

HSP

HYDRAULIC SUBMERSIBLE PUMPS



HSP 600/5-38	
HSP 1500/5-40	
HSP 2600/5-40	
HSP 4000/5-100	
HSP 7000/5-169	
HSP 10000/5-200	
HSP 16000/5-317	

OPERATING INSTRUCTIONS

TABLE OF CONTENTS

1. SAFETY PRECAUTIONS AND WARNING STICKERS	3
2. GENERAL NOTES	4
3. CONSTRUCTION	4
4. TECHNICAL SPECIFICATIONS	5
5. OPERATION	6
6. HYDRAULIC HOSES	6
7. TROUBLESHOOTING	6
8. MAINTENANCE	7
9. HSP PERFORMANCE DIAGRAMS	7-8
10. MAIN ASSEMBLY	9
8.1 HSP 1500/5-40	9
8.2 HSP 2600/5-40, HSP 4000/5-100	10
8.3 HSP 10000/5-200	11
8.4 HSP 16000/5-317	12
11. HYDRAULIC FLUIDS	13
12. PRODUCT DISPOSAL	13
13. MANUFACTURER'S LIMITED WARRANTY	14
14. DECLARATION OF CONFORMITY	15

SAFETY PRECAUTIONS

The pressure in both hydraulic and pumping fluid circuits is considerably high. In order to avoid damages and accidents operator and maintenance personal must act in compliance with the laws, regulations and recommendations issued by local electricity and work safety authorities.

Follow all your local safety instructions related to electric devices and the high pressure hydraulics.

EQUIPMENT TECHNICAL CONDITION HAS TO REGULARLY PAY SPECIAL ATTENTION.

Hydraulic system of a carrier machine or other hydraulic power source should be maintained according to the service program.

All couplings, valves and hoses should be maintained tight and clean as well as kept under constant observation.

Leaks in the hydraulic system must be fixed immediately to avoid injuries caused by high pressure and oil blowouts.

Prior to maintenance, detaching from a carrier or disassembling a DYNASET-unit, the hydraulic system of a carrier machine should be stopped and DYNASET's unit hydraulic circuit depressurized.

When operating or maintaining in the immediate vicinity of DYNASET hydraulic unit or accessories, appropriate protective clothing, safety goggles, gloves, ear and eye protection should be worn.

Do not touch parts heated by hydraulic oil.

Do not lift the pump by the hydraulic hoses.

EXTERME CLEANLINESS MUST BE MAINTAINED WHEN CARRYING OUT ANY SERVICE DISSASSEMBLING OR REPAIR OF DYNASET UNIT AND HYDRAULIC SYSTEM. THIS IS CRUCIAL TO ENSURE SAFE, RELIABLE AND LONG-LIFE OPERATION OF YOUR EQUIPMENT.

All installation and service of both hydraulic and electric equipment must be performed by qualified and experienced personnel only.

WARNING STICKER

Dynaset dispatch department includes one (1) warning sticker bag per one (1) main product. Product recipient is obligated to fix determinate warning sticker to Dynaset product. Attach sticker to visible and appropriate place or close to Dynaset product where it's easily seen. Before attaching sticker clean surface with solvent detergent.



READ OPERATING INSTRUCTIONS. BEWARE OF HIGH PRESSURE SPLATTERS. KEEP FROM FREEZING.

GENERAL NOTES

DYNASET submersible pumps are designed for handling high volumes of various liquids - from clear water to heavy suspensions and slurry. Dredging capability is available as well. Being insensitive to impurities and solids DYNASET submersible pumps can be used in municipal services, civil engineering, industry, agriculture, off shore etc.

