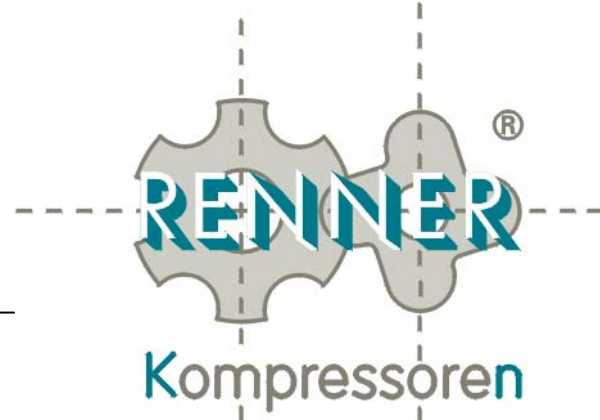


**Installation, Operation &
Maintenance Manual**

RS 3 - 55



***Please read carefully before commissioning and follow instructions.
Keep in a safe place for future use.***

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Chapter 0

General Information

Survey

Contents

Hereunder you will find general information relating to the following subjects:

- Utilisation of the INSTALLATION, OPERATION & MAINTENANCE MANUAL
 - Compressor Operation and Usage
 - Personnel responsibilities
-

Survey

This chapter relates to the following subjects:

No	Subject	Page
0.1	General information	0-2
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0.1 General Information

Contents

General information regarding this manual

Validity

This manual is applicable to the following compressor:

Compressor Detail	Classification
Type	Screw compressor
Year of construction	
Serial number	
Model	
Location	

Manufacturer

RENNER Kompressoren
Emil-Weber-Strasse 32
D-74363 Gueglingen

Date of issue

May 2004 – improved edition including model RS 55: July 2005

Safe-keeping and completeness

- This manual should be kept in a clean safe condition and should be readily available to authorised personnel at all times.
 - Do not remove any pages from this manual.
Any lost or mislaid pages should be replaced especially if they relate to health and safety matters.
-

Continuation next page

0.1 General Information (Continuation)

Copyright

This documentation contains copyrighted information. Without prior consent of RENNER GmbH this information must not be photocopied, duplicated, translated or put on data carrier neither as a whole or part document.
RENNER GmbH reserves all further rights.

Modification of the compressor

For safety reasons any modification or alteration may be permitted only after having received the agreement of the manufacturer.
If modifications are made without the prior agreement of the manufacturer all warranties and manufacturers responsibilities will be invalidated.

Suppliers' documents ^{*)}

The following suppliers documents are part of this manual and must be kept save and related to:

Documents for	manufacturer
RENNERtronic controller	Renner Kompressoren GmbH
VARIABLE SPEED CONTROL	KEB Antriebstechnik Austria GmbH. A 4614 Marchtrenk
Integrated refrigeration <u>air dryer</u>	Ultratroc – Donaldson GmbH.D 24916 Flensburg

^{*)} in case the compressor is equipped with any of these options

0.2 Structure and use of this manual

Contents

The following information relates to the structure and use of this manual.

Chapter

This manual contains the following chapters:

Chapter	Summary
0	<ul style="list-style-type: none">● General Information regarding:<ul style="list-style-type: none">– the manual,– its usage– personnel responsibilities
1	<ul style="list-style-type: none">● Definition of the symbols used● Basic safety instructions
2	<ul style="list-style-type: none">● Description and function of the compressor
3	<ul style="list-style-type: none">● Operating the compressor
4	<ul style="list-style-type: none">● Maintenance hints
A(xy)	<ul style="list-style-type: none">● Appendix (es)

Numbering of pages

The pages have been consecutively numbered according to the chapter:

Example: 3-2

Signifies: Chapter 3, *Page 2*

Example: AS-1

Signifies: Appendix and „S“for control, *Page 1*

Continuation next page

0.3 Intended usage / misuse

Contents

The intended usage of the compressor is described

Definition: authorized persons

Persons are regarded as authorized, when they have received adequate training/instruction and is then charged with defined work on or with the compressor... Keys to the guard doors must only be made accessible to authorized persons.

Intended usage

The compressor should only be used according to the manufacturer recommendations in conjunction with the following bullet points.

- The compressor must be used only for the compression of technically clean air without any detrimental or explosive additives or impurities.
Ambient temperature must be below 40 °C*.
 - Authorized persons only are allowed to work on the compressor
 - The machine must only be operated with the safety devices installed
 - The safety* and operating advice contained in this manual must be observed
 - Any instructions given by the operating company must be observed
 - The legal accident prevention rules must be respected
-

Misuse

Misuse is regarded as:

- Operation by non-authorized persons
 - Operation by disregarding rules and regulations
 - Operation without corresponding treatment /cleansing of the compressed air in the field of foodstuffs and breathing air
 - Operation with defective safety-devices or those deactivated or modified
-

* please consult your dealer or the manufacturer with details in case the ambient temperature is higher in your compressor room

0.4 Requirement of the user

Contents

Hereafter the duties and obligations of the user are outlined when operating the machines

Safety of the plant

The user has to particularly ensure that

- the compressor must be used only according to Manufacturer recommendations in conjunction with all current health and safety regulations
 - the compressor must be operated only when in faultless condition and fully functional
 - the integrated safety devices are regularly serviced and are fully functional
 - only adequately qualified and authorized personnel operate, service, and repair the compressor
-

Protection of staff

The operating company must ensure that the personal protective equipment required is available for

- the operating personnel,
 - the service and maintenance personnel
 - the maintenance and repair personnel and that it is used accordingly
-

Briefing and training

The operating company must ensure:

- that prior to start up all personnel who will maintain, service or operate the compressor are fully aware of the current personal and environmental safety regulations and procedures.
Annual personnel update of safety procedures would be recommended
 - the complete manual must always be available at the site of the compressor in a readable condition
 - that personnel are aware of the location of the manual, the content and particularly the safety chapters.
 - the safety and warning advices mounted are not taken away or made illegible
-

0.5 Personnel responsibilities

Contents

The requirements in regard to personnel responsibilities are as follows.

Duty of operating personal

The personnel must carry out the following duties:

- to control and inspect the compressor as to its faultless and safe function (see chapter 2.1)
 - to operate the compressor according to the operating points previewed
 - to recognize and delete or report respectively disturbances and irregularities.
-

Responsibilities of operating personnel

In order to carry through the requisitions the service personal must accomplish the following requirements

- The operator (of the compressor) must have received instructions from the operating company as to the labor protection law.
 - The operator must have a clear understanding of the instructions given by the operating company and must carry them out.
-

Duties of the maintenance personnel

The service and maintenance personnel must comply with the following duties:

- carry through regular inspection and maintenance work
 - up-keep of the compressor
 - carry through test runs of the machine
 - check the integrated safety devices
-

Requirement of maintenance personnel

The following qualifications are required in regard to maintenance personnel:

- The maintenance personnel must have successfully passed a test as skilled (machinery) labour - or equivalent.
- The personnel must comply with the maintenance instructions.

Chapter 1

Safety Advice

Survey

Contents

This chapter informs you about

- Definition of the symbols used.
- Basic advice as to the safe handling of the compressor.
- Advice regarding accidents.



Important advice!

It must be clearly understood that the safety advice given in this manual should only be used as an additional aid to the national safety accident prevention rules and laws currently in force.

Existing accident prevention rules and regulations must be retained and adhered to at all times.

Survey

This chapter relates to the following subjects:

No	Subject	Page
1.1	Symbols	1-2
1.2	Basic safety advice	1-3
1.3	Accident conduct	1-6

1.1 Symbol

Contents

Symbol Definitions.



Danger!

This symbol relates to the danger of life and health of people

Dangers to life will be particularly related to by using the expression: **danger of life**.



Danger!

This symbol relates to danger of life and health of people due to electric voltage.



Attention!

This symbol is a sign of danger for machine, material or the environment



Advice!

This symbol is to indicate important advice and information which contribute to your own safety, as well as to the better understanding of the compressor operation.



Disposal!

This symbol indicates advice as to the disposal of machinery parts and operating materials.

1.2 Basic safety advice

Contents

Hereafter you will find basic safety advice for the safe handling of the compressor.



Danger!

To minimise risk of personal injury, damage to equipment or property, strictly follow the remedial actions stated below.

Possible danger	Remedial action
<p>Remaining dangers</p> <p>The screw compressor has been designed and built according to latest technical standards and according to recognized safety regulations and is equipped with corresponding safeguarding equipment. However, remaining risks cannot be excluded.</p> <p>These dangers will be explained in this chapter.</p> <p>Endangerment of people due to lack of qualification and/or operational faults of the service personnel.</p> <p>Explanation: Operational faults may cause personal injury, or damage to equipment and property.</p>	<p>You should only operate this equipment</p> <ul style="list-style-type: none"> ● Having the qualification necessary ● Having received complete instructions from the Operating Company ● Having completely read and understood this MANUAL ● Before any maintenance or service work is carried out the RED STOP button must be pressed. The incoming electrical supply to the compressor must also be switched off and isolated.



Protective gloves and protective goggles must be worn during some of the maintenance work. Please observe the corresponding advice

1.2 Basic safety advice (continuation)



Danger!

Please strictly follow the under mentioned safety advice to avoid the danger of electrical shock or personal injury.

Possible danger	Remedial actions
<p>Danger of life Danger to people by an electric shock.</p> <p>Explanation: The machine operates (as standard) at a voltage of 400 V with an adequately high amperage. As voltages of more than 44mA can be fatal, corresponding precautions are required.</p>	<ul style="list-style-type: none"> ● Do not touch live cables or connections. ● In case of damaged cables report immediately to the maintenance personnel. ● Ensure all doors to electrical installations are closed securely. ● Always isolate electrical supply before starting any maintenance work on the compressor. ● Only trained personnel must carry out maintenance and service work. ● Wear rubber soled safety shoes when working on the compressor electrical circuit. ● Make sure that during maintenance or service work no third party may switch on the circuit breaker



I.

1.2 Basic safety advice (continuation)



Attention!

To minimise risk of personal injury, damage to equipment or property, strictly follow the remedial actions stated below.

Possible damage	Measures for prevention
Physical injury of the personnel and damage to the compressor due to removal or evasion of protective devices	<ul style="list-style-type: none"> Do not remove or make inoperative any safety device Rectify defects immediately they are recognised Electrical work/repairs must be carried out by a qualified electrician only
Damage to the compressor due to overloading	<ul style="list-style-type: none"> Do not exceed the technical limit values stipulated
Burns through hot compressor parts	<ul style="list-style-type: none"> Do not touch compressor parts immediately after having opened the doors of the canopy
Burns through hot lubrication oil when topping up or changing oil	<ul style="list-style-type: none"> Turn the oil filler cap slowly anti-clockwise during the first 5 rotations until a tangible "snap-point". Thus the remaining pressure will be slowly relieved (see also chapter 5.7 : Changing Oil)
Possible eye and skin burn due to hot condensate spurt	<ul style="list-style-type: none"> Let the compressor sufficiently cool down and handle with great care before disconnecting it from the c.a. system. Wear protective goggles
Danger through compressed air Danger of life Compressed air may severely injure human and domestic animals	<ul style="list-style-type: none"> Do not bring compressed air to bear on any creature

1.3 Accident Conduct

Contents

Hereafter you will get to know which measures must be taken at accidents or disasters (e.g. fire or explosion)

Preparations for appropriate help at accidents

Please undertake the following measures at regular time intervals so as to be prepared in case of an accident:

- Take part on regular basis in First - Aid courses in order to brush up your knowledge.
 - Get yourself regularly informed about the possibilities which are at your disposal in regards to rescue facilities for First Aid in your company
 - Safe-guard a list at your work place containing the telephone numbers required as well as the contact person.
-

Accident conduct

At an accident, proceed in the following sequence:

Action	If	Then
1	there are injured people	administer first aid if you are a trained first aider?
2	there are injuries to people and damage to property	inform the rescue team of the severity of injuries and type of damage to property.
3	the disaster (fire) has happened	<ul style="list-style-type: none">● leave the machine immediately● use the marked emergency exits and escape facilities.● do not use elevators/lifts!
4	there are injuries to people, damage to equipment or buildings	inform your supervisor immediately or another person from the list of company first aiders or safety officers. This list should be clearly visible in the working area.

Chapter 2

Product description

Survey

Contents

This chapter relates to the following subjects:

- ☐ Compressor service access points
 - ☐ Overview of the compressor and its operating elements
 - ☐ Technical data
-

Survey

This chapter relates to the following subjects:

No.	Subject	page
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2.2.6	Refrigeration air dryer (Optional)	2-12

2.1 Authorized access points

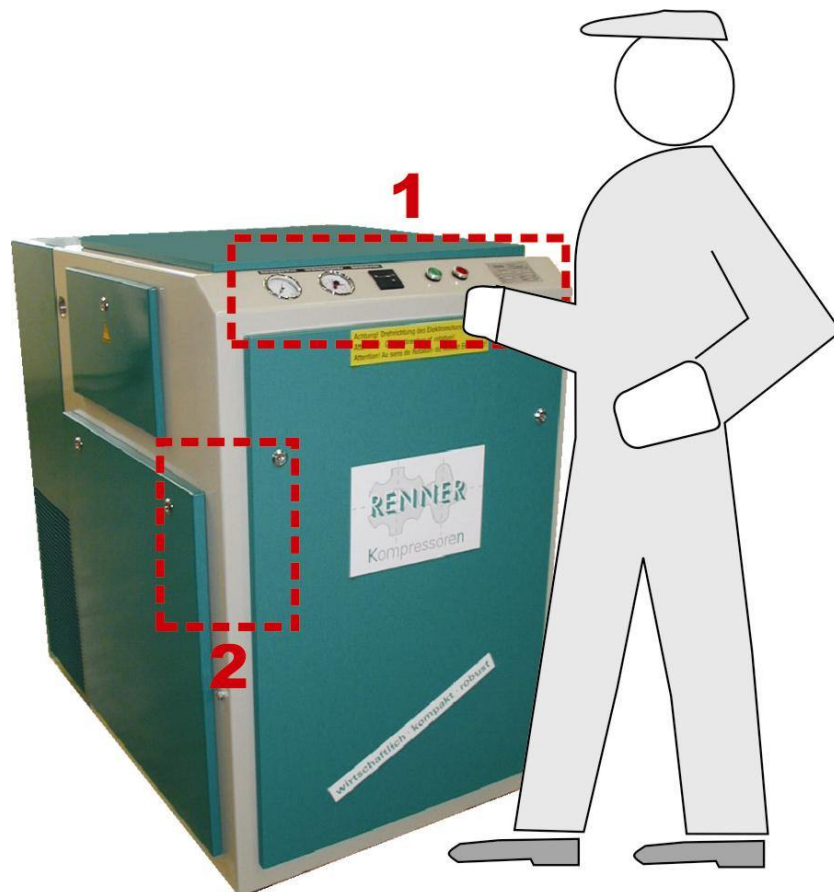
Contents

Authorised access points in regard to the compressor operating elements and, implementation of minor control adjustments and maintenance work.

