BS 50
BS 60

KAESER COMPRESSORS,INC.

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I M P O R T A N T

Read entire service manual before operating unit or performing any maintenance.

Always shut off power to unit at main disconnect switch before attempting any maintenance. All system pressure should be discharged unless manual instructs otherwise.

Use only "Kaeser Compressors" approved replacement parts.

Compressed air from any oil lubricated compressor is not suitable for use in any breathing apparatus or food related process.

A T T E N T I O N

Kaeser Compressors declines responsibility for any modifications made to any Kaeser compressor other than those made at the Kaeser factory or those made with prior written permission from Kaeser Compressors.

KAESER COMPRESSORS

SAFETY PRECAUTIONS

Every Screw Compressor is operated and thoroughly tested at the factory before shipment to make sure the compressors delivers its rated capacity and is in good working order. However, all the care given at the factory will not prevent possible damage during transit. We recommend the unit be carefully inspected for evidence of possible damage in shipment. During the first few hours of operation, the machine should be watched for any possible malfunction.

Comply with the following before start-up

- Remove all packing, tools and debris from in and around unit before operating.
- Do not operate in the presence of toxic or flammable vapor.
- Work on current-carrying parts may only be carried out by an appropriate personnel.
- Do not operate the compressor at a voltage other than the one specified on the compressor nameplate.
- Do not operate the compressor at pressures exceeding the maximum pressures indicated on nameplate.
- Install the compressor in an area where the air inlet temperature is at least 40° F but no higher than 100° F.
- If an air outlet duct is provided, it should be at least the size of the cooler surface and its length should not exceed 13 ft.
- Install the compressor to maintain a distance of 3 ft. between the cooling air inlet of the unit and the wall.
- Do not shut off the compressor operating with load at the main disconnect switch. Push stop button (7, Figure 4).
- Check for proper direction of rotation.
  DO NOT OPERATE UNIT IF ROTATION IS INCORRECT.
- Make sure the shutoff valve (4, Figure 22) is closed.
- Make sure the shutoff valve (3, Figure 23) at the discharge line is open.
- Shut off the unit, tighten up all the screws in the control box (repeat this after 50 operations hours).

Attention:	This work man only be done while the unit is disconnected from the electrical supply.

- To guarantee the cooling air circulation in the compressor unit, be sure the maintenance doors tightly closed during operation.

Attention:	Operating the compressot with open maintenance doors is prohibited because the belt drive and electrical components may cause personal injury.

FAILURE TO HEED THIS OR ANY OTHER WARNING MAY RESULT IN AN ACCIDENT CAUSING PERSONAL INJURY OR PROPERTY DAMAGE.

Attention:

This units (not available for BS 44) have been fitted with a run-in oil filter cartridge. Replace the cartridge after approx. 200 operation hours. See section 6.3

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1. DIMENSIONS AND SPECIFICATIONS

Model	Maximum pressure psig	Free air delivery unit cfm	Motor kW	hp	rpm
BS 44	110 145 190	170 155 135	30	40	3600
BS 50	110 145 190	195 165 145	30	40	1800
BS 60	110 145 190	240 205 178	37	50	1800
CS 75	110 145 190	282 252 215	45	60	1800
CS 90	110 145 190	360 309 263	55	75	1800
CS 120	110 145 190	458 390 340	75	100	1800

2. DESCRIPTION OF THE SIGMA SCREW COMPRESSOR

The main components of the Sigma Screw Compressor are a housing and two rotors. The compressor operates according to the rotary piston principle and is driven by an electro-motor through V-belts.

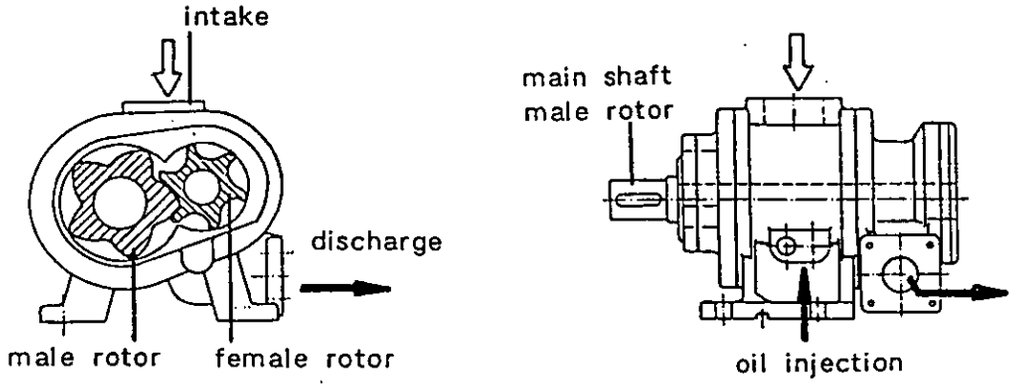

Figure 1

There are two rotors with antifriction bearings in the housing: a male rotor with 5 lobes driven by the motor and a female rotor with 6 voids. While the rotors are turning, air is drawn in through the inlet port at the upper side of the housing and the trapped air is compressed at the lower side.
The oil injected into the housing at the lower side picks up the heat resulting from the compression process, prevents the rotors from contacting each other and lubricates the antifriction bearings at the same time.
As there are no unbalanced forces, inlet or outlet valves, smooth running of the unit is ensured.

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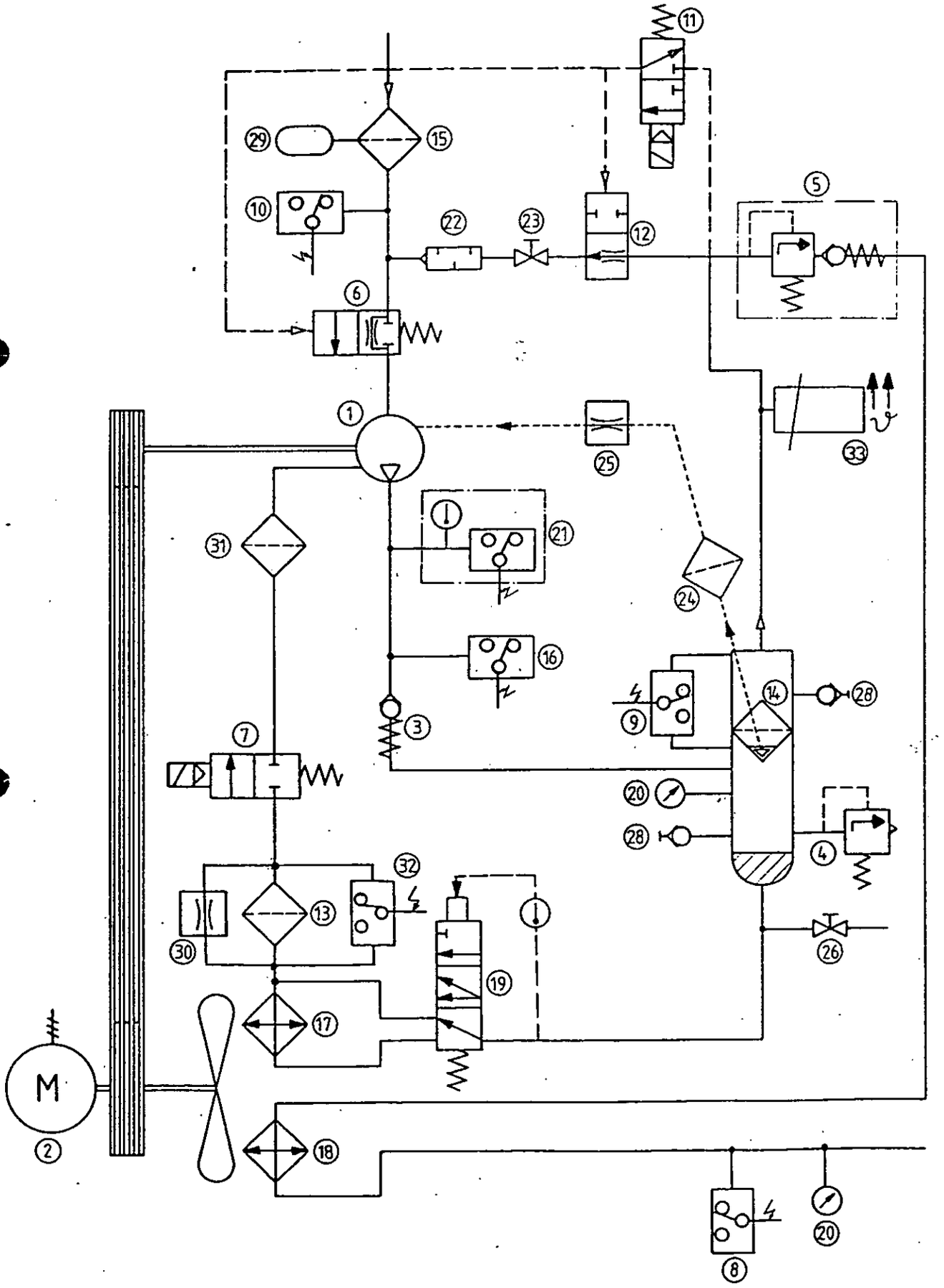
3. Construction and function of screw compressor Model BS/CS

T 8014



KAESER COMPRESSORS

Construction and function of screw compressor Model BS/CS

T 8014

1 Compressor

2 Driving motor

3 Check valve

4 Safety valve

5 Minimum pressure check valve (min. pressure approx. 65 psig)

6 Inlet valve

7 Oil stop valve

8 Pressure switch / Full load - idling (Δp min 10 psi)

9 Differential pressure switch / Oil separator cartridge
Δ p = 14,5 psi (indicative)

10 Differential pressure switch / Air filter
Δp = 0,8 psi (indicative)

11 Control valve

12 Vent valve

13 Oil filter (by-flow filter*) 10 µm

14 Oil separating cartridge

15 Air filter 4 µm
(not required, if bag-type filter is used)

16 Pressure switch (faulty direction of rotation; switching point 5/15 psig)

17 Oil cooler (air-cooled)

18 Air after cooler (air-cooled)

19 Oil temperature controller (opening temp. approx 160° F)

20 Pressure gauge

21 Contact thermometer + Indication (switching point 230° F)

22 Silencer

23 Ball cock

24 Dirt-trap

25 Nozzel (dia. 3/64")

26 Oil drain cock

28 Hose coupling

29 Dust sump

30* Main flow nozzle

31* Strainer 350 µm

32 Differential pressure switch / Oil filter Δp = 18 psi (indicative)

33 Internal thenmal overload (switching point 210 °F)

*not available for BS 44

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4. INSTALLATION

4.1 Ventilation for air-cooled units

Installation of the screw compressor should take place according to the following schedule. For easy access and service, respect the minimum distances indicated below.

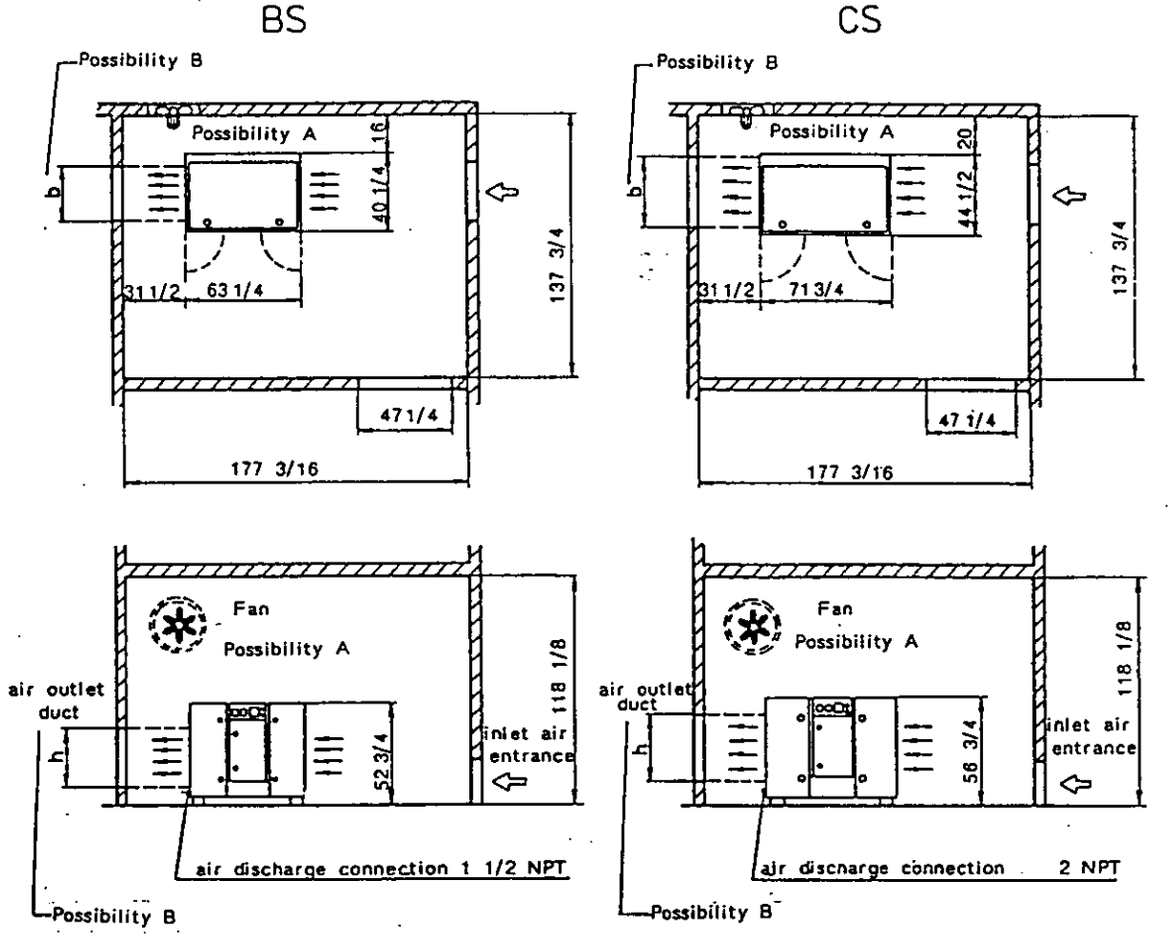

Figure 3

The compressor room should provide adequate ventilation.

Model	Possibility A Ventilation: fan cfm at a static pressure of 0.4 inches WC	Possibility B Exhaust air is used for heating w x h inches	Required size at air inlet entrance for A and B sq.ft.
BS 44	5000	27 x 30	6.5
BS 50	5000	27 x 30	6.5
BS 60	6200	27 x 30	8
CS 75	7700	36 x 34	10
CS 90	9500	36 x 34	13
CS 120	14000	38 x 40	17.5

On water cooled units values indicated on the above chart for inlet air duct and forced ventilation are reduced approx. 25 %. Possibility B does not apply.

Possibility A:

Air delivery of the exhaust fan must be adequate for the size of the unit (see chart on page 7).

Possibility B:

Warm exhaust air is forced through a duct into the room to be heated. Consult KAESER COMPRESSORS for maximum allowable pressure drop in exhaust ducts.

To ensure trouble-free operation of the unit, cooling air temperature should not drop below 40°F and not exceed 100°F.

4.2 Air discharge connection

The unit is piped ready for operation. It must be connected to the air line with a flexible connecting hose. A check valve is not required in the discharge line as one is built into the unit.

4.3 Electrical connection

The unit is wired ready for operation and it needs only be connected to the supply line. Pull the cable with conductors L1, L2, L3 and earth E through the openings of the base frame into the controller and connect them to the terminals marked L1, L2, L3 and earth E. The main disconnect switch and main fuses must be supplied by the purchaser. This main disconnect switch must have a minimum switching capacity which is 1.1 times the indicated rated power of motor.

The required fuses and cross sections of cables are shown in the following chart.

Model	Motor		WYE-Delta start 230 V, 3-phase, 60 cycles		WYE-Delta start 460 V, 3-phase, 60 cycles	
			Fuse dual element	Conductor wire size	Fuse dual element	Conductor wire size
	kW	hp	Amps	AWG	Amps	AWG
BS 44	30	40	100	1	60	6
BS 50	30	40	100	1	60	6
BS 60	37	50	150	1/0	80	4
CS 75	45	60	200	3/0	100	3
CS 90	55	75	225	4/0	125	2
CS 120	75	100	300	350 MCM	150	2/0

4.4 Overload relay adjustment

BS, CS 75/90:
Direct on-line start 460 V, windings in star-connection.

Adjustment:
The overload relay should be adjusted approx. 10 % higher than rated current. This will prevent it from acting at voltage fluctuations.

BS, CS 75/90: direct on-line start 230 V, windings in delta-connection
resp. CS 120: star-delta start 460 V, windings star-delta switching.

Only the phase current of a winding is led through the overload relay. This phase current is only 0.58 times the motor rated current I_N, accordingly the relay has to be adjusted for $I_N \times 0.58$.

Adjustment:
The overload relay should be adjusted approx. 10 % higher than phase current of a winding.

SHUT OFF POWER TO UNIT AT MAIN
DISCONNECT SWITCH BEFORE ATTEMPTING
ANY ADJUSTMENTS TO COMPRESSOR.

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5. PREPARATION FOR INITIAL START-UP

see 'SAFETY PRECAUTIONS' on Page 2

5.1 Start-up after oil change and/or long standstill

The following procedure must be observed when starting the unit after an oil change and/or a standstill period of three (3) months and over.

To add oil in the airend intake port:

Before starting the unit, pour oil in the airend intake port, in quantites below recommended and rotate the airend by hand.

Model	Quantity
BS 44	1 pint
BS 50/60	1 quart
CS	1 quart

Important:

Use the same brand and quality of oil as the one being used to operate the compressor unit only (refer to the specs label on the oil separator tank), or drain oil from the oil separator tank and use for that purpose.

Caution:

Discharge pressure in unit before draining any oil.

To add oil, unscrew the air inlet connection at the inlet port, open the butterfly valve by hand and pour recommended amount oil into the airend. Screw air inlet connection back on.

To increase wye time respectively time of released start, at start-up:

For start-up, increase wye time relay respectively released start time relay to 20 seconds to prevent compression of inlet air during start-up. Stop unit by pushing stop button JUST BEFORE REACHING THE 20 SECOND LIMIT.

Once this is done, the wye time relay respectively released start time relay must be set back to its normal operating point according to the following chart.

Model	WYE time
BS	9 sec.
CS 75/90	9 sec.
CS 120	12 sec.

These two preventive measures will ensure that the airend is getting sufficient oil when starting up the unit and will provide sufficient time for filling the oil cooler and all oil lines.

Attention:

After a standstill of more than 12 months further special procedures are required before the initial start-up. For that consult KAESER COMPRESSORS, INC.

5.2 Checking the direction of rotation:

- Push momentarily start and then stop button (parts 6 and 7, Figure 4) and check for proper direction of rotation.
- Arrows on motor and airend housing indicate direction of rotation.
- Should direction of rotation be incorrect, conductors L1 and L2 must be interchanged.

> **WARNING**
>
> If the compressor rotation is wrong do not operate the unit.

5.3 Instrument Panel

Compressor start-up

- Cut in main disconnect switch
- Push start button (6)

Compressor stop

- Push stop button (7)
- Shut off main disconnect switch

> **Important:**
>
> Do not shut off the compressor operating with load at the main disconnect switch. Use the stop button on the unit first.

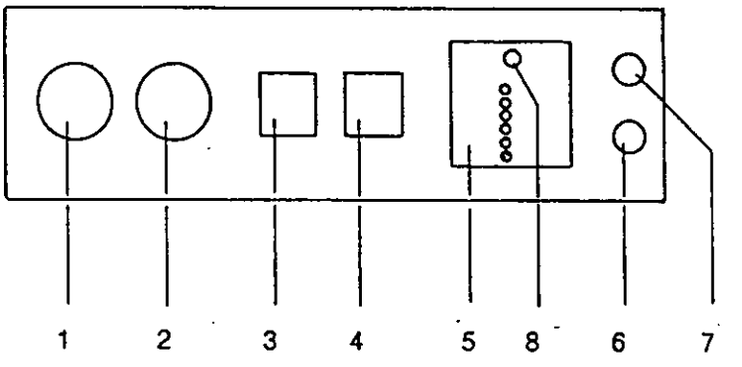

Figure 4

1 Outlet pressure of unit

2 Temperature gauge

3 Hourmeter (service hours)

4 Hourmeter (full load hours)

5 KAESER CONTROL

6 Start button

7 Stop button

8 Reset button

5.4 Safety system: KAESER CONTROL

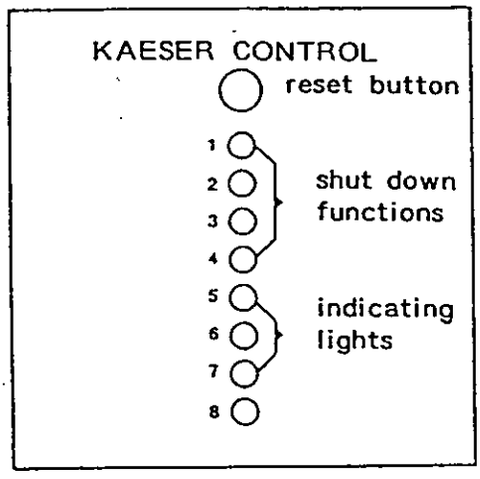

Figure 5

1 Motor
2 Temperature T1
3 Temperature T2
4 Rotation
5 Oil filter
6 Oil separator
7 Air inlet filter
8

In case of malfunction (lights 1, 2 or 3) the compressor is **shut down** by:

1 Overload rely of the compressor motor.
After having eliminated the trouble, push first the contact pin at the overload relay, then the reset button (Figure 5). Now the compressor is ready for operation.

2 Thermostatic switch for final compression temperature will shut unit off when temperature reaches 230°F.

3 Internal thermal overload will shut unit off when temperature behind the oil separator tank reaches 210 °F.

4 Pressure switch (16, Figure 2) at the air inlet port of the airend will shut down the unit if the V-belts are broken or have slipped.

Maintenance requirements are monitored by indicating lights 4, 5 and 6 with **warning functions** only.

5 Differential pressure switch (32, Figure 2) indicates oil filter contamination.

6 Differential pressure switch (9, Figure 2) indicates oil separator contamination.

7 Vacuum switch (10, Figure 2) indicates air inlet filter contamination.

Watch and check indicating lights 4 and 5 only after unit has been running for a minimum of 5 to 10 minutes from start-up. Warning light 6 will stay on until cartridge is cleaned.

To restart unit, press reset and "ON" buttons.

Checking the indicating lights:

For checking the function of the indicating lights, press the reset button.
All lights should come on.

Checking the safety system of the indicating lights with shut-down function:

To guarantee maximum safety, check the shut-down function of the lights at least every 2000 operating hours:

Switch on the main switch, press the stop button and pull out the pins of the 3 disconnection terminals No. 8, 9 and 18 one after the other.

While doing so, the stop button should go out and the corresponding indicating light come on.

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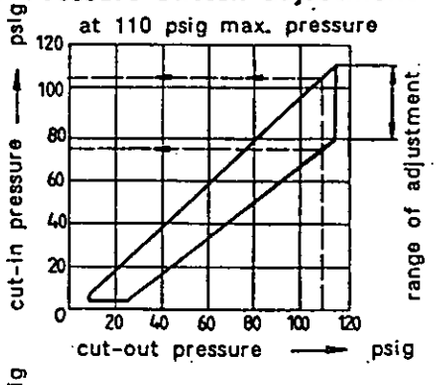
5.5 Idle time adjustment

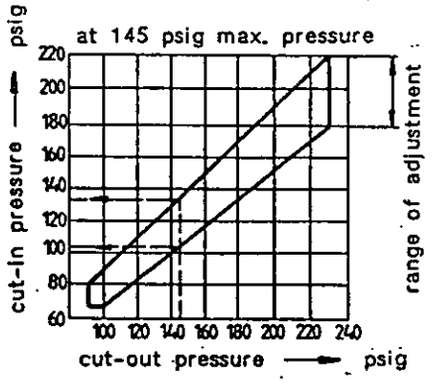
The time delay relay for idling time is located in the control box (time 3-30 minutes). The idling phase should be set in such a way that the maximum permissible cutting in frequency of the motor is not exceeded.

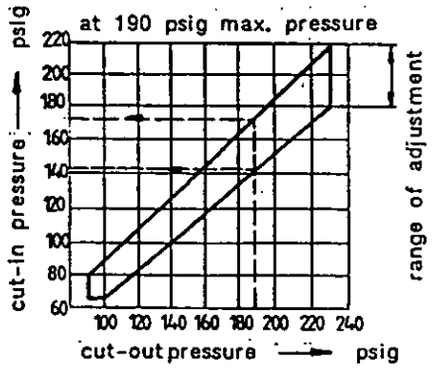
Model	Cutting in frequency (per h)	
	ODP	TEFC
BS 44	15	8
BS 50	30	15
BS 60	15	15

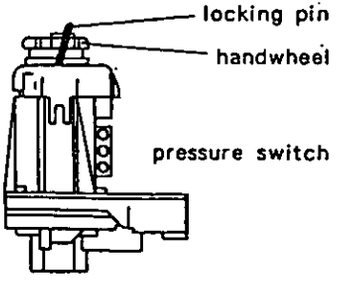
Model	Cutting in frequency (per h)	
	ODP	TEFC
CS 75	15	15
CS 90	15	8
CS 120	8	8

5.6 Pressure switch adjustment









Adjustment of the switch differential at the pressure switch for limiting the switching frequency.

Maximum frequency of idling operation: twice a minute

By increasing the switch differential between cut-out and cut-in the switching frequency can be reduced to a limited extent. If this is not sufficient a larger air tank is required.

The pressure switch has been pre-set at the factory as follows:

110 psig units: 100 to 110 psig (Δp = 10 psi)
145 psig units: 135 to 145 psig (Δp = 10 psi)
190 psig units: 180 to 190 psig (Δp = 10 psi)

Pressure adjustment can only be carried out at the mounted pressure switch when the compressed air line is under pressure.

Cut-out pressure:

For higher pressure: turn handwheel to the right
for lower presssure: turn handwheel to the left

Cut-in pressure/switch differential:

To increase the difference between cut-in and cut-out pressure:
- remove locking pin
- press handwheel so that the cross pin at the top of the handwheel comes out, then turn handwheel to the left
- place in locking pin.

To decrease the difference between cut-in and cut-out pressure:
- remove locking pin
- proceed as indicated above but turn handwheel to the right
- place in locking pin

Caution

Before removing the pressure switch cover, shut off the compressor (stop button and main disconnect switch). After each read adjustment at pressure switch, place cover on pressure switch before switching on the compressor.

5.7 Control systems

5.7.1 DUAL-Control (standard)

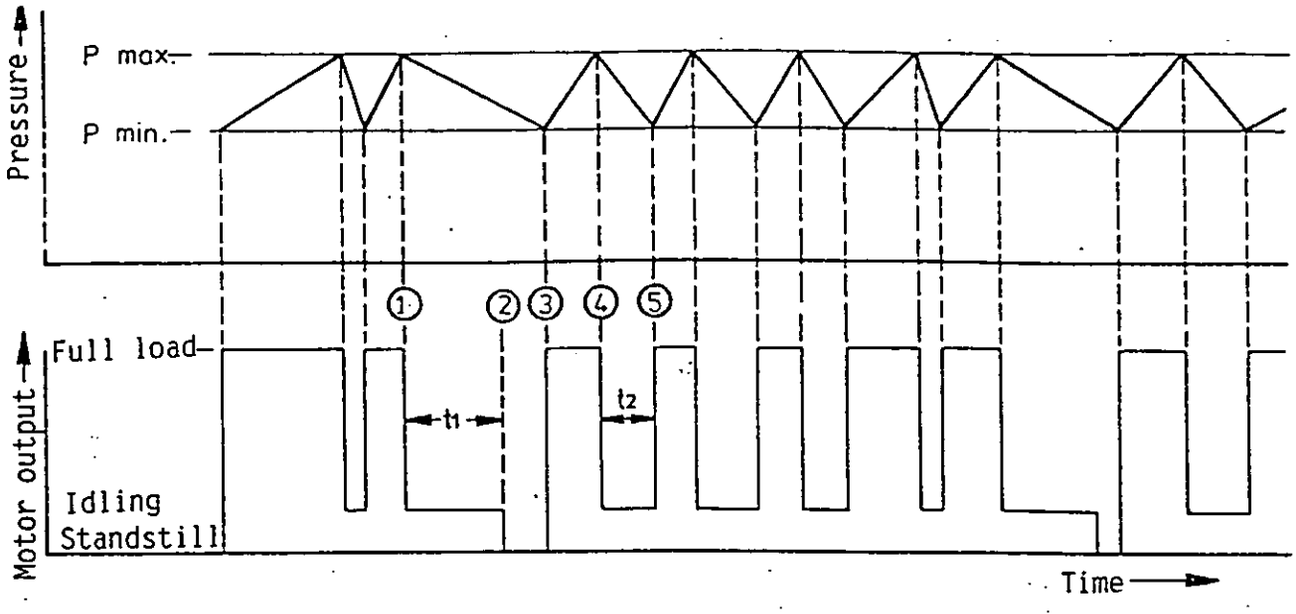


Figure 10

With the DUAL-Control (combined idling/ intermittent operation control system) the compressor operates only at the following two points:

full load and idling

The compressor pressure is regulated by a pressure switch within the pressure limits, e.g. between 100 - 110 psig. This results in an extremely low switching differential of only 10 psig between full load and idling.

