

Thermal Oil / Hot Water Pump

Etanorm SYT

Type Series Booklet



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Type Series Booklet Etanorm SYT

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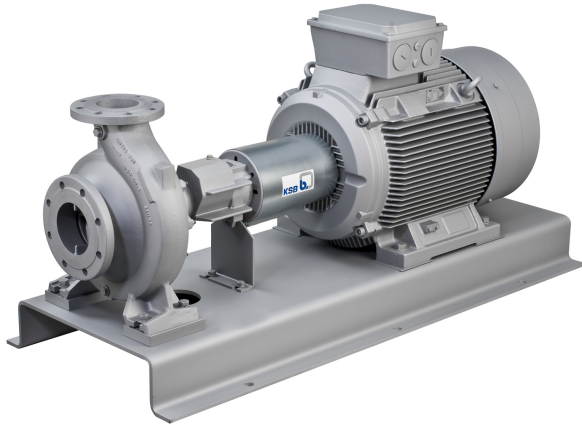
Contents

Centrifugal Pumps with Shaft Seal.....	4
Thermal Oil Pumps / Hot Water Pumps	4
Etanorm SYT	4
Main applications.....	4
Fluids handled	4
Further information on fluids handled.....	4
Operating data.....	4
Materials per country.....	4
Design details	4
Designation	5
Materials.....	6
Coating and preservation	6
Product benefits	6
Acceptance tests and warranty	7
Overview of product features / selection tables	7
Overview of fluids handled	7
Bearings	8
Pressure and temperature limits	8
Technical data	9
Selection Charts.....	10
Etanorm SYT, n = 2900 rpm.....	10
Etanorm SYT, n = 1450 rpm.....	10
Etanorm SYT, n = 960 rpm.....	11
Etanorm SYT, n = 3500 rpm.....	11
Etanorm SYT, n = 1750 rpm.....	12
Etanorm SYT, n = 1160 rpm.....	12
Dimensions and connections	13
Etanorm SYT, Fig. 0.....	13
Flange dimensions.....	15
Flange design	15
Connection types.....	16
Auxiliary connections for double mechanical seal.....	18
Auxiliary connections for double mechanical seal and monitoring equipment.....	18
Auxiliary connections for single mechanical seal and monitoring equipment.....	18
Scope of supply	18
General Assembly Drawings.....	19
Etanorm SYT, bearing bracket WS_25_LS.....	19
Etanorm SYT, Lagerträger WS_25_LS mit Doppelgleitringdichtung	20
Etanorm SYT, Lagerträger WS_25_LS / WS_55_LS mit SiC-Gleitlager.....	21
Etanorm SYT, Lagerträger WS_35_LS / WS_55_LS.....	22
Etanorm SYT, Lagerträger WS_35_LS / WS_55_LS mit Doppelgleitringdichtung.....	23
Etanorm SYT, Lagerträger WS_35_LS mit SiC-Gleitlager	24

Centrifugal Pumps with Shaft Seal

Thermal Oil Pumps / Hot Water Pumps

Etanorm SYT



Main applications

- Heat transfer systems
- Hot water circulation

Fluids handled

- High-temperature hot water
- Thermal oil

Further information on fluids handled

(⇒ Page 7)

Operating data

Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m ³ /h]	≤ 625	≤ 754
Head	H [m]	≤ 102	≤ 100
Fluid temperature	T [°C]	≥ -30	≥ -30
Thermal oil		≤ +350	≤ +350
Fluid temperature		≤ +180	≤ +180
Hot water			
Operating pressure	p [bar]	≤ 16	≤ 16

Materials per country

- A = Europe, Middle East, North Africa
 - A1 = Default material variant
 - A2 = Optional material variant
- B = India
 - B1 = Default material variant
 - B2 = Optional material variant

1) For fluid temperatures ≤ 140°C only

2) For fluid temperatures > 140°C only

Design details

Design

- Volute casing pump
- Horizontal installation
- Back pull-out design
- Single-stage
- Dimensions and ratings to EN 733

Pump casing

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

Shaft seal

- Reinforced single mechanical seal
- Reinforced double mechanical seal
- To EN 12756

Impeller type

- Closed radial impeller with multiply curved vanes

Bearings

- Various application-oriented bearings (⇒ Page 8)

Drive end:

- Grease-packed deep groove ball bearing

Pump end:

- Carbon bearing / SiC/SiC bearing lubricated by fluid handled

Automation

Applies to region A only!

Automation options:

- PumpDrive (motor-mounted model)¹⁾
- PumpDrive (wall-mounted, cabinet mounted)²⁾
- KSB SuPremE

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
E	T	N	Y	0	5	0	-	0	3	2	-	1	2	5	1	5	G	S	D	B	0	8	L	D	2	0	0	7	5	2	B	P	D	2	E	M
See name plate and data sheet																									See data sheet											

Designation key

Position	Code	Description
1-4	Pump type	
	ETNY	Etanorm SYT
5-16	Size, e.g.	
	050	Nominal suction nozzle diameter [mm]
	032	Nominal discharge nozzle diameter [mm]
	1251	Nominal impeller diameter [mm]
17	Pump casing material	
	E	Cast steel GP240GH+N / A216 GR WCB
	S	Nodular cast iron EN-GJS-400-15
18	Impeller material	
	C	Stainless steel 1.4408 / A743 CF8M
	E	Cast steel GP240GH+N / A216 GR WCB
	G	Cast iron EN-GJL-250/A48 CL 35B
19	Design	
	S	Standard
	X	Non-standard (BT3D, BT3)
20	Casing cover	
	D	Casing cover
21	Shaft seal type	
	B	Dead-end arrangement
22-23	Seal code, single mechanical seal	
	08	AQ1VGG M32N69
	Seal code, double mechanical seal in back-to-back arrangement	
	25	AQ1VGG M32N67
24	Bearing bracket	
	L	Version for heat transfer fluid, with leakage barrier
	Y	Version for heat transfer fluid
25	Scope of supply	
	A	Pump only (Fig. 0)
	B	Pump, baseplate
	C	Pump, baseplate, coupling, coupling guard
26	Shaft unit	
	2	Shaft unit 25, bearing bracket LS (standard)
	3	Shaft unit 35, bearing bracket LS (standard)
	5	Shaft unit 55, bearing bracket LS (standard)
27-30	Motor rating P_N [kW]	
	0075	0,75

	1320	132,00
31	Number of motor poles	
32	Product generation	
	B	Etanorm SYT 2014
33-36	PumpDrive	
	PD2	PumpDrive 2
	PD2E	PumpDrive 2 Eco
37	PumpMeter	
	M	PumpMeter

Materials

Overview of available materials

Part No. (⇒ Page 19)	Description	Material	Region				
			1 = Default material variant				
			2 = Optional material variant				
SG	SC	EG	EC	EE			
102	Volute casing	Nodular cast iron JS1030 / 536 Gr 60-40-18	A1	A1	-	-	-
		GP240GH+N / A216 Gr WCB	-	-	B1	B1	B1
161	Casing cover	Nodular cast iron JS1030 / A536 Gr 60-40-18	A1	A1	-	-	-
		GP240GH+N / A216 Gr WCB	-	-	B1	B1	B1
210	Shaft	Chrome steel 1.4021 + QTHRC50	A1	A1	-	-	-
		A276 TP 410 Cond H	-	-	B1	B1	B1
230	Impeller	Grey cast iron JL1040 / A 48 CL 35B	A1	-	B1	-	-
		Stainless steel 1.4408 / A743 Gr CF8M	-	A1	-	B2	-
		Cast steel	-	-	-	-	B2
310	Plain bearing	Carbon KHK	A1	A1	B1	B1	B1
		SiC / SiC	A1	A1	B2	B2	B2
330	Bearing bracket	Nodular cast iron JS1030 / A536 Gr 60-40-18	A1	A1	B1	B1	B1
411.10/.15	Sealing elements	BU9593 / HDR	A1	A1	-	-	-
		CrNi steel/graphite 1G	-	-	B1	B1	B1
502.01	Casing wear ring, suction side	Grey cast iron JL1040 / CI	A1	A1	B1	B1	B1
		Chromhard 400	-	-	-	B2	B2
502.02	Casing wear ring, discharge side	Grey cast iron JL1040 / CI	A1	A1	B1	B1	B1
		Chromhard 400	-	-	-	B2	B2
902	Studs	Steel 8.8	A1	A1	-	-	-
		1.7709+QT / A193 Gr B7	-	-	B1	B1	B1
903	Plug	Steel	A1	A1	B1	B1	B1
920	Nut	8+A2A / 8+B633 SC1 TP3	A1	A1	-	-	-
		1.7218+QT+A2D / A194 Gr 7 / Gr 2H+B633 SC1 TP2	-	-	B1	B1	B1
920.95	Impeller nut	8	A1	A1	B1	B1	B1

Coating and preservation

- Coating and preservation to KSB standard

Product benefits

- Improved efficiency and NPSHreq by experimentally verified hydraulic design of impellers (vanes)
- Operating costs reduced by trimming the nominal impeller diameter to match the specified duty point
- Little wear, low vibration levels and excellent smooth running characteristics thanks to good suction performance and virtually cavitation-free operation across a wide operating range
- Casing sealed reliably – even in varying operating conditions – by confined casing gasket
- Extended selection chart with additional pump sizes for small flow rates
- Easy to dismantle due to back pull-out design; no need to remove the pump casing from the piping
- Easy to dismantle using forcing screws at the interface between casing cover and bearing bracket
- Optimum venting via the highly effective VenJet® venting chamber
- Top reliability with double mechanical seal in tandem arrangement
- High resistance by anti-seize product-lubricated carbon plain bearing or SiC/SiC bearing

Acceptance tests and warranty

The following acceptance tests may be performed at a surcharge:

Overview of acceptance tests/warranty

Acceptance tests / warranty	Region
Materials testing	
▪ Test report 2.2 on request	A, B
Final inspection	
▪ Inspection certificate 3.1 to EN 10204 on request	A, B
Hydraulic test	
▪ The duty point of each pump is guaranteed according to ISO 9906/2B or ISO 9906/3B.	A, B
▪ NPSH test	A, B
Other inspections/tests on request	A, B
Warranty	
▪ Warranties are given within the scope of the valid delivery conditions.	A, B

Overview of product features / selection tables

Overview of fluids handled

Table of fluids handled and associated material combinations
X = standard

Fluid handled	Application limits ³⁾	Casing/impeller materials					Shaft seal	
		Nodular cast iron/ grey cast iron	Nodular cast iron/ stainless steel	Cast steel/ grey cast iron	Cast steel/ stainless steel	Cast steel/ cast steel	Single mechanical seal AQ, VGG	Double mechanical seal tandem AQ, VGG / AQ, VGG
		SG	SC	EG	EC	EE	Code 08	Code 25
Hot water ⁴⁾	t ≤ 180 °C p ≤ 16 bar			X			X	-
Thermal oil on mineral oil basis	t ≤ -30 to 350 °C p ≤ 16 bar			X			X	X
Thermal oil on synthetic basis, vapour pressure ≤ 1 bar at operating temperature	t ≤ -30 to 350 °C p ≤ 16 bar			X			X	X
Thermal oil on synthetic basis, vapour pressure ≥ 1 bar at operating temperature	t ≤ -30 to 350 °C p ≤ 16 bar			X			-	X

3) The inlet pressure must not fall below atmospheric pressure.

