ZENIT

water solutions

Zenit

INDUSTRIAL DRAINAGE, WASTEWATER, SEWERAGE PUMPS, INDUSTRIAL BLOWERS AND MIXERS & COUPLING DEVICES

2020

WHITE® INTERNATIONAL

ZENIT
PRODUCT RANGE

- **Electrical submersible pumps**
- Aeration and mixing
- Hydraulic accessories

Electrical submersible pumps

GREY Series • UNIQA® Series

GREY Series

The Grey series streamlines and updates our range with efficient, reliable products.

The Grey series features completely redesigned hydraulics and motors, to guarantee high performance, low power consumption and outstanding versatility.

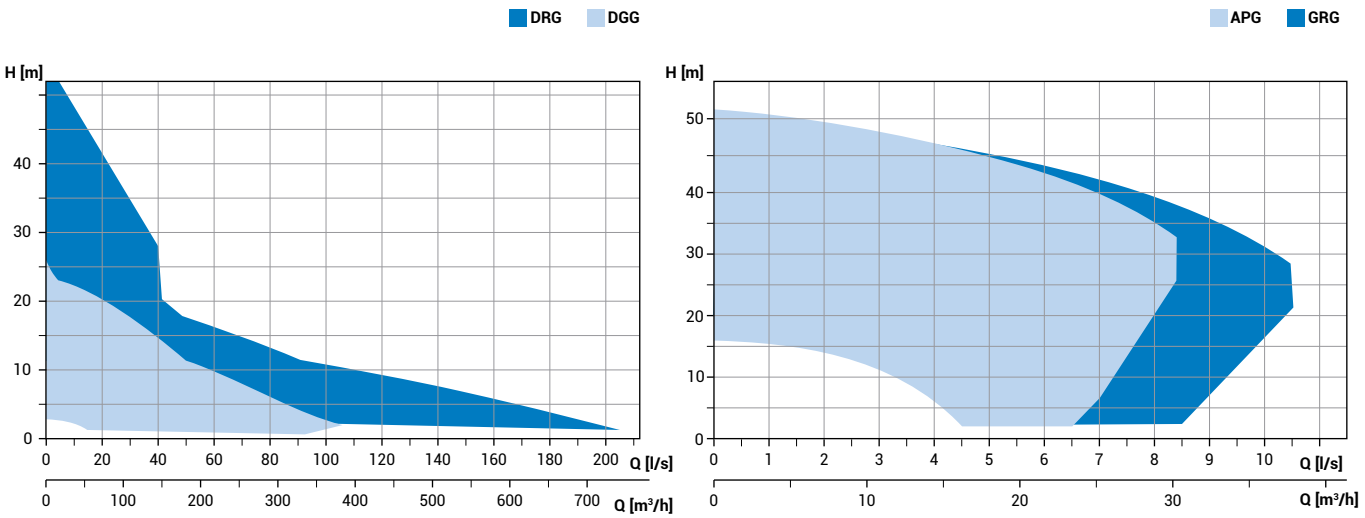
The range incorporates models with 50 and 60 Hz single-phase and three-phase motors ranging from 1.5 to 18.5 kW.

The double mechanical seal in oil chamber guarantees a high level of reliability even when used with heavily soiled wastewater over an extended period.

Models are available with channel (**DRG**), grinding (**GRG**), high head (**APG**) and vortex impeller (**DGG**) to satisfy a wide variety of application requirements, from small domestic lifting stations to civil and industrial treatment plants.

[*] 0.37 ÷ 1.5 In development

Operating ranges



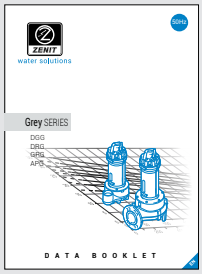
Construction materials

Motor casing	Ghisa EN-GJL-250
Impeller	Ghisa EN-GJL-250
Nuts and bolts	Stainless steel - Class A2-70
Standard gaskets	NBR rubber
Drive shaft	AISI 431 stainless steel
Cutting knife	Chromium steel [GR only]
Painting	Bicomponent epoxy paint with high resistance to corrosion

The data provided are not binding.
Zenit reserves the right to modify the product without advance notification.

Operating specifications

Max operating temperature	40°C
pH of treated liquid	6 ÷ 14
Viscosity of treated liquid	1 mm²/s
Max immersion depth	20 m
Density of treated liquid	1 Kg/dm³
Max acoustic pressure	<70 dB
Max starts per hour	20 [<10 kW] , 15 [>10 kW]



ZENO NAVIGATOR SUITE

The Technical **Data Booklet** complete with duty curves is available for download in the download area of **zenit.com**

To select the pump best suited to your needs we advise you to use the **Zeno Pump Selector** configuration tool on the **zenit.com** website

DG**G**

DG [DRAGA]

- Vortex impeller
- Full free passage

- Biological liquids and wastewater
- Civil and industrial lifting
- Wastewater treatment plants and livestock farms

Range characteristics

Power supply		220/240 V ~1 - 380/400 V ~3
Frequency		50 Hz
Power		0.37 ÷ 15 kW
Poles		2 / 4 / 6
Discharge	**vertical**	G 1½" - G 2½"
	horizontal	DN65 ÷ DN150
Free passage		max 125 mm
Max flow rate		106 l/s
Max head		24.5 m

DR**G**

DR [DRENO]

- Channel impeller
- Large free passage

- Recirculation of industrial and process waters
- Civil lifting
- Drainage and lifting of water from first rainfall tanks

Power supply		220/240 V ~1 - 380/400 V ~3
Frequency		50 Hz
Power		0.37 ÷ 18.5 kW
Poles		2 / 4 / 6
Discharge	**vertical**	G 1¼" - G 2"
	horizontal	DN65 ÷ DN250
Free passage		max 110 mm
Max flow rate		205 l/s
Max head		50.0 m

GR**G**

GR [GRINDER]

- Multi-channel open impeller
- Grinding system with rotary knife

- Lifting of liquids containing fibres and filaments
- Professional and industrial applications
- Livestock farms

Power supply		220/240 V ~1 - 380/400 V ~3
Frequency		50 Hz
Power		0.75 ÷ 9 kW
Poles		2 / 4
Discharge	**vertical**	-
	horizontal	G 1½" - G 2"
		DN40 ÷ DN100
Free passage		-
Max flow rate		8.4 l/s
Max head		53.5 m

AP**G**

AP [Alta Prevalenza]

- Multi-channel open impeller
- High manometric head

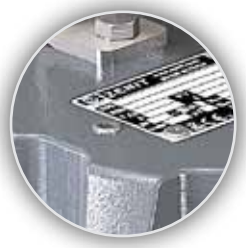
- Industrial applications and car-washes
- Clean water in fountains and water features
- Irrigation and fish farming

Power supply		220/240 V ~1 - 380/400 V ~3
Frequency		50 Hz
Power		0.75 ÷ 9 kW
Poles		2
Discharge	**vertical**	-
	horizontal	G 1½" - G 2"
		DN40 ÷ DN50
Free passage		max 10 mm
Max flow rate		10.5 l/s
Max head		52.0 m

GREY Series

HANDLE

Rugged stainless steel lifting and carrying handle



PRESSURISED TESTING

Every model undergoes pressurised testing to guarantee perfect assembly and operation of the gaskets, cable gland and mechanical seals.

