

Vertical Immersion Pump

**Estigia**

**Type Series Booklet**



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Type Series Booklet Estigia

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## Standardised Pumps / Close-coupled Pumps

### Vertical Immersion Pumps

## Estigia



#### Main applications

- Automotive industry
- Marine applications
- Food industry and beverage industry
- Pulp and paper industry
- Chemical industry
- Petrochemical industry
- Water supply systems
- Surface treatment systems
- Paint shops
- Air-conditioning systems
- Power generation plants
- Washing plants

#### Fluids handled

- Inorganic fluids
- Organic fluids
- Lubricating oils and sealing oils
- Hot water
- Water containing paint
- Water containing sand
- Condensate
- Wash water
- Solvents
- Seawater
- Cooling water

#### Operating data

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m <sup>3</sup> /h]	≤ 1160	≤ 1450
Head	H [m]	≤ 110	≤ 110
Fluid temperature	T [°C]	≥ -30	≥ -30
		≤ +100	≤ +100
Operating pressure	p [bar]	≤ 16	≤ 16
Connection flange	DN	25 - 250	25 - 250
Maximum immersion depth	[m]	≤ 6	≤ 6
Maximum speed	[rpm]	≤ 3000	≤ 3600

#### Design details

##### Design

- Volute casing pump
- For vertical installation in closed tanks under atmospheric pressure
- Single-stage
- In accordance with DIN EN ISO 5199 (with comments)
- Coupling between pump and motor

##### Pump casing

- Radially split volute casing
- Volute casing with integrally cast pump feet
- Replaceable casing wear rings

##### Drive

- KSB surface-cooled IEC three-phase current squirrel-cage motor
- Type of construction IM V1
- Frequency 50 Hz/60 Hz
- Enclosure IP55
- Thermal class F with temperature sensor, 3 PTC thermistors
- Duty cycle: continuous duty S1

##### Shaft seal

- Cartridge mechanical seal
- Lip seal

##### Impeller type

- Closed radial impeller with multiply curved vanes

##### Bearings

- Various application-oriented bearings

##### Automation

Automation options:

- PumpDrive<sup>1)</sup>
- PumpMeter
- KSB SuPremE

1) Consultation with KSB is required for operation on a frequency inverter.

## Designation

Designation example

Position																																							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
S	T	G	C	0	6	5	-	3	1	5	-	G	G	X	W	D	L	0	-	1	D	4	3	1	0	S	5	L	0	0	7	5	E	2	B	P	D	2	-
See name plate and data sheet																									See data sheet														

Designation key

Position	Code	Description	
1-3	Pump type		
	STG	Estigia	
4	Impeller type		
	C	Closed impeller	
5-11	Size, e.g.		
	065	Nominal discharge nozzle diameter [mm]	
	315	Nominal impeller diameter [mm]	
12	Hydraulic design		
	-	Standard hydraulic system	
	1	Alternative hydraulic system	
13	Casing material		
	G	Cast iron	EN-GJL 250 / A48 CL35B
	C	Stainless steel	1.4408 / A743 CF8M
	D	Noridur	1.4593/1.4517 / A995 CD4MCuN
14	Impeller material		
	G	Cast iron	EN-GJL 250 / A48 CL35B
	C	Stainless steel	1.4408 / A743 CF8M
	D	Noridur	1.4593/1.4517 / A995 CD4MCuN
15	Design		
	-	Standard	
	X	Non-standard (BT3D, BT3)	
16	Installation type		
	D	Dry, cantilever design	
	W	Wet	
17	Scope of supply		
	C	Pump and coupling	
	D	Pump set	
18	Sealing element		
	L	Lip seal	
	C	Cartridge mechanical seal	
19	Bearing lubrication		
	0	Fluid handled	
	1	External liquid	
20	Explosion protection status		
	-	Non-explosion-proof	
	A	Explosion-proof	
21-22	Riser design		
	0D	DN discharge nozzle, with DIN upper flange	
	1D	DN discharge nozzle + 1 nominal size, with DIN upper flange	
	2D	DN discharge nozzle + 2 nominal sizes, with DIN upper flange	
	0A	DN discharge nozzle, with ANSI upper flange	
	1A	DN discharge nozzle + 1 nominal size, with ANSI upper flange	
2A	DN discharge nozzle + 2 nominal sizes, with ANSI upper flange		
23-26	Immersion depth [mm]		
27	Suction option		
	-	Suction flange without suction strainer and without bellmouth	
	S	Suction strainer	
	B	Bellmouth	
	X	Suction pipe with or without strainer	

Position	Code	Description
28	Bearing size	
	4	VCS 40
	5	VCS 50
	6	VCS 60
29	Bearing lubrication	
	L	Grease-packed for life
	G	Re-greasable
30-33	Motor rating P <sub>N</sub> [kW]	
	-	Without motor
	0007	0,75
	...	...
34	Frequency [Hz]	
	E	50
	A	60
35	Number of motor poles	
36	Product generation	
	B	Estigia from 2017
37-40	Automation	
	PD2-	PumpDrive 2
	PD2E	PumpDrive 2 Eco
	-NPD	Without PumpDrive

## Materials

Overview of available materials

Part No.	Description	Material	Material variant			
			GG	GC	CC	DD
102	Volute casing	Grey cast iron EN-GJL-250 / A 48 CL 35B	X	X	-	-
		Stainless steel 1.4408 / A 743 Gr. CF8M	-	-	X	-
		Noridur 1.4593/1.4517 / A 995 CD 4MCuN	-	-	-	X
161	Casing cover	Grey cast iron EN-GJL-250 / A 48 CL 35B	X	X	-	-
		Stainless steel 1.4408 / A 743 Gr. CF8M	-	-	X	-
		Noridur 1.4593/1.4517 / A 995 CD 4MCuN	-	-	-	X
210	Shaft	Tempered steel C45+N / A 108 UNS G10450	X	X	-	-
		Stainless steel 1.4404 / AISI 316L	-	-	X	-
		Stainless steel 1.4462 / UNS S31803	-	-	-	X
230	Impeller	Grey cast iron EN-GJL-250 / A 48 CL 35B	X	-	-	-
		Stainless steel 1.4408 / A743 Gr. CF8 M	-	X	X	-
		Noridur 1.4593/1.4517 / A 995 CD 4MCuN	-	-	-	X
341	Drive lantern	Grey cast iron EN-GJL-250 / A 48 CL 35B	X <sup>2)</sup>	X <sup>2)</sup>	X <sup>2)</sup>	X <sup>2)</sup>
		Structural steel	X <sup>3)</sup>	X <sup>3)</sup>	X <sup>3)</sup>	X <sup>3)</sup>
381	Bearing cartridge	SiC/SiC	X	X	X	X
529	Bearing sleeve	SiC/SiC	X	X	X	X
545	Bearing bush	PTFE-GF25	X	X	X	X
68-3	Cover plate	Steel, painted	X	X	X	X

- 2) For model with bearing size VCS 40/50/60 only  
3) For model with bearing size VCS 80 only

## Coating and preservation

Coating and preservation

Coating	KSB Code			
	E1	E2	P1	P2
Pre-treatment	Free from dirt, grease and rust	Blast cleaning, Sa 2 1/2	Free from dirt, grease and rust	Blast cleaning, Sa 2 1/2
Primer coat	Epoxy polyamide with zinc phosphate, 90-100 µm	Epoxy zinc silicate, 75 µm	Epoxy micaceous iron oxide, 125 µm	Epoxy zinc silicate, 75 µm
Intermediate coat	-	Epoxy micaceous iron oxide, 120 µm	-	Epoxy micaceous iron oxide, 125 µm
Top coat	Epoxy polyamide, 60-80 µm	Polyurethane, 130 µm	Polyurethane, 60 µm	Polyurethane, 50 µm

## Product benefits

- Hydraulic characteristics optimised for excellent efficiency and NPSH, ensuring energy-efficient and environmentally friendly use of resources
- Operating costs reduced by trimming the nominal impeller diameter to match the specified duty point
- Lower operating costs through reduced energy consumption, optimised spare parts concept and hard-wearing design
- Service-friendly design, easy and fast to dismantle
- Integral cover plate simplifies pump installation and serves as tank cover.
- Maintenance-free with grease-packed bearings sealed for life
- Vertical design with small footprint
- Long service life due to high-quality plain bearings with long inspection intervals

## Product information

### Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see <http://www.ksb.com/reach>.

## Acceptance tests and warranty

- **Materials inspection and testing**
  - Test report 2.2 and inspection certificate 3.1 on request
- **Final inspection**
  - Inspection certificate 3.1 to EN 10204 on request
- **Hydraulic test**
  - The duty point of each pump with a delivery address or final destination in Europe is guaranteed to ISO 9906/3B.
  - The duty point of each pump with a delivery address or final destination outside of Europe is guaranteed to ISO 9906/3.
- The following acceptance tests can be performed and certified at extra charge:
  - Performance test to ISO 9006/2B
- **Other tests**  
Other tests (e.g. vibrations, strength, noise characteristics) on request.
- **Warranty**  
Warranties are given within the scope of the valid terms and conditions of sale and delivery.

Overview of product features / selection tables

Overview of sizes and nominal flange diameters available

Overview of sizes and nominal flange diameters available (⇒ Page 17)

Sizes	Nominal flange diameters available				
	DN1	DN2	DN3		
			Variant 1	Variant 2	Variant 3
25-160	DN 40	DN 25	DN 25	DN 32	DN 40
25-200	DN 40	DN 25	DN 25	DN 32	DN 40
32-125	DN 50	DN 32	DN 32	DN 40	DN 50
32-125.1	DN 50	DN 32	DN 32	DN 40	DN 50
32-160	DN 50	DN 32	DN 32	DN 40	DN 50
32-160.1	DN 50	DN 32	DN 32	DN 40	DN 50
32-200	DN 50	DN 32	DN 32	DN 40	DN 50
32-200.1	DN 50	DN 32	DN 32	DN 40	DN 50
32-250	DN 50	DN 32	DN 32	DN 40	DN 50
32-250.1	DN 50	DN 32	DN 32	DN 40	DN 50
40-125	DN 65	DN 40	DN 40	DN 50	DN 65
40-160	DN 65	DN 40	DN 40	DN 50	DN 65
40-200	DN 65	DN 40	DN 40	DN 50	DN 65
40-250	DN 65	DN 40	DN 40	DN 50	DN 65
40-315	DN 65	DN 40	DN 40	DN 50	DN 65
50-125	DN 80	DN 50	DN 50	DN 65	DN 80
50-160	DN 80	DN 50	DN 50	DN 65	DN 80
50-200	DN 80	DN 50	DN 50	DN 65	DN 80
50-250	DN 80	DN 50	DN 50	DN 65	DN 80
50-315	DN 80	DN 50	DN 50	DN 65	DN 80
65-125	DN 100	DN 65 <sup>4)</sup>	DN 65	DN 80	DN 100
65-160	DN 100	DN 65 <sup>4)</sup>	DN 65	DN 80	DN 100
65-200	DN 100	DN 65 <sup>4)</sup>	DN 65	DN 80	DN 100
65-250	DN 100	DN 65 <sup>4)</sup>	DN 65	DN 80	DN 100
65-315	DN 100	DN 65 <sup>4)</sup>	DN 65	DN 80	DN 100
80-160	DN 125	DN 80	DN 80	DN 100	DN 125
80-200	DN 125	DN 80	DN 80	DN 100	DN 125
80-250	DN 125	DN 80	DN 80	DN 100	DN 125
80-315	DN 125	DN 80	DN 80	DN 100	DN 125
80-400	DN 125	DN 80	DN 80	DN 100	DN 125
100-160	DN 125	DN 100	DN 100	DN 125	DN 150
100-200	DN 125	DN 100	DN 100	DN 125	DN 150
100-250	DN 125	DN 100	DN 100	DN 125	DN 150
100-315	DN 125	DN 100	DN 100	DN 125	DN 150
100-400	DN 125	DN 100	DN 100	DN 125	DN 150
125-200	DN 150	DN 125	DN 125	DN 150	DN 200
125-250	DN 150	DN 125	DN 125	DN 150	DN 200
125-315	DN 150	DN 125	DN 125	DN 150	DN 200
125-400	DN 150	DN 125	DN 125	DN 150	DN 200
150-200	DN 200	DN 150	DN 150	DN 200	DN 250
150-250	DN 200	DN 150	DN 150	DN 200	DN 250
150-315	DN 200	DN 150	DN 150	DN 200	DN 250
150-400	DN 200	DN 150	DN 150	DN 200	DN 250

4) Material variants CC and DD: only 4 holes instead of 8



## Bearings

Overview of bearings used

Bearing size	Plain bearing		Double angular contact ball bearing <sup>5)6)</sup>
	Pump end	Intermediate <sup>7)</sup>	Drive end
VCS 40	SiC/SiC	PTFE-GF25	3307 2RS C3
VCS 50	SiC/SiC	PTFE-GF25	3310 2RS C3
VCS 60	SiC/SiC	PTFE-GF25	3312 2RS C3
VCS 80	SiC/SiC	PTFE-GF25	3314 2Z C3

The plain bearings are located in the casing cover of the pumps and, for pumps with several support column sections, in the intermediate couplings.

