Pumpen - Boettcher

Tailor - made aggregates and more

Fire extinguishing units

Industry pump - aggregates

Pumps

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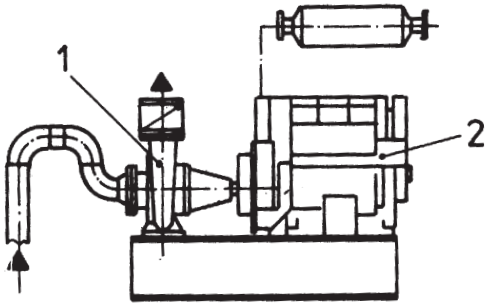
Stationary or transportable fire-extinguishing units for marine and land-application

Self priming / direct coupled



We deliver the pump (1):
- with built-in priming stage or
- with separate evacuating unit for manual operation or remote start

We deliver the diesel engine (2):
- air- or water-cooled with radiator, water-cooled with heat-exchanger
- with 2nd starting equipments acc. to the rules of classifications for emergency fifi-units with following starting possibilities
- manual – spring – electric – pneumatic – hydraulic – starters

Alternative:
- with electromotor 400 V / 50 Hz or 440 V / 60 Hz
- d.o.l. or star-delta starting

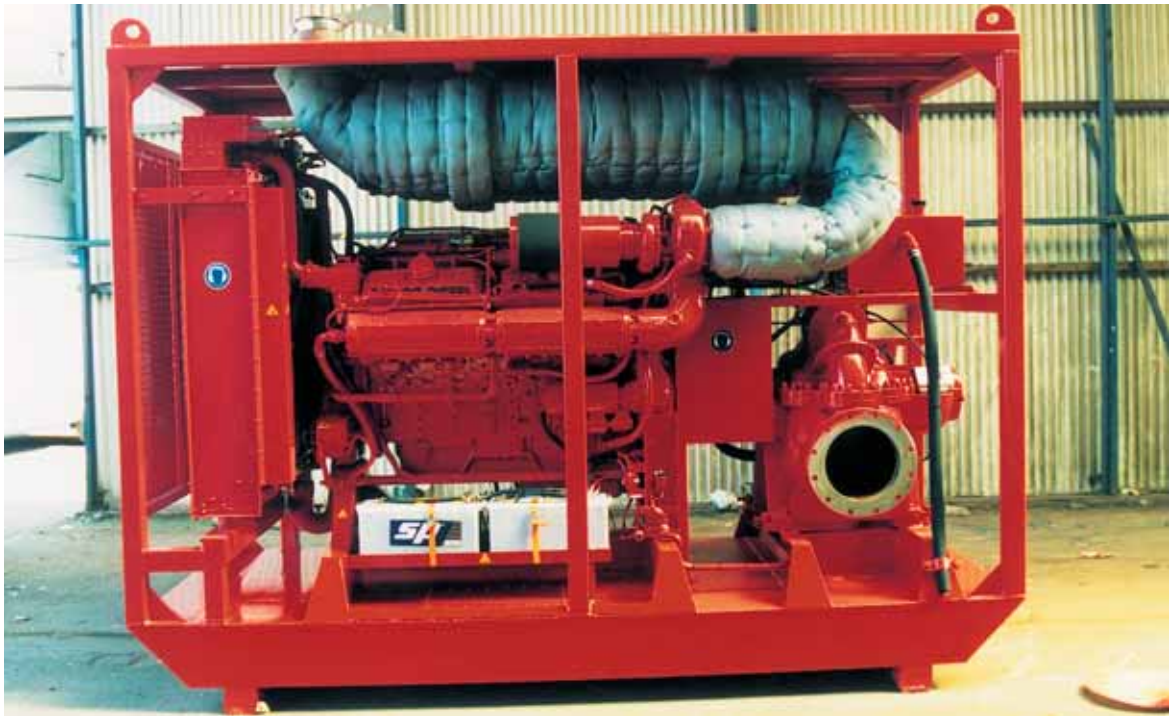
Diesel-driven centrifugal pumps with 3-cylinder Deutz-engine with separate evacuating device with clutch for manual operation

High-pressure self-priming multistage centrifugal pumps with Perkins diesel engine

Stationary or transportable fire-extinguishing units for marine and land-application

Portable diesel driven fire pump with exhaust gas ejector, self-priming and self-draining.

No water filling before start, no blocking or reptures because of frost



Fire extinguishing pump-unit diesel driven with selfpriming device 1200 m³/h - 12 bar

Stationary or transportable fire-extinguishing units for marine and land-application

Pump capacity 12000 l/min at 13 bar

Starting of engine by hydraulic accumulator

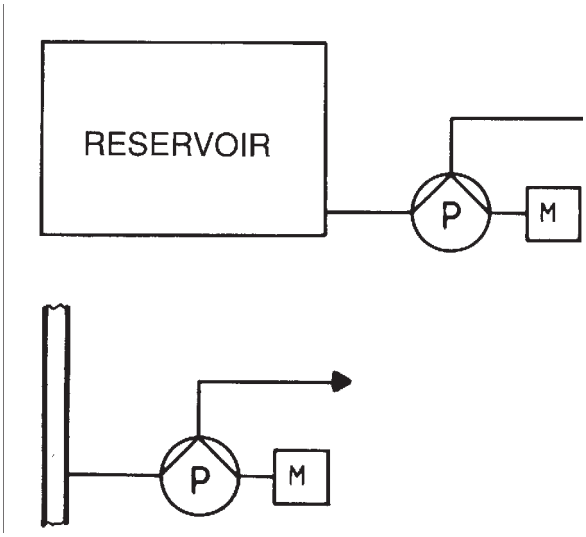
Evacuating system with high capacity (evacuating time can be less than 1 minute) pump made of bronze, operating by hand lever to disk clutch

Easily operated monitor manually, electrically or hydraulically operated with possibility of manual operation in case of emergency

VN-Pumpen designed and developed transportable fire extinguishing units for various applications and a wide range of capacities from 100 up to 1200 m³/h and pressure up to 16 bar.

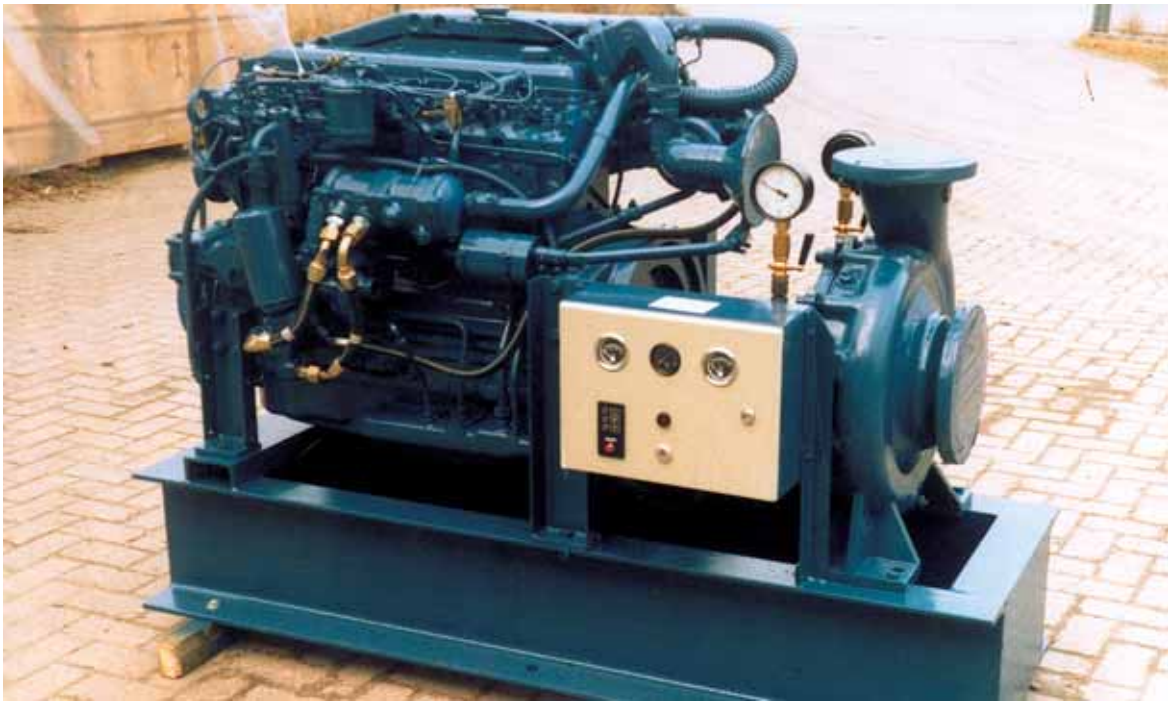
Stationary or transportable fire-extinguishing units for marine and land-application, direct coupled.

Flooded pumps / nonself-priming



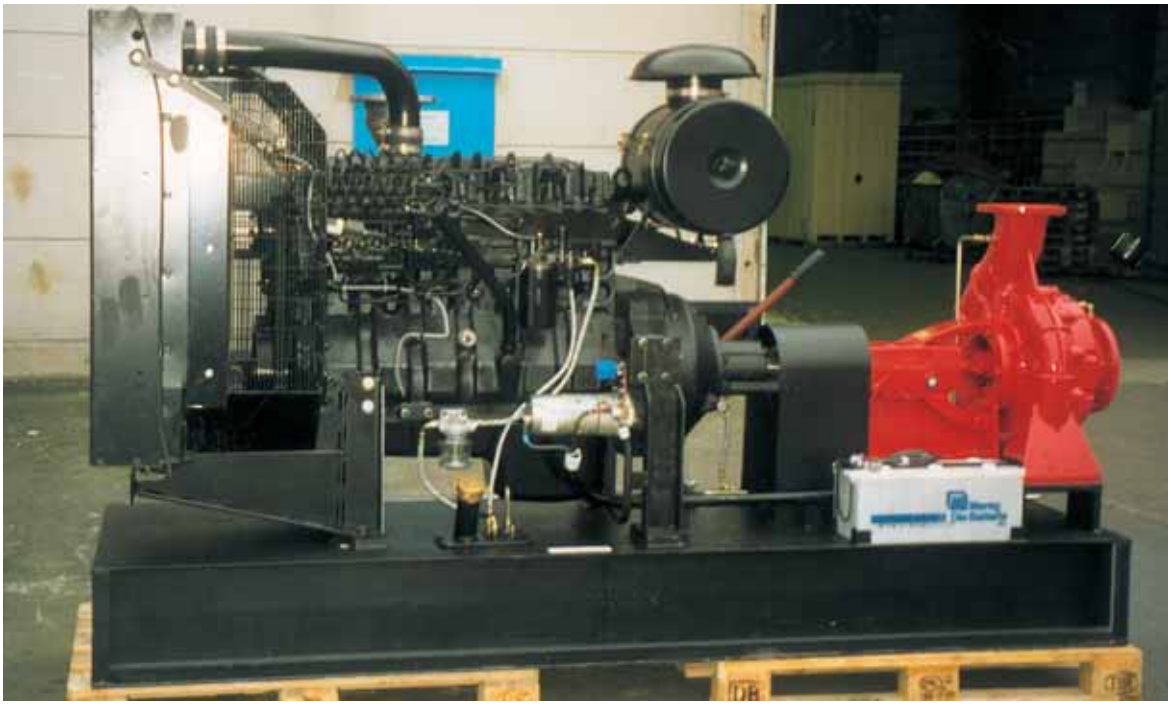
In case of supply from the Public Water Pipeline the inlet pressure can be taken into account when calculating the end-pressure

Compact booster pump unit for fire extinguishing use



Perkins Marine diesel engine with heat-exchanger, pump 180 m³/h – 90 m, with LROS certificate

Stationary or transportable fire-extinguishing units for marine and land-application, direct coupled.



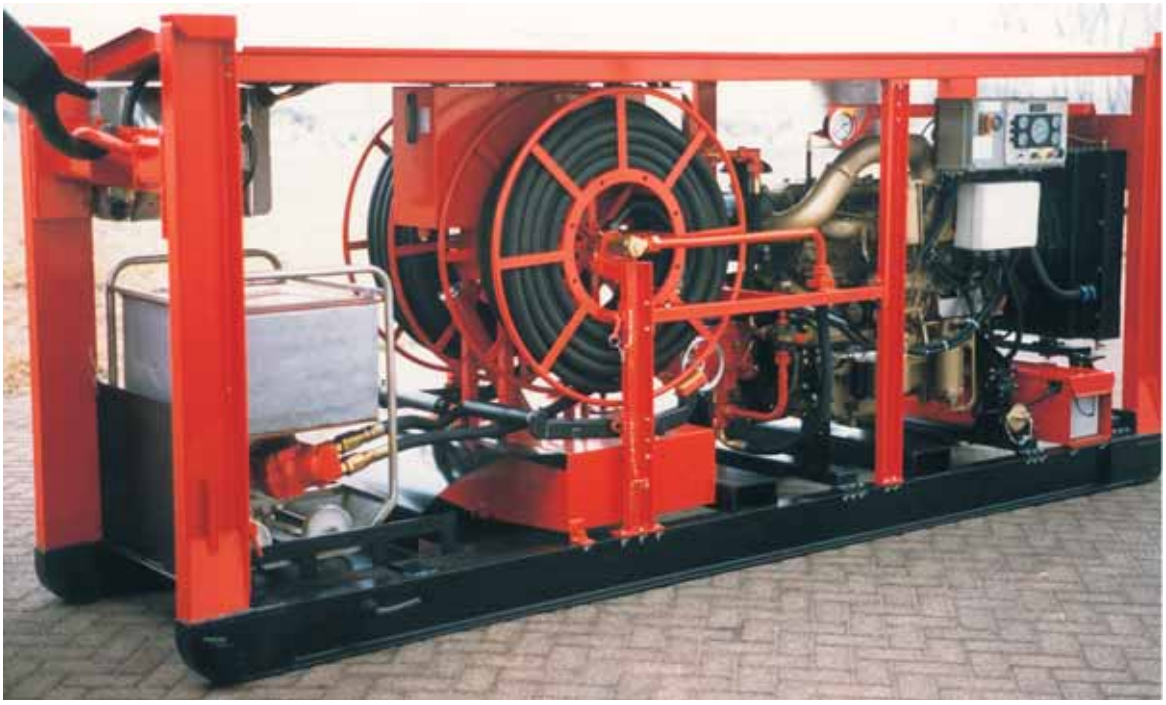
FiFi-pump 300 m³/h – 55 m with 6-cylinder diesel engine radiator cooled

Axial split case pump with diesel engine installed in container

Stationary or transportable fire-extinguishing units for marine and land-application, direct coupled.

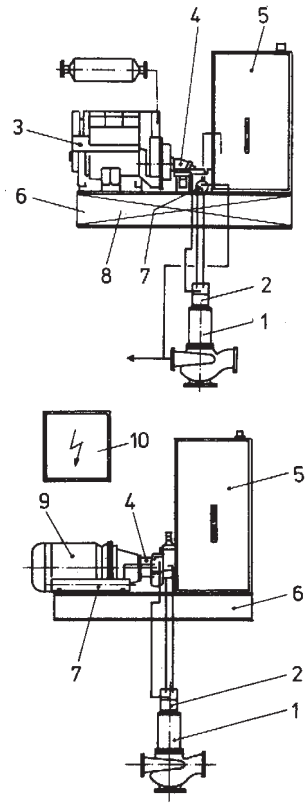
Stationary marine design with Scan engine, pump made of NiAl-bronze 360 m³/h – 140 m

Stationary or transportable fire-extinguishing units for marine and land-application, direct coupled.



Transportable unit special design for operation in industry area

Self priming hydraulic fire extinguishing system with big suction lift



diesel driven

lower unit:

centrifugal pump (1) coupled with hydraulic motor (2). Standard submerged design wet well installation centrifugal pump horizontal or vertical, normal suction or self priming with built-in air-stage depending on installation level.

upper unit:

as compact-unit. With diesel engine (3) air- or water-cooled with radiator, for remote and direct start and possible with secondary starting equipment.

Diesel engine ready assembled with hydraulic pump (4) and necessary fittings. The hydraulic tank (5) on the same base frame (6). Cooling of hydraulic oil with air- or seawater cooler (7). Fuel tank (8) in the base frame.

Electrically driven

as described above, but upper unit driven by means of electric-motor (9) with switchboard (10).

Self priming hydraulic fire extinguishing system with big suction lift

Feeder / booster-pump design:

To save energy or to make the lower unit not to heavy the lower unit will be used only as feeder pump and the upper unit will be equipped with booster pump.

Self priming hydraulic fire extinguishing system with big suction lift

Several designs of submersible pumps hydraulically driven

Self priming diesel driven hydraulic fire extinguishing system with big suction lift

Hydraulically driven submersible pump floating design

Hydraulically driven power package for submersible pump

Self priming diesel driven hydraulic fire extinguishing system with big suction lift

Electrically driven hydraulic power package

Hydraulically driven mobile power package with floating submersible pump

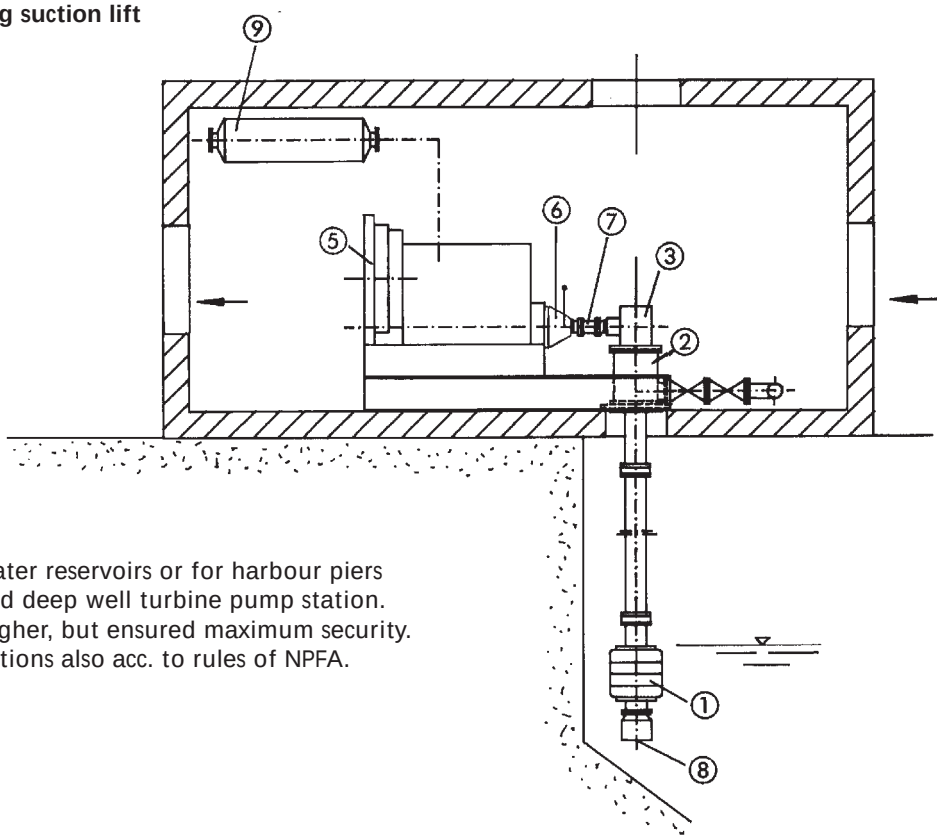
Diesel driven hydraulic power package

Self priming diesel driven hydraulic fire extinguishing system with big suction lift

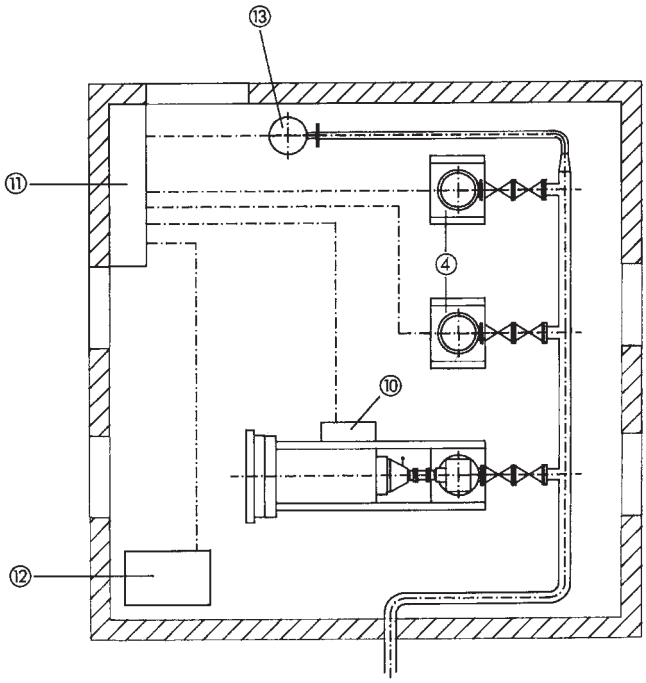
Contaierized fire-fighting unit installed at a pier in the harbour
The water is taken from the river by means of a hydraulically driven submersible pump.
The station transfers the water into a ring pipeline

Fire extinguishing pumping sets with deep well turbine pumps

Self priming with big suction lift



For underground water reservoirs or for harbour piers mostly recommended deep well turbine pump station. The investment is higher, but ensured maximum security. We deliver these stations also acc. to rules of NPFA.



1) Deep well turbine pump
2) Pump head
3) Gearbox
4) 2 electrically driven pumps
5) Diesel engine with radiator
6) Clutch, automatic for remote start
7) Spacer coupling
8) Foot valve
9) Exhaust silencer with spark arrester
10) Battery
11) Switchboard
12) Fuel tank with low level alarm
13) Diaphragm pressure tank

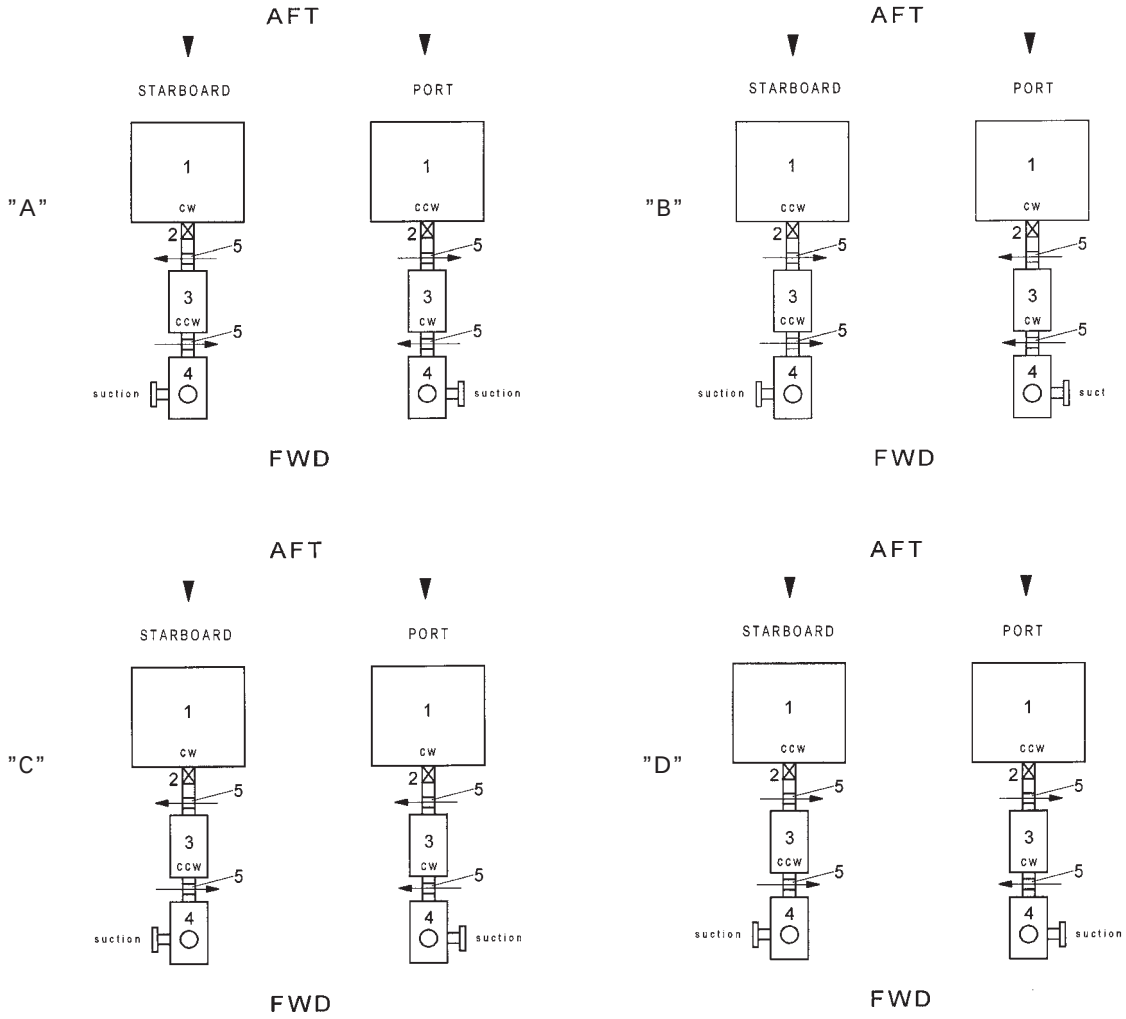
Fire extinguishing pumping sets with deep well turbine pumps

We deliver, if required, with clutch for automatic remote operation with emergency manual operation

Marine fire extinguishing pumping sets with step-up gearbox and clutch for PTO of main engines

We are able to deliver for several directions of rotations and positions of suction- and discharge sockets.

all directions of rotations seen from diesel engine to pump



1) main engine
2) PTO of main engine
3) step-up regular
4) firepump (upwards pointed discharge socket)
5) couplings

Fire pump can be delivered with a sidewards pointed suction socket and an upwards pointed discharge socket as illustrated above design "A", "B", "C", "D"
The fire pump can also be delivered in **inline design,** that means with the suction socket on the right, left or on the bottom, the discharge side is always on the opposite.

Marine fire extinguishing pumping sets with step-up gearbox and clutch for PTO of main engines

Capacity up to 3600 m³/h
Pressure up to 20 bar

Approval and certification of all marine classifications (e.g. ABS, BV, CCS, DNV, GL, LROS, MROS, Rina)

Special containerized fire extinguishing unit

Because the capacity of the available crane on the supply vessel was too small, part of the machinery equipment can be withdrawn as you can see from following photos.

