



# GANZ ENGINEERING AND ENERGY PRODUCTION MACHINERY LLC.

# PUMPS

## PUMPS FOR A WIDE RANGE OF DIFFERENT INDUSTRIAL APPLICATIONS



The first pumps made by Ganz were manufactured in 1860. Since then our company has produced and shipped many thousands of different pumps, pumping units and complete pumping stations all over the world.

Our tailor made, custom designed pumps; medium and large size axial, mixed-flow, double-suction centrifugal and submersible pumps are perfect for application in waterworks, irrigation and drainage systems as well as in industrial water supplies and cooling systems for power plants ( $0.100 < Q < 20$  cum/sec,  $H < 150$ m).

## PRODUCT RANGE OF PUMPS

- Water supply with potable and raw water
- Hot water supply for industry and district heating
- Sewage handling and storm water pumping
- Land drainage and irrigation
- Cooling water circulating pumps for industrial and power plant systems
- Mine dewatering pumps



## DIESEL ENGINE DRIVEN PUMP

## BAP 500-III

### GENERAL SPECIFICATION

Horizontal-shaft, Diesel-powered pump with spiral casing and opened mixed-flow impeller.

### CONSTRUCTION DETAILS

The BAP 500-III type aggregate consists of a pump with spiral casing having an opened mixed flow impeller, and a Diesel engine which are connected by a flexible coupling. In the discharge nozzle of the pump casing there is a flap valve which is adjustable by means of handwheel. Priming of the pump casing at starting is by means of an exhaust-operated gas-jet air pump. The cover age of the engine is made of welded steel sheet construction with two lockable doors. The pump and the engine are mounted on a wide sledge runners. This solution ensures safe operation of the unit even on wet ground. The engine is equipped with a mechanical starter so at operating there is no need for storage battery. The equipment has a protection against overheating, shortage of lubrication and fuel and V-belt rupture. In these cases the protection stops the aggregate.

### MEDIUM HANDLED

Clean water at temperature not exceeding 40 to 45 °C, neutral in reaction and silty water containing no large solids. Max. silt content: 1000 mg/dm<sup>3</sup>.

### FIELD OF APPLICATION

These pumps are used primarily for land drainage, lifting and irrigation. However, they can be used advantageously in places where, in default of installed energy sources, quick installation and putting into operation is required.

### PACKING

Stuffing box with grease.

### BEARING SUPPORT

The gear drive and the pump are carried in oil-lubricated roller bearings.

### MAIN STRUCTURAL MATERIALS

Impeller, flap valve and flap valve casing: iron. Suction pipe, spiral casing, gear: aluminium casting. Pump shaft, flap valve shaft: carbon steel. Sledge runner: welded steel.

### THE TYPES OF ENGINE

DEUTZ F5L 912 – or according to the order.

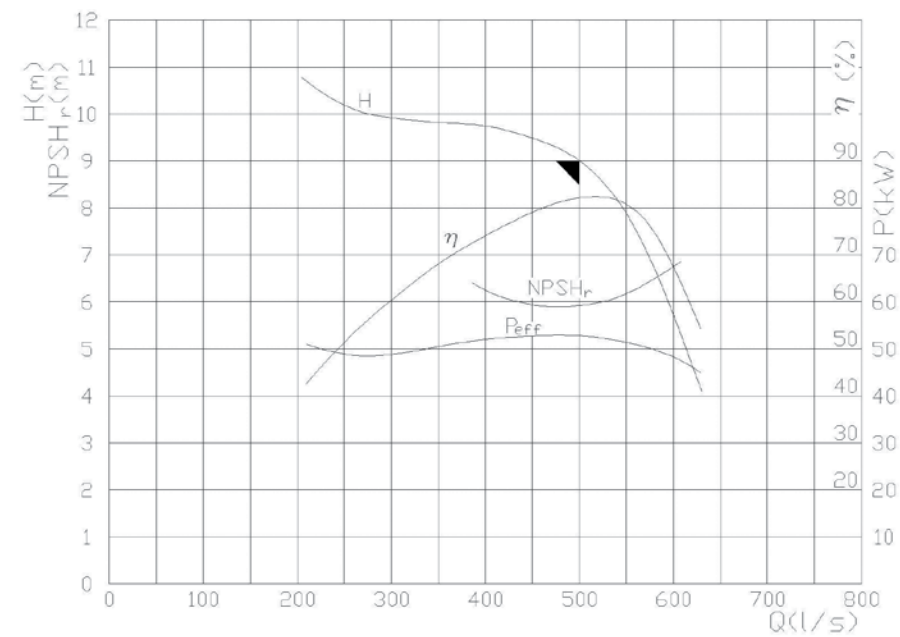




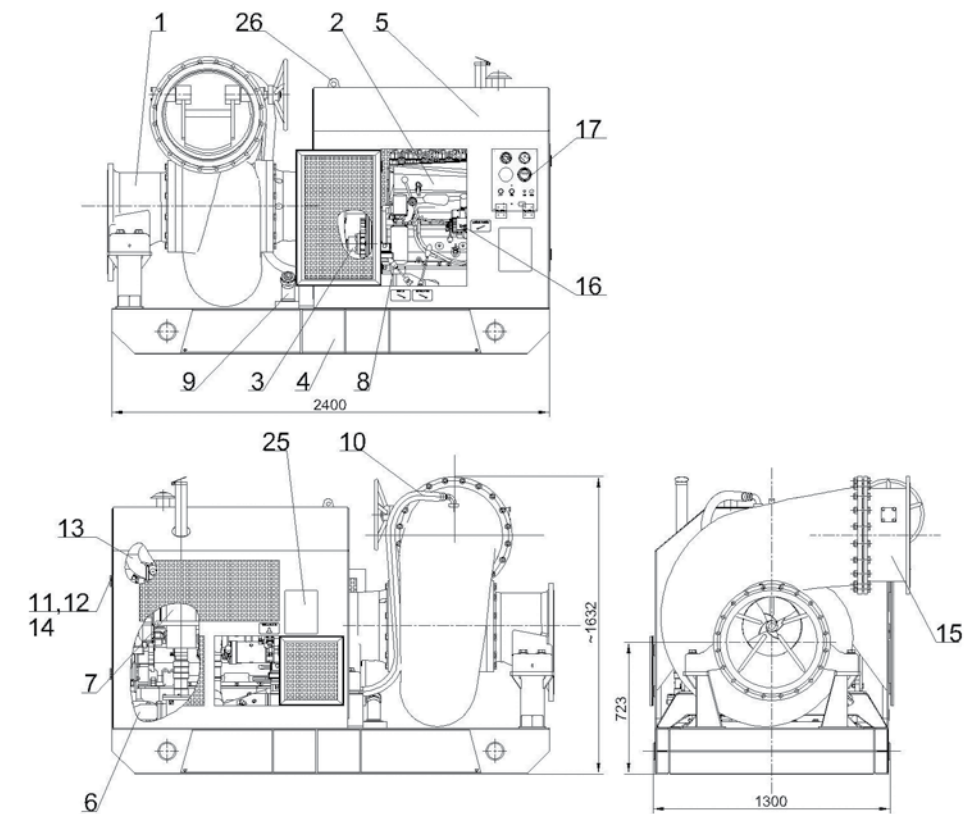
## INSTRUMENTS AND SENSORS

- Oil-pressure indicator;
- Tachometer;
- Service hours counter;
- Fuel level indicator;
- Engine temperature sensor;
- V-belt rupture sensor.

## CHARACTERISTICS OF BAP 500 PUMP

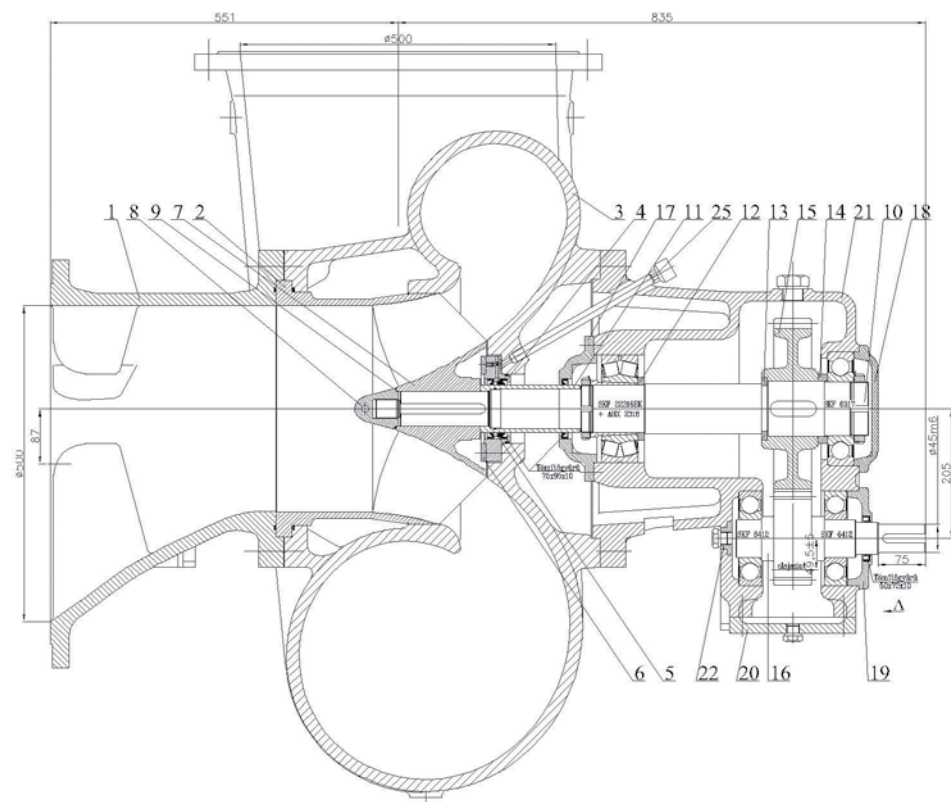


## OUTLINE DRAWING OF BAP 500-III LAND DRAINAGE PUMP WITH DEUTZ ENGINE



- |                       |                                 |
|-----------------------|---------------------------------|
| 1. Pump               | 10. Air removing tube           |
| 2. Diesel engine      | 11. Air suction pipe            |
| 3. Coupling           | 12. Cooling air drive           |
| 4. Sledge runner      | 13. Air filter                  |
| 5. Engine cover       | 14. Cooling air pipe            |
| 6. Gas-jet air pump   | 15. Flap valve                  |
| 7. Exhaust system     | 16. Mechanism for gas rationing |
| 8. Mechanical starter | 17. Instrument board            |
| 9. Fuel tank          | 18-25. Boards                   |

## SECTIONAL DRAWING OF BAP 500-III PUMP



- |                                   |                                |
|-----------------------------------|--------------------------------|
| 1. Suction pipe                   | 8. Shaft end nut               |
| 2. Insert for suction pipe        | 10. Pump shaft                 |
| 3. Pump casing                    | 11-14. Shaft protecting sleeve |
| 4. Insert for stuffing box casing | 15. Gear                       |
| 5. Greaser ring                   | 16. Shaft for gearbox          |
| 6. Cover for stuffing box casing  | 17. Gearbox casing             |
| 7. Impeller                       | 18. Greaser pipe               |

## SEWAGE PUMPS

BD

### GENERAL SPECIFICATION

Horizontal-shaft, single-entry, single-stage non clogging sewage pump with pressure chamber and overhanging bearing support.

### CONSTRUCTIONAL DETAILS

The pump consists of two parts namely the foot type pump housing with pressure chamber and the rotor carried in overhanging ball bearings.

### MEDIUM HANDLED

Non-aggressive household, industrial and slaughterhouse sewage containing also coarse-grained contaminants and fibrous materials. Max. density: 1300 kg/m<sup>3</sup>. The silt content may not exceed 10 per cent by volume.

### FIELD OF APPLICATION

Municipal and industrial sewage treatment plants.

### PACKING

Teflon-cord-packed or mechanical stuffing box.

### BEARING SUPPORT

Deep-groove ball bearing or self-aligning roller bearing at one side and two angular-contact ball bearings in a face-to-face arrangement or a double-row self-aligning ball bearing at the other side, the choice being dependent upon the pump size.

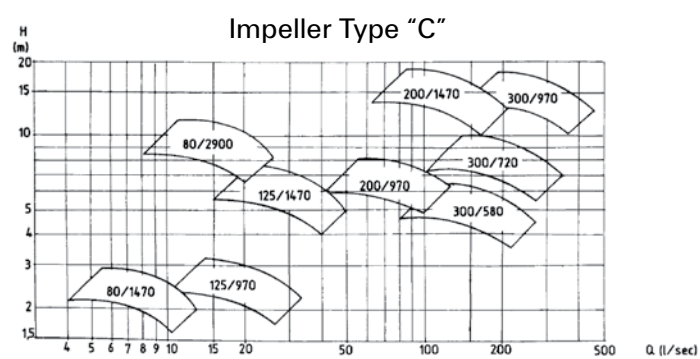
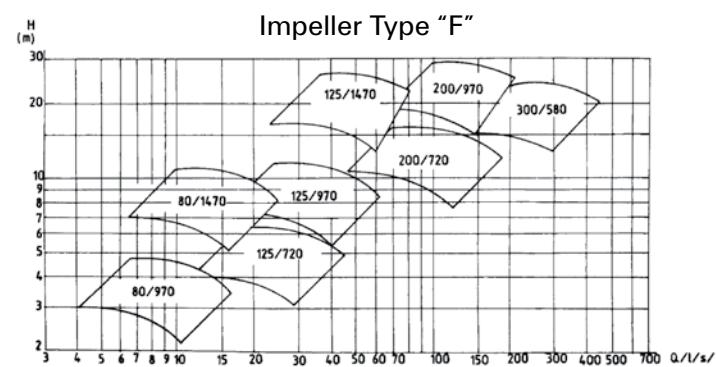
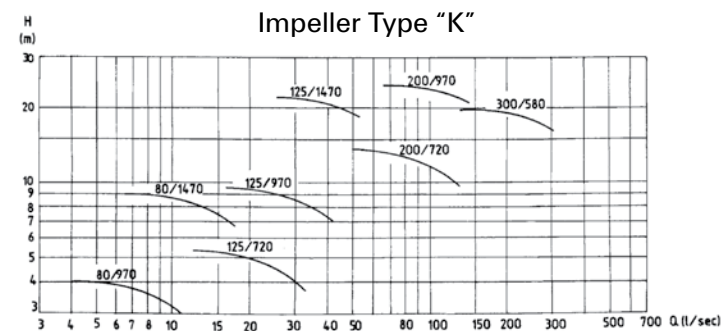
### MAIN STRUCTURAL MATERIALS

Impeller, covers with stuffing box and suction branch, pump casing: cast-iron.  
Wearing ring, base bushing, water seal ring: non-ferrous metal  
Shaft: carbon steel  
Shaft sleeve: corrosion-resistant steel

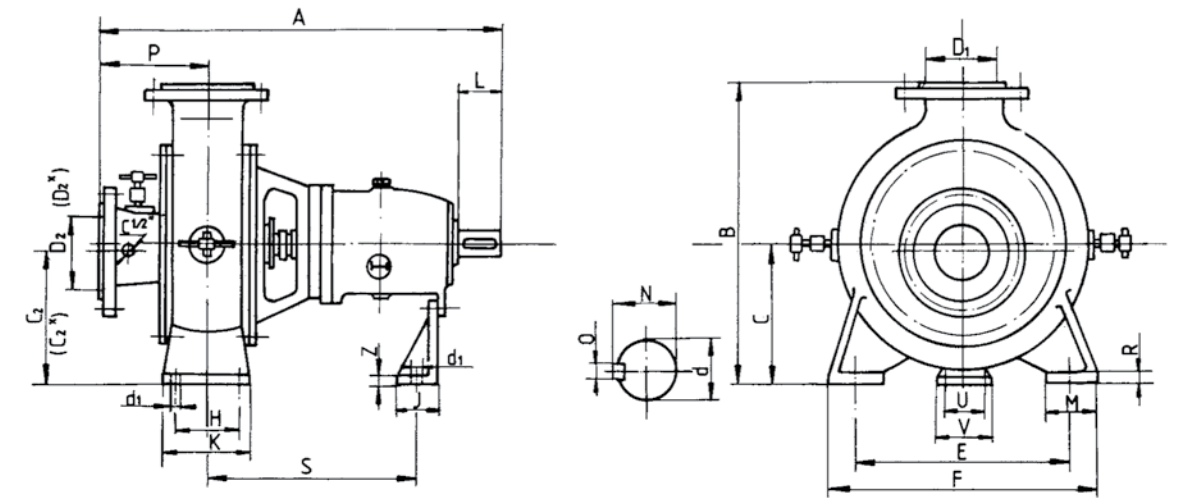




## PERFORMANCE RANGES OF BD PUMPS



## OUTLINE DRAWING OF BD PUMP

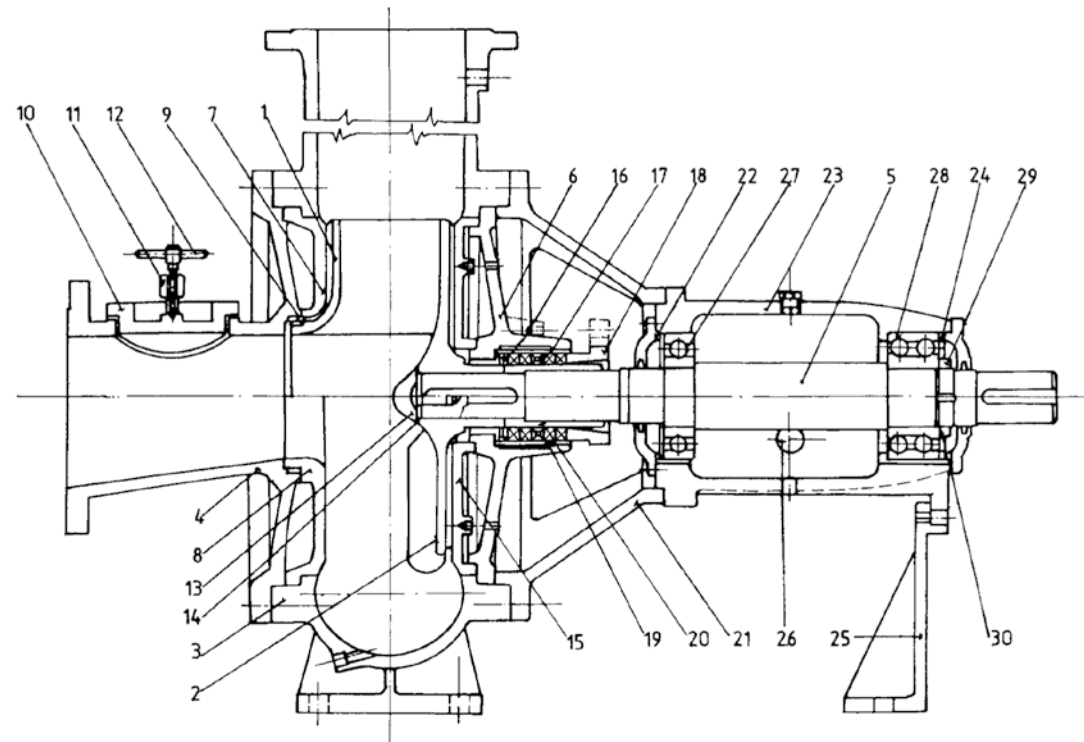


Type	A	B	C <sub>1</sub>	C <sub>2</sub>	C <sub>2</sub> *	D <sub>1</sub>	D <sub>2</sub>	D <sub>2</sub> *	d	d <sub>1</sub>	E	F
BD 80	782	400	180	173,5	174	80	80	100	42	18	230	300
BD 125	995	625	280	269,5	273,7	125	125	150	55	23	400	500
BD 200	1135	1000	425	408,5	410	200	200	250	70	27	630	750
BD 300	2020	1400	600	475	590	300	300	350	120	27	775	900

Type	H	J	K	L	M	N	O	P	R	S	U	V	Z
BD 80	110	70	150	80	70	45	12	230	18	390	60	100	12
BD 125	150	95	200	80	100	59,3	16	300	20	510	90	140	15
BD 200	190	110	250	105	120	74,5	20	433	25	674	110	170	16
BD 300	230	150	300	210	145	127	32	600	28	1050	140	200	20

Dimensions in mm.  
Flanges to NP 10.

## SECTIONAL DRAWING OF BD PUMPS



- |                                    |                                     |                                  |
|------------------------------------|-------------------------------------|----------------------------------|
| 1. Impeller I.                     | 10. Manhole cover                   | 20. Shaft sleeve                 |
| 2. Impeller II.                    | 11. Press yoke                      | 21. Distance piece               |
| 3. Casing                          | 12. Press arm                       | 22. Bearing cover                |
| 4. Suction cover                   | 13. Impeller screw                  | 23. Bearing housing              |
| 5. Shaft                           | 14. Locking plate                   | 24. Shoulder ring                |
| 6. Stuffing box cover              | 15. Wearing disc, stuffing box side | 25. Foot                         |
| 7. Wearing disc I. – suction side  | 16. Neck bush                       | 26. Oil level window             |
| 8. Wearing disc II. – suction side | 17. Lantern ring                    | 27. Ball bearing                 |
| 9. Wearing ring                    | 18. Stuffing gland                  | 28. Angular contact ball bearing |
|                                    | 19. Stuffing box bush               | 29. Bearing nut                  |
|                                    |                                     | 30. Locking plate                |

## STORMWATER PUMPS

BDv

### GENERAL SPECIFICATION

Vertical-shaft, non-clogging mixed-flow stormwater pump with annular discharge chamber.

### CONSTRUCTIONAL DETAILS

The suction pipe is vertical while the discharge branch is horizontal. The base built integral with the bottom part of the pump casing can be formed in two ways, namely with wet pit, or dry pit for use with pipeline. The top part built integral with the stuffing box serves also as support for the electric motor. The latter can, however, be placed on a separate floor as well.

### MEDIUM HANDLED

Stormwater which may contain coarse-grained and fibrous floating matter as well.

### FIELD OF APPLICATION

Stormwater pumping plants, particularly if there is a common stormwater and sewage drainage system.

### PACKING

Teflon-cord-packed or mechanical stuffing box.

### BEARING SUPPORT

The thrust bearing is a self-aligning axial roller bearing immersed in oil, the guide bearing being a greaselubricated self-aligning roller bearing.

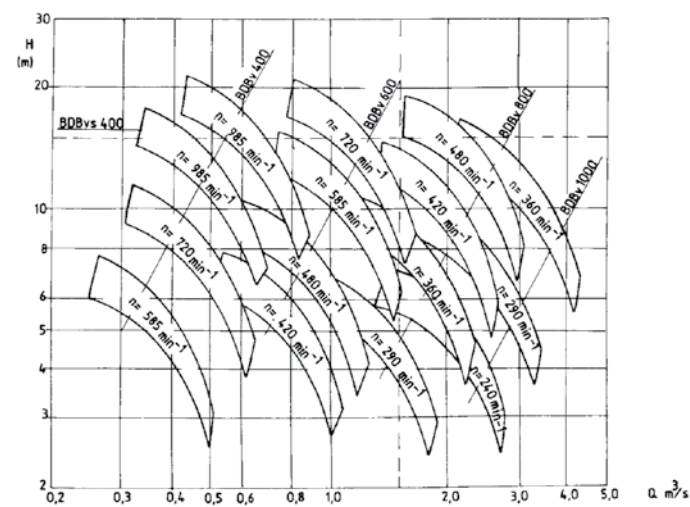
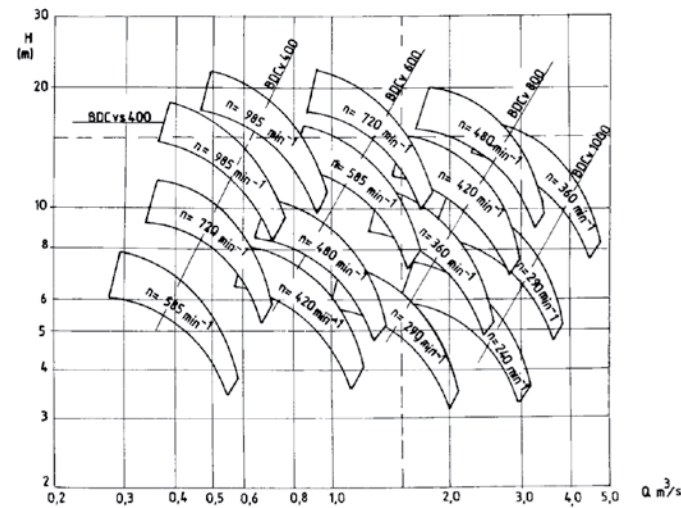
### MAIN STRUCTURAL MATERIALS

Impeller, shaft sleeve: corrosion-resistant steel  
Pump casing, wear inserts: cast-iron  
Shaft: carbon steel

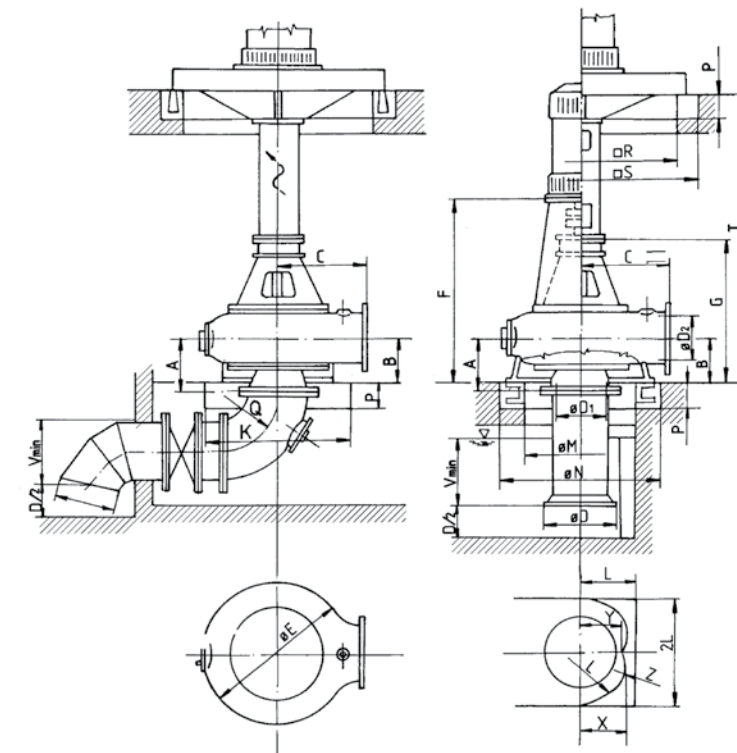




## PERFORMANCE RANGES OF BDCv PUMPS



## OUTLINE DRAWINGS OF BDv PUMP

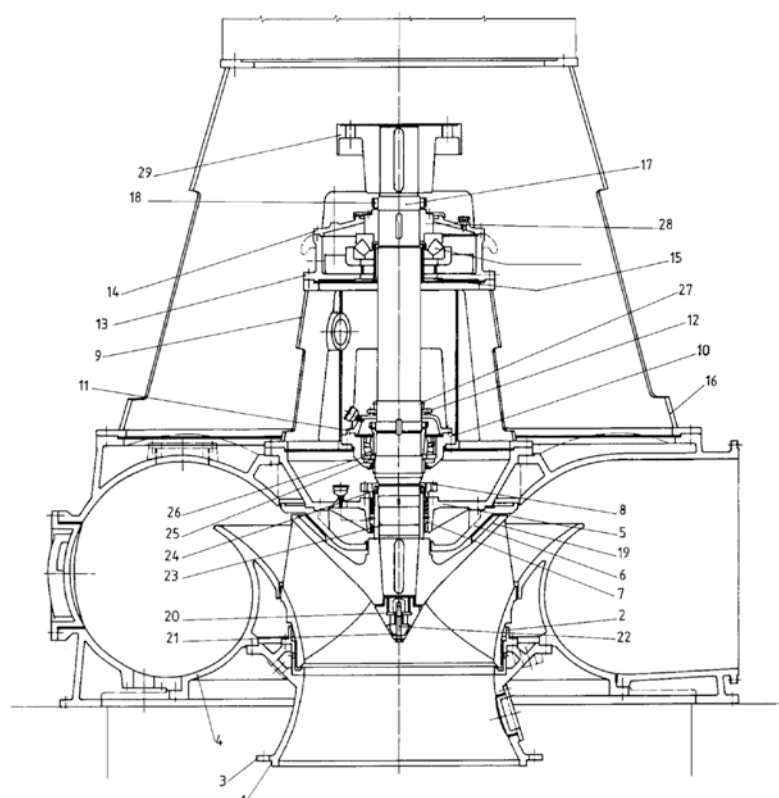


Type	A	B	C	D	D <sub>1</sub>	D <sub>2</sub>	E	F	G	L	M
BDCv 400	300	400	800	600	500	400	1800	1700	1400	600	1000
BDCv 600	700	600	1200	900	700	600	1940	2500	1900	900	1500
BDCv 800	800	650	1600	1200	1000	800	2640	3000	2200	1200	2200
BDCv 1000	1000	680	2000	1600	1200	1000	3210	3120	2300	1500	2700

Type	N	K	Q <sub>min</sub>	P	R	S	T <sub>max</sub>	V <sub>min</sub>	Z	Y	X
BDCv 400	1600	1300	600	300	1600	2200	12 000	700	300	350	400
BDCv 600	2200	2000	800	350	2400	3100	12 000	900	450	500	600
BDCv 800	3000	2600	1100	350	3100	3900	12 000	1200	600	650	800
BDCv 1000	3600	3200	1300	400	3800	4700	12 000	1500	750	800	1000

Dimensions in mm.  
Flanges to NP 10.

## SECTIONAL DRAWING OF BDv PUMPS



- |                               |                                  |                                  |
|-------------------------------|----------------------------------|----------------------------------|
| 1. Suction bell               | 11. Bearing spider cover         | 20. Impeller screw               |
| 2. Casing wear ring           | 12. Clamp plate                  | 21. Closing cover                |
| 3. Insert for delivery casing | 13. Thrust bearing housing       | 22. Locking screw                |
| 4. Delivery casing            | 14. Thrust bearing housing cover | 23. Shaft sleeve                 |
| 5. Delivery casing cover      | 15. Oil retaining tube           | 24. Shaft nut                    |
| 6. Wearing disc               | 16. Motor stool                  | 25. Shoulder ring                |
| 7. Neck bush                  | 17. Shaft                        | 26. Bearing remover sleeve       |
| 8. Stuffing gland             | 18. Shaft nut                    | 27. Protecting disc              |
| 9. Bearing support            | 19. Impeller                     | 28. Centering sleeve for bearing |
| 10. Bearing spider            |                                  | 29. Coupling                     |

## HOT WATER PUMPS

Bf

## GENERAL SPECIFICATION

Horizontal-shaft, single-entry, single stage pump with volute casing and overhanging bearing support to be built into a pressurized system for hot water circulation. The max. pressure at the suction side is 25 bars.

## CONSTRUCTIONAL FEATURES

The pump consists of two parts, namely the scroll casing cast integral with the suction branches and provided with feet, and the rotor carried in ball bearings in the bearing bracket.

## MEDIUM HANDLED

Clean hot water at a temperature of max. 200 °C and industrial water. Max. silt content: 5 g/dm<sup>3</sup>. Particle size: max. 0.1 mm.

## FIELD OF APPLICATION

Primarily in the systems of heating centres as circulating pumps.

## PACKING

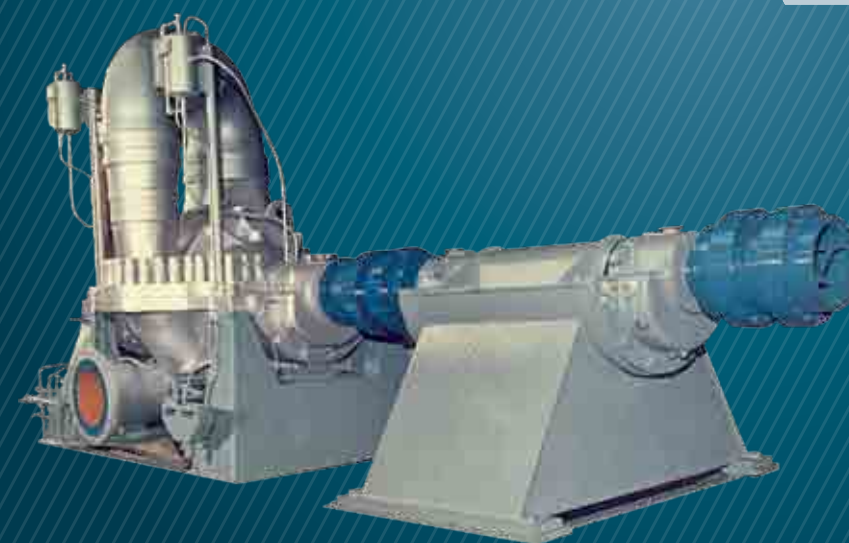
Teflon-cord-packed or mechanical stuffing box which can be cooled.

## BEARING SUPPORT

Deep-groove ball bearing at the pump side and two angular-contact bearings placed opposite to each other on the shaft coupling side. The oil, if necessary, can be cooled with a cooling coil to be installed in the oil space.

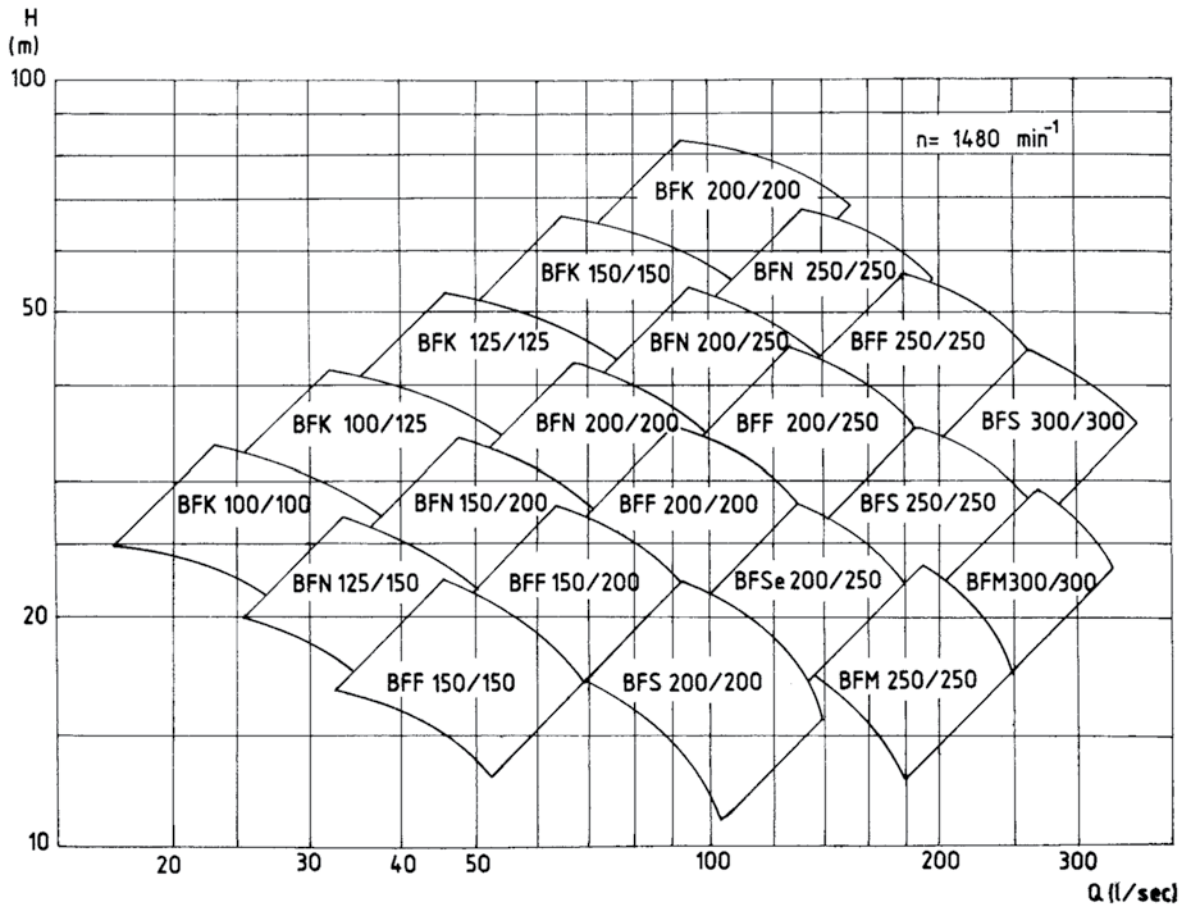
## MAIN STRUCTURAL MATERIALS

Impeller, wear ring, base bushing, water seal ring: nonferrous metal  
 Pump casing, stuffing-box cover: steel casting  
 Shaft: carbon steel  
 Shaft sleeve: corrosion-resistant steel

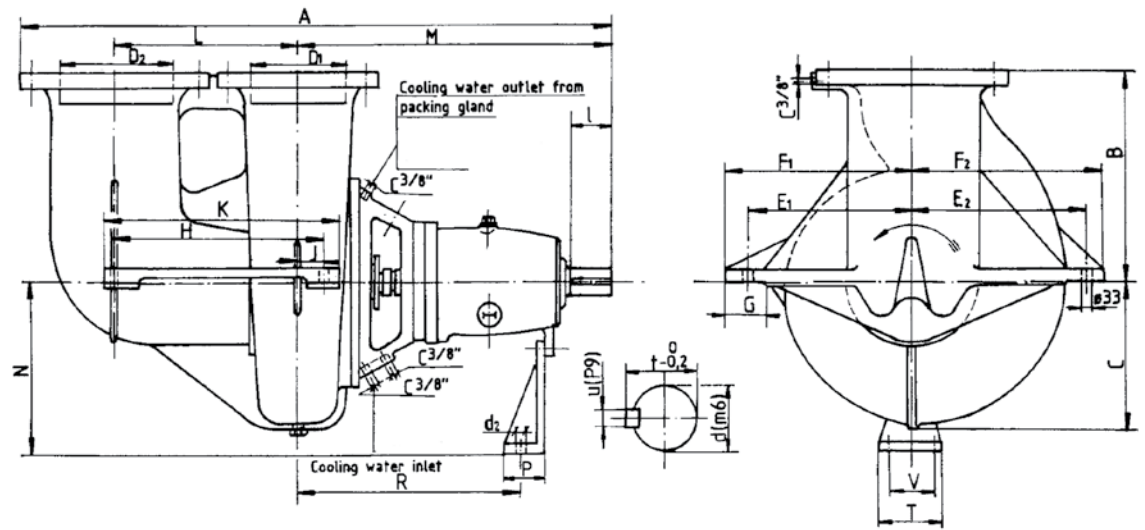




PERFORMANCE RANGES OF Bf PUMPS



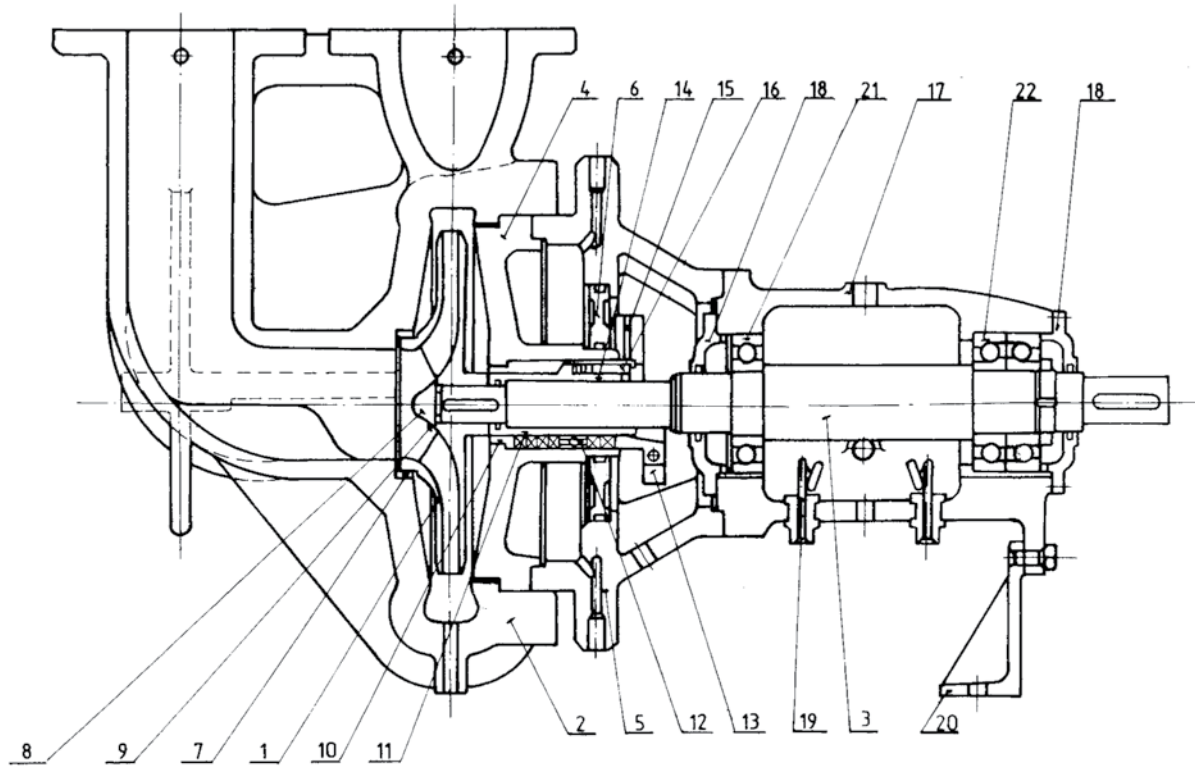
OUTLINE DRAWING OF Bf PUMPS



Type	A	B	C	D <sub>1</sub>	D <sub>2</sub>	E <sub>1</sub>	E <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J	K	L	M	N	P	R	d <sub>2</sub>	T	V	d	l	u	t
1. Bearing support																									
BKF 100/100	1055	350	275	100	100	290	330	340	380	100	310	55	410	255	680	275	76	503	18	110	70	45	80	14	48,8
BFN 125/125	1155	355	275	125	150	290	330	340	380	100	380	80	480	300	680	275	76	503	18	110	70	45	80	14	48,8
BFF 150/150	1180	380	280	150	150	290	330	340	380	100	380	55	480	325	680	275	76	503	18	110	70	45	80	14	48,8
2. Bearing support																									
BKF 100/125	1225	400	300	100	125	320	370	370	420	100	325	55	425	270	820	305	95	608	23	140	90	55	90	16	59,3
BKF 125/125	1240	400	320	125	125	360	430	410	480	100	345	60	445	285	820	380	95	608	23	140	90	55	90	16	59,3
BKF 150/150	1295	450	355	150	150	360	430	410	480	110	385	60	485	325	820	380	95	608	23	140	90	55	90	16	59,3
BFN 150/200	1360	425	320	150	200	320	370	370	420	100	410	60	510	350	820	305	95	608	23	140	90	55	90	16	59,3
BFN 200/200	1410	450	355	200	200	360	430	410	480	100	480	80	580	400	820	380	95	608	23	140	90	55	90	16	59,3
BFF 150/200	1360	400	325	150	200	320	370	370	420	100	410	60	510	350	820	305	95	608	23	140	90	55	90	16	59,3
BFF 200/200	1410	480	355	200	200	360	430	410	480	100	480	80	580	400	820	380	95	608	23	140	90	55	90	16	59,3
BFS 200/200	1410	400	345	200	200	360	430	410	480	100	480	80	580	400	820	380	95	608	23	140	90	55	90	16	59,3
BFS <sub>e</sub> 200/250	1470	480	375	200	250	360	430	410	480	100	480	55	580	425	820	380	95	608	23	140	90	55	90	16	59,3
BFM 250/250	1520	500	435	250	250	430	530	490	590	120	540	65	660	475	820	425	95	608	23	140	90	55	90	16	59,3
3. Bearing support																									
BKF 200/200	1590	500	420	200	200	420	490	480	550	120	460	60	580	400	1000	420	110	727	27	170	110	75	110	20	79,9
BFN 200/250	1650	500	400	200	250	380	440	430	490	100	480	55	580	425	1000	375	110	727	27	170	110	75	110	20	79,9
BFN 250/250	1700	560	440	250	250	420	490	480	550	120	540	65	660	475	1000	420	110	727	27	170	110	75	110	20	79,9
BFF 200/250	1650	500	405	200	250	380	440	430	490	100	480	55	580	425	1000	375	110	727	27	170	110	75	110	20	79,9
BFF 250/250	1700	600	445	250	250	420	490	480	550	120	540	65	660	475	1000	420	110	727	27	170	110	75	110	20	79,9
BFS 250/250	1700	525	430	250	250	420	490	480	550	120	540	65	660	475	1000	420	110	727	27	170	110	75	110	20	79,9
BFS 300/300	1800	560	460	300	300	460	580	520	640	120	600	60	720	540	1000	470	110	727	27	170	110	75	110	20	79,9
BFM 300/300	1800	600	480	300	300	460	580	520	640	120	600	60	720	540	1000	470	110	727	27	170	110	75	110	20	79,9

Dimensions in mm.  
Flanges to NP 10.

