

Vertical Chemical Sump Pump

Type ET



Technical data	
Flow rate Q	up to 100 m ³ /h (1450 rpm) up to 120 m ³ /h (2900 rpm)
Head H	up to 25 m (1450 rpm) up to 55 m (2900 rpm)
Submersion depth	up to 2000 mm
Suction extension	up to 1800 mm
Materials limits of use	PP up to 80°C PVDF up to 100°C
Pressure socket nominal width	DN 15 ... DN 80
Drive capacity	up to 15 kW

Design

- Vertical single-stage sump pump running in bearings

Sizes

- ET 15-80 to ET 80-250

Technical design

- Immersion depths between 500 and 2000 mm in 250 mm increments
- Materials: PP, PVDF
- Pump shaft running in double bearings to increase stability;
- Triple bearings as from an immersion depth of 1,500 mm
- Integrated pressure relief of the sliding bearings to protect from solid matter
- Standard gliding material combination: Teflon/carbon/graphite (PTFE/C/CSb) against SiC
- Alternative: SiC/SiC or SiC/C dry running capable
- Axial thrust relief by vanes on the back
- Pump shaft encapsulated in a thick-walled shaft protection sleeve.

- Pump impeller fitted independent of the rotational direction

Drive

- Three-phase motor, from 0.25 kW to 15 kW
- Drive unit encapsulation to protect against aggressive surrounding atmosphere
- Motor bearing relief by an electric coupling
- Corrosion protection by a 2C protection paint coat

Options/Accessories:

- ASV pump monitor
- External bearing lubrication
- Dry running capable sliding bearings
- Single acting mechanical seal
- Dry run protection device
- Suction basket / suction extension

Application

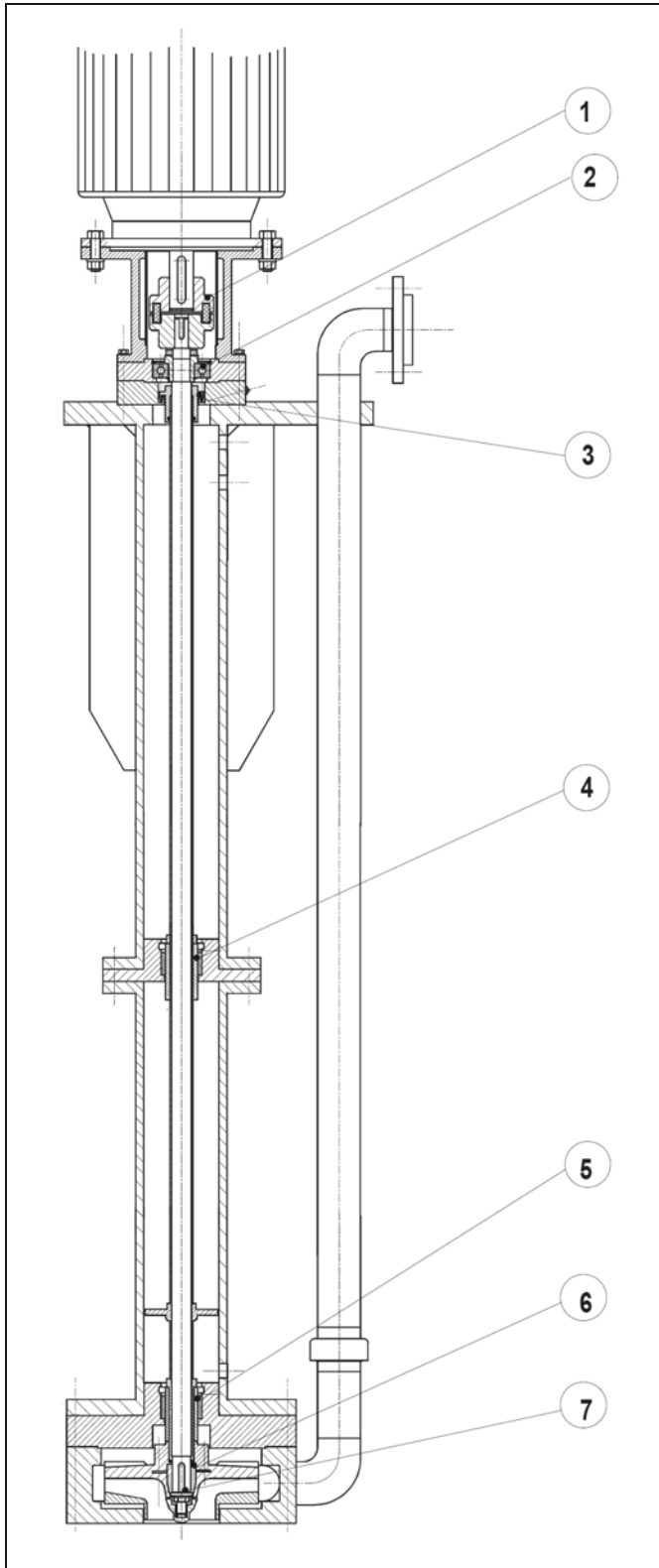
- Chemical plants
- Water treatment
- Process engineering

Utilisation

- ASV vertical sump pumps are designed for operation in open and closed, depressurized containers or pits, for simple draining and circulation of the fluid.

