



OIL AND GAS EQUIPMENT PLANT LLC



ZAVODNGO.COM



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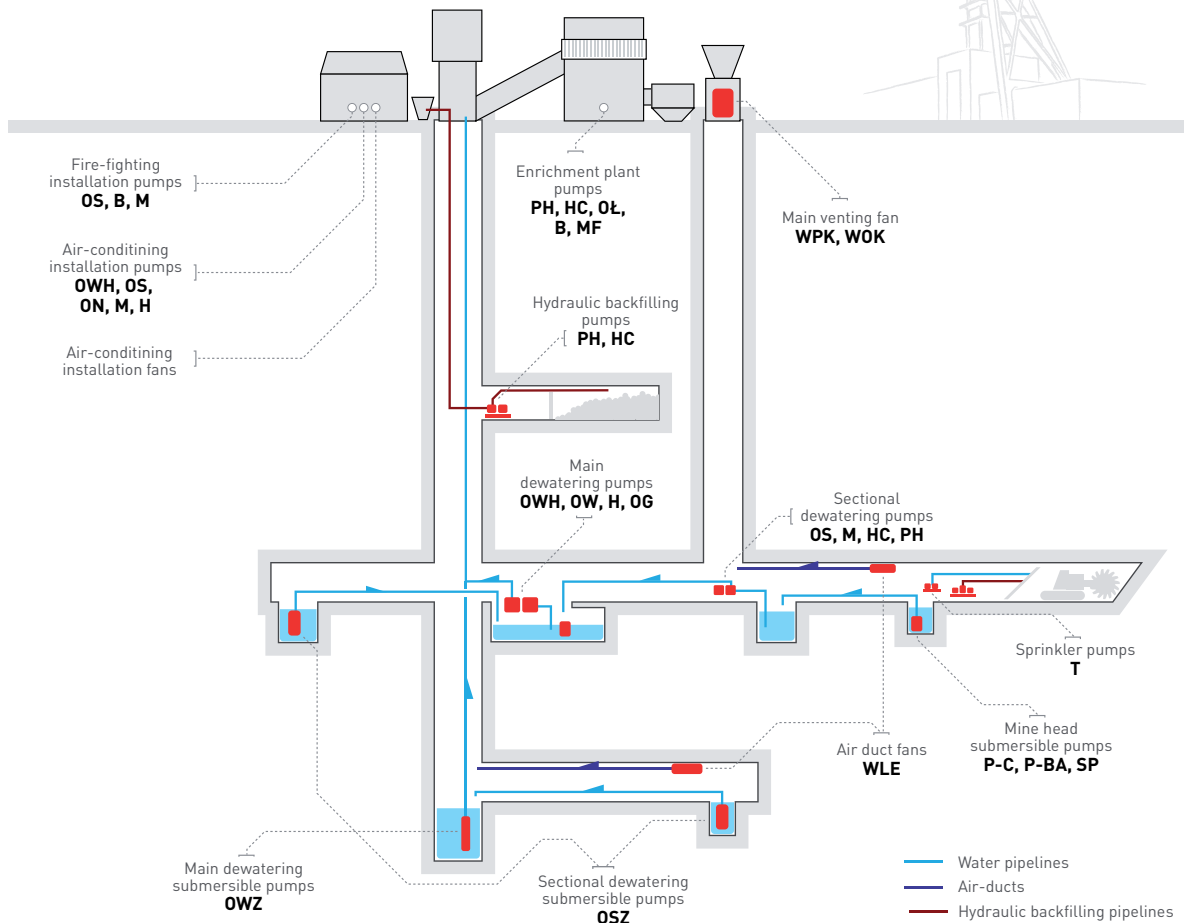
Submersible slurry pumps

HZ	112
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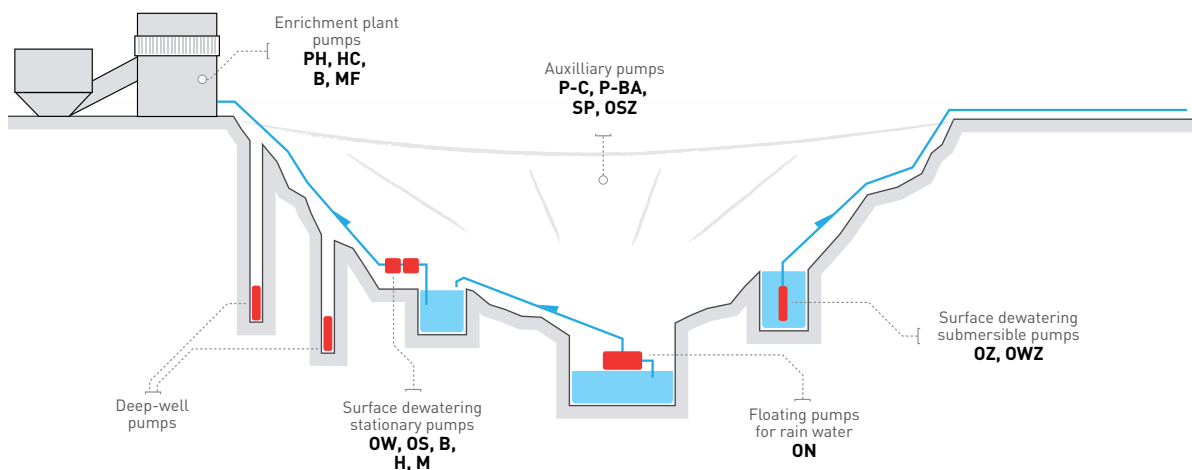
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DEEP MINE PUMPS examples of application



OPENCAST MINE PUMPS examples of application





STATIONARY PUMPS

H

H pumps are designed for pumping mine and other industrial waters, slightly contaminated and saline





STATIONARY PUMPS H

APPLICATION

H type pumps are designed for deep mine dewatering. The parameters cover the range required in this application: capacities of hundreds cubic meters per hour and heads up to 800 meters. The robust design of H pumps is adequate for adverse operating conditions typical for mine dewatering. The pumps are designed to stand increased external loads and the presence of mechanical and chemical contaminations in the mine water.

For the sake of those design features the H pumps, beside the basic application in deep mine dewatering are also applicable in other industries, where there is a need for pumping contaminated fluids, such as:

- steel industry
- cement and lime plants
- open cast mines.

DESIGN

H type pumps are horizontal, stationary, multistage, ring-section pumps. The delivery flange is directed vertically upward and the suction flange can be situated in four directions. i.e turned by 90° according to the needs. Closed impellers and blade diffusers are applied. The axial thrust is absorbed by a balance disk. Grease lubricated roller bearings are applied. The shaft seal can be sealed by a gland or mechanical seal.

The design is compliant with ATEX directive.

MATERIALS OF CONSTRUCTION

The materials of construction for the H pumps are selected accordingly to the handled fluid. There are three standard material versions:

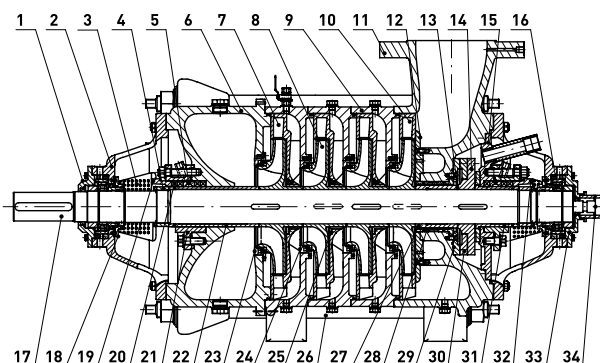
- basic – for water containing no contaminations
- wear-resistant – for water containing solids
- salt-resistant – for chemically contaminated water with solids presence.

Special material versions can be selected for handling non-typical fluids.



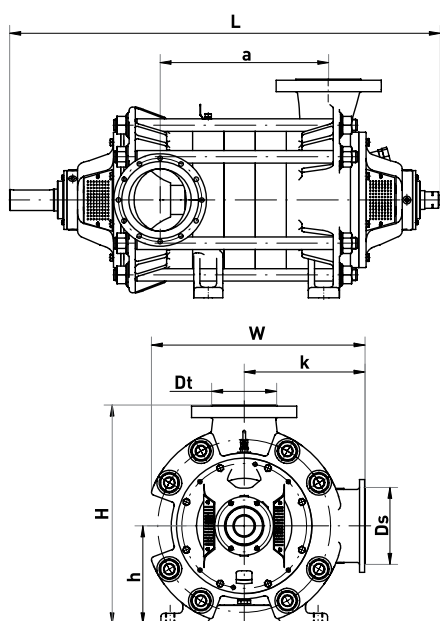
STATIONARY PUMPS H

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name	No.	Part name
1	Bearing cap	12	Discharge casing plate	23	1st stage seal ring
2	Bearing housing	13	Distant	24	Seal ring
3	Stuffing box guard	14	Balance disc	25	Sealing sleeve
4	Shaft nut	15	Seal cover	26	Tie bolt
5	Lantern ring	16	Radial bearing	27	Shaft sleeve
6	Suction casing	17	Shaft	28	Shaft sleeve
7	Centrifugal supply guide	18	Deflector	29	Thrust ring
8	Impeller	19	Gland	30	Sliding ring
9	Stage casing	20	Gland packing	31	Shaft protecting sleeve
10	Centrifugal guide	21	Mechanical seal	32	Shaft nut
11	Discharge casing	22	Shaft protecting sleeve	33	Bearing cap
				34	Shaft displacement indicator

DIMENSIONS



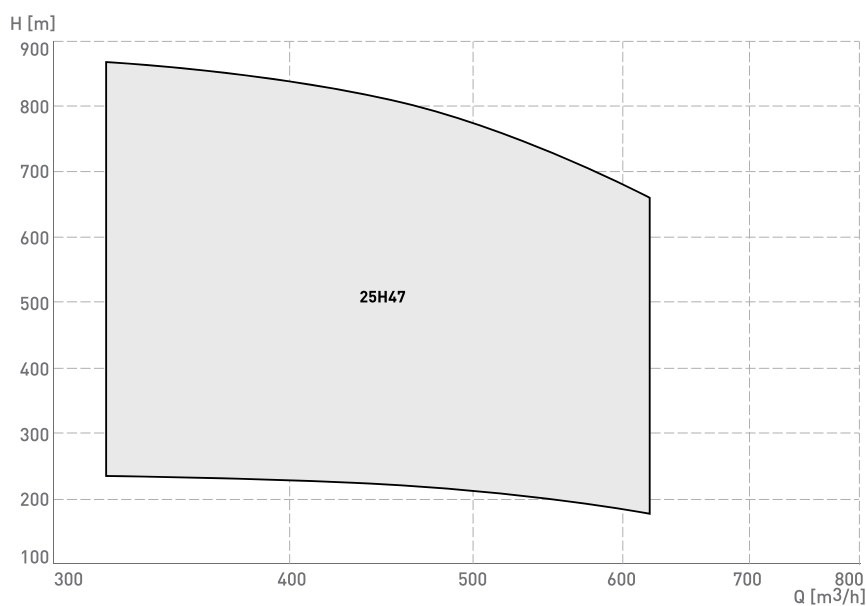
Dimension [mm]	Pump type	25H47
L	Number of stages	3 1920
		4 2070
		5 2220
		6 2370
		7 2520
		8 2670
		9 2820
		10 2970
		11 3120
a	Number of stages	3 657
		4 807
		5 957
		6 1107
		7 1257
		8 1407
		9 1557
		10 1707
		11 1857



STATIONARY PUMPS H

Pump type	Dimensions [mm]					
	W	k	H	h	Ds	Dt
25H47	1030	580	1050	470	300	250

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
25H47	3	560	210	1500	401	2240
	4		280		534	2491
	5		350		668	2742
	6		420		801	2993
	7		490		935	3244
	8		560		1068	3495
	9		630		1202	3746
	10		700		1335	4000
	11		770		1469	4248

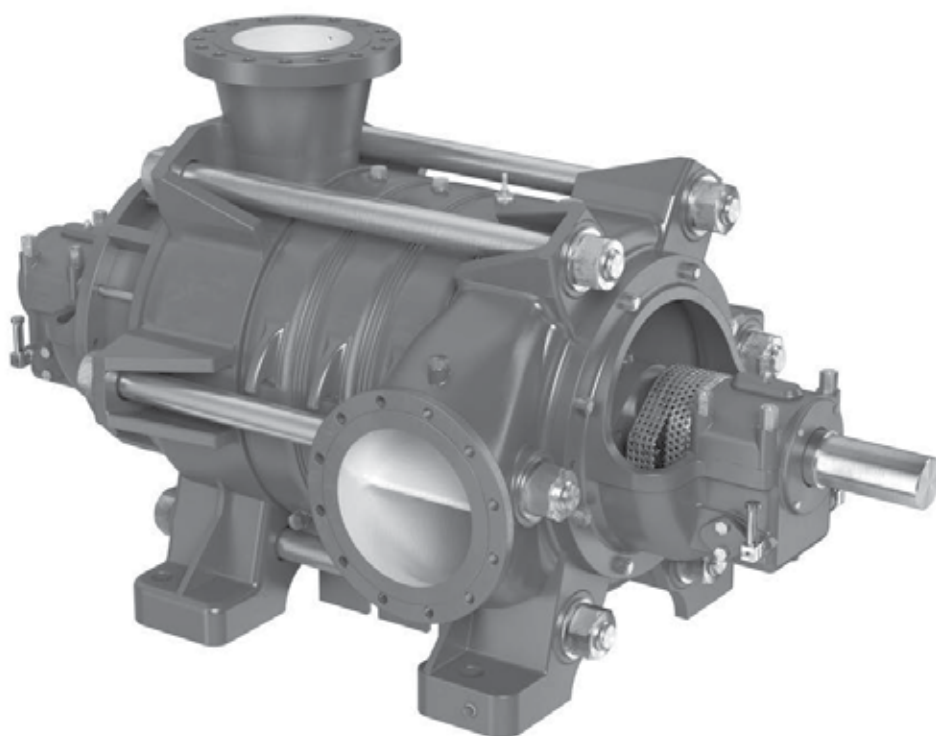
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY PUMPS

OW

OW type pumps are designed
for pumping mine water
and other industrial waters, slightly
contaminated mechanically and saline





STATIONARY PUMPS OW

APPLICATION

The OW-AM and OW-B type pumps are designed for deep mine dewatering. The parameters cover the range required in this application: capacities of hundreds cubic meters per hour and heads up to 800 meters. The robust design of OW-AM and OW-B pumps is adequate for adverse operating conditions typical for mine dewatering. The pumps are designed to stand increased external loads and the presence of mechanical and chemical contaminations in the mine water.

For the sake of those design features the OW-AM and OW-B pumps, beside the basic application in deep mine dewatering are also applicable in other industries, where there is a need for pumping contaminated fluids, such as:

- steel industry
- cement and lime plants
- open cast mines.

DESIGN

OW-AM and OW- are horizontal, stationary, multistage, ring-section pumps. The delivery flange is directed vertically upward and the suction flange is directed horizontally, left or right according to the needs. Closed impellers and blade diffusers are applied. The axial thrust is absorber by a balance disk. Two alternative kinds of bearings can be applied: oil lubricated slide bearings or grease lubricated roller bearings. The shaft seal can be sealed by a gland or mechanical seal

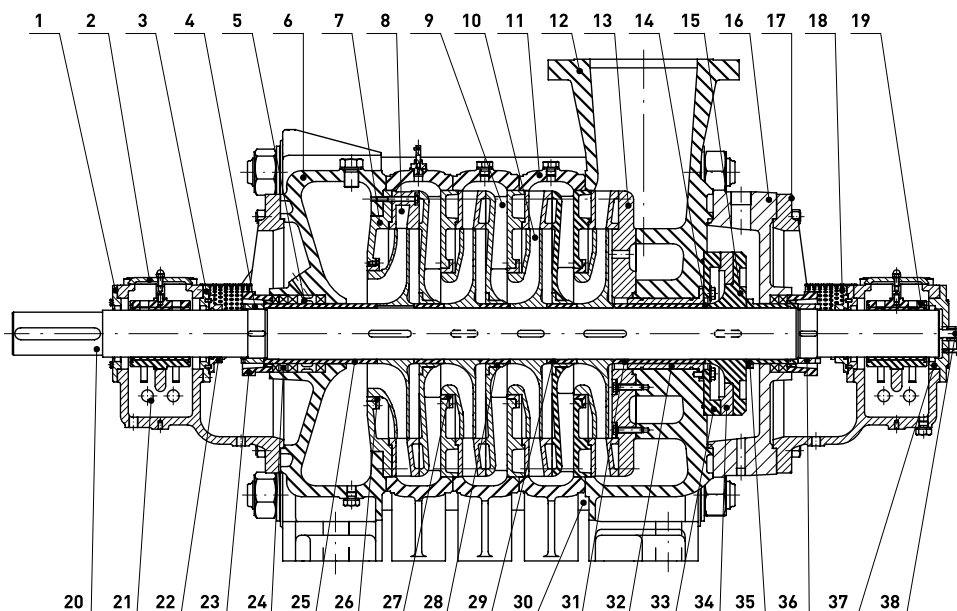
MATERIALS OF CONSTRUCTION

The materials of construction for the OW-AM and OW-B pumps are selected accordingly to the handled fluid. There are three standard material versions:

- basic – for water containing no contaminations
- wear-resistant – for water containing solids
- salt-resistant – for chemically contaminated water with solids presence.

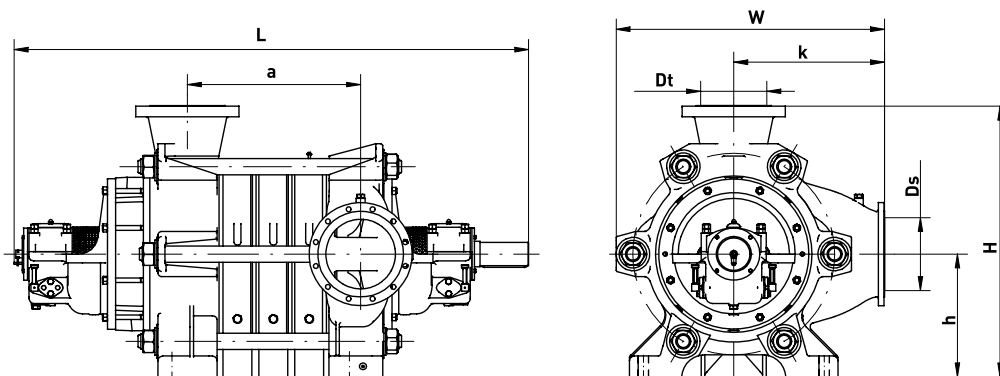
Special material versions can be selected for handling non-typical fluids.

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name	No.	Part name
1	Bearing cap	14	Distant	27	Seal ring
2	Oil chamber cover	15	Balance disc	28	Sealing sleeve
3	Bearing cap	16	Relieving system body	29	Distant sleeve
4	Shaft nut	17	Bearing housing	30	Tie bolt
5	Lantern ring	18	Stuffing box guard	31	Shaft sleeve
6	Suction casing	19	Bearing bush	32	Discharge casing sleeve
7	Suction casing plate	20	Shaft	33	Thrust ring
8	Centrifugal guide	21	Oil cooling system	34	Sliding ring
9	Supply guide	22	Deflector	35	Discharge gland bush
10	Impeller	23	Gland	36	Shaft nut
11	Stage casing	24	Gland packing	37	Bearing cap
12	Discharge casing	25	Shaft protecting sleeve	38	Shaft shift indicator
13	Discharge casing plate	26	1st stage seal ring		

DIMENSIONS



Dimensions [mm]	Pump type		OW-100B	OW-150AM	OW-200AM	OW-250B	OW-250F	OW-300AM
L	Number of stages	3	1341	1424	1913	2065	2110	2151
		4	1426	1513	2051	2220	2265	2337
		5	1511	1602	2189	2375	2420	2523
		6	1596	1691	2327	2530	2575	2709
		7	1681	1780	2465	2685	2730	2895/3108*
		8	1766	1869	2603	2840	2885	3081/3294*
		9	1851	1958	2741	2995	3040	3480*
		10	1936	2047	2879	3150	3195	3666*
		11	-	2136	3017	3305	-	-
a	Number of stages	3	311	375	507	593	593	659
		4	396	464	645	748	748	845
		5	481	553	783	903	903	1031
		6	568	642	921	1058	1058	1217
		7	651	731	1059	1213	1213	1403
		8	736	820	1197	1368	1368	1589
		9	821	909	1335	1523	1523	1775
		10	906	998	1473	1678	1678	1961
		11	-	1087	1611	1833	-	-

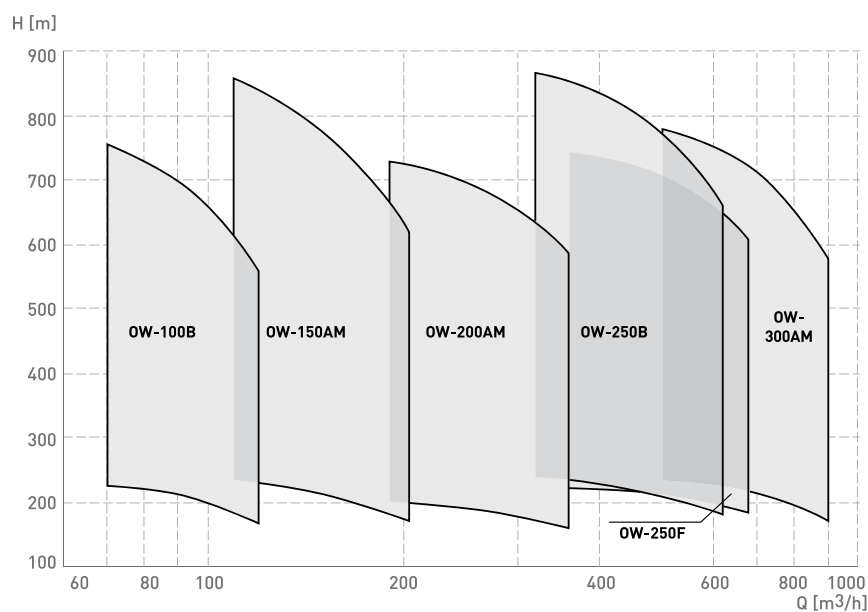
Dimension marked [*] apply to two-sided drive.

Pump type		OW-100B	OW-150AM	OW-200AM	OW-250B	OW-250F	OW-300AM
Dimensions [mm]	W	619	653	1060	1158	1158	1273
	k	350	380	600	650	650	750
	H	605	605	1000	1170	1170	1200
	h	265	265	450	530	530	560
	Ds	150	200	250	300	300	350
	Dt	100	150	200	250	250	300



STATIONARY PUMPS OW

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
OW-100B	3	100	198	2950	82,5	524
	4		264		110	577
	5		330		137,5	630
	6		396		165	683
	7		462		192,5	736
	8		528		220	789
	9		594		247,5	842
	10		660		275	895
OW-150AM	3	160	204	2950	126	550
	4		272		168	605
	5		340		210	660
	6		408		252	715
	7		476		294	770
	8		544		336	825
	9		612		378	880
	10		680		420	935
	11		748		462	990



STATIONARY PUMPS OW

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
OW-200AM	3	300	180	1450	210	2124
	4		240		280	2314
	5		300		350	2504
	6		360		420	2694
	7		420		490	2884
	8		480		560	3074
	9		540		630	3264
	10		600		700	3454
	11		660		770	3644
OW-250B	3	500	210	1450	381	2985
	4		280		508	3271
	5		350		635	3556
	6		420		762	3842
	7		490		889	4126
	8		560		1016	4412
	9		630		1143	4697
	10		700		1270	4982
	11		770		1397	5267
OW-250F	3	600	210	1485	440	3075
	4		280		587	3373
	5		350		733	3691
	6		420		880	4000
	7		490		1027	4308
	8		560		1174	4616
	9		630		1320	4924
	10		700		1467	5232
OW-300AM	3	720	210	1450	528	3005
	4		280		704	3345
	5		350		880	3685
	6		420		1056	4025
	7		490		1232	4365/4382*
	8		560		1408	4705/4722*
	9		630		1584	5062*
	10		700		1760	5402*

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.

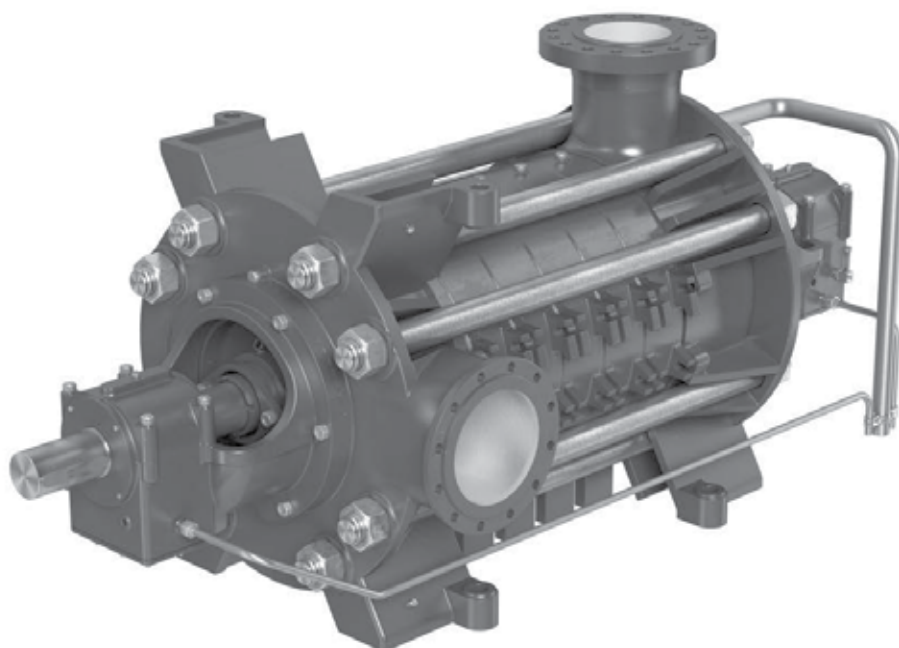
Dimensions marked (*) pertain to design with dual drive.



STATIONARY PUMPS

OWH

OWH pumps are designed for pumping deep mine waters, slightly contaminated mechanically and saline





STATIONARY PUMPS OWH

APPLICATION

The OWH type pumps are designed for deepest mine dewatering. The heads are up to 1000 meters. The robust design of OWH pumps is adequate for adverse operating conditions typical for mine dewatering. The pumps are designed to stand increased external loads and the presence of mechanical and chemical contaminations in the mine water.

For the sake of those design features the OWH pumps, beside the basic application in deep mine dewatering are also applicable in other industries, where there is a need for pumping contaminated fluids, such as:

- steel industry
- cement and lime plants
- open cast mines.

DESIGN

OWH are horizontal, stationary, multistage, ring-section pumps. The delivery flange is directed vertically upward and the suction flange is directed horizontally, left or right according to the needs. Closed impellers and vane diffusers are applied. The axial thrust is absorbed by a balance disk. Two alternative kinds of bearing can be applied: oil lubricated slide bearings or grease lubricated roller bearings. The shaft seal can be sealed by a gland or mechanical seal.

The suction casing is designed to stand suction head up to 200 m. For that reason the OWH pump are able to operate in series with a booster pump to achieve a total head of 1200 m.

The drive for the highest heads is double-sided (two motors per pumps).

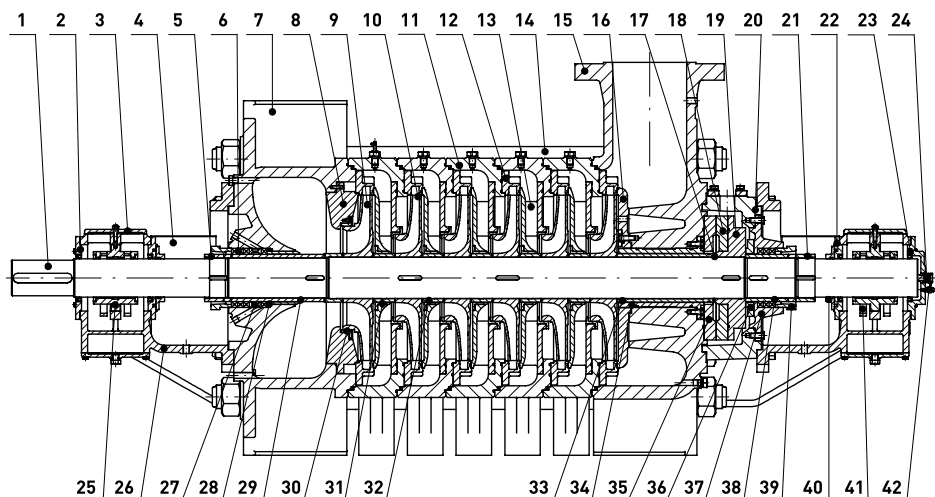
MATERIALS OF CONSTRUCTION

The materials of construction for the OWH pumps are selected accordingly to the handled fluid. There are two standard material versions:

- wear-resistant – for water containing solids
- salt-resistant – for chemically contaminated water with solids presence.

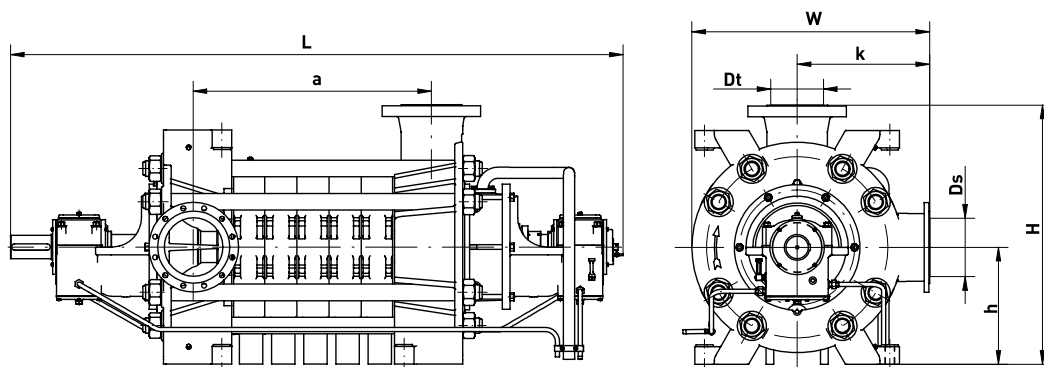
Special material versions can be selected for handling non-typical fluids.

