

Installation and Operation Instructions for EUROSTAR Plastic Pumps



1. General

Procopi SA, 4 Avenue Le Verrier, F-78197 Trappes
 Series: EUROSTAR
 Country of Origin: Federal Republic of Germany
 Field of Application:

The swimming pool pump EUROSTAR is to be used exclusively for the circulation of swimming pool water together with a swimming pool filter unit.

The manufacturer declines any responsibility in cases where these pumps are used for any other purposes than outlined above without his explicit permission!

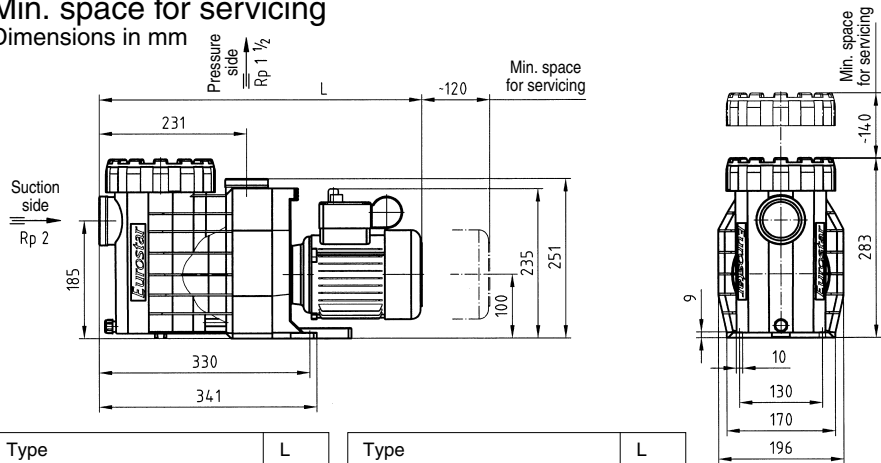
The pump is designed to draw the water from the pool and to return it, cleaned in the filter unit, to the pool. If you use a front-end vacuum cleaner, effective bottom suction is provided, due to the unit's superior suction capacity.

Characteristics and consumption data:

	50 Hz version:	60 Hz version:
Maximal heads		
EUROSTAR 50	H _{max.} = 13,0 m	H _{max.} = 13,0 m
EUROSTAR 75	H _{max.} = 13,5 m	H _{max.} = 13,5 m
EUROSTAR 100	H _{max.} = 15,0 m	H _{max.} = 15,0 m
EUROSTAR 150	H _{max.} = 15,3 m	H _{max.} = 17,0 m
EUROSTAR 200	H _{max.} = 16,8 m	H _{max.} = 17,5 m
EUROSTAR 250	H _{max.} = 17,3 m	H _{max.} = 21,5 m

Min. space for servicing

Dimensions in mm



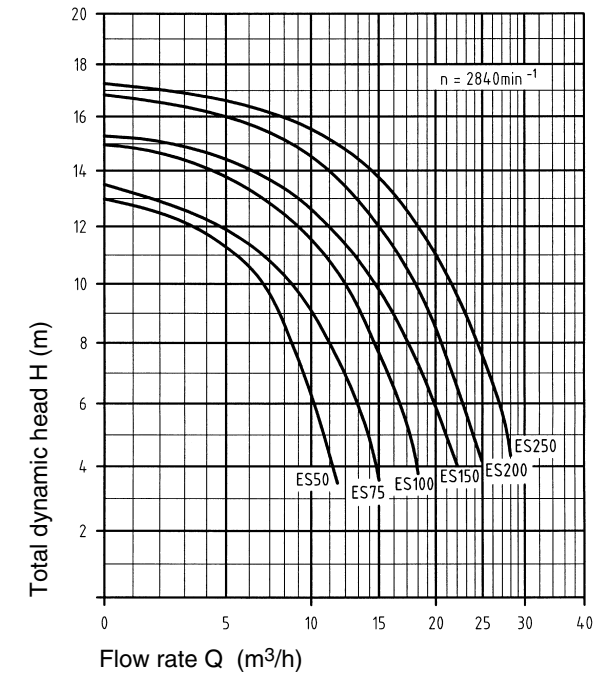
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Type	L	Type	L
EUROSTAR 50-M/T 1~3~	486	EUROSTAR 200-M 1~	523
EUROSTAR 75-M/T 1~3~	486	EUROSTAR 250-M 1~	523
EUROSTAR 100-M/T 1~3~	506	EUROSTAR 200- T 3~	508
EUROSTAR 150-M/T 1~3~	508	EUROSTAR 250- T 3~	518

Subject to technical modifications!