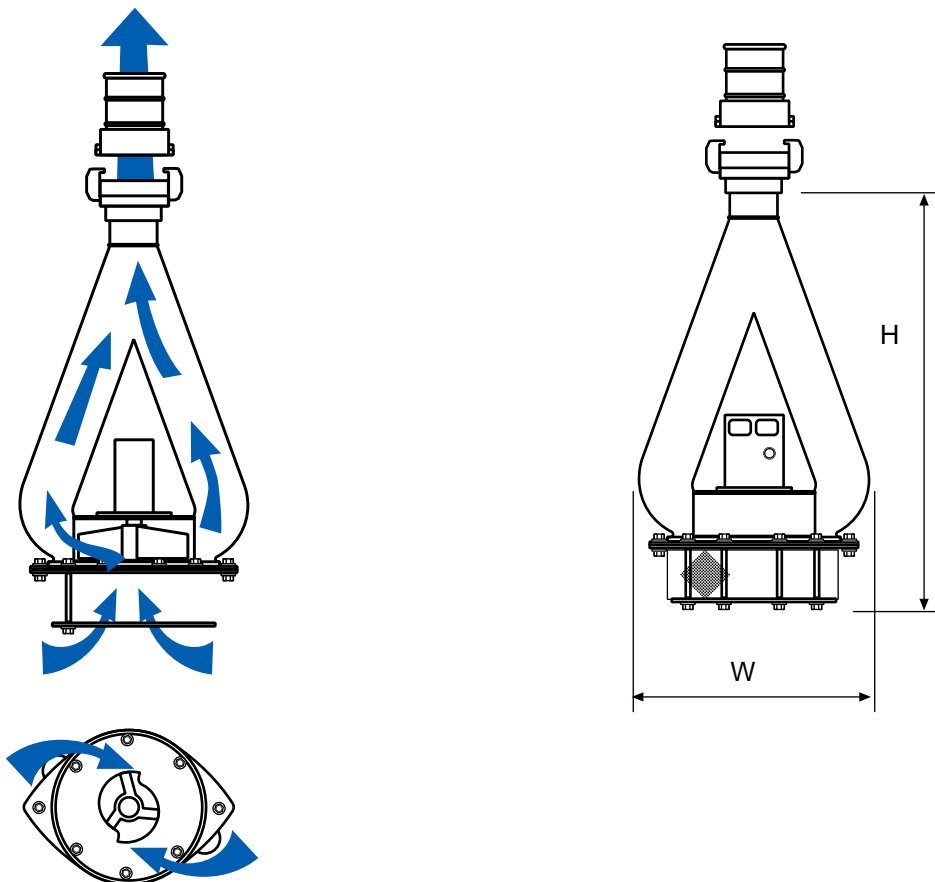
CONSTRUCTION

Simple construction ensures reliability and long service life of DYNASET HSP-pump.

Robust steel structure comprises discharge channel unit with incorporated pump housing. Pump sub-unit consists of a hydraulic motor, volute and impeller. Both volute and impeller are made of high quality wear resistant steel. Impeller works as a cutter, breaking roots and shredding water weed. Inlet chamber with detachable screen is bolted to the intake end of the pump.

Hydraulic motors are of gear type with high pressure shaft seal. However, pump can run dry because motor seal is oil lubricated, no water cooling required.

Standard surface finish of HPS-pump is two-layer paint. Pumps with galvanized housing are available by request.



HSP - HYDRAULIC SUBMERSIBLE PUMPS

TECHNICAL SPECIFICATIONS

MODEL		HSP 600 /5-38	HSP 1500 /5-40	HSP 2600 /5-50	HSP 4000 /5-100
DISHARGE max	l/min	600	2000	3000	5000
PUMP HEAD max	m	25	25	35	30
DISHARG AT STANDARD HEAD OF 5M	l/min	500	1500	2000	4000
DISCHARGE HOSE		2"	3"	3"	5"
HYDRAULIC REQUIREMENTS PRESSURE max	bar	260	180	250	250
FLOW max	l/min	38	40	50	100
HYDRAULIC CONNECTIONS PRESSURE RETURN		1/2" 1/2"	1/2" 1/2"	1/2" 1/2"	1/2" 3/4"
OVERFLOW		-	-	-	-
DIMENSIONS WIDTH W	mm	140	350	350	450
HEIGHT H	mm	510	700	700	900
WEIGHT without hose	kg	7	15	20	39

MODEL		HSP 7000 /5-169	HSP 10000 /5-200	HSP 16000 /5-317
DISHARGE max	l/min	8000	12000	20000
PUMP HEAD max	m	35	35	35
DISHARG AT STANDARD HEAD OF 5M	l/min	7000	10000	16000
DISCHARGE HOSE		5"	6"	8"
HYDRAULIC REQUIREMENTS PRESSURE max	bar	420	420	420
FLOW max	l/min	169	200	317
HYDRAULIC CONNECTIONS PRESSURE RETURN OVERFLOW		3/4" 3/4" 3/8"	3/4" 3/4" 3/8"	1" 1" 3/8"
DIMENSIONS WIDTH W	mm	450	500	650
HEIGHT H	mm	900	1100	1250
WEIGHT without hose	kg	54	70	85

OPERATION

HSP-pump is ready to use as is. HSP-pump can be driven practically on any available source of hydraulic power. Prior to operating the pump ensure that the hydraulic power source develops required hydraulic flow and pressure.

CHECK POWER SOURCE

1. Using a calibrated flow meter and pressure gauge, check that the hydraulic power source develops a flow of 8-12 gpm / 30-45 lpm at 1000-2000 psi / 70-140 bar.
2. Make certain the power source is equipped with a relief valve set to open at 2100 psi/145 bar maximum.
3. Refer to PUMP CLEANING PROCEDURES.

HYDRAULIC HOSES

Pressure hose can be recognized due to RED PLUG. Rotation direction is marked with arrow next to inlet. Observe the arrow to ensure that the flow is in the proper direction. However, cross connection of hydraulic hoses will not damage the motor resulting in minor output of the HSP-pump.

DISCHARGE HOSE is to be connected to the HPS-pump with a quick coupling. Ensure that there are no sharp bends in order to avoid power loss.

Check that the pump inlet screen is clean. Remove any obstruction before operating the pump.

Lower the pump into the liquid to be pumped. Locate the outlet end of the discharge hose to disperse the liquid as required.

Pump is started by opening hydraulic flow.

If the liquid contains too much impurity to be pumped through the intake screen, the screen can be detached.

When pumping is completed, set the hydraulic flow control valve at the power source to "OFF"; then lift the pump from the hole or chamber.

Do not lift the pump by the hydraulic hoses.

TROUBLESHOOTING

IN CERTAIN CIRCUMSTANCES THE DISCHARGE FLOW MAY DECREASE. IF THIS HAPPENS, STOP THE PUMP AND CHECK FOR THE CAUSE OF THE PROBLEM.

CLOGGING

If solids are excessive, they may clog pump's inlet chamber. Clogging may be caused by stone, hay, water weeds and so forth. By running the pump in opposite direction clogging problem may be solved.

