

In-line Twin Pumps

Automation products available:

- Hyamaster
- hyatronic

Fields of Application

- Heating systems
- Air-conditioning systems
- Cooling circuits
- Service water supply systems
- Water supply systems
- Industrial recirculation systems

Fluid Handled

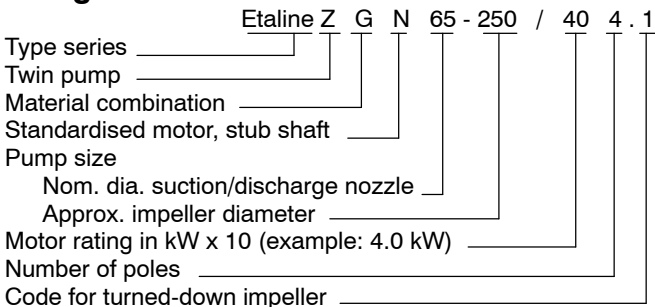
Liquids not chemically or mechanically aggressive to the pump materials (see list of fluids pumped on page 7).

Operating Data

Q up to 615 m³/h, 171 l/s Single-pump operation
up to 1120 m³/h, 311 l/s Parallel operation
H up to 38 m
t -30 to +140 °C
p_d up to 16 bar ¹⁾

¹⁾ The sum of inlet pressure and shutoff head must not exceed the value indicated.

Designation



Design

Close-coupled in-line twin pump. Two separate centrifugal pump hydraulics in one pump casing, with a spring-loaded changeover flap located in the discharge nozzle.

The flap housing material of twin pump sizes DN 32 to DN 80 is Rilsan, from sizes DN 100 up to and including DN 200 bronze. The flaps, springs and axles etc. are made of chrome steel. The mechanical seal chamber can be vented manually by means of integrated vent valves. Single-pump operation (one pump on standby) and parallel operation (additional pump start-up in case of peak load) can be selected as operating modes.

The associated switchgears, pump feet for vertical installation of the pump unit and blind flange for ensuring pump availability during servicing are documented as accessories.

Shaft Seal

Uncooled mechanical seal, for ex. carbon/silicon carbide, EP rubber or special elastomers.

Other variants as indicated in the list of fluids pumped.

Materials

	Etaline Z; GN	Etaline Z; MN
Volute casing	Cast iron JL 1040 ²⁾	Cast iron JL 1040 ²⁾
Discharge cover	Cast iron JL 1040 ²⁾	Cast iron JL 1040 ²⁾
Impeller	Cast iron JL 1040 ²⁾	Tin bronze
Casing wear rings	Cast iron JL 1040 ²⁾	Bronze
Shaft	Tempered steel C 45 N	Tempered steel C 45 N
Shaft sleeve	Chrome nickel molybdenum steel 1.4571	Chrome nickel molybdenum steel 1.4571
Motor stool	Cast iron JL 1040 ²⁾	Cast iron JL 1040 ²⁾

²⁾ to EN 1561 GJL-250 (was GG-25)

Drive

Standardised, surface-cooled three-phase squirrel-cage motor, up to 2.2 kW 230/400 V, 3 kW and above 400/690 V, IP 55, insulation class F.

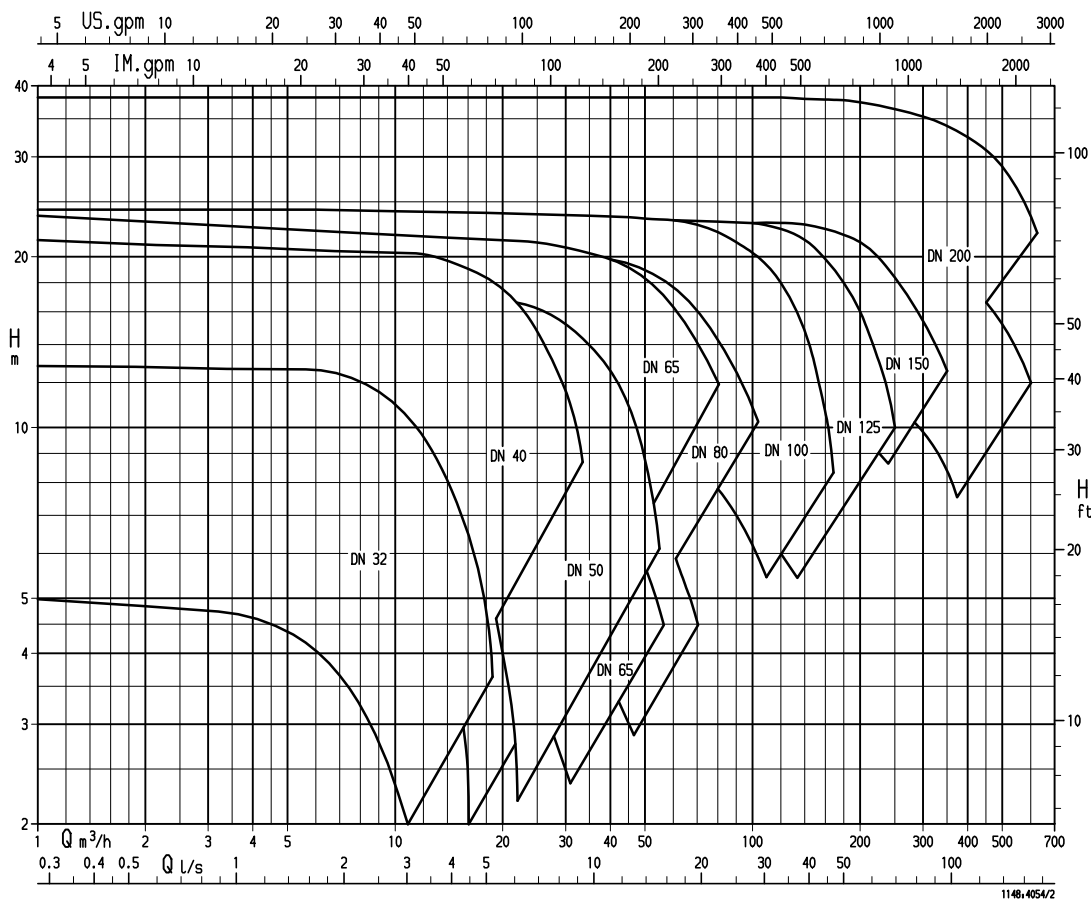
Bearings

Grease-lubricated deep-groove ball bearings.

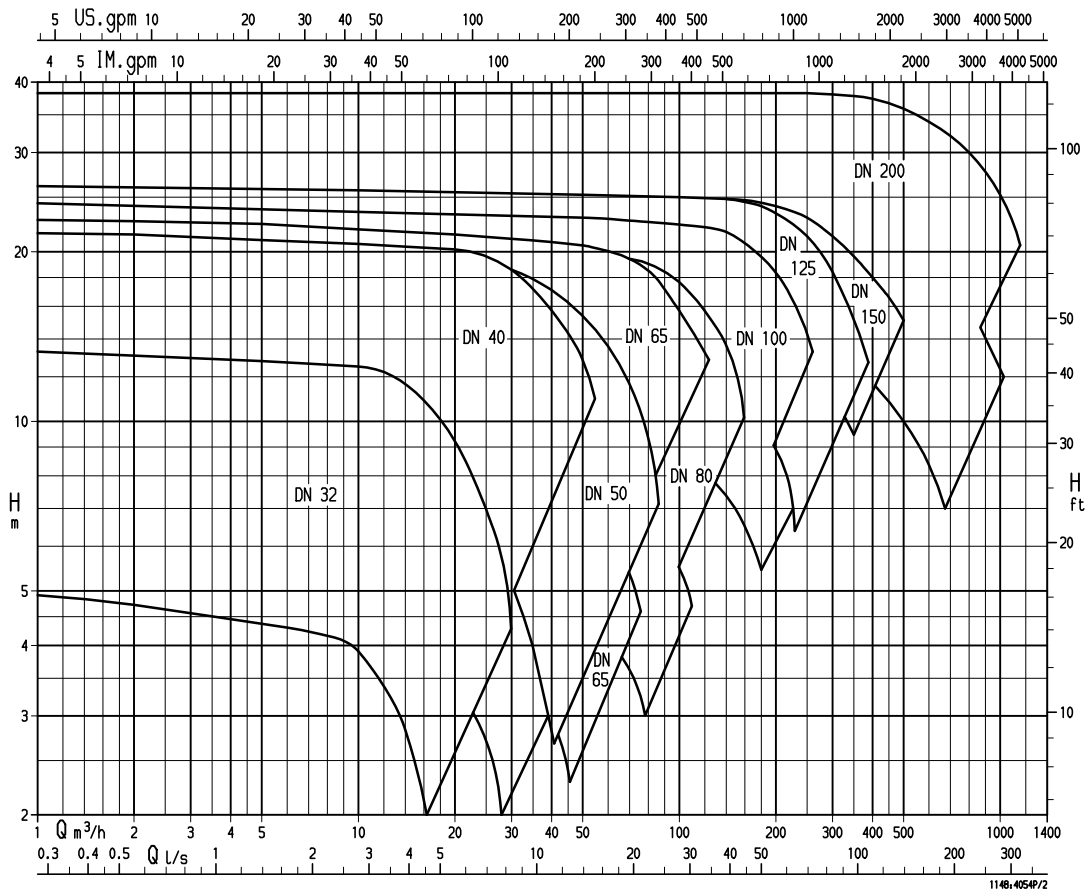
Product Information as per Regulation No. 547/2012 (for Water Pumps with a Maximum Shaft Power of 150 kW) Implementing "Ecodesign" Directive 2009/125/EC

- Minimum efficiency index: see data sheet
- The benchmark for most efficient water pumps is $MEI \geq 0.70$.
- Year of construction: see data sheet
- Manufacturer's name or trade mark, commercial registration number and place of manufacture: see data sheet or order documentation
- Product's type and size identifier: see data sheet
- Hydraulic pump efficiency (%) with trimmed impeller: see data sheet
- Pump performance curves, including efficiency characteristics: see documented characteristic curve
- The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.
- The operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.
- Information relevant for disassembly, recycling or disposal at end of life: see installation/ operating manual
- Information on benchmark efficiency or benchmark efficiency graph for $MEI = 0.7$ (0.4) for the pump based on the model shown in the Figure are available at:
<http://www.europump.org/efficiencycharts>

Selection Chart Etaline Z, 1450 1/min (for single-pump operation)



Selection Chart Etaline Z, 1450 1/min (for parallel operation)



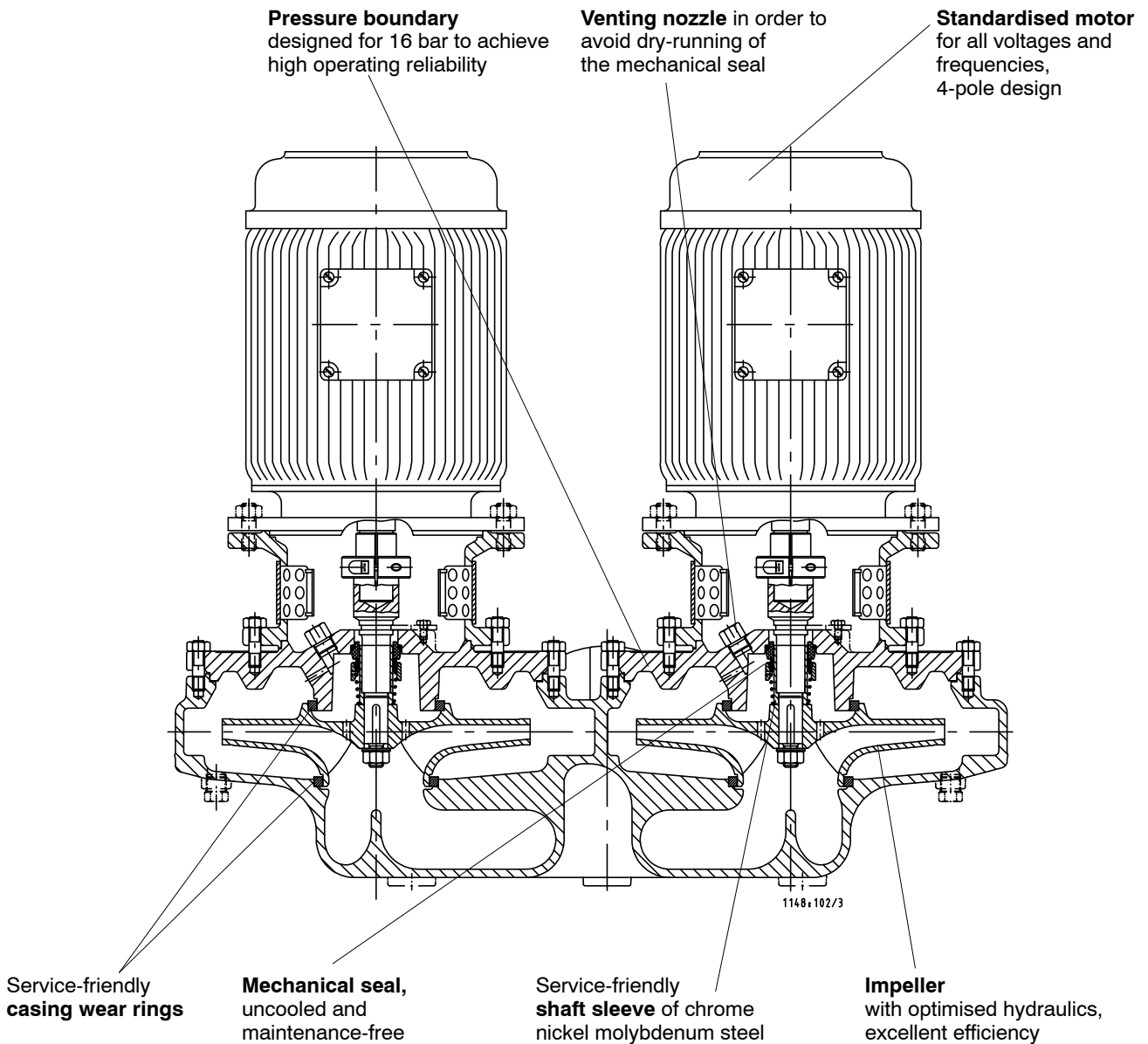
n ≈ 1450 1/min

Etaline Z	Motor		400V ≈A	Net weight ≈kg
	Size	kW		
32-160/024	71	0.25	0.81	55
32-160/034.2	71	0.37	1.16	58
32-160/034.1	71	0.37	1.16	58
32-160/054	80	0.55	1.45	64
32-200/054	80	0.55	1.45	83
32-200/074.2	80	0.75	2.0	86
32-200/074.1	80	0.75	2.0	86
32-200/114	90 S	1.1	2.8	97
40-160/024	71	0.25	0.81	57
40-160/034.2	71	0.37	1.16	60
40-160/034.1	71	0.37	1.16	60
40-160/054	80	0.55	1.45	66
40-250/074.2	80 L	0.75	2.0	103
40-250/074.1	80 L	0.75	2.0	103
40-250/114.2	90 S	1.1	2.8	114
40-250/114.1	90 S	1.1	2.8	114
40-250/154.2	90 L	1.5	3.6	120
40-250/154.1	90 L	1.5	3.6	120
40-250/224.2	100 L	2.2	5.2	137
40-250/224.1	100 L	2.2	5.2	137
40-250/304	100 L	3.0	6.8	147
50-160/034.2	71	0.37	1.16	66
50-160/034.1	71	0.37	1.16	66
50-160/054.2	80	0.55	1.45	72
50-160/054.1	80	0.55	1.45	72
50-160/074.2	80	0.75	2.0	75
50-160/074.1	80	0.75	2.0	75
50-160/114	90 S	1.1	2.8	86
50-250/114	90 S	1.1	2.8	120
50-250/154.2	90 L	1.5	3.6	126
50-250/154.1	90 L	1.5	3.6	126
50-250/224.2	100 L	2.2	5.2	143
50-250/224.1	100 L	2.2	5.2	143
50-250/304	100 L	3.0	6.8	153
65-160/034	71	0.37	1.16	72
65-160/054.2	80	0.55	1.45	78
65-160/054.1	80	0.55	1.45	78
65-160/074.2	80	0.75	2.0	81
65-160/074.1	80	0.75	2.0	81
65-160/114.2	90 S	1.1	2.8	92
65-160/114.1	90 S	1.1	2.8	92
65-160/154	90 L	1.5	3.6	98
65-250/154.2	90 L	1.5	3.6	137
65-250/154.1	90 L	1.5	3.6	137
65-250/224.2	100 L	2.2	5.2	154
65-250/224.1	100 L	2.2	5.2	154
65-250/304.2	100 L	3.0	6.8	164
65-250/304.1	100 L	3.0	6.8	164
65-250/404.2	112 M	4.0	9.0	178
65-250/404.1	112 M	4.0	9.0	178
65-250/554	132 S	5.5	11.4	199
80-160/074.2	80	0.75	2.0	90
80-160/074.1	80	0.75	2.0	90
80-160/114.2	90 S	1.1	2.8	101
80-160/114.1	90 S	1.1	2.8	101
80-160/154	90 L	1.5	3.6	107
80-250/224.2	100 L	2.2	5.2	169
80-250/224.1	100 L	2.2	5.2	169
80-250/304.2	100 L	3.0	6.8	182
80-250/304.1	100 L	3.0	6.8	182
80-250/404.2	112 M	4.0	9.0	196
80-250/404.1	112 M	4.0	9.0	196
80-250/554	132 S	5.5	11.4	216

