Submersible Pump in Discharge Tube

AmaCan D

50 Hz

Type Series Booklet

Legal information/Copyright

Type Series Booklet AmaCan D

Contents

Water applications: Water Transport / Waste Water Transport, Flood Protection

Submersible pumps in discharge tubes

AmaCan D

Main applications

- Irrigation pumping stations
- Drainage pumping stations
- Stormwater pumping stations
- Raw water pumps and clean water pumps in waterworks and waste water treatment plants
- Cooling water pumps in power stations and industry
- Industrial water supply
- Water pollution control
- Flood control
- Aquaculture

Fluids handled

- Waste water
- Sludge
- Surface water
- Stormwater
- Grey water
- Seawater
- Brackish water

Operating data

Table 1: Operating properties

Characteristic		Value
Flow rate	Q [l/s]	≤ 2100
	Q [m³/h]	≤ 8000
Head	H [m]	≤ 29
Motor rating	P_2 [kW]	≤ 340
Fluid temperature	T [°C]	≤ +40

Designation

Example: AmaCan DB3 600-420/1304UTG1 IE3

Table 2: Designation key

Code	Description	
AmaCan	Type series	
D	Impeller type	
	D	Open mixed-flow multi-vane impeller
B	Impeller variants	
	A	
	B	
3	Number of vanes	
	2	
	3	
600	Nominal diameter of the discharge tube [mm]	
420	Nominal impeller diameter [mm]	
130	Motor size	
4	Number of motor poles	
UT	Motor version	
	UT	Not explosion-proof
	XT	Explosion protection ⟨Ex⟩ II2G Ex db h IIB T3 Gb
G1	Material variant	
	G1	Grey cast iron, standard material variant
	G2	Cast iron, casing wear ring made of stainless steel
	G3	Grey cast iron with Zn anodes, casing wear ring made of stainless steel, shaft made of stainless steel 1.4057

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Code	Description	
IE3	Motor efficiency classification[1]	
	-[2]	No efficiency classification
	IE3	Premium Efficiency

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
- Enclosure: IP68 to EN 60529/IEC529
- Type of protection Ex db IIB (applies to explosion-proof pump sets only)

Shaft seal

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

Impeller type

- Open, mixed-flow multi-vane impeller in ECB (ever clean blade) design[3]

Bearings

- Grease-lubricated rolling element bearings

Monitoring equipment

Various sensor packages are available for pump/pump set monitoring:

- **Basic**
  - Motor temperature monitoring (PTC thermistor)
  - Leakage sensor in the motor space
  - Mechanical seal leakage sensor (float switch)
  - Bearing temperature monitoring, pump end (Pt100)
- **Basic+**
  - Motor temperature monitoring (PTC thermistor)
  - Leakage sensor in the motor space
  - Mechanical seal leakage sensor (float switch)
  - Bearing temperature monitoring, drive end (Pt100)
  - Bearing temperature monitoring, pump end (Pt100)
- **Premium**
  - Motor temperature monitoring (PTC thermistor)
  - Leakage sensor in the motor space
  - Mechanical seal leakage sensor (float switch)
  - Bearing temperature monitoring, drive end (Pt100)
  - Bearing temperature monitoring, pump end (Pt100)
  - Vibration monitoring
  - Motor temperature measurement (Pt100)

The sensor information can optionally be evaluated via AmaControl using the live diagnosis function:

- Directly on site
- In additional external systems

1 The IEC 60034-30 standard is not binding for submersible motor pumps. Efficiencies are calculated / determined by analogy with the measurement method specified in IEC 60034-2. The marking is used for submersible motors that achieve efficiency levels similar to those of standard motors acc. to the IEC 60034-30 standard.

2 Blank

3 ECB (EverCleanBlade) = self-cleaning blade contour

Materials

Table 3: Overview of materials depending on material variant

Part No.	Description	Material variant		
		G1	G2	G3[4] (seawater variant)
112	Pump bowl	EN-GJL-250 / A48 Cl. 35B		
138	Bellmouth	EN-GJL-250 / A48 Cl. 35B		
230	Impeller	1.4593 / 1.4517 / A995 Gr. 1B		
350 / 330	Bearing housing / bearing bracket	EN-GJL-250 / A48 Cl. 35B		
360	Bearing cover	EN-GJL-250 / A48 Cl. 35B		
412	O-ring	NBR[5] (Viton FPM)[6]		
433	Mechanical seal (pump end)	SiC/SiC		
	Mechanical seal (drive end)	Carbon/SiC		
502	Casing wear ring with a groove for flushing	EN-GJL-250 / A48 Cl. 35B	1.4593 / 1.4517 / A995 Gr. 1B	
571	Bail	EN-GJS-400-15/S235JR		
811	Motor housing	EN-GJL-250 / A48 Cl. 35B		
812	Motor housing cover	EN-GJL-250 / A48 Cl. 35B		
818	Shaft (rotor)	1.4021/20Cr13		1.4057
82-5	Adapter	EN-GJL-250 / A48 Cl. 35B		
834	Cable gland	-		
	Cable gland housing	EN-GJL-250 / A48 Cl. 35B		
Var.	Bolts/screws	Stainless steel		
99-16	Anode	-	-	Zn
Other materials on request.				

Description of materials

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. 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.

Table 4: Material comparison

EN	ASTM
EN-GJL-250	A 48 Class 35 B
1.4517/1.4593	A 890/A 995 CD 4 MCuN
1.4021	A 276 Type 420
1.4057	A 276 Type 431
NBR	NBR
FPM	FKM
EN-GJS-400-15	A 536: 60–40–18
S235JR	A 284 B

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 benefits

- The pump's own weight ensures self-centring seating in the discharge tube, and an O-ring seals it; quick to install or remove.
- Non-clogging low-maintenance design with large free passages reduces clogging risk and, consequently, maintenance work.
- The slim motor keeps discharge tube flow losses down.
- High-efficiency motors and variable hydraulic systems for optimum hydraulic efficiency and energy efficiency
- High reliability thanks to bearing temperature monitoring, vibration sensor, thermal motor protection, leakage sensors in the motor space and connection space as well as leakage monitoring of the mechanical seal system.
- Low-vibration hydraulic system; inlet ribs and optimised bellmouth for vortex-free inflow.

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4 Pump set with cathodic protection (anodes to be checked every 6 to 12 months) and top coat of 250 µm
5 Nitrile rubber (Perbunan)
6 FPM fluorocarbon rubber variant available as an option against a surcharge

- Absolutely water-tight resin-sealed cable entries prevent any water from entering the motor – even in the event of a damaged cable.
- Highest operating reliability by casing wear ring with groove for flushing
- IIoT[7)]-capable: Internal sensor module and AmaControl analysing device can be used.

Acceptance tests and warranty

Functional test

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

Acceptance inspections/tests

- Acceptance tests to DIN EN ISO and HI 9906 1B on request

Warranty

- 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.

- Adjust the power input to the density of the fluid handled:
  P_2 (required) = ρ [kg/dm³] (fluid handled) × P_2 (documented)
- Select the operating point with the largest power input within an operating range. Select a motor size providing a power reserve to compensate the tolerances in the system characteristic / pump characteristic.

Table 5: Recommended motor power reserve[8)]

P_2	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} ⇒ 0.5 m
    larger than Q_{opt} ⇒ 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 the suction-side water level and the 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.

Inlet losses, riser losses and elbow losses

Losses are caused by the inlet, riser and elbow (and/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. These losses must be taken into account for selection.
- Information on structural requirements, pump installation and pump sump design is given in the KSB know-how brochure "Planning information: Amacan submersible pumps in discharge tubes" (0118.55).

7 IIoT = Industrial Internet of Things

8 If larger power reserves are stipulated by local regulations, these larger reserves must be provided.

Overview of product features / 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 KSB. Make use of our laboratory's expertise when selecting materials.

Table 6: Selection aid for material variants and fluid temperature per fluid

Fluid handled[9]	Max. permissible fluid temperature [°C]	Material variant	Screen	Comments, further recommendations
Waste water				
▪ Industrial, corrosive, non-abrasive, slightly acidic; pH value ≥ 6	40	G2	✓	2-component high solid epoxy finish coat (RAL 5002) 250 µm required
▪ Industrial, corrosive, non-abrasive, with lacquer/paint/varnish suspensions	40	G2	-	Lacquer/paint/varnish suspension = free of solvents
▪ Industrial, corrosive, non-abrasive fluids containing faeces	40	G2	✓	-
▪ Industrial, corrosive, non-abrasive fluids not containing faeces	40	G2	✓	-
▪ Municipal, cleaned	40	G1	✓	-
Suspended solids, water/sand mixture	40	G2	-	Up to 200 mg/l
Sludge	40	G1	-	Up to 2 % dry solids content
Water, seawater and brackish water	25[10]	G3	-	Use of anodes[11] and 2-component high solid epoxy finish coat (RAL 5002) 250 µm required
Water, cooling water	40	G1	-	-
Water, surface water				
▪ River water	40	G1	✓	-
▪ No details specified	40	G1	✓	-
▪ Lake water, fresh water	40	G1	-	-
▪ Lake water, dam water	40	G1	-	-
Water, rainwater				
▪ With strainer	40	G1	-	-
▪ Without strainer	40	G1	✓	-
Water, raw water	40	G1	-	-
Water, contaminated water				
▪ Slightly contaminated water	40	G1	-	-
▪ Combined sewage, with strainer	40	G1	-	-
▪ Combined sewage, without strainer	40	G1	✓	-
▪ Combined sewage containing faeces	40	G1	✓	-
▪ Combined sewage not containing faeces	40	G1	✓	-
Water, clean water	40	G1	-	-