In the container remains the cooling system and fuel tank for 24 hours

Special containerized fire extinguishing unit

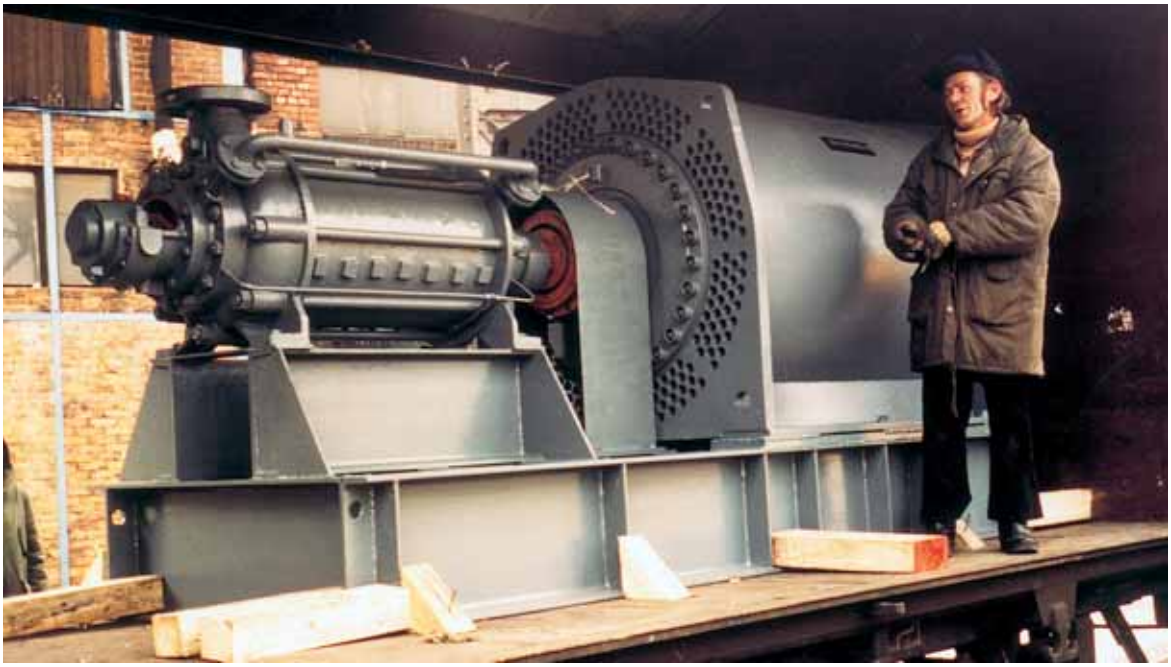
The unit during a 24-hour test program (pump 1200 m^3/h - 16 bar)

Special containerized fire extinguishing unit

The unit at site, also for ice-production in Caspian sea

Industry aggregates

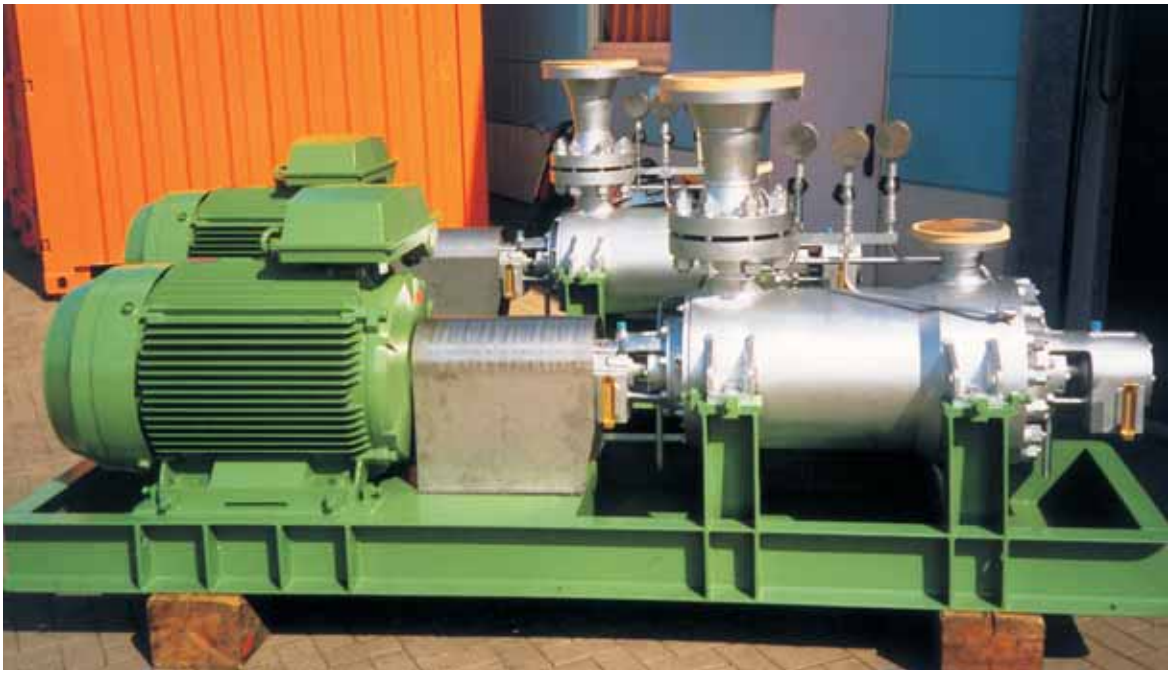
Diesel-driven centrifugal pump for crude-oil



Slurry pump 240 m^3/h – 850 m w.s. with flame-proof motor 875 kW, 6000 Volt, 2975 ^{1}/min for mining

For refinery

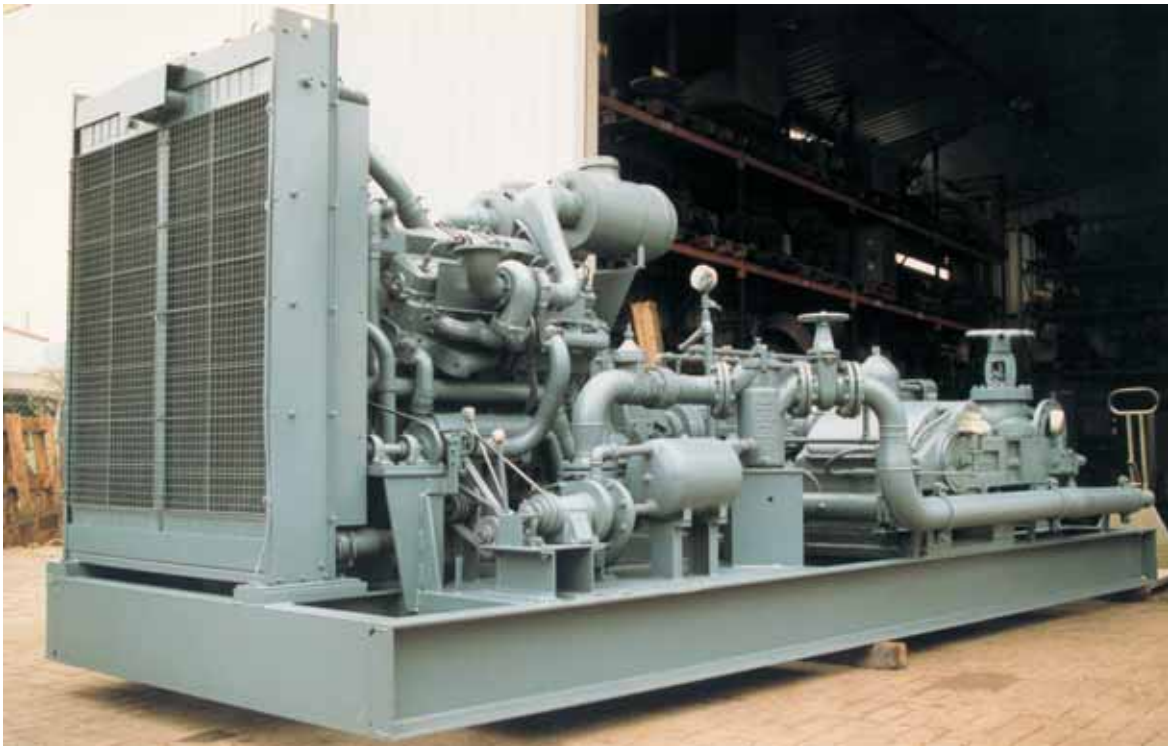
Steam-turbine-driven multistage centrifugal pump barrel-design acc. to API



Electrically-driven multistage centrifugal pump acc. to API 610

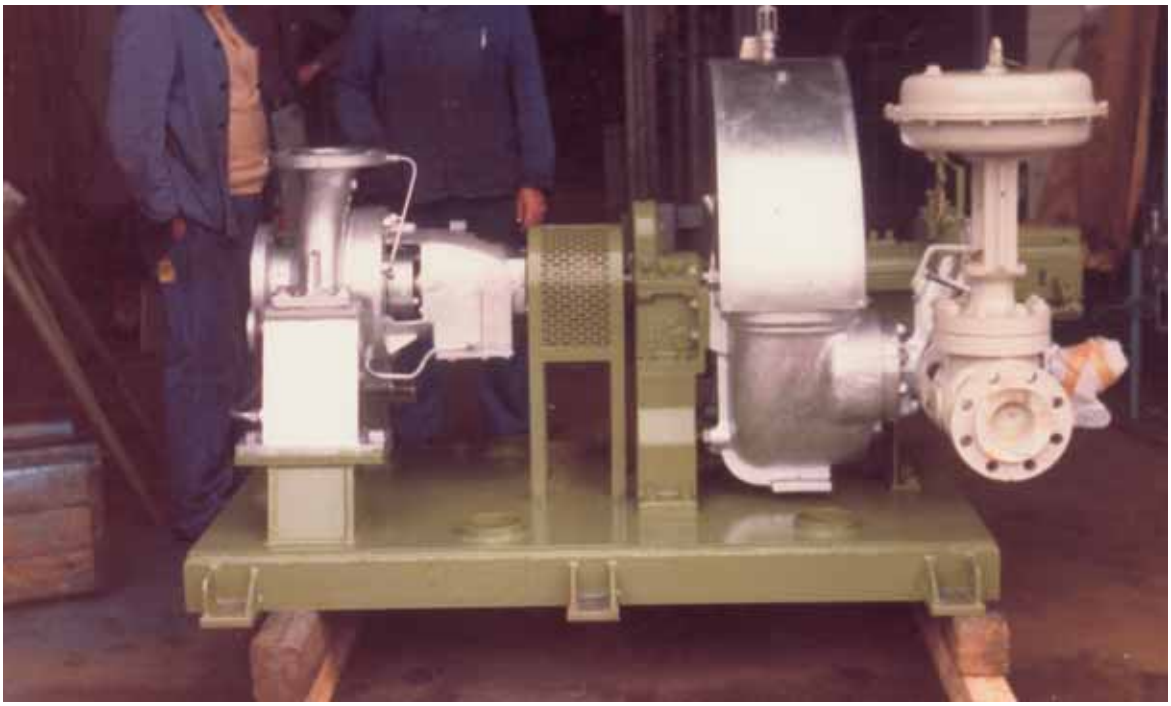
For pipeline building

Oil-pipeline filling- and pressure test-pump, driven by diesel engine with gear-box and two PTO



3

For refinery



Steam turbine-driven single-stage, middle-axle-supported centrifugal pump acc. to API

Steam turbine-driven high-pressure centrifugal pump for butane, API-version

Refilling station for diesel oil and gasoline with coalescer filter and volume counter

Miscellaneous

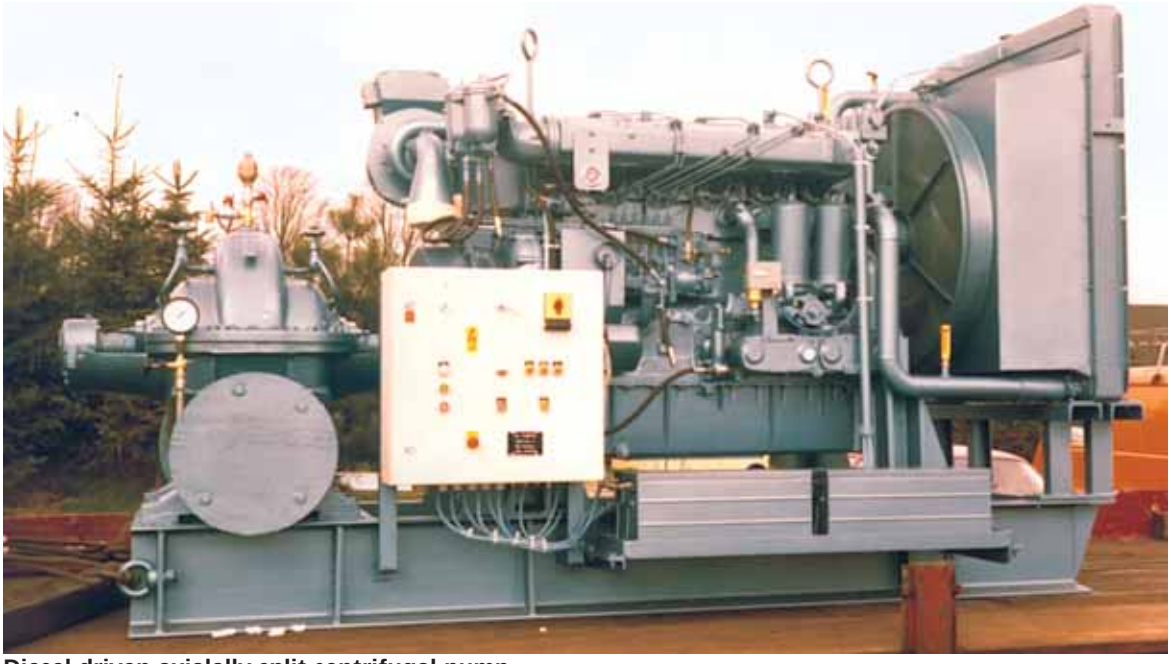
Vertical centrifugal pump with additional evacuating unit

Vertical centrifugal pumps submerged 6500 mm

Miscellaneous

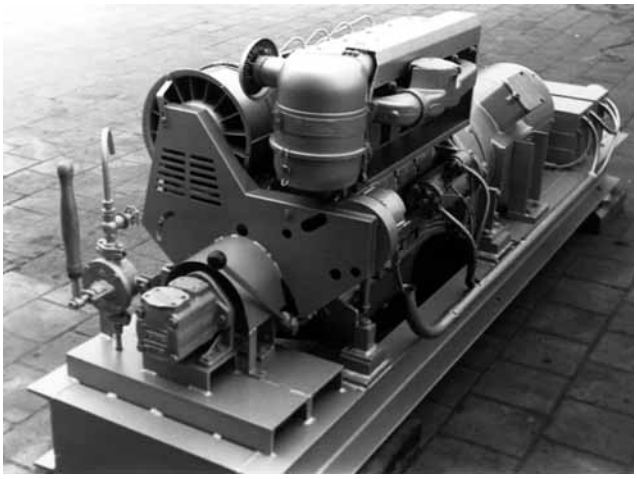
Mobile diesel-driven hydraulic power package for submersible drainage pumps

Miscellaneous



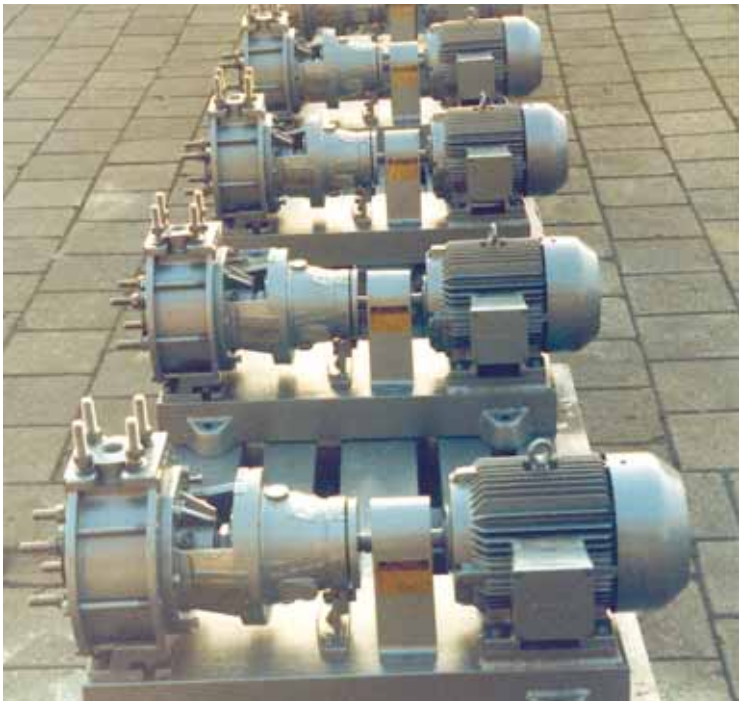
Diesel driven axialally split centrifugal pump

Diesel-driven single stage end suction non-selfpriming centrifugal pump

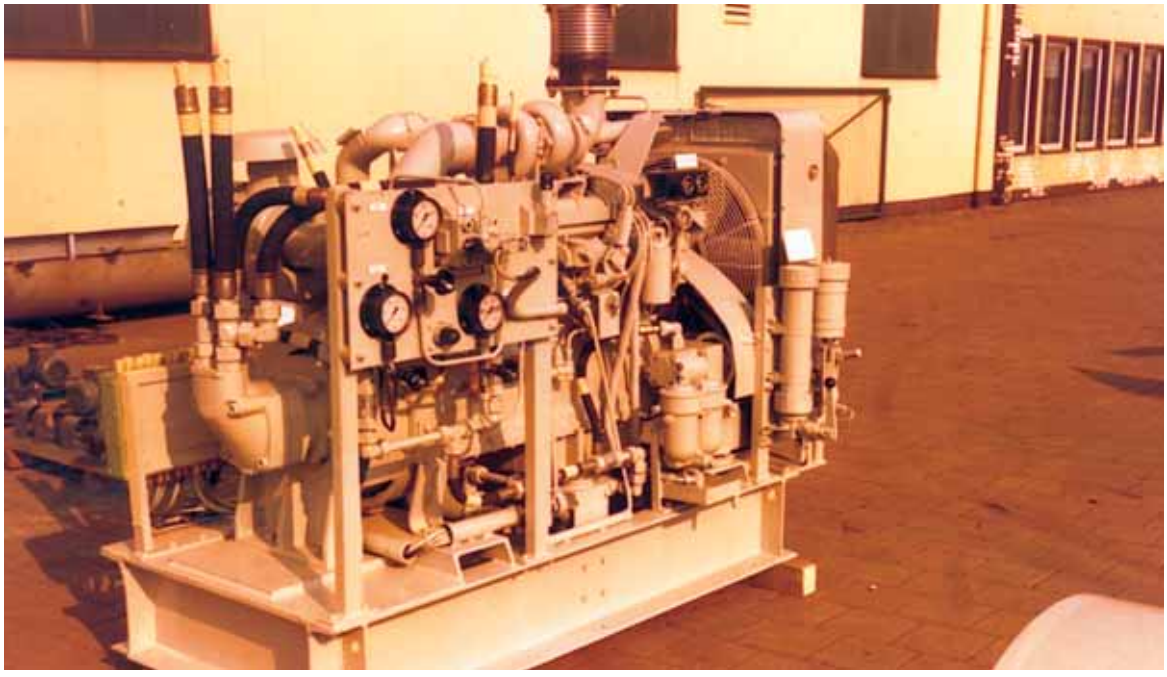


Diesel generator unit with centrifugal pump at PTO of the engine

Miscellaneous



Electrically driven acid pumps material polyethylene



Hydraulic power package

Booster-pump-stations

Acc. to DIN 1988 booster-pump-stations must be constructed, designed and operated to grant continuous supply to consumers, without interfering with the public water supply or other consumer stations. Any change of drinking water quality must be out of the question.

Pressure range:
- min. pressure at tap connection 1,5 bar
- max. pressure at tap connection 6,0 bar

Total head of pump: consists of:
- geodetical height between pump and highest tap connection
- min. flow pressure at highest tap connection (1,5) bar
- friction

(if direct connection to main supply pipe minimal useable city water pressure can be reduced).

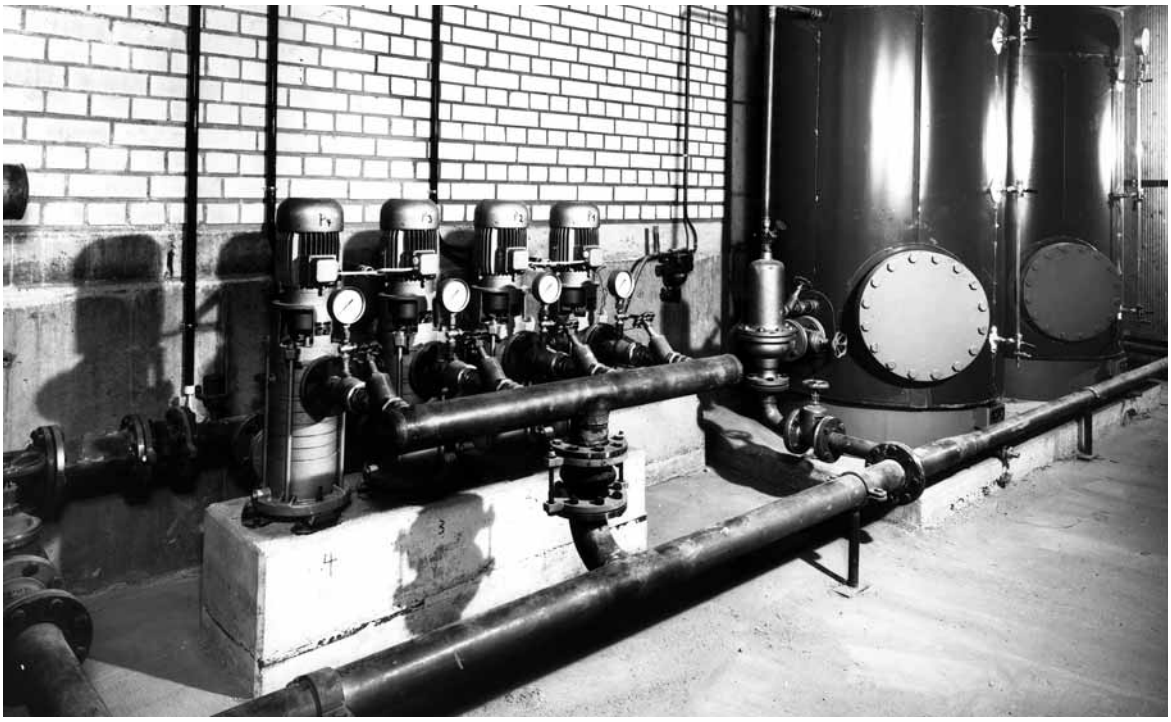
All booster pump stations can also be delivered as compact units.

Instead of pressure-dependent switching acc. to “DVGW Arbeitsblatt W 314” the booster pump station can be provided with:

Regulation in assistance of ridgeless speed-adjustment by means of frequency converter.

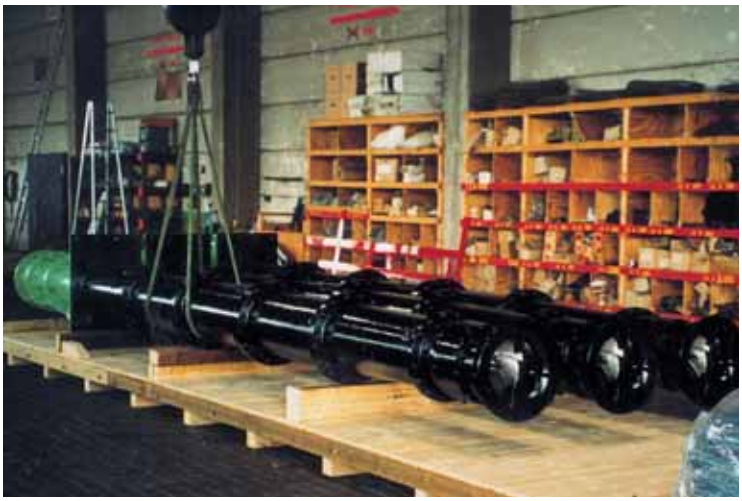
The stations can be delivered with 2, 3, 4, 5 or 6 pumps, the peak load pumps will be switched on and off free of pressure surge by means of electronic automatic cycle operation. The integrated frequency converter is switchboard served for speed regulated operation of base load pump (the base load pump will be switched off by a temperature limit switch if, during a long period of zero-capacity, a rise of the liquid temperature to more than 25 °C occurs).

Booster-pump stations for drinking water



Booster pump stations for drinking water conventional and as compact unit

Feeder pumps for water work



Raw water pumps to the treatment station for use in public water works capacity 6000 m³/h

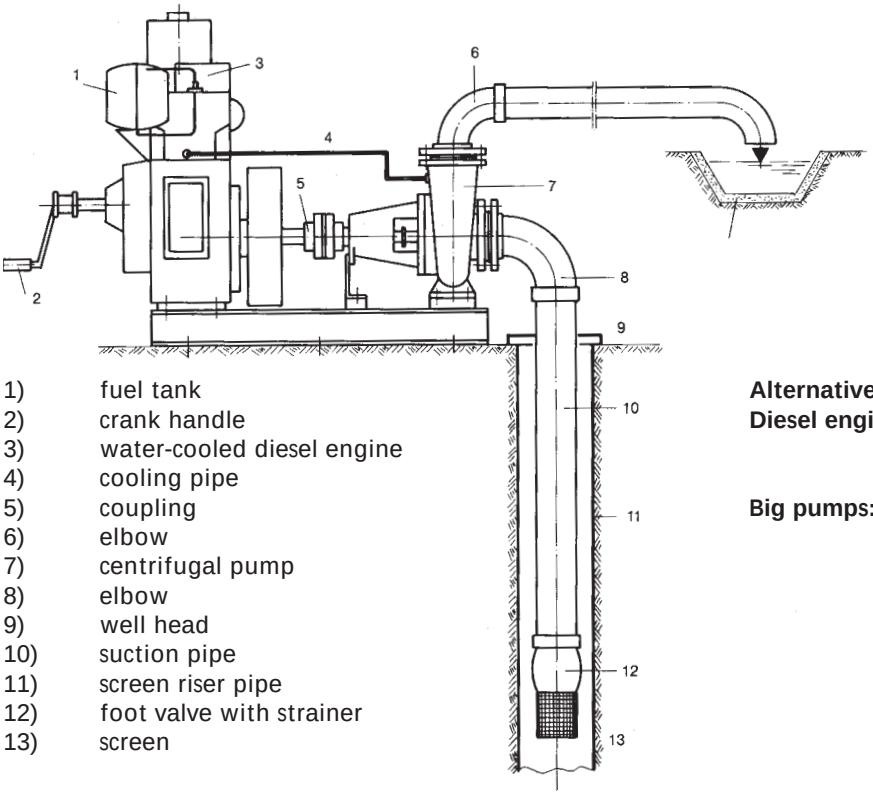
Feeder pumps as deep well turbine pumps with accessories for water works

Booster pump

For use in public water works capacity 6000 m³/h 8 bar

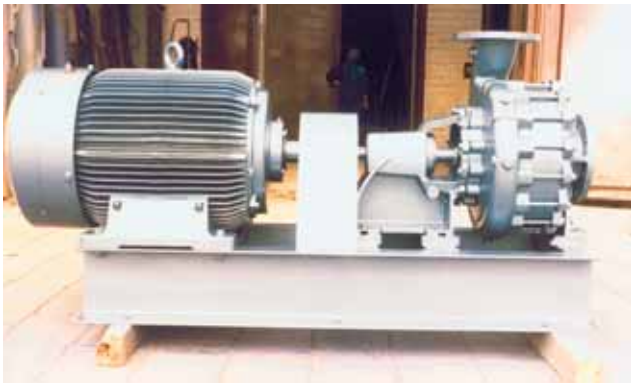
Booster pump units as axially split pumps with accessories and switchboard for water works

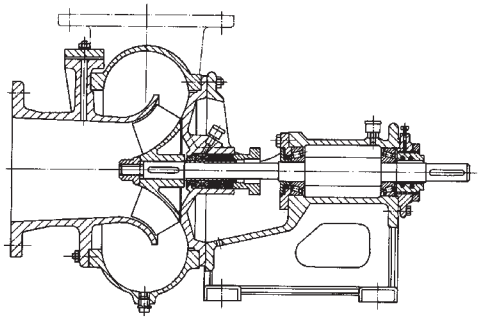
Irrigation with diesel driven centrifugal pump



1) fuel tank
2) crank handle
3) water-cooled diesel engine
4) cooling pipe
5) coupling
6) elbow
7) centrifugal pump
8) elbow
9) well head
10) suction pipe
11) screen riser pipe
12) foot valve with strainer
13) screen

Alternative:
Diesel engine: air cooled, with spring or electric start
Big pumps: with manual or automatic evacuating pump

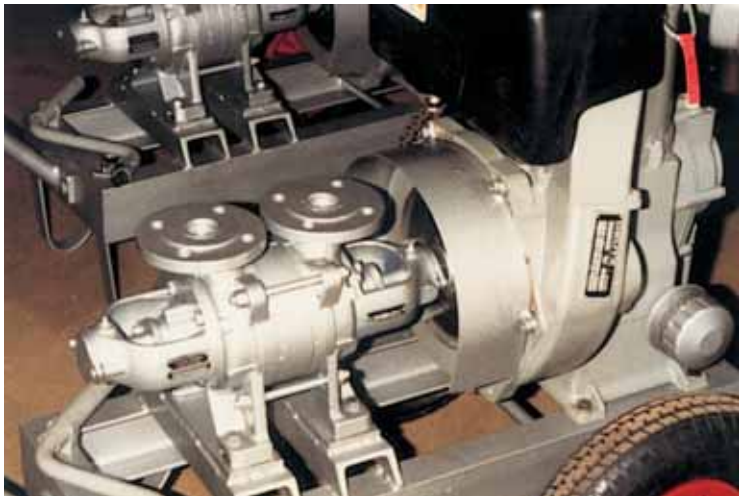




For big capacity (up to 6000 m³/h) of clean and dirty water (without solids) for drainage- and irrigation-stations we recommend the horizontal, single stage pump

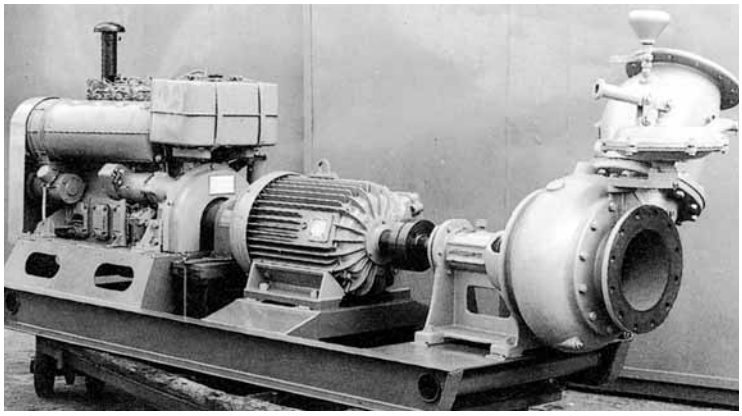
Semi-axial centrifugal pump:
Very good suction height produced by small total height

Irrigation pumps



Small mobile selfpriming Irrigation pump diesel driven

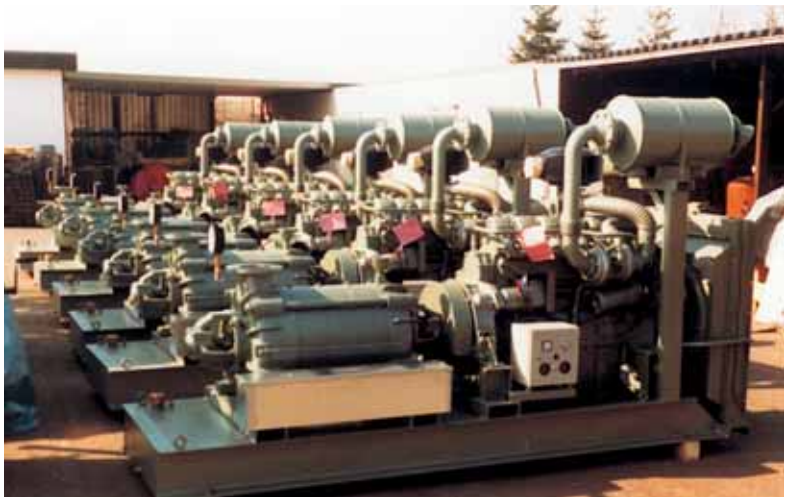
Irrigation pump as deep well turbine pump. Picture shows pump-head with diesel engine

