

OPERATION AND MAINTENANCE INSTRUCTIONS

DESMI end suction centrifugal pump NSLV and NSLH Monobloc



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Special pump No.



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1. PRODUCT DESCRIPTION

These operation and maintenance instructions apply to the DESMI NSLV and NSLH Monobloc pump. The NSLV pump is constructed for vertical mount (with suction flange downwards) and the NSLH pump for horizontal mount.

The pump is a single-stage end suction centrifugal pump equipped with stainless steel shaft, mechanical shaft seal, and closed impeller.

The pump is suitable for the pumping of liquids with temperatures up to 80°C. With special shaft seal up to 100°C in Monobloc pumps with bearing (/02 design) and up to 140°C in Monobloc pumps without bearing (/12 design). For pumping of liquids with temperatures above 100°C DESMI recommends using nodular cast iron (for instance GGG40) for pump casing and rear cover. Max. working pressure and number of revolutions are indicated under Operating Data.

The pump is particularly suitable for the pumping of water in connection with cooling systems, cooling of diesel engines, as bilge pumps, ballast pumps, fire pumps, brine pumps, pumps for irrigation, fish farms, water works, district heating, salvage corps, army and navy, etc.

The descriptions in the operation and maintenance instructions are divided into two parts covering the groups **ø215/265** and **ø330/415/525**, as the designs of these two groups are different. The numbers refer to the standard impeller diameter of the pump. E.g.:

ø215/265: Pumps with ø215 or ø265 impellers:

The back of the impeller is equipped with relief blades to reduce the load on the bearings.

ø330/415/525: Pumps with ø330 , ø415 and ø525 impellers:

The back and the front of the impeller are equipped with sealing rings and relief holes to reduce the load on the bearings.

1.1 DELIVERY

- Check on delivery that the shipment is complete and undamaged.
- Defects and damages, if any, to be reported to the carrier and the supplier immediately in order that a claim can be advanced.

2. TECHNICAL DATA

The pumps are manufactured in various material combinations which appear from the type number on the name plate. See below.

2.1 EXPLANATION OF THE TYPE NUMBER

All the NSLV and NSLH pumps are provided with a name plate. The type number indicated on the name plate is built up as follows:

NSLVXXX-YYY/MR-Z or NSLHXXX-YYY/MR-Z

XXX: Pressure branch diameter, YYY: Standard impeller diameter

M: The material combination of the pump.

R: The assembly combination of the pump.

Z: Other variants

M may be the following:

- A: Casing and shaft seal cover : Cast iron + cast iron alloy. Impeller and sealing rings: Bronze
- B: Casing and shaft seal cover : Cast iron + cast iron alloy. Impeller and sealing rings: Stainless.
- C: All cast iron
- D: Casing and shaft seal cover: Bronze or NiAlBz. Impeller and sealing rings: NiAlBz or stainless steel
- E: Special materials
- S: Casing, shaft seal cover, impeller and sealing rings: SAF2507 and stainless steel alloy.
- U: Nonmagnetic material

The pumps can be delivered in other material combinations according to agreement with the supplier.

R may be the following:

- 02: Monobloc, with bearing in the pump
- 07: Mounted on base plate with electric motor
- 09: Pump with bare shaft end
- 12: Monobloc, without bearing in the pump
- 13: Spacer, light bearing housing
- 14: Spacer, heavy bearing housing
- 15: Spacer, heavy bearing housing and heavy motor bracket (special motor bracket)
- 16: Compact spacer (i.e. pumps shown in this manual)

Z may be the following:

- i : PN16 flanges
- j : PN25 flanges
- k : Special flange
- l : Other shaft seal
- m : BS flanges
- n : ANSI flanges
- o : Shockproof design
- p : Other design
- q : JIS flanges
- r : With inducer

Any use of the pump is to be evaluated on the basis of the materials used in the pump. In case of doubt, contact the supplier.

Pumps in material combinations A and C are primarily used for fresh water.

Pumps in material combination D and E are primarily used for seawater.

If the pumps are designed for special purposes the following is to be indicated:

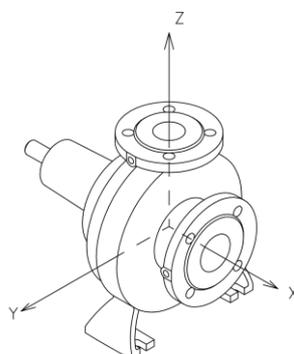
Pump No. :
Pump type :
Application :
Comment :

2.2 TECHNICAL DESCRIPTION

The noise level indicated is the airborne noise including the motor. The noise depends on the motor type supplied, as the noise from the pump can be calculated as the noise level of the motor + 2dB(A). The noise level is for pumps with electric motors.

The capacity of the pump appears from the name plate on the pump. If the pump has been delivered without motor, the pump capacity is to be indicated on the plate when mounting the motor.

The permissible loads on the flanges appear from the following table. The values apply to standard pumps in bronze (Rg5) and cast iron (GG20). As to pumps in SG iron (GGG40), NiAlBz or stainless steel the values are to be increased by a factor 1.5.



Pump size	Fy N	Fz N	Fx N	ΣF	My Nm	Mz Nm	Mx Nm	ΣMt
65-215 65-265	650	840	750	1340	510	310	380	700
80-215 80-265 80-330	800	950	850	1500	550	350	400	750
100-215 100-265 100-330 100-415	1000	1250	1150	2000	650	400	500	900
125-215 125-265 125-330 125-415	1250	1600	1430	2500	830	520	650	1160
150-265 150-330 150-415	1500	1900	1700	2950	1000	650	800	1400
200-265 200-330 200-415 200-525	2000	2520	2260	3920	1330	860	1060	1860
250-330 250-415 250-525	2500	3150	2820	4900	1770	1140	1400	2470
300-415 300-418 300-525	3000	3750	3350	5860	2750	1900	2200	4000
350-525	3500	4370	3920	6840	3630	2500	2930	5300

In connection with the permissible loads on the flanges the following is to be observed:

$$\left(\frac{\sum F_{calc}}{\sum F} \right)^2 + \left(\frac{\sum M_{calc}}{\sum M_t} \right)^2 < 2$$

where index "calc" is the values calculated by the user.

At the same time none of the forces or moments may exceed the indicated figure multiplied by 1.4.

3. INSTALLATION

3.1 MOUNTING/FASTENING

The pump should be mounted and fastened on a solid base plate or wall mounted frame so distortion is avoided. The pump should be installed so that the motor can be pulled away from the pump during maintenance work – i.e. any bolts mounted through the motor feet should be made so they are possible to remove before the motor shall be pulled away from the pump.

The max. permissible loads on the flanges stated in paragraph 2.2 are to be observed.



At installations pumping hot or very cold liquids, the operator must be aware that it is dangerous to touch the pump surface and, consequently, he must take the necessary safety measures.

3.2 WIRING



Wiring to be carried out by authorised skilled workmen according to the rules and regulations in force.

4. TRANSPORT/STORAGE

The weights of the pumps in A, D and S combination (without motor) are stated in the following table, and the pumps are to be lifted as shown below.

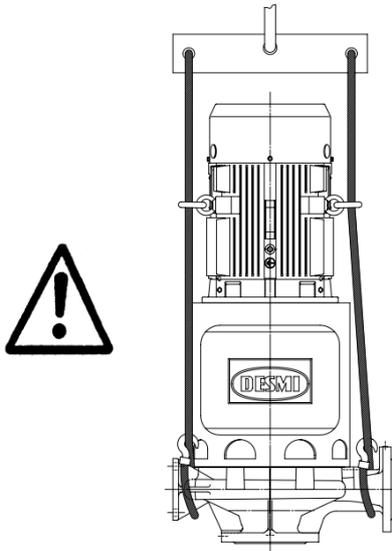
Pump size	Weight (Kg)		Pump size	Weight (Kg)	
	A/D/S-02	A/D/S-12		A/D/S-02	A/D/S-12
65-215	88/98/100	62/72/99	150-330	288/275/340	238/225/269
65-265	93/105/125	67/89/117	150-415	353/360/392	303/310/299
80-215	104/118/123	78/92/110	200-265	247/283/260	221/247/235
80-265	115/137/140	89/103/130	200-330	302/272/407	252/222/335
80-330	213/212/246	163/162/186	200-415	421/426/558	371/376/420
100-215	103/112/131	77/86/114	200-525	597/673/762	527/603/613
100-265	115/131/156	89/105/145	250-330	389/366/477	339/316/405
100-330	218/219/268	168/169/203	250-415	501/491/626	451/441/490
100-415	337/352/482	287/302/391	250-525	677/773/814	607/703/695
125-215	117/135/129	91/109/134	300-415	597/578/680	547/528/545
125-265	150/174/199	124/138/188	300-418	696/627/711	641/-/575
125-330	213/213/285	163/163/213	300-525	709/819/943	639/749/823
125-415	335/346/345	285/296/255	350-525	1060/-/-	1095/-/-
150-265	142/169/200	116/133/190			

The pump is to be stored in a dry area.

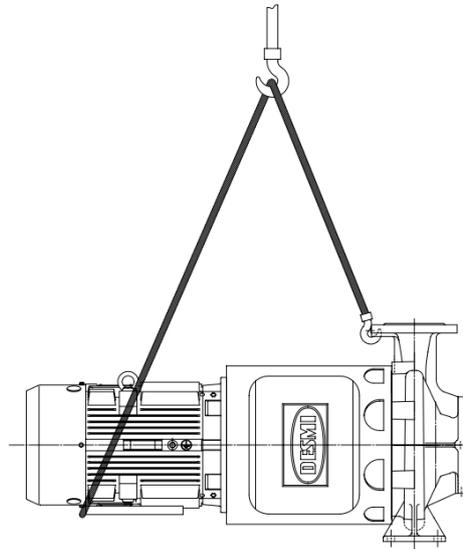
Before shipment the pump is to be fastened securely on pallets or the like.

The pumps are to be lifted in the following way:

NSLV:



NSLH:



The lifting straps must not bear against sharp edges and corners.

5. DISMANTLING

5.1 ACCESS TO IMPELLER

The numbers in brackets refer to the position numbers on the assembly drawing.