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name	No.	Part name
1	Shaft	15	Discharge casing	29	Shaft protecting sleeve
2	Bearing cap	16	Discharge casing plate	30	Seal ring
3	Oil chamber cover	17	Distant	31	Sealing sleeve
4	Stuffing box guard	18	Sliding ring	32	Distance sleeve
5	Shaft nut	19	Balance disc	33	Shaft sleeve
6	Packing	20	Balance device casing	34	Discharge casing sleeve
7	Suction casing	21	Shaft nut	35	Thrust ring
8	Suction casing plate	22	Bearing cap	36	Limiter
9	1st stage impeller	23	Bearing cap	37	Stuffing box casing
10	Impeller	24	Shaft shift indicator	38	Shaft protecting sleeve
11	Stage casing	25	Split acetabulum	39	Split Gland
12	Centrifugal guide	26	Bearing casing	40	Deflector
13	Supply guide	27	Lantern ring	41	Lubricating ring
14	Tie bolt	28	Suction casing sleeve	42	Sliding cover

DIMENSIONS



Dimension [mm]	Pump type		OWH-200	OWH-250	OWH-250S
L	Number of stages	3	2058	2538	-
		4	2213	2703	-
		5	2368	2868	-
		6	2523	3033	3154
		7	2678	3362*	3483*
		8	2833	3527*	3648*
		9	2988	3692*	3813*
		10	3143	3857*	3978*
		11	3298	-	-
a	Number of stages	3	595	685	-
		4	750	850	-
		5	905	1015	-
		6	1060	1180	1220
		7	1215	1345	1385
		8	1370	1510	1550
		9	1525	1675	1715
		10	1680	1840	1880
		11	1835	-	-

Dimensions marked (*) pertain to design with dual drive

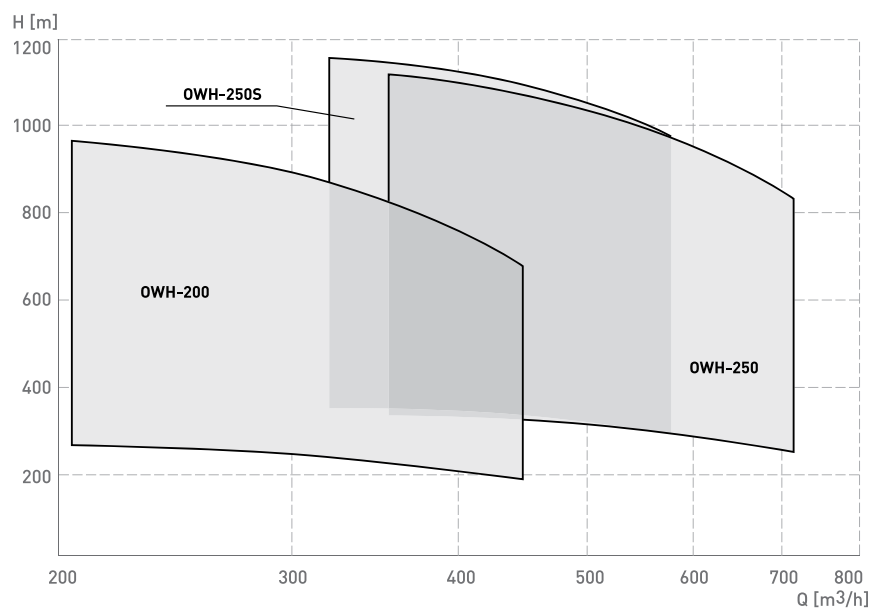
Pump type		OWH-200	OWH-250	OWH-250S
Dimensions [mm]	W	1180	1195	1220
	k	650	597	680
	H	1170	1330	1330
	h	530	600	600
	Ds	250 / 200*	250	300
	Dt	200	250	250

* Applies to pump version with either suction work or work in series with influx



STATIONARY PUMPS OWH

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
OWH-200	3	315	240	1450	295	3633
	4		320		393	3928
	5		400		491	4223
	6		480		589	4518
	7		560		687	4813
	8		640		785	5108
	9		720		883	5403
	10		800		981	5698
	11		880		1080	5993
OWH-250	3	500	300	1450	544	5258
	4		400		726	5864
	5		500		908	6470
	6		600		1090	7076
	7		700		1272	7682
	8		800		1453	8288
	9		900		1635*	8918
	10		1000		1817*	9524



STATIONARY PUMPS OWH

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
OWH-250S	6	500	600	1450	1090	5612
	7		700		1272*	6091
	8		800		1453*	6550
	9		900		1635*	7009
	10		1000		1817*	7468

[*] – dual drive

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY PUMPS

OG

OG pumps are designed
for pumping mine
and other industrial waters





STATIONARY PUMPS OG

APPLICATION

The OG type pumps are designed for deep mine dewatering. The parameters cover the range required in this application: capacities of hundreds cubic meters per hour and heads up to 1300 meters. The robust design of OG pumps is adequate for adverse operating conditions typical for mine dewatering. The pumps are designed to stand increased external loads and the presence of mechanical and chemical contaminations in the mine water.

For the sake of those design features the OG pumps, beside the basic application in deep mine dewatering are also applicable in other industries, where there is a need for pumping contaminated fluids, such as:

- steel industry
- cement and lime plants.

DESIGN

OG are horizontal, stationary, multistage, ring-section pumps. The delivery flanges are directed vertically upward suction flange is directed horizontally, left or right according to the needs. Closed impellers and vane diffusers are applied. The axial thrust is absorbed by a balance disk. Two alternative kinds of bearings can be applied: oil lubricated slide bearings or grease lubricated roller bearings. The shaft seal can be sealed by a gland or mechanical seal.

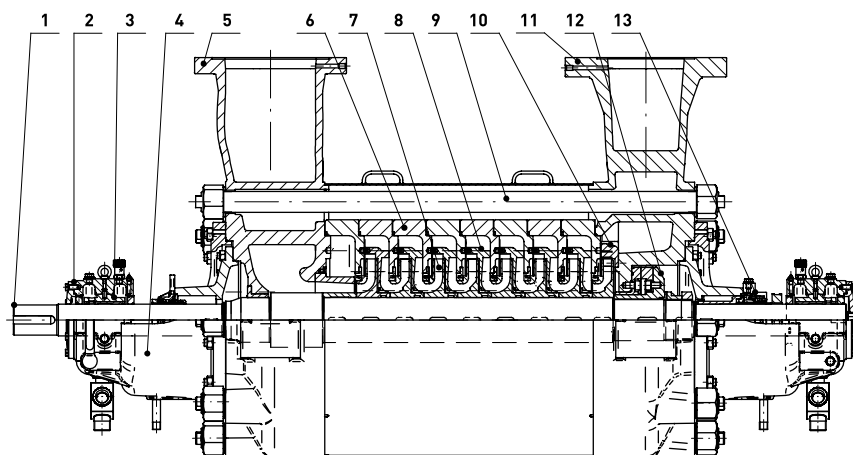
MATERIALS OF CONSTRUCTION

The materials of construction for the OG pumps are selected accordingly to the handled fluid. There are three standard material versions:

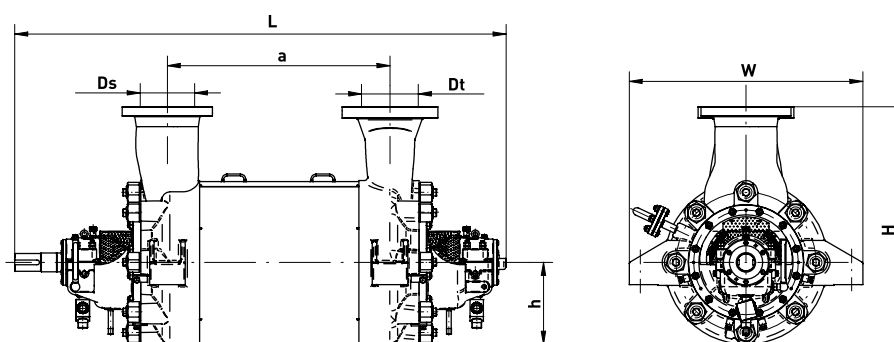
- basic – for water containing no contaminations
- wear-resistant – for water containing solids
- salt-resistant – for chemically contaminated water with solids presence.

Special material versions can be selected for handling non-typical fluids.

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name
1	Shaft	8	Centrifugal supply guide
2	Bearing housing cap	9	Tie bolt
3	Bearing bushing	10	Centrifugal guide
4	Bearing housing	11	Discharge casing
5	Suction casing	12	Balance disc
6	Stage casing	13	Mechanical seal
7	Impeller		

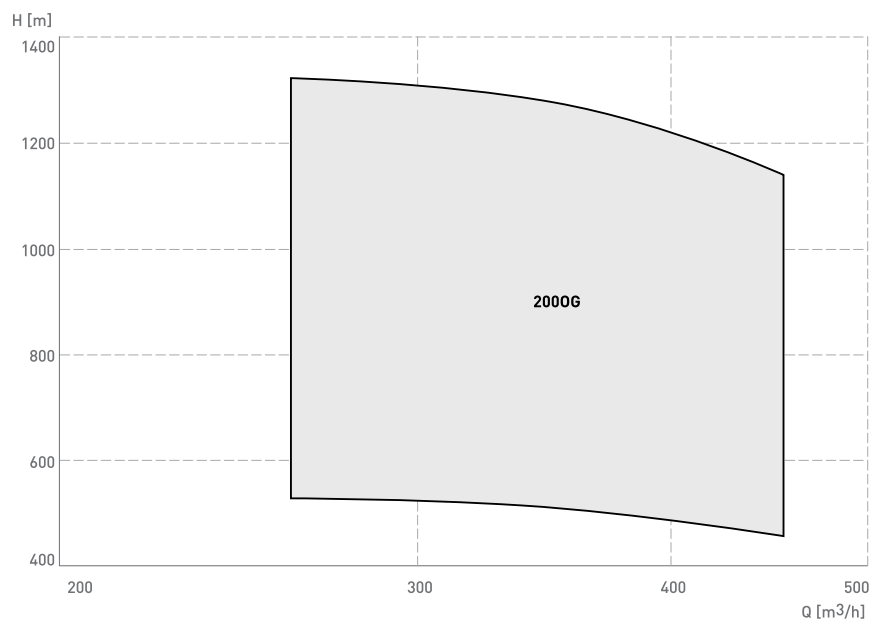


Pump type		Dimensions [mm]						
	Number of stages	L	a	W	H	h	Ds	Dt
200 OG	4	1850	550	1190	1560	860	240	200
	5	1940	640					
	6	2030	730					
	7	2120	820					
	8	2210	910					
	9	2300	1000					



STATIONARY PUMPS OG

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
200 OG	4	375	560	2950	745	1745
	5		700		930	1872
	6		840		1115	1999
	7		980		1300	2126
	8		1120		1485	2253
	9		1260		1670	2380

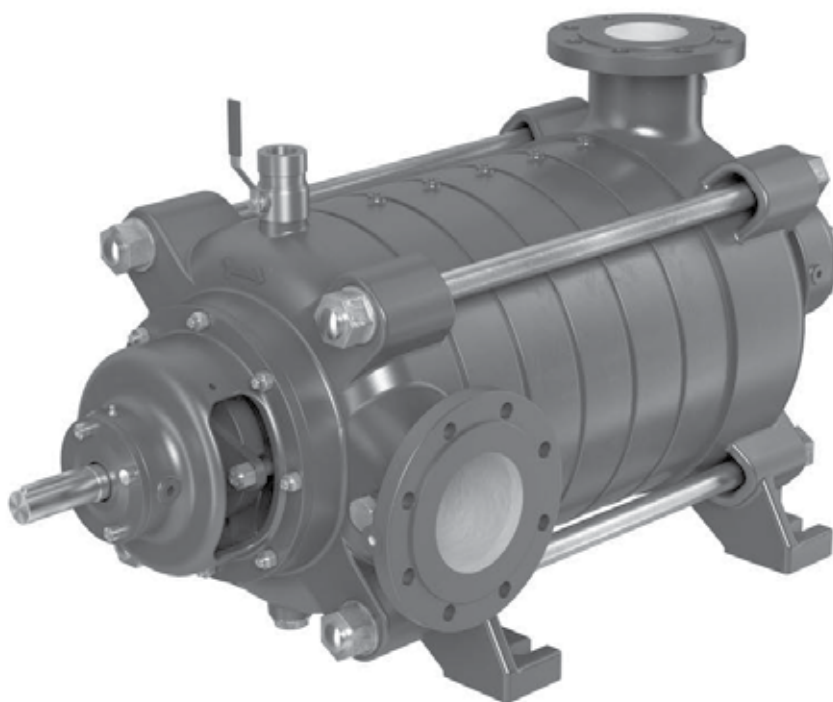
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY PUMPS

M

M pumps are designed
for sectional mine dewatering





STATIONARY PUMPS M

APPLICATION

The M type pumps are designed for sectional mine dewatering. The robust design of the pumps is adequate for adverse operating conditions typical for mine dewatering. The pumps are designed to stand increased external loads and the presence of mechanical and chemical contaminations in the mine water.

For the sake of those design features the M pumps, beside the basic application in mine dewatering are also applicable in other industries, where there is a need for pumping contaminated fluids, such as:

- steel industry
- cement and lime plants
- opencast mines.

DESIGN

Horizontal, stationary, multistage, ring-section medium pressure pumps. The delivery flange is directed vertically upward and the suction flange is directed horizontally, left or right according to the needs. Closed impellers and blade diffusers are applied. The axial thrust is absorbed by grease lubricated roller bearings. The shaft seal can be sealed by a gland or mechanical seal.

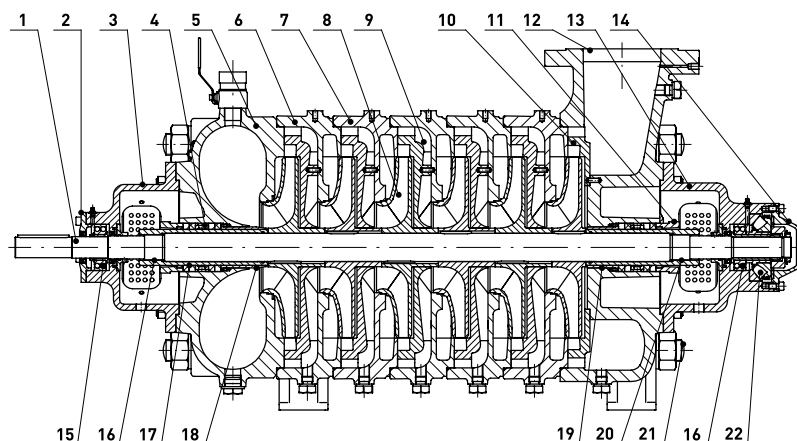
MATERIALS OF CONSTRUCTION

The materials of construction for the M pumps are selected accordingly to the handled fluid. There are three standard material versions:

- basic – for water containing no contaminations
- wear-resistant – for water containing solids
- salt-resistant – for chemically contaminated water with solids presence.

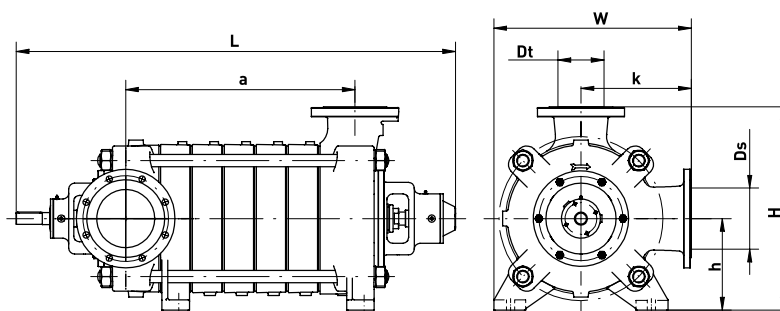
Special material versions can be selected for handling non-typical fluids.

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name	No.	Part name
1	Shaft	9	Centrifugal supply guide	17	Gland packing
2	Bearing cap	10	Centrifugal guide	18	Sealing sleeve
3	Bearing housing	11	Gland	19	Sealing sleeve
4	Lantern ring	12	Discharge casing	20	Shaft protective sleeve
5	Suction casing	13	Bearing housing	21	Tie bolt
6	1st stage of stage casing	14	Bearing cap	22	Aerial bearing
7	Stage casing	15	Radial bearing		
8	Impeller	16	Shaft protecting sleeve		

DIMENSIONS



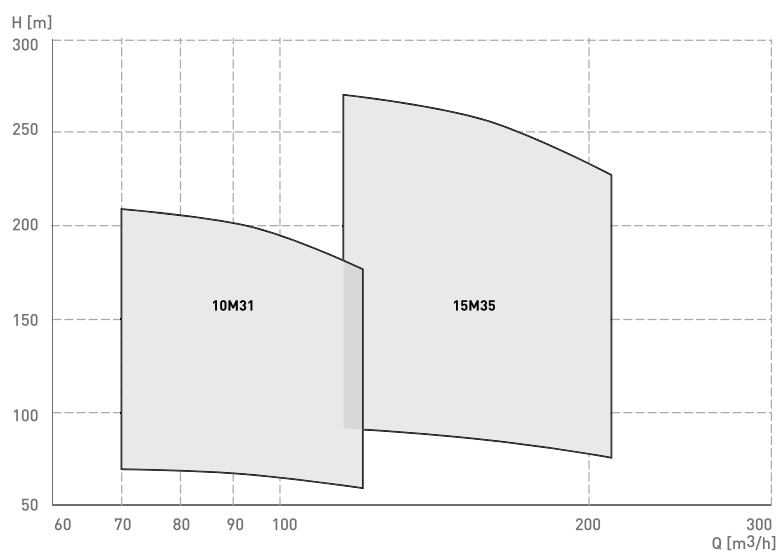
Pump type		10M31	15M35
Dimensions [mm]	W	595	685
	k	335	385
	H	615	700
	h	280	315
	Ds	125	200
	Dt	100	150



STATIONARY PUMPS M

Dimension [mm]	Pump type		10M31	15M35
L	Number of stages	2	935	1080
		3	1020	1190
		4	1105	1300
		5	1190	1410
		6	1275	1520
a	Number of stages	2	286	350
		3	371	460
		4	456	570
		5	541	680
		6	626	790

RANGE OF OPERATION

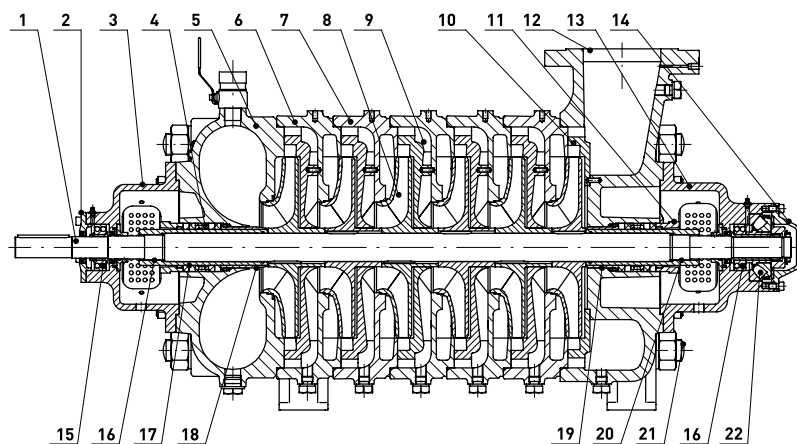


NOMINAL PARAMETERS

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
10M31	2	100	62	1485	24	315
	3		93		36	358
	4		124		48	400
	5		155		60	443
	6		186		72	485
15M35	2	170	84	1485	53	493
	3		126		79	578
	4		168		105	663
	5		210		131	747
	6		252		158	832

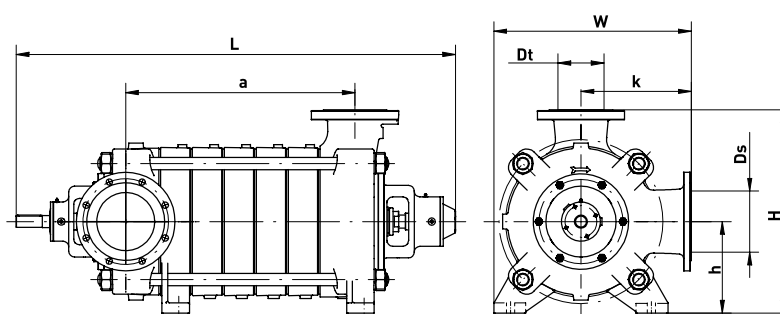
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name	No.	Part name
1	Shaft	9	Centrifugal supply guide	17	Gland packing
2	Bearing cap	10	Centrifugal guide	18	Sealing sleeve
3	Bearing housing	11	Gland	19	Sealing sleeve
4	Lantern ring	12	Discharge casing	20	Shaft protective sleeve
5	Suction casing	13	Bearing housing	21	Tie bolt
6	1st stage of stage casing	14	Bearing cap	22	Atrial bearing
7	Stage casing	15	Radial bearing		
8	Impeller	16	Shaft protecting sleeve		

DIMENSIONS



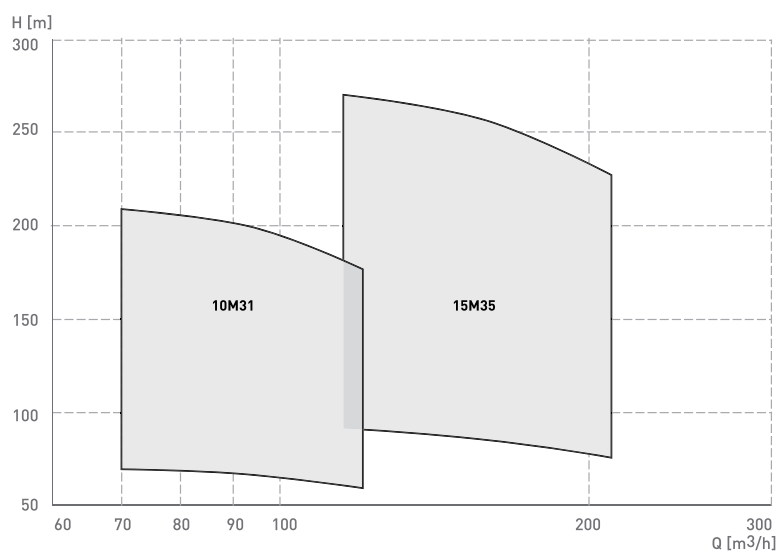
Pump type		10M31	15M35
Dimensions [mm]	W	595	685
	k	335	385
	H	615	700
	h	280	315
	Ds	125	200
	Dt	100	150



STATIONARY PUMPS M

Dimension [mm]	Pump type		10M31	15M35
L	Number of stages	2	935	1080
		3	1020	1190
		4	1105	1300
		5	1190	1410
		6	1275	1520
a	Number of stages	2	286	350
		3	371	460
		4	456	570
		5	541	680
		6	626	790

RANGE OF OPERATION

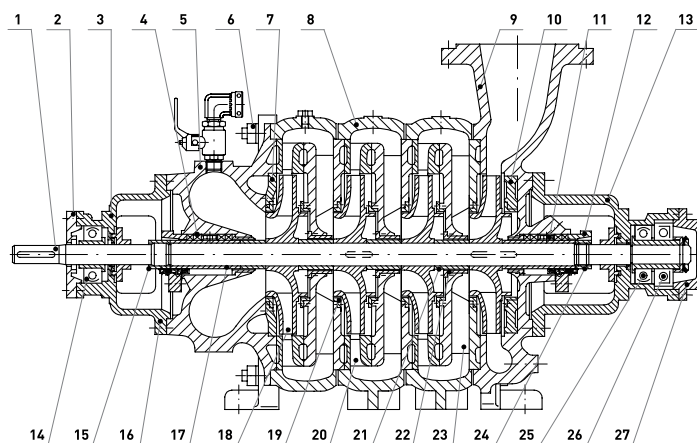


NOMINAL PARAMETERS

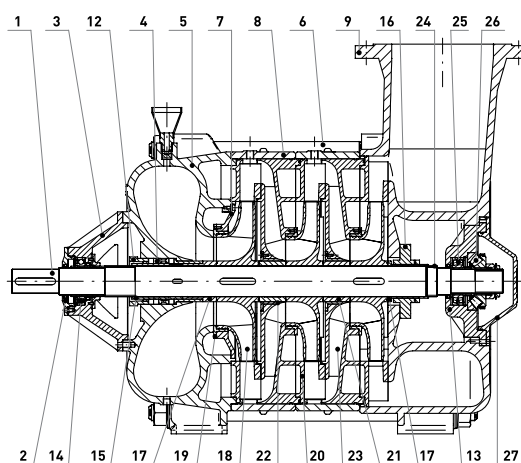
Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
10M31	2	100	62	1485	24	315
	3		93		36	358
	4		124		48	400
	5		155		60	443
	6		186		72	485
15M35	2	170	84	1485	53	493
	3		126		79	578
	4		168		105	663
	5		210		131	747
	6		252		158	832

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.

CROSS-SECTION/LIST OF PUMP PARTS



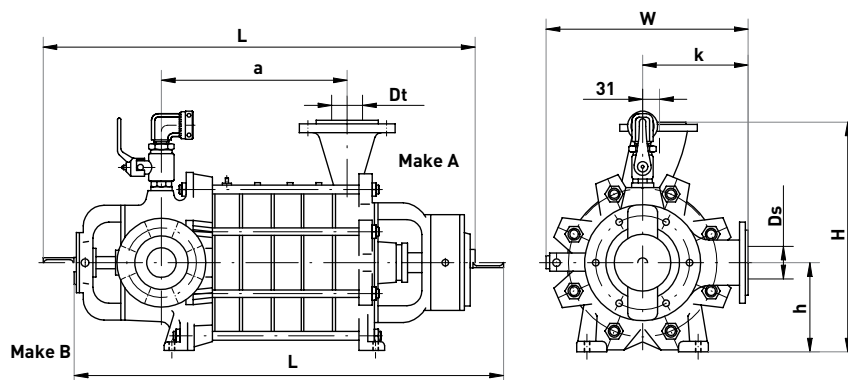
OS-AM, OS-B ranges pump sectional view



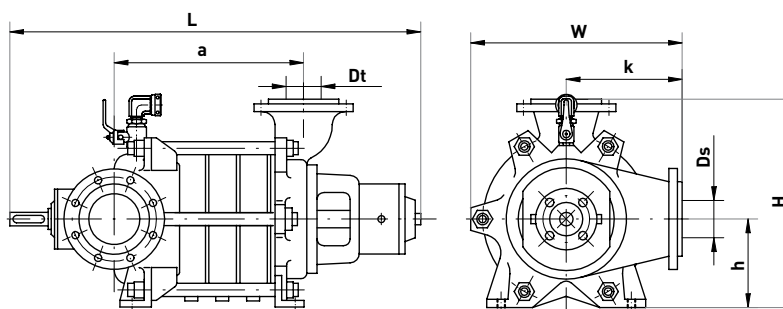
OS-C range pump sectional view

No.	Part name	No.	Part name	No.	Part name
1	Shaft	10	Discharge casing plate	19	Seal ring
2	Bearing cap	11	Lantern ring	20	Centrifugal guide
3	Bearing housing	12	Gland	21	Distance guide
4	Gland packing	13	Bearing housing	22	Sealing sleeve
5	Suction casing	14	Radial bearing	23	Supply guide
6	Tie bolt	15	Shaft nut	24	Shaft nut
7	Suction casing plate	16	Bearing housing	25	Radial bearing
8	Stage housing	17	Shaft protecting sleeve	26	Arial bearing
9	Discharge casing	18	Impeller	27	Bearing cap

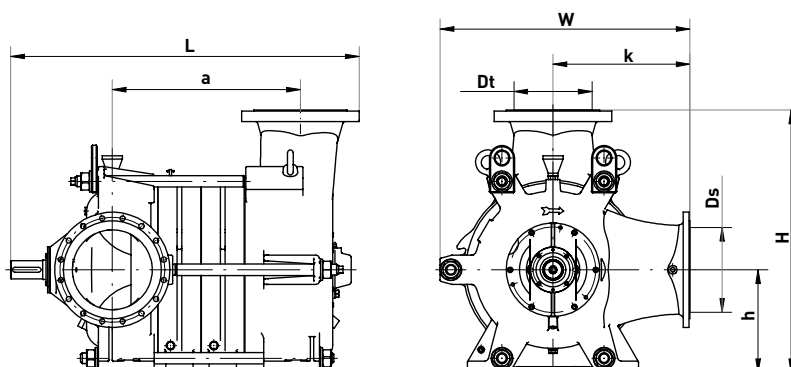
DIMENSIONS



OS-80B pump dimensions



OS-AM stationary impeller pumps and OS-200B hot water pumps dimensions



OS-300C pump dimensions

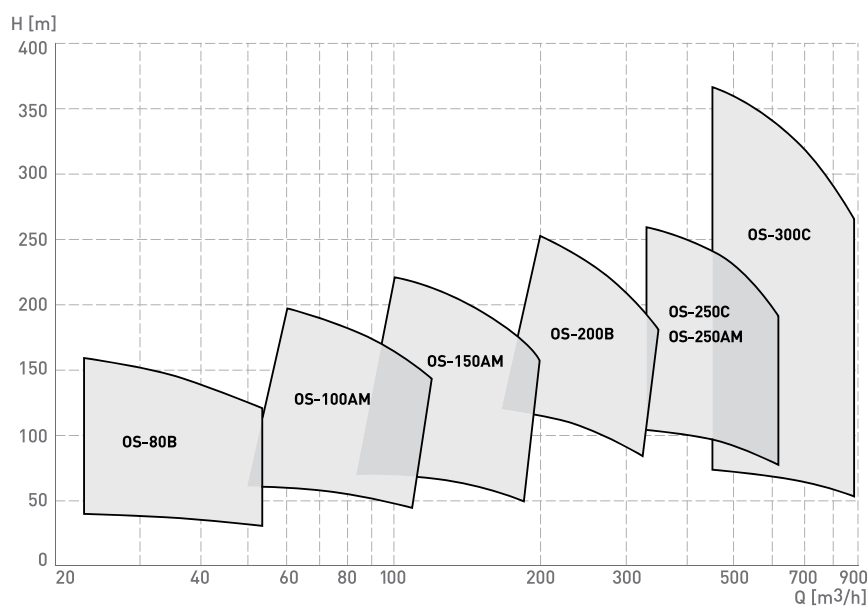


STATIONARY PUMPS M

Dimension [mm]	Pump type		OS-80B		OS-100AM	OS-150AM	OS-200B	OS-250AM	OS-300C
			Make A	Make B					
L	Number of stages	2	769	768	944	1101	1367	1414	1337
		3	837	836	1051	1225	1514	1568	1527
		4	905	904	1158	1349	1661	1722	1717
		5	973	972	1265	1473	1808	1876	1907
		6	1041	1040	1372	1597	1955	-	-
		7	1109	1108	-	-	-	-	-
		8	1177	1176	-	-	-	-	-
a	Number of stages	2	162		291,5	367	478,5	567	634
		3	230		398,5	491	625,5	721	824
		4	298		505,5	615	772,5	875	1014
		5	366		612,5	739	919,5	1029	1204
		6	434		719,5	863	1066,5	-	-
		7	502		-	-	-	-	-
		8	570		-	-	-	-	-

