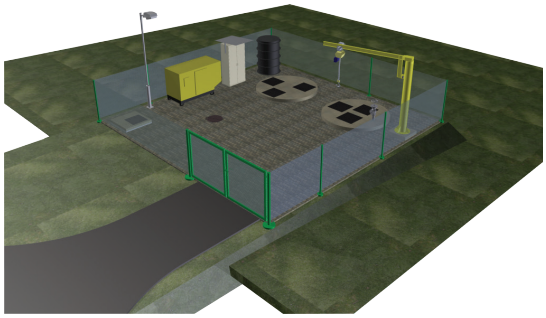
Pumping Stations

Standard (domestic from plastic)

Custom (municipal from concrete)

PUMPING STATION:



The PURECO pumping stations are professional custom equipments for storm- and wastewater forwarding. Our pumping pits are not standardized, they are customized for the specific application, the on-site conditions and needs of the customer.

What we offer:
- Pump selection, sizing,
- Shaft-selecting, sizing,
- All around designing,
- Construction, commissioning based on existing plans
- Maintenance

Pit materials:
- Reinforced concrete (prefabricated or in situ monolithic structure)
- Plastic (polypropylene, polyethylene)

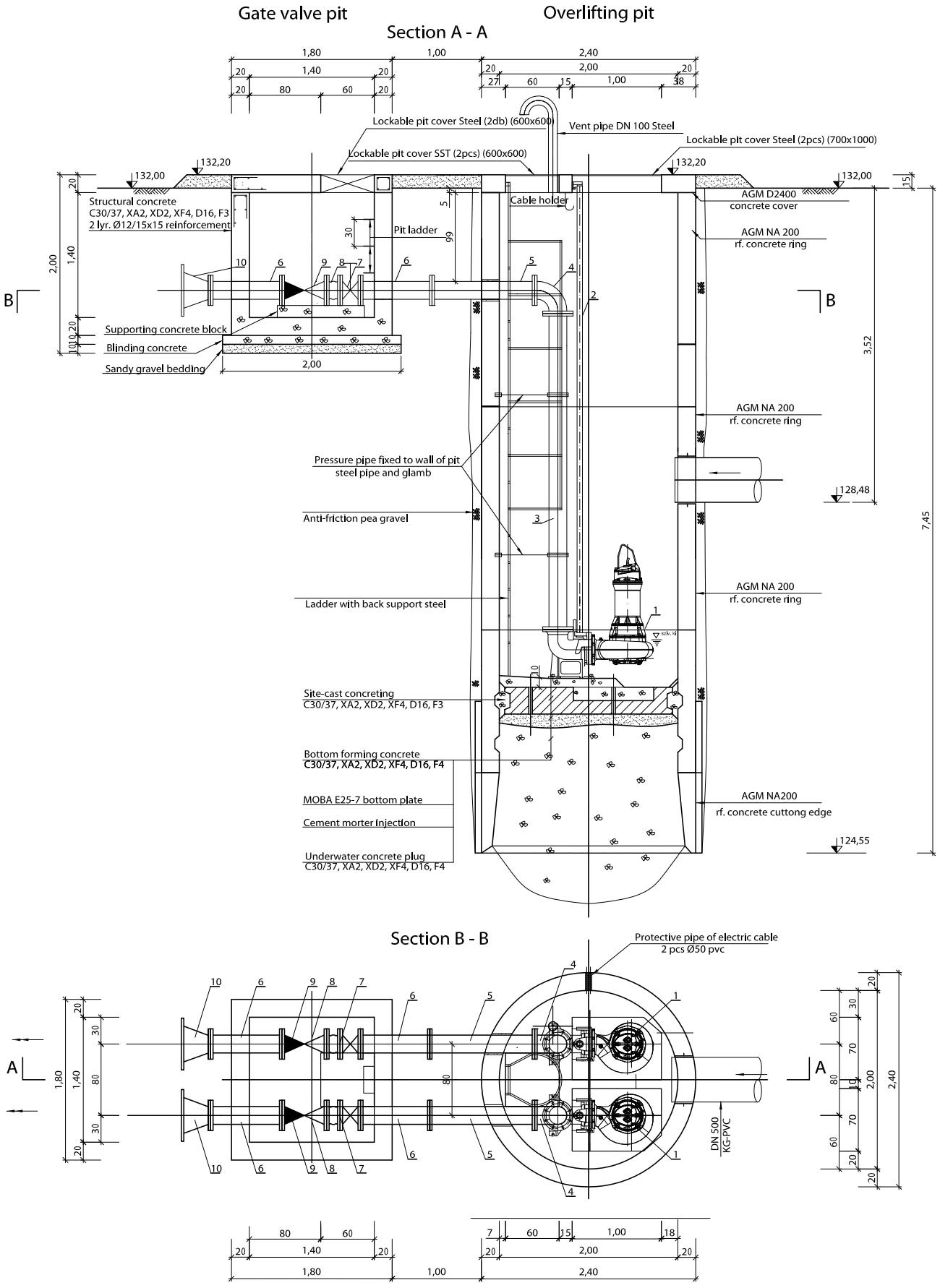
Pumps:
- ABS, Flygt, Grundfos, Jung, Wilo, or suitable types of other manufacturers on request.

