



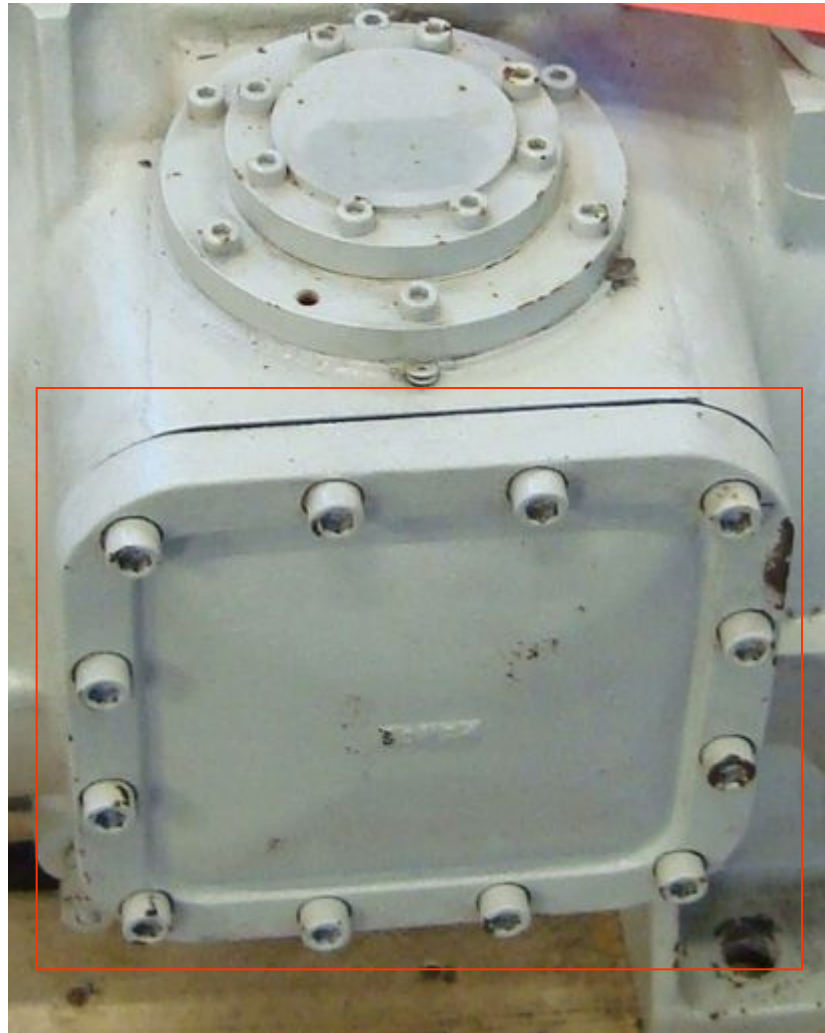
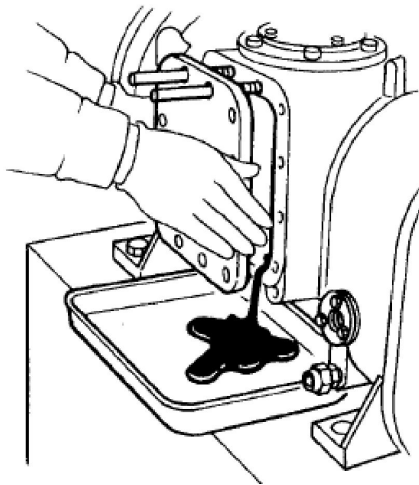
Overhaul Daikin screw compressor

important issues during disassembling
of the Daikin G/F type compressor

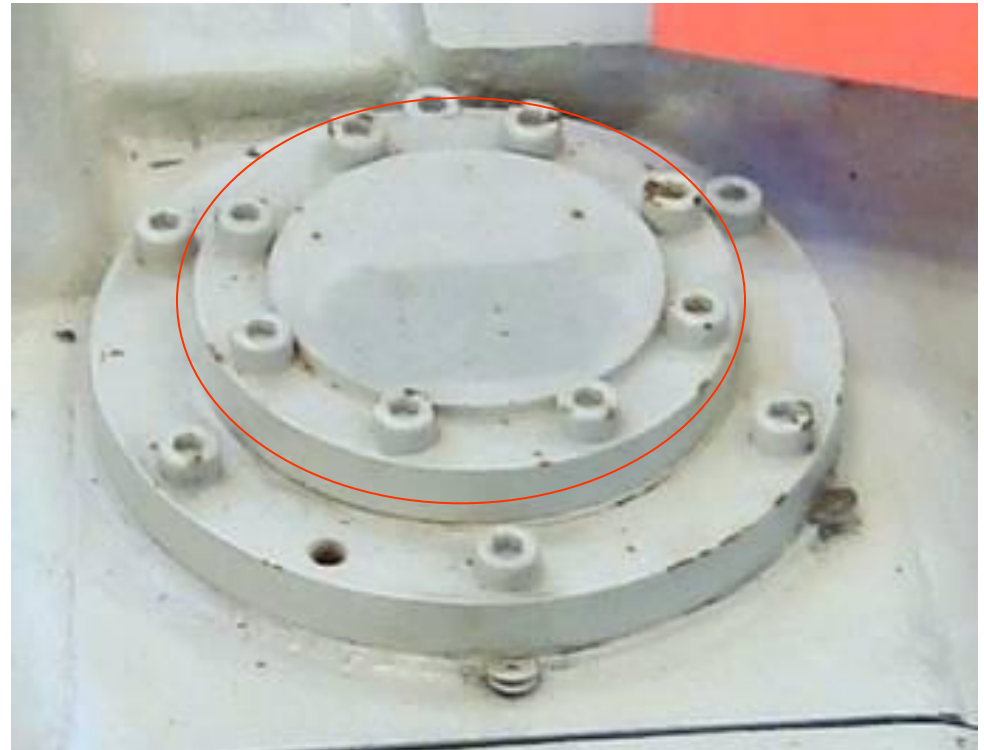
1. Two oil drain plugs
2. For fast oil drainage break the sealing of the suction and discharge cover (see opening suction and discharge cover)



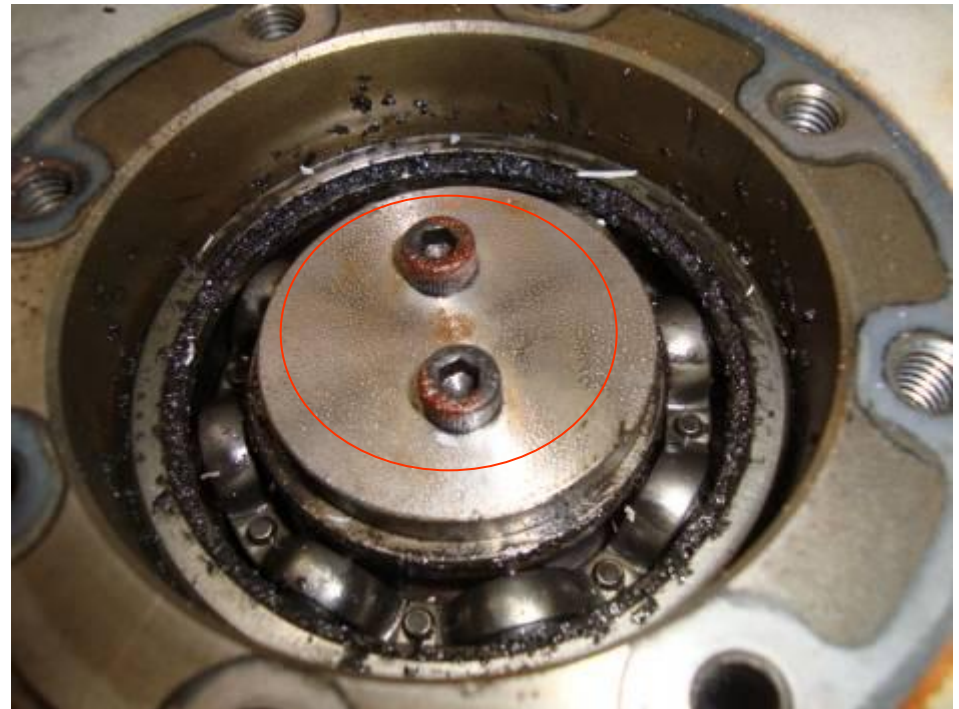
Remove side cover, use guiding bolts to support the side cover



Remove top cover
gate rotor

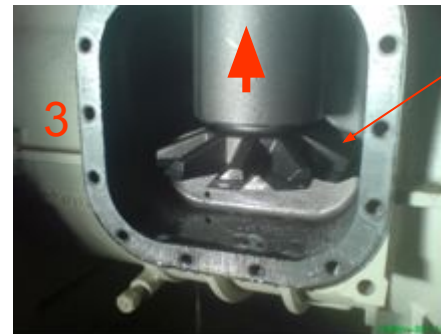
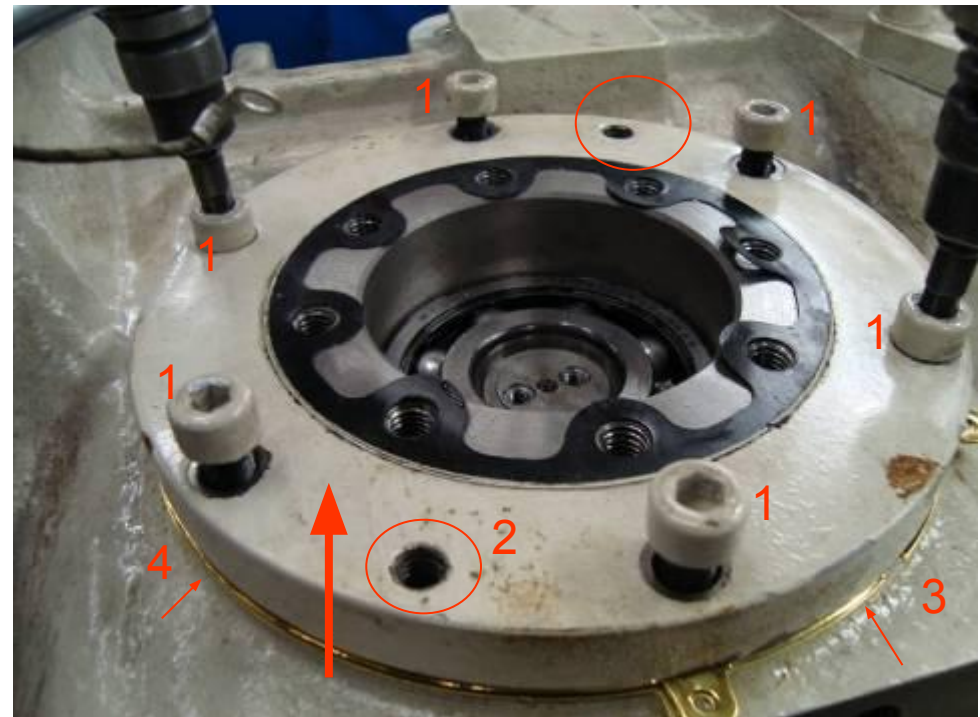
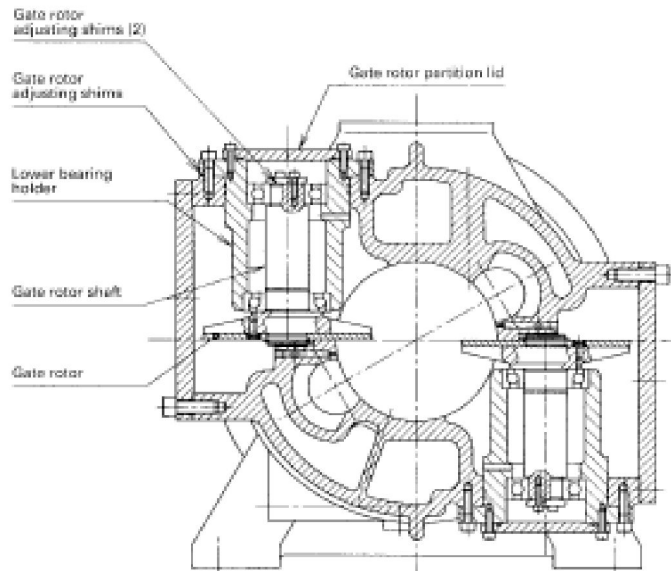


1. Remove the gate rotor bearing retaining plate, remove the two M4 bolts
2. Keep the shims under the retaining plate!



Removing gate rotor

1. Remove all screws
2. Lift the gate rotor bearing holder by using “breaking” screws
3. Tap with plastic hammer on gate rotor shaft.
4. Keep the shims! Thickness!