FREE PASSAGE [DGG]

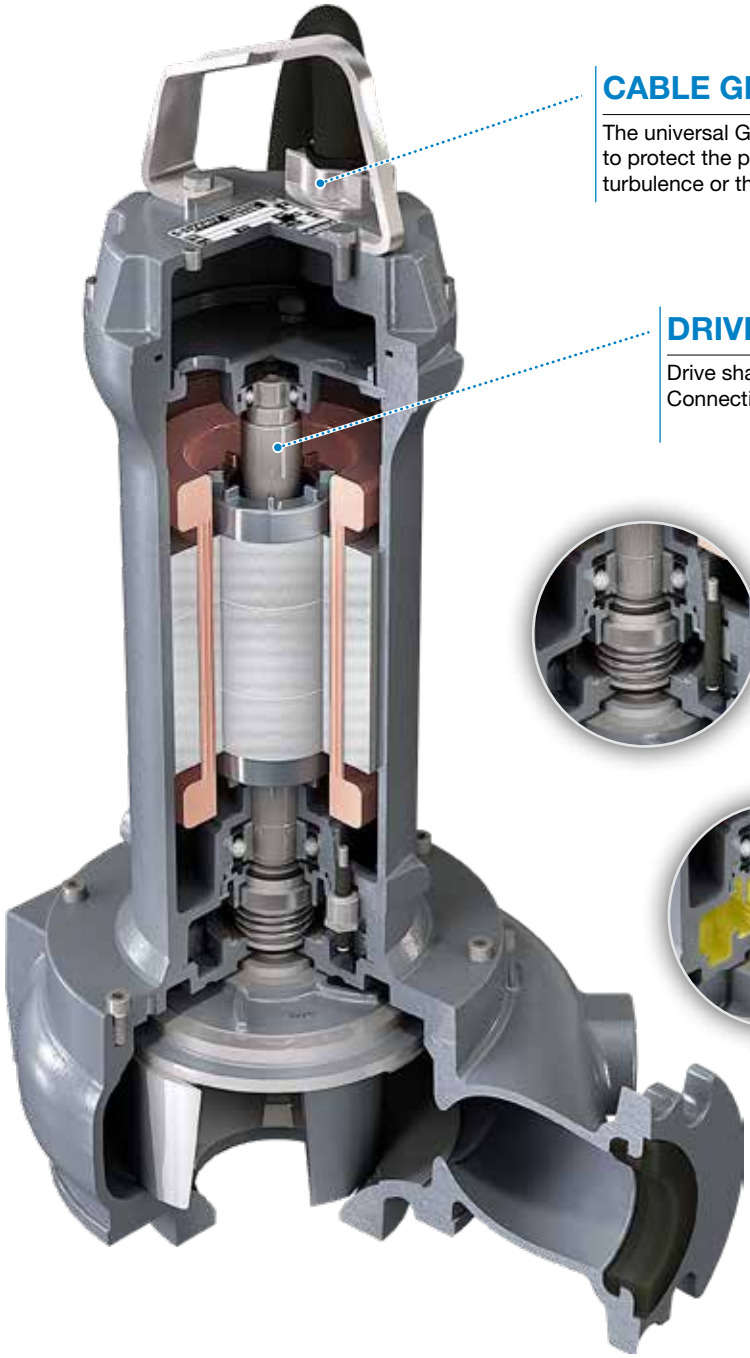
Ample free passage allowing the expulsion of solids and preventing fouling of the impeller.

Highlight

EFFICIENT AND RELIABLE

The Grey series offers reduced purchasing, installation and maintenance times and costs thanks to a wide choice of models and the use of immediately available standard components.
Exceptionally reliable, the Grey series needs far fewer repairs, meaning reduced costs.
Running costs will be lower and there will be fewer system stoppages, allowing more effective maintenance scheduling.

GREY Series



CABLE GLAND

The universal GAS thread of the cable gland is able to take a sheathing pipe to protect the power cable from mechanical or chemical damage due to turbulence or the aggressive nature of the liquid.

DRIVE SHAFT

Drive shaft in AISI 431 stainless steel.
Connection to impeller via tapered coupling.

MECHANICAL SEALS + V-RING

Two mechanical seals in silicon carbide (SiC-SiC) enclosed in an inspectable oil chamber. This prevents all contact between the mechanical seals and any solids or filaments in the wastewater.

OIL CHAMBER

Large, inspectable oil chamber to guarantee longer mechanical seal lifetime.
Leakage detection sensor.

ANTI-CLOGGING SYSTEM [DRG · GRG]

The special conformation of the hydraulic part ensures the expulsion of solids and prevents fouling of the impeller.

UNIQA® Series

UNIQA series pumps, designed for heavy-duty professional applications, are used in industrial and other wastewater treatment plants and for lifting sewage and pumping wastewater which contains solids.

Motors are designed with the aim of achieving the Premium (IE3) efficiency class according to the EN 60034-30 standard and guarantee high performance with low energy use.

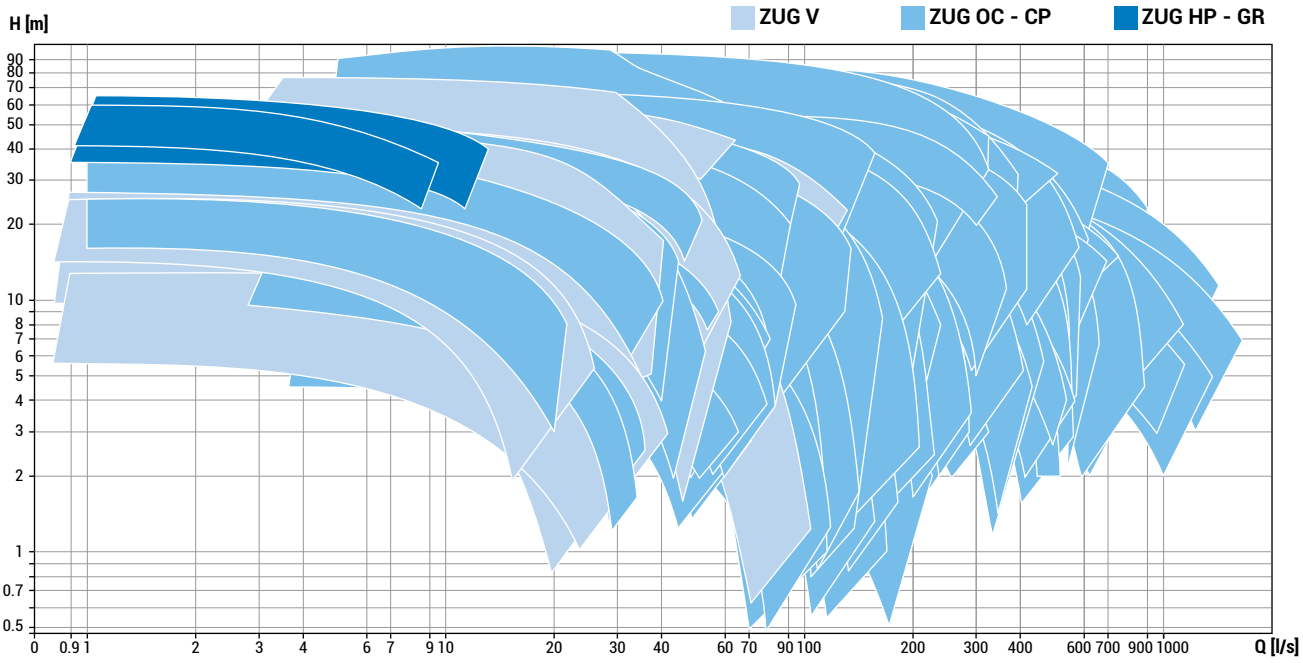
There are various types of hydraulics, to adapt perfectly to any type of application.

The range includes models with vortex impeller (**ZUG V**) with full free passage, with channel impeller (**ZUG OC**) with anti-clogging and anti-fouling systems, chopper (**ZUG CP**) equipped with cutting sistem able to grind particles of any shape or proportion, with high head (**ZUG HP**), capable of delivering high hydraulic performances, and with grinding system (**ZUG GR**) for use with soiled liquids and where filaments are present.

Depending on the service required, each model comprises a motor-hydraulics combination chosen to provide optimal performance at the duty point, low energy use, and high reliability, thanks to the use of the materials best suited to the type of application.

The entire range is available in the DRY version, which requires no external liquid inputs and allows the electric pump to operate continually (S1 duty) even if partially submerged or installed in a dry chamber.

Operating ranges



Construction materials

Motor casing	Cast iron EN-GJL-250
Impeller	Cast iron EN-GJL-250
Nuts and bolts	Stainless steel - Class A2-70
Standard gaskets	NBR rubber
Drive shaft	AISI 431 stainless steel
Cutting knife	Chromium steel [ZUG GR only]
Painting	Bicomponent epoxy paint with high resistance to corrosion

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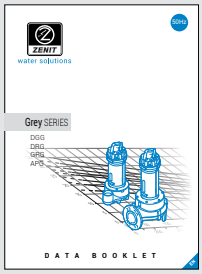
Operating specifications

Max operating temperature	40°C
pH of treated liquid	6 ÷ 14
Viscosity of treated liquid	1 mm^2/s
Max immersion depth	20 m
Density of treated liquid	max 1.1 Kg/dm^3
Max acoustic pressure	<70 dB
Max starts per hour	20 [0 ÷ 10 kW], 15 [10 ÷ 160 kW] , 10 [≥ 160 kW]



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Range characteristics

ZUG **V**

VORTEX

- Cast iron vortex impeller
- Full free passage

- Biological liquids and wastewater
- Suitable for civil pumping stations and lifting wastewaters in livestock farms and industrial plants