These bearings must always be lubricated and cooled. The bearings can be lubricated in any of the following three ways:

- Lubrication by fluid handled  
(To be used for clean and non-aggressive fluids without particles; no additional lubricant required).
- Lubrication by external liquid  
(An external auxiliary connection is provided in the cover plate on which the pump is mounted; clean water or another liquid that is compatible with the fluid handled is injected at a pressure of approximately 3 kg/cm<sup>2</sup> (pressure gauge)).
- Lubrication by electrically driven pump  
(The auxiliary pump is designed with a grease reservoir for lubricating the bearings. The auxiliary pump is maintenance-free; the reservoir must be filled with grease at all times.)

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5) Grease-packed for life or re-greasable  
 6) Mainly for severely abrasive liquids and liquids with a high solids content  
 7) Can be lubricated by the fluid handled, by an external liquid or grease-lubricated by means of an electric grease pump

**Technical data**

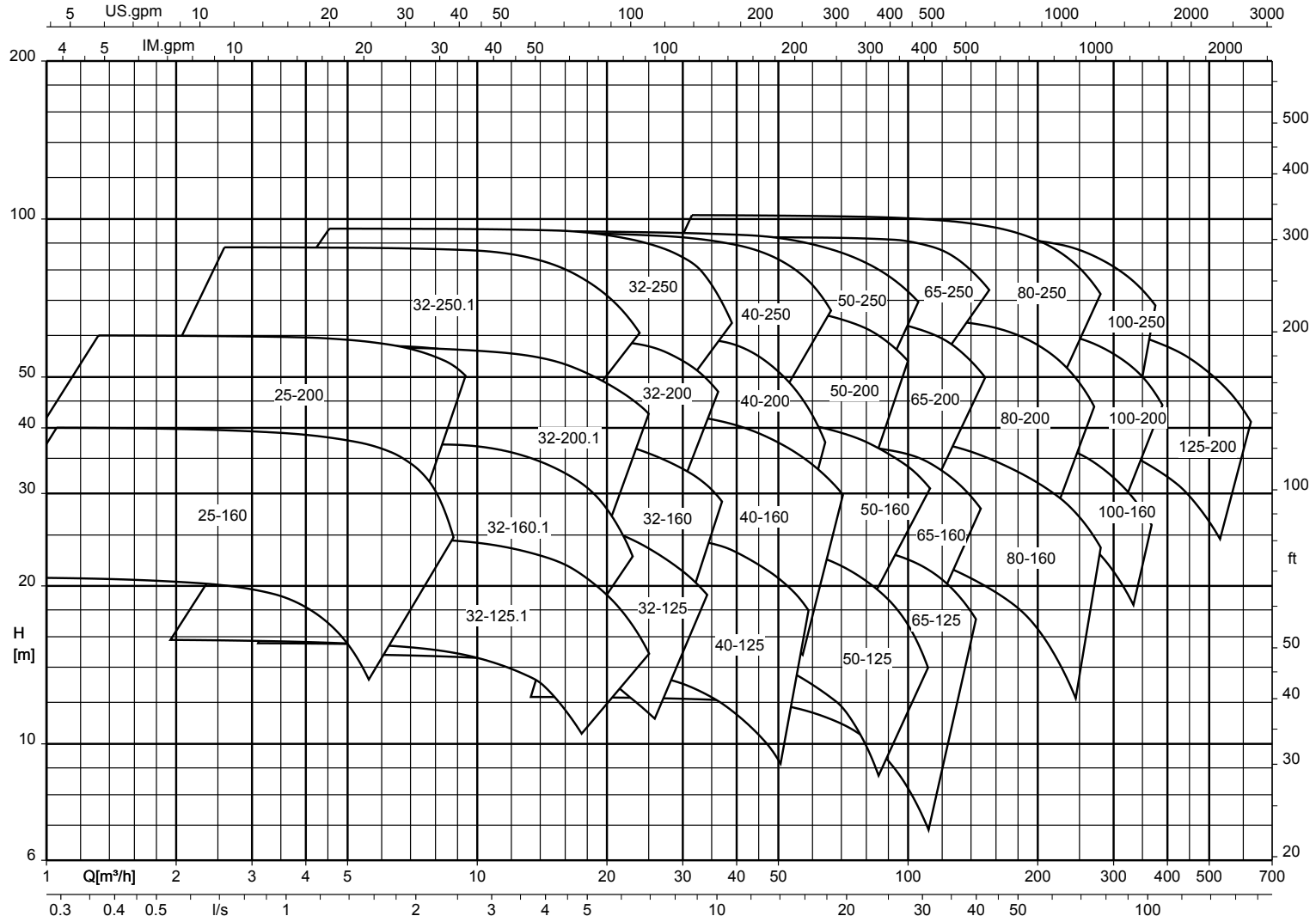
Technical data

Size	Bearing size	Impeller					Pump shaft	Bearings	Shaft protecting sleeve
		Outlet width	Free passage	Inlet diameter	Max. diameter	Min. diameter			
		[mm]	[mm]	[mm]	[mm]	[mm]			
025-160	VCS 50	6	5,7	44	169	130	24	40	33
025-200	VCS 40	6	5,7	44	209	160	24	40	33
032-125	VCS 40	10	5,7	63	139	110	24	40	33
032-125.1	VCS 40	7	6,0	52	139	114	24	40	33
032-160	VCS 40	9	5,8	63	174	135	24	40	33
032-160.1	VCS 40	6	5,4	52	170	138	24	40	33
032-200	VCS 40	7	6,7	62	209	178	24	40	33
032-200.1	VCS 40	6	5,3	54	204	138	24	40	33
032-250	VCS 50	8	7,1	63	261	212	32	50	43
032-250.1	VCS 50	6	5,2	58	254	220	32	50	43
040-125	VCS 40	14	9,6	74	139	110	24	40	33
040-160	VCS 40	13	11,5	70	174	135	24	40	33
040-200	VCS 40	9	8,9	69	209	175	24	40	33
040-250	VCS 50	8	8,0	73	260	214	32	50	43
040-315	VCS 50	8	7,1	75	326	278	32	50	43
050-125	VCS 40	20	11,6	88	142	114	24	40	33
050-160	VCS 40	17	11,6	87	174	135	24	40	33
050-200	VCS 40	14	11,9	83	219	180	24	40	33
050-250	VCS 50	11	10,0	84	260	220	32	50	43
050-315	VCS 50	10	9,5	86	323	270	32	50	43
065-125	VCS 40	26	12,9	99	141	114	24	40	33
065-160	VCS 50	21	12,2	92	174	132	32	50	43
065-200	VCS 50	17	13,3	100	219	180	32	50	43
065-250	VCS 50	15	14,3	101	260	220	32	50	43
065-315 <sup>8)</sup>	VCS 60	14	13,0	107	320	270	42	60	53
080-160	VCS 50	32	15,1	124	174	122	32	50	43
080-200	VCS 50	25	15,2	115	219	180	32	50	43
080-250 <sup>8)</sup>	VCS 50	19	15,8	115	269	220	32	50	43
080-315 <sup>8)</sup>	VCS 60	19	17,8	115	334	281	42	60	53
080-400	VCS 60	15	14,3	129	398	330	42	60	53
100-160 <sup>8)</sup>	VCS 50	38	16,4	135	185	155	32	50	43
100-200 <sup>8)</sup>	VCS 50	33	17,9	142	219	179	32	50	43
100-250 <sup>8)</sup>	VCS 60	27	18,8	145	262	216	42	60	53
100-315 <sup>8)</sup>	VCS 60	23	19,9	142	334	280	42	60	53
100-400	VCS 60	18	17,1	142	401	329	42	60	53
125-200 <sup>8)</sup>	VCS 60	41	21,1	160	224	162	42	60	53
125-250 <sup>8)</sup>	VCS 60	37	22,4	162	269	218	42	60	53
125-315 <sup>8)</sup>	VCS 60	31	22,6	162	334	280	42	60	53
125-400	VCS 60	26	20,9	162	419	330	42	60	53
150-200	VCS 60	60	25,2	179	224	158	42	60	53
150-250	VCS 60	49	23,0	191	269	220	42	60	53
150-315	VCS 80	40	26,9	192	334	264	48	80	65
150-400	VCS 80	33	23,8	191	419	330	48	80	65

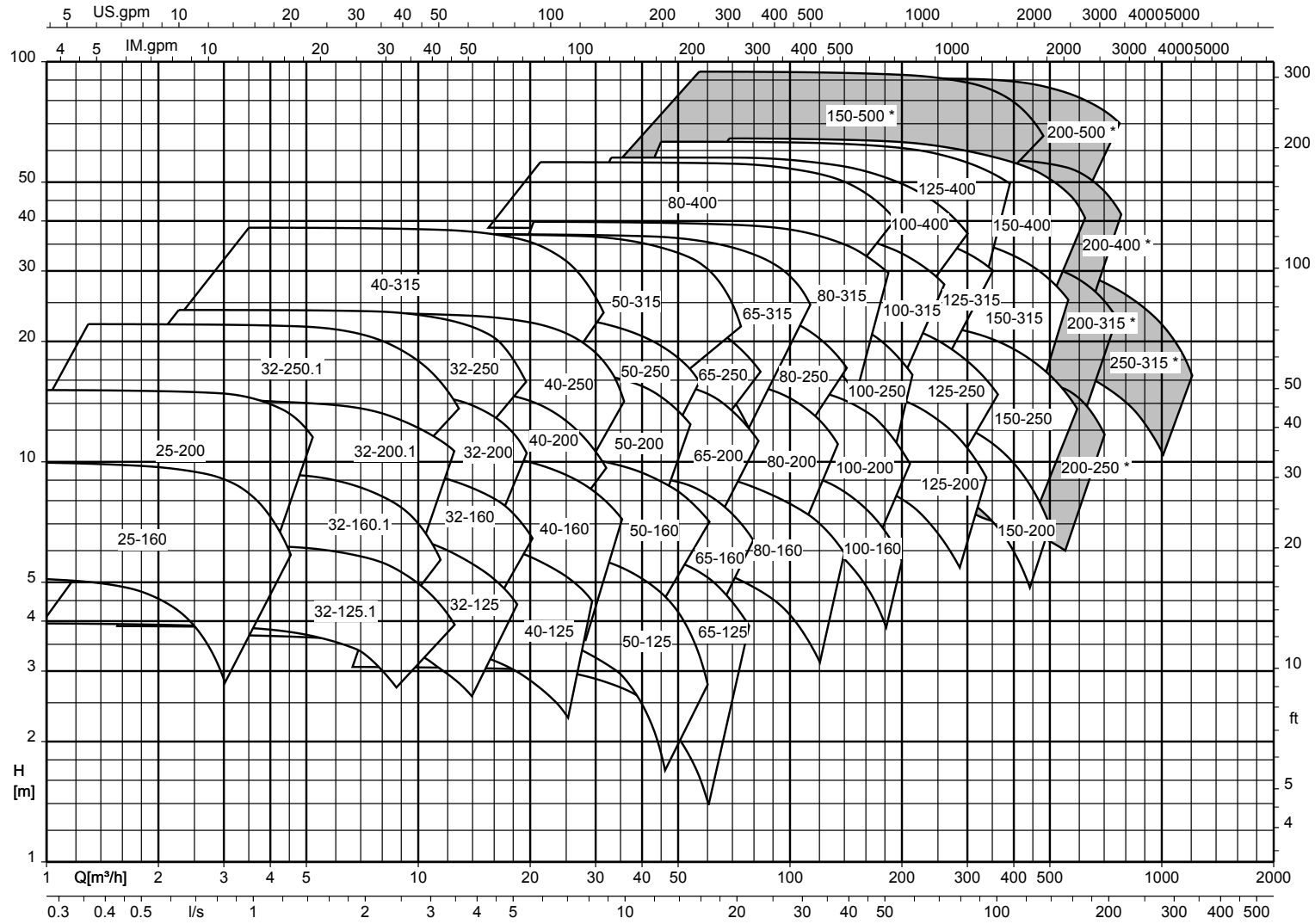
 8) Motor size  $\geq$  315: bearing size VCS 80