Etaline Z	Motor		400V ≈A	Net weight ≈kg
	Size	kW		
100-200/224	100 L	2.2	5.2	222
100-200/304.2	100 L	3.0	6.8	232
100-200/304.1	112 M	3.0	6.8	232
100-200/404.2	112 M	4.0	9.0	246
100-200/404.1	112 M	4.0	9.0	246
100-200/554	132 S	5.5	11.4	265
100-250/404	112 M	4.0	9.0	268
100-250/554.3	132 S	5.5	11.4	288
100-250/554.2	132 S	5.5	11.4	288
100-250/554.1	132 S	5.5	11.4	288
100-250/754.2	132 M	7.5	15.4	315
100-250/754.1	132 M	7.5	15.4	315
100-250/1104	160 M	11.0	22.1	370
125-200/224	100 L	2.2	5.2	243
125-200/304.2	100 L	3.0	6.8	253
125-200/304.1	100 L	3.0	6.8	253
125-200/404.2	112 M	4.0	9.0	267
125-200/404.1	112 M	4.0	9.0	267
125-200/554.2	132 S	5.5	11.4	287
125-200/554.1	132 S	5.5	11.4	287
125-200/754	132 M	7.5	15.4	313
125-250/404	112 M	4.0	9.0	286
125-250/554	132 S	5.5	11.4	305
125-250/754.3	132 M	7.5	15.4	332
125-250/754.2	132 M	7.5	15.4	332
125-250/754.1	132 M	7.5	15.4	332
125-250/1104.2	160 M	11.0	22.1	387
125-250/1104.1	160 M	11.0	22.1	387
125-250/1504	160 L	15.0	28.5	439
150-250/754.2	132 M	7.5	15.4	392
150-250/754.1	132 M	7.5	15.4	392
150-250/1104.3	160 M	11.0	22.1	448
150-250/1104.2	160 M	11.0	22.1	448
150-250/1104.1	160 M	11.0	22.1	448
150-250/1504.2	160 L	15.0	28.5	500
150-250/1504.1	160 L	15.0	28.5	500
150-250/1854	180 M	18.5	35.0	537
200-250/1104	160 M	11.0	22.1	540
200-250/1504.3	160 L	15.0	28.5	592
200-250/1504.2	160 L	15.0	28.5	592
200-250/1504.1	160 L	15.0	28.5	592
200-250/1854.2	180 M	18.5	35.0	629
200-250/1854.1	180 M	18.5	35.0	629
200-250/2204.2	180 L	22.0	41.0	669
200-250/2204.1	180 L	22.0	41.0	669
200-250/3004	200 L	30.0	55.0	790
200-315/3004.3	200 L	30.0	55.0	903
200-315/3004.2	200 L	30.0	55.0	903
200-315/3004.1	200 L	30.0	55.0	903
200-315/3704.3	225 S	37.0	67.0	1095
200-315/3704.2	225 S	37.0	67.0	1095
200-315/3704.1	225 S	37.0	67.0	1095
200-315/4504.2	225 M	45.0	80.0	1176
200-315/4504.1	225 M	45.0	80.0	1176
200-315/5504	250 M	55.0	97.0	1193

Etaline Z - GN with bolted-on discharge cover

In-line design for easy installation and simple piping layout



Media Pumped

Medium pumped	Application limits	Casing/impeller materials		Shaft seal Mechanical seal				Variant code	Comments
		Cast iron/ Cast iron	Cast iron/ Tin bronze	U3BEGG	U3U3VGG	Q1Q1X4GG	BQ1EGG		
		GN	MN	6	9	10	11		
Water 1)									
Service water	$t \leq 110 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 10	
Heating water 4)	$t \leq 120 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	GN 11	If used as circulating pump according to DIN 4752; $p_{\text{max}} \leq 10 \text{ bar}$
Heating water 4)	$t \leq 140 \text{ }^\circ\text{C}$, $p \leq 16 \text{ bar}$	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>				GN 6	
Heating water 4)	$t \leq 110 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 10	
Condensate 3)	$t \leq 120 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	GN 11	Provide open-loop circuit MN 11 (processing via product number)
Cooling water (without antifreeze agent)	$t \leq 60 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 10	Provide open-loop circuit MN 10
Cooling water pH value ≥ 7.5 (with antifreeze agent) 2)	$t \geq -30 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$ $t \leq 110 \text{ }^\circ\text{C}$	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	GN 11	
Slightly contaminated water	$t \leq 60 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 10	
Clean water 3)	$t \leq 60 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	GN 11	
Untreated water	$t \leq 60 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 10	
Swimming pool water, fresh water	$t \leq 60 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 10	In case of requirements as per DIN 19 643, provide MN 10 (processing via product number)
Drinking water	$t \leq 60 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$		<input type="checkbox"/>				<input type="checkbox"/>	MN 11	
Partly desalinated water	$t \leq 120 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	GN 11	
Refrigerants, cooling brines									
Cooling brine, inorganic pH ≥ 7.5 , inhibited	$t \geq -30 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$ $t \leq 25 \text{ }^\circ\text{C}$	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	GN 11	
Water with antifreeze agent pH ≥ 7.5 2)	$t \geq -30 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$ $t \leq 110 \text{ }^\circ\text{C}$	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	GN 11	
Oils / emulsions									
Drilling/grinding emulsion	$t \leq 60 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 9	
Oil/water emulsion	$t \leq 60 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 9	
Cleaning agents									
Degreasing/cleaning solutions pH 7 to 14	$t \leq 90 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 10	
Bottle rinsing lyes	$t \leq 90 \text{ }^\circ\text{C}$, $p \leq 10 \text{ bar}$	<input type="checkbox"/>				<input type="checkbox"/>		GN 10	

■ = Standard □ = Prices and delivery times upon request

Example:
Given:

Clean water of $20 \text{ }^\circ\text{C}$; $Q = 40 \text{ m}^3/\text{h}$, $H = 20 \text{ m}$

Found: Etaline Z GN 65-250/404.1 GN 11

Pump size as per selection chart _____

Variant code _____

G = pump casing and impeller made of JL 1040 5)

N = stub shaft variant with standardised motor

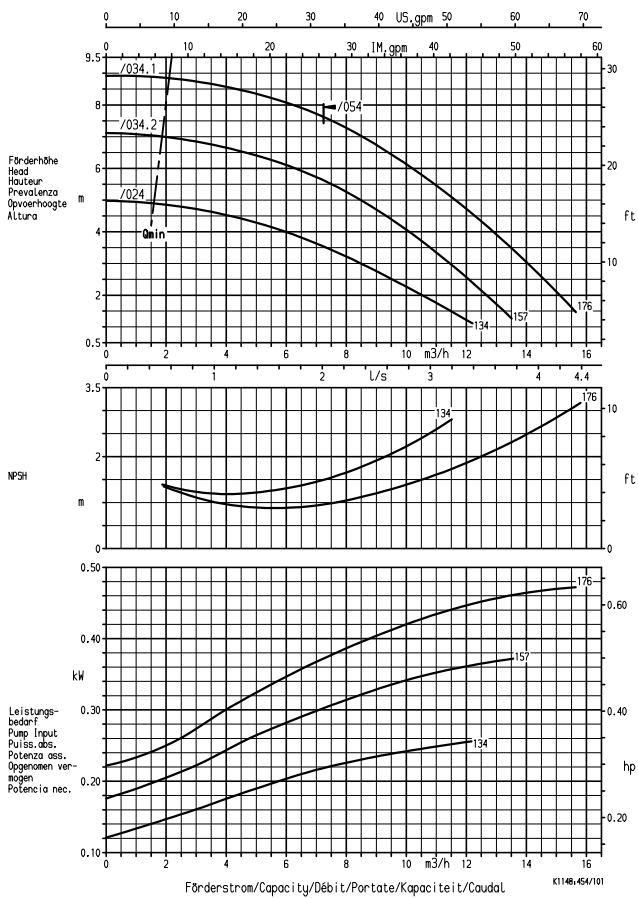
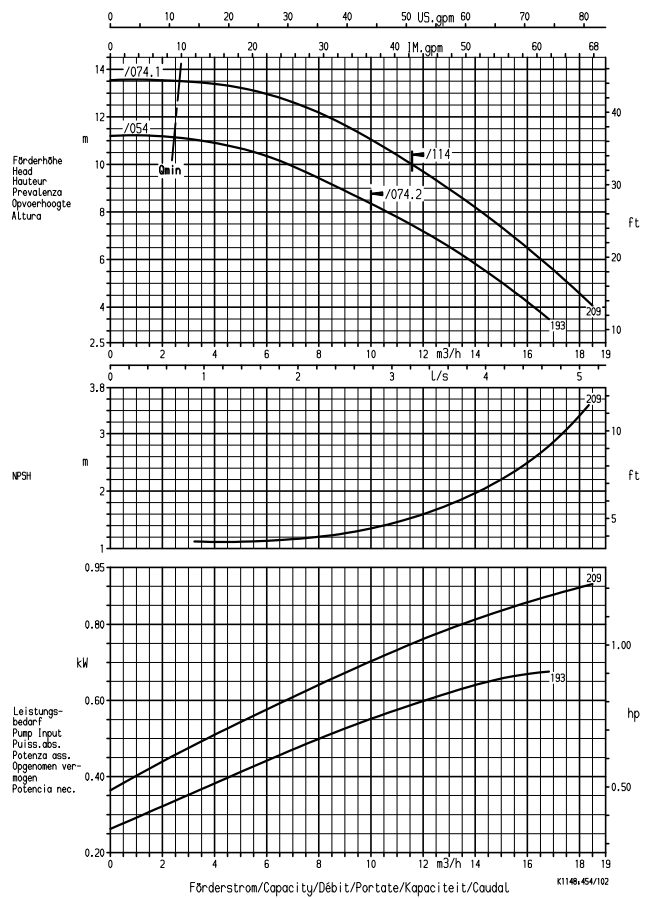
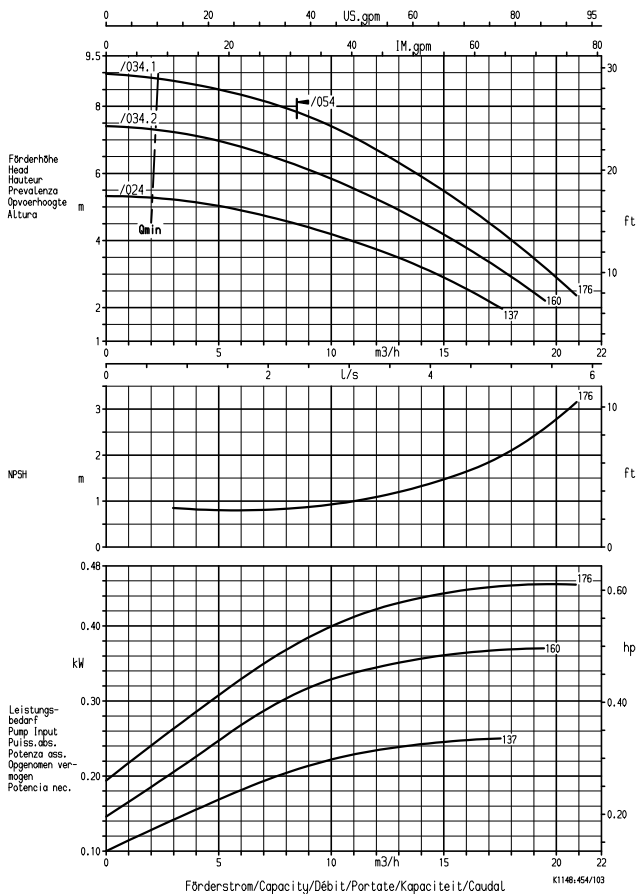
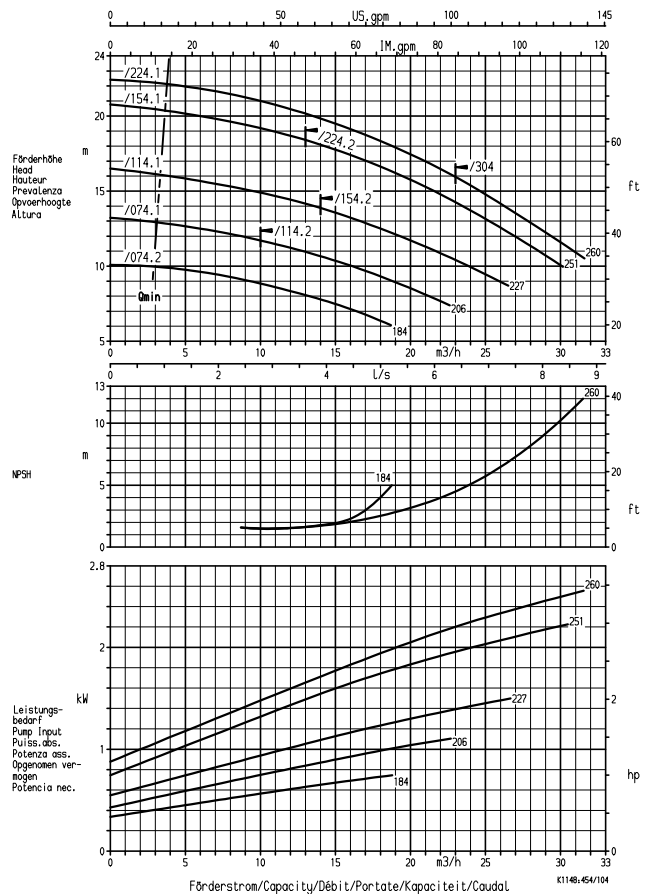
11 = mechanical seal materials BQ1EGG (as per DIN EN 12 756)

