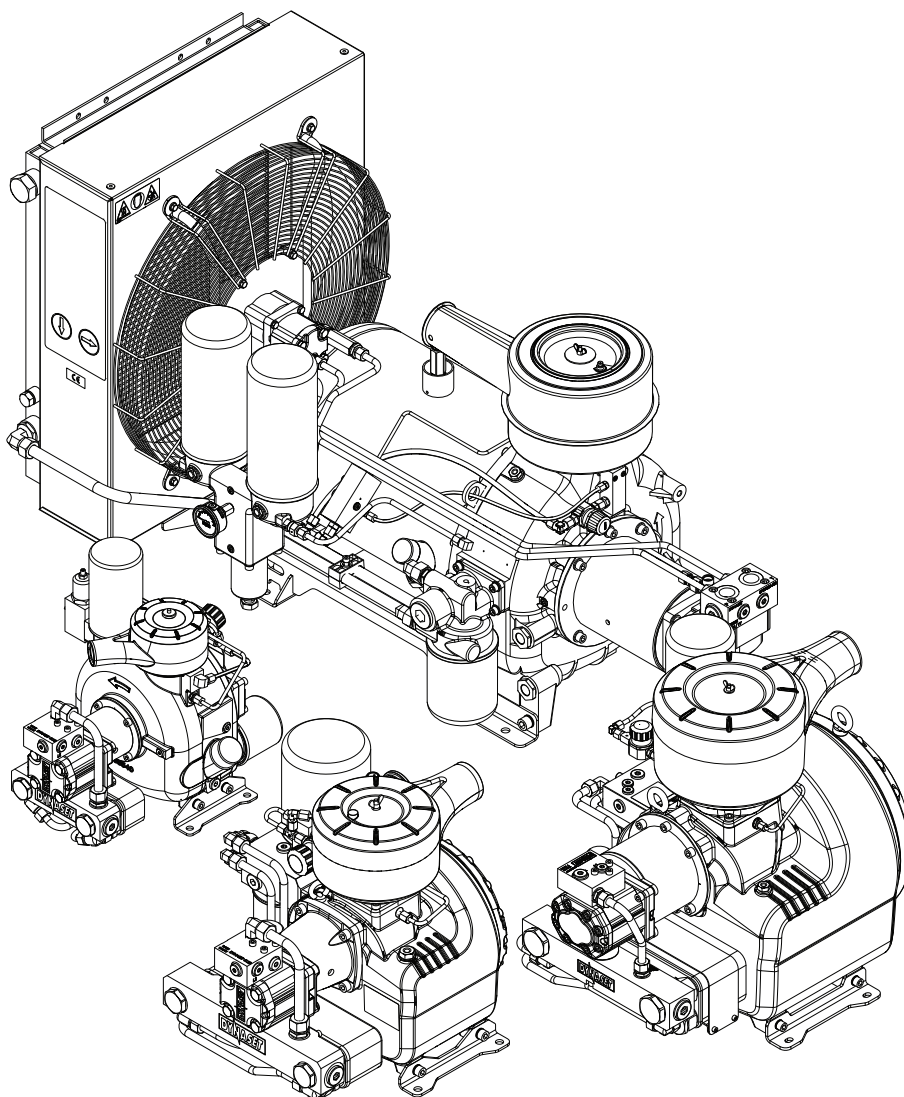




PARTNER OF YOUR MACHINE



USER MANUAL

HKR Hydraulic Screw Compressors



**HKR500
HKR600
HKR800**

**HKR1300
HKR2000
HKR2000**

**HKR2500
HKR4000
HKR4000**

**HKR5000
HKR6500
HKR7500**

HKR11000

1. GENERAL	5
1.1 PRODUCT INFORMATION	5
1.2 PRODUCT IDENTIFICATION KEY	6
1.3 TYPE PLATE	7
1.4 HKR COMPRESSOR LINE-UP BLUE AIR	8
1.5 MAIN COMPONENTS OF HKR COMPRESSOR	9
2. SAFETY	10
2.1 SAFETY PRECAUTIONS	10
2.2 SAFETY EQUIPMENT	10
2.3 OPERATING SAFETY	11
2.4 MAINTENANCE SAFETY	12
2.5 WARNING LABELS	12
3. OPERATING PRINCIPLES	13
3.1 OPERATING DESCRIPTION	13
3.2 LUBRICATION SYSTEM OF COMPRESSOR	14
3.3 PRESSURE AND COMPRESSION RATIO	15
3.4 INTAKE VALVE	16
3.5 MULTIBLOCK	18
3.6 OIL NON-RETURN VALVE	20
3.7 AIR-OIL SEPARATING ELEMENT	21
3.8 MINIMUM PRESSURE VALVE	22
3.9 OIL FILTER	24
3.10 OIL THERMOSTAT	25
4. INSTALLATION	26
4.1 BEFORE INSTALLATION	26
4.2 INSTALLING DYNASET HYDRAULIC PRODUCT	34
4.3 INSTALLING HKR COMPRESSOR	38
5. OPERATION	41
5.1 BEFORE STARTING THE COMPRESSOR	41
5.2 STARTING THE COMPRESSOR	43
5.3 AIR AND OIL TEMPERATURES	45
5.4 AIR HUMIDITY	46
5.5 UNLOADED MODE	46
5.6 COLD STARTS	47
5.7 STOPPING THE COMPRESSOR	48
5.8 RESTARTING THE COMPRESSOR	48

6. MAINTENANCE	49
6.1 GENERAL	49
6.2 MAINTENANCE INTERVALS	50
6.3 HYDRAULIC FLUIDS	51
6.4 COMPRESSOR OILS	52
6.5 CLEANING THE COMPRESSOR	54
6.6 OIL LEVEL CHECK	55
6.7 OIL QUALITY CHECK	58
6.8 OIL CHANGE	59
6.9 REPLACING OIL FILTER	65
6.10 REPLACING AIR-OIL SEPARATING ELEMENT(S)	68
6.11 REPLACING AIR FILTER ELEMENT	71
6.12 CHANGING CYCLONE FILTER (OPTION)	75
6.13 ADJUSTING THE OFF-LOAD PRESSURE	76
6.14 TROUBLESHOOTING	77
7. MANUFACTURER'S LIMITED WARRANTY	82
7.1 WARRANTY COVERAGE	82
7.2 BEGINNING OF WARRANTY PERIOD	82
7.3 WARRANTY PERIOD	82
7.4 WARRANTY PROCEDURES	82
7.5 WARRANTY REPAIRS	83
7.6 DELIVERY TERMS OF WARRANTY REPAIR	83
7.7 WARRANTY OF REPAIRED PRODUCT	83
7.8 EXCLUSIONS FROM WARRANTY	84
8. PRODUCT DISPOSAL	85
9. DECLARATION OF CONFORMITY	86
10. TECHNICAL SPECIFICATIONS	87
10.1 BLUE AIR MODELS	87

1. GENERAL

This manual contains general information about assembly, installation, operation and maintenance of the DYNASET equipment.



WARNING

Read this user manual before the installation, use or maintenance of the DYNASET product to ensure proper handling, operation and maintenance right from the beginning. Pay attention to warnings and safety instructions, READ CHAPTER "2 Safety".

1.1 PRODUCT INFORMATION

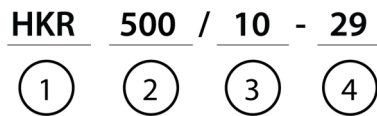
HKR compressors are compact and integrated all-in-one units, especially designed for mobile installation. The only power source needed is a hydraulic system of a base machine which provides the compressor required hydraulic flow and pressure.

HKR compressor converts the hydraulic power into high quality compressed air, and it can be installed in almost any working machine. HKR compressors are used to power for example pneumatic tools, filling tires, air flushing, purge air protection equipments, cleaning equipments, and CAFS foam generation.

DYNASET HKR compressors are designed to meet regular modern compressed air demands.

1.2 PRODUCT IDENTIFICATION KEY

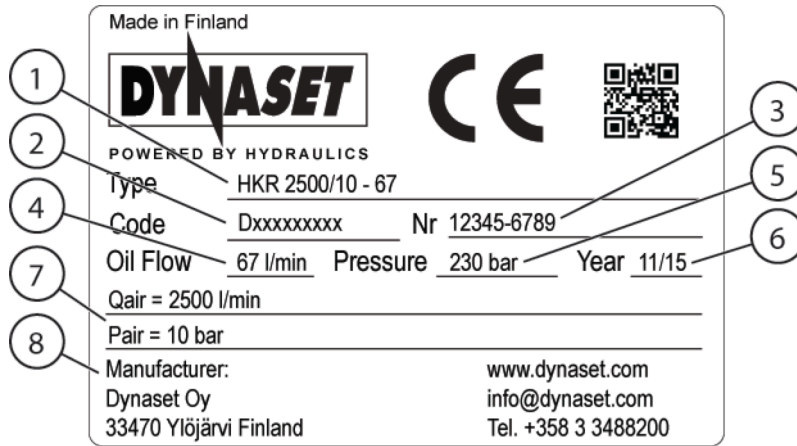
The product identification key describes the characteristics of the DYNASET product. The product identification key is on the product type plate which is attached onto every DYNASET product.



Picture 1: Identification key for HKR

1. Product Group HKR Hydraulic Screw Compressor
2. Maximum Discharge. It is the maximum amount of air flow (l/min) that HKR hydraulic screw compressor can produce at discharge pressure of 6 bar (according to ISO1217(1996).)
3. Maximum Discharge Pressure. It is the maximum air pressure (bar) that HKR hydraulic screw compressor can produce.
4. Maximum hydraulic flow. It is the maximum hydraulic flow that HKR hydraulic screw compressor is designed to run. Do not exceed the maximum hydraulic flow.

1.3 TYPE PLATE

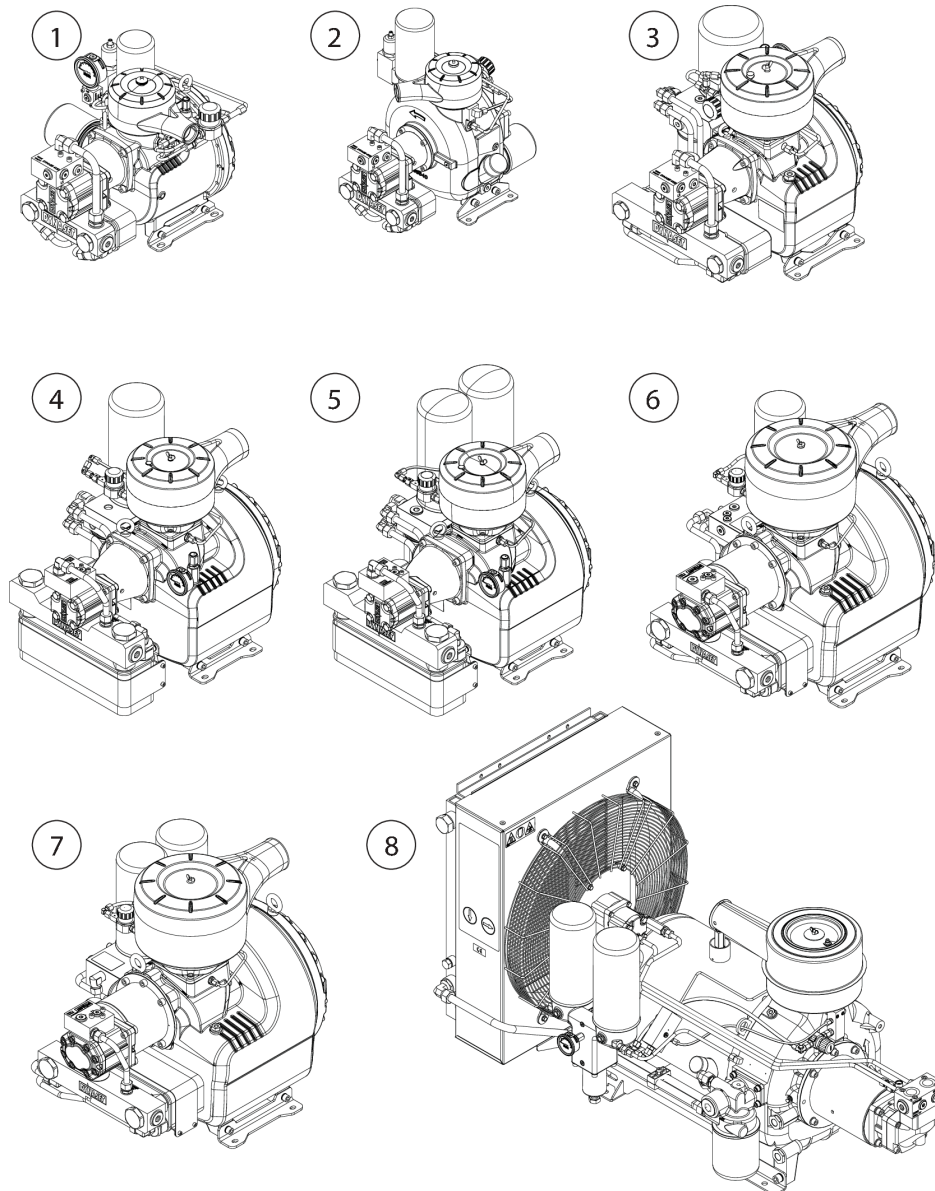


Picture 2: Type plate

The products type plate shows the following information.

1. Product identification key
2. Product code
3. Serial number
4. Maximum hydraulic flow
5. Maximum hydraulic pressure
6. Production month / year
7. Output air flow rate and pressure.
8. Manufacturer's contact information

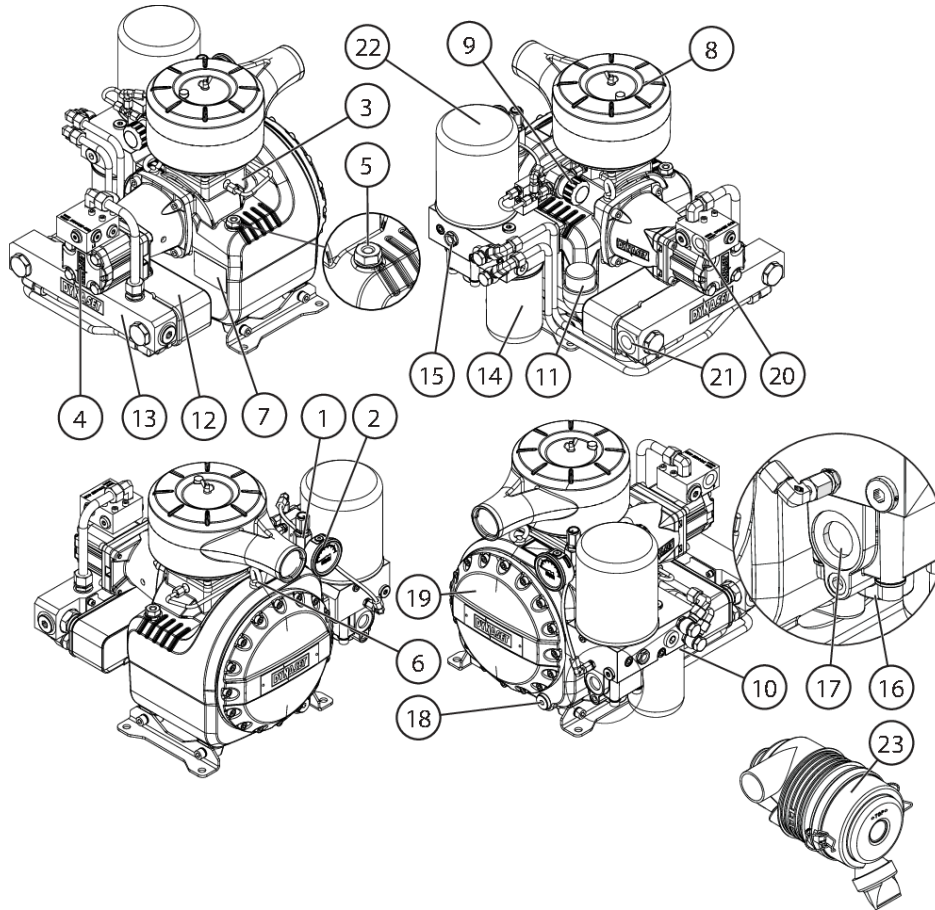
1.4 HKR COMPRESSOR LINE-UP BLUE AIR



Picture 3: HKR compressor line-up

- | | |
|---|---|
| 1. HKR 500/10-29
HKR 800/10-43 | 5. HKR 5000/10-137 |
| 2. HKR 600/15-26 | 6. HKR 6500/13-195 |
| 3. HKR 1300/10-37
HKR 2000/13-68
HKR 2500/10-67 | 7. HKR 7500/10-183 |
| 4. HKR 4000/10-104
HKR 4000/13-125 | 8. HKR 11000/10-270
HKR 11000/10-184 |

1.5 MAIN COMPONENTS OF HKR COMPRESSOR



Picture 4: Main components of HKR compressor - Blue Air

- | | |
|---------------------------------|--|
| 1. Safety valve | 13. Heat exchanger by-pass check valve |
| 2. Pressure gauge | 14. Oil filter |
| 3. Intake valve | 15. Oil return line sight glass |
| 4. Hydraulic motor | 16. Minimum pressure valve |
| 5. Temperature probe connection | 17. Compressed air outlet (AP) |
| 6. Lifting eyes | 18. Oil drain plug |
| 7. DYNASET type plate | 19. Compressor block |
| 8. Intake filter | 20. Hydraulic pressure line (P) |
| 9. Air pressure control valve | 21. Hydraulic return line (T) |
| 10. Oil thermostat | 22. Air-oil separator element |
| 11. Oil filler cap | 23. Cyclone filter (Y) |
| 12. Heat exchanger | |

2. SAFETY

2.1 SAFETY PRECAUTIONS

WARNING

Operators and maintenance personnel must always comply with local safety regulations and precautions in order to close out the possibility of damages and accidents.

The pressure in both hydraulic and compressed air circuits is considerably high. Keep the condition of your equipment and hydraulic system under constant observation.

 **WARNING**

HIGH PRESSURE AIR AND OIL!

Can cause severe injuries.
Always wear appropriate clothing
and safety equipment.

Couplings, valves and hoses must be tight and clean to avoid possible leakages. Leaks in the hydraulic system must be repaired immediately to avoid injuries caused by high pressure blowouts.

In order to avoid possible accidents, do not clean or inspect HKR compressor or pneumatic tools when hydraulic or/and pneumatic circuit is pressurized. Prior to any cleaning, inspection and service, hydraulic system of your base machine must be stopped and both hydraulic and pneumatic circuits must be depressurized.

2.2 SAFETY EQUIPMENT

Always wear appropriate clothing and safety equipment such as safety goggles, safety shoes and ear protection when operating the compressor.



2.3 OPERATING SAFETY

When operating the compressor, beware of unit parts warmed by hot hydraulic oil.

**WARNING**

RISK OF BURNS!

Parts of the unit, oil, and oil filler cap
can be hotter than 80 °C!

Wear personal safety equipment!



Never aim compressed air at a person.

**WARNING**

HIGH PRESSURE AIR!

Never aim compressed air at a person.
Can cause severe injuries.



WARNING

Do not exceed the maximum pressure, temperature and load.

2.4 MAINTENANCE SAFETY

WARNING

Installation and service of both hydraulic and pneumatic equipment must be done by qualified and experienced personnel only.

NOTE!

When carrying out any maintenance to HKR compressor, keep the components of the system clean. This is important to ensure safe, reliable and long-life operation of your equipment.

Hydraulic system of a base machine must be maintained according to the service program.

2.5 WARNING LABELS

Warning labels are included with each main product.

Product recipient is obligated to place warning labels on the DYNASET product. Attach labels to visible and appropriate place onto or close to DYNASET product where it's easily seen.

Attach labels to visible and appropriate place onto or close to DYNASET product where it's easily seen. Clean surface with solvent detergent before attaching labels.



READ OPERATING
INSTRUCTIONS.



USE EAR PROTECTION
AND SAFETY
GOGGLES.



HIGH PRESSURE
OIL



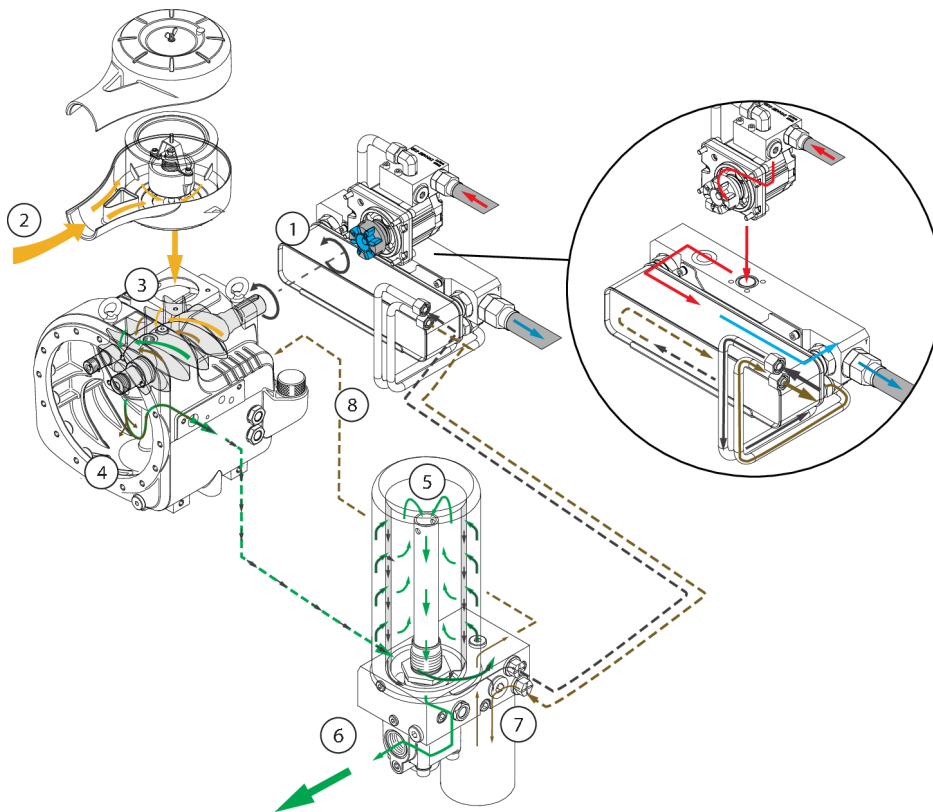
GENERAL CAUTION.
BEWARE OF HIGH
PRESSURE AIR.



BEWARE OF HOT
SURFACE.

3. OPERATING PRINCIPLES

3.1 OPERATING DESCRIPTION



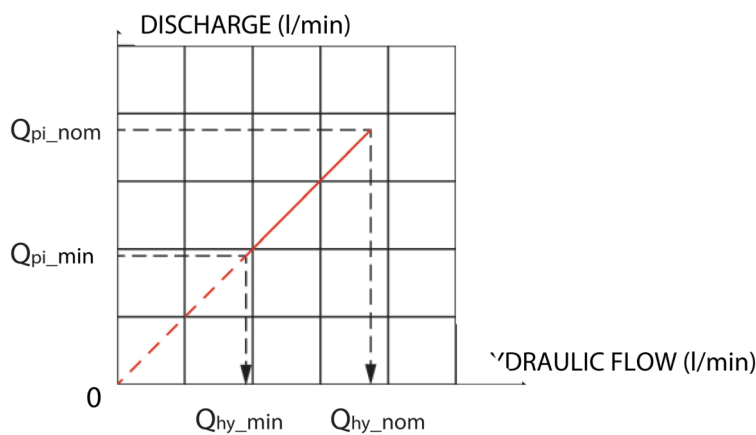
Picture 5: Operating description

1. The screw compressor is driven by a hydraulic motor. The rotation of screws creates suction and starts the air flow.
2. Air flows through the intake filter and valve into the compression chamber.
3. Intake air is compressed between male and female screws. Oil is mixed with air and injected into screws for lubrication and cooling.
4. The majority of the oil is separated from the oil-air-mixture in a separating tank in the compressor block.
5. The air-oil mixture flows to the air-oil separating element where the oil is filtered out down to a residual content of $< 3 \text{ mg/m}^3$.
6. Compressed and filtered air goes from the air-oil separating element to the air supply system through a minimum pressure valve and AP-port.
7. Depending on the oil temperature, the oil thermostat valve routes the oil through the oil cooler or directly to the oil filter. Optimum operating temperature of oil is adjusted by integrated thermostat valve.
8. Oil flows from the oil filter to various injection points in the compressor block.