Selection charts

Estigia, n = 2900 rpm

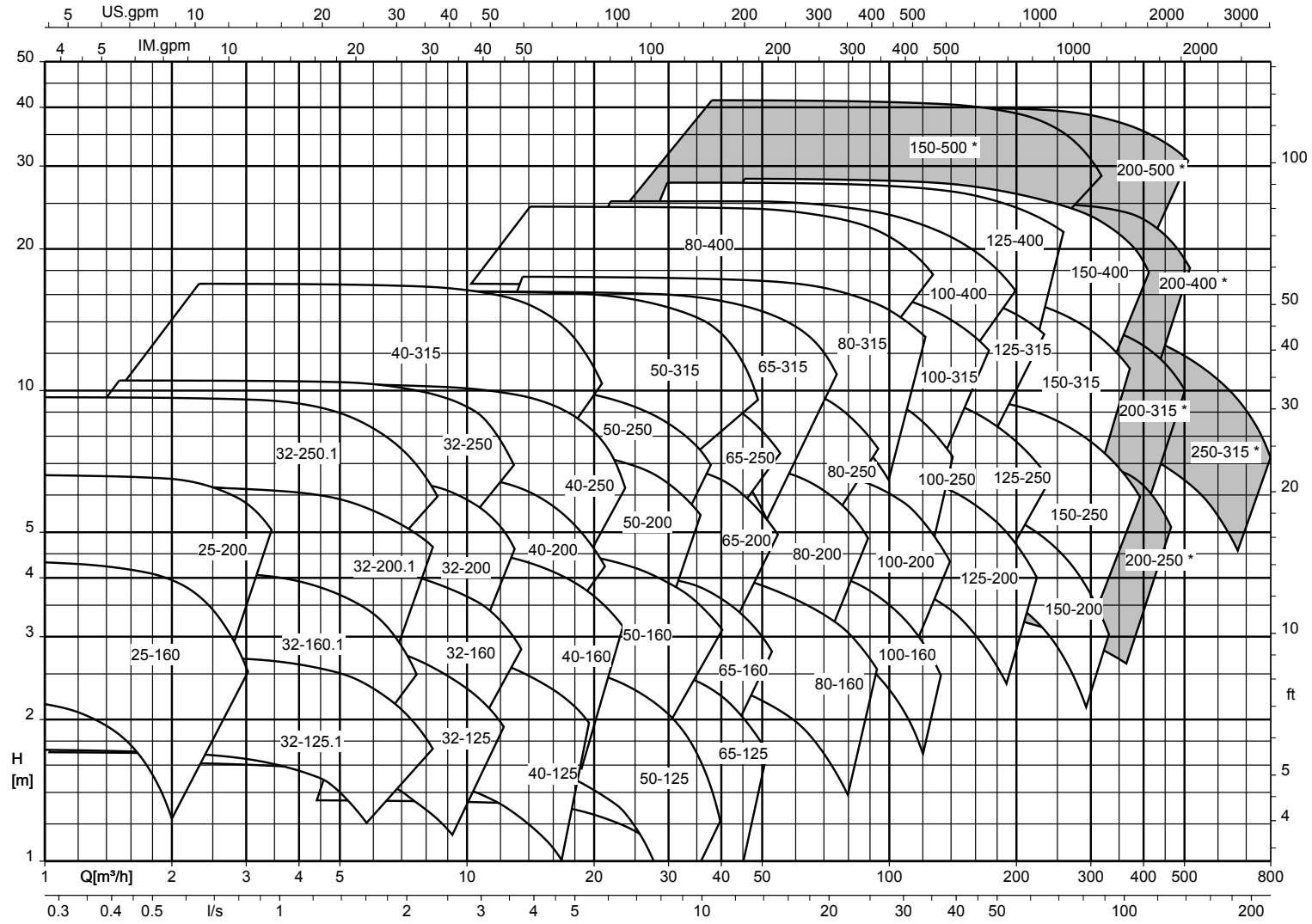


Estigia, n = 1450 rpm



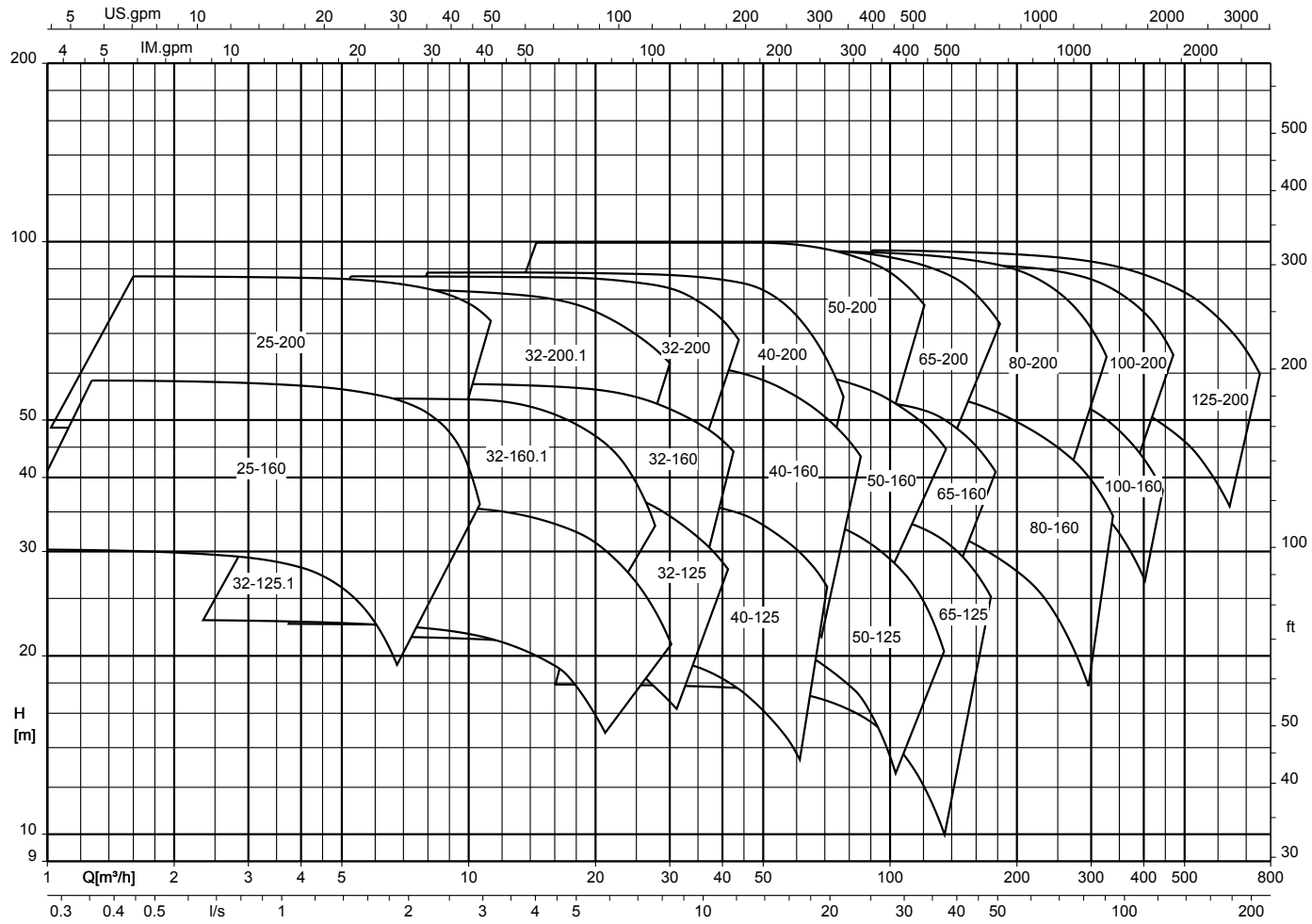
\*: On request

Estigia, n = 960 rpm

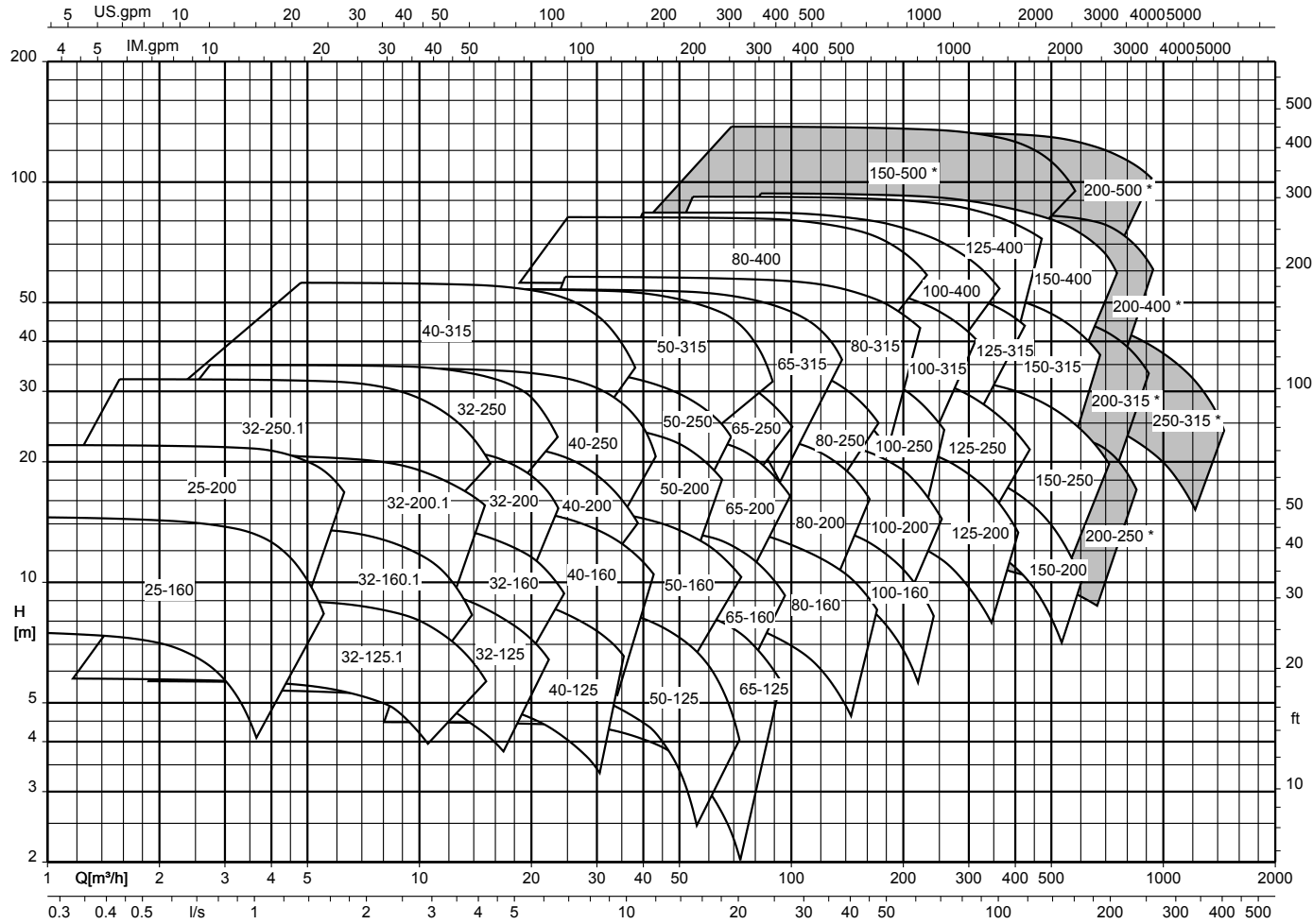


\*: On request

Estigia, n = 3500 rpm

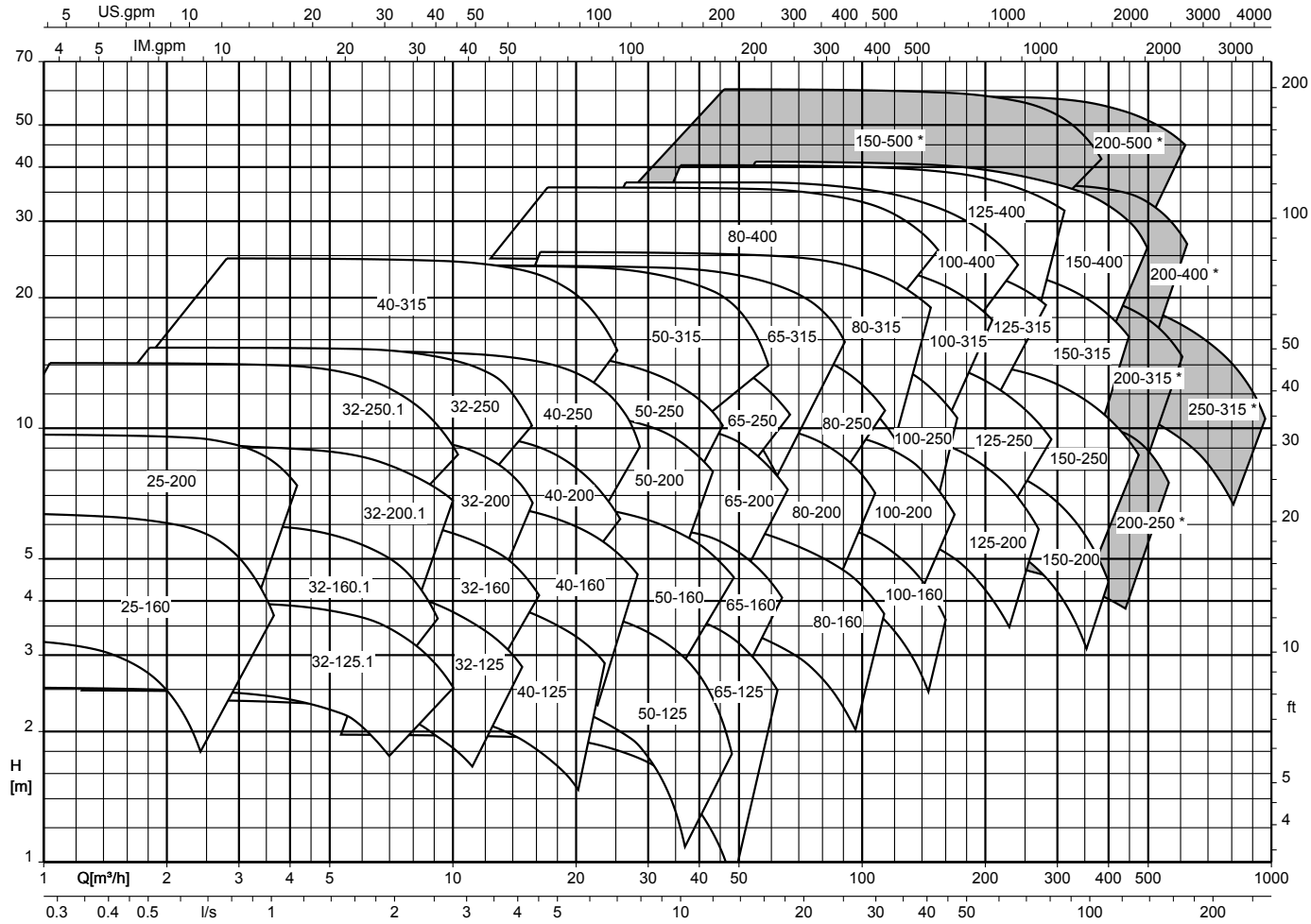


Estigia, n = 1750 rpm



\*: On request

Estigia, n = 1160 rpm



\*: On request



Dimensions

Pump dimensions and immersion depths  
Estigia with rectangular baseplate

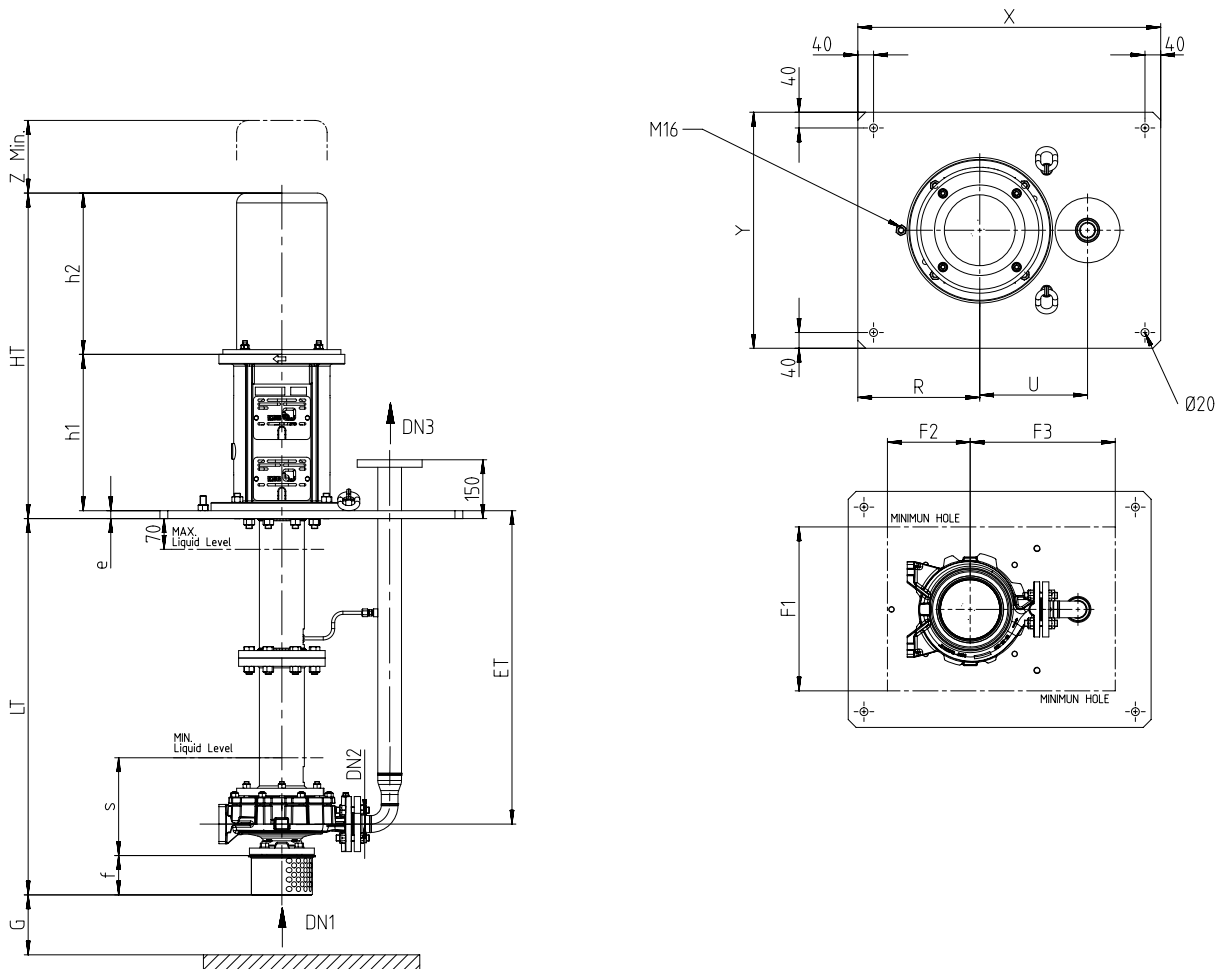


Fig. 1: Pump dimensions and immersion depths, rectangular baseplate

>: Minimum

<: Maximum

Pump dimensions and immersion depths [mm] - rectangular baseplate

Size	Motor size	Bearing size	Possible immersion depth (ET) <sup>9)</sup>	DN1	DN2	a	e	f min	F1 min	F2 min	F3 min <sup>10)</sup>	G	LT	R	s min	U	X	Y
						[mm]												
25-160	≤ 280	VCS 40	A	40	25	80	20	100	340	182	318	40	ET+160	310	220	242	770	600
25-200	≤ 280	VCS 40	A	40	25	80	20	100	400	210	338	40	ET+160	310	220	262	770	600
32-125	≤ 280	VCS 40	A	50	32	80	20	100	330	162	316	50	ET+160	310	220	234	770	600
32-125.1	≤ 280	VCS 40	A	50	32	80	20	100	330	162	316	50	ET+160	310	220	234	770	600
32-160	≤ 280	VCS 40	A	50	32	80	20	100	360	182	336	50	ET+160	310	220	254	770	600
32-160.1	≤ 280	VCS 40	A	50	32	80	20	100	340	182	336	50	ET+160	310	220	254	770	600
32-200	≤ 280	VCS 40	A	50	32	80	20	100	400	210	356	50	ET+160	310	220	274	770	600
32-200.1	≤ 280	VCS 40	A	50	32	80	20	100	400	210	356	50	ET+160	310	220	274	770	600
32-250	≤ 280	VCS 50	B	50	32	100	20	100	460	230	401	50	ET+180	375	270	319	980	740
32-250.1	≤ 280	VCS 50	B	50	32	100	20	100	450	230	401	50	ET+180	375	270	319	980	740
40-125	≤ 280	VCS 40	A	65	40	80	20	100	340	162	336	65	ET+160	350	220	246	890	630
40-160	≤ 280	VCS 40	A	65	40	80	20	100	340	182	356	65	ET+160	350	220	266	890	630

9) See Table: Possible immersion depths (ET) depending on number of support columns

10) Minimum dimension if maximum dimension is selected for DN3

Size	Motor size	Bearing size	Possible immersion depth (ET) <sup>9)</sup>	DN1	DN2	a	e	f min	F1 min	F2 min	F3 min <sup>10)</sup>	G	LT	R	s min	U	X	Y
						[mm]												
40-200	≤ 280	VCS 40	A	65	40	100	20	100	410	210	376	65	ET+180	350	240	286	890	630
40-250	≤ 280	VCS 50	B	65	40	100	20	100	460	230	421	65	ET+180	375	270	331	980	740
40-315	≤ 280	VCS 50	B	65	40	125	20	100	515	250	446	65	ET+205	375	295	356	980	740
50-125	≤ 280	VCS 40	A	80	50	100	20	100	370	182	381	80	ET+180	350	240	285	890	630
50-160	≤ 280	VCS 40	A	80	50	100	20	100	400	210	401	80	ET+180	350	240	305	890	630
50-200	≤ 280	VCS 40	A	80	50	100	20	100	430	210	421	80	ET+180	350	240	325	890	630
50-250	≤ 280	VCS 50	B	80	50	125	20	100	480	230	446	80	ET+205	375	295	350	980	740
50-315	≤ 280	VCS 50	B	80	50	125	20	100	540	275	501	80	ET+205	375	295	405	980	740
65-125	≤ 280	VCS 40	A	100	65	100	20	100	400	210	432	100	ET+180	350	240	324	890	630