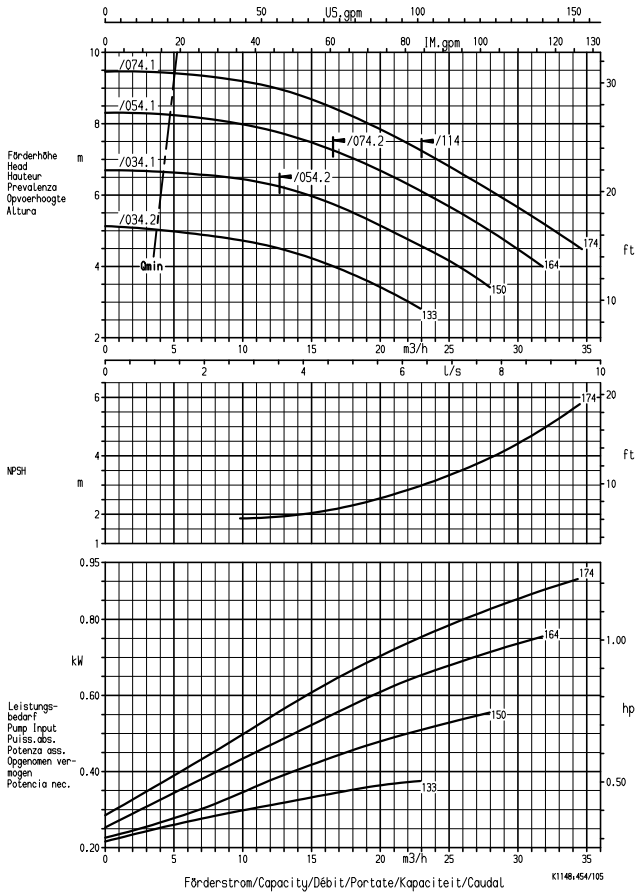
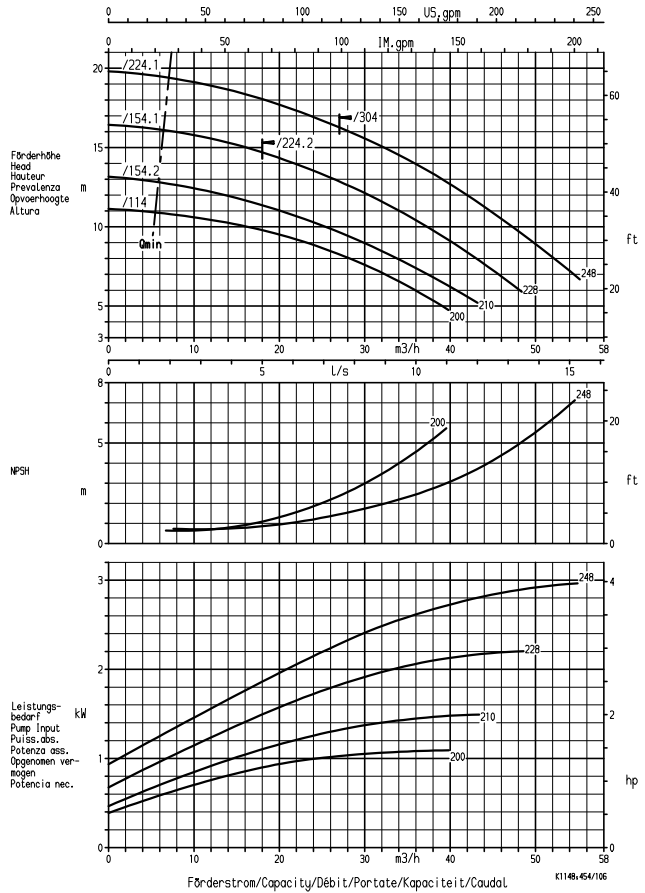
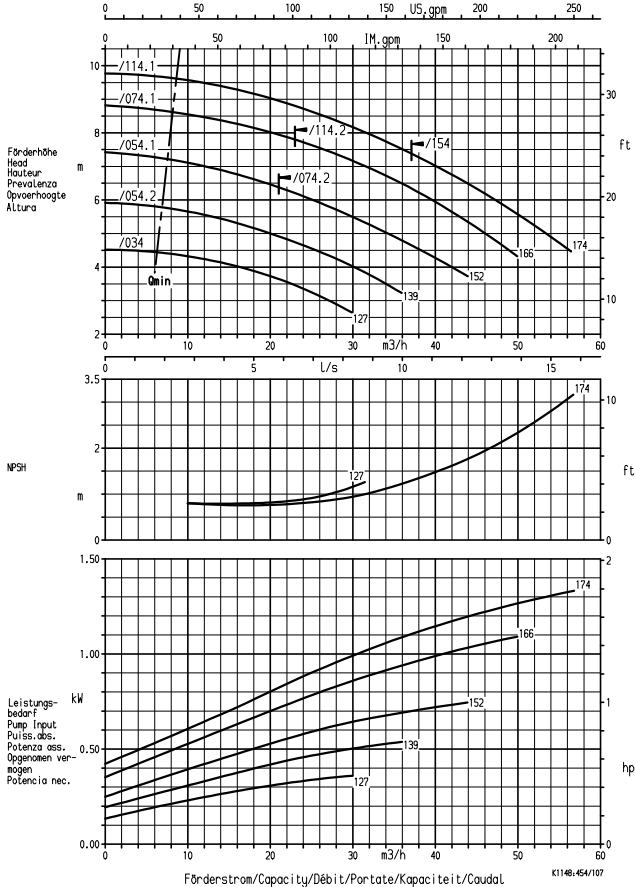
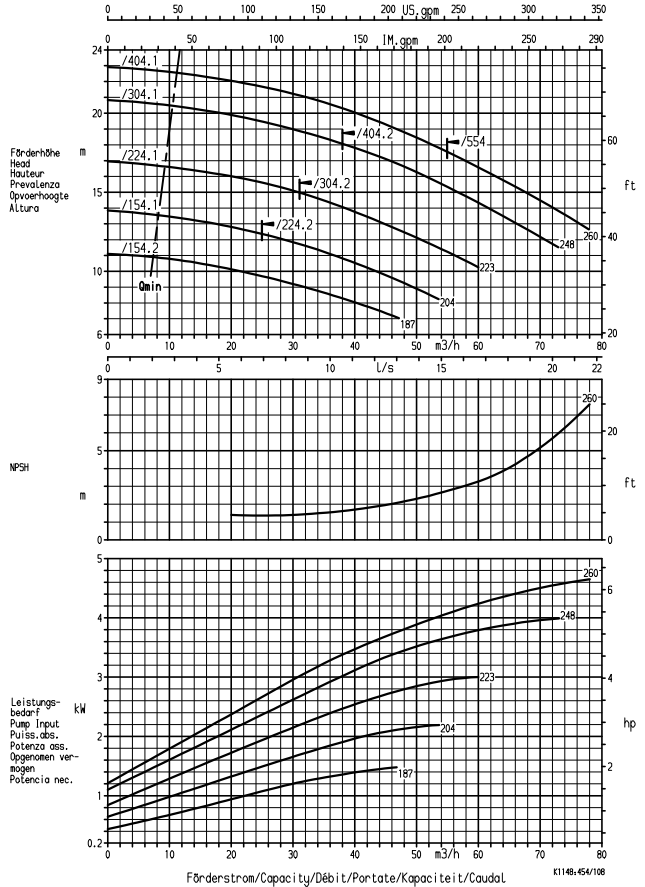
- 1) General evaluation criteria for water analysis: pH value ≥ 7 ; content of chlorides (Cl) $\leq 250 \text{ mg/kg}$, chlorine (Cl₂) $\leq 0.6 \text{ mg/kg}$.
- 2) Antifreeze agent on ethylene glycol basis with inhibitors. Content >20 to 50% (for example, Antifrogen N)
- 3) No ultrapure water: conductivity at $25 \text{ }^\circ\text{C}$: $\leq 800 \text{ } \mu\text{S/cm}$, neutral as to chemical corrosion
- 4) For heating water we recommend application of the VDI 2035 or Vd TÜV 1466 standards, otherwise a reduced service life of the mechanical seal may be the consequence.

Mechanical seal material codes:

U3 = tungsten carbide
 B = carbon, synthetic resin impregnated
 Q1 = silicon carbide
 G = CrNiMo steel
 V = fluorocarbon rubber (Viton)
 X4 = special elastomer
 E = EP rubber

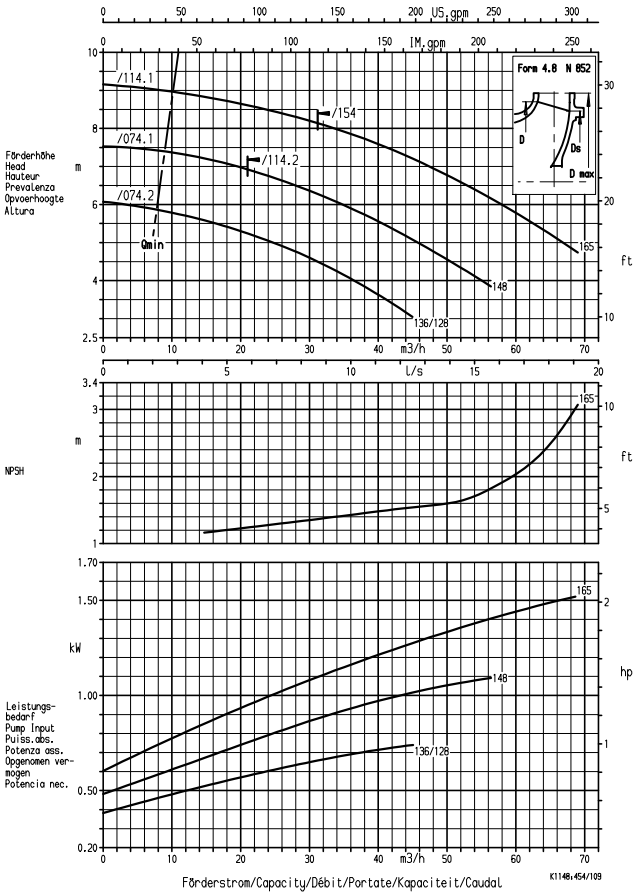
- 5) to EN 1561 (was GG-25)

Etaline Z 32-160

Etaline Z 32-200
Single-pump operation
n ≈ 1450 1/min

Etaline Z 40-160

Etaline Z 40-250


**Single-pump operation
n ≈ 1450 1/min**
Etaline Z 50-160

Etaline Z 50-250

Etaline Z 65-160

Etaline Z 65-250


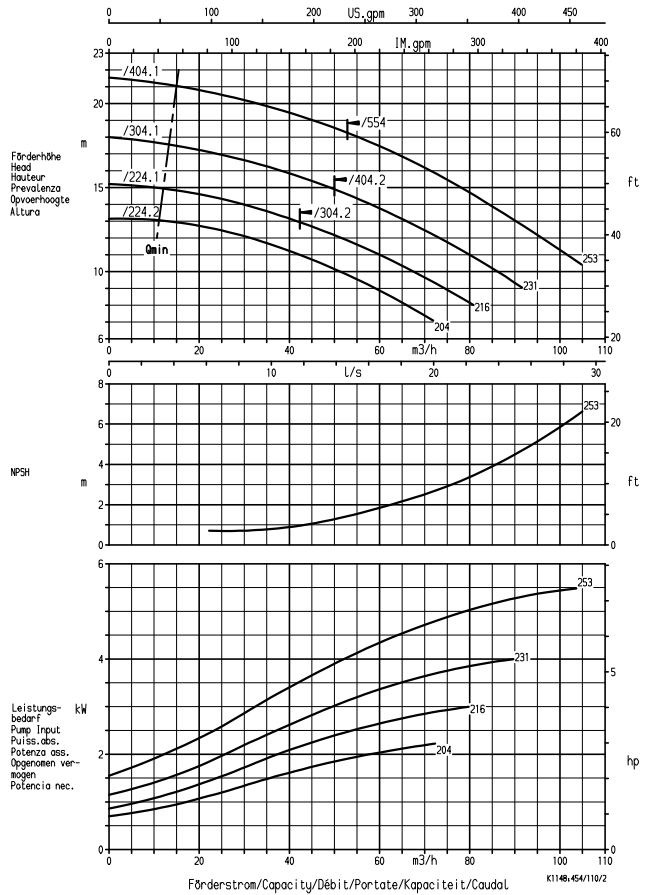
NPSH + 0,5 m Sicherheitszuschlag / security margin / marge de sécurité / margine di sicurezza / zekerheidsmarge

Etaline Z 80-160

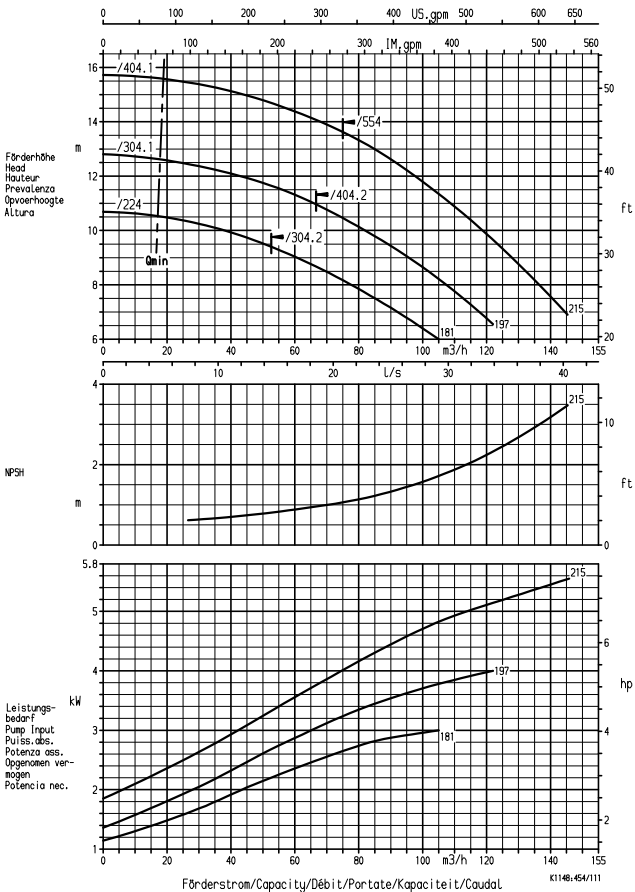


Etaline Z 80-250

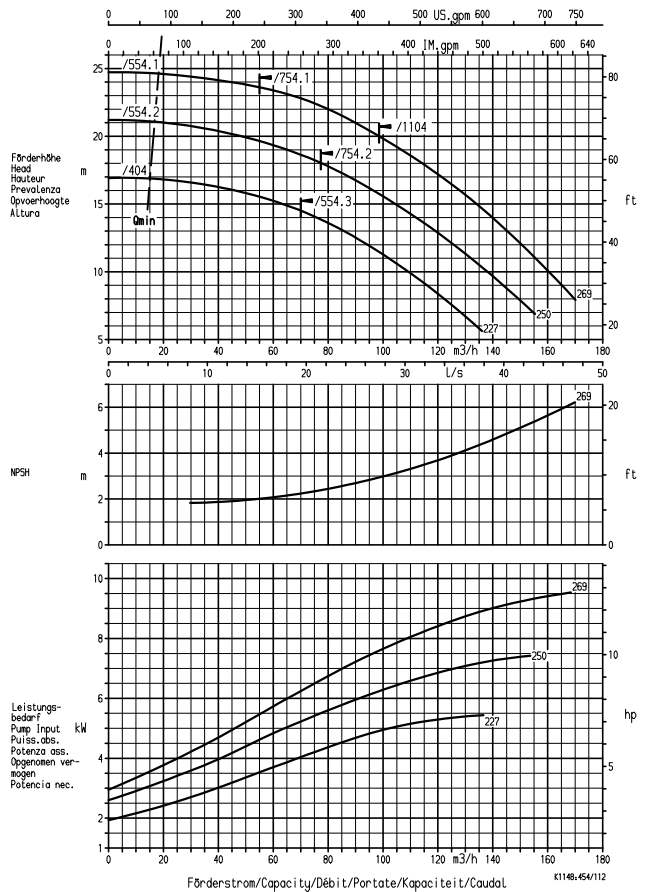
**Single-pump operation
n ≈ 1450 1/min**



