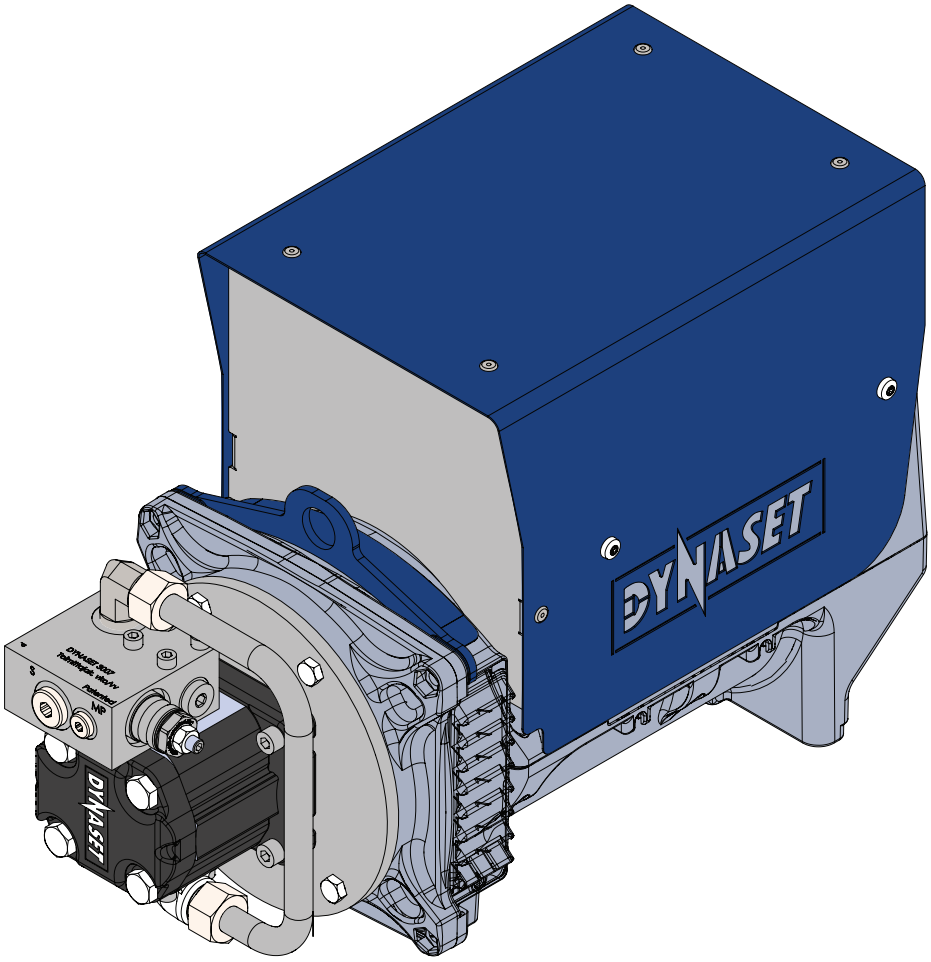
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DYNASET

PARTNER OF YOUR MACHINE



USER MANUAL

Hydraulic Ground Power Generators

HGG200
HGG500

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1. GENERAL

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



WARNING

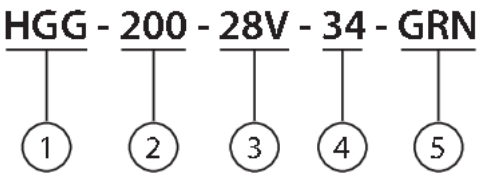
Read this user manual before the installation, use or maintenance of the product to ensure proper handling, operation and maintenance right from the beginning. Pay attention to warnings and safety instructions, read chapter 2 Safety.

1.1 PRODUCT INFORMATION

HGG hydraulic ground generators are compact and integrated all-in-one units, especially designed for mobile installations. The generators use hydraulic power source to operate and produce high quality DC electricity. The generators can be used to power a wide variety of tools and appliances, and to charge batteries.

1.2 PRODUCT IDENTIFICATION KEY

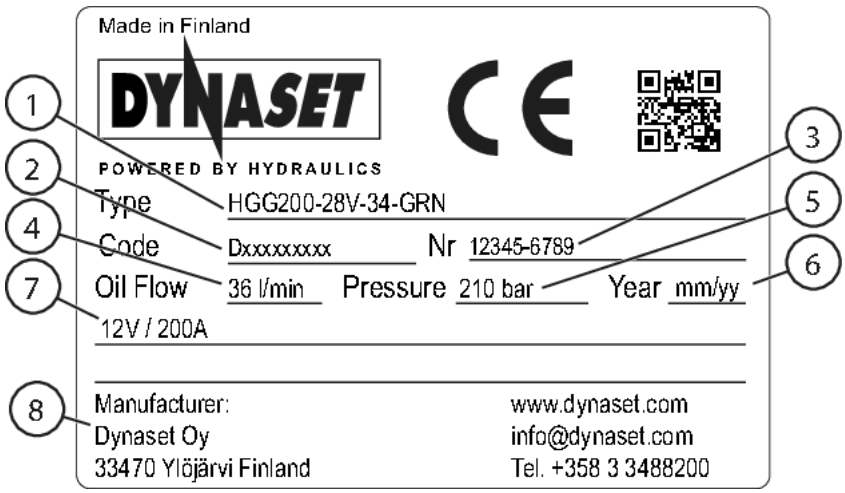
The product identification key describes the characteristics of the DYNASET product. The product identification key is on the product type plate which is attached on to every DYNASET product.



Picture 1: Identification key for HGG hydraulic ground generators

1. **Product category,** HGG hydraulic ground generators.
2. **Nominal power output.** Generator's theoretical maximum current.
3. **Maximum voltage**.
4. Nominal hydraulic flow. Theoretical hydraulic flow of the base machine needed to operate the product.
5. **Output power type (Ground)**

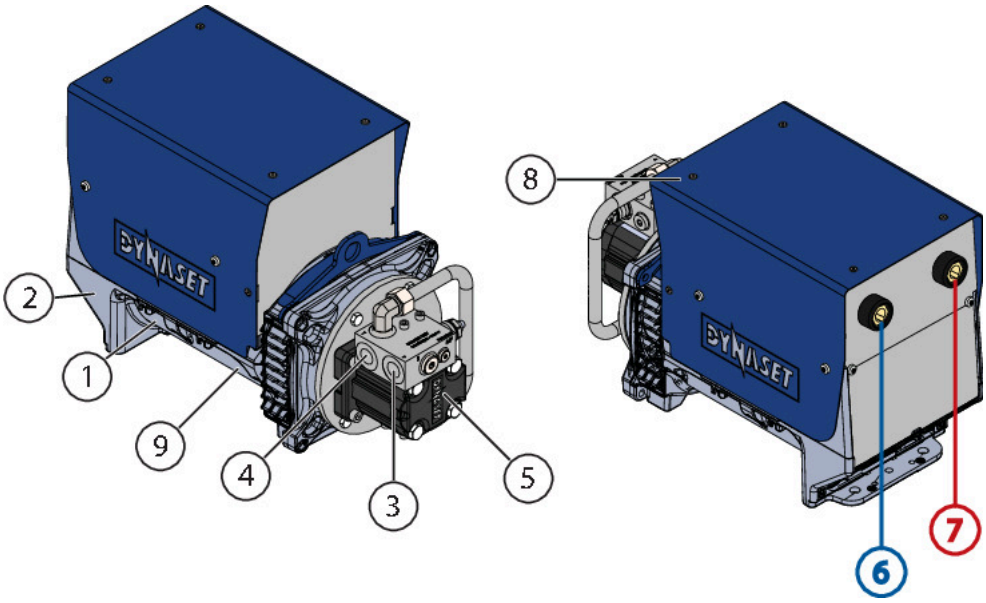
1.3 TYPE PLATE



Picture 2: Type plate

1. Product identification key
2. Product code
3. Serial number
4. Minimum hydraulic flow
5. Maximum hydraulic pressure
6. Production month / year
7. Single Phase: Main voltage / current.
8. Manufacturer's contact information

1.4 HGG'S MAIN COMPONENTS



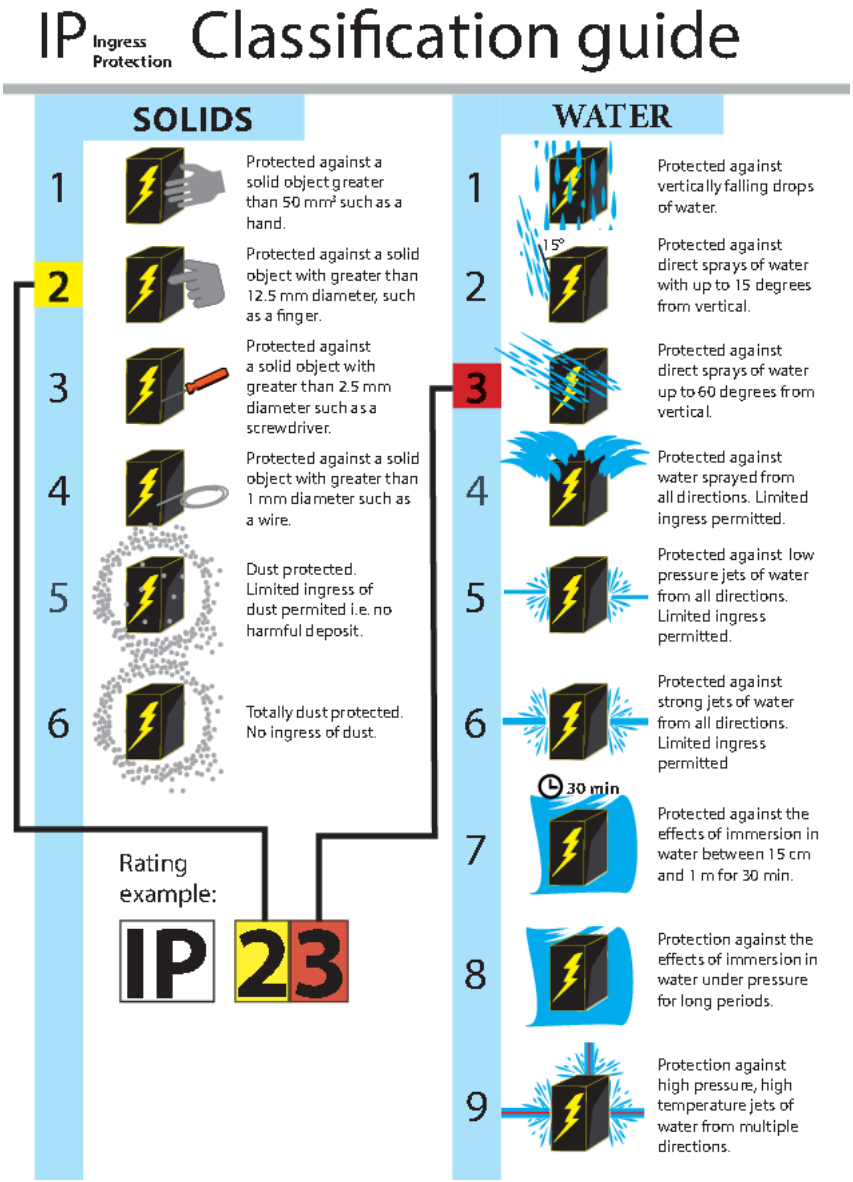
Picture 3: Main components of the HGG hydraulic ground generators

1. Type plate
2. Serial number
3. Hydraulic pressure line (P)
4. Hydraulic return line (T)
5. Hydraulic motor
6. Negative terminal
7. Positive terminal
8. Electric enclosure
9. Generator frame

1.5 IP (INGRESS PROTECTION) CLASSIFICATION

HGG Hydraulic Ground Generators are IP classified according to the IEC standard 60529 for the degrees of protection of electrical equipment. The protection class of standard HG Hydraulic Ground Generator complies the specifications IP23 or IP54. Also other IP class generators are available by request.