When the air supply line is closed and preset air pressure is reached, compressor starts to run automatically in off-load mode. Pneumatically controlled intake valve is closed and compressor's internal pressure drops to 5.5 bar. Pressure in the supply line remains until the supply line is opened.

When the compressed air in the air supply line is needed, off-load automatic controls the intake valve according to the current air demand.

The nominal discharge is achieved when the compressor is rotated by hydraulic flow adequate to the nominal rotation speed.



Picture 6: The nominal discharge of hydraulic screw compressor

3.2 LUBRICATION SYSTEM OF COMPRESSOR

Compressor oil has the following functions:

1. **LUBRICATION:** Pressure differential makes the oil spread along grooves to the surfaces to be lubricated. A separate oil pump is not needed.
2. **HERMETIZATION:** Injected oil seals the screw surfaces against each other.
3. **COOLING:** DYNASET HKR screw compressor is equipped with oil heat exchanger. The compressor's heat is transferred to hydraulic system with heat exchanger. HKR screw compressor requires cooling capacity from the base machine's hydraulic system.

3.3 PRESSURE AND COMPRESSION RATIO

The rated absolute intake pressure is 1 bar (1000 hPa).



NOTE!

The reference barometric pressure at sea level is 1,0135 bar, when at 1'000m (3'281ft) above sea level it drops to 0,9 bar.

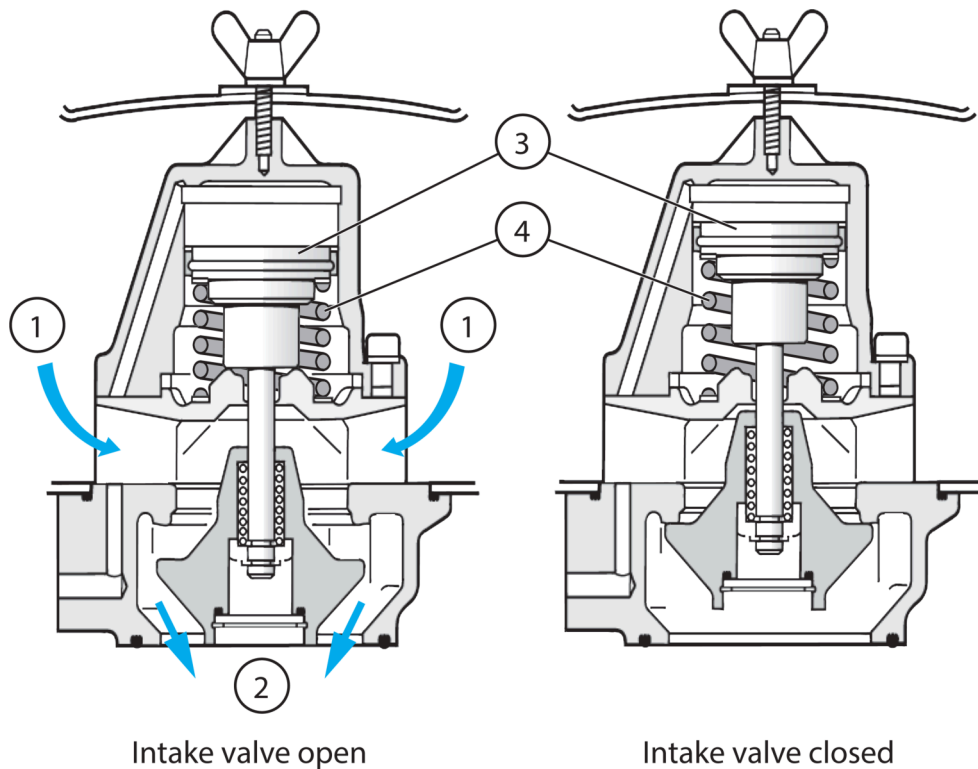
When the operational pressure of HKR-compressor is 10 bar, compression ratio is equal to:

$$\frac{\text{operational pressure} + \text{barometric pressure}}{\text{barometric pressure}} = \frac{10 + 1,0135}{1,0135} = 10,87$$

The compression ratio for unit of (x) bar is calculated in the same way.

3.4 INTAKE VALVE

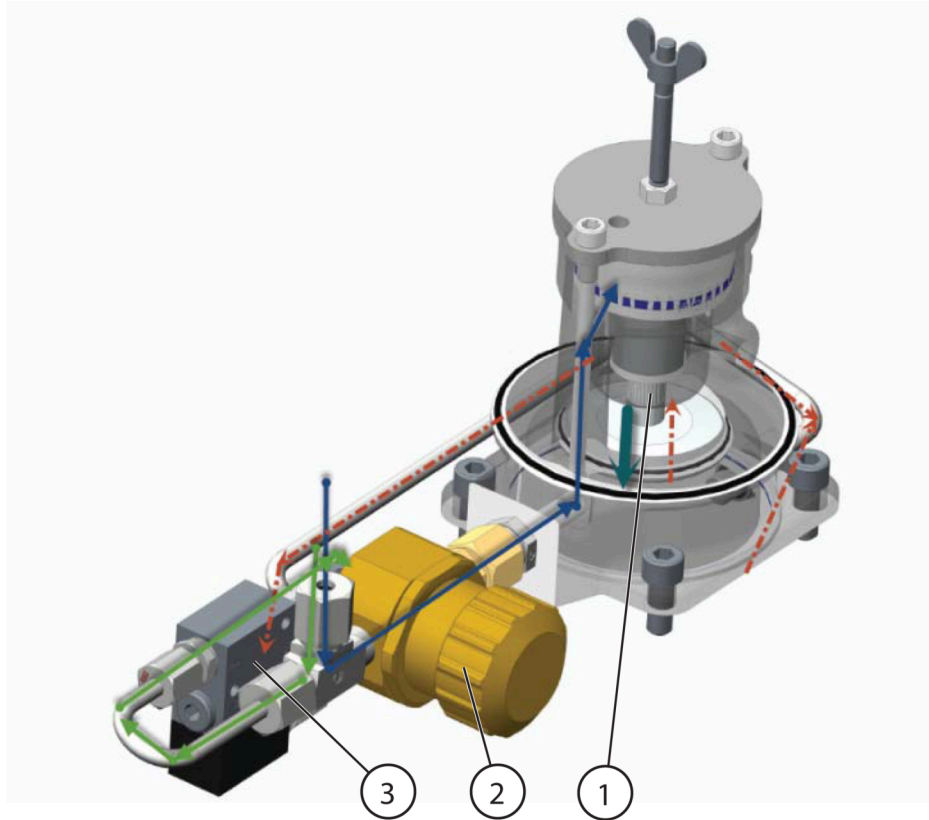
Dynaset HKR is equipped with an integrated intake valve that is mounted directly on the compressor housing. It is triggered via air pressure control valve.



Picture 7: Operating principles of intake valve

- | | |
|---------------|-------------------|
| 1. Air inlet | 3. Control piston |
| 2. Air outlet | 4. Spring |

3.4.1 FUNCTIONAL PRINCIPLE OF PNEUMATIC INTAKE CONTROL



Picture 8: Functional principle of pneumatic intake control

1. Intake valve
2. Air pressure control valve
3. 3/2 way valve

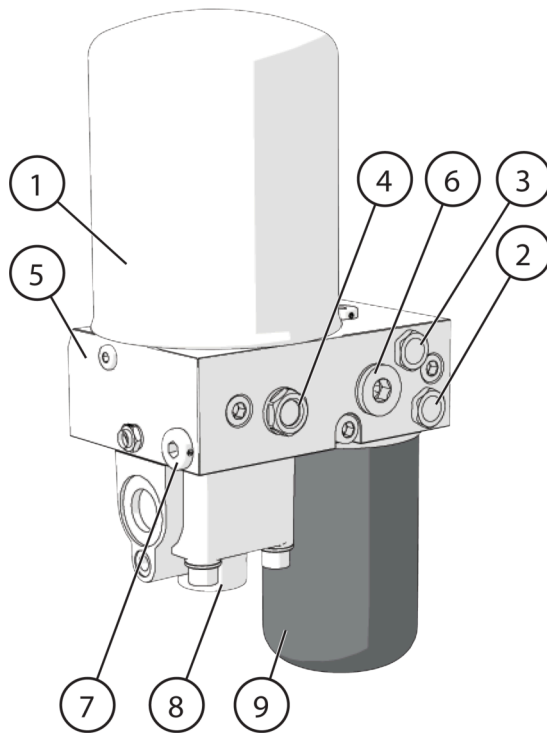
The intake valve is normally open. When the preset pressure at the air pressure control valve is reached, the pilot air (blue in the picture) closes the intake valve. When the intake valve is closed, compressor is in standby mode.

When air in the air supply line is used and the pressure decreases, the air pressure control valve reduces the pilot air flow so that the intake valve opens and intake regulator maintains the set pressure.

When the compressor unit is stopped, the increasing pressure (red in the picture) above the screws activates the 3/2 way valve. The pressure in the compressor is released via the 3/2 way valve and the relief nozzle.

3.5 MULTIBLOCK

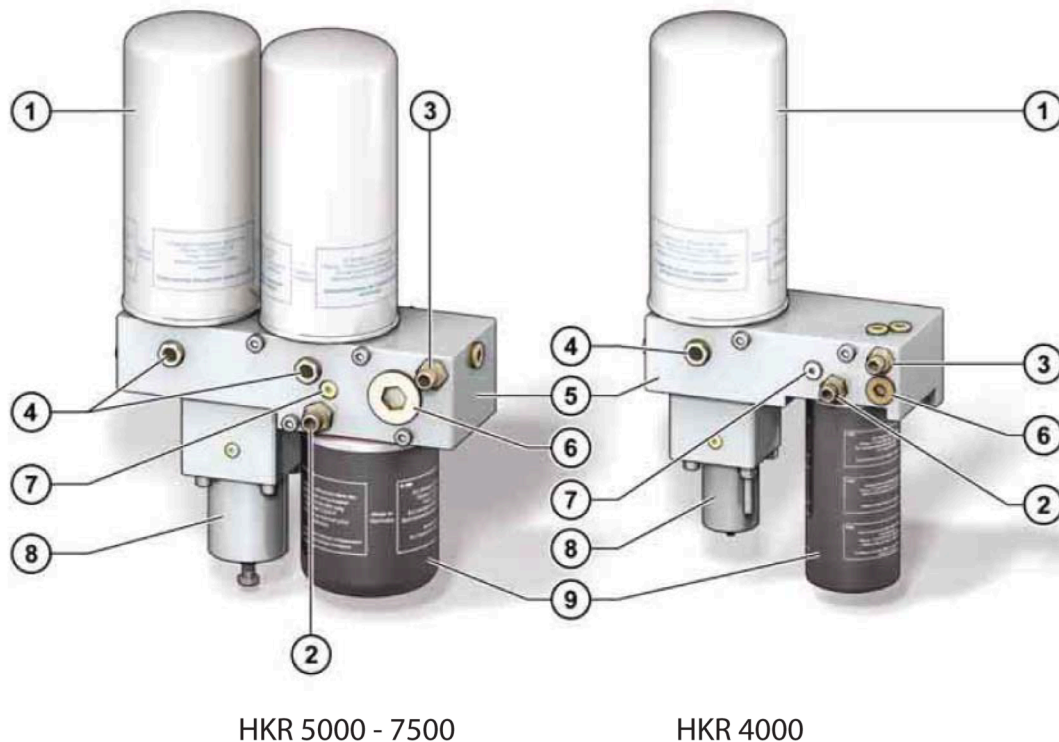
The DYNASET HKR screw compressors (HKR 1300-7500) are equipped with a multiblock. Into the multiblock are integrated: oil thermostat, oil filter, air-oil separating elements, minimum pressure valve, non-return valve with an oil return line, and oil return line check.



HKR 1300 - 2500

Picture 9: Multiblock of HKR 1300 - HKR 2500

- | | |
|---|---|
| 1. Air-oil separating element | 6. Oil thermostat |
| 2. Oil circulation connection Inlet | 7. Oil separation return line (integrated non-return valve) |
| 3. Oil circulation connection Outlet | 8. Minimum pressure valve |
| 4. Oil return line check / sight glass and nozzle | 9. Oil filter |
| 5. Housing | |

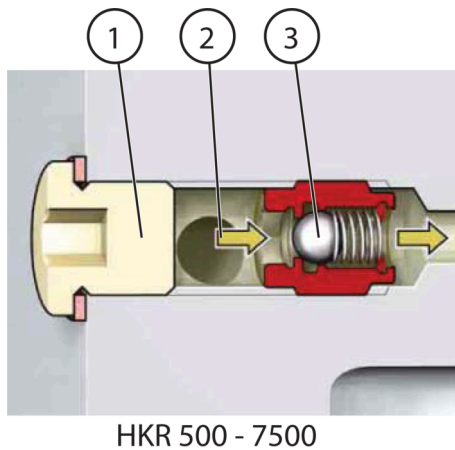


Picture 10: Multiblock of HKR 4000 and HKR 5000 - HKR 7500

- | | |
|---|---|
| 1. Air-oil separating element(s) | 6. Oil thermostat |
| 2. Oil circulation connection Inlet | 7. Oil separation return line (integrated non-return valve) |
| 3. Oil circulation connection Outlet | 8. Minimum pressure valve |
| 4. Oil return line check / sight glass and nozzle | 9. Oil filter |
| 5. Housing | |

3.6 OIL NON-RETURN VALVE

The oil non-return valve prevents oil from flooding from the air-oil separating element(s). Oil tends to flow from the air-oil separating element(s) to the screw compressor due to the pressure difference in the system when the screw compressor system is switched off.



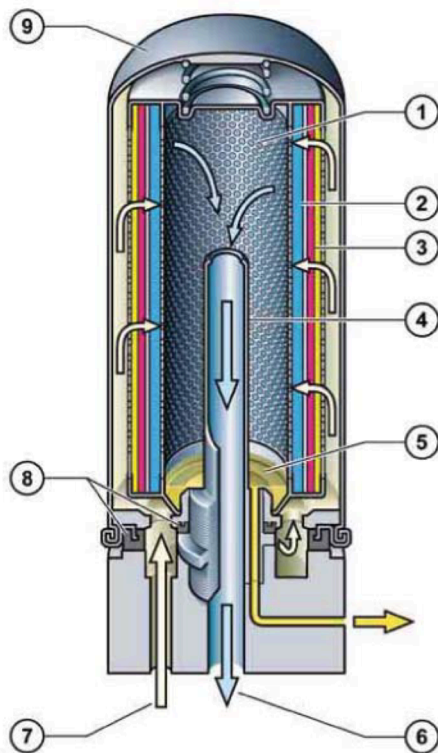
Picture 11: Operating principle of oil non-return valve

- | | |
|-----------------------------------|---------------------|
| 1. Screw plug | 3. Non-return valve |
| 2. Return line for oil separation | |

3.7 AIR-OIL SEPARATING ELEMENT

The air-oil separating element is used to recover finely distributed residual oil from air.

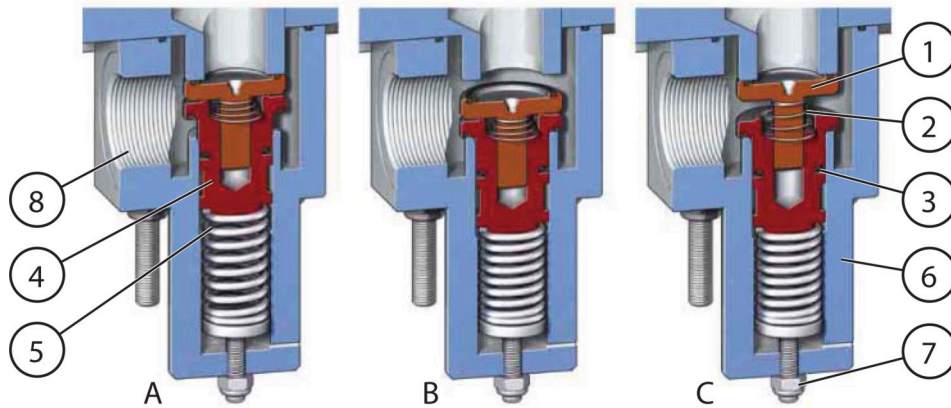
The air to the vertical cartridge comes from below. The residual oil is separated from the air while flowing through the filter element. Filtered oil flows back to the oil circulation.



Picture 12: Operating principle of air-oil separating element

- | | |
|---------------------------------|-----------------------------|
| 1. Inlet of air-oil mixture | 6. Oil separated air outlet |
| 2. Fine separator | 7. Separated oil |
| 3. Post-separator | 8. Seals |
| 4. Oil separated compressed air | 9. Element housing |
| 5. Support pipe | |

3.8 MINIMUM PRESSURE VALVE



Picture 13: Operating principle of minimum pressure valve

- A. MPV closed
- B. MPV open
- C. MPV open, non-return valve closed.
- 1. Non-return valve plate
- 2. Non-return valve spring
- 3. Seal
- 4. Pressure holding valve piston
- 5. Pressure holding valve spring
- 6. Pressure holding valve housing
- 7. Adjustment screw / counter nut (only in HKR500 and HKR7500)
- 8. Compressed air connection

The minimum pressure valve is used as a pressure holding valve and a non-return valve.

3.8.1 PRESSURE HOLDING VALVE

When there is no counter-pressure in the air supply line, the pressure holding valve prevents the pressure from dropping below the minimum pressure that is set for the pressure holding valve (factory setting approximately 5.5 bar). This pressure is necessary to ensure the oil supply to the compressor. At the same time this is the condition for a good oil separation.

3.8.2 NON-RETURN VALVE

The non-return valve prevents compressed air from flowing back from the system. This valve operates automatically.

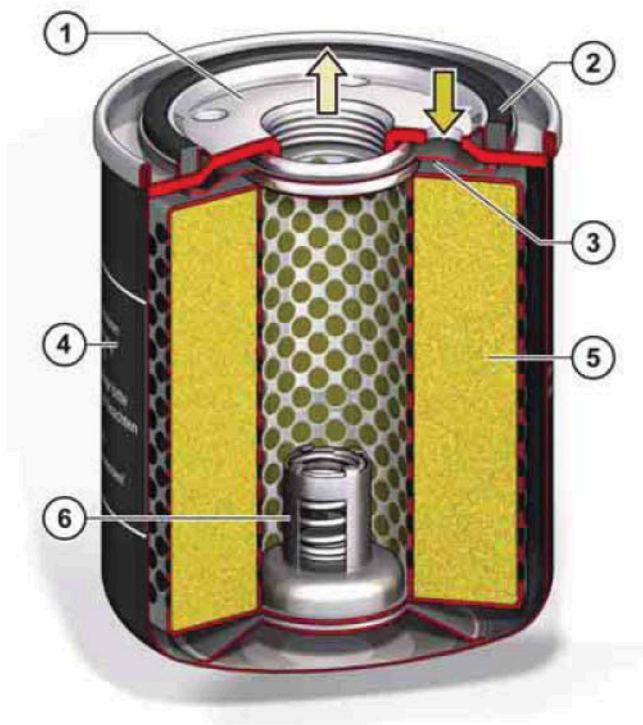
 WARNING

The minimum pressure valve is not an over-flow valve for continuous operation (it is only used for the starting sequence until the higher operating pressure is reached and subsequently determines a higher system pressure).

3.9 OIL FILTER

The filter mesh size is 20 µm.

The filter has a bypass valve which opens when oil is cold and high-viscosity or when the filter is heavily soiled and pressure difference is 2.5 bar. This allows oil to flow to the screw compressor.



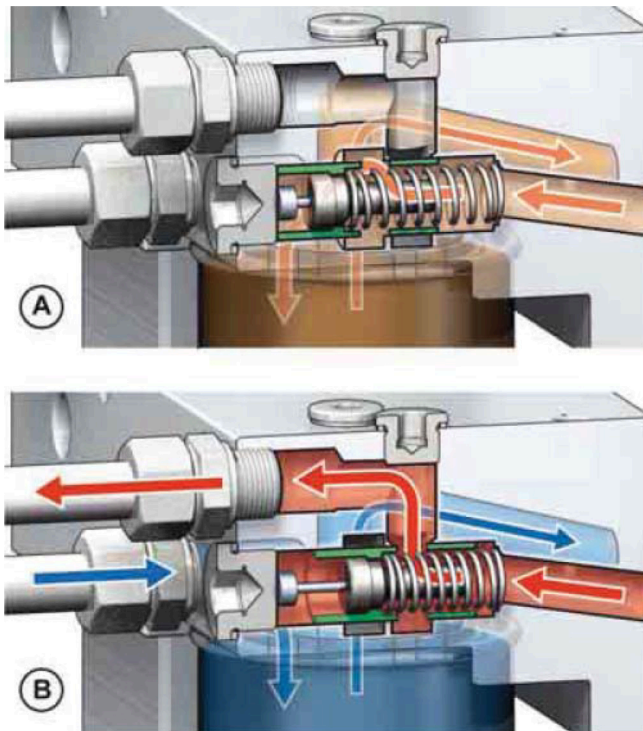
Picture 14: Operating principle of oil filter

- | | |
|-------------------------------|-------------------|
| 1. Cover | 4. Filter housing |
| 2. Seal | 5. Filter element |
| 3. Return line shut-off valve | 6. Bypass valve |

3.10 OIL THERMOSTAT

DYNASET HKR is equipped with an integrated oil thermostat. It is located above the oil filter and is accessible from the outside (left side – viewed from the drive side).

The oil thermostat opens the connection to the heat exchanger when the operating temperature is reached. The oil thermostat controls the temperature of the system as the process continues. In the startup phase thermostat is closed and operating temperature is reached faster.



Picture 15: Operating principle of oil thermostat

1. Oil thermostat closed
2. Oil thermostat open

4. INSTALLATION

4.1 BEFORE INSTALLATION

! WARNING

Read the instructions before installing the DYNASET product!

