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Flexible Impeller Pumps one design - four types



UNISTAR - COMBISTAR - NIROSTAR - ACOSTAR



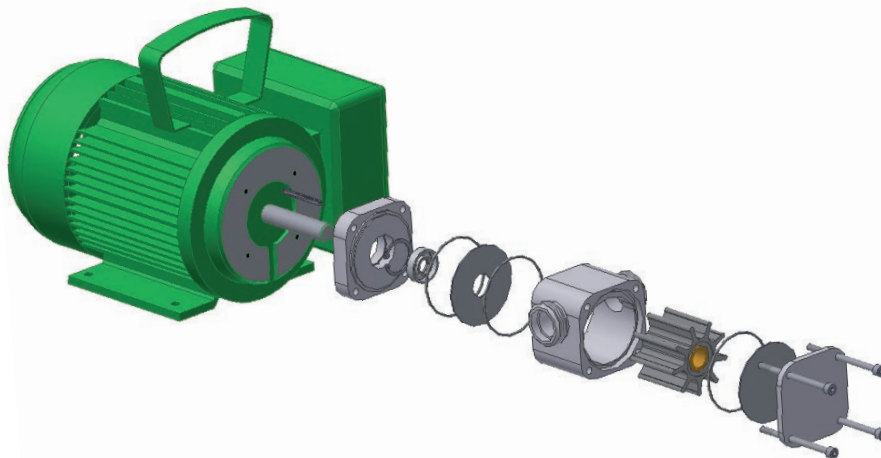
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QUALITY
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ZUWA-Zumpe GmbH

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.

All data, descriptions, photos, images and dimensions of the entire brochure are non binding and shall be used for visualisation only. We reserve the right for amendments and can not be held liable for printing errors.

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:

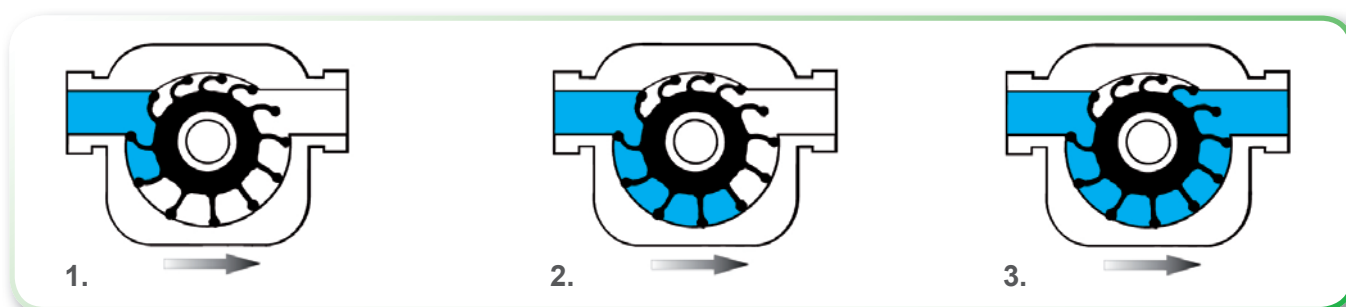
The impeller rotation and the straightening of the vanes upon leaving the cam creates a vacuum on the suction side drawing the fluid into the pump chamber.

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

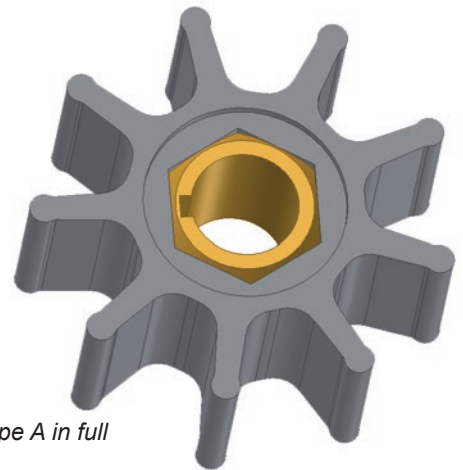
Impeller pumps will readily pump fluids with a wide range of viscosity, even highly viscous liquids such as oil or honey (up to 20 000 mPAS) as well as liquids containing solids. The approved media temperature is max. 90°C. A short dry-run of up to one minute can be tolerated.

Pump types

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

Versions and Drive Systems

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

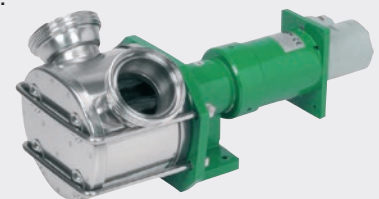
- ▶ single or two stage
- ▶ variably adjustable



with gear motor

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

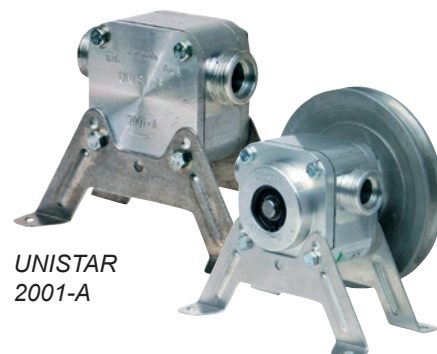
All ZUWA impeller pumps are also available without electric motors, enabling the pump to be connected to any type of alternative drive unit.

Drive Options:

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

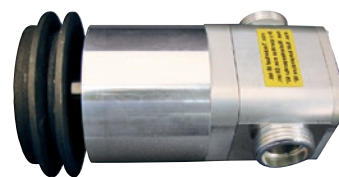
Transmission for V-belt drive

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.



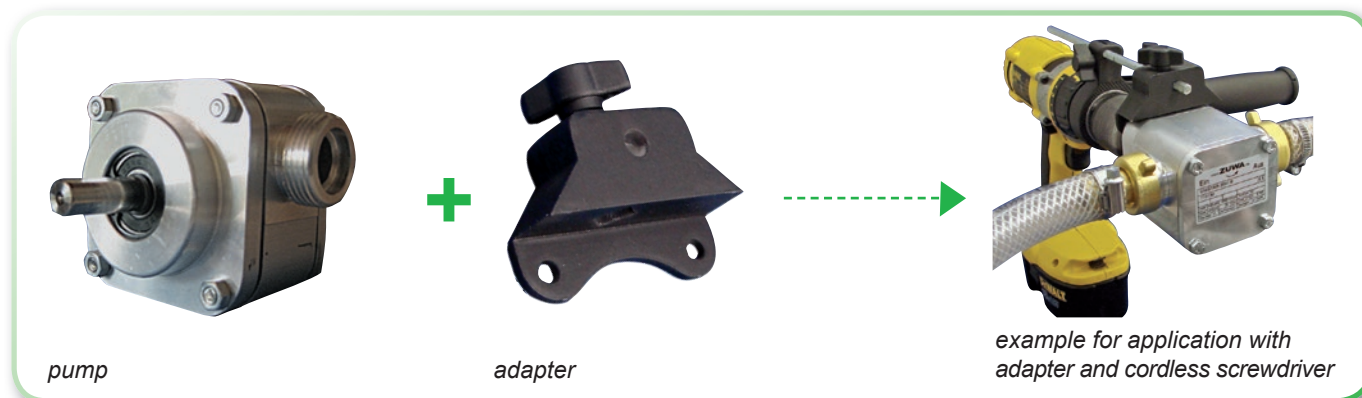
UNISTAR
2001-A

with V-belt pulley



pump with transmission

Drill driven Impeller Pumps



pump

adapter

example for application with
adapter and cordless screwdriver

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-A | 2000-B | 2000-C

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

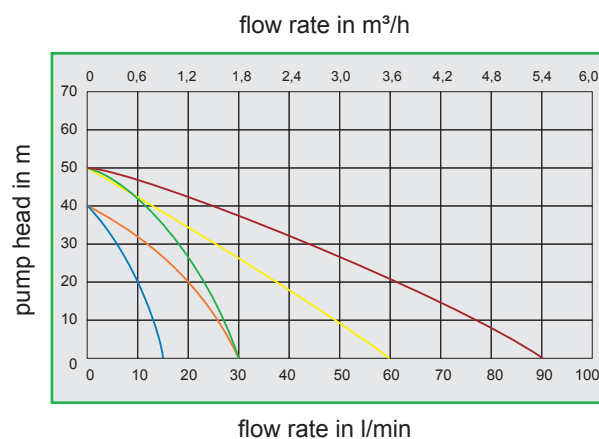
Fluids

- ▶ 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:



UNISTAR 2000-C
bidirectional motor as standard

Technical details

UNISTAR	2000-A								2000-B								2000-C	
Flow rate max. (l/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	¾"								1"								1¼"	
Volt	230		400		12		24		230		400		12		24		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	2.800	
Ampere	3,2		2,1	1,9	39	42	12	18	4,4	4	2,8	2,4	50	49	23		8,8	2,7
motor power	0,37 kW				0,25 kW				0,55 kW				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 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 water
- ▶ diesel fuel, biodiesel
- ▶ vegetable oils
- ▶ heating and motor oil
- ▶ detergents
- ▶ antifreeze
- ▶ heat transfer fluid
- ▶ cooling lubricants



UNISTAR 2001-A/-B



UNISTAR 2001-A, for example with cordless screwdriver



UNISTAR 2001-C with transmission

Technical details

UNISTAR	2001-A	2001-B	2001-C
Flow rate max. (l/min)	30	60	90
Pressure max. (bar)*	4	4	4
connections	3/4"	1"	1 1/4"
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

2000-A | 2000-B | 2001-A | 2001-B

This pump is particularly suitable for all fluids containing abrasives. All components getting in contact with the medium are made of stainless steel. It is an economic alternative to the NIROSTAR series for transferring abrasive or slightly corrosive liquids.

Applications

- ▶ cleaning machines
- ▶ oil disposal
- ▶ whitewashing stables
- ▶ draining tanks
- ▶ cleaning tanks
- ▶ galvanizing tanks
- ▶ draining waste oil
- ▶ dispose off cooling lubricants

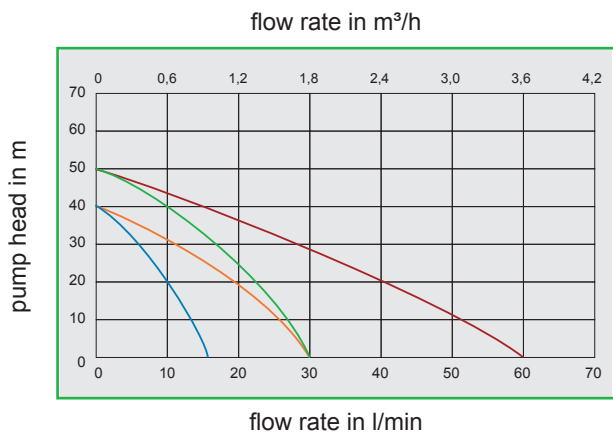
Fluids

- ▶ descaler
- ▶ grinding emulsions
- ▶ coolant
- ▶ lime water
- ▶ diluted soluble oil
- ▶ galvanising sludge
- ▶ waste oil
- ▶ cooling lubricants



COMBISTAR 2000-A/B

Characteristic curves:



- Type A with 1400 rpm
- Type A with 2800 rpm
- Type B with 1400 rpm
- Type B with 2800 rpm



COMBISTAR 2001-A/B

Technical details

COMBISTAR	2000-A								2000-B								2001-A	2001-B												
Flow rate max. (l/min)	15	30	15	30	15	30	15	30	30	60	30	60	30	60	30	60	30	60												
Pressure max. (bar)*	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4													
connections	¾"								1"								¾"	1"												
Volt	230		400		12		24		230		400		12		24		COMBISTAR without drive unit													
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														
Ampere	3,2		2,1		1,9		39		42		12		18		4,4				4		2,8		2,4		50		49		23	
motor power	0,37 kW				0,25 kW				0,55 kW				0,37 kW																	
temperature max.	90°C								90°C								90°C													
weight	9,4 kg								10 kg								1 kg		1,6 kg											

* with Perbunan-Impeller

2000-A | 2000-B | 2001-A | 2001-B

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

Applications

- ▶ delivering
- ▶ filtering
- ▶ dosing
- ▶ decanting
- ▶ draining

Fluids

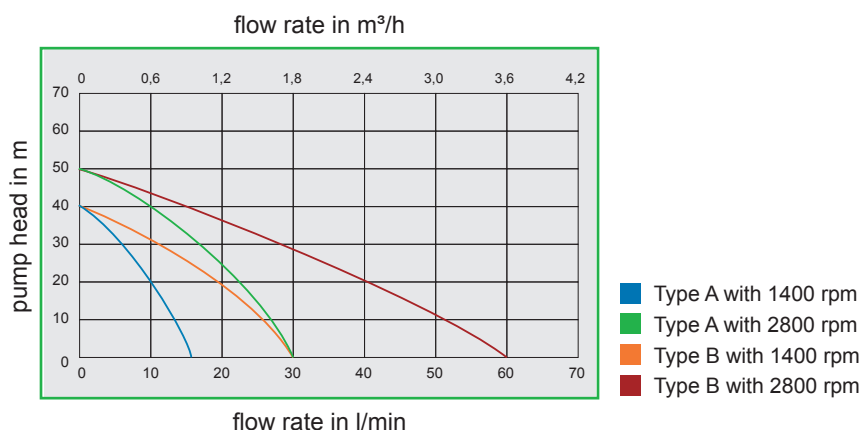
- ▶ Food, drinks
- ▶ mash
- ▶ chemicals, acids, bases
- ▶ liquid fertilizers
- ▶ dyes, glues
- ▶ vegetable oils
- ▶ cooling lubricants
- ▶ fire fighting foam agents



1)

NIROSTAR 2000-A/B

Characteristic curves:



1)

NIROSTAR 2001-A/B

¹⁾ For more information about the Star Handles - Page 16

Technical details

NIROSTAR	2000-A								2000-B								2001-A	2001-B												
Flow rate max. (l/min)	15	30	15	30	15	30	15	30	30	60	30	60	30	60	30	60	30	60												
Pressure max. (bar)*	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4															
connections	3/4"								1"								3/4"	1"												
Volt	230		400		12		24		230		400		12		24		NIROSTAR without drive unit													
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														
Ampere	3,2		2,1		1,9		39		42		12		18		4,4				4		2,8		2,4		50		49		23	
motor power	0,37 kW				0,25 kW				0,55 kW				0,37 kW																	
temperature max.	90°C								90°C								90°C													
weight	9,8 kg								10,4 kg								1,5 kg		2 kg											

* with Perbunan-Impeller

NIROSTAR C - F

Applications

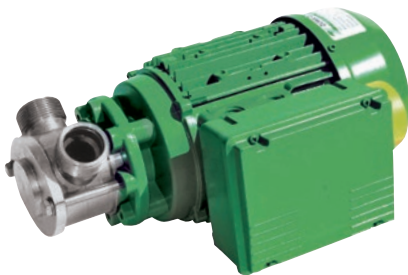
- ▶ clean tanks
- ▶ cleaning ponds
- ▶ delivering
- ▶ filtering
- ▶ dosing
- ▶ decanting
- ▶ draining

Fluids

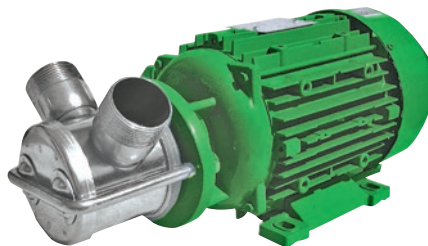
- ▶ heating oil, diesel fuel
- ▶ food, drinks
- ▶ mash
- ▶ chemicals
- ▶ acids
- ▶ bases
- ▶ liquid fertilizers
- ▶ dyes, glues
- ▶ vegetable oils
- ▶ surface treatment
- ▶ cooling lubricants
- ▶ fire fighting foam agents
- ▶ concrete admixtures

Connections

On request available with following pipe fittings: BSP male thread, hygienic connection acc. to DIN 11851, Garolla fitting, SMS fitting, BSM (RJT) fitting and further optional connections.



NIROSTAR 2000-C



NIROSTAR 2000-D



NIROSTAR 2001-D

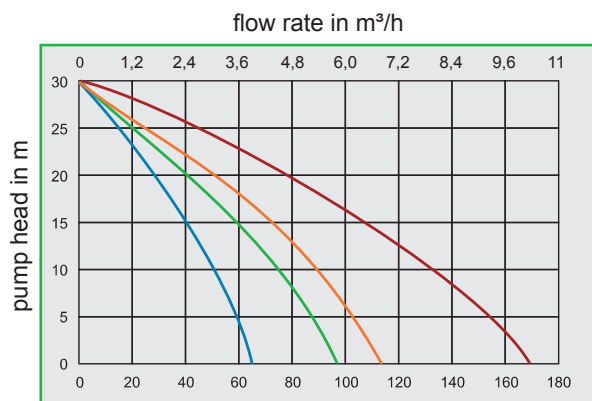
Technical details

NIROSTAR	2000-C*					2000-D*			2001-D
Flow rate max. (l/min)	64	96	64	96	64	115	115	166	115
Pressure max. (bar)	3					3			3
connections	1¼"					1½"			1½"
Volt	230		400		24	230	400		NIROSTAR without drive unit
rpm	900	1.400	900	1.400	900	900	900	1.400	
Ampere	5	7,1	1,7	2,1	30	13	4,1	3,8	
motor power	0,56 kW	0,75 kW	0,56 kW	0,75 kW	0,56 kW	1,5 kW			
temperature max.	90°C					90°C			90°C
weight	15 kg					20 kg			5,4 kg

* bidirectional motor

Characteristic curves:

NIROSTAR C and D



- Type C with 900 rpm
- Type C with 1400 rpm
- Type D with 900 rpm
- Type D with 1400 rpm

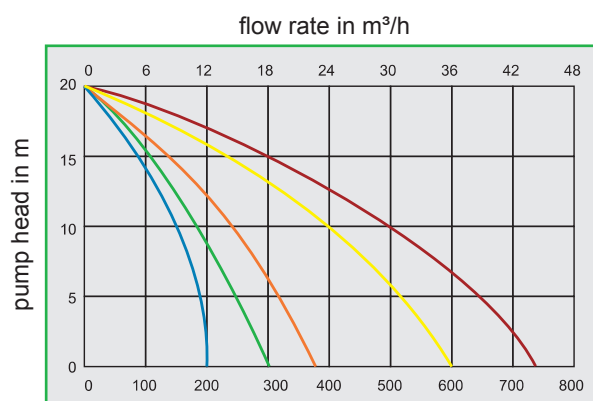


NIROSTAR 2000-E



NIROSTAR 2001-F

NIROSTAR E and F



- Type E with 470 rpm
- Type E with 700 rpm
- Type E with 900 rpm
- Type F with 470 rpm
- Type F with 600 rpm



NIROSTAR 2000-F
with frequency converter and
dry run protection on trolley

Technical details

NIROSTAR	2000-E*			2000-F*		2001-E	2001-F
Flow rate max. (l/min)	200	300	375	600	730	375	730
Pressure max. (bar)	2			2		2	
connections	2"			3"		2"	3"
Volt	400			400		NIROSTAR without drive unit	
rpm	470	700	900	470	600		
Ampere	6,9	6	5,5	9,5	8,2		
motor power	1,25 kW	1,5 kW	1,87 kW	3,3 kW	3,5 kW		
temperature max.	90°C			90°C		90°C	
weight	38 kg	31 kg	31 kg	69 kg		9,7 kg	15,7 kg

* bidirectional motor

2000-A

Synthetic impeller pump - for a wide variety of applications in the chemical sector. Perfect for fluids with various viscosities plus aggressive acids, bases and solvents.

Suitable only for fluids compatible with PTFE (TEFLON®) and FPM/FKM (VITON®)!

Applications

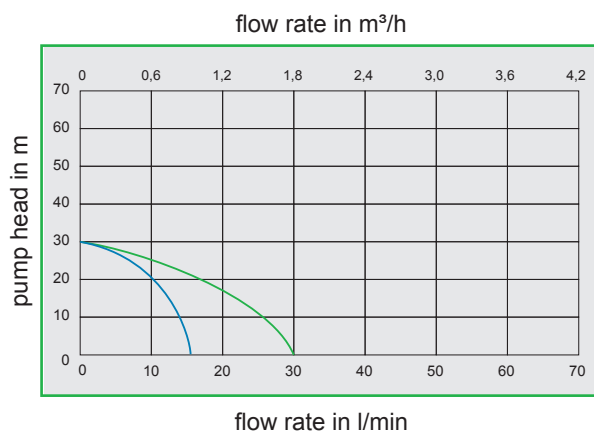
- ▶ conveying
- ▶ filtering
- ▶ dosing
- ▶ decanting
- ▶ draining

Fluids

- ▶ acids
- ▶ bases
- ▶ solvents
- ▶ fluids with various viscosities

NEW!

Characteristic curves:



ACOSTAR 2000-A

- Type A with 1400 rpm
- Type A with 2800 rpm

Technical details

ACOSTAR	2000-A			
Flow rate max. (l/min)	15		30	
Pressure max. (bar)	3			
connections	¾“ male thread or hose fitting ½“			
Volt	230	400	230	400
rpm	1400		2800	
Ampere	3,2	2 / 1,15	3,2	1,9 / 1,1
motor power	0,37 kW			
temperature max. (with dry run protection)	max.60°C			
weight	9,4 kg			

bidirectional motor available on request

integrated or external frequency Converter

Variable flow rate

Flexible flow rate controlled by a frequency converter – the exact flow rate can be adjusted when pump is used for filling or dosing. The rotation of the impeller can be reversed if required.

Features

- ▶ reversion of rotation
- ▶ overload protection
- ▶ precise drive
- ▶ compact design

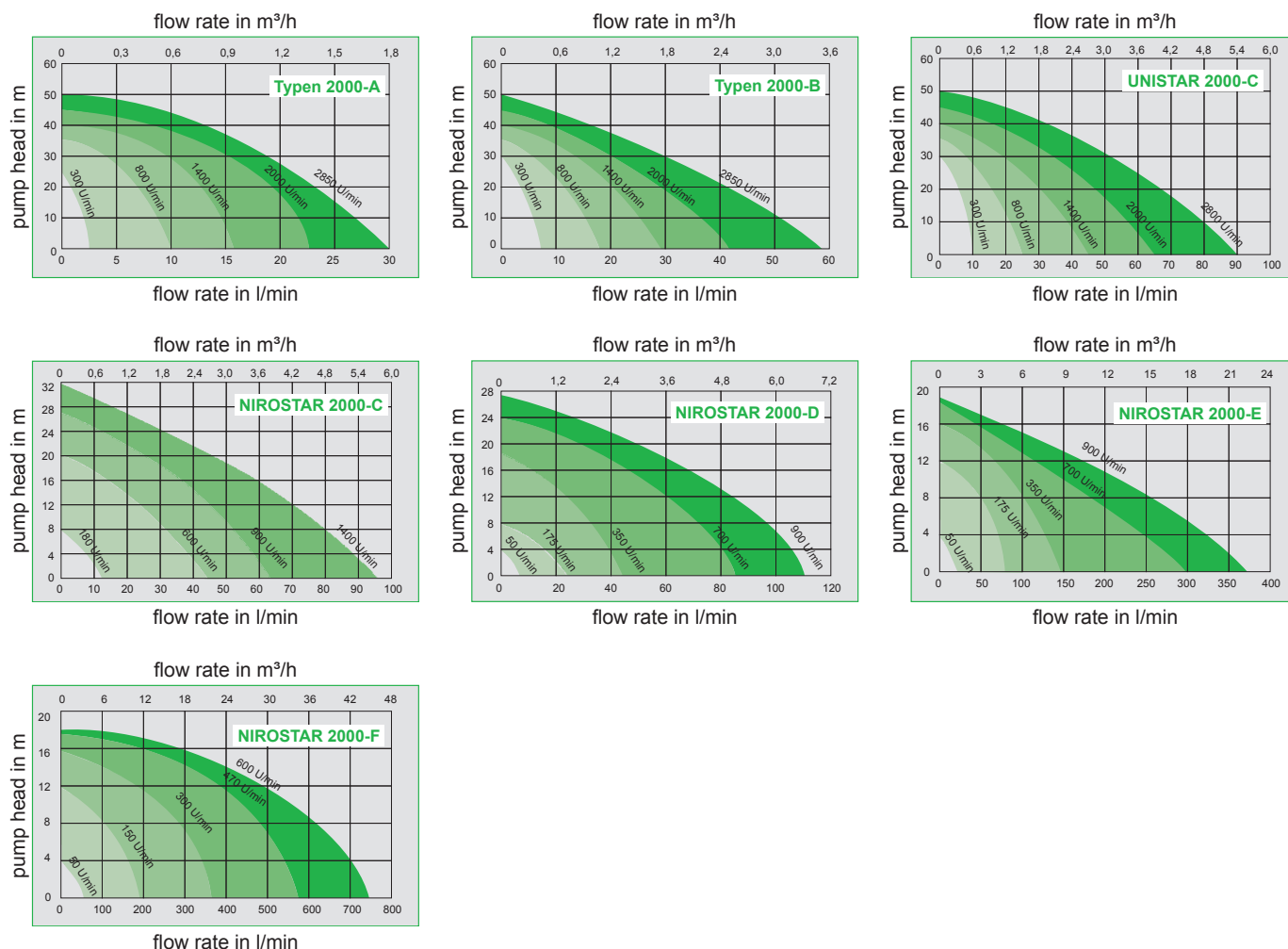
Integrated frequency converter:



External frequency converter:



Characteristic curves for Pumps with frequency converter:



Dry run protection



Impeller pumps can be equipped with a dry run protection. A sensor switch interrupts the power supply before overheating. Easy retrofitting of existing pumps.

Pressure switch



The pressure switch shuts off the pump when reaching a preset pressure level. As soon as the pressure drops again by 30% the pump automatically starts anew. Device just works with 400 V motor.

- ▶ Switching pressure: adjustable from 1-10 bar
- ▶ Material: stainless steel or brass

Star handles



For easy opening of the pump by hand without using tools. For this operation it is not necessary to remove the pump from its installed position. This provides an easy access for cleaning, inspection and maintenance. (for NIROSTAR A and B)

Tool for changing the impeller



A useful tool to install the impeller easily into the casing. Suitable for all ZUWA impellers type A and B

Flow control



adjusted to a specific quantity. The flow meter is integrated in the housing.

- ▶ Flow rate: 8 - 30 l/min or 10 - 40 l/min
- ▶ Connection: 2 x 1" male thread
- ▶ operating pressure max.: 10 bar
- ▶ Material: brass (approved for drinking water)

Carrying handle



Carrying handle with rubber pads - convenient transport for all impeller pumps of the series 2000 (except for NIROSTAR 2000-E and NIROSTAR 2000-F).

Remote control

For frequency converter

Remote control with 15 meter cable to control speed and sense of rotation.

Remote control for pump

10 metre extension cable with ON/OFF switch.

Remote control

Handy little transmitter with receiver.



remote control



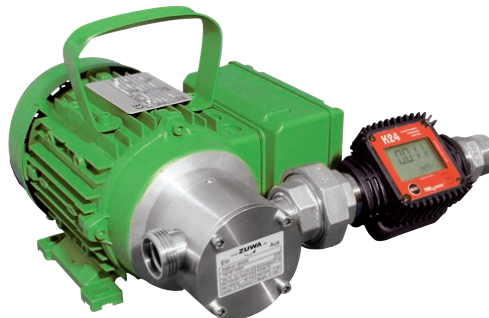
remote control for pump



NIROSTAR 2000-C with frequency converter and remote control

Flow Meters

Electronic and mechanical meters for various fluids and applications.
All electronic meters also available in pulser version.



Transport cart

Trolley with removable push rod and handy cable reel.



Special Applications

Barrel pump for battery drive

Extremely lightweight and efficient pump for mobile applications with battery drive 12 or 24 Volt. For continuous duty approved.

- ▶ Flow rate max.: 15 L/min with 12 V — 30 L/min with 24 V
- ▶ Operating pressure max.: 3 bar
- ▶ Weight: only 3.1 kg

Features:

- ▶ dry self-priming impeller pump
- ▶ 3 pole connector plug
- ▶ ON/OFF switch with thermal motor protection
- ▶ 2" barrel connection (on option)

(barrel and battery not included with the delivery)



Flat suction kits

Effective aid to flooded basements. Also available with oil resistant hose for oil contaminated fluids.

For larger areas two or more mats can be connected to the pump in parallel.

Application:

- ▶ drain flooded basements
- ▶ suck off flat roofs
- ▶ clean sludgy ponds

Features:

UNISTAR 2000-B, spiral hose, flat suction mat and euro container with cover.

On option: pump control, dry run protection and pumps with higher capacity or superior materials (COMBISTAR and NIROSTAR also for fluids with abrasive particles).

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



Watering cart

Low noise watering and fertilizing of large areas with 12/24 Volt battery drive.

Features:

UNISTAR 2000-A with ZUMATIC pump control switching the pump on and off automatically.

- ▶ Tank content: 120 litres

Pump UNISTAR with pump control and 12 or 24 Volt drive separately available.

(battery not included)



HVAC Filling and Flushing Stations



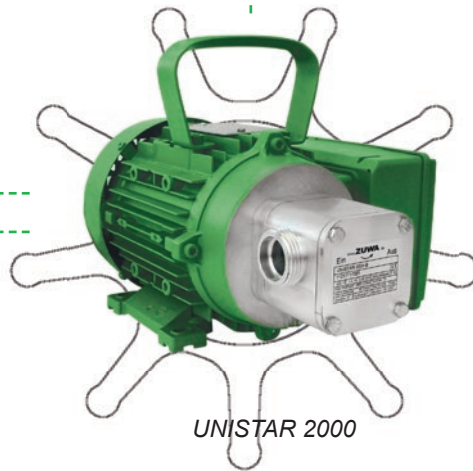
FLUSH PRO



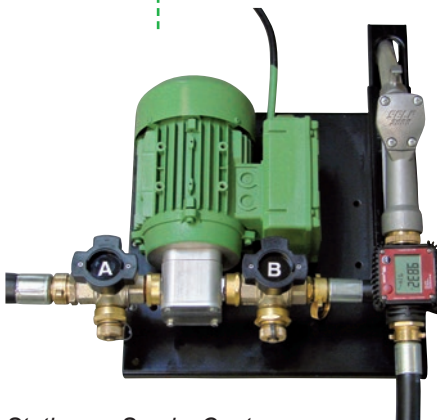
Solarcheck Mobilcenter



DESCAL



UNISTAR 2000



Stationary ServiceCenter

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



Mobile ServiceCenter



www.ZUWA.de



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



Pumps and Filling Units for HPAC Professionals



Fill - vent - renovate - decalcify

- ▶ Solar collectors
- ▶ Heating systems
- ▶ Heating pump systems
- ▶ Boilers / heat exchangers
- ▶ Tanks for heating oil



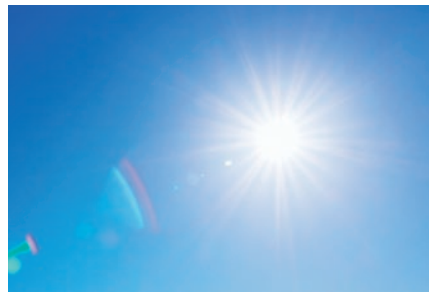
ZUWA-Zumpe GmbH
Franz-Fuchs-Str. 13-17
D-83410 Laufen

Phone: +49 8682 8934-50
Fax.: +49 8682 8934-850
E-Mail: export@zuwa.de

QUALITY
SINCE 1946

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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.

All data, descriptions, photos, images and dimensions of the entire brochure are non binding and shall be used for visualisation only. We reserve the right for amendments and can not be held liable for printing errors.

Filling and flushing stations



Solarcheck Mobilcenter

Flushing, venting and filling heat transfer medium into solar systems from page 5



FLUSH PRO

For ground collectors, ground probes and panel heatings from page 8



DESCAL

Descaling plate heat exchangers and hot water boilers from page 12

Pumps and Accessories



Impeller pumps

Multi-purpose pumps for water, fuel oil, heat transfer fluid etc. from page 15



Drill driven pumps

Handy pumps for operation with cordless drill or screwdriver from page 17



Pumps for diesel and heating oil

Decant, drain and fill 230 / 400 / 12 / 24 Volt from page 18



Flat Suction Systems

Flat suction mats for draining flooded basements completely from page 20



Waste water pumps

Submersible waste water pumps and flat suction pumps page 22



Accessories

Collection pan, pump controls, dry running protection and more page 24

Filling and Flushing Stations

Built to work

On account of their robust construction ZUWA filling and flushing stations for solar collectors, heat pumps and panel heatings are suitable for on site application. The fully developed devices have been proved and tested for more than a decade in heating installation.

Powerful pumps

- ▶ self-priming
- ▶ easy accessible protective filter at the pump inlet
- ▶ pressure relief valve (not for all types)

All pumps are getting almost completely drained after use.
No leaking of liquids during transport, no cleaning required when a different medium is used.

Rugged cart

- ▶ large pneumatic tires
- ▶ convenient to manoeuvre even on rough ground or over stairs
- ▶ hose holder

Fill- and return hose with high stress resistance

- ▶ high quality, temperature resistant hose materials
- ▶ threaded hose couplings with high-pressure crimped fittings
- ▶ hose clips guarantee tightness even at high temperatures
- ▶ interlock connector prevents residual liquids from leaking during transport

Interchangeable 30 litres tank

- ▶ wide charging mouth
- ▶ leak tight lid
- ▶ stop valve on the bottom side of the tank
- ▶ tanks are easily removable for cleaning
- ▶ tanks are easily interchangeable when using different heat transfer fluids
- ▶ with suction port located at the lowest point of the tank complete draining at the end of the operation



with hose holder

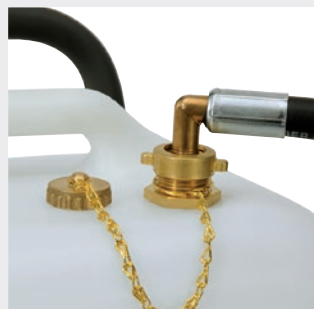


hoses with ball valves and professional swivel coupling

Detail Illustrations



telescopic handle with soft grip



return hose connection in 90° angle



pump UNISTAR with filter and pressure relief valve



carrying handle

Compact versions

Flushing, venting and filling heat transfer medium into solar systems in one process.

The latest member of the ZUWA filling stations family: small, easy to transport, fits upright into the trunk of a Volkswagen Rabbit!

Easy transport

- ▶ A carrying handle on rearward side allows for single handed transport of the device, stairs or other obstacles cause no problems. The device sits closely to the body axis and can be carried very comfortable.
- ▶ The telescopic handle with softgrip is height adjustable from 78 to 110 cm.
- ▶ Device is absolutely leak-proof both in horizontal or vertical transport.