Table 7: Symbols key

Symbol	Description
✓	Required
-	Not required

Table 8: Space between screen bars

Size	Required space between screen bars [mm]
600-390	30
600-420	40
700-390	30
700-420	40

9 Fluids to be handled which are not listed in this table usually require higher-grade materials. Contact KSB.
10 For t > 25 °C contact KSB (stainless steel variant).
11 Efficiency reduced by 2 % to 3 %; anode to be checked every 6 to 12 months

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Size	Required space between screen bars [mm]
700-460	40
800-460	40
800-580	60

Size	Required space between screen bars [mm]
900-630	80
900-650	80
1000-650	80

Overview of product features

Table 9: Material variants (G1, G2, G3)

Feature	Motor version		
	UTG/XTG		
Motor size			
4 poles	70 4 … 130 4	150 4 … 215 4	275 4 ... 300 4
6 poles	47 6 … 120 6	155 6 … 205 6	250 6 … 340 6
8 poles	40 8 … 95 8	120 8 … 160 8	205 8 … 290 8
10 poles	–	–	–
12 poles	–	–	–
14-poles	–	–	–
Explosion protection			
Version U...	Not explosion-proof		
Version X...	Ⓔx II2G Ex db h IIB T3 Gb		
Motor			
Starting method	DOL or star-delta (690 V only DOL)		
Voltage	400 V[12)]		
Cooling	Cooled by surrounding fluid		
Immersion depth	30 m max.		
Power cable			
Type	"Overview of power cables", (⇨ Table 10)		
Length	10 m[13)]		
Cable entry	Absolutely water-tight		
Sealing elements			
Elastomer seals	Nitrile butadiene rubber NBR[14)]		
Shaft seal	Bellows-type mechanical seal[15)]		
Monitoring			
Sensor package	Basic/Basic+/Premium (⇨ Page 5)		
Coating	Environmentally friendly KSB standard coating, colour RAL 5002[16)]		
Installation	BU, BG, CU, CD, DU, DG (⇨ Page 41)		
Maximum fluid temperature			
Material variant G1	40 °C		
Material variant G2	40 °C		
Material variant G3	25 °C		
Tests/inspections			
Hydraulic system	KSB standard (ZN 56525)[17)]		
General	KSB standard (ZN 56525)[17)]		

Table 10: Overview of connection cables

Feature	Rubber-sheathed cable		
	S1BN8-F	S07RC4N8-F	S05BN8-F
Design	Standard	Optional	Optional
Rated voltage	1000 V	750 V	500 V
EMC screening	-	✓	✓

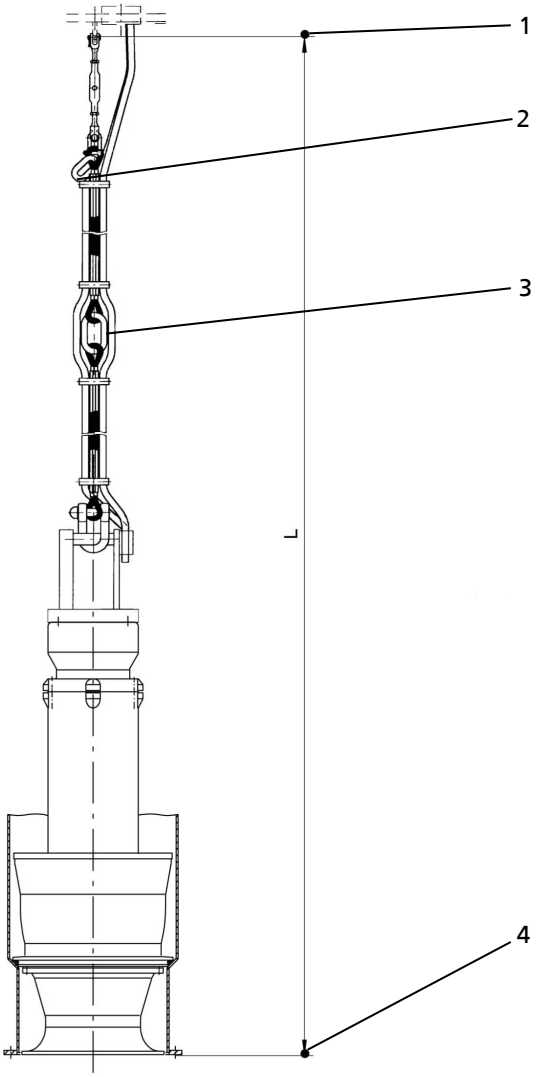
12 Optional: 380 V, 415 V, 500 V, 690 V
13 Optional: up to 40 m
14 Optional: Viton = fluorocarbon rubber FPM
15 Optional: mechanical seal with covered spring
16 Optional: 250 µm
17 Optionally to ISO 9906/1/2/A

Feature	Rubber-sheathed cable		
	S1BN8-F	S07RC4N8-F	S05BN8-F
Insulation material	EPR[18)]	EPR[18)]	Elastomer mixture
Maximum continuous temperature of insulation	90 °C	90 °C	90 °C
For permanent immersion in waste water to DIN VDE 0282-16/HD22.16	✓	✓	✓

Data to be indicated in the purchase order

- Pump designation
- Flow rate Q, head H_{total}
- Type of fluid handled and fluid temperature
- 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 design (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 lifting equipment) 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 44) as an option. The standard design is supplied without intermediate lifting ring(s).

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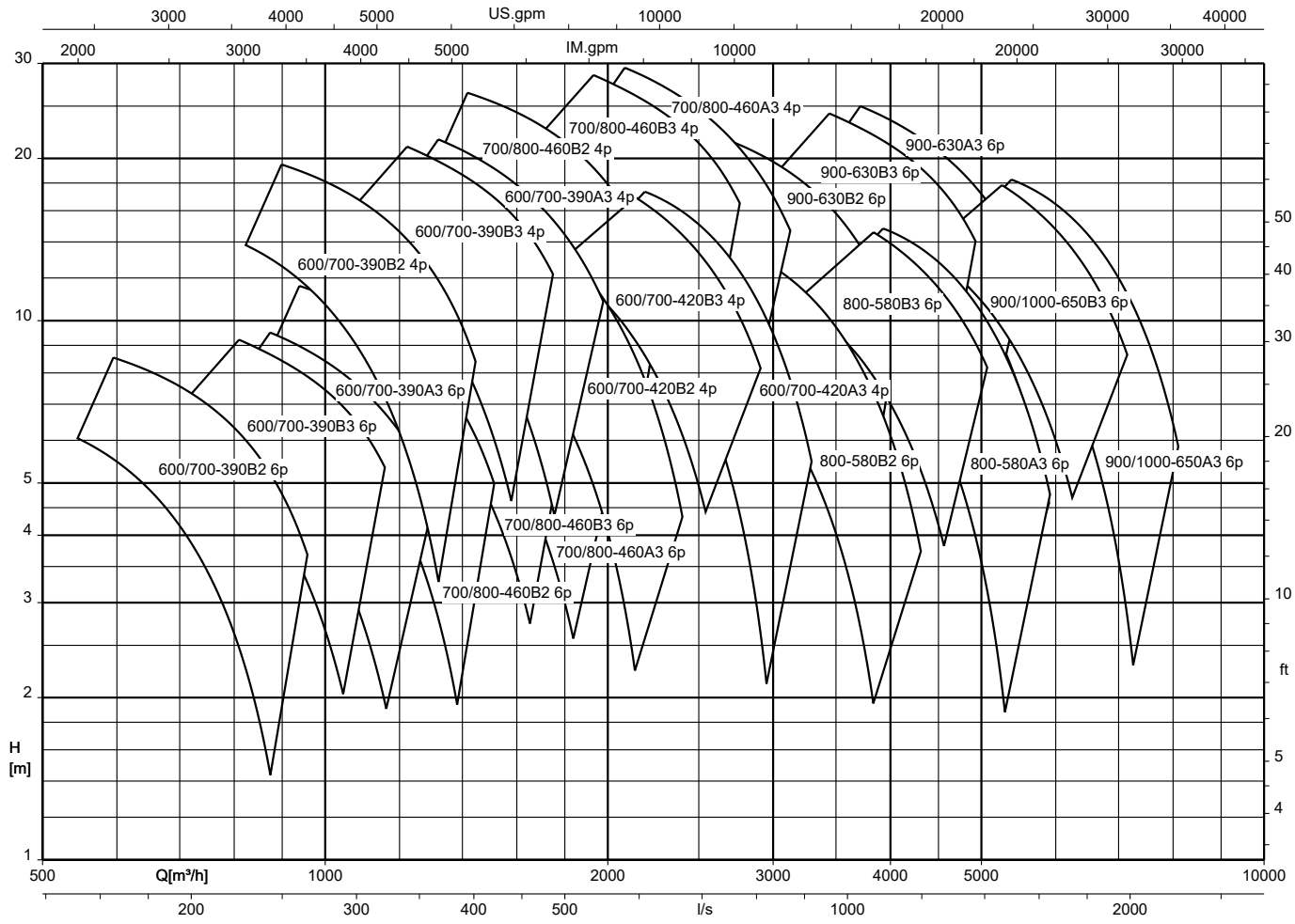
18 EPR = ethylene propylene rubber