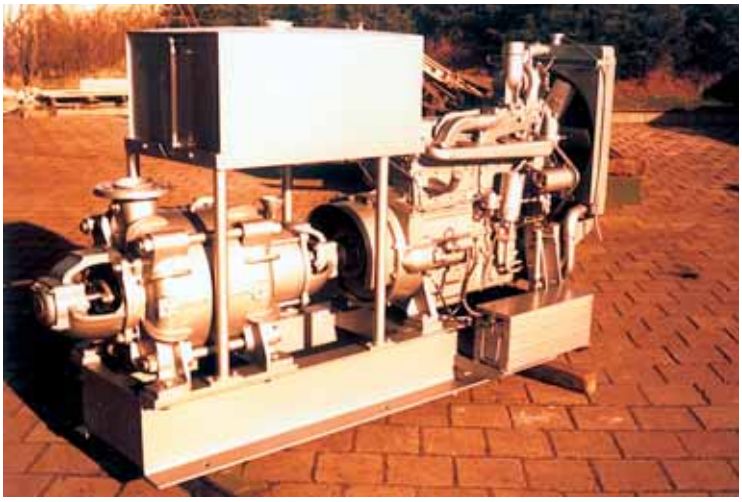


Combined diesel engine and electric motor driven semi-axial centrifugal pump for irrigation

Irrigation pumps

Stationary irrigation units with Mercedes diesel engines





Stationary irrigation unit with self-priming centrifugal pump and diesel engine

Mobile irrigation unit with multi-stage centrifugal pump and diesel engine with manual pump for evacuating

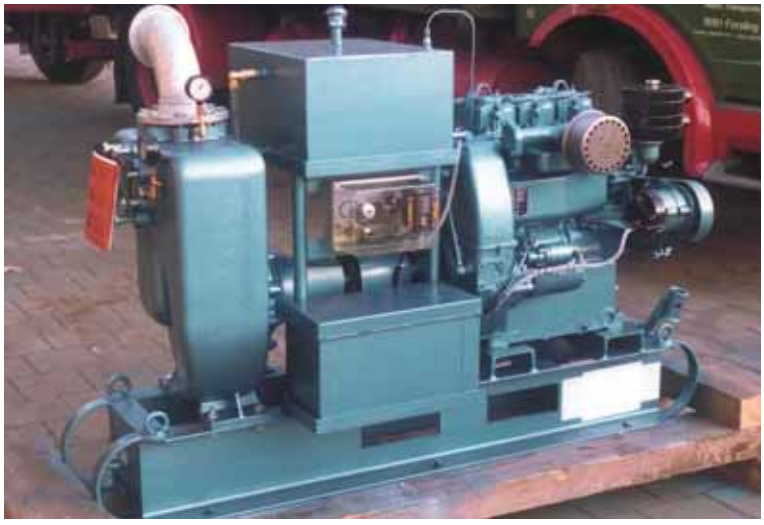
Drainage pumps

Diesel driven centrifugal pump with automatic operating evacuation system

**Selfpriming drainage pump for waste dump.
Diesel driven with automatic remote operation**

Drainage pumps

Electric and diesel driven selfpriming dewatering pumps for water containing sand and solids in suspension



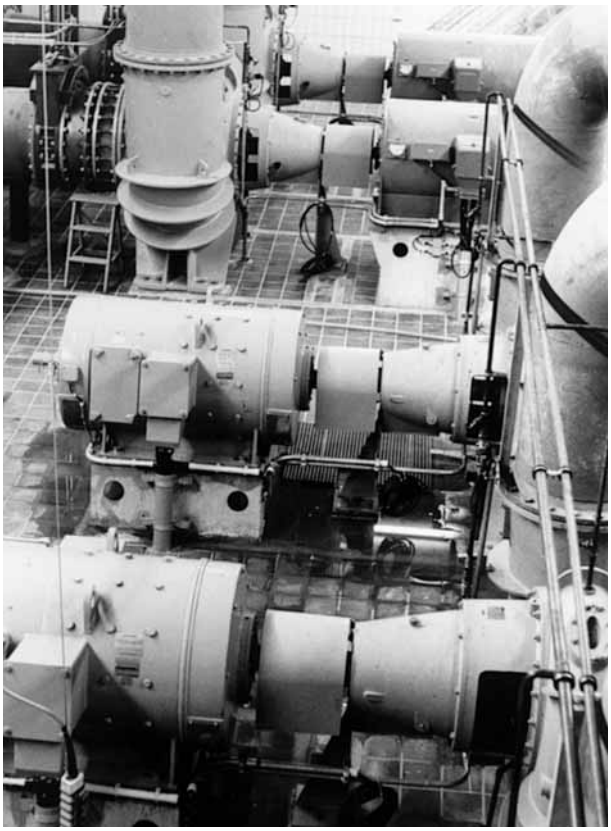
Drainage pumps

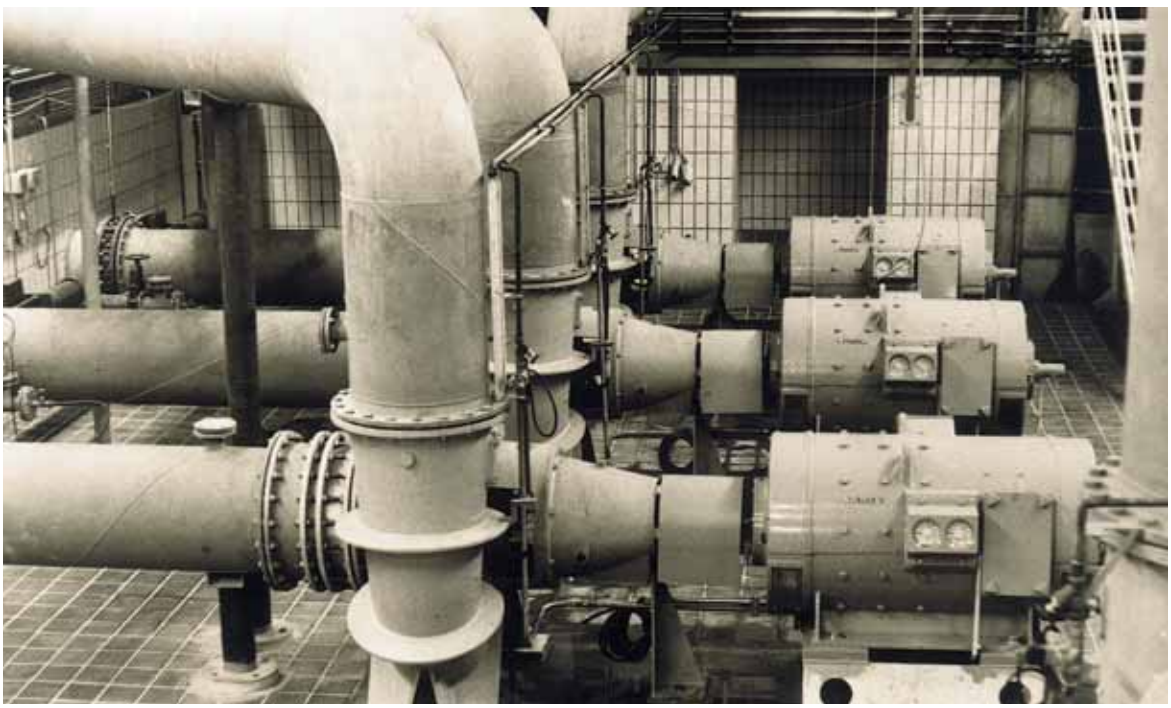
Mobile units diesel driven

With manual evacuating system

With selfpriming pump for water containing sand and solids in suspension

Drainage pumping station
total 7000 m³/h with piping system DN 800

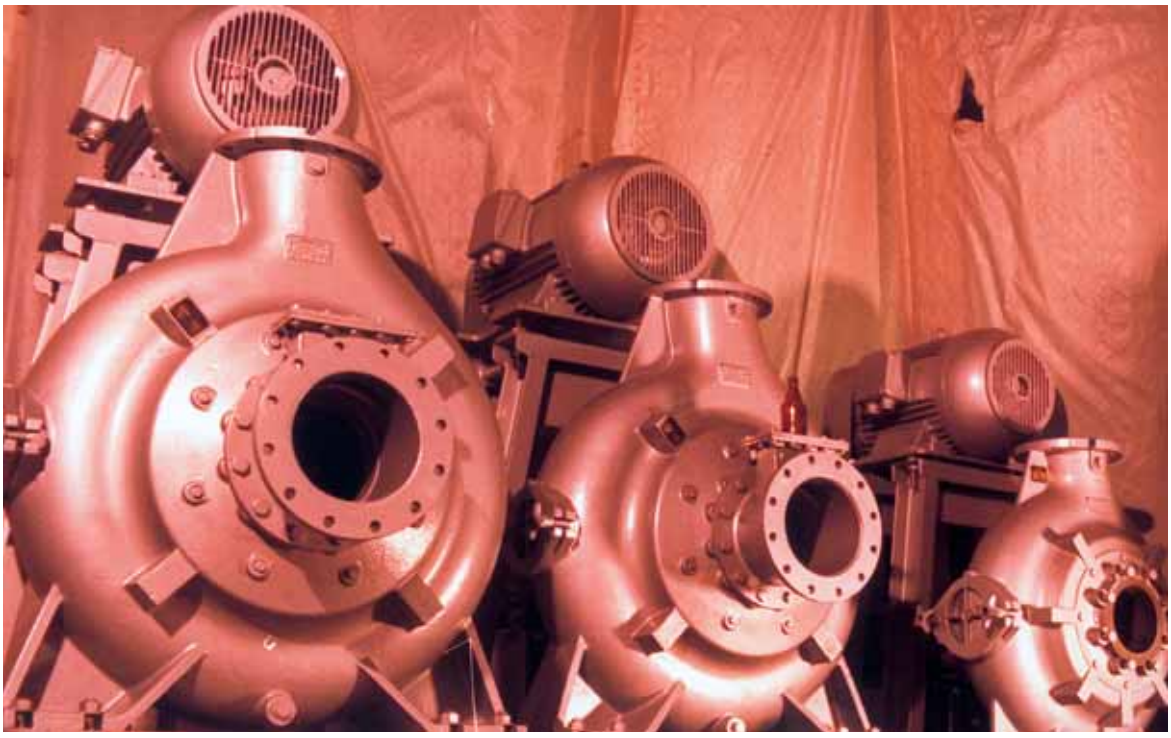




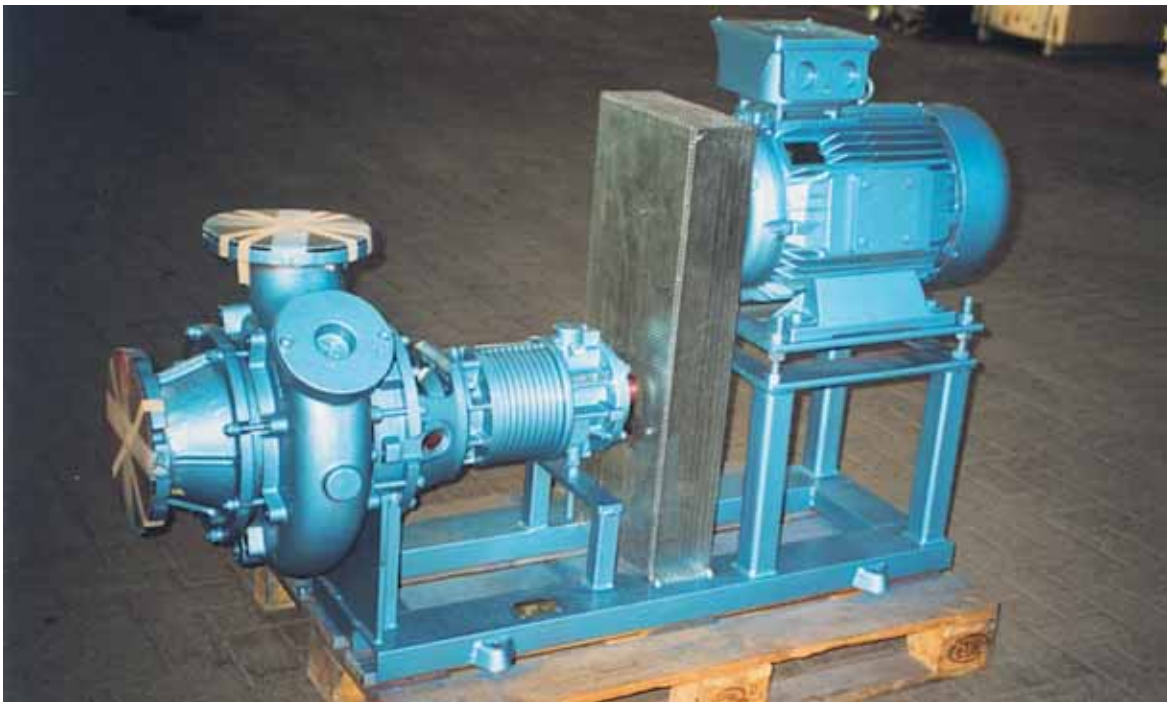
Dewatering pump station

Dewatering pump as mixed flow pump Q = 20.000 m³/h
H = 20 m speed 423 RPM, the power output of suitable motors 1600 KW

Sewage pumps



Sewage pumps V-belt driven for better adjustment



Water treatment

We produce not only standard units. Production in accordance with our customers' specifications is also possible.

Containerized prefabricated machinery compact units for water treatment of raw river water to drinking water. Capacity 50 m^3/h up to 250 m^3/h consisting of the following main components:

a) 2 low lift pumps for raw river water (1 in operation and 1 stand-by) as submersible pumps or selfpriming centrifugal pumps

b) 2 aluminium sulphate dosing pumps (1 in operation and 1 stand-by) with 1 tank, 1 mixer, 2 dosing pumps, 2 ball valves, 1 injection unit, 1 pressure valve

c) equipment for disinfection of the river water by means of chlorine gas with 2 or 4 cylinders, 2 vacuum regulators, 1 vacuum change-over device, 1 carbon filter, 1 dosing regulator, 1 injection with injection unit, sample water extraction, measuring water pump, compact measuring system, pH-electrode, buffer solution, Alcon compact photometer, 2 pH reagent with reagents set, dosing pump with accessories. Safety equipment as gas detected gas warning system, gas sensor, signal horn, flashlight, sprinkler system. Installation in separate chamber in the container (insulated with air-conditioning if the plant is to be used in a tropical area)

d) 2 multistage non-selfpriming centrifugal pumps made of stainless steel (1 in operation and 1 standby) for water/chlorine dosing

e) 2 high lift pumps (1 in operation and 1 stand-by) as booster centrifugal pumps

f) 1 hydrophore tank, steel galvanized, with manhole, with safety valve, level indicator device, pressure switch, 2 float switches and compressed air stop valve

g) 1 air-cooled compressor with all accessories

h) 1 back wash air blower, complete with all accessories in closed cabinet

i) 1 switchboard made of steel, free standing, with main switch, voltmeter, frequency meter, fuses, star-delta and d.o.l.-switches each with a selecting switch, operation and alarm lamp, hourmeter. For the big motors with ammeter, current transformer, time relay. (The switchboard is connected to the air-condition system if the plant is to be used in a tropical area).

j) 1 combined machine and sea container. Outer dimensions according to ISO container standard including all fittings for handling. 2 doors, openings at the side walls, sun-roof, CSC-label

All components in the container mounted, piped and wired ready for operation
(clarifier and sedimentation tank are produced locally because they are made of concrete)

Water treatment

Booster pumps for water/ chlorine dosing

High lift pumps 240 m³/h 50m

Low lift pumps and blower

High lift pumps, pressure tank and compressor

Aluminium sulphate dosing equipment

Pressure tank and compressor

Water treatment

High lift pumps 50 m³/h 80 m

Air condition

Switchboard

Pressure vessel 3800 liter 10 bar

Aluminium sulphate dosing pumps

Chlorine gas disinfection

Chlorine gas disinfection

Condensate recovery unit

Application:
The automatic condensate recovery unit is mainly used to handle hot condensate, which is commonly returned for use as boiler feed water to supply a feed water tank. Other applications are air conditioning stations (humidifier), domestic heating (static pressure) and water supply for cooling circuits.

Sizing

Receiver size:
⅓ to ½ of the average rate kg/h condensate returns to the receiver.

$$\text{condensate rate (kh/h)} = \frac{\text{Boiler capacity (kjoule)}^*}{2100}$$

*1 kcal approx. 4,2 kjoule / 1 kwh approx. 860 kcal or approx. 3.610 kjoule)

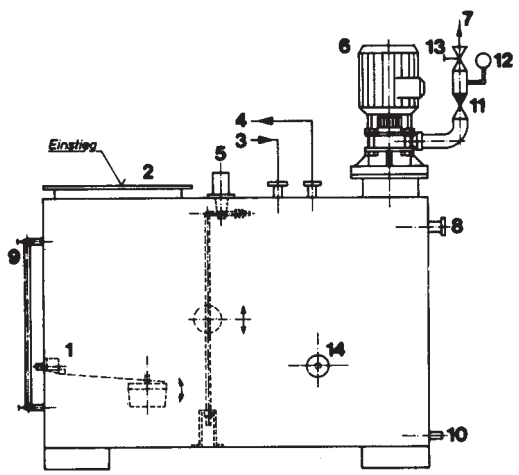
Condensate recovery for temperatures up to 95 °C vented rectangular receiver, standard specification: up to 2500 l welded construction of 4 mm steel sheet and from 3000 l to 5000 l of 5 mm steel sheet, with bolted manhole (inspection cover). strutting according to receiver volume and weight of the pump(s), special pump-counterflange(s) and welded UNP-supports.

Pump capacity
2 to 3 times the rate of condensate returns to the receiver total pumping delivery head:

a) **boiler feed pump:**
static head between bottom of the receiver and average of controlled boiler-level (m)
+ friction loss in pipe and fittings (m)
+ max. boiler-pressure (m)

b) **discharging to the feed water tank**
static head between bottom of the receiver and max. level of feed water tank (m)
+ friction loss in pipe and fittings (m)
+ pressure infeed water tank

Condensate recovery for temperatures up to 120 °C, operation pressure max. 4 bar with TÜV-Test. Execution acc. to "AD-leaflets". Receiver made of steel welded with manhole and 4 feet



1	float operated valve for treated water
2	manhole (inspection cover)
3	condensate inlet
4	vent
5	float operated magnetic level control
6	vertical pump(s)
7	pump discharge pipe(s)
8	overflow (to fit via an inverted syphon if necessary)
9	water level indicator
10	drain
11	nonreturn valve
12	pressure gauge with cock
13	gate valve
14	thermometer

Heat degasifying plant

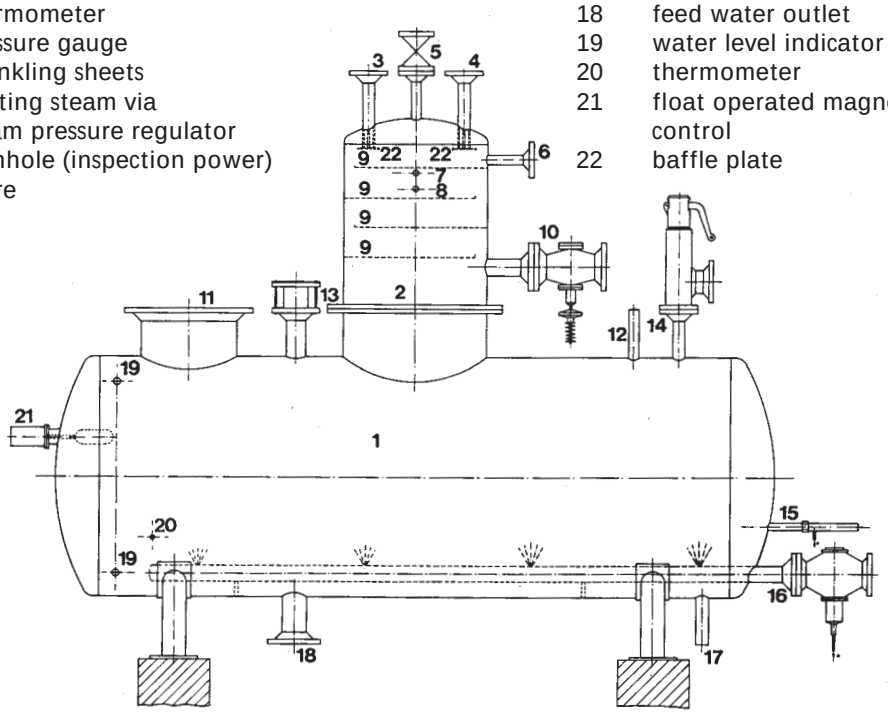
Application:
Condensate specially in feedmixed freshwater of steam-generating plants normally contains gases, oxygen and carbon dioxide. To prevent corrosion in this respect on the whole system a heat- or chemical degasifyer has to be installed. Because the chemical degasifying includes a loading of the condensate with salts and toxic materials, we recommend the heat degasifyer.

Mode of operation:
Mixture of condensate and freshwater is guided via sprinkling device as cascade sprinkling or filling body insets. The heating steam flows in counter direction into the degasifying unit to heat up the liquid to boiling temperature. Because solubility of oxygen and carbon dioxide is practically zero during boiling condition of condensate, these materials pass over into the heating steam and go out via degasifying dome and vapours outlet. In heat degasifying plants which work to an operation pressure of 0.3 bar following residual values available

oxygen < 0,1 mg/l
carbon doxide > 1,0 mg/l

As a rule, subsequent treatment for these small residual values is not necessary. If these values are too high, very small quantities of hydrazine or sodium sulfide have to be injected.

1	feet water receiver
2	degasification dome
3	condensate inlet
4	freshwater inlet
5	vapors outlet with valve
6	condensate inlet
7	thermometer
8	pressure gauge
9	sprinkling sheets
10	heating steam via steam pressure regulator
11	manhole (inspection power)
12	spare
13	vacuum braker
14	safety valve
15	temperature feeler
16	heating steam inlet via temperature regulator
17	drain
18	feed water outlet
19	water level indicator
20	thermometer
21	float operated magnetic level control
22	baffle plate



Diesel – Generator – Units

For more than 25 years we have been supplying to our customers Marine Type Auxiliary and Emergency Power Generating Sets with an output ranging from 50 to 1000 KVA and a speed of 750 – 3000 rpm (50/60 Hz). Our generating sets are manufactured to have a compact design and to take up as little space as possible whilst retaining high reliability in performance and maintenance.

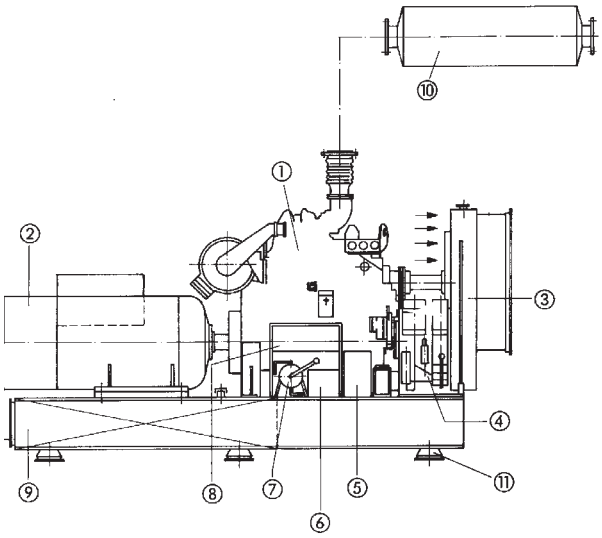
The following points are a basis for selection and design concept of our Gen-Sets:

For most of our units we use marine type diesel engines and generators from manufactures with a world-wide service net.
The generator set can be delivered with test and acceptance certificates from all Classification Societies and all our customers´ special requirements will be considered.

Mirrlees Blackstone diesel engine
with Ansaldo generator

Deutz diesel engine
with Leroy Somer generator

Diesel – Generator – Units



1	Diesel engine
2	Generator
3	Radiator with fan
4	Emergency starting device
5	Battery, maintenance free
6	Battery charger
7	Hand pump
8	Supervision
9	Fuel tank 18 h
10	Exhaust silencer with spark arrestor
11	Flexible mounting

Caterpillar diesel engine with Siemens generator

Starters are offered acc. to Classification Societies Rules. We have the following starters:

- Electric
- Spring
- Compressed air
- Hydraulic

As a secondary starting device for emergency generator sets we provide:

- Hydraulic starter with high pressure hydraulic accumulator
- Hansa-Quick-Starter

If a second P.T.O. at the flywheel of the diesel engine is available, the following can be assembled:

- Compressed air starter
- Spring starter

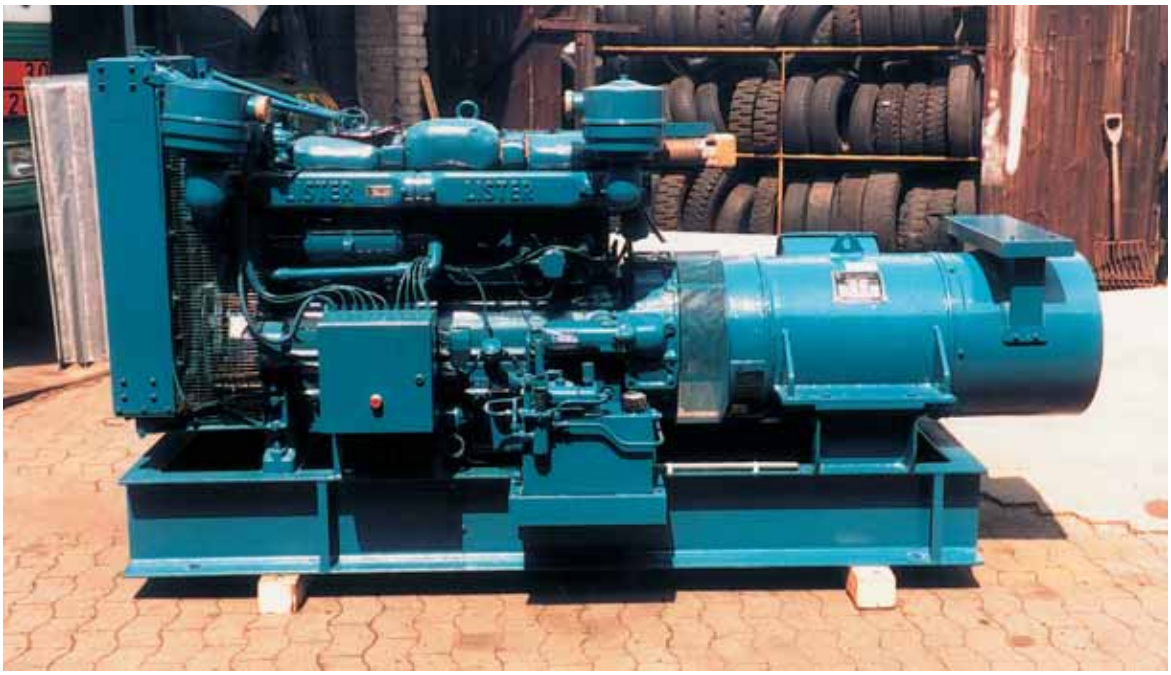
Hydraulically actuated starter systems are more expensive, but they start more reliably and are easier to handle than Hansa-Quick-Starters.

Starting batteries are mounted at the base frame of the generator set to ensure a short cable distance between battery and starter. Apart from normal lead batteries we also supply Ni-Cd batteries and other maintenance-free special batteries.

We also supply all necessary instruments for monitoring, alarm and shut-down which conform to Classification Societies Rules whilst still meeting the individual needs of our customers and of the manufacturers of the diesel engines and generators. These instruments can either be supplied as a loose unit or installed at the generating set.
Diesel oil tanks can be incorporated within the base plate complete with level indicating gauges and alarm devices thus obtaining a compact generating set.
Important accessories such as antivibration mounting elements, flexible hoses, silencers/spark arrestors, expansion bellows are selected acc. to Classification Societies Rules.