Important comment

The use of any other access points other than those stated by the manufacturer, for servicing, maintenance or operation of the compressor, are not permitted.
Only a qualified electrician with an understanding of the product and installation should be allowed to carry out any electrical work.

Illustration: Access points



continuation next page

2.1 Authorized access points (continuation)

Description:
Access points

Solely for the operation of the machine the following points are previewed:

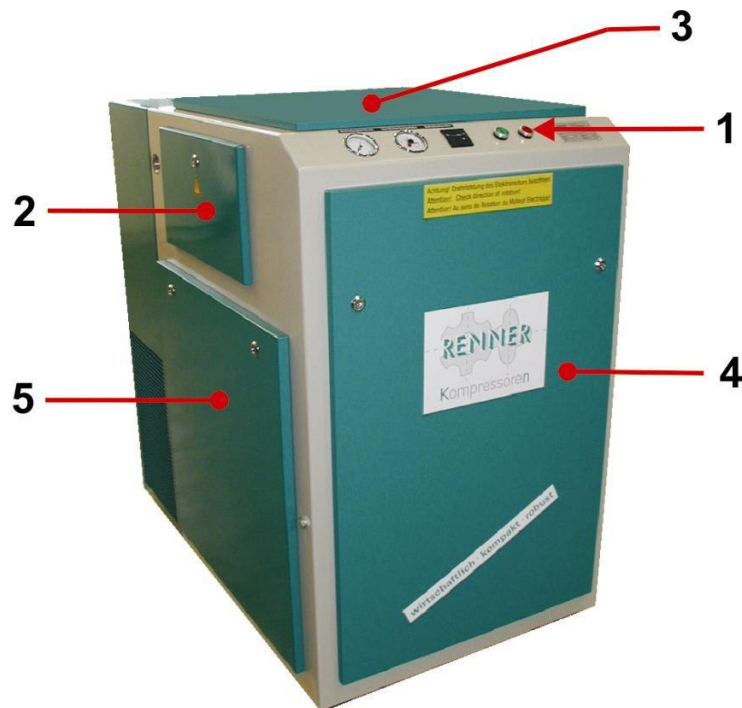
Item	Operation ...	Actions permitted
1	... of the control panel	<ul style="list-style-type: none"><input type="checkbox"/> View service pressure<input type="checkbox"/> View oil and service temperature<input type="checkbox"/> Read operating hours<input type="checkbox"/> Switch-on compressor<input type="checkbox"/> Emergency stop of the compressor or close-down
2	... of the protective devices	<ul style="list-style-type: none"><input type="checkbox"/> Carrying out control of, and/or minor maintenance work

2.2.1 Safety devices

Content

Overview covering the most important compressor elements and their functions

Picture: Safety devices



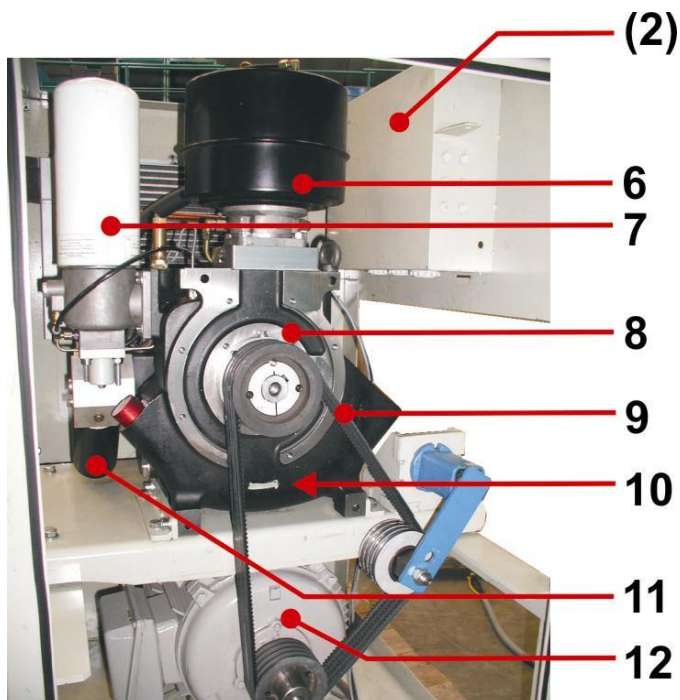
Description: Safety devices

On the outside of the compressor you can see the following safety devices:

Item	Description	Function
1	STOP pushbutton	To stop compressor in case of emergency
2	Door of electric panel	Safety door of electric panel. To be opened only by a qualified electrician ATTENTION: danger to life due to electric voltage
3	Top cover	Access to pressure switch, air-filter and solenoid valve
4	Front door	Access to motor, belt and air filter
5	Side panels	Access to oil filter, oil separator cartridge and oil filling point

2.2.2 Compression unit models RS 3 - 45

Picture:
Compression unit



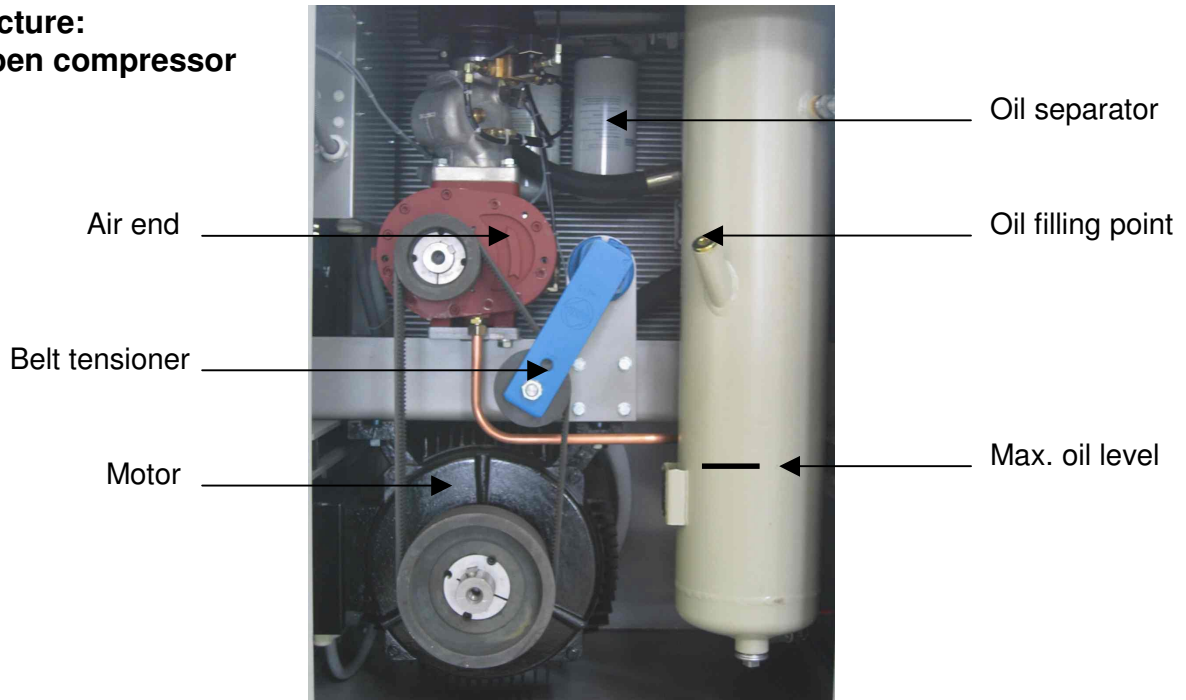
Description:
Compression unit

After having removed the front panel of the machine you can see the most important components of the unit:

Item	Description	Function
6	Suction filter cartridge	Filters the intake air
7	Oil separator cartridge	Filters fine residual oil from the compressed air after pre-separation
8	Air end	Producing compressed air
9	V-belt	Power transmission
10	Arrow showing direction of rotation	Important for control of rotation (see chapter 3.3.)
11	Oil filter	Filters impurities from compressor oil
12	Electric motor	Drive train

2.2.2 compressor overview model RS 55 *

picture:
open compressor



description:
compressor unit

You will see the main machinery components after taking off the front door of the compressor package

	Description	Function
	Air end	Generating compressed air
	Belt- tensioner	Keeps belts continuously tensioned
	Electric motor	drive
	Oil separator	Filters residual oil from compressed air after pre-separation
	Oil filling point*	For re-filling and checking of compressor oil
	Max oil level	About 17 cm underneath the oil port
		* with gauge since 8/2005

2.2.2 Compression unit (continuation)

Description: Compression unit components

Air end (item 8)

The direction of rotation of the air end is to the left (anti-clockwise) when looking from the front-side on to the shaft (see picture).

Pay attention to the directional arrow at the v-belt pulley.

Suction air filter (item 6)

The suction air filter (with the small air end model NK 40 already integrated in the housing), is directly mounted on to the suction stud of the suction regulator.

The dry micro-filter with a rating of 10 µm filters the intake air.

Pressure switch (electric)

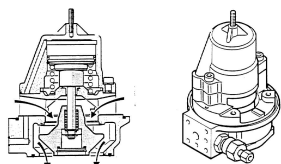
The pressure switch is directly connected to the outlet of the machine. It controls the suction regulator. The values for p_{\max} and p_{\min} are set at this switch.

p_{\max} : is the upper service pressure at which the unit normally stops pumping

p_{\min} : is the lower service pressure at which the unit normally starts pumping again.



The pressure switch has been correctly set in the factory. Authorised personnel must only carry out adjustments to the pressure switch.



Suction regulator

The suction regulator is directly connected to the air end. It controls the air volume sucked in by the compressor via the air suction filter.

Function of the suction regulator:

The suction regulator comprises of one main valve. This operates as a control valve and at the same time as a hermetically sealed isolator valve. At full load the suction cross-section is fully opened.

When the machine stops this valve closes quickly and thus the suction cross section is locked altogether.

The multi-functions of the regulator are ensured by just one flange mounted control unit.

Minimum pressure valve

The minimum pressure valve is situated at the outlet of the compressor unit just before the air-after cooler.

It performs two tasks:

1) As a minimum pressure valve it prevents a loss of pressure (in the air end) when no counter pressure in the air-mains is available. A minimum pressure of 4.5 bar is necessary in order to safeguard lubrication of the air end.

2) As a “non return valve” it prevents at the same time the reverse flow of compressed air from the air mains or the air vessel, back into the compressor unit. Due to this function the compressor unit is totally pressure relieved once it is stopped.

**Description:
Compression unit
components
(continuation)**



Minimum pressure valve (continuation)

The valve operates automatically. The setting of the minimum pressure valve must only be done by persons authorised by the manufacturer.

Oil separator cartridge (Item 7)

The oil separator cartridge is not only designed for filtering the oil from the compressed air, but serves at the same time to reclaim the residual oil after pre-separation as drops, formerly micro-distributed in the system. This cartridge is a spin on/off type and – by means of the connection nipple – is screwed on to the filter support of the oil re-claimer (see illustration below)

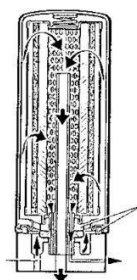


Illustration: oil separator cartridge

Oil return scavenge window / oil return scavenge non-return valve

The oil return window (fitted to some air ends) is situated near to the oil separator cartridge and shows the scavenged oil coming from the a.m. cartridge.

When starting the compressor the scavenge window is filled with oil due to its accumulation during standstill. After a few minutes a mixture of oil and air can be observed. Separation of oil in the cartridge takes place.

If after a longer period of operating time no oil can be observed in the scavenge window, a disturbance may have happened e.g. a clogged borehole. As a consequence the oil separated will be carried over in the compressed air into the air mains/vessel.

Only personnel authorised by the manufacturer are allowed to rectify such problems.

2.2.2 Compression unit (continuation)

**Description:
Compression unit
components
(continuation)**

Oil scavenge window / oil scavenge non-return valve

The oil scavenge non-return valve prevents the oil separator cartridge from flooding by scavenging oil from the air end.

Oil filter (item 11)

The oil filter (cartridge) cleans the compressor oil from impurities. The cartridge is screwed on to the scavenge stud by hand. The efficiency of the filter is between 5 – 10 µm.

COMBISTAT

The COMBISTAT is a temperature indicator and control unit. It is built into the instrument panel. It monitors the maximum permissible service temperature of the unit, which is set at 110°C (red mark).

When this temperature is reached the electric circuit is disconnected and the unit stops automatically.

