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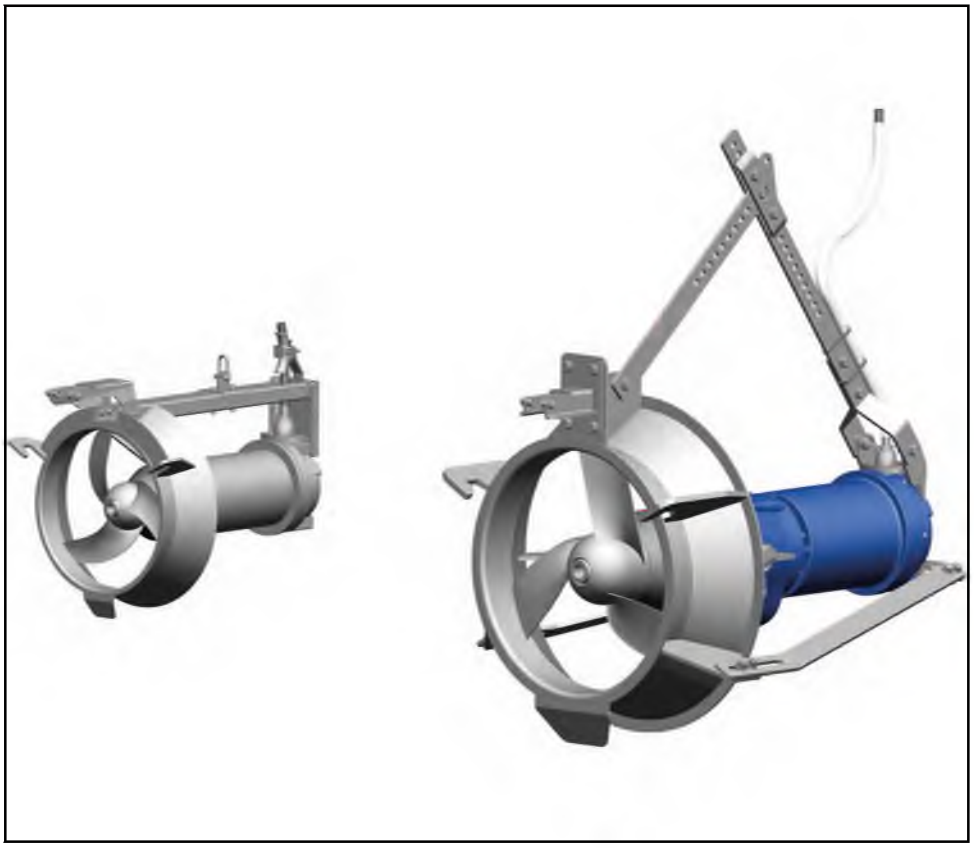
Пропеллерные насосы KSB. Техническое описание

Submersible Motor Pump

Amaline

Type Series Booklet

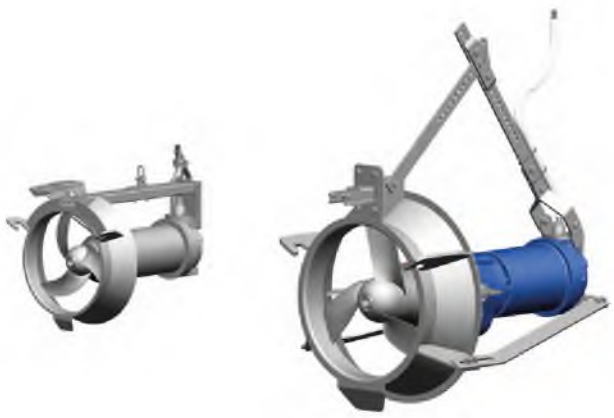


Contents

Waste Water

Submersible Motor Pump

Amaline



Main applications

- Recirculating activated sludge from the nitrification to the denitrification stage of activated sludge tanks
- Economic handling of stormwater, river water, surface water and polder water at low heads
- Generating flow in water bodies

Fluids handled

- Activated sludge
- Stormwater
- River water
- Polder water
- Surface water

Operating data

Operating properties of Amaline 200/300/400 pumps

Characteristic		Amaline 200	Amaline 300	Amaline 400
Power	P [kW]	1.25 - 2.5	1.8 - 7.5	2.5 - 4
Head	H [m]	< 2.5	< 3.4	< 1.2
Flow rate	Q [m³/h]	< 425	< 1200	< 1800
Fluid temperature	t [°C]	< 40	< 40	< 40

Operating properties of Amaline 500/600/800 pumps

Characteristic		Amaline 500	Amaline 600	Amaline 800
Power	P [kW]	4.5 - 17	4.5 - 25	4.5 - 27
Head	H [m]	< 3.5	< 3.4	< 2.15
Flow rate	Q [m³/h]	< 2700	< 4700	< 6600
Fluid temperature	t [°C]	< 40	< 40	< 40

Designation

Example: Amaline C 2035 - 1450 / 24 UDG

Key to the designation

Code	Description	
Amaline	Type series	
C	Pump casing material	
	C	Stainless steel
	S	Galvanised steel
20	Size, nominal diameter (DN)	
	20	200
	30	300
	40	400
	50	500
	60	600
	80	800
3	Number of blades	
	2, 3	
5	Code of blade incidence angle	
	1, 2, 3, 4, 5, 6	
1450	Nominal speed of the propeller [rpm]	
2	Motor size	
	0, 1, 2, 3, 4, 6, 8, 11, 16, 17, 23, 25, 30	
4	Number of motor poles	
	2, 4, 6, 8	
UD	Motor version	
	UD	Standard version without gear unit
	YD	Explosion-proof version without gear unit to ATEX II 2GT4
	UR	Standard version with gear unit
	YR	Explosion-proof version with gear unit to ATEX II 2GT4
G	Motor housing material	
	G	Grey cast iron
	C	Stainless steel

Design details

Design

- Fully floodable submersible motor pump
- Horizontal installation
- Wet-well installation

Propeller

- Self-cleaning propeller

Shaft seal

- Two bi-directional mechanical seals in tandem arrangement, with liquid reservoir

Amaline 500/600/800:

- Additional leakage chamber between the mating ring carrier and the gear unit

Bearings

Amaline 200/300/400:

- Grease-packed rolling element bearings sealed for life

Amaline 500/600/800:

- Motor-end rolling element bearings, greased for life
- Gear-end rolling element bearings, oil-lubricated

Drive

- Three-phase asynchronous squirrel-cage motor
- Motors integrated in explosion-proof pump sets are supplied in Ex d IIB type of protection.

Amaline 200/300/400:

- Direct drive

Amaline 500/600/800:

- Spur gear drive

Materials

Materials of an Amaline 200/300/400 pump

Component		Pump casing material	
		S	C
Casing cover		EN-GJL-250	1.4571
Adapter		PU	
Pump casing		Galvanised steel / 1.4571	1.4571
Propeller		1.4571	
Mechanical seal	Propeller end	SiC/SiC	
	Drive end	SiC/SiC	
Shaft[1)]		1.4571	
Elastomer seals		Viton (FPM)	
Screws/bolts		A4[2)]	

Materials of an Amaline 500/600/800 pump

Component		Pump casing material	
		S	C
Casing cover		EN-GJL-250	
Gear housing		EN-GJL-250	
Adapter[3)]		PU	
Pump casing		Galvanised steel	1.4571
Propeller		1.4571	
Mechanical seal	Propeller end	SiC/SiC	
	Drive end	SiC/SiC	
Shaft[4)]		1.4122	
Elastomer seals		Viton (FPM)	
Screws/bolts		A4[2)]	

Motor housing materials of an Amaline 200/300/400 pump

Component	Motor housing material	
	G	C
Motor housing	EN-GJL-250	1.4581
Motor housing cover	EN-GJL-250	1.4517

Motor housing materials of an Amaline 500/600/800 pump

Component	Motor housing material	
	G	C
Motor housing	EN-GJL-250	-
Motor housing cover	EN-GJL-250	-

Description of materials

Grey cast iron EN-GJL-250 (lamellar graphite cast iron):
Lamellar graphite cast iron to DIN EN 1561 is the most widely used cast material for handling municipal sewage, waste water and sludges as well as stormwater and surface water. It is suitable for neutral fluids which are only slightly aggressive and cause little wear. The pH value should be ≥ 6.5, the sand content ≤ 0.5 g/l.

Duplex stainless steel (1.4517 or technically equivalent material)

This type of carbon steel is resistant to cavitation, has excellent strength values and is used for high circumferential speeds. An excellent resistance to pitting corrosion makes ferritic-austenitic stainless carbon steel a popular choice for pumping acidic waste water with a high chloride content as well as seawater and brackish water. Thanks to its good chemical resistance, e.g. also against waste water containing phosphorous and sulphuric acid, this material is used in a wide range of applications in the chemical industry and and process engineering. Pumps made of duplex stainless steel have a very long service life, even when handling brines, chemical waste water (pH value 1 - 12), grey water and landfill leachate.

1.4571 / 1.4581 (X10 CrNiMoTi 18 10): austenitic steel

This austenitic steel to DIN 17440 is characterised by its high corrosion resistance in municipal and chemical waste water. It is stabilised with titanium and as such resistant to intergranular corrosion even when welded.

Product benefits

- Perfectly protected by absolutely water-tight cable gland protecting the motor against moisture
- Motor monitored by temperature sensors to prevent it from overheating
- Easy to install
- Two bi-directional mechanical seals with oil reservoir filled with ecologically acceptable oil provide double safety

Amaline 500/600/800:

- Leakage chamber between oil reservoir and gear unit for high reliability
- Optional: leakage sensor in leakage chamber available for non-explosionproof version

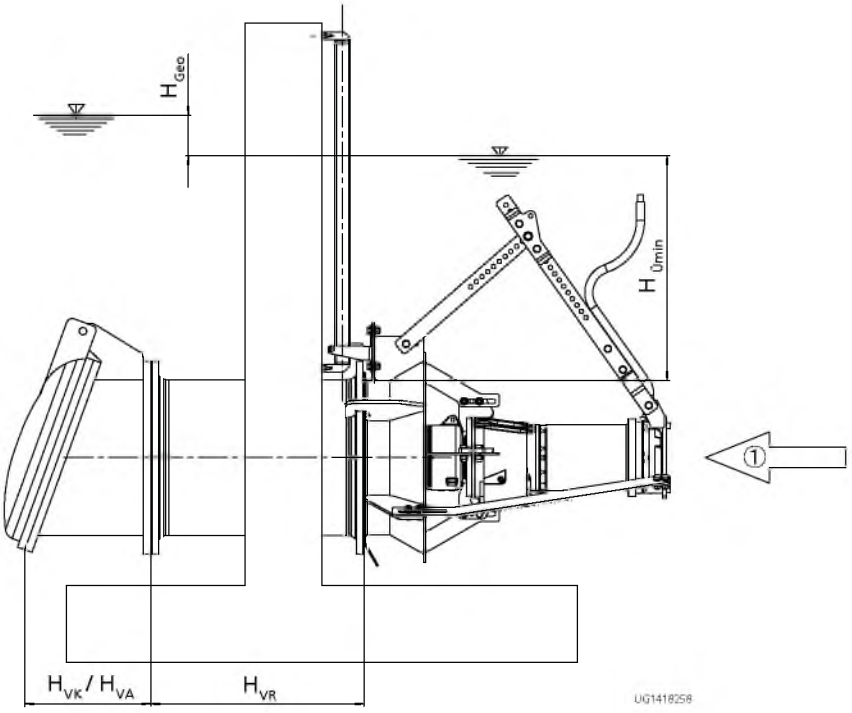
Acceptance tests / guarantees

- Every pump undergoes functional testing to KSB standard ZN 56525.
- Quality is assured by means of an audited and certified quality assurance system to DIN EN ISO 9001.

Special acceptance inspections upon request.

1) For Amaline ... ...-300/86 .. G; shaft made of 1.4021
2) Equivalent to 1.4571
3) Not for Amaline 800
4) Gear unit output shaft

Selection information



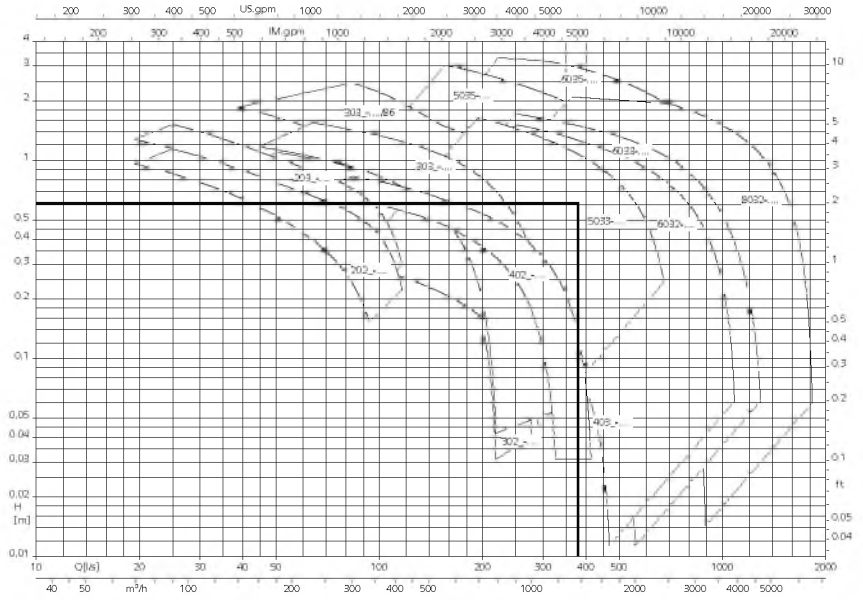
Drawing showing the design criteria - $H_{Ü}$, H_{geo}, H_{VR}, H_{VK}, H_{VA}

$H_{Ü}$	Submergence	H_{VR}	Head losses in the pipe
H_{geo}	Static head	H_{VK}	Head losses in the valve
H_{Vtotal}	Head losses in the system	H_{VA}	Head losses at the outlet
①	Direction of flow		

Example:

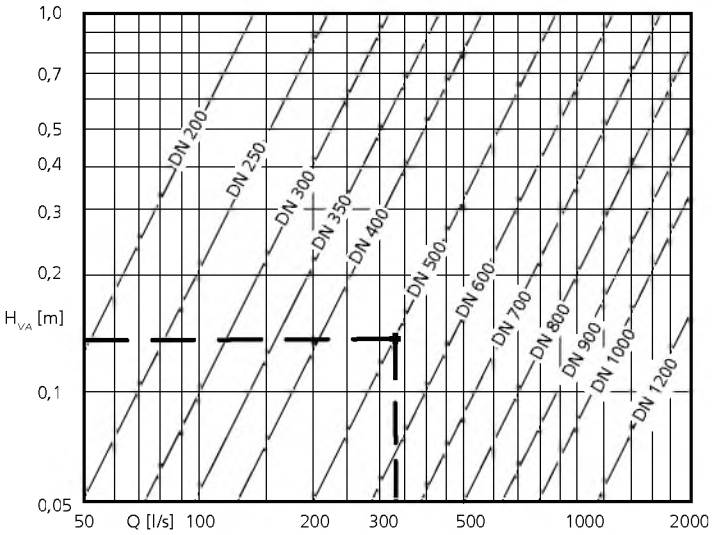
Given:
Flow rate: Q = 1350 m³/h
Static head: H_{geo} = 0.3 m

1. Pre-selection



Pre-selection: Amaline with DN 500

2. Determining the outlet losses



Outlet loss $H_{VA} = v^2/2g$

$H_{VA} = v^2/2g = 0.15$ m

3. Determining the head

$H = H_{geo} + H_{Vtotal}$

$H_{Vtotal} = H_{VR} + H_{VK} + H_{VA}$

$H_{VR} = 0$ m (short pipe)

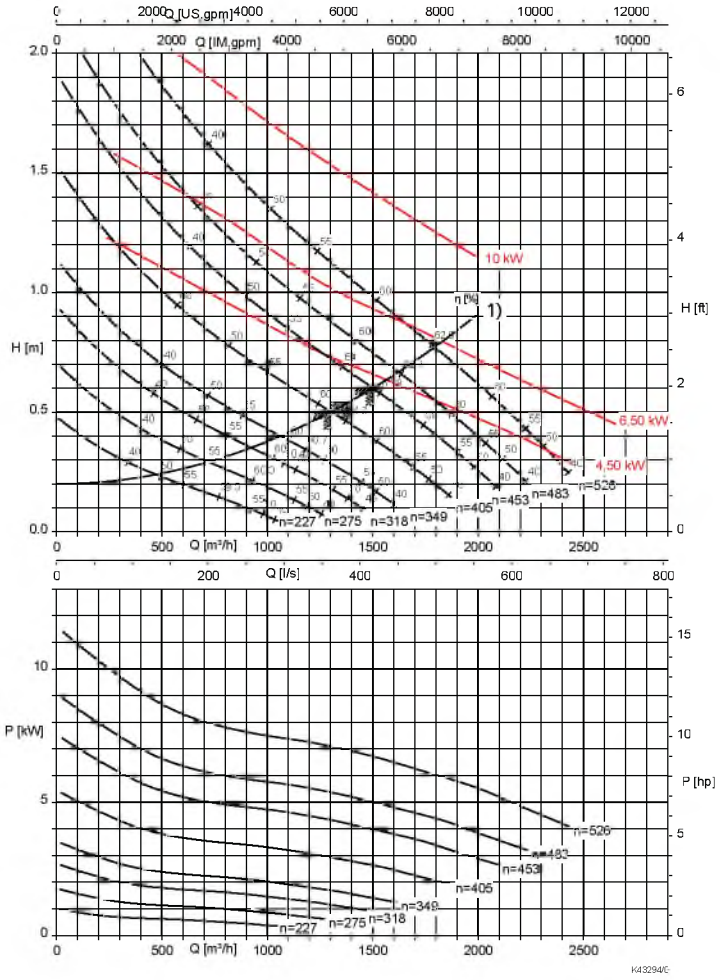
$H_{VK} = 0.15$ m (observe the manufacturer's information, characteristic $H_{VK\,(Q)}$).

$H_{VA} = v^2/2g = 0.15$ m

H = 0.3 m + 0 m + 0.15 m + 0.15 m + = 0.6 m

4. Duty point = design point

If controlled by a frequency inverter the pump can be run at its design point without deviations.



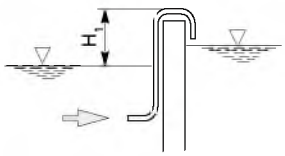
Speed performance chart Amaline 5033-_ _ _, 1) = system curve

The operating speed equals 405 rpm or 453 rpm respectively. All pump sets have sufficient motor reserves (they use max. 85 % of the motor rating).

Technical data

Code	Speed $n_{eff.}$	Motor power P_2	Drive with gear unit	Transmission ratio
	[rpm]	[kW]		
5033-405/4 4	405	4.5	SP189	3.618
5033-405/6 4	405	6.5	SP189	3.618
5033-453/4 4	453	4.5	SP189	3.232
5033-453/6 4	453	6.5	SP189	3.232

5. Information on operation



Required head H_1 of the siphon line

Pipe lengths: L > 5 x D:

When starting up the pump, the acceleration of the pipe content leads to higher heads. For this reason, the pump will briefly exceed its operating limits. The duty point for filling the siphon line must be below the operating limit:

- $H_{max.} \leq$ operating limit

The indicated heads and performance data apply to pumped fluids with a density $\rho = 1$ kg/dm³ and a kinematic viscosity $v \leqq 20$ mm²/s.