Etaline Z 100-200

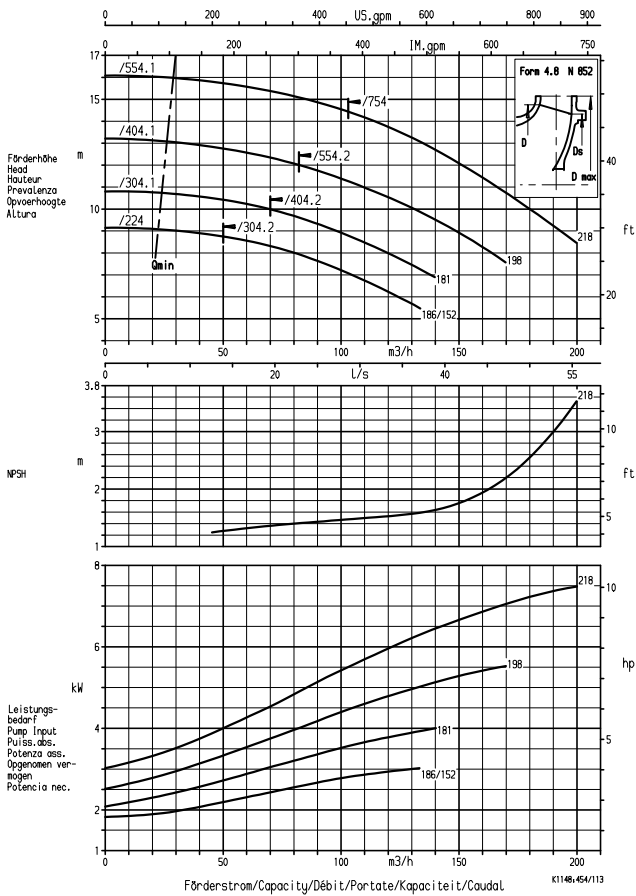


Etaline Z 100-250

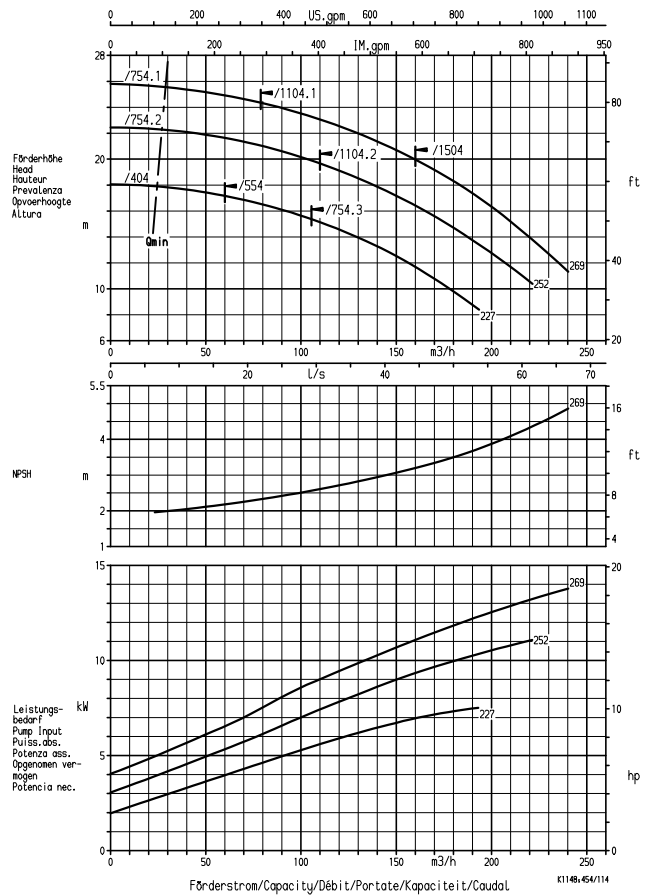


Single-pump operation n ≈ 1450 1/min

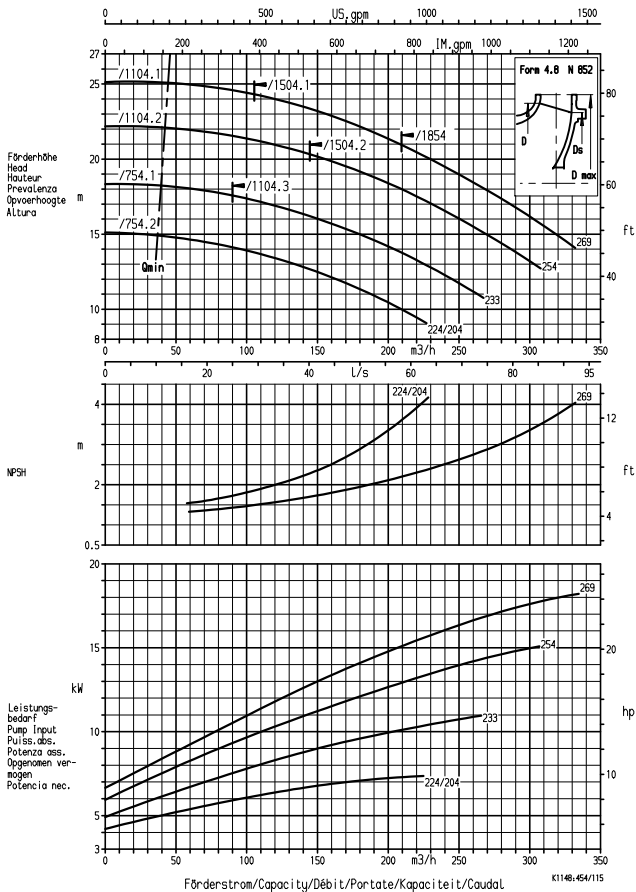
Etaline Z 125-200



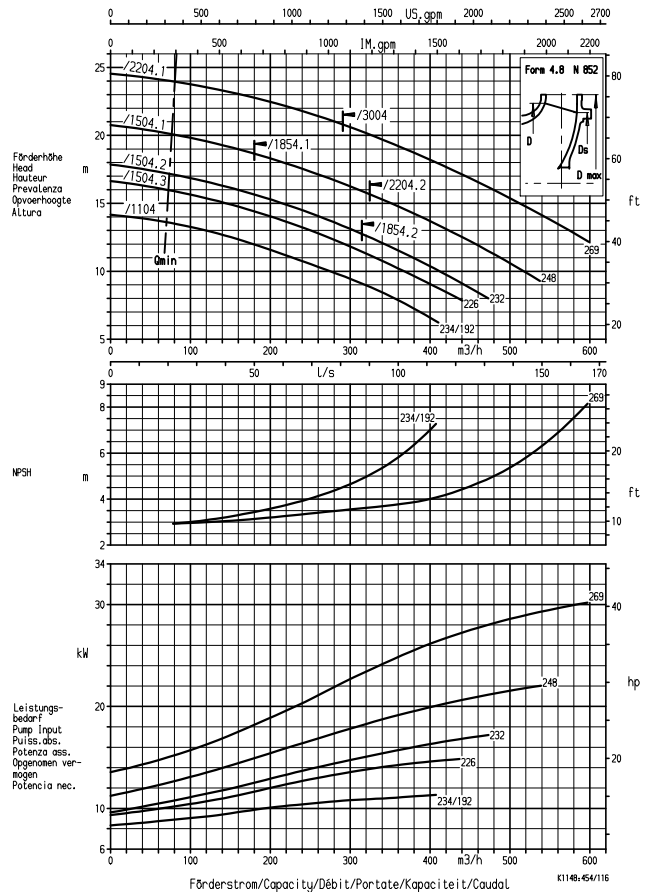
Etaline Z 125-250



Etaline Z 150-250

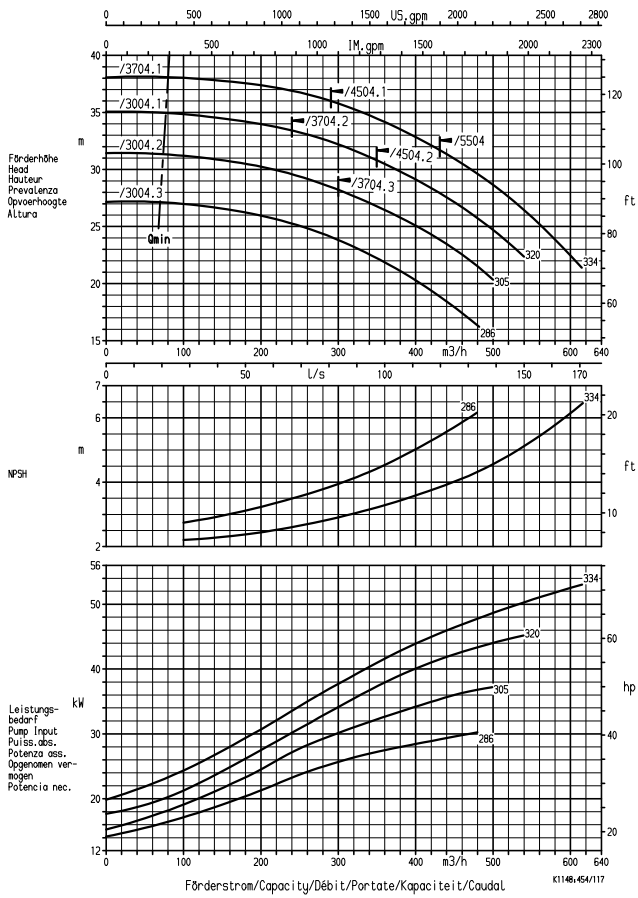


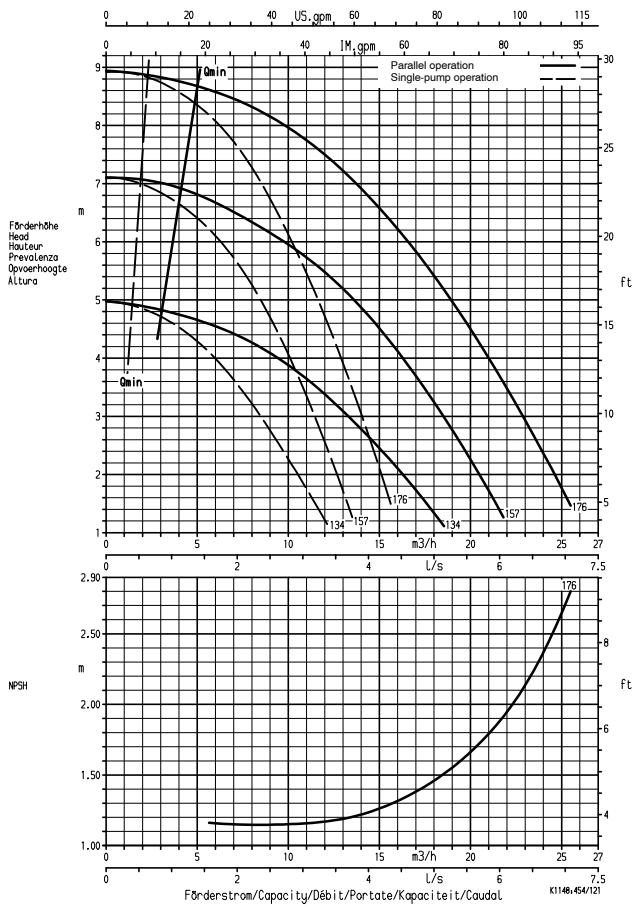
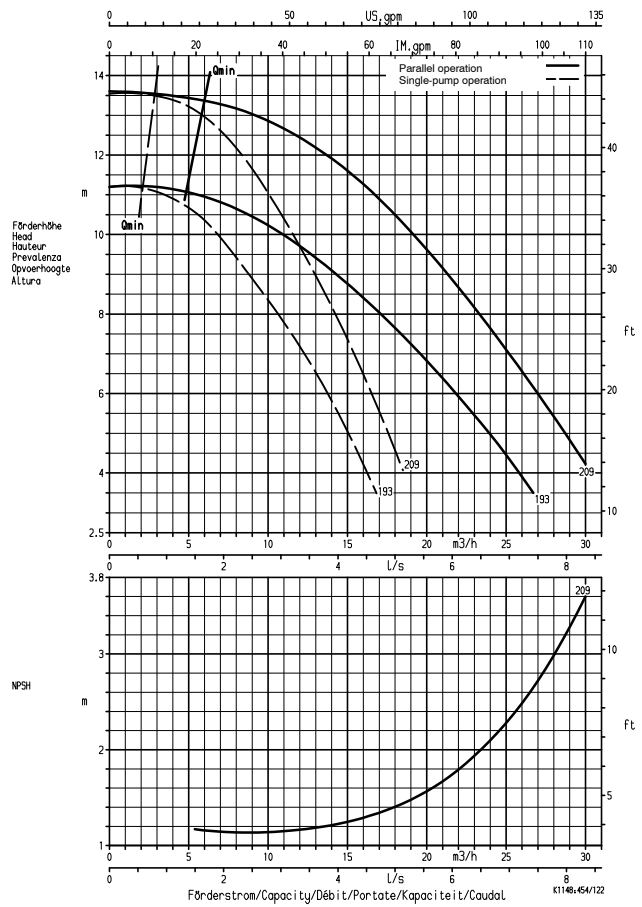
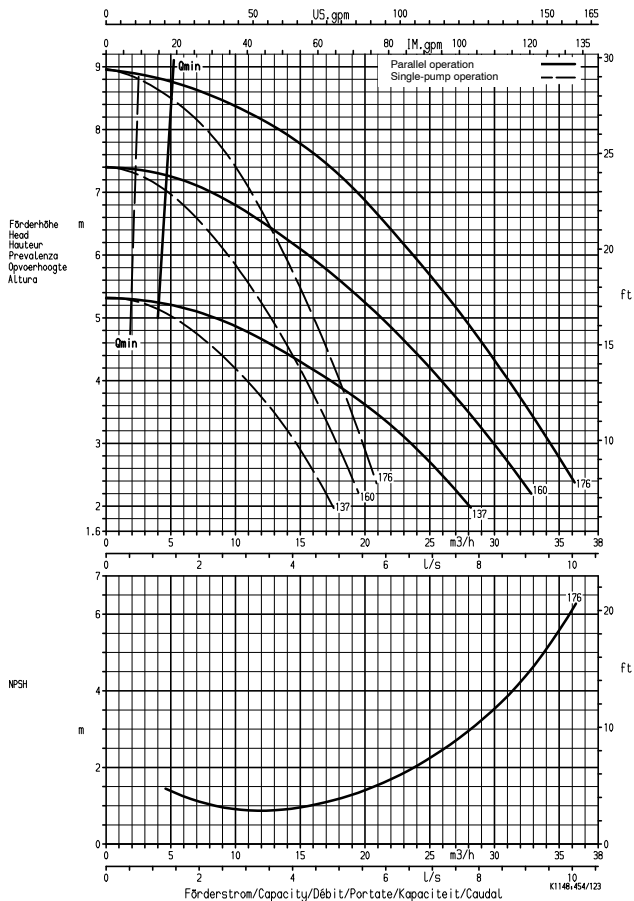
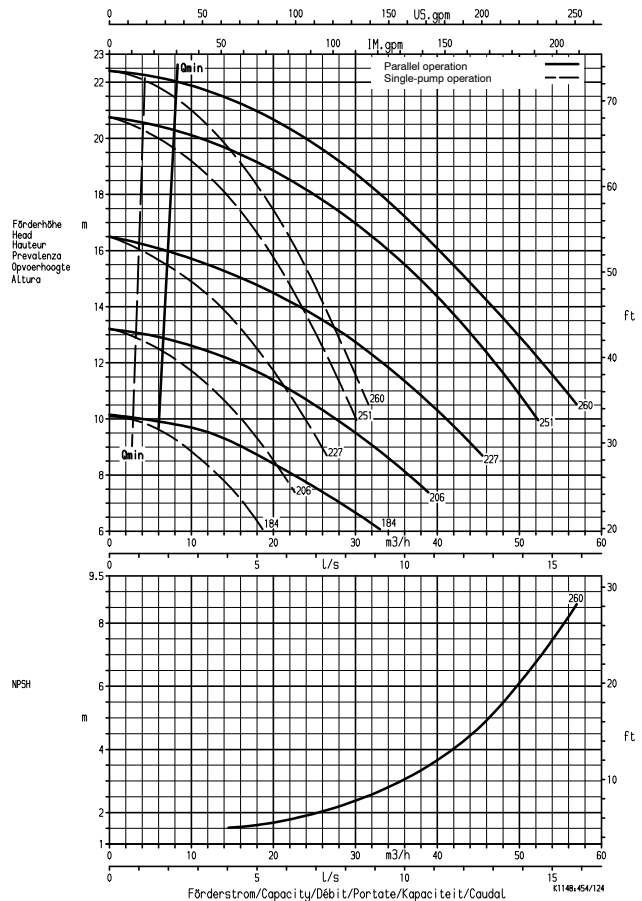
Etaline Z 200-250



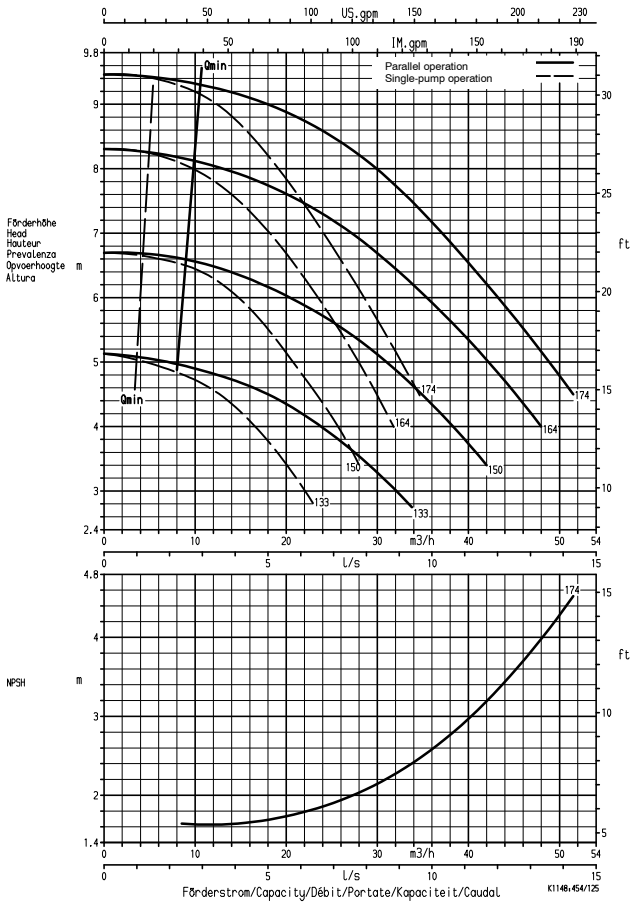
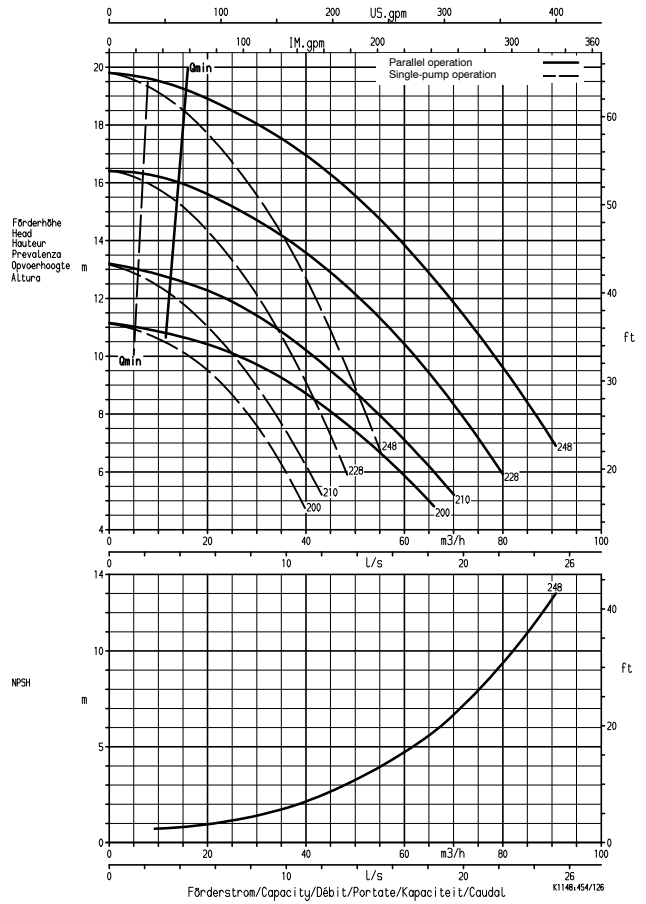
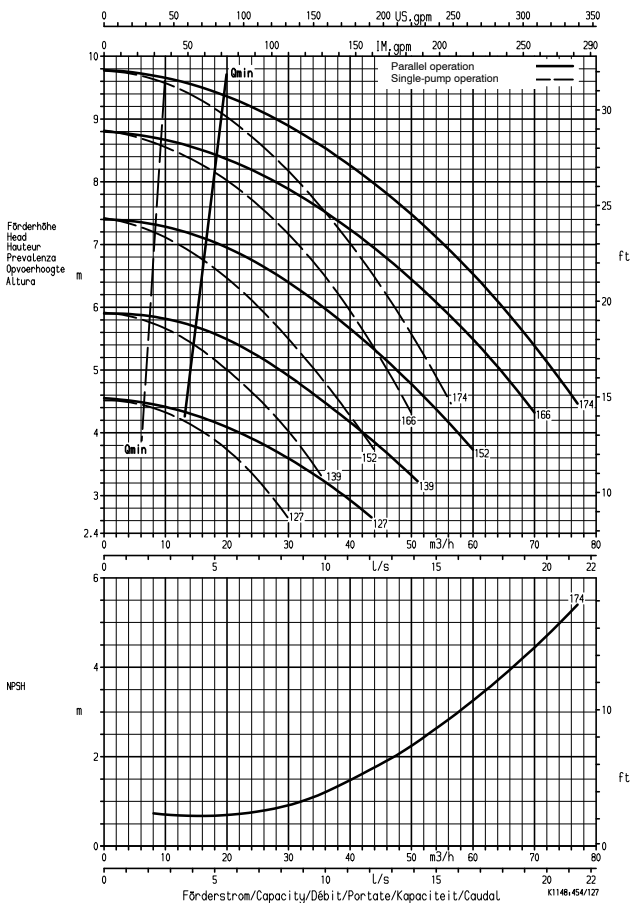
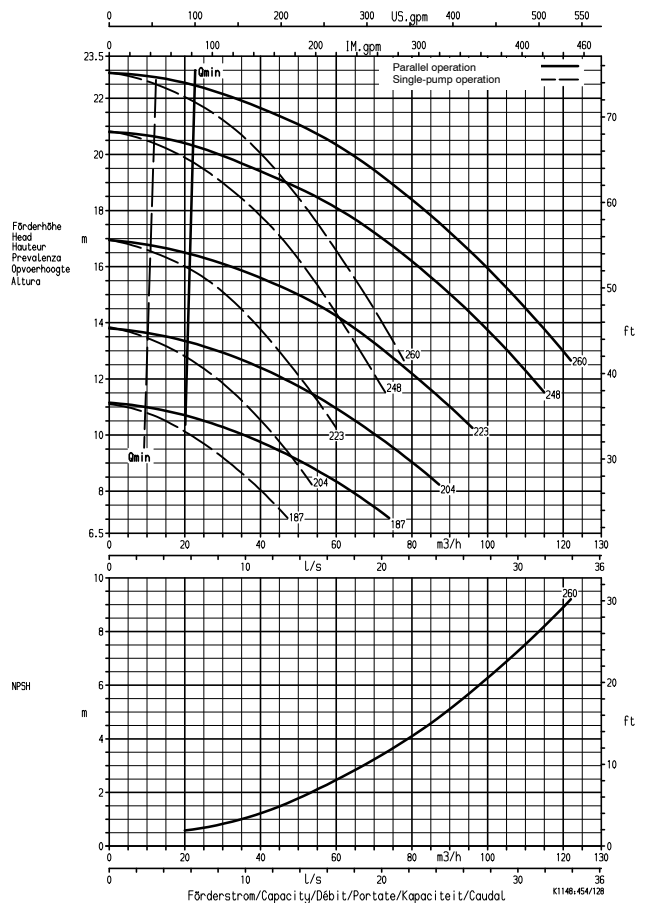
NPSH + 0,5 m Sicherheitszuschlag / security margin / marge de sécurité / margine di sicurezza / zekerheidsmarge