Power supply		380/400 V ~3
Frequency		50 Hz
Power		3 ÷ 45 kW
Poles		2 / 4
Discharge	**vertical**	-
	horizontal	DN65 ÷ DN150
Free passage		max 125 mm
Max flow rate		110.0 l/s
Max head		75.0 m

ZUG **OC**

OPEN CHANNEL

- Channel impeller in cast iron
- Large free passage

- Liquids containing suspended solids
- Suitable for sewage and drainage systems and first rainfall tanks

Power supply		380/400 V ~3
Frequency		50 Hz
Power		3 ÷ 355 kW
Poles		2 / 4 / 6 / 8 / 10 / 12
Discharge	**vertical**	-
	horizontal	DN80 ÷ DN600
Free passage		max 220 x 110 mm
Max flow rate		1600.0 l/s
Max head		100.0 m

ZUG **CP**

CHOPPER

- Multi-Channel Impeller in cast-iton with special Molib-Tech™ treatment
- Chopper sistem able to cut particles of any shape of proportion

- Liquids containing solid parts and fibres
- Suitable for sewage, lifting of not strained black water

Power supply		380/400 V ~3
Frequency		50 Hz
Power		3 ÷ 355 kW
Poles		2 / 4 / 6 / 8 / 10 / 12
Discharge	**vertical**	-
	horizontal	DN80 ÷ DN600
Free passage		max 220 x 110 mm
Max flow rate		1600.0 l/s
Max head		100.0 m

ZUG **GR**

GRINDER

- Cast iron multi-channel open impeller
- Grinding system with rotary knife

- Soiled liquids containing fibres and filaments
- Suitable for professional and heavy-duty applications

Power supply		380/400 V ~3
Frequency		50 Hz
Power		4 ÷ 11 kW
Poles		2
Discharge	**vertical**	-
	horizontal	DN50 ÷ G 2”
Free passage		-
Max flow rate		8.0 l/s
Max head		57.0 m

ZUG **HP**

ALTA PREVALENZA

- Cast iron multi-channel open impeller
- High manometric head

- Clean, rain and seepage water
- Suitable for applications in agriculture, irrigation and fish farming

Power supply		380/400 V ~3
Frequency		50 Hz
Power		4 ÷ 11 kW
Poles		2
Discharge	**vertical**	-
	horizontal	DN50 ÷ G 2”
Free passage		max 10 mm
Max flow rate		11.0 l/s
Max head		61.0 m

UNIQA® Series

CABLE GLAND

On request the cable entry point can be sealed with resin, preventing all possibility of water seeping inside the motor cover even if the cable's outer sheath is torn.

DRIVE SHAFT

Drive shaft in AISI 431 stainless steel.
DUPLEX steel shaft available as optional.

BEARINGS

Oversized bearings to guarantee 100000 working hours.

MECHANICAL SEALS

Two silicon carbide mechanical seals in the oil sump and V-rings. The oil can be be checked and changed even with the pump vertical, using plugs on the outside of the mount.

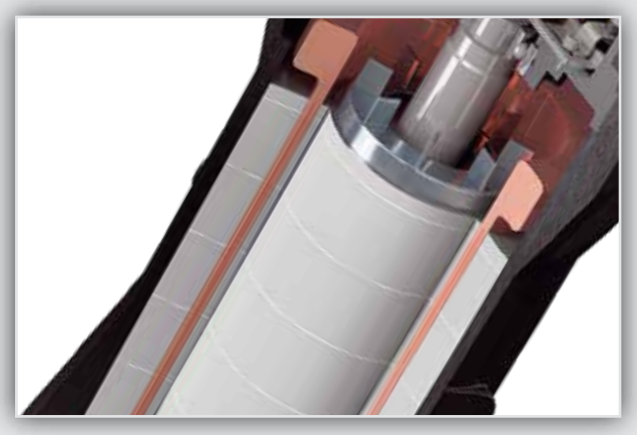
PROBE

Possibility to equip the pump with many different optional probes to detect any anomaly.
Humidity probe to detect water in the mechanical-seal oil-chamber standard also for ATEX version.

FLANGES

Various flange drilling are available, including ANSI and BS.

Highlight



HIGH EFFICIENCY MOTOR

Motor designed with the aim of achieving the PREMIUM (IE3) efficiency class according to EN 6034-30. Operation guaranteed in S1 mode even in water at a temperature of 60° C or above.
Generally, since energy costs are higher than other expenses, continuous duty provides higher savings compared to a conventional system and the initial investment in a high efficiency systems is soon recouped, without considering the considerable advantages in terms of environmental footprint.

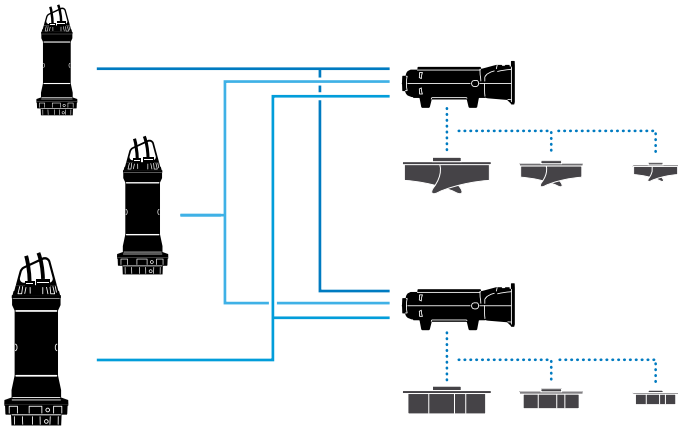
UNIQA® Series

CLOGGING-PROOF HYDRAULICS

All hydraulic components are designed for the highest efficiency and the best performance while still ensuring ample free passages.
Impellers are available in cast-iron, Stainless steel, bronze/alluminium and Molib-tech™, this last is an innovative treatment that assures a much longer life compared to traditional ceramic paint.
All models with channel hydraulics feature an axial adjustment system allowing the impeller clearance to be restored, to maintain performance even further to normal wear and tear.
The ACS (Anti-Clogging System) consists of a spiral groove of suitable depth cut into the diffuser plate.
This prevents clogging of the impeller even with highly fouled liquids, allows stringy items to be pulled out or unwound and renders the hydraulics clogging-proof.

MODULARITY

The UNIQA series features a modular design in which the motor and hydraulics are perfectly coupled to each other. This characteristic allows the creation of particularly reliable units, thanks to the use of materials specific for the intended type of liquid and achievement of top performances, since every component is optimised for the duty point and of suitable size to guarantee minimal energy use.



PATENTED COOLING SYSTEM

The motor is cooled by means of a patented internal "closed circuit" system. This ensures that there is no adulteration of the fluid used even if contaminated liquid accidentally enters the oil sump due to wear of the first mechanical seal. Continuous duty is ensured even in dry and partially submerged working conditions.

ATEX

On request available ATEX version of the pump suitable for installation in potentially explosive atmosphere. Humidity probe to detect water in the mechanical-seal oil-chamber is standard also for ATEX version.

II 2G Ex db k IIB T4 / II 2D Ex tb IIIC T135°C

ZENIT
PRODUCT RANGE

- Electrical submersible pumps
- **Aeration and mixing**
- Hydraulic accessories

Aeration and mixing

OXYPLATE 9”-12” • OXYTUBE 2 • OXYINOX
JETOXY 50 • JETOXY 80÷300
MIXER ZMD • MIXER ZMR

Aeration and mixing system

Zenit offers a line of aeration and mixing products for the highly specialised civil and industrial wastewater treatment sector.

9" and 12" disc-shaped and 2" tubular **air diffusers** with elastomer membranes providing high oxygen transfer efficiency

Venturi-type **submerged aerators**, which ensure an efficient combined mixing and aeration action and are especially suitable for homogenization and first rainfall storage tanks

Mixers with self-cleaning propellers with direct transmission and reduction gears

WE PLACE OUR SPECIFIC EXPERTISE AT THE SERVICE OF PLANT ENGINEERS AND INSTALLERS WHO WORK IN THE WATER TREATMENT SECTOR EVERY DAY

As well as supplying products of outstanding quality, Zenit provides its customers with assistance including:

- **support for product selection** to guarantee the best fit with the plant's characteristics and achievement of the engineer's specified performances
- **plant design** tailored to specific needs, using components optimised for service at the duty point, with impressive savings on energy and purchase costs;
- **supervision during installation** to ensure the use and correct installation of genuine components, to guarantee a top quality system and optimal performance

AIR DIFFUSERS

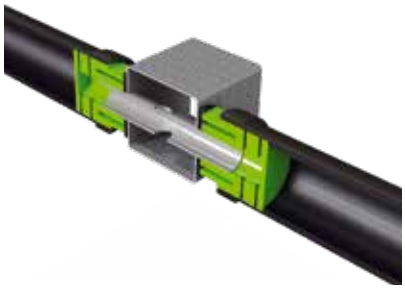
The Zenit range includes disc-shaped and tubular membrane air diffusers. Both models are fitted with high-quality membranes with perforation ensuring high oxygen transfer with low pressure drop, minimising the relative energy consumption. Disc-shaped diffusers can be fitted with integral ball check valves.