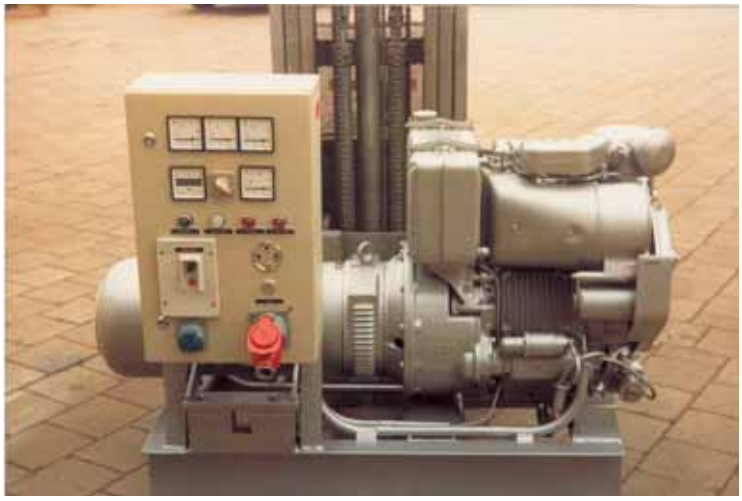
Diesel – Generator – Units

Auxiliary diesel gensets with Deutz engines and A. van Kaick generators



Emergency genset with certificate Det Norske Veritas

Diesel – Generator – Units



For land application

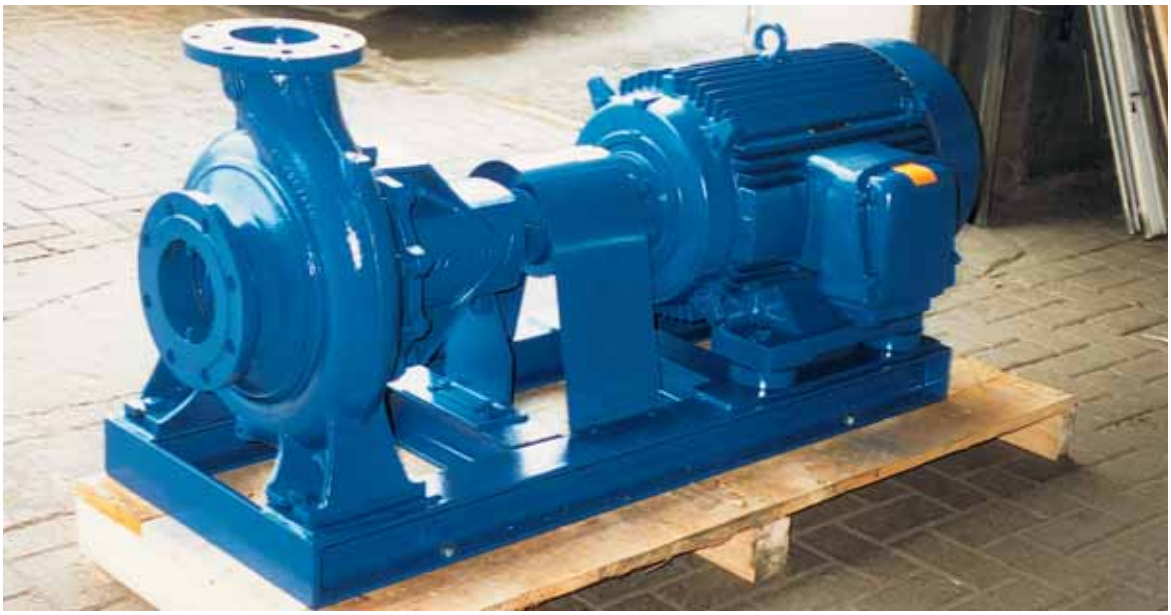
Diesel – Generator – Units

Emergency genset

Converter for floating dock

Mobile diesel-driven welding sets

Low pressure centrifugal pump / process pump acc. to DIN 24255



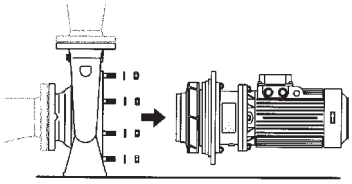
Application:
Water supply for communities, industrial works and agriculture fields, for irrigation and drainage, seawater circulation, brine pumping, condensate transfer, hot water, cooling water, oil circulation, mixing and loading pump.
Handling of clean or turbid, non-aggressive liquids which do not contain any solid constituents.

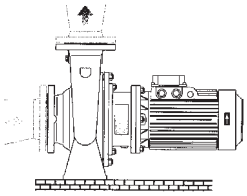
Design:
Horizontal, single stage, single flow centrifugal pump in back pull-out design; process pump acc. to DIN 24255 (the pump is available also with pillow block)

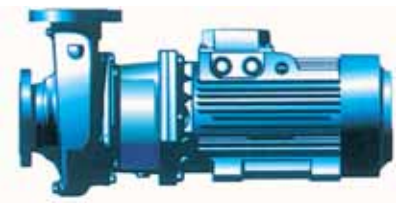
Connections:	suction socket axial discharge socket vertical upwards flanges acc. to DIN PN 10
Temperature:	normal from - 30° C up to + 120 °C (higher temperatures are possible)
Materials:	casing and impeller: cast iron or bronze shaft: steel or chrome steel wearing ring: cast iron or bronze shaft sleeve: stainless steel or bronze
Capacity range:	5 – 500 m^3/h (special sizes up to 2000 m^3/h)
Pump pressure:	max. 95 m
Shaft sealing:	stuffing box (also cooled), mechanical seal
Driver:	electric motor or gasoline/diesel engine
Direction of rotation:	cw
Power transmission:	flexible coupling or spacer coupling. V-belt drive is also possible.
Bearing:	on drive side, double ball bearings grease lubricated

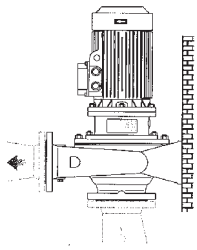
Pumpen-Boettcher

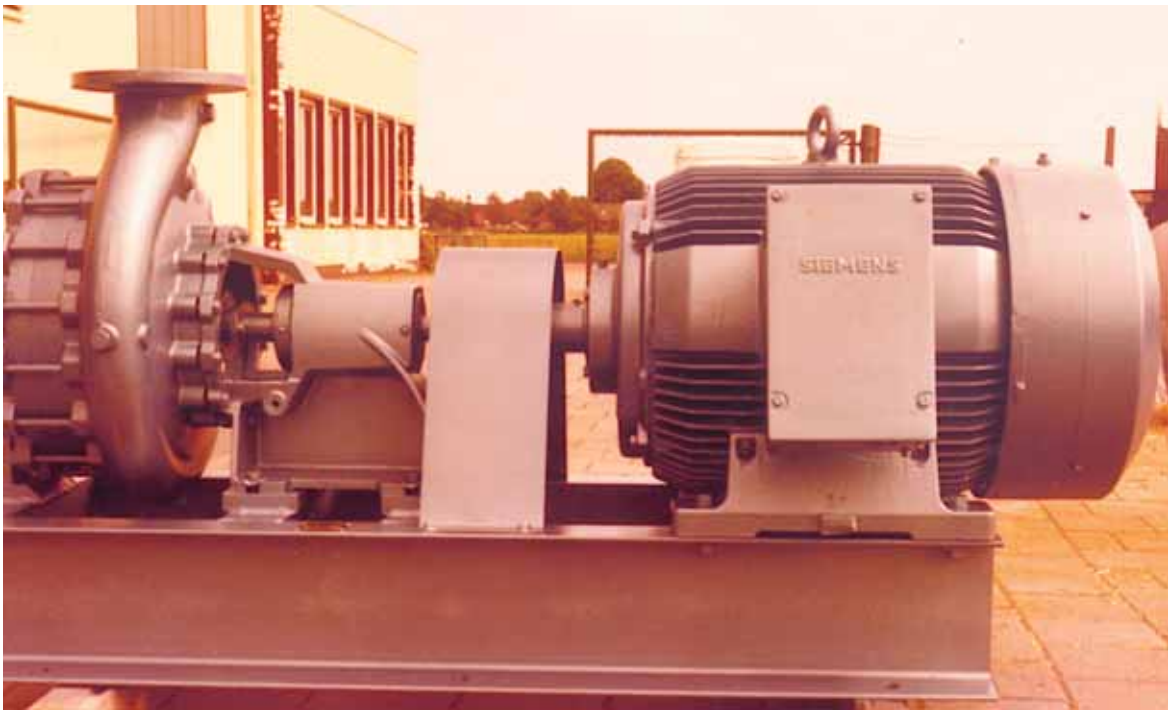
Further versions for low pressure centrifugal pumps acc. to DIN 24255 & bloc-pumps (closed-coupled centrifugal electro pumps)







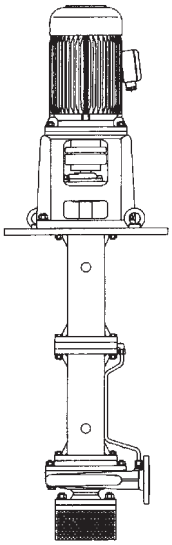


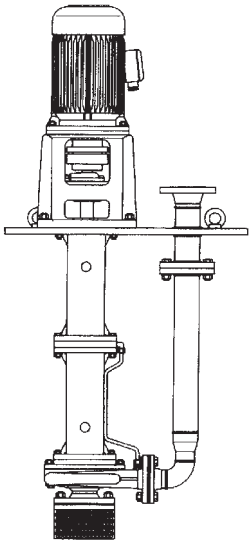


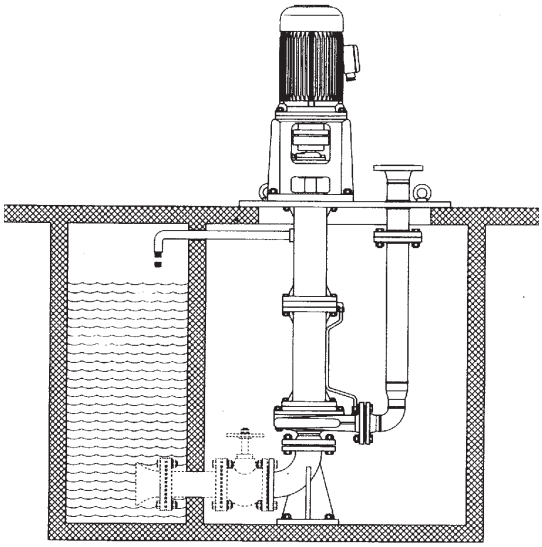
Special big sizes: for higher head with two stages

2

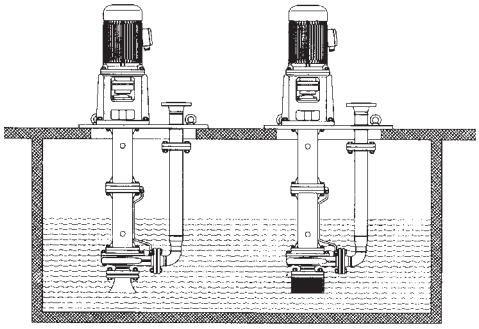
Vertical centrifugal pumps, pump-casing acc. to DIN 24255 for tank-installation





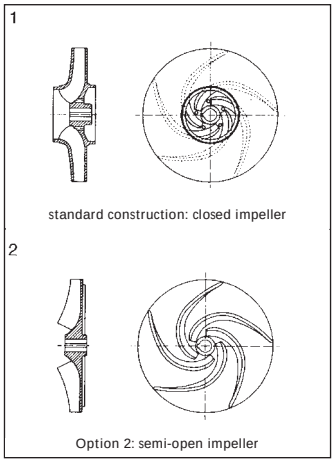


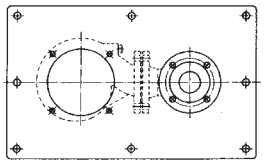
Pumps are vertical line-shaft, single stage pumps with base plate. The main components (casing, cover, pump flanges, etc.) are DIN-24255 Standard based.



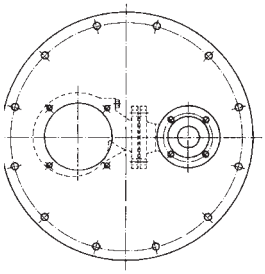
Pumps may pump a wide range of fluids, such as

Turbine lubrication oil	Antifreeze products
Cutting oils	Dips
Drilling oils	Galvanic baths
Hardening oils	Methyl chloride
Capacitor oil	Condensates
Residual oils	Detergents
Ethyl-acetate	Solvents
Sulphuric acid	Phenols
Acrylonitriles	Phosphates
Sugar water	Calcium hydroxide
Water with sand	Zinc-phosphate sludges
Water with millscale	Methacrylates
Water with corundum powder	Paints:
Water ith emery powder	Cataphoresis paint
Water with coke wastes	Phosphate paints
Water with silicates	Degreasing paint
Sea water	Water with pigments
Cooling water	Ultrafiltrates
Dyeing water with fibers	Paint sludges
Demineralized water	Chromic acid wastes
Water from strip rollings	Kerosenes
Warm water	Soda recovery
Water with ashes	Dreasing solutions
Water with paint	Drilling oils
Draining water	Tri-ethylen-glycol...



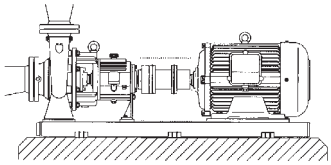


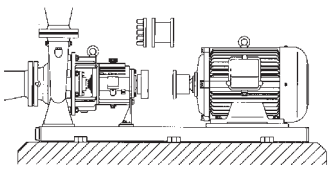
Standard construction:
rectangular base pate

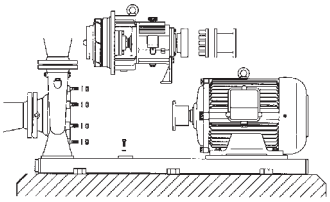


Special circular base plate

Pumpen-Boettcher







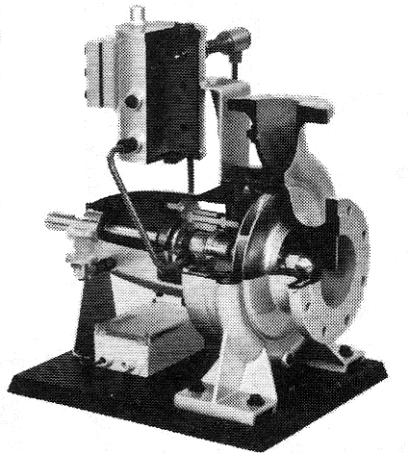
Chemical standard pump

acc. to DIN 24256

Application: Chemical industry, food industry, water treatment and manufacture of apparatus. Applicable for any kinds of liquid which do not tend to crystallize and do not contain a very low percentage of solids. The material combinations are selected under these aspects.

Design: Horizontal, single stage, single flow volute casing centrifugal pump in back pull-out design. Process pump acc. to DIN 24256. The closed impeller is provided with double curved blades. The hydraulical layout of the pump is carried out acc. to DIN 24256.

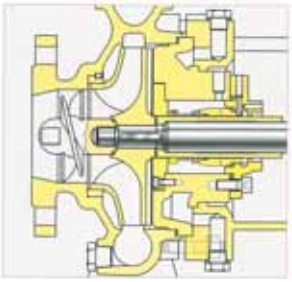
Connections:	suction socket axial discharge socket radial upwards flanges acc. to DIN PN 10 or 16 (British standard or ANSI possible)
Temperature:	from -40° up to +200 °C
Capacity range:	5-500 m^3/h (special sizes: up to 2000 m^3/h)
Delivery head:	up to 160m
Shaft sealing:	cooled or uncooled stuffing box or mechanical seal
Driver:	electric motor, building form B3
Direction of rotation:	cw
Power transmission:	flexible coupling or spacer coupling, V-belt drive is also possible
Bearing:	on drive-side double ball bearings grease or oil lubricated



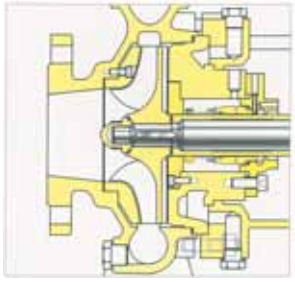
Materials:	casing, impeller, and wearing ring:	cast iron, spheroidal graphite iron, cast steel, bronze, stainless steel, titanium or different kinds of plastic materials
	shaft:	chrome steel, chrome nickel steel,
	shaft sleeve:	selected in accordance with shaft and sealing

Chemical standard pump

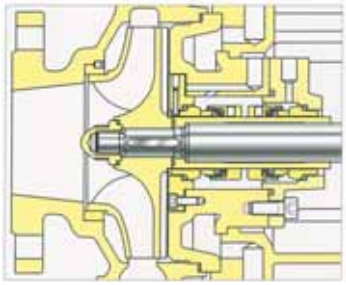
acc. to DIN 24256
Details of some options



Pumps with includer



Pumps with semi-open impeller



"Back to back" mech. seal and cylindrical channel

Some examples for special executions:

Exhaust gas boiler cirulation pump with mechanical seal up to 185 °C without external cooling

Vertical inline

Design acc. to API 610 , latest edition horizontal in centre line arrangement

Vertical wet installation

Pumpen-Boettcher

Thermal oil circulating pump

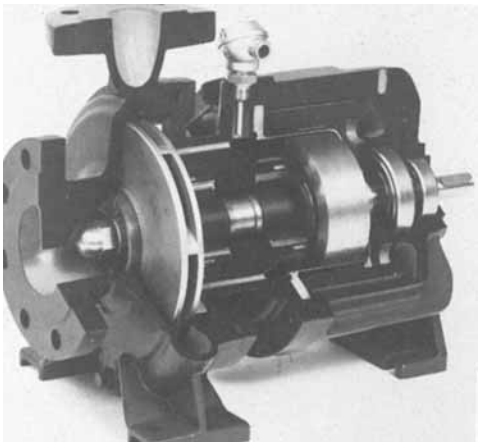
Application: In thermal oil heat transfer plants (acc. to DIN 4754) for circulating thermal oils with saturation pressure $\leqq$ 1 bar. Thermal oils clean, non-aggressive, which do not contain any solid constituents.

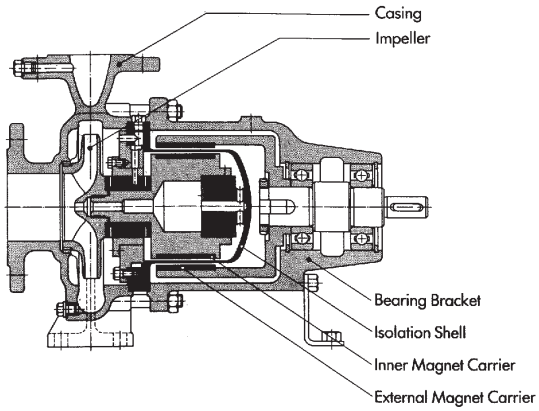
Thermal oil pumps are used mainly in chemical industry, rubber- and plastic industry, food industry, paper mills and industrial laundry plants. The pump is specially designed for the pumping of thermal oils.

Design: Horizontal, single stage, single flow centrifugal pump. Main dimensions and hydraulic outputs correspond to DIN 24255. Thermal oil heat, which is transferred to casing parts and pump shaft is reduced by dissipation of heat, so that the pump sealings and bearings are not affected by the high thermal oil temperature. This is achieved by a proper design of pump casing, cover and the bearing housing.

Connections:	suction socket	axial
	discharge socket	radial upwards
	flanges acc. to DIN	
Temperature:	max. 340 °C without cooling	
Pump pressure:	max. inlet pressure (system pressure)	5 bar
	max. pump pressure	25 bar
Shaft sealing:	mechanical seal with premounted stuffing box	
Materials:	casing: cast iron, spheroidal graphite iron or cast steel	
	impeller: cast iron	
	shaft: chrome steel	
Driver:	electric motor building form B3	
Direction of rotation:	cw	
Power transmission:	flexible coupling or spacer coupling	
Bearing:	ball bearings	

Glandless centrifugal pump in acc. to DIN 24256
with permanent magnetic drive arrangement



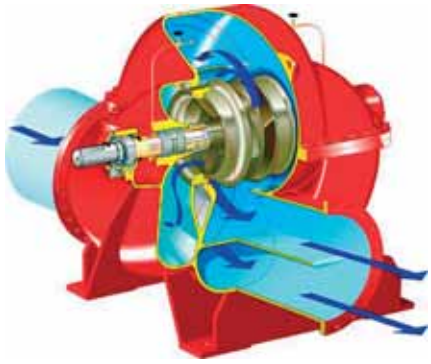


Application: chemical and petrochemical industry, ideally suited to applications where the prevention of seal leakage is a requirement and particularly with volatile, high-tempered, hazardous or toxic liquids.
Design: horizontal, single stage, single flow volute casing centrifugal pump in back pull-out design. Process pump acc. to DIN 24256. The closed impeller is provided with double curved blades. The hydraulical lay-out of the pump is carried out acc. to DIN 24256. The torque required to operate the pump is transmitted via a flexible coupling to the drive shaft which is supported in maintenance-free ball bearings. The drive shaft in turn has attached to it the external magnet carrier which is fitted with permanent magnets. An isolation shell separates the liquid chamber from the atmosphere. An inner magnet carrier (fitted with permanent magnets) is located inside the isolation shell and supported in sleeve bearings which are lubricated by the pumpage. The inner magnet carrier transmits the motor torque, at synchronous speed, to the impeller which is attached to it. The pump casing ensures a perfectly sealed unit.

Connections:	suction socket axial discharge socket radial upwards flanges acc. to DIN PN 10 or 16 (British standard or ANSI possible)	
Temperatures:	from -120 °C up to +450 °C	
Capacity range:	up to 1000 m^3/h	
Delivery head:	up to 150 m	
Materials:	casing and impeller:	spheroidal graphite iron, cast steel, many kinds stainless steels and titan
	Isolation shell:	NiMo16Cr16Ti
	permanent magnets:	depending on temperature
Driver:	electric motor, building form B 3	
Direction of rotation:	cw	
Power transmission:	flexible coupling or spacer coupling	
Bearing:	on drive-side double ball bearings, grease lubricated	
Lubrication systems:	due to the internal design of the liquid chamber a force-fed flushing arrangement is required to lubricate the sleeve bearings and cool the area between the inner magnet carrier and isolation shell; therefore available are - internal lubrication - internal filtered lubrication - internal separate lubrication via pumping ring - external lubrication	

Pumpen-Boettcher

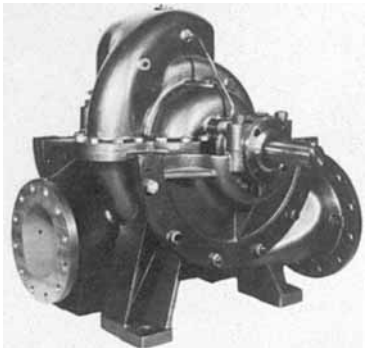
Axial split-case-centrifugal pump



Application: for handling of crude oil- and intermediate products of refineries, for cooling water and public water supply, pipelines, fuel oil bunkering, in chemical and petrochemical industry, in shipbuilding and power plants.

Design: horizontal or vertical, single- or two stage, non-self priming, axially-split, double-suction. Also available as API-execution.

Connections: in-line execution with flanges



Temperatures: max. 160 °C

Capacity: up to 30.000 m^3/h

Delivery head: up to 250 m

Sealing: stuffing box or mechanical seal

Materials:

casing:	cast iron, spheroidal graphite iron, cast steel, bronze, stainless steel, alu-bronze
impeller:	cast iron, bronze, alu-bronze, chrome steel, stainless steel
shaft:	steel, chrome steel, stainless steel
sleeve:	bronze, stainless steel
wearing rings:	cast iron, bronze, chrome steel, stainless steel

Driver: electric motor, diesel engine, steam turbine

Direction of rotation: cw or ccw

Power transmission: flexible coupling

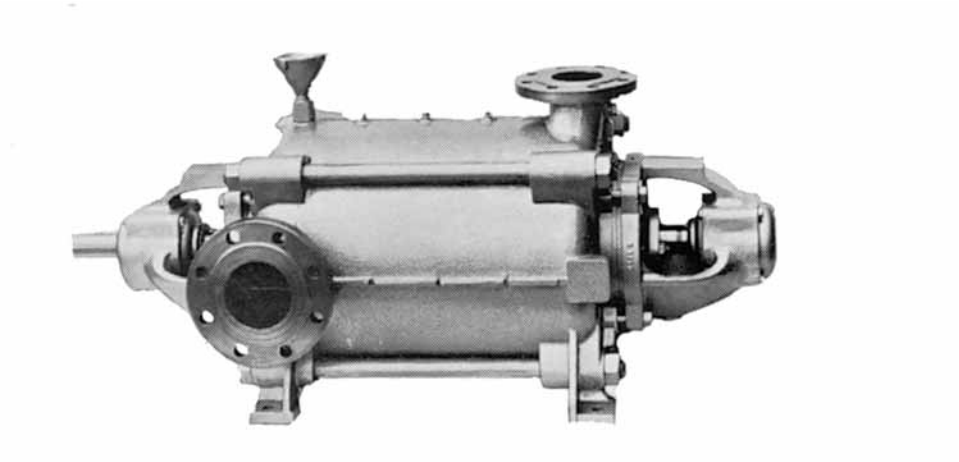
Bearing: grease lubricated ball bearings at both sides.

Axial split-case-centrifugal pump

Diesel engine driven axial split-case centrifugal pumps

Pumpen-Boettcher

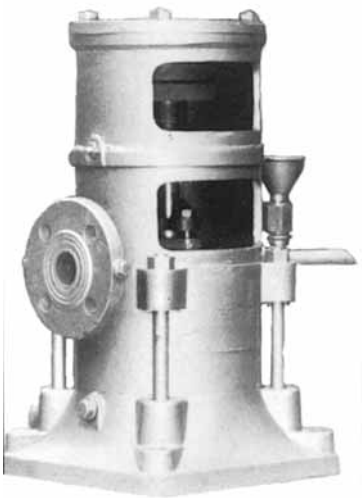
High pressure multistage centrifugal pump

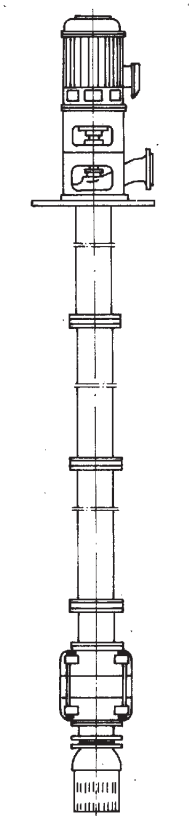


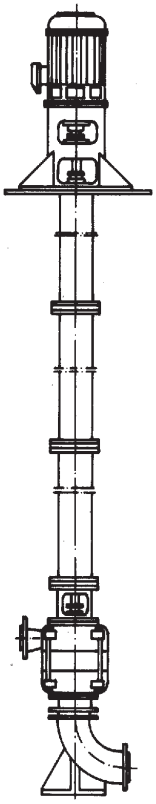
Application:
Community- and city water supply, cooling water supply, booster pump stations, irrigation systems. Shipbuilding industry: pump for bilge-, ballast- and fire extinguishing-service. High-pressure washing systems, air-conditioning and dust-arrester installation, chemical and petrochemical industry. For clean liquid chemical non-aggressive and free of mechanical solids.

Design:
Horizontal, high pressure, multi-stage centrifugal pump in robust, heavy duty design for continuous operation. Balancing of axial thrust is done by release borings (for higher pressure with relieving piston and also oppositely directed). Shaft sleeves in area of the stuffing boxes and wearing rings are replaceable. Stuffing boxes relieved from pressure.
Vertical execution as described before but not available in all sizes and number of stages.

Additional equipments:
Built-in air-stage for self-priming execution and second shaft end.







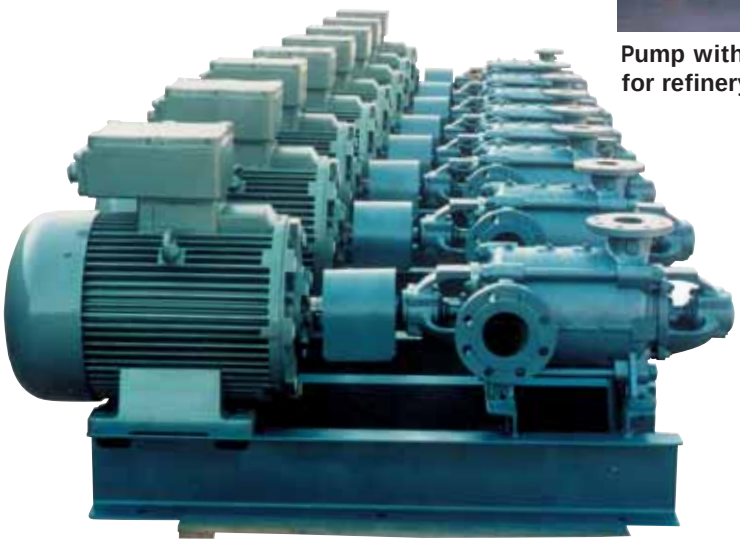
High pressure multistage centrifugal pump

Connections:	horizontal pump:	suction horizontal right, left or vertical upwards, discharge vertical upwards (special connections possible)
	vertical pump:	suction and discharge: 180° to each other on different level or on the same level (in-line). If required the discharge connection can be arranged 90° to the left or right of the suction connection.
Temperature:	up to 160° C, higher temperatures possible	
Capacity range:	1 – 1000 m^3/h	
Delivery head:	up to 900 m	
Shaft sealing:	stuffing box or mechanical seal	
Materials:	casing:	cast iron, bronze, cast steel, stainless steel
	impeller:	cast iron, bronze, chrome steel, stainless steel
	wearing ring:	cast iron, bronze, stainless steel
	shaft sleeve:	bronze, stainless steel
	shaft:	steel, chrome steel, stainless steel
	air stage casing:	cast iron, bronze
	air stage impeller:	bronze
Driver:	electric motor or gasoline/diesel engine	
Direction of rotation:	cw or ccw	
Power transmission:	flexible coupling	
Bearing:	horizontal pump: external grease lubricated antifriction bearings at both sides	
	vertical pump: grease lubricated ball bearing in motor-lantern, lower bearing as sleeve bearing liquid lubricated	
Additional design forms:	Vertical pump with variable mounting length up to 10 m for wet and dry installation. Pumps according to API 610 and constructed as barrel pump.	

High pressure multistage centrifugal pump

Diesel engine driven axial split-case centrifugal pumps

Pump with heating coil and flame proof motor for refinery



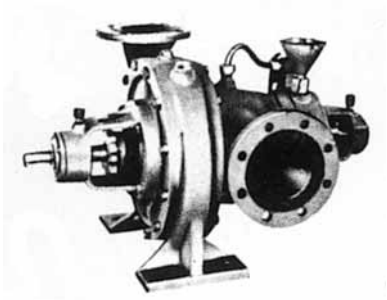
Pumps for ammonia with flame proof motors

Self-priming single- and multistage centrifugal pump

with air stage

Application:
For the handling of fresh water, sea water, oils, brines, lyes, condensates etc. without any abrasive particles, and not chemically attacking the construction materials of the pump. In the shipbuilding industry as fire extinguishing-, bilge- and ballast pump. For irrigation, cooling-water circuits, water supply from own wells.

Design:
Single- or multi-stage centrifugal pump, radially split, horizontal. Conveying of gas by means of built-in priming impeller, or with integrated jet pump.