65-160	≤ 280	VCS 50	B	100	65	100	20	100	420	210	452	100	ET+180	375	270	344	1100	750
65-200	≤ 280	VCS 50	B	100	65	100	20	100	460	230	477	100	ET+180	375	270	369	1100	750
65-250	≤ 280	VCS 50	B	100	80	125	20	100	500	250	502	100	ET+205	375	295	394	1100	750
65-315	≤ 280	VCS 60	B	100	65	100	20	100	560	275	532	100	ET+205	430	295	424	1260	870
65-315	≥ 315	VCS 80	B	100	65	100	30	100	560	275	532	100	ET+205	465	295	424	1340	850
80-160	≤ 280	VCS 50	B	125	80	125	20	150	460	230	515	125	ET+255	375	295	393	1100	750
80-200	≤ 280	VCS 50	B	125	80	125	20	150	480	230	540	125	ET+255	375	295	418	1100	750
80-250	≤ 280	VCS 50	B	125	80	125	20	150	520	275	570	125	ET+255	375	295	448	1100	750
80-250	≥ 315	VCS 80	B	125	80	125	30	150	520	275	570	125	ET+255	465	295	448	1340	850
80-315	≤ 280	VCS 60	B	125	80	125	20	150	590	300	605	125	ET+255	430	295	483	1260	870
80-315	≥ 315	VCS 80	B	125	80	125	30	150	590	300	605	125	ET+255	465	295	483	1340	850
80-400	≤ 280	VCS 60	B	125	80	125	20	150	660	330	645	125	ET+255	430	295	523	1260	870
100-160	≤ 280	VCS 50	B	125	100	125	20	150	550	250	624	125	ET+255	375	295	488	1100	750
100-160	≥ 315	VCS 80	B	125	100	125	30	150	550	250	624	125	ET+255	465	295	488	1340	850
100-200	≤ 280	VCS 50	B	125	100	125	20	150	530	250	624	125	ET+255	375	295	488	1100	750
100-200	≥ 315	VCS 80	B	125	100	125	30	150	530	250	624	125	ET+255	465	295	488	1340	850
100-250	≤ 280	VCS 60	B	125	100	140	20	150	540	275	624	125	ET+270	430	310	488	1260	870
100-250	≥ 315	VCS 80	B	125	100	140	30	150	540	275	624	125	ET+270	465	310	488	1340	850
100-315	≤ 280	VCS 60	B	125	100	140	20	150	610	300	659	125	ET+270	430	310	523	1260	870
100-315	≥ 315	VCS 80	B	125	100	140	30	150	610	300	659	125	ET+270	465	310	523	1340	850
100-400	≤ 280	VCS 60	B	125	100	140	20	150	670	330	699	125	ET+270	430	310	563	1260	870
125-200	≤ 280	VCS 60	B	150	125	140	20	150	590	300	726	150	ET+270	430	310	564	1260	870
125-200	≥ 315	VCS 80	B	125	125	140	30	150	590	300	726	150	ET+270	465	310	564	1340	850
125-250	≤ 280	VCS 60	B	150	125	140	20	150	650	300	766	150	ET+270	465	310	604	1445	930
125-250	≥ 315	VCS 80	B	125	125	140	30	150	650	300	766	150	ET+270	465	310	604	1340	850
125-315	≤ 280	VCS 60	B	150	125	140	20	150	660	330	766	150	ET+270	465	310	604	1445	930
125-315	≥ 315	VCS 80	B	150	125	140	30	150	660	330	766	150	ET+270	465	310	604	1340	850
125-400	≤ 280	VCS 60	B	150	150	140	20	150	720	365	811	150	ET+270	465	310	649	1445	930
150-200	≤ 280	VCS 60	B	200	150	180	20	200	730	330	877	200	ET+360	465	350	688	1445	930
150-250	≤ 280	VCS 60	B	200	150	160	20	200	700	330	852	200	ET+340	465	330	663	1445	930
150-315	≤ 280	VCS 80	C	200	150	160	30	200	710	365	877	200	ET+330	525	450	688	1712	1100
150-315	≥ 315	VCS 80	C	200	150	160	30	200	710	365	877	200	ET+330	525	450	688	1712	1100
150-400	≤ 280	VCS 80	C	200	150	160	30	200	770	365	927	200	ET+330	525	450	738	1712	1100
150-400	≥ 315	VCS 80	C	200	150	160	30	200	770	365	927	200	ET+330	525	450	738	1712	1100