Pump type		OS-80B		OS-100AM	OS-150AM	OS-200B	OS-250AM	OS-300C
		Make A	Make B					
Dimensions [mm]	W	407	407	630	708	818	925	1095
	k	240	240	335	380	450	500	600
	H	507	507	615	735	855	975	1150
	h	212	212	280	315	355	425	450
	Ds	80		125	200	250	300	350
	Dt	80		100	150	200	250	300

RANGE OF OPERATION





STATIONARY PUMPS M

NOMINAL PARAMETERS

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
OS-80B	2	36	36	1450	5,6	185
	3		54		8,4	219
	4		72		11,2	253
	5		90		14	287
	6		108		16,8	321
	7		126		19,6	355
	8		144		22,4	389
OS-100AM	2	81	58	1450	19	319
	3		87		28,5	393
	4		116		38	467
	5		145		47,5	541
	6		174		57	615
OS-150AM	2	144	64	1450	35	473
	3		96		52,5	578
	4		128		70	683
	5		160		87,5	788
	6		192		105	893
OS-200B	2	258	72	1450	67	780
	3		108		100,5	926
	4		144		134	1070
	5		180		167,5	1215
	6		216		201	1356
OS-250AM	2	450	96	1450	153	1011
	3		144		229,5	1221
	4		192		306	1431
	5		240		382,5	1641
OS-300C	2	750	122	1490	355	1587
	3		183		560	1876
	4		244		710	2165
	5		305		900	2450

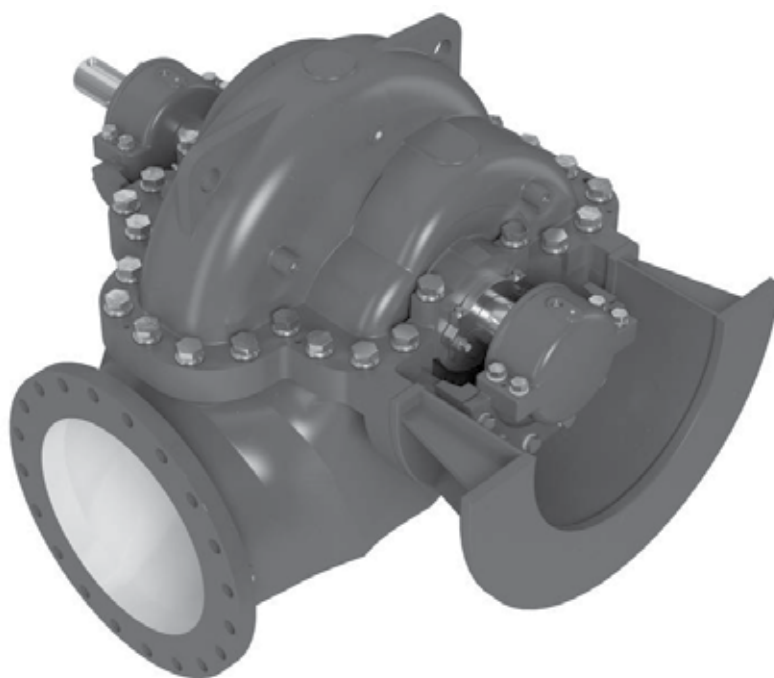
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY PUMPS

B

B pumps are designed as horizontal
splitcasing centrifugal, double suction pumps
with closed impellers





STATIONARY PUMPS B

APPLICATION

The B pumps are designed to handle hot, clean and slightly contaminated water. They can be applied in water supply systems, industrial cooling systems, and, for the ability to pump hot water, in district heating and power plants.

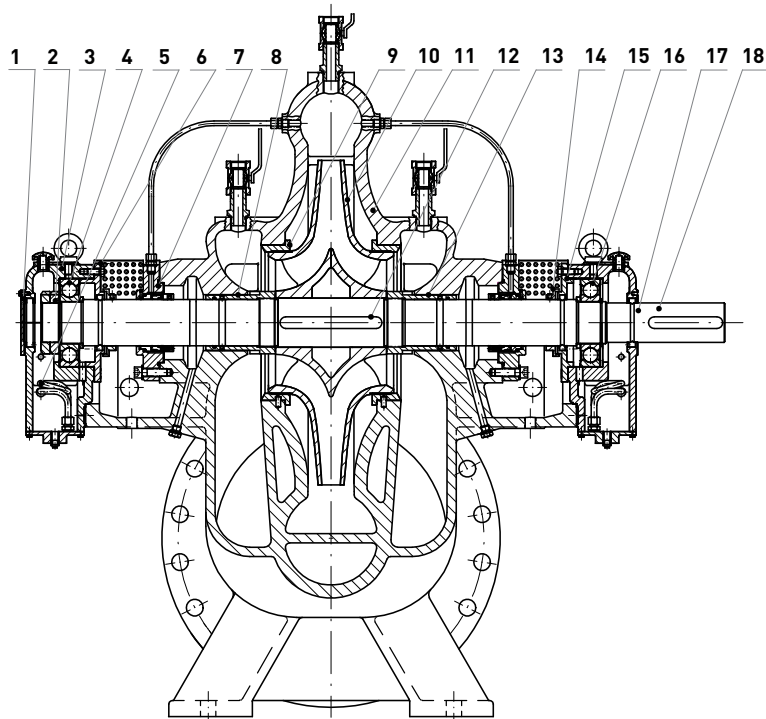
DESIGN

Stationary, horizontal, double suction, horizontally split pumps. The suction and delivery flanges are arranged horizontally in-line. The upper part of the casing can be lifted and the entire rotating assembly can be taken out for repair without disconnecting the pump from the pipelines. The oil-lubricated roller bearings and the mechanical seals installed on both sides of the shaft are equipped with cooling chambers, so the pumps are able to handle hot fluids.

MATERIALS OF CONSTRUCTION

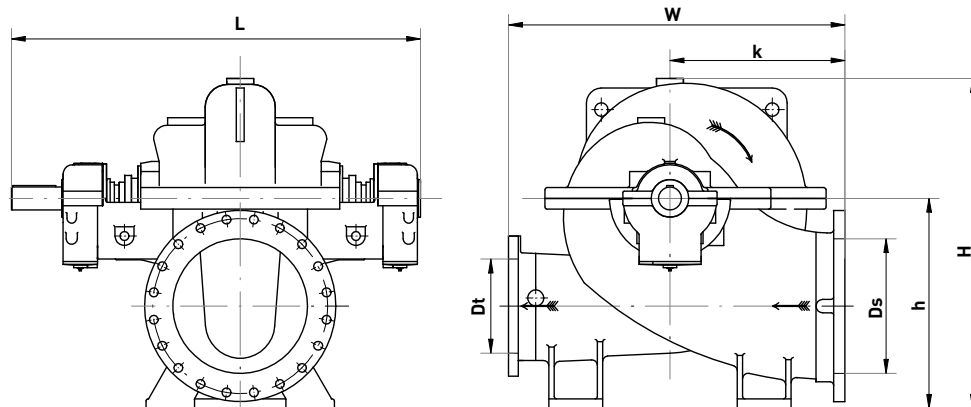
The casings are made of cast iron or, for higher heads, of cast steel. The impellers are of cast iron or stainless chromium cast steel.

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name	No.	Part name
1	Bearing casing cover	7	Mechanical seal	13	Left gland sleeve
2	Nut	8	Gland seal	14	Expeller
3	Bearing casing	9	Seal ring	15	Radial bearing cover
4	Bearing	10	Impeller	16	Bearing
5	Cooler	11	Casing	17	Shaft
6	Thrust Bearing cap	12	Key groove	18	Parallel key

DIMENSIONS

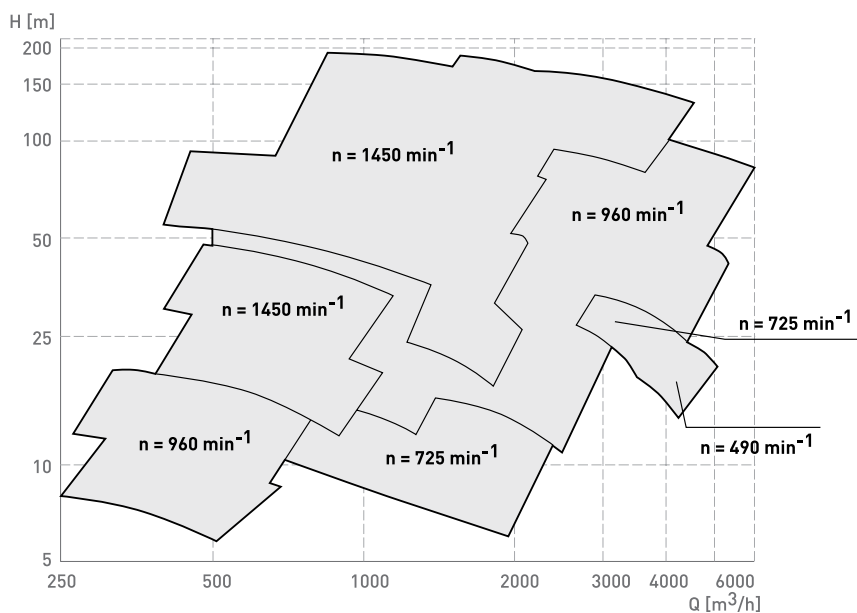


Pump type	Dimension [mm]							Weight m [kg]
	L	W	k	H	h	Ds	Dt	
25B32	1165	870	470	910	580	350	250	850
25B35	1040	950	550	805	520	300	250	730
30B30	1165	870	470	875	560	350	300	880
25B50	1380	970	500	975	610	350	250	890
30B50	1380	1200	600	1135	720	400	300	1250
30B70	1520	1250	650	1290	800	400	300	1680
35B40	1520	1210	650	1215	780	500	350	1500
35B50	1520	1250	650	1225	780	500	350	1520
35B63	1520	1250	650	1340	850	500	350	1730
40B40	1520	1350	750	1295	820	500	400	1720
40B50	1520	1310	710	1370	860	500	400	1750
50B40	1785	1560	850	1490	950	600	500	2470
50B63	1785	1700	850	1520	950	600	500	2780
50B80	2015	2000	1000	1770	1100	700	500	4015
60B63A	2015	1900	950	1670	1050	700	600	3200
70B90	2500	2350	1300	2300	1400	800	700	7800
30B52	1415	1150	500	1015	630	350	300	1170
35B35	1520	1150	600	940	600	400	350	1170
40B36	1655	1230	680	1115	735	500	400	2100
40B61A	1960	1680	830	1310	800	500	400	2860
40B80	2080	1800	900	1540	950	600	400	3920
50B50	1820	1650	900	1490	960	600	500	2880
50B52A	1060	1930	930	1250	850	600	500	2800
20B47	1060	1000	500	930	560	250	200	1150
30B46	1215	1200	600	1030	630	350	300	1135
40B49	1336	1600	800	1290	800	450	400	2355
40B63	1584	1760	880	1345	800	500	400	2660
50B50D	1615	1750	750	1290	800	600	500	2750
50B50F	1615	1750	750	1290	800	600	500	1750



STATIONARY PUMPS B

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	725 [rpm] / (490 [rpm] for 70B90 only)			960 [rpm]			1450 [rpm]		
	Capacity Q [m³/h]	Head H [m]	Shaft power P [kW]	Capacity Q [m³/h]	Head H [m]	Shaft power P [kW]	Capacity Q [m³/h]	Head H [m]	Shaft power P [kW]
25B32	-	-	-	600	18,5	38	900	42	123
25B35	-	-	-	400	15	19	600	34	66
30B30	-	-	-	600	10,5	21,5	900	24	72
25B50	-	-	-	-	-	-	900	80	242
30B50	-	-	-	-	-	-	1250	90	360
30B70	-	-	-	940	68	212	1400	150	690
35B40	-	-	-	1250	26	108	2000	60	380
35B50	-	-	-	1250	40	162	2000	90	570
35B63	-	-	-	1600	65	341	2400	152	1170
40B40	1250	15	61	2000	26	167	-	-	-
40B50	-	-	-	2000	50	320	-	-	-
50B40	2300	12,5	94	3000	22	212	-	-	-
50B63	-	-	-	3000	60	570	-	-	-
50B80	3800	50	623	5000	90	1442	-	-	-
60B63A	3800	36	443	5000	62	985	-	-	-
70B90	4400	24	338	-	-	-	-	-	-



STATIONARY PUMPS B

Pump type	725 [rpm] / (490 [rpm] for 70B90 only)			960 [rpm]			1450 [rpm]		
	Capacity Q [m³/h]	Head H [m]	Shaft power P [kW]	Capacity Q [m³/h]	Head H [m]	Shaft power P [kW]	Capacity Q [m³/h]	Head H [m]	Shaft power P [kW]
30B52	-	-	-	600	40	83	1000	89	304
35B35	-	-	-	940	15	47	1400	33	152
40B36	-	-	-	1010	16	56	1500	36	183
40B61A	-	-	-	2220	63	448	3300	140	1448
40B80	2260	49	355	3000	86	809	-	-	-
50B50	2110	10	70	2800	18	162	-	-	-
50B52A	2260	15	108	3000	26	247	-	-	-
20B47	-	-	-	343	28	35	510	62	116
30B46	-	-	-	545	29	54	810	65	335
40B49	-	-	-	968	32	106	1440	70	335
40B63	1345	24	107	2000	52	337	-	-	-
50B50D	-	-	-	1614	28	150	2400	61	480
50B50F	-	-	-	1735	33	192	2580	74	627

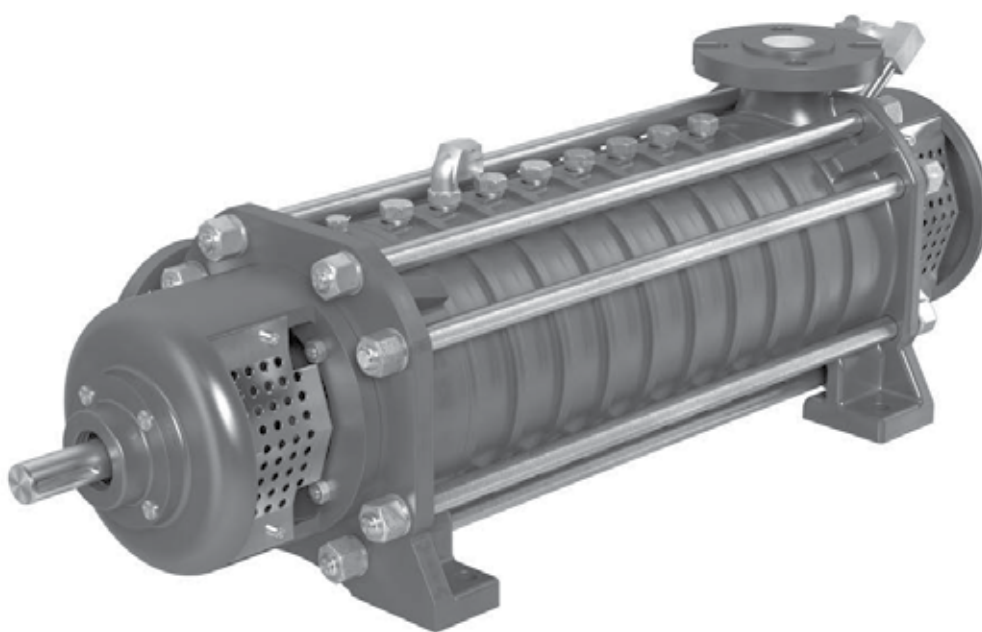
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY PUMPS

ZW

ZW pumps are designed for pumping
clean or industrial water





STATIONARY PUMPS ZW

APPLICATION

ZW pumps are designed to handle clear water or industrial water. In mining ZW pumps are most often used as sprinkling pumps, located on the equipment combine. In addition ZW pumps are used wherever the pumping industrial water with pressure up to 30 bar and limited capacity is required.

ZW pumps can be used in potentially explosive atmospheres as a device group I category M2.

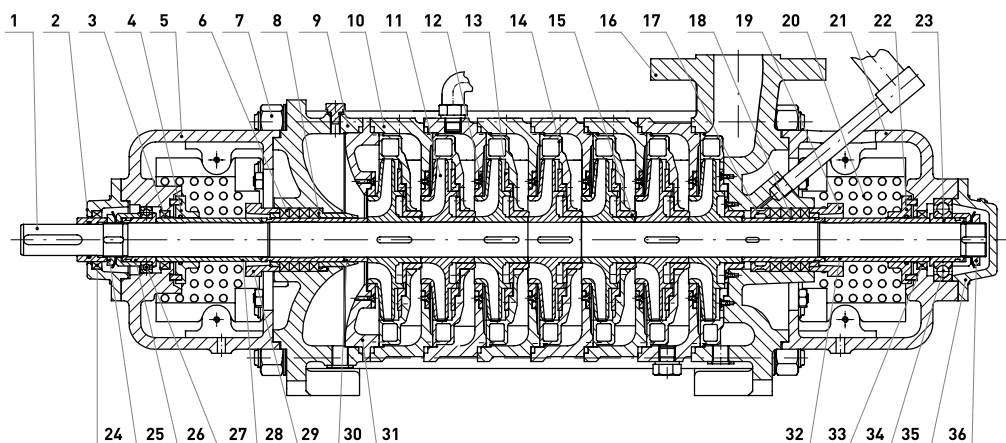
DESIGN

Horizontal, stationary multistage pumps with bodies divided radially, mounted using tiebolts. Pumps possess closed impellers and centrifugal vane guide with side outlet. Discharge casing is directed vertically upwards and suction casing to the side. The axial forces, reduced by the pressure relief holes in impellers is transmitted through the roller bearings. The pump shaft is mounted in rolling bearings lubricated with grease without the need to cooling. Shaft seals in the basic version are gland packing. ZW pumps running at a speed 3000 rev/min.

MATERIALS OF CONSTRUCTION

ZW pumps are manufactured in five versions with a different number of stages depending on the required performance.

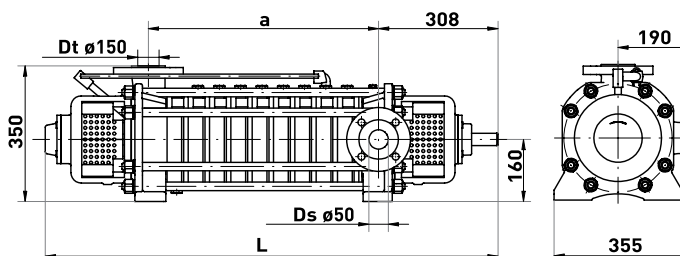
CROSS-SECTION / LIST OF PUMP PARTS



No.	Part name	No.	Part name	No.	Part name
1	Shaft	13	Seal ring	25	Shaft nut
2	Bearing cap	14	Guide	26	Sleeve bearing
3	Seal ring	15	Sealing sleeve	27	Rolling bearing
4	Deflector	16	Discharge casing	28	Distance sleeve
5	Bearing housing I	17	Lantern ring	29	Gland
6	Seal	18	Shaft sleeve	30	Shaft protecting sleeve
7	Tie bolt	19	Gland	31	Suction casing wall
8	Sleeve	20	Stuffing box guard	32	Distance sleeve
9	Suction casing	21	Bearing housing II	33	Seal ring
10	Stage casing	22	Deflector	34	Rolling bearing
11	Impeller	23	Bearing sleeve	35	Bearing cap
12	Seal ring	24	Sealing ring	36	Shaft nut

DIMENSIONS

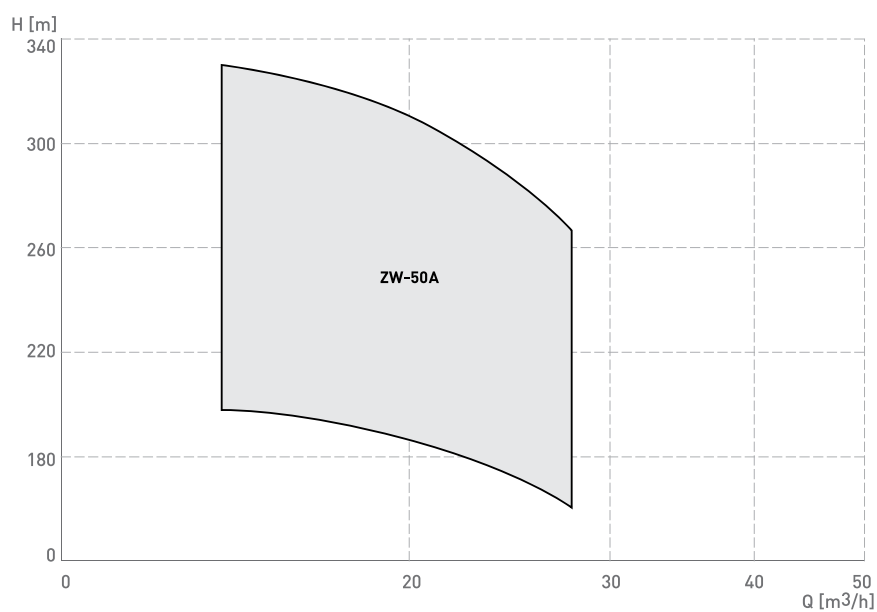
Dimension [mm]	Pump type	ZW-50A
L	Number of stages	6 950
		7 1005
		8 1057
		9 1115
		10 1170
a	Number of stages	6 374
		7 429
		8 484
		9 539
		10 594





STATIONARY PUMPS ZW

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Number of stages	Capacity Q [m^3/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
ZW-50A	6	23	179	2950	23,1	145
	7		209		27	157
	8		238		30,8	170
	9		268		34,7	182
	10		298		38,5	195

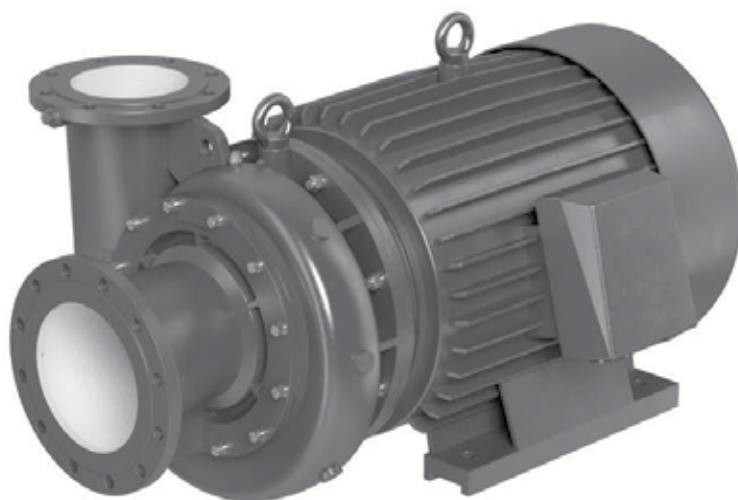
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY PUMPS

ON

ON pumps are designed for pumping clean and slightly contaminated water





STATIONARY PUMPS ON

APPLICATION

ON pumps are applicable for pumping clean and slightly contaminated water especially when small dimensions and small mass of the pumping set is required.

Typical applications:

- include water supply systems and open cast mine dewatering.

DESIGN

ON type are horizontal, stationary, end suction, close-coupled pumps with impellers assembled directly on the motor shaft. The pumps have spiral casings with delivery flanges directed vertically upwards. Mechanical seals are assembled in a sealing chamber between the pump wet end and the motor. The motors are of special design with enforced bearings able to absorb the hydraulic forces from the impeller.

The entire design is compact so the ON pumps sets can be installed on sites where space is limited.

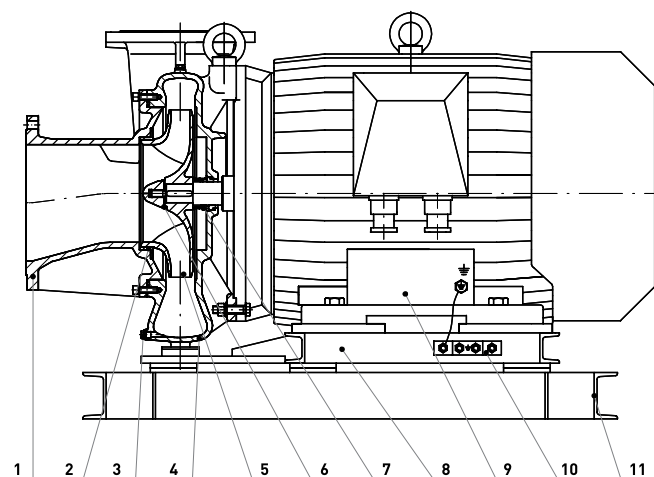
MATERIALS OF CONSTRUCTION

The pump wet end is made of cast iron or of chromium cast steel according to the kind of fluid pumped.



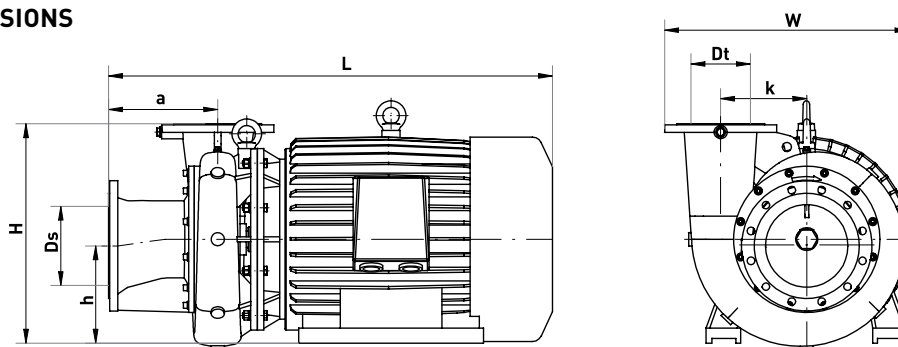
STATIONARY PUMPS ON

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name	No.	Part name
1	Suction casing	5	Impeller	9	Electric motor
2	Seal ring	6	Impeller nut	10	Protective terminal
3	Drain plug	7	Mechanical seal	11	Base frame
4	Casing	8	Support motor		

DIMENSIONS

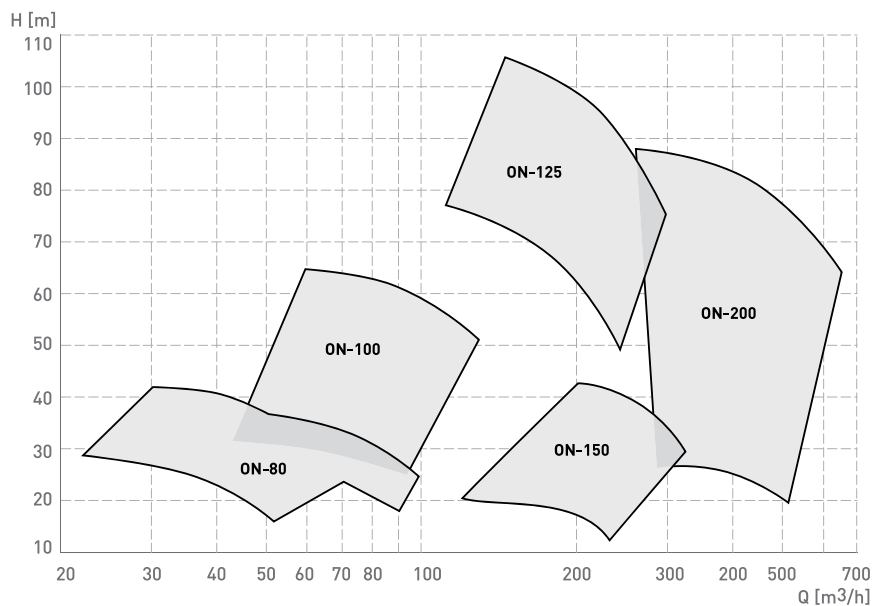


Pump type	Dimensions [mm]							
	L	a	W	k	H	h	Ds	Dt
ON-80BB	832	145	368	120	365	160	100	80
ON-80DB	718	96	318	-	360	160	100	80
ON-100BB	1032	171	456	146	470	187,5	125	100
ON-125DB	1304	195	585	185	605	277	150	125
ON-150BB	1298	478	527	165	550	195	200	150
ON-200BB	1448	332	706	261	680	310	250	200
ON-200DB	1475	200	633	-	855	355	250	200
ON-200EB	1558	225	855	-	938	358	250	200
ON-200FB	1424	200	680	-	985	425	250	200
ON-200GB	1588	230	760	290	780	350	250	200
ON-200GB/G	1668	230	760	290	780	350	250	200



STATIONARY PUMPS ON

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Motor power rated P_s [kW]	Weight m [kg]
ON-80BB	45	36	3000	11	205
ON-80DB	76	32	3000	15	157
ON-100BB	105	57	3000	30	325
ON-125DB	220	95	3000	90	696
ON-150BB	280	37	3000	45	398
ON-200BB	540	39	1500	75	731
ON-200DB	510	51	1500	110	928
ON-200EB	565	59	1500	132	1056
ON-200FB	500	77	1500	160	1161
ON-200GB	550	56	1500	110	856
ON-200GB/G	550	56	1500	110	870

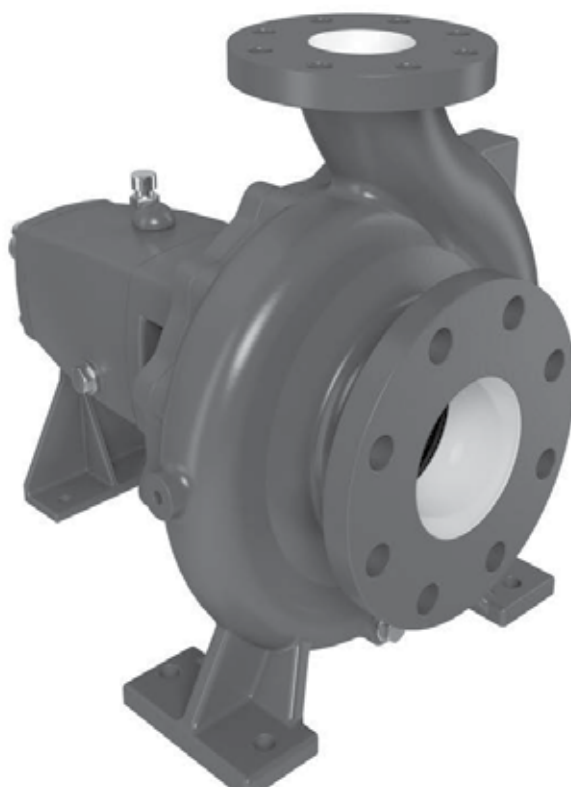
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY PUMPS

A

A pumps are general purpose end suction, single stage, horizontal centrifugal pumps for pumping clean and slightly contaminated water





STATIONARY PUMPS A

APPLICATION

The A pumps are universal, general purpose pumps designed to handle different fluids such as clean, cold water, hot water, contaminated water and chemicals. They are applicable in many industries including, for example, water supply, power industry, steel works etc.