If the compressor continues to idle longer than for a pre-set adjustable period (1) to (2) e.g. t_1 = 6 min, then the electric motor will be switched off completely at (2).

Upon reaching the lower switching point at p_{min} (3) e.g. 100 psig, the unit is switched on again automatically. If, however, the pressure drops again to p_{min} (5) within a shorter period (4) to (5) e.g. t_2 = 3 min. then, automatic switching over to full load will take place.

5.7.2 QUADRO-Control (optional)

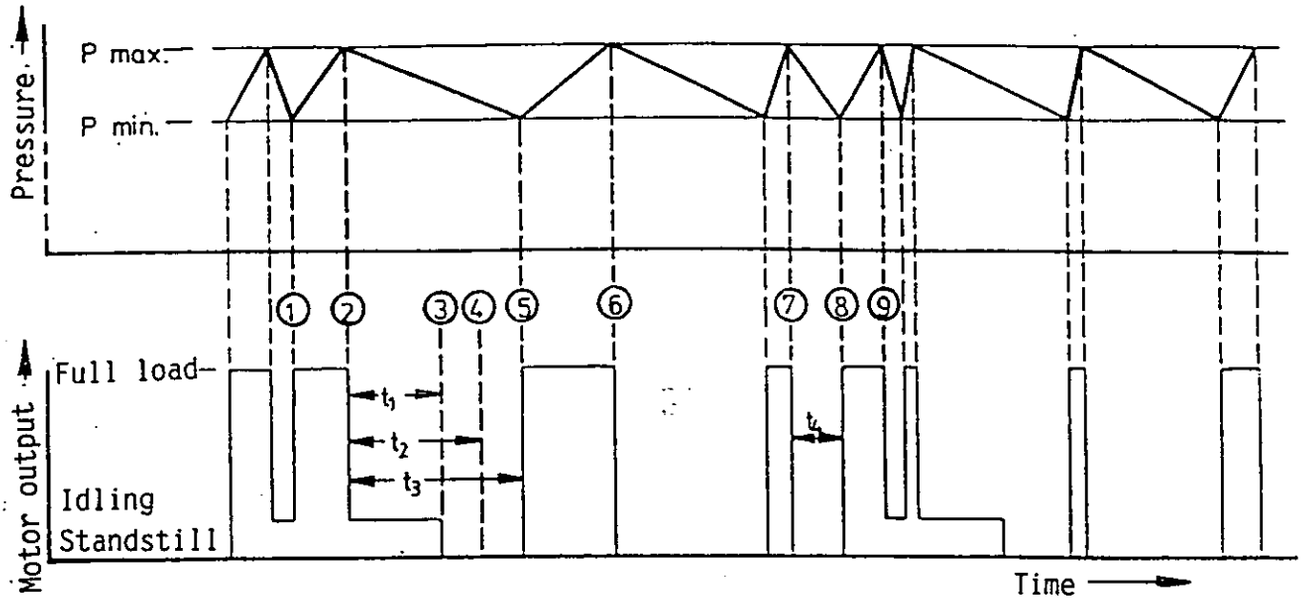


Figure 11

The Quadro-Control provides even greater savings in the case of widely varying air demand.

The following controls and operating modes are possible:

- Upon reaching the lower pressure limit of the pressure switch p_{min} (1), the control automatically selects **full load.**
- When the upper pressure limit p_{max} (2) is reached, the control automatically selects **idling.**
- At the end of the pre-set idling period (2) to (3) e.g. t_1 = 4 min, the compressor is switched to **standstill.**
- If the time is dropping from p_{max} (2) to p_{min} (5) e.g. t_3 = 6 min is longer than the comparison period (2) to (4) e.g. t_2 = 5 min, the **intermittent operation** mode is selected automatically and the compressor drops to standstill rather than to idle for the subsequent cycle (6). If the time from (7) to (8) is shorter e.g. t_4 = 2 min, the idling mode is selected again for the following cycle (9). This comparison with the fixed time "t_2" is repeated for each pressure drop.

The QUADRO-Control also replaces the commonly used selector switch for idling/intermittent operation in selecting the optimum operating mode automatically.

6. MAINTENANCE SCHEDULE

Always follow maintenance instructions:

- Before performing any maintenance on the unit, push stop button (7, Figure 4) and cut off main disconnect switch to make sure the power is off.
- Before restarting, make sure no one is working on the unit and covering plates are back on, as well all doors are closed
- After switching on main disconnect switch, start unit by pushing start button (6,Figure 4).
- In case of power failure or cutoff at main disconnect switch, restart unit manually by pushing the start button.
- The socket to vent the tank is attached to the hose coupling (4, Figure 22). It is used for maintenance work, such as oil refill, oil and filter change.
- Work on current-carrying parts may only be carried out by an appropriate personnel.

6.1 Air inlet filter

Clean the air inlet filter, when the warning light 6 of KAESER CONTROL (Figure 5) comes on.

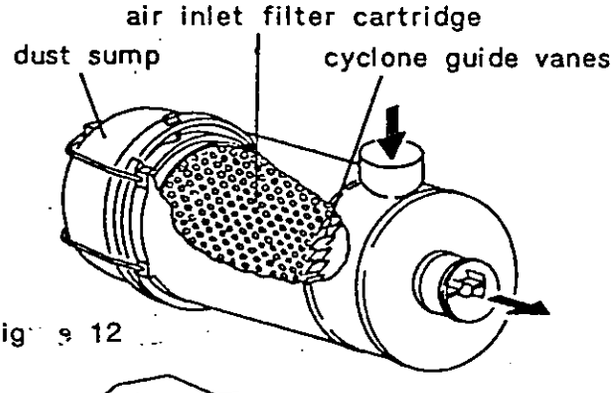


Figure 12

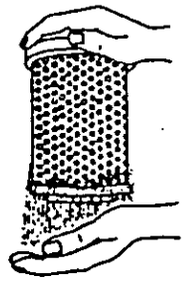


Figure 13

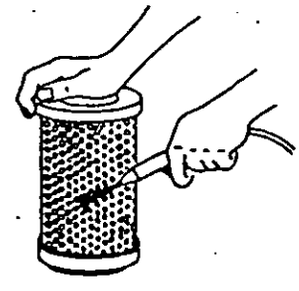


Figure 14

- Shut off the compressor (stop button and main disconnect switch).
- Opening of the filter housing (Figure 12):
- Remove and empty dust sump.

Important:

Make sure dust sump is reassembled correctly.

- Cleaning by tapping off the dust (Figure 13):

  Tap the front side of the cartridge against your palm until all the dust has fallen out. Avoid damaging the cartridge. Clean the contact surfaces of the gaskets.

- Blow clean with compressed air (Figure 14):

  Blow dry compressed air (no higher than 70 psig) slanted against the paper pleats. Then blow clean the inside of the cartridge thoroughly.

Caution:

Do not use fluids to clean air filter. Replace cartridge after several cleanings (Max. 5 cleanings) or if cartrige is overly contaminated.

6.2 Filter mat

Clean filter mat every 100 to 300 operating hours depending on amount of dust.

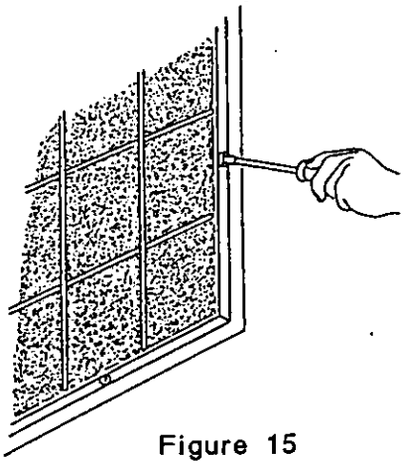


Figure 15

- Shut off the compressor (stop button and main disconnect switch).
- Remove cover frame with a screwdriver. To mount, turn screws 90° (Figure 15).
- Cleaning:
  Rinse the mat in water of approx. 100° with some mild detergent. Cleaning can also be done by tapping, vacuuming, or blowing the dust off with compressed air. With oily dust, rinse the mat in mild solvent or warm water.
- If mat is excessively soiled, replace.

6.3 Oil filter

For cleaning the oil system, the compressor units Series BS/CS (not available for BS 44) have been fitted with a run-in oil filter cartridge and a locking screw. After approx. 200 operation hours replace the run-in oil filter cartridge by the standard oil filter cartridge supplied with the unit and make sure to **remove the locking screw** (1, Figure 17).

Afterwards replace the oil filter cartridge every 2000 to 3000 operation hour or when the indicating light 4 of KAESER CONTROL (Figure 5) comes on.

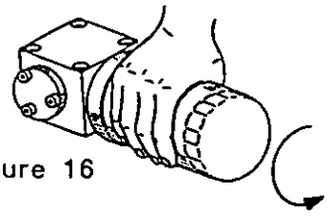


Figure 16

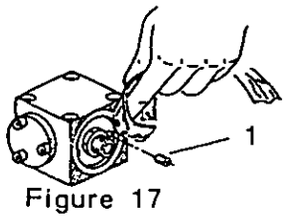


Figure 17

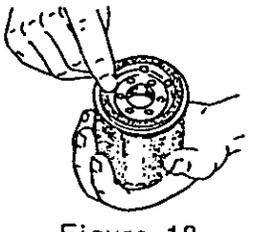


Figure 18

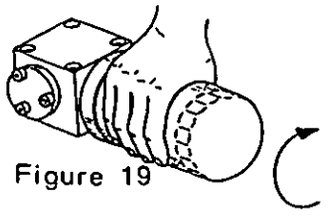


Figure 19

- Shut off the compressor (stop button and main disconnect switch).
- Place vent socket (1, Figure 22) into hose coupling (2, Figure 22) at the tank (the tank loses its pressure). Then wait about 1 minute until the oil settles.
- Unscrew clogged filter by turning the filter counterclockwise and discard. (Figure 16)
- Clean sealing surface at the filter head thoroughly with lint-free cloth. (Figure 17)
- Lubricate the new oil filter at gasket lightly with oil. (Figure 18)
- Screw in the new filter manually until the cartridge gasket fits tightly. (Figure 19) Hand-tighten only!
- Pour oil into the tank to normal level. See section 6.6.

Important:

Remove vent socket from hose coupling. Start up the compressor and check for leakage.

Caution:

Oil may be very hot. Allow unit to cool before working with oil system.

6.4 Oil separator

If the cartridge is contaminated (indicated by warning light 5 of KAESER CONTROL) replace. Start by pressing start button. The unit is ready for operation.

6.4.1 Filter replacement

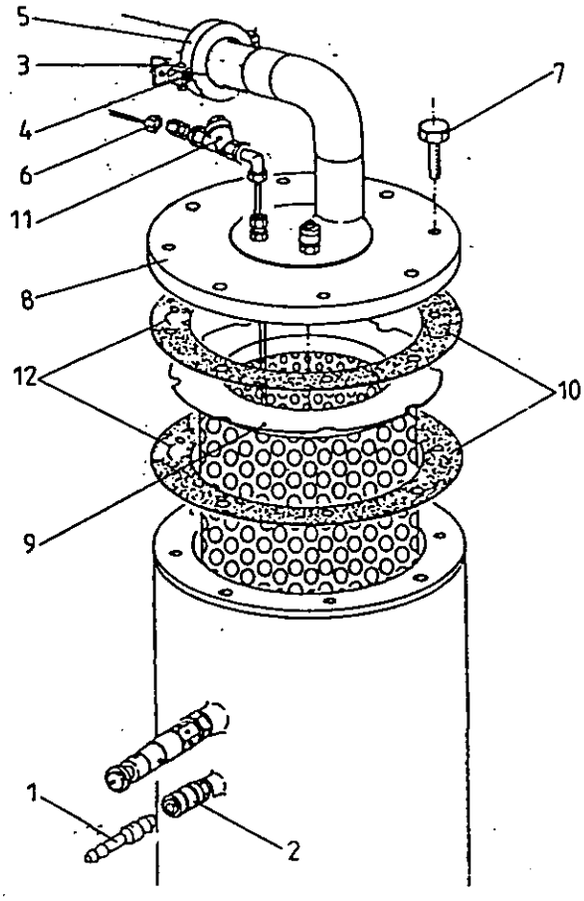


Figure 20

- Shut off the compressor (stop button and main disconnect switch).
- Open maintenance doors.
- Place vent socket (1) into hose coupling (2) at the tank (the tank loses its pressure).
- Loosen self-locking nuts (3) and (4) of the elastic pipe connection and remove bracket halves (5).
- Loosen pipe fitting (6), remove screws (7) and tank head (8).
- Remove the old oil separator cartridge (9) with gaskets (10) and clean gasket surfaces.
- Place in a new cartridge (9) with new gaskets (10) and fasten tank head (8) with screws (7).
- When changing the cartridge (9), unscrew and replace screen filter and o-ring from the dirt trap (11). Also replace the diaphragm, part no. 5.0999.0 on the vent valve. See section 11.7.
- Assemble parts in reverse order.
- To install elastic pipe connection. See section 6.4.2.
- Remove the vent socket (1).

Attention

In order that static electricity can flow through the electrically conductive oil separator cartridge to the separator tank and grounded compressor frame, the gaskets (10) of the oil separator tank cover have been provided with a metal clip (12).

Do not remove the clip!

6.4.2 Mounting of the elastic pipe connection

- Cutting edge "a" of pipe (1) has to be burr-free and surface "b" clean.
- Place cone ring holder (3) and cone ring (2) on pipe (1).
- Place pipe (1) into sleeve (7) without preliminary stress; push cone ring (2) with cone ring holder up to the cone end of sleeve (7) (realign the pipe, if necessary).
- Place the bracket halves (4) on the cone ring holder and sleeve and tighten nuts (5) according to measurement "s". Measurement "s" is a recommended value and can fluctuate by approx. 2 %.
- Tighten locking screws (8) and nuts (6) so as to allow adjusting by hand when the unit is off. When the unit is operating at full load, all screws must be under equal load.

After the self-locking nuts (5) and (6) have been tightened and loosened several times they have to be replaced.

Model	d	s	Order No.
BS 44	1 3/8 (1.38)	2 21/32 (2.66)	5.1390.0
BS	1 29/32 (1.9)	3 7/32 (3.22)	5.1391.0
CS	2 3/8 (2.38)	3 23/32 (3.72)	5.1392.0

Dimensions in inches

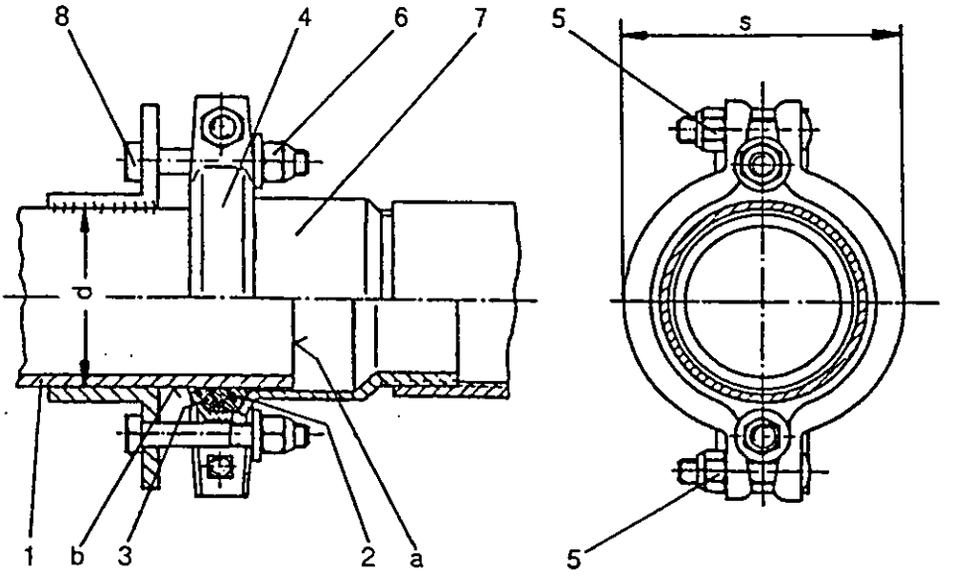


Figure 21

KAESER COMPRESSORS

6.5 Compressor Oil Specifications

6.5.1 Mineral oils

BP	ENERGOL THB 46
	ENERGOL HLP 46
Castrol	HYSPIN AWS 46
Chevron	GST 46
	CALTEX REGAL OIL R+O
EXXON	NUTO H 46
Mobil	D.T.E OIL MEDIUM
Shell	ROTELLA 10 W*
	X 100 Motoroil 10 W
TEXACO	RANDO OIL HD 46

02.25.85

The oil used for cooling the screw compressor during operation must have the following properties:

- high ageing resistance
- high dispersive power
- low emulsifiability
- minimum capacity for forming foam

Basic oil:	solvent raffinate
Hydraulic or turbine oil:	viscosity class VG 46
Viscosity at 104°F:	approx. 42-50 cSt (200-230 SU sec)
Flash point, surface temperature:	above 392°F
Pour point:	at least 18°F below lowest ambient temperature

To ensure trouble-free operation, use only one of the oil types listed on the left. These oil types are of comparable quality and can be purchased from the listed oil companies or service stations.

The order in which the oils are listed is not indicative of or related to the quality of the oils.

The oil companies reserve the right to change the names of the oil designations!

*Oil type "ROTELLA 10 W" is mixable with oil type "SHELL COMPTELLA OIL 46" (old name "Shell Oil S.9159") which is already in the unit.

KAESER COMPRESSORS

6.5.2 Synthetic Oils

The following synthetic oils are recommended for use in KAESER screw compressors:

	Ambient Temperature
Kaeser Synthetic 466R	40° F to 100° F
Kaeser Synthetic 687R	Consistantly above 70° F

Consult KAESER COMPRESSORS, INC. for other brands.

Extra care must be taken when changing from mineral oil use to synthetic oil or when changing oil brands. Make sure that all oil in the separator tank, oil lines, oil cooler and airend has been drained.

Kaeser Compressors recommends that the initial fill of synthetic oil be changed no later than 6000 service hours. Thereafter, the oil must be changed no later than 8000 service hours. The first oil filter must be replaced after 100 - 200 servoce hours and every 2000 - 3000 hours thereafter. The oil and oil filter change intervals may vary dependin on ambient conditions.

Also, when switching from mineral oil to a synthetic oil, the plant system materials must be re-evaluated. Certain plastics are not compatible with synthetic oils. The following is a partial list of acceptable and not recommended materials:

Acceptable	Not Recommended
Viton	Neoprene
High Nitrile Buna N	SBR Rubber
Teflon	Low Nitrile Buna N
Epoxy Paint	Acrylic Paint
Oil-resistant Alkyd	Lacquer
Nylon	Polystyrene
Delrin	PVC
Celcon	ABS

Consult KAESER COMPRESSORS, INC. for details or materials not listed.

Caution:
Synthetic oils are not compatible with polycarbonate bowls. Any such bowls in the compressed air system should be covered with metal bowl guards or replaced with metal bowls.

6.6 Adding oil

Check oil level daily at the oil sight glass. Always shut off the compressor when checking the oil level. Oil must be added when the minimum oil level, which is the middle of the lower oil sight glass, has been reached. Fill to the middle of the upper oil sight glass, no higher.

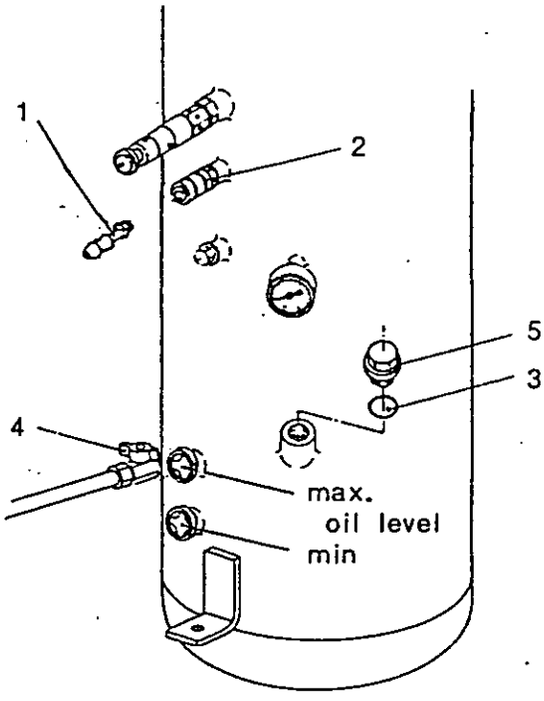


Figure 22

DO NOT OVERFILL.

- Shut off the compressor (stop button and main disconnect switch).
- Open maintenance doors.
- Place vent socket (1) into coupling (2) at the tank (the tank loses its pressure).
- Loosen locking screw (5) at the filling vent.
- Pour oil in to the max. level.
- Check gasket (3) and tighten locking screw (5).
- Remove vent socket (1) from coupling.

Important:

Always use the same make and type of oil (indicated on the oil-separator tank).

Different oil than that already in the unit may be used if it meets the oil specifications. See section 6.5. Whenever changing oil types, always drain all of old oil completely and change oil filter before adding new oil type.

Never mix oil types, other than approved by KAESER COMPRESSORS, INC.

6.7 Oil change

The oil must be changed approx. every 2000 to 3000 service hours depending on contamination of inlet air.
If the unit operates at or close to ambient temperature of 100°F (for example in boiler rooms etc.) the oil must be changed more frequently, i.e. every 1000 - 1500 hours.

Important:

Drain all oil from, the oil separator tank, cooler and lines.

For restart procedure sse section 5.1

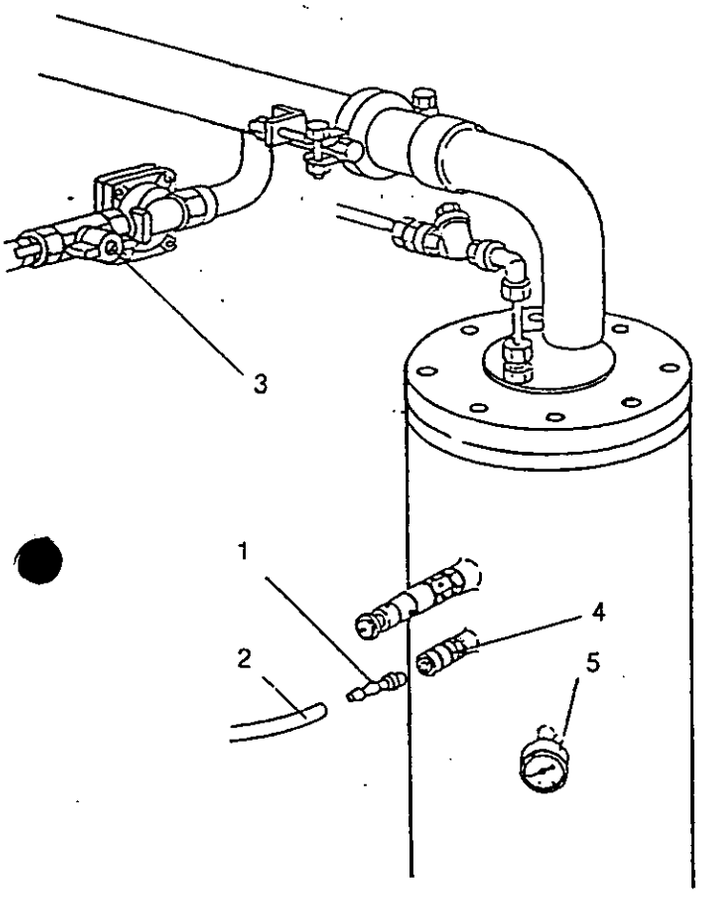


Figure 23

Oil change with pressure produced by another source.

- Shut off the compressor (stop button and main disconnect switch).
- Close shutoff valve (3).
- Hook hose (2) of other pressure source to socket (1) onto tank and pressure feed (the tank should have a pressure of approx. 30 psig).
- Remove hose with socket.
- Slowly open drain valve (4, Figure 22) (the pressure remaining in the tank will cause the oil to flow).
- After discharging the tank, slowly open the cooler drain plug (13, Figure 27) (the oil will drain without pressure).
- Close drain valve (4, Figure 22) and cooler drain plug (13, Figure 27).
- Open shutoff valve (3).
- Oil adding see section 6.6.

Oil change with pressure produced by the compressor:

- Shut off the compressor (stop button and main disconnect switch).
- Close shutoff valve (3).
- Let compressor run for about half a minute (the tank should have a pressure of approx. 30 psig).
- Shut off the compressor (stop button and main disconnect switch).
- Slowly open drain valve (4, Figure 22) (the pressure remaining in the tank will cause the oil to flow).
- After discharging the tank, slowly open the cooler drain plug (13, Figure 27) (the oil will drain without pressure).
- Close drain valve (4, Figure 22) and cooler drain plug (13, Figure 27).
- Open shutoff valve (3) at the tank cover.
- Oil adding see section 6.6.

Model	Oil charge
BS	approx 9 1/4 US Gal
CS 75/90	approx 16 US Gal
CS 120	approx 18 1/2 US Gal

Caution

Oil may be very hot.
Allow unit to cool before draining oil.

6.8 Temperature gauge with high temperature switch

When final compression temperature directly behind the air end reaches 230 °F, the distance temperature (Figure 2) reacts.

When temperature directly behind the oil separator tank reaches 210 °F, the thermistor relay reacts.

Upon reacting of the high temperature switch, the compressor shuts off and warning, light (excessive temperature) on the KAESER CONTROL (see section 5.4) comes on.

Troubleshoot and repair.

Probable causes: malfunction in the cooling system, e.g.:
low oil level
extreme ambient temperature (too low or too high)
clogged oil filter
clogged oil cooler
clogged filter mat

To restart, press reset (8) and start (6) buttons (Figure 4).
The compressor is back in operation.

6.9 Motor lubrication

Models BS 44 up to CS 90:

The standard motors have life-time grease lubrication.
Under normal working conditions (ambient temperature 80°F), carry out maintenance of the motor bearings according to the following chart.
After the indicated working hours, demount motor bearings, rinse them and fill the void spaces with new grease.

Model CS 120:

The standard motors are equipped with relubrication system.
Under normal working conditions (ambient temperature 80°F), carry out relubrication of the motor bearings according to the following chart.
After the indicated working hours, relubricate motor bearings with the indicated amount of grease.

Model	Lubrication interval operating hours	Amount of grease ounce
BS 44	16 000	-
BS 50	32 000	-
BS 60	32 000	-
CS 75	32 000	-
CS 90	32 000	-
CS 120	8 000	3/4

We recommend the following brands of lithium base grease:
BP Energrease LS 3
Calypsol H 443
Exxon Beacon 3
Mobilux Grease 3
Shell Alvania 3
SKF Waelzerol FL

Under harder working conditions, i.e. strongly polluted intake air and ambient temperature of the unit, approx. 105° F, lubrication interval is half as long.

For special motors, other protective systems etc., follow manufacturer's instructions (on motor name plate).

