

Installation and Operating Instructions for BADU Picco Plastic Pumps



1. General

Speck-Pumpen Verkaufsgesellschaft Karl Speck GmbH & Co., Lauf
Series BADU Picco
Country of Origin: The Federal Republic of Germany

Field of Application:

The swimming pool pump BADU Picco 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.

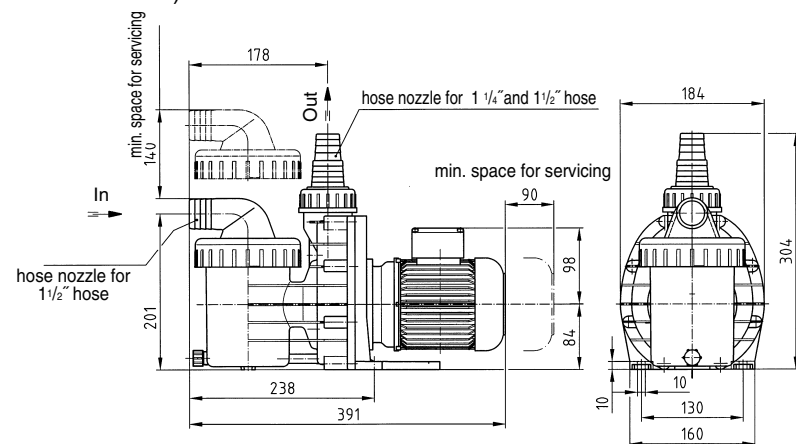
Performance characteristics and consumption data:

Maximal heads:

BADU Picco 5 $H_{\max.} = 11,0 \text{ m}$  

Dimensional Drawing

(Dimensions in mm)

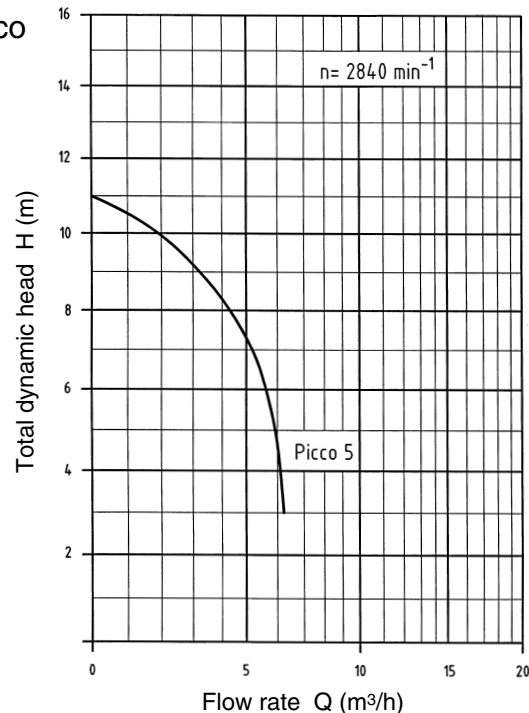


Subject to technical modifications!

Drawing no. D 91.40.401

Characteristics BADU Picco

applicable for water of 20°C



KL 90.40.401

Technical data at 50 Hz		BADU Picco 5
Inlet / nozzle		Ø 38
Outlet, nozzle *)		Ø 38 (Ø 32)
Recommended inlet/outlet pipe, hose		1½"/1½" (1¼")
Power input P ₁ (kW)	1~230 V	0,35
Power output P ₂ (kW)	1~230 V	0,20
Rated current (A)	1~230 V	1,95
Weight (kg)		5,5

*) Special screw fitting with hose nozzle for 1¼" and 1½" hose, included.

Type of protection	IP 44	For standard voltage according to IEC 38 and
Thermal class	F	DIN EN 60034 (Euro-voltage).
Motor speed approx. (rpm)	2840	Suitable for continuous operation at 1~220-240 V.
Continuous sound intensity level dB (A) ≤ 70 ¹⁾		Tolerances ± 5%.
Max. water temperature (°C)	60	GS-tested pumps according to EN 60335-1.
Max. casing interior pressure (bar)	2,5	¹⁾ Measured with a phonometer according to DIN 45635.