If clogging removal requires handwork, hydraulic power source must be de-energized and hydraulic circuit of HPS-pump depressurized.

POSITION OF DISCHARGE HOSE

The end of the discharge hose is too high, causing an excessive lift height for the column of liquid being pushed by the pump. This slows the flow of liquid to a level where it can no longer carry solids.

INSUFFICIENT HYDRAULIC POWER

The flow and pressure of hydraulic oil to the pump is too low, which reduces impeller speed.

Inlet chamber clogging and incorrect position of discharge hose may cause hydraulic oil overheating and consequently damage hydraulic unit. Check and repair malfunction on time.

MAINTENANCE

Due to small number of moving parts, in normal operating conditions HSP-pump does not require any particular service, except cleaning and inspection on a daily basis.

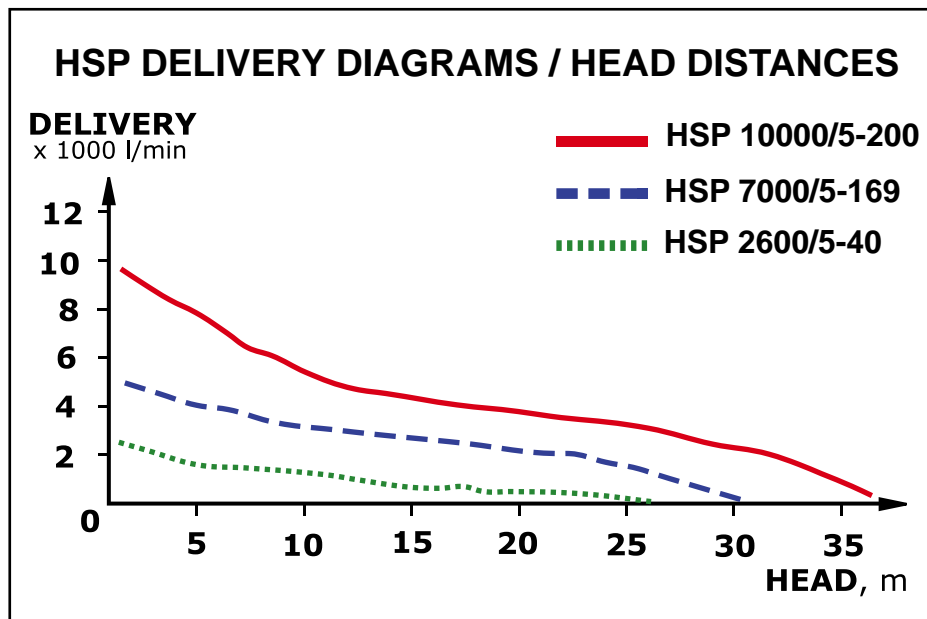
Replacement of sealing's in hydraulic motor is occasional and depends on a cleanliness of hydraulic oil.

Pump body can be repaired by welding if required, surface finish should be refurbished on a regular basis.