Small tick of hammer during lifting up the bearing holder. This to avoid composite is breaking!

Pay attention to the position of the oil supporting holes

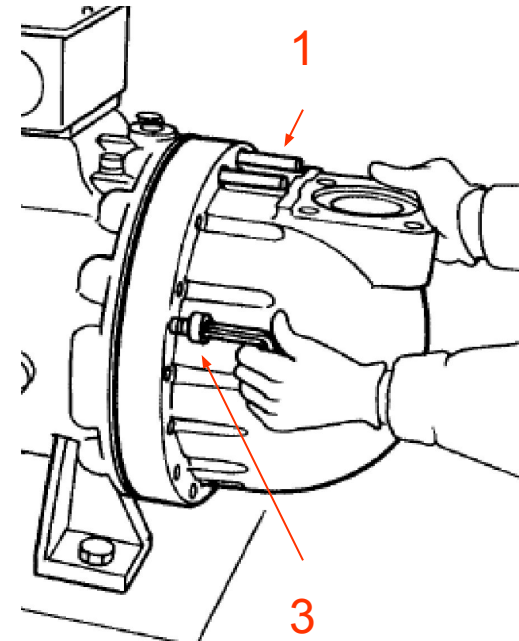
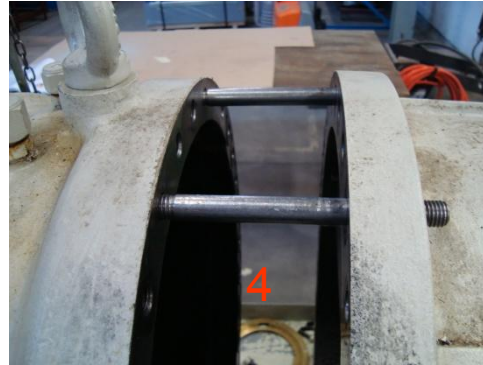
Holes needs to point towards the main screw and thus providing oil to the gate rotor bearings during operation of the compressor

Keep the left and right gate rotor parts separated!



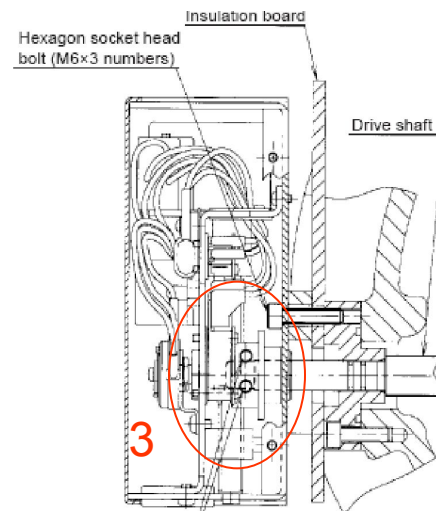
Removing suction cover

1. Remove first two screws on top and place guiding studs
2. Remove all the rest of the screws
3. To separate the suction cover use "breaking" bolts
4. Remove the cover, supporting on the studs

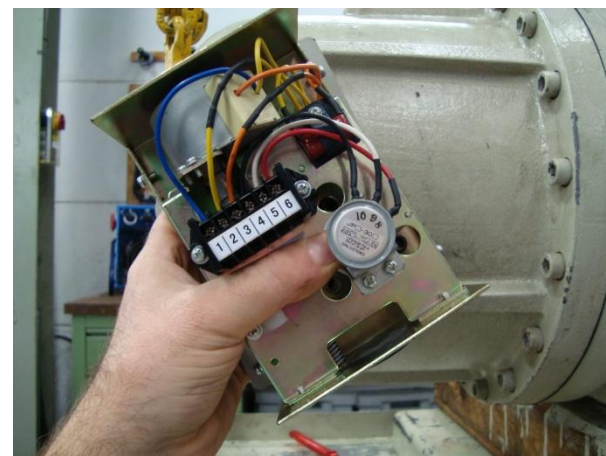
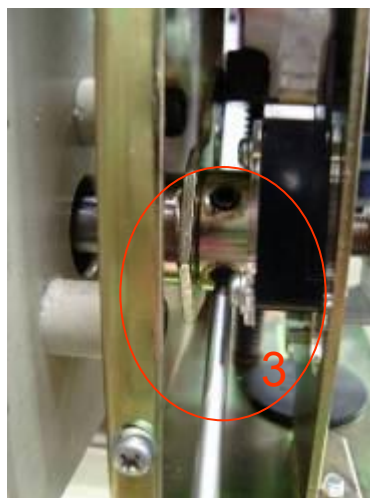
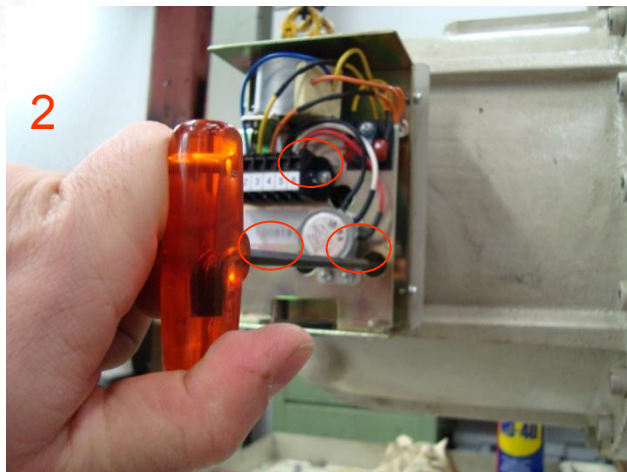


Removing step motor

1. Remove the step motor cover
2. Unloose the 3 heat insulation panel screws.
3. Loose the axe fixation screws. It can be possible in order to reach all screws, the motor needs to be actuated !
4. Pull the motor unit from the axe

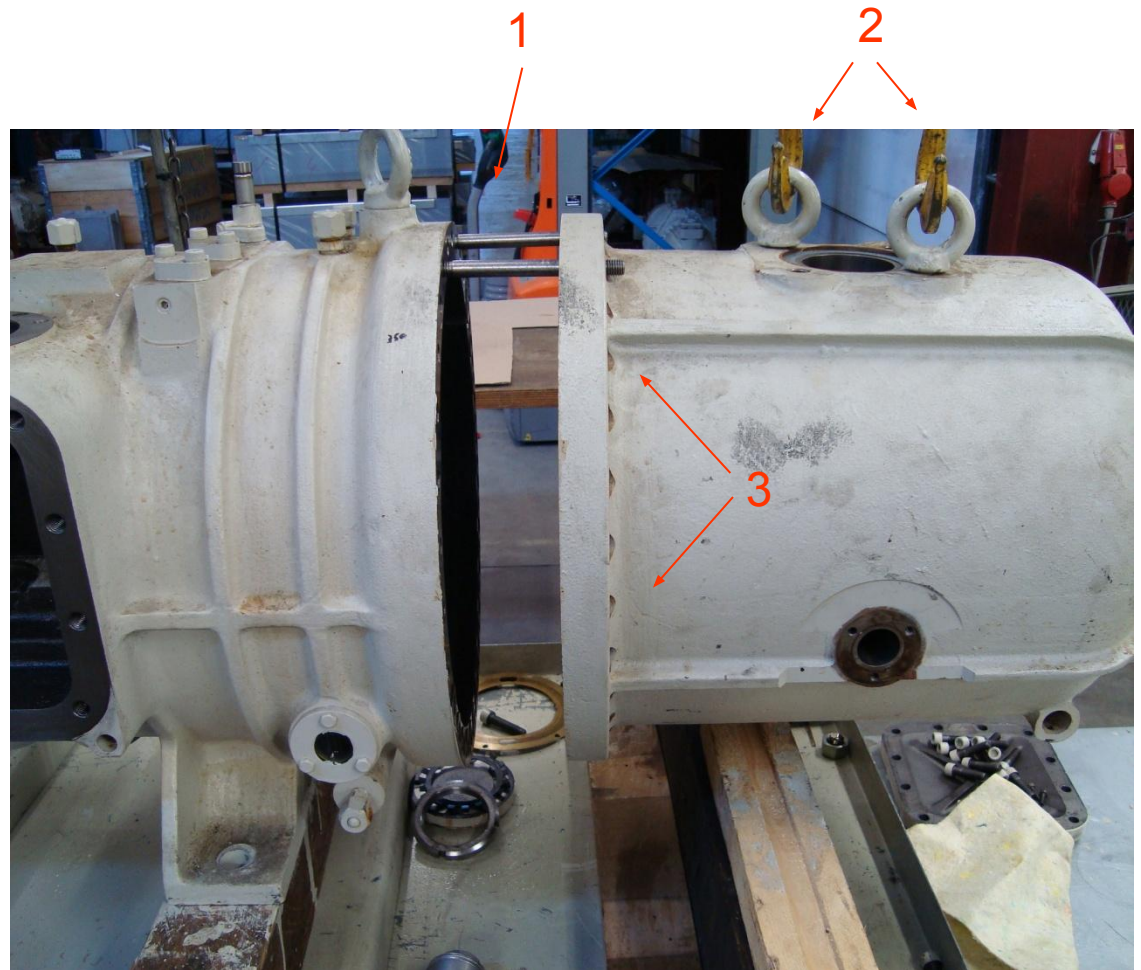


Hexagon socket head setscrew (M5x2 numbers)



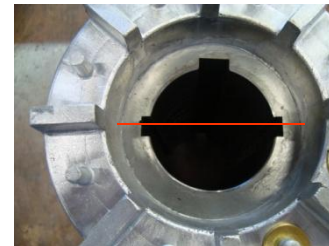
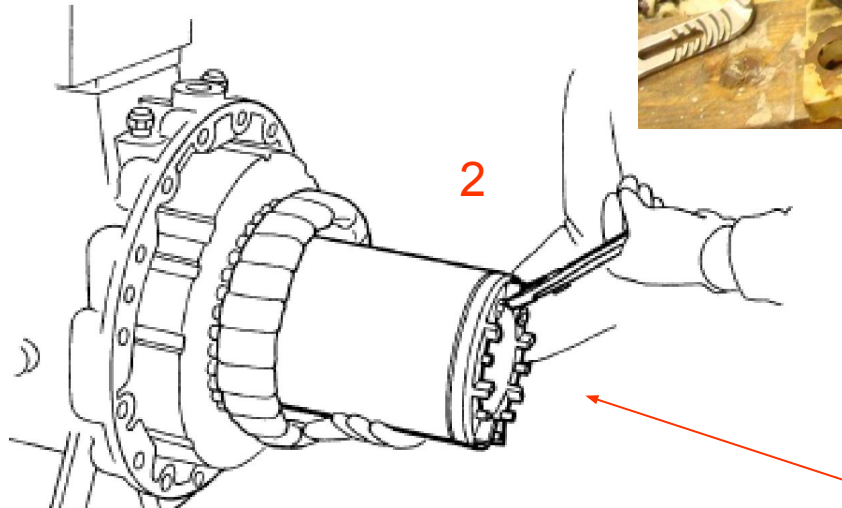
Removing discharge cover