Fine filter with transparent casing

- ▶ The filter at the pump inlet filters out solder or weld residues.
- ▶ The transparent filter casing enables the detection of air bubbles in the heat transfer fluid.

Return hose connection in 90° angle

Return hose connection 90° angle, no bending of hose. Secured caps!



The
ORIGINAL

MADE IN
GERMANY



stop valve in shockproof position



all-terrain pneumatic tires



wide charging mouth



capacity indicator

Compact versions

Solarcheck Mobilcenter UNISTAR

Top equipment down to the smallest detail

► Pump UNISTAR 2000-A

Dry self-priming impeller pump with glycol resistant Perbunan impeller

► High temperature resistant supply and return hose

Hoses temperature resistant up to 100°C, threaded hose couplings with high-pressure crimped fittings

► Drain valve on pressure side

The manual drain valve at the pump outlet is used to release the pressure in the delivery hose after use. Thus the hose can be easily and quickly disconnected from the fittings

► Ball valves at the hose ends

The ball valves at the hose ends are leak-proof and allow for pre-filling the hoses. No air from the hoses enters into the solar collectors during filling process.

Solarcheck Mobilcenter P80

Proven and tested solar filling station for solar pros

► Pump P80

Self-priming robust centrifugal pump with small pump chamber

► Temperature resistant supply and return hose

Temperature resistant hoses up to 60°C, threaded hose couplings with high-pressure crimped fittings

Accessories for all versions

Filter bags, special tank lid, remote control



Solarcheck Mobilcenter UNISTAR

MADE IN
GERMANY



Solarcheck Mobilcenter P80



hoses with ball valves and professional swivel coupling



Pump P80 with filter



Technical details

Solarcheck Mobilcenter	UNISTAR 2000-A	P 80
Pump	dry self-priming impeller pump UNISTAR 2000-A with glycol resistant impeller	self-priming centrifugal pump
flow rate max.	30 l/min*	31 l/min
working pressure max.	5 bar	5,9 bar
Temperature max.	90° C	60° C
Motor	230V/50 Hz with thermal motor protection, 110V/50Hz (UK) and 110V/60 Hz (USA/CAN) on option	230 V with thermal motor protection
hoses	EPDM hose with ball valves for tem- peratures up to 100°C	PVC tissue hose for temperatures up to 60°C
Extras	2 m cable with plug	2 m cable with plug
Tank	UV resistant PE tank with wide lock-up opening, capacity indicator and stop valve at the outlet, content 30 litres	
drain valve on pressure side	✓	✗
Cart	robust welded chassis, powder-coated steel, telescopic handle with soft grip	
Dimensions (L x W x H)	760-1000-1100 x 490 x 510 Packaging dimensions: 800 x 400 x 500 (12 units per pallet for shipping)	
Empty weight	20.9 kg	21.2 kg
Art.No.	134052V11	134053V11

* For a higher capacity (60 or 90 L/min) ask for our FLUSH PRO types.

FLUSH PRO

the versatile flushing station

More power - more potential

The FLUSH PRO is equipped with a powerful pump to convey large amounts of heat transfer fluid in short time. Two multifunctional valves allow for connection to external tanks (IBC etc.) as well as the execution of various successive process steps without changing hoses or hose connections

Filling, flushing and venting of

- ▶ large scale collectors
- ▶ ground collectors, ground probes
- ▶ floor and panel heatings

Function and Work flow

1 + 2 Mixing heat transfer fluid

Mixing heat transfer fluid from concentrate and water. Prime and pump back concentrate and water from / to external tanks in a closed circuit

1 + 3 + 4 Filling and flushing the system

Pumping heat transfer fluid from external tanks directly into the system (very convenient for large quantities of fluid)
Reflux from thermal collector to internal tank

3 + 4 + 5 Flushing and venting the system

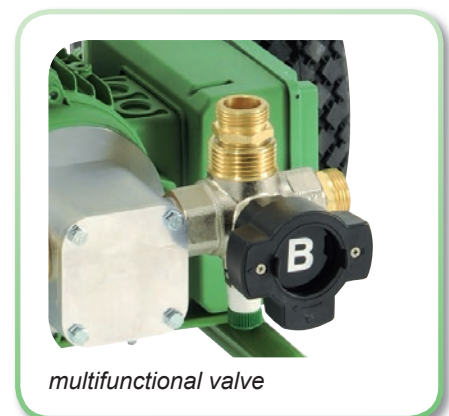
After filling process switch to internal circuit between tank on device and collector to remove air enclosures



FLUSH PRO MC 60/30



FLUSH PRO MC 90/55



Main Features

- ▶ dry self-priming impeller pump
- ▶ sturdy cart with pneumatic tyres
- ▶ 2 m cable with plug
- ▶ tank with wide charging mouth and capacity indicator
- ▶ 2 x 3 m supply and return hose
- ▶ 2 multifunctional valves

DO YOU NEED A BIGGER TANK?
you find additional equipment for the FLUSH PRO on Page 11 of these brochure

Technical details

FLUSH PRO	MC 60/30	MC 90/55	MC 90/120
Flow rate max.	60 l/min	90 l/min	90 l/min
Working pressure max.	5 bar	5 bar	5 bar
Motor	230 V, 50 Hz with thermal motor protection		
Medium-Temperature max.	90°C	60°C	60°C
Hoses	$\frac{3}{4}$ " EPDM-hose for temperatures up to 100°C (for a short time even to 120°C)* 1" PVC-tissue-hose for temperatures up to 60°C*		
Tank with stop valve at the outlet	✓	✓	✗
Tank content	30 l	55 l	120 l
Dimensions L x W x H	760-1000-1100 x 490 x 510 mm	1050 x 490 x 640 mm	830 x 700 x 1400 mm
Empty weight	25 kg	39 kg	47 kg
telescopic handle and carry handle with soft grip	✓	✗	✗
Protective filter	✓	optional	optional
Drain valve on pressure side	✓	✓	✓
Art. No.	134058V11	1340581	1340582

* with crimped hose fitting

In addition to the fine filter with transparent cup separate filter bags can be used. Please see page 11 for more information.

quick, easy
and clean!

ZUWA guarantees quality

With the flushing station you get a German quality product that enables filling, flushing and venting by using only one system. The FLUSH PRO can also be used for other application areas. Please do not hesitate to contact us if you need additional accessories or any further assistance/information.

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GERMANY



Extensions

Flushing and filling unit for hydronic systems

(for FLUSH PRO MC 30 only)

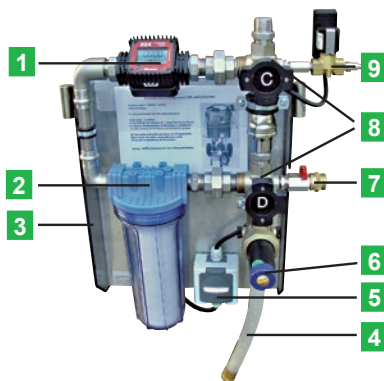
Meets the requirements of VDI guideline 2035 and Austrian Standard ÖNORM H 5195-1.

The plate mounted unit is hinged onto the hose bracket. Single serving filling cartridges or softening devices for purified water can be connected easily.

Art. No.: 105013

Features

- 1 digital flow meter
- 2 Filter 20 µm
- 3 stainless steel plate
- 4 hose connection to pump
- 5 plug IP 44
- 6 pressure reducer
- 7 connection to water softening equipment
- 8 2 multifunktional valves
- 9 compressed air connection with electromagnetic timer valve



Solar collectors - heat pumps - hydronic systems

flush - fill - vent - renovate

Reverse flow direction

For more effective flushing

The adjustable flow rate and reversible pumping direction improves the flushing process and removal of sedimentations.

Without compressed air connection

Art.No.: 1050131

With compressed air connection

Art.No.: 1050131L

Reverse flow direction, Connection hoses

Art.No.: 1050131SP

ON OPTION:
connection for
compressed air



Mixing vessels for brine

Mixing heat transfer fluid of concentrate and water - even in larger quantities right on construction site. *Art.No.: 105012*

Features

- ▶ 2 containers, 150 litres each, with stop valve
- ▶ hose fork
- ▶ 6 m suction hose $\frac{3}{4}$ "

Function

Tanks are connected to both multifunctional valves. The pump takes care for the mixing of the heat transfer medium and transports the fluid from the tanks directly into the collector system. Using external tanks rather than the tank on the device speeds up the filling of large systems drastically.



CONVENIENT: filter bags and special lid

The new disposable filter bags are used in cases of heavily silted heating water or polluted heat transfer medium. They supplement the filter on the suction side of the pump on the ZUWA filling stations and prevent this filter from clogging. (**70 µm for coarse-grained particles and 40 µm for fine grained particles**)

Quite simple: Just hinge filter bag into the mouth piece of the tank and fix with the specific tank lid.



Suitable for the following devices

- ▶ solar filling stations SOLARCHECK MOBILCENTER
- ▶ Multi-purpose filling and flushing stations FLUSH PRO
- ▶ Descaling station DESCAL

Screw cap with Special lid

- ▶ brass or stainless steel fittings
- ▶ return hose connection
- ▶ pressure relief valve

Filter bags for filling and flushing stations

Solarcheck Mobilcenter, DESCAL, FLUSH PRO MC 60/30

10 pieces (5 a 70 µm and 5 a 40 µm:

Art.No.: 132003

FLUSH PRO MC 90/55 and MC 90/120

10 pieces (all 70 µm)

Art.No.: 132005

Screw cap

Brass

Art.No.: 805531

Stainless steel

Art.No.: 805532

FLUSH PRO MC 90/55 and MC 90/120

Art.No.: 805533



Effective decalcification

Flushing station for effective descaling of heat exchangers and hot water storage tanks

The DESCAL is a specifically designed tool for HVAC professionals to flush boilers and heat exchangers with anti-scale agents. The device was tested and approved with the following agents (max. fluid temperature 40°C).

Approved media

- ▶ SANIT: KalkLöser, formic acid based, and Citroplus, citric acid based
- ▶ SOTIN: Entkalker 212 and 212 TW
- ▶ Grünbeck: GENO® -clean M and GENO® -clean CP

(always to be used according to manufacturer recommended dosing rate) Other decalcifier on request

Function

An agent circulates between heat exchanges and the DESCAL. Limescale is softened, washed out and collected in the tank.

The flushing process is repeated until the liquid is free of scale residues which can be controlled via the transparent hoses and the filter casing.

Effective:

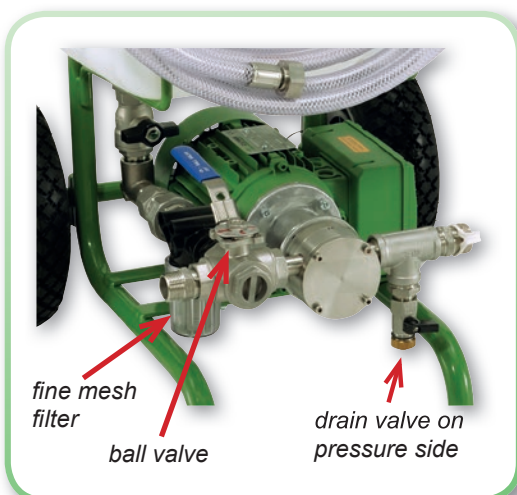
- ▶ a high flow rate and high pump pressure make for a thorough separation of the scale

Clean:

- ▶ a pressure relieve valve at the pump outlet avoids acid from being set free when the hose is disconnected after use
- ▶ pump gets almost completely empty after use and can be opened easily for cleaning
- ▶ ball valve allows for cleaning the pump without removing the softening agent from the tank as well as priming fluids from external tanks

Flushing:

Cleaning pump and filter while anti scale agent remains inside the canister



Effective decalcify

Furrings with a thickness of one millimetre reduce the efficiency of a heat exchanger already by 10%. Thicker layers may cause a loss of 40%. Regions with limy water call for a periodic decalcification of heat exchangers and storage water heaters.

Main Features:

- ▶ dry self priming impeller pump with stainless steel casing
- ▶ corrosion resistant fittings
- ▶ comfortable and sturdy cart with large pneumatic wheels
- ▶ removable plastic tank with wide charging mouth and capacity indicator

Technical details

DESCAL	
Flow rate max.	30 l/min (on option with 60 l/min)
Working pressure max.	5 bar
Pump	NIROSTAR 2000-A, 230 V*
Medium-Temperature max.	40°C
Hoses	3 m Suction hose ¾", 3 m Pressure hose ¾" made of transparent plastic with fabric insert
Tank	UV-resistant tank with stop valve at the outlet
Tank content	30 l
Dimensions L x W x H	985 x 495 x 555 mm
Empty weight	23 kg
Cart extras	telescopic handle and carry handle with soft grip
Protective filter	✓
Drain valve on pressure side	✓
Art. No.	1340591V11 (for media by Sanit) 1340591V-V11 (for media by Sotin and Grünbeck)

*On option with NIROSTAR 2000-B, 230 V)

Accessories

Overflow containment

Collect overflowing descaling agent

The containment safely collects overflowing or over-foaming antiscaling agent. The fluid runs controlled into the box through a bent hose guidance. The agent can safely be primed directly from the box without decanting.

Features:

- ▶ Plastic box
- ▶ 2 m hose
- ▶ Stainless steel fittings

Art.No.: 1340592



Reverse flow direction

Decalcifying more effectively

The adjustable flow rate and reversible pumping direction improves the flushing process and removal of sedimentations.

Without Connection for compressed air
Art.No.: 1050131

With Connection for compressed air
Art.No.: 1050131L

Reverse flow direction, Connection hoses
Art.No.: 1050131SP

ON OPTION:
Connection for
compressed air



Solar

More functions – the DESCAL can also be used to fill and flush solar or ground collectors when equipped with the extension kit Solar, consisting of:

Features

- ▶ replacement tank for heat transfer fluid
- ▶ 2 x 3 meter high temperature resistant hoses

Art.No.: 1340593V11



Note:

The large non-woven filter bags (page 11) collect the solute and scoured limescale before they get to the pump.

Pump types

UNISTAR

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

NIROSTAR

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

Properties

Dry self-priming pumps, initial filling is not required. Solids and air enclosures in the fluid are transported without any difficulty. Simple, low cost maintenance.

- ▶ Temperature up to 90° C
- ▶ suction depth max. 7 metres (dry 3 metres)

Applications

- ▶ fill and flush solar loops with heat transfer medium
- ▶ drain and clean tanks
- ▶ decant/pump fuel oil and Diesel
- ▶ descale boilers (type NIROSTAR)



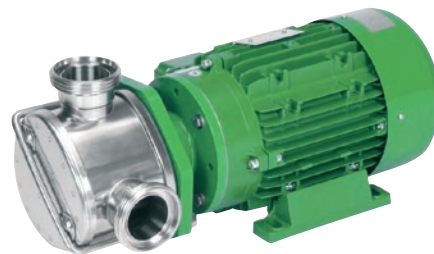
NIROSTAR 2000-D
on trolley with detachable
push rod



UNISTAR 2000-C
with reversion of rotation



COMBISTAR 2001-B



NIROSTAR 2000-E

Accessory

Dry running protection

Automatic stop when pump is running dry. Restart with reset button after eliminating the fault.

Dry running protection for UNISTAR-A and B Art. No.: 130100



UNISTAR 2000-B
with dry running protection

Impeller pumps

Technical details

UNISTAR	2000-A	2000-B	2000-C	2001-A	2001-B
Flow rate max.	30 l/min	60 l/min	90 l/min	30 l/min	60 l/min
Working pressure max.*	5 bar	5 bar	5 bar	4 bar	4 bar
Motor	230 / 400 V	230 / 400 V	230 / 400 V	–	–
Connections	¾“, DN 19	1“, DN 25	1¼“, DN 32	¾“, DN 19	1“, DN 25
Weight	9 kg	9.2 kg	13 kg	0.6 kg	0.8 kg

COMBISTAR	2000-A	2000-B
Flow rate max.	30 l/min	60 l/min
Working pressure max.*	5 bar	5 bar
Motor	230 / 400 V	230 / 400 V
Connections	¾“, DN 19	1“, DN 25
Weight	9,4 kg	10 kg

NIROSTAR	2000-A	2000-B	2000-C	2000-D	2000-E	2000-F
Flow rate max.	30 l/min	60 l/min	96 l/min	166 l/min	375 l/min	730 l/min
Working pressure max.*	5 bar	5 bar	3 bar	3 bar	2 bar	2 bar
Motor	230 / 400 V	230 / 400 V	230 / 400 V	230 / 400 V	400 V	400 V
Connections	¾“, DN 19	1“, DN 25	1¼“, DN 32	1½“, DN 40	2“, DN 50	3“, DN 65
Weight	9.8 kg	10.4 kg	15 kg	20 kg	30 kg	69 kg

* maximum pressure with Perbunan impeller (NBR)

All types, except NIROSTAR 2000-C, are available also without electric motor and can be operated by a motor or an alternative drive unit (e. g. with gear motor, cordless drills or screwdrivers).



Impeller Pumps

Solar filling pump with carrying handle and filter

Small, economic solution for filling and flushing solar systems

Features:

- ▶ dry self-priming impeller pump UNISTAR 2000-A or centrifugal pump P80
- ▶ carrying frame with rubber pads
- ▶ filter with transparent filter cup
- ▶ pressure relieve valve at pump outlet (only UNISTAR 2000-A)

With pump UNISTAR 2000-A Art. No.: 110120M-SOL
With pump P80 Art. No.: 165010-SOL

OPTIONAL:
hose-set, Euro container with cover (for UNISTAR only)



Solar filling pump with UNISTAR 2000-A

Drill driven impeller pumps



pump



adapter



example of application with adapter and cordless drill

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.

Two alternative mounting systems

This mounting system provides a secure and stable link between pump and drill:

With adapter

The adapter fixes the pump with the depth stop.

With mounting feet and regraded support

The pump is mounted to a regraded support along with the drill (the support is not part of the purchased parts package)

Adapter and regraded support separately available for back fitting:

- ▶ Support Art. No.: 11012310
- ▶ Mounting feet Art. No.: 11012710
- ▶ Adapter Art. No.: 11012300



example of application with support (optional)

Diesel- and Oil pumps

Pump types

DC, AC or rotary current

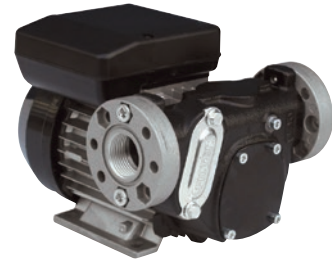
Application

- ▶ drain and clean tanks
- ▶ decant fuel oil and diesel
- ▶ motor oil change in CHP units
- ▶ central oil supplies

Diesel and oil pumps with flow meter available on request.



mechanical
flow meter



Panther

Panther and E 120

Dry self-priming fuel pumps with bypass valve, type Panther additionally with anti-siphon valve and filter (100 µm) on the suction side. The pumps operate efficiently and reliably even at low temperatures.

VISCOMAT

Vane or gear pumps for oils with all grades of viscosity – also for vegetable oil. The pumps are characterized by excellent suction capacity and low-noise operation.



VISCOMAT

Stationary or mobile fuelling

Cube 56 - fuel pump for non-resale use. Diesel pump Panther 56 in welded steel enclosure with flow meter and nozzle. For wall mounting or with pedestal..



fuel dispenser 56

Technical details for Diesel- and Oil pumps

PANTHER	56	72	DC 12	DC 24
Flow rate max.	56 l/min	72 l/min	56 l/min	72 l/min
Working pressure max.	1,5 bar	2 bar	1,5 bar	2 bar
Motor	230 / 400 V	230 / 400 V	12 V	24 V
Connections	1", DN 25	1", DN 25	1", DN 25	1", DN 25
Weight	7.4 kg	8 kg	7.5 kg	7.5 kg

Type	E120
Flow rate max.	100 l/min
Working pressure max.	1,7 bar
Motor	230 / 400 V
Connections	1", DN 25
Weight	15.6 kg

You will find more information about our wide range of diesel and oil pumps in the detailed brochure or on our website www.zuwa.de

Fuel transfer box 3000 for mobile fuelling

Comes with diesel pump 12 / 24 Volt and box for safe storage.
Clean refueling also in soiled environment:

a foot valve prevents dirt from getting into the suction hose.

12V Art.Nr.: P23100

24V Art.Nr.: P23200



fuel transfer box 3000

Side channel centrifugal pumps EP

With AC, DC, rotary current or V-belt drive

Versatile, self-priming pumps made of bronze or stainless steel for liquids without soil and solids, well suitable also for fuel oil and diesel fuel. The pumps operate in both directions.

- ▶ suction depth 7 m maximum
- ▶ high temperature resistance
- ▶ on option with trolley

Application

- ▶ Water
- ▶ Fuel oil, Diesel
- ▶ Some acids
(only stainless steel pumps)



EP NIRO



EPm220/40 with trolley

Technical details for side channel centrifugal pumps

Type EPm	220/20	220/25	220/40	220/50
Flow rate max.	30 l/min	60 l/min	120 l/min	230 l/min
Working pressure max.	1,5 bar	1,8 bar	2,2 bar	3,0 bar
Motor	230 V	230 V	230 V	230 V
Connections	¾", DN 19	1", DN 25	1½", DN 40	2", DN 50
Weight	5.6 kg	9.2 kg	16 kg	26 kg

* Motor mit 400 Volt auf Anfrage möglich.

Type EPNiro	220/25	220/40	220/50
Flow rate max.	58 l/min	120 l/min	230 l/min
Working pressure max.	2 bar	2,2 bar	3 bar
Motor	230 / 400 V	230 / 400 V	230 / 400 V
Connections	1¼", DN 30	1½", DN 40	2", DN 50
Weight	9,5 kg	18 kg	28 kg

Flat suction systems

Flat suction kit

Flat Suction System offers effective aid to:

- ▶ draining platform roofs
- ▶ flooded basement and basement garages
- ▶ discarding residue water from swimming pools

Features:

Powerful Pump

▶ Sturdy:

The Flat Suction System is provided with a heavy-duty ZUWA Impeller Pump. The pump is suitable for slurping action and tolerates a short dry run. The flexible impeller wheel is capable of transporting soil and solid particles within the fluid.

▶ Versatile

The pumps are not only suitable for water, but also for many different fluids like oil, heating oil, diesel and heat transfer fluid.

Suction Mat:

Suction mat remove fluids within reach of the mat nearly completely. Flow channels in the bottom side improve the suction effect and take even small amounts of liquid.

The water is pumped directly without intermediate storage.

▶ Expandable:

Depending on the dimensions of the flooded area even several mats can be connected in parallel to one pump.

3 x 3 meter spiral hoses

Special GEKA screw fitting for the suction line ensures hermetic sealing (suction-, delivery hose and extension).

Practical Accessories

Euro container

for easy transport and storage of pump and accessories.

Dry run protection:

Sensor interrupts power supply when overheating. Restart with reset button after eliminating the fault. The dry run protection allows to pump with the Flat Suction Kit without supervision!



Flat Suction
Kit KOMPAKT



Oil-Suction
Kit, mat not included

Scavenge Kit ELEPHANT

The cordless suction set - assembled quickly and with a drill immediately ready for action. A must for any service technician.

- ▶ rapid, compact, reliable
- ▶ bidirectional rotation
- ▶ with flat suction mat and strainer
- ▶ Professional, yet inexpensive



NEW!

Feature variants

Flat Suction Kit	Basic	Compact	Top	Oil-Suction Kit	ELEPHANT
Pump UNISTAR 2000-B*	✓	✓	✓	✓	drill powered pump UNISTAR 2001-B
Pump carrying frame with rubber buffer	✓	✓	✓	✓	✗
3 x 3 m spiral hose 1" (with GEKA-coupling)	✓	✓	✓	✓	2 x 3 m textile reinforced hose ¾" with hose fitting
Flat suction mat	✓	✓	✓	on option	✓
Euro container with cover (2008550)	✗	✓	✓	✓	Transport box with lid 528 x 310 x 320 mm
Multi-purpose pump control	✗	✗	✓	✗	✗
Multi-purpose sensor switch	✗	✗	✓	✗	✗
Dry run protection (130100, 130120)	on option	on option	on option	on option	✗
Radio remote control set (141005)	on option	on option	on option	on option	✗
Art. No.	110150	110151	110152	110153	1101511
Art. No. - with COMBISTAR 2000-B*	110158	110157	110154	110155	✗

*Flow rate max. 60 l/min. On request pumps with higher capacity available (up to max. 96 l/min)

Flat suction Kit for different applications

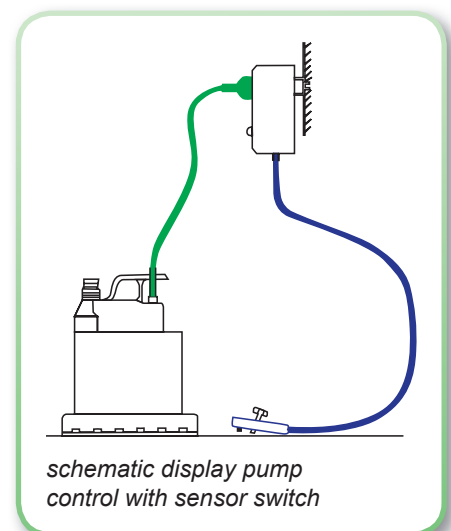
The flexible and robust suction mat work on slightly uneven ground as well. Unlike submersible pumps and water vacuum cleaners the flat suction system is capable of completely pumping out the fluid and is applicable for large areas.



Fire brigade



Flat roofs



At the back site of the brochure you find further accessories.

Waste water pumps

VORTEX and VORTEX NIRO

ZUWA'S VORTEX pumps are used for applications with dirty water containing solids. Depending on the type of pump particles with a diameter of 55 mm can be pumped.

VORTEX

Robust waste water pumps made of cast iron with float switch, also for liquids with solid particles.

Also ATEX approved for application in biogas plants and other areas with potentially explosive atmosphere – intended for use in zone 1 and 2!

Applications

- ▶ Draining of excavation pits and hoppers
- ▶ remove flood water
- ▶ dispose off domestic sewage

Agricultural applications

- ▶ pump down of milking parlours
- ▶ cleaning of silage soakage and surface water
- ▶ irrigation in agriculture and horticulture

VORTEX NIRO

Corrosion resistant sewage water pumps constructed of stainless steel, especially for aggressive sewage.

Applications

- ▶ biogas sector
- ▶ electrocoating processes
- ▶ chemical industry
- ▶ pharmacy
- ▶ seawater



VORTEX 75



VORTEX NIRO 100

Technical details

Type	Power			Flow rate max.	pump head max.	Connections	Dimension	Pump inlet	Weight	Art. No.
	kW	V	A							
VORTEX 75	0,55	230	3,9	225 l/min	8 m	1 1/4"	22 x 28 cm	30 mm	17 kg	1650130
VORTEX 100	0,75	230	5,4	285 l/min	9 m	2"	20 x 42 cm	45 mm	23 kg	165017
VORTEX 150	1,1	230	8,9	450 l/min	10 m	2"	23 x 52 cm	50 mm	33 kg	165020
	1,1	400	3,5	450 l/min	10 m	2"	23 x 52 cm	50 mm	33 kg	165033
VORTEX 200	1,5	230	10	570 l/min	11 m	2"	23 x 52 cm	50 mm	34 kg	165018
	1,5	400	5,0	570 l/min	11 m	2"	23 x 52 cm	50 mm	34 kg	165057
VORTEX NIRO 100	0,75	230	5,3	340 l/min	12 m	2"	23 x 41 cm	35 mm	16 kg	165024
VORTEX NIRO 200	1,5	400	3,2	600 l/min	16 m	3"	44 x 53 cm	37 mm	36 kg	165025
VORTEX NIRO 300	2,2	400	4,6	850 l/min	20 m	3"	44 x 57 cm	40 mm	38 kg	165026

Pump mounted on plate

Faster and easier oil change in CHP Units

Plate mounted for simple fixing on tank or wall.

Application and function

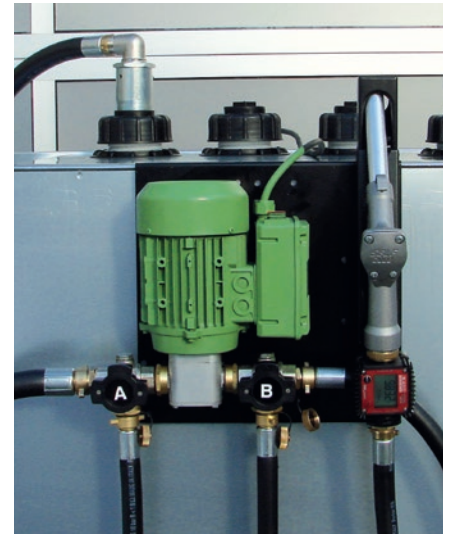
The pump is equipped with two suction and two pressure hoses. These hoses are connected to the motor of the CHP unit, a used oil tank and a tank with new motor oil. The set-up remains the same no matter if used oil is removed or fresh oil is delivered. Turning the multifunctional valves the four pipes are opened or closed accordingly.

Features

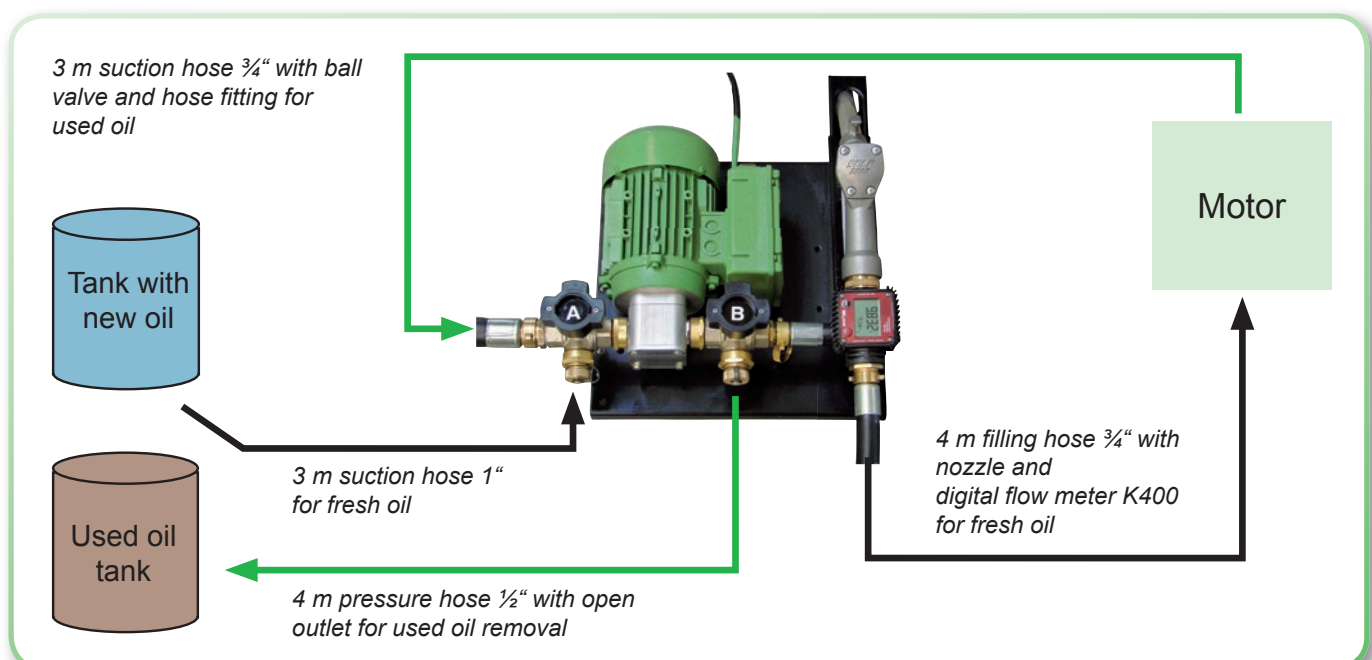
- ▶ Pump UNISTAR 2000-B - dry self priming pump with high performance - insensitive solids
- ▶ nozzle with electronic flow meter
- ▶ 2 x 3 m suction hose and 2 x 4 m delivery hose
- ▶ 2 multifunctional valves

Additional cleaning effect

Unlike removing motor oil through the oil drain plug pumping out oil leads to an increased removal of sedimentation inside the motor. The higher flow rate creates a suction effect and extracts dirt. The pumps handles solids without being affected.



Detailed Illustration



Dry running protection

Impeller pumps can be equipped with a dry run protection. A sensor switch interrupts the power supply to avoid overheating. Easy retrofitting of existing pumps.



Dry running protection

Remote control with cable

Remote control for pumps with 10 m cable and ON/OFF switch. Suitable for all 230 Volt pumps, especially for remote control of the Solarcheck Mobil-center from the solar system control unit.

Radio remote control

Small and handy transmitter and receiver.

Pump control

Reliable control device for pumps with 230 / 400 Volt up to 16 A. Key pads and signal lights on the front side.

Features:

- ▶ integrated level control
- ▶ programmable dry running protection
- ▶ electronic over-/underload protection
- ▶ excess voltage, phase failure and lightning protection
- ▶ reverse battery protection
- ▶ blocking protection (activation of the pump every 24 h/1 sec)
- ▶ storage of startings and working hours



Remote control with cable



Radio remote control



Pump control

Changing the impeller

Useful tool to install the impeller easily into the casing. Suitable for all ZUWA impellers type A, B and C.



Tool for changing of the impeller

Flexible collection pan for liquids

The foldable pans are ready to use in a few seconds. Base area and height can be adapted to the environment. Handy with low packaging dimensions and space saving storage.