## SECTIONAL DRAWING OF Bf PUMP



- |                       |                    |                                  |
|-----------------------|--------------------|----------------------------------|
| 1. Impeller           | 8. Impeller nut    | 16. Mechanical sleeve            |
| 2. Casing             | 9. Locking plate   | 17. Bearing housing              |
| 3. Shaft              | 10. Neck bush      | 18. Bearing cover                |
| 4. Stuffing box cover | 11. Shaft sleeve   | 19. Cooling coil                 |
| 5. Distance piece     | 12. Lantern ring   | 20. Foot                         |
| 6. Cooling cover      | 13. Stuffing gland | 21. Ball bearing                 |
| 7. Casing wear ring   | 14. Shaft sleeve   | 22. Angular contact ball bearing |
|                       | 15. Cover          |                                  |

## END SUCTION PUMPS

BK

### GENERAL SPECIFICATION

Horizontal-shaft, single-entry, single-stage pump with volute casing and overhanging bearing support. The pump type BKt has vertical shaft arrangement.

### CONSTRUCTIONAL DETAILS

The pump consists of two parts namely the scroll casing cast on feet together with the suction branch. The other part is the rotor embedded in the bearing bracket by means of ball bearings. The pump type BKt also consists of two parts namely the bottom part of the frame with the suction elbow and the upper part of the frame with the rotor, bearings and the scroll casing.

### MEDIUM HANDLED

Clean, cold water, or hot water up to a temperature of max. 100 °C, or slightly contaminated industrial water. Max. silt content: 5 g/dm<sup>3</sup>. Particle size: max. 0.1 mm. Other non-corrosive liquids with a viscosity slightly differing from that of water can be handled.

### FIELD OF APPLICATION

Primarily industrial and potable water supply systems and agricultural irrigation plants.

### PACKING

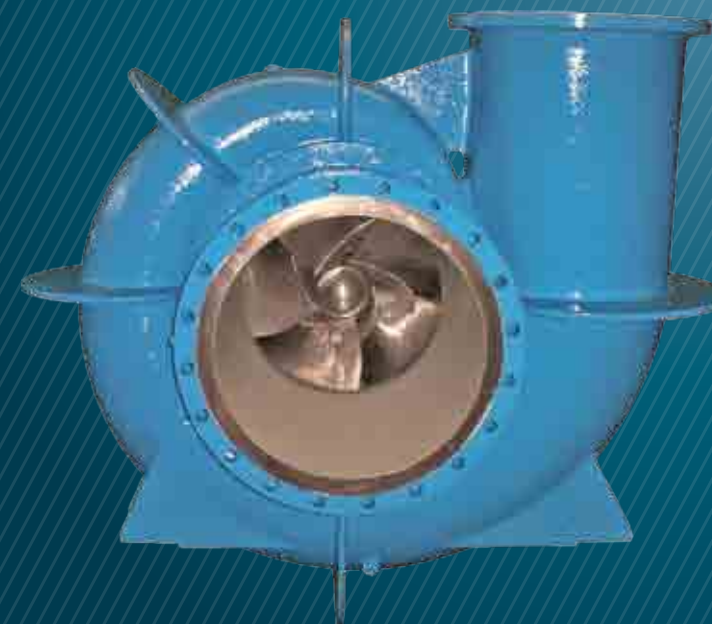
Teflon-cord-packed or mechanical stuffing box which can be cooled.

### BEARING SUPPORT

Single-row deep-groove ball bearing. The oil, if necessary, can be cooled with a cooling coil installed in the oil space. The bottom bearing of the pump type BKt is a double-row, self-aligning ball or roller bearing, the top one being a double-row angular-contact ball bearing. The bearings are grease-lubricated, the amount of grease being regulable in the top bearing.

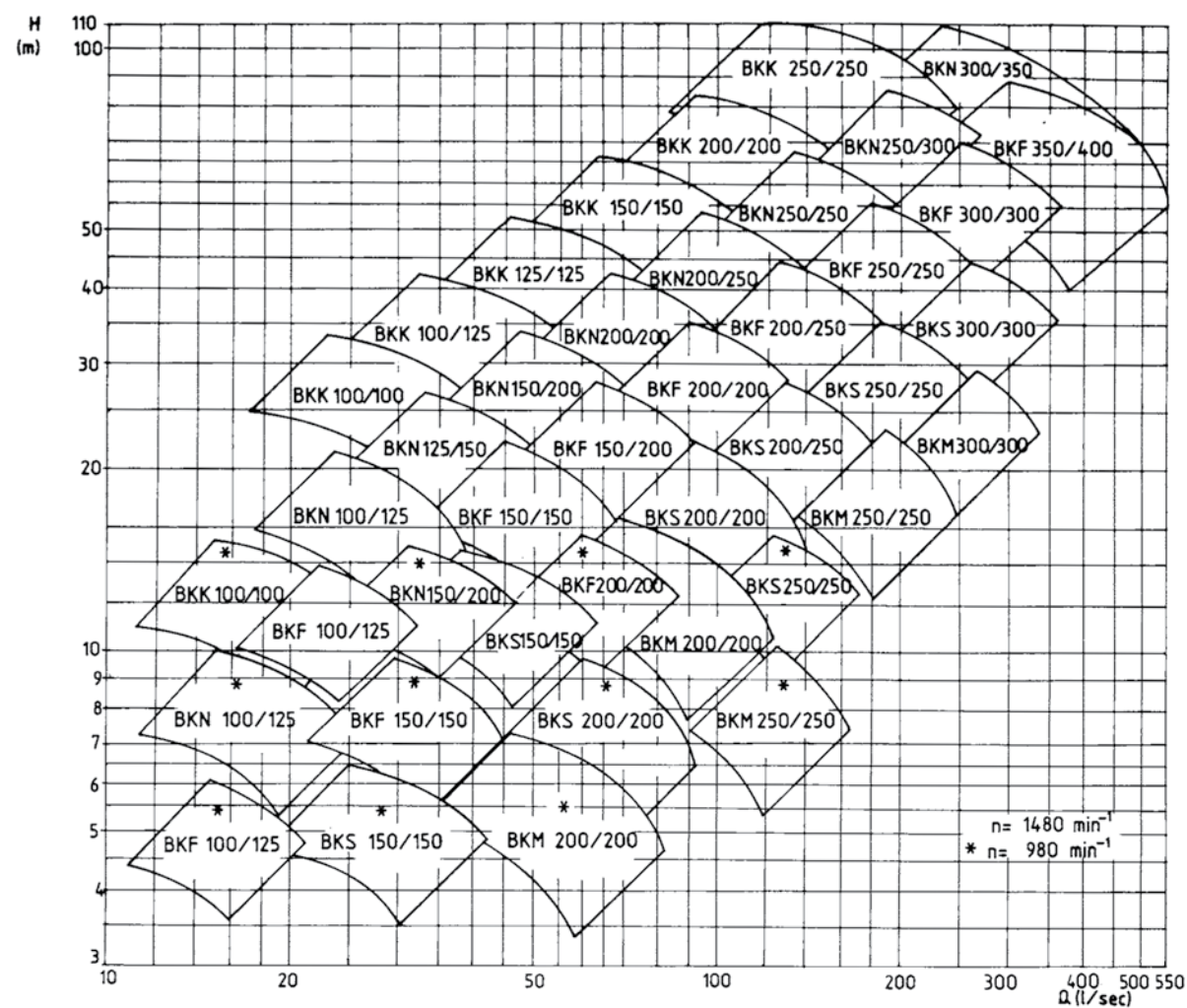
### MAIN STRUCTURAL MATERIALS

Impeller, wearing ring, base bushing, water seal ring: nonferrous metal  
Pump casing, stuffing-box cover, bearing bracket, bearing covers: cast iron  
Shaft: carbon steel  
Shaft protecting sleeve: corrosion-resistant steel

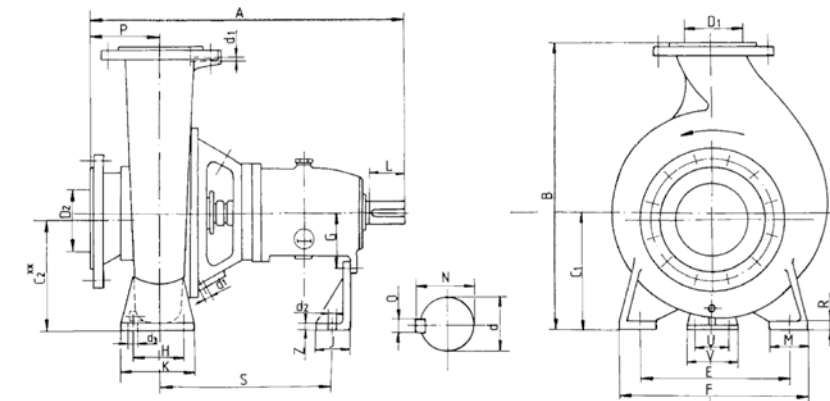




## PERFORMANCE RANGES OF SINGLE-STAGE PUMPS



## OUTLINE DRAWING OF BK PUMPS



Type	A	B	C <sub>1</sub>	C <sub>2</sub> **	D <sub>1</sub>	D <sub>2</sub>	d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	E	F	H	J	K	L	M	N	O	P	S	U	V
1. Bearing support																							
BKK 100/100	670	565	250	250	100	100	42	C 3/8"	18	18	315	400	120	76	160	80	80	45,5	12	140	365	70	110
BKN 100/125	670	565	250	250	100	125	42	C 3/8"	18	18	315	400	120	76	160	80	80	45,5	12	140	365	70	110
BKN 125/150	670	605	250	250	125	150	42	C 3/8"	18	18	315	400	120	76	160	80	80	45,5	12	140	365	70	110
BKF 100/125	670	505	225	225	100	125	42	C 3/8"	18	18	315	400	120	76	160	80	80	45,5	12	140	365	70	110
BKF 150/150	690	630	250	250	150	150	42	C 3/8"	18	23	400	500	150	76	200	80	100	45,5	12	160	365	70	110
BKS 150/150	670	565	250	250	150	150	42	C 3/8"	18	18	315	400	120	76	160	80	80	45,5	12	140	365	70	110
BKM 200/200	690	735	315	315	200	200	42	C 3/8"	18	23	480	600	190	76	250	80	120	45,5	12	160	365	70	110
2. Bearing support																							
BKK 100/125	810	605	250	250	100	125	55	C 3/8"	23	23	400	500	150	95	200	80	100	60	16	140	485	90	140
BKK 125/125	830	680	280	280	125	125	55	C 3/8"	23	23	400	500	150	95	200	80	100	60	16	160	485	90	140
BKK 150/150	850	765	315	315	150	150	55	C 3/8"	23	23	480	600	190	95	250	80	120	60	16	180	485	90	140
BKN 150/200	830	680	280	263	150	200	55	C 3/8"	23	23	400	500	150	95	200	80	100	60	16	160	485	90	140
BKN 200/200	850	765	315	315	200	200	55	C 3/8"	23	23	400	500	150	95	200	80	100	60	16	180	485	90	140
BKF 150/200	830	680	280	280	150	200	55	C 3/8"	23	23	400	500	150	95	200	80	100	60	16	160	485	90	140
BKF 200/200	850	765	315	315	200	200	55	C 3/8"	23	23	480	600	190	95	250	80	120	60	16	180	485	90	140
BKS 200/200	830	715	315	315	200	200	55	C 3/8"	23	23	400	500	150	95	200	80	100	60	16	160	485	90	140
BKS 200/250	850	805	355	355	200	250	55	C 3/8"	23	23	480	600	190	95	250	80	120	60	16	180	485	90	140
BKM 250/250	850	900	400	400	250	250	55	C 3/8"	23	23	630	750	190	95	250	80	120	60	16	180	485	90	140
3. Bearing support																							
BKK 200/200	1040	855	355	344	200	200	70	C 3/8"	27	27	480	600	190	110	250	105	120	76	20	200	615	110	170
BKK 250/250	1070	1025	425	389	250	250	70	C 3/8"	27	27	630	750	190	110	250	105	120	76	20	230	615	110	170
BKN 200/250	1020	588	355	333	200	250	70	C 3/8"	27	27	480	600	190	110	250	105	120	76	20	180	615	110	170
BKN 250/250	1040	960	400	400	250	250	70	C 3/8"	27	27	630	750	190	110	250	105	120	76	20	200	615	110	170
BKN 250/300	1040	1055	425	406	250	300	70	C 3/8"	27	27	630	750	190	110	250	105	120	76	20	200	615	110	170
BKN 300/350	1350	1200	500	471,5	300	350	70	C 3/8"	27	27	755	900	230	150	300	170	145	95	20	250	770	120	180
BKF 200/250	1020	855	355	344	200	250	70	C 3/8"	27	27	480	600	190	110	250	105	120	76	20	180	615	110	170
BKF 250/250	1040	1000	400	400	250	250	70	C 3/8"	27	27	630	750	190	110	250	105	120	76	20	200	615	110	170
BKF 300/300	1040	1095	425	425	300	300	70	C 3/8"	27	27	630	750	190	110	250	105	120	76	20	200	615	110	170
BKF 350/350	1170	1250	500	500	350	350	70	C 3/8"	27	27	755	900	230	150	300	105	145	74,9	20	300	625	120	180
BKF 350/400	1390	1250	500	500	350	400	70	C 3/8"	27	27	755	900	230	150	300	170	145	95	20	300	770	120	180
BKS 250/250	1020	900	400	400	250	250	70	C 3/8"	27	27	630	750	190	110	250	105	120	76	20	180	615	110	170
BKS 300/300	1040	960	400	400	300	300	70	C 3/8"	27	27	630	750	190	110	250	105	120	76	20	200	615	110	170
BKM 300/300	1040	1050	450	450	300	300	70	C 3/8"	27	27	755	900	230	110	300	150	145	76	20	200	615	110	170

Dimensions in mm.

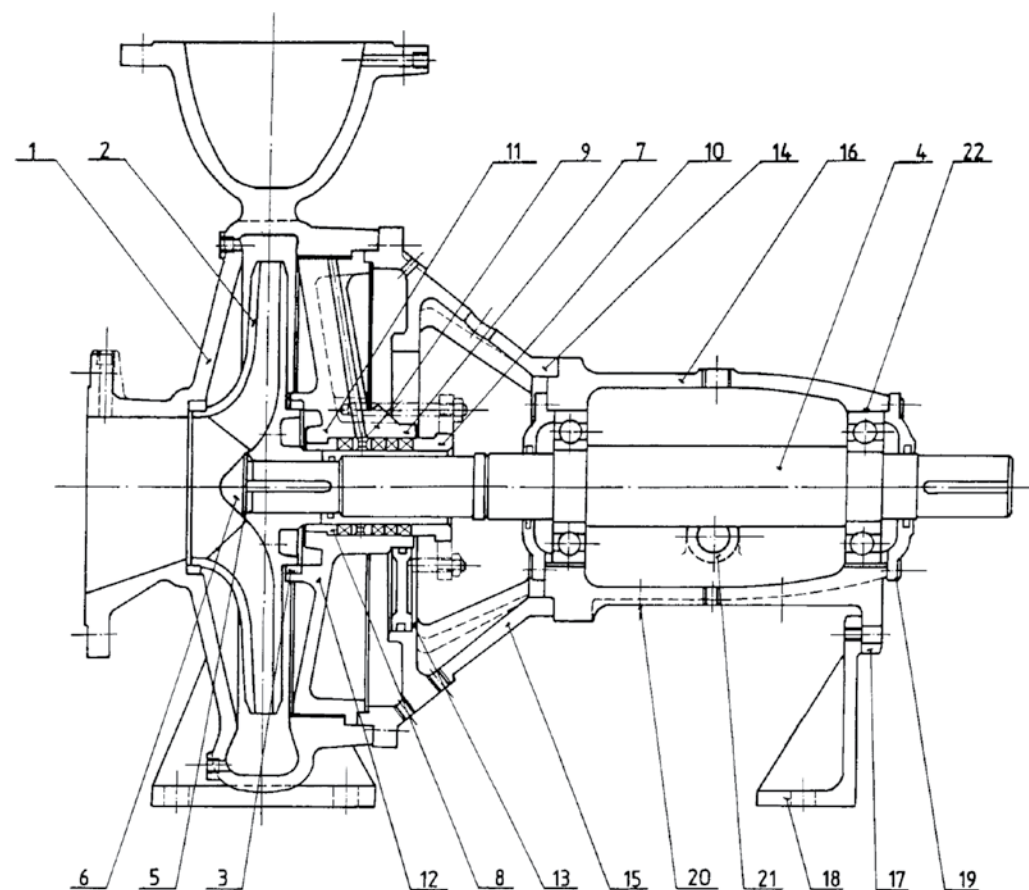
Flanges to NP 6.

1. Bearing support				
Type	Qp	Qb	Qt	Prices
	kg	kg	kg	EUR
BKK 100/100	154	130	284	3 730
BKN 100/125	151	130	281	3 670
BKN 125/150	166	130	296	3 970
BKF 100/125	140	123	263	3 415
BKF 150/150	175	151	326	4 255
BKS 150/150	158	130	288	3 810
BKM 200/200	221	176	397	5 300

2. Bearing support				
Type	Qp	Qb	Qt	Prices
	kg	kg	kg	EUR
BKK 100/125	265	170	435	5 620
BKK 125/125	298	184	482	6 284
BKK 150/150	343	227	570	7 309
BKN 150/200	292	184	476	6 176
BKN 200/200	327	195	522	6 861
BKF 150/200	297	184	481	6 266
BKF 200/200	339	227	566	7 237
BKS 200/200	296	195	491	6 303
BKS 200/250	347	215	562	7 321
BKM 250/250	412	240	652	8 616



## SECTIONAL DRAWING OF BK PUMP



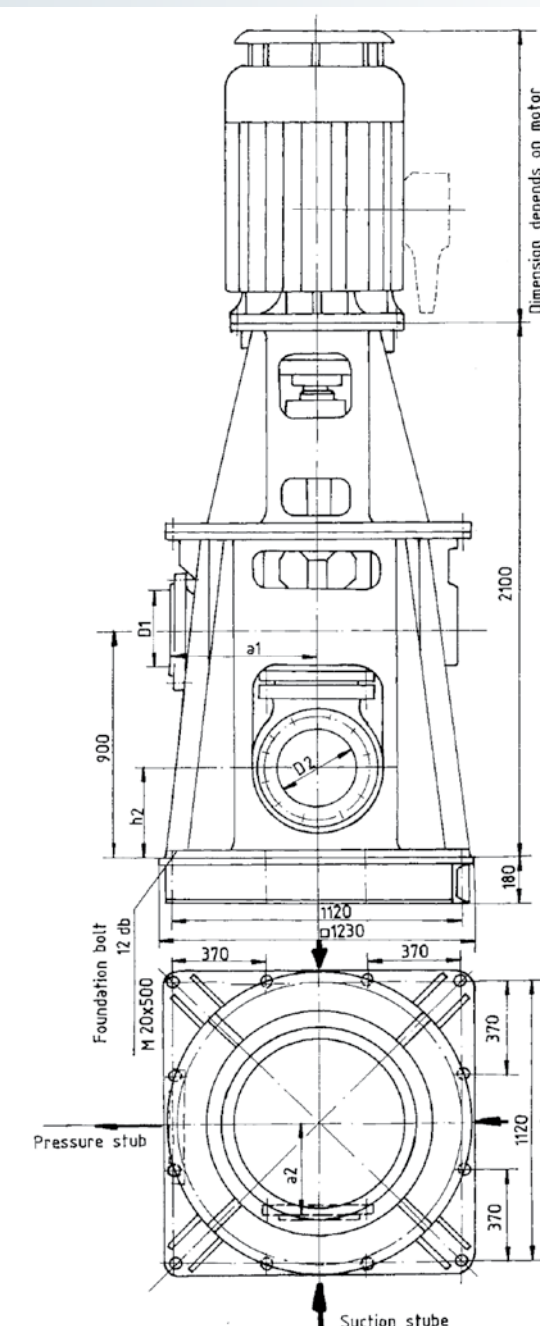
- |                     |                                 |                              |
|---------------------|---------------------------------|------------------------------|
| 1. Casing           | 8. Neck bush                    | 15. Distance piece (cooled)  |
| 2. Impeller         | 9. Lantern ring                 | 16. Bearing housing          |
| 3. Casing wear ring | 10. Stuffing gland              | 17. Bearing housing (cooled) |
| 4. Shaft            | 11. Stuffing box cover          | 18. Foot                     |
| 5. Locking plate    | 12. Stuffing box cover (cooled) | 19. Bearing cover            |
| 6. Shaft screw      | 13. Cover of cooler             | 20. Connection to oil cover  |
| 7. Shaft sleeve     | 14. Distance piece              | 21. Oil windows              |
|                     |                                 | 22. Ball bearing             |

3. Bearing support				
Type	Qp kg	Qb kg	Qt kg	Prices EUR
BKK 200/200	485	235	720	8 935
BKN 200/250	465	235	700	8 615
BKN 250/250	570	250	820	10 370
BKN 250/300	635	250	885	11 410
BKF 200/250	465	235	700	8 615
BKF 250/250	585	250	835	10 610
BKF 300/300	645	290	935	11 770
BKS 250/250	510	250	760	9 410
BKS 300/300	616	250	866	11 106
BKM 300/300	570	290	860	10 570

## OUTLINE DRAWING OF VERTICAL SHAFT BKt PUMPS

Type	D <sub>1</sub>	a <sub>1</sub>	D <sub>2</sub>	a <sub>2</sub>	H <sub>2</sub>
BKKt 200/200	200	500	200	300	450
BKNt 200/250	200	500	250	350	420
BKNt 250/250	250	560	250	350	400
BKNt 250/300	250	630	300	400	350
BKFt 200/250	200	500	250	350	420
BKFt 250/250	250	600	250	350	400
BKFt 300/300	300	570	300	400	350
BKSt 250/250	250	500	250	350	420
BKSt 300/300	300	560	300	400	350
BKMt 300/300	300	600	300	400	350

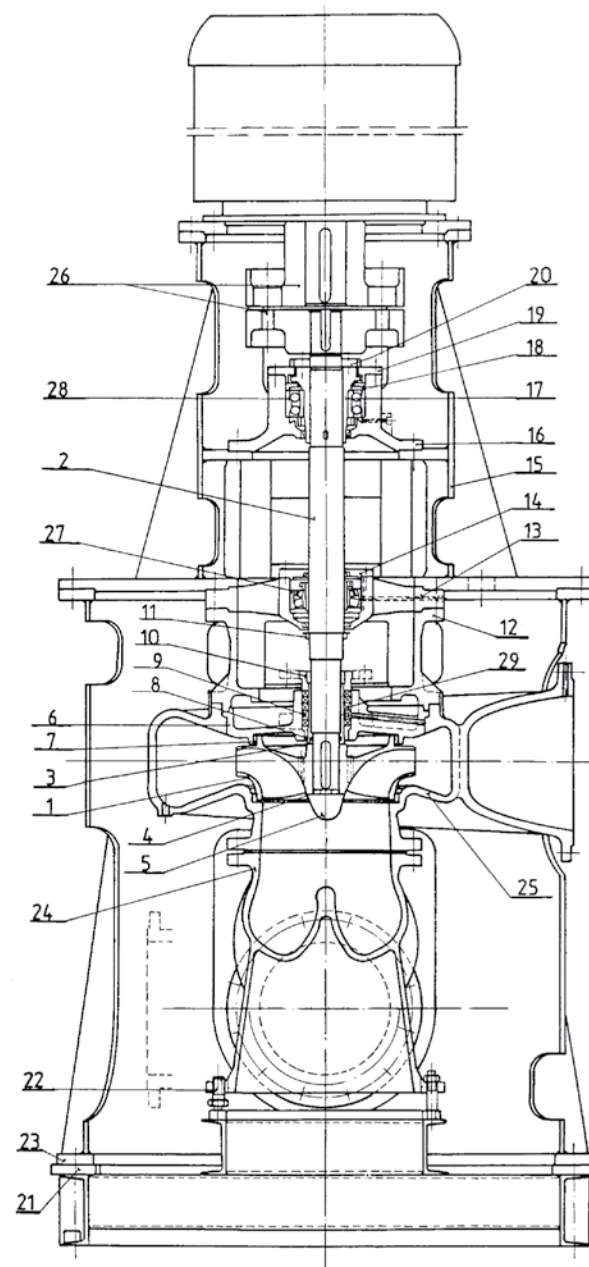
Dimensions in mm.  
Flanges to NP 10.





## SECTIONAL DRAWING OF VERTICAL SHAFT BKt PUMPS

1. Impeller
2. Shaft
3. Shaft sleeve
4. Locking plate
5. Impeller screw
6. Stuffing box cover
7. Casing wear ring
8. Neck bush
9. Lantern ring
10. Stuffing gland
11. Spreading disc
12. Distance piece
13. Bearing housing
14. Bearing cover
15. Pedestal (upper)
16. Bearing housing (upper)
17. Sleeve for bearing
18. Grease guide-pulley
19. Bearing cover
20. Adjusting screw
21. Base frame
22. Adjusting bolt
23. Pedestal (lower)
24. Suction elbow
25. Casing
26. Coupling
27. Self aligning ball bearing
28. Angular contact ball bearing
29. Packing



## TWO-STAGE END-SUCTION PUMPS

BT

## GENERAL SPECIFICATION

Horizontal-shaft, single-entry, two-stage pump with guide wheel and overhanging bearing support.

## CONSTRUCTIONAL DETAILS

The pump housing comprises the spiral casing, the cover with stuffing box and the guide wheel connecting the guide vanes of the two stages. The pump housing and the bearing bracket are connected by an expansion joint. The pump and the driving electric motor are mounted on a common welded baseframe. The suction branch is horizontal and the discharge branch is vertical, the centreline of the latter being in alignment with that of the volute casing.

## MEDIUM HANDLED

Clean cold water, hot water up to a temperature of max. 90 °C or slightly contaminated industrial water. Max. silt content: 5 g/dm<sup>3</sup>. Particle size max. 0.1 mm. Other non-corrosive liquids with a viscosity slightly differing from that of water can also be handled.

## FIELD OF APPLICATION

Water intake works of industrial plants, mainly where relatively small amounts of water are to be handled with good suction capacity.

## PACKING

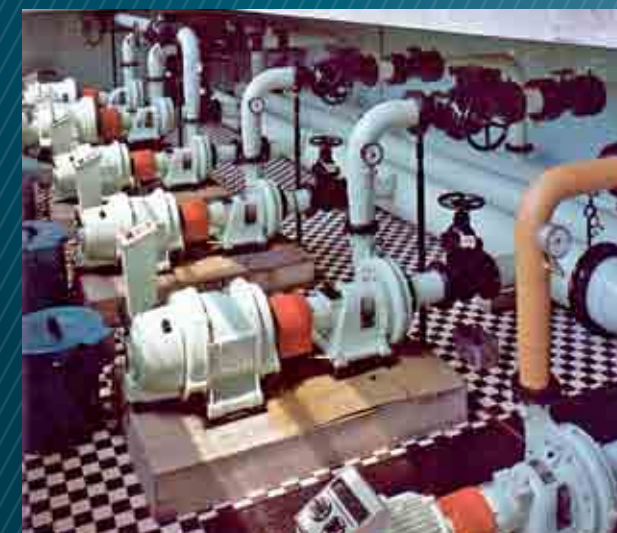
Teflon-cord-packed or mechanical stuffing box which can be cooled.

## BEARING SUPPORT

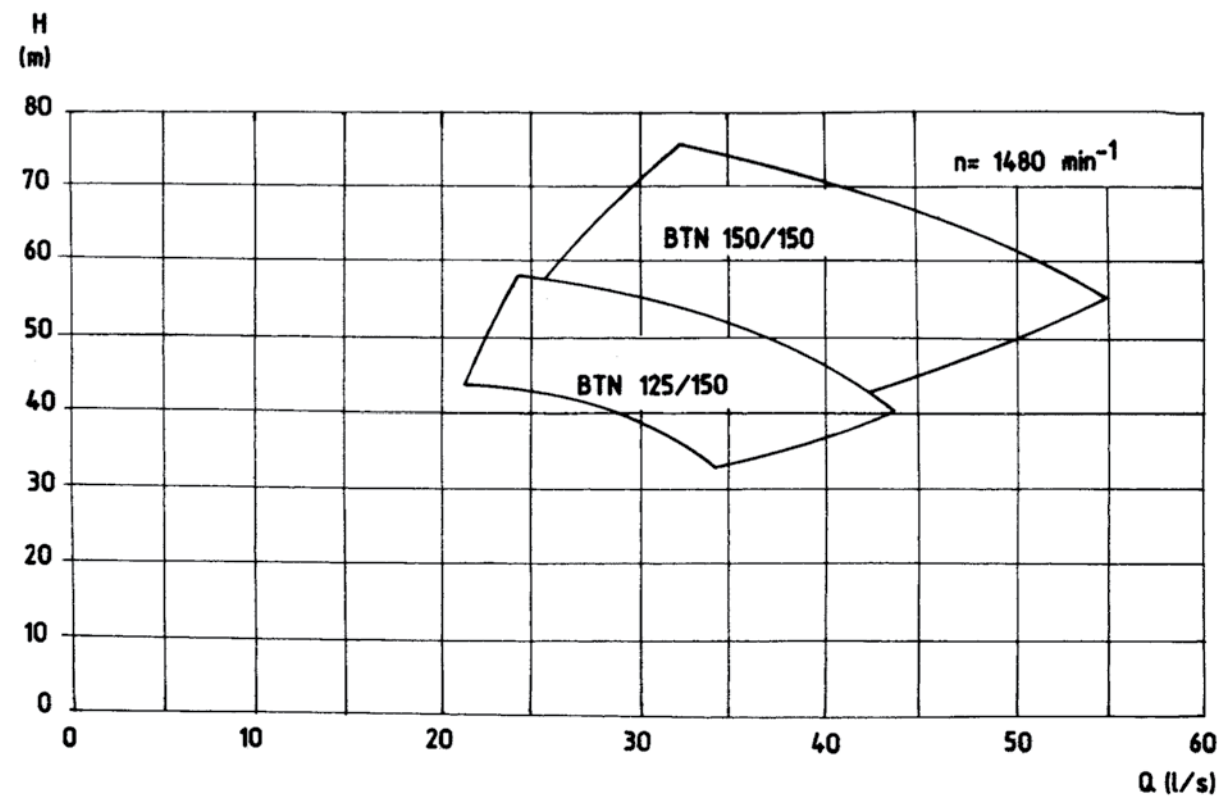
Two single-row deep-groove ball bearings, with cooling coil installable in the oil space if necessary. The oil can be cooled.

## MAIN STRUCTURAL MATERIALS

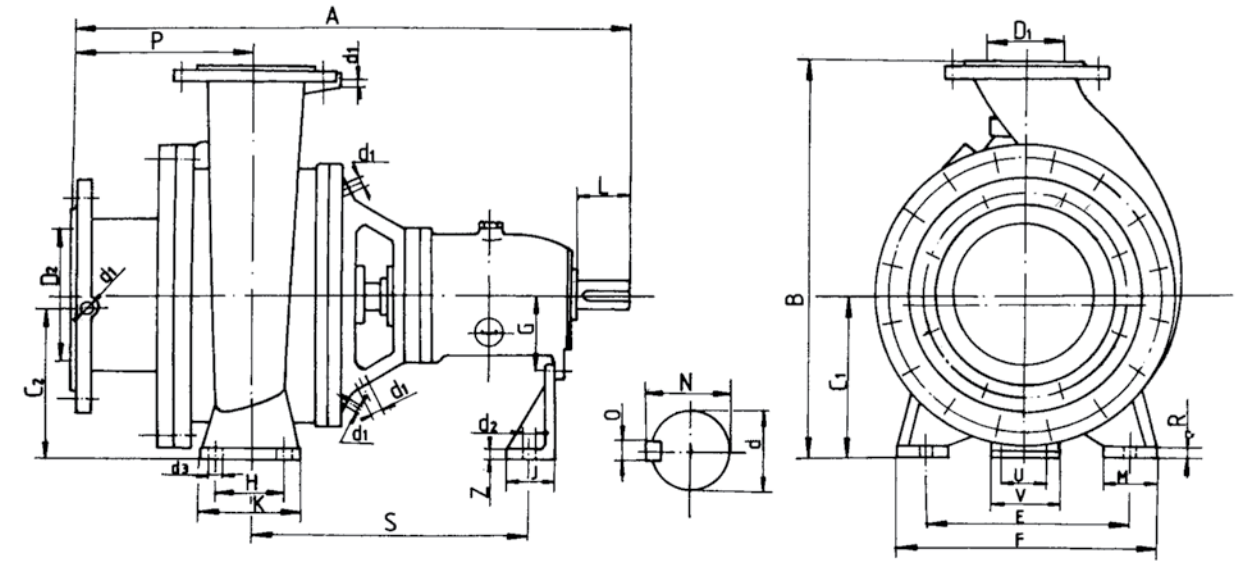
Impeller, wearing ring, base bushing, water seal ring: nonferrous metal  
Pump casing, cover with stuffing box, bearing bracket, bearing covers: cast-iron  
Shaft: carbon steel  
Shaft sleeve: corrosion-resistant steel



# PERFORMANCE RANGES OF BT PUMPS



# OUTLINE DRAWING OF BT PUMPS



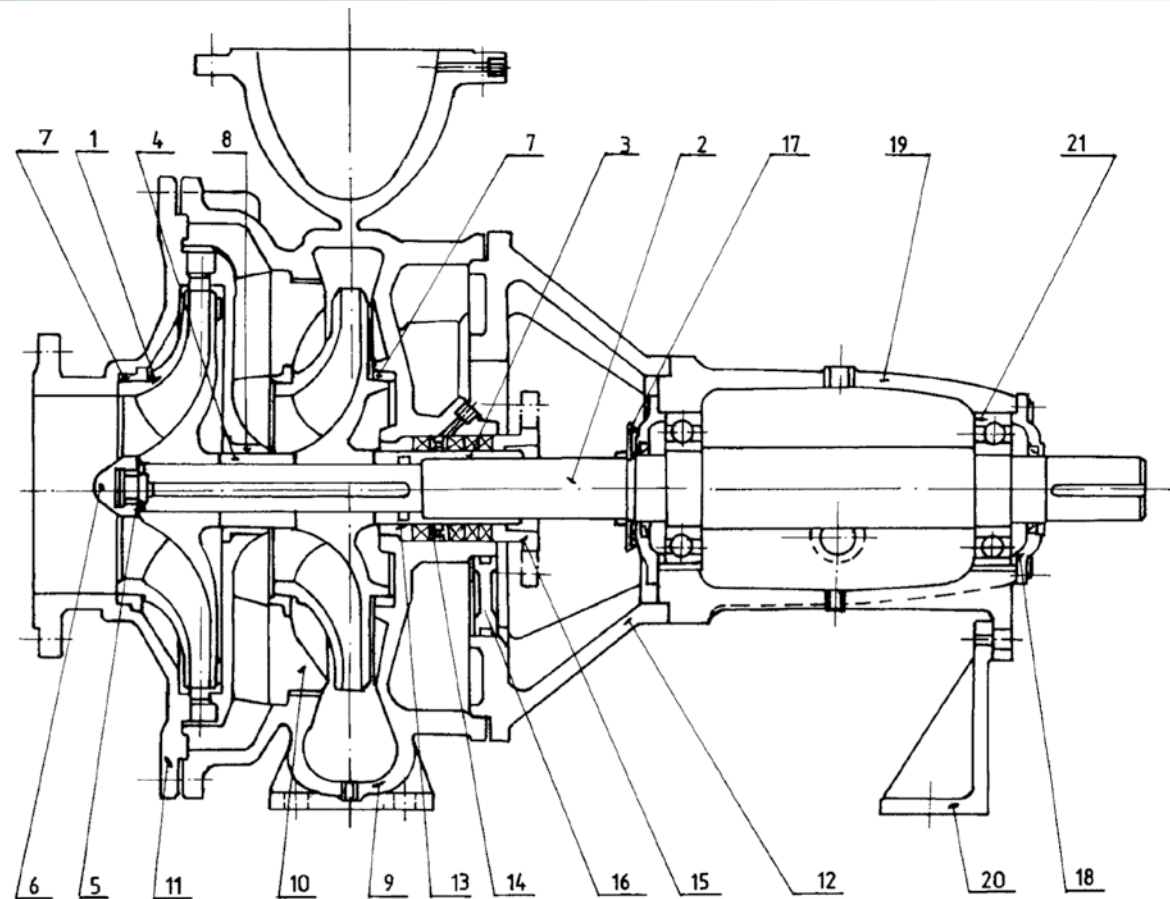
Type	A	B	$C_1$	$C_2^{**}$	$D_1$	$D_2$	$d$	$d_1$	$d_2$	$d_3$	E	F
BTN 125/150	938	635	280	280	125	150	55	C 3/8"	23	18	315	400
BTN 150/150	969	715	315	315	150	150	55	C 3/8"	23	18	365	450

Type	G	H	J	K	L	M	N	O	P	R	S	U	V	Z
BTN 125/150	140	120	95	160	80	80	59,3	16	270	18	484	90	140	15
BTN 150/150	140	120	95	160	80	80	59,3	16	300	18	484	90	140	15

Dimensions in mm.  
Flanges to NP 10.