PARTS LIST

No	Pc	Name	Diameter	Length	Material	Remark
1	2	Pump			Cast iron	ABS XFP201G-CB2.3PE110/6
2	2	Pump suction pipe	2"	~5000	KO	
3	2	Connecting piece	DN 200	~ 3640	KO	local size
4	2	Q piece	DN 200		KO	
5	2	FF piece	DN 200	1200	KO	
6	4	FF piece	DN 200	600	KO	
7	6	Gate valve	DN 200		Cast iron	
8	2	Check valve	DN 200		Cast iron	
9	2	Rubber compensator	DN 200		NBR	
10	2	FFR piece	DN 200 / DN 400		Cast iron	

Remark

-Breakthroughs for pressure pipe on pitwall shall be sealed with SIKAFLEX-15 LM flexible sealing material


Gate valve pit
Overlifting pit
Section A - A
Lockable pit cover Steel (2db) (600x600)
Vent pipe DN 100 Steel
Lockable pit cover Steel (2pcs) (700x1000)
Lockable pit cover SST (2pcs) (600x600)
132,20
132,00
Structural concrete
C30/37, XA2, XD2, XF4, D16, F3
2 lyr. Ø12/15x15 reinforcement
Cable holder
AGM D2400
concrete cover
Pit ladder
AGM NA 200
rf. concrete ring
Supporting concrete block
Blinding concrete
Sandy gravel bedding
Pressure pipe fixed to wall of pit
steel pipe and glamb
Anti-friction pea gravel
Ladder with back support steel
128,48
124,55
Site-cast concreting
C30/37, XA2, XD2, XF4, D16, F3
Bottom forming concrete
C30/37, XA2, XD2, XF4, D16, F4
MOBA E25-7 bottom plate
Cement morter injection
Underwater concrete plug
C30/37, XA2, XD2, XF4, D16, F4
AGM NA200
rf. concrete cuttong edge
Section B - B
Protective pipe of electric cable
2 pcs Ø50 pvc
DN 500
KG-PVC

GENERAL INSTRUCTION MANUAL – PUMPING STATION

1. Technical specifications, technical data

Prefabricated reinforced concrete pit, and service pit prepared on site
in adequate size and capacity in accordance with built in pump switch volume and also for local circumstances – inflow and outflow level – with stainless steel manhole cover and cover slab in accordance with traffic load on site - 15kN load bearing capacity.

Outdoor sewage-pump machinery
Installed into the prefabricated reinforced concrete pump-pit, respectively – into pit built on site. Machinery consist of 2 pieces of under-water pump, with connecting sole-plate, pressure pipe, lifting chain, lead pipe, and a pipe network consisting of a DN 100 gate valve, ball flap valve and a connector pipe connecting pumps to installation set and pressure pipe by each pump. It also contains a discharge branch equipped with a DN100 gate valve.

Outdoor sewage-pump controlling
Controller unit of sewage pump is installed in a lockable, outdoor workout metal switchboard chest. Switching and controlling unit (pumps with direct start, motor-protecting switch, motor-current meter, work-hour counter, float switch controlled automatics and hazard-level signal), it is completed with 3 pieces of float-valve. Protections built into the pumps can be connected to controlling (inner thermal protection, leakage supervision).

Operation of controls
During normal operations the 2 pumps operate alternately, in case of dropout only one of them is capable to handle maximum load. Automatic selection of operating pump is applied. If higher current-volume workload would occur than a single pump maximum output capacity then both pump are able to work simultaneously, ensuring avoidance of emergency.