Zenit is able to design the most efficient solution for the customer's specifications, and supply the complete aeration system, including detailed assembly plans.

Operating mode

During operation, the membrane inflates to open the tiny holes and allow the air to flow out in the form of fine bubbles.

When the blower stops, the membrane deflates and the tiny holes close to prevent all risk of liquid inflow. What's more, the central part, free from holes and specially shaped, acts as a check valve.



Application

Membrane air diffusers are generally used in water treatment and purification processes where slurries have to be aerated to activate biological organic matter oxidation and nitrification processes.

They are also used in pre-aeration and aeration processes in oxidation tanks and aerobic digestion plants for industrial and civil sludges.

OXYPLATE 9”-12”

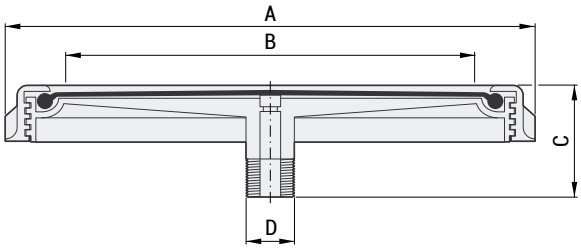
Disc-shaped air diffusers

Disc-shaped diffusers having elastomer membrane with tiny holes for application in water treatment processes in reactors with continuous or intermittent aeration, especially recommended for high-efficiency permanent installations.

The quality, design and membrane hole size ensure unbeatable efficiency in terms of the ideal oxygen transfer-pressure drop balance.

Technical characteristics

	OXYPLATE 9”	OXYPLATE 12”
Outside diameter [mm]	270	340
Min. operating flow rate (Nm³/h)	2	2
Max. operating flow rate (Nm³/h)	6	10
Limit flow rate * [Nm³/h]	10	15
Active surface area (m²)	0.038	0.06
Membrane thickness (mm)	2 ± 0.15	2 ± 0.15



Construction materials

Diffuser body	PP GF 30
Ring-nut	PP GF 30
Membrane	EPDM LP / SILICONE

Overall dimensions (mm)

	A	B	C	D	E	kg
OXYPLATE 9”	270	200	76	3/4” NPT	32	0.7
OXYPLATE 12”	340	310	76	3/4” NPT	32	1.2

Data with fine-bubble EPDM LP membrane. * No more than 10 min/day for membrane cleaning, tests, etc.

Accessories and components

ZENIT is able to design and build complete aeration systems comprising disc-shaped diffusers and preassembled PVC air distribution networks.

The high degree of standardisation and the use of special components manufactured by ZENIT itself allow the construction of simple, reliable, quick-to-install systems which are surprisingly inexpensive in spite of the use of top-quality materials such as PVC PN10 pipelines and stainless steel mounts.

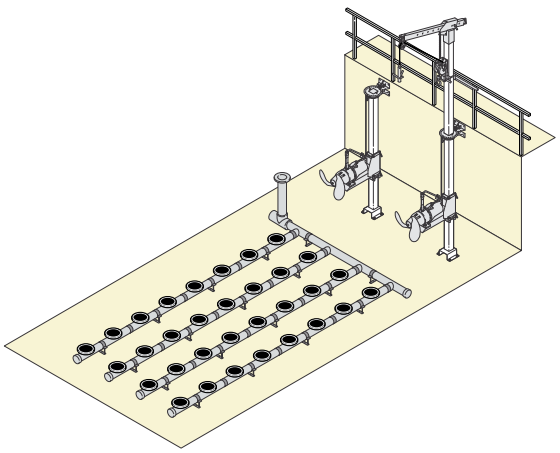
To facilitate the installation and servicing of its diffuser systems, Zenit has produced a series of tools that make every procedure quick and effective.

Installations

Preassembled systems are designed for quick, easy installation even by relatively unskilled staff, following the detailed instructions provided.

All connections are made by means of special self-aligning flanges with integral gasket.

The mounts are easily height-adjustable (up to 20 cm) to allow levelling even with uneven or slightly sloping tank bottoms.



OXYTUBE 2

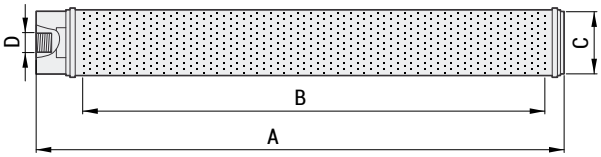
Tubular air diffusers

They are especially recommended for the construction of removable aeration systems and in all cases where a large output surface area is required with only a small number of air distribution pipelines.

Diffusers basically consist of a head with threaded connection, a rigid polypropylene mount and a tubular membrane in elastomer with tiny holes, secured with stainless steel band clamps.

Technical characteristics

	OXYTUBE 2 500	OXYTUBE 2 750	OXYTUBE 2 1000
Outside diameter [mm]	63	63	63
Length of perforated section [mm]	500	750	1000
Min. operating flow rate (Nm³/h)	1	2	3
Max. operating flow rate (Nm³/h)	6	9	12
Limit flow rate * [Nm³/h]	10	15	20
Active surface area [m²]	0.09	0.135	0.18
Membrane thickness [mm]	1.7 ± 0.2	1.7 ± 0.2	1.7 ± 0.2



Construction materials

Membrane / Gasket	EPDM / SILICONE
Mount	PP GF 30
Band clamps	V2A [AISI 304]

	Overall dimensions (mm)				
	A	B	C	D	kg
OXYTUBE 2 500	560	500	63	¾" WR f	0.8
OXYTUBE 2 750	810	750	63	¾" WR f	1.1
OXYTUBE 2 1000	1060	1000	63	¾" WR f	1.3

Data with fine-bubble EPDM LP membrane. * No more than 10 min/day for membrane cleaning, tests, etc.

Accessories and components

Membranes made of different materials are available for different applications:

- EPDM LP with low plasticiser content (<15%) for civil wastewater with some industrial input and industrial wastewater with low fat, oil and hydrocarbon content. Maximum operating temperature 80 °C;
- SILICONE for industrial wastewater with high fat and hydrocarbon content. Maximum operating temperature 100°C;
- Stainless steel connectors for installation of diffusers in pairs facing each other on square manifold of 80x80 mm or 100x100 mm.
- Adaptors for manifolds with ready-made holes.

Installations

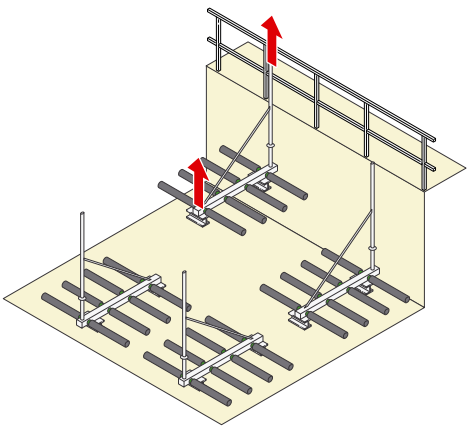
Especially recommended for small/medium sized systems, or in general in all cases where it is not possible to empty the tank for maintenance. These systems are built with stainless steel supply assemblies comprising basically a square manifold on which the diffusers are installed in facing pairs, a down-pipe, one or more stiffener tie-rods and a draining system.

The individual assemblies are simply placed on the bottom of the tank and connected to the main air pipeline with a flange.

Stability is ensured by counterweights that also act as feet.

No runner or anchor systems are required.

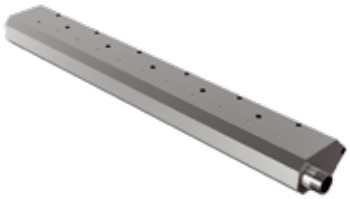
The individual assembles are therefore easy to remove and install with the tank full and in operation.