ø215/265 02-combination

Remove guards (28). Remove Allen screws (22) which hold the shaft seal cover (18) and the motor bracket (20) to the pump casing (1). Dismantle copper pipe (58). Remove motor bracket and motor. Loosen shaft seal cover (18) from pump casing by means of the two M12 bolts in the threaded holes in the shaft seal cover. The shaft seal cover with shaft and impeller can now be lifted up allowing inspection of the impeller.

ø215/265 12-combination

Remove guards (28). Remove Allen screws (22) which hold the motor bracket (20) to the pump casing (1) (stainless steel pumps have separate rear cover (18) and motor bracket (20), and use Allen screw (40) to connect). Dismantle copper pipe (58). The top piece can now be lifted up allowing inspection of the impeller.

ø330/415/525 02-combination

Remove guards (28). Remove set screws (64) which hold the motor bracket (20) to the pump casing (1). Dismantle copper pipe (58) (for NSLV). Remove motor bracket and motor. Remove set screws (22) with washers (23), which hold the shaft seal cover (18) to the pump casing. Loosen the shaft seal cover from the pump casing by means of the pointed screws (86). The shaft seal cover with shaft and impeller can now be lifted up allowing inspection of the impeller.

ø330/415/525 12-combination

Remove guards (28). Remove set screws (64) which hold the motor bracket (20) to the pump casing (1). Dismantle copper pipe (58) (for NSLV). Remove set screws (22) with washers (23), which hold the shaft seal cover (18) to the pump casing. Loosen the shaft seal cover from the pump casing by means of the pointed screws (86). The motor and motor bracket with shaft seal cover and shaft with impeller can now be lifted up allowing inspection of the impeller.

5.2 DISMANTLING SHAFT SEAL

ø215/265 02-combination

Pull the shaft seal cover off the motor bracket, by which the coupling (19) is pulled off the motor shaft. Remove nut (6). Pull off the impeller (5) and remove sunk key (9). Remove Allen screws (16), which hold the bearing cover (15) to the shaft seal cover, pull shaft seal cover and bearing cover apart, by which shaft seal (10) and water deflector (11) are pulled off the shaft.

ø215/265 12-combination

Remove nut (6). Pull off the impeller (5), and remove sunk key (9). Remove set screws (71) and pull motor bracket and electric motor with shaft (17) apart, by which the shaft seal is pulled off the shaft.

ø330/415/525 02-combination

Remove set screw (6). Pull off the impeller, and remove sunk key (9). Remove set screws (16), which hold the bearing cover (15) to the shaft seal cover, pull shaft seal cover and bearing cover apart, by which the shaft seal (10) is pulled off the shaft.

ø330/415/525 12-combination

Remove set screw (6). Pull off the impeller, and remove sunk key (9). Pull shaft seal cover out of motor bracket, by which the shaft seal (10) is pulled off the shaft.

5.3 DISMANTLING SEAT

Press out the seat from behind the shaft seal cover or motor bracket (ø215/265 in 12-combination)

5.4 DISMANTLING BEARING (ONLY 02-COMBINATION)

Before dismantling bearing, remove ring lock (12). Pull the shaft/coupling out of the bearing cover and press the bearing out of the bearing cover.

5.5 INSPECTION

When the pump has been dismantled, check the following parts for wear and damage:

- Sealing ring/impeller: Max. clearance 0.4-0.5 mm measured in radius.
- Shaft seal/shaft seal cover: Check the seat for flatness and cracks.
Check the rubber parts for elasticity.
- Bearings: Replace in case of wear and noise.

5.6 DISMANTLING COUPLING (02-COMBINATION) / SHAFT (12-COMBINATION)

It is not necessary to remove the coupling in the 02-combination or the shaft in the 12-combination during normal maintenance. However, in the 12-combination the shaft must be removed when the lower bearing in the electric motor is replaced.

02-combination:

Dismantle the coupling by removing the pointed screw (73) and pull off the coupling. If the coupling is removed on the assembled pump, take care that the bearing is not damaged by pulling too hard on the coupling. If the coupling is removed after dismantling the pump, fix the shaft at the thread at the opposite shaft end, while the coupling is pulled off. The coupling might be heated to facilitate dismantling.

12-combination:

Remove pointed screws (73). Pull off the shaft. . The coupling might be heated to facilitate dismantling.

6. ASSEMBLING

6.1 FITTING SEALING RINGS

When fitted, the sealing ring (4) has to bear against the shoulder of the pump casing.

ø330/415/525

When fitted the sealing ring (27) has to bear against the shoulder of the shaft seal cover (20).

6.2 FITTING BEARING (ONLY 02-COMBINATION)

Place the support disc (14) (grease valve ring in ø330/415/525 with angular ball bearings) in the bearing cover and press the bearing into place in the bearing cover. Lead the shaft through the bearing cover, support disc and bearing, and press the bearing into place up against the support disc. Fit ring lock (12).

ø330/415/525

Fit cover under bearing (26).

6.3 FITTING WATER DEFLECTOR (ONLY 02-COMBINATION)

ø215/265

Assemble bearing cover and shaft seal cover. Lead the water deflector (11) over the shaft until it touches the shaft seal cover and then further 1-1.5 mm into the shaft seal cover. Do not fasten bearing cover and electric motor until motor and coupling have been mounted and the shaft can rotate freely without noise.

ø330/415/525

Lead the water deflector (11) over the shaft until it touches the cover under bearing (26) and then further 1-1.5 mm towards the cover under bearing. Assemble bearing cover and shaft seal cover. Do not fasten bearing cover and electric motor until motor and coupling have been mounted and the shaft can rotate freely without noise.

6.4 FITTING SHAFT SEAL

For pumps with balanced shaft seal type ELK (=“-L” included in pump code on name plate) please read appendix A

Before fitting the seat, clean the recess in the shaft seal cover or the motor bracket ($\varnothing 215/265$ in 12-combination). When fitting the seat, remove the protective coating without scratching the lapped surface. Dip the outer rubber ring of the seat into soapy water. Now press the seat into place with the fingers and check that all parts are correctly imbedded.

If it is necessary to use tools for assembling, then protect the sliding surface of the seat to prevent it from being scratched or cut. Lubricate the inner surface of the slide ring rubber bellows with soapy water and push it over the shaft. The use of a conical fitting bush as shown on the assembly drawing is recommended to avoid that the rubber bellows is cut.

Push the slide ring over the shaft with the hand. If the rubber bellows is tight, use a fitting tool and take care that the slide ring is not damaged. If the carbon ring is not fixed, it is important to check that it is fitted correctly, i.e. the chamfered/lapped side is to face the seat. The carbon ring can be held by a little grease.

When using soapy water on the shaft, the bellows will settle and seat in abt. 15 minutes, and until then tightness should not be expected. After start, check by viewing the leak hole that there are no leaks.

6.5 FITTING IMPELLER

Fit the sunk key in the shaft and lead the impeller towards the shoulder of the shaft. Take care that the ring at the end of the shaft seal spring locates in the recess of the impeller. Secure the impeller with washers (7 and 8) and a nut ($\varnothing 215/265$) or a set screw ($\varnothing 330/415/525$). Secure set screw (6) or nut (6) with a removable screw locking agent, e.g. Loctite 243 or Omnifit 40M. Tighten according to below table.

6.6 FITTING SHAFT SEAL COVER OR MOTOR BRACKET (12-COMBINATION)

Place the O-ring (21) between pump casing and shaft seal cover (or motor bracket in $\varnothing 215/265$ 12 combination) in the O-ring groove and hold it with a little grease. However, check the material of the O-ring first. As standard the material is nitrile, but it might be EPDM which will be damaged by mineral grease. Use soft soap or silicone grease for EPDM. Fit and fasten shaft seal cover or motor bracket, mounted with the electric motor, in the pump casing. Screw the pointed screws (86) back into the shaft seal cover before tightening. Fit copper pipe (58).

6.7 SHAFT

When the pump has been assembled, check that the shaft rotates freely. In case the shaft has been dismantled in the 12-combination, tap the shaft towards the shaft end of the electric motor by means of a plastic hammer, and fasten the pointed screws (first the middle screw) according to the below table. Check that the wobble, measured as close to the shaft end as possible, is within the limits indicated in the table.

Motor size	Dimension Pointed screws	Torque Pointed screws	Max. wobble
100/112	M6	10 Nm	70 µm
132	M8	24 Nm	70 µm
160	M10	40 Nm	70 µm
180	M12	55 Nm	70 µm
200	M12	75 Nm	70 µm
225	M16	160 Nm	70 µm
250	M16	160 Nm	70 µm
280	M16	160 Nm	70 µm
315	M16	160 Nm	70 µm
315 / 355	M20	320 Nm	70 µm

6.8 FITTING COUPLING (ONLY 02-COMBINATION)

Fit sunk key (76). If the coupling is fitted on the assembled pump, take care that you do not damage the bearing by pressing the coupling too hard. The coupling might be heated to facilitate the fitting. If the coupling is fitted before assembling the pump, the shaft must be supported at the opposite shaft end while the coupling is pressed into place. When the coupling bears against the shoulder of the pump shaft, fit the pointed screw.

7. FROST PROTECTION

Pumps which are not in operation during frost periods are to be drained to avoid frost damage. Remove the plug (3) at the bottom to empty the pump. Alternatively, it is possible to use anti-freeze liquids in normal constructions.

8. DISMANTLING

Before dismantling the pump make sure that it has stopped. Empty the pump of liquid before it is dismantled from the piping system. If the pump has been pumping dangerous liquids you are to be aware of this and take the necessary safety measures.



If the pump has been pumping hot liquids, take great care that it is drained before it is removed from the piping system.

9. START-UP

A centrifugal pump will not function until it has been filled with liquid between the foot valve and somewhat above the impeller of the pump.



The liquid also serves as coolant for the shaft seal. In order to protect the shaft seal the pump must not run dry.

ATTENTION

For safety reasons the pump is only allowed to operate against closed discharge valve for a short time (max. 5 minutes and at a max. temperature of 80°C for standard pumps). Otherwise there is a risk of damage to the pump and, at worst, of a steam explosion. If the pump is not monitored, the installation of a safety device is recommended.

