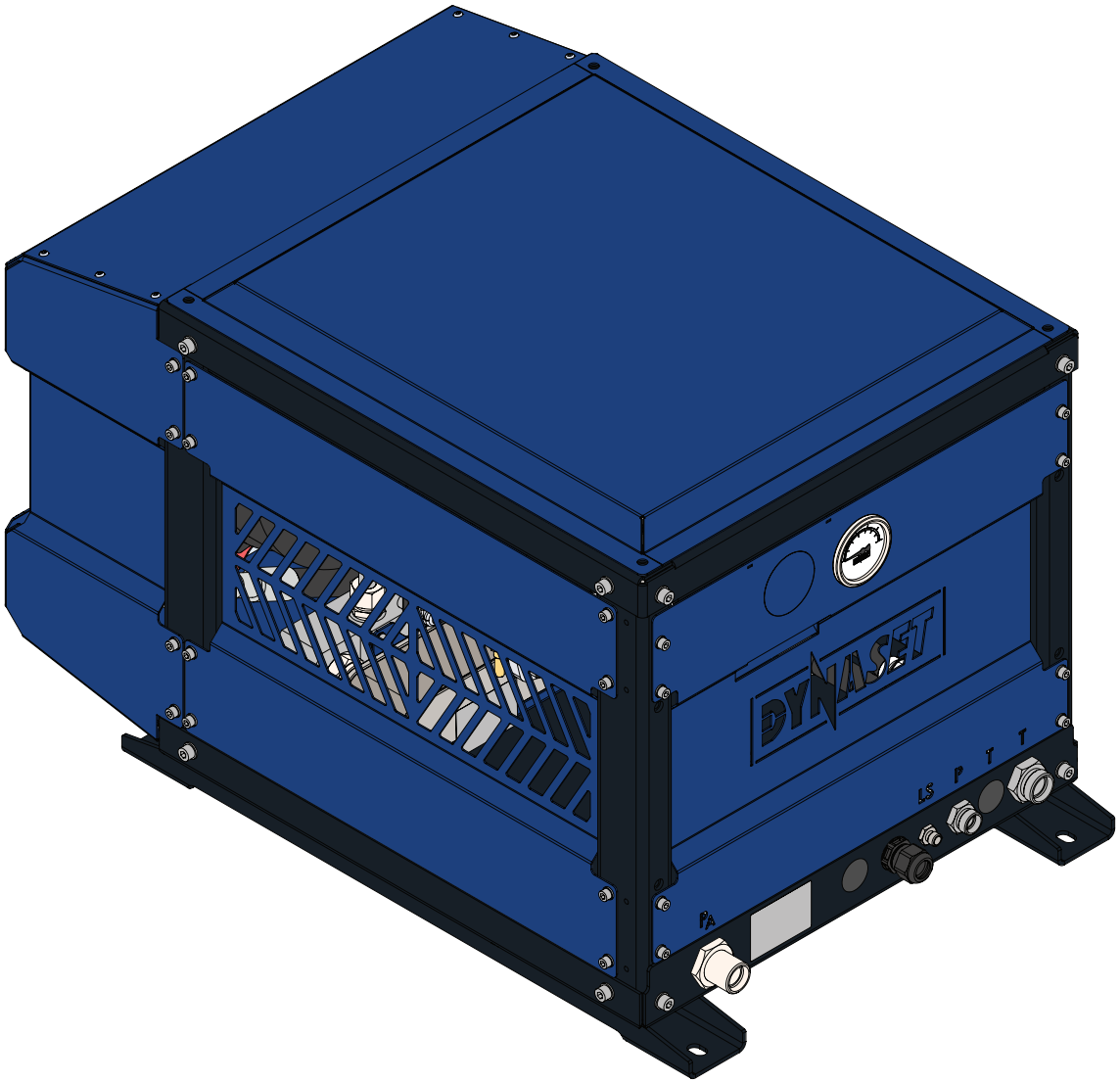
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JMA

DYNASET

PARTNER OF YOUR MACHINE



USER MANUAL

HKR HYDRAULIC ABOVE DECK COMPRESSOR UNIT

HKR-AD-800
HKR-AD-2500

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1. GENERAL

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



WARNING

Read this user manual before the installation, use or maintenance of the 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

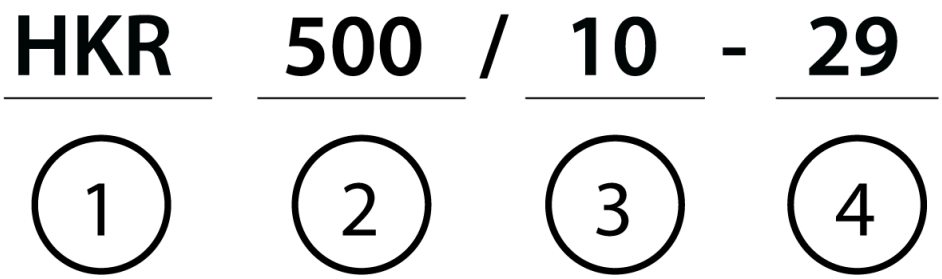
HKRU (HKR Hydraulic Above Deck Compressor) are compact and integrated all-in-one units, especially designed for mobile installation. The only power source needed is a hydraulic system of a base machine which provides the compressor required hydraulic flow and pressure.

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

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

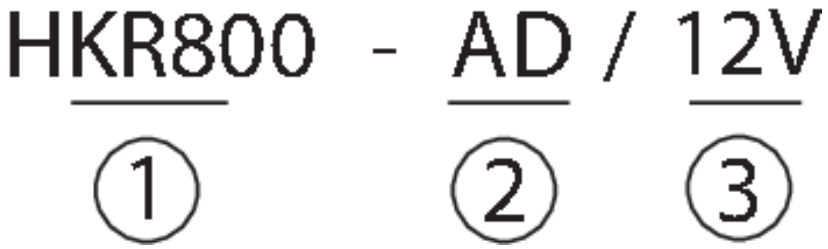
1.2 PRODUCT IDENTIFICATION KEY

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

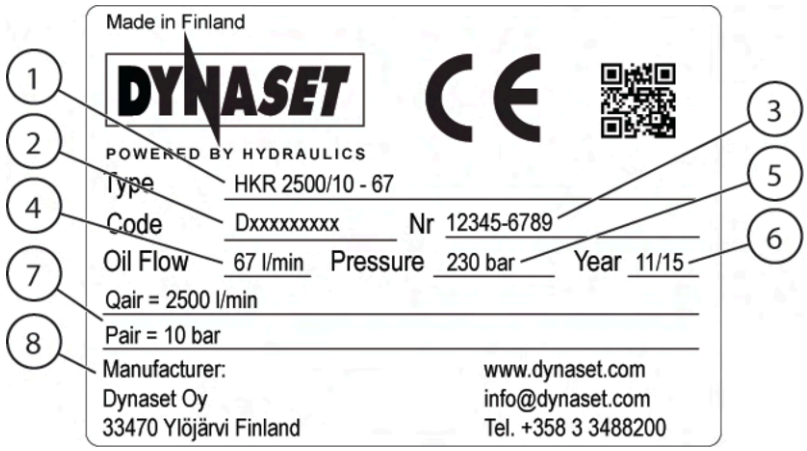
1. Product Group HKR Hydraulic Screw Compressor
2. Maximum Discharge. It is the maximum amount of air flow (l/min) that HKR hydraulic screw compressor can produce at discharge pressure of 6 bar (according to ISO1217(1996).)
3. Maximum Discharge Pressure. It is the maximum air pressure (bar) that HKR 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.



Picture 2: Identification key for HKR Above Deck Compressor

1. Compressor type
2. Above Deck Compressor Unit
3. Operating voltage

1.3 TYPE PLATE

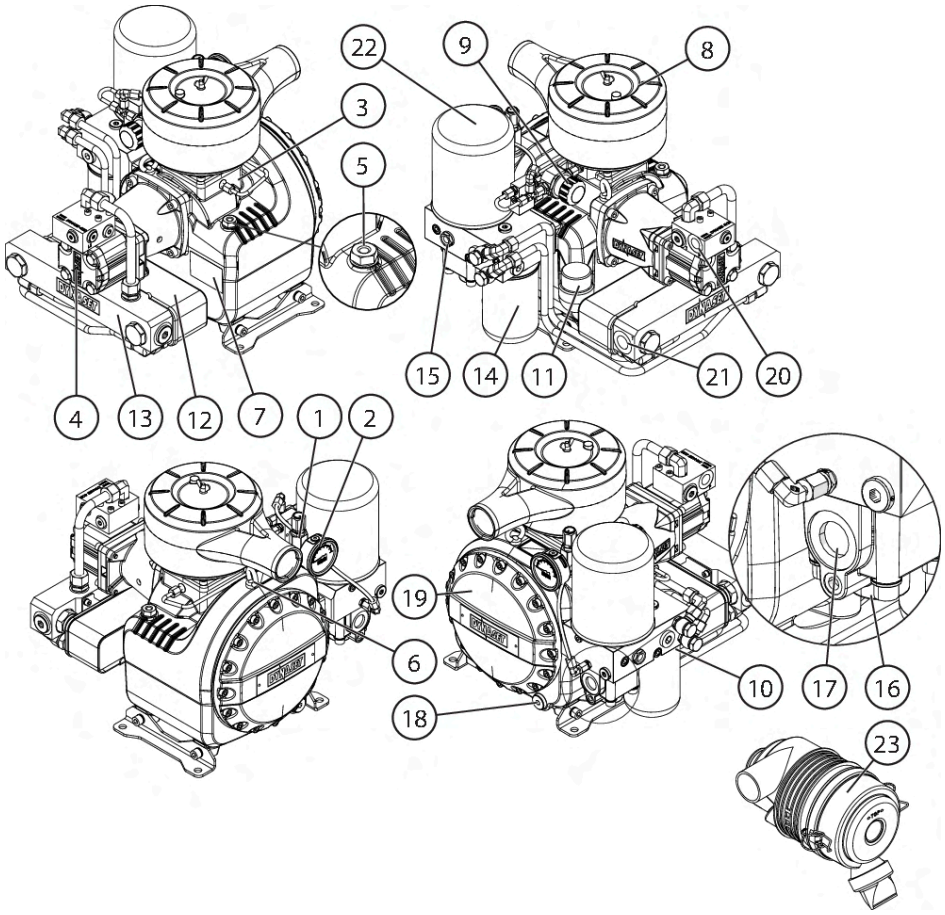


Picture 3: Type plate for HKR Compressor

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

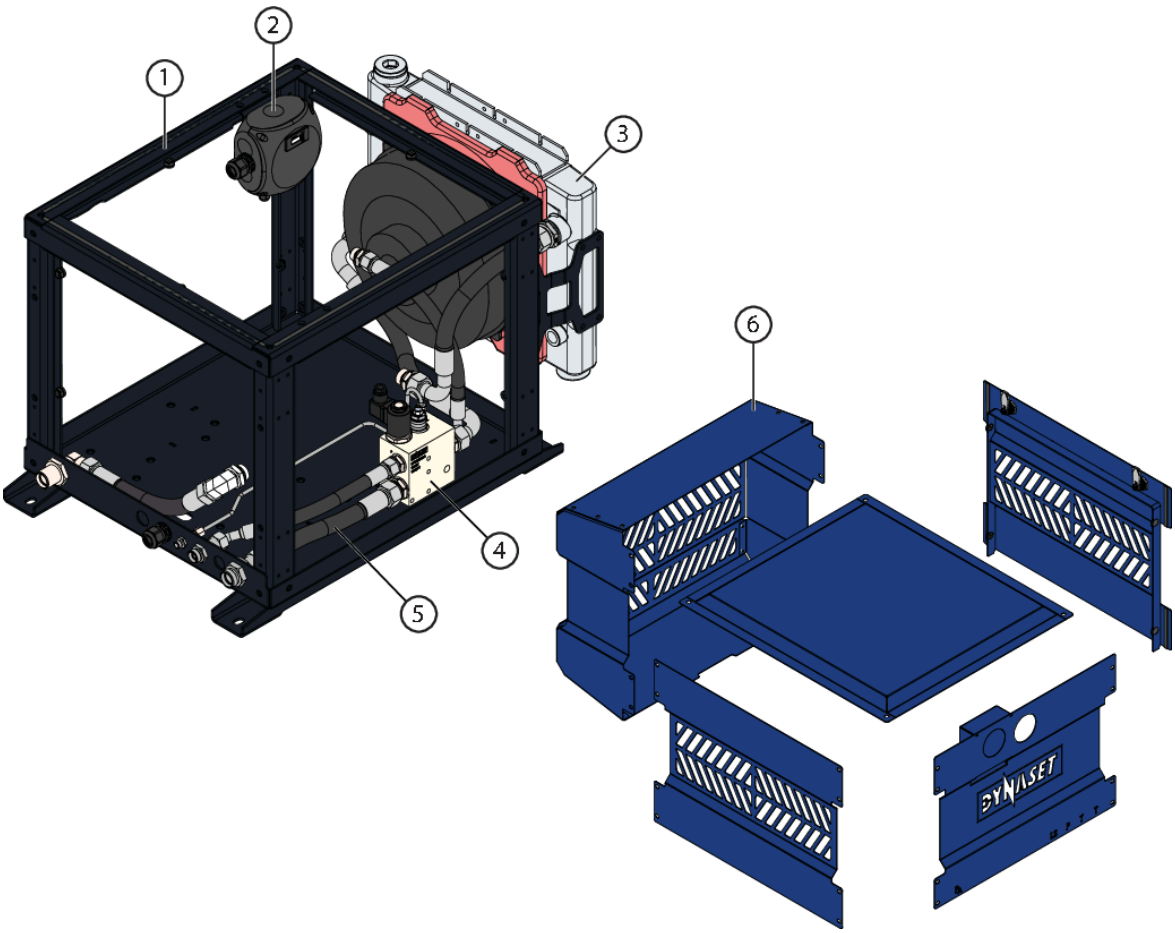
1.4 MAIN COMPONENTS OF HKR COMPRESSOR



Picture 4: Main components of HKR Compressor

1. HKR Compressor
2. Base frame
3. Electrical connection box
4. Hour meter
5. Hydraulic control valve block
6. Oil cooler
7. Maintenance hatch
8. Cover plate
9. Air pressure gauge
10. Cover plate
11. Cover plate
12. Cooler cover plate

1.4.1 FRAME COMPONENTS OF HKR ABOVE DECK COMPRESSOR



Picture 5: Frame components of HKR-AD

1. Frame
2. Electrical connection box
3. Cooler kit
4. Valve kit
5. Hydraulic hose kit
6. Cover kit

2. SAFETY

2.1 SAFETY PRECAUTIONS

⚠ WARNING

Operator and maintenance personnel must act in compliance with the laws, regulations and recommendations issued by the local electricity and work safety authoritiesin in order to close out the possibility of damages and accidents.

⚠ WARNING

All installations and maintenance must be done according to this manual. All electrical installations and maintenance that is not shown in this manual should only be done by a qualified electrician.

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



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.

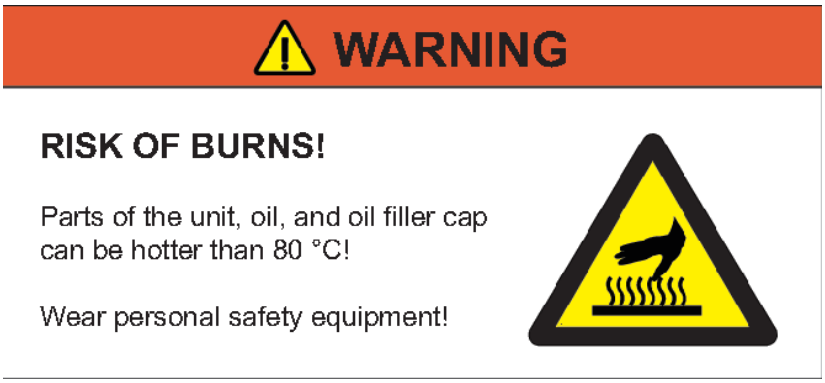
2.2 SAFETY EQUIPMENT

Always wear appropriate clothing and safety equipment such as safety goggles, safety shoes and ear protection when operating the HKR Hydraulic Above Deck Compressor Unit.



2.3 OPERATING SAFETY

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



Never aim compressed air at a person.



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.

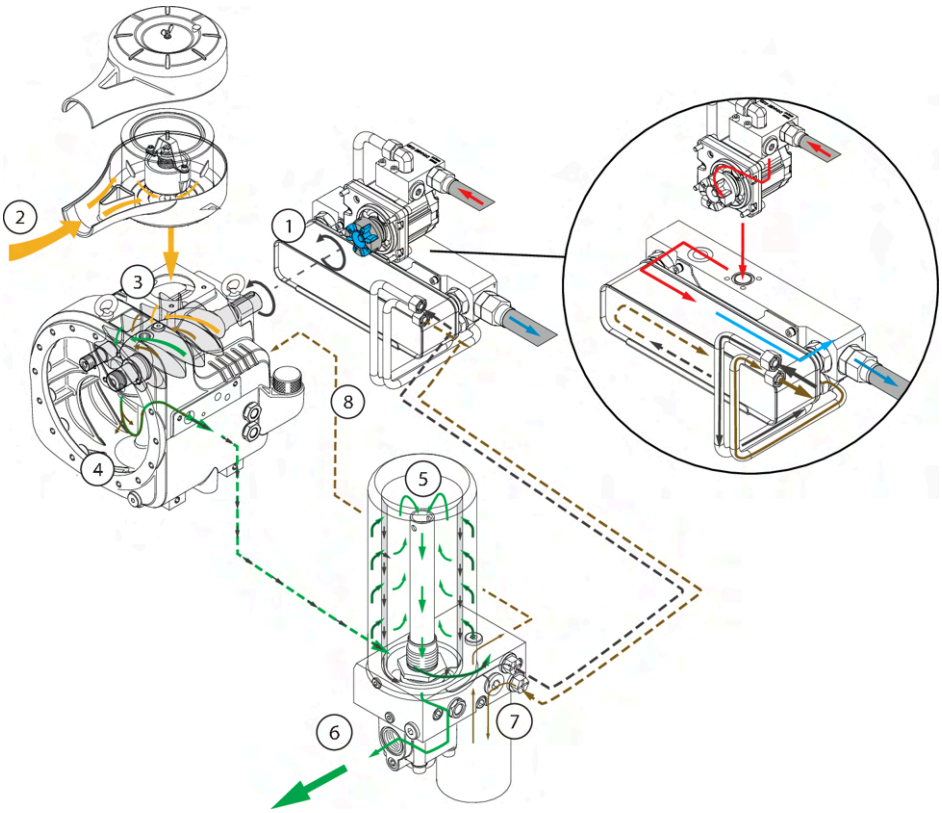

HIGH PRESSURE OIL


GENERAL CAUTION. BEWARE OF HIGH PRESSURE AIR.