Selection chart

AmaCan D 50 Hz, n = 1450 / 960 rpm (diameter-based selection chart)



Characteristic curves

n = 1450 rpm

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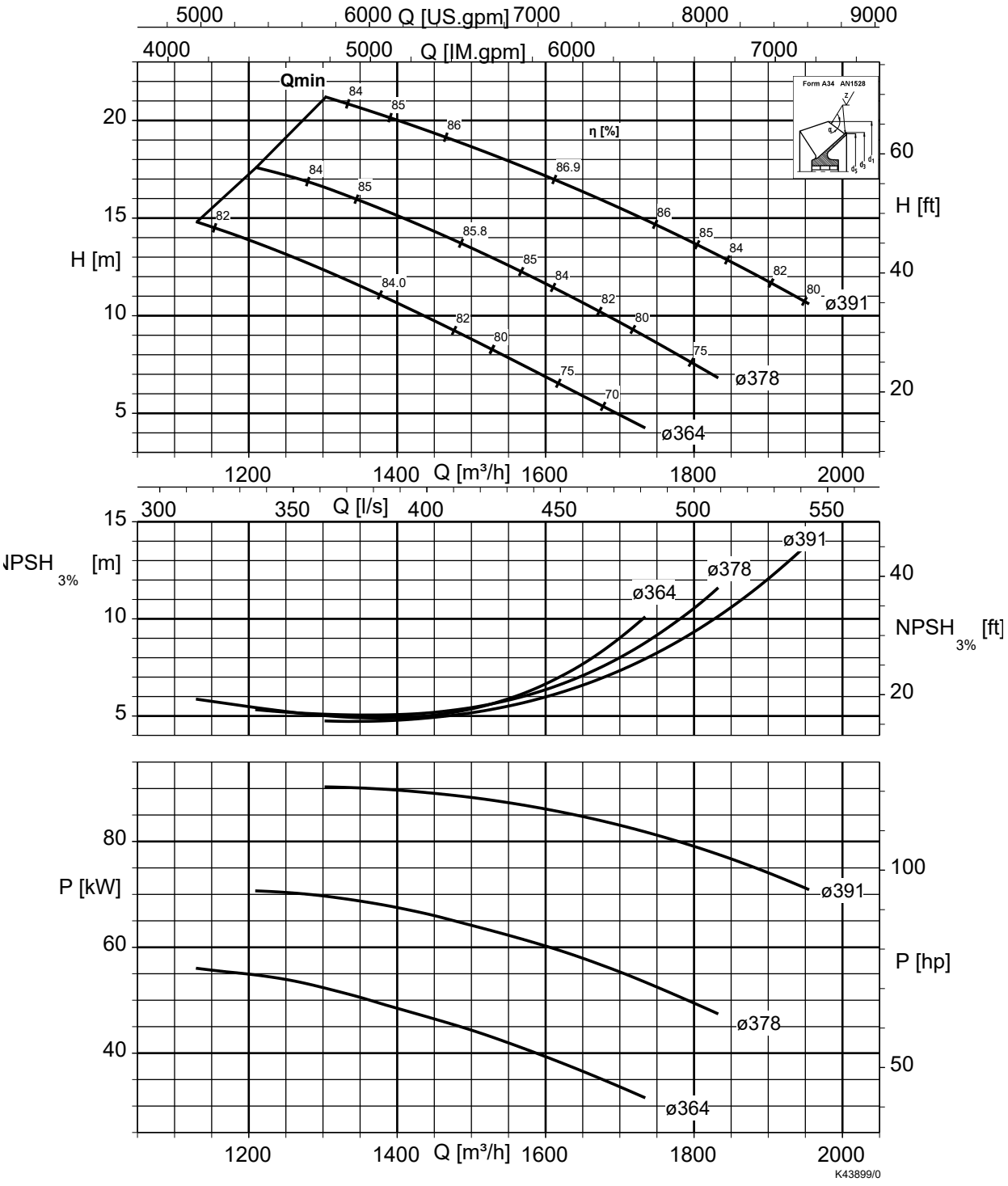
Amacan DA3 600-390, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 65 mm

Table 11: Motor data

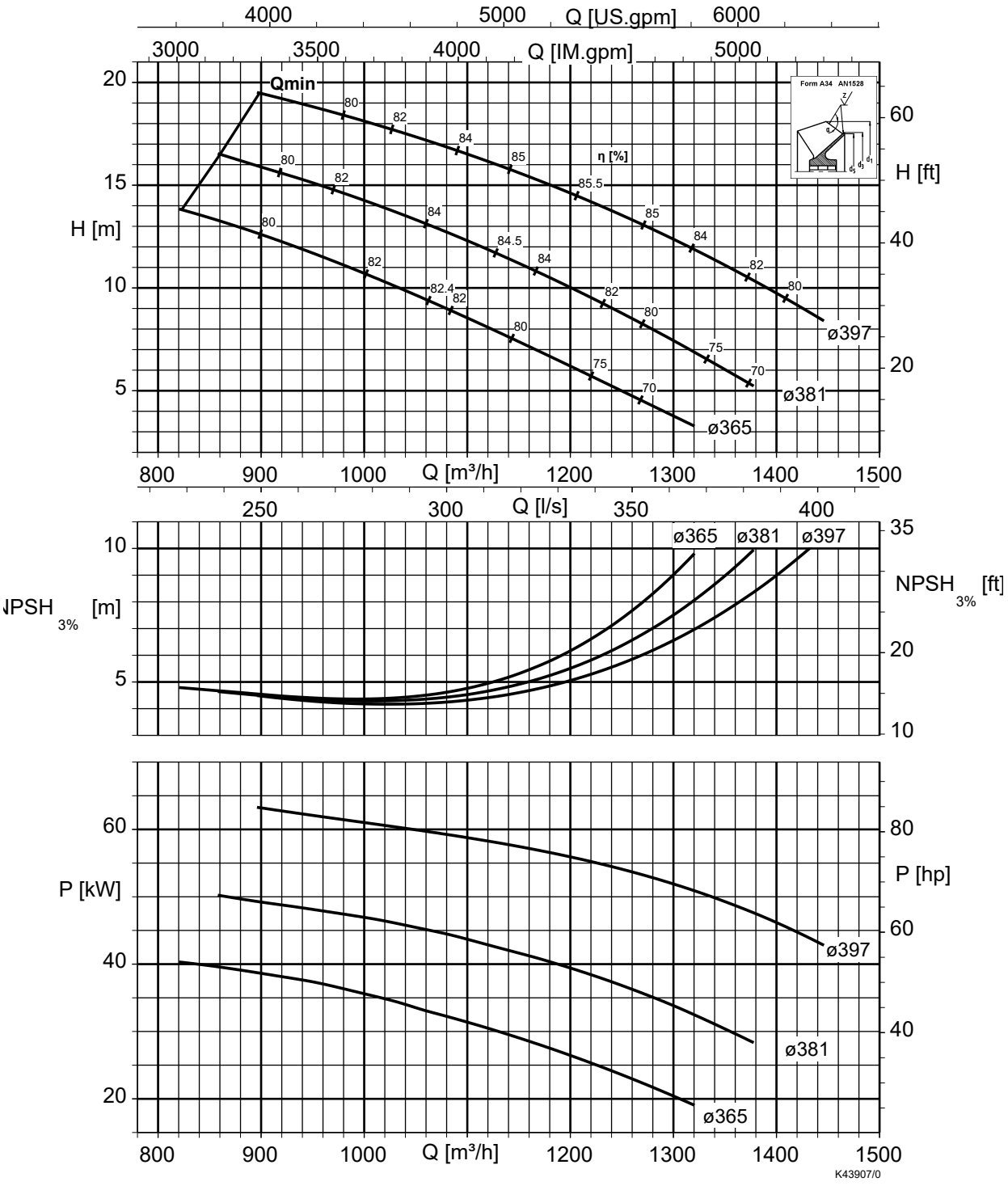
Size	Motor	P2 [kW]		J
		-[19]	IE3	[kgm²]
600-390	704 UT/XT	70	-	0,92
600-390	904 UT/XT	90	-	1,05
600-390	1054UT/XT	105	55	1,13

Size	Motor	P2 [kW]		J
		-[19]	IE3	[kgm²]
600-390	1304UT/XT	-	75	1,21

19 - = No efficiency classification

Amacan DB2 600-390, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 65 mm

Table 12: Motor data

Size	Motor	P2 [kW]		J
		-[20]	IE3	[kgm²]
600-390	704 UT/XT	70	-	0,83
600-390	804 UT/XT	-	37	0,87
600-390	904 UT/XT	90	45	0,97
600-390	1054UT/XT	-	55	1,05
600-390	1304UT/XT	-	75	1,13

