



**MEEA**  
MOBILE ENERGY AUSTRALIA  
Specialists in vehicle mounted compressor & generator systems



## **USER MANUAL**

### **HYDRAULIC PISTON COMPRESSORS**

HK 450

HK 1000

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### 1. GENERAL

This manual contains general information about assembly, installation, operation and maintenance of the DYNASET HK hydraulic piston compressor.



#### ATTENTION!

Read this user manual before installation, use or maintenance of the HK compressor to ensure proper handling, operation and maintenance right from the beginning. Pay attention to warnings and safety instructions. READ CHAPTER "2. SAFETY" for more information.

#### 1.1. PRODUCT INFORMATION

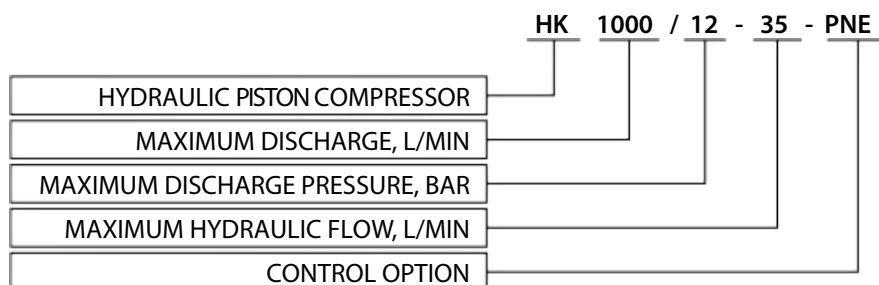
HK compressors are compact and integrated all-in-one units, especially designed for mobile installation. The only power source needed is a hydraulic system of base machine which provides compressor the required hydraulic flow and pressure.

HK compressor converts the hydraulic power into high quality compressed air and it can be installed in almost any working machine. HK compressors are used to power for example pneumatic tools, filling tires and cleaning equipment.

DYNASET HK 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 HK



#### MAXIMUM DISCHARGE

Maximum discharge is the maximum amount of air flow (l/min) that HK hydraulic compressor can produce at discharge pressure of 6 bar (according to ISO1217(1996).)

#### MAXIMUM DISCHARGE PRESSURE

Maximum discharge pressure is the maximum air pressure (bar) that HK hydraulic compressor can produce.

#### MAXIMUM HYDRAULIC FLOW

Maximum hydraulic flow is the maximum hydraulic flow that HK hydraulic compressor is designed to run with. Do not exceed the maximum hydraulic flow.

#### CONTROL OPTION

##### Pneumatic cut-off (PNE):

Automatic operation control between pre-adjusted maximum and minimum pressure limits. When there is no air consumption, pneumatic cut-off halts the unit by switching the hydraulics to the free circulation. Simultaneously the hose between compressor block and frame reservoir is depressurized to make compressor's restart easy. Designed for hydraulic systems with fixed displacement pump.

##### Electric pressure switch (E):

Automatic operation control between pre-adjusted maximum and minimum pressure limits. When there is no air consumption, pressure switch halts the unit by de-energizing a hydraulic solenoid valve in hydraulic system of base machine and switches hydraulics to the free circulation. Simultaneously the hose between compressor block and frame reservoir is depressurized to make compressor's restart easy. Designed for hydraulic system with variable displacement pump with electric valve.

##### Flow limiting valve to the pressure port (S):

Flow limiter on the compressors pressure port. For closed centre hydraulic systems with variable or displacement pump and without other oil flow control system.

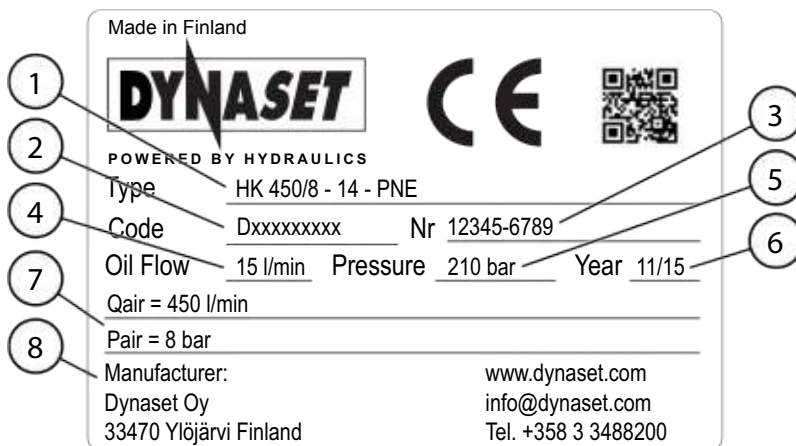
##### Cyclone filter (Y):

Increased filtering capacity for extremely dusty conditions.

##### Electric on / off (SV):

Solenoid valve with Load Sensing on PT-flange. When there is no air consumption, solenoid valve halts the unit and switches hydraulics to the free circulation.

### 1.3. TYPE PLATE

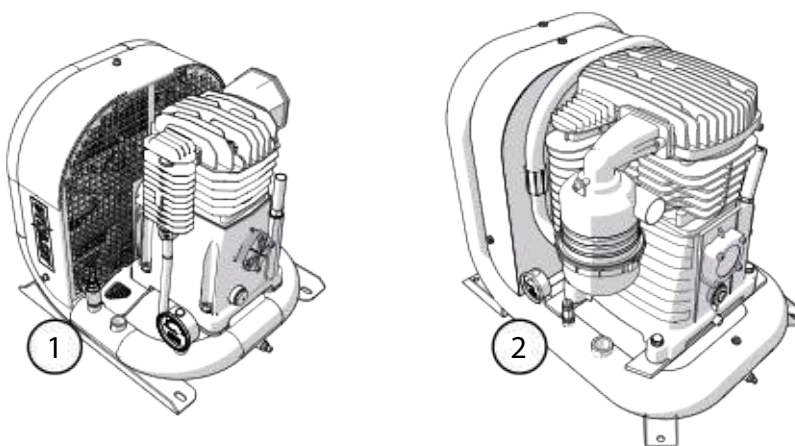


Picture 2: Type plate

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

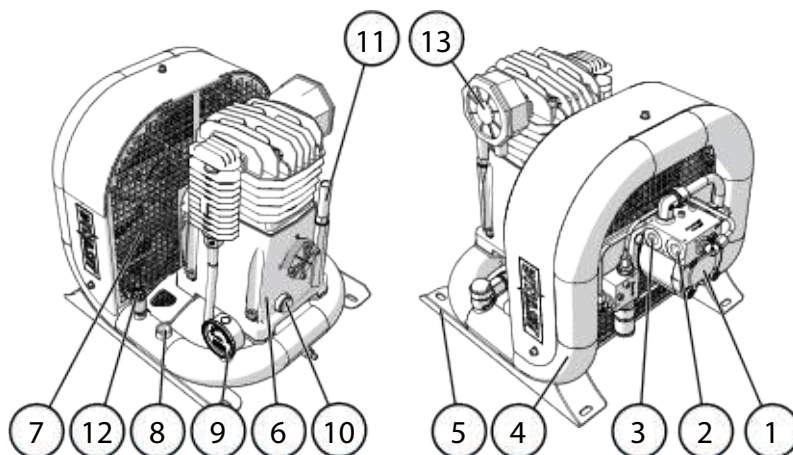
### 1.4. HK COMPRESSOR LINE-UP



Picture 3: HK compressor line-up



### 1.5. MAIN COMPONENTS OF HK COMPRESSOR



Picture 4: Main components of HK compressor

- |   |  |
|---|--|
| 1. Hydraulic motor                      | 8. Compressed air output ( <b>AP</b> ) |
| 2. Hydraulic pressure line ( <b>P</b> ) | 9. Pressure gauge                      |
| 3. Hydraulic return line ( <b>T</b> )   | 10. Oil level sight glass              |
| 4. Frame reservoir                      | 11. Oil filler cap                     |
| 5. Support mount                        | 12. Safety valve                       |
| 6. Compressor block                     | 13. Air intake filter                  |
| 7. Fan                                  |  |




## 2. SAFETY

### 2.1. SAFETY PRECAUTIONS

#### **ATTENTION!**



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 need to be kept tight and clean to avoid possible leakages. Leaks in the hydraulic system must be repaired immediately to avoid injuries caused by high pressure bowouts.

In order to avoid possible accidents, it is not allowed to clean or inspect HK 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.



 **ATTENTION!**

Do not exceed the maximum pressure, temperature and load.

## 2.4. MAINTENANCE SAFETY



### ATTENTION

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



### NOTE!

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

Hydraulic system of a base machine should 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. Clean surface with solvent detergent before attaching labels.



READ OPERATING  
INSTRUCTIONS.



GENERAL CAUTION.  
BEWARE OF HIGH  
PRESSURE AIR.



BEWARE OF HOT  
SURFACE.

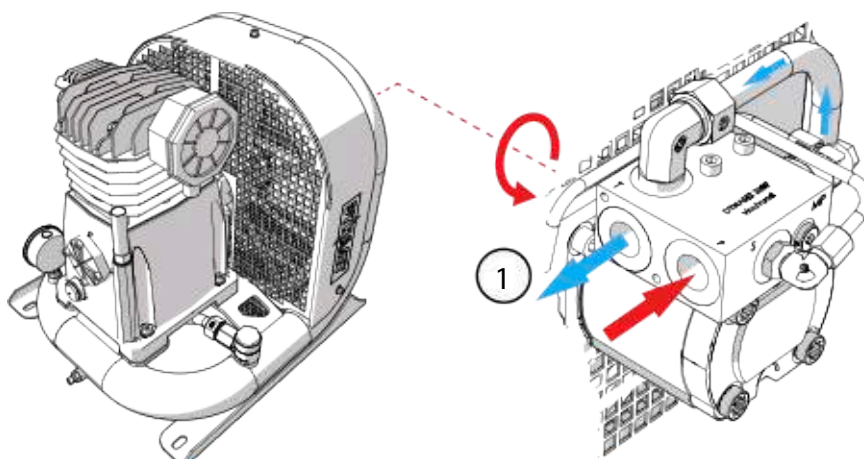


USE EAR PROTECTION  
AND SAFETY  
GLOGGLES.



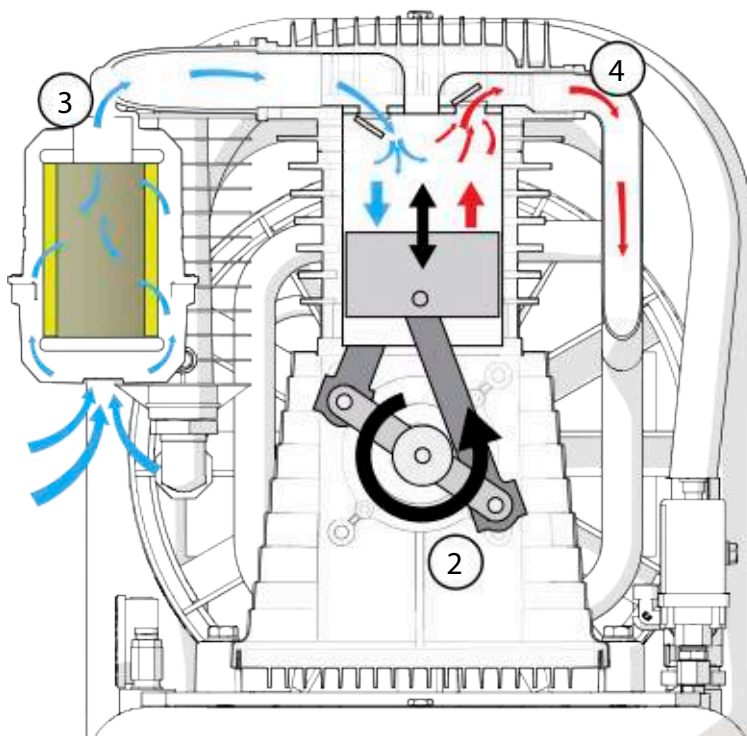
### 3. OPERATING PRINCIPLES

#### 3.1. OPERATING DESCRIPTION



Picture 5: Operating description: Hydraulic motor

1. Hydraulic flow from the base machine rotates the hydraulic motor of the hydraulic compressor.



Picture 6: Operating description: Air compression

2. Hydraulic motor rotates the crankshaft which turns the circular motion into reciprocating motion.
3. The reciprocating motion of the piston creates vacuum when the piston moves downwards. Air is sucked through air intake filter into the chamber to fill vacuum.