HGG Hydraulic Ground Generator's IP class is marked into the product identification key. From the following chart you can check your IP class information.



1.6 HYDRAULIC EQUIPMENT

This product identification key describes which hydraulic options are included to the HGG Hydraulic Ground Generator's structure.

PRESSURE RELIEF VALVE (P)

An additional pressure relief valve can be installed on the generator's RPM-block. It prevents the oil pressure from increasing too high.

ADD-ON VALVES (V/W)

As an addition for traditional valve options, Dynaset offers HG Hydraulic Generators equipped with Add-On valves to replace load sensing and pressure relief valves. With the Add-on valve block the valves are integrated to the HG Hydraulic generator's RPM-block. They can also be installed afterwards to the HG generators. They save space and simplify generator and valve installation to the hydraulic system.

RUBBER CUSHIONS (R)

Rubber cushions are attachments between HG Hydraulic Generator and its base machine. If HG Hydraulic Generator comes with rubber cushions, grounding of the generator must be ensured.

NOTE!

Read Installation chapter "Grounding" to see proper grounding for the HG hydraulic generators.

WITHOUT AUTOMATIC FREQUENCY REGULATION (S)

Without automatic frequency regulation generator does not have any automatic rotation or frequency control.

NOTE!

The customer is responsible for controlling the suitable oil flow and rotation speed of the hydraulic motor.

2. SAFETY

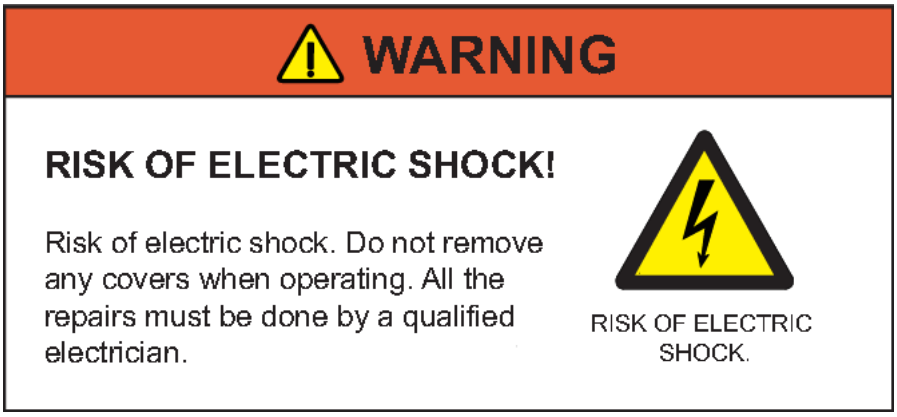
2.1 SAFETY PRECAUTIONS

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 hydraulic system is pressurized up to 420bar.

The pressure in the hydraulic circuits is considerably high. Therefore, the condition of your equipment must be kept under constant observation. All couplings, valves

and hoses must be tight and clean. Leaks in the hydraulic system must be repaired immediately to avoid injuries caused by high pressure and oil blowouts.

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.

NOTE!

Technical condition of your machinery and equipment must be subjected to constant surveillance.

The base machine must be stopped, and the hydraulic circuit must be depressurized prior to maintenance, detaching or disassembling the HG Hydraulic Generator.

2.2 SAFETY EQUIPMENT

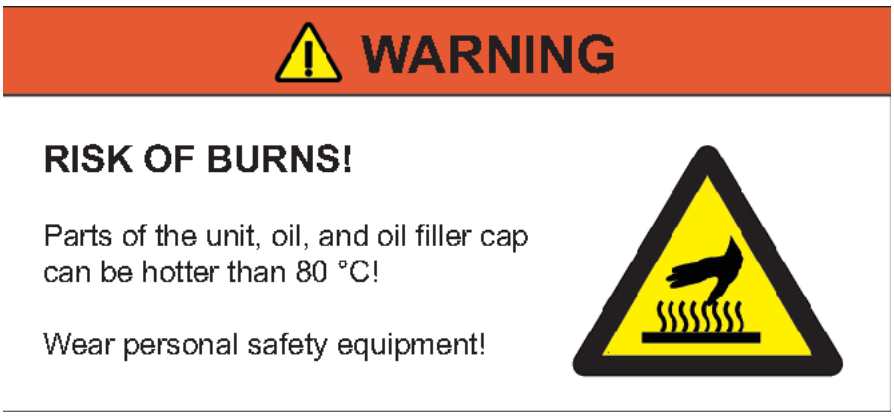
Always wear appropriate clothing and safety equipment such as safety goggles, safety shoes and ear protection when operating the Hydraulic Ground Power Generators.



2.3 OPERATING SAFETY

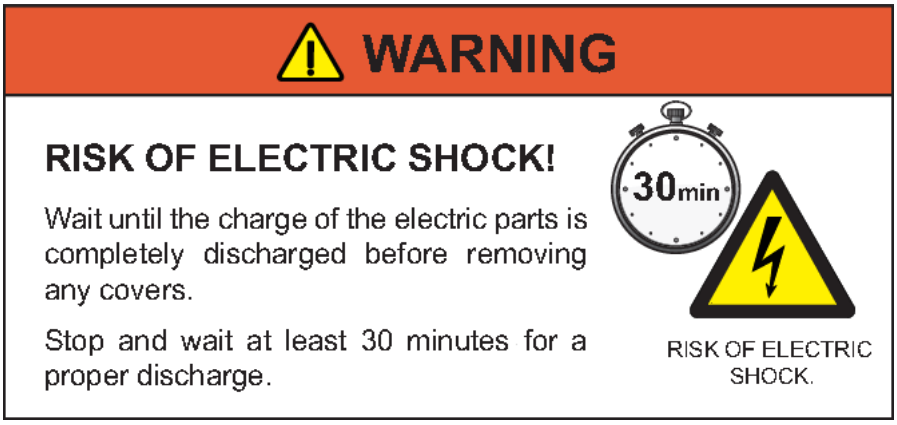
WARNING

Maximum load must never be exceeded.



2.4 MAINTENANCE SAFETY

Hydraulic system of the base machine should be maintained according to the machine's own service program.



WARNING

All installations and maintenance must be performed according to this manual. All installations and maintenance that is not shown in this manual should only be performed by a qualified mechanic or electrician depending on the job's requirements.

WARNING

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

NOTE!

When you do any maintenance to , keep the components of the system clean. This is important to ensure safe, reliable and longlife operation of your equipment.

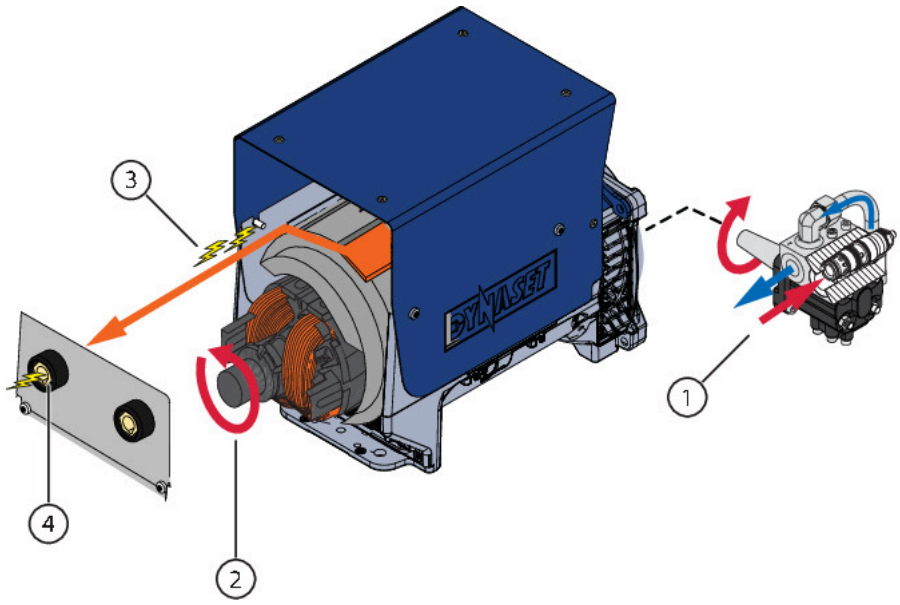
2.5 WARNING LABELS

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 the surface with solvent detergent before attaching labels.

3. OPERATING PRINCIPLES

3.1 OPERATING DESCRIPTION



Picture 4: HGG Hydraulic Ground Generators operating principle

1. When the hydraulic flow is directed through RPM-valve block to the hydraulic motor. The RPM-valve keeps the flow constant with a RPM cartridge and controls the speed of the hydraulic motor.
2. Hydraulic motor actuates the alternator's rotor through a direct connection to the rotor.
3. The rotor spins, and it produces a changing magnetic flux that generates electricity. AC electricity is then converted through the rectifier to DC current.
4. Electricity outlets on the HGG provide DC current. They are simple + and - connectors ("machine connectors") that provide DC electricity from 12 to 24v, depending on the model.

3.2 VOLTAGE CONTROL

Voltage regulator adjusts rotor's excitation power, maintaining constant output voltage at fluctuating electric load.

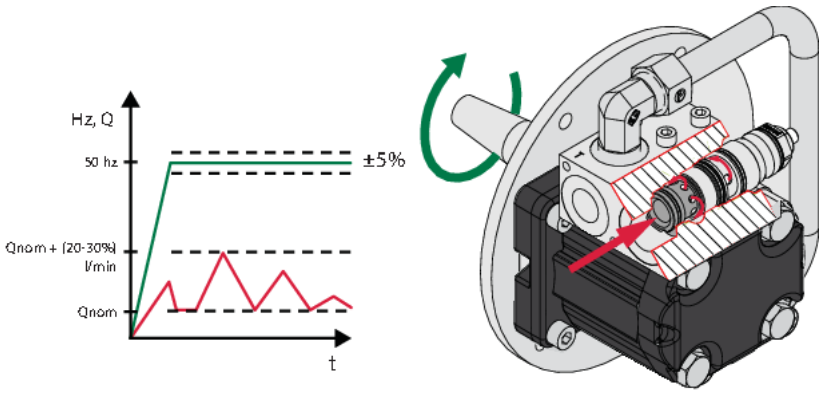
SINGLE-PHASE GENERATORS

Voltage control of a single-phase generator is affected with a capacitor circuit, connected to auxiliary windings. Voltage control keeps the voltage constant through the whole load range with accuracy of ± 5%. The response time of the voltage control is less than 1 second.