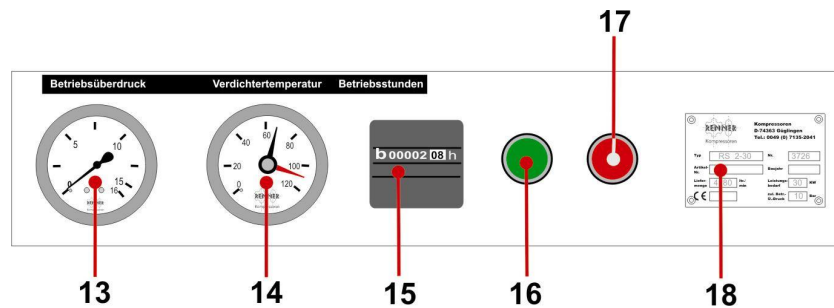
Do not bend the connecting line between the compressor and the COMBISTAT, otherwise the electric circuit is interrupted.

Safety valve

The safety valve is mounted on the oil re-claimer before the oil separator cartridge. It is set 1-2 bar above the max. gauged pressure. The safety valve blows off in case the final pressure is exceeded due to a fault somewhere in the system.

2.2.3 Instrumentation panel

Picture:
Instrumentation
panel



Description:
Instrumentation
panel

On the panel you will find the following service elements:

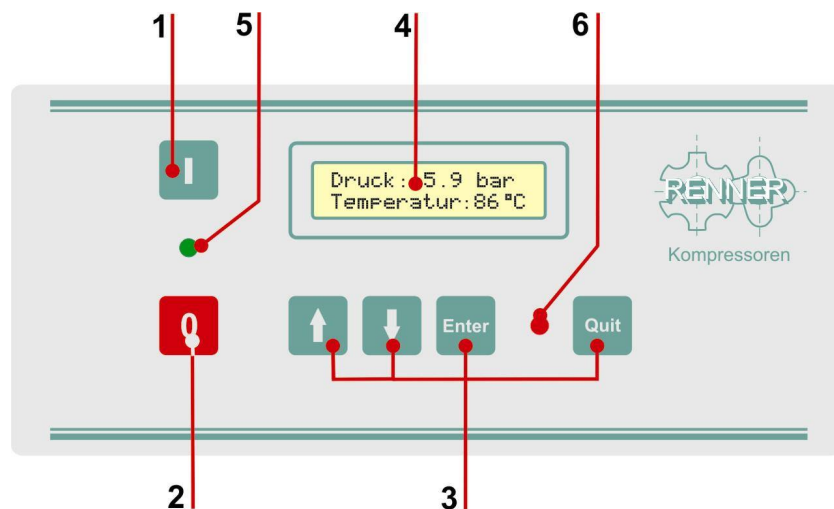
Item	Description	Function
13	Gauge: service pressure(g)	Indication of working pressure
14	Temperature indicator: <i>Combistat</i>	Indication of service temperature or overheating
15	Hour meter	Counts the service hours of the compressor
16	Start pushbutton	Switches compressor on
17	Stop pushbutton EMERGENCY STOP	For switching the compressor off in emergency cases only
18	Machine plate	Shows the main performance data and the compressor model

2.2.4 Electronic control (Optional)

Content

The RENNERtronic control monitors and controls the function of the compressor. You may set and change respectively a multitude of parameters and functions, details of which can be taken from the RENNERtronic instruction manual.

Picture of RENNERtronic control



Service elements RENNERtronic control

The RENNERtronic control contains the following service elements:

Item.	Description	Function
1	Compressor ON	Switches the compressor on
2	compressor OFF	Switches the compressor off
3	Multiple function key	Navigation within the menu and setting of parameters etc.
4	Display	Readout of parameters
5	LED (green)	Service -LED
6	LED (red)	Fault-/maintenance-LED



Attention

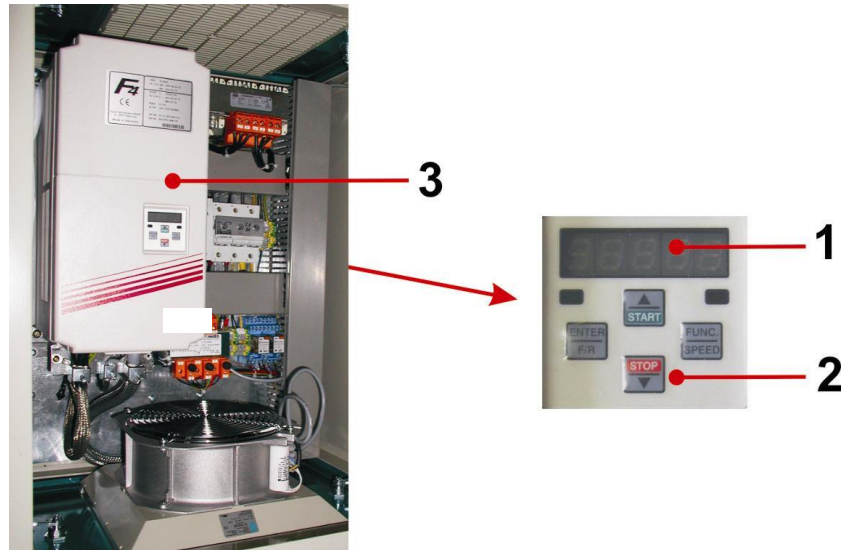
Please refer to the comments in chapter 4 and appendix S as well as in the manual for the RENNERtronic control

2.2.5 Frequency converter (optional)

Content

This chapter contains a brief survey about the service elements in conjunction with the frequency converter installed as an option. For details see the operator's manual.

Picture: Frequency converter



Description: Frequency converter

The control panel (3) of the frequency converter contains the following elements:

Item	Description	Function
1	Display	Indication for parameters
2	Key pad	Operate and set the service parameters



Danger!

The frequency converter is operated by a voltage, which may – when touched - cause death or serious injury. A qualified electrician must carry out any installation and maintenance work.



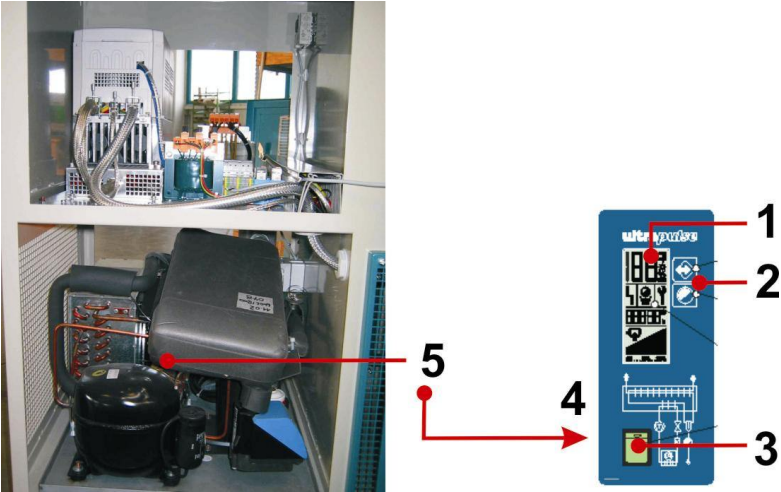
Attention!

For details please see the comments in appendix FU as well as the operating manual for the frequency converter.

2.2.6 Refrigeration air dryer

Content This chapter contains a short survey of the refrigeration dryer optionally installed. For details see the operator’s manual.

Picture:
Refrigeration air
dryer



Danger!
Observe the safety instructions in the separate operating manual for the dryer. It is especially dangerous to breathe in refrigerant vapour or come into contact with liquid refrigerant. Smoking is not permitted when working around the dryer since ash from cigarettes, or any other naked flame (e.g. when welding) combined with refrigerant produce poisonous vapours.

Description:
Refrigeration dryer

The dryer has a refrigerating unit to cool the compressed air. At the same time the compressed air is dehumidified. The resulting condensate is drained off using a condensate separator.
The control panel (4) of the refrigeration dryer contains the following service elements:

Item	Description	Function
1	Display	Indication of the parameter
2	Keypad	Keys used to operate and set the service parameters
3	Switch ON / OFF	Switches the dryer on and off



Attention!
For details please see the comments in chapter 4 and appendix KT as well as the operating manual for the refrigeration air dryer.

Chapter 3

Installation & putting into operation

Content

This chapter contains important information concerning the transportation, installation and storage of the compressor.

General information

The installation plan and technical data for this special screw compressor model can be found in the preceding data sheet (located on the reverse of the cover sheet).
The compressor is normally delivered on (Euro-) pallets and is packed in cardboard and plastic foil.



Danger of toppling!

The machine may topple over if tilted in excess of 10°! Use an appropriate means of transport such as fork-lift, lift-truck or wire harness. Support the sides of the unit.

No special procedures need to be taken when unpacking. Likewise, storing the unit (temporarily) within its original packaging poses no problems. Store the compressor on even, firm ground and prevent it from toppling over.



Dispose of the packaging material (cardboard/plastic foil) separately.

Survey

This chapter is divided into the following sub-sections:

No.	Subject	Page
3.1	Compressor installation	3-2
3.2	Connections	3-3
3.3	Putting into operation	3-5

3.1 Compressor installation

Content

This section contains important advice you need to follow in order to install the compressor safely whilst avoiding damage or malfunction.



Compressor installation

CAUTION

Observe safety instructions!

Always stay away from the danger zone of a load being lifted!

Keyword	Instructions
Installation site	<ul style="list-style-type: none"> • Ground: even, horizontal, firm • Check load carrying capacity of floor. • Air: as cool, clean and free of frost as possible, as low humidity as possible Temp.: +3°C (37°F) - +40°C (104°F) *) • Sufficient ventilation of compressor room • Air intake must be unobstructed • Place air intake opening in a position where loose objects cannot be drawn in. • Ensure installation site has sufficient lighting (for reading of instruments, carrying out maintenance, etc.)
Lifting work	<ul style="list-style-type: none"> • Secure all loose and swinging parts, before lifting the compressor. • Use an appropriate lifting vehicle (weight according to data sheet) • Always stay away from the danger zone of a load being lifted
Pipelines, pressure lines	<ul style="list-style-type: none"> • Before assembling pipelines, remove all flanges, plugs, caps and sacks using a drying agent. • Ensure that the pressure system can expand from the compressor to the aftercooler or air system due to heat. Make sure it does not come into contact with flammable materials.
Exhaust	<ul style="list-style-type: none"> • Exhaust ducts must have a diameter at least equal to that of the cooler surface and should be approx. 1m in length; for longer ducts, use an additional fan with a capacity 20% greater than the compressor ventilator • When using multiple units, make sure no compressor can draw in the heated exhaust of another compressor.

*) in case the ambient temperature is higher, please consult your dealer or the manufacturer

3.2 Connections

Content

This section contains important advice you need to follow in order to connect the compressor safely to the compressed air system, and connect the power supply.



CAUTION

In compressor units fitted with pressure tanks, the air receiver must in most countries undergo an acceptance test carried out by an official surveyor prior to putting into operation. Make a log book.

A) Compressed air connection

The unit's piping has been installed ready for operative use. You must follow the following advice when connecting the unit to the compressed air system:

Compressed air connection

Keyword	Instructions
Pressure	<ul style="list-style-type: none">• Use fittings and pipe lines suitable for the operating pressure.• Do not operate the unit at a final pressure greater than that specified on the name plate• A check valve between the unit and the compressed air system is not necessary as one has already been installed in the unit itself.
Connection	<ul style="list-style-type: none">• Connect unit to the compressed air system stress-free, and free from vibration (via a flexible hose for ex.)
Shut-off valve	<ul style="list-style-type: none">• We recommend you also install a shut-off valve to enable you to carry out maintenance work on the compressor without having to remove pressure from the compressed air system.
Condensate	<ul style="list-style-type: none">• An automatic condensate drain can be installed after the aftercooler to remove condensation from the compressed air

3.2 Connections (Cont.)

B) Electrical connections

The unit has been wired so as to be ready for immediate use.
You only need to connect the unit to the mains.

The unit must only be connected by an electrician

Observe the following when connecting the unit to the mains:

Electrical connections

Keyword	Instructions
Voltage	<ul style="list-style-type: none">Only connect the unit to the supply voltage specified on the name plate of the motor.
Direction of rotation	<ul style="list-style-type: none">Follow correct direction of rotation! Anticlockwise when viewed from the front.
Fuses	<ul style="list-style-type: none">A primary fuse and master switch with EMERGENCY-STOP function must be installed by the Operating Company. The switch must have a capacity at least 1.1 times the rated output of the motor and must be uniquely assigned to the unit.Ensure that the electrical network is sufficiently fused (see data sheet)
Connection	<ul style="list-style-type: none">Lay the supply cable safely so that people cannot trip over it.Lead the cable with the wires L1,L2,L3, N and PE through corresponding screw fittings (we do not recommend to use plugs) into the connection cabinet.Connect the wires to the appropriate terminals L1,L2,L3,N and PE

3.3 Putting into operation

Content

This section contains important advice you need to follow in order to put the compressor safely into operation.

General

Each module of the unit has been tested in the factory and has undergone an endurance test after final assembly. The tests demonstrate that the specified data is correct and that all modules are in perfect working order. The unit should be monitored during the first hours of operation to check for any malfunctions.



Important

Operators must read and follow the specific instructions for any additional optional components (electronic control, frequency inverter, refrigeration dryer) installed in the unit.

Preparation

Before putting the unit into operation for the first time, you must observe the following:

Step	Activity
1	Have all bolted and terminal connections in the switch cabinet been checked for tightness by an electrician
2	<p>For units which are operated remotely, affix a sign to the unit and in a clearly visible location. The sign should have the following message:</p> <p>CAUTION: This unit is controlled remotely and can start without warning.</p> <p>When controlling the unit remotely, observe safety regulations which safeguard against the unit being started while being checked or maintained; Affix an appropriate sign next to the remote control switch.</p>
3	In normal operation, <u>do not switch off units under load using the emergency - or master switch –</u> see chapter 4.3 OPERATION

3.3 Putting into operation (Cont.)

Check direction of rotation, INFO

Check the direction of rotation of the screw compressor when putting the unit into operation for the first time, and each time after the electric cabling is changed.
The direction of rotation is anticlockwise, viewed from the front of the compressor. The direction of rotation of the V-belt pulley must be the same as that indicated by the arrow. Reconnect the connection cables where necessary (electrician).