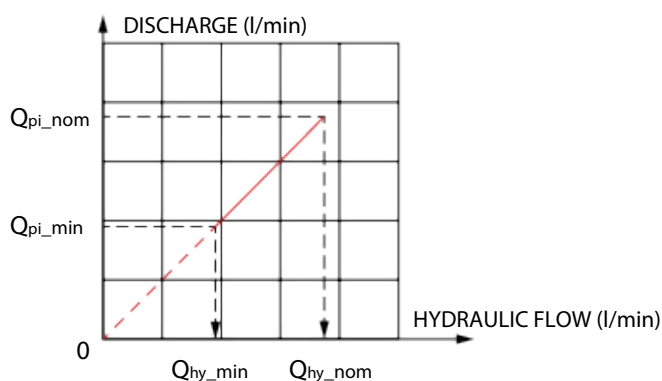
4. Air is compressed by the piston as it changes its direction of movement and starts to move up. The intake valve closes and the pressure in the cylinder builds up. When the certain pressure level is reached, the output valve is opened and compressed air rushes into the air tank.

Compressor's frame reservoir is equipped with an unloader valve, safety valve and pressure gauge.

If the compressed air is not used while compressor is running, air pressure in frame reservoir rises up. The unloader valve releases the air when preset maximum air pressure level is achieved.

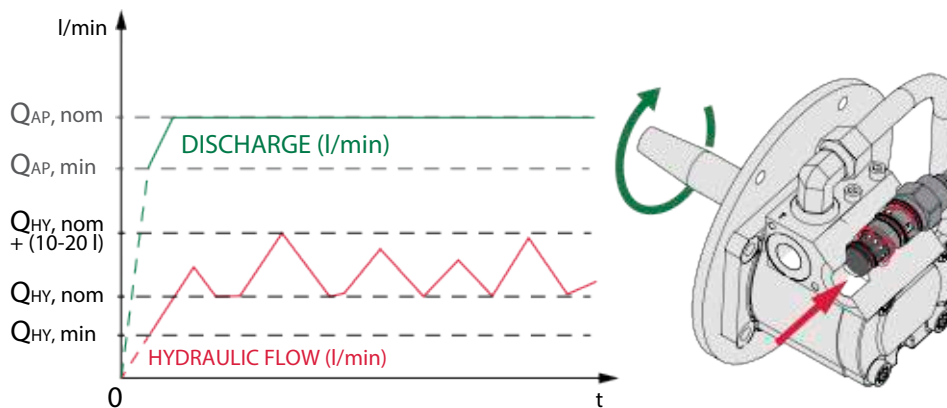
Safety valve protect compressor against internal overpressure. Frame reservoir's safety valve is adjusted at factory either to 9,5 bar (HK450) or 13,5 bar (HK 1000).

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 HK compressor

### 3.2. AUTOMATIC RPM-CONTROL



Picture 8: Automatic RPM-control

Automatic RPM-control keeps rotation speed constant. Incoming hydraulic oil flow ( $Q_{hy}$ ) can vary from nominal demanded flow ( $Q_{hy, nom}$ ) up to value exceeding  $Q_{hy, nom}$  by 10-20 l/min depending on compressors size.

### 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 1000 m above sea level it drops to 0,9 bar.

When the operational pressure of HK compressor is 8 bar, compression ratio is equal to:

$$\frac{\text{operational pressure} + \text{barometric pressure}}{\text{barometric pressure}} = \frac{8 + 1,0135}{1,0135} = 8,89$$

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

## HYDRAULIC PISTON COMPRESSORS OPERATING INSTRUCTIONS

## **4. INSTALLATION**

### **4.1. BEFORE INSTALLATION**



#### **ATTENTION!**

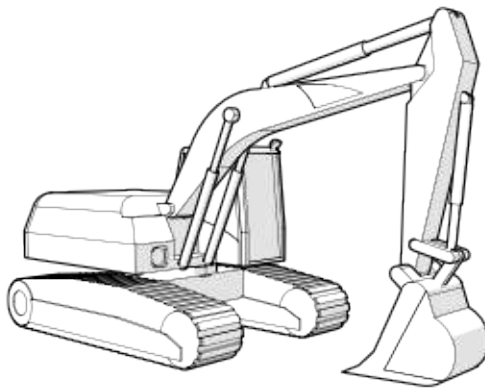
**Read the instructions before installing the DYNASET product!**

#### **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 centre hydraulic system with Load Sensing variable displacement pump
- Closed centre hydraulic system with Load Sensing variable displacement pump
- Hydraulic system with fixed displacement pump
- Hydraulic system with fixed displacement pump at fixed rotation speed

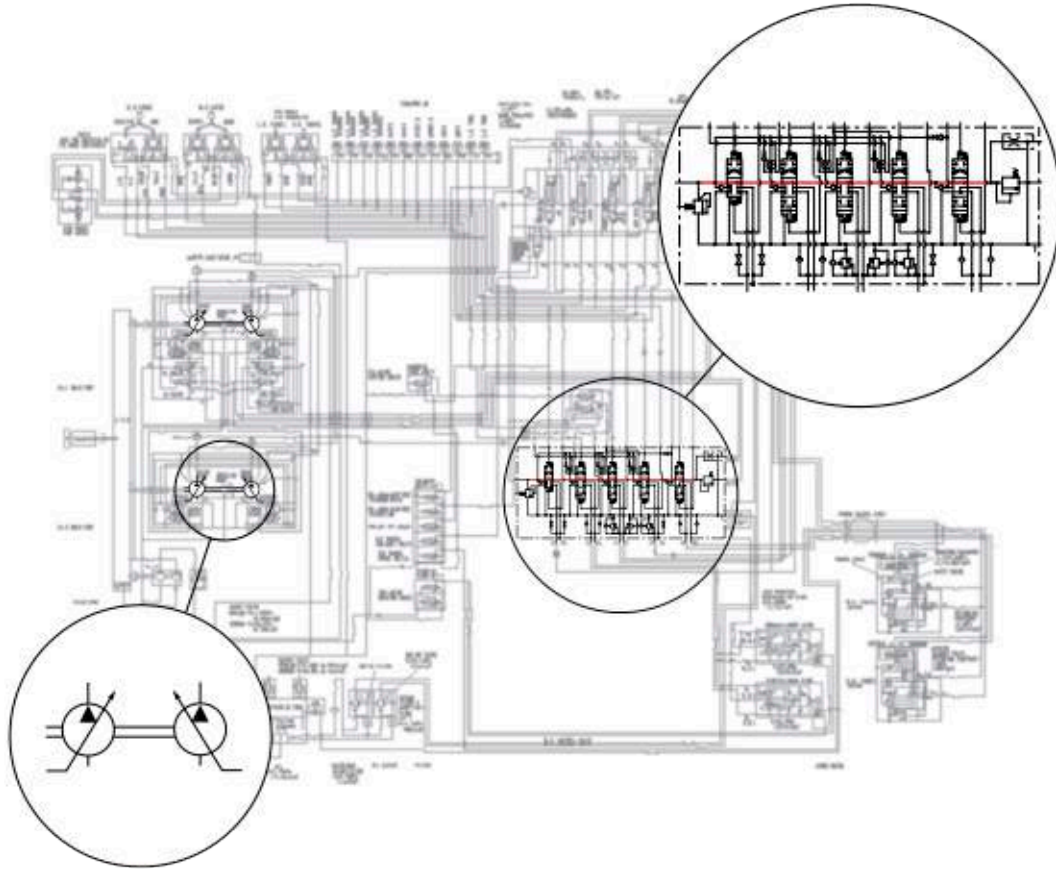
**Before installing the DYNASET product, find out the type of the hydraulic system of your machine.**



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

Next four paragraphs describe the hydraulic systems in more detail.

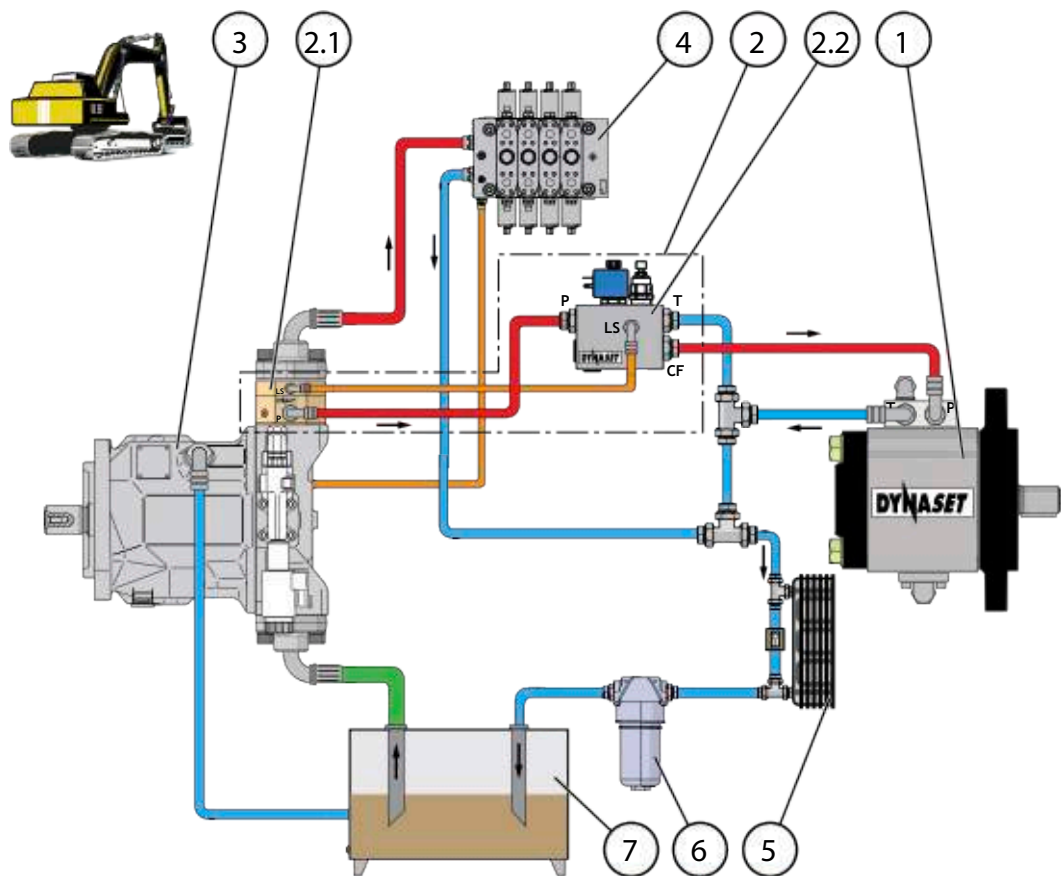
### OPEN CENTRE HYDRAULIC SYSTEM WITH LOAD SENSING VARIABLE DISPLACEMENT PUMP



Picture 9: Open centre hydraulic system with Load Sensing variable displacement pump

In open centre hydraulic system the flow is returned to tank through the control valves open centre; 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.