3.3 PERFORMANCE OF AUTOMATIC FREQUENCY CONTROL

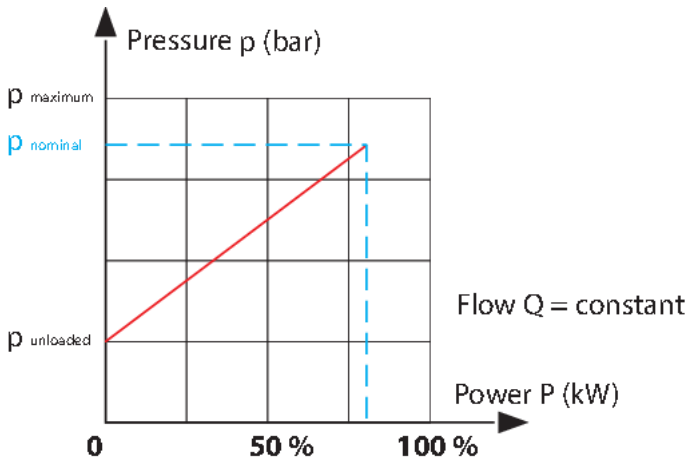
RPM-cartridge maintains rotation speed of the hydraulic motor so that the frequency is constant (±5 %). The output power remains stable (±5 %) even when the hydraulic flow (Q) exceeds the nominal flow (Qnom) up to 20-30% l/min, depending on HG Hydraulic Generator size.

3.4 PRESSURE POWER RATIO



Picture 5: Automatic frequency control

Following chart describes the power to pressure ratio. The chart shows output power's relation to the pressure, when the hydraulic flow Q is kept constant. The best power to pressure ratio is achieved when the pressure is at nominal level, little under the maximum value.



Picture 6: Pressure/Power chart

4. INSTALLATION

4.1 BEFORE INSTALLATION

⚠ WARNING

Read the instructions before installing the DYNASET product!

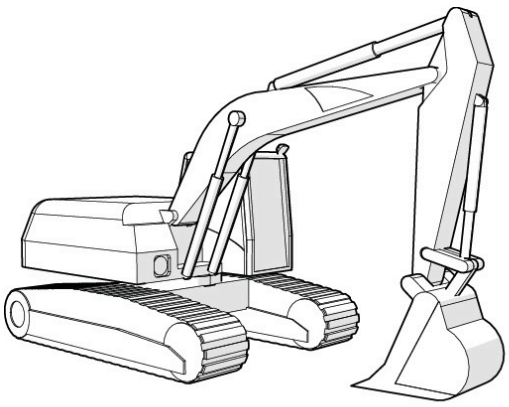
4.1.1 HYDRAULIC SYSTEM OF A BASE MACHINE

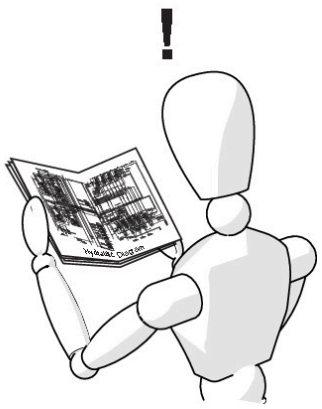
Base machines have different type of hydraulic systems. Most common hydraulic systems in mobile machinery are:

- 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.

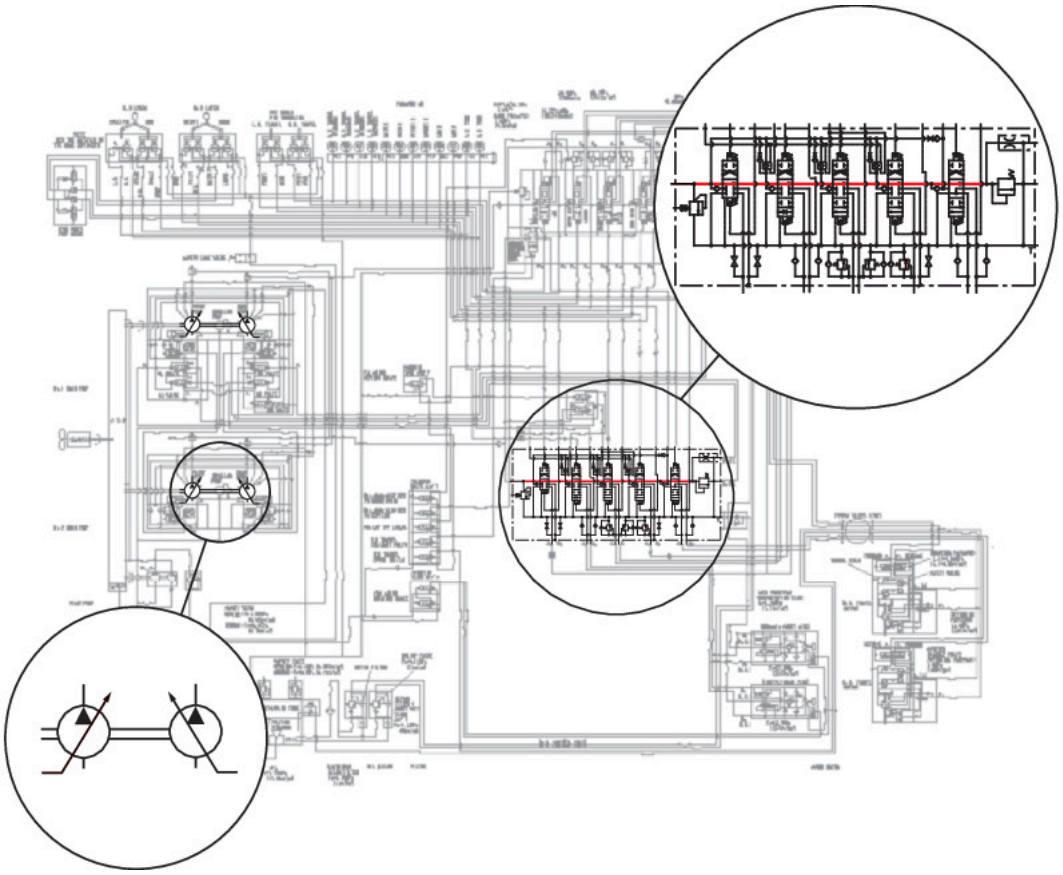




If you are unsure of the hydraulic system, please contact the base machine manufacturer.

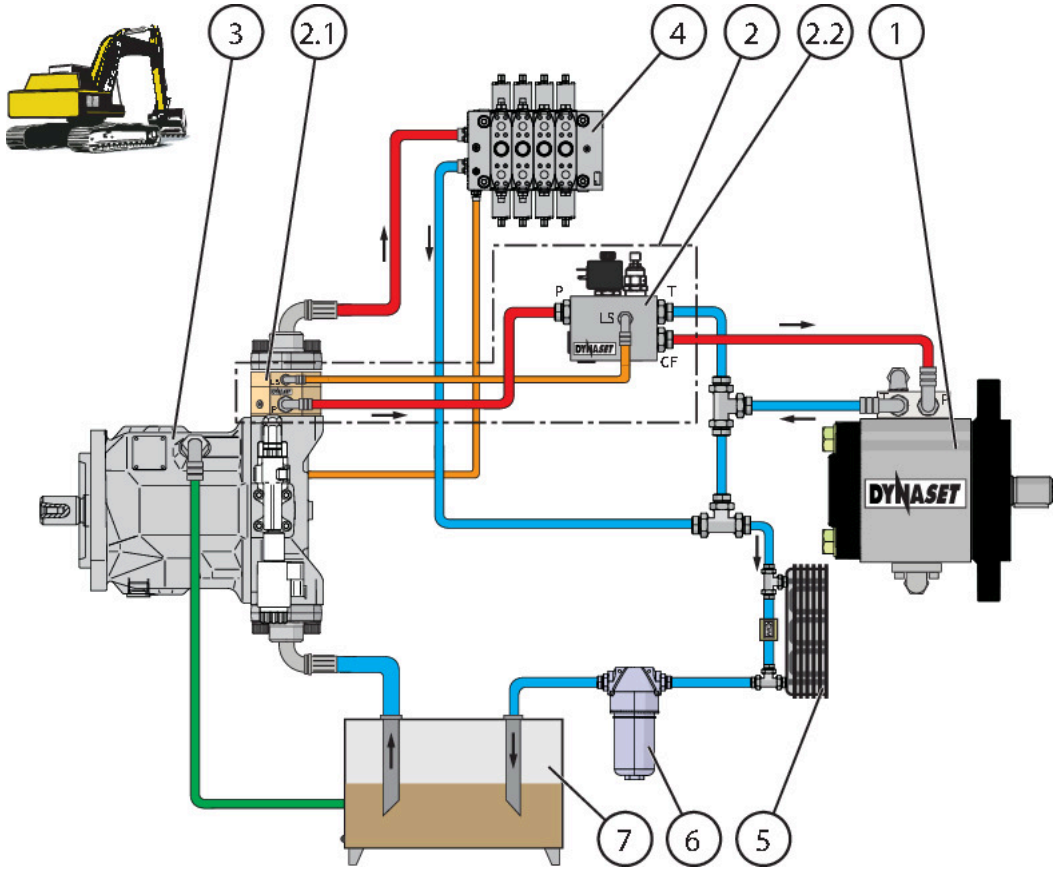
Next three paragraphs describe the hydraulic systems in more detail.

OPEN CENTER HYDRAULIC SYSTEM WITH LOAD SENSING VARIABLE DISPLACEMENT PUMP



Picture 7: Open center hydraulic system with Load Sensing variable displacement pump

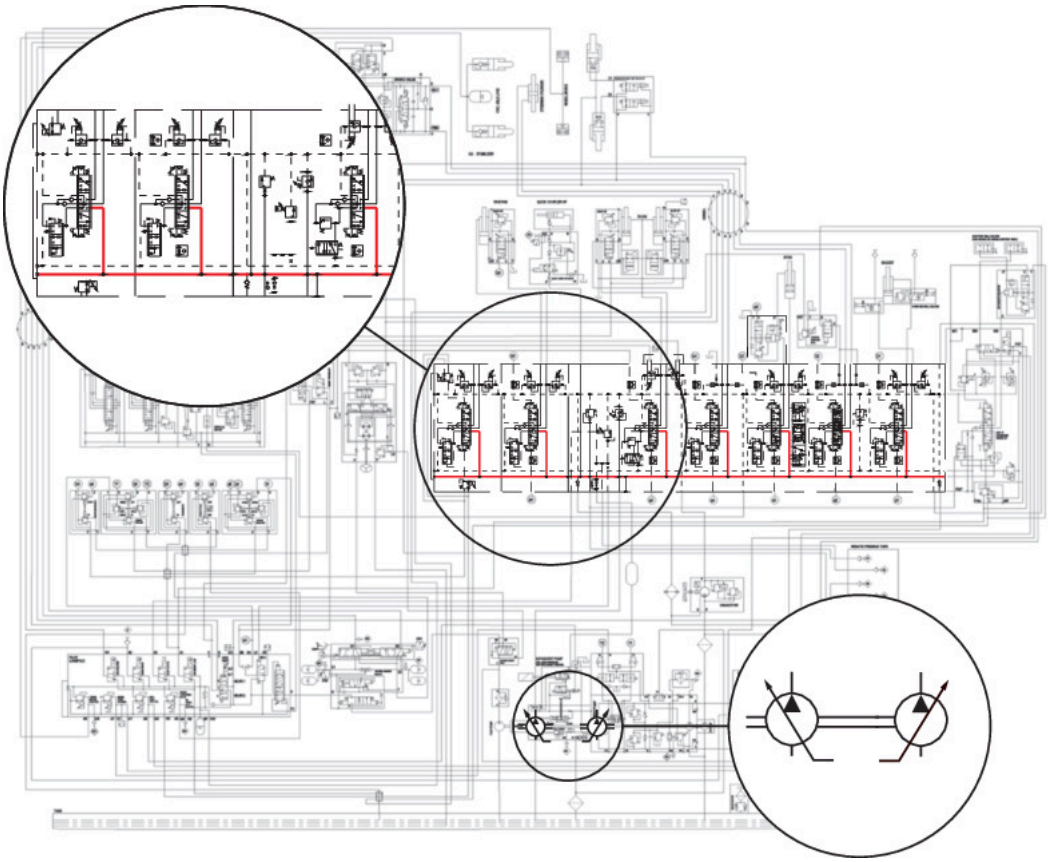
In open center hydraulic system the flow is returned to tank through the control valves open center; that is, when the control valve is centered. It provides an open return path to the tank and the fluid is not pumped into a high pressure. In Load Sensing variable-displacement pump, the flow rate and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



