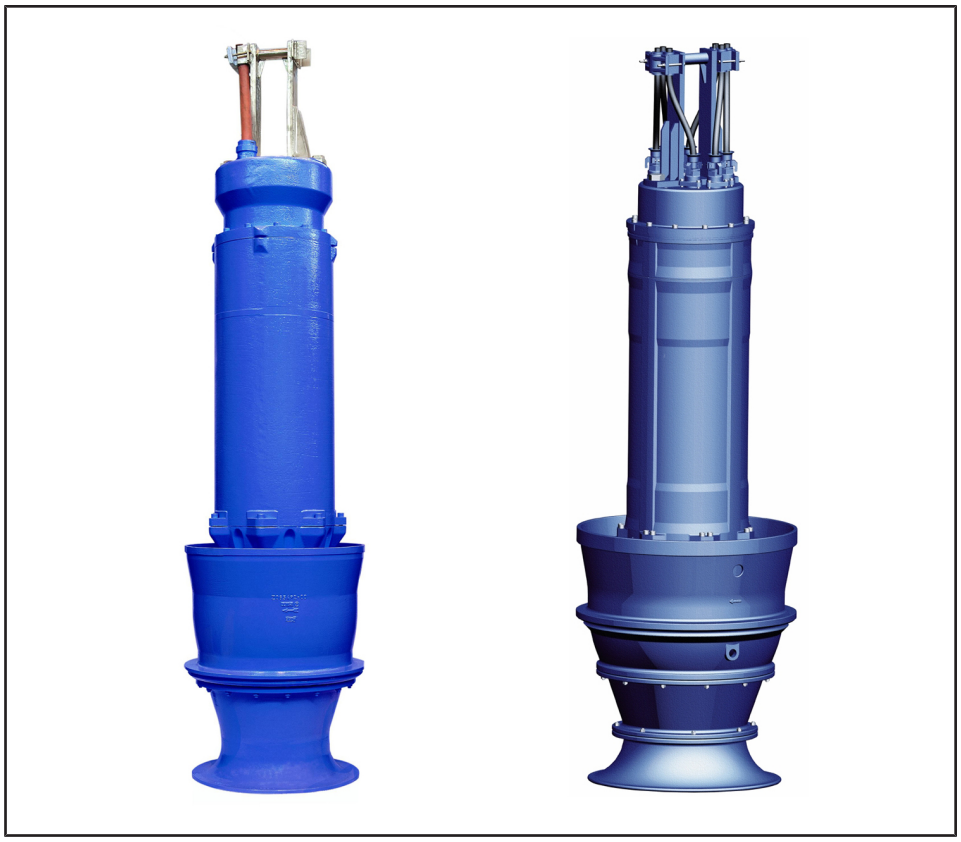
Submersible Pump in Discharge Tube

Amacan S

50 Hz

Type Series Booklet



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Type Series Booklet Amacan S

Contents

Water Applications: Water Transport

Submersible Pump in Discharge Tube

Amacan S

Main applications

- Irrigation and drainage pumping stations
- Stormwater pumping stations
- Raw and clean water pumps in water works
- Cooling water pumps in power stations and in industry
- Industrial water supply
- Water pollution and flood control
- Pumps for docks and locks
- Aquaculture

Fluids handled

- Grey water
- River water
- Stormwater
- Activated sludge
- Seawater
- Brackish water

Operating data

Characteristic		Value
Flow rate	Q	up to 3000 l/s
Head	H	Up to 40 m
Motor rating	P_2	Up to 420 kW
Temperature of fluid pumped[1)]	t	Up to 40 °C

Designation

Example: Amacan S 1000-655 / 25O 8 UTG2

Key to the designation

Code	Description	
Amacan	Type series	
S	Impeller type, e.g. S = mixed flow impeller	
1000	Nominal diameter of the discharge tube [mm]	
655	Nominal impeller diameter [mm]	
250	Motor size	
8	**Number of motor poles**	
	4	4-pole
	6	6-pole
	8	8-pole
	10	10-pole
UT	**Motor version**	
	UA	Without explosion protection, standard (sizes 650-364 ... 800-505)
	UT	Without explosion protection, standard (sizes 800-535 ... 1300-820)
G2	**Material variant**	
	G2	Grey cast iron, standard material variant
	G3	Grey cast iron with Zn anodes, shaft made of 1.4057 stainless steel

Design details

Design

- Fully floodable submersible pump in discharge tube (submersible motor pump)
- Not self-priming
- Close-coupled design
- Single-stage
- Vertical installation

Drive

- Three-phase asynchronous squirrel-cage motor

Shaft seal

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

Impeller type

- Open or closed mixed flow impeller

Bearings

- Grease-packed rolling element bearings

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1) Higher temperatures on request

Materials

Description	Material
Pump casing	EN-GJL-250 (JL 1040)
Motor housing	EN-GJL-250 (JL 1040)
Shaft	1.4021 / 1.4057
Impeller	1.4517 (duplex stainless steel)
Casing wear ring	Stainless steel
Screws, bolts and nuts	Stainless steel

Coating and preservation

Paint

- **Surface treatment:** SA 2 1/2 (SIS 055900) AN 1865
- **Primer:** primer coat on unfinished casting
- **Top coat:** environmentally friendly KSB standard coating (RAL 5002)

Special coating

- Available on request (extra charge and a longer delivery period apply).

Product advantages / customer benefits

- Three-phase motor and optimum motor cooling by fluid handled make for efficient power utilisation.
- The pump's own weight ensures self-centring seating in the discharge tube, and an O-ring seals it; no anchoring or anti-rotation elements; quick to install or remove.
- The slim motor minimises discharge tube flow losses.
- High reliability thanks to bearing temperature monitoring, vibration sensor, thermal motor protection, leakage sensors in the motor and connection space, and leakage monitoring of the mechanical seal system.
- Low-vibration hydraulic system; inlet ribs and optimised bellmouth for vortex-free inflow.
- Absolutely water-tight resin-sealed cable entries prevent any water from entering the motor – even in the event of a damaged cable.

Acceptance tests / Warranties

Functional test

- Every pump undergoes functional testing to KSB standard ZN 56525.
- Operating data is guaranteed to DIN EN ISO 9906 / 2 / 2B.

Acceptance tests

- Acceptance tests to ISO/DIN or comparable standards are available against a surcharge.

Warranties

- Quality is assured by means of an audited and certified quality assurance system to DIN EN ISO 9001.

Selection information

Information for pump selection

The guaranteed point of submersible pumps in discharge tubes is measured at a head 0.5 m above the motor (DIN 1184). The documented characteristic curves refer to this data. This must be taken into account when calculating system losses. The indicated heads and performance data apply to pumped fluids with a density ρ = 1 kg/dm³ and a kinematic viscosity v of up to 20 mm²/s.

The pump input power must be matched to the density of the fluid handled:
$P_{2req} = \rho_{fluid}$ [kg/dm³] x P_{2docu}

The operating point with the largest pump input power is decisive for the operating range of the motor. To compensate the unavoidable tolerances of the characteristic curves of system, pump and motor we recommend selecting a motor size which provides sufficient power reserves.

Recommended minimum reserves[2)]

Required pump input power	Motor power reserve	
[kW]	Mains operation	With frequency inverter
< 30	10 %	15 %
> 30	5 %	10 %

Intake chamber

Determine the minimum water level t_{1min} (diagram in general arrangement drawing):
The minimum water level t_{1min} is the water level required in the pump's suction chamber to ensure:

- that there is a sufficient liquid cover above the hydraulic system (propeller) (shown in diagram depending on pump size)
- that the pump does not draw in air-entraining vortices (shown in diagram depending on flow rate)
- that there is no cavitation in the hydraulic system (check against the $NPSH_{required}$ value indicated in the technical literature). The following conditions must be met:
  - $NPSH_{available} > NPSH_{required}$ + safety allowance
  - $NPSH_{available} = 10.0 + (t_1 - t_3 - h_7/2)$
  - Safety allowance:
    up to $Q_{opt} \Rightarrow$ 0.5 m
    larger than $Q_{opt} \Rightarrow$ 1.0 m

Head (H)

The total pump head is composed as follows:
$H = H_{geo} + \Delta H_V$

H_{geo} (static head)

- Without discharge elbow – Difference between suction-side water level and overflow edge
- With discharge elbow – Difference between suction-side and discharge-side water level

ΔH_V (losses in the system)

- Starting 0.5 m downstream of the pump: e.g. pipe friction, elbow, swing check valve, etc.

2) If larger reserves are stipulated by local regulations or are required to compensate for uncertain factors in system calculations, these larger reserves must be provided.

Losses by inlet, riser and elbow

Losses are caused by the inlet, riser and elbow (or free discharge).

- Losses in the riser up to the indicated reference level (0.5 m above the motor) are taken into account in the documented characteristic curves.
- Inlet and elbow losses are system losses and must be taken into account for selection.
- For information on structural requirements, pump installation and pump sump design please refer to the KSB know-how brochure "Planning information: Amacan submersible pumps in discharge tubes" 0118.55.

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Programme overview / selection tables

Table of fluids handled

The table below for your guidance is based on KSB's long-standing experience. The data are standard values and are not to be considered as generally binding recommendations. More detailed advice is available from our specialist department in Halle. Make use of our laboratory's expertise when selecting materials.

Fluid handled[3] (fluids not containing stringy material)	Comments, recommendations
Waste water (without long fibres and large solid particles)	Pre-screen with fine screen.
Surface water (stormwater, river water)	Pre-screen.
Activated sludge	Max. dry substance 2 %
Seawater and brackish water[4]	Material variant G3 up to t = 25 °C[5]

Opening size of screen bars

Size	Coarse screen	Fine screen[6]
	[mm]	[mm]
650-364	40	15
650-365	40	15
650-404	40	15
650-405	40	15
800-505	40	15
800-535 / 850-535	40	15
850-550	40	15
900-600 / 1000-600	50	25
900-615 / 1000-615	50	25
900-620 / 1000-620	40	15
1000-655	60	25
1300-820	60	25

3) Fluids to be pumped which are not listed in this table usually require higher-grade materials. Contact KSB.
4) Use of anodes required (efficiency reduced by 2 % to 3 %); anode to be checked every 6 to 12 months
5) For t > 25 °C contact KSB (stainless steel variant).
6) Fine screens must be used for high pollution loads.

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Overview of product features

Overview of product features: material variants G2, G3

Feature	Motor version					
	UAG		UTG			
4-pole	45 4 ... 140 4	160 4 ... 220 4	–	–	–	–
6-pole	100 6 ... 140 6	150 6 ... 175 6	120 6	155 6 ... 205 6	250 6 ... 340 6	–
8-pole	–	–	–	85 8 ... 120 8	205 8 ... 290 8	350 8
10-pole	–	–	–	–	220 10 ... 250 10	310 10 ... 420 10
Explosion protection						
Version U...	Non-explosionproof					
Motor						
Starting method	DOL		DOL or star-delta (690 V only DOL)			
Voltage	400 V[7)]					
Cooling	Cooled by surrounding fluid					
Power cable						
Type	See table "Overview of power cables"					
Length	10 m[8)]					
Cable entry	Absolutely watertight					
Sealing elements						
Elastomer seals	Nitrile butadiene rubber NBR[9)]					
Shaft seal	Bellows-type mechanical seal					
Monitoring equipment						
Winding temperature	PTC thermistor					
Bearing temperature	PT100 on pump end PT100 on drive end		PT100 on pump end[10)]			
Leakage inside the motor	Electrode monitoring the winding space for leakage		Electrode monitoring the winding and connection space for leakage			
Mechanical seal leakage	Float switch in leakage area					
Vibration sensor	-		-[11)]			
Coating	Environmentally friendly KSB standard coating, colour RAL 5002[12)]					
Installation	(⇨ Page 29)					
Maximum temperature of fluid handled						
Material variant G2	40 °C					
Material variant G3	25 °C					
Tests/inspections						
Hydraulic system	KSB standard (ZN 56525)[13)]					
General	KSB standard (ZN 56525)					

Overview of power cables

Feature	S1BN8-F rubber-sheathed cable	S07RC4N8-F rubber-sheathed cable
Type	Standard	Optional
Rated voltage	1000 V	750 V
EMC screening	-	✓
Insulation material	EPR[14)]	EPR[14)]
Max. continuous temperature of insulation	90 °C	90 °C
For permanent immersion in waste water to DIN VDE 0282-16/HD22.16	✓	✓

Related documents

- General Arrangement Drawings 1589.39
- Motor Data Booklet 1589.566
- Planning Information 0118.55

7) Optional: 500 V, 690 V
8) Optional: up to 50 m
9) Optional: Viton = fluorocarbon rubber FPM
10) Optional: PT100 on motor end
11) Optional: internal vibration sensor
12) Optional: 250 µm
13) Optionally to ISO 9906/1/2/A
14) EPR = ethylene propylene rubber

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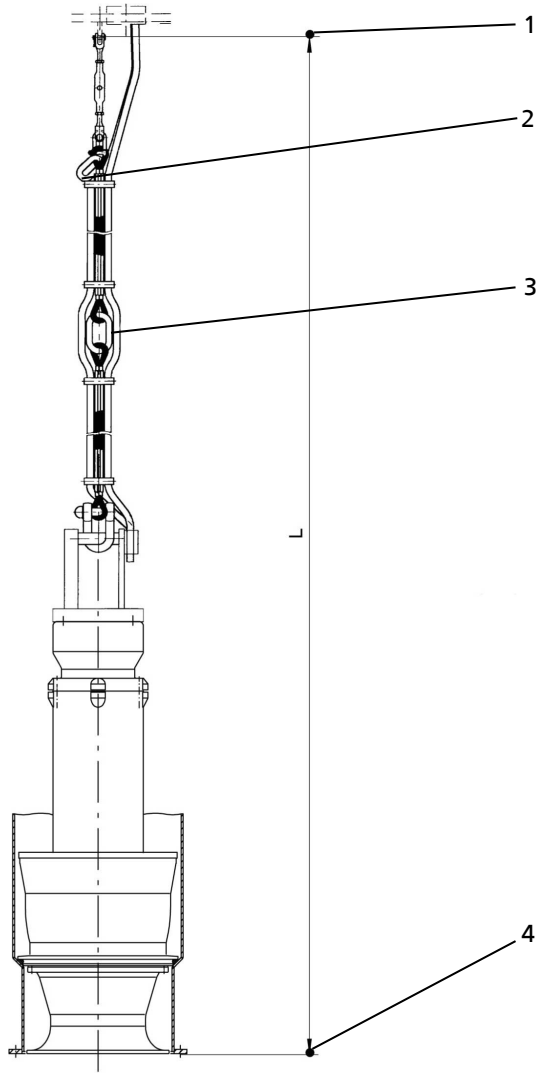
Data to be indicated in the purchase order

- Designation of the pump
- Flow rate Q, head H_{total}
- Type and temperature of the fluid pumped
- Voltage, frequency, starting method, cable length
- Quantity and language of operating manuals
- Required accessories
  - For discharge tubes indicate all required elevations and the type of installation.
  - For flow-straightening vanes indicate the type of installation and whether the design is with or without suction umbrella.
  - For a support rope indicate dimension "L", the number of additional lifting rings (depending on the lifting height of the hoisting tackle) as well as the elevations and type of installation.