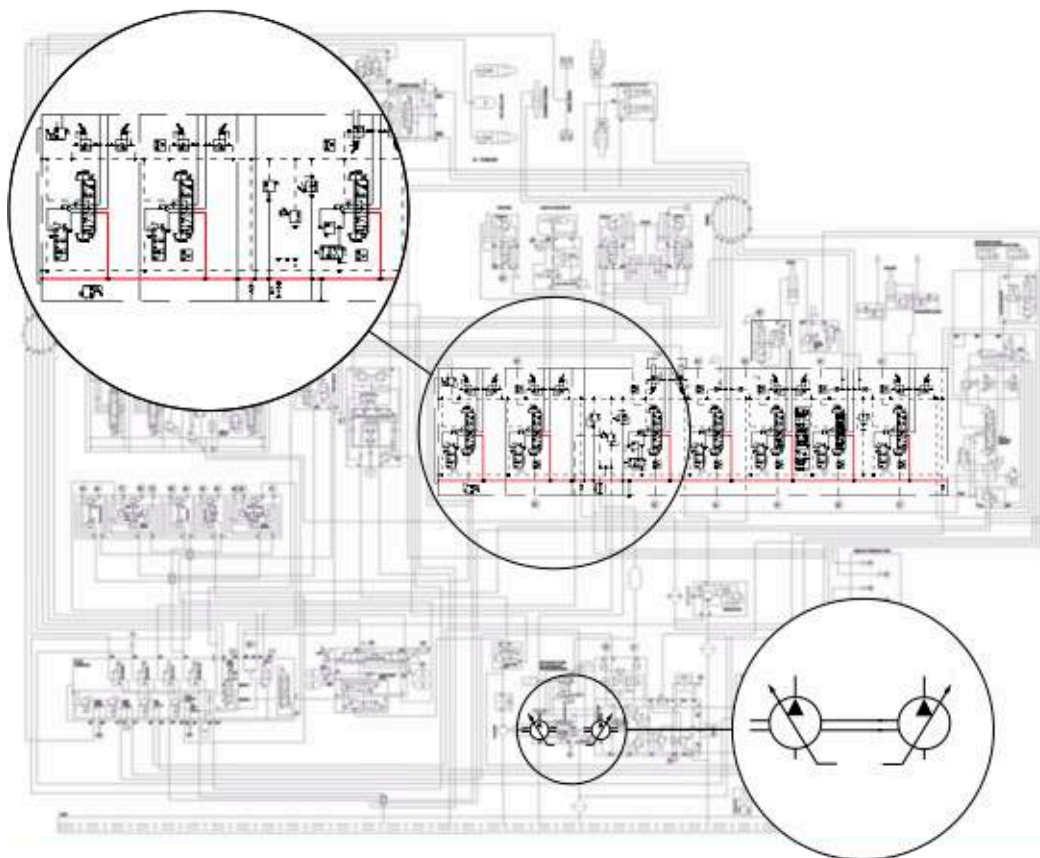


Picture 10: Connection figure for open centre hydraulic system with Load Sensing variable displacement pump

- |   |   |
|---|---|
| 1. DYNASET hydraulic equipment              | 4. Open centre 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 variable displacement pump |   |

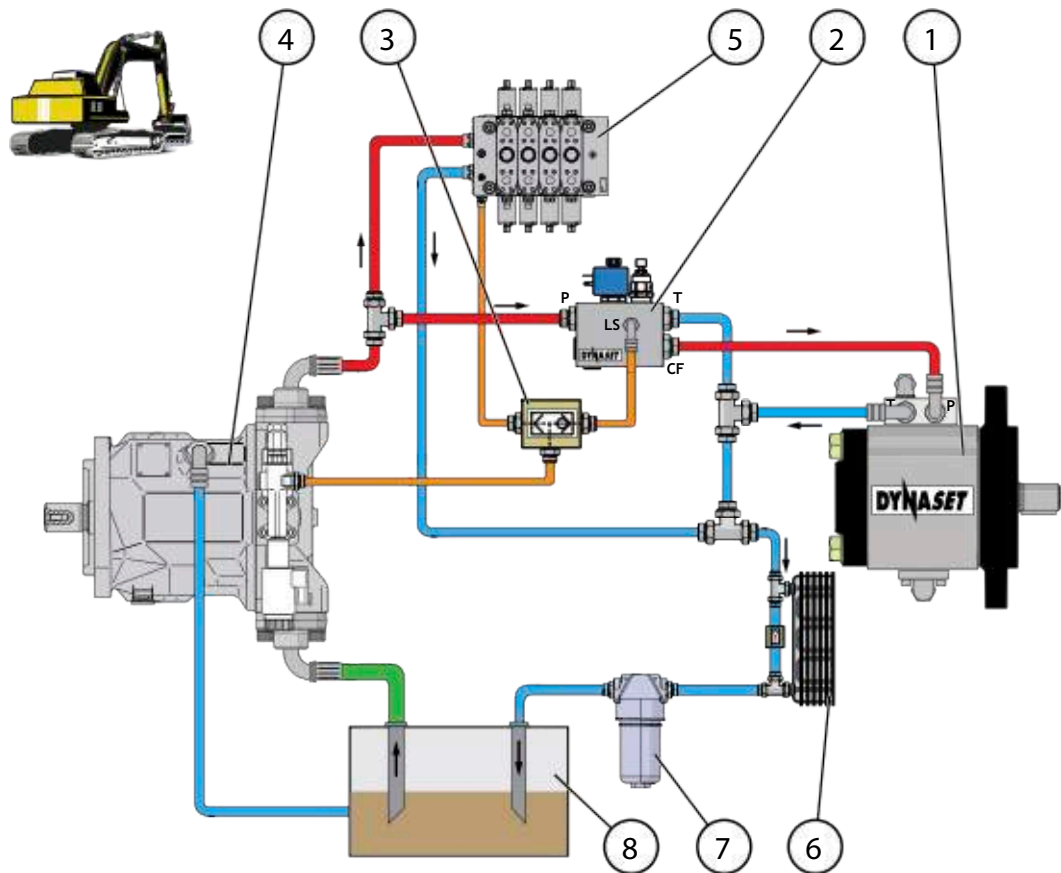


**CLOSED CENTRE HYDRAULIC SYSTEM WITH LOAD SENSING VARIABLE DISPLACEMENT PUMP**



**Picture 11: Closed centre hydraulic system with Load Sensing variable displacement pump**

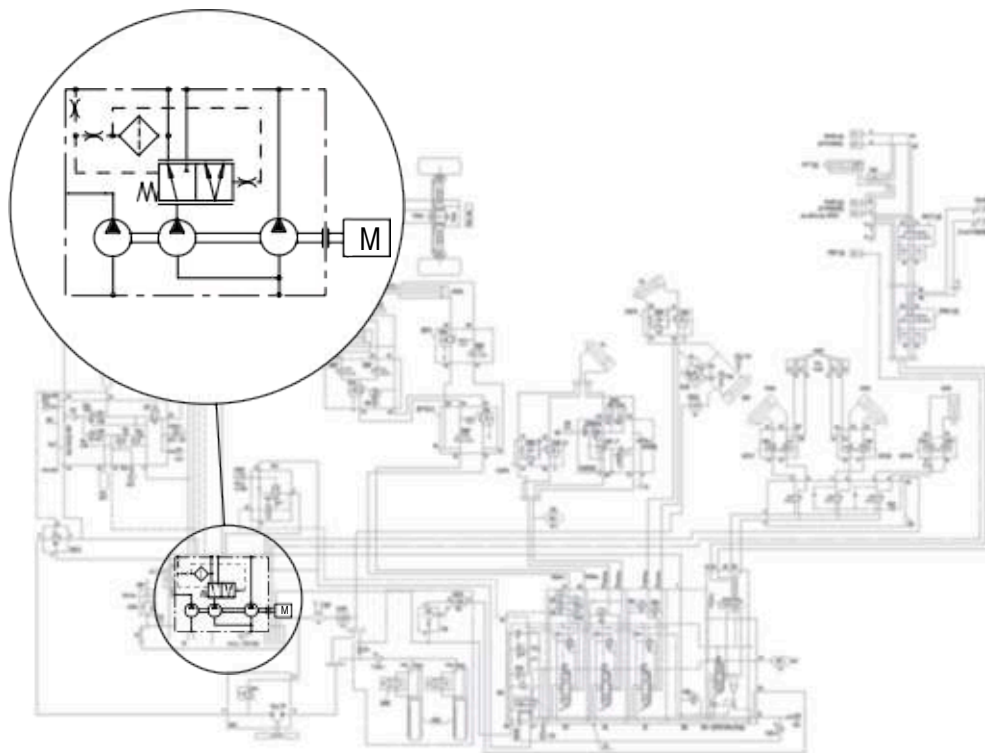
In a closed centre hydraulic system the oil flow is stopped from the pump when control valve is centered. The pump can rest when the oil is not required to operate a function. In Load Sensing variable-displacement pump, the flow rate and output pressure adjusts automatically based on the load of the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



Picture 12: Connection figure for closed centre hydraulic system with Load Sensing variable displacement pump

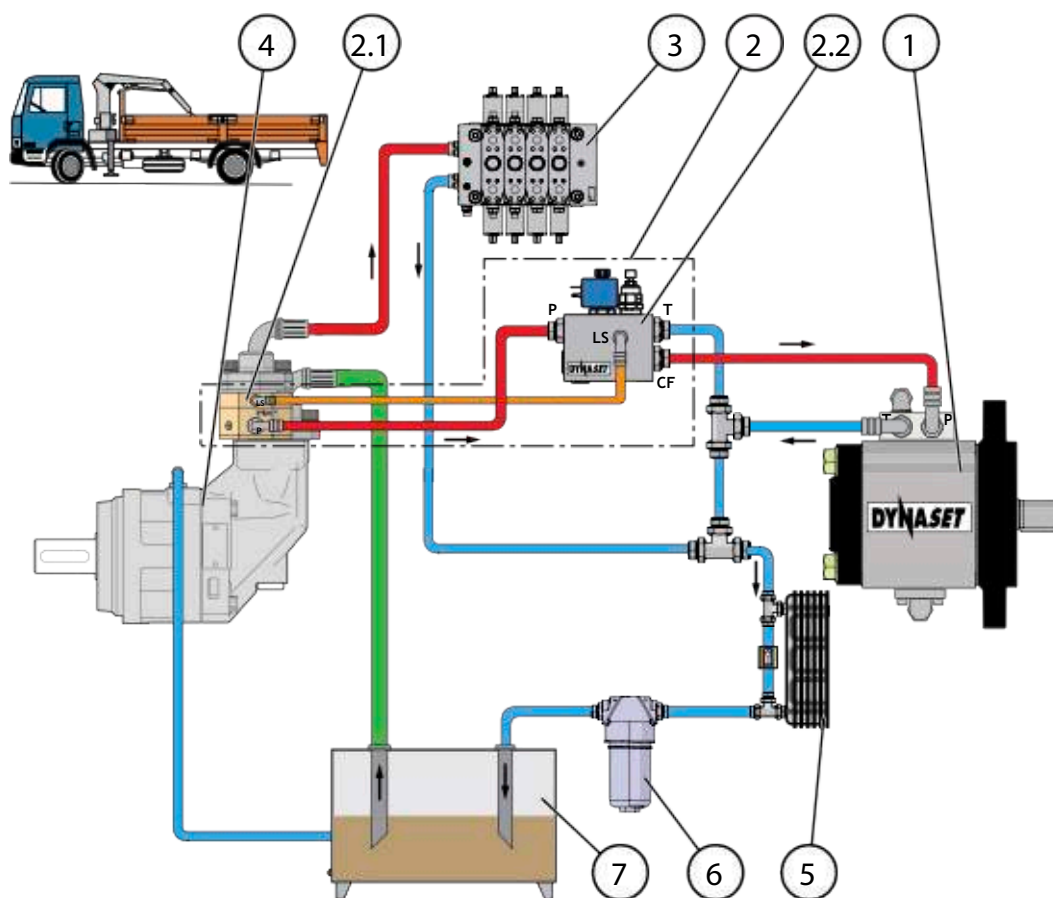
- |   |   |
|---|---|
| 1. DYNASET hydraulic equipment              | 5. Closed centre directional control valves |
| 2. DYNASET LSV Load sensing valve           | 6. Oil cooler                               |
| 3. DYNASET Shuttle valve                    | 7. Oil filter                             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