Picture 8: Connection figure for open center hydraulic system with Load Sensing variable displacement pump

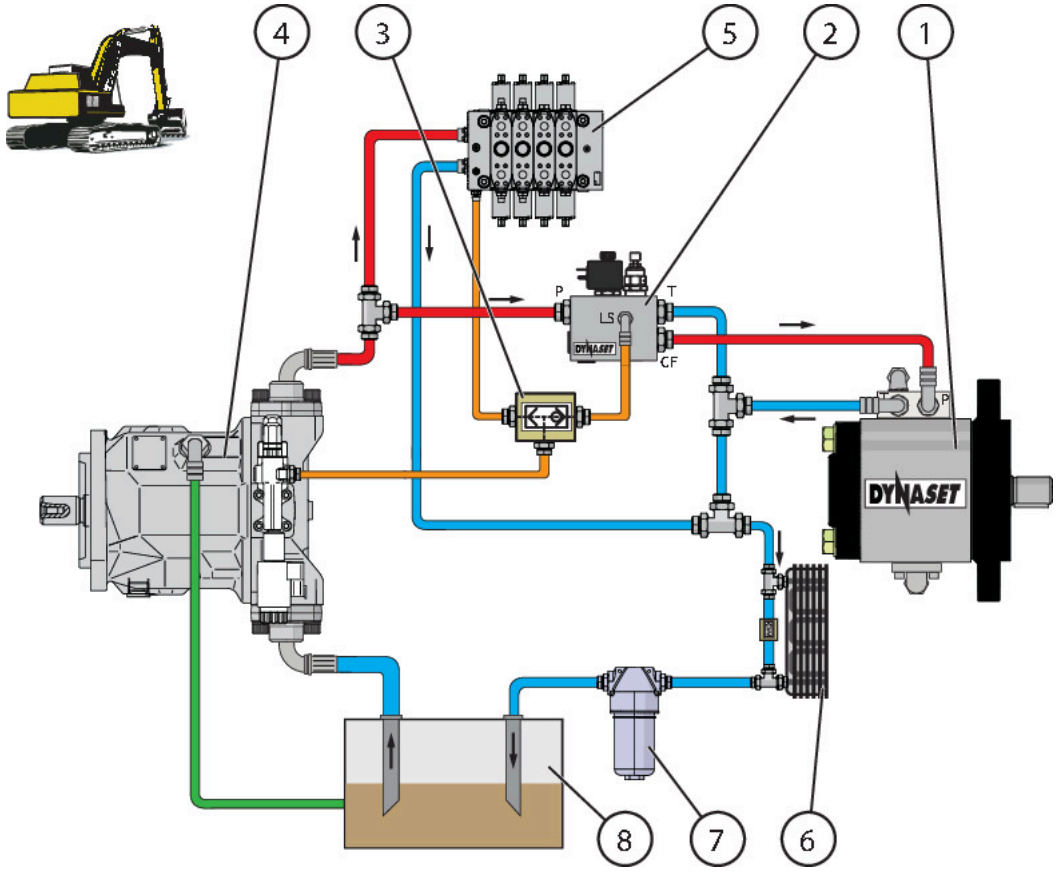
1. DYNASET hydraulic equipment
2. DYNASET Priority valve PV-SAE
   - 2.1. DYNASET PC-SAE pressure compensator
   - 2.2. DYNASET LSV Load sensing valve
3. Base machines variable displacement pump
4. Open center directional control valves
5. Oil cooler
6. Oil filter
7. Oil tank

CLOSED CENTER HYDRAULIC SYSTEM WITH LOAD SENSING VARIABLE DISPLACEMENT PUMP



Picture 9: Closed center hydraulic system with Load Sensing variable displacement pump

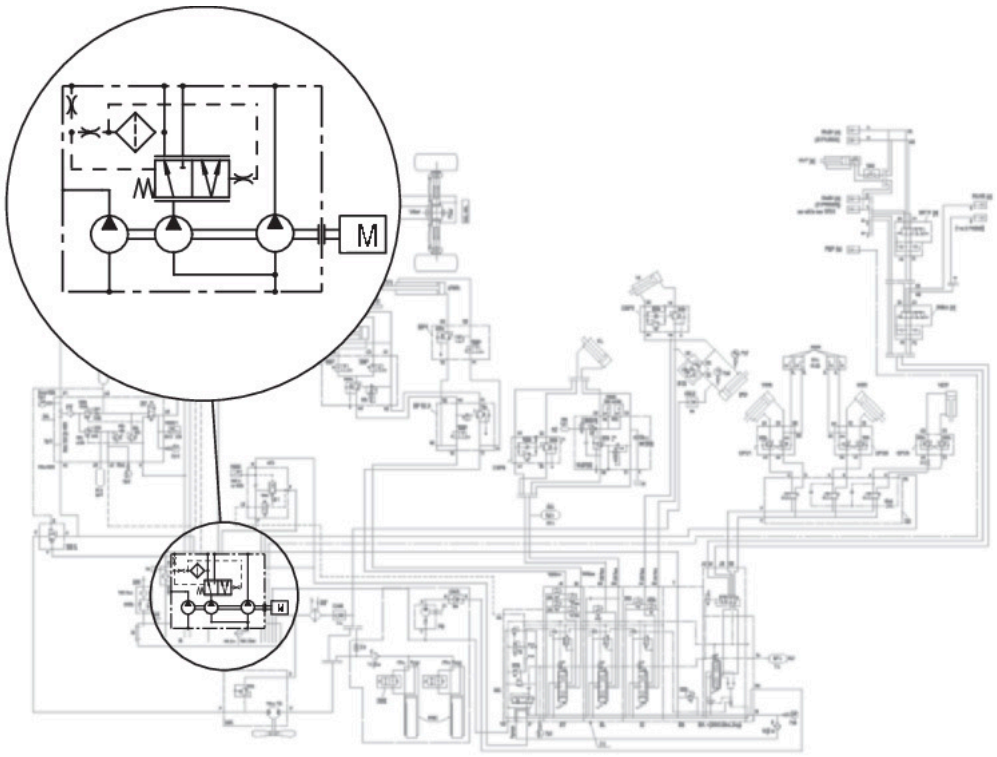
In a closed center hydraulic system the oil flow is stopped from the pump when control valve is centered. The pump can rest when the oil is not required to operate a function. In Load Sensing variable-displacement pump, the flow rate and output pressure adjusts automatically based on the load of the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



Picture 10: Connection figure for closed center hydraulic system with Load Sensing variable displacement pump

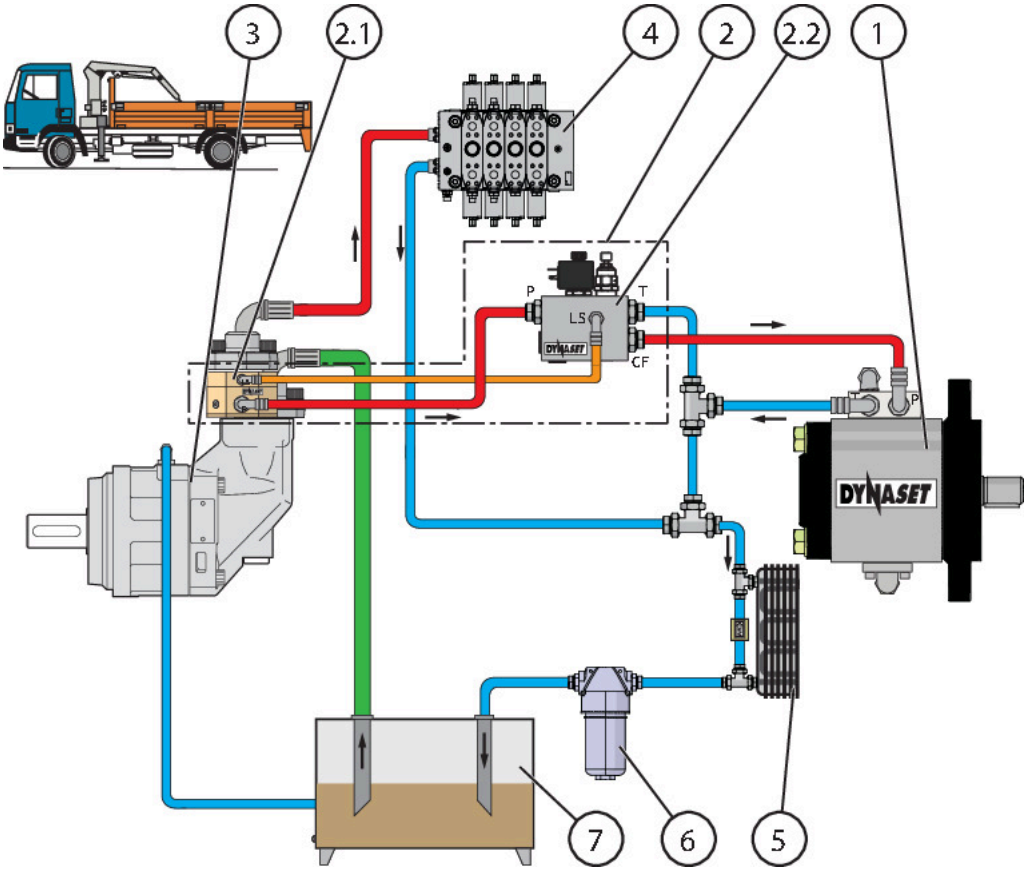
1. DYNASET hydraulic equipment
2. DYNASET LSV Load sensing valve
3. DYNASET Shuttle valve
4. Base machines variable displacement pump
5. Closed center directional control valves
6. Oil cooler
7. Oil filter
8. Oil tank

HYDRAULIC SYSTEM WITH FIXED DISPLACEMENT PUMP



Picture 11: 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.



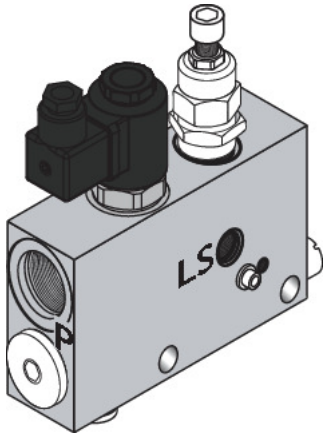
Picture 12: Connection figure for hydraulic system with fixed displacement pump

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.