## SECTIONAL DRAWING OF BT PUMP



- |                     |                             |                     |
|---------------------|-----------------------------|---------------------|
| 1. Impeller         | 8. Sleeve for guiding piece | 15. Stuffing gland  |
| 2. Shaft            | 9. Casing                   | 16. Cooling cover   |
| 3. Shaft sleeve     | 10. Guiding wheel           | 17. Spreading ring  |
| 4. Neck bush        | 11. Suction cover           | 18. Bearing cover   |
| 5. Locking plate    | 12. Impeller                | 19. Bearing housing |
| 6. Shaft nut        | 13. Neck bush               | 20. Foot            |
| 7. Casing wear ring | 14. Lantern ring            | 21. Ball bearing    |

## SLURRY PUMPS

BZ

### GENERAL SPECIFICATION

Horizontal-shaft, single-entry, single-stage, wear-resistant slurry pump with spiral casing and bearing support bracket.

### CONSTRUCTIONAL DETAILS

The pump consists of two parts, namely the casing with lining and wearing inserts and the rotor carried in ball bearing in the bearing bracket. The pump has a special hydraulic design in order to increase wear resistance. In case of wear the impeller can be readjusted in axial direction.

### MEDIUM HANDLED

Chemically non-aggressive water which may contain lump contaminants and abrasive material, sand, slag, etc., too.

### FIELD OF APPLICATION

Shingle dredgers, mines, plants processing agricultural basic materials and all fields where handling of water containing abrasive material or bigger solids is a requirement.

### PACKING

Teflon-cord-packed or mechanical stuffing box.

### BEARING SUPPORT

There are double-row, self-aligning roller bearings at both ends of the bearing bracket and an angular-contact roller bearing is used to take up the axial forces.

### MAIN STRUCTURAL MATERIALS

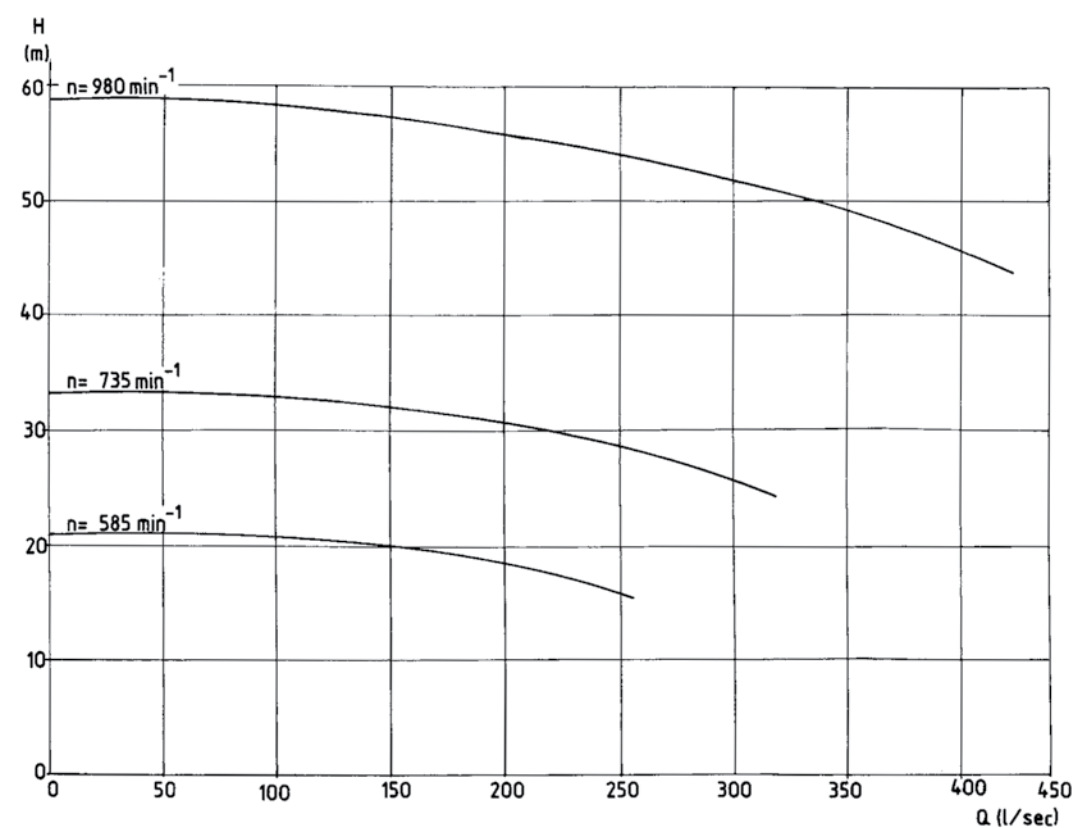
Impeller, parts subject to wear, spiral casing lining: cast-iron (if sandy water is to be handled) or manganese steel (when handling water containing hard solids)

Shaft: carbon steel

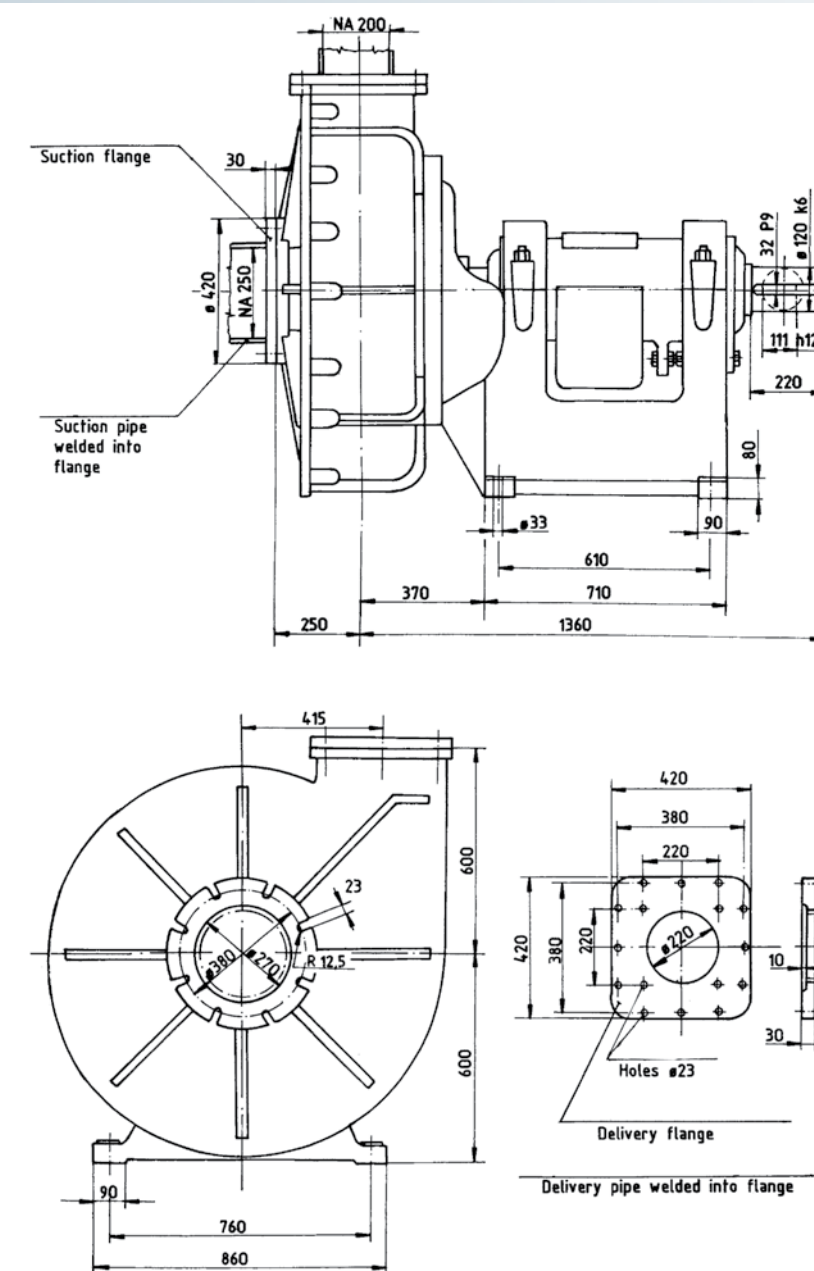
Spiral casing, bearing bracket: cast-iron



## CHARACTERISTIC CURVES OF BZ PUMPS

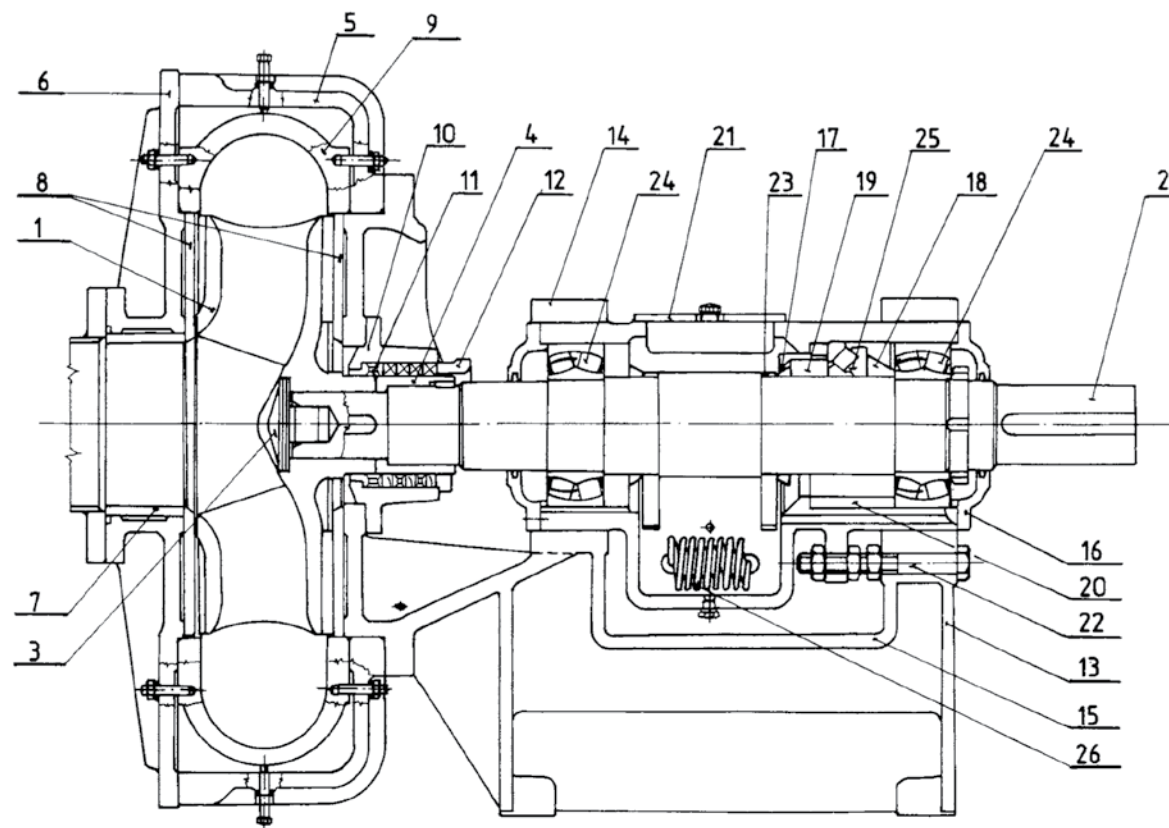


## OUTLINE DRAWING OF BZ PUMPS





## SECTIONAL DRAWING OF BZ PUMPS



- |                  |                          |                                     |
|------------------|--------------------------|-------------------------------------|
| 1. Impeller      | 9. Casing liner          | 18. Shoulder ring                   |
| 2. Shaft         | 10. Stuffing box housing | 19. Shoulder ring of thrust bearing |
| 3. Shaft screw   | 11. Base bush            | 20. Distance ring                   |
| 4. Shaft sleeve  | 12. Stuffing gland       | 21. Cover                           |
| 5. Pump casing   | 13. Bearing support      | 22. Adjusting screw                 |
| 6. Suction cover | 14. Clamp                | 23. Lubricating ring                |
| 7. Brush insert  | 15. Bearing housing      | 24. Rolling bearing                 |
| 8. Wear plate    | 16. Bearing cover        | 25. Thrust bearing                  |
|                  | 17. Oil spreading ring   | 26. Cooling coil                    |

## INCLINED SHAFT PROPELLER-PUMPS

CF

### GENERAL SPECIFICATION

Single-stage, inclined-shaft, axial-flow propeller pump with guide vane system.

### CONSTRUCTIONAL DETAILS

The impeller casing, guide vane system and the discharge elbow are divided into two parts, enabling the rotor to be assembled after lifting off the upper part of the pump casing. The bottom part is anchored in concrete at two points and the driving motor is supported separately.

### MEDIUM HANDLED

Neutral clean water up to a temperature of 40–45 °C or silty raw water containing no larger solids. Max. silt content: 600 mg/dm<sup>3</sup>. It may, however, attain 3000 mg/dm<sup>3</sup> when using rubber bearings lubricated with clean water from outside.

### FIELD OF APPLICATION

Primarily irrigation and land drainage and all other pumping duties where large volumes of water are to be lifted to low head.

### PACKING

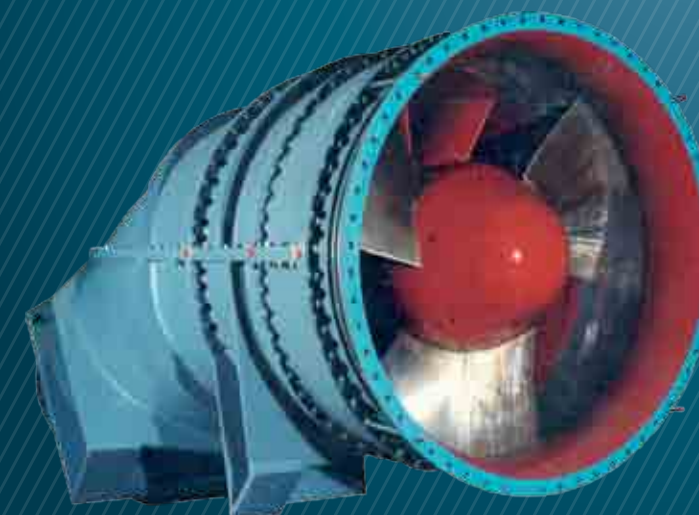
Stuffing box with teflon cord packing unless otherwise required.

### BEARING SUPPORT

The guide bearing is a rubber-lined bearing lubricated by the water handled, or a bronze-lined slide bearing lubricated by a grease gun driven by a separate electric motor. The thrust bearing is a self-aligning, axial roller bearing immersed in oil, with water cooling which can be switched on when necessary.

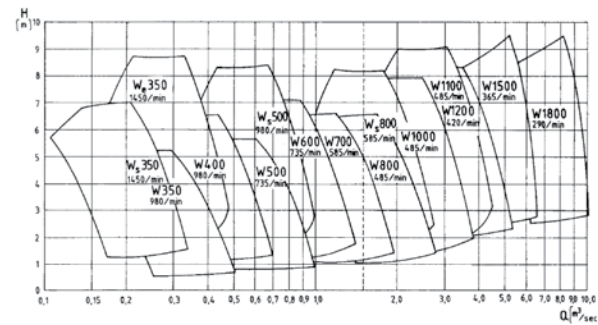
### MAIN STRUCTURAL MATERIALS

Impeller blades: corrosion-resistant steel  
 Impeller hub, base bushing: nonferrous metal  
 Stuffing box: steel casting  
 Pump casing, wearing ring: cast-iron  
 Shaft, rising pipe: carbon steel  
 Shaft protecting sleeve: corrosion-resistant steel

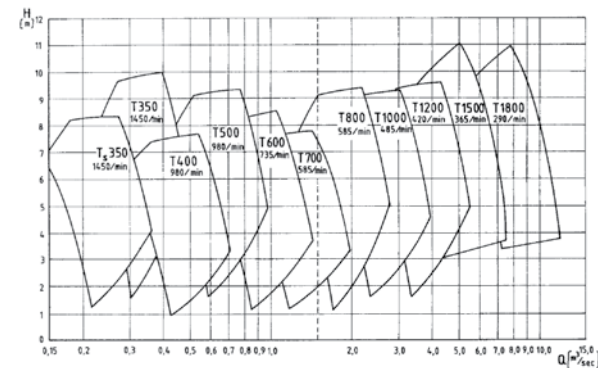


## PERFORMANCE RANGES OF CF PUMPS

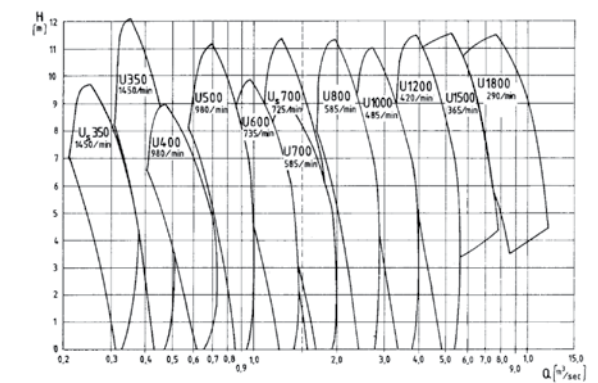
CFW Pumps



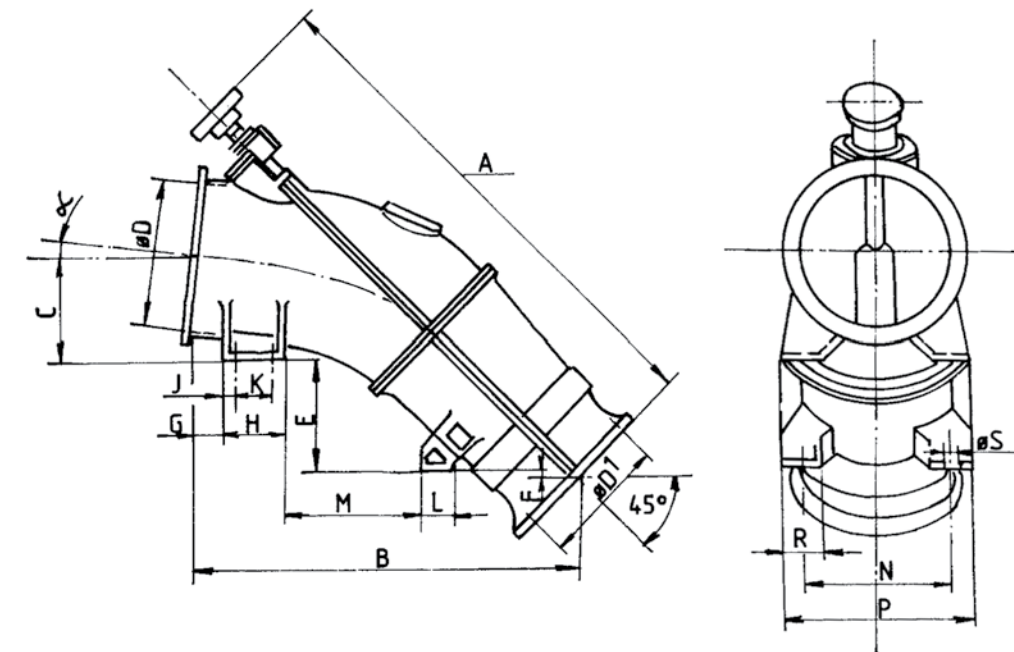
CFT Pumps



CFU Pumps



## OUTLINE DRAWING OF CF PUMPS

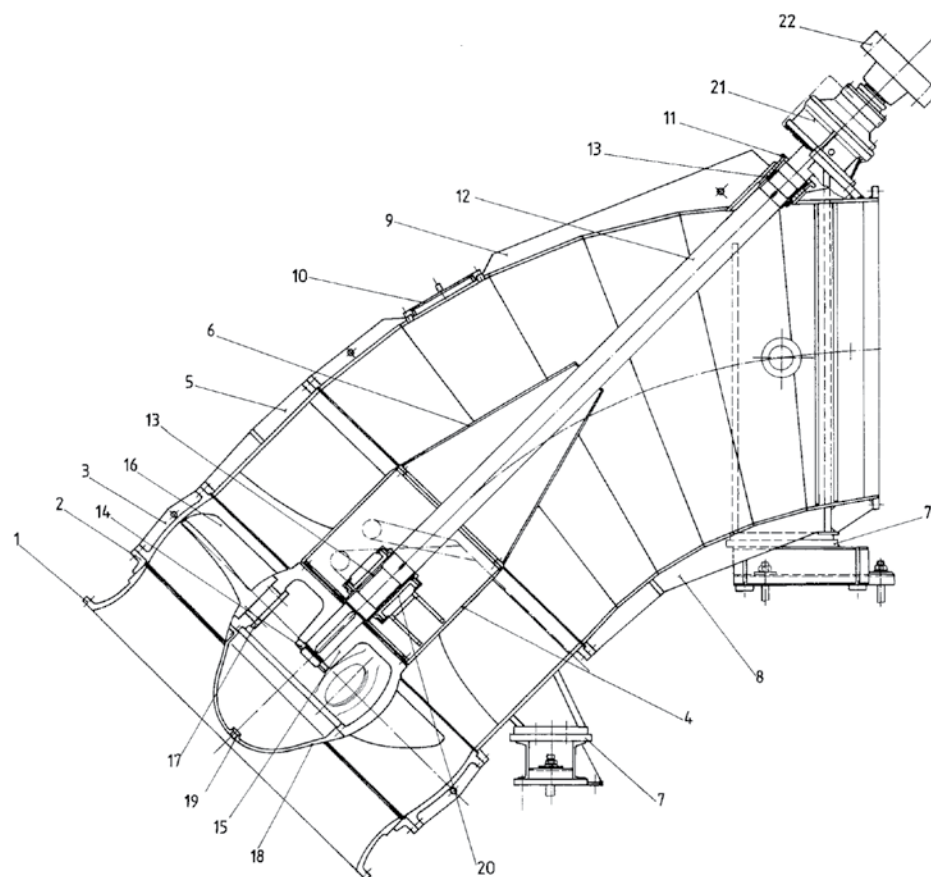


Type	A	B	C	D	D <sub>1</sub>	E	F	α	G	H	J	K	L	M	N	P	R	S
CF 650	2800	1849	450	650	760	400	28	0	250	300	75	150	200	500	650	750	120	33
CF 800	3100	2165	540	800	920	540	0	0	300	400	100	200	220	500	850	1000	150	27
CF 1200	4407	2660	740	1200	1340	885	-20	0	300	500	125	250	300	723	1250	1500	250	39
CF 1500	5097	2970	950	1500	1660	1210	20	75	250	600	150	300	350	1340	1550	1850	300	42
CF 1800	5515	3970	1050	1800	1970	1240	-50	0	200	800	100	600	450	100	1800	2100	350	52

Dimensions in mm.  
Flanges to NP 6.



## SECTIONAL DRAWING OF CF PUMPS



- |                             |                             |                                      |
|-----------------------------|-----------------------------|--------------------------------------|
| 1. Suction bell             | 8. Delivery elbow lower     | 16. Impeller blade                   |
| 2. Moving flange            | 9. Delivery elbow upper     | 17. Looking cover                    |
| 3. Impeller housing         | 10. Cover for mounting hole | 18. Guide cover                      |
| 4. Guide vanes casing lower | 11. Stuffing box cover      | 19. Cap screw                        |
| 5. Guide vanes casing upper | 12. Shaft                   | 20. Guide bearing                    |
| 6. Guide cones              | 13. Shaft sleeve            | 21. Thrust and guide bearing housing |
| 7. Ground frame             | 14. Shaft end nut           | 22. Coupling                         |
|                             | 15. Impeller boss           |                                      |

## AXIAL-FLOW PUMPS

## CL-CK KL-KK

## GENERAL SPECIFICATION

These are vertical-shaft, single-stage, axial-flow pumps with guide vane system. The rotor of the pumps designated CK and KK can be withdrawn without dismantling the pump itself. Those of type KL and KK have blading adjustable during operation.

## CONSTRUCTIONAL DETAILS

The pumps are made in three construction forms: Form "A": the pump support is under the discharge elbow and the electric motor is mounted directly on the discharge elbow. Form "B": the pump support is under the discharge elbow and the electric motor is placed on a separate floor. Form "C": the pump is suspended from the floor of the electric motor.

## MEDIUM HANDLED

Neutral, clean water and silty water containing no larger solids at temperatures not exceeding 40 to 45 °C. The max. silt content is 600 mg/dm<sup>3</sup>. It may, however, attain 3000 mg/dm<sup>3</sup> in case of rubber bearings lubricated by clean water from outside.

## FIELD OF APPLICATION

Waterworks, cooling water supply of industrial plants and thermal power stations, land drainage and irrigation.

## PACKING

Stuffing box with teflon-cord-packing unless otherwise requested.

## BEARING SUPPORT

The thrust bearing is a self-aligning roller bearing immersed in oil, with water cooling that can be cut in when required. One or more guide bearings are provided which are rubber-lined sliding, bearings lubricated by the water handled, or bronze-lined sliding bearings lubricated with a grease gun driven by a separate electric motor.

## MAIN STRUCTURAL MATERIALS

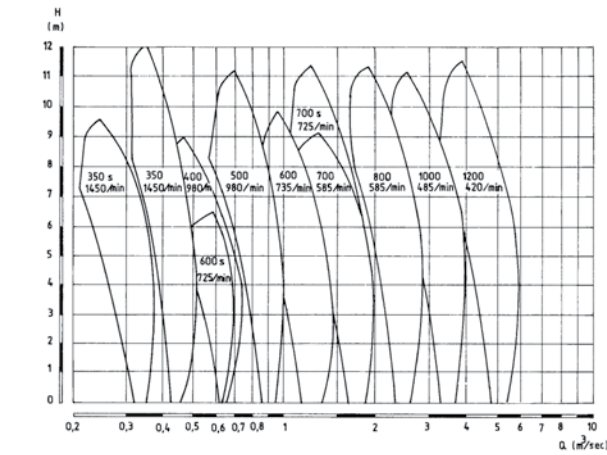
Wing blades: corrosion-resistant steel or bronze  
 Impeller hub: steel or cast iron  
 Base bushing: bronze  
 Stuffing box: steel  
 Pump bowl: cast iron  
 Wearing ring: corrosion-resistant steel  
 Shaft, rising pipe: carbon steel  
 Shaft sleeve: corrosion-resistant steel



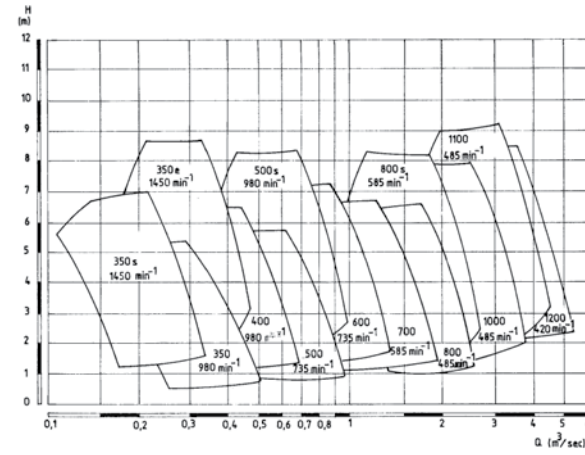


# PERFORMANCE RANGES OF TYPE C PUMPS

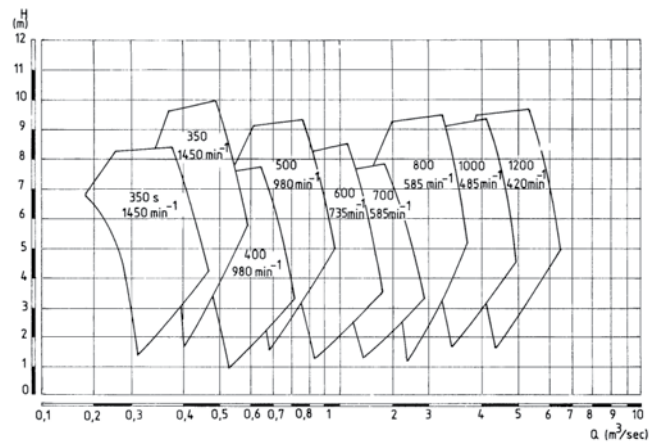
with Impeller Type "U"



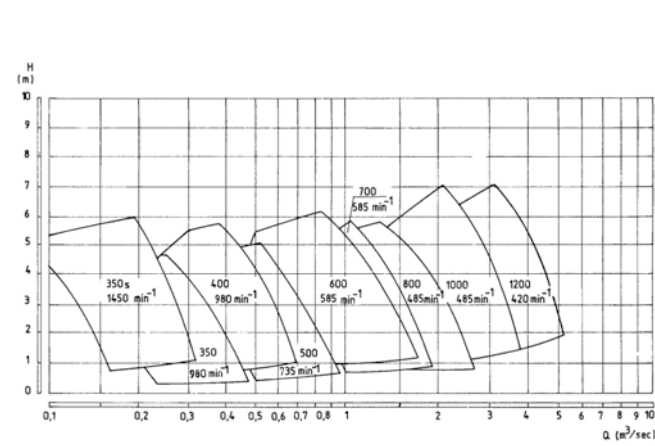
with Impeller Type "W"



with Impeller Type "T"



with Impeller Type "Z"

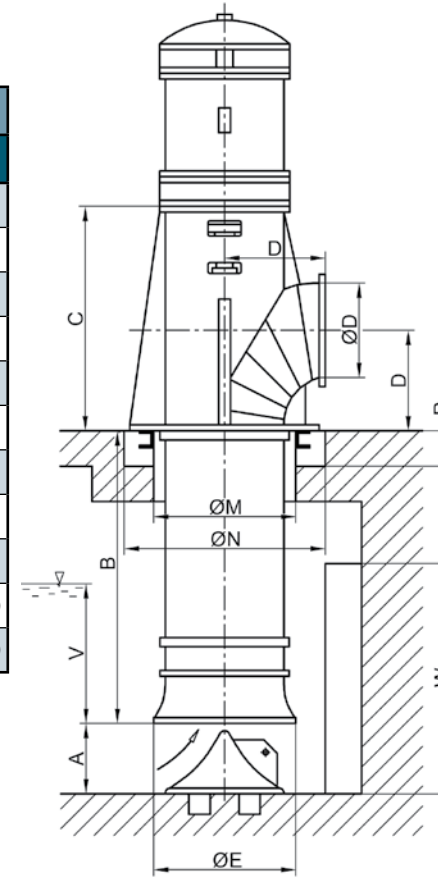


# OUTLINE DRAWINGS OF TYPE CL PUMPS

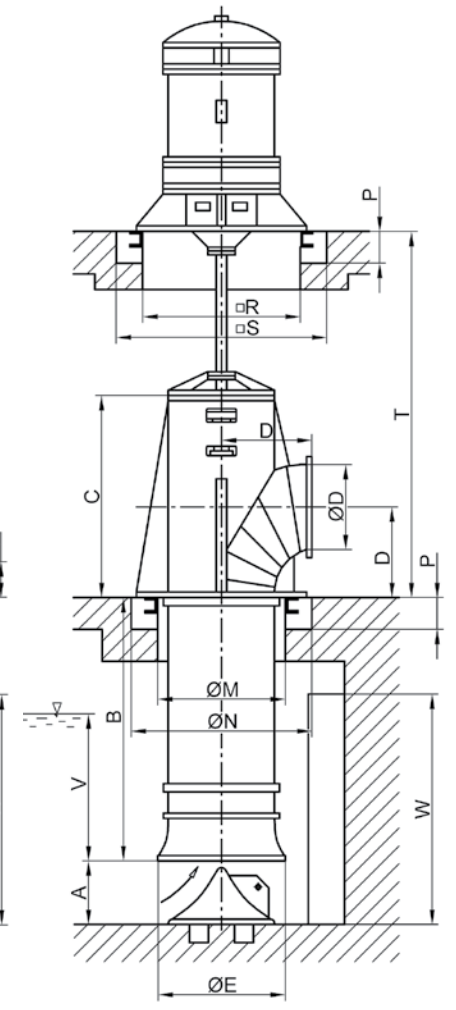
Pump						
D	A	B <sub>min</sub>	C*	E	T <sub>min</sub>	V <sub>min</sub> **
350	200	600	1200	500	1200	380
400	250	700	1400	600	1400	450
500	300	700	1550	800	1550	600
600	350	1000	1750	900	1750	680
700	400	1200	1900	1000	1900	750
800	500	1400	2100	1200	2100	900
1000	600	1500	2450	1500	2450	1130
1200	700	1900	2800	1800	2800	1350
1400	850	2200	3200	2100	3200	1580
1600	950	2500	3600	2400	3600	1800
1800	1100	2800	4950	2700	4950	2030

Korrektion factor applied for high  
\* Informative dimensions discharge:  
 $K=Q/0.75E^2$  ( $Q[m^3/s]$ ,  $E[m]$ )  
\*\*  $V_{min}$  is valid for low discharge.

Version "A"

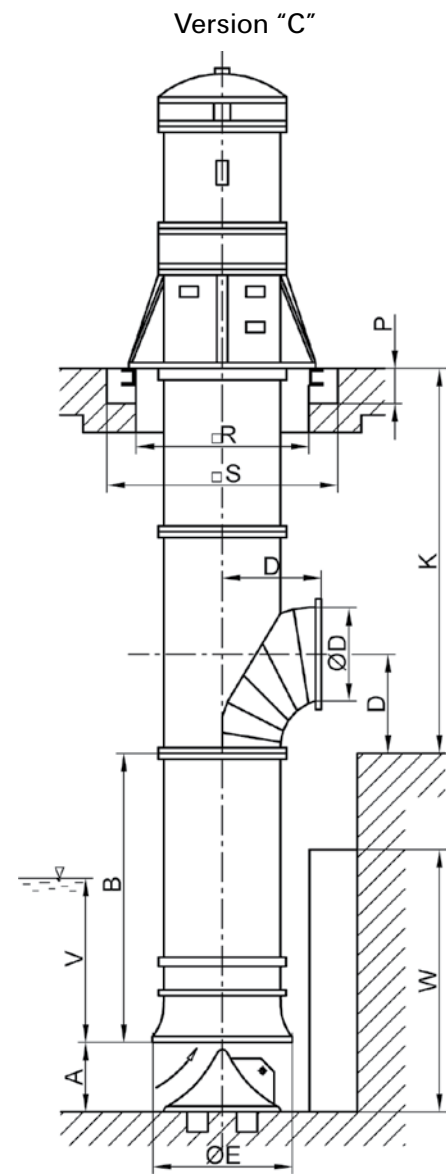


Version "B"

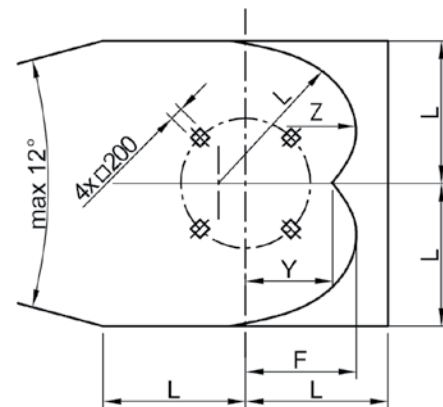




## OUTLINE DRAWINGS OF TYPE CL PUMPS



Suction Well Form

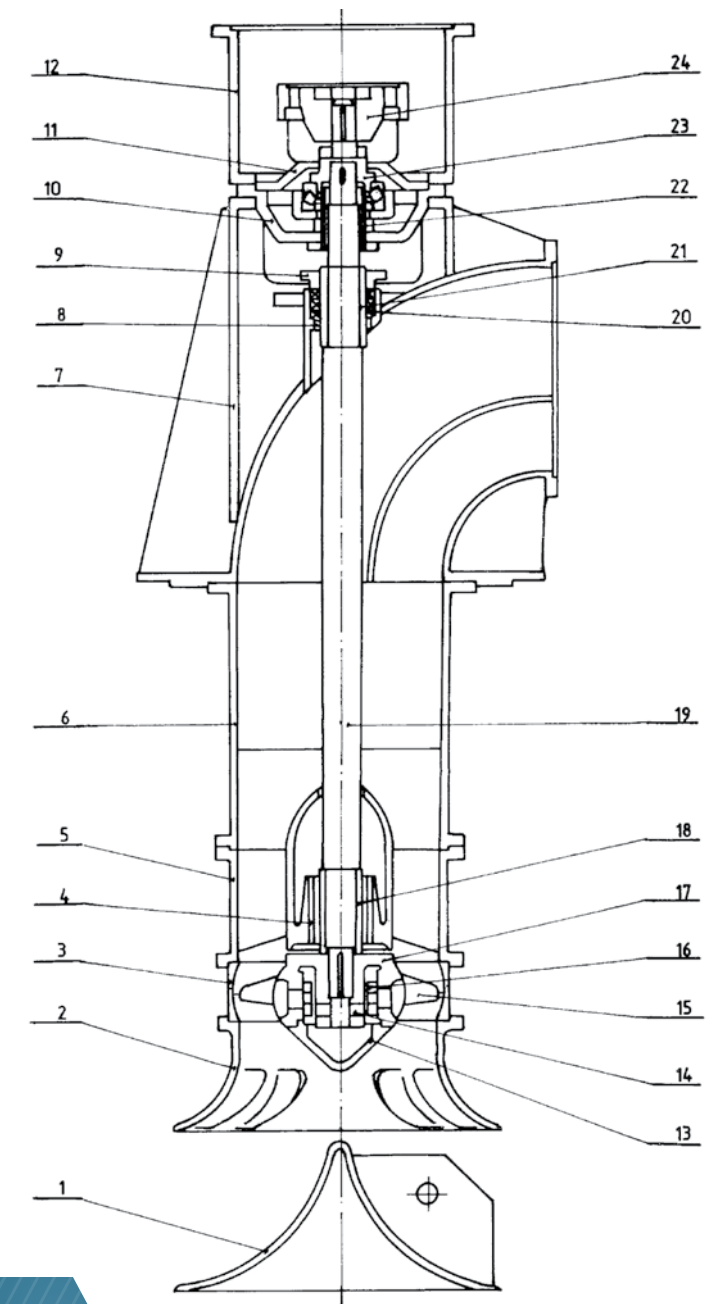


D	Floor Dimensions					Suction Well				
	M	N	P	R	S	F	Y	L	Z	W
350	600	1000	200	850	1250	311	275	438	250	600
400	650	1100	200	900	1300	355	314	500	286	700
500	850	1300	200	1100	1500	444	393	625	357	900
600	1000	1400	200	1300	1700	533	471	750	429	1100
700	1100	1500	250	1400	1800	622	550	875	500	1200
800	1300	1700	250	1600	2000	711	629	1000	571	1400
1000	1600	2000	300	2000	1400	888	786	1250	714	1800
1200	1900	2300	300	2300	2700	1066	943	1500	857	2100
1400	2200	2600	300	2600	3000	1244	1100	1750	1000	2500
1600	2500	2900	350	3000	3400	1421	1257	2000	1143	2800
1800	2800	3200	350	3400	3800	1599	1414	2250	1286	3200

Dimensions in mm.  
Flanges to NP 6 and NP 10.