The tarpaulin is made of polyester fabric, pvc coated on both sides and high frequency welded. The pans are resistant to oil and several chemicals. Available in various dimensions from 60 x 60 cm to 200 x 200 cm

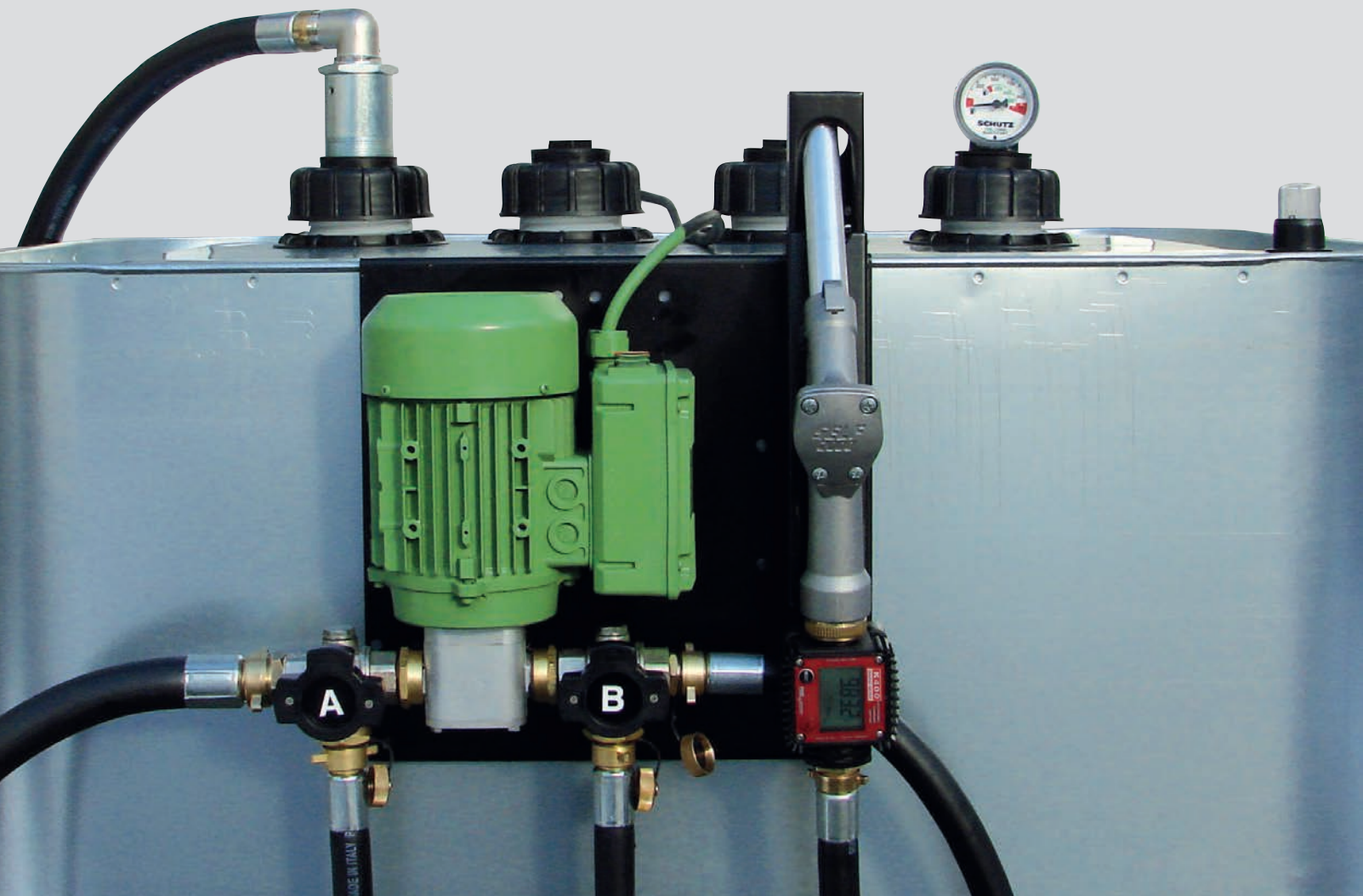


Flexible collection pan

Servicecenter
stationary and mobile



Extract soiled and refill clean fluids with only ONE pump!



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Stationary ServiceCenter

Pump mounted on plate

Stationary ServiceCenter for wall or tank attachment. The plate mounted unit is ideal for changing motor oils in large machines and plants and to be employed with a diversity of fluids as well.

Features

- ▶ pump UNISTAR 2000-B - dry self priming impeller pump with high flow rate, insensitive to solid particles
- ▶ nozzle with electronic flow meter
- ▶ 2 x 3 m suction hose and 2 x 4 m delivery hose
- ▶ 2 multifunctional valves

Application

- ▶ motor oil change in CHP units
- ▶ extraction of waste oil from motors, gear boxes and hydraulic equipment
- ▶ extraction of cooling lubricants
- ▶ maintenance of machines

Function

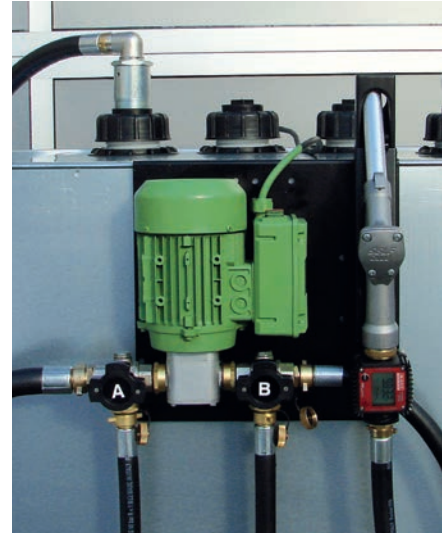
The pump is equipped with two suction and two pressure hoses. These hoses are connected to the motor of the CHP unit, to a used oil tank and to a tank with new motor oil. The set up remains the same no matter if used oil is removed or fresh oil is delivered.

Turning the multifunctional valves the four pipes are opened or closed accordingly.

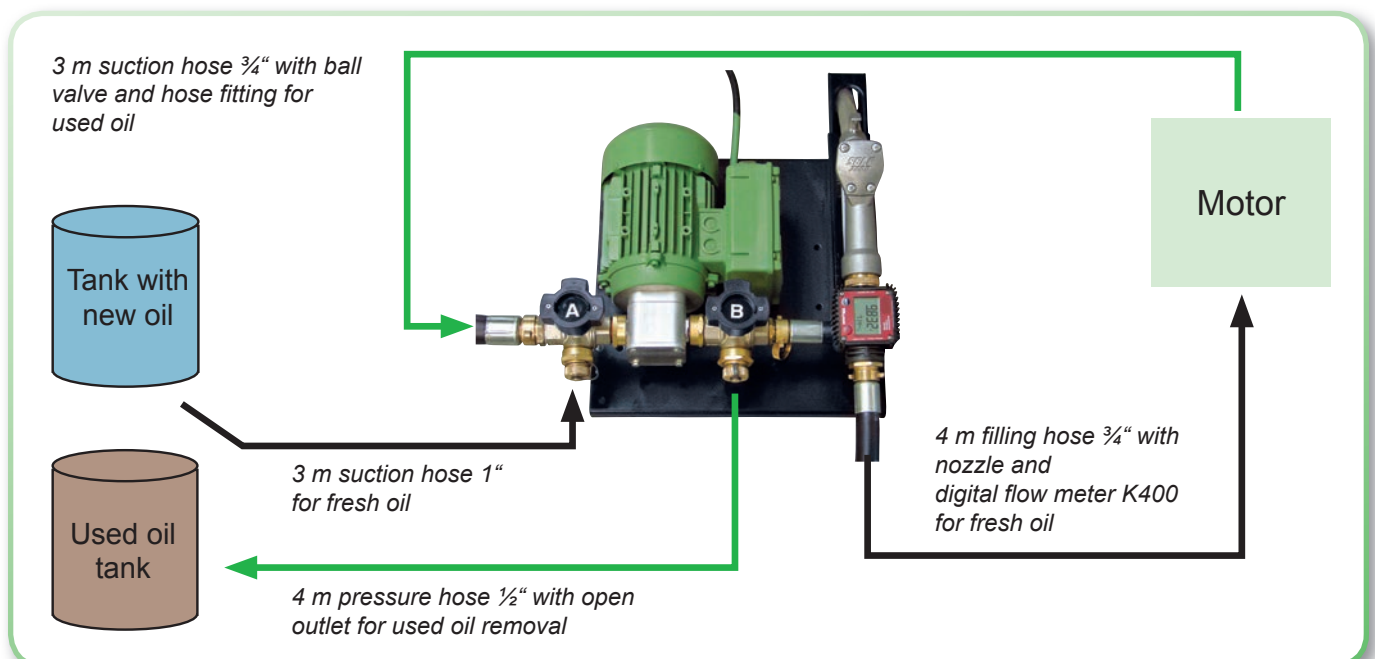
Additional cleaning effect

Unlike removing motor oil through the oil drain plug, pumping out oil leads to an increased removal of sedimentation inside the motor. The higher flow rate creates a suction effect and extracts dirt.

The pumps handles solids without being affected by it.



Detail Illustration



Pump mounted on frame

Mobile unit to extract and decant clean or stained oils of all kinds.
Easy and safe operation: no handling of heavy tanks, no spilling of fluids.

Features

- ▶ dry self priming impeller pump with high flow rate, insensitive to solid particles
- ▶ suction and pressure hose 3 m each
- ▶ 4 suction probes suitable for dip stick inlets or filling ports
- ▶ detachable probe retainer with closed bottom to collect fluid residues from the probes
- ▶ 2 multifunctional valves
- ▶ comfortable trolley with large wheels

ON OPTION:
Nozzles and flow
meters for oils

Application

- ▶ extraction of waste oil from motors, gear boxes and hydraulic equipment
- ▶ draining cooling lubricants and diluted soluble oil from CNC-machines
- ▶ maintenance of machines

Function

Apart from external suction and pressure pipes the pump has two lines to the container. With the two multifunctional valves A and B pump operation can be adjusted to either filling or draining the container.

Waste oil or any other fluid is pumped into the tank of the ServiceCenter. For disposal the unit can be moved conveniently to a collection point. Vice versa the ServiceCenter can be used for the transport of fluid to where it is needed and for pumping the fluid into a motor or vehicle.



Detail Illustration



rear view with suction probes



extraction and filling tank



delivering and draining tank



pumping without intermediate storage in tank

Technical details

Stationary and mobile ServiceCenter

ServiceCenter	stationary	mobile	
Pump - dry self-priming impeller pump ¹⁾	UNISTAR 2000-B	UNISTAR 2000-A	UNISTAR 2000-B
Flow rate max.	18 l/min (based on motor oil 10W-40 at 20°C)	15 l/min (based on water at 20°C)	30 l/min (based on water at 20°C)
Working pressure max.	3 bar	3 bar	3 bar
Impeller and shaft seal	Viton®	Viton®	Viton®
Power supply	230 Volt - 400 V optionally	230 Volt - 400 V optionally	
Oil resistant delivery hoses ²⁾	1 x 4 m ½", DN 13 1 x 4 m ¾", DN 19	1 x 3 m ½", DN 13, (delivery hose with open outlet)	
Oil resistant suction hoses ²⁾	1 x 3 m ¾", DN 19 1 x 3 m 1", DN 25 1 x 1,50 m 1", DN 25, (with tank adapter 2" and foot valve - nonreturn valve)	1 x 3 m ½", DN 13, (suction hose with probe adapter)	
Other	2 multifunctional valves	2 multifunctional valves	
Tank	✗	55 litres	
Suction probes	✗	2 semirigid probes (6 / 8 x 800 mm) 2 rigid probes (6 / 9 x 650 mm)	
Flow Meter K400	with digital display and aluminium housing, precision ±0,5%	optionally	
Nozzle	✓	optionally	
mounted on plate	✓	✗	
mounted on frame	✗	✓	
Art. No.	11231136332-BHKW	132064	132065

¹⁾ on option: with thermal dry run protection (applicable only for fluid temperatures below 60°C).

²⁾ hoses also available in different lengths on demand

quick, easy
and clean!

ZUWA guarantees quality

With the ServiceCenter you get a German quality product that enables extracting and filling by using only one pump. The ServiceCenter can also be used for other application areas. Please do not hesitate to contact us if you need additional accessories or any further assistance/information.

MADE IN
GERMANY



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Filling station for wind power plants



ZUWA's special solution for Wind Power Plants

For priming the cooling system of wind power plants (wind turbines), Senvion SE decided to use Impeller Pumps manufactured by ZUWA.

Senvion SE, a subsidiary of Suzlon Group, is one of the leading international manufacturers of onshore and offshore wind turbines.

This worldwide active machine building company develops, manufactures and distributes wind power plants for nearly every location, with power ratings from 1,8 to 6,15 MW. Rotor diameters measure from 82 up to 126 meters.



The Target

For service and maintenance tasks on the cooling circuit Senvion searched for a portable, handy, and reliable solution. Their special requirement was getting a small and lightweight pump for convenient use in the narrow spaces of the wind turbines. With the motor-driven, easy to handle ZUWA-Priming-Station, Senvion is able to abstain from the hand-operated pumps used in the past.

The Solution

The main part of the set-up is the ZUWA impeller pump type UNISTAR 2000-A. This pump has been well-proven over many years in similar applications like charging solar heating systems with heat transfer fluids.

ZUWA impeller pumps are dry self priming, there is no need to fill them before starting the work. The flow rate of the UNISTAR-2000-A is max. 30 l/min. The pump body is made of aluminium, impeller and seal are made of sturdy rubber.

Individual Adjustment after Testing

After testing the station on site it was adjusted to the individual needs of Senvion.

A pressure regulation valve and a pressure gauge were integrated to make sure that the cooling circuit with a volume of about 40 litres always is charged with a constant pressure of 2 bar.

The tripartite hose set consists of 2 heat resistant hoses with three meters and 1 hose of five meters length, ideally adjusted for this kind of use.



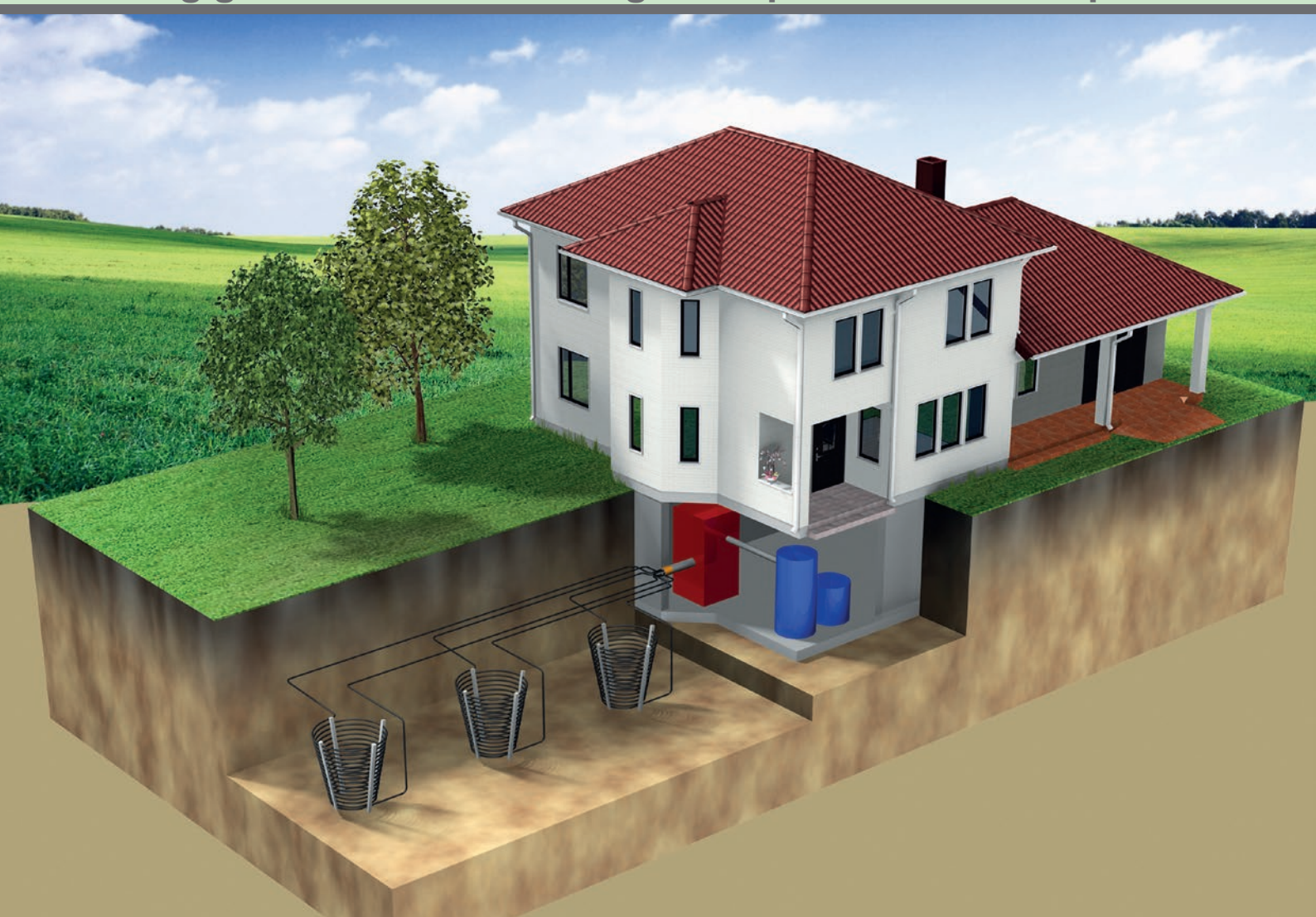
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Fill- and Flushing Station for heat pump systems



Filling ground collectors and ground probes free of air pockets



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FLUSH PRO

the versatile flushing station

Filling, flushing and venting of ground collectors and ground probes

The FLUSH PRO is equipped with a powerful pump to convey large amounts of heat transfer fluid in short time.

Function and Work flow

1 + 2 Mixing heat transfer fluid

Mixing heat transfer fluid from concentrate and water. Prime and pump back concentrate and water from / to external tanks in a closed circuit

1 + 3 + 4 Filling and flushing the system

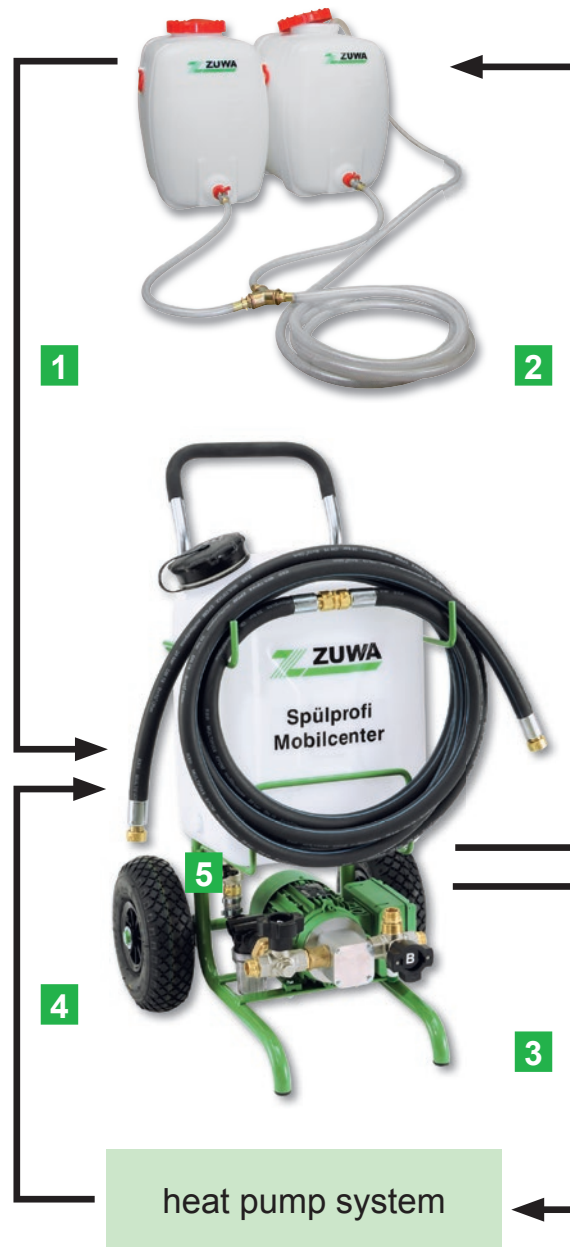
Pumping heat transfer fluid from external tanks directly into the system (very convenient for large quantities of fluid)
Reflux from thermal collector to internal tank

3 + 4 + 5 Flushing and venting the system

After filling process switch to internal circuit between tank on device and collector to remove air enclosures

Changing of hoses is not needed!

Two multifunctional valves allow for connection to external tanks (IBC etc.) as well as the execution of various successive process steps without changing hoses or hose connections



quick, simple
and clean!

ZUWA guarantees quality

With the flushing station you get a German quality product that enables filling, flushing and venting by using only one system. The FLUSH PRO can also be used for other application areas. Please do not hesitate to contact us if you need additional accessories or any further assistance/information.

MADE IN
GERMANY



Features and technical details

Main Features

- ▶ dry self-priming impeller pump
- ▶ sturdy cart with pneumatic tyres
- ▶ 2 m cable with plug
- ▶ tank with wide charging mouth and capacity indicator
- ▶ 2 x 3 m supply and return hose
- ▶ 2 multifunctional valves



DO YOU NEED A BIGGER TANK?
you find additional equipment for the FLUSH PRO on Page 4 of this brochure

Technical details

FLUSH PRO	MC 60/30	MC 90/55	MC 90/120
Flow rate max.	60 l/min	90 l/min	90 l/min
Working pressure max.	5 bar	5 bar	5 bar
Motor	230 V, 50 Hz with thermal motor protection		
Medium-Temperature max.	90°C	60°C	60°C
Hoses	¾" EPDM-hose for temperatures up to 100°C (for a short time even to 120°C)*		1" PVC-tissue-hose for temperatures up to 60°C*
Tank with stop valve at the outlet	✓	✓	✗
Tank content	30 l	55 l	120 l
Dimensions L x W x H	760-1000-1100 x 490 x 510 mm	1050 x 490 x 640 mm	830 x 700 x 1400 mm
Empty weight	25 kg	39 kg	47 kg
telescopic handle and carry handle with soft grip	✓	✗	✗
Protective filter	✓	optional	optional
Drain valve on pressure side	✓	✓	✓
Art. No.	134058V11	1340581	1340582

* with crimped hose fitting

Mixing vessels for brine

Mixing heat transfer fluid of concentrate and water - even in larger quantities right on construction site. Art.No.: 105012

Features

- ▶ 2 containers, 150 litres each, with stop valve
- ▶ hose fork
- ▶ 6 m suction hose ¾"

Mixing brine conveniently on site



Function

Tanks are connected to both multifunctional valves. The pump takes care for the mixing of the heat transfer medium and transports the fluid from the tanks directly into the collector system. Using external tanks rather than the tank on the device speeds up the filling of large systems drastically.

Filter bags for heavily soiled systems

The new disposable filter bags are used in cases of heavily silted heating water or polluted heat transfer medium. They supplement the filter on the suction side of the pump on the ZUWA filling stations and prevent this filter from clogging. Just hinge filter bag into the mouth piece of the tank and fix with the specific tank lid.

Filter bags for FLUSH PRO MC 60/30:

10 pieces (5 a 40 µm and 5 a 70 µm. Art. Nr.: 132003

Filter bags for FLUSH PRO MC 90/55 and MC 90/120:

10 pieces 70 µm. Art. Nr.: 132005



User report BetaTherm

Mixing brine, filling and venting ground collectors in one process!

A number of HVAC professionals are using the FLUSH PRO to fill solar or ground collectors with brine. The idea to add two separate 150 litre tanks with cut off cock was the result of a collaboration between BetaTherm and ZUWA. ZUWA's FLUSH PRO is absolutely tight. The pump provides sufficient pressure and flow rate to prevent air pockets influencing the heat transmission. The problem was the size of the internal tank.

In collaboration a solution was developed. Mr. Graf, Managing Director of BetaTherm, was impressed - „without hesitating Mr. Wimmer transformed our proposals“. With the extra equipment the installer is now in a position to mix the brine (see page 2) and without changing the hoses the fluid is pumped straight into the collector.

It was important for Mr. Graf that the hoses connecting the tanks are equipped with a stop cock to stop the flow before the tanks get empty and air is sucked in. When the system is full the turn of one handle is sufficient to change the flow direction of the pump: a three way valve at the pump inlet closes the hose to the mixing containers and opens the connection to the tank of the station.

Now the brine circulates between collector and station, the air still enclosed escapes through the open lid of the station's tank.

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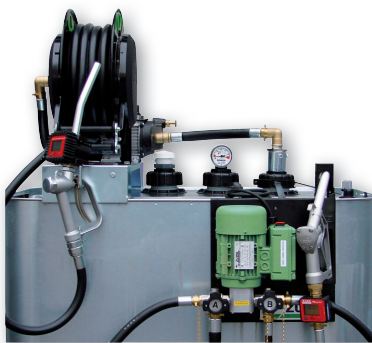


Pumps for Biogas Plants



Functions of a biogas plant:

- | | | |
|---|--|---------------------------------|
| 1 semi-liquid manure dump | 3 fermenter with biogas storage and desulfurization | 5 digestate storage tank |
| 2 receiving area for renewable raw materials | 4 gas utilization with
a) CHP module
b) gas flare | 6 output |



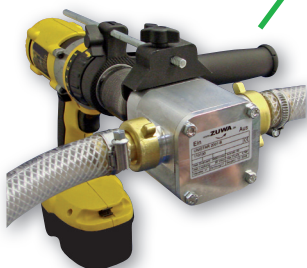
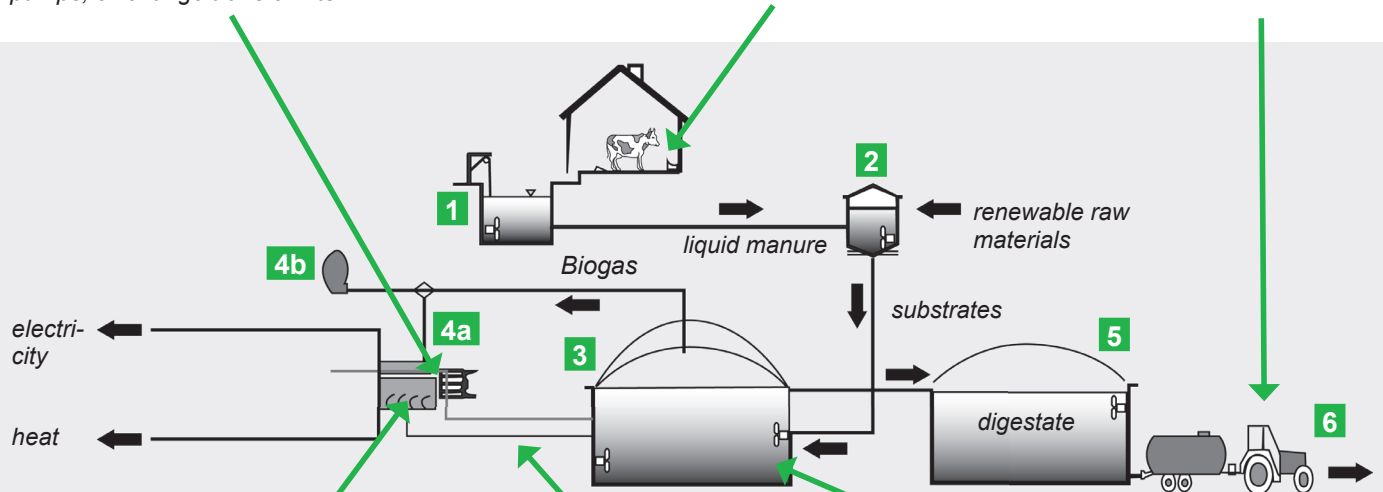
for oil change and coolant: impeller pumps, oil change/transfer kits



for water supply and pressure boost: centrifugal pumps, well pumps



for fuelling: fuel pumps, diesel fuel dispensers and transfer units



for antifreeze in the cooling circuit of the engine: drill pump



for condensate and silage soakage: waste water pumps, made of grey cast iron or stainless steel (also available with ATEX certification)



for easy filling and flushing of the cooling circuit: FLUSH PRO

Pumps for Biogas Plants



www.ZUWA.de

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Refueling Systems

for diesel, gasoline, oil and AdBlue



Easy and comfortable refueling!



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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 70 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.

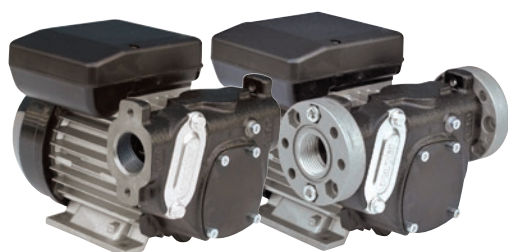
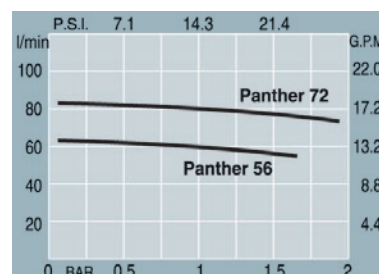
The close contact with our customers provides us with proposals and impulses to improve and further develop our products. In house production and shop floor enable us to meet customer specific requirements, manufacture custom made products and complete repair jobs. Competent contact persons and lean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

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ZUWA diesel fuel pumps – rugged, durable pumps for the refuelling of construction engines, commercial and agricultural vehicles, motor yachts etc. with diesel or biodiesel. Applicable for filling and draining fuel oil tanks. The pumps operate efficiently and reliably even at low temperatures.
Capacity: 30 - 100 l/min

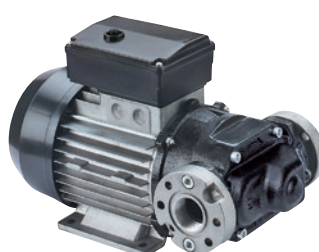
Refueling pumps Panther 56/72 and E 80/120

- ▶ dry self-priming
- ▶ integrated pressure regulation valve (bypass)
- ▶ model Panther with integrated filter (500 µm) on suction side and anti-siphon valve
- ▶ wide range of accessories available

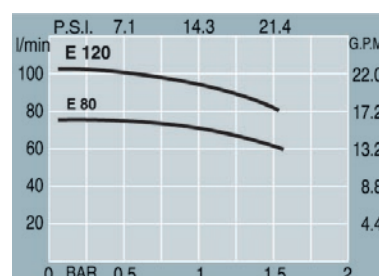


Panther 56

Panther 72



E 80/120



Technical details

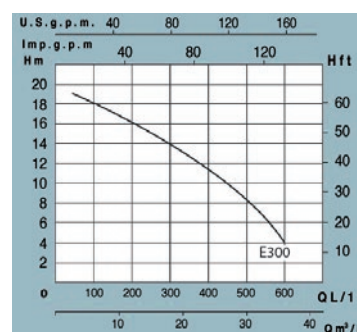
Type	Power			Flow rate max.	Pressure max.	Connections	Weight	Art.No.
	kW	Volt	A					
Panther 56-m	0,35	230	3	56 l/min	1,5 bar	1" iG x 1" iG	7,4 kg	120701
Panther 56-t	0,5	400	1,3	56 l/min	1,5 bar	1" iG x 1" iG	7,4 kg	120703
Panther 72-m	0,5	230	4,2	72 l/min	2 bar	1" iG x 1" iG	7,9 kg	120702
Panther 72-t	0,55	400	1,6	72 l/min	2 bar	1" iG x 1" iG	7,9 kg	120704
E 80-m	0,7	230	3,5	75 l/min	1,6 bar	1" iG x 1" iG	13 kg	120607
E 80-t	0,55	400	1,6	75 l/min	1,6 bar	1" iG x 1" iG	13 kg	120619
E 120-m	0,75	230	5,7	100 l/min	1,6 bar	1" iG x 1" iG	15,6 kg	120608
E 120-t	0,8	400	2,2	100 l/min	1,6 bar	1" iG x 1" iG	15,6 kg	120638
E 300	1,5	230	9,2	550 l/min	1,8 bar	2" iG x 2" iG	28 kg	P32100

E 300 - The powerful transfer pump

- ▶ self priming
- ▶ integrated stop valve
- ▶ up to 300 l/min



E 300

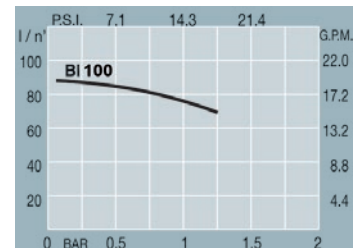


Diesel Fuel Pumps

DC powered

Panther 56/72, BI 100 und E 3000

- ▶ dry self-priming
- ▶ integrated pressure regulation valve (bypass)
- ▶ model Panther with integrated filter (500 µm) on suction side and anti-siphon valve
- ▶ wide range of accessories available
- ▶ duty cycle max. 30 min



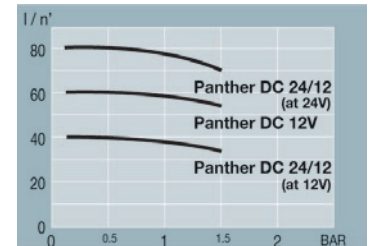
Panther DC



BI 100



E3000

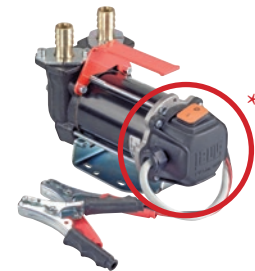


CARRY Panther / E 3000

- ▶ Pump with handle
- ▶ On/Off switch
- ▶ battery cable



Carry Panther



Carry E 3000

Technical details

DC Powered Pump	Power			Flow rate max.	Pressure max.	Connections	Weight	Art.No.
	kW	V	A					
E 3000	0,3	12	24	50 l/min	1,5 bar	3/4"	3,5 kg	1206283N
E 3000*	0,31	24/12	13	50/30 l/min	1,5 bar	3/4"	3,5 kg	1206303N
BI 100	0,53	12	44	85 l/min	1,2 bar	1"	9,9 kg	120708
BI 100	0,54	24	22,5	85 l/min	1,2 bar	1"	9,9 kg	120707
Panther 56	0,42	12	35	56 l/min	1,5 bar	1"	7,5 kg	120701DC12
Panther 72*	0,6	24/12	25	70/35 l/min	1,5 bar	1"	7,5 kg	120702DC24
Carry Panther	0,42	12	35	56 l/min	1,5 bar	1"	9,1 kg	120672
Carry Panther*	0,6	24/12	25	70/35 l/min	1,5 bar	1"	9,1 kg	120673
Carry E 3000	0,3	12	24	50 l/min	1,5 bar	3/4"	4,2 kg	1206703N
Carry E 3000*	0,31	24/12	13	50/30 l/min	1,5 bar	3/4"	4,2 kg	1206713N

*with 12V - smaller suction capacity

Accessories E 3000	Volt	Features	Art.No.
Cable junction	12	4 m cable and alligator clips	P16295
Cable junction	24	4 m cable and alligator clips	P16296



Battery Kit

- ▶ On/Off-Switch
- ▶ battery cable with alligator clips
- ▶ manual Nozzle
- ▶ 4 m oil resistant rubber hose $\frac{3}{4}$ " male thread, NW 19, with swivel connector and suction filter



Fuel Transfer Box 3000 BASIC / PRO

Clean refuelling outdoors – a foot valve prevents dirt from getting into the suction hose.