1. Use two guiding studs
2. Use eye bolts to support discharge cover
3. Remove all existing bolts on the discharge shell
4. Tap with plastic hammer to separate the cover from the compressor

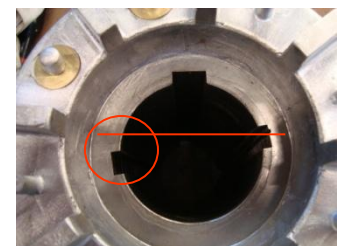


Removing motor rotor

1. Remove the rotor locking nut and plate (with screw driver)
2. With set of plyers the rotor can be pulled out



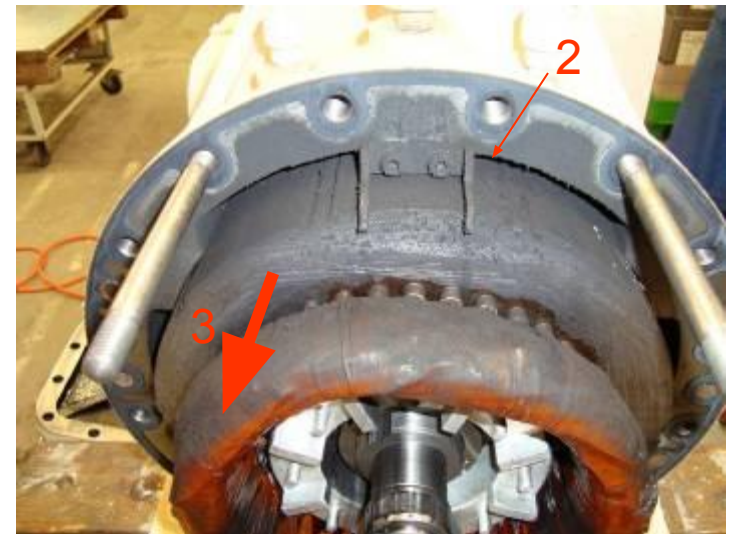
Front side



back side

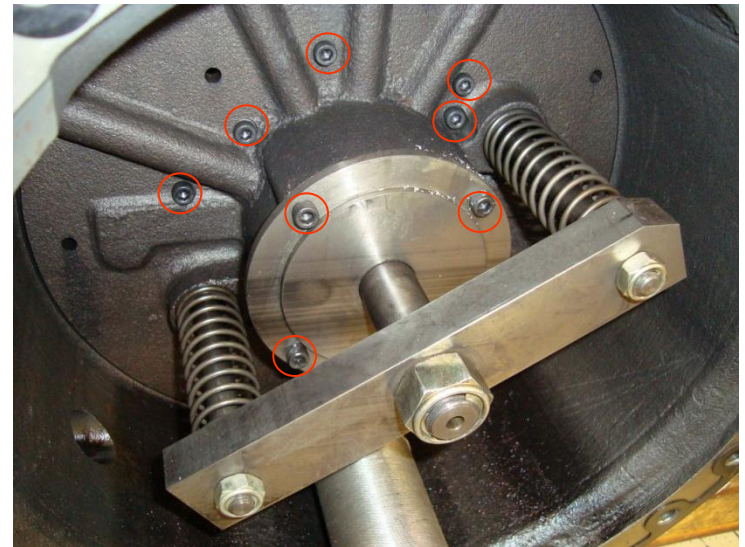
Removing motor stator

1. Open electrical terminal and unloose the connection wires. Guide the wires when pulling out the stator.
2. Remove the stator fixation plates en keep the shims!.
3. Stator can be pulled out now.



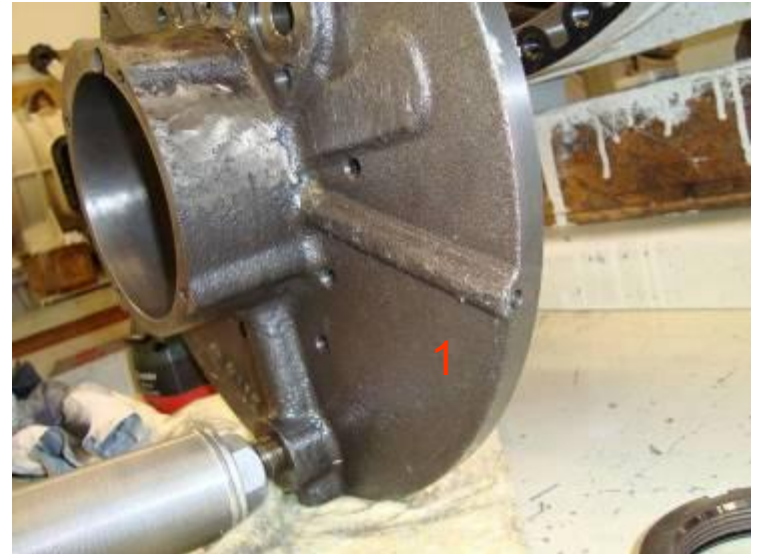
Removing the main screw

1. Remove the slide valve arm and the springs
2. Remove all the screws from the capacity cylinder
3. Remove all the screws from the main bearing fixation plate



Removing the main screw

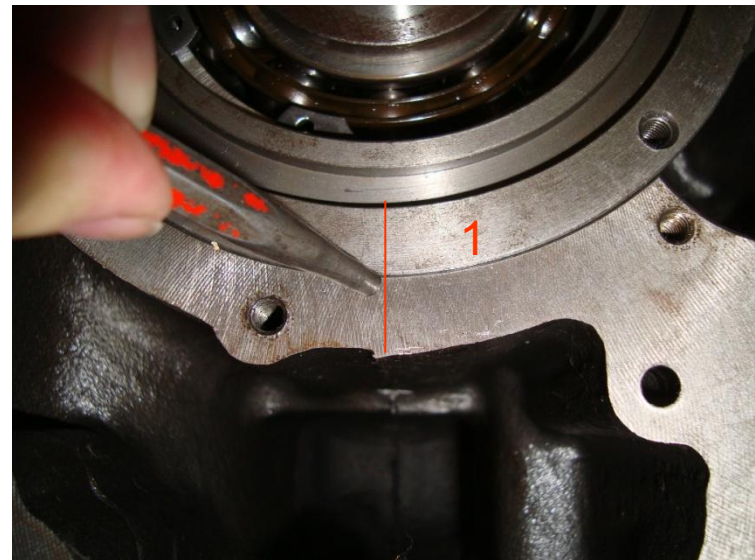
1. Remove the main bearing fixation plate
2. Keep the shims! (thickness for later assembly !)
3. Note the position of the shims, the notch is at the top.



Removing the main screw

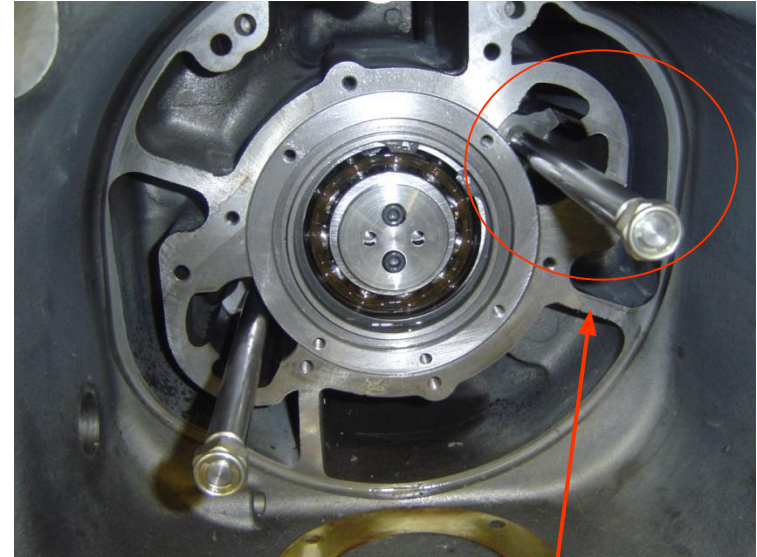
1. Make a mark to remember position of the main bearing holder

This position is needed during reassembly of the bearing fixing plate in order to let correspond the different screw holes



Removing the main screw

Remove the capacity slides. Remark, on the upper slide there is a mark with the figure "2". Don't mix up the slides!

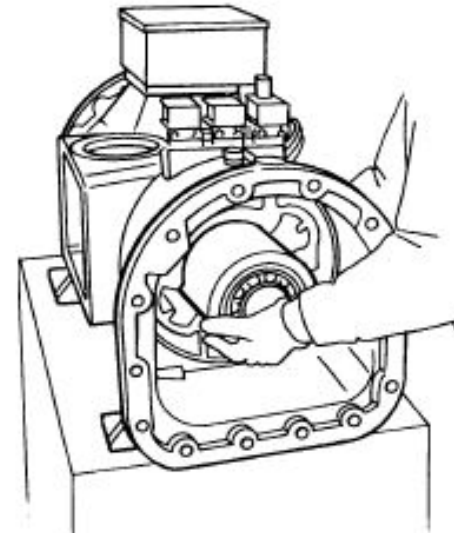
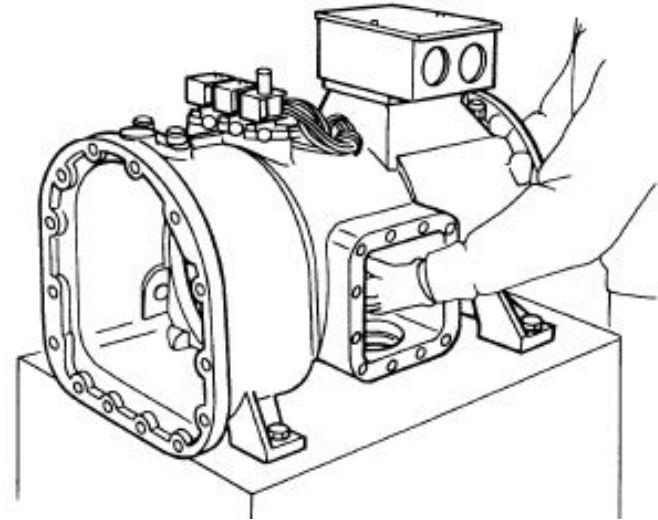