Etaline Z 200-315

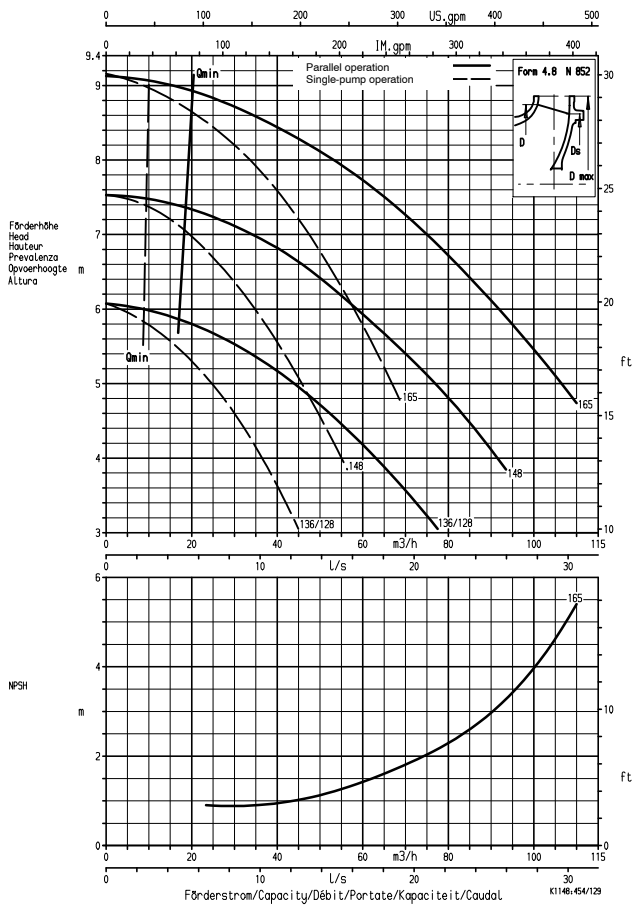


Etaline Z 32-160

Etaline Z 32-200
**Parallel operation
n ≈ 1450 1/min**

Etaline Z 40-160

Etaline Z 40-250


NPSH + 0,5 m Sicherheitszuschlag / safety margin / marge de sécurité / margine di sicurezza / zekerheidsmarge

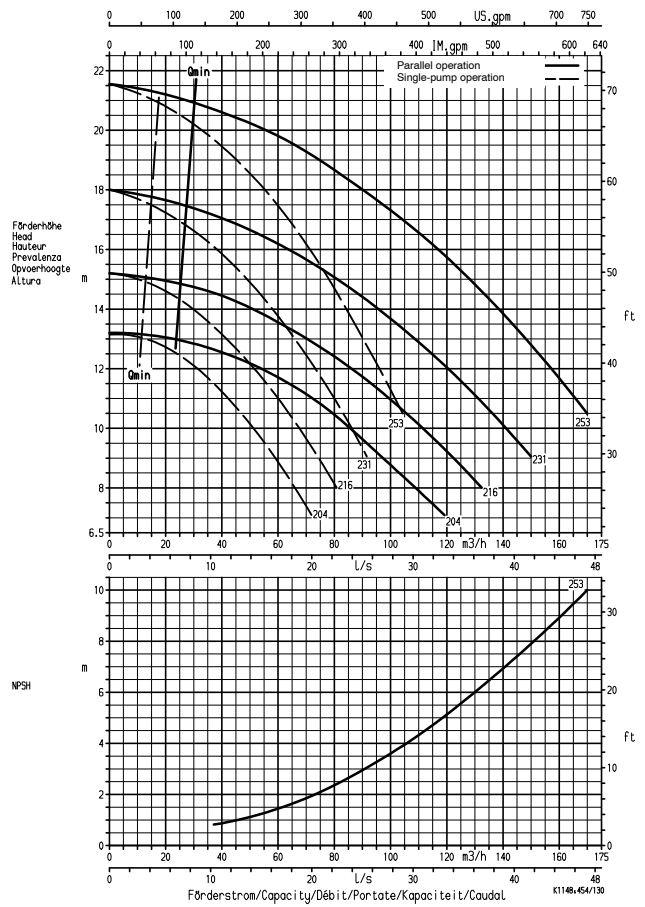
Etaline Z 50-160

Etaline Z 50-250
Parallel operation
n ≈ 1450 1/min

Etaline Z 65-160

Etaline Z 65-250


Etaline Z 80-160

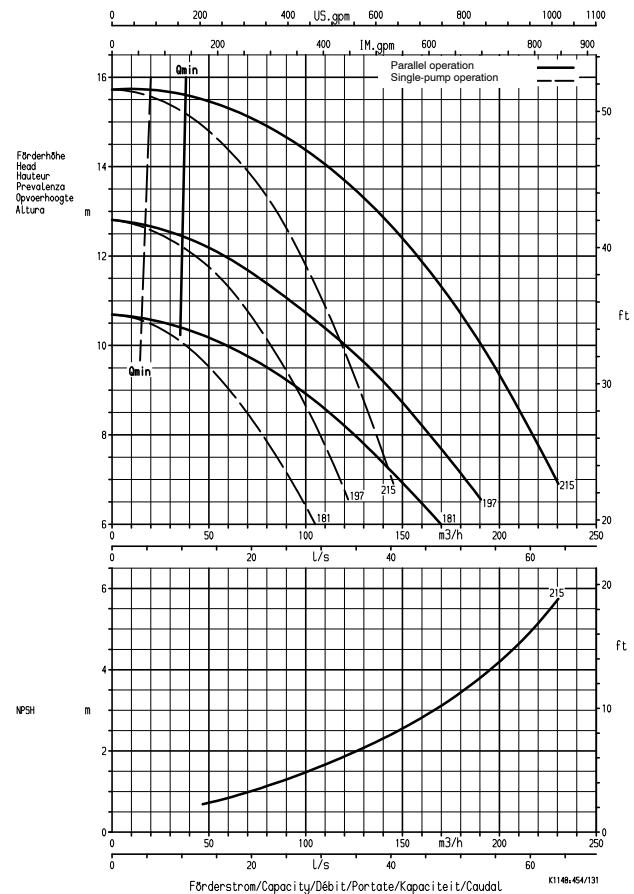


Etaline Z 80-250

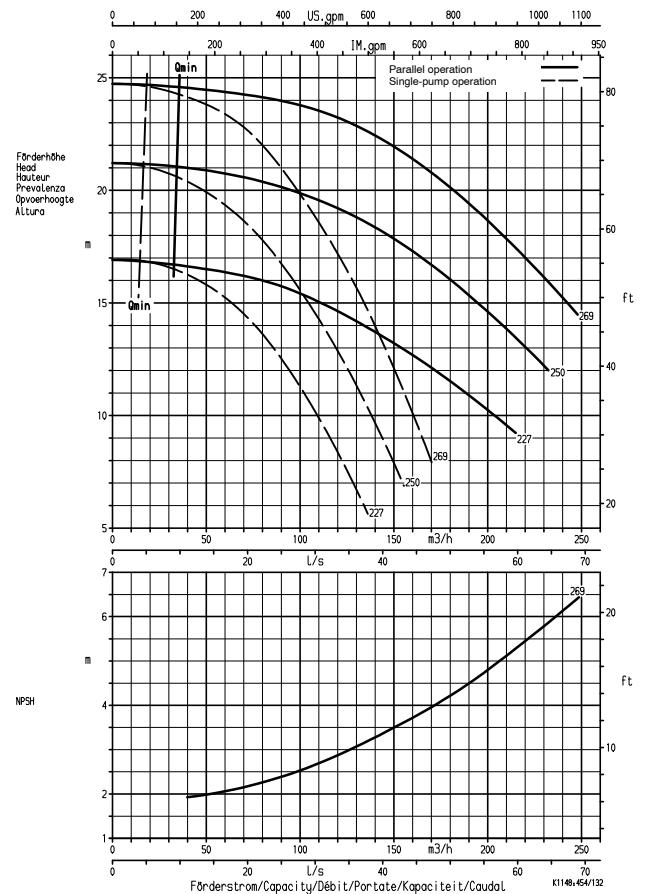
Parallel operation
n ≈ 1450 1/min



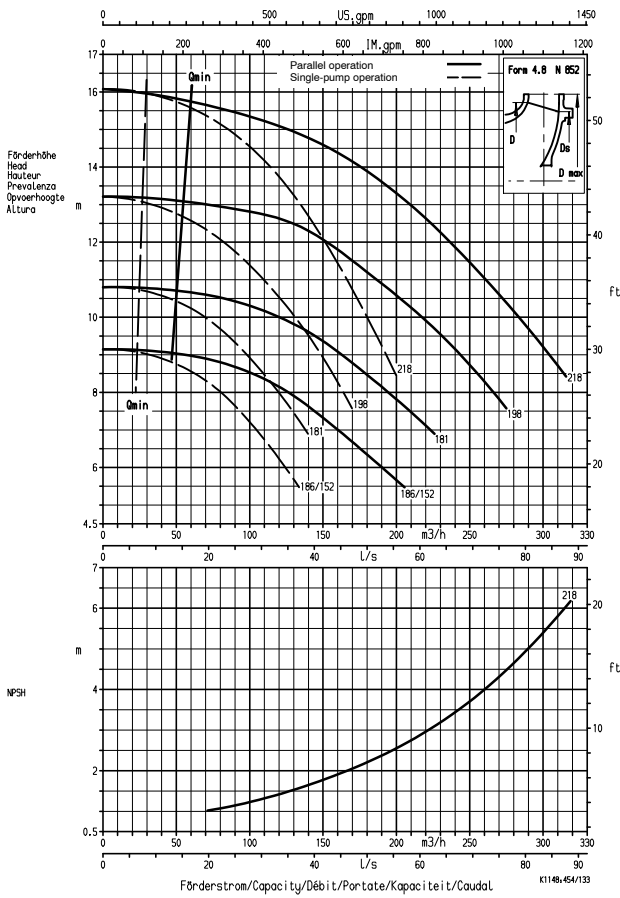
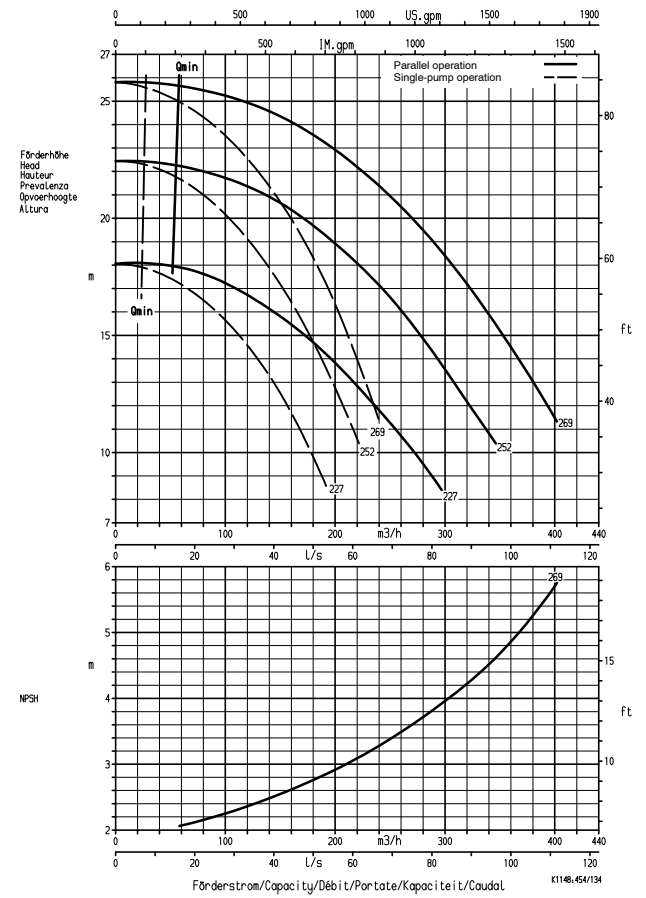
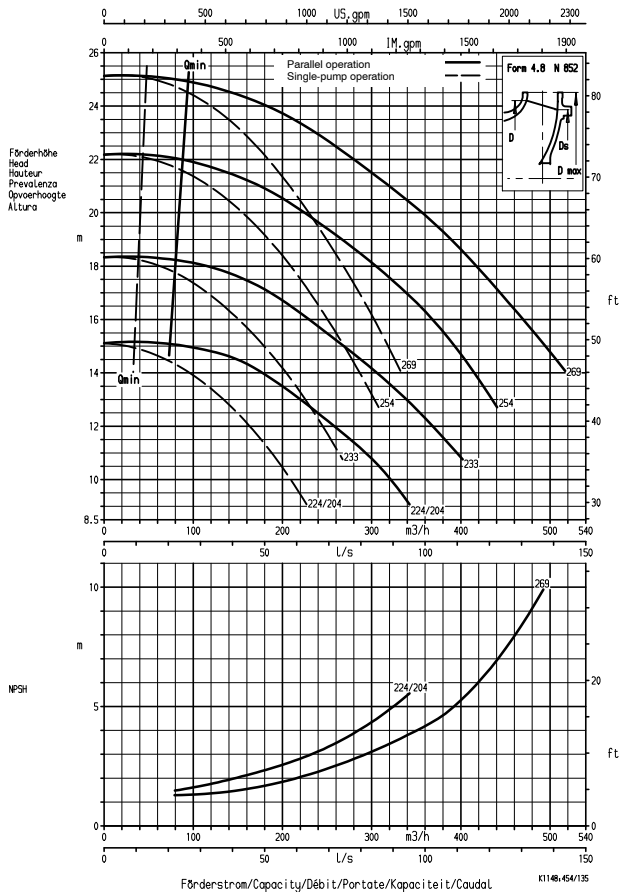
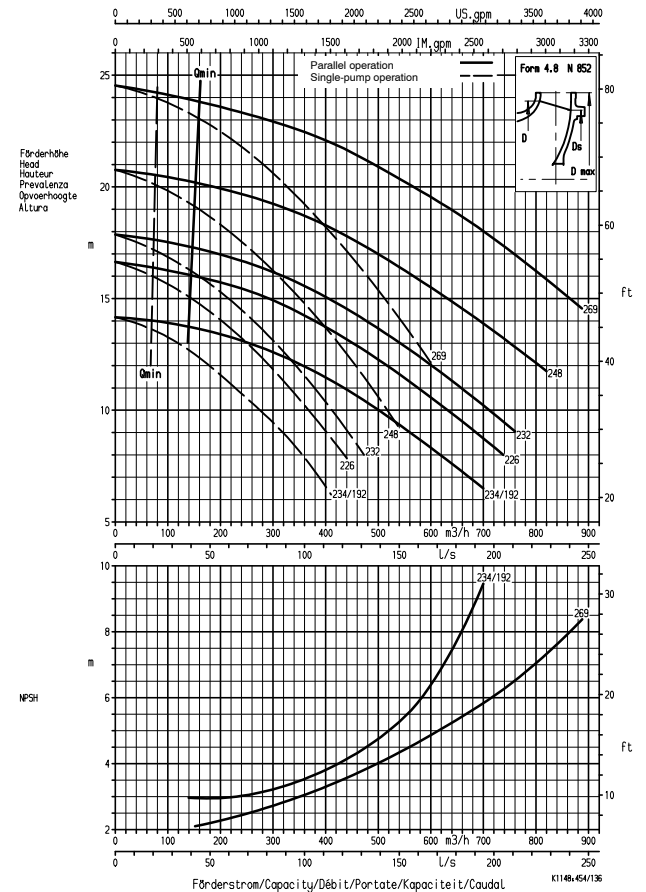
Etaline Z 100-200