- ▶ 4 m battery cable with alligator clips
- ▶ manual nozzle
- ▶ oil resistant rubber hose (PRO 6 m, BASIC 4 m)
- ▶ foot valve with blocking function
- ▶ diesel filter 10 μ m (PRO only)



Technical details

DC Powered Transfer Kit	Power			Flow rate max.	Pressure max.	Connections	Weight	Art.No.
	kW	V	A					
Battery Kit E 3000	0,3	12	24	45 l/min	1,5 bar	$\frac{3}{4}$ " FPT	7,5 kg	1206313N
Battery Kit E 3000	0,31	24/12	13	45/30 l/min	1,5 bar	$\frac{3}{4}$ " FPT	7,5 kg	1206323N
Battery Kit Panther	0,42	12	35	56 l/min	1,5 bar	1" FPT	10,8 kg	120705
Battery Kit Panther*	0,6	24/12	25	70/35 l/min	1,5 bar	1" FPT	10,8 kg	120706
Fuel Transfer Box E3000 BASIC	0,3	12	24	45 l/min	1,5 bar	$\frac{3}{4}$ " grommet	9,5 kg	P23100
Fuel Transfer Box E3000 BASIC*	0,31	24/12	13	45/30 l/min	1,5 bar	$\frac{3}{4}$ " grommet	9,5 kg	P23200
Fuel Transfer Box E3000 PRO	0,3	12	24	45 l/min	1,5 bar	$\frac{3}{4}$ " grommet	12 kg	P23101
Fuel Transfer Box E3000 PRO*	0,31	24/12	13	45/30 l/min	1,5 bar	$\frac{3}{4}$ " grommet	12 kg	P23201

*with 12V - smaller suction capacity

Fuel Transfer Kits

AC powered

ZUWA fuel transfer kits are complete, ready to mount systems to be fastened either to a wall or a tank.

Features

- ▶ pump with On/Off switch and cable with plug (230 Volt only)
- ▶ types E56 and E72 with anti-siphon valve
- ▶ alternatively available with or without mechanical meter K33
- ▶ automatic nozzle (on option with type approval)
- ▶ 4 m injection hose, oil resistant rubber with textile reinforcement, 3/4" or 1" male
- ▶ Standard Version: suction kit 1,5 m oil resistant spiral hose with foot actuated valve
- ▶ all Transfer kits with Barrel Connection are equipped with telescopic tube 95 cm instead of the suction kit with spiral hose
- ▶ nozzle holder (except for E56-BS and E72-BS)



E 56-F/Z

Technical details

for wall fastening (on plate with meter)

Fuel Transfer Kit	Power			Pump type	Flow rate max.	Pres- sure max.	Art.No.
	kW	V	A				
E 56-BS/Z	0,35	230	3	Panther 56	56 l/min	1,5 bar	120713
E 72-BS/Z	0,5	230	4,2	Panther 72	70 l/min	2 bar	120639
Suction kit	for 990 Liters Tank						12082410

12 and 24 V versions available upon request!



E 72-BS/Z

for tanks (with 2" barrel connection and flow meter)

Fuel Transfer Kit	Power			Pump type	Flow rate max.	Pres- sure max.	Art.No.
	kW	V	A				
E 56-F/Z	0,35	230	3	Panther 56	56 l/min	1,5 bar	120709N
E 72-F/Z	0,5	230	4,2	Panther 72	70 l/min	2 bar	120660N
E 3000-F/Z	0,3	12	24	E 3000	45 l/min	1,5 bar	1206743N
	0,31	24	13	E 3000	45 l/min	1,5 bar	1206753N



E 3000-F

without meter (types -F with 2" barrel connection)

Fuel Transfer Kit	Power			Pump type	Flow rate max.	Pres- sure max.	Art.No.
	kW	V	A				
E 56-BS	0,35	230	3	Panther 56	56 l/min	1,5 bar	120711
E 72-BS	0,5	230	4,2	Panther 72	70 l/min	2 bar	120659
E 56-F	0,35	230	3	Panther 56	56 l/min	1,5 bar	120714
E 3000-F	0,3	12	24	E 3000	45 l/min	1,5 bar	1206763
	0,31	24	13	E 3000	45 l/min	1,5 bar	1206773

Nozzles with type approval for all fuel transfer units listed on option.

ON OPTION:
Cable junction 12 and 24V
see Page 4



E 56-BS

Barrel Pump for diesel

Barrel pump PICO

- ▶ barrel connection 2"
- ▶ 4 m hose 3/4"
- ▶ foot valve
- ▶ manual nozzle (automatic on option)
- ▶ PICO DC with 3 m cable with alligator clips
- ▶ PICO AC with 2 m cable with plug

ON OPTION:
digital flow meter



PICO DC



PICO AC

Technical details

Barrel Pumps	Power			Flow rate max.	Pressure max.	Connections	Weight	Art.No.
	kW	V	A					
PICO DC	0,11	12	9	30/25* l/min	1 bar	3/4" iG x 2" aG	4,5/5,5* kg	P20204
	0,14	24	5,5	30/25* l/min	1 bar	3/4" iG x 2" aG	4,5/5,5* kg	P20208
PICO AC	0,22	230	1	35/30* l/min	1 bar	3/4" iG x 2" aG	4,5/5,5* kg	P20200

*manual/automatic nozzle

(Drum not included)

Barrel Pumps for oil and Diesel

- ▶ Suction tube 1"
- ▶ Barrel connection with back pressure valve and filter
- ▶ Nozzle holder
- ▶ 4 m filling hose 3/4", connection 1"

Barrel Pump VISCOMAT

- ▶ VISCOMAT 200 with flexible nozzle for oils and anti-drip valve
- ▶ VISCOMAT 70 with mechanical nozzle

Barrel Pump Panther

- ▶ Pump with anti-siphon valve (leakage protection)
- ▶ automatic nozzle 60



VISCOMAT



Panther 56

Technical details

Barrel Pumps	Power			Flow rate max.	Pressure max.	Flow Meter	Art.No.
	kW	V	A				
VISCOMAT 200	0,8	230	3,8	9 l/min	12 bar	K400	120648FZ
	0,8	230	3,8	9 l/min	12 bar	-	120648F
VISCOMAT 70	1,15	230	5,5	25 l/min	6 bar	K33	120644FZ
	1,15	230	5,5	25 l/min	6 bar	-	120644F
Panther 56	0,35	230	3	56 l/min	1,5 bar	K24	120711FZ
	0,35	230	3	56 l/min	1,5 bar	-	120711F
Panther 56, DC	0,42	12	35	56 l/min	1,5 bar	K24	120705FZ
	0,42	12	35	56 l/min	1,5 bar	-	120705F
Panther 72, DC	0,6	12/24*	25	70 l/min	1,5 bar	K24	120706FZ
	0,6	12/24*	25	70 l/min	1,5 bar	-	120706F

*with 12V - smaller suction capacity

Mobile refueling - Fuel Transfer Tank for Diesel

with ADR approval

Easy to install unit consisting of tank, suction kit, pump and delivery hose.
Perfectly suitable for enterprises, farm yards or construction sites.

Refueling System Features

- ▶ self priming rotary vane pump
- ▶ filter 500 µm in the pump housing
- ▶ mechanical flow meter K33 with high precision
- ▶ automatic nozzle (on option with type approval)
- ▶ 4 m high quality oil resistant delivery hose
- ▶ anti-siphon valve

Tank Features

- ▶ nominal capacity 990 liters (smaller ones on request)
- ▶ tank level control and visual leak detector
- ▶ double wall construction (steel panels + PE-DH plastics)
- ▶ suction tube with check valve and hose
- ▶ storage approval

Console

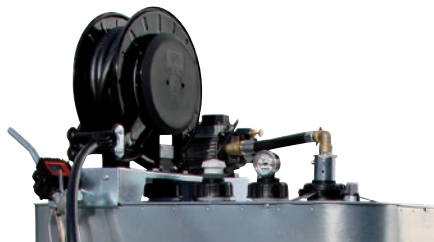
for mounting pump and hose reel on the tank - fits all standard tanks

ON OPTION:

- Vent connection and filling nozzle
- limit level indicator



Fuel transfer tank KT 50



Console



Limit level indicator



Fuel transfer tank E 56-BS/Z

Technical details

Fuel Transfer Tanks	Power			Pump type	Flow rate max.	Pressure max.	Art.No.
	kW	V	A				
E 56-BS/Z	0,35	230	3	Panther 56	56 l/min	1,5 bar	CT120820
E 72-BS/Z	0,5	230	4,2	Panther 72	70 l/min	2 bar	CT120821
KT 50	0,35	230	3	Panther 56	56 l/min	1,5 bar	CT120820KT56
KT 70	0,5	230	4,2	Panther 72	70 l/min	2,0 bar	CT120820KT70

All pumps available with 12 or 24 V

Tank Kubicus with ADR and storage approval

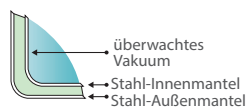
For the refuelling of machineries, aggregates and vehicles directly on the location. **Approved as IBC and storage tank**, universal use, simple transport.

Basic Features

- ▶ vent plug, suction hose lockable
- ▶ slot for hose and cable guide
- ▶ nozzle holder and drip tray
- ▶ 4 hanging points for catenae lift
- ▶ level control with litre scale
- ▶ filling pipe with filling tube closure 2"
- ▶ transport frame for more comfort in rough terrain

Kubicus 350 - 1000:

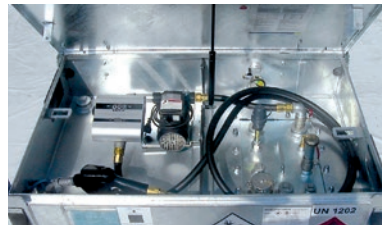
- ▶ transport- and storage tanks are double walled
- ▶ hot galvanised on inside and outside
- ▶ over pressure valve and limit level indicator



All standard gasoline / Diesel pumps available for these tanks



double wall Kubicus 350 -1000



Kubicus 250*:

- ▶ tank single walled*
- ▶ powder-coated execution



single wall* Kubicus 250

Technical details

Type	Volume	Dimensions (mm)	Weight double wall	Weight single wall
Kubicus 350	332 l	800 x 1200 x 745	225 kg	-
Kubicus 500	475 l	800 x 1200 x 915	268 kg	-
Kubicus 700	668 l	800 x 1200 x 1135	297 kg	-
Kubicus 1000	966 l	800 x 1200 x 1395	342 kg	-
Kubicus 250*	ca. 250 l	1000 x 600 x 650	-	90 kg

* transport legal approval for Diesel, fuel oil, gasoline and special fuel (approval-No.: D/BAM 14186/31A). Or approved after craftsman regulation - ADR 1.1.3.1c – direct transport from establishment to site of operation without detour.

Mobile refueling

with or without ADR approval

CADDY - the mobile refueling

with ADR approval or ADR free pursuant sections 1.1.3.1.a) and 1.1.3.1.c) ADR

Ideal for the refueling of small or mid sized vehicles or crafts. Featuring a unique design with ergonomic grip for excellent handling and lifting, equipped with pneumatic wheels suitable for transport on any surface.

Basic Features:

- ▶ Slots for fixing with tension belts
- ▶ same flow rate when filling in horizontal or vertical position
- ▶ closure with integrated venting and safety ball valve
- ▶ 3 m hose, manual nozzle
- ▶ solid rubber tires

Compact, lightweight tank made in roto-molded linear polyethylene



with ADR approval
for gasoline

In exemption from ADR sections 1.1.3.1.a)
and 1.1.3.1.c) for Diesel and AdBlue



Technical details

CADDY	55 liters			110 liters		
	Gasoline	diesel	AdBlue	Gasoline	diesel	AdBlue
Pump	hand piston pump	electric 12 V pump	rotative hand pump	hand piston pump	electric 12 V pump	rotative hand pump
Flow rate	-	45 l/min	-	-	45 l/min	-
Dimensions ca.	460 x 360 x 900 mm			460 x 440 x 1100 mm		
Weight empty	9 kg	8 kg		13 kg	12 kg	
Art.No.	120829B55	120829D55	120829A55	120829B110	120829D110	120829A110

No ADR (in line with “craftsmanship regulation”)

Mobile tanks for Diesel and AdBlue (AUS 32, Urea)

Quick, handy refueling, straight from loading space.

Basic Equipment / Features:

- ▶ large storage space, further equipment can be mounted
- ▶ Lid with gas spring, lockable, with 4 keys
- ▶ Extremely robust (wallthickness up to 11,5 mm)
- ▶ Selfpriming pump 12 V (24 V on option)
- ▶ Automatic nozzle with nozzle holder (manual nozzle with AdBlue tank)
- ▶ 6 m filling hose
- ▶ 4 m battery cable with clamp
- ▶ Large 4“filling port and vent
- ▶ Comes with 2 steel shackles to fix the tank on front side
- ▶ Integrated fork lift spaces



Mobile Tank Diesel 400 and 200l

Very wide range of applications – extremely robust and UV resistant mobile Tank

AdBlue Version

- ▶ Membrane pump 12 V
- ▶ Manual nozzle
- ▶ 6 m filling hose for AdBlue



Mobile Tank for AdBlue 400l



Technical details

Mobile tank	200 liter		400 liter	
	Diesel*	AdBlue	Diesel*	AdBlue
Flow rate max.	50 l/min	36 l/min	50 l/min	36 l/min
Dimensions ca.	108 x 80 x 58 mm		108 x 80 x 83 mm	
Empty Weight - Tank only	43 kg		53 kg	
wall thickness	between 7,2 and 10 mm		between 7,9 and 11,5 mm	
filling plug	4“		4“	
level indicator (on optional)	120828FÜLL	✗	1208284FÜLL	✗
Flow meter digital K24 (on option)	131839	1318170 + P15776	131839	1318170 + P15776
Art.No.	120828FB200D	120828FB200A	120828FB400D	120828FB400A

The transport of AdBlue does not require permits.

*In exemption from ADR sections 1.1.3.1.a) and 1.1.3.1.c)

Fuel Dispensers

with mechanical meter

Compact, economical fuel dispensers for private and business (not for resale) use in a rugged, durable design. For wall, tank or pedestal mounting.

OPTIONAL:

- 2" connection for tank mounting on suction side
- pedestal

Features

- ▶ dry self-priming vane pump for 230, 12 or 24 Volt
- ▶ built-in bypass valve and anti-siphon valve
- ▶ integrated filter on the suction side of the pump
- ▶ automatic nozzle - on option with type approval
- ▶ nozzle holder with lever for automatic pump start/stop
- ▶ mechanical flow meter with high precision and clearly legible display
- ▶ suction kit 1 ½ m oil resistant spiral hose, 1" with foot valve
- ▶ high quality oil resistant delivery hose 4 m, ¾" or 1" with swivel connection
- ▶ coated sheet steel housing with anti corrosion treatment



coupling tank mount version



fuel dispenser 56/70



fuel dispenser with pedestal



fuel dispenser mounted on tank

Technical details

Small fuel dispensers	Power			Flow rate max.	Pressure max.	Flow meter	Nozzle	Weight	Art.No.
	kW	V	A						
KS 56	0,35	230	3	56 l/min	1,5 bar	K33	A 60	21 kg	120600
	0,42	12	35	56 l/min	1,5 bar	K33	A 60	21 kg	120599
KS 70	0,5	230	4,2	70 l/min	2 bar	K33	A 60	25 kg	120610
	0,6	24/12	25	70/35 l/min	1,5 bar	K33	A 60	21 kg	120598
KS 90	0,5	230	4,9	90 l/min	3,3 bar	K33	A 120	21 kg	P59200
pedestal	black							18 kg	P12708

Fuel Dispensers Self Service

with mechanical meter

Fuel dispenser Self Service for private and business (not for resale) use – modern, slender design for quick and convenient refuelling. Available as standalone or tank mounted version.

Features

- ▶ dry self-priming vane pump 230 Volt
- ▶ integrated pressure regulation valve (bypass)
- ▶ protective filter on the suction side
- ▶ automatic nozzle - optional with type approval
- ▶ nozzle holder with lever for automatic pump start/stop
- ▶ delivery hose 4 m, 1" with swivel connection
- ▶ lockable front door allows easy access for maintenance and service
- ▶ Water separating filter 30μ (on option for the tank version)

Mechanical Flow meter K44

precision $\pm 1\%$

subtotal dispense volume indicator 4-digit (resettable)

total dispense volume indicator 7-digit (not resettable)



Self Service K44



Water separating filter



tank version (Filter on option)

Technical details

Self Service	Power			Pump type	Flow rate max.	Pressure max.	Nozzle	Weight	Art.No.
	kW	V	A						
70 K44	0,55	230	3,3	Panther 72	70 l/min	2 bar	A 80	67 kg	120805F
70 K44 Tank	0,55	230	3,3	Panther 72	70 l/min	2 bar	A 80	57 kg	120805Tank
100 K44	0,75	230	5,7	E120	90 l/min	1,6 bar	A 120	75 kg	120810F
100 K44 Tank	0,75	230	5,7	E120	90 l/min	1,6 bar	A 120	65 kg	120810Tank

Fuel Dispensers

with integrated tank data management system

Compact and sturdy fuel dispenser with data management system for private and business (not for resale) use. Easy installation. Wall, tank or pedestal mounting. Optional PC interface.

Features

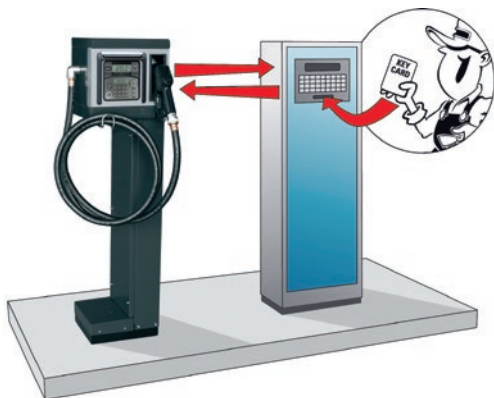
- ▶ dry self-priming vane pump for 230, 12 and 24 Volt
- ▶ built-in bypass valve and anti-siphon valve
- ▶ protective filter on the suction side
- ▶ automatic nozzle - with type approval on option
- ▶ nozzle holder with lever for automatic pump start/stop
- ▶ digital flow meter K600, precision $\pm 0,5 \%$
- ▶ suction kit 1 ½ m oil resistant spiral hose, NW 25, 1" mt with foot valve (for models without pedestal only)
- ▶ delivery hose 4 m, 1" with swivel connection
- ▶ preadjustable charge
- ▶ access control and data management (see page 17) for up to 50/120 users with PIN code and/or magnetic key

OPTIONAL:

- adjustable pulser signals for easy connection with external electronic devices, for example pump controllers
- Can be combined with a tank level control system
- pedestal



Small fuel dispenser 70 MC50



Technical details

Small fuel dispenser	Power			Flow rate max.	Pressure max.	Pump type	max. users	Magnetic key	Nozzle	Weight	Art.No.
	kW	V	A								
70 MC50	0,55	230	3,3	70 l/min	2 bar	Panther 72	50	on option	A 60	25 kg	120612P
70 MC120	0,55	230	3,3	70 l/min	2 bar	Panther 72	120	on option	A 60	25 kg	120613P-UK
Pedestal	black									18 kg	P12708

Fuel Dispensers Self Service

with integrated tank data management system

Fuel dispenser for private and business (not for resale) use with tank data management system. Modern and compact design for quick and convenient refuelling. Available as standalone or tank mounted version. PC interface on option.

Features

- dry self-priming vane pump
- built-in bypass valve
- protective filter on the suction side
- automatic nozzle (A 80 / A 120) - with type approval on option
- nozzle holder with lever for automatic pump start/stop
- electronic flow meter K600, precision $\pm 0,5 \%$
- delivery hose 4 m, 1" with swivel connection
- water separating filter 30 μ
- preadjustable charge
- tank data management (see page 17)
- thermal printer for fuelling slip and tank level control (FM version)
- lockable front door allows easy access for maintenance and service

**New Version
2.0 - P.17**



Self Service MC
up to 80 users



Self Service FM
up to 120 users

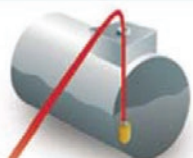


Water separating filter



also available as tank version
(filter on option)

for FM



level indicator
integrated

ON OPTION:
- Magnetic key

Technical details

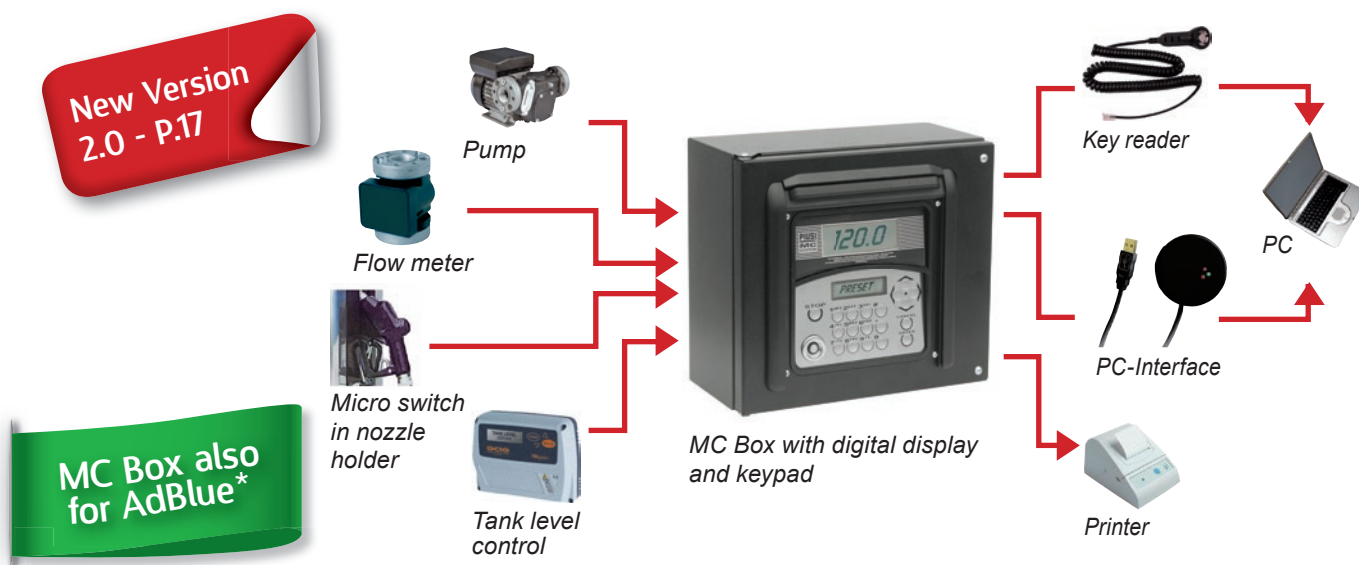
Self Service	Power			Flow rate max.	Pressure max.	Pump type	max. users	Water filter	Printer	Tank level control	Art.No.
	kW	V	A								
70 FM	0,55	230	3,3	70 l/min	2 bar	Panther 72	120	✓	✓	✓	120801P
70 FM Tank	0,55	230	3,3	70 l/min	2 bar	Panther 72	120	on option	✓	✓	120801Tank
100 FM	0,75	230	5,7	90 l/min	1,6 bar	E 120	120	✓	✓	✓	120806P
100 FM Tank	0,75	230	5,7	90 l/min	1,6 bar	E 120	120	on option	✓	✓	120806Tank-P
70 MC F	0,55	230	3,3	70 l/min	2 bar	Panther 72	80	✓	✗	✗	120803P
70 MC Tank	0,55	230	3,3	70 l/min	2 bar	Panther 72	80	on option	✗	✗	120803Tank
100 MC F	0,75	230	5,7	90 l/min	1,6 bar	E 120	80	✓	✗	✗	120808P
100 MC Tank	0,75	230	5,7	90 l/min	1,6 bar	E 120	80	on option	✗	✗	120808PTANK

MC-Box and Tank Level Control

MC Box - control system for multiple fuel units

Logging and administration of tank data via PC and printer for Diesel or AdBlue*

- ▶ the digital display shows dispense quantity dispensed and operating instructions
- ▶ administration of up to 80 users
- ▶ access control via PIN code or magnetic key
- ▶ preadjustable filling quantity
- ▶ local memory for up to 250 performed dispensing operations (dispense volume, date, time, user and on option: kilometres, vehicle registration number)
- ▶ connection to tank level control
- ▶ administration of micro switch connected to the nozzle holder
- ▶ data transfer to PC via key reader or specific transfer cable (RS Converter, for a distance of up to 1000 m) via USB interface



Tank Level Control

Permanent high precision display of tank content. The unit consists of a control device with system integrated software and a 10 metre hose. On option: PC interface, easy to configure.

Adjustments

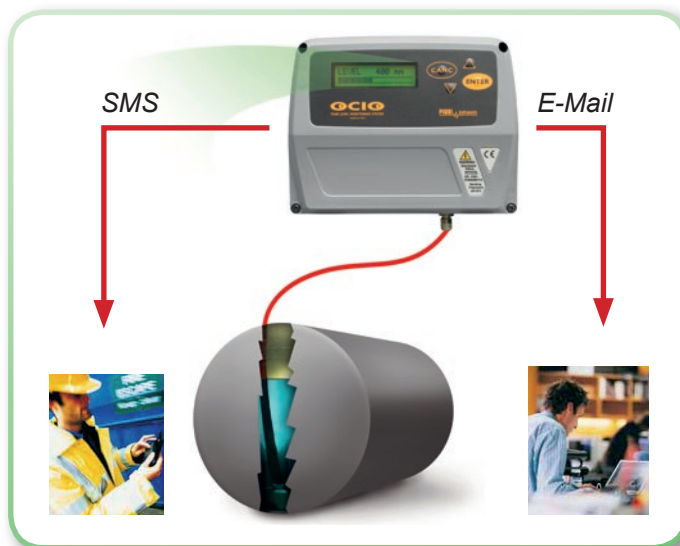
- ▶ filling level alarm (min. and max.)
- ▶ level indicator (height, volume, percentage in various measures)
- ▶ calibration

Art.No. 131808

Tank level control, extension for oil:
Art.No. P12939

Extended remote control

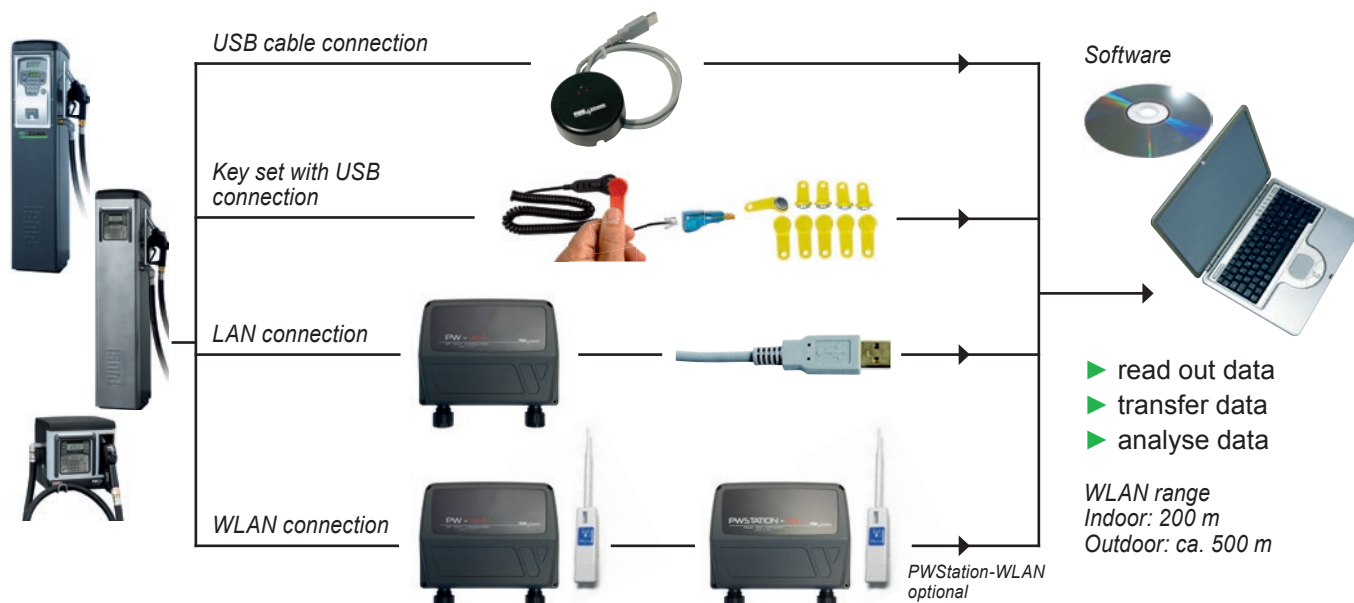
Filling level control can be expanded with a remote control system sending out alarm signals or the current filling level via SMS or e-mail. Monitoring of up to 8 tanks.



Tank Data Management

Features Tank Data Management

- ▶ digital display shows dispense quantity and operating instructions
- ▶ access control and data management for up to 120 users via PIN code and/or magnetic key
- ▶ local memory for up to 250 performed dispensing operations (dispense volume, date, time, user and optional kilometres, vehicle registration number)
- ▶ data management software for administration and analysis on PC
- ▶ connection and data transfer to PC via magnetic key (master key) and/or serial interface FS 485 or via LAN/WLAN
- ▶ magnetic key for comfortable access and high security level (prevents illegal use)



Self Service Management 2.0:

- ▶ Up to 1000 users
- ▶ vehicle detection via magnet key
- ▶ Warnings when the fill level is to high or to low
- ▶ The complete programming is handled by the computer
- ▶ On a defect, all the data can recovered by synchronizing
- ▶ Free software updates

Please contact us for more information.

Technical details

Tank Data Management	Content	Art.No.
Magnetic key set for USB connection	1 masterkey, 10 userkeys, PC reader, PC software	P14144P
PC converter	with software for direct connection of fuel dispenser	P12710
Magnetic key for administrator	1 masterkey	P12496
Magnetic key set for users	10 userkeys	P12495P
PW-WLAN data transmission	RS485 board-/Ethernet signal changer, antenna, software	P12714
PW-LAN data transmission	Device with RS485-/Ethernet-Signal, software	P12715
PW-WLAN MCO-OCIO interface		P127111
PW-LAN MCO-OCIO interface		P127110
PW-WLAN OCIO tank level control	Remote control for one tank	P12755
PW-Station-WLAN data transmission	WLAN repeater (to extend range)	P12719

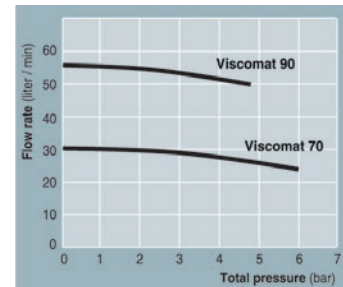
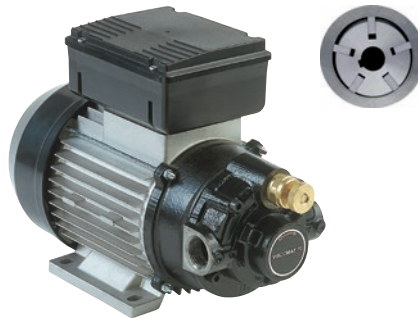
Oil Pumps



Vane, gear and impeller pumps for oils with almost all grades of viscosity. Also suitable for vegetable oil. Some types are available with pressure switch for automatic pump start and stop.

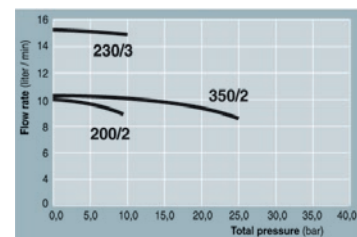
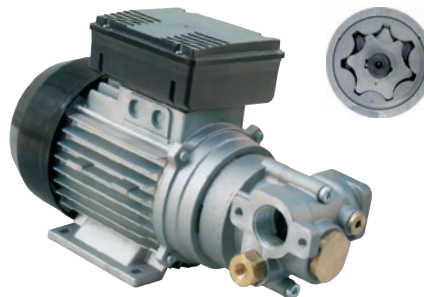
VISCOMAT 70/90

Self-priming vane pumps with specially designed blades for the transfer of oils and lubricants. The adjustable bypass valve (except for Viscomat 90-m) provides flow regulation. Excellent suction capacity and low-noise operation.



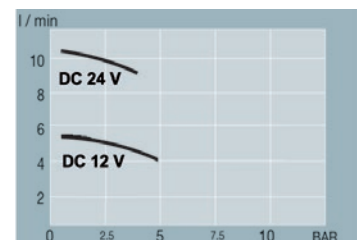
VISCOMAT 200/230/350

Gear pumps with excellent suction capacity and an internal profile maintaining constant flow at high pressure. Integrated bypass and venting valve. Pump can be mounted horizontally or vertically.



VISCOMAT DC 12/24 V

Gear pump with DC motor and battery connection for oil transfer or to draw off oil. For any mobile application.



Technical details

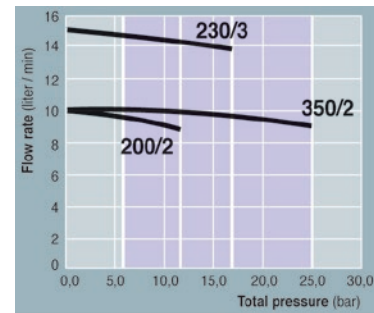
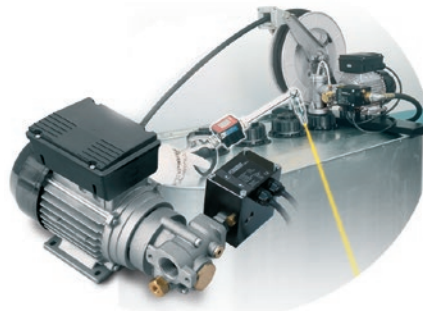
Oil Pumps	Power			rpm	Flow rate max.	Pressure max.	Connections	Weight	Art.No.
	kW	V	A						
Viscomat 70-m	1,15	230	5,5	1450	25 l/min	6 bar	1" ft x 1" ft	14,1 kg	120609
Viscomat 70-t	0,80	400	2,3	1450	25 l/min	6 bar	1" ft x 1" ft	14,1 kg	120606
Viscomat 90-m	1,35	230	6,2	1450	50 l/min	5 bar	1" ft x 1" ft	14,1 kg	1206070
Viscomat 90-t	2	400	5	1450	50 l/min	5 bar	1" ft x 1" ft	14,1 kg	1206069
Viscomat 200-m	0,8	230	3,8	1450	9 l/min	12 bar	1" ft x 1" ft	9 kg	1206092
Viscomat 200-t	0,6	400	1,4	1450	9 l/min	12 bar	1" ft x 1" ft	9 kg	1206096
Viscomat 230-m	1,25	230	6	1400	14 l/min	16 bar	1" ft x 1" ft	12,5 kg	1206091
Viscomat 230-t	1,2	400	2,7	1400	14 l/min	16 bar	1" ft x 1" ft	12,5 kg	1206095
Viscomat 350-m	1,2	230	6	1250	9 l/min	25 bar	1" ft x 1" ft	12,5 kg	1206093
Viscomat 350-t	1,2	400	2,7	1450	9 l/min	25 bar	1" ft x 1" ft	12,5 kg	1206094
Viscomat DC 12V	0,15	12	18,5	2900	4 l/min	5 bar	½" ft x ½" ft	3 kg	1206097
Viscomat DC/2 12V	0,3	12	35	2900	10 l/min	4 bar	¾" ft x ¾" ft	5 kg	12060972
Viscomat DC 24V	0,15	24	9,5	2900	4 l/min	5 bar	½" ft x ½" ft	3 kg	1206098
Viscomat DC/2 24V	0,3	24	18	2900	10 l/min	4 bar	¾" ft x ¾" ft	5 kg	12060982

* Further oil pumps with higher flow rate can be found in our special brochure VISCOSTAR.