"2" O' clock mark => upper capacity slide

Removing the main screw

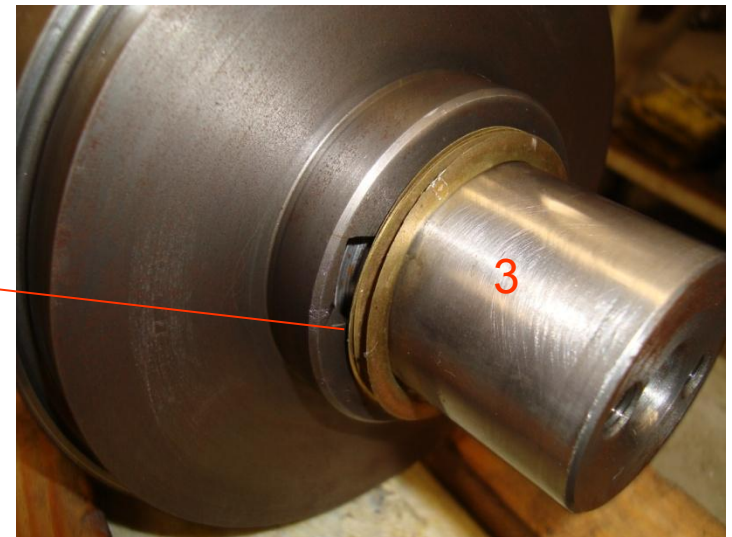
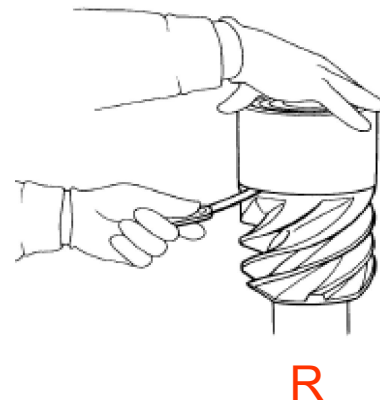
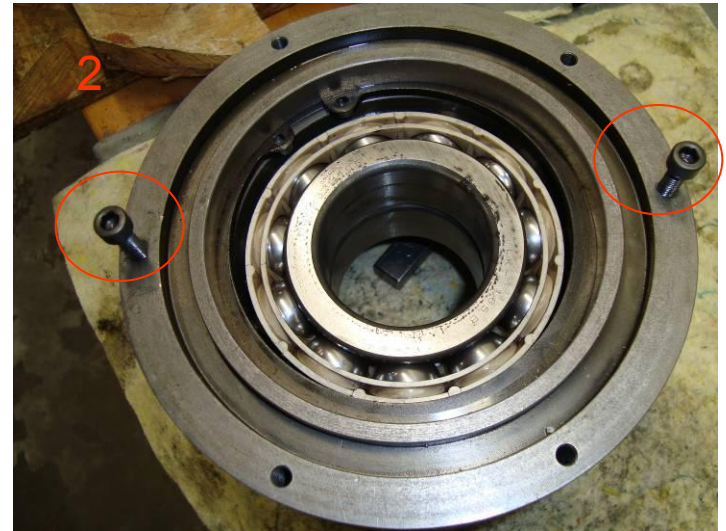
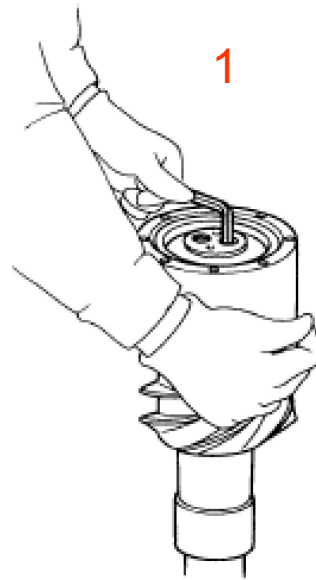
1. Push the screw from the suction side towards the discharge side

On the larger types of compressors like size 7 and 9, the screw needs to be supported with straps during disassembling



Removing the main screw

1. Remove the bearing fixing plate from the main bearing holder
2. Remove the main bearing holder from the screw, if needed use plastic hammer or put "pulling" screws into the holder housing
3. Don't lose the shims! Important for clearance between the bearing holder and the end of the screw

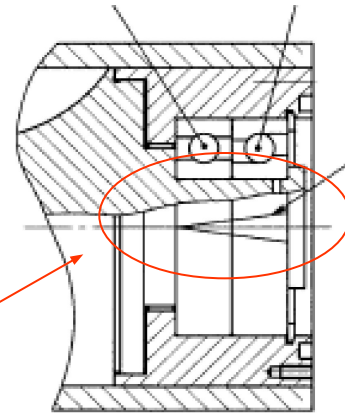


Removing the main bearings

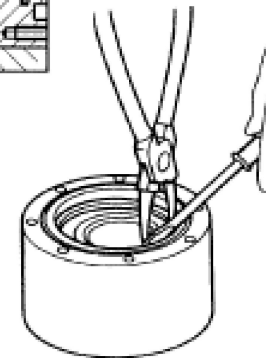


1. Remove the c-retainer clip
2. Remove the bearings with appropriate tool
3. Note the mouting direction of the bearings, on both bearings there is a sign under the form of an arrow

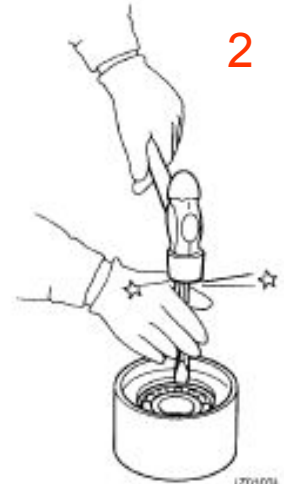
3



1



2



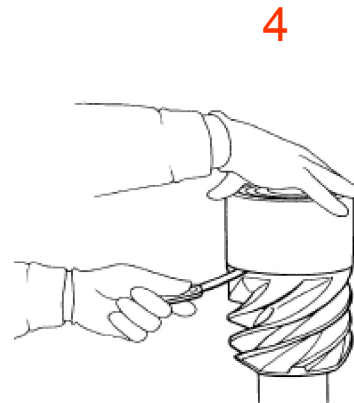
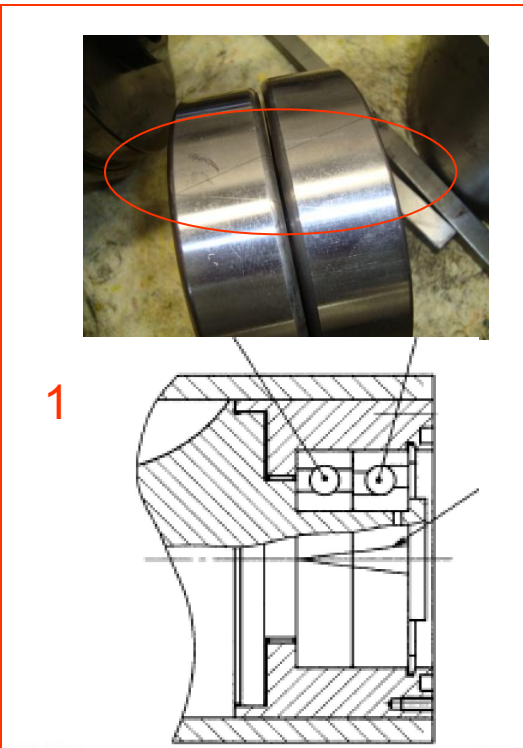
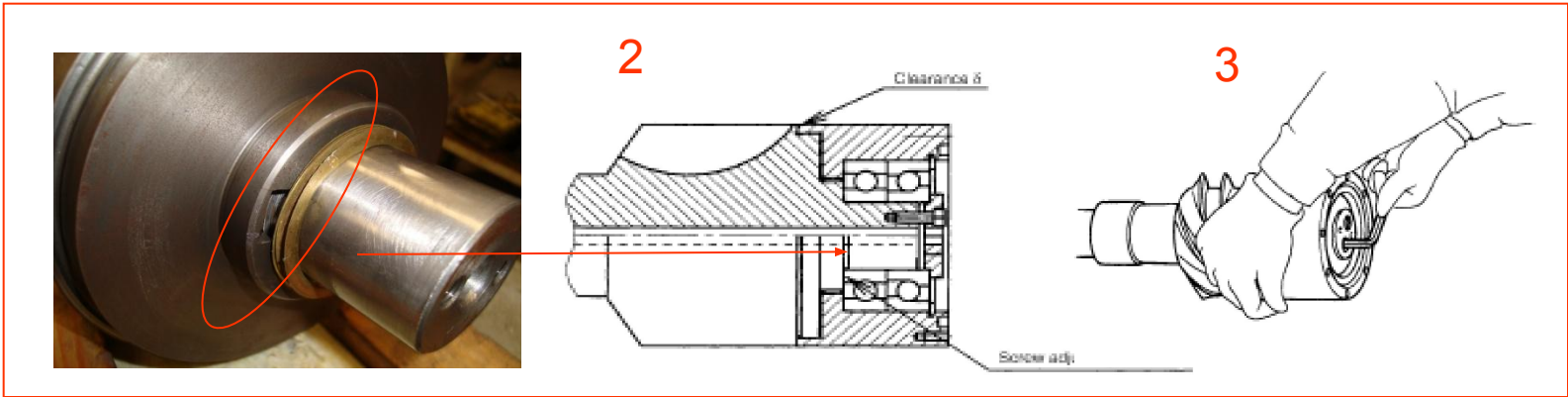
(ZD103)



Overhaul Daikin screw compressor

important issues during assembling of
the Daikin G/F type compressor

Mounting new mean bearings - screw



1. Put new mean bearings in the bearing holder, keep in mind mouting direction. It may be needed to cool down the bearings to mount. Oil the bearings !
2. Put correct shim tickness on screw shaft (same as during diassembling)
3. Mount bearing fixing plate
4. Check clearance 0.03 to 0.05 mm, except ZH9 0.04 – 0.06 mm.

Mounting new bearings screw – suction end

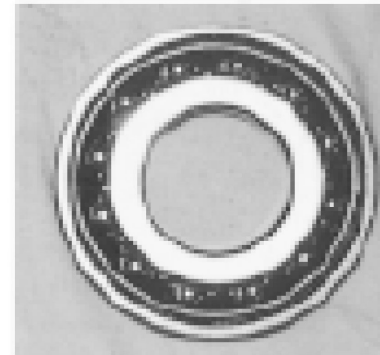
1. Remove the inner ring of the suction end bearing. For mounting new inner ring. Due to small clearance it is recommended to heat the ring to 120°C with special electro magnetic bearing heater.
2. The outer part of the suction-end bearing can be dismantled/mounted using bearing puller and appropriate pushing ring
3. Oil bearing after mounting



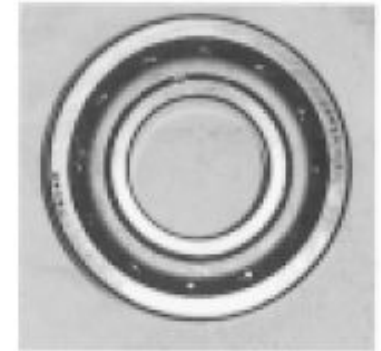
Mounting new bearings gate rotor

1. After dismantling old bearings from the gate rotor bearing holder, mount new bearings. Keep in mind mounting direction for the angular contact bearing

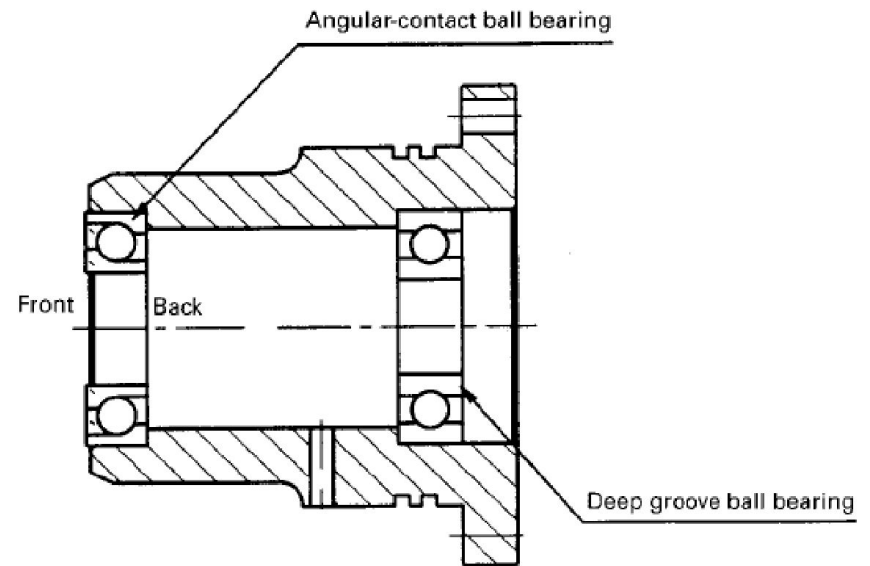
Use bearing press with correct pushing ring



Front



Back

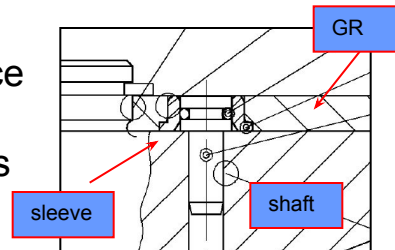


Mounting new gate rotors

1. Remove floating pin with correct dial pin (dia. 5mm). Support gate rotor with ring to avoid breaking of the composite during removing of the pin. Remove C-retainer to separate the composite from the axe.