Etaline Z 100-250

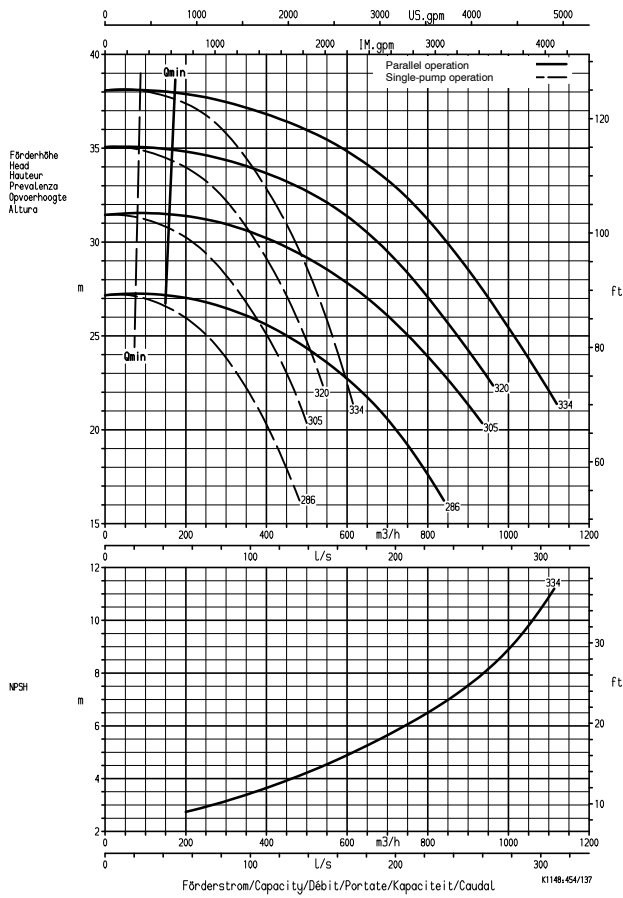


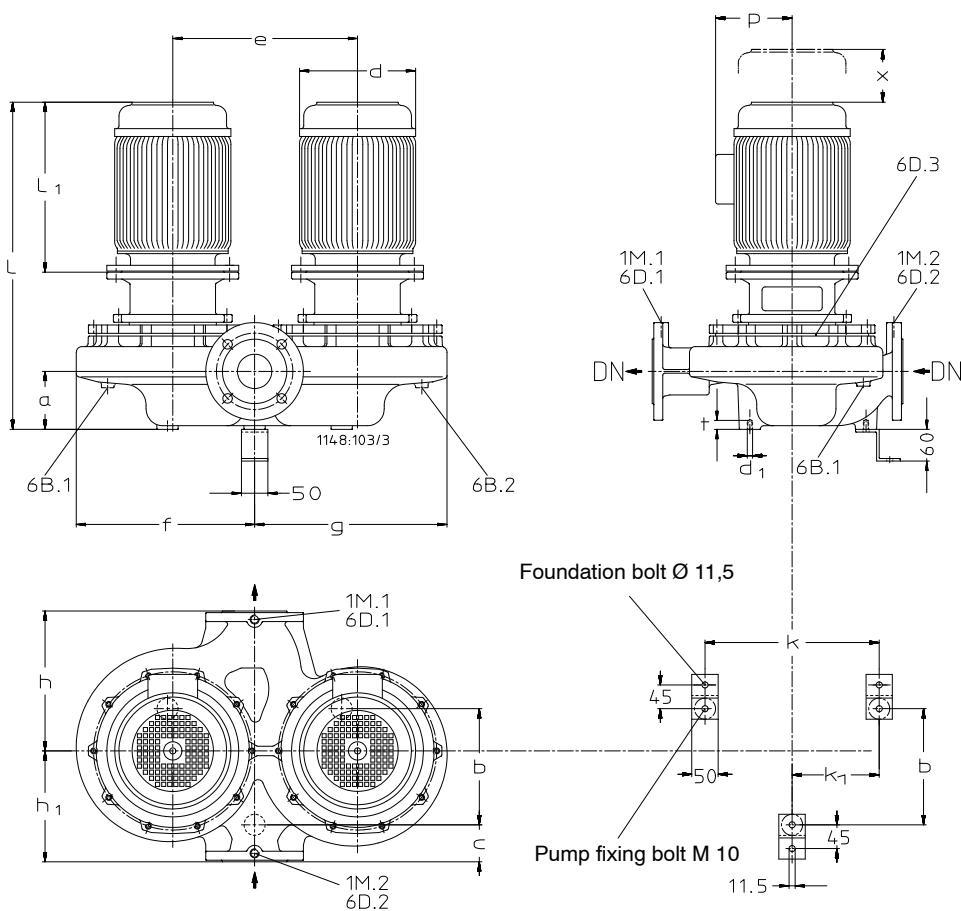
NPSH + 0,5 m Sicherheitszuschlag / safety margin / marge de sécurité / margine di sicurezza / zekerheidsmarge

Etaline Z 125-200

Etaline Z 125-250
Parallel operation
n ≈ 1450 1/min

Etaline Z 150-250

Etaline Z 200-250


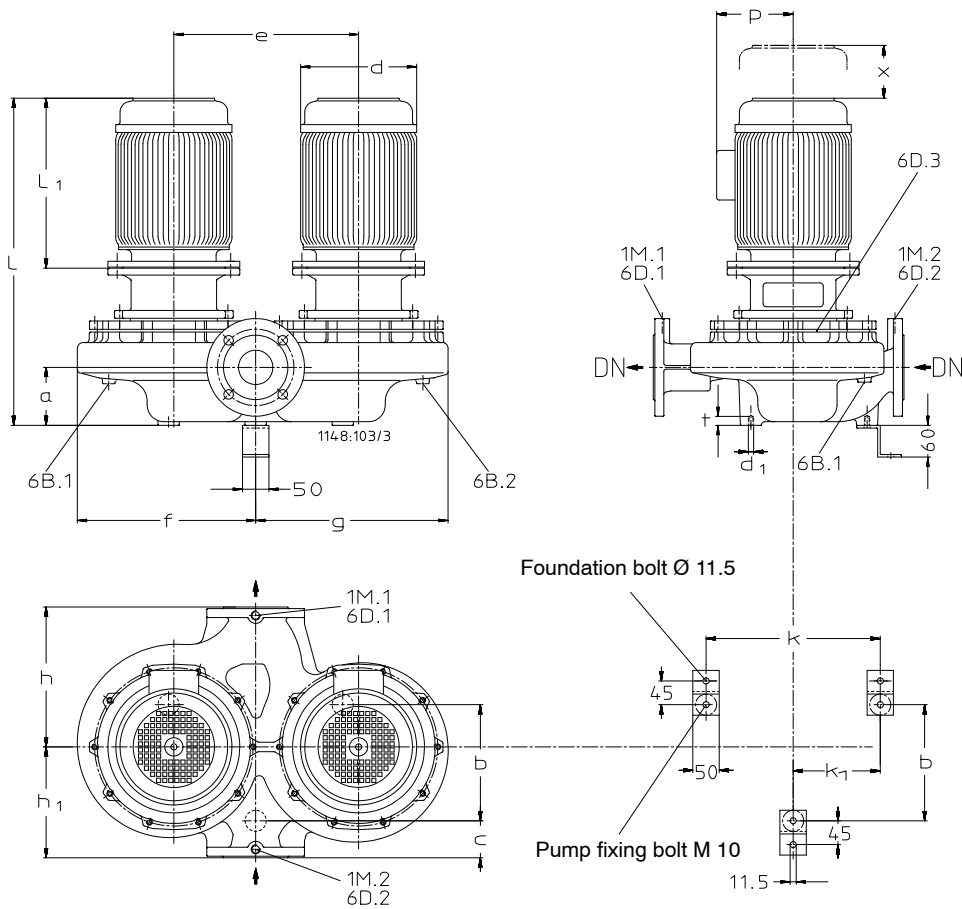
— Parallel operation
 n ≈ 1450 1/min

Etaline Z 200-315



n ≈ 1450 1/min


Etaline Z	DN ¹⁾	a	b	c	d	d ₁	e	f	g	h	h ₁	k	k ₁	d	d ₁	p	t	x	1M.1/2 6B.1/2 6D.1/2 ²⁾	6D.3 ²⁾
32-160/024	32	75	140	70	145	M10	235	235	230	170	150	235	117.5	458	237	111	12.5	100	Rc 3/8	Rc 1/4
32-160/034.2	32	75	140	70	145	M10	235	235	230	170	150	235	117.5	458	237	111	12.5	100	Rc 3/8	Rc 1/4
32-160/034.1	32	75	140	70	145	M10	235	235	230	170	150	235	117.5	458	237	111	12.5	100	Rc 3/8	Rc 1/4
32-160/054	32	75	140	70	162	M10	235	235	230	170	150	235	117.5	496	255	120	12.5	100	Rc 3/8	Rc 1/4
32-200/054	32	105	180	70	162	M10	285	274	269	190	190	285	142.5	516	255	120	12.5	100	Rc 3/8	Rc 1/4
32-200/074.2	32	105	180	70	162	M10	285	274	269	190	190	285	142.5	516	255	120	12.5	100	Rc 3/8	Rc 1/4
32-200/074.1	32	105	180	70	162	M10	285	274	269	190	190	285	142.5	516	255	120	12.5	100	Rc 3/8	Rc 1/4
32-200/114	32	105	180	70	190	M10	285	274	269	190	190	285	142.5	543	282	128	12.5	100	Rc 3/8	Rc 1/4
40-160/024	40	85	140	70	145	M10	250	242	237	170	150	250	125.0	458	237	111	12.5	100	Rc 3/8	Rc 1/4
40-160/034.2	40	85	140	70	145	M10	250	242	237	170	150	250	125.0	458	237	111	12.5	100	Rc 3/8	Rc 1/4
40-160/034.1	40	85	140	70	145	M10	250	242	237	170	150	250	125.0	458	237	111	12.5	100	Rc 3/8	Rc 1/4
40-160/054	40	85	140	70	162	M10	250	242	237	170	150	250	125.0	496	255	120	12.5	100	Rc 3/8	Rc 1/4
40-250/074.2	40	101	224	70	162	M10	330	303	348	220	220	330	190.0	521	255	120	12.5	100	Rc 3/8	Rc 1/4
40-250/074.1	40	101	224	70	162	M10	330	303	348	220	220	330	190.0	521	255	120	12.5	100	Rc 3/8	Rc 1/4
40-250/114.2	40	101	224	70	190	M10	330	303	348	220	220	330	190.0	548	282	128	12.5	100	Rc 3/8	Rc 1/4
40-250/114.1	40	101	224	70	190	M10	330	303	348	220	220	330	190.0	548	282	128	12.5	100	Rc 3/8	Rc 1/4
40-250/154.2	40	101	224	70	190	M10	330	303	348	220	220	330	190.0	574	308	128	12.5	100	Rc 3/8	Rc 1/4
40-250/154.1	40	101	224	70	190	M10	330	303	348	220	220	330	190.0	574	308	128	12.5	100	Rc 3/8	Rc 1/4
40-250/224.2	40	101	224	70	213	M10	330	303	348	220	220	330	190.0	627	347	135	12.5	100	Rc 3/8	Rc 1/4
40-250/224.1	40	101	224	70	213	M10	330	303	348	220	220	330	190.0	627	347	135	12.5	100	Rc 3/8	Rc 1/4
40-250/304	40	101	224	70	213	M10	330	303	348	220	220	330	190.0	662	382	135	12.5	100	Rc 3/8	Rc 1/4
50-160/034.2	50	110	160	70	145	M10	270	254	245	180	160	270	135.0	483	237	111	12.5	100	Rc 3/8	Rc 1/4
50-160/034.1	50	110	160	70	145	M10	270	254	245	180	160	270	135.0	483	237	111	12.5	100	Rc 3/8	Rc 1/4
50-160/054.2	50	110	160	70	162	M10	270	254	245	180	160	270	135.0	521	255	120	12.5	100	Rc 3/8	Rc 1/4
50-160/054.1	50	110	160	70	162	M10	270	254	245	180	160	270	135.0	521	255	120	12.5	100	Rc 3/8	Rc 1/4
50-160/074.2	50	110	160	70	162	M10	270	254	245	180	160	270	135.0	521	255	120	12.5	100	Rc 3/8	Rc 1/4
50-160/074.1	50	110	160	70	162	M10	270	254	245	180	160	270	135.0	521	255	120	12.5	100	Rc 3/8	Rc 1/4
50-160/114	50	110	160	70	190	M10	270	254	245	180	160	270	135.0	548	282	128	12.5	100	Rc 3/8	Rc 1/4
50-250/114	50	110	220	70	190	M10	380	362	352	220	220	380	190.0	548	282	128	12.5	100	Rc 3/8	Rc 1/4
50-250/154.2	50	110	220	70	190	M10	380	362	352	220	220	380	190.0	574	308	128	12.5	100	Rc 3/8	Rc 1/4
50-250/154.1	50	110	220	70	190	M10	380	362	352	220	220	380	190.0	574	308	128	12.5	100	Rc 3/8	Rc 1/4
50-250/224.2	50	110	220	70	213	M10	380	362	352	220	220	380	190.0	627	347	135	12.5	100	Rc 3/8	Rc 1/4
50-250/224.1	50	110	220	70	213	M10	380	362	352	220	220	380	190.0	627	347	135	12.5	100	Rc 3/8	Rc 1/4
50-250/304	50	110	220	70	213	M10	380	362	352	220	220	380	190.0	662	382	135	12.5	100	Rc 3/8	Rc 1/4