Possible immersion depths (ET) depending on number of support columns

Number of support columns	Possible immersion depth (ET)		
	A	B	C
[Qty]	[mm]		
1	692	715	729
1	842	865	879
1	1092	1115	1129
1	1292	1315	1329
1	1429	1452	1466
1	1593	1616	1630
1	1843	1866	1880

Number of support columns	Possible immersion depth (ET)		
	A	B	C
[Qty]	[mm]		
1	2093	2116	2130
2	2312	2335	2349
2	2512	2535	2549
2	2613	2636	2650
2	2786	2809	2769
2	2813	2836	2850
2	2950	2973	2987
2	3114	3137	3151
2	3313	3336	3350
2	3450	3473	3487
2	3614	3637	3651
2	3864	3887	3901
2	4114	4137	4151
3	4143	4166	4180
3	4170	4193	4207
3	4307	4330	4344
3	4471	4494	4508
3	4557	4580	4594
3	4635	4658	4672
3	4721	4744	4758
3	4885	4908	4922
3	5135	5158	5172
3	5385	5408	5422
3	5635	5658	5672
3	5885	5908	5922
3	6135	6158	6172

Estigia with round baseplate

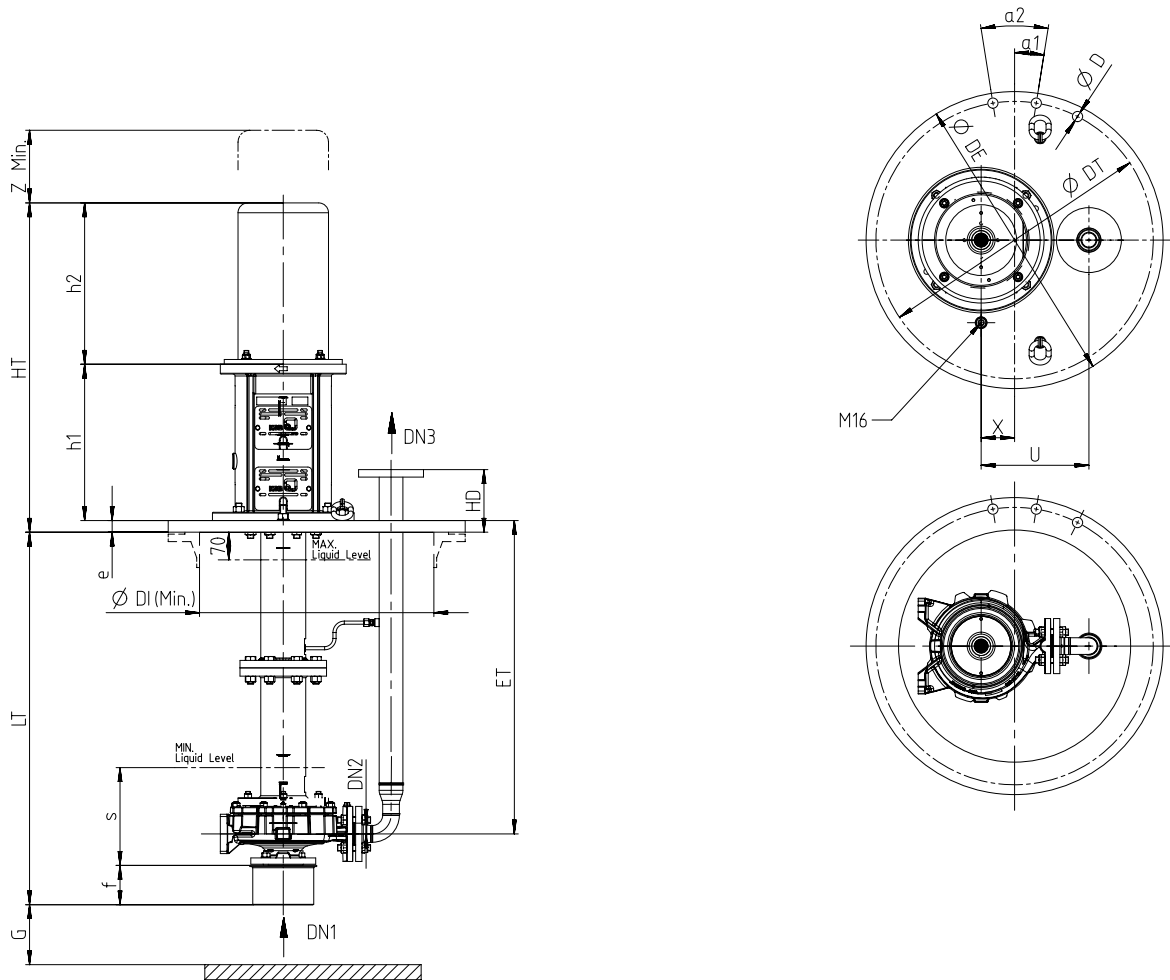


Fig. 2: Pump dimensions and immersion depths, round baseplate

>: Minimum

<: Maximum

Pump nominal sizes - round baseplate

Size	Motor size	Bearing size	DN500	DN600	DN700	DN800	DN900	DN1000	DN1200	DN1400	DN1600	DN1800
25-160	≤280	VSC 40	*	*	*							
25-200	≤280	VSC 40		*	*	*						
32-125	≤280	VSC 40	*	*	*							
32-125.1	≤280	VSC 40	*	*	*							
32-160	≤280	VSC 40	*	*	*							
32-160.1	≤280	VSC 40	*	*	*							
32-200	≤280	VSC 40		*	*	*						
32-200.1	≤280	VSC 40		*	*	*						
32-250	≤280	VSC 50			*	*	*					
32-250.1	≤280	VSC 50			*	*	*					
40-125	≤280	VSC 40		*	*	*						
40-160	≤280	VSC 40		*	*	*						
40-200	≤280	VSC 40		*	*	*						
40-250	≤280	VSC 50			*	*	*					
40-315	≤280	VSC 50			*	*	*					
50-125	≤280	VSC 40		*	*	*						
50-160	≤280	VSC 40		*	*	*						
50-200	≤280	VSC 40		*	*	*						
50-250	≤280	VSC 50			*	*	*					
50-315	≤280	VSC 50				*	*	*				
65-125	≤280	VSC 40			*	*	*					
65-160	≤280	VSC 50			*	*	*					

Size	Motor size	Bearing size	DN500	DN600	DN700	DN800	DN900	DN1000	DN1200	DN1400	DN1600	DN1800
65-200	≤280	VSC 50				*	*	*				
65-250	≤280	VSC 50				*	*	*				
65-315	≤280	VSC 60					*	*	*			
65-315	≥315	VSC 80					*	*	*			
80-160	≤280	VSC 50				*	*	*				
80-200	≤280	VSC 50				*	*	*				
80-250	≤280	VSC 50					*	*	*			
80-250	≥315	VSC 80					*	*	*			
80-315	≤280	VSC 60						*	*	*		
80-315	≥315	VSC 80						*	*	*		
80-400	≤280	VSC 60						*	*	*		
100-160	≤280	VSC 50					*	*	*			
100-160	≥315	VSC 80					*	*	*			
100-200	≤280	VSC 50					*	*	*			
100-200	≥315	VSC 80					*	*	*			
100-250	≤280	VSC 60					*	*	*			
100-250	≥315	VSC 80					*	*	*			
100-315	≤280	VSC 60						*	*	*		
100-315	≥315	VSC 80						*	*	*		
100-400	≤280	VSC 60						*	*	*	*	
125-200	≤280	VSC 60						*	*	*	*	
125-200	≥315	VSC 80						*	*	*	*	
125-250	≤280	VSC 60						*	*	*	*	
125-250	≥315	VSC 80						*	*	*	*	
125-315	≤280	VSC 60						*	*	*	*	
125-315	≥315	VSC 80						*	*	*	*	
125-400	≤280	VSC 60						*	*	*	*	
150-200	≤280	VSC 60							*	*	*	*
150-250	≤280	VSC 60							*	*	*	*
150-315	≤280	VSC 80							*	*	*	*
150-315	≥315	VSC 80							*	*	*	*
150-400	≤280	VSC 80							*	*	*	*
150-400	≥315	VSC 80							*	*	*	*

Flange: DN <sub>min</sub>	DE	DT	DI	NT	D	a1	a2	Maximum difference in pressures inside and outside of the tank <sup>11)</sup>
DN500	645	600	494	20	22	9	18	0.500 bar
DN600	755	705	595	20	26	9	18	0.500 bar
DN700	860	810	697	24	26	7,5	15	0.500 bar
DN800	975	920	800	24	30	7,5	15	0.410 bar
DN900	1075	1020	900	24	30	7,5	15	0.330 bar
DN1000	1175	1120	1000	28	30	6,428	12,856	0.270 bar
DN1200	1405	1340	1203	32	33	5,625	11,25	0.200 bar
DN1400	1630	1560	1406	36	36	5	10	0.150 bar
DN1600	1830	1760	1602	40	36	4,5	9	0.120 bar
DN1800	2045	1970	1800	44	39	4,09	8,18	0.100 bar

11) Only for atmospheric or slightly pressurised tanks. The pump is not designed for use in tanks under vacuum. The pressure inside the tank must always be equal to the pressure outside the tank. The maximum difference of the pressures inside and outside of the tank is specified in the column, i.e. the pressure inside the tank must always be higher than the pressure outside the tank.