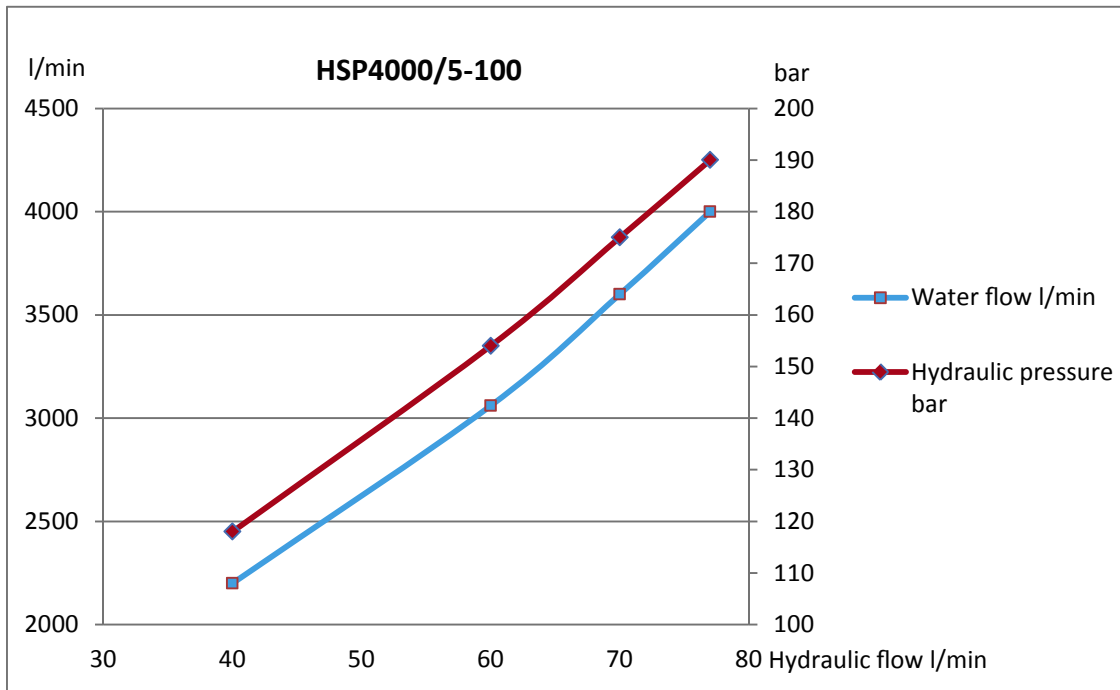
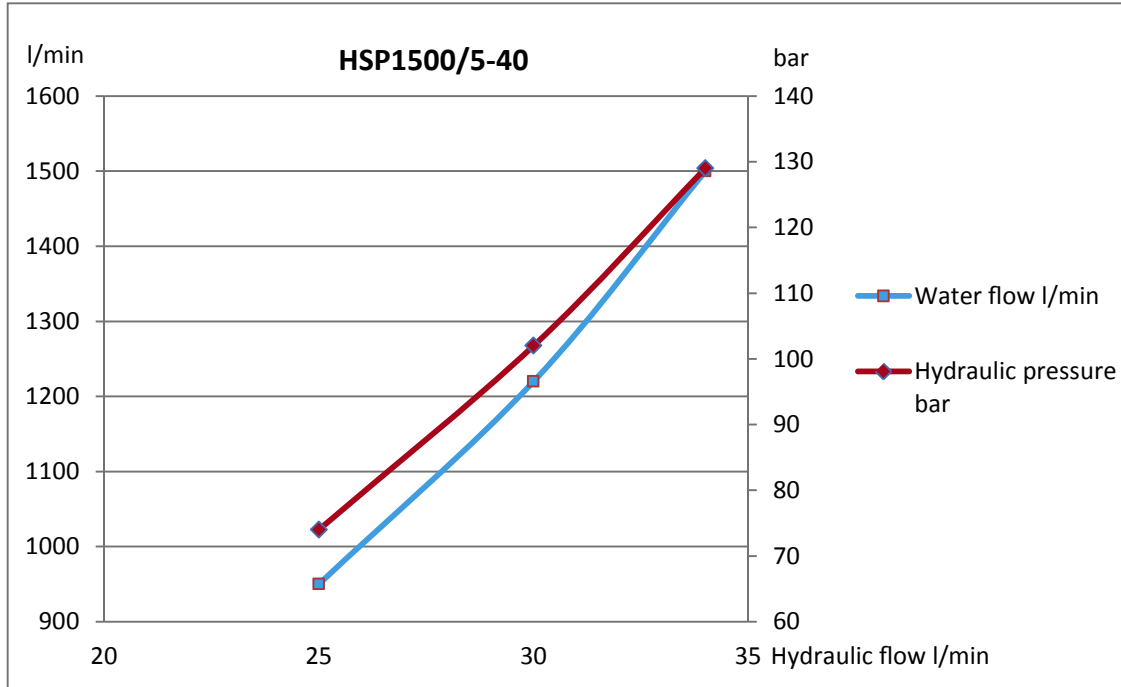
WHEN CARRYING OUT ANY SERVICE DISSASSEMBLING OR REPAIR OF HSP-PUMP, ABSOLUTE CLEANLINESS MUST BE MAINTAINED TO ENSURE RELIABLE AND TROUBLE-FREE OPERATION OF YOUR EQUIPMENT.

HSP PUMP HEAD DIAGRAM

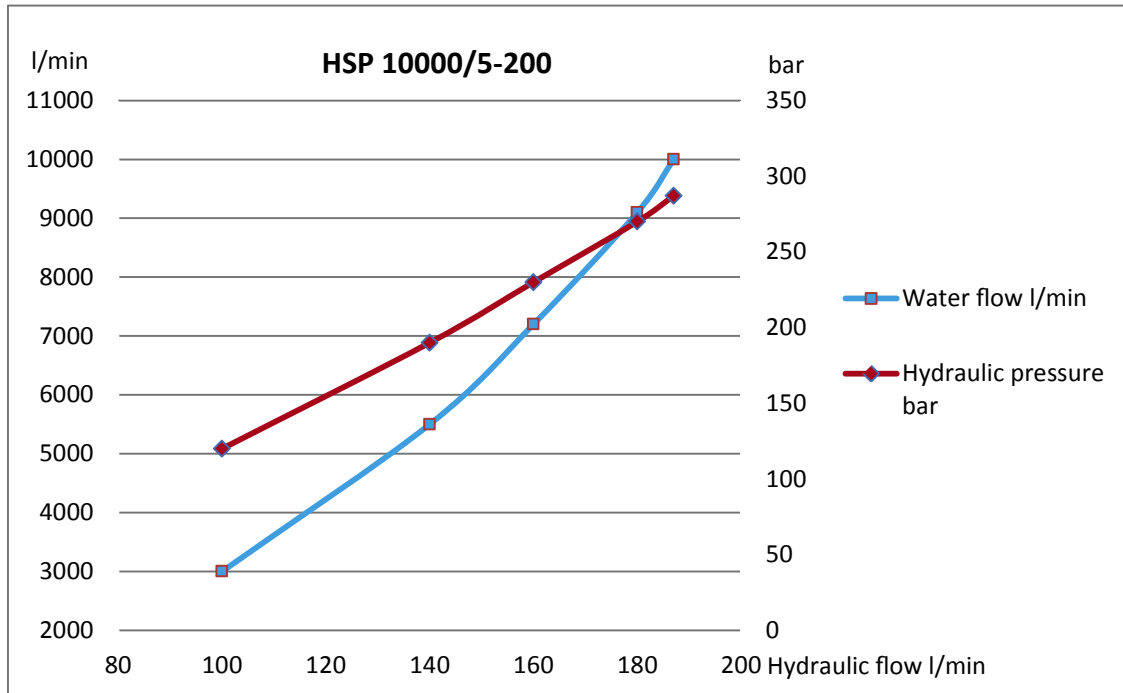
Pump Head is the linear vertical measurement of the maximum height a specific pump can deliver a liquid to the pump outlet. A pump can only deliver a liquid to a maximum height because the weight of the liquid above the pump mechanism becomes greater than the forces which are attempting to turn the pump or move the impeller.