Programme overview / selection tables

Overview of product features

Overview of product features: Amaline 200/300/400; motor housing made of grey cast iron

Feature	Amaline 200	Amaline 300	Amaline 400
Motor size			
4-pole	1 4 2 4	-	-
6-pole	-	0 6 2 6 8 6	-
8-pole	-	-	3 8 4 8
Propeller speed	1450 rpm	960 rpm	725 rpm
Propeller diameter	200 mm	303 mm	384 mm
Power range	1.25 kW to 2.5 kW	1.8 kW to 7.5 kW	2.5 kW to 4 kW
Bearings	Grease-packed rolling element bearings sealed for life		
Explosion protection			
Version UD	Not explosion-proof		
Version YD	⟨Ex⟩ ATEX II 2G Ex dc IIB T4		
Motor			
Starting method	DOL[5]		DOL or star-delta
Voltage	400 V[6] 50 Hz, suitable for frequency inverter operation		
Cooling	By surrounding fluid handled		
Submergence	Up to 12 m[7]		
Power cable			
Length	10 m[8]		
Cable entry	Absolutely watertight		
Type	See table "Overview of power cables"		
Monitoring equipment			
Winding temperature	PTC thermistor		
Leakage	Leakage sensor in the motor space		
Coating	Two-component epoxy resin coating		
Permissible ambient temperature	40 °C		

Overview of product features: Amaline 200/300/400; motor housing made of stainless steel

Feature	Amaline 200	Amaline 300	Amaline 400
Motor size			
4-pole	1 4 2 4	-	-
6-pole	-	0 6 2 6	-
8-pole	-	-	3 8 4 8
Propeller speed	1450 rpm	960 rpm	725 rpm
Propeller diameter	200 mm	303 mm	384 mm
Power range	1.25 kW to 2.5 kW	1.8 kW to 3.2 kW	2.5 kW to 4 kW
Bearings	Grease-packed rolling element bearings sealed for life		
Explosion protection			
Version UD	Not explosion-proof		
Version YD	⟨Ex⟩ ATEX II 2G Ex dc IIB T4		
Motor			
Starting method	DOL		DOL or star-delta
Voltage	400 V[6] 50 Hz		
Cooling	By surrounding fluid handled		
Submergence	Up to 12 m[7]		

5) For motor 8 6: DOL or star-delta
6) Optional: 500 V, 690 V on request
7) Deeper submergence on request
8) Optional: 15 m, 20 m, (> 20 m on request)

Feature	Amaline 200	Amaline 300	Amaline 400
Power cable			
Length	10 m[8)]		
Cable entry	Absolutely watertight		
Type	See table "Overview of power cables"		
Monitoring equipment			
Winding temperature	PTC thermistor		
Leakage	Leakage sensor in the motor space[9)]		
Coating	-		
Permissible ambient temperature	40 °C		

Overview of product features: Amaline 500/600/800; motor housing made of grey cast iron

Feature	Amaline 500	Amaline 600	Amaline 800
Motor size			
2-pole	17 2 25 2	17 2	-
4-pole	4 4 6 4 11 4 16 4	4 4 6 4 11 4	4 4 6 4 11 4 16 4 23 4 30 4
Propeller speed	227 to 719 rpm	227 to 719 rpm	206 to 466 rpm
Propeller diameter	484 mm	585 mm	787 mm
Power range	4.5 kW to 17 kW	4.5 kW to 25 kW	4.5 kW to 27 kW
Bearings			
Motor	Grease-packed rolling element bearings sealed for life		
Gear unit	Oil-lubricated rolling element bearings		
Explosion protection			
Version UR	Not explosion-proof		
Version YR	⟨Ex⟩ ATEX II 2G Ex dc IIB T4		
Motor			
Starting method	DOL or star-delta		
Voltage	400 V[6)] 50 Hz, suitable for frequency inverter operation		
Cooling	By surrounding fluid handled		
Submergence	Up to 12 m[7)]		
Power cable			
Length	10 m[8)]		
Cable entry	Absolutely watertight		
Type	See table "Overview of power cables"		
Monitoring equipment			
Winding temperature	PTC thermistor		
Leakage	Leakage sensor in the motor space[10)]		
Coating	Two-component epoxy resin coating		
Permissible ambient temperature	40 °C		

Overview of power cables

Feature	S1BN8-F rubber-sheathed cable	S07RC4N8-F rubber-sheathed cable	TEHSITE Tefzel cable
Design	Standard	On request	Optional
Rated voltage	1000 V	750 V	750 V
EMC screening	-	✓	-
Insulation material	EPR[11)]	EPR[11)]	ETFE[12)]
Max. continuous temperature of insulation	90 °C	90 °C	135 °C
For permanent immersion in waste water to DIN VDE 0282-16/HD22.16	✓	✓	✓

9) Optional for U version only: additional leakage sensor in the oil reservoir
10) Optional for U version only: additional leakage sensor in the leakage chamber
11) EPR = ethylene propylene rubber
12) ETFE = ethylene tetrafluoroethylene

Combination of pump and motor: Amaline 200, 300, 400; motor housing made of grey cast iron

Amaline 200/300/400 (direct drive)[13)]

Overview of pump sizes and motors

Pump size	Motors						
	14	24	06	26	86	38	48
Amaline 200							
2021-1450	✗	-	-	-	-	-	-
2022-1450	✗	✗	-	-	-	-	-
2034-1450	✗	✗	-	-	-	-	-
2035-1450	-	✗	-	-	-	-	-
Amaline 300 (lower motor ratings)							
3021-960	-	-	✗	-	-	-	-
3022-960	-	-	✗	✗	-	-	-
3031-960	-	-	✗	✗	-	-	-
3032-960	-	-	✗	✗	-	-	-
3033-960	-	-	✗	✗	-	-	-
Amaline 300 (higher motor ratings)							
3034-960	-	-	-	-	✗	-	-
3035-960	-	-	-	-	✗	-	-
3036-960	-	-	-	-	✗	-	-
Amaline 400							
4021-700	-	-	-	-	-	✗	-
4022-700	-	-	-	-	-	✗	✗
4031-700	-	-	-	-	-	✗	✗
4032-700	-	-	-	-	-	✗	✗
4033-700	-	-	-	-	-	✗	✗

Combination of pump and motor: Amaline 200, 300, 400; motor housing made of stainless steel

Amaline 200/300/400 (direct drive)[14)]

Overview of pump sizes and motors

Pump size	Motors					
	14	24	06	26	38	48
Amaline 200						
2021-1450	✗	-	-	-	-	-
2022-1450	✗	✗	-	-	-	-
2034-1450	✗	✗	-	-	-	-
2035-1450	-	✗	-	-	-	-
Amaline 300 (lower motor ratings)						
3021-960	-	-	✗	-	-	-
3022-960	-	-	✗	✗	-	-
3031-960	-	-	✗	✗	-	-
3032-960	-	-	✗	✗	-	-
3033-960	-	-	✗	✗	-	-
Amaline 400						
4021-700	-	-	-	-	✗	-
4022-700	-	-	-	-	✗	✗
4031-700	-	-	-	-	✗	✗
4032-700	-	-	-	-	✗	✗
4033-700	-	-	-	-	✗	✗

13) Illustration with shackle as the attachment point (standard)
14) Illustration with bail as the attachment point (optional)

Combination of pump and motor: Amaline 500, 600, 800; motor housing made of grey cast iron

Amaline 500/600/800 (spur gear drive)

Overview of pumps sizes and motors

Pump size	Motors							
	4 4	6 4	11 4	16 4	17 2	25 2	23 4	30 4
Amaline 500 (lower motor ratings)								
5033-227	✗	-	-	-	-	-	-	-
5033-275	✗	-	-	-	-	-	-	-
5033-318	✗	-	-	-	-	-	-	-
5033-349	✗	-	-	-	-	-	-	-
5033-405	✗	✗	-	-	-	-	-	-
5033-453	✗	✗	✗	-	-	-	-	-
5033-483	-	✗	✗	-	-	-	-	-
5033-526	-	-	✗	-	-	-	-	-
Amaline 500 (higher motor ratings)								
5035-453	✗	-	-	-	-	-	-	-
5035-483	✗	✗	-	-	-	-	-	-
5035-526	✗	✗	-	-	-	-	-	-
5035-558	-	-	-	-	✗	-	-	-
5035-608	-	-	-	-	✗	-	-	-
5035-640	-	-	-	-	✗	-	-	-
5035-672	-	-	-	-	✗	-	-	-
5035-719	-	-	-	-	✗	-	-	-
Amaline 600 (lower motor ratings)								
6032-227	✗	-	-	-	-	-	-	-
6032-275	✗	-	-	-	-	-	-	-
6032-318	✗	-	-	-	-	-	-	-
6032-354	✗	-	-	-	-	-	-	-
6032-405	✗	✗	-	-	-	-	-	-
6032-453	✗	✗	✗	-	-	-	-	-
6032-483	-	✗	✗	-	-	-	-	-
6032-526	-	✗	✗	-	-	-	-	-
6033-227	✗	-	-	-	-	-	-	-
6033-275	✗	-	-	-	-	-	-	-
6033-318	✗	-	-	-	-	-	-	-
6033-354	✗	✗	-	-	-	-	-	-
6033-405	✗	✗	✗	-	-	-	-	-
6033-453	✗	✗	✗	-	-	-	-	-
6033-483	-	✗	✗	-	-	-	-	-
6032-526	-	✗	✗	-	-	-	-	-
Amaline 600 (higher motor ratings)								
6035-357	-	-	-	✗	-	-	-	-
6035-405	-	-	-	✗	-	-	-	-
6035-453	-	-	✗	-	-	-	-	-
6035-488	-	-	-	-	✗	-	-	-
6035-522	-	-	-	-	✗	-	-	-
6035-558	-	-	-	-	✗	-	-	-
6035-608	-	-	-	-	✗	✗	-	-
6035-640	-	-	-	-	✗	✗	-	-
6035-672	-	-	-	-	✗	✗	-	-
6035-719	-	-	-	-	-	✗	-	-
Amaline 800								
8032-206	✗	-	-	-	-	-	-	-
8032-230	✗	✗	-	-	-	-	-	-
8032-279	-	✗	✗	-	-	-	-	-
8032-317	-	-	-	✗	-	-	-	-
8032-334	-	-	-	✗	-	-	-	-
8032-357	-	-	-	✗	-	-	✗	-
8032-386	-	-	-	✗	-	-	✗	-
8032-405	-	-	-	-	-	-	✗	✗
8032-433	-	-	-	-	-	-	✗	✗
8032-466	-	-	-	-	-	-	✗	✗

Specifications required for enquiries/orders

Connection pipe (⇨ Page 37)

- Nominal diameter
- Material variant
- Dimensions l_3 and l_4

E.g. connection pipe DN 500 made of galvanised steel, l_3 = 2 m and l_4 = 0.3 m
= 122.5 kg + 78.5 kg = **201 kg**

Standard and special designs

Standard and special designs

Option	Comments
Mechanical seal with covered springs	Available for all sizes
Power cable > 20 m	Available for all sizes
Leakage sensor in leakage chamber of mechanical seal	Available for all Amaline 500/600/800 sizes of version UR
Analysing device for leakage sensor, thermistor tripping unit for monitoring the winding temperature	Available for all sizes
Special voltages 500 V and 690 V	Available for all sizes
Two-component epoxy resin coating, 250 µm	Available for all sizes
Additional operating manuals	Standard: 1 operating manual per pump set
Customer-specific installation drawing	Available for all sizes
Flow measurements	Available for all sizes
Flow simulation	Available for all sizes
Installation consultancy	Available for all sizes

For any versions not documented in this type series booklet or special versions please always contact KSB for technical details, prices and delivery periods.

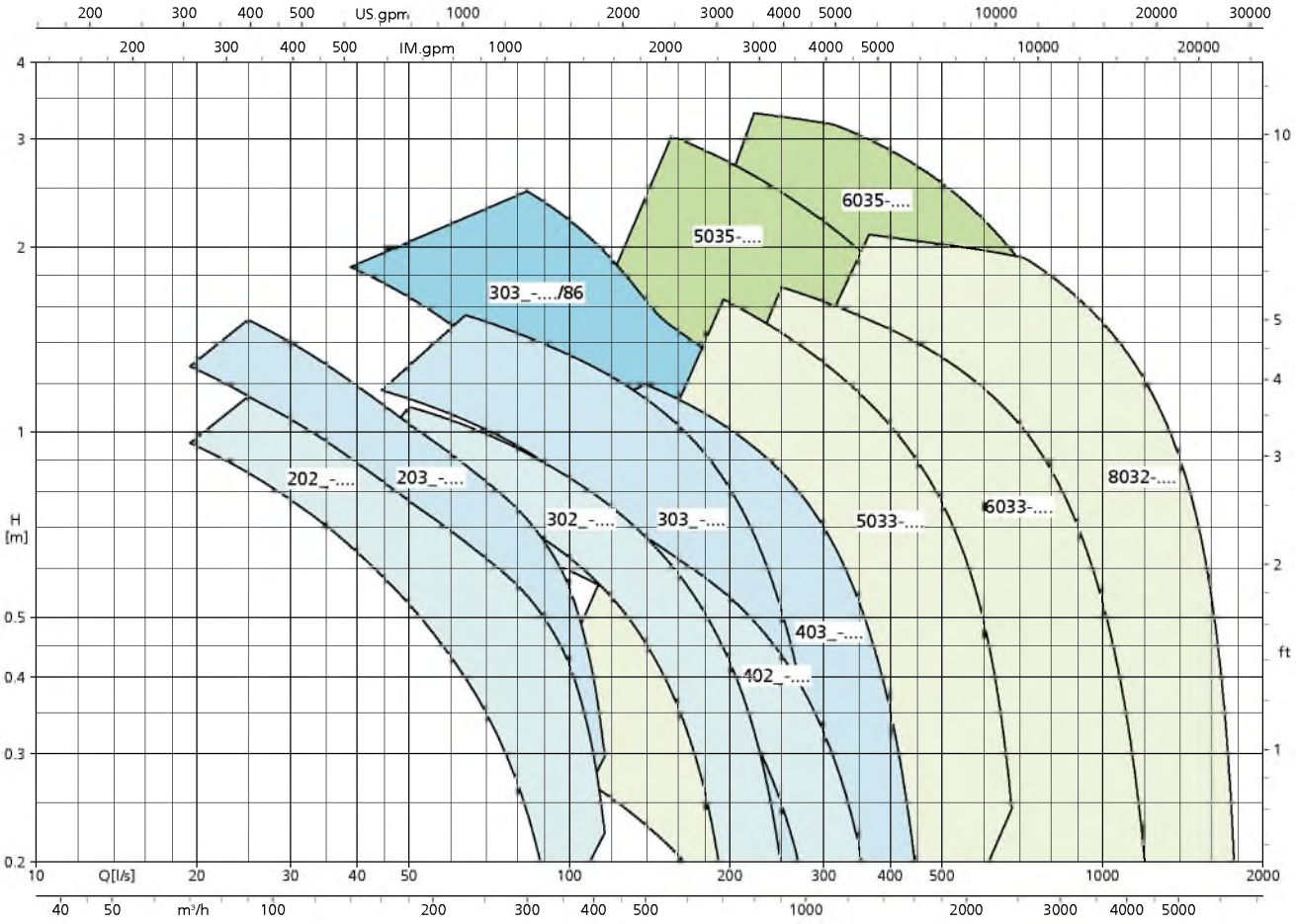
Examples:

- Other voltages (except 400 V / 500 V / 690 V)
- Special coatings
- Combinations of special motor, special propeller, special gear unit
- Special installation parts

- Special cables

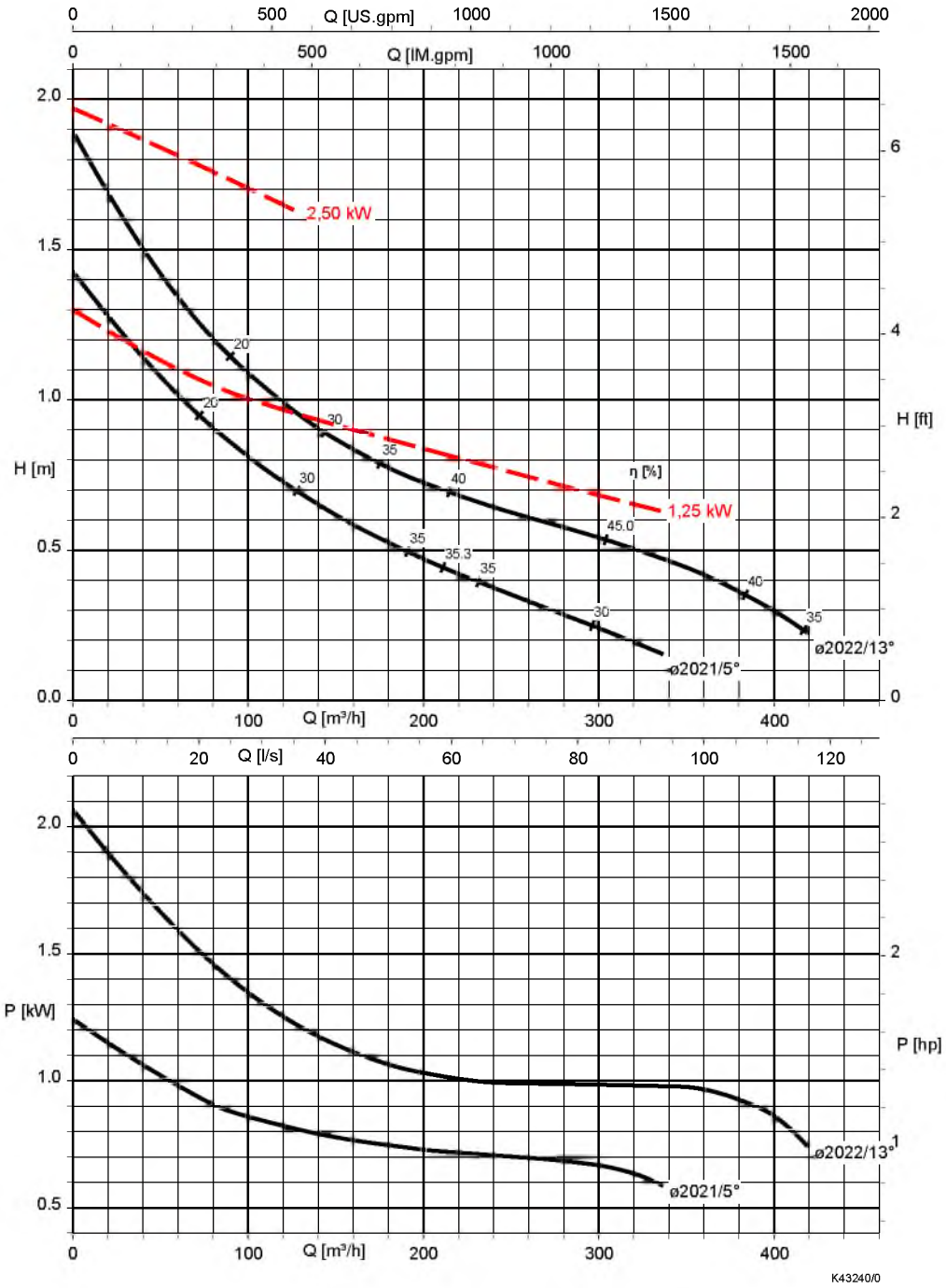
Selection chart

Amaline 200/300/400, n = 1450/960/725 rpm, Amaline 500/600/800, n = 729 - 206 rpm



Characteristic curves

Amaline 202_, motors: 1 4, 2 4

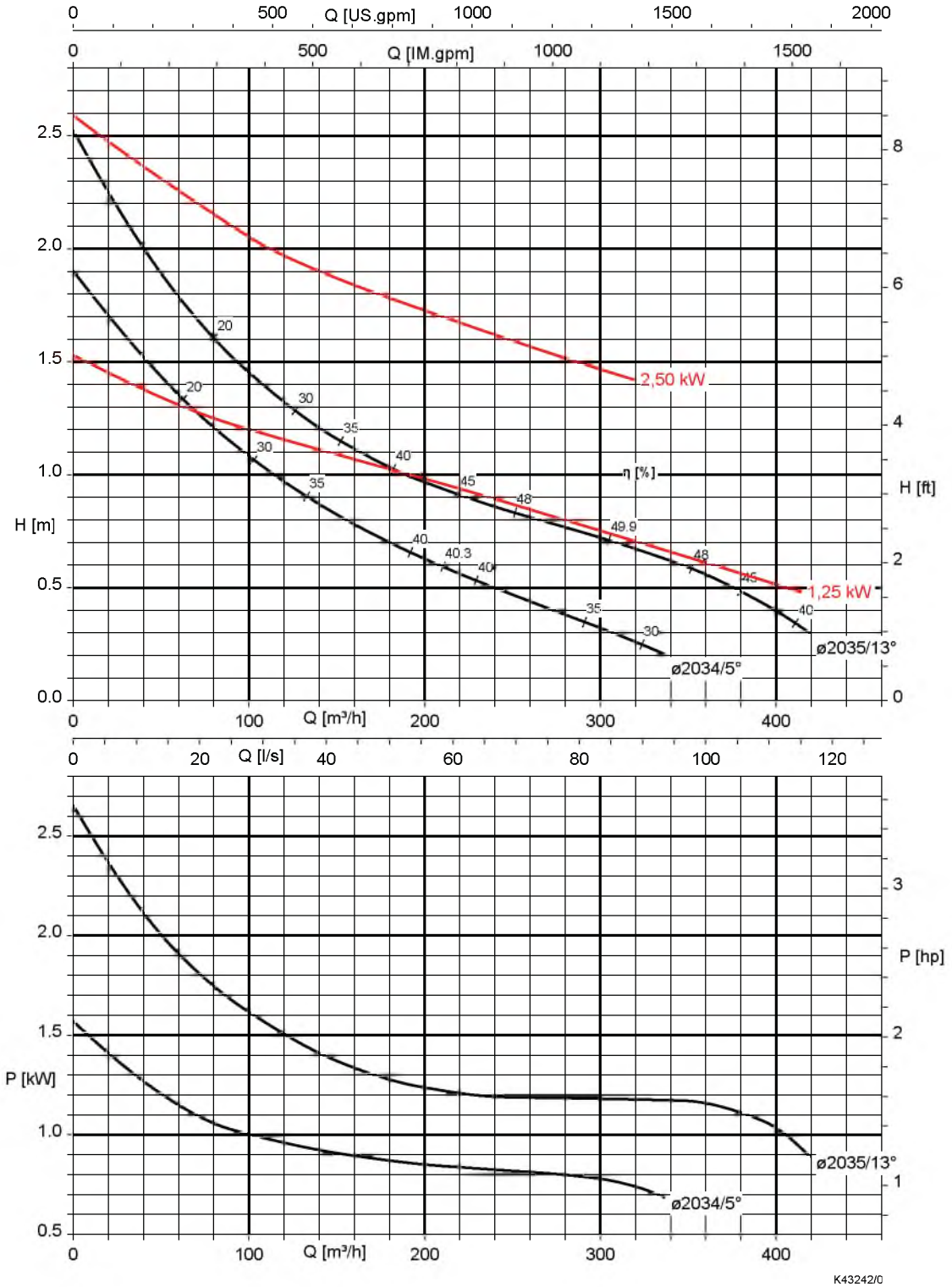


Free passage = 65 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$	P_2
	[rpm]	[kW]
2021-1450/14UDG/YDG/UDC/YDC	1450	1,25
2022-1450/14UDG/YDG/UDC/YDC	1450	1,25
2022-1450/24UDG/YDG/UDC/YDC	1450	2,5