Flow Media

Neutral and aggressive fluids free of solid particles, provided that the pump components coming into contact with the fluid are resistant at the operating temperature in accordance with the ASV resistance guide.



Examinations

DIN EN ISO 9906

General

- Elastic coupling to relieve pump and motor bearing.
- Protection of drive unit against aggressive circulating air.
- Labyrinth seal protects interior space against gases and vapours.
Single acting mechanical seals on request.
- Fluid lubricated intermediate bearings (from 1500 mm submersion depth) guarantee the stability of pump shaft. Due to a special construction dry running of the bearings is avoided even in case of low fluid levels in the storage tank.
- Pairs of mechanical seal of SiC/PTFE-C-CSb or SiC/SiC or SiC/C guarantee the operating safety of sump pumps.
Dry running capable slide bearing on request.
- Axial thrust relief by vanes on the back of the impeller or by relief bores (depending on pump size).
- Impeller fixing independent of direction of rotation

Construction

- The submersion depths of the ASV sump pumps are from 500 mm with steps of 250 mm up to 2000 mm. By means of a special designed suction extension the submersion depth can be increased of up to further 1800 mm depending on the pump size. Using a suction extension the fluid level has to be above the pump volute casing on starting the pump (see min. fluid level on pump drawing) due to the fact that the sump pumps are not self-priming. Between the stated "min." and "max." fluid level (see pump drawing) the pump can be switched on as desired.

Materials

- In standard ASV sump pumps are made of the high-molecular thermoplastic materials Polypropylene (PP) and Polyvinylidene fluoride (PVDF), using the pumps in extreme abrasive fluids the components subject to increased wear are made of UHMW-PE. Because of the ASV Stübbe modular design system the proven components of the ASV standard chemical pumps can be used for the sump pumps as well. The robust construction adapted to thermoplastics demands a minimum of maintenance.

Bearing

- Because of the double bearing of the shaft the stability of this important part is secured. From a submersion depth of 1500 mm up the pump shaft is additionally secured by a further bearing. By this a smooth, radially vibration-low running of the pump as well as an improvement of the hydraulic efficiency is given. Through an integrated pressure relief the slide bearings are relieved of solid particles.
- The chosen standard execution of the pair of mechanical seal teflon/carbon/graphite (PTFE/C/CSb) against SiC guarantees the fluid resistance of the bearing. Depending on the fluid the pairs of mechanical seal SiC/SiC or SiC/C are also used. For special applications where due to operation a longer dry running cannot be avoided, a dry running capable execution of mechanical seal can be used.

Pump shaft

- The pump shaft made of acidproof stainless steel is covered by a thick-walled shaft protection sleeve corresponding to the pump material. Through an O-ring sealing the injection-moulded impeller is connected with the pump shaft independent of direction of rotation by means of a moulded metal hub. Depending on varying fluid temperatures occurring graduations will be compensated by the special developed pump hydraulic. By this there are constant characteristic curves of the pump for the total pumping range independent of fluid temperature.
- Because of the special construction the ASV sump pumps can be run against closed valve on the pressure side, in case of larger solid particles in the fluid a strainer can be installed on the suction side in the corresponding size.

Information

Suction behaviour

- In order to insure malfunction free operation of the ASV vertical sump pumps observe the installation dimensions X and V in the dimensional table during the planning and assembly.
- Dimensions X and V are minimum dimensions. Dropping below these dimensions will result in reduced output, vibrations and/or pump damage.
- Each time a container is emptied, fill the container to above the minimum fluid level prior to restarting the pump unit. Always ensure the minimum covering dimension »Z« of the pump housing when starting the unit.
- For higher operating temperatures observe the steam pressure of the medium and if necessary increase »Z« appropriately.