BEWARE OF HOT SURFACE.

3. OPERATING PRINCIPLES

3.1 OPERATING DESCRIPTION



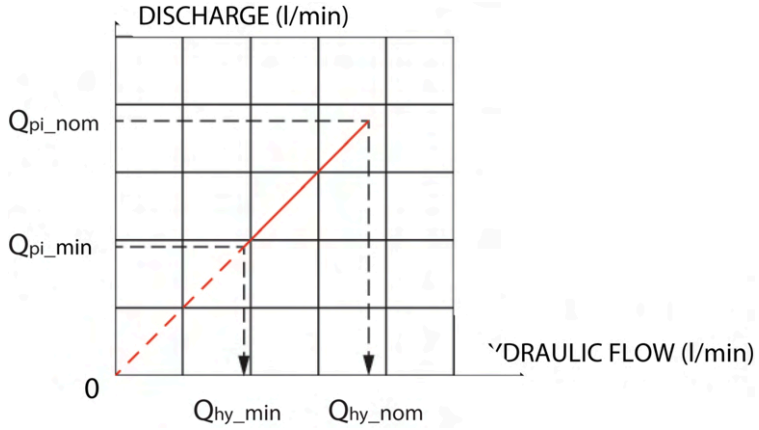
Picture 6: Operating description

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 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 7: 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.

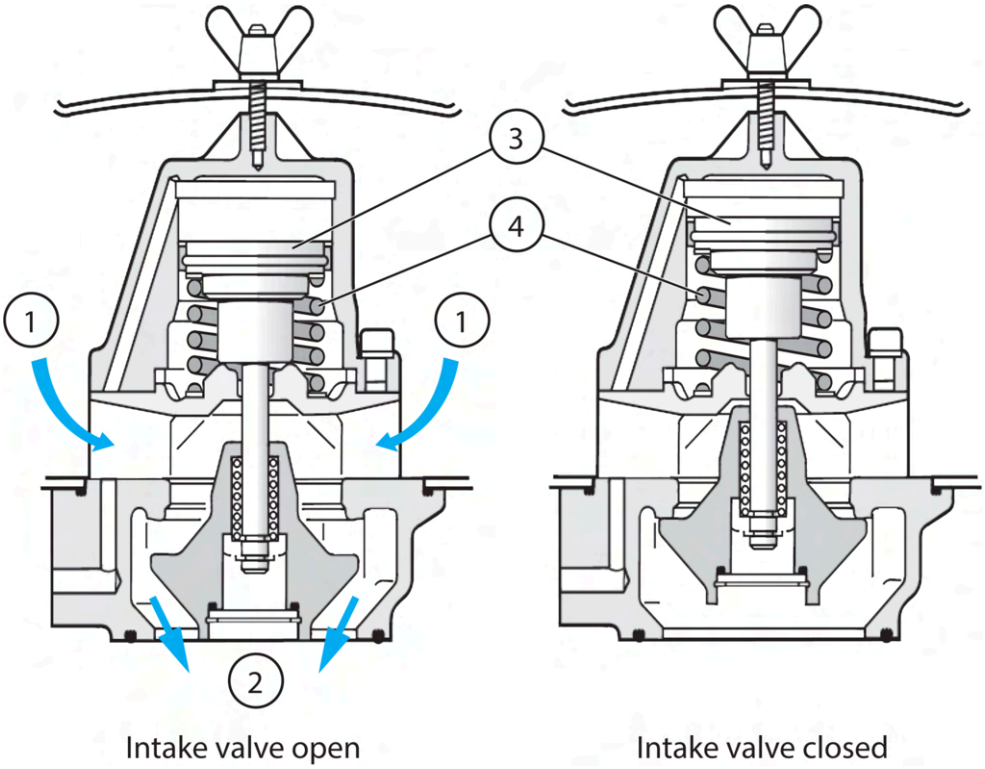
When the operational pressure of HKR-compressor is 10 bar, compression ratio is equal to:

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

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

3.4 INTAKE VALVE

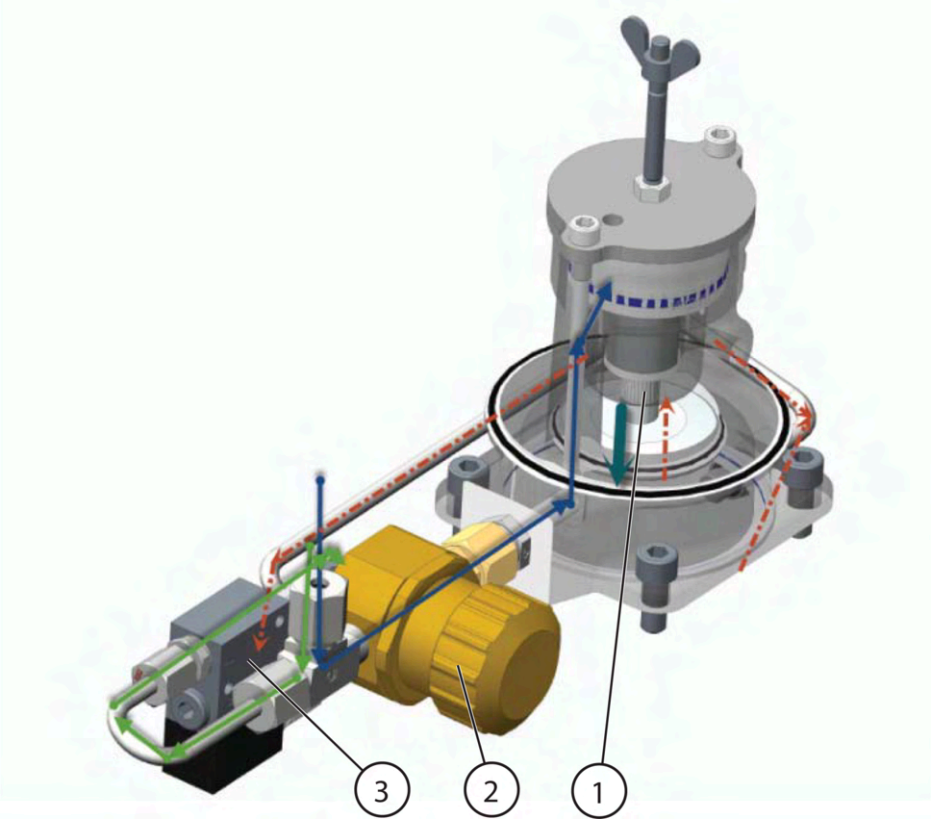
Dynaset HKR is equipped with an integrated intake valve that is mounted directly on the compressor housing. It is triggered via air pressure control valve.



Picture 8: Operating principles of intake valve

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

3.4.1 FUNCTIONAL PRINCIPLE OF PNEUMATIC INTAKE CONTROL



Picture 9: Functional principle of pneumatic intake control

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

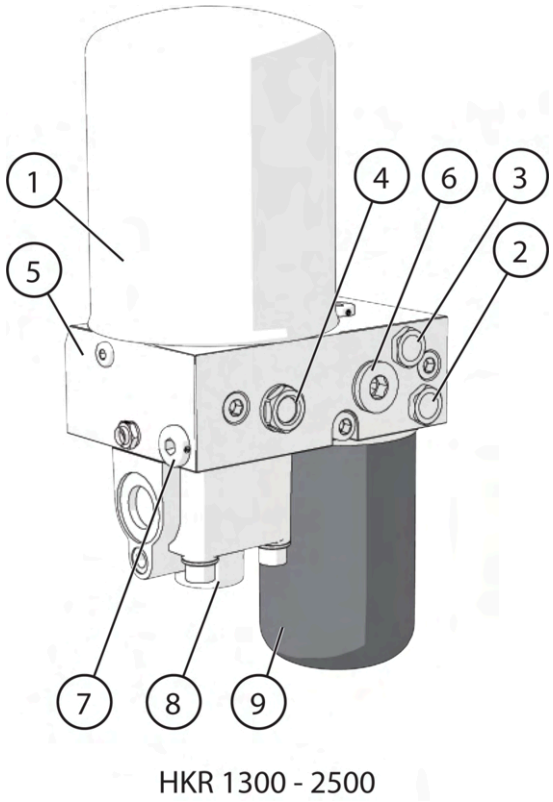
The intake valve is normally open. When the preset pressure at the air pressure control valve is reached, the pilot air (blue in the picture) closes the intake valve. When the intake valve is closed, compressor is in standby mode.

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.

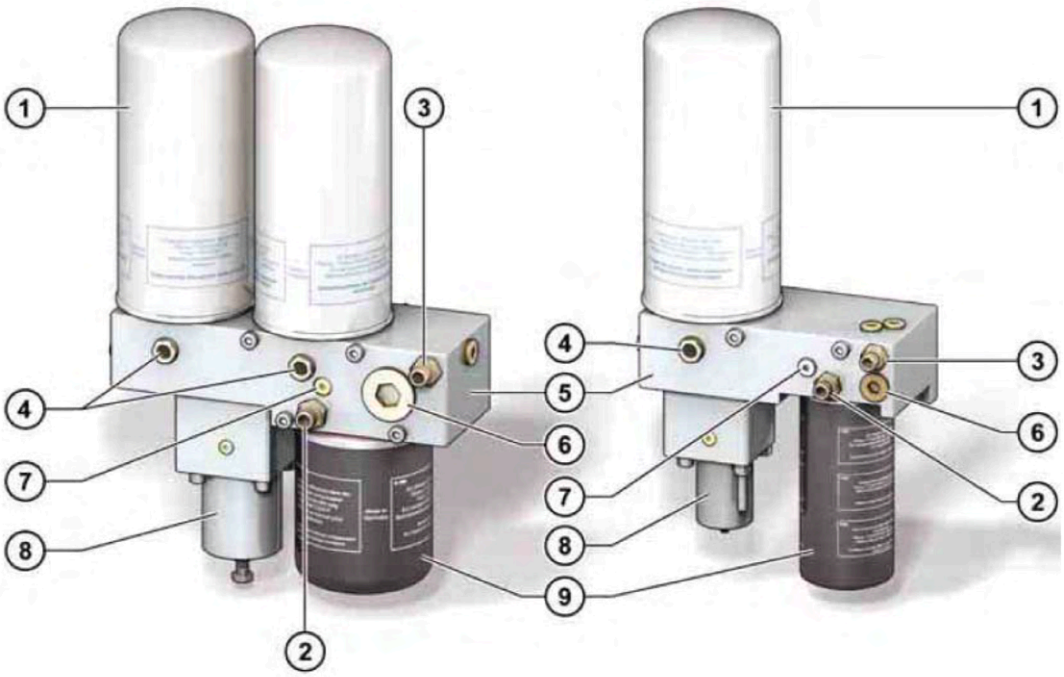
3.5 MULTIBLOCK

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.



Picture 10: Multiblock of HKR 1300 - HKR 2500

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



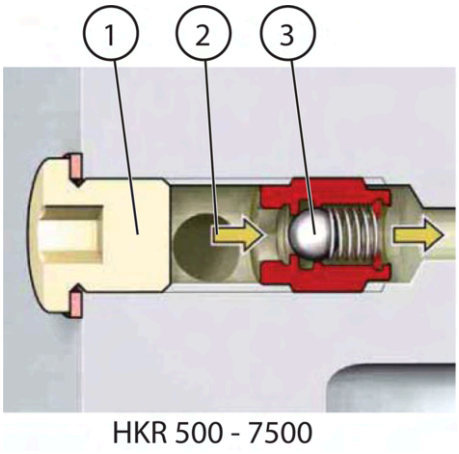
HKR 5000 - 7500 HKR 4000

Picture 11: Multiblock of HKR 4000 and HKR 5000 - HKR 7500

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

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.



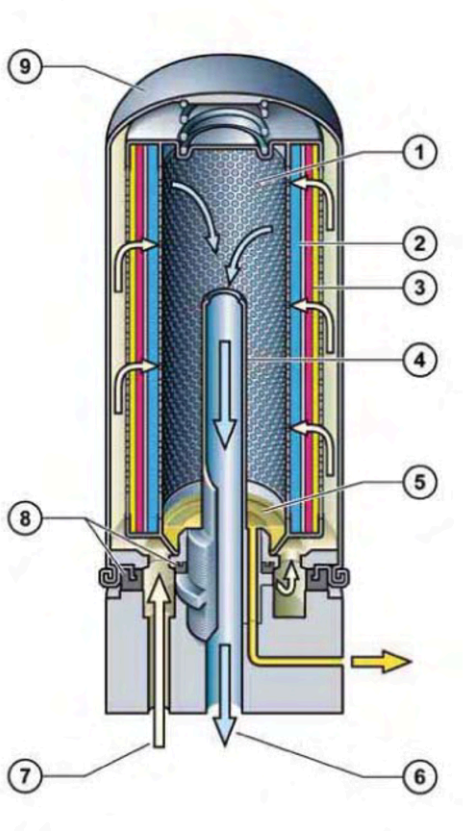
Picture 12: Operating principle of oil non-return valve

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

3.7 AIR-OIL SEPARATING ELEMENT

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

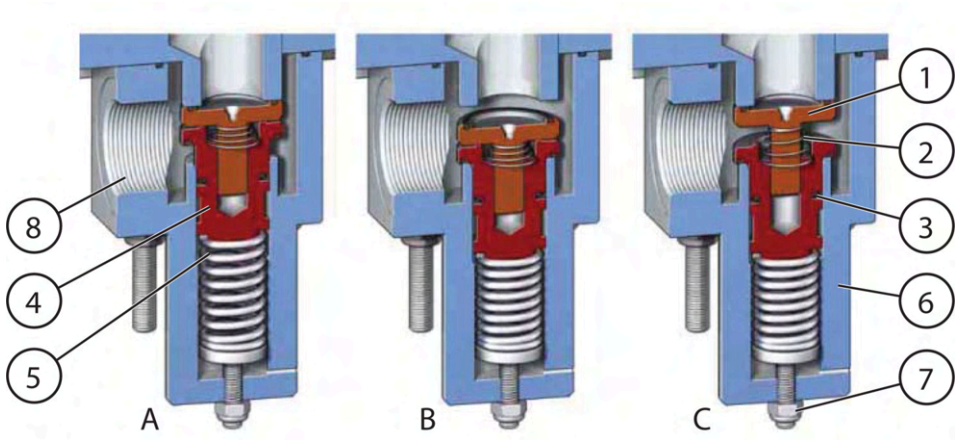
The air to the vertical cartridge comes from below. The residual oil is separated from the air while flowing through the filter element. Filtered oil flows back to the oil circulation.



Picture 13: Operating principle of air-oil separating element

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

3.8 MINIMUM PRESSURE VALVE



Picture 14: 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 / counternut (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.

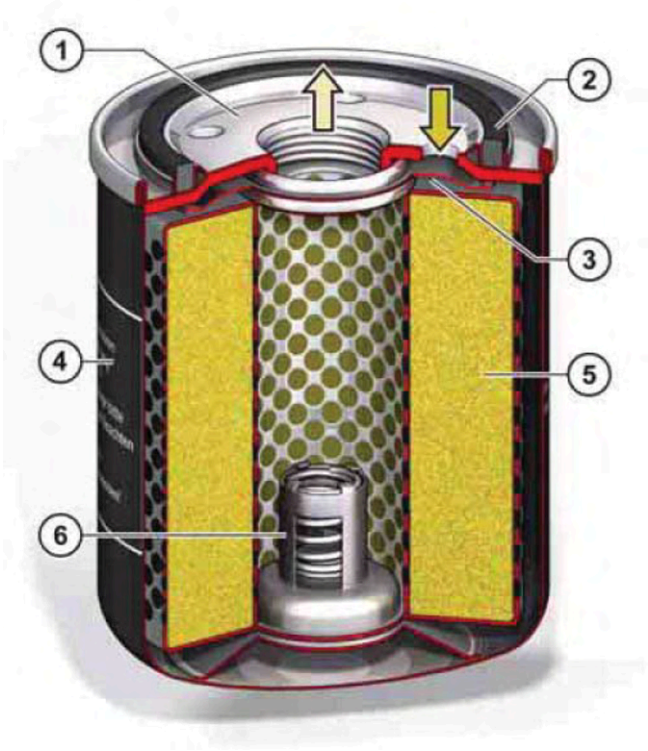
⚠ WARNING

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.



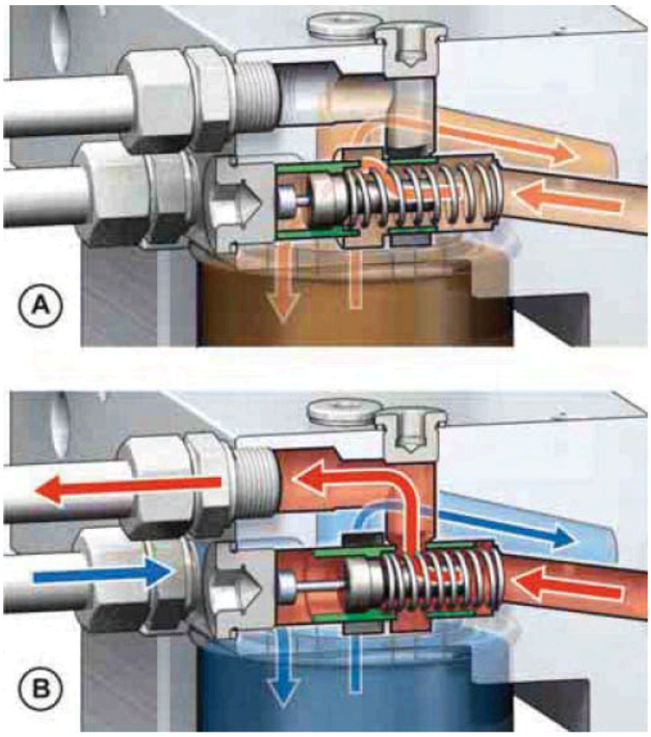
Picture 15: Operating principle of oil filter

1. Cover
2. Seal
3. Return line shut-off valve
4. Filter housing
5. Filter element
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 16: 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!