Amaline 203_, motors: 1 4, 2 4

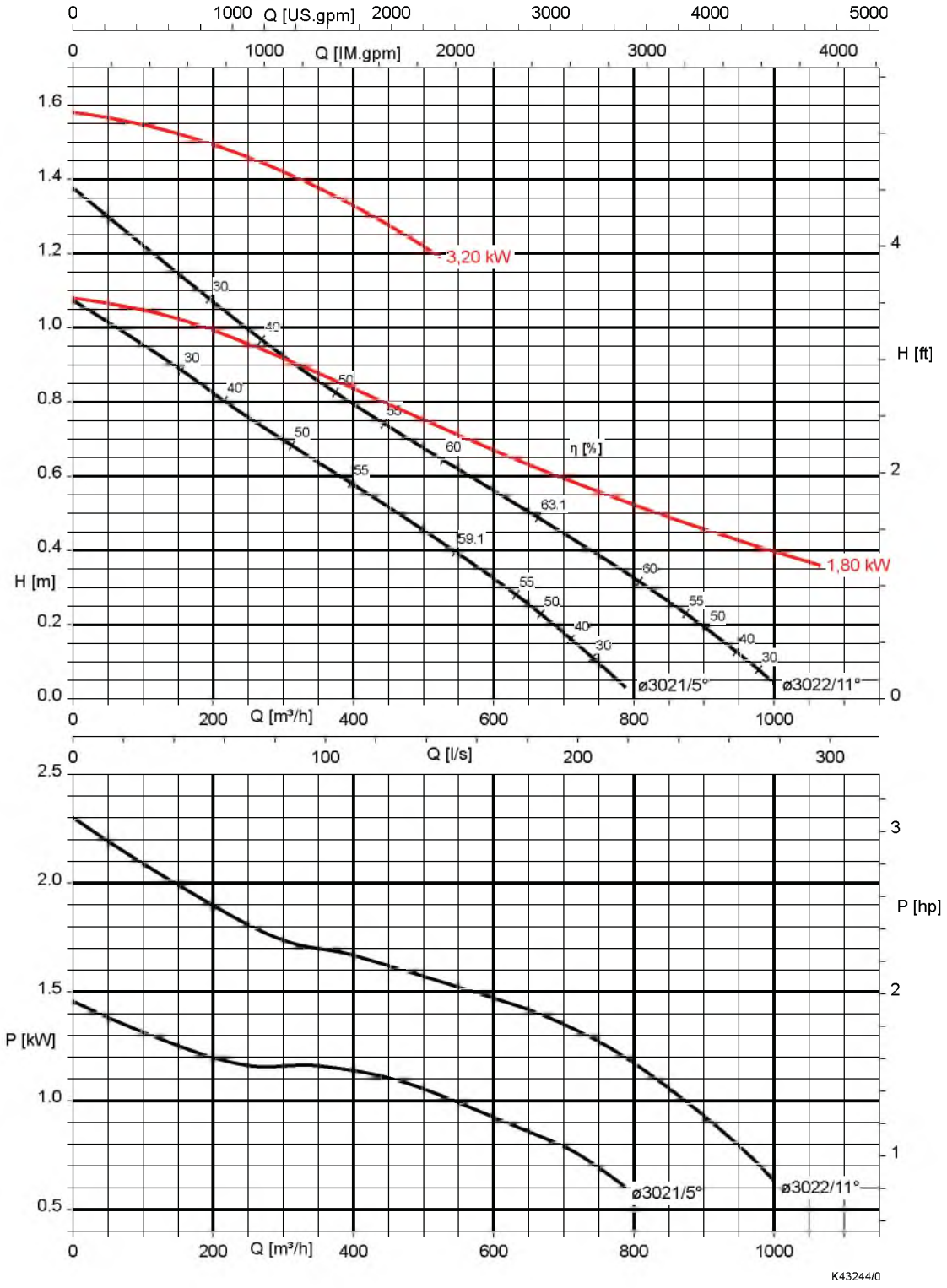


Free passage = 65 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$	P_2
	[rpm]	[kW]
2034-1450/14UDG/YDG/UDC/YDC	1450	1,25
2034-1450/24UDG/YDG/UDC/YDC	1450	2,5
2035-1450/24UDG/YDG/UDC/YDC	1450	2,5

Amaline 302_, motors: 0 6, 2 6

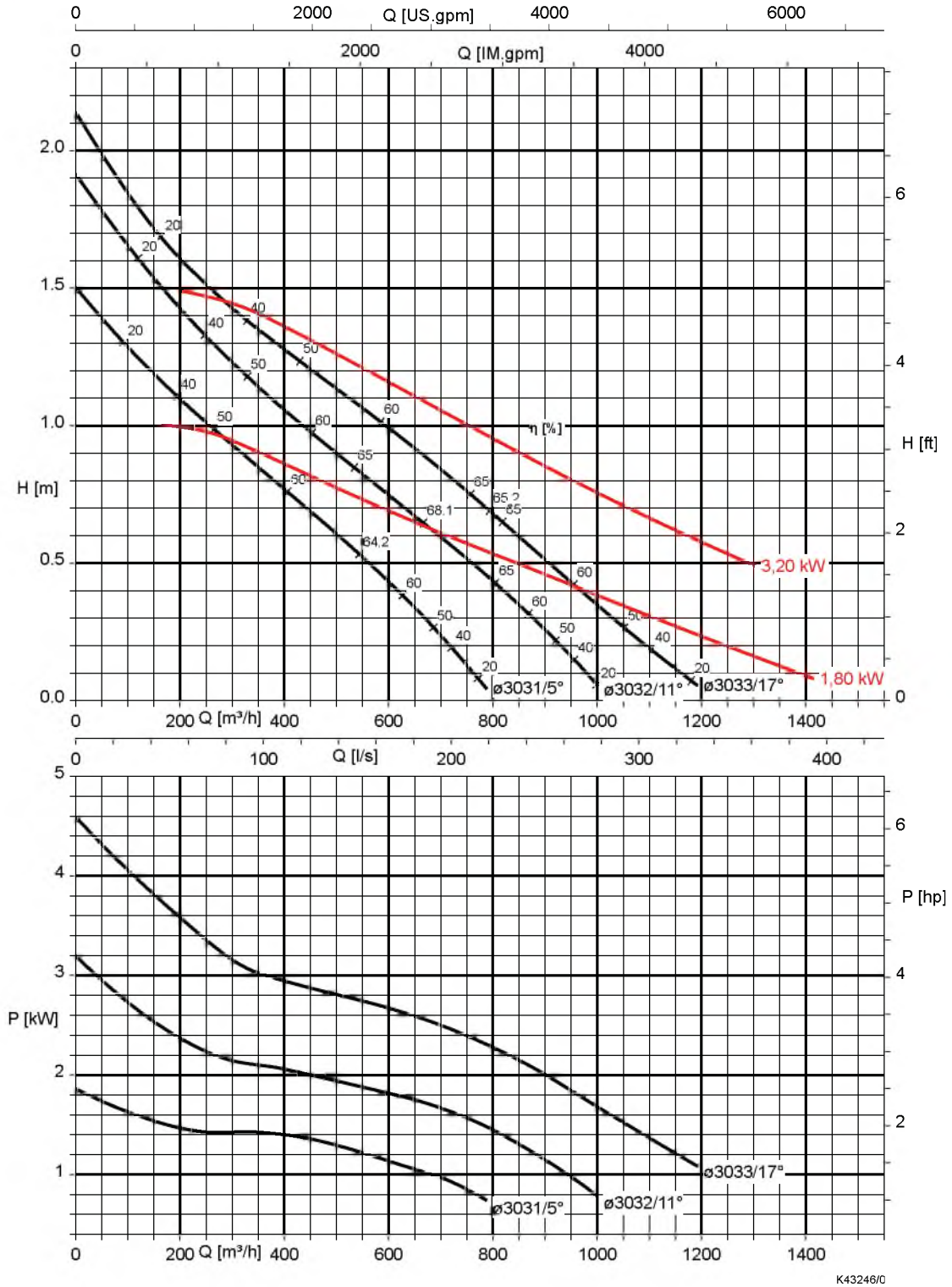


Free passage = 100 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$	P_2
	[rpm]	[kW]
3021-960/06UDG/YDG/UDC/YDC	960	1,8
3022-960/06UDG/YDG/UDC/YDC	960	1,8
3022-960/26UDG/YDG/UDC/YDC	960	3,2

Amaline 303_, motors: 0 6, 2 6



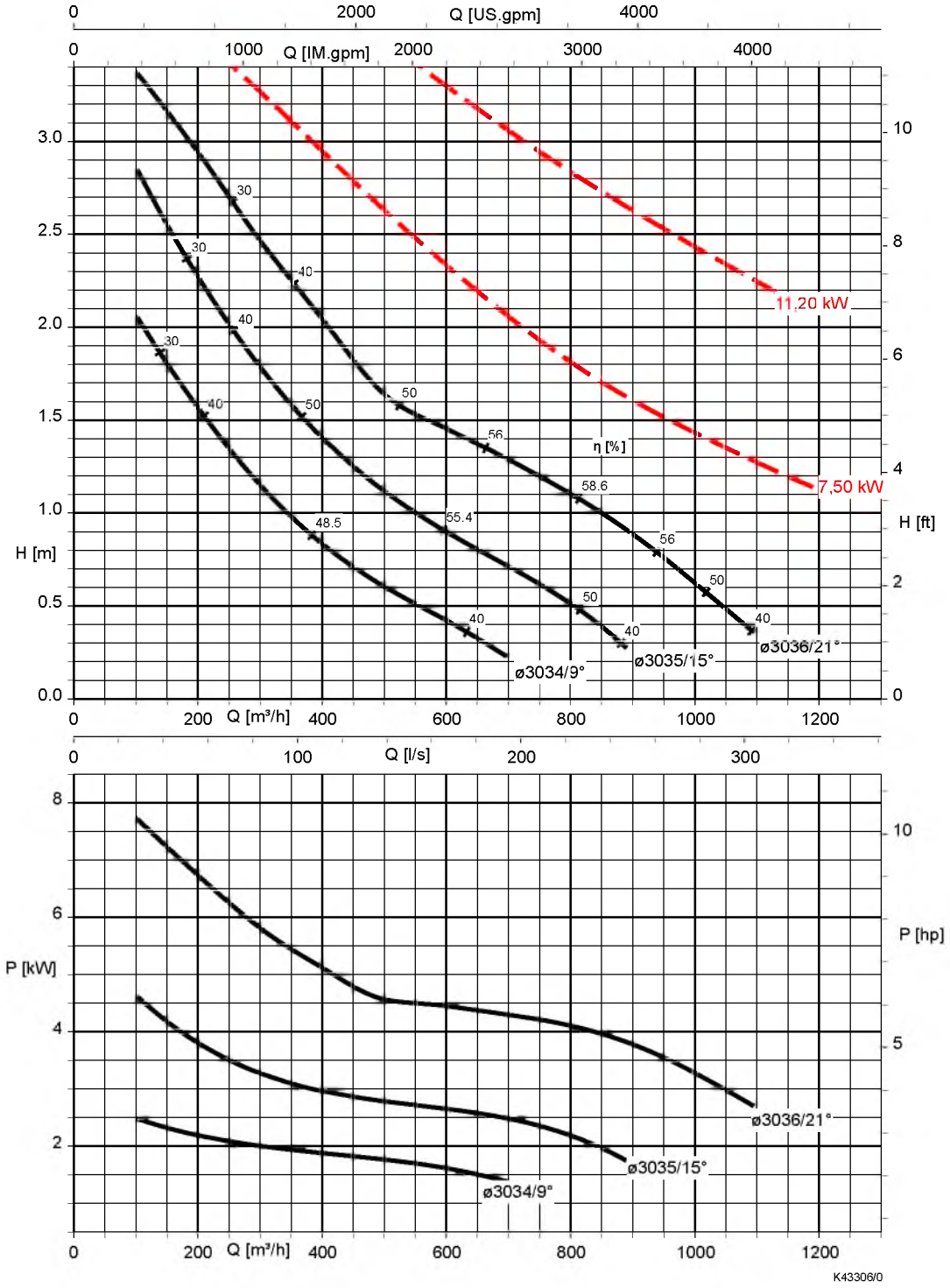
Free passage = 100 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$	P_2
	[rpm]	[kW]
3031-960/06UDG/YDG/UDC/YDC	960	1,8
3032-960/06UDG/YDG/UDC/YDC	960	1,8
3033-960/06UDG/YDG/UDC/YDC	960	1,8
3031-960/26UDG/YDG/UDC/YDC	960	3,2

Size	$n_{eff.}$	P_2
	[rpm]	[kW]
3032-960/26UDG/YDG/UDC/YDC	960	3,2
3033-960/26UDG/YDG/UDC/YDC	960	3,2

Amaline 303_, motors: 8 6

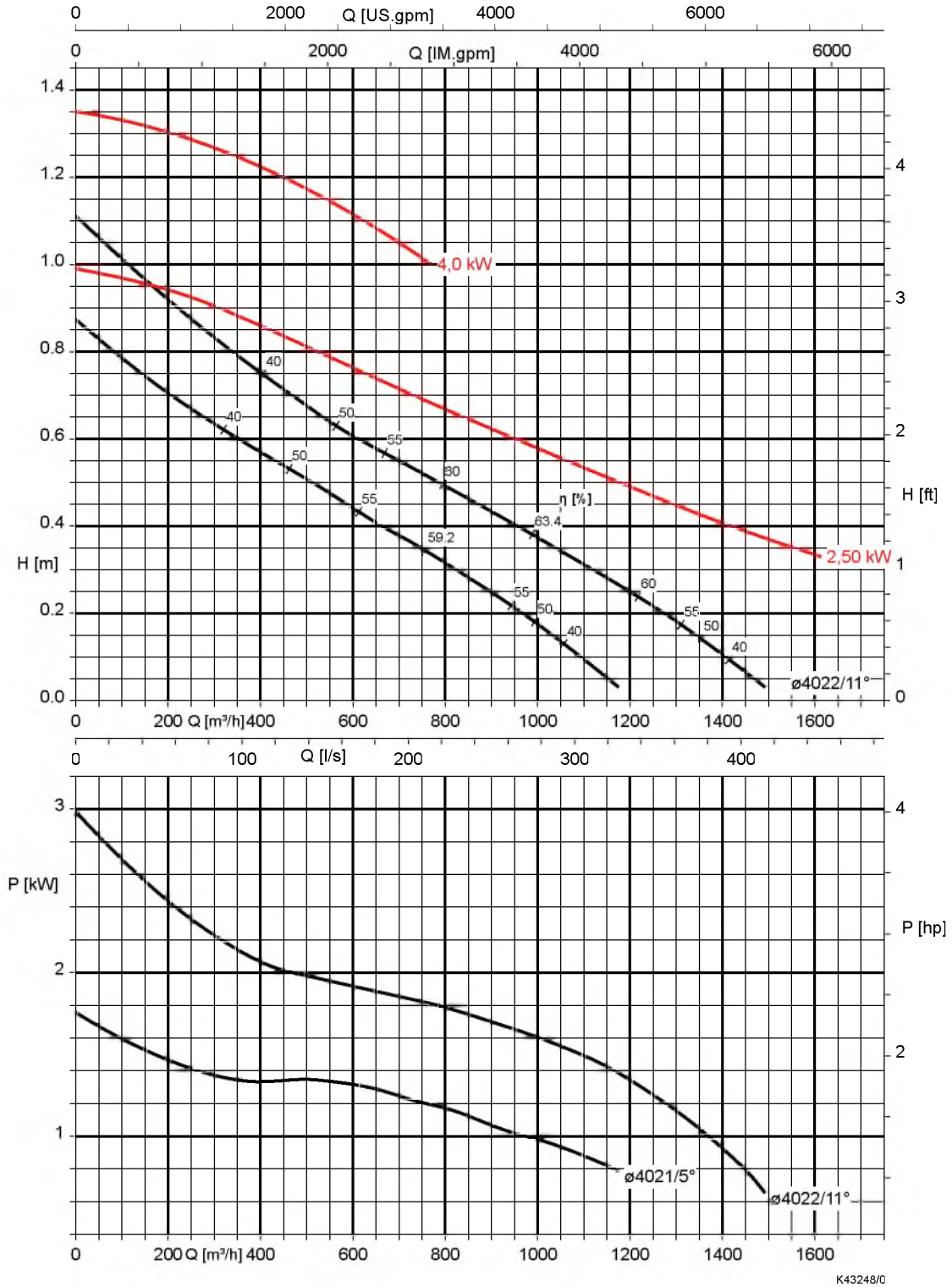


Free passage = 80 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$	P_2
	[rpm]	[kW]
3036-960/86UDG/YDG	960	7,5
3035-960/86UDG/YDG	960	7,5
3034-960/86UDG/YDG	960	7,5

Amaline 402_, motors: 3 8, 4 8

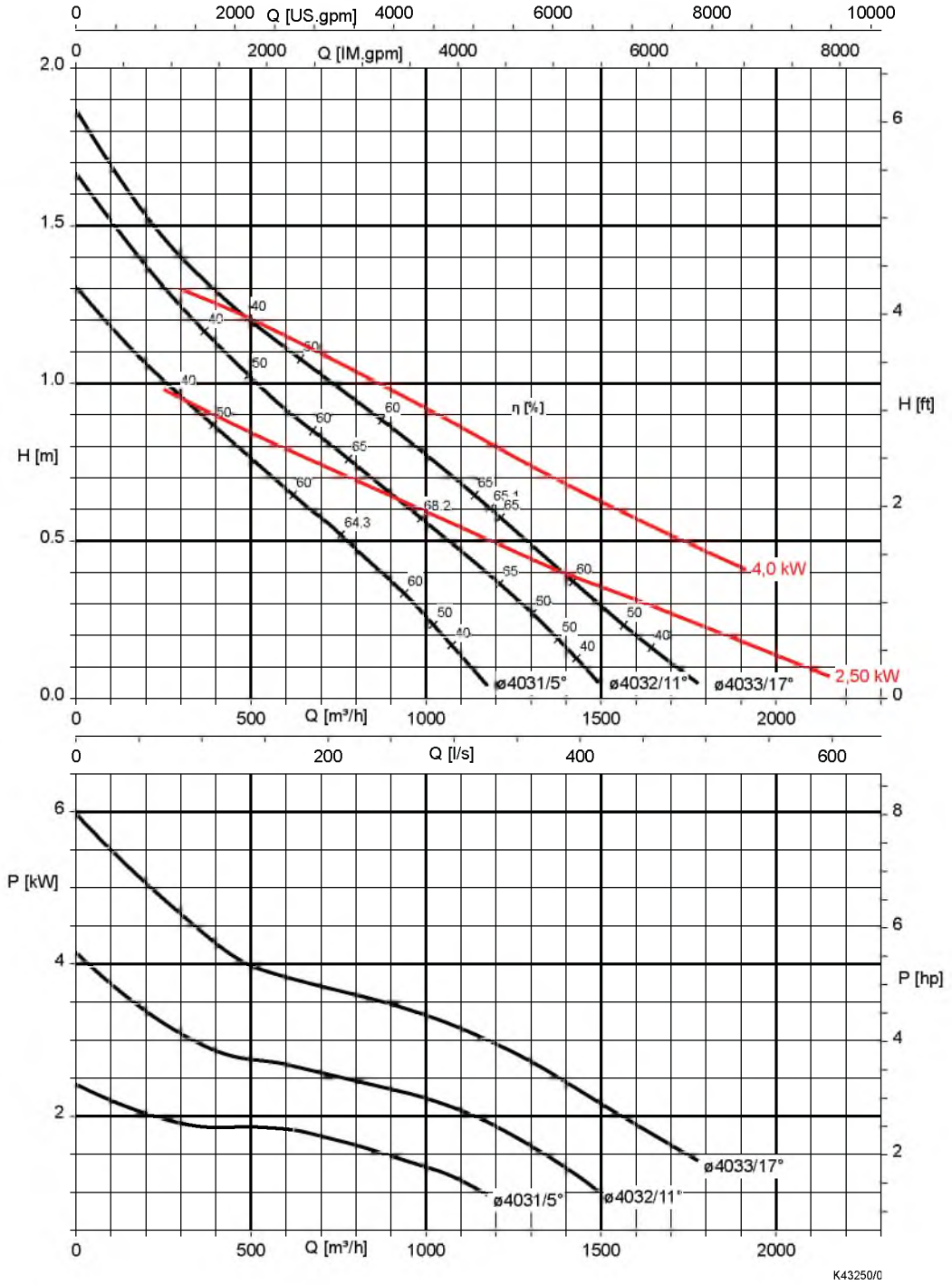


Free passage = 120 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$	P_2
	[rpm]	[kW]
4021-725/38UDG/YDG/UDC/YDC	725	2,5
4022-725/38UDG/YDG/UDC/YDC	725	2,5
4022-725/48UDG/YDG/UDC/YDC	725	4,0