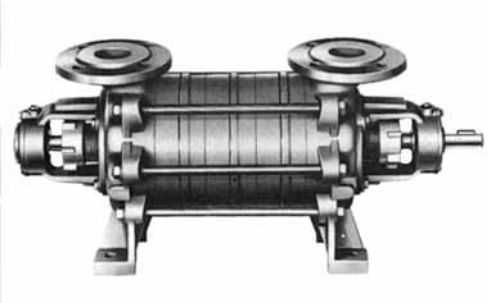
Connections:

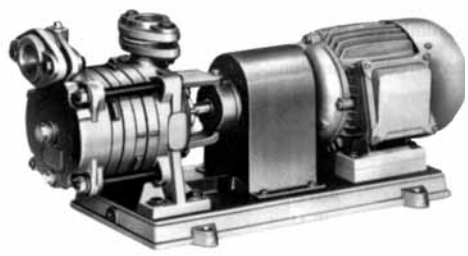
suction socket:	Upwards pointed. For priming operation it must be granted that the pump is filled with liquid.
discharge socket:	upwards pointed
Temperature:	–25 °C up to + 90 °C
Capacity:	max. 500 m³/h
Delivery head:	max. 200 m
Shaft sealing:	stuffing box or mechanical seal

Materials:

casing:	cast iron, bronze, bronze-plated
impeller:	cast iron, bronze
air-impeller:	bronze
shaft:	chrome steel, chromenickel steel
Driver:	electric motor building form B3, or diesel engine
Power transmission:	flexible coupling or V-belt

Side channel pump, self-priming





Application: water supply, hydrophore systems, irrigation plants, diesel-, gas- and fuel-oil supply as feed water pumps to boiler.

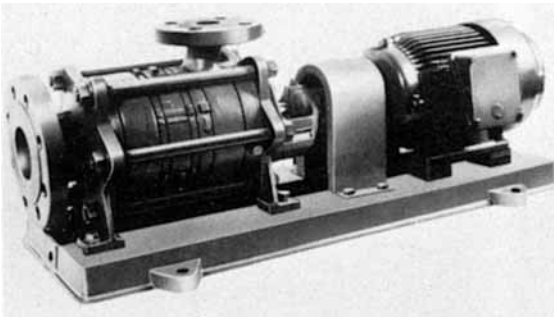
This pump can be used for the pumping of any kind of liquids, which are clean or turbid liquids without any abrasive matter.

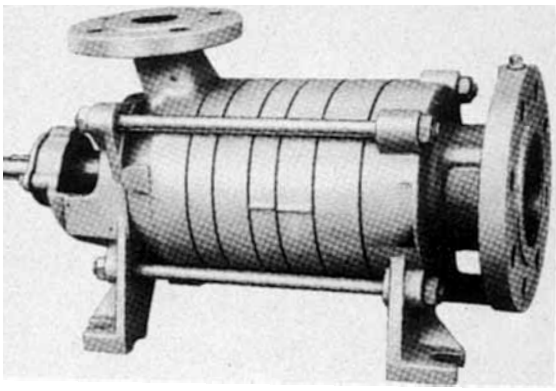
The side channel centrifugal pump is a segmental type self-priming and handling gases during normal liquid duty, operating with unshrouded vane wheel impellers.
Normal design horizontal, some sizes are available in vertical design.

Connections:	suction and discharge connections upwards, with oval flanges including counter flanges or with round flanges without counter flanges.
Temperature:	normal up to 120 °C, maximal 220 °C
Pump pressure:	normal 10 bar, pressure ratings 16 bar up to 40 bar are available
Capacity range:	0,1 – 40 m^3/h
Total head:	up to 300 m
Shaft sealing:	stuffing box or mechanical seal
Materials:	suction and discharge cover and intermediate pieces: cast iron, bronze, stainless steel impellers: special brass, bronze, stainless steel shaft: chrome-steel or stainless steel
Driver:	electric motor or diesel/gasoline engine
Direction of rotation:	cw, special design ccw
Power transmission:	flexible coupling
Bearing:	on the discharge side: medium lubricated sleeve bearing on the suction side: grease lubricated ball bearings, or both sides with grease lubricated ball bearings.

Side channel condensate pump

Self-priming with NPSH inducer stage





Application: condensate, distillate, refrigerants, boiler feed water and liquid gas pumping. This pump is also applicable at positive suction heads below 0,5 m.

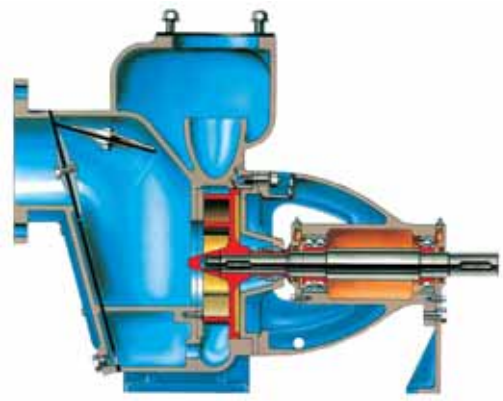
This pump can be used for pumping any kind of liquids which do not tend to crystallize and do not contain any mechanical impurities, which can result in a wearing or a clogging effect.

Design: horizontal, self-priming side channel pump of segmental-type gas handling during normal duty – with open impellers and preconnected centrifugal stage in combination system for reaching of optimal NPSH values. The material designs which are available make possible an optimal rating corresponding to the required range of performance and the medium handled.

Connection:	suction connection axial, discharge connection radial upwards flanged connections without counter flanges.	
Temperature:	max. 220 °C	
Pump pressure:	max. 40 bar	
Capacity range:	0,1 – 36 m^3/h	
Total head:	up to 300 m	
Shaft sealing:	stuffing box or mechanical sealing in all variations; (for example: internal sealing, external sealing, flushed, cooled, uncooled, balanced sealing arrangements)	
Materials:	casing: vane wheel impeller and impeller: shaft:	cast iron, bronze or stainless steel special brass, bronze, stainless steel chrome-steel or stainless steel
Driver:	electric motor, diesel engine	
Direction of rotation:	ccw	
Power transmission:	flexible coupling	
Bearing:	on the suction side – medium lubricated sleeve bearing on the discharge side – grease lubricated ball bearing.	

Pumpen-Boettcher

Self-priming centrifugal pump as bilge-, ballast- and fire extinguishing pump and for water containing sand and solids in suspension



Application:
for handling liquids corrosive, aggressive with or without solids. The self-priming effect needs no extra device. Foot valve is not necessary.

Used as a bilge-, ballast- and fire fighting pump. Dewatering of construction pits draining, injection of well tubes, handling of dirty fuel.

Design:
the replaceable wear plate has an abrasion resistant facing and the open impeller has wide passages for handling solids. Many models have inspection-openings. Pump is only available in horizontal, single stage design, some with grease lubricated mechanical seal for short dry running.

Connections:
suction socket axial or side wards pointed, discharge socket upwards. Thread socket or flange-execution.

Temperature:	up to 100 °C
Capacity:	up to 1200 m³/h
Delivery head:	up to 60 m
Suction lift:	up to 7,5 m
Shaft sealing:	mechanical seal
Materials:	
casing, impeller and wearing plate:	cast iron, bronze, stainless steel
shaft:	chrome steel or stainless steel
Driver:	electric motor, gasoline or diesel engine
Power transmission:	block-pump i.e. motor shaft = pump shaft, flexible coupling, V-belt

Small selfpriming ship centrifugal pump

Application:
Shipbuilding: as cooling water-, bilge-, ballast-, fire-extinguishing- and general service pump for boats and small ships.

Design:
single stage, horizontal, selfpriming

Connections:
suction- and discharge socket upwards pointed with thread socket or flanges

Temperature: max. 80 °C

Capacity: 0,5 - 50 m^3/h

Delivery head: 50 m

Shaft sealing: mechanical seal

Material:
casing: bronze G-CUSn5Zn5Pb5
impeller: G-CUSn10
shaft: chrome nickel steel

Driver: electric motor, diesel engine, V-belt pulley, manual clutch, magnetic clutch





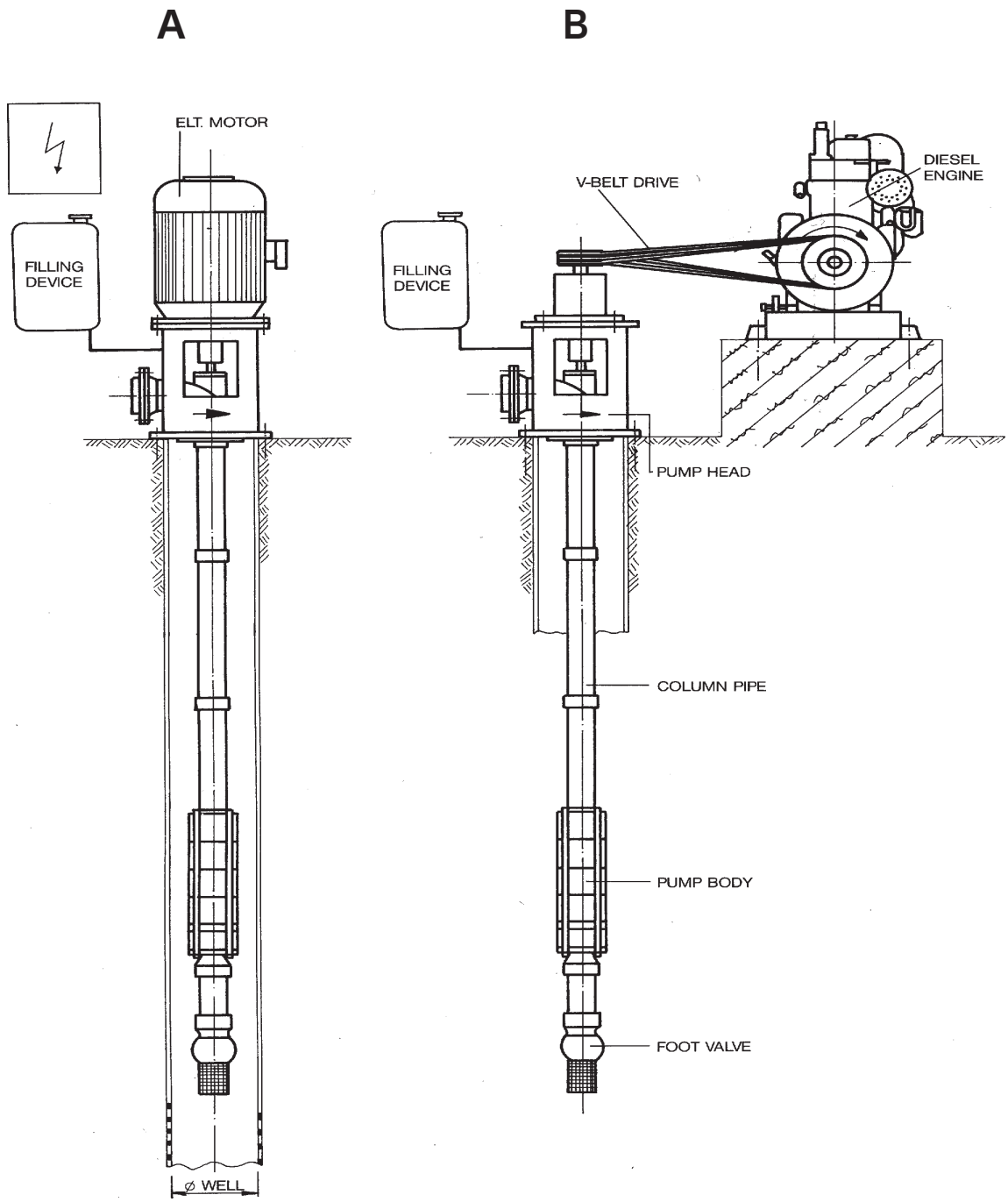





Pumpen-Boettcher

Deep well centrifugal pump

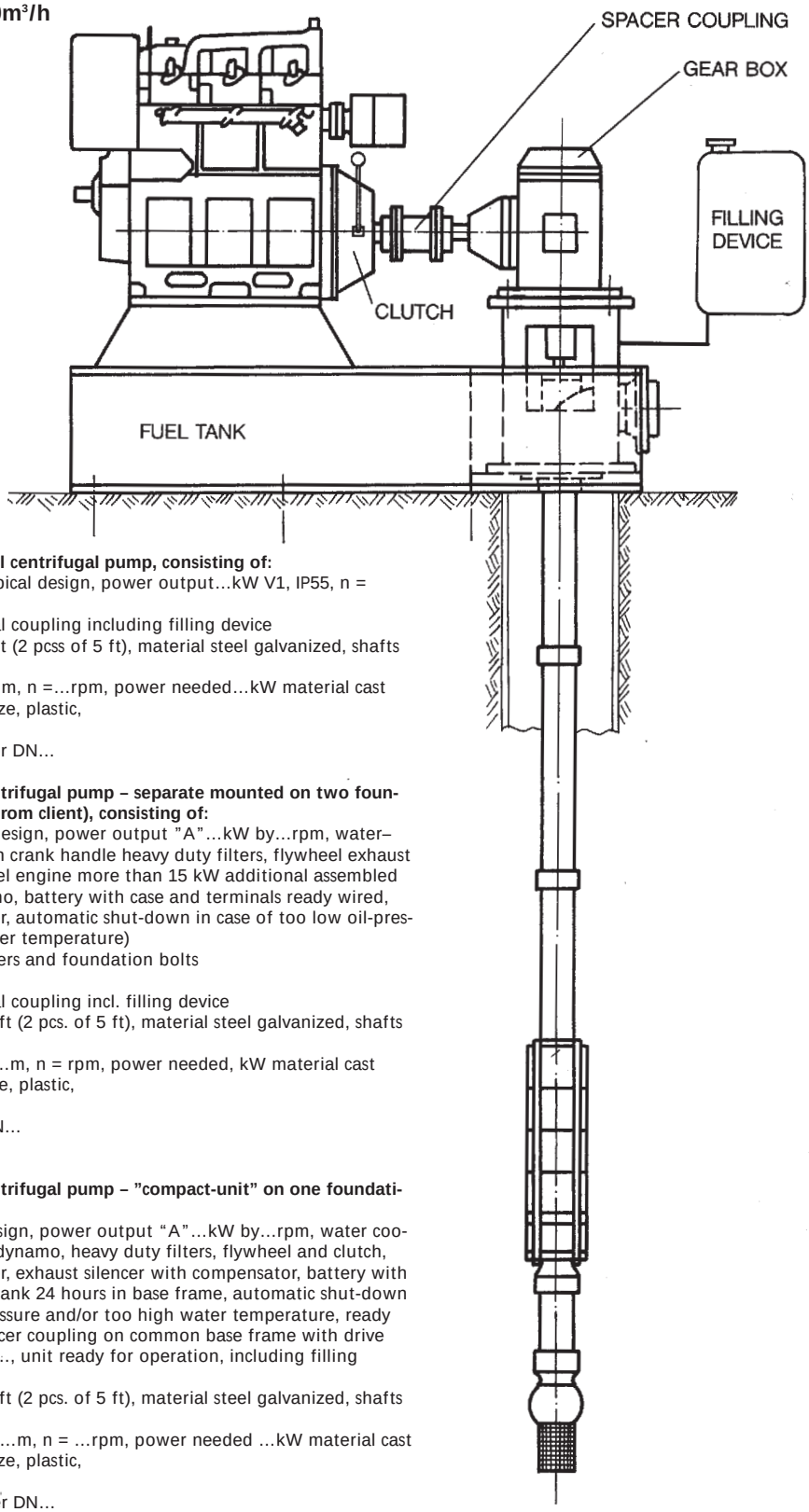
Thread version up to 100 m³/h



Deep well centrifugal pump

Tread version up to 100m³/h

C



A Electrically driven deep well centrifugal pump, consisting of:
- t.e.f.c. electric motor tropical design, power output...kW V1, IP55, n = ...rpm
- 1 pump-head with special coupling including filling device
- ...column pipes, each 10ft (2 pcss of 5 ft), material steel galvanized, shafts stainless steel
- 1 pump Q =...m3/h, H=...m, n =...rpm, power needed...kW material cast iron, stainless steel, bronze, plastic,
- 1 suction pipe
- 1 foot-valve with strainer DN...

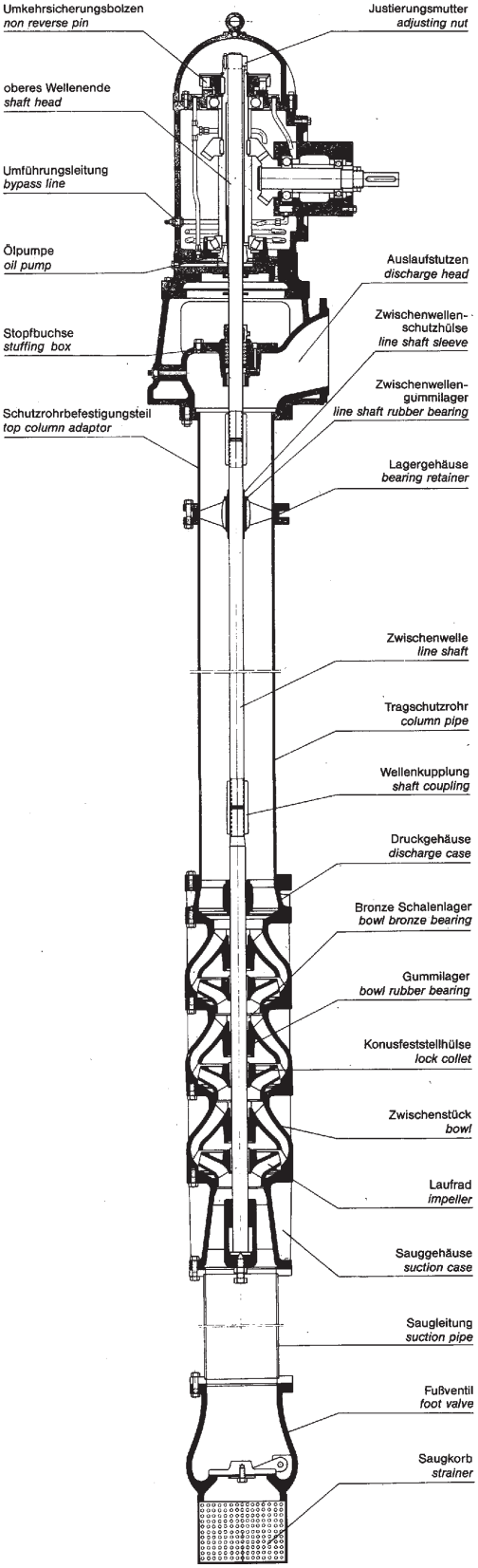
B Diesel driven deep well centrifugal pump – separate mounted on two foundation bases (base frames from client), consisting of:
- 1 diesel engine tropical design, power output "A"...kW by...rpm, water–cooled, manual start with crank handle heavy duty filters, flywheel exhaust silencer fuel tank (if diesel engine more than 15 kW additional assembled with electric start, dynamo, battery with case and terminals ready wired, manometer, thermometer, automatic shut-down in case of too low oil-pressure and/or too high water temperature)
- 1 base frame with spanners and foundation bolts
- 1 V-belt-drive complete
- 1 pump-head with special coupling incl. filling device
- ... column pipes, each 10ft (2 pcs. of 5 ft), material steel galvanized, shafts stainless steel
- 1 pump Q = ...m3/h, H = ...m, n = rpm, power needed, kW material cast iron, stainless steel, bronze, plastic,
- 1 suction pipe
- 1 foot-valve with strainer DN...

C Diesel driven deep well centrifugal pump – "compact-unit" on one foundation base, consisting of:
- diesel engine tropical design, power output "A"...kW by...rpm, water cooled, electric starter with dynamo, heavy duty filters, flywheel and clutch, manometer, thermometer, exhaust silencer with compensator, battery with case and terminals, fuel tank 24 hours in base frame, automatic shut-down in case of too low oil pressure and/or too high water temperature, ready coupled by means of spacer coupling on common base frame with drive and right angle gear –1:..., unit ready for operation, including filling device.
- ...column pipes, each 10 ft (2 pcs. of 5 ft), material steel galvanized, shafts stainless steel.
- 1 pump Q = ...m³/h, H = ...m, n = ...rpm, power needed ...kW material cast iron, stainless steel, bronze, plastic,
- 1 suction pipe
- 1 foot-valve with strainer DN...

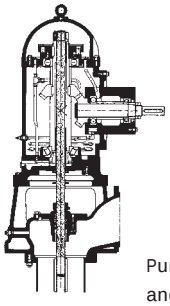
Pumpen-Boettcher

Deep well centrifugal pump

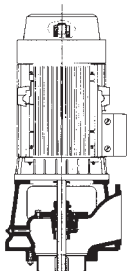
Section drawing of deep well centrifugal pump – flanged design



Delivery possibilities for pumpheads with driver

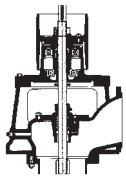


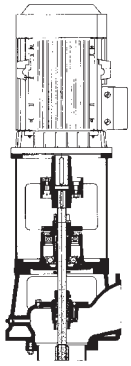
Pumphead with hollow shaft electric motor



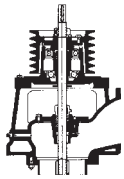
Pumphead with right angle gear drive

Pumphead with flat pulley





Pumphead with v-belt pulley



Pumphead with thrust bearing and flexible coupling for standard t.e.f.c. electric motor

Deep well centrifugal pump

For capacity range up to 1500 m³/h

Several designs of diesel driven deep well centrifugal pumps, upper ”compact - unit”

Materials:
cast iron bronze stainless steel

Pumpen-Boettcher

Electrically Driven Submersible Pump

Application:
Drinking water supply to cities and communities, housing pumps, booster-stations, water supply for industrial and commercial use, irrigation plants, drainage, fountain systems, air-conditioning systems.

Design:
Vertical, multi-stage high pressure centrifugal pump with semi-axial or radial impellers, built-in non-return valve with submersible electric-motor and vulcanized submersible electric cable.

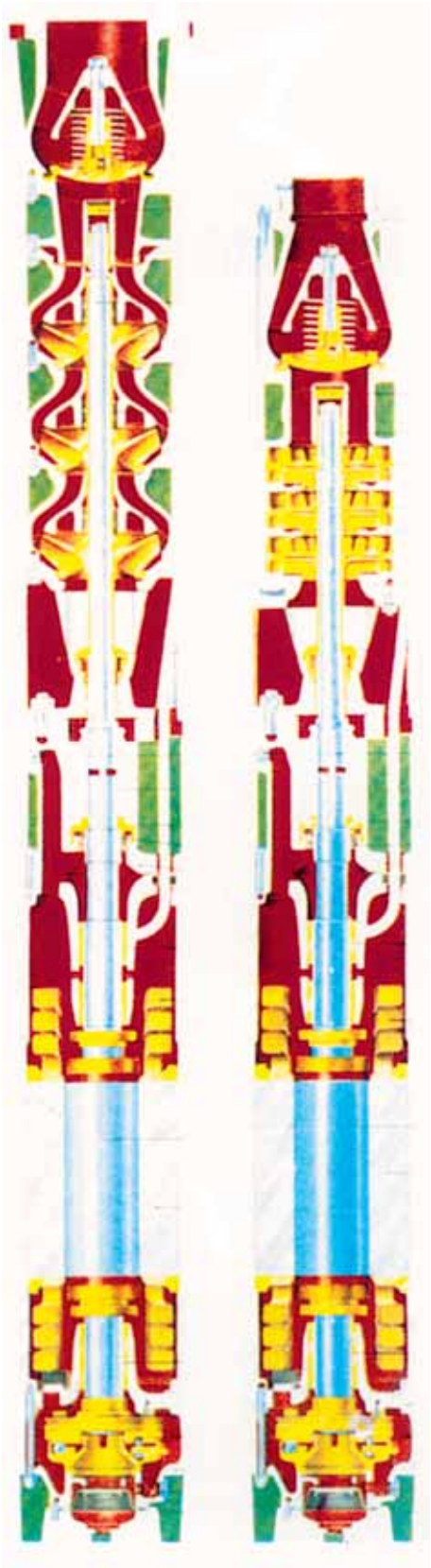
Connections:

suction connection:	with strainer between pump and electric motor
discharge connection:	threaded sleeve or flange
Temperature:	suitable for clean cold water, temperature up to max. 40° C. Special design for warm water supply for approx. 80° - 90°C.
max. capacity:	1200 m^3/h
max. total head:	1000 m

Materials:

casing:	cast iron, stainless steel or bronze
impellers:	bronze, stainless steel or plastic
shaft:	stainless steel
Drive:	Electric motor, single phase and three phase as squirrel-cage motor. Submersible motor in collimator execution, which is filled with operating fluid including anti-freeze agent before leaving the factory. Three phase motor for direct online starting, over 3 kW for direct online, starting with transformer, starting with soft-starter, or for star-delta starting.
Power transmission:	Rigid sleeve – coupling
Bearing:	medium lubricated sleeve bearing

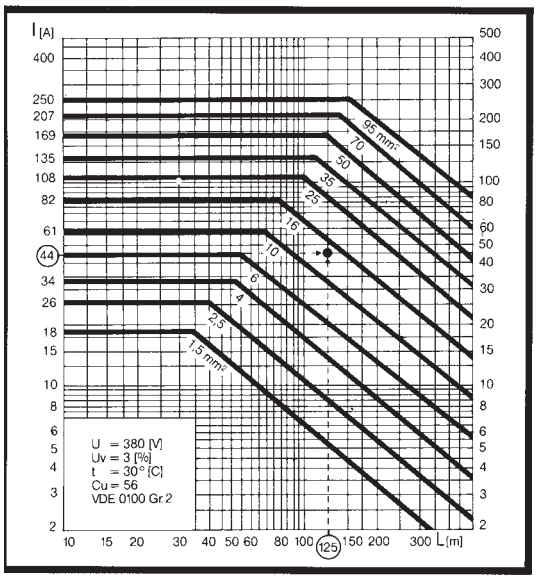
Horizontal installation is possible; depending on size of the pump a certain amount of inclination has to be provided.