DESIGN

Single stage, horizontal, end suction pumps with own bearings, closed impellers and spiral casings. The pumps are of back-pull out design, so they can be disassembled without disconnecting from the pipelines after removing the distant coupling. Mechanical seals of different types can be applied depending on the fluid pumped. The bearings are roller type, oil lubricated.

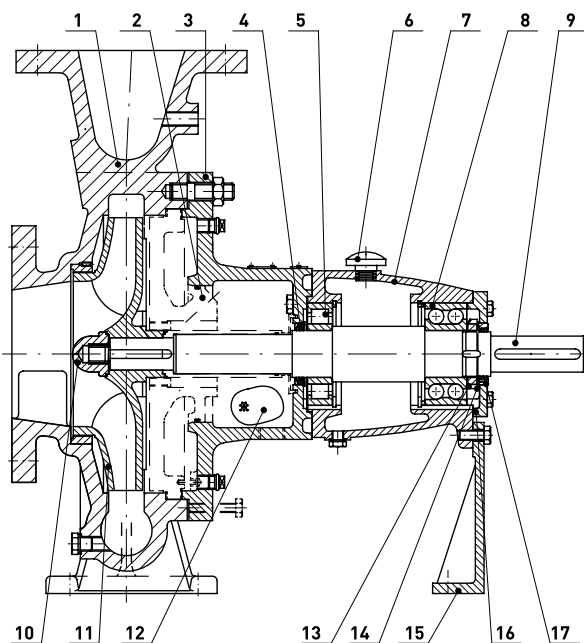
MATERIALS OF CONSTRUCTION

A pumps are available in different material versions including cast iron, cast steel and stainless cast steel. The materials of construction are selected individually for each application according to the kind of fluid.



STATIONARY PUMPS A

CROSS-SECTION/LIST OF PUMP PARTS

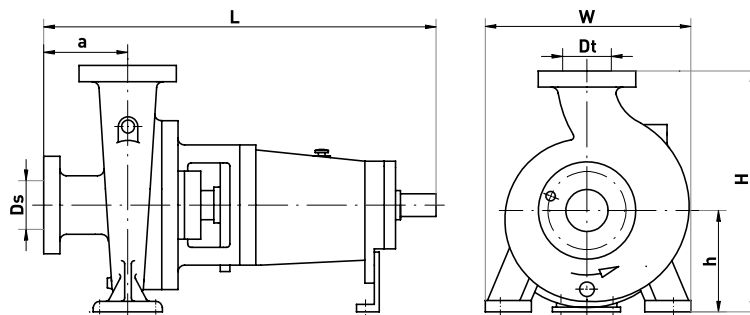


No.	Part name	No.	Part name
1	Casing	10	Impeller nut
2	Shaft seal	11	Impeller
3	Bearing casing adapter	12	Stuffing box guard
4	Labyrinth seal	13	Toothed washer
5	Bearing	14	Bearing nut
6	Vent plug	15	Support
7	Bearing casing	16	Bearing cap
8	Bearing	17	Labyrinth seal
9	Shaft		



STATIONARY PUMPS A

DIMENSIONS

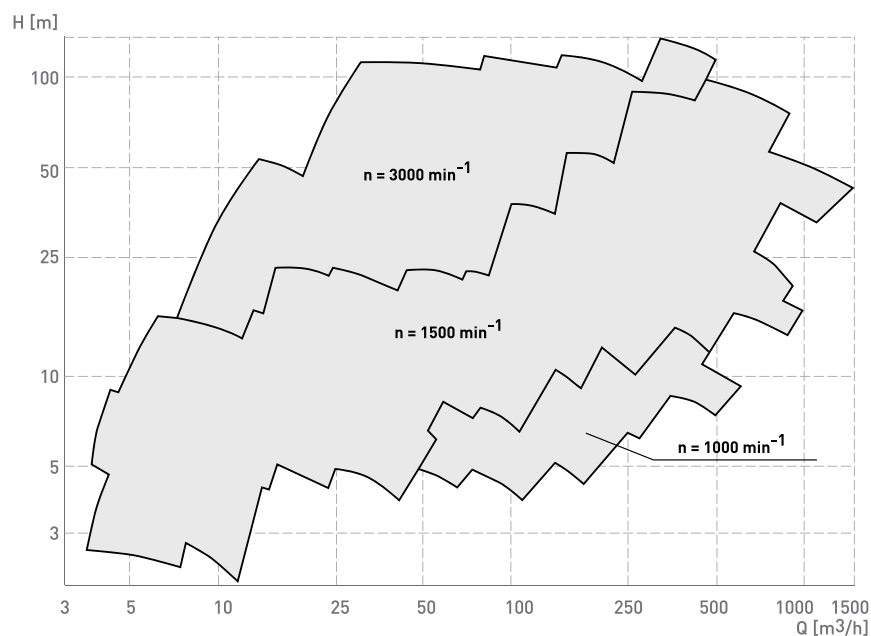


Pump type	Dimension [mm]						
	L	a	W	H	h	Ds	Dt
3A13	465	80	190	252	112	50	32
3A16	465	80	240	292	132	50	32
3A20	465	80	240	340	160	50	32
5A13	465	80	210	252	112	65	50
5A16	465	80	240	292	132	65	50
5A20A	485	100	265	360	160	80	50
5A25	625	125	320	405	180	80	50
6A16	485	100	265	340	160	80	65
6A20	600	100	320	405	180	100	65
6A25A	625	125	360	450	200	100	65
8A16	600	100	280	360	160	100	80
8A20	625	125	345	430	180	125	80
8A25A	625	125	400	505	225	125	80
10A20	625	125	360	480	200	125	100
10A25A	670	140	400	505	225	125	100
12A25	670	140	400	605	250	150	125
12A32A	670	140	500	635	280	150	125
15A25	690	160	500	655	280	200	150
15A32A	830	160	550	715	315	200	150
15A40	830	160	550	765	315	200	150
20A25	850	180	550	780	355	200	200
20A32	870	200	550	805	355	250	200
20A40	870	200	550	855	355	250	200
20A50A	970	200	660	985	425	250	200
25A32	920	250	660	960	400	300	250
25A40	970	200	800	1025	425	300	250
25A50	970	200	800	1145	475	250	250
30A40	1020	250	800	1105	475	350	300



STATIONARY PUMPS A

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Rotation speed n = 1450 [rpm]			Rotation speed n = 2900 [rpm]			Weight m [kg]
	Capacity Q [m³/h]	Head H [m]	Motor rated power P _s [kW]	Capacity Q [m³/h]	Head H [m]	Motor rated power P _s [kW]	
3A13	6,3	5	0,75	12,5	20	3	47
3A16		8	1,5	12,5	32	5,5	45
3A20		12,5	3,0	12,5	50	7,5	55
5A13	12,5	5	2,2	25	20	7,5	49
5A16	12,5	8	3,0	25	32	15	56
5A20A	25	12,5	5,5	50	50	22	66
5A25	25	20	11	50	80	45	96
6A16	25	8	4	50	32	18,5	72
6A20	50	12,5	7,5	100	50	45	81
6A25A	50	20	15	100	80	75	114
8A16	50	8	4	100	32	30	80
8A20	80	12,5	11	160	50	55	103
8A25A	80	20	18,5	160	80	90	130
10A20	125	12,5	15	250	50	90	100
10A25A		20	30		80	132	148



STATIONARY PUMPS A

12A25	200	20	37	400	80	200	152
12A32A		32	55		128	250	175
15A25	315	20	45	-	-	-	180
15A32A		32	75	-	-	-	292
15A40		50	90	-	-	-	322
20A25	500	16	55	-	-	-	256
20A32		32	110	-	-	-	335
20A40		50	160	-	-	-	380
20A50A		80	250	-	-	-	480
25A32	800	32	132	-	-	-	350
25A40		50	250	-	-	-	458
25A50		80	355	-	-	-	524
30A40	1250	50	315	-	-	-	560

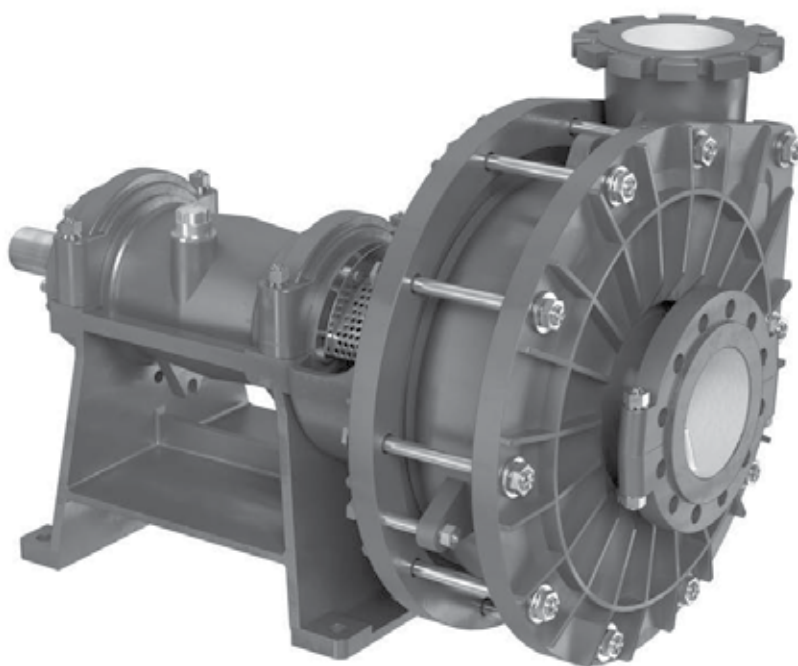
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY SLURRY PUMPS

HC

HC pumps are single stage, horizontal, heavy-duty slurry pumps for handling mixtures containing high concentration of abrasive solids





STATIONARY SLURRY PUMPS HC

APPLICATION

HC pumps are designed to handle slurries containing high concentration of solids such as sand, gravel, stone, coal, slag, ores, clay, whitewash, tailings etc.

Typical application include:

- mines – in coal or ore processing plants,
- mineral raw materials mines – for hydraulic transport of sand, gravel and stones,
- power industry – for hydraulic disposal of slag and ash,
- steelworks – for pumping water with scale,
- cement plants – for pumping sand and raw materials,
- sugar factories – for pumping industrial waste.

DESIGN

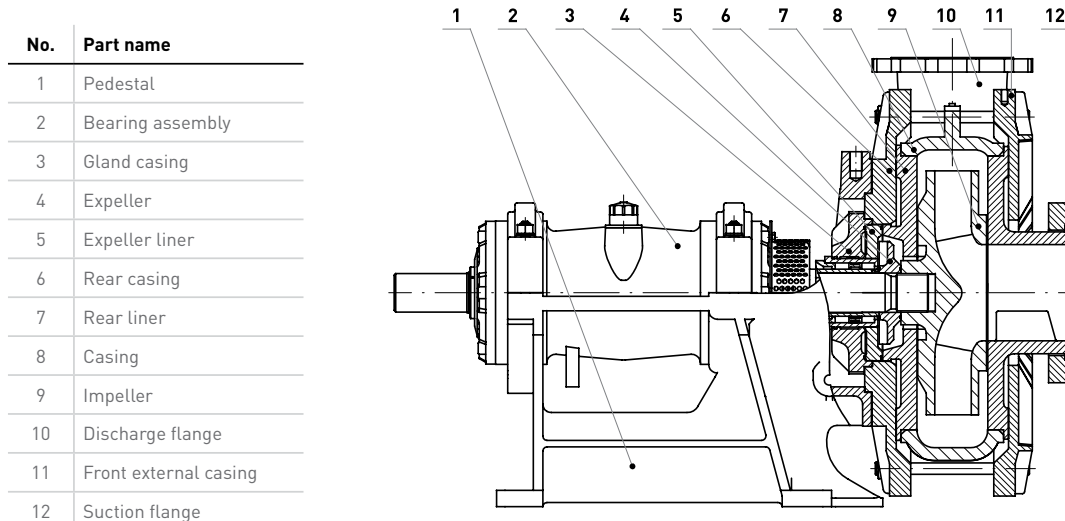
Stationary, single-stage, centrifugal, horizontal slurry pumps with closed impellers. The suction flange is located horizontally at the axis while the delivery flange is located vertically upwards. The pump outer casing is protected from inside by replaceable wear resistant liners. The axial thrust is absorbed by a thrust roller bearing. The bearings are oil lubricated. The shaft is centrifugal consisting of a gland seal fed with grease and of an additional expeller reducing the pressure on the packing. Version with mechanical seal is also available. The whole rotating assembly together with the bearing housing can be shifted along the axial direction without pump disassembly in order to adjust the sealing gap between the impeller and the front liner.

HC pumps can be made in a vertical version.

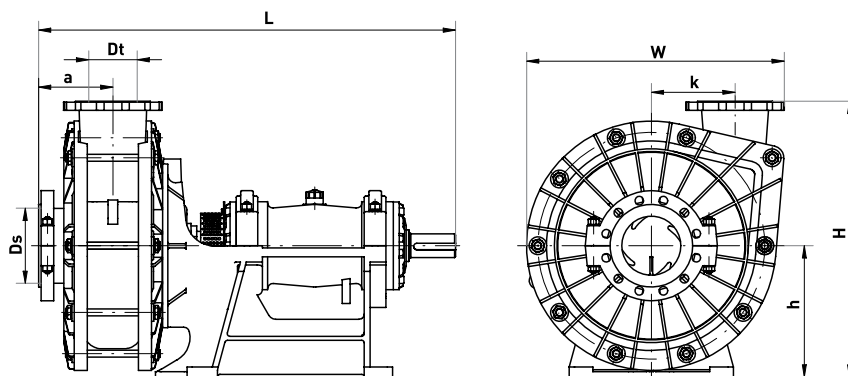
MATERIALS OF CONSTRUCTION

Wet end components are made of MTL-26 – wear resistant high chromium alloy cast steel

CROSS-SECTION / LIST OF PUMP PARTS



DIMENSIONS

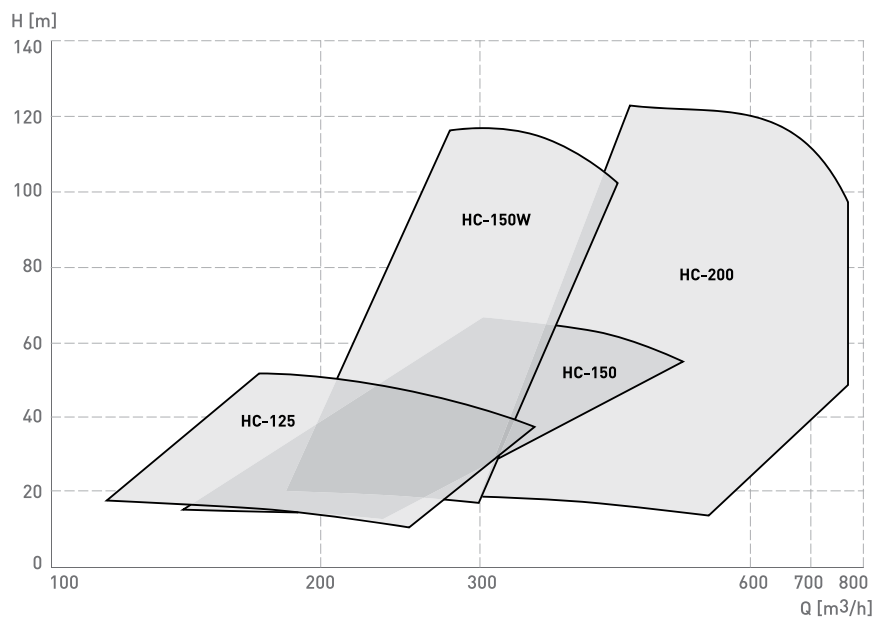


Dimension [mm]	Pump type			
	HC-125	HC-150	HC-150W	HC-200
L	1132	1536	1516	1577
a	220,5	239	229	283
W	~ 786	~ 872	~ 980	~ 980
k	253	280	338	319
H	880	982	1052	1050
h	450	500	500	500
Ds	150	175	175	225
Dt	125	150	150	200



STATIONARY SLURRY PUMPS HC

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight [kg]
HC - 125/380	250	45	1450	44	ok. 913
HC-150/580	400	105	1465	174	ok. 1680
HC-150/440	400	63	1470	100	ok. 1447
HC-200/570	600	120	1475	300	ok. 1848

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.

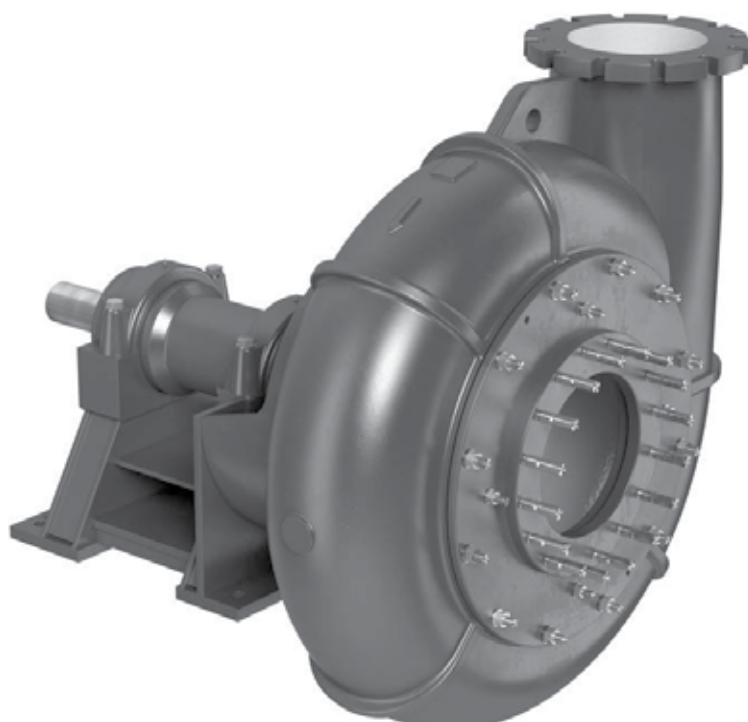
Pump type	Maximum solid size [mm]	Maximum pressure in the pump [MPa]
HC - 125	25	1,2
HC-150	60	1,6
HC-150W	20	1,6
HC-200	60	1,6



STATIONARY SLURRY PUMPS

HCR

HCR pumps are designed for pumping liquids containing considerable amounts of large dimension solid particles





STATIONARY SLURRY PUMPS HCR

APPLICATION

HCR slurry pumps are used for pumping liquids containing substantial amounts of large particle sizes. Permissible pumped liquid density of 1700 kg/m^3 is usual, but in individual cases, depending on the type of medium, pumping slurries of higher density at a limited speed is permitted. The maximum allowable size of particulate matter (passage size) reaches 180 mm.

HCR pumps are typically used in aggregate mining, in particular, working on suction dredgers used for mining of gravel located on the bottom of water reservoirs. They can also be used in other cases where the required pumping mixtures containing solids of significant size.

DESIGN

HCR pumps are single-stage horizontal rotary pumps of design adapted for pumping mixtures of liquids and solids of considerable size. The inlet connection port is at the pump axis and the discharge connection port in the basic version is directed vertically upwards laterally offset in relation to the axis of the pump. If needed by the requirements, it, a helical pump casing can be mounted in a different configuration in such a way that the discharge connection port is situated in every other position than vertical.

Taking into account the suction properties of the pump, HCR pump Pedestal is low, for the inlet port to be situated at the lowest position above the base. The hydraulic unit of HCR pumps consists of a helical casing and a front helical and rear plates, which are protected by protective walls. HCR pump impellers are closed and with low number (3-4) thickened vanes, which increases their lifetime and allows for the pumping larger size particles.

The parts that are in contact with the pumped medium (impeller, helical casing, and protective walls) are made from high chromium casts with high resistance to abrasion. Sealing joint slot between the front protective wall and the impeller is a radial slot, and its breadth due to wear can be adjusted without dismantling the pump by moving the entire rotating assembly together with the bearing casting from the pump pedestal by means of special adjustment screws. The expansion in the slot between the rear disc of the impeller and the impeller and the rear protection wall can be adjusted by moving the rear protective wall in relation to the casing by means adjustment screws.

In order to obtain a longer pump life, HCR pumps are designed for low speeds and are usually driven by a belt, although direct drive motor from low speed also is possible.

HCR pump bearings are designed to carry additional dynamic loads that may occur as a result of imbalance of rotating assembly as a result of its wear. The bearings are also envisaged to carry additional lateral loads that occur with the pulley drive. To this end rolling bearings lubricated with grease are used.

The shaft passage point through the casing is sealed by the cord packing with a water lock in order to prevent the penetration of water particles into the gland.

HCR pumps can be made in a vertical version.

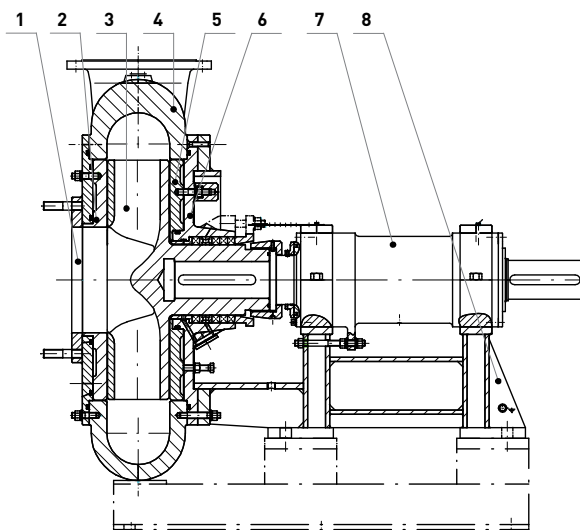
MATERIALS OF CONSTRUCTION

Alloy steel cast is used for the flow elements. Cast iron is applied for bearing assembly. Alloy carbon steel cast and copper cast iron is used for the remaining castings.



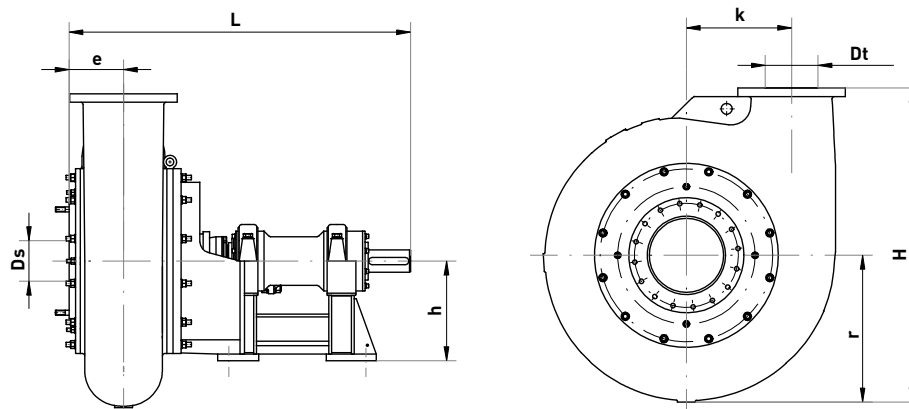
STATIONARY SLURRY PUMPS HCR

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name
1	Suction flange
2	Front wear plate
3	Impeller
4	Casing
5	Rear wear plate
6	Stuffing box casing
7	Bearing assembly
8	Base

DIMENSIONS

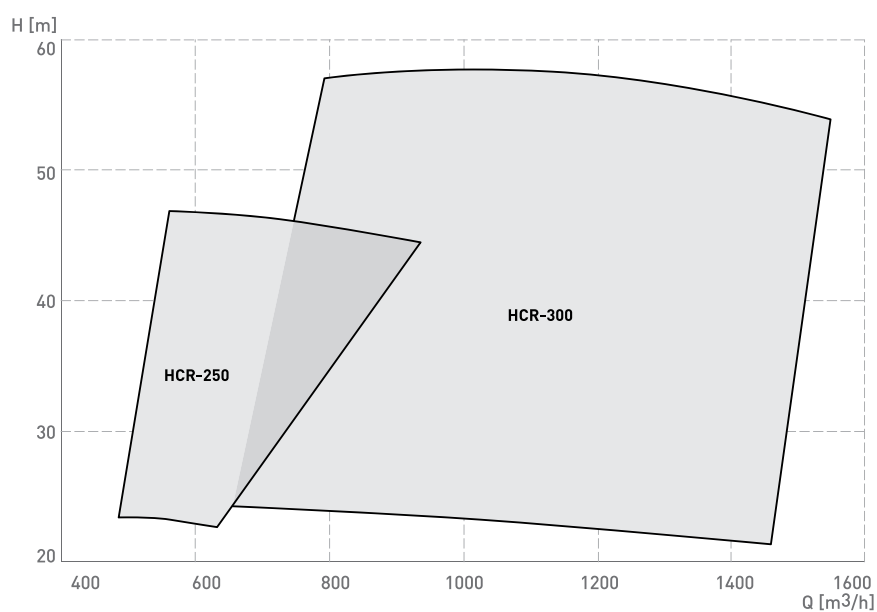


Dimension [mm]	Pump type	
	HCR-250	HCR-300
L	1492	1502
e	210	246
k	485	475
H	1265	1480
h	450	450
r	640	725
Ds	300	350
Dt	250	300



STATIONARY SLURRY PUMPS HCR

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
HCR-250	800	42	700	142	2300
HCR-300	1200	36	700	220	3100

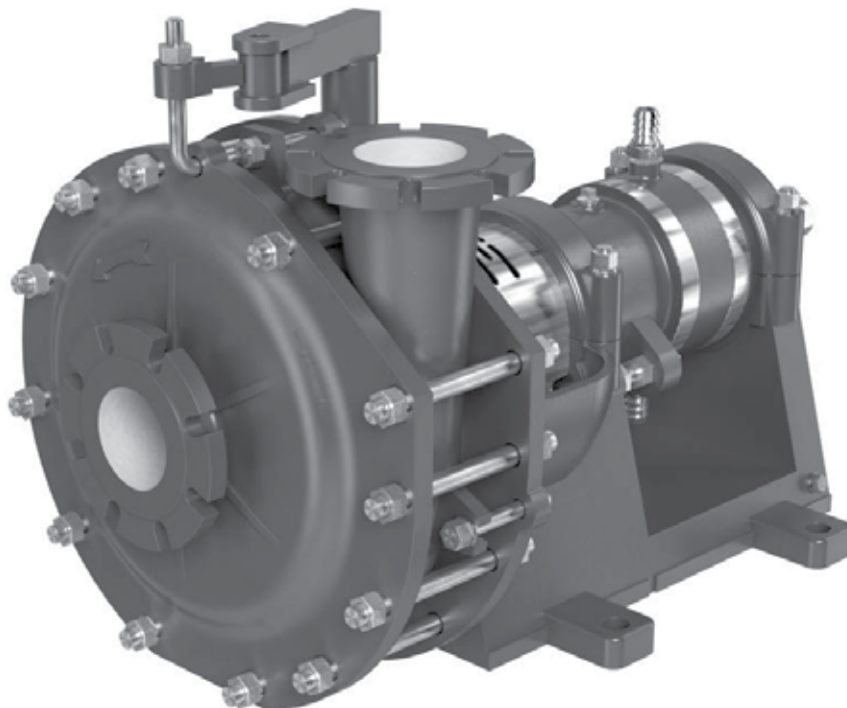
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY SLURRY PUMPS

PH

PH pumps are single stage, horizontal heavy-duty slurry pumps for handling mixtures containing high concentration of abrasive solids





STATIONARY SLURRY PUMPS PH

APPLICATION

PH pumps are used for pumping liquids containing significant amounts of solid particles (sludge). Permissible pumpage density is mainly 1700 kg/m^3 , but in individual cases, depending on the type of medium, pumping slurries of higher density is permitted at a limited rotary speed. The maximum allowable size of solid particles (passage) increases with the pump size and can reach 52 mm.