Characteristics EUROSTAR 50 Hz version

applicable for water of 20°C



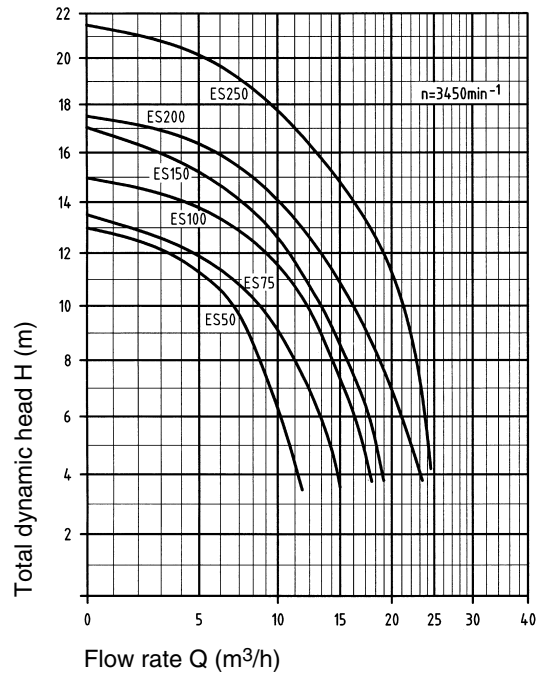
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Technical data at 50 Hz	ES 50	ES 75	ES 100	ES 150	ES 200	ES 250
Inlet / outlet (Rp) *)	2 / 1½	2 / 1½	2 / 1½	2 / 1½	2 / 1½	2 / 1½
Recommended inlet/outlet pipe (mm), PVC, d	50/50	50/50	63/50	63/50	63/63	75/63
Power input P ₁ (kW) 1~ 230 V	0,58	0,65	0,97	1,10	1,30	1,70
Power output P ₂ (kW) 1~ 230 V	0,30 ¹⁾	0,45 ¹⁾	0,65 ¹⁾	0,75 ¹⁾	1,05 ¹⁾	1,30 ¹⁾
Rated current (A) 1~ 230 V	2,60	3,20	4,70	5,20	5,80	7,40
Power input P ₁ (kW) 3~ Y/Δ 400/230 V	0,58	0,65	0,90	1,00	1,32	1,65
Power output P ₂ (kW) 3~ Y/Δ 400/230 V	0,30 ¹⁾	0,45 ¹⁾	0,65 ¹⁾	0,75 ¹⁾	1,00 ¹⁾	1,30 ¹⁾
Rated current (A) 3~ Y/Δ 400/230 V	1,00/1,75	1,25/2,15	1,75/3,00	2,10/3,60	2,50/4,30	3,00/5,20
Weight (kg) 1~	9,2	9,2	12,3	13,0	16,6	16,9
Weight (kg) 3~	9,0	9,0	12,0	12,2	12,3	15,5

Type of motor enclosure	IP X4	For standard voltage according to IEC 38 and DIN EN 60034 (Euro-voltage).
Thermal class	F	Suitable for continuous operation at 1~ 220-240 V and at 3~ Y/Δ 380-420 V / 220-240 V.
Motor speed approx. (rpm)	2840	Tolerances ± 5%. GS-tested pumps according to EN 60335-1.
Continuous sound intensity level dB (A) ≤ 70 ¹⁾		*) Internal thread according to DIN 2999 part 1 and ISO 7/1, seal only with Teflon tape.
Max. water temperature (°C)	60	1) Measured with a phonometer according to DIN 45635.
Max. casing interior pressure (bar)	2,5	
Plastic connection according to DIN 8062, outside diameter (mm).		

