Flexible Impeller Pumps one design - four types





UNISTAR - COMBISTAR - NIROSTAR - ACOSTAR





ZUWA-Zumpe GmbH Franz-Fuchs-Str. 13-17 D-83410 Laufen Phone: +49 8682 8934-50 Fax.: +49 8682 8934-850 E-Mail: export@zuwa.de



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ZUWA-Zumpe GmbH

The family run enterprise ZUWA-Zumpe GmbH has been manufacturing high quality pumps and innovative pump systems for more than 65 years. The ample experience in designing and producing high end products enables us to offer a wide range of different devices.

The entire product range consisting of pumps, fuelling stations, plant protection systems as well as charging and flushing stations is in high demand all over the world. ZUWA is working in accordance with the ISO 9001:2008 quality management system, regularly controlled by TÜV SÜD. Process safety and constant quality is guaranteed.



The close contact with our customers provides us with proposals and impulses to improve and further develop our products. In house production and shop floor enable us to meet customer specific requirements, manufacture custom made products and complete repair jobs. Competent contact persons and lean management make for quick and reliable service.

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Impeller Pump

Principles of operation

Flexible impeller pumps are displacement pumps. The rotor with flexible vanes is mounted concentrically in a circular housing which has a flattened area at one side. This provides the eccentric path for the impeller, thereby squeezing the flexible blades on this side.

1. Suction:

The impeller rotation and the straightening of the vanes upon leaving the cam creates a vacuum on the suction side drawing the fluid into the pump chamber.

2. Transfer:

The rotating impeller transfers the liquid from the inlet to the outlet port of the pump.

3. Press:

On the pressure side the impeller vanes are compressed and the fluid is discharged constantly from the pump.



The advantages of an Impeller pump

Dry self priming

What makes impeller pumps outstanding – they do not need to be filled prior to operation. Impeller pumps are dry self priming from a depth of three meters. Pre-filling is required for a suction depth of three metres and more. The suction depth is max. 7 metres.

► High capacity

Depending on type and model our pumps are capable of transferring from between 3 litres up to 730 litres per minute. Tanks will be drained down to the last drop.

► Versatile

Useful for many different fluids and applications. Materials of impellers, seals and pump housings can be selected according to the individual needs and applications required. ZUWA Impeller Pumps are available with AC and DC motors with various revolutions per minute.

► Gentle

Fluids are transferred absolutely free of pulsation. Smaller amounts of air or other gaseous fluids can be handled

on the suction side.

Reliable

All pumps are tested for continuous operation in our workshop. Top quality materials guarantee for a long durability.

Easy maintaining

For cleaning and maintenance work the pumps are quickly and easily disassembled. Replacement parts can be ordered individually. Low operation costs!

Sturdy

Impeller pumps will readily pump fluids with a wide range of viscosity, even highly viscous liquids such as oil or honey (up to 20 000 mPAS) as well as liquids containing solids.The approved media temperature is max. 90°C. A short dry-run of up to one minute can be tolerated.



UNI-, COMBI-, NIRO- and ACOSTAR

Where Impeller Pumps are being used

- electroplating
- biotechnology
- heating and sanitary
- workshop, machine shop
- agriculture and horticulture
- food and beverage industry
- boating, marine engineering
- water and sewerage treatment
- manufacturing, industrial plants and construction
- chemical, pharmaceutical and cosmetics industry



impeller wheel type A in full scale: Ø 56 mm

Pump types

UNISTAR

A multi-purpose pump designed for transferring clean or contaminated liquids. Not suitable for handling abrasive or corrosive fluids.

NIROSTAR

A high quality stainless steel pump with numerous applications in industrial plants and production facilities, the appropriate choice for transferring corrosive fluids.

COMBISTAR

This pump is particularly suitable for all fluids containing abrasives. It is an economic alternative to the NIROSTAR series for transferring abrasive or slightly corrosive fluids.

ACOSTAR

The synthetic pump is for a wide variety of applications in the chemical sector. Perfect for fluids with various viscosities plus agressive acids, bases and solvents.