PH pumps are used in the mining industry in processing plants and enrichment of minerals, in hydraulic filling systems, hydraulic waste removal, as well as in other applications where pumping mixtures containing significant amounts of solids is required. PH-Ex pump versions are suitable for use in potentially explosive underground mines, as group I, M2 category installation.

DESIGN

PH pumps are horizontal, single stage, centrifugal pumps, with design adapted for pumping liquid mixtures and solids with abrasive properties. The inlet connection port is at the pump axis and the discharge connection port, in the basic version, is directed vertically upwards, offset laterally in relation to the pump axis.

PH pumps have closed impellers, with a small number of thickened vanes, thus increasing their life and allowing for pumping solid particles of larger size. Impellers are fitted on the front and rear discs with relieving vanes limiting the penetration of solid particles to the area of the shaft seal and the impeller neck sealing gap. This gap forms a frontal slot and its width can be adjusted with wear, without removing the pump, by moving the entire rotating assembly with Bearing housing in relation to the pump stator using special adjustment screws.

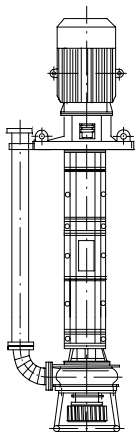
PH pumps can be made in a vertical version.

MATERIALS OF CONSTRUCTION

Standard design material version for PH pumps used in manufacturing of the flowing system is hard-wearing alloy steel casting. Cast iron is used for manufacturing bearing elements. Carbon alloy steel casting and copper-cast iron is used in manufacturing of the remaining castings.

PH pumps are also available in the following special versions:

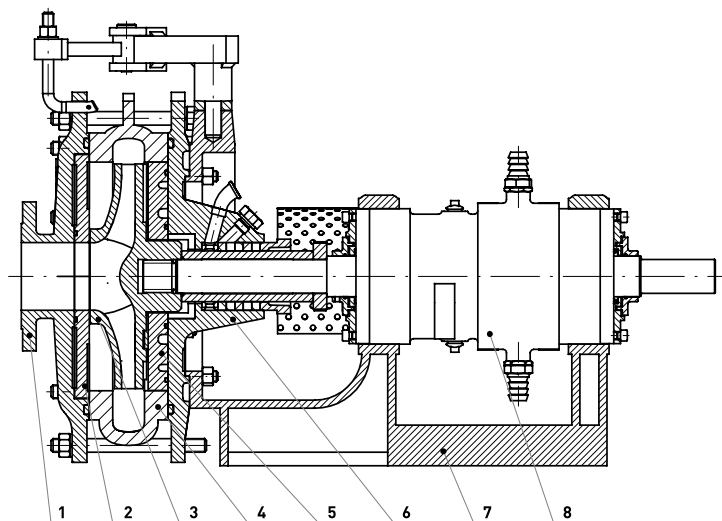
- saline-resistant steel casting version,
- hot water version,
- PH-Ex version designed for areas where explosion hazard is present in underground mines.



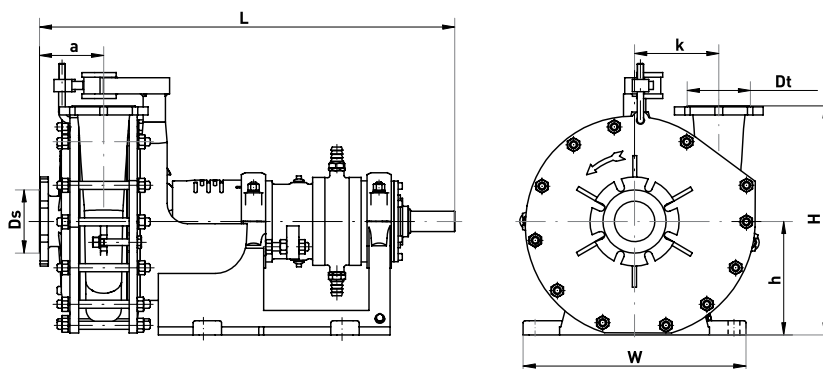
Sample of vertical version.

CROSS-SECTION / LIST OF PUMP PARTS PH

No.	Part name
1	Suction flange
2	Front liner
3	Impeller
4	Casing
5	Rear liner
6	Stuffing box casing
7	Pedestal
8	Bearing assembly



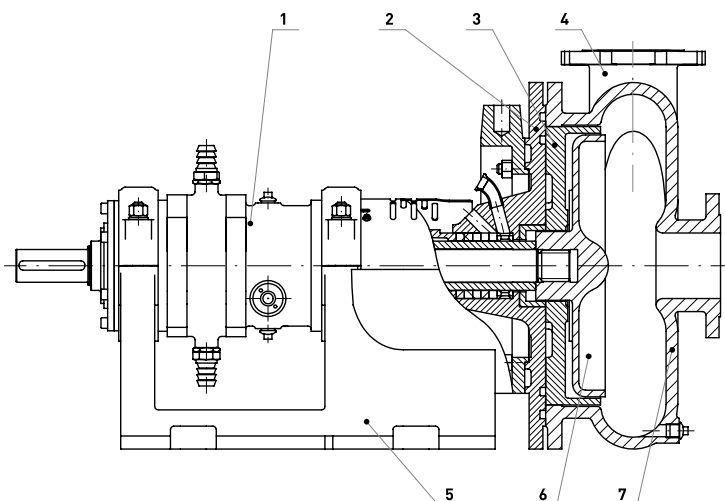
DIMENSIONS



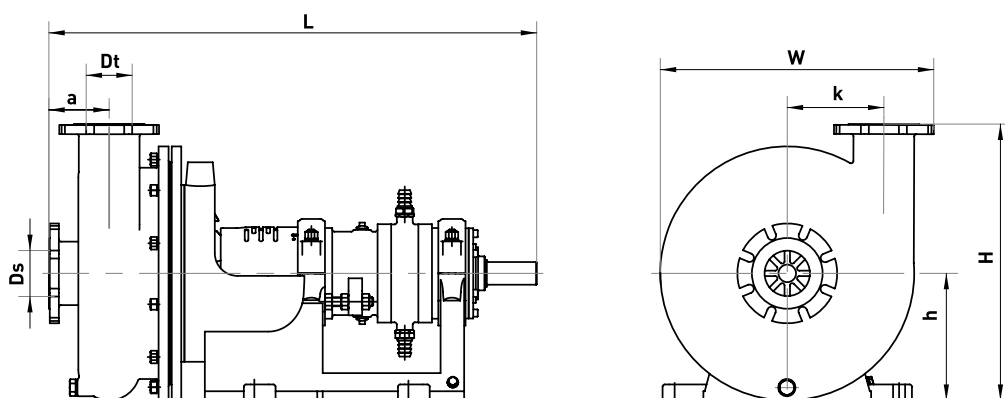
Dimension [mm]	Pump type								
	PH-50 W/ WO/ WG	PH - 65/174	PH- 80/244	PH- 100/332	PH- 100W	PH- 150/440	PH- 200/504	PH- 250/570	PH- 300/725
L	826	630	843	1026	1237	1236	1467	1593	1817
a	115	108	127	158	224	202	244	255	286
W	420	320	420	560	590	590	690	690	910
k	129	112,5	162	208	292	256	347	365	453
H	445	340	445	565	715	735	975	1080	1200
h	225	160	225	280	360	335	475	560	630
Ds	50	70	80	100	150	200	200	250	300
Dt	50	70	80	100	100	150	200	250	300

CROSS-SECTION / LIST OF PUMP PARTS PH-S

L.p.	Nazwa części
1	Bearing assembly
2	Stuffing box casing
3	Wear plate
4	Discharge flange
5	Base
6	Impeller
7	Casing



DIMENSIONS

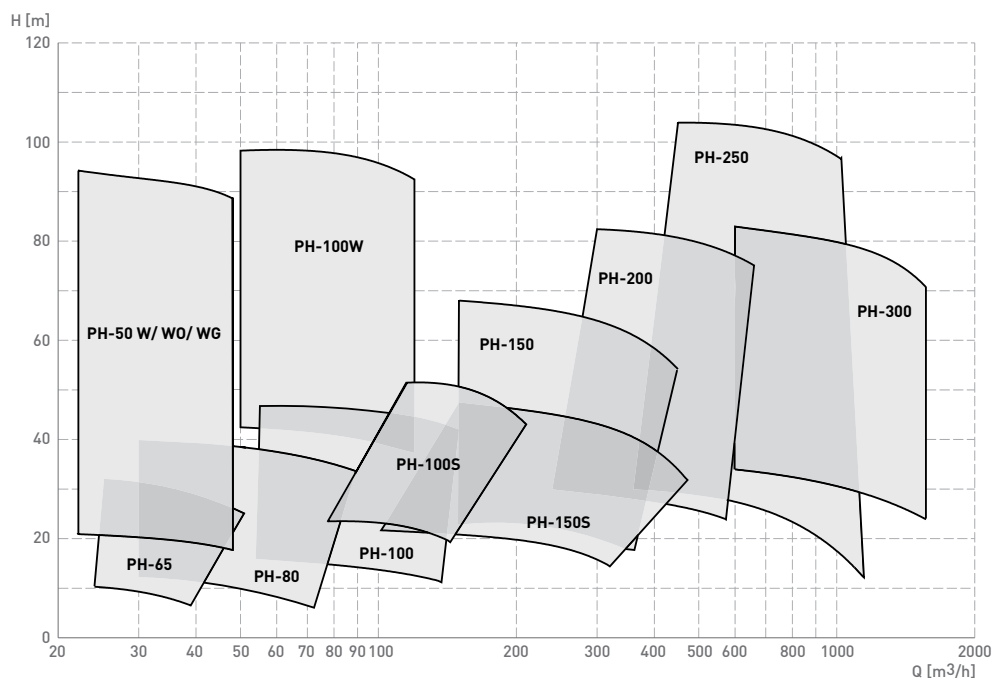


dimensions [mm]	Pump types	
	PH-100S	PH-150S
L	1073	1273
a	133	170
W	602	642,5
k	212	205
H	610	735
h	280	335
Ds	100	150
Dt	100	150



STATIONARY SLURRY PUMPS PH

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
PH-50 W/ WO/ WG	40	74	2945	17	188
PH-65/174	50	25	2650	6,1	94
PH-80/244	80	25	1800	7,8	194
PH-100/332	125	40	1600	21	359
PH-100W	100	95	1470	51	826
PH-150/440	315	63	1450	75	720
PH-200/504	500	80	1450	168	1230
PH-250/570	960	90	1450	308	1522
PH-300/725	1400	73	980	357	2646
PH-100S	185	48	1450	53	330
PH-150S	315	44	1450	80,5	609

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



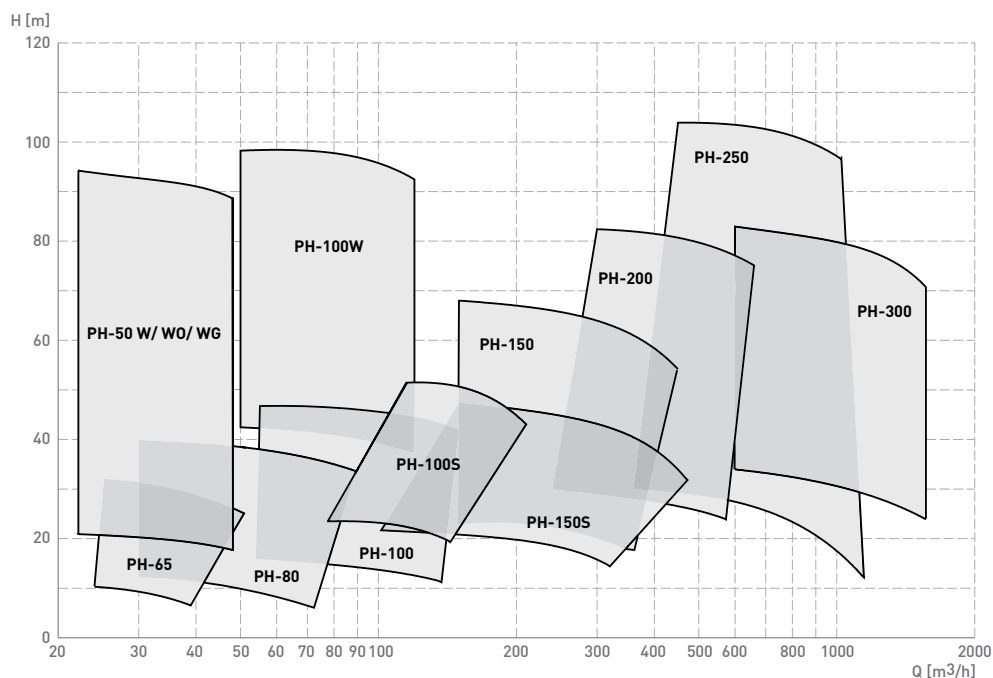
STATIONARY SLURRY PUMPS PH

Pump type	Maximum solid size [mm]	Maximum pressure in the pump [MPa]
PH-50 W/WO/WG	11	1,1
PH-65/174	9	0,64
PH-80/244	11	0,82
PH-100/332	14	0,94
PH-100W	20	1,15
PH-150/440	42	1,42
PH-200/504	50	1,6
PH-250/570	52	1,6
PH-300/725	50	1,6
PH-100S	75	1,0
PH-150S	100	1,05



STATIONARY SLURRY PUMPS PH

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
PH-50 W/ WO/ WG	40	74	2945	17	188
PH-65/174	50	25	2650	6,1	94
PH-80/244	80	25	1800	7,8	194
PH-100/332	125	40	1600	21	359
PH-100W	100	95	1470	51	826
PH-150/440	315	63	1450	75	720
PH-200/504	500	80	1450	168	1230
PH-250/570	960	90	1450	308	1522
PH-300/725	1400	73	980	357	2646
PH-100S	185	48	1450	53	330
PH-150S	315	44	1450	80,5	609

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY SLURRY PUMPS PH

APPLICATION

OŁ pumps are designed to handle slurries containing high concentration of solids such as sand, gravel, stone, coal, slag, ores, clay, whitewash, tailings etc.

Typical application include:

- mines – in coal or ore processing plants,
- mineral raw materials mines – for hydraulic transport of sand, gravel and stones,
- power industry – for hydraulic disposal of slag and ash,
- steelworks – for pumping water with scale,
- cement plants – for pumping sand and raw materials,
- sugar factories – for pumping industrial waste.

DESIGN

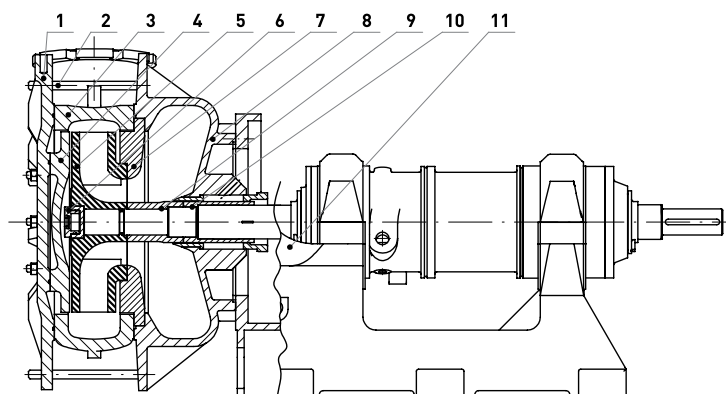
Stationary, single-stage, centrifugal, horizontal slurry pumps with closed impellers. The suction flange is positioned horizontally at side of the pump while the delivery flange is located vertically upwards. The pump casing is protected from inside by replaceable wear resistant liners. The axial thrust is absorbed by a thrust roller bearing. The bearings are oil lubricated. The shaft is sealed by a stuffing box with a gland water led to the lantern ring. Stuffing box is located on the suction side of the pump. The entire rotating assembly can be shifted in axial direction in order to adjust the sealing gap between the impeller and the front liner.

The pumps can be powered directly via a coupling or via a v-belt transmission.

MATERIALS OF CONSTRUCTION

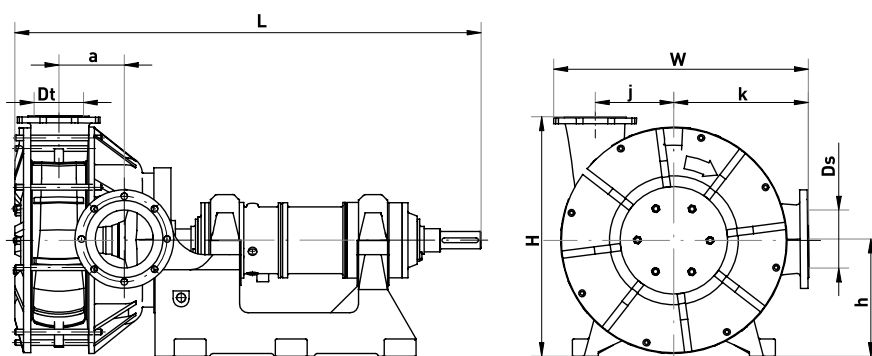
Wet end components are made of MTL-26 – wear resistant high chromium alloy cast steel

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name	No.	Part name
1	Cover	5	Impeller	9	Distance sleeve
2	Tie bolt	6	Distance ring	10	Shaft protective sleeve
3	Discharge casing	7	Back wear plate	11	Stuffing box guard
4	Front wear plate	8	Suction casing		

DIMENSIONS

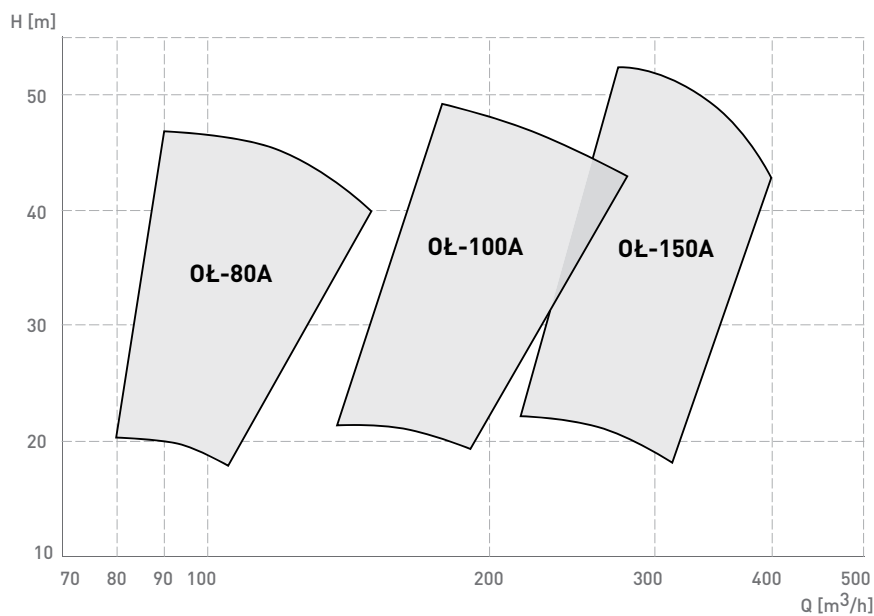


Dimension [mm]	Pump type		
	OŁ-80A	OŁ-100A	OŁ-150A
L	1500	1542	1608
a	184	210	230
W	750	785	785
k	400	435	435
j	220	245	272
H	720	780	825
h	400	400	400
Ds	80	150	200
Dt	80	100	150



STATIONARY SLURRY PUMPS PH

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
OŁ-80A	90	19	960	8,4	~ 713
OŁ-100A	165	20,5	960	14	~ 848
OŁ-150A	300	18	960	20,7	~ 979

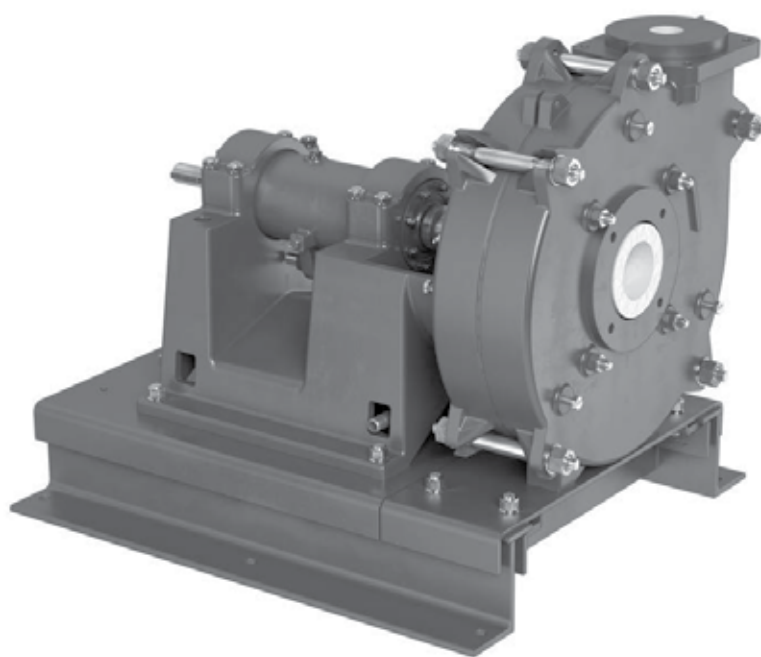
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



STATIONARY SLURRY PUMPS

MF

MF pumps are rubber-lined single stage, horizontal slurry pumps for pumping liquids containing abrasive solids





STATIONARY SLURRY PUMPS MF

APPLICATION

MF pumps are designed to handle slurries containing high concentration of fine solids.

Typical application include:

- copper ore processing plants,
- hydraulic transport of sand,
- FGD installations in power plants.

DESIGN

Stationary, horizontal, single-stage rubber lined slurry pumps with rubber impellers and spiral casing. The entire rotating assembly can be shifted in axial direction in order to adjust the sealing gap between the impeller and the front liner. The axial thrust is absorbed by roller bearings. The suction flange is situated horizontally at the pump axis. The delivery flange can be directed vertically upwards, horizontally or at an angle of 45°. The pumps are powered by motor by v-belt transmission. The pumps are equipped with a special frame allowing for moving the bearing casing and one half of the pump casing which enables rubber liners and impeller replacement without disconnecting the pump flanges from the pipelines. A stuffing box with gland water led to the lantern ring is applied as a standard for shaft sealing. Version with mechanical seal is also applicable.

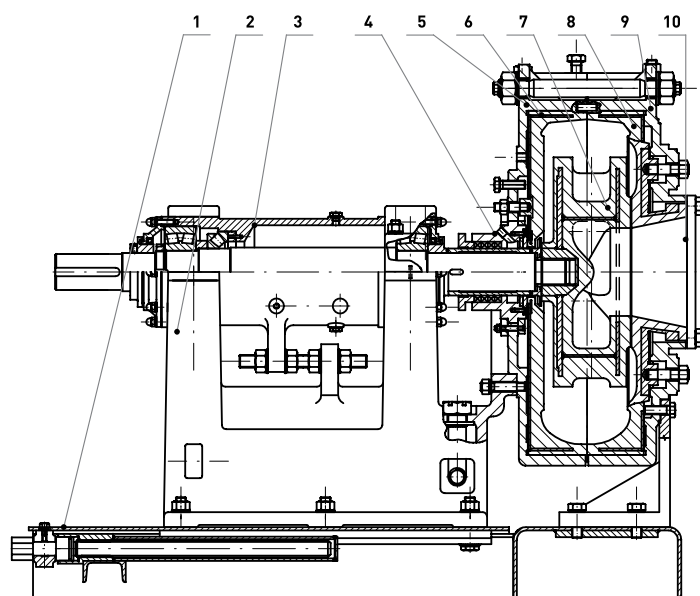
MF pumps can be made in a vertical version.

MATERIALS OF CONSTRUCTION

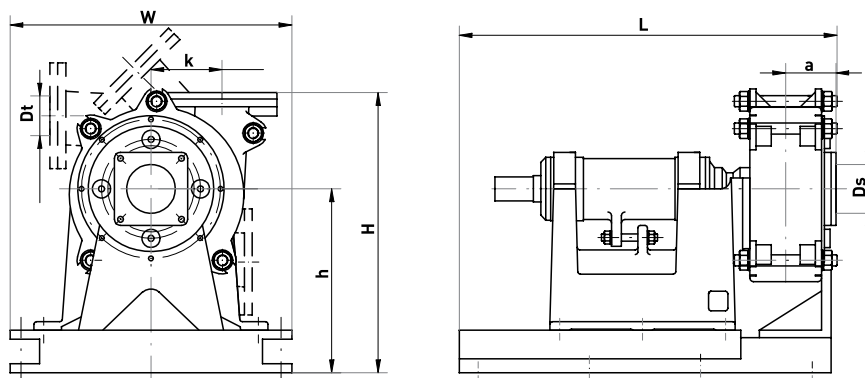
Impeller and liners – rubber
Pump casing and bearing casing – cast iron
Shaft – alloy steel

CROSS-SECTION / LIST OF PUMP PARTS

No.	Part name
1	Pump base frame
2	Pump casing
3	Bearing assembly
4	Stuffing box casing
5	Casing 2
6	Casing liner
7	Impeller
8	Casing liner
9	Casing 1
10	Suction liner



DIMENSIONS

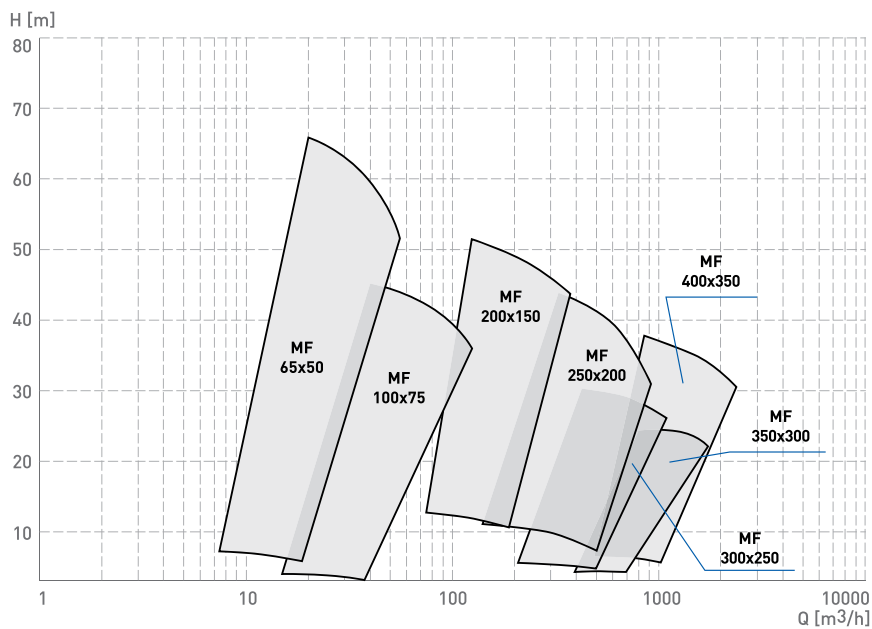


Dimension [mm]	Pump type						
	MF 65x50	MF 100x75	MF 200x150	MF 250x200	MF 300x250	MF 350x300	MF400x350
L	864	864	1525	1525	1855	1855	1855
a	111	111	206	247	270	307	323
W	764	764	1156	1156	1330	1330	1330
k	225	200	293	381	457	515	578
H	740	720	1186	1242	1624	1664	1778
h	455	455	774	774	1028	1028	1108
Ds	65	100	200	250	300	350	400
Dt	50	75	150	200	250	300	350



STATIONARY SLURRY PUMPS MF

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
MF 65x50	7,5 – 55	5,5 – 65	600 – 1800	30	600
MF 100x75	15 – 125	4 – 44	600 – 2000	30	600
MF 200x150	75 – 375	10,5 – 51	600 – 1200	90	1540
MF 250x200	140 – 920	11 – 44	500 – 1000	160	1660
MF 300x250	210 – 1100	4,5 – 30	300 – 700	200	2415
MF 350x300	450 – 1750	4,5 – 25	300 – 700	250	2890
MF 400x350	490 – 2400	5,5 – 37,5	300 – 700	355	3535

MF range pump parameters have been given for clean water of gravity $\rho = 1000 \text{ kg/m}^3$ at temperature $T = 150^\circ \text{C}$

Pump type	Maximum granulation of a grain [mm]	Maximum speed of the pump n [rpm]
MF 65x50	2	1800
MF 100x75	3	2000
MF 200x150	5	1200
MF 250x200	7	1000
MF 300x250	9	700
MF 350x300	11	700
MF 400x350	15	700



SUBMERSIBLE PUMPS

OWZ

OWZ pumps are designed
as submersible pumps
for deep mine dewatering





SUBMERSIBLE PUMPS OWZ

APPLICATION

OWZ pumps are typically applied for open cast mine and deep mine dewatering. They are also applicable in any other case when submersible pumps of high capacity and head are required to pump contaminated water.

DESIGN

Multi-stage, vertical, submersible centrifugal pumps with closed impellers and vane diffusers. Water inlet is located around the perimeter between the pump and the motor while the delivery flange is directed vertically upwards. The pump is designed to operate hanging on the delivery pipeline.

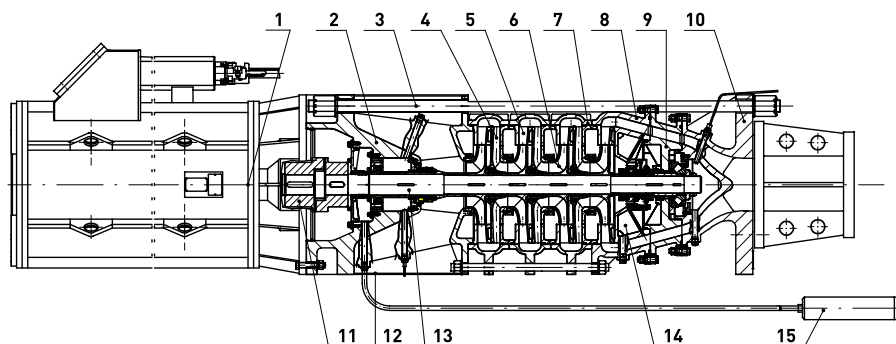
The slide bearings are installed in oil chambers sealed by mechanical seals. Thus the presence of abrasive solids in the pumped fluid does not affect the bearing operation. The upper Mitchell type bearing absorbs the axial thrust. For smaller sizes both the radial and axial bearing are roller type, oil lubricated.

