STENHØJ
OPERATING
INSTRUCTIONS

SCREW COMPRESSOR
SP20 – 150

STENHØJ

Version 04 Edition 02/05 T63693

INDEX

WARNING SYMBOLS

Warning symbols

1. Vessel under pressure..... 

2. Rotating parts ..... 

3. High voltage ..... 

4. Not suitable for respiratory air ..... 

5. Bleed out (burn danger)..... 

6. Hot parts ..... 

7. Cutting/rotating parts..... 

8. Lifted part, do not go under..... 

9. General attention ..... 

10. Automatic start ..... 

1 INTRODUCTION

1.1 Introduction

Congratulations on your new STENHØJ compressor. For the last 70 years, STENHØJ KOMPRESSOR A/S has been known for manufacturing efficient, high-quality industrial compressors.

STENHØJ KOMPRESSOR A/S is a name you can trust, and thus STENHØJ compressors are manufactured in a particularly robust design, fully complying with the requirements to modern industrial compressors.
The STENHØJ KOMPRESSOR A/S philosophy is to manufacture highly efficient compressors providing your compressor with optimal operating safety, a minimum of energy consumption, high specific output, quiet operation and a long service life with a minimum of maintenance. At the same time, these compressors will produce a stable and safe compressed-air supply for many years.

STENHØJ KOMPRESSOR A/S recommends that this operating instruction is read thoroughly before the initial start-up.

Your new STENHØJ compressor is built according to the best and latest manufacturing methods and to the best and most contemporary technical standards.
Intentionally, this operating manual is to help you operate your new compressor.
Therefore, all staff involved in the transport, installation, start-up, operation, maintenance and repair of this compressor have to read and UNDERSTAND this manual.

THIS INSTRUCTION MANUAL SHOULD NOT BE REMOVED FROM THE COMPRESSOR.

As shown below, the compressor is equipped with a machine data plate. It is a good idea to copy the data plate information into the diagram below.

STENHØJ
Kompressor A/S
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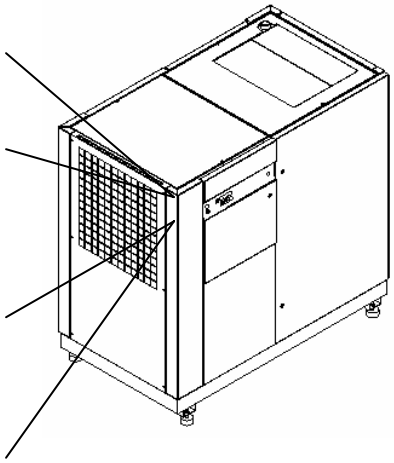
Compressor Type:		**Serial No**		**Year**	
Working Pressure		**Flow**		**Weight**	
Max fuse rating		**Isol Class**		**IP**	
Motor Power		**Motor Amp.**			
Fan Power		**Fan Amp.**			
Voltage		**Frequency**			



1.2 Limitations of liability

At the time of printing, all technical information, data and instructions in this manual in respect of the operation and maintenance of the compressor are updated according to the latest revision (see version number/letter on the front page) and include our previous experiences with and knowledge of this compressor type and therefore is only guidance.

STENHØJ KOMPRESSOR A/S reserves the right to alter the technical specifications for the compressor(s) mentioned in this manual without prior notice. For this reason, STENHØJ KOMPRESSOR A/S cannot accept any claims arising out of such alterations.

STENHØJ KOMPRESSOR A/S is not liable for any damage or stop-downs resulting from operating failure, non-compliance with the instructions herein, or incorrect maintenance/repair, etc.

STENHØJ KOMPRESSOR A/S is not liable for spare parts and accessories not supplied by us and thus not authorised by us.

Adding and/or using such non-original parts and accessories can adversely affect the compressor characteristics and endanger people, the compressor and other values. Damage arising from the use of non-original spare parts is under no circumstances covered by STENHØJ KOMPRESSOR A/S.

STENHØJ KOMPRESSOR A/S cannot be held liable for damage arisen as a consequence of alterations or changes made to the compressor carried out without the written consent of STENHØJ KOMPRESSOR A/S.

STENHØJ KOMPRESSOR A/S is not liable for any consequential damage.

To the best of STENHØJ KOMPRESORS A/S' knowledge, translations of documents are accurate. STENHØJ KOMPRESSOR A/S is not liable for translation mistakes. Only the Danish version is normative and this is available on request.

Texts and drawings does not include all available components e.g. in connection with the ordering of spare parts. Drawings and graphics are only normative and not reproduced in the scale 1:1.

Pursuant to the safety regulations, the compressor should under no circumstances be operated unless all covers/doors on the cabinet have been correctly mounted since an operation of this kind carries a severe health hazard. STENHØJ KOMPRESSOR A/S cannot be held liable for damage resulting from any such operation.

All legal disputes concerning this compressor shall be subject to the jurisdiction of the domicile of the manufacturer according to Danish legal rules and legislation.

The compressor is only intended for the production of compressed air according to this manual.

1.3 Design base

The design base for this/these compressor(s) conforms to;

Machinery directive:

- 89/392/EEC, 91/368/EEC, 93/44EEC

Labelling directive:

- 93/68EEC

EMC directive:

- 89/336/EEC, article 10, § 1AD-M.

Further, the following harmonized standards have been used during the construction:

- EN 29001
- EN 292
- EN 60204 -1
- EN 53011
- EN 53012
- ISO 1217

1.4 Document protection

This manual is confidential and is exclusively intended for use in your company by the persons responsible for the compressor.

It is not allowed to copy or distribute the document to third hand parties, nor is to make copies without the written consent of STENHØJ KOMPRESSOR A/S. Violation of the above is considered a criminal offence.

1.5 Warranty

Under normal operating conditions, STENHØJ KOMPRESSOR A/S grants a 12-month warranty against material and production defects. As an additional safety, STENHØJ KOMPRESSOR A/S grants a 24-month warranty on the air end, irrespective of the operating time. The warranty period takes effect from the invoice date.

The warranty is conditional upon compliance with the instructions herein and upon the correct setting-up of the compressor, see chapter 5.2 Installation.
Spare parts are not covered by the warranty.
Contact STENHØJ KOMPRESSOR A/S immediately in the case of claims for warranty and state the warranty coverage referring to:

----------Machine data plate----------

Compressor type and pressure
Machine number

----------Invoice----------

Date of delivery
Order and invoice number of STENHØJ KOMPRESSOR A/S.

1.6 Service

To ensure the best setting-up, running in, future service and repair work STENHØJ KOMPRESSOR A/S have a service net covering the entire world.
If problems occur outside normal working hours, STENHØJ KOMPRESSOR A/S or your local distributor is on duty 24 hours a day.

Producer:

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E-mail: kompressor@stenhoj.dk
Website: www.stenhoj.dk

Authorized STENHØJ distributor only use original spare parts.

1.7 Maintenance

We would like to safeguard your compressor by taking over any service and maintenance needs you may have.

You can sign a servicing agreement with your local authorized STENHØJ distributor who has skilled personnel and fully equipped service vehicles and only uses original STENHØJ spare parts.

2 SAFETY

2.1 Range of application

This compressor is designed according to the best and latest manufacturing methods of STENHØJ KOMPRESSOR A/S and to the best and most contemporary technical standards.
During the design, the recognised safety regulations and standards have been taken into consideration.
The compressor safety has been evaluated and approved by the manufacturer.
The compressor should only be used to the production of compressed air and NOT for the compression of any other gas type.
The compressor and any attached compressed-air equipment have to be maintained to by qualified personnel who should continuously check and maintain the entire installation.
Be aware the ALL other equipment has to be approved for operating at the pressure corresponding to the maximal operating pressure of the compressor.

The compressor is not designed for use in explosion-proof environments or environments containing flammable gasses. The compressed air from the compressor should not be used as respiratory air, since it contains oil and water vapour.
The installation is not designed for outdoor operations and should be located indoors.
Make sure that the compressor only works within the temperature range mentioned in chapter 5.2 Installation.

Unnecessary health risks and endangerment of the compressor occur, if:

- the compressor is operated with just one cover/door open/removed
- the compressor is not maintained according to the instructions herein
- the compressor is not operated according to the instructions herein
- the compressor is operated with one or more safety devices blocked/removed.
- the compressor is used outside the range of its intended use (see above)
- the compressor is incorrectly modified, e.g. with non-original spare parts

The manufacturer, STEHØJ KOMPRESSOR A/S, expressly prohibits:

- starting the compressor, if the instructions of this manual are not carefully followed.

2.2 Testing regulations

Before actuation, please observe the following:

- Check the compressor for any transportation damage.
- Check the compressor for any missing parts on delivery.

Continuous control measures:

- Check the compressor operation continuously.
- Check the wear and tear of the compressor continuously.
- Immediately replace any worn parts (it may be necessary to remove the part to determine its condition).
- Separator vessel
- Check the separator tank according to local rules and regulations.
- Testing MUST be carried out by trained personnel.

2.3 General safety instructions

This manual should be considered as a general safety guide on the installation, operation and maintenance of the compressor. Therefore, all safety instructions herein have to be observed and followed.

This manual is primarily intended for the personnel responsible for the daily compressor operation and should not be removed from the vicinity of the compressor.

2.4 Personnel and qualifications

Ensure that the personnel responsible for the daily compressor operation have the relevant background and education. The personnel should, if necessary, be trained in the compressor operation, service and maintenance plans, etc. STENHØJ KOMPRESSOR A/S or our co-operators are able to provide help in this respect.

2.5 Risk assessment

Non-compliance with the safety regulations herein may endanger people, the compressor, any attached equipment and the surrounding environment.
Furthermore, this may lead to a rejection of any claims for warranty and damages.

E.g. neglecting the safety instructions may result in:

- endangering the surrounding environment due to oil leakages;
- electrical failure and consequently mechanical failure;
- endangering people around the compressor;
- endangering the continuous compressor operation.

2.6 Risk reduction

The safety instructions herein, all local regulations and guidelines have to be observed and followed at all times. Any company safety regulations can be used to supplement this manual.

2.7 Operator safety instructions

To minimise the risk of failure, this manual should be closely observed and followed.

Compressor safety instructions:

- Pursuant to the safety regulations, the compressor should under no circumstances be operated if not all covers/doors on the cabinet are mounted correctly.
- The locks on the covers/doors, which require special keys, should not be replaced with inferior types.
- Protective equipment preventing contact etc. should not be removed.
- Do not open the electrical cabin during operation.
- Single parts on the compressor can be very hot during operation.

The following material, which should be handled with care for the protection of people and the environment, has been used for the manufacturing of this compressor:

- Oil
- Lubricant
- Polyester foam with polyurethane film and adhesive on the reverse side
- Miscellaneous sealing

Operator safety instructions:

- Avoid getting in contact with especially with oil and lubricants.
- Avoid prolonged exposure to and inhaling of vapours.

See a doctor in the case of an accident.

2.8 Safety instructions for service, inspection and mounting work

The owners of this compressor are responsible for making sure that all maintenance, inspection and mounting work are carried out by authorised and/or trained personnel who have the necessary expertise.

Any work on the compressor should be carried out when the compressor is not operating, when the main switch is disconnected and locked and when there is no internal pressure in the compressor.

If it is necessary to remove safety equipment in order to carry out service on the compressor, the equipment HAS TO be remounted when the service work is completed. Pay attention to the general starting-up procedures, see chapter 6.2 Before start-up.

Any kind of warranty work must be carried out by an authorised STENHØJ service engineer.

2.9 Alterations and spare parts not manufactured by the manufacturer

The use of original spare parts ensures the quality.
Compressor alterations or modifications of any kind are NOT permitted.
The use of non-original spare parts or spare parts not manufactured by the manufacturer may have unpredictable consequences for which STENHØJ KOMPRESSOR A/S is not liable.

The warranty lapses in connection with alterations and/or custom manufactured spare parts.

2.10 Non-permitted operation

Do not exceed the fixed limits on the data sheets.
Only use the compressor according to its intended use as mentioned herein.

Call an authorised STENHØJ service engineer in the event of failure and/or defects in the safety systems.

Do NOT operate the compressor if there are defects in the safety systems. It is not permitted to override defective safety devices e.g. electrically (not even for a short period of time).

3 TECHNICAL DATA

3.1 Mechanical data

TYPE	Unit	SP20	SP25	SP30	SP40	SP50
Connection:						
Frequency	Hz	50	50	50	50	50
Voltage	V	400	400	400	400	400
Main motor / fan	Amp	28,9 / 0,5	34,3 / 0,5	41,1 / 0,5	55,9 / 2,7	66,9 / 2,7
Recommended cable cross section	mm^2	4	6	10	16	16
Recommended maximum fuse	A	50	63	63	100	125
Heat recovery	kW/t	12	14,8	17,6	24	29,6
Usable energy by heat exchanger	MJ/t	43,2	53,2	63,3	86,3	106,4
Motor:						
Motor size	kW	15	18,5	22	30	37
Protection class	IP	55	55	55	55	55
Isolations class	isol-cl	F	F	F	F	F
Nominal RPM	r.p.m.	3.000	3.000	3.000	3.000	3.000
Dimensions:						
Height	mm	1.373	1.373	1.373	1.648	1.648
Width	mm	1.424	1.424	1.424	1.774	1.774
Depth with closed front	mm	824	824	824	999	999
Depth with open front	mm	1.624	1.624	1.624	1.949	1.949
Weight	kg	535	553	575	856	876
Free air delivery						
8 bar	m^3/min	2,38	2,95	3,5	4,92	6,01
10 bar	m^3/min	2,08	2,59	3,11	4,35	5,37
13 bar	m^3/min	1,75	2,16	2,6	3,66	4,56
Outlet dimension	"	3/4	3/4	3/4	1 1/2	1 1/2
Recommended minimum receiver size	litre	1.000	1.500	1.500	2.000	2.000
Recommended ventilation of:						
Compressor room with free ventilation	m^3/h	5400	6660	7920	-	-
Compressor room with extraction	m^3/h	5.400	6.660	7.920	10.800	13.320
Compressor room by forced ventilation	m^3/h	2.700	3.330	3.960	5.400	6.660
Allowed pressure drop in ducts	m/s	4	4	4	4	4
Minimum room temperature	°C	+ 2	+ 2	+ 2	+ 2	+ 2
Maximum room temperature	°C	+ 45	+ 45	+ 45	+ 45	+ 45
Normative outlet temperature	°C	amb. + 10	amb. + 10	amb. + 10	amb. + 10	amb. + 10
Additional data:						
Quantity of oil	~ litre	8	8	8	8	14
Safety valve's setting over operating pressure	bar	2	2	2	2	2
Sound level	dB(A)	68	69	70	71	73
Overall protection class	IP	21	21	21	21	21

TECHINCAL DATA

TYPE	Unit	SP60	SP75	SP100	SP125	SP150
Connection:						
Frequency	Hz	50	50	50	50	50
Voltage	V	400	400	400	400	400
Main motor / fan	Amp	79,9 / 2,7	98,6 / 2,7	129 / 3,5	153 / 3,5	184 / 3,5
Recommended cable cross section	mm^2	25	35	50	70	95
Recommended maximum fuse	A	125	160	200	250	315
Heat recovery	kW/t	36	44	60	72	88
Usable energy by heat exchanger	MJ/t	129,4	158,2	215,7	258,9	316,4
Motor:						
Motor size	kW	45	55	75	90	110
Protection class	IP	55	55	55	55	55
Isolations class	isol-cl	F	F	F	F	F
Nominal RPM	r.p.m.	3.000	3.000	3.000	3.000	3.000
Dimensions:						
Height	mm	1.648	1.648	1.768	1.768	1.768
Width	mm	1.774	1.774	2.274	2.274	2.274
Depth with closed front	mm	999	999	1.274	1.274	1.274
Depth with open front	mm	1.949	1.949	1.997	1.997	1.997
Weight	kg	928	1.021	1.556	1.581	1.676
Free air delivery						
8 bar	m^3/min	7,17	8,3	13,1	15,7	18,4
10 bar	m^3/min	6,46	7,8	11,4	13,7	16,3
13 bar	m^3/min	5,55	6,8	9,8	12	14,2
Outlet dimension	"	1 1/2	1 1/2	2 1/2	2 1/2	2 1/2
Recommended minimum receiver size	litre	3.000	4.000	5.000	6.000	8.000
Recommended ventilation of:						
Compressor room with free ventilation	m^3/h	-	-	-	-	-
Compressor room with extraction	m^3/h	16.200	19.800	27.000	32.400	39.600
Compressor room by forced ventilation	m^3/h	8.100	9.900	13.500	16.000	19.800
Allowed pressure drop in ducts	m/s	4	4	4	4	4
Minimum room temperature	°C	+ 2	+ 2	+ 2	+ 2	+ 2
Maximum room temperature	°C	+ 45	+ 45	+ 45	+ 45	+ 45
Normative outlet temperature	°C	amb. + 10	amb. + 10	amb. + 10	amb. + 10	amb. + 10
Additional data:						
Quantity of oil	~ litre	14	14	32	32	32
Safety valve's setting over operating pressure	bar	2	2	2	2	2
Sound level	dB(A)	75	78	80	81	83
Overall protection class	IP	21	21	21	21	21

4 DESCRIPTION

4.1 Description of operation

Air is sucked in through a combined intake and control valve, which controls the compressor operation together with a solenoid valve. The air is compressed between two movable rotors and led into the separator tank together with the supplied oil.