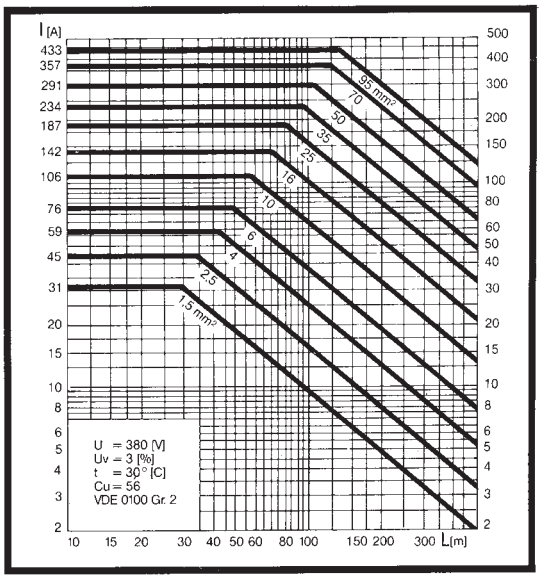
Electrically Driven Submersible Pump

Calculation of necessary cable cross section for total cable length between switch board and pump

Max. current carriying capacity for switching direct on line (1 cable)



Max. current carrying capacity for switching star-delta (2 cables)



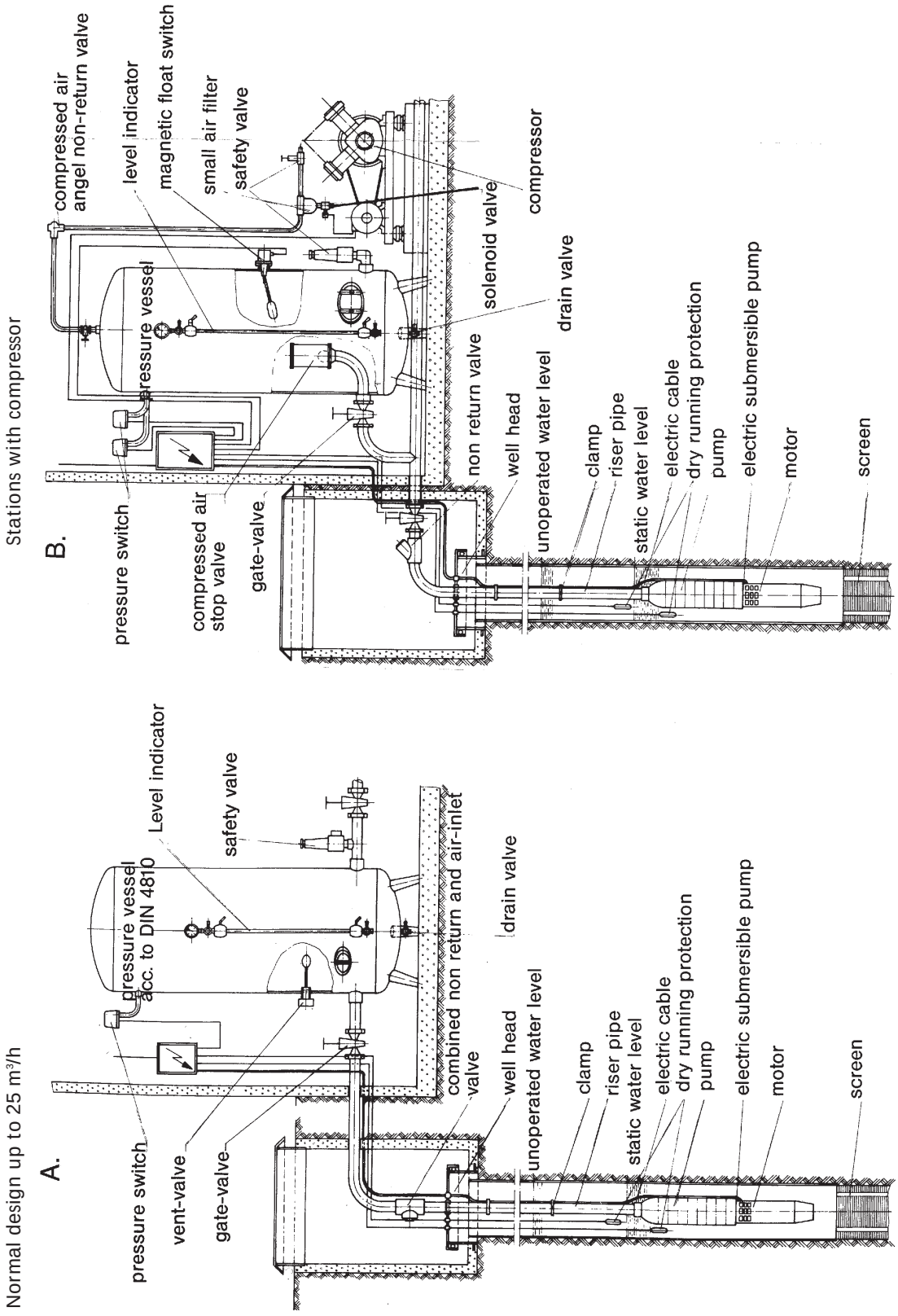
Electrical conductivity from submersible-cable HO 7 RN-7 (DON 57282) at an ambient temperature between 20 °C and 55 °C

Ambient temperature	current carrying capacity at an ambient temperature of:
t	
(°C)	(%)
20	100
25	100
30	92
35	85
40	75
45	65
50	53
55	38

Switchboard for d.o.l. / star delta-switching 3x ...V/...Hz with following components:
- 1 steel casing
- 1 set of fuses
- 1 motor protection/star delta-switch with term. overload relay
- 1 volmeter
- 1 volmetric commutator
- 1 amperemeter
- 1 amperemetric commutator
- 1 door lock
- 1 operation lamp
- 1 alarm lamp

Dry running protection consisting of:
- 1 electronic relay built in a.m. switchboard
- 1 electrode probe
- 2 electrodes
- 2x ...m electrode-submersible cable

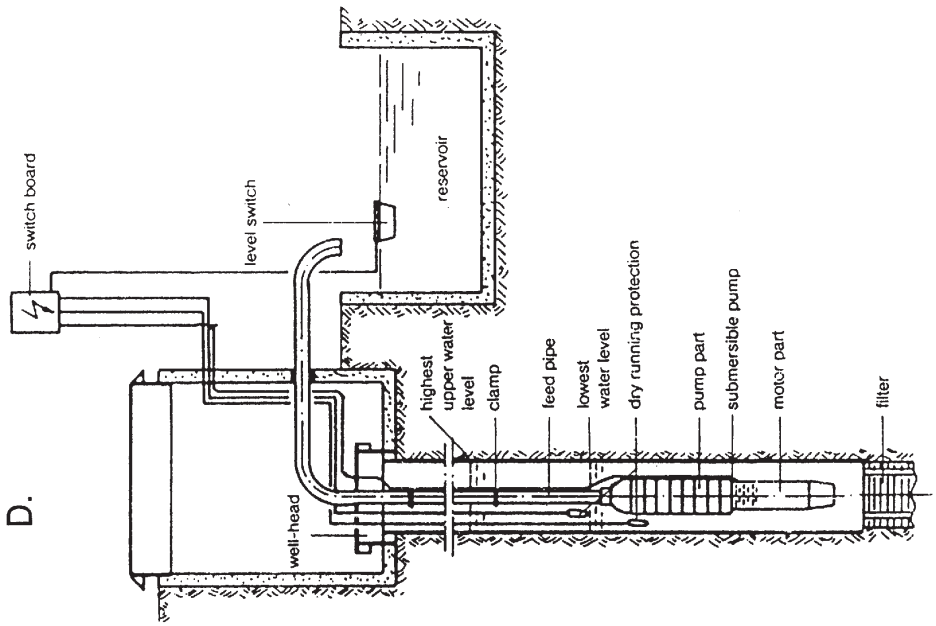
Waterworks with electric submersible pumps



Waterworks with electric submersible pumps

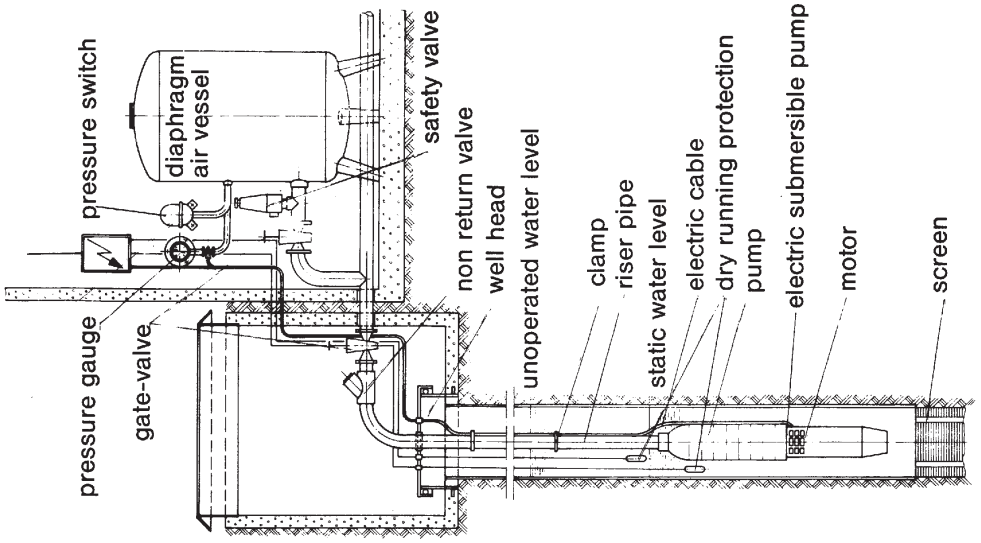
Design for irrigation sprinkler (by means of additional booster-pump)

D.



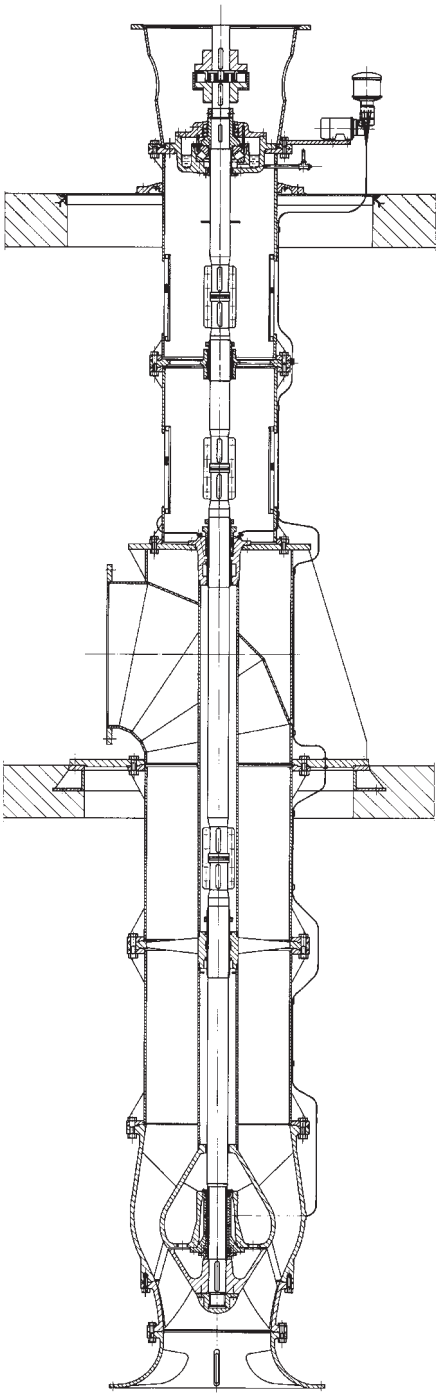
Modle for continous water supply and automatic operation

C



Please give us with your inquiry the required installation according: A, B, C, D.

Pumpen-Boettcher



Axial flow pump

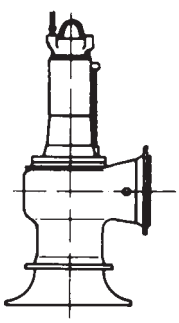
Vertical, single-stage centrifugal pump, low pressure pumps with large quantity of liquid for drainage and irrigation, for rain water, mixed waste water, muddy water, cooling water and water for industrial supply. The liquid must be pre-settled and chemically neutral and the temperature should not rise above 60° C.
The impeller blades are inserted into the impeller hub singly. Thus the angle of the blades can be modified when operating conditions change or individual blades renewed if they become damaged.

Design dimension:	DN 200 up to DN 1400
Capacity range:	up to 20 000 m^3/h
Delivery head:	up to 10 m
Driver:	electric motor, electric gear motor, diesel engine with angle gear or V-belt.

Mixed flow pump

As described before, but for medium-sized heights that means delivery head up to 30 m

Complete submersible model available.



One of the mixed flow pumps used in a drainage pump station in the Middle East

Delivered pumps for Q = 20.000m3/h, H = 20 m

Motor for a.m. pump 1600 kW 423 RPM ▶

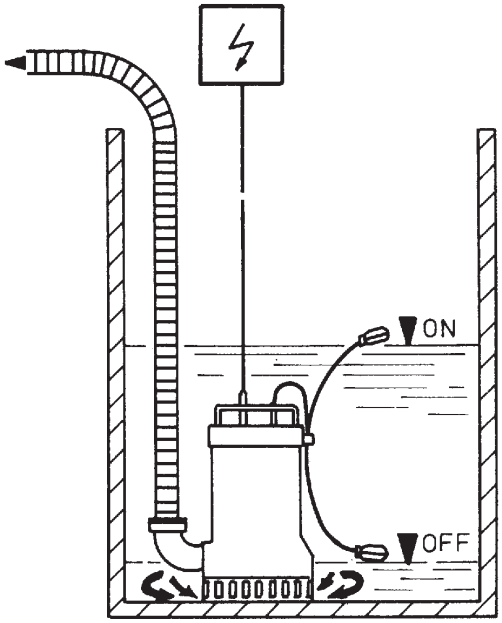
Pumpen-Boettcher

Dewatering pump

electric submersible pump for dewatering, low pressure

Application:
for automatic discharge of dirty water out of dewatering pits in cellars, lavatories or store-rooms, for backwash safety in case of high water level.

Design:	vertical, single stage, submersible pump, with strainer, with open impeller for max. solids of 10 mm.
Discharge socket:	female thread 1¼"
Temperature:	normal 40 °C, max. 90 °C
Shaft sealing:	radial sealing rings
capacity range:	1 - 25 m³/h
delivery head:	1 - 10 m
Materials:	
casing:	aluminium castings, cast iron, stainless steel, plastic
impeller:	GFK,ALSI 12, GG 20
shaft:	stainless steel
Driver:	submersible electric motor, protection IP 68, single phase 230 V, 50 Hz, three phase 3 x 400 V, 50 Hz (special voltage possible)
Bearing:	2 ball bearings



Dewatering pump

Electric submersible pump for dewatering, middle pressure

Application:
for discharge of dirty and muddy water out of excavations and dewatering pits

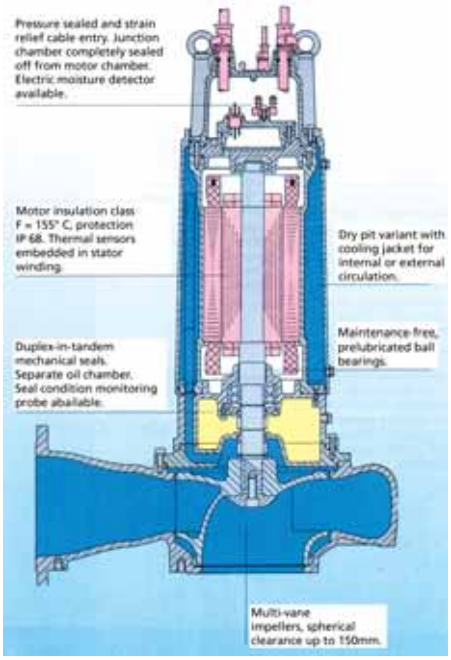
Design:	vertical, single- or two stage, submersible pump, with strainer, with open impeller for solids of 6 up to 20 mm
Discharge socket:	female thread or quick coupling
Temperature:	normal 40° C, max. 90° C
Shaft sealing:	mechanical seals with oil chamber
Capacity range:	10 - 500 m^3/h
Delivery head:	1 – 40 m

Materials:

casing:	aluminium casting, cast iron, inside rubberized
impeller:	ALSI 12, cast iron, bronze, hard metal
shaft:	stainless steel

Driver:	submersible electric motor, protection IP 68, single phase 230 V, 50 Hz, three phase 3x400 V, 50 Hz (special voltage possible) up to 3 kW direct on line, over 4 kW star-delta
Switching:	Starter with motor protection, hand-automat-selecting-switch, cable and plug. For automatic operation with level switch. Three-phase version available with switch for reversal of rotation.
Bearing:	2 ball bearings

Pumpen-Boettcher



Sewage dewatering pump

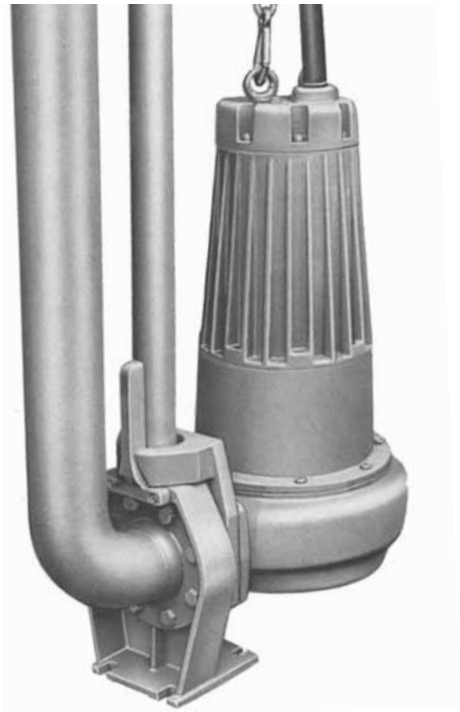
Application: For industries, trade business and municipal undertaking for handling sewage such as long-fibred coarse materials (sanitary pads, tissue) specially in undergrounds, swimming pools, hospitals, paper factories, utilizing plants, hotels, camping places etc.
For the choice of right pump you have to consider:

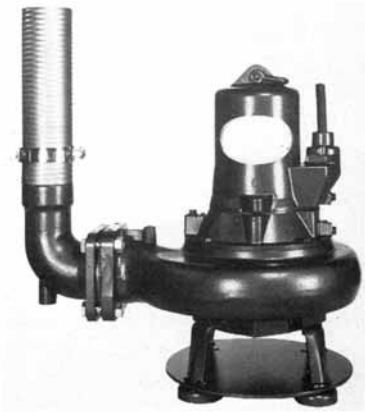
- application of pump
- necessary diameter of free-flow
- if sewage is non-treated or treated

Design: vertical, single-stage, submersible with special impeller, one-vane-impeller or free-flow-impeller, for following max. solids: mini-model = 45 or 70 mm, all other sizes acc. to the diameter of discharge socket without danger of clogging.

Pump with foot and hose-connection, or with self-coupling slipway system.

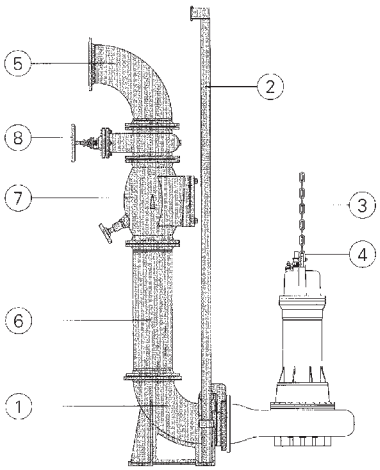
Connection:	sidewards pointed flange
Shaft sealing:	mechanical seals with oil chamber
Capacity range:	10 - 1000 m^3/h
Delivery head:	1 – 40 m
Materials:	casing and impeller cast iron, shaft stainless steel
Driver:	submersible electric motor with, protection IP 68, three phase 3x400 V, 50 Hz, (special voltage possible), furthermore explosion-proof version, PTB-type-approval. Up to 3 kW direct on line, 4,0 kW and more for star delta. (mini-model available for single phase 230 V, 50 Hz)
Bearing:	2 ball bearings



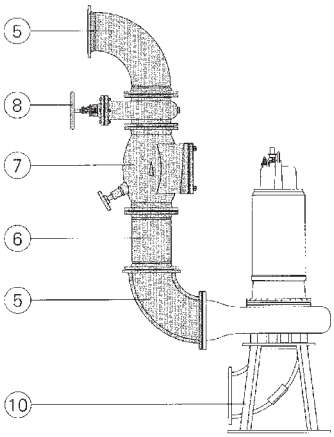


Accessories for dewatering and sewage submersible pumps

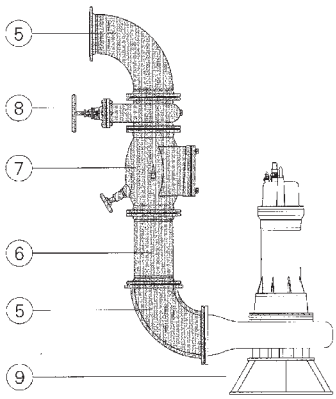
Permanent wet well installation
with elbow discharge connection



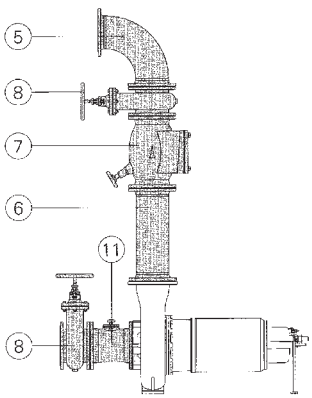
Permanent dry well installation
vertical



Wet well installation with
supporting ring



Horizontal installation



1) Auto-coupling system consisting of auto-coupling with flanged elbow, flanged pump coupling and upper slide rail bracket

2) Steel galvanized guide rails

3) Steel galvanized lifting chain

4) Steel galvanized shackle

5) 90° flanged elbow (or flanged y-piece for twin pump arrangement), horizontal discharge (optional with vertical discharge) available with different dimensions according to sump dimensions

6) Flanged discharge pipe with gasket and fixing bolts or hose with quick couplings

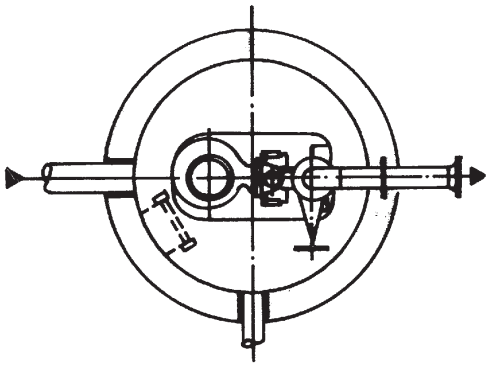
7) Flanged swing check valve with gasket and fixing bolts

8) Flanged gate valve with gasket and fixing bolts

9) Ring base stand

10) Pump stand with 90° suction elbow with cleaning hole, gasket and fixing bolts

Pumpen-Boettcher

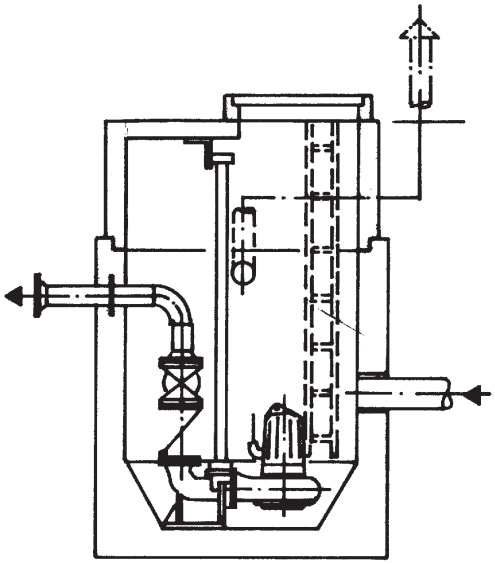


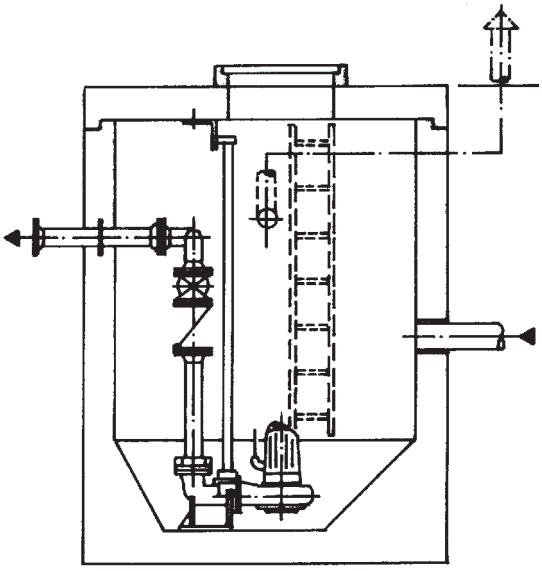
Waste water pump

The automatic coupling provides swift and systematic installation and starting-up of the pumps. The base is mounted on the shaft-floor of the pump installation and is linked to the delivery output. A conductor joins the base to the box spanner on the shaft opening.

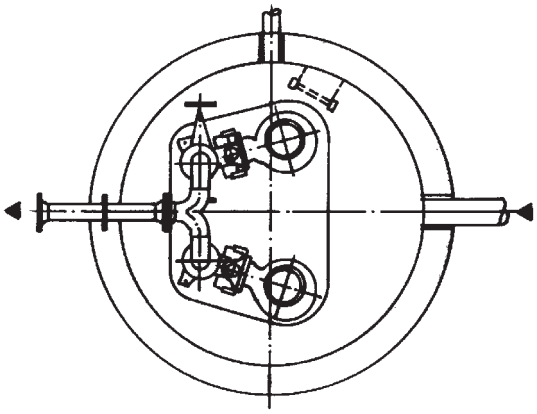
The immersion motor pump is suspended from the conductor and is gently lowered.

It then automatically finds its operating position and the pressure connection at the base is made watertight due to the pump's own weight.

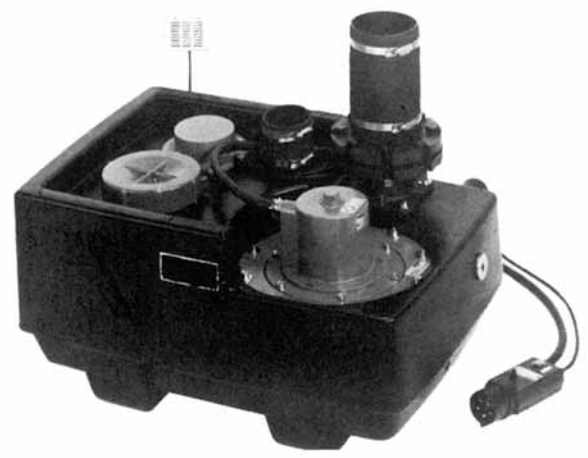




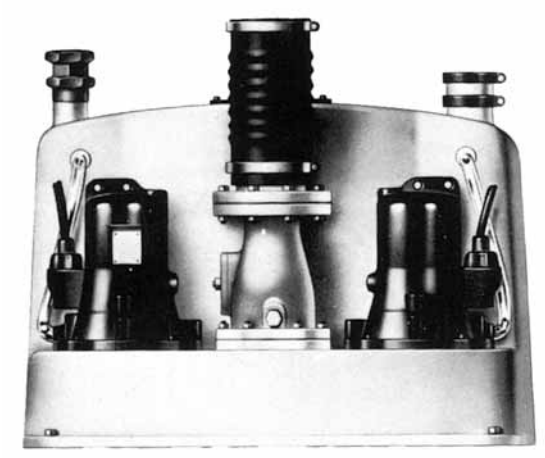
For fixed-installations with base and mono-pipe conductor or for portable usage or fitting onto containers there is an extensive accessories programme. We supply fully fitted control centres with various optional extras such as floating switches or the pneumostat electro-pneumatic level control. These are for automatic control of single or dual pump stations.



Electric sewage dewatering pump station inside closed buildings



Packaged sewage disposal unit with 1 pump



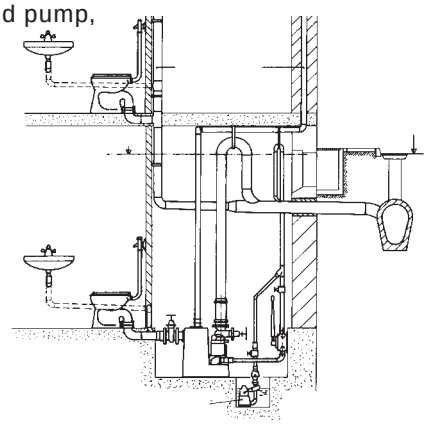
Packaged sewage disposal unit with 2 pumps

Design acc. to DIN 1986 with approval

Application: acc. to DIN 1986 all sewage must be pumped out with a pump station, if surface of toilet is less than 250 mm over back wash water table. For installation in closed rooms this pump station must be designed as packaged tank units which are freestanding, smell–tight and gastight.

- mini-station for single toilets or single family houses
- station with 1 pump for multifamily houses
- station with 2 pumps for hotels, restaurants, department stores, schools

Design: automatically operating packaged sewage disposal unit consisting of: tank with cleaning opening, 1 or 2 pumps with motors, switchboard, automatic level control unit with transformer, alarm device, emergency hand pump, non-return valve and gate valve



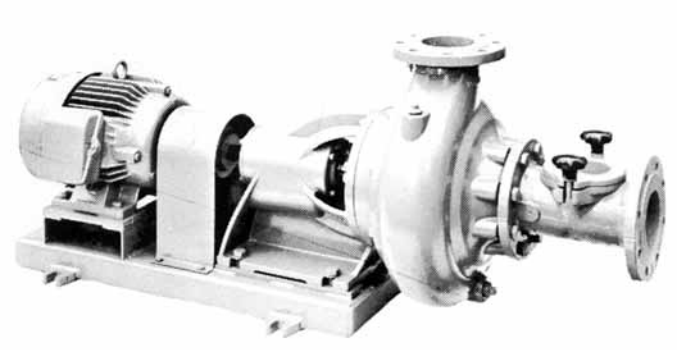
Temperature: max. 75 °C

Driver: electric motor, submersible version is also available

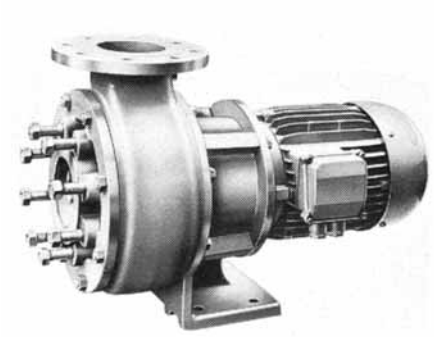
Switching: automatic operation by means of level control unit, switchboard with supervision, up to 2,2 kW for starting direct on line, 3 kW and more for star delta starting with alarm device audible and visible, independent of mains.

Pumpen-Boettcher

Crude waste and sewage handling pump



Application:
handling of waste water in sewage treatment plants, breweries, slaughter houses etc; treated domestic- and industrial-sewage, faeces, sanitary sewage, mud etc.



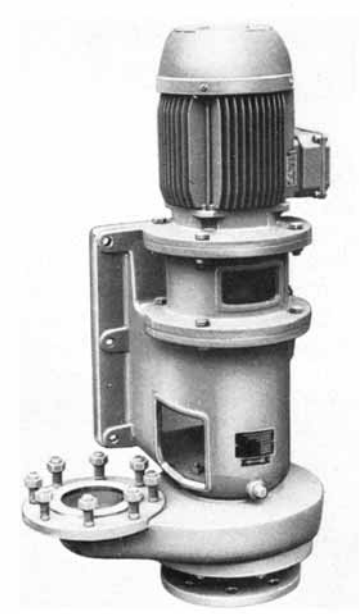
Design:
single stage, non-self-priming centrifugal pump, horizontal or vertical, bigger models with cleaning opening at the casing or inlet-socket. Pump can be delivered with
- enclosed single-port, twin-port or three-port impeller
- open single-port, twin-port or three-port impeller.