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.

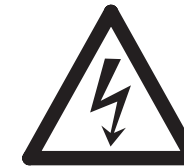
It is important that not only all general safety measures appearing under the above heading "Safety" should be adhered to but also all other, specialized safety instructions appearing under the other headings, e.g. for private use.

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 building

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

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 BADU Picco have been designed to circulate pool water in combination with a corresponding filter unit. All parts in contact with the pumping medium are mostly of polypropylene PP 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 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 44 respectively. In case the pump is installed outside, we recommend nevertheless to see for a simple rain protection. This will increase the durability of your pump. If the pump is installed in a humid space, effective ventilation and aeration must be provided for, in order to prevent condensation. In case of very small installation spaces, the natural cooling of the air may be so insignificant that, also there, ventilation and aeration is necessary in order not to exceed the environmental temperature 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 90 mm) and of the strainer basket (143) towards above (minimum 140 mm) (see directions in the dimensional drawing). Fastening the pump to the foundation should be affected 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.

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 1,5 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). **Make sure that the suction line is not leaky, otherwise the pump will prime insufficiently or not at all.** The transparent lid as well as the ring nut 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 intake line cannot drain itself while the machine is shut down. This keeps priming times short e.g. after cleaning of 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 A.C. motors are equipped with a winding breaker contact as standard.

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 $I_{\Delta N} \leq 30 \text{ mA}$.

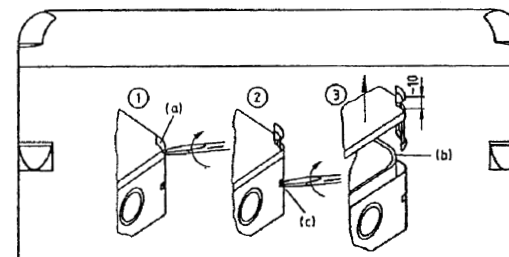
The electrical wiring used (HO5RN – F for inside, HO7RN – for outside) must have a minimum cross section of 1 mm².

5.4 Opening of the terminal box cover:

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 lip (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 and lever 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 and make sure that the O-ring seal (412.1) is well in the housing groove. Pull the ring nut (160.2) by using your hands. 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

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

6.3 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 shutdown valves
3. Open ring nut (160.2), 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 (166.2).
(see chapter 6.1 and 6.3)
4. Open shutoff valves
5. Restart pump

7.2 CAUTION

Whenever the pump is shut down by the coiled winding breaker contact the current has to be cut off and the pump must be checked for unobstructed and easy rotation.

Turn the motor shaft at the fan side with a screwdriver or similar tool. If turning the motor shaft requires considerable force, the pump must be checked by an expert. If it turns easily, remove screwdriver or similar tool and restore current supply. After the motor has cooled down, the winding breaker contact will be reactivated by itself. Please check the drawing of current! After another release of the winding breaker contact, the cause of the malfunction is to be determined by an expert (e.g. blocking of the pump due to impurities). Control 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 CAUTION

Important hints for repair work

Replacement of 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.** 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:

The impeller (230) has a right-handed internal screw thread M 10. Put a screwdriver into the slot of the motor shaft (fan side) hold it and unscrew the impeller.

Assembly

Re-assembly of the impeller:

Assembly is effected in reverse order.

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

First turn the 8 tapping screws (900) to the left until reaching the cut thread by latching, tighten only afterwards. Please make sure that the screws are not tightened too strong (tightening moment 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.

7.7

CAUTION

After extended periods of storage or down-time of the pump check for smooth running before re-operating. Therefore put a screwdriver into the slot at the impeller's end (fan side) and turn by hand in the direction of the motor. If necessary remove fan cowl and move the fan by hand in the direction of the motor. Check for density of the mechanical seal after starting.

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 (430, 475, 412.3) by a new one (see 7.5).