4) Low-salt or fully desalinated water to VdTÜV technical instruction leaflet / AGFW technical instruction leaflet
 TCN 1466 (VdTÜV) 5/15 (AGFW), edition 02.89

Bearings

Bearings used

Overview

Version	Bearing bracket	Pump end	Drive end
Standard plain bearing (lubricated by fluid handled)	WS_25_LS	Carbon (KHK)	-
	WS_35_LS	Carbon (KHK)	-
	WS_55_LS	Carbon (KHK)	-
Optional plain bearing (lubricated by fluid handled)	WS_25_LS	SiC / SiC	-
	WS_35_LS	SiC / SiC	-
	WS_55_LS	SiC / SiC	-
Rolling element bearing (grease lubrication / grease-packed for life Klüber Asonic HQ 72-102)	WS_25_LS	-	DIN 625
	WS_35_LS	-	DIN 625
	WS_55_LS	-	DIN 625

Pressure and temperature limits

Test pressure limits and temperature limits

Pressure limits and temperature limits as a function of material variant

Material	Fluid temperature	Test pressure ⁵⁾	Region
	[°C]	[bar]	
S	-30 to +350	≤ 25	A
E	-30 to +350	≤ 25	B

In-service pressure limits and temperature limits

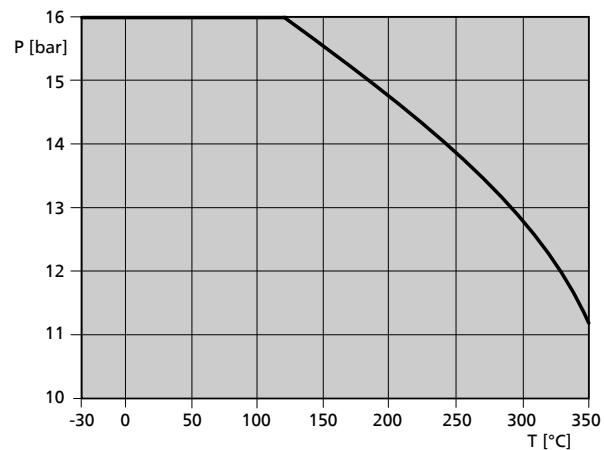


Fig. 1: Pressure/temperature correlation for flanges, material S, to EN 1092-2 and flanges drilled to ASME 125
Pressure/temperature correlation for flanges, material E, to EN 1092-1 and flanges drilled to ASME 150

5) The casing components are checked for leakage by means of internal pressure tests to AN 1897/75-03D00 using water.

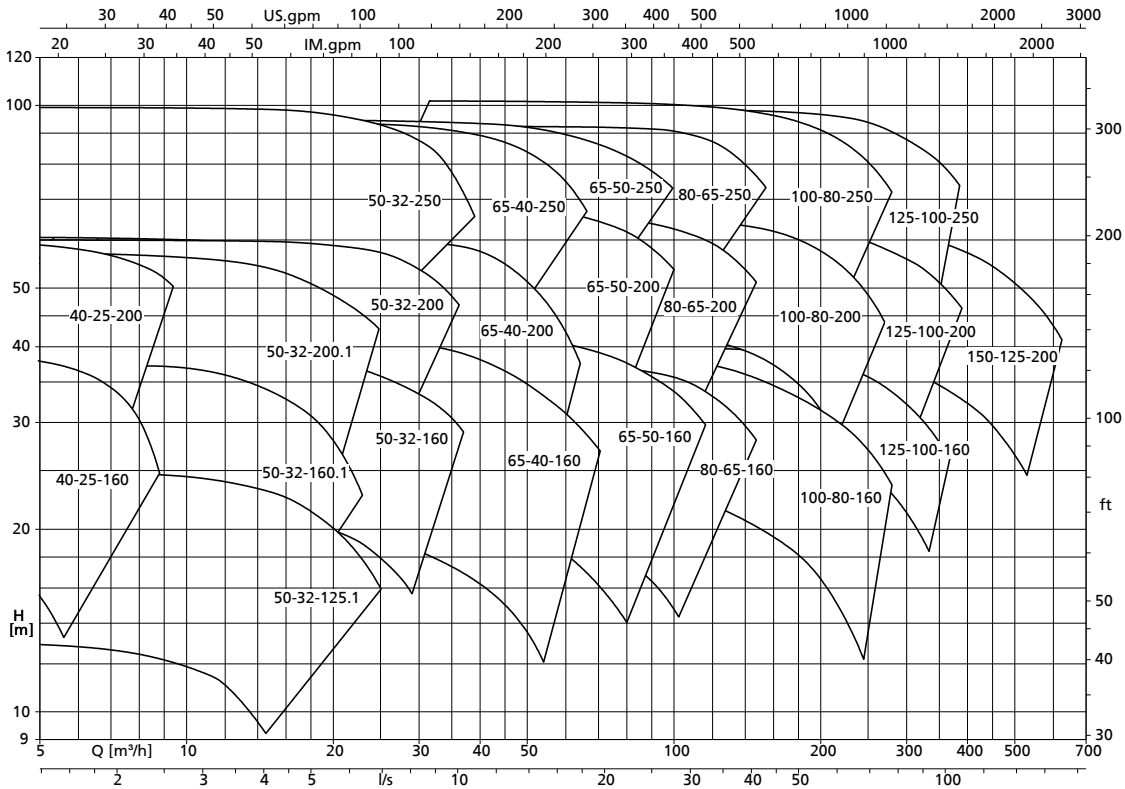
Technical data

Technical data

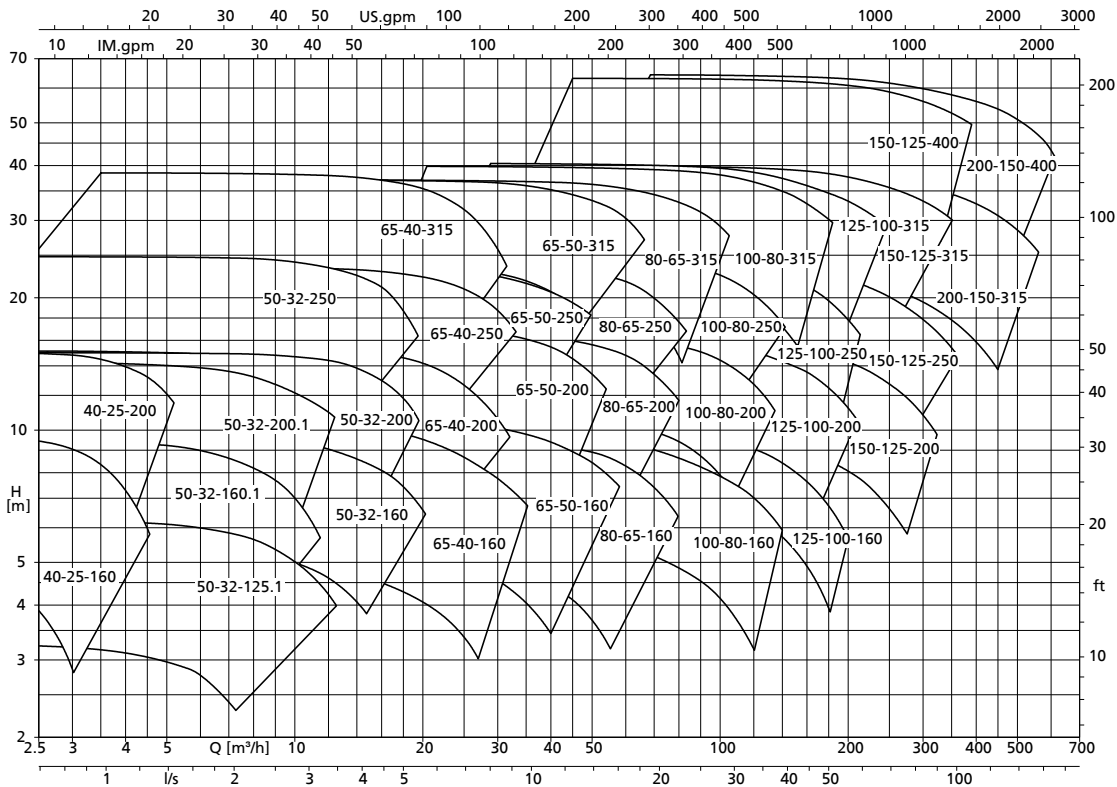
Etanorm SYT	Shaft unit	Impeller				Speed limit	
		Outlet	Inlet	Nominal diameter		Max.	Min.
			Nominal diameter	Max.	Min.		
		[mm]				[rpm]	
040-025-160	25	6,0	45,2	169	130	3600	800
040-025-200	25	6,0	45,2	209	160	3600	800
050-032-125.1	25	6,6	52,4	139	104	3600	800
050-032-160	25	8,5	60,6	174	136	3600	800
050-032-160.1	25	5,7	52,7	170	136	4400	800
050-032-200	25	7,0	62,9	209	170	3700	800
050-032-200.1	25	5,6	54,0	204	170	3800	800
050-032-250	25	7,5	62,6	261	209	3600	800
065-040-160	25	13,0	70,0	174	128	4400	800
065-040-200	25	9,4	69,4	209	165	3700	800
065-040-250	25	8,4	74,1	260	200	3600	800
065-040-315	35	7,5	75,3	326	260	2300	800
065-050-160	25	16,9	86,9	174	128	4400	800
065-050-200	25	13,8	83,1	219	170	3600	800
065-050-250	25	10,5	84,0	260	215	3600	800
065-050-315	35	10,0	87,0	323	265	2400	800
080-065-160	25	21,0	92,0	174	132	3900	800
080-065-200	25	17,0	99,7	219	175	3600	800
080-065-250	35	15,1	101,0	260	215	3600	800
080-065-315	35	13,7	108,2	320	260	1900	800
100-080-160	25	31,6	124,0	174	138	3600	800
100-080-200	35	24,5	115,0	219	180	3600	800
100-080-250	35	19,0	115,0	269	215	3600	800
100-080-315	35	18,7	115,6	334	269	1900	800
125-100-160	35	37,6	135,0	185	162	3600	800
125-100-200	35	32,5	142,0	219	179	3600	800
125-100-250	35	27,0	145,0	269	210	3600	800
125-100-315	35	23,0	142,0	334	270	1900	800
150-125-200	35	40,7	159,0	224	182	3600	800
150-125-250	35	37,0	162,4	269	218	2000	800
150-125-315	55	30,9	162,0	334	270	1900	800
150-125-400	55	25,9	162,4	419	330	1800	800
200-150-315	55	39,7	191,5	334	264	1800	800
200-150-400	55	33,0	191,4	419	330	1800	800