6.10 V-belt tension

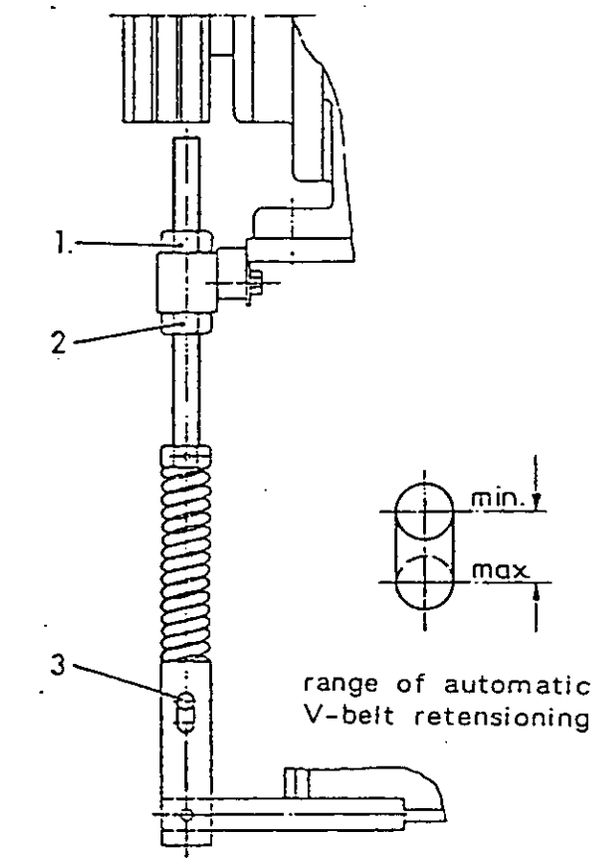


Figure 24

Belt tension must be checked every 500 operating hours.

The V-belt span is adjusted automatically within a limited range by the pressure spring. See figure at left.

An indicator pin (3) in the oblong hole indicates the V-belt span. When the pin (3) reaches the top of the hole, retensioning is required.

- Shut off the compressor (stop button and main disconnect switch).
- Loosen hex nut (1).
- Retension the V-belt by turning the hex nut (2) until the pin (3) is all the way down.
- Retighten hex nut (1).

6.10.1 V-belt changing

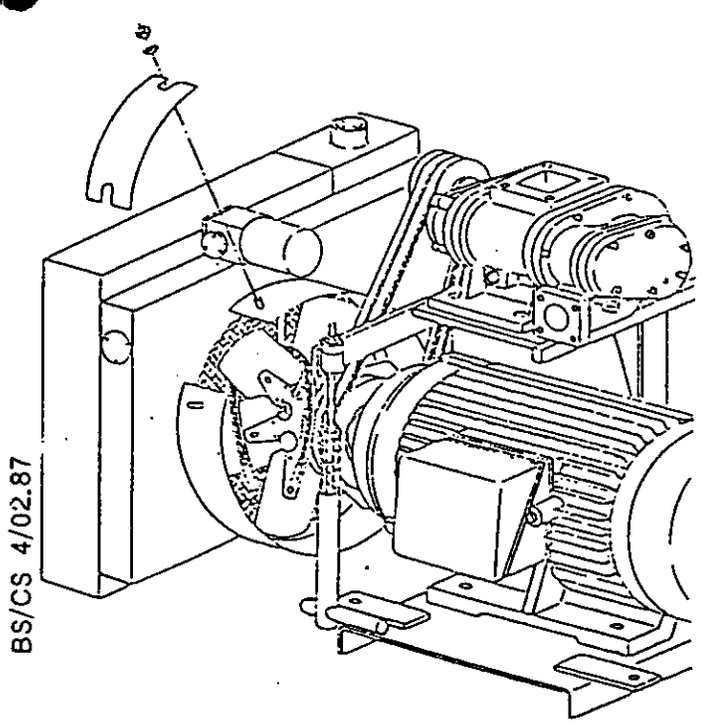


Figure 25

- Shut o f the compressor (stop button and main disconnect switch).
- Unscrew and remove covering plate from fan frame.
- Turn adjusting hex nut (2, Figure 22) downwards.
- Place V-belt first ove the free-standing fan blade, then turn fan and move belt over the other blades.
- Slip V-belt over motor and compressor pulleys.
- Tension V-belt see section 6.10.
- Fasten covering plate on the frame.
- Check V-belt tension after approx. 2 and 24 operating hours. (See section 6.10).

Important:

Spare V-belts must absolutely have the same length and must be 100 % oil resistance. We, therefore, recommended the genuine Kaeser V-belts be used.

6.11 Cleaning the cooler

Check cooler at least every 1000 operating hours for contamination through an inspection hole (1). Strong contamination can result in excessive temperature in oil circulation.

Disassembling and cleaning the cooler:

- Shut off the compressor (stop button and main disconnect switch).
- Vent the unit (see section 6.4.1).
- Remove covering wall (2) and open maintenance doors (3).
- Discharge compressed air line.

> **Attention:**
>
> When the unit has been vented, pressure is provided from the air lines up to the minimum pressure check valve (4). Therefore, disconnect the unit from the air mains (shut-off valve). After that vent the air aftercooler by demounting the compressed air line (12) carefully. If no shut-off valve is provided, the complete air lines must be vented.

- Demounted elastic pipe connection (5) and control line (6).
- Screw off combination valve (7) from cooler (8), left it slightly and wipe off the oil flowing out with a piece of cloth. Remove o-rings and check them.
- Close the openings of the oil lines at the cooler (8).
- Undo attachment screws (9) and swivel the cooler (8) outwards.
- Blow cooling fins clean with compressed air or spray with water.
- Check foam kit (10) of fan housing (11).
- Assemble part in reverse order.
- While mounting combination valve (6), make sure o-rings are seated properly.
- For mounting elastic pipe connection see section 6.4.2.

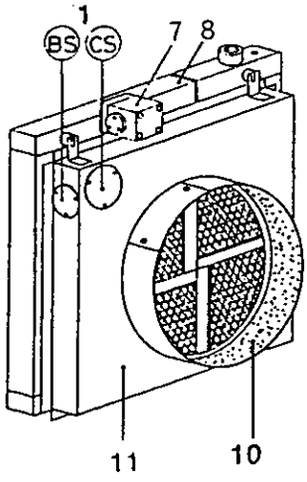


Figure 26

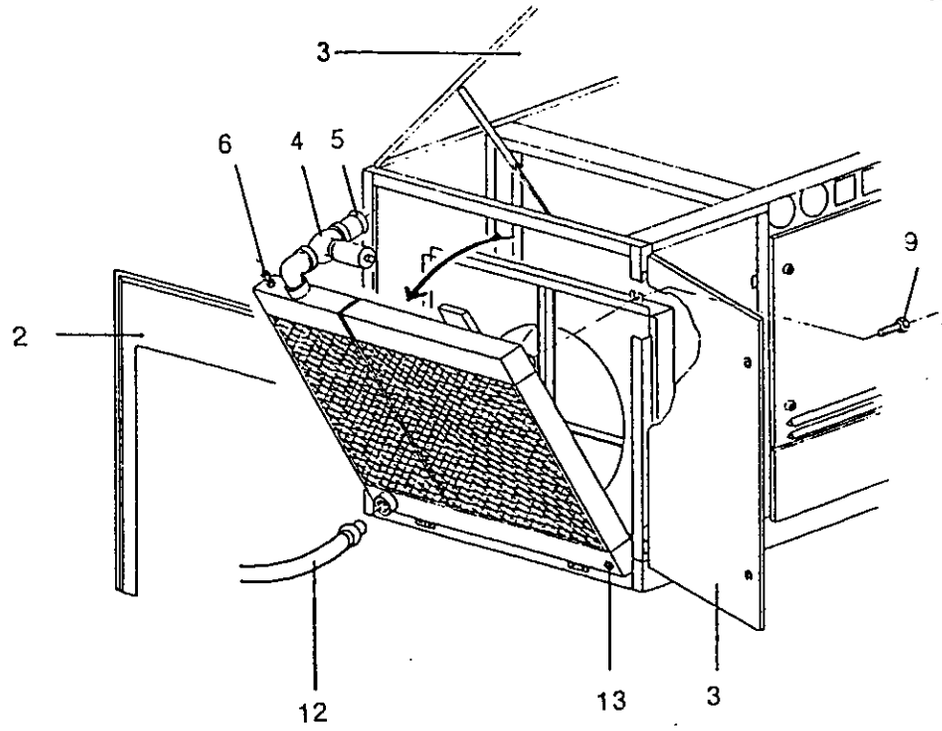


Figure 27

6.12 Checking the safety valve on the oil separator tank

To check the set maximum operating limit the unit must be operated at a final pressure higher than maximum setting of the pressure switch.

Maximum pressure of the unit	Set maximum operating pressure of the safety valve
110 psig	130 psig*
145 psig	175 psig
190 psig	210 psig

In order to avoid readjustment of the pressure switch, carry out checking in the following way:

- Shut off the compressor (stop button and main disconnect switch).
- Close the shutoff valve (3, Figure 23) at the discharge line.
- Close the shutoff valve downstream of the unit.
- Start the compressor and let it switch over from full load to idling.
- While the discharge line is being closed the pressure can easily be checked at the pressure gauge (5, Figure 23) on the seperater tank as it is increased slowly up to the limit where the safety valve will react.
- Shut off the compressor.
- Open the shutoff valve downstream of the unit.
- Open the shutoff valve (3, Figure 23) at the discharge line.

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6.13 Maintenance parts list

Model	Maximum pressure	V-belt		Oil filter cartridge	Oil separation cartridge compl.set	.Air inlet filter cartridge	Filter mat
	psig	pcs.	compl.set Order No.	Order No.	Order No.	Order No.	Order No.
BS 44	110 145 190	4 4 4	6.2540.0 6.2540.0 6.2540.0	6.1981.0	6.2012.0	6.1996.0	6.1938.0
BS 50	110 145 190	6 6 6	6.1434.0 6.2533.0 6.2542.0	6.1981.0	6.2012.0	6.1996.0	6.1938.0
BS 60	110 145 190	6 6 6	6.2532.0 6.1434.0 6.2533.0	6.1981.0	6.2012.0	6.1996.0	6.1938.0
CS 75	110 145 190	9 9 9	6.1432.0 6.2521.0 6.2522.0	6.1981.0	6.2013.0	6.1997.0	6.1945.0
CS 90	110 145 190	9 9 9	6.1432.0 6.2521.0 6.2522.0	6.1981.0	6.2013.0	6.1997.0	6.1945.0
CS 120	110 145 190	9 9 9	6.2529.0 6.1432.0 6.1432.0	6.1981.0	6.2013.0	6.1997.0	6.1945.0

The oil separating cartridge set (Order No. 6.2012.0) consits of:

pcs.	Order No.	Name
1	6.1960.0	Separating cartridge
2	5.0556.0	Gasket
1	8.0394.0	Dirt-trap strainer
1	5.1443.0	O-ring

The oil separating cartridge set (Order No. 6.2013.0) consits of:

pcs.	Order No.	Name
1	6.1965.0	Separating cartride
2	5.0566.0	Gasket
1	8.0394.0	Dirt-trap strainer
1	5.1443.0	O-ring

When ordering spare parts always state compressor type, serial number and year of manufacture which are stamped on the name plate.

Important:

Order KAESER genuine factory-tested replacement parts only !!

KAESER COMPRESSORS

6.14 Recommended maintenance schedule for model BS/CS

Interval	Maintenance	Refer to section
50 hrs after initial start up	Tighten all wiring connections in the control panel	
100 to 200 hrs after initial start up	Replace oil filter	6.3 Oil filter
Weekly	Check oil level	6.6 Adding oil
100 to 300 hrs	Clean filter mat	6.2 Filter mat
Every 500 hrs	Check V-belt tension	6.10 V-belt tension
Every 1000 hrs	Check cooler for surface dirt*	6.11 Checking the cooler
Every 2000 hrs	Check safety system	5.4 Safety system
Every 2000 hrs to 3000 hrs	Change oil (if mineral oil is used)*	6.7 Oil change
Indicated by KAESER CONTROL	Clean or replace air inlet filter*	6.1 Air inlet filter
	Change oil filter*	6.3 Oil filter
	Change separator cartridge*	6.4 Oil separator
Every 6000 to 8000 hrs	Change synthetic oil (if used in place of mineral oil)*	6.7 Oil change
Every 8000/16000 or 32000 hrs	Lubricate motor bearings*	6.9 Motor lubrication
Yearly	Clean cooler surfaces*	6.11 Checking the cooler
	Tighten all wiring connections in the control panel	
	Check safety valve	6.12 Checking the safety valve

* Note:

Time interval may vary depending on type of unit, installation (e.g. boiler room), frequency of use, and ambient conditions (e.g. ambient temperature other than 32 - 105° F), please consult KAESER COMPRESSORS, INC.

KAESER COMPRESSORS

6.15 Maintenance check list

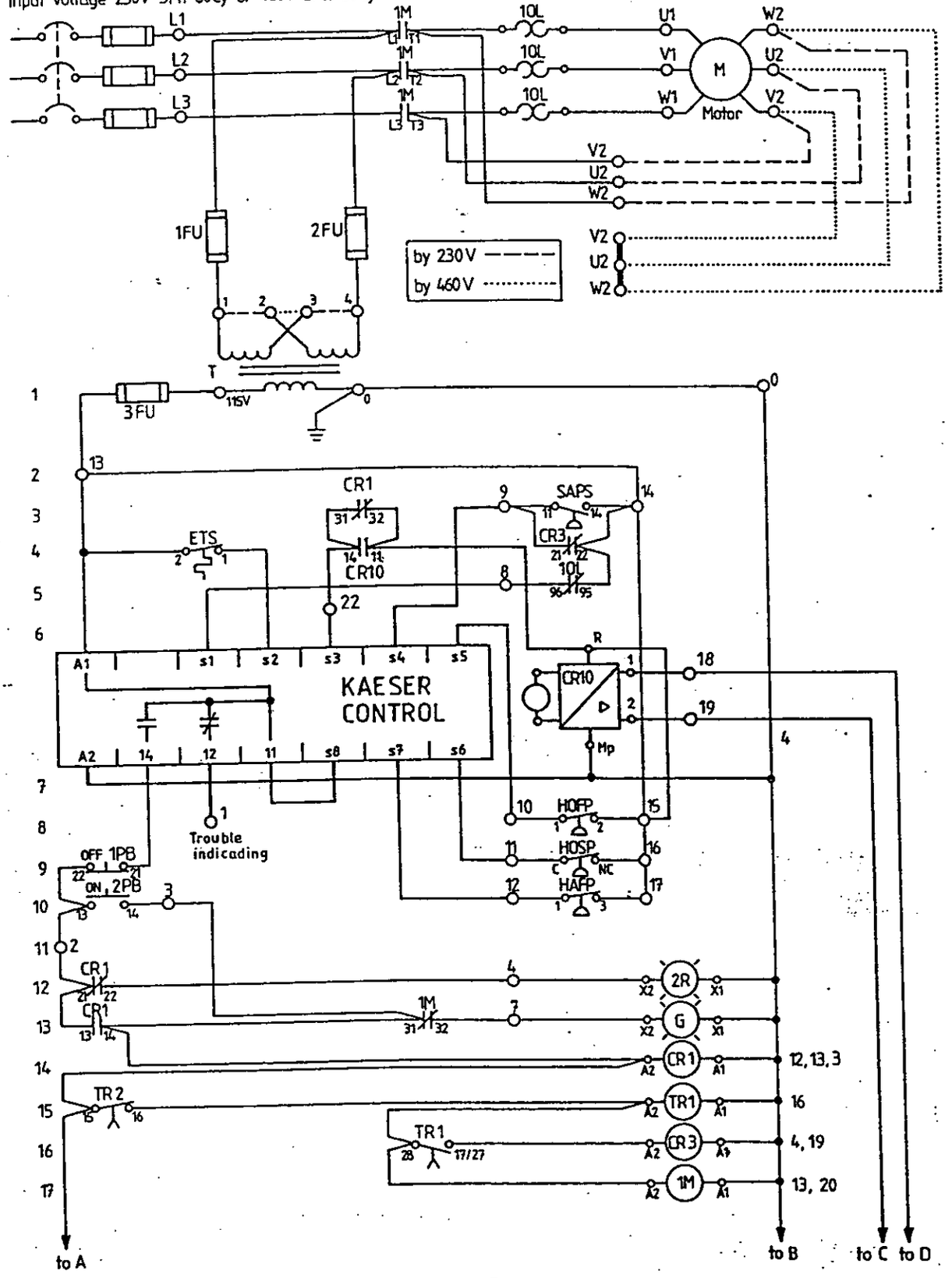
Record hours of operation and check maintenance work performend.
Record values where indicated.

Hours of operation	Filter mat		Air filter cartridge		Oil filter cartridge	Oil separating cartridge	Oil fill			V-belts			Date	Signature
	cleaned	replaced	cleaned	replaced	replaced	replaced	checked	refilled	replaced	checked	retensioned	replaced		

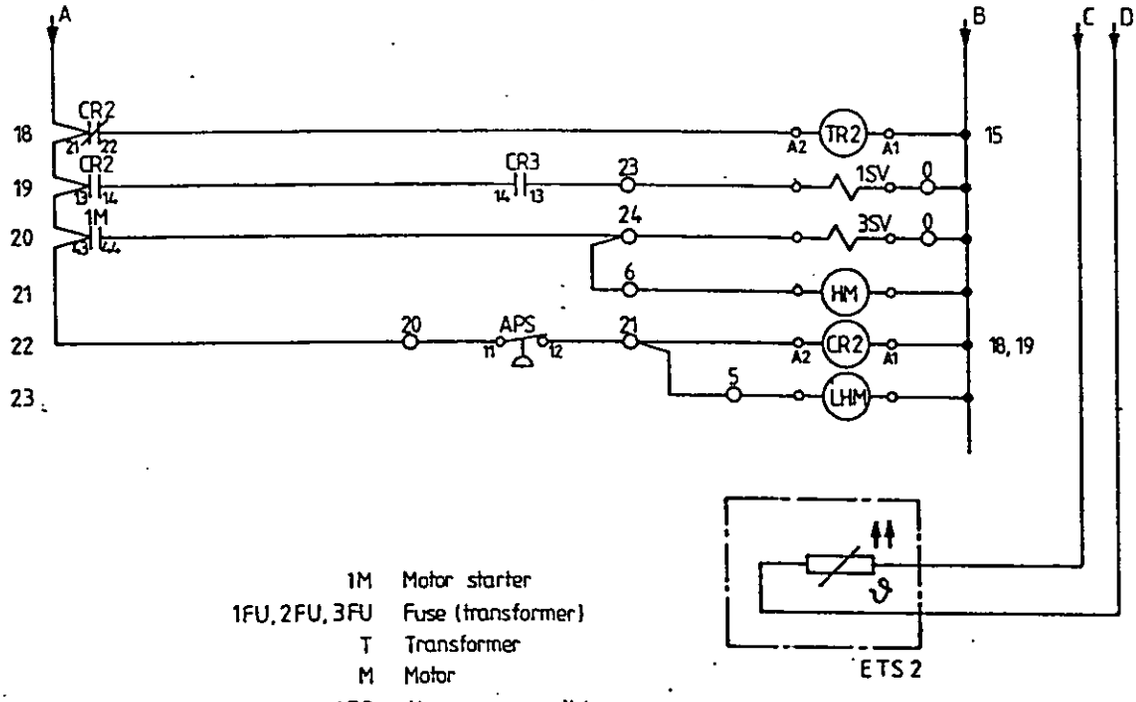
7. Wiring diagram for BS/CS page 1
St 501.514.3

Main switch and fuses must be supplied by the purchaser

Input voltage 230V 3Ph 60Cy or 460V 3Ph 60Cy



7. Wiring diagram for BS/CS page 2
St 501.514.3

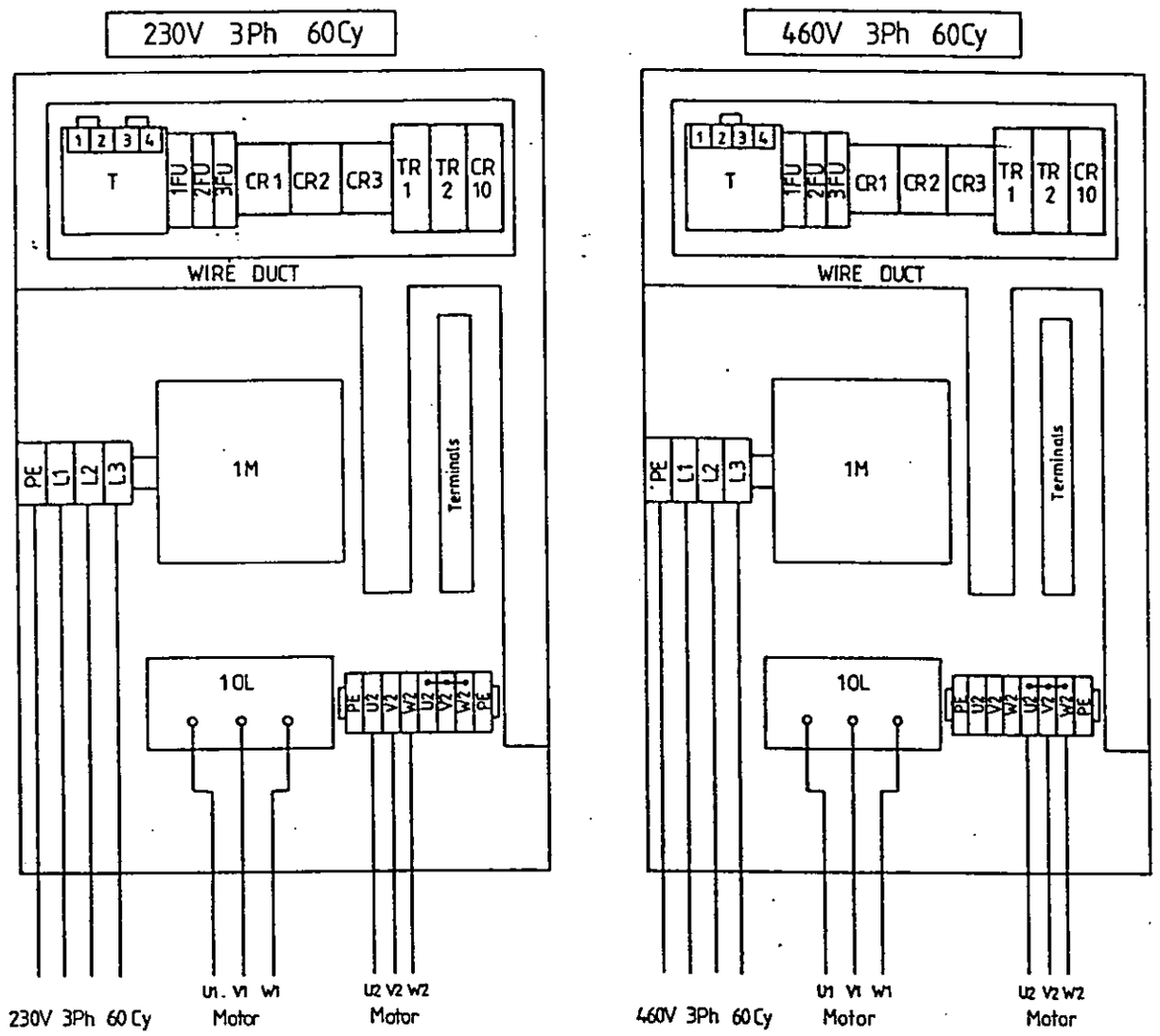


1M	Motor starter
1FU, 2FU, 3FU	Fuse (transformer)
T	Transformer
M	Motor
APS	Air pressure switch
CR1/2/3	Control relay
1SV	Solenoid valve (controls inlet valve and discharge valve)
3SV	Solenoid valve (oil stop)
TR2	Time delay relay (delay-off)
TR1	Time delay relay (released start)
1PB	Push button "off"
2PB	Push button "on"
2R	Indicating light (red, off)
G	Indicating light (green, ready for operation)
HM	Hour meter
LHM	Load hour meter
ETS2	Thermistor relay releasing device

Malfunction Indicators

1OL	Overload relay for motor	shutdown function
ETS	Excessive temperature switch	
SAPS	Safety air pressure switch	
HOFP	High oil filter pressure	indicating lights
HOSP	High oil separator pressure	
HAFP	High air filter pressure	
CR10	Thermal overload releasing relay air outlet oil seperator	automatic shutdown

7. Wiring diagram for BS 50/60, CS 75 page 3
St 501.514.3



Important!

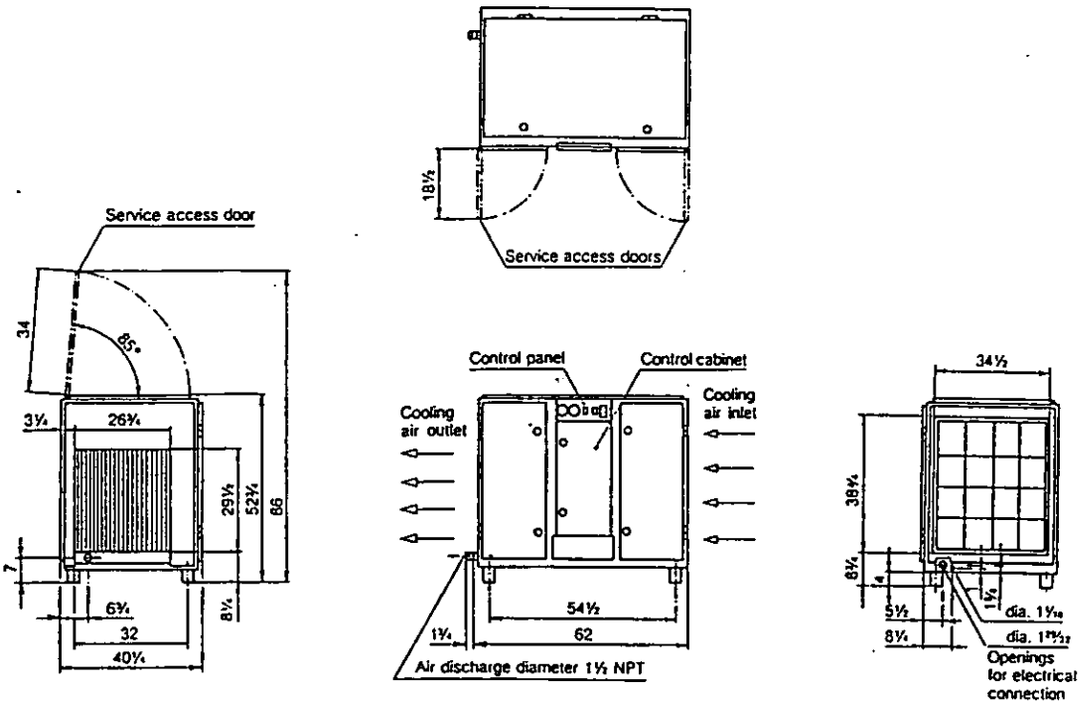
Before start-up connect the motor and transformer for the corresponding voltage!