OXYINOX

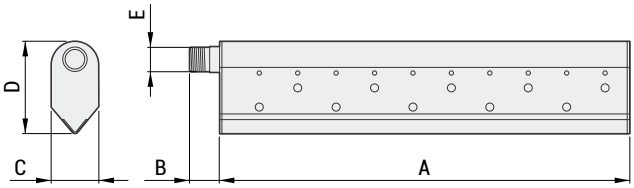
Large bubble tubular diffusers

Constructed in AISI 316 throughout, the type of diffuser is used where the liquid has to be both mixed and oxygenated. Its ideal applications are aerated sand separators, aerobic digestion tanks, pre-aeration tanks and in general any installation where the use of steel is necessary due to the nature of the liquid for treatment.



Technical characteristics

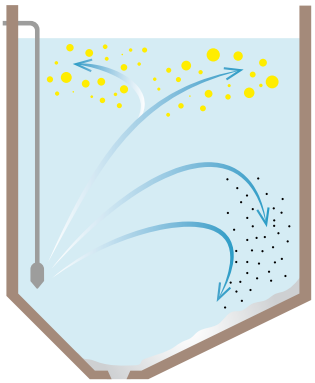
	L305	L610
Bubble dimensions	large	large
Body material	AISI 316	AISI 316
Top hole diameter [mm]	4	4
Bottom hole diameter [mm]	8	8
Total length [mm]	305	610
Thread connection	3/4" NPT	3/4" NPT



Performance

Nominal flow rate [Nm³/h]	20.0	40.0
Minimum operating flow rate (Nm³/h)	3.5	7.0
Maximum operating flow rate (Nm³/h)	40.0	80.0
Pressure drops at nominal flow rate [cm] (depth 4 m)	~ 9.5	~ 9.5

	Overall dimensions (mm)					
	A	B	C	D	E	kg
L305	305	28	50	100	3/4" NPT	1.5
L610	610	28	50	100	3/4" NPT	3.0



The air emitted by the diffuser in the form of large bubbles combines with the flow of wastewater to trigger a spiral motion which encourages sedimentation of the sand and flotation of the oils and fats.

SUBMERGED AERATORS

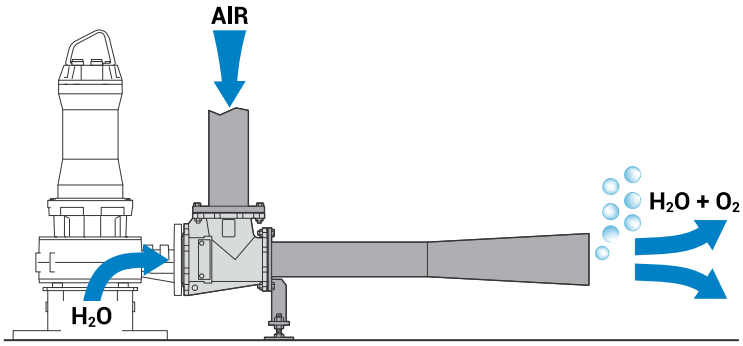
Venturi-type submerged aerators ensure an efficient combined mixing and aeration action and they are especially suitable for homogenization and first rainfall storage tanks.

They consist of submersible pumps with power levels up to 30 kW and channel impellers with large free passage combined with "OXY" series ejectors.

OXY 80 and 150 units have a polyurethane (Vulkollan) diaphragm, easily replaceable without dismantling the pump from the ejector thanks to a patented system. The OXY80 device has a flange suitable for connection to electric pumps having DN80 and DN100 discharges.

Operating mode

In OXY devices, the liquid conveyed is mixed with the air by the "Venturi" effect, creating a mixture containing medium-fine air bubbles that increase the contact surface area and provide highly efficient oxygen exchange.



Application

OXY submerged oxygenation systems are used in industrial and other wastewater and sludge treatment plants, or whenever combined oxygenation and mixing are required.

These systems can be installed without emptying the tank.

JETOXY 50

Submerged aeration systems

JETOXY 50 units comprise a Venturi-type ejector coupled to a submersible electric pump rated from 0.37 to 1.5 kW with open multi-channel or vortex impeller.

JETOXY models can be selected on the basis of the performance curve best suited to requirements, optimising consumption.

Application

- Fish farms, small water treatment tanks, holding pits.

Characteristics

- Cast iron body (GJL-250);
- Suitable for use with DRO and DGO pumps;
- Can be permanently coupled to the pump or mounted on the bottom of the tank using the automatic coupler (DAC type)

Composition

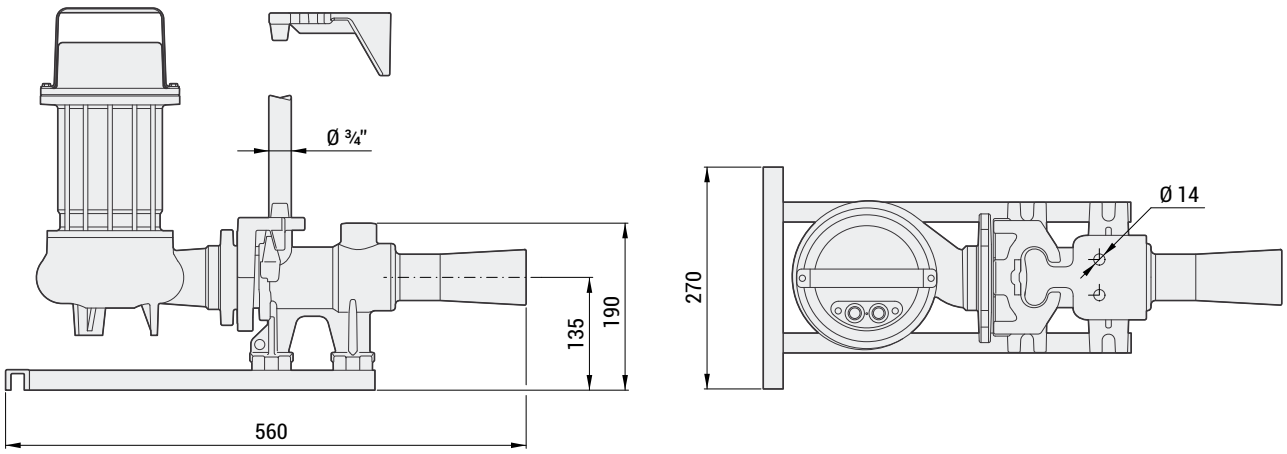
- OXY body (cone + integral diaphragm);
- Sliding flange with gasket and stainless steel screws;
- Pipe guide.

A special technical detail on the OXY body allows mechanical fixing (using screws) between the ejector and the sliding flange connected to the pump, creating a rigid system even suitable for mobile installation.

Materials

Body	Cast iron GJL-250
Diffuser cone	Cast iron GJL-250
Nuts and bolts	Stainless steel
Painting	Epoxy-vinyl

Overall dimensions



JETOXY 80÷300

Submerged aeration systems

JETOXY 80÷300 units comprise a Venturi-type ejector with replaceable diaphragm coupled to a submersible electric pump rated from 2.2 to 30 kW .

Open multi-channel, open single-channel, and closed single or dual-channel impellers may be used depending on the type of liquid to be processed.

Application

- Holding, homogenisation and stabilisation tanks, first rainfall collection tanks, oxidation tanks,

Characteristics

- Cast iron structure;
- Stainless steel diffuser cone;
- Diaphragm is interchangeable for flow rate adjustment or for easier replacement in the event of wear (PATENTED SYSTEM).

Composition

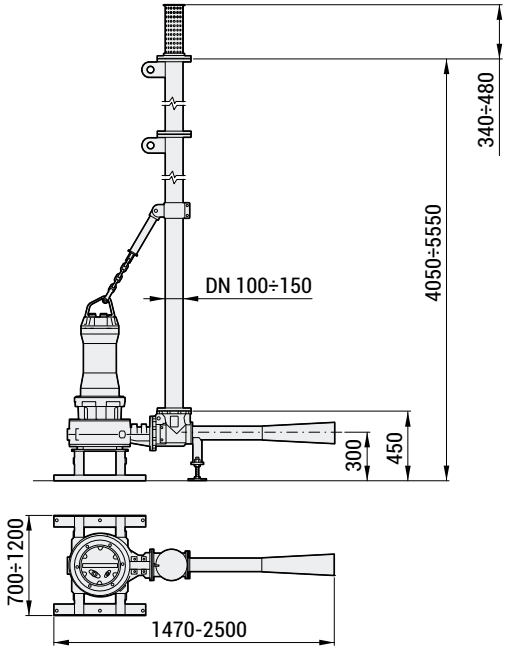
- OXY body;
- Interchangeable diaphragm;
- Stainless steel diffuser cone;
- Stainless steel screws;
- Air intake pipe with flue filter and galvanised steel lifting hook;
- Connecting tie-rod between pump and intake pipeline;
- Galvanised steel/spheroidal cast iron base.