## HYDRAULIC SYSTEM WITH FIXED DISPLACEMENT PUMP



**Picture 13: 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.



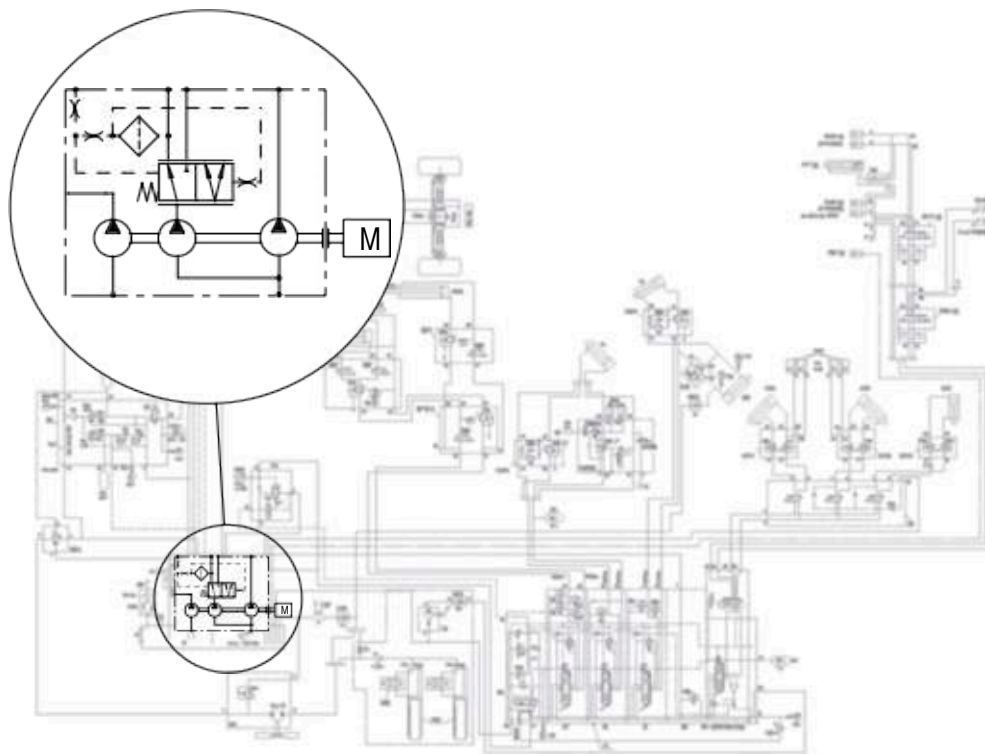
Picture 14: Connection figure for hydraulic system with fixed displacement pump

- |  |   |
|--|---|
| 1. DYNASET hydraulic equipment           | 4. Open centre 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 |   |



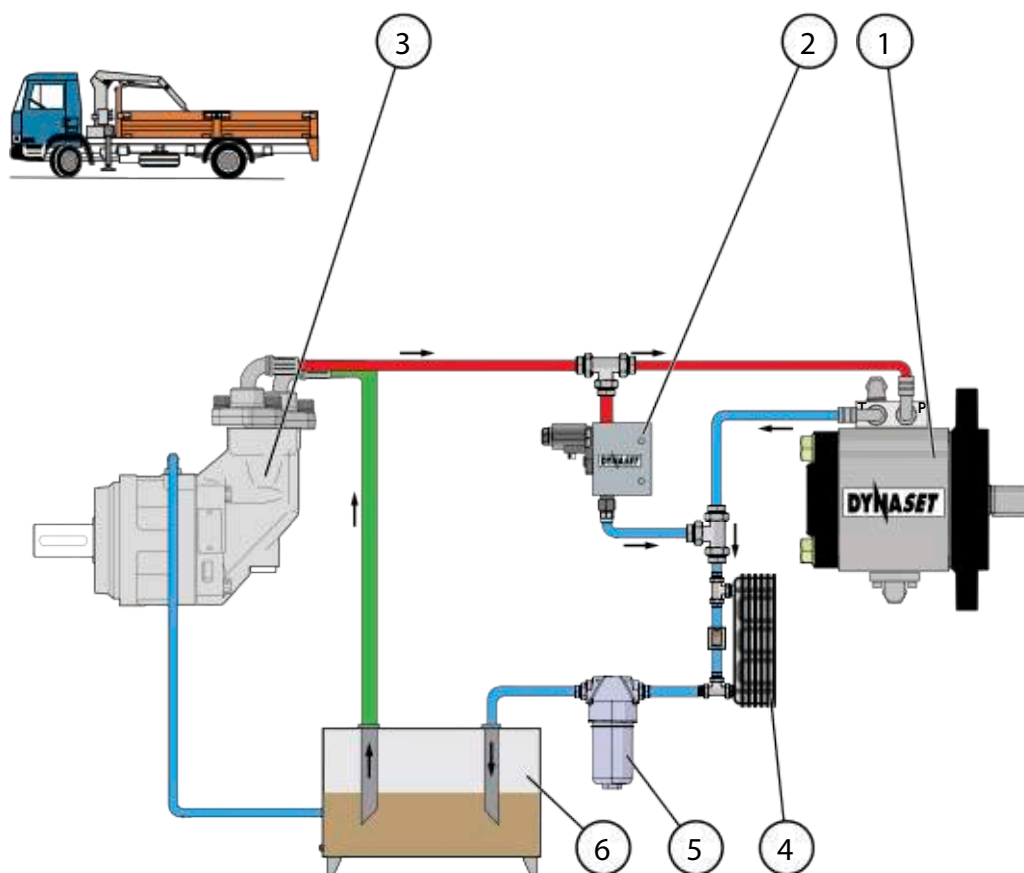


**HYDRAULIC SYSTEM WITH FIXED DISPLACEMENT PUMP AT FIXED ROTATION SPEED**



Picture 15: Hydraulic system with fixed displacement pump at fixed rotation speed

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 engine of the base machine is set to run at fixed rpm when pump is used.



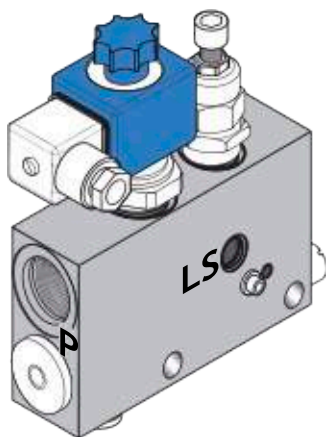
Picture 16: Connection figure for hydraulic system with fixed displacement pump at fixed rotation speed

- |  |               |
|--|---------------|
| 1. DYNASET hydraulic equipment           | 4. Oil cooler |
| 2. DYNASET VKV free flow valve           | 5. Oil filter |
| 3. Base machines fixed displacement pump | 6. Oil tank   |

### 4.1.2. DYNASET VALVES

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

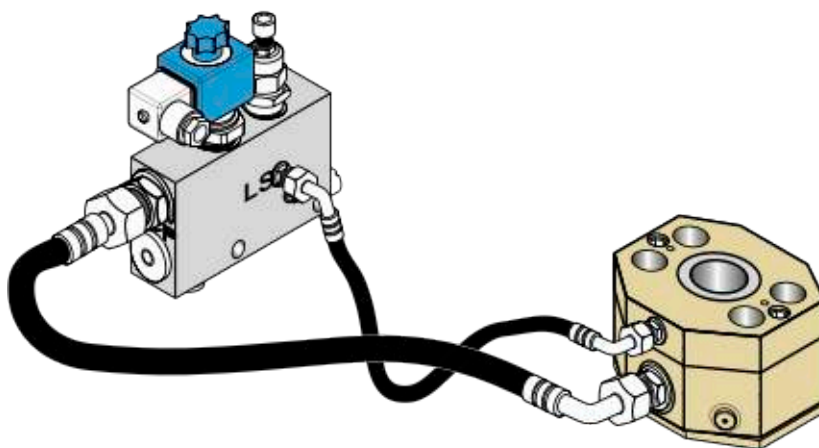
#### DYNASET LOAD SENSING VALVE



Picture 17: Load Sensing valve LSV

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

#### DYNASET PRIORITY VALVE

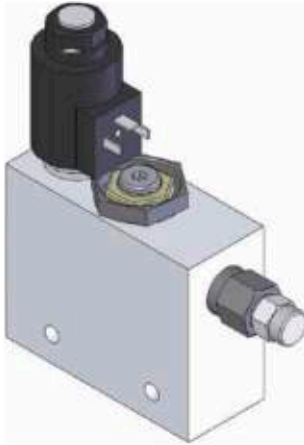


Picture 18: Priority valve PV-SAE

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



### **DYNASET FREE FLOW VALVE**



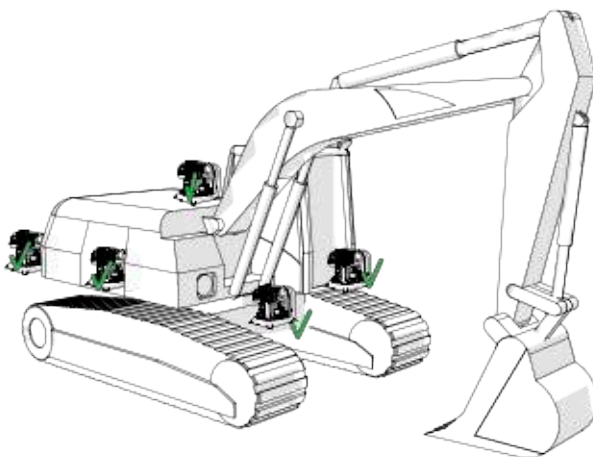
Picture 19: Free flow valve VKV

DYNASET VKV free flow valve enables the installations of the DYNASET products into a hydraulic system with fixed displacement at a fixed rotation speed.