Characteristics EUROSTAR 60 Hz version

applicable for water
of 20°C



KL 90.04.602

Technical data at 60 Hz	ES 50	ES 75	ES 100	ES 150	ES 200	ES 250
Inlet / outlet (Rp) *)	2 / 1½	2 / 1½	2 / 1½	2 / 1½	2 / 1½	2 / 1½
Recommended inlet/outlet pipe (mm), PVC, d	50/50	50/50	63/50	63/50	63/63	75/63
Power input P ₁ (kW) 1~ 230 V	0,55	0,68	1,00	1,10	1,50	1,83
Power output P ₂ (kW) 1~ 230 V	0,30 ¹⁾	0,45 ¹⁾	0,65 ¹⁾	0,75 ¹⁾	1,05 ¹⁾	1,30 ¹⁾
Rated current (A) 1~ 230 V	2,70	3,10	4,50	5,00	6,60	8,10
Power input P ₁ (kW) 3~ Y/Δ 400/230 V	0,50	0,66	0,93	1,00	1,35	1,74
Power output P ₂ (kW) 3~ Y/Δ 400/230 V	0,30 ¹⁾	0,45 ¹⁾	0,65 ¹⁾	0,75 ¹⁾	1,00 ¹⁾	1,30 ¹⁾
Rated current (A) 3~ Y/Δ 400/230 V	0,85/1,45	1,10/1,90	1,55/2,70	1,90//3,30	2,20/3,80	2,80/4,85
Weight (kg) 1~	9,2	9,2	12,3	13,0	16,6	16,9
Weight (kg) 3~	9,0	9,0	12,0	12,2	12,2	15,5

Type of protection IP X4 For standard voltage according to IEC 38 and DIN EN 60034 (Euro-voltage).
 Thermal class F Suitable for continuous operation at
 Motor speed approx. (rpm) 3450 1~ 220-240 V and at 3~ Y/Δ 380-420 V / 220-240 V.
 Continuous sound intensity level dB (A) ≤ 70¹⁾ Tolerances ± 5%. GS-tested pumps according to EN 60335-1.
 Max. water temperature (°C) 60 *) Internal thread according to DIN 2999 part 1 and ISO 7/1, seal only with Teflon tape.
 Max. casing interior pressure (bar) 2,5 ¹⁾ Measured with a phonometer according to DIN 45635.
 Plastic connection according to DIN 8062, outside diameter (mm).

2. Safety

This Operation Manual contains basic instructions, which must be observed during mounting, operation and maintenance. Therefore the Operation Manual should be carefully read before installation and start-up by the person in charge of the installation as well as by all other technical personnel/operators and should at all times be available at the installation site.

It is important that not only all general safety measures appearing under the above heading "Safety" should be adhered to but also all other, specialized safety instructions appearing under the other headings, e.g. for private use.

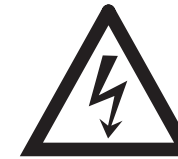
2.1 Symbols for Safety Instructions in the Operation Manual

All safety warnings contained in the Operation Manual which, when ignored, may constitute danger for humans, are specially marked with general danger symbols.



Safety symbol according to DIN 4844 - W 9

In case of electrical hazards they are specially marked with



Safety symbol according to DIN 4844 – W 8

For safety warning which, when ignored may constitute a hazard for the machine and its functions as well as for the surrounding, the word

CAUTION

is added.

Symbols directly attached to the machine like e.g.

- arrow denoting the direction of rotation
- symbol for fluid connections

must be heeded and kept fully legible at all times.

2.2 Personnel Qualification and Training

All personnel for the operation, maintenance, inspection and installation must be fully qualified to perform that type of job. Responsibility, competence and the supervision of such personnel must be strictly regulated by the user. Should the available personnel be lacking the necessary qualification, they must be trained and instructed accordingly. If necessary, the operator may require the manufacturer/supplier to provide such training. Furthermore the operator/user must make sure that the personnel fully understands the contents of the Operation Instructions.

2.3 Dangers of Ignoring the Safety Symbols

Ignoring the safety directions and symbols may pose a danger to humans as well as to the environment and the machine itself. Non-observance may void any warranties.

Non-observance of safety directions and symbols may for example entail the following:

- Failure of important functions of the machine/plant
- Failure of prescribed methods for maintenance and repair
- Endangerment of persons through electrical, mechanical and chemical effects
- Danger to the environment because of leakage of hazardous material
- Danger of damage to equipment and buildings

2.4 Safety-oriented Operation

The safety directions contained in the Operation Instructions, existing national regulations for the prevention of accidents as well as internal working-, operational- and safety-regulations of the operator/user must be observed at all times.