Selection Charts

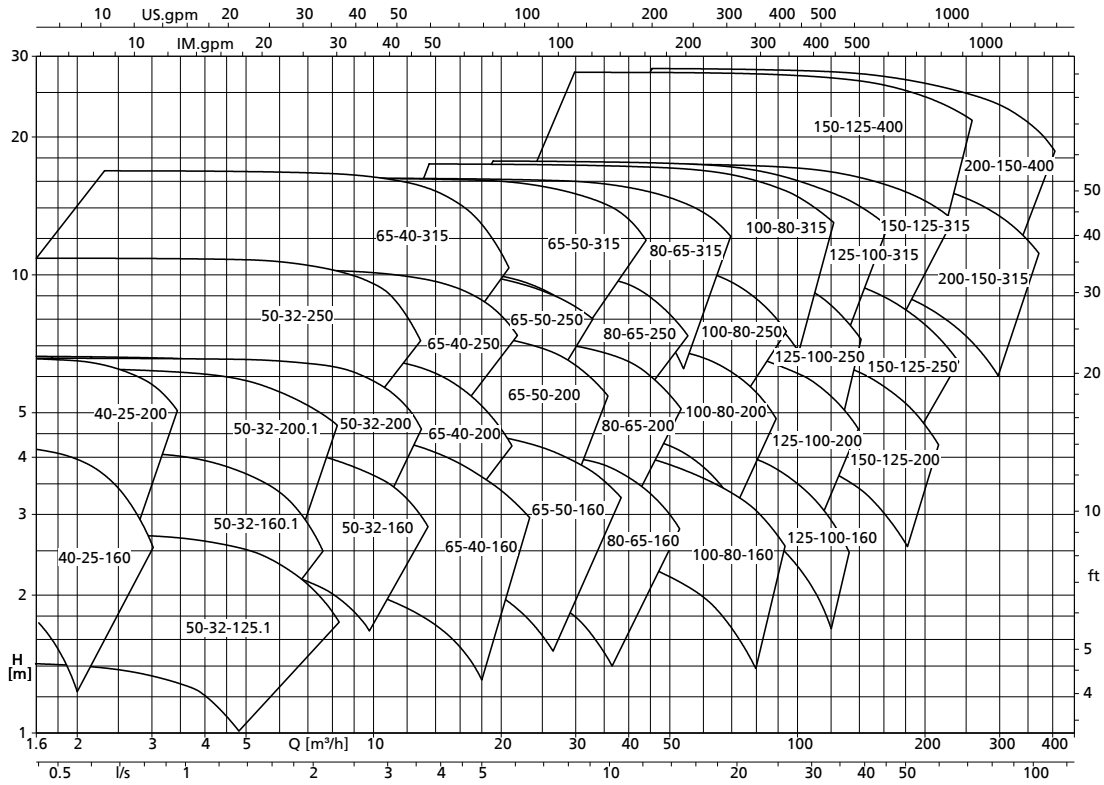
Etanorm SYT, n = 2900 rpm



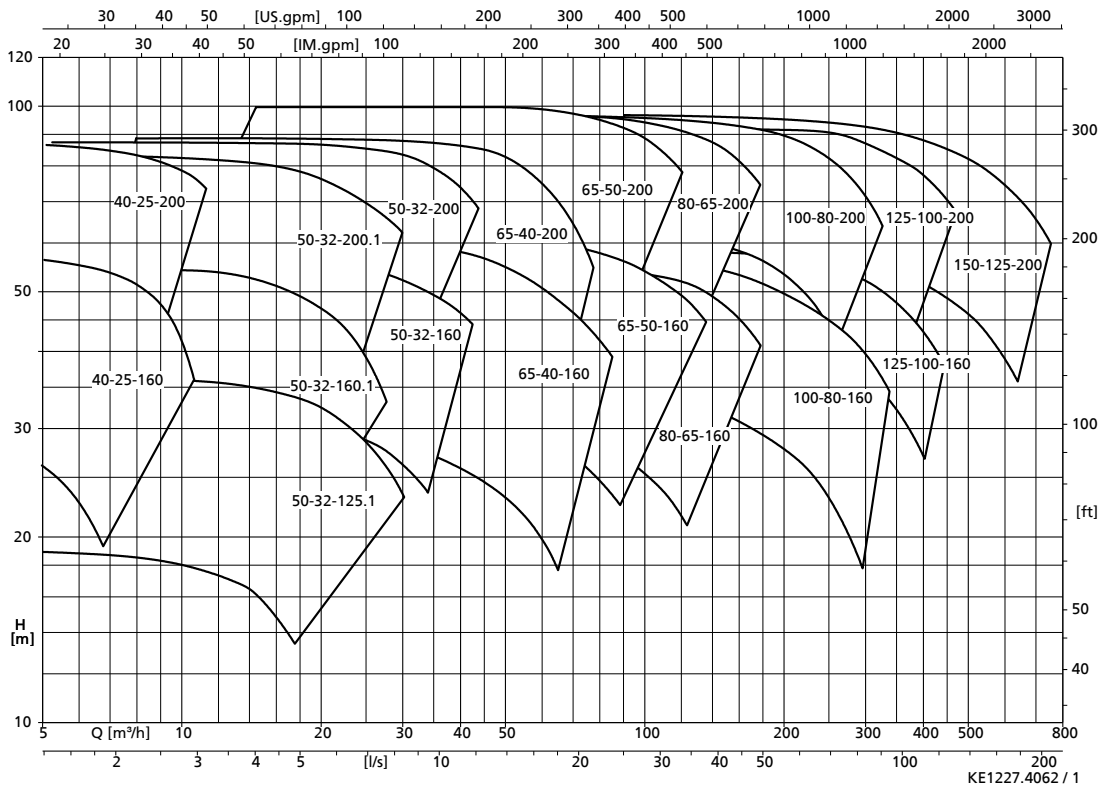
Etanorm SYT, n = 1450 rpm



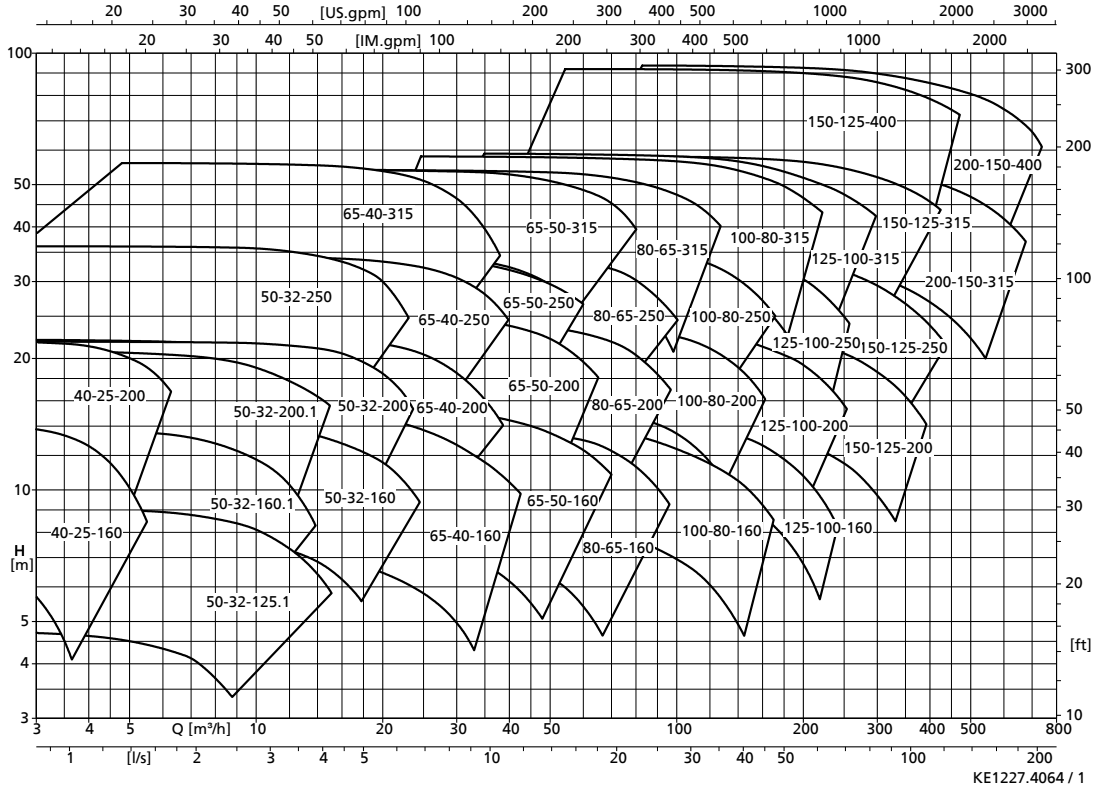
Etanorm SYT, n = 960 rpm



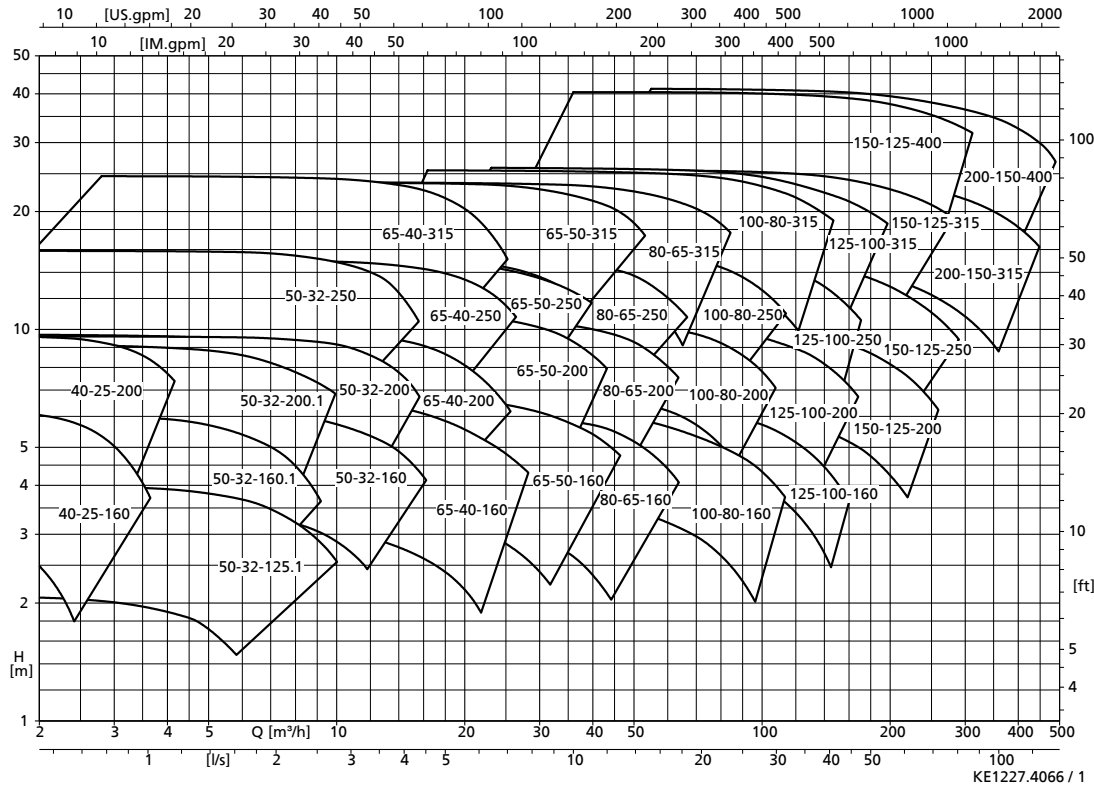
Etanorm SYT, n = 3500 rpm



Etanorm SYT, n = 1750 rpm



Etanorm SYT, n = 1160 rpm



Dimensions and connections

Etanorm SYT, Fig. 0

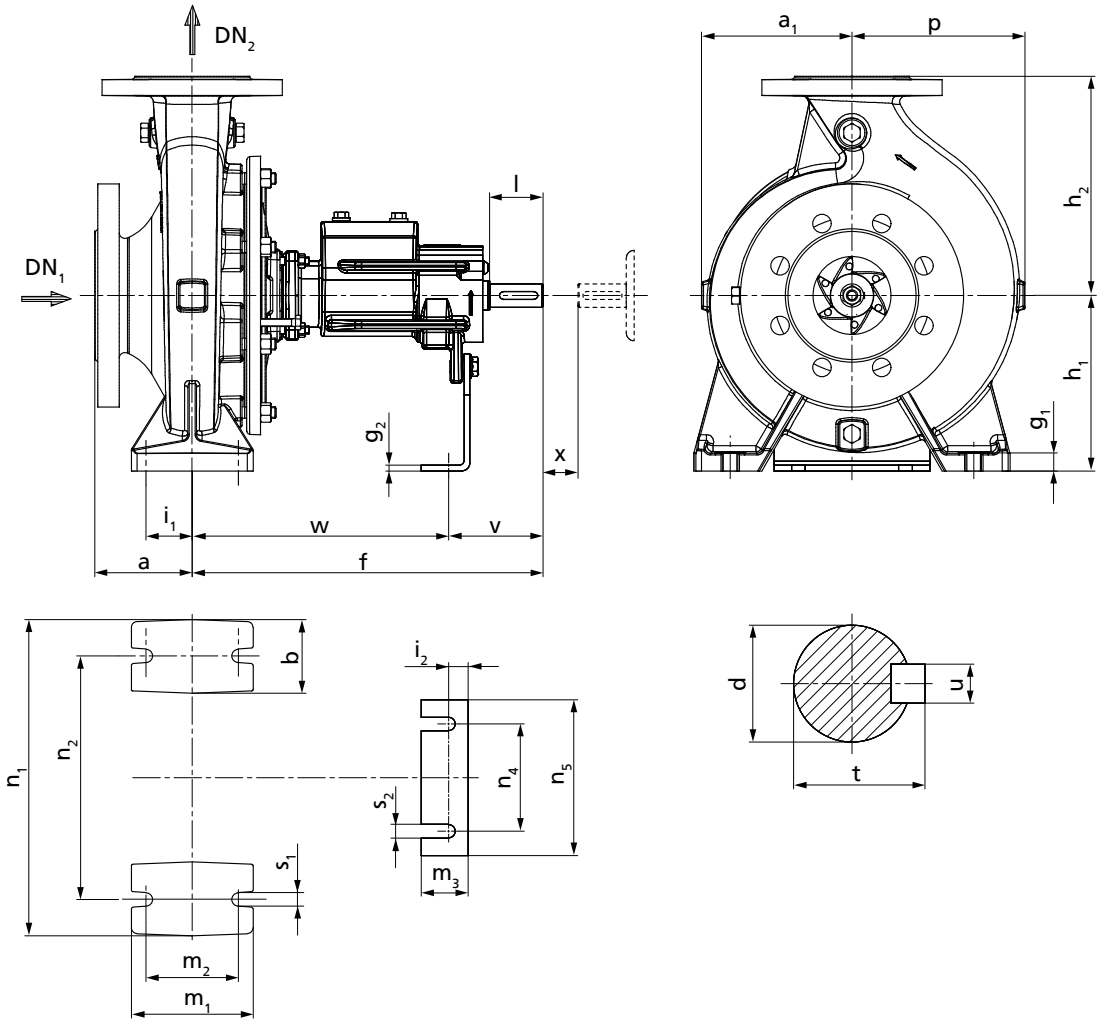


Fig. 2: Dimensions of Etanorm SYT pump (Fig. 0)

Dimensions of Etanorm SYT pump (Fig. 0)

Etanorm SYT	Bearing bracket	DN ₁ ⁶⁾	DN ₂ ⁶⁾	a ⁶⁾	a ₁	b ⁶⁾	d ⁶⁾	f ⁶⁾	g ₁	g ₂	h ₁ ⁶⁾	h ₂ ⁶⁾	i ₁	i ₂	l ⁶⁾	m ₁ ⁶⁾	m ₂	m ₃ ⁶⁾	n ₁ ⁶⁾	n ₂ ⁶⁾	n ₄	n ₅	p	s ₁ ⁶⁾	s ₂ ⁶⁾	t	u	v	w ⁶⁾	x ⁶⁾
		[mm]																												
040-025-160	WS_25_LS	40	25	80	118	50	24	360	15	4	132	160	35	23	50	100	70	48	240	190	110	160	118	14	14	27	8	100	260	100
040-025-200	WS_25_LS	40	25	80	142	50	24	360	15	4	160	180	35	23	50	100	70	48	240	190	110	160	142	14	14	27	8	100	260	100
050-032-125.1	WS_25_LS	50	32	80	116	50	24	360	15	4	112	140	35	23	50	100	70	48	190	140	110	160	116	14	14	27	8	100	260	100
050-032-160	WS_25_LS	50	32	80	118	50	24	360	15	4	132	160	35	23	50	100	70	48	240	190	110	160	128	14	14	27	8	100	260	100
050-032-160.1	WS_25_LS	50	32	80	116	50	24	360	15	4	132	160	35	23	50	100	70	48	240	190	110	160	121	14	14	27	8	100	260	100
050-032-200	WS_25_LS	50	32	80	142	50	24	360	18	4	160	180	35	23	50	100	70	48	240	190	110	160	143	14	14	27	8	100	260	100
050-032-200.1	WS_25_LS	50	32	80	142	50	24	360	18	4	160	180	35	23	50	100	70	48	240	190	110	160	142	14	14	27	8	100	260	100
050-032-250	WS_25_LS	50	32	100	169	65	24	360	18	6	180	225	47,5	25	50	125	95	48	320	250	110	160	178	14	14	27	8	100	260	100
065-040-160	WS_25_LS	65	40	80	119	50	24	360	15	4	132	160	35	23	50	100	70	48	240	190	110	160	134	14	14	27	8	100	260	100
065-040-200	WS_25_LS	65	40	100	142	50	24	360	18	4	160	180	35	23	50	100	70	48	265	212	110	160	155	14	14	27	8	100	260	100
065-040-250	WS_25_LS	65	40	100	169	65	24	360	18	6	180	225	47,5	25	50	125	95	48	320	250	110	160	179	14	14	27	8	100	260	100
065-040-315	WS_35_LS	65	40	125	207	65	32	470	18	6	225	250	47,5	24	80	125	95	48	345	280	110	160	207	14	14	35	10	130	340	100
065-050-160	WS_25_LS	65	50	100	128	50	24	360	18	4	160	180	35	23	50	100	70	48	265	212	110	160	149	14	14	27	8	100	260	100
065-050-200	WS_25_LS	65	50	100	144	50	24	360	18	4	160	200	35	23	50	100	70	48	265	212	110	160	163	14	14	27	8	100	260	100