## **4.2. INSTALLING DYNASET HYDRAULIC PRODUCT**

### **4.2.1. PLACING DYNASET HYDRAULIC PRODUCT**

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



Picture 20: Placing the compressor

#### **! NOTE!**

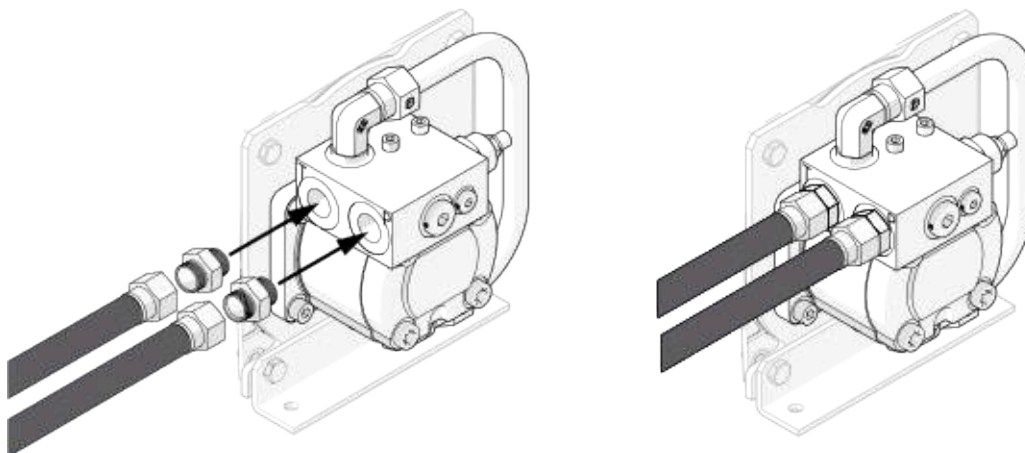
When positioning the HK compressor note the maximum inclinations and ensure that required oil cooling capacity of hydraulic system is sufficient. READ CHAPTER "10. TECHNICAL SPECIFICATIONS" for specific cooling capacities.

#### 4.2.2. INSTALLING DYNASET VALVES

Installation instructions can be found in DYNASET LSV, DYNASET PV SAE or DYNASET VKV instructions manual.

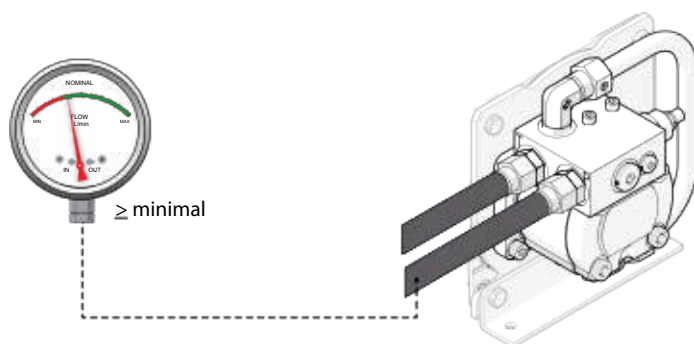
#### 4.2.3. CONNECTING HYDRAULIC HOSES

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



Picture 21: Installing hydraulic hoses

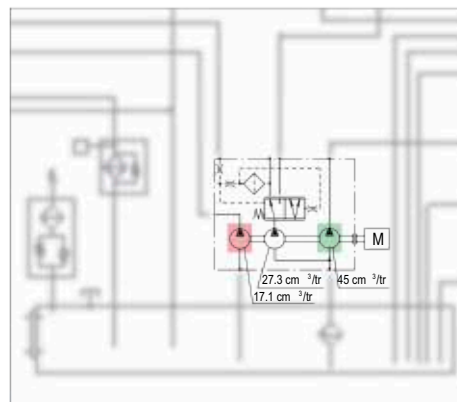
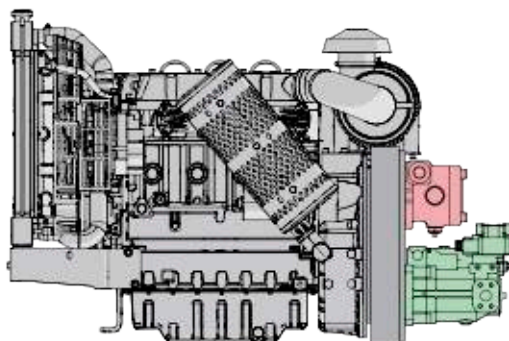
Ensure that the hydraulic flow of the base machine is sufficient to run the unit. At least the minimal flow must be available. READ CHAPTER "10. TECHNICAL SPECIFICATIONS" for hydraulic flow requirements of your HK compressor.



Picture 22: P-line operational hydraulic flow

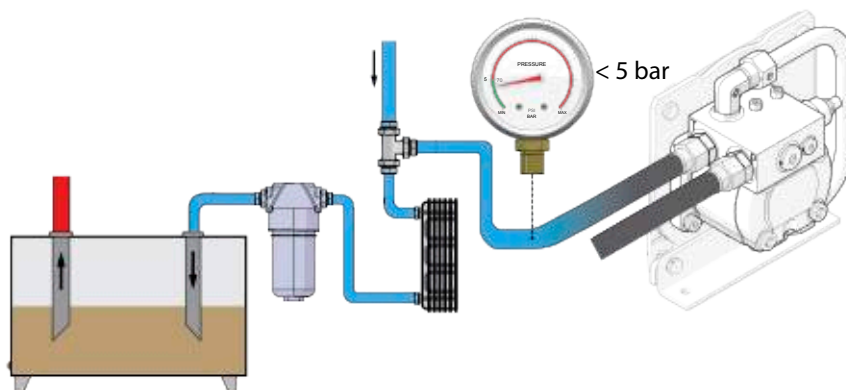
In case of hydraulic flow being too high. The flow must be reduced either by dropping down the rotation speed of base machine's hydraulic pump or using flow limiter valve. DYNASET PV-SAE priority valve is recommended.





Picture 23: 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 24: Return line connection



### ATTENTION!

Ensure that the filtering degree and cooling capacity of the hydraulic system are sufficient. READ CHAPTER "10. TECHNICAL SPECIFICATIONS" for more information.

#### 4.2.4. HYDRAULIC FLUIDS

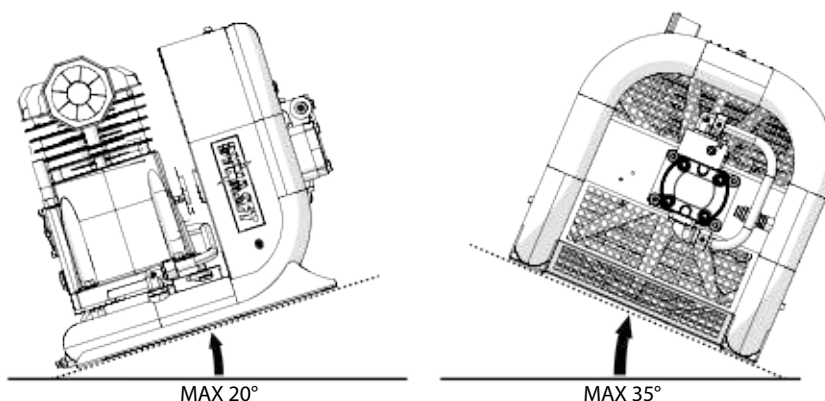
To use proper hydraulic fluid READ CHAPTER "6.2. Hydraulic fluids" for more information.



### 4.3. INSTALLING HK COMPRESSOR

#### 4.3.1. MAXIMUM INCLINATIONS

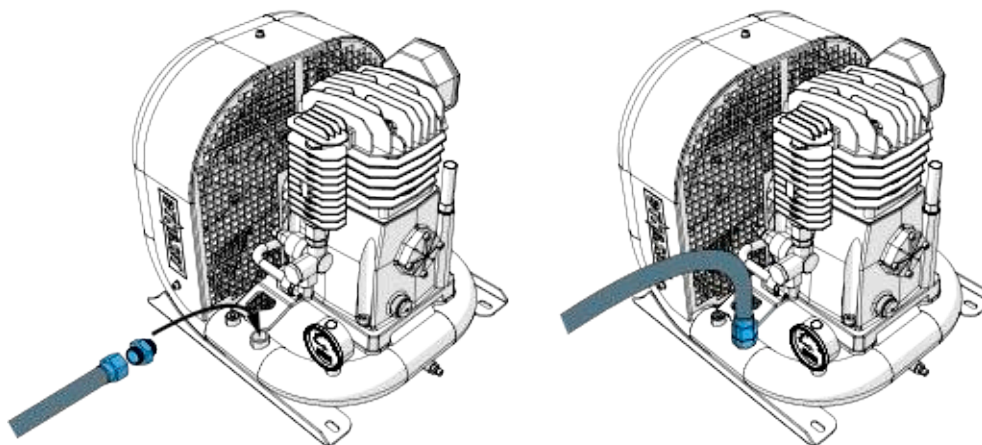
Maximum inclination angle of DYNASET Hydraulic compressor is 20° in front-to-rear direction and 35° in side-to-side direction.



Picture 25: Maximum inclination angle of HK compressor

#### 4.3.2. CONNECTION TO THE AIR SUPPLY SYSTEM

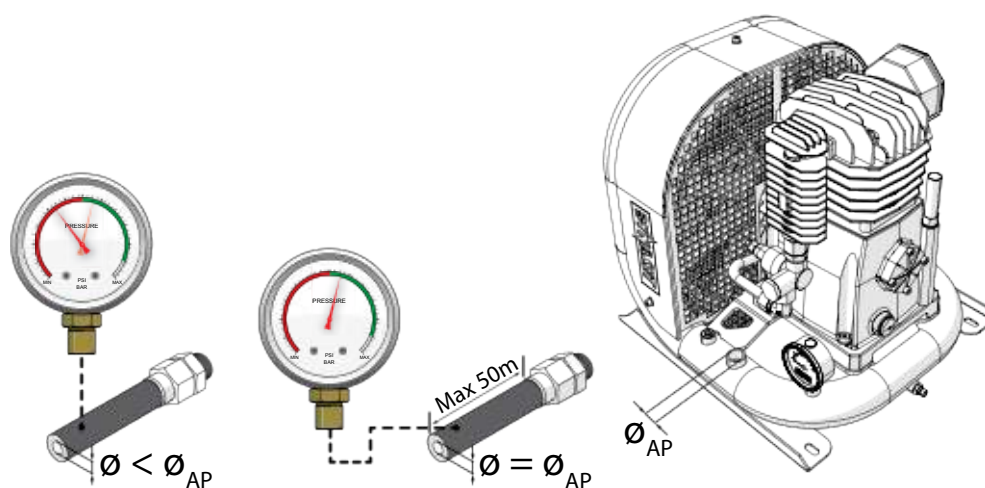
Compressor can be connected to the air supply system (or consumer) with a proper fitting and cut-off valve (option).



Picture 26: Air supply system connection

The inner diameter of pipe / hose used for compressor's connection should 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 AP-port, can be 50 m as maximum. For longer lines use larger diameter.



Picture 27: Air supply line hose diameter and length

## HYDRAULIC PISTON COMPRESSORS INSTALLATION

## 5. OPERATION

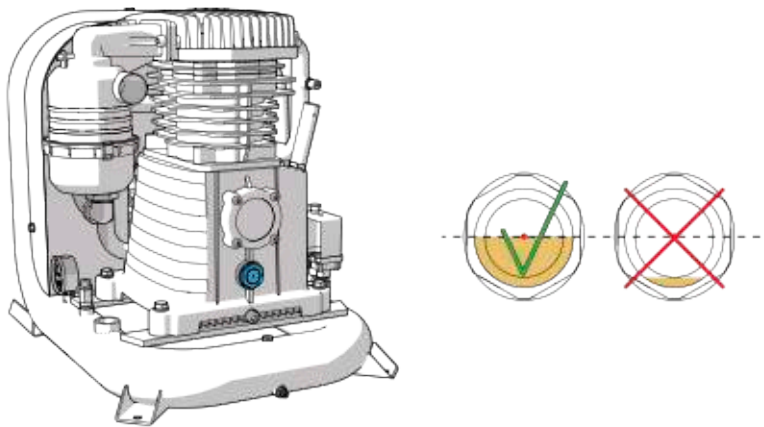
### 5.1. BEFORE STARTING THE COMPRESSOR

#### **ATTENTION!**

Before starting the compressor first time, make sure that the unit is filled with oil.

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

The oil level must be at the mid level of a sight glass when standing still.



Picture 28: Oil level of the HK compressor

#### **NOTE!**

Check the lubrication oil fill periodically

#### **ATTENTION!**

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!