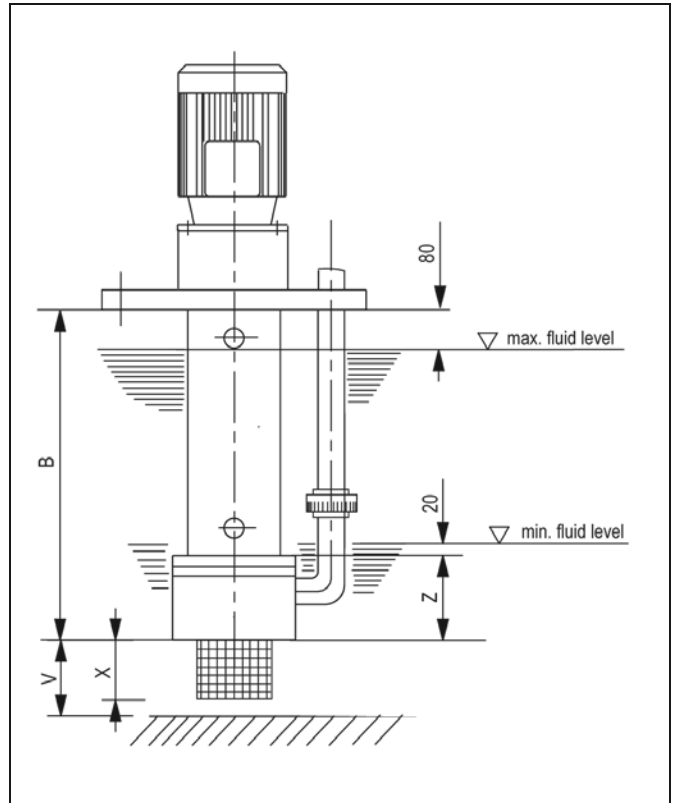
Terminology definition

Fluid level »max.«

- maximum admissible fluid level
- top switching point for level control

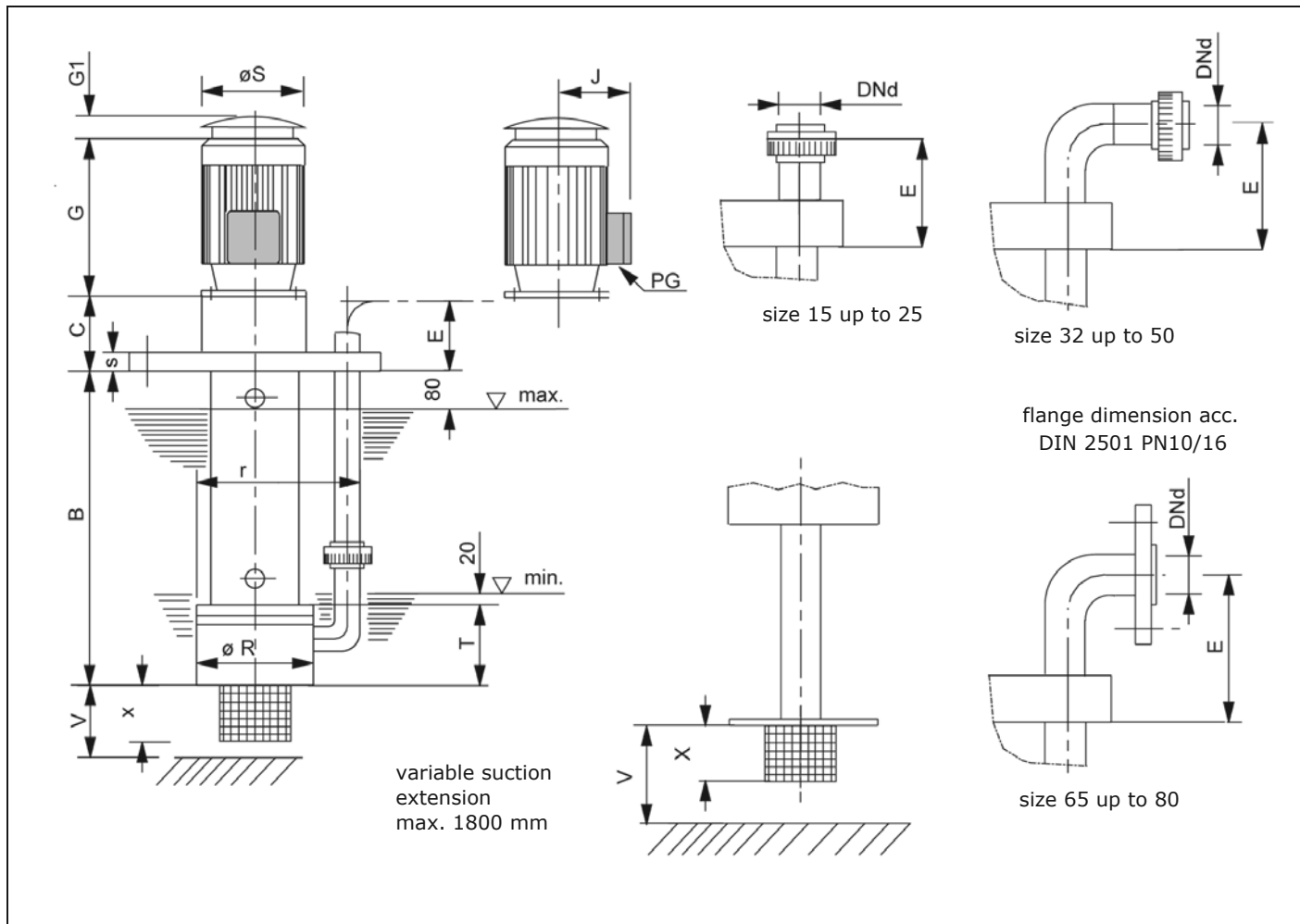
Fluid level »min.«

- lowest admissible fluid level each time the pump unit is started up
- bottom switching point for level control during commissioning/start-up of the pump unit