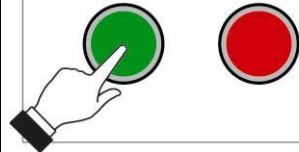
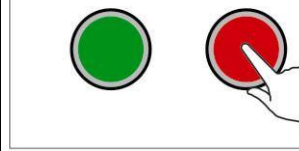
CAUTION

Check the direction of rotation using the two handed method.

Operation with an incorrect direction of rotation lasting longer than approx. 2 seconds will destroy the screw compressor.

Danger of moving parts if front doors are left open during check.

Control the direction of rotation as follows:

Step	Activity:	Image
1	Open front door.	
2	Start compressor by tapping the green start button: Release button immediately after!	
3	Stop the compressor within 2 seconds by pressing the red stop button with the other hand.	

3.3 Putting into operation (Cont.)

Test run INFO



Carry out a test run. This allows oil to distribute itself in the unit.

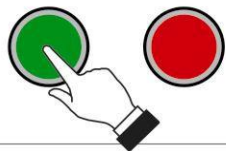
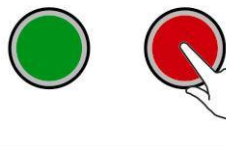
Note:

Switching off the unit when the shut-off valve is open can result in foaming of the oil in the separator tank. This may result in the following:

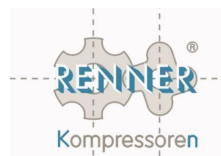
- Oil is discharged with the relief air
- Oil in the separator cartridge overflows
- There is oil within the compressed air when restarting the unit.

This is usually not critical and the unit should return to normal during the course of operation. However, in isolated cases, the separator cartridge may need to be replaced.

Test run

Step	Activity:	Image
1	Open shut-off valve. Press start button and allow the unit to run for max.3 seconds.	
2	Press stop button. (Attention: stop compressor as described only when testing. When stopping the compressor in normal operation kindly see chapter 4.3 OPERATING)	
3	Repeat steps 1 and 2 again twice.	

Also note the instructions on switching off the unit in Chapter 4.3 ("Stop of compressor").



Chapter 4

Operation / normal use

Content This chapter relates to the correct operation of the compressor

Survey The chapter is detailed as follows:

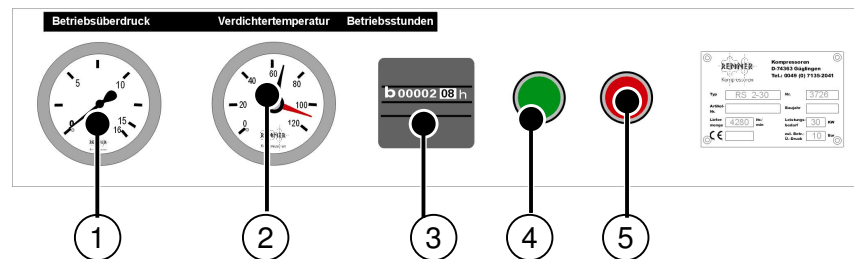
Item	Subject	page
4.1	Control instrumentation	4-2
4.2	Compressor start up / normal use	4-3
4.3	To stop the compressor	4-5
4.4	Failure during operation	4-6
4.5	Remedies of failures	4.7

4.1 Control Instrumentation

Content

Below are descriptions covering the instrumentation components.

Picture: Control panel



Function: Components

The control components have the following functions:

Item	Description	Function / operation
1	Gauge <i>Service pressure (g)</i>	Shows the service pressure (g)
2	Temperature indicator <i>Combistat</i>	Indicates the oil and service temperature
3	Hour meter	Counts the operating hours the compressor has actually run
4	Pushbutton (green) <i>Start</i>	To start compressor Note: the main switch – provided and installed by the customer - must be switched on.
5	Pushbutton (red) <i>Stop / Emergency stop</i>	Stops compressor immediately. EMERGENCY STOP.

4.2 Compressor start up / normal use

Content

The following explains how to start the compressor and where to pay attention to during operation / normal use.



Danger!

There are moving parts inside of the compressor housing which can cause serious injuries. Therefore never operate the compressor with the cabinet doors removed.

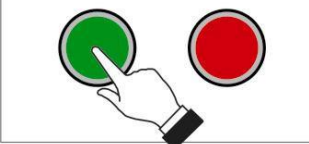
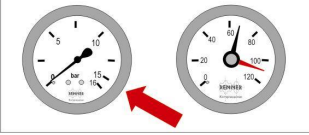
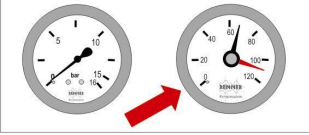
Before starting the compressor

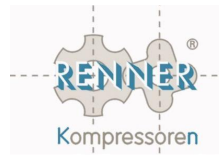
Before starting the compressor please check the following:

- Is the oil level sufficient?
- Has the circuit breaker been switched on?
- Are any existing shut-off valves opened?

To start compressor and monitor operation/normal use


Press the pushbutton *START* to start the compressor

Step	Operation	Picture / explanation
1	Press the (green) START pushbutton in order to start the compressor	
2	When operating please regularly monitor the following:	
2a	Service pressure (g) The service pressure (g) must not exceed the max. admitted value indicated on the compressor plate. Otherwise stop the compressor immediately.	
2b	Oil and service temperature The oil and service temperature must not exceed 110°C. If 110°C is exceeded the compressor will automatically stop.	



4.2 Compressor start up / normal use (cont.)

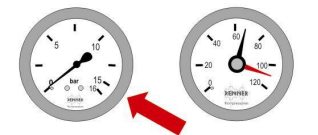
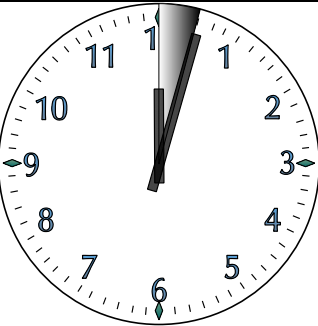
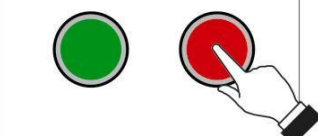
Monitoring operation / normal use (continuation.)

Step	Operation	Picture / explanation
Cont. 2b	Important! In case the compressor fails to stop automatically, you must immediately push the Emergency stop button manually.	
2c	Hour meter After a number of given service hours different maintenance work must be carried through. For the exact maintenance intervals together with the relevant service work please refer to the maintenance table.	

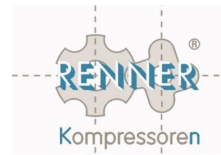
4.3 To stop the compressor

Content How to stop the compressor in operation / normal use during or after work.

Operation/normal use: stopping In case you want to stop the compressor, carry out the below steps in the following sequence

Step	Operation	Picture/explication
1	Let the compressor operate until the final pressure has been reached. Alternatively, close the shut-off valve. In the latter case the compressor operates immediately against final pressure and switches into the "run-on time"	
2	Close the shut-off valve	The shut-off valve is situated directly at the compressed air exit, on the left hand side as seen from the front of the compressor
3	Let the compressor idle for 3 minutes, it will then stop automatically Observe without failure: The run-on time must not be shorter than 3 minutes! (a longer time period is no problem).	
4	Press pushbutton <i>Stop / Emergency stop</i>	

To stop completely When there is no further requirement for compressed air, or if any maintenance/service work needs to be carried out on the compressor, please ensure that the **mains switch / isolator** is locked in the off position.



4.4 Failures during Operation / normal use

Content

Advice regarding fault finding and corrective action.



Danger!

To minimise risk of personal injury, damage to equipment or property, only trained/qualified personnel should carry out any fault finding or rectification work on this product

Before clearing faults

Before starting any sort of work:

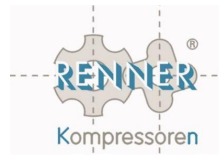
- Stop the compressor and disconnect it at the main switch!
- Vent the compressor, mains and the air vessel respectively.

Operating faults

The followings faults may occur during service:

Fault	Possible cause	Clearing of fault
Compressor does not start:	<ul style="list-style-type: none"> • No current • Loose cables or fuses • Motor protection switch stopped compressor • <i>Combistat</i> stopped compressor / is defective • Connecting cables to <i>Combistat</i> are defective 	<ul style="list-style-type: none"> ➤ Make current available ➤ Retighten cables and fuses ➤ Unlock motor-protection switch (in electric control panel) ➤ Ensure correct cooling, change <i>Combistat</i> when defective ➤ Ensure correctly fed connecting cables

See next page

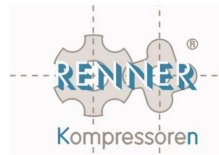


4.5 Remedies of failures during operation / normal use (continuation)

Failures (cont.)

Fault	Possible reason	How to clear fault
Compressor struggles to start	<ul style="list-style-type: none"> • Too long or too short star-delta switch over time • Compressor is under pressure • Fluctuations in the power system • Temperature of the site is too low and therefore the oil is too viscous • Oil is too viscous 	<ul style="list-style-type: none"> ➤ Check and reset time period, correct setting is 3-6 seconds on relay K1T ➤ Check/change solenoid valve / vent the compressor ➤ Determine reason ➤ Heat site and compressor or position in warmer area ➤ Choose suitable oil – Shell Corena D68 or D46 in case of low surrounding temperature
compressor stops before reaching final pressure	<ul style="list-style-type: none"> • Motor overload has tripped • <i>Combistat</i> switches off due to high temperature • Control current is short-circuited 	<ul style="list-style-type: none"> ➤ Check overload setting and if necessary alter it. Check setting of pressure switch, if necessary, alter it. Check supply of all three phases. ➤ Ensure correct cooling; change <i>Combistat</i> if necessary. ➤ Remove reason for short-circuit and/or replace fuses

See next page

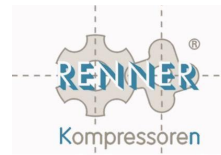


4.5 Remedies of failures during operation / normal use (continuation)

Failures (continuation)

Fault	Possible reason	How to clear fault
Motor overload stops the compressor	<ul style="list-style-type: none"> • Seized air end • Loss of one or more phases • Motor overloaded • Ambient temperature is too high 	<ul style="list-style-type: none"> ➤ Remove reason for seizure ➤ Check supply ➤ Check setting of overload, alter if necessary, check/alter settings of pressure switch ➤ Ventilate compressor room
<i>Combistat</i> operates due to high temperature	<ul style="list-style-type: none"> • Shortage of oil • Oil filter clogged • Defective thermostat • Dirty oil cooler • Incorrect installation of compressor • Faulty <i>Combistat</i> or incorrectly set 	<ul style="list-style-type: none"> ➤ Check and correct oil level ➤ Change oil filter ➤ Change thermostat ➤ Clean cooler (oil and air sides) ➤ Check installation instructions ➤ Adjust or replace <i>Combistat</i>
Safety valve blows	<ul style="list-style-type: none"> • Faulty safety valve • Oil separator cartridge clogged 	<ul style="list-style-type: none"> ➤ Change safety valve ➤ Change separator cartridge

See next page

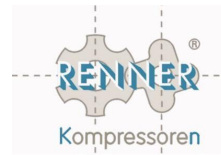


4.5 Remedies of failures during operation / normal use (continuation)

Failures (continuation.)

Fault	Possible reason	How to clear fault
Oil carryover	<ul style="list-style-type: none"> • Dirty oil return (scavenge) pipe • Faulty separator cartridge • High oil level in tank • Compressor was stopped <u>before</u> end of run-on time (min 3 minutes) 	<ul style="list-style-type: none"> ➤ Clean scavenge system ➤ Check/change separator cartridge ➤ Reduce oil level ➤ Ensure the compressor is only stopped <u>after</u> run-on time has elapsed
Compressor does not vent when idling; does not stop during on/off operation i.e. safety valve blows off	<ul style="list-style-type: none"> • Setting of pressure switch too high • Faulty solenoid • Defective relief valve in suction - regulator • Minimum pressure valve jams 	<ul style="list-style-type: none"> ➤ Lower setting of pressure switch ➤ Change solenoid valve ➤ Check/change relief valve ➤ Check/correct minimum pressure valve
Unit continuously pressure relieves, reduced flow	<ul style="list-style-type: none"> • Defective solenoid valve • Defective relief valve in suction regulator • Electrical connection to solenoid broken • Faulty auxiliary contact on Y-contactor 	<ul style="list-style-type: none"> ➤ Change solenoid valve ➤ Change relief valve ➤ Rectify electrical connection ➤ Check / change switch
No capacity or reduced flow	<ul style="list-style-type: none"> • Air filter clogged • Intake valve faulty or jams • air leaks 	<ul style="list-style-type: none"> ➤ Change air filter cartridge ➤ Check suction regulator, butterfly valve, clean bearing and guide ➤ rectify leak

See next page



4.5 Remedies of failures during operation / normal use (continuation)

Failures (continuation)

Fault	Possible reason	How to clear fault
Suction regulator does not close at final pressure	<ul style="list-style-type: none"> • Setting cylinder defective, no control air • Jet is blocked, frozen up 	<ul style="list-style-type: none"> ➤ Change setting cylinder and/or solenoid valve ➤ Clean jet
Oil reservoir is under pressure	<ul style="list-style-type: none"> • Non return valve is faulty 	<ul style="list-style-type: none"> ➤ Change non return valve
Oil contamination inside cabinet, oil mist on venting	<ul style="list-style-type: none"> • Loose connections in oil circulation system • Check seal on oil drain plug • Compressor stops under pressure • Check condition of O-ring seal at intake valve and its correct seat 	<ul style="list-style-type: none"> ➤ Tighten connections ➤ Tighten screw / replace seal ➤ Switch off compressor after 3 minutes run-on time. Check if run-on time is 3 minutes or greater ➤ Change o-ring if necessary
Compressor runs noisily	<ul style="list-style-type: none"> • Drive belt not correctly tightened • Drive-belts are not compatible matched sets • Pulley discs are not aligned 	<ul style="list-style-type: none"> ➤ Check /adjust tension of drive belt ➤ Change to compatible matched sets ➤ Check and correct alignment of drive

Chapter 5

Maintenance

Survey

Content This chapter contains information concerning maintenance of the unit.