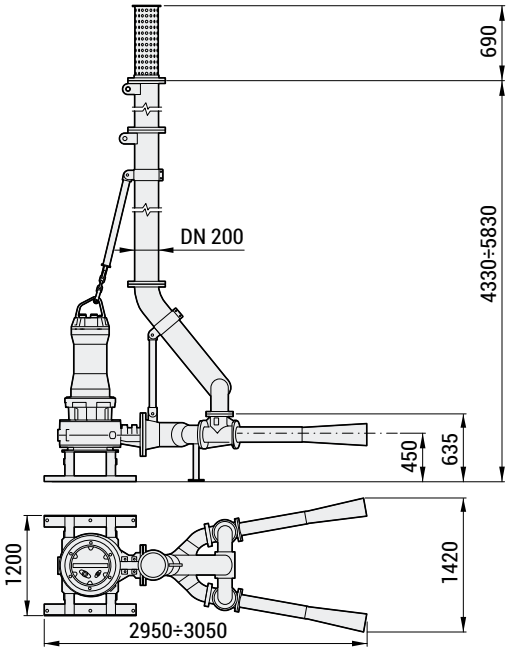
Units in the OXY 80-150 range have a polyurethane (Vulkollan) diaphragm, easily replaceable without dismantling the pump from the ejector thanks to a patented system.

Materials

Body	Cast iron GJL-250
Diffuser cone	Stainless steel - AISI 304
Diaphragm	Vulkollan
Nuts and bolts	Stainless steel
Painting	Environment-friendly epoxy-vinyl

Overall dimensions

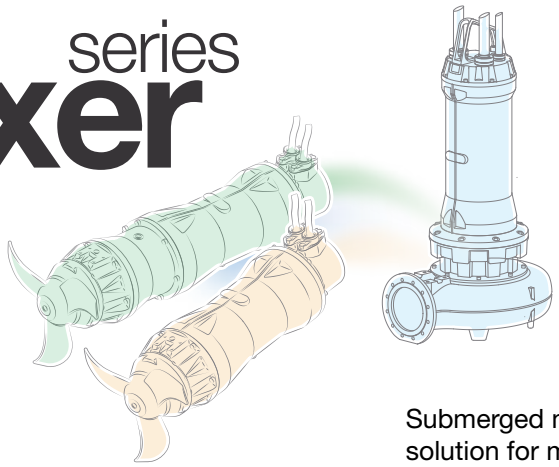




MIXERS

Essential components of water treatment and purification plants, the new Zenit mixers share the stylish looks, reliability and new-concept high-efficiency motors of the UNIQA range.

series
Mixer



THE LOW PROPELLER RPM, NECESSARY IN APPLICATIONS WITH SLUDGES CONTAINING HIGH SOLID CONCENTRATIONS, IS ACHIEVED BY MEANS OF A RUGGED PLANETARY REDUCTION GEARBOX RATHER THAN MOTORS WITH A HIGH NUMBER OF POLES, FOR GREATER MECHANICAL RELIABILITY.

Submerged mixers are the most practical, efficient solution for mixing liquids in water treatment and purification plants.

Suitably installed in tanks, these devices apply a force varying depending on the propeller diameter, shape and rotation speed to the liquid in which they are immersed, and keep the mass of fluid in motion to boost homogenisation and prevent sediment formation.

They can be adopted in single or multiple installations, or in combination with bottom aeration systems, depending on the process in which they are used.

Their efficiency class IE3 motors, already applied on the **Zenit UNIQA** range of submersible pumps, keep running costs down, with low energy use and limited maintenance.

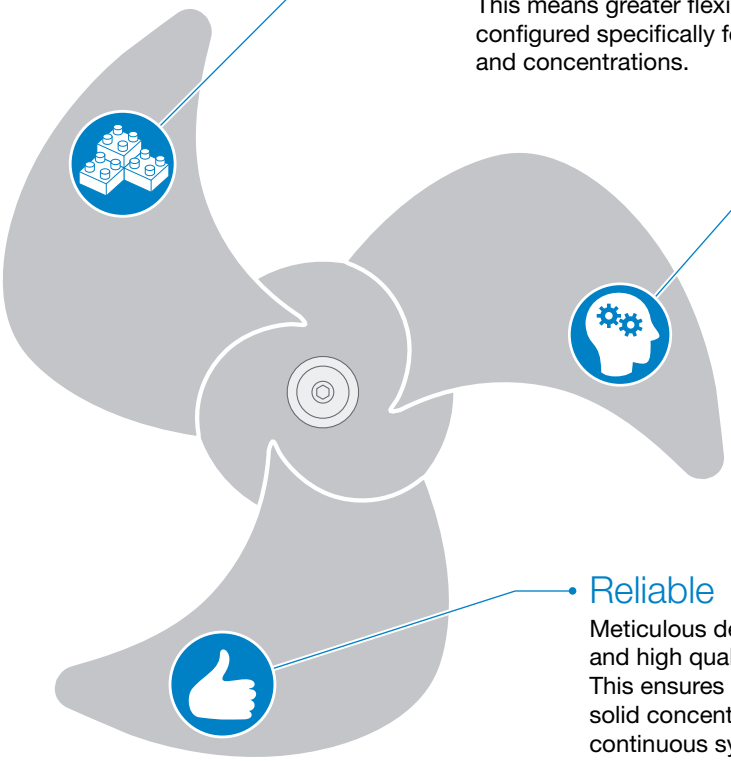
Their complete compatibility and vast assortment of accessories allow them to be installed in any point of the tank, both for optimal mixing and for use as replacements for obsolete devices in existing systems.

ZMD series	**1.1 ÷ 4 kW**	Propeller Ø (mm) 200 - 300 - 450	**4 - 6 - 8 poles** **DIRECT TRASMISSION**
ZMR series	**4 ÷ 18.5 kW**	Propeller Ø (mm) 650 - 900	**4 poles** **REDUCTION GEARS**

ZMD • ZMR

Zenit **ZMD** and **ZMR** series mixers can be used in equalisation, denitrification and homogenisation processes in industrial and civil plants.

Their construction characteristics make them rugged and versatile, ideal for any application.



Modular

The ZMD and ZMR range of mixers is built on a **modular criterion** in which high-efficiency motors evolved from the UNIQA units are coupled with propellers with different shapes, sizes and materials.
This means greater flexibility when selecting the product, which can be configured specifically for the application, and for liquids with different densities and concentrations.

Innovative

Zenit mixers are built with innovative materials and include **state-of-the-art engineering solutions** developed in a modern department which also conducts performance and endurance tests on the parts most subject to wear.
This guarantees lower energy consumption and exceptional versatility, making them suitable for any type of installation.

Reliable

Meticulous design, machining on latest-generation machining centres and high quality components make Zenit mixers highly reliable.
This ensures **a long working life** even with liquids containing high solid concentrations, and low maintenance, guaranteeing trouble-free, continuous system operation.

Construction materials

Motor complex	EN-GJL 250 grey cast iron
Propeller	AISI 316 stainless steel
Shaft	AISI 431 stainless steel
Mechanical seals	2 silicon carbide (SiC) in oil chamber
Nuts and bolts	A2-70 Stainless Steel
Gaskets	NBR
Hook	AISI 304 stainless steel
Runner	AISI 304 stainless steel
Paintwork	Bicomponent epoxy paint 200 µm