The pump is driven by 6000V electric dry type motor with IP X8 degree of protection located under the pump. The power from electric motor is transmitted via a flexible coupling. The motor has own roller bearings. The pump set is equipped with the monitoring system including bearings and motor windings temperature sensors as well as water presence sensors in the oil chambers and in the motor.

MATERIALS OF CONSTRUCTION

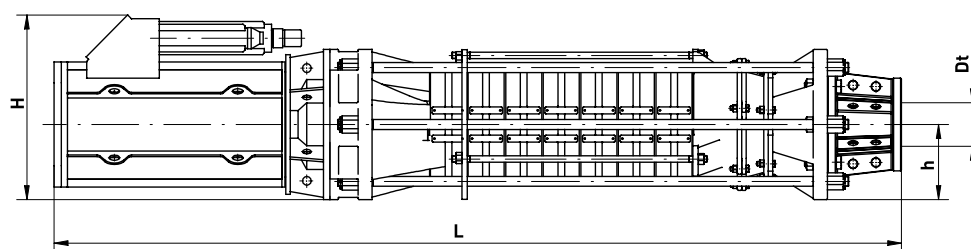
Impellers, diffusers, casings are made of cast steel.
Shaft, bolts, nuts – stainless steel.

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name	No.	Part name
1	Electric motor	9	Bearing housing
2	Suction casing	10	Discharge casing
3	Tie bolt	11	Coupling
4	Centrifugal guide	12	Suction strainer
5	Supply guide	13	Shaft
6	Impeller	14	Oil
7	Stage casing	15	Oil tank
8	Seal casing		

DIMENSIONS

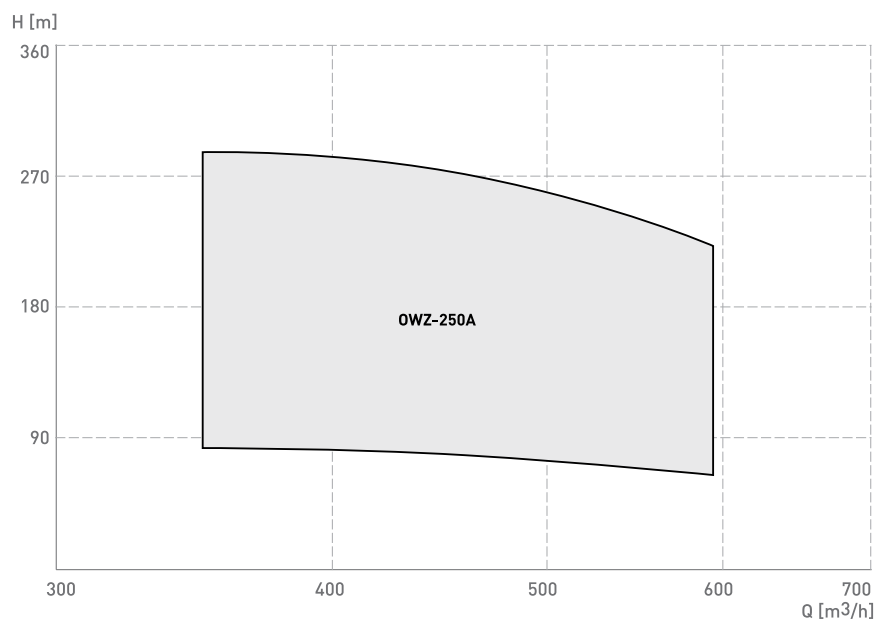


Pump type	Number of stages	Dimensions [mm]			
		L	H	h	Dt
OWZ-250A	3	3638	1095	425	250
	4	3967			
	5	4162			
	6	4357			
	7	4552			



SUBMERSIBLE PUMPS OWZ

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Motor rated power P _s [kW]	Weight m [kg]
OWZ-250A	3	500	114	1500	315	6824
	4		151		315	7013
	5		188		500	7202
	6		225		500	7391
	7		262		500	7580

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



SUBMERSIBLE PUMPS

OZ

OZ pumps are designed
for open cast mine dewatering





SUBMERSIBLE PUMPS OZ

APPLICATION

The basic application of OZ is open cast mine dewatering.

The OZ pumps are resistant to increased external loads and to the presence of solids and chemicals in the pumped liquid. Pumps must work in complete submergence. The capacity is up to 1600 m³/h and head exceeds 100 m.

For the sake of its design features the OZ pumps can be applied in any other situation where adverse operational

DESIGN

Submersible, vertical single-stage centrifugal pumps with single-stream impeller mounted directly on the end of the electric motor shaft. The pumps are equipped with vane radial diffusers.

Hydraulic part is located above the motor. Between the hydraulic part and the motor there is an oil chamber with double mechanical seal. Since the chamber is subject to hydrostatic pressure the motor shaft seal is not subject to pump delivery pressure. Discharge flange is located at the axis of the pump and directed vertically upwards. The pumps can be installed on the bottom of the tank or hanged on the delivery pipeline.

The pump is driven by 400, 500 or 6000V electric dry and waterproof type motor designed for work in submergence up to 10 meters with IP X8 degree of protection.

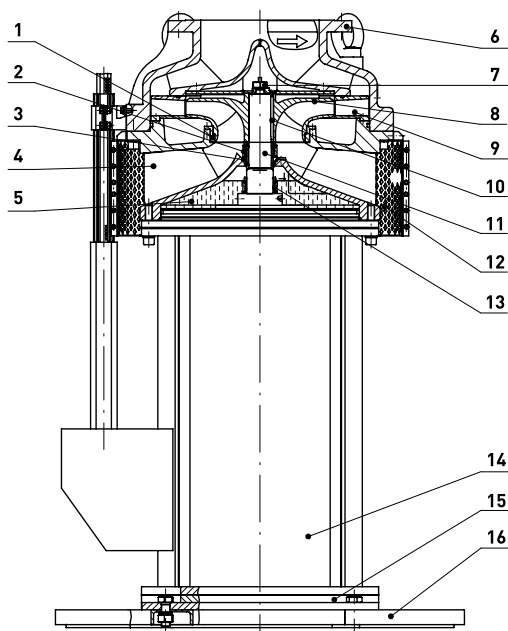
MATERIALS OF CONSTRUCTION

OZ pumps are manufactured with three material versions: standard, wear-resistant and salt-resistant.



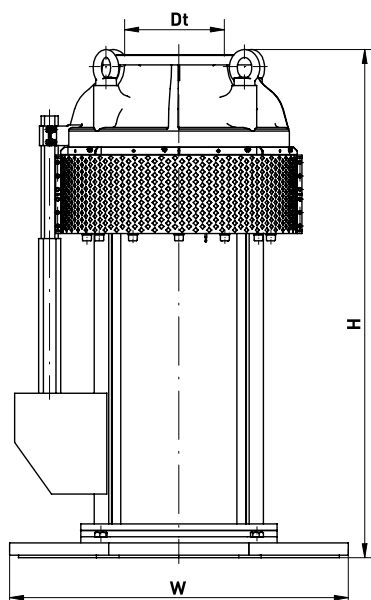
SUBMERSIBLE PUMPS OZ

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name
1	Seal ring
2	Shaft protecting sleeve
3	Mechanical seal
4	Suction casing
5	Oil
6	Discharge casing
7	Impeller bolt
8	Impeller
9	Centrifugal guide
10	Parallel key
11	Shaft
12	Suction rose
13	Mechanical seal
14	Electric motor
15	Plug
16	Base

DIMENSIONS

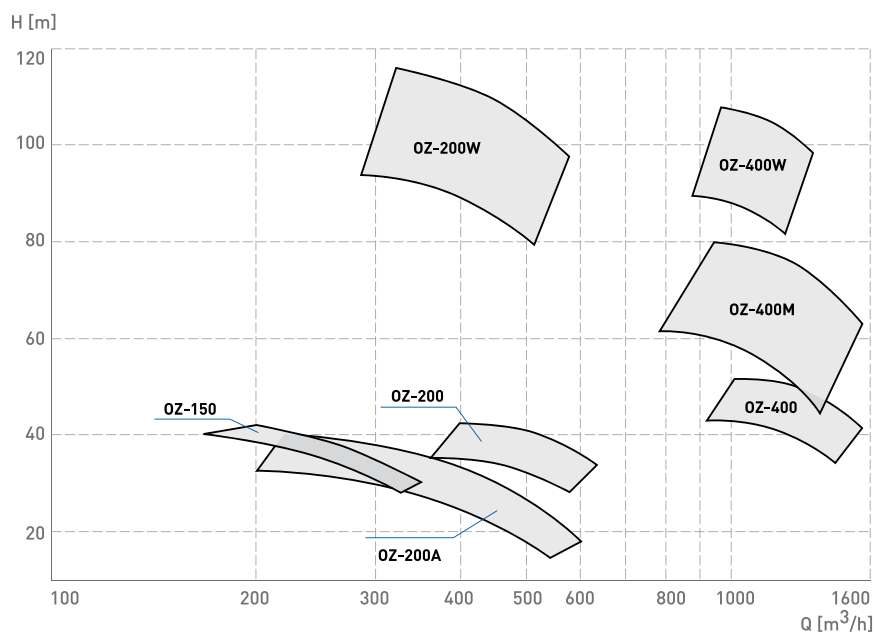


Pump type	Dimension [mm]		
	W	H	Dt
OZ-150	710	1120	150
OZ-200	710	1393	200
OZ-200A	710	1393	200
OZ-200W	1285	2118	200
OZ-400	1600	2140	400
OZ-400W	1400	2500	400
OZ-400M	1400	2250	400



SUBMERSIBLE PUMPS OZ

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type		Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Motor rated power P _s [kW]	Weight m [kg]
OZ-150	OZ-150A	260	36,0	1500	37	724
OZ-200	OZ-200A	500	40,0	1500	75	895
OZ-200A	OZ-200A/A	425	33	1500	75	895
OZ-200W		500	100	1500	220	2817
OZ-400		1200	49	1500	220	2934
OZ-400M		1200	75,0	1500	360	3816
OZ-400W		1200	100	1500	500	4750

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



SUBMERSIBLE PUMPS

OSZ

OSZ pumps are vertical, multistage submersible pumps for mechanically and chemically contaminated fluids





SUBMERSIBLE PUMPS OSZ

APPLICATION

OSZ pumps are typically applied for open cast mine and deep mine dewatering. They are also applicable in any other case when submersible pumps of medium capacity and head are required to pump contaminated water. OSZ pumps are typically applied for open cast mine and deep mine dewatering. They are also applicable in any other case when submersible pumps of medium capacity and head are required to pump contaminated water.

DESIGN

Multi-stage, vertical, submersible centrifugal pumps with closed impellers and vane diffusers. Water inlet is located around the perimeter between the pump and the motor while the delivery flange is directed horizontally at the upper part of the pump.

The roller bearings are installed in oil chambers sealed by mechanical seals. Thus the presence of abrasive solids in the pumped fluid does not affect the bearing operation. The upper bearing absorbs the axial thrust.

The pump is driven by dry type submersible motor located under the pump. The power from electric motor is transmitted via a flexible coupling. The motor has own roller bearings. The pump set is equipped with the monitoring system including bearings and motor windings temperature sensors as well as water presence sensors in the oil chambers and in the motor.

MATERIALS OF CONSTRUCTION

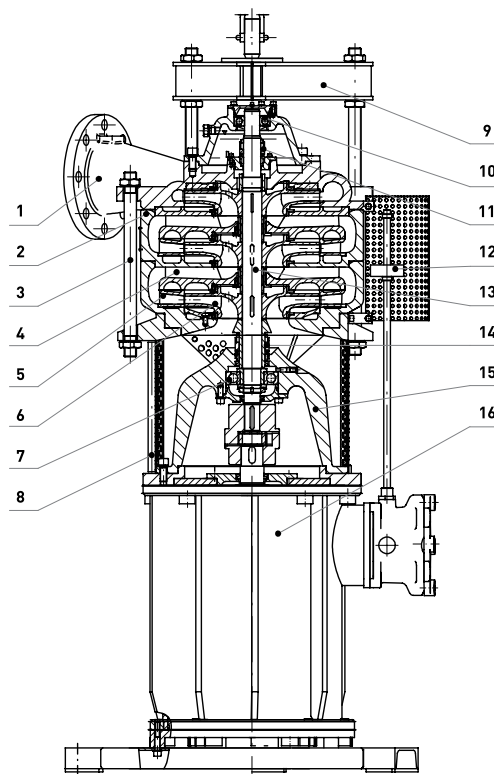
Impellers, diffusers, casings are made of cast iron or stainless cast steel.



SUBMERSIBLE PUMPS OSZ

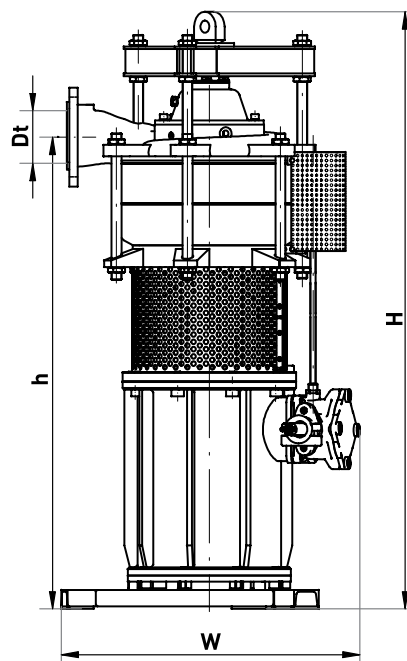
CROSS-SECTION / LIST OF PUMP PARTS

No.	Part name
1	Discharge flange
2	Stage casing
3	Tie bolt
4	Guide vane
5	Vane diffuser
6	Impeller
7	Bearings
8	Suction strainer
9	Hanger
10	Hanging bracket
11	Mechanical seal
12	Level sensor
13	Shaft
14	Mechanical seal
15	Suction casing
16	Motor



DIMENSIONS

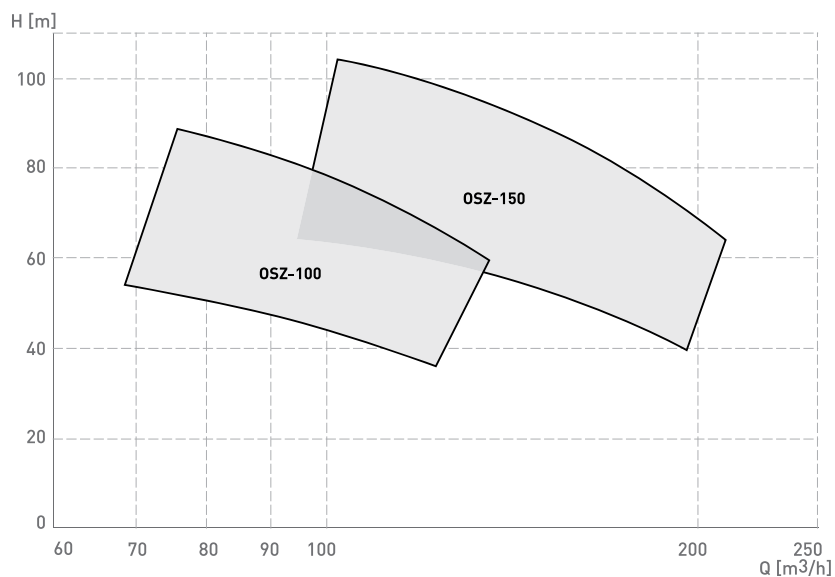
Dimension [mm]	Pump type			
	OSZ-100		OSZ-150	
Number of stages	3	2	3	2
H	1600	1500	1700	1574
h	1360	1260	1443	1317
W	860		880	
Dt	100		150	





SUBMERSIBLE PUMPS OSZ

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Number of stages	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Motor power P _s [kW]	Weight m [kg]
OSZ-100	2	90	56	1475	37	827
	3		84			892
OSZ-150	2	155	58	1475	75	1044
	3		87			1150

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



SUBMERSIBLE PUMPS

SP

SP pumps are designed for pumping
mine and industrial waters contaminated
mechanically and saline





SUBMERSIBLE PUMPS SP

APPLICATION

SP pumps are designed to handle mine and industrial water containing solids.

Typical applications include:

- underground mines – for mine face dewatering, including cases where methane hazard or coal dust explosion hazard are present,
- construction site dewatering.

DESIGN

Submersible, single stage impeller pumps with closed impellers mounted directly on electric motor shaft under the motor. The motor is cooled by the fluid pumped through a cooling jacket. The delivery flange is located at the upper part of the pump. Pump shaft is sealed by double mechanical seal in the oil chamber between the impeller and the motor.

The pump set is equipped with monitoring system consisting of motor bearings and windings temperature sensors, moisture sensors and electric protections against overload or dry run of the pump.

The pumps are compliant with Atex directive and are certified for operation at sites exposed to explosion hazard – I M2c, EEx dI.

Non Atex version of smaller mass is also available.

MATERIALS OF CONSTRUCTION

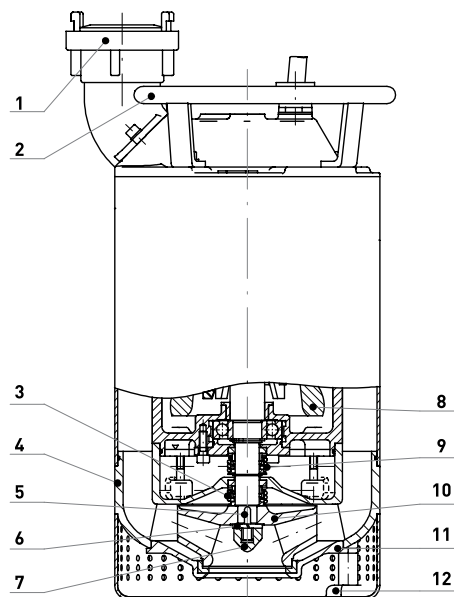
Standard version: impeller – wear-resistant cast steel, pump casing– aluminum alloy, shaft, bolts, nuts – stainless steel. In salt-resistant version all elements are made of stainless cast steel.



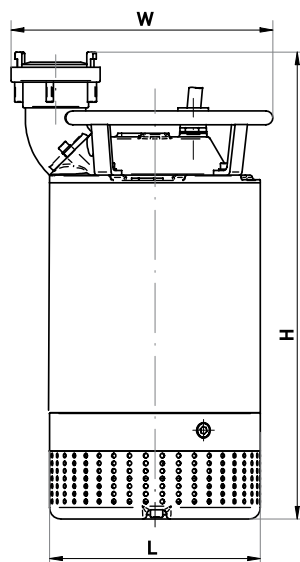
SUBMERSIBLE PUMPS SP

CROSS-SECTION/LIST OF PUMP PARTS

No.	Part name
1	Discharge flange
2	Handle
3	Mechanical seal
4	Discharge casing
5	Parallel key
6	Washer
7	Impeller nut
8	Motor
9	Mechanical seal
10	Impeller
11	Suction cover
12	Suction rose



DIMENSIONS

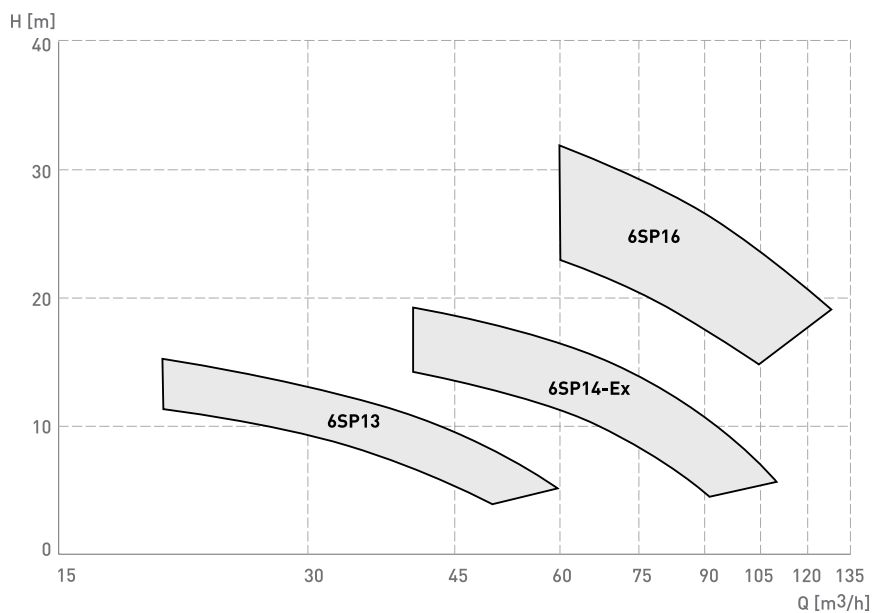


Dimension [mm]	Pump type			
	6SP14I-1-Ex	6SP13I-1	6SP13S-8	6SP16I-1
L	276	222	222	303
W	343	308	308	314
H	611	620	620	865



SUBMERSIBLE PUMPS SP

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Motor rated Power P _e [kW]	Weight m [kg]
6SP14I-1-Ex	63	16	3000	5,5	78
6SP13I-1	32	12,5	3000	3	30
6SP13S-8	32	12,5	3000	3	50
6SP16I-1	95	25	3000	11	90

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



SUBMERSIBLE PUMPS

NZ

Submersible pumps NZ are designed
to deal with water
containing solids and salt





SUBMERSIBLE PUMPS NZ

APPLICATION

Submersible pumps NZ type are designated to handle mixtures of water with solids of dimensions up to 15 mm for 6NZ15 pump, 10 mm for 6NZ18 pump and 32 mm for 10NZ22 pump. The density of pumped mixture must not exceed 1200 kg/m³.

Typical applications:

- for local dewatering in coal, ore and minerals mines as well as in power industry.

DESIGN

Submersible, vertical single-stage centrifugal pumps. The impeller is installed directly on the shaft end of a submersible electric motor. Motor is assembled over the pump. The hydraulic assembly is located under the motor and is separated from it by a mechanical seal in an oil chamber. The pump inlet is located at the axis under the pump and the delivery flange is directed horizontally, perpendicularly to the axis.

The motors are of IP 68 protection class and are designed to operate in submergence up to 20 m. A support is provided in lower part the pump in order to place the pump on the sump bottom.

The pump sets are equipped with electric protection systems against overload and dry-run. Bearing temperature sensors are provided.

Pumps can be equipped with motors for various supply voltages 400V, 500V, 660V, 1140V and switchable 500V/1000V. The pumps are compliant with ATEX directive and are certified for operation in explosion hazardous areas – I M2c Ex dI. Mb.

MATERIALS OF CONSTRUCTION

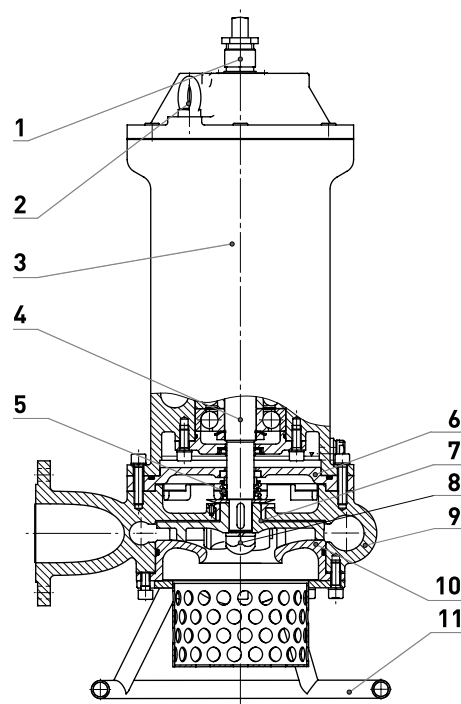
Pump impellers are made of wear resistant alloy cast steel. The casings are made of cast iron. Nuts, bolts and pump supports are made of stainless steel.



SUBMERSIBLE PUMPS NZ

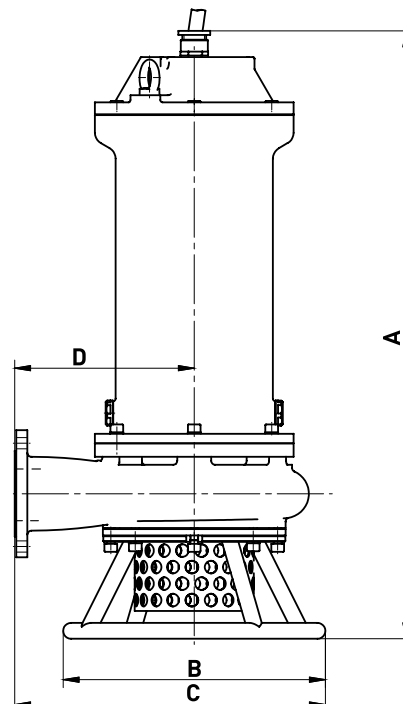
SECTIONAL VIEW / LIST OF PUMP PARTS

No.	Part name
1	Power supply cable
2	Handle
3	Motor
4	Shaft
5	Mechanical seal
6	Seal chamber
7	Impeller
8	Impeller nut
9	Delivery casing
10	Suction cover
11	Support



DIMENSIONS

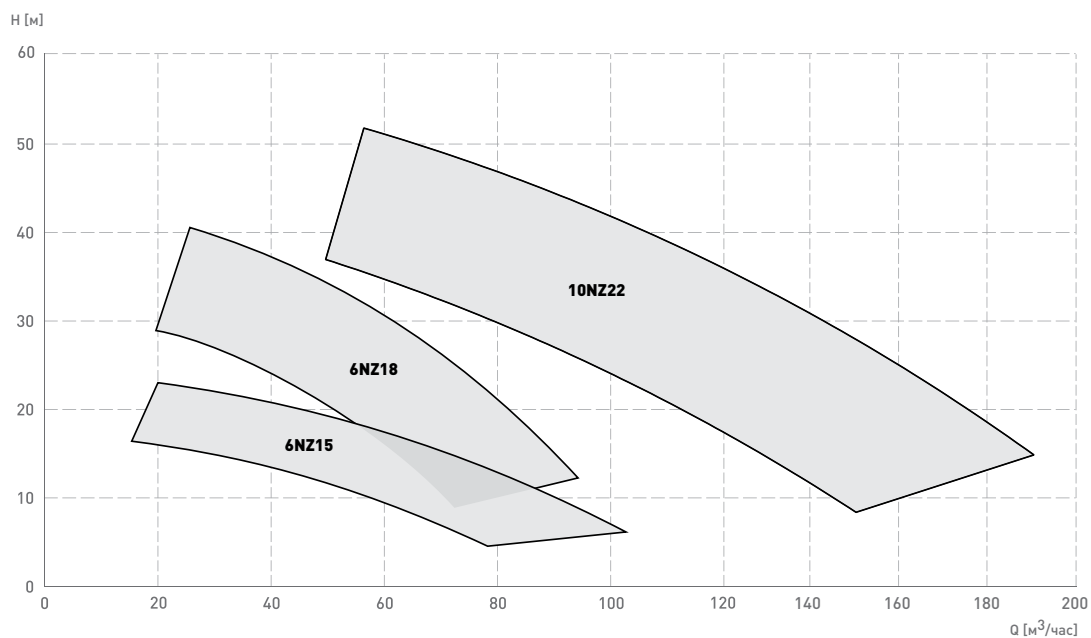
Dimensions [mm]	Pump type		
	6NZ15	6NZ18	10NZ22
A	720	760	1100
B	330	330	520
C	390	390	564
D	225	226	304





SUBMERSIBLE PUMPS NZ

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Motor rated power P_s [kW]	Weight m [kg]
6NZ15-Ex	60	15	3000	5,5	87
6NZ18-Ex	45	27	3000	7,5	98
10NZ22-EX	125	37	3000	22	275
6NZ15	60	15	3000	5,5	87
6NZ18	45	27	3000	7,5	98
10NZ22	125	37	3000	22	275

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



SUBMERSIBLE PUMPS

P-BA

P-BA pumps are single stages
submersible pumps for handling
mechanically and chemically
contaminated fluids





SUBMERSIBLE PUMPS P-BA

APPLICATION

P-BA pumps are designed to handle mine and industrial water containing solids.

Typical applications include:

- underground mines – for mine face dewatering, including cases where methane hazard or coal dust explosion hazard are present,
- construction site dewatering.

DESIGN

Submersible, single stage impeller pumps with closed impellers mounted directly on electric motor shaft under the motor. The motor is cooled by the fluid pumped through a cooling jacket. The delivery flange is located at the upper part of the pump. Pump shaft is sealed by double mechanical seal in the oil chamber between the impeller and the motor.

The pump set is equipped with monitoring system consisting of motor bearings and windings temperature sensors, moisture sensors and electric protections against overload or dry run of the pump.

The pumps are compliant with Atex directive and are certified for operation at sites exposed to explosion hazard – I M2c, EEx dL.

Non Atex version of smaller mass is also available.

MATERIALS OF CONSTRUCTION

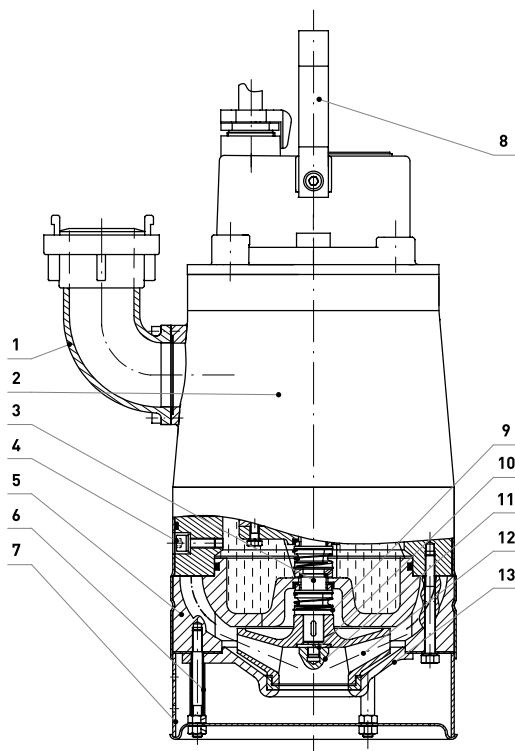
Standard version: impeller – wear-resistant cast steel, pump casing– aluminum alloy, shaft, bolts, nuts – stainless steel. In salt-resistant version all elements are made of stainless cast steel.