Technical data

Sewage pump pit		
Inner diameter:	1,59	m
Effective depth:	4,78	m
Load bearing capacity of cover-slab:	125	kN
Load bearing capacity of manhole cover:	15	kN
Pump		
Type:	XFP 100C-CB1.3 PE22/4	
Discharge connector:	DN 100	
Motor		
Feed:	400/50	V/Hz
Terminal block input:	2,53	KW
Shaft power:	2,2	KW
Current draw:	4,56	A

2. Handling Instructions

General prescriptions
Product guarantee law requires us to call your attention to the following risks resulting of non-normal operation conditions, in order to protect your interest:

- Operating personnel should read present instruction manual fully before installation and putting into operation of the unit.
- Operating personnel be responsible for obeying operational and safety instructions given in present manual.
- Present manual does not detail general safety at work and operational safety regulations, that is also the responsibility of operating personnel.
- Trouble free operation may only be ensured if operation and maintenance is done by mechanical and electricians prescriptions.
- Given unit can only be operated among parameters given on the tag fitted to the equipment and also in the letter, confirming the order.

- If you would have any questions not answered in present manual, please turn to us.
- Depending on operational conditions (wear, corrosion, aging) life cycle and parameters of units are limited. It is the duty of the operator to carry out regular check-up and maintenance, to replace actual parts in adequate time or renew, resulting longer life-cycle by safe operating conditions for the whole equipment. In case of operation other than usual workload or recognised malfunction use of equipment should be terminated at once.
- Those machinery units, which dropout or malfunction may cause personal injury or damage in property are equipped by alarm signal and/or spare unit, their working potential and availability should be checked regularly.
- Hydraulics compartment of pumps is filled with oil, consequently the equipment can not be used where direct contact is given with potable water.
- If prescriptions given in present manual are ignored can cause malfunctioning of overload, consequently actual personal injuries and damages in property.
- Supplier undertakes guarantee only if prescriptions are obeyed completely.
- If equipment is handed over to third party it is necessary to transfer operating conditions given in present manual and in confirmation of order, also to specify working parameters.

Application prescriptions

- Pumps are basically capable to convey max. 40 °C temperature rainwater, with the condition of being non-aggressive to steel, (except for cast iron workout).
- Pumps are not self-sucking types, by switch-in the impeller should be in submerged position, that means that the pump should be dipped into the fluid, or inlet should be ensured across a suck-pipe.
- Water level above pump should be adequate high in order to avoid cavitation.
- Air intake and turbulence should be avoided.
- Pumps are not applicable for transport of explosion-hazardous liquids or mixtures.
- If pumps are utilised in explosion-hazardous environment, then a type equipped with explosion-proof motor should be installed.
- Maximum 15 switch-in and off cycle is allowed per hour.
- Minimum 0,6 m/s current/flow should be ensured in pipe network.
- Special working conditions, that are met with special types of pumps are given in catalogue separately.

Electrician handling instructions

Electric protection of switchboard is IP 55, material is painted metal, it can withstand weather conditions. Door should be closed after each work-phase in order to avoid unfavourable consequences. All controller gauge and operating switch is located under closed door.

Equipment may be put under voltage across a circuit separating switch.
Working mode selector switches can be set to manual or automatic operation. Manual operation the float switches are not used, therefore that can be used only for controlling or service purposes. Working mode selector switch set to 0 setting means off position.

Under automatic operation pump(s) are switched on- or off by float-switches. 3 pieces of float-switches built into pump-pits fulfil the following functions:

- switch off of pump(s) under lower level,
- switch on of first pump reaching level,
- switch on of second pump reaching top level,
- repeated switch on and failure signal reaching upper danger level.

Operational control happens across low-voltage system (24 V AC). Since required quantity can be pumped by a single pump, only one works under normal workload. In case of malfunctions, when the actual pump drops out, or the float-switch or low voltage transformer malfunctions, then safety control steeps in. During that kind of operation hysteresis (switching difference) between lower and upper levels are ensured by the own hysteresis of float switch. That is much smaller, than the difference between operational on- and off switching levels, causing more frequent switching.

Reaching upper level potential-independent contactor serves to be used for actual remote signalling or alarm. Contactor closes in case of motor-protection of one of the pumps has been released due to overload or short-circuit.
Selection of operating pump is automatic, ensuring even work-load to both pumps. Total operational time of pumps are indicated by built-in working hour counters.

Motor current measuring devices give adequate information on operation of pumps. By their help certain malfunctions (e.g. clogging) can be avoided with high probability.

3. Troubleshooting/failure search

1) Motor does not start

Fuse burns out or motor-protecting switch is released at once. Starting can not be repeated!