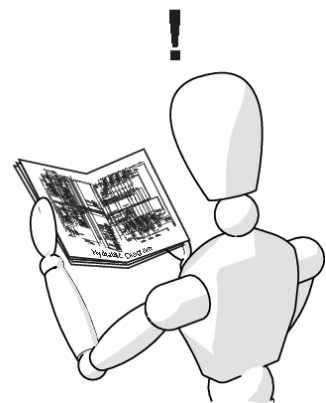
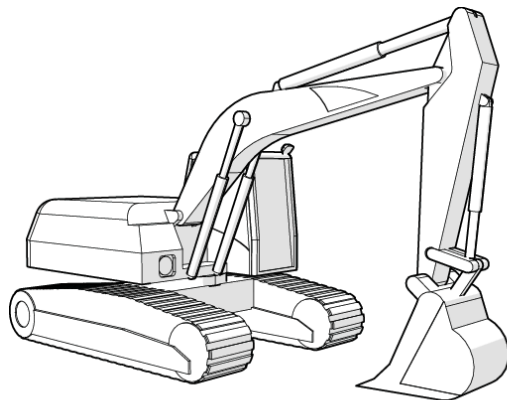
4.1.1 HYDRAULIC SYSTEM OF A BASE MACHINE

Base machines have different type of hydraulic systems. Most common hydraulic systems in mobile machinery are:

- Open center hydraulic system with Load Sensing variable displacement pump
- Closed center hydraulic system with Load Sensing variable displacement pump
- Hydraulic system with fixed displacement pump

! WARNING

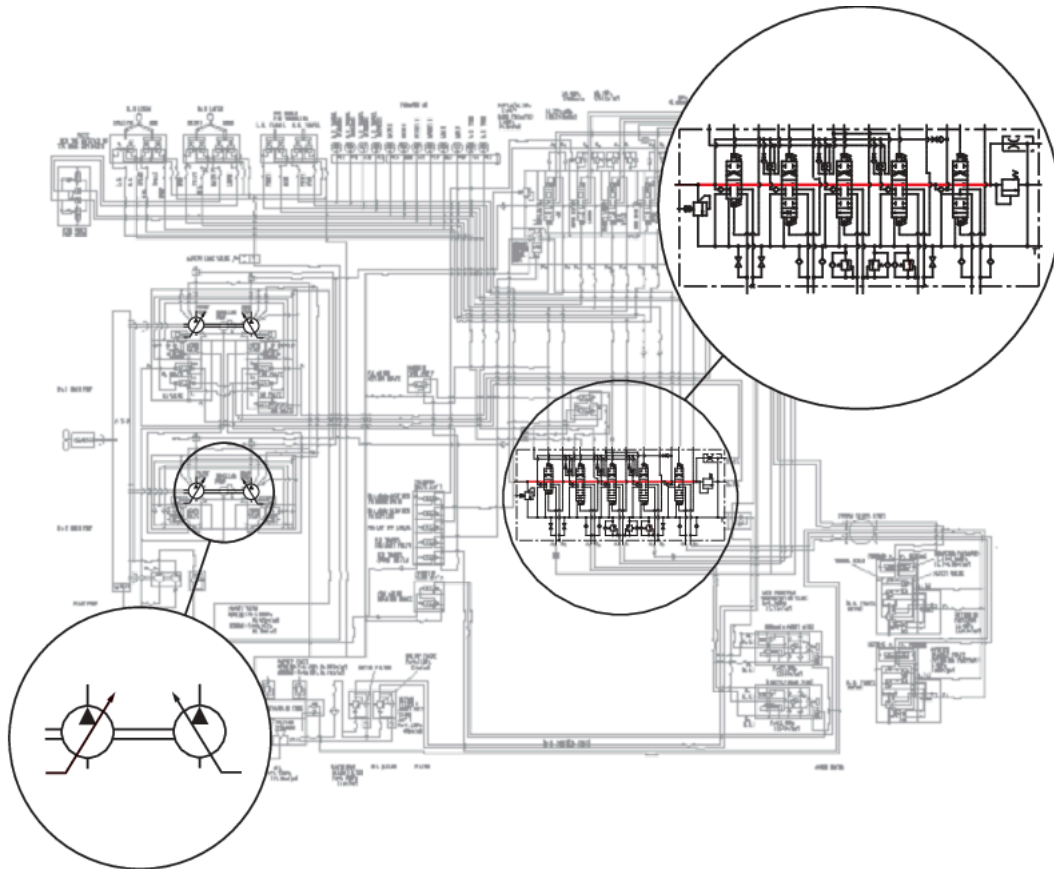
Before installing the DYNASET product, find out the type of the hydraulic system of your machine.



If you are unsure of the hydraulic system, please contact the base machine manufacturer.
Next three paragraphs describe the hydraulic systems in more detail.

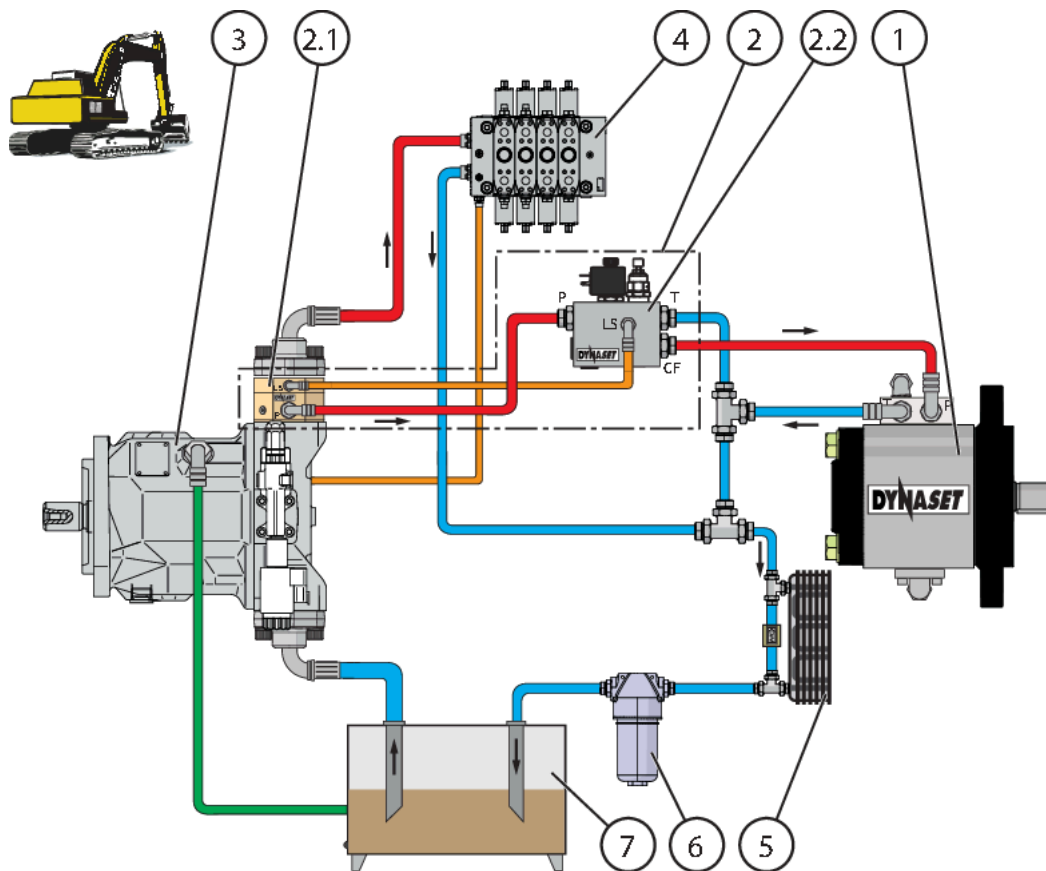
4.1.1.1

Open center hydraulic system with Load Sensing variable displacement pump



Picture 16: Open center hydraulic system with Load Sensing variable displacement pump

In open center hydraulic system the flow is returned to tank through the control valves open center; that is, when the control valve is centered. It provides an open return path to tank and the fluid is not pumped into a high pressure. In Load Sensing variable-displacement pump, the flow rate and output pressure adjusts automatically based on the load of the hydraulic system.



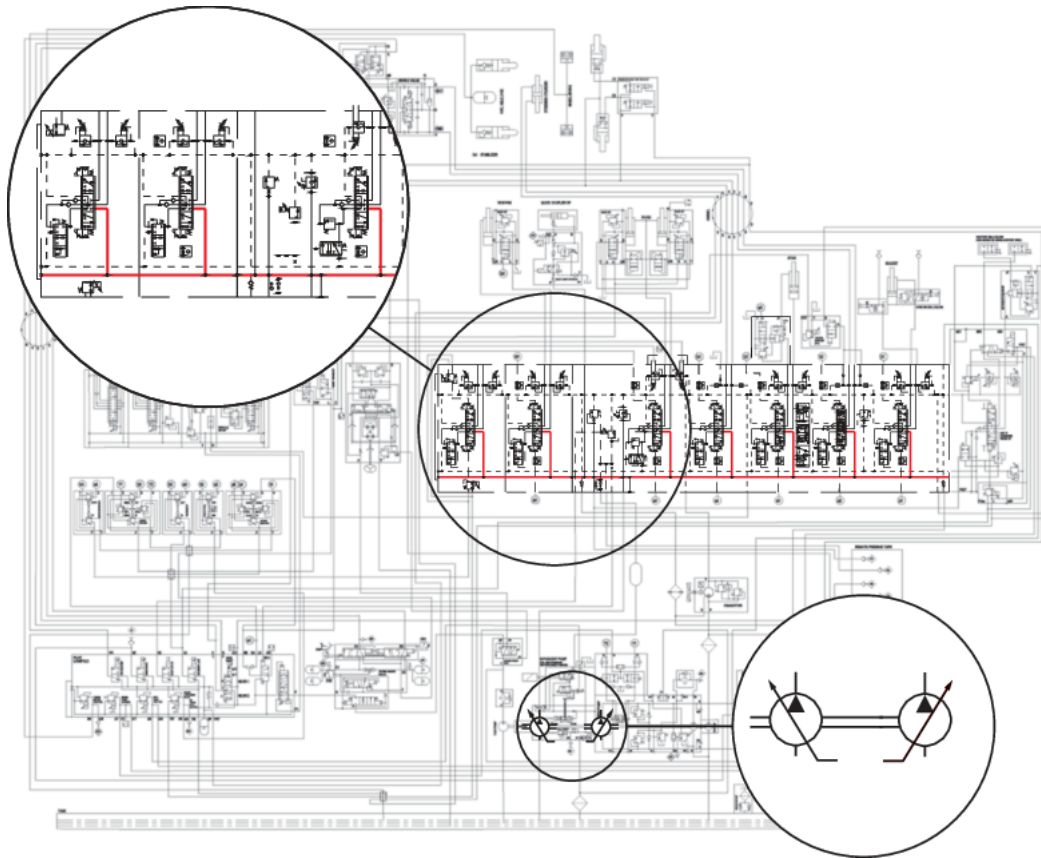
Picture 17: Connection figure for open center hydraulic system with Load

Sensing variable displacement pump

1. DYNASET hydraulic equipment
2. DYNASET Priority valve PV-SAE
 - a. DYNASET PC-SAE pressure compensator
 - b. DYNASET LSV Load sensing valve
3. Base machines variable displacement pump
4. Open center directional control valves
5. Oil cooler
6. Oil filter
7. Oil tank

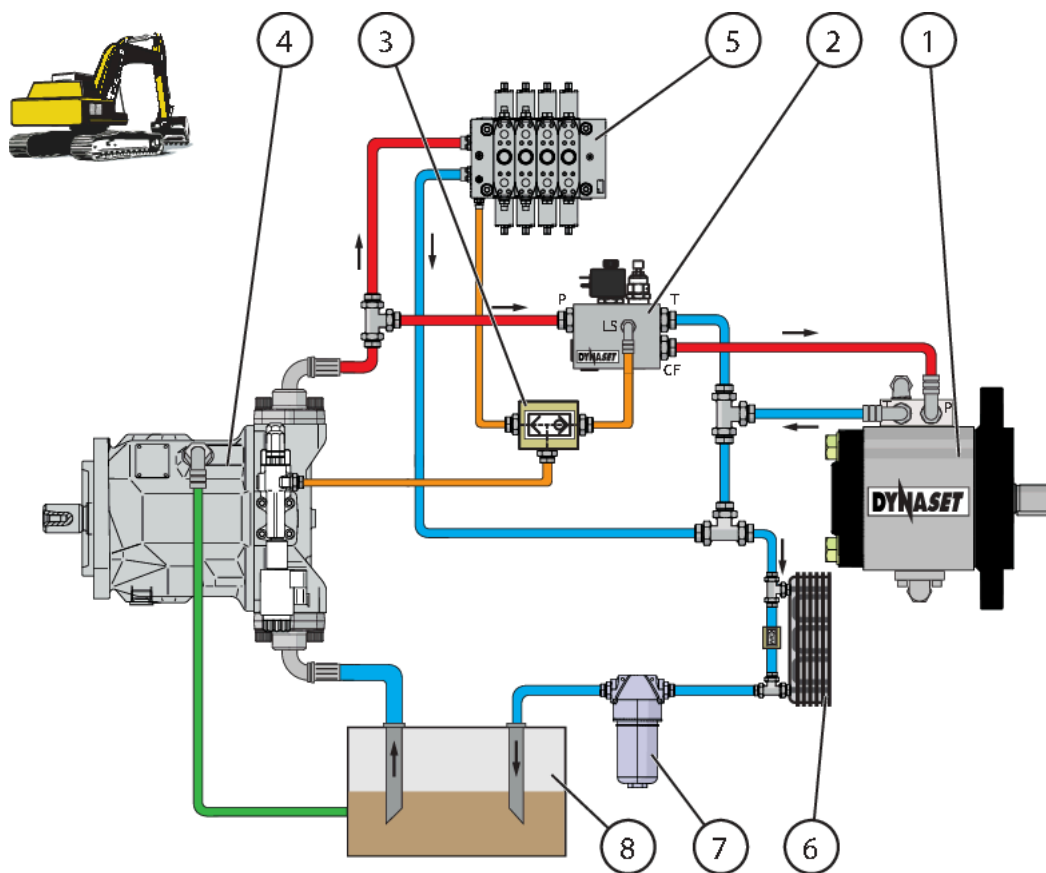
4.1.1.2

Closed center hydraulic system with Load Sensing variable displacement pump



Picture 18: Closed center hydraulic system with Load Sensing variable displacement pump

In a closed center hydraulic system the oil flow is stopped from the pump when control valve is centered. The pump can rest when the oil is not required to operate a function. In Load Sensing variable-displacement pump, the flow rate and output pressure adjusts automatically based on the load of the hydraulic system.

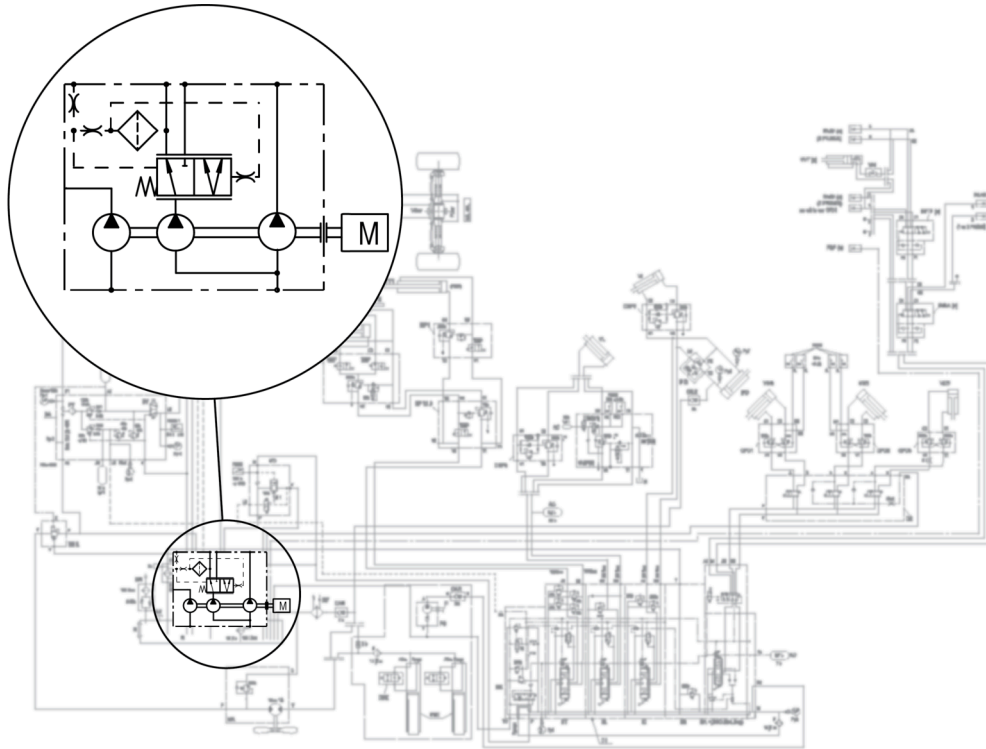


Picture 19: Connection figure for closed center hydraulic system with Load Sensing variable displacement pump

1. DYNASET hydraulic equipment
2. DYNASET LSV Load sensing valve
3. DYNASET Shuttle valve
4. Base machines variable displacement pump
5. Closed center directional control valves
6. Oil cooler
7. Oil filter
8. Oil tank

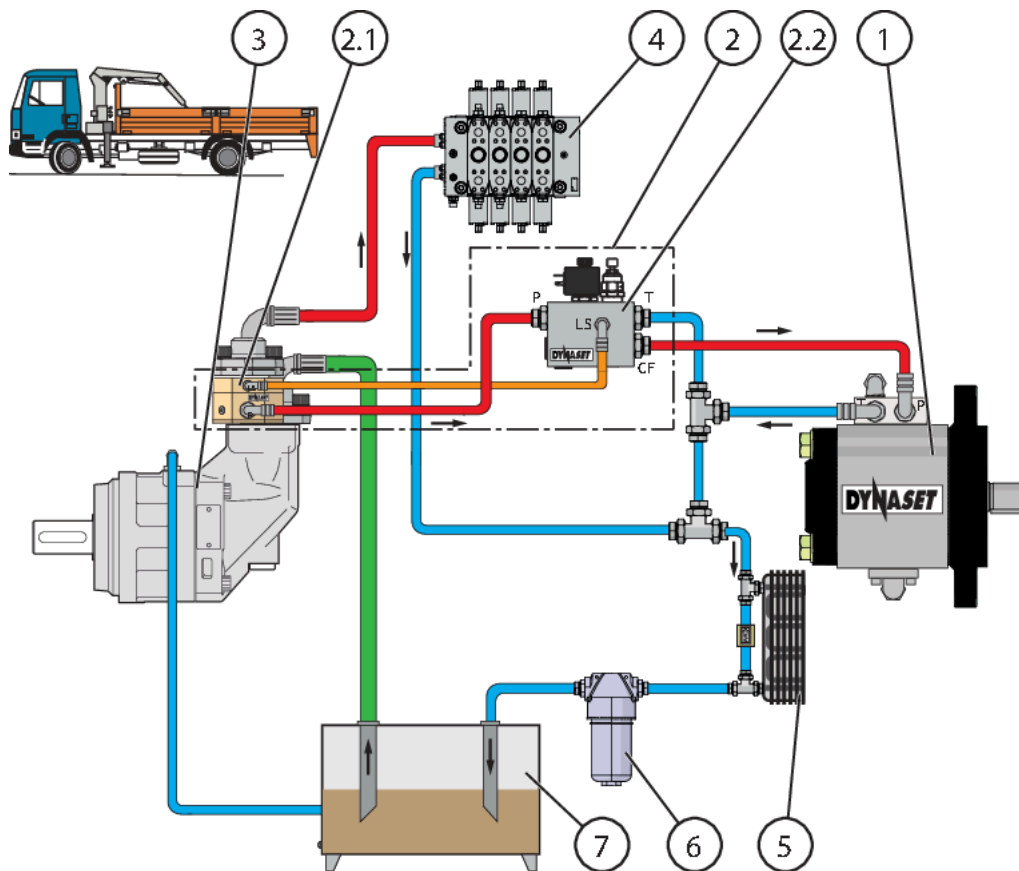
4.1.1.3

Hydraulic system with fixed displacement pump



Picture 20: Hydraulic system with fixed displacement pump

In hydraulic system which has the fixed displacement pump, the oil flow from the pump is fixed. Every stroke of the hydraulic motor moves the same amount of oil. The output flow is function of the motor's rpm and pump's displacement.

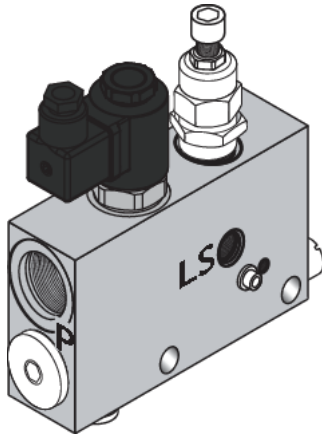


Picture 21: Connection figure for hydraulic system with fixed displacement pump

- | | |
|--|---|
| 1. DYNASET hydraulic equipment | 4. Open center directional control valves |
| 2. DYNASET Priority valve PV-SAE | 5. Oil cooler |
| 2.1. DYNASET PC-SAE pressure compensator | 6. Oil filter |
| 2.2. DYNASET LSV Load sensing valve | 7. Oil tank |
| 3. Base machines fixed displacement pump | |

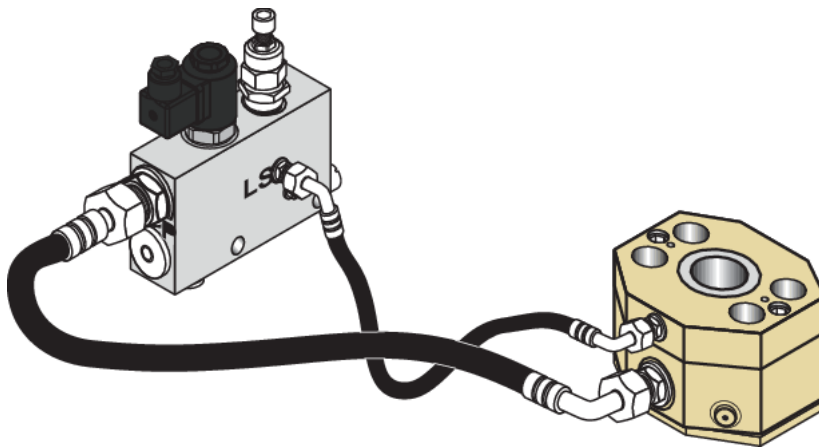
4.1.2 DYNASET VALVES

DYNASET valves are designed to enable easy installation of your DYNASET hydraulic product.

DYNASET LOAD SENSING VALVE

Picture 22: Load sensing valve LSV

DYNASET LSV load sensing valves are made for installations in a closed center hydraulic systems.

DYNASET PRIORITY VALVE

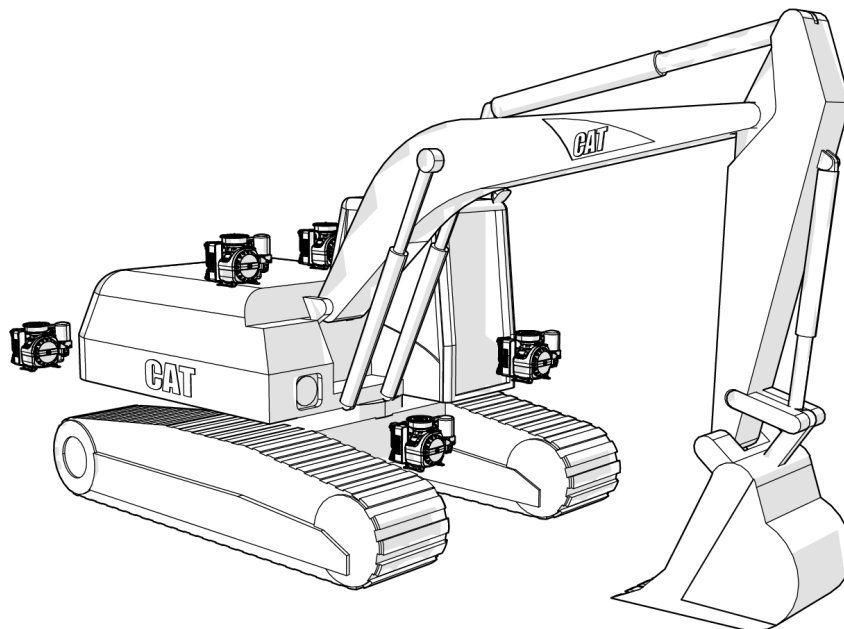
Picture 23: Priority valve PV-SAE

DYNASET PV- SAE priority valve enables the installations of the DYNASET products into any hydraulic system.

4.2 INSTALLING DYNASET HYDRAULIC PRODUCT

4.2.1 PLACING DYNASET HYDRAULIC PRODUCT

Place DYNASET hydraulic product where there is easy access to the unit. Ensure proper ventilation.



Picture 24: Placing the HKR compressor

! NOTE!

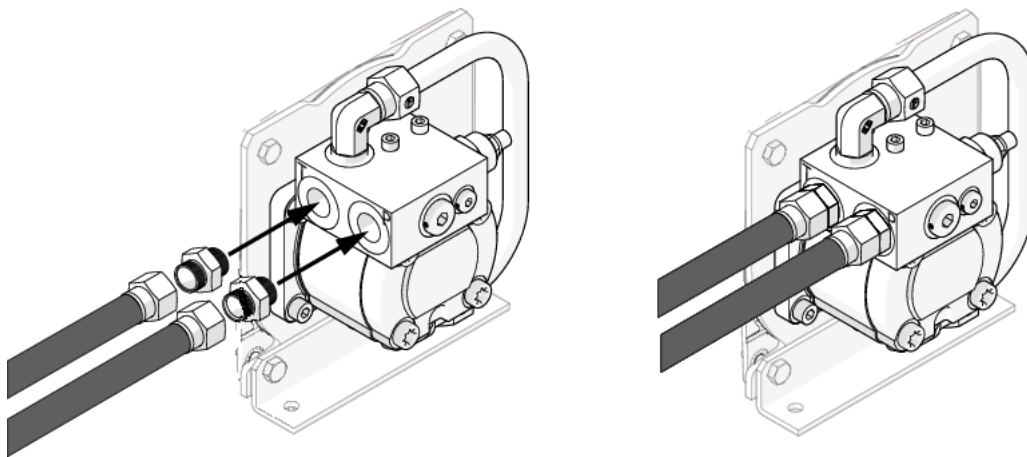
When positioning the HKR compressor note the maximum inclinations and ensure that required oil cooling capacity of hydraulic system is sufficient. Check chapter 10 "Technical Specifications" for specific cooling capacity.