SUBMERSIBLE PUMPS P-BA

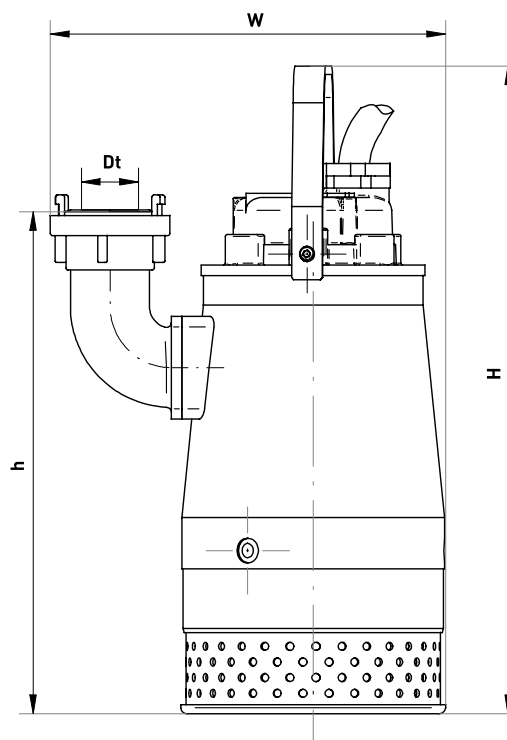
SECTIONAL VIEW / LIST OF PUMP PARTS

No.	Part name
1	Discharge pipe quick release joint
2	Motor
3	Shaft
4	Draining plug
5	Discharge casing
6	Connecting bolt
7	Suction strainer
8	Handle
9	Mechanical seal
10	Spring washer
11	Impeller nut
12	Impeller
13	Suction cover



DIMENSIONS

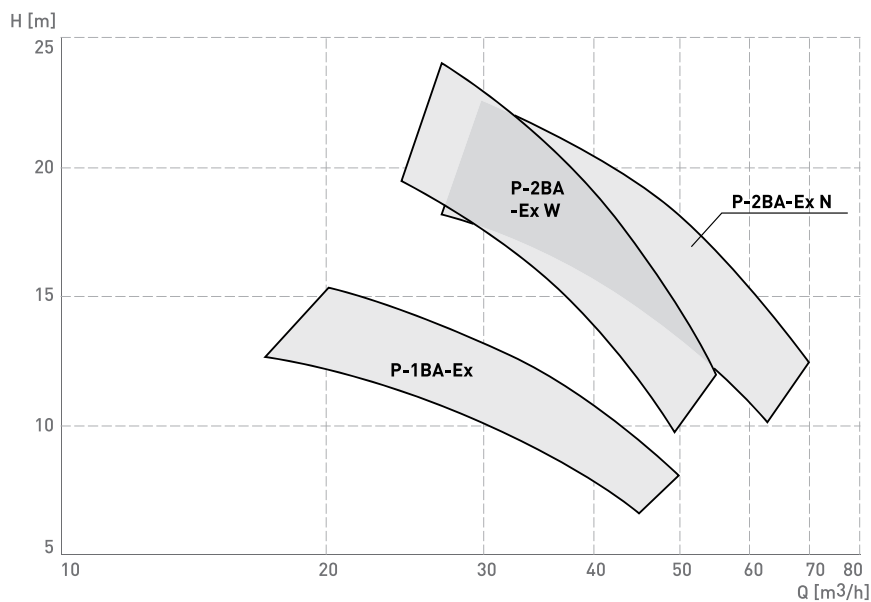
Dimensions [mm]	Pump type	
	P-1BA-Ex	P-2BA-Ex
W	375	411
D	258	290
H	590	676
h	490	515
Dt	65	65





SUBMERSIBLE PUMPS P-BA

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Motor rated power P _s [kW]	Weight m [kg]
P-1BA/I-Ex	32	12,5	2840	2,2	62
P-1BA-Ex	32	12,5	2840	2,2	62
P-1BA/D-Ex	32	12,5	2840	2,2	62
P-1BA/E-Ex	32	12,5	2840	2,2	62
P-1BA/EC-Ex	32	12,5	2840	2,2	62
P-1BA/A	32	12,5	2840	2,2	62
P-2BA-Ex wyk N/wykW	36/42	21/18	2865	4	83
P-2BA/D-Ex wyk N/wykW	36/42	21/18	2865	4	83
P-2BA/E-Ex wyk N/wykW	36/42	21/18	2865	4	83
P-2BA/EC-Ex wyk N/wykW	36/42	21/18	2865	4	83
P-2BA/A wyk N/wykW	36/42	21/18	2865	4	83

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



SUBMERSIBLE PUMPS

P-C

P-C pumps are single stage submersible pumps for handling mechanically and chemically contaminated fluids.





SUBMERSIBLE PUMPS P-C

APPLICATION

P-C pumps are designed to handle mine and industrial water containing solids.

Typical applications include:

- underground mines – for mine face dewatering, including cases where methane hazard or coal dust explosion hazard are present,
- construction site dewatering.

DESIGN

Submersible, single stage impeller pumps with closed impellers mounted directly on electric motor shaft under the motor. The motor is cooled by the fluid pumped through a cooling jacket. The delivery flange is located at the upper part of the pump. Pump shaft is sealed by double mechanical seal in the oil chamber between the impeller and the motor.

The pump set is equipped with monitoring system consisting of motor bearings and windings temperature sensors, moisture sensors and electric protections against overload or dry run of the pump.

The pumps are compliant with Atex directive and are certified for operation at sites exposed to explosion hazard – I M2c, EEx dL.

Non Atex version of smaller mass is also available.

MATERIALS OF CONSTRUCTION

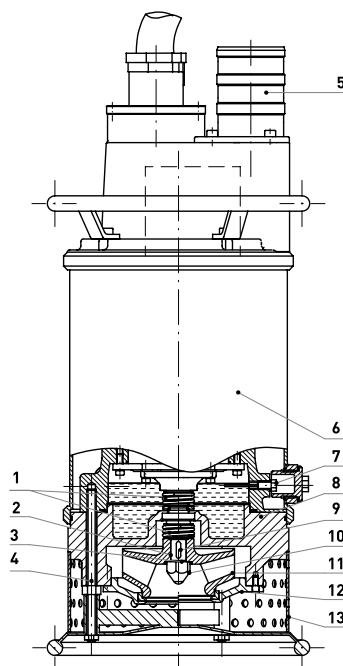
Standard version: impeller – wear-resistant cast steel, pump casing– aluminum alloy, shaft, bolts, nuts – stainless steel. In salt-resistant version all elements are made of stainless cast steel.



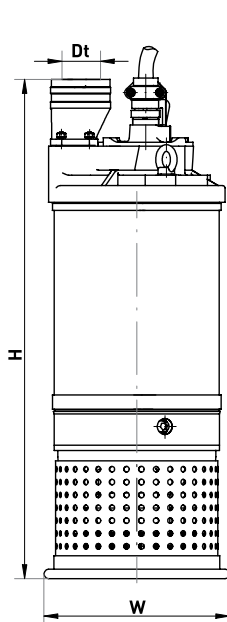
SUBMERSIBLE PUMPS P-C

CROSS-SECTION/LIST OF PUMP PARTS

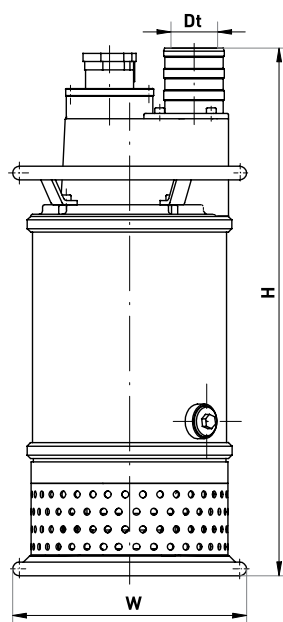
No.	Part name
1	Mechanical seal
2	Shaft
3	Spring washer
4	Joining bolt
5	Discharge flange
6	Motor
7	Plug
8	Discharge casing
9	Parallel key
10	Impeller nut
11	Impeller
12	Suction cover
13	Suction rose



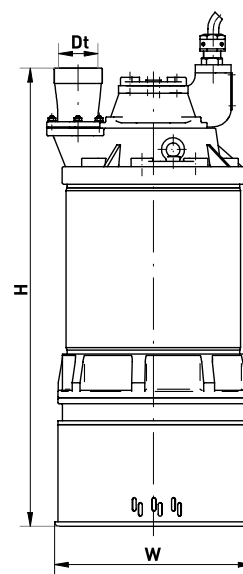
DIMENSIONS



P-3CC/II-Ex



P-2CC/II-Ex



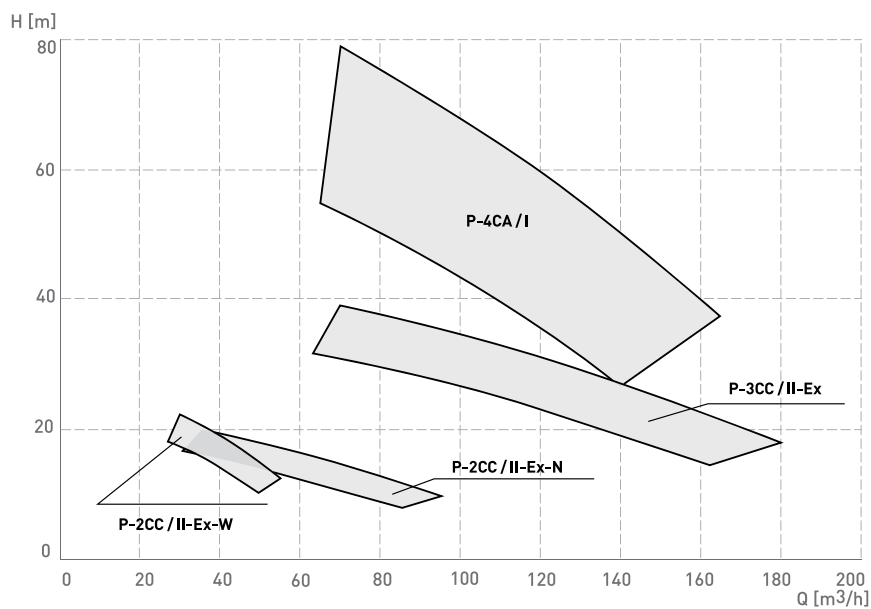
P-4CA/I

Dimensions [mm]	Pump type		
	P-2CC/II-Ex N/W	P-3CC/II-Ex	P-4CA/I
W	350	400	518
H	826	1130	1200
Dt	65	100	100



SUBMERSIBLE PUMPS P-C

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Rated Capacity Q [m³/h]	Head H [m]	Rated rotary speed n [rpm]	Motor rated power P _s [kW]	Weight m [kg]
P-2CC/II-Ex wyk N/wyk W	63/40	16/20	3000	4	105
P-2CA/II wyk N/wyk W	63/40	16/20	3000	4	105
P-3CC/II-Ex	135	28	3000	18,5	233
P-3CC/II-Ex	135	28	3000	18,5	233
P-3CA/II-S	135	28	3000	18,5	233
P-4CA/I	120	60	3000	37	585

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



SUBMERSIBLE PUMPS

PZD

PZD pumps are designed for pumping
mine and industrial water containing solids





SUBMERSIBLE PUMPS PZD

APPLICATION

PZD pumps are designed to handle mine and industrial water containing solids having a maximum size of 14 mm wherein the density of the pumped liquid must not be greater than 1100 kg/m³, and the temperature to 30°.

Typical applications include:

- underground mines – as the initial pumping pumps,
- architecture,
- farming,
- municipal economy.

DESIGN

Submersible, centrifugal, vertical single-stage impeller pumps with dual stream closed impeller mounted directly on electric motor shaft. Suitably shaped discharge casing is finished with nozzle flange having an inner diameter 250 mm, directed vertically upwards. From the side of the intake, impeller is closed with two suction caps. Due to the use of dual-rotor pump has a two suction rose made of perforated sheet metal and located on both sides of the discharge body. The pump is used three-phase asynchronous motor with degree of protection IP68 – with briefly closed impeller cooled with pump liquid – built-under the pumping system.

PZD pumps can be installed on the bases at the bottom of the reservoir or suspended by the handles.

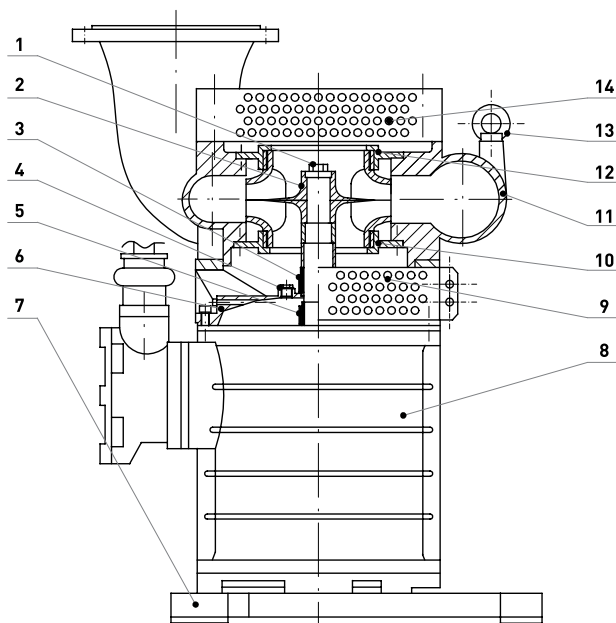
MATERIALS OF CONSTRUCTION

PZD pumps are made with two different voltage versions 400 V and 500 V in the basic version of the materials.



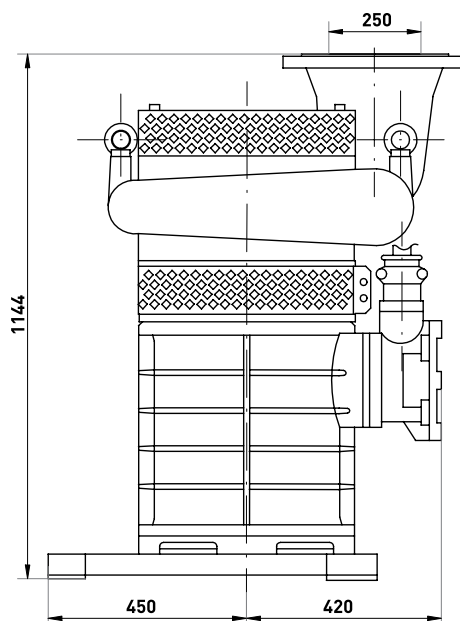
SUBMERSIBLE PUMPS PZD

CROSS-SECTION/LIST OF PUMP PARTS



No.	Part name
1	Impeller nut
2	Impeller
3	Mechanical seal
4	Plug
5	Mechanical seal
6	Suction casing
7	Stand
8	Motor
9	Suction rose
10	Suction cover
11	Discharge casing
12	Suction cover
13	Lug
14	Suction rose

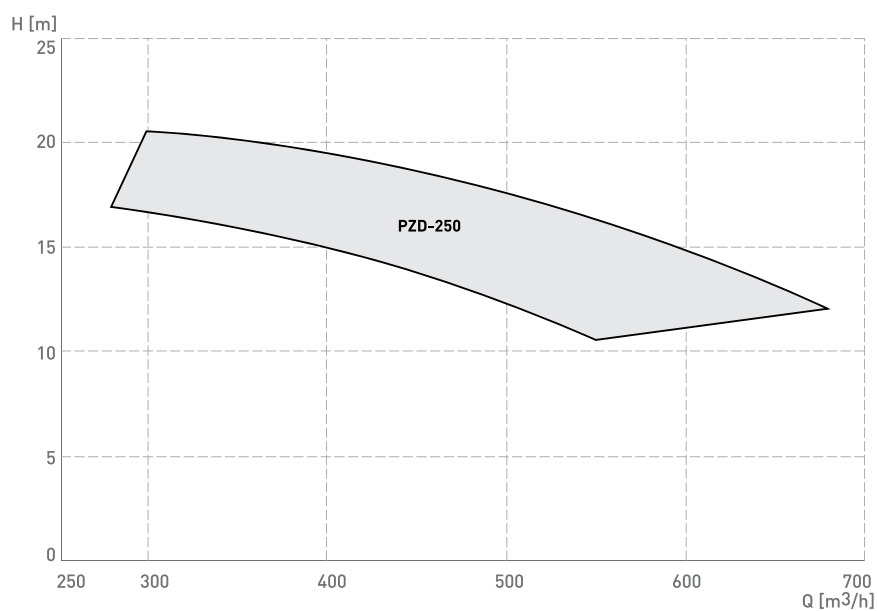
DIMENSIONS





SUBMERSIBLE PUMPS PZD

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m^3/h]	Head H [m]	Rotation speed n [rpm]	Motor rated power P_s [kW]	Weight m [kg]
PZD-250A	500	17,5	1475	37	576
PZD-250	500	17,5	1475	37	576

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



SUBMERSIBLE PUMPS

PZH

PZH pumps are designed
for pumping clean and contaminated
water containing solids.





SUBMERSIBLE PUMPS PZH

APPLICATION

PZH pumps are designed to handle mine and industrial water containing solids having a maximum size of 50 mm wherein the density of the pumped liquid must not be greater than 1100 kg/m³, and the temperature to 30°.

Typical applications include:

- high-performance intermediate pumping stations,
- as the initial pumping pumps: melioration, dewatering, water supply.

Maximum immersion in the liquid – up to 2 m from the surface of the liquid to cable entry of the pump motor.

DESIGN

Submersible, centrifugal, vertical single-stage impeller pumps with helicoidal impeller mounted directly on electric motor shaft. Suction rose attached to the suction casing is the basis of the pump. Spiral discharge casing is finished with nozzle flange having an inner diameter 500 mm, about direction perpendicular to the axis of the pump. The pump is used three-phase asynchronous motor with degree of protection IP48 – with briefly closed impeller cooled with pump liquid – built-under the pumping system.

Handles for transport of the pump are located on the motor cover.

MATERIALS OF CONSTRUCTION

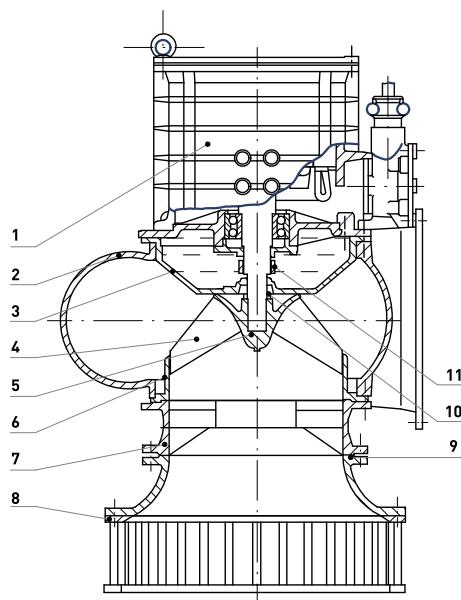
All components of PZH pumps are made of cast iron, besides suction rose made of constructional steel.



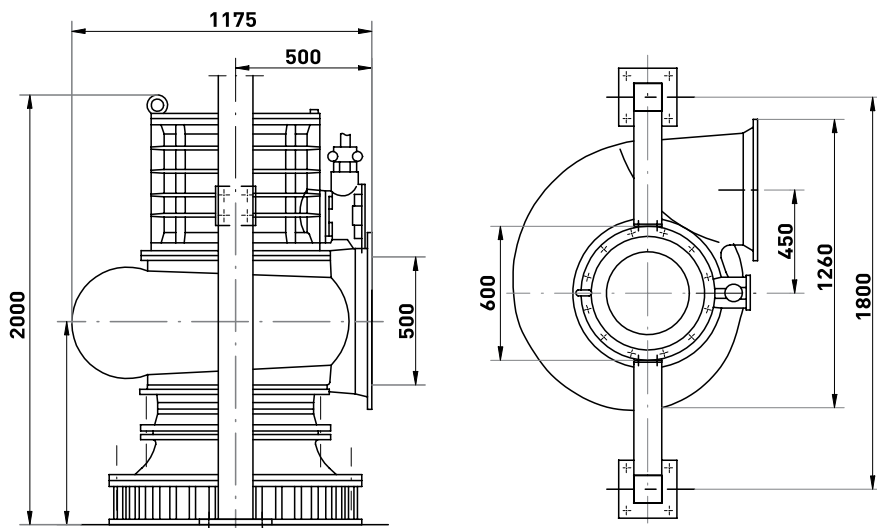
SUBMERSIBLE PUMPS PZH

CROSS-SECTION/LIST OF PUMP PARTS

No.	Part name
1	Motor
2	Discharge casing
3	Cover
4	Impeller
5	Impeller nut
6	Guide vane
7	Suction flange
8	Suction rose
9	Intake
10	Mechanical seal
11	Mechanical seal



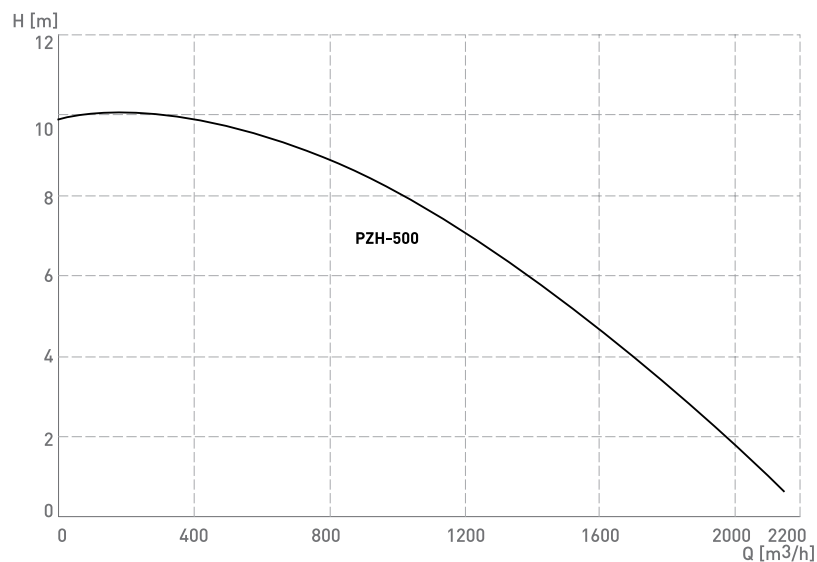
DIMENSIONS





SUBMERSIBLE PUMPS PZH

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [m³/h]	Head H [m]	Rotary speed n [rpm]	Motor rated power P_s [kW]	Weight m [kg]
PZH-500	1800	3	750	37	1503

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



SUBMERSIBLE SLURRY PUMPS

HZ

HZ pumps are submersible
heavy-duty slurry pumps
for abrasive solids.





SUBMERSIBLE SLURRY PUMPS HZ

APPLICATION

HZ pumps are submersible pumps designed to handle water containing significant amounts of solids with dimensions exceeding 100 mm (in version with the free movement impellers) wherein the density of the pumped liquid must not be greater than 1400 kg/m³.

Typical applications:

- for pumping highly contaminated liquids,
- for pumping sludge and similar.

DESIGN

Submersible, vertical single-stage impeller pumps. Free movement or closed impellers are mounted directly on submersible electric motor shaft. Drive motor is located right on the pump part. Hydraulic part located under the engine is separated from the shaft mechanical seal with oil chamber. An inlet to the pump is in axis from the bottom of the pump, and discharge casing is directed to the side perpendicular to the pump axis.

Drive motors have protection against the ingress of external factors IP X8 and are adapted for immersion service up to 6 m. Standard voltage is 400 V, but 500 V version is also available.

HZ pumps are equipped with security systems including motor winding and bearings temperature sensors, presence of moisture sensor in the motor and the presence of water sensor in the oil chamber. The pump has a rack from the bottom, which allow to set pump at the bottom of reservoir.

MATERIALS OF CONSTRUCTION

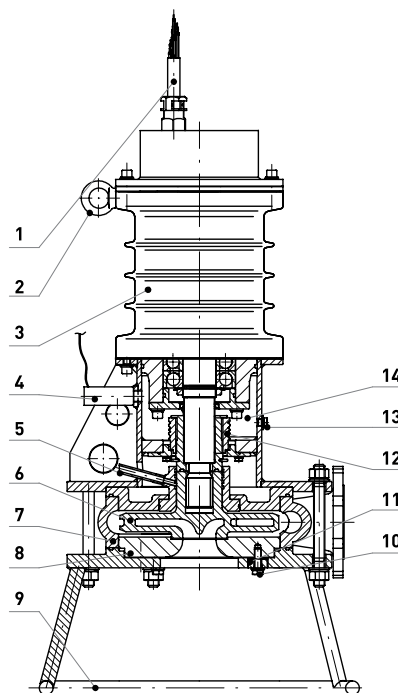
HZ pumps are made with two different versions of the materials, hard-abrasiveness and salt-resistant.



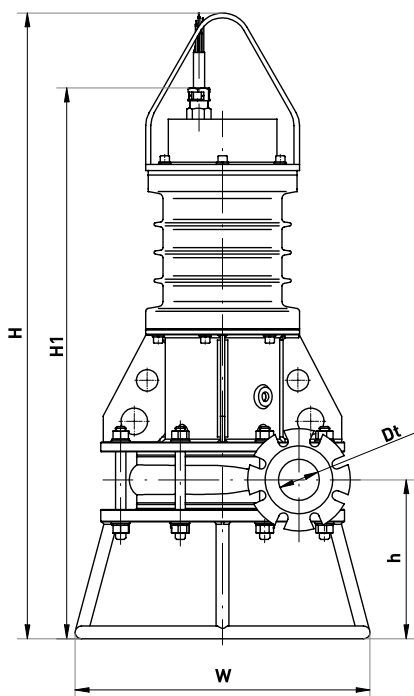
SUBMERSIBLE SLURRY PUMPS HZ

CROSS-SECTION/LIST OF PUMP PARTS

No.	Part name
1	Power supply cable
2	Handle
3	Motor
4	Pug or oil moisture sensor (optional)
5	Supply pipe
6	Impeller
7	Discharge casing
8	Front liner
9	Base
10	Adjusting screw
11	Adjusting sleeve
12	Mechanical seal
13	Drain plug
14	Oil



DIMENSIONS

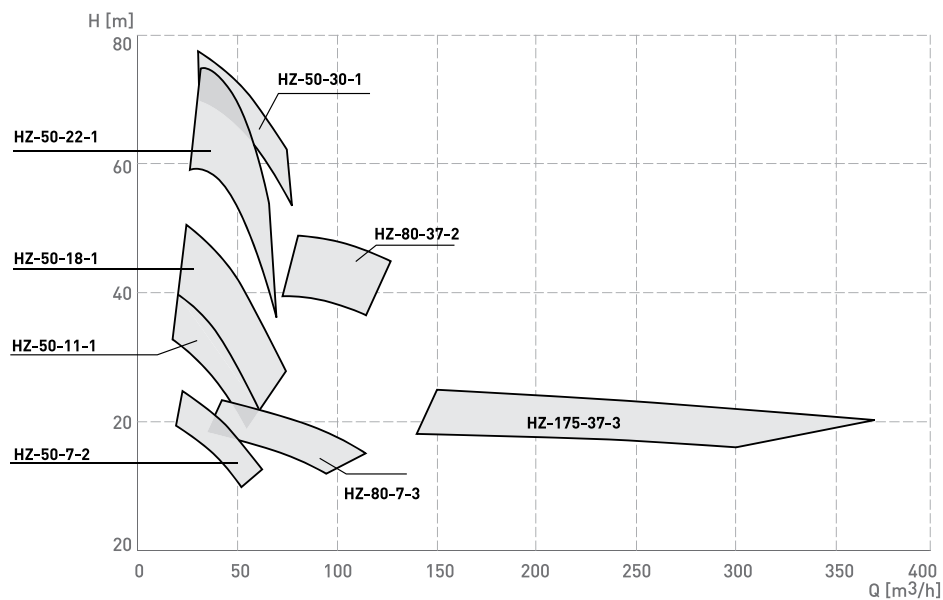


Pump type	Dimension [mm]				
	H	H1	h	W	Dt
HZ-50-7-2	-	1075	310	600	50
HZ-50S-11-1	1201	1131	262	700	50
HZ-50S-18-1	1361	1291	262	700	50
HZ-50-22-1	1292	1222	268	700	50
HZ-50S-30-1	1408	1338	252	700	50
HZ-80-7-3	-	1150	316	595	80
HZ-80-22-2	1445	1270	320	575	80
HZ-80-37-2	1100	-	320	575	80
HZ-175-37-3	1709	-	590	1000	175



SUBMERSIBLE SLURRY PUMPS HZ

RANGE OF OPERATION



NOMINAL PARAMETERS

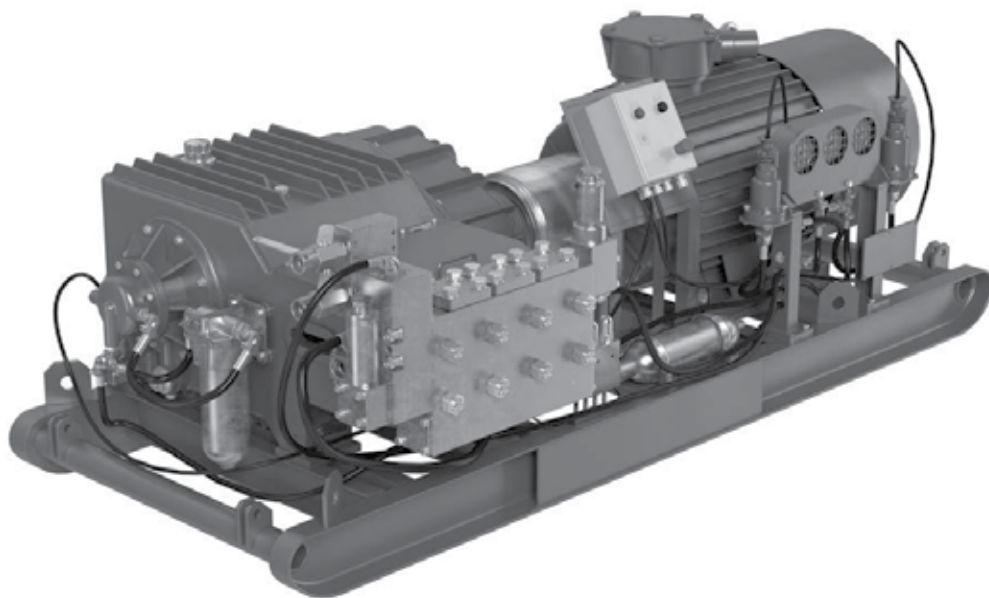
Pump type	Rated Capacity Q [m³/h]	Head H [m]	Rotation speed n [rpm]	Motor rated power P_e [kW]	Weight m [kg]
HZ-50-7-2	40	20	1465	7,5	274
HZ-50S-11-1	25	34	2930	11	278
HZ-50S-18-1	50	42	2930	18,5	325
HZ-50-22-1	45	61	2920	22	412
HZ-50S-30-1	60	69	2940	30	370
HZ-80-7-3	40	19	960	7,5	398
HZ-80-22-2	90	40	1465	22	477
HZ-80-37-2	125	44	1475	37	661
HZ-175-37-3	250	21	980	37	1245

The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.