Always define dimension "L" when ordering a support rope to allow the correct length to be determined. The lifting height of the crane must be taken into account when ordering a support rope. This determines the number of lifting rings required for installing the pump in or removing it from the discharge tube.



1	Suspension arrangement attached to cover (or cross beam for BU/BG)
2	Lifting ring (standard, included in the scope of supply)
3	Optional (intermediate) lifting ring(s)
4	Lower edge of discharge tube = lower edge of pump

The support rope is an accessory and can be supplied with additional lifting rings and a support spacer (⇨ Page 34) as an option. The standard design is supplied without intermediate lifting ring(s).

Material variants

Overview of materials

Part No.	Description	G2	G3[15] (seawater variant)
101	Pump casing	EN-GJL-250 (JL 1040)	
138	Bellmouth	EN-GJL-200 (JL 1030)	
233	Open counter-clockwise impeller	1.4517	
	Closed counter-clockwise impeller[16]	1.4517	
350/330	Bearing housing / bearing bracket	EN-GJL-250 (JL 1040)	
360	Bearing cover	EN-GJL-200 (JL 1030)	
412	O-ring	NBR[17] (Viton-FPM)[18]	
433	Mechanical seal (pump end)	SiC/SiC (bellows NBR[17], Viton FPM[18])	
	Mechanical seal (drive end)	Carbon/SiC (bellows NBR[17], Viton FPM[18])	
502	Casing wear ring	1.4571 (stainless steel)	
571	Bail	EN-GJS-400-15 (JS 1030) / S235JR[19]	
811	Motor housing	EN-GJL-250 (JL 1040)	
812	Motor housing cover	EN-GJL-250 (JL 1040)	
818	Shaft (rotor)	1.4021	1.4057
82-5	Adapter	EN-GJL-250 (JL 1040)	
834	Cable gland	-	
	Gland housing	EN-GJL-250 (JL 1040)	
Various	Screws/bolts	Stainless steel	
99-16	Anode	–	Zn
Other materials on request.			

Comparison of materials

EN	ASTM
EN-GJL-200 (JL 1030)	A 48 Class 30 B
EN-GJL-250 (JL 1040)	A 48 Class 40 B
1.4517	A 890 CD 4 MCu
1.4021	A 276 Type 420

EN	ASTM
1.4057	A 276 Type 431
1.4571	A 276 Type 316Ti
NBR	NBR
FPM	FKM
EN-GJS-400-15 (JS 1030)	A 536: 60–40–18
S235JR	A 284 B

Description of materials

Duplex stainless steel (1.4517 or technically equivalent material)
This type of cast 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 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 process engineering. Pumps made of duplex stainless steel have a very long service life, even when handling brines, chemical waste water (pH 1–12), grey water and landfill leachate.

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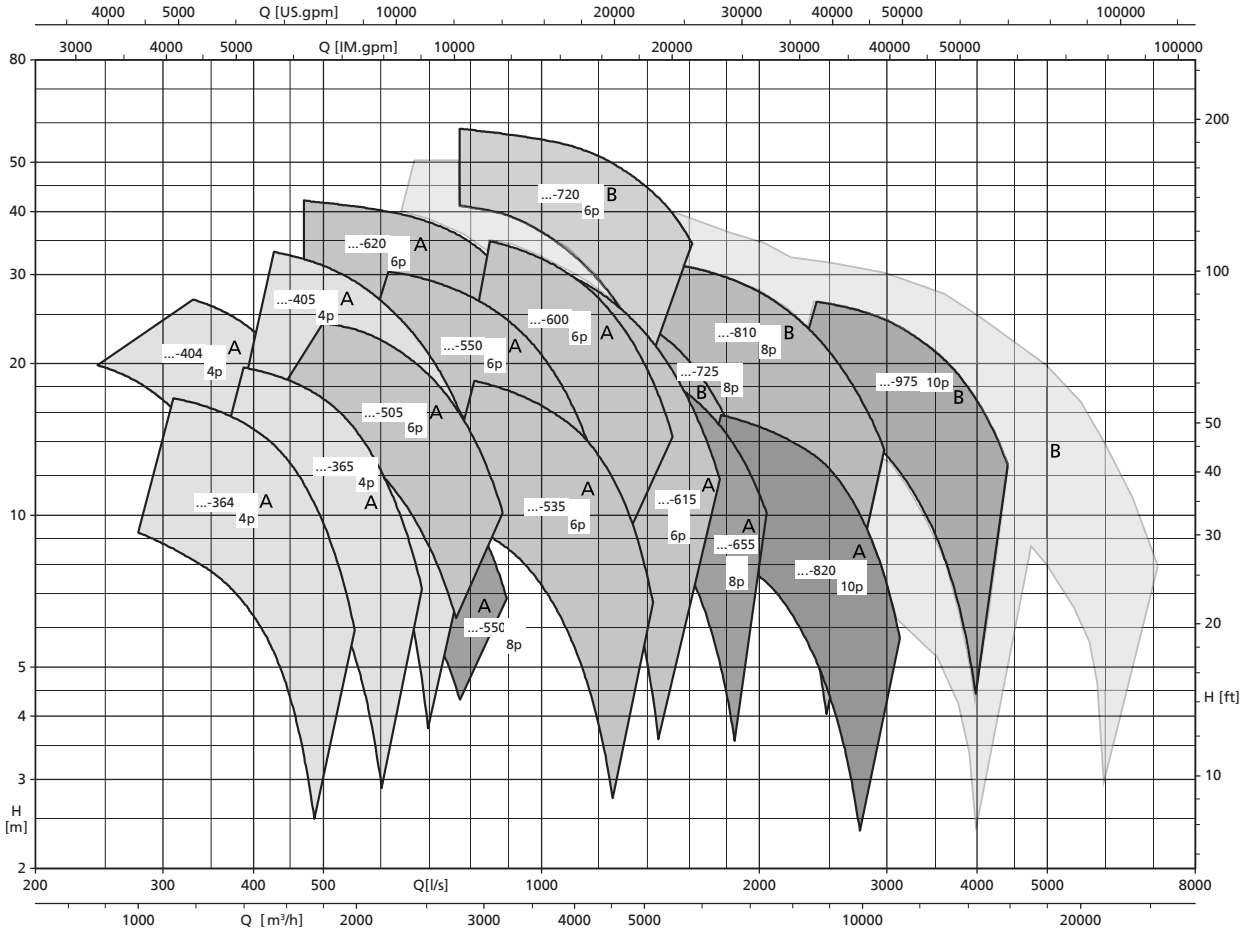
15) Pump set with cathodic protection (anodes to be checked every 6 to 12 months) and top coat of 250 µm
16) Sizes 900/1000-620
17) Nitrile butadiene rubber (Perbunan)
18) FPM fluorocarbon rubber variant available as an option against a surcharge
19) JS 1030 for motors: 120 6 … 205 6 TG, 85 8 … 120 8 TG; all other motors S235JR

Selection chart

Amacan S, n = 1450 / 960 / 725 / 580 rpm



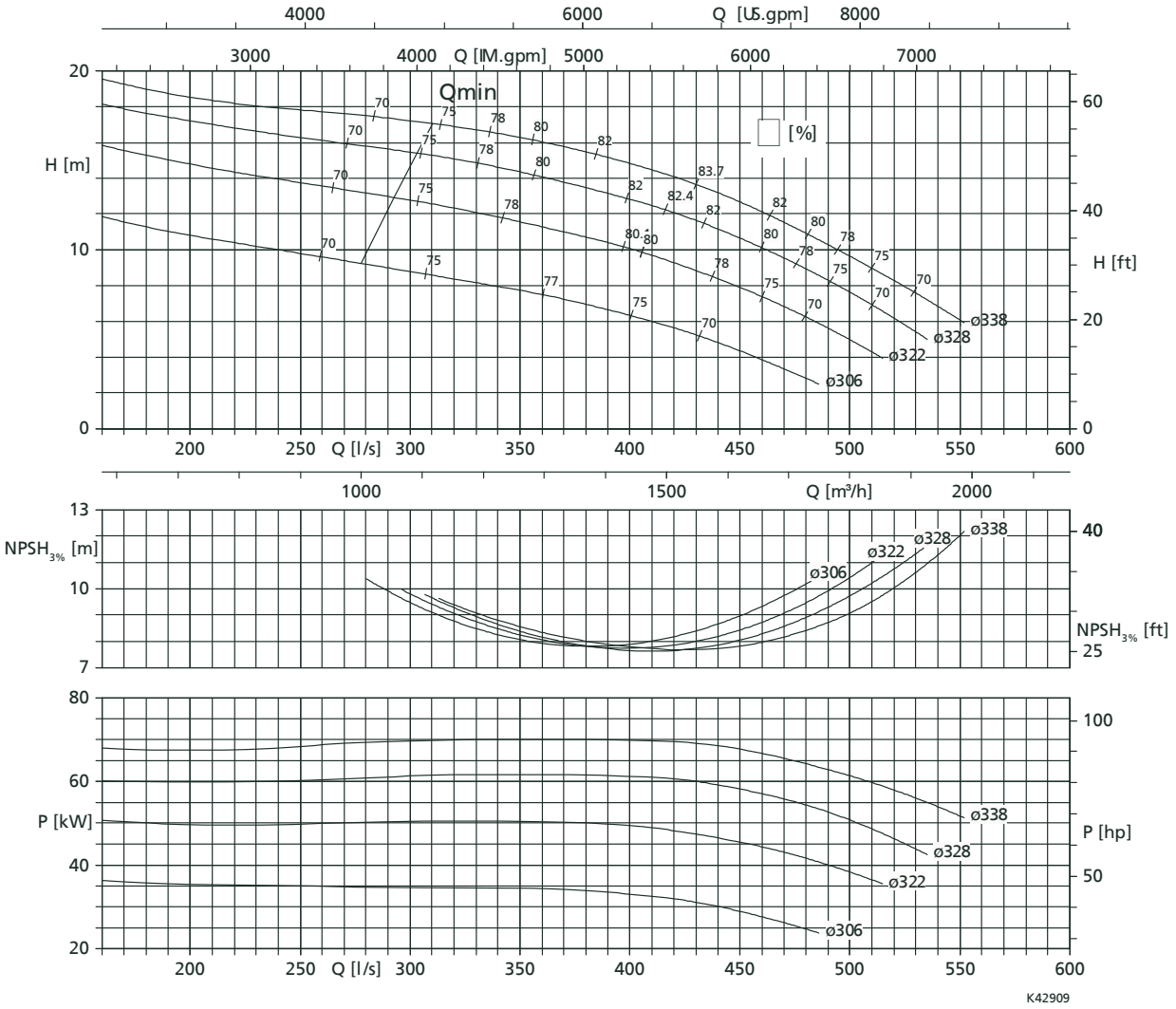
A	Standard range	B	Special range on request

Characteristic curves

n = 1450 rpm

Amacan S 650-364, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 39 mm in diameter

Rated power P_2 and mass moment of inertia J[20)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
650-364 / 45 4 UAG	45	0,55
650-364 / 65 4 UAG	55	0,55
650-364 / 80 4 UAG	75	0,64

Amacan S 650-365, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.

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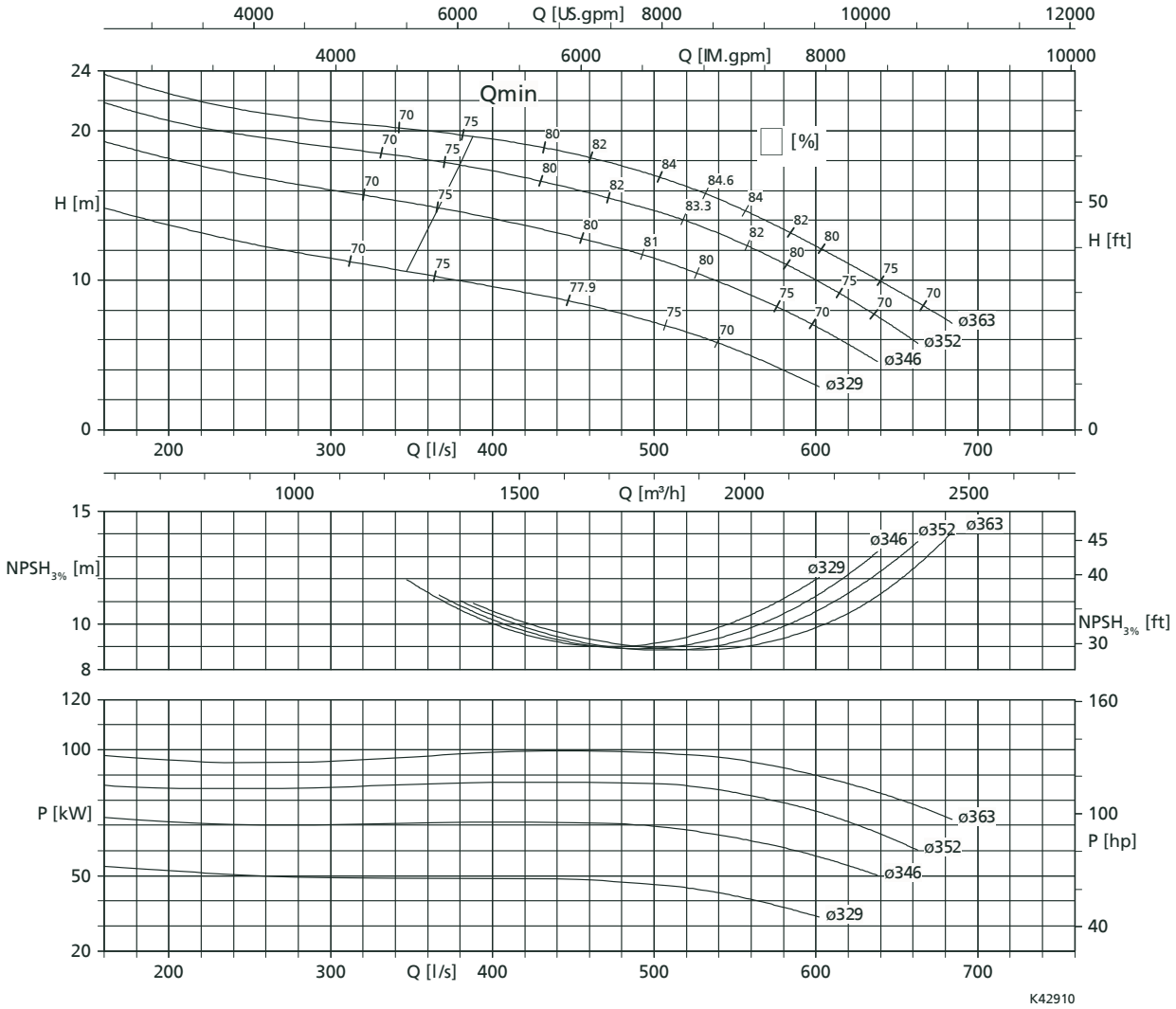
20) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.