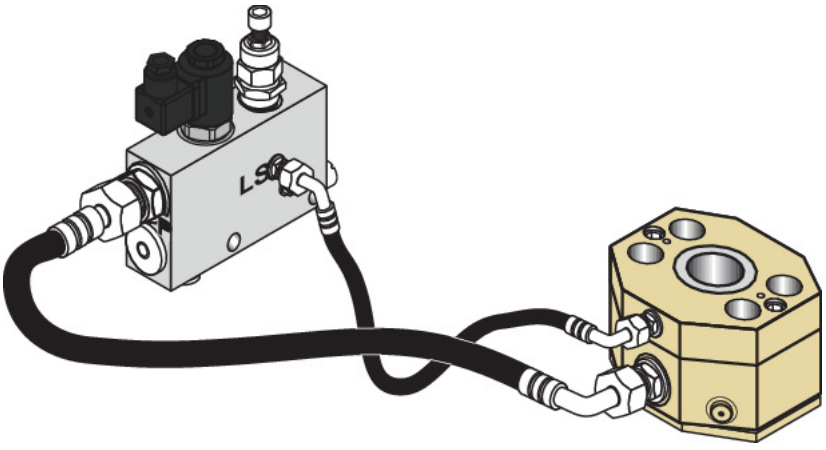
4.1.2.1 DYNASET Load Sensing valve



Picture 13: Load Sensing valve LSV

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

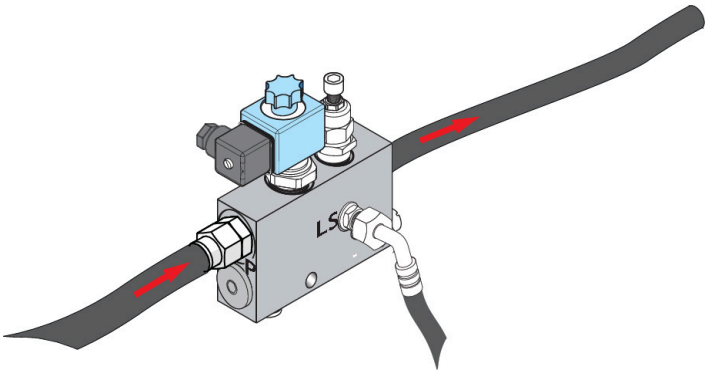
4.1.2.2 Dynaset priority valve



Picture 14: Priority valve PV-SAE

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

4.1.2.3 Dynaset Solenoid valve



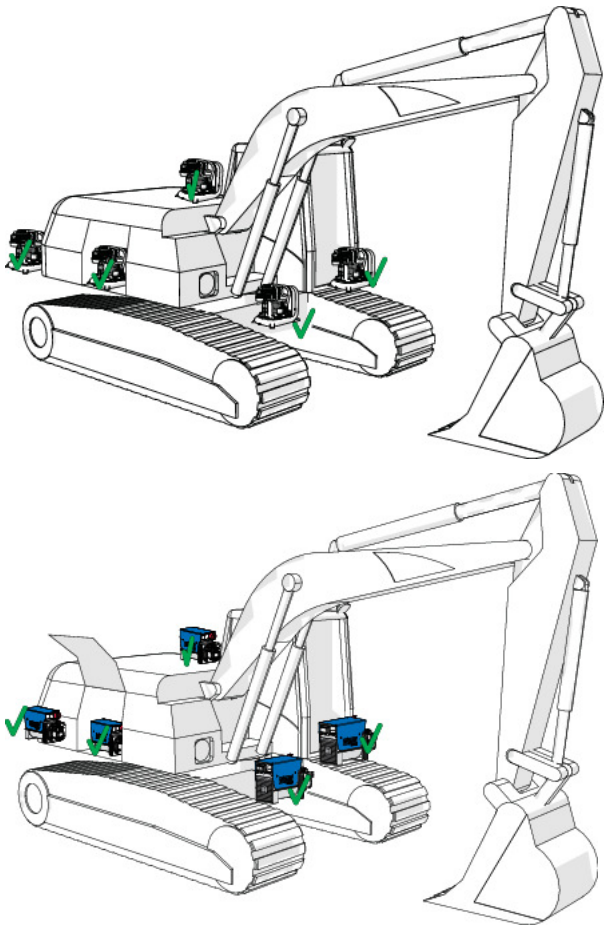
Picture 15: Solenoid Valve SV

DYNASET SV Solenoid valve enables the electric ON / OFF switch for operating hydraulic flow to the equipment.

4.2 INSTALLING DYNASET HYDRAULIC PRODUCT

4.2.1 PLACING DYNASET HYDRAULIC PRODUCT

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



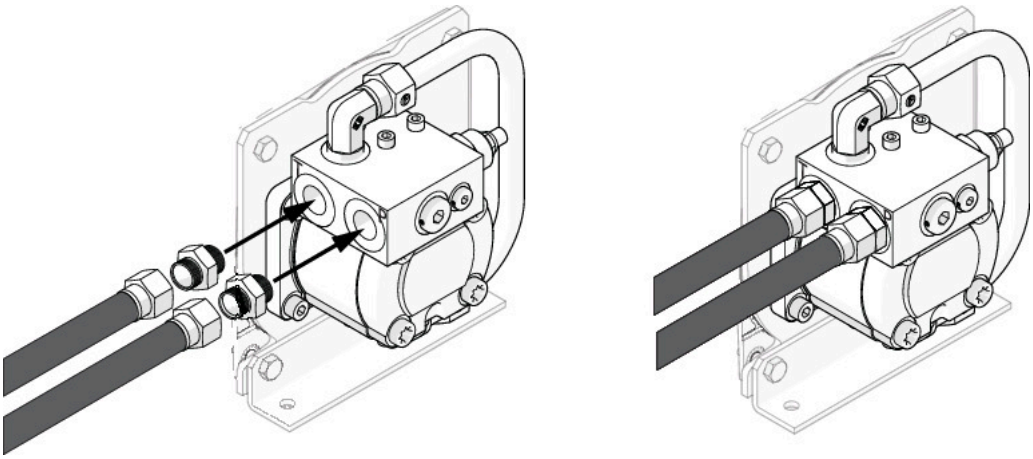
Picture 16: Placing the compressor

4.2.2 INSTALLING DYNASET VALVES

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

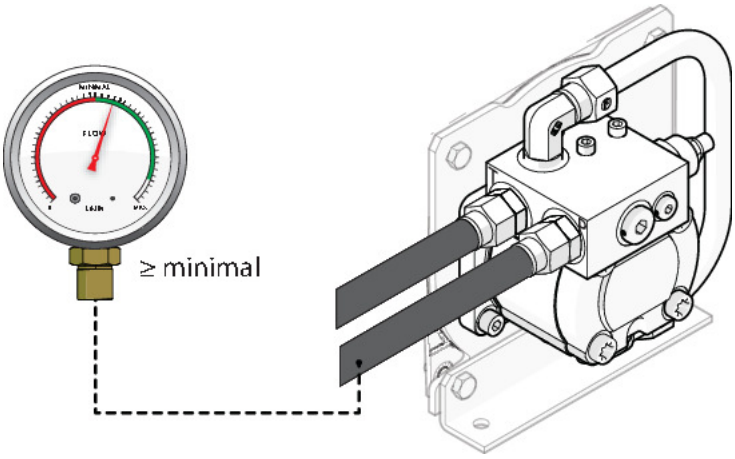
4.2.3 CONNECTING HYDRAULIC HOSES

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



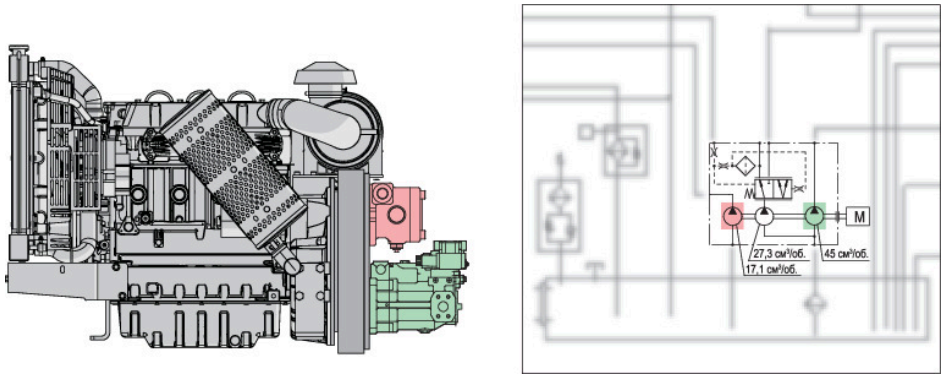
Picture 17: Installing hydraulic hoses

Ensure that the hydraulic flow of the base machine is sufficient to run the unit. At least the minimal flow must be available. Check technical specifications for hydraulic flow and pressure requirements at the end of this manual.



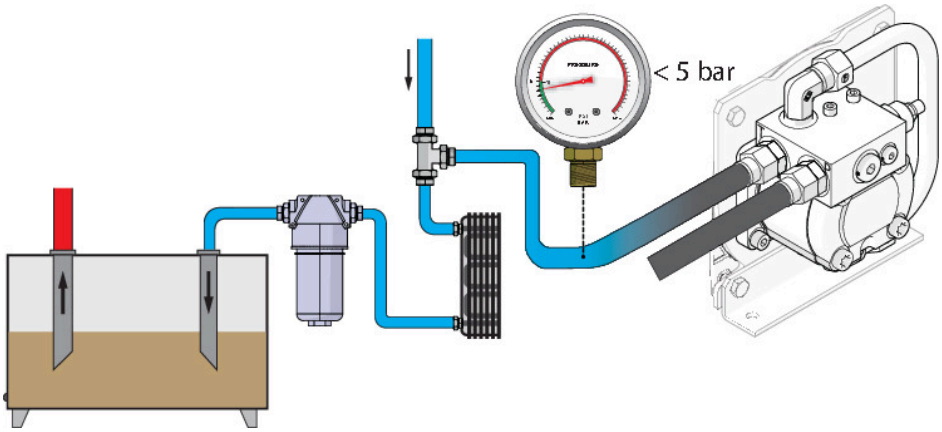
Picture 18: P-line operational hydraulic flow

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 19: 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 should be connected directly to the return line of a hydraulic system.



Picture 20: Return line connection

WARNING

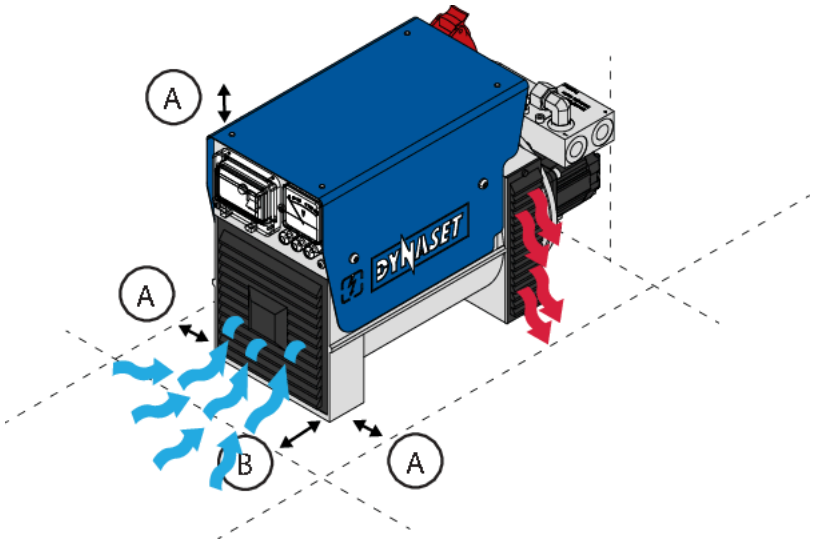
Ensure that the filtering degree and cooling capacity of the hydraulic system are sufficient. Check technical specifications for more information.