VISCOMAT

with pressure switch

The pressure switch automatically starts the pump when the nozzle opens and switches it off when maximum pressure is reached.



Technical details

Viscomat with pressure switch	Power			rpm	Flow rate max.	Pressure max.	Connections	Weight	Art.No.
	kW	V	A						
Viscomat 200	0,8	230	3,8	1450	9 l/min	12 bar	1" ft x 1" ft	12 kg	120645
Viscomat 230	1,2	230	6	1450	14 l/min	16 bar	1" ft x 1" ft	15 kg	120651
Viscomat 350	1,25	230	6	1450	9 l/min	25 bar	1" ft x 1" ft	15 kg	120647

Oil Transfer Kit

Oil pump VISCOMAT 70, plate mounted for wall fastening.

Features:

- ▶ filter on the suction side
- ▶ 1,5 m oil resistant suction hose 3/4" with foot valve
- ▶ 4 m oil resistant delivery hose 1/2"
- ▶ nozzle for oils with digital flow meter K400
- ▶ holder for nozzle and filling hose

(Art.No. 120644 for 230 Volt, Art.No. 120646 for 400 Volt)



Impeller pumps UNISTAR 2000-A/B/C

for oils and Diesel - perfect for cleaning tanks

Dry self-priming ZUWA impeller pumps are capable of draining tanks nearly completely. The flexible impeller allows to pass suspended solids with the liquid and is ideal for pumping waste oil.

- ▶ extraction of waste oil from motors and gear boxes
- ▶ extraction of solid cooling lubricants
- ▶ maintenance of machines
- ▶ draining fuel oil tanks

See the Impeller Pump catalogue for additional information and the wide range of pumps available.



Barrel pump
Page 7

Technical details

Impeller Pump	Power			rpm	Flow rate max.	Pressure max.	Connections	Weight	Art.No.
	kW	V	A						
UNISTAR/V 2000-A	0,37	230	3,2	2800	30 l/min	3 bar	3/4" mt x 3/4" mt	9,5 kg	110121M
UNISTAR/V 2000-B	0,56	230	4	2800	60 l/min	3 bar	1" mt x 1" mt	10 kg	110131M
UNISTAR/V 2000-C	1,1	230	8,8	2800	90 l/min	3 bar	1 1/4" mt x 1 1/4" mt	12 kg	11331136341

The mobile Oil Dispenser

Viscotroll is the ideal solution for delivering oil from a drum anywhere in the workshop. Powered by electricity it can be connected to any power socket thus eliminating the need for compressed air.

Viscotroll 70

- ▶ pump Viscomat 70, 230 Volt
- ▶ manual nozzle
- ▶ 4 m delivery hose ¾"
- ▶ 1,5 m suction hose 1"
- ▶ flow rate max. 25 l/min
- ▶ pressure max. 6 bar
- ▶ viscosity max. 500 cSt
- ▶ on option with flow meter K33, precision ±1%

Viscotroll 200

- ▶ pump Viscomat 200, 230 Volt
- ▶ nozzle with anti-drip valve
- ▶ 4 m delivery hose ½"
- ▶ 1,5 m suction hose 1"
- ▶ flow rate max. 9 l/min
- ▶ pressure max. 12 bar
- ▶ viscosity max. 2000 cSt
- ▶ on option with flow meter K400, precision ±0,5%
- ▶ on option with pressure switch



Technical details

VISCOTROLL	70		200			
Trolley	✓	✓	✓	✓	✓	✓
Pump	VISCOMAT 70		VISCOMAT 200			
Pressure switch	✗	✗	✗	✗	✓	✓
Flow meter	✗	✓	✗	✓	✗	✓
manual Nozzle	✓	✓	✗	✗	✗	✗
Oil nozzle with anti-drip valve	✗	✗	✓	✓	✓	✓
Art.No.	P26310	P26311	P26300	P26301	P26302	P26303

(Barrel not included)

Filtroll

Filter unit on wheels with oil or diesel pump

- ▶ filtering oil and diesel in two steps:
30 µm for water absorption – 5 µm for impurities
- ▶ automatic stop when filter is clogged (on option)
- ▶ robust trolley with large pneumatic wheels
- ▶ suction line with integrated foot valve (only for Panther 56)
- ▶ power supply 230 Volt

Technical details

Filtroll for	Pump	Flow rate max.	Hoses	Art.No.
Diesel and Oil	Viscomat 70	25 l/min	3 m suction hose 3/4", 3 m delivery hose 3/4" with open delivery pipe	120658
Diesel	Panther 56	56 l/min	3 m suction hose 3/4", 4 m delivery hose 3/4" with manual Nozzle	120657



MobilFil and Depuroil

Oil filtration and decanting device

The mobile oil filtration device is the ideal equipment to remove suspended particles from the oil.

Mobile filter and handling device

- ▶ pressure gauge to control filter (congestions)
- ▶ replaceable filter cartridge
- ▶ power supply 230 V
- ▶ 2 x 2 m spiral hose 3/4"
- ▶ intake tube

Spare filter

replaceable filter, 10µm
Art.No. P61100



Spare filter



MobilFil



Depuroil

Technical details

Oil filtration and decanting device	Power			Flow rate max.	Dimensions cm	Weight	Art.No.
	kW	V	A				
Depuroil Viscomat 70	0,75	230	4,6	25 l/min	67 x 31 x 33	28 kg	120669
Depuroil Viscomat 90	1,35	230	6,2	50 l/min	67 x 31 x 33	28 kg	120668
MobilFil UNISTAR-B	0,56	230	4	30 l/min	67 x 31 x 33	26 kg	120667

Servicecenter for oils and Diesel

Solutions for Oil service and Oil transfer

Stationary ServiceCenter

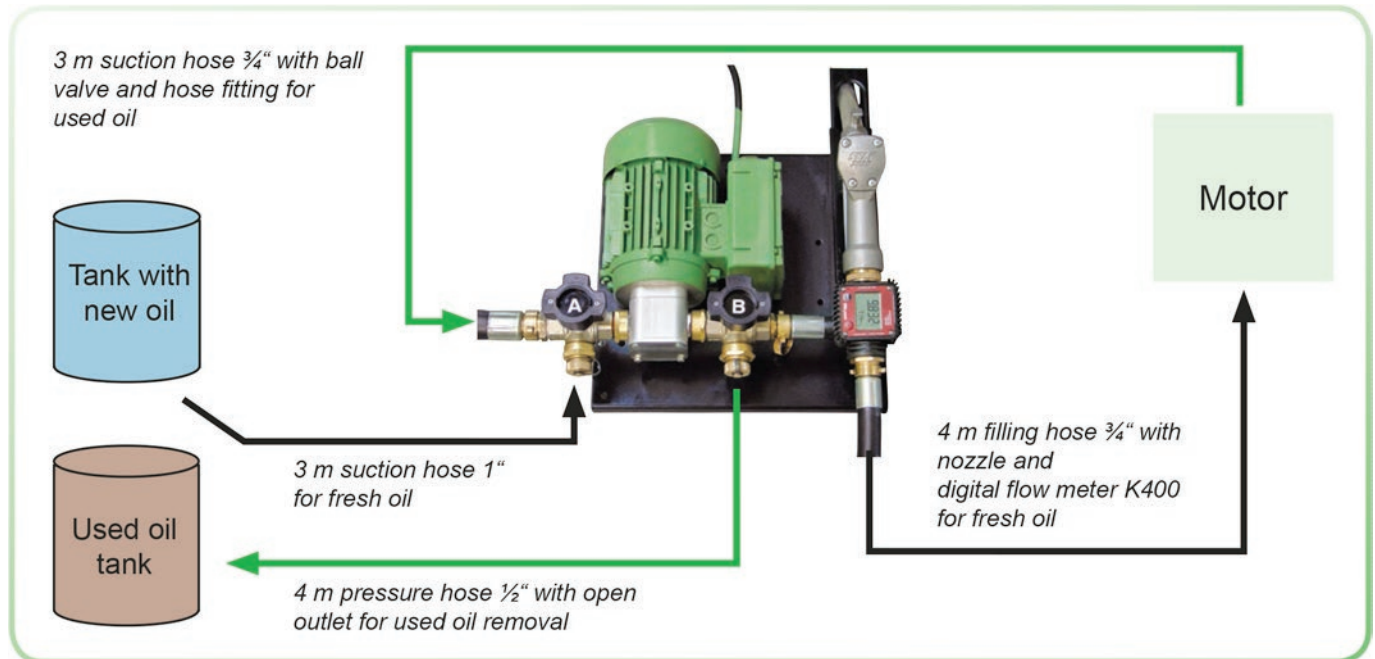
rapid and convenient motor oil change in CHP units

Features

- ▶ pump Unistar 2000-B - flow rate with oil max. 18 l/min
- ▶ nozzle with elektronik flow meter

- ▶ 2 x 3 m suction hose and 2 x 4 m pressure hose
- ▶ 2 multifunctional valves

Art.No. 11231136332-BHKW



Mobile ServiceCenter

Mobile unit to extract and decant clean or stained oils of all kinds.

- ▶ dry self priming impeller pump, Flow rate with oil max. 18 l/min
- ▶ suction and pressure hose 3 m each
- ▶ 4 suction probes suitable for dip stick inlets or filling ports
- ▶ detachable probe retainer with closed bottom to collect fluid residues from the probes

- ▶ 2 multifunctional valves
- ▶ comfortable trolley with large pneumatic wheels
- ▶ tank with 55 liters

Art.No.: 132064 (UNISTAR 2000-A)

Art.No.: 132065 (UNISTAR 2000-B)



AdBlue (AUS 32, Urea) Pumps and Transfer Kits

Pumps and Dispensing Kits

In order to meet the new EURO 5 directive (reduction of noxious emissions) trucks are equipped with SCR catalytic converters requiring the use of AdBlue (AUS 32, Urea), a mixture of water and urea. Each truck has an additional tank for this specific fluid.

Further AdBlue Products*

Dispensing kit PRO / BASIC for AdBlue (AUS 32, Urea)

Complete dispensing kit especially suitable for IBC or smaller container.

- ▶ powerful self priming diaphragm pump
- ▶ digital flow meter K24 (type Pro)
- ▶ suction hose with quick coupling
- ▶ 6 metre supply hose
- ▶ automatic nozzle (on PRO and BASIC PLUS) or manual nozzle (on BASIC)
- ▶ nozzle holder with drip collector



Dispensing kit PRO with flow meter and automatic nozzle

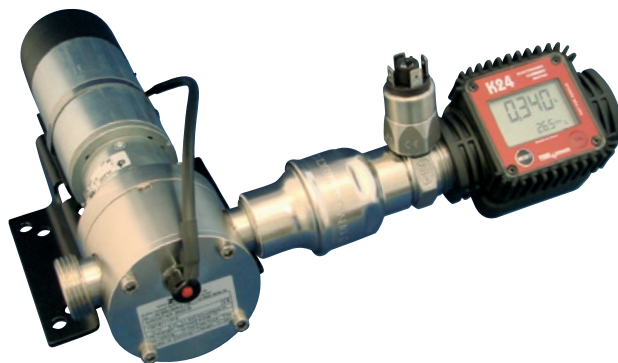
Pumps for AdBlue (AUS 32, Urea)

- ▶ dry self-priming impeller pump, easy to maintain, with pump body of high quality stainless steel (AISI 316 Ti) for 230 Volt, 400 Volt or battery drive with 12 or 24 Volt.
- ▶ flow rate with AdBlue: max. 45 l/min
- ▶ ultra light

SPECIAL:
better performance
higher pressure

On option:

- ▶ high precision digital flow meter K24
- ▶ pressure switch for automatic ON/OFF
- ▶ dry run protection



AdBlue (AUS 32, Urea) Pump for battery drive (DC) with flow meter, pressure switch and dry run protection.

Technical details

Pumps and Dispensing Kits for AdBlue	Power			rpm	Flow rate max.	Pressure max.	Art.No.
	kW	V	A				
Dispensing Kit BASIC	0,4	230	1,95	2850	35 l/min	1,5 bar	ZU81605
Dispensing Kit PRO	0,4	230	1,95	2720	35 l/min	1,5 bar	ZU81604KS
Impeller pump AC	0,56	230	4,3	2850	45 l/min	4 bar	13218116331
Impeller pump DC	0,11	12/24	7,3/8,3	670/1560	12/25 l/min	3/3,3 bar	13218111312

*You find a wide range of AdBlue (AUS 32, Urea) products in our separate AdBlue brochure

Nozzles

for Diesel

Nozzles
for AdBlue*

Manual Nozzles

- ▶ swivel connection
- ▶ low flow loss
- ▶ types 120 and 150 with aluminium housing



manual
plastics



manual120



manual 150

Automatic Nozzles

- ▶ swivel connection
- ▶ stops fuelling process automatically when tank is full
- ▶ rubber jacket - convenient handling also in low temperatures (not available for nozzle 280)



Hoses and
hose reels
see
page 31



automatic 60



automatic 80/120



automatic 280

Technical details

Nozzles for Diesel and Biodiesel	Flow rate max.	Outlet Ø	Suitable for	Connections	Art.No.
plastics manual	80 l/min	34 mm		1" iG	131041
120 manual	120 l/min	25 mm		1" iG	131016
150 manual	150 l/min	25 mm		1" iG	131080
A 60 automatic	70 l/min	24 mm	car	1" iG	131033
A 60 automatic with type approval	70 l/min	24 mm	car	1" iG	131033GN
A 80 automatic	90 l/min	29 mm	truck	1" iG	131069
A 120 automatic	120 l/min	29 mm	truck	1" iG	131070
A 90/120 automatic with type approval	120 l/min	29 mm	truck	1" iG	131070GN
A 280 automatic	280 l/min	38,5 mm	truck	1½" iG	1310250

*Nozzles for AdBlue (AUS 32, Urea) - please see our detailed AdBlue brochure

for Oil and lubricants

Nozzles for oils

- ▶ with automatic anti-drip valve
- ▶ alternatively with flexible or rigid end fitting
- ▶ preadjustment of charge with meter K500*



Nozzle rigid



Nozzle flexible



Nozzle flexible with K40



Nozzle flexible with K400



Nozzle rigid with K500*



Pistol one rigid with NEXT/2



Pistol one flexible with NEXT/2

Technical details

Nozzles for Oils and Lubricants with automatic Anti-drip Valve	Flow rate max.	Connections	Art.No.
rigid	30 l/min	1/2" iG	131803
flexible	30 l/min	1/2" iG	131804
Pistol one rigid	90 l/min	3/4" iG	P64001
Pistol one flexible	90 l/min	3/4" iG	P64002
rigid, with mechanic flow meter K40	1-30 l/min	1/2" iG	131818
flexible, with mechanic flow meter K40	1-30 l/min	1/2" iG	131819
rigid, with digital flow meter K400	1-30 l/min	1/2" iG	131802
flexible, with digital flow meter K400	1-30 l/min	1/2" iG	131801
flexible, with digital flow meter K500*	1-30 l/min	1/2" iG	131807
Pistol one rigid, with digital flow meter NEXT/2	6-60 l/min	3/4" iG	P97401
Pistol one flexibel, with digital flow meter NEXT/2	6-60 l/min	3/4" iG	P97402

* required quantity can be preadjusted

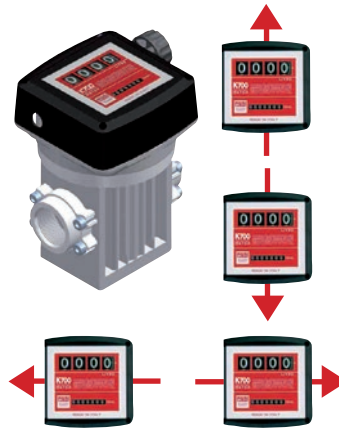
Flow Meters

mechanical and electronic

K700M for oil and Diesel

Calibratable flow meter for plants with high flow rate. Pivotable, analogue display with 4-digit subtotal and 7-digit total dispense volume indicator.

- ▶ precision $\pm 1\%$
- ▶ housing: aluminium
- ▶ flow rate: 20 - 220 l/min
- ▶ working pressure max. 10 bar
- ▶ connections: 1½" iG



K33/K44 for Diesel and oil

K33: 3-digit subtotal and 6-digit total dispense volumen indicator

K44: 4-digit subtotal and 7-digit total dispense volumen indicator

- ▶ precision $\pm 1\%$
- ▶ low flow loss

Also available with Ex-approval



Technical details

Mechanical Flow meter	Flow rate max.	Pressure max.	Connec-tion	Dimensions	Weight	Art.No.
K33	20-120 l/min	10 bar	1" iG	80 x 180 x 170 mm	2 kg	131072
K44	20-120 l/min	10 bar	1" iG	80 x 180 x 170 mm	2 kg	131806
K700M	20-220 l/min	10 bar	1½" iG	240 x 240 x 275 mm	5,8 kg	131700

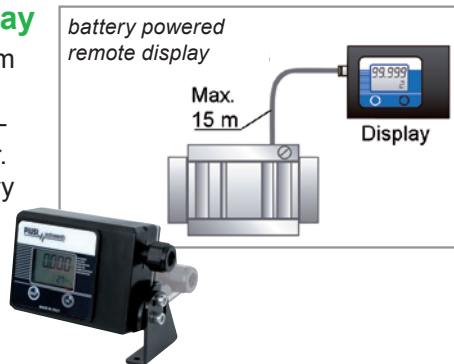
Pulser flow meter for Diesel and oil

Meters for connecting with an external receiver, with or without remote indicator.

Remote Display

Displays data from a distance of 15 metres when connected to a meter. Works with battery supply.

Art.Nr. P495010



Technical details

Elektronic Pulser Flow meter	Flow rate max.	Pressure max.	Connection	Weight	Art.No.
K24	5-120 l/min	20 bar	1" aG x 1" iG	0,5 kg	1318171
K200	0,1-2,8 l/min	30 bar	¼" iG	0,5 kg	131823
K400	1-30 l/min	70 bar	½" iG	0,5 kg	131824
K600/3	10-100 l/min	30 bar	1" iG	2,6 kg	P472000
K600/4	15-150 l/min	20 bar	1½" iG	3,2 kg	P473000
K700	25-250 l/min	20 bar	2" iG	5,5 kg	P498000
K900*	50-500 l/min	20 bar	3" iG	12 kg	P499020

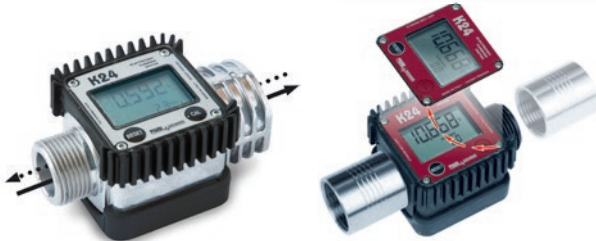
* remote display and cable connection included

K24 for Diesel, Bio Diesel and heat transfer fluid

pivoted digital display with 5-digit subtotal and 6-digit total dispense volume indicator

- high precision $\pm 1\%$
- battery charge indicator

New: made of aluminium



K24 with rotatable display and adapter

NEXT/2 for oil

Digital display with 5-digit subtotal and 8-digit total dispense volume indicator

- precision $\pm 0,5\%$



NEXT/2



K200 for Diesel, Bio Diesel and oil

Digital display with 5-digit subtotal and 8-digit total dispense volume indicator.

- precision $\pm 0,5\%$
- low flow loss



K200

K400 for oil and lubricants

Digital display with 5-digit subtotal and 7-digit total dispense volume indicator.

- precision $\pm 0,5\%$
- low flow loss



K400

K600 for Diesel and Bio Diesel

(K600/3 also for oils)

Digital display with 5-digit subtotal and 8-digit total dispense volume indicator.

- precision $\pm 0,5\%$
- low flow loss
- integrated filter in the suction line
- low battery indicator
- calibratable



K600



K600B/3
with extra large display (80 mm)

Technical details

Elektronik Flow meter with Display	Flow rate max.	Pressure max.	Connections	Gehäuse	Weight	Art.No.
K24 + Adapter	5-120 l/min	20 bar	1" aG x 1" iG	plastic	0,5 kg	131814N
K24 Alu	7-120 l/min	20 bar	1" aG x 1" iG	Aluminium	0,5 kg	131839
K200	0,1-2,5 l/min	500 bar	1/8" iG	Aluminium	0,6 kg	131822
K400	1-30 l/min	70 bar	1/2" iG	Aluminium	0,5 kg	131801Z
K600/3	10-100 l/min	30 bar	1" iG	Aluminium	1,6 kg	131805
K600B/3	10-100 l/min	30 bar	1" iG	Aluminium	1,6 kg	P49100
K600/4	15-150 l/min	20 bar	1 1/2" iG	Aluminium	3,2 kg	131809
K900	50-500 l/min	20 bar	3" iG	Aluminium	12 kg	131701
NEXT/2	6-60 l/min	70 bar	3/4" iG	Aluminium	0,6 kg	P48615

*Flow meters for AUS 32 - please see our detailed AUS 32 brochure

Gasoline Pump and Transfer kit

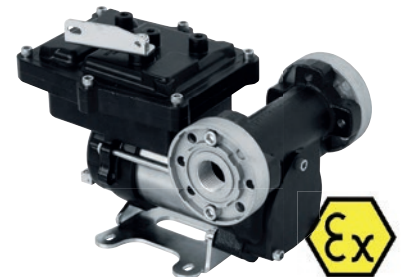
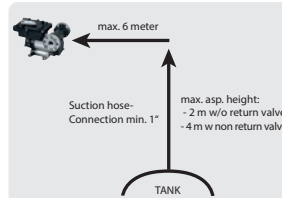
Gasoline pump EX50

Pump according to ATEX/IECEx guideline for product safety in Europe (II 2 G Ex d IIA T4 Gb).

Fully-flanged components: Pump, flow meter and filters can be fitted or replaced without the use of sealing paste, making the connections quick and safe.

Features

- ▶ compact and sturdy construction
- ▶ cast iron body
- ▶ ON/OFF Switch
- ▶ anti-noise filter
- ▶ (electromagnetic compatibility EMC)
- ▶ integrated bypass valve
- ▶ thermal protect switch



Gasoline Transfer Kit

Transfer kit for flammable liquids (gasoline, kerosene and diesel).

Drum pump Features

- ▶ telescopic tube on suction side
- ▶ 2" barrel connection with integrated dirt filter, return valve and pressure control valve
- ▶ nozzle holder
- ▶ water separating filter
- ▶ hose for gasoline ATEX, 4 meters, D20
- ▶ automatic nozzle

On Option: flow meter K33 ATEX



Drum pump EX50

Wall mounted Features

- ▶ mechanical meter K33 ATEX
- ▶ metal suction filter
- ▶ hose for gasoline ATEX, 4 meters, D20
- ▶ automatic nozzle

On Option: with water filter P11698



Wall mounted EX50

Technical details

Pump, transfer kit (Ex-proof)	Power			max. Flow		Conne- ction	operating cycle on/off	Access- ories	Art.No.
	kW	V	A	rate	pressure				
EX 50 DC	0,25	12	21	50 l/min	0,6 bar	1" iG	30/60 min	-	P37100
EX 50 AC	0,25	230	1	50 l/min	0,6 bar	1" iG	30/60 min	-	P37300
Transfer kit (drum pump) EX 50 DC	0,25	12	21	50 l/min	0,6 bar	1" iG	30/60 min	aut. nozzle	P37201
	0,25	12	21	50 l/min	0,6 bar	1" iG	30/60 min	aut. nozzle and flow meter	P37501
Transfer kit (drum pump) EX 50 AC	0,25	230	1	50 l/min	0,6 bar	1" iG	30/60 min	aut. nozzle	P37401
	0,25	230	1	50 l/min	0,6 bar	1" iG	30/60 min	aut. nozzle and flow meter	P37601
Transfer kit (wall mounted) EX50 AC	0,25	230	1	50 l/min	0,6 bar	1" iG	30/60 min	aut. nozzle and flow meter	P37700

Flow Meters

The new mechanical flow meters for noncommercial applications meet the requirements of the ATEX guidelines for precise measuring of fluids (Gasoline, Kerosene, Diesel) disposed, even in heavily explosive environment (II 2 G IIB T6, in accordance with guideline 99/92/EG).

The meters can be installed in any position both in rigid and flexible tubes, right on a pump or on a tank.

reliable, inexpensive,
easy installation and
calibration



Flow direction (B-Standard)

K33 ATEX

- ▶ Accuracy +/- 1%
- ▶ reproducibility +/- 0.3%
- ▶ working pressure max. 3,5 bar
- ▶ flow rate 20-120 l/min
- ▶ 3-digit subtotal and 6-digit total dispense volume indicator

K24 ATEX

- ▶ Accuracy +/- 1%
- ▶ reproducibility +/- 0.3%
- ▶ working pressure max. 20 bar
- ▶ flow rate 7-120 l/min
- ▶ 5-digit subtotal and 6-digit total dispense volume indicator



Automatic Nozzle ATEX

Explosion proof, automatic nozzle (II 1 G).

Technical details

Flow meter and Nozzle	Flow rate max.	Working pressure max.	Connection	Art.No.
Flow meter K24 ATEX	7-120 l/min	20 bar	1" iG	P40800
Flow meter K33 ATEX	20-120 l/min	3,5 bar	1" iG	P57000
automatic Nozzle EX 50 ATEX	60 l/min	-	1" iG	P61302



Accessories:

- ▶ hose for gasoline ATEX, 4 meters, D20
- ▶ adapter NPT/BSP ATEX
- ▶ adapter cable fitting ATEX
- ▶ electric connection cable with cable fitting ATEX DC 12 V, 4 meters
- ▶ spare cartridge Water separating filter, 30 µm - 70 l/min

Art.No. P18151
Art.No. P18156
Art.No. P17996
Art.No. P17771
Art.No. P11567

Hand pump

ZUWA hand pumps - for a convenient always and everywhere use



Vane pump



Reciprocating pump

Technical details

Hand pump	pump type	Flow rate max.	Features	Art.No.
for oil, diesel and gasoline	Vane pump	40 l/min	with 2" barrel adapter and suction pipe	P332000
for oil and diesel	Reciprocating pump	0,3 l/hub	2" barrel adapter and telescopic suction pipe (400-915 mm)	120613

Transparent Filters for Diesel and Oil

Water separating filter

- ▶ 30 µm, one spare filter included transparent case with bottom valve to dispose water Art.No.: P611B10
- ▶ 6 cartridges Art.No.: P611040



Dirt filter

- ▶ 30 µm, one spare filter included transparent case with bottom valve to dispose water Art.No.: P611B00
- ▶ 6 cartridges Art.No.: P611030
- ▶ 125 µm, with bottom valve, washable metal cartridge for Diesel and oil* Art.No.: P611B60



Cartridge Filter for Oil

- ▶ 10 µm, max. 100 l/min, 1" female Art.No.: 12060502
- ▶ cartridge Art.No.: P9359



Water Separating Filter

- ▶ 70 - 30 µm, max. 70 l/min, 1" female (incl. 1 spare filter) Art.No.: P611A00
- ▶ spare filter Art.No.: P11567
- ▶ 150 - 30 µm, max. 150 l/min, 1" female Art.No.: P611A10
- ▶ spare filter Art.No.: P611020E



90° Line Filter

for Fuel and Oil pumps, 350 µm, 1" female Art.No.: 12060501



Foot valve 1" with overpressure valve

for Oil and Diesel 1" female, Art.No.: 131045



Foot valve for Diesel

strainer with blocking function

- ▶ 3/4" female, Art.No.: P1239908
- ▶ 1" female, Art.No.: P1239905

Suction hose stays filled, no leaking of diesel.



pivoted
ON/OFF
foot valve

Barrel Adapter

- ▶ one piece 2" male x 1" female, with integrated filter 500µm and stop valve Art.No.: P17163
- ▶ without stop valve Art.No.: P17190



Barrel (Tank)-Adapter

Two piece for easy mounting of the pump onto the tank. Pump side 1" male thread and barrel side 2" male thread

Art.No.: 131080N



Quick Coupling

leak proof coupling for diesel and oil hoses 1" Art.No.: P63600



Swivel Connection

for nozzles

- ▶ 1" female x 3/4" male, Art.No.: 131103
- ▶ 1" female x 1" male, Art.No.: 131099



Hoses for Diesel Fuel and Oil

All hoses are equipped with swivel connector.

Filling hose of oil resistant rubber with reinforcement

up to max. 10 bar pressure

- ▶ 1/2" hose, NW 13, sold per meter Art.No. 30077
- ▶ 3/4" hose, NW 19, sold per meter Art.No. 30074
- ▶ 1" hose, NW 25, sold per meter Art.No. 30075
- ▶ 1 1/2" hose, NW 38, sold per meter Art.No. 30086
- ▶ 1/2" filling hose kit with 4 m, for Viscomat 70/90 Art.No. 131024*
- ▶ 1/2" filling hose kit with 4 m, for Viscomat 200/230/350,
(up to max. 25 bar pressure) Art.No. 131024HP*
- ▶ 3/4" filling hose kit for Diesel and Fuel Oil (no Gasoline),
1" male thread, max 10 bar operating pressure 4 m: Art.No. P08976
(other lengths: Art.No. 131012) 6 m: Art.No. P08945
- ▶ 1" filling hose kit for Diesel and Fuel Oil (no Gasoline),
1" male thread, max 10 bar operating pressure 4 m: Art.No. P089770
(other lengths: Art.No. 131064) 6 m: Art.No. P08858



filling hose kit



suction hose kit

Suction hose with spiral inlay, made of oil resistant plastics

- ▶ 1" hose, NW 25, sold per meter, Art.No. 30095
- ▶ 1" suction kit, NW 25, with 1,5 m, complete with back pressure valve
and filter, Art.No. 131014*

* Also available in any other lengths.

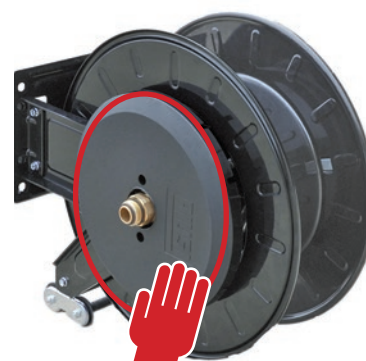
Hose Reels for Diesel and Oil Supply Hoses

The advanced design of the hose reel reduces the pressure loss and makes for easy handling. It can be used for high performance pumps as well.

- ▶ Hose diameter 3/4" or 1"
- ▶ reduced pressure loss
- ▶ protective latch mechanism to prevent accidental contact with the hands
- ▶ adjustable arm for easy positioning
- ▶ rotating support plate facilitates hose reel installation in different positions (on option)



rotating support plate



hose reel with hand protection

Technical details

Hose Reels for Diesel / Oil Supply Hoses	On-roll length	hose included	Pressure max.	Art.No.
Hose reel automatic 3/4"	for 8 m hose	on option	10 bar	P750080
Hose reel automatic 3/4"	for 8 m hose	✓	10 bar	P750090
Hose reel automatic 3/4"	for 14 m hose	on option	10 bar	P750000
Hose reel automatic 1"	for 10 m hose	on option	10 bar	P750010
Hose reel automatic 1"	for 10 m hose	✓	10 bar	P750030
Rotating support plate	for 8 m hose			P17317
Rotating support plate	for 10 and 14 m hose			P16279
fixed support for hose reel	for 8 m hose			P17316
fixed support for hose reel	for 10 and 14 m hose			P16298
connecting hose 1 meter for hose reel	-			P16367



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Pumps and Dispensing Kits for AdBlue (AUS 32, Urea)



Fuelling AdBlue (AUS 32, Urea) made really easy!



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Dispensing Kits for AdBlue (AUS 32, Urea)

In order to meet the new EURO 5 directive (reduction of noxious emissions) trucks are equipped with SCR catalytic converters requiring the use of AdBlue, a mixture of water and Urea. Each truck has an additional tank for this specific fluid.

Dispensing Kit PRO / BASIC for AdBlue (AUS 32, Urea)

Complete dispensing kit especially suitable for IBC or smaller container.