In the tank, the oil is separated from the air. The oil is led through the oil cooler and the oil filter back into the air end.
The air is led through a separator filter and a combined minimum pressure/non-return valve via the air cooler and out into the air network.

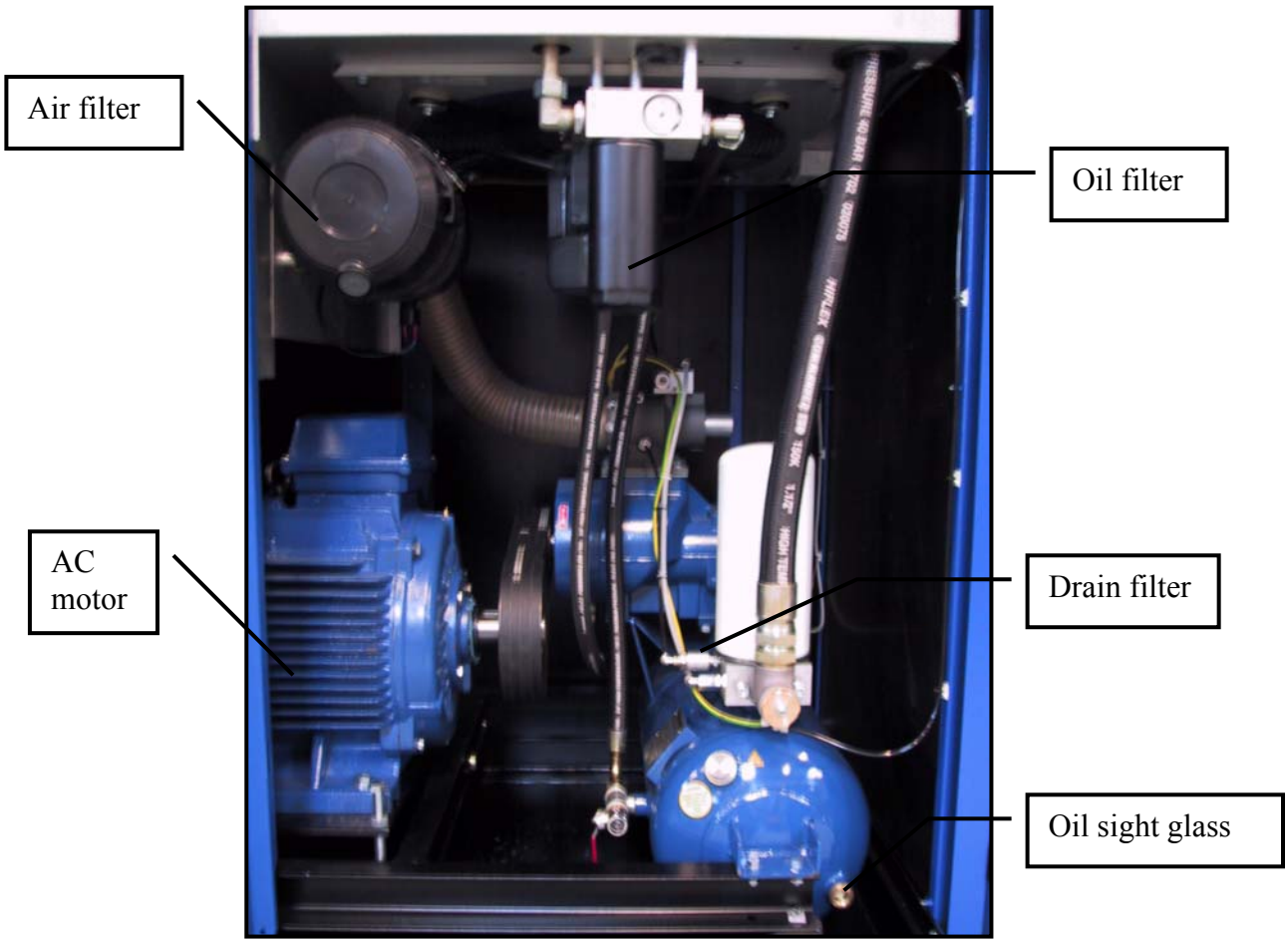
LEDs are placed on the instrument panel of the compressor and they indicate how the compressor works and any failures on the compressor. All relevant operation data like pressure and temperature is also indicated here.

A more thorough description of the installation's mode of operation and the indications on the instrument panel can be found in chapter 6.5 User interface.

STENHØJ KOMPRESSOR A/S uses highly efficient air ends in all screw compressors. The compression takes place in one-step, and the compressors controller constantly control and monitor the entire compressor operation and optimises the production of compressed air, so that it is produced as inexpensively as possible.

4.2 Overall view

Seen form the front, front cover open.



From the right side, side cover removed.

4.3 Mechanical components for single compressors

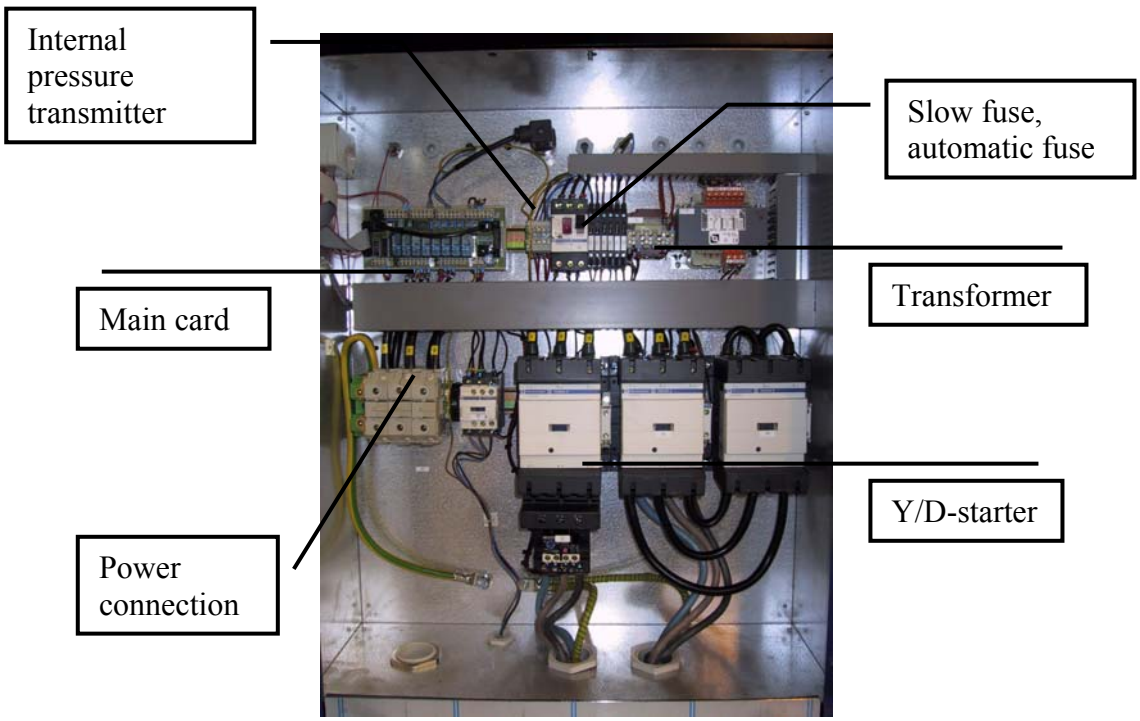
A standard control consists of two cards and a star-delta starter. The cards are named the controller and the main card. The two cards are connected to a 20-conductor ribbon cable.

The controller is the card with the display, which is placed in the electric door. The main card is mounted in the electric cabin and this is where all connections to temperature and pressure sensors and other external connections are placed. It is also, where the communication for MULTI CONTROL is connected.

Besides the two cards, each compressor has or can have various sensors.

- Pressure transmitter for outlet pressure. Pressure transmitter for system pressure. (optional)
- Differential pressure monitor for separator filter (SP125-150).
- Vacuum sensor for air filter (standard).
- Temperature sensor for operating temperature (standard).
- Thermostatic protection for operating temperature (standard).

Electrical cabin with star-delta starter for main motor, transformers for control, fuse/automatic fuse for control circuit.



4.4 Mechanical components for multi control

The components used are the same as the ones used for single compressors. See chapter 4.3 Mechanical components for single compressors. Further, a pressure transmitter for system pressures has to be used. This pressure transmitter is placed in the first pressure tank of the system.

The pressure transmitter is connected to a compressor operating in MULTI CONTROL mode. Mount it on the MASTER in order to minimise the error range.

Mount a satellite control unit into the compressor in question if compressors not part of the SP-Range.
Use a satellite control unit with a pressure simulator for the pressure transmitter signal if this compressor is equipped with a pressure transmitter.

For more information, see the appendices “System setup” and “Guidance to satellite control unit”.

Contact your local authorized STENHØJ distributor for more information.

5 TRANSPORT AND INSTALLATION

5.1 Transportation

Follow the rules and regulations governing transport of goods and make sure that the compressor is not damaged. Particularly the control panel and the on/off switches should be protected.

When using a forklift truck make sure that the forks support the entire compressor. The compressor can also be lifted by means of a crane with extreme care.

5.2 Installation

IMPORTANT: Do NOT install this compressor installation in open air.

Install the compressor in a suitable, well-ventilated room protected from snow, rain and humidity.

Though the compressor is equipped with an air filter that discards more than 99% of the air impurities, it is recommended that the compressor is installed in an environment, which is as clean as possible.
The room temperature should be within the range of +5 °C to +20 °C measured in the centre of the cooling air-intake.

Install the compressor in an environment with a temperature range between +2 °C to +40 °C to ensure problem-free operation.
If the operating temperature exceeds +100° C, the compressor is stopped automatically by the control.

If the oil temperature is below -3 °C, the compressor cannot be started. This is to protect the air end.

The compressor installation is mounted on vibration dampers.
It is not necessary to bolt the compressor installation.

The compressor can be installed directly on a concrete floor or a similar quality-base.

In order to check the oil level it is, however, necessary to make sure that the compressor is placed horizontally and that it support on all legs.

Furthermore, the connection of equipment for additional maintenance, electricity and the compressed-air piping system should be considered.

5.3 Placing

As a minimum, the compressor should be placed 0.6 m from all walls in the compressor room. The minimum ceiling height is recommended to be 2.5 m. Furthermore, the connection of equipment for additional maintenance, electricity and the compressed-air piping system should be considered when placing the compressor.

Install the channels in such a way that the total loss of pressure is minimised as much as possible. See diagram in chapter 3.1 Mechanical data for information on the available, additional pressure.

Also, minimise the air speed in the channels as much as possible due to noise. 4 m/s is a suitable speed within the channels.

To ensure a natural heat circulation, the air intake should be placed at ground level and the air should be blown out at the ceiling.

Normal compressor installation:

The intake vent “A” is dimensioned as described in chapter 5.7.2 Intake.

The ventilation “V” is dimensioned as described in chapter 5.7.1 Temperature control in the compressor room.

The temperature at the intake should not fall below +2 °C.

Compressor installation with ducts:

An adjustable valve can be mounted to conduct the air outside (in the summer) or into a storage hall (in the winter). The installation can be supplemented with an additional valve to recirculate the air, thus maintaining the temperature above +5 °C.

The temperature at the intake should not fall below +2 °C.

Please contact your local authorized STENHØJ distributor if you have any questions.

5.4 Room temperature

The room temperature should be between +2 °C to +40 °C. The compressor works best within a temperature range of +5 °C to + 20 °C.

If the temperature is likely to fall below +2 °C, a heating element should be mounted.
Please contact your local authorized STENHØJ distributor for further information.

The compressor cannot be started if the oil temperature falls below -3 °C.

5.5 Compressed-air connection

See chapter 3.1 Mechanical data for information on all types of compressed-air connections. ALWAYS make sure that the connection from the compressor to the compressed-air system has the same size as the outgoing circuit from the compressor and ALWAYS USE a flexible hose.

When the size amounts to 2 ½" >, the connection should be carried out by means of a pipe. Pay attention to pipe enlargements in connection with temperature fluctuations.

5.6 Electrical connection

The electrical connections to the compressor have to be carried out by an authorised electrician and according to EU regulations and local authority requirements.

The compressor is connected electrically in the electric cabin. A 4-conductor cable with L1-L2-L3 and PE (earth) is required.
On the back of the cabinet, a hole for the power cable is placed. The cable HAS TO be mounted with cable entry to relieve the load on the cable.

A wiring diagram is placed in the compressor.

The installation HAS TO be connected to the electrical supply network through a lockable circuit breaker, which HAS TO be placed in the immediate vicinity of the compressor.

The compressor cannot tolerate a wrong direction of rotation, as this will damage the air end. Check that the phase sequence and the rotation direction are correct (see arrow on/by the air end).

The direction of rotation can never be reversed by swapping the motor cables.

5.7.1 Temperature control in the compressor room

In order to control the temperature in the compressor room one or more separate ventilators can be installed in the exterior wall. The necessary ventilator capacity "V" can be deduced using the below formula:

V = kW x 320 m^3 / hour [m^3/h] where

kW = the nominal output of the electric motors installed in the room in kW.

The temperature rise in the room should not exceed +8 to +10° C.

The ventilation air-intake should be placed at the bottom of the room and blown out from the top of the room.

See chapter 5.3 Placing

5.7.2 Intake

To ensure a sufficient air exchange in the room, an intake vent corresponding to the ventilator capacity should be mounted.

The necessary intake area "A" can be deduced using the below formula:

A = kW x 180 cm^2 [cm^2] where:

kW = the nominal output of the electric motors installed in the room in kW.

See chapter 5.3 Placing

5.7.3 Heat recovery

Since most of the supplied energy in a screw compressor is converted into heat, there are plenty of possibilities for using this heat for e.g. room or water heating.

Please contact your local authorized STENHØJ distributor if water is to be heated by means of the compressor.

Always comply with the relevant rules and regulations of e.g. the Factories Inspectorate and similar bodies, if a heat exchanger is mounted.

6 OPERATION

6.1 Operation – start-up

Do NOT start the compressor before the operator has thoroughly read and understood this manual and the instructions herein.

All compressors have been tested and checked before delivery. However, the compressor could be damaged during transportation from the factory. Therefore, the compressor has to be checked carefully for damage on arrival.

STENHØJ KOMPRESSOR A/S is not liable for claims for damages in connection with transportation damage and the claims should be directed to the carrier.

6.2 Before start-up

- Check installation and connections. See chapter 5.3 Placing
- Check the oil level, see chapter 8.6 Oil level
- Check the ventilation conditions, see chapter 5.7 Ventilation and heat recovery
- Mount ALL covers/doors.
- Make sure that the motor is placed correct, with the transport-bolt secured in release.
- Check that the direction of rotation is correct. If the direction is not correct, the air end will be damaged within second (see arrow on/by the air end).
- Check that the direction of rotation on the ventilator is correct (see arrow on/by the ventilator).