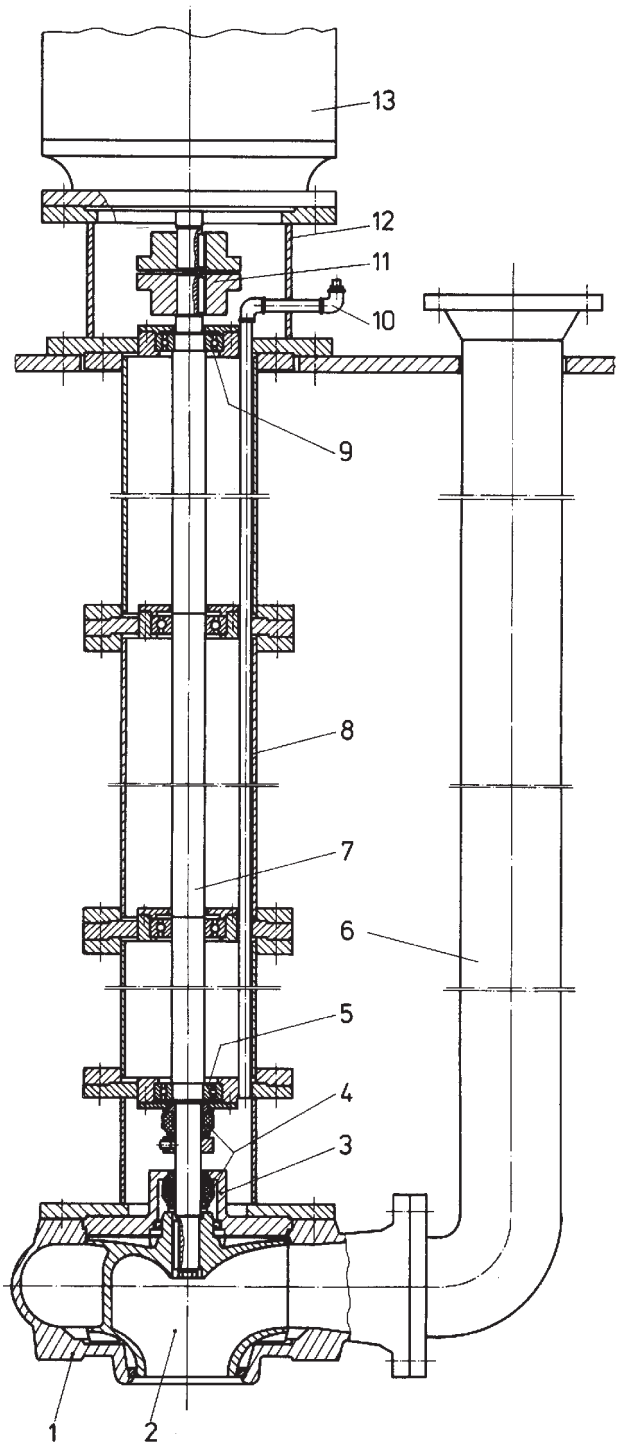
Kind of impeller depends on required max. solids. Pump can be equipped with an automatic fibre chopping device made of highly wear-resistant cast iron, which prevents fibrous material from clogging the pump.

Connections:	suction socket axial, discharge socket various possibilities. Flange connection.
Temperature:	max. 110 °C
Capacity range:	5 – 3000 m³/h
Delivery head:	max. 95 m
Shaft sealing:	stuffing box, mechanical seal

Materials:

casing, impeller and wear plate:	cast iron, bronze, stainless steel, highly wear-resistant cast iron
shaft:	steel, stainless steel
sleeve:	chrome steel, bronze, stainless steel
Driver:	electric motor, diesel engine, electric submersible motor, also explosion- and flame-proof motors
Direction of rotation:	cw
Power transmission:	flexible coupling, V-belt, direct flanged i.e. motor shaft = pump shaft





Crude waste and sewage handling pump

Special design:

vertical dry- or wet-installation. The top supporting plate is connected with the lantern including the thrust bearing for the drive-shaft. Shaft and motor assembled by means of flexible coupling. Below the supporting plate the shaft protection pipe is flanged. Corresponding to the length, this protection pipe consists of one or several intermediate pipes and bearings, in which the rigid coupled intermediate shafts are supported. At the end is the pump body with inlet casing, pump shaft and impeller. The liquid is pumped out of sidewards pointed discharge socket, or through parallel to protection pipe mounted discharge pipe above supporting plate. Shaft sealing can be delivered with stuffing box, but we recommend mechanical seal or better double mechanical seal with oil filling, because this design is absolutely dry-run-proof.

1 pump casing

2 impeller

3 pump cover

4 mechanical seals

5 ball bearing

6 discharge pipe

7 shaft

8 column pipe

9 thrust bearing

10 oil fill in connection

11 flexible coupling

12 motor support

13 electric motor

Pumpen-Boettcher

Electric submersible pump made of bronze or stainless steel

Material bronze for seawater as portable loading or off-loading pump, bilge or ballast pump.
Material stainless steel for pumping corrosive and abrasive mediums, aggressive chemical drainage water or sludge and chemicals.

Application:
for discharge of dirty and muddy water out of excavations and dewatering pits

Design:	vertical, single- stage, submersible pump, with open impeller for solids of 10 up to 30 mm
Discharge socket:	flange
Temperature:	normal up to 40 °C, max. 90 °C
Shaft sealing:	mechanical seals motorside carbon / ceramic mediumside sic / sic
Capacity range:	5 - 72 m^3/h
Delivery head:	1 – 40 m
Materials:	casing and impeller: marine bronze casing or impeller: stainless steel 1.4401 shaft: stainless steel
Driver:	submersible electric motor, protection IP 68, three phase 3x400 V, 50 Hz (special voltage possible) up to 3 kW direct on line, over 4 kW star-delta
Bearing:	2 ball bearings

Diaphragm pump

The diaphragm pump is a slow speed positive displacement pump with non-clogging valves. Diaphragm pumps can pump sewage- and muddy water and even slurry. Special features:

Self-priming
Non-clogging
Can run dry
Sturdy design
Long service life

Capacity:	up to 42 m^3/h
Delivery head:	10-15m
Driver:	electric motor or gasoline/diesel engine
Connection:	thread sockets

Pumpen-Boettcher

Compressed air-driven diaphragm pumps

Benefits at a glance:
- gentle conveyance of liquid or viscous products
- ideal for abrasive, viscous and shear sensitive media
- can handle media with entrained solids
- tolerant of dry running
- no dynamic or pressure loaded seals
- mobile, easy-to-transport units
- infinite regulation of pumping capacity
- dry self-priming
- can run against closed valves
- compressed air control, oil free
- submersible designs
- suitable for use in explosive and hazardous areas

Main application fields:
on board of vessels as stripping pump, in civil engineering for emptying tanks, water accumulation, pits and cable trenches

Design:	selfpriming vertical portable pump for compressed air -drive.
Materials:	Housing: aluminium, cast iron, stainless steel 316L, poly-propylene, PVDF, PTFE
	valve seat,valve ball, diaphragm: NRS, EPDM, Viton, EPDM-grey, Nitrile, PTFE
Connenctions:	female thread, flange, quick-coupling
Capacity:	0,1.....40m³/h
Total head:	max. 7 bar
Suction lift:	up to 8,5 m
Viscosity:	up to 18 mm²/s
Accessories:	- silencer
	- maintenance-unit of pressure gauge, filter and neeedle valve ¾”
	- slow-start-valve adjustable 1 - 10 sec.

Compressed air-driven, dirt resistant submersible pump

Application:

Portable loading and off-loading pump
for handling of pure or slightly polluted liquids, which do not chemically or mechanically attack the construction materials of the pump.

Main application fields:

on board of vessels as stripping pump, in civil engineering for emptying tanks, water accumulation, pits and cable-trenches.

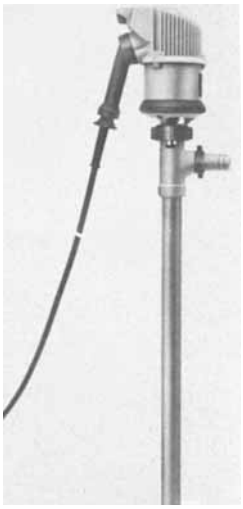
Design: vertical portable pump for compressed air drive, filter and compressed air connection cock.

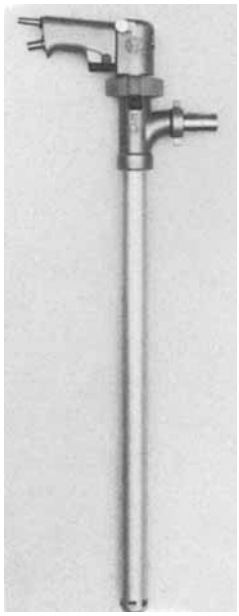
Connections: compressed
air connection: ¾”
water connection: 1½” female thread

Driver: built-in air motor. Compressed air pressure 6 – 8 bar

Max. capacity by air pressure of 6 bar and 5 m head, 100 m^3/h
Max. head: 60 m

Pumpen-Boettcher





Barrel and container pump

Application:
for all neutral, corrosive, flammable, thin or highly viscous, pasty, creamy and aerated liquids. Pump is a light weight, fully portable or stationary barrel and container pump. Stirring and mixing are readily achieved, even in narrow-necked vessels, by fitting a mixing tube.

Design:
Motor heads and pump tube sets are interchangeable according to application. Motor head is surface-cooled, fitted with an insulated handle and a built-in switch and with 5 m cable and plug. Each pump tube has an inner and outer tube, inner tube carefully sealed. Pump tube set is secured to the motor head by a union nut and is easily removed for cleaning. The liquid is pumped upwards between the outer and inner tubes to the outlet. When lifted from the liquid, the pump set drains completely. Pump sets available in lengths of 700, 1000 and 1200 mm.

Connection:	discharge socket sidewards below motor head
Temperature:	up to max. 120 °C (temporary) depending on material and liquid.
Capacity range:	0,1 – 60 m^3/h
Delivery head:	up to 2 bar
Shaft sealing:	shaft seal is made of material compatible with the liquids to be pumped i.e. perbunan, viton, ceramics and hard carbon. Special seals available on request. Also available in sealless version.
Materials:	
Pump tube set:	aluminium alloy (AlMg 5), stainless steel 1.4571, hastelloy C, polypropylene, PVDF
Impeller and Bearing case:	stainless steel, polyamide, polypropylene, PTFE
Shaft:	stainless steel, hastelloy
Driver:	double insulated splash proof commutator motor 240, 230, 110, 42 V AC, 24 V AC/DC, 12 V DC, or gear motors for single- or three-phase current, explosion proof (Ex) d3nG5, (Ex) dC3 (T4), dIIBT6, class 1 group C and D. With compressed air motor.
Power transmission:	coupling
Bearing:	sleeve bearings
Viscosity:	up to 1000° Engler (7580 cp)
Tested:	to German, Swiss, American and Canadian standards.

Dosing and Transfering Pump

Applicable for nearly all kinds of liquids (such as: acids, brines, solvents and others) can be delivered as: single pump, multiblock pumps, combination pumps, complete dosing and control systems and small dosing units.

Materials:
All parts in contact with the liquid are selected according to the medium to be pumped. We can deliver dosing pumps with following materials: PVC, PE, PTFE, titanium, steel with hard rubber lining, corrosion and acid resistant steels, perbunan, hypalon and viton.

Regulation:
The capacity of the pump is constant and infinitely adjustable. Regulation is done by changing the stroke and/or by changing number of stroke. For this purpose the pump is provided with a scale-hand adjusting knob or with control gear motor including hand-wheel. Electrical control by a servo motor or pneumatic control by a small air motor. D.C. motors with Tyristor – control units can be delivered to use alternating current mains.

Automatic dosing plants:
The proportional control of dosing volume is carried out as a function of the measured value on a contact flow meter: the pump gives a full stroke volume of flow for each water counting impulse. Fully automatic dosing dependent on a main flow meter: continuous dosing proportional to the measured flow of main flow meter.
Proportional dosing depending on analogue measuring values (current, voltage, resistance). Direct dosing control of the pump is made by the converting of an input value to a proportional impulse frequency. Electronically controlled systems can be delivered for automatic control of the ph-value. Dosing value is controlled by automatic comparison of measured value to the preadjusted rated value. Charge dosing with digital flow preselection: the pump is shut off automatically after arriving at preadjusted dosing value.

Small dosing plants:
Dosing pumps, tanks and fittings mounted to a compact unit (tanks in polyethylene or steel). Units complete with foot valve, hand- or electric-mixer and with all other accessories such as dosing point connection, overflow valve, ball valve. These systems are robust, reliable and ideal for continuous operation.

Hydrazin dosing plants:
are installed on the water / steam systems for dosing of Hydrazin to avoid corrosion by binding of oxygen. This kind of plant is gas tight and fulfils the safety regulations of the industrial control societies.


Piston diaphragm dosing pump


Aluminium Sulphate solution dosing compact units

Pumpen-Boettcher

Dosing and Transfer Pump

Application:

Sewage neutralization and water treatment:
Chemical dosing for precipitating and flocculating agent
Car wash plants:
Dosing of cleaning agents in fluid form, shampoo and wax into wash water.
Chemical industry:
Dosing and transfer of various neutral and aggressive fluids for chemical processes.
Paint and varnish industry:
Dosing of paint and varnish components in fluid form and dosing of solvents.
Photo industry:
Dosing of development chemicals.
Galvanizing process:
Dosing of concentrates on pickling and galvanizing plants
Food and beverage industry:
Dosing of flavour agents and fruit concentrates, dosing of sugar solutions for production of malt beer, dosing of aux. filtering agents and stabilizers, dosing of bottle-cleaning agents.
Animal food production plants:
Fat and soya bean oil addition, spraying and luprosil dosing.
Food industry:
Dosing of vitamin and sugar solutions, protein and flavour agents.
Margarine production:
Dosing of soya bean oil and salt solutions.
Dairy-plants:
Dosing of colour agents into fruit juice, yoghurt and marmalades. Dosing of salt solution for butter production. Dosing of water treatment and cleaning chemicals.
Paper industry:
Chemical dosing of colour agents, bleaching agents and solvents.
Pharmaceutical industry:
Dosing and transfer of brines and solvents.
Nuclear power plants:
water and sewage treatment, sample testing.
Swimming pools:
Dosing of chlorine solutions for disinfection, dosing of aluminium sulphate for flocking.
Textile industry:
Dosing of colour agents, acids and brines.
Sugar industry:
Dosing of lime milk for neutralization, kieselguhr for drifting filter, and dosing for acids for leaching.

Diaphragm dosing pumps

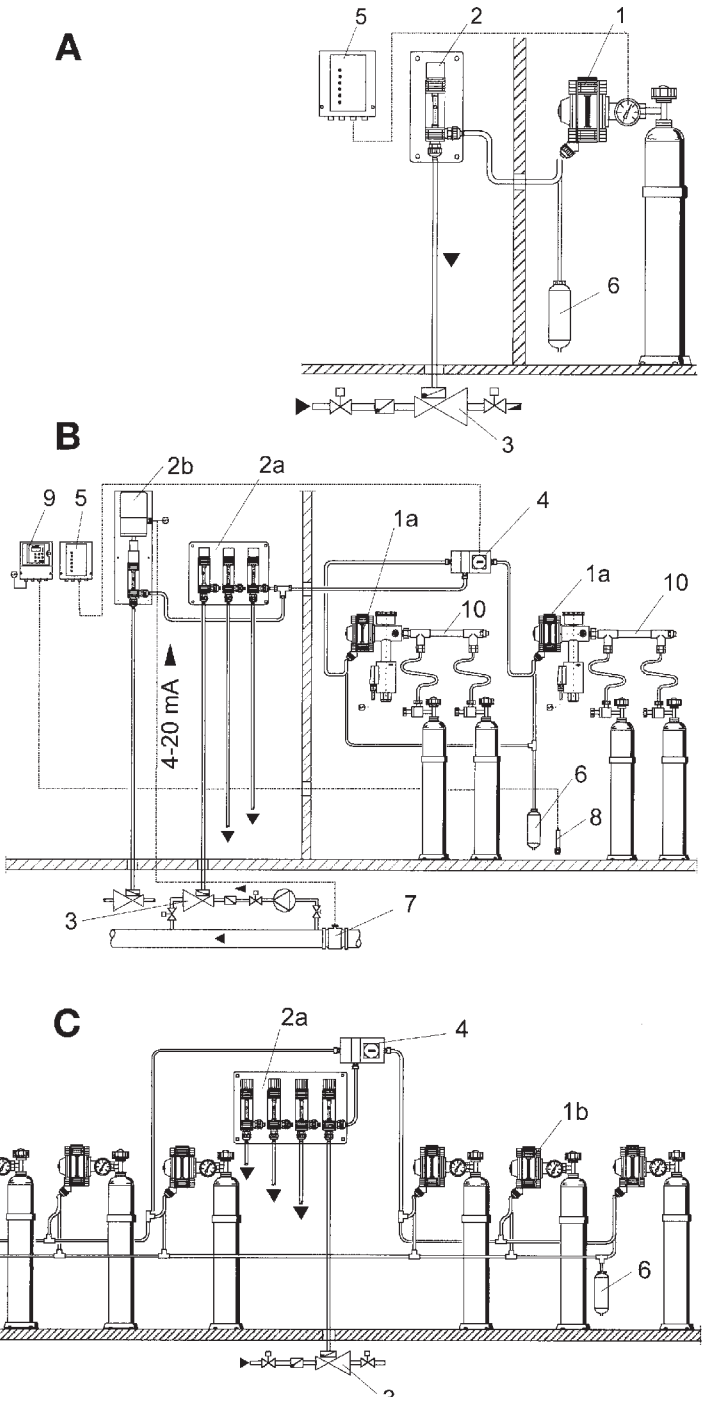
Gas dosing systems

Different versions for various applications

A **Modular System**
- vacuum regulator for direct mounting on a gas cylinder
- dosing regulator for separate wall mounting
- up to 10 m of vacuum line between both devices

B **Dosing system with vacuum change-over device**
- for continuous gas dosing without interrupting the process
- 2 vacuum regulators for mounting on gas cylinders
- single or multiple dosing regulator for separate wall mounting
- the first cylinder being empty, the device changes over immediately to the next vacuum regultor at the full gas cylinder

C **Dosing system for the simultaneous extraction from several gas cylinders**
- if more gas is needed, it can be extracted from several cylinders simultaneously
- vacuum regulators are installed on several chlorine cylinders and switched in series by T-pieces
- single or multiple dosing regulators for separate wall mounting
- with automatic vacuum change-over device



1	Vacuum regulator with manometer	4	Vacuum change-over device
1a	Vacuum regulator with liquid trap (heated)	5	Indication unit for empty signal
1b	Vacuum regulator with serial switching	6	Gas absorption cylinder
2	Single dosing regulator	7	Flowmeter with current signal output
2a	Multiple dosing regulator	8	Gas sensor
2b	Dosing regulator with electric servomotor	9	Gas warning device Gasdetect
3	Injector with non-return diaphragm	10	Header line

Pumpen-Boettcher

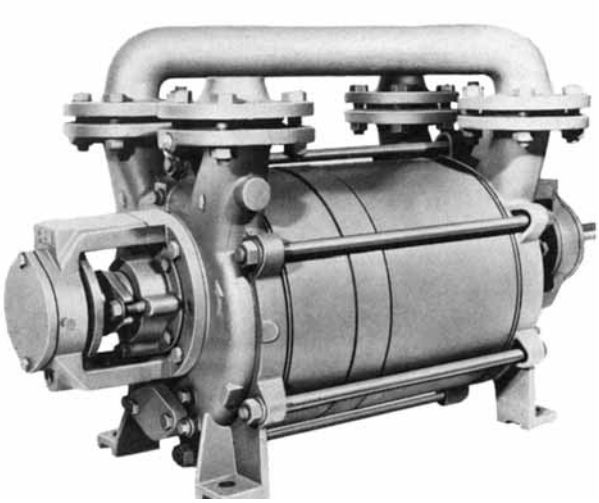
Circulating pumps

coupled with electric motor

Inline-design

Application:	for cold- and hotwater circulation, desalinated water, freon, glycol-mixing, and other kinds of liquid, which are circulating pure and slightly polluted liquids, the construction materials of the pump not chemically and mechanically attacking.
Design:	single stage low pressure centrifugal pump, inline design, for horizontal or vertical installation. Can be delivered as single- or double pump.
Connections:	suction- and discharge socket same dimension, opposite, flange connection up to DN 200
Temperature:	- 15 °C up to + 140 °C
Capacity:	up to 500 m^3/h
Delivery head:	up to 75 m
Operation pressure:	up to 120 °C max. 16 bar, up to 140 °C max. 13 bar
Sealing:	mechanical seal, some models, if required, with stuffing box packing
Materials:	casing: cast iron, spheroidal graphite iron, bronze impeller: cast iron, bronze, stainless steel shaft: stainless steel
Driver:	3-phase electric norm-motor, if required single-phase, direct-current-, explosion proof- and pole-changeable-design
Direction of rotation:	depending on model and size cw or ccw
Power transmission:	sleeve coupling
Bearing:	the bearing and load of axial- and radial-forces are taking over from drive side fixed-bearing of motor

Liquid ring – vacuum pump



Application: Vacuum pump is used for compressing dry and wet gases on the plants of chemical and pharmaceutical industry, food-, semi-luxuries- and paper industry.
Water ring vacuum pump used for evacuation of apparatus and piping systems, impregnating, distillation, drying, sterilization, boiling, draining and compressing of explosive and aggressive gases. Furthermore, they can be used on desalination plants for freshwater production, degassing of melted steel, on pneumatic transport systems and for draining.

Design: An eccentric rotor located in cylindrical pump casing transmits the power to a liquid ring, which after starting-up takes a concentric form to the casing. By means of this arrangement, the liquid is displaced from an impeller cell and is sucked into cell again. On the area of the impeller-cell the liquid ring is exhausted. The gas is discharged at the pressure side via an outlet part. During operation the pump must continuously be supplied with service liquid, normally water, in order to eliminate the heat resulting from gas compression and in order to replenish the liquid ring, because some of the liquid leaves the pump together with the gas. The liquid can be separated from the gas in a liquid separator. Re-use of the service liquid is possible.
Liquid ring vacuum pump has the following important features: Almost all gases and vapours can be pumped. The gases being pumped can be saturated with vapour. Small quantities of entrained liquid can be handled. Compression of the gases and vapours being pumped is nearly isothermal. Liquid ring vacuum pump does not require any lubricant in the working space. Reliable operation with minimum maintenance. Low noise and vibration levels. Adaptable to most duties when correct choices of materials of construction and service liquid are made. They can be applied without modification as compressors up to a compression pressure of 1 bar.

Connections:	flange connections, suction and discharge radial or tangential upwards.	
Shaft sealing:	stuffing box or mechanical seal.	
Materials:	casing:	cast iron, bronze, stainless steel
	impeller:	bronze, stainless steel
	shaft:	chrome steel, stainless steel

Driver:	electric motor
Direction of rotation:	cw
Power transmission:	flexible coupling
Bearing:	both sides grease lubricated ball bearings

Pumpen-Boettcher

Reciprocating pump

Application: Water supply for agriculture, shipbuilding industry as bilge-, stripping- or boiler feed pump.

Design:
up to 5 m³/h horizontal double acting with built-in relief valve, with crank shaft or gear; over 5 m³/h horizontal double acting with gear (relief valve must be installed separately)over 5 m³/h vertical version is available. Some models available with ball-valves for viscous and dirty liquids.

Connection:
up to 5 m³/h oval flanges with threated counter flanges, other models with DIN-flanges without counter flanges.

Horizontal piston pump direct driven via gearbox

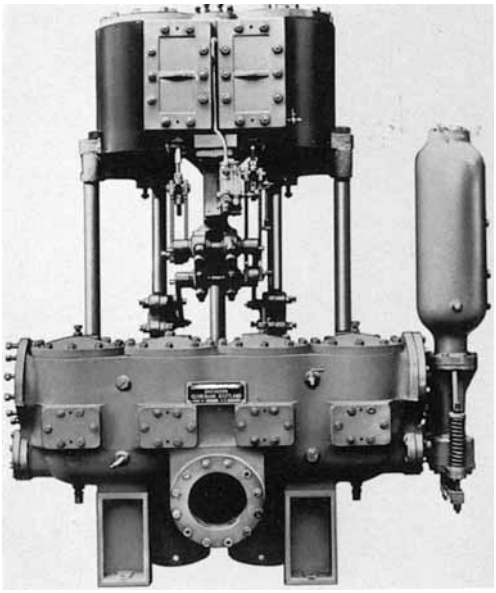
Vertical marine reciprocating pump

Reciprocating pump

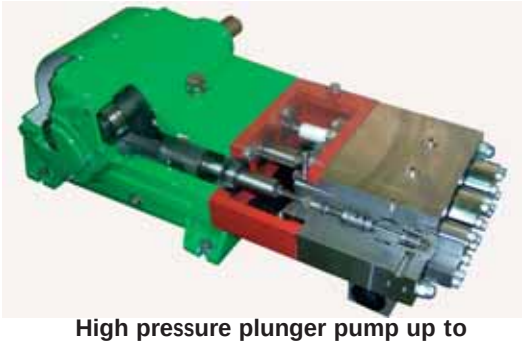
Driver:	electric motor, diesel engine, steam	
Power transmission:	V-belt, gearbox and flexible coupling	
Bearing / lubrication:	crank shaft, gears and all bearings oil bath-lubricated	
Temperature:	max. 105 °C	
Capacity range:	0,5 - 250 m³/h	
Pump pressure:	normal version	4 up to 6 bar
	middle pressure version	up to 16 bar
Suction lift:	normal- and middle pressure version up to 7,5 m	
Shaft sealing:	stuffing box	
Materials:	gear casing	cast iron
	pump casing	cast iron, bronze, steel, stainless steel
	cylinder	brass, bronze, stainless steel
	valves	brass, bronze, stainless steel
	valve rings	rubber, buna
	piston rod	stainless steel
	piston and piston rings	cast iron, bronze, stainless steel, rubber, buna etc.

High and very high pressure plunger pump units for all industrial applications

Mobile driven reciprocating pump 190 l/min - 220 bar



Steam driven reciprocating pump



High pressure plunger pump up to 100 m³/h up to 1500 bar

Pumpen-Boettcher

Gear pump

Application:
For pumping mineral oils, respectively fuel oils, pipe line pump and transfer pump; for pumping self-lubricating liquids without abrasive particles in general.

Design:
Self-priming with replaceable bearing inserts, including bearing bushes. An adjustable over-pressure relief valve with by-pass to suction side is mounted on the pump. Normal execution is horizontal. If required, vertical version for bulkhead or with pedestal.

Connection:	suction and discharge socket on the same level (in-line). Bigger pump with SAE- or DIN-flanges, smaller pump with screwed sockets.
Temperature:	max. 100 °C, special design up to 150 °C
Capacity range:	0,1 – 100 m^3/h
Pump pressure:	up to 25 bar, special design for hydraulic oil up to 250 bar
Shaft sealing:	stuffing box, axial- or radial-sealing ring, mechanical seal
Materials:	casing: cast iron Gears and shaft: annealed steel
Driver:	electric motor, design form B3, B5 or V1 (gasoline / diesel engine is also possible)
Direction of rotation:	cw, if required: ccw

Gear pump

Gear pumps special design

for lubricating and non-lubricating fluid as well as for liquids with solids. The internal gear pump can be used for fluids of any viscosity, like solvents (1 mm^2/s) or chocolate (max. 1000.000 mm^2/s)

Capacity:	up to 180 m^3/h
Max. different pressure	16 bar
Viscosity:	to over 1000.000 mm^2/s
Temperature:	from -60 °C to +300 °C

Power transmission:	flexible coupling, motor power should be selected 20% more than pump requirement
Bearing:	sleeve bearing
Suction lift:	max. 5 m vacuum-metric
Viscosity/speed:	depending on viscosities the following pump speeds have to be selected

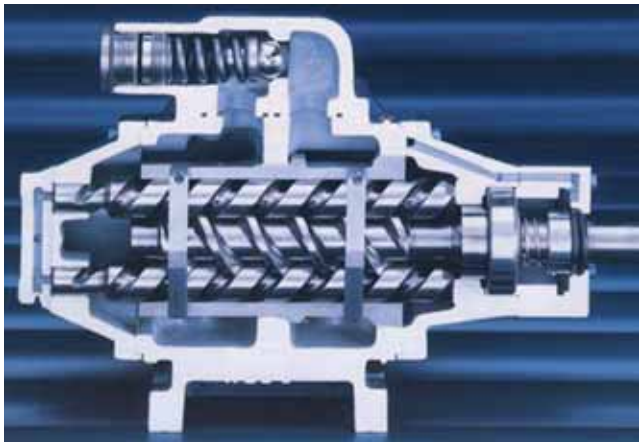
		50 Hz	60 Hz
viscosity approx.:	10 - 50°E	1500 l/min	1200 l/min
	50 - 200°E	1000 l/min	900 l/min
	200 - 300°E	750 l/min	600 l/min

The selfpriming positive displacement rotary pump for liquids of any viscosity used for example:

Aceton	Detergents	Laquer	Polyol
Acids	Diesel fuel	Lard	Printers ink
Alcohols	Ether	Liquefied gas	Resin
Alkalis	Fat	Lubricating oil	Soap
Asphalt	Freon	Methanol	Sodium silicate
Bitumen	Fruit juices	Milk	Solvents
Blood	Fuel oil	Milk of lime	Starch
Brine	Gelatine	Mineral oil	Syrup
Bunker fuel	Glue	Molasses	Tar
Chemicals	Glycerine	Must	Trichlorethylene
Chocolate	Glycol	Petrol	Varnish
Colours	Heat transfer oil	Petroleum	Viscose
Cream	Isocyanate	Pithc	Wax
Creosote	Kerosene	Plastifiers	Wine

Pumpen-Boettcher

Screw-type pump with internal bearings



Application:

as fuel-oil supply-, ringline- and transfer pump. Lubricating oil supply and circulating pump, tank drain pump, cooling-oil and hydraulic pump. Generally applicable to self-lubricating liquids without any content of grinding particles.