Pump dimensions and immersion depths [mm] - round baseplate

Size	Motor size	Bearing size	Possible immersion depth (ET) <sup>12)</sup>	DN1	DN2	a	e	f min	G	LT	s min	U	X
						[mm]							
25-160	≤ 280	VCS 40	A	40	25	80	30	100	40	ET+150	220	242	770
25-200	≤ 280	VCS 40	A	40	25	80	30	100	40	ET+150	220	262	770
32-125	≤ 280	VCS 40	A	50	32	80	30	100	50	ET+150	220	234	770
32-125.1	≤ 280	VCS 40	A	50	32	80	30	100	50	ET+150	220	234	770
32-160	≤ 280	VCS 40	A	50	32	80	30	100	50	ET+150	220	254	770
32-160.1	≤ 280	VCS 40	A	50	32	80	30	100	50	ET+150	220	254	770
32-200	≤ 280	VCS 40	A	50	32	80	30	100	50	ET+150	220	274	770
32-200.1	≤ 280	VCS 40	A	50	32	80	30	100	50	ET+150	220	274	770
32-250	≤ 280	VCS 50	B	50	32	100	30	100	50	ET+170	270	319	980
32-250.1	≤ 280	VCS 50	B	50	32	100	30	100	50	ET+170	270	319	980
40-125	≤ 280	VCS 40	A	65	40	80	30	100	65	ET+150	220	246	890
40-160	≤ 280	VCS 40	A	65	40	80	30	100	65	ET+150	220	266	890
40-200	≤ 280	VCS 40	A	65	40	100	30	100	65	ET+170	240	286	890
40-250	≤ 280	VCS 50	B	65	40	100	30	100	65	ET+170	270	331	980
40-315	≤ 280	VCS 50	B	65	40	125	30	100	65	ET+195	295	356	980
50-125	≤ 280	VCS 40	A	80	50	100	30	100	80	ET+170	240	285	890
50-160	≤ 280	VCS 40	A	80	50	100	30	100	80	ET+170	240	305	890
50-200	≤ 280	VCS 40	A	80	50	100	30	100	80	ET+170	240	325	890
50-250	≤ 280	VCS 50	B	80	50	125	30	100	80	ET+195	295	350	980
50-315	≤ 280	VCS 50	B	80	50	125	30	100	80	ET+195	295	405	980
65-125	≤ 280	VCS 40	A	100	65	100	30	100	100	ET+170	240	324	890
65-160	≤ 280	VCS 50	B	100	65	100	30	100	100	ET+170	270	344	1100
65-200	≤ 280	VCS 50	B	100	65	100	30	100	100	ET+170	270	369	1100
65-250	≤ 280	VCS 50	B	100	80	125	30	100	100	ET+195	295	394	1100
65-315	≤ 280	VCS 60	B	100	65	100	30	100	100	ET+205	295	424	1260
65-315	≥ 315	VCS 80	B	100	65	100	30	100	100	ET+195	295	424	1340
80-160	≤ 280	VCS 50	B	125	80	125	30	150	125	ET+245	295	393	1100
80-200	≤ 280	VCS 50	B	125	80	125	30	150	125	ET+245	295	418	1100
80-250	≤ 280	VCS 50	B	125	80	125	30	150	125	ET+255	295	448	1100
80-250	≥ 315	VCS 80	B	125	80	125	30	150	125	ET+245	295	448	1340
80-315	≤ 280	VCS 60	B	125	80	125	30	150	125	ET+255	295	483	1260
80-315	≥ 315	VCS 80	B	125	80	125	30	150	125	ET+245	295	483	1340
80-400	≤ 280	VCS 60	B	125	80	125	30	150	125	ET+245	295	523	1260
100-160	≤ 280	VCS 50	B	125	100	125	30	150	125	ET+255	295	488	1100
100-160	≥ 315	VCS 80	B	125	100	125	30	150	125	ET+245	295	488	1340
100-200	≤ 280	VCS 50	B	125	100	125	30	150	125	ET+255	295	488	1100
100-200	≥ 315	VCS 80	B	125	100	125	30	150	125	ET+245	295	488	1340
100-250	≤ 280	VCS 60	B	125	100	140	30	150	125	ET+270	310	488	1260
100-250	≥ 315	VCS 80	B	125	100	140	30	150	125	ET+260	310	488	1340
100-315	≤ 280	VCS 60	B	125	100	140	30	150	125	ET+270	310	523	1260
100-315	≥ 315	VCS 80	B	125	100	140	30	150	125	ET+260	310	523	1340
100-400	≤ 280	VCS 60	B	125	100	140	30	150	125	ET+260	310	563	1260
125-200	≤ 280	VCS 60	B	150	125	140	30	150	150	ET+270	310	564	1260
125-200	≥ 315	VCS 80	B	125	125	140	30	150	150	ET+260	310	564	1340
125-250	≤ 280	VCS 60	B	150	125	140	30	150	150	ET+270	310	604	1445
125-250	≥ 315	VCS 80	B	125	125	140	30	150	150	ET+260	310	604	1340
125-315	≤ 280	VCS 60	B	150	125	140	30	150	150	ET+270	310	604	1445
125-315	≥ 315	VCS 80	B	150	125	140	30	150	150	ET+260	310	604	1340
125-400	≤ 280	VCS 60	B	150	150	140	30	150	150	ET+260	310	649	1445
150-200	≤ 280	VCS 60	B	200	150	180	30	200	200	ET+260	350	688	1445
150-250	≤ 280	VCS 60	B	200	150	160	30	200	200	ET+330	330	663	1445
150-315	≤ 280	VCS 80	C	200	150	160	30	200	200	ET+330	450	688	1712

12) See Table: Possible immersion depths (ET) depending on number of support columns

Size	Motor size	Bearing size	Possible immersion depth (ET) <sup>(2)</sup>	DN1	DN2	a	e	f min	G	LT	s min	U	X
						[mm]							
150-315	≥ 315	VCS 80	C	200	150	160	30	200	200	ET+330	450	688	1712
150-400	≤ 280	VCS 80	C	200	150	160	30	200	200	ET+330	450	738	1712
150-400	≥ 315	VCS 80	C	200	150	160	30	200	200	ET+330	450	738	1712

Possible immersion depths (ET) depending on number of support columns

Number of support columns [Qty]	Possible immersion depth (ET)		
	A	B	C
	[mm]		
1	692	715	729
1	842	865	879
1	1092	1115	1129
1	1292	1315	1329
1	1429	1452	1466
1	1593	1616	1630
1	1843	1866	1880
1	2093	2116	2130
2	2312	2335	2349
2	2512	2535	2549
2	2613	2636	2650
2	2786	2809	2769
2	2813	2836	2850
2	2950	2973	2987
2	3114	3137	3151
2	3313	3336	3350
2	3450	3473	3487
2	3614	3637	3651
2	3864	3887	3901
2	4114	4137	4151
3	4143	4166	4180
3	4170	4193	4207
3	4307	4330	4344
3	4471	4494	4508
3	4557	4580	4594
3	4635	4658	4672
3	4721	4744	4758
3	4885	4908	4922
3	5135	5158	5172
3	5385	5408	5422
3	5635	5658	5672
3	5885	5908	5922
3	6135	6158	6172

Motor dimensions

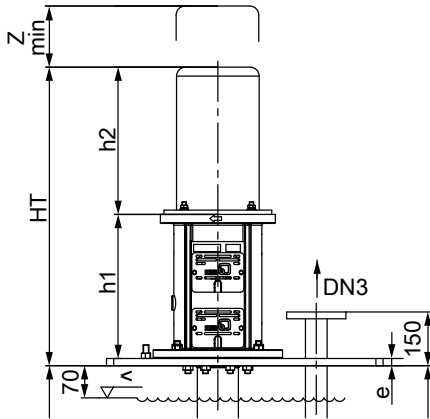


Fig. 3: Motor dimensions

<: Maximum

Motor dimensions [mm]

Motor size	Number of poles		Z min	h2 <sup>13)</sup>	VCS 40				VCS 50 / 60				VCS 80			
	2	4			h1	e <sup>14)</sup>	e <sup>15)</sup>	HT <sup>13)</sup>	h1	e <sup>14)</sup>	e <sup>15)</sup>	HT <sup>13)</sup>	h1	e <sup>14)</sup>	e <sup>15)</sup>	HT <sup>13)</sup>
	[mm]															
90L	X	X	100	297	368	20	30	685	-	-	-	-	-	-	-	-
90S	X	X	100	297	368	20	30	685	-	-	-	-	-	-	-	-
100L	X	X	110	335	378	20	30	733	463	20	30	818	-	-	-	-
112M	X	X	110	333	378	20	30	731	463	20	30	816	-	-	-	-
132S	X	X	130	385	398	20	30	803	483	20	30	888	-	-	-	-
132M	X	X	130	410	398	20	30	828	483	20	30	913	-	-	-	-
160M	X	X	160	494	428	20	30	942	513	20	30	1027	515	30	30	1039
160L	X	X	160	532	428	20	30	980	513	20	30	1065	515	30	30	1077
180M	X	X	160	602	428	20	30	1050	513	20	30	1135	515	30	30	1147
180L	X	X	160	602	428	20	30	1050	513	20	30	1135	515	30	30	1147
200L	X	X	160	660	-	-	-	-	513	20	30	1193	515	30	30	1205
225S	X	-	160	746	-	-	-	-	513	20	30	1279	515	30	30	1291
225M	X	-	160	746	-	-	-	-	513	20	30	1279	515	30	30	1291
225S	-	X	190	746	-	-	-	-	543	20	30	1309	545	30	30	1321
225M	-	X	190	746	-	-	-	-	543	20	30	1309	545	30	30	1321
250M	X	X	190	825	-	-	-	-	543	20	30	1388	545	30	30	1400
280S	X	X	190	820	-	-	-	-	543	20	30	1383	545	30	30	1395
280M	X	X	190	931	-	-	-	-	543	20	30	1494	545	30	30	1506
315S	X	-	190	932	-	-	-	-	-	-	-	-	545	30	30	1507
315M	X	-	190	1104	-	-	-	-	-	-	-	-	545	30	30	1679
315L	X	-	190	1092	-	-	-	-	-	-	-	-	545	30	30	1667
315S	-	X	220	932	-	-	-	-	-	-	-	-	575	30	30	1537
315M	-	X	220	1104	-	-	-	-	-	-	-	-	575	30	30	1709
315L	-	X	220	1092	-	-	-	-	-	-	-	-	575	30	30	1697
355S	-	X	260	1177	-	-	-	-	-	-	-	-	615	30	30	1822
355M	-	X	260	1237	-	-	-	-	-	-	-	-	615	30	30	1882
355L	-	X	260	1237	-	-	-	-	-	-	-	-	615	30	30	1882

13) Depending on motor manufacturer  
14) Rectangular baseplate  
15) Round baseplate



**Flange variant**

Flange designs

Characteristic	Material variant				Suction side DN <sub>1</sub>	Discharge side DN <sub>2</sub>	Discharge side DN <sub>3</sub>
	GG	GC	CC	DD			
Standard	X	X	-	-	EN 1092-2	EN 1092-2	EN 1092-1 <sup>16)</sup>
	-	-	X	X	EN 1092-1 <sup>17)</sup>	EN 1092-1 <sup>21)</sup>	EN 1092-1 <sup>20)</sup>
Flange position	X	X	X	X	Axial	Radial	Axial
Pressure class	X	X	X	X	PN 16	PN 16	PN 16 <sup>18)</sup>
Flange design	X	X	X	X	RF	RF	FF to DIN EN 1902-1 <sup>19)</sup>
Flange type	X	X	X	X	21-B	21-B	01-A

**Recommended spare parts stock for 2 years' operation to DIN 24296**

Quantity of spare parts for recommended spare parts stock

Part No.	Description	Number of pumps (including stand-by pumps)							
		2	3	4	5	6 - 7	8 - 9	10 and more	
		Number of spare parts							
210	Shaft	1	1	2	2	2	3	30 %	
211 <sup>20)</sup>	Pump shaft	1	1	2	2	2	3	30 %	
230	Impeller	1	1	2	2	2	3	30 %	
320	Rolling element bearing	1	1	2	2	2	3	30 %	
381 <sup>24)</sup>	Bearing cartridge	1	1	2	2	2	3	30 %	
410 <sup>24)</sup>	Profile seal	2	3	4	5	6	7	80 %	
411 <sup>24)</sup>	Joint ring	2	3	4	5	6	7	80 %	
412 <sup>24)</sup>	O-ring	2	3	4	5	6	7	80 %	
421.1 <sup>21)</sup> /.2/.3	Lip seal	1	1	2	2	2	3	30 %	
422	Felt ring	1	1	2	2	2	3	30 %	
433 <sup>22)</sup>	Mechanical seal	2	3	4	5	6	7	80 %	
502.1/.2	Casing wear ring	1	1	2	2	2	3	30 %	
529.1	Bearing sleeve	1	1	2	2	2	3	30 %	
545 <sup>23)</sup>	Bearing bush	1	1	2	2	3	4	40 %	
554.1	Washer	1	1	2	2	3	4	50 %	
852	Screwed coupling	1	1	2	2	2	3	30 %	
860 <sup>24)</sup>	Coupling part	1	1	2	2	2	3	30 %	
904.2 <sup>27)</sup>	Grub screw	1	1	2	2	2	3	40 %	
950	Spring	1	1	2	2	2	3	30 %	

- 20) Optional: ASME16.5  
 21) DN 65: 4 holes instead of 8  
 22) Optional: ASME Class 150  
 23) Optional: RF to ASME 16.5  
 24) Available as spare parts kit, see general assembly drawing with list of components  
 25) For versions with lip seal only  
 26) For versions with mechanical seal only  
 27) Quantity of parts per support column

General assembly drawings with list of components

Estigia, 1 support column

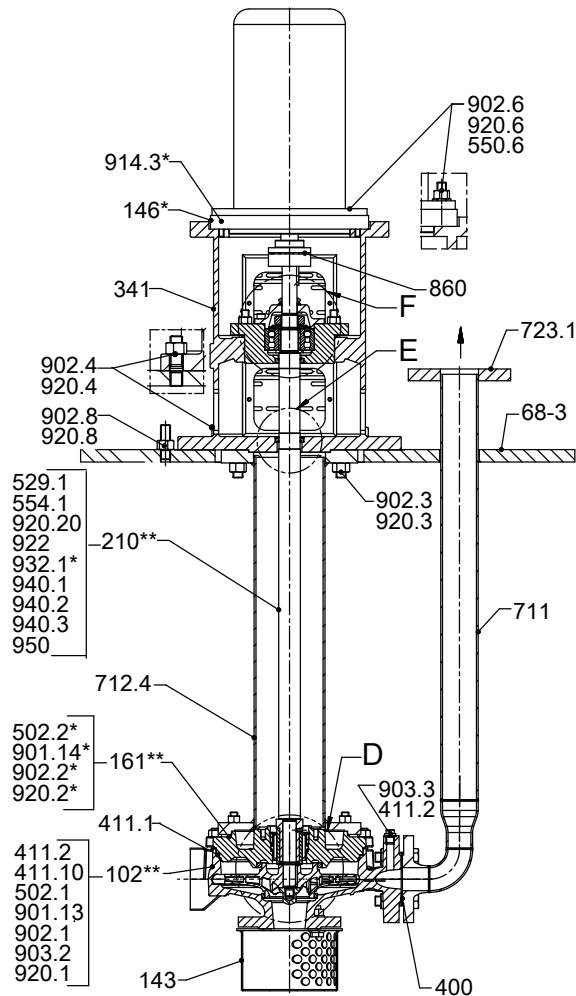


Fig. 4: General assembly drawing

D	Hydraulic system (⇒ Page 29)	E	Seal (⇒ Page 29)
F	Bearing (⇒ Page 30)		