n ≈ 1450 1/min


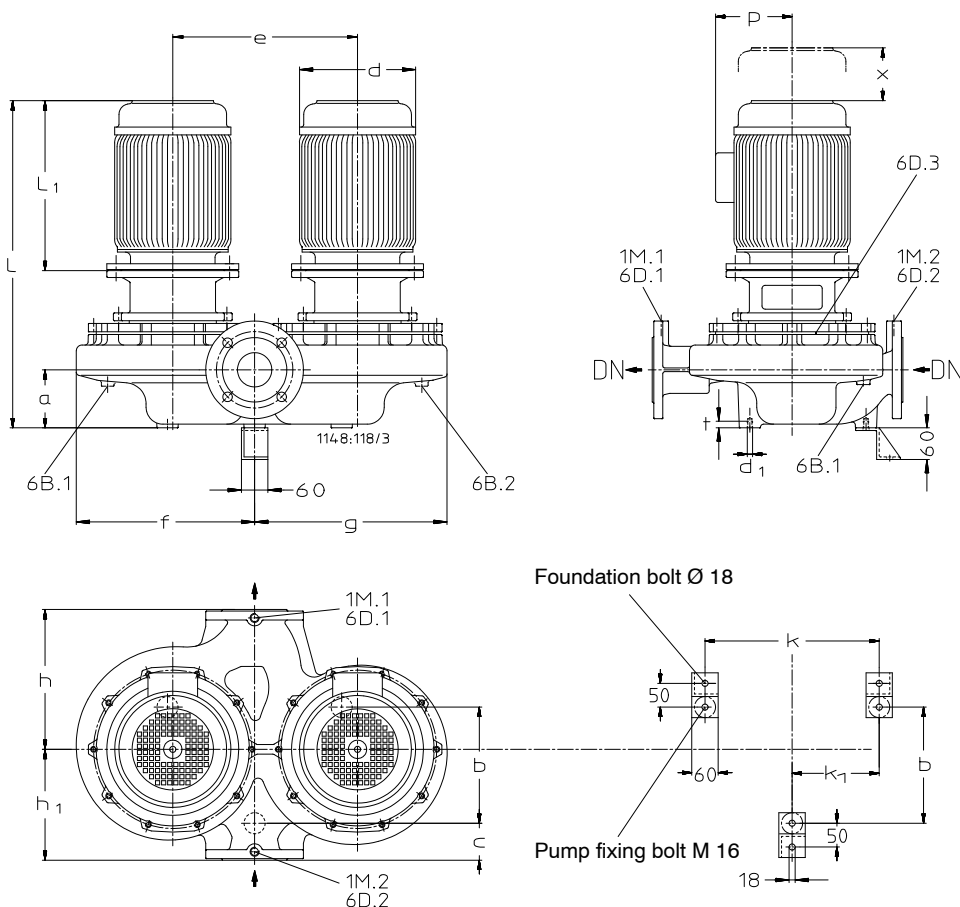
Etaline Z	DN ¹⁾	a	b	c	≈d	d ₁	e	≈f	≈g	h	h ₁	k	k ₁	≈l	≈l ₁	≈p	t	x	1M.1/2 6B.1/2 6D.1/.2 ²⁾	6D.3 ²⁾
65-160/034	65	120	170	70	145	M10	285	263	255	180	160	285	142.5	493	237	111	12.5	100	Rc 3/8	Rc 1/4
65-160/054.2	65	120	170	70	162	M10	285	263	255	180	160	285	142.5	531	255	120	12.5	100	Rc 3/8	Rc 1/4
65-160/054.1	65	120	170	70	162	M10	285	263	255	180	160	285	142.5	531	255	120	12.5	100	Rc 3/8	Rc 1/4
65-160/074.2	65	120	170	70	162	M10	285	263	255	180	160	285	142.5	531	255	120	12.5	100	Rc 3/8	Rc 1/4
65-160/074.1	65	120	170	70	162	M10	285	263	255	180	160	285	142.5	531	255	120	12.5	100	Rc 3/8	Rc 1/4
65-160/114.2	65	120	170	70	190	M10	285	263	255	180	160	285	142.5	558	282	128	12.5	100	Rc 3/8	Rc 1/4
65-160/114.1	65	120	170	70	190	M10	285	263	255	180	160	285	142.5	558	282	128	12.5	100	Rc 3/8	Rc 1/4
65-160/154	65	120	170	70	190	M10	285	263	255	180	160	285	142.5	584	308	128	12.5	100	Rc 3/8	Rc 1/4
65-250/154.2	65	110	220	70	190	M10	350	338	365	265	210	330	165.0	594	308	128	12.5	100	Rc 3/8	Rc 1/4
65-250/154.1	65	110	220	70	190	M10	350	338	365	265	210	330	165.0	594	308	128	12.5	100	Rc 3/8	Rc 1/4
65-250/224.2	65	110	220	70	213	M10	350	338	365	265	210	330	165.0	647	347	135	12.5	100	Rc 3/8	Rc 1/4
65-250/224.1	65	110	220	70	213	M10	350	338	365	265	210	330	165.0	647	347	135	12.5	100	Rc 3/8	Rc 1/4
65-250/304.2	65	110	220	70	213	M10	350	338	365	265	210	330	165.0	682	382	135	12.5	100	Rc 3/8	Rc 1/4
65-250/304.1	65	110	220	70	213	M10	350	338	365	265	210	330	165.0	682	382	135	12.5	100	Rc 3/8	Rc 1/4
65-250/404.2	65	110	220	70	234	M10	350	338	365	265	210	330	165.0	671	371	148	12.5	100	Rc 3/8	Rc 1/4
65-250/404.1	65	110	220	70	234	M10	350	338	365	265	210	330	165.0	671	371	148	12.5	100	Rc 3/8	Rc 1/4
65-250/554	65	110	220	70	266	M10	350	338	365	265	210	330	165.0	736	413	167	12.5	100	Rc 3/8	Rc 1/4
80-160/074.2	80	120	175	70	162	M10	324	290	280	195	165	324	162.0	541	255	120	12.5	100	Rc 3/8	Rc 1/4
80-160/074.1	80	120	175	70	162	M10	324	290	280	195	165	324	162.0	541	255	120	12.5	100	Rc 3/8	Rc 1/4
80-160/114.2	80	120	175	70	190	M10	324	290	280	195	165	324	162.0	568	282	128	12.5	100	Rc 3/8	Rc 1/4
80-160/114.1	80	120	175	70	190	M10	324	290	280	195	165	324	162.0	568	282	128	12.5	100	Rc 3/8	Rc 1/4
80-160/154	80	120	175	70	190	M10	324	290	280	195	165	324	162.0	594	308	128	12.5	100	Rc 3/8	Rc 1/4
80-250/224.2	80	109	224	70	213	M10	345	333	362	290	210	345	172.5	667	347	135	12.5	140	Rc 3/8	Rc 3/8
80-250/224.1	80	109	224	70	213	M10	345	333	362	290	210	345	172.5	667	347	135	12.5	140	Rc 3/8	Rc 3/8
80-250/304.2	80	109	224	70	213	M10	345	333	362	290	210	345	172.5	702	382	135	12.5	140	Rc 3/8	Rc 3/8
80-250/304.1	80	109	224	70	213	M10	345	333	362	290	210	345	172.5	702	382	135	12.5	140	Rc 3/8	Rc 3/8
80-250/404.2	80	109	224	70	234	M10	345	333	362	290	210	345	172.5	691	371	148	12.5	140	Rc 3/8	Rc 3/8
80-250/404.1	80	109	224	70	234	M10	345	333	362	290	210	345	172.5	691	371	148	12.5	140	Rc 3/8	Rc 3/8
80-250/554	80	109	224	70	266	M10	345	333	362	290	210	345	172.5	756	413	167	12.5	140	Rc 3/8	Rc 3/8

1 M.1/2	Pressure gauge
6 B.1/2	Pumped liquid drain
6 D.1/2	Pumped liquid venting / drain
6 D.3	Mechanical seal chamber venting

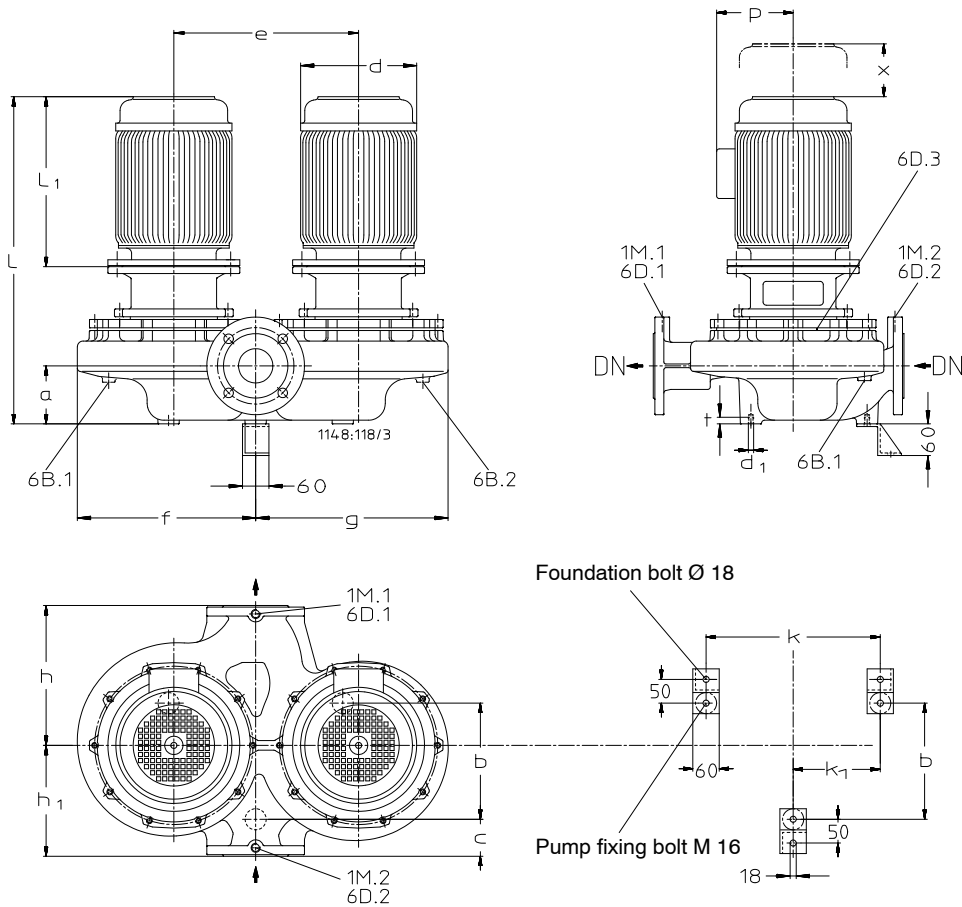
1) DN = EN 1092-2, PN 16

2) Rc = ISO 7/1

 Tolerances of connecting dimensions to EN 735
 Dimensions in mm

n ≈ 1450 1/min


Etaline Z	DN ¹⁾	a	b	c	≈d	d ₁	e	≈f	≈g	h	h ₁	k	k ₁	≈l	≈l ₁	≈p	t	x	1M.1/2 6B.1/2 6D.1/2 ²⁾	6D.3 ²⁾
100-200/224	100	195	280	98	213	M16	410	394	376	280	270	410	205.0	732	347	135	20.0	150	Rc 1/2	Rc 3/8
100-200/304.2	100	195	280	98	213	M16	410	394	376	280	270	410	205.0	767	382	135	20.0	150	Rc 1/2	Rc 3/8
100-200/304.1	100	195	280	98	213	M16	410	394	376	280	270	410	205.0	767	382	135	20.0	150	Rc 1/2	Rc 3/8
100-200/404.2	100	195	280	98	234	M16	410	394	376	280	270	410	205.0	756	371	148	20.0	150	Rc 1/2	Rc 3/8
100-200/404.1	100	195	280	98	234	M16	410	394	376	280	270	410	205.0	756	371	148	20.0	150	Rc 1/2	Rc 3/8
100-200/554	100	195	280	98	266	M16	410	394	376	280	270	410	205.0	821	413	167	20.0	150	Rc 1/2	Rc 3/8
100-250/404	100	195	270	105	234	M16	480	452	438	295	255	480	240.0	780	371	148	20.0	140	Rc 1/2	Rc 3/8
100-250/554.3	100	195	270	105	266	M16	480	452	438	295	255	480	240.0	845	413	167	20.0	140	Rc 1/2	Rc 3/8
100-250/554.2	100	195	270	105	266	M16	480	452	438	295	255	480	240.0	845	413	167	20.0	140	Rc 1/2	Rc 3/8
100-250/554.1	100	195	270	105	266	M16	480	452	438	295	255	480	240.0	845	413	167	20.0	140	Rc 1/2	Rc 3/8
100-250/754.2	100	195	270	105	298	M16	480	452	438	295	255	480	240.0	873	441	167	20.0	140	Rc 1/2	Rc 3/8
100-250/754.1	100	195	270	105	298	M16	480	452	438	295	255	480	240.0	873	441	167	20.0	140	Rc 1/2	Rc 3/8
100-250/1104	100	195	270	105	325	M16	480	452	438	295	255	480	240.0	1011	546	197	20.0	140	Rc 1/2	Rc 3/8
125-200/224	125	221	265	95	213	M16	380	394	366	345	275	550	275.0	758	347	135	20.0	155	Rc 1/2	Rc 3/8
125-200/304.2	125	221	265	95	213	M16	380	394	366	345	275	550	275.0	793	382	135	20.0	155	Rc 1/2	Rc 3/8
125-200/304.1	125	221	265	95	213	M16	380	394	366	345	275	550	275.0	793	382	135	20.0	155	Rc 1/2	Rc 3/8
125-200/404.2	125	221	265	95	234	M16	380	394	366	345	275	550	275.0	782	371	148	20.0	155	Rc 1/2	Rc 3/8
125-200/404.1	125	221	265	95	234	M16	380	394	366	345	275	550	275.0	782	371	148	20.0	155	Rc 1/2	Rc 3/8
125-200/554.2	125	221	265	95	266	M16	380	394	366	345	275	550	275.0	847	413	167	20.0	155	Rc 1/2	Rc 3/8
125-200/554.1	125	221	265	95	266	M16	380	394	366	345	275	550	275.0	847	413	167	20.0	155	Rc 1/2	Rc 3/8
125-200/754	125	221	265	95	298	M16	380	394	366	345	275	550	275.0	875	441	167	20.0	155	Rc 1/2	Rc 3/8
125-250/404	125	226	300	85	234	M16	400	409	389	360	260	400	200.0	787	371	148	20.0	145	Rc 1/2	Rc 3/8
125-250/554	125	226	300	85	266	M16	400	409	389	360	260	400	200.0	852	413	167	20.0	145	Rc 1/2	Rc 3/8
125-250/754.3	125	226	300	85	298	M16	400	409	389	360	260	400	200.0	880	441	167	20.0	145	Rc 1/2	Rc 3/8
125-250/754.2	125	226	300	85	298	M16	400	409	389	360	260	400	200.0	880	441	167	20.0	145	Rc 1/2	Rc 3/8
125-250/754.1	125	226	300	85	298	M16	400	409	389	360	260	400	200.0	880	441	167	20.0	145	Rc 1/2	Rc 3/8
125-250/1104.2	125	226	300	85	325	M16	400	409	389	360	260	400	200.0	1018	546	197	20.0	145	Rc 1/2	Rc 3/8
125-250/1104.1	125	226	300	85	325	M16	400	409	389	360	260	400	200.0	1018	546	197	20.0	145	Rc 1/2	Rc 3/8
125-250/1504	125	226	300	85	325	M16	400	409	389	360	260	400	200.0	1024	552	197	20.0	145	Rc 1/2	Rc 3/8

n ≈ 1450 1/min


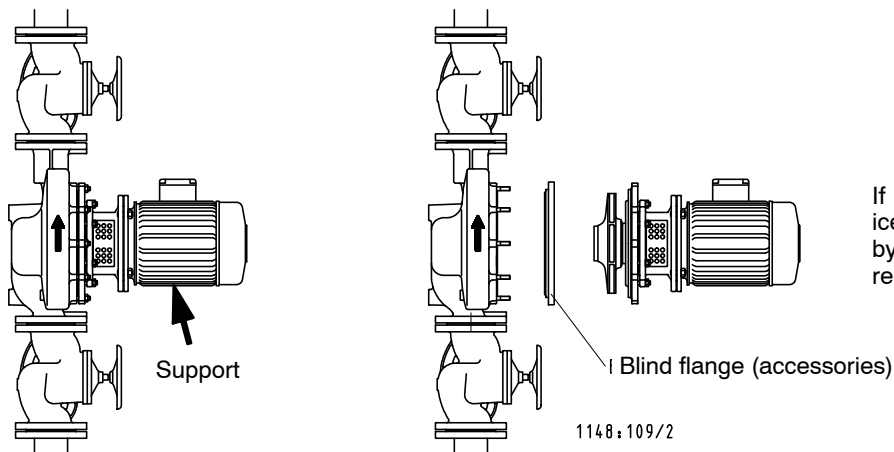
Etaline Z	DN ¹⁾	a	b	c	≈d	d ₁	e	≈f	≈g	h	h ₁	k	k ₁	≈l	≈l ₁	≈p	t	x	1M.1/2 6B.1/2 6D.1/2 ²⁾	6D.3 ²⁾
150-250/754.2	150	256	320	120	298	M16	600	560	534	400	300	600	300.0	910	441	167	20.0	155	Rc 1/2	Rc 3/8
150-250/754.1	150	256	320	120	298	M16	600	560	534	400	300	600	300.0	910	441	167	20.0	155	Rc 1/2	Rc 3/8
150-250/1104.3	150	256	320	120	325	M16	600	560	534	400	300	600	300.0	1048	546	197	20.0	155	Rc 1/2	Rc 3/8
150-250/1104.2	150	256	320	120	325	M16	600	560	534	400	300	600	300.0	1048	546	197	20.0	155	Rc 1/2	Rc 3/8
150-250/1104.1	150	256	320	120	325	M16	600	560	534	400	300	600	300.0	1048	546	197	20.0	155	Rc 1/2	Rc 3/8
150-250/1504.2	150	256	320	120	325	M16	600	560	534	400	300	600	300.0	1054	552	197	20.0	155	Rc 1/2	Rc 3/8
150-250/1504.1	150	256	320	120	325	M16	600	560	534	400	300	600	300.0	1054	552	197	20.0	155	Rc 1/2	Rc 3/8
150-250/1854	150	256	320	120	370	M16	600	560	534	400	300	600	300.0	1112	610	258	20.0	155	Rc 1/2	Rc 3/8
200-250/1104	200	281	410	210	325	M16	600	585	537	530	470	600	300.0	1073	546	197	20.0	160	Rc 1/2	Rc 3/8
200-250/1504.3	200	281	410	210	325	M16	600	585	537	530	470	600	300.0	1079	552	197	20.0	160	Rc 1/2	Rc 3/8
200-250/1504.2	200	281	410	210	325	M16	600	585	537	530	470	600	300.0	1079	552	197	20.0	160	Rc 1/2	Rc 3/8
200-250/1504.1	200	281	410	210	325	M16	600	585	537	530	470	600	300.0	1079	552	197	20.0	160	Rc 1/2	Rc 3/8
200-250/1854.2	200	281	410	210	370	M16	600	585	537	530	470	600	300.0	1137	610	258	20.0	160	Rc 1/2	Rc 3/8
200-250/1854.1	200	281	410	210	370	M16	600	585	537	530	470	600	300.0	1137	610	258	20.0	160	Rc 1/2	Rc 3/8
200-250/2204.2	200	281	410	210	370	M16	600	585	537	530	470	600	300.0	1137	610	258	20.0	160	Rc 1/2	Rc 3/8
200-250/2204.1	200	281	410	210	370	M16	600	585	537	530	470	600	300.0	1137	610	258	20.0	160	Rc 1/2	Rc 3/8
200-250/3004	200	281	410	210	422	M16	600	585	537	530	470	600	300.0	1196	669	305	20.0	160	Rc 1/2	Rc 3/8
200-315/3004.3	200	287	410	220	422	M16	580	594	554	520	480	580	290.0	1214	669	305	20.0	185	Rc 1/2	Rc 3/8
200-315/3004.2	200	287	410	220	422	M16	580	594	554	520	480	580	290.0	1214	669	305	20.0	185	Rc 1/2	Rc 3/8
200-315/3004.1	200	287	410	220	422	M16	580	594	554	520	480	580	290.0	1214	669	305	20.0	185	Rc 1/2	Rc 3/8
200-315/3704.3	200	287	410	220	460	M16	580	594	554	520	480	580	290.0	1270	695	305	20.0	185	Rc 1/2	Rc 3/8
200-315/3704.2	200	287	410	220	460	M16	580	594	554	520	480	580	290.0	1270	695	305	20.0	185	Rc 1/2	Rc 3/8
200-315/3704.1	200	287	410	220	460	M16	580	594	554	520	480	580	290.0	1270	695	305	20.0	185	Rc 1/2	Rc 3/8
200-315/4504.2	200	287	410	220	468	M16	580	594	554	520	480	580	290.0	1300	725	305	20.0	185	Rc 1/2	Rc 3/8
200-315/4504.1	200	287	410	220	468	M16	580	594	554	520	480	580	290.0	1300	725	305	20.0	185	Rc 1/2	Rc 3/8
200-315/5504	200	287	410	220	520	M16	580	594	554	520	480	580	290.0	1392	817	427	20.0	185	Rc 1/2	Rc 3/8