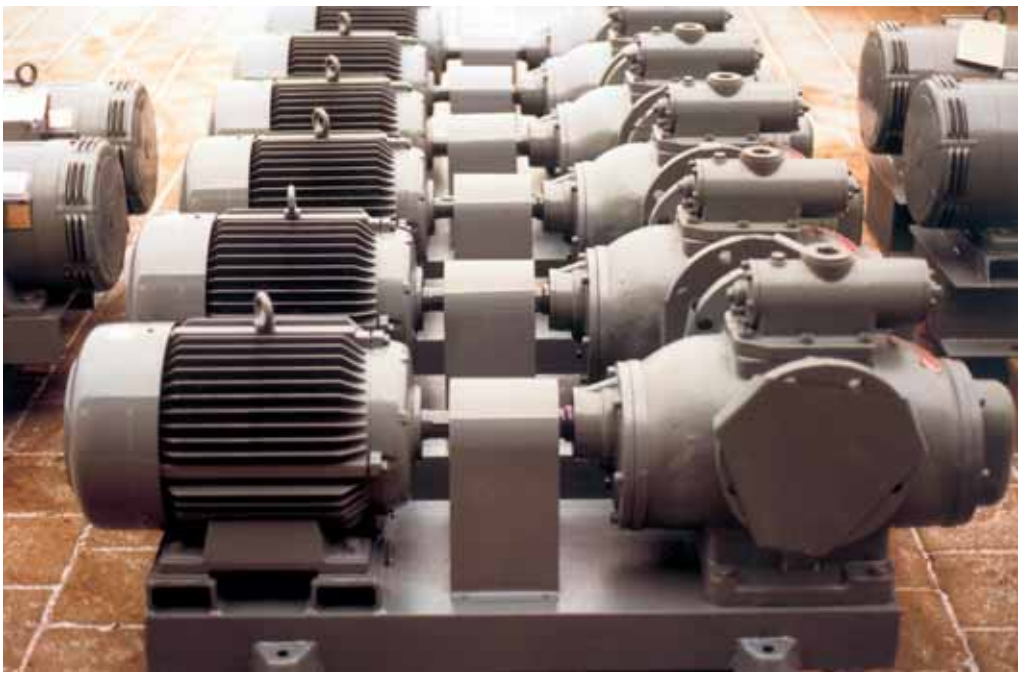
Design: **three** spindle, self-priming screw pump for low noise and continuous flow. As overpressure protection a safety valve is provided. The pump can be delivered with heating device electric or steam

Connections: suction and discharge on the same level (in-line).

Temperature: max. approx 150 °C (Please consider recommended inlet pressure for fuel pumps up to max. 150 °C)

Pump pressure: normal up to 16 bar, for medium with good self lubricating property higher pressures up to 100 bar are available.

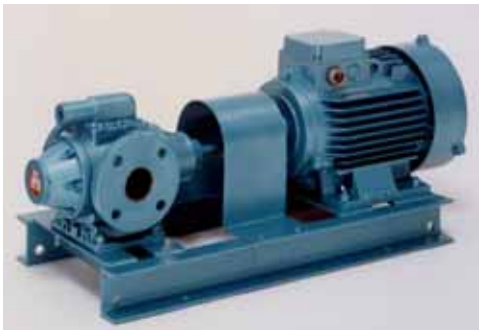
Capacity: 0,5 – 250 m^3/h



Screw-type pump with internal bearings

Shaft sealing:	radial sealing ring, stuffing box, mechanical seal	
Materials:	casing:	cast iron or spheroidal graphite iron
	spindles:	nitrided steel
Driver:	electric motor, diesel engine, steam turbine, mechanically, electrically or hydraulically controlled variable speed drives, V-belt drive.	
Direction of rotation:	cw, special design: ccw	
Power transmission:	flexible coupling or V-belt drive.	
Bearings of the pump:	spindles are supported in replaceable bearing bushes or in bearing housings. A roller bearing on the drive end cover used for the axial fixing of spindle block. The axial thrust, which acts on the supply screws is hydraulically balanced.	
Suction lift:	max. 8 m vacuum metric depending on viscosity and speed	
Viscosity:	marine standard up to 760 cst	

Vertical free-standing-design with pedestal

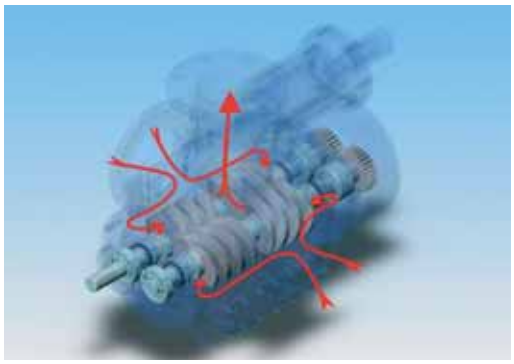


Horizontal design with base frame

Horizontal or vertical for bulkhead mounting

Pumpen-Boettcher

Screw-type pump with external bearings



Application:	**Marine:**	as cargo pumps for the transfer of H.F.O., M.D.O. gasoline etc. as a coolant pump or lubrication pump for marine diesel engines, turbines and gearboxes, for ballast transfer
	Refinery:	for the transfer of mazut, waste oil, fuel oil, lubricating oil, turbine hydraulic and gear oil, naphta and bitumen
	Chemical industry:	for the transfer of thin, highly viscous, neutral or aggressive mediums.

Special feature: pump is able to pump non-lubricating medium such as for example water

Design: **two** spindle, self-priming screw pump for low noise and continuous flow. As over-pressure protection a safety valve is provided. The pump can be delivered with heating device for electric, steam and thermo oil

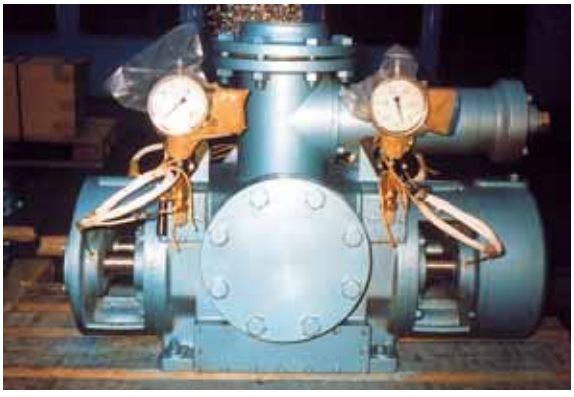
Connections: suction at both sides (big advantage), discharge at top

Temperature: max. approx 120 °C

Pump pressure: normal up to 16 bar, for medium with good self lubricating property higher pressures up to 100 bar are available.

Capacity: 10 – 1500 m^3/h

Total head: up to 160 m



Horizontal design with temperature control for the bearings

Screw-type pump with external bearings

Shaft sealing: stuffing box, mechanical seal

Materials:

normal design: casing and screws
special design: casing: cast steel, steel welded, spheroidal graphite iron, bronze, aluminium and stainless steel

Driver: electric motor, diesel engine, steam turbine, mechanically, electrically or hydraulically controlled variable speed drives, V-belt drive.

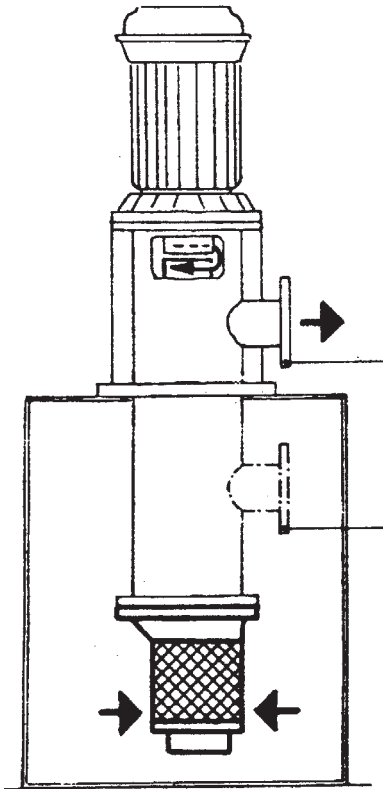
Direction of rotation: cw or ccw

Power transmission: flexible coupling or V-belt drive.

Bearings of the pump: the bearings are arranged outside the supply room. Driving of the running spindle is driven via a cogwheel gearing.

Suction lift: max. 8 m vacuum metric depending on viscosity and speed

Viscosity: up to 15000 ° E or more, if a free flow of the liquid to the pump or a supply by a booster is ensured.



Pumpen-Boettcher

Eccentric helical rotor pump

Application:
Handling abrasive, neutral or aggressive liquids, the viscosity and consistency of which may be just fluid. Medium with fibrous content or containing very high proportions of solids, as well as gasous, aerated and foaming compounds can also be pumped safely. This pump is used especially in food-, chemical-, ceramic-, cosmetic-, cellulose-, plastic-, soap- and fat-industry, agriculture, filter technique, ship-building, water treatment plants.

Design:
Horizontal or vertical self-priming eccentric helical rotor pumps. Stator and rotor (wearing parts) are replaceable.

Pump and motor are connected flexibly to each other and mounted on a common base plate. A relief valve must be provided on the discharge side of the pump if a shut-off valve is installed on pump outlet. If a dry running may occur the pump must be protected by separate equipment.

Connections:	suction socket	vertical upwards
	discharge socket	axial
	if direction of rotation changed	connections opposite
	Pump with flange connections (smaller pumps with inner thread)	
Temperature:	max. 200° C	
Capacity range:	0,1 – 600 m³/h	
Delivery head:	max. 400 m	
Shaft sealing:	stuffing box or mechanical seal	

Eccentric helical rotor pump

Materials:

Casing:	cast iron, steel, stainless steel or cast iron inside rubberized
Rotor and shaft:	stainless steel
Stator:	perbunan, natural rubber, neoprene, hypalon, silicon, buna, viton, polyethylene, polyamide, teflon etc.

Driver:
Electric motor, geared motor, infinitely variable gear, gasoline- or diesel-engine by means of flexible coupling. V-belt drive and chain drive.

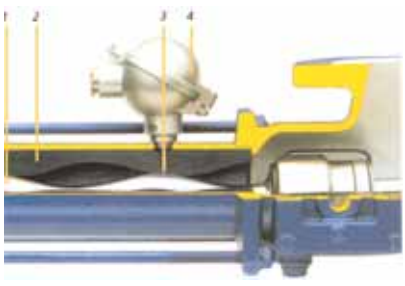
Direction of rotation:
ccw (if required cw in this case suction axial, discharge vertical upwards)

Bearing:
Two grease lubricated ball bearings in bearing housing. The rotor is connected by two cardan joints and the universal joint with the drive shaft rotates. The cardan joints are necessary so that the rotary motion of the driver can be transmitted to the rotor which is eccentrically located in the stator.

Suction lift:
max. 8 m (depending on medium and viscosity)

Type of construction:
The pump can be delivered as express cleaning model; as vertical submerged model; as block pump and in many other special designs.

For pumping extremely viscous, pasty or hardly pumpable medium or medium with a content of solid matter (up to 60 % drying agent) on the universal joint a screw conveyor is mounted transporting this very viscous medium into the handling elements to avoid failure.



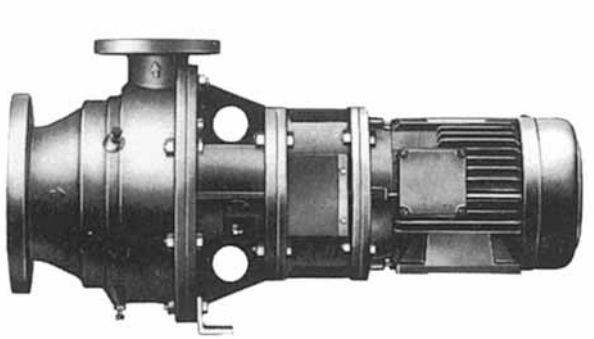
dry running protection

Pumps´ special features for use in oil and gas installations on and offshore

flow rater:	starting from 0.1 l/hr (0.026 usgph) for precise dosing of liquids with accuracies of ±1 % Volumes of 350 m^3/h (1542 usgpm) at speeds of approx. 350 rpm can be achieved e.g. for transporting drilling mud, crude oil, etc.
pressure:	up to 144 bar (2088 psi) can be achieved e.g. Down Hole Pump used in oilfield installations for oil extraction
API 373	pumps can be manufactured in accordance with API 676 "Rotary Positive Displacement Pumps"

Pumpen-Boettcher

Size reduction technique



Application: Size reduction units chop solids conveyed in liquids like wood, textiles, plastics, paper, rubber, bones, skins, glass etc. and make them pumpable. After treatment the solids have a grain size of approx. 3,5 mm and fibres a size of approx. 1,5 cm^2.
(As metal parts and stones destroy the cutting tools of the impeller, a collecting tank should be installed in front of a size reduction unit to separate them)

Design:

Tank mounting:	for lateral installation to a collection tank or basin. These size reduction units work as disintegrator pump with a delivery head of 3 m and thus automatically lead back the chopped particles into the main flow.
Pipeline mounting:	for direct installation into the piping. With this design the size reduction unit must be stopped by a helical rotor pump sucking the solids through the size reduction unit and pumping it into the plant for further treatment.
Connections:	unit for tank mounting with axial pointed suction- and sidewards pointed discharge socket. unit for pipeline mounting = inline flange design
Temperature:	max. 80 °C
Capacity range:	10 – 80 m^3/h (max. through-put by sludge of 3 % dry substance)
Shaft sealing:	mechanical seal, which must be supplied with seal water (2 bar above the system pressure)

Driver, power transmission and bearing:

Tank mounting design:	electric standard motor, building form B 3 / B 5, ball bearing in bearing casing with flexible coupling
Pipeline mounting design:	electric motor, building form V 1 with special bearing, because complete bearing from motor, motor shaft = pump shaft

Peristaltic pumps

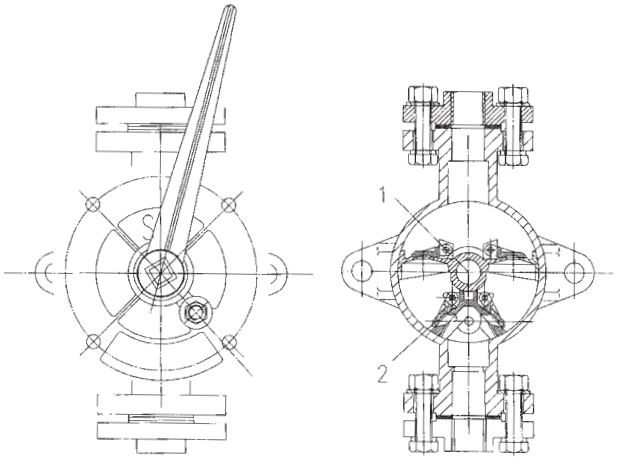
Benefits at a glance:

- ideal for abrasive, viscous and shear sensitive media
- gentle pumping of liquid or viscous products
- constant volume capacity due to vacuum support
- dry running resistant
- integrated early warning system
- pumping of media with entrained solids
- unobstructed fluid flow – easy cleaning
- free of dynamic and pressure loaded seals
- infinite regulation of capacity
- easy operation and servicing, only one wear item

Main application:	chemical industry, ceramic and porcelain industry, food and beverage industry, breweries, cosmetic and pharmaceutical industry, power stations, colour and painting industry, waste and disposal industry
Design:	horizontal pump for electric drive or by gasoline or diesel engine
Bearing:	ball bearings
Lubricant filling:	silicon oil, glycerin
Materials:	stainless steel, Polypropylene, PVDF
Hose:	Natural Rubber (NR), Nitrile (NBR), Hypalone, Butyl, EPDM
Connections:	male thread
capacity range:	0,1 – 25 m^3/h
total head:	max. 13 bar
suction lift:	max. 9,5 m
Elastomers:	**Natural rubber (NR)** Properties: tension-resistant, elastic, cold-resistant, approved for food applications Operative range: for abrasive media, diluted acids and alkalis Temperature range: - 20 °C - +80 °C **Nitrile rubber (NBR)** Properties: wear-resistant, grease and oil resistant Operative range: for oily and greasy media, alcohols Temperature range: -10 °C - +80 °C **Butyl rubber** Properties: heat resistant and non-aging, gas-tight Operative range: for organic and inorganic acids alkalis, ketones and hot water Temperature range: -25 °C - + 80 °C **Hypalon** Properties: chemical resistant, wear resistant Operative range: for acids and alkalis, colours Temperature range: - 20 °C - + 80 °C **EPDM** Properties: chemical resistant, good insulating properties and outside applications Operative range: for acids and alkalis, hot water Temperature range: - 30 °C - + 80 °C

Hand pump

semi-rotating wing pump



Function- and operating description

the function of the pump will be performed by moving the pump shaft by swinging the hand lever and the piston wing (1) with the integrated flaps in connection with the suction divider (2) and its integrated flaps, the medium will be sucked in and discharged. The integrated flaps in the suction divider (2) and the piston wing (1) will open under the left or right side of the pump. They will close by further strokes in the opposite direction by the medium when discharging.
In connection with the Semi-Rotating Piston Wing Pump and an electrical pump as compact unit the discharged medium from the electrical pump passes through the piston wing pump and opens the flaps. As soon as the flow is interrupted the flaps will close and prevent the backflow. In this case the flaps are acting as a check valve.

Application: The pump is suitable for the following liquids:
water, diesel fuel, bunker oil, alcohol, parafine, all not aggressive liquids, greasing oil up to a viscosity of 40 °E, LPG with special shaft sealing, thermo oil in special design.

Pump features:
piston wing conical, for safe operation and long life
piston wing control flaps with grinded seat
bronze bearing for shaft in body and cover
o-ring sealing between cover and body
material and material combination corrosion safe
additional reinforced mounting possibilitiy
freezing safe for water application (drain screw)
quality and function control for each pump
for zero-leakage additional check valve integrated
self-priming is guaranteed by integrated check valve

Materials: casing cast iron, piston wing and suction divider brass, bearing bronze
for seawater we can deliver material bronze
Connection: oval flanges with counter flanges
Suction lift: max. 7 m
discharge head: max. 25 m
temperature: max 80 ºC (special design up to 200 ºC)

size No.	connection inch	capacity ca. l/min	number of strokes/min	weight ca. kp
00	3/8	7,5	80	3
0	1/2	11,5	65	4
1	3/4	17,25	60	6
2	1	22,5	55	8
3	1 1/4	29	50	10
4	1 1/4	43,25	50	12
5	1 1/2	53,5	45	15

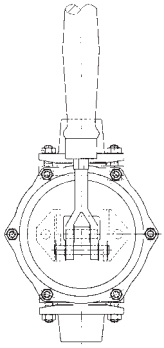
Hand pump

Barrel pumps

suitable for standard 200 liter barrel

Material: cast iron,
PVC (for seawater)

Operation: hand level or
rotating actuator



Diaphragm pump, suction and discharge pump casing cast iron, diaphragm and ball valve made of rubber

Connection	1¼"	1½"
Capacity ca.	40 l/min	50 l/min
Delivery head ca.	15 m	15 m

Pressure- and test-pump
up to 50 bar pressure, with single piston, pump-casing made of special casting, valves made of bronze, with shut-off valve, drain valve, galvanized water reservoir and pressure gauge

Piston Ø	30 mm
Piston stroke	40 mm
Operation pressure	50 bar
Reservoir dimension	430 x 310 x 330 mm
Weight	14 kp

(with single piston available up to 100 bar, with double piston up to 1000 bar)

Ejector

Application:

Bilge Ejector:
for all sorts of bilges e.g. engine bilges, cargo hold bilges, chain lockers, peak tanks, sludge tanks, gutters, septic tanks, or for pumping soot deriving from boiler cleaning, sludge from cargo hold cleaning

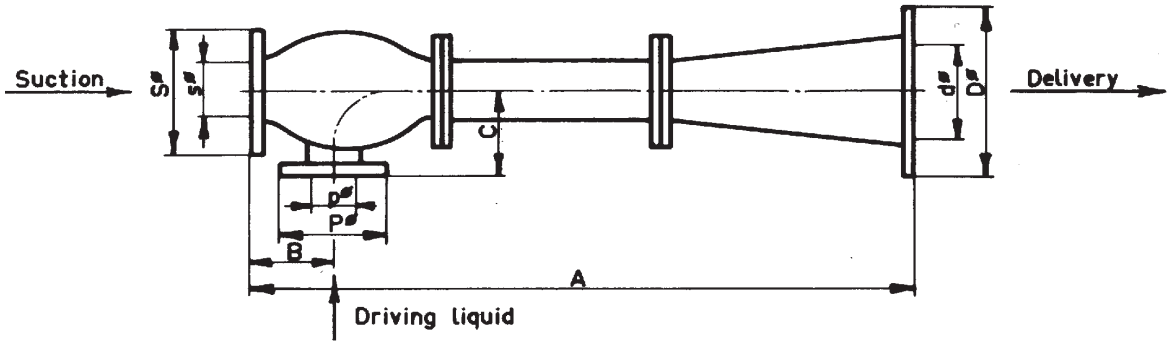
Stripping ejector:
i.e. for stripping out the remaining oil (-sludge) in cargo tanks and other tanks

Portable ejector:
with hose connections to be used where fixed installations are lacking

Cleaning ejector:
with hoses for vacuum-cleaning or cargo-holds

Evacuating ejector:
for evacuating air, e.g. from a central vacuum tank (priming ejector)

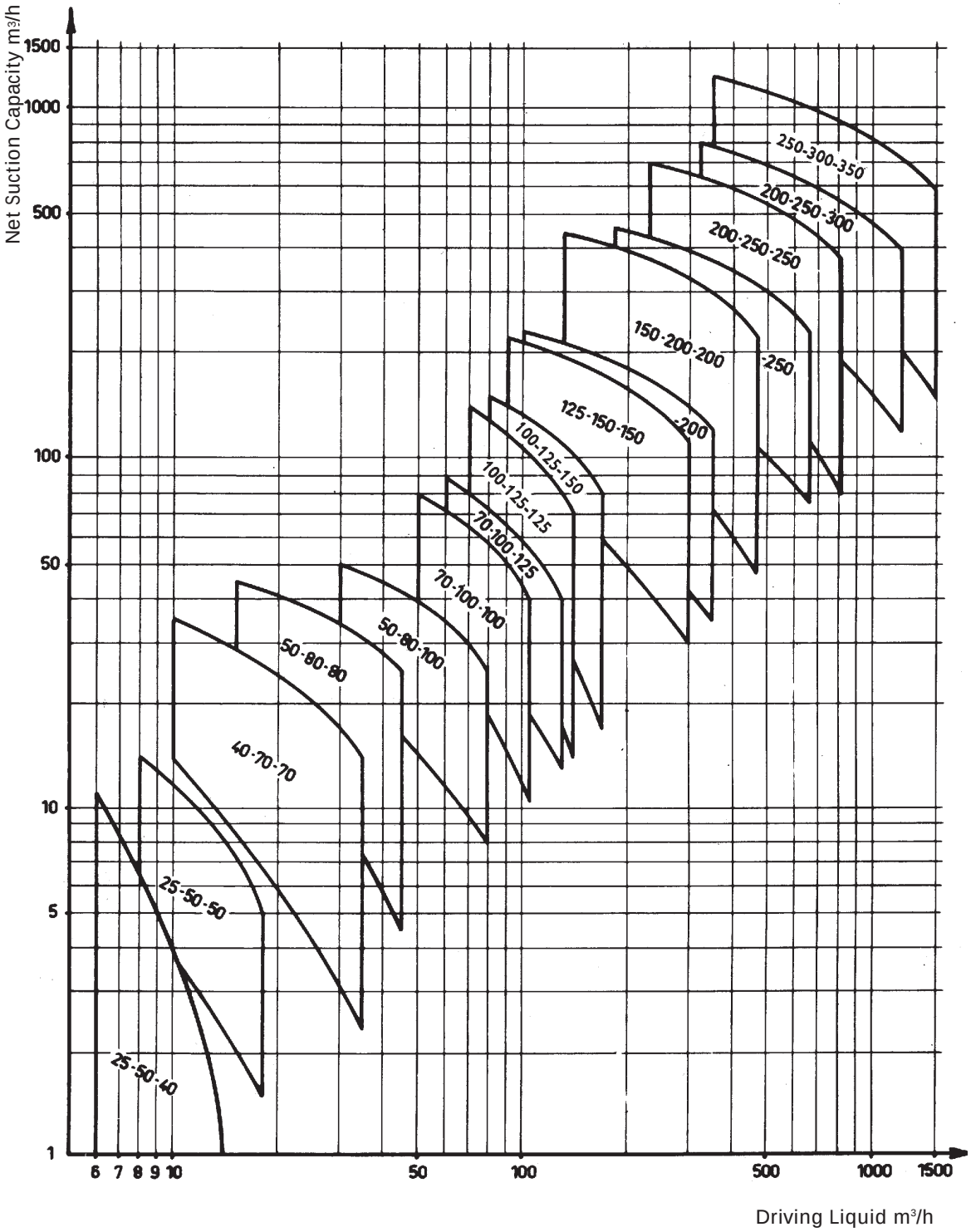
Materials: bronze, cast iron, cast steel, stainless steel



Ejector type	A	B	C	pØ	PØ	sØ	SØ	dØ	DØ	Kgs
25- 50- 40	385	40	39	1" BSP socket		2" BSP socket		1 ½" BSP nipple		2
25- 50- 50	456	40	39	1"		2"		2"		3
40- 70- 70	600	60	70	1 ½"		2 ½"		2 ½"		10
50- 80- 80	794	115	130	50	165	80	200	80	200	35
50- 80- 100	940	115	130	50	165	80	200	100	220	46
70- 100- 100	965	123	138	70	185	100	220	100	220	47
70- 100- 125	1230	123	138	70	185	100	220	125	250	62
100- 100- 125	1230	124	153	70	185	125	250	125	250	64
100- 125- 150	1265	124	153	70	185	125	250	150	285	66
125- 150- 150	1238	162	180	125	250	150	285	150	285	125
125- 150- 200	1606	162	180	125	250	150	285	200	340	155
150- 200- 200	1855	180	215	150	285	200	340	200	340	220
150- 200- 250	1905	180	215	150	285	200	340	250	395	230
200- 250- 250	2190	230	250	200	340	250	395	250	395	260
200- 250- 300	2295	230	250	200	340	250	395	300	445	290
250- 300- 350	2510	280	275	250	395	300	445	350	505	485

Ejector

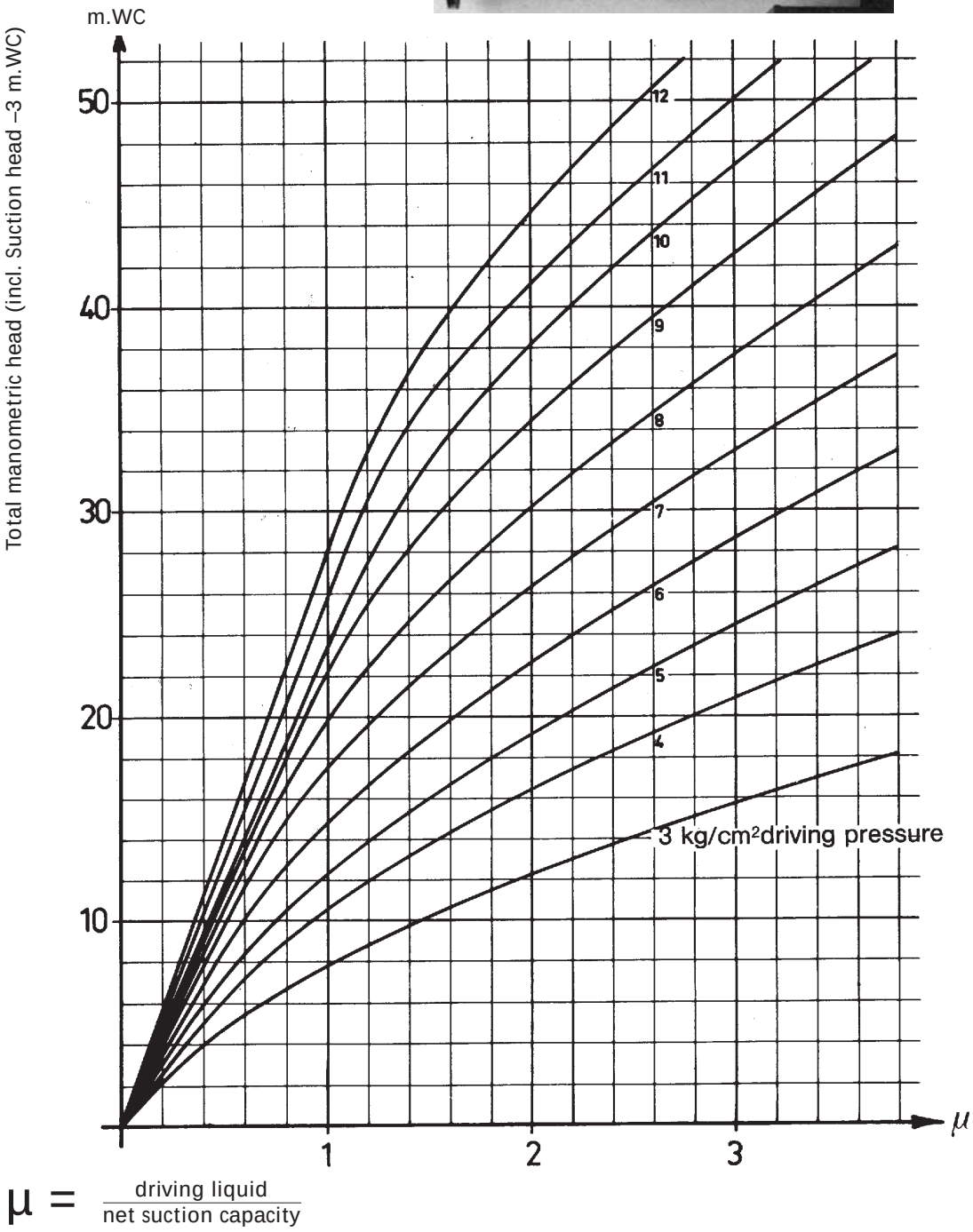
Sizes and capacities axial suction, sidewards driving liquid injection



Pumpen-Boettcher

Ejector

Total heads –
μ relations rough estimate



$$\mu = \frac{\text{driving liquid}}{\text{net suction capacity}}$$

Curve gives a rough estimate on the applicability of your requirements.
Example: Required capacity/head: 200 m³/h – 15 m W.C.
Driving pressure available: 7 bar
From curve (15 m + 7 bar): μ = 0,8
Driving liquid injection needed: 200 m³/h x 0,8 = 160 m³/h.