KAESER COMPRESSORS

8. DIMENSIONAL DRAWING BS-- air cooled

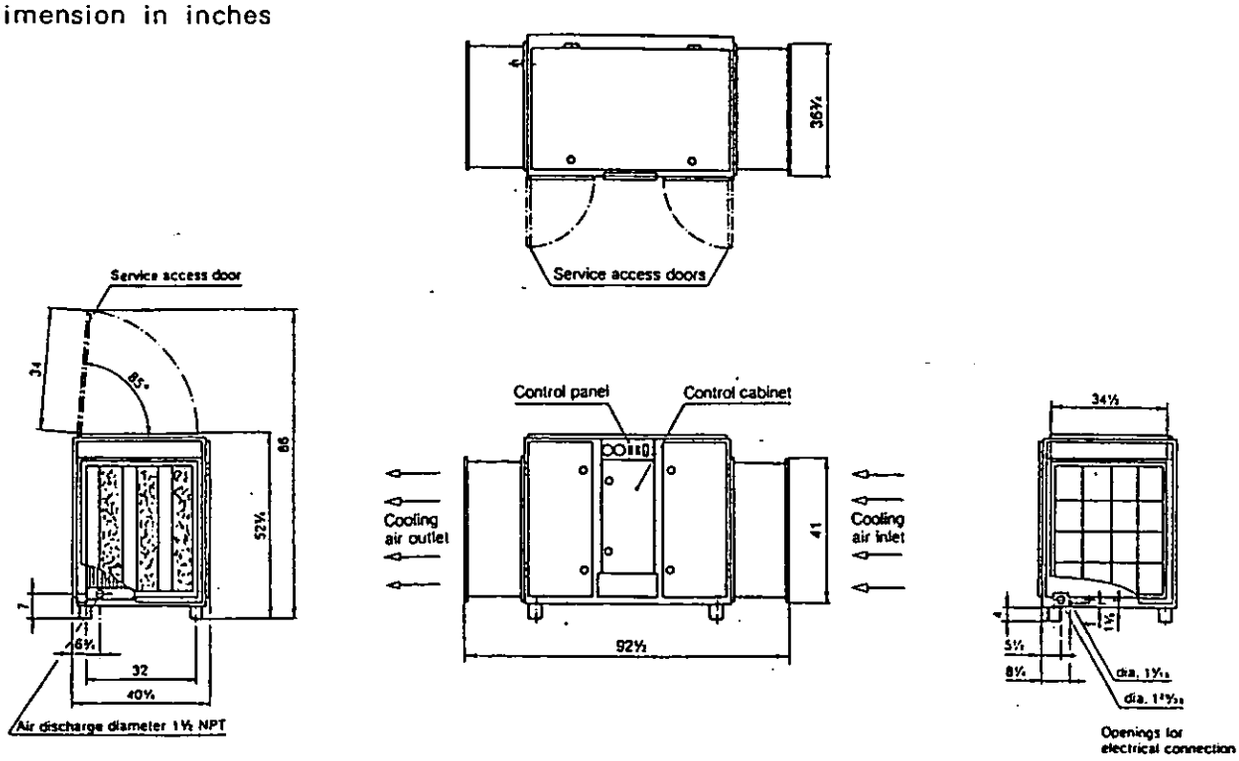
with soundproofing casing

Dimension in inches



with super soundproofing casing

Dimension in inches

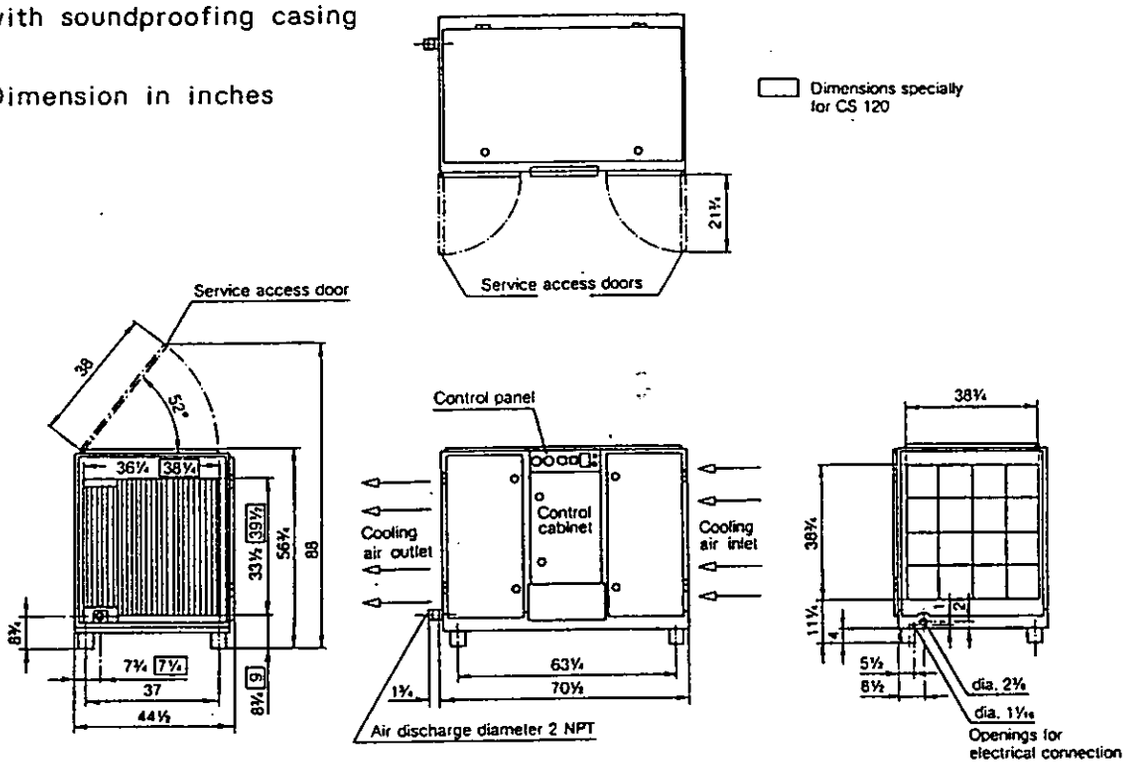


KAESER COMPRESSORS

8. DIMENSIONAL DRAWING CS - air cooled

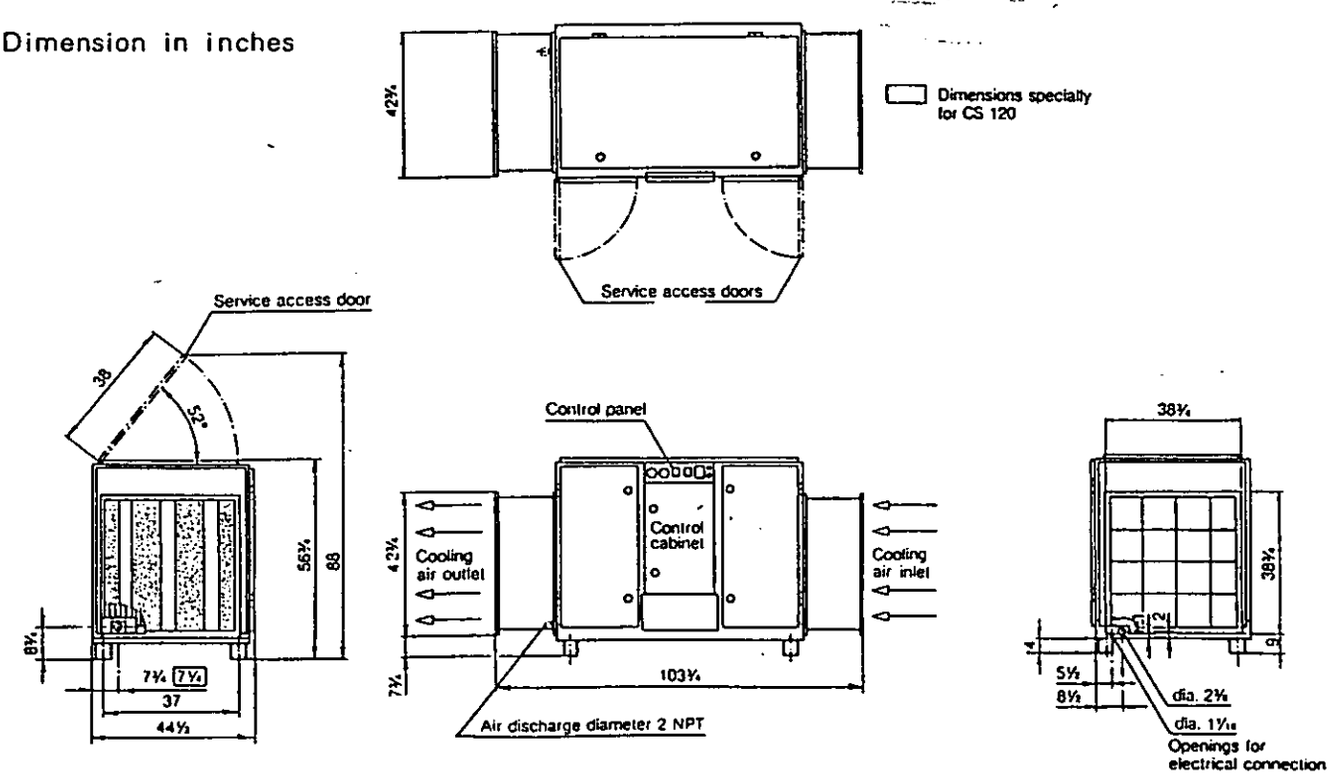
with soundproofing casing

Dimension in inches



with super soundproofing casing

Dimension in inches



BS/CS 4/03.86

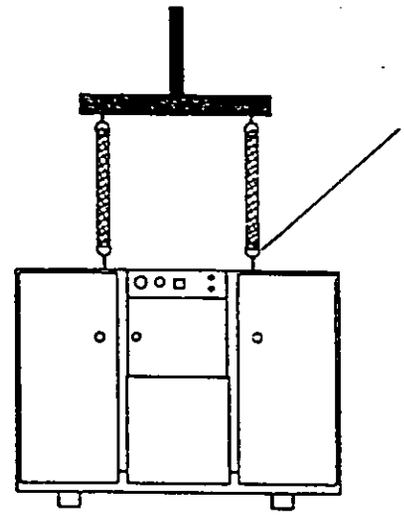
KAESER COMPRESSORS

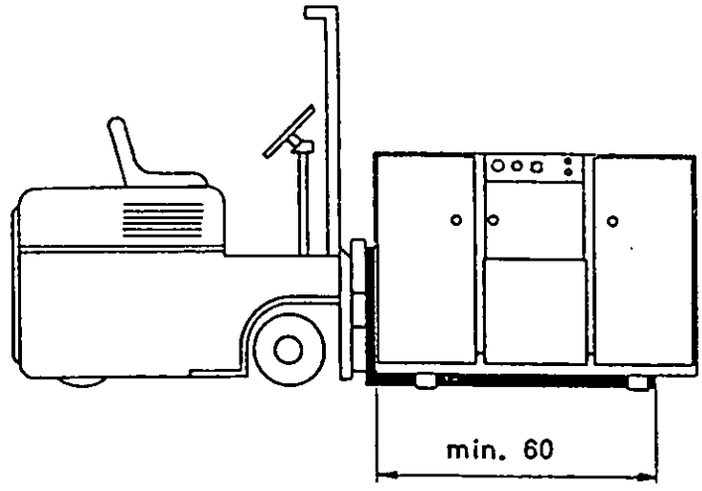
9. TRANSPORT INSTRUCTIONS

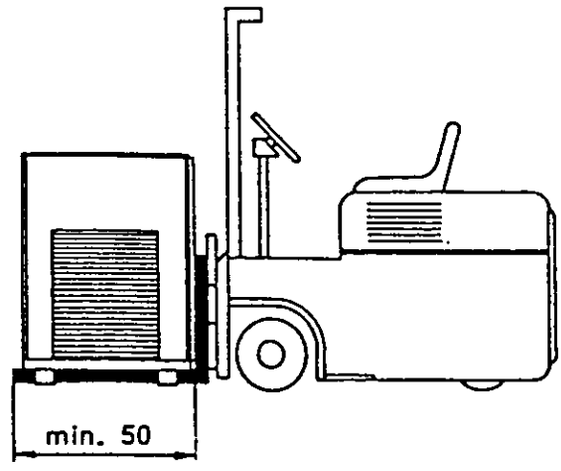
To avoid damage of the casing of the unit, it is recommended a fork lift or an adjustable spreader beam be used for transportation.

Model	Weight
BS 44	approx. 1520 lbs
BS 50	approx. 1850 lbs
BS 60	approx. 1940 lbs
CS 75	approx. 2490 lbs
CS 90	approx. 2600 lbs
CS 120	approx. 2930 lbs

Dimension in inches





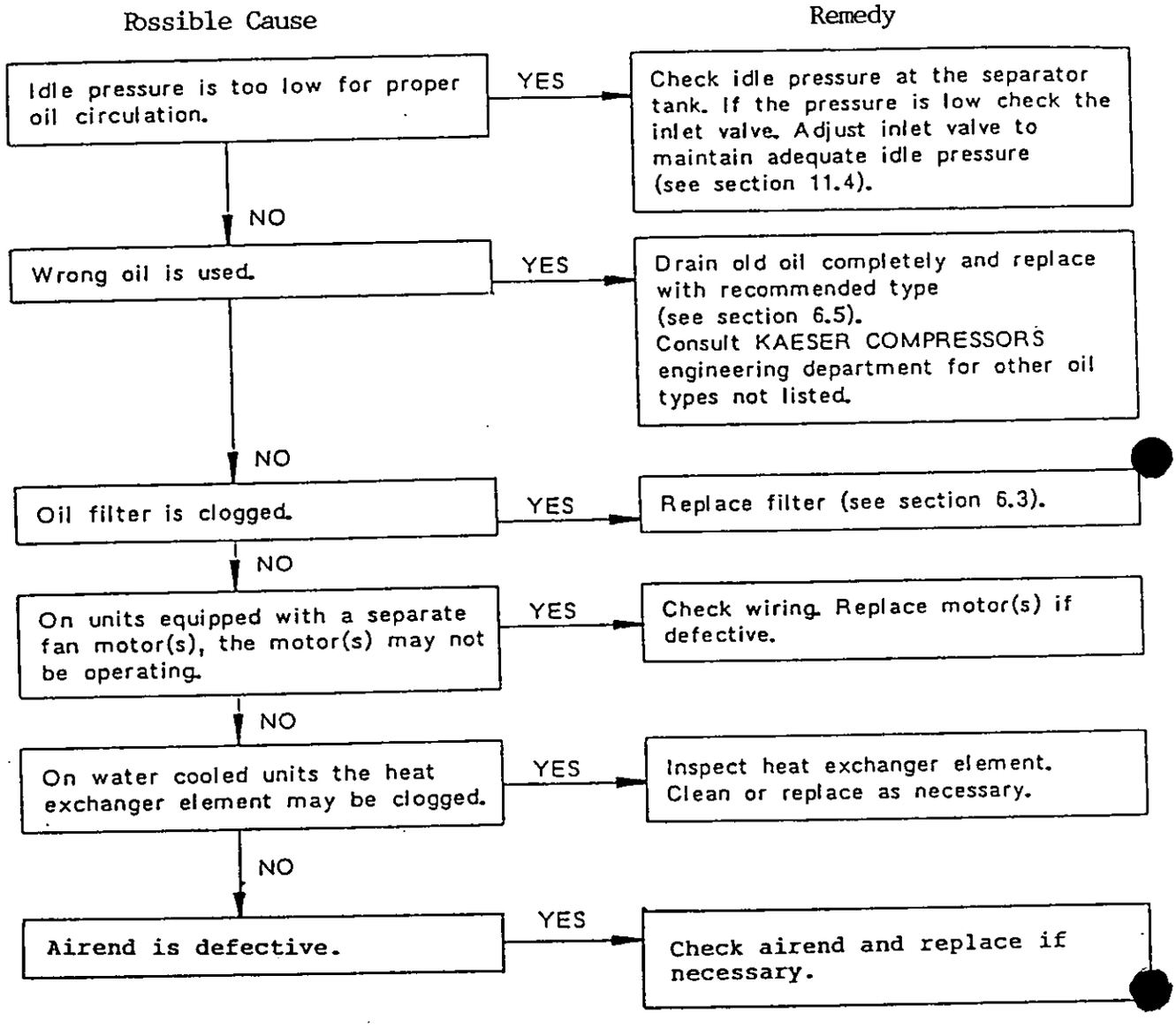


KAESER COMPRESSORS

10. TROUBLE SHOOTING

10.1 Airend temperature is too high (greater than 155 - 180°F)

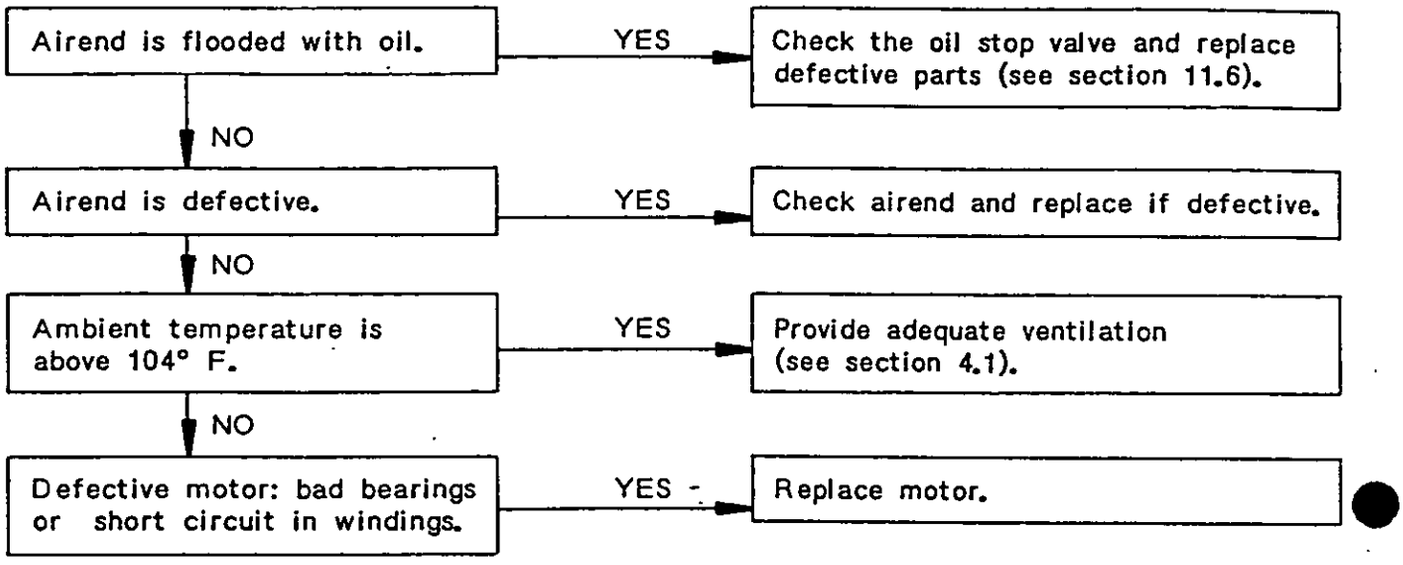
Possible Cause		Remedy
Cooling air inlet or outlet is too close to wall or other blockage.	YES →	Situate unit for adequate air flow (see section 4.1)
NO ↓		
Air intake filter mats are clogged.	YES →	Clean the mats or replace if necessary (see section 6.2).
NO ↓		
Ambient temperature is too high, i.e. greater than 104°F.	YES →	Provide cooler air from other source or move compressor to a cooler location.
NO ↓		
Cooling air supply is inadequate.	YES →	Provide required amount of ventilation (see section 4.1).
NO ↓		
If cooling air outlet duct is used it may be too narrow or too long.	YES →	Consult KAESER COMPRESSORS engineering department for duct requirements.
NO ↓		
The ribs of the coolers (air and oil coolers) are clogged	YES →	Clean with compressed air/water or steam injector. (see section 6.11).
NO ↓		
Oil level is low.	YES →	Check oil level and add necessary amount of recommended oil (see section 6.5). Check dirt trap filter in oil return line for possible contamination.
NO ↓		
Thermostatic valve is not functioning correctly.	YES →	Check the valve spring and actuating piston. Replace defective parts (see section 11.2).
NO ↓		
Oil stop valve is not functioning correctly.	YES →	Check the valve and replace any defective parts (see section 11.6).
NO ↓		


Possible Cause
Remedy
Idle pressure is too low for proper oil circulation.
YES
Check idle pressure at the separator tank. If the pressure is low check the inlet valve. Adjust inlet valve to maintain adequate idle pressure (see section 11.4).
NO
Wrong oil is used.
YES
Drain old oil completely and replace with recommended type (see section 6.5). Consult KAESER COMPRESSORS engineering department for other oil types not listed.
NO
Oil filter is clogged.
YES
Replace filter (see section 6.3).
NO
On units equipped with a separate fan motor(s), the motor(s) may not be operating.
YES
Check wiring. Replace motor(s) if defective.
NO
On water cooled units the heat exchanger element may be clogged.
YES
Inspect heat exchanger element. Clean or replace as necessary.
NO
Airend is defective.
YES
Check airend and replace if necessary.

KAESER COMPRESSORS

10.2 Motor overload relay switches the unit off

Possible Cause		Remedy
Overload relay is set wrong or is defective.	YES	Check line current and adjust overload relay as necessary (see section 4.4). Replace relay if defective.
NO		
Motor is running two phase: defective motor or blown fuse.	YES	Check wiring, tighten any loose connections. Replace fuse(s) or motor if necessary.
NO		
Motor stop/start cycle is too frequent.	YES	See section 10.5
NO		
Operating pressure is too high.	YES	Adjust pressure switch to proper operationg pressure (see section 5.6). Replace pressure switch if defective.
NO		
Oil separator cartridge is contaminated.	YES	Check pressure differential across cartridge. Replace cartridge and dirt-trap filter if necessary (see section 6.4).
NO		
Motor starts against pressure because system does not get vented.	YES	- Check ballcock and open it if it is closed. - Check the diaphragm in the vent valve and replace if defective (see section 11.7). - Check the minimum pressure check valve. Adjust minimum pressure function or replace defective parts as necessary. (see section 11.5). - Check silencer in vent line. Clean or replace as needed.
NO		


Airend is flooded with oil.
YES
Check the oil stop valve and replace defective parts (see section 11.6).
NO
Airend is defective.
YES
Check airend and replace if defective.
NO
Ambient temperature is above 104° F.
YES
Provide adequate ventilation (see section 4.1).
NO
Defective motor: bad bearings or short circuit in windings.
YES
Replace motor.

10.3 Compressor is running but produces no pressure

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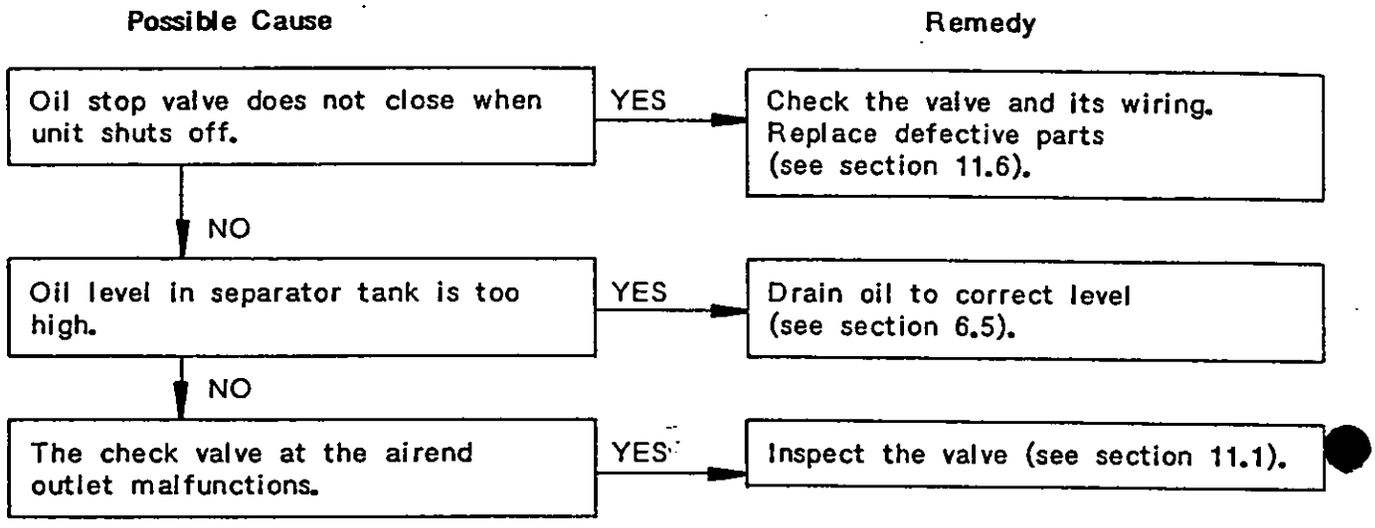
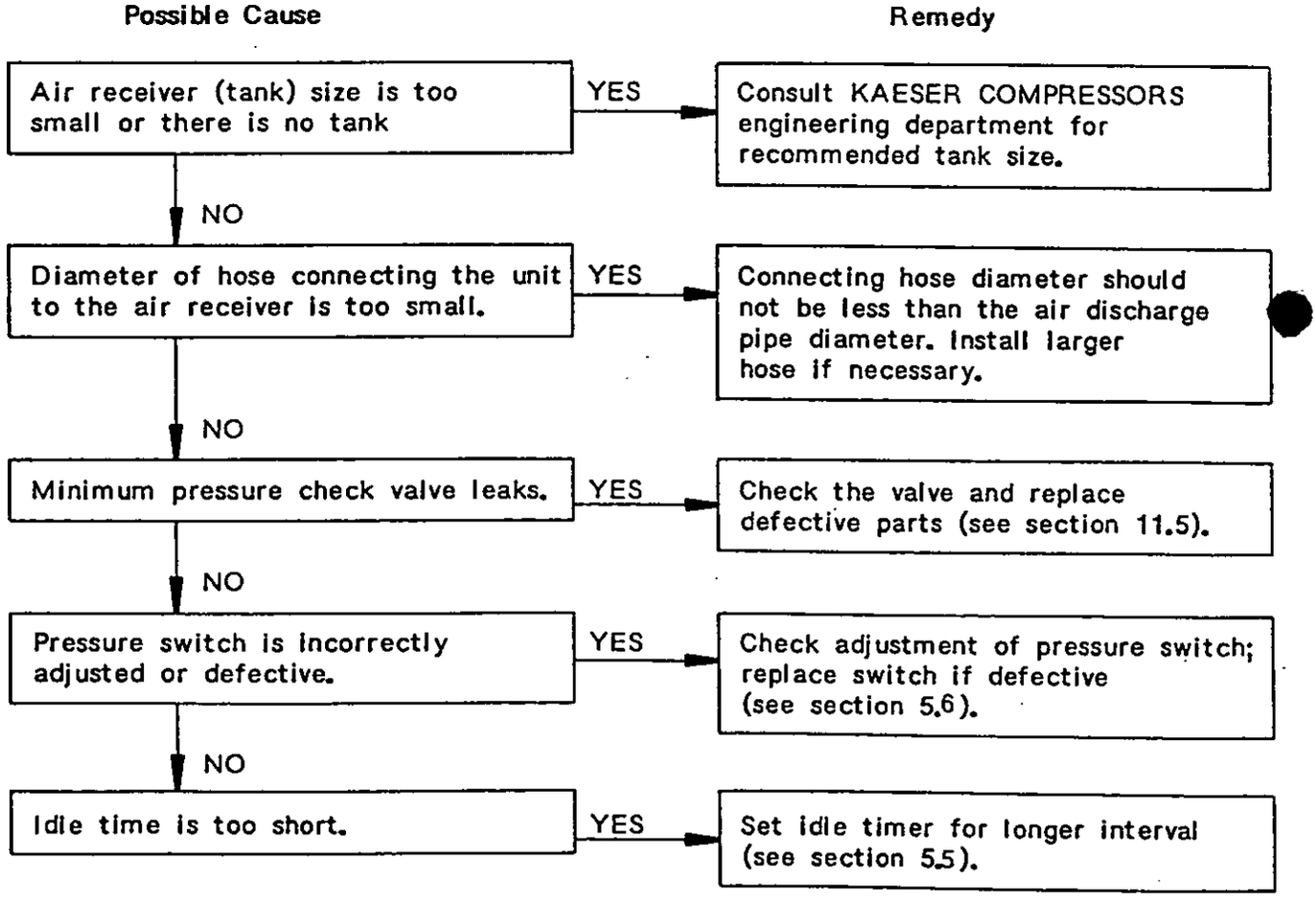
Possible		Remedy
Airend rotates in wrong direction.	YES	Reverse motor polarity (see section 5.2 and 7).
NO		
Inlet valve does not open or opens only partially.	YES	Check the inlet valve, control valve and lines. Replace defective parts as needed (see section 11.4).
NO		
Discharge valve does not close at full load.	YES	Check the control valve, control lines and discharge valve. Replace defective parts as needed (see section 11.3 and 11.7).
NO		
Minimum pressure check valve is defective.	YES	Check the valve and replace defective parts (see section 11.5)
NO		
Leaks in plant system.	YES	Check for open valves, loose connections, defective tools, etc.
NO		
Plant system air demand exceeds capacity of compressor.	YES	Reduce system demand or install additional compressor(s).
NO		
Starting timer for WYE switch over or released start up does not work.	YES	Check timer and replace if necessary. (Supplement - Electrical System).
NO		
Air leak in unit.	YES	Tighten loose connections, repair or replace defective parts as necessary.
NO		
Socket is still in the hose coupling at the oil separator tank.	YES	Remove socket from coupling (see section 6.6).
NO		
Safety valve has blown off.	YES	See section 10.6.
NO		
Airend is defective.	YES	With unit running, place hand over air inlet filter casing. Should feel considerable suction. If not, airend is producing no pressure.