## SECTIONAL DRAWING OF CL PUMPS

1. Suction cone
2. Suction bell
3. Impeller ring
4. Guide bearing casing
5. Guide vanes casing
6. Tube
7. Delivery elbow
8. Neck bush
9. Stuffing box
10. Thrust bearing casing
11. Thrust bearing cover
12. Motor stool
13. Cover
14. Shaft nut
15. Blade
16. Fixing plate
17. Impeller hub
18. Shaft sleeve
19. Shaft
20. Packing
21. Shaft sleeve
22. Oil retaining tube
23. Bearing bell
24. Coupling



Type	CLU
D	800
Version	C

B	2 500 mm
T	2 100 mm
K	2 100 mm

G	2 700 kg
G1	0 kg
G2	1 300 kg
Q1	451 kg
Q2	0 kg
Q1c	0 kg
Mass	4 451 kg
Prices	36 657 EUR

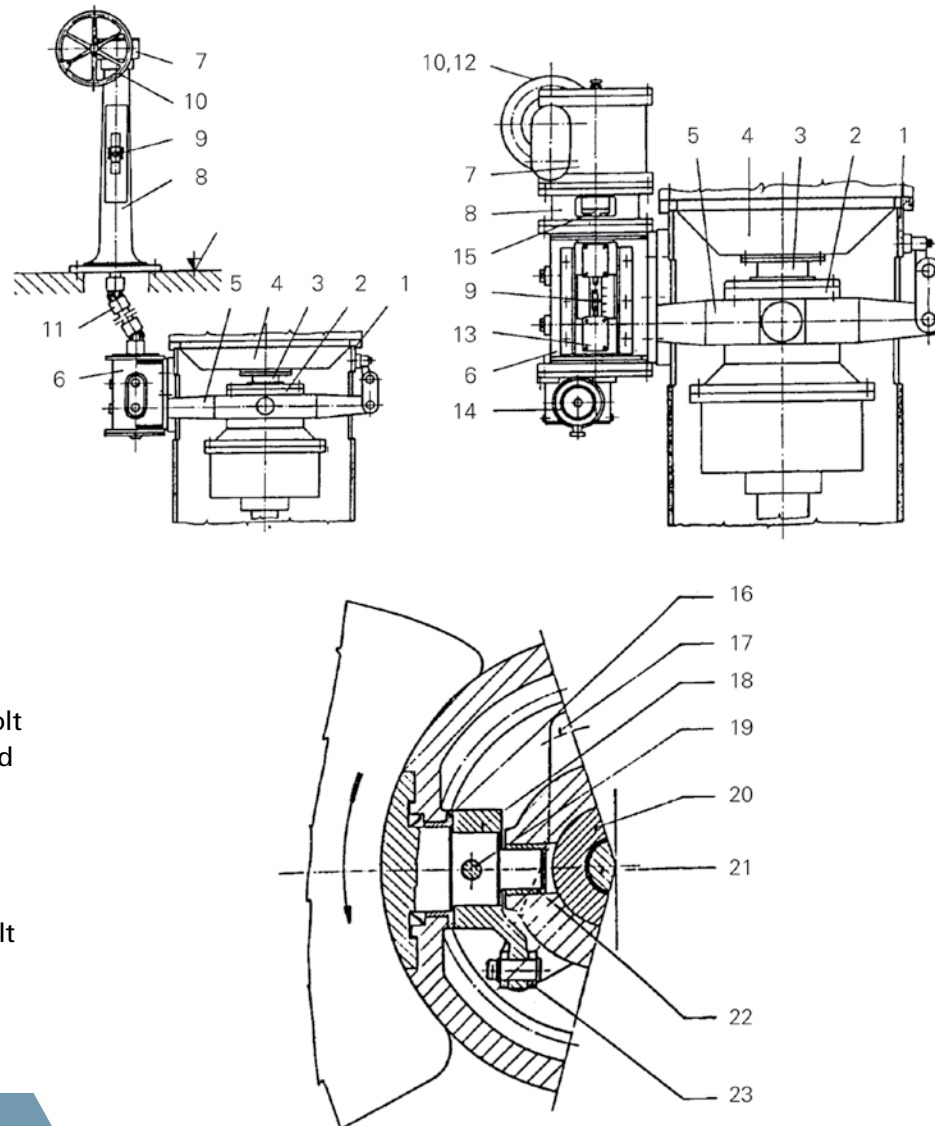
D	Version A, B=Bmin
	CLW, CLT, CLU, CLZ
400	8 500 EUR
500	12 550 EUR
600	16 650 EUR
700	22 750 EUR
800	27 950 EUR
1000	42 300 EUR
1200	56 750 EUR

D	Version A, B=Bmin
	CLW, CLT, CLU, CLZ
400	900 kg
500	1 310 kg
600	1 730 kg
700	2 350 kg
800	2 890 kg
1000	4 360 kg
1200	5 850 kg

KL PUMP WITH BLADES ADJUSTABLE DURING OPERATION  
KK PUMP WITH BLADES ADJUSTABLE DURING OPERATION  
AND ROTOR THAT CAN BE WITHDRAWN

Blade adjusting device

1. Pump casing
2. Bearing casing for blade adjusting equipment
3. Shaft
4. Thrust-bearing casing
5. Lever
6. Headstock
7. Gear box
8. Frame support
9. Pointer
10. Hand wheel
11. Cardan shaft
12. Electromotor
13. Limit switch
14. Distant transmitter
15. Shaft coupling
16. Bush for external blade bolt
17. Blade adjusting cross head
18. Blade adjusting lever
19. Blade bolt
20. Pump shaft
21. Tractive rod for blade
22. Bush for internal blade bolt
23. Blade adjusting link



## SUBMERSIBLE PUMPS

CU-MU

### GENERAL SPECIFICATION

Vertical-shaft, single-stage submersible pumps with guide vane system.

### CONSTRUCTIONAL DETAILS

The electric motor and the pump form a single unit and operate inside the rising pipe submerged in water. The water handled flows around the pump motor unit and serves for cooling, too. The pump mounted in the rising pipe can be hung into the suction sump (understructure), so there is no need for any superstructure or building. The rising pipe pump unit can be operated placed in an inclined position, e. g. on the side of a dam body.

### MEDIUM HANDLED

Neutral clean water up to a temperature of 40 to 45 °C or silty water containing no larger solids. Max. silt content: 600 mg/dm<sup>3</sup>.

### FIELD OF APPLICATION

Waterworks, industrial plants and thermal power stations, for the purpose of cooling water supply, land drainage, irrigation. The pumps type MU can be used for higher lifts.

### PACKING

Double mechanical seal built in the electric motor. Between the two seal rings there is an oil space. Should any water get in, an appropriate sensor will give signal and/or stop the motor.

### BEARING SUPPORT

The rolling-element bearings installed in the electric motor require no separate lubrication.

### MAIN STRUCTURAL MATERIALS

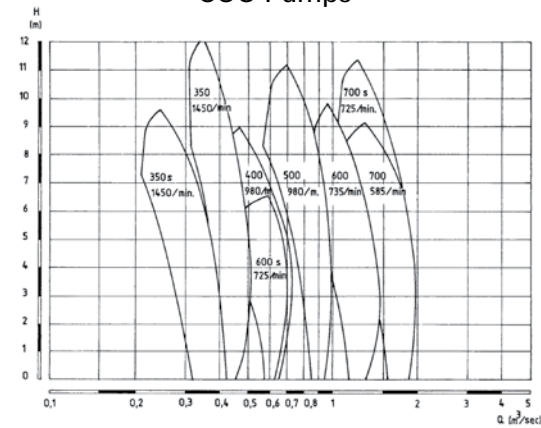
Impeller, wingblade: corrosion-resistant steel  
Pump casing: cast-iron  
Rising pipe: carbon steel



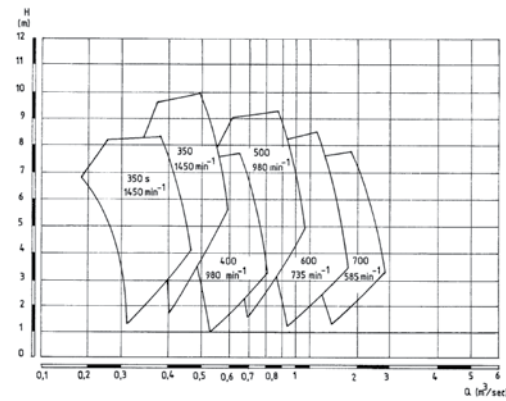


## PERFORMANCE RANGES

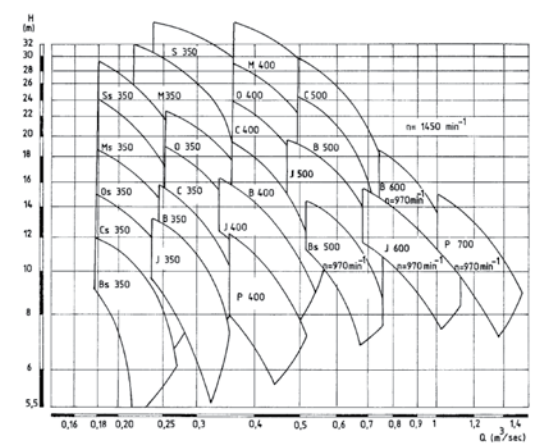
Performance Ranges of Type CUU Pumps



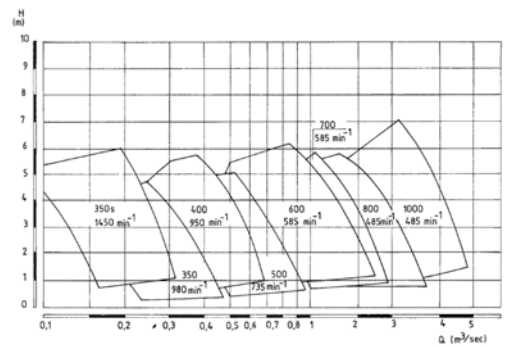
Performance Ranges of Type CUT Pumps



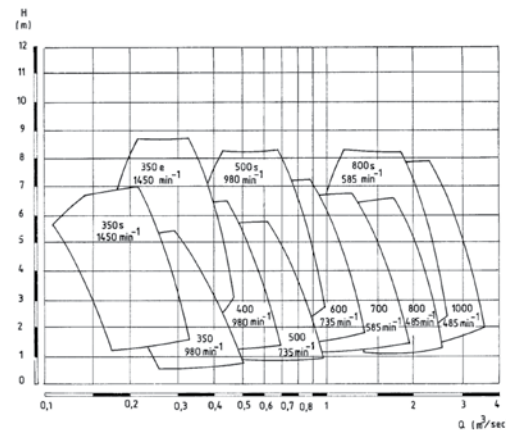
Performance Ranges of Type MU Pumps



Performance Ranges of Type CUZ Pumps

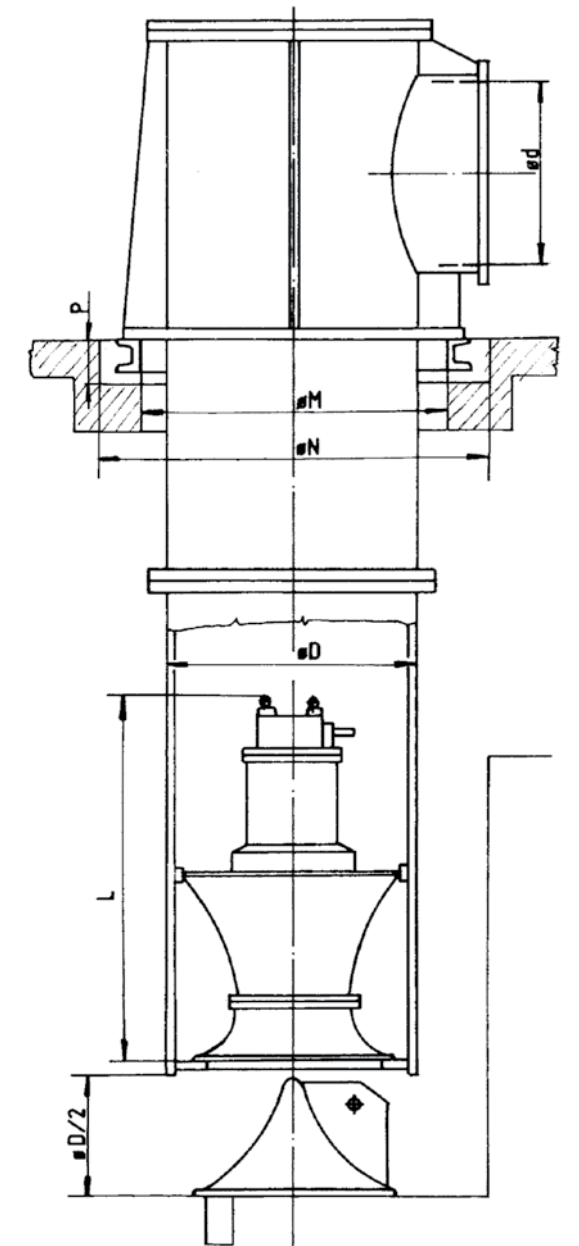


Performance Ranges of Type CUW Pumps



## OUTLINE DRAWINGS OF TYPE CU, MU PUMPS

Type	d	D	L <sub>max</sub>	M	N	P
CUU 350s	350	600	1060	650	1100	200
CUU 350	350	600	1740	650	1100	200
CUU 400	400	600	1910	650	1100	200
CUU 500	500	800	2150	850	1300	200
CUU 600s	600	900	2020	1000	1400	200
CUU 600	600	900	2400	1000	1400	200
CUU 700s	700	1100	2900	1200	1600	250
CUU 700	700	1100	2930	1200	1600	250
CUT 350s	350	600	1080	650	1100	200
CUT 350	350	600	1740	650	1100	200
CUT 400	400	600	1910	650	1100	200
CUT 500	500	800	2150	850	1300	200
CUT 600	600	900	2400	1000	1400	200
CUT 700	700	1100	2930	1200	1600	250
CUW 350s	350	600	960	650	1100	200
CUW 350e	350	600	1510	650	1100	200
CUW 350	350	600	1080	650	1100	200
CUW 400	400	700	1670	750	1200	200
CUW 500s	500	700	1860	750	1200	200
CUW 500	500	700	1910	750	1200	200
CUW 600	600	900	2160	1000	1400	200
CUW 700	700	1000	2550	1100	1500	250
CUW 800s	800	1100	2840	1200	1600	250
CUW 800	800	1200	3010	1300	1700	250
CUW 1000	1000	1200	3150	1300	1700	250
CUZ 350s	350	600	980	650	1100	200
CUZ 350	350	600	1110	650	1100	200
CUZ 400	400	700	1670	750	1200	200
CUZ 500	500	700	1950	750	1200	200
CUZ 600	600	900	2050	1000	1400	200
CUZ 700	700	1000	2590	1100	1500	250
CUZ 800	800	1200	3060	1300	1700	250
CUZ 1000	1000	1200	3210	1300	1700	250
MUSs 350	350	700	1730	750	1200	200
MUS 350	350	800	1960	850	1300	200
MUMs 350	350	600	1730	650	1100	200
MUM 350	350	800	1950	850	1300	200
MUM 400	400	800	2090	850	1300	200
MUOs 350	350	600	1570	650	1100	200
MUO 350	350	400	1770	750	1200	200
MUO 400	400	800	2090	850	1300	200
MUCs 350	350	600	1520	650	1100	200
MUC 350	350	700	1710	750	1200	200
MUC 400	400	800	1920	850	1300	200
MUC 500	500	1000	2370	1100	1500	250
MUBs 350	350	600		650	1100	200
MUB 350	350	600		650	1100	200
MUB 400	400	400		750	1200	200
MUBs 500	500	800		850	1300	200
MUB 500	500	800		850	1300	200
MUB 600	600	1000		1100	1500	250
MUJ 350	350	600	1510	850	1100	200
MUJ 400	400	700	1700	750	1200	200
MUJ 500	500	800	2000	850	1300	200
MUJ 600	600	1000	2150	1100	1500	250
MUP 400	400	600	1740	650	1100	200
MUP 700	700	1000	2610	1100	1500	250

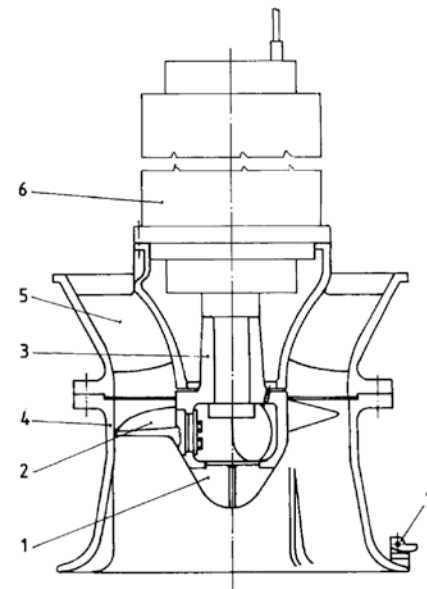


Dimensions in mm.  
Flanges to NP 6.

## SECTIONAL DRAWINGS

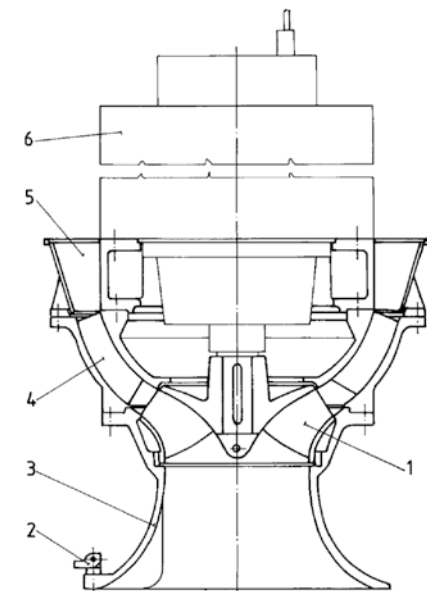
Sectional Drawing of CU Pumps

1. Cover
2. Impeller blade
3. Impeller boss
4. Suction bell
5. Guide vanes casing
6. Submersible motor
7. Retainer



Sectional Drawing of MU Pumps

1. Impeller
2. Retainer
3. Suction bell
4. Guide vanes casing
5. Diffuser
6. Submersible motor



## DOUBLE SUCTION PUMPS

D

### GENERAL SPECIFICATION

Horizontal- or vertical-shaft, single-stage double-suction pump with volute casing splitted in the axial plain.

### STRUCTURAL DETAILS

Both the suction and the discharge branches are horizontal. The branches, the bearing brackets and the socket of the pump are in the bottom part of the casing. The shaft may be horizontal or vertical. The casing may be cast in the standard models or fabricated by welding at larger models.

### HANDLED MEDIUM

Clean cold water or hot water up to a temperature of 80 °C, or slightly contaminated industrial water containing no larger solids. Other, non-aggressive fluids with a viscosity not too far from that of the water can also be handled.

### FIELD OF APPLICATION

Primarily industrial and potable water supply systems, cooling water circulation of power plants, irrigation plants and fire-fighting systems.

### SEALING

Stuffing box with soft cord packing or – in function of the handled fluid and of the suction side pressure – mechanical seal.

### SHAFT BEARINGS

Grease lubricated roller bearings in horizontal shaft pumps. In the pumps with vertical shaft arrangement the lower bearing can be water lubricated sliding bearing. The pumps with larger dimensions and/or with higher power consumption can be equipped with oil lubrication instead of greasing. The bearing casings can get water-cooling.

### MAIN STRUCTURAL MATERIALS

Impeller: bronze or stainless steel  
Pump casing: cast iron or welded carbon steel  
Shaft: carbon steel or stainless steel  
Shaft protecting sleeves: stainless steel

### PERFORMANCE FIELD

The diagram of performances consists of two fields: The inside area is the field of standard machines, the outside area belongs to tailor made non-serial pumps. Tailor made solutions can be applied to the machines within the „standard field“ too.



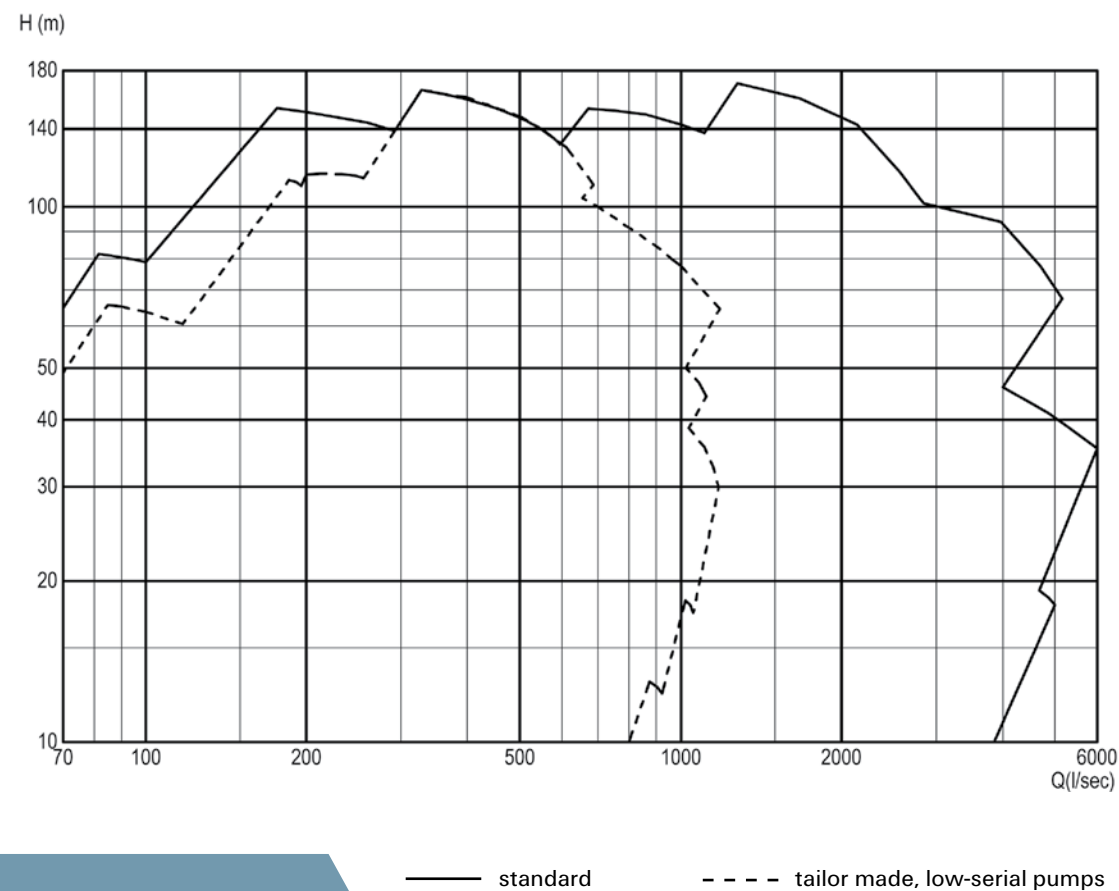


## SECTIONAL AND OUTLINE DRAWINGS

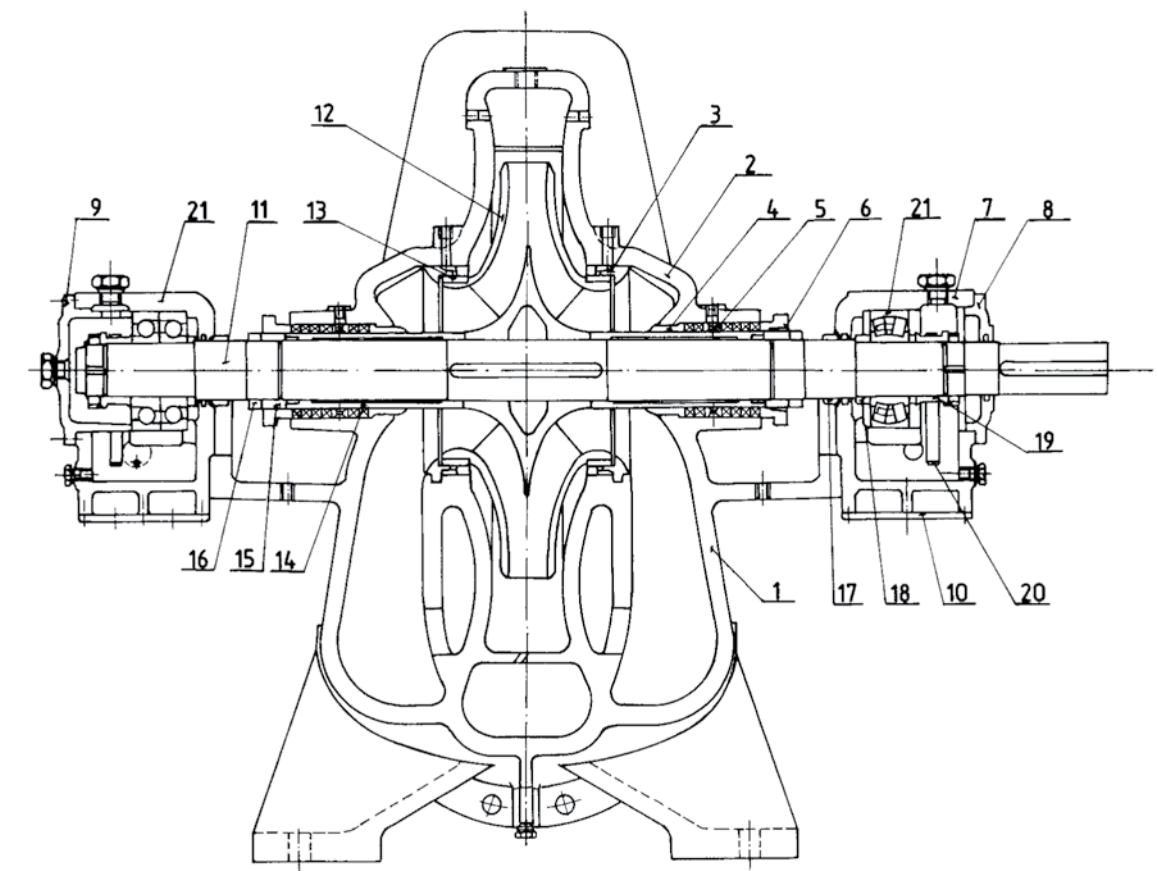
Sectional Drawing of „standard” pumps  
Outline Drawings of „standard” pumps  
Outline Drawing of vertical-shaft pumps  
Outline Drawing of large-size pump with welded casing

The characteristic curves, the actual readings of the outline dimensions referring to the drawing and other parts of the detailed technical specification shall be given by our offer.

## PERFORMANCE RANGES OF TYPE D PUMPS

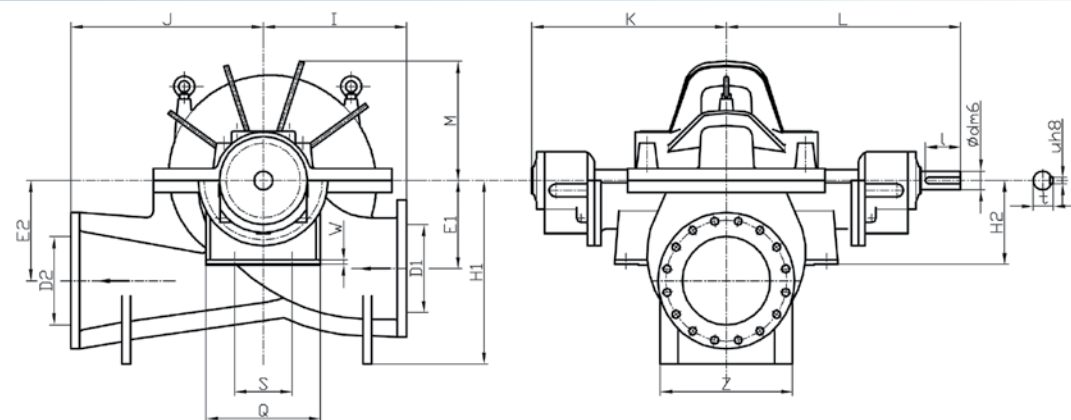


## SECTIONAL DRAWING OF A DOUBLE-SUCTION PUMP



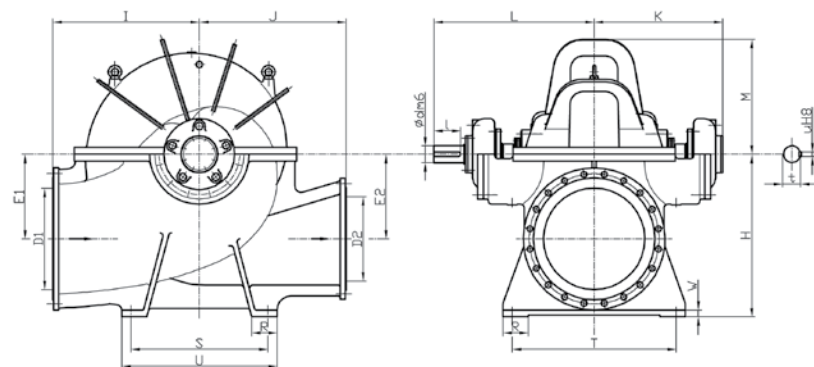
- |                       |                             |                      |
|-----------------------|-----------------------------|----------------------|
| 1. Casing half, lower | 8. Bearing cover I.         | 15. Shaft nut        |
| 2. Casing half, upper | 9. Bearing cover II.        | 16. Lock nut         |
| 3. Casing wear ring   | 10. Cooling cover           | 17. Labyrinth ring   |
| 4. Neck bush          | 11. Shaft                   | 18. Shoulder ring    |
| 5. Lantern ring       | 12. Impeller                | 19. Distance sleeve  |
| 6. Stuffing gland     | 13. Impeller ring           | 20. Lubrication ring |
| 7. Bearing housing    | 14. Shaft protecting sleeve | 21. Bearing          |

## OUTLINE DRAWING I. OF DOUBLE-SUCTION SPLIT-CASED, HORIZONTAL-SHAFT, CENTRIFUGAL PUMP



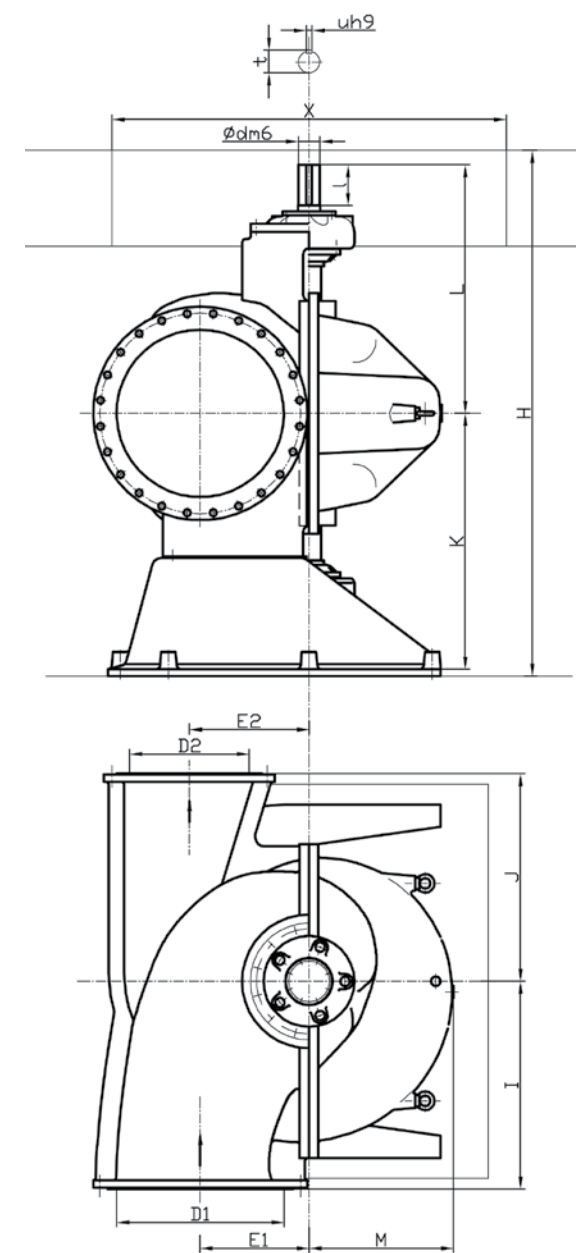
D Pumps	Range		
Discharge branch	ND	200-1200	(mm)
Flow Rate	Q	0,07-6,0	(m³/s)
Head	H	10-140	(m)
Working pressure	p	max. 16	bar
Working temperature	t	max. 80	°C
Speed	n	max. 1500	(f/p - RpM)

## OUTLINE DRAWING II. OF DOUBLE-SUCTION SPLIT-CASED, HORIZONTAL-SHAFT, CENTRIFUGAL PUMP



Type		Qp	Qc	Qb	Qt	Prices
		kg	kg	kg	kg	EUR
DAK	150	340	40	160	540	5 520
DAK	200	450	40	210	700	7 090
DAK	250	990	70	340	1400	14 700
DAK	300	2000	150	550	2700	29 150
DAN	200	320	20	130	470	4 810
DAN	250	520	40	210	770	7 930
DAN	300	800	70	320	1190	12 320
DAN	350	1200	150	530	1880	19 450
DAN	450	2450	150	650	3250	35 050
DAN	500	3650	250	750	4650	51 550
DAN	600	5050	250	860	6160	68 900

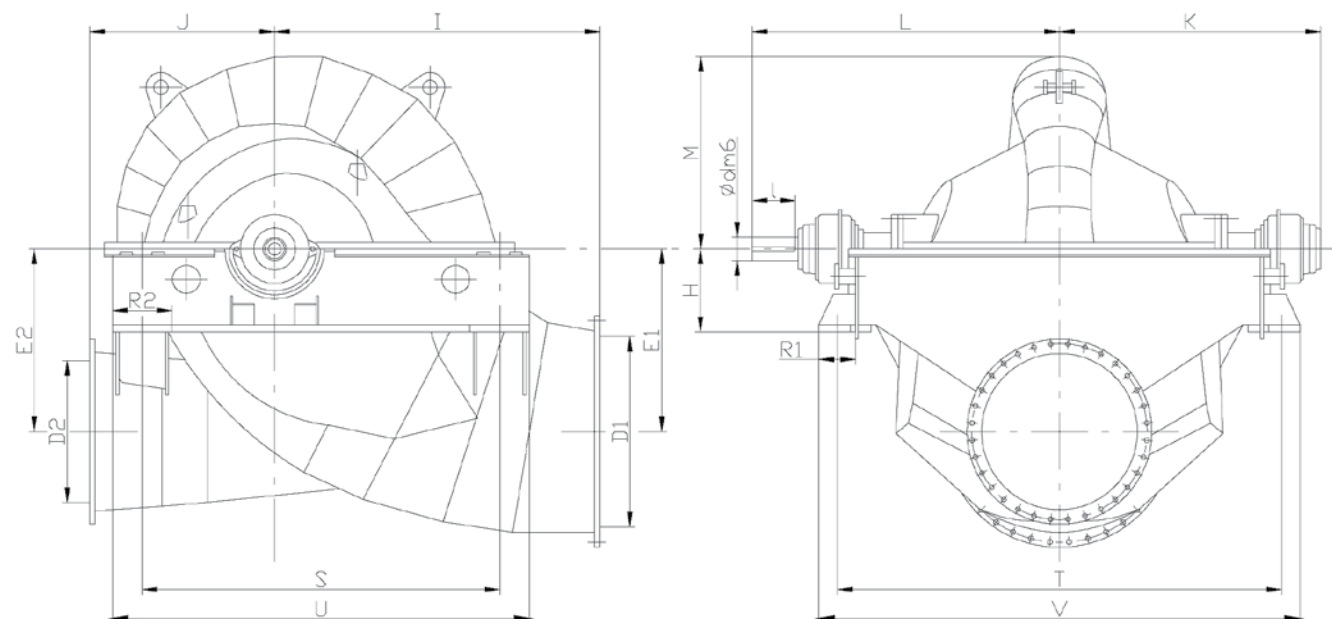
## OUTLINE DRAWING OF DOUBLE-SUCTION SPLIT-CASED, VERTICAL-SHAFT, CENTRIFUGAL PUMP



Type		Qp	Qc	Qb	Qt	Prices
		kg	kg	kg	kg	EUR
DAF	250	450	40	160	650	6 840
DAF	300	620	40	210	870	9 130
DAF	350	840	70	300	1210	12 700
DAF	400	1100	70	400	1570	16 320
DAF	500	2300	150	680	3130	33 400
DAF	600	3300	150	760	4210	45 800
DAF	700	5000	250	850	6100	68 250
DST	350	650	40	290	980	9 890
DST	450	970	70	380	1420	14 660
DST	500	1750	70	510	2330	24 670
DST	600	2700	150	710	3560	38 350
DST	700	4600	150	850	5600	61 850



## OUTLINE DRAWING OF DOUBLE-SUCTION WELDED-CASED, HORIZONTAL-SHAFT, CENTRIFUGAL PUMP



## DOUBLE-SUCTION HOT - WATER PUMPS

Df

### GENERAL SPECIFICATION

Horizontal-shaft, single-stage double-suction pump with volute casing splitted in the axial plain.

### STRUCTURAL DETAILS

Both the suction and the discharge branches are horizontal. The branches, the bearing brackets and the socket of the pump are in the bottom part of the casing. The casing is cast. In case of higher temperatures cooled base fram can be applied.

### HANDLED MEDIUM

Clean hot water up to a temperature of 200 °C, with maximum solid contents of 300 g/m<sup>3</sup>. Other, nonaggressive fluids with a viscosity not too far from that of the water can also be handled.