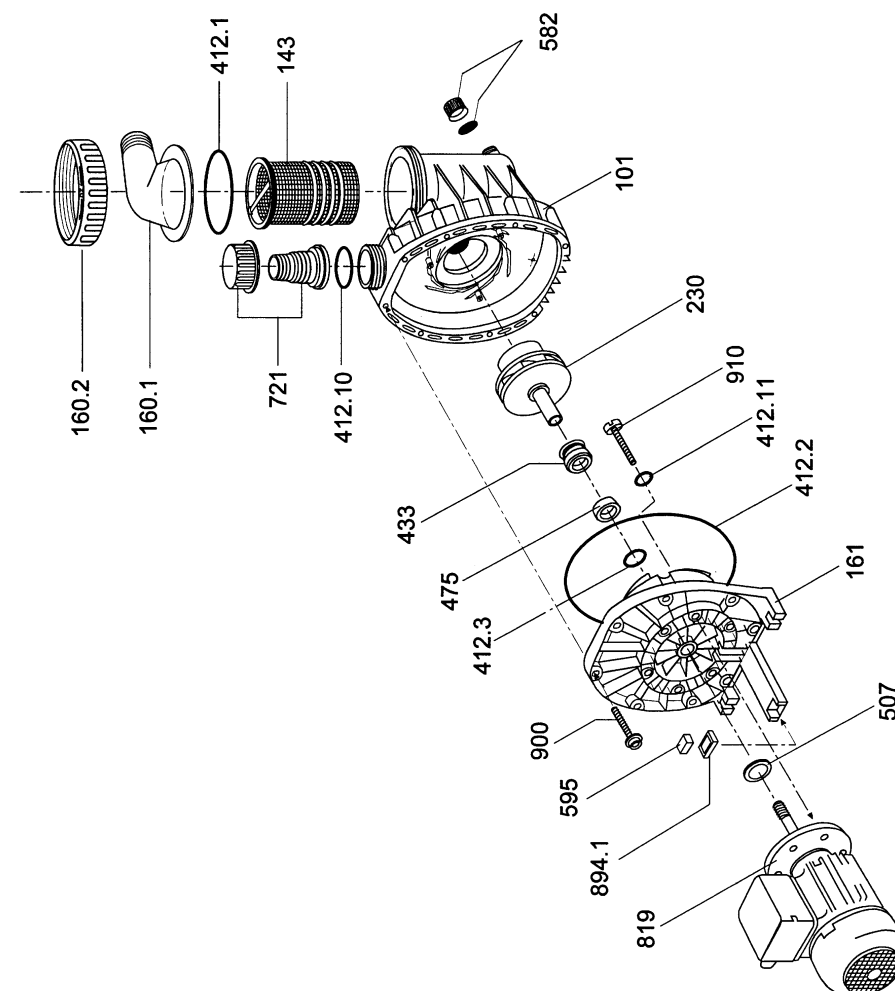
In case of malfunction we recommend contacting the pool builder of the unit first.

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 Drawing Materials



Z.-Nr. W 91.40.407

Serial	Qty	Description	Material Remarks
101	1	Casing	PP
143	1	Strainer basket with handle	PP
160.1	1	Transparent lid	PC
160.2	1	Ring nut	ABS
161	1	Gland housing	PP TV 40
230	1	Impeller	PA 66 GF 30 / PC
412.1	1	O-ring	Perbunan
412.2	1	O-ring	Perbunan
412.3	1	O-ring	Perbunan
412.10	1	O-ring	Perbunan
412.11	6	O-ring	Viton
433	1	Mechanical seal (complete with 475 and 412.3)	Coal/Perbunan
475	1	Ceramic ring	Keramik
507	1	Splash ring	Perbunan
582	1	Closing cap with gasket	PP/Perb.
595	1	Rubber puffer	Perbunan
721	1 1	Union: Union nut Hose nozzle 1 ¹ / ₄ " , 1 ¹ / ₂ "	ABS ABS
819	1	Motor shaft	1.0715
894.1	2	Adapter	PP
900	8	Tapping screw with washer	A 2
910	6	Casing bolt with slot	PA 66

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