Check the direction of rotation before the initial start-up and:

- after repair work on the electrical installations;
- after repair work on the electrical system and the electric motor of the compressor;
- if the compressor has been moved to a new location.

6.3 Start – actuation of the compressor

From the factory, the compressor has been set and adjusted to values corresponding to “normal” operation. After actuation, the compressor is precision adjusted according to the actual operating conditions.

- ALL covers/doors have to be fitted correctly before the compressor is started.
- NEVER let the compressor work at a higher pressure and/or temperature that that for which it is intended. The max temperature is 100° C.
- A complete noise reduction can only be obtained when ALL covers/doors are fitted correctly.
- ALWAYS use a hearing protection device - also in connection with adjustment work.

Push the green button to start the compressor. A start delay occurs after power failure. This means that the compressor might start with delay. This delay is indicated with the text “Starting…” in the display. After timer expiration, the compressor starts.

Before start, please read chapter 6.5 User interface.

6.4 Stopping the compressor

The compressor operates automatically and thus starts and stops by itself.

Push the red button to stop the compressor.
Note that the compressor is operating in release before it stops.

Push the EMERGENCY STOP immediately in case of an emergency. This stops the compressor immediately.

6.5 User interface

The user interface consists of a 2*16-character LCD display and a keyboard with seven keys and three LEDs.

These keys are defined as follows:

|

Green – Starts the compressor.

○

Red – Stops the compressor.

SE
RVI

Yellow – Service menu.

ESC

ESC – Moves one-step back or undoes changes.

▽

Arrow down/to the left – moves down/to the left or diminishes a value.

△

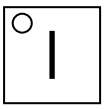
Arrow up/to the right – Moves up/to the right or increases a value.

OK

OK – Enters menus or accepts changes.

6.5.1 The three LEDs are defined as follows:

Start – Green LED.
Stop – Red LED.
Service – Yellow/red LED signals an expired service interval and an alarm respectively.



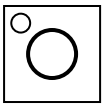
The start LED

There are three operating conditions:

The compressor is on – The green LED at the start button is illuminated.

The compressor produces air – The green LED at the start button blinks rapidly.

The compressor operates in release mode – The green LED at the start button blinks slowly.



The stop LED

There are two operating conditions:

The compressor is off – The red LED at the start button is illuminated.

The compressor is about to stop – The red LED at the stop button blinks slowly.

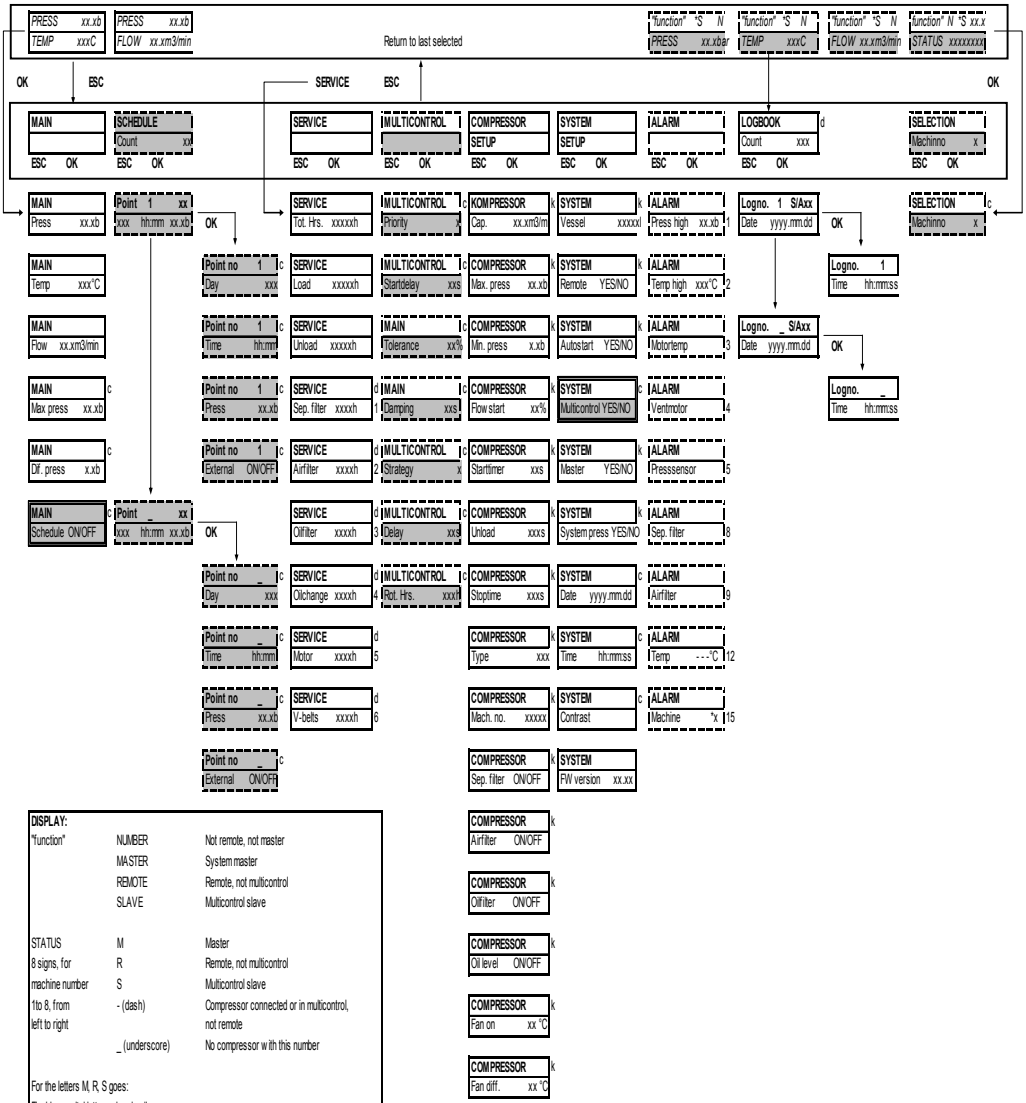
Service LED

Note that this LED has two colours

Service announcement – The yellow LED at the service button blinks slowly.
Accepted service announcement – The yellow LED at the service button is illuminated.

Alarm – The red LED at the service button blinks slowly.

6.6 Menus


PRESS xx.xb
TEMP xxxC
PRESS xx.xb
FLOW xx.xm3/min
Return to last selected
"function" *S N
PRESS xx.xbar
"function" *S N
TEMP xxxC
"function" *S N
FLOW xx.xm3/min
"function" N *S xx.x
STATUS xxxxxxxx
OK
ESC
SERVICE
ESC
OK
MAIN
SCHEDULE
Count xx
SERVICE
MULTICONTROL
COMPRESSOR SETUP
SYSTEM SETUP
ALARM
LOGBOOK
Count xxx
SELECTION
Machinno x
ESC OK
Point 1 xx
xxx hh:mm xx.xb
Point _ xx
xxx hh:mm xx.xb
Point no 1
Day xxx
Time hh:mm
Press xx.xb
External ON/OFF
Point no _
Logno. 1 S/Axx
Date yyyy.mm.dd
Time hh:mm:ss
Logno. _ S/Axx
Main
Press xx.xb
Temp xxx°C
Flow xx.xm3/min
Max press xx.xb
Dif. press x.xb
Schedule ON/OFF
Tot. Hrs. xxxxxh
Load xxxxxh
Unload xxxxxh
Sep. filter xxxxh
Airfilter xxxxh
Oilfilter xxxxh
Oilchange xxxxh
Motor xxxxh
V-belts xxxxh
Priority x
Startdelay xxs
Tolerance xx%
Damping xxs
Strategy x
Delay xxs
Rot. Hrs. xxxxh
Cap. xx.xm3/m
Max. press xx.xb
Mn. press x.xb
Flow start xx%
Starttimer xxs
Unload xxxs
Stoptime xxxs
Type xxx
Mach. no. xxxxx
Sep. filter ON/OFF
Airfilter ON/OFF
Oilfilter ON/OFF
Oil level ON/OFF
Fan on xx °C
Fan diff. xx °C
Vessel xxxxxl
Remote YES/NO
Autostart YES/NO
Multicontrol YES/NO
Master YES/NO
System press YES/NO
Date yyyy.mm.dd
Time hh:mm:ss
Contrast
FW version xx.xx
Press high xx.xb
Temp high xxx°C
Motortemp
Ventmotor
Presssensor
Sep. filter
Airfilter
Temp ---°C
Machine *x
DISPLAY:
"function" NUMBER Not remote, not master
MASTER System master
REMOTE Remote, not multicontrol
SLAVE Multicontrol slave
STATUS M Master
8 signs, for R Remote, not multicontrol
machine number S Multicontrol slave
1to 8, from - (dash) Compressor connected or in multicontrol, not remote
left to right _ (underscore) No compressor with this number
For the letters M, R, S goes:
Flashing capital letter, when loading
Capital letter, when unloading
Small letter, when stopped
Signs after top line indicate data source:
(blank) = Single machine
*S = System pressure
N = Machine number
MENU:
Letter right to point;
(blank) = Only see
c = can alters
k = by service key
d = to default/variable value
Number right to point;
xx = alarm or service code
that is showed in logbook
Standard menu point with variable value
Activated by an alarm
Activates/deactivates by menu point MAIN - schedule
Activates/deactivates by menu point COMPRESSOR SETUP - out temp
Activates/deactivates by menu point SYSTEM SETUP - multicontrol
Activates/deactivates other menu points
OTHER TEXTS:
Start delay
(shows until key press or timer run out)
(Current display)
STARTING...
Only remote (by power-on)
(shows until timer run out [1,3 second])
(Current display)
REMOTE CTRL
No net connection (by power-on)
(shows until net connection)
(Current display)
NET CONNECTION?
Confirmation of net addressers
(shows until key press [ESC/OK])
(Current display)
SET ADDRESSERS?
Confirmation of remote start/stop
(shows until key press [ESC/OK])
(Current display)
CONFIRM?

6.6.1 Menu structure

ESC

▽

△

OK

The compressor has nine menus but only five of them are visible when the compressor is delivered. The remaining menus become visible when they are activated in one of the five menus. The menu SCHEDULE is e.g. not visible unless it has been activated in the OPERATING menu.
In the same way, the ALARM menu is only active, when there is an alarm.
In this way, the menu structure will only provide the operator with the necessary information.

The menu structure works like drop-down menus with submenus placed next to each other.
Press the two arrow keys in the middle to shift between the drop-down menus. Press OK to enter one of the submenus.
Press the two arrow keys in the middle to shift between the drop-down menus. Press OK to change one of the submenus and use the two arrow keys in the middle to make changes in the submenus.
Press OK to accept a change.
Press ESC to move one-step back

MAIN

	Unit		User	Service
MAIN				
MAIN Press	bar	Indicates the actual pressure	☐	☐
MAIN Temp	°C	Indicates actual oil temperature of the compressor.	☐	☐
MAIN Flow	m^3/min	Indicates the immediate air consumption.	☐	☐
MAIN Max press	bar	Indicates the maximal operating pressure, the cut-out pressure.	☑	☑
MAIN Dif. Press	bar	Indicates the differential pressure, the pressure of operation.	☑	☑
MAIN Schedule	on / off	Activates or deactivates the schedule	☑	☑

MAIN

It is used to set operating parameters as e.g. maximum and differential pressure and the current operating values for pressure, flow and temperature are red out.
The SCHEDULE menu is activated in the MAIN menu.

SCHEDULE

	Unit		User	Service
SCHEDULE Count	nn			
POINT 1		Indicates settings of the current point	☐	☐
POINT NO 1 Day	dd	Choice of day for action.	☑	☑
POINT NO 1 Time	hh:mm	Choice of time for action.	☑	☑
POINT NO 1 Pressure	bar	Choice of pressure for action.	☑	☑
POINT NO 1 External	on / off	Choice of action for external.	☑	☑

SCHEDULE

Is only visible if it has been activated in the MAIN menu. It starts and stops the compressor automatically according to a diagram determined by the operator. In the SCHEDULE menu, it is also possible to activate external equipment like e.g. a fan in the compressor room.
The advantage about SCHEDULE is that besides obtaining a fully automated control of the pressure air in connection with e.g. shift work, cost savings are also achieved because the compressor is automatically put on stand-by, when no air is produced.
Thus, an unnecessary production of air due to leakages in the piping system is avoided.

By entering day, time and pressure, the SCHEDULE works so that the compressor can be started or stopped automatically. At the same time, e.g. a fan can be started or stopped by setting EXT=ON/OFF.
The compressor will continue its operation according to the latest time registered by the SCHEDULE until it encounters a new time. This means that it is necessary to inform the compressor about each single pressure change, starting or stopping time.
The compressor is controlled in intervals of one week and then returns to the starting time.

Check that date and time have been set in the SYSTEM SETUP.
Remote start overrules the time schedule.

Example of time schedule:

No	DAY	TIME	PRESSURE	EXT
1	Mon	05:30	0,0 bar	ON
2	Mon	06:00	10,0 bar	ON
3	Mon	15:05	0,0 bar	OFF
4	Tues	05:30	0,0 bar	ON
5	Tues	06:00	10,0 bar	ON
6	Tues	15:05	0,0 bar	OFF
7	Tues	21:30	0,0 bar	ON
8	Tues	22:00	8,5 bar	ON
9	Wed	06:00	10,0 bar	ON
10	Wed	15:05	0,0 bar	OFF

Explanation

1	Monday at 05:30	External equipment is activated, e.g. a fan, the compressor is operating at 0,0 bar.
2	Monday at 06:00	The compressor is started and operates at 10 bar, external equipment is still on.
3	Monday at 15:05	The compressor is set to operate at 0,0 bar, external equipment is turned off.
4	Tuesday at 05:30	External equipment is activated, the compressor operates at 0,0 bar.
5	Tuesday at 06:00	The compressor is started and operates at 10 bar, external equipment is still on.
6	Tuesday at 15:05	The compressor is set to operate at 0,0 bar, external equipment is turned off.
7	Tuesday at 21:30	External equipment is activated, the compressor operates at 0,0 bar.
8	Tuesday at 22:00	The compressor is started and operates at 8.5 bar, external equipment is still on.
9	Wednesday at 06:00	The compressor now operates at 10 bar, external equipment is still on.
10	Wednesday at 15:05	The compressor is set to operate at 0 bar, external equipment is turned off.

The last admission applies until a new one is made or the SCHEDULE function is deactivated.
In connection with e.g. holidays, the SCHEDULE is deactivated in the OPERATING menu.
When the holiday is over, the SCHEDULE is activated again. All the points will still be registered which means that it is not necessary to enter start and stop again.
To delete a point, DAY is set = OFF. 0,0 bar stops the compressor.

In MULTI CONTROL, the SCHEDULE for the entire system is set to the MASTER.

Register your own time table below.

	DAY	TIME	PRESSURE	EXTERNAL
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

SERVICE

The service codes shown in the LOG BOOK correspond to their location in the SERVICE menu.

	Unit	Code		User	Service
SERVICE					
SERVICE Tot. hours	hours		Indicates the total amount of hours consisting of load and unload hours.	☐	☐
SERVICE Load	hours		Indicates the total load hours.	☐	☐
SERVICE Unload	hours		Indicates the total unload hours.	☐	☐
SERVICE Sep. filter	hours	S01	Indicates the remaining durability of the separator filter.	☐	☑
SERVICE Air filter	hours	S02	Indicates the remaining durability of the air filter.	☐	☑
SERVICE Oil filter	hours	S03	Indicates the remaining durability of the oil filter.	☐	☑
SERVICE Oil change	hours	S04	Indicates the remaining hours to oil change.	☐	☑
SERVICE Motor	hours	S05	Indicates the remaining hours to lubrication of bearing.	☐	☑
SERVICE V-belts	hours	S06	Indicates the remaining durability of V-belts.	☐	☑

SERVICE

Monitors the compressor in connection with service intervals for key components and spare parts.
The compressor issues a service announcement for e.g. renewal of separator filters or v-belts and for motor lubrication.

The service announcement is saved in the LOG BOOK.

Service is carried out according to the below diagram. In particularly dirty environments, service is carried out more often.