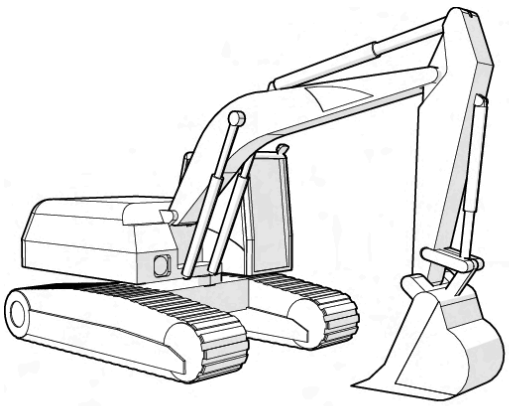
4.1.1 HYDRAULIC SYSTEM OF A BASE MACHINE

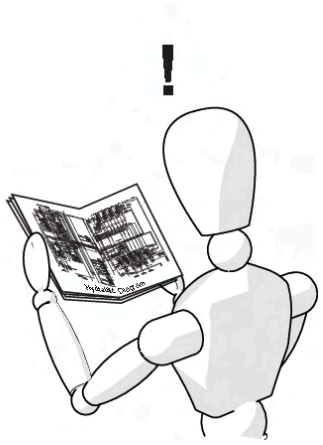
Base machines have different type of hydraulic systems. Most common hydraulic systems in mobile machinery are:

- 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.

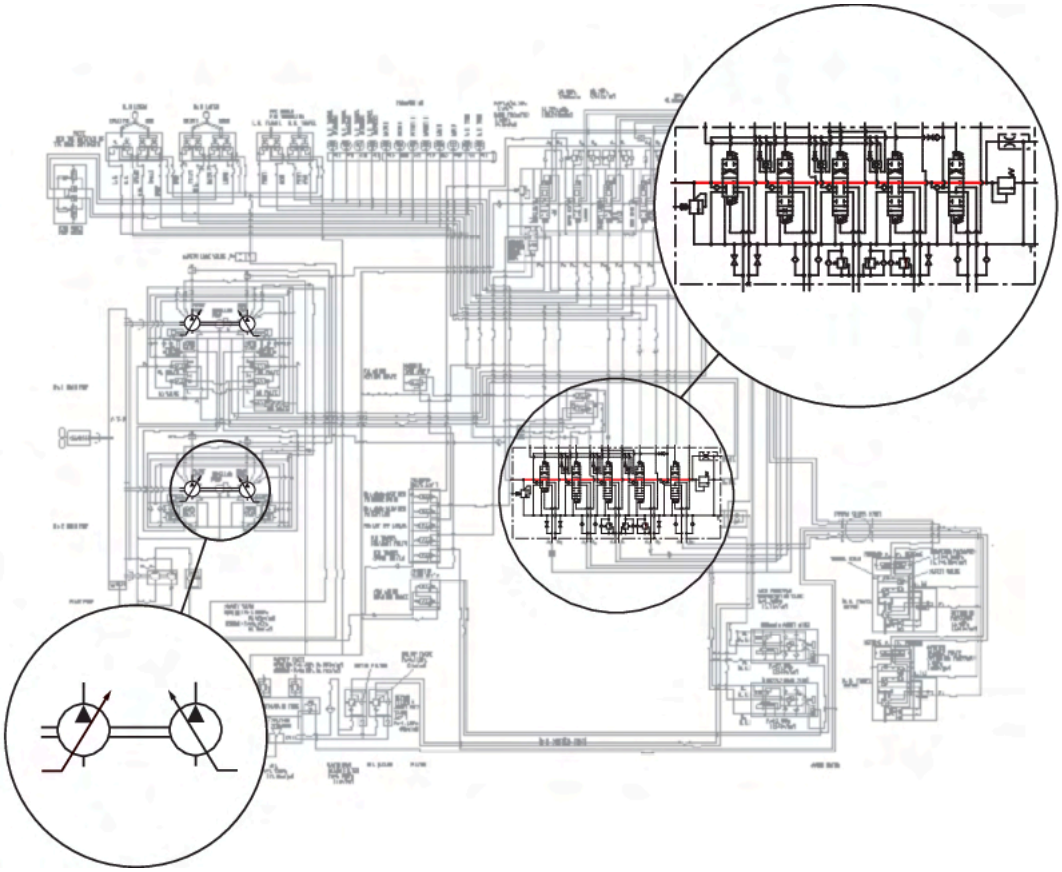




If you are unsure of the hydraulic system, please contact the base machine manufacturer.

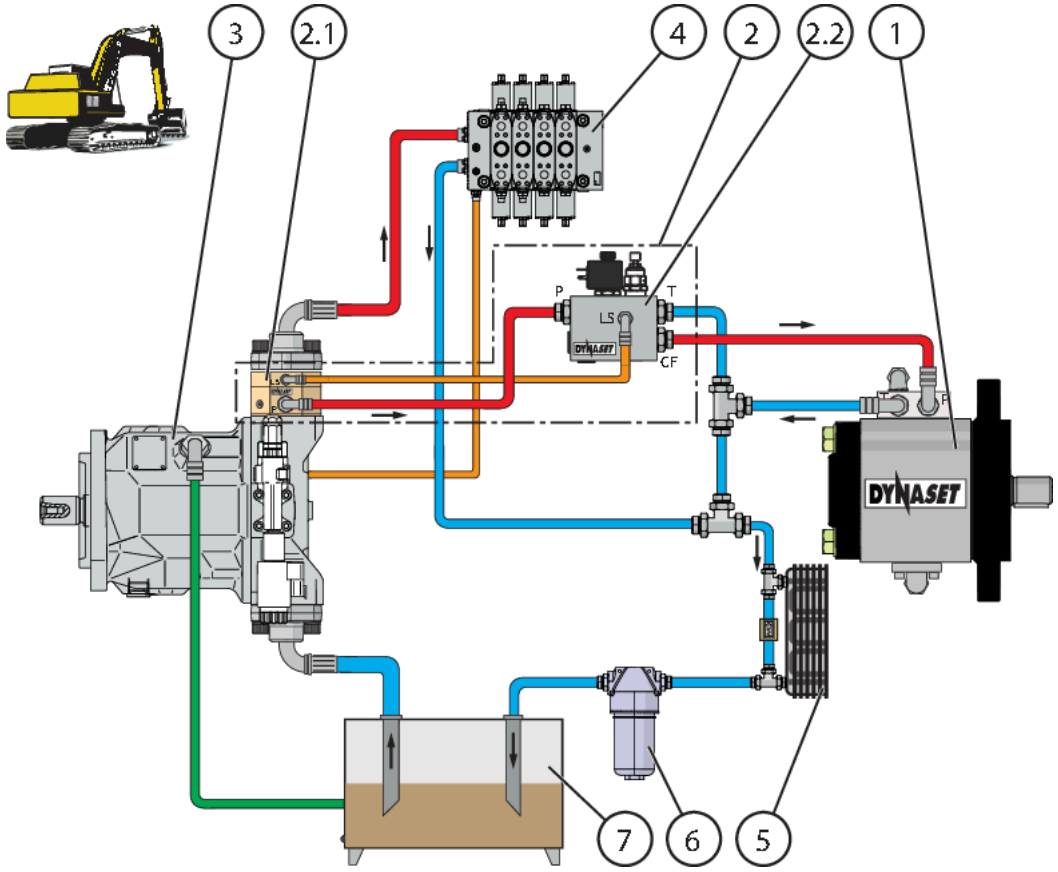
Next three paragraphs describe the hydraulic systems in more detail.

4.1.1.1 Open center hydraulic system with Load Sensing variable displacement pump



Picture 17: 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.

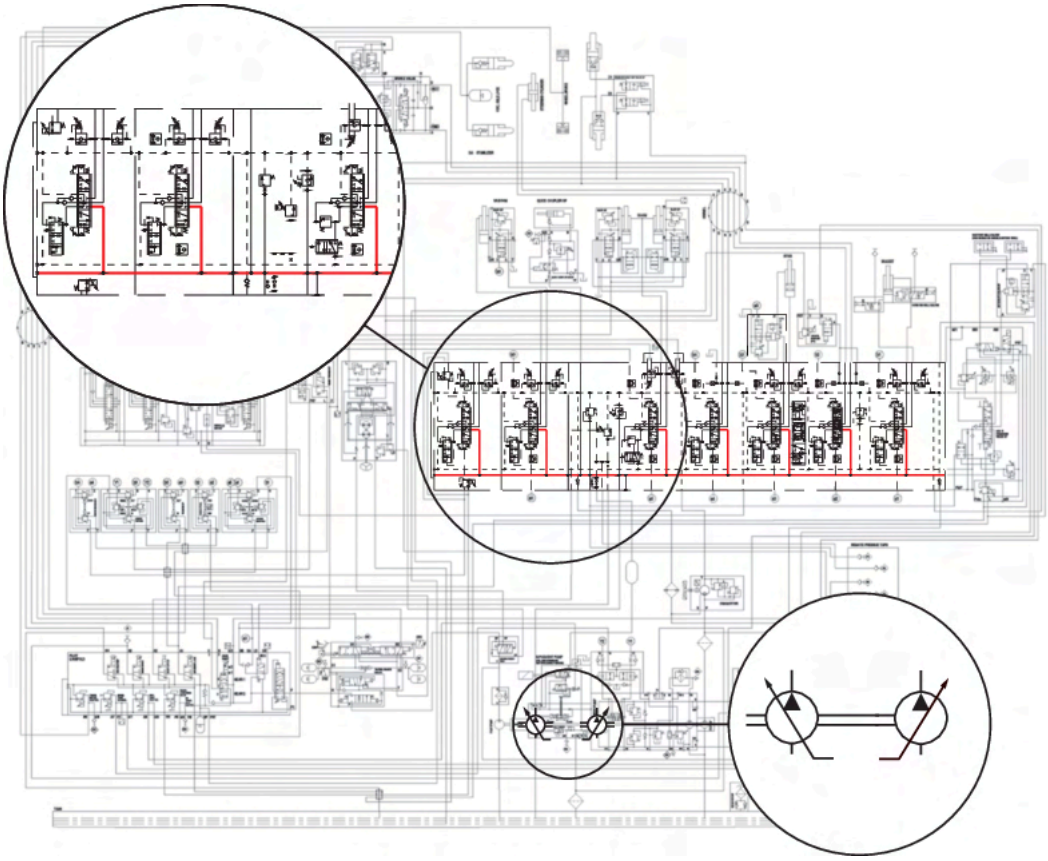


Picture 18: Connection figure for open center hydraulic system with Load

Sensing variable displacement pump

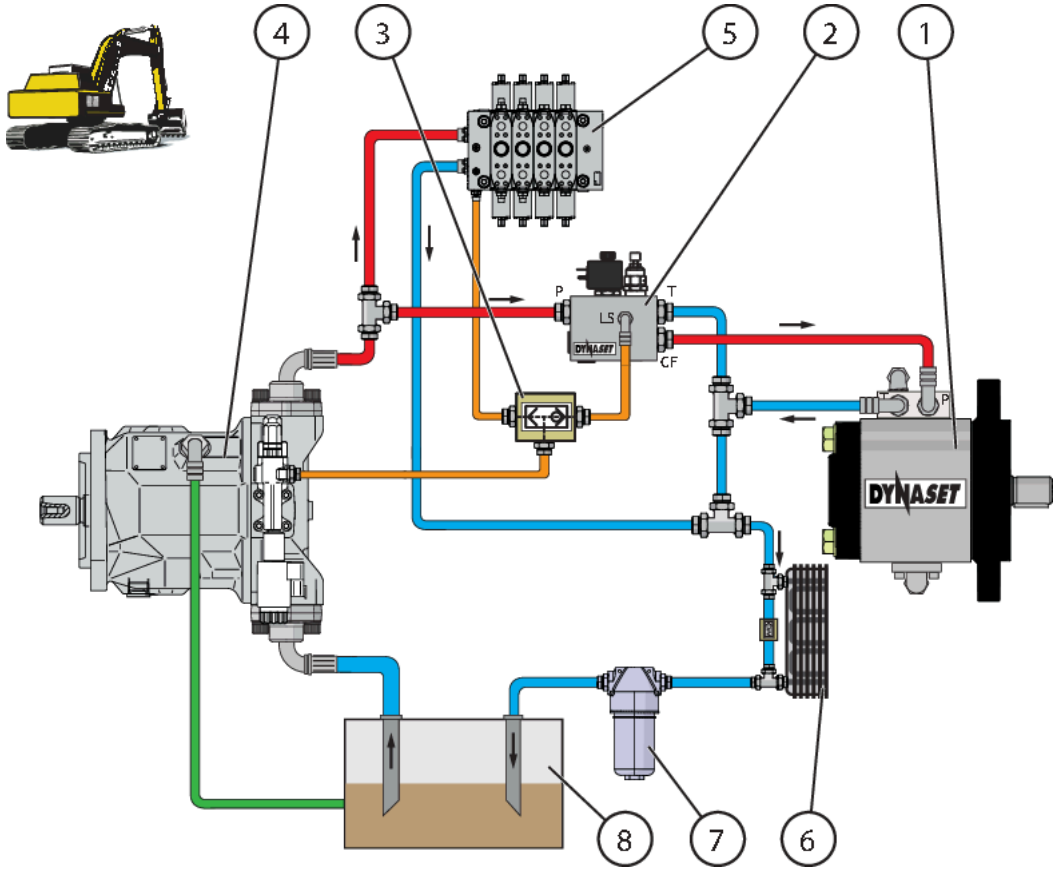
1. DYNASET hydraulic equipment
2. DYNASET Priority valve PV-SAE
   a. DYNASET PC-SAE pressure compensator
   b. DYNASET LSV Load sensing valve
3. Base machines variable displacement pump
4. Open center directional control valves
5. Oil cooler
6. Oil filter
7. Oil tank

4.1.1.2 Closed center hydraulic system with Load Sensing variable displacement pump



Picture 19: Closed center hydraulic system with Load Sensing variable displacement pump

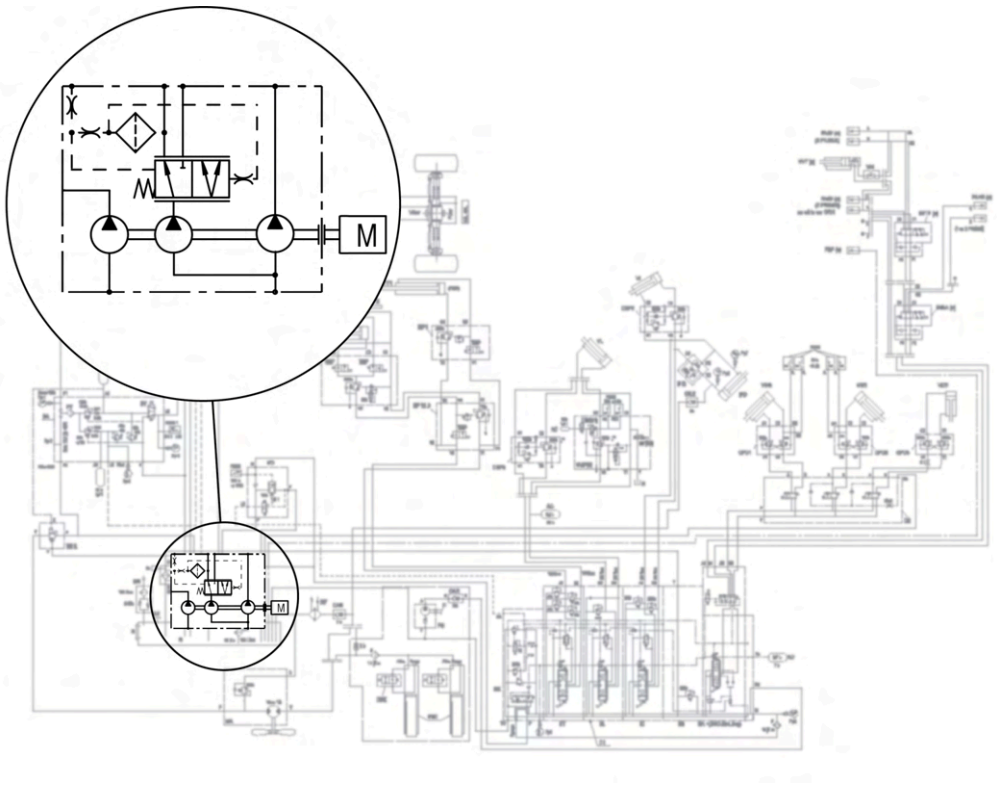
In a closed center hydraulic system the oil flow is stopped from the pump when control valve is centered. The pump can rest when the oil is not required to operate a function. In Load Sensing variable-displacement pump, the flow rate and output pressure adjusts automatically based on the load of the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



Picture 20: Connection figure for closed center hydraulic system with Load Sensing variable displacement pump

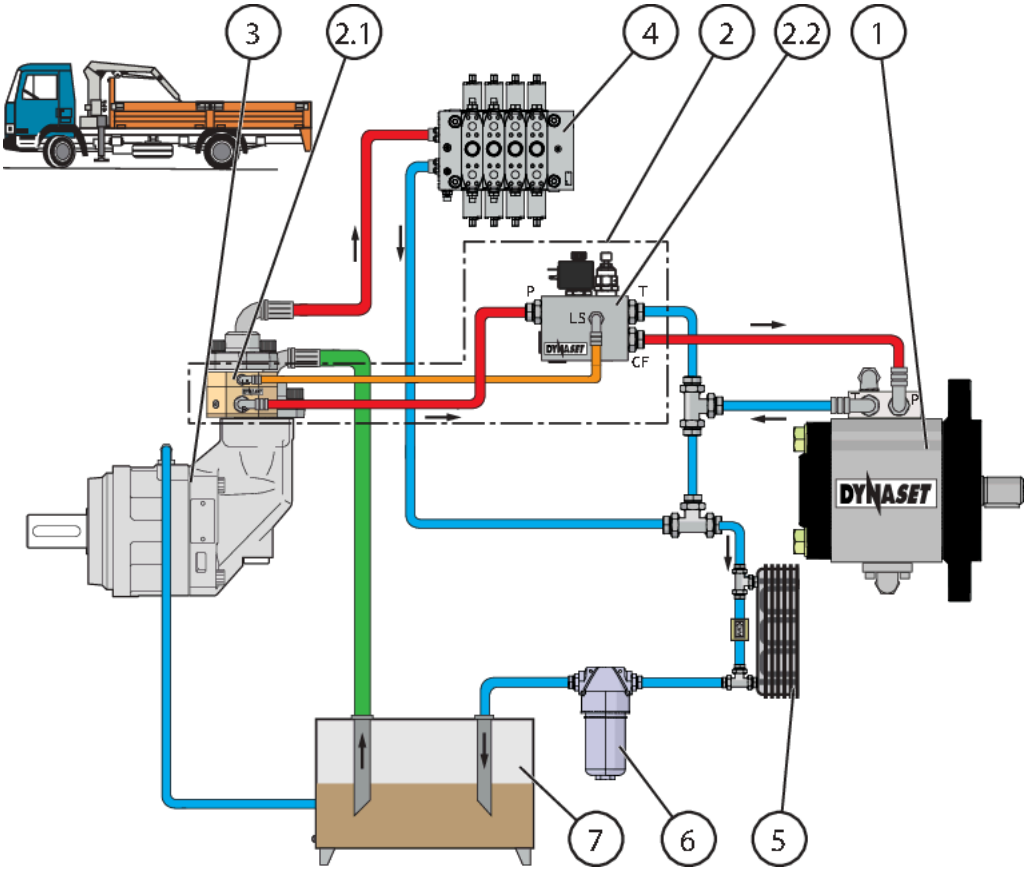
1. DYNASET hydraulic equipment
2. DYNASET LSV Load sensing valve
3. DYNASET Shuttle valve
4. Base machines variable displacement pump
5. Closed center directional control valves
6. Oil cooler
7. Oil filter
8. Oil tank

4.1.1.3 Hydraulic system with fixed displacement pump



Picture 21: 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.