\*: On specific designs only

\*\* : Available as spare parts kit including the parts listed

List of components

Part No.	Description	Part No.	Description
102	Volute casing	711	Riser
143	Suction strainer	712.4	Support column
146	Intermediate lantern	723.1	Flange
161	Casing cover	860	Coupling part
210	Shaft	901.13/.14	Hexagon head bolt
341	Drive lantern	902.1/.2/.3/.4/.6/.8	Stud
400	Gasket	903.2/.3	Screw plug
411.1/.2	Joint ring	914.3	Hexagon socket head cap screw
502.1/.2	Casing wear ring	920.1/.2/.3/.4/.6/.8/.20	Nut
529.1	Bearing sleeve	922	Impeller nut
550.6	Disc	932.1	Circlip
554.1	Washer	940.1/.2/.3	Key
68-3	Cover plate	950	Spring

4720.5/03-EN

Estigia, 3 support columns

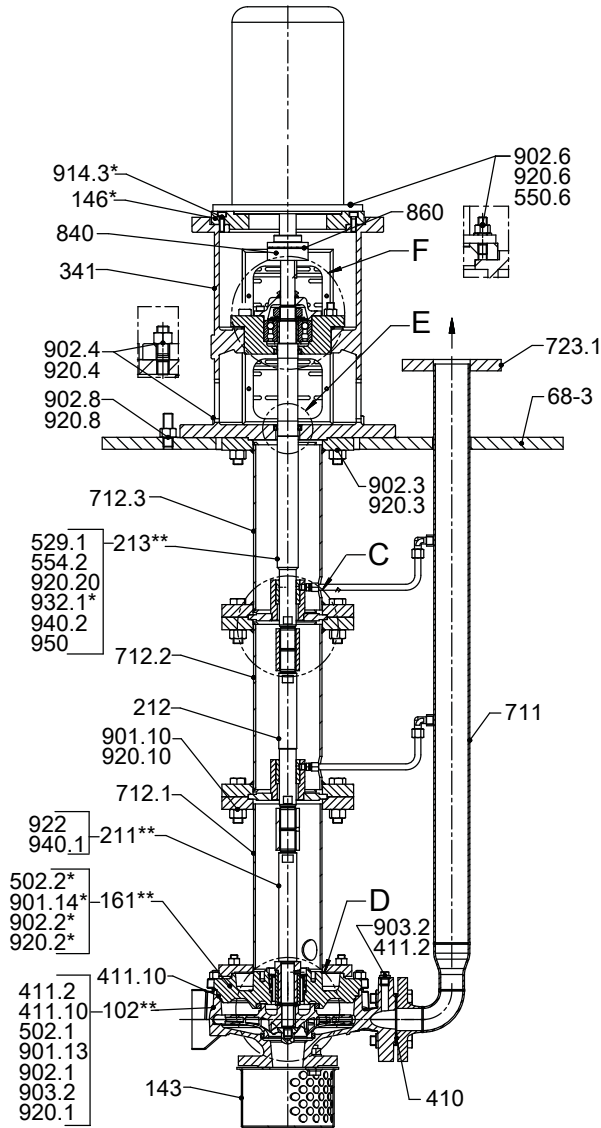


Fig. 5: General assembly drawing

C	Screwed coupling (⇒ Page 28)	D	Hydraulic system (⇒ Page 29)
E	Seal (⇒ Page 29)	F	Bearing (⇒ Page 30)

\*: On specific designs only

\*\* : Available as spare parts kit including the parts listed

List of components

Part No.	Description	Part No.	Description
102	Volute casing	711	Discharge pipe
143	Suction strainer	712.1/.2/.3	Support column
146	Intermediate lantern	723.1	Flange
161	Casing cover	840	Coupling
211	Pump shaft	860	Coupling part
212	Intermediate shaft	901.10/.13/.14	Hexagon head bolt
341	Drive lantern	902.1/.2/.3/.4/.6/.8	Stud
410	Profile seal	903.3	Screw plug
411.2/.10	Joint ring	914.3	Hexagon socket head cap screw
502.1/2	Casing wear ring	920.1/.2/.3/.4/.6/.8/.10/.20	Nut
529.1	Bearing sleeve	922	Impeller nut
550.6	Disc	932.1	Circlip
554.2	Washer	940.2/.3	Key
68-3	Cover plate	950	Spring

Detail drawings

Casing fastening elements

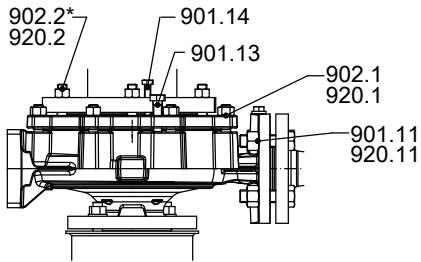


Fig. 6: Detail drawing of casing fastening elements

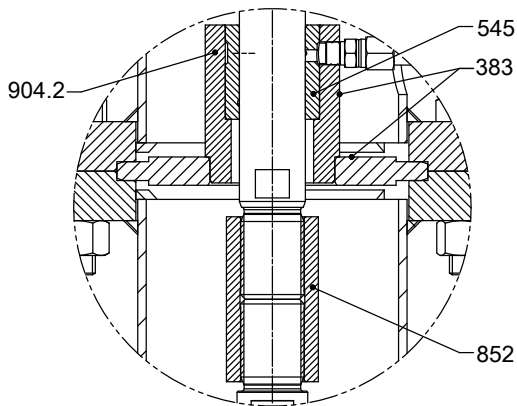
\*: On specific designs only

List of components

Part No.	Description	Part No.	Description
901.11/.13/.14	Hexagon head bolt	920.1/.2/.11	Nut
902.1/.2	Stud		

Screwed coupling

C1



C2

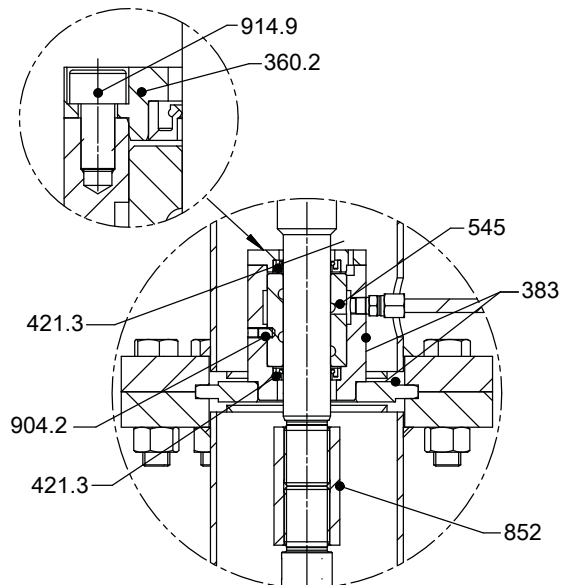


Fig. 7: Detail drawings of screwed coupling (only for versions with 2 or 3 support columns)

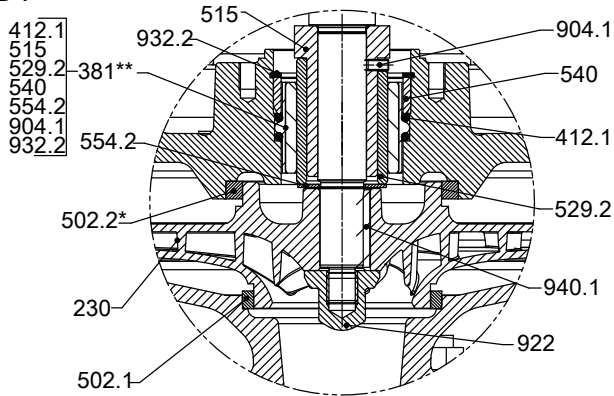
C1	Lubricated by fluid handled or external liquid	C2	Lubricated by electrically driven pump
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List of components

Part No.	Description	Part No.	Description
383	Bearing spider	852	Screwed coupling
421.3	Lip seal	904.2	Grub screw
545	Bearing bush		

Hydraulic system

D1



D2

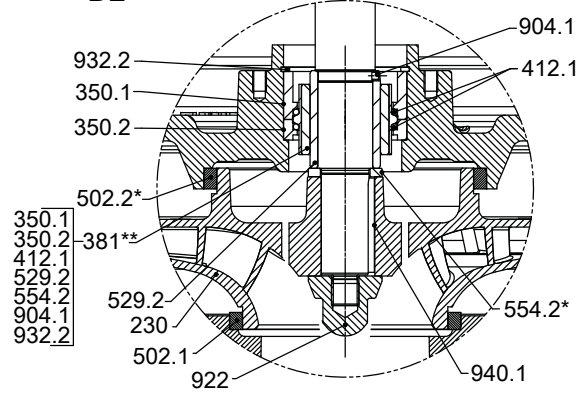


Fig. 8: Detail drawings of hydraulic system (depending on bearing size)

D1	VCS 40 and VCS 60	D2	VCS 50 and VCS 80
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\*: On specific designs only

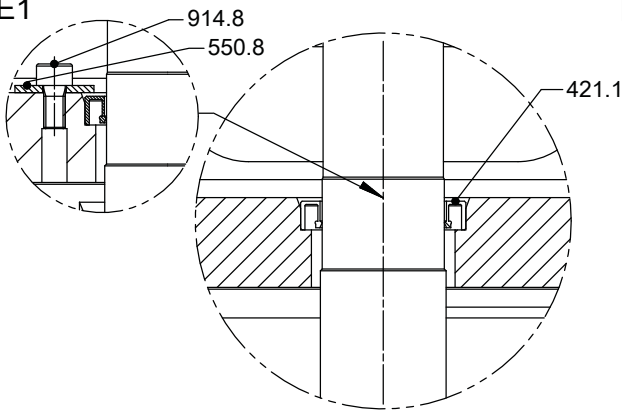
\*\* : Available as spare parts kit including the parts listed

List of components

Part No.	Description	Part No.	Description
230	Impeller	529.2	Bearing sleeve
350	Bearing housing	540	Bush
381	Bearing cartridge	554.2	Washer
412.1	O-ring	904.1	Grub screw
502.1/.2	Casing wear ring	922	Impeller nut
504	Spacer ring	932.2/.3	Circlip
515	Locking ring	940.1	Key

Seal

E1



E2

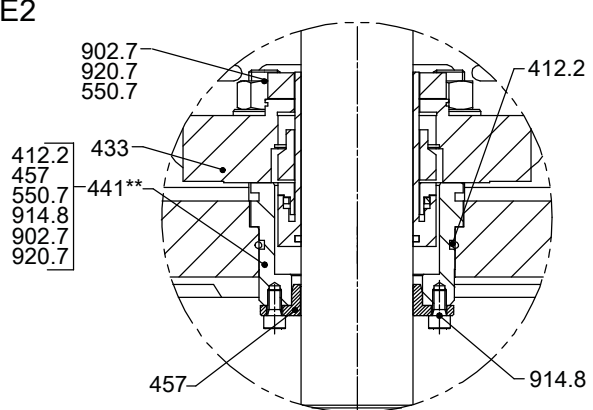


Fig. 9: Detail drawings of seal

E1	Lip seal	E2	Mechanical seal
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\*\* : Available as spare parts kit including the parts listed

List of components

Part No.	Description	Part No.	Description
412.2	O-ring	550.7/.8	Disc
421.1	Lip seal	902.7	Stud
433	Mechanical seal	914.8	Hexagon socket head cap screw
441/.99	Shaft seal housing	920.7	Nut
457	Neck ring		

Bearing

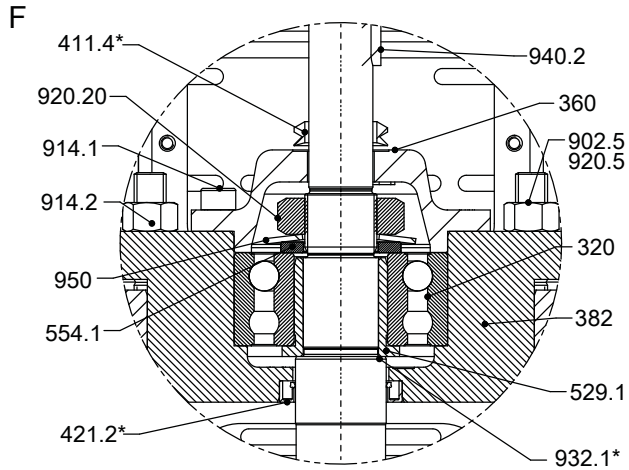


Fig. 10: Detail drawing of bearing

\*: On specific designs only

List of components

Part No.	Description	Part No.	Description
320	Rolling element bearing	554.1	Washer
360	Bearing cover	902.5	Stud
382	Bearing carrier	914.2	Hexagon socket head cap screw
411.4	Joint ring	920.5/.20	Nut
421.2	Lip seal	932.1	Circlip
529.1	Bearing sleeve	950	Spring