Type service	Separator filter	Air filter	Oil filter	Oil change	V-belt change	
SP20 - 150	3.000	3.000	3.000	3.000	3.000	Hours
	Suction valve	Minimum pressure valve	Thermostatic valve	Safety valve		
SP20 - 25	9.000	9.000	9.000	9.000	See chapter 8.21	Hours
SP30 - 150	9.000	9.000	9.000	9.000	See chapter 8.21	Hours

MULTI CONTROL

	Unit		User	Service
MULTI CONTROL				
MULTI CONTROL Priority	nn	Is used to assign priorities to the compressors. Is not used in connection with energy control.	☑	☑
MULTI CONTROL Start delay	sec.	Delays start-up so more compressors do not start at the same time.	☑	☑
MULTI CONTROL Tolerance	%	Allows tolerance deviation from the maximum pressure for a shorter period of time.	☑	☑
MULTI CONTROL Dampening	sec.	Is the period, which allows deviation from the maximum pressure.	☑	☑
MULTI CONTROL Strategy	rot. / energy	Is used to choose operation. Energy, rotation or priority.	☑	☑
MULTI CONTROL Delay	sec.	Is the waiting period for pressure changes before a new decision is made.	☑	☑

MULTI CONTROL

Is used if it is desired to control more compressors as one unit in a compressed-air installation. It is only visible if it has been activated in the SYSTEM SETUP menu.
By default, the compressor is able to control itself and up to seven additional compressors. This is used in situations where all compressors in an installation should be uniformly worn or to make sure that the compressor(s) most suitable for the current air consumption is activated, thus avoiding an unnecessary consumption of energy.
Extra equipment can be bought if the other compressors are not from the SP Range.
The master can only be a compressor from the SP Range.

6.6.2 Multi control

In MULTI CONTROL, it is possible to choose three different ways of controlling the individual compressors.

Priority control

If the basic consumption is well-defined and if the peak consumption varies, priority control could be an advantage.

The compressors start in priority, and thus the compressor with the highest priority (lowest number) is started first.

Rotation – Priority rotation

If more compressors have the same size and they have to be uniformly worn, the use of rotation control could be an advantage.

Within each priority class, the compressors rotate according to a regular interval of typically 24 hours. The hours are regulated according to operating hours not “clock hours”. If two machines move more than two times the interval apart, the starting sequence is changed.

The interval counts down when the machine is running.

Example of priority rotation:

COMPRESSOR	SP75	SP75	SP30	SP30	SP30
PRIORITY	1	1	2	2	2
START AS	No.1	No.2	No.3	No.4	No.5
AFTER 24 HOURS	No.2	No.1	No.5	No.3	No.4
AFTER 48 HOURS	No.1	No.2	No.4	No.5	No.3
AFTER 72 HOURS	No.2	No.1	No.3	No.4	No.5
AFTER 96 HOURS	No.1	No.2	No.5	No.3	No.4

Energy control

If the compressors vary in size and have fluctuating consumption, the use of energy control could be an advantage.

The compressors are started according to their current air consumption.
The control takes its starting point from the capacity/time of the individual compressor.

During operation, a pressure drop will occur as a consequence of the air consumption in the system.
When the system pressure falls below the minimum pressure, all deactivated compressors and idle-running compressors are run through.

The control chooses the compressor or the combination of compressors that correspond to or is bigger than the consumption.
Frequency controlled compressors have first priority.

Example of starting sequence:

Consumption/Cap.	6 m3/min	8 m3/min	2-4 m3/min
1 m3/min			X
4 m3/min			X
5 m3/min	X		
9 m3/min	X		X
11 m3/min		X	X
13 m3/min	X	X	
16 m3/min	X	X	X

In connection with a sudden consumption rise, which exceeds 10% of the total capacity of the compressors currently running, the control also makes sure that the production of air is started before the minimum pressure has been reached, thus avoiding a lack of air.

Fore more information, see the appendices “System setup” and “Guidance to satellite control unit”.

10 % -rule

Makes sure that no extra compressor is started up, if there is small air consumption.

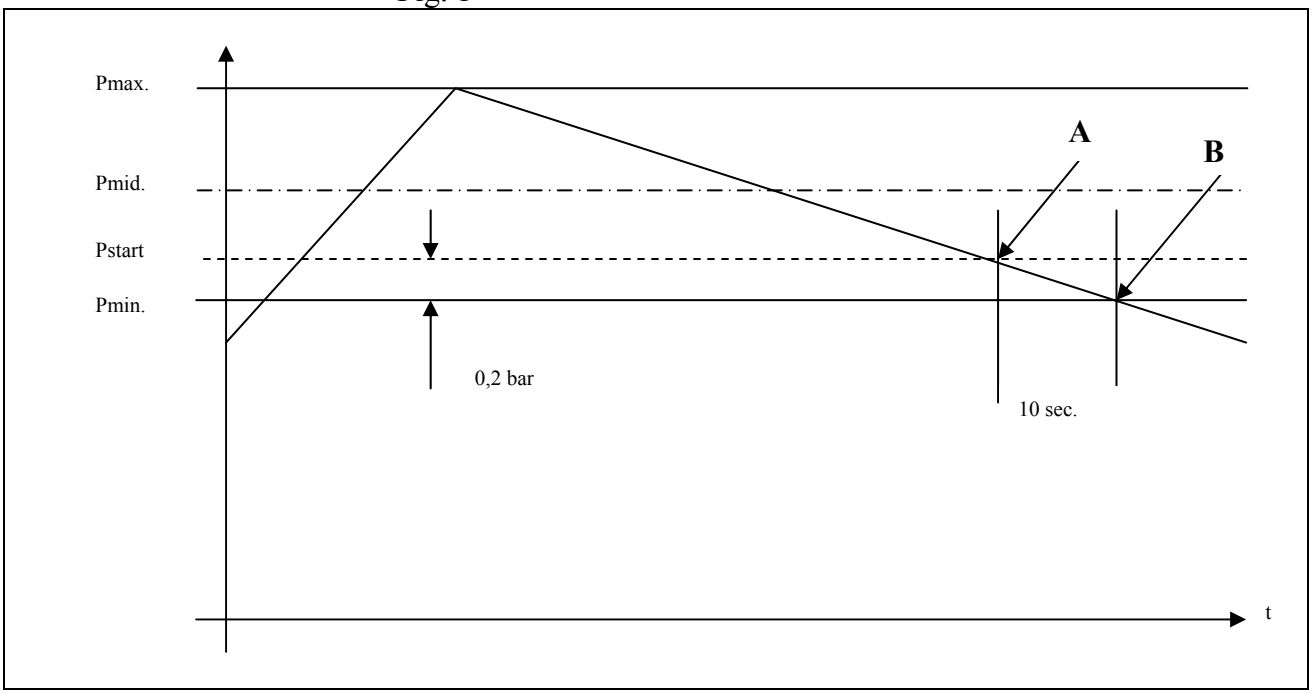
If the air consumption is less than 10 % of the total capacitate, of all the running compressors, no additional compressors is started, unless Pstart is reach. This is so, that no compressors and started and then stopped again after a few seconds.

Pstart / Pstop

Pstart and Pstop are variable limits in the controller used for providing a more smooth operation and ensuring that the pressure does not fall below Pmin.

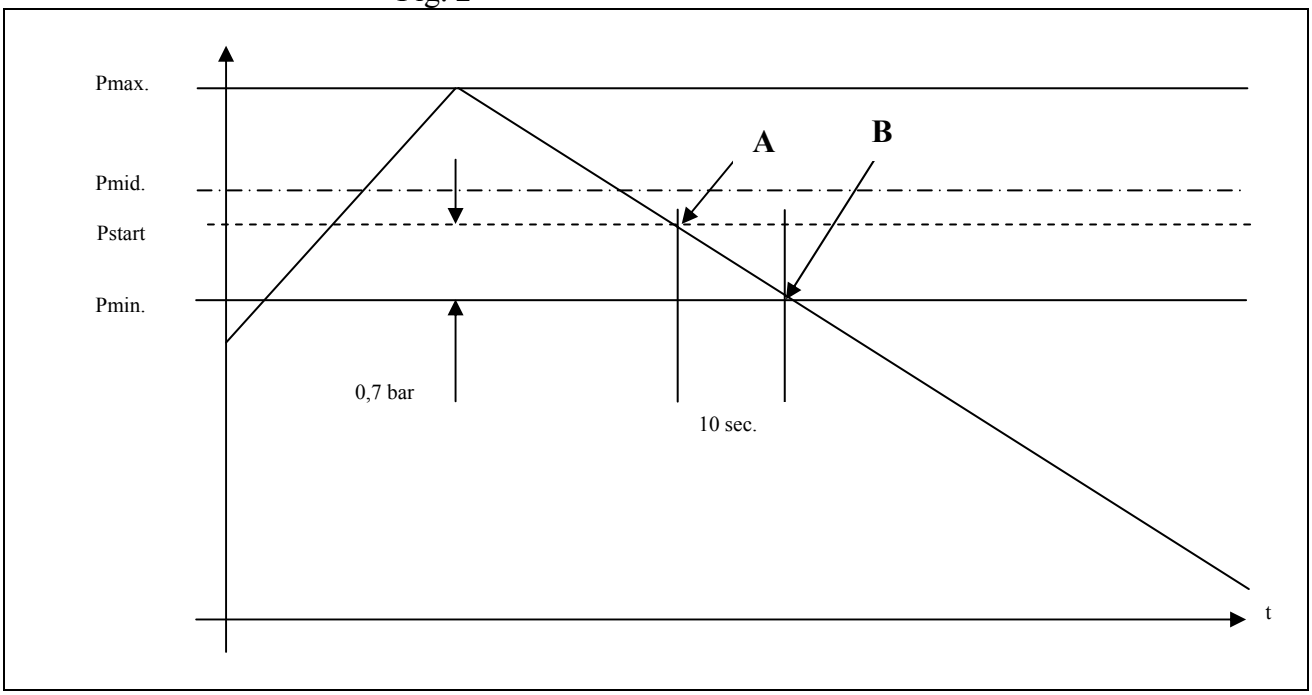
Pstart is a starting time, calculations based on the current flow/pressure drop.
Starting time: From point A, it takes the pressure 10 sec. to reach point B, i.e. Pmin, see fig. 1

Fig. 1



In connection with a large flow/consumption, the Pstart limit will move up the pressure curve, which means that the compressors will start earlier, see fig. 2

Fig. 2



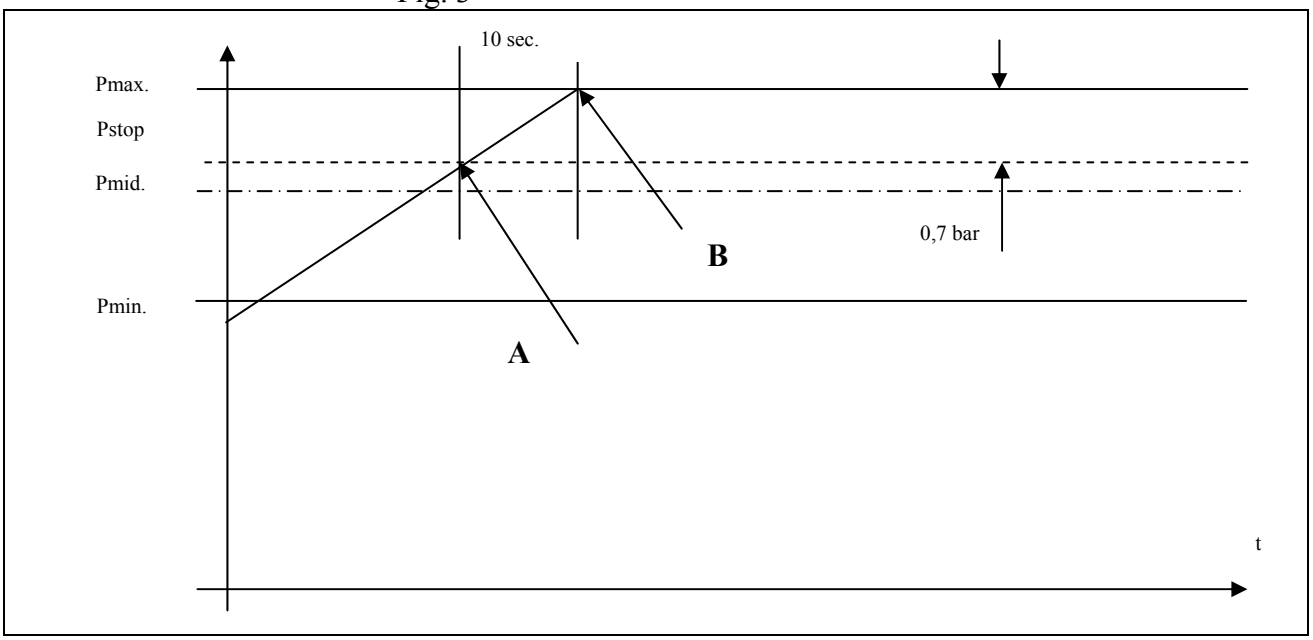
Example 1.

At a flow of 2 m^3/min. Pstart could be 0,2 bar above Pmin (see fig. 1) and at a flow of 4.5 m^3/min. Pstart could be 0.7 bar above Pmin (see fig. 2). The Pstart limit however, can never be above Pmid. Pmid = $\frac{P\max + P\min}{2}$

Pstop works contrary to Pstart, which means that in connection with a large flow, the compressor that was started the latest stops closed to Pmax and in connection with a small flow, the compressor is stopped earlier. It will however, never be possible to stop it below Pmid.

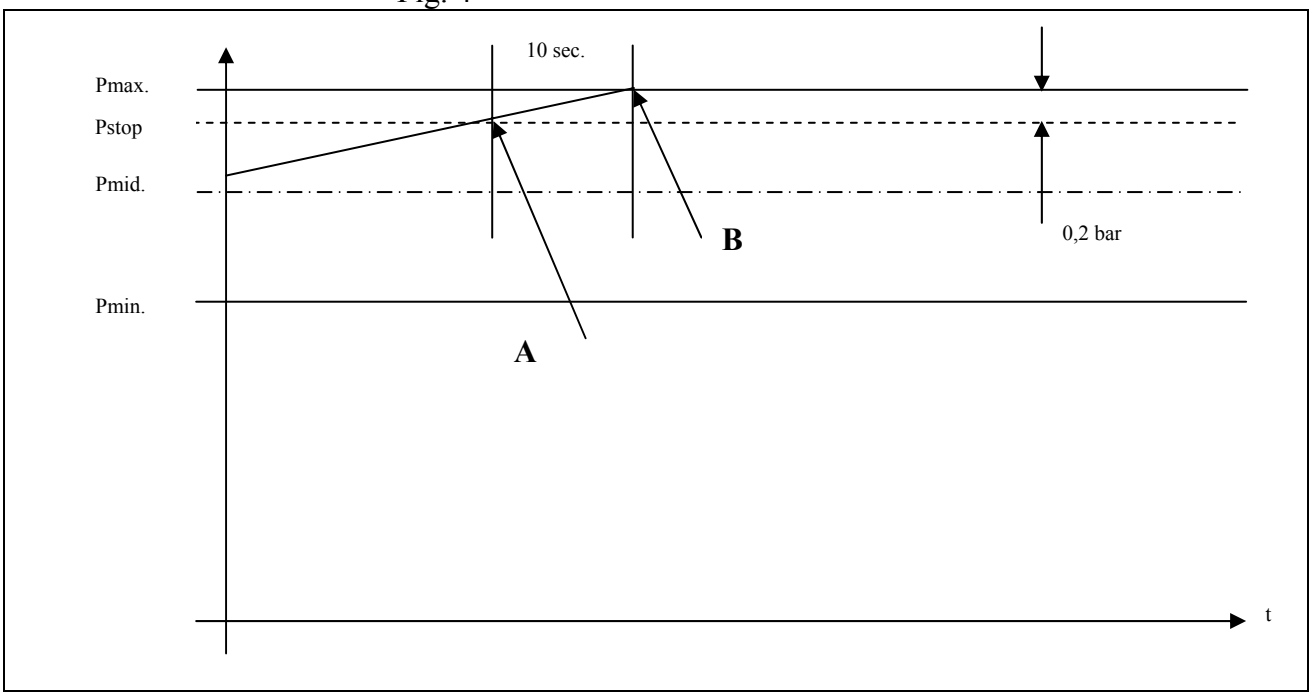
Pstop is a stopping time, calculated based on the current flow/pressure rise.
Stopping time: From point A, it takes the pressure 10 sec. to reach point B, i.e. Pmax, see fig. 3

Fig. 3



In connection with a small flow/consumption, the Pstop limit will move up the pressure curve, thus stopping the compressors later, see fig. 4

Fig. 4



Example 2.