20 - = No efficiency classification

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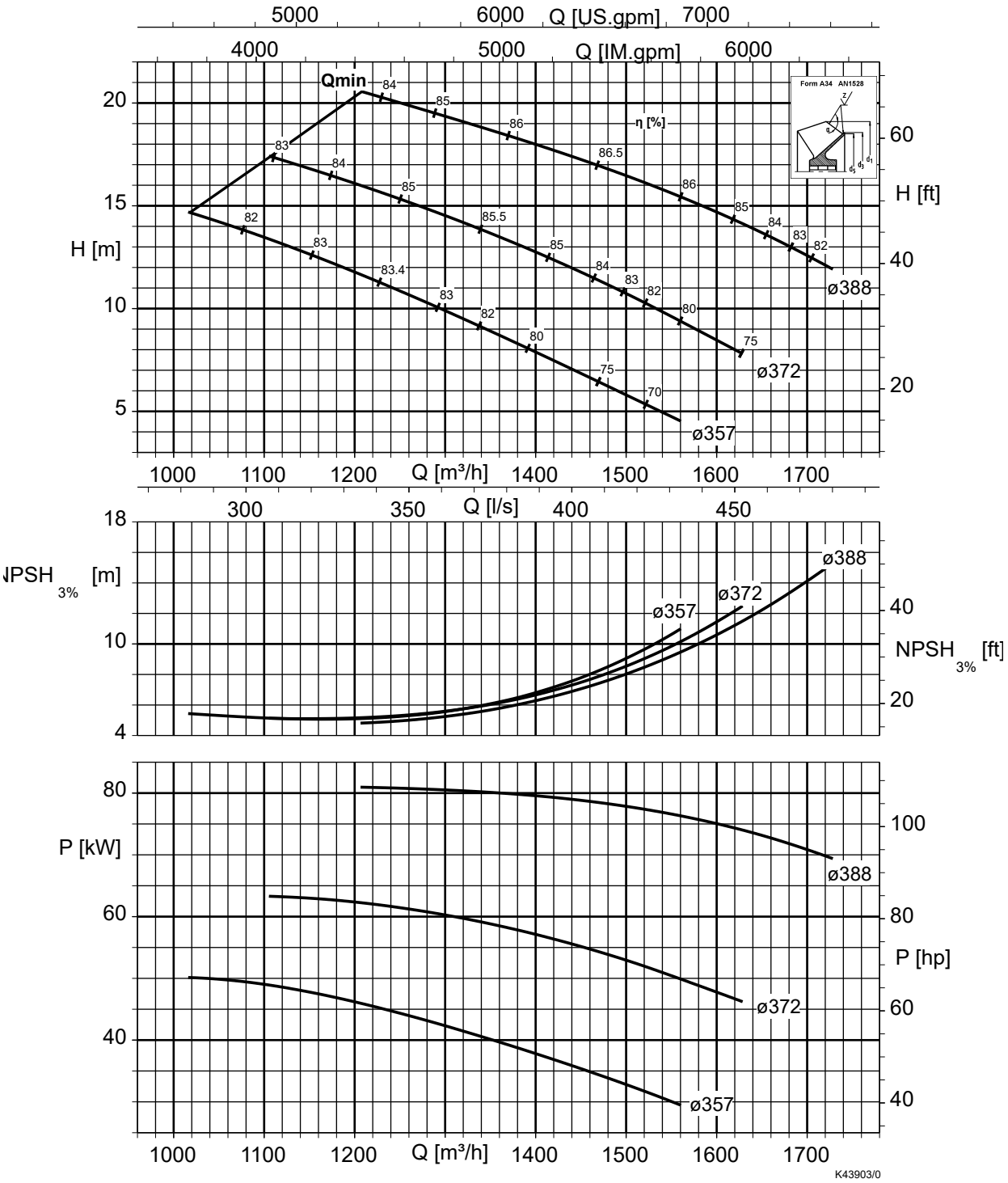
Amacan DB3 600-390, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 65 mm

Table 13: Motor data

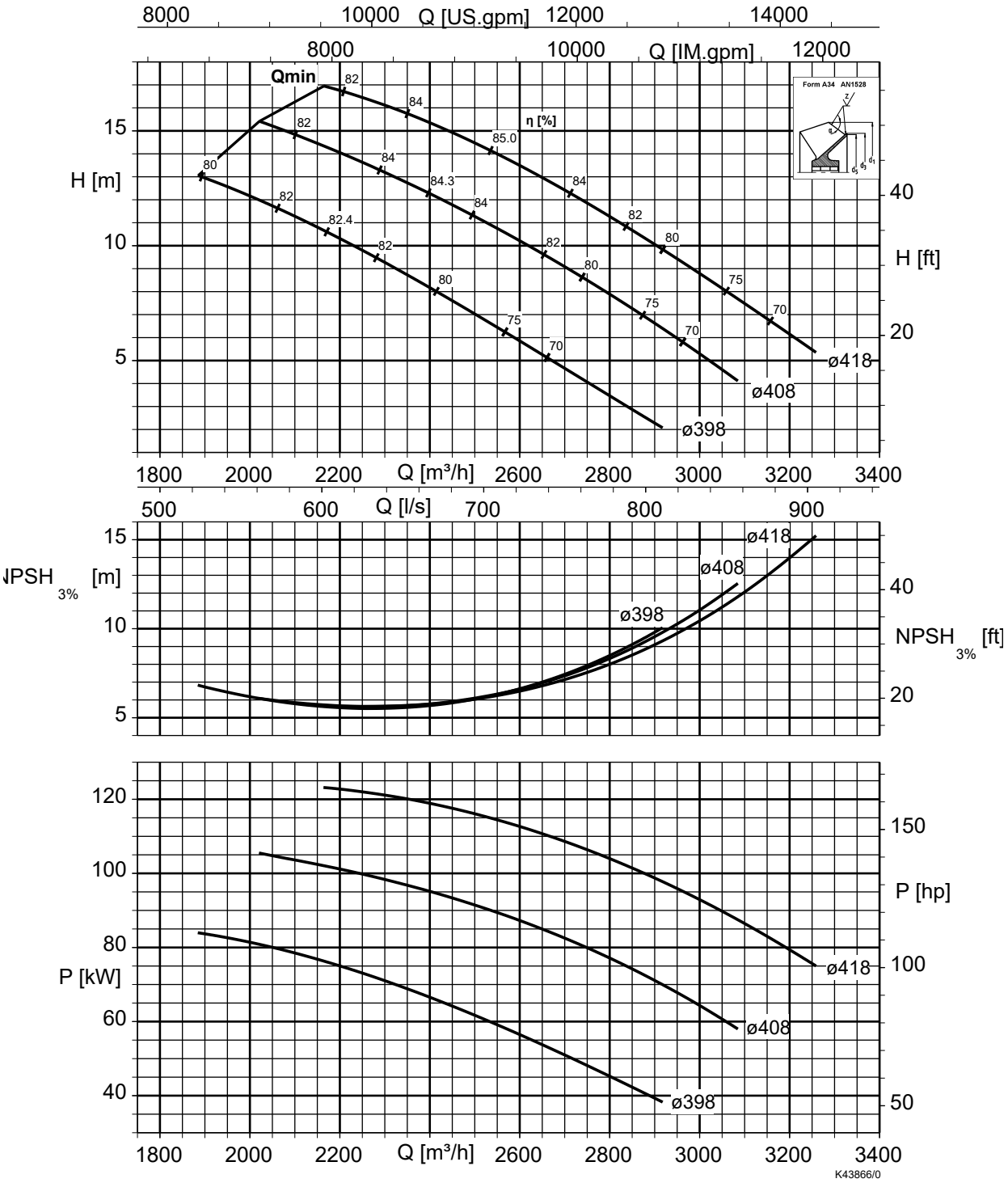
Size	Motor	P2 [kW]		J
		-[21]	IE3	[kgm²]
600-390	704 UT/XT	70	-	0,87
600-390	904 UT/XT	90	-	1,01
600-390	1054UT/XT	105	55	1,05

Size	Motor	P2 [kW]		J
		-[21]	IE3	[kgm²]
600-390	1304UT/XT	-	75	1,17

21 - = No efficiency classification

Amacan DA3 600-420, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 76 mm

Table 14: Motor data

Size	Motor	P2 [kW]		J
		-[22)]	IE3	[kgm²]
600-420	904 UT/XT	90	-	1,13
600-420	1054UT/XT	105	-	1,21
600-420	1304UT/XT	130	-	1,29