### FIELD OF APPLICATION

Primarily circulating pump of thermal power stations and district heating plants.

### SEALING

Stuffing box with soft cord packing or mechanical seal. The stuffing box can be cooled.

### SHAFT BEARINGS

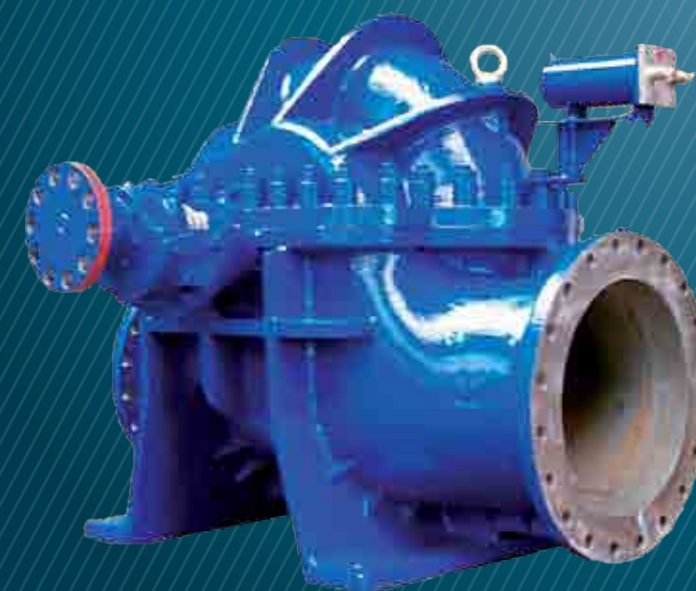
Oil lubricated roller bearings in horizontal shaft pumps. A double-row self-aligning ball bearing or roller bearing at one side, two angular-contact ball bearings in face-to-face arrangement at the other side. The bearing casings can be water cooled.

### MAIN STRUCTURAL MATERIALS

Impeller, impeller wearing ring, base bush and stuffing box: non-ferrous metal or stainless steel  
Pump casing: steel casting  
Shaft: carbon steel  
Shaft protecting sleeves: stainless steel

### PERFORMANCE FIELD

The diagram of performances covers standard machines. Machines falling outside this area are tailormade non-serial pumps. Tailormade solutions can be applied to the machines within the „standard field“ too.

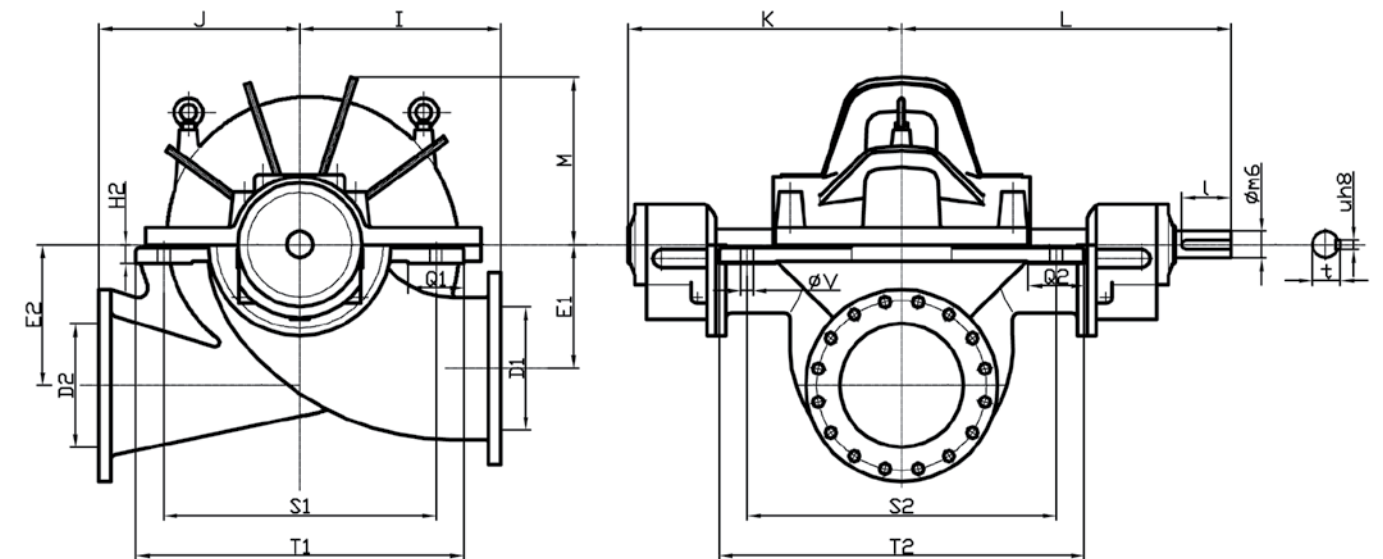
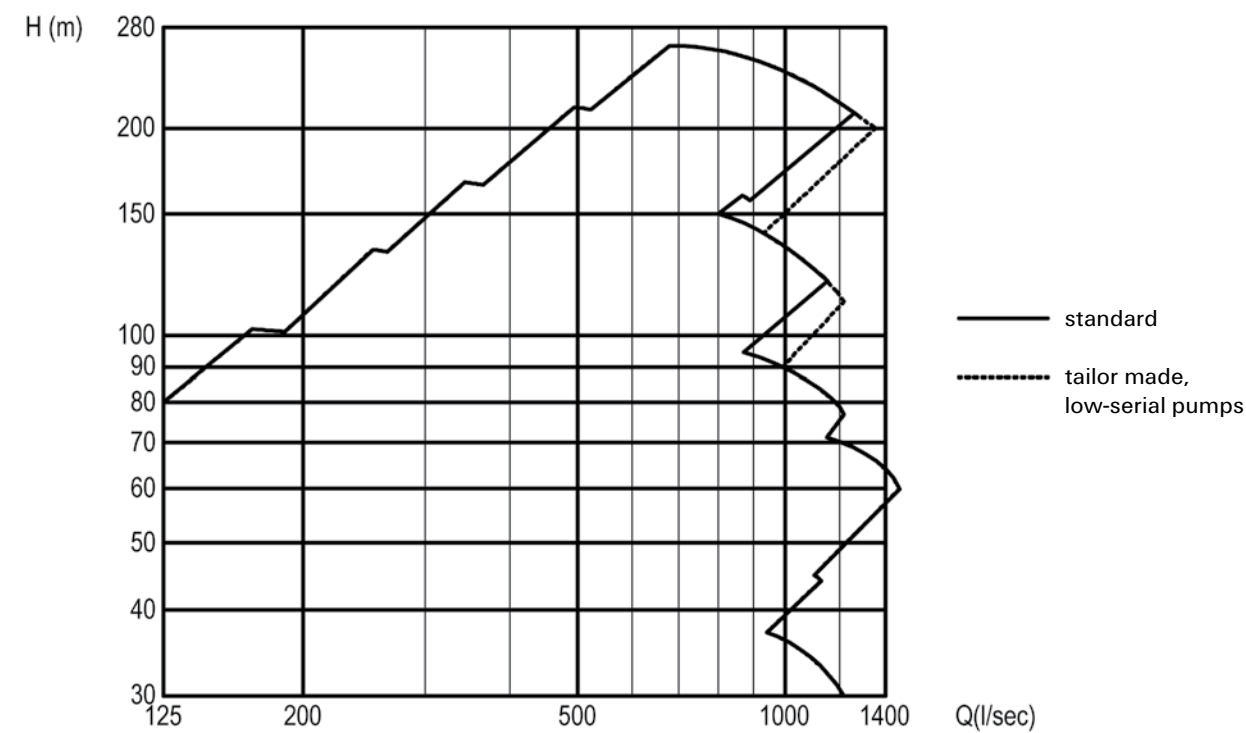


## SECTIONAL AND OUTLINE DRAWINGS

Sectional Drawing of „Df” Pump  
Outline Drawings of „Df” Pumps

The characteristic curves, the actual readings of the outline dimensions referring to the drawing and other parts of the detailed technical specification shall be given by our offer.

## PERFORMANCE RANGES OF TYPE Df PUMPS

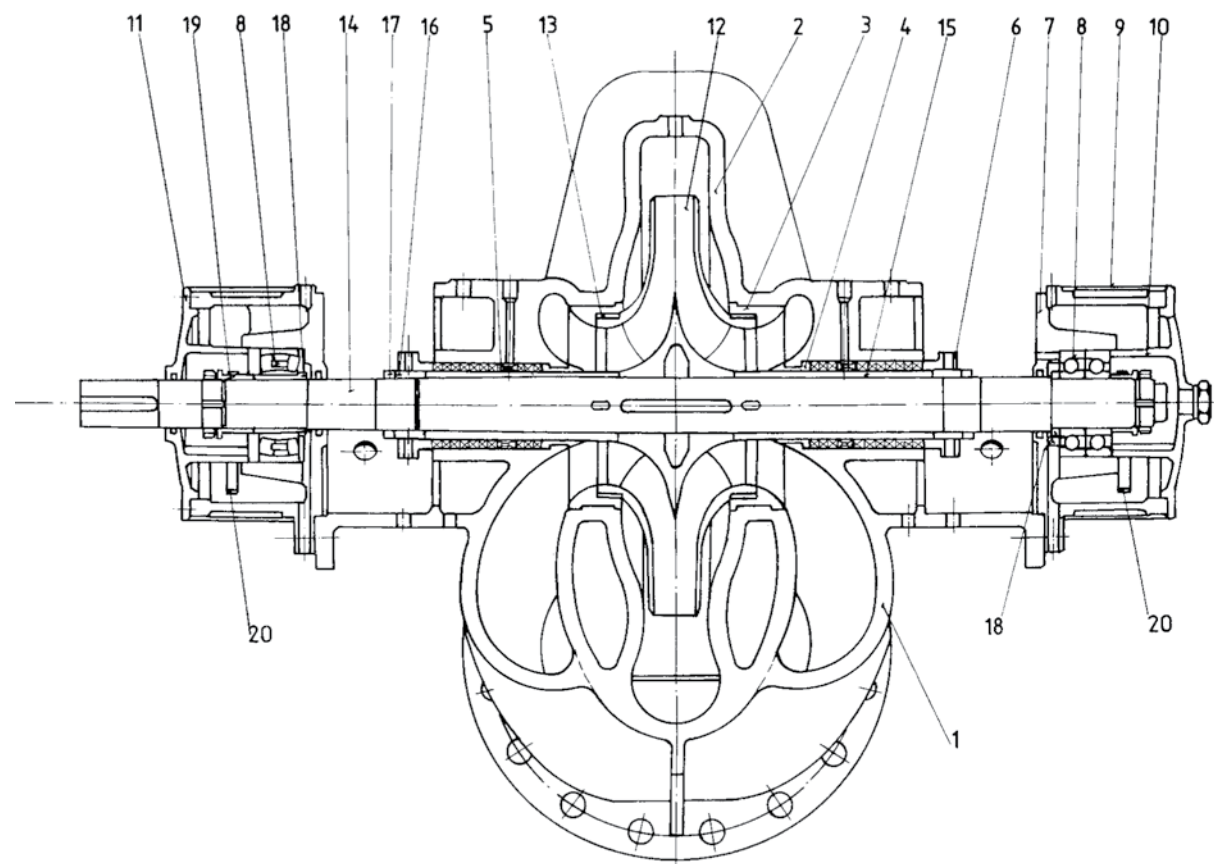


Df Pumps	Range		
Discharge branch	ND	250–600	(mm)
Flow Rate	Q	0,15–1,2	(m <sup>3</sup> /s)
Head	H	30–260	(m)
Working pressure	p	max. 40	bar
Working temperature	t	max. 200	°C
Speed	n	max. 1500	(f/p - RpM)

Type		Qp	Qc	Qb	Qt	Prices
		kg	kg	kg	kg	EUR
DfAK	250	1100	70	600	1770	17 320
DfAK	300	1500	150	830	2480	24 550
DfAK	400	2400	150	1100	3650	36 700
DfAN	250	750	40	480	1270	12 040
DfAN	300	1100	70	580	1750	17 220
DfAN	350	1500	150	830	2480	24 550
DfAN	400	2300	150	1100	3550	35 500
DfAN	500	2700	250	1450	4400	43 650
DfAN	600	4000	250	1450	5700	59 250



## SECTIONAL DRAWING OF Df PUMPS



- |                       |                       |                      |
|-----------------------|-----------------------|----------------------|
| 1. Casing half, lower | 7. Bearing housing    | 14. Shaft            |
| 2. Casing half, upper | 8. Bearing            | 15. Shaft sleeve     |
| 3. Casing wear ring   | 9. Cooling coat       | 16. Shaft nut        |
| 4. Neck bush          | 10. Bearing cover I.  | 17. Lock nut         |
| 5. Lantern ring       | 11. Bearing cover II. | 18. Shoulder ring    |
| 6. Stuffing gland     | 12. Impeller          | 19. Distance sleeve  |
|                       | 13. Impeller ring     | 20. Lubrication ring |

## MULTI-STAGE PUMPS

EBG

### GENERAL SPECIFICATION

Horizontal-shaft, opposed-impeller, multi-stage pump with split casing.

### CONSTRUCTIONAL DETAILS

The pump consists of two impeller groups in a face-to-face arrangement in order to equalize the axial forces. The two stage groups are connected by a passage pipe which can be situated at either the RH or LH side. The pump is composed of elements which are split perpendicularly to the shaft. The feet form a single unit while the return passage and the suction branch can be turned by 45 degrees, as the conditions of installation require.

### MEDIUM HANDLED

Clean, cold water, warm water up to 80 °C, slightly contaminated industrial water containing no larger solids, or settled subterranean (mine) water. Other liquids with a viscosity slightly differing from that of water and neutral in reaction can also be handled.

### FIELD OF APPLICATION

Industrial plants, mines and waterworks.

### PACKING

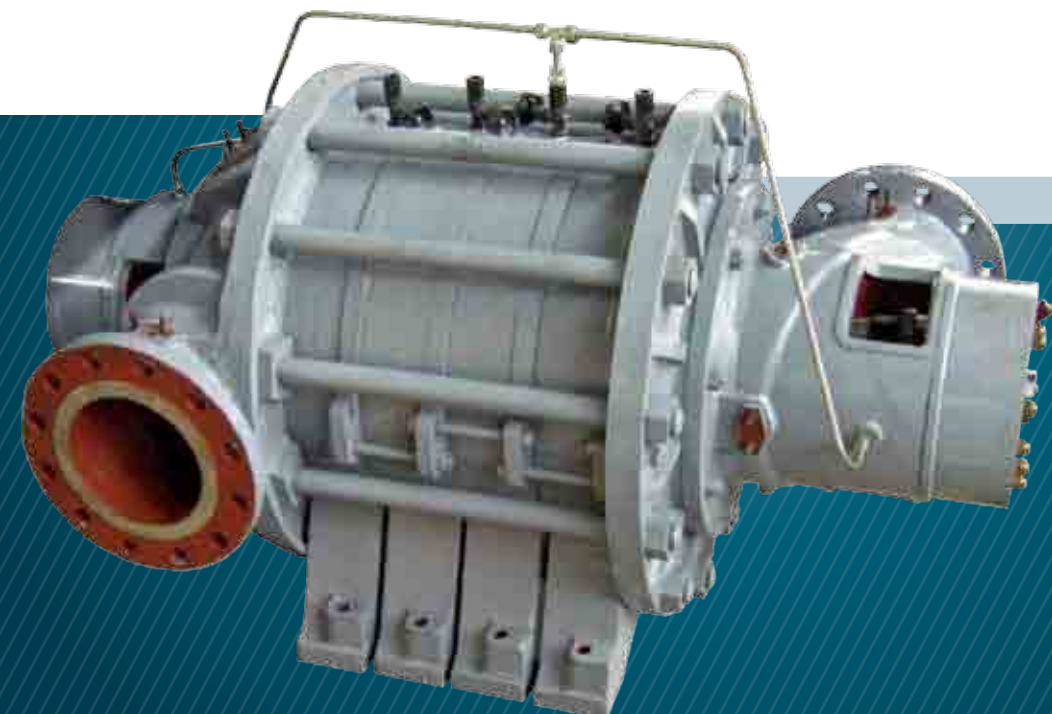
Teflon-cord-packed or mechanical stuffing box.

### BEARING SUPPORT

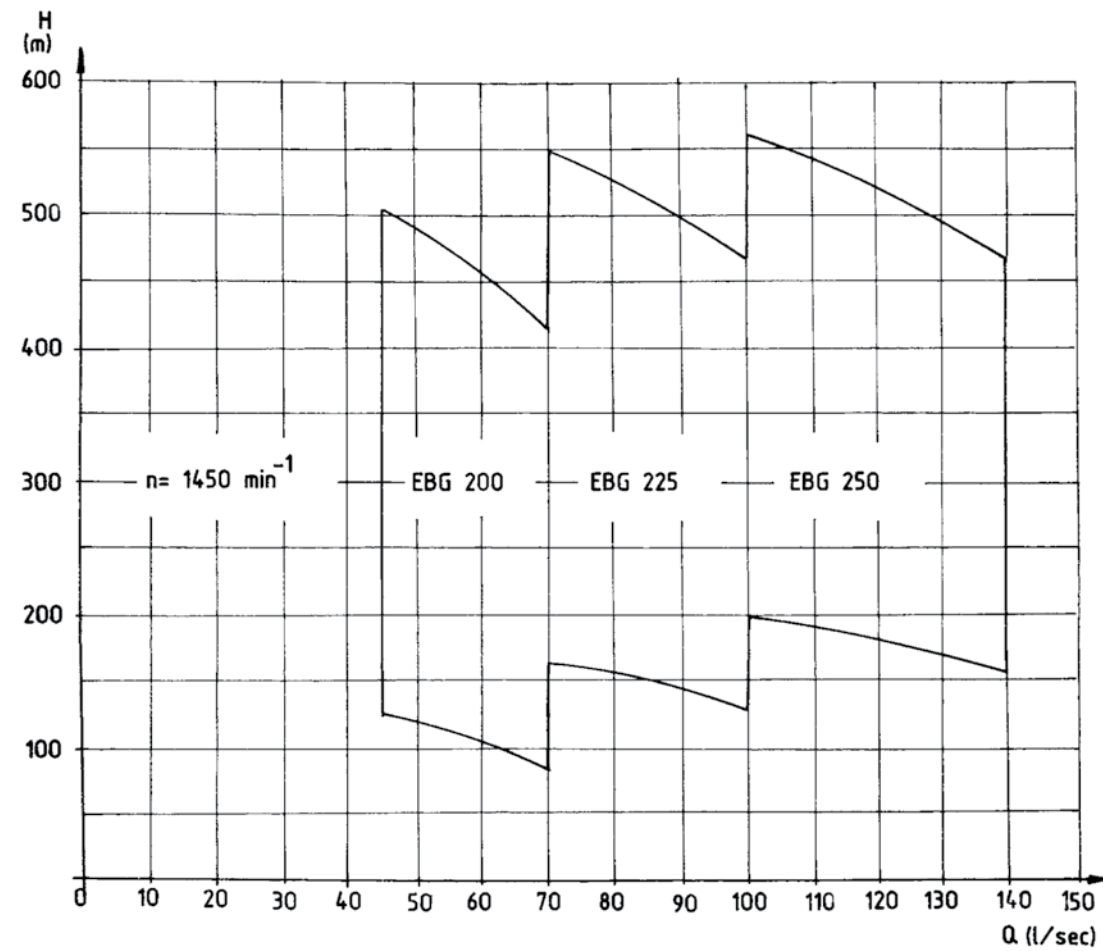
Self-aligning ball or roller bearings at two points; the possible axial forces are taken up by self-aligning thrust bearings.

### MAIN STRUCTURAL MATERIALS

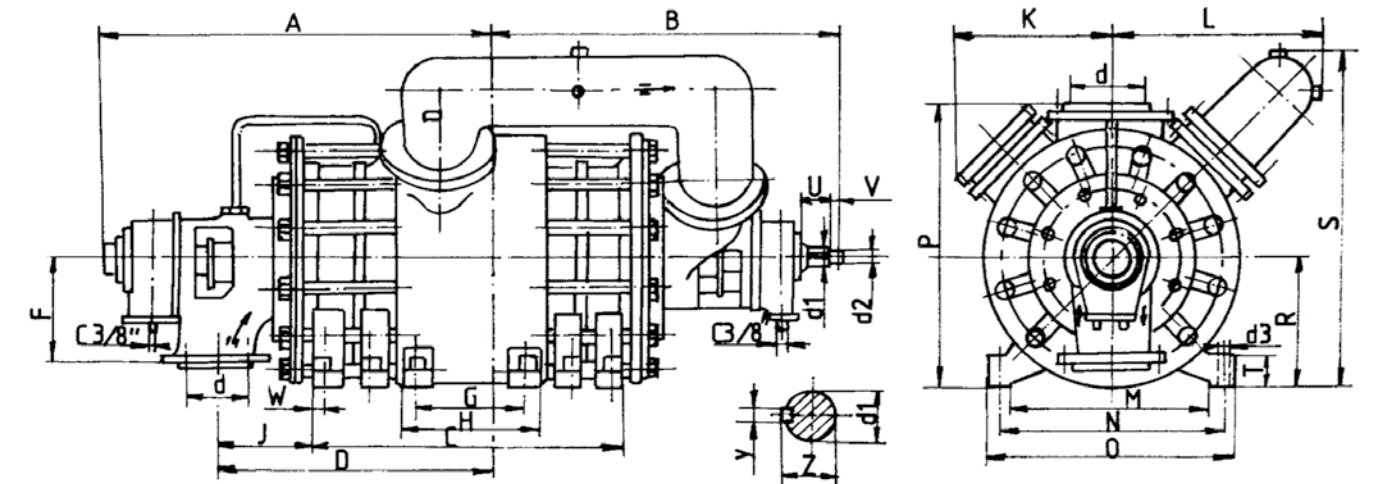
Impeller: cast-iron or nonferrous metal  
Wearing ring, base bush, stuffing box: nonferrous metal or corrosion-resistant steel  
Pump casing: steel casting  
Shaft: carbon steel  
Shaft protecting sleeve: corrosion-resistant steel



## PERFORMANCE RANGES OF EBG PUMPS



## OUTLINE DRAWING OF EBG PUMPS



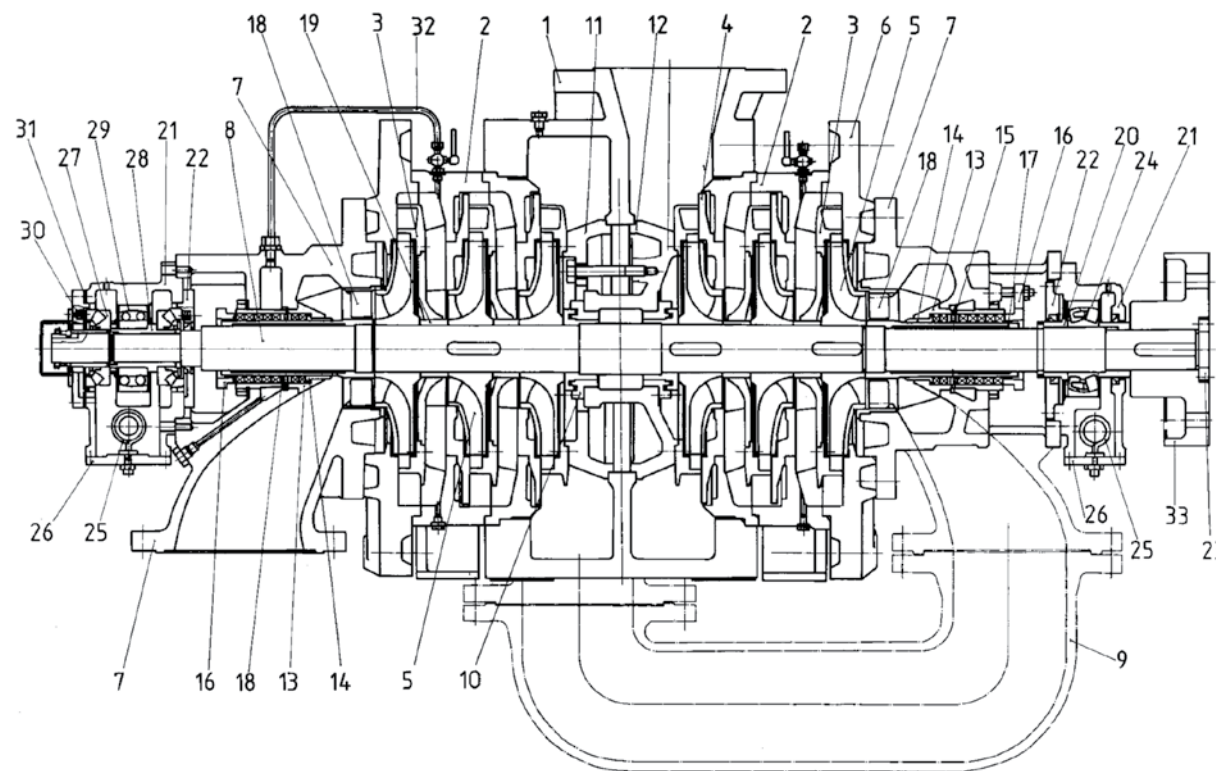
Type	F	G	H	J*	K	L	M	N	O	P	R	S	T	U	V	d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	y	z	w
EBG 200	335	345	450	309 (315)	500	635	570	680	750	860	380	1015	90	115	25	200	72	LH 60x2	22	20	78	35
EBG 225	575	370	490	338 (343)	546	695	650	770	850	1165	435	1130	100	118	25	250	82	LH 68x2	26	24	89	40
EBG 250	430	395	530	373 (377)	585	770	700	845	920	1085	485	1255	110	133	27	250	92	LH 75x2	26	24	99	50

	EBG 200					EBG 225				EBG 250		
	IV	VI	VIII	X	XII	IV	VI	VIII	X	IV	VI	VIII
A	1005	1123	1241	1359	1477	1047,5	1182,5	1317,5	1452,5	1149	1302	1455
B	837	955	1073	1191	1309	871,5	1006,5	1141,5	1276,5	978	1131	1284
C	450	698	934	1170	1406	490	770	1040	1310	530	844	1150
D	630	748	866	984	1102	683	818	953	1088	744	897	1050

Flanges	
Suction branch	Discharge branch
MSZ 2934 NP 40 neck according to MSZ 2994. For EBG 225 MSZ 2895 NP 40 neck according to MSZ 2994.	MSZ 2935 NP 64 with protrusion according to MSZ 2994.



## SECTIONAL DRAWING OF EBG PUMPS



- |                              |                             |                                  |
|------------------------------|-----------------------------|----------------------------------|
| 1. Delivery casing           | 11. Insert plate            | 23. Shaft nut                    |
| 2. Diffuser with guide vanes | 12. Cover insert            | 24. Roller bearing               |
| 3. Guide wheel               | 13. Stuffing box            | 25. Cooling pipe                 |
| 4. Profil disc               | 14. Base bush               | 26. Cover of oil chamber         |
| 5. Impeller                  | 15. Lantern ring            | 27. Thrust bearing               |
| 6. Suction cover             | 16. Stuffing gland          | 28. Centering sleeve for bearing |
| 7. Suction casing            | 17. Shaft protecting sleeve | 29. Ball bearing                 |
| 8. Shaft                     | 18. Entry impeller          | 30. Spring                       |
| 9. Passage pipe              | 19. Distance sleeve         | 31. Adjusting ring               |
| 10. Labyrinth ring           | 20. Shoulder ring           | 32. Lubrication pipe             |
|                              | 21. Bearing housing         | 33. Coupling half                |
|                              | 22. Bearing cover           |                                  |

# TWO-STAGE OPPOSED-IMPELLER PUMPS

EDH

## GENERAL SPECIFICATION

Horizontal-shaft, two-stage, opposed-impeller pumps with volute casing.

## CONSTRUCTIONAL DETAILS

The suction and discharge branches are horizontal. The two stages having a separate volute casing each operate opposite to each other in order to equalize the axial forces. The pump housing incorporating the two suction chambers and the two volute casings is made of a casting split into the shaft centre. The suction and discharge branches, the bearing brackets and the foot of the pump can be found at the bottom part of the housing while the top part incorporates the passage channel between the two stages. The pump can be driven from either the RH or LH side.

## MEDIUM HANDLED

Clean cold water or hot water up to a temperature of max. 80 °C or slightly contaminated industrial water containing no larger solids or sedimentated subterranean water. Other liquids with a viscosity slightly differing from that of water and being neutral in reaction can also be handled.

## FIELD OF APPLICATION

Industrial plants, mines, waterworks.

## PACKING

Teflon-cord-packed or mechanical stuffing boxes.

## BEARING SUPPORT

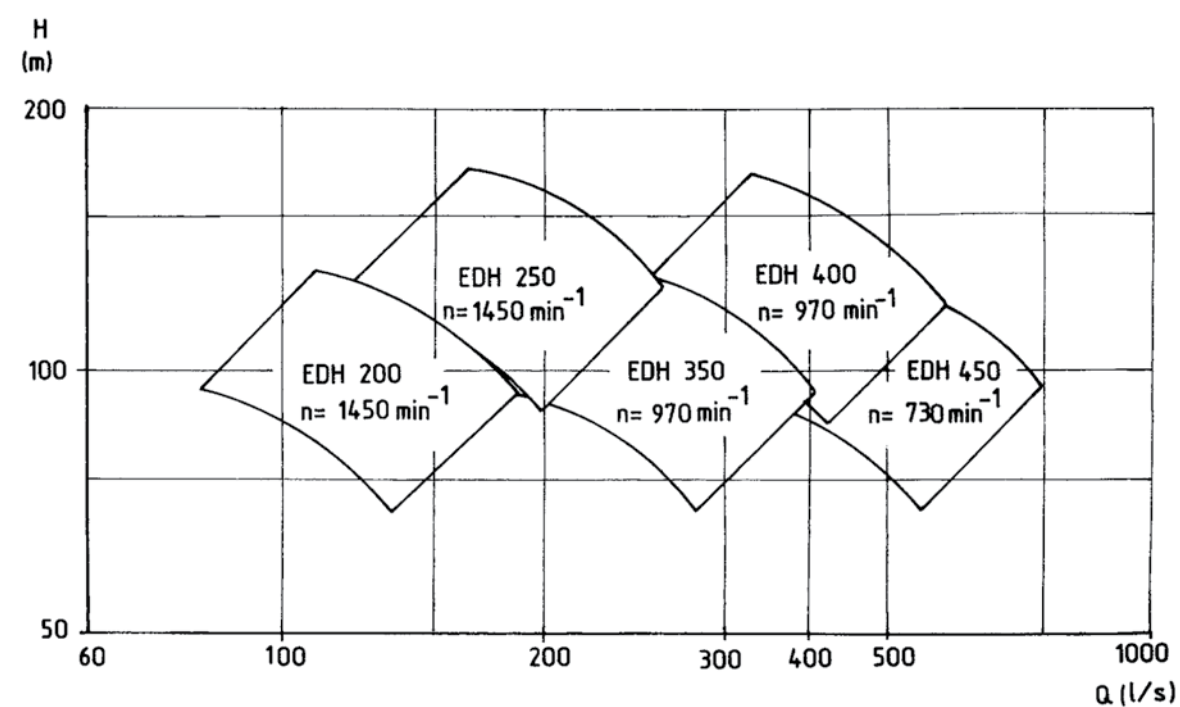
Grease-lubricated roller bearings; double-row self-aligning ball or roller bearings on one side and two angular-contact ball bearings placed opposite to each other on the other side. The bearing housings can be cooled.

## MAIN STRUCTURAL MATERIALS

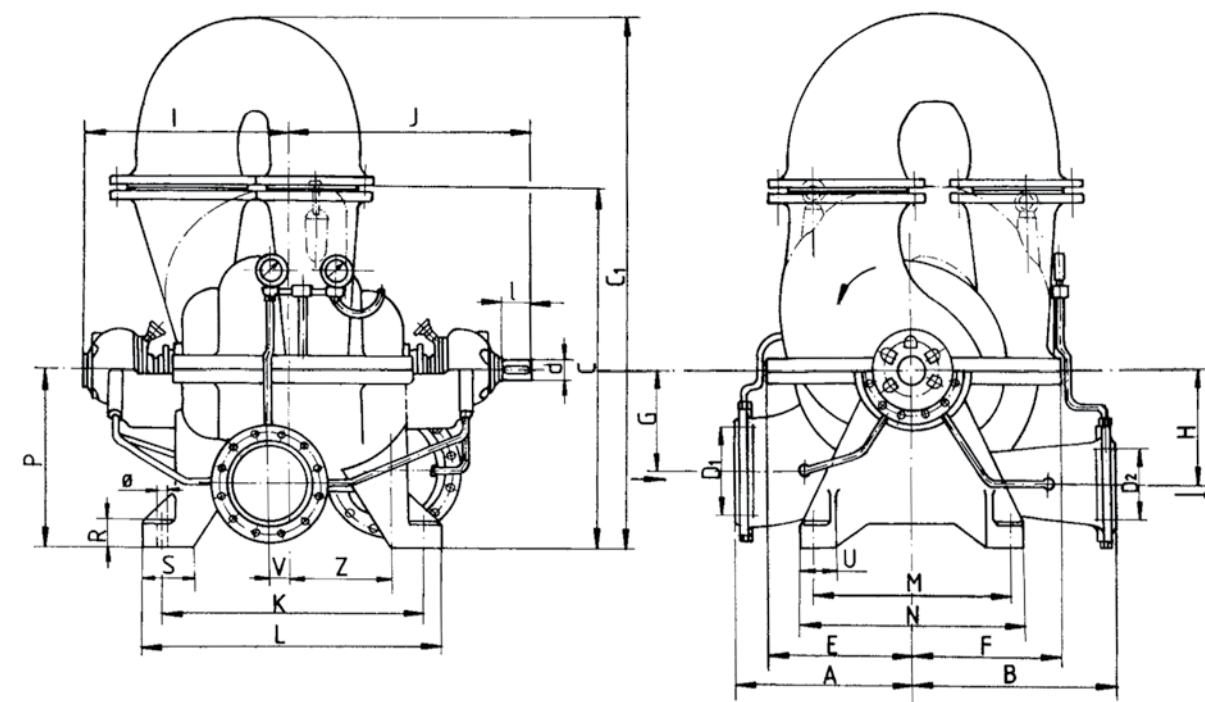
Impeller: nonferrous metal  
Wear ring, base bushing, stuffing box: nonferrous metal or corrosion-resistant steel  
Pump casing: cast iron  
Shaft: carbon steel  
Shaft sleeve: corrosion-resistant steel



## PERFORMANCE RANGES OF EDH PUMPS



## OUTLINE DRAWING OF EDH PUMPS



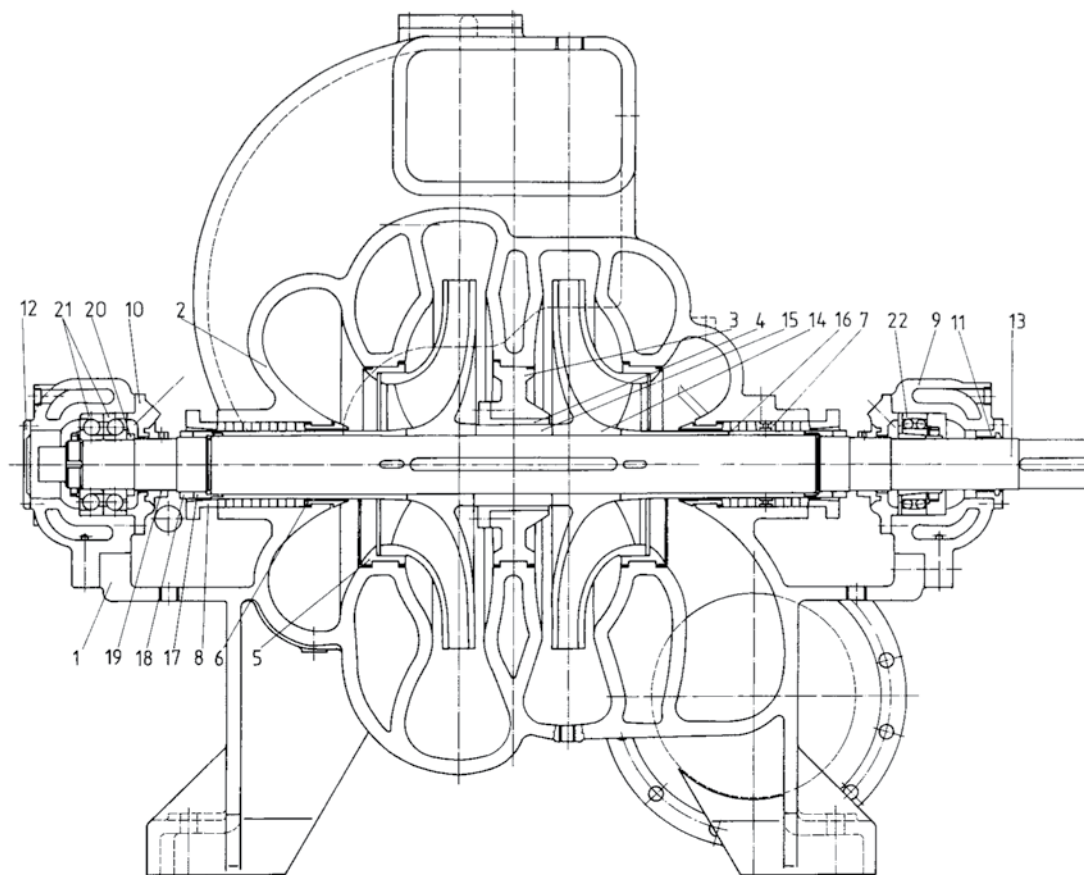
Type	A	B	C	C <sub>1</sub>	D <sub>1</sub>	D <sub>2</sub>	E	F	G	H	I	J
EDH 200	520	500	1510	1508	250	200	415	480	300	330	451	776
EDH 250	600	700	1259	-	300	250	457	525	340	380	710	835
EDH 350	760	920	1650	2230	400	350	615	710	450	490	1000	1200
EDH 400	870	1050	1750	2545	500	400	700	810	500	550	1150	1350
EDH 450	1030	1240	2200	3005	500	450	830	955	590	660	1350	1620

Type	K	L	M	N	P	R	S	U	V	Z	Ø	d	I
EDH 200	800	900	620	700	550	75	170	110	70	305	25	65	100
EDH 250	940	1060	700	800	600	90	200	130	80	350	27	72	100
EDH 350	1220	1050	920	1050	820	110	250	165	104	455	30	90	170
EDH 400	1400	1600	1050	1200	900	120	300	200	118	516	30	110	200
EDH 450	1650	1800	1240	1410	1100	145	340	220	140	610	30	118	230

Dimensions in mm.  
Flanges to NP 16.



## SECTIONAL DRAWING OF EDH PUMPS



- |                        |                       |                                  |
|------------------------|-----------------------|----------------------------------|
| 1. Casing half (lower) | 8. Stuffing gland     | 16. Shaft sleeve                 |
| 2. Casing half (upper) | 9. Bearing housing    | 17. Shaft nut                    |
| 3. Interstage piece    | 10. Bearing cover     | 18. Lock nut                     |
| 4. Interstage bush     | 11. Packing cover     | 19. Labirinth ring               |
| 5. Casing wear ring    | 12. Bearing end cover | 20. Shoooulder ring              |
| 6. Neck bush           | 13. Shaft             | 21. Self aligning ball bearing   |
| 7. Lantern ring        | 14. Impeller          | 22. Angular contact ball bearing |
|                        | 15. Distance sleeve   |                                  |

## TWO-STAGE HOT - WATER PUMPS

## EfDH

## GENERAL SPECIFICATION

Horizontal-shaft, two-stage, opposed-impeller pumps with spiral casing, intended for handling hot water.

