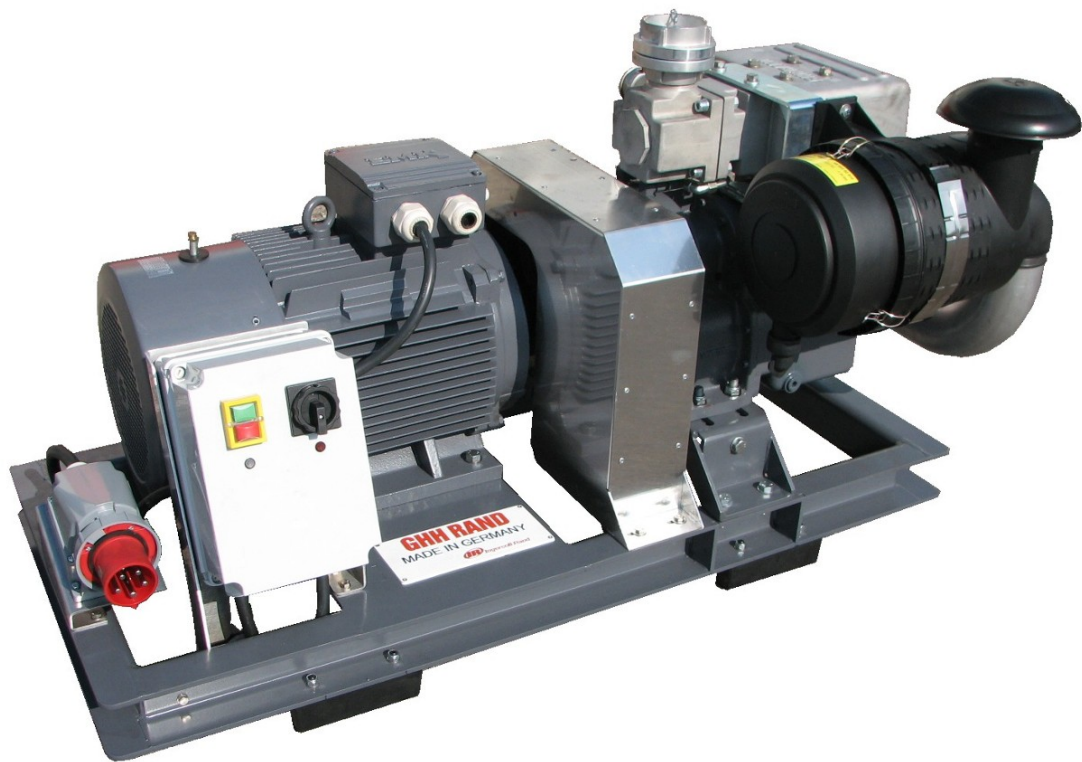


Operating manual

Compressor unit with electric motor

CG600 EP-Belt NON EU



Introduction

Before installing and commissioning the compressor units, please read through these operating instructions.

The operating manual contains important instructions which must be strictly followed if trouble-free operation and a long service life are to be ensured.

Contents

1	GENERAL	4
1.1	Application	4
1.2	Manufacture's address	4
1.3	Identification	4
1.4	Information for enquiries and orders	4
1.5	Service and support	5
1.6	Technical data CG80 screw compressor	5
1.7	Technical data compressor unit / electric motor	6
1.7.1	CG600 EP-LITE-Belt 380V-400V/30kW/50Hz 2.1bar	6
1.7.2	CG600 EP-LITE-Belt 400V/37kW/50Hz 2.6bar	6
1.7.3	CG600 EP-LITE-Belt 380V/41.5kW/60Hz 2.3bar	7
1.8	Mounting instructions	8
1.9	Assembly instructions	9
1.9.1	Mounting instructions – Metal rubber	10
2	SAFETY	11
2.1	General	11
2.2	Authorised personnel, training and qualification	11
2.3	Safety-conscious work	11
2.4	Safety instructions for the owner/operator	12
2.5	Unauthorised conversions and spare parts	12
2.6	Incorrect operating methods	12
2.7	Disposal	12
3	OPERATION	12
3.1	Safety during operation	12
3.2	Installation	13
3.3	Wiring diagram 30kW/50Hz	14
3.4	Wiring diagram 37kW/50Hz und 41.5kW/60Hz	15
3.5	Control elements	16
3.6	Switching on	16
3.7	Switching off	17
3.8	Allowed operating time	17
3.9	Monitoring operation / compressor oil pressure gauge	18

4 MAINTENANCE/REPAIR 19

 4.1 Safety 19

 4.2 Maintenance Intervals electric motor / compressor 19

 4.3 V-belt drive 20

 4.4 Oil change / bearing lubrication 21

 4.5 Oil cooler / optional 22

5 FAULTS, CAUSE AND INSTRUCTIONS FOR TROUBLESHOOTING 23

1 General

1.1 Application

GHH RAND builds and supplies the compressor unit with electric motor SILU CG600 EP Belt. Because of their oil-free compression of atmospheric air, the compressor unit is used to pneumatically convey bulk goods, such as flour, sugar, salt, animal feed, powdered chemicals, dry granulate, soda, cement, sand, lime, plaster, etc. in mobile and stationary applications.

1.2 Manufacturer's address

GHH RAND
Schraubenkompressoren GmbH
Max-Planck-Ring 27
46049 Oberhausen

1.3 Identification

For the machine data, refer to the accompanying documents and the rating plate. In order to always have the data on hand, we recommend that you enter it into the following blank space.