22 - = No efficiency classification

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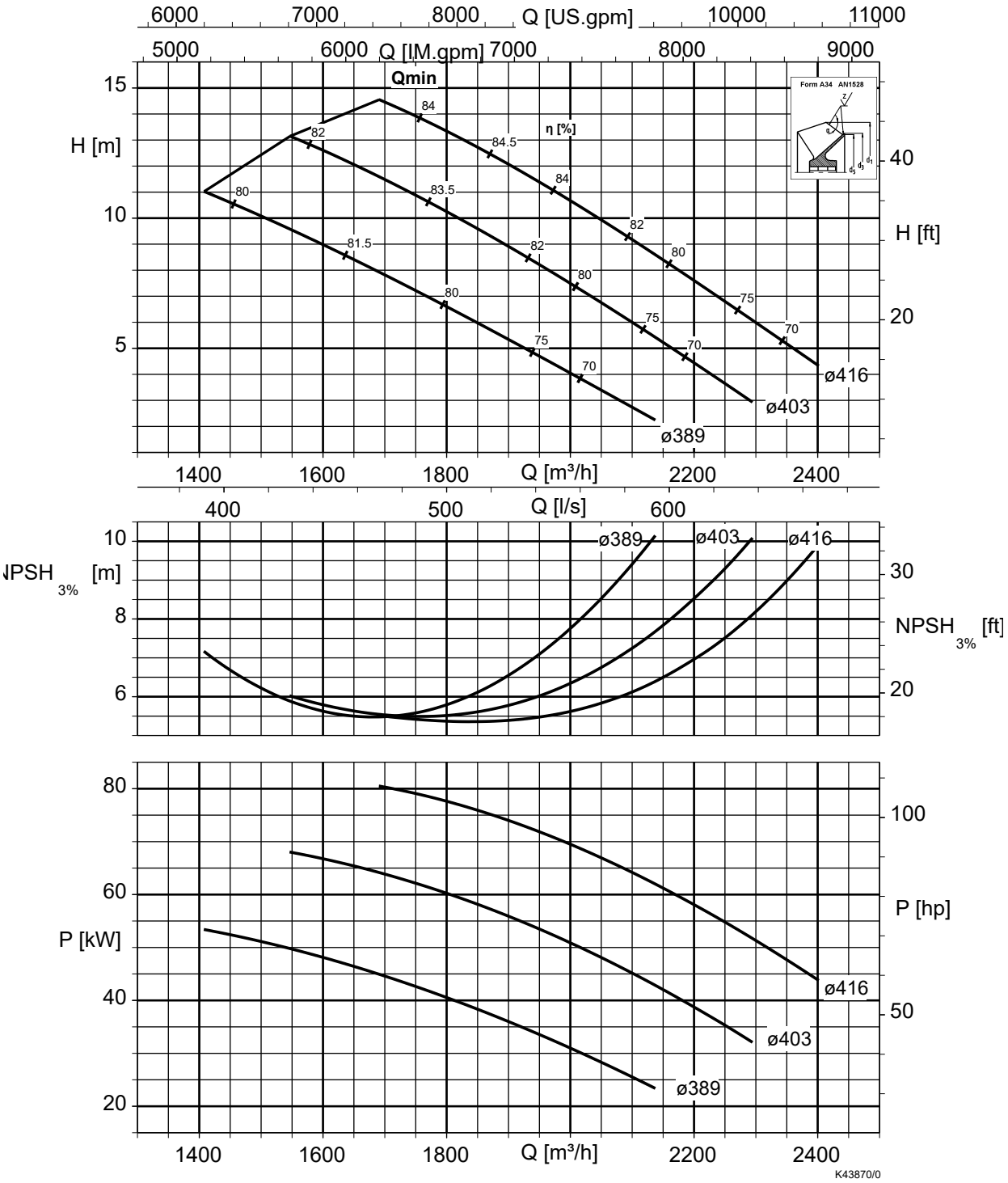
Amacan DB2 600-420, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 76 mm

Table 15: Motor data

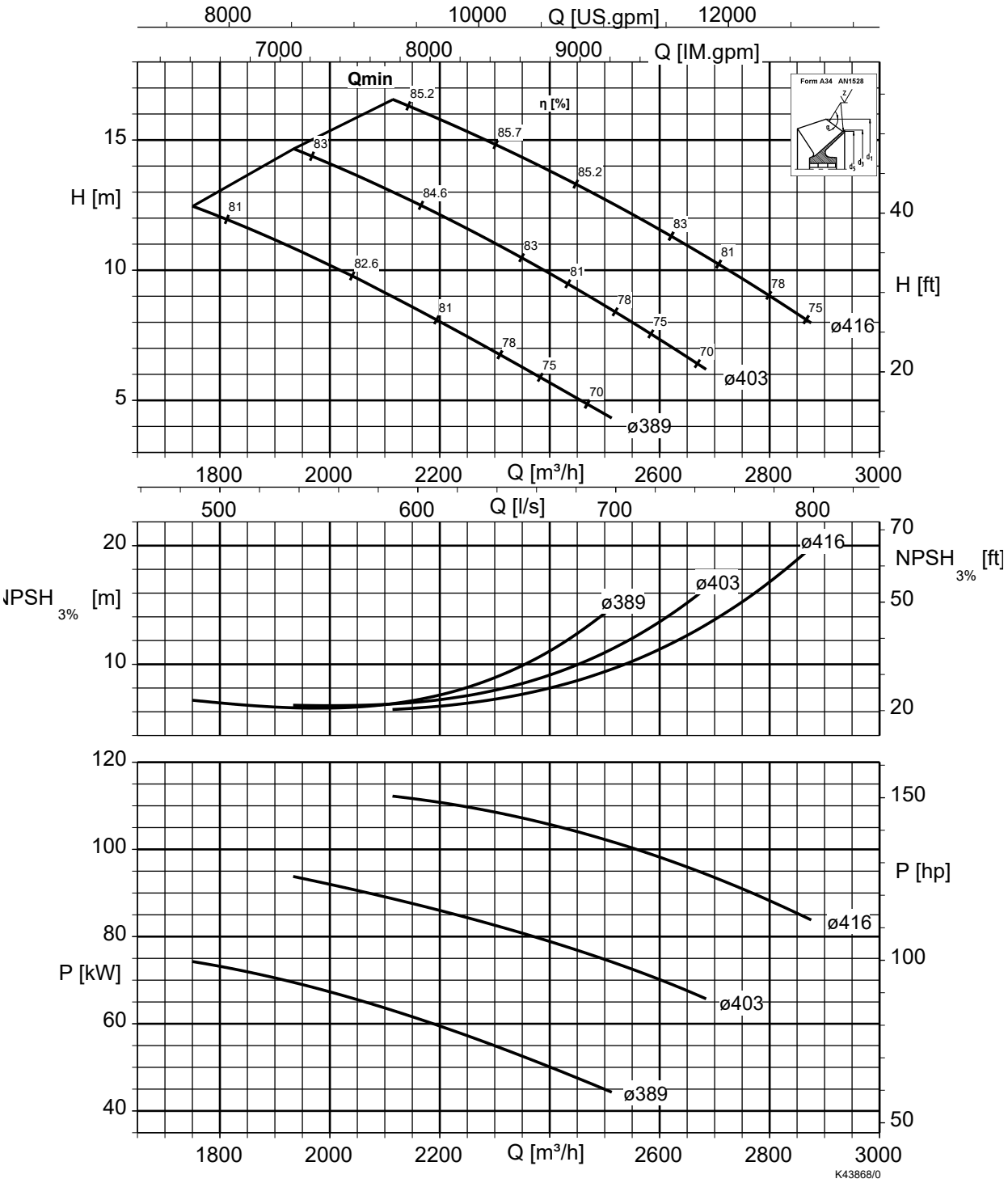
Size	Motor	P2 [kW]		J
		-[23]	IE3	[kgm²]
600-420	704 UT/XT	70	-	0,91
600-420	904 UT/XT	90	-	1,05
600-420	1054UT/XT		55	1,13

Size	Motor	P2 [kW]		J
		-[23]	IE3	[kgm²]
600-420	1304UT/XT	-	75	1,21

23 - = No efficiency classification

Amacan DB3 600-420, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 76 mm

Table 16: Motor data

Size	Motor	P2 [kW]		J
		-[24]	IE3	[kgm²]
600-420	904 UT/XT	90	-	1,05
600-420	1054UT/XT	105	-	1,13
600-420	1304UT/XT	130	75	1,21