Amaline 403_, motors: 3 8, 4 8

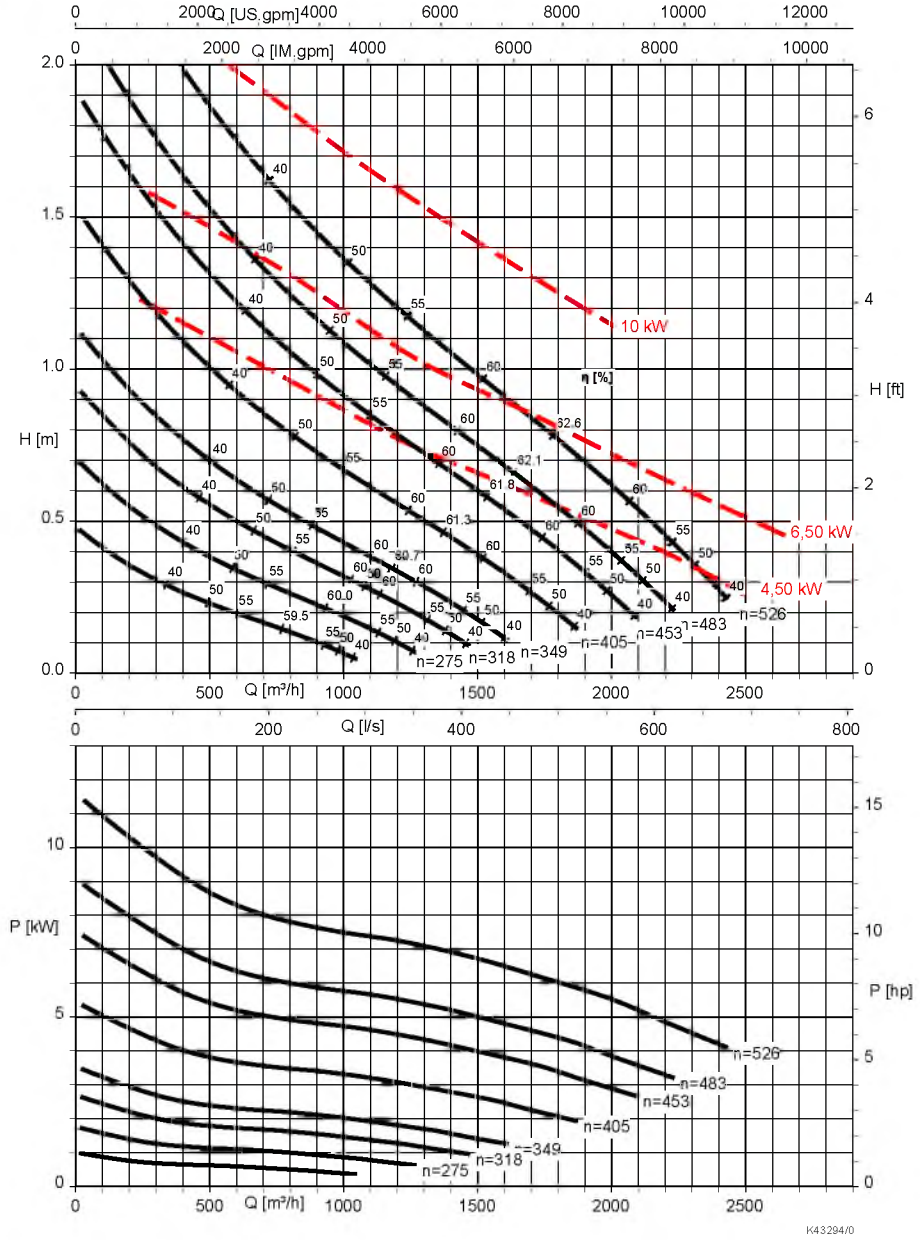


Free passage = 120 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$	P_2
	[rpm]	[kW]
4031-725/38UDG/YDG/UDC/YDC	725	2,5
4032-725/38UDG/YDG/UDC/YDC	725	2,5
4033-725/38UDG/YDG/UDC/YDC	725	2,5
4031-725/48UDG/YDG/UDC/YDC	725	4,0
4032-725/48UDG/YDG/UDC/YDC	725	4,0
4033-725/48UDG/YDG/UDC/YDC	725	4,0

Amaline 5033- _ _ _, motors: 4 4, 6 4, 11 4



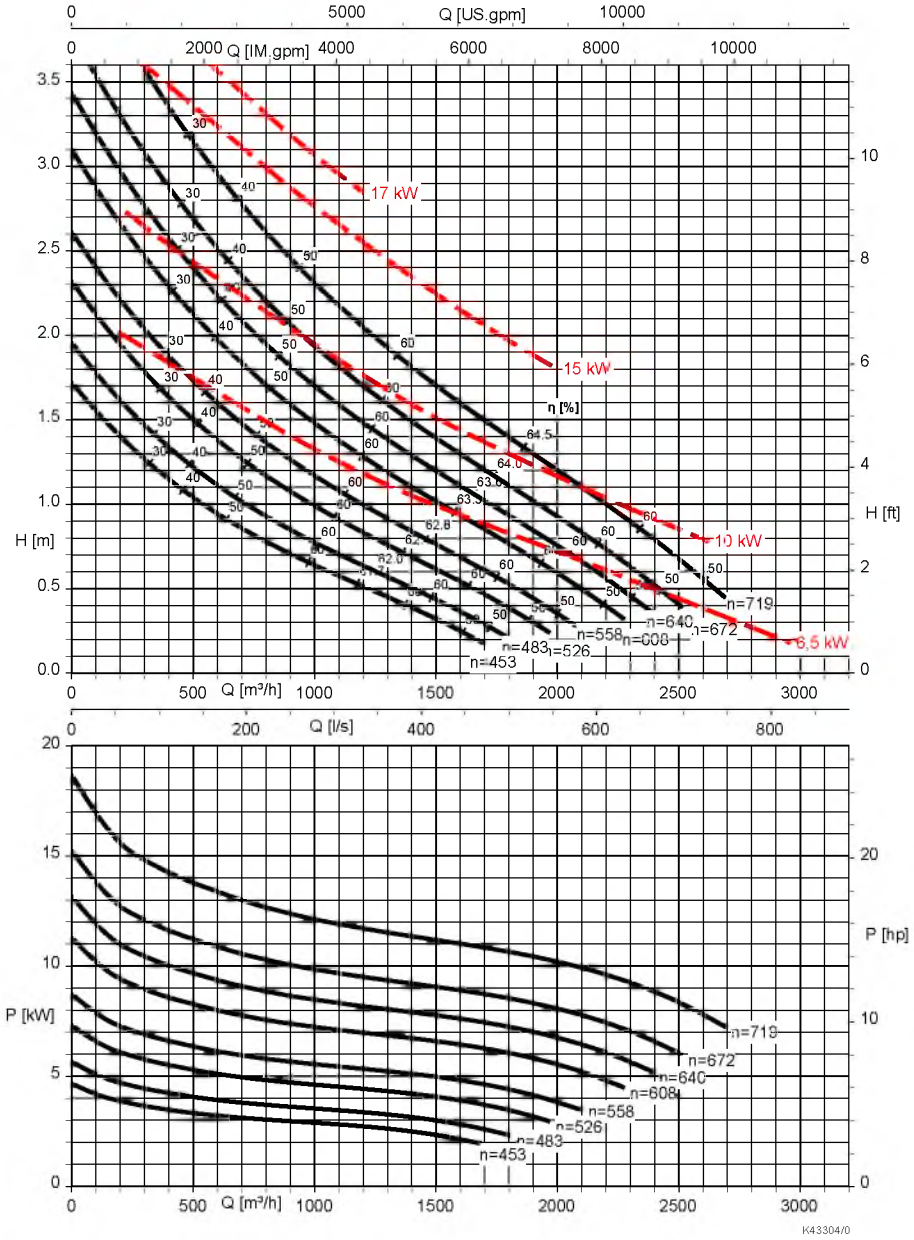
Free passage = 140 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$ [rpm]	P_2 [kW]	Drive with gear unit	Transmission ratio
5033-227/44URG/YRG	227	4,5	SP189	6,356
5033-275/44URG/YRG	275	4,5	SP189	5,250
5033-318/44URG/YRG	318	4,5	SP189	4,545
5033-349/44URG/YRG	349	4,5	SP189	4,143
5033-405/44URG/YRG	405	4,5	SP189	3,618
5033-405/64URG/YRG	405	6,5	SP189	3,618
5033-453/44URG/YRG	453	4,5	SP189	3,232
5033-453/64URG/YRG	453	6,5	SP189	3,232
5033-453/114URG/YRG	453	10,0	SP189	3,232
5033-483/64URG/YRG	483	6,5	SP189	3,036

Size	$n_{eff.}$ [rpm]	P_2 [kW]	Drive with gear unit	Transmission ratio
5033-483/114URG/YRG	483	10,0	SP189	3,036
5033-526/114URG/YRG	526	10,0	SP189	2,784

Amaline 5035- _ _ _, motors: 17 2, 4 4, 6 4

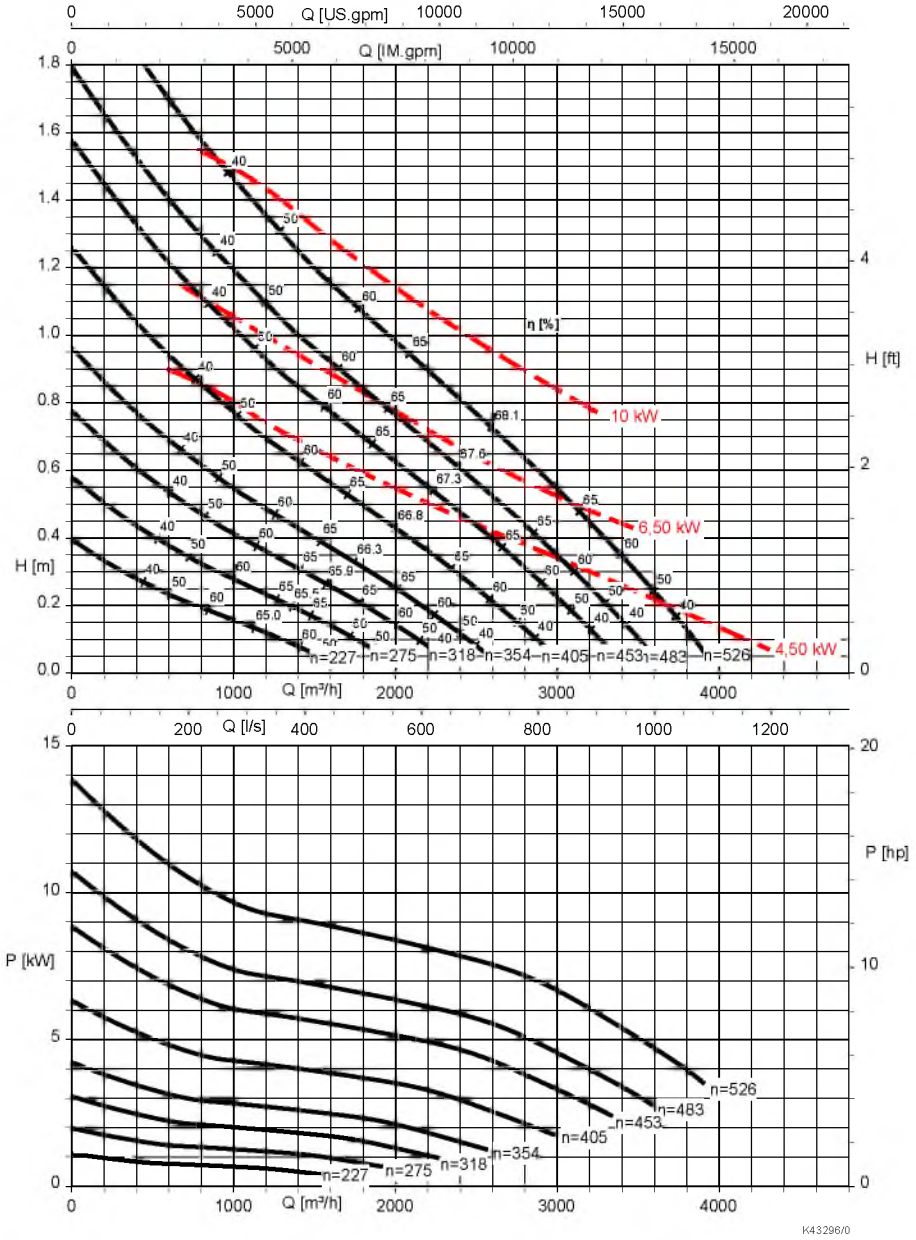


Free passage = 140 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$ [rpm]	P_2 [kW]	Drive with gear unit	Transmission ratio
5035-453/44URG/YRG	453	4,5	SP189	3,232
5035-483/44URG/YRG	483	4,5	SP189	3,036
5035-483/64URG/YRG	483	6,5	SP189	3,036
5035-526/44URG/YRG	526	4,5	SP189	2,780
5035-526/64URG/YRG	526	6,5	SP189	2,780
5035-558/172URG/YRG	558	17,0	SP190	5,294
5035-608/172URG/YRG	608	17,0	SP190	4,856
5035-640/172URG/YRG	640	17,0	SP190	4,616
5035-672/172URG/YRG	672	17,0	SP190	4,392
5035-719/172URG/YRG	719	17,0	SP190	4,104

Amaline 6032- _ _ _, motors: 4 4, 6 4, 11 4

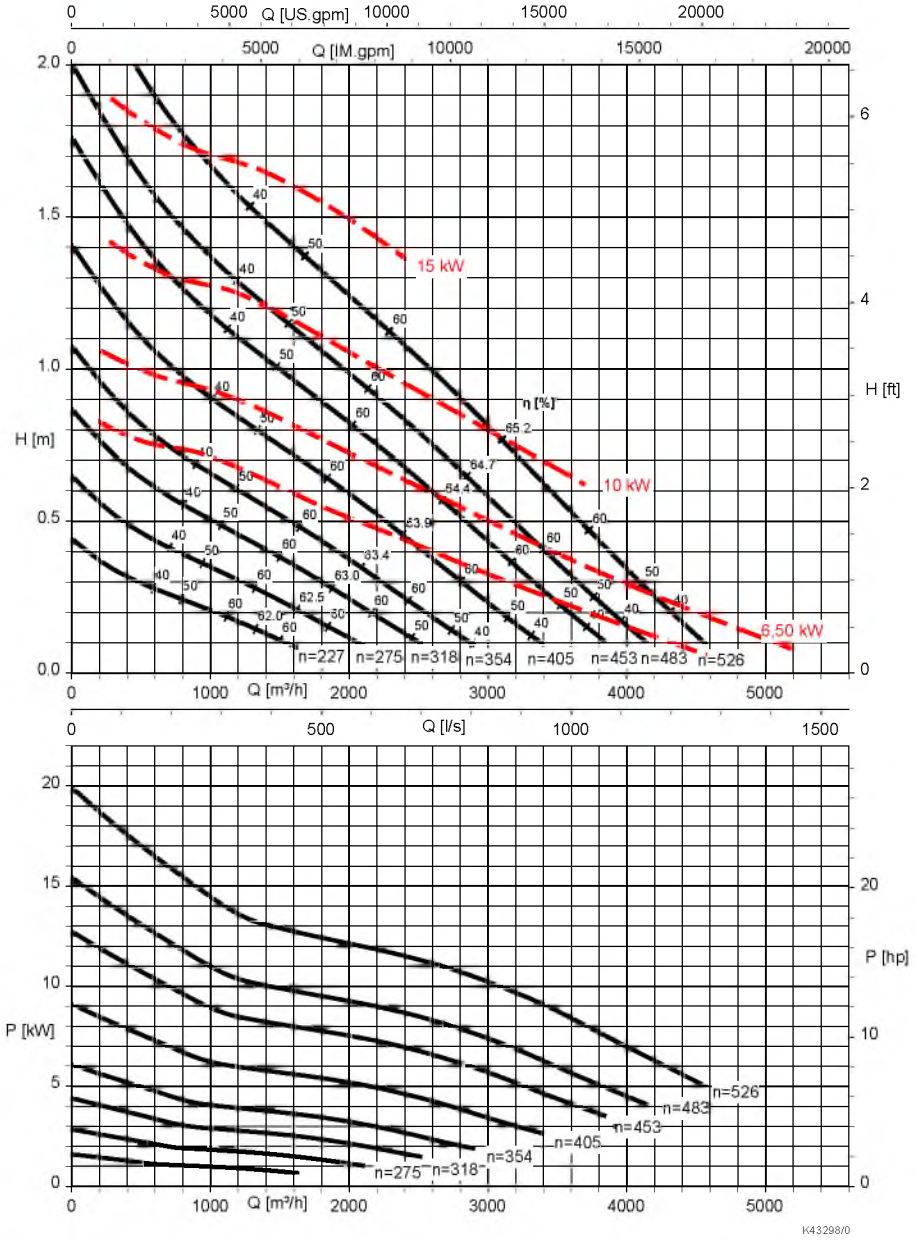


Free passage = 200 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$ [rpm]	P_2 [kW]	Drive with gear unit	Transmission ratio
6032-227/44URG/YRG	227	4,5	SP189	6,356
6032-275/44URG/YRG	275	4,5	SP189	5,250
6032-318/44URG/YRG	318	4,5	SP189	4,545
6032-354/44URG/YRG	354	4,5	SP189	4,143
6032-405/44URG/YRG	405	4,5	SP189	3,618
6032-405/64URG/YRG	405	6,5	SP189	3,618
6032-453/44URG/YRG	453	4,5	SP189	3,232
6032-453/64URG/YRG	453	6,5	SP189	3,232
6032-453/114URG/YRG	453	10,0	SP189	3,232
6032-483/64URG/YRG	483	6,5	SP189	3,036
6032-483/114URG/YRG	483	10,0	SP189	3,036
6032-526/64URG/YRG	526	6,5	SP189	2,784
6032-526/114URG/YRG	526	10,0	SP189	2,784

Amaline 6033- _ _ _, motors: 4 4, 6 4, 11 4

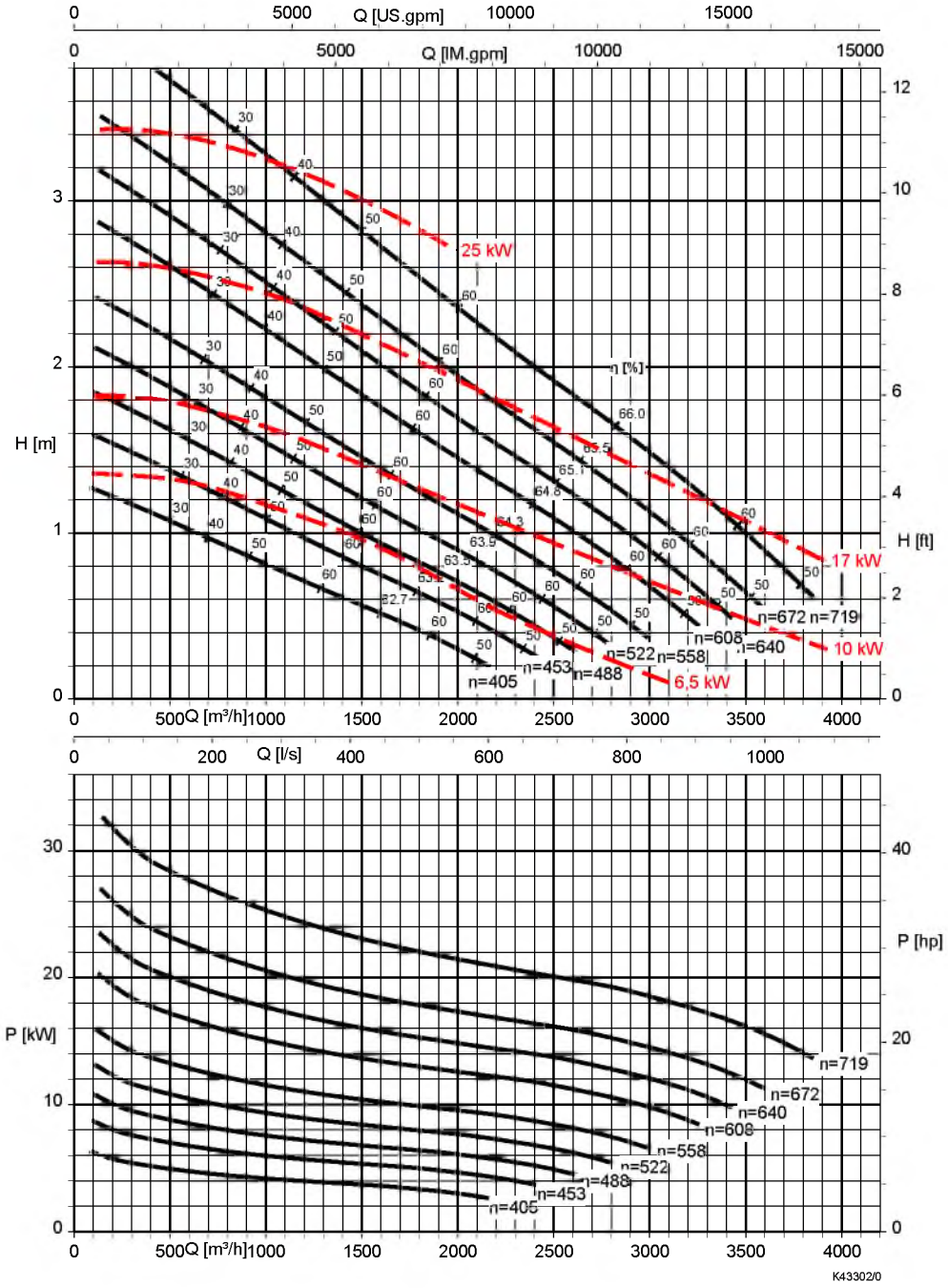


Free passage = 200 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$ [rpm]	P_2 [kW]	Drive with gear unit	Transmission ratio
6033-227/44URG/YRG	227	4,5	SP189	6,356
6033-275/44URG/YRG	275	4,5	SP189	5,250
6033-318/44URG/YRG	318	4,5	SP189	4,545
6033-354/44URG/YRG	354	4,5	SP189	4,143
6033-354/64URG/YRG	354	6,5	SP189	4,143
6033-405/44URG/YRG	405	4,5	SP189	3,618
6033-405/64URG/YRG	405	6,5	SP189	3,618
6033-405/114URG/YRG	405	10,0	SP189	3,618
6033-453/44URG/YRG	453	4,5	SP189	3,232
6033-453/64URG/YRG	453	6,5	SP189	3,232
6033-453/114URG/YRG	453	10,0	SP189	3,232
6033-483/64URG/YRG	483	6,5	SP189	3,036
6033-483/114URG/YRG	483	10,0	SP189	3,036
6033-526/64URG/YRG	526	6,5	SP189	2,784
6033-526/114URG/YRG	526	10,0	SP189	2,784