4.2.2 INSTALLING DYNASET VALVES

Installation instructions are in DYNASET LSV or DYNASET PV SAE installation manual.

4.2.3 CONNECTING HYDRAULIC HOSES

Connect pressure- (P) and return (T) lines of a hydraulic system to the corresponding hydraulic ports of the DYNASET unit.



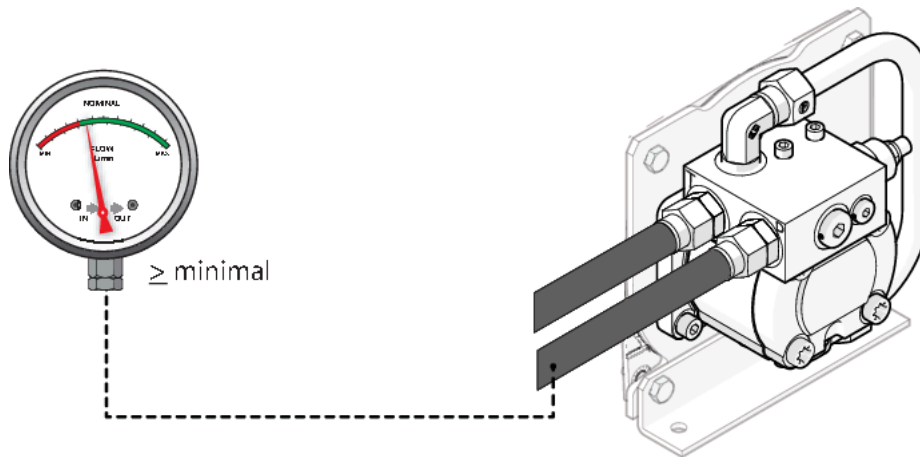
Picture 25: Installing hydraulic hoses



NOTE!

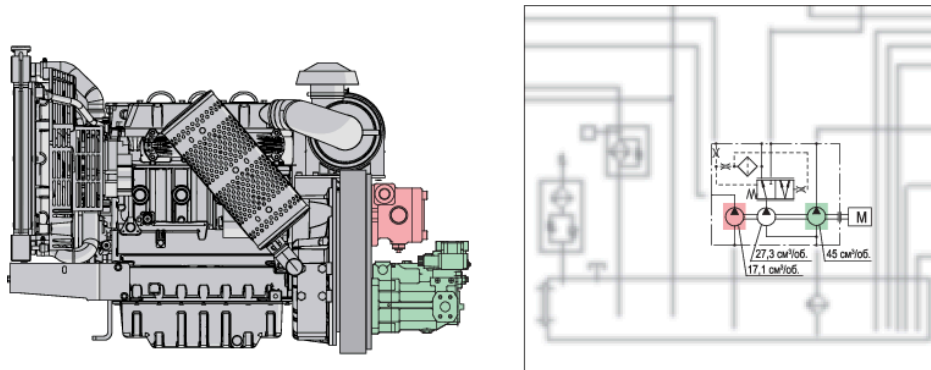
Location of P- and T-ports varies between different DYNASET hydraulic equipment.

Ensure that the hydraulic flow of the base machine is sufficient to run the unit. At least the minimal flow must be available. For hydraulic flow requirements of your HKR compressor.



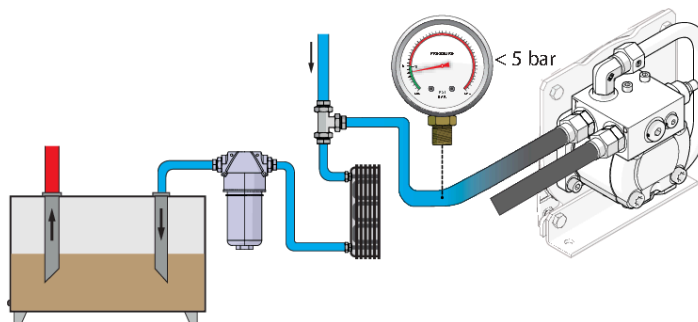
Picture 26: P-line operational hydraulic flow

In case of hydraulic flow being too high. The flow must be reduced either by dropping the rotation speed of base machine's hydraulic pump or using flow limiter valve. DYNASET PV-SAE priority valve is recommended.



Picture 27: Base machine's hydraulic pumps

Return line must be connected to a hydraulic oil tank in the shortest possible line in order to keep the return hydraulic pressure under 5 bar in the tank line. Generally DYNASET's T-line is to be connected directly to the return line of a hydraulic system.



Picture 28: Return line connection

 WARNING

Ensure that the filtering degree and cooling capacity of the hydraulic system are sufficient. For more information READ CHAPTER 10 "Technical Specifications".

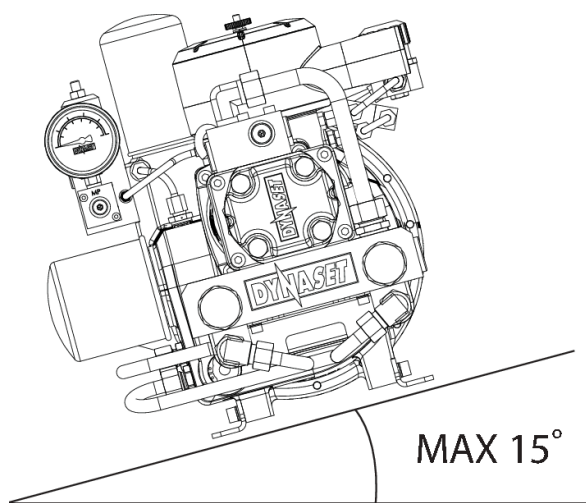
4.2.4 HYDRAULIC FLUIDS

Check chapter 6.3 to find more information about the use of proper hydraulic fluid.

4.3 INSTALLING HKR COMPRESSOR

4.3.1 MAXIMUM INCLINATIONS

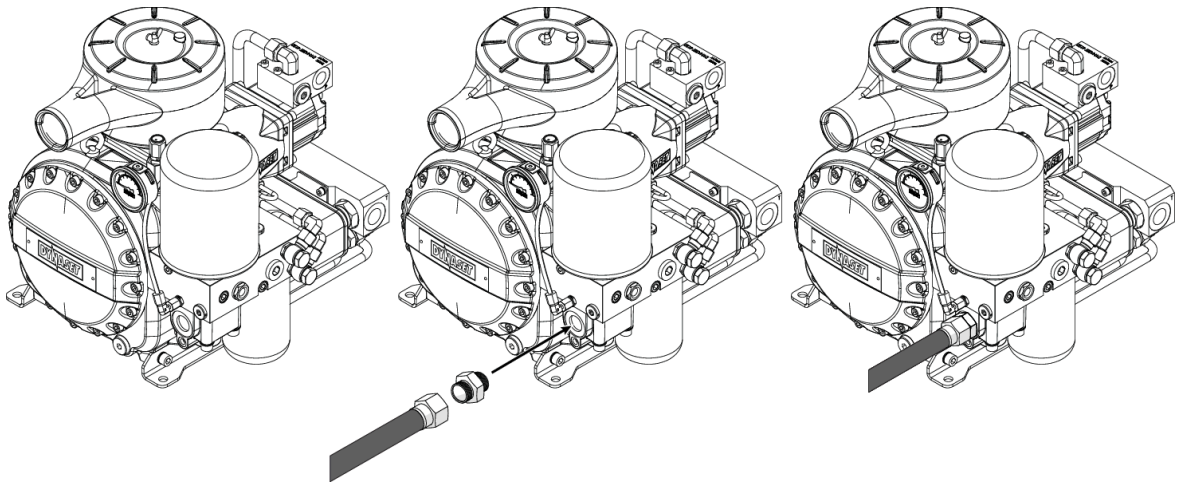
Maximum inclination angle of DYNASET Hydraulic screw compressor is 15° in all directions.



Picture 29: Maximum inclination angle of HKR compressor

4.3.2 CONNECTION TO THE AIR SUPPLY SYSTEM

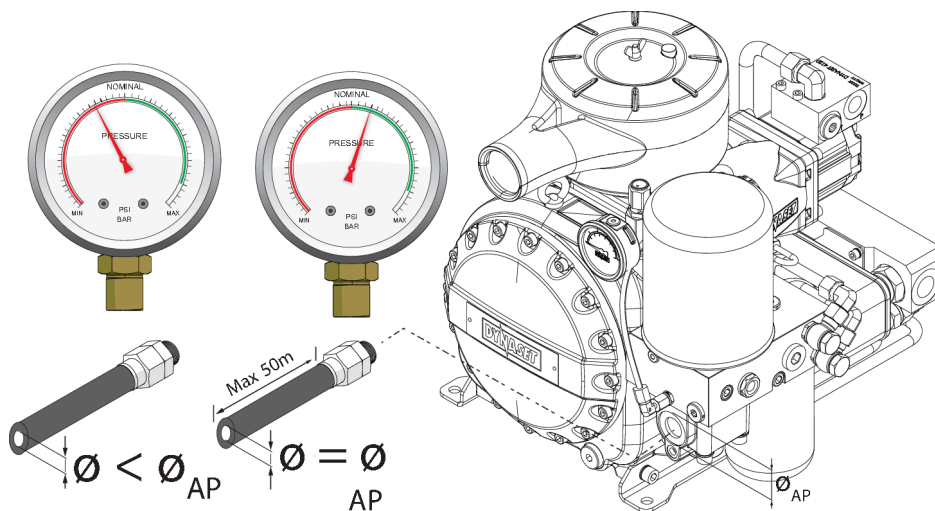
Compressor can be connected to the air supply system with a proper fitting and cut-off valve (options).



Picture 30: Air supply system connection

The inner diameter of the pipe/hose that is used for compressor's connection must be at least equal to AP-port to keep the pressure drop minimal.

The length of a pipeline, with the pipe of same diameter as the AP-port, can be 50m (164ft) as maximum. For longer lines use larger diameter.



Picture 31: Air supply line hose diameter and length

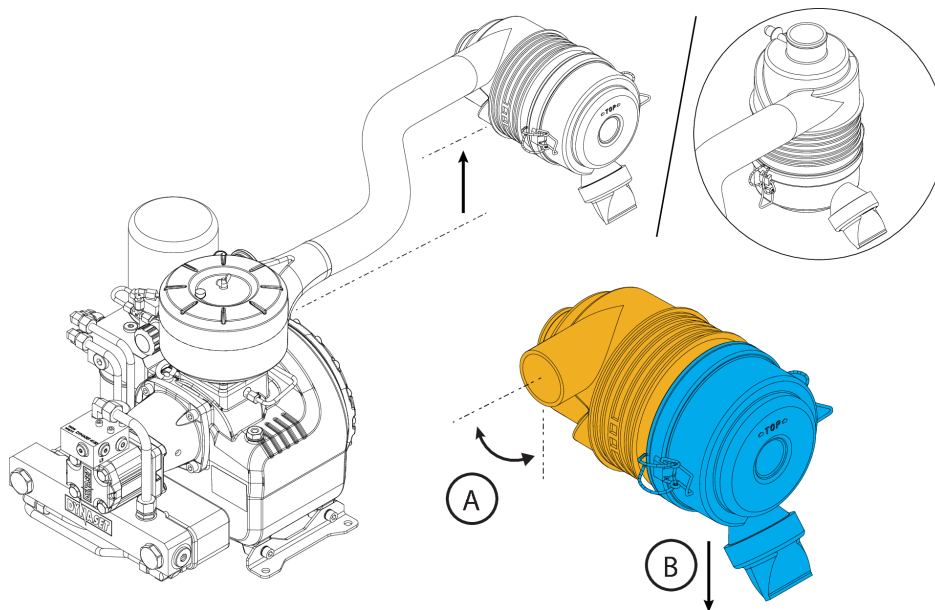
4.3.3 INSTALLING CYCLONE FILTER (OPTION)

HKR Hydraulic Screw Compressor can be fitted with a cyclone filter. The cyclone filter makes it possible to install the compressor unit into even smaller spaces.

It won't require as much vertical space because the filter unit can be installed separately from the unit. The cyclone filter assembly can be installed vertically or horizontally.

Install the unit according to the picture below. When installing the cyclone filter horizontally, make sure that the unit's suction port is positioned in such a way that water or contaminating particles cannot enter to the unit. Also note that the dust valve must be set to the lowest point on the unit. For this the end part of the cyclone unit is turnable.

If possible install the cyclone filter above the suction valve on the compressor unit. This way the oil is prevented from getting to the cyclone filter from the compressor.



A = Suction port, B= Dust valve

Picture 32: Installation and positioning of cyclone filter

5. OPERATION

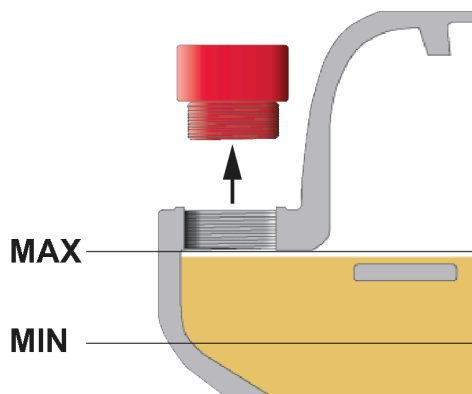
5.1 BEFORE STARTING THE COMPRESSOR

WARNING

Before you start the compressor for the first time, make sure that the unit is filled with oil.

The compressor is delivered with compressor oil. Only in special cases the compressor is delivered without compressor oil.

The oil level must be between min and max.



Picture 33: Oil level of the HKR compressor

NOTE!

Check the compressor oil fill periodically.

WARNING

Never remove the oil filler cap when the compressor is running!



WARNING

RISK OF BURNS!

Parts of the unit, oil, and oil filler cap
can be hotter than 80 °C!

Wear personal safety equipment!

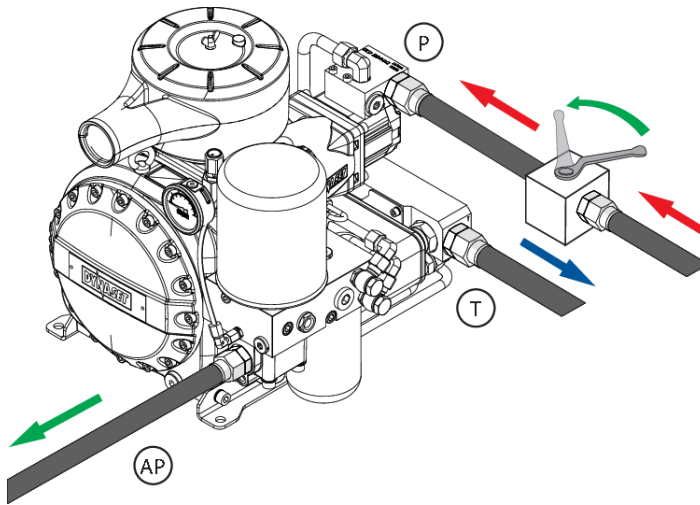


5.2 STARTING THE COMPRESSOR

WARNING

When you start the compressor, ensure that the unit is decompressed.

When hydraulic flow is available, the HKR compressor can be started by opening the hydraulic control valve to the compressor.



Picture 34: Starting the compressor

The compressor starts to produce usable compressed air when hydraulic flow achieves the functional minimum rate, which is approx. a half of the nominal value.

The nominal discharge is achieved when the compressor is rotated by hydraulic flow adequate to the nominal rotation speed.

When the compressor is running, oil circulation is proper when gray air-oil-mixture mist can be seen from the oil return line sight glass.

NOTE!

Restarting the compressor: Always do the stop cycle (READ CHAPTER „5.7 STOPPING THE COMPRESSOR“) and wait until the compressor chamber pressure level has decreased under the 2 bar level. If the compressor is not equipped with pressure gauge, wait for few minutes for the pressure level to decrease. Restarting the compressor against the pressure can cause wear or damage to the inside parts of the compressor. READ CHAPTER „5.8 RESTARTING THE COMPRESSOR“

! NOTE!

Before you use the compressor in cold conditions READ CHAPTER „5.6 COLD STARTS “.

! WARNING

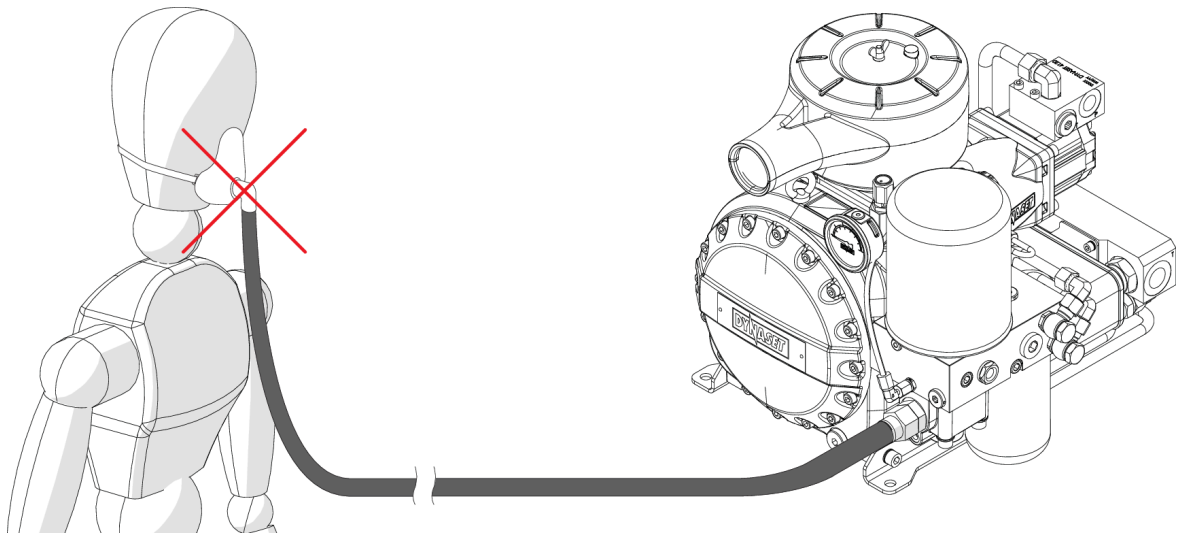
Compressor's maximum hydraulic pressure must not be exceeded in any circumstances.

Hydraulic flow and pressure values marked on the compressor's type plate are maximum and must not be exceeded in any circumstances. Exceeding the maximum hydraulic flow causes compressor to over speed and may damage it.

! WARNING

The compressor must not be operated in conditions where toxic or flammable vapours could be aspirated. Do not use the compressor to compress toxic, corrosive, explosive or noxious gases.

Compressed air delivered by a HKR-compressor must not be used as breathing air, even if it's purified and filtered.



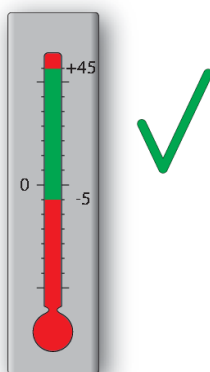
Picture 35: Compressed air must not be used as breathing air

HKR compressor is designed to compress atmospheric air only and must not be used with any other gas. If the compressor is connected to the distribution network or consumer

with a flexible hose, ensure that the hose is of proper diameter and pressure class. Damaged or worn hose must be replaced immediately.

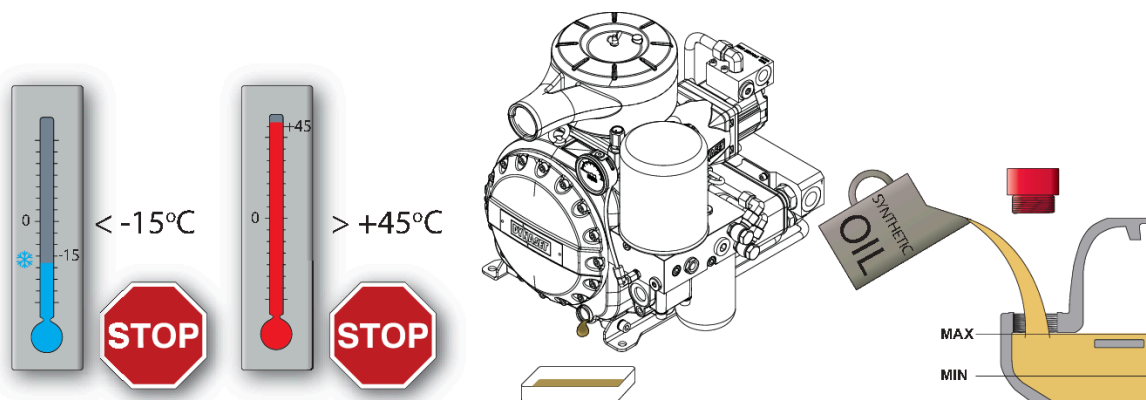
5.3 AIR AND OIL TEMPERATURES

Normal operating within ambient temperature range between -5°C (23°F) and 45°C (113°F).



Picture 36: Normal operating ambient temperature

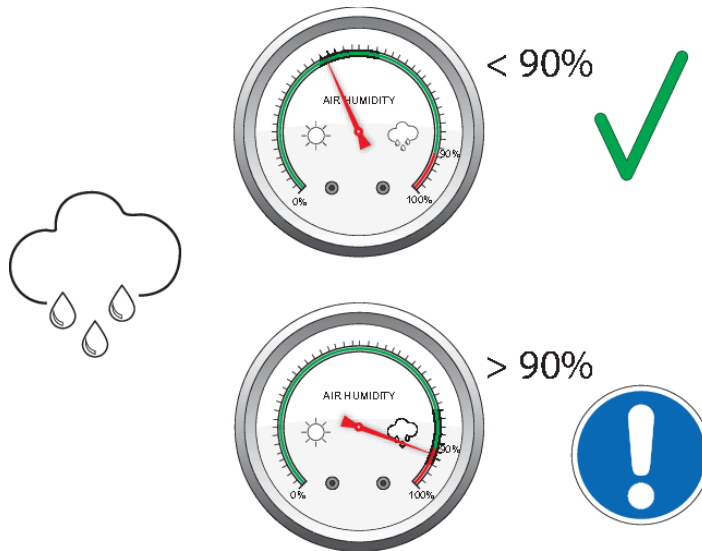
If ambient temperature drops below -15°C (5°F) or increases over 45°C (113°F), make sure that the compressor is filled with synthetic oil. READ CHAPTER "6.3. Compressor oils" for corresponding oils.



Picture 37: Operating in extreme ambient temperatures

5.4 AIR HUMIDITY

When you operate the compressor in high humidity ambient conditions, take the water condensation into account. Condensate water can cause malfunctions on operation.



Picture 38: Operating air humidity

WARNING

When you use HKR compressor on high ambient humidities, water can be condensed in the compressor chamber. Condensed water may increase the risk of saturation in air-oil separator element.

5.5 UNLOADED MODE

When the compressed air supply line is closed and preset air pressure in the supply line is reached, the compressor automatically starts to run at unloaded mode.

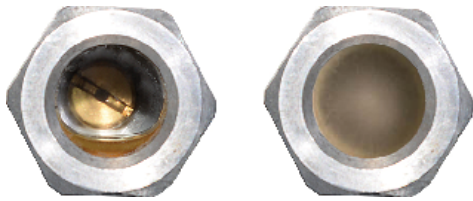
For the unloaded mode, the air pressure is set to 10 bar, 13 bar or 15 bar as factory default, depending on the model.

In unloaded mode the pneumatically controlled intake valve is closed and compressor's internal pressure drops to 5.5 bar. Then the intake valve opens again. Pressure in the supply line remains until supply line is opened.