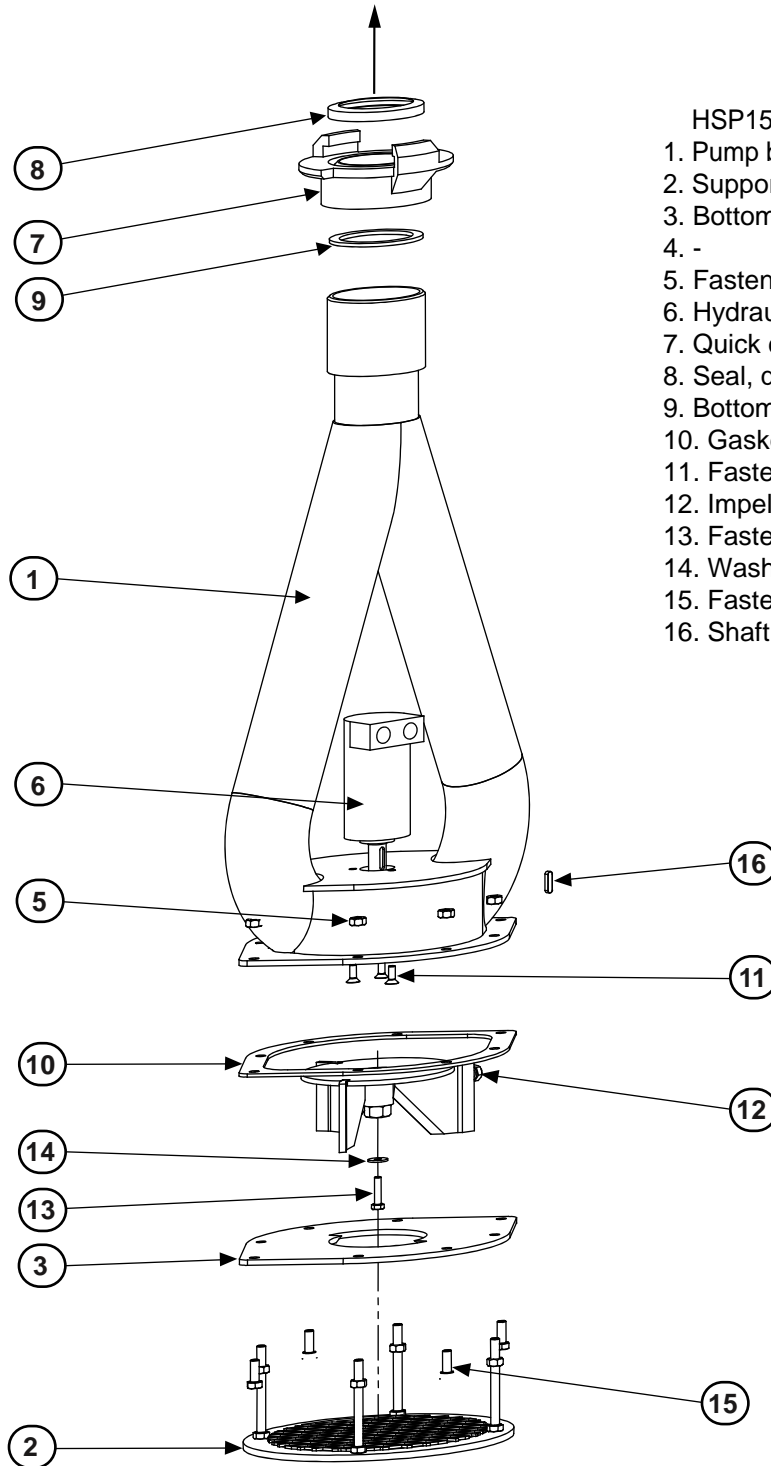


HSP PERFORMANCE DIAGRAMS 1/2

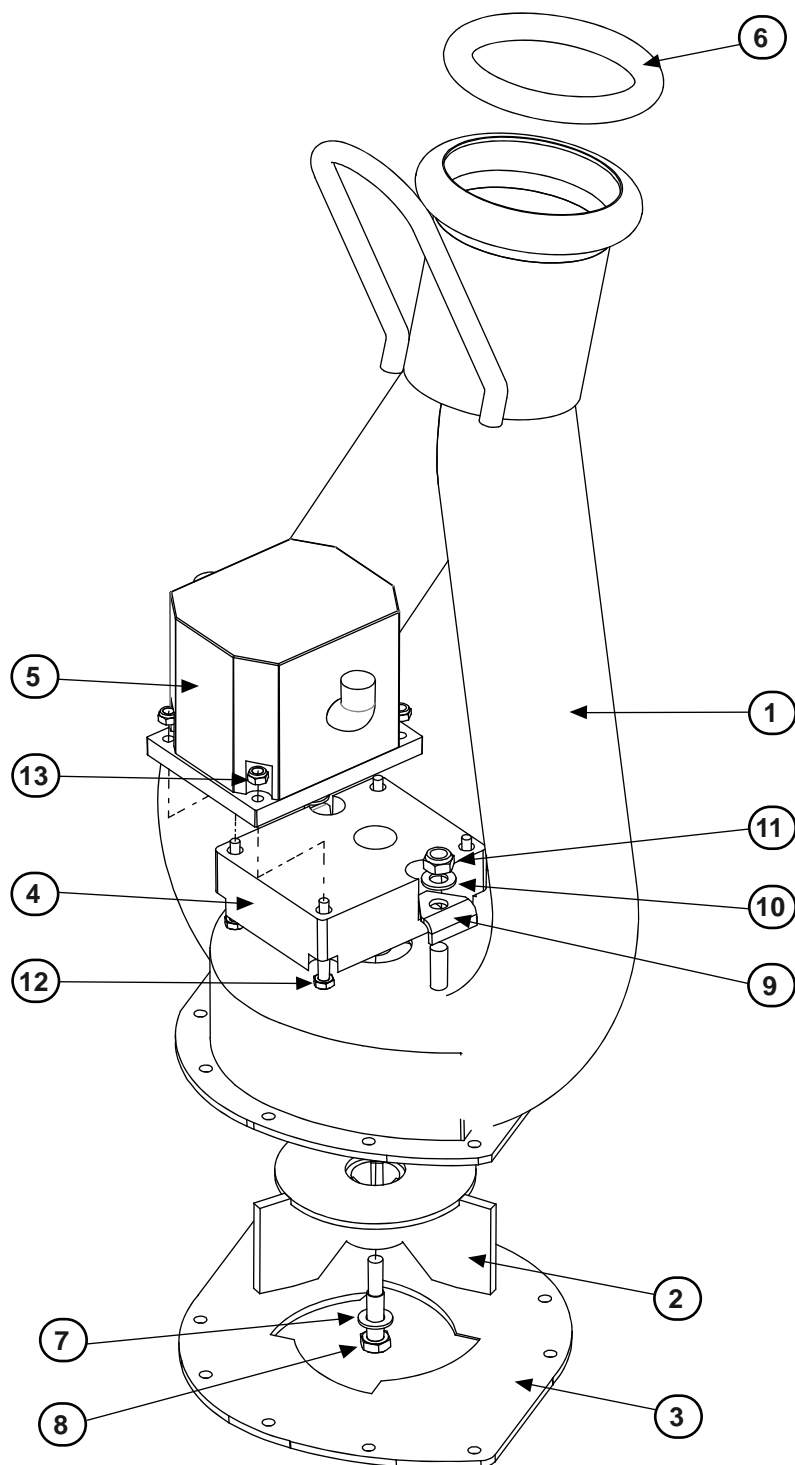


HSP PERFORMANCE DIAGRAMS 2/2



MAIN ASSEMBLY**HSP 1500/5-40****HSP1500**

1. Pump body
2. Support plate
3. Bottom plate, intake
4. -
5. Fastening screw, Bottom plate
6. Hydraulic motor
7. Quick coupling, outlet
8. Seal, quick coupling
9. Bottom seal, quick coupling
10. Gasket, cover
11. Fastening screw, hydraulic motor
12. Impeller
13. Fastening screw, impeller
14. Washer, impeller
15. Fastening screw, bottom plate
16. Shaft key