2. To remove floating pin sleeve use correct dial pin (dia 10mm) to remove the sleeve, again support the composite material with ring to avoid breaking of the material

3. Re assemble in opposite order. Mind the correct face direction of the composite gate rotor + sleeve towards metal shaft,

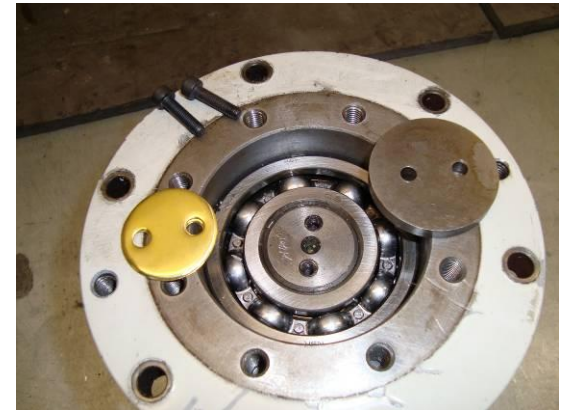


Mounting new bearings gate rotor

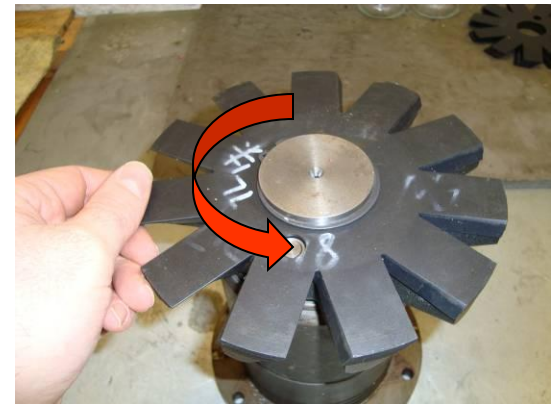
1. To achieve correct preload on the gate rotor bearings the gate rotor shaft needs to be mounted in the holder with the new bearings.

Put correct shim high and mount the bearing fixing plate with correct torque (11 Nm)

2. Turn the gate rotor by hand, no rolling sound from the bearings should be heard. The movement must be smoothly. If needed add or remove shims. **GR should turn +/- 3 turns when swinging by hand!**
3. When correct preload is achieved dismount again the gate rotor shaft from the bearing holder to be able to mount in compressor.



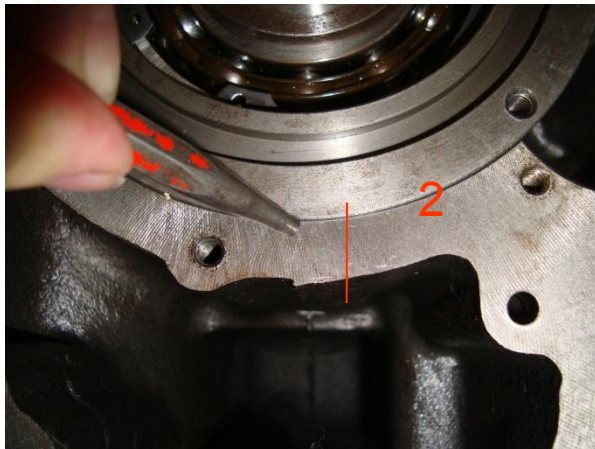
1



2

Mounting of screw

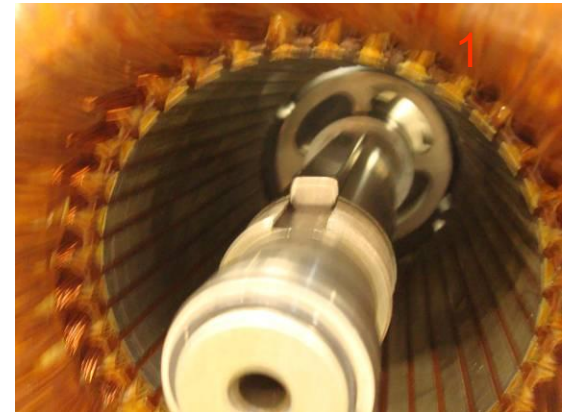
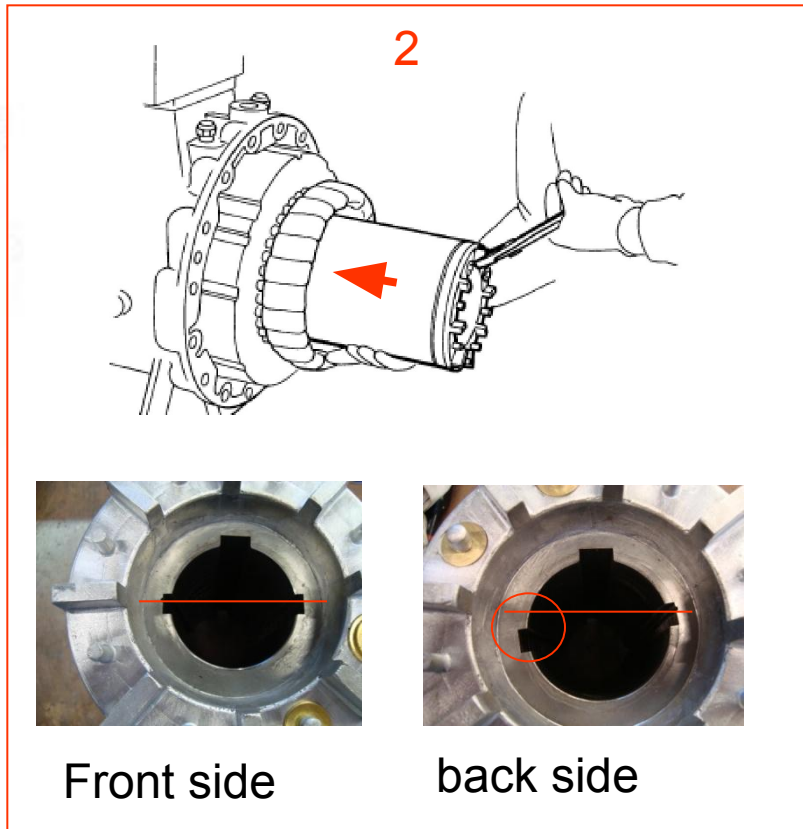
1. After screw is mounted back into compressor, place correct amount of shims, note the notch on top. Use special guides to keep shims in place.
2. Put main bearing holder on mark made before. Otherwise not possible to assemble the bearing fixing plate
3. To avoid screw is moved from it's ref position, during mounting of the rotor or the suction cover a kind of blocking jig must be mounted on the back of the discharge chamber. Ideal is the use of a special designed jig (3a) or if not available eg. a solenoid valve (3b) can be used or any other perpendicular piece.



ideal



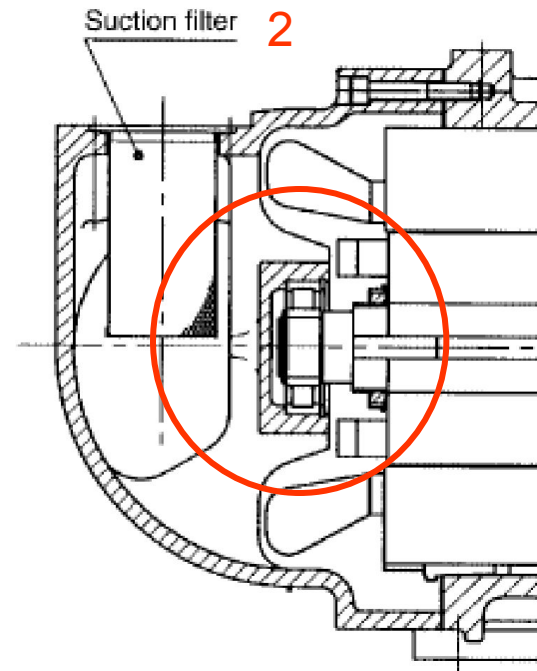
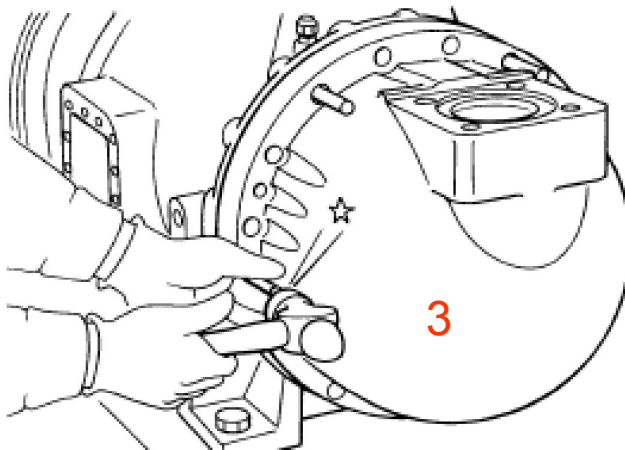
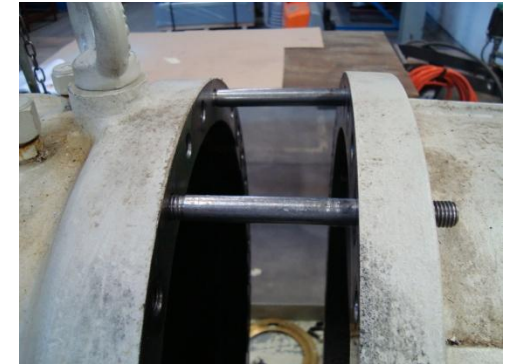
optional



1. First mount the key way, be sure it's clean and no burs are present.
2. Mount back the rotor, keep in mind the direction way
3. Put back the locking nut and retainer

Mounting back the suction cover

1. Apply new gasket with oil and mount back the suction cover using guiding studs
2. Be carefull not to damage the bearing during assembling the cover
3. Insert the two location pins on each side of the suction cover. Put back the fixation M12 screws on the shell, apply 120 Nm