4.2.4 HYDRAULIC FLUIDS

To use proper hydraulic fluid, read chapter 6.3 "Hydraulic fluids".

4.3 INSTALLING HGG HYDRAULIC GROUND GENERATOR

The generator can be installed into the hydraulic system of any base machine. It can be installed to a place where sufficient venting and easy access to HG is ensured. The position of the generator must be horizontal.



Picture 21: Placement of the generator with sufficient room and ventilation

A. Minimum 25 mm

B. Minimum 50 mm

NOTE!

Sufficient venting is important. Generator's components heat up under use. Maintain the generator accordingly and keep the vents open and clean.

4.4 GROUNDING

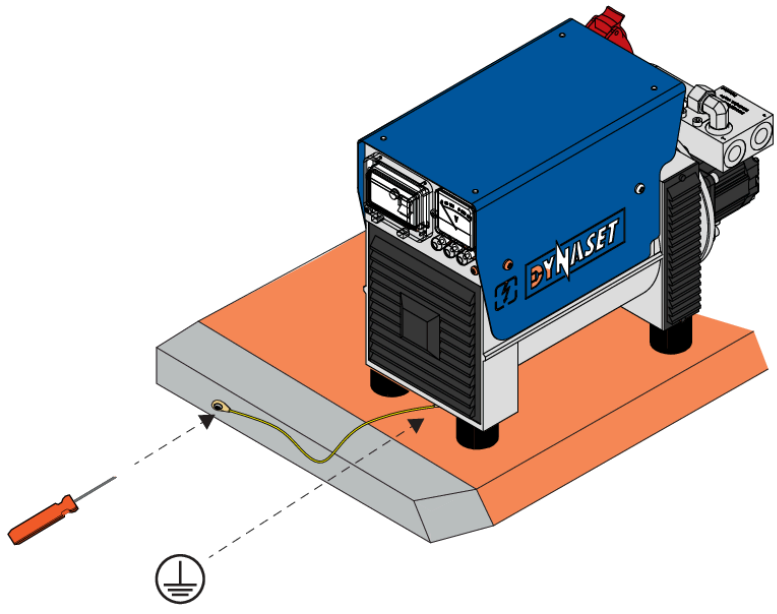
⚠ WARNING

DYNASET HGG Hydraulic Ground Generator must be grounded when rubber cushions or plastic pads are installed to the generator's framework. Grounding is also recommended when the generator is installed onto the base machine without rubber cushions or plastic pads.

Do not ground the generator through hydraulic connections. Make the grounding only to the base machine's frame. Use external galvanized wire to gain proper grounding as shown picture below. The ground wire is recommended to be according to the following table.

Generator	Ground wire cross-section area (mm2)
HGG 200	35 mm2
HGG 500	50 mm2
HGG 500 (Long Distance)	70 mm2

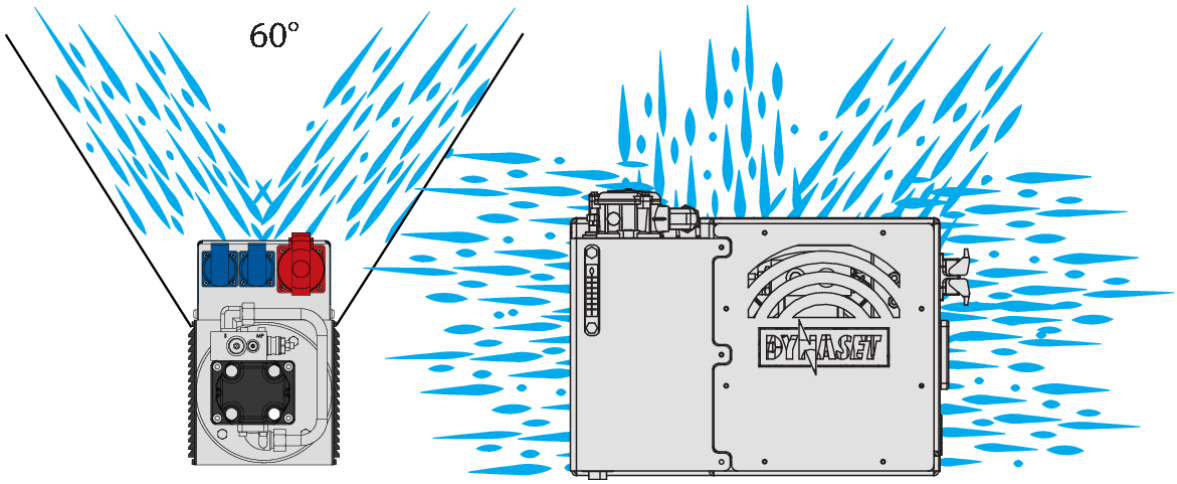
Ground the generator from the marked grounding spot in generators frame. The grounding spot varies between different generator models.



Picture 22: Generator grounding (in picture HG 6,5)

4.5 IP CODE REQUIREMENTS

IP23 HG hydraulic generators must be installed in a location and position where water can not enter the generator from below or from the sides according to the IP23 classification. IP54 HG hydraulic generators can be installed outside of a base machine.

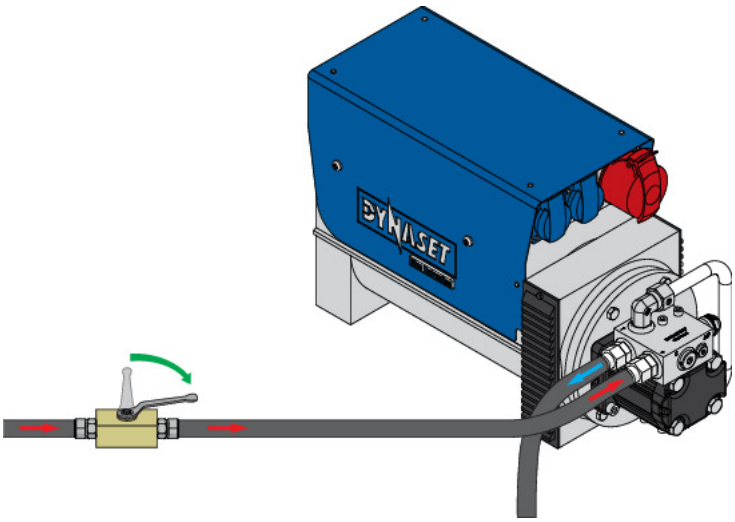


Picture 23: IP23 and IP54 positioning

4.6 OUTPUT INSPECTION AT START-UP

HGG hydraulic ground generators are tested and adjusted at the factory, but if a problem arises, here's how you can make sure the basic parameters are correct.

1. Ensure that the generator is properly connected to the hydraulic system of your base machine and there are no oil leakages in the system.
2. Start the engine of your base machine. Adjust the engine speed to demanded level if necessary.
3. Start the generator with a control valve.
4. Measure that the hydraulic flow rate is correct for the generator model.
5. Measure that the output voltage is correct for the generator model.
6. If either is incorrect, adjust in the same order to correct specifications.



Picture 24: Starting the HGG Hydraulic Ground Generator

4.7 CABLE CONNECTIONS

⚠ WARNING

The customer is responsible for the connection of the cable and safety devices in accordance with the local laws, regulations and recommendations issued by local electricity and work safety authorities.

The connection to the generator must be done in following manner.

1. Check the voltage from the type plate on the generator.
2. Check the generator product series mark from the generator's identification key found in the type plate.
3. Select correct connection type from list below based on the voltage and product series.
4. Make the connection.

⚠ WARNING

Connections variate with different generator voltages and product series. Using incorrect connection may damage the generator. If you have questions about the cable connection, contact Dynaset or nearest Dynaset dealer.

5. OPERATION

WARNING

Always check the HG Hydraulic Generator and its hoses' condition before use to ensure that there are no leaks or damages.

5.1 CONNECTING THE APPLIANCE

After ensuring the proper operation of the Generator, appliances can be connected. Appliance can be any electrical device e.g. work lamp, grinder, welder etc.

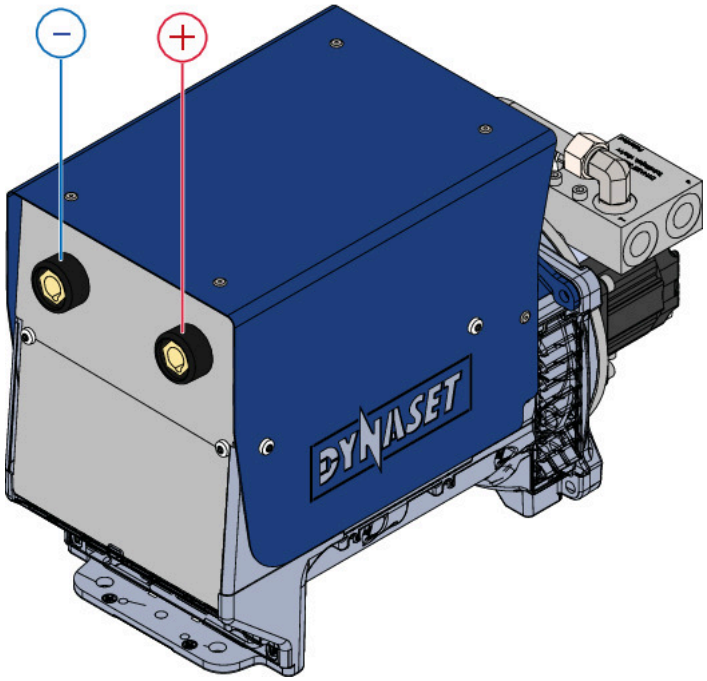
Avoid starting the generator with an appliance connected to it.

NOTE!

It is recommended to use a UPS (uninterruptible power source) with electrical equipment such as computers to protect them from power surges and spikes.

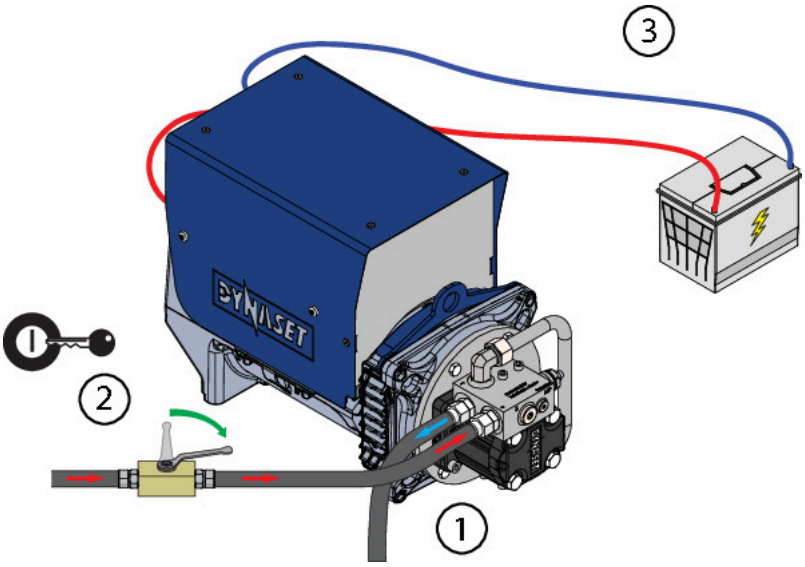
NOTE!