9.1 START-UP

Before starting the pump check that:

- the shaft rotates freely without jarring sounds.
- the pump casing and the suction line are filled with liquid.

Start the pump for a moment to check the direction of rotation. If the direction is correct (i.e. in the direction of the arrow) the pump may be started.

10. SYSTEM BALANCING

It is often difficult to calculate a manometric delivery head in advance. It is, however, decisively important to the quantity of liquid delivered.

A considerably smaller delivery head than expected will increase the quantity of liquid delivered, causing increased power consumption and perhaps cavitation in pump and piping. In the pump the impeller may show signs of heavy erosion caused by cavitation (corrosion) which may at times render an impeller unfit for use in a very short time. Not unusually do similar erosions occur in pipe bends and valves elsewhere in the piping system.

Therefore, after start-up, it is necessary to check either the quantity of liquid delivered or the power consumption of the pump e.g. by measuring the current intensity of the connected motor. Together with a reading of the differential pressure the quantity of water delivered can be determined against the characteristics of the pump.

Should the pump not function as intended, please proceed according to the fault-finding list. Bear in mind, though, that the pump was carefully checked and tested at the factory and that the majority of faults stem from the piping system .

FAULT	CAUSE	REMEDY
The pump has no or too low capacity	<ol style="list-style-type: none"> 1. Wrong direction of rotation 2. Piping system choked 3. The pump is choked 4. Suction line leaks Pump takes air 5. Suction lift too high 6. Pump and piping system wrongly dimensioned 	Change direction of rotation to clockwise when viewed from shaft end (the direction of the arrow) Clean or replace Clean the pump Find the leakage, repair the fault, non-return valve not submerged Check data sheet Q/H curve and NPSH or contact DESMI As 5
The pump uses too much power	<ol style="list-style-type: none"> 1. Counter-pressure too low 2. The liquid is heavier than water 3. Foreign body in pump 4. Electric motor is running on 2 phases 	Insert orifice plate or check valve/Contact DESMI Contact DESMI Dismantle the pump, remove the cause Check fuses, cable connection, and cable
The pump makes noise	<ol style="list-style-type: none"> 1. Cavitation in pump 	Suction lift too high/ Suction line wrongly dimensioned/Liquid temperature too high

11. INSPECTION AND MAINTENANCE

Inspect the shaft seal for leaks at regular intervals.

- Before inspection of a pump without guard check that the pump cannot be started unintentionally.
- The system is to be without pressure and drained of liquid.
- The repairman must be familiar with the type of liquid which has been pumped as well as the safety measures he is to take when handling the liquid.

11.1 DRAINING THE PUMP

When the piping system has been drained, note that there is still liquid in the pump. Remove the liquid by dismantling the pipe plug (3) at the bottom of the pump.

11.2 BEARING

In the 12-combination the life depends on the relubrication, size and quality of the bearing in the motor.

ø215/265 in 02-combination

The bearing in the 02-combination is dimensioned for a nominal life of 25,000 working hours. The bearing is lubricated for life and requires no attention but is to be replaced in case of noise or bearing wear.

ø330/415/525 in 02-combination

The bearing is dimensioned for a nominal life of 100,000 working hours and is to be relubricated according to the below table. The bearing is to be replaced in case of noise or bearing wear.

Light bearing housing (single-row ball bearing)

The bearing is to be relubricated through the lubricator nipple (84) in the bearing cover (15). In connection with replacement, the bearings are to be mounted with the RS - sealing facing downwards, fill the bearing itself with grease and place a grease bead on the bearing towards the shaft in a quantity corresponding to the table below.

Heavy bearing housing (two angular ball bearings)

The bearings are to be relubricated through the lubricator nipple (84) in the bearing cover (15). Fill the bearings with grease and place a grease bead on the bearing towards the shaft in a quantity corresponding to the table below.

Pump	Assembly	Interval	Quantity
80-330 100-330 125-330 100-415 125-415	Light bearing housing	4500 hours	30 g
150-330 200-330 250-330 150-415	Heavy bearing housing	4500 hours	40 g
200-415 250-415 300-415 300-418	Heavy bearing housing	4500 hours	50 g
200-525 250-525 300-525 350-525	Heavy bearing housing	4500 hours	80 g

If the pumped liquid temperature is below 80°C the following types of grease are recommended:

ESSO	Beacon 2
BP	Energrease LS EP 2
Shell	Gadus S5 V100 2
Mobil	Mobil lux grease EP 2 eller Mobil plex 47
Castrol	Spheerol AP 2
Texaco	Multifak EP 2
Q8	Rembrandt EP 2 eller Rubens
Statoil	Uniway Li 62

If the pumped liquid temperature is above 80°C, high-temperature grease is recommended, e.g. SKF LGH P2/0.4.

12. REPAIRS

12.1 ORDERING SPARE PARTS

When ordering spare parts please always state pump type, serial No. (appears on the name plate of the pump), position No. on the assembly drawing and designation on the spare parts list.

13. OPERATING DATA

The following working pressures (pressure in piping incl. the pressure increase caused by the pump), number of revolutions and electric motors are allowed in standard pumps:

ø215/265

In the 02-combination the ø215 pumps are as standard available with motors up to frame size 225 (inclusive) and ø265 pumps with motors up to frame size 280 (inclusive).

In the 12-combination the ø215 pumps are as standard available with motors up to frame size 180 (inclusive) and ø265 pumps with motors up to frame size 200 (inclusive).

ø330/415/525

In the 02/12-combination the ø330 pumps are as standard available with motors up to frame size 315 (inclusive) and ø415 pumps with motors up to frame size 355 (inclusive).

Pump size	Max. working pressure [bar] Bronze / Cast iron	Max. working pressure [bar] SG-iron	Max. RPM 12- & 02-Combination	Pump size	Max. working pressure [bar] Bronze / Cast iron	Max. working pressure [bar] SG-iron	Max. RPM 12- & 02-Combination
65-215	16	25	3600	150-415	9 / 13	25	1800
65-265	14.5	25	3600	150-265	10	25	1800
80-330	15 / 15	25	3600	200-525	14	25	1800
80-215	13	25	3600	200-330	7 / 13	25	1800
80-265	14.5	25	3600	200-415	9 / 13	25	1800
100-330	11 / 14	25	3000	200-265	10 / 12.5	25	1800
100-415	10 / 12.5	25	1800	250-330	7 / 12	25	1800
100-215	12.5	25	3600	250-415	9 / 12	25	1800
100-265	14.5	25	3600	250-525	14	25	1800
125-330	11 / 12	25	3000	300-415	9 / 12	25	1800
125-415	9 / 13	25	1800	300-418	6/16	25	1800/1600
125-215	8	25	1800	300-525	14	25	1800
125-265	7	25	1800	350-525	-/16	25	1600
150-330	7 / 13	25	1800				

Notice: Some pump combinations allow higher speeds than stated in the table—see actual pump name plate. The max. working pressure for NiAlBz and stainless steel pumps is 1.5 times max. working pressure for bronze (RG5). The above-mentioned max. working pressure is a design value – delivered pumps are pressure tested according to actual application requirements and actual flange standards. For instance the above-mentioned max. working pressure is **NOT** valid for pumps approved by a classification society. Pumps approved by classification societies have been pressure tested according to the requirements of these societies, i.e. a test pressure of 1.5 x the permissible working pressure. The test pressure is stated in the test certificate and stamped into the discharge flange of the pump.

14. EU DECLARATION OF CONFORMITY

DESMI PUMPING TECHNOLOGY A/S, hereby declare that our pumps of the NSLV and NSLH Monobloc type are manufactured in conformity with the following essential safety and health requirements in the COUNCIL DIRECTIVE 2006/42/EC on machines, Annex 1.

The following harmonized standards have been used:

EN/ISO 13857:2008	Safety of machinery. Safety distances to prevent danger zones being reached by the upper limbs
EN 809:1998 + A1:2009	Pumps and pump units for liquids – Common safety requirements
EN12162:2001+A1:2009	Liquid pumps – Safety requirements – Procedure for hydrostatic testing
EN 60204-1:2006/A1:2009	Safety of machinery – Electrical equipment of machines (item 4, General requirements)
Ecodesign Directive (2009/125/EC).	Water pumps: Commission Regulation No 547/2012. Applies only to water pumps marked with the minimum efficiency index MEI. See pump nameplate.

Pumps delivered by us connected with prime movers are CE-marked and comply with the above requirements.

Pumps delivered by us without prime movers (as partly completed machinery) must only be used when the prime mover and the connection between prime mover and pump comply with the above requirements.