## CONSTRUCTIONAL DETAILS

Both the suction and discharge branches are horizontal. The two stages – having a separate spiral casing each – operate in a face-to-face arrangement in order to equalize the axial forces. The pump housing incorporating the two suction chambers and the two spiral casings is made from a casting split along the shaft centre. The suction and discharge branches, bearing brackets and the pump foot can be found at the bottom part of the housing while the top part incorporates the passage channel connecting the two stages. The pump can be driven from either the RH or LH side.

## MEDIUM HANDLED

Clean cold water at a temperature of 150 to 200 °C. Max. silt content: 120 mg/dm<sup>3</sup>. Other liquids with a viscosity slightly differing from that of water and neutral in reaction can also be handled.

## FIELD OF APPLICATION

Primarily as circulating pumps in thermal power stations.

## PACKING

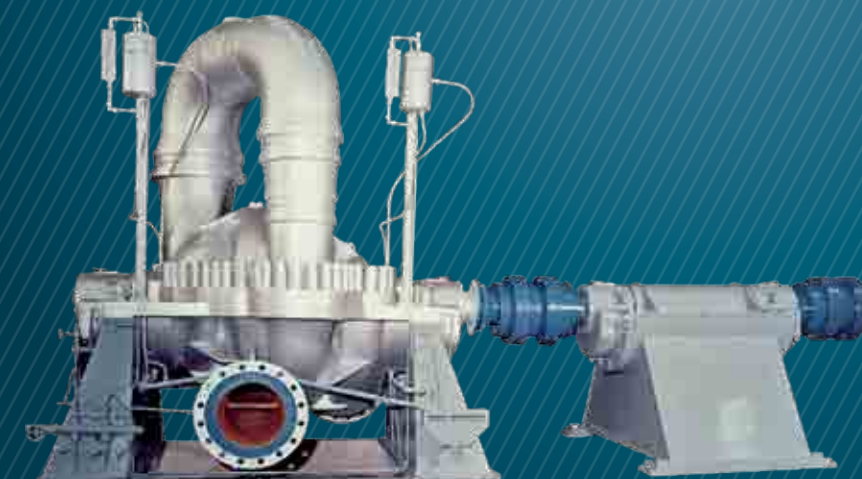
Teflon-cord-packed or mechanical stuffing box which can be cooled.

## BEARING SUPPORT

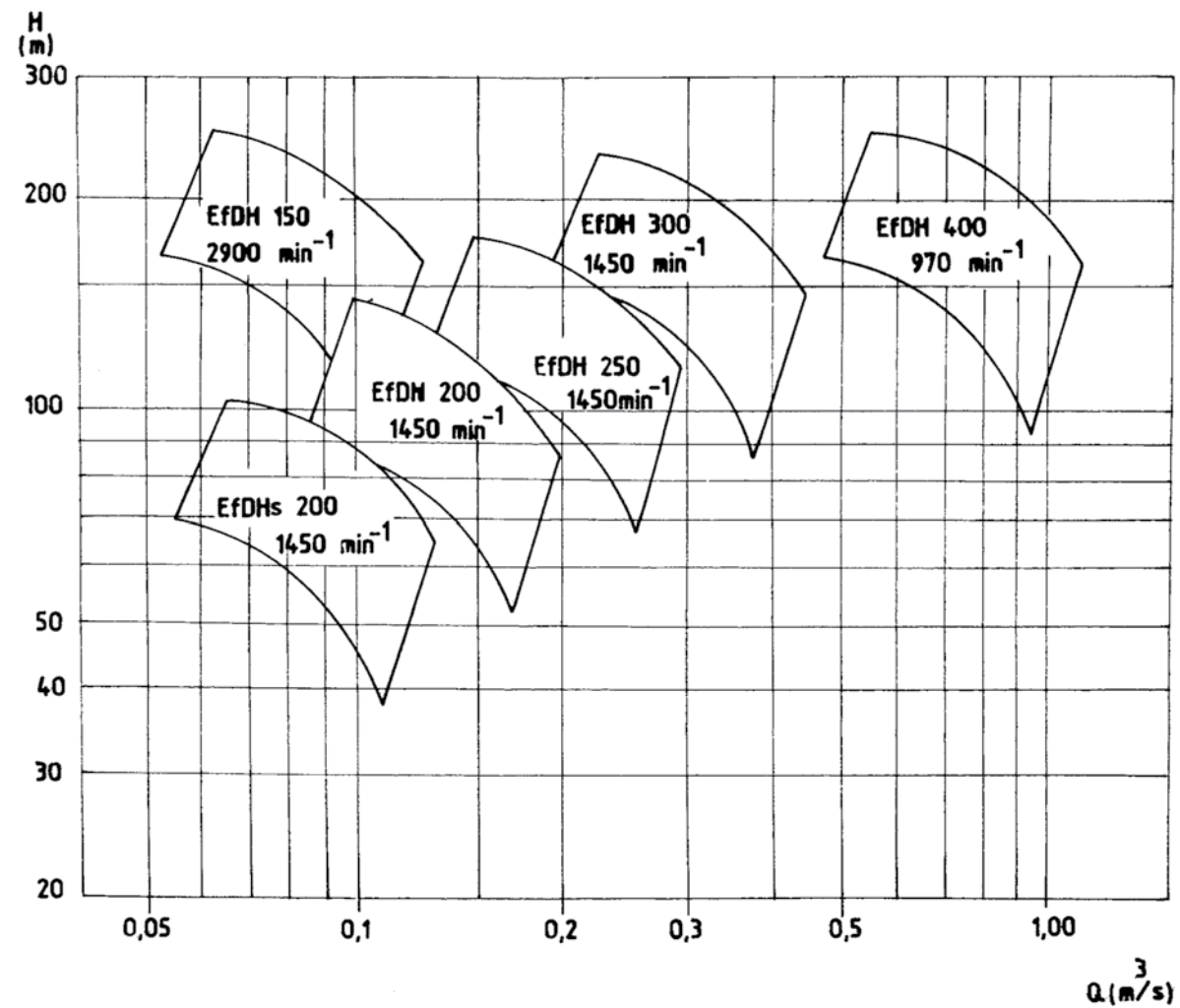
Oil-lubricated roller bearings; a double row self-aligning ball or roller bearing at one side and two angular-contact ball bearings in face-to-face arrangement. The bearing housings can be cooled.

## MAIN STRUCTURAL MATERIALS

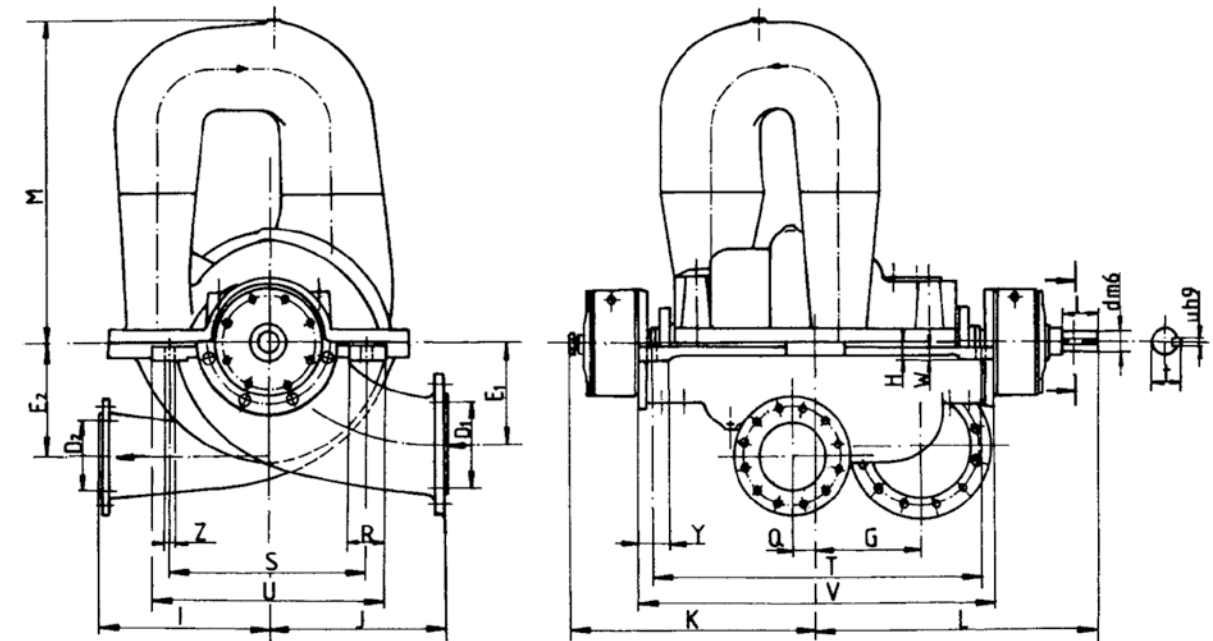
Impeller, wearing ring, base bushing, stuffing box: nonferrous metal or corrosion-resistant steel  
 Pump housing: steel casting  
 Shaft: carbon steel  
 Shaft sleeve: corrosion-resistant steel



# PERFORMANCE RANGES OF EfDH PUMPS



# OUTLINE DRAWING OF EfDH PUMPS



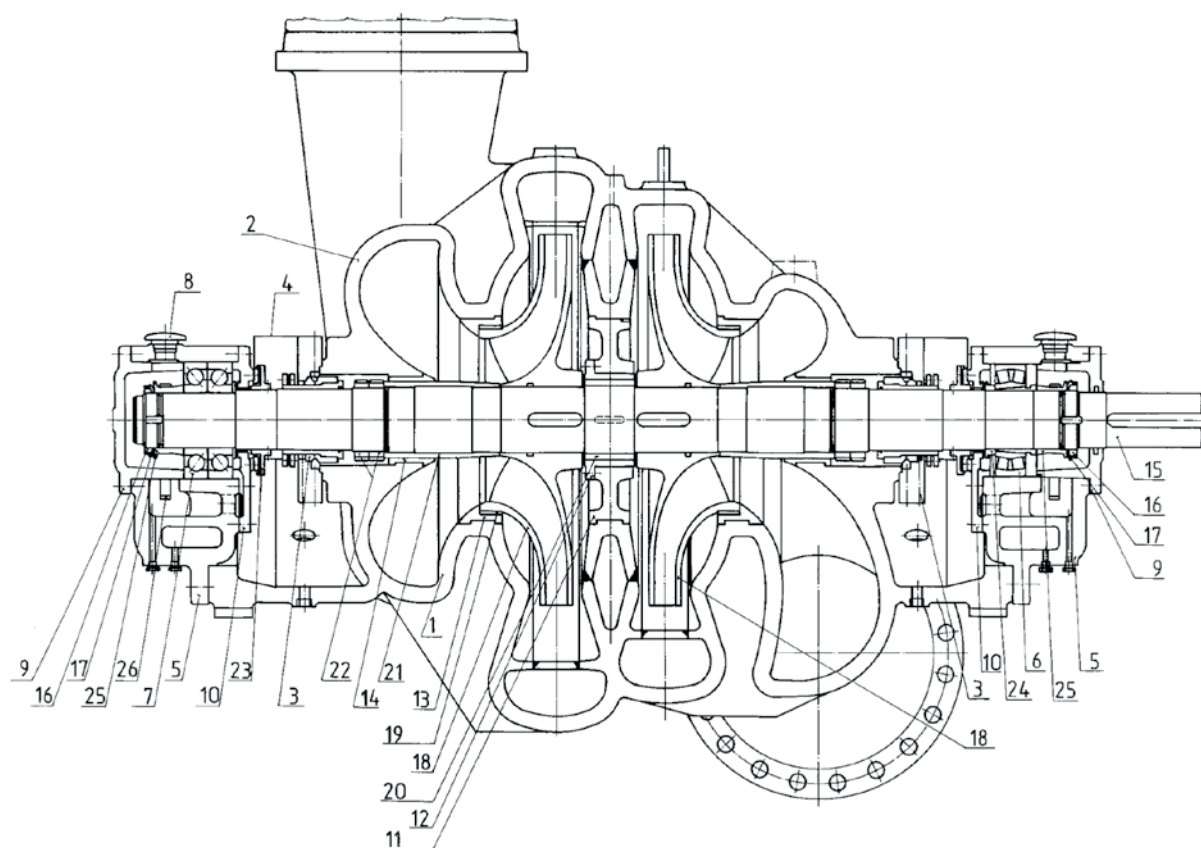
Type	D <sub>2</sub>	D <sub>1</sub>	E <sub>2</sub>	E <sub>1</sub>	G	Q	H	M	K	L	I	J
EfDH 150	150	200	255	200	207,5	47,5	70	659	482,5	555	420	420
EfDH 200												
EfDH 200	200	250	330	300	305	70	45	977	740	834	500	520
EfDH 250	200	300	380	340	350	80	65	1095	795	855	700	600
EfDH 300												
EfDH 400	400	500	675	600	542,5	142,5	100	1994	1309	1550	1000	1000

Type	R	S	T	U	V	W	Z	y	d	l	t	u
EfDH 150	100	400	700	500	785	52	23	65	43	80	46,3	12
EfDH 200												
EfDH 200	110	590	980	700	1060	35	30	90	60	100	64,4	18
EfDH 250	100	670	1190	770	1290	60	45	100	72	100	76,9	20
EfDH 300												
EfDH 400	145	1100	1900	1230	2070	90	52	170	140	250	147,4	36

Dimensions in mm.  
Flanges to NP 40.



## SECTIONAL DRAWING OF EfDH PUMPS



- |                                  |                      |                      |
|----------------------------------|----------------------|----------------------|
| 1. Casing half, lower            | 8. Vent plug         | 17. Locking plate    |
| 2. Casing half, upper            | 9. Bearing cover     | 18. Impeller         |
| 3. Shaft sealing (mechanical)    | 10. Bearing cover    | 19. Impeller         |
| 4. protecting lining             | 11. Interstage piece | 20. Distance sleeve  |
| 5. Bearing housing               | 12. Interstage bush  | 21. Shaft sleeve     |
| 6. Self aligning rolling bearing | 13. Casing wear ring | 22. Shaft sleeve nut |
| 7. Angular contact ball bearing  | 14. Neck bush        | 23. Labyrinth disc   |
|                                  | 15. Shaft            | 24. Shoolder ring    |
|                                  | 16. Bearing nut      | 25. Distance sleeve  |

## DIESEL ENGINE DRIVEN PUMPS

## MHB

### GENERAL SPECIFICATION

Horizontal-shaft Diesel-engine driven pump with guide vane casing and opened mixed-low impeller.

### CONSTRUCTIONAL DETAILS

The pump aggregate consists of a mixed-flow pump and a Diesel-engine which are connected by a flexible coupling. In the discharge branch of the pump casing there is flap valve which prevents the flowing back of the water. Priming of the pump casing at starting is by means of an exhaust operated gas-jet air pump. The gas-jet air pump and the exhaust box are located under the engine. The coverage of the engine is made of welded steel sheet construction with two lockable doors. The pump and the engine are mounted on a common baseframe which in turn is supported on wide sledge runners. This solution ensures safe operation of the unit even on wet ground. The engine is equipped with mechanical starter so there is no need for storage battery. The equipment has an electronic protection which stops the aggregate in case of overheating and shortage of lubrication.

### MEDIUM HANDLED

Clean water at temperature not exceeding 40–50 °C and neutral in reaction and silty water

containing no large solids. Max. silt content: 1000 mg/dm<sup>3</sup>.

### FIELD OF APPLICATION

These pumps are used primarily for land drainage, lifting and irrigation. However, they can be used advantageously in places where in default of installed power supply, quick erection and putting into operation is required.

### PACKING

Stuffing box with grease.

### BEARING SUPPORT

The pump is carried out in grease-lubricated roller bearings.

### MAIN STRUCTURAL MATERIALS

Impeller: cast iron  
Suction connection, pump casing: cast aluminium  
Pump shaft, flap valve disc: carbon steel  
Sledge runner: welded steel





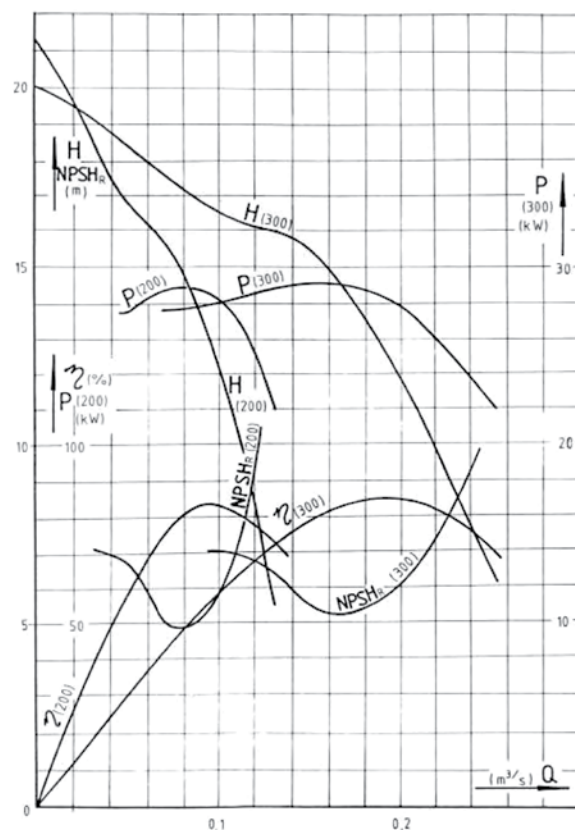
## THE TYPES OF ENGINES

In case of MHB 200: DEUTZ F2L 1011. In case of MHB 300: DEUTZ BF4L 1011 or according to the order.

## BUILT-IN INSTRUMENTS AND SENSORS

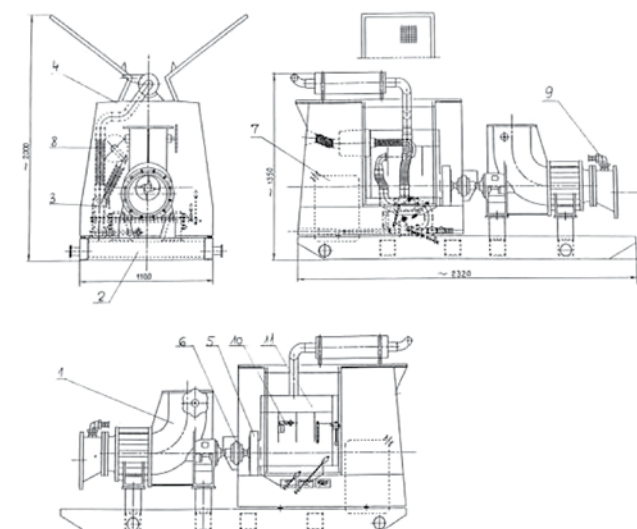
- Oil-pressure indicator;
- Tachometer;
- Service hours counter;
- Fuel level indicator;
- Engine temperature sensor.

## CHARACTERISTIC CURVES OF MHB 200 AND MHB 300 PUMPS



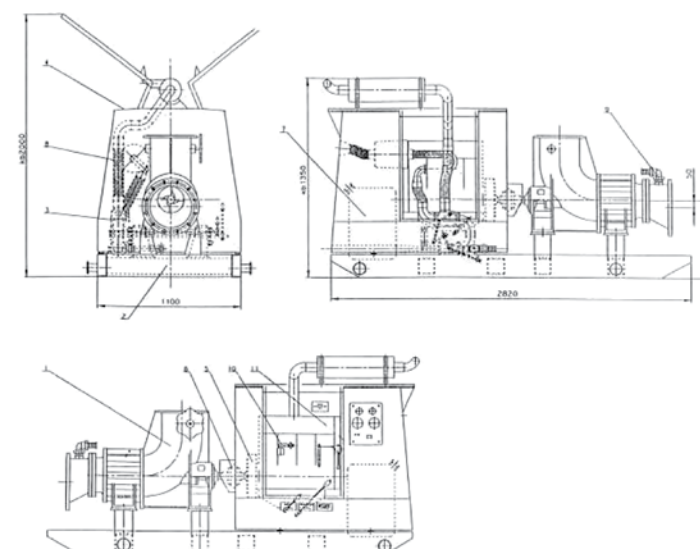
## MHB 200 DIESEL ENGINE DRIVEN DRAINAGE, IRRIGATION PUMP

1. pump with guide wheel and opened mixed-flow impeller
2. runner
3. gas-jet air pump
4. engine cover
5. engine shaft-extension
6. coupling
7. fuel tank
8. exhaust and air suction system
9. air removing tube
10. fuel filter
11. diesel engine



## MHB 300 DIESEL ENGINE DRIVEN DRAINAGE, IRRIGATION PUMP

1. pump with guide wheel and opened mixed-flow impeller
2. runner
3. gas-jet air pump
4. engine cover
5. engine shaft-extension
6. coupling
7. fuel tank
8. exhaust and air suction system
9. air removing tube
10. fuel filter
11. diesel engine

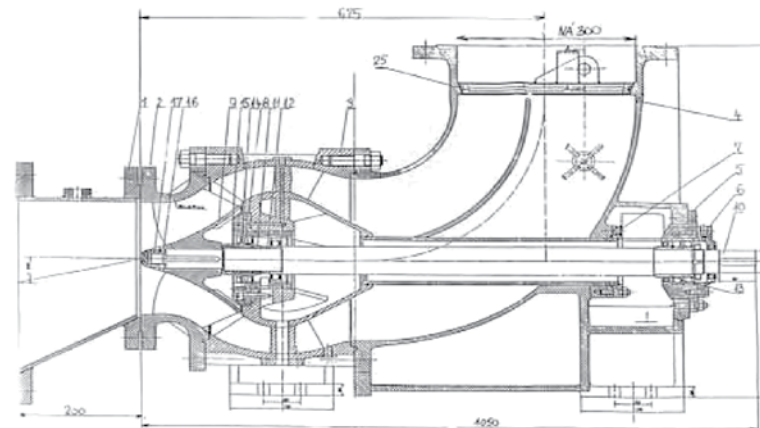




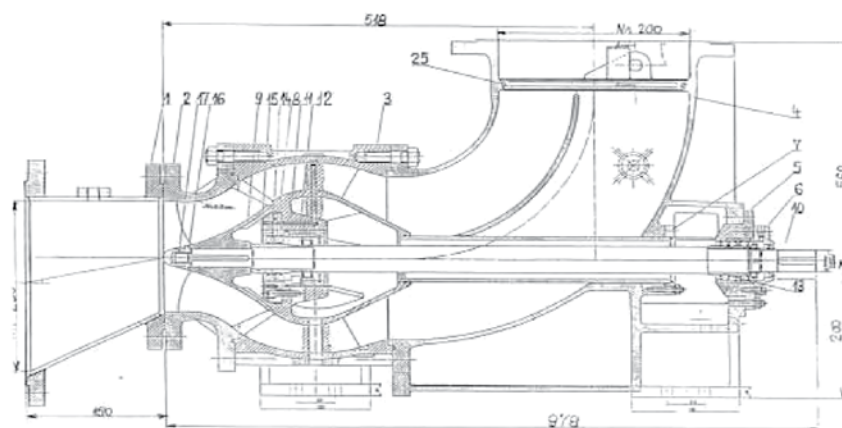
## SECTIONAL DRAWINGS OF MHB PUMPS WITH GUIDE VANES AND OPENED MIXED-FLOW IMPELLER

1. suction branch
2. suction cover
3. guide vane casing
4. delivery band
5. bearing housing
6. bearing cover
7. insert pipe
8. bearing housing
9. impeller
10. shaft
- 11-13. distant sleeves
14. grease distributor
15. protecting plate
16. safety plate
17. shaft crew
25. clack plate

MHB 300



MHB 200



## MIXED-FLOW PUMPS

## ML-MK

### GENERAL SPECIFICATION

Vertical-shaft, single-stage, mixed-flow pumps with guide vane system, their design being welded (type ML) and cast (type MN) respectively. Type MK means model with pull-out interior.

### CONSTRUCTIONAL DETAILS

The pumps are made in three construction forms, namely: form "A": the pump support is under the discharge elbow and the electric motor is mounted directly on such elbow. Form "B": the pump support is under the discharge elbow and the electric motor is placed on a separate floor. Form "C": the pump is suspended from the floor of the electric motor.

### MEDIUM HANDLED

Neutral clean water up to a temperature of 40 to 45 °C or silty water containing no larger solids. Max. silt content: 600 mg/dm<sup>3</sup>. It may, however, attain 3000 mg/dm<sup>3</sup> when using rubber bearings lubricated with clean water from outside.

### FIELD OF APPLICATION

Waterworks, industrial plants and thermal power stations for the purpose of cooling water supply, land drainage, irrigation for higher lifts.

### PACKING

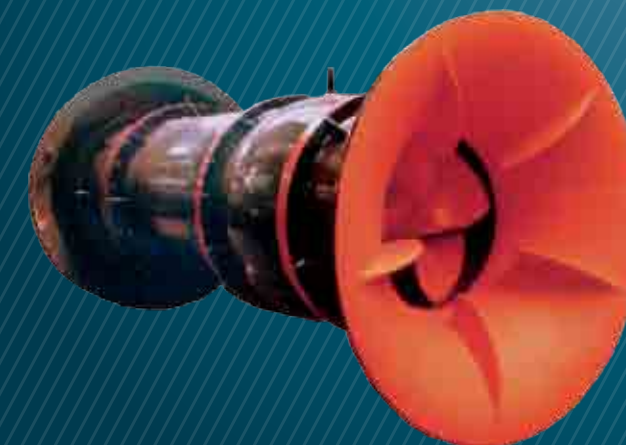
Stuffing box teflon-cord-packing unless otherwise required.

### BEARING SUPPORT

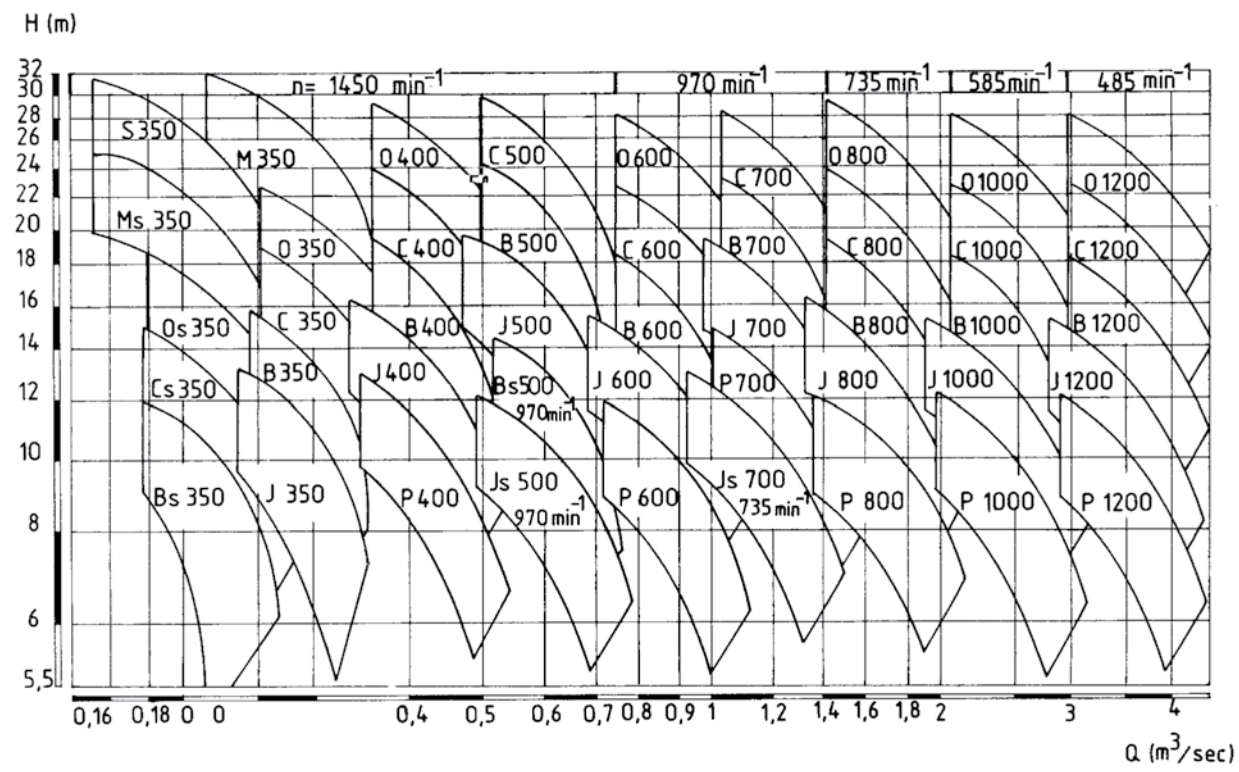
The thrust bearing is a self-aligning roller bearing immersed in oil, with water cooling that can be cut in when required. One or more guide bearings are provided which are rubber-lined sliding bearings lubricated by the water handled, or bronze-lined sliding bearings lubricated with a grease gun driven by a separate electric motor.

### MAIN STRUCTURAL MATERIALS

Impeller: corrosion-resistant steel or bronze  
Base bushing: bronze  
Stuffing box: steel  
Pump bowl: cast iron  
Shaft, rising pipe: carbon steel  
Shaft sleeve: corrosion-resistant steel

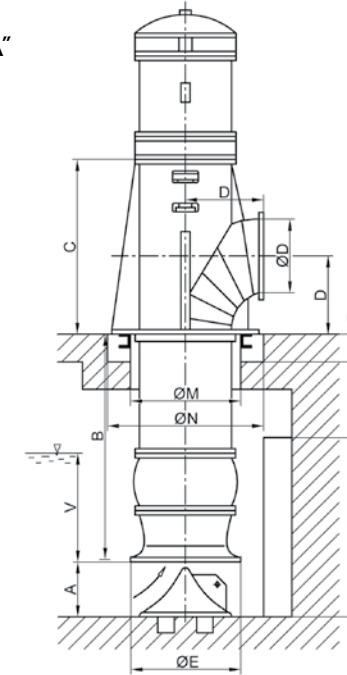


## PERFORMANCE RANGES OF ML-MK PUMPS

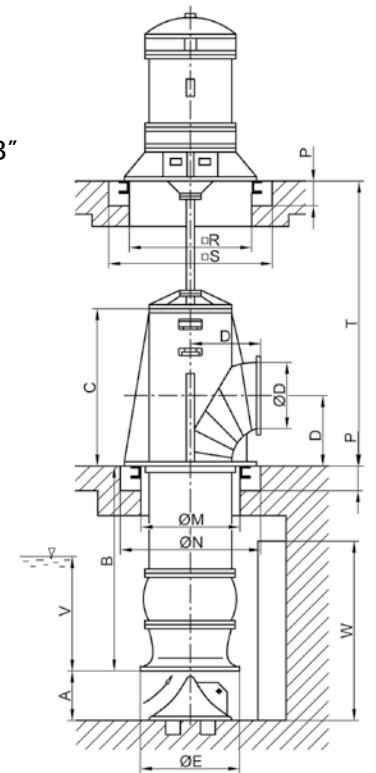


## OUTLINE DRAWINGS OF TYPE ML PUMPS

Pumps Version "A"



Pumps Version "B"



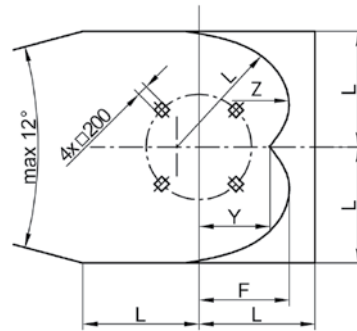
Pump						
D	A	B <sub>min</sub>	C*	E	T <sub>min</sub>	V <sub>min</sub> **
350	200	875	1200	500	1200	380
400	250	1000	1400	600	1400	450
500	300	1200	1550	800	1550	600
600	350	1400	1750	900	1750	680
700	400	1600	1900	1000	1900	750
800	500	2000	2100	1200	2100	900
1000	600	2500	2450	1500	2450	1130
1200	700	3000	2800	1800	2800	1350
1400	850	3500	3200	2100	3200	1580
1600	950	4000	3600	2400	3600	1800
1800	1100	4500	4950	2700	4950	2030

\* Informative dimensions  
 \*\*  $V_{\min}$  is valid for low discharge.  
 Correction factor applied  
 for high discharge:  
 $K = Q / 0.75E^2$  ( $Q$  in  $\text{m}^3/\text{s}$ ,  $E$  in  $\text{m}$ )



## OUTLINE DRAWINGS OF TYPE ML PUMPS

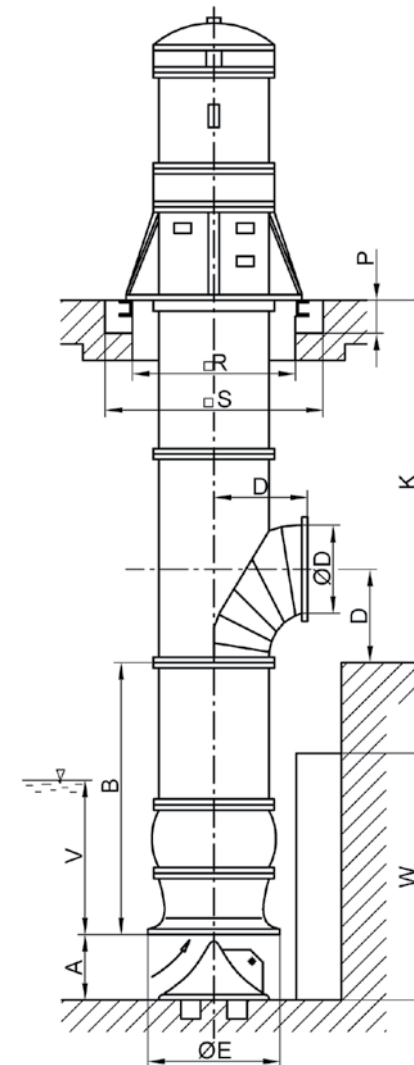
suction Well Form



D	Floor Dimensions					Suction well				
	M	N	P	R	S	F	Y	L	Z	W
350	600	1000	200	850	1250	311	275	438	250	600
400	650	1100	200	900	1300	355	314	500	286	700
500	850	1300	200	1100	1500	444	393	625	357	900
600	1000	1400	200	1300	1700	533	471	780	429	1100
700	1100	1500	250	1400	1800	622	550	875	500	1200
800	1300	1700	250	1600	2000	711	629	1000	571	1400
1000	1600	2000	300	2000	1400	888	786	1250	714	1800
1200	1900	2300	300	2300	2700	1066	943	1500	857	2100
1400	2200	2600	300	2600	3000	1244	1100	1750	1000	2500
1600	2500	2900	350	3000	3400	1421	1257	2000	1143	2800
1800	2800	3200	350	3400	3800	1599	1414	2250	1286	3200

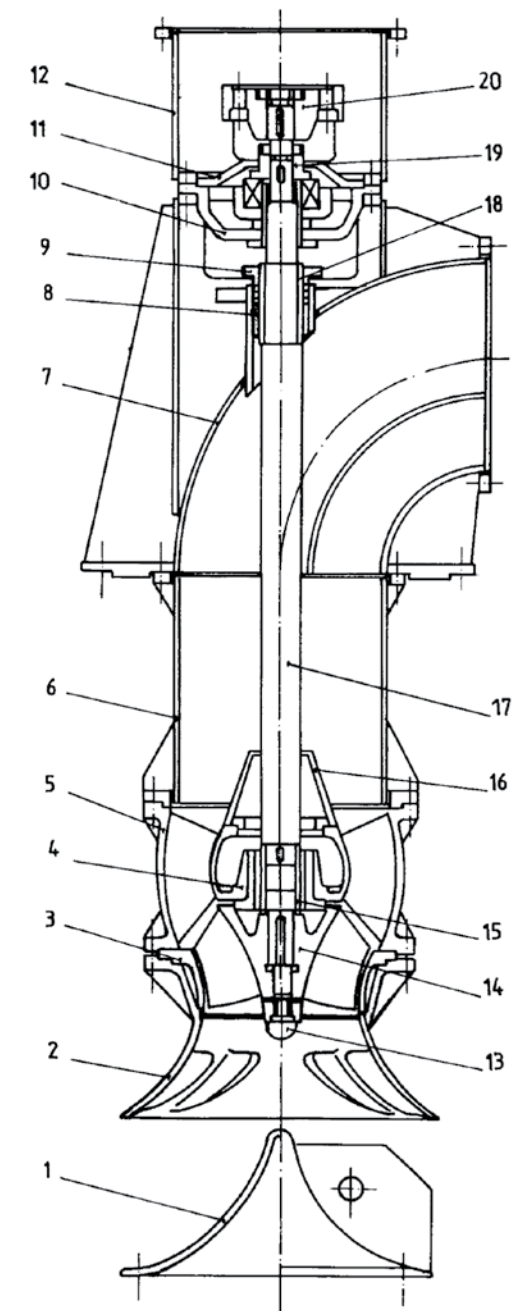
Dimensions in mm  
Flanges to NP 6 and NP 10.

Pumps Version "A"



## SECTIONAL DRAWINGS OF TYPE ML PUMPS

1. Suction cone
2. Suction bell
3. Inset for suction cone
4. Guide bearing casing
5. Guide vanes casing
6. Tube
7. Delivery elbow
8. Neck bush
9. Stuffing box
10. Thrust bearing casing
11. Thrust bearing cover
12. Motor stool
13. Shaft end nut
14. Impeller
15. Shaft sleeve
16. Guide extension
17. Shaft
18. Shaft sleeve
19. Bearing bell
20. Coupling



Type	MLC
D	1000
Version	C

B	3 000 mm
T	2 500 mm
K	4 000 mm

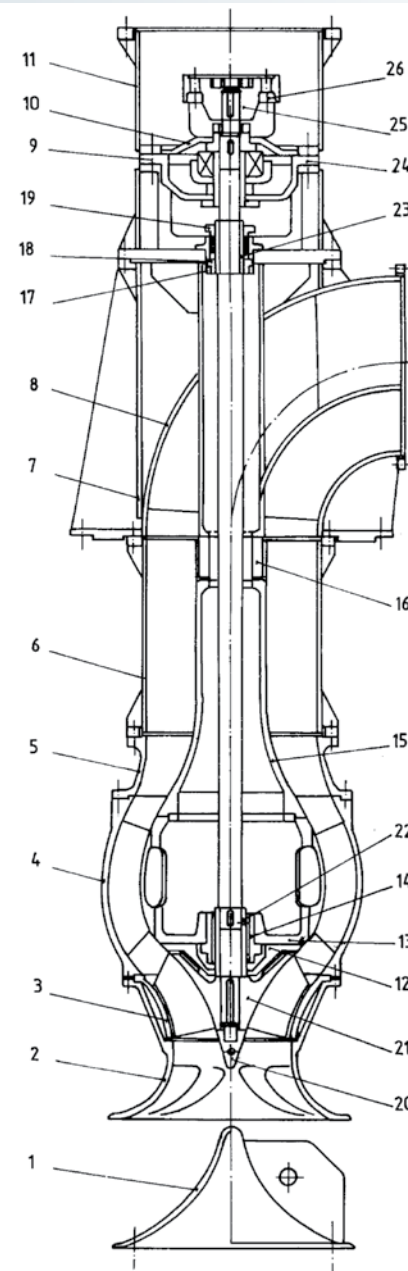
G	6 800 kg
G1	0 kg
G2	1 900 kg
Q1	295 kg
Q2	0 kg
Q1c	915 kg
Mass	9 910 kg
Prices	85 967 EUR

D	Version A, B=Bmin	
	MLP, MLJ	MLB, MLC, MLO
400	9 500 EUR	10 500 EUR
500	14 550 EUR	16 550 EUR
600	19 650 EUR	24 650 EUR
700	26 750 EUR	33 750 EUR
800	33 950 EUR	43 950 EUR
1000	51 300 EUR	69 300 EUR
1200	71 750 EUR	101 750 EUR

D	Version A, B=Bmin	
	MLP, MLJ	MLB, MLC, MLO
400	1 000 kg	1 100 kg
500	1 510 kg	1 710 kg
600	2 030 kg	2 530 kg
700	2 750 kg	3 450 kg
800	3 490 kg	4 490 kg
1000	5 260 kg	7 060 kg
1200	7 350 kg	10 350 kg

## SECTIONAL DRAWINGS OF TYPE MK PUMPS

1. Suction cone
2. Suction bell
3. Inset for suction cone
4. Guide vanes casing
5. Distance piece
6. Tube
7. Delivery elbow
8. Guide plate
9. Thrust bearing casing
10. Bearing casing cover
11. Motor stool
12. Wearing plate
13. Guide bearing casing
14. Guide bearing
15. Protecting tube
16. Protecting tube extension
17. Stuffing box casing
18. Neck bush
19. Stuffing box
20. Shaft end nut
21. Impeller
22. Protecting sleeve
23. Protecting sleeve
24. Bearing bell
25. Coupling
26. Shaft



## MIXED FLOW MULTI-STAGE PUMPS

TL

### GENERAL SPECIFICATION

Vertical-shaft, two-, or three-stage pump with guide vane casing.