- ▶ powerful self priming diaphragm pump
- ▶ digital flow meter K 24 (type PRO)
- ▶ suction hose with quick coupling
- ▶ 6 metre supply hose
- ▶ automatic nozzle (on PRO and BASIC PLUS) or manual nozzle (on BASIC)
- ▶ nozzle holder with drip collector



*Dispensing kit PRO
The auto cut off nozzle makes refuelling absolutely easy. The precise filling amount is shown on the display of the flow meter.*



Dispensing kit TROLLEY (without barrel and pump) for BASIC and PRO



*Dispensing kit BASIC
for convenient refuelling*

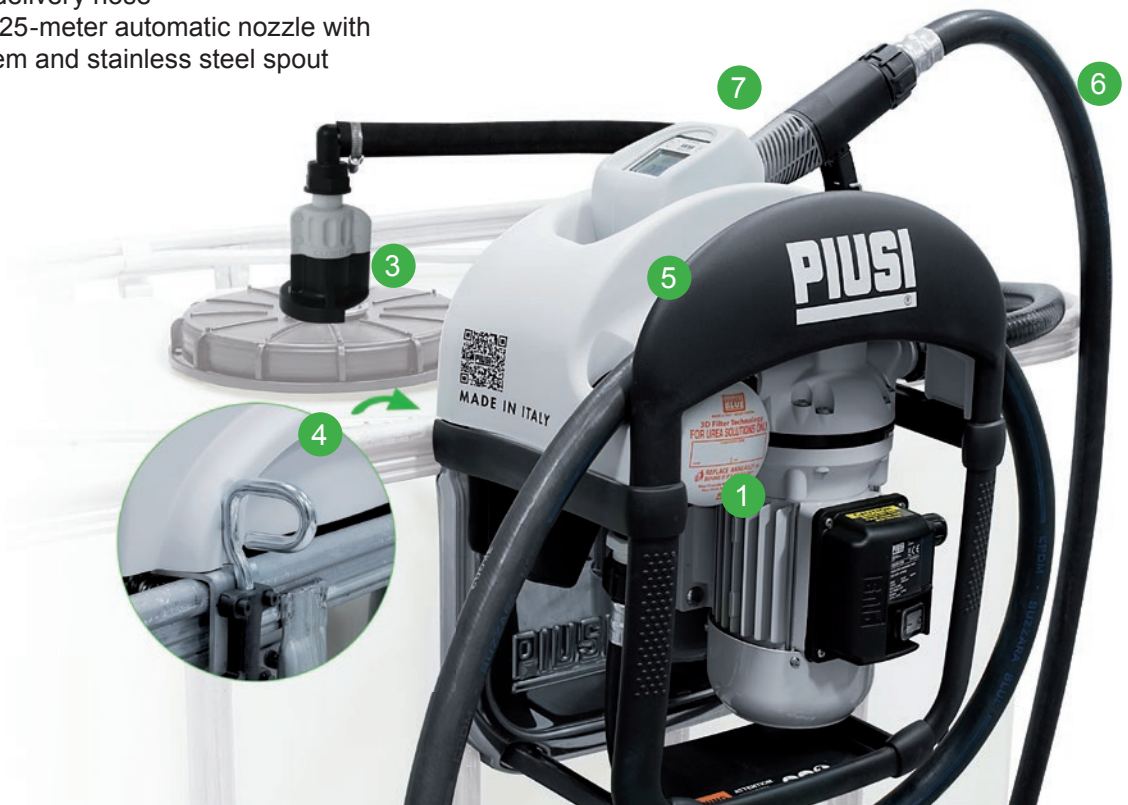


*Dispensing kit DRUM (without barrel)
available with automatic nozzle (DRUM PLUS)*

THREE25 - Dispenser Systems for IBC Tanks

Designed to ensure optimum durability and efficiency, the Three25 administers a 32.5% Urea solution that is protected by our AdBlue 3D filter which prevents the contamination of your AdBlue and in turn allows for an increased life of the catalytic converter. The Three25 features a complete, turnkey system that gives users the ability to safely dispense their AdBlue fluids.

- 1) AdBlue 3D Filter
- 2) Sturdy, stainless steel, plate with roll bar protection
- 3) SEC connector for plastic couplings or new DEF Coupler (PDC) for common IBC tank steel coupling systems
- 4) New security lock bracket system
- 5) High capacity hose holder and practical nozzle holder
- 6) Crimped EPDM delivery hose
- 7) New SB325/SB325-meter automatic nozzle with break-away system and stainless steel spout



Technical Details

Dispensing kits for AdBlue	Volt	Flow rate max.	Working pressure max.	Art.No.
THREE25 with int. meter	230	34 l/min	1,6 bar	81619KS325
THREE25 with meter K24	230	34 l/min	1,6 bar	81620KS325
Dispensing kit PRO	230	35 l/min	1,5 bar	ZU81604KS325
Dispensing kit BASIC	230	35 l/min	1,5 bar	ZU81605
Dispensing kit BASIC PLUS	230	35 l/min	1,5 bar	81608KS325
Dispensing kit DRUM	230	35 l/min	1,5 bar	81606
Dispensing kit DRUM PLUS	230	35 l/min	1,5 bar	81606AZKS325
Trolley for Dispensing kit		-		P12681

Dispensing Kits for AdBlue (AUS 32, Urea)

DELPHIN - Fueling Kit for cars with AdBlue (AUS 32, Urea)

This new, mobile unit was specifically designed for the use in garages.
The maneuverable system makes for a save delivery of AdBlue into car tanks.

Equipment:

- ▶ Robust trolley for 200 liter barrel (comes without barrel)
- ▶ Membrane pump 230V for AdBlue
- ▶ 20 Liter Container Delphin with optical level indicator
- ▶ Discharge hose with connection valve for cars (ISO 22241)
- ▶ SEC coupling and suction hose to pump
- ▶ Riser inside barrel

Art.No. 81610

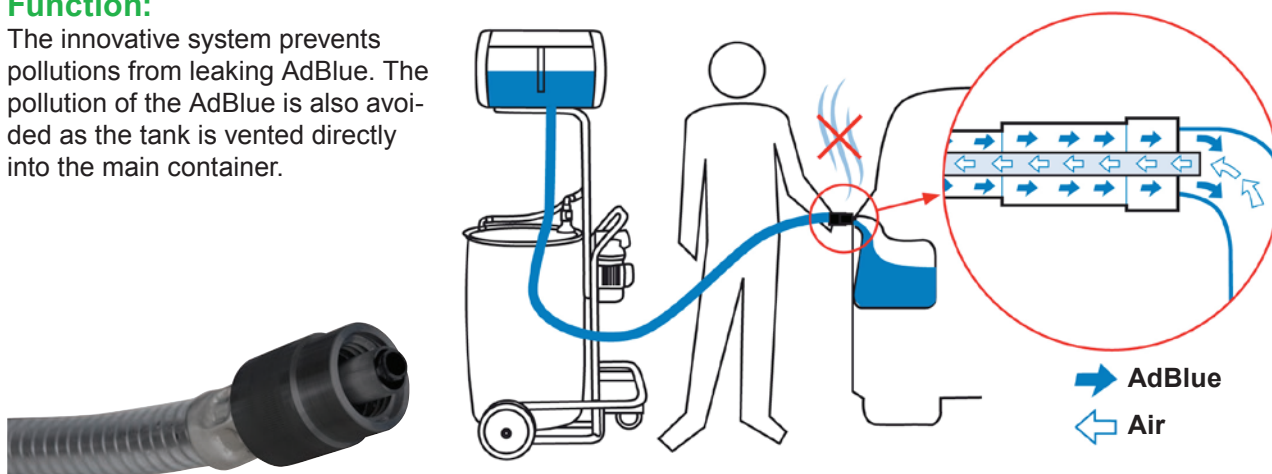


backside



Function:

The innovative system prevents pollutions from leaking AdBlue. The pollution of the AdBlue is also avoided as the tank is vented directly into the main container.





Accessories for AdBlue (AUS 32, Urea)

AC and DC Pump

- ▶ nipple for 3/4" hose connection
- ▶ extra safe seals
- ▶ On/Off switch
- ▶ 2 m cable with plug
- ▶ DC pump available with handle



AC Pump



DC pump

Hand Crank pump

- ▶ Max. Flow rate 38 l per 100 rotations
- ▶ 2" BSP connection with MAUSER and GREIF adapter
- ▶ Pump housing stainless steel
- ▶ Incl. Intake and 2.5 m filling hose with stainless steel spout



Hand Crank pump



Hand pump

Technical Details

Pumps for AdBlue	Volt	Flow rate max.	Working pressure max.	duty cycle	Art.No.
AC Pump	230	34 l/min	1,5 bar	20 min	P20310
DC Pump	12	36 l/min	1,5 bar	20 min	P20400
	24	36 l/min	1,5 bar	20 min	P20410
Hand Crank pump	with 2,50 m hose - with moulting and gripping adapter				P332A90
Hand pump	-				120614
	with 3 m hose - with moulting and gripping adapter				120615

Nozzles:



stainless steel manual



stainless steel automatic



plastic automatic*



plastic automatic with flow meter*

Flow Meter/Adapter:



K 24 with pivoting display and adapter

Technical Details

Nozzles for AdBlue	Flow rate max.	Connections	Art.No.
stainless steel manual	40 l/min	3/4" hose tail	131120
stainless steel automatic	80 l/min	3/4" hose tail	131109
plastic automatic	35 l/min	3/4" hose tail	P61700
plastic automatic with flow meter	35 l/min	3/4" hose tail	P61701



*optional with magnetic adapter (P19174)

Flow meters	Flow rate max.	pressure max.	Connections	Weight	Art.No.
K24 for AdBlue	6-100 l/min	10 bar	1" x 1" ext. thread	0,4 kg	1318170
K24 Pulser for AdBlue	6-100 l/min	10 bar	1" x 1" ext. thread	0,4 kg	1318172
Adapter stainless steel	-	-	1" x 1" int. thread	-	P16073

Accessories for AdBlue (AUS 32, Urea)



Gravity-Kit

Manual nozzle with IBC bottom valve adapter
Art.No. P15517



Suction connection

SEC, HDPE plastic for CDS suction hose
Art.No. P15452



Suction hose

with IBC bottom valve adapter and stop valve
Art.No. P15515



Suction pipe

with SEC/CDS Cover
Art.No. P15606 AG Greif
Art.No. P156062 AG 2" BSP

Fittings



M1" BSP x Ø 3/4"
Art.No. P15522



90°
Ø 3/4" x M1" BSP
Art.No. P15485



90°
Ø 3/4" x F1" BSP
Art.No. P15484



M/F 1" BSP
Art.No. P15179



1" F BSP
Art.No. P16433



1" F BSP
Art.No. P16434



1" F BSP x Ø 3/4"
Art.No. P16435



Swivel connection
Stainless steel
M 3/4" BSP x Ø 3/4"
Art.No. P14132



Rubber-jacket for swivel connection
Art.No. P16497



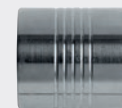
EPDM suction hose 3/4"
Art.No. P14124
EPDM suction hose 3/4"
Art.No. P141255



EPDM suction kit with foot valve, length 1,5 m
Art.No. P14146



Hose clamp
Stainless steel
Art.No. P13800



Adapter
1" iG NPT/NPT
Art.No. P16074
1" iG BSP/NPT
Art.No. P16458
1" iG BSP/BSP
Art.No. P16073

Hose Reels for AdBlue (AUS 32, Urea)

Easy handling - with static or rotating support plate.

- ▶ protective latch mechanism
- ▶ adjustable arm (on option)
- ▶ hose connection in/out 3/4"
- ▶ inlet with swivel
- ▶ hose length max. 8 m/15m (Ø 3/4")

Hose reel

- ▶ pivotable hose connection
- ▶ hose-stop and protection spring
- ▶ hose clamp
- ▶ pressure loss 0,1 bar at 35 l/min

Art.No. P750060

Hose reel with 8 m EPDM-hose 3/4"

- ▶ complete with swivel and elbow
- ▶ pressure loss 0,4 bar at 35 l/min

Art.No. P750070



Console for Hose reel (IBC) construction Art.No. P17275

Accessories for AdBlue (AUS 32, Urea)



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Waste Water Pumps
made in stainless steel and grey cast



For water even with solids



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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.

All data, descriptions, photos, images and dimensions of the entire brochure are non binding and shall be used for visualisation only. We reserve the right for amendments and can not be held liable for printing errors.

Waste Water Pumps



VORTEX:

for waste water even with solids.
Page 4



VORTEX NIRO:

for aggressive waste water even with solids.
Page 5



VORTEX EX:

for application in biogas sector with
ATEX approval.
Page 6



SUPERSAND:

for waste water and water containing sand.
Page 6



VELO UP:

Pump for waste water. For murky waters without fibers.
Page 7

Pump control



Pump control V 10 Plus:

Reliable control unit for 230 or 400 Volt pumps up to 16 A.
Page 8



Float Switch:

Float switch suitable for nearly all pump types.
Page 8

VORTEX - Waste Water Pump

Waste water even with solids

VORTEX

VORTEX Pumps by ZUWA are particularly suitable for waste water with solid particles. Depending on pump type they transport solids with a maximum diameter of 55 mm.

- ▶ max. density of fluid: 1100 kg/m³
- ▶ fluid temperature max. 50°C
- ▶ pH value: 6 - 11

Applications

- ▶ Draining of excavation pits and hoppers
- ▶ remove flood water
- ▶ dispose off domestic sewage

Agricultural applications

- ▶ pump down of milking parlours
- ▶ conveying of silage soakage and surface water
- ▶ irrigation in horticulture

Features

- ▶ pump housing, impeller made of grey cast iron
- ▶ motor in oil bath (with thermal motor protection for 230 V to 1.5 kW)
- ▶ shaft made of stainless steel
- ▶ rotary seal made of silicium carbide
- ▶ float switch (for 230 V models only)
- ▶ cable length 10 m



VORTEX 100

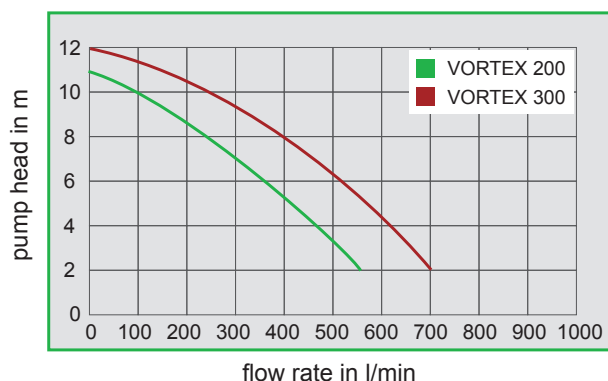
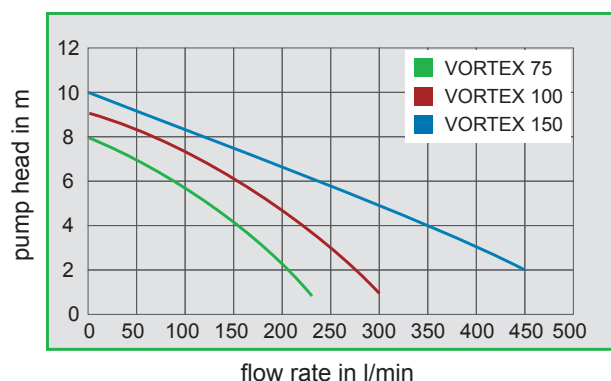


VORTEX 75 with fixed level regulator*



VORTEX 75

Characteristic curves:



Technical details

Typ	Flow rate max.	Pumping head max.	Engine power V / kW / A			Pressure port	Dimensions	Pump inlet	Weight	Art. No.
VORTEX 75	225 l/min	8 m	230	0,55	4,2	1 1/4"	22 x 28 cm	30 mm	17 kg	1650130
VORTEX 75*	225 l/min	8 m	230	0,55	4,2	1 1/4"	24 x 28 cm	30 mm	17 kg	165051
VORTEX 100	300 l/min	9 m	230	0,75	7	2"	20 x 42 cm	45 mm	23 kg	165017
VORTEX 150	450 l/min	10 m	230	1,1	8,9	2"	23 x 52 cm	50 mm	33 kg	165020
	450 l/min	10 m	400	1,1	3,5	2"	23 x 52 cm	50 mm	33 kg	165033
VORTEX 200	550 l/min	11 m	230	1,5	10	2"	23 x 52 cm	50 mm	34 kg	165018
	550 l/min	11 m	400	1,5	5,0	2"	23 x 52 cm	50 mm	34 kg	165057
VORTEX 300	700 l/min	12 m	400	2,2	5,5	3"	27 x 53 cm	55 mm	38 kg	165019

*for clean water

VORTEX NIRO - Waste Water Pump

For aggressive waste water even with solids

VORTEX NIRO

VORTEX NIRO Pumps are perfectly suitable for aggressive waste water in chemistry, pharmacy, metal finishing and sea water.

- ▶ max. density of fluid: 1100 kg/m³
- ▶ fluid temperature max. 50°C
- ▶ pH value: 3 - 14

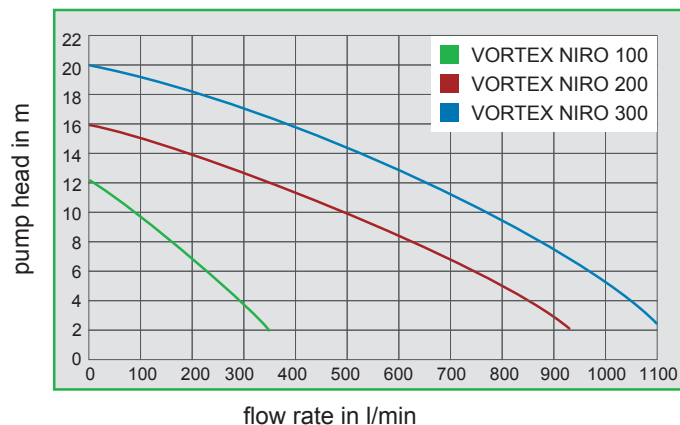
Applications

- ▶ biogas sector
- ▶ electrocoating processes
- ▶ chemical industry
- ▶ pharmacy
- ▶ seawater

Features

- ▶ pump housing and all parts in contact with fluid made of stainless steel (AISI 316)
- ▶ cable length 10 m

Characteristic curves:



VORTEX NIRO 100



VORTEX NIRO 300

Technical details

Typ	Flow rate max.	Pumping head max.	Engine power V / kW / A			Pressure port	Dimensions	Pump inlet	Weight	Art. No.
VORTEX NIRO 100	350 l/min	12 m	230	0,75	5,3	2"	23 x 41 cm	35 mm	16 kg	165024
VORTEX NIRO 200	600 l/min	16 m	400	1,5	3,2	3"	44 x 53 cm	37 mm	36 kg	165025
VORTEX NIRO 300	1120 l/min	20 m	400	2,2	5,0	3"	44 x 57 cm	40 mm	38 kg	165026

VORTEX EX and SUPERSAND - Waste Water Pumps

ATEX approved

VORTEX EX

VORTEX Pumps now also ATEX approved for application in biogas sector and other areas with potentially explosive atmosphere – intended for use in zone 1 and 2.

- ▶ max. density of fluid: 1100 kg/m³
- ▶ fluid temperature max. 40°C
- ▶ pH value: 6 - 11

Application

Submersible waste water pumps are frequently used in biogas plants to remove condensed water from the dead well and return it to the fermenter. Biogas plants are classified as areas with potentially explosive atmosphere. This is why VORTEX pumps are now launched meeting the health and safety requirements of the ATEX directive.

Features

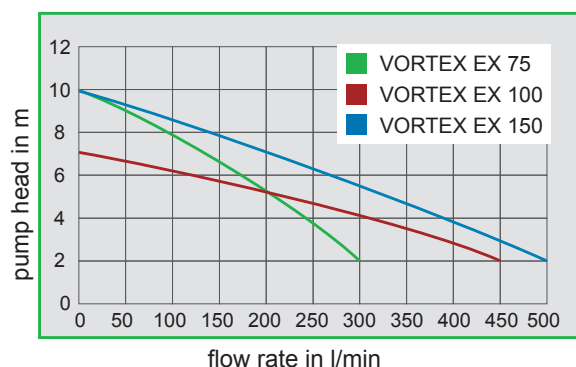
- ▶ pump housing and impeller made of grey cast iron
- ▶ motor in oil bath (with thermal motor protection for 230 V to 1.5 kW)
- ▶ ATEX certification number: Eexd-IIB-T3-II-2-G
- ▶ rotary seal made of silicium carbide
- ▶ shaft made of stainless steel
- ▶ cable length 10 m

ON OPTION:
ATEX approved
float switch



VORTEX EX

Characteristic curves:



for waste water and water containing sand

SUPERSAND

For waste water and water containing sand. The clearance between motor and pump casing ensures motor cooling at low water level.

Application

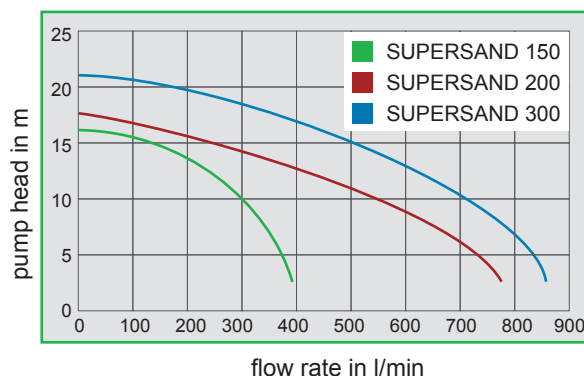
Designed especially for construction sites to drain foundation ditches, tunnels, galleries etc.

- ▶ maximum immersion depth: 10 m
- ▶ max. density of fluid: 1100 kg/m³
- ▶ fluid temperature max. 40°C
- ▶ pH value: 6 - 13

Features

- ▶ pumps and motor casing made of stainless steel (AISI 304)
- ▶ impeller constructed of abrasion resistant cast iron with chrome, hardness 60 RC
- ▶ Oil cooled dual rotary seal made of silicium carbide
- ▶ shaft made of stainless steel (AISI 410)
- ▶ cable length 10 m

Characteristic curves:



SUPERSAND

VELO UP

Electronic pump drainage with vertical adjustable (automatic or manual) with removable filter for suction up to 2/3 mm. The adjustment slider of the probes, allows you to vary the level of on-off of the pump, this feature increases the versatility of installation.

The vertical delivery and the electronic float make it a pump suitable for use in wells of small dimensions. Thermal-amperometersc protection incorporated and condenser permanently connected.

Application

from 1 to 15 m³/h-with prevalence up to 10 meters.

- ▶ from 0° C to +35° C for domestic use
- ▶ maximum immersion depth: 7 m
- ▶ minimum depth of draft: 60 mm
- ▶ maximum containing solids: 10 mm

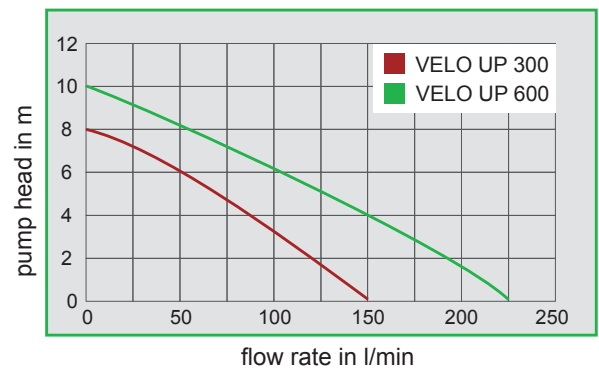
Features

- ▶ motor, rotor shaft and screws in stainless steel
- ▶ triple O-ring seal with interposed oil chamber
- ▶ stator in a sealed stainless steel enclosure
- ▶ asynchronous submersible motor for continuous operation



VELO UP

Characteristic curves:



Technical details

Typ	Flow rate max.	Pumping head max.	Engine power			Pressure port	Dimensions	Pump inlet	Weight	Art. No.
			V	kW	A					
VORTEX 75 EX	300 l/min	10 m	230	0,55	4,7	1½"	37 x 18 cm	30 mm	17 kg	165013 ATEXOS
VORTEX 100 EX	450 l/min	7 m	230	0,75	7,0	2"	46 x 30 cm	45 mm	31 kg	165017 ATEXOS
VORTEX 150 EX	502 l/min	10 m	230	1,1	8,0	2"	46 x 30 cm	50 mm	32 kg	165020 ATEXOS
SUPER-SAND 150	380 l/min	16 m	230	1,1	8,2	2"	50 x 21 cm	8 mm	29 kg	165029
SUPER-SAND 200	723 l/min	17 m	230	1,5	10	3"	55 x 24 cm	10 mm	38 kg	165032
	723 l/min	17 m	400	1,5	3,5	3"	55 x 24 cm	10 mm	38 kg	165030
SUPER-SAND 300	870 l/min	21 m	400	2,2	5,1	3"	55 x 24 cm	10 mm	39 kg	165031
VELO UP 300	150 l/min	8 m	220-240	0,38	1,5	1¼"	30 x 16 cm	-	5,6 kg	165300
VELO UP 600	225 l/min	10 m	220-240	0,77	3,5	1¼"	33 x 16 cm	-	7,3 kg	165600

Pump control

1. Pump control V 10 Plus:

Reliable control unit for 230 and 400 Volt pumps up to 16 A.

Article no. 169013

Functions:

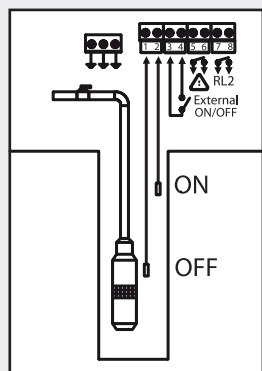
- ▶ integrated level control
- ▶ programmable dry run protection
- ▶ electronic over-/underload protection
- ▶ records starts and operation time
- ▶ excess voltage, phase failure and lightning protection
- ▶ automatic restart after interruption

Features:

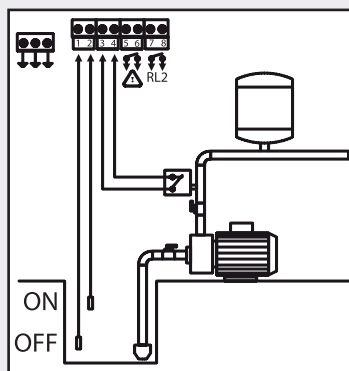
- ▶ easy installation, simple handling
- ▶ key pad, signal lights and amperage display
- ▶ on front side
- ▶ signal output to activate an alarm
- ▶ protection rating IP 54



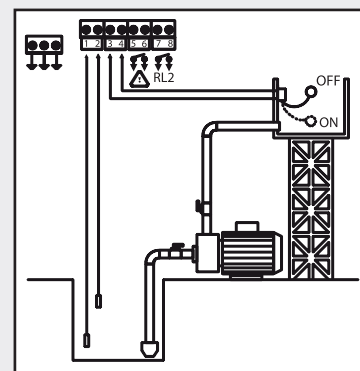
Water supply



Pressure boosting



Irrigation



further applications: sewage disposal, rain water harvesting, dry run protection for impeller pumps

2. Float switch:

Float switch with 5 m cable and adapter plug, suitable for nearly all pump types.

Article no. 131066



All data, descriptions, photos, images and dimensions of the entire brochure are non binding and shall be used for visualisation only. We reserve the right for amendments and can not be held liable for printing errors.



Side Channel Centrifugal Pumps EP BRONZE



Side Channel Centrifugal Pumps

The pumps are available with various motors (AC, DC and threephase current) or with V-belt pulley for V-belt drive. They operate in both senses. The 230-Volt motors in addition are equipped with a change-over switch to change the direction of rotation.

The 230 V versions are equipped with a rotation direction switch. Optional accessories for all models: Regulation valve (bypass) for flow control and trolley for easy transport.

EP BRONZE - high capacity pumps for various applications

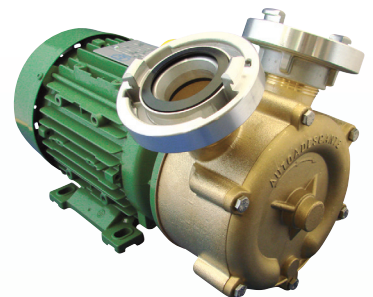
The self-priming ZUWA side channel centrifugal pumps, constructed of bronze, are suitable for all fluids with a temperature up to 70°C without solids or abrasive particles.

Features

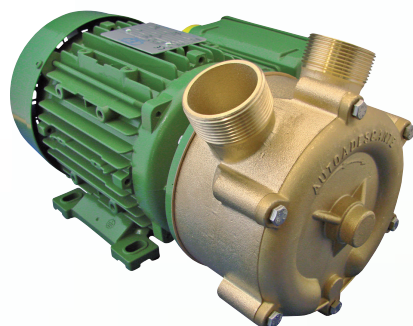
- ▶ self-priming
- ▶ suction height max. 6 m
- ▶ fluid temperature max. 70°C
- ▶ pulsationfree pumping
- ▶ tolerates short dry-run periods

Applications

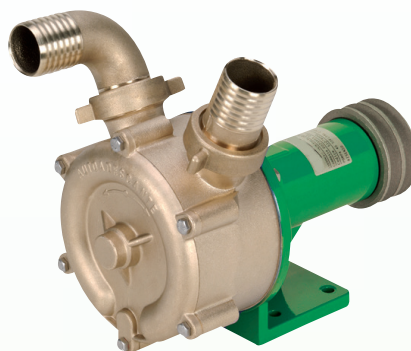
- ▶ water, sea water
- ▶ oils, fuel oil
- ▶ Diesel
- ▶ beverages (e.g. wine, milk)



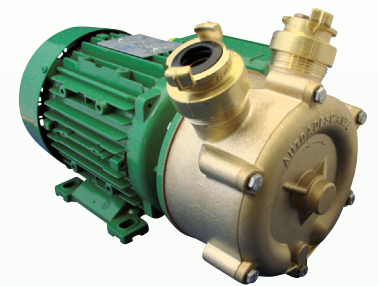
EP Bronze with C-coupling*



EP Bronze

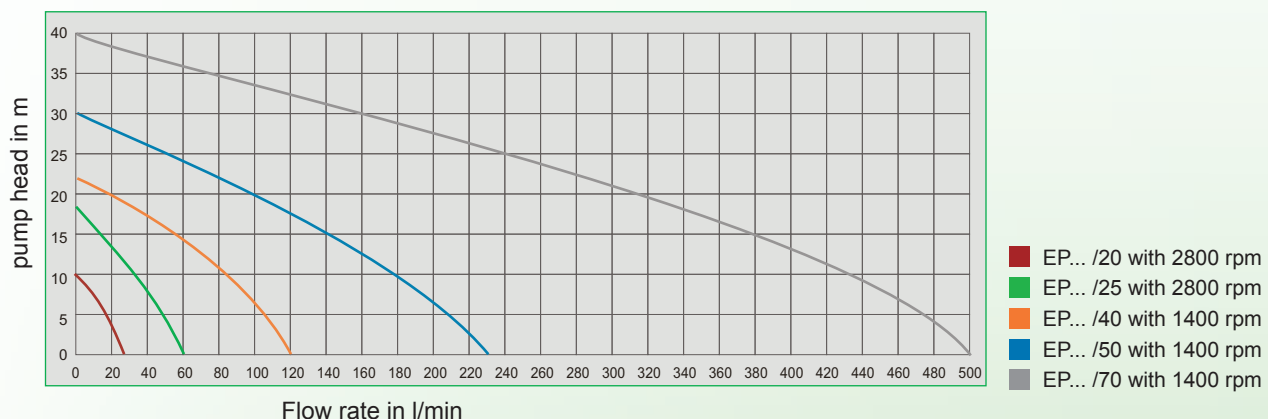


EP for V-belt drive with pedestal



EP Bronze with GEKA coupling*

Characteristic curves:



* couplings available on option

Side Channel Centrifugal Pumps EP BRONZE

Technical details

Pumps with AC motor or threephase current motor

Model	Motor			rpm	Flow rate max.	Pump head max.	Hose connection	Weight	Art.No.
	kW	V	A						
EP m220/20	0,22	230	2,2	2800	29 l/min	12 m	¾", DN 19	6,3 kg	180009BSP
EP t400/20	0,25	400	0,8	2800	29 l/min	15 m	¾", DN 19	6,3 kg	180018BSP
EP m220/25	0,45	230	4	2800	60 l/min	18 m	1", DN 25	8 kg	180010BSP
EP t400/25	0,56	400	3,5	2800	60 l/min	18 m	1", DN 25	8 kg	180011BSP
EP m220/40	0,75	230	5,3	1400	120 l/min	22 m	1½", DN 40	16,2 kg	180020BSP
EP t400/40	0,75	400	3,64	1400	120 l/min	22 m	1½", DN 40	15,7 kg	180032BSP
EP m220/50	1,86	230	2,5	1400	230 l/min	30 m	2", DN 50	27,5 kg	180030BSP
EP t400/50	1,86	400	4,4	1400	230 l/min	30 m	2", DN 50	26 kg	180031BSP
EP t400/70	5,5	400	11,8	1400	500 l/min	40 m	2½", DN 70	75 kg	180012BSP

Pumps with DC motor*

Model	Motor			rpm	Flow rate max.	Pump head max.	Hose connection	Weight	Art.No.
	kW	V	A						
EP cc12/20	0,33	12	26	2000	25 l/min	10 m	¾", DN 19	5,7 kg	180001BSP
EP cc24/20	0,33	24	14	2000	25 l/min	10 m	¾", DN 19	5,6 kg	180002BSP
EP cc12/25	0,45	12	38	2000	53 l/min	12 m	1", DN 25	9,2 kg	180003BSP
EP cc24/25	0,45	24	22	2000	53 l/min	12 m	1", DN 25	9,3 kg	180005BSP
EP cc24/40	1,12	24	45	1400	120 l/min	22 m	1½", DN 40	19,8 kg	180004BSP

*not suitable for continuous operation

Pumps for V-belt drive with pedestal or type NAUTIC

Model	rpm	Flow rate max.	Pump head max.	Hose connection	Weight	Art.No.
EP K20	2800	29 l/min	15 m	¾", DN 20	2 kg	180201BSP
EP K25	2800	60 l/min	18 m	1", DN 25	2,8 kg	180202BSP
EP K30	1400	75 l/min	18 m	1¼", DN 30	5,6 kg	180204BSP
EP K40	1400	120 l/min	22 m	1½", DN 40	7,3 kg	180205
EP K50	1400	230 l/min	30 m	2", DN 50	12,5 kg	180206BSP

Models K30, K40 and K50 are also available with electromagnetic clutch, type NAUTIC additionally with clutch lever for manual operation.



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Side Channel Centrifugal Pumps

Stainless Steel - EP NIRO



Side Channel Centrifugal Pumps

The pumps are available with various motors (AC, DC and threephase current) or with V-belt pulley for V-belt drive. They operate in both senses. The 230-Volt motors in addition are equipped with a change-over switch to change the direction of rotation.

The 230 V versions are equipped with a rotation direction switch.

Optional accessories for all types: Regulation valve (bypass) for flow control and trolley for easy transport.

EP NIRO - for acids and food applications

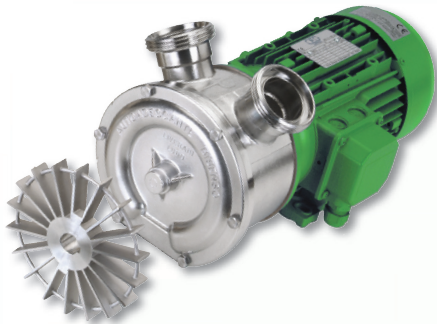
The self-priming ZUWA side channel centrifugal pumps, constructed of stainless steel, are particularly suitable for aggressive and corrosive media and for food.