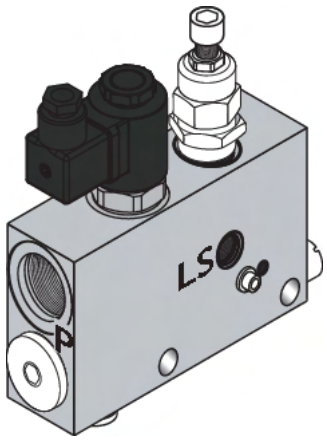
Picture 22: Connection figure for hydraulic system with fixed displacement pump

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

4.1.2 DYNASET VALVES

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

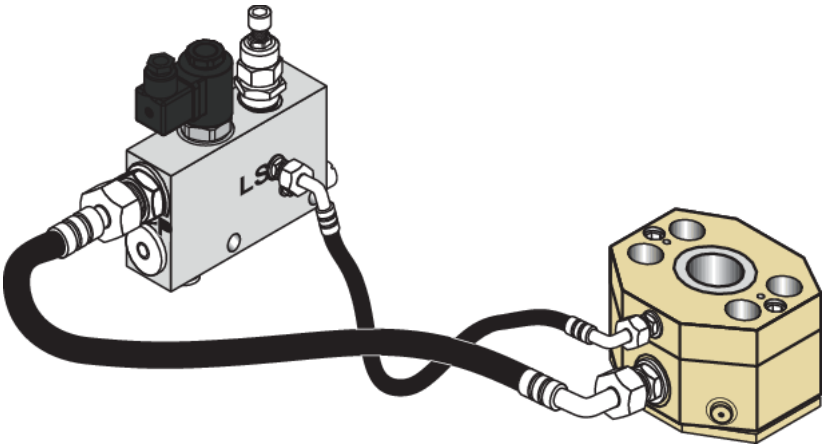
DYNASET LOAD SENSING VALVE



Picture 23: Load sensing valve LSV

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

DYNASET PRIORITY VALVE



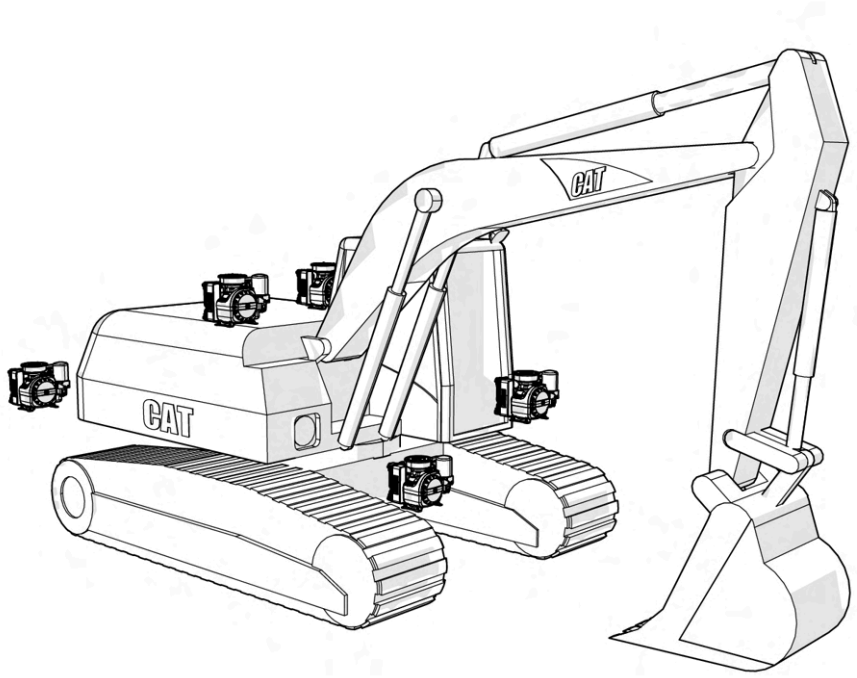
Picture 24: Priority valve PV-SAE

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

4.2 INSTALLING HKR-AD

4.2.1 PLACING HKR-AD

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



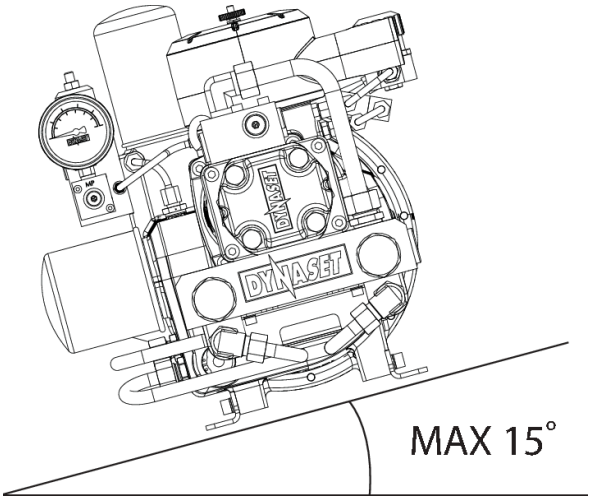
Picture 25: Placing the HKR-AD compressor

NOTE!

When positioning the HKR-AD 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 MAXIMUM INCLINATIONS

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



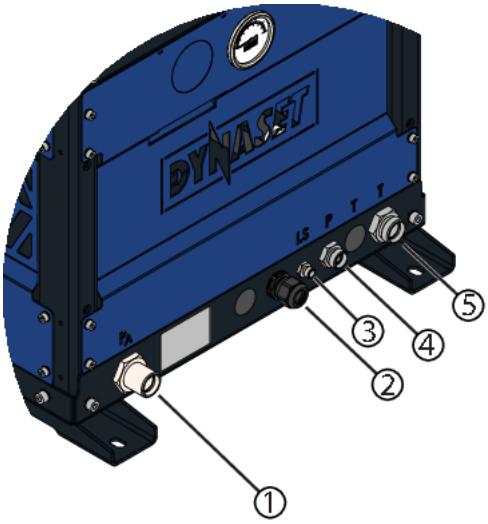
Picture 26: Maximum inclination angle of HKR compressor

4.2.3 INSTALLING DYNASET VALVES

Installation instructions for Dynaset installation valves cän be found from DYNASET installation valves installation manual.

4.2.4 HYDRAULIC AND ELECTRIC CONNECTIONS

Make the connections from the base machines system to the corresponding hydraulic ports and electric connections on the HKR-AD unit.



Picture 27: Connections points

1. Pressurized air outlet, AP
2. Electric cable, E
3. Load Sensing line, LS
4. Pressure line, P
5. Return line, T

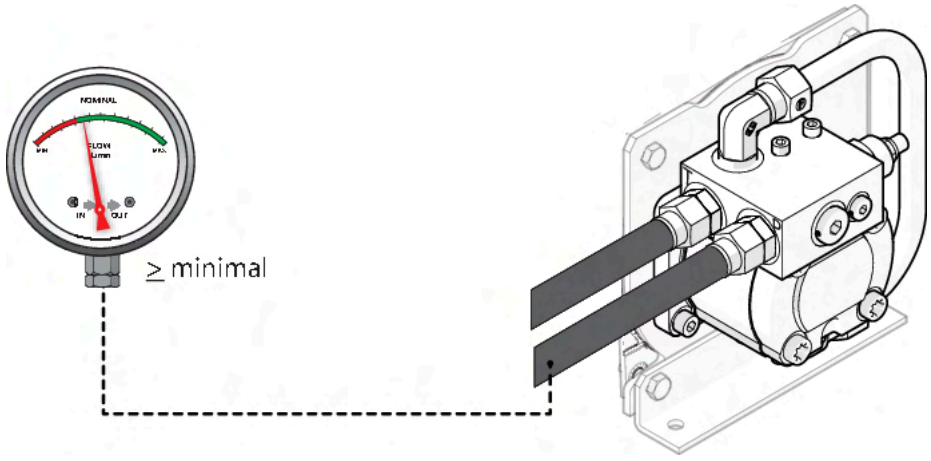
NOTE!

Electric connections should be made according to the schematic in chapter 10. Technical Specifications.

WARNING

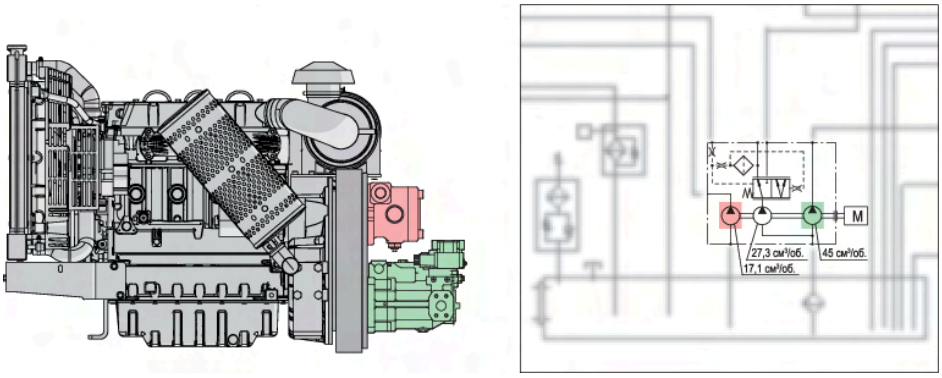
All installations and maintenance must be done according to this manual. All electrical installations and maintenance that is not shown in this manual should only be done by a qualified electrician.

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.



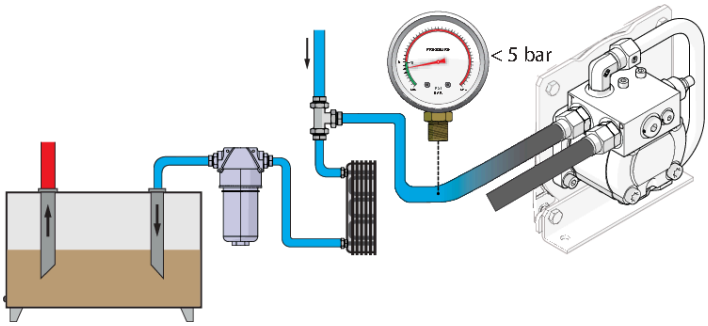
Picture 28: P-line operational hydraulic flow

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 29: 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 DYNASETs T-line is to be connected directly to the return line of a hydraulic system.



Picture 30: Return line connection

WARNING

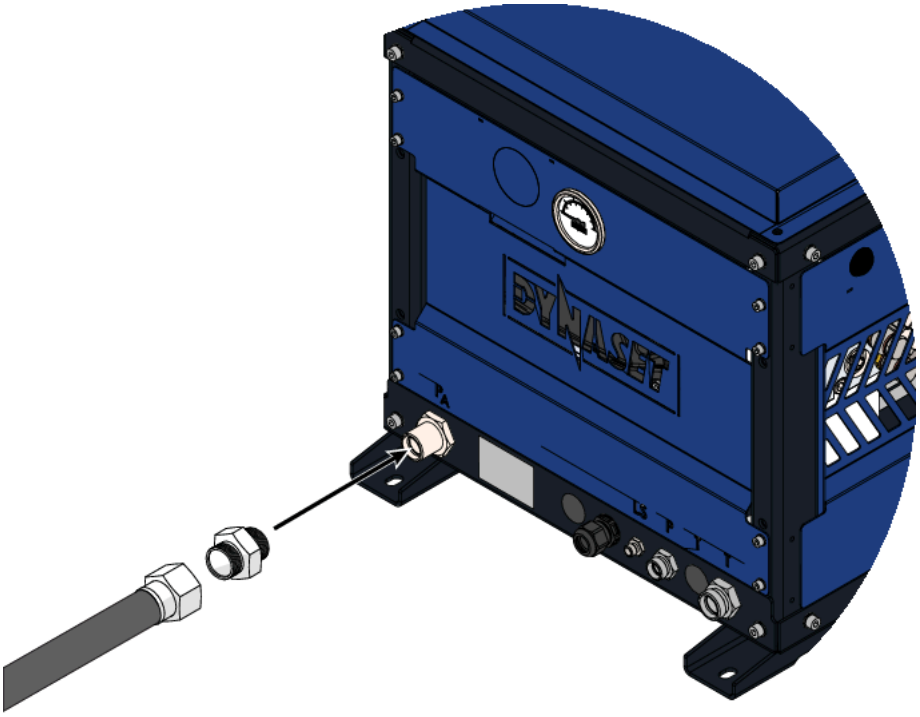
Ensure that the filtering degree and cooling capacity of the hydraulic system are sufficient. For more information READ CHAPTER 10 "Technical Specifications".

4.2.5 HYDRAULIC FLUIDS

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

4.3 CONNECTION TO THE AIR SUPPLY SYSTEM

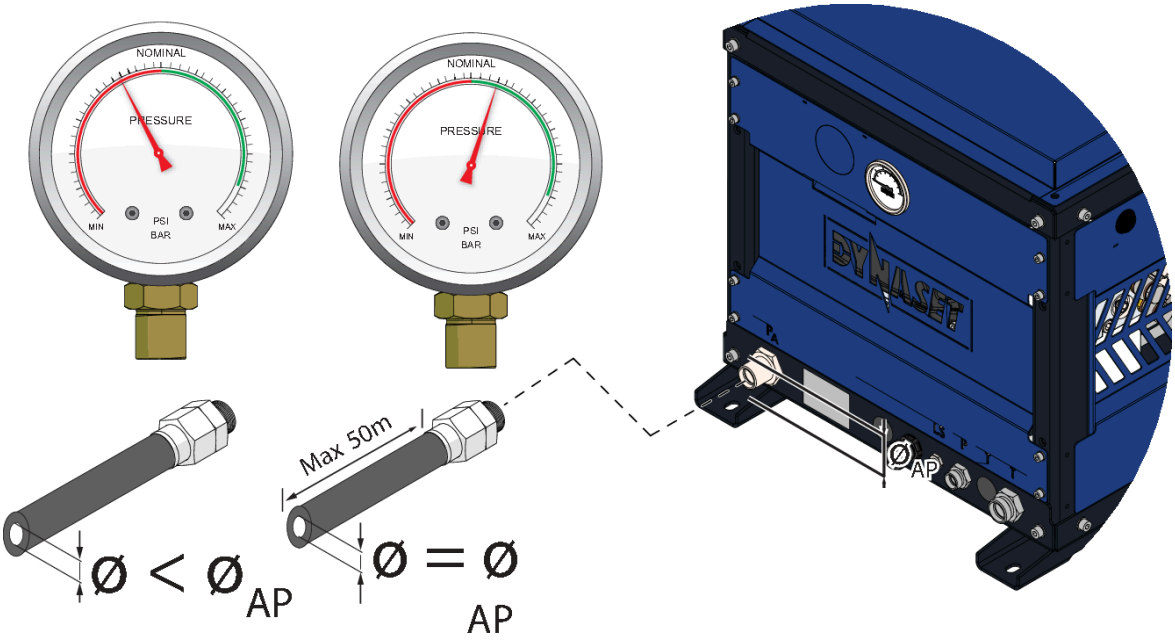
Compressor can be connected to the air supply system with a proper fitting and cut-off valve (options).



Picture 31: 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 32: Air supply line hose diameter and length

5. OPERATION

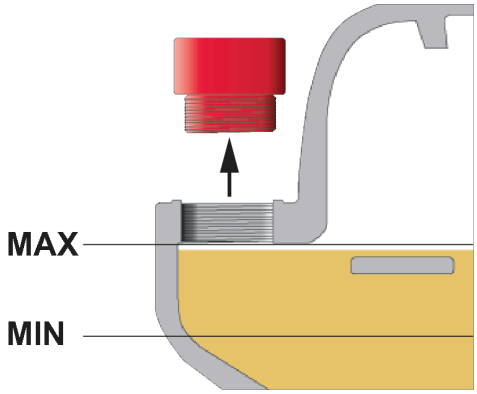
5.1 BEFORE STARTING THE COMPRESSOR

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.



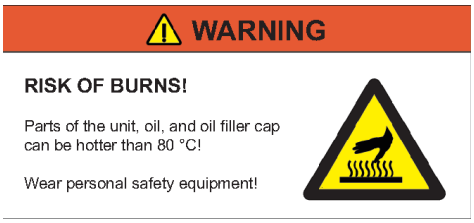
Picture 33: Oil level of the HKR compressor

NOTE!

Check the compressor oil fill periodically.

WARNING

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

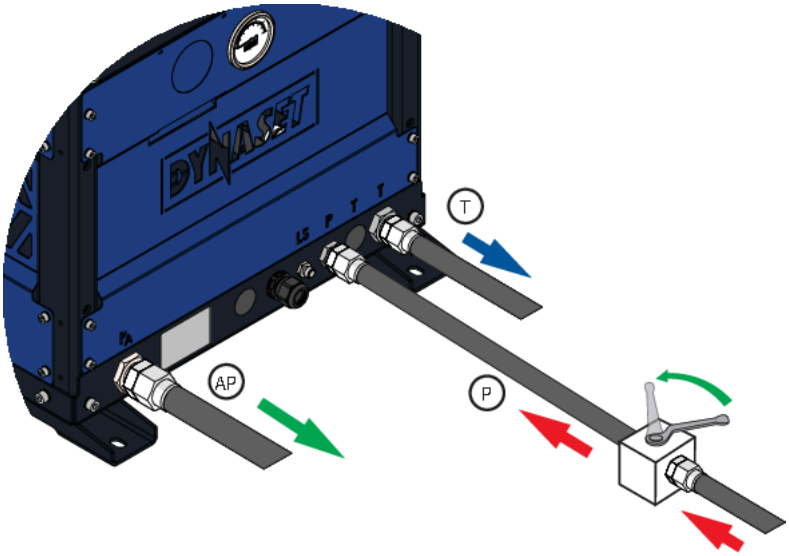


5.2 STARTING THE COMPRESSOR

WARNING

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

When hydraulic flow is available, the HKRAD 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 "Cold starts".