24 - = No efficiency classification

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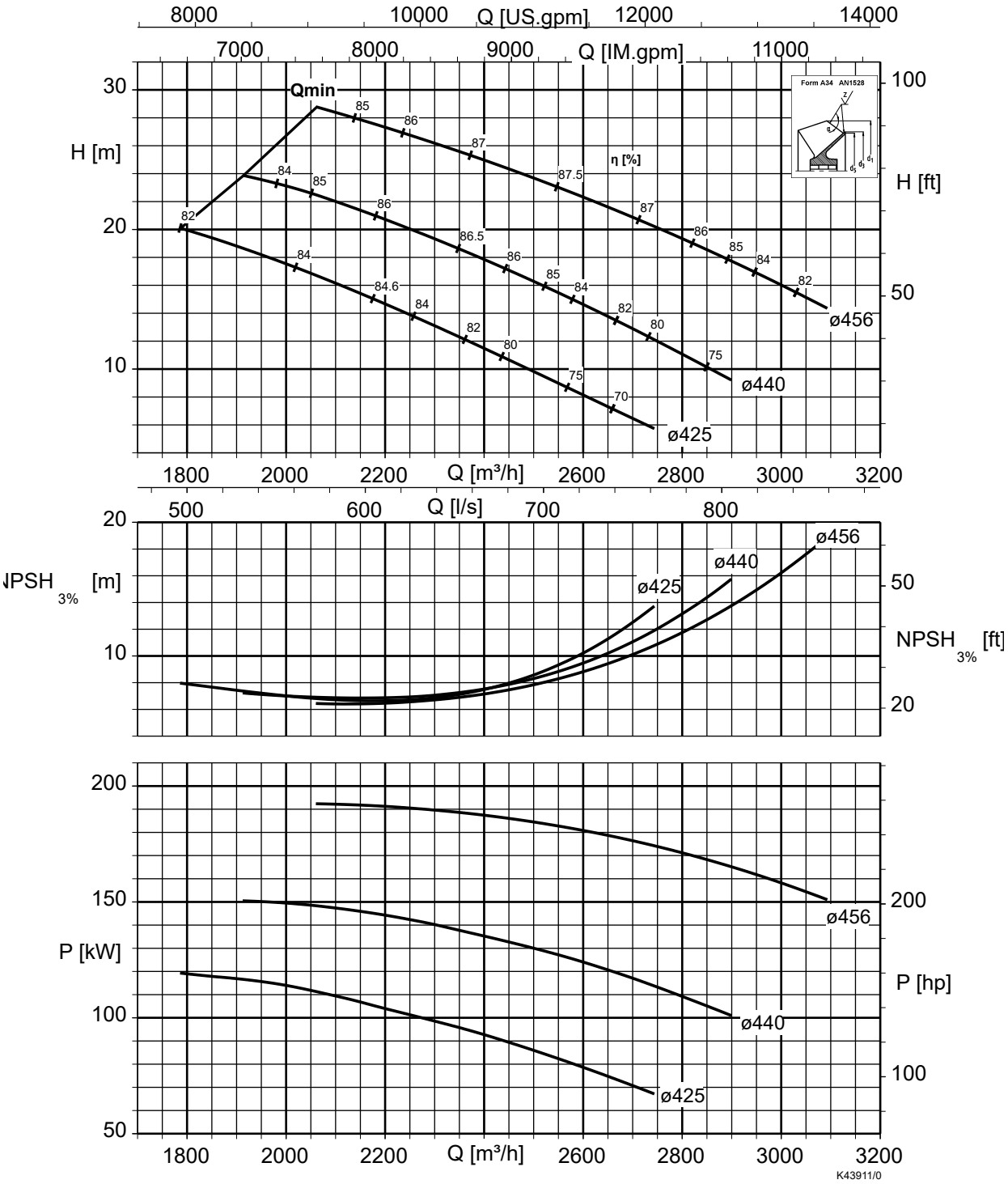
Amacan DA3 700/800-460, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 76 mm

Table 17: Motor data

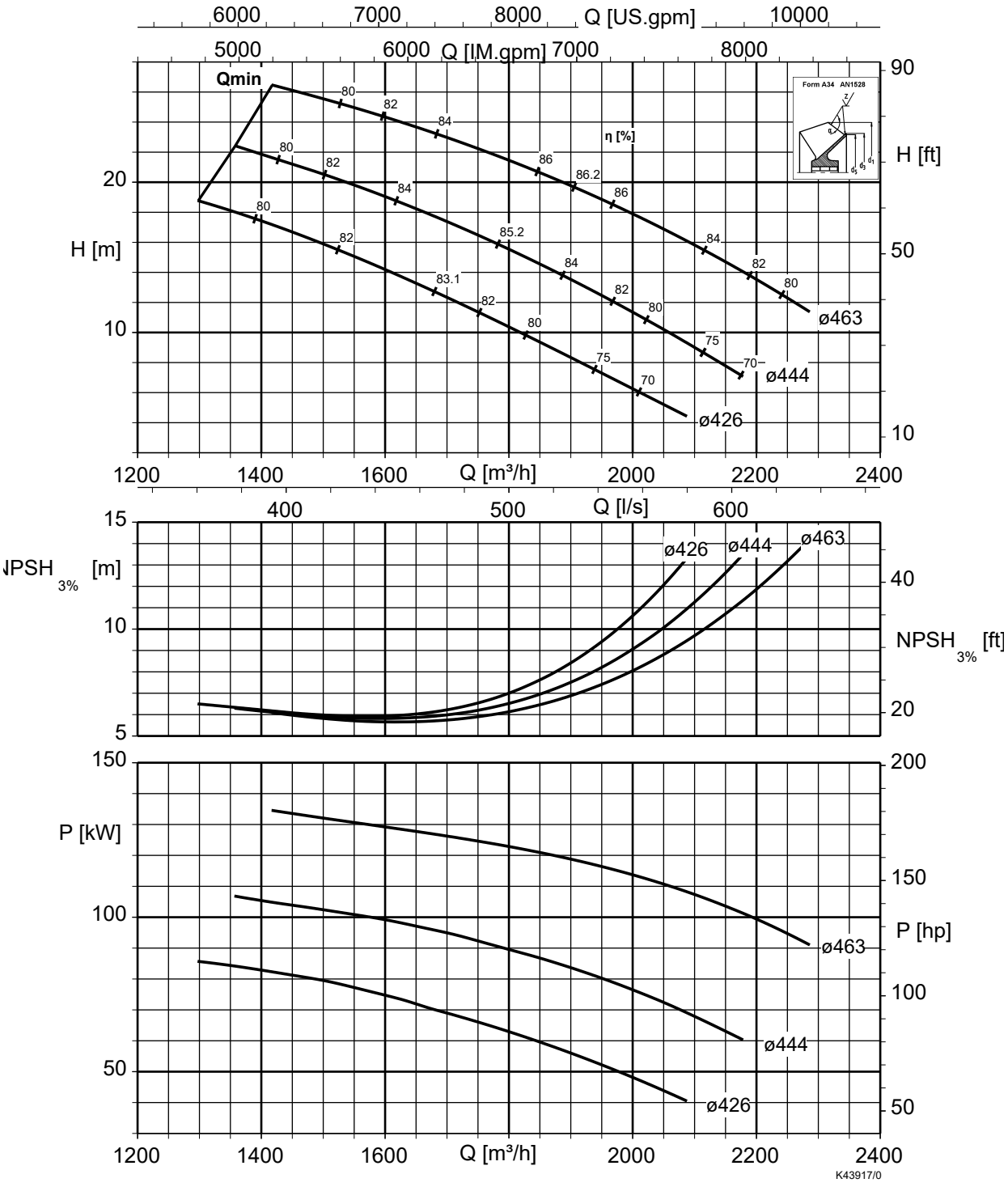
Size	Motor	P2 [kW]		J
		-[25]	IE3	[kgm²]
700-460	1304UT/XT	130	-	1,88
700-460	1704UT/XT	170	-	2,52
700-460	1904UT/XT	190	-	2,69

Size	Motor	P2 [kW]		J
		-[25]	IE3	[kgm²]
700-460	2154UT/XT	215	-	2,83
800-460	2754UT	-	150	4,86
800-460	3004UT	-	215	5,21

25 - = No efficiency classification

Amacan DB2 700/800-460, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 76 mm

Table 18: Motor data

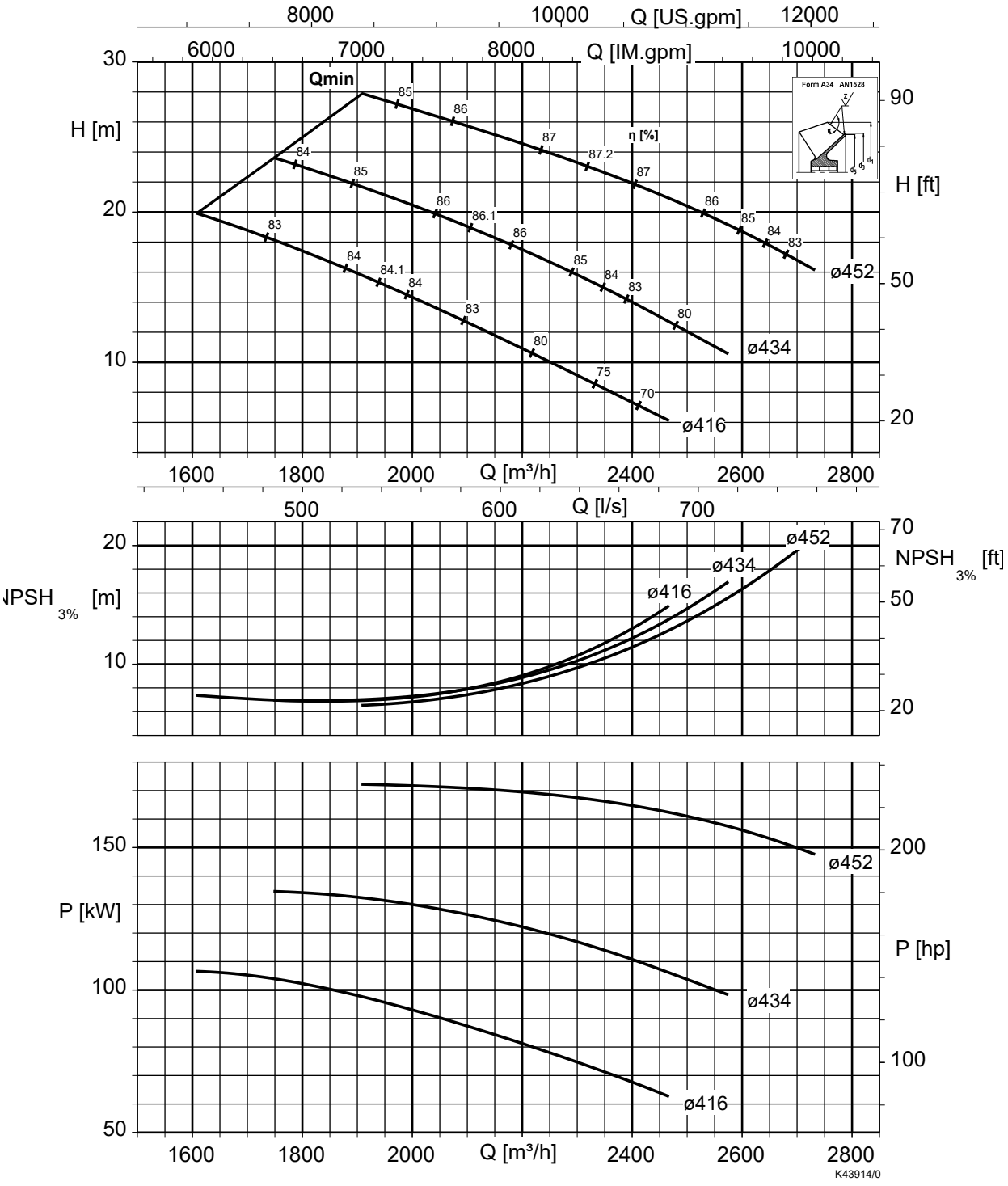
Size	Motor	P2 [kW]		J
		-[26]	IE3	[kgm²]
700-460	904UT/XT	90	-	1,55
700-460	1054UT/XT	105	-	1,63
700-460	1304UT/XT	130	-	1,71
700-460	1504UT/XT	150	-	2,34
700-460	1704UT/XT	170	90	2,34