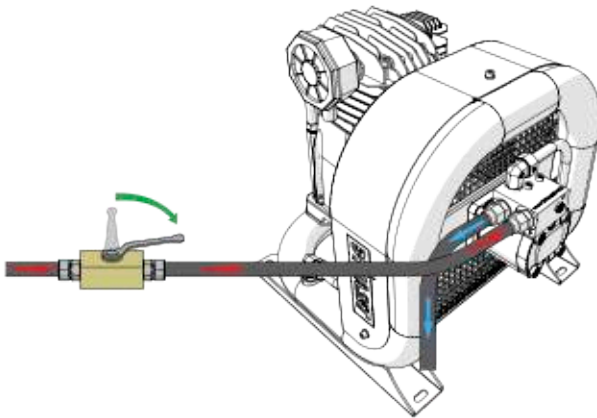
## 5.2. STARTING THE COMPRESSOR



### **ATTENTION!**

**When starting the compressor, ensure that the unit is decompressed.**

When the engine of base machine is running and hydraulic flow is available, the HK compressor can be started by opening the hydraulic control valve.



Picture 29: Starting the compressor

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.



### **ATTENTION !**

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

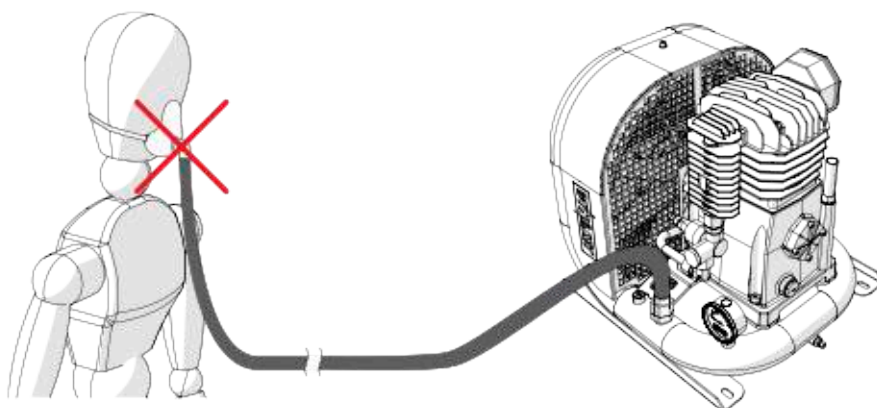
Hydraulic flow and pressure values marked on the compressor's type plate are maximum and should not be exceeded in any circumstances. Exceeding the maximum hydraulic flow causes compressor to overspeed and may damage it. READ CHAPTER "10. TECHNICAL SPECIFICATIONS" for correct pressure and flow rates.

**⚠ ATTENTION !**

The compressor must not be operated in smoky or in conditions where toxic or flammable vapors could be aspirated.

The compressor is not allowed to use to compress toxic, corrosive, explosive or noxious gases.

Compressed air delivered by a HK-compressor must not be used as the breathing air, even if purified and filtered.



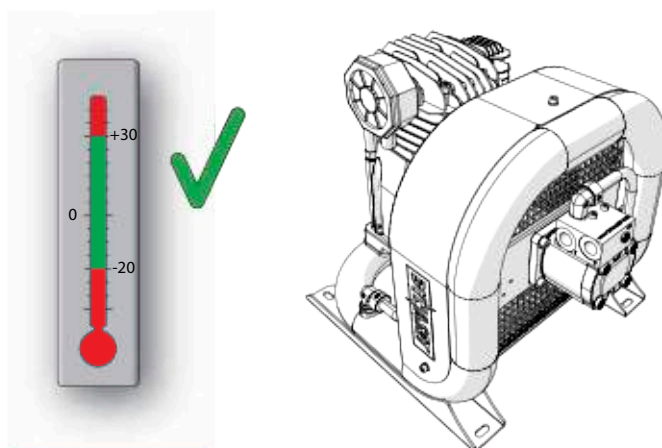
HK-compressor is designed to compress atmospheric air only and must not be used with any other gas.

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 should be replaced immediately.

### 5.3. AIR AND OIL TEMPERATURES

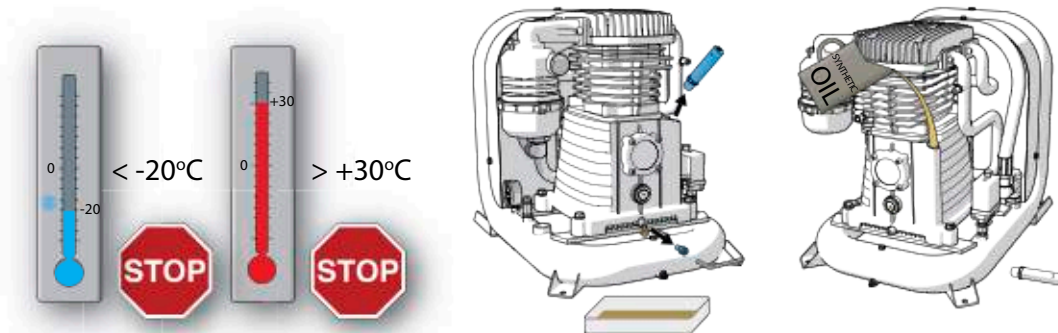
Normal operating within ambient temperature range -20 °C... + 30 °C.



Picture 30: Normal operating ambient temperature



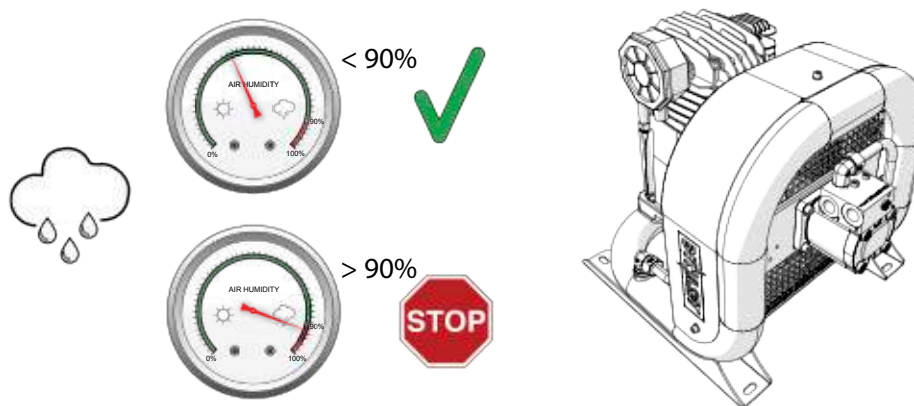
If ambient temperature drops below  $-20^{\circ}\text{C}$  or raises over  $+30^{\circ}\text{C}$ , make sure that compressor is filled with synthetic oil. READ CHAPTER "6.3. Lubrication oils" for corresponding oils.



Picture 31: Operating in extreme ambient temperatures

#### 5.4. AIR HUMIDITY

Compressor can be operated at the relative humidity up to 90%, provided that the ambient temperature is within the above range.



Picture 32: Operation air humidity

#### 5.5. COLD STARTS

When starting the compressor in cold conditions it may start slowly due to oil viscosity.

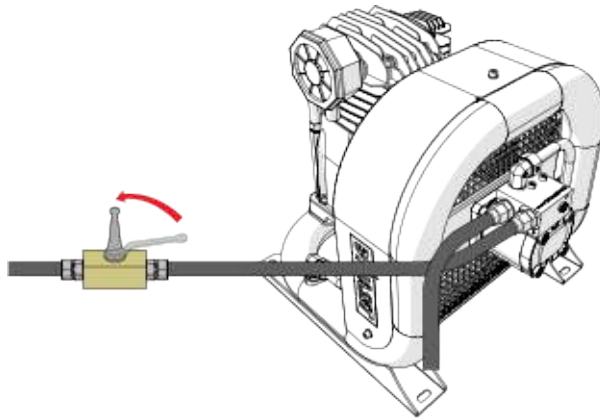
### **5.6. OFF-LOAD MODE**

In standard compressor when the air supply line is closed and preset maximum air pressure in the frame reservoir is reached, unloader valve lets off the air and keeps the air pressure below maximum level.

When the compressed air is requested (i.e. delivery line is open), pressure in frame reservoir decreases, unloader valve closes and re-directs the air into delivery line.

### **5.7. STOPPING THE COMPRESSOR**

To stop the compressor, shut off the hydraulic flow.



Picture 33: Stopping the compressor





## 6. MAINTENANCE

DYNASET HK hydraulic compressors are low-maintenance units. Only normally wearing parts and materials should be replaced either when necessary or in accordance with a service program.



### ATTENTION!

Before beginning any maintenance or repair, ensure that the system is stopped and depressurized. Make sure that the system can not start accidentally.



### 6.1. MAINTENANCE INTERVALS



### ATTENTION!

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

The following table provides maintenance schedule for DYNASET HK hydraulic compressor.

CHECK POINTS	Daily	Weekly	Monthly or every 100 h	Every 6 months or 1000 h	Every 12 months or 2500 h
Check oil level	x				
Clean compressor block and fan guards	x				
Check system for leaks	x				
Drain the condensate water from the frame reservoir *		x			
Change air intake filter			o	x	
Change oil					x

\* At the ambient temperature below 0 °C the frame reservoir must be drained after each work shift.

o = Check / change if necessary

x = Change



### NOTE!

All installation and service of both hydraulics and electric equipment must be performing experienced personnel only.

### 6.2. HYDRAULIC FLUIDS

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

Mineral hydraulic oil	Operation temperature up to
ISO VG 32S	60 °C
ISO VG 46S	70 °C
ISO VG 68S	80 °C

Synthetic and bio-oils can also be used if their viscosity characteristics and lubricating efficiency are similar to the 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 follow the base machine's maintenance instructions.

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

### 6.3. LUBRICATION OILS

Compressor is delivered with lubrication oil. Factory-fill oil must be changed after very first 150 operation hours !

Quality	Ambient temperature	Change interval	Oil fill	
SAE 10W-30	- 20 °C ... + 30 °C	500 h / 12 months	HK 450	HK 1000
			0,9 l	3,1 l

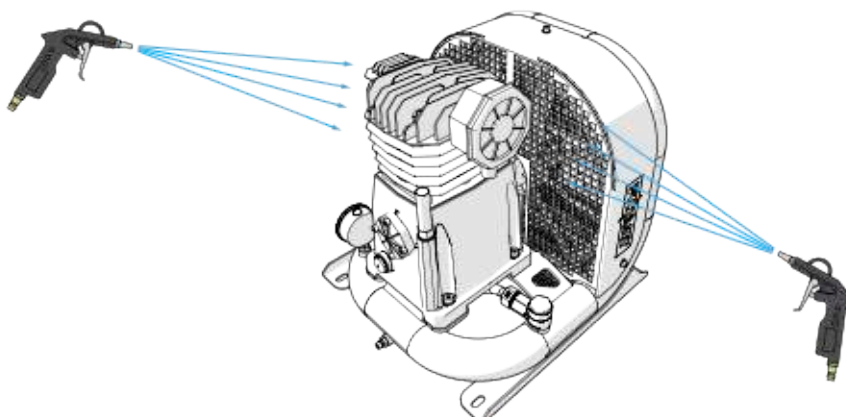
#### 6.4. CLEANING THE COMPRESSOR



##### **ATTENTION!**

Keep the HK compressor clean to enable its safe and longlife operation.  
Check and clean your HK compressor after every work shift.

The compressor block and fan guards should be checked on a daily basis and cleaned when necessary. To clean the unit use blow gun. Clogged and dirty cooling ribs result compressor's overheating.