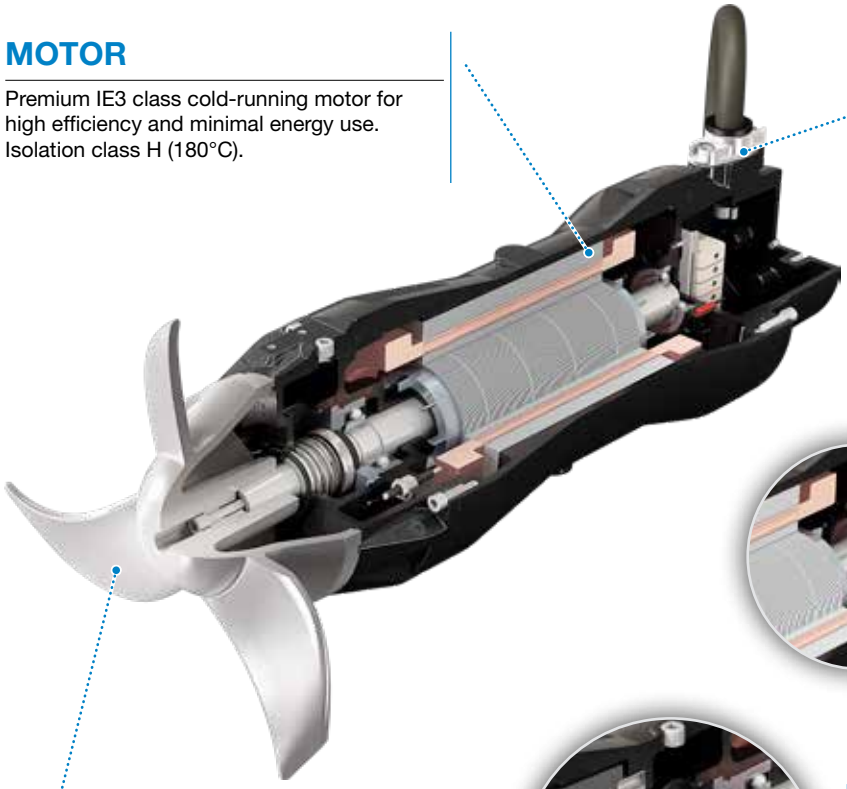
Operating limits

Max. ambient temperature	40°C
Max. immersion depth	20 m
pH of treated liquid	6-12
Max. starts/hour	15 (evenly distributed)
Max. acoustic pressure	70 dB
Duty	S1 – continuous operation
Density of treated liquid	1060 Kg/m³
Max. dynamic viscosity	500 mPas

ZMD • ZMR

MOTOR

Premium IE3 class cold-running motor for high efficiency and minimal energy use.
Isolation class H (180°C).



CABLE GLAND

Innovative cable gland system with cable holder. The universal thread ring-nut can be removed to fix a rigid or flexible duct to the cable gland to protect the cable from physical and mechanical stresses.

BEARINGS

Ball bearings with lifetime lubrication designed to guarantee 100,000 working hours.
Temperature sensor on request.

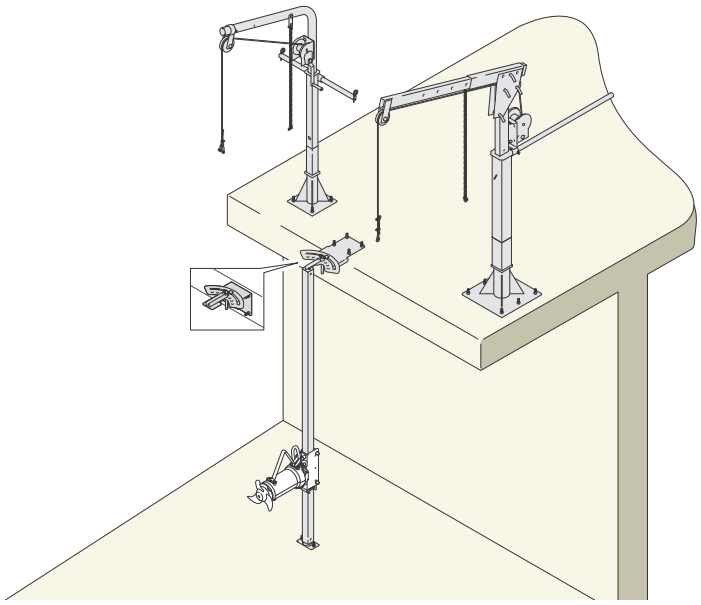
PROPELLER

High hydraulic efficiency propeller in AISI 316 stainless steel.
The self-cleaning profile guarantees constant high performances and low maintenance.

REDUCTION GEARBOX [ZMR]

Rugged planetary reduction gearbox which provides high reduction ratios and torque transfer and withstands heavy radial loads, with compact size and light weight.

Installations



Guide post installation

The most widely used installation mode, suitable for mixers of any shape and size.

The mixer, fitted with a runner which is also compatible with existing installations, slides along a square post and can be removed with no need to drain the tank, thanks to rugged lifting jib cranes.

The mixer can be horizontally adjusted for the best possible position, while vertical adjustment is possible with the aid of special optional runners.

ZENIT
PRODUCT RANGE

- Electrical submersible pumps
- Aeration and mixing
- **Hydraulic accessories**

Hydraulic accessories

DAC-R • DAC-V • DAC-E • DAC-H • DAC-X
KBS • KBC • KBS-H
FLX
VAP • VAC • SRP
KCR
KFL • KAT

Couplers

This system allows the pump to be extracted and then quickly returned to the tank with no need to drain it, often an expensive operation involving lengthy plant stoppages. Perfect mating between flange and coupler is ensured on all units in the Zenit range by a rubber gasket.

ESSENTIAL ACCESSORIES FOR MAKING A REVERSIBLE HYDRAULIC CONNECTION BETWEEN THE PUMP AND THE DISCHARGE PIPE

Innovation

Zenit bottom couplers can have horizontal or vertical discharge in order to better adapt to the customer's needs.
All couplers are designed to receive 2 guide pipes which can accompany the pump into its working position, preventing troublesome rotation.
What's more, a PATENTED system simplifies pump release and reduces the mechanical stresses on the guide pipes, even after an extended period of time immersed in the wastewater.

Reliability

For plants with large pipelines, Zenit has developed a range of reinforced couplers capable of supporting the weight of particularly heavy pumps.
They come complete with rugged mounting brackets of suitable size and an anchor system consisting of a cast iron hook fixed to a special provided on the pump body, instead of the usual sliding flange connected to the discharge port.

[DAC-R]

Bottom coupling devices with vertical discharged in reinforced version for use with electric pumps weighing more than 1300 kg.

Fixing by means of sliding flange [KAF] (for models up to discharge DN250) or hook [KGP] with double guide pipe.

A PATENTED guide pipe connection system that reduces mechanical stresses and simplifies pump release

To ensure sufficient intake and prevent cavitation, on some pump models with high-power motor it may be necessary to increase the distance between the intake port and the bottom of the tank.

For technical advice, contact the Zenit Customer Service.

- Flanged models from DN100 to DN600
- Cast iron body
- Sliding flange [KAF] in EN-GJL-250 cast iron (models with discharge max DN250)
- Cast iron hook [KGP] (models with discharge > DN250)
- Two guide pipes of Ø2” or Ø3”
- Stainless steel metal fasteners
- Epoxy-vinyl paint
- Full free passage

[DAC-V]

Bottom coupling devices with vertical discharge for use with pumps up to 1300 kg.

Fixing by means of sliding flange or hook [KGP] (discharge DN350) with double guide pipe.

A PATENTED guide pipe connection system that reduces mechanical stresses and simplifies pump release

To ensure sufficient intake and prevent cavitation, on some pump models with high-power motor it may be necessary to increase the distance between the intake port and the bottom of the tank.

For technical advice, contact the Zenit Customer Service.

- Threaded models from GAS 1½" to GAS 2"
- Flanged models from DN65 to DN350 with or without expansion
- Cast iron body
- Cast iron sliding flange
- Cast iron hook (for models with discharge DN350 only)
- Two guide pipes of Ø2” (Ø3” for model with discharge DN350)
- Stainless steel metal fasteners
- Epoxy-vinyl paint
- Full free passage

[DAC-E]

External coupler **[DAC-E]** consisting of two parts: a fixed part for connection to the plant and a movable part connected to the pump by means of an optional threaded connecting pipe.

The two parts can be connected and disconnected without the aid of tools by means of hook operating on the lever principle.

Since this system remains above water level, it can be installed without draining the tank, often a complex, expensive process.

- GAS 2” thread discharge connection
- Fixed body in cast iron, movable body in spheroidal cast iron
- NBR rubber gaskets
- Epoxy-vinyl paint
- Fixing to tank wall by means of DN50 PN10 flange or 2” GAS thread
- Full free passage

[DAC-H]

Bottom couplers with horizontal discharge, particularly compact and suitable for installations in tight spaces. They have 2 guide pipes which can accompany the pump into its working position, preventing troublesome rotation.

A patented system simplifies pump release and reduces the mechanical stresses on the guide pipes If the discharge direction has to be modified, the device can be connected to an ordinary threaded or flanged 90° bend.

- Flanged-threaded model DN32-50 - GAS 2”
- Flanged models from DN65 to DN250
- Cast iron body
- NBR rubber gasket
- Stainless steel metal fasteners
- Epoxy-vinyl paint
- Full free passage

[DAC-X]

Stainless steel bottom couplers particularly suitable for use with DRY pumps.

They allow installation of a completely stainless steel system for resistance to chemically aggressive liquids

- Flanged models from DN65 to DN100
- Body and flange in AISI 316 stainless steel
- Gasket in NBR rubber
- Full free passage
- Recommended for installations with corrosive or saline liquids

Base plates

[KBS]

Base plates **[KBS]** for FREE installation allow the pump to be positioned in the tank quickly and ensure a high level of stability thanks to the large contact surface.