065-050-250	WS_25_LS	65	50	100	170	65	24	360	18	6	180	225	47,5	25	50	125	95	48	320	250	110	160	186	14	14	27	8	100	260	100
065-050-315	WS_35_LS	65	50	125	207	65	32	470	18	6	225	280	47,5	24	80	125	95	48	345	280	110	160	215	14	14	35	10	130	340	100
080-065-160	WS_25_LS	80	65	100	132	65	24	360	18	4	160	200	47,5	23	50	125	95	48	280	212	110	160	160	14	14	27	8	100	260	100
080-065-200	WS_25_LS	80	65	100	155	65	24	360	18	6	180	225	47,5	25	50	125	95	48	320	250	110	160	178	14	14	27	8	100	260	140
080-065-250	WS_35_LS	80	65	100	179	80	32	470	20	6	200	250	60	24	80	160	120	48	360	280	110	160	199	19	14	35	10	130	340	140
080-065-315	WS_35_LS	80	65	125	209	80	32	470	20	6	225	280	60	24	80	160	120	48	400	315	110	160	229	19	14	35	10	130	340	140
100-080-160	WS_25_LS	100	80	125	138	65	24	360	18	6	180	225	47,5	25	50	125	95	48	320	250	110	160	174	14	14	27	8	100	260	140
100-080-200	WS_35_LS	100	80	125	159	65	32	470	18	4	180	250	47,5	22	80	125	95	48	345	280	110	160	188	14	14	35	10	130	340	140
100-080-250	WS_35_LS	100	80	125	183	80	32	470	18	6	200	280	60	24	80	160	120	48	400	315	110	160	209	19	14	35	10	130	340	140
100-080-315	WS_35_LS	100	80	125	218	80	32	470	20	6	250	315	60	24	80	160	120	48	400	315	110	160	242	19	14	35	10	130	340	140
125-100-160	WS_35_LS	125	100	125	178	80	32	470	18	6	200	280	60	24	80	160	120	48	360	280	110	160	225	19	14	35	10	130	340	140
125-100-200	WS_35_LS	125	100	125	173	80	32	470	18	6	200	280	60	24	80	160	120	48	360	280	110	160	212	19	14	35	10	130	340	140
125-100-250	WS_35_LS	125	100	140	188	80	32	470	18	6	225	280	60	24	80	160	120	48	400	315	110	160	219	19	14	35	10	130	340	140
125-100-315	WS_35_LS	125	100	140	225	80	32	470	18	6	250	315	60	24	80	160	120	48	400	315	110	160	255	19	14	35	10	130	340	140
150-125-200	WS_35_LS	150	125	140	189	80	32	470	20	6	250	315	60	24	80	160	120	48	400	315	110	160	242	19	14	35	10	130	340	140
150-125-250	WS_35_LS	150	125	140	226	80	32	470	20	6	250	355	60	24	80	160	120	48	400	315	110	160	275	19	14	35	10	130	340	140
150-125-315	WS_55_LS	150	125	140	243	100	42	530	20	6	280	355	75	25	110	200	150	48	500	400	110	160	280	24	14	45	12	160	370	140
150-125-400	WS_55_LS	150	125	140	277	100	42	530	20	6	315	400	75	25	110	200	150	48	500	400	110	160	309	24	14	45	12	160	370	140
200-150-315	WS_55_LS	200	150	160	255	100	42	530	20	6	280	400	75	25	110	200	150	48	550	450	110	160	304	24	14	45	12	160	370	140
200-150-400	WS_55_LS	200	150	160	289	100	42	530	20	6	315	450	75	25	110	200	150	48	550	450	110	160	331	24	14	45	12	160	370	140