At a flow of 2 m^3/min. Pstop could be 0.7 bar below Pmax (see fig. 3) and at a flow of 4.5 m^3/min. Pstop could be 0.2 bar below Pmax (see fig. 4). The Pstop limit however, can never be below Pmid. Pmid = $\frac{P\max + P\min}{2}$

COMPRESSOR SETUP

	Unit		User	Service
COMPRESSOR SETUP				
COMPRESSOR SETUP Cap.	m^3/min	Indicates the capacity of the relevant compressor.	☐	☑
COMPRESSOR SETUP Max press	bar	Indicates the upper safety limit of the compressor.	☐	☑
COMPRESSOR SETUP Min. press	bar	Indicates the lower safety limit of the compressor.	☐	☑
COMPRESSOR SETUP Flowstart	%	Indicates how much of the compressor's capacity the consumption has to exceed in order for the compressor to start before the minimum pressure has been reached (is not used in connection with multi control) FLOW START can be deactivated.	☐	☑
COMPRESSOR SETUP Start timer	sec.	Indicates the star time before change to delta.	☐	☑
COMPRESSOR SETUP Unload time	sec.	Indicates the minimum period of time the compressor needs to unload the separator vessel.	☐	☑
COMPRESSOR SETUP Stop timer	sec.	Indicates a safety interval for number of motor start/hour.	☐	☑
COMPRESSOR SETUP Type	nn	Indicates the compressor's size in HP.	☐	☑
COMPRESSOR SETUP Machine no.	nn	Indicates the serial number of the compressor.	☐	☑

COMPRESSOR SETUP

Contains the standard values for the individual machine.
The machine number is also placed in this menu.

COMPRESSOR SETUP Sep. filter	on / off	Indicates monitoring of the separator filter on SP125-150	☐	☑
COMPRESSOR SETUP Air filter	on / off	Indicates monitoring of the air filter. (standard)	☐	☑
COMPRESSOR SETUP Fan on	°C	Turns on the ventilator for cooling of oil and air.	☐	☑
COMPRESSOR SETUP Fan dif.	°C	Indicates the ventilator's difference, i.e. cooling area.	☐	☑

SYSTEM SETUP

	Unit		User	Service
SYSTEM SETUP				
SYSTEM SETUP Vessel	litre	Indicates the volume of the first receiver.	☐	☑
SYSTEM SETUP Remote	on / off	Allows the compressor to be started by a remote control.	☑	☑
SYSTEM SETUP Multi control	on / off	Activates the multi control function.	☑	☑
SYSTEM SETUP Master	on / off	Assigns the system control to this compressor.	☐	☑
SYSTEM SETUP System press	on / off	Indicates if the compressor has a system pressure transmitter in the first receiver.	☐	☑
SYSTEM SETUP Date	yy.mm.dd	Indicates date.	☐	☑
SYSTEM SETUP Time	hh:mm:ss	Indicates time.	☐	☑
SYSTEM SETUP Contrast		Is used to set the light intensity of the display.	☐	☑
SYSTEM SETUP FW version	nn.nn	Indicates the software version of the controller.	☐	☐

SYSTEM SETUP

Is used to specify the values for the system in which the compressor works, e.g. receiver volume. The menu is also used to determine if the compressor has to work in multi control mode, or if it should be started by remote control, etc.
In the SYSTEM SETUP menu, the real time watch of the compressor is set and the contrast in the display can be changed.

The software version can also be found here.

6.6.3 Remote start

Remote control on the main card can be used if the machine is to be started by means of a remote control. The input terminal works so that the compressor stops if the connection is opened and starts if the connection is closed. This switch is potential free.

Set REMOTE CONTROL in SYSTEM SETUP to YES.

Place the remote start button on the master, which will activate the entire system in cases of multiple compressors operating in multi control.

Remote start overrules the SCHEDULE.

ALARM

	Code	Type		User	Service
ALARM					
ALARM Press. High	A01	Stop	Operating/system pressure too high.	☐	☐
ALARM Temp high	A02	Stop	Oil temperature too high.	☐	☐
ALARM Motor temp	A03	Stop	Electric motor overstressing.	☐	☐
ALARM Vent motor	A04	Stop	Fan motor overstressing.	☐	☐
ALARM Press. sensor	A05	Stop	Defect or missing pressure transmitter.	☐	☐
ALARM Sep. filter	A08	Warning	Clogged separator filter.	☐	☐
ALARM Air filter	A09	Warning	Clogged air filter.	☐	☐
ALARM Temp	A12	Stop	Defect or missing temperature sensor.	☐	☐
ALARM External	A15	Warning	Alarm on external equipment.	☐	☐
ALARM Machine no	A16	Warning	The master indicates which compressor (2-8) is defective.	☐	☐

ALARM

In the ALARM menu, alarm codes for possible failures or exceeded operation values can be seen.
Like the other menus, besides the five standard menus, the ALARM menu is only visible in case of an alarm.

Warning:

Errors there not immediately endanger compressor or its personnel. An indication is given, but the compressor is not stopped.

Stop:

Errors there immediately endanger compressor or its personnel. An indication is given and the compressor is stopped.

Alarms are saved in the LOG BOOK.

6.6.4 Remote alarm

If a remote alarm from the compressor to e.g. a rotor blink or a horn is desired, the alarm on the main card can be used. This switch is potential free.
In this case, the connection is opened when an alarm appears on the machine.

LOG BOOK

		Unit		User	Service
LOG BOOK Count		nn			
LOG NO Date		yy:mm:dd	Indicates type of alarm and date on which it accrued.	☐	☑
	LOG NO Time	hh:mm:ss	Indicates type of alarm and time on which it accrued.	☐	☑

LOG BOOK

Is used to monitor the compressor operation for longer periods of time in connection with service and alarms.
In this way, it is possible to see any alarms or service codes together with the time and date of their occurrences.

Alarm code A indicates an alarm and code S indicates that service has been carried out. See passage ALARM and SERVICE

MACHINE SELECTION

	Unit		User	Service
MACHINE SELECTION Machine no	nn			
MACHINE SELECTION Machine no	nn	Chooses a compressor that is connected to a master.	☑	☑

MACHINE SELECTION

Is only visible when MULTI CONTROL has been activated in the SYSTEM SETUP menu. The menu is used in connection with the multi control mode.
From a MASTER it is possible too see data of all attached controls which means that monitoring and programming the entire system can take place from one machine.
The compressors are assigned numbers according to their location in the piping system.
Through this menu, it is possible to enter or alter the menus of the other machines from the keyboard on the MASTER.

The MASTER can only be a compressor from the SP Range.

7 ELECTRICAL DOCUMENTATION

7.1 Wiring diagrams

See the wiring diagrams supplied with the compressor.
Always use the wiring diagram supplied with the compressor.

Be aware that the data of the supplied wiring diagram only applies to this compressor type.

In connection with other voltage supplies, e.g. 230 V or frequency inverter, a special wiring diagram is supplied.

Note that the attached wiring diagram is general for all sizes of this compressor type

8 MAINTENANCE

8.1 General

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

If repairs or service requires that the compressor is running, make sure:

- that there are no persons in the vicinity of the compressor;
- that the work wear necessary for the task is worn and that this is not loose.
- to inform the surroundings on the potential risk (e.g. blow down on safety valve, removed protective devices, etc.).
- to put up a warning sign with the text “Servicing – operating compressor”.

When the work has been completed, make sure:

- that a test-run on the compressor has been carried out;
- that the safety devices are mounted correctly;
- that potentially dangerous materials are packed, handled and disposed of correctly.

8.2 Cleaning the prefilter

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the prefilter is to be clean at service or as minimum once a year. If necessary, clean the prefilter as needed.
The standard primary filter mounted on the compressor can be removed and cleaned in a light sulphonated solution.
NEVER use solvents or other chemicals for the cleaning.
Before reassembling, the filter must be completely dry.

Use only suitable tools on the compressor.

8.3 Cleaning the cooler

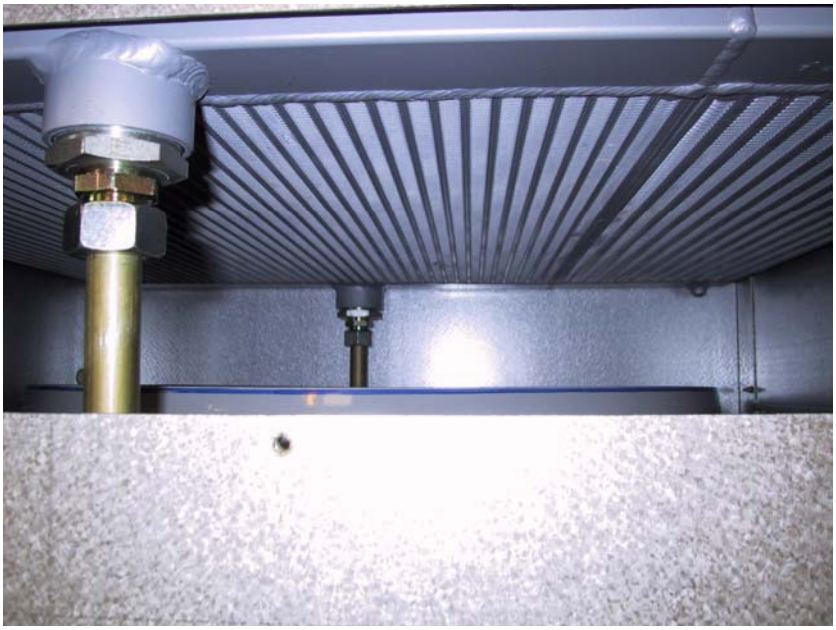
BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the cooler is to be clean for dust and dirt at service or as minimum once a year. If necessary, clean the cooler as needed.
There is easy access to the cooler when the front cover is opened and the inspection covers on the ventilator box are removed.

Oil or fat solvents may be used.

Note; the compressor and the cooler are very hot.

Use only suitable tools on the compressor.



8.4 Electrical connections and operations

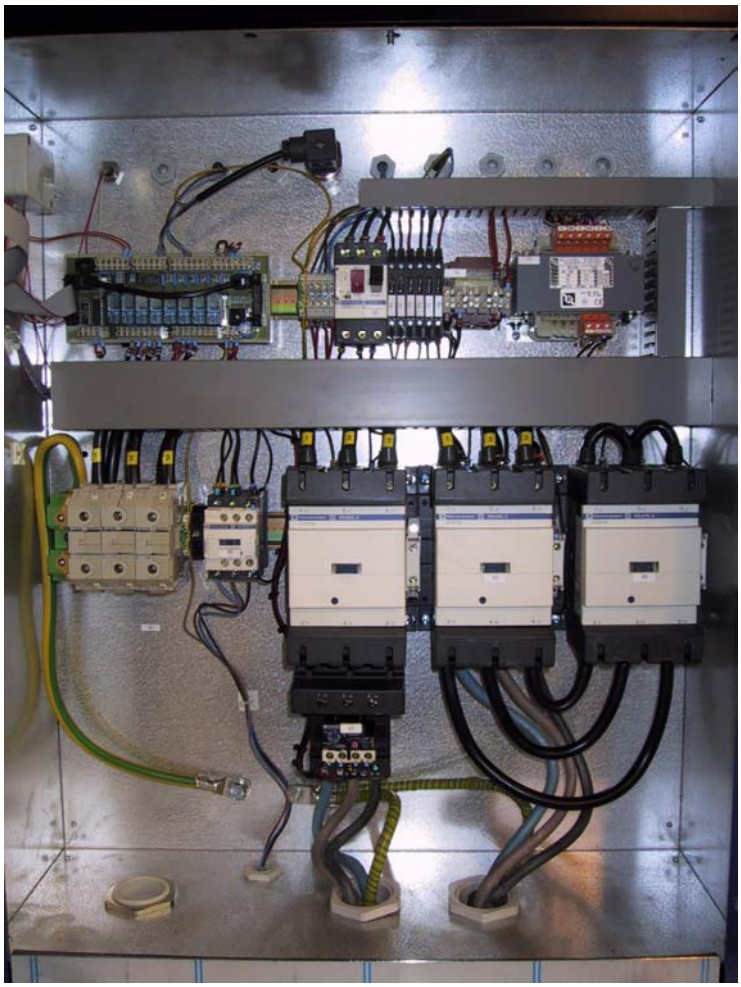
BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the electrical equipment is to be clean at service or as minimum once a year. If necessary, clean the electrical equipment as needed.
Keep the electrical equipment on the compressor free from dirt and dust.

Check and if necessary tighten all electrical connections.

Test the performance of the start/stop function and the emergency stop device.

Use only suitable tools on the compressor.



8.5 Periods of inactivity

If the compressor has to be stopped for a longer period of time, you have to observe the following:

- Close the isolation valve between the compressor and the air system.
- The compressor has to be without pressure.
- Supply switch disconnected and locked.

If the compressor is not operating for longer periods of time (> three months) the instructions in chapter 6.2 Before start-up should be followed before actuation.

8.6 Oil level

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

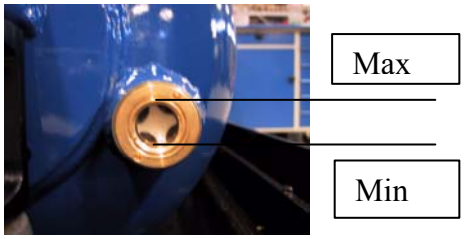
To ensure the optimum operating of the compressor, the oil level has to be check often (approx. once a week). If necessary, check the oil level more often.

Check the oil level as follows:

Stop the compressor by pressing the red button and wait for approx. ten minutes for the foam to disappear. See if necessary chapter 8.7 Changing the oil

Note; the compressor runs unload before stopping. The compressor and the separator vessel are very hot.

Make sure that the oil is in the middle/at the top of the oil inspection glass. Refill oil if this is not the case.



Refill diagram:

	Litres from min to max
SP20	1,2
SP25	1,4
SP30	1,8
SP40	2,3
SP50	4,6
SP60	5,1
SP75	6,0
SP100	10,9
SP125	12,8
SP150	15,5

Note that the compressor should never be overfilled.
Make sure that there is no internal pressure in the compressor before the filler plug is removed.

In connection with installation near the sea or in chemical atmospheres, the oil properties may be damaged due to the presence of e.g. chlorine (salt) or other chemicals.

Contact your local authorized STENHØJ distributor if this is the case.

8.7 Changing the oil

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

The supplied oil lubricates all parts of the compressor, thus making additional lubrication of the compressor unnecessary. Motor bearings, however, should be lubricated, see chapter 8.21 Motor bearings with lubricating nipples.

To ensure the optimum operating of the compressor, the oil has to be changed after 3000 hours or as minimum once a year. If necessary, change the oil as needed.

Note; that the oil and the separator vessel are very hot during operation and the tapping of oil presents a burning hazard.

1. Start the compressor by pressing the green button, to build up pressure in the separator vessel.
2. Stop the compressor by pressing the red button.
3. Close the small ball valve on the inlet valve. See fig. 1 – ref. 1 for SP20-75, fig. 1.1 – ref. 1 for SP100-150. This is to keep pressure in the separator vessel..