MAIN ASSEMBLY**HSP 2600/5-40 HSP 4000/5-100**

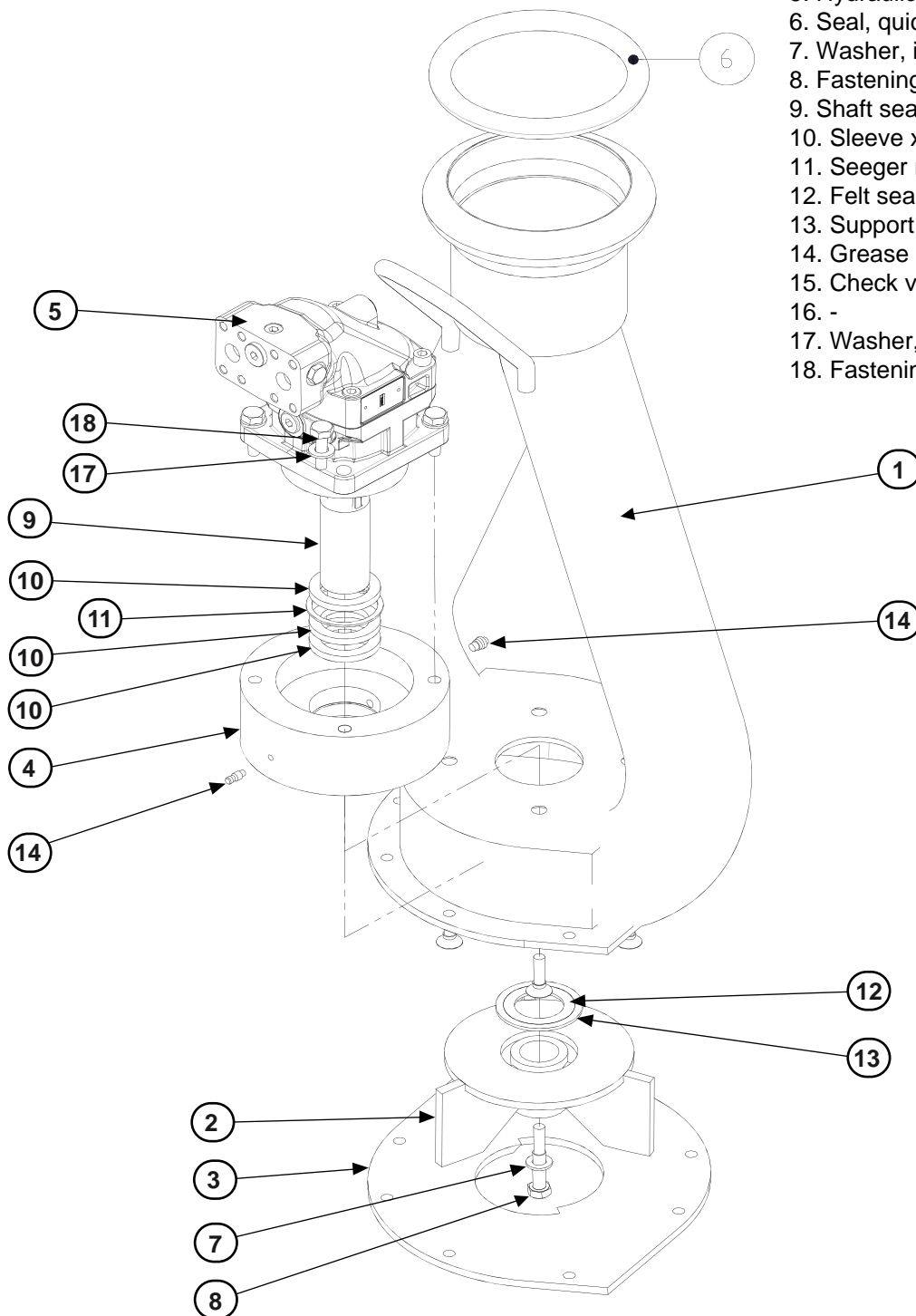
HSP 2600, 4000

1. Pump body
2. Impeller
3. Bottom plate, intake
4. Support bearing
5. Hydraulic motor
6. Seal, quick coupling outlet
7. Washer, impeller fastening screw
8. Fastening screw, impeller
9. Fastening bracket, support bearing
10. Washer, support bearing
11. Nut, support bearing
12. Fastening screw, hydraulic pump
13. Nut, hydraulic pump

MAIN ASSEMBLY**HSP 10000/5-200**