For all applications the right Impeller material



NBR /Acrylonitrile-Butadiene-rubber (Perbunan[®], Buna-N[®]):

for water, antifreeze, heat transfer fluid, vegetable oil and grease high impact elasticity and good mechanical strength good for applications involving high pressures up to max. 5 bar



EPDM /Ethylene-Propylene-Diene-rubber (Keltan[®], Buna EP[®]):

for high temperatures, for acids and bases. high elasticity and very good mechanical stability



CR /Chloroprene-rubber (Neoprene®, Bayprene®):

preferably used for applications in the food industry. flame retardant, tearproof, durable



FKM or FPM /Fluor-rubber (Viton[®], Fluorel[®]):

for oil, diesel, fuel oil, palm oil, soy bean oil and oil emulsive wood preservatives very good chemical resistance, less mechanical resistance



Plastic

for water, mineral and vegetable oils, diesel fuel, heat transfer fluid and several chemicals. Extremely tear resistant and good mechanical resistance (not suitable for abrasive fluids) maximum fluid temperature 60°C



Thermoplastic impeller



UNISTAR	2000-A, B and C	2001-A, B and C				
Pump housing	AlMgSi1					
Pump cover*	AIMgSi1					
Pump shaft	AISI 430 F	AISI 316 L				
Rotary shaft seal	\checkmark	✓				
Impeller wheel: NBR, EPDM, FKM, CR, Plastic	optional	optional				

COMBISTAR	2000-A and B	2001-A and B				
Pump housing	AISI 316 L					
Pump cover*	AlMgSi1					
Pump shaft	AISI 430 F	AISI 316 L				
Rotary shaft seal	✓	\checkmark				
Impeller wheel: NBR, EPDM, FKM, CR, Plastic	optional	optional				

NIROSTAR	2000-A and B	2000-C, D, E and F 2001-D, E and F	2001-A and B
Pump housing	AISI 316 L	C = AISI 316, D-F = AISI 304	AISI 316 L
Pump cover*	AISI 316 L	C = AISI 316, D-F = AISI 304	AISI 316 L
Pump shaft (directly flanged)	AISI 430 F	AISI 304	AISI 316 L
Pump shaft (with pump carrier)	AISI 316 L	×	×
Rotary shaft seal	\checkmark	×	\checkmark
Floating shaft seal	×	\checkmark	×
Impeller wheel: NBR - Perbunan [®]	\checkmark	\checkmark	\checkmark
EPDM - Keltan®	optional	optional	optional
FKM - Viton®	optional	×	optional
CR - Neoprene®	optional	optional	optional
Plastic	optional	×	optional

ACOSTAR	2000-A
Pump housing	PTFE
Pump cover*	POM
Pump shaft	NIRO 1.4104 with ceramic (AK99,5) shaft bush
Rotary shaft seal	VITON®
rod seal	VITON®
Impeller wheel:	VITON®

* For UNISTAR and COMBISTAR: to protect the aluminium pump covers the pump chamber is sealed with stainless steel discs (AISI 316). The POM lids are covered by Ceramic discs on the side in touch with the fluid.

🗸 = standard, 🗴 = not available



Electrically driven pumps

Electric motors

ZUWA Impeller Pumps are available with electric motors of various specifications. The pump casing can either be directly flanged to the motor or is connected via a special adapter housing. Drives are available as follows:

- > 230 Volt AC
- ▶ 400 Volt AC
- 12 or 24 Volt DC



directly flanged

Pump carrier

Carrier to connect pumps with standardized motors with installation size M71 B3/B14.



with pump carrier

Gear motor

- single or two stage
- variably adjustable



Hydraulic motor

Hydraulic motor for connection to hydraulic systems of commercial vehicles.



with Hydraulic motor

Bidirectional motor

It is possible to pump in both directions by reversing rotation: tanks can be drained and filled easily without changing hoses.

The pumps of series A and B can be

mounted to a bidirectional motor on option. For the pumps of series C to F a bidirectional motor is standard equipment.



with rotary switch

Pneumatic motor

Handy and extremely light pump of series 2001-A with a powerful pneumatic drive, especially made for garages where compressed air is available. The pump is fixed in a similar way as with the drill adapter and depth stop (see next page).



with pneumatic motor



Pumps without drive units

All ZUWA impeller pumps are also available without electric motors, enabling the pump to be connected to any type of alternative drive unit.