Typ	V	Z	y
ET 15-80	110	80	10
ET 20-100	110	110	10
ET 25-125	110	110	10
ET 32-125	140	140	15
ET 32-160	140	200	15
ET 32-200	140	200	15
ET 32-250	140	215	15
ET 40-125	160	140	25
ET 40-160	160	200	25
ET 40-200	160	200	25
ET 40-250	160	215	25
ET 50-125	160	210	30
ET 50-160	160	210	30
ET 50-200	160	210	30
ET 50-250	160	215	30
ET 65-200	160	210	35
ET 65-250	160	215	35
ET 80-160	160	210	40
ET 80-200	160	210	40
ET 80-250	160	215	40

Dimensions



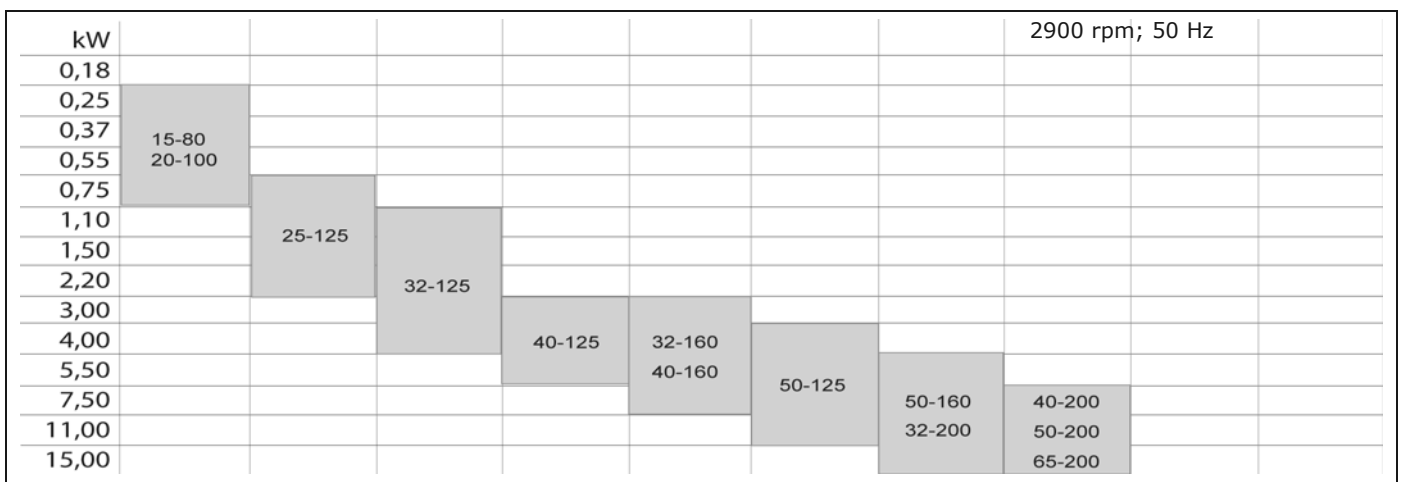
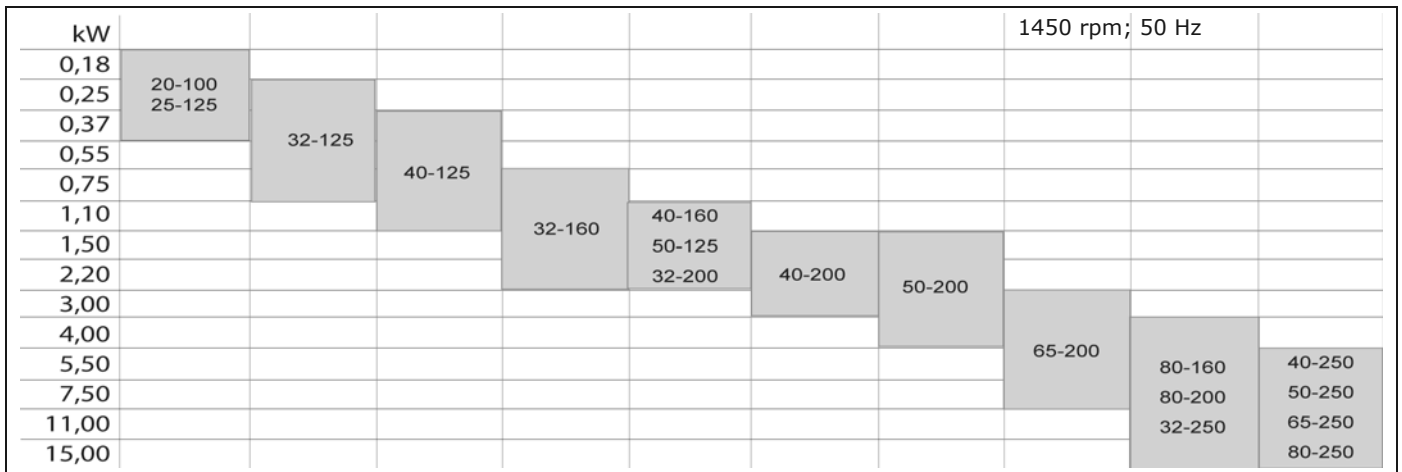
Dimensions of the pump