Features

- ▶ self-priming
- ▶ suction depth max. 6 meter
- ▶ pulsationfree pumping
- ▶ tolerates short dry-run periods

Applications

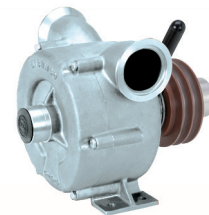
- ▶ beverages (e.g. wine, milk)
- ▶ acids
- ▶ water, sea water
- ▶ oils, fuel oil
- ▶ Diesel



EP Niro



EP Niro for V-belt drive with pedestal

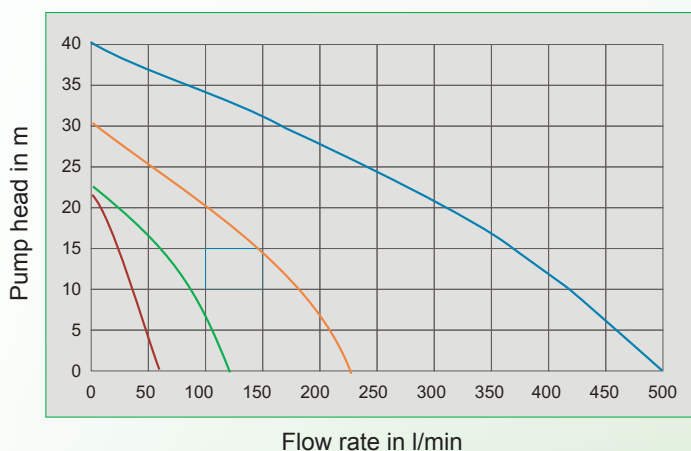


Version NAUTIC



EP Niro on trolley

Characteristic curves:



- EP Niro 400/70 with 1400 rpm
- EP Niro 220/50 with 1400 rpm
- EP Niro 220/40 with 1400 rpm
- EP Niro 220/25 with 2800 rpm



Side Channel Centrifugal Pump EP NIRO

Technical details

Pumps with AC motor or threephase current motor

Model	Motor			rpm	Flow rate max.	Pump head max.	Hose connection	Weight	Art.No.
	kW	V	A						
EP Niro220/25	0,45	230	4	2800	58 l/min	22 m	1¼", DN 30	9,5 kg	180025
EP Niro400/25	0,56	400	2	2800	58 l/min	22 m	1¼", DN 30	9,6 kg	180014
EP Niro220/40	1,1	230	6,4	1400	120 l/min	22 m	1½", DN 40	17,5 kg	180028
EP Niro400/40	1,1	400	2,8	1400	120 l/min	22 m	1½", DN 40	17,6 kg	180039
EP Niro220/50	1,86	230	12,1	1400	230 l/min	30 m	2", DN 50	27,5 kg	180029
EP Niro400/50	1,86	400	4,41	1400	230 l/min	30 m	2", DN 50	26,5 kg	180035
EP Niro400/70	5,5	400	11,8	1400	500 l/min	40 m	3", DN 70	75 kg	180036

Pumps with DC motor*

Model	Motor			rpm	Flow rate max.	Pump head max.	Hose connection	Weight	Art.No.
	kW	V	A						
EP Niro12/25	0,37	12	32	2000	43 l/min	10 m	1¼", DN 30	9,1 kg	180027
EP Niro24/25	0,37	24	20	2000	43 l/min	10 m	1¼", DN 30	9,3 kg	180021
EP Niro24/40	1,12	24	45	1400	120 l/min	22 m	1½", DN 40	19,9 kg	180013

*not suitable for continuous operation

Pumps for V-belt drive with pedestal or type NAUTIC

Model	rpm	Flow rate max.	Pump head max.	Hose connection	Weight	Art.No.
EP Niro/K40	1400	120 l/min	22 m	1½", DN 40	7,4 kg	180207
EP Niro/K50	1400	230 l/min	30 m	2", DN 50	12,8 kg	180208
EP Niro/K70**	1400	500 l/min	40 m	2½", NW 70	25,3 kg	180211

**only in version NAUTIC available

Models K40 and K50 are also available with elektromagnetic clutch



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Pumps for domestic water supply
on the farm or in the garden



Pumps for water supply around the house



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QUALITY
SINCE 1946

Pumps for domestic water supply

for farming, gardening and general cleaning applications

Free water for domestic use - delivered by efficient ZUWA pumps

Save precious and expensive drinking water!

With a ZUWA domestic water pump process water can be pumped free of charge from wells, cisterns, the own pond or lake.

ZUWA domestic water supply systems include a rugged efficient centrifugal pump, a pump control for automatic pump start and stop and a pressure gauge.

Applications:

- ▶ irrigation
- ▶ flush toilet
- ▶ pond venting
- ▶ washing machine
- ▶ car wash
- ▶ increasing water pressure
- ▶ cleaning barns

Quick and easy
installation



JET 100/E

Further Informations about this pump - page 4



JET 100/E INOX

JET 100/E INOX

Full automatic pump for domestic water supply with automatically pump stop when running out of water (BRIO). Pump is particularly suitable for toilet flushing and washing machines. Non rusting pump made of stainless steel.

- ▶ pump housing and shaft: stainless steel
- ▶ impeller: brass
- ▶ rotary seal: carbon/ceramic



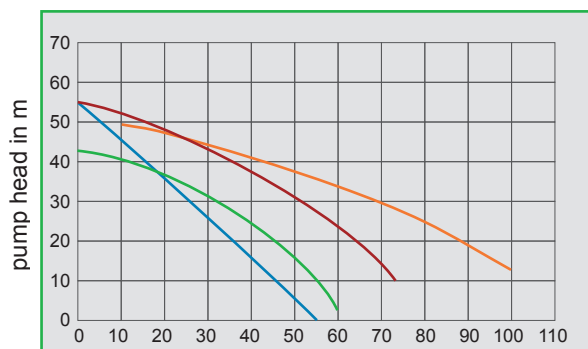
JET 200/Z

Further Informations about this pump - page 4

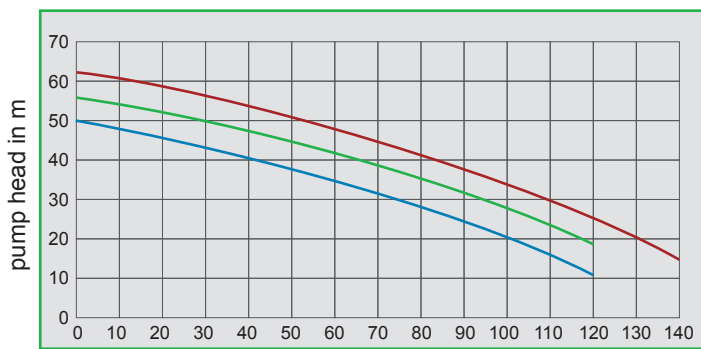
Pumps for domestic water supply

for the farm or in the garden

Characteristic curves:



- JET 100
- JET 100/E INOX (1,2 kW)
- P 80
- CM 100



- JET 150
- JET 200 (230V)
- JET 200 (400V)
- JET 300

*Flow rates slightly lower when using pump controle BRIO.

Technical details

Type	Motor power			Flow rate max.	Pressure max.	Pump control	Connections (out/in)	Dimensions in cm	Weight	Art.No.
	kw	V	A							
JET 100/Z	0,75	230	4,5	60 l/min	4,3 bar	Zumatic	1"	43 x 36 x 67	22 kg	165007HWZ
JET 100/E	0,75	230	4,5	60 l/min	4,3 bar	Brio	1"	43 x 19 x 41	18 kg	165007HWE
JET GP 100/E INOX 1200	1,2	230	5,5	75 l/min	5,8 bar	Brio	1"	37 x 20 x 46	10 kg	165010HWE
JET 150/Z	1,1	230	8,5	120 l/min	5 bar	Zumatic	1½" / 1¼"	56 x 23 x 70	38 kg	165046HWZ
JET 150/E	1,1	230	8,5	120 l/min	5 bar	Brio	1½" / 1¼"	56 x 22 x 45	36 kg	165046HWE
JET 200/Z	1,5	230	9,4	120 l/min	5,6 bar	Zumatic	1½" / 1¼"	56 x 23 x 70	38 kg	165048HWZ
	1,5	400	4,4	120 l/min	5,6 bar	Zumatic	1½" / 1¼"	56 x 23 x 70	38 kg	165049HWZ
JET 300/Z	2,2	400	4,6	140 l/min	6,2 bar	Zumatic	1½" / 1¼"	56 x 23 x 70	39 kg	165050HWZ
CM 100/Z	0,75	230	6,6	100 l/min	4,9 bar	Zumatic	1"	37 x 36 x 65	16 kg	165053HWZ
CM 100/E	0,75	230	6,6	100 l/min	4,9 bar	Brio	1"	37 x 17 x 39	12 kg	165053HWE
P80/Z	0,75	230	5,5	56 l/min	5,5 bar	Zumatic	1"	25 x 36 x 63	11 kg	165012HWZ
P80/E	0,75	230	5,5	56 l/min	5,5 bar	Brio	1"	25 x 12 x 37	11 kg	165012HWE

Centrifugal Pumps

uncomplicated and durable

The simple and robust design is one of the key features of a centrifugal pump. They are primarily used for pumping clean water in a dry-well installation. Main applications are service water, irrigation and pressure increase.

Model CM

Multistage, regular priming centrifugal pump for service water and irrigation – operates extremely quiet.

- ▶ pump housing, shaft and impeller: stainless steel
- ▶ rotary seal: ceramic/graphite
- ▶ thermal motor protection and cable
- ▶ for water temperatures up to 40°C



Model CM

Model P

Regular priming centrifugal pump with peripheral impeller – an efficient, small pump for clean water at a most competitive price. Suited for domestic water supply, irrigation from wells or rain water basins or for industrial use.

- ▶ pump housing: cast iron or brass
- ▶ Impeller: brass
- ▶ shaft: stainless steel
- ▶ thermal motor protection and cable
- ▶ for water temperatures up to 60°C

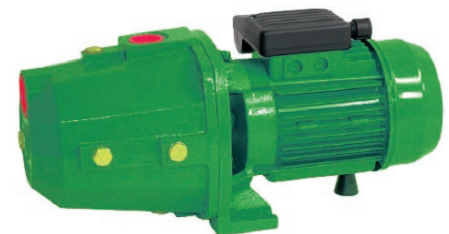


Model P

Model Jet

Self priming, durable pump for domestic water supply, irrigation or industrial use. Maximum suction height 8 metres.

- ▶ pump housing: cast iron
- ▶ impeller: brass
- ▶ shaft: stainless steel
- ▶ rotary seal made of ceramic/graphite
- ▶ thermal motor protection (for 230V version) and cable
- ▶ for water temperatures up to 50°C



JET 100

Combined with an optional pump control this pump is perfectly adapted for the use as a domestic water supply system.

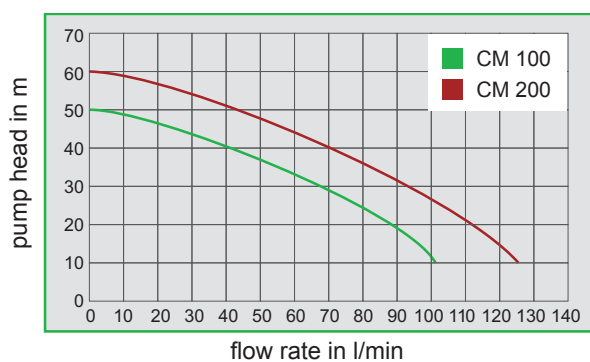
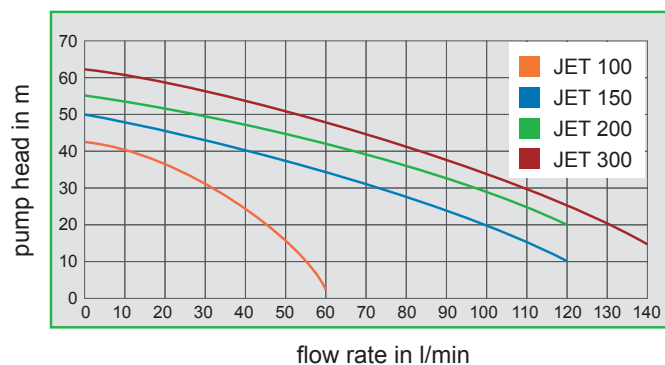
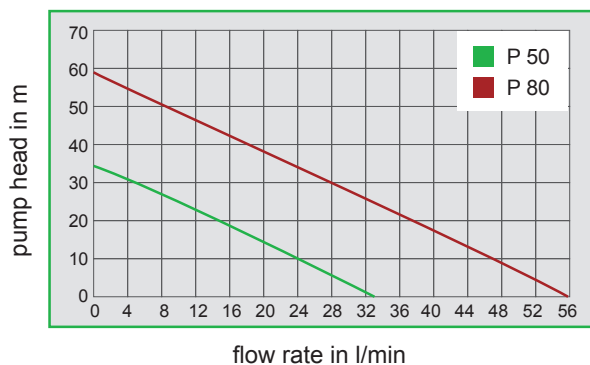


JET 150/200/300

Additional Equipment – Pump Control:

ZUWA centrifugal pumps can be equipped with a pump control – ideal when the pump is used for domestic water supply or for pressure boosting. Pump starts automatically when water is withdrawn. (Page 7)

Characteristic curves:



Technical details

Type	Motor power			Flow rate max.	Pressure max.	Connections out/in	Dimensions in cm	Weight	Art.No.
	kW	V	A						
JET 100	0,75	230	4,5	60 l/min	4,3 bar	1" x 1"	42,5 x 18,5 x 20	17 kg	165007
JET 150	1,1	230	8,5	120 l/min	5,0 bar	1½" / 1¼"	55,5 x 22,1 x 24,2	32 kg	165046
JET 200	1,5	230	9,4	120 l/min	5,6 bar	1½" / 1¼"	55,5 x 22,1 x 24,2	33 kg	165048
	1,5	400	4,4	120 l/min	5,6 bar	1½" / 1¼"	55,5 x 22,1 x 24,2	33 kg	165049
JET 300	2,2	400	4,6	140 l/min	6,2 bar	1½" / 1¼"	55,5 x 22,1 x 24,2	34 kg	165050
CM 100	0,75	230	6,6	100 l/min	4,9 bar	1" x 1"	37 x 17 x 18,2	11 kg	165053
	0,75	400	2,2	100 l/min	4,6 bar	1" x 1"	37 x 17,5 x 18	11 kg	1650534
CM 200	1,5	400	3,8	120 l/min	6 bar	1¼" / 1"	42 x 19,5 x 21	15 kg	165054
P 50	0,37	230	2,7	32 l/min	3,0 bar	1" x 1"	25,5 x 14,5 x 16	5,8 kg	165004
P 80	0,75	230	5,5	56 l/min	5,9 bar	1" x 1"	28,5 x 16 x 18	8,5 kg	165010V

Submersible pumps

for clear water

WELL pumps are particularly suitable for lifting clear water from deep wells and cisterns, for pressure boosting or irrigation. The pumps can be provided with different pump controls if required (Page 7 and 8).

All Models:

- ▶ shaft, motor and pump housing are constructed of stainless steel
- ▶ oil- or water-cooled motor (Oil has no harmful effect on environment)
- ▶ protection class IP 68
- ▶ motor protection switch
- ▶ inclusive 15 meter cable
- ▶ for water temperatures up to 35° C

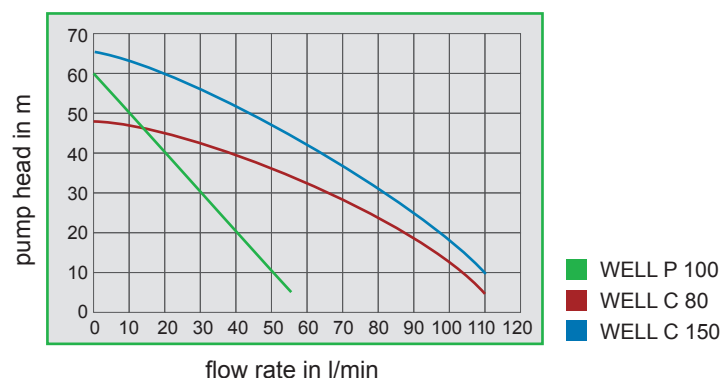
WELL C 80 and C 150

- ▶ noryl impellers

WELL P

- ▶ brass impellers

Characteristic curves:



Technical details

Type	Flow rate max.	Pump head max.	Motor power			Pressure connection	Dimensions	Particle size	weight	impeller wheels	Art. No.
			kW	V	A						
WELL C 80	100 l/min	48 m	0,6	230	4,4	1¼", DN 32	50 x 12,8 cm	38 mm	15 kg	5	1650368
WELL C 150	100 l/min	68 m	1,1	230	7,5	1¼", DN 32	57 x 12,8 cm	42 mm	19 kg	6	165037
WELL P 100	50 l/min	60 m	0,75	230	6	1", DN 25	49,5 x 9,5 cm	42 mm	14 kg	1	165014

Pump Control V10 Plus

Multifunctional control device for pumps with 230 or 400V, up to 7,5 kW and 16 A.

Functions:

- ▶ integrated level control
- ▶ programmable dry run protection
- ▶ electronic over-/underload protection
- ▶ excess voltage, phase failure and lightning protection
- ▶ reverse battery protection
- ▶ blocking protection (activation of the pump every 24 h / 1 sec)
- ▶ storage of startings and working hours

Art. No.: 169013



Pump Control
V10 Plus

Pump control BRIO and ZUMATIC

Electronic and mechanical pump controls for automation of garden pumps and domestic water supply pumps. The pump control starts the pump automatically on withdrawal of water and stops it when withdrawal is finished.

ZUMATIC

Mechanical pump control with surge tank and pressure gauge. Particularly suitable for high capacity pumps and for pressure boosting. No dry run protection.

230 Volt, 2-12 bar:	Art. No.: 169017
400 Volt, 1-5 bar:	Art. No.: 169016
230 Volt, 1-5 bar:	Art. No.: 169001
400 Volt, 2-12 bar:	Art. No.: 169018

BRIO

Electronic pump control to be installed anywhere in the line between pump and first outlet. Ensures constant pressure distribution. Easy mounting and installation.

With dry run protection: pump is cut off automatically when running without water (signal light). Suitable also for retrofitting existing pumps.

with brass screwing, without cable and plug:	Art. No.: 169009
with brass screwing, cable and plug:	Art. No.: 1690092



ZUMATIC with
pressure switch



BRIO

Pump Control Venscu:

Control for submersible pumps. With dry run protection:

- ▶ port for pressure control
- ▶ electronic overload protection
- ▶ operating capacitor for pump

for 230 V pumps	Art. No.: 169034 (for 11A), 169035 (for 13A)
for 400 V pumps	Art. No.: 169044 (for 3,7A), 169045 (for 5,5A)

Additional equipment: probes for water level monitoring. Page 8



Pump Control
Venscu

Accessories

Probes

Probes for pump control, level regulation for fluidlevels Art. No.: 169000



Probes

Hose

PVC-hose, operating pressure: 5,5 to max. 6,5 bar, spiral insert per meter

- ▶ hose 19 mm, ¾" Art. No.: 30033
- ▶ hose 25 mm, 1" Art. No.: 30059
- ▶ hose 30 mm, 1 ¼" Art. No.: 30081
- ▶ hose 40 mm, 1 ½" Art. No.: 30083
- ▶ hose 50 mm, 2" Art. No.: 30050

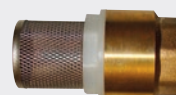


Hose

Stop valve

Clapper valve in different sizes, brass with stainless steel strainer, for water

Art. No.: 131048, 131061, 131053, 131054, 131055



Stop valve

Transport trolley

Cart with removable push rod and convenient cable holder.

Art. No.: 136101



Transport trolley

Float switch:

Float switch with 5 m cable and adapter plug, suitable for nearly all pump types.

Art. No.: 131066



Float Switch

Filters for Water Pumps

Water filter 1¼" i with cartridge Art. No.: 131017

Water filter 1½" i with cartridge Art. No.: 131018

Water filter 1" i with cartridge Art. No.: 131087



Wasserfilter



Diaphragm Pumps
for agriculture, horticulture and more



Constant, pulsation free conveyance of fluids



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**QUALITY
SINCE 1946**

Diaphragm Pumps

Main Information

The construction of the rugged ZUWA double piston diaphragm pumps provides for a constant and pulsation free transport of fluids. The pumps work in a medium pressure range and offer excellent intake capacity.

Spraying herbicides and pesticides on small to mid size crops is the most frequent application of diaphragm pumps in agriculture and horticulture. The pumps are also suitable for whitewashing stables and for applying INDISPRON® D 110 against parasites in poultry farms.

For the use with acids a pump with propylene housing and VITON® diaphragm is available. The corrosion resistant pumps can be mounted on carts, commercial vehicles, tractors or trailers.

Applications:

- ▶ spraying herbicides and pesticides
- ▶ distributing liquid fertilizer
- ▶ spraying detergents and paint
- ▶ whitewashing stables
- ▶ chemical disinfection
- ▶ cleaning industrial installations

Features:

- ▶ pump housing nylon or polypropylene
- ▶ continuously adjustable pressure regulator with recirculation, can be used for agitation
- ▶ mechanical parts oil bath lubricated
- ▶ good dry run tolerance
- ▶ glycerine manometer (except for MC 8 and MC 18)

Drive Modes:

Pumps are flanged directly onto the motor.

- ▶ electric motors 230 or 400 V
- ▶ combustion engines 2- or 4-stroke (Honda)
- ▶ p.t.o. shaft (only for model MP 30)
- ▶ hydraulic drive



with electric motor



with combustion engine



diaphragm pump with p.t.o. connection



with p.t.o. shaft

MC 8, MC 18 and MC 20

- ▶ for spraying applications in parks, lawns, nurseries and small to mid size crops
- ▶ for industrial applications
- ▶ for water soluble detergents or paint

Diaphragms are available in NBR, Viton® or Desmopan®.
For acids: MC 8 and MC 18 with polypropylene housing and VITON® diaphragm.



MC 20 with 2-stroke motor



MC 8 with electric motor



MC 18 with electric motor acid version



MC 20 with electric motor

Technical details

Model	Motor power			rpm	Flow rate max.	Pressure max.	Connections in/out	Weight	Dimensions cm	Art.No.
	kW	V	A							
MC 8 *	0,44	230	3,2	1400	7,8 l/min	15 bar	16,4 x 10,5	9 kg	32 x 22 x 32	120652
	0,44	400	3,2	1400	7,8 l/min	15 bar	16,4 x 10,5	8 kg	32 x 24 x 22	120653
MC 8 * for acids	0,44	230	3,2	1400	7,8 l/min	15 bar	16,4 x 10,5	9 kg	32 x 22 x 32	1206421
MC 18 *	0,44	230	3,2	1400	11,9 l/min	15 bar	16,4 x 10,5	9,7 kg	32 x 22 x 32	1206412
	0,44	400	3,2	1400	11,9 l/min	15 bar	16,4 x 10,5	9,7 kg	32 x 24 x 22	1206413
MC 18 for acids	0,37	230	3,2	1400	11,9 l/min	15 bar	16,4 x 10,5	9,7 kg	32 x 22 x 32	1206422
MC 20 *	0,92	230	6	650	23 l/min	20 bar	18 x 10	15,6 kg	48 x 30 x 22	120603
	0,92	400	1,9	650	23 l/min	20 bar	18 x 10	15,6 kg	48 x 30 x 22	120635
MC 20 with 2-stroke motor	1,3	-	-	650	23 l/min	20 bar	18 x 10	10 kg	36 x 28 x 34	120604
MC 20 with 4-stroke motor	2,61	-	-	650	23 l/min	20 bar	18 x 10	25 kg	45 x 37 x 35	120643H

* Standard-Version with electric motor

Models MC 8 and MC 18 are available with combustion engine upon request. All models are available with different engine power.

Diaphragm Pumps

MC 25 and MP 30

MC 25 and MP 30

- ▶ for spraying applications in parks, lawns, nurseries and small to mid size crops
- ▶ for industrial applications
- ▶ for water soluble detergents or paint

Diaphragms are available in NBR, Viton® or Desmopan®.



MP 30 with electric motor



MC 25 with combustion engine



MC 25 with electric motor



MP 30 with 4-stroke motor

Technical details

Model	Motor power			rpm	Flow rate max.	Pressure max.	Connections in/out	Weight	Dimensions cm	Art.No.
	kW	V	A							
MC 25 *	1,1	230	7,1	650	23 l/min	25 bar	18 x 10	15 kg	48 x 30 x 22	12064305
	1,1	400	3,2	650	23 l/min	25 bar	18 x 10	14 kg	44 x 27 x 33	12064306
MC 25 with 4-stroke motor	2,61	-	-	650	23 l/min	25 bar	18 x 10	25 kg	56 x 37 x 38	12064304
MP 30 with p.t.o. shaft	-	-	-	550	32 l/min	30 bar	23,5 x 11,6	6,6 kg	10 x 26 x 22	120627
MP 30 *	2,2	230	15,2	550	32 l/min	30 bar	23,5 x 11,6	29 kg	57 x 26 x 34	120624
	2,2	400	4,85	550	32 l/min	30 bar	23,5 x 11,6	28 kg	56 x 35 x 29	120625
MP 30 with 4-stroke motor	3,7	-	-	550	32 l/min	30 bar	23,5 x 11,6	30 kg	48 x 35 x 37	120622

* Standard version with electric motor



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PTO Pumps

Irrigation, flushing, plant protection



PTO Pumps from ZUWA are ideal to convey water and pesticides. They are self-priming and sturdy. The PTO 20 and 25 are fully equipped. For PTO 300 accessories are to be ordered separately.



*PTO 20
with accessory
kit irrigation*



*PTO 25
with accessory
kit washing*



*PTO 300
with accessory
kit irrigation*

Technical Details

PTO Pump		Flow rate max.	Discharge pressure max.	Rpm	Connections inlet/outlet	Art.No.
PTO 20	with accessory kit washing	70 l/min	25 bar	700	1 1/4" - 3/4"	120681
	with accessory kit irrigation	180 l/min	25 bar	700	1 1/4" - 1 1/4"	120682
PTO 25 with BY-Pass	with accessory kit washing	70 l/min	25 bar	700	1 1/4" - 3/4"	120683
	with accessory kit irrigation	180 l/min	25 bar	700	1 1/4" - 1 1/4"	120684
PTO 300	without accessories*	170-300 l/min	30 bar	700	1 1/2" - 1 1/2"	120680

*Accessories see back side



PTO Pumps



Accessory Kits	PTO 20 and PTO 25		PTO 300*	
	washing	irrigation	washing	irrigation
3 m suction hose	✓ 1 1/4"	✓ 1 1/4"	✓ 1 1/2"	✓ 1 1/2"
7 m pressure hose	✓ 3/4"	✓ 1 1/4"	✓ 3/4"	✓ 1 1/2"
Sieve	✓	✓	✓	✓
Brass nozzle	✓	✗	✓	✗
Hose clamp	✓	✓	✓	✓
Art.No.	-	-	1206801	1206802



Repair Kit PTO 20, 25

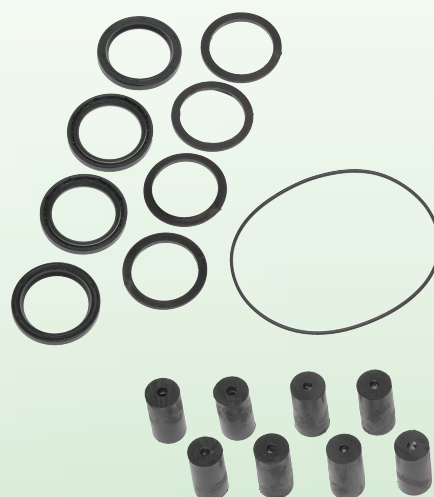
- ▶ 8 pcs. nylon rolls
- ▶ 4 pcs. gasket rings 45 x 60 x 7
- ▶ 4 pcs. distance rings
- ▶ 1 pcs. O-ring 3525

Art.No.: 120687

Repair Kit PTO 300

- ▶ 10 pcs. nylon rolls
- ▶ 4 pcs. gasket rings 45 x 60 x 7
- ▶ 4 pcs. distance rings
- ▶ 1 pcs. O-ring 4725

Art.No.: 120686



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für Pflanzenschutz, Pflege und Düngung
for plant protection, cultivation and fertilization



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QUALITÄT
SEIT 1946
QUALITY SINCE 1946

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ZUWA-Zumpe GmbH

Das familiengeführte Unternehmen ZUWA-Zumpe GmbH steht seit mehr als 65 Jahren für Qualität und innovative Produkte. Die langjährige Erfahrung in der Herstellung und Entwicklung von Pumpen ermöglicht uns ein vielfältiges Sortiment. Das Produktspektrum von Pumpen, Zapfsäulen, Pflanzenschutzgeräten bis hin zu Füll- und Spülstationen ist weltweit gefragt. ZUWA führt ein Qualitätsmanagement-System nach ISO 9001:2008, dass regelmäßig vom TÜV-SÜD überprüft wird – Prozesssicherheit und gleichbleibend hohe Qualität wird gewährleistet. Durch den engen Kontakt zu unseren Kunden bekommen wir immer wieder Anregungen und Impulse für Verbesserungen und Weiterentwicklungen unserer Produkte.

Die eigene Produktion und Werkstatt im Haus ermöglicht uns jederzeit Sonderwünsche, Spezialanfertigungen und Reparaturen auszuführen. Kompetente Ansprechpartner und kurze Wege innerhalb der Firma sorgen für einen zuverlässigen und schnellen Service.



Daten, Angaben, Abbildungen, Beschreibungen und Maße des gesamten Prospekts sind unverbindlich und dienen nur der Veranschaulichung. Änderungen behalten wir uns vor. Für Druckfehler übernehmen wir keine Haftung.

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.

All data, descriptions, photos, images and dimensions of the entire brochure are non binding and shall be used for visualisation only. We reserve the right for amendments and can not be held liable for printing errors.

Rückenspritze | Knapsack Sprayer

Spritzgeräte für Pflanzenschutz, Pflege und Düngung

Behälter in verschiedenen Größen

- ▶ mit Füllstandsmarkierung
- ▶ restlos entleerbar
- ▶ große Einfüllöffnung mit Siebeinsatz

Verschleißarme Membranpumpen

- ▶ mit leistungsfähigen Elektro- oder Verbrennungsmotoren, 2- oder 4-Takt
- ▶ trockenlaufsicher
- ▶ mit Glyzerinmanometer (nicht MC 18)

Druckregler mit Bypass

- ▶ stufenlos einstellbar
- ▶ Rücklauf kann als Rührwerk eingesetzt werden (Rührdüse ist als Zubehör lieferbar)

Geländetaugliche Fahrgestelle

- ▶ robust und verwindungssteif
- ▶ leichtgängige Luftreifen

Sprayers for plant protection, cultivation and fertilization

Tanks in different sizes

- ▶ with graduation marks
- ▶ can be drained completely
- ▶ wide tank openings with integrated sieve

Durable diaphragm pumps

- ▶ with high capacity electric or combustion engine, 2- or 4-stroke
- ▶ dry run resistant
- ▶ with glycerine manometer (except MC 18)

Pressure regulation with bypass

- ▶ continuously adjustable
- ▶ recirculation can be used for mixing of fluids (agitator available on option)

All-terrain carts

- ▶ sturdy and warp resistant
- ▶ smooth running pneumatic wheels

Rückenspritze / KNAPSACK SPRAYER

10- oder 20-Liter Behälter

Die Rückenspritze ist angenehm zu tragen durch breite, gepolsterte Trageriemen und Rückenkissen aus Leder. Eine große, doppelt wirkende Kolbenpumpe mit Windkessel aus Messing sorgt für gleichbleibenden Druck bei geringem Kraftaufwand. Die Pumpe ist außerhalb des Tanks bequem zu reinigen und wartungsfreundlich. Ersatzteilgarantie!

- ▶ Rückenspritze mit großer Öffnung und Füllstandsmarkierung
- ▶ Spritzrohr 60 cm mit Momentabstellventil
- ▶ Manometer
- ▶ Bogenstück und verstellbare Düse

10 Liter, Art. Nr. 500001 - 20 Liter, Art. Nr. 500004

10- or 20-Litres Tank

Comfortable carrying with soft leather pads for shoulders and back. Large double piston pump with brass air reservoir maintaining constant high pressure at minimum effort. Externally attached pump allows for easy cleaning and maintenance. Spare parts are available for decades!

- ▶ Knapsack sprayer with wide mouth and filling marks
- ▶ spray pipe 60 cm with shut-off valve
- ▶ pressure gauge
- ▶ bow-shaped segment and adjustable cone

10 litres, Art. No. 500001 - 20 litres, Art. No. 500004



Karrenspritze | Cart Sprayer

F-30 | F-55

Karrenspritze F-30 KOMPAKT mit Zubehör | Cart Sprayer F-30 KOMPAKT incl. accessories

30-Liter Behälter

Kompaktes Fahrgestell mit 10 m Druckschlauch und Spritzrohr 750 mm komplett.

- ▶ höhenverstellbarer Teleskopgriff
- ▶ Tragegriff auf der Rückseite für bequemes Tragen mit einer Hand
- ▶ Maße: 76-100-110 x 49 x 51 cm

30-Litres Tank

Compact chassis with 10 m pressure hose and spray wand 750 mm complete.

- ▶ retractable telescopic handle
- ▶ carrying handle on rearward side for convenient transport of the device
- ▶ dimensions: 76-100-110 x 49 x 51 cm



Karrenspritze F-55 | Cart Sprayer F-55

55-Liter-Behälter

Einteiliges Fahrgestell in schmaler Bauform, gut geeignet für Verkaufsräume mit Ecken und schmalen Durchgängen.

- ▶ Reifengröße: 260 x 85 mm
- ▶ Maße: 60 x 47 x 105 cm

OPTIONAL:
Schlauch und
Spritzrohr

55-Litres-Tank

One-piece chassis, narrow construction, well adapted for locations with narrow aisles and corners.

- ▶ tyre size 260 x 85 mm
- ▶ dimensions: 60 x 47 x 105 cm

ON OPTION:
Hose and
spray wand



Technische Details | Technical details

Karrenspritze / Cart Sprayer	Motor			Förderleistung / Flow rate max.	Förderdruck / Pressure max.	Gewicht / Weight	Art.Nr. / Art.No.
	kW	V	A				
F-30 MC 18	0,37	230	3,2	11,9 l/min	15 bar	24 kg	132028
F-55 MC 18	0,37	230	3,2	11,9 l/min	15 bar	28 kg	132060
F-55 MC 20	1,0	230	6	23 l/min	20 bar	34 kg	132061
F-55 MC 20	1,0	400	1,9	23 l/min	20 bar	34 kg	132063
F-55 MC 20	1,3	2-Takt/stroke		23 l/min	20 bar	36 kg	132062



MC 20



MC 18



MC 20-2T
2-Takt/2-stroke

Karrenspritze F-120 | Cart Sprayer F-120

120-Liter Behälter

Zweiteiliges Fahrgestell mit abnehmbarem Handgriff. Das Drehkreuz erleichtert das Abrollen des Schlauches in alle Richtungen und ebenso das Aufrollen.

- ▶ Drehkreuz zum Schwenken der Schlauchhaspel
- ▶ Reifengröße: 400 x 100 mm
- ▶ Maße: 140 x 68 x 83 cm

OPTIONAL:

Spritzrechen zur Montage an der Rückseite des Karrens und Lenkrolle vorne

120-Litres Tank

Two-piece chassis with removable handle. The Reel base for easy delivery and retraction of hose to all directions.