Note the orientation of the negative and positive terminals.



1. Connect the Hydraulic pressure line (P) and return line (T) to the Generator into their corresponding places.
2. Start your base machine. When the engine of the base machine is running and the hydraulic flow is available, the Generator
3. Connect your appliance to the generator.

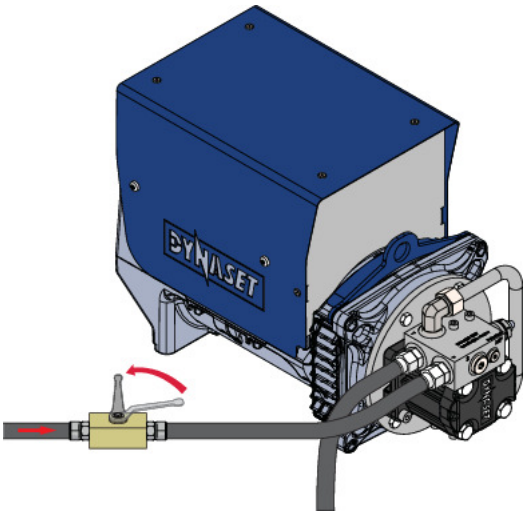
can be started by opening the hydraulic flow to it.



Picture 25: Connecting load to the Generator

5.2 STOPPING THE GENERATOR

1. Stop the generator by closing the hydraulic control valve.



Picture 26: Stopping the Generator

WARNING

Exceeding the maximum hydraulic flow causes the generator to overspeed and may damage it as well as the connected appliance. for the technical specifications.

5.3 AMBIENT TEMPERATURE AND ALTITUDE

To avoid power loss, it is not recommended to use the HG Hydraulic Generator when the ambient temperature exceeds +40 °C. When the ambient temperature exceeds +40 °C power takeoff should be limited in accordance with the attached table.

If the ambient temperature reaches +40 °C, the HG's full output power can be maintained by adding additional air ventilation.

The altitude also has a factor on the performance of the generators. Altitude and temperature derating factors can also be found from the chart below.

	Temperature °C(°F)							
Altitude m (ft)	**25 (77)**	**40 (104)**	**45 (113)**	**50 (122)**	**55 (131)**	**60 (140)**	**65 (149)**	**70 (158)**
0 - 1000 (0 - 3'281)	1.07	1	.96	.93	.91	.89	.85	.82
1000 - 1500 (3'281 - 4'921)	1.01	.96	.92	.89	.87	.84	.81	.77
1500 - 2000 (4'921 - 6'562)	.96	.91	.87	.84	.83	.79	.77	.73
2000 - 3000 (6'562 - 9'842)	.90	.85	.81	.78	.76	.73	.71	.68
3000 - 4000 (9'842 - 13'123)	.84	.78	.75	.73	.70	.68	.66	.62
4000 - 5000 (13'123 - 16'404)	.78	.72	.69	.67	.65	.62	.59	.56
5000 - 6000 (16'404 - 19'685)	.70	.65	.63	.61	.58	.55	.53	.50

6. MAINTENANCE

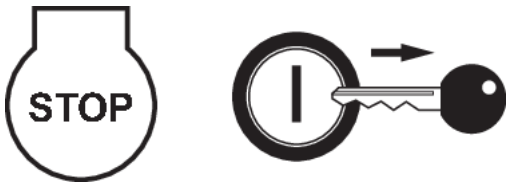
6.1 GENERAL

⚠ 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.



6.2 MAINTENANCE INTERVALS

All maintenance must be complied with as they are scheduled in this manual. The following table provides maintenance schedule for DYNASET HG Hydraulic Generator.

Check points	New device After installation	After daily use	Monthly
Perform the needed actions after HG's installation according to the chapter 4. Installation.	x		
Check if the HG Hydraulic Generator needs cleaning and clean it according to the chapter 6.3.		x	
Test safety devices			x

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.

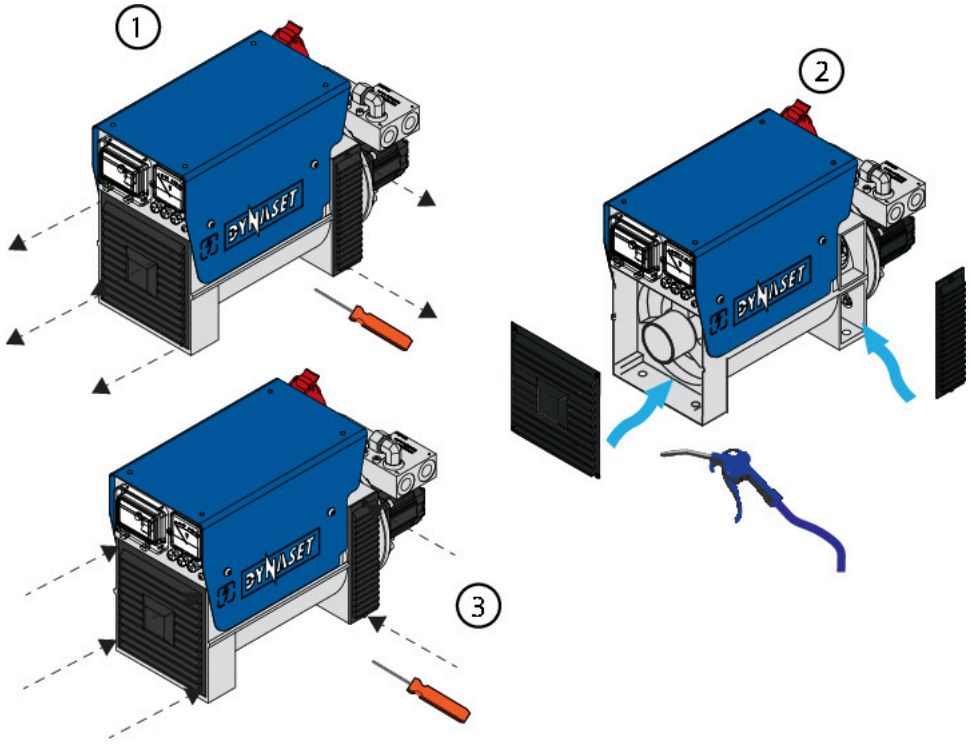
To use special hydraulic fluids with DYNASET equipment, contact the nearest DYNASET representative for more information.

6.4 CLEANING THE HG

WARNING

Maintain the generator accordingly and keep the vents open and clean. Check your equipment after every work shift. Depending on the operational environment, clean the HG Hydraulic Generator as frequently as necessary to keep it in perfect working condition.

1. Remove side screens and air diffuser.
2. Clean fan, rotor and stator compartments with compressed air. Ensure that electric enclosure's drain holes are dirt free.
3. After cleaning the generator, place screens/covers back on and secure them with appropriate screws.



Picture 27: Cleaning the HG Hydraulic Generator

NOTE!

Use compressed air to clean your equipment.

Remove all unnecessary grease and oil deposits from the HG Hydraulic Generator. Accumulated grease and oil can cause overheating, creating subsequent damage and present a potential fire hazard.

WARNING

Do not leave anything inside the generator case or control box which does not belong to the assembly.

Check the lids, covers, and screw joints on a regular basis, at least once a week. Tighten them, if they are loose. If the HG Hydraulic Generator is exposed to a noticeable vibration, inspection has to be done more frequently.

The condition of all oil seals/gaskets must be inspected and defective parts replaced.

After maintenance or cleaning, remember to install and tighten all covers!

NOTE!

Ensure a clean ventilation of the HG Hydraulic Generator. Dusty conditions increase the wear of the components.

6.5 TEST SAFETY DEVICES

Hydraulic Ground Power Generators RCD (V) or RCCBD (Y) must be tested monthly.

NOTE!

Safety devices can only be tested when the Hydraulic Ground Power Generators is on.

When the test button is pushed, the switch must release immediately. Use of the Hydraulic Ground Power Generators with faulty safety equipment is forbidden until they are replaced.

If a fault condition trips the safety device, the fault has to be cleared before the switch can be set back up. Bypassing or removing safety devices to clear the problem is strictly forbidden.

1. Push the RCD/RCCBD test button to check the functionality of the device. If everything is in order, the switch releases.
2. Switch the RCD/RCCBD reset switch back up, and the unit is operational.

A. Fuses

6.6 OUTPUT FREQUENCY ADJUSTING

WARNING

HG hydraulic generators are tested and adjusted at the factory. Do not adjust them without a real need. Adjust first the base machine's hydraulic flow to demanded level.

WARNING

When measuring output frequency, act in compliance with the laws, regulations and recommendations issued by local electricity, work safety authorities and universal multimeter manufacturer.

WARNING

Do not adjust the generator when an appliance is connected to it.

NOTE!

When doing adjustment, the hydraulic fluid must be at normal operating temperature!

NOTE!

Only use a True RMS multimeter for measuring the frequency.

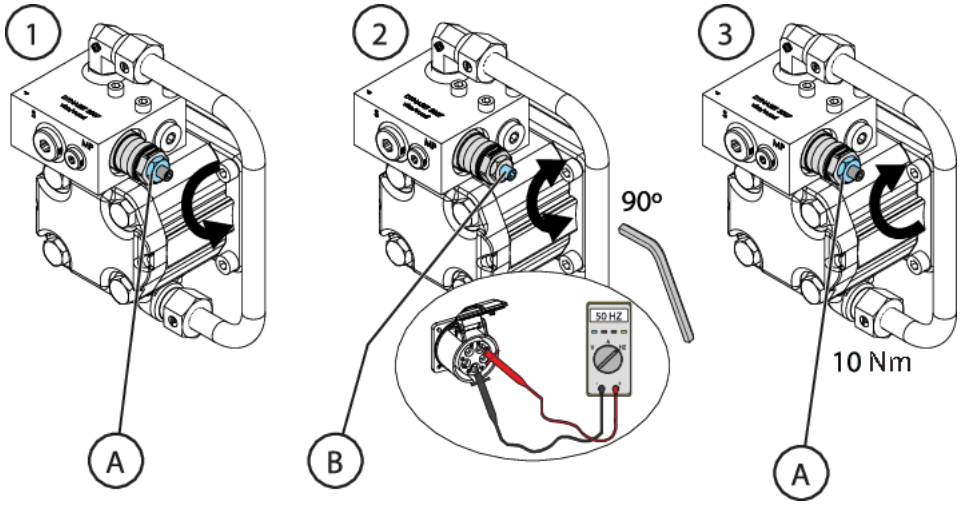
6.6.1 WHEN THE HG HYDRAULIC GENERATOR IS INSTALLED TO HYDRAULIC SYSTEM WITH DYNASET INSTALLATION VALVE

Turn the generator on and ensure that the hydraulic flow is at least at nominal level. When the hydraulic flow level is on the proper level, set the frequency by adjusting the RPM-cartridge with following instructions.