- Cut-off of feed cable, short-circuit, earth-lock in conduit or in coil
- Cables and motor should be checked by a electrician professional, error corrected.

- Bad fuse burnt out
- Replacement according to tag fixed to equipment.

- Impeller blocked by a foreign body.
- Impeller should be made free.

- Automatic float-switch should be checked.

2) Unit runs, but after a short while motor-protecting switch off.

- Thermal protection is set too low.
- Setting should be checked by a professional and set according to tag fixed to equipment.

- In case of higher current consumption by voltage drop (longer cable)
- Voltage be measured between phases of motor. Allowed difference + 5 %.

- Higher current consumption in case of two-phase run
- Voltage of all 3 phases to be measured. If they are not equal, fuses and connections be checked, replaced if needed.

- Impeller held back by foreign body.
- Excess current consumption in all 3 phases.
- Pump must be cleaned.

3) Unit runs, but pumping gain and electric consumption is low

- Impeller and direction of rotation should be checked.

4) Unit runs, but pump does not transfer

- Pump should be de-aerated.

If malfunctioning can not be corrected, it is advised to ask for help from the manufacturer, respectively to send pump into manufacturer workshop. Repair or servicing of pumps outside of manufacturer workshop may be done only for own responsibility, that makes manufacturer guarantee claims void.

4. Maintenance instructions

The following controls and maintenance process should be carried out to sewage:

In case of any maintenance works main switch should be in off position. If operation of any pump can not be avoided, then switch of pump being under maintenance should set to 0 setting and motor-protecting switch in off position.

Weekly

Current consumption may be checked by short hand-operation start of pumps

In case of pumps equipped by fittings it is important to avoid that pump should suck-in air, because in that case transportation of liquid stops. If this could, pump should be lifted a bit during operation, to let air our from impeller.

Monthly

- Terminal blocks bolts should be checked in control panel, in case bolts should be fastened. Control panel needs no further maintenance.
- In case of float-switch control cleaning of float-switches from sediment contamination (grease, fibrous material, etc.)
- In case of pneumo-static level control check formation of even bubbles.

Semi-annually

- a) gate valve checked, opened and closed
- b) flap valve checked (valve should give a clicking noise after stop). After stopping of pump no flow-back can happen.
- Checkups of pump (impeller, hydraulic chamber, oil, sealing).
- Checkups of corrosion

Yearly

In case of normal operations once a year general maintenance should be carried out on pumps. In case of sewage/water hard polluted or containing sand general maintenance should be carried out more frequently.
Maintenance of pumps should be done as by attached pump operations manual.

Proposed to keep up an operational record, in which working hours, electric consumption and regular checkups and maintenance works are recorded.
Take note that our service is available, ensuring maintenance works for favourable prices.

5. Safety and environment-protection prescriptions

General safety at works and fire-protection prescriptions should be obeyed in sewage-pumping works area. Present manual does not contain local prescriptions. It is the responsibility of operator and maintenance staff.

Electric connection, maintenance can only be done by professional, according to prescriptions being in force.

Pump may be switched on only in built in state.

It is forbidden to stay within the effective radius of moving parts! In some given cases pump is delivered by free impeller.

It is forbidden to stay within the effective radius of parts being under electric current or pressure! Before operation all fill-in, outflow and de-aerating opening should be checked whether they are closed as prescriptions require.

Work on pumps may be done only after complete de-powering and after the rotating parts have been stopped. Chance of accidental switch-in should be excluded in advance.

Oil being in sealant compartment and motor chamber can be under pressure. Infill and outflow openings can only be opened with special care and very slowly. Removal of closing bolts can be done only after complete de-pressurization.

In case of actual oil replacement used oil should be neutralized according to environment-protection prescriptions being in force.

In case of malfunction (e.g.: motor does not start, fuse burnt out, motor-protection released, etc.) re-starting of pump is not allowed, because it can cause overheating/overload of the motor. Cause of malfunction should be corrected before.

Sewage pump can handle only water or communal sewage with parameters in accordance with measurement data. If water would contain other contaminants (e.g. oil, chemicals, solvents), it can be led to pump after preliminary cleaning.