- ▶ rotating reel base
- ▶ Tire size: 400 x 100 mm
- ▶ Dimensions: 140 x 68 x 83 cm

ON OPTION:

Spray bar for mounting on the back side of the cart and jockey wheel mounted on the front side



optional mit Lenkrolle vorne
on option with front side jockey wheel



Drehkreuz
rotating reel base



Technische Details | Technical details

Karrenspritze Cart Sprayer	Motor			Förderleistung / Flow rate max.	Förderdruck / Pressure max.	Gewicht / Weight	Art.Nr. / Art.No.
	kW	V	A				
F-120 MC 18	0,37	230	3,2	11,9 l/min	15 bar	37 kg	132078
F-120 MC 18	2,2	4-Takt/stroke		11,9 l/min	15 bar	42 kg	132077
F-120 MC 20	1,0	230	6	23 l/min	20 bar	44 kg	132071
	1,0	400	1,9	23 l/min	20 bar	44 kg	132076
F-120 MC 20	1,3	2-Takt/stroke		23 l/min	20 bar	37 kg	132072
	2,2	4-Takt/stroke		23 l/min	20 bar	44 kg	132073H
F-120 MC 25	1,1	4-Takt/stroke		23 l/min	25 bar	46 kg	132078H
F-120 MP 30	2,2	400	4,8	32 l/min	30 bar	44 kg	132075
F-120 MP 30	4,1	4-Takt/stroke		32 l/min	30 bar	48 kg	132074H

Karrenspritze | Cart Sprayer

F-200/300

Karrenspritze F-200/300 Cart Sprayer F-200/300

200- oder 300-Liter Behälter

Fahrgestell mit zwei Lenkrollen* für mehr Stabilität und leichteres Rangieren. Weitere Vorteile: Große Luftreifen und abnehmbarer Handgriff.

- ▶ Reifengröße 400 x 100 mm
- ▶ Maße: 180 x 80 x 85 (90) cm

* Optional: Lenkrollen mit Luft

200- or 300 Litres Tank

Chassis with two jockey wheels* providing for better stability and convenient transport. Further benefits: large pneumatic tires and removable handle.

- ▶ Tire size 400 x 100 mm
- ▶ Dimensions: 180 x 80 x 85 (90) cm

* On Option: pneumatic jockey wheels

OPTIONAL:

- ▶ Drehkreuz zum Schwenken der Schlauchhaspel für einfache Handhabung
- ▶ Breitreifen 480 x 200 mm
- ▶ mit Pumpentyp MC 20 für niedrigeren Druck

ON OPTION:

- ▶ rotating reel base for convenient handling of the hose
- ▶ large tires 480 x 200 mm
- ▶ with pump MC 20 for lower pressure



MP 30



MP 30 4-Takt/4-stroke



Technische Details | Technical details

Karrenspritze / Cart Sprayer	Motor			Förderleistung / Flow rate max.	Förderdruck / Pressure max.	Gewicht / Weight	Art.Nr. / Art.No.
	kW	V	A				
F-200 MP 30	2,2	400	4,8	32 l/min	30 bar	68 kg	132456
F-200 MP 30	4	4-Takt/stroke		32 l/min	30 bar	74 kg	132457H
F-300 MP 30	2,2	400	4,8	32 l/min	30 bar	75 kg	132556
F-300 MP 30	4,1	4-Takt/stroke		32 l/min	30 bar	81 kg	132557H

Anhängerspritze EAS-200/300 Trailer Sprayer EAS-200/300

200- oder 300-Liter Behälter

Anhängerspritzgeräte für Kleintraktoren. Fahrgestell mit großen Luftreifen, höhen- und längenverstellbarer Deichsel, höhenverstellbares Deichselstützrad mit Kurbel.

- ▶ Reifengröße 400 x 100 mm
- ▶ Maße: 200 x 80 x 85 (90) cm

200- or 300-LitresTank

Trailer sprayers for lawn or garden tractors. Chassis with large pneumatic tires, tow bar adjustable in height and length, jockey wheel with crank handle.

- ▶ Tire size 400 x 100 mm
- ▶ Dimensions: 200 x 80 x 85 (90) cm

OPTIONAL:

- ▶ Drehkreuz zum Schwenken der Schlauchhaspel für einfache Handhabung
- ▶ Breitreifen 480 x 200 mm
- ▶ Deichsel mit Kugelkopfkupplung für PKW oder Zugöse

ON OPTION:

- ▶ rotating reel base for convenient handling of the hose
- ▶ large tires 480 x 200 mm
- ▶ shaft with trailer coupling for cars or drawbar eye



Breitreifen / large tires



Technische Details | Technical details

Anhängerspritze / Trailer Sprayer	Motor			Förderleistung / Flow rate max.	Förderdruck / Pressure max.	Gewicht / Weight	Art.Nr. / Art.No.
	kW	V	A				
EAS-200 MP 30	2,2	400	4,85	32 l/min	30 bar	84 kg	132460
EAS-200 MP 30	3,7	4-Takt/stroke		32 l/min	30 bar	90 kg	132462H
EAS-300 MP 30	2,2	400	4,85	32 l/min	30 bar	91 kg	132560
EAS-300 MP 30	3,7	4-Takt/stroke		32 l/min	30 bar	97 kg	132562H
EAS-200br MP 30*	4,1	4-Takt/stroke		32 l/min	30 bar	105 kg	132469
EAS-300br MP 30*	4,1	4-Takt/stroke		32 l/min	30 bar	111 kg	132569
EAS-200 MP 30	-	Zapfwelle/PTO		32 l/min	30 bar	80 kg	132463
EAS-300 MP 30	-	Zapfwelle/PTO		32 l/min	30 bar	87 kg	132563

* Reifengröße / tire size 480 x 200 mm

Anbauspritze | Tractor Mounted Sprayer

Gießgerät F-120 | Watering Sprayer F-120

Anbauspritze ABS 200/300 | Tractor Mounted Sprayer ABS 200/300

200- oder 300-Liter-Behälter

Kompakte Anbauspritze mit massivem Rahmen für 3-Punkt-Aufhängung von Schleppern. Leistungsstarke Membranpumpe MP 30 für Zapfwellenantrieb inklusive Fernanschluss.

Auch Sonderanfertigungen nach Kundenwunsch möglich!

► Maße: 90 x 60 x 110 cm

200 or 300 Litres Tank

Compact tractor mounted sprayer with robust frame and three point hitch. Efficient diaphragm pump MP 30 for connection with p.t.o. shaft including remote control.

We offer individual fabrication according to customer's specification!

► Dimensions: 90 x 60 x 110 cm

OPTIONAL:

- Spritzrechen
- Schlauchhaspel



ON OPTION:

- Spray bar
- hose reel



Zapfwellenanschluss /
PTO Connection



Fernanschluss /
remote connection

Technische Details | Technical details

Anbauspritze / Tractor Mounted Sprayer	Förderleistung / Flow rate max.	Förderdruck / Pressure max.	Behälter / Tank	Gewicht / Weight	Art.Nr. / Art.No.
ABS-200	32 l/min	30 bar	200 l	75 kg	132483
ABS-300	32 l/min	30 bar	300 l	85 kg	132484

Gießgerät F-120 | Watering Sprayer F-120

120-Liter-Behälter* | 120-Litre-Tank*

Trocken selbstansaugende Impellerpumpe und robustes Fahrgestell für Parks/ Friedhöfe. Leise, batteriebetriebene Pumpe (Batterie exklusive) mit ZUMATIC-Pumpensteuerung - automatisches Ein- und Ausschalten beim Öffnen oder Schließen des Gießrohres. Art.Nr. 133004 12V und 133006 24V

- Förderleistung max.: 30 (optional 60) l/min
- Antrieb 12 oder 24 Volt mit mindestens 80 A/h

Watering sprayer with dry self-priming impeller pump and sturdy chassis for applications in parks/cemeteries. Noiseless battery driven pump (battery exclusive) with ZUMATIC pump control. The pump starts/stops automatically on opening or closing the spray pipe. Art.No. 133004 12V and 133006 24V

- Flow rate max.: 30 (on option 60) l/min
- Drive: battery 12 or 24 Volt with minimum 80 A/h



* auch mit 200- oder 300-Liter Behälter lieferbar oder zur Montage auf einer Anhängerpritsche.

* also available with 200 or 300 litre tank or designed for being mounted on a pick up truck or a van.

Schlauch | Hose

Schlauch PVC $\frac{3}{8}$ " , max. 40 bar, Meterware, Art.Nr. 30085

Hose PVC $\frac{3}{8}$ " , max. 40 bar, sold per metre, Art.No. 30085



Schlauchhaspeln | Hose Reels

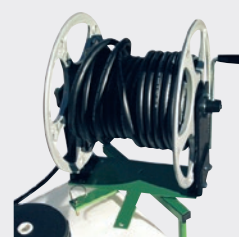
Schlauchhaspeln / Hose reels	für / for	Art.Nr. / Art.No.
manuell / manual	50 m	131042
manuell / manual	100 m	131043
automatisch / auto-retracting	40 m	131244



Drehkreuz für Schlauchhaspeln | Rotating reel base

Zum Schwenken der Schlauchrolle in alle Richtungen. Einfaches Auf- und Abrollen des Schlauches ohne Kippen des Fahrgestells. Art.Nr. 131230

Rotating reel for convenient multidirectional delivery and retracting of hose without tilting the cart. Art.No.131230



Spritzrechen | Spray Bars

Spritzrechen / spray bar	Düsen / nozzles	Spritzbreite / Spray coverage	Art.Nr. / Art.No.
klappbar / hinged	6	3 m	133101
klappbar / hinged	8	4 m	133102
steif / rigid	3	1,5 m	550020



Spritzpistolen | Spray Guns

- Spritzpistole mit verstellbarer Düse 2,3 mm, Tragegurt, Anschlussgewinde $\frac{1}{2}$ ". Art.Nr. 14790110
- Spritzpistole HYDRA Plus, Einhandbedienung, Anschlussgewinde $\frac{1}{2}$ " a, Art.Nr. 550005

- Spray gun with adjustable nozzle 2.3 mm, shoulder strap, connecting thread $\frac{1}{2}$ ". Art.Nr. 14790110
- Spray gun HYDRA Plus, for single handed use, connecting thread $\frac{1}{2}$ " ext., Art.No. 550005



Düsen | Spray nozzles

Düsen für Spritzpistolen / Spray nozzles	Art.Nr. / Art.No.
Ø 1,0 mm	55001503
Ø 1,5 mm	55001501
Ø 2,0 mm	55001502



Zubehör Accessories

Gießrohr | Pouring Tube

Gießrohr mit Brausekopf, KS Kugelhahn, ALU-Rohr, mit 3/4" Gewinde,
Art.Nr. 550007 - mit GEKA-Anschluss, Art.Nr. 550008

Watering tube with shower nozzle, ball valve, aluminium wand, with 3/4" thread,
Art.No. 550007 - with GEKA connection, Art.No. 550008



Schutzschirme | Safety Shields

Schutzschirme mit Flachstrahldüse / Safety shield with flat fan nozzle	Form / Shape	Art.Nr. / Art.No.
Ø 35 cm	oval / oval	550120
Ø 25 cm	rund / circular	550119
Ø 20 cm		550118
Ø 15 cm		550117



Spritzrohre | Spray Pipes

- ▶ Spritzrohr: Momentabstellventil, Messingrohr, Bogenstück, verstellbare Düse 1,5 mm, Schlauchanschluss 1/2" oder 3/8", Rohranschluss M12 x 1,25 Länge 75 cm, Art.Nr. 550402 - Länge 100 cm, Art.Nr. 550401
 - ▶ Momentabstellventil Messing, Anschluss 1/2" a, Rohranschluss M12 x 1,25 Art.No. 550420
 - ▶ Bogenstück Messing, Rohranschluss M12 x 1,25, Art.No. 550421
- ▶ Spray pipe kit with shut-off valve, brass wand, bow-shaped segment, adjustable nozzle 1,5 mm, hose thread 1/2" or 3/8", pipe connection M12 x 1,25 length 75 cm, Art.No. 550402 - length 100 cm, Art.No. 550401
 - ▶ Shut-off valve brass, thread 1/2" ext., pipe connection M12 x 1,25. Art.No. 550420
 - ▶ Bow-shaped segment brass, pipe connection M12 x 1,25. Art.No. 550421

Verlängerungsrohre für Spritzrohr / Spray pipe extensions	Art.Nr. / Art.No.
Messing / brass 60 cm, 75 cm, 100 cm	550106, 550107, 550108
Aluminium 50 cm, 100 cm, 150 cm, 200 cm	550143, 550101, 550102, 550103



Düsen | Nozzles

Rohranschluss bei allen Düsen / Pipe connection for all nozzles: M12 x 1,25

Düsen für Spritzrohr / Nozzles for spray pipes	Ø mm	Art.Nr. / Art.No.
verstellbare Düse / adjustable nozzle	1,5	550209
Gabeldüse 2-fach / Y-connection	1,5	550217
Gabeldüse 3-fach / 3-way distributor	2,0	550212
Düse Messing, PVC / nozzle brass, PVC	1,5	550219
Düse Messing, PVC / nozzle brass, PVC	2,0	550222
Düse Messing, PVC / nozzle brass, PVC	2,3	550223
Kalkdüse (Fischmauldüse) / nozzle for whitewash	-	550205



Unkrautstäbe | Weed Wands

Funktionsweise | Function

Beim Bestreichen des Unkrauts mit dem Docht wird von den Blättern der behandelten Pflanze ein systemisches, nicht selektiv wirkendes Herbizid (z. B. Roundup®PowerFlex) aufgenommen. Das Herbizid dringt in die Wurzeln ein und zerstört das Unkraut.

Form und Anordnung des Dochts platzieren das Herbizid direkt auf dem Unkraut ohne Schaden für die angrenzende Vegetation.

Ersatzdochte und Verschlusskappen einzeln erhältlich.

Vor Inbetriebnahme des Gerätes hat sich jeder Anwender zu vergewissern, dass das eingesetzte Mittel die Streichzulassung aufweist!

When wiping the rope wick onto weeds a systemic, non-selective herbicide (e. g. Roundup®PowerFlex) is absorbed by the foliage of the treated plant, penetrates the root system and destroys the weed.

The wick's shape and configuration place the herbicide directly on the target weed without damaging adjacent vegetation.

Replacement wicks and sealing caps individually available.

Prior to using the device the user needs to make sure the agent used has a permission / certification for the specific application!

Typ / Type	Länge / Dimension	Arbeitsbreite / coverage	Füllmenge / content	Art.Nr. / Art.No.
310	Länge je 1 m / length 1 m	5 cm	0,4 l	300311
315*		15 cm	0,6 l	300316
320*		20 cm	0,6 l	300321
330		30 cm	0,6 l	300330
350	1,30 m	50 cm	1,3 l	300350
Markierungsfarbe / Marker dye	50 ml			300300

* mit LSV-Zertifikat / LSV-certificate

Flächenstreichgerät 2000-SB Wick Wiper Bar 2000-SB

Bausatz für Selbstmontage | Self installation kit

Flächenstreichgeräte zur Montage an Schleppern.

- ▶ Grundeinheit**: Dochtbalken mit 6 Dochten, Streichbreite 1,4 m, 10-Liter Behälter mit Kugelhahn, 1,5 m Schlauch ½" mit Schlauchverschraubung und 2 Schlauchklemmen. Art.Nr. 300501
- ▶ Verlängerung: Dochtbalken mit 6 Dochten, Streichbreite 1,3 m, 1,5 m Schlauch ½" mit Armaturen, Verbindungsstücken und 5 Schlauchklemmen. Art.Nr. 300502

** Verbindung zur Drei-Punkt-Aufhängung des Schleppers nicht inklusive.

Wick wiper bar for tractor mounting.

- ▶ Basic Unit**: bar with 6 rope wicks, coverage 1.4 m, 10 litres tank with ball valve, 1.5 m hose ½" with hose and connections and 2 hose clamps. Art.Nr. 300501
- ▶ Extension Unit: bar with 6 rope wicks, coverage 1.3 m, 1.5 m hose ½" with fittings, connections and 5 hose clamps. Art.Nr. 300502

** Attachment to three-point hitch of a tractor not included.



Unkrautstab 310
Weed Wand 310



Unkrautstab 315/320
Weed Wand 315/320



Unkrautstab 330
Weed Wand 330



Unkrautstab 350
Weed Wand 350





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The ZUWA Vole Fighter

Nonpolluting, simple, save!



No more disturbing Volehills

The ZUWA vole fighter is a well tested, easy to handle and absolutely save device to remove voles in a short time.

Fully equipped:

- ▶ 2-stroke Otto motor with fan
- ▶ 2 probes and 1 gas injector
- ▶ 6 meters hose and hose carrier
- ▶ 5 liter fuel tank



OPTIONALLY:
longer axle for more
comfort in rough
terrain

Contrary to other methods the fumigation with ZUWA Vole Fighter does not expel the voles but eradicates them even in wide spread tunnel systems.

No environmental impact! The application of ZUWA Vole Fighter is absolutely safe for the operator. The procedure is environmentally compatible and does not contaminate the soil. It does not affect other wildlife nor pets or poultry.

Simple application, rapid result:

1. insert the gas injector into a vole tunnel
2. initiate exhaust emission for about 3-5 min

Using the ZUWA Vole Fighter is simple - the gas injector is inserted into a vole tunnel and exhaust emission is pumped into the tunnel system. Fanned, the gas spreads so rapidly, that there is no time for the vole to leave or block the tunnel. The dosed gas concentration is so high that an immediate death of the voles is guaranteed.

Technical details:

The ZUWA Vole Fighter

Cylinder capacity	72,4 cm ³
Power	2,6 kW (3,5PS)
Ventilation system performance	max. 960 m ³ /h; 120 m/s
Dimensions	67 x 48 x 104 cm
Weight	ca. 27 kg
Article number	400001



THE ORIGINAL -
Made BY ZUWA -
German Top Quality



The ZUWA Vole Fighter

Stop the voles!!!

Stop the vole plague by using the ZUWA Vole Fighter!
Vole infestation cause a number of damages:

- ▶ bad feed quality
- ▶ bad animal health
- ▶ power reduction, drop of animal power
- ▶ high wear and tear of machinery = high costs

A vole is an attack on your profit!

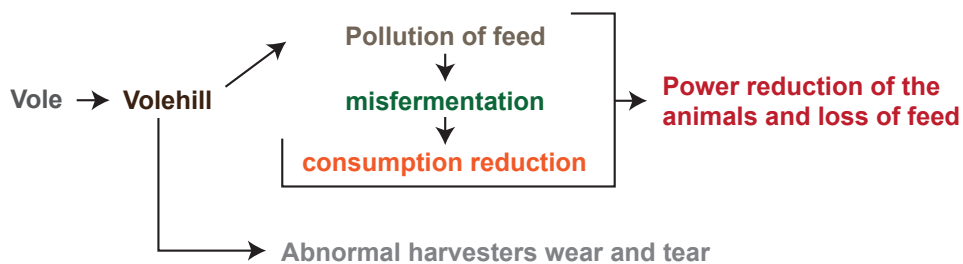
Damages caused by voles

Feed quality:

By feeding with butyric contaminated silage the animal health may be affected. Because of the disgusting taste of the silage, feed consumption decrease and dirt remains longer in the digestive tract. The result is a metabolic disorder and problems of udder health, fertility and the claws may be occur.

Agricultural machinery:

Abnormal wear and tear will be occur at harvesters and because of the high pollution of the feed additional efforts are needed.



Important information about voles:

Good environmental conditions and high food availability boost a very rapid growth of population. Therefore an immediate reaction is required to avoid a vole plague.

Fast and systematic action is needed!

The best time period for vole fighting is in spring (before the first propagation) and in autumn (to avoid that they can survive in winter). Vole fighting is a permanent process.

Please always take care about the affected areas to act immediately in case of new infestation. The result of none combating would be a fast reproduction and new damages.

There is a solution of fighting against voles. With the ZUWA Vole Fighter you get an effective tool to keep out voles from your areas in a simple way.

Many satisfied users confirm this again and again. Please use this device and take confidence of our long experience.

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I. Validity, conclusion of the contract

- 01 The following Conditions of Sale and Payment, as well as any separate contractual agreements, shall apply to all our supplies and services to our customer – hereinafter named “customer”.
- 02 Any deviating General Terms and Conditions of Business of the customer shall not form part of the contract, even through our acceptance of the order.
- 03 In the absence of a separate agreement, a contract shall materialise upon our written confirmation of the order. In the absence of any separate agreement, the type and scope of supplies and services shall substantially be in conformity with our order confirmation.

II. Offer, reservation of right to make amendments

- 01 All offers shall always be subject to confirmation.
- 02 The documents forming part of our offers, such as illustrations, drawings and details of weights and measures are only approximate values and, as such, are only applicable in so far as they are not expressly designated binding.
- 03 Any amendments to the technical design of the goods ordered shall be admissible in so far as a significant change in function does not occur thereby or the customer does not prove that the change is unreasonable for it.
- 04 We reserve our unrestricted ownership and our comprehensive intellectual property rights and copyrights in cost estimates, drawings, models, plans and any other documentation in material and immaterial form, in particular electronic form. They are to be treated confidentially and may not be made accessible to third parties.

III. Prices and payment terms

- 01 In the absence of any special agreement, our prices are always quoted in EUROS ex works. Within the country, the statutory applicable rate of VAT shall apply in addition to the prices. In the case of prices ex works the customer shall in addition bear the costs of packaging, insurance, despatch and any customs duties.
- 02 Our invoices are payable immediately without deduction - subject to any special written agreements.
- 03 In the event of arrears of payment and/or doubt concerning the creditworthiness of a customer we reserve the right to require the customer to pay in advance or to request a corresponding security deposit.
- 04 The customer may only assert rights of retention or offset our claims with counterclaims in so far as the latter have been determined undisputedly or with legal validity.
- 05 Partial deliveries shall be invoiced separately. In that respect, the respective above-mentioned conditions shall apply.

IV. Delivery and delivery deadline

- 01 The specifying of particular delivery deadlines and delivery dates shall be subject to the reservation that we receive correct and timely deliveries ourselves. Should any delays in that respect become apparent, we shall inform the customer of this as soon as possible.
- 02 The customer shall be obliged to inform us in good time of the exact delivery address; we shall not accept any liability for errors occurring on the part of the customer in that respect. Any additional costs which may be incurred shall be borne by the customer.
- 03 The delivery deadline shall only begin to run following receipt of all details and documentation necessary for processing the order from the customer.
- 04 Delivery deadlines shall be extended by the period in which the customer is in arrears with the fulfilment of its principal contractual obligations, in particular the fulfilment of its payment obligations.
- 05 The delivery deadline is deemed to have been adhered to if the items to be delivered have left the factory prior to its expiry or readiness for despatch has been notified to the customer. Deliveries ex works shall be fulfilled upon provision of the goods for collection by the customer.
- 06 Partial deliveries shall be permissible, in so far as they are reasonable for the customer.
- 07 We shall not be responsible for any delay and failure to deliver for as long as we or our assistants or suppliers are not blameworthy. This shall particularly apply in the event of Acts of God. Should a claim for compensation for damage accrue to the customer as a result of our delay in accordance with the statutory provisions, this shall be restricted to the damage foreseeable at the time of concluding the contract, however a maximum of 5% of the value of the partial or entire delivery, in so far as, in consequence of the delay or non-delivery, the latter cannot be used by the customer in good time or in accordance with the contract. This restriction shall not apply in so far as we are unrestrictedly liable in cases of intent or gross negligence. The customer is required to inform us immediately in writing on any impending damage due to delay.

- 08 Should the despatch of the items to be delivered be delayed for reasons which are the fault of the customer, we shall be entitled, commencing two weeks after notification of readiness for despatch, to charge the customer for any costs incurred through the delay.

V. Delay in acceptance

- 01 For the duration of the delay in acceptance we shall be entitled to store the delivery items at the customer's expense.
- 02 If the customer continues to refuse acceptance following the expiry of a reasonable deadline set for it, or previously finally and seriously declares that it no longer wishes to accept the delivery, we may withdraw from the contract and require compensation for damage in place of the customer's payment. As compensation for damage we may require 25% of the agreed purchase price. We reserve the right to assert a higher claim for damage.
- 03 Should the customer delay in acceptance of the delivery, the risk shall pass to it.

VI. Passing of risk

- 01 Upon agreed delivery carriage paid or DDU, the risk shall pass to the customer upon handing over the goods. In the case of delivery ex works, the risk shall pass to the customer upon provision of the delivery. This shall also apply if despatch is delayed as a result of circumstances for which we are not responsible. Should notification of readiness for despatch not occur, the risk shall pass to the customer upon handing over the goods to the post, the carrier or freight forwarder, however at the latest upon leaving the factory premises. This shall also apply to partial deliveries and in the event that we take on further services, such as the costs of despatch or delivery charges. We undertake to conclude insurances requested by the customer, at the customer's expense, upon receipt of advance payment.
- 02 With reference to our reservation of ownership, the customer is required to ensure that the delivery is insured, since, upon asserting our reservation of ownership, we take the full value of the goods as a basis and any damage or deterioration which has occurred to the delivery items in the meantime shall be made good at the customer's expense.
- 03 In the absence of any special agreement, any returns shall always be at the customer's expense and risk.

VII. Reservation of ownership

A) Business within the country

- 01 We reserve the right of ownership in the items delivered by us (reserved goods) in all cases. Respective ownership shall only pass to the customer following payment in full.
- 02 Should the customer be an independent contractor, it shall be entitled to resell the items supplied within the scope of its orderly course of business, and on its usual terms and conditions of business, for as long as it is not in arrears. In this case the customer already now assigns to us all receivables with all subsidiary rights accruing to it from the consumer or third parties as a result of the resale, and in fact regardless of whether the reserved goods are resold without or following further processing or manufacture. The customer shall continue to be entitled to collect these receivables following assignment. Our authorisation to collect the receivables ourselves shall remain unaffected thereby. We shall not make use of this authorisation for as long as the customer fulfils its payment obligations in an orderly manner. We may require the customer to make known to us the assigned claims and the debtors thereof, provide us with all details necessary for collection, hand over to us the associated documentation and inform the debtor of the assignment. Should the goods be sold on together with other goods, which do not belong to us, the customer's claim against the consumer shall be deemed to have been assigned to us in the amount of the value of the invoice due to us by the customer.
- 03 The reserved goods shall always be processed and manufactured for us as a manufacturer within the meaning of Sec. 950 German Civil Code, however without putting us under any obligation. The manufactured goods shall be deemed to be reserved goods within the meaning of these provisions. Should reserved goods be processed or inseparably mixed with other items, not belonging to us, we shall acquire co-ownership in the new item in the proportion of the invoice value of our retained goods to the invoice value of the other items used at the time of processing and mixing. The co-ownership rights which have arisen in this way shall be deemed to be reserved goods within the meaning of these provisions.
- 04 Should our delivery items be connected to or mixed with other moveable items to form an integrated item, and should the other item be considered the main item, we shall receive from the customer proportionate co-ownership, in so far as the main item belongs to the customer. Furthermore, the same shall apply to the item arising through the processing and connection or mixing as to the reserved goods.

- 05 The customer shall be obliged to keep our reserved goods in an orderly condition and store them with the due care of a trader. It shall in particular be obliged to adequately insure the latter at their new value against theft, breakage, fire, water and other damage, at its own expense.
- 06 The customer may not assign our reserved goods or pledge them as security, or either assign the claim to a third party or offset something else with it, nor agree a prohibition on assignment of claims with its customers. It shall also not be entitled to accept other services as payment, in particular also not other items or services in place of fulfilment.
- 07 Any authorisation by the customer concerning our reserved goods deviating from the aforementioned provisions shall be strictly prohibited without our prior consent, for as long as the reservation of ownership exists. Should the items supplied under reservation of ownership be subjected to levy of execution by third parties or otherwise claimed, the customer shall be obliged to inform us on this without delay and by the quickest method possible, if possible by telephone. The customer shall be obliged to forward us any bailiffs return, as well as an affidavit on the identity of the items seized.
- 08 Should the goods be taken back within the scope of the assertion of the reservation of ownership, the purchaser shall, in principle, remain obliged to fulfil the contract unless anything else has been expressly stated by us upon asserting the reservation of ownership. The costs of taking back the items and the realisation of the items of purchase shall be borne by the customer.
- 09 In the event of the customer engaging in conduct which is contrary to the contract, in particular in the case of delays in payment, we shall, following a reminder, be entitled to take back the reserved items, and the customer shall be obliged to hand over the items to us.
- 10 A petition for the institution of insolvency proceedings over the customer's assets shall entitle us to withdraw from the contract and require the immediate return of the goods supplied.

B) Business abroad

- 01 We reserve ownership in the items supplied until payment in accordance with the respective statutory provisions of the country of destination has been received in full. The reservation of ownership shall be deemed to have been expressly agreed between us and the customer. In so far as nothing else mandatorily emerges from the statutory provisions of the country of destination, the regulations agreed in these general Conditions of Sale concerning business within the country shall also apply to business abroad.
- 02 Should a reservation of ownership be inadmissible in accordance with the regulations of the country of destination, we shall be entitled to assert the rights to protection admissible there. The customer undertakes to advise us of the measures which we have to implement in order to protect these rights. The customer shall actively support us in implementing these measures. Should third parties assert rights in the items delivered, the customer is required to inform us of this by telephone and in writing without delay. We shall be entitled to carry out any registrations necessary based on the law of the foreign country due to our reservation of ownership.

VIII. Claims for defects, warranty

- 01 We shall be liable for our goods being free of defects upon the passing of risk. The nature, durability and use of our goods shall be geared exclusively towards the specification, product description and/or instructions for use agreed in writing. Any details going beyond that, in particular in introductory meetings, advertising, catalogues and/or industrial norms referred to, shall only form part of the contract through express written inclusion. If the customer wishes to use the goods supplied for purposes other than the agreed purpose, it is required to carefully examine the suitability for that purpose and/or the admissibility itself, on its own responsibility. We exclude liability for any use not expressly confirmed by us in writing.
- 02 The customer shall be obliged to examine the goods received for completeness, as well as any defects, the quality and the assured properties without delay following delivery. Any errors in quantity and recognisable defects are to be notified to us in writing without delay, at the latest within 5 business days of receipt, hidden defects within the same period following discovery. The warranty shall lapse for any defects not notified in good time.
- 03 Our liability for defects shall, in principle, be restricted to subsequent improvement. Subsequent improvement shall, at our option, be remedying the defect or supplying defect-free goods. Any further claims concerning defects shall only exist in the case of refusal, impossibility or failure of subsequent improvement. Should the purchase be a trade transaction, any increased expenditure for the subsequent improvement (in particular, costs of transportation, labour, shipping and handling and materials) resulting from the fact that the customer has brought the item purchased following delivery to a different place from its own premises shall be borne by the customer.
- 04 The customer shall, within the scope of the statutory provisions, have a right of withdrawal from the contract if, taking into account the statutory

exceptions, we permit a reasonable deadline set for us for the repair or replacement delivery due to a material defect to expire fruitlessly. Should there be only an insignificant defect, the customer shall only be entitled to a right of reduction in the purchase price. The right to a reduction in the purchase price shall otherwise be excluded.

- 05 Replaced parts within the scope of the warranty shall become our property.
- 06 Should the goods lack an assured quality at the time of the passing of risk, the customer shall be entitled to assert its statutory rights.
- 07 Any warranty claims of the customer shall become statute-barred in all cases within two years of the passing of risk.
- 08 We do not provide any warranty for the consequences of improper handling, use, maintenance and service of our goods by the customer or its assistants, or for normal wear and tear. This shall in particular also apply in regard to the consequences of thermal, chemical, electrochemical or electrical influences, as well as infringements of our instructions for use. The same shall apply if the defects are attributable to any intervention or arrangements made by the customer not confirmed by us.
- 09 Should we determine that there is no defect in the goods in which the customer has notified a defect, we shall be entitled to require compensation from the customer for the expenditure incurred to us (in particular for labour costs).

IX. General limitation of liability

- 01 For damage which has not been incurred to the delivery item itself, we shall only be liable – regardless of on what legal grounds – in the event of intent, gross negligence on the part of the institutions or executive staff; in the case of culpable injury to life, body and health; and in the case of defects which have been fraudulently concealed or the absence of which we have guaranteed. In the case of defects in the delivery item we shall accept liability in so far as we are liable in accordance with the Product Liability Act for damage to persons and property incurred to privately used items.
- 02 In the case of culpable infringement of significant contractual obligations we shall also be liable in the case of gross negligence of non-executive employees and in the case of slight negligence. In the latter case, limited to the contractually typical, reasonably predictable damage.
- 03 In cases other than those specified above, our liability shall be excluded. This shall in particular apply to claims for compensation for damage arising from fault upon concluding the contract, due to any other infringements of obligations or due to tortious claims for compensation for material damage pursuant to Sec. 823 German Civil Code.
- 04 The aforementioned limitation (Clause 3) shall also apply in the event that the customer demands compensation for futile expenditure in place of service instead of a claim to compensation for damage.
- 05 In so far as liability on our part is excluded or restricted, this shall apply equally in regard to personal liability for compensation for damage by our employees, workers, co-workers, representatives and assistants.

X. Statute of limitations

- 01 In so far as nothing else has been regulated above (Clause VIII 07), and in so far as the statutory period of limitations is not shorter, all claims on the part of the customer shall become statute-barred – regardless of on what legal grounds – no later than 12 months after the passing of risk to the customer.
- 02 Concerning claims to compensation for damage pursuant to Section IX, the statutory deadlines shall apply.

XI. Applicable law, place of fulfilment, place of jurisdiction

- 01 The contractual relationships shall exclusively be regulated in accordance with the law applicable in the Federal Republic of Germany, under exclusion of the UN Convention on Contracts for the International Sale of Goods (CISG).
- 02 The place of fulfilment for all contractual or statutory claims shall be the Head Office of our company.
- 03 Should the customer be a trader, the Head Office of our company shall be the exclusive place of jurisdiction. The same place of jurisdiction shall apply if the customer has no general place of jurisdiction in the Federal Republic of Germany at the time of instituting judicial proceedings. We shall in addition also be entitled to file an action at the Head Office of the customer.

XII. Miscellaneous provisions

- 01 Any alterations or additions to these General Conditions of Sale require to be made in writing. This shall also apply to this requirement for the written form itself.
- 02 Should one or more of these provisions be legally invalid in whole or in part, the validity of the remaining provisions shall not be affected thereby.
- 03 Decisive for all contractual relationships is the German version of our General Conditions of Sale. This shall also apply if a translation of these General Conditions of Sale into another language in addition to the German conditions has been used.