Free passage 39 mm in diameter

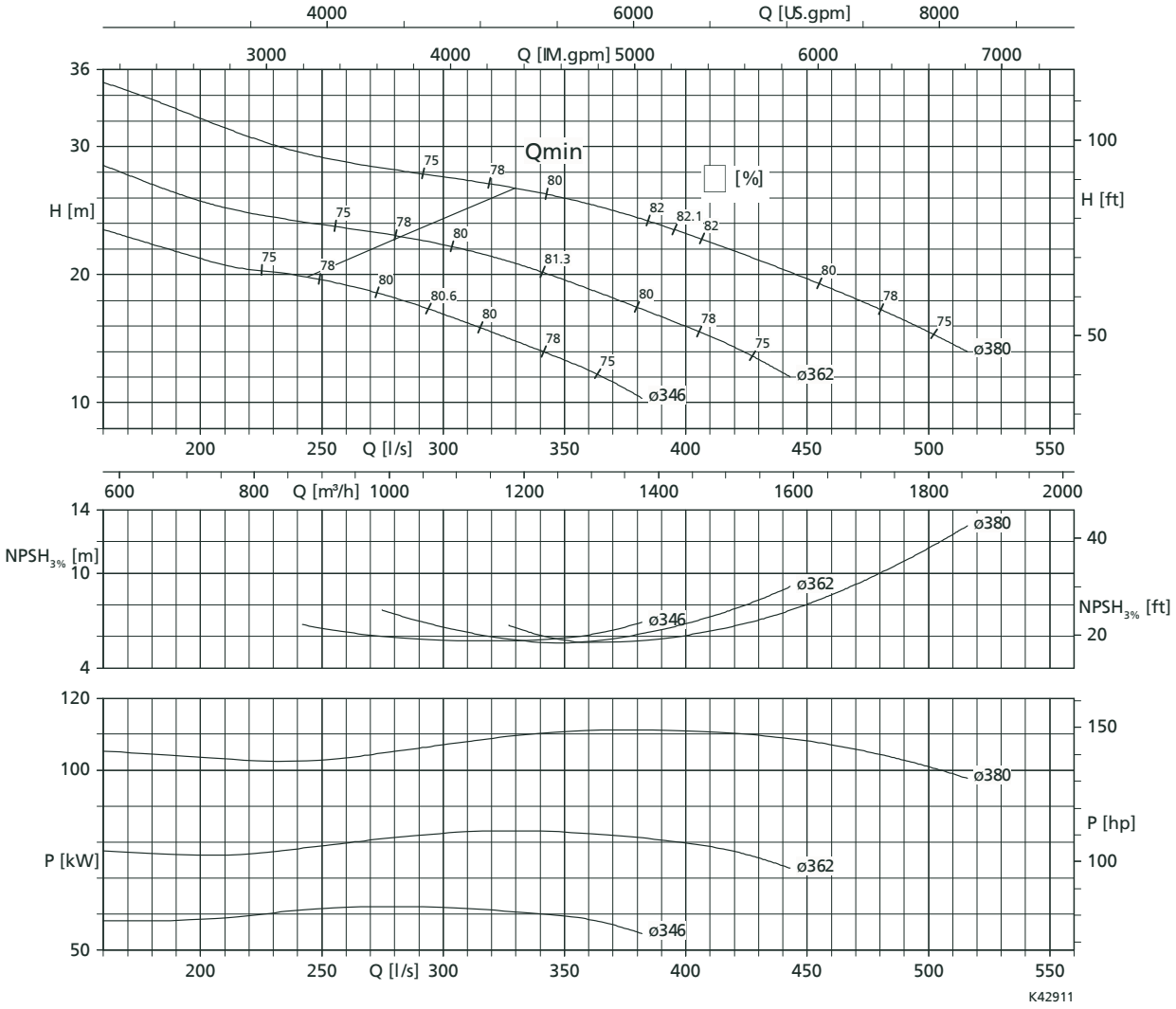
Rated power P_2 and mass moment of inertia J[21)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
650-365 / 65 4 UAG	55	0,55
650-365 / 80 4 UAG	75	0,64
650-365 / 100 4 UAG	90	0,71
650-365 / 120 4 UAG	110	0,79

21) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

Amacan S 650-404, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 42 mm in diameter

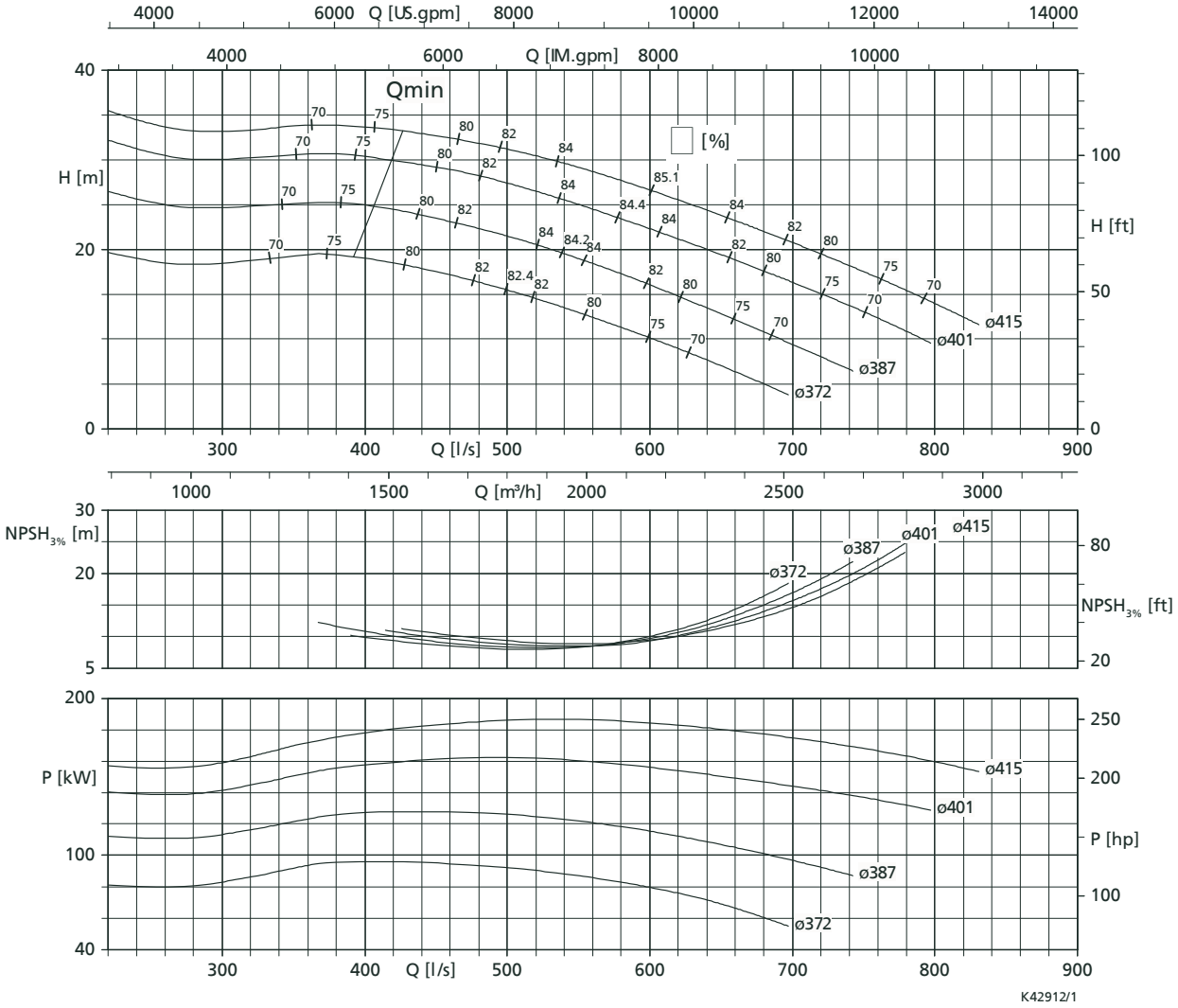
Rated power P_2 and mass moment of inertia J[22)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
650-404 / 80 4 UAG	75	0,84
650-404 / 100 4 UAG	90	0,91
650-404 / 120 4 UAG	110	0,99
650-404 / 140 4 UAG	135	1,03

22) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

Amacan S 650-405, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 42 mm in diameter

Rated power P_2 and mass moment of inertia J[23)]

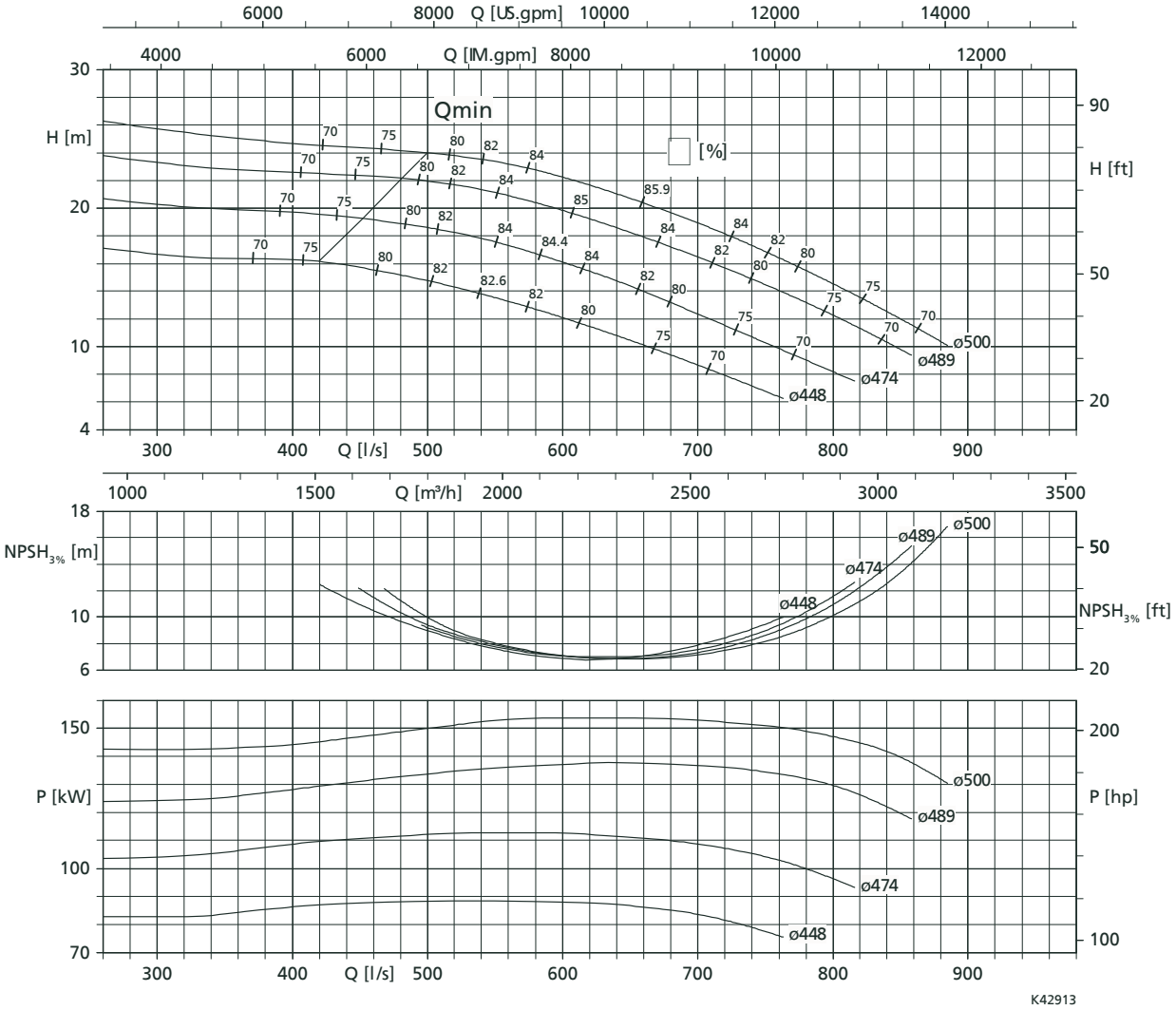
Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
650-405 / 120 4 UAG	110	1,10
650-405 / 140 4 UAG	135	1,15
650-405 / 160 4 UAG	150	1,70
650-405 / 180 4 UAG	180	1,82
650-405 / 200 4 UAG	200	2,00
650-405 / 220 4 UAG	220	2,11

23) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

n = 960 rpm

Amacan S 800-505, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 57 mm in diameter

Rated power P_2 and mass moment of inertia J[24)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
800-505 / 100 6 UAG	95	2,21
800-505 / 120 6 UAG	110	2,28
800-505 / 140 6 UAG	125	2,44
800-505 / 150 6 UAG	150	3,28
800-505 / 175 6 UAG	175	3,60