Nørresundby, March 05 2019



Henrik Mørkholt Sørensen
Managing Director

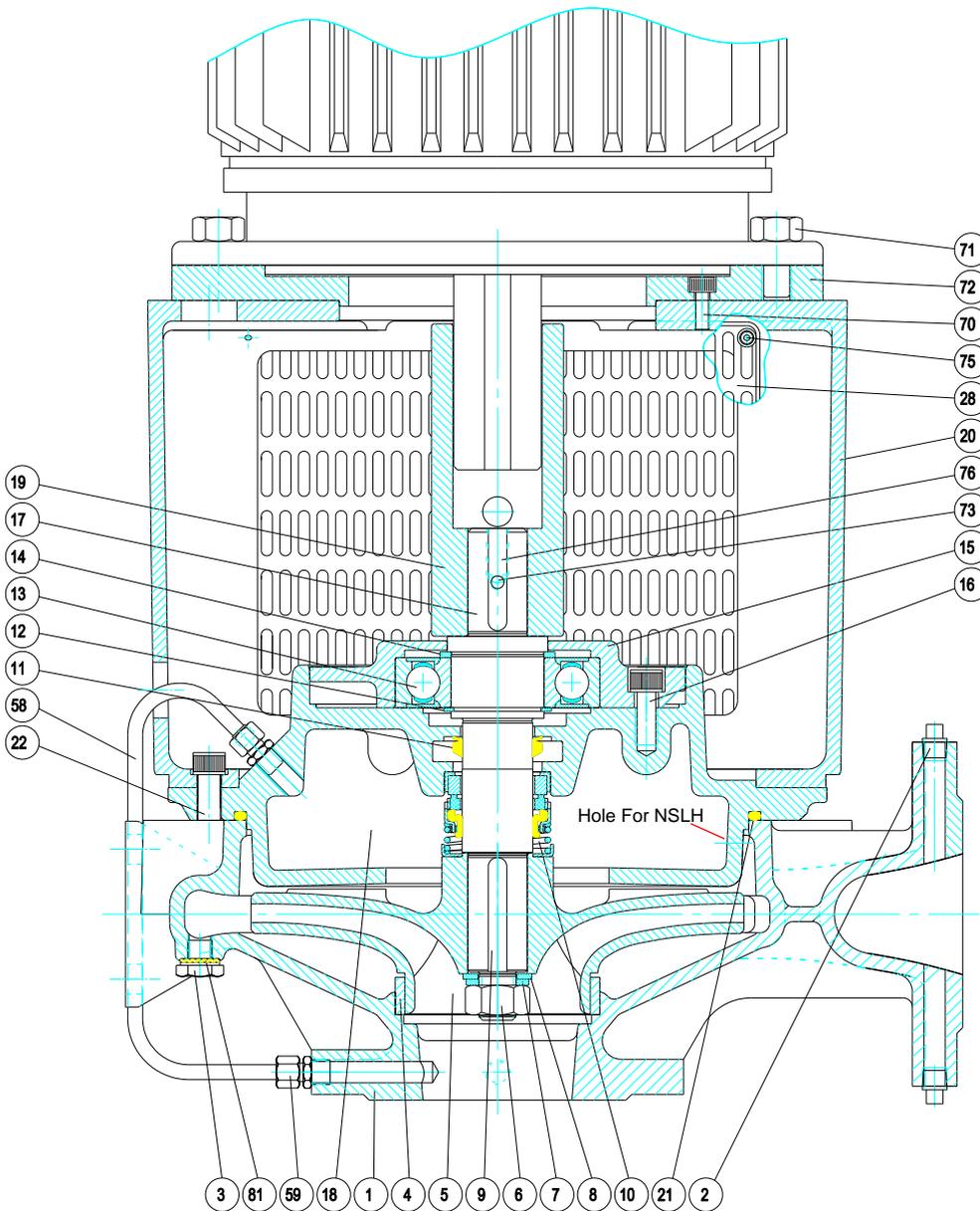
DESMI Pumping Technology A/S
Tagholm 1
9400 Nørresundby

15. INFORMATION RELEVANT FOR DISASSEMBLY OR DISPOSAL AT END-OF-LIFE

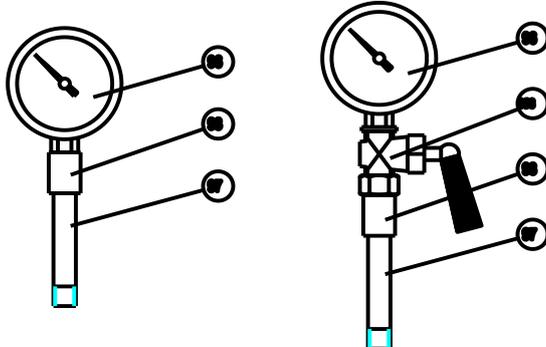
No damage materials are used in DESMI pumps – please refer to DESMI Green Passport (can be sent on request – contact a DESMI sales office) – i.e. common recycling companies can handle the disposal at end-of-life. Alternatively the pump and motor can be returned to DESMI at end-of-life for safe recycling.

16. ASSEMBLY DRAWING $\varnothing 215/265$ 02-COMB

17. SPARE PARTS LIST $\varnothing 215/265$

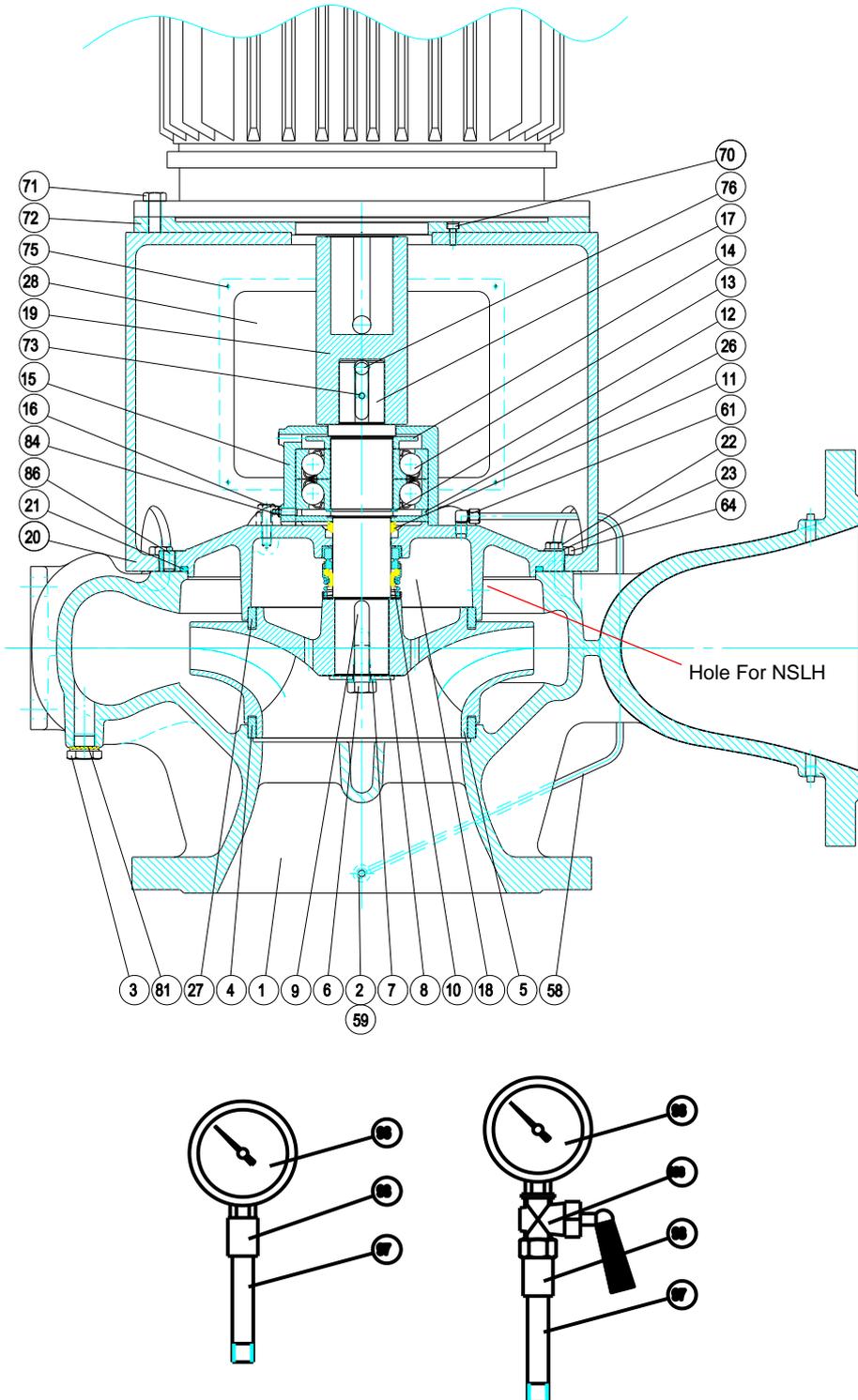


- 1 Pump casing
- 2 Pipe plug
- 3 Pipe plug
- 4 Sealing ring
- 5 Impeller
- 6 Nut
- 7 Spring washer
- 8 Washer
- 9 Sunk key
- 10 Shaft seal
- 11 Water deflector
- 12 Ring lock
- 13 Ball bearing
- 14 Support disc
- 15 Bearing cover
- 16 Allen screw
- 17 Shaft
- 18 Shaft seal cover
- 19 Coupling
- 20 Motor bracket
- 21 O-ring
- 22 Allen screw
- 28 Guard
- 58 Copper pipe (For NSLV)
- 59 Hexagon nipple
- 70 Allen screw
- 71 Set screw
- 72 Intermediate flange
- 73 Pointed screw
- 75 INSEX-screw
- 76 Sunk key
- 81 Sealing washer
- 96 Manometer
- 97 Nipple
- 98 Sleeve
- 106 Valve (optional)