Survey This chapter is divided into the following sub-sections:

No.	Subject	Page
5.1	What to take into account	5-2
5.2	Remove faults	5-5
5.3	Venting the compressor system	5-6
5.4	Cleaning work	5-7
5.5	Checking oil level	5-8
5.6	Changing oil filter	5-9
5.7	Changing oil	5-10
5.8	Cleaning oil return window	5-11
5.9	Cleaning oil cooler	5-12
5.10	Tensioning and changing drive belt(s)	5-12

5.1 What to take into account

Content

This section contains general information you need to follow when carrying out all maintenance and service work.

PERSONNEL REQUIREMENTS

Maintenance and service work must only be carried out by qualified personnel.

Information about the precise personnel requirements can be found in chapter 0.



DANGER

Follow the following safety instructions to avoid danger of life or damage to health:

Possible danger from...	Means of avoidance
Being injured by moving parts.	<ul style="list-style-type: none"> Always maintain correct safety distance from all moving parts when carrying out test runs.
Electric shock.	<ul style="list-style-type: none"> Switch off all power supplies before commencing work. Safeguard power supplies from being restarted by accident.
Unsuitable spare parts.	<ul style="list-style-type: none"> Always replace self-locking nuts and screws. Only use spare parts from the spare parts list.
Unreliable/premature release of unit.	<ul style="list-style-type: none"> Only release the machine for operation when all safety devices are fully functional. Only now can the work be considered complete.

5.1 What to take into account (Cont.)

After completion of work

After completing the work, you must carry out the following:

Step	Activity
1	Observe the maintenance schedule and complete the check logs, activity logs etc (see Appendix W "Maintenance record").
2	Check that all safety devices are functioning correctly. Only release the machine for operation when all safety devices are working perfectly.
3	Reinstall and secure the safety devices that were removed.
4	Remove all tools, foreign parts, materials and fluids in the work area.
5	Carry out a test run and check the functioning of the components that were maintained or replaced.
6	Prevent keys from falling into the hands of unauthorized persons upon leaving the machine and prior to completing the work.

Spare parts, accessories

Only use original spare parts when replacing components such as oil filters, oil, V-belt tensioners, air filters, separator cartridges etc.

Repairs

Only allow authorized dealers to carry out repair work. A list of additional persons authorized by the manufacturer to carry out repair work can be obtained from the manufacturer directly upon request.

Only allow repair work to be carried out by persons authorized by the manufacturer!

Servicing is carried out as agreed with the authorized dealer.

5.1 What to take into account (Cont.)

General information

Observe standard safety instructions and proceed with caution when carrying out maintenance and service work.
The following points are of particular importance:

- Service and maintenance work only to be carried out by qualified personnel.
- Only use tools suited to the work.
- Carry out all maintenance work only after the unit and the power supply have been switched off. Ensure that the unit cannot be accidentally restarted.
- Allow the unit to cool before carrying out maintenance work. Danger of being burned!
Except when changing the oil (requires unit at operating temp.). Important: Observe safety instructions!
- Shut off unit from all pressure source and vent fully before removing pressurized parts.
- When carrying out maintenance work, always keep the unit clean, down to the minutest detail; cover up parts and exposed openings with a clean cloth, paper or adhesive strip.
- Safeguard motors, air filters, electrical components, control devices etc from moisture, e.g. when wiping.
- Never carry out welding or other heat-based work in close proximity to the oil system; discharge and clean the oil tank prior to commencing such work.
- Do not leave any tools, loose parts or rags in or on the unit.
- Before releasing the unit for operation after maintenance, check operating pressure, temperatures and time settings, and ensure that control and shut-off devices are in perfect working order.
- Close the doors before switching on the unit (also for test runs).
- Do not remove or adjust any sound-absorbing materials.

5.2 Remove faults

Content

This section informs you about what you need to consider when eliminating faults and where you can find the required information.



DANGER

- Always ensure that the machine can be shut-off in an emergency by a second person.
- Only carry out checks or eliminate faults when you are appropriately qualified (specialist qualification in mechanical and electrical engineering).
- Observe the general safety instructions in this manual when handling the machine.
- Observe the information given in this chapter, the maintenance instructions of the Operating Company, as well as the documentation for all components which comprise the unit (e.g. inverter, refrigerating air-drier).

List of faults

To find out what you have to do in case of faults, refer to:

- Chapter 4.4. "Eliminate faults (normal service)" and
 - In-house maintenance documents of the Operating Company.
-

5.3 Venting the compressor system

Content

This section shows you what you have to consider when the unit has to be vented.

Why vent?

You must vent the unit before all maintenance and service work. While it is true that the unit vents itself automatically each time it is switched off, if there is a problem, the unit may still remain pressurized even after being switched off. Since this cannot be detected externally, you must always vent the unit prior to all maintenance or service work.



There is a danger of being burned when unit is at operating temperature. The oil refill plug can reach temperatures of up to 110°C! Therefore, only handle oil refill plugs with safety gloves!

When removing the oil refill plug, residual pressure may cause hot oil to squirt out. Therefore, always wear safety glasses!

Venting the compressor system

Observe the following safety instructions to avoid damage to health or danger of life:

Step	Activity
1	Switch off unit and prevent it from being restarted by accident.
2	Unscrew cap of oil refill port (oil refill plug) by hand.
3	Proceed slowly for the first five turns of the cap. Unscrew in an anticlockwise direction until you can hear it "snap"; the oil refill plug has its own safety relief hole on the side, which allows residual pressure to escape gradually.
4	Wait until all of the pressure of the unit has been released via the safety relief hole. The unit is now pressureless.

5.4 Cleaning work

Content

The following section contains information about how to clean the unit's compressor and air filter.

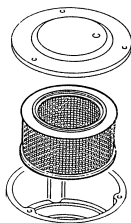
General

For general cleaning work, vacuum the unit and/or wipe it with a damp cloth. Regularly check the intake passage and where necessary remove any leaves, dust, dirt or similar to ensure a perfect air supply.



**Never direct compressed air at a living being.
Misuse of the compressed air unit can cause tissue damage or fatal injury.**

Cleaning of air filter



Step	Activity
1	Switch off unit and prevent it from being restarted by accident.
2	Unscrew screw on the filter cover and remove the cover.
3	Remove filter cartridge.
4	Wipe away dust from the filter housing (inside and outside) using a lightly damp cloth.
5	Place new cartridge in housing.
6	Fit the filter cover and retighten screw, making sure the cover is fitted correctly.
7	Carry out test run and check functioning.

5.5 Checking of oil level

Content

This section describes the procedure for checking the oil level of the compressor.

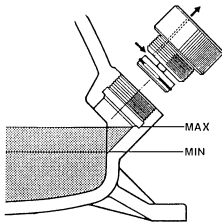
General

The oil level in the oil reclaimer reservoir is an important factor in ensuring that the unit is operationally safe. Carry out the checks described below thoroughly and to the specified schedule. Otherwise, we cannot assume liability for any damages which may occur.



Observe the safety instructions concerning the venting of the unit (see chapter 5.3)!

Checking of oil level



Step	Instructions
1	Switch off unit and prevent it from being restarted by accident.
2	Wait until the unit has been switched off for at least three minutes.
3	Unscrew the oil refill plug on the block by hand.
4	<p>To check the oil level, look into the oil port (see diagram):</p> <p><u>Ideal oil level:</u> visibly <u>underneath</u> the bottom of the refill port – see sketch – left</p> <p>Oil must <u>by no means</u> reach up to the lowest thread of the oil refill plug.</p> <p>ATTENTION: for oil level of model RS 55 (sep. oil reclaimer tank) see page 2-6</p>
5	Where required, replenish with the same kind of oil up to the maximum mark.
6	Retighten the oil refill plug firmly by hand.
7	Switch on the unit and check the oil refill port for leakages.
8	Where required, change the O-ring on the refill port.

5.6 Changing oil filter

Content

This section describes the procedure for carrying out a change of the oil filter.

Important information

An oil filter change must only be carried out when the unit is at rest, fully vented, electrically isolated and depressurized.

Change of oil filter

Step	Activity
1	Switch off unit and prevent it from being restarted by accident. Allow the unit to cool to 70 °C and then vent as described in Chapter 5.3.
2	Unscrew the oil filter cartridge using a strapwrench.
3	Lightly oil the gasket of the new cartridge and prime with the same kind of oil.
4	Screw in the new cartridge on to the socket by hand
5	Start unit and check for leakages from the oil filter.
6	Record the oil filter change on the maintenance check sheet.



**Dispose of all oil filter cartridges
in an ecologically sound manner**

5.7 Changing oil

Content

This section describes the procedure for carrying out an oil change.

Important information

An oil change must only be carried out when the unit is at rest, fully vented, electrically isolated and depressurized. When changing the oil, the unit must be at operating temperature (approx. 60°C - 80°C).

The unit must be used with the oil type best suited to its operation. The standard kind of oil used at the factory is Shell Corena D68. We recommend you use this kind of oil.



Other kinds of oil used must have the same characteristics as Shell Corena D68. Only refill with oil of the same type and from the same manufacturer.

Mixing oils of different kinds is not permitted.

Observe the safety instructions concerning the venting of the unit (see Chapter 5.3)

Changing oil

Step	Activity
1	Switch off unit and prevent it from being restarted by accident. Allow the unit to cool down to 70°C and then vent as described in Chapter 5.3.
2	Place a suitable container under one of the screw plugs (exterior hex socket) on the bottom of the compressor block to catch the oil. Next, loosen this screw and unscrew completely.
3	Drain the full amount of oil from the compressor block then re-screw the plug and tighten.
4	Pour the new oil into the oil refill port up to the level indicated in chapter 5.5. Replace the oil refill plug tightly by hand.
5	When starting, allow the unit to run for approx. 5 seconds before switching it off again. Do this 2 or 3 times. This allows the oil to be distributed in the unit before it is put on load.
6	Switch on unit and allow it to run for approx. 3 minutes.
7	Check oil level and refill where required.
8	Check screw- and oil refill plugs for leakages.
9	Record the oil change on the maintenance check sheet.



Dispose of used oil in an ecologically sound manner

5.8 Cleaning oil return window

Content This section describes the procedure for cleaning the oil return window. (Not installed on all air-end models)

General The oil return window is located down-stream of the oil separation cartridge.

Cleaning of oil return window (not on all air-ends)

Step	Activity
1	Switch off unit and prevent it from being restarted by accident. Allow the unit to cool to 70 °C and then vent as described in Chapter 5.3.
2	Loosen screws on oil level sight glass.
3	Remove sight glass and clean with a cloth.*
4	Check for leakages and replace where necessary.
5	Refit sight glass.

* air-end model NK 60 is equipped with oil control sight hose R 3508. The compl. hose can be exchanged, if so required.

5.9 Cleaning of oil cooler

Content This section describes the procedure for cleaning the oil cooler.

General Blowing the cooler with compressed air is sufficient if the oil cooler is not very dirty. In this case, the unit has to be at rest and the cooler need not be disassembled.
If the oil cooler is very dirty, proceed as described in the following:

Cleaning of oil cooler

Step	Activity
1	Switch off unit and prevent it from being restarted by accident. Allow the unit to cool to approx. 70°C, disconnect from power supply, and then vent as described in Chapter 5.3.
2	Remove oil cooler.
3	Clean oil cooler externally with a steam jet.
4	Reinstall oil cooler.
5	Start unit and check for leakages.

5.10 Tensioning and changing of drive belt(s)

Content This section describes the procedure for tensioning and/or changing the V-belt(s).

General

The V-belt is correctly tensioned when the arrow (1) is pointing to the 15° mark on the scale (2). SPA/SPZ V-belts need to be tensioned to 15°. XPA/XPZ to 25 - 30°.

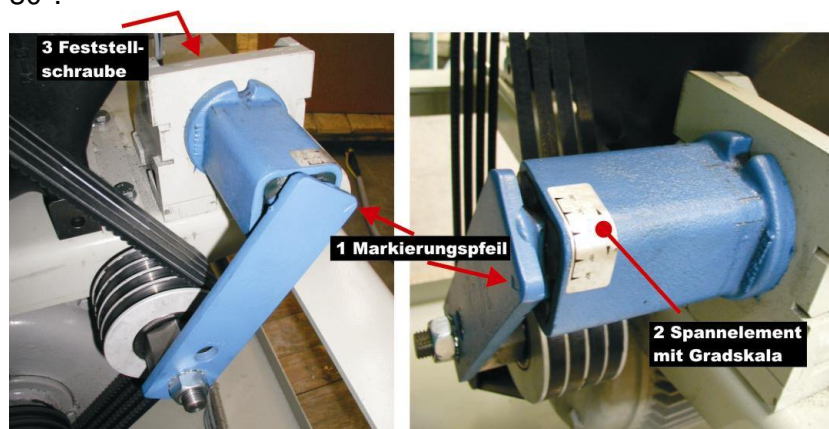


Fig.: Tensioning the V-belt¹

Tensioning of V-belt

Step	Activity
1	Switch off unit, disconnect it from the power supply, and prevent it from being restarted by accident.
2	Loosen clamping bolt (3) on the V-belt unit.
3	Turn the tensioning element with the degree scale (2) using a correct sized spanner/wrench until the arrow on the pulley points to 15° or 25-30°; the tensioning element can be turned in either direction.
4	Keep the tensioning element (2) at the required setting while tightening the clamping bolt (3).
5	Attention is required that motor and compressor pulleys are aligned.