WARNING

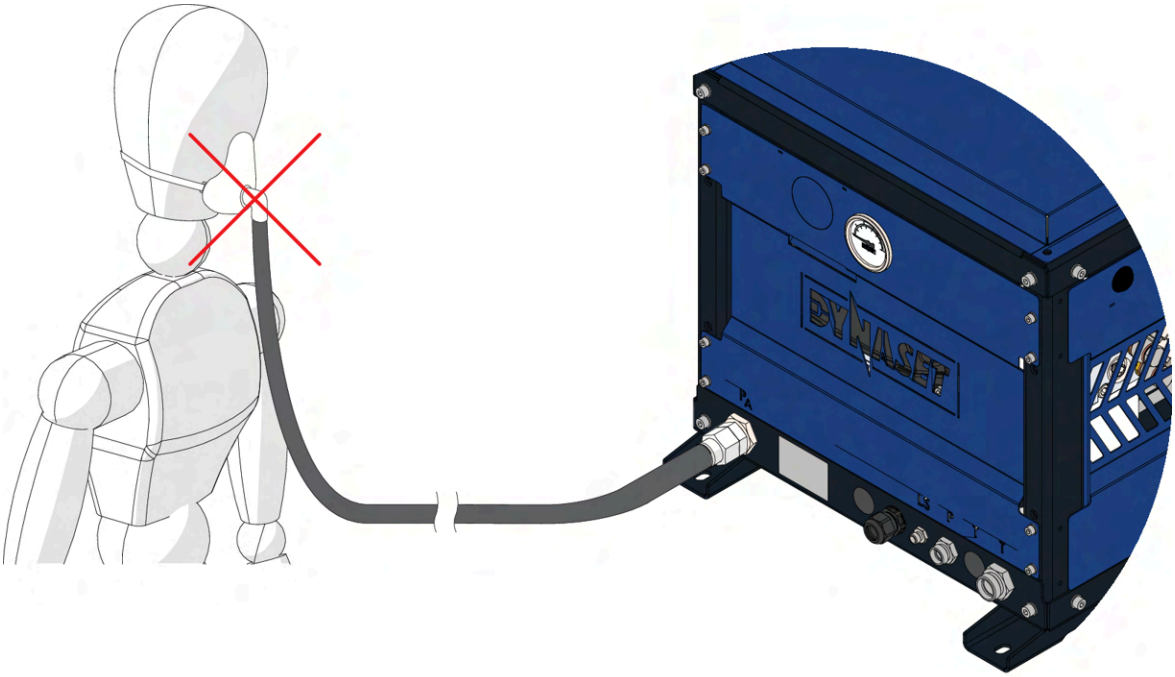
Compressor's maximum hydraulic pressure must not be exceeded in any circumstances.

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.

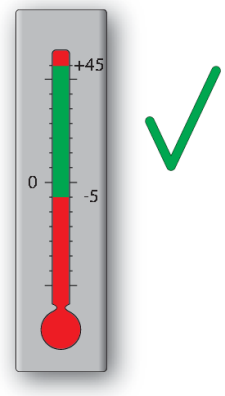


Picture 35: Compressed air must not be used as breathing air

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.

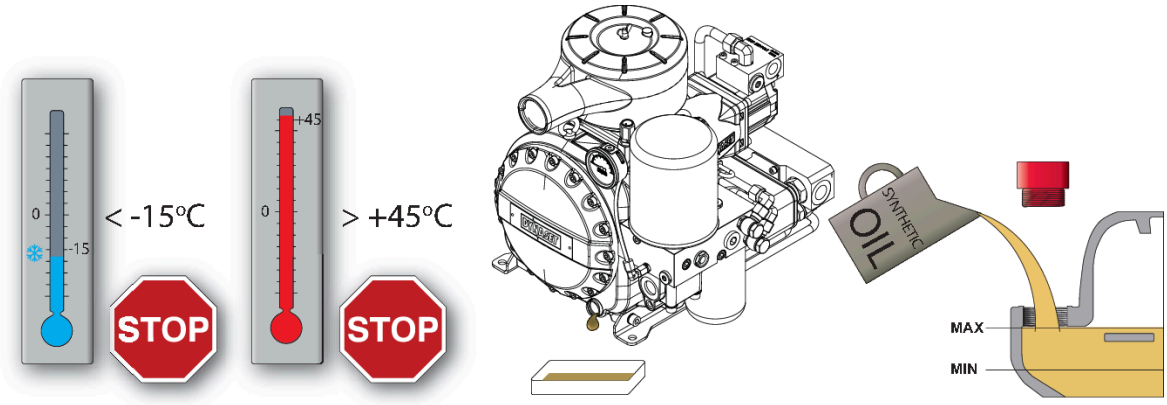
5.3 AIR AND OIL TEMPERATURES

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.

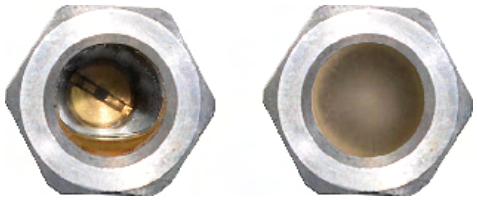
For the unloaded mode, the air pressure is set to 10 bar, 13 bar or 15 bar as factory default, depending on the model.

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°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.



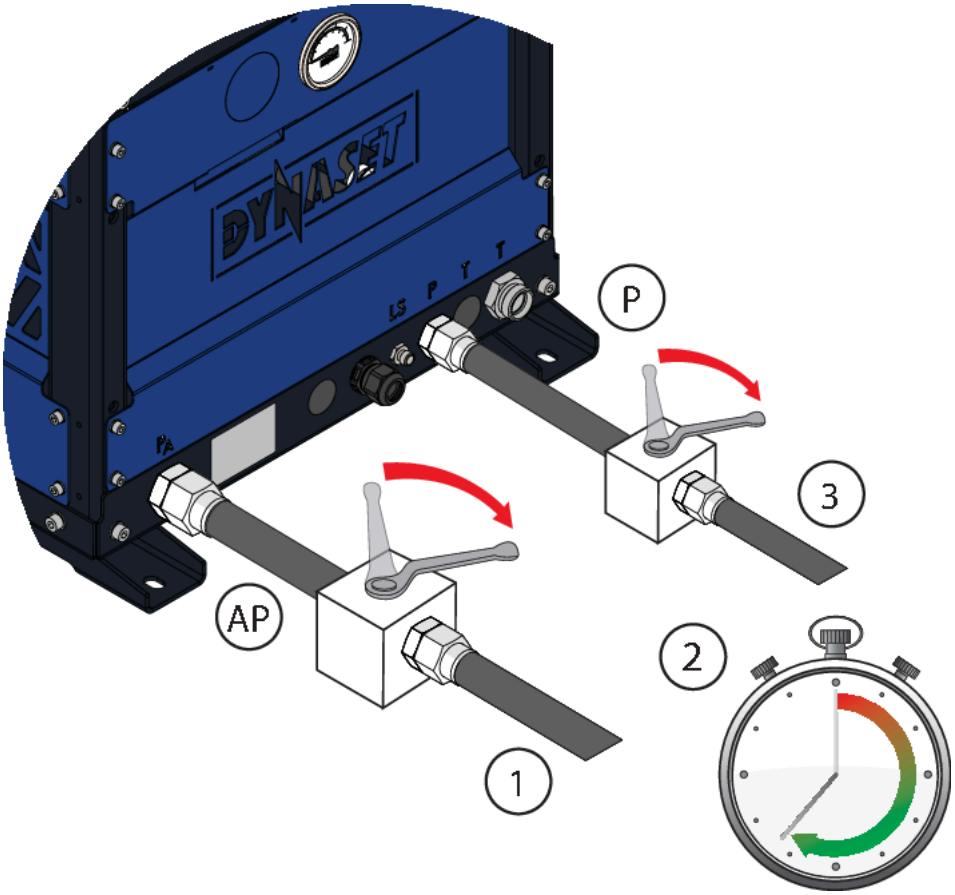
Picture 39: Oil return sight glass

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

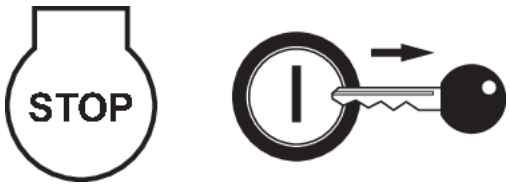
6.1 GENERAL

⚠ WARNING

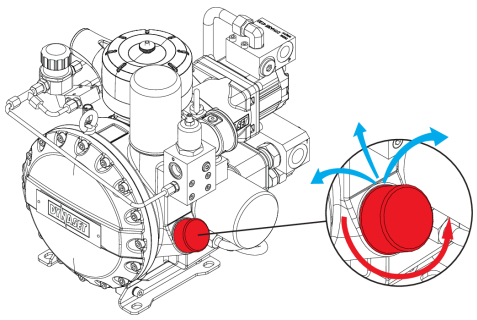
All installations and maintenance must be done according to this manual. All electric installations and maintenance should only be done by a qualified electrician depending on the jobs requirements.

⚠ 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 loosing 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 intake 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.

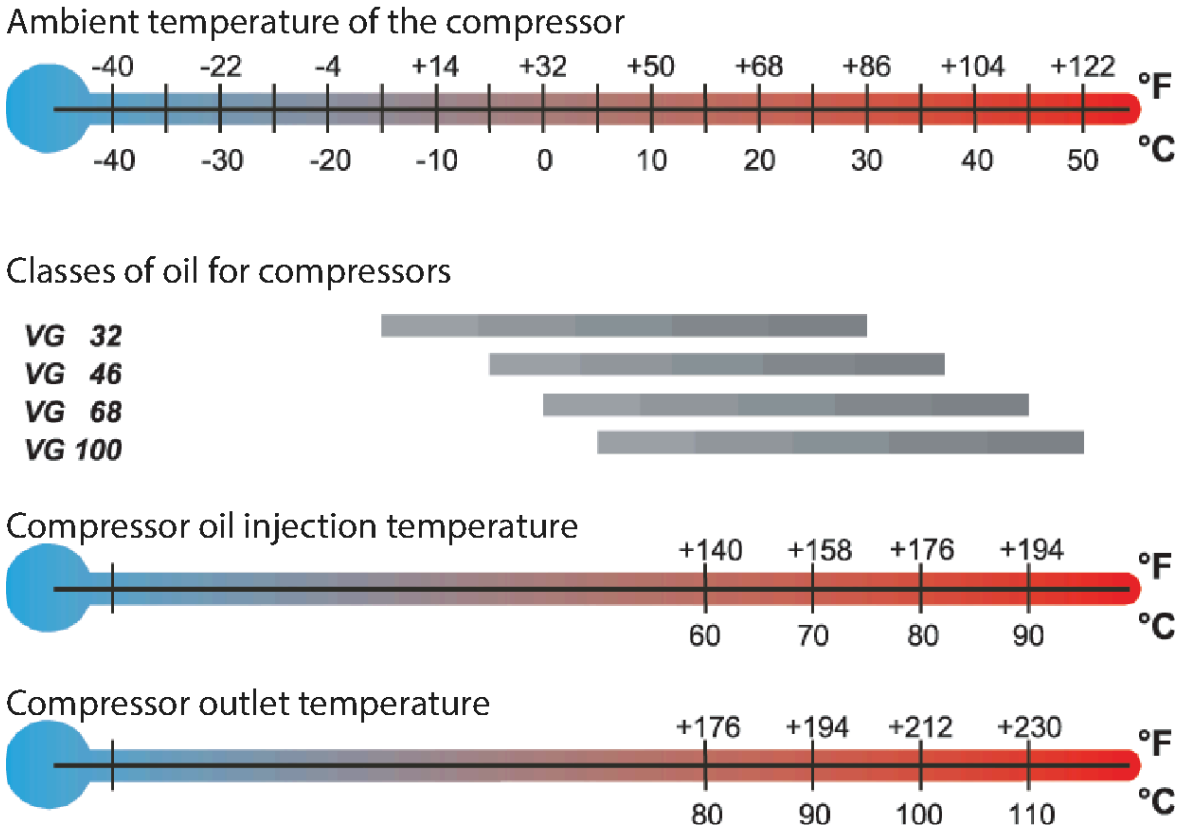
- Only use oils approved for screw compressors!

- 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



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

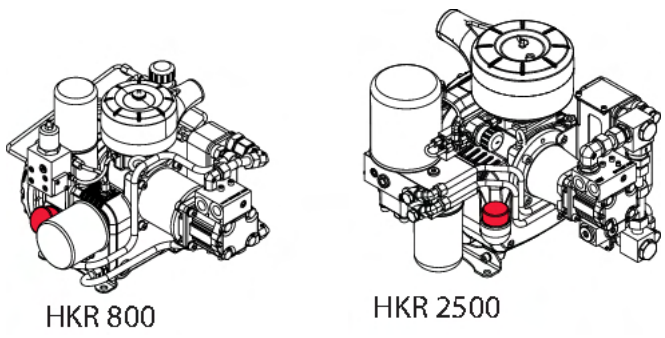
WARNING

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

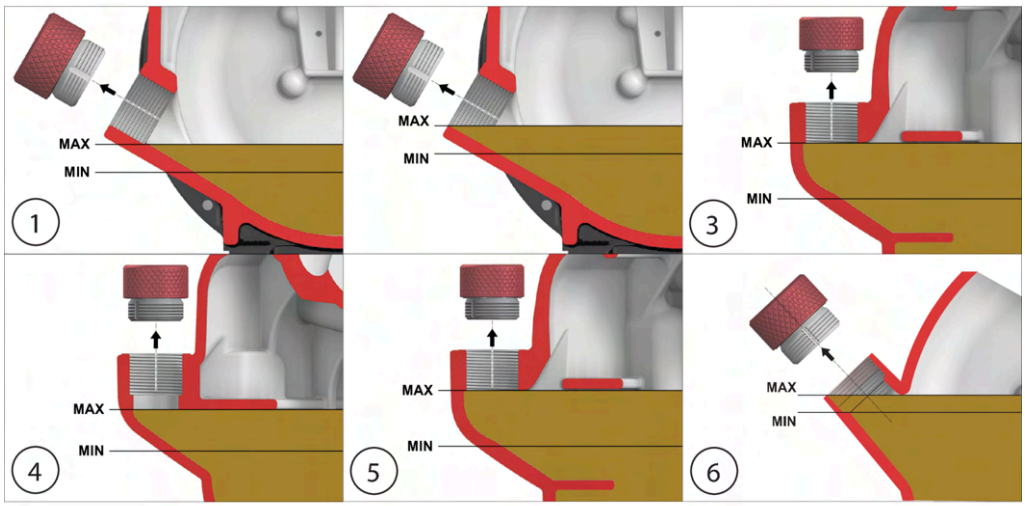
Location of the oil fill cap.



Picture 43: Location of the oil fill cap

NOTE!

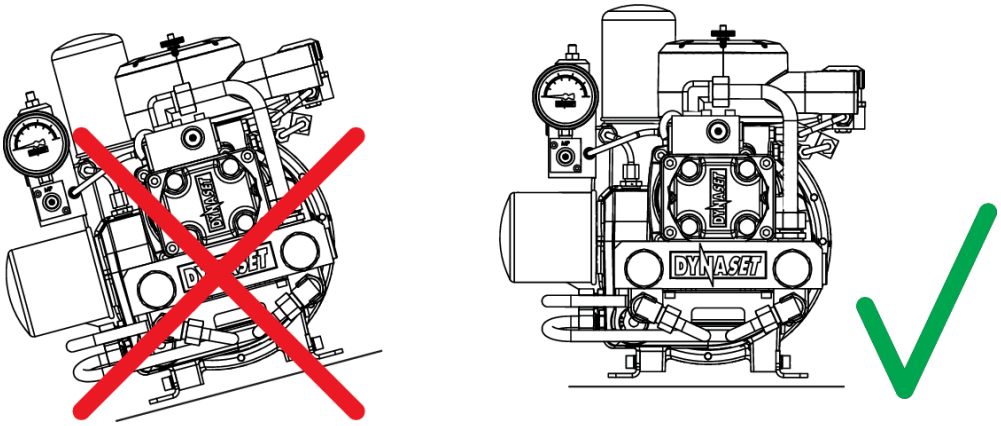
Check the oil level accordingly to the following instructions and fill levels depending on the model.



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

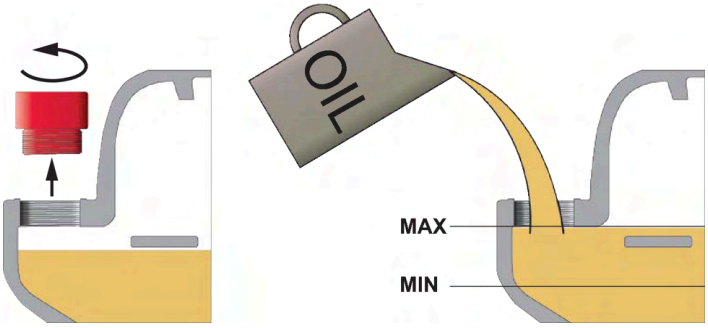
1. Make sure that the compressor is in a horizontal position.



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.



6.7 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.

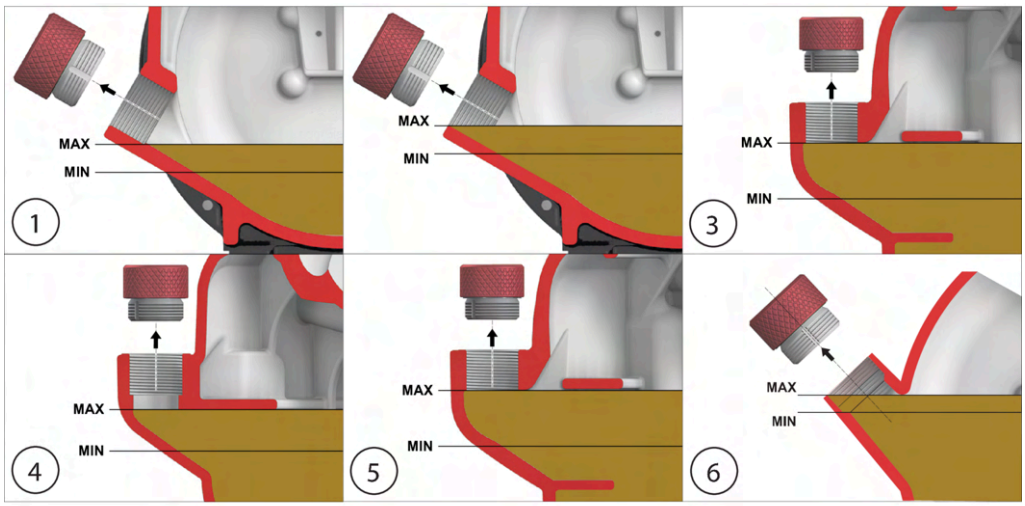
Model	Oil fill (litre)
HKR 800	2,5
HKR 2500	4,9

NOTE!

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

NOTE!