18. ASSEMBLY DRAWING $\varnothing 330/415/525$ 02-COMB

19. SPARE PARTS LIST $\varnothing 330/415/525$ WITH HEAVY BEARING HOUSING

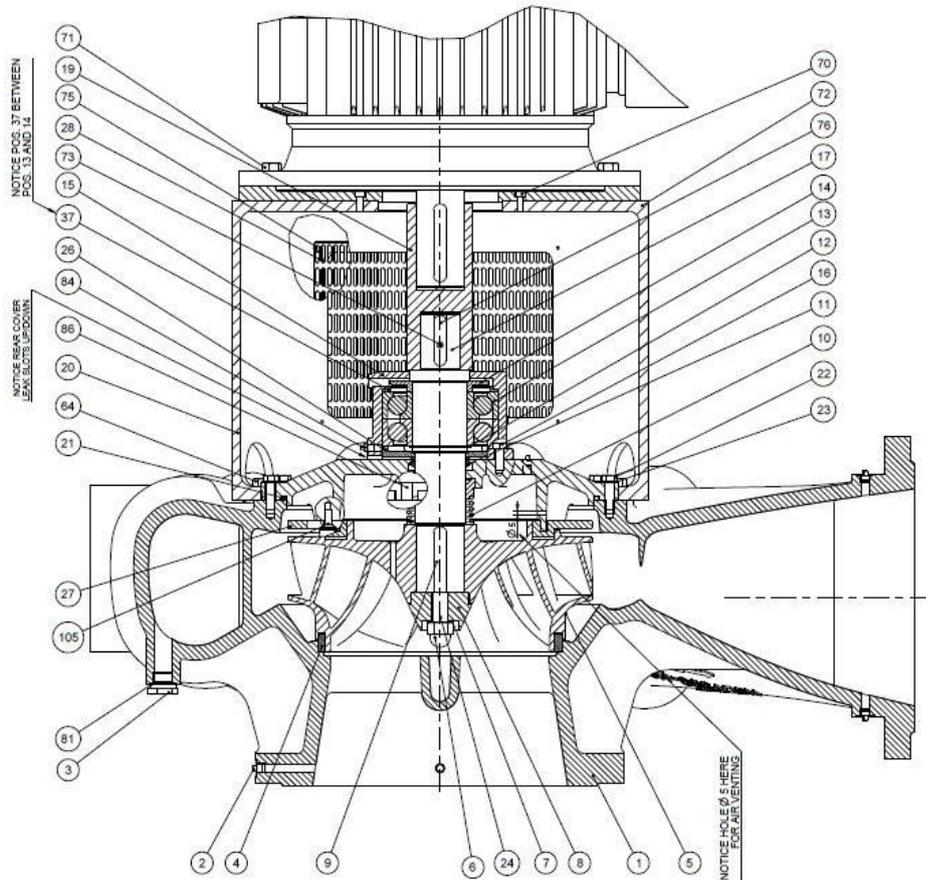


- 1 Pump casing
- 2 Pipe plug
- 3 Pipe plug
- 4 Sealing ring
- 5 Impeller
- 6 Set screw
- 7 Spring washer
- 8 Washer
- 9 Sunk key
- 10 Mech. shaft seal
- 11 Water deflector
- 12 Ring lock
- 13 Ball bearing
- 14 Grease valve ring*
- 15 Bearing cover
- 16 Set screw
- 17 Shaft
- 18 Shaft seal cover
- 19 Coupling
- 20 Motor bracket
- 21 O-ring
- 22 Set screw
- 23 Lock washer
- 26 Cover under bearing
- 27 Sealing ring 2
- 28 Guard
- 58 Copper pipe(For NSLV)
- 59 Hexagon nipple
- 61 Hexagon nipple
- 64 Set screw
- 70 Allen screw
- 71 Set screw
- 72 Intermediate flange
- 73 Pointed screw
- 75 INSEX-screw
- 76 Sunk key
- 81 Sealing washer
- 84 Lubricator nipple
- 86 Pointed screw
- 96 Manometer
- 97 Nipple
- 98 Sleeve
- 106 Valve (optional)

It is better to replacement motor in vertical direction for big motor in order to mount motor easy and ensure better alignment.

20. ASSEMBLY DRAWING 300-418 02-COMB.

21. SPARE PARTS LIST 300-418 02-COMB.

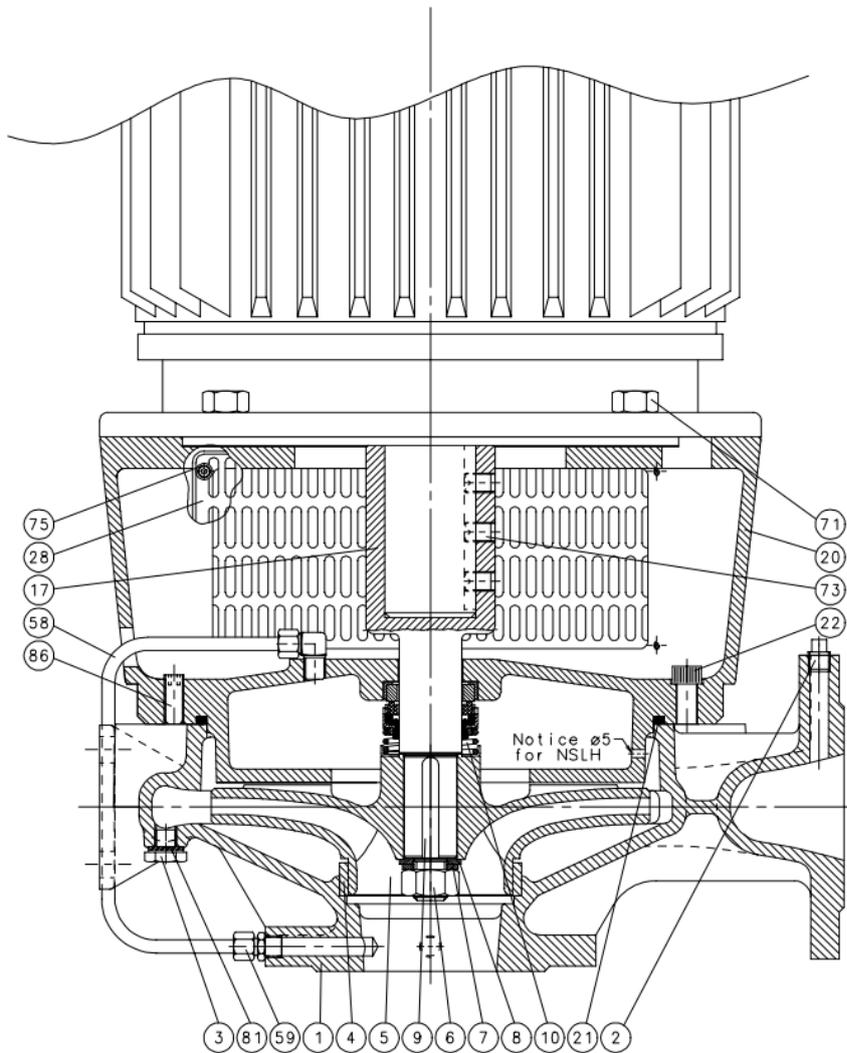


- 1 Pump casing
- 2 Pipe plug
- 3 Pipe plug
- 4 Sealing ring
- 5 Impeller
- 6 Cap screw
- 7 Spring washer
- 8 Inlet cone
- 9 Sunk key
- 10 Mech. shaft seal
- 11 Water deflector
- 12 Ring lock
- 13 Ball bearing
- 14 Grease valve ring*
- 15 Bearing cover
- 16 Set screw
- 17 Shaft
- 18 Shaft seal cover
- 19 Coupling
- 20 Motor bracket
- 21 O-ring
- 22 Set screw
- 23 Lock washer
- 26 Cover under bearing
- 27 Sealing ring 2
- 28 Guard
- 58 Copper pipe(For NSLV)
- 59 Hexagon nipple
- 61 Hexagon nipple
- 64 Set screw
- 70 Allen screw
- 71 Set screw
- 72 Intermediate flange
- 73 Pointed screw
- 75 INSEX-screw
- 76 Sunk key
- 81 Sealing washer
- 84 Lubricator nipple
- 86 Pointed screw

22. ASSEMBLY DRAWING $\varnothing 215/265$ 12-COMB.

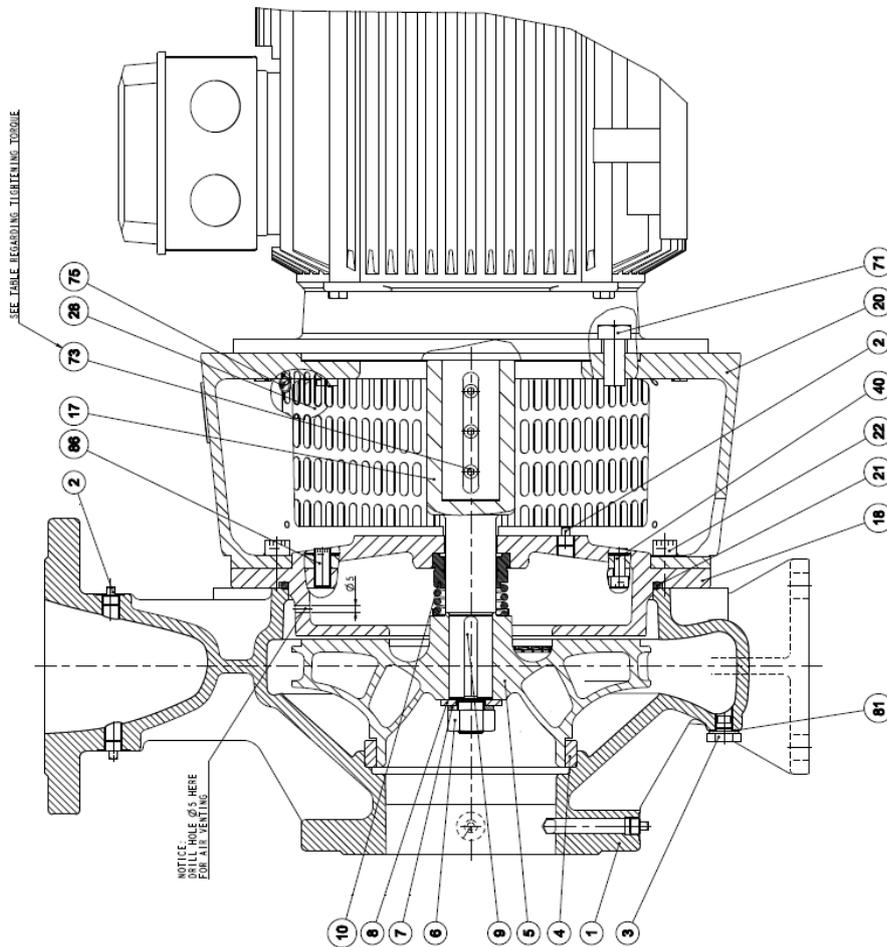
23. SPARE PARTS LIST $\varnothing 215/265$ 12-COMB.