Compressor serial no.:

Unit serial no.:

1.4 Information for enquiries and orders

If you have enquiries or orders for spare parts and accessories, please provide details of the exact type designation and the serial number of the screw compressor or the compressor unit, for which the spare part or accessory is intended.

Use of unauthorised spare parts and accessories

Original replacement parts and accessories that are authorised by the manufacturer represent safety factors. The use of non-original or non-authorised replacement parts and accessories may void the liability for the resulting consequences.

→ Only use original spare parts and accessories authorised and approved by the manufacturer.

1.5 Service and Support

www.ghhrand-transport.com

1.6 Technical data CG80 screw compressor

Operating manual:	see SILU CG80
Operating overpressure:	3.5 bar
Intake pressure:	1.0 bar
Intake temperature:	20 C°
Intake temperature max.:	40 C°
Intake volume:	559 m³/h (at 2.0 bar/g)
Final temperature:	190 C°
Power consumption:	37 kW
Rotational speed max.:	3600 rpm
Weight:	110 kg
Oil filling quantity:	9 litres (without oil cooler)

Notice!

The function of the non-return valve installed in the compressor unit is to prevent the compressor, after having been switched off, from running in reverse at high speed for a long time as a result of residual pressure that exists in the discharge lines of the pneumatic system.

To avoid an unintended return blow of material into the compressor, it is mandatory that at least one further non-return valve is installed in the pneumatic system of the silo arrangement.

1.7 Technical data compressor unit / electric motor

1.7.1 CG600 EP-LITE-Belt 380V-400V/30kW/50Hz 2.1bar

Operating motor speed:	2963 rpm
Operating compressor speed:	3158 rpm
Operating overpressure:	2.1 bar/g
Intake volume:	472 m ³ /h (at 2.0 bar/g)
Construction:	V-belt drive i = 1.066
V-belt pulley engine:	SPA-5-160/TP
V-belt pulley compressor:	SPA-5-150/TP
V-belt size:	XPA 882
Dimensions:	165x65x75 cm
Weight:	500 kg

Technical data electric motor

Motor type:	KAE2G200L1-2 / IE3
Voltage:	400 V / 50 Hz
Output:	30 kW
Design:	IM B3
Operating speed engine:	2963 rpm
Protection class:	IP 55
Insulation class:	F / (B)
Weight:	246 kg

1.7.2 CG600 EP-LITE-Belt 400V/37kW/50Hz 2.6bar

Operating motor speed:	2968 rpm
Operating compressor speed:	3179 rpm
Operating overpressure:	2.6 bar/g
Intake volume:	462 m ³ /h (at 2.5 bar/g)
Construction:	V-belt drive i = 1.071
V-belt pulley engine:	SPA-5-150/TP
V-belt pulley compressor:	SPA-5-140/TP
V-belt size:	XPA 832
Dimensions:	165x65x75 cm
Weight:	500 kg

Technical data electric motor

Motor type:	KAE2G200L2-2 / IE3
Voltage:	400 V / 50 Hz
Output:	37 kW
Design:	IM B3
Operating speed engine:	2968 rpm
Protection class:	IP 55
Insulation class:	F / (B)
Weight:	267 kg

1.7.3 CG600 EP-LITE-Belt 380V/41.5kW/60Hz 2.3bar

Operating motor speed:	3555 rpm
Operating compressor speed:	3349 rpm
Operating overpressure:	2.3 bar/g
Intake volume:	504 m ³ /h (at 2.2 bar/g)
Construction:	V-belt drive i = 0.943
V-belt pulley engine:	SPA-5-132/TP
V-belt pulley compressor:	SPA-5-140/TP
V-belt size:	XPA 832
Dimensions:	165x65x75 cm
Weight:	500 kg

Technical data electric motor

Motor type:	1CV3205A
Voltage:	380 V / 60 Hz
Output:	41.5 kW
Design:	IM B3
Operating speed engine:	3555 rpm
Protection class:	IP 55
Insulation class:	155 (F) to 130 (B)
Weight:	250 kg

1.8 Mounting instructions

In addition to the general technical operating instructions per the regulations of the local authorities, special attention is drawn to the following guidelines:

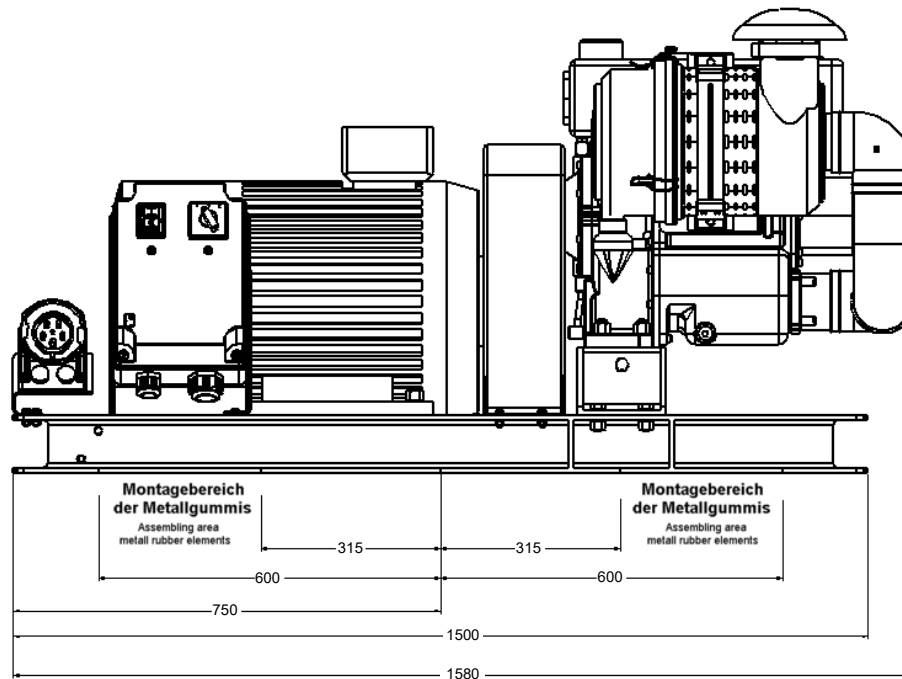
- Use a suitable hoist which fulfills the local safety regulations for handling of the compressor unit. Securely fasten all loose or swinging parts prior to handling. Do not stand in the danger area of a lifted load.
- Remove all blank flanges, plugs and caps prior to installation of the piping. Ensure that the distribution pipes and pipe connections are of the correct size and suitable for the respective operating pressure.
- Install the unit in a place where the ambient air is as cool and clean as possible. If needed, provide for a suction duct. Never block the air inlet. The sucked-in air must not contain any flammable vapors or gases which might cause a fire or an explosion.
- Do not remove or modify any safety devices, protective covering or lagging. Protect any pressure tanks or accessory installed outside the compressor unit for storing compressed air by means of separate safety valves.
- The electrical connections must fulfill the local regulations. The compressor units must be grounded and protected against short circuits by means of fuses.
- If operation by remote control is provided for, a clearly visible sign must be attached to the unit reading the following:

Caution!

This unit is operated by remote control and might start without prior warning.

Make sure that the electrical connection is interrupted when conducting maintenance and/or repair work.

1.9 Assembly instructions

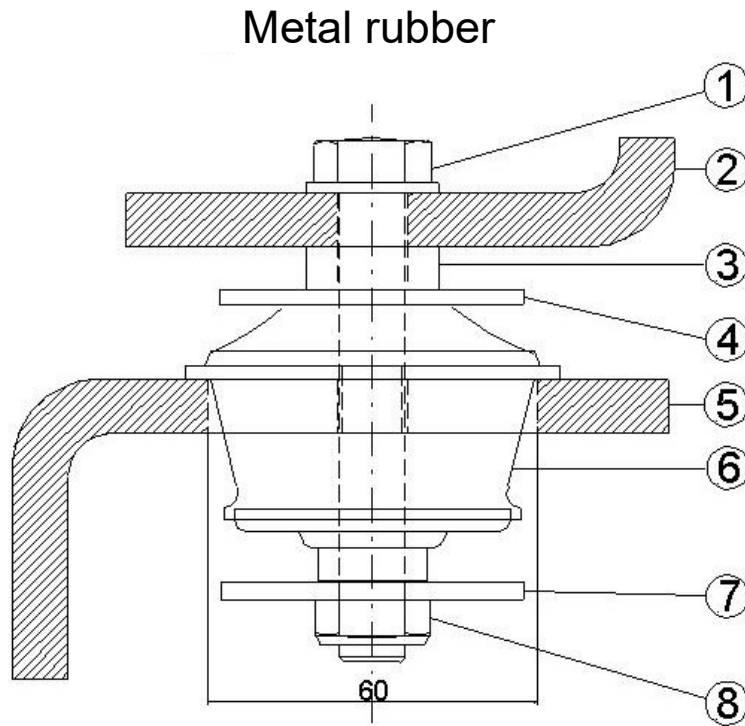


The mounting area of the vibration dampers can be between 315 mm and 600 mm from the centre line on each side.

The position of the vibration dampers must be symmetrical to the centre line.

1.9.1 Mounting instructions – Metal rubber

After defining the mounting positions of the vibration dampers in the supporting frame, cut a hole of 60 mm diameter for each vibration damper by means of a hole saw. (Please see drawing)



1. Screw M12 x 90
2. Compressor baseframe
3. Spacer 8mm
4. Lock washer above
5. Chassis baseframe
6. Metallgummi
7. Lock washer below
8. Lock nut

2 Safety

2.1 General

This operating manual contains basic instructions to be followed during operation and maintenance/repair. Therefore, this operating manual must be read by the responsible technical staff/operator prior to commissioning and it must always be available at the place of use for the aggregate.

2.2 Authorised personnel, training and qualification

Work carried out on the compressor, such as operation and maintenance/repair, must only be carried out by persons with the appropriate authorisation, training and qualifications, who are familiar with the valid safety regulations. Repairs or modifications must only be performed by authorised personnel who is available at any time at the service sites or at GHH RAND. Work on electrical components may only be carried out by trained electricians.

2.3 Safety-conscious work

The essential safety-related regulations for installation, operation and maintenance/repair of air compressors are contained in the following publications:

Machinery Directive 2006/42/EC

Standards, in particular:

DIN EN ISO 12100-1/2	Safety of machinery
DIN EN 1012-1	Compressors and vacuum pumps, safety requirements

The regulations of the professional associations, in particular:

BGI 666	Sample operating instructions for operation of container vehicles for granular or dust-like goods (silo vehicles)
---------	---

In this context, the respectively last applicable versions of these regulations shall be authoritative. Special legal provisions and regulations, particularly safety regulations, that may apply in your company or due to local conditions must also be adhered to. In case of competing regulations, the more restrictive provisions shall be applied. You must also observe any national regulations in the respective country of use.