2.5 General Safety Directions for the Operator / User

If hot or cold machine parts pose a danger, such parts must be protected by the operator/user against contact with personnel.

Protective covers for moving parts (e.g. coupling) must not be removed when the machine is running.

Leakages (e.g. at the shaft seal) of hazardous pumping media (e.g. explosive, toxic, hot liquids) must be disposed of in such a way that any danger for personnel and the environment is removed. All government regulations must be observed at all times. Any danger to persons etc. by electrical energy must be excluded. For details see e.g. regulations of VDE and the local utilities.

2.6 Safety Directions for Maintenance, Inspection and Assembly Work

It is the user's responsibility to make sure that all maintenance, inspection and assembly work is performed exclusively by authorized and qualified experts sufficiently informed through careful perusal of the Operating Instructions.

The accident prevention regulations must be observed.

Basically, all work on the machine is to be performed while the machine is not in operation. The sequence for shutting the machine down described in the Operating Instructions must be strictly observed. Pumps or pump units handling hazardous liquids must be decontaminated.

Immediately upon completion of the work, all safety and protective equipment must be restored and activated.

Before restarting the machine, all points contained in chapter "Initial Start-up" must be observed.

2.7 Unauthorized Changes and Manufacturing of Spare Parts

Any conversion or changes of the machine may only be undertaken after consulting the manufacturer. Original spare parts and accessories authorized by the manufacturer guarantee operational safety. Using non-authorized parts may void any liability on the part of the manufacturer in case of consequential damage.

2.8 Unauthorized Operation

The operational safety of the machine delivered is only guaranteed if the machine is used in accordance with the directions contained in Section 1 – General – of the Operating Instructions. Limits stated in the data sheets may not be exceeded under any circumstances.

Cited Standards and other Documentations

DIN 4844 Part 1 Supplement 13	Safety marking; Safety symbols W 8
DIN 4844 Part 1 Supplement 14	Safety marking; Safety symbols W 9

3. Transportation and Intermediate Storage

Prolonged intermediate storage in an environment of high humidity and fluctuating temperatures must be avoided. Moisture condensation may damage windings and metal parts. Non-compliance will void any warranty.

4. Description

The plastic pumps of series EUROSTAR have been designed to circulate pool water in combination with a corresponding filter unit. All parts in contact with the transported medium are mostly of glass fibre reinforced polypropylene PP GF 30 or PP TV 40 respectively and thus possess excellent corrosion resistance against the pool water and the usual chemicals for treatment of the pool water. The pump housing does not contain any inserts, therefore it can easily be recycled.

The motor shaft also serves as the pump shaft on which the impeller is mounted. The seal for the shaft is a bellows-type mechanical seal arranged on a plastic impeller hub. This guarantees a positive electrical separation between the pool water and the electric motor. Because of the pump's close coupled design, a minimum of space is required. The pumps are driven by A.C. motors. Integrated in the pump housing is a strainer basket (143), which keeps coarse impurities from the pump's interior.

5. Placement / Installation

5.1

CAUTION

The pump is equipped with a motor protection type IP X4. When installed outside we recommend providing some protection against the rain. This will increase the longevity of your pump. When installed in a closed room, like for example a cellar a drainage connected to the sewers must be foreseen. The installation site of the pump must be dry. If the pump is installed in a humid environment, effective ventilation and aeration must be provided in order to prevent condensation. In case of extremely small, confined installation places, the natural cooling of the air may be so insignificant that, here too, a ventilation and aeration is necessary in order to avoid exceeding environmental temperatures of 40°C.

Make sure by applying appropriate measures, that the environment will not be impaired by any sound produced by the pump.

During installation, make sure that there is enough space available to permit subsequent disassembly of the motor unit in the direction of the motor fan (minimum 120 mm) and the strainer basket (143) towards above (minimum 140 mm), see directions in the dimensional drawing. Fastening the pump to the foundation should be effected exclusively by means of bolts, threads (or dowels) in order to avoid blocking the removal of the motor unit! Inlet- and outlet-pipes must be mounted to the pump housing free of tension.