size	connection										
type ET	DN d	B ¹⁾	b	C	D ²⁾	E	R	r	V	X	Z
15-80	15	500	20	136		95	120	170	110	100	80
20-100	20	500	20	136		95	138	187	110	100	110
25-125	25	500	20	136		95	158	214	110	100	110
32-125	32	500	30	203		155	200	250	140	125	140
32-160	32	500	40	269		165	274	412	140	125	200
32-200	32	500	40	299		165	320	400	140	125	200
32-250	32	500	40	299		165	400	495	140	125	215
40-125	40	500	30	203		155	200	260	160	150	140
40-160	40	500	40	269		165	274	417	160	150	200
40-200	40	500	40	299		165	320	405	160	150	200
40-250	40	500	40	299		165	400	500	160	150	215
50-125	50	500	40	269		165	274	423	160	125	210
50-160	50	500	40	299		165	320	420	160	125	210
50-200	50	500	40	299		165	348	455	160	125	210
50-250	50	500	40	299		165	400	506	160	125	215
65-200	65	500	40	299		165	348	461	160	125	210
65-250	65	500	40	299		165	400	512	160	125	215
80-160	80	500	40	299		165	348	509	160	150	210
80-200	80	500	40	299		165	400	535	160	150	210
80-250	80	500	40	299		165	450	560	160	150	215

1) dimension from 500 mm up to 2000 mm in 250 mm steps, up to 1500 mm with intermediate bearing.

2) see technical data and dimensions of drive motors

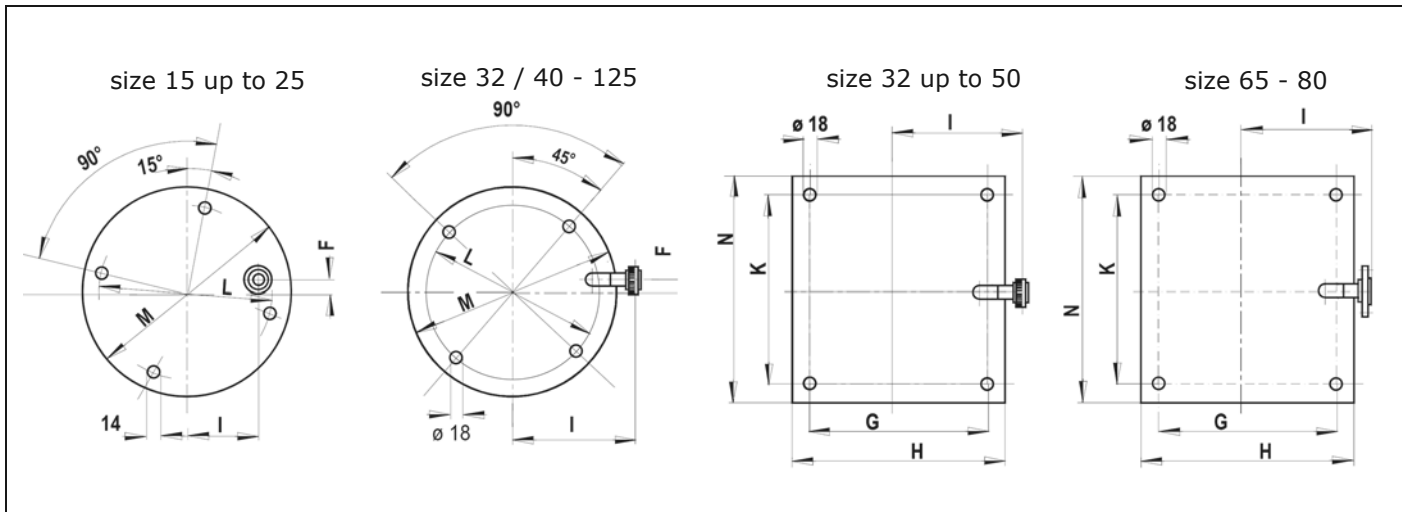
Coordination of pump sizes and motor power