Drive Options:

- power drill
- V-belt drive
- gear motor
- hydraulic motor
- pneumatic drive

Transmission for V-belt drive

Transmission with 24 mm stainless steel shaft (AISI CA 6 NM) for pulley carrier. The motor shaft is mounted with a double angular ball bearing and is fixed by the bearing housing. Thereby the axial forces barely affect the pump shaft and abrasion is minimized.



with V-belt pulley



pump with transmission

Drill driven Impeller Pumps



The pump series 2001-A and 2001-B are ideally driven with a drill. The shaft can easily be fixed to the chuck of each regular electric or cordless drill and screwdriver.

The pump is available in two versions:

1. with drill adapter

The adapter fixes the pump with the depth stop.

2. with regraded support and mounting feet

The pump is mounted to a regraded support along with the drill (the support is not part of the standard equipment).

Adapter and regraded support separately available for back fitting.



example for application with regraded support (optional accessory)



2000-А | 2000-В | 2000-С

A multi-purpose pump designed for transferring clean or contaminated fluids without abrasive particles (suitable for all non corrosive and non abrasive fluids).

Applications

- filling solar collectors
- irrigation
- rain water harvesting
- domestic water supply
- drain flooded basements
- decanting barrels
- sewerage disposal
- fuelling vehicles
- draining waste oil
- dispose off cooling lubricants
- draining water beds
- car wash
- cleaning tanks
- draining tanks

Fluids

- water, seawater
- waste water
- diesel fuel, biodiesel
- vegetable oils
- heating and motor oil
- detergents
- antifreeze
- heat transfer fluid
- cooling lubricants



UNISTAR 2000-A/-B



Characteristic curves:

flow rate in m3/h





UNISTAR 2000-C bidirectional motor as standard

Technical details

UNISTAR	2000-A						2000-В							2000-C				
Flow rate max. (I/min)	15	30	15	30	15	30	15	30	30	60	30	60	30	60	30	60	90	
Pressure max. (bar)*	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	5	
connections				3/4	:4				1"						1¼"			
Volt	23	30	40	00	1	2	2	4	230 400 12 24			4	230	400				
rpm	1.400	2.800	1.400	2.800	1.500	3.000	1.500	3.000	1.400	2.800	1.400	2.800	1.500	3.000	1.500	3.000		7.000
Ampere	3	,2	2,1	1,9	39	42	12	18	4,4	4	2,8	2,4	50	49	2	3	8,8	2,7
motor power		0,37	7 kW		0,25 kW				0,55 kW 0				0,37	′ kW		1,1 kW		
temperature max.	90°C					90°C						90°C						
weight	9 kg						9,2 kg						13 kg					

* with Perbunan-Impeller



UNISTAR

2001-A | 2001-B | 2001-C

UNISTAR without drive unit

Applications

- refill solar collectors
- irrigation
- rain water harvesting
- domestic water supply
- drain flooded basements
- decanting barrels
- draining waste oil
- sewerage disposal
- fuelling vehicles
- car wash
- draining aquariums
- dispose off cooling lubricants
- bilge pump
- booster pump

Fluids

- water, seawater
- waste waterdiesel fuel, biodiesel
- vegetable oils
- heating and motor oil
- detergentsantifreeze
- heat transfer fluid
- cooling lubricants





UNISTAR 2001-A/-B

Technical details



UNISTAR 2001-A, for example with cordless screwdriver



UNISTAR 2001-C with transmission

UNISTAR	2001-A	2001-B	2001-C
Flow rate max. (I/min)	30	60	90
Pressure max. (bar)*	4	4	4
connections	3/4"	1"	1¼"
minimum drive power	500 W	700 W	1.400 W
rpm	max. 2.800	max. 2.800	max. 2.800
temperature max.	90°C	90°C	90°C
weight	0,6 kg	0,8 kg	2,4 kg

* with Perbunan-Impeller

Additional information on these products is available in our detailed brochure for Drill Driven Pumps (sent to you on request) or can be downloaded from www.zuwa.de