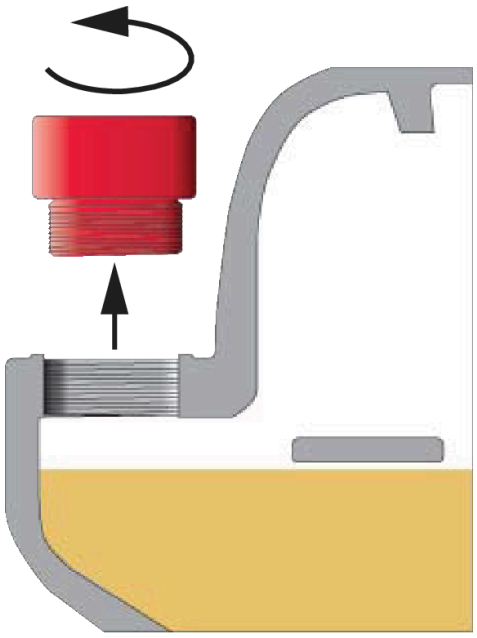
Check the oil level accordingly to the following instructions and fill levels depending on the model.



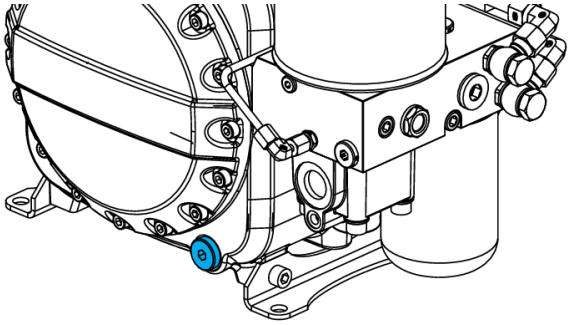
1. **HKR 500 - HKR 800**
2. **HKR 600**
3. **HKR 1300 - HKR 2500**
4. **HKR 4000 - HKR 5000**
5. **HKR 6500 - HKR 7000**
6. **HKR 11000**

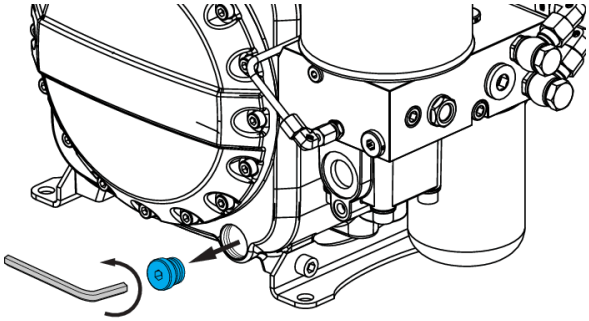
Picture 45: Oil level limits

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



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

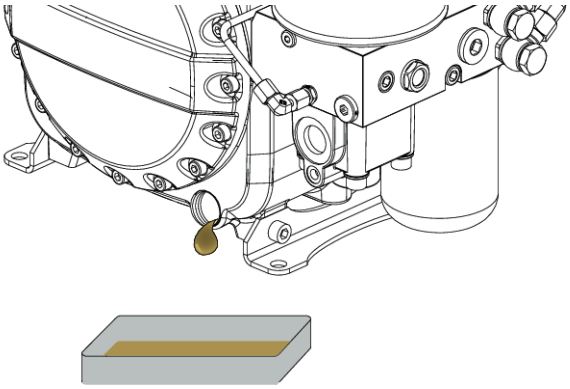


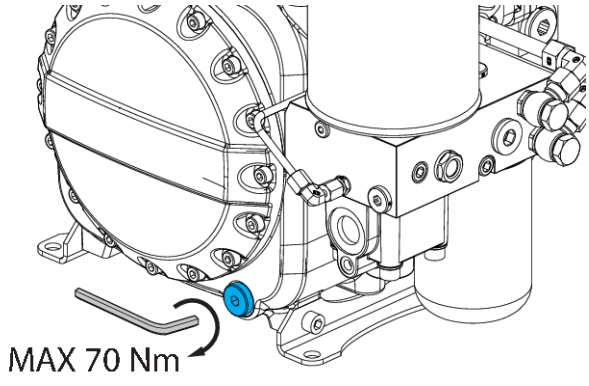


3. Drain the used oil to a suitable container, clean the oil drain plug and put it back.

WARNING

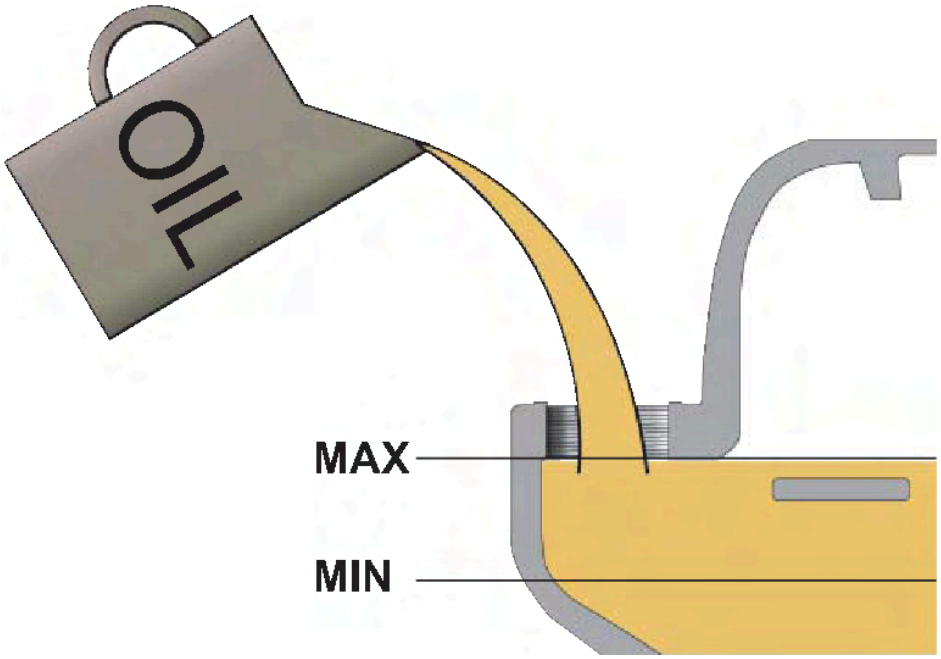
Oil is a risk to environment. Dispose the used oil according to the applicable environmental and disposal laws and regulations.



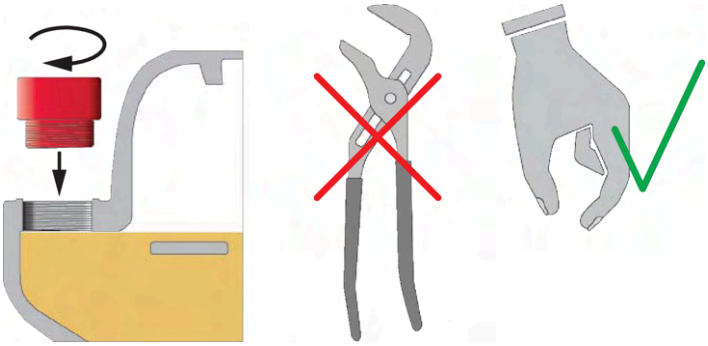


4. Replace the oil filter. READ CHAPTER „6.9 REPLACING OIL FILTER “.

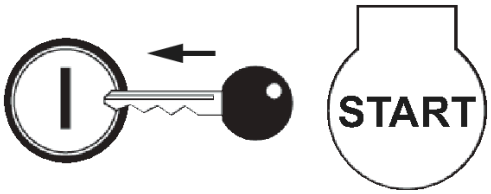
5. Add oil up to the maximum level. Check the oil level fill for the model from the picture "Oil Level limits" above.



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

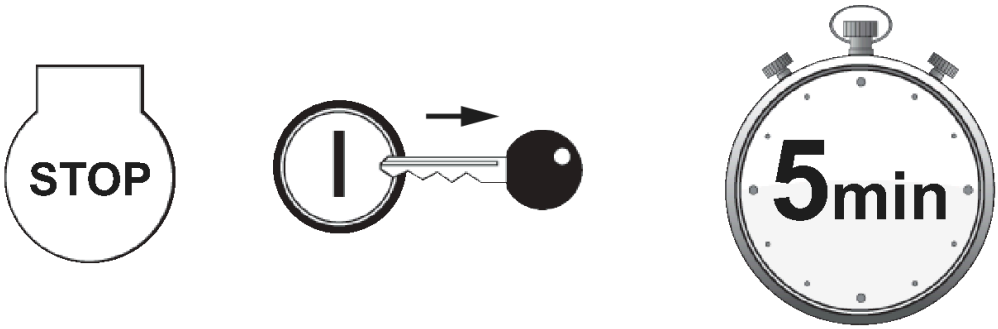


7. Start the compressor and close the supply line. Allow compressor run for three minutes.

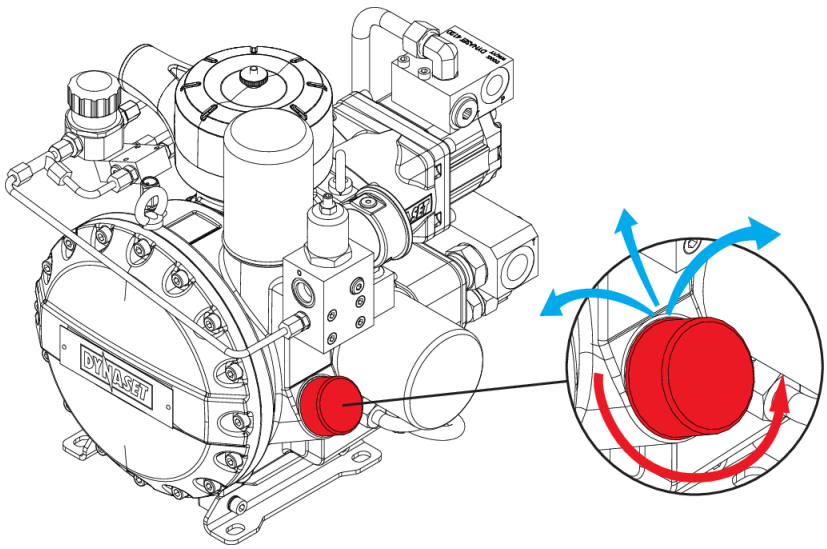




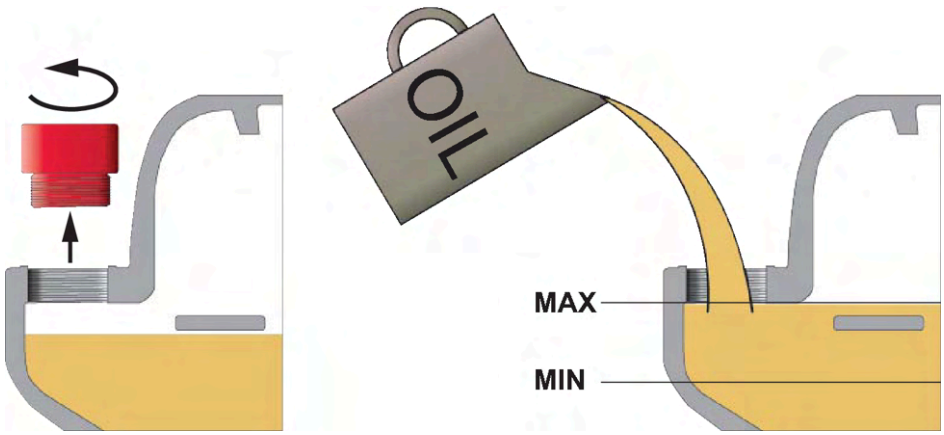
8. Stop the compressor and wait for 5 minute standstill



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.



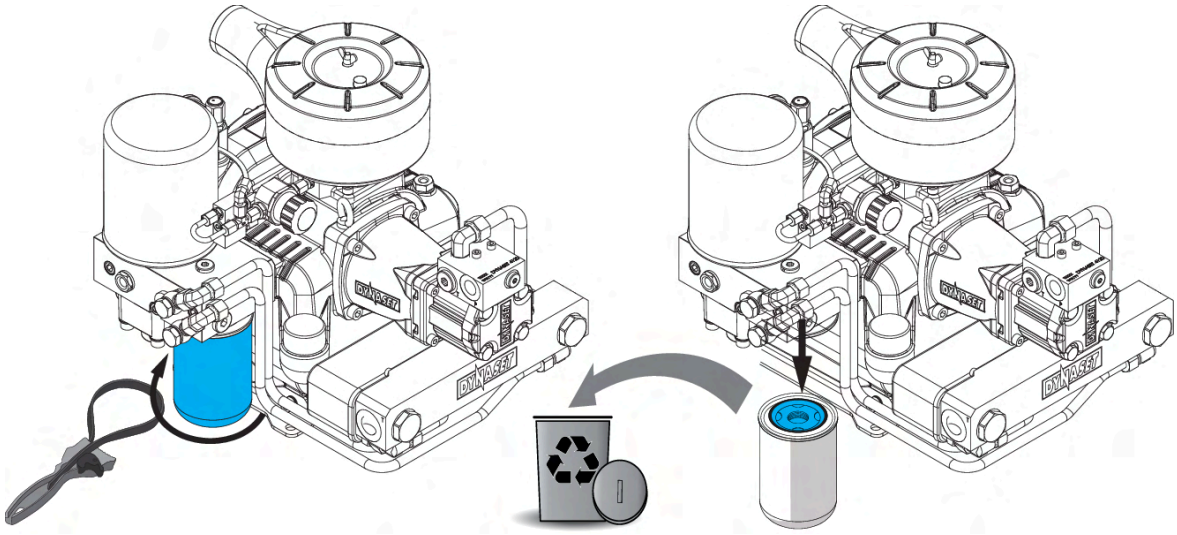
6.9 REPLACING OIL FILTER

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.

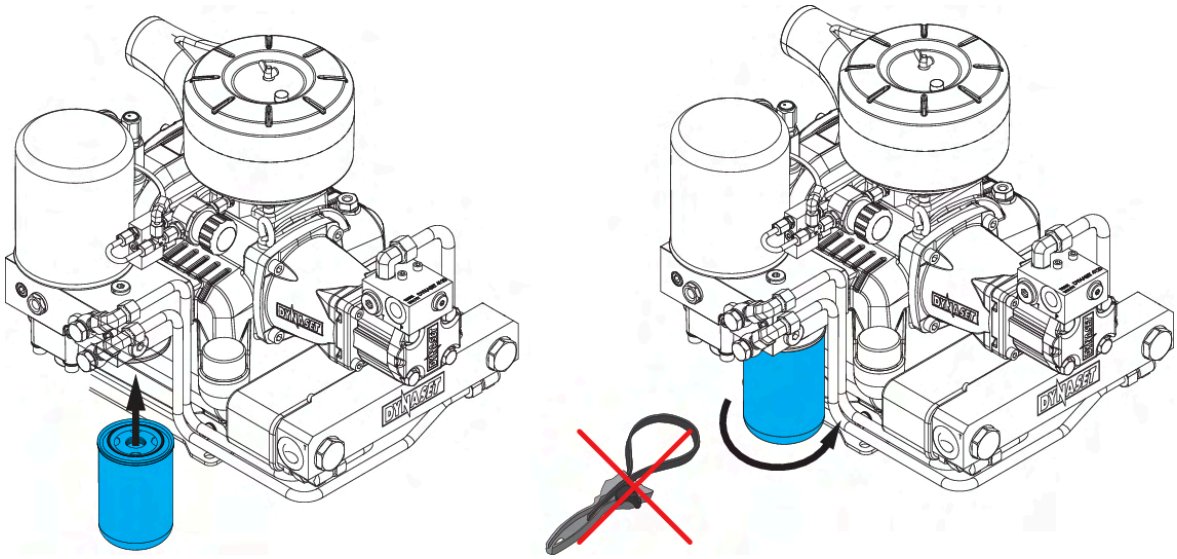
1. Remove the oil filter cartridge with a suitable tool.



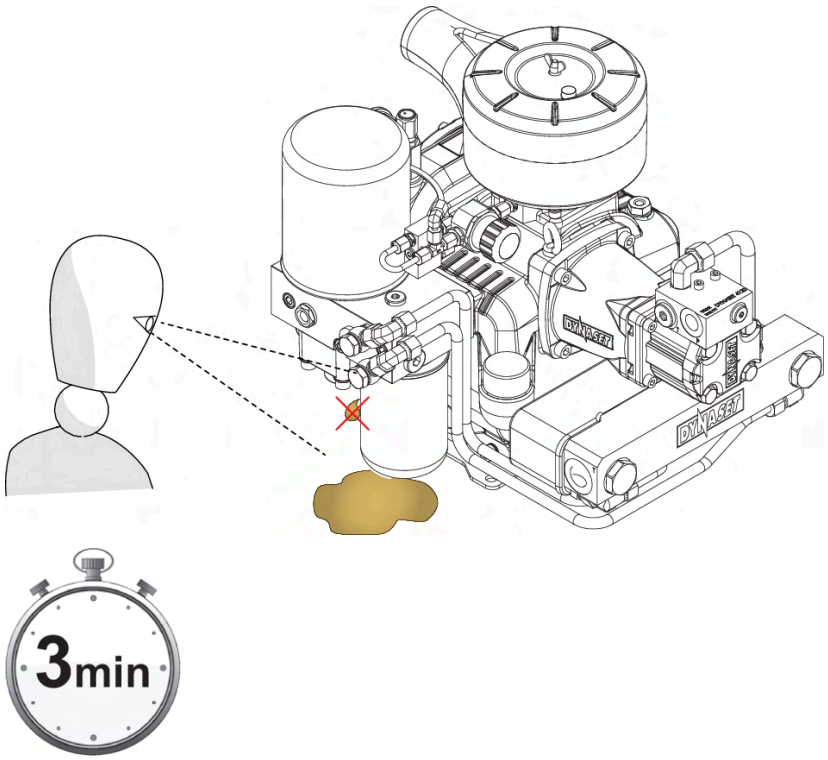
2. Lubricate the seal of the new oil filter cartridge with clean oil or grease. Fill the cartridge with the same oil as in HKR screw compressor.



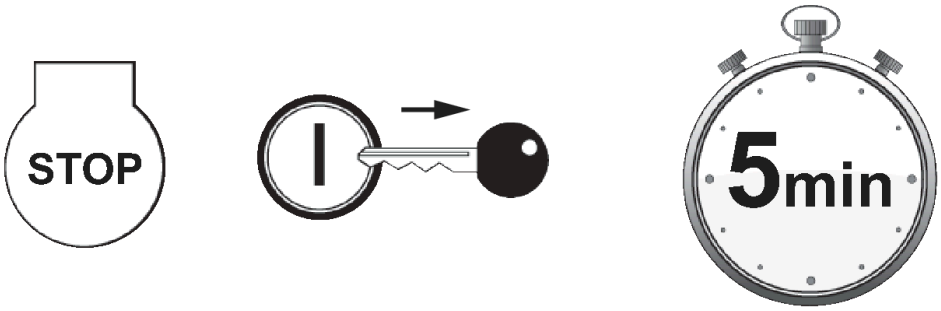
3. Insert the new oil filter cartridge onto the multiblock and tighten by hand. Do not use any tools.