10.4 Oil flows out of air filter



10.5 Full-load/Idle sequence occurs too frequently



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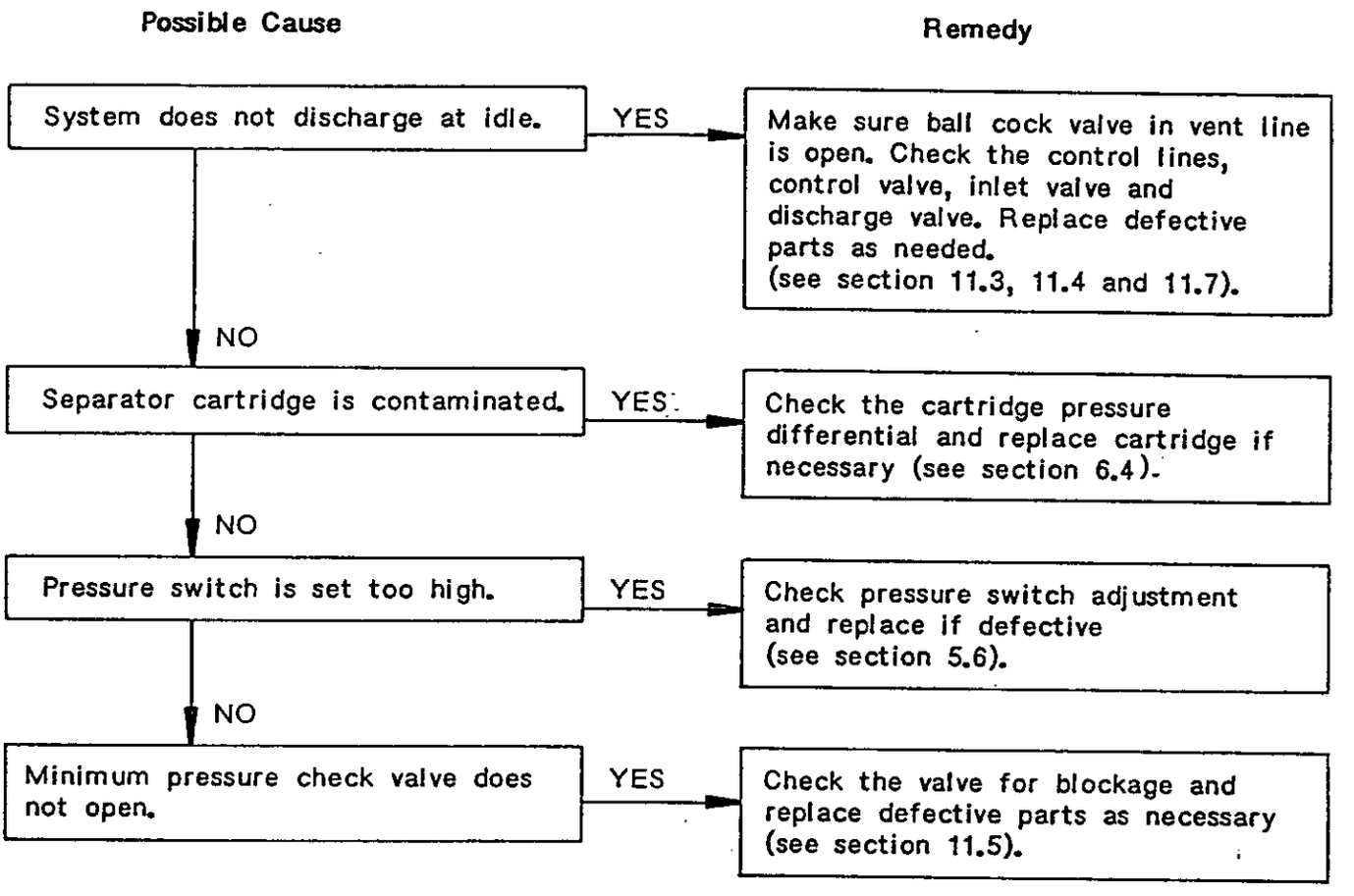
10.6 Safety-valve blows off



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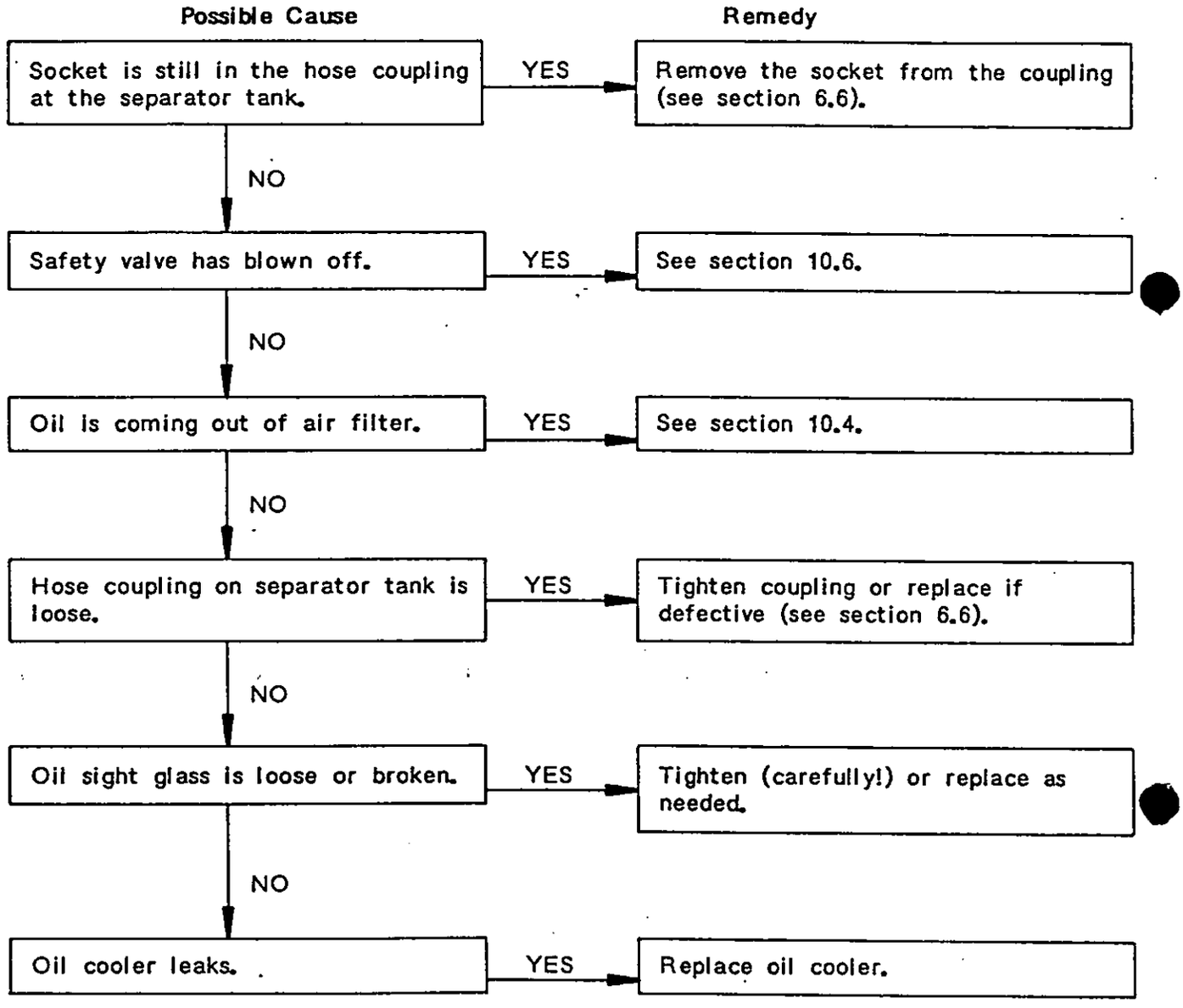
10.7 Oil in the unit enclosure



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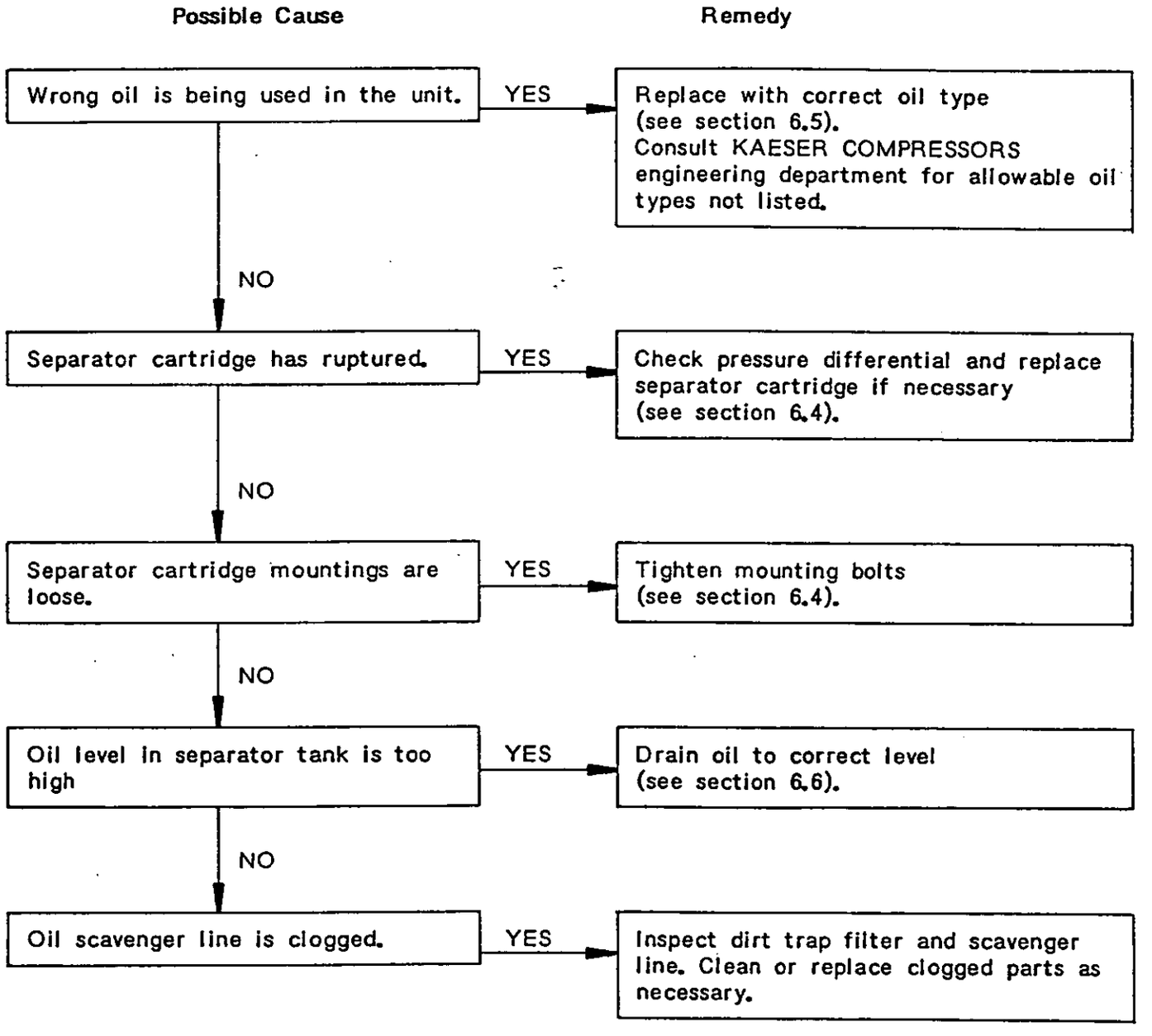
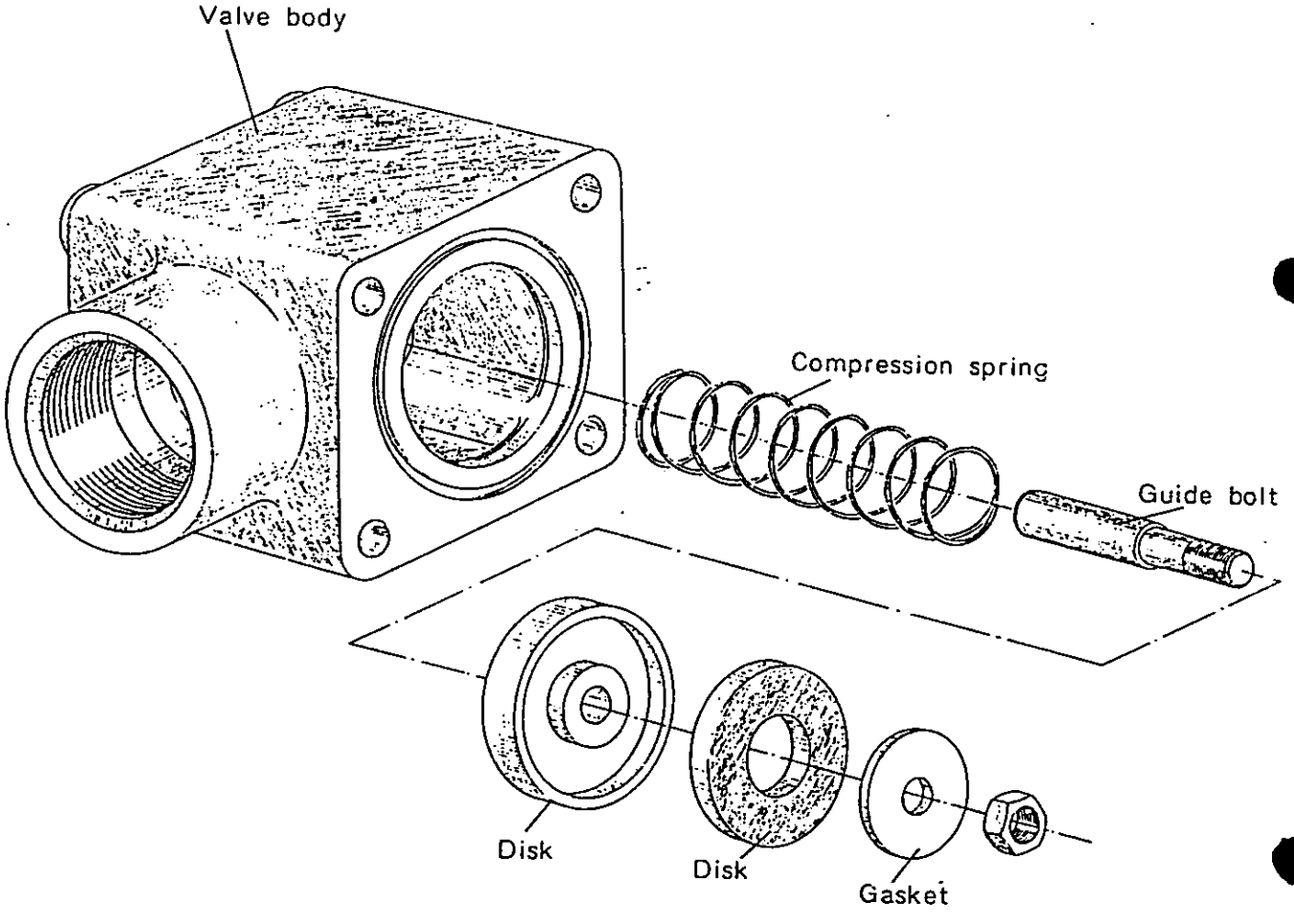
10.8 Excessive oil consumption



KAESER COMPRESSORS

11. VALVE SERVICE SUPPLEMENT

11.1 Check Valve



Function

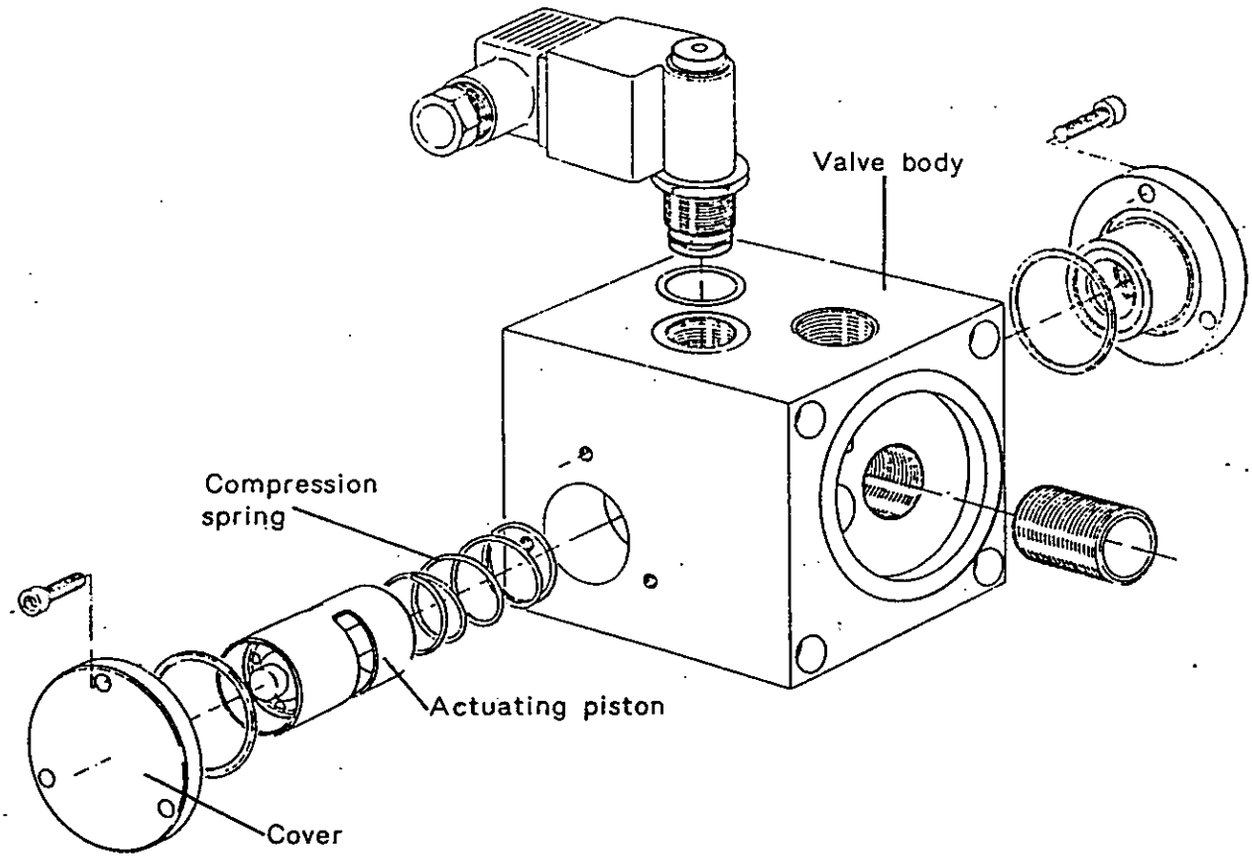
To prevent the backflow of oil-air mixture into airend during cut-off.

Compressor Mode	Valve Condition
Full-load	Open
Idle	Open
Cut-off	Closed

Checking

Remove bolts and pull away from airend. Do not attempt to remove the air-oil pipe. Manually operate check plate. Condensation, a broken spring or oil deposits may cause it to stick open or shut.

11.2 Combination (Thermostatic) Valve

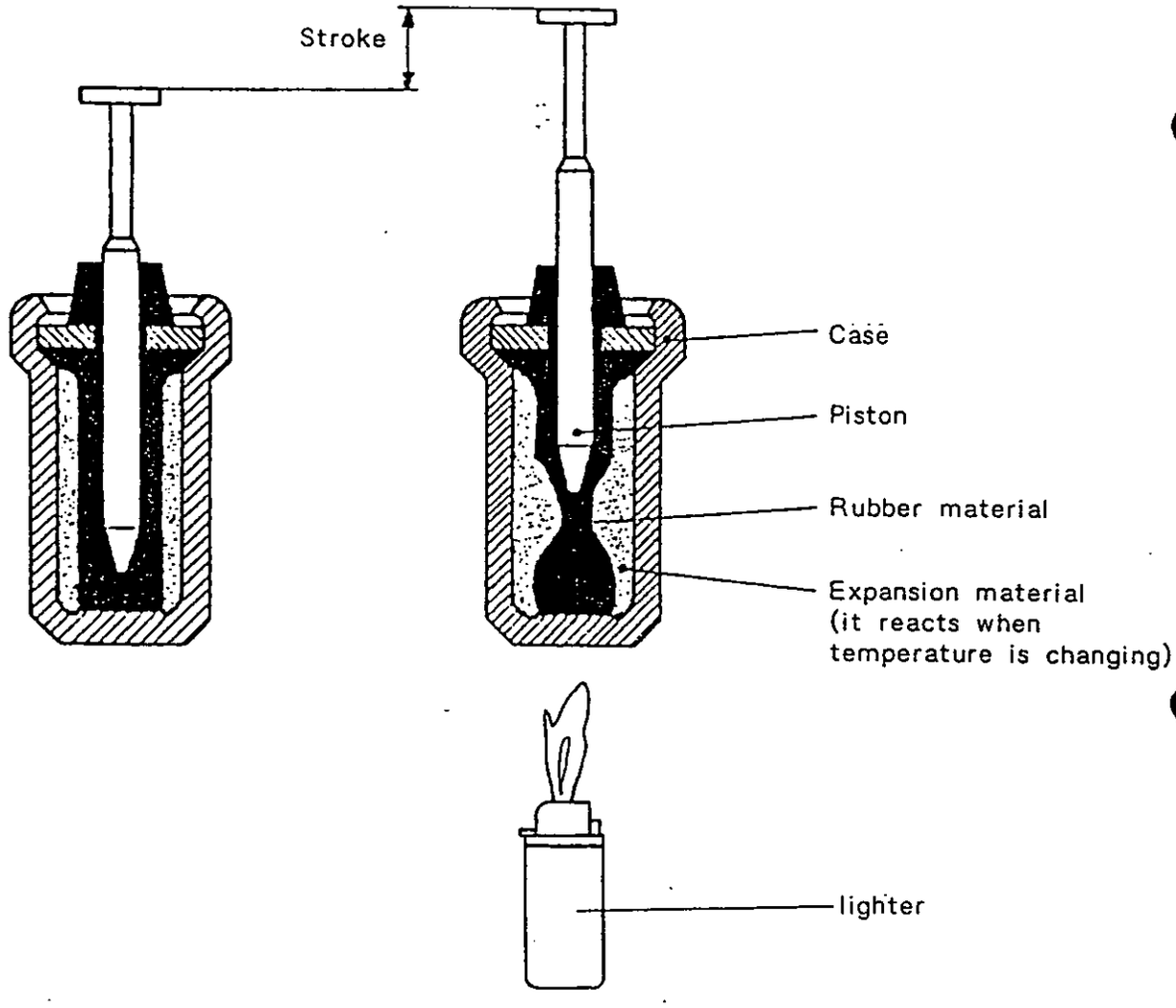


Function

To regulate flow of oil into oil cooler, thus maintaining proper oil temperature. This valve directs oil into the cooler, or by-passes the cooler to send oil directly back to the airend, as necessary.

Checking thermostatic operating features of the working element

Start compressor after allowing it to cool. If thermostatic valve is operating correctly, there should be a sharp increase in the temperature of the cooling exhaust air when the unit reaches operating temperature as the valve directs warm oil through the cooler. If no such increase occurs, or machine runs hotter than normal (greater than 180° F), then remove the actuating piston from the valve assembly. Apply heat to the end of the working element as shown:

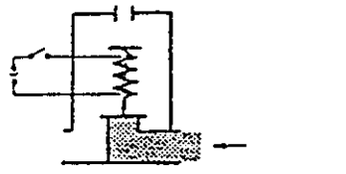


Position: oil is cold

Position: operating temperature is reached

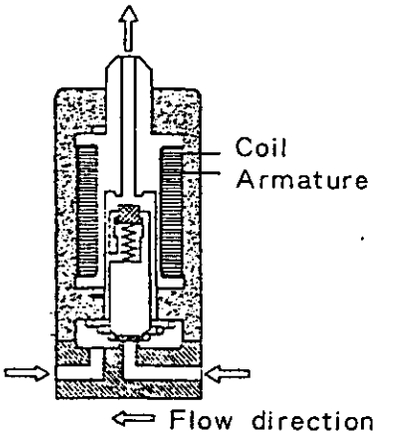
The working element should move outward in the direction indicated. Replace the actuating piston if the element does not move.

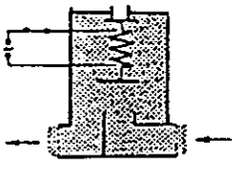
11.3 Control Valve



Deenergized closed:

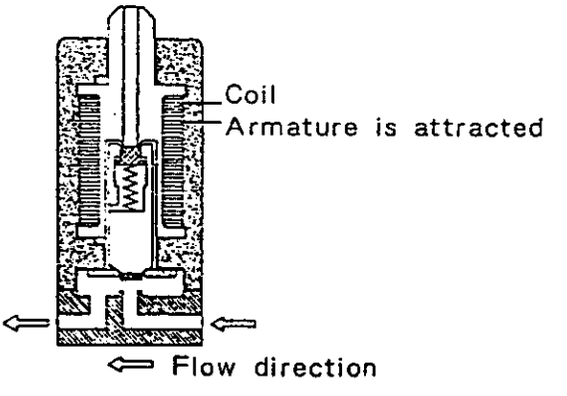
(currentless)
when compressor is running off-load or is cut-off (WYE-time)





Energized opened:

when compressor is running on-load (Delta-time)



Function

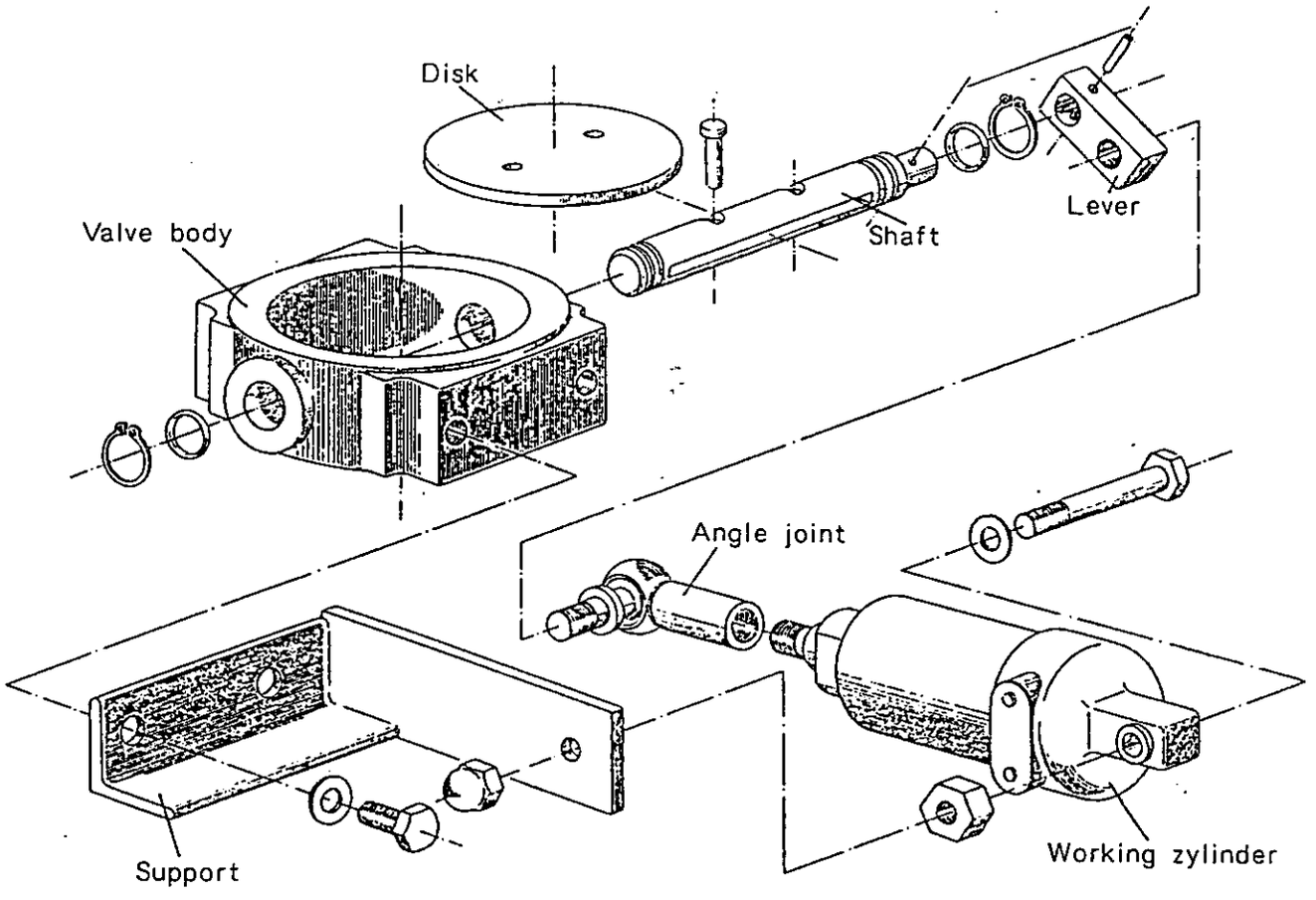
This valve is activated by a solenoid coil. It controls the operation of the vent valve and the inlet valve. When the control valve is open, the vent valve is closed and the inlet valve is open. When the control valve is closed, the vent valve is open and the inlet valve is closed.