HSP10000

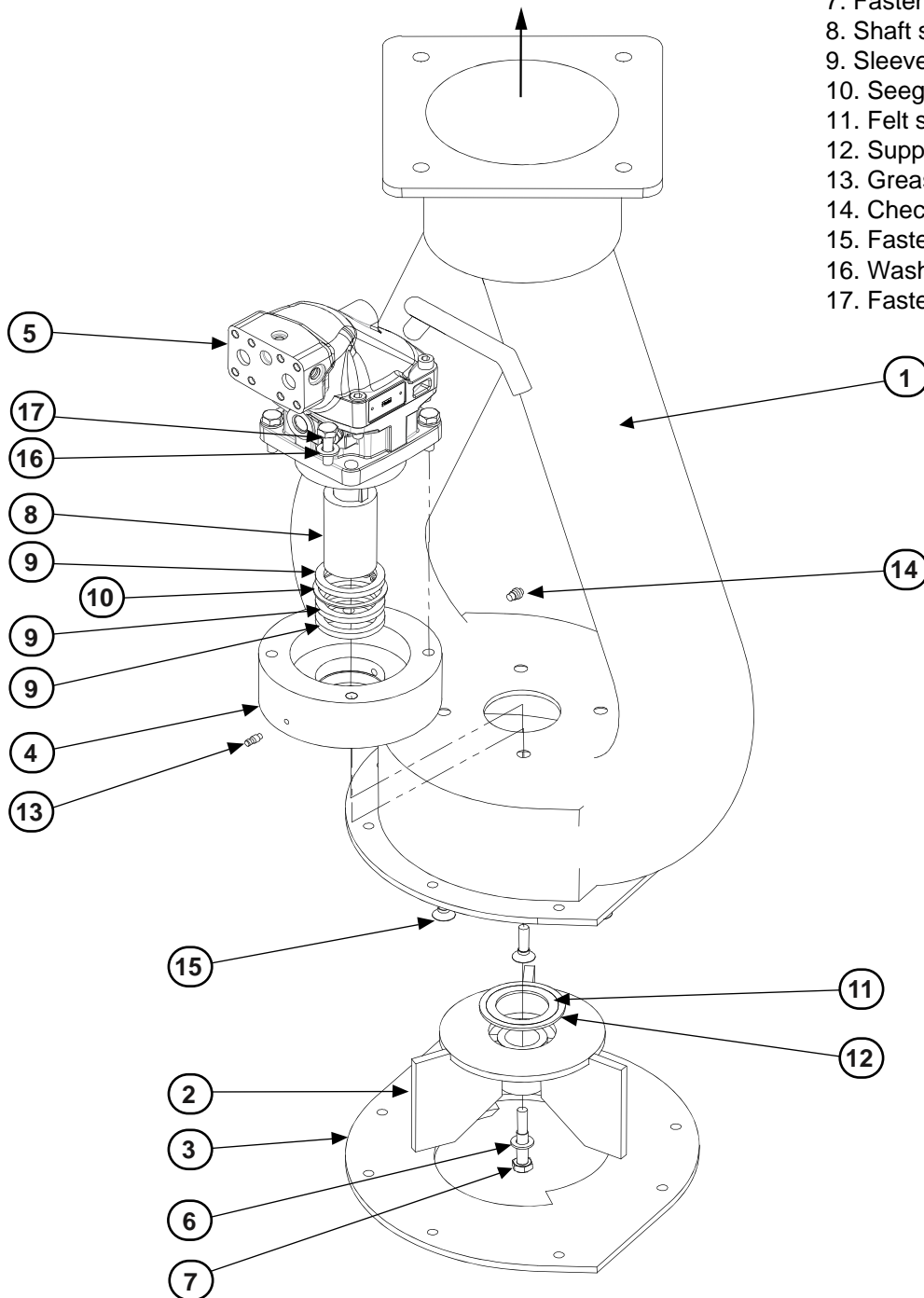
1. Pump body
2. Impeller
3. Bottom plate, intake
4. Fastening flange, hydraulic motor
5. Hydraulic motor
6. Seal, quick coupling outlet
7. Washer, impeller
8. Fastening screw, impeller
9. Shaft seal
10. Sleeve x 3, shaft seal
11. Seeger ring, seal
12. Felt seal
13. Support ring, felt seal
14. Grease nipple, shaft
15. Check valve, bypass hole
16. -
17. Washer, hydraulic motor
18. Fastening screw, hydraulic motor