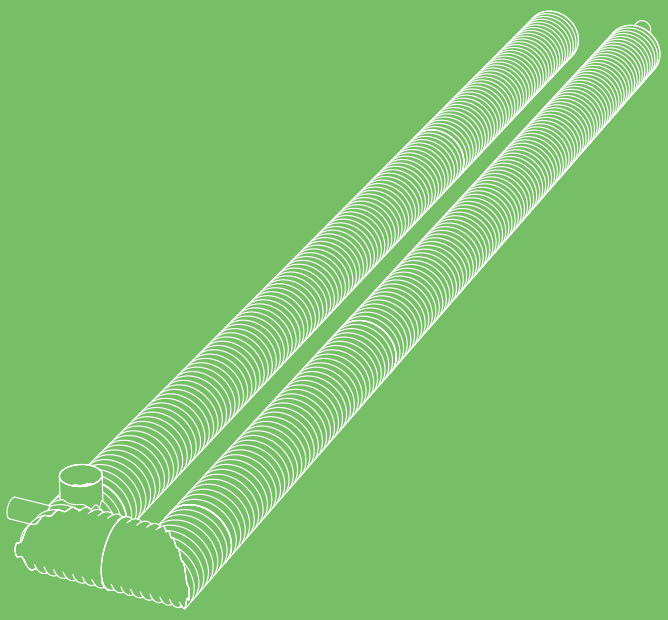
5. Guarantee

- Guarantee is undertaken in accordance with our general supply conditions.
- Maintenance works during guarantee period can be done by the supplier, or the service nominated by the supplier in writing, in other cases guarantee is void.
- Long term guarantee be valid only for the utilized material. Guarantee is not valid for parts under natural wear, such as impeller, seal of shaft, shaft, bearing, distancer- and wear-ring, etc.
- Guarantee claims can only be validated if operated among given working parameters.

Infiltration

TWINSTORE

Infiltration Boxes



PURECO / TWINSTORE

INFILTRATION – TWINSTORE

What is Twinstore?

Twinstore is a patented system of stormwater attenuation which offers even further benefits over conventional systems such as thermoplastic chambers. Developed in 2008, it is completely versatile and widely specified in the UK and Ireland as a means of reducing the tank footprint and cost.

How does Twinstore work?

Twinstore uses a manifold of lightweight, helically wound galvanised steel pipes in any diameter from 0.3 to 3.6 metres installed below the surface in a lined bed of granular material.

Instead of being sealed by PURECO's watertight gaskets to create a controlled discharge tank, the pipe ends allow water to pass out into the granular fill. It balances water freely between the pipes and the backfill contained within an impermeable membrane.

By balancing the ratio of 100% void tanks to granular fill (typically 40% void), Twinstore reduces the volume and cost of the pipe system – the critical factor in any specification.

The bed of granular fill is lined with either an impermeable membrane or a geotextile liner, according to local conditions and requirements. Bentonite is particularly suitable with Twinstore, as it seals on wetting. Furthermore, the water is cleaned as it passes through the granular fill. Like any PURECO stormwater attenuation tank, Twinstore can be fabricated to an infinite variety of layouts, unlike concrete chambers or cellular systems which are limited by size and shape.

Reduced footprint – reduced cost

Twinstore's patented system increases the gross volume of storage with a footprint that is comparable to cellular systems.

Easy to handle and quick to install

PURECO lightweight steel tanks are delivered fully prefabricated and make handling and installation quick and simple for a small unskilled team, with no need for heavy lifting gear.

Loadbearing capability

Manufacture to HA Standard BD 12 makes PURECO's steel pipe systems supremely fit for purpose, capable of carrying temporary construction loads during construction and full motorway live loads if required.

Maintainability

Twinstore can be fitted with access shafts, ladders and inlet and outlet connections for ready inspection and maintenance, and as silt cannot escape from the pipes, it is a simple job for a gully cleaner if needed

Recyclability

Our helibore steel pipe is manufactured from a high percentage of recycled steel and is fully recyclable, unlike cells or concrete.

Design

PURECO can provide assistance throughout the project, designing a tank layout to suit any layout and capacity according to the return period and the permissible discharge rate.

The services we provide free for any project include an outline design and drawing, cost estimate and installation instructions.

	Twinstore	Standard tank	Cells/Crates	Permeable paving
Voids	100%	100%	max 95%	max 30%
Footprint	Small	Medium	Small	Large
Versatility	Good	Good	Limited by strength	Limited by strength
Installation	Easy	Easy	Easy	Complex
Strength	High – full highway live-loads	High – full highway live-loads	Limited – live loads and dead loads	Limited - unsuitable for heavy loads
Accessibility / Maintenance	Fully accessible	Fully accessible	Not accessible	Not accessible
Cost	Low	Medium	Medium	High

Produced by TUBOSIDER GRUPPO RUSCALLA HUNGARIA KFT.