Compressore Mode	Valve Condition
Full-load	Open
Idle (WYE-time, or released start up time)	Closed
Cut-off	Closed

Checking

The coil operates on 110 V AC, so it may be checked with power from any standard outlet. Disconnect leads to the control box and connect outside power. Coil should energize and operate with an audible click. If coil operates with external power, but valve does not operate when machine runs, then check for power in leads from pressure switch. Make sure that the machine is running at full-load when checking for power from pressure switch. If coil operates, and is receiving power from the pressure switch at full-load, but valve still does not function properly, then check control lines for blockage.

11.4 Inlet Valve



Function

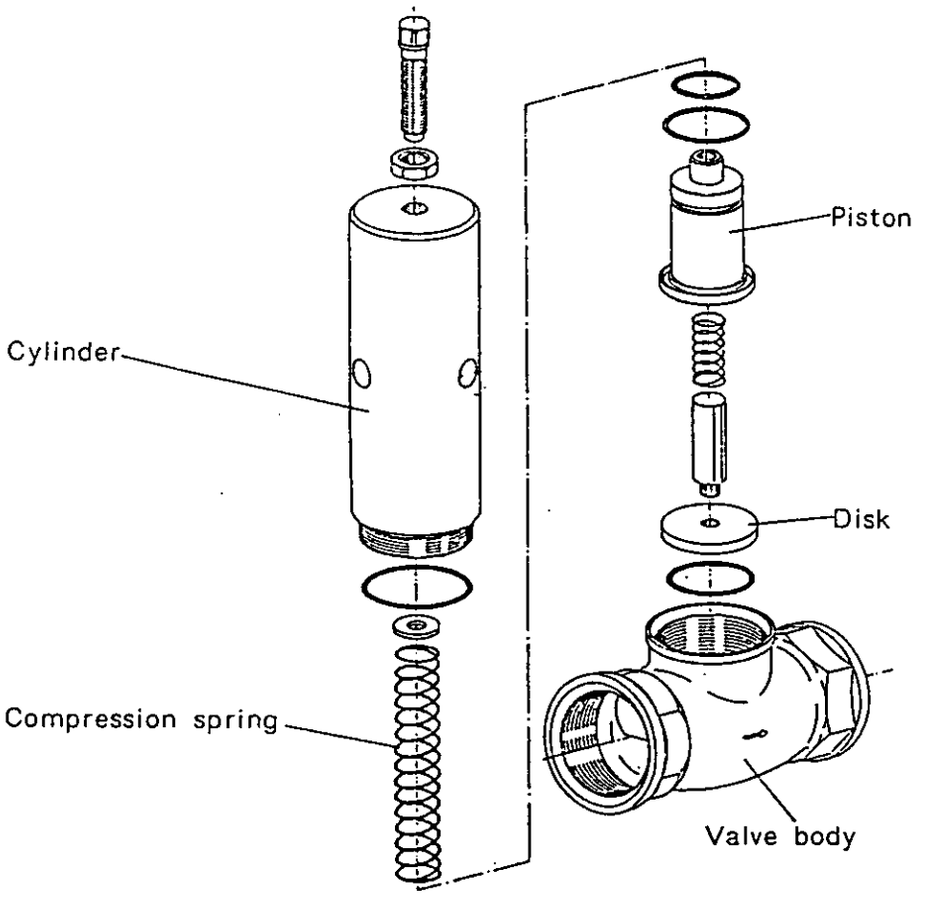
To control the flow of air into the airend. There is a hole in the valve plate to allow some air to enter the airend when the inlet valve is closed. This hole is just big enough to allow adequate idle pressure for proper oil circulation.

Compressor Mode	Valve Condition
Full-load	Open
Idle (WYE-time, or released start up time)	Closed (but idling hole open)
Cut-off	Closed

Checking

- Pull on the lever that connects the working cylinder to the valve plate, i.e. manually open the inlet valve. It should close when released. If it does not close, or there is no resistance, then the working element spring is defective.
- Run the machine at full load to build up system pressure. Pour soapy water on working cylinder. Bubbles indicate an air leak. Replace entire working cylinder if any leakage is indicated.
- Disconnect valve plate linkage and manually rotate valve plate. It should rotate 360° freely. If it does not then the valve plate is defective.

11.5 Minimum pressure check valve



Function

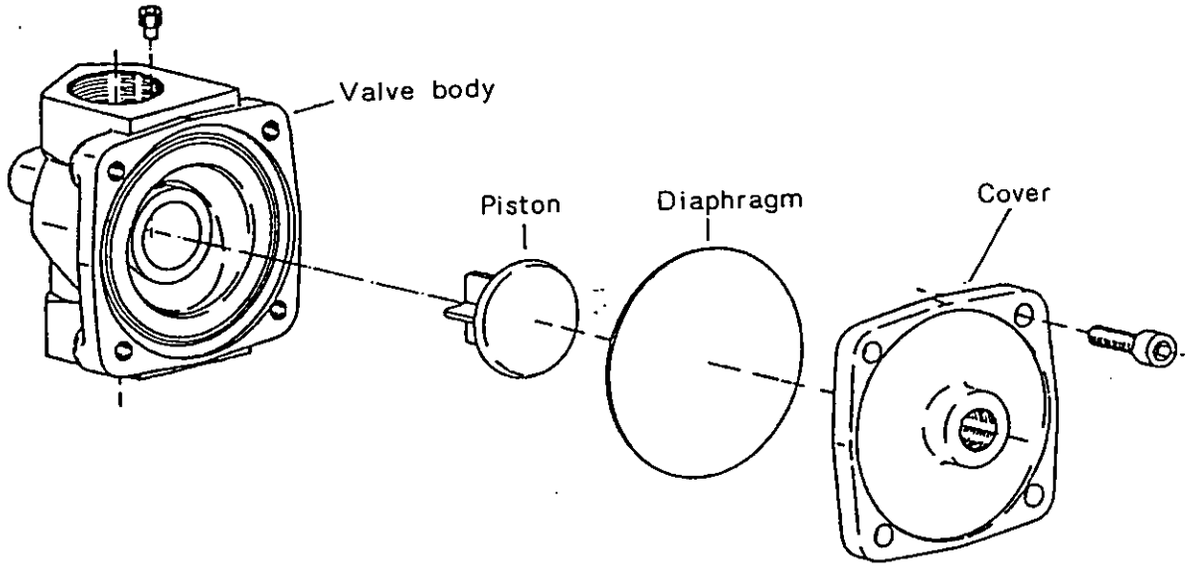
- Minimum Pressure:
  Allows compressor to build up sufficient pressure for adequate oil circulation before releasing air to the receiver.
- Check Funktion:
  Prevents backflow of air through the unit.

Compressor Mode	Valve Condition
Full-load	Open
Idle (WYE-time, or released start up time)	Closed
Cut-off	Closed

Checking

- Minimum Pressure:
  Start the unit and watch the separator tank pressure and the instrument panel readings. The separator tank pressure should go to about 60 psi before any pressure is indicated on the instrument panel. Be sure that the panel gauge shows no pressure before attempting this test.
- Check Funktion:
  Isolate machine and shut it off at maximum pressure. If the valve is not operating then the instrument panel gauge will show a rapid loss of pressure.

11.7 Vent valve (Discharge valve)



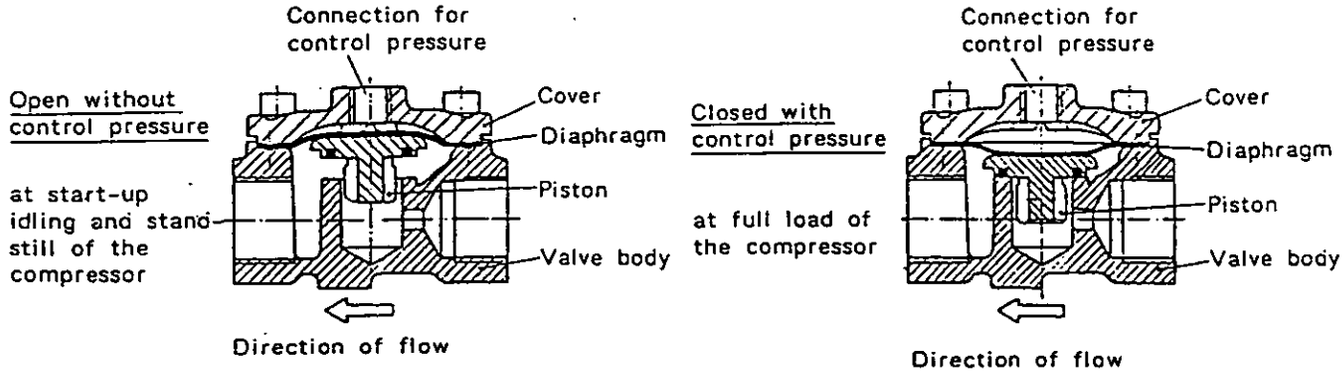
Function

To discharge the system pressure during idle and cut-off. It is necessary to discharge pressure during idle to reduce motor load, thus saving energy. The system must be discharged when shut off because starting the compressor against pressure will damage the motor.

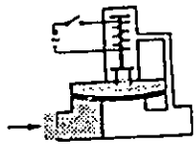
Compressor Mode	Valve Condition
Full-load	Closed
Idle (WYE-time, or released start up time)	Open
Cut-off	Open

Checking

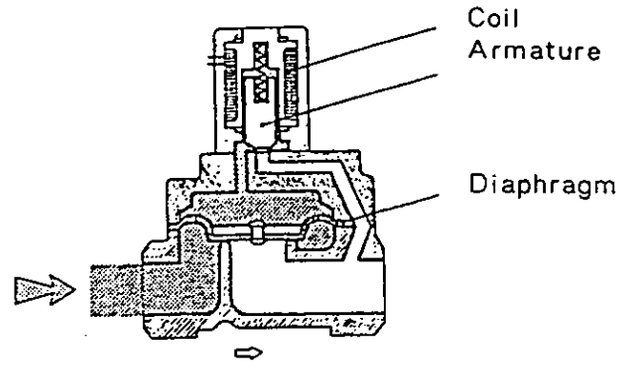
- Close ball cock valve in the discharge line.
- Start unit, allow to idle, and shut off immediately.
- If the vent valve diaphragm is defective the inlet valve will operate. Replace the diaphragm if it is defective.

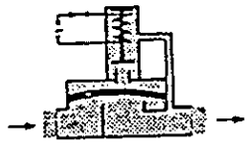


11.6 Oil stop valve

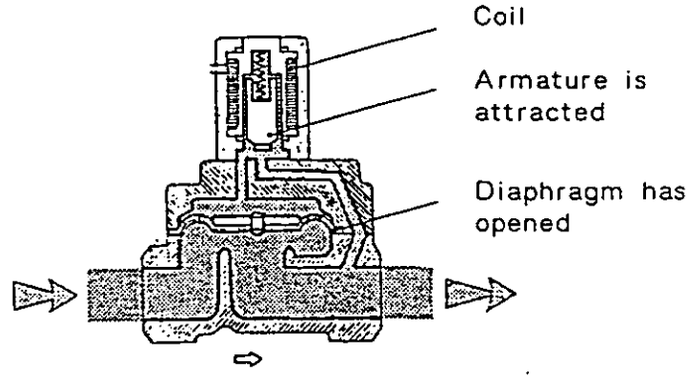


Deenergized closed:
(currentless)
when compressor is switched off.





Energized opened:
when compressor is running off load or on load.



Function

Controls flow of oil to the airend. This valve is activated by a solenoid coil and should always be open when the motor is running. It closes only when the unit shuts off to prevent oil from flooding the airend.

Compressor Mode	Valve Condition
Full-load	Open
Idle (WYE-time, or released start up time)	Open
Cut-off	Closed

Checking

- Be sure to always allow unit to complete one full-load/idle sequence before shutting the machine off. Avoid shutting off unit under full load. Allow unit to idle first if possible.
- Coil activates on 110 V AC. It may be tested with power from any standard outlet. To test coil disconnect leads from the No. 1 Motor Starter and apply power from external source. Coil should activate with an audible click.
- Check for power from No. 1 Motor Starter leads with motor running. If there is no power when motor is running then the starter may be defective.
- If coil activates, and there is power in the leads from the motor starter with the motor running, but the valve still does not operate, then check the diaphragm for rupture or blockage.

BS 50
BS 60

A 20

B 20

C 20

D 21

KAESER COMPRESSORS, INC. P.O.Box 7416 239 Industrial Drive, Fredericksburg, Virginia 22401
Tel. (703) 898.5500 Telex 827493

BS 50
BS 60

- PARTS MANUAL
- RECOMMENDED SPARE PARTS LIST

A 20

B 20

C 20

D 21

KAESER COMPRESSORS

I N D E X

Caution:

If not otherwise indicated all measurements in mm

R = Withword pipe thread
G = Pipe thread ISO 228
M = Metric ISO thread

KAESER COMPRESSORS

SECTION 1 I N T R O D U C T I O N

1. FOREWORD

This manual is provided for the operator's use and reference when ordering parts. An illustrated parts breakdown is included for identification. All compressor parts meet the manufacturer's highest quality used in the manufacture of the original equipment.

2. DESCRIPTION

The parts breakdown lists every part, assembly and sub-assembly of the compressor unit. Each part is idendified with a number. The location of and relationship between parts are clearly illustrated. Questions pertaining to the number, description and quantities needed for each assembly are dealt with in the following pages.

3. TO ORDER PARTS

When ordering parts, furnish the following information to prevent any error:

- Model designation and serial number of the unit as shown on compressor nameplate.
- Reference number, part number, description and quantity required as listed.

4. RECOMMENDED SPARE PARTS LIST

A recommended spare parts list is provided at the end of this manual. The list indicates the description, part number, the quantity used in the compressor, and minimum quantities which should be carried to ensure maximum protection of the compressor. The recommended spare parts inventory to be kept on hand varies according to the location of the nearest distributor, and is broken down as follows:

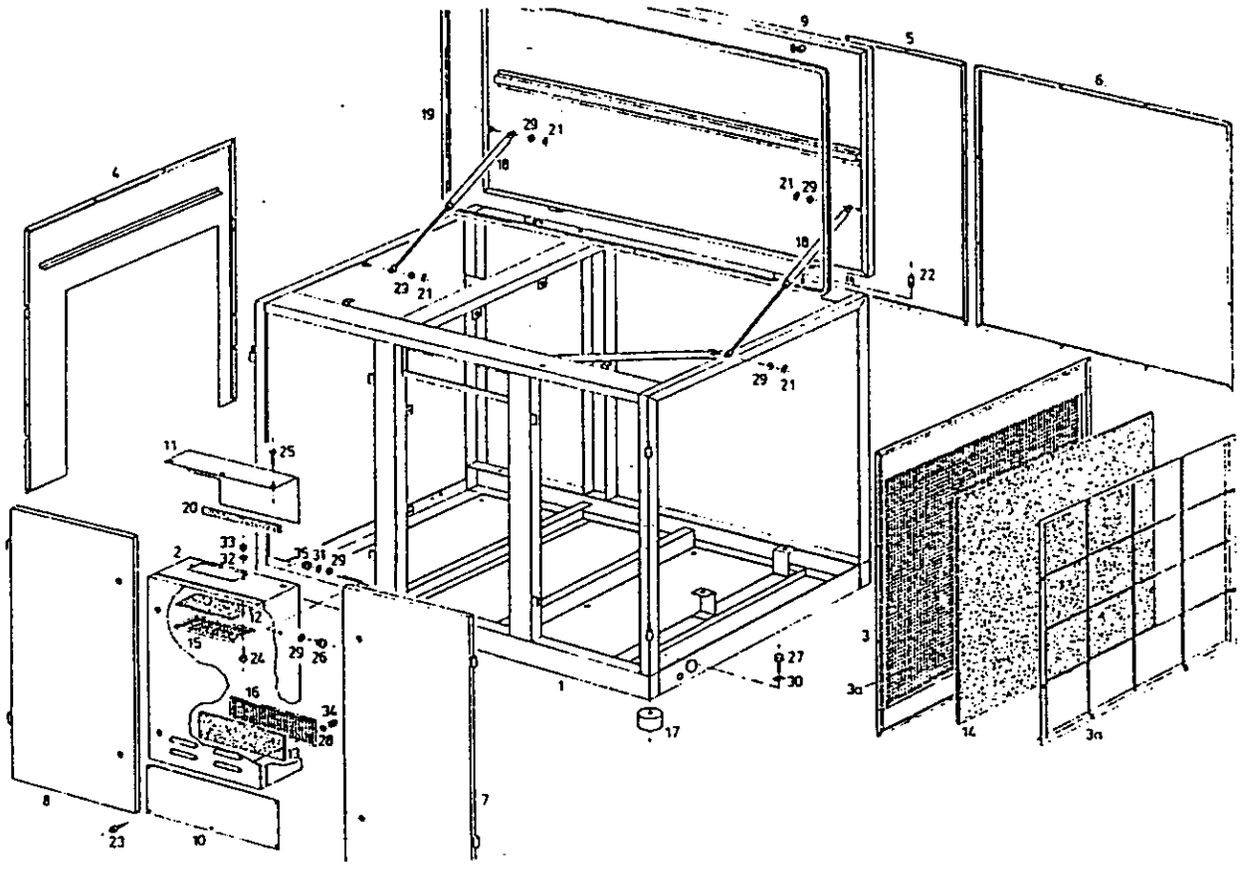
A. Local distributor
B. Nearby distributor
C. Remote distributor.

5. CAUTION

NEVER use parts other than the ones approved by the manufacturer and listed in this parts manual. The use of parts not appreoved by the manufacturer may result in hazardous conditions, over which the manufacturer has no control, bodily injury, and damage to the compressor unit. Such action would invalidate the manufacturer's warranty of the compressor unit.

Frame, Casing
BS 50, BS 60 type

KAESER COMPRESSORS



Ref.	Qty	Part No.	Description
1	1	4.9320.0	Frame
1) 2	1	7.2305.0	Controller
2) 2	1	7.2306.0	Controller
3	1	4.7026.3	Casing complete with 3a
3a	1	6.1939.0	Quick-change frame
4	1	4.7019.1	Casing
5	1	4.8324.0	Casing
6	1	4.8225.0	Casing
7	1	4.7071.1	Door
8	1	4.7072.1	Door
9	1	4.8323.0	Door
10	1	4.7070.1	Cover sheet
11	1	4.8305.0	Cover plate
12	1	4.7349.0	Filter mat
13	1	4.7347.0	Filter mat
14	1	6.1938.0	Filter mat
15	1	4.7348.0	Covering grating
16	1	4.7346.0	Covering grating
17	4	6.1347.0	Anti-vibration pads dia. 3 15/18x3 15/18"
18	2	5.1331.0	Gas spring
19	1	5.1398.0	Gasket profile 185"
20	1	5.1408.0	Froth rubber band 13"
21	4	5.1330.0	Split pin
22	1	6.2344.0	Stud M 10 x 35
23	49	6.0916.0	Philips head screw M 5 x 10
24	2	6.0901.0	Philips head screw M 5 x 15
25	3	6.0986.0	Sheet metal screw 3,5 x 9,5
26	4	6.0726.0	Hex. hd. screw M 8 x 20
27	4	6.2203.0	Hex. hd. screw M 16 x 20
28	2	6.0622.0	Washer
29	12	6.0623.0	Washer
30	4	6.0627.0	Washer

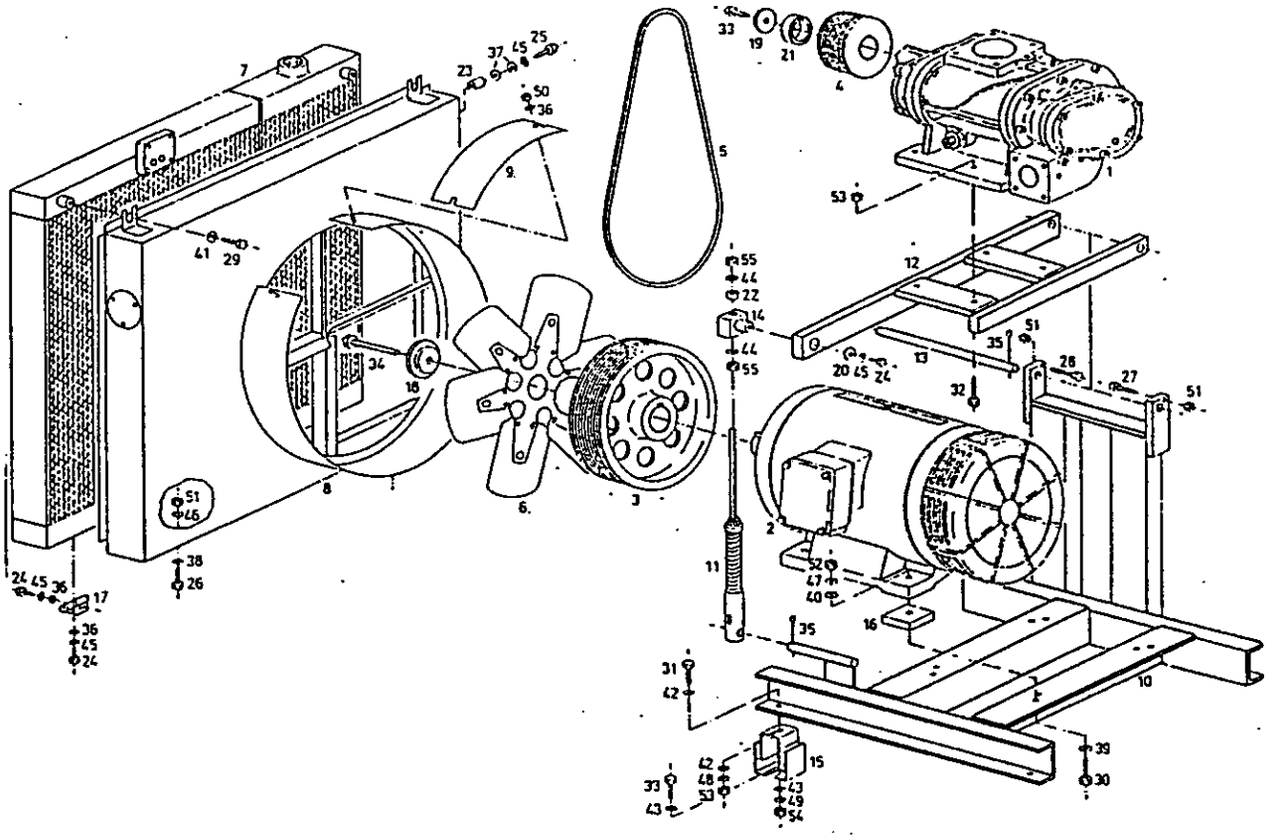
Ref.	Qty	Part No.	Description
31	4	6.0653.0	Spring washer
32	2	6.0660.0	Toothed lock washer
33	2	6.0681.0	Hex. nut M 5
34	2	6.0682.0	Hex. nut M 6
35	4	6.0684.0	Hex. nut M 8

1) Compressor Unit BS 50
2) Compressor Unit BS 60

A20

Driving system
BS 50, BS 60 type

KAESER COMPRESSORS

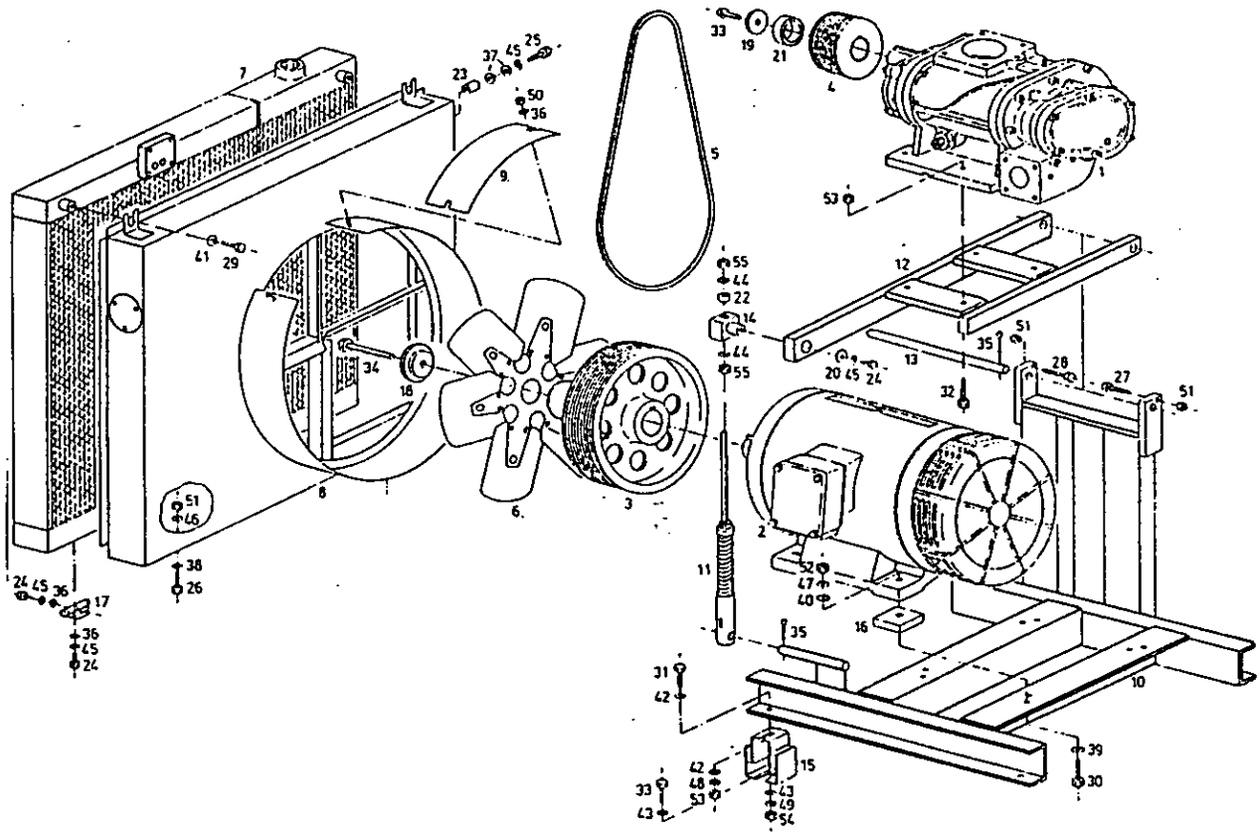


Ref.	Qty	Part No.	Description
1	1	1.3851.4	Screw compressor Sigma 2
1-3) 2	1	7.0940.0	Motor 3-phase 30 kW, 230/460 V
4-6) 2	1	7.0944.0	Motor 3-phase 37 kW, 230/460-V
1-3) 3	1	4.7283.1	Motor pulley dia. 12 19/32"
4-6) 3	1	4.7284.1	Motor pulley dia. 12 19/32"
1) 4	1	4.9876.0	Compressor pulley
2) 4	1	4.9877.0	Compressor pulley
3) 4	1	4.9878.0	Compressor pulley
4) 4	1	4.9879.0	Compressor pulley
5) 4	1	4.9880.0	Compressor pulley
6) 4	1	4.9881.0	Compressor pulley
1) 5	1	6.1434.0	Set of v-belts
2) 5	1	6.2533.0	Set of v-belts
3) 5	1	6.2542.0	Set of v-belts
4) 5	1	6.2532.0	Set of v-belts
5) 5	1	6.1434.0	Set of v-belts
6) 5	1	6.2533.0	Set of v-belts
6	1	5.0684.0	Fan wheel
7	1	5.1074.3	Cooler
8	1	4.8328.0	Fan case
9	1	SK 1426.73	Cover plate
10	1	4.8327.1	Swing frame
11	1	4.7566.1	Balance adjustment
12	1	4.8326.0	Whip
13	1	4.7572.1	Shaft
14	1	4.8322.0	Pivot bearing
15	4	6.1329.0	Base of the machine
1-3) 16	4	4.7593.0	Steel plate
17	2	4.7428.0	Hinge
18	1	4.7588.1	Centering disk
19	1	4.7592.0	Disk
20	1	5.0428.0	Disk