### CONSTRUCTIONAL DETAILS

The pumps are made in two construction forms. For both forms the pump support is under the discharge elbow. Either the electric motor is mounted directly on the discharge elbow or it is placed on a separate floor.

### MEDIUM HANDLED

Clean water at a temperature not exceeding 40–45 °C and neutral in reaction and natural silty water containing no larger solids.

### FIELD OF APPLICATION

Primarily in agriculture for irrigation and land drainage purposes.

### PACKING

Teflon-cord-packed or mechanical stuffing box.

### BEARING SUPPORT

The thrust bearing is a self-aligning axial roller bearing immersed in oil while the guide bearings are greaselubricated sliding bearings.

### MAIN STRUCTURAL MATERIALS

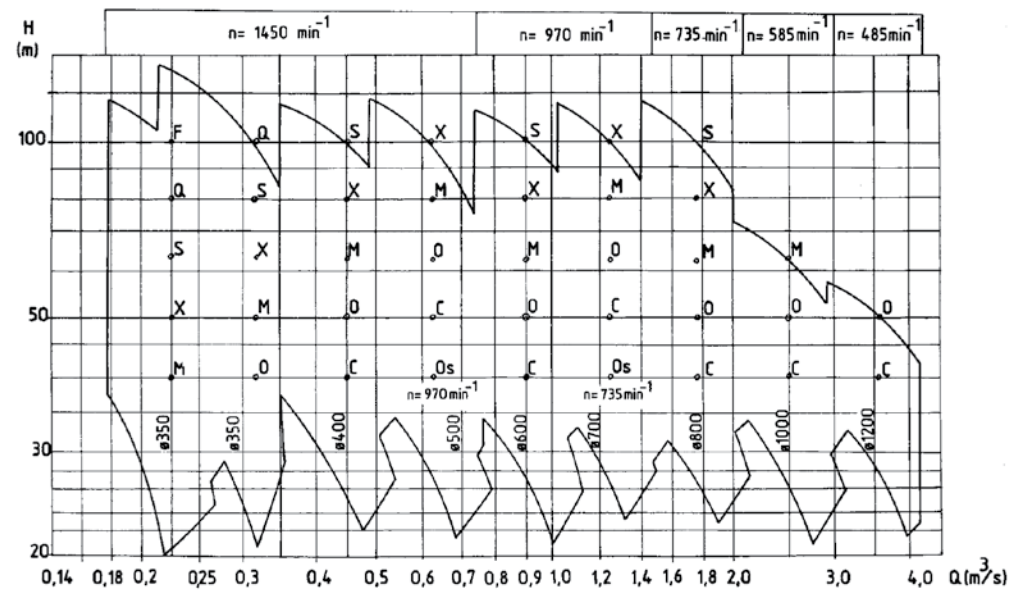
Impeller, shaft protecting sleeve: corrosion-resistant steel  
 Shaft: carbon steel or alloyed steel  
 Pump casing: carbon steel  
 Wearing ring: nonferrous metal  
 Pump bowl: cast iron



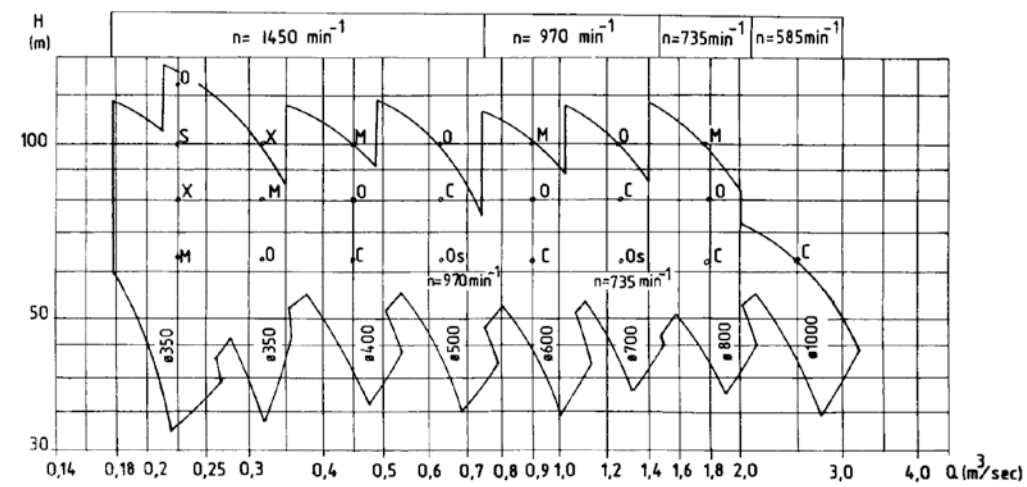


## PERFORMANCE RANGES OF TL PUMPS

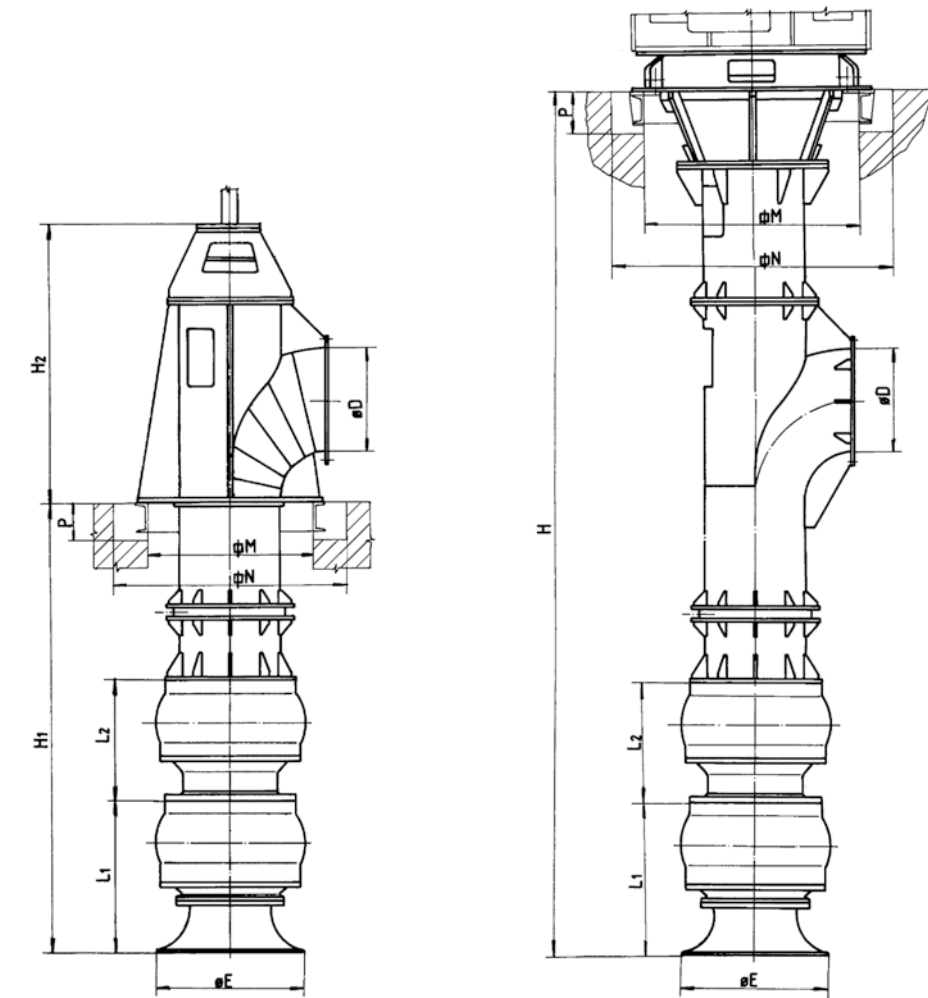
Two-Stage  
TL Pumps



Three-Stage  
TL Pumps



## OUTLINE DRAWING OF TL PUMPS

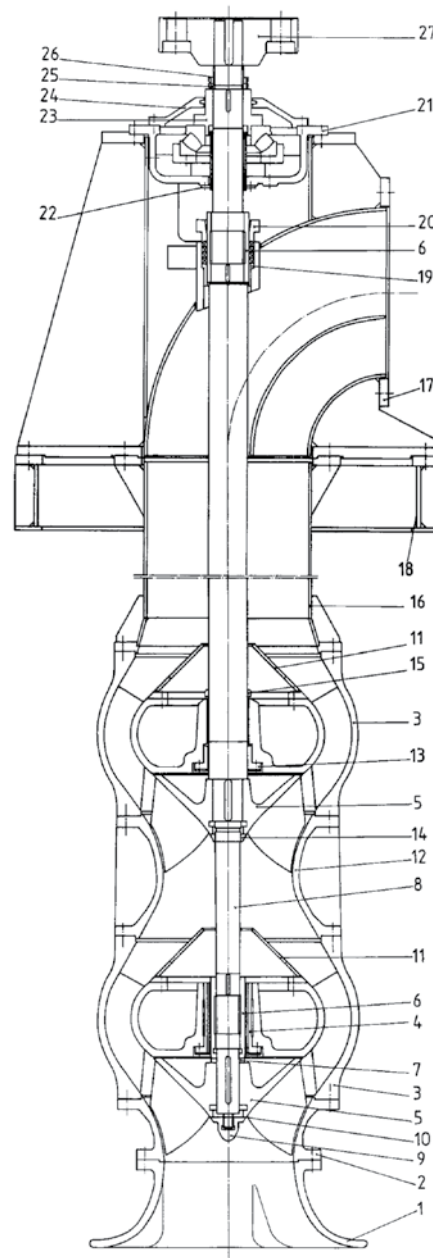


Type	D	$H_{\min}$	$H_{1\min}$	$H_{2\min}$	$L_1$	$L_2$	E	M	N	P
TL 350	350	-	1300	1100	670	670	600	650	1100	200
TL 600	600	3800	1800	1750	880	870	900	1000	1400	200

Dimensions in mm.  
Flanges according to NP10, NP 16.

## SECTIONAL DRAWING OF TL PUMPS

1. Suction bell
2. Impeller housing
3. Guide vane casing
4. Rubber bearings
5. Impeller
6. Shaft protecting sleeve
7. Adjusting ring
8. Shaft
9. Shaft nut
10. Locking plate
11. Guide cone
12. Intermediate piece
13. Bush
14. Shaft nut
15. Thrower ring
16. Rising pipe
17. Delivery elbow
18. Immuring ring
19. Base bush
20. Stuffing box
21. Thrust bearing housing
22. Oil retaining tube
23. Bearing bell
24. Thrust bearing cover
25. Shaft nut
26. Counter nut
27. Coupling half



## CONDENSATE WATER PUMPS

TNKK

### GENERAL SPECIFICATION

Vertical-shaft, multistage pump with diffuser.

### CONSTRUCTIONAL DETAILS

Both the suction and the discharge branches are horizontal. Water flows, after the suction branches, to a suction vessel located under the floor level where the pump head is also found. An adequate suction head can thus be attained for the first stage. The pump head is held by the rising pipe which in turn rests on the floor level. The casing containing the suction-discharge branches accommodates the stuffing box and the thrust bearing while the motor support with the electric motor rests on the casing.

### MEDIUM HANDLED

Clean cold water or warm water up to a temperature of max. 80 °C. Other liquids with a viscosity slightly differing from that of water and neutral in reaction can also be handled. Max. silt content: 200 to 300 mg/dm<sup>3</sup>.

### FIELD OF APPLICATION

Primarily as condensate pumps in thermal power stations.

### PACKING

Teflon-cord-packed or mechanical stuffing box.

### BEARING SUPPORT

Water-lubricated teflon sliding bearing at the centre of the suction bell. Deep-groove ball bearing in the motor support and a self-aligning axial roller bearing to take the axial forces. Both bearings are oil-lubricated. The bearing-housing can be cooled by water if necessary.

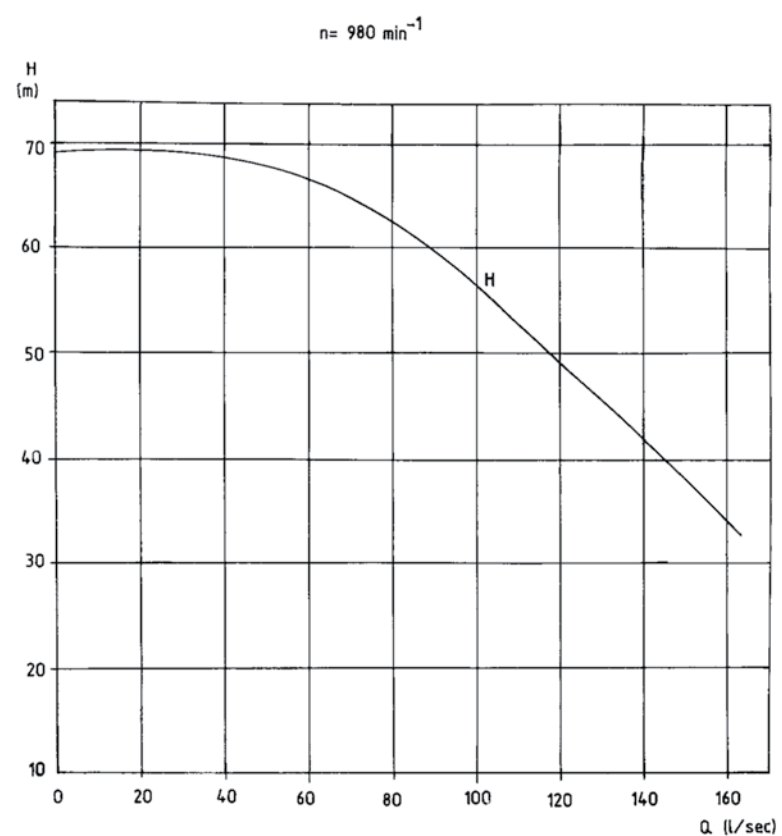
### MAIN STRUCTURAL MATERIALS

Impeller, throttler bushing, base bushing: nonferrous metal  
 Wearing ring, shaft sleeve: corrosion-resistant steel  
 Pressure chamber, return passages, guide inserts, stuffing box housing, bearing housing: cast-iron  
 Shaft: carbon steel

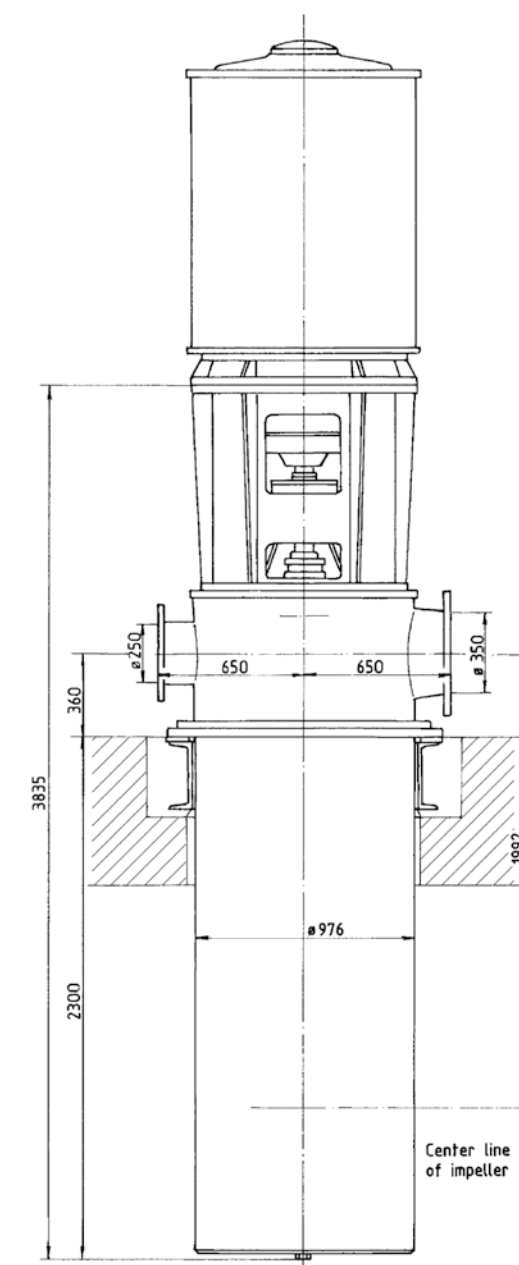




## PERFORMANCE CURVE OF TNKK PUMP

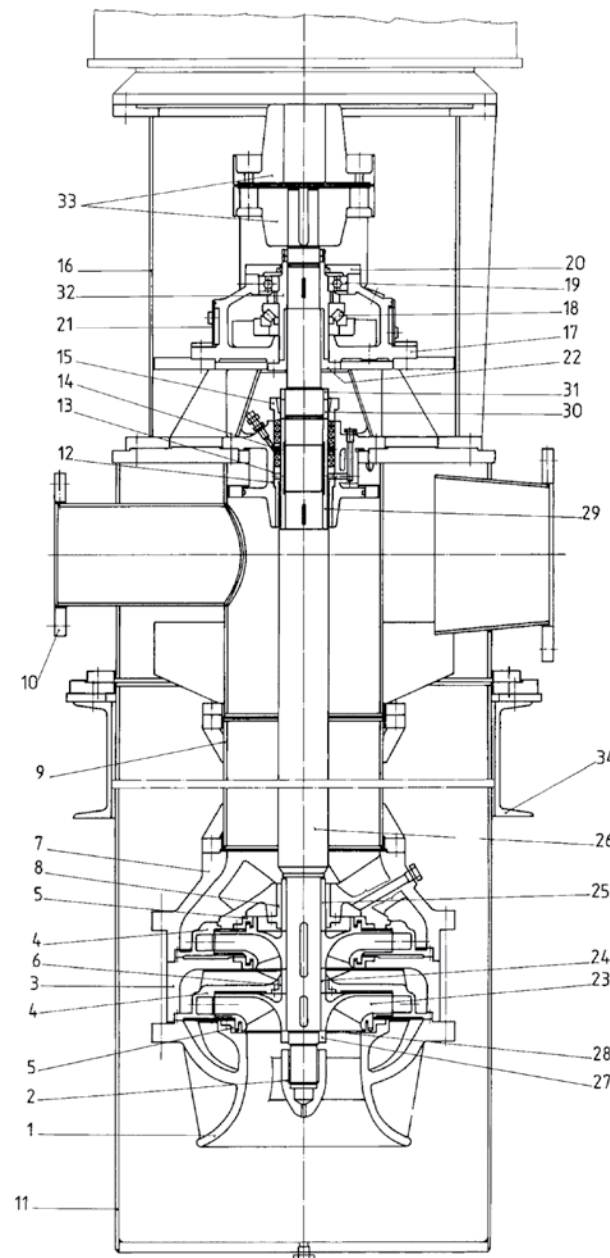


## OUTLINE DRAWING OF TNKK PUMP



## SECTIONAL DRAWING OF TNKK PUMP

1. Suction bell
2. Bearing bushing
3. Distance piece
4. Guiding wheel
5. Casing wear ring
6. Interstage bush
7. Delivery casing
8. Neck bush
9. Column pipe
10. Delivery casing
11. Suction vessel
12. Stuffing box
13. Neck bush
14. Lantern ring
15. Stuffing gland
16. Mootor stool
17. Thrust bearing housing
18. Thrust bearing
19. Guide bearing
20. Bearing housing cover
21. Cooling coat
22. Oil retaining tube
23. Impeller
24. Interstage sleeve
25. Distance sleeve
26. Shaft
27. Shaft sleeve nut
28. Locking plate
29. Shaft sleeve
30. Shaft sleeve nut
31. Lock nut
32. Bearing bell
33. Coupling
34. Base frame



## MULTI-STAGE PUMPS

## TNN-TFH

### GENERAL SPECIFICATION

Horizontal-shaft, multi-stage pump with diffuser.

### CONSTRUCTIONAL DETAILS

The pump casing is composed of elements which are split perpendicularly to the shaft centre and are clamped together by bolts. The covers with the suction and the discharge branch can be found at the two ends with joints between them. The pump is supported on the feet cast integral with the above two covers. The discharge branch stands upright while the suction branch, depending on the conditions of installation, can be arranged horizontally to the left or right.

### MEDIUM HANDLED

Clean cold water or warm water up to a temperature of max. 90 °C. Other liquids with a viscosity slightly differing from that of water and neutral in reaction can also be handled. Max. silt content: 1000 mg/dm<sup>3</sup>. Particle size: max. 0,1 mm.

### FIELD OF APPLICATION

Waterworks, booster stations of industrial and agricultural plants.

### PACKING

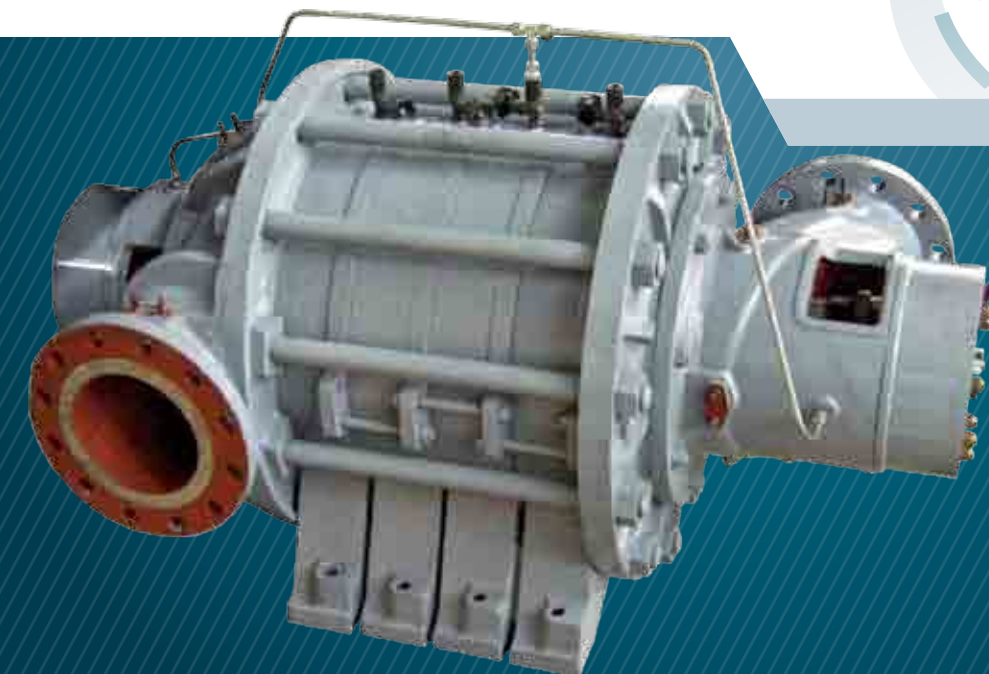
Teflon-cord-packed or mechanical stuffing box which can be cooled in case of need.

### BEARING SUPPORT

The axial load is taken over by a thrust bearing while the radial loads are taken, at both ends of the shaft, by ball or roller bearings. The bearing housing can be cooled by water if required.

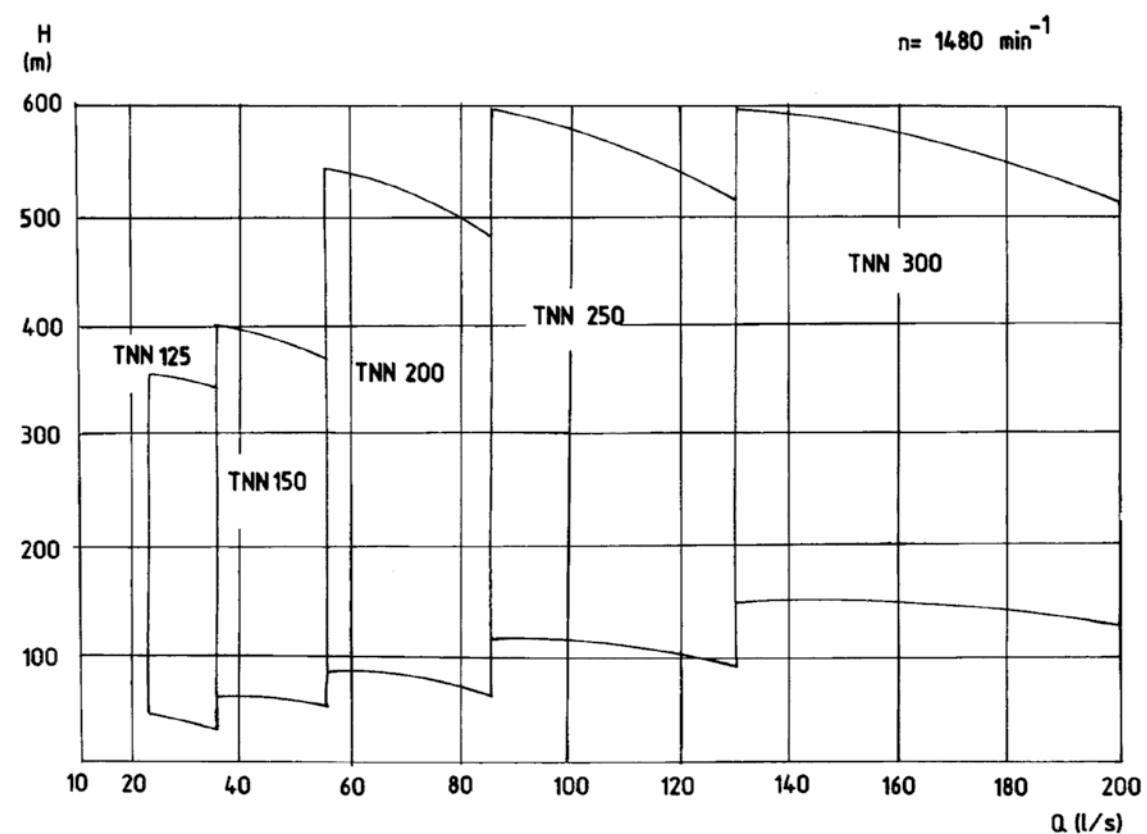
### MAIN STRUCTURAL MATERIALS

Impeller: cast-iron or nonferrous metal  
Wearing ring, base bushing, stuffing box: nonferrous metal or corrosion-resistant steel  
Covers with suction and discharge branch: steel casting  
Expansion joints: cast-iron  
Shaft: carbon steel  
Shaft protecting sleeve: corrosion-resistant steel

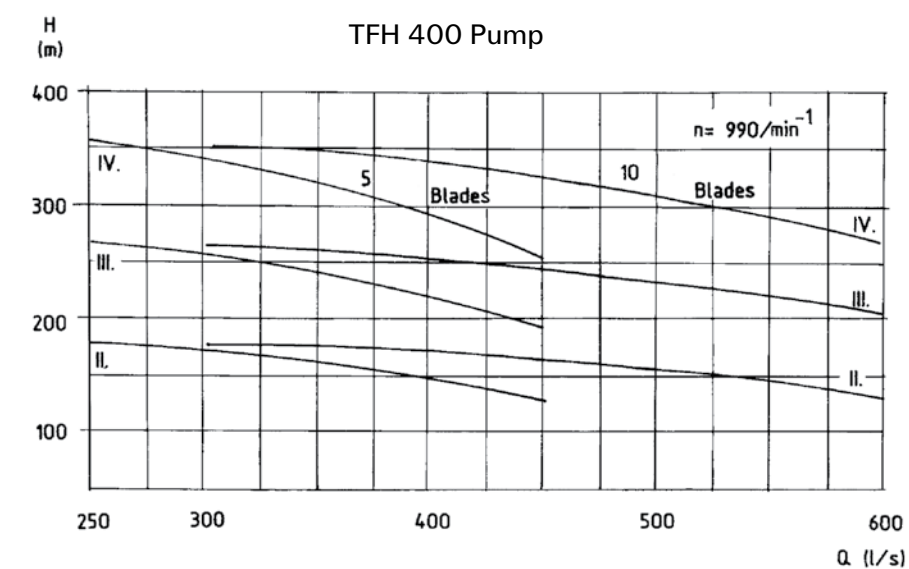
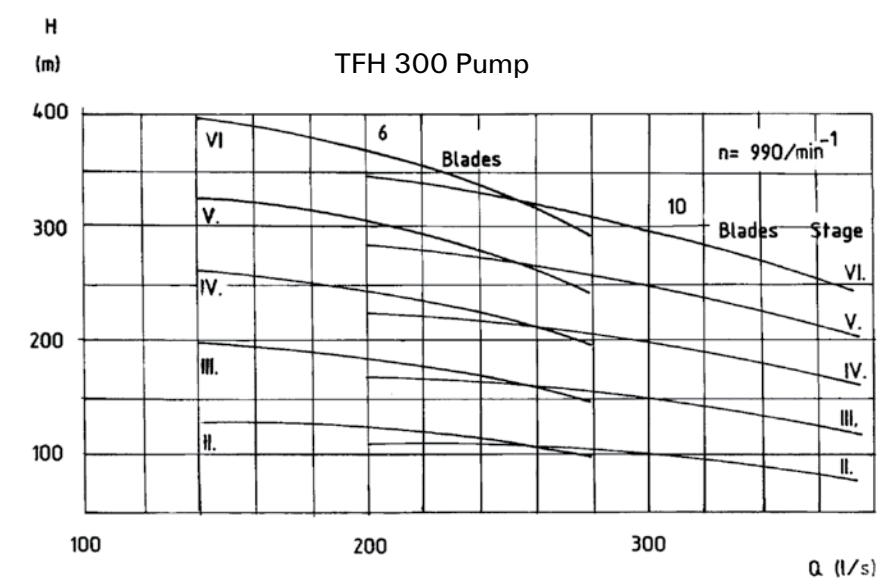




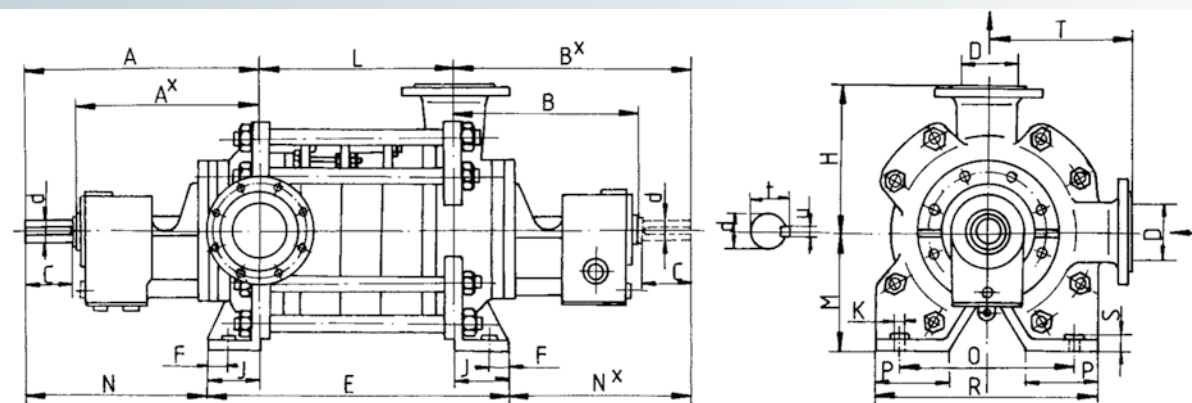
## PERFORMANCE RANGES OF TNN PUMPS



## CHARACTERISTIC CURVES OF TFH PUMPS



## OUTLINE DRAWING OF TNN PUMPS



The position of suction branch can be in two directions in the horizontal plane.

Type	A	B	C	D	F	H	J	K	M	N	O	P	R	S	T	d	t	u	A*	B*	N*
TNN 125	545	429	110	125	50	335	145	27	280	405	430	170	540	40	335	55	59	16	429	545	405
TNN 150	649	493	140	150	60	400	150	30	355	513	500	200	630	45	400	63	67	18	503	639	493
TNN 200	767	579	170	200	70	450	170	33	400	602	580	230	730	50	450	80	85	22	589	757	592
TNN 250	822	642	170	250	80	530	200	36	475	627	680	270	850	55	530	90	95	25	642	822	627
TNN 300	947	712	210	300	95	630	250	39	530	707	800	320	1000	60	630	100	106	28	727	932	692

The Dimensions marked by "x" are valid for delivery side driving.

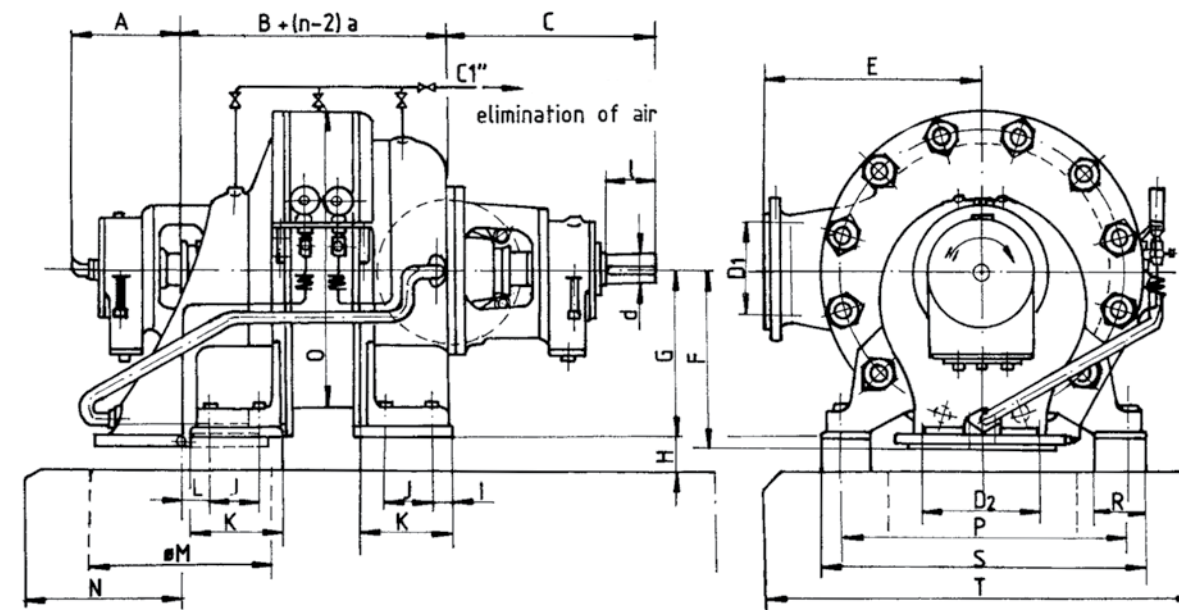
	TNN 125											TNN 150									
	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	II	III	IV	V	VI	VII	VIII	IX	X	
E	540	640	740	840	940	1040	1140	1240	1340	1440	1540	600	715	830	945	1060	1175	1290	1405	1520	
L	260	360	460	560	660	760	860	960	1060	1160	1260	310	425	540	655	770	885	1000	1115	1230	

Delivery Flanges of TNN 125, 150 to NP 64.  
Suction Flanges of TNN 125, 150 to NP 40.

	TNN 200										TNN 250								TNN 300					
	II	III	IV	V	VI	VII	VIII	IX	X	II	III	IV	V	VI	VII	VIII	II	III	IV	V	VI			
E	700	830	960	1090	1220	1350	1480	1610	1740	835	990	1145	1300	1455	1610	1765	1015	1200	1385	1570	1755			
L	370	500	630	760	890	1020	1120	1280	1410	455	600	755	910	1065	1220	1370	535	720	905	1090	1275			

Delivery Flanges of TNN 200, 250, 300 to NP 64.  
Suction Flanges of TNN 200, 250, 300 to NP 40.  
Dimensions in mm.

## OUTLINE DRAWING OF HORIZONTAL-SHAFT TFH PUMPS



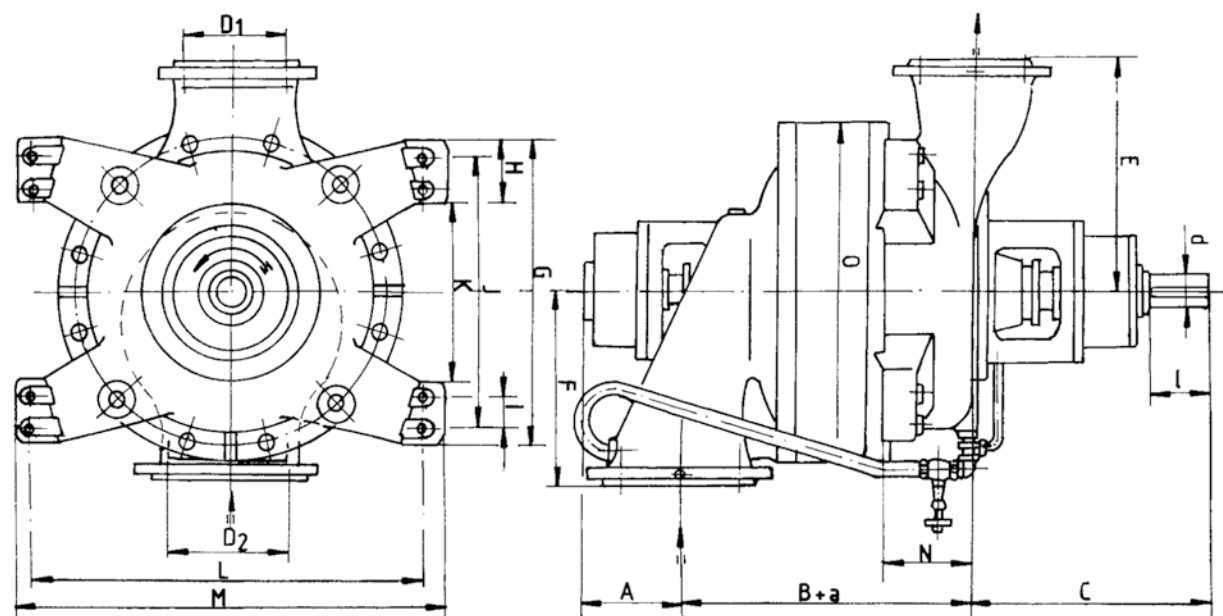
Type	A	B	C	D <sub>1</sub>	D <sub>2</sub>	E	F	G	H	I	J	K
TFH 300 II-VI	423	890	760	300	350	720	600	560	120	70	180	320
TFH 400 II-IV	570	1115	910	400	400	900	750	710	130	75	230	380

Type	L	M	N	O	P	R	S	T	a	d	l
TFH 300 II-VI	100	760	800	1060	970	165	1210	1500	210	110	190
TFH 400 II-IV	115	590	800	1340	1200	215	1520	1800	255	130	230

Dimensions in mm.  
Flanges to NP 25.