26 - = No efficiency classification

Size	Motor	P2 [kW]		J
		-[26)]	IE3	[kgm²]
700-460	1904UT/XT	-	110	2,51
800-460	2754UT	-	150	4,68
800-460	3004UT	-	215	5,03

Amacan DB3 700/800-460, n = 1450 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 76 mm

Table 19: Motor data

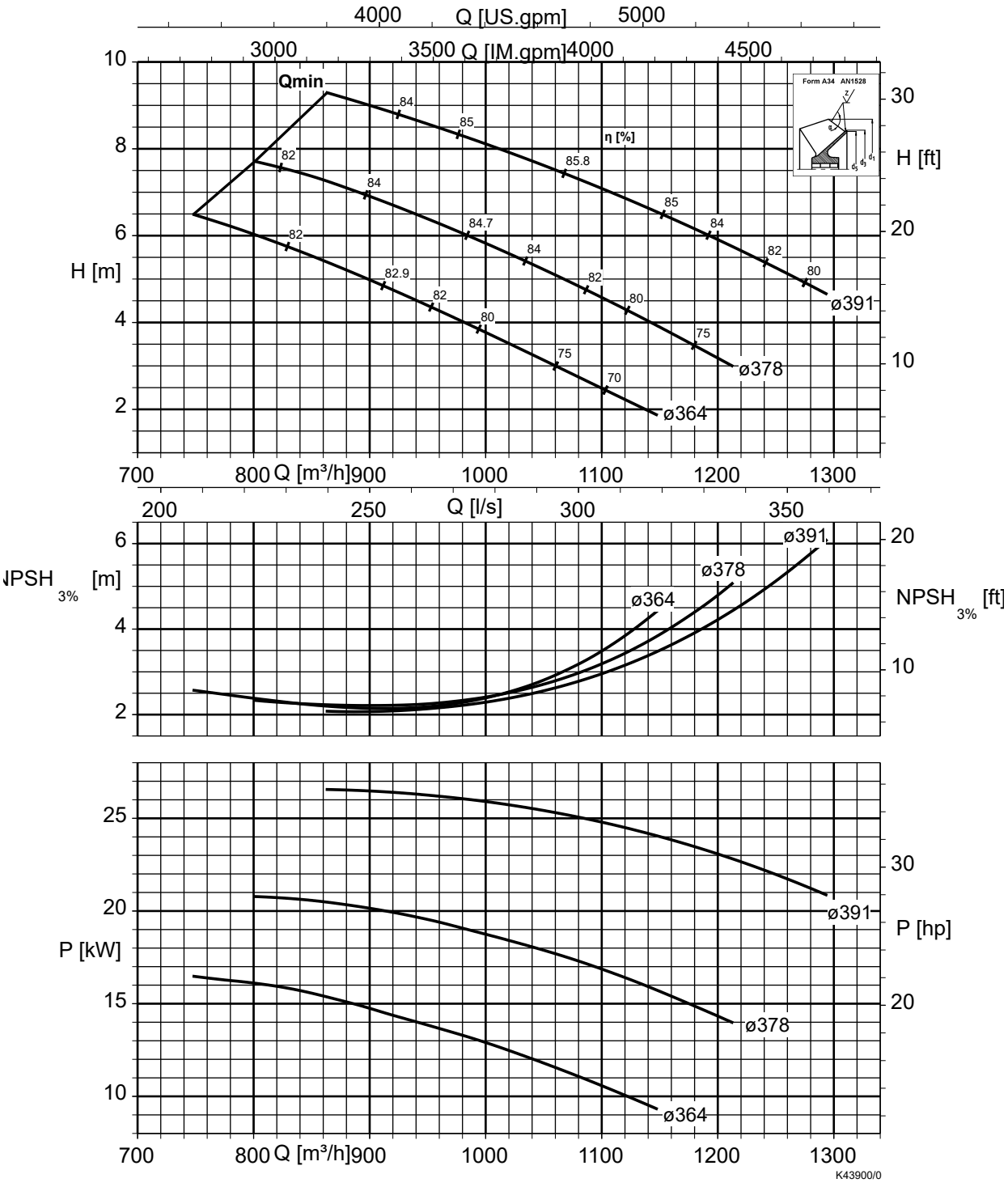
Size	Motor	P2 [kW]		J
		-[27)]	IE3	[kgm²]
700-460	1304UT/XT	130	-	1,78
700-460	1504UT/XT	150	-	2,41
700-460	1704UT/XT	170	-	2,41
700-460	1904UT/XT	190	-	2,58
700-460	2154UT/XT	215	-	2,72
800-460	2754UT	-	150	4,75
800-460	3004UT	-	215	5,1

27 - = No efficiency classification

n = 960 rpm

Amacan DA3 600-390, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 65 mm

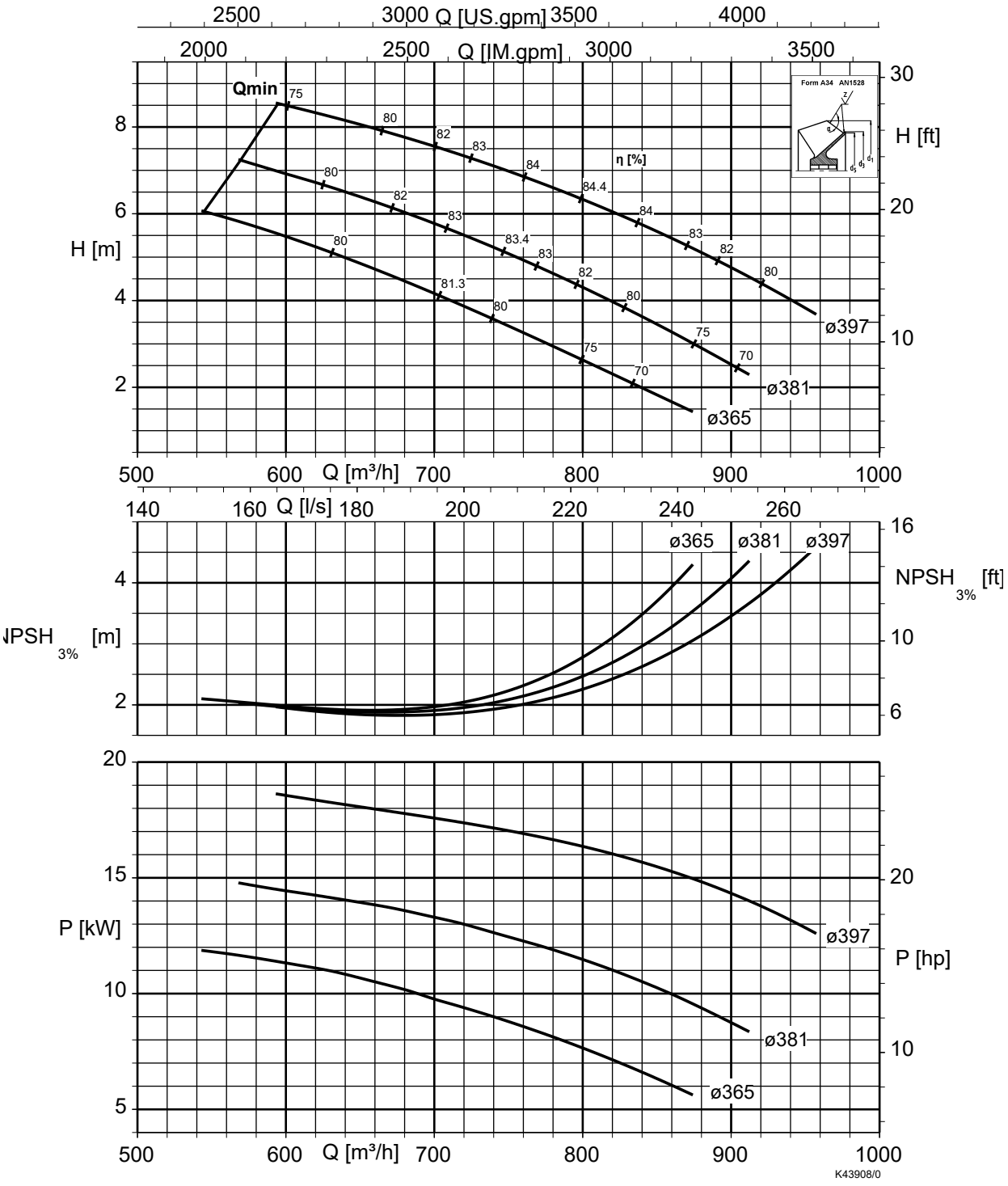
Table 20: Motor data

Size	Motor	P2 [kW]		J
		-[28]	IE3	[kgm²]
600-390	476UT/XT	-	18,5	1,06
600-390	656UT/XT	-	20	1,14
600-390	806UT/XT	-	30	1,25