Ref.	Qty	Part No.	Description
21	1	4.7207.1	Intermediate ring
22	1	6.2369.0	Intermediate ring
-23	1	4.8321.0	Distance washer
24	8	6.0725.0	Hex. hd. screw M 8 x 15
25	1	6.0730.0	Hex. hd. screw M 8 x 40
26	2	6.0763.0	Hex. hd. screw M 10 x 30
27	1	6.0772.0	Hex. hd. screw M 10 x 55
28	1	6.0798.0	Hex. hd. screw M 10 x 70
29	2	6.2215.0	Hex. hd. screw M 12 x 25
1-3) 30	4	6.0799.0	Hex. hd. screw M 12 x 75
4-6) 30	4	6.0819.0	Hex. hd. screw M 16 x 60
.31	4	6.2210.0	Hex. hd. screw M 14 x 40
32	4	6.2200.0	Hex. hd. screw M 14 x 60
33	5	6.0813.0	hex. hd. screw M 16 x 40
1-3) 34	1	6.0795.0	Hex. hd. screw M 20 x 100
4-6) 34	1	6.0777.0	Hex. hd. screw M 20 x 65
35	3	6.0617.0	Split pin
36	10	6.0623.0	Washer
37	2	6.0631.0	Washer
38	2	6.0624.0	Washer
1-3 39	4	6.0625.0	Washer
4-6) 39	4	6.0627.0	Washer
1-3) 40	4	6.0633.0	Washer
4-6) 40	4	6.2376.0	Washer
41	2	6.0633.0	Washer
42	8	6.0626.0	Washer
43	8	6.0627.0	Washer
44	2	6.0629.0	Washer
45	10	6.0653.0	Spring washer
46	2	6.0654.0	Spring washer
1-3) 47	4	6.0655.0	Spring washer
4-6) 47	4	6.0657.0	Spring washer

B20

Driving system
BS 50, BS 60 type



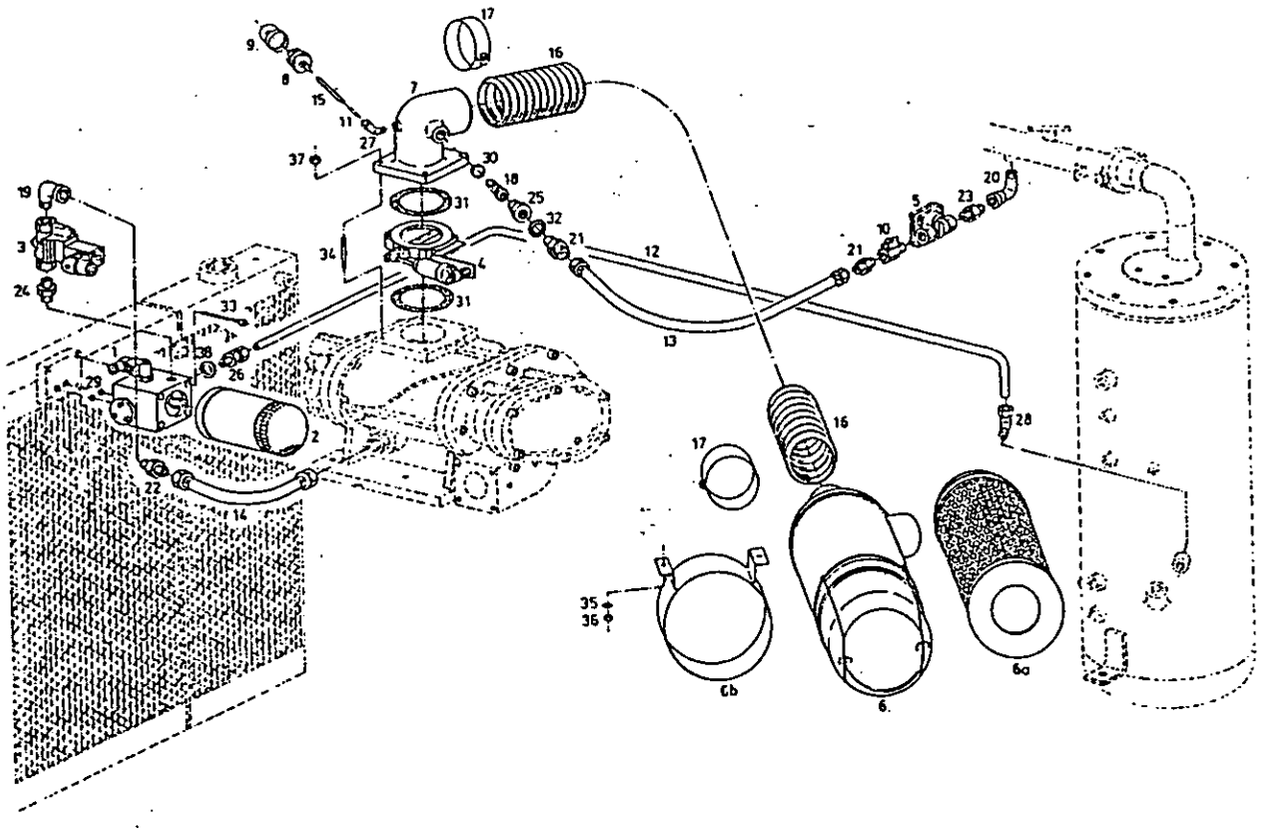
Ref.	Qty	Part No.	Description
48	4	6.0656.0	Spring washer
49	4	6.0657.0	Spring washer
50	2	6.0684.0	Hex. nut M 8
51	4	6.0685.0	Hex. nut M 10
1-3) 52	4	6.0686.0	Hex. nut M 12
4-6) 52	4	6.0688.0	Hex. nut M 16
53	8	6.0687.0	Hex. nut M 14
54	4	6.0688.0	Hex. nut M 16
55	2	6.0693.0	Hex. nut M 20

1) Compressor Unit BS 50,110 psig
2) Compressor Unit BS 50,145 psig
3) Compressor Unit BS 50,190 psig
4) Compressor Unit BS 60,110 psig
5) Compressor Unit BS 60;145 psig
6) Compressor Unit BS 60,190 psig

B20

Oil tubes, Vent lines
BS 50, BS 60 type

KAESER COMPRESSORS



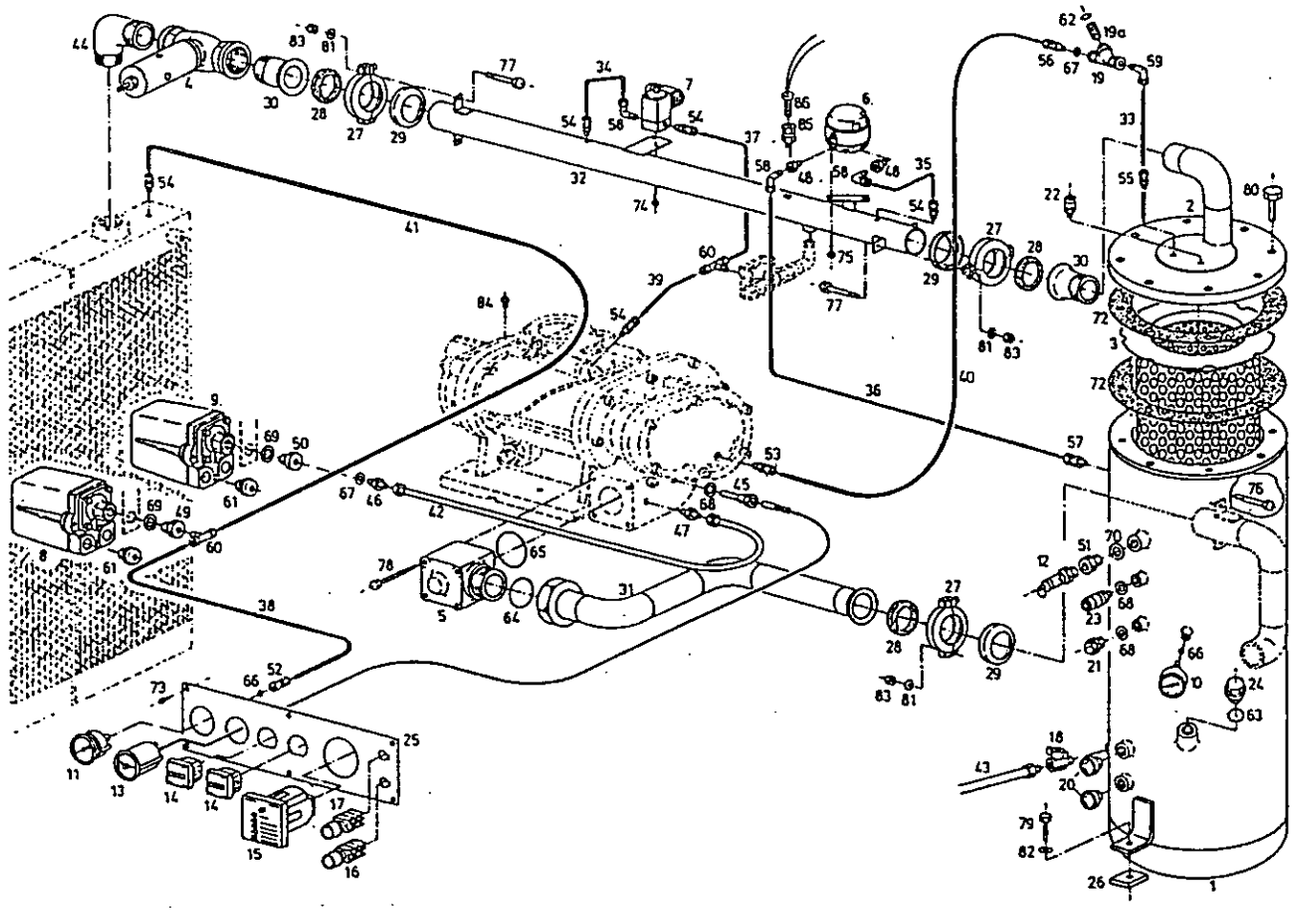
Ref.	Qty	Part No.	Description
1	1	4.8870.1	Combination valve
2	1	6.1981.0	Filter cartridge
3	1	2.0703.0	Oil stop valve compl. pasted with Pos. 19 and 24
4	1	4.7387.1	Inlet valve
5	1	2.1128.0	Vent valve compl. pasted with Pos. 10 and 21
6	1	6.1917.0	Air filter complete
6a	1	6.1996.0	Filter cartridge
6b	1	6.1920.0	Support for air filter
7	1	4.7324.2	Flange
8	1	7.0294.0	Vacuum switch (-19 11/16" wg)
9	1	7.0298.0	Protecting cap
10	1	8.0259.0	Ball cock R 1/2"
11	1	4.1850.0	Copper tube
12	1	4.8307.1	Tube
13	1	8.0864.1	Hose line R 1/2"x19 11/16"
14	1	8.1139.0	Hose line R 3/4"x28 47/64"
15	1		Hose line R 1/8"x1 49/64"
16	1	9.1078.0	Hose R 3"x25 25/64"
17	2	9.0659.0	Hose clip
18	1	6.1969.0	Silencer
19	1	6.1113.0	Angle R 3/4"
20	1	6.1062.0	Elbow R 1/2"
21	2	5.0784.0	Double nipple R 1/2"
22	1	5.0785.0	Double nipple R 3/4"
23	1	6.1030.1	Fitting R 1/2"
24	1	6.1033.0	Fitting R 3/4"
25	1	5.0925.0	Recuding socket R 3/4"xR 1/2"
26	1	6.0274.0	Pipe fitting R 3/4"
27	1	6.0251.0	Angle fitting R 1/8"
28	1	6.0259.0	Angle fitting R 3/4"
29	2	5.1423.0	O-ring dia.19 x 3
30	1	5.0532.0	Rubber sleeve

Ref.	Qty	Part No.	Description
31	2	5.0567.1	Gasket for inlet valve
32	1	6.1524.0	Gasket R 1/2"
33	4	6.2411.0	Cylinder screw with inside hex. M 6 x 100
34	4	6.2342.0	Stud M 10 x 65
35	2	6.0631.0	Washer
36	2	6.0684.0	Hex. nut M 8
37	4	6.0685.0	Hex. nut M 10
38	1	6.1527.0	Gasket R 3/4"

C20

Control tubes, Compressed air tubes BS 50, BS 60 type

KAESER COMPRESSORS

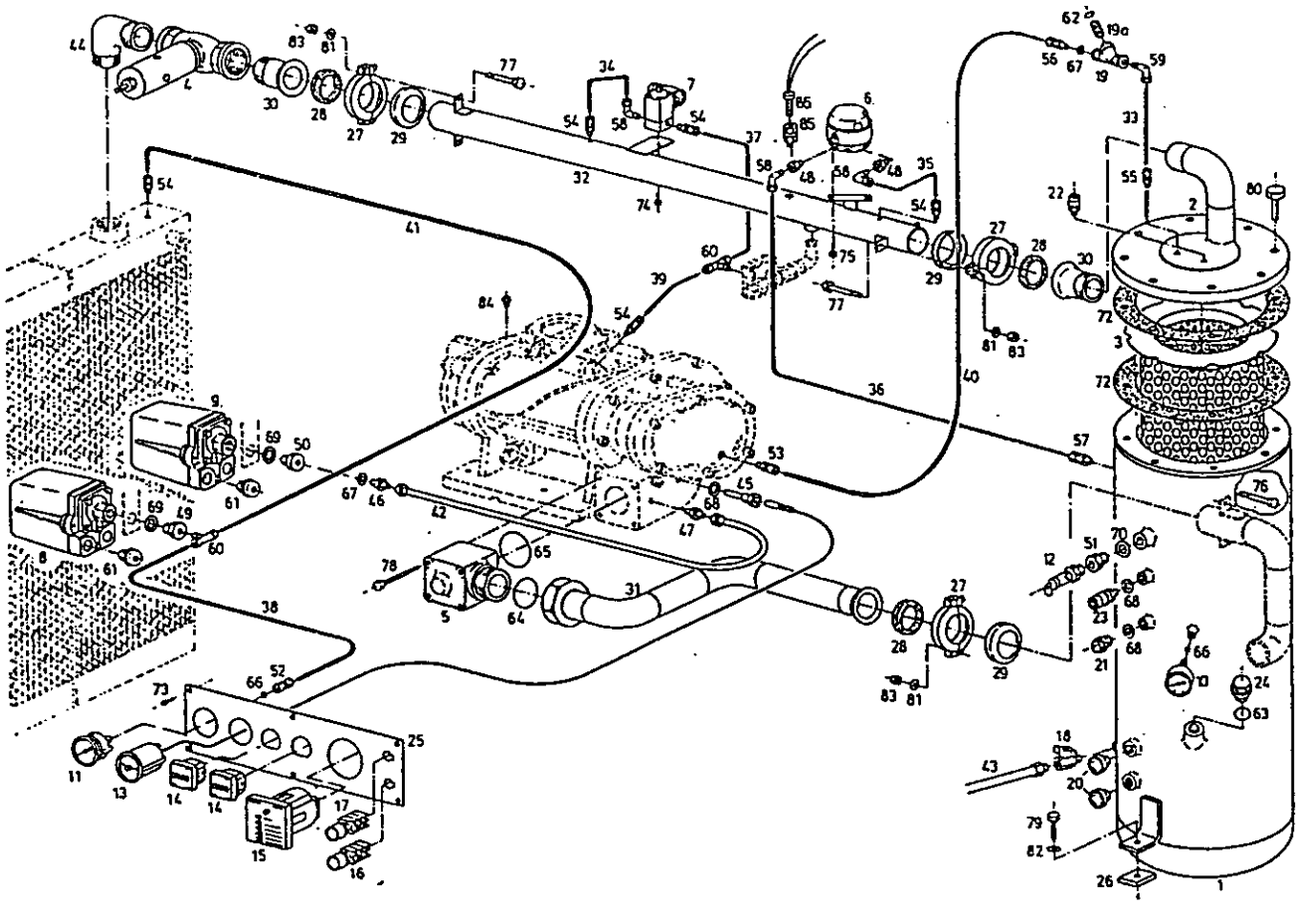


Ref.	Qty.	Part No.	Description
1	1	3.6114.0	Tank 13 gal.
2	1	4.7338.2	Cover
3	1	6.1960.0	Oil separator cartridge
4	1	4.7342.0	Minimum pressure check valve 1 1/2
5	1	4.7393.2	Check valve complete
6	1	7.0217.0	Difference pressure switch
7	1	2.0712.0	Control valve compl. pasted with Pos. 54 and 58
1) 8	1	7.0220.0	Pressure switch 115 psig
2) 8	1	7.0221.0	Pressure switch 230 psig
3) 8	1	7.0221.0	Pressure switch 230 psig
9	1	7.0219.0	Pressure switch
10	1	8.0018.0	Pressure gauge 0-360/220 psig
1) 11	1	8.0137.0	Pressure gauge 0-145/110 psig
2) 11	1	8.0136.0	Pressure gauge 0-230/145 psig
3) 11	1	8.0138.0	Pressure gauge 0-230/190 psig
1) 12	1	8.2003.0	Safety valve G 3/8 130 psi
2) 12	1	8.2009.0	Safety valve G 1/2 165 psi
3) 12	1	8.2007.0	Safety valve G 1/4 165 psi
4) 12	1	8.2015.0	Safety valve G 1/2 210 psi
13	1	8.0197.0	Distance thermometer
14	2	7.0784.0	Hour meter
15	1	7.2720.00040	Malfunction relay
16	1	7.1083.0	Luminous button green
17	1	7.1084.0	Luminous button red
18	1	8.0259.0	Ball cock G 1/2
19	1	8.0381.0	Dirt trap G 1/4
19a	1	8.0394.0	Dirt trap strainer
20	2	6.0105.0	Oil sight glass G 3/4
21	1	6.0501.0	Locking screw G 3/8
22	1	9.0843.0	Hose coupling G 1/4
23	1	9.0844.0	Hose coupling G 3/8
24	1	6.0519.0	Locking screw G 1 1/3
25	1	4.7454.0	Instrument panel
26	2	4.8435.0	Steel plate
27	3	5.1125.0	Tension clamp complete

Ref.	Qty	Part No.	Description
28	3	5.1391.0	Gasket ring
29	3	5.1122.0	Support for gasket ring
30	2	4.8268.0	Sleeve
31	1	4.4341.0	Air tube
32	1	4.8308.0	Air tube
33	1	4.8317.0	Suction tube
34	1		Control tube dia. 1/4" x 9 7/16"
35	1		Control tube dia. 1/4" x 8 1/4"
36	1		Control tube dia. 1/4" x 15"
37	1		Control tube dia. 1/4" x 14 1/2"
38	1		Control tube 1/4 x 13
39	1		Control tube 1/4 x 16 59/64
40	1		Control tube 1/4 x 17 23/32
41	1		Control tube 1/4 x 51 11/64
42	1	8.1130.0	Hose line G 1/4 x 27 9/16
43	1	8.0581.0	Hose line G 1/2 x 59
44	1	6.1098.0	Angle G 1 1/2
45	1	5.0929.0	Protection sleeve G 3/8
46	1	5.0780.0	Double nipple G 1/4
47	1	5.0795.0	Double nipple G 1/4 x M 12 x 1,5
48	2	5.0820.0	Reducing socket G 1/4 x G 1/8
49	1	5.0846.0	Reducing socket G 1/2 x G 1/8
50	1	5.0963.0	Reducing socket G 1/2 x G 1/4
1) 51	1	6.3200.0	Reducing socket G 1/2 x G 3/8
3) 51	1	6.3201.0	Reducing socket G 1/2 x G 1/4
52	1	6.0390.0	Pipe fitting G 1/4
53	1	6.0231.0	Pipe fitting G 1/8
54	5	6.0246.0	Pipe fitting G 1/8
55	1	4.8199.0	Pipe fitting G 1/4
56	1	4.8335.0	Pipe fitting G 1/4
57	1	6.0229.0	Pipe fitting G 1/4
58	3	6.0266.0	Angle fitting G 1/8
59	1	6.0254.0	Angle fitting G 1/4
60	2	6.0344.0	T pipe fitting G 1/8

KAESER COMPRESSORS

Control tubes, Compressed air tubes BS 50, BS 60 type

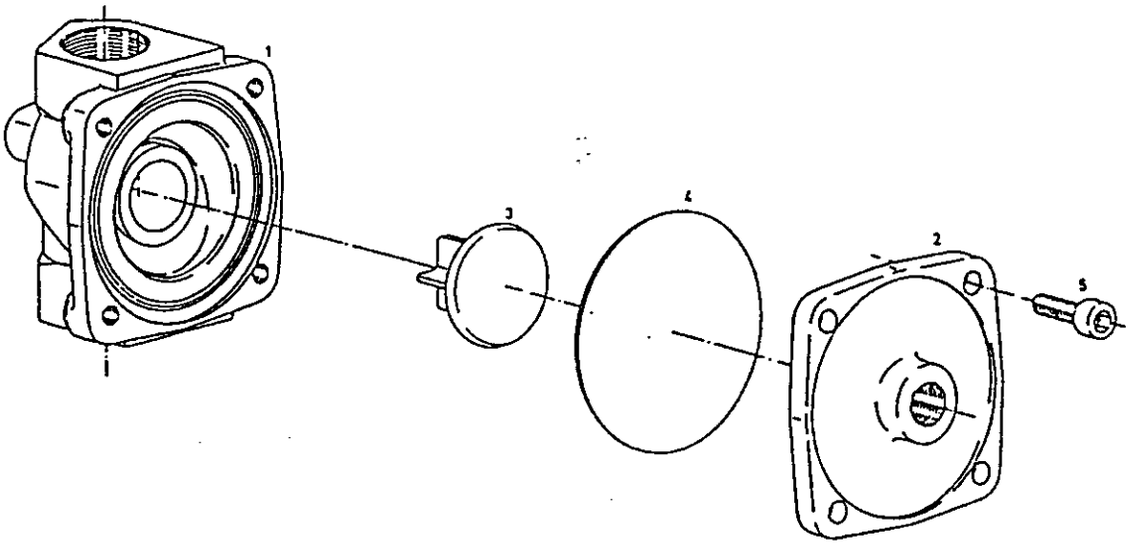


Ref.	Qty	Part No.	Description
61	2	7.0673.0	Plug PG 16
62	1	5.1443.0	O-ring dia. 20 x 2,5
63	1	5.1455.0	O-ring dia. 47 x 2
64	1	5.1422.0	O-ring dia. 56 x 3
65	1	5.1462.0	O-ring dia. 80 x 2
66	2	6.0470.0	Gasket for pressure gauge G 1/4
67	2	6.0432.0	Gasket G 1/4
68	3	6.1521.0	Gasket G 3/8
69	2	6.0438.0	Gasket G 1/2
1/3) 70	1	6.1524.0	Gasket G 1/2
71			
72	2	5.0556.0	Gasket for tank
73	6	6.0914.0	Philips head screw M 4 x 10
74	2	6.0860.0	Fillister head screw M 4 x 8
75	2	6.0746.0	Hex. hd. screw M 6 x 10
76	2	6.2214.0	Hex. hd. screw M 8 x 50
77	4	6.0733.0	Hex. hd. screw M 8 x 60
78	4	6.0780.0	Hex. hd. screw M 10 x 110
79	2	6.0821.0	Hex. hd. screw M 10 x 40
80	8	6.0759.0	Hex. hd. screw M 16 x 45
81	6	6.2374.0	Washer
82	2	6.2373.0	Washer
83	6	6.2431.0	Hex. nut M 8
84	1	6.2604.0	Plug G 1/8
85	1	6.0242.0	Pipe fitting R 1/8
86	1	7.2712.0	Internal thermal overload

1. Compressor Unit BS 50/60 110 psig
2. Compressor Unit BS 50 145 psig
3. Compressor Unit BS 60 145 psig
4. Compressor Unit BS 50/60 190 psig

Vent valve
2.1128.0

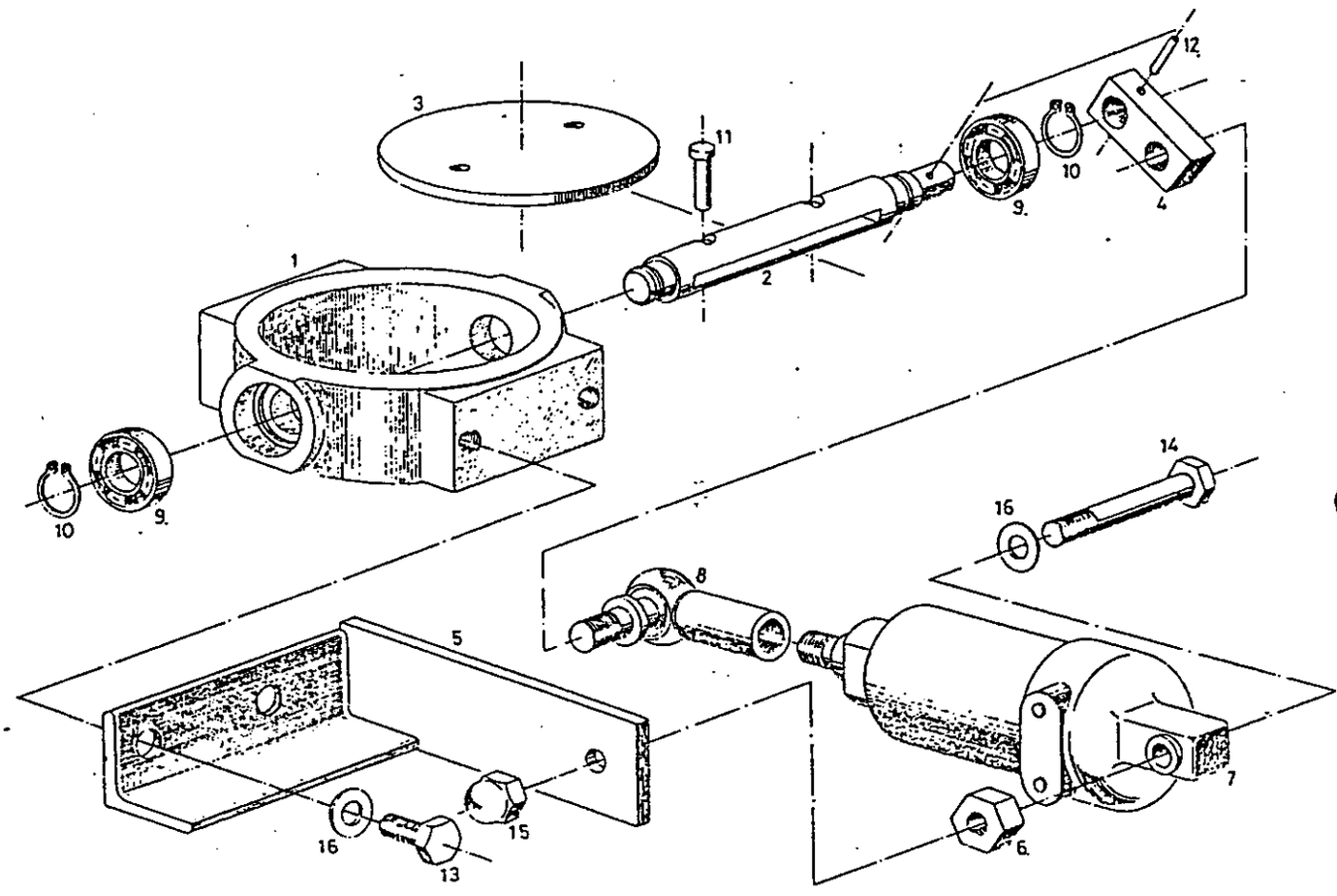
KAESER COMPRESSORS



Ref.	Qty.	Part No.	Description
1	1	5.0989.0	Valve body
2	1	5.0997.0	Cover
3	1	4.9026.0	Piston complete
4	1	5.0999.0	Diaphragm
5	4	6.2408.0	Cylinder screw with inside hex. M 5 x 12