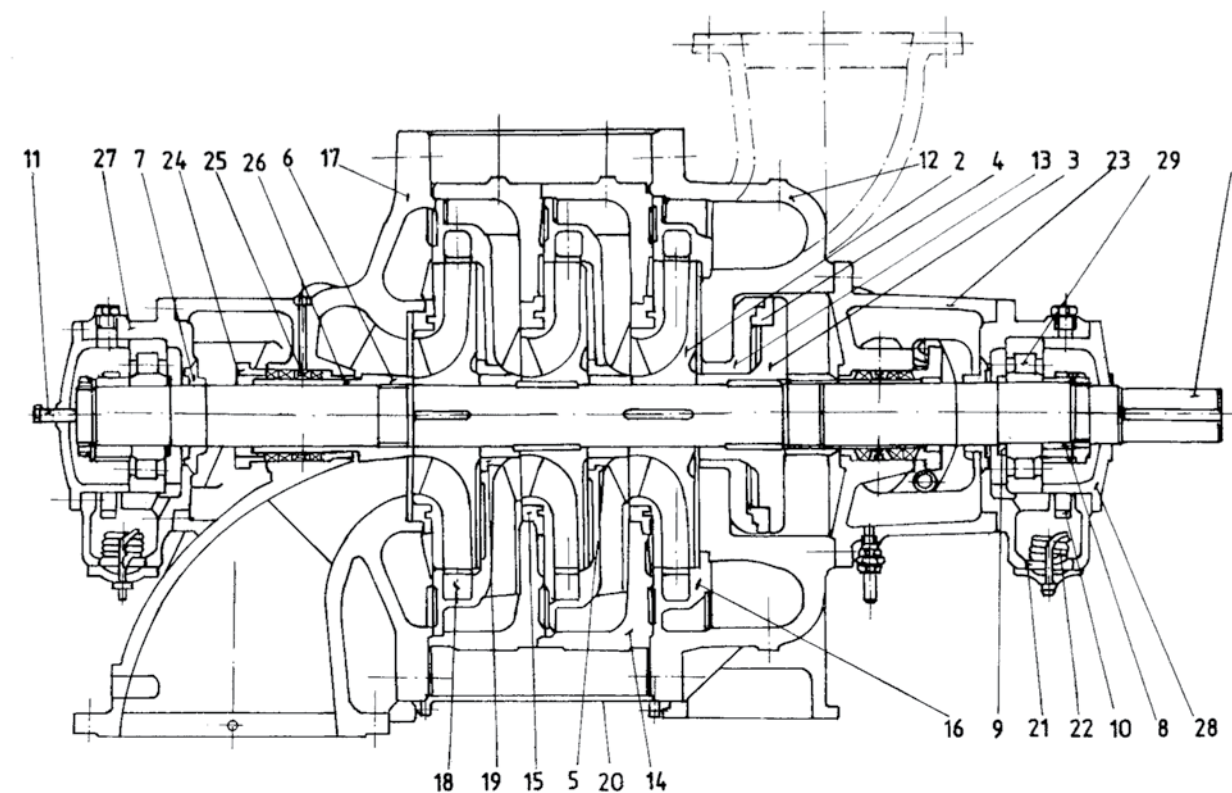
## OUTLINE DRAWING OF VERTICAL-SHAFT TFHV PUMPS



Type	A	B	C	D <sub>1</sub>	D <sub>2</sub>	E	F	G	H	J	K	L	M	N	O	a	d	I
TFHv 300 II-VI	410	890	760	300	350	720	600	1000	200	900	600	1200	1300	270	1080	210	110	190
TFHv 400 II-IV	415	1115	910	400	500	900	750	1200	250	1080	700	1500	1650	300	1340	255	130	230

Dimensions in mm.  
Flanges to NP 25.

## SECTIONAL DRAWING OF HORIZONTAL ARRANGEMENT TNN, TFH PUMPS

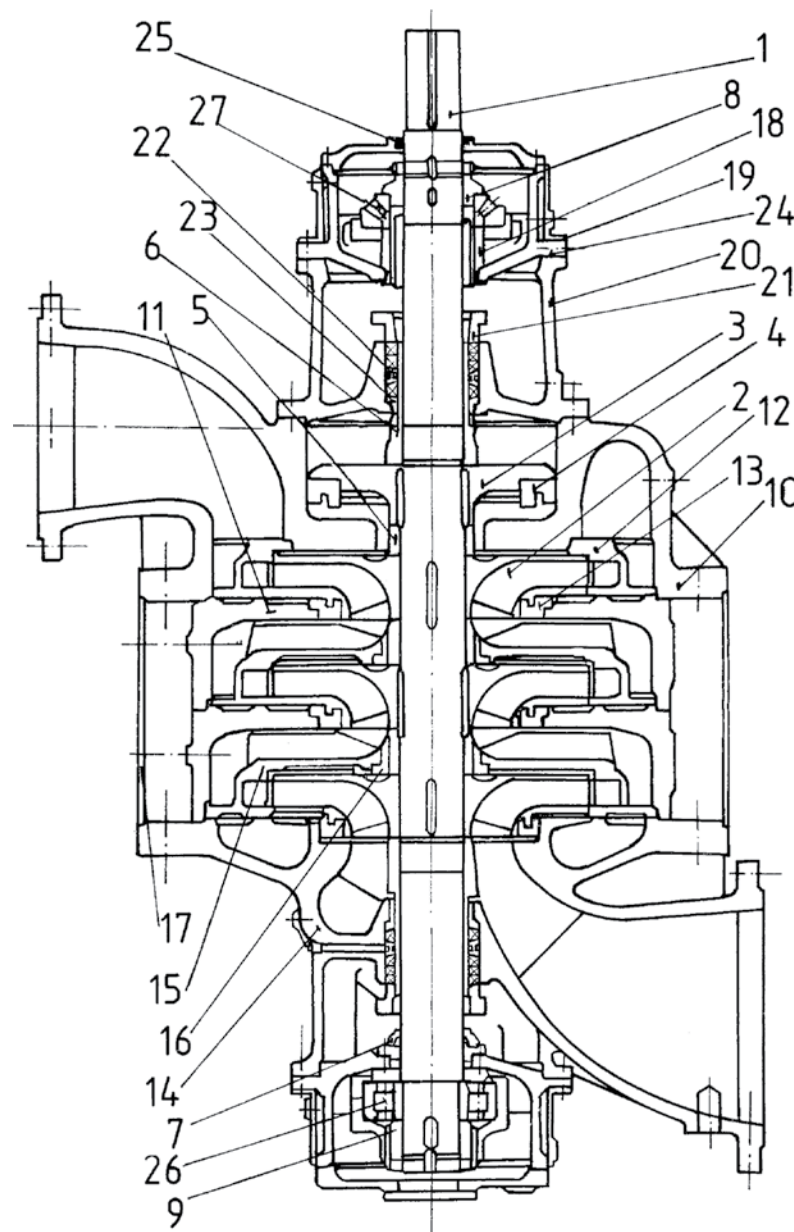


- |                      |                         |                              |
|----------------------|-------------------------|------------------------------|
| 1. Shaft             | 10. Lubrication ring    | 19. Sleeve for guiding piece |
| 2. Impeller          | 11. Indicator of moving | 20. Pump lining              |
| 3. Balance disc      | 12. Delivery casing     | 21. Cover of oil chamber     |
| 4. Balance disc seat | 13. Balance contra-disc | 22. Cooling coil             |
| 5. Interstage sleeve | 14. Middle piece        | 23. Stuffing box cover       |
| 6. Shaft sleeve nut  | 15. Casing wear ring    | 24. Stuffing gland           |
| 7. Labyrinth ring    | 16. Guide wheel         | 25. Lantern ring             |
| 8. Distance sleeve   | 17. Suction casing      | 26. Neck bush                |
| 9. Shoulder ring     | 18. Guiding piece       | 27. Bearing housing          |
|                      |                         | 28. Bearing cover            |
|                      |                         | 29. Rolling bearing          |



## SECTIONAL DRAWING OF VERTICAL SHAFT TFHV PUMPS

1. Shaft
2. Impeller
3. Balance disc
4. Balance disc seat
5. Interstage sleeve
6. Shaft sleeve nut
7. Labyrinth ring
8. Centering sleeve for bearing
9. Shoulder ring
10. Delivery casing
11. Middle piece
12. Guide wheel
13. Casing wear ring
14. Suction casing
15. Guiding piece
16. Sleeve for guiding piece
17. Pump lining
18. Oil retaining tube
19. Cooling coat
20. Stuffing box cover
21. Stuffing gland
22. Lantern ring
23. Neck bush
24. Thrust bearing housing
25. Bearing cover
26. Rolling bearing
27. Thrust bearing



## WELL PUMPS

## TU-EU

### GENERAL SPECIFICATION

Vertical-shaft, multi-stage submersible pump with guide vane casing.

### CONSTRUCTIONAL DETAILS

The housings of the individual pump stages having guide wheel are clamped together by connecting bolts. The electric motor and the pump form a single unit which operates submerged in water and is mounted on the end of the rising pipe. The motor is surrounded externally by the liquid handled, the latter ensuring cooling, too. The pump type TU is of series arrangement and is intended for lower lift. The two stage groups of the pump type EU are of face-to-face arrangement, thus equalizing axial forces and being able to use more stages as well. The pumps can also be installed in a piping if they are fitted with a protective "jacket" pipe. This version is suitable for horizontal operation, as well.

### MEDIUM HANDLED

Clean water at a temperature of max. 40–45 °C which is neutral in reaction or natural raw water containing no large solids. Max. silt content: 500 mg/dm<sup>3</sup>.

### FIELD OF APPLICATION

Primarily as deep well pumps for dewatering of mines, lowering of ground-water level, but they can also be used as booster pumps, for drinking water and process water supply.

### PACKING

Sliding-ring packing built into the electric motor.

### BEARING SUPPORT

The thrust bearing made of special material is located in the motor. The radial guide bearings are water-lubricated lead-bronze slide bearings. The bearings in the pump are lubricated by the water handled while those in the motor are lubricated by the filling water. They require no maintenance.

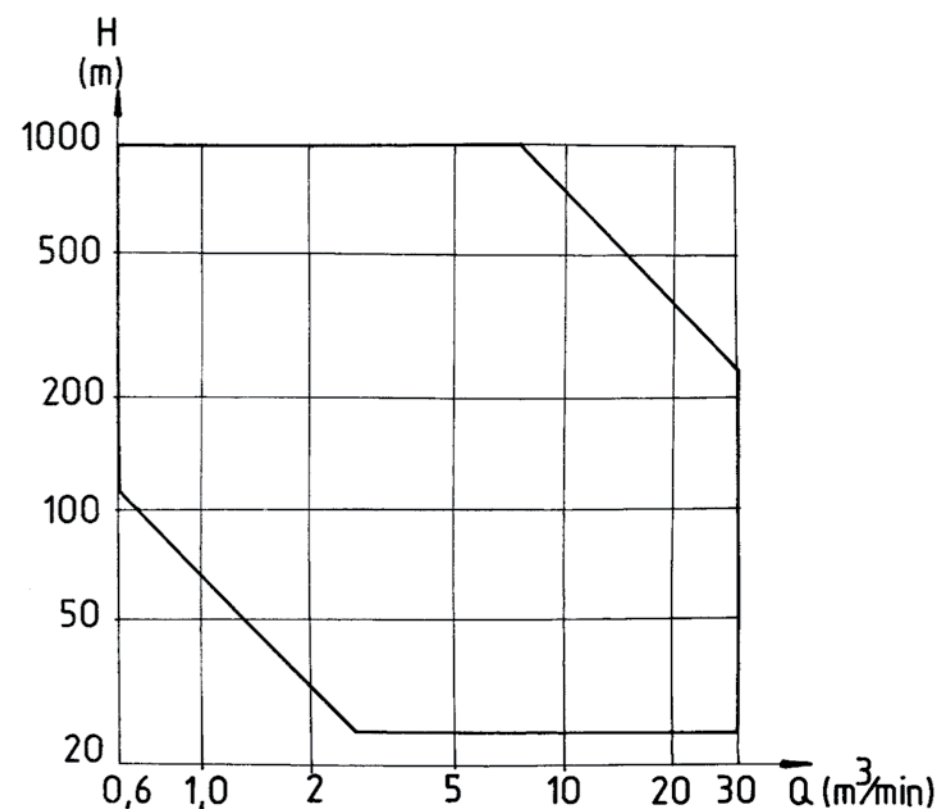
### MAIN STRUCTURAL MATERIALS

Impeller, housing wearing ring, bushing: nonferrous metal  
 Stage housing: cast-iron or stainless steel casting  
 Shaft protecting sleeve, impeller wearing ring: corrosion-resistant steel  
 Guide wheel, insert ring: cast-iron or nonferrous metal  
 The quality of material grade may vary according to the chemical composition of water

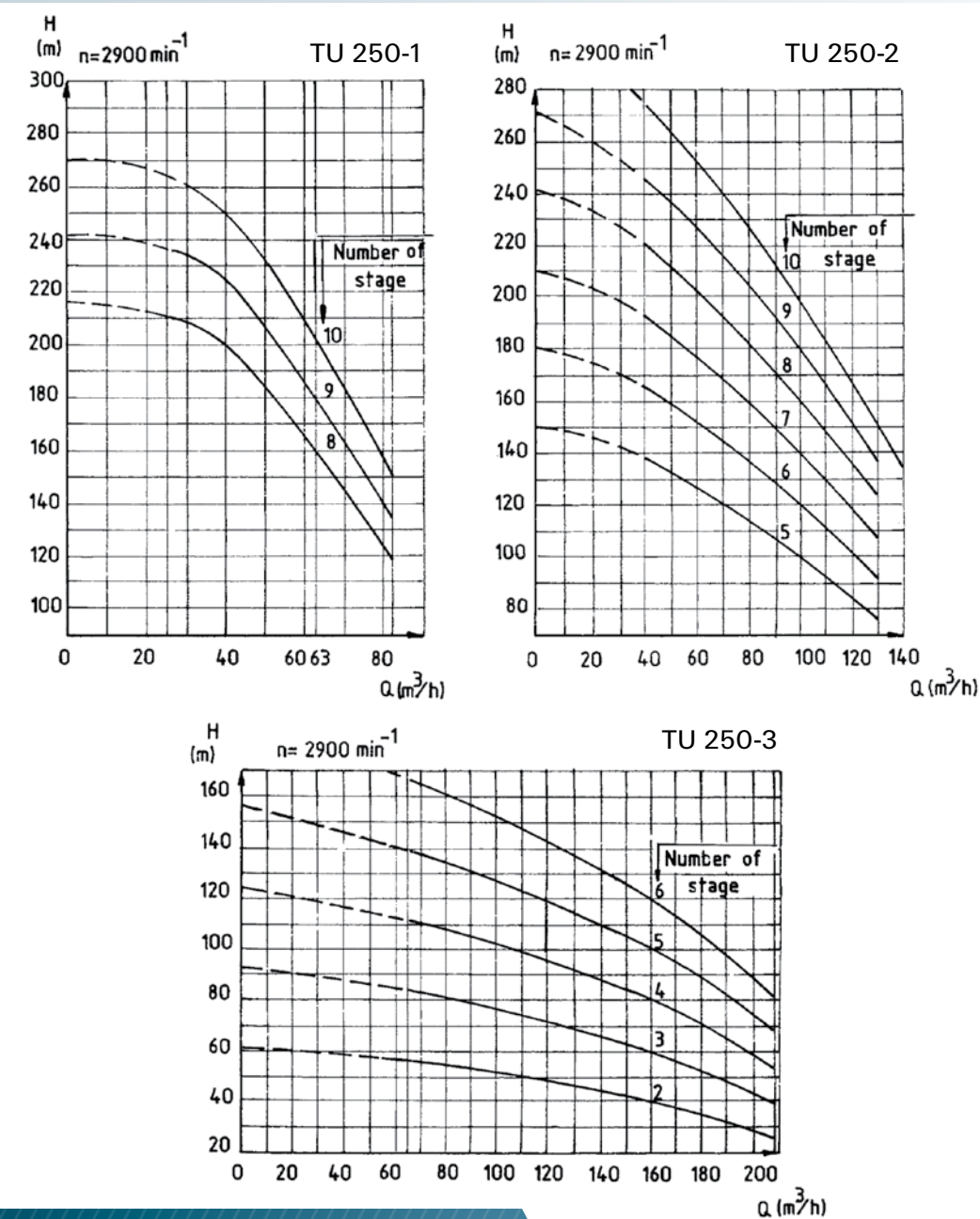




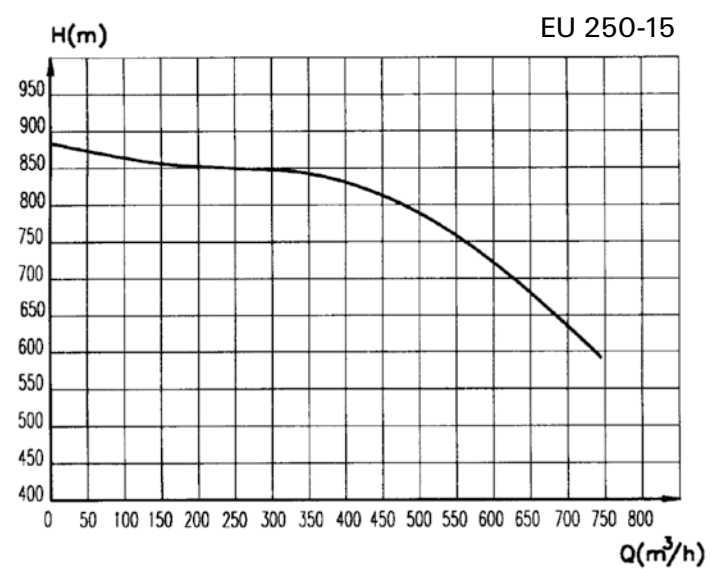
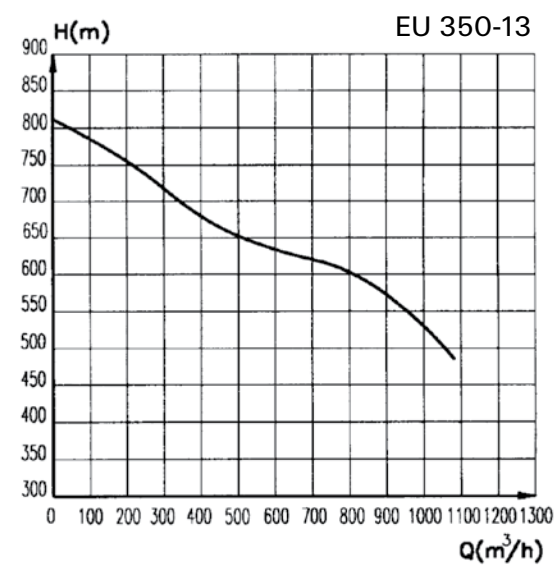
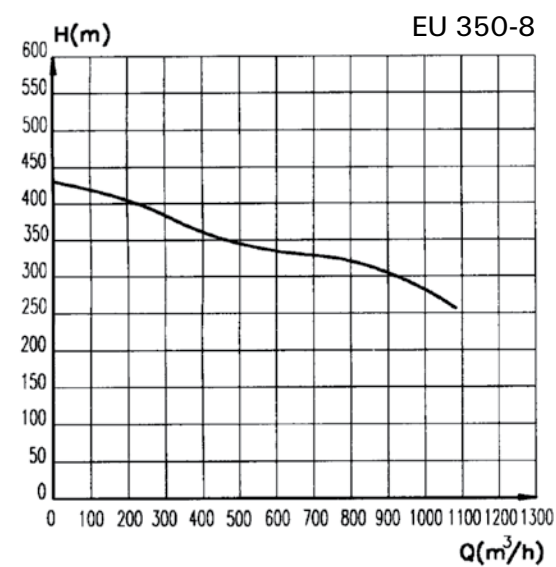
## PERFORMANCE RANGE OF TU-EU PUMPS



## CHARACTERISTIC CURVES OF TU PUMPS



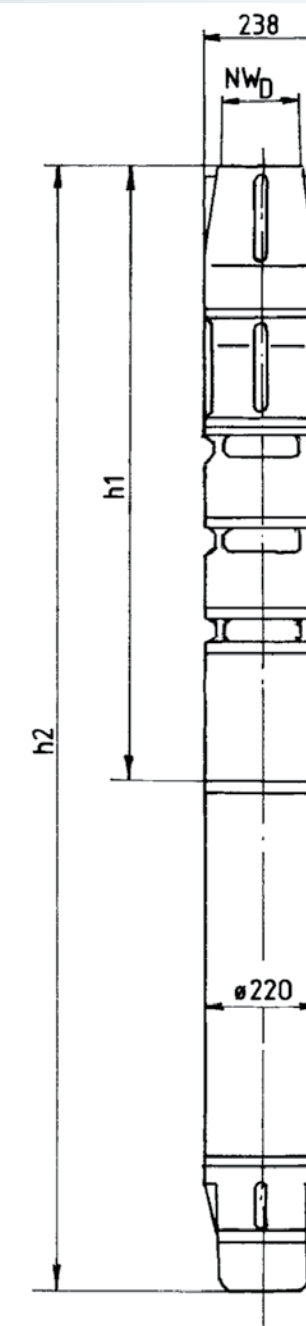
## CHARACTERISTIC CURVES OF EU PUMPS



## OUTLINE DRAWING OF TU PUMPS

Type	No of stages	NW <sub>D</sub>	h <sub>1</sub>	h <sub>2</sub>
TU 250-1	8	R4"	1704	3018
TU 250-1	9	R4"	1829	3253
TU 250-1	10	R4"	1954	3378
TU 250-2	5	R5"	1404	2718
TU 250-2	6	R5"	1544	2968
TU 250-2	7	R5"	1684	3108
TU 250-2	8	R5"	1824	3388
TU 250-2	9	R5"	1964	3578
TU 250-2	10	R5"	2104	3718
TU 250-3	2	R6"	1014	2208
TU 250-3	3	R6"	1169	2483
TU 250-3	4	R6"	1324	2748
TU 250-3	5	R6"	1479	3043
TU 250-3	6	R6"	1634	3248
TU 250-3	7	R6"	1789	3353

Dimensions h<sub>1</sub>, h<sub>2</sub> in mm.

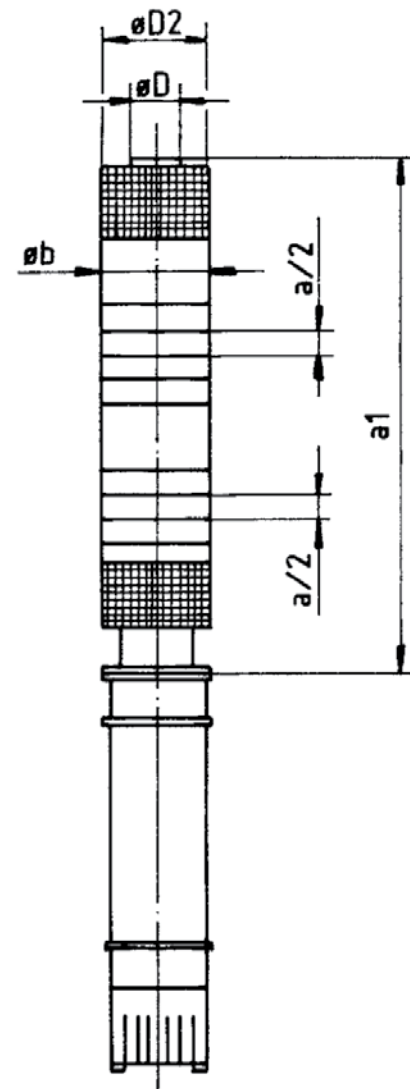




## OUTLINE DRAWING OF EU PUMPS

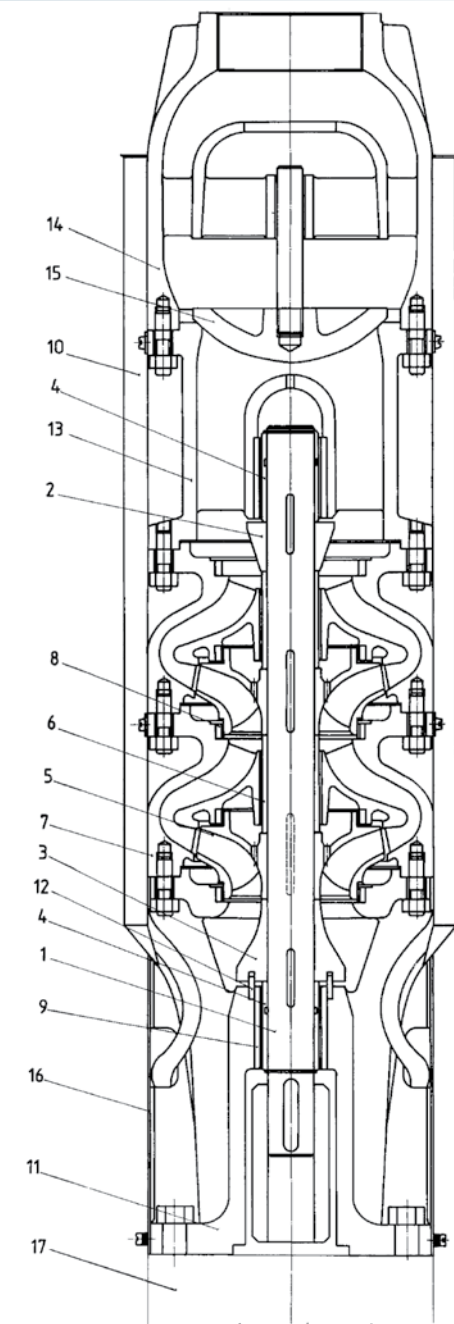
Type	a <sub>1</sub> Lenght of one stage pump	a additional length of each stage	b	Ø D	Ø D <sub>2</sub>	Flange
EUN 250	2505	270	770	250	505	NNY 100 NP 100
EUF 350	2915	320	790	350	600	NNY 64 NP 64

Dimensions in mm.



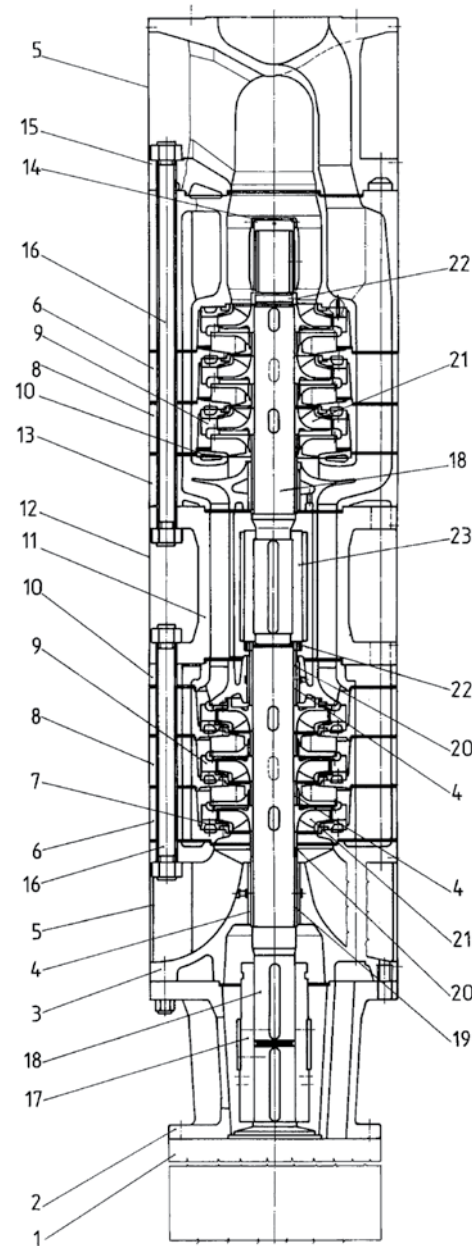
## SECTIONAL DRAWING OF TU PUMPS

1. Shaft
2. Sleeve
3. Protecting bell
4. Shaft protecting sleeve
5. Impeller
6. Distance sleeve
7. Stage casing
8. Wearing disc
9. Bearing
10. Cable protecting tube
11. Suction casing
12. Wearing ring
13. Delivery branch
14. Non-return valve
15. Valve disc
16. Filter
17. Submersible motor



## SECTIONAL DRAWING OF EU PUMPS

1. Submersible motor
2. Connection piece
3. Suction casing
4. Guide bearing
5. Filter
6. Stage casing at suction side
7. Distance piece
8. Stage casing
9. Guide wheel
10. Guide wheel at last stage
11. Guide piece
12. Cover
13. Cross over
14. Protecting cup
15. Suction and delivery casing
16. Tie bolt
17. Coupling sleeve
18. Shaft
19. Shaft protecting sleeve
20. Distance sleeve
21. Impeller
22. Shaft nut
23. Conical coupling sleeve



## IMMERSED IRRIGATION PUMPS

USN

### GENERAL SPECIFICATION

Vertical-shaft, single-suction, two-stage pump with volute casing, the first stage is immersed in the tailwater.

### CONSTRUCTIONAL DETAILS

The first stage consists of the suction branch, impeller and the guide vane, the upper stage being composed of the impeller and the volute casing. The first stage and the volute casing are connected by a rising pipe, the length of which is determined by the installation conditions.

### MEDIUM HANDLED

Clean or slightly contaminated water up to a max. temperature of 40 °C being neutral in reaction. Max. silt content: 1 g/dm<sup>3</sup>. Non-corrosive liquids with a viscosity slightly differing from that of water can also be handled.

### FIELD OF APPLICATION

Primarily in the booster stations of agricultural irrigation sprinkler plants.

### PACKING

Stuffing box packed with graphitized cotton ring-lets.

### BEARING SUPPORT

The thrust bearing is a self-aligning roller bearing immersed in oil, with water cooling which can be switched on when required. The first stage is provided with a rubber bearing lubricated by the water handled, the rising pipe being fitted with a bronze-lined slide bearing which is lubricated by a grease gun driven by a separate electric motor.

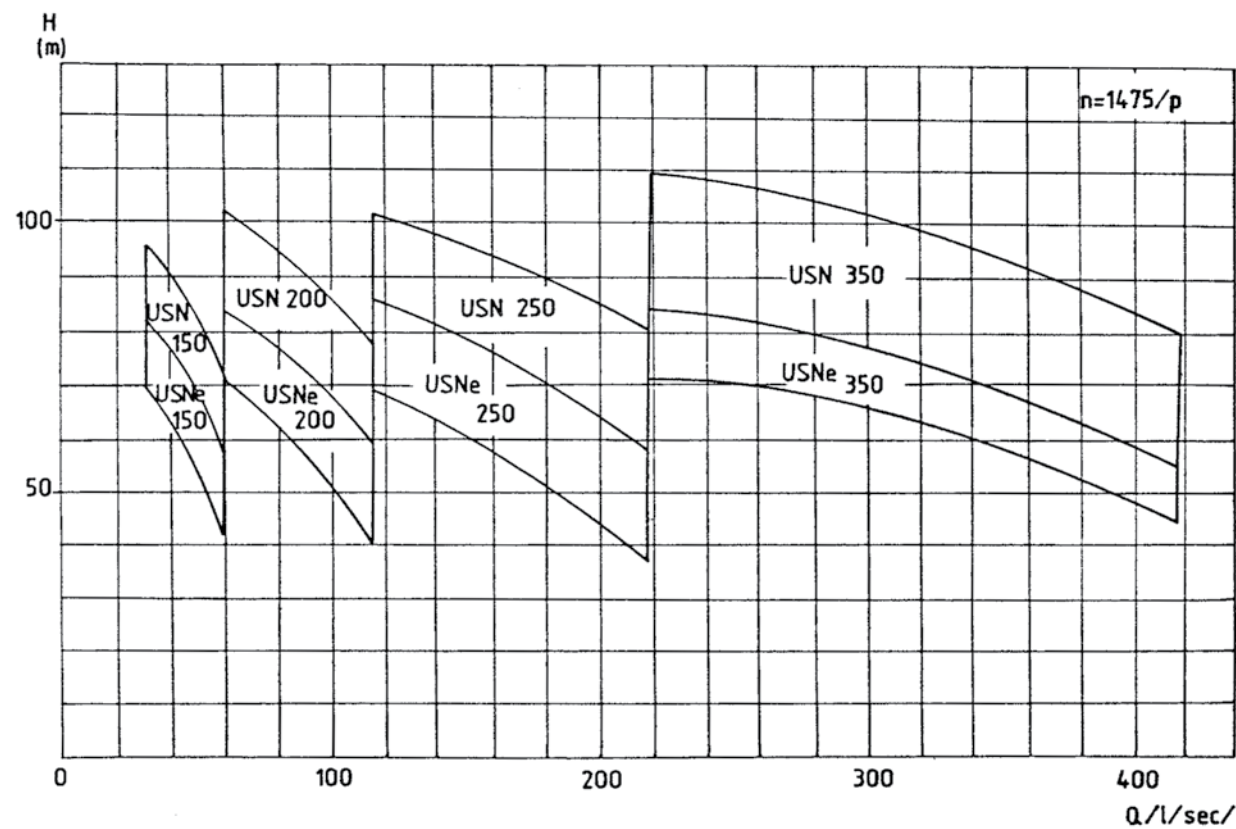
### MAIN STRUCTURAL MATERIALS

Impeller: nonferrous metal  
Wearing ring, suction pipe insert: nonferrous metal or corrosion-resistant steel  
Pump casing: cast-iron  
Shaft, rising pipe: carbon steel  
Shaft protecting sleeve: corrosion-resistant steel

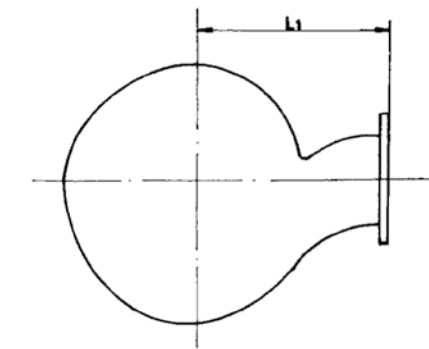
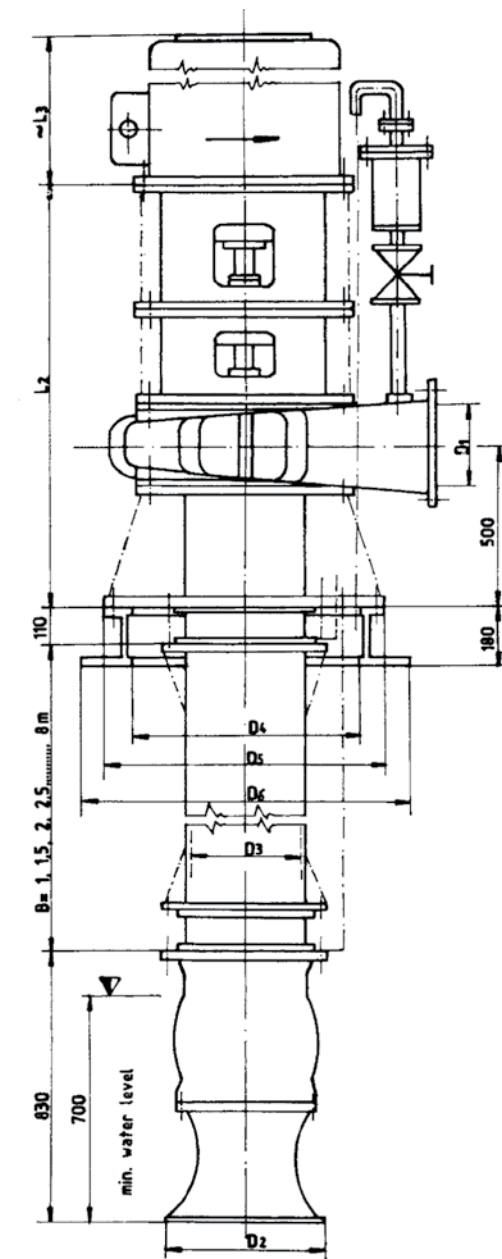




## PERFORMANCE RANGES OF USN PUMPS



## OUTLINE DRAWING OF USN PUMPS

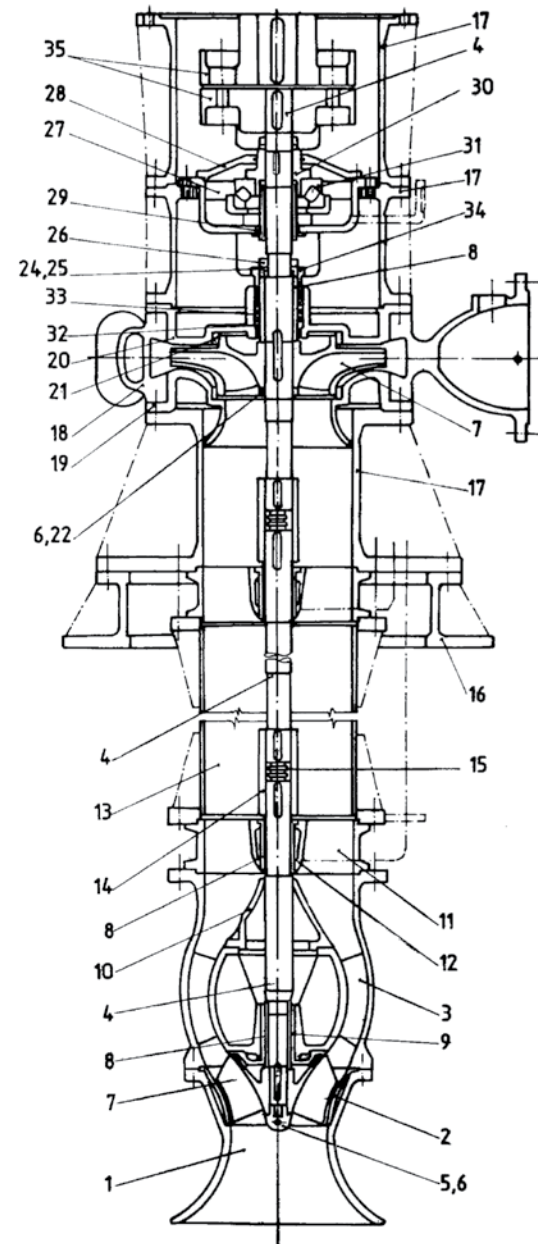


Type	USN 150	USN 200	USN 250	USN 350
$D_1$	Ø 150	Ø 200	Ø 250	Ø 350
$D_2$	Ø 300	Ø 400	Ø 500	Ø 570
$D_3$	Ø 200	Ø 300	Ø 350	Ø 450
$D_4$	Ø 600	Ø 700	Ø 700	Ø 850
$D_5$	Ø 750	Ø 850	Ø 850	Ø 1000
$D_6$	Ø 900	Ø 1000	Ø 1000	Ø 1200
$L_1$	500	580	580	670
$L_2$	1165	1205	1300	1400
$L_3$	700-860	800-940	900-1400	1150-1560

Dimensions in mm.  
Flanges to NP 10.

## SECTIONAL DRAWING OF USN PUMP

1. Suction bell
2. Insert for suction cone
3. Guide vanes casing
4. Shaft
5. Impeller screw
6. Locking plate
7. Impeller
8. Shaft sleeve
9. Guide bearing (rubber)
10. Guide extension
11. Bearing spider
12. Bearing
13. Tube
14. Coupling sleeve
15. Nipple
16. Immuring ring
17. Support
18. Casing
19. Suction cover
20. Stuffing box cover
21. Casing wear ring
22. Adjusting ring
23. Press ring
24. Lock nut
25. Shaft nut
26. Thrust bearing casing
27. Thrust bearing cover
28. Oil retaining tube
29. Centering sleeve for bearing
30. Thrust bearing
31. Neck bush
32. Lantern ring
33. Stuffing gland
34. Coupling



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