Technical data and dimensions of drive motors

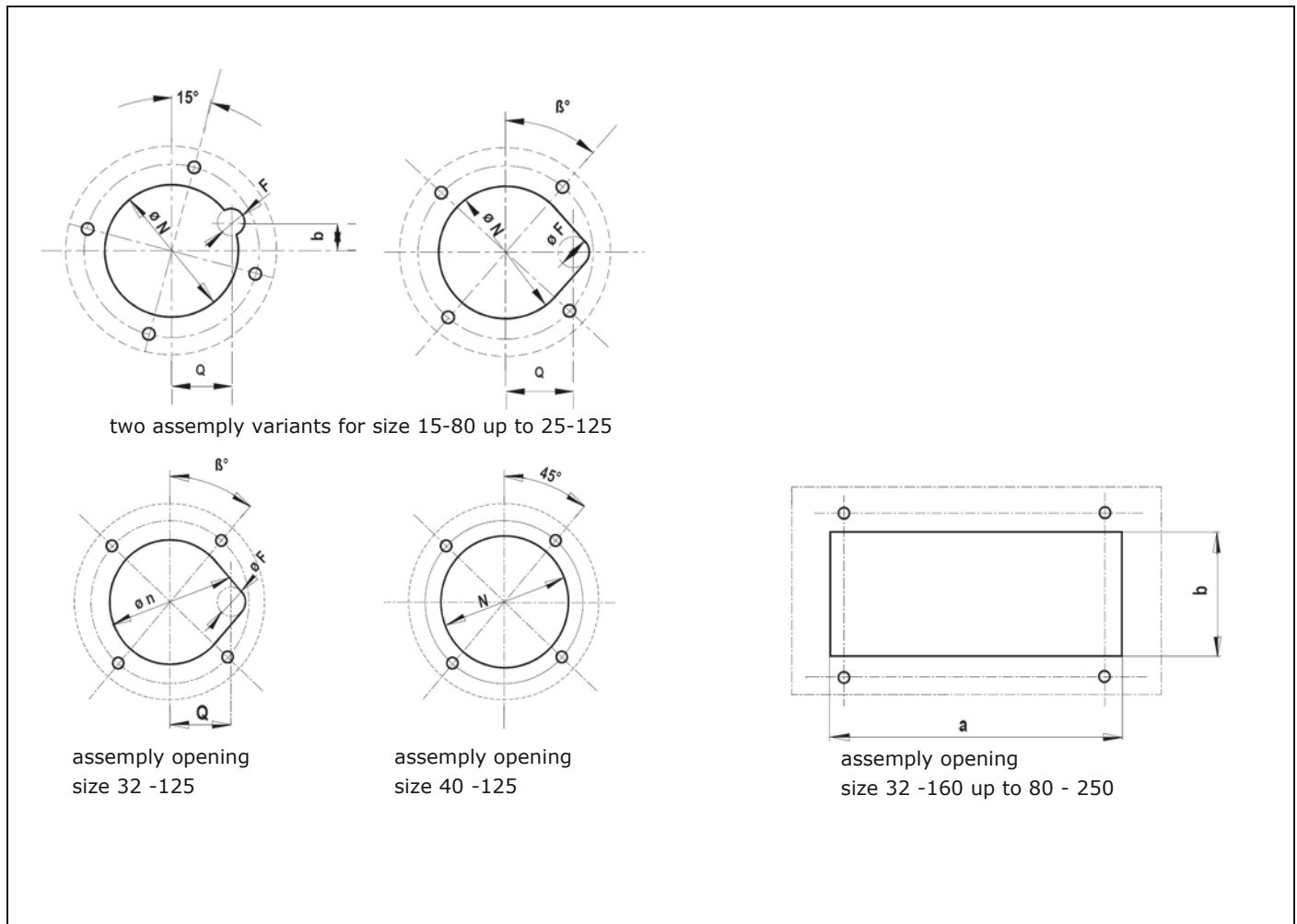
motor	n = 1450 rpm			n = 2900 rpm			dimensions (mm)				cable
	PM	IN	weight	PM	IN	weight	G	G1	øS	J	connection
size	kW	A	kg	kW	A	kg					
71	0,25	0,81	6	0,37	0,94	6	210	28	145	111	1xM16x1,51xM25x1,5
71	0,37	1,04	7,2	0,55	1,42	7,2	210	28	145	111	1xM16x1,51xM25x1,5
71	-	-	-	0,75	1,65	7,4	210	28	145	111	1xM16x1,51xM25x1,5
80	0,55	1,32	9,8	0,75	1,71	9,8	268	26	163	120	1xM16x1,51xM25x1,5
80	0,75	1,81	12,3	1,10	2,25	12,3	268	26	163	120	1xM16x1,51xM25x1,5
90 S	1.10	2,55	15	1.50	3,05	15	281	51	180	128	1xM16x1,51xM25x1,5
90 L	1,50	3,4	18	2,20	4,40	18,6	308	51	180	128	1xM16x1,51xM25x1,5
100 L	2.20	4,65	21	3.00	6,10	21	335	33	198	166	2xM32x1,5
100 L	3,00	6,2	25	-	-	-	335	33	198	166	2xM32x1,5
112 M	4.00	8,2	29	4.00	7,80	27	239	33	222	177	2xM32x1,5
112 M	-	-	-	5,50	10,30	34	329	33	222	177	2xM32x1,5
132 S	5.50	11,4	42	5,50	10,40	39	385	35	262	202	2xM32x1,5
132 M	7,50	14,8	49	7,50	14,20	43	385	35	262	202	2xM32x1,5
160 M	11.00	21	71	11.00	20,50	67	494	34	314	236	2xM40x1,5
160 L	15,00	28	83	15,00	27,00	84	494	34	314	236	2xM40x1,5