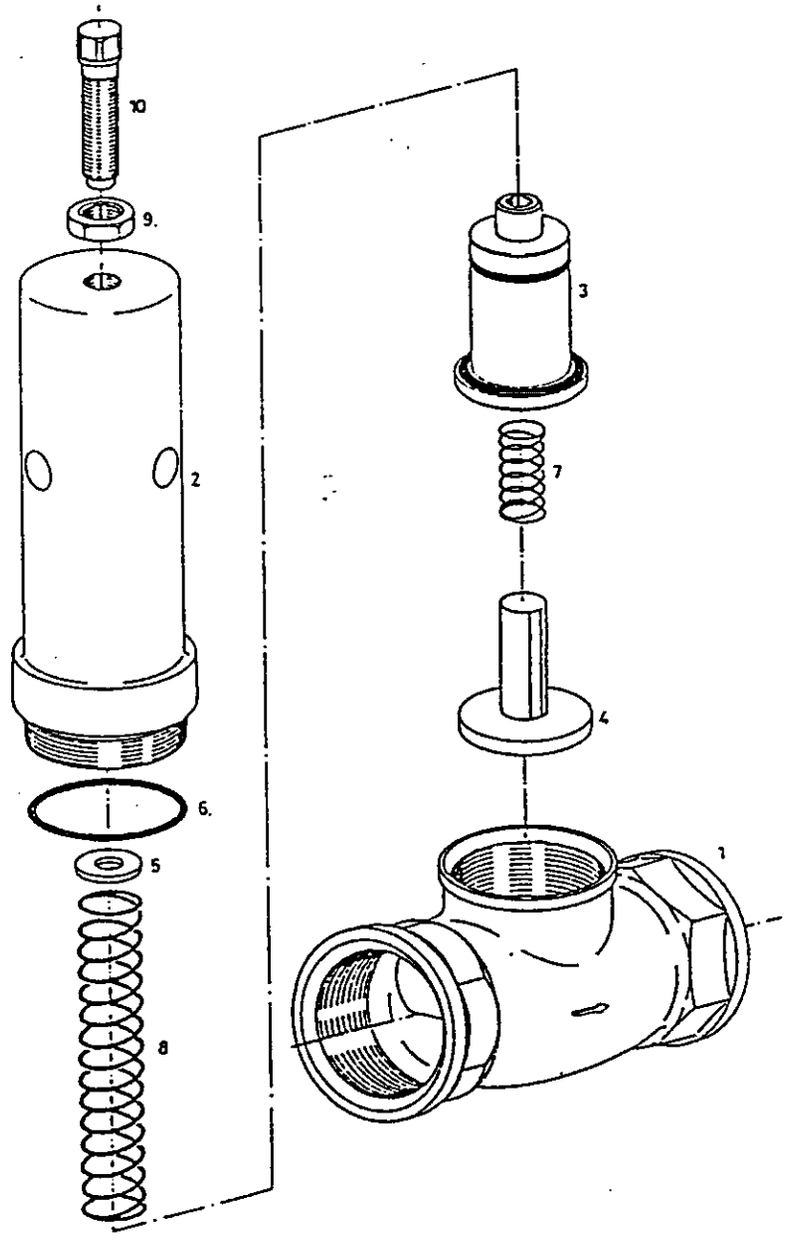
Inlet valve
4.7387.1

KAESER COMPRESSORS



Ref.	Qty	Part No.	Description
1	1	4.8930.2	Valve body
2	1	4.8963.0	Shaft
3	1	4.8932.0	Disk
4	1	4.8964.0	Lever
5	1	4.8961.1	Support
6	1	4.8965.0	Hex. nut
7	1	7.0486.0	Working cylinder
8	1	7.0489.0	Angle joint
9	2	6.0033.0	Ball bearing
10	2	6.0541.0	Guard ring
11	1	4.7564.0	Rivet with button head
12	1	6.0609.0	Clamping sleeve
13	2	6.0720.0	Hex. hd. screw M 6 x 15
14	1	6.0723.0	Hex. hd. screw M 6 x 45
15	1	6.0701.0	Cap nut M 6
16	3	6.0622.0	Washer

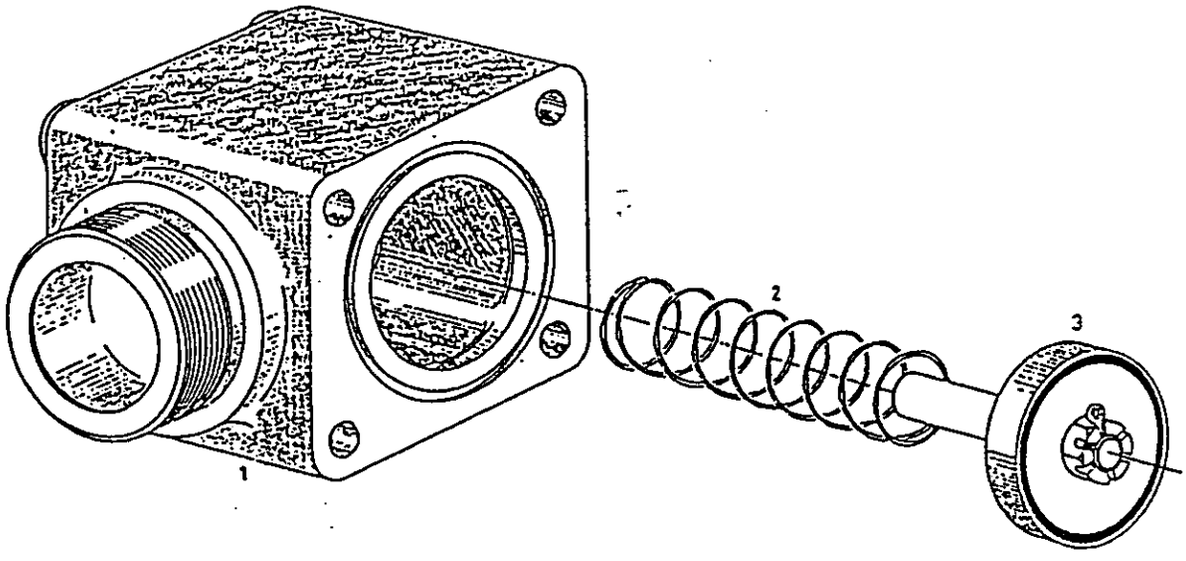
Minimum pressure check valve 4.7342.0



Ref.	Qty	Part No.	Description
1	1	4.8575.0	Valve body G 1 1/2
2	1	4.8576.0	Cylinder
3	1	4.9021.0	Piston complete
4	1	4.9015.0	Valve disk complete
5	1	6.2371.0	Disk
6	1	5.1470.0	O-ring dia. 45 x 3
7	1	5.0643.0	Compression spring
8	1	5.0645.0	Compression spring
9	1	6.0686.0	Hex. nut M 12
10	1	6.0945.0	Square head bolt M 12 x 40

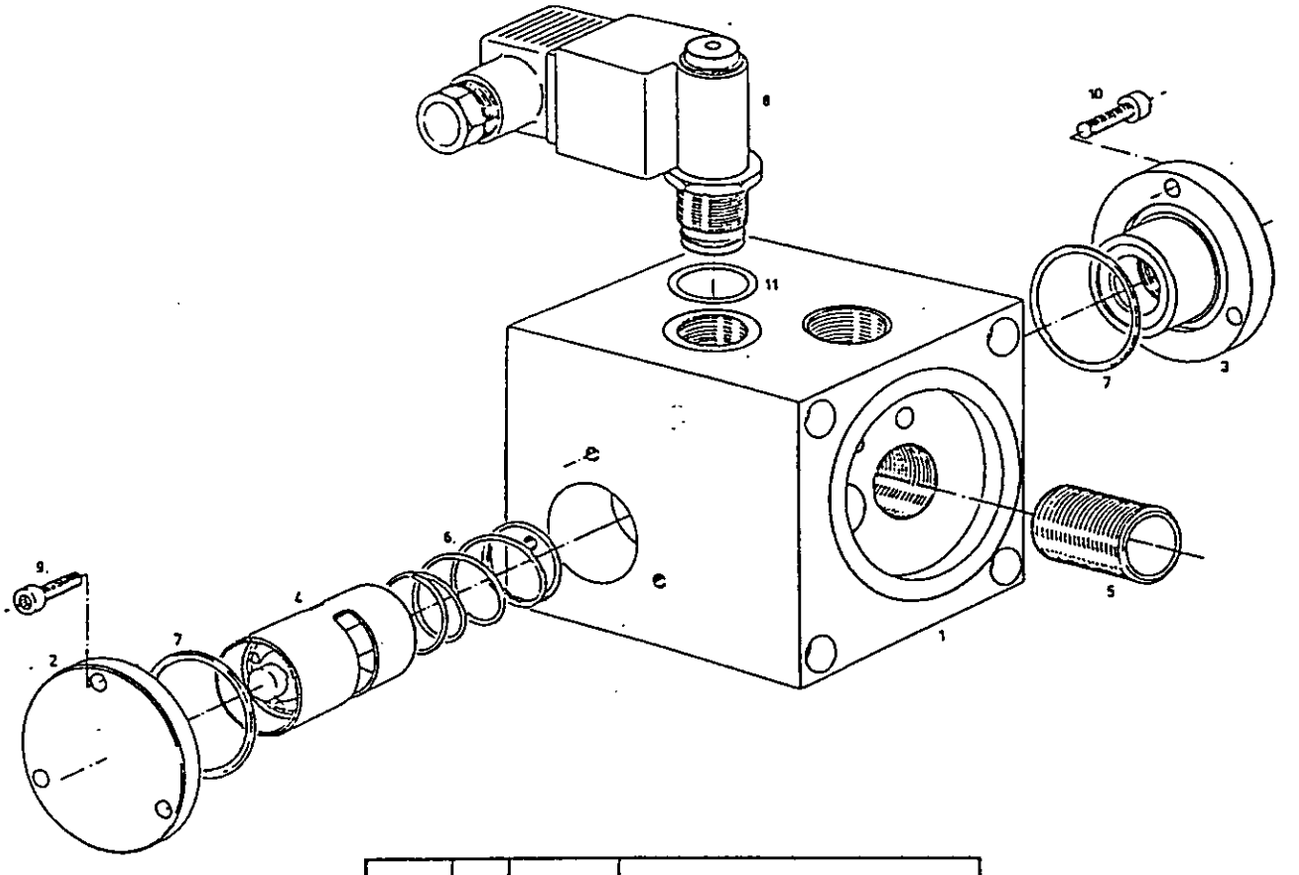
Check valve
4.7393.2

KAESER KOMPRESSOREN



Ref.	Qty	Part No.	Description
1	1	4.8910.2	Valve body
2	1	5.0617.1	Compression spring
3	1	4.9011.1	Valve disk complete
3	1	4.8916.1	Guide bolt

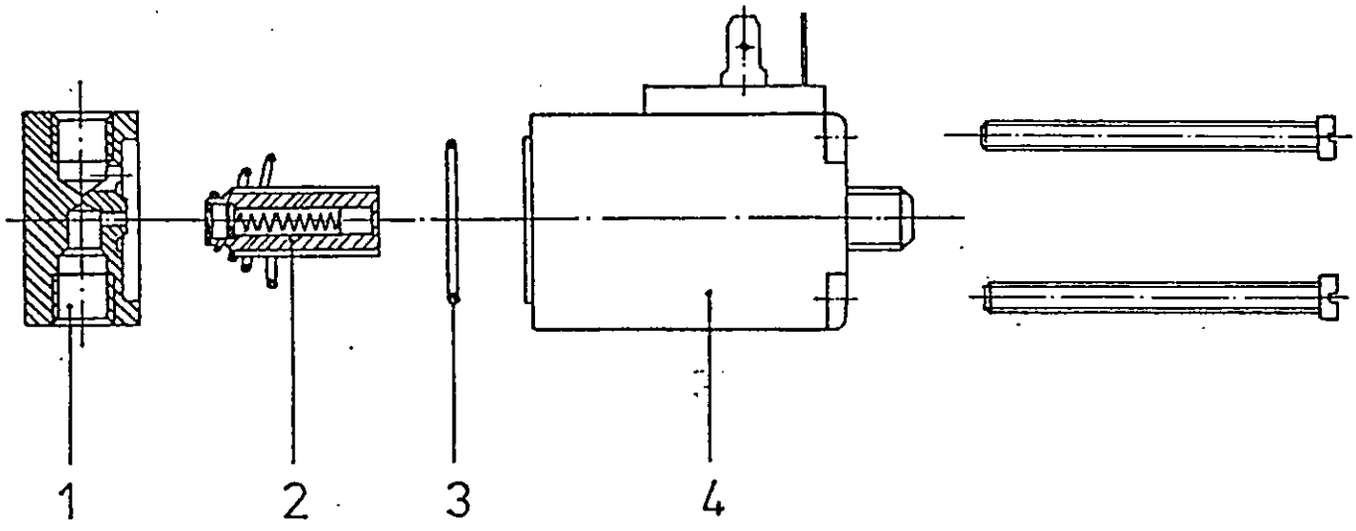
Combination valve
4.8870.1



Ref.	Qty	Part No.	Description
1	1	4.8872.1	Valve body
2	1	4.8875.0	Cover
3	1	4.8873.0	Cover
4	1	7.0399.0	Actuating piston with working element
5	1	4.8874.1	Thread nipple
6	1	5.0636.0	Compression spring
7	2	5.1445.0	O-ring dia. 35 x 2
8	1	7.1407.0	Difference pressure switch
9	3	6.2406.0	Cylinder screw with inside hex. M 5 x 16
10	3	6.2400.0	Cylinder screw with inside hex. M 5 x 20
11	1	6.1534.0	Gasket dia. 25/32" x dia. 15/16" x 1/16"

Control valve
2.0712.0

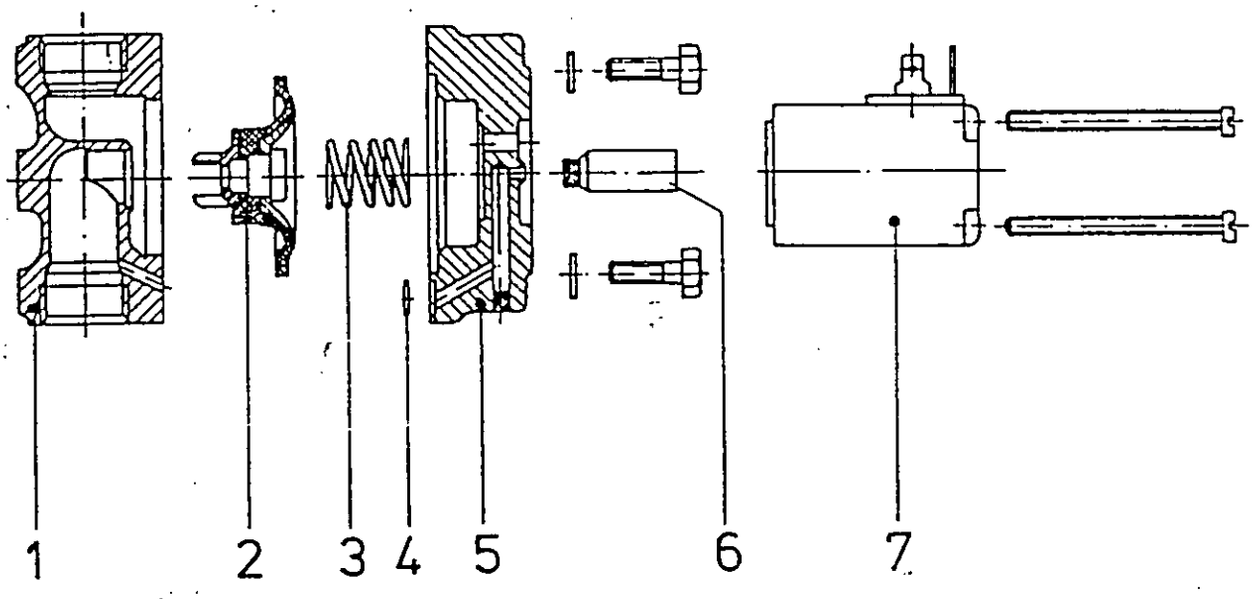
KAESER COMPRESSORS



Ref.	Qty	Part No.	Description
1			Casing
2		7.0387.0	Armature
3		7.0344.0	O-ring 25 x 1,5 Viton
4		7.1372.0	Coil

Oil stop valve
2.0703.0

KAESER COMPRESSORS



Ref.	Qty.	Part No.	Description
1			Bottom of casing compl. pasted with fitting
2		7.0347.0	Diaphragm complete
3		7.0378.0	Closing spring
4		7.0345.0	O-Ring 6 x 1,5 Viton
5			Top of casing
6		7.0343.0	Core
7		7.1958.0	Coil complete

RECOMMENDED SPARE PARTS LIST

KAESER COMPRESSORS

BS 50/60

Section 1

DESCRIPTION	Part No.	Qty per unit	LOCATION		Recommended Quantities		
			Section	Ref.	A	B	C
Oil filter cartridge	6.1981.0	1	Oil tubes, Vent lines	2	1	2	3
Oil separator cartridge complete set consits of:							
- Oil separater cartridge	6.1960.0	1	Control tubes, compressed air tubes	3			
- Gasket for tank	5.0556.0	2	Control tubes, compressed air tubes	72			
- O-Ring dia. 20x2,5	5.1443.0	1	Control tubes, compressed air tubes	62			
- Dirt trap strainer	8.0394.0	1	Control tubes, compressed air tubes	19a			
V-belt set BS 50/110 psig	6.1434.0	1	Driving system	5	1	1	2
V-belt set BS 50/145 psig	6.2533.0	1	Driving system	5	1	1	2
V-belt set BS 50/190 psig	6.2542.0	1	Driving system	5	1	1	2
V-belt set BS 60/110 psig	6.2532.0	1	Driving system	5	1	1	2
V-belt set BS 60/145 psig	6.1434.0	1	Driving system	5	1	1	2
V-belt set BS 60/190 psig	6.2533.0	1	Driving system	5	1	1	2
O-Ring dia. 15,5 x 2,5	5.1473.0	1	Vent valve	3b	1	1	2
O-Ring dia. 19 x 3	5.1423.0	2	Oil tubes, Vent lines	29	1	1	2
O-Ring dia. 35 x 2	5.1445.0	2	Combination valve	7	1	1	2
O-Ring dia. 45 x 3	5.1470.0	1	Minimum pressure check valve	6	1	1	2
O-Ring dia. 47 x 2	5.1455.0	1	Control tubes, compressed air tubes	63	1	1	2
O-Ring dia. 56 x 3	5.1422.0	1	Control tubes, compressed air tubes	64	1	1	2
O-Ring dia. 80 x 2	5.1462.0	1	Control tubes, compressed air tubes	65	1	1	2
Gasket G 1/4	6.0470.0	2	Control tubes, compressed air tubes	66	1	1	2
Gasket G 1/4	6.0432.0	2	Control tubes, compressed air tubes	67	1	1	2
Gasket G 3/8	6.1521.0	3	Control tubes, compressed air tubes	68	1	1	2
Gasket G 1/2	6.0438.0	2	Control tubes, compressed air tubes	69	1	1	2
Gasket G 1/2	6.1524.0	1	Control tubes, compressed air tubes	70	1	1	2
Gasket G 1/2	6.1524.0	1	Oil tubes, Vent lines	32	1	1	2
Gasket G 3/4	6.1527.0	1	Oil tubes, Vent lines	38	1	1	2
Gasket G 3/4	6.1527.0	1	Control tubes, compressed air tubes	71	1	1	2
Gasket for inlet valve	5.0567.1	2	Oil tubes, Vent lines	31	1	1	2
Gasket ring	5.1391.0	3	Control tubes, compressed air tubes	28	1	1	2
Diaphragm	5.0999.0	1	Vent valve	4	1	1	2
Diaphragm complete	7.0347.0	1	Oil stop valve	2	1	1	2

RECOMMENDED SPARE PARTS LIST
BS 50/60

KAESER COMPRESSORS

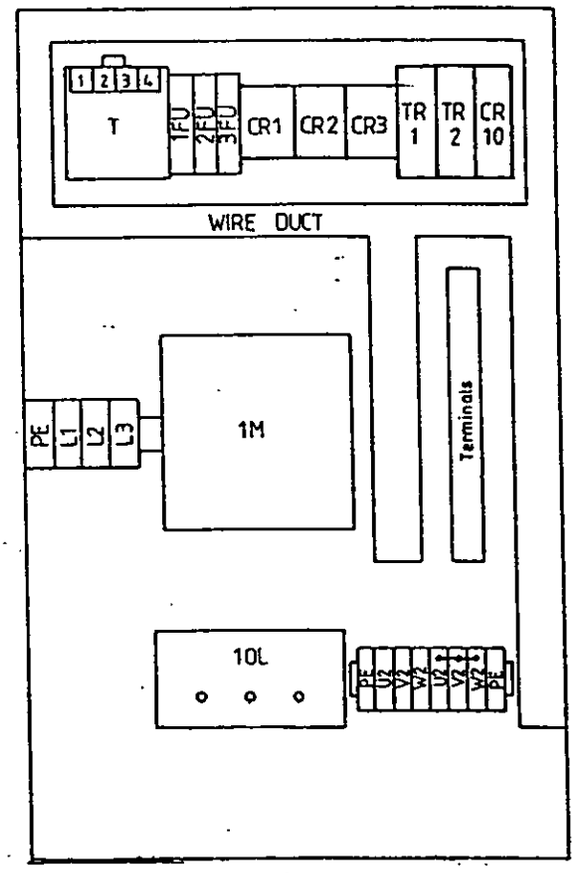
Section 2

DESCRIPTION	Part No.	Qty per unit	LOCATION		Recommended Quantities		
			Section	Ref.	A	B	C
Piston complete	4.9026.0	1	Vent valve	3	1	1	2
Piston complete	4.9021.0	1	Minimum pressure check valve	3	1	1	2
Safety pressure switch	7.0219.0	1	Control tubes, compressed air tubes	9	0	1	1
Pressure switch 115 psig	7.0220.0	1	Control tubes, compressed air tubes	8	0	1	1
Pressure switch 230 psig	7.0221.0	1	Control tubes, compressed air tubes	8	0	1	1
Valve disk complete	4.9015.0	1	Minimum pressure check valve	4	1	1	2
Valve disk complete	4.9011.1	1	Check valve	3	1	1	2
Compression spring	5.0643.0	1	Minimum pressure check valve	7	0	1	1
Compression spring	5.0645.0	1	Minimum pressure check valve	8	0	1	1
Compression spring	5.0617.1	1	Check valve	2	0	1	1
Compression spring	5.0636.0	1	Combination valve	6	0	1	1
Working element	7.0399.0	1	Combination valve	4	1	1	2
Vent valve	2.1128.0	1	Oil tubes, vent lines	5	0	0	1
Inlet valve	4.7387.1	1	Oil tubes, vent lines	4	0	0	1
Minimum pressure check valve	4.7342.0	1	Control tubes, Compressed air tubes	4	0	0	1
Check valve	4.7393.2	1	Control tubes, compressed air tubes	5	0	0	1
Control valve	2.0712.0	1	Control tubes, compressed air tubes	7	0	0	1
Oil stop valve	2.0703.0	1	Oil tubes, vent lines	3	0	0	1

RECOMMENDED SPARE PARTS LIST FOR
ELECTRICAL EQUIPMENT

Model BS 44/50

230/460 V Direct-on-line

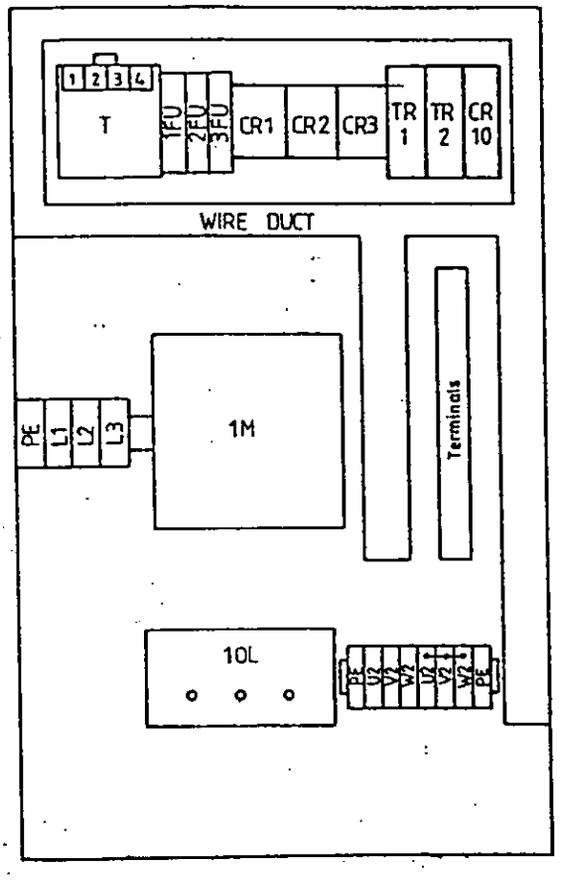


DESCRIPTION		Part No.	Qty-per unit	LOCATION USE	Recommended Quanties		
					A	B	C
1M	Motor starter (main contactor)	7.2064.0	1	Control box	0	1	1
1,2,3FU	Fuse	7.3301.0	3	Control box	0	1	1
T	Transformer	7.2221.0	1	Control box	0	1	1
CR1,2,3	Control relay	7.2066.0	3	Control box	0	1	1
TR2	Time delay relay	7.0467.0	1	Control box	0	1	1
CR 10	Thermal overload	7.2710.1	1	Control box	0	1	1
TR1	Time delay relay (WYE time)	7.0466.0	1	Control box	1	1	2
10L	Overload relay for motor	7.3460.0	1	Control box	0	1	1

RECOMMENDED SPARE PARTS LIST FOR ELECTRICAL EQUIPMENT

Model BS 60

230/460 V Direct-on-line



DESCRIPTION		Part No.	Qty-per unit	LOCATION USE	Recommended Quanties		
					A	B	C
1M	Motor starter (main contactor)	7.2064.0	1	Control box	0	1	1
1,2,3FU	Fuse	7.3301.0	3	Control box	0	1	1
T	Transformer	7.2221.0	1	Control box	0	1	1
CR1,2,3	Control relay	7.2066.0	3	Control box	0	1	1
TR2	Time delay relay	7.0467.0	1	Control box	0	1	1
CR 10	Thermal overload	7.2710.1	1	Control box	0	1	1
TR1	Time delay relay (WYE time)	7.0466.0	1	Control box	1	1	2
10L	Overload relay for motor	7.3461.0	1	Control box	0	1	1