1. Loose the locknut A.
2. Make the adjustment by adjusting screw B according to the readings of frequency meter. Due to the response time make only small adjustments at a time and wait for

the generator to level its speed before turning the screw B more. Do not make more than a quarter revolution turns at the time!

3. When the frequency has reached the required level, tighten the locknut A to a moment of 10 Nm.



Picture 28: Adjusting the RMP-cartridge

If a frequency measurement option is not available, adjustments can be made by measuring the output voltage.

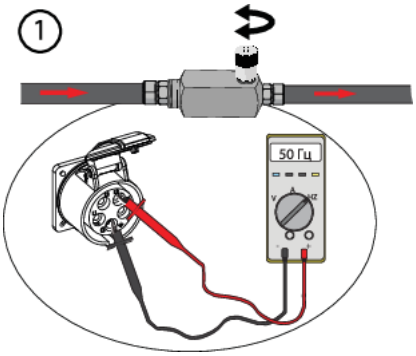
6.6.2 WHEN THE HG HYDRAULIC GENERATOR IS INSTALLED TO HYDRAULIC SYSTEM WITHOUT DYNASET INSTALLATION VALVE

⚠ WARNING

Only adjust with these instructions when the HG Hydraulic Generator is installed to a hydraulic system without DYNASET installation valve. Otherwise, you may damage your HG Hydraulic Generator doing the following procedure.

Primarily adjust the base machine's hydraulic flow to the required, nominal level before making any adjustment to the RPM-cartridge. If the voltage is still out of the range, adjust the RPM-cartridge with the following instructions.

1. Adjust the hydraulic flow until the frequency achieves the value of 50 Hz. Follow the readings on the True RMS multimeter.

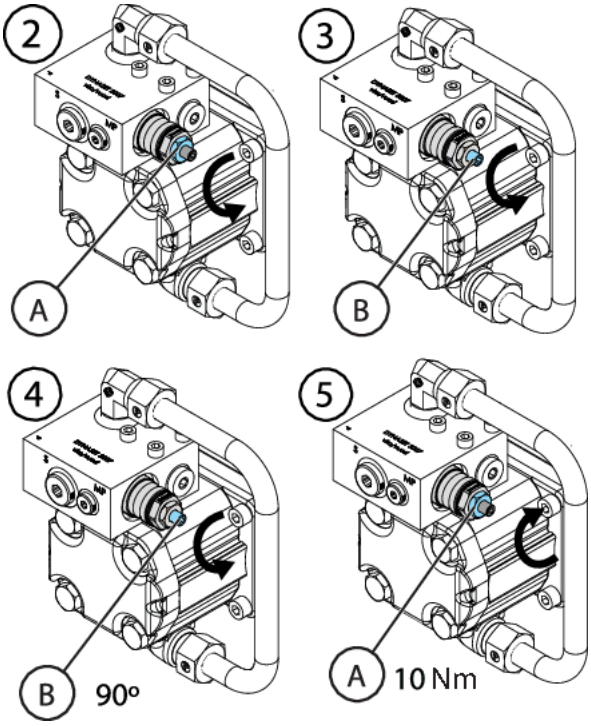


Picture 29: Adjusting the RPM-cartridge without installation valve 1

If the adjusting does not affect the frequency, there is a feed problem in the base machine's hydraulic system that must be fixed before continuing the adjustments.

If the frequency does change when the adjustments are made to the hydraulic flow, continue with the following instructions.

2. Loose the locknut A.
3. Turn the adjusting screw B counter-clockwise until it starts to control the flow.
4. Then turn the screw B counter-clockwise for another quarter of revolution.
5. Lock the setting with the locknut A tightening it to 10 Nm.



Picture 30: Adjusting the RPM-cartridge without installation valve 1

6.7 TROUBLESHOOTING

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

FAILURE	REASON	CORRECTIVE ACTION
LOW OUTPUT VOLTAGE AT NO LOAD	Poor contact in electric system.	Check all internal contacts and wirings of the generator. Check and clean brushes and slip ring.
OUTPUT VOLTAGE < 20Vac	Failure in excitation rectifier.	Trace the failure and replace the rectifier (with Compound or Capasitor voltage regulator).
	Failure in voltage regulator.	Replace the capacitor (HG3,5 ... HG5,0).
		Check and adjust the air gap of the compound regulator. Replace if broken.
		Check and adjust or replace the electronic regulator. HG with AVR.
	Insufficient residual magnetism.	Use external 12 V DC battery for 1 - 2 sec. to magnetize the rotor (HG3,5 ... HG5,0).
LOW OUTPUT VOLTAGE AND FREQUENCY AT LOAD	The generator is overloaded.	Reduce the load and check the current I (A) to ensure that the proper load is being applied.
LOW FREQUENCY AT NO LOAD	Too low rotation speed.	If frequency is out of range, hydraulic system failure is concerned.
		Check whether the hydraulic flow and pressure are sufficient. Adjust RPM-cartridge if necessary.
		Check the hydraulic motor for possible leakage. Replace the motor if necessary.

FAILURE	REASON	CORRECTIVE ACTION
HIGH FREQUENCY AT LOAD	Too high rotation speed.	If frequency is out of range, hydraulic system failure is concerned.
		Check whether the hydraulic flow and pressure are sufficient. Adjust RPM-cartridge if necessary.
OUTPUT VOLTAGE INSTABILITY	Instable rotation speed of generator.	Check the generator's hydraulics including automatic frequency control valve. Make an adjustment if necessary.
		Check that the hydraulic oil flow is constant.
		Check whether the hydraulic fluid flow and pressure are not excessive. Adjust when necessary.
		Check the hydraulic motor for possible leakage. Replace the motor if necessary.

FAILURE	REASON	CORRECTIVE ACTION
LOW OUTPUT VOLTAGE AT LOAD	The generator is being overloaded.	Reduce the load and check the current I (A) to ensure that the proper load is being applied.
GENERATOR CONSUMES ABNORMAL AMOUNT OF HYDRAULIC FLUID	Failure in axial sealing of generator's hydraulic motor. External indication - hydraulic oil outflow from ventilation grids.	Axial sealing of hydraulic motor is broken due to excessive pressure in return line (T). Rebuild the return line (T). Maximum allowed pressure in return line is 5 bar. Replace axial sealing of generator's motor.
	Oil leakage from hydraulic motor.	Hydraulic motor worn out and must be replaced.

FAILURE	REASON	CORRECTIVE ACTION
GENERATOR CONSUMES ABNORMAL HYDRAULIC PRESSURE AT NO LOAD	Winding failure.	One or more stator winding is in short circuit. Replace generator.
A MILD ELECTRIC SHOCK FROM HYDRAULIC GENERATOR	Poor hydraulic generator grounding.	Ensure proper grounding cable installation.
ABNORMAL NOISE FROM GENERATOR	Bearing failure.	Replace broken/worn bearing.
	Broken fan.	Replace broken/worn fan.

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:	HYDRAULIC GROUND POWER GENERATORS
Product:	Hydraulic Ground Power Generators

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

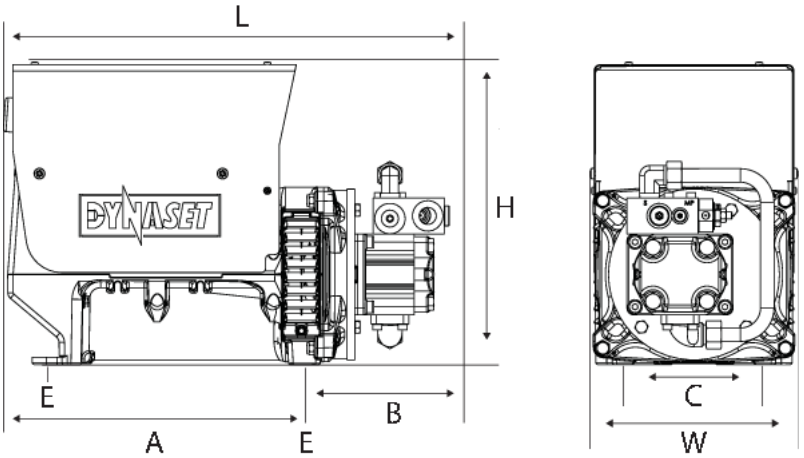


Pasi Yli-Kätkä
R&D Director
Menotie 3, 33470
Ylöjärvi, Finland 20.10.2025

10. TECHNICAL SPECIFICATIONS

10.1 DIMENSIONS

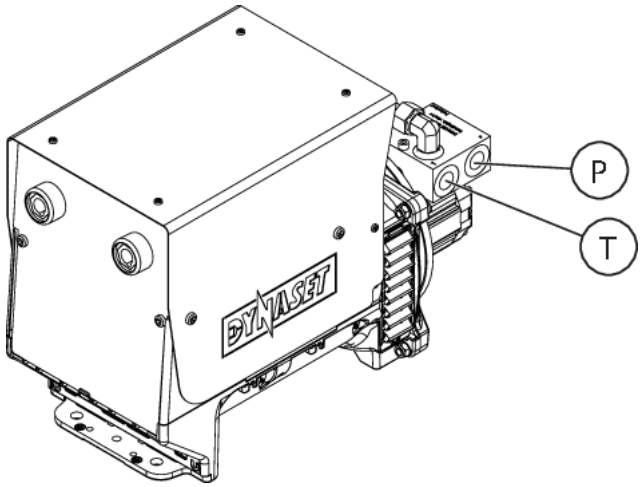
HGG200



Model	Dimensions, mm (in)								Weight
	L	W	H	A	B	C	D	E	kg (lbs)
HGG200-33	528 (20.8)	360 (14.2)	336 (13.2)	283 (11.1)	203 (8.0)	110 (4.3)	( )	12 (0.5)	43 (95)
HGG500-53	583 (23.0)	290 (11.4)	436 (17.2)	345 (13.6)	184 (7.2)	200 (7.9)	( )	12 (0.5)	62 (137)

10.2 HYDRAULIC CONNECTION

HGG200



Model	Connections	
	Pressure Line, P	Return Line, T
HGG200-33	BSPP 1/2	BSPP 1/2
HGG500-53	BSPP 1/2	BSPP 1/2

10.3 TECHNICAL SPECIFICATIONS

		HGG200-33	HGG500-53
OUPUT CHARACTERISTICS			
output Power max.	**kW**	4.8	12
Output Voltage Nominal	**VDC**	24	24
Output Voltage Adjustable	**VDC**	23 31	23 31
Current max.	**A**	200	500
Frequency control		FLC1	FLC1
IP (NEMA)		23	23
Current limit protection		included	included
Ripple		without load 8% with full resistive load 6% with batteries 3% or less	without load 8% with full resistive load 6% with batteries 3% or less
Operating temperature	**°C(°F)**	°C(°F)	°C(°F)
HYDRAULIC POWER REQUIREMENTS			
Flow min.	**l/min (gpm)**	37 (9.78)	56 (14.80)
Flow max.	**l/min (gpm)**	55 (14.53)	84 (22.19)
Pressure at nominal power output	**bar (psi)**	180 (2'611)	180 (2'611)
Pressure max.	**bar (psi)**	210 (3'046)	210 (3'046)
Pressure when unloaded	**bar (psi)**	35 (508)	35 (508)
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
Cooling capacity requirements	**KW**	2.4	3.5

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DYNASET

PARTNER OF YOUR MACHINE

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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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