2.4 Safety instructions for the owner/operator

The owner/operator is responsible for ensuring that the screw compressor is in a safe operational condition. Damaged or faulty parts must be immediately replaced. If the screw compressor is used to convey combustible materials, make sure that the temperature remains below the spontaneous ignition temperature for any dust/air mixture which may be created. In accordance with the professional association regulation BGI 666, for the pneumatic transport of materials subject to dust explosion, a temperature limit of max. 120 °C must be adhered to (measurement point before contact with the materials to be conveyed).

2.5 Unauthorised conversions and spare parts

Conversions and modifications to the screw compressor and screw compressor unit are not permitted. Damage to the seal will void any warranty claims. Original replacement parts and accessories that are authorised by the manufacturer represent safety factors. The use of non-original or unauthorised replacement and accessory parts may void the liability for resulting consequences.

2.6 Incorrect operating methods

The operation of the compressor under incorrect conditions may lead to serious injuries and significant material damage.

- The compressor must only be operated under permitted conditions.

Unless approval is obtained from GHH RAND, the compressor must only be operated under the conditions stated in chapter 1.6 on page 5 to chapter 1.8 on page 8.

2.7 Disposal

Compressor components, as well as operating materials used in conjunction with the screw compressor and compressor unit must be disposed of observing the local regulations.

3 Operation

3.1 Safety during operation

Note: Also observe the safety instructions in chapter 2 on page 11 and 12.

RISK OF EXPLOSION!

For the conveyance of combustible, dust-like materials, the temperature of the compressed air at the measurement point directly before contact with the material to be conveyed may not exceed the maximum value of 120 °C.

- If the maximum temperature is exceeded, switch off the compressor immediately.

NOISE GENERATION!

A greater acoustic pressure level can result in damage to hearing.

- Wear hearing protection.

HOT MACHINE PARTS!

During operation, the compressor is very hot. There is a risk of burning on hot machine parts.

- Wear protective gloves.

OVERHEATING DUE TO EXCESSIVE RUNNING TIME!

Exceeding the max. running time results in tangible damage due to overheating.

- Adhere to the max. running time: 3 hours running time and a subsequent 1 hour pause.

OVERHEATING DUE TO EXCESSIVE OPERATING PRESSURE!

Exceeding the max. operating pressure results in tangible damage due to overheating.

- Do not operate the compressor at an operating pressure of more than 2.5 bar.
- In the event of operating at high altitudes, adapt the operating pressure.
- If exceeded, switch off the compressor.

3.2 Installation

Mount the compressor unit in horizontal position, if possible. If the unit is not mounted horizontally, please observe the specified limit values.

Notice!

Observe the maximum permitted inclination during operation:

- | | |
|-------------------------------|-----|
| To the front and to the rear: | 10° |
| To the right and left: | 10° |

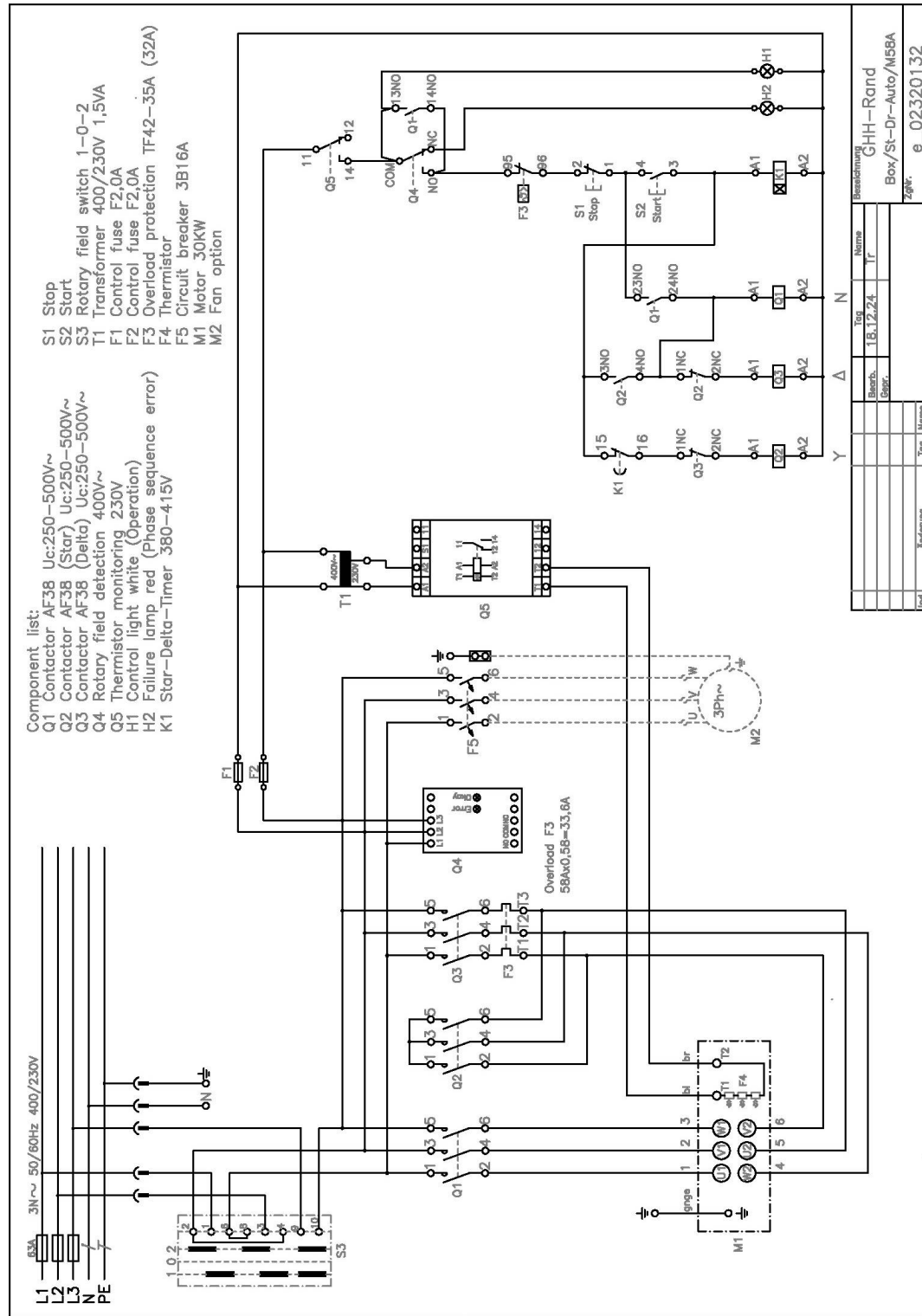
Electrical connection:

The standard electrical connection is realized by means of a junction box with feeder clamps. As an option, the unit can be delivered with a CEE connector plug installed.

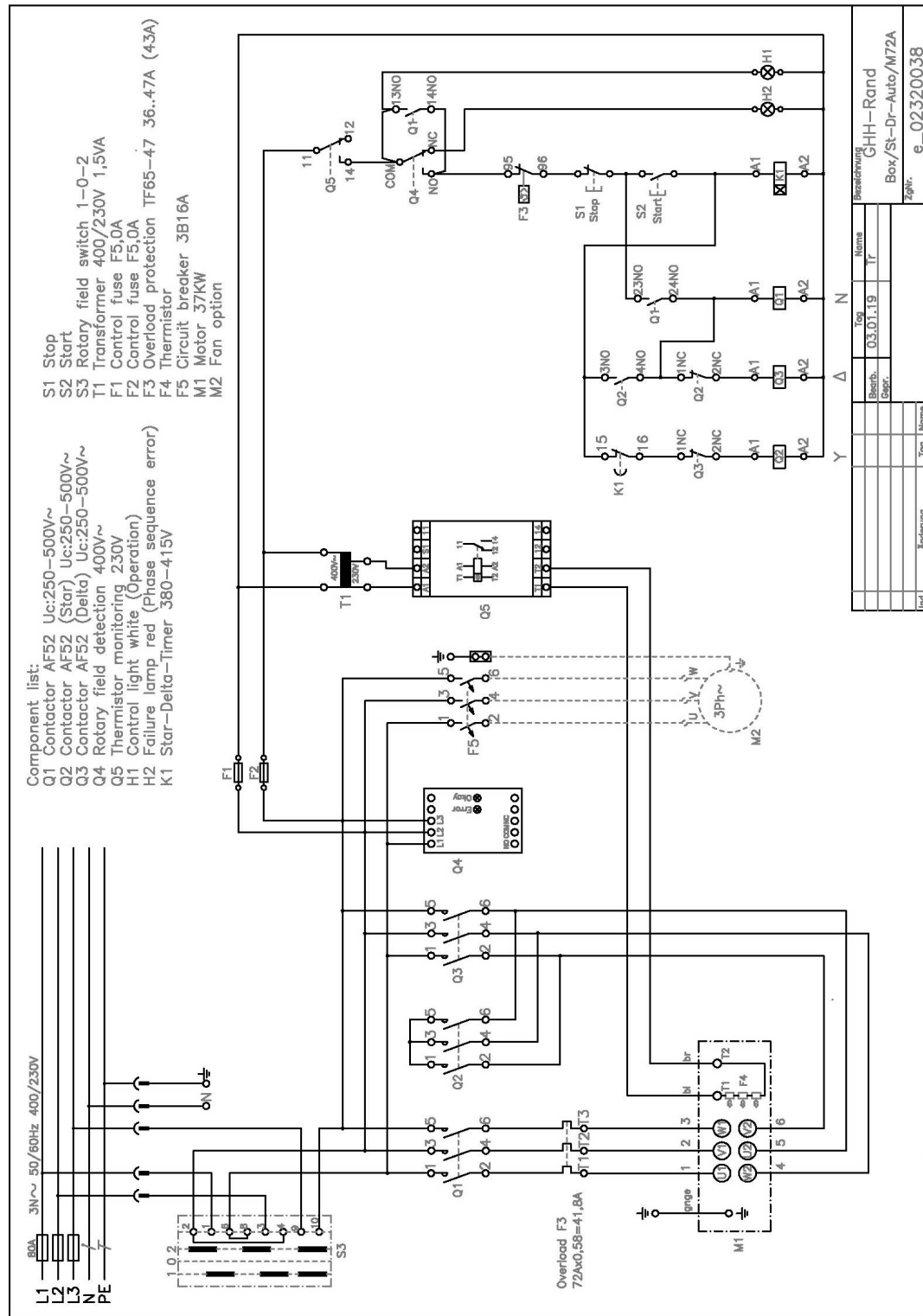
Notice!