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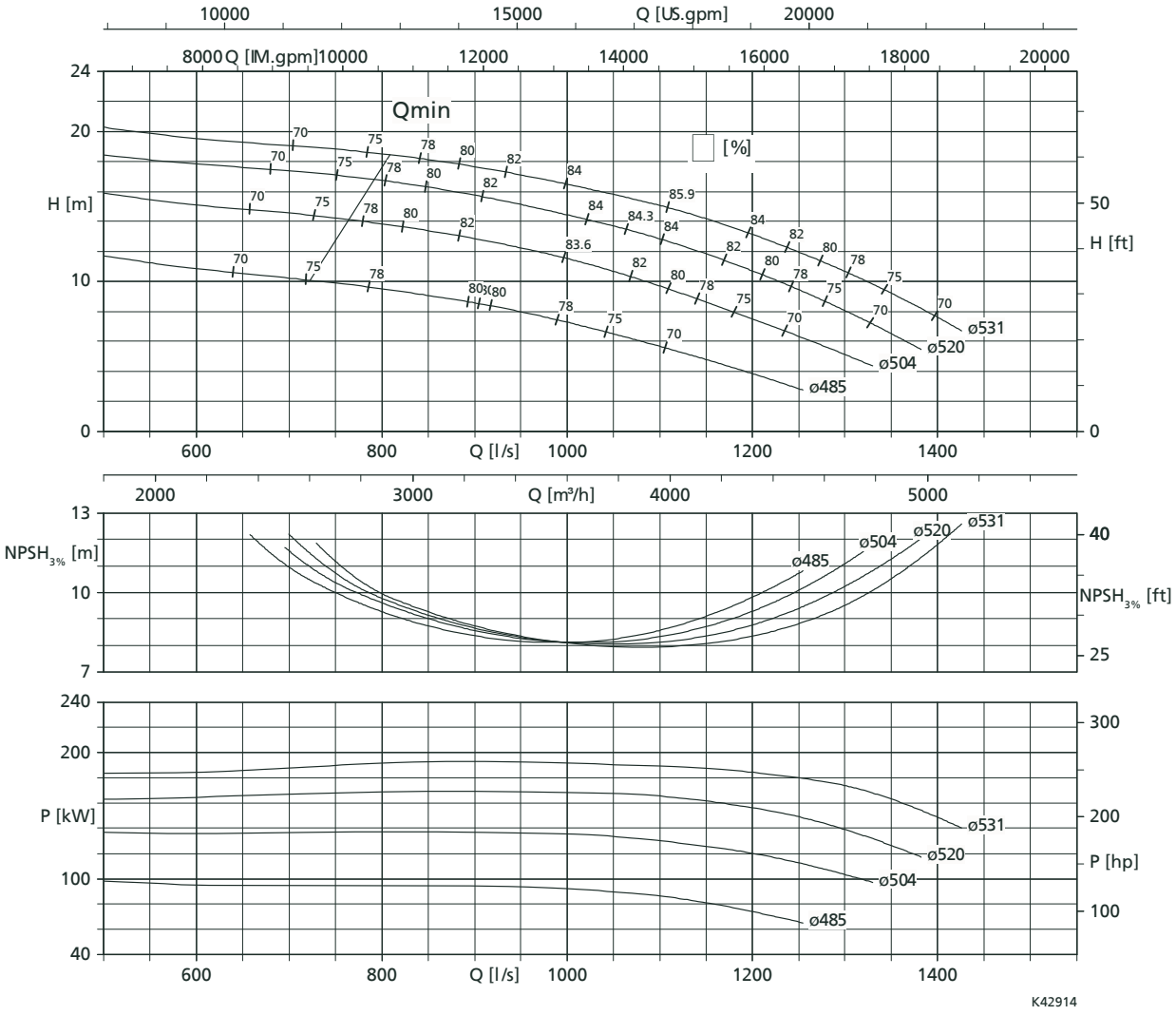
24) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

Amacan S 800-535 / 850-535, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 72 mm in diameter

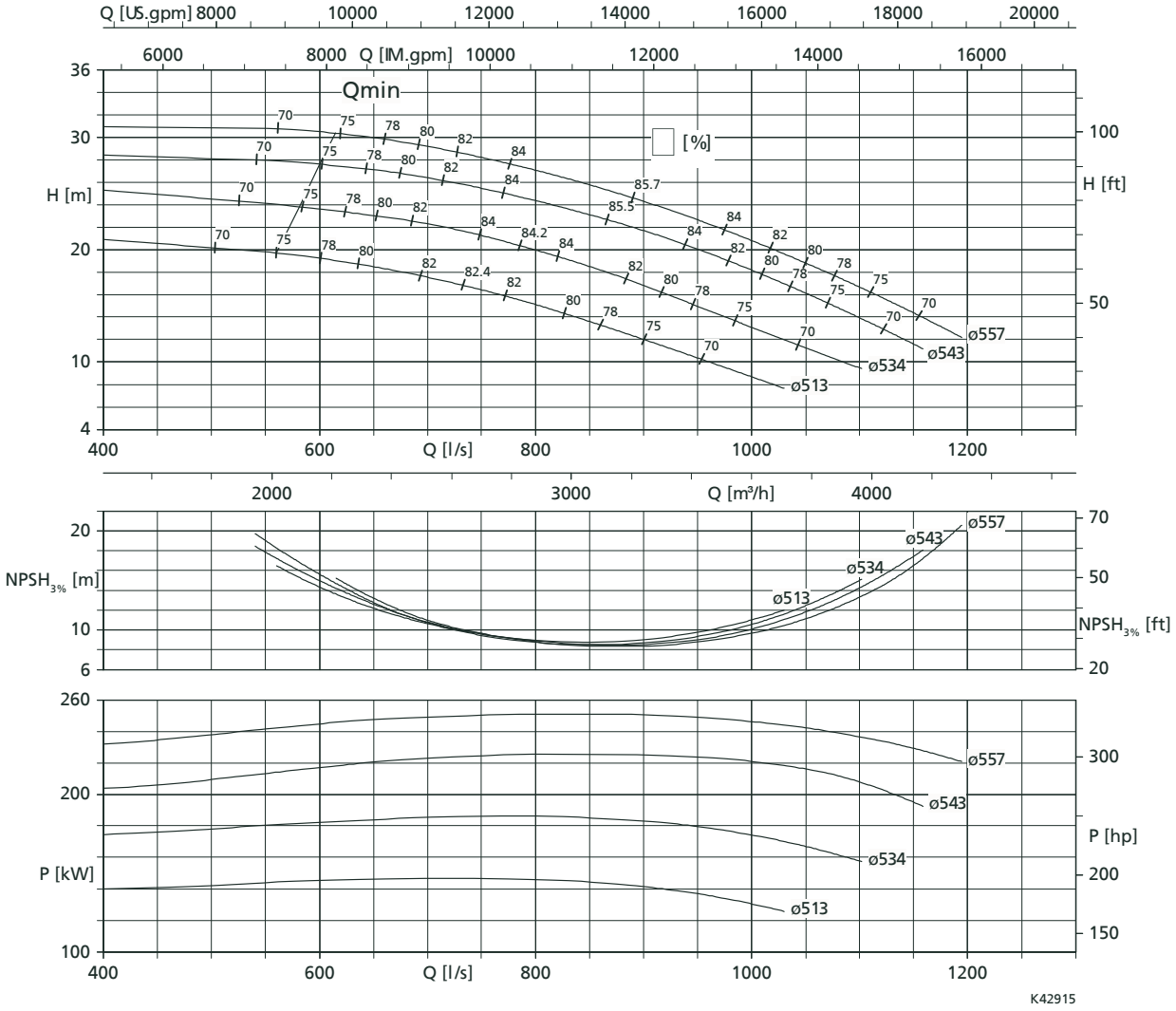
Rated power P_2 and mass moment of inertia J[25)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
800-535 / 120 6 UTG	115	2,3
800-535 / 155 6 UTG	155	3,3
800-535 / 180 6 UTG	180	3,6
800-535 / 205 6 UTG	205	3,9
850-535 / 250 6 UTG	250	8,6

25) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

Amacan S 850-550, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 72 mm in diameter

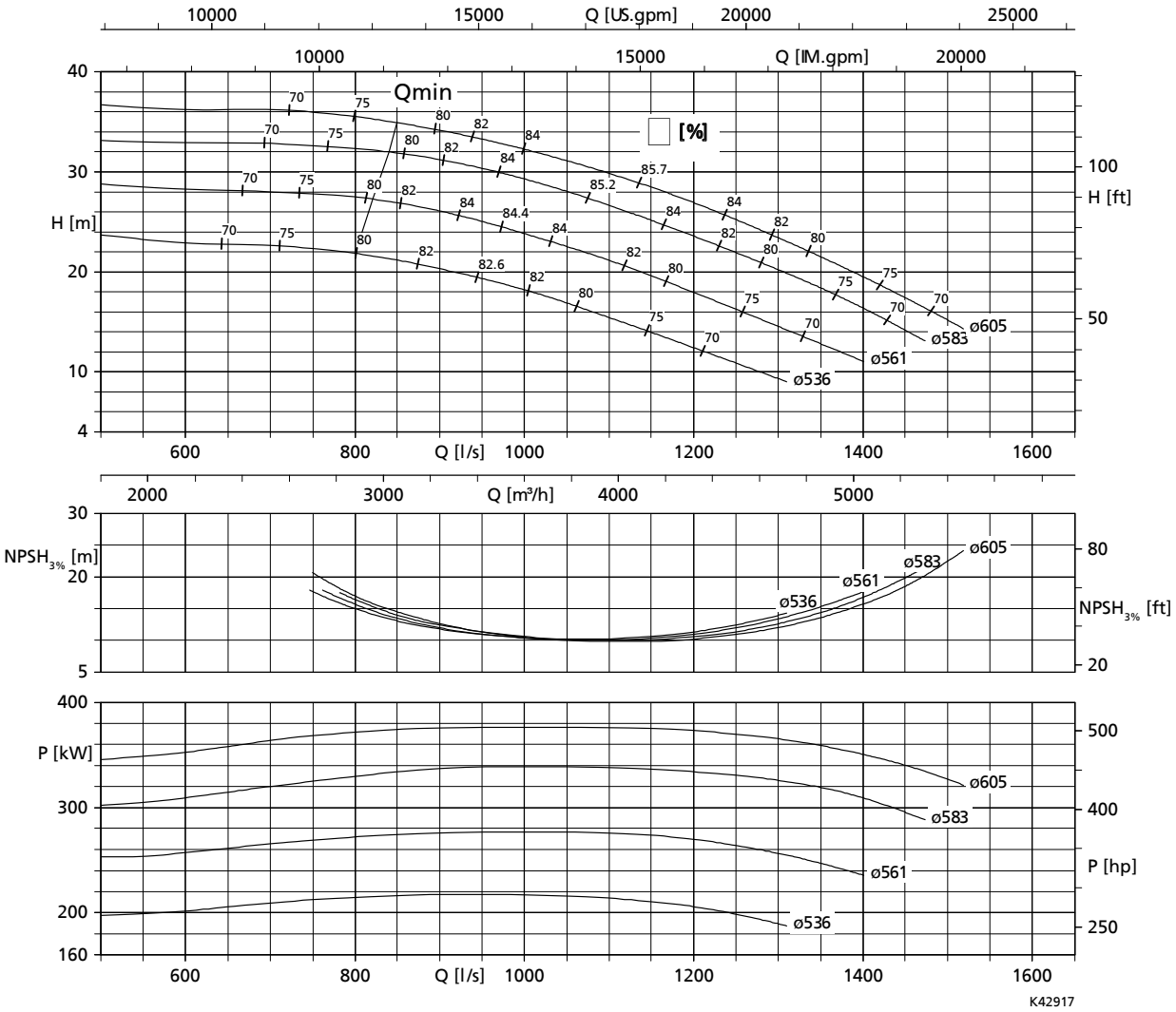
Rated power P_2 and mass moment of inertia J[26)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
850-550 / 155 6 UTG	155	4,7
850-550 / 180 6 UTG	180	5,0
850-550 / 205 6 UTG	205	5,3
850-550 / 250 6 UTG	250	9,9
850-550 / 290 6 UTG	290	11,2

26) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

Amacan S 900-600 / 1000-600, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 72 mm in diameter

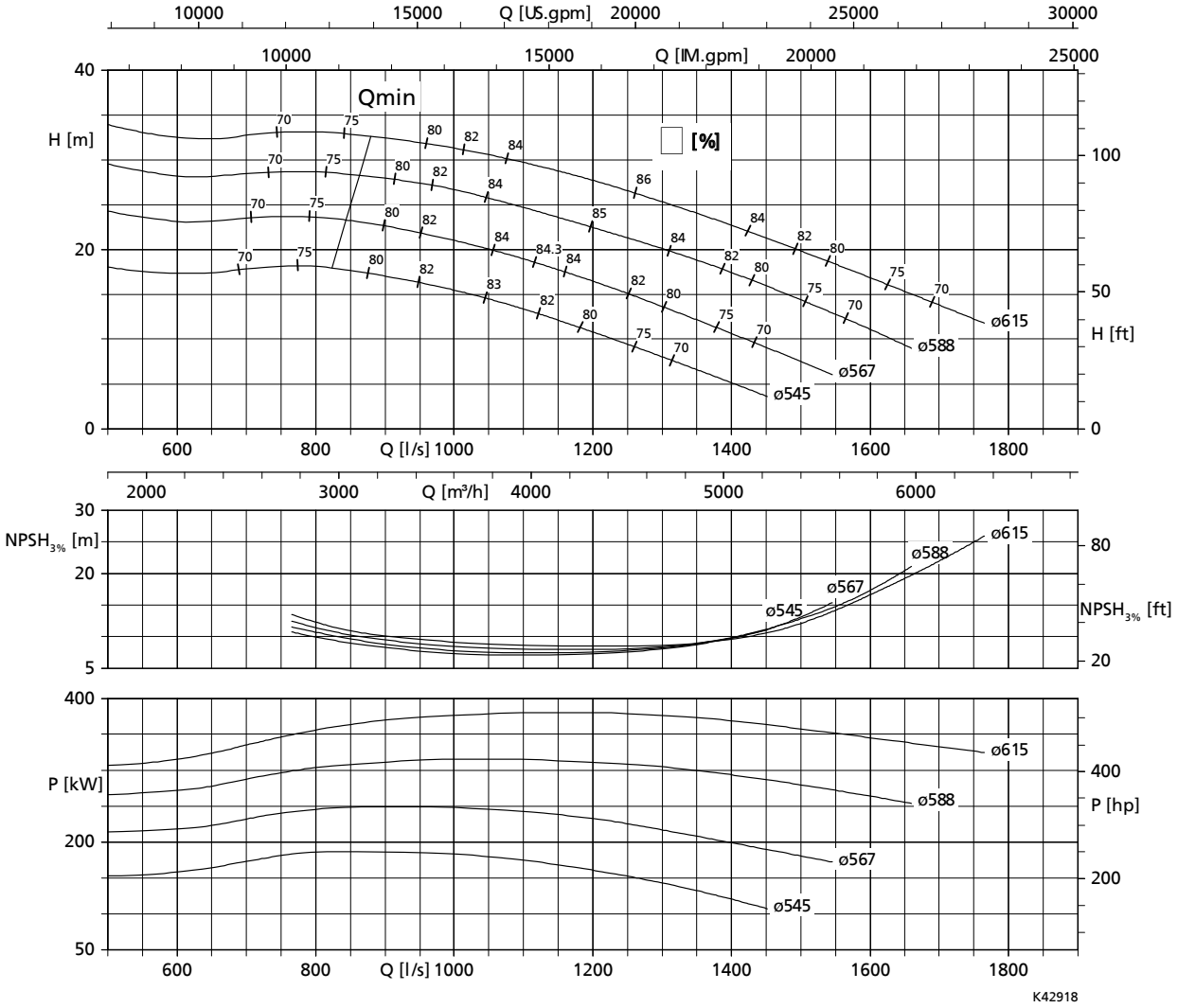
Rated power P_2 and mass moment of inertia J[27)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
900-600 / 250 6 UTG	250	10,8
900-600 / 290 6 UTG	290	12,1
900-600 / 340 6 UTG	340	13,4
1000-600 / 415 6 UTG	415	17,9

27) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

Amacan S 900-615 / 1000-615, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 67 mm in diameter

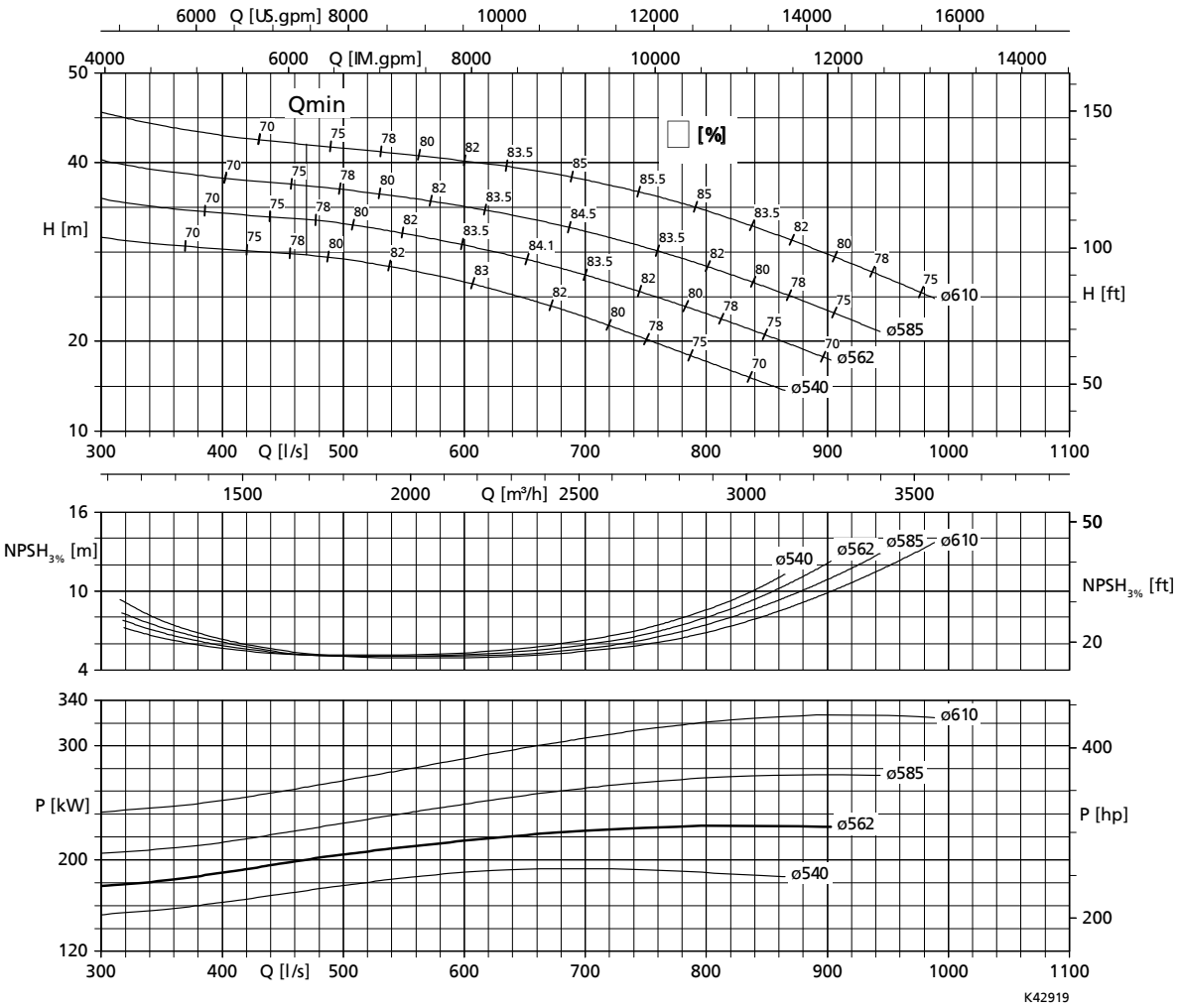
Rated power P_2 and mass moment of inertia J[28)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
900-615 / 250 6 UTG	250	11,1
900-615 / 290 6 UTG	290	12,4
900-615 / 340 6 UTG	340	13,7
1000-615 / 415 6 UTG	415	18,2

28) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

Amacan S 900-620 / 1000-620, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 58 mm in diameter

Rated power P_2 and mass moment of inertia J[29)]

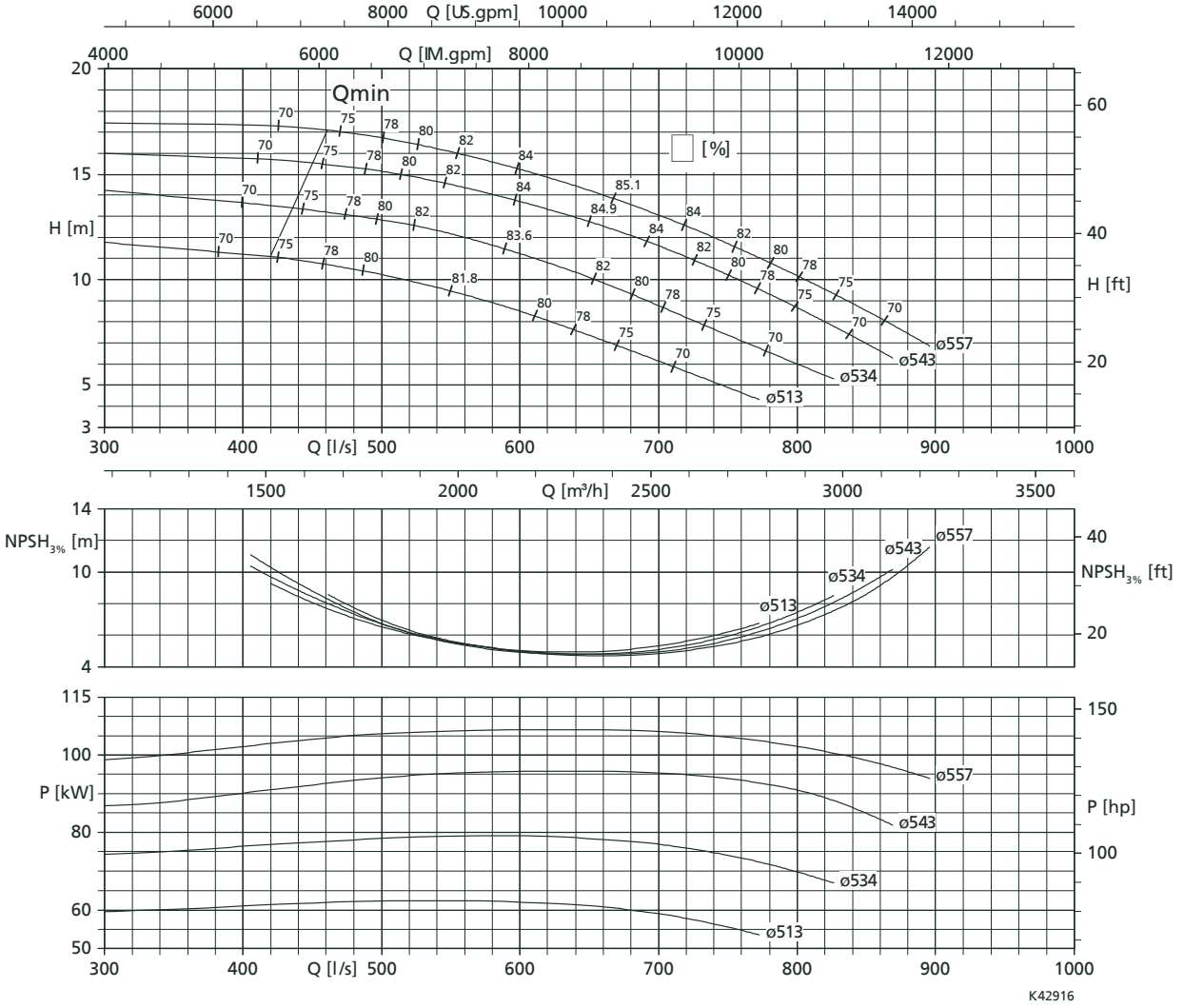
Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
900-620 / 250 6 UTG	250	12,8
900-620 / 290 6 UTG	290	14,1
900-620 / 340 6 UTG	340	15,4
1000-620 / 415 6 UTG	415	19,9

29) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

n = 725 rpm

Amacan S 850-550, n = 725 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 72 mm in diameter

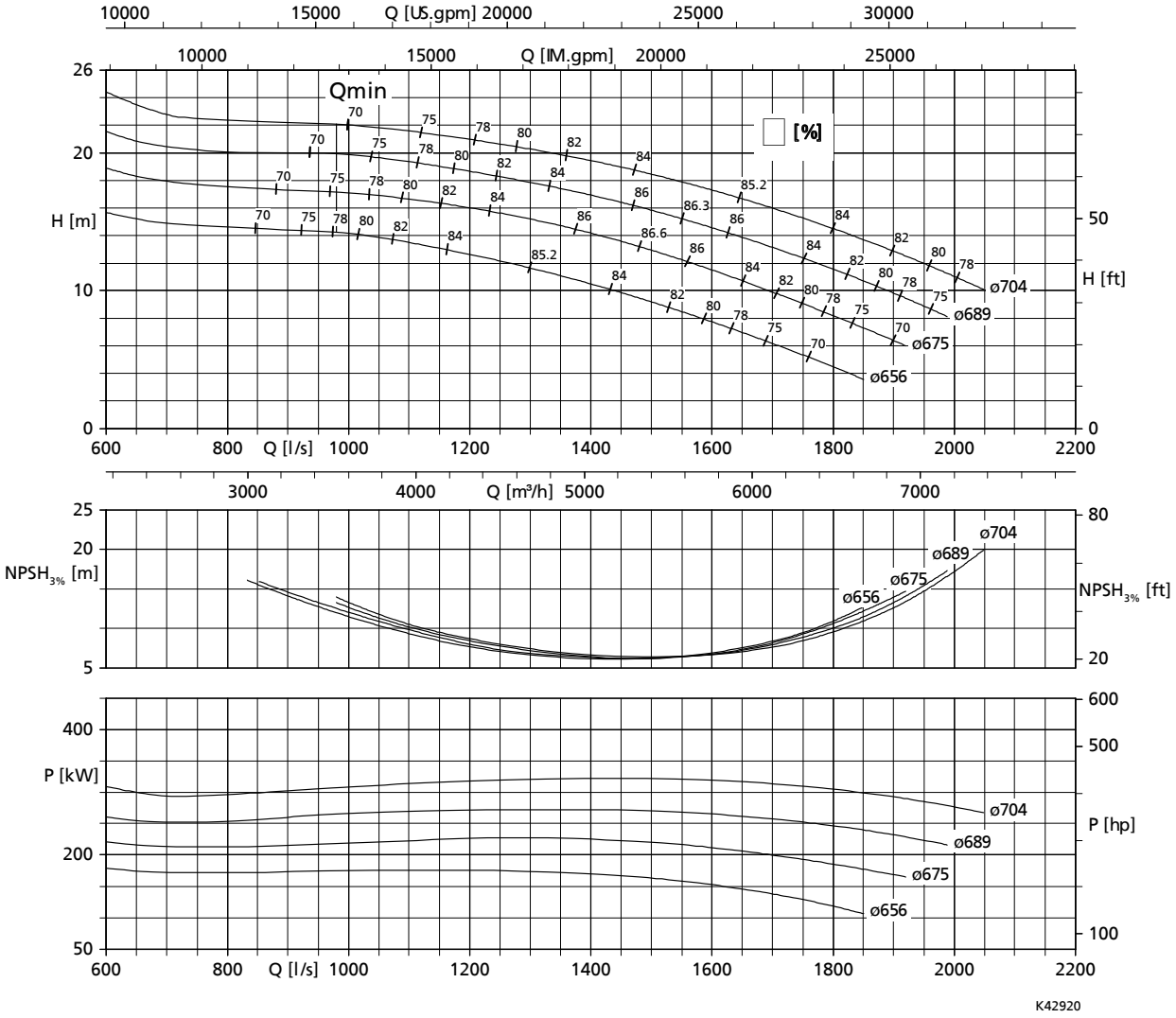
Rated power P_2 and mass moment of inertia J[30)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
850-550 / 85 8 UTG	85	3,7
850-550 / 120 8 UTG	120	4,7

30) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

Amacan S 1000-655, n = 725 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 103 mm in diameter

Rated power P_2 and mass moment of inertia J[31)]