5.6 COLD STARTS

When you start the compressor in cold conditions (ambient temperature $< 5^{\circ}\text{C}$ (41°F)), the compressor oil viscosity is high and internal lubrication might be insufficient. It is recommended to close the compressor's air supply line and let the compressor run few minutes at off-load mode.

Oil circulation is proper when gray air-oil-mixture mist can be seen on the oil return line sight glass.



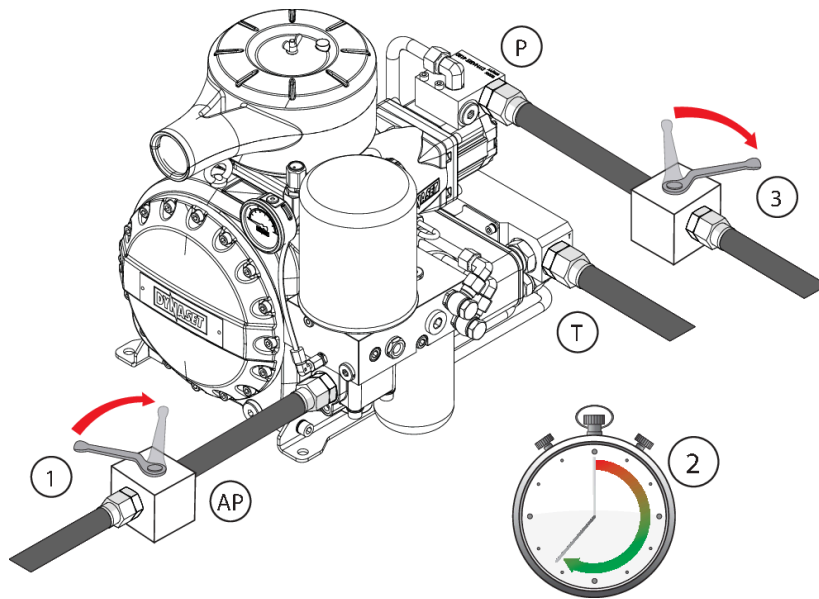
Picture 39: Oil return sight glass

! NOTE!

When you start HKR compressor in cold ambient temperatures; It is recommended that the compressor air supply line is closed and let the compressor run few minutes at off-load mode to make oil temperature increase.

5.7 STOPPING THE COMPRESSOR

1. Close the air pressure line.
2. Do not shut down the compressor until it has reached the set pressure limit. Wait until the compressor starts to run unloaded cycle, then the compressor has reached the set pressure limit and intake valve has closed.
3. Shut off the hydraulic flow to the compressor.



Picture 40: Stopping the compressor

5.8 RESTARTING THE COMPRESSOR

! NOTE!

Restarting compressor: always do the stop cycle (READ CHAPTER „5.7 STOPPING THE COMPRESSOR “), and wait until the compressor chamber pressure level has decreased under 2 bar level. If the compressor is not equipped with a pressure gauge, wait for few minutes for the pressure level to drop. Restarting the compressor against the pressure can cause wear or damage to the inside parts of the compressor.

1. Check that the compressor pressure is 2 bar or under. If HKR model is not equipped with a pressure gauge, make sure that it has been turned off for few minutes for the pressure to drop.
2. Do the start cycle, READ CHAPTER „5.2 STARTING THE COMPRESSOR “.

6. MAINTENANCE

6.1 GENERAL

WARNING

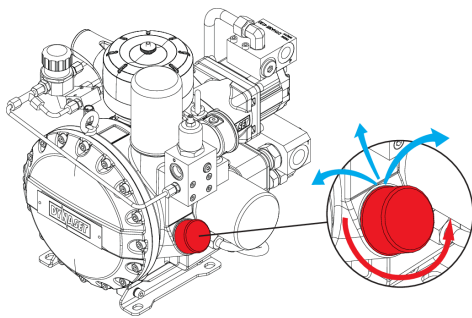
All installations and maintenance must be done according to this manual. All electric installations and maintenance should only be done by a qualified electrician depending on the jobs requirements.

WARNING

Before you do any maintenance or repair, always make sure that the pump is turned off and depressurized. Make sure that the system does not turn on while doing maintenance.



Depressurize the system completely by loosening the oil filler cap. Little amount of hot oil may escape from the groove of the oil filler cap when loosening it. Especially if the compressor has been running recently and there is pressure in the system and oil is thermally expanded.



Picture 41: Depressurizing the compressor

6.2 MAINTENANCE INTERVALS

WARNING

All maintenance must be done as they are scheduled in this manual.

The following table provides maintenance schedule for DYNASET HKR screw compressor.

Check points	Daily	Monthly or every 100 h	Every 6 months or 1000 h	Every 12 months or 2500 h
Check oil level	x			
Check system for leaks	x			
Change air in-take filter (also cyclone filter)		o	x	
Change cyclone air filters safety element			o	
Change the air-oil separating element				x
Change oil and oil filter				x

o = Check / change if necessary

x = Change

NOTE!

All installation and service of must be done by experienced personnel only.

6.3 HYDRAULIC FLUIDS

A wide range of standard hydraulic fluids can be used with the DYNASET hydraulic é. Depending on the operating temperature, the following mineral hydraulic oils are recommended:

Mineral hydraulic oil	Operation temperature up to
ISO VG 32S	60°C (140°F)
ISO VG 46S	70°C (158°F)
ISO VG 68S	80°C (176°F)

WARNING

Recommended oil viscosity is between 10 and 35 cSt when operating at normal operating temperature.

Synthetic and bio-oils can also be used if their viscosity characteristics and lubricating efficiency are similar to mineral oils. Automatic transmission fluids and even engine oils can be used, provided that they are allowed to be used in hydraulic system of your base machine.

For the hydraulic fluid change interval, obey the base machine's maintenance instructions.

To use special hydraulic fluids with DYNASET equipment, contact the nearest DYNASET representative for more information.

6.4 COMPRESSOR OILS

DYNASET screw compressors must be operated with an oil that is suitable for special requirements. Oil must be approved by the oil manufacturer for use in screw compressors. It must even be suitable under unfavourable operating conditions, such as pollution of the intake air and also in case of high ambient temperatures.

Petroleum raffinates (mineral oils), synthetic oils as well as biodegradable oils can be used as screw compressor oils.

Compliance with oil viscosity is imperative; failure to do so poses a risk to the bearing service life.

The oil in the HKR compressor must meet the following requirements, among others:

- High ageing stability
- High dispersive capacity
- Flash point: above 200°C (392°F)
- Minimum foaming
- High corrosion protection
- Basic oil: Solvent raffinate
- Operating temperature: up to 110°C (230°F)
- Viscosity class: ISO VG 68-100

In most cases, an oil of the viscosity class ISO VG 68 is suitable, but a minimum viscosity of 10 cSt (0.387 ft²/h) up to 30 cSt (1.162 ft²/h) at operating temperature must be maintained. In this case, the possible reduction in the viscosity due to oil degeneration over the duration of operation must be taken into account.

6.4.1 MULTI-GRADE OIL

 WARNING

The use of multi-grade oils can cause problems in the long run because viscosity improvers of oil are destroyed over time.

The oil is then no longer secured in the upper viscosity class and a thermal stability is no longer completely ensured. Therefore, the use of multi-grade oils in DYNASET HKR compressors is not authorized.

- Only use oils approved for screw compressors!

- Use the same manufacturer and the same oil type that is currently used in HKR screw compressor.

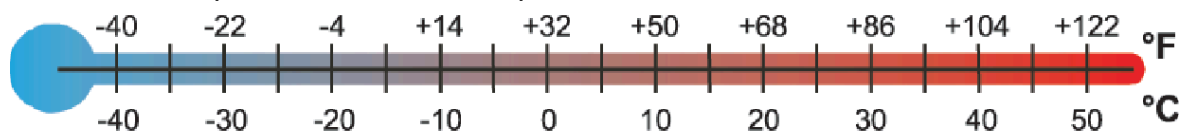


NOTE!

Do not mix different oils.

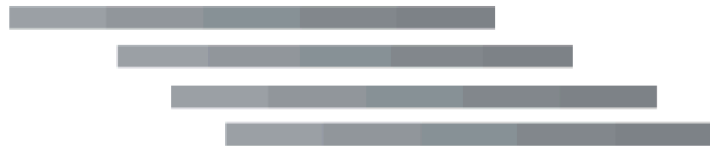
6.4.2 TEMPERATURES AND OIL TYPES

Ambient temperature of the compressor



Classes of oil for compressors

VG 32
VG 46
VG 68
VG 100



Compressor oil injection temperature



Compressor outlet temperature



Picture 42: Temperatures and oil types



NOTE!

Guide values at 60% relative humidity and 10 bar ultimate pressure.

Quality	Oil change max hours	Supplier	ISO VG	Details
Dacnis SH	2500h or 12 months	Total	46-68	Synthetic oil
Shell Corena S4R	2500h or 12 months	Shell	46-68	Synthetic oil
Castrol Aircol SR	2500h or 12 months	Shell	46-68	Synthetic oil
Rarus SHC 1020	2500h or 12 months	Exxon Mobil	46-68	Synthetic oil

6.5 CLEANING THE COMPRESSOR

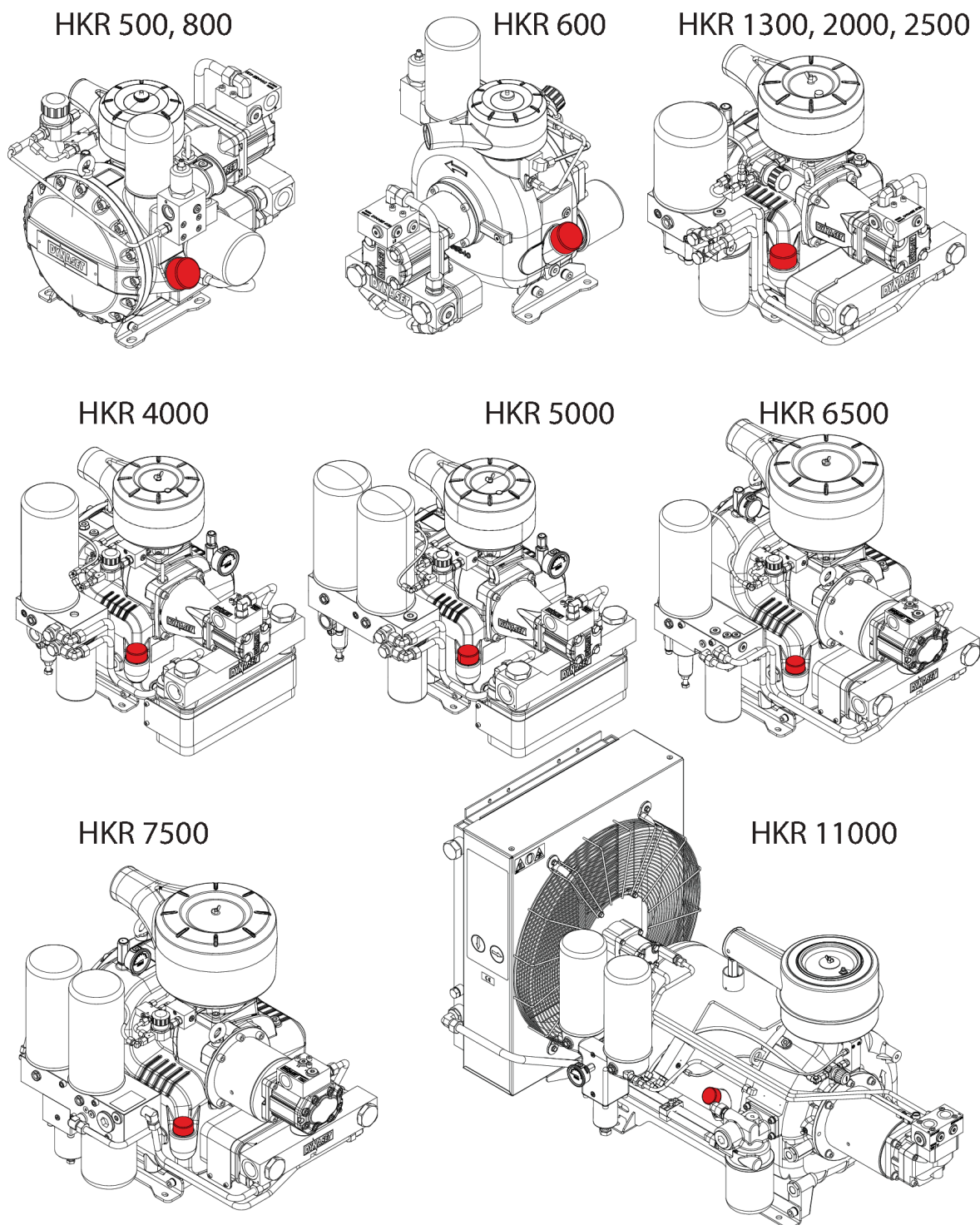
WARNING

Keep the HKR compressor clean to enable its safe and long-life operation. Check and clean your HKR compressor after every work shift.

Check the compressor block on a daily basis and clean it when necessary. To clean the unit use a blow gun.

6.6 OIL LEVEL CHECK

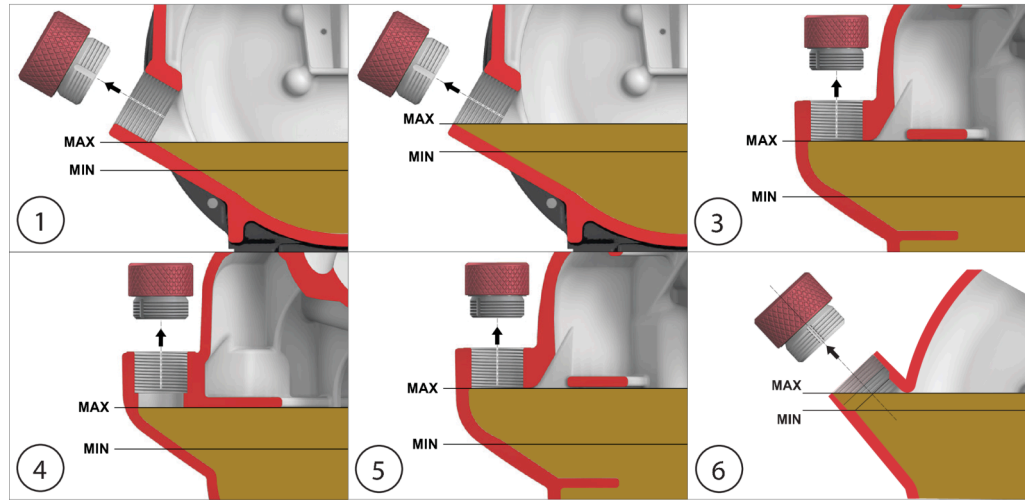
Location of the oil fill cap.



Picture 43: Location of the oil fill cap Blue Air models

NOTE!

Check the oil level accordingly to the following instructions and fill levels depending on the model.

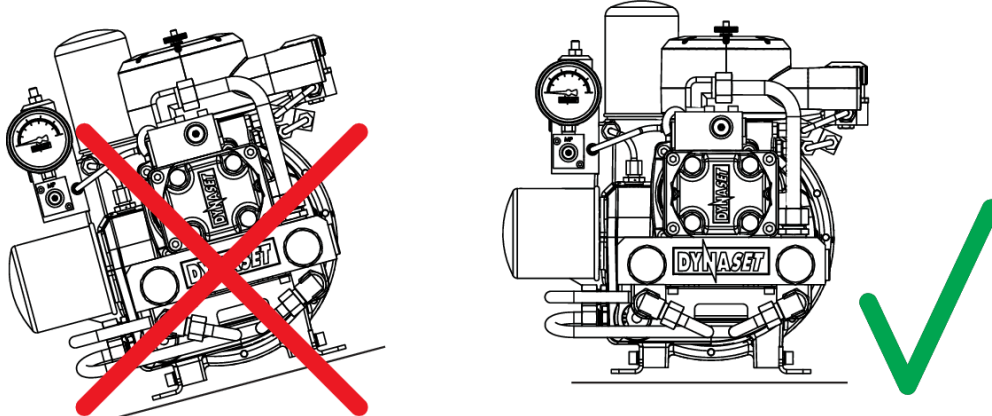


1. HKR 500 - HKR 800
2. HKR 600
3. HKR 1300 - HKR 2500

4. HKR 4000 - HKR 5000
5. HKR 6500 - HKR 7000
6. HKR 11000

Picture 44: Oil level limits

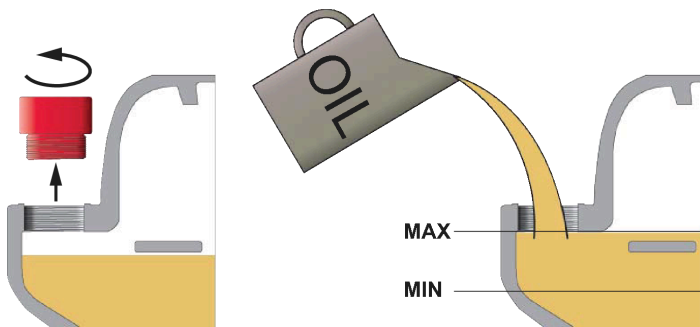
1. Make sure that the compressor is in a horizontal position.



2. Wait for 5 minute at standstill.



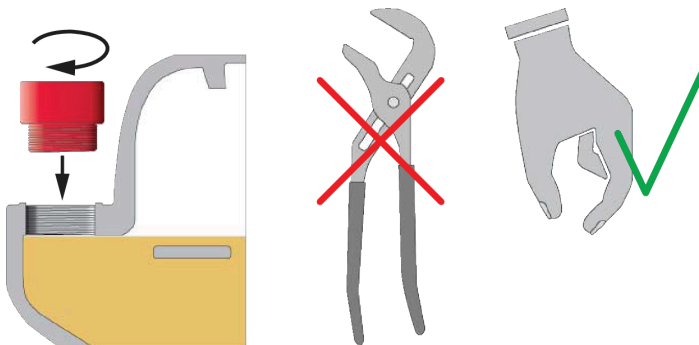
3. Open the oil filler cap and check the oil level. If required, fill up with the same oil as in the HKR compressor, up to the maximum level. Check the oil level fill for the model from the picture "Oil Level limits" above.

**NOTE!**

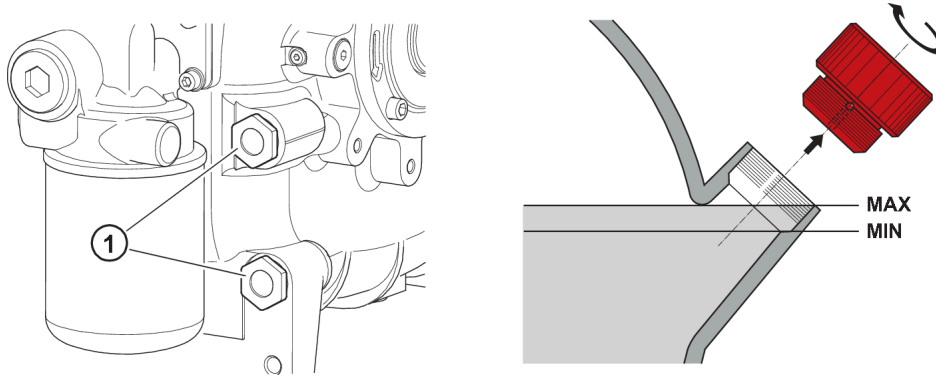
Hot oil expands in volume.

4. As a result, oil may escape when the oil filler cap is opened at the maximum oil level. In this case, close the oil filler cap again immediately and carefully clean the oil that has escaped.

5. Close the oil filler cap on filler neck by hand.



6.6.1 OIL LEVEL CHECK FOR HKR 11 000



Picture 45: Oil level HKR 11000

The oil level inspection glasses 1 are intended for an oil level check when the compressor is running.

When HKR 11000 is turned off, the oil level is correct when the oil level is visible from the upper sight glass.

When HKR 11000 is running, the oil level is correct when the oil level is visible from the lower sight glass.

6.7 OIL QUALITY CHECK

Check visually that there is no water mixed into the compressor oil. Oil becomes turbid, when mixed with water. Water causes corrosion in the compressor and its screws and damages the compressor.

6.8 OIL CHANGE

HKR compressor must be at operating temperature when changing the oil. It helps oil draining from the drain hole. Compressor must be stopped during oil change.



NOTE!

Use recommended screw compressor oil.



WARNING

Oil is a risk to environment. Dispose the used oil according to the applicable environmental and disposal laws and regulations.

When you add oil, use the same oil type from the same manufacturer. Switching over to another oil type can require flushing of the compressor block and heat exchanger.

Check the oil fill levels from the picture on the next page.

Model	Oil fill (litre)
HKR 500	2,5
HKR 600	3,5
HKR 800	2,5
HKR 1300	4,9
HKR 2000	4,9
HKR 2500	4,9
HKR 4000	10,8
HKR 5000	10,8
HKR 6500	27
HKR 7500	27
HKR 11000	45

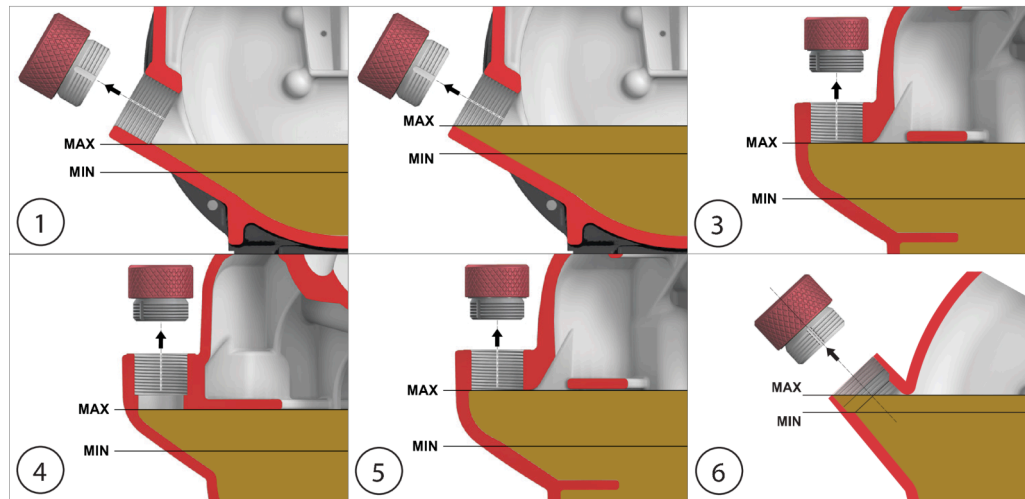


NOTE!

DYNASET recommends that you replace the oil filter at the same time as you do the oil change.

! NOTE!

Check the oil level accordingly to the following instructions and fill levels depending on the model.