Dimensions of the mounting plate



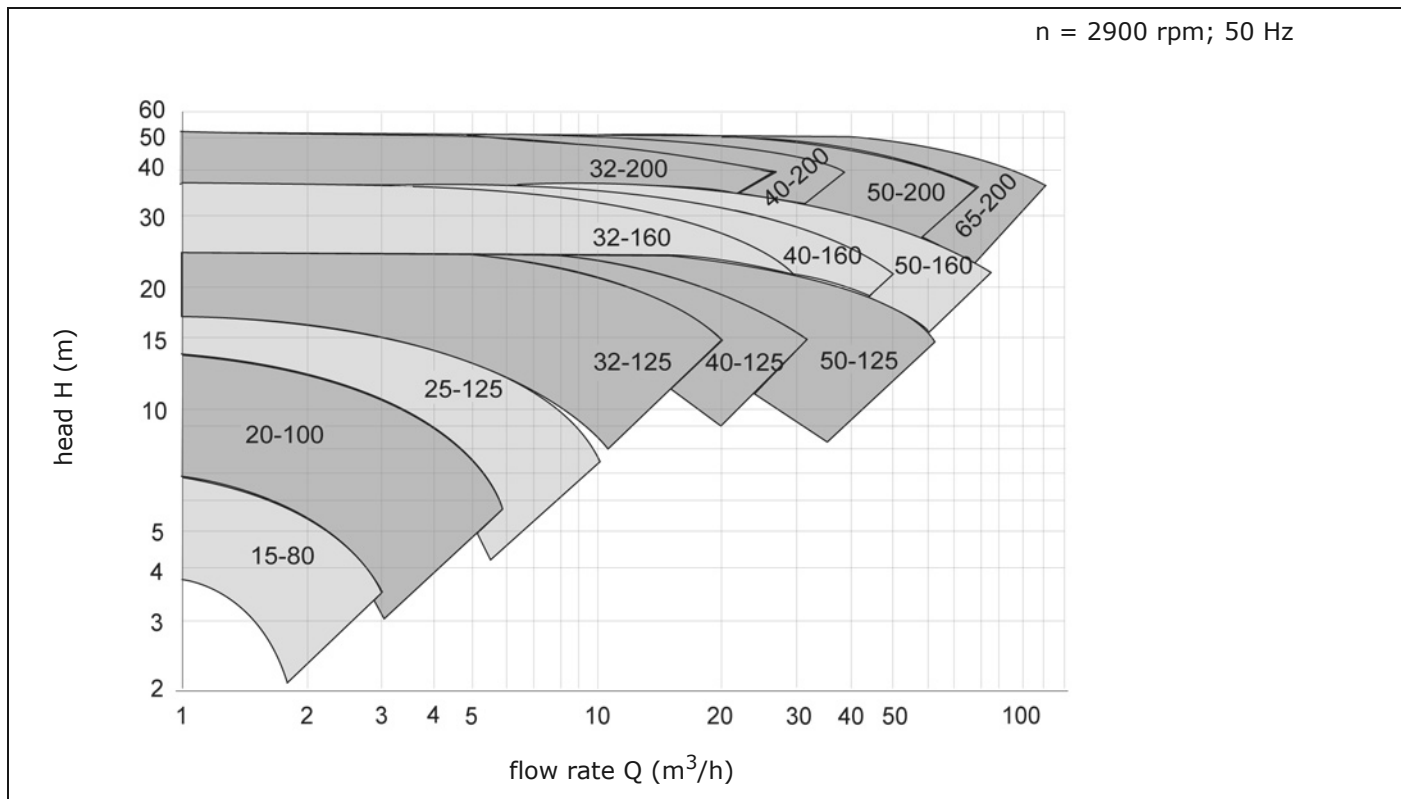
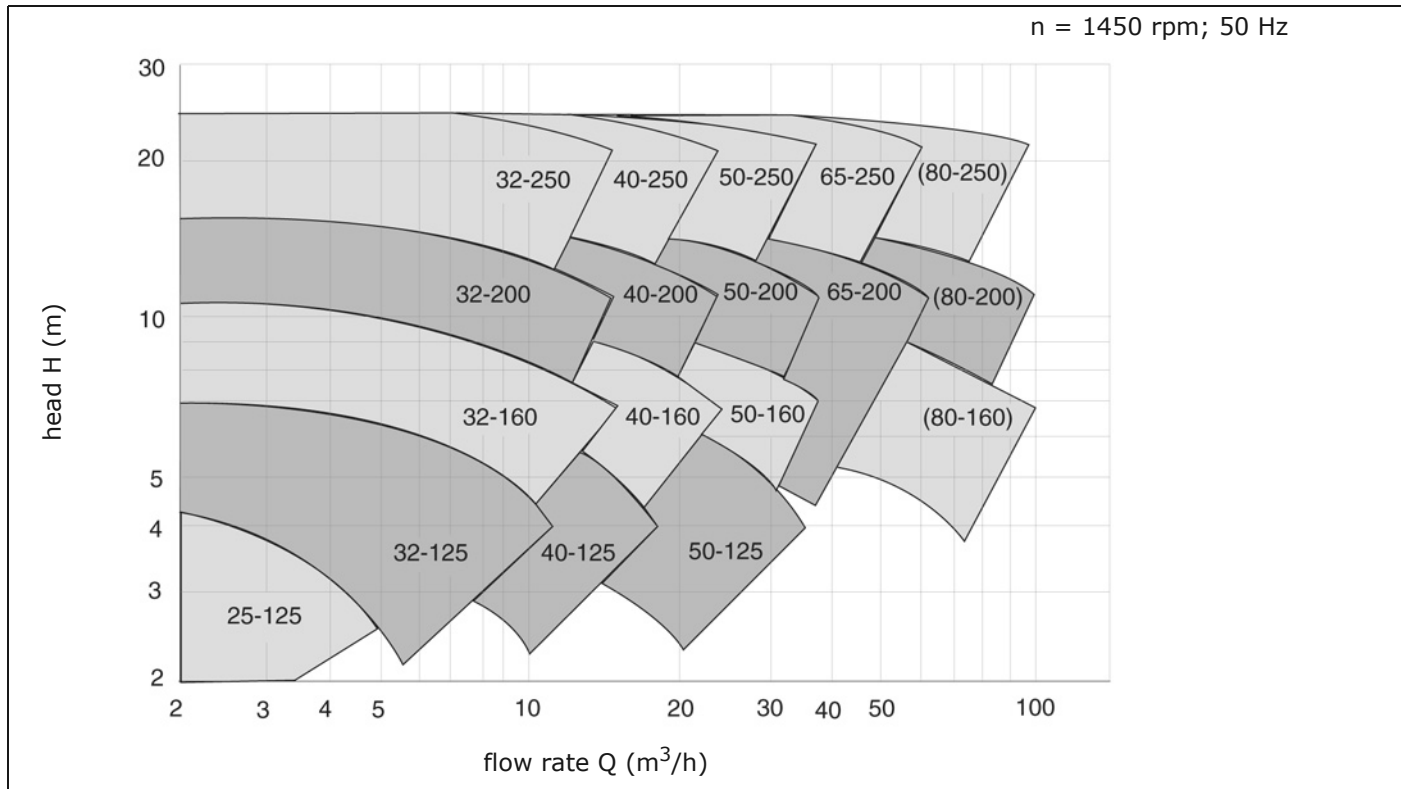
size	connection	motor									
type ET	DNd	kW max.	F	G	H	I	K	L	M	N	
15-80	15	0,55	40	-	-	100	-	210	255	-	
20-100	20	0,75	50	-	-	105	-	230	270	-	
25-125	25	1,5	58	-	-	119	-	270	320	-	
32-125	32	5,5	22	-	-	220	-	365	400	-	
32-160	32	11	-	350	440	244	350	-	-	440	
32-200	32	11	-	360	540	264	420	-	-	470	
32-250	32	11	-	410	590	288	440	-	-	490	
40-125	40	7,5	22	-	-	235	-	365	400	-	
40-160	40	11	-	350	440	255	350	-	-	440	
40-200	40	15	-	360	540	275	420	-	-	470	
40-250	40	15	-	410	590	299	440	-	-	490	
50-125	50	11	-	350	440	269	350	-	-	440	
50-160	50	15	-	360	540	297	420	-	-	470	
50-200	50	15	-	360	540	319	420	-	-	470	
50-250	50	15	-	410	590	318	440	-	-	490	
65-200	65	15	-	360	540	330	420	-	-	470	
65-250	65	15	-	410	590	318	440	-	-	490	