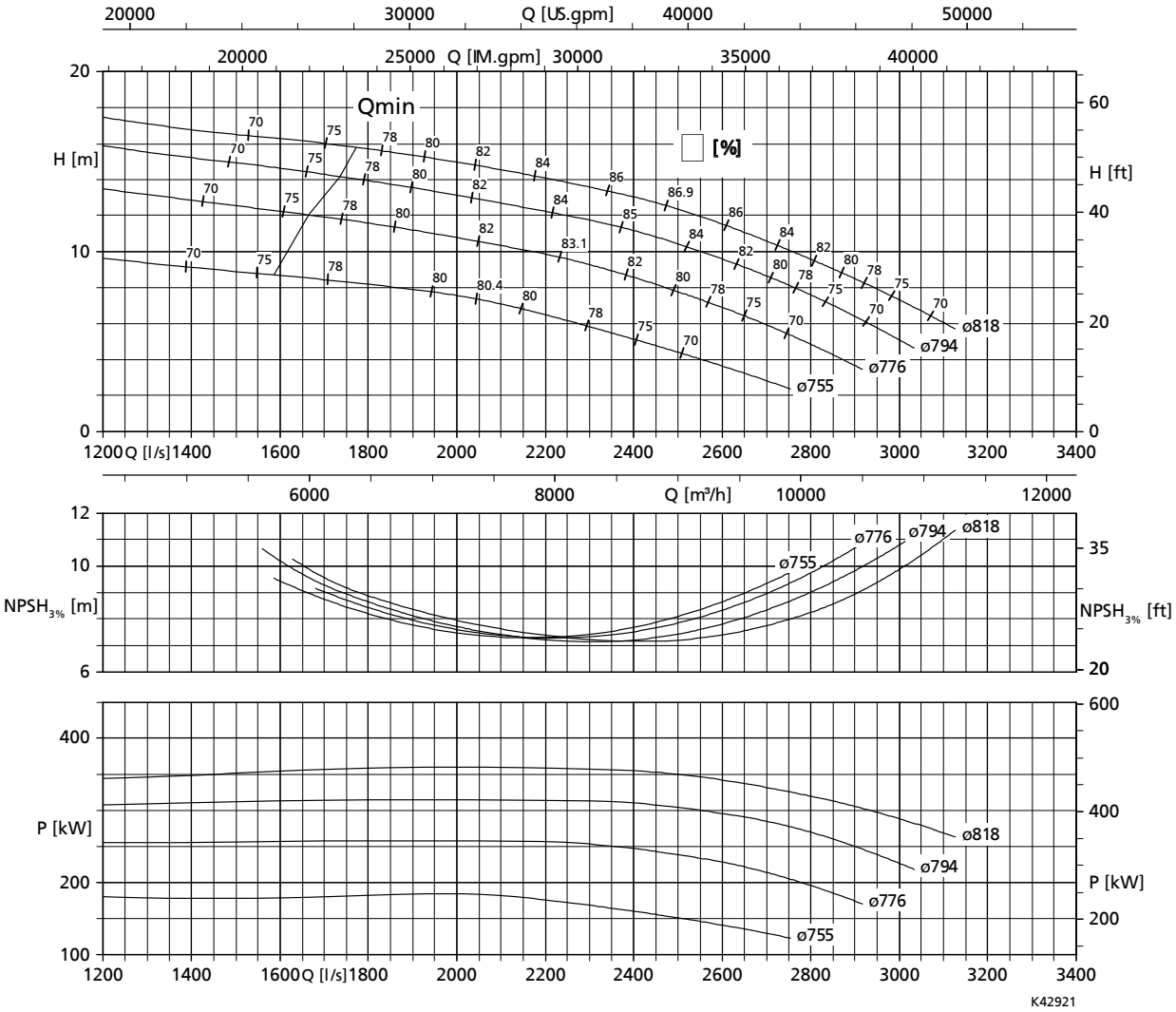
Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
1000-655 / 205 8 UTG	205	13,3
1000-655 / 250 8 UTG	250	14,6
1000-655 / 290 8 UTG	290	15,8
1000-655 / 350 8 UTG	350	20,4

31) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

n = 580 rpm

Amacan S 1300-820, n = 580 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. The characteristic curves correspond to the effective motor speed.



Free passage 116 mm in diameter

Rated power P_2 and mass moment of inertia J[32)]

Size	Rated power P_2	Mass moment of inertia J
	[kW]	[kgm²]
1300-820 / 200 10 UTG	200	22,5
1300-820 / 250 10 UTG	250	24,7
1300-820 / 310 10 UTG	310	30,6
1300-820 / 365 10 UTG	365	33,3
1300-820 / 420 10 UTG	420	36,0

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32) These values are valid for a density = 1 kg/dm³ and a kinematic viscosity of up to 20 mm²/s.

Dimensions

UAG motors (650-364 to 800-505)

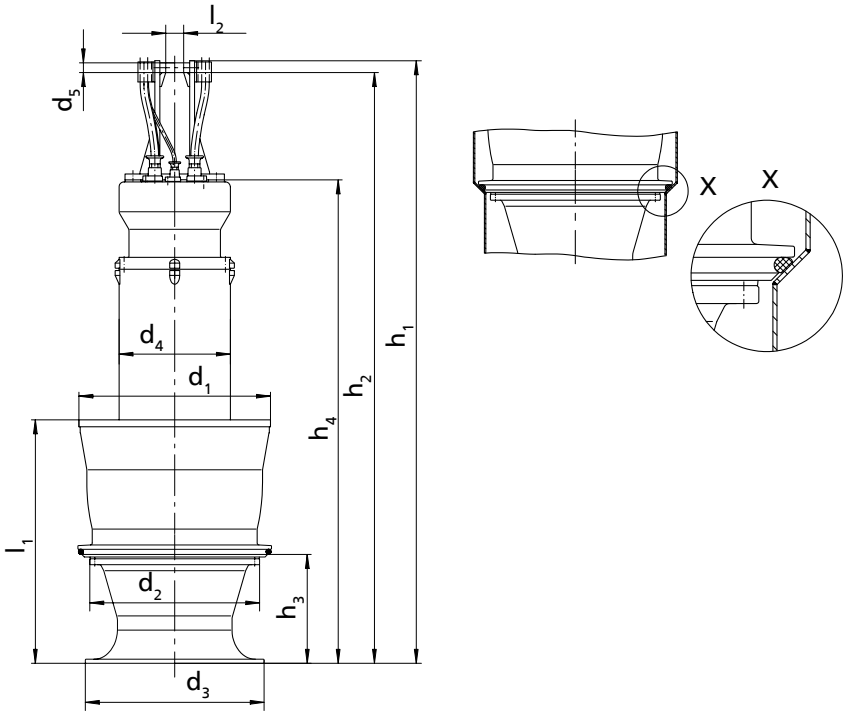

Fig. 1: Dimensions of the pump set

Dimensions of the pump set [mm]

Size	Motor size	Number of poles	h_1	h_2	h_3	h_4	d_1	d_2	d_3	d_4	d_5	l_1	l_2	[kg][33]
650 - 364	45	4	2090	2042	260	1605	625	500	510	390	35	651	70	970
650 - 364	65	4	2090	2042	260	1605	625	500	510	390	35	651	70	970
650 - 364	80	4	2290	2242	260	1805	625	500	510	390	35	651	70	1080
650 - 365	65	4	2090	2042	260	1605	625	500	510	390	35	651	70	960
650 - 365	80	4	2290	2242	260	1805	625	500	510	390	35	651	70	1070
650 - 365	100	4	2290	2242	260	1805	625	500	510	390	35	651	70	1100
650 - 365	120	4	2290	2242	260	1805	625	500	510	390	35	651	70	1150
650 - 404	80	4	2305	2258	290	1820	620	–	500	390	35	665	70	1080
650 - 404	100	4	2305	2258	290	1820	620	–	500	390	35	665	70	1120
650 - 404	120	4	2305	2258	290	1820	620	–	500	390	35	665	70	1170
650 - 404	140	4	2505	2458	290	2020	620	–	500	390	35	665	70	1300
650 - 405	120	4	2305	2258	290	1820	620	–	500	390	35	665	70	1160
650 - 405	140	4	2505	2458	290	2020	620	–	500	390	35	665	70	1290
650 - 405	160	4	2585	2528	290	2100	620	–	500	480	45	665	90	1550
650 - 405	180	4	2585	2528	290	2100	620	–	500	480	45	665	90	1610
650 - 405	200	4	2665	2608	290	2180	620	–	500	480	45	665	90	1690
650 - 405	220	4	2665	2608	290	2180	620	–	500	480	45	665	90	1730
800 - 505	100	6	2375	2328	370	1890	775	665	645	390	35	795	70	1340
800 - 505	120	6	2375	2328	370	1890	775	665	645	390	35	795	70	1380
800 - 505	140	6	2575	2528	370	2090	775	665	645	390	35	795	70	1480
800 - 505	150	6	2520	2463	370	2035	775	665	645	480	45	795	90	1790
800 - 505	175	6	2600	2543	370	2115	775	665	645	480	45	795	90	1890

33) Pump set complete with 10 m power cable and 5 m support rope

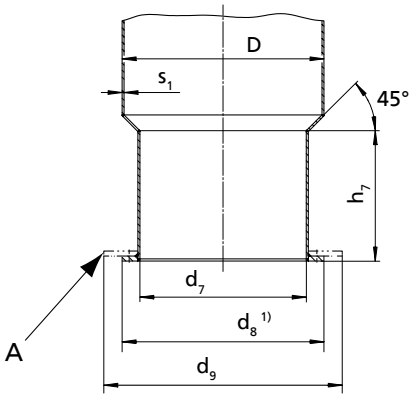

Fig. 2: Dimensions of the discharge tube

A	Suction umbrella; option for reducing the minimum water level
1)	This dimension depends on the type of installation, see booklet of general arrangement drawings

Dimensions of the discharge tube [mm]

Size	Motor size	Number of poles	D	d_7	d_9	h_7	s_1
650 - 364	45	4	660	530	900	225	7,1
650 - 364	65	4	660	530	900	225	7,1
650 - 364	80	4	660	530	900	225	7,1
650 - 365	65	4	660	530	900	225	7,1
650 - 365	80	4	660	530	900	225	7,1
650 - 365	100	4	660	530	900	225	7,1
650 - 365	120	4	660	530	900	225	7,1
650 - 404	80	4	660	530	900	265	7,1
650 - 404	100	4	660	530	900	265	7,1
650 - 404	120	4	660	530	900	265	7,1
650 - 404	140	4	660	530	900	265	7,1
650 - 405	120	4	660	530	900	265	7,1
650 - 405	140	4	660	530	900	265	7,1
650 - 405	160	4	660	530	900	265	7,1
650 - 405	180	4	660	530	900	265	7,1
650 - 405	200	4	660	530	900	265	7,1
650 - 405	220	4	660	530	900	265	7,1
800 - 505	100	6	813	680	1050	335	8
800 - 505	120	6	813	680	1050	335	8
800 - 505	140	6	813	680	1050	335	8
800 - 505	150	6	813	680	1050	335	8
800 - 505	175	6	813	680	1050	335	8

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UTG motors (800-535 to 1300-820)

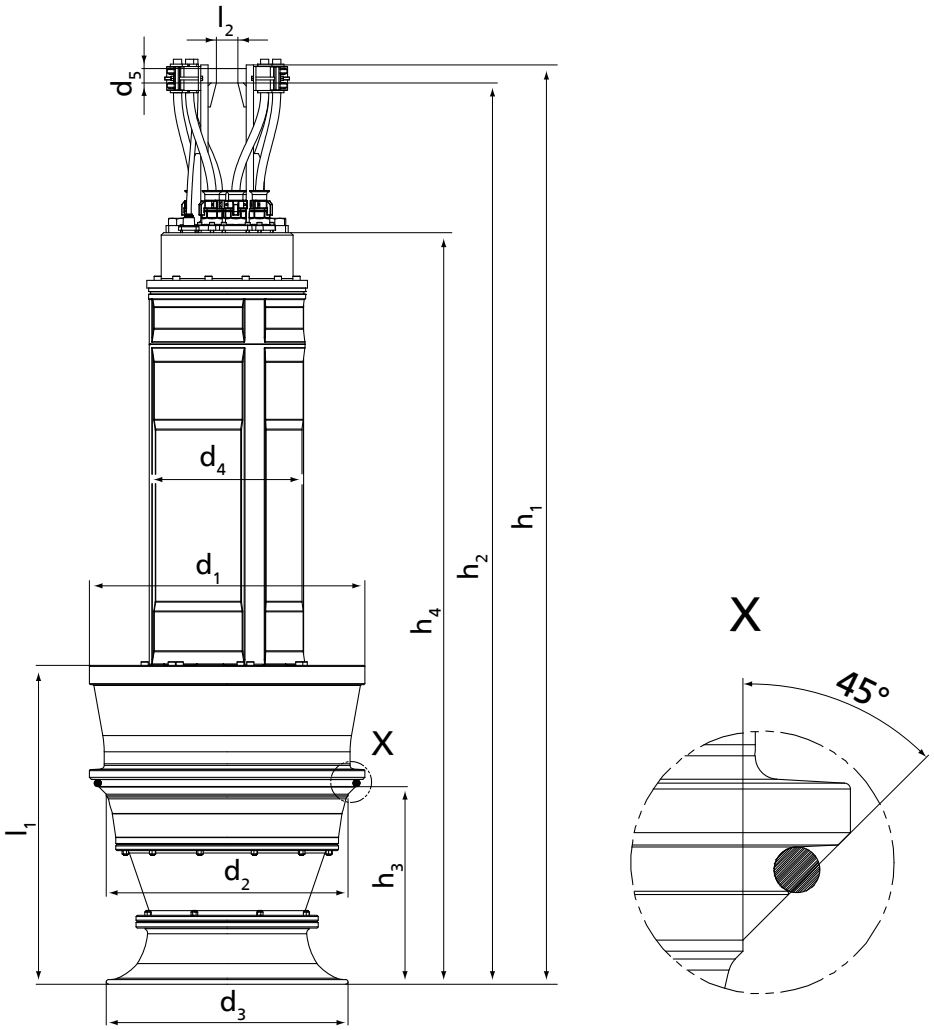

Fig. 3: Dimensions of the pump set

Dimensions of the pump set [mm]

Size	Motor size	Number of poles	h_1	h_2	h_3	h_4	d_1	d_2	d_3	d_4	d_5	l_1	l_2	[kg][34)]
800 - 535	120	6	2720	2680	350	2030	775	670	700	385	40	885	80	1500
800 - 535	155	6	2740	2700	350	2050	775	670	700	475	40	885	80	1690
800 - 535	180	6	2740	2700	350	2050	775	670	700	475	40	885	80	1785
800 - 535	205	6	2740	2700	350	2050	775	670	700	475	40	885	80	1840
850 - 535	250	6	3150	3090	350	2550	775	670	700	555	50	885	90	2440
850 - 550	155	6	2780	2740	415	2090	826	720	700	475	40	865	80	1735
850 - 550	180	6	2780	2740	415	2090	826	720	700	475	40	865	80	1830
850 - 550	205	6	2780	2740	415	2090	826	720	700	475	40	865	80	1885
850 - 550	250	6	3190	3130	415	2590	826	720	700	555	50	865	90	2480
850 - 550	290	6	3190	3130	415	2590	826	720	700	555	50	865	90	2655
850 - 550	85	8	2780	2740	415	2090	826	720	700	475	40	865	80	1700
850 - 550	120	8	2780	2740	415	2090	826	720	700	475	40	865	80	1710
900 - 600	250	6	3145	3085	450	2545	875	780	750	555	50	895	90	2580
900 - 600	290	6	3145	3085	450	2545	875	780	750	555	50	895	90	2740
900 - 600	340	6	3145	3085	450	2545	875	780	750	555	50	895	90	2885
900 - 615	250	6	3120	3060	450	2520	870	760	730	555	50	815	90	2785
900 - 615	290	6	3120	3060	450	2520	870	760	730	555	50	815	90	2955
900 - 615	340	6	3120	3060	450	2520	870	760	730	555	50	815	90	3090
900 - 620	250	6	3105	3045	405	2505	875	755	645	555	50	970	90	2650