Work on the heavy current unit must be conducted by specially authorized experts only.

3.3 Wiring diagram 30kW/50Hz



3.4 Wiring diagram 37kW/50Hz und 41.5kW/60Hz



3.5 Control elements

List / Designation:

- Start button (I) green
- Stop button (0) red
- Phase switch - Position 1-0-2
- Operation control lamp (white)
- Phase switch lamp (red)
- Oil pressure gauge compressor
- Maintenance indicator of compressor air filter

3.6 Switching on

Starting electric motor / compressor:

- Provide for electrical power connection
- Perform phase switching check
(switch to 1 or 2 until lamp goes out)
- Press start button „green“
- Check start procedure
- Only operate the compressor at **full speed** under back pressure

Notice!

Start the compressor unit completely relieved of load only. Never start operating against existing back pressure!



3.7 Switching off

Stop electric motor / compressor:

- Relieve compressor discharge pipe
- Press stop button „red“
- Wait for shutdown
- Turn rotary switch to position „0“

3.8 Allowed operating time

- Maximum running time of the compressor without oil cooler:

3 hours followed by a 1-hour cooling phase.

- Continuous operation of the compressor is only possible with an optionally available oil cooler.

3.9 Monitoring operation / Compressor oil pressure gauge

The oil pressure is indicated on the oil pressure gauge.

The oil pressure must not drop below 0.3 bar.

Notice!

If the oil pressure does not build up within a short period of time, switch off the motor / compressor. Check the oil level and clean the oil suction strainer, if necessary (see operating instructions of compressor, chapter maintenance).

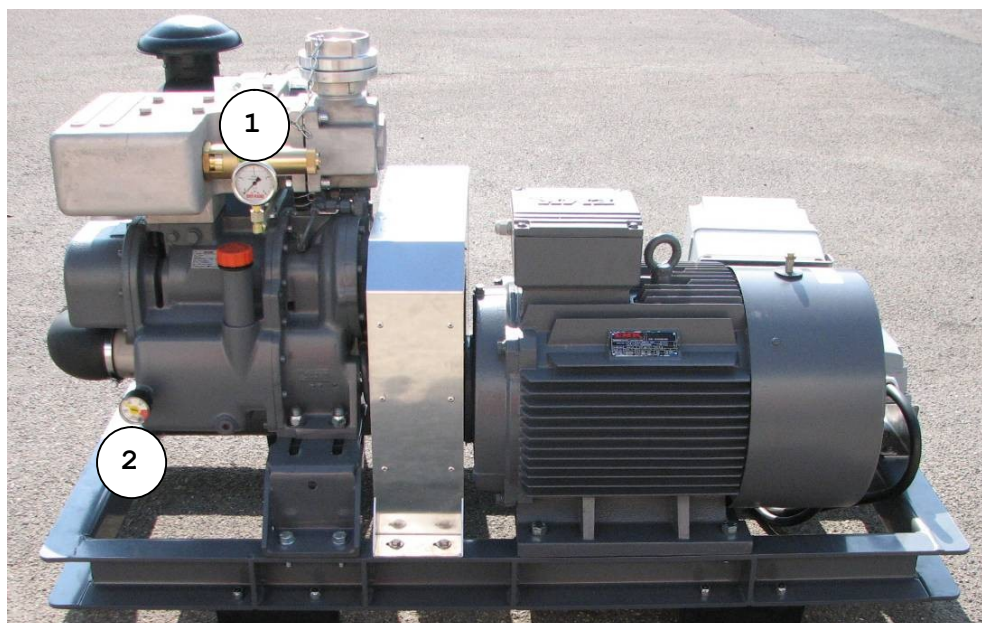
Maintenance indicator

The negative pressure in the compressor is displayed on the maintenance indicator.

Notice!

If the display reaches 65 mbar, the permissible negative pressure has been exceeded. Clean the filter element in the suction filter of the compressor unit or replace it if it is very dirty. Reset the maintenance indicator (see: compressor operating instructions).

- 1 Oil pressure gauge
- 2 Maintenance indicator



4. Maintenance / repair

4.1 Safety

Note: Also observe the safety instructions in chapter 2 on page 11 and 12.

COMPRESSED AIR IN THE SYSTEM!

There is a risk of injury due to pressurized components and lines.

- All checks and maintenance tasks must only be performed with the compressor switched off and depressurised.
- Before working on the electric compressor unit, the main power cable must be unplugged and de-energized.
- In case of stationary units, remove the fuses.

HOT MACHINE PARTS!

During operation, the compressor is very hot. There is a risk of burning on hot machine parts.

- Wear protective gloves.

CLEANING USING A HIGH-PRESSURE JET!

When cleaning a silo vehicle using a high-pressure jet, there is the possibility that water will ingress into the interior of the compressor and the air filter.

- A distance of 0.5m must be maintained.
- If necessary, empty or clean the air filter.
- In order to prevent corrosion, after cleaning, the compressor must be briefly operated (approx. 10 minutes).

4.2 Maintenance Intervals electric motor / compressor

After the first 2 operating hours:

- Readjust the tension of the V-belts and quick-release bushings of the V-belt pulleys.
- Re-tighten the fastening screws on the discharge silencer (Tightening torque 65Nm).
- Perform a visual inspection of the lines to/from the oil cooler and compressor to make sure they do not leak (optional).