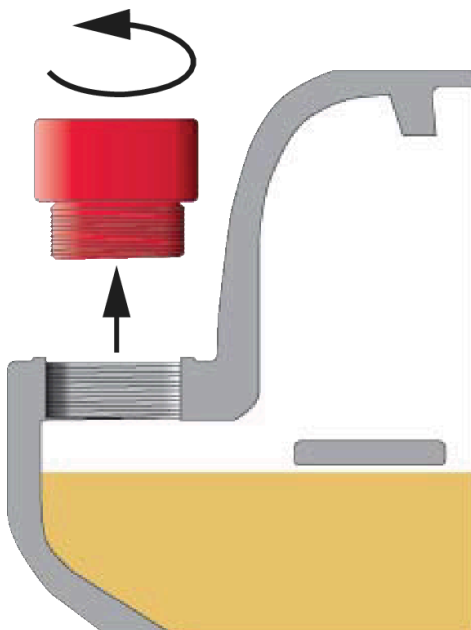


1. HKR 500 - HKR 800
2. HKR 600
3. HKR 1300 - HKR 2500

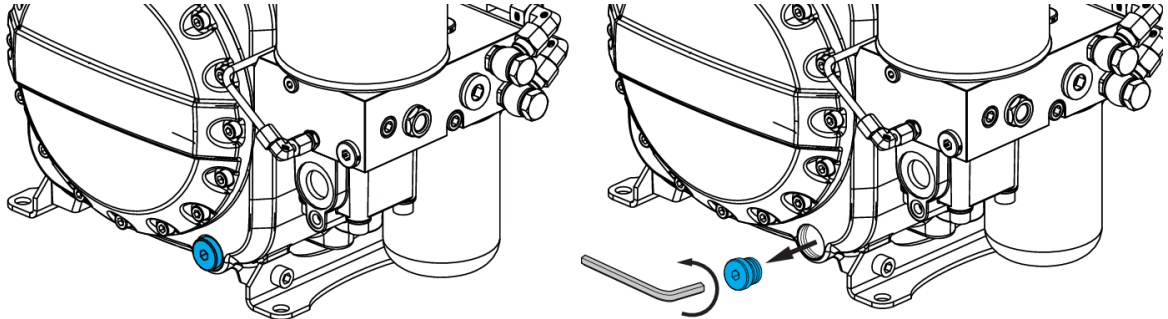
4. HKR 4000 - HKR 5000
5. HKR 6500 - HKR 7000
6. HKR 11000

Picture 46: Oil level limits

1. Open the oil filler cap from the oil filler neck by hand.



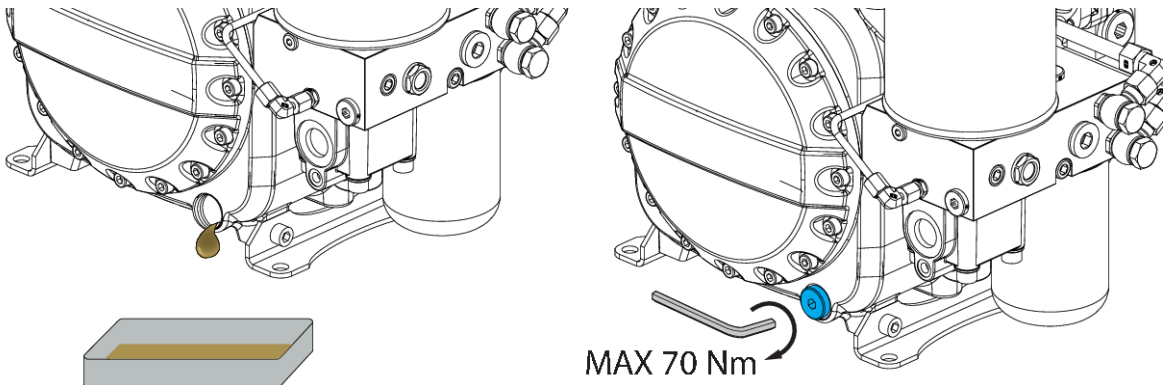
2. Open the oil drain plug with an allen key.



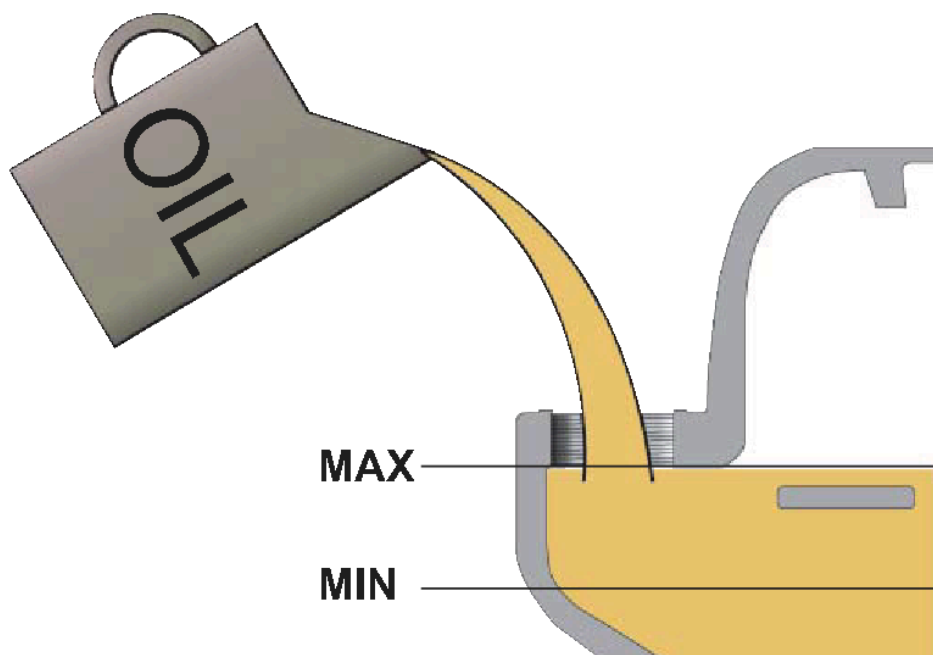
3. Drain the used oil to a suitable container, clean the oil drain plug and put it back.

! WARNING

Oil is a risk to environment. Dispose the used oil according to the applicable environmental and disposal laws and regulations.



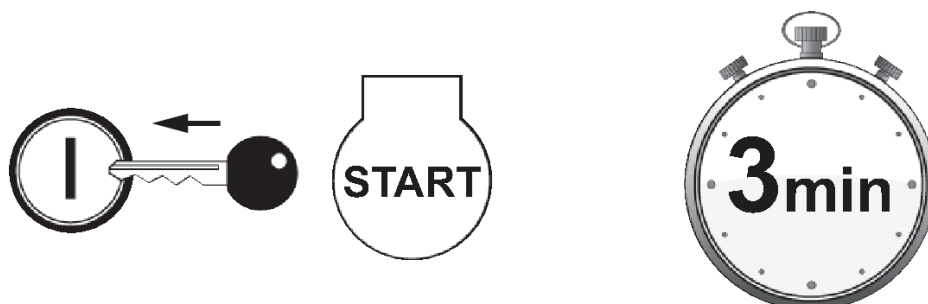
4. Replace the oil filter. READ CHAPTER „6.9 REPLACING OIL FILTER “.
5. Add oil up to the maximum level. Check the oil level fill for the model from the picture "Oil Level limits" above.



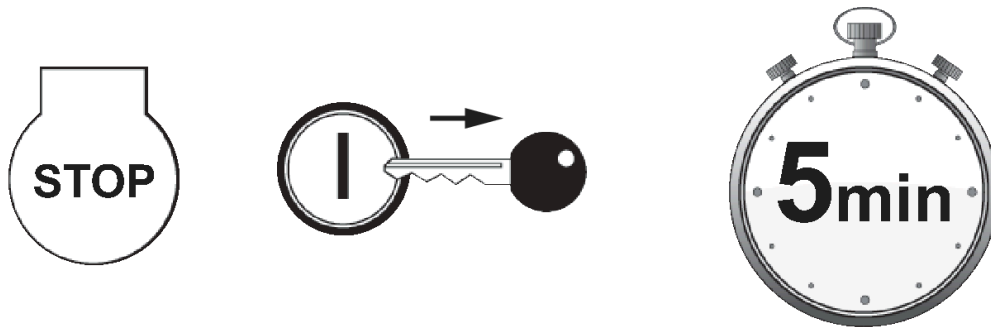
6. Close the oil filler cap firmly onto the filler neck by hand.



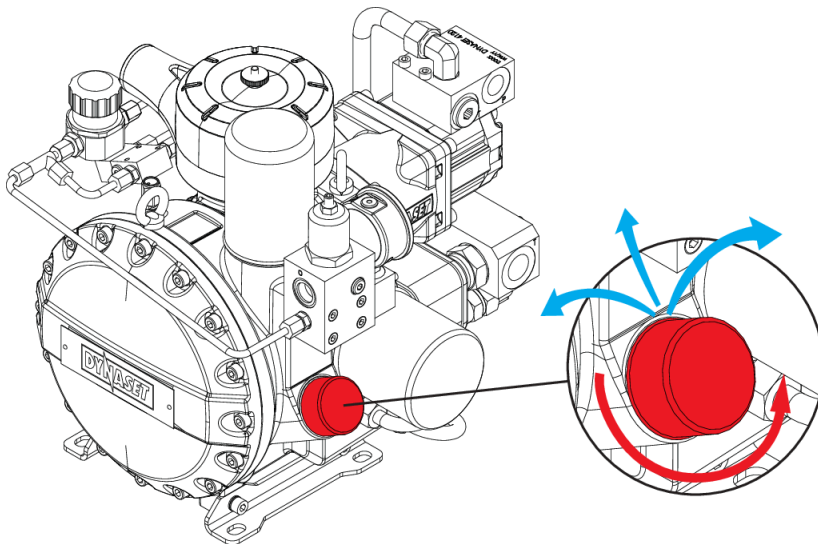
7. Start the compressor and close the supply line. Allow compressor run for three minutes.



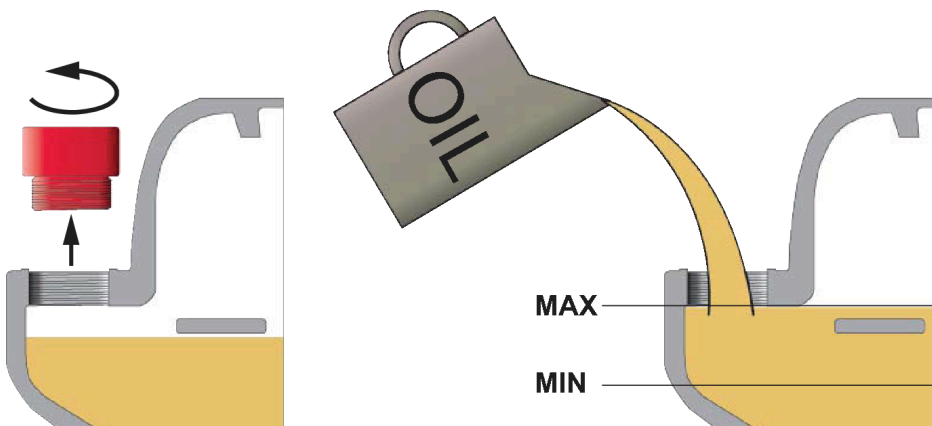
8. Stop the compressor and wait for 5 minute standstill



9. Depressurize the system completely by opening air supply line and loosening the oil filler cap.



10. Open oil filler cap, check the oil level fill and top up the missing oil quantity again up to the maximum level if required. Check the oil level fill for the model from the picture "Oil Level limits" above.



6.8.1 OIL CHANGE HKR 11000

When new oil has been added to HKR 11000:

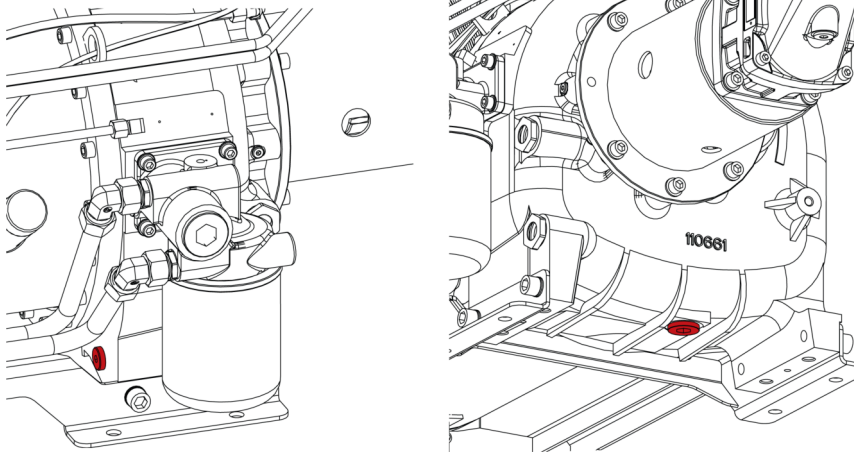
1. Turn the compressor on and wait that the thermostat opens and fills the oil cooler and the pipelines.
2. When the oil has filled the oil cooler and the pipelines, turn the compressor off and check the oil level. Add oil if necessary (READ CHAPTER „6.6.1 OIL LEVEL CHECK FOR HKR 11 000 “)

! NOTE!

When oil is hot, oil level might be 10 mm higher than when it is cold

! NOTE!

HKR 11000 has two oil drain plugs (image below), oil can be drained from either one.



Picture 47: HKR 11000 Oil Drain plugs

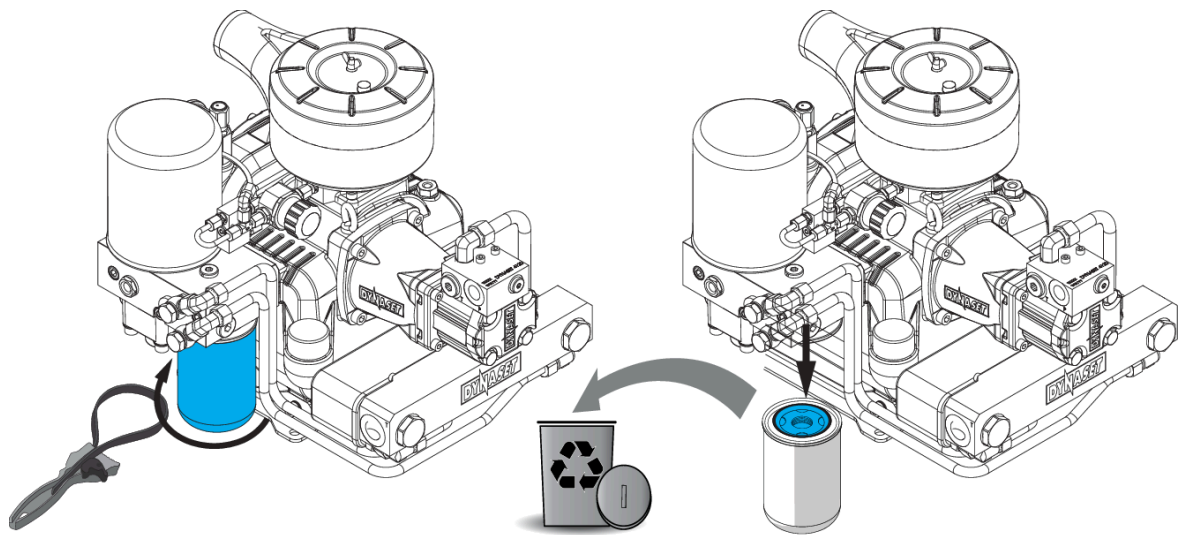
6.9 REPLACING OIL FILTER

The oil filter must be replaced at every oil change.

WARNING

Oil filter contains oil and is a risk to environment. Dispose the used oil filter according to the applicable environmental and disposal laws and regulations.

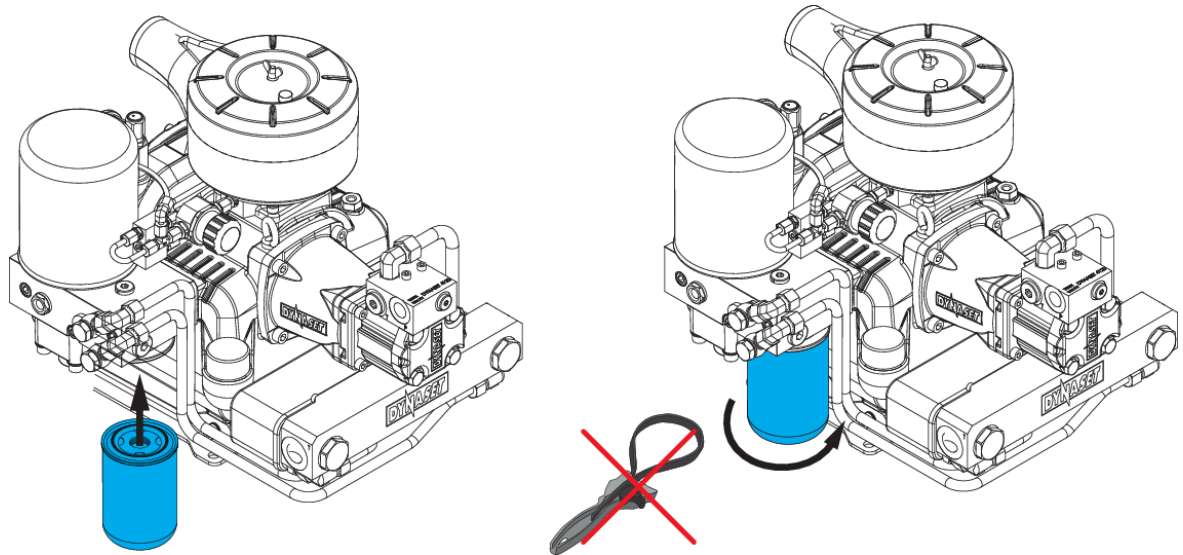
1. Remove the oil filter cartridge with a suitable tool.



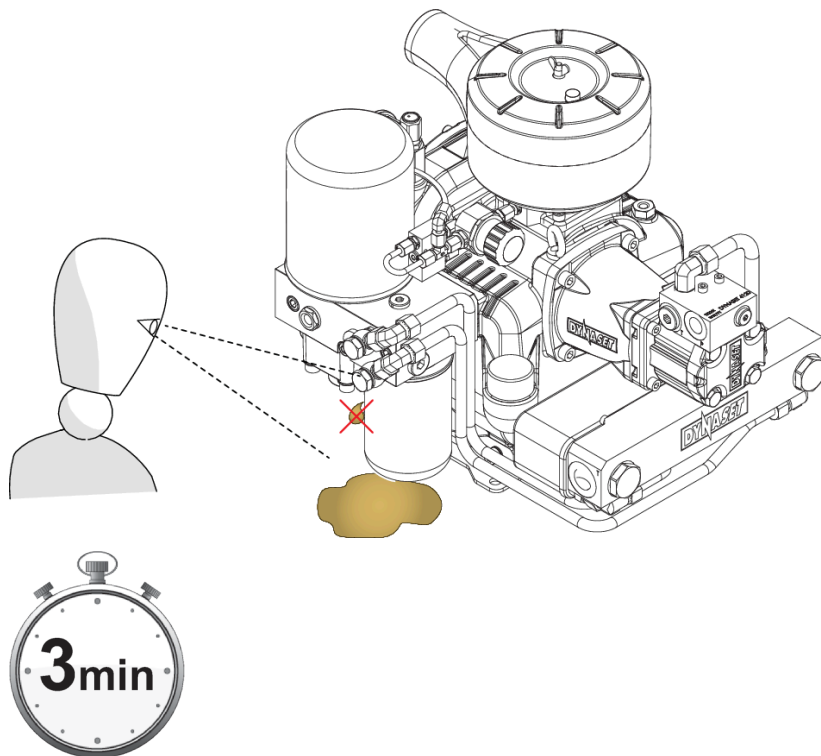
2. Lubricate the seal of the new oil filter cartridge with clean oil or grease. Fill the cartridge with the same oil as in HKR screw compressor.



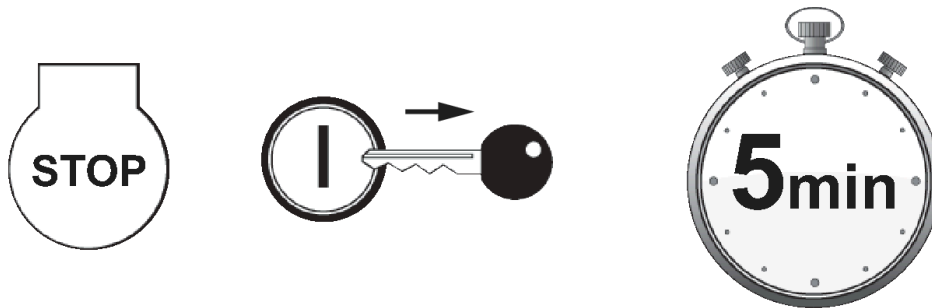
3. Insert the new oil filter cartridge onto the multiblock and tighten by hand. Do not use any tools.



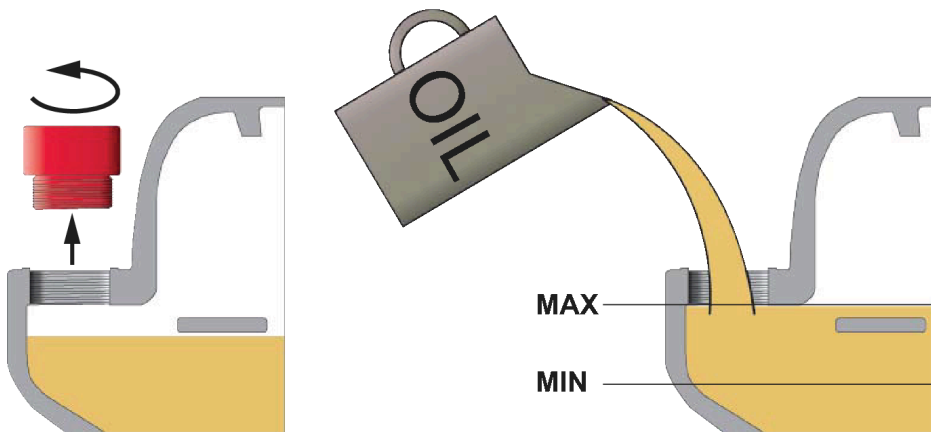
4. Start the compressor and close the air supply line. Allow compressor run for 3 minutes. Check the compressor and the system for leaks when the system is running.



5. Stop the compressor and wait for 5 minute standstill



6. Check the oil level, fill up the missing oil quantity up to the maximum level.



6.10 REPLACING AIR-OIL SEPARATING ELEMENT(S)

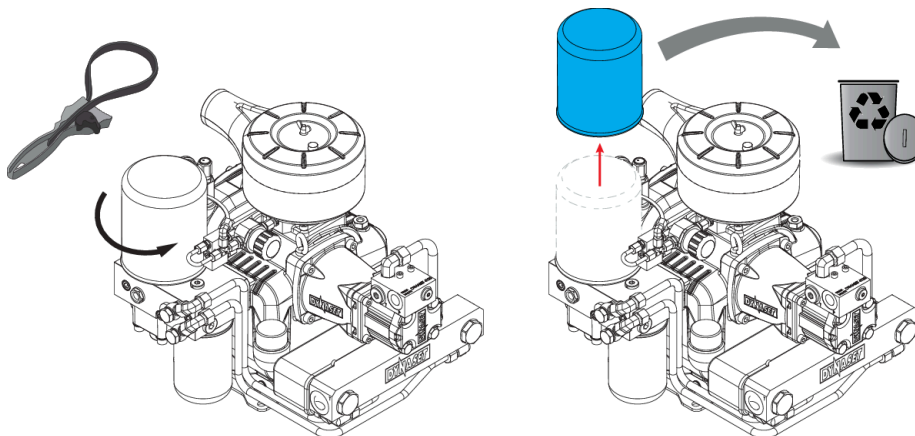
⚠ WARNING

Air-oil separator contains oil and is risk to environment. Dispose the used air-oil separator according to the applicable environmental and disposal laws and regulations.

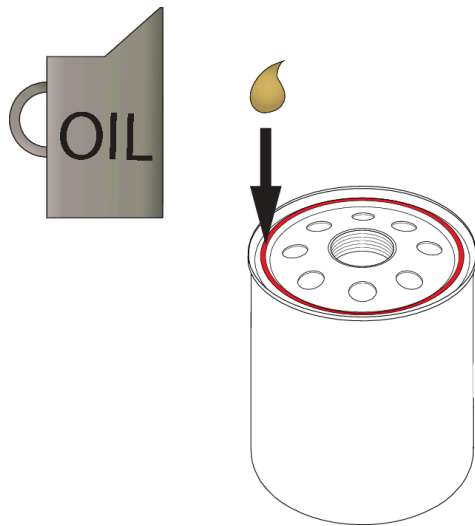
⚠ WARNING

Heavily soiled intake air or low-quality oil cause heavier soiling of the separating element, which can result in the premature need for replacement.