See stainless steel pump on the next pages



- 1 Pump casing
- 2 Pipe plug
- 3 Pipe plug
- 4 Sealing ring
- 5 Impeller
- 6 Nut
- 7 Spring washer
- 8 Washer
- 9 Sunk key
- 10 Mech. shaft seal
- 17 Shaft
- 20 Motor bracket
- 21 O-ring
- 22 Allen screw
- 28 Guard
- 58 Copper pipe (for NSLV)
- 59 Hexagon nipple
- 71 Set screw
- 73 Pointed screw
- 75 INSEX-screw
- 81 Sealing washer

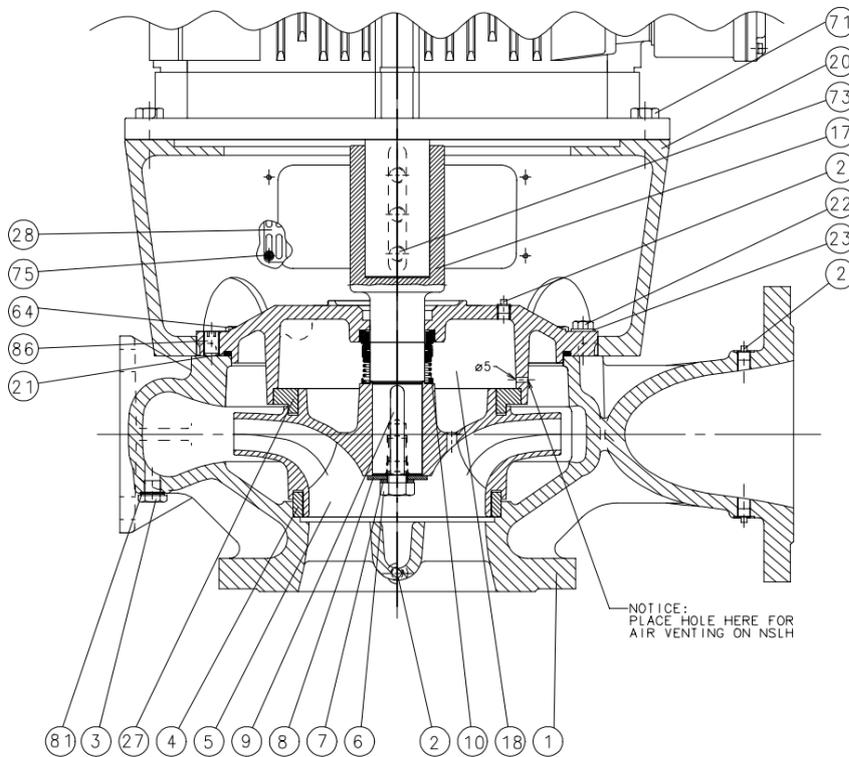
Stainless steel pump ø215/265 12-COMB



- 1 Pump casing
- 2 Pipe plug
- 3 Pipe plug
- 4 Sealing ring
- 5 Impeller
- 6 Nut
- 7 Spring washer
- 8 Washer
- 9 Sunk key
- 10 Mech. shaft seal
- 17 Shaft
- 18 Rear cover
- 20 Motor bracket
- 21 O-ring
- 22 Allen screw
- 28 Guard
- 40 Allen screw
- 58 Copper pipe (for NSLV)
- 59 Hexagon nipple
- 71 Set screw
- 73 Pointed screw
- 75 INSEX-screw
- 81 Sealing washer
- 86 Pointed screw

24. ASSEMBLY DRAWING $\varnothing 330/415/525$ 12-COMB.

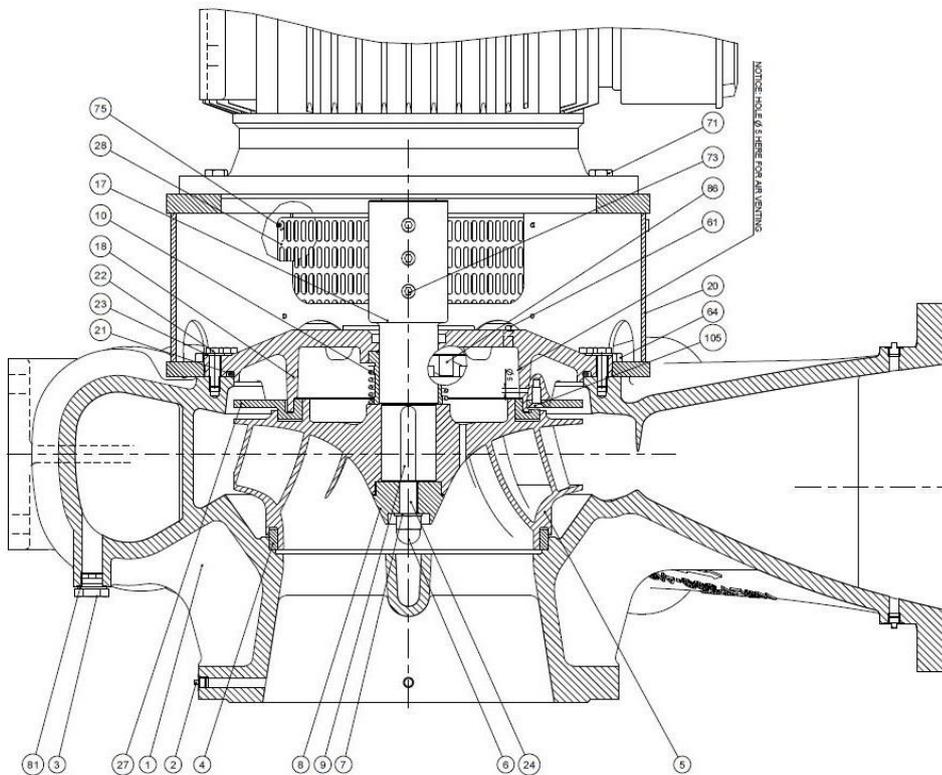
25. SPARE PARTS LIST $\varnothing 330/415/525$ 12-COMB.



- | | |
|----|------------------|
| 1 | Pump casing |
| 2 | Pipe plug |
| 3 | Pipe plug |
| 4 | Sealing ring |
| 5 | Impeller |
| 6 | Set screw |
| 7 | Spring washer |
| 8 | Washer |
| 9 | Sunk key |
| 10 | Mech. shaft seal |
| 17 | Shaft |
| 18 | Rear cover |
| 20 | Motor bracket |
| 21 | O-ring |
| 22 | Allen screw |
| 28 | Guard |
| 64 | Set screw |
| 71 | Set screw |
| 73 | Pointed screw |
| 75 | INSEX-screw |
| 81 | Sealing washer |
| 86 | Pointed screw |

26. ASSEMBLY DRAWING 300-418 AND 350-525 12-COMB.

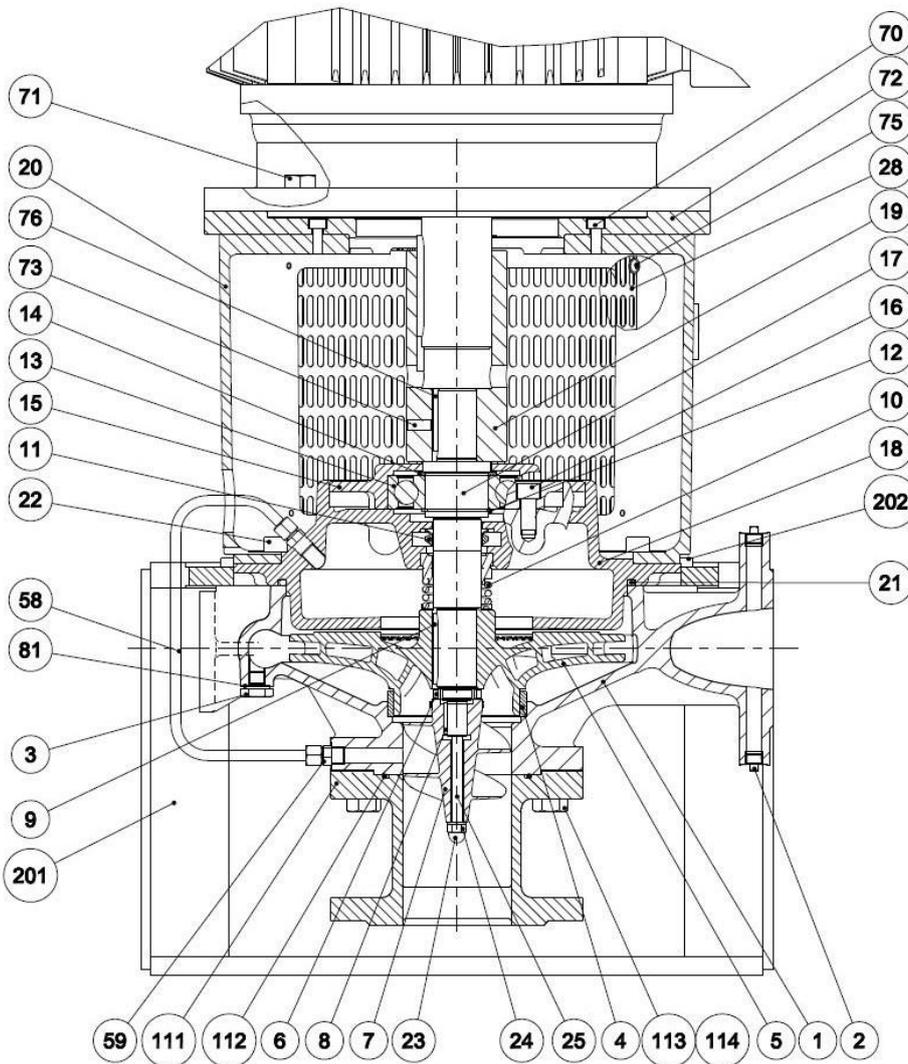
27. SPARE PARTS LIST 300-418 AND 350-525 12-COMB.