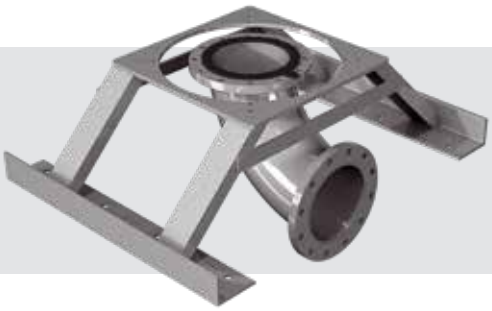
- Made of spheroidal cast iron or galvanised steel
- Complete with stainless steel fasteners

[KBC]

Intake bend unions **[KBC]** for the hydraulic connection of pumps in dry chamber installations, with the necessary stability assured.

Depending on the models, additional masonry or structural metal support may be necessary to position the intake port at the correct height.

- Galvanised steel construction
- NBR rubber gasket
- Complete with stainless steel fasteners



[KBS-H]

Metal structural base plates for submerged or dry chamber horizontal installation.

- Galvanised steel construction
- Complete with stainless steel fasteners

Flushing valve

Sediments often form in lifting stations which collect the wastewater from drain systems. Over time, the solids are compacted and reduce the available volume to the tank, often leading to the pump fouling.

A specific procedure involving lengthy, expensive system shutdown, is therefore necessary to remove them.

The flushing valve **[FLX]** is a hydraulic accessory that automatically generates an adjustable-direction jet of water inside the pit whenever the pump is restarted thus preventing sediment from collecting on the bottom of the tank.

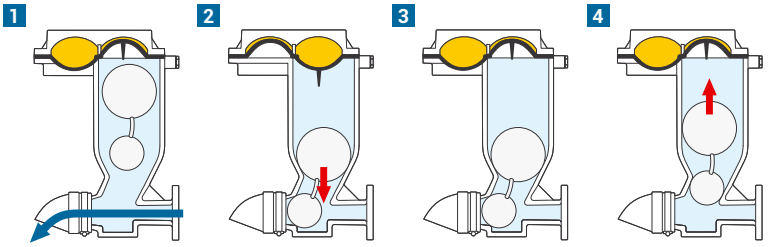
[FLX]

Flushing valve **[FLX]** constructed in cast iron, to be installed directly on the pump casing by means of a threaded coupling.

This type of valve operates on the “Venturi” principle and does not require an electricity supply.

A regulator allows the valve closure time to be set between 10 and 400 seconds, depending on pit size, pump power or the amount of sediment to be shifted.

- Cast iron body
- Hard-wearing, low-noise rubber balls
- Connection to system by means of a diamond-shaped flange compatible with competitor models, or with a 1½” GAS threaded connection
- Closure time setting from 10 to 400 seconds
- Adjustable-direction jet



Operating requirements

Total head [m]	5÷20
Delivery rate [l/min]	100÷17000
Liquid temperature [°C]	0÷40
Pump maximum flow rate [l/min]	750÷17000
Pump minimum weight [Kg]	70

The heart of the Zenit flushing valve is an innovative PATENTED system comprising 2 rubber balls joined together by a flexible diaphragm.

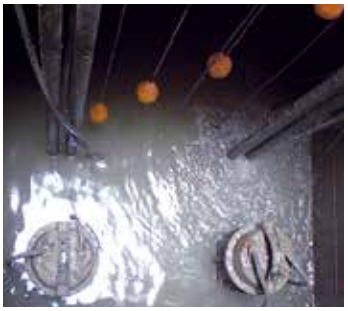
When the pump starts up, the valve is open and the liquid in the pit is drawn into the pump and circulated through the pit, to place all the solid sediments in suspension (phase 1).

After a time set by the user by means of a regulator, the vacuum created in the valve body recalls a rubber diaphragm, which pushes the two balls downward to shut off the flow (phase 2) and allow the water to be conveyed to the discharge before the solids are deposited on the bottom again.

When the pump stops, the vacuum inside the valve raises the diaphragm (phase 3) and the balls (phase 4), which open the valve ready for the next cycle.

How it works

The formation of a solid deposit in the tank (left) has made it necessary to install flushing valves to generate turbulence inside the tank and help to keep the solids in suspension (right).



Check valves and gate valves

Zenit check valves, certified EN 12050-4 annex ZA standard EN 12050-4, are designed for use even with soiled liquids and provide full guarantees of operation even under heavy-duty working conditions.

The sinking ball system ensures a full free passage since at maximum opening the valve has a completely free main line, greatly reducing pressure drops.

The capability for installation in a horizontal or vertical position provides greater versatility and optimal assembly.

Clapet valves can be used for non-abrasive clear wastewaters. Zenit models have body and disc in GJL-250 cast iron and brass and EPDM rubber seat. The lever which operates the mechanism is in GJS 400 cast iron for maximum reliability. Compliance with international design regulations simplifies installation and ensures compatibility with any standard flange.

The knife gate valves, with handwheel control, have various functions and are used as cut-off devices to regulate the flow in a pipeline or to temporarily isolate a section of the plant.

The gate valves have GJL-250 cast iron body containing the mechanisms used to partially or totally block the flow.

This product is designed to allow fitting of a servomotor for remote partial or total opening/closing (no manual operation required).

Zenit gate valves are in GJL-250 cast iron with the gate travelling in a brass seat to ensure smooth operation over time, even after long periods without use.

Flanges meet the UNI standards for perfect interchangeability.

They are mainly used in distribution and treatment plants for civil and industrial wastewater in general.

[VAP]

Ball check valves **[VAP]**, with EN 12050-4 certification, are designed for use even with soiled liquids to provide full guarantees of operation in heavy-duty working conditions.

Full free passage with lower pressure drops

Can be installed in a horizontal or vertical position for optimal installation in all conditions.

- Threaded models from GAS 1¼" to GAS 2"
- Flanged models from DN65
- Body in cast iron with rubber gaskets included
- Sinking ball in NBR rubber
- Sealing ensured by rubber on rubber contact
- Stainless steel metal fasteners
- Epoxy paint resistant to aggressive liquids
- Full free passage
- Easily removable cover for plant inspection

[VAC]

Clapet valve **[VAC]** suitable for non-abrasive clear water. With body and disc in cast iron and brass and EPDM rubber seat.

Lever mechanism GJS 400 cast iron for maximum reliability.

Compliance with international design regulations simplifies installation and ensures compatibility with any standard flange.

- Flanged models from DN100
- Cast iron body and head
- Gaskets in EPDM rubber
- Bronze seats
- Epoxy paint resistant to aggressive liquids
- Can be installed horizontal or vertical
- The valve can be partially opened by hand with the aid of a screw: this option is particularly useful for draining the pipeline upstream of the valve during any maintenance interventions

[SRP]

Knife gate valves **[SRP]** in EN-GJL-250 cast iron with bronze blade seat for perfectly smooth travel even after long periods out of use.

Flanges meet the UNI standards for perfect interchangeability with the pipelines of existing systems.

- Flanged models from DN50
- Cast iron body
- Stainless steel shaft with O-ring seal
- Bronze seats
- Epoxy paint
- Can be installed horizontal or vertical
- Full free passage when completely open

Bend unions

Discharge unions **[KRC]** are designed to be coupled to the pump's discharge port or inside plants, in both cases allowing a tight-radius 90° change in direction.

They may be flange-flange or flange-thread type, with full free passage.

Another advantage is the tight radius of curvature, giving more compact size than any other accessories on the market.

Depending on models, they can be made of EN-GJL-250 cast iron, galvanized steel or stainless steel.

[KCR]

- 2” GAS thread
- Stainless steel body
- Full free passage

- UNI flange - GAS thread
- Cast iron body
- Epoxy paint;
- Gasket in NBR rubber
- Full free passage

- UNI flange
- Cast iron or galvanised steel body
- Epoxy paint;
- Gasket in NBR rubber
- Full free passage

Flanges [KFL]

Complete range of threaded and welded flanges with holes in EN 1092-1 standard positions for maximum compatibility

Flange in cast iron painted with epoxy coating

- Flange in cast iron painted with epoxy coating

Chains [KAT]

Stainless steel chains for handling pumps and accessories.

- Stainless steel chains
- Suitable for lifting pumps from tanks and wells

Notes

Notes

Available from your Zenit distributor:

P_AUS/NZ_T_ZENIT_BR_NZ_2020

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