NOTE; moving parts

Fig. 1

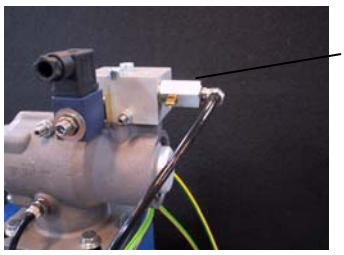
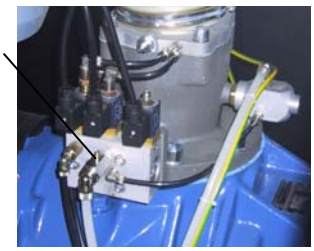


Fig. 1.1

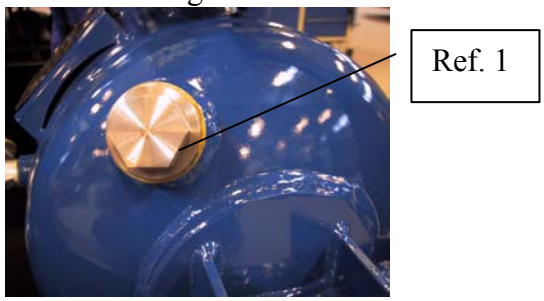


4. Wait for the compressor to stop. Activate the emergency stop.
5. Remove ¾” plug from the large ball valve on the side of the separator vessel. See fig. 2 – ref. 1

Fig. 2

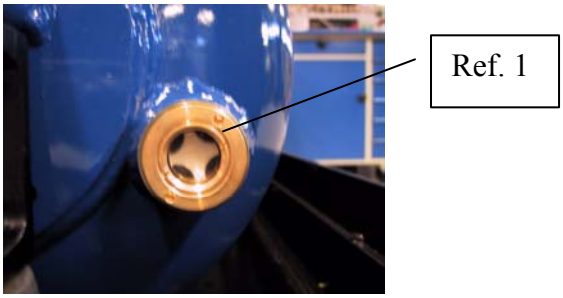
6. Mount a ¾" hose and tap the oil out by opening the large ball valve. See fig. 2 – ref. 2. The pressure in the separator vessel presses the oil out.
7. After tapping the oil, close the large ball valve (fig. 2 – ref. 2) and remove the hose.
8. Mount ¾" plug in large ball valve (fig. 2 – ref. 1) and open for the small ball valve on the inlet valve. (fig. 1 – ref. 1 for SP20-75, fig. 1.1 – ref. 1 for SP100-150)
9. Remove the oil refill plug from the separator vessel. See fig. 3 – ref. 1

Fig. 3



10. Refill the separator vessel with STENHØJ oil, to the top of the oil sight glass. See fig. 4 – ref. 1

Fig. 4



11. Remount the oil refill plug on the separator vessel (fig. 3 – ref. 1) release the emergency stop and start the compressor by pressing the green button.
12. Stop the compressor after aprox. five minutes of load, by pressing the red button.
13. Wait approx. ten minutes and check the oil level. (fig. 4 – ref.1). Repeat if necessary step 9 to 10.

Note; After operating the compressor, there is pressure in the separator vessel.

Always dispose of oil according to local environmental regulations.

ONLY USE A SUITABLE OIL FOR THE COMPRESSOR

Refer to T81377 "oil specification" which is supplied with the compressor, when choosing the correct lubricant.

Use only suitable tools on the compressor.

8.8 Oil consumption

Note the amount of oil used to fill the compressor in the maintenance check sheet.
Note also if the oil brand is being changed.

Date	Initials	Remarks

8.9 Changing the oil brand

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

Only use a suitable oil for the compressor (see oil specification T81377).

When the oil brand is changed, the entire oil system has to be “flushed out”. Tap the old oil and refill with a new one. Let the compressor operate on full load for approx. 10 minutes. See chapter 8.7 Changing the oil
Tap the oil again, change the oil and the separator filter and refill with a new oil. See chapter 8.10 Oil filter and 8.12 Separator filter for information on changing the parts.

Note that the oil brand has been changed in the maintenance check sheet.

Dispose of the oil, the oil and the separator filter according to local environmental regulations.

8.10 Oil filter

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the oil filter has to be changed after 3000 hours or as minimum once a year. If necessary, change the oil filter as needed.

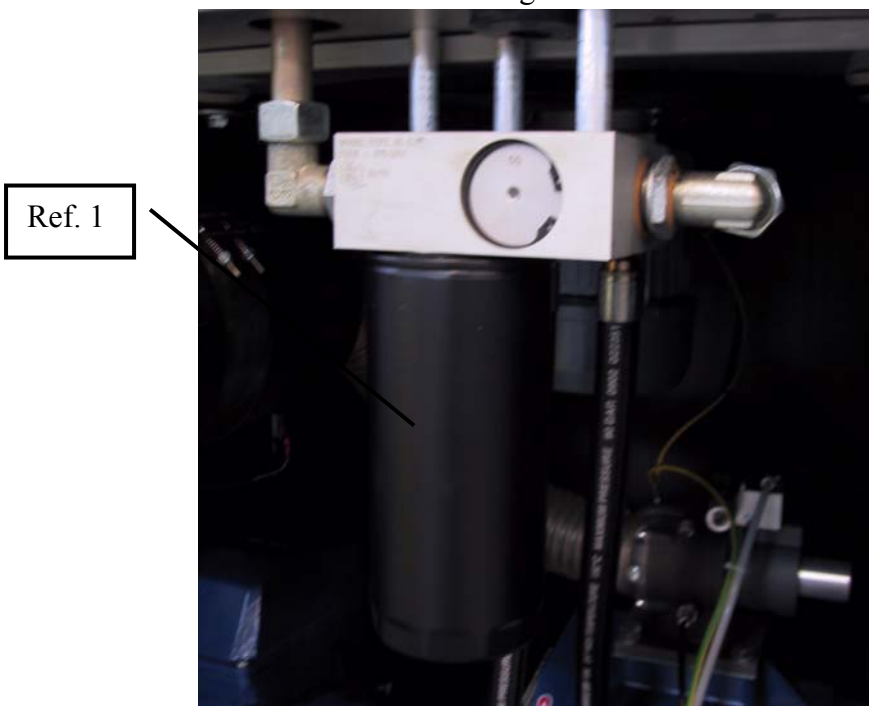
1. Stop the compressor by pressing the red button and make sure there is no internal pressure in it.

2. Remove the old oil filter (by means of a filter key). See fig. 5 – ref. 1

3. Apply a thin layer of oil to the seal of the new filter and mount the filter. Turn the filter clockwise until “contact”. Then turn the filter ¾ of a round manually. The filter has now been correctly mounted.

Use only suitable tools on the compressor.

Fig. 5



Note; the compressor and the oil filter are very hot.

Check the compressor for any leakages after start-up.
Always dispose of residual oil and oil filters according to local environmental regulations.

8.11 Air filter

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the air filter has to be changed after 3000 hours or as minimum once a year. If necessary, change the air filter as needed

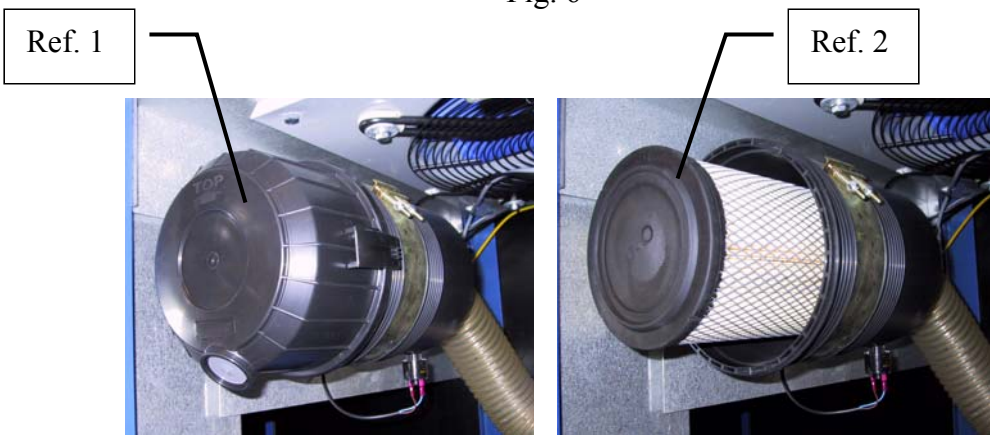
1. Stop the compressor by pressing the red button and make sure there is no internal pressure in it.

2. Remove the air filter, after removing the filter cover. See fig. 6 – ref. 1

3. Replace air filter (fig. 6 – ref. 1) and mount filter cover.

Use only suitable tools on the compressor.

Fig. 6



Note; the compressor and the oil filter are very hot.

Dispose of the air filter according to local environmental rules.

8.12 Separator filter

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the separator filter has to be changed after 3000 hours or as minimum once a year. If necessary, change the separator filter as needed

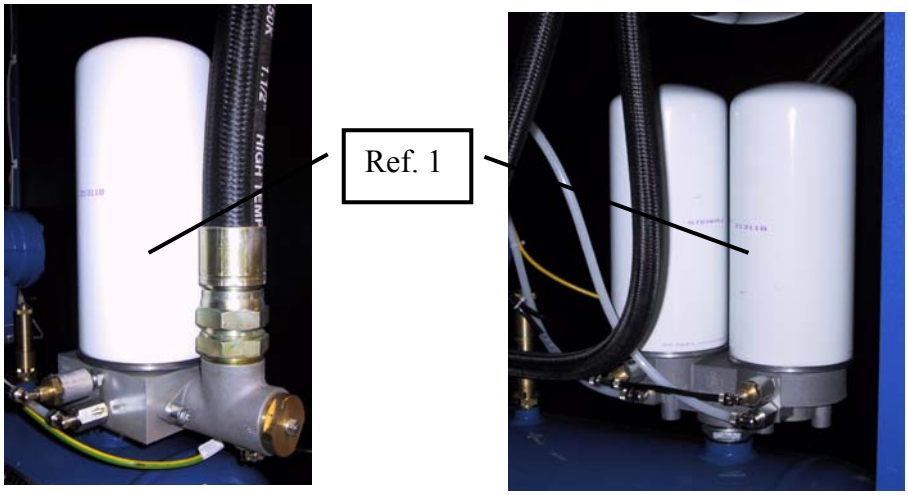
SP20-100:

1. Stop the compressor by pressing the red button and make sure there is no internal pressure in it.

2. Remove the old separator filter (by means of a filter key). See fig. 7 – ref. 1

3. Apply a thin layer of oil to the seal of the new filter and mount the filter. Turn the filter clockwise until “contact” is felt. Then turn the filter ¾ of a round manually. The filter has now been correctly mounted.

Fig. 7



SP125-150:

1. Stop the compressor by pressing the red button and make sure there is no internal pressure in it.

2. Remove hoses and cables from the separator vessel and the MPV. See fig. 7.1

3. Loosen bolts and remove the flank with the MPV from the separator vessel. Caution; be aware of the pipe for the drain line.

4. Replace the old separator filter with a new.

5. Place the flank with the MPV on the separator vessel. Caution; be aware of the pipe for the drain line.

6. Cross tighten the bolts on the flank with torque. See chapter 8.24 Bolt tightening

7. Mount hoses and cables on the separator vessel and the MPV.

Fig. 7.1

Note; the compressor, separator vessel and the filter are very hot.

Check the compressor for any leakages after start-up.

Always dispose of residual oil and separator filters according to local environmental regulations.

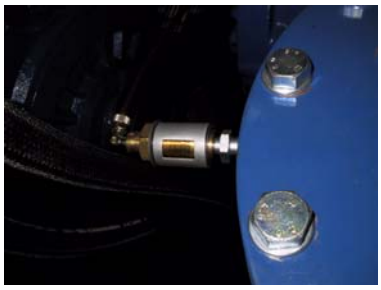
Use only suitable tools on the compressor.

8.13 Drain filter

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

The primary task of the drain filter is to remove the rest oil from the separator filter.

To ensure the optimum operating of the compressor, the drain filter has to be changed after 9000 hours or as minimum every third year. If necessary, change the drain filter as needed.



8.14 V-Belts

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the drain filter has to be changed after 9000 hours or as minimum every third year. If necessary, change the drain filter as needed.

1. Stop the compressor by pressing the red button and make sure that there is no internal pressure in it.

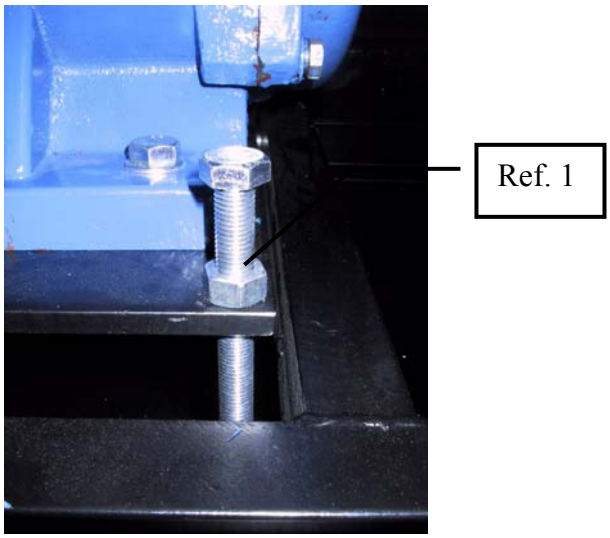
2. Lift the motor by fastening the bolt from the transportfastene to the base frame. See fig. 8 – ref. 1

3. When the motor is lifted, the V-belts can be easily mounted and removed.

4. Check the pulleys for wear and parallelism.

5. Lower the motor to its usual place. Make sure that there is room below the bolt, even when the belts are in position. Fasten the counter nut to secure the bolt.

Fig. 8



Note; the compressor and the pulleys are very hot.

Always dispose of residual oil and separator filters according to local environmental regulations.

Use only suitable tools on the compressor.

8.15 Parallelism of pulleys

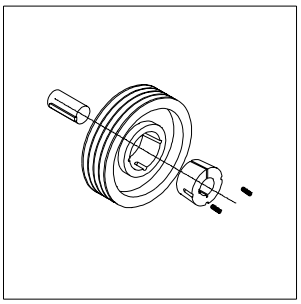
BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

The pulleys on the motor and the air end have to be completely parallel to ensure an optimum belt drive and an optimum durability of the V-belts.
Please contact your local authorised STENHØJ service engineer who will assist you in doing this.

Adjusting the pulleys:

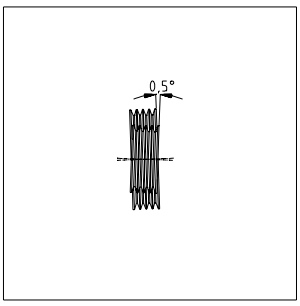
To ensure the durability of the V-belts, it is important that the parallelism between the two pulleys is optimum at all times. For this reason, it is very important to check the belt drive for both mounting, tightening and maintenance according to the provided guidelines. All belt drives have been dimensioned to last for 3.000 problem-free operating hours, but the durability also depends on the above mentioned.
The placing of the motor has been adjusted so that the motor weight ensures a constant and correct belt tension.

Pulleys for V-belts with a TB-taper lock:



Clean the axle, taper lock and cone in the pulley, oil the cone and the Allen screw.
Hang the pulley on the axle and mount the taper lock.
Turn the disc until its tap holes fit the smooth holes in the taper lock.
Insert the Allen screws and tighten them in a way that allows the pulley to be moved on the axle.

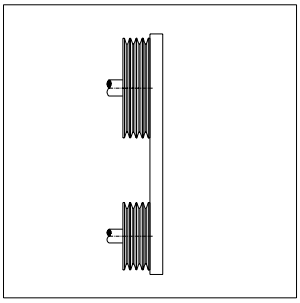
Horizontal alignment of axles:



Align the motor and the installation axle until they are parallel, use a level if necessary.

NOTE! The maximal deviation from a 100% parallelism is 0.5°.

Vertical alignment of pulleys for V-belts:



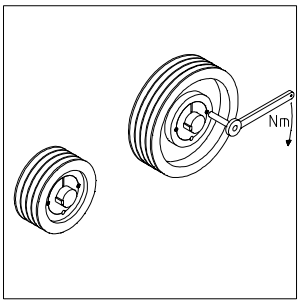
Align the pulleys for V-belts until the exterior of the pulleys flush with the straightedge.

Note; that alignment of the pulleys should be carried out by adjusting the axle placing in the adjusting ring the end of the motor.

NOTE! Check that the V-belts still flush when the pulleys has been fastened.

Note; that the below mentioned torques have to be fastened systematically three times.