Caution: Sealing of connecting parts only by means of Teflon tape!

5.2

CAUTION

Mechanical / Hydraulic

The pump must be installed in a horizontal position in dry condition. It may be installed either max. 3 m **below** (gravity feed) or 1,5 m above (suction mode) of the water level. Thereby the geodetic head between liquid level and pump inlet must not exceed 3 m. The suction lift may be significantly reduced by flow resistance in the suction line, if the pipes are very long and/or insufficiently dimensioned. **Only use sealing tape for connecting sleeves to pump!** Make sure that the suction line is not leaky, otherwise the pump will prime insufficiently or not at all. The transparent lid must be screwed on tightly and the suction/intake line should be as short as possible. This will reduce priming time, which is dependent on the air volume in the intake line. If the intake line is very long this may take up to 12 minutes. If possible the intake line to the pump should be

installed below the water level. Whenever the pump is installed above the water level it is recommended to install a foot valve in the intake line. Thus the suction pipe cannot drain itself when the pump has been turned off. This keeps priming times short e.g. after having cleaned the strainer basket (143).

5.3



Electrical: All electrical connections should be performed by a qualified expert only!

Please make sure that the electrical installation has a disconnecting device, which allows disconnecting from the power supply with a minimum of 3 mm contact gap at each pole. This pump is built according to Protection Class 1. The ambient temperature must not exceed max. 40°C. Pumps with three-phase motors require the installation of a correctly adjusted motor overload switch. Observe the data on the rating plate. Non-compliance will void any warranty in case of motor failure. Pumps with A.C. motors are equipped with an overload protection switch as standard.

The motors are built according to thermal class F, the ribs may achieve temperatures up to 70°C.

Caution: The use of pumps for swimming pools and the restricted area around them is only permitted if pumps are installed in accordance with DIN/VDE 0100 part 702. Please consult your licensed electrician!

The supply circuit has to be protected with a fault current contactor with a nominal fault current of $I_{AN} \leq 30$ mA.

The electrical wiring used (HO5RN – F for inside, HO7RN – for outside) must have a minimum cross section of 1 mm².

5.4 Opening of the terminal box cover for ES 50, ES 75 and ES 100:

1. It is important to first lever the 4 locking pins (a) loose by using a screwdriver, push them up by hand (approx. 10 mm) until limit stop (see drawing 1).

Caution: Don't use any force, don't tear the safety pins out!

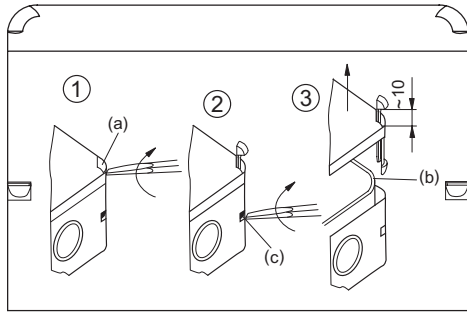
2. Lever the 4 cams upwards by putting a screwdriver into the slot (c) (see drawing 2).

3. Lift terminal box cover vertically (see drawing 3).

Closing of the terminal box cover

1. In order to avoid any damage to the filigree sealing lips (b) put the cover carefully and **right-angled** onto the housing and push it down.

2. Only when the cover is fitted perfectly to the housing, push the locking pins (a) until they catch.



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6. Initial Start-up

6.1 CAUTION

Loosen the ring nut (160.2) above the strainer basket (143) by turning anticlockwise, if necessary one can use a closed folding ruler as opening device by placing it between the cams of the ring nut. Remove the transparent lid (160.1). Slowly fill the pump with clean water until the water level reaches the inlet connection. Put on the transparent lid (160.1) and make sure that the O-ring seal (412.1) is well in the housing groove. Tighten the ring nut (160.2) by hand. Otherwise the pump will prime insufficiently or not at all.

Never let the pump run dry, not even for the purpose of checking the direction of rotation!

6.2 CAUTION

Make sure pump and motor turns freely, especially after extended periods of downtime. To do this put a screwdriver into the slot at the fan end and turn it by hand in the direction of rotation (see directional arrow). If necessary remove the fan cover and turn the fan by hand. Make sure the mechanical seal doesn't leak.