6) Dimensions to EN 733

Flange dimensions

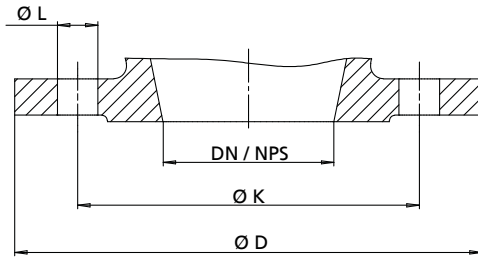


Fig. 3: Flange dimensions of Etanorm SYT

Flange dimensions of Etanorm SYT

DN / NPS	Standard								
	EN 1092-1			EN 1092-2			ASME B 16.1 / 16.5		
	Material								
	E			S			S / E		
	PN 16						Class 125 / 150		
	Ø K	Ø D	Number and Ø of holes (Ø L)	Ø K	Ø D	Number and Ø of holes (Ø L)	Ø K	Ø D	Number and Ø of holes (Ø L)
[mm]									
25 / NPS 1	85	115	4 x Ø14	85	115	4 x Ø14	79,2	115	4 x Ø15.7
32 / NPS 1 1/4	100	140	4 x Ø18	100	140	4 x Ø19	88,9	140	4 x Ø15.7
40 / NPS 1 1/2	110	150	4 x Ø18	110	150	4 x Ø19	98,6	150	4 x Ø15.7
50 / NPS 2	125	165	4 x Ø18	125	165	4 x Ø19	120,7	165	4 x Ø19.1
65 / NPS 2 1/2	145	185	4 x Ø18	145	185	4 x Ø19	139,7	185	4 x Ø19.1
80 / NPS 3 ⁷⁾	160	200 / 230	8 x Ø18	160	200 / 229 ⁸⁾	8 x Ø19	152,4	200 / 229 ⁸⁾ / 230 ⁸⁾	4 x Ø19.1
100 / NPS 4	180	230	8 x Ø18	180	230	8 x Ø19	190,5	230	8 x Ø19.1
125 / NPS 5	210	255	8 x Ø18	210	255	8 x Ø19	215,9	255	8 x Ø22.4
150 / NPS 6	240	285	8 x Ø22	240	285	8 x Ø23	241,3	285	8 x Ø22.4
200 / NPS 8	295	345	12 x Ø22	295	345	12 x Ø23	298,5	345	8 x Ø22.4

Equivalents of DN 80 for a flange drilled to ASME

Etanorm SYT	Bearing bracket	Material			
		SG / SC		EG / EC / EE	
		DN 1	DN 2	DN 1	DN 2
		ASME 125	ASME 125	ASME 150	ASME 150
080-065-160	WS_25_LS	NPS 4	NPS 2 1/2	NPS 4	NPS 2 1/2
080-065-200	WS_25_LS	NPS 4	NPS 2 1/2	NPS 4	NPS 2 1/2
080-065-250	WS_35_LS	NPS 4	NPS 2 1/2	NPS 4	NPS 2 1/2
080-065-315	WS_35_LS	NPS 4	NPS 2 1/2	NPS 4	NPS 2 1/2

Flange design

Flange design by materials

Material	Standard	Nominal diameter	Pressure class	Region
S	EN 1092-2	DN 25 - DN 200	PN 16	A
	Drilled to ASME B16.1 ⁹⁾	DN 25 - DN 200	Class 125	A
E	EN 1092-1	DN 25 - DN 200	PN 16	B
	Drilled to ASME B16.5 ⁹⁾	DN 25 - DN 200	Class 150	B

7) DN 80 machined like DN 100, drilled to ASME

8) Flange DN 80 on suction side (Etanorm SYT 080-065-160 / 080-065-200 / 080-065-250 / 080-065-315 only). Also see the table on Equivalents.