Changing V-belt

Step	Activity
1 + 2	As "Tensioning the V-belt"
3	Allow the tensioning element (2) to slacken. Remove old V-belt and install new V-belt.
4	As "Tensioning the V-belt", 3 and 4.
5	Attention is required that motor and compressor pulleys are aligned.

¹⁾ Legend: 1 arrow; 2 tensioning element with degree scale; 3 clamping screw

Chapter 6

Decommissioning and disposal

Survey

Content This chapter contains important advice for (temporarily) decommissioning or disposing of your compressor.

Survey This chapter is divided into the following sub-sections:

No.	Subject	Page
6.1	Decommissioning of plant	6-2
6.2	Re-commissioning after storage	6-3
6.3	Shut-down and disposal	6-4

6.1 Decommissioning of plant

Content

This section contains instructions you need to follow when decommissioning the compressor for an extended period of time, and when subsequently returning it to operation.

When decommissioning for an extended period of time, prepare the unit as follows:

Decommissioning of plant

Step	Activity
1	A qualified electrician should disconnect the compressor from power supply and lock off isolator to ensure it can not be restarted by accident.
2	Check oil level and fill if necessary (see Chapter 5.5 "Checking of oil level") The unit should be stored with its oil tank filled to the max. recommended level
3	Slacken the V-belt (see Chapter 5.10 "Tensioning and changing of belt").
	Do <u>not</u> cover the unit with any material that is impermeable to air. Doing so intensifies the corrosion of individual parts.

6.2 Re-commissioning after storage

Re-commissioning information

Compressor units that have been switched off, decommissioned or stored away for longer than 3 months, should not be put back into operation until the following measures have been carried out.

Re-commissioning after storage

Follow the procedure outlined below to return the compressor to operation after being out of commission for 3 months or more.

Step	Activity
1	Turn the screw compressor in the direction of rotation several times by hand.
2	Remove the air inlet filter and manifold and pour approx. 0.1 litres of oil ("manufacturer recommended compressor oil only") into the suction port. Then, turn the screw compressor by hand in the direction of the rotation arrow (anti-clockwise) once more.
3	Check the oil level (in the reclaimer tank) and fill where necessary, see 5.5. "Checking of oil level".
4	Connect unit: see Chapter 3.2 "Connections".
5	Re-adjust the V-belt (see Chapter 5.10 "Tensioning and changing of belt").

6.3 Shut-down and disposal

Content

This section describes what you need to consider when shutting down and disposing of the unit.



DANGER

- Observe the safety instructions outlined in this handbook, the instructions specified in the supplier's documentation as well as accident prevention guidelines.

Danger of life!

- Moving or lifting the compressor should only be undertaken in a safety conscious manner.
- Always ensure no one is within the danger zone when the compressor is being lifted.

DANGER

When carrying out the following disassembly work be aware of sharp corners and edges which may cause cuts. For this reason always wear protective gloves.

Environment



- The following instructions must be observed properly to prevent any possible damage to the environment. The Operating Company must ensure that the regulations are adhered to correctly even where disposal is carried out by an authorized firm of specialists.

Disassembly of the compressor

To dismantle the compressor, proceed as follows and observe the following points:

Step	Activity
1	Find out how each component (or the whole machine) needs to be disposed of. If unsure, consult your local environmental agency.
2	Depressurise all components and vent the unit (see Chapter 5.3. "Venting the plant").

6.3 Shut-down and disposal (Cont.)

Materials Information

The following materials were predominately used in the construction of the unit:

Material	Where used
Batteries, NiCad-/Li	• Control
Copper	• Cables
Steel	• Machine frame • Side panels and doors • Motor and components
Plastic, rubber, PVC	• Gaskets • Tubes • Cables
Tin	• Boards
Polyester	• Boards

Hazardous waste Information

The following parts, materials and fluids must be disposed of separately:

Denomination	Application
LCD displays Note: LCD displays contain highly poisonous fluids	• Display devices
Electronic scrap	• Electrical supply • Controls (SPS etc.) • Boards with electronic parts

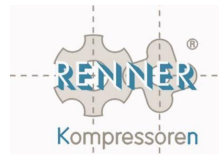


The environment:

Dispose of all parts of the unit in a manner that prevents damage from being caused to other peoples' health or the environment.

ANNEX T TECHNICAL DATA

Model	7.5 bar m³/min cfm	10 bar m³/min / cfm	13 bar m³/min / cfm	15 bar m³/min / cfm	motor kW HP		Motor current consumption A	Feed cable mm² Number of wires in brack	HRC fuses (A)
RS 3.0	0.41 / 15	0,32 / 12	0,24 / 9	0,21/ 8	3.0	4.0	6,00	2,50 (5x)	16,00
RS 4.0	0.56 / 20	0,46 / 17	0,35 / 13	0,30 / 11	4.0	5.5	8,00	2,50(5x)	16,00
RS 5.5	0.77 / 28	0,65 / 23	0,53 / 19	0,45 / 16	5.5	7.5	9,50	2,50(5x)	16,00
RS 7.5	1,10 / 39	0,95 / 34	0,74 / 26	0,63 / 23	7.5	10.0	14,30	4,00(5x)	25,00
RS 9.0	- -	1,09 / 39	0,86 / 31	0,76 / 27	9.0	12.0	16,50	6,00(5x)	25,00
RS 11	1.76 / 63	1,50 / 53	1,16/ 41	0,93 33	11.0	15.0	21,40	6,00(5x)	35,00
RS 15	2,24 / 79	1,96 / 70	1,51/ 54	1,24 44	15.0	20.0	28,50	6,00(5x)	35,00
RS 18.5	2,91 / 103	2,62/ 93	2,20 / 78	1,89 / 67	18.5	25.0	34,80	10,00(5x)	50,00
RS 22	3,46 / 123	3,10 / 110	2,66 / 94	2,31/ 82	22.0	30.0	42,50	10,00(5x)	50,00
RS1 - 30	4,38 / 155	4,01 / 142	3,52 / 125	3,02 / 107	30.0	40.0	56,00	16,00(5x)	63,00
RS2 - 30	5,05 / 179	4,28 / 152	3,76 / 133	3,40 / 120	30.0	40.0	56,00	16,00(4x)	63,00
RS 37	6,15 / 218	5,24 / 185	4,56 / 161	4,15 / 147	37.0	50.0	73,00	25,00(4x)	80,00
RS 45	7,25 / 257	6,51 / 230	5,55 / 196	5,03 / 178	45.0	60.0	85,00	35,00(4x)	100,00
RS 55	9,30 / 329	7,96 / 282	6,70 / 237	5,87 / 208	55.0	75.0	104,00	50,00(4x)	125,00
RSD* 3.0	0.41 / 15	0,32 / 12	0,24 / 9	0,21/ 8	3.0	4.0	6,00	2,50(5x)	6,00
RSD* 4.0	0.56 / 20	0,46 / 17	0,35 / 13	0,30 / 11	4.0	5.5	8,00	2,50(5x)	10,00
RSD* 5.5	0.77 / 28	0,65 / 23	0,53 / 19	0,45 / 16	5.5	7.5	9,50	2,50(5x)	16,00
RSD* 7.5	1,10 / 39	0,95 / 34	0,74 / 26	0,63 / 23	7.5	10.0	14,30	4,00(5x)	25,00
RSD* 9.0	- -	1,09 / 39	0,86 / 31	0,76 / 27	9.0	12.0	16,50	6,00(5x)	25,00
RSD* 11	1.76 / 63	1,50 / 53	1,16 / 41	0,93 / 33	11.0	15.0	21,40	6,00(5x)	35,00
RSD* 15	2,24 / 79	1,96 / 70	1,51 54	1,24 / 44	15.0	20.0	28,50	6,00(5x)	35,00
RSDK** 3.0	0.41 / 15	0,32 / 12	0,24 / 9	0,21/ 8	3.0	4.0	6,00	2,50(5x)	6,00
RSDK** 4.0	0.56 / 20	0,46 / 17	0,35 / 13	0,30 / 11	4.0	5.5	8,00	2,50(5x)	10,00
RSDK** 5.5	0.77 / 28	0,65 / 23	0,53 / 19	0,45 / 16	5.5	7.5	9,50	2,50(5x)	16,00
RSDK** 7.5	1,10 / 39	0,95 / 34	0,74 / 26	0,63 / 23	7.5	10.0	14,30	4,00(5x)	25,00
RSDK** 9.0	- -	1,09 / 39	0,86 / 31	0,76 / 27	9.0	12.0	16,50	6,00(5x)	25,00
RSDK** 11	1.76 / 63	1,50 / 53	1,16 / 41	0,93 / 33	11.0	15.0	21,40	6,00(5x)	35,00
RSDK** 15	2,24 / 79	1,96 / 70	1,51 / 54	1,24 / 44	15.0	20.0	28,50	6,00(5x)	35,00



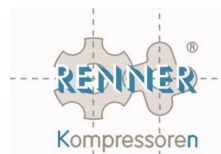
ANNEX T TECHNICAL DATA (continuation)

Model	Sound level db(A)	Outlet BSp	appr.oil quantity (litres) 1)	Drive belt	Cooling air (m³/h)	weight approx kg	dimensions (L x B x H in mm)
RS 3.0	59,00	1/2"	2	1,00	300,00	160	567 x 764 x 900
RS 4.0	60,00	1/2"	2	1,00	340,00	160	567 x 764 x 900
RS 5.5	61,00	1/2"	2	1,00	560,00	170	567 x 764 x 900
RS 7.5	62,00	1/2"	2	2,00	980,00	180	567 x 764 x 900
RS 9.0	63,00	1/2"	2	2,00	1100,00	190	567 x 764 x 900
RS 11	69,00	3/4"	4	2,00	1950,00	270	664 x 992 x 1117
RS 15	69,00	3/4"	4	2,00	2710,00	290	664 x 992 x 1117
RS 18.5	71,00	1 1/4"	6	3,00	3170,00	480	791 x 1281 x 1290
RS 22	71,00	1 1/4"	6	3,00	3680,00	510	791 x 1281 x 1290
RS1 - 30	71,00	1 1/4"	6	3,00	4990,00	550	791 x 1281 x 1290
RS2 - 30	75,00	1 1/4"	16	4,00	5700,00	680	931 x 1392 x 1574
RS 37	75,00	1 1/4"	16	4,00	6700,00	730	931 x 1392 x 1574
RS 45	75,00	1 1/4"	16	4,00	8100,00	830	931 x 1392 x 1574
RS 55	75,00	1 1/2"	16	5,00	9900,00	980	1100 x 1505 x 1575
RSD* 3.0	59,00	1/2"	2	1,00	300,00	260	570 x 1415 x 1435
RSD* 4.0	60,00	1/2"	2	1,00	340,00	260	570 x 1415 x 1435
RSD* 5.5	61,00	1/2"	2	1,00	560,00	270	570 x 1415 x 1435
RSD* 7.5	62,00	1/2"	2	2,00	980,00	280	570 x 1415 x 1435
RSD* 9.0	63,00	1/2"	2	2,00	1100,00	290	570 x 1415 x 1435
RSD* 11	69,00	3/4"	4	2,00	1950,00	440	664 x 1810 x 1757
RSD* 15	69,00	3/4"	4	2,00	2710,00	460	664 x 1810 x 1757
RSDK** 3.0	59,00	1/2"	2	1,00	300,00	300	570 x 1415 x 1435
RSDK** 4.0	60,00	1/2"	2	1,00	340,00	300	570 x 1415 x 1435
RSDK** 5.5	61,00	1/2"	2	1,00	560,00	320	570 x 1415 x 1435
RSDK** 7.5	62,00	1/2"	2	2,00	980,00	330	570 x 1415 x 1435
RSDK** 9.0	63,00	1/2"	2	2,00	1100,00	340	570 x 1415 x 1435
RSDK** 11	69,00	3/4"	4	2,00	1950,00	500	664 x 1810 x 1757
RSDK** 15	69,00	3/4"	4	2,00	2710,00	520	664 x 1810 x 1757

* Units with compressed air vessel. Standard: 3- 9 kW = 250l , 11 & 15 kW= 500 l (other variations possible)

**Units similar to RSD, but with refrigeration dryer fitted. Standard: 3- 9 kW = 250l, 11 & 15 kW= 500l (also other variations possible)