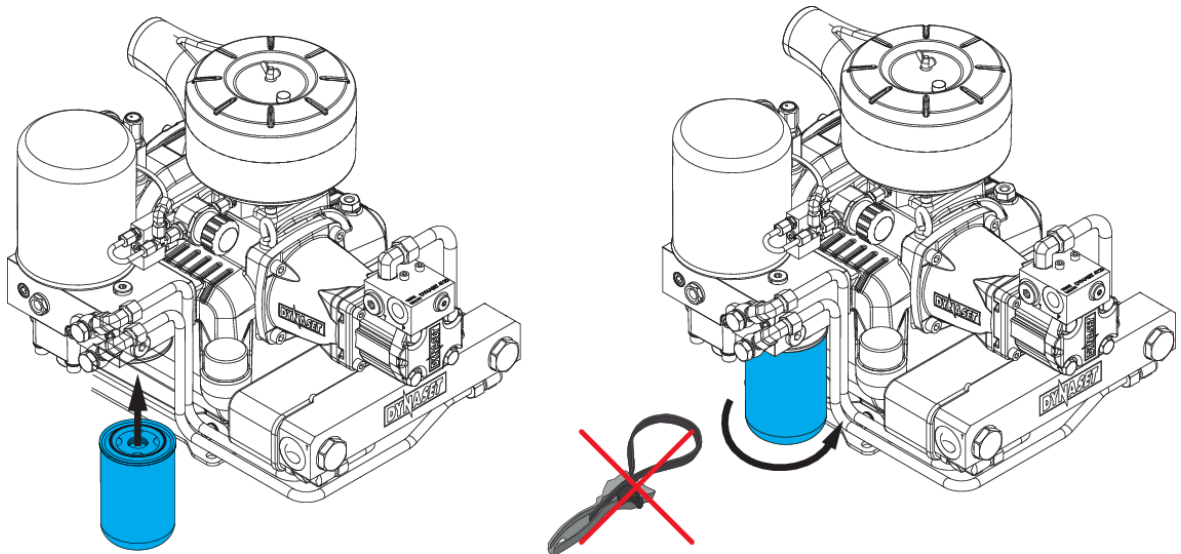
1. Remove the air-oil separating element(s) with a suitable tool.



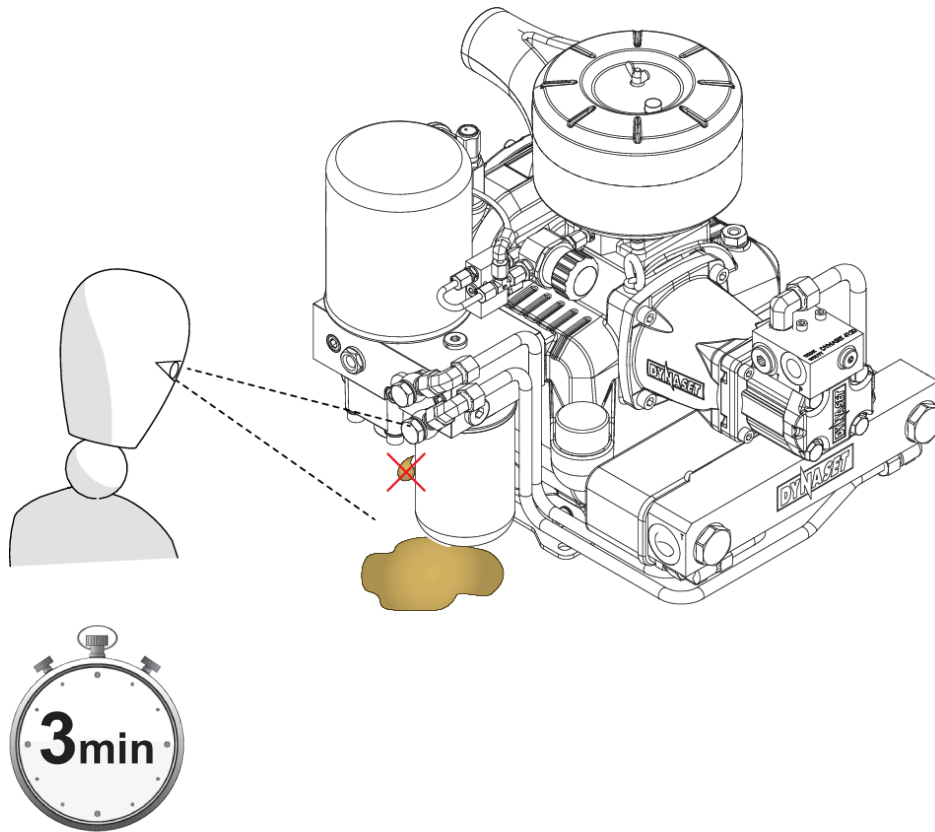
2. Lubricate the seal of the new air-oil separating element with clean oil or grease.



3. Insert the new air-oil separating element onto the multiblock and tighten by hand. Do not use any tools.



4. Start the compressor and close the air supply line. Allow it run for 3 minutes. Check the compressor and system for leaks when the system is running.



6.11 REPLACING AIR FILTER ELEMENT

Both stock air filter and cyclone air filter element replacement are done following these instructions:

 NOTE!

Check Air filter replacement interval from maintenance interval chapter. Note that harsh conditions can affect on the interval period shortening it greatly. Remember to check the filter regularly if the conditions are harsh.

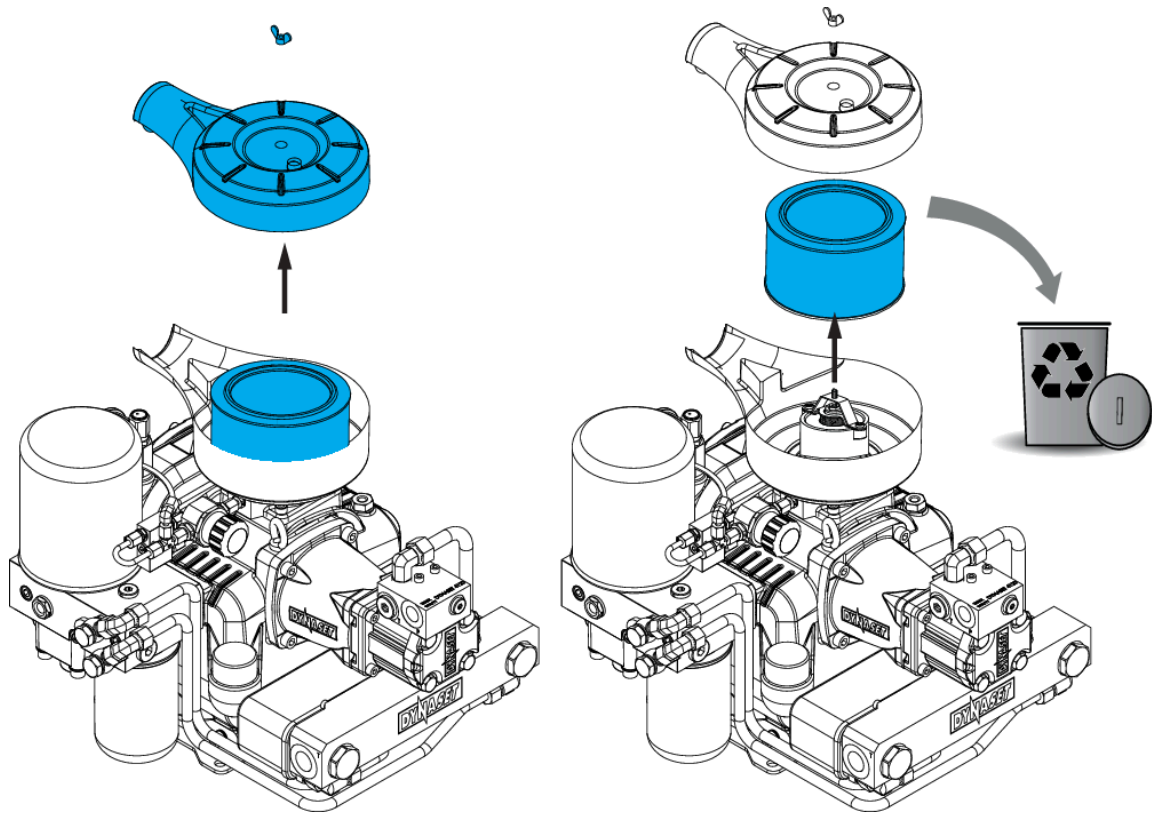
 NOTE!

With cyclone filter there is a safety element inside the air filter. Remember to check that the safety element is intact and in good condition. It only needs to be replaced if visibly or damaged.

 WARNING

Dirt and dust particles must be prevented to get into the air inlet of the compressor.

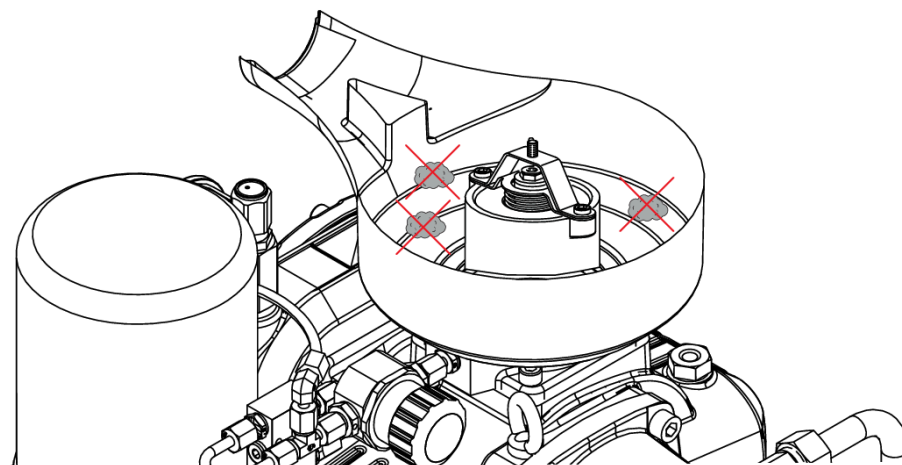
1. Remove the filter cover and remove the old filter element.



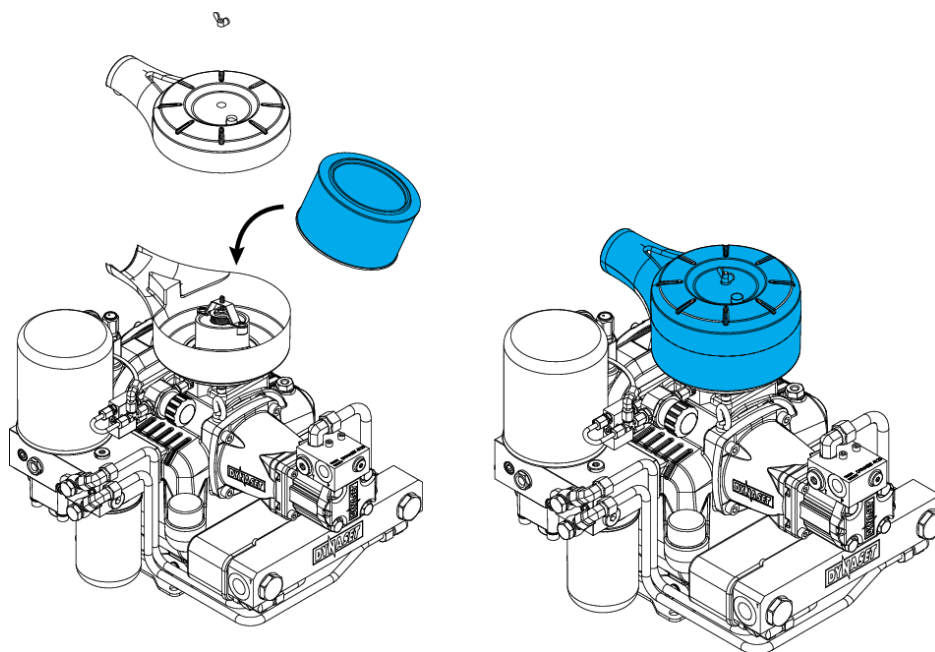
⚠ WARNING

Do not clean the filter element. The filter element must always be replaced in case of soiling!

2. Remove dust carefully from the filter housing.



3. Insert new filter element and install filter cover.

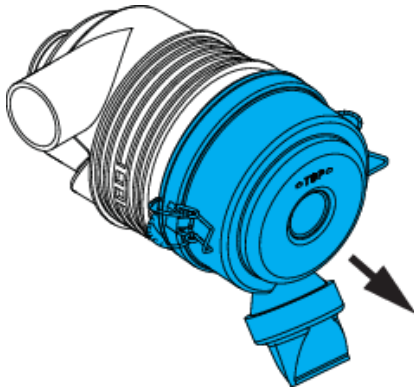


! WARNING

Dispose the old air filter element according to the applicable regulations.

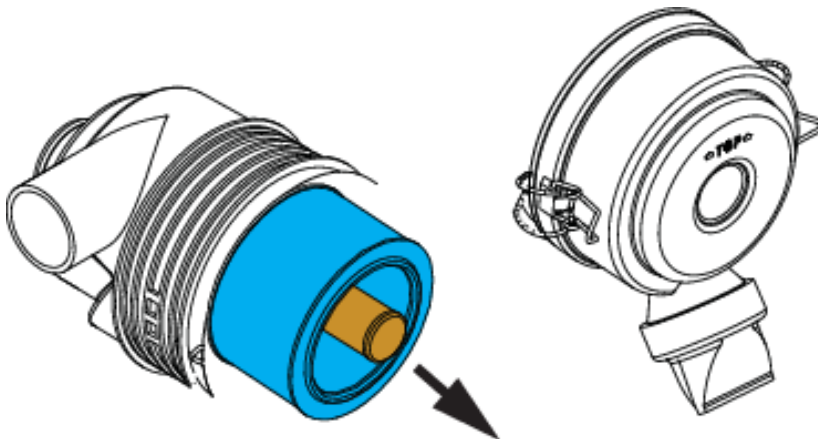
6.12 CHANGING CYCLONE FILTER (OPTION)

1. Detach the filter cover.



Picture 48: Detaching the filter cover

2. Now you can detach the safety element or the filter element.



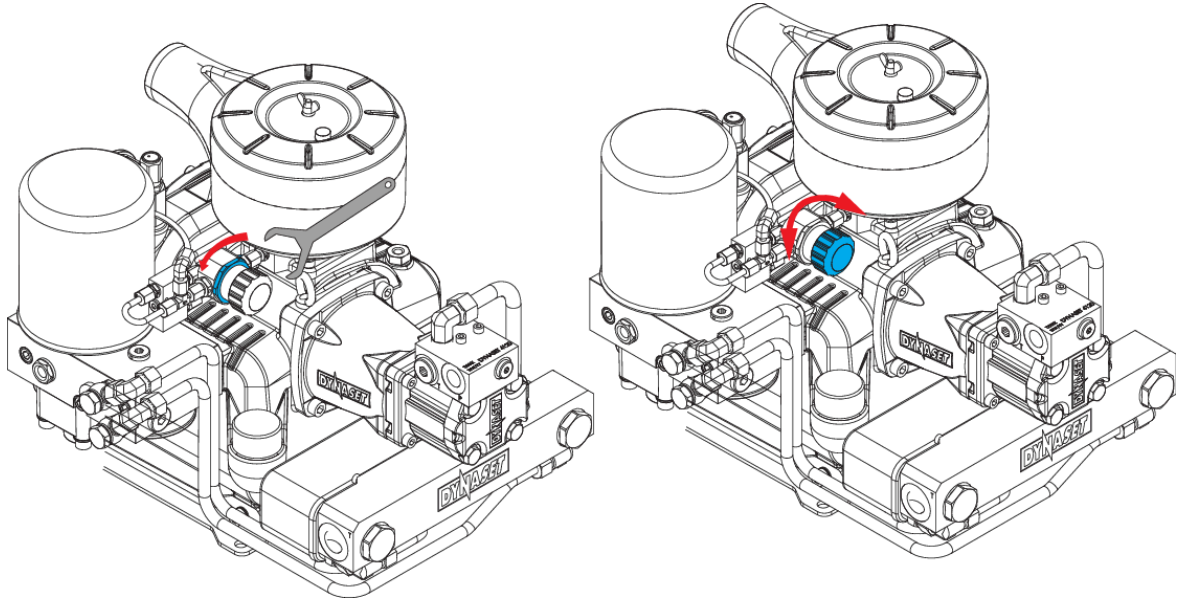
Picture 49: Pulling out the safety element and the filter element

! NOTE!

You do not need to change the safety element every time when you change the filter element. Change the safety element when it is significantly dirty or when the filter surface is damaged.

! WARNING

Dispose the old filter according to the applicable regulations.

6.13 ADJUSTING THE OFF-LOAD PRESSURE

1. Loosen locking nut.
2. Use adjust knob to set off-load pressure.
3. Tighten the locking nut.

! NOTE!

Do not adjust pressure over the maximum pressure output! Adjusting the limit over the capacity will activate the safety valve unnecessary and cause unwanted loop for the compressor and can cause wear to the compressor.

! NOTE!

Do not adjust pressure under 6,5 bar! Adjusting the limit under the value of minimum pressure valve or close to it, will cause unwanted loop for the compressor and can cause wear to the compressor.

6.14 TROUBLESHOOTING

Performing the maintenance tasks requires a qualified hydraulic mechanic. Please, contact DYNASET authorized workshop or dealer for more maintenance information.

FAILURE	REASON	CORRECTIVE ACTION
Compressor does not start while hydraulic system is operating.	Malfunction or fault on hydraulic control valve or connection.	Check and repair.
	Excessive internal pressure remained in compressor.	Check and depressurize.
	Failure in hydraulic system.	Check that the hydraulic pressure and flow are sufficient. Adjust if necessary.
		Check the hydraulic motor of compressor for possible leakage. Replace shaft seal if necessary.
	Air pressure in delivery line prevents compressor start.	Check and depressurize air delivery line.

FAILURE	REASON	CORRECTIVE ACTION
Compressor has difficulty starting.	Failure in hydraulic system. Insufficient hydraulic pressure or flow.	Check that system hydraulic pressure and flow are sufficient. Adjust if necessary.
		Check the hydraulic motor of the compressor for possible leakage. Replace shaft seal if necessary.
	Air pressure in delivery line prevents compressor's start.	Check and depressurize air delivery line.
	Compressor is flooded with oil.	Check oil return line nozzle, check valve and air-oil separating element(s). Replace if necessary.
	Ambient temperature is too low.	Check the viscosity of oil.
	Oil filling is too viscous.	Check the viscosity of oil.

FAILURE	REASON	CORRECTIVE ACTION
Excessive compressor oil consumption or oil in air delivery line.	Lubrication nozzle in compressor oil return line is clogged or faulty.	Check. Replace nozzle if necessary.
	Compressor oil return line check valve is clogged or faulty.	Check. Replace check valve if necessary.
	Air-oil separating element(s) is clogged or faulty.	Check. Replace air-oil separating element(s) if necessary.
	Oil level is too high.	Check oil level. Drain and replace oil if necessary.
	Operating pressure and delivery quantity are not in the permissible range.	Check hydraulic pressure and flow. Adjust if necessary.

FAILURE	REASON	CORRECTIVE ACTION
Compressor does not produce compressed air.	Delivery line is closed.	Check.
	Air pressure control valve failure or incorrect setting (i.e. adjusted pressure is lower than setting of minimum pressure valve).	Check. Adjust if necessary.
	Air intake valve does not open.	Check the valve and air pressure control valve. Replace parts if necessary.

FAILURE	REASON	CORRECTIVE ACTION
Air pressure does not achieve requested rate.	Air pressure control valve's incorrect setting.	Check. Adjust if necessary.
	Safety valve opens due to incorrect setting of air pressure control valve.	Check. Adjust air pressure control valve if necessary.
	Failure in hydraulic system.	Check that hydraulic pressure and flow are sufficient. Adjust if necessary.
		Check that hydraulic motor of the compressor for possible leakage. Replace shaft seal if necessary.

FAILURE	REASON	CORRECTIVE ACTION
	Air intake filter is clogged.	Check. Replace filter.
	Air-oil separating element(s) is clogged or faulty.	Check. Replace air-oil separating element(s) if necessary.

FAILURE	REASON	CORRECTIVE ACTION
Compressor is overheating	Insufficient cooling capacity of hydraulic system.	Check and ensure sufficient cooling capacity if necessary.
	High ambient temperature.	Check installation location of compressor. Arrange sufficient cool intake air for compressor.
	Compressor oil does not circulate through the heat exchanger due to the incorrect operation of faulty thermostatic by-pass valve.	Check. Replace thermostatic by-pass valve if necessary.
	Compressor oil does not circulate through the heat exchanger due to the incorrect operation of faulty heat exchanger by-pass valve.	Check. Replace heat exchanger by-pass check valve if necessary.
	Insufficient cooling capacity.	Check. Improve cooling capacity if necessary. Dynaset oy offers wide range of hydraulic components including oil coolers.

FAILURE	REASON	CORRECTIVE ACTION
Compressor is overheating.	Oil level is too low.	Check the oil level. Fill if necessary.
	Oil filter is soiled.	Replace oil filter cartridge.
	Oil thermostat faulty.	Replace oil thermostat.

FAILURE	REASON	CORRECTIVE ACTION
Safety valve blows off (at a permissible operating pressure).	Safety valve pressure setting is too low.	Check and adjust if necessary.
	Air-oil separating element is dirty.	Replace air-oil separating element.
	Safety valve defective.	Replace safety valve.
	Pressure control valve setting is too high.	Check and adjust if necessary.
	Incorrect operation of minimum pressure valve.	Check minimum pressure valve for smooth movement; if necessary ensure smooth operation or replace.

FAILURE	REASON	CORRECTIVE ACTION
Insufficient discharge.	Intake filter element is soiled.	Replace the filter element.
	Oil level is too low.	Check the oil level. Fill if necessary.
	Incorrect operation of intake control valve.	Check control valve and control valve flap, clean the bearing and guides. Check stroke, replace if necessary.
	Leaks in the system.	Check. Seal if necessary.

FAILURE	REASON	CORRECTIVE ACTION
Oil escapes during stop.	Sealing surfaces in control valve are damaged, spring in control valve is broken.	Check and replace parts.

FAILURE	REASON	CORRECTIVE ACTION
Abnormal noise during operation.	Insufficient lubrication, loose parts, damage to hydraulic drive kit, bearings or shaft, etc.	Check. If necessary, replace parts.

7. MANUFACTURER'S LIMITED WARRANTY

7.1 WARRANTY COVERAGE

All accessories manufactured by DYNASET OY are subject to the terms and conditions of this limited warranty. Products are warranted to the original purchaser to be free from defects in materials or workmanship. Exclusions from warranty are explained in item Exclusions from warranty.

7.2 BEGINNING OF WARRANTY PERIOD

Warranty period begins from the delivery date of the product. Delivery is considered to be done on the date when installation has been accomplished or purchaser has taken the product in use. Product is considered as taken in use at the date when DYNASET OY has delivered the product to purchaser, unless separately agreed otherwise by written agreement.

7.3 WARRANTY PERIOD

Warranty period is twenty-four (24) months based on maximum of 2000 hours usage during this time period. In cases where the system is provided complete with certain special components (e.g. drive unit), those components are considered as a subject to their manufacturer's warranty.

7.4 WARRANTY PROCEDURES

Immediately upon identifying a problem which purchaser believes to be a failure subject to the product's limited warranty, purchaser must contact primary to the seller of the product. Contact must be made as soon as possible, the latest thirty (30) days after the problem was identified. Seller and/or manufacturer technical staff determines the nature of the problem primarily by phone or e-mail. Purchaser commits to give necessary information and to perform routine diagnostic procedures in order to determine the nature of the problem and necessary procedures.

7.5 WARRANTY REPAIRS

If the product is found to be defective during the warranty period, DYNASET OY will, at its option, either repair the product, author it to be repaired at its authorized workshop or exchange the defective product. If the product must be repaired elsewhere than premises of DYNASET OY or authorized workshop, all costs excluded from this warranty (travelling and waiting hours, daily allowance, travelling expenses and uninstallation/reinstallation costs) will be charged from the purchaser. If the problem is not covered by this limited warranty, DYNASET OY has the right to charge purchaser of troubleshooting and repairing.

7.6 DELIVERY TERMS OF WARRANTY REPAIR

If the product is found possible to be defective under this limited warranty, and it needs to be repaired, DYNASET OY gives Warranty Return Number (WRN). Items being returned must be shipped, at the purchaser's cost, adequately packed for shipment, to the DYNASET OY or to other location authored by DYNASET OY.