6.3 CAUTION

Never operate the pump without the strainer basket (143) and strainer basket handle respectively (danger of the suction strainer bobbing up), otherwise the pump may get clogged and blocked.

6.4 CAUTION



When starting pumps with three-phase current motors for the first time, make sure the motor turns in the direction of the affixed arrow (clockwise, seen from the fan). If the motor rotates in the wrong direction, two phases must be switched (by a licensed electrician only!)

6.5 CAUTION

Please make sure that the installed shutoff valves in the suction and pressure lines are completely open. Since the pump must never be allowed to run with shutoff valves closed!

7. Maintenance / Repair

CAUTION

The strainer basket (143) must be periodically emptied. A full or dirty strainer will impair the pump's flow rate and the filtration.

7.1 Cleaning the strainer

1. Shut down pump
2. Close shutoff valves
3. Open ring nut (160.2), see par. 6.1, lift transparent lid (160.1). Remove strainer basket (143), clean and replace it. Put transparent lid (160.1) back in place and tighten ring nut (160.2), see par. 6.1 and 6.3.
4. Open shutoff valves
5. Restart pump

7.2 CAUTION

When the pump is shut off by the thermal security in the windings or by the motor overload switch, the power supply must be cut off and one must check whether the pump can still turn unobstructed. To do so try rotating the motor shaft at the fan side with a screwdriver or other tool that will do. If rotating the motor shaft requires considerable force, the pump must be checked by an expert. If it rotates easily, remove your tool and restore the power supply. As soon as the motor has cooled down the thermal security in the windings will reactivate itself, respectively the motor overload switch can be pressed down. This only may happen one more time. If the pump still shuts off because of the thermal security in the windings or because of the motor overload switch the cause of the malfunction is to be determined by an expert (e.g. blocking of the pump due to impurities or sand swept up while vacuuming the bottom of the pool). Check current supply and fuses.

7.3 CAUTION

If the pump seizes, it has to be cleaned. Repeated starting of a blocked pump may cause damage to the motor. In that case any guarantee is voided!

7.4

CAUTION

The leakage pipe on the underside between pump housing and motor must never be clogged or sealed; otherwise the water in it will rise and the motor will be damaged! Please make sure that leakage cannot cause consequential damages! If necessary provide a suitable drip pan.

7.5 **Important hints for repair work**

CAUTION

Replacement of the mechanical seal:

Dismantling:

Switch off the pump and disconnect it from the power supply. **The exchange of the mechanical seal has to be done by an expert. The mechanical seal always has to be replaced completely (433).** To do so, it is not necessary to dismount the complete pump, only the motor unit has to be removed from the housing (101) by loosening the 8 tapping screws (900).

Removing of the impeller:

With types EUROSTAR 50, EUROSTAR 75 and EUROSTAR 100 the impeller is screwed onto the shaft (right handed thread).

Dismantling:

Put a screwdriver into the slot of the motor shaft (fan side) hold it and unscrew the impeller.

Caution: For three-phase current motors the impeller is secured by LOCTITE 480 (similar to Cyanoacrylate instant adhesive), it may be useful to remove the motor fan blades and to clamp the motor shaft.

With types EUROSTAR 150, EUROSTAR 200 and EUROSTAR 250 the impeller is pressed onto the motor shaft.

Dismantling:

Take off the impeller cap (260) with o-ring (412.6) by unscrewing it. Separate the impeller (230) from the motor shaft (819) with a M10 x 50 screw, by holding the impeller by hand and while turning in the screw.

Assembly:

Mounting of the new mechanical seal:

Slightly moisten the impeller hub (230) as well as the sleeve of the complete lock ring with soap water. Press the mechanical seal (433) onto the impeller hub regularly with both thumbs, press the lock ring into the gland housing (161.2), respectively.

Re-assembly of the impeller:

Before re-assembly of the impeller, clean the surface of the lock ring and of the mechanical seal with alcohol or with a clean paper tissue.

With types EUROSTAR 50, EUROSTAR 75 and EUROSTAR 100 re-assembly is effected in reverse order (see Dismantling).

Caution: With three-phase current motors first leave the pumps for 24 hours at ambient temperature without using it in order to let the glue connection (see dismantling) impeller/shaft achieve its final consistency.