9) DN 80 machined like DN 100

Connection types

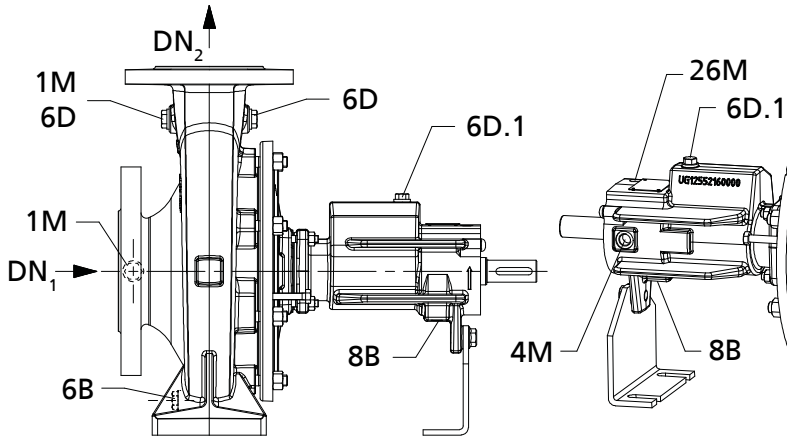


Fig. 4: Connection of Etanorm SYT with single mechanical seal

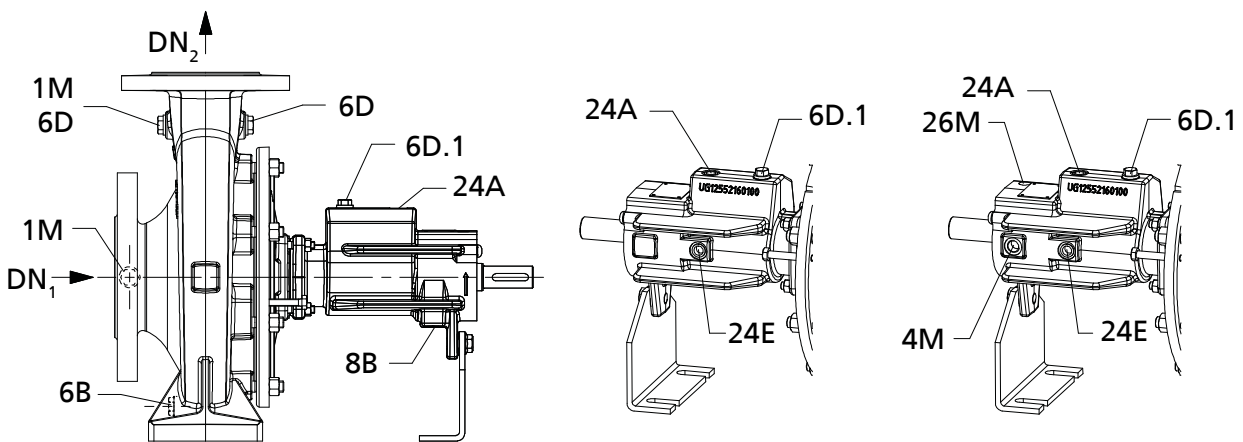


Fig. 5: Connection of Etanorm SYT with double mechanical seal

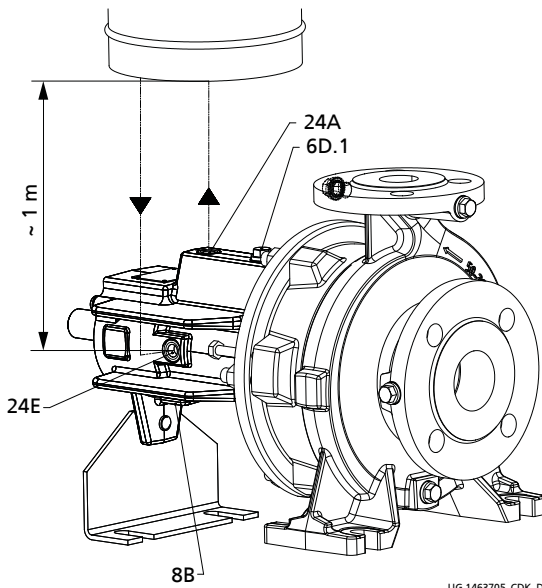
Connection type

Connection	Design	Configuration	Position	Region
1M	Pressure gauge connection	Drilled and closed or with pressure sensor	DN ₂	A
		Drilled and closed		B
1M Optional	Pressure gauge connection	Drilled and closed or with pressure sensor	DN ₁	A
		Drilled and closed		B
4M	Temperature measurement	Drilled and closed or with temperature sensor	-	A, B
6B	Fluid drain	Drilled and closed	-	A, B
6D	Fluid priming and venting	Drilled and closed	DN ₂ , suction side	A, B
6D optional	Fluid priming and venting	Drilled and closed	DN ₂ , drive end	A, B
6D.1	Fluid priming and venting	Drilled and closed	-	A, B
8B	Leakage drain	Drilled	-	A, B
24A	Quench fluid outlet	Drilled and closed or with quench piping	-	A, B
24E	Quench fluid inlet	Drilled and closed or with quench piping	-	A, B
26M	Shock pulse measurement	Drilled and closed or with vibration sensor	-	A, B

Etanorm SYT connections

Etanorm SYT	Bearing bracket	Material			
		S		E	
		Connection			
		Volute casing	Bearing bracket		Volute casing
1M / 6D / 6B	4M	6D.1 / 8B / 24A / 24E / 26M	1M / 6D / 6B		
040-025-160	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
040-025-200	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-125.1	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-160	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-160.1	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-200	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-200.1	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-250	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-040-160	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-040-200	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-040-250	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-040-315	WS_35_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-050-160	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-050-200	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-050-250	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-050-315	WS_35_LS	G 1/4	M8	G 1/4	1/4-18 NPT
080-065-160	WS_25_LS	G 3/8	M8	G 1/4	3/8-18 NPT
080-065-200	WS_25_LS	G 3/8	M8	G 1/4	3/8-18 NPT
080-065-250	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
080-065-315	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
100-080-160	WS_25_LS	G 3/8	M8	G 1/4	3/8-18 NPT
100-080-200	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
100-080-250	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
100-080-315	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
125-100-160	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
125-100-200	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
125-100-250	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
125-100-315	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
150-125-200	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
150-125-250	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
150-125-315	WS_55_LS	G 1/2	M8	G 1/4	1/2-14 NPT
150-125-400	WS_55_LS	G 1/2	M8	G 1/4	1/2-14 NPT
200-150-200	WS_55_LS	G 1/2	M8	G 1/4	1/2-14 NPT
200-150-400	WS_55_LS	G 1/2	M8	G 1/4	1/2-14 NPT

Auxiliary connections for double mechanical seal



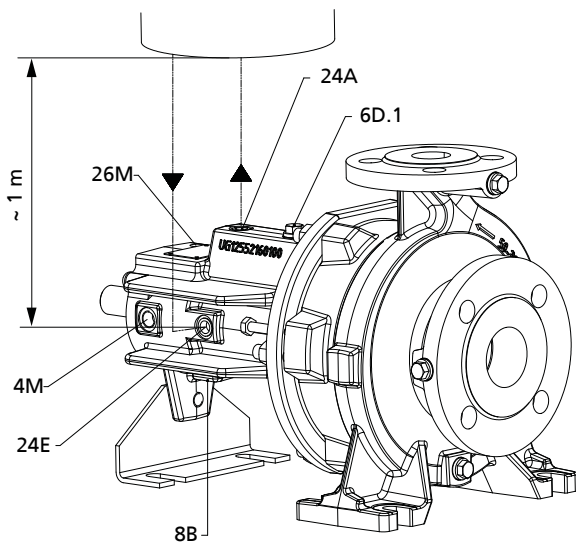
UG 1463705_CDK_D01_001/01

Fig. 6: Connections for double mechanical seal

Overview

Connection	Design
6D.1	Fluid priming and venting
8B	Leakage drain
24A	Quench fluid outlet
24E	Quench fluid inlet

Auxiliary connections for double mechanical seal and monitoring equipment



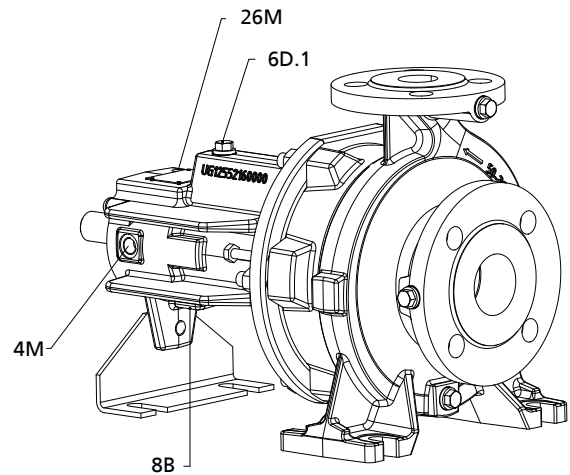
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Fig. 7: Connections for double mechanical seal and monitoring equipment

Overview

Connection	Description
4M	Temperature measurement
6D.1	Fluid priming and venting
8B	Leakage drain
24A	Quench liquid outlet
24E	Quench liquid inlet
26M	Shock pulse measurement

Auxiliary connections for single mechanical seal and monitoring equipment



UG 1501785_ZDK_002/01

Fig. 8: Connections for single mechanical seal and monitoring equipment

Overview

Connection	Description
4M	Temperature measurement
6D.1	Fluid priming and venting
8B	Leakage drain
26M	Shock pulse measurement

Scope of supply

Depending on the model, the following items are included in the scope of supply:

Scope of supply

Scope of supply	Region
Pump	A, B
Baseplate	A, B
Coupling	A, B
Coupling guard	A, B
Drive	A, B
Quench pot with pipework (optional)	A
Special accessories as required	A