34) Pump set complete with 10 m power cable and 5 m support rope

Size	Motor size	Number of poles	h_1	h_2	h_3	h_4	d_1	d_2	d_3	d_4	d_5	l_1	l_2	[kg][34)]
900 - 620	290	6	3105	3045	405	2505	875	755	645	555	50	970	90	2825
900 - 620	340	6	3105	3045	405	2505	875	755	645	555	50	970	90	2955
1000 - 600	415	6	3595	3520	450	2895	875	780	750	650	60	895	90	3570
1000 - 615	415	6	3570	3495	450	2870	960	760	730	650	60	1190	90	3780
1000 - 620	415	6	3555	3480	405	2855	875	755	645	650	60	970	90	3650
1000 - 655	205	8	3235	3175	550	2635	975	855	900	555	50	1220	90	2775
1000 - 655	250	8	3235	3175	550	2635	975	855	900	555	50	1220	90	2905
1000 - 655	290	8	3235	3175	550	2635	975	855	900	555	50	1220	90	3070
1000 - 655	350	8	3685	3610	550	2985	975	855	900	650	60	1220	90	3770
1300 - 820	200	10	3280	3220	600	2680	1200	970	1050	555	50	1195	90	3720
1300 - 820	250	10	3280	3220	600	2680	1200	970	1050	555	50	1195	90	3970
1300 - 820	310	10	3580	3505	600	2880	1200	970	1050	650	60	1195	90	4590
1300 - 820	365	10	3805	3730	600	3105	1200	970	1050	650	60	1195	90	4990
1300 - 820	420	10	3805	3730	600	3105	1200	970	1050	650	60	1195	90	5140

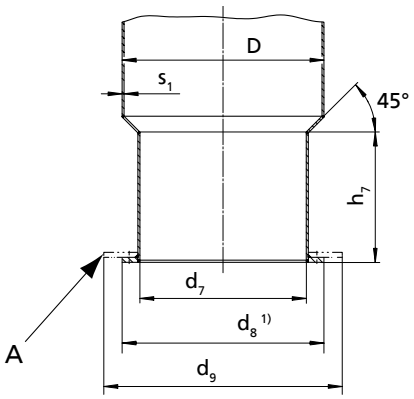

Fig. 4: Dimensions of the discharge tube

A	Suction umbrella; option for reducing the minimum water level
1)	This dimension depends on the type of installation, see booklet of general arrangement drawings

Dimensions of the discharge tube [mm]

Size	Motor size	Number of poles	D	d_7	d_9	h_7	s_1
800 - 535	120	6	813	720	1300	325	8
800 - 535	155	6	813	720	1300	325	8
800 - 535	180	6	813	720	1300	325	8
800 - 535	205	6	813	720	1300	325	8
850 - 535	250	6	868	720	1300	325	8
850 - 550	155	6	868	740	1300	375	8
850 - 550	180	6	868	740	1300	375	8
850 - 550	205	6	868	740	1300	375	8
850 - 550	250	6	868	740	1300	375	8
850 - 550	290	6	868	740	1300	375	8
850 - 550	85	8	868	740	1300	375	8
850 - 550	120	8	868	740	1300	375	8
900 - 600	250	6	914	800	1300	415	10
900 - 600	290	6	914	800	1300	415	10
900 - 600	340	6	914	800	1300	415	10
900 - 615	250	6	914	780	1300	420	10
900 - 615	290	6	914	780	1300	420	10
900 - 615	340	6	914	780	1300	420	10
900 - 620	250	6	914	770	1300	365	10
900 - 620	290	6	914	770	1300	365	10
900 - 620	340	6	914	770	1300	365	10
1000 - 600	415	6	1016	800	1300	415	10

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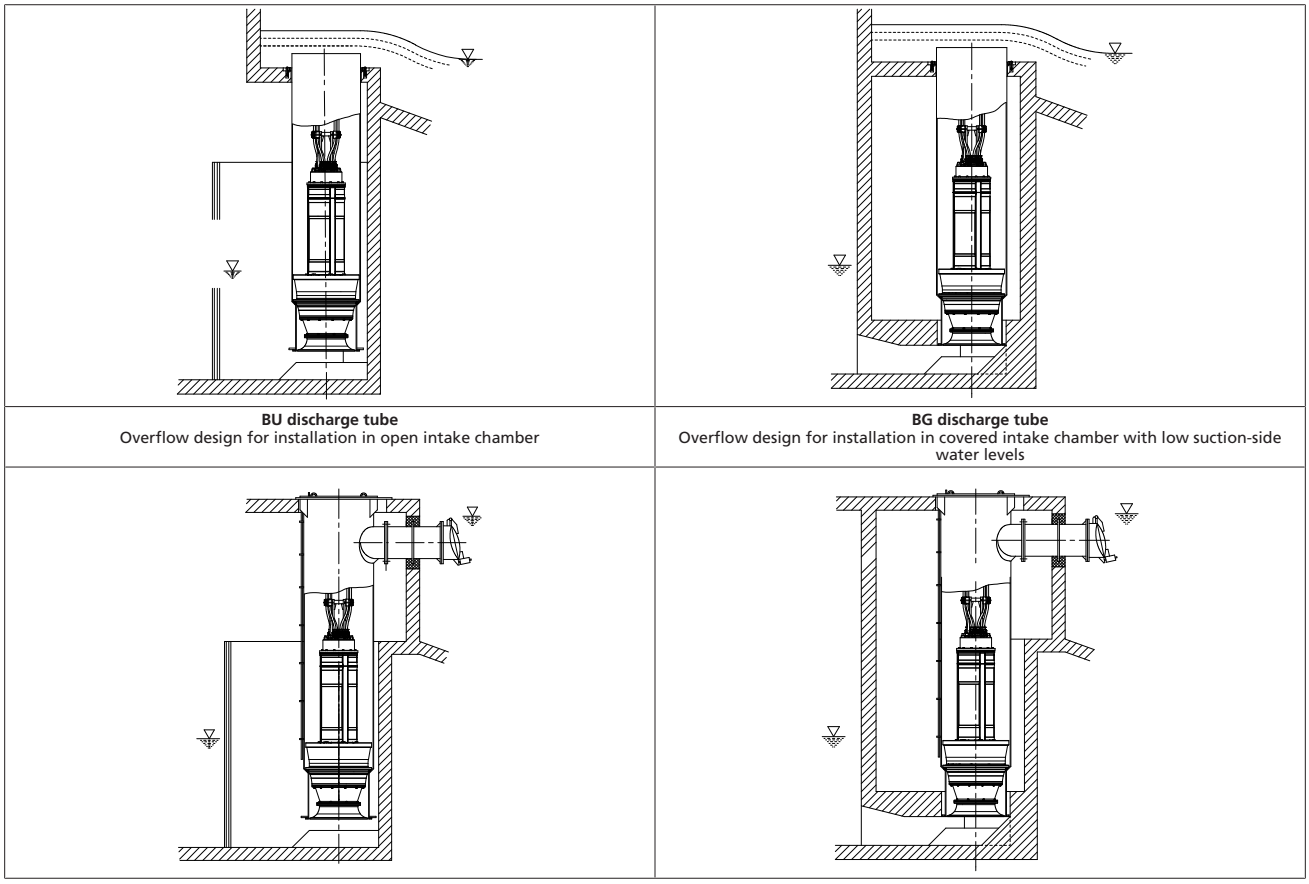
Size	Motor size	Number of poles	D	d_7	d_9	h_7	s_1
1000 - 615	415	6	1016	780	1300	420	10
1000 - 620	415	6	1016	770	1300	365	10
1000 - 655	205	8	1016	920	1500	515	10
1000 - 655	250	8	1016	920	1500	515	10
1000 - 655	290	8	1016	920	1500	515	10
1000 - 655	350	8	1016	920	1500	515	10
1300 - 820	200	10	1320	1080	1800	545	12
1300 - 820	250	10	1320	1080	1800	545	12
1300 - 820	310	10	1320	1080	1800	545	12
1300 - 820	365	10	1320	1080	1800	545	12
1300 - 820	420	10	1320	1080	1800	545	12

Installation types

Six design variants[35] are available for the following installation types:

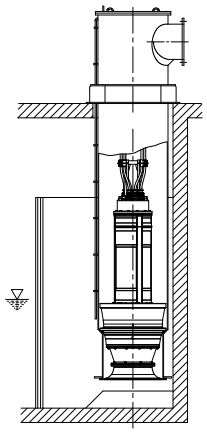
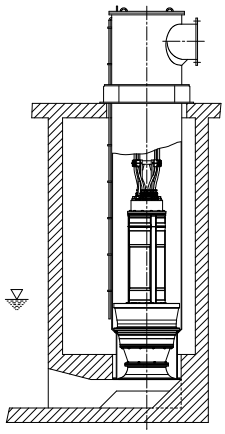
Installation types



BU discharge tube
Overflow design for installation in open intake chamber

BG discharge tube
Overflow design for installation in covered intake chamber with low suction-side water levels

35) For information on the various designs (foundation measurements, intake chamber, etc.) refer to the general arrangement drawings.

CU discharge tube Design with underfloor discharge for installation in open intake chamber	**CG discharge tube** Design with underfloor discharge for installation in covered intake chamber with low suction-side water levels
	
DU discharge tube Design with above floor discharge nozzle for installation in open intake chamber	**DG discharge tube** Design with above floor discharge nozzle for installation in covered intake chamber with low suction-side water levels

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Scope of supply

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

- Pump set complete with 10 m power cable
- O-ring
- Back-up name plate

Accessories (optional):

- Support rope
- Accessories for cable support
  - Spacer
  - Turnbuckle
  - Support spacer
  - Shackle
  - Cable clamps
- Cable support sleeves
- Flow-straightening vane to prevent floor vortices
- Discharge tube in various designs (steel or GFRP)

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Accessories

Flow-straightening vane and intake chamber

Design of the intake chamber wall surfaces (to prevent vortex formation)

The flow-straightening vane is indispensable for the inlet conditions of the pump set. It prevents the development of a submerged vortex (floor vortex) which could cause a drop in performance, for example. In addition, the floor and wall surfaces of the intake chamber should be designed as a rough concrete surface. Rough surfaces minimise the separation of boundary layers that may cause wall and floor vortices.

Flow-straightening vane and intake chamber

- The anti-swirl baffles in the bellmouth must be aligned with the flow-straightening vane.
- The bail of the pump is oriented in the same direction as the anti-swirl baffles in the bellmouth.

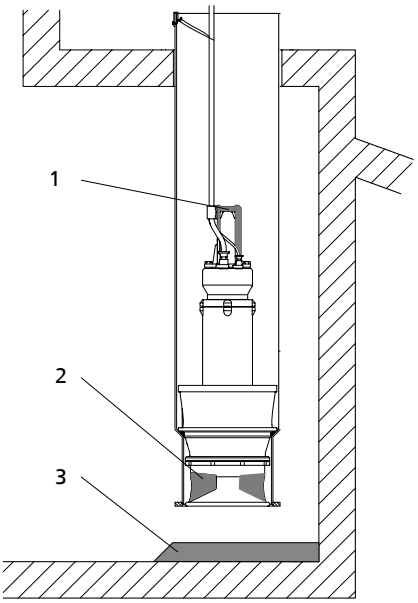
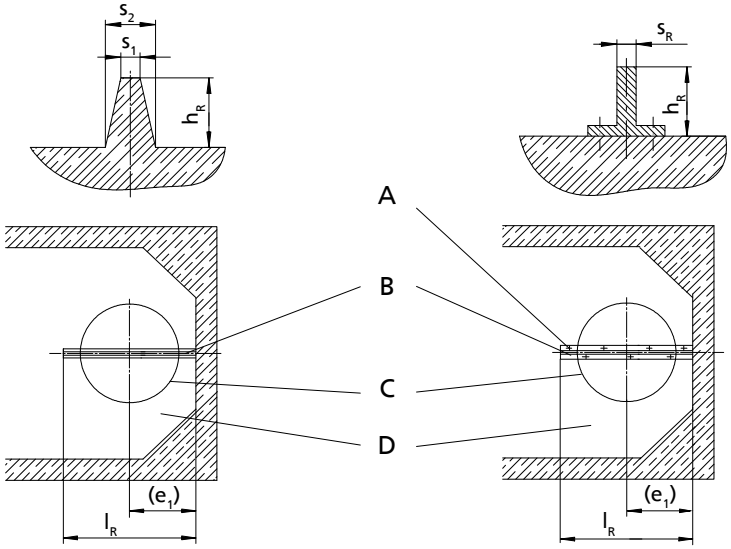


Fig. 5: Installation position of the pump set

1	Bail
2	Anti-swirl baffles
3	Flow-straightening vane

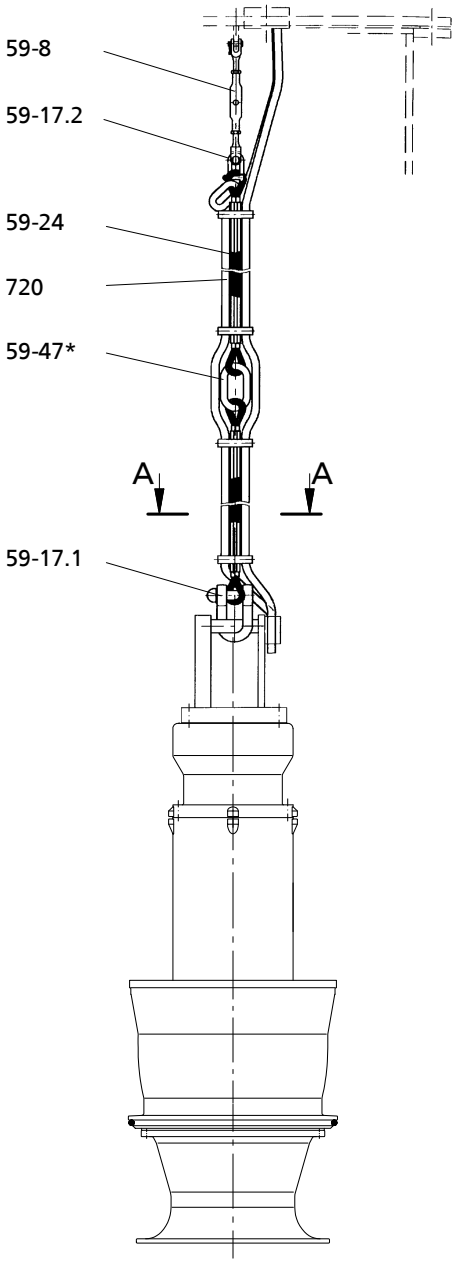
Variant 1
Flow-straightening vane cast from concrete

Variant 2
Steel section

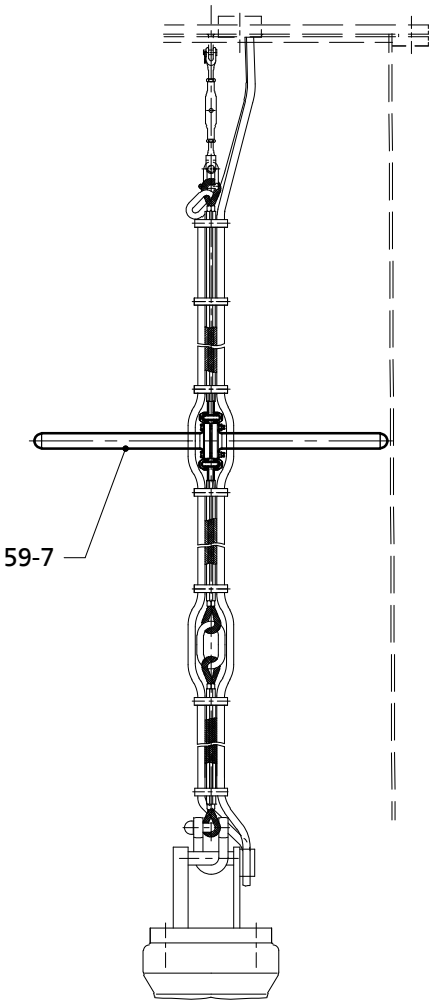


A	Bolted to the floor of the intake chamber
B	Flow-straightening vane centred beneath the discharge tube
C	Discharge tube
D	Intake chamber

Support rope and turnbuckle in the discharge tube



For large installation depths
(with support spacer)



*= The number of (intermediate) lifting rings depends on the lifting height of the hoisting tackle and on the building structure. (Intermediate lifting rings are supplied as an option).