Pressing on of the impeller for EUROSTAR 150, EUROSTAR 200 and EUROSTAR 250:

First screw-in the impeller cap (260) with o-ring (412.6) into the impeller hub, then press the impeller, with constant force at the impeller cap, until it catches. For the reception of the counterforce, support the end of the motor shaft (centre of the fan cowl), otherwise there would be too much pressure to the ball bearing!

Re-assembly of the motor unit into the pump casing:

Tighten the 8 tapping screws (900) with a tightening moment of 7 Nm.

Do not use force!

7.6

CAUTION

If there is danger of freezing, the pump must be drained ahead of time. For this purpose open the drain plug (903) in order to drain off all liquid. Also drain all pipes subject to freezing.

8. In Case of Malfunction

The sealing between the motor and the pump housing is done by means of a mechanical seal (433). It is normal that a few drops of water seep through once in a while, especially during the break-in period. Depending on the nature of the water and the duration of operation said mechanical seal may become leaky after some time. If the water penetrates continuously, replace the complete mechanical seal (433) by a new one (see par. 7.5).

In case of malfunction we recommend contacting the pool builder of the unit first.

If ball bearings must be replaced, bearings with C3 air and high-temperature grease (approx. 180°C) are to be used!

When restarting the pump, refer to item 6.

9. Associated Documentation

Parts list and materials

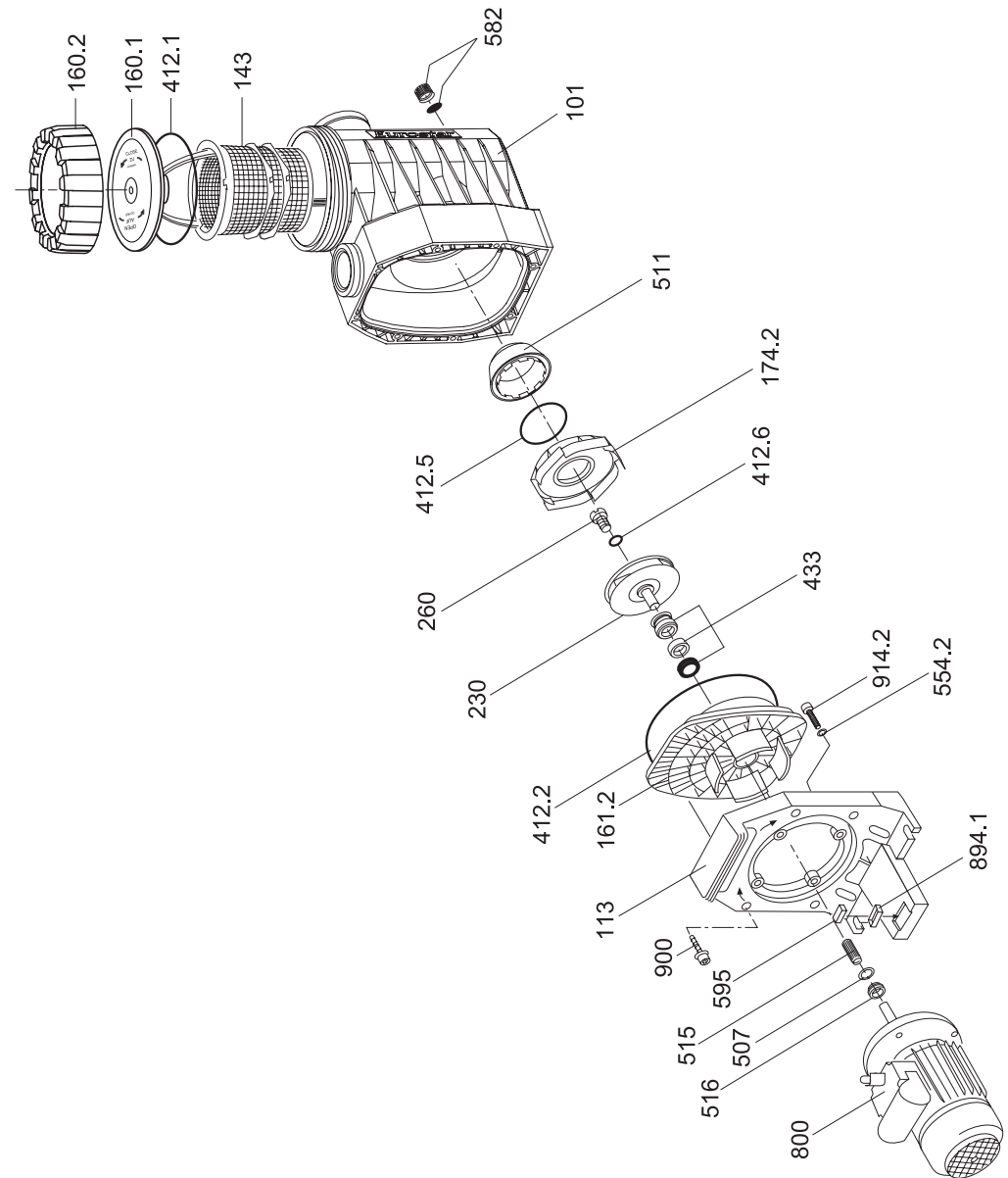
Types 50 Hz and 60 Hz
Parts drawing see page 41