General Assembly Drawings

Etanorm SYT, bearing bracket WS_25_LS

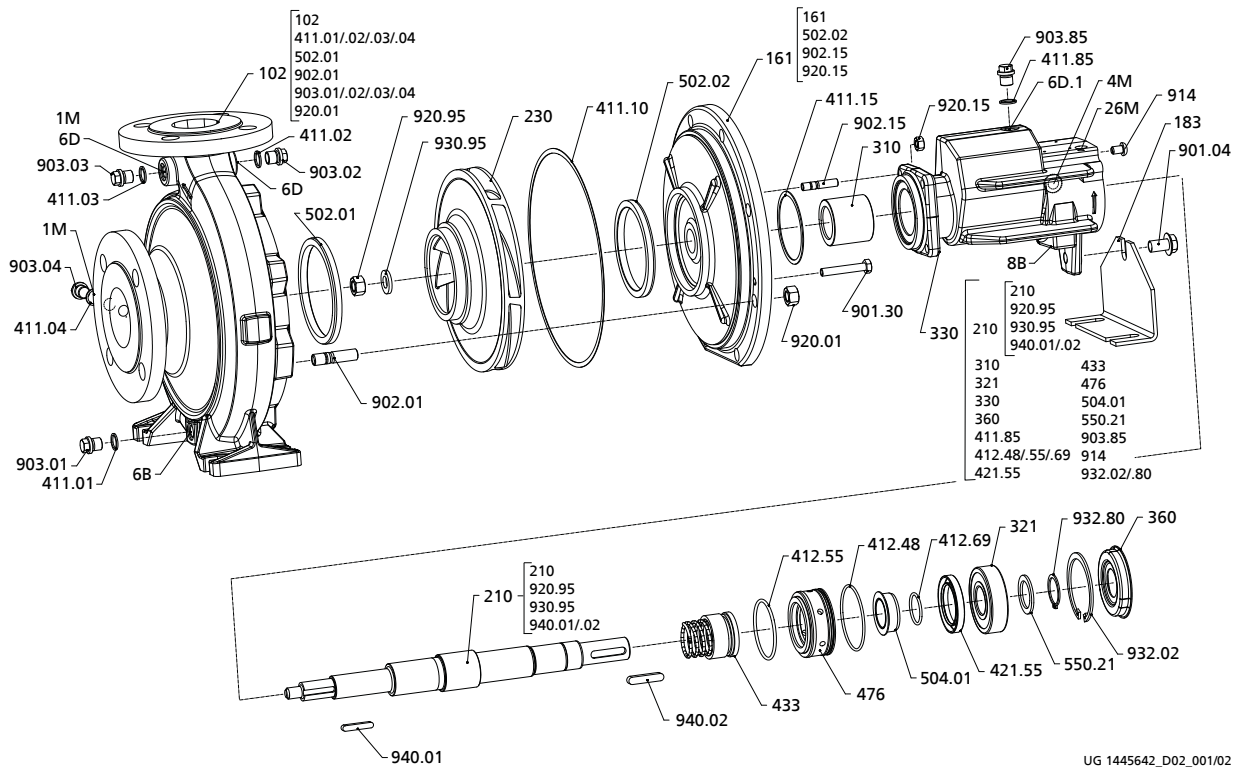


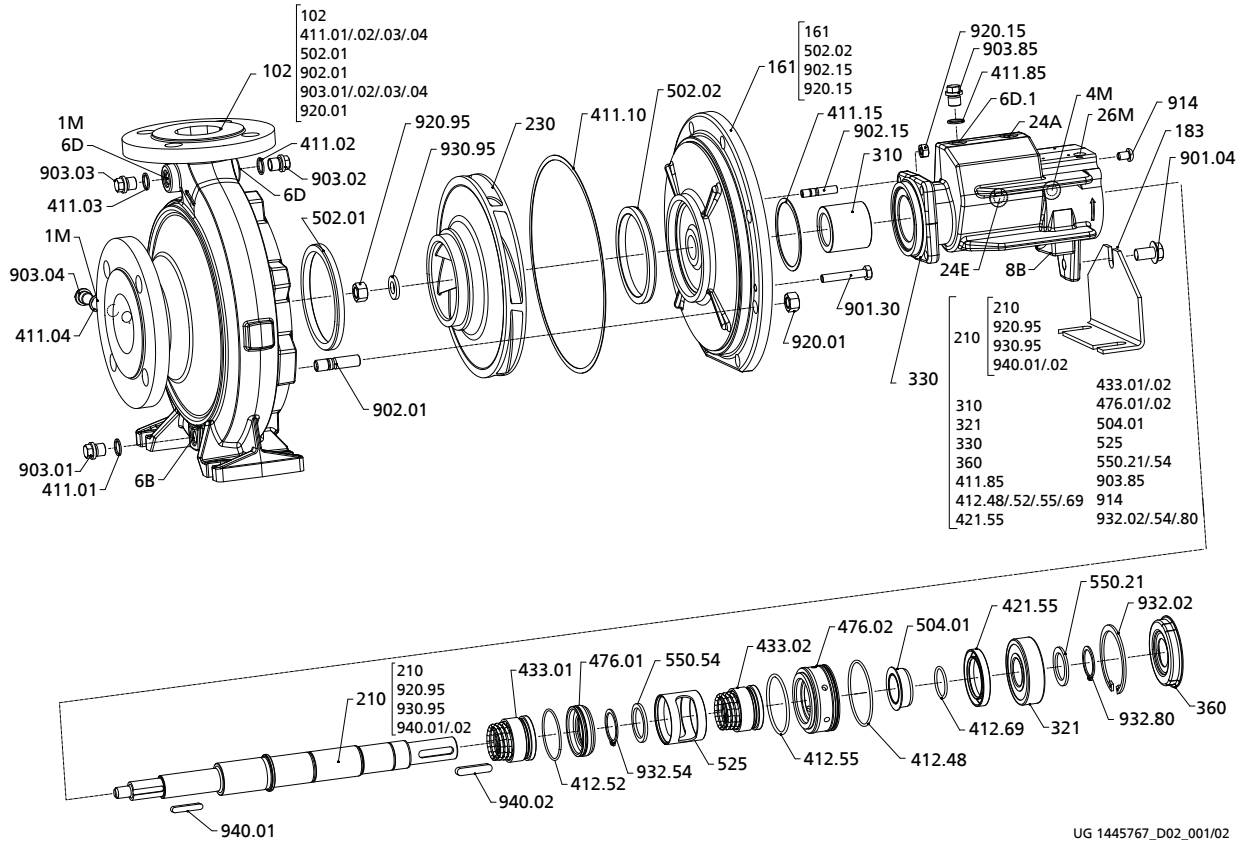
Fig. 9: Exploded view of an Etanorm SYT, bearing bracket WS_25_LS

List of components

Part No.	Description	Part No.	Description
102	Volute casing	476	Mating ring carrier
161	Casing cover	502.01/.02 ¹⁰⁾	Casing wear ring
183	Support foot	504.01	Spacer ring
210	Shaft	550.21	Disc
230	Impeller	901.04/.30	Hexagon head bolt
310	Plain bearing	902.01/.15	Stud
321	Radial ball bearing	903.01/.02/.03/.04/.85	Screw plug
330	Bearing bracket	914	Pan head screw
360	Bearing cover	920.01/.15/.95	Nut
411.01/.02/.03/.04/.10/.15/.85	Joint ring	930.95	Safety device
412.48/.55/.69	O-ring	932.02/.80	Circlip
421.55	Lip seal	940.01/.02	Key
433	Mechanical seal		

10) 502.02 not fitted on sizes 040-025-160, 050-032-125.1, 050-032-160, 050-032-160.1

Etanorm SYT, Lagerträger WS_25_LS mit Doppelgleitringdichtung



UG 1445767_D02_001/02

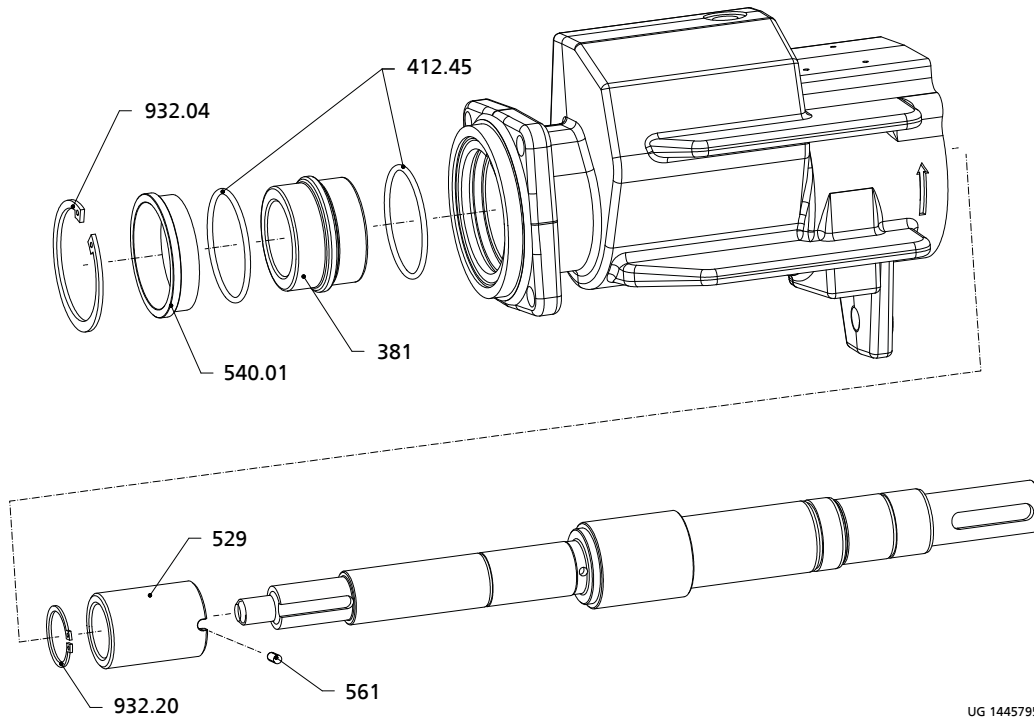
Fig. 10: Exploded view of an Etanorm SYT; bearing bracket WS_25_LS with double mechanical seal

List of components

Part No.	Description	Part No.	Description
102	Volute casing	476.01/.02	Mating ring carrier
161	Casing cover	502.01/.02 ¹¹⁾	Casing wear ring
183	Support foot	504.01	Spacer ring
210	Shaft	525	Spacer sleeve
230	Impeller	550.21/.54	Disc
310	Plain bearing	901.04/.30	Hexagon head bolt
321	Radial ball bearing	902.01/.15	Stud
330	Bearing bracket	903.01/.02/.03/.04/.85	Screw plug
360	Bearing cover	914	Pan head screw
411.01/.02/.03/.04/.10/.15/.85	Joint ring	920.01/.15/.95	Nut
412.48/.52/.55/.69	O-ring	930.95	Safety device
421.55	Lip seal	932.02/.54/.80	Circlip
433.01/.02	Mechanical seal	940.01/.02	Key

11) 502.02 not fitted on sizes 040-025-160, 050-032-125.1, 050-032-160, 050-032-160.1

Etanorm SYT, Lagerträger WS_25_LS / WS_55_LS mit SiC-Gleitlager



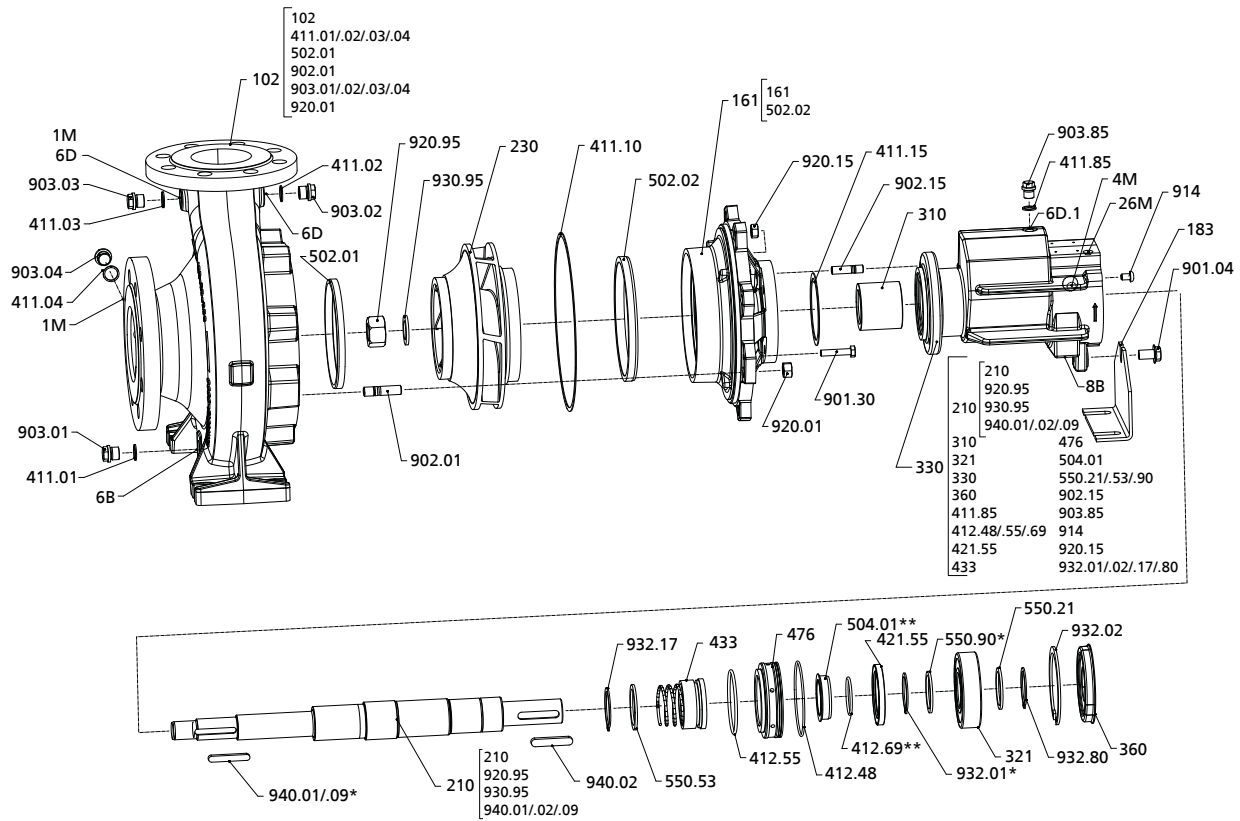
UG 1445795_D02_001/01

Fig. 11: Exploded view of an Etanorm SYT, bearing brackets WS_25_LS / WS_55_LS with SiC plain bearing