80-160	80	15	-	410	590	343	490	-	-	540	
80-200	80	15	-	410	590	343	490	-	-	540	
80-250	80	15	-	410	590	343	490	-	-	540	

Dimensions of the assembly opening



type	a	b	Q	N	n	F	β°
ET 15-80	80	40	90	185	-	70	37
ET 20-100	85	50	97	205	-	70	40
ET 25-125	100	58	112	245	-	80	41
ET 32-125	130	22	-	335	240	95	54
ET 32-160	400	300	-	-	-	-	-
ET 32-200	490	370	-	-	-	-	-
ET 32-250	520	410	-	-	-	-	-
ET 40-125	130	22	-	335	240	95	54
ET 40-160	400	300	-	-	-	-	-
ET 40-200	490	370	-	-	-	-	-
ET 40-250	520	410	-	-	-	-	-
ET 50-125	400	300	-	-	-	-	-
ET 50-160	490	370	-	-	-	-	-
ET 50-200	490	370	-	-	-	-	-
ET 50-250	520	410	-	-	-	-	-
ET 65-200	490	370	-	-	-	-	-
ET 65-250	520	410	-	-	-	-	-
ET 80-160	550	460	-	-	-	-	-
ET 80-200	550	460	-	-	-	-	-
ET 80-250	550	460	-	-	-	-	-

Characteristic curves ET



n = 2900 rpm, for product line 200
 submersion depth only up to 1250 mm

Subject to technical modifications