Amaline 6035- _ _ _, motors: 17 2, 25 2, 11 4, 16 4

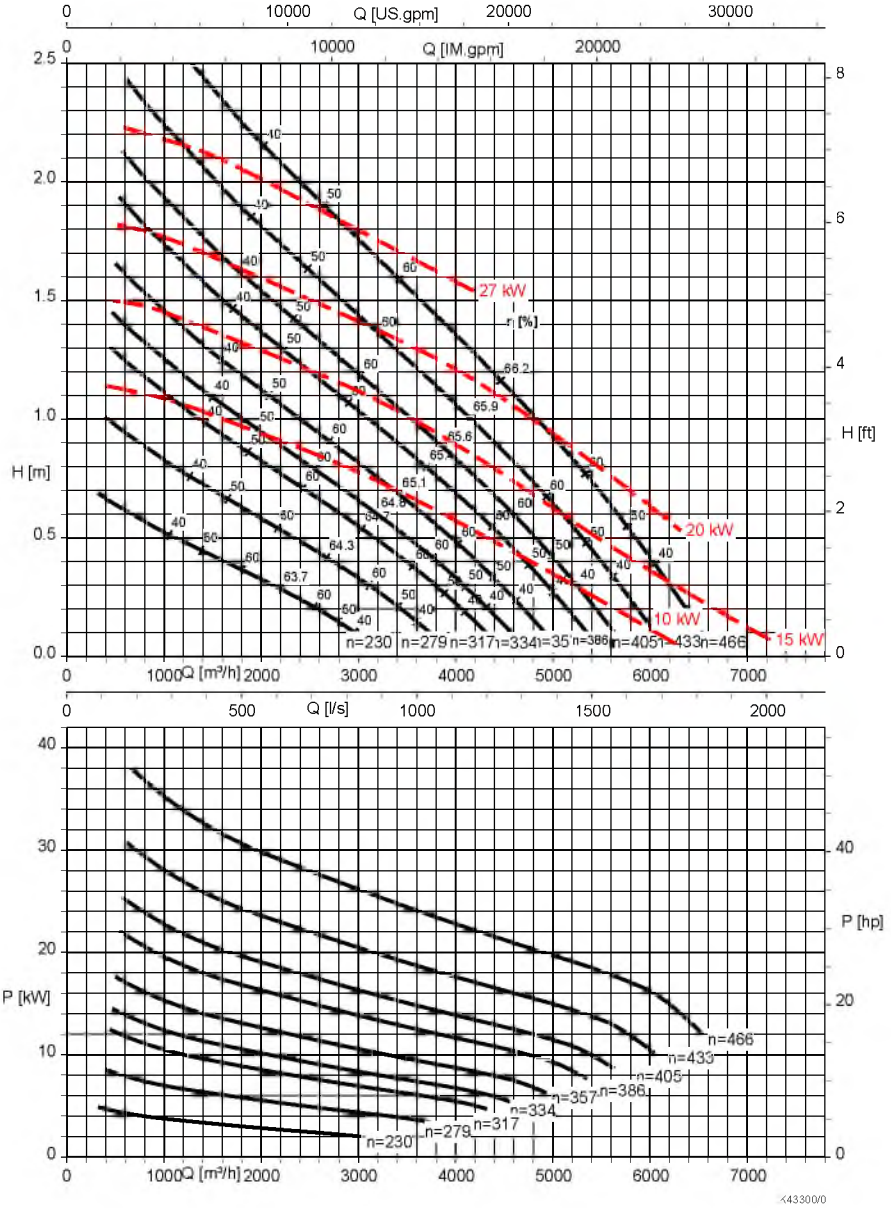


Free passage = 200 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$ [rpm]	P_2 [kW]	Drive with gear unit	Transmission ratio
6035-357/164URG/YRG	357	15,0	SP190	4,104
6035-405/164URG/YRG	405	15,0	SP190	3,618
6035-453/114URG/YRG	453	10,0	SP189	3,232
6035-488/172URG/YRG	488	17,0	SP190	6,051
6035-522/172URG/YRG	522	17,0	SP190	5,654
6035-558/172URG/YRG	558	17,0	SP190	5,294
6035-608/172URG/YRG	608	17,0	SP190	4,856
6035-608/252URG/YRG	608	25,0	SP190	4,856
6035-640/172URG/YRG	640	17,0	SP190	4,616
6035-640/252URG/YRG	640	25,0	SP190	4,616
6035-672/172URG/YRG	672	17,0	SP190	4,392
6035-672/252URG/YRG	672	25,0	SP190	4,392
6035-719/252URG/YRG	719	25,0	SP190	4,104

Amaline 8032- _ _ _, motors: 4 4, 6 4, 11 4, 16 4, 23 4, 30 4



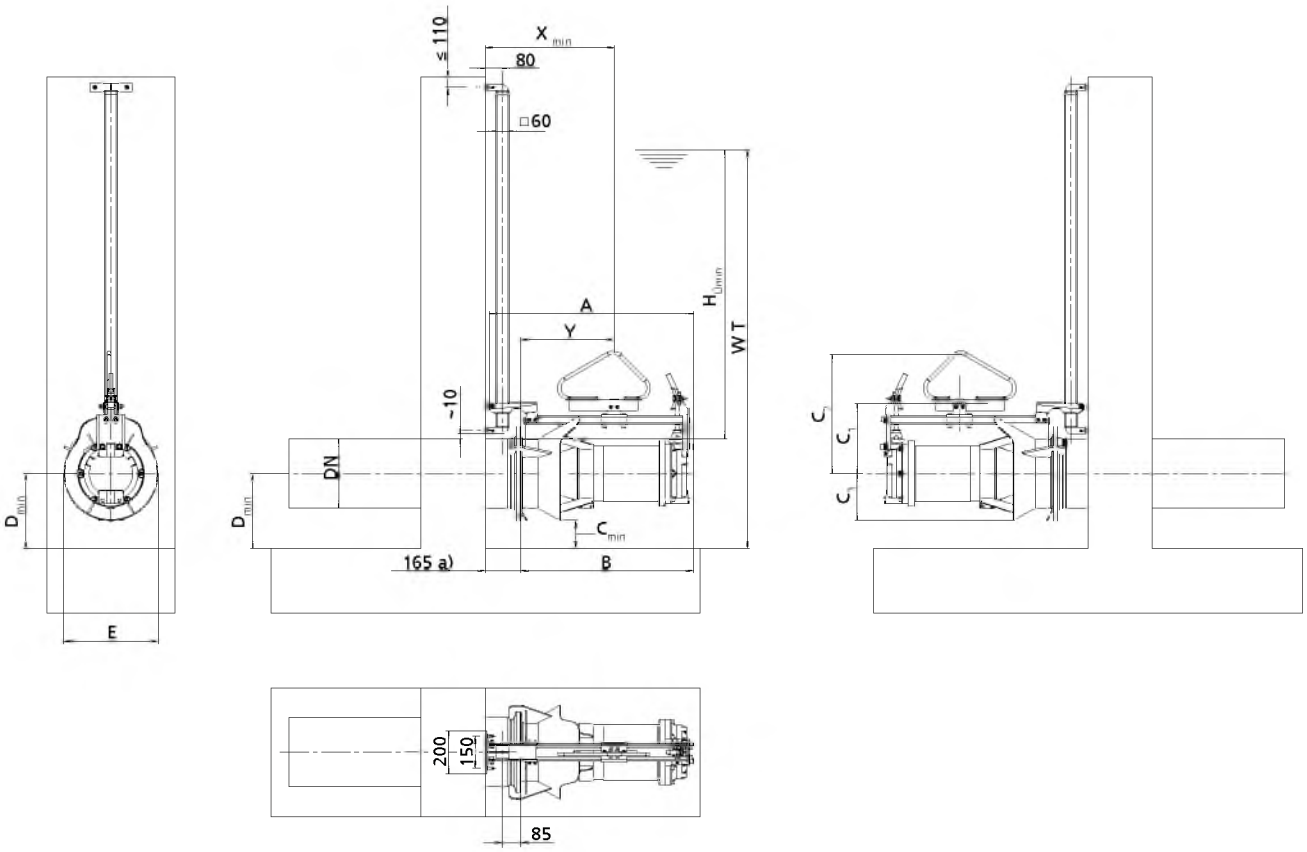
Free passage = 260 mm

Speed $n_{eff.}$ and motor rating P_2

Size	$n_{eff.}$ [rpm]	P_2 [kW]	Drive with gear unit	Transmission ratio
8032-206/44URG/YRG	206	4,5	SP189	7,116
8032-230/44URG/YRG	230	4,5	SP189	6,363
8032-230/64URG/YRG	230	6,5	SP189	6,363
8032-279/64URG/YRG	279	6,5	SP189	5,250
8032-279/114URG/YRG	279	10,0	SP189	5,250
8032-317/164URG/YRG	317	15,0	SP190	4,616
8032-334/164URG/YRG	334	15,0	SP190	4,392
8032-357/164URG/YRG	357	15,0	SP190	4,104
8032-357/234URG/YRG	357	20,0	SP190	4,104
8032-386/164URG/YRG	386	15,0	SP190	3,797
8032-386/234URG/YRG	386	20,0	SP190	3,797
8032-405/234URG/YRG	405	20,0	SP190	3,620
8032-405/304URG/YRG	405	27,0	SP190	3,620
8032-433/234URG/YRG	433	20,0	SP190	3,384
8032-433/304URG/YRG	433	27,0	SP190	3,384
8032-466/234URG/YRG	466	20,0	SP190	3,145
8032-466/304URG/YRG	466	27,0	SP190	3,145

Dimensions

Amaline 200, 300, 400; motor housing made of grey cast iron



Dimensions of an Amaline 200, 300, 400; motor housing made of grey cast iron

a)	Minimum

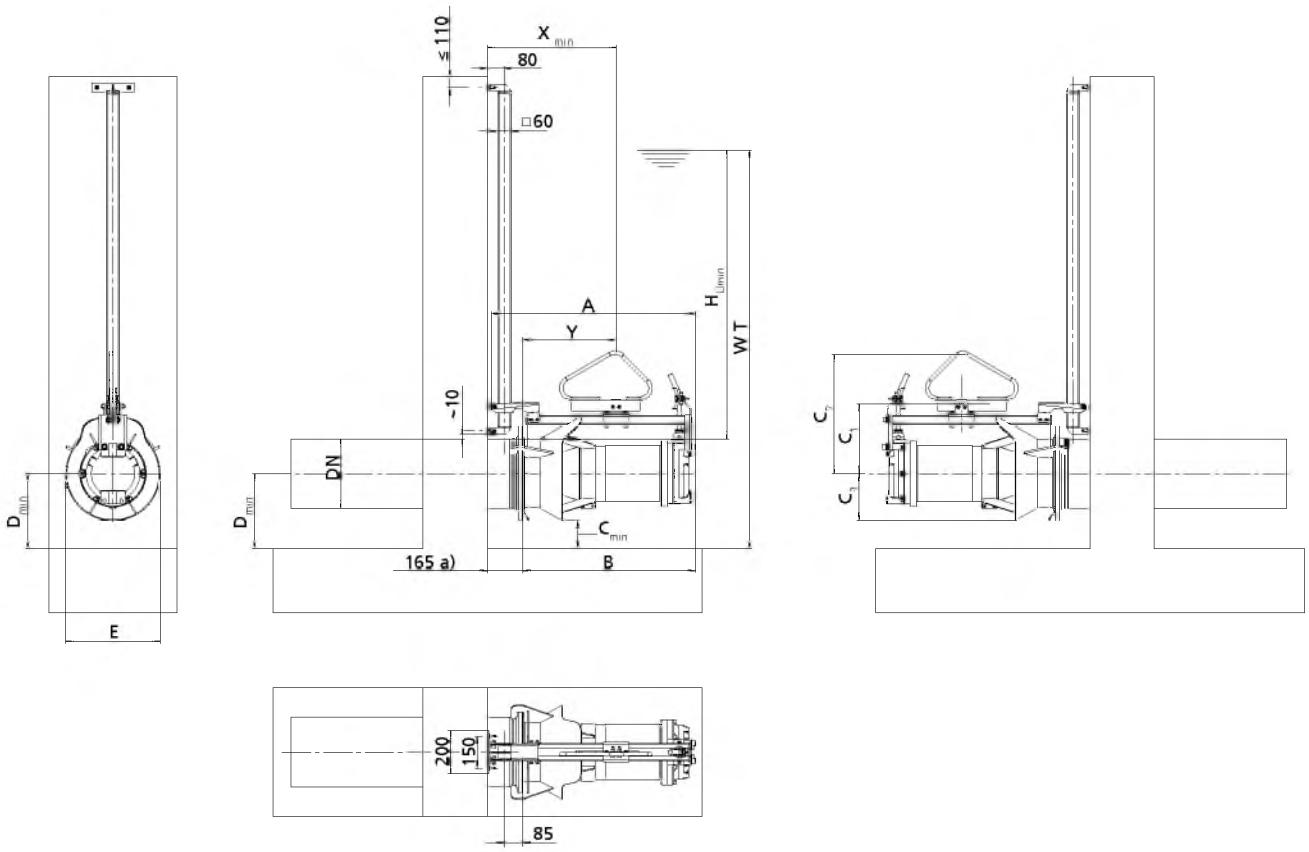
The tolerances of the connection pipe (flange diameter and flange thickness) must be observed to ensure smooth functioning. If required, the flanges must be reworked prior to installation. (⇨ Page 37)

Dimensions [mm]

Size	A	B	C_{min}	C_1	C_2	C_3	D_{min}	E	$Hü_{min}$	W_T	X_{min}	Y	[kg]
Amaline 200													
2021-1450/14	709	568	112	193	363	168	280	331	400	780	465	300	45,4
2022-1450/14	709	568	112	193	363	168	280	331	400	780	465	300	45,4
2022-1450/24	709	568	112	193	363	168	280	331	400	780	470	300	47
2034-1450/14	709	568	112	193	363	168	280	331	400	780	465	300	45,4
2034-1450/24	709	568	112	193	363	168	280	331	400	780	470	300	47
2035-1450/24	709	568	112	193	363	168	280	331	400	780	470	300	47
Amaline 300													
3021-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	58,5
3022-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	58,5
3022-960/26	778	637	130	243	413	220	350	436	500	1000	545	380	58,5
3031-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	58,5
3031-960/26	778	637	130	243	413	220	350	436	500	1000	545	380	58,5
3032-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	58,5
3032-960/26	778	637	130	243	413	220	350	436	500	1000	545	380	58,5
3033-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	58,5
3033-960/26	778	637	130	243	413	220	350	436	500	1000	545	380	58,5
3034-960/86	950	804	131	326	556	219	350	438	500	1000	555	390	169,5

Size	A	B	C_{min}	C_1	C_2	C_3	D_{min}	E	$Hü_{min}$	W_T	X_{min}	Y	[kg]
3035-960/86	950	804	131	326	556	219	350	438	500	1000	555	390	169,5
3036-960/86	950	804	131	326	556	219	350	438	500	1000	555	390	169,5
Amaline 400													
4021-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	92,5
4022-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	92,5
4022-700/48	867	726	135	283	498	265	400	524	600	1200	605	440	92,5
4031-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	92,5
4031-700/48	867	726	135	283	498	265	400	524	600	1200	605	440	92,5
4032-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	92,5
4032-700/48	867	726	135	283	498	265	400	524	600	1200	605	440	92,5
4033-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	92,5
4033-700/48	867	726	135	283	498	265	400	524	600	1200	605	440	92,5

Amaline 200, 300, 400; motor housing made of stainless steel



Dimensions of an Amaline 200, 300, 400; motor housing made of stainless steel

a)	Minimum

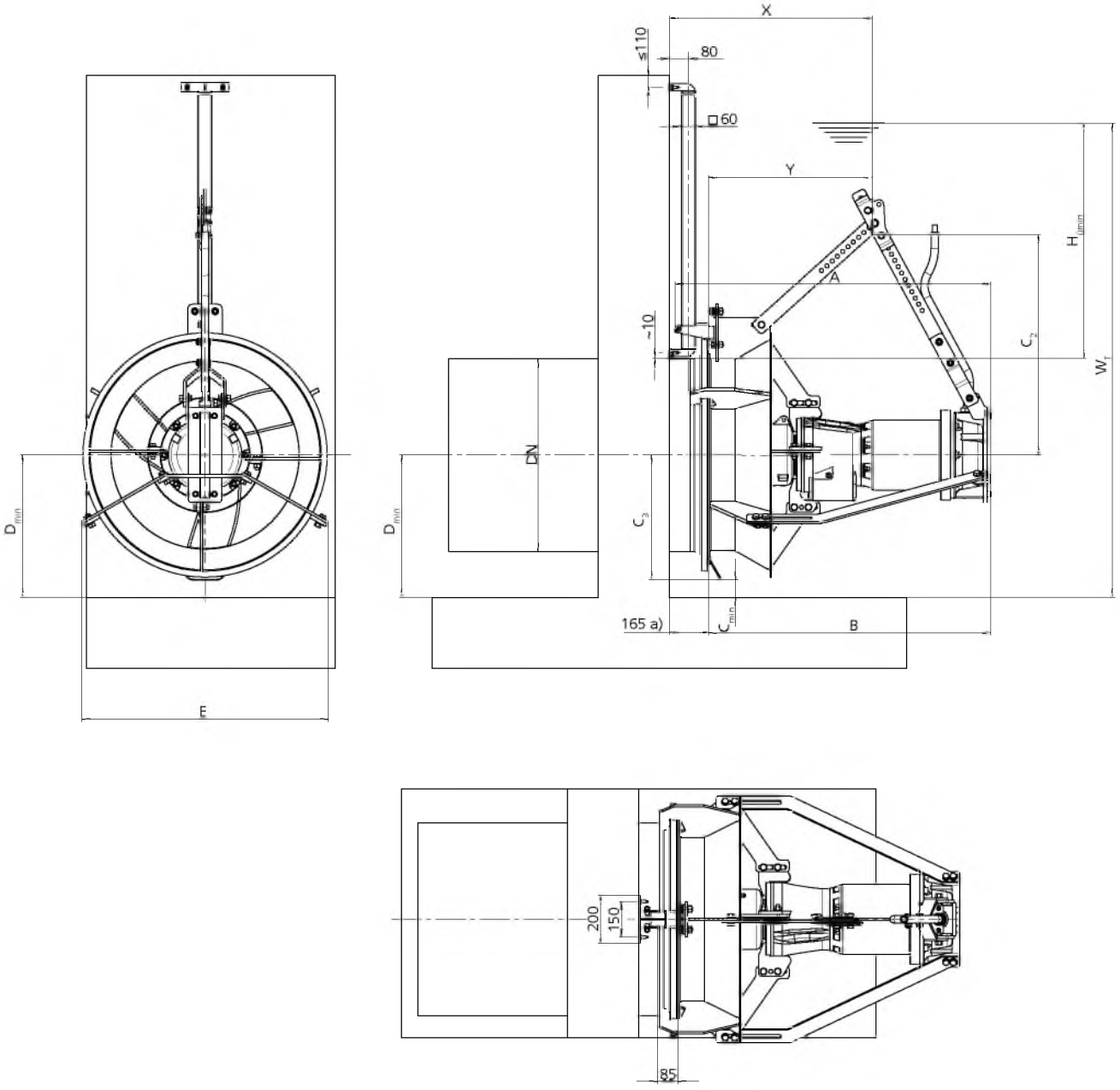
The tolerances of the connection pipe (flange diameter and flange thickness) must be observed to ensure smooth functioning. If required, the flanges must be reworked prior to installation. (⇨ Page 37)