Picture 34: Cleaning the compressor



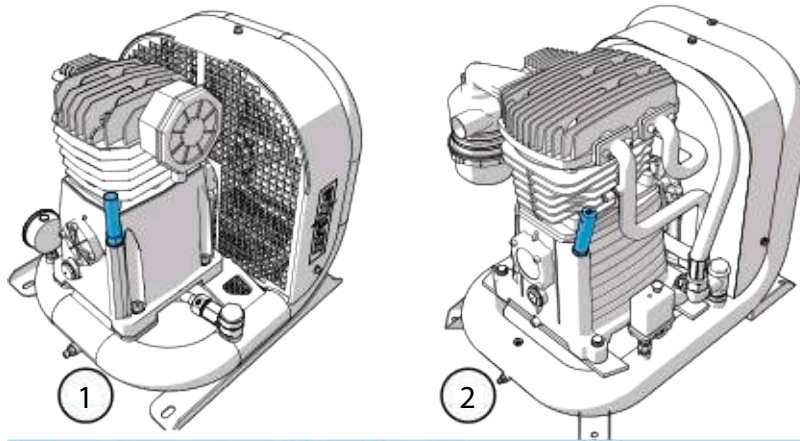
##### **ATTENTION!**

Use safety glasses when cleaning equipment with blow gun.



### 6.5. OIL LEVEL CHECK

Location of oil filler cap.

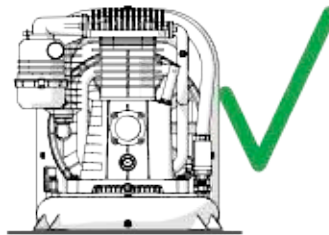


Picture 35: Location of oil filler cap

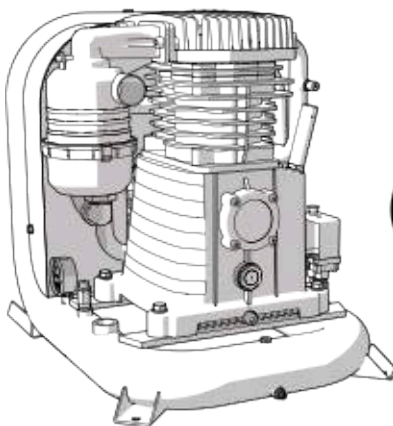
1. HK 450

2. HK 1000

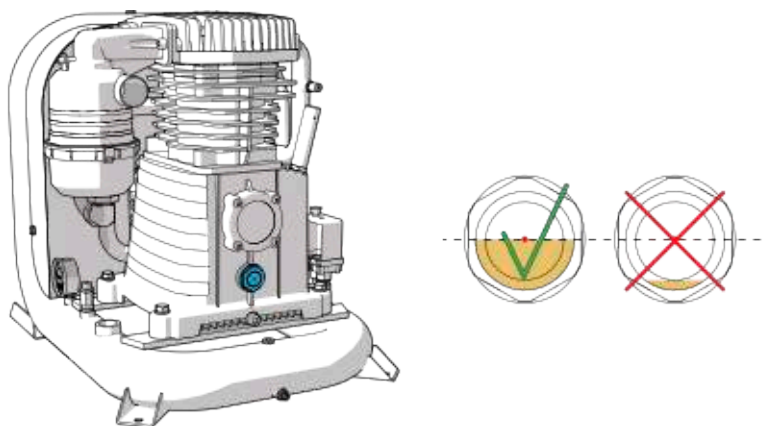
1. Make sure that the compressor is in a horizontal position.



2. Stop the compressor and wait for one minute at standstill.

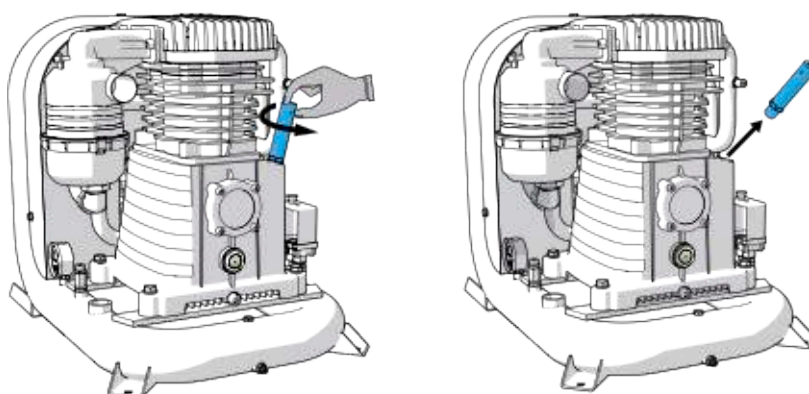


3. Check the oil level from the oil level sight glass. The oil level must be at the mid level of a sight glass when standing still.

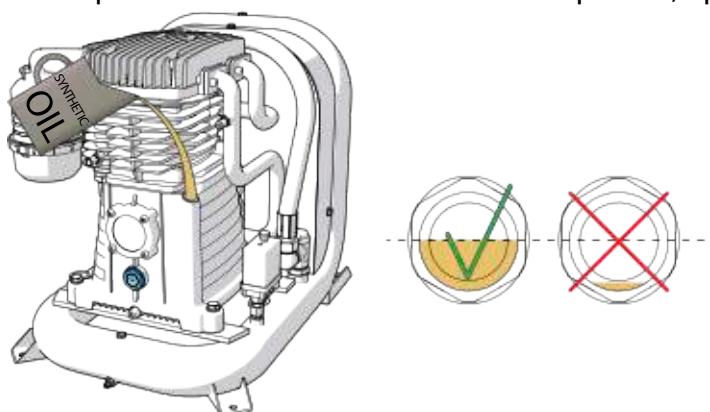


Picture 36: Oil level of the hydraulic compressor

4. If the compressor requires oil fill up, open oil filler cap.

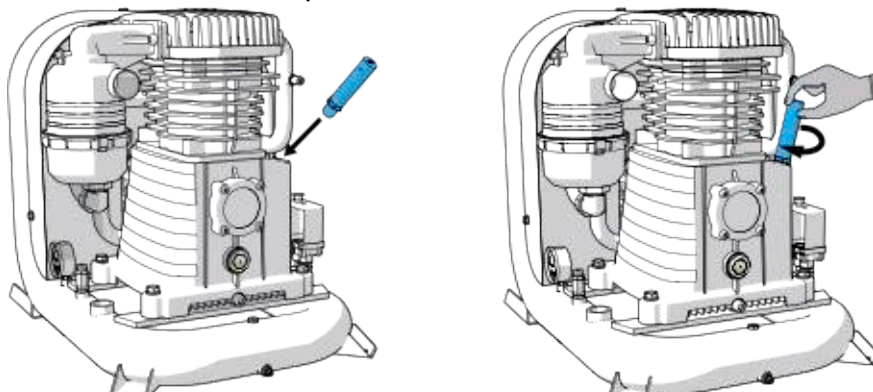


5. Fill up with the same oil as in the HK compressor, up to the maximum level.





6. Close the oil filler cap.



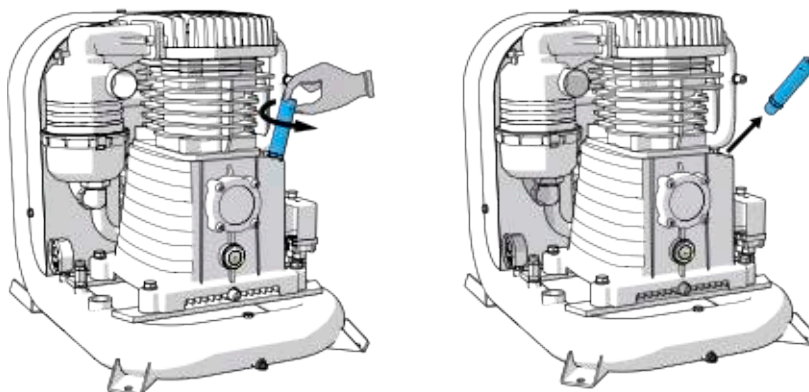
### 6.6. OIL CHANGE

The HK 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.

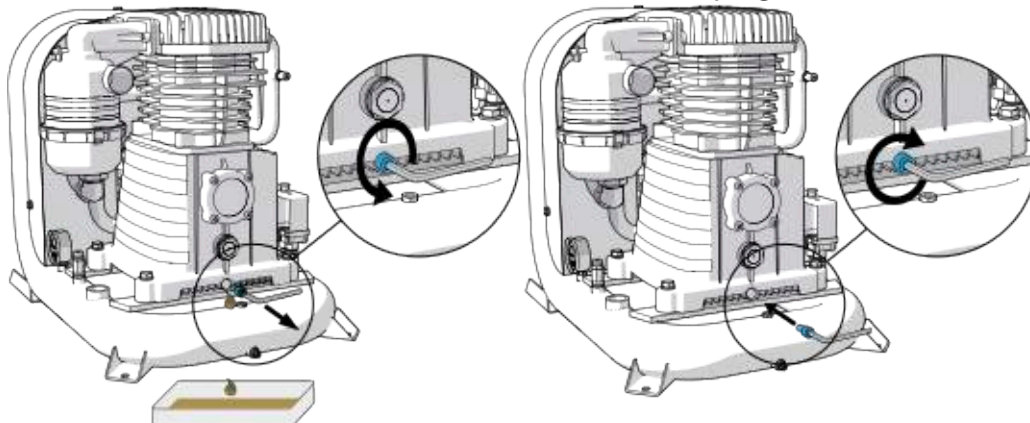
Oil fills of HK compressor.

Model	Oil fill (litre)
HK 450	0,9
HK 1000	3,1

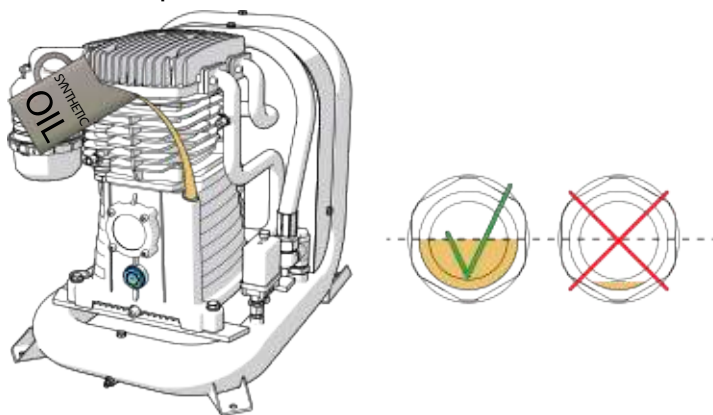
1. Open oil filler cap.



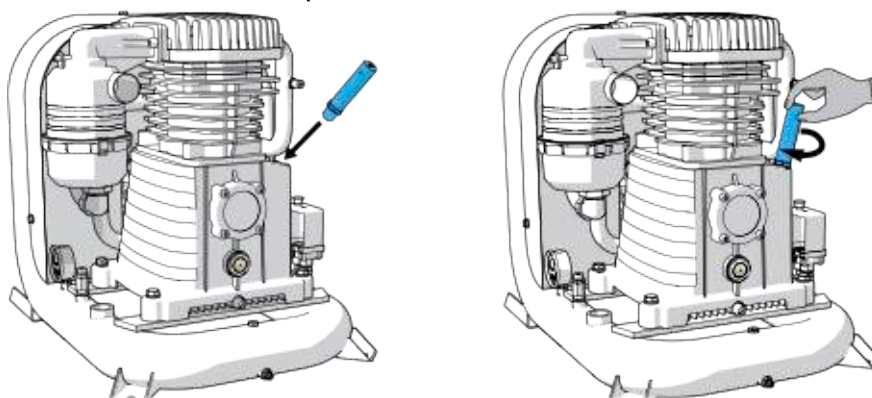
2. Place suitable container under oil drain plug, open the plug and drain oil into container. After all oil is drained, close the oil drain plug.