Bearing lubrication

Lubrication by fluid handled

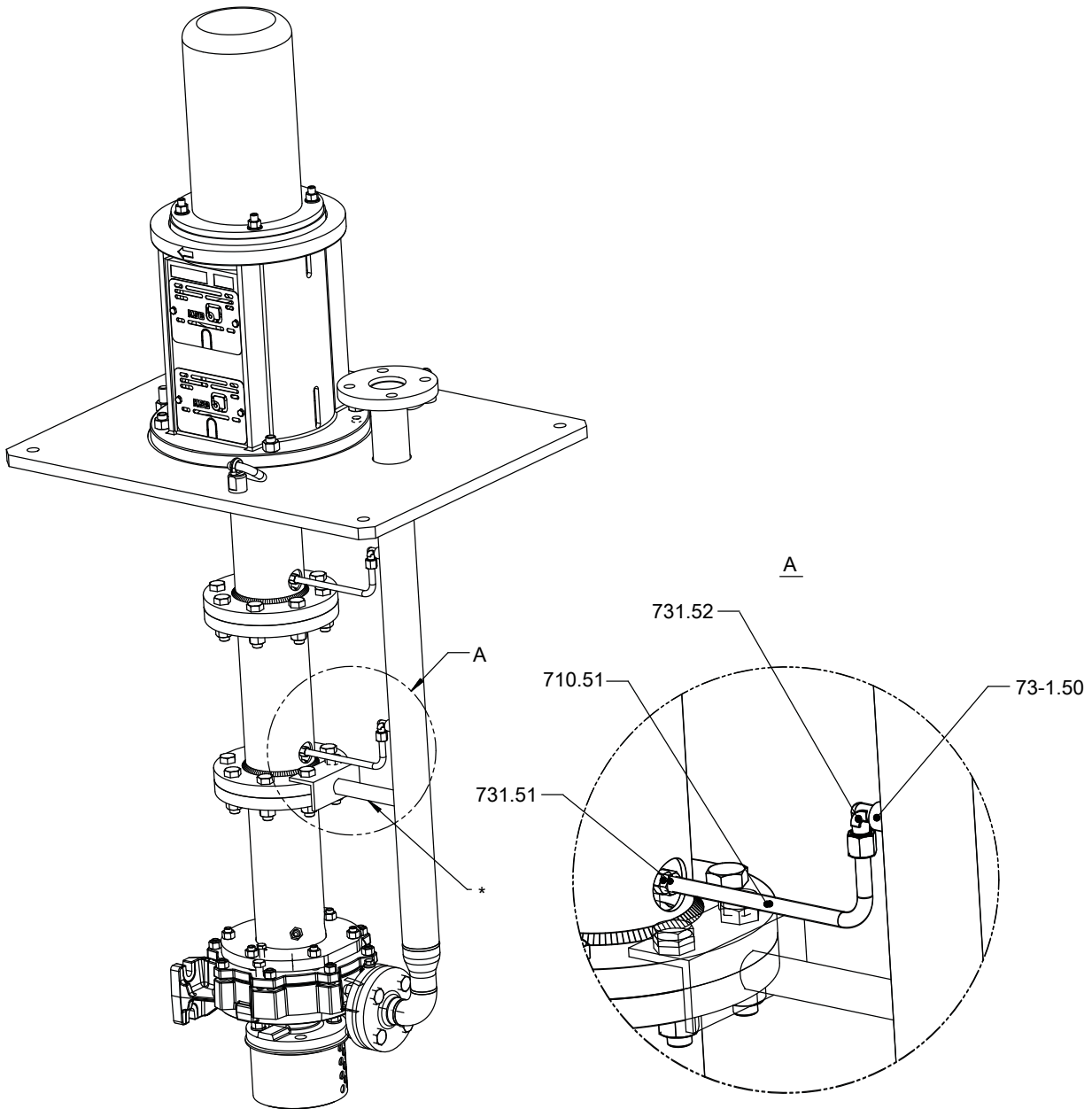


Fig. 11: Detail drawing of lubrication by fluid handled

\*: On specific designs only

List of components

Part No.	Description	Part No.	Description
710.51	Pipe	731.51/.52	Pipe union
73-1.50	Socket		

Lubrication by external liquid

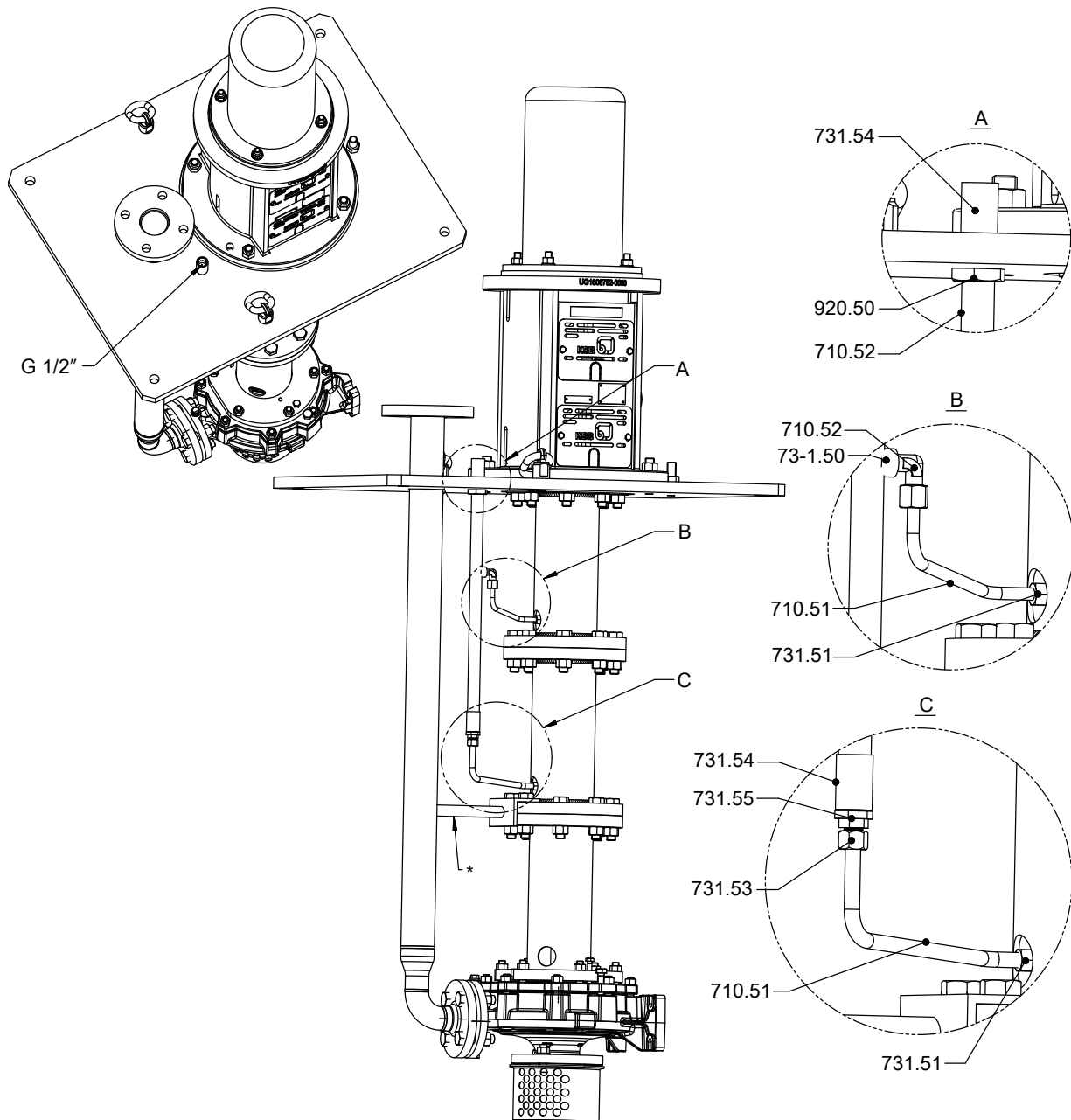


Fig. 12: Detail drawing of lubrication by external liquid

\*: On specific designs only

List of components

Part No.	Description	Part No.	Description
710.51/.52	Pipe	731.51/.53/.54/.55	Pipe union
73-1.50	Socket	920.50	Nut



Lubrication by electrically driven pump

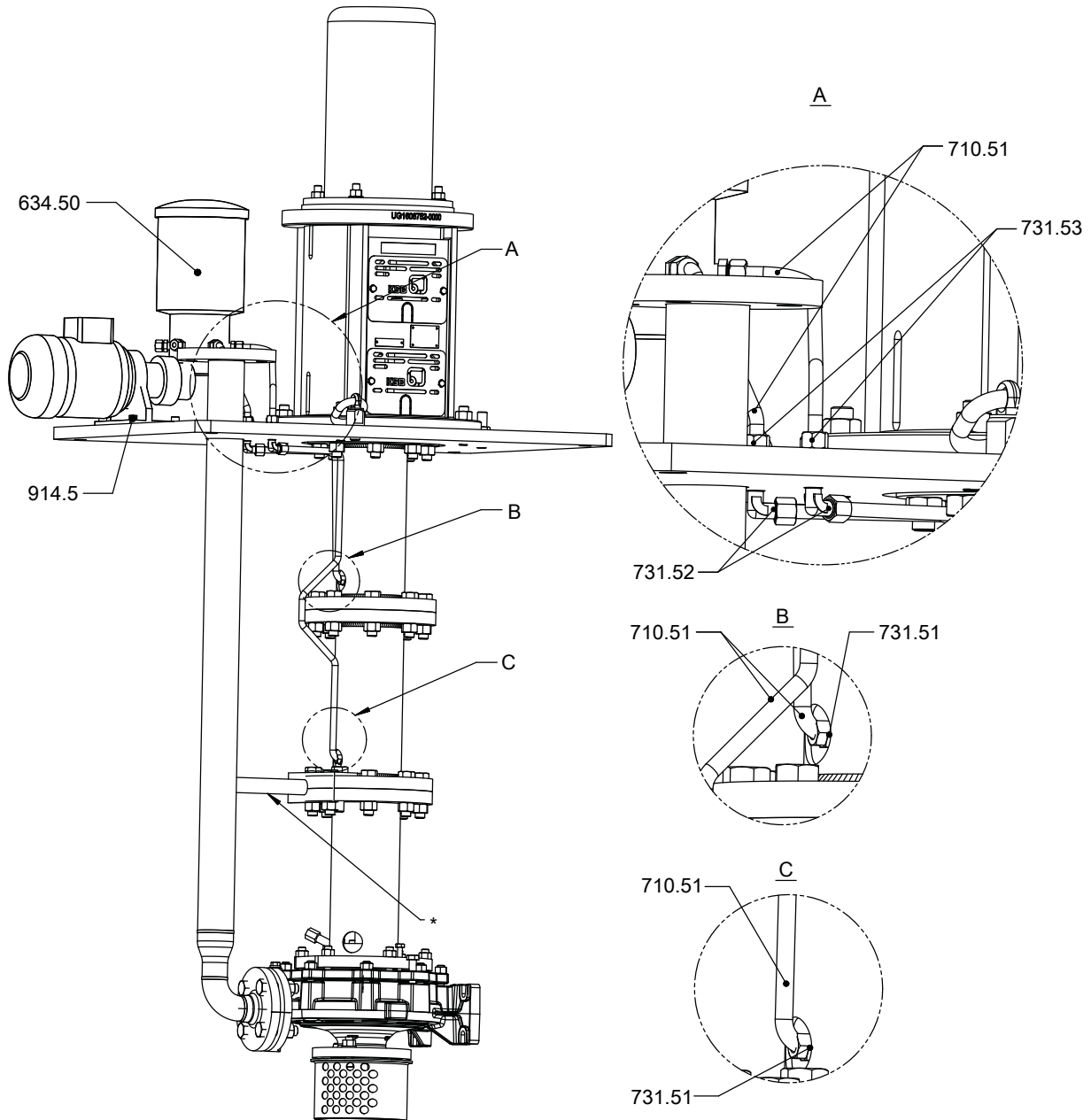


Fig. 13: Lubrication by electrically driven pump

\*: On specific designs only

List of components

Part No.	Description	Part No.	Description
634.50	Grease pump	914.5	Hexagon socket head cap screw
731.51/.52/.53	Pipe union		







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