TB-torques:



Pulley type	Min	Max	
TB 1008 + 1108	4,5	5,7	NM
TB 1210 + 1215	16	20	NM
TB 1310 + 1315	16	20	NM
TB 1610 + 1615	16	20	NM
TB 2012 + 2017	25	31	NM
TB 2517 + 2525	39	49	NM
TB 3020 + 3030	74	92	NM
TB 3525 + 3535	92	115	NM
TB 4030 + 4040	138	172	NM
TB 4535 + 4545	156	195	NM
TB 5040+ 5050	220	275	NM

8.16 Inlet valve

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the inlet valve has to be serviced after 9000 hours or as minimum every third year. If necessary, service the inlet valve as needed.

1. Stop the compressor by pressing the red button and make sure that there is no internal pressure in it.
2. Remove hoses and cables from the inlet valve.
3. Loosen the bolts and remove the suction valve from the air end.
4. Cover the air end to prevent foreign bodies from getting into the rotors.
5. See fig. 9, fig. 9.1 and fig. 9.2 over inlet valve for details.
6. Brush a lean grease on the sliding surfaces, e.g. CASTROL MOLYLAX or a similar molykote product. Reassemble in reverse order.
7. Reassemble the inlet valve on the air end.
8. Reassemble hoses and cables on the inlet valve.

Note; the compressor and the inlet valve are very hot.

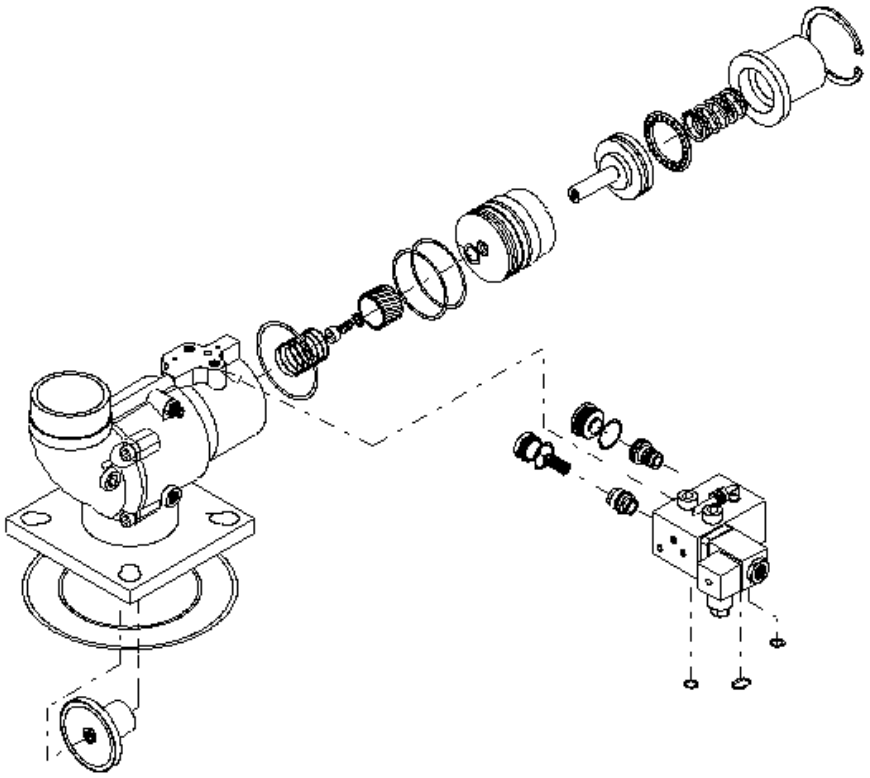
Finally, the compressor performance is tested.

A service kit is available for all suction valves.

Type\part No	760021	760022	760023
SP20-30	X		
SP40-75		X	
SP100-150			X

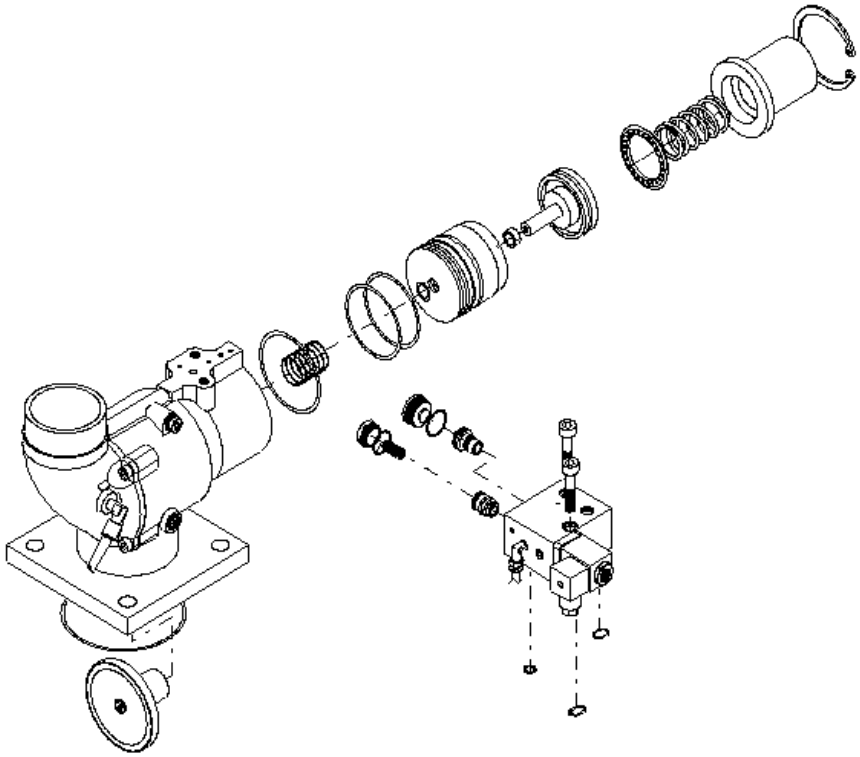
SP20-30

Fig. 9



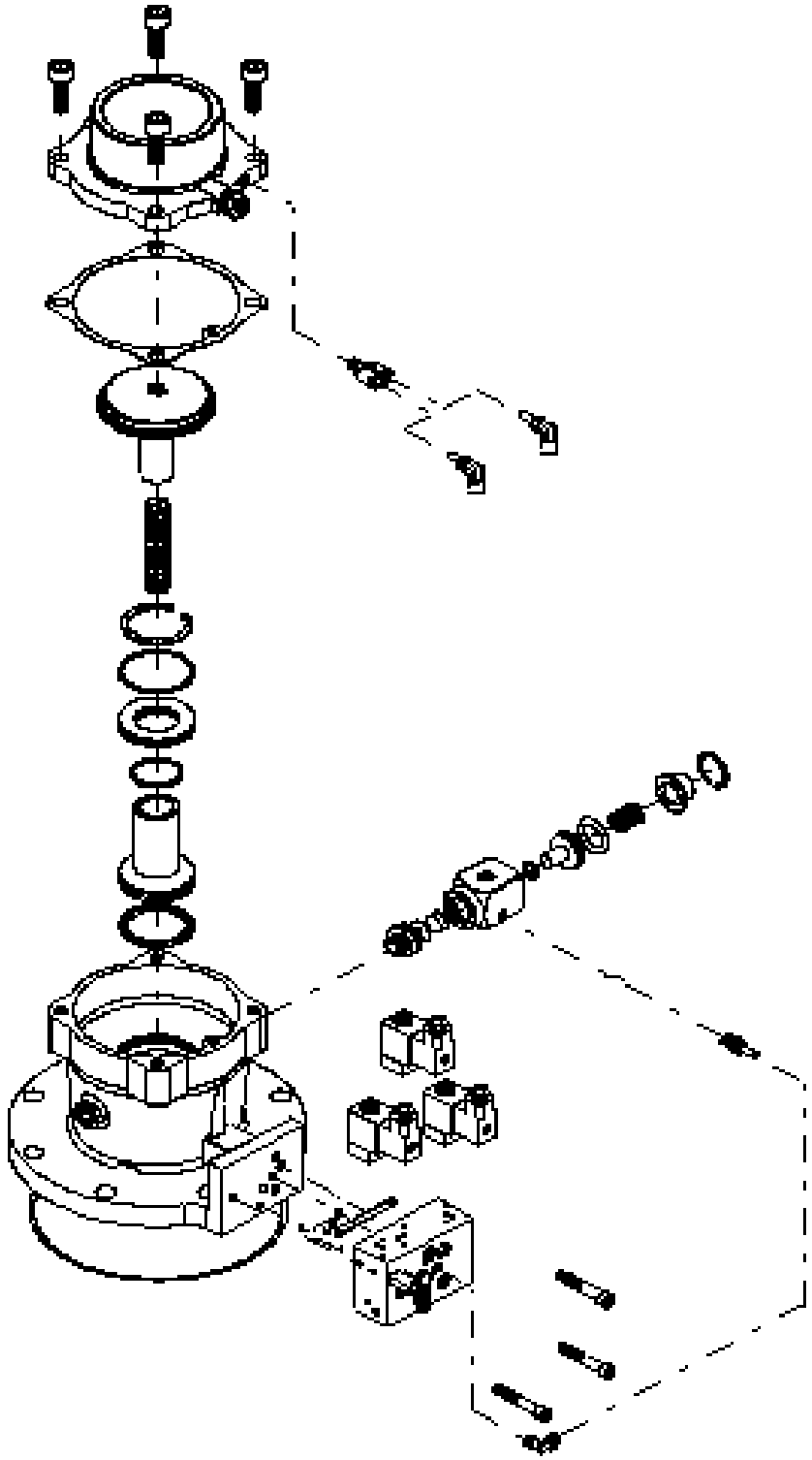
SP40-75

Fig. 9.1



SP100-150

Fig. 9.2



8.17 Minimum pressure/non-return valve

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the minimum pressure/non-return valve has to be serviced after 9000 hours or as minimum every third year. If necessary, service the minimum pressure/non-return valve as needed.

Note; that pressure could be present in the hose between the non-return valve and the air cooler.

1. Stop the compressor by pressing the red button and make sure that there is no internal pressure in it.

2. Slowly loosen the union nut on the hose between the minimum pressure/non-return valve and in this way release the pressure.

3. Then loosen the entire hose from the minimum pressure/non-return valve.

4. See fig. 10 and fig. 10.1 for details over the non-return valve.

5. Brush a lean grease on the sliding surfaces, e.g. CASTROL MOLYLAX or a similar molykote product. Reassemble the new parts in reverse order.

Note; the compressor and the non-return valve are very hot.

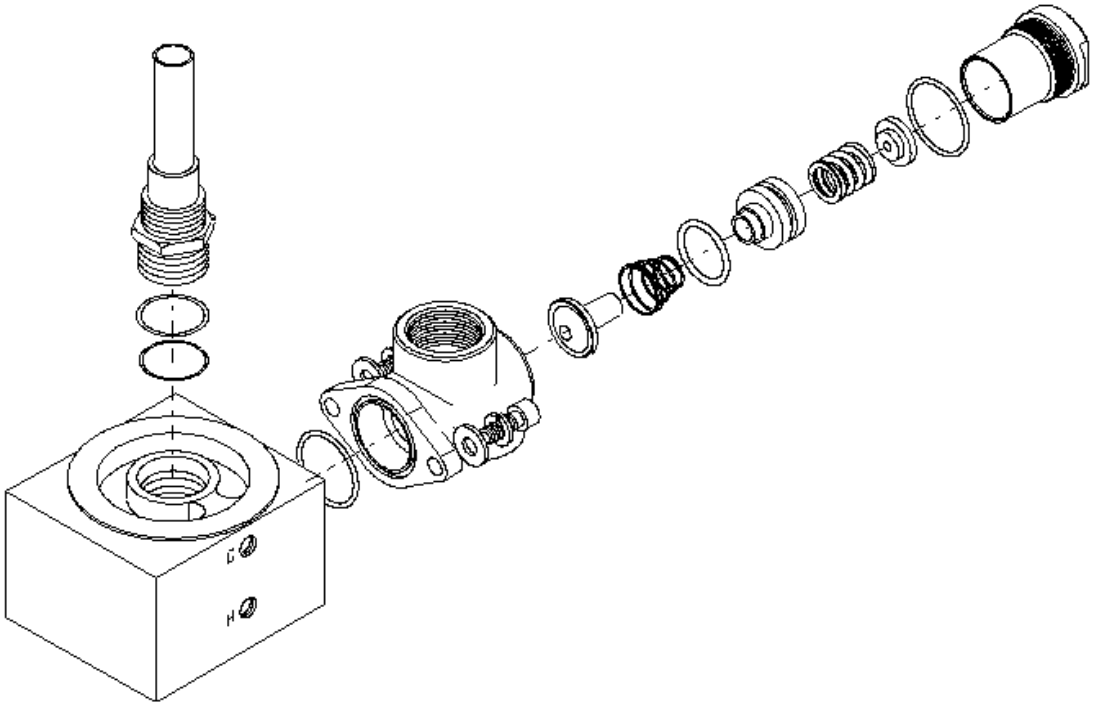
Finally, the compressor performance is tested.

A service kit is available for all minimum pressure/non-return valves.

Type/part.No	760001	760002	760003	760004
SP20-30	X			
SP40-60		X		
SP75-100			X	
SP125-150				X

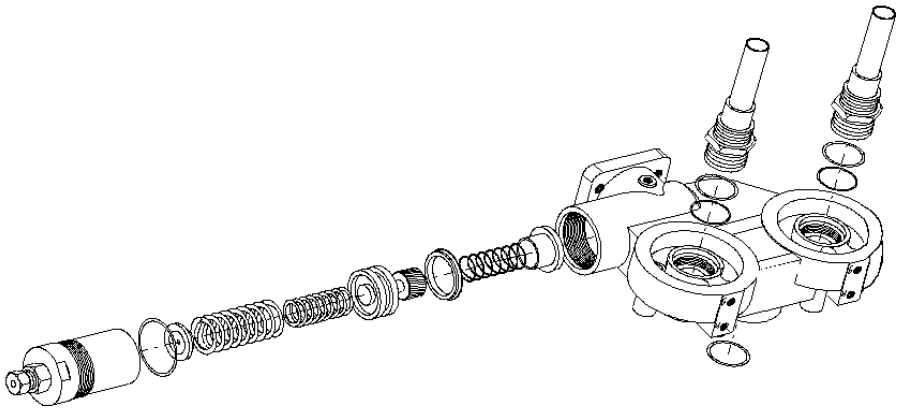
SP20-60

Fig. 10



SP75-100

Fig. 10.1



8.18 Thermostat

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, the thermostat has to be serviced after 9000 hours or as minimum every third year. If necessary, service the thermostat as needed.

1. Stop the compressor by pressing the red button and make sure that there is no internal pressure in it.

2. Loosen the lock ring and remove the cover.

3. See fig. 11, fig. 11.1 and fig. 11.2 for details over the thermostat.

4. Brush a lean grease on the sliding surfaces, e.g. CASTROL MOLYLAX or a similar molykote product. Reassemble the new parts in reverse order.

Note; the compressor and the thermostat are very hot.

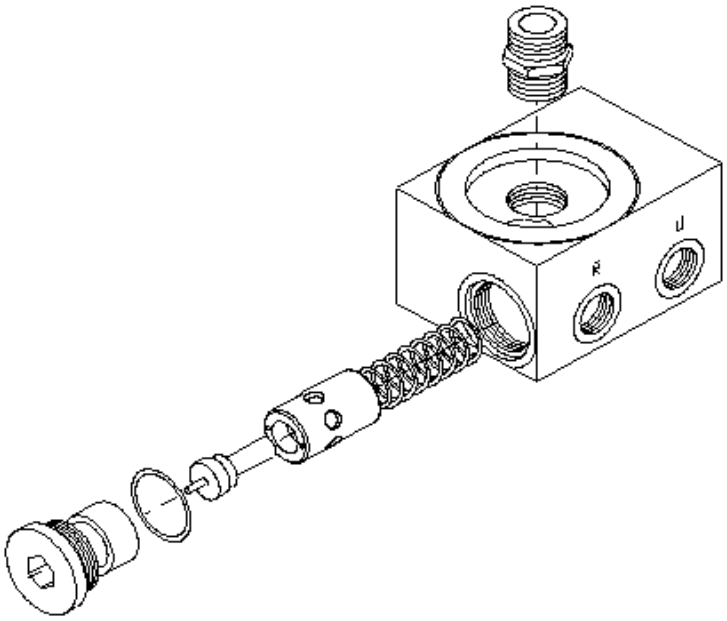
Finally, the compressor performance is tested.