1 M.1/2	Pressure gauge
6 B.1/2	Pumped liquid drain
6 D.1/2	Pumped liquid venting / drain
6 D.3	Mechanical seal chamber venting

1) DN = EN 1092-2, PN 16

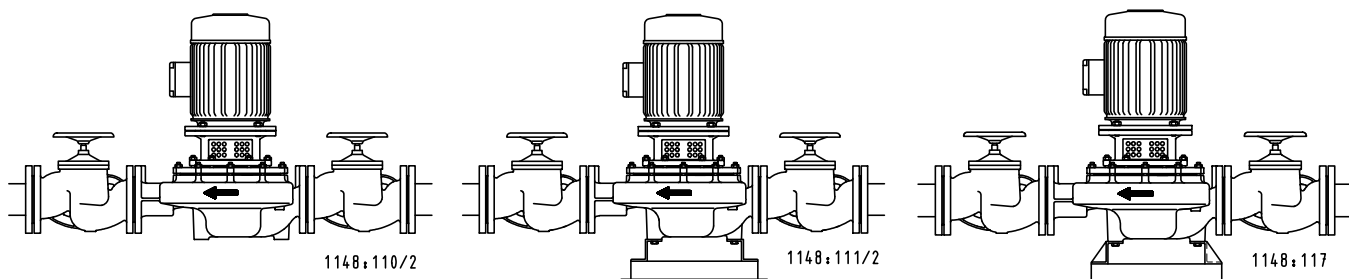
2) Rc = ISO 7/1

 Tolerances of connecting dimensions to EN 735
 Dimensions in mm



If one of the pumps needs to be serviced, the pump chamber can be shut off by a blind flange so that the pump unit remains operational.

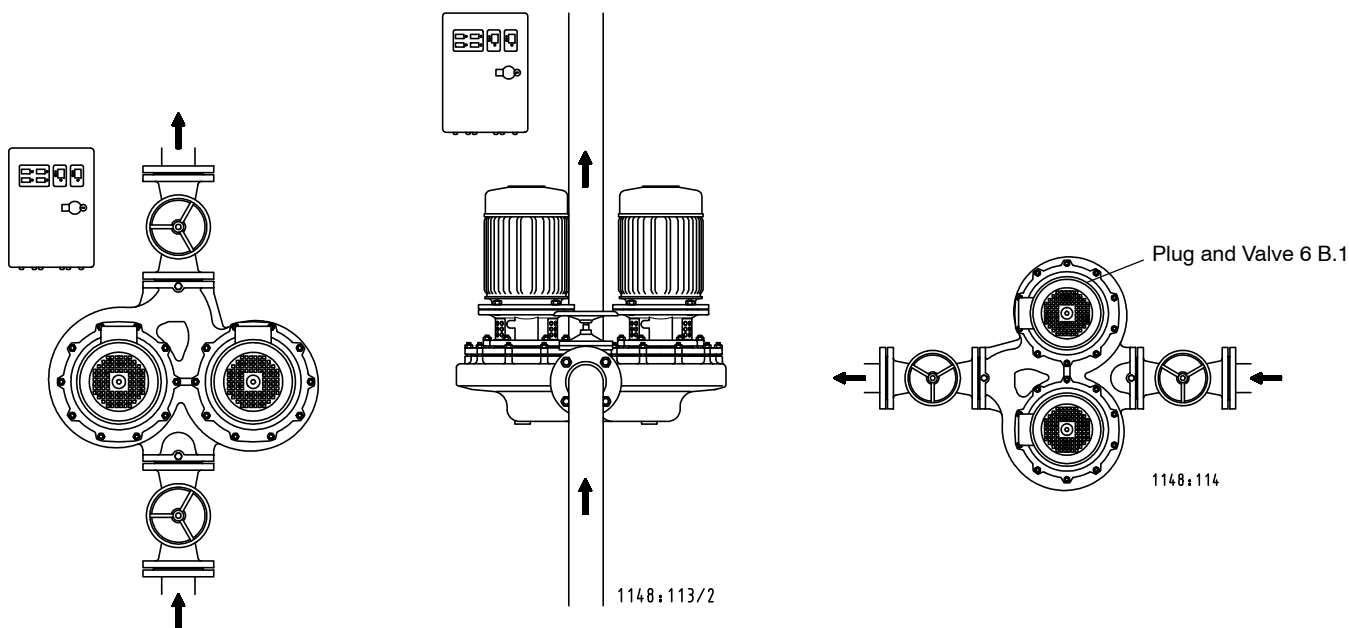
On Etaline Z pump units equipped with motors of size 180 (18.5 kW) and above, with the motor axis in horizontal position, the motors must be supported. To this end, use the foot fixing holes on the motor housing.



Pump sizes Etaline Z 32-160/... to 80-250/... fixed without feet.

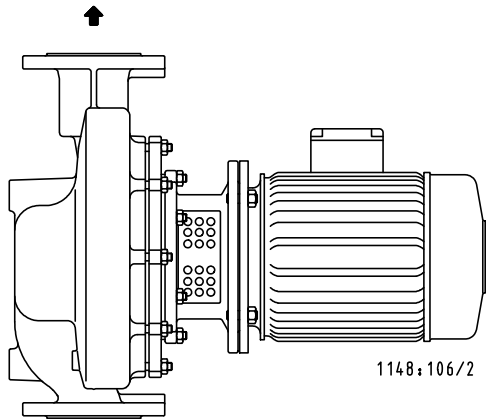
Pump sizes Etaline Z 32-160/... to 80-250/... fixed by three angle feet (St 37, accessories).

Pump sizes Etaline Z 100-200/... to 200-315/... fixed by three angle feet (EN-GJL, accessories).

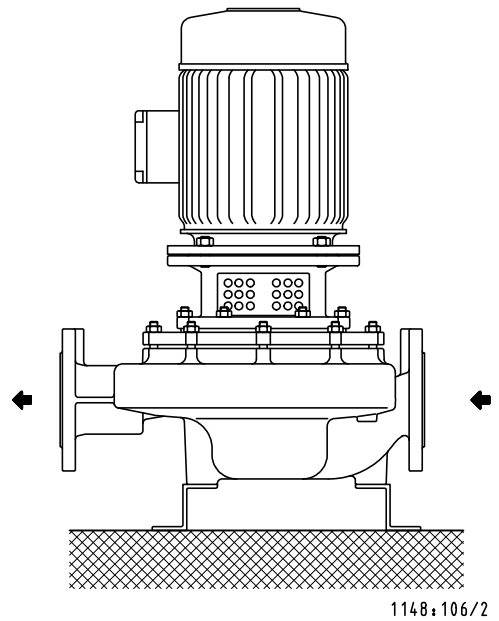


If flexible pipe joints (expansion joints) are used or if the pump set is installed with pump feet, Etaline Z has to be fixed. The list of pump accessories includes appropriate fixing elements. When the motor is removed the volute casing may remain in the piping.

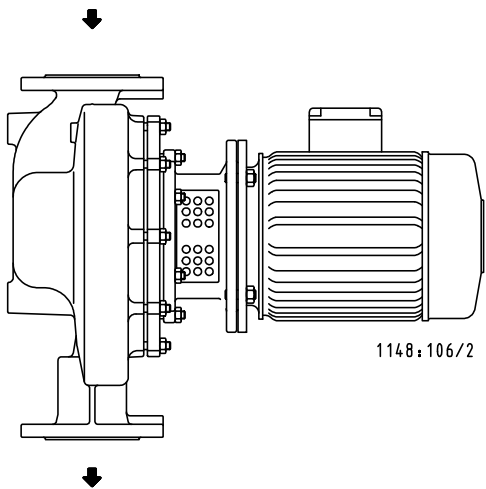
If the piping is laid horizontally, the upper pump must be vented through venting connection 6 B.1 and valve. After that, the unit will give trouble-free operation.



Horizontal installation, direction of flow from bottom to top



Vertical installation, pump fixed by three angle feet



Horizontal installation; direction of flow from top to bottom. The pump casing/back pull-out unit must be turned by 180° so that the terminal box remains in its position on the top. Pump sizes 32 to 80 can be directly installed into the piping in any position, but not with the motor pointing downwards.

Interchangeability of Etaline Z, Etaline and Etabloc Components and Interchangeability of Components among Each Other

Etaline 1)	Shaft unit	Description																Etabloc			
		Volute casing		Discharge cover		Shaft with taper lock ring										Impeller	Mechanical seal		Casing wear ring, suction side	Casing wear ring, discharge side	Shaft sleeve
		102	163	210										230	433	502.1	502.2		523		
		Motor																			
		71	80	90	100/112	132	160	180	200	225 ²⁾	250										
32-160/...	25	○	1	1	2	3	◆	◆	◆	◆	◆	◆	◆	1	1	1	1	1	32-160.1/...		
32-200/...	25	○	○	□	2	3	4	◆	◆	◆	◆	◆	◆	○	1	1	1	1	32-200.1/...		
40-160/...	25	○	1	1	2	3	◆	◆	◆	◆	◆	◆	◆	1	1	1	1	1	32-160/...		
40-250/...	25	○	2	□	2	3	4	5	◆	◆	◆	◆	◆	○	1	1	2	1	32-250/...		
50-160/...	25	○	1	1	2	3	4	◆	◆	◆	◆	◆	◆	○	1	2	1	1	40-160/...		
50-250/...	25	○	2	□	□	3	4	□	6	7	◆	◆	◆	○	1	2	2	1	40-250/...		
65-160/...	25	○	1	1	2	3	4	◆	◆	◆	◆	◆	◆	○	1	3	1	1	50-160/...		
65-250/...	25	○	2	□	□	3	4	5	◆	◆	◆	◆	◆	○	1	3	2	1	50-250/...		
80-160/...	25	○	○	□	2	3	□	5	◆	◆	◆	◆	◆	○	1	○	○	1	65-160/...		
80-250/...	35	○	○	◆	◆	◆	8	9	◆	◆	◆	◆	◆	○	2	○	○	2	65-250/...		
100-200/...	35	○	4	◆	◆	◆	8	9	10	11	◆	◆	◆	○	2	4	3	2	80-200/...		
100-250/...	35	○	5	◆	◆	◆	8	9	10	□	12	13	◆	○	2	4	3	2	80-250/...		
125-200/...	35	○	4	◆	◆	◆	8	9	10	11	◆	◆	◆	○	2	5	3	2	100-200/...		
125-250/...	35	○	5	◆	◆	◆	8	9	10	□	◆	◆	◆	○	2	5	3	2	100-250/...		
150-250/...	35	○	6	◆	◆	◆	□	9	10	11	□	□	◆	○	2	○	○	2	125-250/...		
200-250/...	35	○	6	◆	◆	◆	□	□	10	11	12	□	◆	○	2	6	○	2	150-250/...		
200-315/...	55	○	○	◆	◆	◆	◆	◆	◆	◆	14	15	16	○	○	6	○	○	150-315/...		

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 Same number means same component.
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 Components differ.
- | |
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 In case of other frequencies and/or power reserves for this pump/motor combination please contact the manufacturer.
- | |
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| ◆ |
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 This pump/motor combination is not available.
- | |
|---|
| ■ |
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 Components interchangeable with those of Etabloc and Etaline.



Motor	Rating
71	.../024, .../034, .../032, .../052
80	.../054, .../074, .../072, .../112
90	.../114, .../154, .../152, .../222
100	.../224, .../304, .../302
112	.../404, .../402
132	.../554, .../754, .../552, .../752
160	.../1104, .../1504, .../1102, .../1502, .../1852
180	.../1854, .../2204, .../2202
200	.../3004, .../3002, .../3702
225	.../3704, .../4504, .../4502
250	.../5504, .../5502

1) Except for the volute casing, the pump components of single and twin Etaline pumps are identical.
 2) Not interchangeable between 2-pole and 4-pole motors (shaft end of 4-pole motor Ø 60 mm, 2-pole Ø 55 mm)

		≈kg
Pump feet ¹⁾ for vertical installation		
Etaline Z 32-160/... to 80-250/... ¹⁾	47 077 960	2.0
Etaline Z 100-200/... to 200-315/... ¹⁾	47 089 180	3.0
Blind flange , consisting of blind flange and gasket		
Etaline Z 32-160, 40-160, 50-160, 65-160, 80-160	47 085 521	5.0
Etaline Z 32-200, 100-200, 125-200	47 085 522	9.0
Etaline Z 40-250, 50-250, 65-250, 80-250, 100-250, 125-250, 150-250, 200-250	47 085 523	13.0
Etaline Z 200-315	47 085 524	20.0

¹⁾ 3 pump feet with bolts

Elektrical accessories

		Setting range max.	Prefuse		≈kg	
¹⁾ 	Switchgear DDU, IP 54	DDU 10.1	0.63 - 1 A	25 A	19 070 267	18.0
	with pump changeover via timer, fault changeover, external changeover, external starting in case of peak load, external release, thermal circuit-breaker connection, separate 230 V output, with one motor protection switch each (may be locked in 'Off' position), hand-0-automatic switch with motor contactor and thermistor tripping device. Lamps indicating operation and fault for each pump. Volt-free contacts for operation and fault indication for each pump. Connections on terminal strip.	DDU 16.1	1 - 1.6 A	25 A	19 070 268	18.0
		DDU 25.1	1.6 - 2.5 A	25 A	19 070 269	18.0
		DDU 40.1	2.5 - 4 A	25 A	19 070 270	18.0
		DDU 60.1	4 - 6 A	25 A	19 070 271	18.0
		DDU 100.1	6 - 10 A	25 A	19 070 272	18.0
	600 x 400 x 200 mm					
¹⁾ 	Switchgear DSU, IP 54	DSU 140.1	9 - 14 A	50 A	19 071 258	20.0
	with pump changeover via timer, fault changeover, external changeover, external starting in case of peak load, external release, thermal circuit-breaker connection, separate 230 V output, with one motor protection switch each (may be locked in 'Off' position), hand-0-automatic switch with star-delta starting and thermistor tripping device. Lamps indicating operation and fault for each pump. Volt-free contacts for operation and fault indication for each pump. Connections on terminal strip.	DSU 160.1	13 - 18 A	50 A	19 070 273	20.0
		DSU 200.1	17 - 23 A	50 A	19 070 274	20.0
		DSU 250.1	20 - 25 A	63 A	19 070 275	20.0
		DSU 400.1	25 - 40 A	100 A	19 070 722	36.0
		DSU 630.1	40 - 63 A	160 A	19 070 723	39.0
	600 x 400 x 200 mm 800 x 600 x 200 mm for DSU 400.1/630.1					
All-purpose pressure gauge set , measuring range 0 - 6 bar, scale division 0.2 bar, consisting of: 1 precision pressure gauge, pre-assembled with 2 shut-off valves, copper connection pipes, various connection elements, elbows and reducers				40 981 832	0.8	

¹⁾ Designed for 3 ~ 400 V. For all other voltages and frequencies please contact KSB.