1) approx. quantity of oil in litres to be refilled after oil change



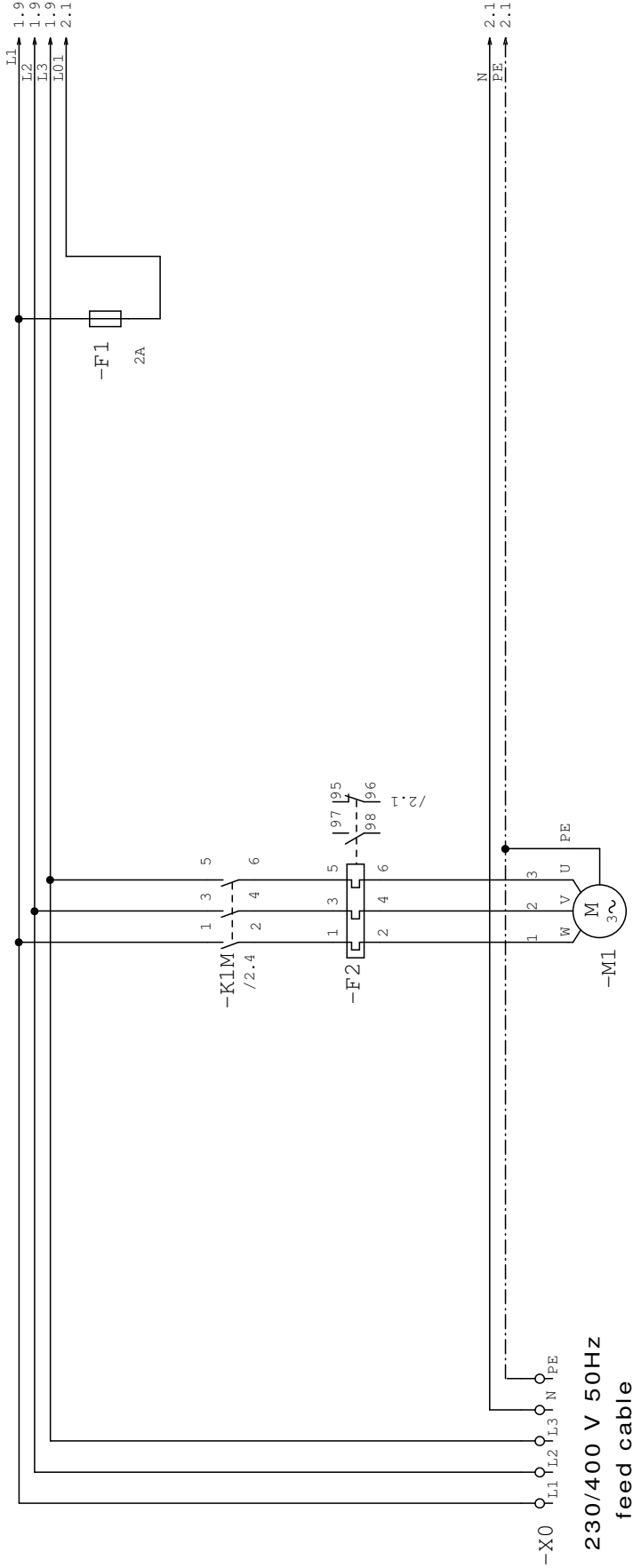
APPENDIX St

Electric wiring diagrams

RENNER screw compressors

Wiring diagrams





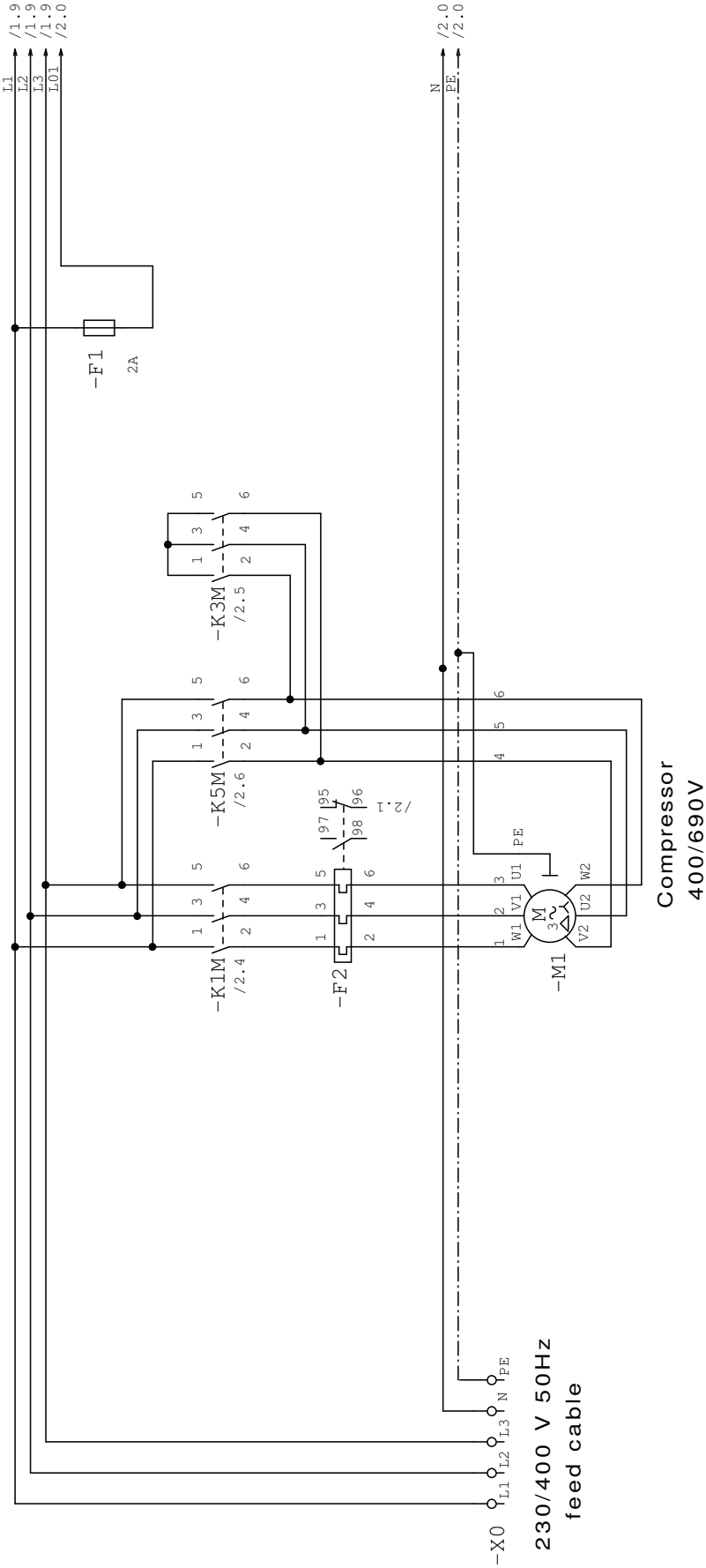
230/400 V 50Hz
feed cable

Compressor
400V

Model	Start	fuse	feed cable	motor nominal current	motor protection relays	el. motor cable	contactors	bimetal
RS 3,0	DOL	16 (10) A	5x2,5 mm ²	6,6 A	8 A	5x2,5 mm ²	DIL 00 AM	Z 00-10
RS 4,0	DOL	16 (10) A	5x2,5 mm ²	8,5 A	10 A	5x2,5 mm ²	DIL 00 AM	Z 00-10

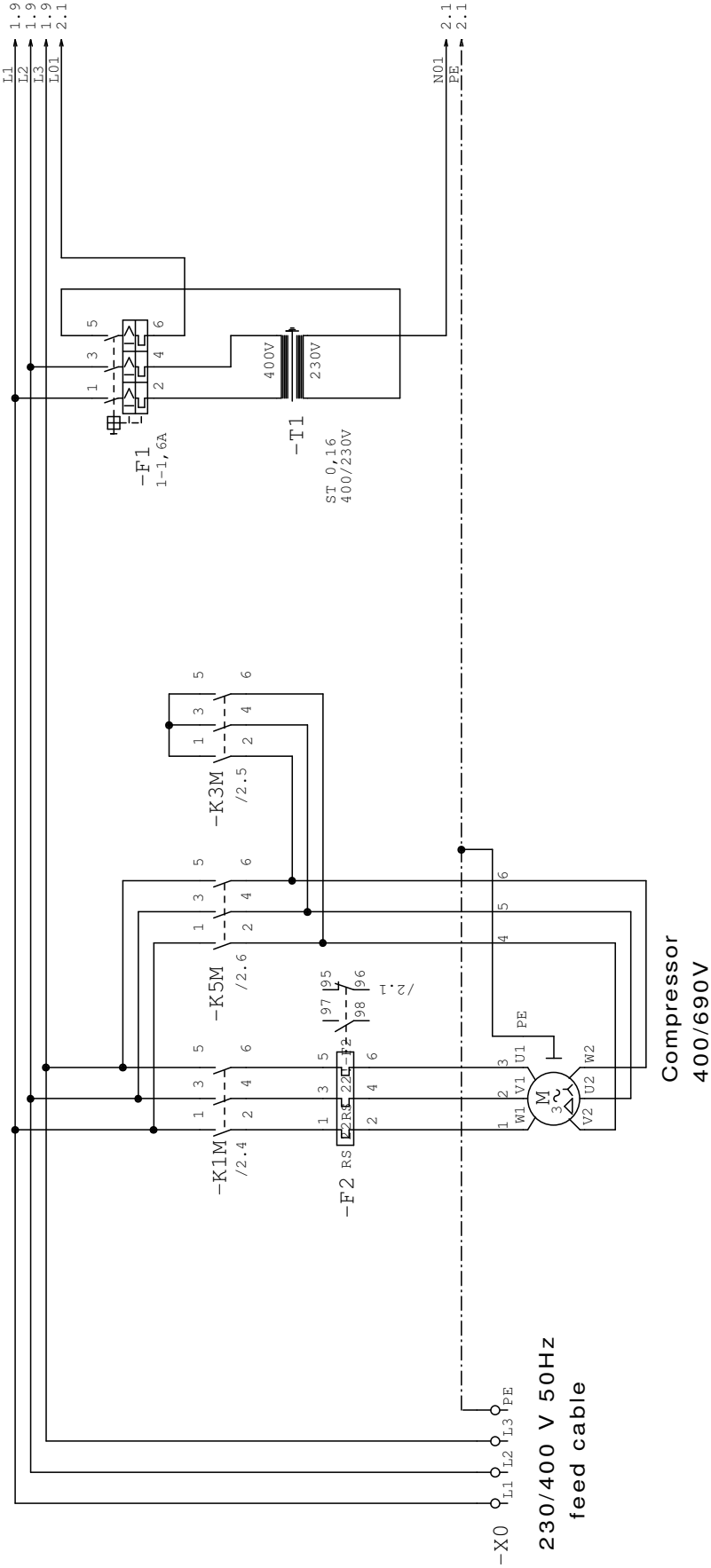
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BEH	Tabelle	16.02.04	Datum	13.01.01	Compressor RS 3-4kW		FOR DOL START	
			Bearb.	MA			Page 1	
			Gepr.				of 2	
Zust.	Änderung	Datum	Name	Urspr.	Ers.f	Ers.d	Bl.	



Model	Start	fuse	feed cable	motor nominal current	motor protection relays	el. motor cable	Y/D contactors	bimetal
RS 11	with Y/D	35 A	5x6,0 mm ²	21,7 A	14,0 A	7x2,5 mm ²	SDAINL 0 M	Z 00-16
RS 15	with Y/D	35 A	5x6,0 mm ²	29,3 A	18,5 A	7x4,0 mm ²	SDAINL 0 AM	Z 00-24
RS 18,5	with Y/D	50 A	5x10 mm ²	36,0 A	23,0 A	7x4,0 mm ²	SDAINL 0 AM	Z 00-24
RS 22	with Y/D	50 A	5x10 mm ²	41,0 A	26,2 A	7x4,0 mm ²	SDAINL 1 M	Z 1-24
RS1-30	with Y/D	63 A	5x16 mm ²	55,0 A	35,0 A	7x6,0 mm ²	SDAINL 1 AM	Z 1-40

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Model	Start	fuse	feed cable	motor nominal current	motor protection relays	el. motor cable	Y/D Contactors	bimetal
RS2-30	with Y/D	63 A	4x16 mm ²	55,0 A	35,0 A	7x6,0 mm ²	SDAINL 1 AM	Z 1-40
RS 37	with Y/D	80 A	4x25 mm ²	68,0 A	43,0 A	7x10 mm ²	SDAINL 2 M	Z 1-57
RS 45	with Y/D	100 A	4x35 mm ²	81,0 A	51,0 A	7x10 mm ²	SDAINL 2 AM	Z 1-57
RS 55	with Y/D	125 A	4x50 mm ²	99,0 A	62,0 A	7x16 mm ²	SDAINL 2 AM	Z 1-63

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Annex W – Maintenance Check

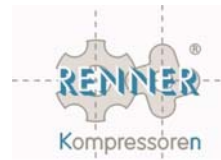
When Due	Maintenance Work	Parts Required
Start-up:	Check oil level	
	Check V-belt tension	
	Tighten hose / pipe connections	
	Tighten electric terminals	
Regularly	Tighten electric terminals (once, then every 2000 h)	
	Check all connections are securely fixed	
	Check hose / pipe connections for leaks	
	Check pressure gauge and temperature indicator are working	
	Check oil level	
	Change oil filter (1x after 100 h) on RS 55 model only	Oil filter for RS 55 only
	Check V-belt tension	
	Check alignment of V-belt pulleys	
	Check level of contamination in air filter	
2000 h	Change oil filter	Oil filter
or 1x per year	Oil change ²	Compressor oil
	Change air filter element	Air filter cartridge
	Change fine separator cartridge ³	Fine separator cartridge
	Tighten electric terminals	
	Check V-belt tension	
	Check V-belt for wear and replace if necessary	
	Clean oil cooler	
	Clean oil return inspection glass	
	Check system for leaks	
	Check run-on time (≥ 3 min.)	
	Check belt tensioner bearing and replace if necessary	
	Check pressure switch setting and adjust if necessary	
	Re-grease motor bearings (RS 11 and above)	High-temperature grease
	Clean / replace filter mats	(See attached details)
	Check overall condition of system	
4000 h	As for 2000 h	As above
or 1x per year		
6000 h	As for 2000 h plus:	Plus:
or 1x per year	Change V-belt	V-belt
	Change tensioning reel (excluding tensioning element)	Tensioning reel
8000 h	As for 2000 h plus:	Plus:
or 1x per year	Change thermo-valve element	Thermo-valve element
	Change O-ring on oil filler plug	O-ring for oil filler plug
	Change oil return inspection glass (where fitted)	oil return inspection glass

Instruction Manual

RENNER Kompressoren



When Due	Latest	Maintenance Work	Parts Required
	Month		
10,000 h		As for 2000 h	As for 2000 h
or 1x per year			
12,000 h		As for 2000 h plus:	Plus:
or 1x per year		Suction regulator maintenance kit	Suction regulator maint. kit
		Separator head maintenance kit	Separator head maint. kit
		Change complete front cover	Complete front cover
		Change solenoid coil	Solenoid coil
		Change complete tensioning reel including tensioning element	Tensioning reel inc. tensioning element
		Change V-belt	V-belt
14,000 h		As for 2000 h	As for 2000 h
or 1x per year			
16,000 h		As for 2000 h plus:	Plus:
or 1x per year		Change thermo-valve element	Thermo-valve element
		Change O-ring on oil filler plug	O-ring for oil filler plug
		Change oil return inspection glass (where fitted)	oil return inspection glass
18,000 h		As for 2000 h plus:	Plus:
or 1x per year		Change tensioning reel - excluding tensioning element	Tensioning reel
		Change V-belt	V-belt
20,000 h		As for 2000 h	As for 2000 h
or 1x per year			
22,000 h		As for 2000 h	As for 2000 h
or 1x per year			
24,000 h		As for 2000 h plus:	Plus:
or 1x per year		Change V-belt	V-belt
		Change thermostatic valve element	Thermostatic valve element
		Change O-ring on oil filler plug	O-ring for oil filler plug
		Change oil return inspection glass (where fitted)	oil return inspection glass
		Suction regulator maintenance kit	Suction regulator maint. kit
		Separator head maintenance kit	Separator head maint. kit
		Change complete front cover	Complete front cover
		Change complete tensioning reel including tensioning element	Tensioning reel inc. tensioning element
		Complete electric control unit	Electric control unit
² With RENNER SUPER LUB every 4000 h			
³ Theoretical service life > 4000 h, from a technical point of view change interval should be 2000 h			



Technical Information **regarding motor bearings**

The electric motors of our compressors up to 9 kW are equipped with so called permanently lubricated or closed bearings. Calculated life time is between 10 and 20.000 operating hours. This kind of bearings could be changed when other major servicing and or maintenance work is carried through.