Shipment documents must contain:

- Purchaser's name and contact information
- Receipt of original purchase
- WRN code
- Problem description

7.7 WARRANTY OF REPAIRED PRODUCT

Warranty period of the product repaired under this limited warranty continues to the end of original warranty period.

7.8 EXCLUSIONS FROM WARRANTY

This warranty shall not apply to:

- Failures due to normal wear and tear, improper installation, misuse, abuse, negligence, purchaser selection of improper product to intended use, accident, improper filtration of hydraulic oil or intake water or lack of maintenance.
- Cost of maintenance, adjustments, installation or startup.
- Coating, hydraulic oil, quick couplings and interconnection hoses (internal or external to system assemblies).
- Products altered or modified in a manner not authorized by DYNASET OY in writing.
- Products which have been repaired during warranty period by others than DYNASET OY or its authorized workshop.
- Costs of any other damage or loss, whether direct, indirect, incidental, special or consequential, arising out of the use of, or the inability to use, the product.
- Telephone or other communications expense.
- Product that is used in exceptional conditions, considered to cause excessive wear and tear.
- Faults caused by nature phenomenon like flood, thunder, etc.

© DYNASET OY, all rights reserved

8. PRODUCT DISPOSAL

Dispose and recycle all DYNASET products and their packaging environmentally responsible way.

Do not dispose used oils, electrical components, batteries or any other hazardous waste with normal waste. They are harmful for the environment and can be recycled for re-use.

Contact your local waste recycling facility for more information about recycling hazardous waste.



NOTE!

Always act according to the waste legislation, regulations and recommendations in waste disposal and waste recycling issued by your local authorities.

9. DECLARATION OF CONFORMITY

We hereby declare that the design and manufacture of the product stated below are in conformity with the provisions of the European Parliament and Councils on the harmonization of the laws of Member States on the safety of machines.

Machine directive 2006/42/EC

LVD directive 2014/35/EU

EMC directive 2014/30/EU

RoHS directive 2015/863

PED directive 2014/68/EU

Applied conformity standards:

EN ISO 4413:2010 Hydraulic fluid power - General rules and safety requirements for systems and their components.

EN60204-1:2018 Safety of machinery – Electrical equipment of machines.

Manufacturer: DYNASET Oy
Menotie 3, FI-33470 Ylöjärvi, Finland

Product group: HKR HYDRAULIC SCREW COMPRESSORS

Product: HKR Hydraulic Screw Compressors

If the device has been modified by someone other than the manufacturer or without the manufacturer's permission, this declaration is not valid.



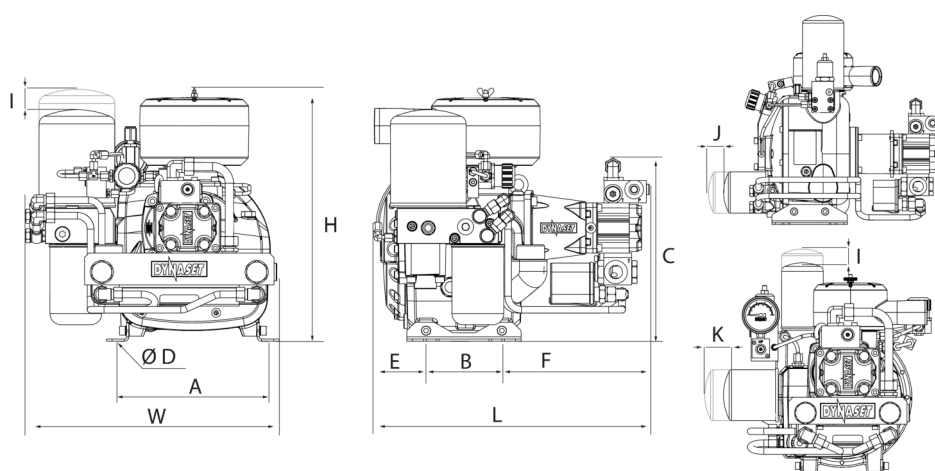
Pasi Yli-Kätkä
R&D Director
Menotie 3, 33470
Ylöjärvi, Finland 01.06.2023



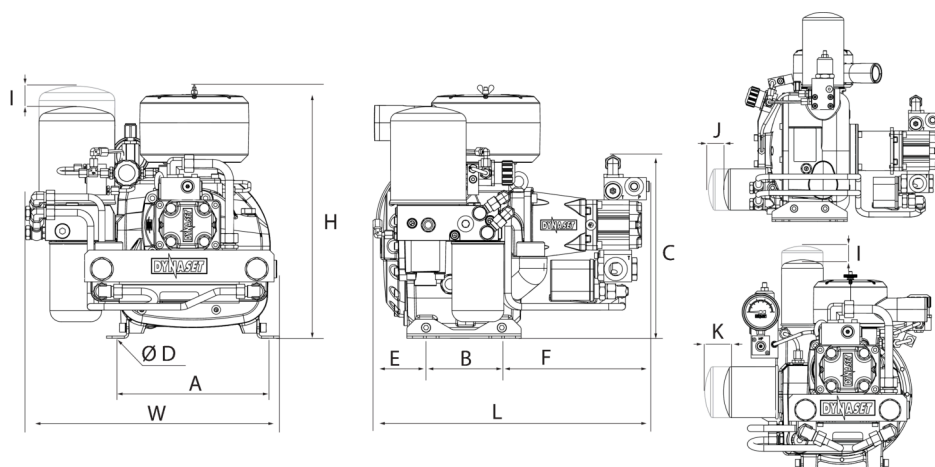
10. TECHNICAL SPECIFICATIONS

10.1 BLUE AIR MODELS

10.1.1 DIMENSIONS

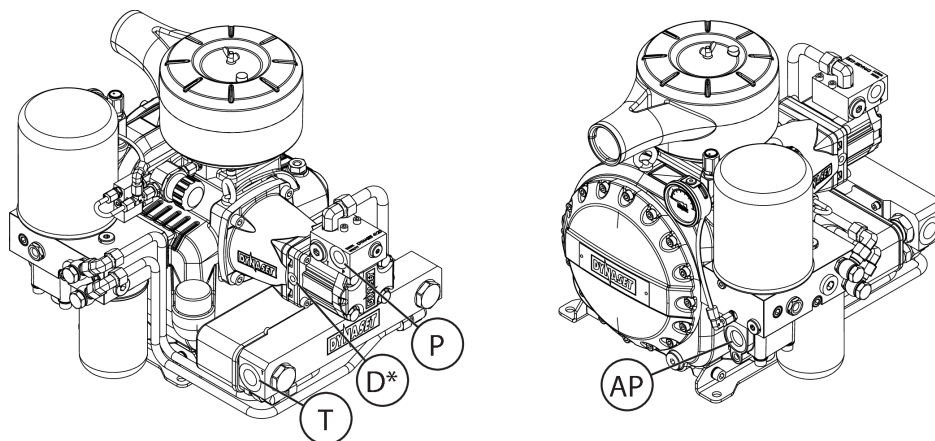


Model	Dimensions, mm (in)									Space for filter de-mounting, mm (in)			Weight kg (lbs)
	L	W	H	A	B	C	D	E	F	I	J	K	
HKR500/ 10-29	443 (17.4)	379 (14.9)	386 (15.2)	183 (7.2)	151 (5.9)	312 (12.3)	12.5 (0.5)	51 (2.0)	242 (9.5)	100 (3.9)	()	15 (0.6)	43 (95)
HKR600/ 15-26	499 (19.6)	371 (14.6)	471 (18.5)	288 (11.3)	140 (5.5)	285 (11.2)	12.5 (0.5)	109 (4.3)	235 (9.3)	150 (5.9)	25 (1.0)	()	43 (95)
HKR800/ 10-43	443 (17.4)	379 (14.9)	386 (15.2)	183 (7.2)	151 (5.9)	312 (12.3)	12.5 (0.5)	51 (2.0)	242 (9.5)	100 (3.9)	()	15 (0.6)	43 (95)
HKR1300/ 10-37	495 (19.5)	455 (17.9)	453 (17.8)	284 (11.2)	176 (6.9)	329 (13.0)	12.5 (0.5)	75 (3.0)	243 (9.6)	120 (4.7)	()	()	74 (163)
HKR2000/ 10-53	495 (19.5)	455 (17.9)	453 (17.8)	284 (11.2)	176 (6.9)	329 (13.0)	12.5 (0.5)	75 (3.0)	243 (9.6)	120 (4.7)	()	()	74 (163)
HKR2000/ 13-68	496 (19.5)	455 (17.9)	453 (17.8)	284 (11.2)	176 (6.9)	329 (13.0)	12.5 (0.5)	75 (3.0)	245 (9.6)	120 (4.7)	()	()	74 (163)
HKR2500/ 10-67	495 (19.5)	455 (17.9)	453 (17.8)	284 (11.2)	176 (6.9)	329 (13.0)	12.5 (0.5)	75 (3.0)	243 (9.6)	120 (4.7)	()	()	74 (163)



Model	Dimensions, mm (in)								Space for filter de-mounting, mm (in)				Weight
	L	W	H	A	B	C	D	E	F	I	J	K	kg (lbs)
HKR4000/ 10-104	612 (24.1)	518 (20.4)	574 (22.6)	322 (12.7)	165 (6.5)	400 (15.7)	12.5 (0.5)	140 (5.5)	306 (12.0)	230 (9.1)	()	()	137 (302)
HKR4000/ 13-125	616 (24.3)	518 (20.4)	574 (22.6)	322 (12.7)	165 (6.5)	400 (15.7)	12.5 (0.5)	140 (5.5)	311 (12.2)	230 (9.1)	()	()	137 (302)
HKR5000/ 10-137	669 (26.3)	518 (20.4)	579 (22.8)	322 (12.7)	165 (6.5)	400 (15.7)	12.5 (0.5)	198 (7.8)	306 (12.0)	230 (9.1)	()	()	137 (302)
HKR6500/ 13-195	766 (30.2)	616 (24.3)	734 (28.9)	423 (16.7)	215 (8.5)	451 (17.8)	12.5 (0.5)	190 (7.5)	361 (14.2)	240 (9.4)	()	()	270 (596)
HKR7500/ 10-183	776 (30.6)	623 (24.5)	735 (28.9)	423 (16.7)	215 (8.5)	451 (17.8)	12.5 (0.5)	205 (8.1)	356 (14.0)	240 (9.4)	()	()	270 (596)
HKR11000/ 10-184	1'603 (63.1)	796 (31.3)	946 (37.2)	484 (19.1)	505 (19.9)	472 (18.6)	17 (0.7)	464 (18.3)	485 (19.1)	240 (9.4)	()	()	377 (832)
HKR11000/ 10-270	1'618 (63.7)	796 (31.3)	946 (37.2)	484 (19.1)	505 (19.9)	478 (18.8)	17 (0.7)	464 (18.3)	501 (19.7)	240 (9.4)	()	()	382 (843)

10.1.2 CONNECTIONS



D* Only in models with Drain port

Model	Connections			
	Pressure Line, P	Return Line, T	Drain Line, D*	Air Output, AP
HKR500/10-29	G 1/2 - BSPP	G 3/4 - BSPP	G 1/8 - BSPP	G 1/2 - BSPP
HKR600/15-26	G 1/2 - BSPP	G 3/4 - BSPP	G 1/8 - BSPP	G 3/4 - BSPP
HKR800/10-43	G 1/2 - BSPP	G 3/4 - BSPP	G 1/8 - BSPP	G 1/2 - BSPP
HKR1300/10-37	G 1/2 - BSPP	G 3/4 - BSPP	G 1/8 - BSPP	G 3/4 - BSPP
HKR2000/10-53	G 1/2 - BSPP	G 3/4 - BSPP	G 1/8 - BSPP	G 3/4 - BSPP
HKR2000/13-68	G 1/2 - BSPP	G 3/4 - BSPP	G 1/8 - BSPP	G 3/4 - BSPP
HKR2500/10-67	G 1/2 - BSPP	G 3/4 - BSPP	G 1/8 - BSPP	G 3/4 - BSPP
HKR4000/10-104	G 1 - BSPP	G 1-1/4 - BSPP	G 1/8 - BSPP	G 1 - BSPP
HKR4000/13-125	G 1 - BSPP	G 1-1/4 - BSPP	G 1/8 - BSPP	G 1 - BSPP
HKR5000/10-137	G 1 - BSPP	G 1-1/4 - BSPP	G 1/8 - BSPP	G 1 - BSPP
HKR6500/13-195	G 1 - BSPP	G 1-1/4 - BSPP	G 1/8 - BSPP	G 1-1/4 - BSPP
HKR7500/10-183	G 1 - BSPP	G 1-1/4 - BSPP	G 1/8 - BSPP	G 1-1/4 - BSPP
HKR11000/10-184	G 1 - BSPP	G 1 - BSPP	15L-M22x1.5	G 2 - BSPP
HKR11000/10-270	G 1 - BSPP	G 1 - BSPP	15L-M22x1.5	G 2 - BSPP

10.1.3 TECHNICAL SPECIFICATIONS 10 BAR MODELS

		HKR500/ 10-29	HKR800/ 10-43	HKR1300/ 10-37	HKR2000/ 10-53	HKR2500/ 10-67
DISCHARGE CHARACTERISTICS						
Flow rate max.	l/min (cfm)	500 (18)	800 (28)	1'300 (46)	2'000 (71)	2'500 (88)
Pressure max.	bar (psi)	10 (145)	10 (145)	10 (145)	10 (145)	10 (145)
Noise level, LWA	dB(A)	96	99	98	101	103
HYDRAULIC POWER REQUIREMENTS						
Flow min.	l/min (gpm)	19 (5.02)	21 (5.55)	27 (7.13)	30 (7.93)	35 (9.25)
Flow nom.	l/min (gpm)	29 (7.66)	43 (11.36)	37 (9.78)	53 (14.00)	67 (17.70)
Flow max.	l/min (gpm)	30 (7.93)	45 (11.89)	40 (10.57)	55 (14.53)	80 (21.14)
Pressure at nominal power output	bar (psi)	123 (1'784)	135 (1'958)	205 (2'973)	205 (2'973)	205 (2'973)
Pressure max.	bar (psi)	230 (3'336)	230 (3'336)	230 (3'336)	230 (3'336)	230 (3'336)
Pressure when unloaded	bar (psi)	80 (1'160)	100 (1'450)	130 (1'885)	130 (1'885)	130 (1'885)
HYDRAULIC FLUID REQUIREMENTS						
Viscosity	cSt	10-200 / optimum	10-200 / optimum	10-200 / optimum	10-200 / optimum	10-200 / optimum
		25-35	25-35	25-35	25-35	25-35
Temperature max.	°C(°F)	70 (158)	70 (158)	70 (158)	70 (158)	70 (158)
Filter ratio	µm	25	25	25	25	25
Cooling capacity requirements	kW	4	6	7	11	13
LUBRICATION OIL						
Oil Fill	liter (gal.)	2.5 (0.66)	2.5 (0.66)	4.9 (1.29)	4.9 (1.29)	4.9 (1.29)

		HKR4000/ 10-104	HKR5000/ 10-137	HKR7500/ 10-183	HKR11000/ 10-184	HKR11000/ 10-270
DISCHARGE CHARACTERISTICS						
Flow rate max.	l/min (cfm)	4'000 (141)	5'000 (177)	7'500 (265)	11'000 (388)	11'000 (388)
Pressure max.	bar (psi)	10 (145)	10 (145)	10 (145)	10 (145)	10 (145)
Noise level, LWA	dB(A)	96	98	108	110	110
HYDRAULIC POWER REQUIREMENTS						
Flow min.	l/min (gpm)	55 (14.53)	60 (15.85)	70 (18.49)	115 (30.38)	165 (43.59)
Flow nom.	l/min (gpm)	104 (27.48)	137 (36.20)	183 (48.35)	184 (48.61)	270 (71.33)
Flow max.	l/min (gpm)	105 (27.74)	140 (36.99)	200 (52.84)	190 (50.20)	275 (72.66)
Pressure at nominal power output	bar (psi)	215 (3'118)	210 (3'046)	230 (3'336)	345 (5'004)	230 (3'336)
Pressure max.	bar (psi)	230 (3'336)	230 (3'336)	270 (3'916)	380 (5'511)	380 (5'511)
Pressure when unloaded	bar (psi)	140 (2'031)	160 (2'321)	160 (2'321)	250 (3'626)	()
HYDRAULIC FLUID REQUIREMENTS						
Viscosity	cSt	10-200 / optimum 25-35	10-200 / optimum 25-35	10-200 / optimum 25-35	10-200 / optimum 25-35	10-200 / optimum 25-35
Temperature max.	°C(°F)	70 (158)	70 (158)	70 (158)	70 (158)	70 (158)
Filter ratio	µm	25	25	25	25	25
Cooling capacity requirements	kW	22	27	40	45	45
LUBRICATION OIL						
Oil Fill	liter (gal.)	10.8 (2.85)	10.8 (2.85)	27 (7.13)	45 (11.89)	45 (11.89)

10.1.4 TECHNICAL SPECIFICATIONS 13 BAR MODELS

		HKR2000/ 13-68	HKR4000/ 13-125	HKR6500/ 13-195
DISCHARGE CHARACTERISTICS				
Flow rate max.	l/min (cfm)	2'000 (71)	4'000 (141)	6'500 (230)
Pressure max.	bar (psi)	13 (189)	13 (189)	13 (189)
Noise level, LWA	dB(A)	101	96	108
HYDRAULIC POWER REQUIREMENTS				
Flow min.	l/min (gpm)	30 (7.93)	55 (14.53)	70 (18.49)
Flow nom.	l/min (gpm)	53 (14.00)	125 (33.03)	183 (48.35)
Flow max.	l/min (gpm)	68 (17.97)	125 (33.03)	195 (51.52)
Pressure at nominal power output	bar (psi)	210 (3'046)	220 (3'191)	230 (3'336)
Pressure max.	bar (psi)	210 (3'046)	230 (3'336)	230 (3'336)
Pressure when unloaded	bar (psi)	130 (1'885)	140 (2'031)	()
HYDRAULIC FLUID REQUIREMENTS				
Viscosity	cSt	10-200 / optimum 25-35	10-200 / optimum 25-35	10-200 / optimum 25-35
Temperature max.	°C(°F)	70 (158)	70 (158)	70 (158)
Filter ratio	µm	25	25	25
Cooling capacity requirements	kW	14.5	28	44
LUBRICATION OIL				
Oil Fill	liter (gal.)	4.9 (1.29)	10.8 (2.85)	27 (7.13)

10.1.5 TECHNICAL SPECIFICATIONS 15 BAR MODELS

		HKR600/ 15-26
DISCHARGE CHARACTERISTICS		
Flow rate max.	l/min (cfm)	600 (21)
Pressure max.	bar (psi)	15 (218)
Noise level, LWA	dB(A)	95
HYDRAULIC POWER REQUIREMENTS		
Flow min.	l/min (gpm)	16 (4.23)
Flow nom.	l/min (gpm)	26 (6.87)
Flow max.	l/min (gpm)	30 (7.93)
Pressure at nominal power output	bar (psi)	195 (2'828)
Pressure max.	bar (psi)	230 (3'336)
Pressure when unloaded	bar (psi)	145 (2'103)
HYDRAULIC FLUID REQUIREMENTS		
Viscosity	cSt	10-200 / optimum 25-35
Temperature max.	°C(°F)	70 (158)
Filter ratio	µm	25
Cooling capacity requirements	kW	5
LUBRICATION OIL		
Oil Fill	liter (gal.)	3.5 (0.92)

Picture 1: Identification key for HKR	6
Picture 2: Type plate	7
Picture 3: HKR compressor line-up	8
Picture 4: Main components of HKR compressor - Blue Air	9
Picture 5: Operating description	13
Picture 6: The nominal discharge of hydraulic screw compressor	14
Picture 7: Operating principles of intake valve	16
Picture 8: Functional principle of pneumatic intake control	17
Picture 9: Multiblock of HKR 1300 - HKR 2500	18
Picture 10: Multiblock of HKR 4000 and HKR 5000 - HKR 7500	19
Picture 11: Operating principle of oil non-return valve	20
Picture 12: Operating principle of air-oil separating element	21
Picture 13: Operating principle of minimum pressure valve	22
Picture 14: Operating principle of oil filter	24
Picture 15: Operating principle of oil thermostat	25
Picture 16: Open center hydraulic system with Load Sensing variable displacement pump	27
Picture 17: Connection figure for open center hydraulic system with Load	28
Picture 18: Closed center hydraulic system with Load Sensing variable displacement pump	29
Picture 19: Connection figure for closed center hydraulic system with Load Sensing variable displacement pump	30
Picture 20: Hydraulic system with fixed displacement pump	31
Picture 21: Connection figure for hydraulic system with fixed displacement pump	32
Picture 22: Load sensing valve LSV	33
Picture 23: Priority valve PV-SAE	33
Picture 24: Placing the HKR compressor	34
Picture 25: Installing hydraulic hoses	35
Picture 26: P-line operational hydraulic flow	36
Picture 27: Base machine's hydraulic pumps	36
Picture 28: Return line connection	36
Picture 29: Maximum inclination angle of HKR compressor	38
Picture 30: Air supply system connection	39
Picture 31: Air supply line hose diameter and length	39
Picture 32: Installation and positioning of cyclone filter	40
Picture 33: Oil level of the HKR compressor	41
Picture 34: Starting the compressor	43
Picture 35: Compressed air must not be used as breathing air	44

Picture 36: Normal operating ambient temperature	45
Picture 37: Operating in extreme ambient temperatures	45
Picture 38: Operating air humidity	46
Picture 39: Oil return sight glass	47
Picture 40: Stopping the compressor	48
Picture 41: Depressurizing the compressor	49
Picture 42: Temperatures and oil types	53
Picture 43: Location of the oil fill cap Blue Air models	55
Picture 44: Oil level limits	56
Picture 45: Oil level HKR 11000	58
Picture 46: Oil level limits	60
Picture 47: HKR 11000 Oil Drain plugs	64
Picture 48: Detaching the filter cover	75
Picture 49: Pulling out the safety element and the filter element	75



PARTNER OF YOUR MACHINE

Menotie 3
FI-33470 Ylöjärvi, Finland
tel: +358 3 3488 200
info@DYNASET.com



ELECTRICITY

HG Hydraulic Generator
HGV POWER BOX Variable Hydraulic
Generator System
HGV Variable Hydraulic Generator System
HWG Hydraulic Welding Generator
HGG Hydraulic Ground Power Generator



HIGH PRESSURE WATER

HPW Hydraulic High Pressure Water Pump
HPW Hydraulic Power Washer
KPL High Pressure Street Washing Unit
KPL-WEED Weed Killing Unit
SCU Surface Cleaning Unit
HPW-DUST High Pressure Dust Suppression
System
PPL High Pressure Pipe Cleaning Unit
HPW-FIRE High Pressure Firefighting System
FP Fire Fighting Piercing Kit
HDF Hydraulic Drilling Fluid Pump
JPL High Pressure Bin Washing System
HSP Hydraulic Submersible Pump



COMPRESSED AIR

HK Hydraulic Piston Compressor
HKL Hydraulic Rotary Vane Compressor
HKR Hydraulic Screw Compressor



MAGNET POWER

HMG PRO Hydraulic Magnet Generator
MAG Lift Magnet
HMAG PRO Hydraulic Magnet



VIBRATION

HVB Hydraulic Vibration Pump
HVD Hydraulic Directional Vibra
HRC Hydraulic Reversal Cylinder



POWER BOOSTING

HPI Hydraulic Pressure Intensifier
HPI-C Hydraulic Pressure Intensifier for
Cylinder



VACUUM

HCF Hydraulic Centrifugal Fan
HRVB Hydraulic Recycling Vacuum Bucket



KNOW-HOW

Hydraulic Power Take-off (PTO)
Hydraulic Power Unit Technology
HEU Hydraulic Expansion Unit
HRU Hydraulic Rescue Units
De-Icing Technology
Installation Valves
HHK Hydraulic Grinder
HV/HVY Hydraulic Winch / Winch Unit

www.DYNASET.com



/dynaset



/dynasetoy



/Dynaset_ofcl



/dynaset_official