MAIN ASSEMBLY**HSP 16000/5-317**

HSP16000

1. Pump body
2. Impeller
3. Bottom plate, intake
4. Fastening flange, hydraulic motor
5. Hydraulic motor
6. Washer, impeller
7. Fastening screw, impeller
8. Shaft seal
9. Sleeve x 3, shaft seal
10. Seeger ring, seal
11. Felt seal
12. Support ring, felt seal
13. Grease nipple, shaft
14. Check valve, bypass hole
15. Fastening screw, bottom plate
16. Washer, hydraulic motor
17. Fastening screw, hydraulic motor



HYDRAULIC FLUIDS

Wide range of standard hydraulic fluids can be used with the DYNASET hydraulic equipment.

Subject to the operating temperature, following mineral hydraulic oils are recommended:

- ISO VG 32S for oil's operation temperature up to 70 °C;
- ISO VG 46S for oil's operation temperature up to 80 °C;
- ISO VG 68S for oil's operation temperature up to 90 °C.

Synthetic and bio-oils can be used as well if their viscosity characteristics and lubricating efficiency are corresponding to above 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 carrier machine.

Prior to use special hydraulic fluids a with DYNASET equipment, please be kindly requested to contact nearest DYNASET representative for an advice.

PRODUCT DISPOSAL

Conform to waste legislation, regulations and recommendations in waste disposal and waste recycling issued by local authorities.

1. Precondition:

- Product is permanently useless or beyond repair.
- Before transportation get off all used agent (oil, cooling liquid) and dirty filters.

Items requiring special handling can normally be done by authorized waste management facility, if not:

- Separating the base materials, iron, copper, steel, electronics, removing paint, polyester resin, and insulation tape and/or plastics residues from all components.
- This 'waste material' can now be recycled.

2. Deliver the recycling and waste material to waste management facility.

Note! Customer can send the DYNASET equipment for reuse or recycling to the Dynaset Oy or to other location determinate by Dynaset representative.

- Customer pays shipping cost.
- Equipment must be adequately packed for shipment.
- Shipment documents must contain purchaser's name, contact information, equipment type and serial number.



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 8.

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 twelve (12) 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:

- a. 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
- b. Cost of maintenance, adjustments, installation or startup
- c. Coating, hydraulic oil, quick couplings and interconnection hoses (internal or external to system assemblies)
- d. Products altered or modified in a manner not authorized by DYNASET OY in writing
- e. Products which have been repaired during warranty period by others than DYNASET OY or its authorized workshop
- f. 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
- g. Telephone or other communications expense
- h. Product that is used in exceptional conditions, considered to cause excessive wear and tear
- i. Faults caused by nature phenomenon's like flood, thunder, etc.

© DYNASET OY, all rights reserved

EC DECLARATION OF CONFORMITY

We hereby declare that the below-reference product design and manufacturing are in conformity with the provisions in the Council Directive on mutual approximation of laws of the Member States on the safety of machines.

- Machine directive 2006/42/EC
- Directive 97/23/EC European standards Pressure equipment.

Apply conformity standards:

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

If device has changed by someone other than at the hands of manufacturer or his permission, this declaration is not valid.

PRODUCT: DYNASET SUBMERSIBLE PUMP

TYPE NUMBERS: HSP 1500/5-40
HSP 2600/5-40
HSP 4000/5-100
HSP 7000/5-169
HSP 10000/5-200
HSP 16000/5-317

YLÖJÄRVI 11.09.2012

DYNASET Oy



Timo Nieminen
R&D Manager