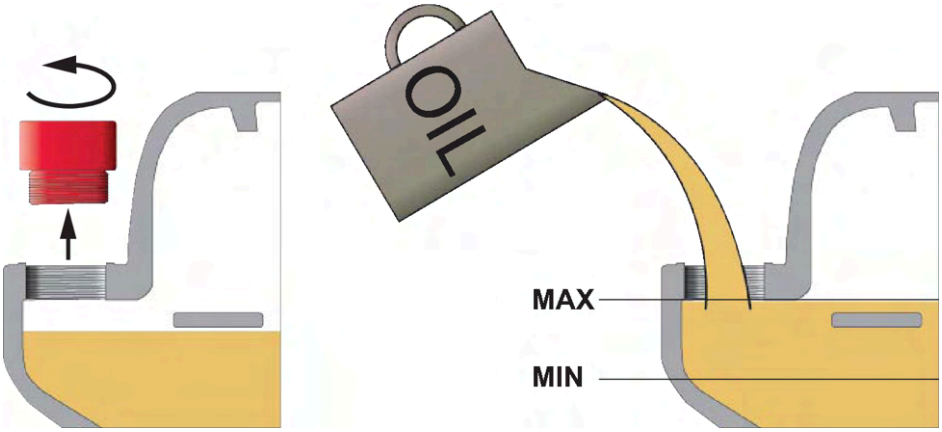
4. Start the compressor and close the air supply line. Allow compressor run for 3 minutes. Check the compressor and the system for leaks when the system is running.



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)

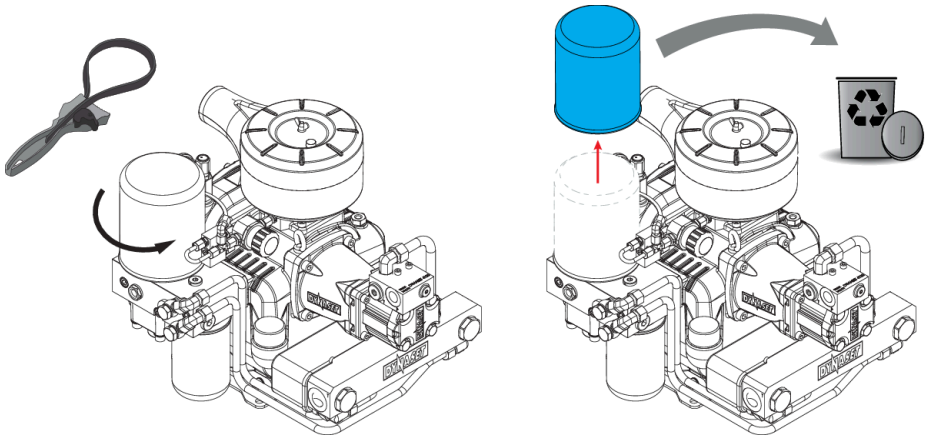
⚠ WARNING

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.

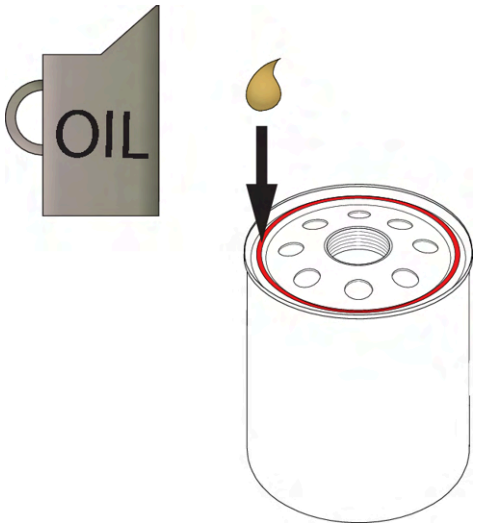
⚠ WARNING

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

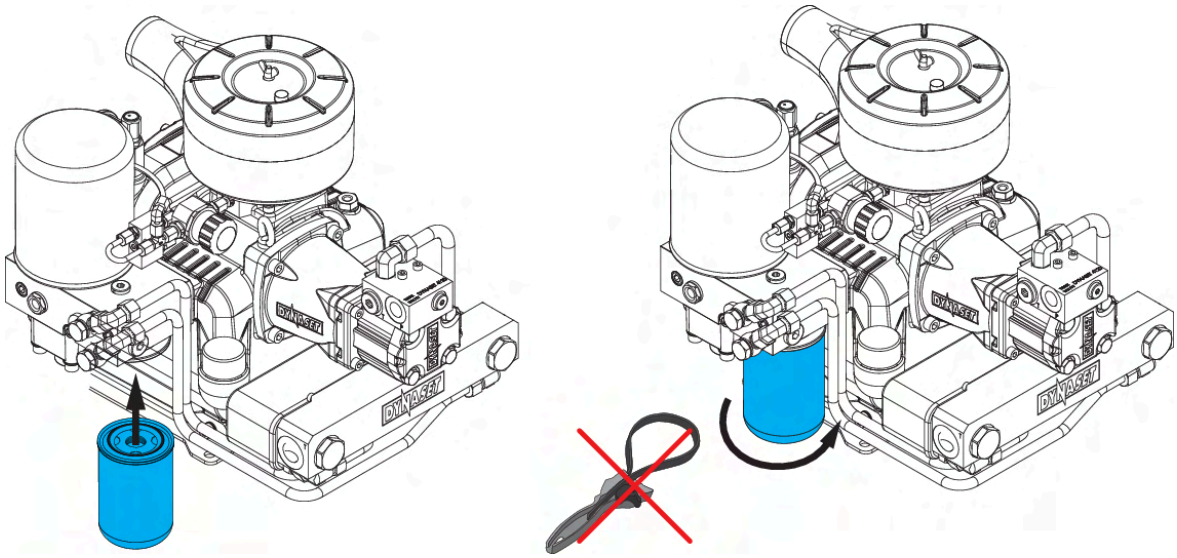
1. Remove the air-oil separating element(s) with a suitable tool.



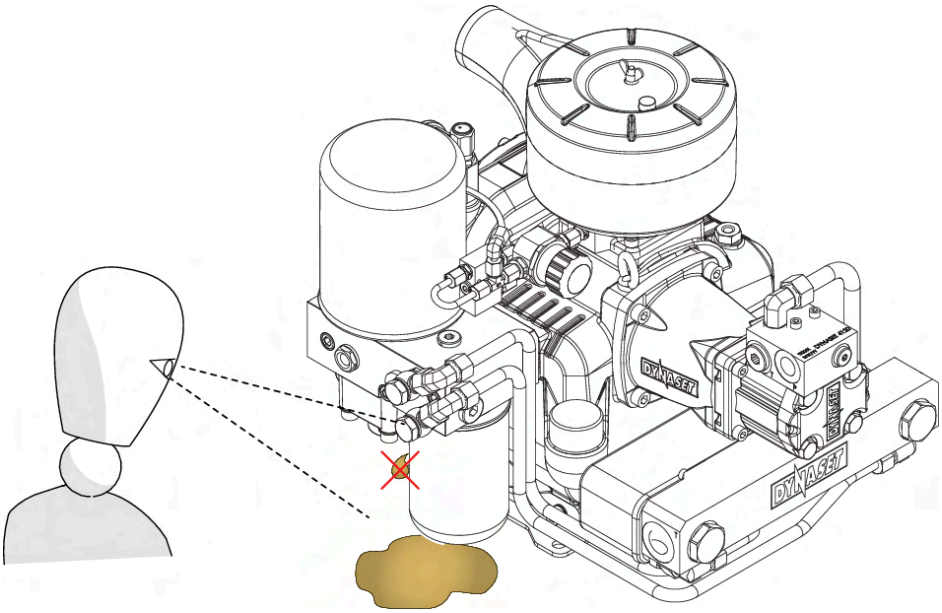
2. Lubricate the seal of the new air-oil separating element with clean oil or grease.



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 regurlarly if the conditions are harsh.

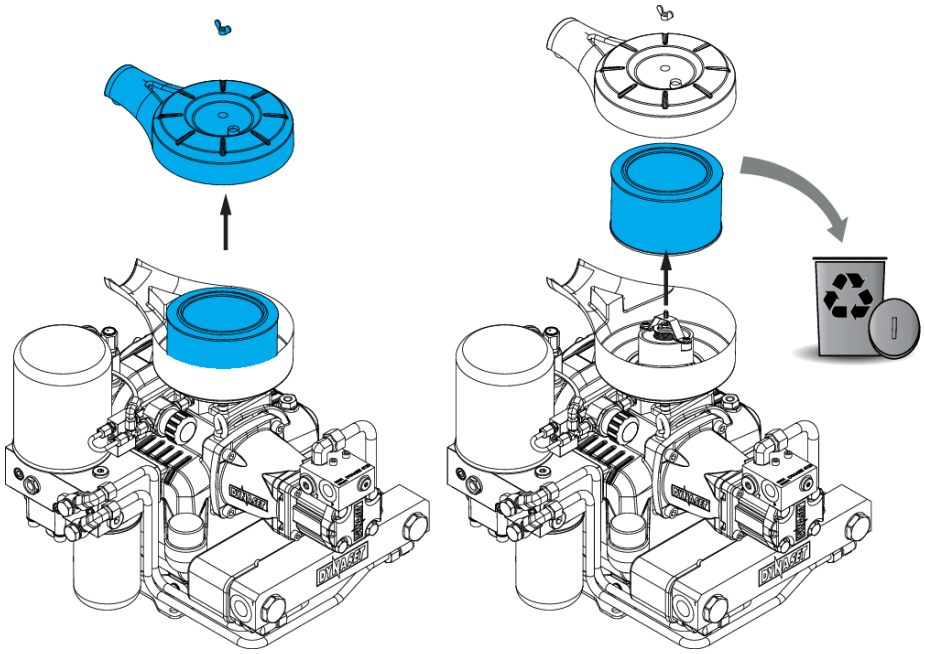
NOTE!

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.

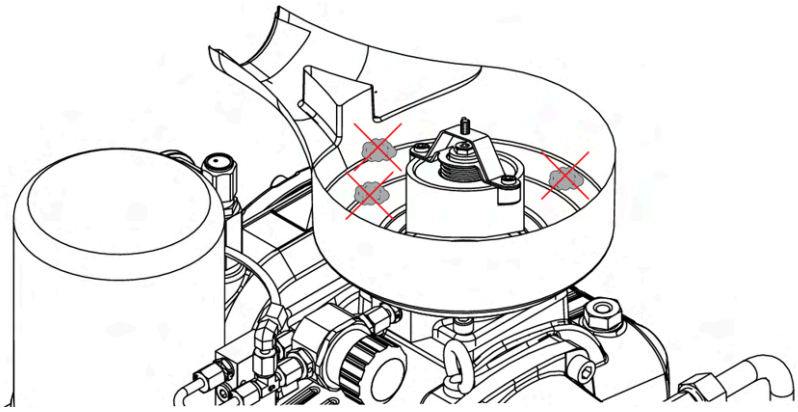
1. Remove the filter cover and remove the old filter element.



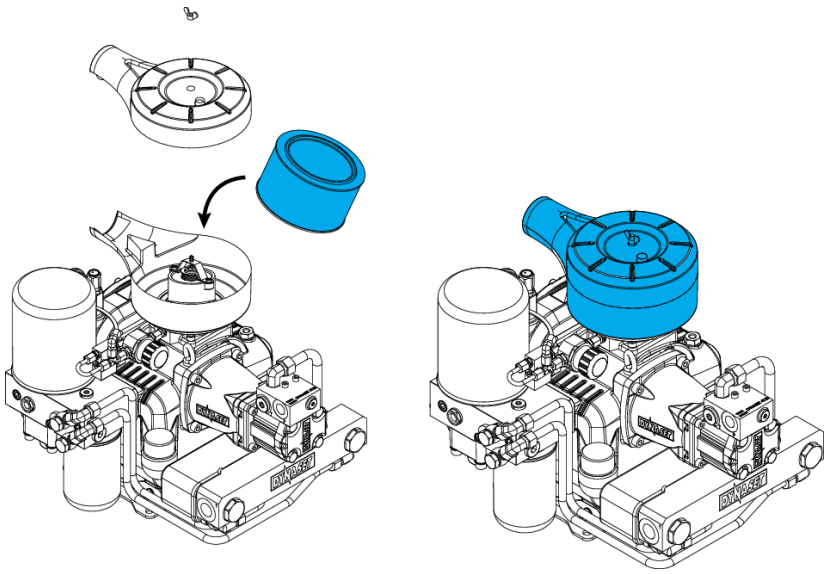
⚠ WARNING

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.



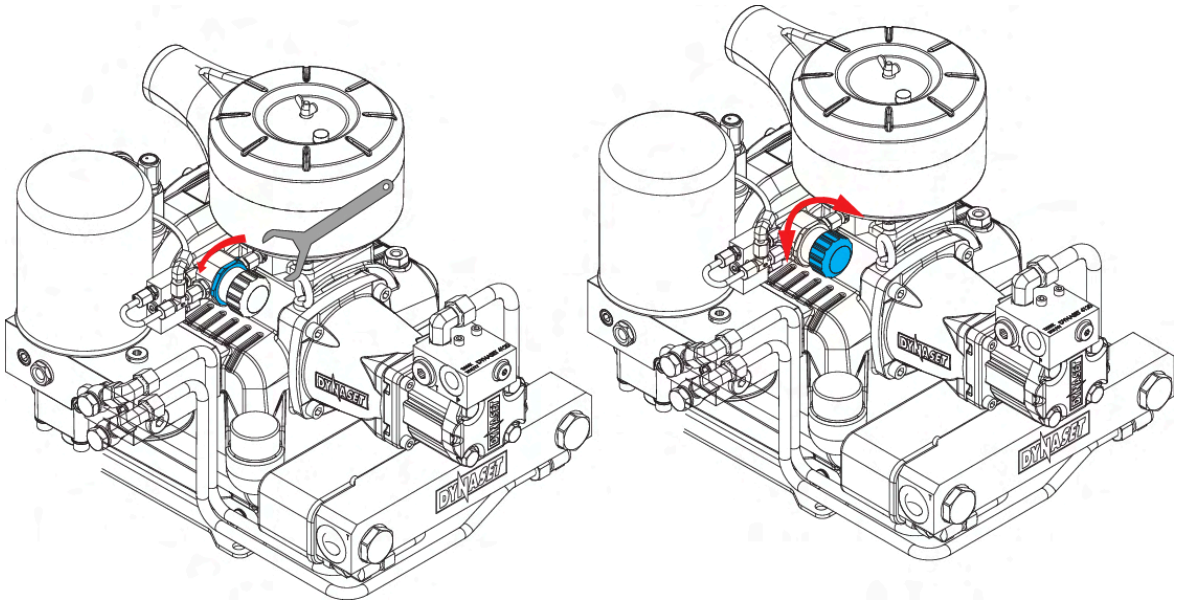
3. Insert new filter element and install filter cover.



WARNING

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

6.12 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.

6.13 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 of 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.

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8. DYNASET PRODUCT AND ENVIRONMENT

8.1 GENERAL INFORMATION

This chapter contains an environmental impact assessment for DYNASET hydraulic and electrical products. The assessment considers the recyclability of the products, the reuse of materials, as well as possible environmental impacts.

8.1.1 ENVIRONMENTAL DESIGN

Material Selection and Composition:

DYNASET takes great care in minimizing the environmental impact of both hydraulic and electrical products throughout their lifecycle, from design and material selection to manufacturing and end-of-life management. This commitment is reflected in several key areas:

- **Environmentally Friendly Materials:** We prioritize the use of environmentally friendly materials and substances in both hydraulic and electrical product lines. This includes exploring and implementing alternatives to hazardous materials wherever feasible. For hydraulic systems, this may involve investigating and recommending the use of bio-based or readily biodegradable hydraulic fluids. For electrical products, this means carefully selecting components with minimal environmental impact.
- **Compliance with Regulations:** All products, both hydraulic and electrical, are designed and manufactured to comply with relevant environmental regulations, including RoHS (Restriction of Hazardous Substances), REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) and other applicable international and local regulations. We maintain up-to-date knowledge of regulatory changes and proactively adapt our processes and materials to ensure ongoing compliance.
- **Recyclability and Reusability:** We consider material recyclability and reusability as a key factor in material selection. Designs are optimized to facilitate disassembly and separation of materials for efficient recycling streams. For hydraulic products, this includes using readily recyclable metals in the construction of housings and components. For electrical products, this involves selecting components with known recycling pathways and minimizing the use of composite materials that can be difficult to recycle. We strive to use materials that can be easily recovered and reused or recycled at the end of the product's life.

Energy Efficiency:

Beyond material selection and composition, the manufacturer also prioritizes energy efficiency in the design and manufacturing of both hydraulic and electrical products to minimize their operational environmental impact. This focus is implemented through the following strategies:

- **Design for Energy Efficiency:** For both hydraulic and electrical product lines, we strive to minimize power consumption during manufacturing and in their use. This involves careful component selection, optimized system design, and the integration of energy-saving technologies. For exmple in our manufacturing we recycle the water used in test processes and use automated test processes to minimize human error and maximize efficiency. Also our manufacturing facilities are partly powered by renewable energysources.
- **Optimization of Hydraulic Components and Systems:** For hydraulic products, we employ advanced engineering techniques to optimize the performance of components such as pumps, valves, and actuators. This includes minimizing friction losses, optimizing flow characteristics, and employing efficient hydraulic circuits. We also consider the overall system design to reduce energy losses and improve efficiency. This may involve incorporating features like load-sensing hydraulics or regenerative braking systems where appropriate.
- **Integration of Energy-Saving Technologies:** Both hydraulic and electrical products benefit from the integration of energy-saving technologies. For electrical products, this may involve using highly efficient electronic components, implementing power management systems, and incorporating features like automatic shut-off functions. For hydraulic systems, this could include the use of variable displacement pumps, electro-hydraulic servo valves for precise control, or the implementation of hybrid power systems that combine hydraulic power with electric drives. We continuously explore and evaluate new technologies that can further improve the energy efficiency of our products.

8.1.2 PACKAGING AND TRANSPORTATION

Beyond material selection, energy efficiency, and regulatory compliance, DYNASET also prioritizes minimizing the environmental impact of product packaging. This commitment is demonstrated through the following practices:

- **Recyclable and Reusable Packaging Materials:** We are committed to using recyclable and reusable packaging materials whenever possible for our products. This includes exploring alternatives to traditional packaging materials, such as using recycled cardboard, biodegradable packing peanuts, and reusable containers. We prioritize materials that can be easily recycled through existing infrastructure. Where reusable packaging is feasible, we encourage its return and reuse through partnerships or incentives.