List of components

Part No.	Description	Part No.	Description
381	Bearing cartridge	540.01	Bush
412.45	O-ring	561	Grooved pin
529	Bearing sleeve	932.04/.20	Circlip

Etanorm SYT, Lagerträger WS_35_LS / WS_55_LS



UG 1451261_D02_001/02

Fig. 12: Exploded view of an Etanorm SYT; bearing brackets WS_35_LS / WS_55_LS

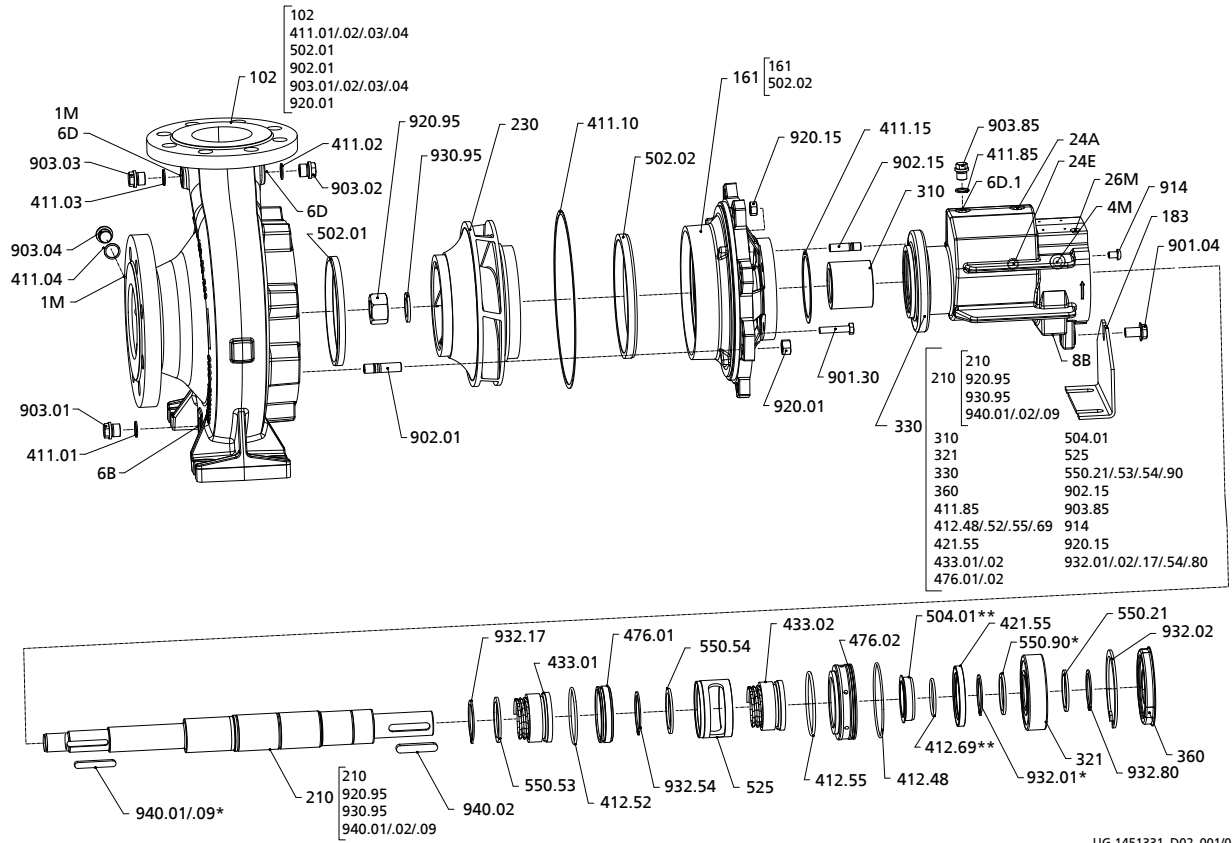
* For WS_55 only
** For WS_35 only

List of components

Part No.	Description	Part No.	Description
102	Volute casing	476	Mating ring carrier
161	Casing cover	502.01/02	Casing wear ring
183	Support foot	504.01 ¹²⁾	Spacer ring
210	Shaft	550.21/.53/.90 ¹³⁾	Disc
230	Impeller	901.04/.30	Hexagon head bolt
310	Plain bearing	902.01/.15	Stud
321	Radial ball bearing	903.01/.02/.03/.04/.85	Screw plug
330	Bearing bracket	914	Pan head screw
360	Bearing cover	920.01/.15/.95	Nut
411.01/.02/.03/.04/.10/.15/.85	Joint ring	930.95	Safety device
412.48/.55/.69	O-ring	932.01 ¹⁴⁾ /.02/.17/.80	Circlip
421.55	Lip seal	940.01/.02/.09 ¹⁵⁾	Key
433	Mechanical seal		

12) 504.01 for bearing bracket WS_35_LS only
13) 550.90 for bearing bracket WS_55_LS only
14) 932.01 for bearing bracket WS_55_LS only
15) 940.09 for bearing bracket WS_55_LS only

Etanorm SYT, Lagerträger WS_35_LS / WS_55_LS mit Doppelgleitringdichtung



UG 1451331_D02_001/02

Fig. 13: Exploded view of Etanorm SYT; bearing brackets WS_35_LS / WS_55_LS with double mechanical seal

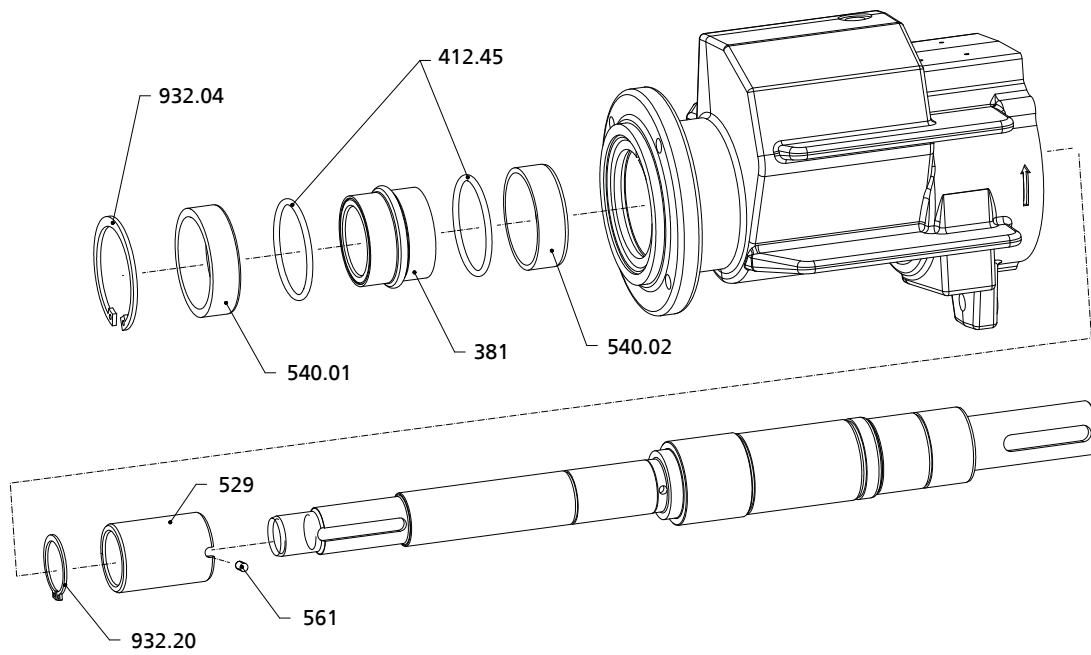
* WS_55 only
** WS_35 only

List of components

Part No.	Description	Part No.	Description
102	Volute casing	476.01/.02	Mating ring carrier
161	Casing cover	502.01/.02	Casing wear ring
183	Support foot	504.01 ¹⁶⁾	Spacer ring
210	Shaft	525	Spacer sleeve
230	Impeller	550.21/.53/.54/.90 ¹⁷⁾	Disc
310	Plain bearing	901.04/.30	Hexagon head bolt
321	Radial ball bearing	902.01/.15	Stud
330	Bearing bracket	903.01/.02/.03/.04/.85	Screw plug
360	Bearing cover	914	Pan head screw
411.01/.02/.03/.04/.10/.15/.85	Joint ring	920.01/.15/.95	Nut
412.48/.52/.55/.69 ¹⁸⁾	O-ring	930.95	Safety device
421.55	Lip seal	932.01 ¹⁹⁾ /.02/.17/.54/.80	Circlip
433.01/.02	Mechanical seal	940.01/.02/.09 ²⁰⁾	Key

16) 504.01 for bearing bracket WS_35_LS only
 17) 550.90 for bearing bracket WS_55_LS only
 18) 412.69 for bearing bracket WS_35_LS only
 19) 932.01 for bearing bracket WS_55_LS only
 20) 940.09 for bearing bracket WS_55_LS only

Etanorm SYT, Lagerträger WS_35_LS mit SiC-Gleitlager



UG 1451348_D02_001/01

Fig. 14: Exploded view of an Etanorm SYT, bearing bracket WS_35_LS with SiC plain bearing

List of components

Part No.	Description	Part No.	Description
381	Bearing cartridge	540.01/.02	Bush
412.45	O-ring	561	Grooved pin
529	Bearing sleeve	932.04/.20	Circlip



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