POSITIVE DISPLACEMENT PUMPS

T

T pumps are designed to feed the deep mine longwall supports with oil emulsion at high pressure.





POSITIVE DISPLACEMENT PUMPS T

APPLICATION

T type pumps are designed to feed the deep mine longwall supports with oil emulsion at high pressure. They are also applicable in any other case when high pressure at low capacity is required.

DESIGN

Triple plunger pumps driven by electric motors via a gear box reducing the speed and a crankshaft. The plungers are led in grease lubricated bushings and sealed by high pressure seals. The hydraulic assembly comprises the suction and delivery valves and the relief and safety valves.

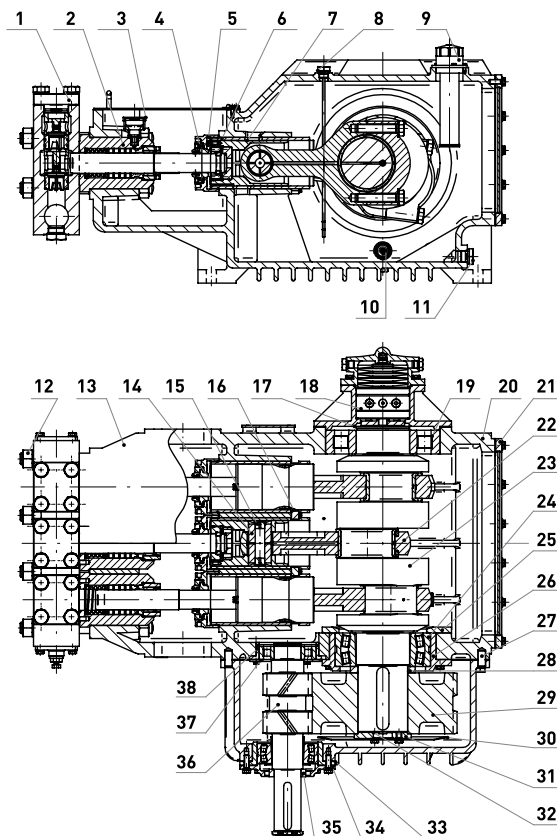
The pumps are compliant with Atex directive

MATERIALS OF CONSTRUCTION

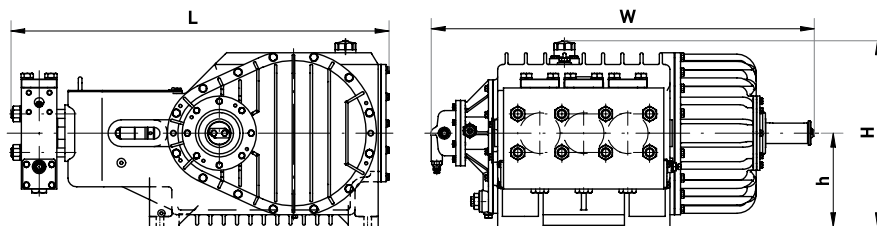
As standard, the pump is manufactured of cast iron; the other elements are manufactured of cast steel.

CROSS-SECTION/LIST OF PUMP PARTS

No.	Part name	No.	Part name
1	Valve block	21	Cover
2	Plunger seal assembly	22	Crankshaft
3	Greaser	23	Crankshaft
4	Screw	24	Bearing
5	Adjusting nut	25	Split ring
6	Slider sleeve	26	Bearing sleeve
7	Plunger-slider assembly	27	Straight pin
8	Oil indicator	28	Ring
9	Filling filter	29	Kog gear
10	Filter	30	Plate shield
11	Plug	31	Safety disc
12	Stud -bolt	32	Nozzle
13	Cover	33	Bearing sleeve
14	Pin	34	Cover
15	Insert	35	Sealing ring
16	Wedge	36	Drive shaft
17	Seat spring-ring	37	Split ring
18	Oil pump assembly	38	Bearing sleeve
19	Bearing		
20	Casing		



DIMENSIONS

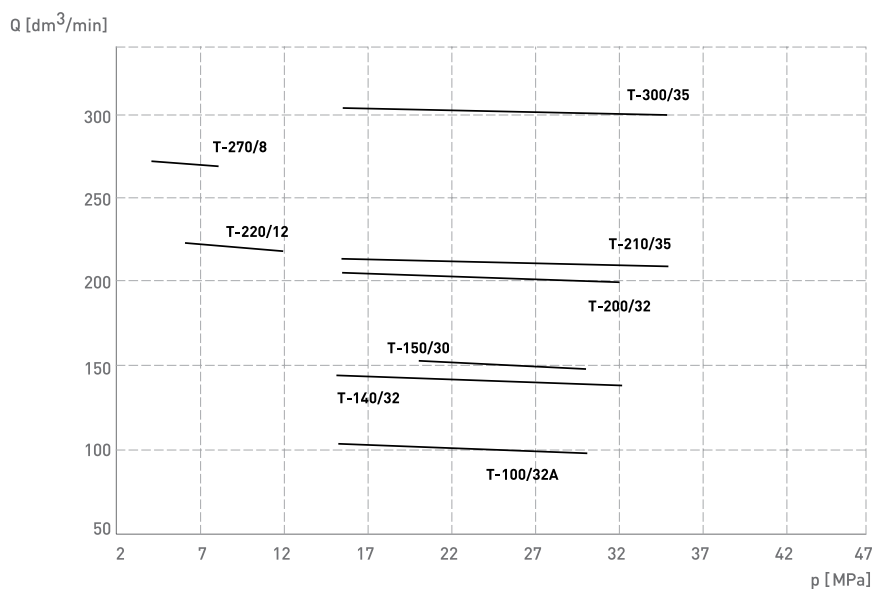


Pump type	Dimensions [mm]			
	L	W	H	h
T-100/32A Ex-Z	975	1000	485	250
T-140/32 Ex-Z	1046	1100	452	225
T-150/30 Ex-Z	1046	1100	507	280
T-200/32 Ex-Z	1275	1290	530	315
T-210/35 Ex-Z	1275	1290	530	315
T-220/12 Ex-Z	1046	1100	452	225
T-270/8 Ex-Z	1046	1100	507	280
T-300/35 Ex-Z	1296	1290	530	315



POSITIVE DISPLACEMENT PUMPS T

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity Q [dm³/min]	Working press. p [MPa]	Rotation speed n [rpm]	Shaft power P [kW]	Weight m [kg]
T-100/32A Ex-Z	100	30	1500	56	712
T-140/32 Ex-Z	140	32		84	817
T-150/30 Ex-Z	150	30		83	822
T-200/32 Ex-Z	200	32		120	1414
T-210/35 Ex-Z	210	35		136	1414
T-220/12 Ex-Z	220	12		49	822
T-270/8 Ex-Z	270	8		42	888
T-300/35 Ex-Z	300	35		197	1491

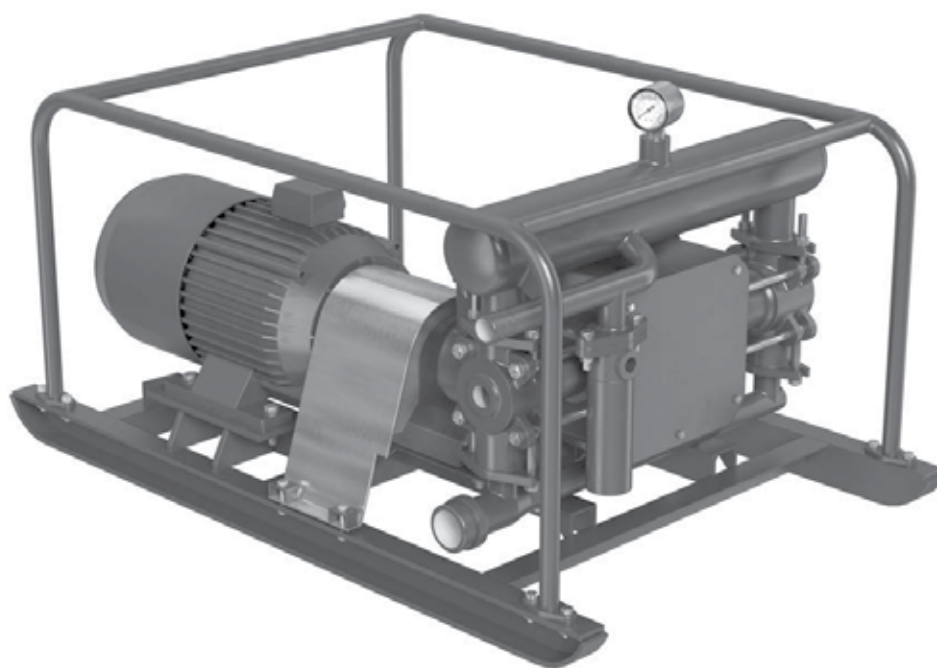
The parameters are specified for clean water of density $\rho = 1000 \text{ kg/m}^3$ and temperature $T = 15^\circ\text{C}$.



POSITIVE DISPLACEMENT PUMPS

WT

WT pump are designed
for pumping clean water as well
as water containing small solids





POSITIVE DISPLACEMENT PUMPS WT

APPLICATION

WT pumps are designed to handle clear water as well as water containing small solids having a maximum size of 0,5 mm (tiny sand, mule). Temperature of the pumped liquid must not be greater than 40°C, and the density to 1050 kg/m³.

Primary application of WT pumps is pumping drilling mud when large diameter is drilling. Pumps can be used in potentially explosive methane and/or coal dust atmospheres as a device group I category M2.

DESIGN

Double piston single body pumps with mechanical gear train and slider crank mechanism. Discharge system consists of two cylinder heads with cylinder bushings and ball valves, located symmetrically in relation to the body and screwed with body with bolts. Both cylinder heads are connected to an air vessel, used to pressure equalization while pistons are working. Internal moving parts are lubricated by splash oil. Pump has an overflow safety valve, protecting it against excessive pressure.

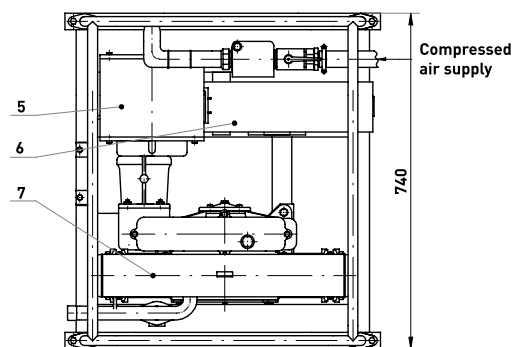
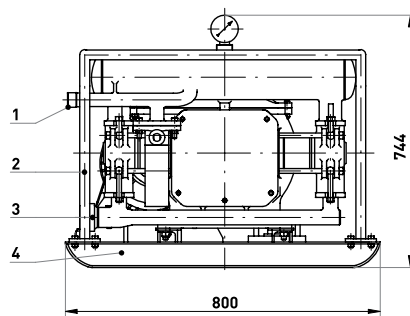
Pump is mounted with four screws to the ground, which may be a portable frame, the flat surface of another machine or permanent foundation.

MATERIALS OF CONSTRUCTION

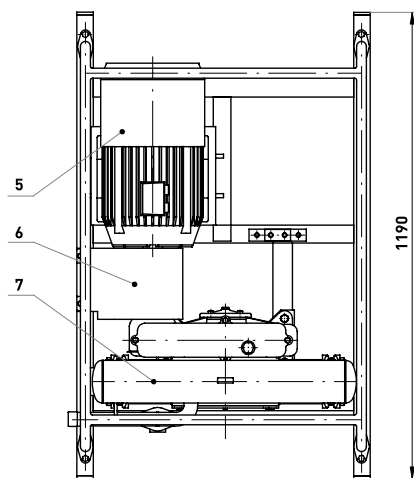
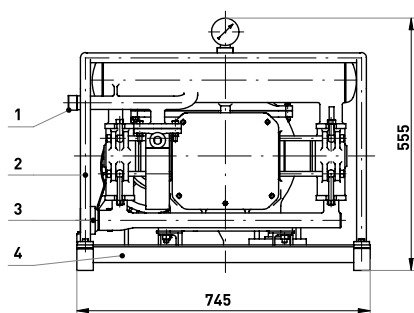
WT pumps are available in two versions depending on the type of engine.

LIST OF PUMP PARTS AND DIMENSIONS

No.	Part name
1	Discharge connection port
2	Guard
3	Suction connection port
4	Frame
5	Motor
6	Silencer
7	Pump



WT-30/2PB



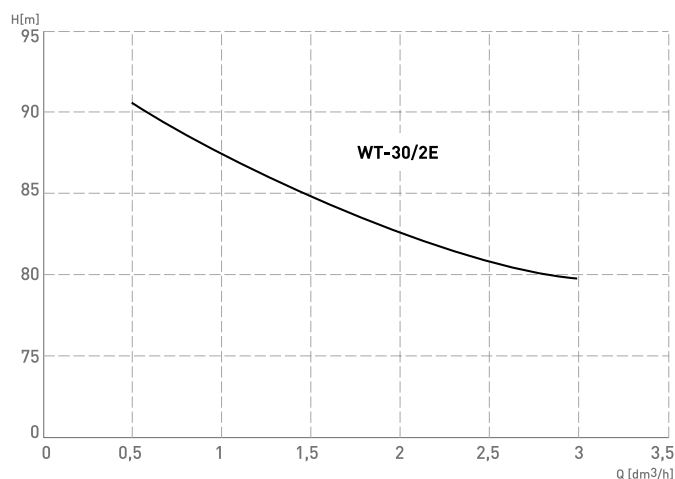
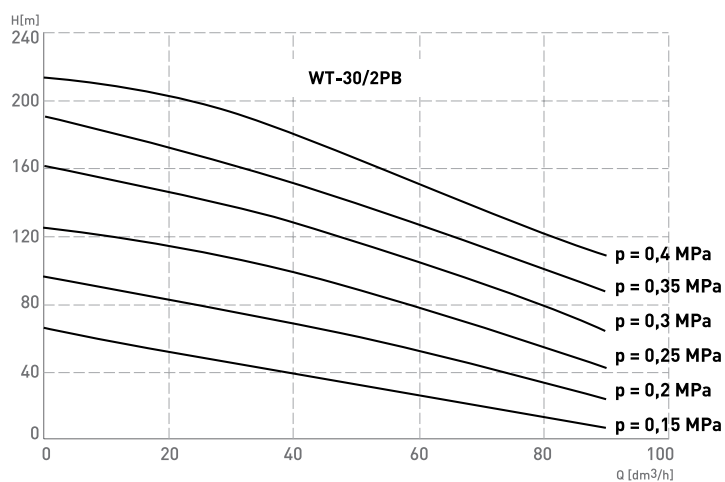
WT-30/2E

No.	Part name
1	Discharge connection port
2	Guard
3	Suction connection port
4	Frame
5	Motor
6	Coupling cover
7	Pump



POSITIVE DISPLACEMENT PUMPS WT

RANGE OF OPERATION



NOMINAL PARAMETERS

Pump type	Capacity $Q \text{ [dm}^3/\text{min]}$	Head $H \text{ [MPa]}$	Motor rated power $P_s \text{ [kW]}$	Voltage $U \text{ [V]}$	Motor revs $n_s \text{ [rpm]}$
WT-30/2E ver. „B”	80	1,7	3	500 / 600	1415
WT-30/2E ver. „C”	80	3,0	7,5	500 / 600	1450
WT-30/2E ver. „D”	80	3,0	11	500 / 600	1463
WT-30/2PB	50	1,6	2,94	-	660

Pump type	Pump shaft exit revs. $n_w \text{ [rpm]}$	Pneumatic motor drive	Supply air consumption $[\text{nm}^3/\text{kMh}]$	Supply air pressure $[\text{Mpa}]$	Pump weight $m \text{ [kg]}$
WT-30/2E ver. „B”	152	-	-	-	236,5
WT-30/2E ver. „C”	156	-	-	-	289
WT-30/2E ver. „D”	157	-	-	-	337
WT-30/2PB	-	SPZ-4/660	50	0,4	233



ELASTIC PLATE MUFFS TYPE MK

Designation and usage

Elastic plate muffers type MK are designed to transmit the torsional moment from drive to pumps, compressors, smoke exhausters and other rotation devices which are to be used at oil and gas, chemical, metallurgical and other industrial areas.

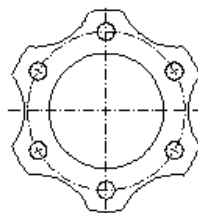
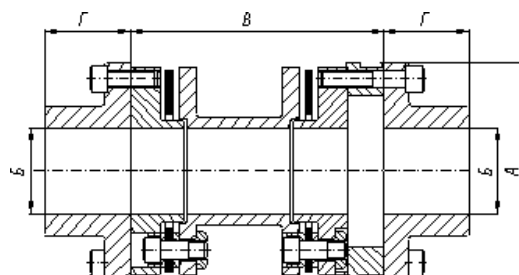
Operation

The principle of elastic plate muffs operation is based on transmission the torsional moment between shafts through bags of thin metal sheets. At this time the mutual angle, axial and radial shaft misalignment can be compensated only with elastic deformation of sheet bags. The muff is consisted in two half-muffs and spacer plate with two bags of elastic units. The spacer plate is fixed to half-muffs with screw.

Benefits

Having compared the tooth muffs and pin coupling, the plate muffs are available to:

- reduce the vibration level;
- enhance in-use life of pump and compressor support and end compaction;
- make possible the axial misalignment of joint rotors aiming to take the working position while start (alignment of magnetic axis of electro drive rotor and stator, setting the working gap into hydraulic balancing device)
- exclude lubrication supply and maintenance.



MAIN TECHNICAL CHARACTERISTICS OF MUFFS TYPE MK

Muff's type	Transmitting torsional moment, HxM		Transmitting power, kW*, while		Size, mm				Permitted relative shaft misalignment			Minimum axial distance between edges of connecting shafts, mm	Weight, kg while B min
	Nominal	Max. short-term	n=1000 rpm	n=3000 rpm	ø C	ø D max	B min	A	Radial, mm	Axial, mm	Angle, °		
MK 2-17	160	395	17	51	100	45	100	40	0,35	± 2,0	0,5	90	7
MK 2-34	315	787	34	102	125	60	100	40	0,45	± 2,8		95	11
MK 2-67	630	1575	67	201	150	75	120	55	0,55	± 3,2		110	16
MK 2-105	1000	2500	105	315	150	75	120	65	0,35	± 2,0		110	17
MK 2-270	2500	6250	270	810	180	80	140	80	0,5	± 2,2		140	30
MK 2-420	4000	10000	420	1260	220	100	160	90	0,6	± 3,0		160	50
MK 2-670	6300	15750	670	2010	255	120	180	105	0,7	± 3,8		170	80
MK 2-1050	10000	25000	1050	3150	285	130	200	120	0,75	± 4,0		170	103
MK 2-1340	12500	31250	1340	4020	310	160	200	140	0,75	± 4,0		200	120



END SEALING FOR OIL AND GAS COMPLEX

API 682

SINGLE END SEALING BRANDS

TM — to be used in non-aggressive, non-explosive, firesafe liquids, leakage of which in atmosphere is permissible considering security requirements.

TMP — has sealing with an extra throttle valve from atmosphere side intended to lower leakage level in case of damage of a main friction pair

TMH — has a thermal barrier along a shaft (a cooler).

DOUBLE END SEALING

2TM — to be used in cases, when leakage of a product pumped into atmosphere is not permissible (poisonous, radioactive, explosive and such kind of liquids), and also is the pumped product has poor lubricity (gases, condensed gases), the pumped product is severely contaminated with abrasive impurities (up to 25%), it has tendency to gumming-up, polymerization, crystallization, etc.

2 TMH — has a thermal barrier along a shaft (a cooler).

2 TM(H) sealing is used together with a heat exchanger tank **BTN-12D-35K, SAPPD 1.1-7.5/2/35K**.

DOUBLE TANDEM-TYPE END SEALING

2 TMT — are used in cases, when single sealing cannot be applied according to security conditions' requirements (hot oil products, flammable and toxic liquids and other).

2 TMTH — has a thermal barrier along a shaft (a cooler).

Sealing of **2 TMTH** brand is used together with a heat exchanger tank **BT-12T-15K**.

Design

- hydraulically unloaded friction pairs;
- cartridge structure;
- springs are taken out of the operating environment (product);
- second throttle valve.

Sealing type	Pumped medium temperature	Piping as in API 682	Can be used in pumps of the following brands
TM, TMP TMH	from -30 to +100 °C до +400 °C	Plan 01, 02, 11, 12, 13, 21, 22, 31, 32, 41	NK, NKV, NPS, CNS, CN, PE, SE, D
2TM 2TMH	from -30 to +200 °C to +400 °C	Plan 53A, 53B, 53C, 54	
2TMT 2TMTH	from -30 to +200 °C to +400 °C	Plan 52	

MATERIALS USED

Friction pairs — silicon carbide, tungsten carbide, siliconized graphite, anti-friction coal-graphite;

Secondary sealing — rubber compounds on the basis of fluorine caoutchouc, ethylene-propylene;

Body parts — stainless steel AISI 420, 321, 318, 316Ti, S31635, 904L.





END SEALING FUNCTIONALITY ENSURING SYSTEMS

API 682

Heat exchanging tank BT-12T-15K:

it is intended to store, cool and control quantity, temperature, pressure of flush liquid, used for lubricating and cooling of double end sealing. It is used in piping of tandem-type end sealing according to the plan 52 API 682.

Specific of design:

- detachable type construction, bottom with a coil can be disassembled to remove scale and residue;
- is equipped with Klinger glass;
- there are provided connecting pipes to connect level, temperature and pressure sensors;
- is supplied with ball cocks, safety valve, bimetallic thermometer, manometer.



Materials:

stainless steel, AiSi 321H, rubber compounds on the basis of fluorelastomer, perfluorelastomer, ethylene-propylene.

Heat exchanging tank BTN-12D-35K:

it is intended to store, cool and control quantity, temperature, pressure of barrier liquid, which is used to lubricate and cool of double end sealing. It is used in piping of double end sealing according to the plan 53A API 682.

Specific of design:

- detachable type construction, bottom with a coil can be disassembled to remove scale and residue;
- is equipped with a pump pumping NPR 3–35K;
- is equipped with Durance glass for liquid level visual control
- there are provided connecting pipes to connect level, temperature and pressure sensors;
- is supplied with ball cocks, safety valve, bimetallic thermometer, manometer.



Materials:

stainless steel, AiSi 321H, rubber compounds on the basis of fluorelastomer, perfluorelastomer, ethylene-propylene.

MAIN CHARACTERISTIC

Parameter type	BT-12T-15K	BTN-12D-35K
Flush/barrier fluid	Mineral oil synthetic oil, diesel fuel, water, etc.	
Cooling mixture	Chemically desalted water and other heat-transfer agents	
Quantity of flush/barrier fluid in a tank, dm ³		
maximum		12
minimum		8,5
Flush/barrier fluid temperature incoming to a tank, °C, not more than		80
Working pressure of flush/barrier fluid, MPa, kgf/cm ² , not more than	1,5 (15)	3,5 (35)
Pressure of flush/barrier fluid, MPa, kgf/cm ² , not more than		10
Recommended cooling mixture temperature when coming into the tank, °C		20...30
Recommended discharge of cooling mixture, m ³ /h		0,6...1,2
Calculated power of a built-in heat exchanger, kW		3,5
Mass, kg	25	58



Pressure fall automatic maintenance system on the basis of a differential hydro-sucker SAPPD 1,1-7,5/2-35K:

It is for storing, cooling down, refill of quantity and automatic maintenance of pressure fall of barrier liquid in a cooling system of double end sealing. SAPPD is used in piping according to the 53C API 682 plan.

Design:

- Contains a detachable heat exchanger, differential hydro-sucker and a hand supercharging pump NPR 3-35K;
- Detachable type construction (for convenience in cleaning of inside surface);

Kit contents:

Bimetallic thermometer at barrier liquid's entrance to the heat exchanger;

- Indicating manometer on the line of pumping up of barrier liquid into a seal;
- Visual control device of barrier liquid in a differential sucker;
- Connector to connect a temperature sensor;
- Safety valve.



Material used:

- Stainless steel AISI 321H, 420;
- Rubber mixtures on the basis of fluorelastomer, perfluorelastomer.

MAIN CHARACTERISTICS OF SAPPD 1,1-7,5/2-35K

PARAMETER TYPE	SAPPD 1.1-7,5/2-35K
Barrier liquid	Mineral oil, synthetic oil, diesel fuel, water, etc.
Coolant	Chemically desalted water and other heat-transfer agents
Barrier liquid quantity, l in a strapping of a heat exchanger in a differential hydro-sucker	7,5 2
Hydraulic gain coefficient	1,1
Working liquid temperature (product), °C, not more than	from -20 to +200
Barrier liquid temperature when entering a tank, °C, not more than	90
Barrier liquid working head, mPa (kgf/sm ² not more than)	3,85 (38,5)

PARAMETER TYPE	SAPPD 1.1-7,5/2-35K
Coolant's head, mPa (kgf/sm ² not more than)	10
Recommended coolant's temperature at a tank's entrance, °C	20....30
Recommended coolant's discharge, m ³ /h	0,6....1,2
Calculated power of an in-built heat exchanger, kW	3,5
Mass, kg	66



Detachable heat exchanger VT-45K:

It is intended to cool down liquids pumped into a chamber of an end sealing. It is used for piping according to the plans 21,22,23,41 API 682.

DESIGN:

- Detachable type construction to remove scale and residue
- A coil-type heat exchanger is mounted into a lid;
- A deliver set contains stop valves and a bimetallic thermometer;
- Parts' material – stainless steel AISI 321H.

SPECIFICATIONS:

- Medium consumed: chemically desalted water, steam condensate,
- Inner content – 7 l;
- Capacity of a heat exchanger – 3,5 kW;
- Coolant's maximum pressure – 1(10) MPa (kgf/cm²)
- Coolant's pressure – 4,5, (45) MPa (kgf/cm²)
- Mass – 11 kg



Hydrocyclone separator brand GCC:

is designed for cleaning the sealing fluid supplied to the mechanical seal of the hard abrasive inclusions. Used in together with single mechanical seal in piping plan 31 API682.

APPLICATION:

Oil production and transportation pumps, chemical and oil-processing industry pumps, pumping of liquids with solid abrasive impurities.

MATERIAL of production: steel AISI 321H

SPECIFICATIONS:

- Maximum working pressure – 10 (100) (kgf/cm²);
- Maximum working temperature – 150 °C;
- Connections – G ½", flange;
- Minimum pressure fall at hydrocyclone – 1,5 (15) MPa (kgf/cm²);
- Purification rate depending on viscosity of working medium (product) and mechanical particles size — from 90 to 99%;
- Unlike filters do not need recurrent cleaning;
- Service life period is not less than three years.





END SEALING FOR CHEMICAL INDUSTRIES

API 682

BRANDS OF THE SEALING PRODUCED:

TMR – single end mechanical sealing for insulation of running shafts of mixing devices, reactors and other equipment with non-aggressive, non-explosive and fire-safe working liquids, which leakage into atmosphere is permissible when considering security requirements.

TMR-P – production with a frictionless bearing.

2TMR - double end mechanical sealing for insulation of running shafts of mixing devices, reactors and other equipment, where leakage of pumped liquid is not permissible.

2TMR-P – production with a frictionless bearing.

2TMF – double end mechanical sealing of cartridge-type with multiple springs, hydraulically unloaded, with fluoroplastic secondary sealing from the side or working liquid. It is used in equipment with mediums, which have increased corrosion effect on metal parts of a sealing.

2TMF-P – production with a frictionless bearing.

BG – contactless gas barrier end sealing with multiple springs for sealing of running shafts of equipment, working liquids of which have no corrosion effect on sealing parts they contact with, and in which leakage of pumped liquid is not permissible. It is used in conditions when it is impossible to use liquid as sealing medium.

TBG - P – production with a frictionless bearing.

2TBG – double contactless gas barrier end sealing. External gas sealing pair performs backup function when used in especially important processes.

2TBG-P – production with a frictionless bearing.

TMR —



2TMR —



2TMF —



BG —





We invite you to cooperation!
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