Weekly:

- Check the oil level in the compressor and correct as required.
- Clean the intake filter or replace if the degree of contamination is excessive and reset the negative pressure maintenance indicator as required.
- Check the tension of the V-belts and adjust as necessary.

Quarter-annually:

Electric motor

Check electrical connections for tightness, re-grease rotor bearings if necessary (see electric motor operating instructions).

Compressor

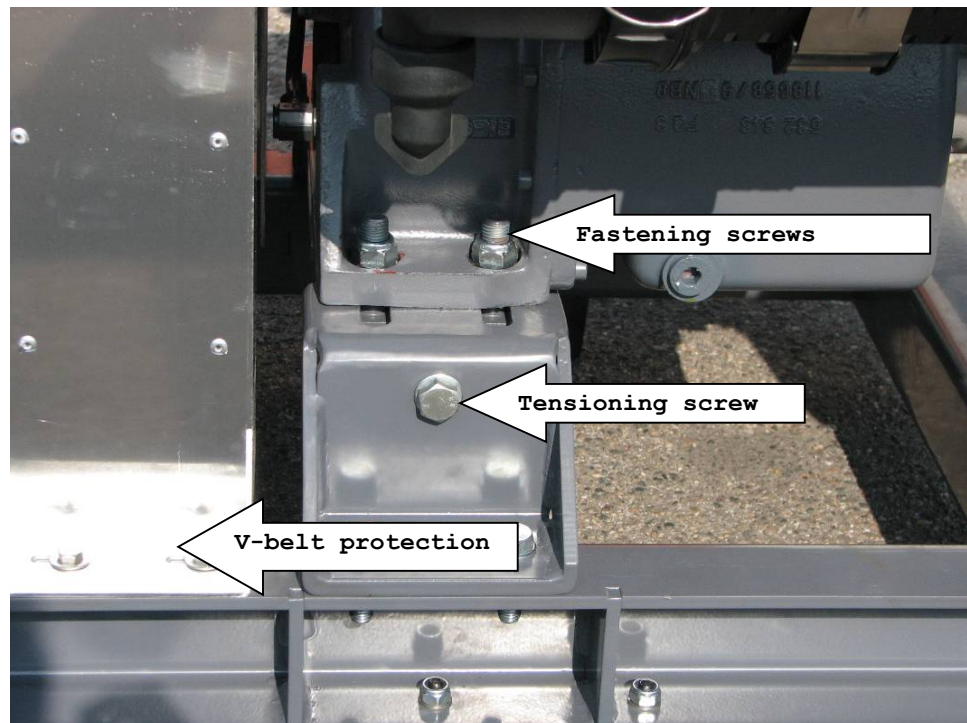
- Carry out a function check of the safety valve.
- Carry out a function check of the check valve.
- Check the air cooler blades for dirt and clean as needed (optional).

Every six months or, if using Silol, once per year:

- Carry out an oil change.
- Clean the oil intake strainer.

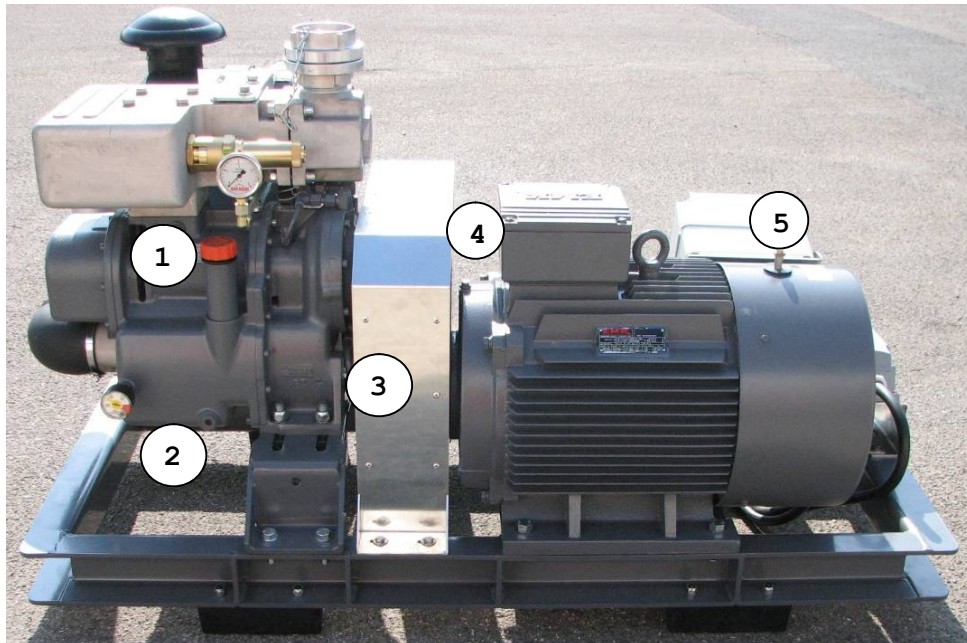
4.3 V-belt drive

Tension the V-belts using the tensioning screw and a measuring device in line with the instructions of the V-belt manufacturer.



In order to change or retension the V-belts, remove the V-belt protection to be able to check the V-belt tension. To this end, unscrew the four screws at the foot of the V-belt protection and lift off the protection completely. Loosen the four fixing screws at the compressor foot afterwards and decrease the tension of the V-belts by turning the tensioning screw to the left or increase it by turning the tensioning screw to the right. After tensioning, tighten the fixing screws. Install the V-belt protection.