- **Optimization of Packaging Size and Weight:** We continuously optimize packaging size and weight to minimize material usage and reduce transportation impacts. This involves careful consideration of product dimensions and fragility to design packaging that provides adequate protection while minimizing waste. The focus on packaging optimization not only reduces material consumption but also contributes to lower shipping costs and reduced fuel consumption during transportation. We strive to balance product protection with minimal environmental impact.

8.1.3 END-OF-LIFE MANAGEMENT

Beyond material selection, energy efficiency, packaging, and regulatory compliance, DYNASET prioritizes responsible end-of-life management for its products, including disposal, recycling, reuse, and refurbishment. This commitment is reflected in the following practices:

Disposal and Recycling:

- **Information on Proper Disposal and Recycling:** We provide information to end-users on proper disposal and recycling methods for both hydraulic and electrical products. This information is typically included in in this manual and on our website. We strive to make it easy for customers to understand how to handle end-of-life products responsibly.
- **Compliance with Waste Management Regulations:** We request users to follow and adhere to all relevant waste management regulations concerning the disposal and recycling of our products. This includes compliance with local, national, and international regulations regarding hazardous waste disposal and electronic waste recycling.

Reuse and Refurbishment:

- **Encouragement of Reuse and Refurbishment:** We actively encourage reuse and refurbishment options to extend the lifespan of our products. This includes designing products for durability and ease of repair, as well as promoting the benefits of refurbishment over replacement.
- **Support for Repair and Maintenance Services:** We support repair and maintenance services to facilitate product longevity. This includes providing spare parts, offering repair training, and also establishing authorized service centers. We strive to make it easy for customers to access repair services and keep their products functioning optimally for as long as possible. We believe that extending product life through reuse and refurbishment is a key component of minimizing environmental impact.

8.1.4 HYDRAULIC PRODUCTS

Hydraulic products mainly consist of metal components, which are generally highly recyclable. However, the oils and other fluids used in the manufacture of products can cause environmental harm if they leak. The fluids of decommissioned hydraulic products must always be handled properly so that they do not end up in nature.

The life cycle of hydraulic products can be long if they are properly maintained. The environmental impact of the products depends mainly on their use and possible leaks.

8.1.5 ELECTRICAL PRODUCTS

Electrical products contain electronics, which may contain harmful substances such as heavy metals. Recycling products is important so that these substances do not end up in the environment. Electrical products should always be delivered to an appropriate recycling point.

The life cycle of electrical products is usually shorter than that of hydraulic products. The environmental impact of the products depends on their manufacture, use and recycling.

8.1.6 PRODUCTS CONTAINING BATTERIES

Products containing batteries and other energy sources may contain substances harmful to the environment, such as heavy metals and acids. Recycling these products is particularly important so that they do not cause environmental damage. Batteries and other energy sources should always be removed from the products and delivered to a separate recycling point.

The life cycle of products containing batteries and other energy sources can be short, especially if the batteries are not properly maintained and charged. The environmental impact of the products depends on their manufacture, use and recycling.

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

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 ABOVE DECK COMPRESSOR UNIT
Product:	HKR Hydraulic Above Deck Compressor Unit

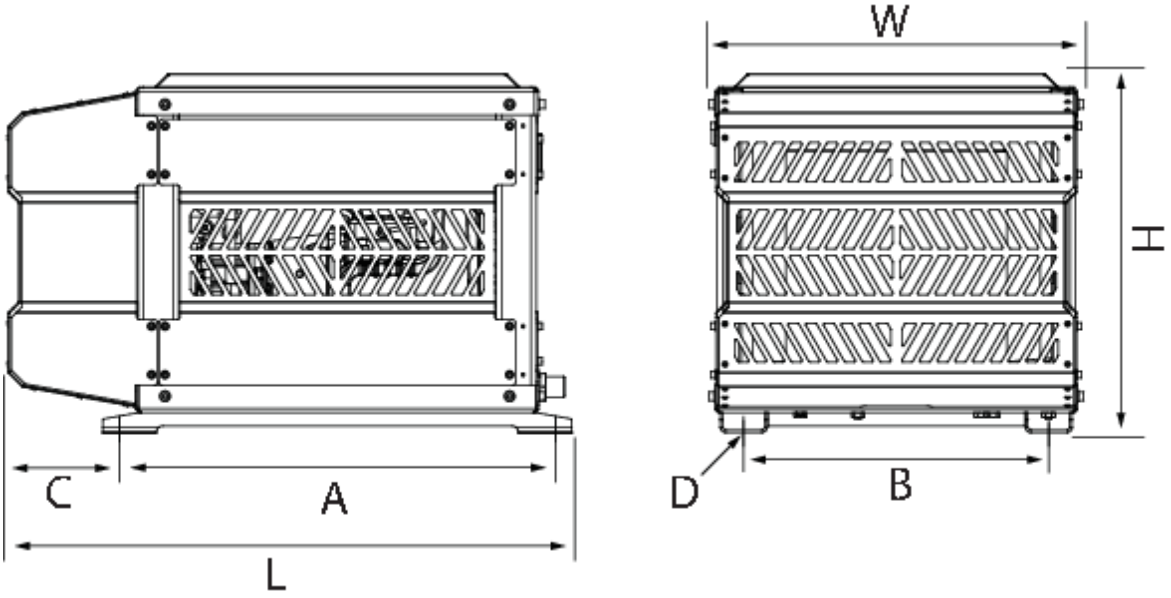
If the device has been modified by someone other than the manufacturer or without the manufacturer's permission, this declaration is not valid.



Pasi Yli-Kätkä
R&D Director
Menotie 3, 33470
Ylöjärvi, Finland 01.10.2025

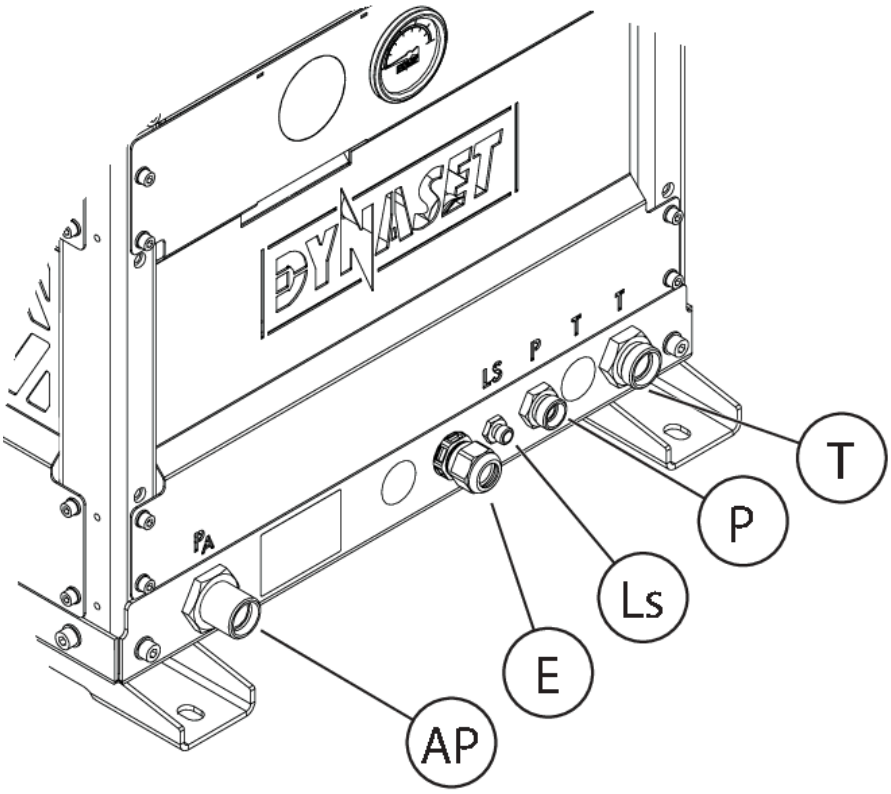
10. TECHNICAL SPECIFICATIONS

10.1 DIMENSIONS



Model	Dimensions, mm (in)							Weight
	L	W	H	A	B	C	D	kg (lbs)
HKR-AD-800	841 (33.1)	540 (21.3)	534 (21.0)	650 (25.6)	455 (17.9)	166 (6.5)	13 (0.5)	116 (256)
HKR-AD-2500	841 (33.1)	540 (21.3)	534 (21.0)	650 (25.6)	455 (17.9)	166 (6.5)	13 (0.5)	146 (322)

10.2 CONNECTIONS



Model	Hydraulic & Air Connections				Electric Connection
	Pressure Line, P	Return Line, T	Load Sensing, Ls	Air Output, AP	E, ø mm (in)
HKR-AD-800	15L-M22x1.5	22L-M30x2	06L-M12x1.5	22L-M30x2	9-17 (0.35-0.67) *
HKR-AD-2500	15L-M22x1.5	22L-M30x2	06L-M12x1.5	22L-M30x2	9-17 (0.35-0.67) *

*Electric connections and wire sizes are found in the electric connections & schematic chapter 10.5

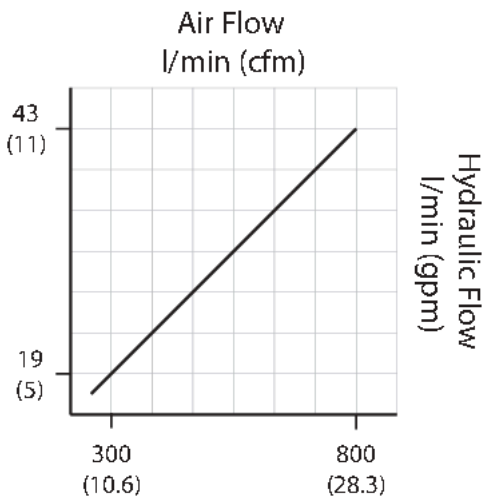
10.3 TECHNICAL SPECIFICATIONS

		HKR-AD-800	HKR-AD-2500
DISCHARGE CHARACTERISTICS			
Flow rate max.	**l/min (cfm)**	500 - 800 (18 - 28)	1'300 - 2'500 (46 - 88)
Pressure max.	**bar (psi)**	7 (102) - 10 (145)	7 (102) - 10 (145)
Noise level, LWA	**dB(A)**		
HYDRAULIC POWER REQUIREMENTS			
Flow min.	**l/min (gpm)**	19 (5.02)	27 (7.13)
Flow nom.	**l/min (gpm)**	29- 43	37- 67
Flow max.	**l/min (gpm)**	64 (16.91)	100 (26.42)
Pressure at nominal power output	**bar (psi)**	115 (1'668) - 145 (2'103)	175 (2'538) - 225 (3'263)
Pressure max.	**bar (psi)**	230 (3'336)	245 (3'553)
Pressure when unloaded	**bar (psi)**	105 (1'523)	155 (2'248)
HYDRAULIC FLUID REQUIREMENTS			
Viscocity	**cSt**	10-200 / optimum 25-35	10-200 / optimum 25-35
Temperature max.	**°C(°F)**	70 (158)	70 (158)
Filter ratio	**µm**	25	25
LUBRICATION OIL			
Oil Fill	**liter (gal.)**	2.5 (0.66)	4.9 (1.29)

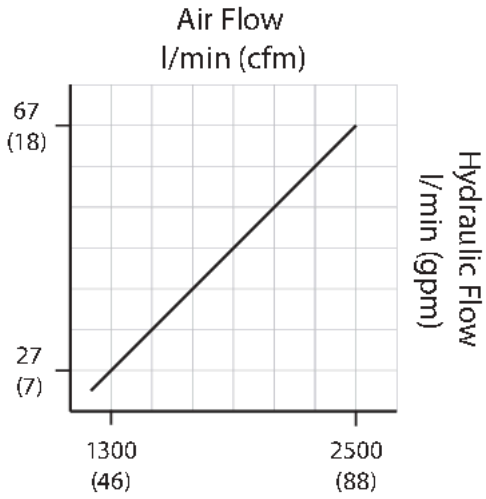
10.4 FLOW RANGE CHART

The HKR-AD Series can run on different equipment with varying hydraulic flow output levels. Below is a chart expressing the approximate response of the air output levels of the compressor unit.

HKR-800-AD

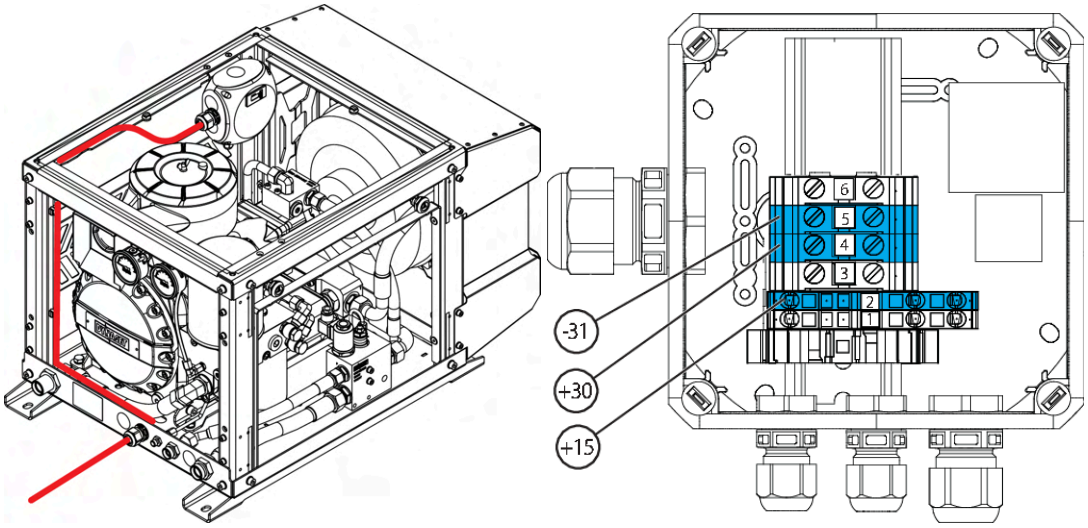


HKR-2500-AD



10.5 ELECTRICAL CONNECTIONS & SCHEMATIC

10.5.1 ELECTRICAL CONNECTIONS



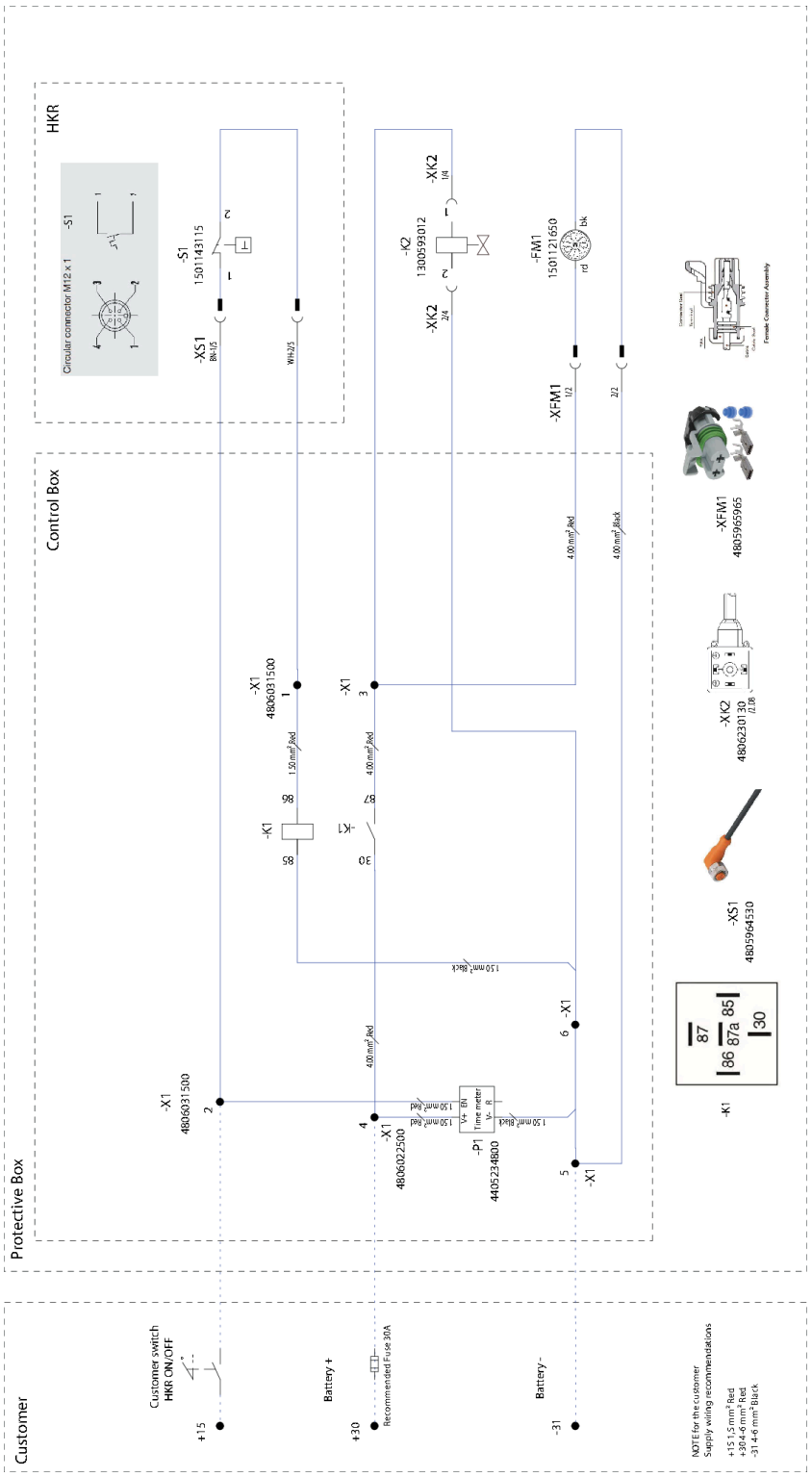
Reference to the electric schematic. Use the ready made cable attachment points found in the frame to attach the wire. Make the wiring as shown in the picture above.

Use following wire sizes:

Electric wire sizes mm^2 (AWG)			Fuses	
Signal Wire	**Supply Wire**	**Ground Wire**	**12V**	**24V**
1.5 (16)	4 - 6 (12 - 10) *	4 - 6 (12 - 10) *	30 A	20 A

*For long distance (+5m /16ft) wires use 6mm^2 (10 AWG).

10.5.2 ELECTRICAL SCHEMATIC



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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 Unis
De-Icing Technology
Installation Valves
HHK Hydraulic Grinder
HV/HVY Hydraulic Winch / Winch Unit

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