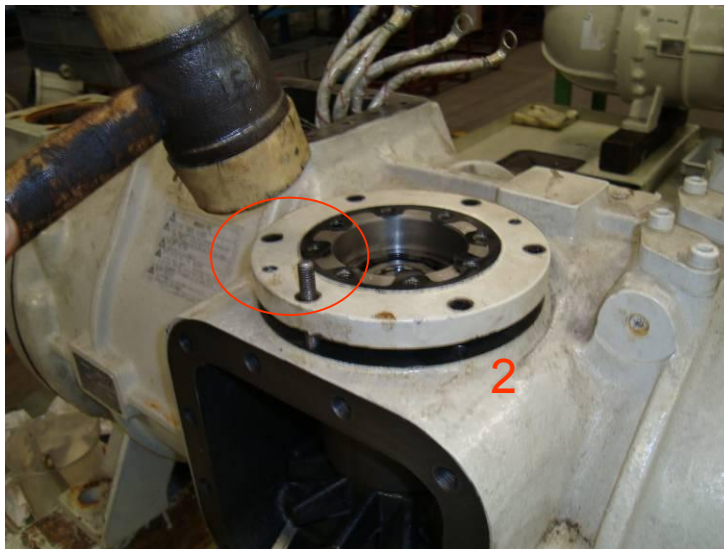
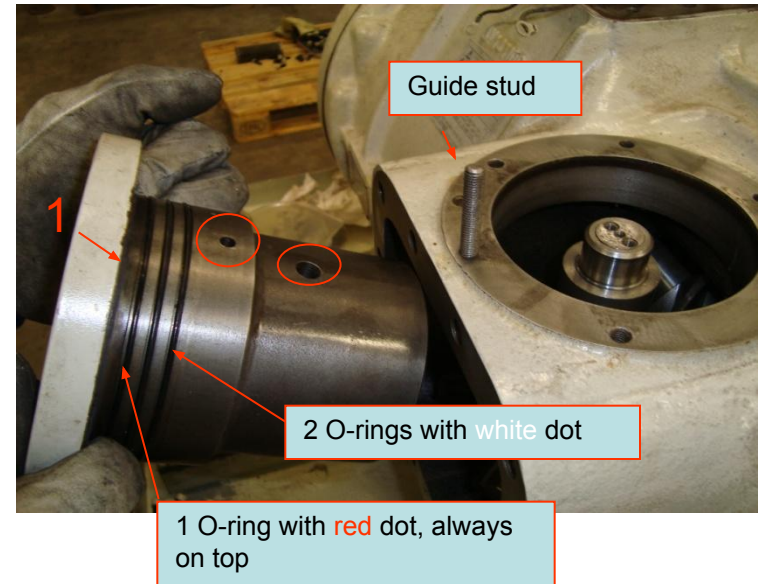


Mounting of gate rotors

1. Apply new O-rings on bearing holder, put oil supply holes towards screw direction.
2. Mount back the bearing holder, be careful not to damage the O-rings, apply some oil !

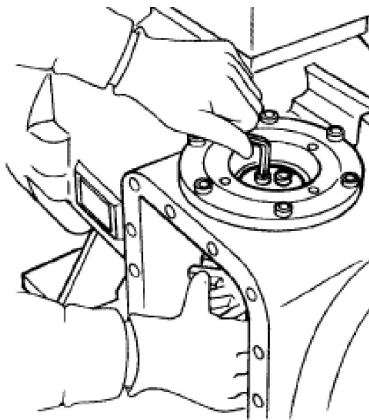
Use guiding stud to keep bearing holder in position towards screw holes

3. Mount the correct shims (eg 0.2+0.2+0.05 mm)



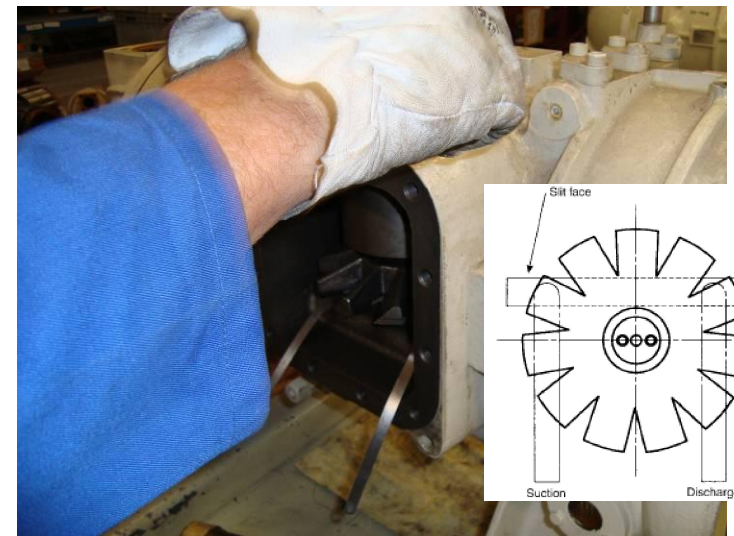
1. Put two thickness gauges between the composite and the slit. (between 0.06 and 0.09 mm)
2. Fixate bearing holder on casing with two screws, use correct torque (34 Nm)
3. Mount the bearing fixing plate with shims on top of gate rotor axle and apply correct torque on M5 screws (11 Nm).
4. When correct clearance between the gate rotor and the slit is achieved it must be possible to withdraw the measure gauges with minimal force.

If needed add or remove shims



3

Mounting of gate rotors (top)

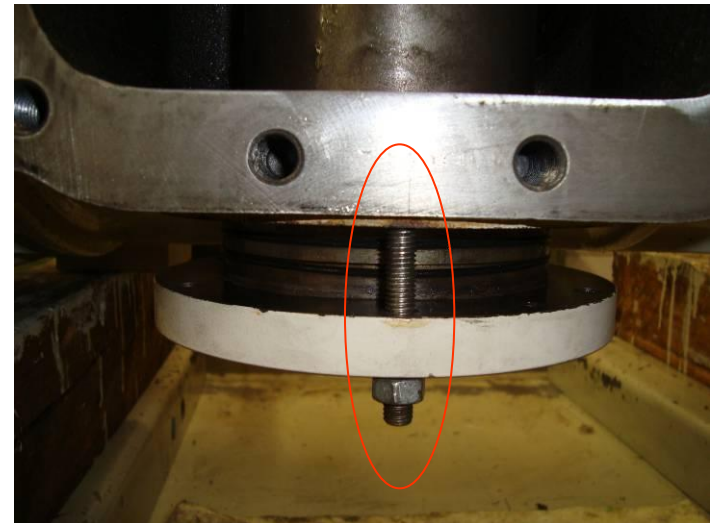
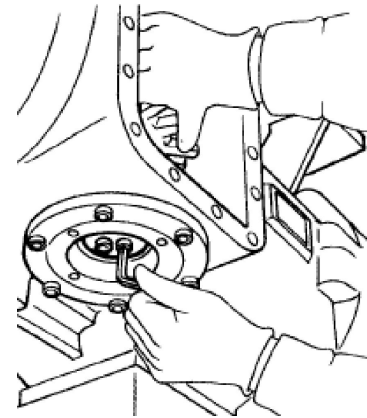


1&4

Mounting of gate rotors (down)

1. Put two thickness gauges between the composite and the slit. (between 0.06 and 0.09 mm)
2. Fixate bearing holder on casing with two screws, use correct torque (34 Nm). To avoid bearing holder is falling down a M8 guiding bolt with nut can be used.
3. Mount the bearing fixing plate with shims on top of gate rotor axle and apply correct torque on M5 screws (11 Nm).
4. When correct clearance between the gate rotor and the slit is achieved it must be possible to withdraw the measure gauges with minimal force.

If needed add or remove shims

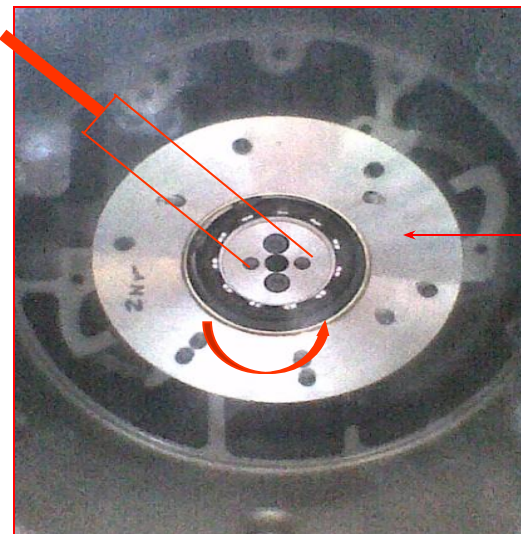
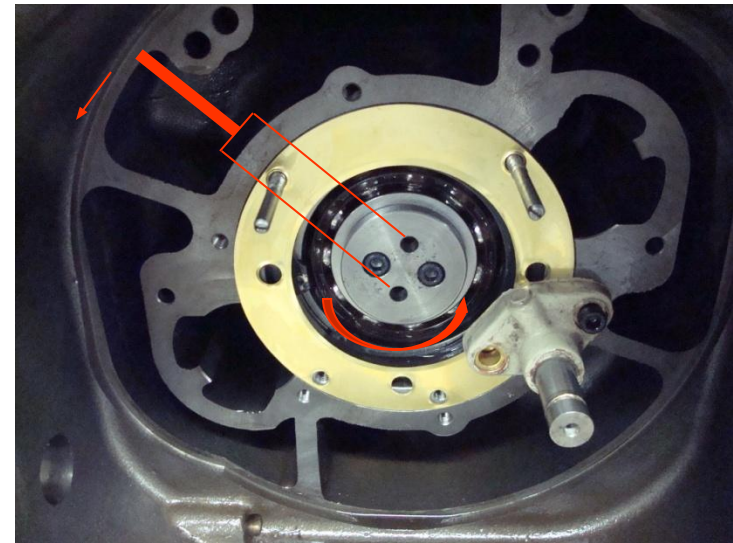


Checking idle run screw

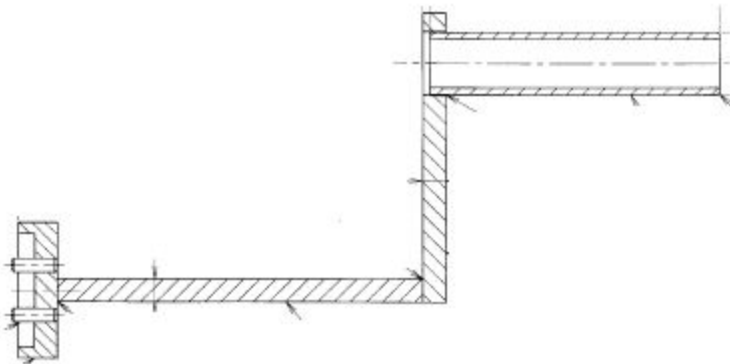
- After both gate rotors are mounted, an idle run of the screw can be performed by using a special tool.

This tool can be attached to the back of the screw into the bearing fixing plate.