3. Add oil up to maximum level.



4. Close the oil filler cap





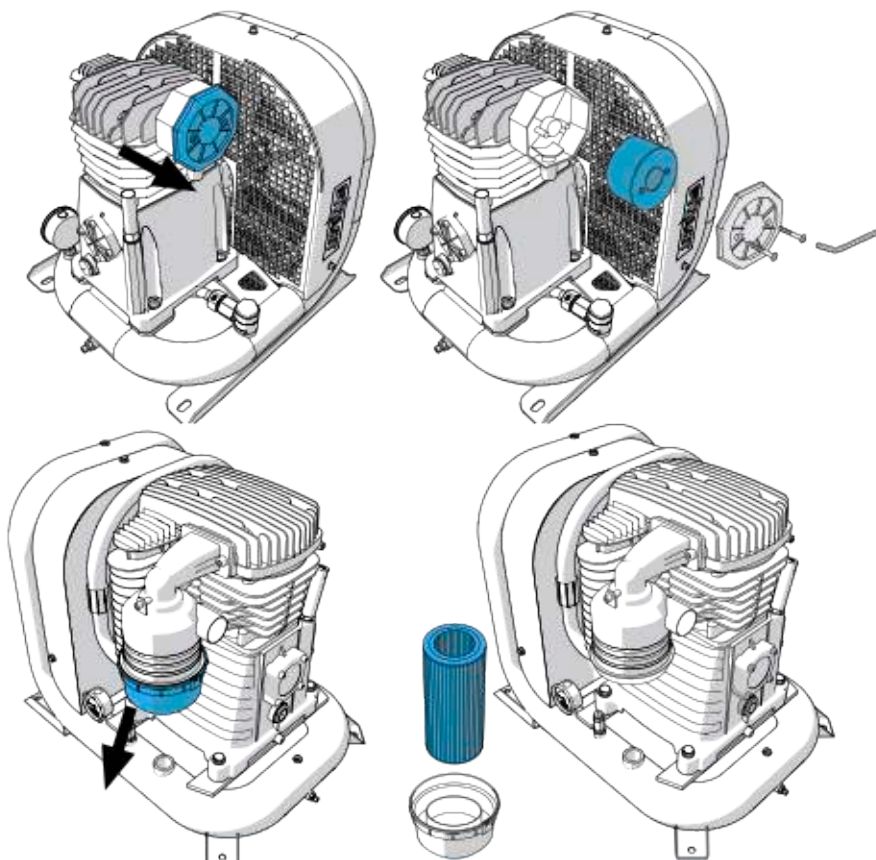
## 6.7. REPLACING THE AIR FILTER ELEMENT



### ATTENTION!

Prevent dirt and dust particles to get into the air inlet of the compressor.

1. Remove air filter element.



Picture 37: Replacing the air filter element

2. Clean or replace the filter element if necessary.
3. Install new air filter element into filter housing.

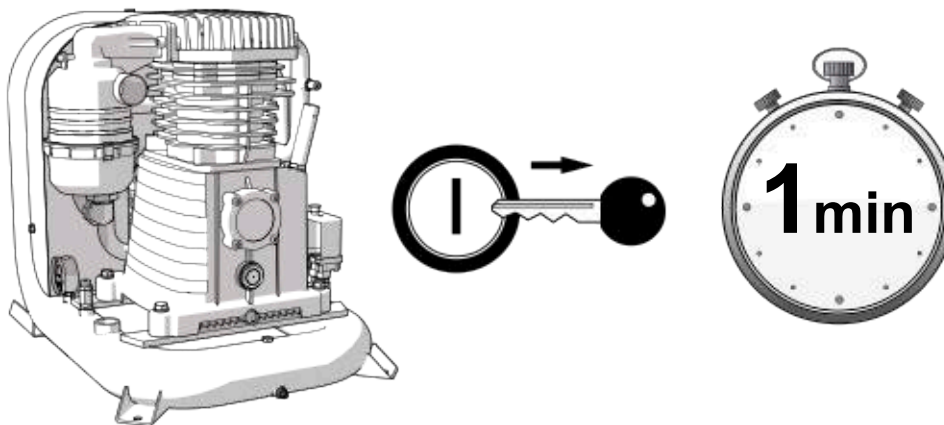


### ATTENTION!

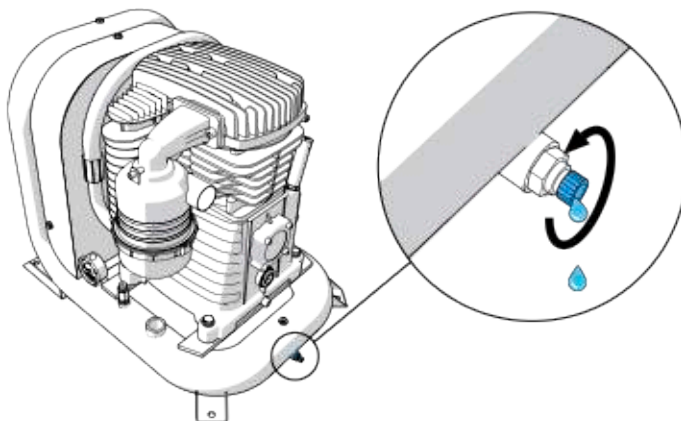
Dispose of the old air filter element according to the applicable regulations.

## 6.8. REMOVE CONDENSATE WATER FROM FRAME RESERVOIR

1. Stop the compressor.



2. Open water drain valve slowly in order to maintain controlled discharge of the reservoir. After the pressure is released, open the valve completely and drain off the condensate water.





#### 6.9. 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
<b>Compressor does not start while carrier's engine is running and hydraulic system is on.</b>	Malfunction on compressor's hydraulic control valve.	Check and repair.
	Compressor's excessive internal pressure.	Release the frame tank's pressure, for instance, by means of 3-way valve installed to the delivery line. In case of intermittent / cyclic duty, either electric pressure switch (-E) or pneumatic cut-off (-PNE) is recommended.
	Failure in hydraulic system.	Check that the hydraulic flow and pressure are sufficient. Adjust when necessary.
		Check the hydraulic motor for possible leakage. Replace damaged parts if necessary.
	Air pressure in delivery line disrupts compressor's start.	Depressurize the system line prior to starting the compressor. It is recommended to install solenoid control valve for off-load valve, especially if the pneumatic system is provided with an air reservoir.



## HYDRAULIC PISTON COMPRESSORS

### MAINTENANCE

FAILURE	REASON	CORRECTIVE ACTION
Compressor starts hardly.	Failure in hydraulic system.	Check that the hydraulic flow and pressure are sufficient. Adjust when necessary.
		Check the hydraulic motor for possible leakage. Replace damaged parts if necessary.
	Air pressure in delivery line disrupts compressor's start.	Depressurize the system line prior to starting the compressor. It is recommended to install solenoid control valve for off-load valve, especially if the pneumatic system is provided with an air reservoir.
	Cold ambient temperature.	Change lubrication oil. READ CHAPTER "6.3. Lubrication oils"
FAILURE	REASON	CORRECTIVE ACTION
Air pressure does not achieve requested rate.	Safety valve opens due to either failure or incorrect setting.	Check and adjust safety valve.
	Failure in hydraulic system.	Check that the hydraulic flow and pressure are sufficient. Adjust when necessary.
		Check the hydraulic motor for possible leakage. Replace damaged parts if necessary.
	Air intake filter is clogged.	Check and replace.
FAILURE	REASON	CORRECTIVE ACTION
Compressor does not produce compressed air.	Delivery line is closed or possible malfunction in pneumatic executor.	Check and repair.
	Unloader valve's failure or incorrect setting.	Check and repair.
	Cogged air intake filter.	Check and clean or replace the air filter.
FAILURE	REASON	CORRECTIVE ACTION
Excessive oil consumption.	Worn piston rings.	Check and replace piston rings.
	Compressor block filled with improper oil.	Fill the compressor block with approved oil.

## HYDRAULIC PISTON COMPRESSORS MAINTENANCE

FAILURE	REASON	CORRECTIVE ACTION
<b>Compressor is overheating</b>	Dirty compressor block, clogged cooling fan's guard.	Check and clean.
	High ambient temperature.	Arrange sufficient ventilation to the operating environment.
	Low oil level.	Add lubrication oil to the required level.
	Compressor block filled with improper oil.	Fill the compressor block with approved oil.

## **7. MANUFACTURER'S LIMITED WARRANTY**

### **1. Warranty coverage**

All hydraulic 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.

### **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.

### **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.

### **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, 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.

### **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 (traveling and waiting hours, daily allowance, traveling 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.

### **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. Warranty of repaired product**

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

**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's like flood, thunder, etc.

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## **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.**

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## HYDRAULIC PISTON COMPRESSORS

### PRODUCT DISPOSAL

## **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 2006/95/EC**

**EMC directive 2004/108/EC**

Applied conformity standards:

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

**EN60204-1** Safety of machinery – Electrical equipment of machines.

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

Product group: **HYDRAULIC COMPRESSORS**

Product: **HK Hydraulic piston compressors**

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



Timo Nieminen  
R&D Manager  
Ylöjärvi, Finland 01.12.2015

## HYDRAULIC PISTON COMPRESSORS DECLARATION OF CONFORMITY

### 10. TECHNICAL SPECIFICATIONS

		HK 450 /8-14	HK 1000 /12-35
<b>DISCHARGE CHARACTERISTICS</b>			
Flow rate at ref. conditions *	l/min (gpm)	450 (118.9)	1000 (264.2)
Pressure max.	bar (psi)	8 (116)	12 (174)
Compressed air connection	AP	BSP 1/2"	BSP 1"
Frame reservoir	l (gal)	4,27 (1.13)	14 (3.70)
<b>HYDRAULIC CONNECTIONS</b>			
Pressure line	P	BSP 1/2"	BSP 1/2"
Return line	T	BSP 1/2"	BSP 1/2"
<b>HYDRAULIC POWER REQUIREMENTS</b>			
Oil flow min.	l/min (gpm)	10 (2.64)	12 (3.17)
Oil flow nom.	l/min (gpm)	15 (3.96)	35 (9.25)
Oil flow max.	l/min (gpm)	35 (9.25)	50 (13.20)
Pressure at nominal flow	bar (psi)	130 (1.85)	210 (3.46)
Pressure max.	bar (psi)	210 (3.46)	230 (3.36)
Pressure when unloaded	bar (psi)	67 (972)	100 (1.50)
<b>HYDRAULIC FLUID REQUIREMENTS</b>			
Viscosity	cSt	10-200 / optimum 25-35	
Temperature **	° C (° F)	max. 70 (158)	
Filter ratio, recommendation	µm	min. 25	
Cooling capacity requirement ***	kW	2	4
<b>LUBRICATION OIL</b>			
Oil fill	l (gal)	0,9 (0.24)	3,1 (0.82)
<b>OVERALL DIMENSIONS</b>			
Length	mm (in)	530 (20.9)	725 (28.5)
Width	mm (in)	430 (16.9)	490 (19.3)
Height	mm (in)	460 (18.1)	600 (23.6)
Weight	kg (lbs)	35 (77.2)	80 (176.4)

\* According to ISO 1217 (1.96) at discharge pressure of 6 bar.

\*\* SEE CHAPTER "6.2. Hydraulic fluids".

\*\*\* Minimum oil cooling capacity for HK compressor on base machine.

## HYDRAULIC PISTON COMPRESSORS

### TECHNICAL SPECIFICATIONS