List of components

Part No.	Description	Material
59-8	Turnbuckle	Stainless steel
59-17.2	Shackle	Stainless steel
59-47	(Intermediate) lifting ring(s)	Stainless steel
59-24	Rope, low rotation design	Stainless steel

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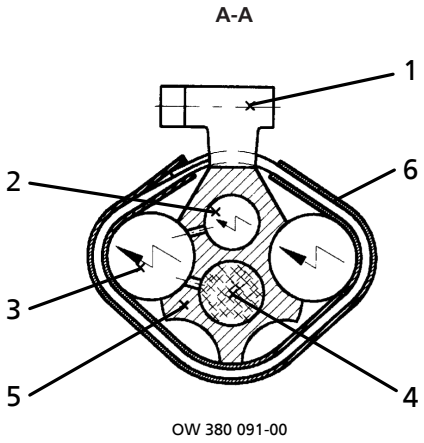
Part No.	Description	Material
720	Spacer	EPDM
59-17.1	Shackle	Galvanised steel (stainless steel optional)
59-7	Support spacer	GFRP

Cross-section of cable support

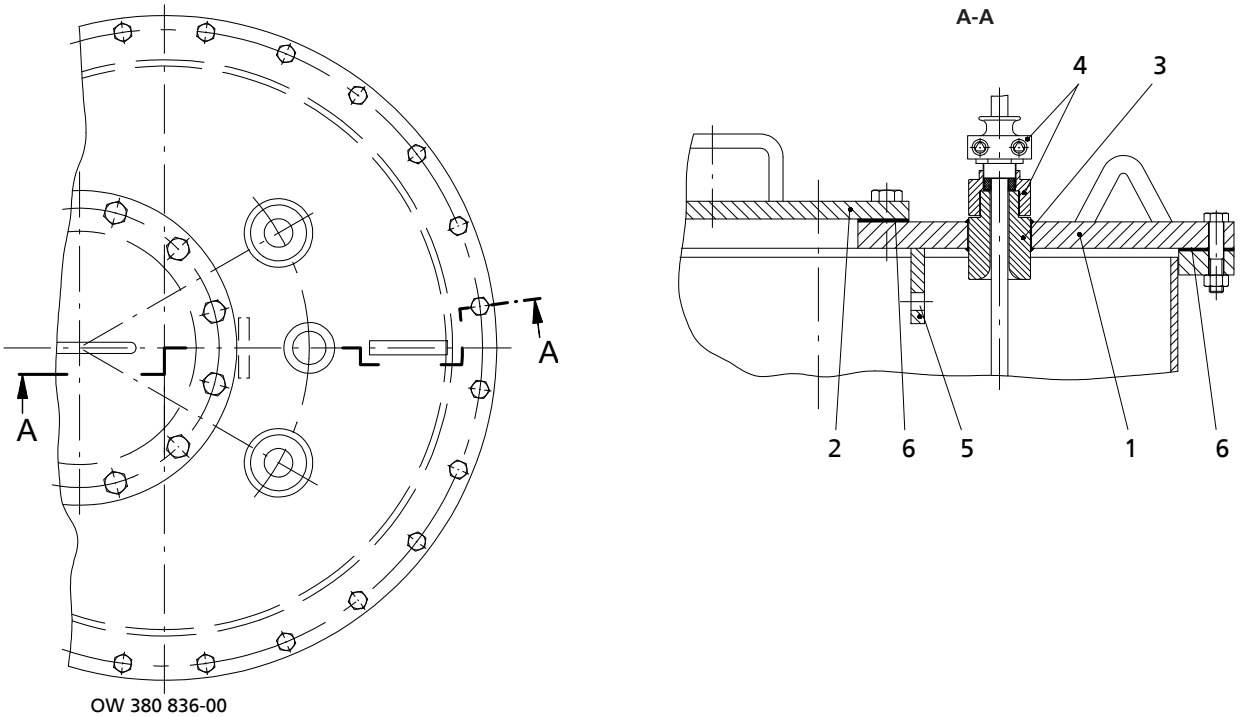


List of components

Part No.	Description	Part No.	Description
1	Cable clamp (approximately every 400 mm)	4	Support rope 59-24
2	Control cable	5	Spacer
3	Power cable	6	Clamp cover

Discharge tube cover with cable gland

Design variant with welding sleeve



List of components

Part No.	Description	Part No.	Description
1	Discharge tube cover	4	Threaded bush with cable entry to DIN 22419 with strain relief and protection against kinking and twisting
2	Cover	5	Eyeplate for fastening the cable support (support rope)
3	Welding sleeve	6	Gasket, e.g. fabric-reinforced rubber

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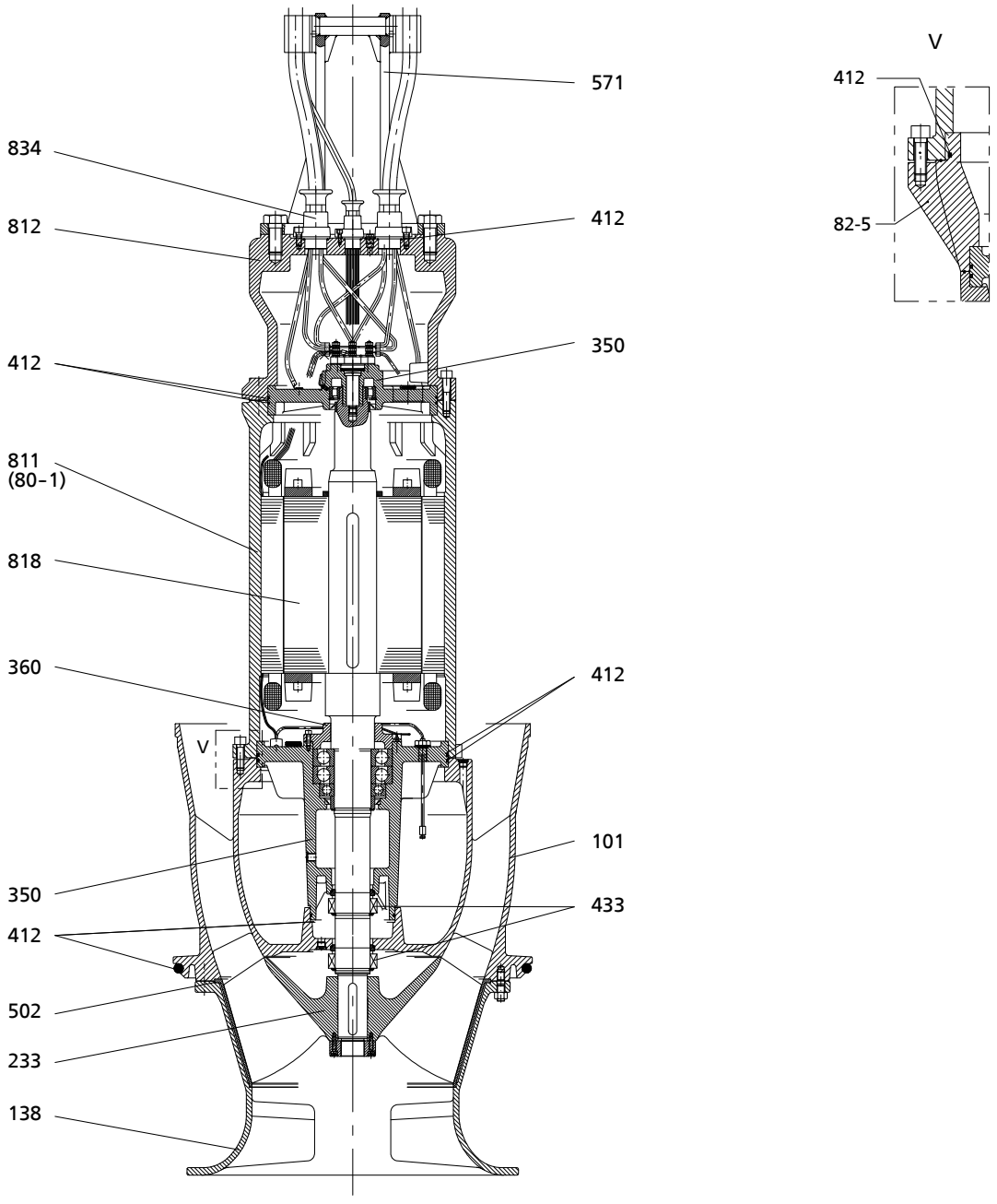
General assembly drawing

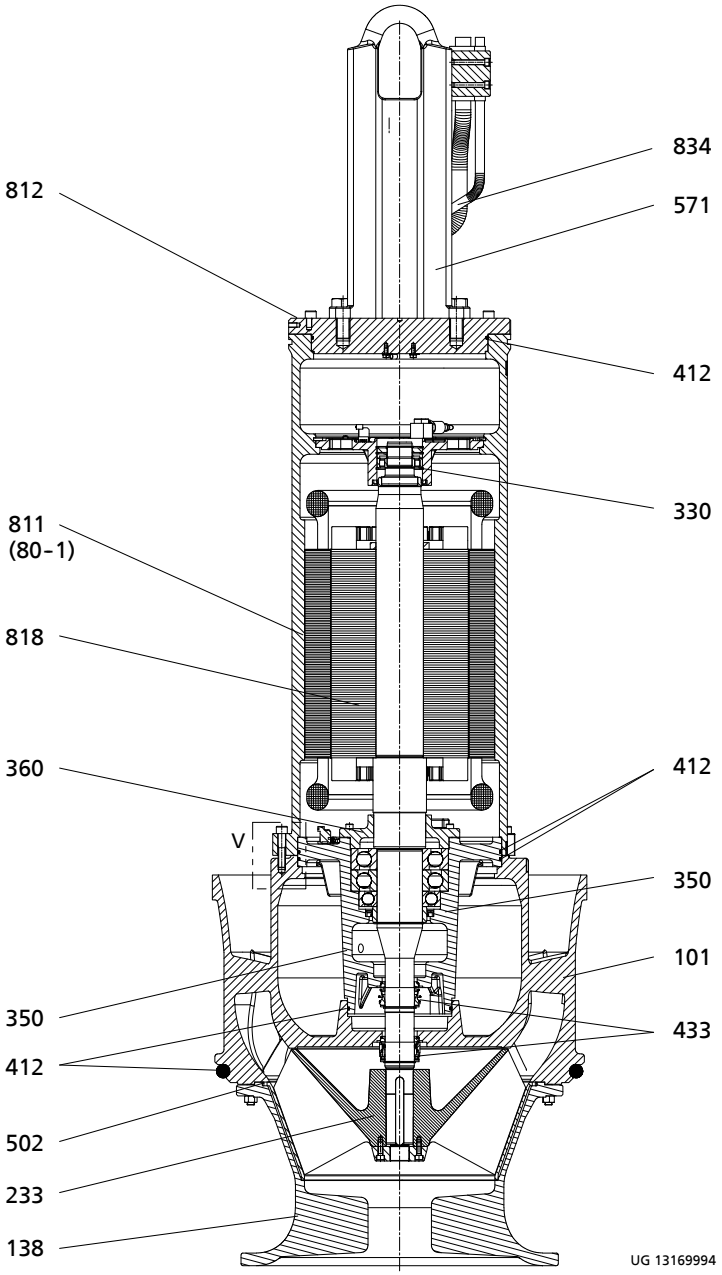
Amacan S 650-364 / 365
Amacan S 650-404 / 405
Amacan S 800-505
Motor version: UAG

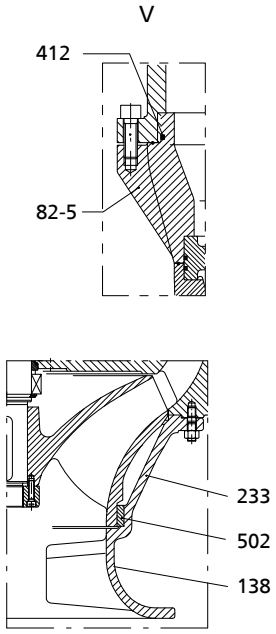


List of components

Part No.	Description	Part No.	Description
101	Pump casing	502	Casing wear ring
138	Bellmouth	571	Bail
233	Open counter-clockwise impeller	811	Motor housing
350	Bearing housing	812	Motor housing cover
360	Bearing cover	82-5	Adapter
412	O-ring	818	Shaft (rotor)
433	Mechanical seal	834	Cable gland

Amacan S 800-535
Amacan S 850-535 / 850-550
Amacan S 900-600 / 900-615 / 900-620
Amacan S 1000-600 / 1000-615 / 1000-620 / 1000-655
Amacan S 1300-820
Motor version: UTG





Design:
closed impeller

List of components

Part No.	Description	Part No.	Description
101	Pump casing	433	Mechanical seal
138	Bellmouth	502	Casing wear ring
233	Open counter-clockwise impeller	571	Bail
	Closed counter-clockwise impeller	811	Motor housing
330	Bearing bracket	812	Motor housing cover
350	Bearing housing	82-5	Adapter
360	Bearing cover	818	Shaft (rotor)
412	O-ring	834	Cable gland

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