The screw needs to running without



Special "jig"

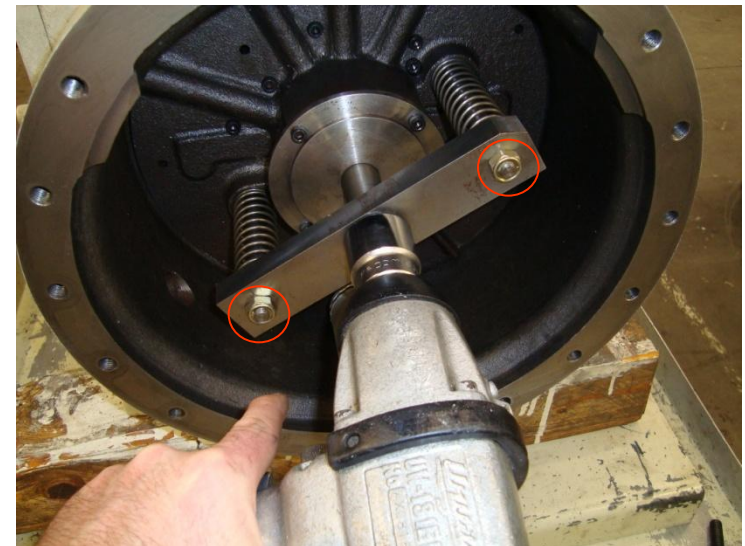
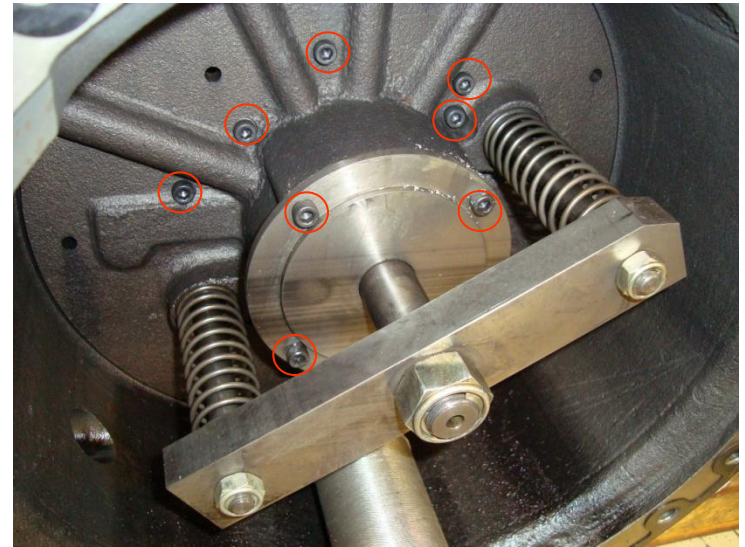
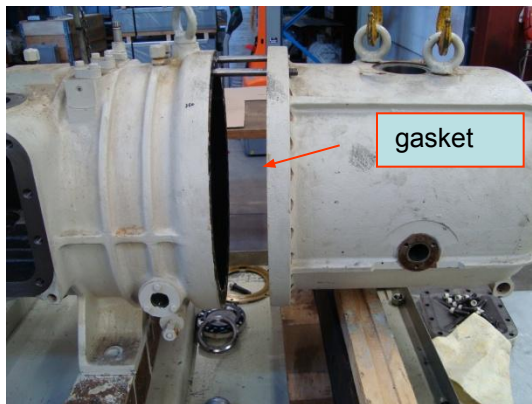


Final assembly of mean bearing fixing plate

- Finally the capacity valves and the main bearing plate can be mounted back.

Note that no O-rings or sealings are present. All sealing happens by mean of oil.

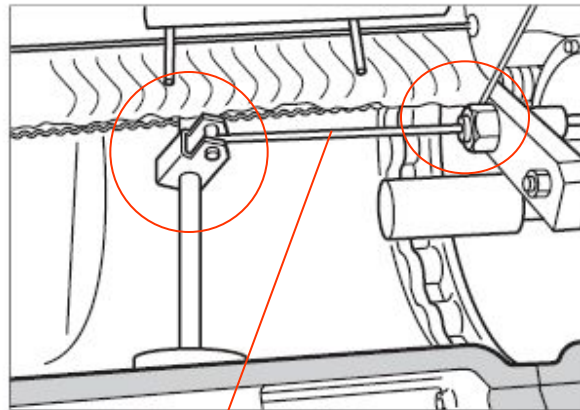
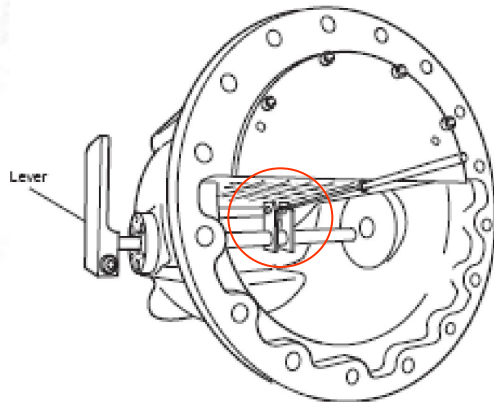
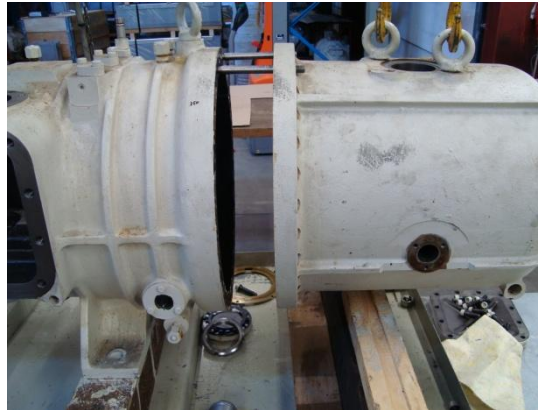
- Before the discharge cover can be mounted back, a new gasket needs to be placed on the surface of the discharge cover.



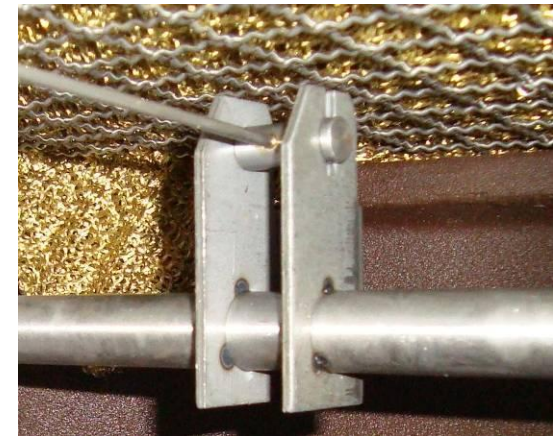
Mounting discharge cover

Important during mounting back the discharge cover is that the piston valve is correctly introduced into the back of the capacity piston/cylinder.

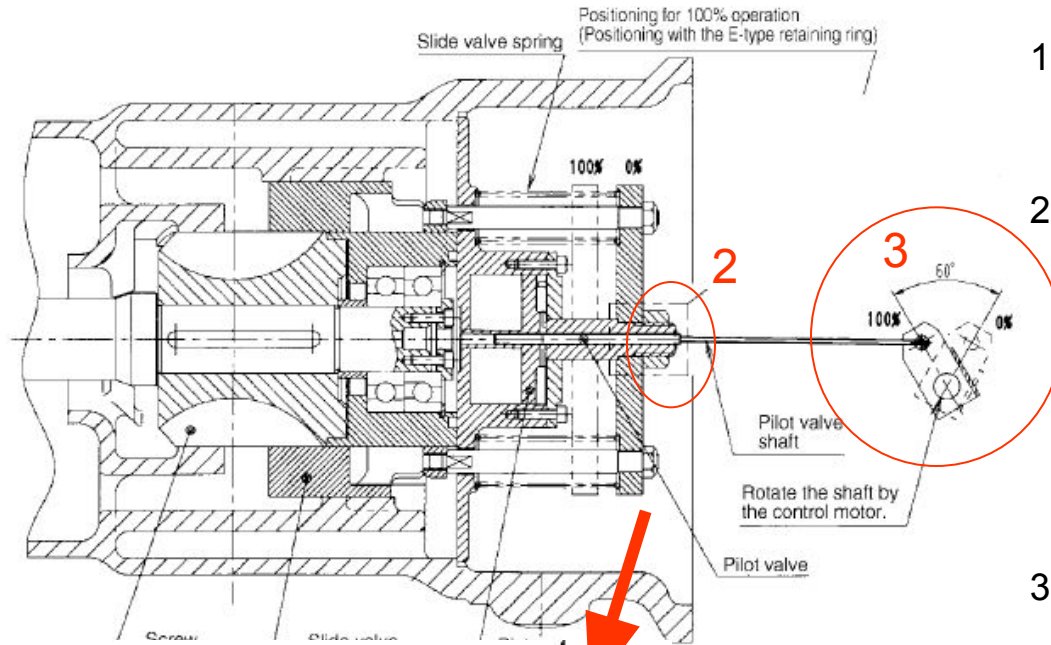
Keep attention towards the position of the "rod" during matching the suction cover to the compressor housing



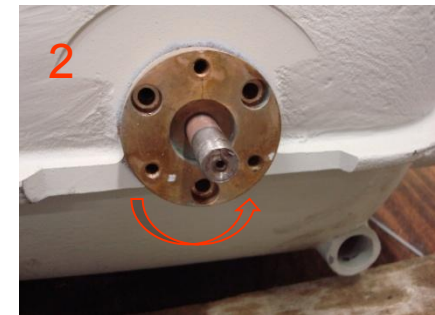
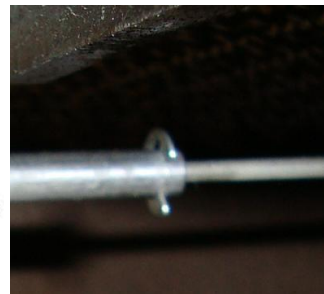
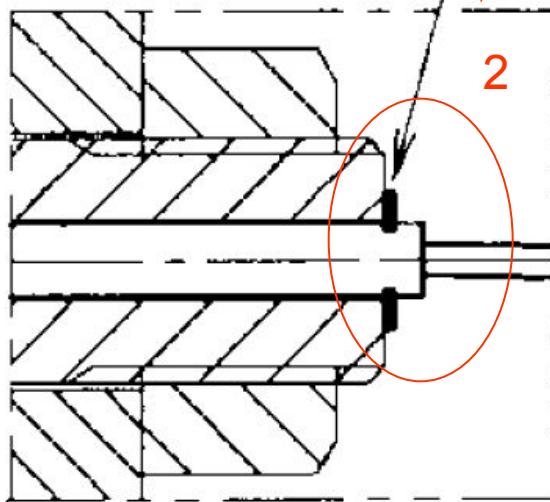
Piston valve



Calibrating – mounting step motor

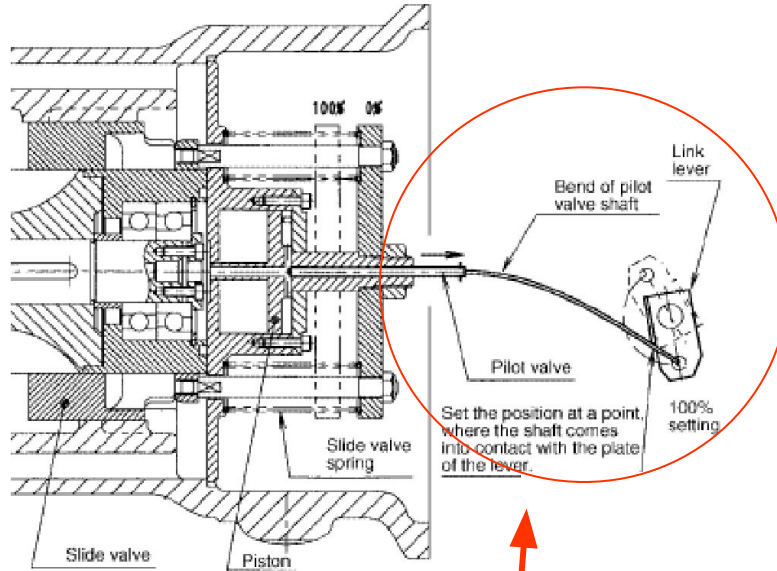


1. Before mounting the step motor it's important that the piston valve is at it's max position
2. This max position can be achieved by turning the external axle towards the suction side of the compressor. Once the piston valve is at max, a mechanical stop (due to the c-retainer touching the entrance) will be noticed.
3. The rod must be in up position during assembling
4. Keep in mind not to put to much force when rotating the external axle otherwise risk for bending axe.