- | | |
|----|------------------|
| 1 | Pump casing |
| 2 | Pipe plug |
| 3 | Pipe plug |
| 4 | Sealing ring |
| 5 | Impeller |
| 6 | Cap nut |
| 7 | Spring washer |
| 8 | Inlet cone |
| 9 | Sunk key |
| 10 | Mech. shaft seal |
| 17 | Shaft |
| 18 | Rear cover |
| 20 | Motor bracket |
| 21 | O-ring |
| 22 | Set screw |
| 23 | Washer |
| 24 | Stud |
| 27 | Seal ring 2 |
| 28 | Guard |
| 61 | Plug |
| 64 | Set screw |
| 71 | Set screw |
| 73 | Pointed screw |
| 75 | INSEX-screw |
| 81 | Sealing washer |
| 86 | Point screw |

28. ASSEMBLY DRAWING 65-265/-02 WITH INDUCER.

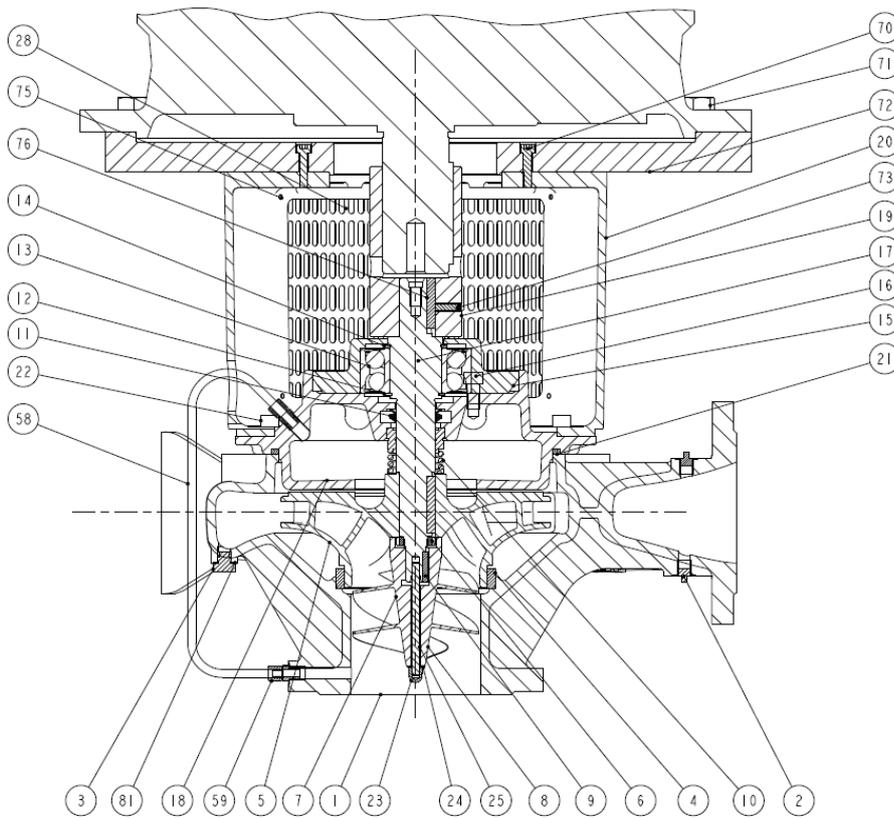
29. SPARE PARTS LIST 65-265/-02 WITH INDUCER.



- | | |
|-----|---------------------|
| 1 | Pump casing |
| 2 | Pipe plug |
| 3 | Pipe plug |
| 4 | Sealing ring |
| 5 | Impeller |
| 6 | Small round nut |
| 7 | Inducer |
| 8 | Key |
| 9 | Sunk key |
| 10 | Mech. shaft seal |
| 11 | Water deflector |
| 12 | Ring lock |
| 13 | Ball bearing |
| 14 | Support disc |
| 15 | Bearing cover |
| 16 | Set screw |
| 17 | Shaft |
| 18 | Rear cover |
| 19 | Coupling |
| 20 | Motor bracket |
| 21 | O-ring |
| 22 | Set screw |
| 23 | Cap nut |
| 24 | Spring washer |
| 25 | Stud |
| 28 | Guard |
| 58 | Copper pipe |
| 59 | Hexagon nipple |
| 70 | Allen screw |
| 71 | Set screw |
| 72 | Intermediate flange |
| 73 | Pointed screw |
| 75 | INSEX-screw |
| 76 | Sunk key |
| 81 | Sealing washer |
| 111 | Inducer pipe |
| 112 | O-ring |
| 113 | Set screw |
| 114 | Nut |
| 201 | Base frame |
| 202 | Alan screw |

30. ASSEMBLY DRAWING 100-265/-02 WITH INDUCER.

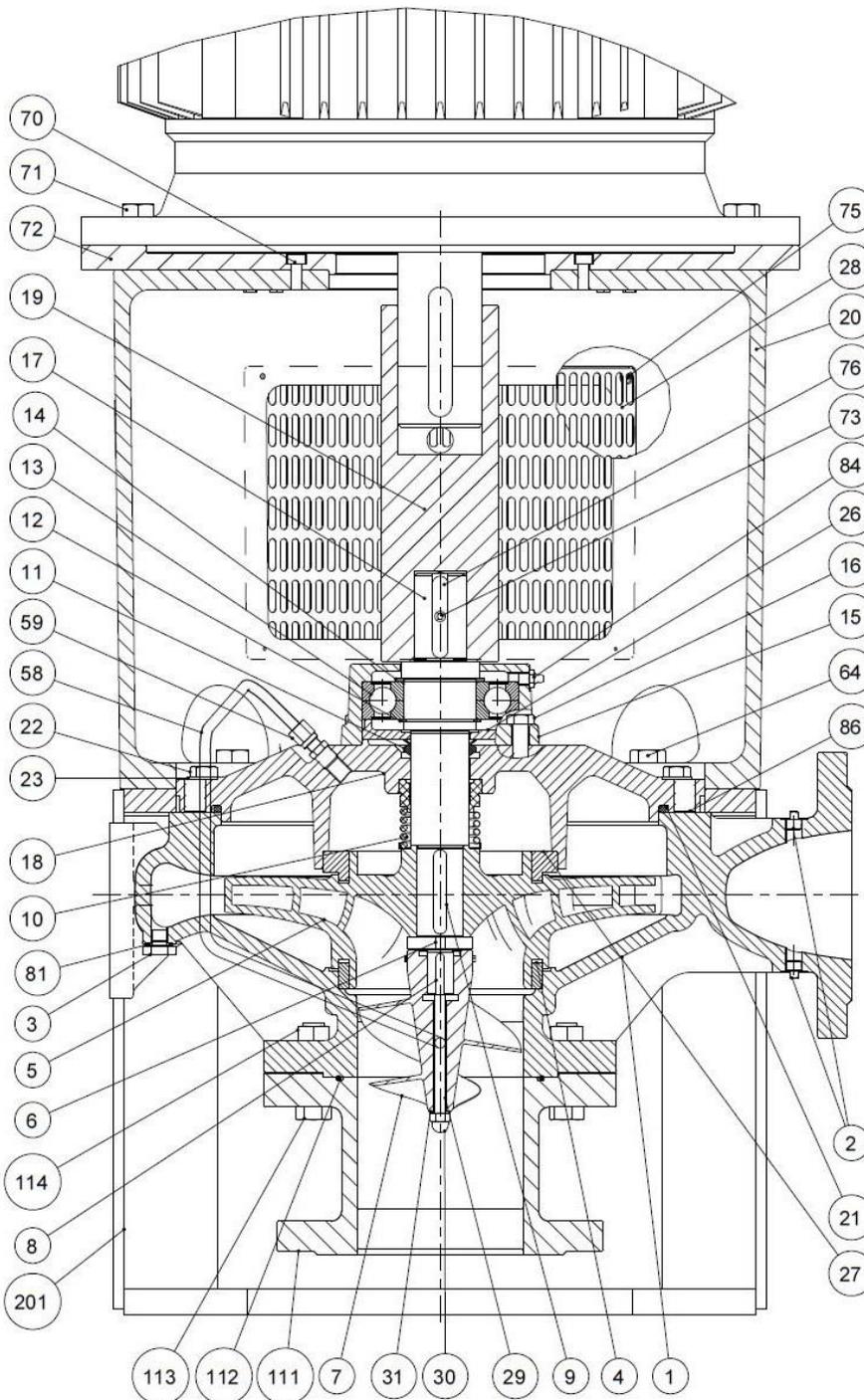
31. SPARE PARTS LIST 100-265/-02 WITH INDUCER.



- 1 Pump casing
- 2 Pipe plug
- 3 Pipe plug
- 4 Sealing ring
- 5 Impeller
- 6 Small round nut
- 7 Inducer
- 8 Key
- 9 Sunk key
- 10 Mech. shaft seal
- 11 Water deflector
- 12 Ring lock
- 13 Ball bearing
- 14 Support disc
- 15 Bearing cover
- 16 Set screw
- 17 Shaft
- 18 Rear cover
- 19 Coupling
- 20 Motor bracket
- 21 O-ring
- 22 Set screw
- 23 Cap nut
- 24 Spring washer
- 25 Stud
- 28 Guard
- 58 Copper pipe (For NSLV)
- 59 Hexagon nipple
- 70 Allen screw
- 71 Set screw
- 72 Intermediate flange
- 73 Pointed screw
- 75 INSEX-screw
- 76 Sunk key
- 81 Sealing washer

32. ASSEMBLY DRAWING 100-330/-02 WITH INDUCER.

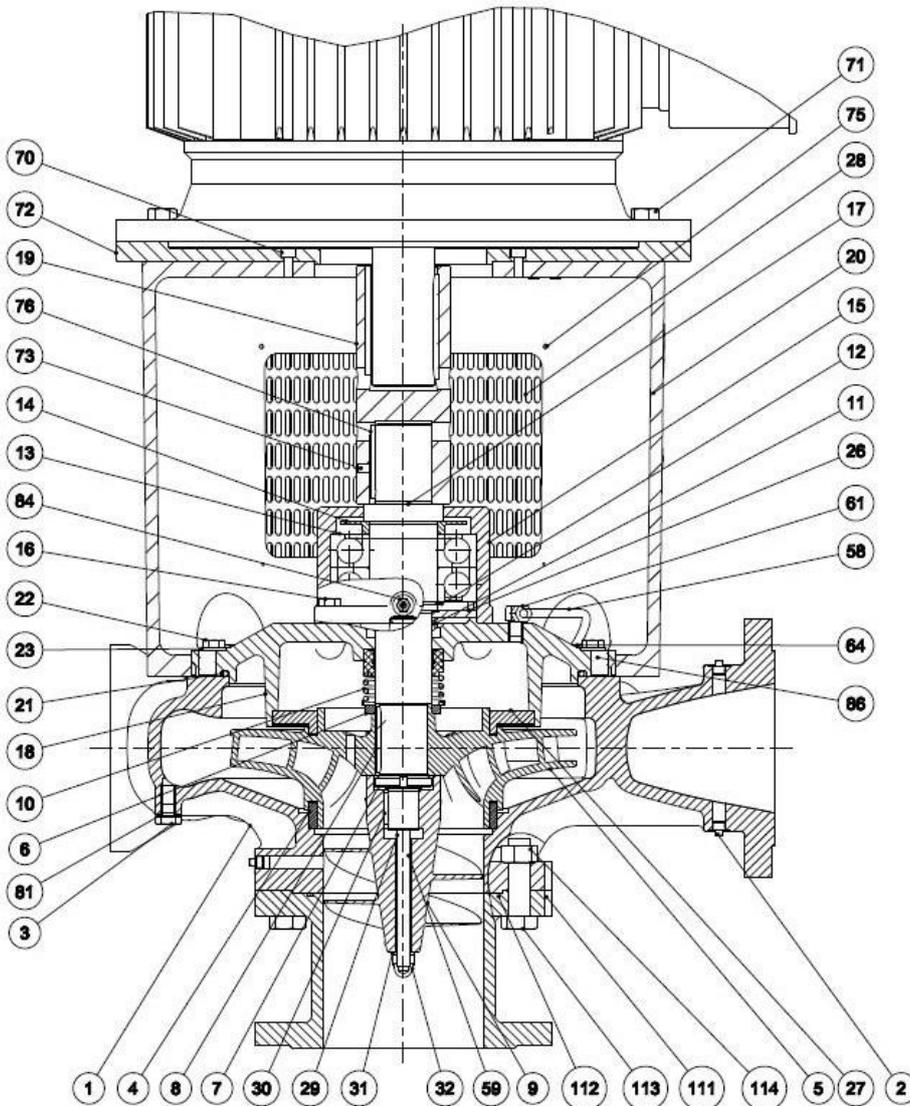
33. SPARE PARTS LIST 100-330/-02 WITH INDUCER.