4.4 Oil change / bearing lubrication

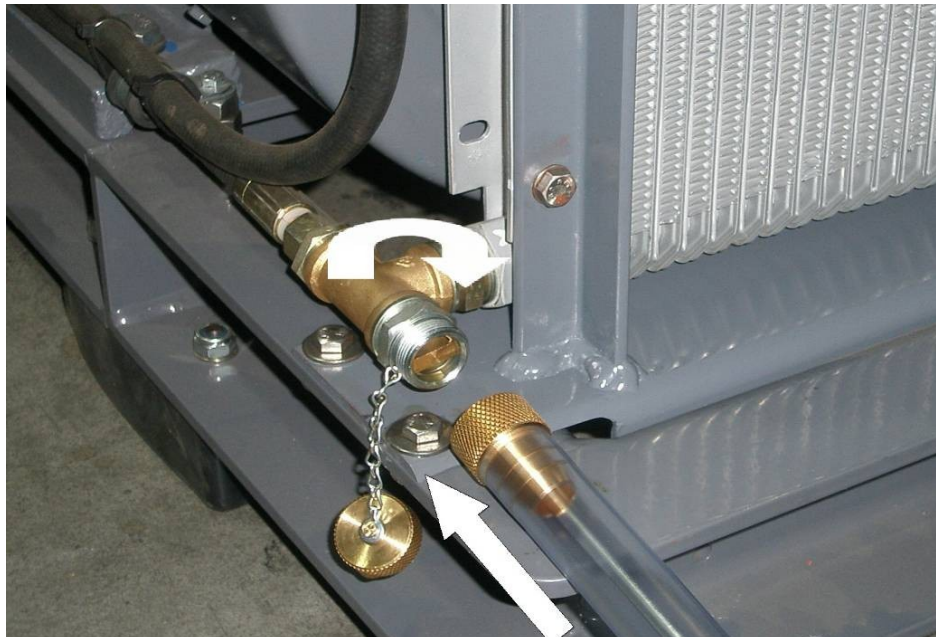


- 1 Oil change and oil level control
(see operating manual - compressor)
- 2 Oil drain screw
- 3 Cleaning of the oil suction strainer
(see operating manual - compressor)
- 4 Bearing lubrication - 45g/side every 3125 hrs
(see operating manual - electric motor)
- 5 Bearing lubrication - 45g/side every 3125 hrs
(see operating manual - electric motor)

4.5 Oil cooler / optional

Electric motor / compressor with oil cooler

The optional oil cooler for the compressor unit is designed for continuous operation applications.



- The oil cooler requires little maintenance and is cooled by the electric motor fan. If there is a large amount of dust, the cooling fins should be cleaned depending on the degree of contamination so that the cooling performance is not reduced.
- When changing the oil in the compressor, the oil in the oil cooler must also be drained. There is an oil drain valve on the underside of the oil cooler (see photo). Screwing in the oil drain hose (included in delivery) opens a valve and allows the oil to be drained cleanly into a container. After draining, unscrew the oil drain hose and screw the cap back on.
- After changing the oil, oil must be added to the compressor (see operating manual). Then start the compressor until oil pressure is indicated. Afterwards, switch off the compressor, check the oil level, and top up with oil if necessary.

5. FAULTS, CAUSE AND INSTRUCTIONS FOR TROUBLESHOOTING

Fault	Possible cause	Remedy
Air quantity not sufficient	Drive speed too low	Increase drive speed to the maximum permitted speed
	Suction filter soiled / clogged	Clean or replace filter cartridges or elements as necessary
Ultimate air pressure too high	Nominal diameter of the compressed air line too small	Install new lines with a larger nominal diameter
	Non-return valve faulty	Check the non-return valve
	Safety valve does not open	Check the safety valve
	Drive speed too high	Reduce the drive speed to the maximum permitted speed
Ultimate air temperature too high	Intake filter soiled	Clean or replace filter cartridges or elements as necessary
	Ultimate air pressure too high	Check the safety valve
	Ambient temperature too high	Observe permitted intake temperature
	Blades of the air cooler dirty	Check air cooler
	Fan not running	Check control and cable connection
		Replace the fuse of the feed line
		Check the fan selector switch position

Fault	Possible cause	Remedy
Negative pressure greater than 65 mbar	Intake filter soiled	Clean or replace filter cartridges or elements as necessary
	Drive speed too high	Reduce the drive speed to the maximum permitted speed
Oil pressure less than 0.3 bar	Oil intake strainer soiled	Clean the oil intake strainer
	Oil level too low	Check oil level and top up as necessary
	Wrong type of oil	Drain oil completely and top up with specified oil
	Drive speed too low	Increase drive speed to the maximum permitted speed
	Bent or damaged oil lines on units with an external oil cooler (optional)	Check oil lines and oil cooler
Oil foams	Wrong type of oil	Drain oil completely and top up with specified oil
	Water in the oil	
	Oil quality different	
	Oil level too high	Check oil level and drain off oil as necessary
Oil leaks	Oil level too high	Check oil level and drain off oil as necessary
	Screw connections leaking	Check screw connections
Oil pressure fluctuates	Oil level too low	Check oil level and top up as necessary
	Excessive inclination of the compressor	Observe the max. permitted inclination

Printed in Germany

Reserves the right to amend technical details compared to the information and illustrations of the operating manual. A replication, copying or translation, even in parts, is not permitted without written consent.

Service & Support

www.ghhrand-transport.com

Subject to revision without notice
Printed in Fed. Rep. of Germany
12/2025 DE