Calibrating – mounting step motor

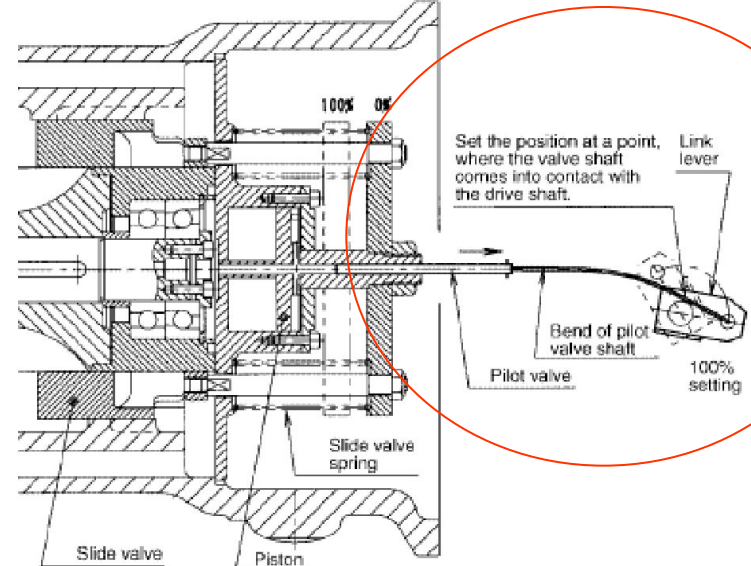
Example of failure in 100% position setting (1)



Examples of **WRONG** position of piston valve due to applying to **MUCH** force!

NOT GOOD

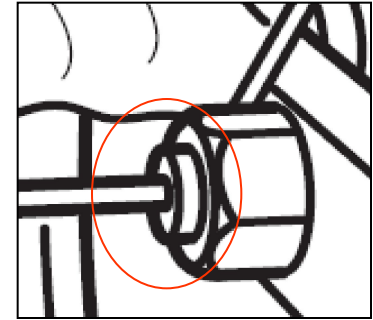
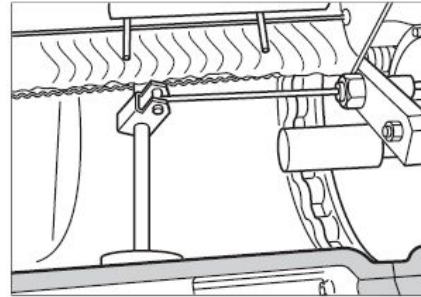
Example of failure in 100% position setting (2)



Calibrating – mounting step motor

ZH 3&5

Turn countre clockwise



ZH 7&9

Turn clockwise

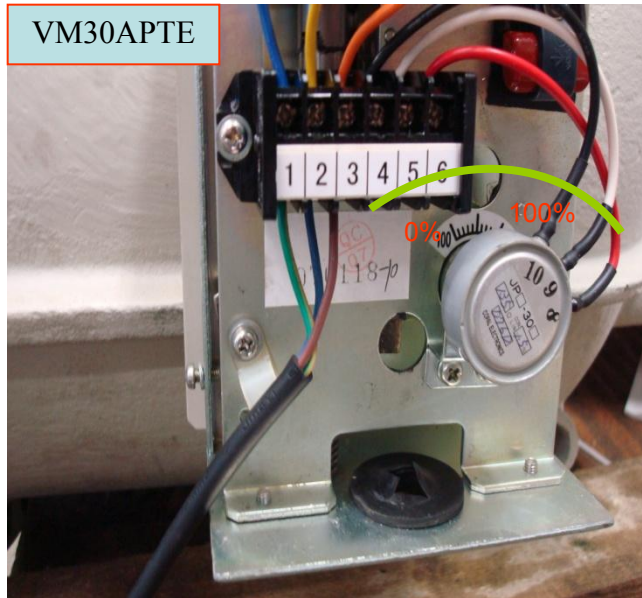


Rotate external axe, unilt c-retainer touches entrance
 = **the mechanical maximum position** = >
 corresponds to **100% position** of step motor.

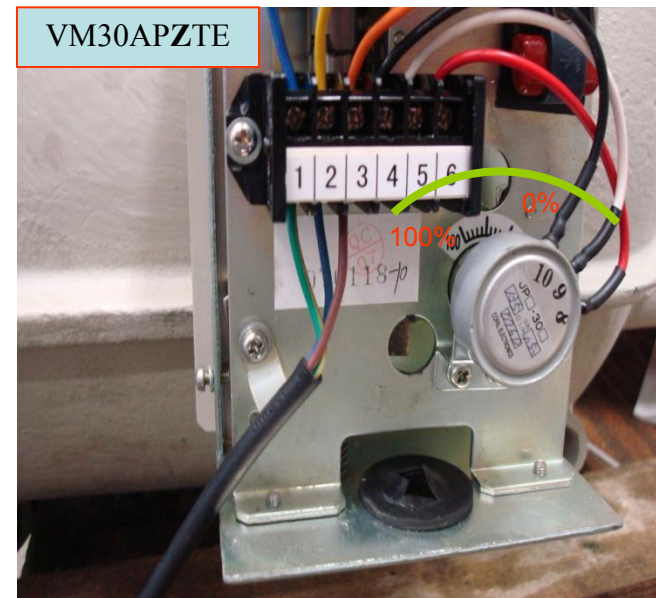
Calibrating – mounting step motor

Pay attention to the turning direction of the step motor module. This is different according to compressor size

Two partnumbers: VM30APTE & VM30APZTE



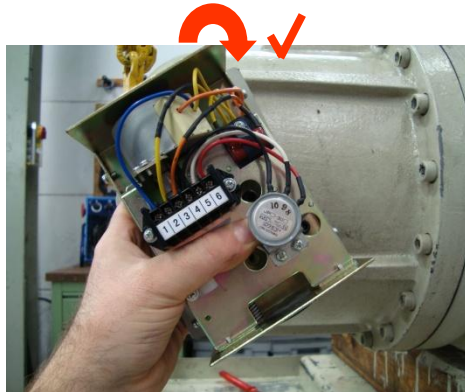
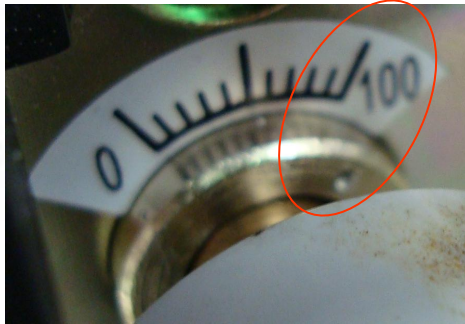
ZH.. 3& 5 types



ZH.. 7&9 types



Calibrating – mounting step motor

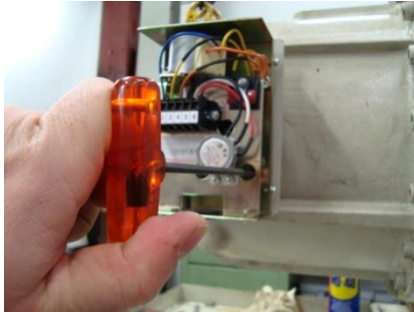


1. Before stepmotor is mounted on external axe the stepmotor must be **@ 100 %**. If needed put power supply on motor terminals to achieve the 100 % position.

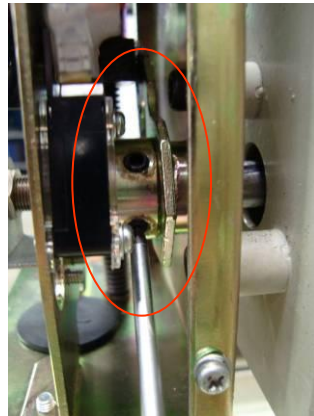
2. In order not to turn back the external axe during mounting of the motor module and thus loosing the correct max position. The module must be kept under an angle and a turning movement has to be made during pushing the module on the axe.

3. Once the holes in de motor module frame and the bronze piece around the external axe are corresponding stop the turning movement. **At this point don't turn back**

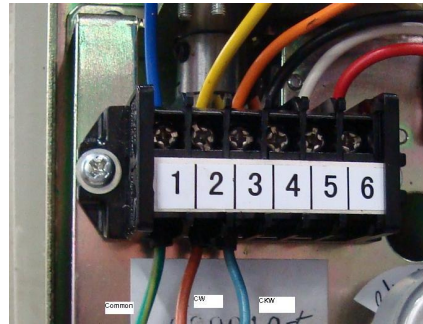
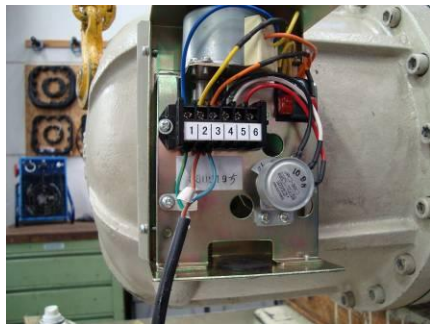
Calibrating – mounting step motor



1



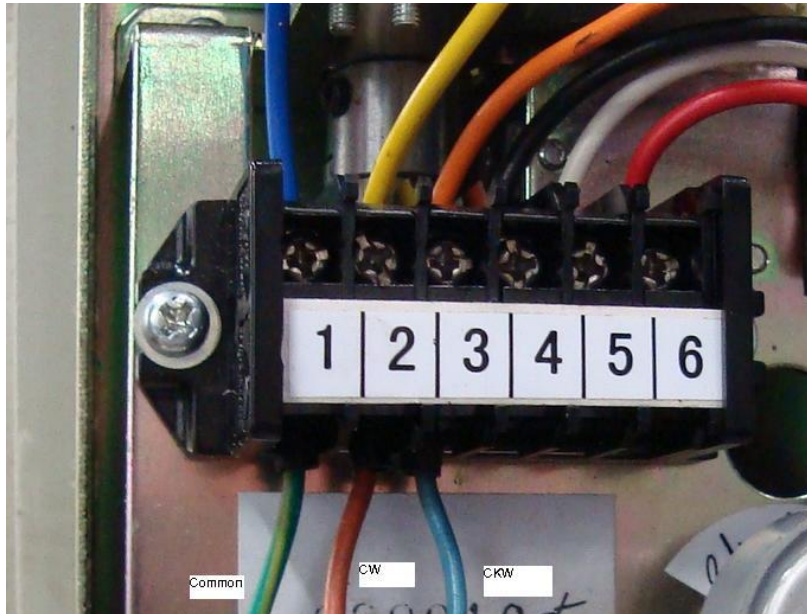
2



3

1. Once the motormodule is at its position, fasten the backplate towards the bronze piece on the discharge cover
2. Fasten the small screws on the motor coupling, don't use force. To avoid screw coming loose by vibrations Loctite thread lock is recommended.
3. Initiate manually the motor module towards 0 % by applying voltage on the motor terminals. **This is important otherwise at first startup compressor will run @ 100%.**

Initiating the steppmotor



- The steppmotor can be initiated by applying 220 Volt on the terminals (see pic).

Terminal 1 is the common, by connecting the other phase on terminal 2 or 3 the motor will turn clockwise or contre clockwise.

- The motor will stop at 0% or 100% by means of microswitch

N L ↔ L

220V 2 -phase

Airtightness test and nitrogen charging

- After an airtightness test has been performed, compressor needs to be charged with proper refrigeration oil, vacuumized and charged with nitrogen gas.