A service kit is available for all thermostats.

Type/part No	760010	760011	760012
SP20-50	X		
SP40-75		X	
SP100-150			X

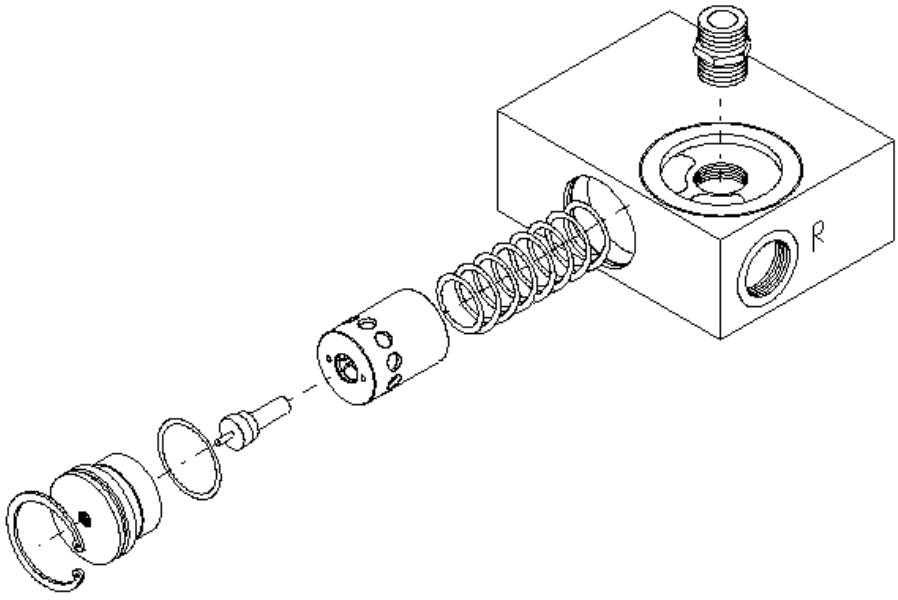
SP20-30

Fig. 11



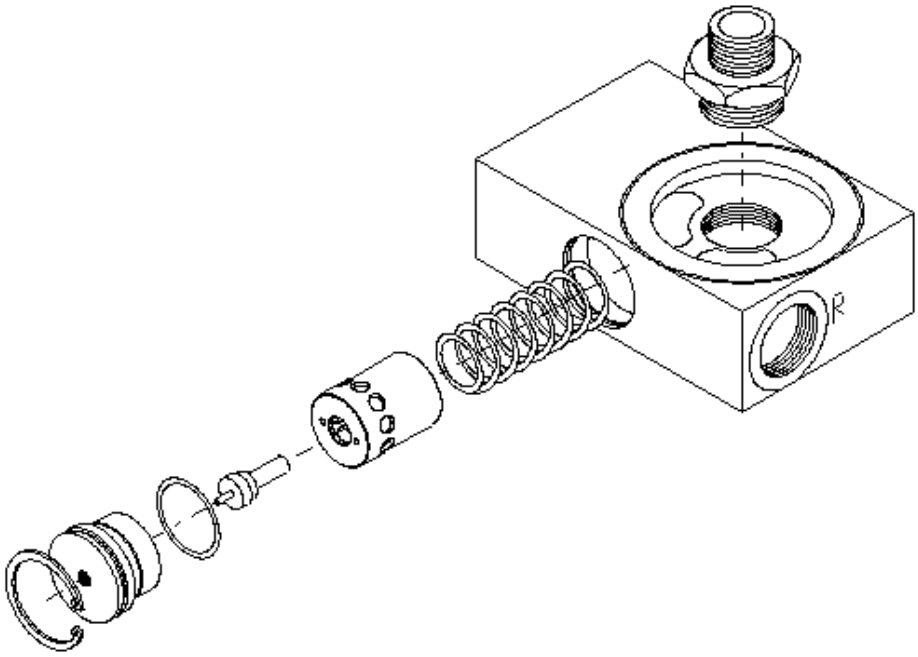
SP40-75

Fig. 11.1



SP100-150

Fig. 11.2



8.19 Motor

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, it is important to keep the motors cooling ribs free from dirt and dust. The motors cooling ribs has to be cleaned at service or as minimum once a year. If necessary, clean the motor as needed.

Note; the compressor and the motor are very hot.

NEVER clean the motor with water or other fluids.

Check the cooling air intake to the motor on a regular basis.

8.20 Motor bearings without lubricating nipples

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

During normal operation conditions, the two-poled motor is maintenance-free for thousands of hours, often up to 6-8.000 hours. As a minimum however, the motor should be disassembled, cleaned and checked every four years and if necessary, the bearings should be replaced.

Change the motor bearings according to the below diagram.

Size	Hours
4kW	20.000
5,5kW	20.000
7,5kW	15.000
11kW	15.000

Note; this should only be carried out by experts.

Always comply with the relevant rules and regulations of e.g. the Factories Inspectorate and similar bodies.

8.21 Motor bearings with lubricating nipples.

To ensure the optimum operating of the compressor, it is important to grease the motors bearings.

The durability of the motor is dependent on the compliance with the re-lubricating intervals. The bearings are lubricated with Shell Alvania R3.
It is very important not to “over-lubricate” the bearings.

Lubrication diagram:

Size	Type	Hours	Amount	
15kW	SP20	2.500	13	gram
18,5kW	SP25	2.500	13	gram
22kW	SP30	2.000	15	gram
30kW	SP40	1.700	20	gram
37kW	SP50	1.700	20	gram
45kW	SP60	1.500	22	gram
55kW	SP75	1.000	23	gram
75kW	SP100	1.000	23	gram
90kW	SP125	750	30	gram
110kW	SP150	750	30	gram

ONLY RE-LUBRICATE WHEN THE MOTOR IS RUNNING.
BE AWARE OF THE DANGER OF ROTATING PARTS.

When a new lubricant fabricated on another base product is used, the bearings HAVE TO be cleaned thoroughly.

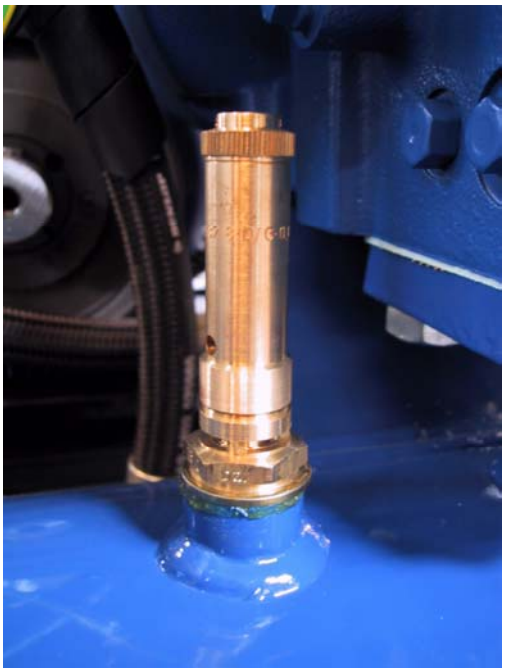
8.22 Safety valve

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, it is important that the safety valve works correct. The safety valve should be performance tested at service or as minimum once a year. If necessary, the safety valve should be performance tested as needed.

The safety valve should be performance tested with suitable equipment.

From the factory, the safety valve in the separator tank has been set to a pressure of two bar above the nominal operating pressure on the compressor. The safety valve has been sealed and its setting should not be changed.



In addition, the separator vessel have to be inspected, controlled & serviced in comply with the relevant rules and regulations of e.g. the Factories Inspectorate and similar bodies.

Contact your local authorized STENHØJ distributor, for more information.

8.23 Leakage

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, it is important to check the entire compressor for leakage, especially the oil system and the drain line.

If any, the oil leakage can pollute the environment and be of damage to the compressor.

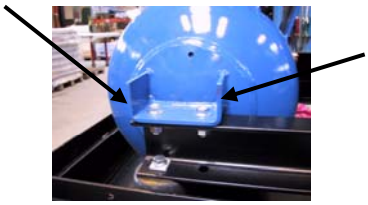
8.24 Bolt tightening

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

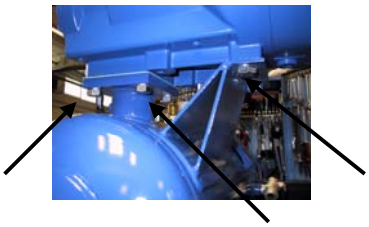
To ensure the optimum operating of the compressor, it is important that all joints are controlled/retighten at first service. If necessary, controlled/retighten as needed.
Tighten all joints according to the below diagram.

Thread/Quality	4.6	5.6	8.8	12.9
	NM / KPM	NM / KPM	NM / KPM	NM / KPM
M6		6 / 0,6	10 / 1,0	17 / 1,7
M8		15 / 1,5	25 / 2,5	41 / 4,1
M10		30 / 3,0	48 / 4,8	81 / 8,1
M12		52 / 5,2	82 / 8,2	
M16		126 / 12,6	190 / 19,0	

Parts that HAVE TO be tightened with torque according to the above diagram:

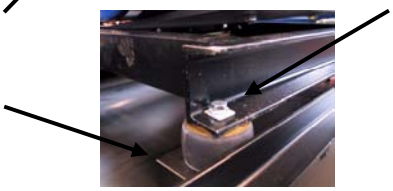


Separator tank on motor console.

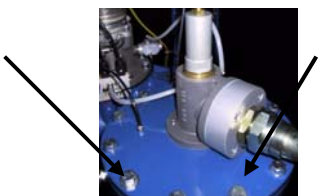


Air end on separator tank.

Motor on motor platform.



Vibration damper on base frame and motor console



Flank on the separator vessel on SP125-150

8.25 Hose condition

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

To ensure the optimum operating of the compressor, it is important that all hoses/pipes are controlled/retighten at first service. If necessary, controlled/retighten as needed.

Check also all hoses/pipes for wear and possible damage. The hoses should not be fastened to tightly together nor be in contact with each other or any sharp objects as this could destroy the hoses due to the vibrations.

8.26 Test run

After carrying out service or maintenance work on the compressor, a test run should be performed.

1. Check the oil level.
2. Start the compressor. Make sure that the direction of rotation is correct.
3. Test all functions that might be influenced by the work carried out.
4. Stop the compressor.
5. Activate the emergency stop.
6. Check the compressor for any leakages.

8.27 Safety functions

Test the safety functions of the compressor in the following way:

1. Test the function of the emergency stop device.

8.28 Electrical system

BEFORE CARRYING OUT ANY SERVICE, DISCONNECT AND LOCK THE SUPPLY SWICTH. CLOSE THE ISOLATION VALVE AND MAKE SURE THERE IS NO INTERNAL PRESSURE IN THE COMPRESSOR.

Only authorised personnel should tamper with or repair the electrical system of the compressor.
Please contact your local authorized STENHØJ distributor for further information.
Wiring diagrams of ALL electrical equipment is delivered with the compressor.

WARNING: Check, that there is no internal pressure in the compressor and that the supply switch is disconnected and locked before dissociating parts on the compressor, including changing the oil, filters, etc.

In connection with installation, service or maintenance, please contact your local authorized STENHØJ distributor, who can be of help.

9 FAULT FINDING

9.1 Faultfinding

Single compressor

Condition	Cause	Action
A. The compressor is not running.	1. The pressure has not reached the cut-in pressure. 2. The compressor is manual stopped. 3. The compressor is stopped by the schedule.	1. Wait to the pressure drops. 2. Start the compressor manual. 3. Wait to the schedule starts the compressor or start the compressor manual.
B. The compressor dos not start.	1. The pressure has not reached the cut-in pressure. 2. Fuse in F4 is burnt.	1. Wait to the pressure drops. 2. Change fuse in F4.
C. The compressor is running, but not producing air.	1. The pressure has reached the cutout pressure and is unloading. 2. Fuse in F3 is burnt. 3. The compressor has been stopped and is unloading.	1. Wait to the pressure drops. 2. Change fuse in F3. 3. Start the compressor.
D. Service-button is flashing red and the display reads, ”Press high”	1. The pressure at the compressor is higher than the allowed.	1. Make sure that no isolation valves have been closed.
E. Service-button is flashing red and the display reads, ”Temp high”	1. The temperature at the compressor is higher than the allowed.	1.1 Check the oil level. 1.2 Check the ventilation conditions. 1.3 Check if filters are clogged.
F. Service-button is flashing red and the display reads, ”Motortemp”	1. Main motor is overstressed. 2. Thermo contactor Q1 is adjusted too low.	1. Make sure that the motor dos not have too many starts pr hours, by using the menu “Stoptime” 2. Adjust Q1 according to 3.1 technical data.

G. Service-button is flashing red and the display reads, ”Press sensor”	1. Missing system pressure sensor. 2. Failure in pressure sensor. 3. Pressure sensor is connected wrong.	1. Mount pressure sensor or deactivate ”System press” in System Setup. 2. Replace pressure sensor. 3. Invert connection on the main card.
H. Schedule dos not start the compressor right.	1. Date and time is not correct. 2. Schedule is not appropriate adjusted.	1. Adjust date and time in System Setup. 2. Organize schedule after desire.
I. Service-button flashes yellow.	1. Time for service of the compressor.	1. Contact your STENHØJ engineer.

Multicontrol

Condition	Cause	Action
A. The compressor system is not running.	1. The pressure has not reached the cut-in pressure. 2. The compressor system is manual stopped. 3. The compressor system is stopped by the schedule.	1. Wait to the pressure drops. 2. Start the compressor system manual. 3. Wait to the schedule starts the compressor system or start the compressor system manual.
B. The compressor system dos not start.	1. The pressure has not reached the cut-in pressure.	1. Wait to the pressure drops.
C. Service-button is flashing red and the display reads, ”Machine (2-8)”	1. Failure on this compressor connected in multicontrol.	1. Find and correct fault, possible by the faultfinding diagram.
D. The compressors are not showed at the master.	1. Set up is not correctly on the compressor. 2. The master is not assigning to any compressor. 3. There is no system pressure sensor connected.	1. Set up compressor according to T63747 and T63748. 2. Assign the master to a compressor in multicontrol. 3. Connect a system pressure sensor.

10 OTHER APPLICATION

STENHØJ KOMPRESSOR A/S is very flexible, in carrying out special request of our standard compressors. We can offer a wide range of possibilities, for example:

10.1 Water cooling

STENHØJ KOMPRESSOR A/S can mount a heat exchanger to the existing system, thus making it possible to use the excess heat from the compressor. Since large amounts of heat are released from a screw compressor this presents a good opportunity for the possibilities of cost savings. See chapter 5.7 Ventilation and heat recovery

Always comply with the relevant rules and regulations of e.g. the Factories Inspectorate and similar bodies, if a heat exchanger is mounted.

Please contact your local authorized STENHØJ distributor for further information.

10.2 Heat recovery

As mentioned in chapter 5.7 Ventilation and heat recovery, large amounts of heat are produced in a screw compressor. This should situation could be exploited and the easiest way is to use the hot ventilation air directly for room heating.

Always comply with the relevant rules and regulations of e.g. the Factories Inspectorate and similar bodies, if the ventilation air is used directly for room heating.

Please contact your local authorized STENHØJ distributor for further information.

10.3 Special voltages/frequencies

Throughout the years, STENHØJ KOMPRESSOR A/S has exported compressor to the entire world and consequently obtained the knowledge required for producing compressors with different voltages/frequencies.

Please contact your local authorized STENHØJ distributor for further information.

11 ANNEX

11.1 Additional documentation

The following documentation are delivered with your STENHØJ compressor

- Spare part list
  - SP20-30 ..... T63755
  - SP40-75 ..... T63756
  - SP100 ..... T63757
  - SP125-150 ..... T63758
- Wiring diagram
  - Standard 400V T63770
  - Standard 230V T63771
  - Frequency inverter 400V T63772
- Oil specifications
  - SP compressor T81377
- Certificate for the safety valve
- Certificate for the separator vessel.
- Check list T41806