We can let you know the bearing types upon request.

Since January/February 2003 our motors (also the EFF types) from 11kW and larger are equipped with deep groove ball and cylinder roller bearings respectively.

As in the past these bearings are of the open type. They are filled with high temperature grease. The motors have re-grease facilities on both ends.

These facilities make it much easier to re-grease the motor.

When re-greasing do not but use high temperature grease (for min. 175°C – Lithium based – SKF LGHQ3/1 or equivalent).

Greasing of the motors should be done every 2000 hours and could be organized together with the corresponding compressor service.

Please consider by all means: high ambient temperatures, dusty and other detrimental ambient conditions negatively influence the life-time of the bearings. In those cases the re-greasing time should be reduced to its half.

Please see hereunder details of the motor bearings and the quantities of grease required:

Type	motor kW	D end (A)	N end (B)	Grease quant. in grams per b.
NC 160 M1-2	11	6209	6209	20
NC 160 M2-2	15	6209	6209	20
NC 180 M-2	22	6211	6211	25
NC 200 L1-2	30	NU212	6212	25
NC 200 L2-2	37	NU212	6212	25
NC 225 M-2	45	NU312	6312	25
NC 250 M-2	55	NU313	6313	30

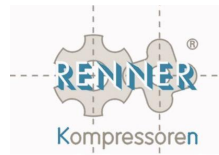
The quantity of grease mentioned should be introduced into the bearings by means of a grease gun. If excessive grease is introduced it will emerge from an opening near to the grease inlet. This outlet must be opened (small screw) prior to the commencement of, and closed, after the completion of the greasing procedure. Kindly instruct your service men accordingly. Thanking you.

Gueglingen, March 2006

ANNEX W - MAINTENANCE CONTROL

[illegible]

Please tick the work which has been done and/or record measured data which confirm by signature .



**CONFORMITY DECLARATION IN ACCORDANCE WITH
MACHINERY GUIDE LINE 98/37EEC, Appendix II A**

**CERTIFICAT DE CONFORMITE SELON LA
REGLEMENTATION CE 98/37EEC Appendice II A**

We / Nous

RENNER GMBH. KOMPRESSOREN, EMIL WEBER STR. 32, D 74363 GUEGLINGEN

hereby declare that compressors of the following series:
RS, RS-Compact, RSD, RSDK, RSF, RSK and RSKF meet the following standards and/or
guide lines respectively as known at the date of issue of this declaration:
89/336/EEC, 73/23/EEC, 87/04/EEC, 97/23/EEC.

The following harmonized standards have also been respected:
EN 292-1:2000, EN 60204-1:1998, EN 1012-1:1996, EN 286-1:1998, EN 55011:1998,
EN 61000-3-2:2000, EN 61000-3-3:1995, EN 61000-6-2:2101, EN 61000-6-4:2100

déclarons par la présente que les compresseurs des gammes :
RS, RS-Compact, RSD, RSDK, RSF, RSK et RSKF sont conforme aux normes – en date ou
cette déclaration a été fait - en particulier :

89/336/EEC, 73/23/EEC, 87/04/EEC, 97/23/EEC
Sinon, les normes harmonisées qui suivent ont été appliquées :
EN 292-1:2000, EN 60204-1 :1998, EN 1012-1 :1996, EN 286 :1-1998, EN 55011:1998,
EN 61000-3-2:2000, EN 61000-3-3:1995, EN 61000-6-2:2101, EN 61000-6-4:2100

Place/lieu Gueglingen 29.4.2004

General Manager
P.D.G.

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Appendix S

Service hints for RENNERtronic compressor control

Content This short section gives you the key information about the operation of the “RENNERtronic” controller. A detailed Manual on the RENNERtronic control is enclosed into the package.

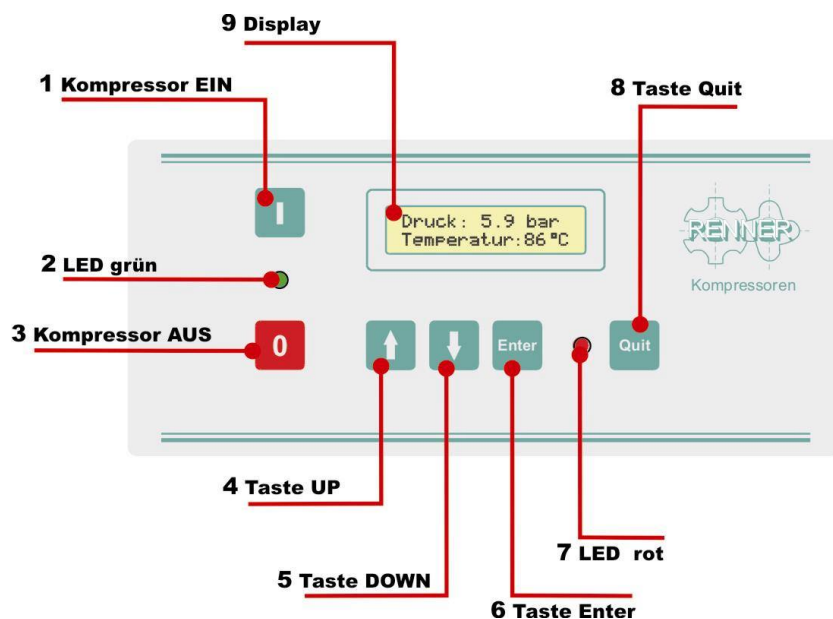
Function The compressor control is set and monitored via the system’s control panel. You can use the “RENNERtronic” control to set and/or change a variety of parameters and functions. The control system also provides comprehensive data about settings, such as maintenance information.



For safety reasons, you can only activate the programmable mode when the compressor has been stopped.

To operate the frequency converter (**optional**), please read the appropriate instruction manual which forms part of the documentation for this compressor.

RENNERtronic control panel¹



¹ For legend, see table on following page.
APPENDIX S (R-tronic) engl. final.doc

Control panel, shortcuts

No.	Description	Function
1	Compressor ON	Switches the compressor on
2	LED (green)	Operating LED
3	Compressor OFF	Switches the compressor off
4	Arrow UP	Use the UP button to move to the previous menu entry or increase parameter values. It is also used to call up INFO (used in combination with the Enter key).
5	Arrow DOWN	Use the DOWN button to move to the subsequent menu entry or decrease parameter values. It is also used to call up INFO (used in combination with the Enter key).
6	Menu Enter	Select a menu entry. Confirm/save entries or changes.
7	LED (red)	Error/maintenance LED
8	Menu Quit	Use "Quit" to reject entries or leaving the selected menu entry. It is also used to acknowledge warning and error messages.
9	Display	Displays parameters, error and warning messages. 1st row: Displays current operating data 2nd row: Displays menu values, error and warning messages.



Important

Regularly check for error/warning messages. Do so by pressing one of the arrow keys followed by enter to call up the "error messages" info level.

Flashing messages (! mark appears at the beginning of the message) denote unresolved errors. A warning message begins with a question mark.

Appendix FU

Frequency converter

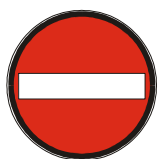
Content

This short section gives you the key information about the operation of the frequency converter. (For more information see the detailed and enclosed manual of the converter manufacturer)

Function

The frequency converter allows continuous operation of the motor, thus enabling production of compressed air to be adjusted according to need.
The rotational speed varies between just over 30 and 100% of the compressor motor speed.
The frequency converter is configured and parameterized at the factory.

Should an error occur, the compressor is switched off and the message "Error Converter" appears on the display of the RENNERtronic control system. Error messages which appear on the display of the frequency converter are also important. Error messages begin with an E for error. Examine the reasons for the error and the measures to be taken against it in the appropriate chapter of the instruction manual for the frequency converter (see section "Error diagnosis").

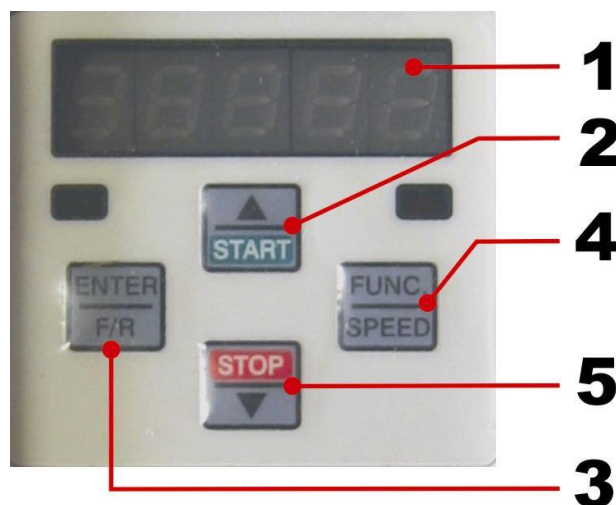


CAUTION

Make sure that the air circulation is not restricted or blocked in any way. A sufficient clearance area must be provided between the ventilation grid and the walls of the room.

Appendix FU – Frequency converter

Figure:
Control panel¹



Control panel,
shortcuts

No.	Description	Function
1	Display	Displays parameter numbers and set parameter values
2	UP / START	UP = increase parameter number / parameter value START = start drive
3	ENTER / F/R	ENTER = confirm entries (save) F/R = direction of rotation
4	FUNC. / SPEED	FUNC. = function key. Toggle between parameter number (s) and parameter value(s) SPEED = driver mode
5	DOWN / STOP	DOWN = decrease parameter number / parameter value STOP = Stop drive

¹ Legend (top to bottom): Display; start drive; parameter UP; toggle parameter (number), driver mode; stop drive parameter DOWN; confirm parameter direction of rotation.

Appendix KT

Operating instructions for Refrigeration dryer

Contents

This section provides a brief overview of the refrigeration dryer, installed as an optional feature. A detailed operator's manual is enclosed into the package.

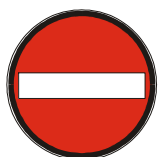


Hazard!

Observe the safety instructions in the separate operating manual for the refrigeration dryer. It is especially dangerous to breathe in refrigerant vapour or come into contact with liquid refrigerant. Smoking is not permitted when working around the refrigerant dryer since ash from cigarettes, or any other naked flame (e.g. when welding) combines with refrigerant to produce poisonous vapours.

Function

The refrigerant dryer also has a cooling unit to cool the compressed air. The unit also removes moisture from the compressed air. The resulting condensate is drained off using a condensate separator.

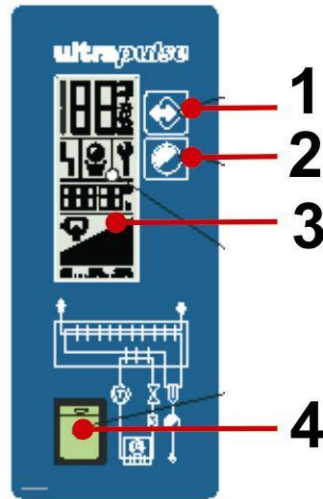


Caution!

The air inlet and air outlet must not be hindered or blocked at any time! A suitable gap must be maintained between the ventilation grille and the interior walls. Also observe section 2.3.1 as well as the diagram in 2.3 in the operating manual provided by the refrigerant dryer supplier.

Annex KT- Refrigerant dryer

Picture:
Control panel



Control panel:
brief description

No.	Name	Function
1	Data entry key	Multi-function key used to adjust parameters: Hold down key for 5s: To switch between Normal and Change modes. Push key briefly: To switch between menus Push Condensate release key briefly: To adjust parameters Hold down key for 5s: To save adjusted presets and switch to Normal mode.
2	Condensate release key	To manually release condensate & adjust parameters.
3	Display	To display parameter numbers and pre-set parameter values.
4	ON/OFF switch	To switch refrigerant dryer on/off. Caution! After switching on unit, wait 5 minutes until pressure compensation has been completed. Do not start compressor before this time.