Dimensions [mm]

Size	A	B	C_{min}	C_1	C_2	C_3	D_{min}	E	$HÜ_{min}$	W_T	X_{min}	Y	[kg]
Amaline 200													
2021-1450/14	707	566	112	193	363	168	280	332	400	780	465	300	45,2
2022-1450/14	707	566	112	193	363	168	280	332	400	780	465	300	45,2
2022-1450/24	707	566	112	193	363	168	280	332	400	780	470	300	47,6
2034-1450/14	707	566	112	193	363	168	280	332	400	780	465	300	45,2
2034-1450/24	707	566	112	193	363	168	280	332	400	780	470	300	47,6
2035-1450/24	707	566	112	193	363	168	280	332	400	780	470	300	47,6
Amaline 300													
3021-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	57,7
3022-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	57,7
3022-960/26	778	637	130	243	413	220	350	436	500	1000	545	380	57,7
3031-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	57,7
3031-960/26	778	637	130	243	413	220	350	436	500	1000	545	380	57,7
3032-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	57,7
3032-960/26	778	637	130	243	413	220	350	436	500	1000	545	380	57,7
3033-960/06	778	637	130	243	413	220	350	436	500	1000	545	380	57,7
3033-960/26	778	637	130	243	413	220	350	436	500	1000	545	380	57,7
Amaline 400													
4021-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	90,6
4022-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	90,6
4022-700/48	867	726	135	283	498	265	400	524	600	1200	605	440	90,6

Size	A	B	C_{min}	C_1	C_2	C_3	D_{min}	E	$Hü_{min}$	W_T	X_{min}	Y	[kg]
4031-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	90,6
4031-700/48	867	726	135	283	498	265	400	524	600	1200	605	440	90,6
4032-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	90,6
4032-700/48	867	726	135	283	498	265	400	524	600	1200	605	440	90,6
4033-700/38	867	726	135	283	498	265	400	524	600	1200	605	440	90,6
4033-700/48	867	726	135	283	498	265	400	524	600	1200	605	440	90,6

Amaline 500, 600, 800; motor housing made of grey cast iron



Dimensions of an Amaline 500, 600, 800; motor housing made of grey cast iron

a)	Minimum

The tolerances of the connection pipe (flange diameter and flange thickness) must be observed to ensure smooth functioning. If required, the flanges must be reworked prior to installation. (⇨ Page 37)

Dimensions [mm]

Size	A	B	C_{min}	C_2	C_3	D_{min}	E	$HÜ_{min}$	W_T	X_{min}	Y	[kg]
Amaline 500												
5033-... / 4 4...	1286	1145	70	945	380	450	768	700	1400	815	650	240,5
5033-... / 6 4...	1376	1235	70	910	380	450	768	700	1400	855	690	276
5033-... / 11 4...	1376	1235	70	910	380	450	768	700	1400	855	690	276
5035-... / 4 4...	1254	1113	70	945	380	450	768	700	1400	825	660	239
5035-... / 6 4...	1344	1203	70	905	380	450	768	700	1400	865	700	274,5

Size	A	B	C_{min}	C_2	C_3	D_{min}	E	$Hü_{min}$	W_T	X_{min}	Y	[kg]
5033-... / 17 2...	1344	1203	70	905	380	450	768	700	1400	865	700	306,5
Amaline 600												
6032-... / 4 4...	1286	1145	75	980	425	500	838	900	1700	835	670	248,5
6032-... / 6 4...	1376	1235	75	950	425	500	838	900	1700	860	695	284
6032-... / 11 4...	1376	1235	75	950	425	500	838	900	1700	860	695	284
6033-... / 4 4...	1286	1145	75	980	425	500	838	900	1700	835	670	248,5
6033-... / 6 4...	1376	1235	75	950	425	500	838	900	1700	860	695	284
6033-... / 11 4...	1376	1235	75	950	425	500	838	900	1700	860	695	284
6035-... / 11 4...	1308	1168	75	980	425	500	838	900	1700	825	660	284
6035-... / 16 4...	1340	1199	75	945	425	500	838	900	1700	815	650	315,6
6035-... / 17 2...	1340	1199	75	945	425	500	838	900	1700	815	650	315
6035-... / 25 2...	1340	1199	75	945	425	500	838	900	1700	815	650	332
Amaline 800												
8032-... / 4 4...	1179	1038	73	1000	527	600	1037	1100	2100	795	630	270
8032-... / 6 4...	1271	1130	73	1000	527	600	1037	1100	2100	935	770	305,5
8032-... / 11 4...	1271	1130	73	1000	527	600	1037	1100	2100	935	770	305,5
8032-... / 16 4...	1309	1168	73	990	527	600	1037	1100	2100	945	780	337,5
8032-... / 23 4...	1309	1168	73	990	527	600	1037	1100	2100	945	780	349,5
8032-... / 30 4...	1331	1190	73	1060	527	600	1037	1100	2100	885	720	397

Scope of supply

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

- Pump set, complete with power cable
- Shackle
- Bail

Using a bail is recommended when the lifting rope of the crane will not remain attached to the attachment point of the pump set during operation; instead, the pump set will be pulled up or lowered by means of a hook.[15)]

Accessories

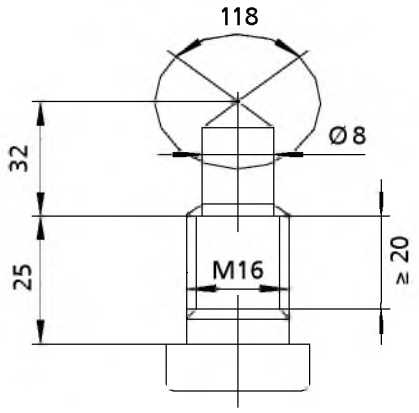
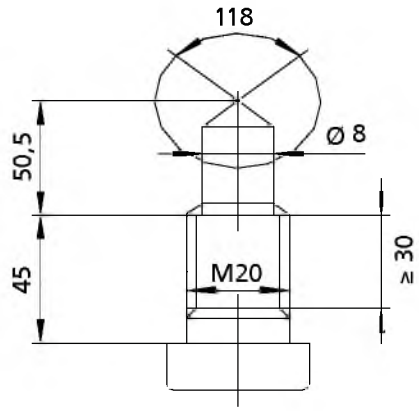
- Depending on the model the installation parts consist of:
  - Guide rail
  - Mounting brackets
  - Middle support (optional)
- Connecting pipe
- Cable support for properly routing the power cable
- Other accessories on request

15) For Amaline 200, 300, 400 only

Accessories

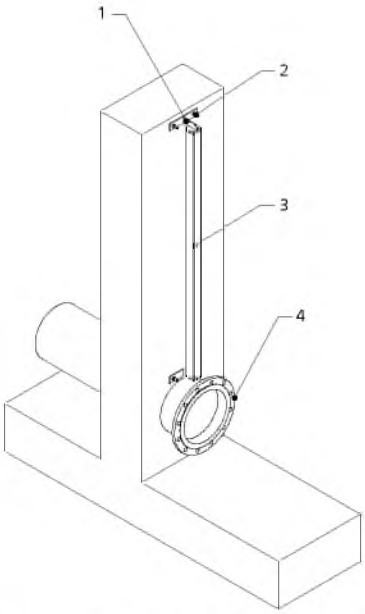
Forcing screws

Forcing screws

Amaline	Forcing screw		Mat. No.	[kg]
200	M16 x 60		11197135	0.10
300, motors: 0 6, 2 6			11197135	0.10
400			11197135	0.10
300, motors: 8 6, 11 6	M20 x 95		11197784	0.25
600			11197784	0.25
800			11197784	0.25

Installation accessories

Overview of installation accessories



Overview of installation accessories

1	Holder
2	Chemical anchor M10x30
3	Guide rail
4	Connection pipe

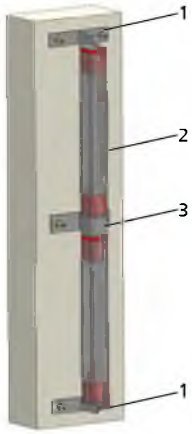
Fastening elements for the guide rail

Fastening elements for a guide rail < 6 m without middle support

Guide rail length < 6 m

1	Holder
2	Guide rail 60 x 60 x 3 mm

Fastening elements for a guide rail > 6 m with middle support



Guide rail length > 6 m

1	Holder
2	Guide rail 60 x 60 x 3 mm
3	Middle support

Overview of fastening elements for the guide rail

Description	Pipe length [m]	Material	Material No.	[kg]
Fastening element for a guide rail 60 x 60 x 3 mm without middle support for mounting on the tank wall, incl. chemical anchors M10 x 130	6	1.4571	01428145	2.5
Fastening element for a guide rail 60 x 60 x 3 mm with middle support for mounting on the tank wall, incl. chemical anchors M10 x 130	6 - 12	1.4571	01428146	4.4

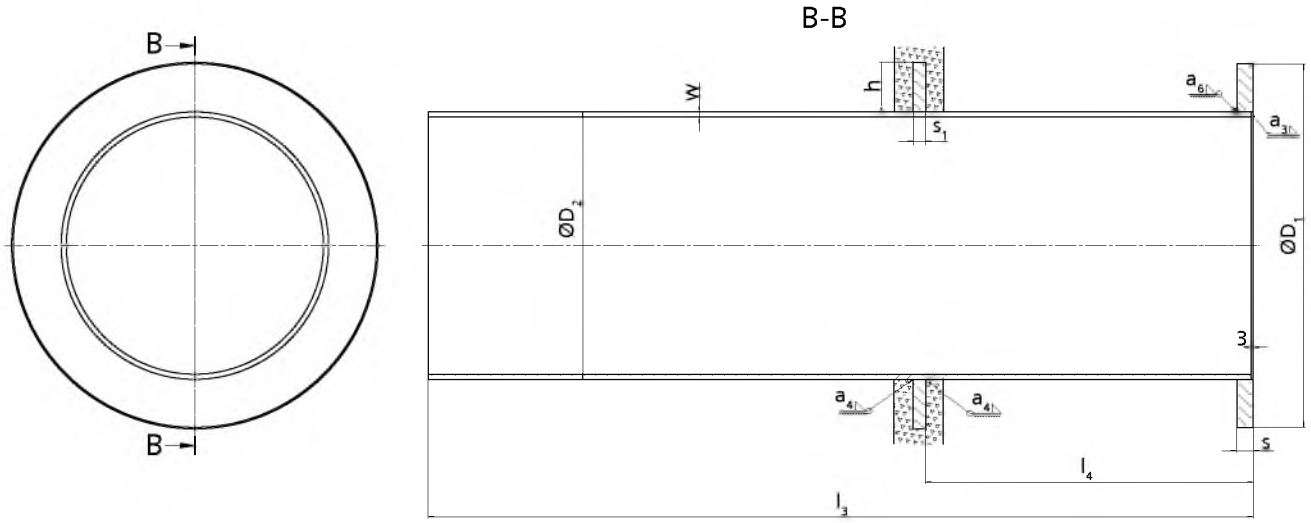
Guide rails

The guide rail length required depends on the water level. They are supplied in standard lengths of 3 m or 6 m. If the top of the guide rail is fastened to the tank edge, select the guide rail length accordingly. If necessary, shorten the guide rails at the site. For larger installation depths, extend the guide rails by adding guide rail extensions of 3 m or 6 m length at the site. Welding and subsequent treatment must be performed at the site in accordance with the relevant regulations. To allow smooth lifting and lowering of the submersible motor pumps, grind the weld seam at the outside of the guide rail down to a max. projection of 0.5 mm. For guide rail lengths > 6 m using a middle support is recommended.

Overview of guide rails

	Description	Pipe length [m]	Material	Material No.	[kg]
	Guide rail 60 x 60 x 3 mm	3,0	1.4301	11304010	15.7
	Guide rail 60 x 60 x 3 mm	3,0	1.4571	11304011	15.7
	Guide rail 60 x 60 x 3 mm	6,0	1.4301	11304596	31.3
	Guide rail 60 x 60 x 3 mm	6,0	1.4571	11304597	31.3

Connection pipe



Dimensions of the connection pipe (l_3, l_4 = order specifications provided to the manufacturer by the customer)

Prior to installation all dimensions including the indicated tolerances (especially the flange diameter and thickness) must be verified and, if required, adjusted by reworking.

Dimensions of the connection pipe [mm]

DN	Ø D_1	Ø D_2	$s_{-0.5}$	w^{+1}	s_1	h
200	320	219	20	6	10	50
300	440	324	22	6	15	60
400	540	406	22	6	15	65
500	645	508	24	6	15	70
600	755	610	30	6	15	75
800	975	813	30	6	15	80

Material variants of the connection pipe

	Description	DN	Mat. No.	Material	[kg]
	Connection pipe with flange to DIN EN 1092-1 / PN 6, length l_3 = 1 m	200	01488465	Galvanised steel	45.5
		200	01488466	1.4571	45.5
		300	01488467	Galvanised steel	75.5
		300	01488470	1.4571	75.5
		400	01488471	Galvanised steel	95.5
		400	01488472	1.4571	95.5
		500	01488473	Galvanised steel	122.5
		500	01488474	1.4571	122.5
		600	01488475	Galvanised steel	155
		600	01488476	1.4571	155
		800	01488477	Galvanised steel	217.5
		800	01488478	1.4571	217.5

Connection pipe extension per metre

DN	Material variant		[kg]
	Galvanised steel	1.4571	
200	✗	✗	33,8
300	✗	✗	50,8
400	✗	✗	64,5
500	✗	✗	78,5
600	✗	✗	94,5
800	✗	✗	129

Cable support/carabine hook

The cable support is used for supporting the power cable at the lifting rope or tank edge (one included in standard scope of supply; additional or spare cable supports optionally available).

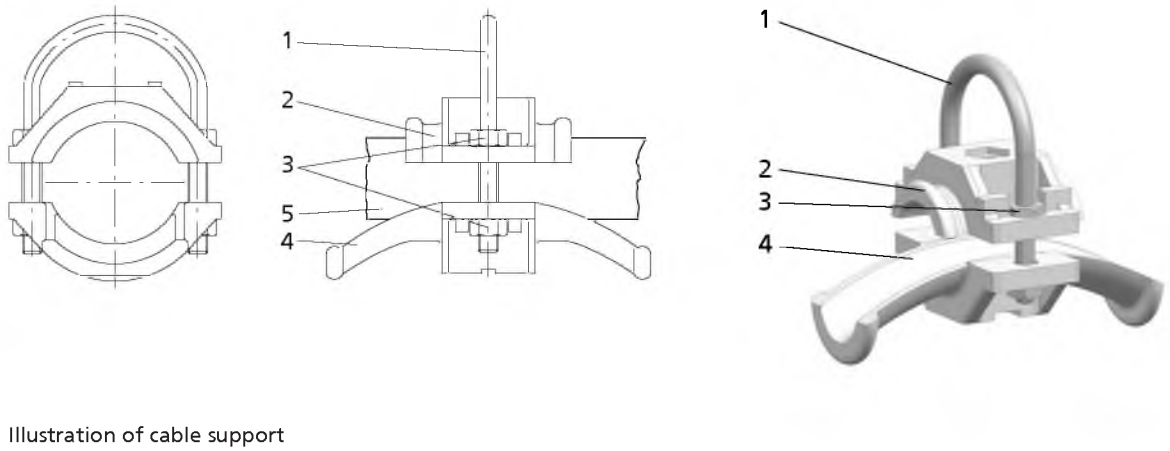
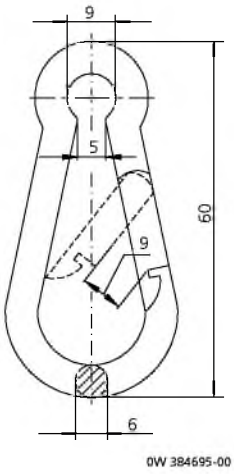


Illustration of cable support

1	Bail
2	Moulded part made of polypropylene
3	Hexagon nut made of A4
4	Moulded part made of polypropylene
5	Power cable with defined diameter[16)]

Carabine hook



Dimensions of carabine hook [mm]

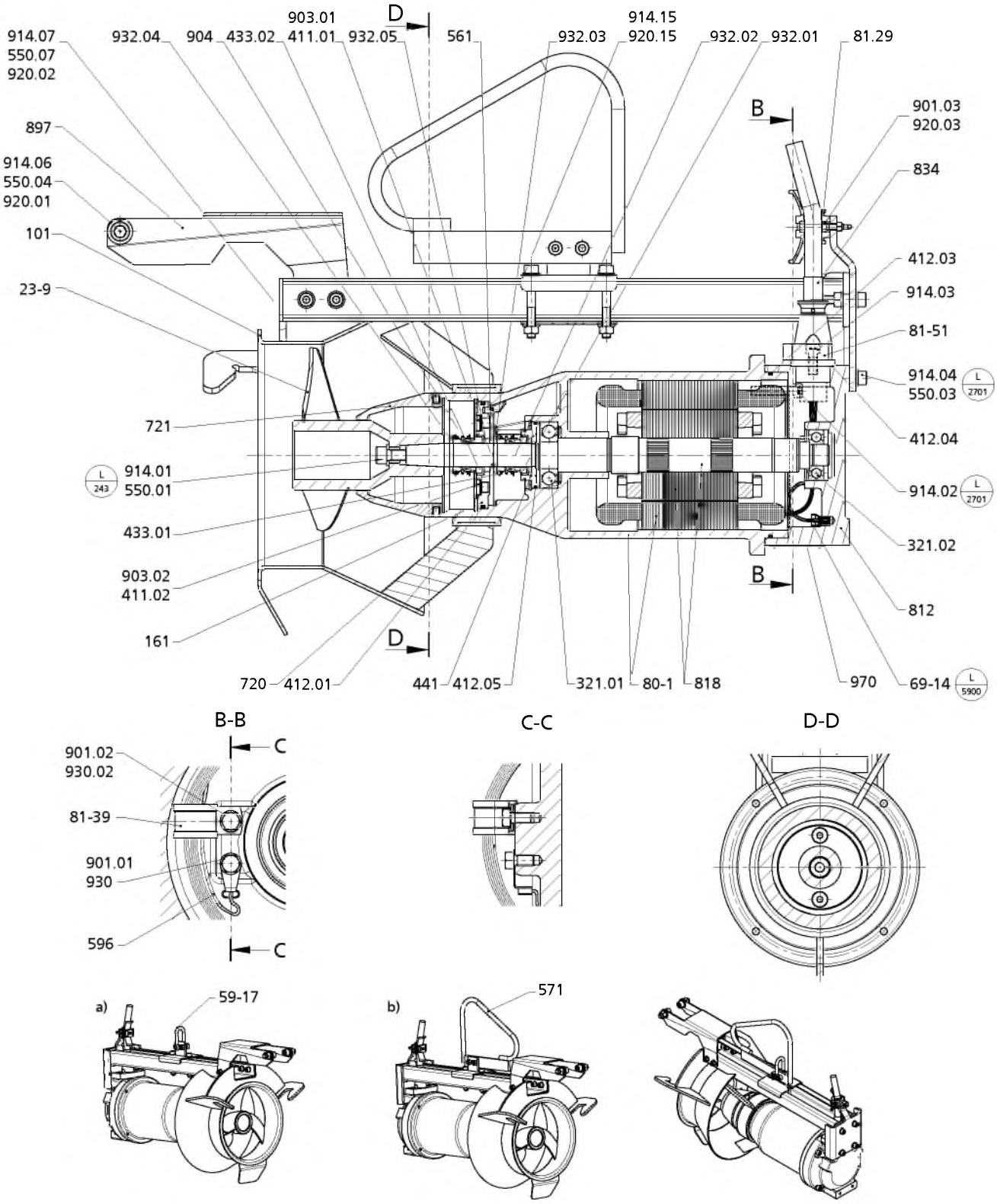
Overview of cable supports/carabine hooks

Description	Suitable for	Material	Material No.	[kg]
Cable support, incl. carabine hooks	Motors 1 4, 2 4, 0 6, 2 6 (power cable diameters: Ø = 10 ... 16 mm)	Cable support: plastic / A4, carabine hook: A4	19555522	0.06
Cable support, incl. carabine hooks	Motor 17 2, 25 2, 4 4, 6 4, 11 4, 16 4, 23 4, 30 4, 3 8, 4 8	Cable support: plastic / A4, carabine hook: A4	19555523	0.09

16) Refer to the power cable data given in the motor catalogue.