Serial #	Qty.	Description	Material Remarks
101	1	Casing with EUROSTAR print inlet connection Rp 2, ring dia. 75 outlet connection Rp 1 1/2, ring dia. 65	PP TV 20 grey RAL 7040 1.4301 1.4301
113	1	Intermediate flange	PP TV 40
143	1	Strainer basket (complete with handle) strainer basket handle	PP PP
160.1	1	Transparent lid	PC
160.2	1	Ring nut	PA 66 GF 30
161.2	1	Gland housing ES 50, ES 75, ES 100 ES 150, ES 200, ES 250	PP TV 40 PP TV 40
174.2	1	Diffuser ES 50, ES 75, ES 100 ES 150, ES 200, ES 250	PP TV 40 PP GF 30
230	1	Impeller ES 50 (1), ES 75 (1), ES 100 (1) ES 150, ES 200, ES 250 (1) ES 50-T (3~), ES 75-T (3~), ES 100-T (3~) impeller secured with adhesive	PA 66 GF 30/PC PP GF 30
260	1	Impeller cap ES 150, ES 200, ES 250	PP
412.1	1	O-ring	Perbunan
412.2	1	O-ring	Perbunan
412.4	1	O-ring	Perbunan
412.5	1	O-ring ES 50, ES 75, ES 100 ES 150, ES 200, ES 250	Perbunan Perbunan
412.6	1	O-ring ES 150, ES 200, ES 250	Viton
433	1	Mechanical seal, complete - mechanical seal - lock ring - o-ring ES 50, ES 75, ES 100 ES 150, ES 200, ES 250	Q 54-PG Al ₂ O ₃ Perunan
507	1	Splash ring ES 50, ES 75, ES 100, ES 150, ES 200 3~, ES 250 3~ ES 200 1~, ES 250 1~	Perbunan Perbunan Perbunan Perbunan
511	1	Eccentric ring ES 50, ES 75, ES 100	PP TV 40
515	1	Staring ES 150, ES 200, ES 250	1.4310
516	1	V-ring ES 150, ES 200 3~, ES 250 3~	Perbunan
554.2	4	Washer	A 2
577	1	Opening device	ABS
582	1	Closing cap with gasket	PP yellow Perbunan 60°S
595	1	Rubber puffer	Perbunan
800	1	Motor motor shaft ES 50 1~/3~, ES 75 1~/3~ motor shaft ES 100 1~/3~, ES 150 1~/3~ motor shaft ES 200 1~/3~, ES 250 1~/3~	1.0543 1.0543 1.0543
894.1	4 2 1	Adapter ES 50, ES 75 ES 100, ES 150, ES 200 ES 250	PP PP PP
900	8	Self-tapping screw with washer	A 2
914.2	4	Allan screw	A 2
970	1	Rating plate ES 50, ES 75, ES 100 with GS symbol	self-adhesive sticker

When ordering spare parts, please quote pump type, pump no., 50 or 60 Hz, motor capacity and the serial-no. of the spare parts required!

Subject to technical modifications!

Ersatzteilzeichnung / Vue éclatée / Parts drawing



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