- | | |
|-----|---------------------|
| 1 | Pump casing |
| 2 | Pipe plug |
| 3 | Pipe plug |
| 4 | Sealing ring |
| 5 | Impeller |
| 6 | Stop ring |
| 7 | Round nut |
| 8 | Key |
| 9 | Inducer |
| 10 | Mech. shaft seal |
| 11 | Water deflector |
| 12 | Ring lock |
| 13 | Ball bearing |
| 14 | Support disc |
| 15 | Bearing cover |
| 16 | Set screw |
| 17 | Shaft |
| 18 | Rear cover |
| 19 | Coupling |
| 20 | Motor bracket |
| 21 | O-ring |
| 22 | Set screw |
| 23 | Lock washer |
| 26 | Cover under bearing |
| 27 | Seal ring 2 |
| 28 | Guard |
| 29 | Stud |
| 30 | Key |
| 31 | Spring washer |
| 32 | Cap nut |
| 58 | Copper pipe |
| 59 | Hexagon nipple |
| 64 | Set screw |
| 70 | Allen screw |
| 71 | Set screw |
| 72 | Intermediate flange |
| 73 | Pointed screw |
| 75 | INSEX-scre |
| 76 | Sunk key |
| 81 | Sealing washer |
| 84 | Lubricator nipple |
| 86 | Point screw |
| 111 | Inducer pipe |
| 112 | O-ring |
| 113 | Set screw |
| 114 | Nut |
| 201 | Base frame |

34. ASSEMBLY DRAWING 125-330/-02 WITH INDUCER.

35. SPARE PARTS LIST 125-330/-02 WITH INDUCER.



- | | |
|-----|---------------------|
| 1 | Pump casing |
| 2 | Pipe plug |
| 3 | Pipe plug |
| 4 | Sealing ring |
| 5 | Impeller |
| 6 | Stop ring |
| 7 | Small round nut |
| 8 | Key |
| 9 | Inducer |
| 10 | Mech. shaft seal |
| 11 | Water deflector |
| 12 | Ring lock |
| 13 | Ball bearing |
| 14 | Support disc |
| 15 | Bearing cover |
| 16 | Set screw |
| 17 | Shaft |
| 18 | Rear cover |
| 19 | Coupling |
| 20 | Motor bracket |
| 21 | O-ring |
| 22 | Set screw |
| 23 | Lock washer |
| 26 | Cover under bearing |
| 27 | Seal ring 2 |
| 28 | Guard |
| 29 | Stud |
| 30 | Key |
| 31 | Spring washer |
| 32 | Cap nut |
| 58 | Copper pipe |
| 61 | Hexagon nipple |
| 64 | Set screw |
| 70 | Allen screw |
| 71 | Set screw |
| 72 | Intermediate flange |
| 73 | Pointed screw |
| 75 | INSEX-screw |
| 76 | Sunk key |
| 81 | Sealing washer |
| 84 | Lubricator nipple |
| 86 | Point screw |
| 111 | Inducer pipe |
| 112 | O-ring |
| 113 | Set screw |
| 114 | Nut |

36. DIMENSIONAL SKETCH

Please require a dimensional sketch of the actual pump from DESMI.

37. DESMI SUBSIDIARY

Subsidiary companies – DESMI Pumping Technology A/S				
Company Name	Address	Country	Telephone	Fax
DESMI Pumping Technology (Suzhou) Co.,Ltd.	No. 740 Fengting Avenue Weiting Sub District 215122 SIP Suzhou, P. R. China	China	+86 512 6274 0400	+86 512 6274 0418
DESMI Danmark A/S DESMI Contracting A/S DESMI Ocean Guard A/S	Tagholm 1 9400 Nørresundby	Denmark	+45 9632 8111	+45 9817 5499
DESMI GmbH	An der Reitbahn 15 D-21218 Seevetal	Germany	+49 407 519847	+49 407 522040
DESMI B.V	Texasdreef 7 3565 CL Utrecht	Netherlands	+31 302610024	+31 302623314
DESMI Norge AS	Skibåsen 33 h 4636 Kristiansand	Norway	+47 3812 2180	+47 3804 5938
DESMI Ltd.	"Norman House", Rosevale Business Park Parkhouse Industrial Estate (West) Newcastle Staffordshire ST5 7UB	United Kingdom	+44 1782 566900	+44 1782 563666
DESMI Singapore Pte.Ltd.	No. 8 Kaki Bukit Road 2, Ruby Warehouse Complex Unit no: # 02-13 417841	Singapore	+65 6748 2481	+65 6747 6172
DESMI Inc.	HQ, Manufacturing and sales 1119 Cavalier Blvd. Chesapeake, VA 23323	USA	(757) 857 7041	(757) 857 6989
DESMI Korea	503-8, DangSa Ri, Kijang-eup, Kijang-gun Busan	Korea	+82 51 723 8801 +82 70 7723 8804	+82 51 723 8803
DESMI SARL	21G rue Jacques Cartier F-78960 Voisins-le-Bretonneux RCS Versailles en cours	France	+33 (0) 1 30 43 97 10	+33 (0)130 43 97 11
DESMI UAE	Dubai Office Office 307 D-Wing P.O. Box 341489 Dubai Silicon Oasis	UAE	+971-56-300 3422	
DESMI India	413, Aditya Trade Centre Ameerpet Hyderabad – 500016	India	+91-9949339054	
DESMI Africa	Plot No.1848 Yacht Club Road Msasani Peninsular Dar es Salaam	Tanzania	+255 757597827	
DESMI Poland	Przedstawicielstwo w Polsce ul. Batalionu Platerówek 3 03-308 Warszawa	Poland	+48 22 676 91 16	+48 22 618 19 53

38. SERVICE CENTER-DENMARK

Service center - Denmark			
City	Address	Telephone	Fax
Nørresundby	Tagholm 1 9400 Nørresundby	+45 70236363	+45 9817 5499
Kolding	Albuen 18 C DK-6000 Kolding	+45 70236363	+45 75 58 34 65
Aarhus	Lilleringvej 20 DK-8462 Harlev J	+45 70236363	+49 407 522040
Hvidovre	Stamholmen 173 DK-2650 Hvidovre	+45 70236363	+45 3677 3399
Odense	Hestehaven 61 DK-5260 Odense S	+45 70236363	+45 6595 7565

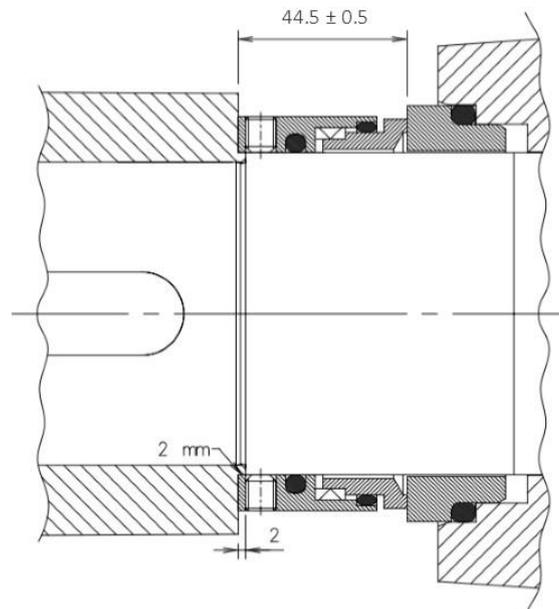
APPENDIX A

Check length from motor shaft end to motor flange being within +/- 0.5mm of the nominal length (like 60, 80, 110, 140 and 170 mm).

If the motor shaft is too short then fit a pointed screw glued into the motor shaft end to adjust the pump shaft to correct mounting position – in order to ensure correct build in length for the ELK shaft seal.

If the motor shaft is too long then it has to be machined / milled to nominal length.

It has to be checked if the shaft sealing have the correct length when mounted on the pump shaft as shown below. I.e. there shall always be 44.5 ± 0.5 mm from sliding surface on the seat to the end of the rotating part, on the sizes of ELK sealing used by DESMI. Please observe that the rotating part protrudes 2 mm beyond the shoulder on the pump shaft as shown below.



Also make sure that the electric motor is with locked bearing in the drive end – i.e. there must not be forced axial stroke of the electric motor.

Notice ! Never use mineral oil / fat as grease, as rubber parts as standard are in EPDM.

Notice ! Never put grease on the sliding surfaces! They must be completely dry, dust-free and clean during the mounting procedure. Also any fingerprints shall be removed with alcohol or another suitable solvent.

Notice: ELK shaft seals must be turned after installation ... so O-rings, springs and sliding surfaces can slip into right placement before pressure testing. This is done by mounting the seal as described and later turn the shaft about 10 revolutions - with water in the pump - but without adding pressure. Then pressure test the pump as normally done.