General assembly drawings with list of components

Amaline 200 (motors: 1 4, 2 4; motor housing made of grey cast iron)

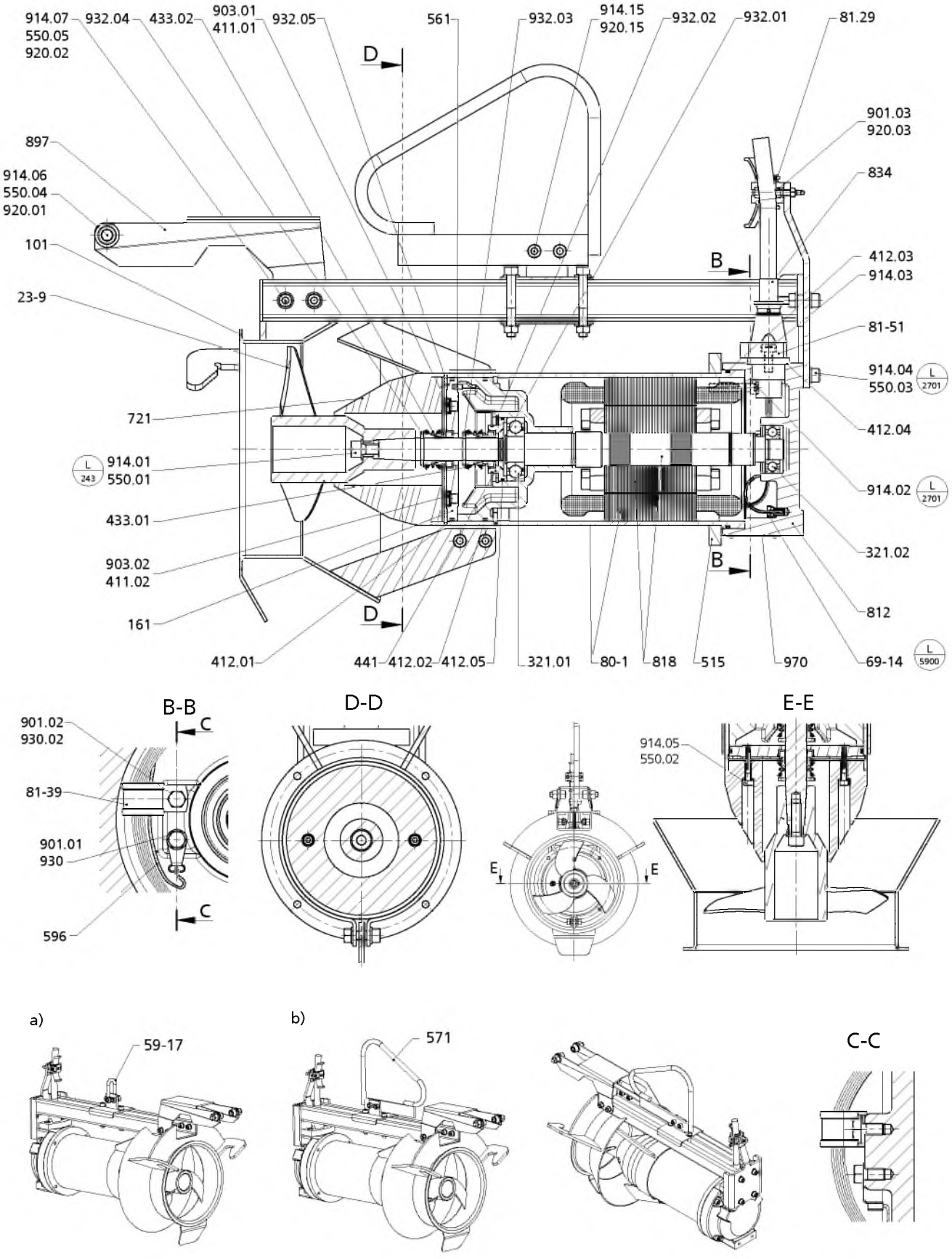


General assembly drawing: a) with shackle b) with bail (optional)

List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	571	Bail (optional)
59-17	Shackle	596	Wire
69-14	Leakage sensor	720	Spacer
80-1	Motor unit	721	Adapter
81-29	Terminal	812	Motor housing cover
81-39	Clamp	818	Rotor
81-51	Clamping element	834	Cable gland
101	Pump casing	897	Guide piece
161	Casing cover	901.01/.02/.03	Hexagon head bolt
321.01/.02	Radial ball bearing	903.01/.02	Screw plug
411.01/.02	Joint ring	904	Grub screw
412.01/.03/.04/.05	O-ring	914.01/.02/.03/.04/.06/ .07/.15	Hexagon socket head cap screw
433.01/.02	Mechanical seal	920.01/.02/.03/.15	Nut
441	Shaft seal housing	930.01/.02	Safety device
550.01/.03/.04/.05	Disc	932.01/.02/.03/.04/.05	Circlip
561	Grooved pin	970	Label/plate

Amaline 200 (motors: 1 4, 2 4; motor housing made of stainless steel)

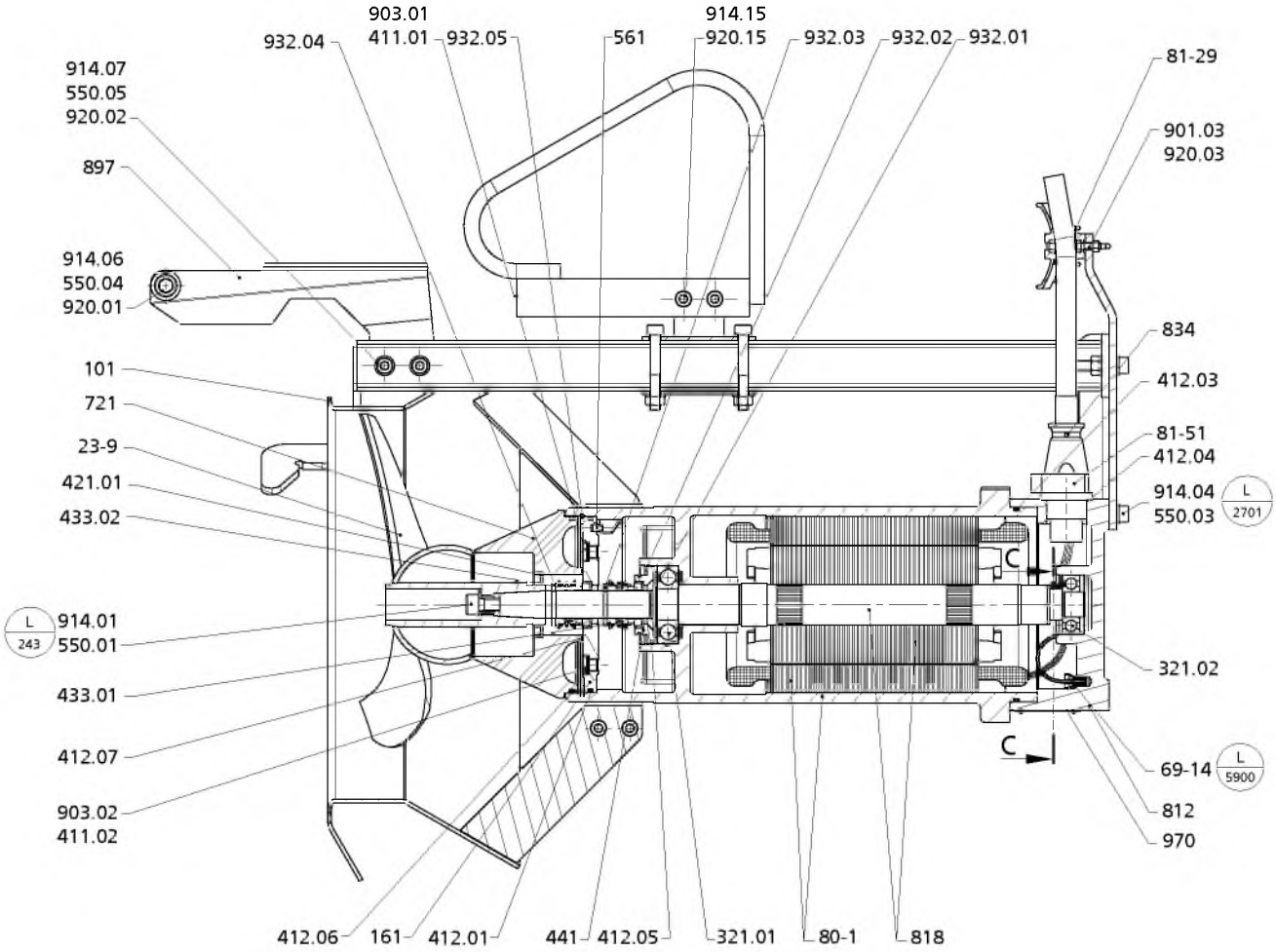


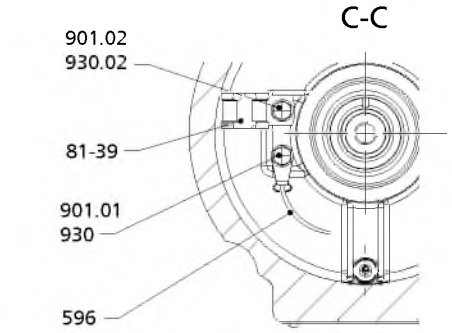
General assembly drawing: a) with shackle b) with bail (optional)

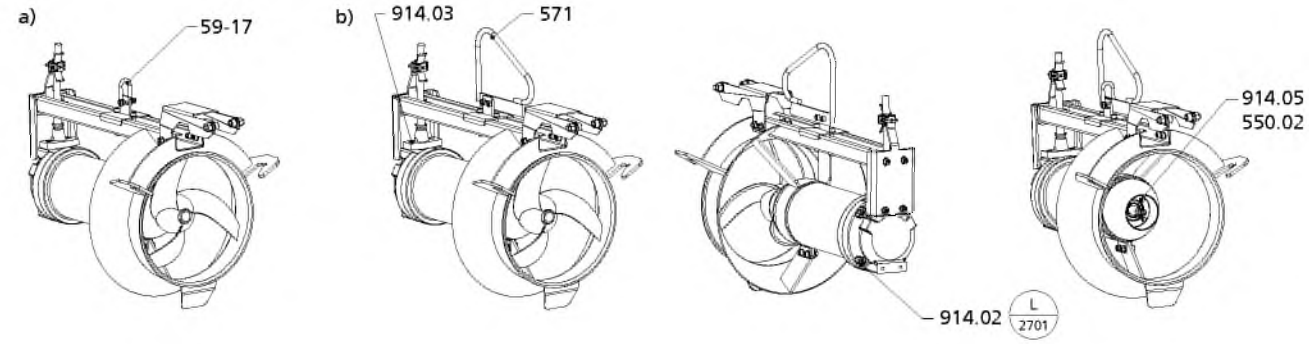
List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	561	Grooved pin
59-17	Shackle	571	Bail (optional)
69-14	Leakage sensor	596	Wire
80-1	Motor unit	721	Adapter
81-29	Terminal	812	Motor housing cover
81-39	Clamp	818	Rotor
81-51	Clamping element	834	Cable gland
101	Pump casing	897	Guide piece
161	Casing cover	901.01/.02/.03	Hexagon head bolt
321.01/.02	Radial ball bearing	903.01/.02	Screw plug
411.01/.02	Joint ring	914.01/.02/.03/.04/.05/ .06/.07/.15	Hexagon socket head cap screw
412.01/.02/.03/.04/.05	Shaft seal ring	920.01/.02/.03/.15	Nut
433.01/.02	Mechanical seal	930.02	Safety device
441	Shaft seal housing	932.01/.02/.03/.04/.05	Circlip
515	Taper lock ring	970	Label/plate
550.01/.02/.03/.04/.05	Disc		

Amaline 300 (motors: 0 6, 2 6; motor housing made of grey cast iron)





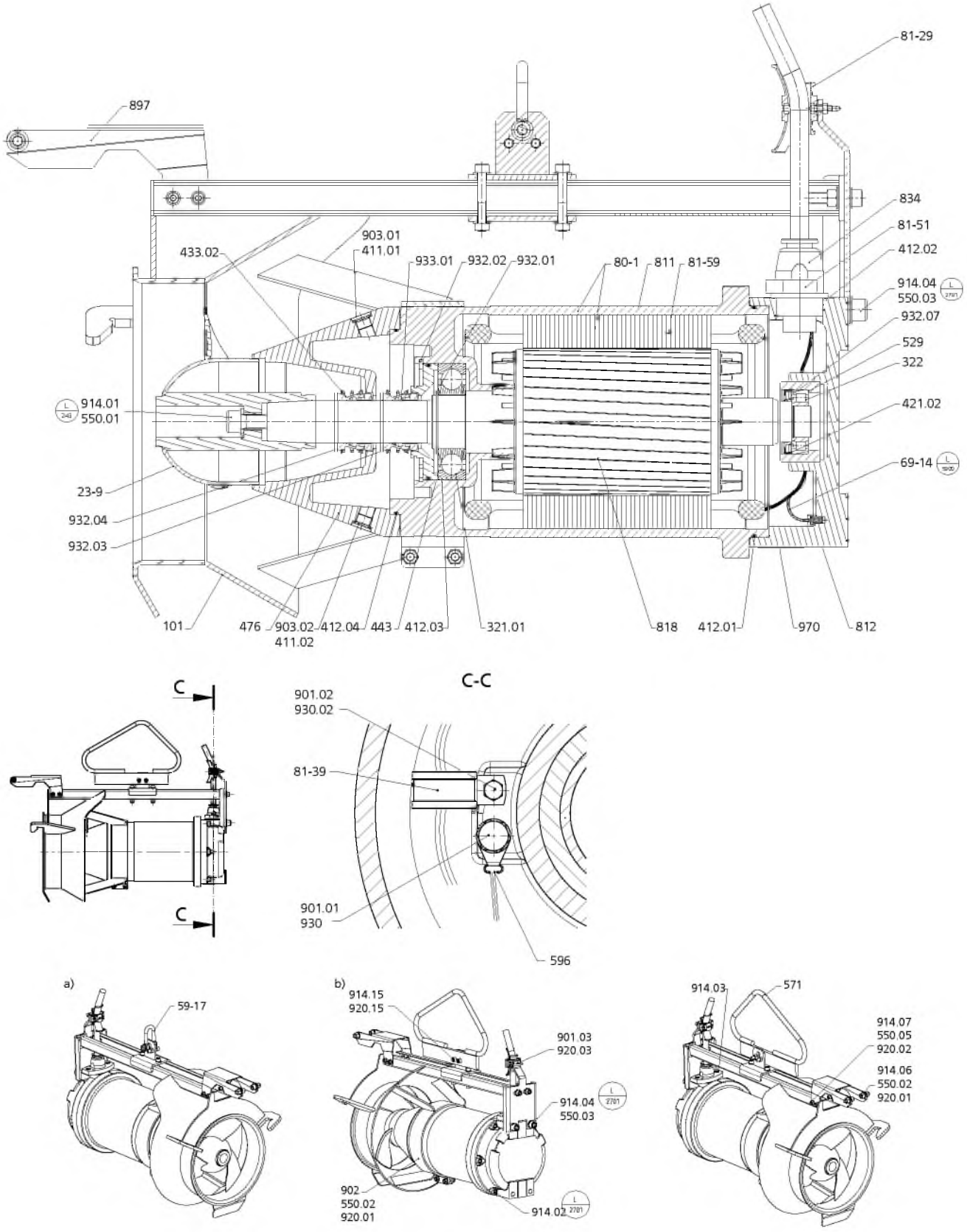


General assembly drawing: a) with shackle b) with bail (optional)

List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	561	Grooved pin
59-17	Shackle	571	Bail (optional)
69-14	Leakage sensor	596	Wire
80-1	Motor unit	721	Adapter
81-29	Terminal	812	Motor housing cover
81-39	Clamp	818	Rotor
81-51	Clamping element	834	Cable gland
101	Pump casing	897	Guide piece
161	Casing cover	901.01/.02/.03	Hexagon head bolt
321.01/.02	Radial ball bearing	903.01/.02	Screw plug
411.01/.02	Joint ring	914.01/.02/.03/.04/.05/ .06/.07/.15	Hexagon socket head cap screw
412.01/.03/.04/.05/.06/.07	O-ring	920.01/.02/.03/.15	Nut
421.01	Lip seal	930.01/.02	Safety device
433.01/.02	Mechanical seal	932.01/.02/.03/.04/.05	Circlip
441	Shaft seal housing	970	Label/plate
550.01/.02/.03/.04/.05	Disc		

Amaline 300 (motors: 8 6; motor housing made of grey cast iron)

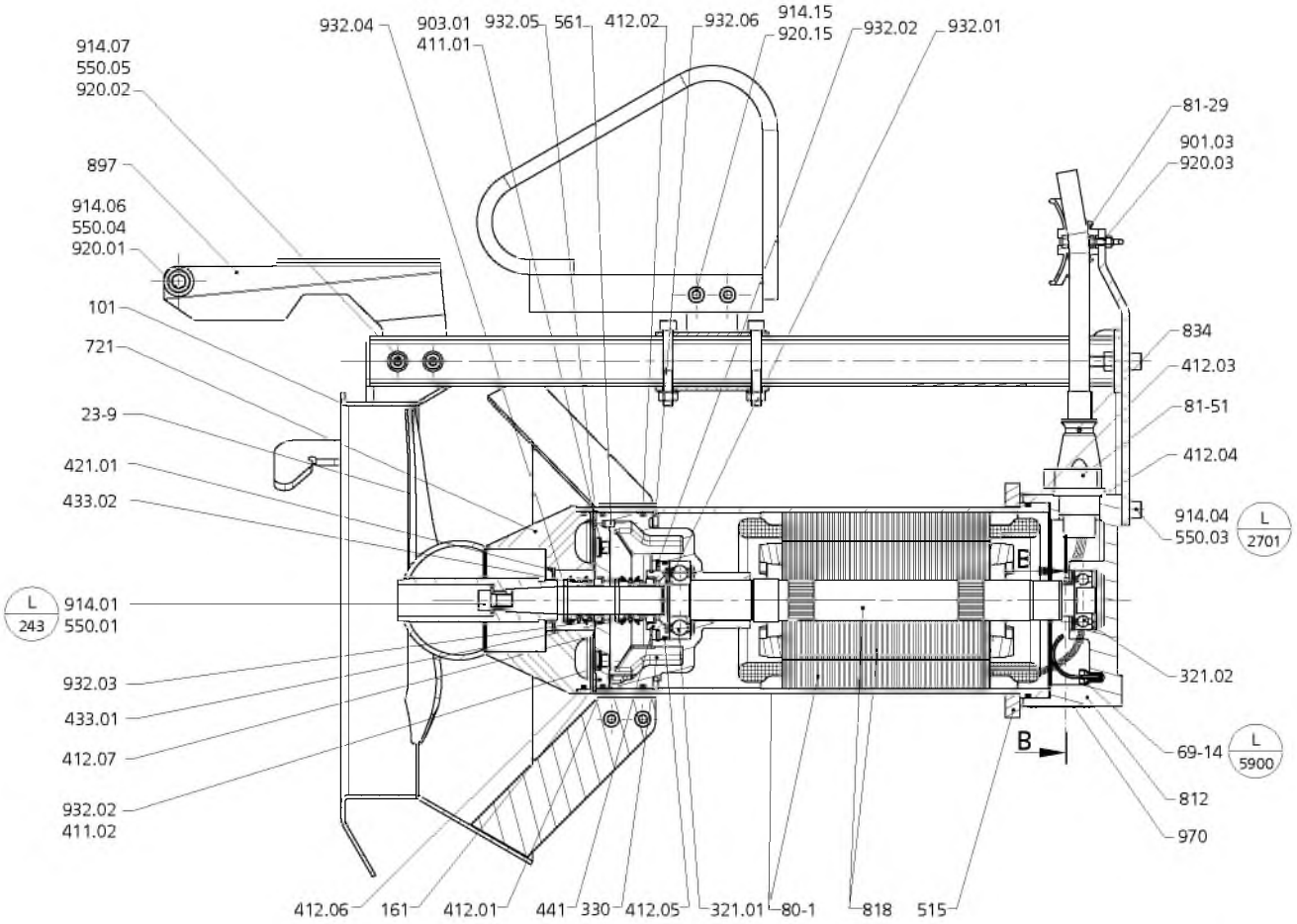


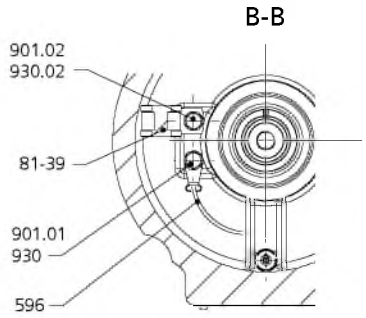
General assembly drawing: a) with shackle b) with bail (optional)

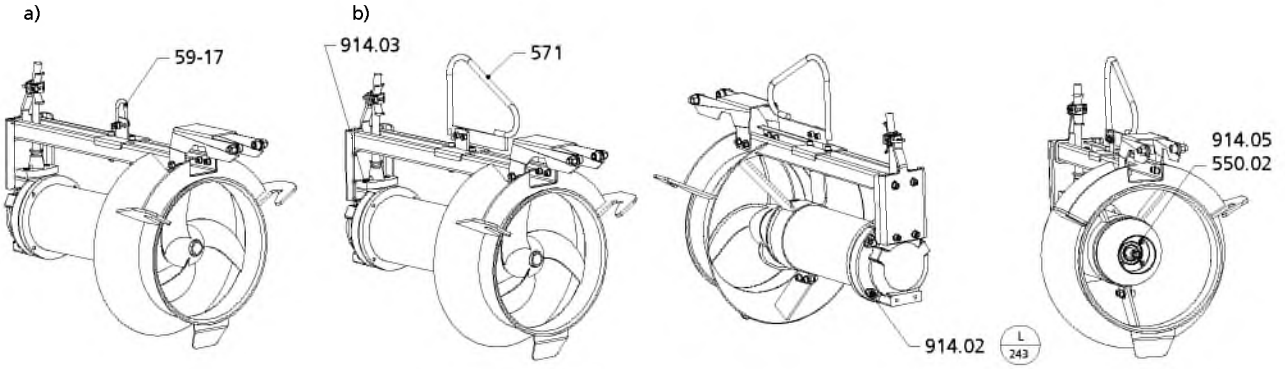
List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	529	Bearing sleeve
59-17	Shackle	550.01/.02/.03/.05	Disc
69-14	Leakage sensor	571	Bail (optional)
80-1	Motor unit	596	Wire
81-29	Terminal	811	Motor housing
81-39	Clamp	812	Motor housing cover
81-51	Clamping element	818	Rotor
81-59	Stator	834	Cable gland
101	Pump casing	897	Guide piece
321.01	Radial ball bearing	901.01/.02/.03	Hexagon head bolt
322	Radial roller bearing	902	Stud
411.01/.02	Joint ring	903.01/.02	Screw plug
412.01/.02/.03/.04	O-ring	914.01/.02/.03/.04/.06/ .07/.15	Hexagon socket head cap screw
421.02	Lip seal	920.01/.02/.03/.15	Nut
433.02	Mechanical seal	930.02	Safety device
443	Seal insert	932.01/.02/.03/.04/.07	Circlip
476	Mating ring carrier	970	Label/plate

Amaline 300 (motors: 0 6, 2 6; motor housing made of stainless steel)





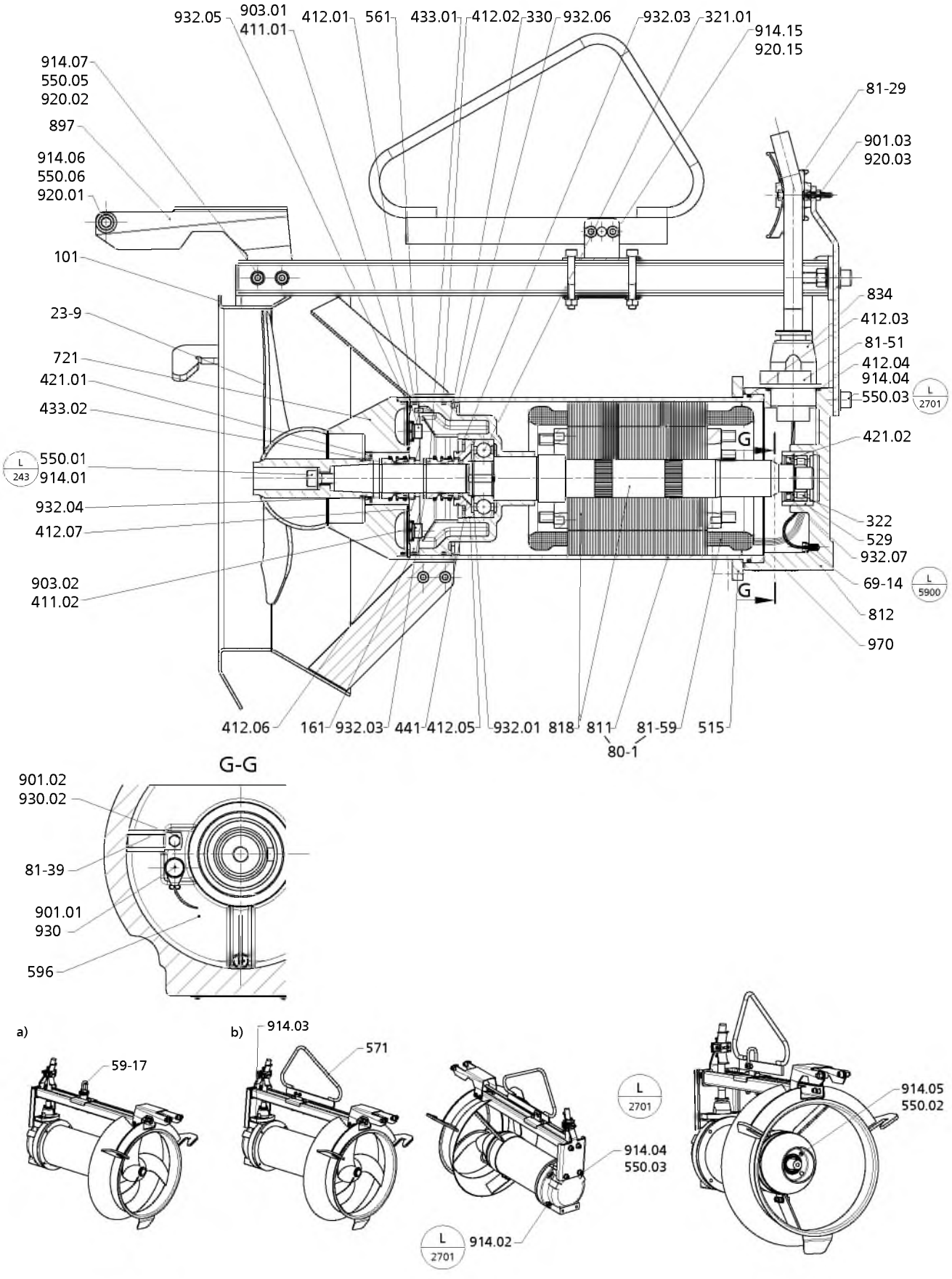


General assembly drawing: a) with shackle b) with bail (optional)

List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	550.01/.02/.03/.04/.05	Disc
59-17	Shackle	561	Grooved pin
69-14	Leakage sensor	571	Bail (optional)
80-1	Motor unit	596	Wire
81-29	Terminal	721	Adapter
81-39	Clamp	812	Motor housing cover
81-51	Stator	818	Rotor
101	Pump casing	834	Cable gland
161	Housing cover	897	Guide piece
321.01/.02	Radial ball bearing	901.01/.02/.03	Hexagon head bolt
330	Bearing bracket	903.01	Screw plug
411.01/.02	Joint ring	914.01/.02/.03/.04/.05/ .06/.07/.15	Hexagon socket head cap screw
412.01/.02/.03/.04/.05/.06/.07	O-ring	920.01/.02/.03/.15	Nut
421.01	Lip seal	930.02	Safety device
433.01/.02	Mechanical seal	932.01/.02/.03/.04/.05/.06	Circlip
441	Shaft seal housing	970	Label/plate
515	Taper lock ring		

Amaline 400 (motors: 3 8, 4 8; motor housing made of grey cast iron)

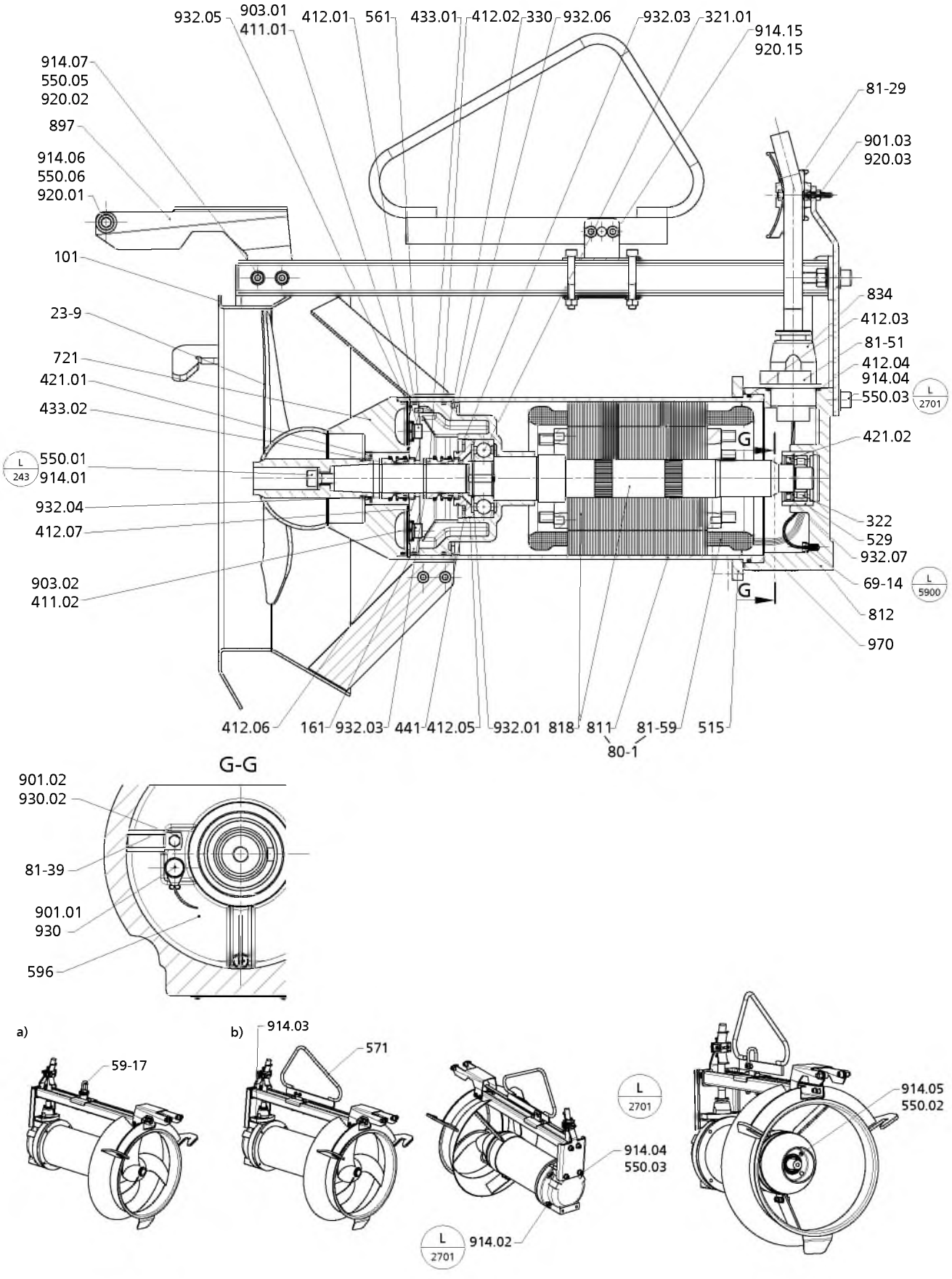


General assembly drawing: a) with shackle b) with bail (optional)

List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	529	Bearing sleeve
59-17	Shackle	550.01/.02/.03/.04/.05	Disc
69-14	Leakage sensor	561	Grooved pin
80-1	Motor unit	571	Bail (optional)
81-29	Terminal	596	Wire
81-39	Clamp	721	Adapter
81-51	Clamping element	811	Motor housing
81-59	Stator	812	Motor housing cover
101	Pump casing	834	Cable gland
161	Casing cover	897	Guide piece
321.01	Radial ball bearing	901.01/.02/.03	Hexagon head bolt
322	Radial roller bearing	903.01/.02	Screw plug
411.01/.02	Joint ring	914.01/.02/.03/.04/.05/ .06/.07/.15	Hexagon socket head cap screw
412.01/.04/.05/.06/.07	O-ring	920.01/.02/.03/.15	Nut
421.01/.02	Lip seal	930.01/.02	Safety device
433.01/.02/.03	Mechanical seal	932.01/.02/.03/.04/.05/.07	Circlip
441	Shaft seal housing	970	Label/plate

Amaline 400 (motors: 3 8, 4 8; motor housing made of stainless steel)

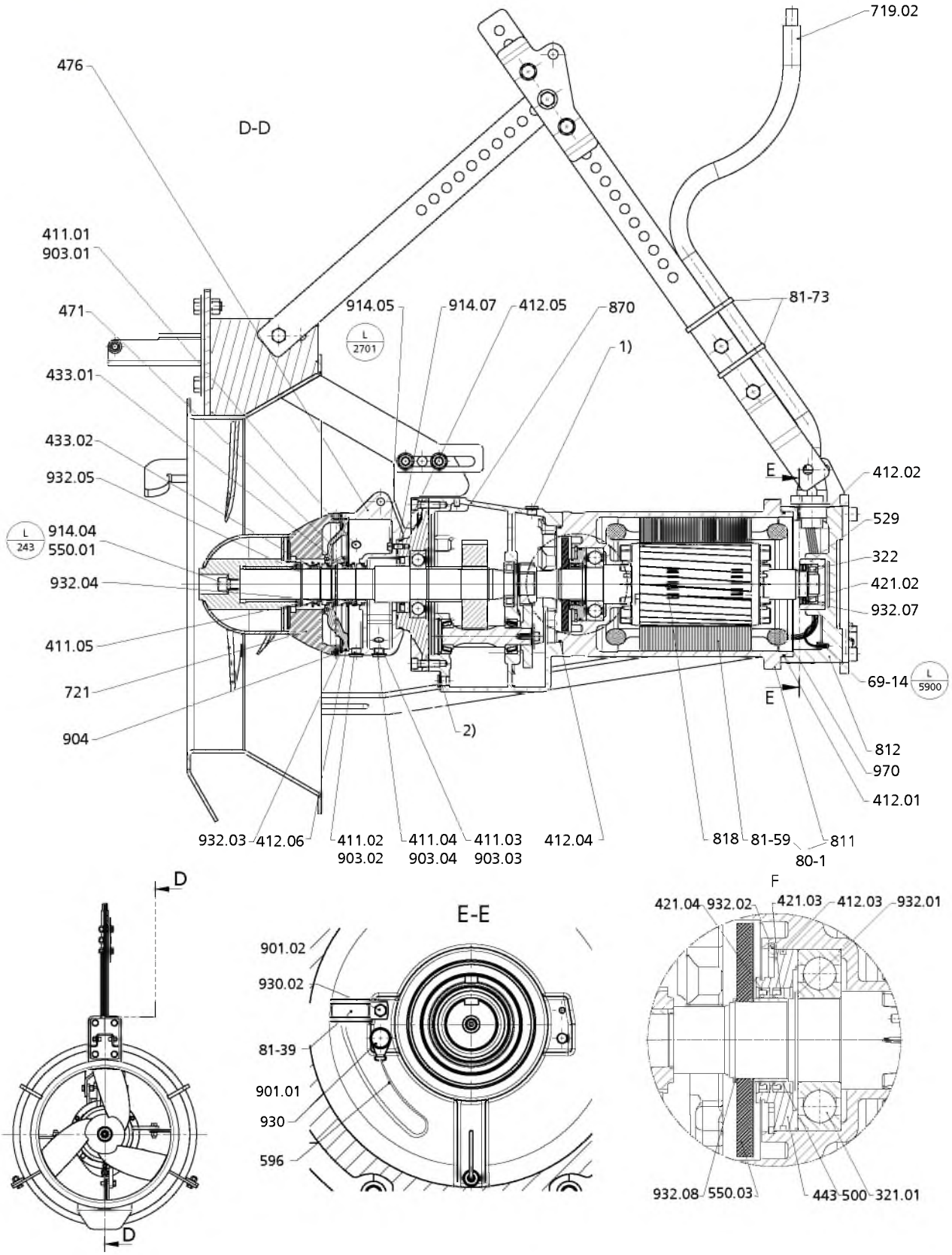


General assembly drawing: a) with shackle b) with bail (optional)

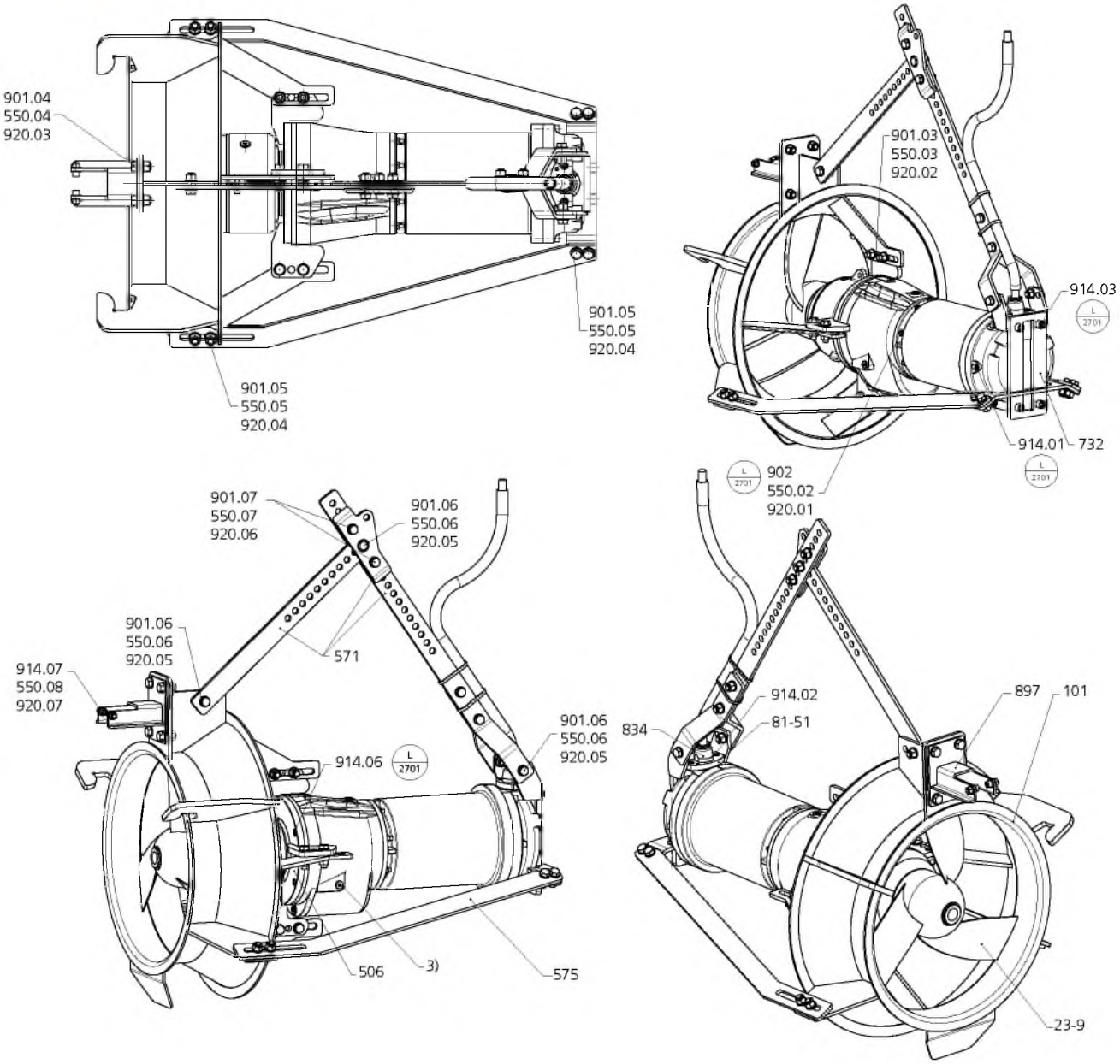
List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	529	Bearing sleeve
59-17	Shackle	550.01/.02/.03/.05/.06	Disc
69-14	Leakage sensor	561	Grooved pin
80-1	Motor unit	571	Bail (optional)
81-29	Terminal	596	Wire
81-39	Clamp	721	Adapter
81-51	Clamping element	811	Motor housing
81-59	Stator	812	Motor housing cover
101	Pump casing	818	Rotor
161	Casing cover	834	Cable gland
321.01	Radial ball bearing	897	Guide piece
322	Radial roller bearing	901.01/.02/.03	Hexagon head bolt
330	Bearing bracket	903.01/.02	Screw plug
411.01/.02	Joint ring	914.01/.02/.03/.04/.05/ .06/.07/.15	Hexagon socket head cap screw
412.01/.02/.03/.04/.05/.06/.07	O-ring	920.01/.02/.03/.15	Nut
421.01/.02	Lip seal	930.02	Safety device
433.01/.02	Mechanical seal	932.01/.03/.04/.05/.06/.07	Circlip
441	Shaft seal housing	970	Label/plate
515	Taper lock ring		

Amaline 500/600/800 (motors: 17 2, 25 2, 4 4, 6 4, 11 4, 16 4, 23 4, 30 4; motor housing made of grey cast iron)



General assembly drawing: 1) oil filler plug, 2) oil drain plug



3) oil check plug

List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	571	Bail
69-14	Leakage sensor	575	Strip
80-1	Motor unit	596	Wire
81-39	Clamp	719.02	Flexible tube
81-51	Clamping sleeve	721[17)]	Adapter
81-59	Stator	732	Holder
81-73	Cable support	811	Motor housing
101	Pump casing	812	Motor housing cover
321.01	Radial ball bearing	818	Rotor
322	Radial roller bearing	834	Cable gland
411.01/.02/.03/.04/.05	Joint ring	870	Gear unit
412.01/.02/.03/.04/.05/.06	O-ring	897	Guide piece

17) For Amaline 500/600 only

Part No.	Description	Part No.	Description
421.02/.03/.04	Lip seal	901.01/.02/.03/.04/.05/.06/.07	Hexagon head bolt
433.01/.02	Mechanical seal	902	Stud
443	Seal insert	903.01/.02/.03/.04	Screw plug
471	Seal cover	904	Grub screw
476	Mating ring carrier	914.01/.02/.03/.04/.05/.06/.07	Hexagon socket head cap screw
500	Ring	920.01/.02/.03/.04/.05/.06/.07	Nut
506	Retaining ring	930	Safety device
529	Bearing sleeve	932.01/.02/.03/.04/.05/.07/.08	Circlip
550.01/.02/.03/.04/.05/.06/.07/.08	Disc	970/970.02	Label/plate

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