28 - = No efficiency classification

Amacan DB4 600-390, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 65 mm

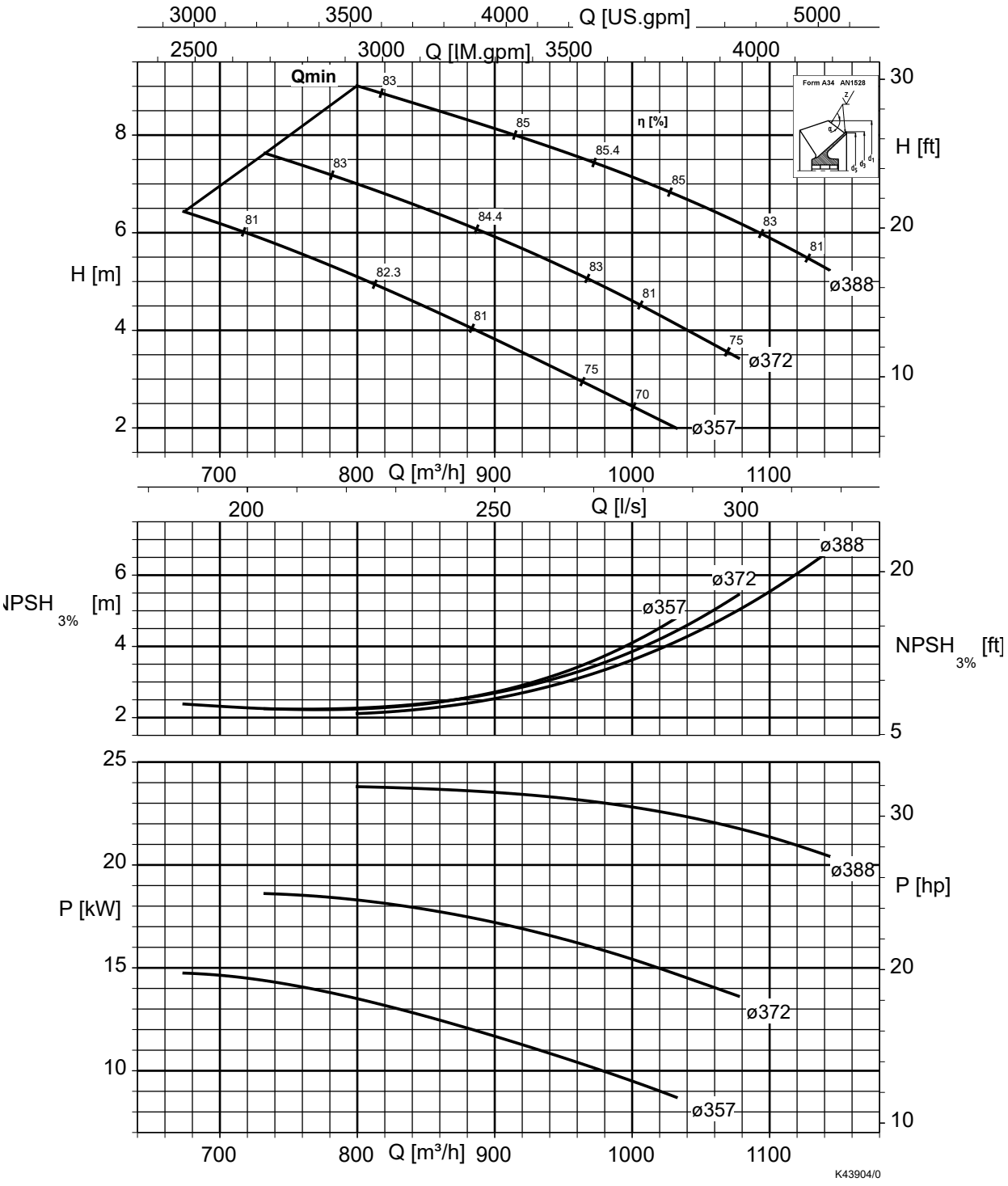
Table 21: Motor data

Size	Motor	P2 [kW]		J
		-[29]	IE3	[kgm²]
600-390	476UT/XT	-	18,5	0,98
600-390	656UT/XT	-	22	1,06

29 - = No efficiency classification

Amacan DB3 600-390, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 65 mm

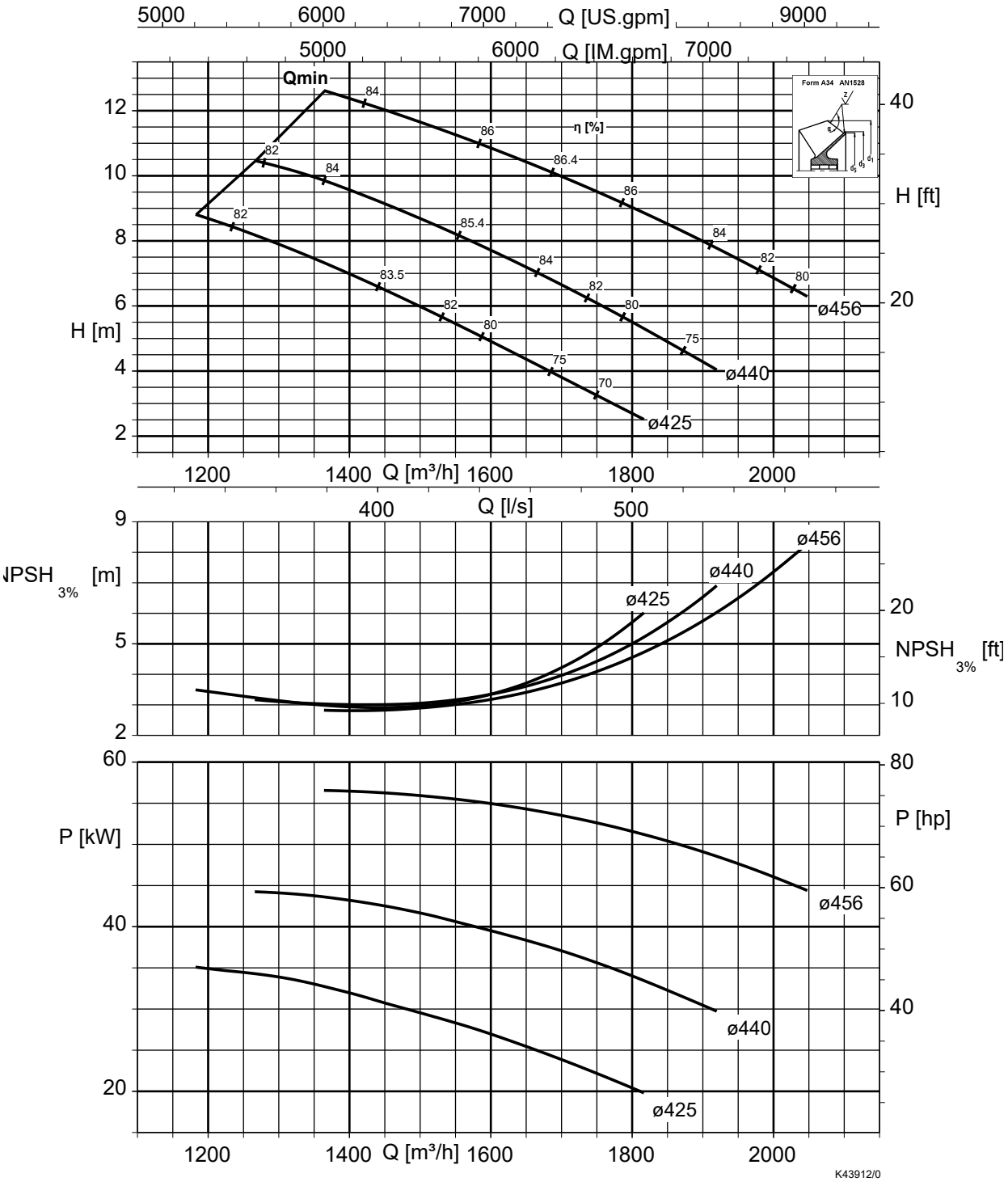
Table 22: Motor data

Size	Motor	P2 [kW]		J
		-[30]	IE3	[kgm²]
600-390	476UT/XT	-	18,5	1,02
600-390	656UT/XT	-	22	1,1
600-390	806UT/XT	-	30	1,20

30 - = No efficiency classification

Amacan DA3 700-460, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 76 mm

Table 23: Motor data

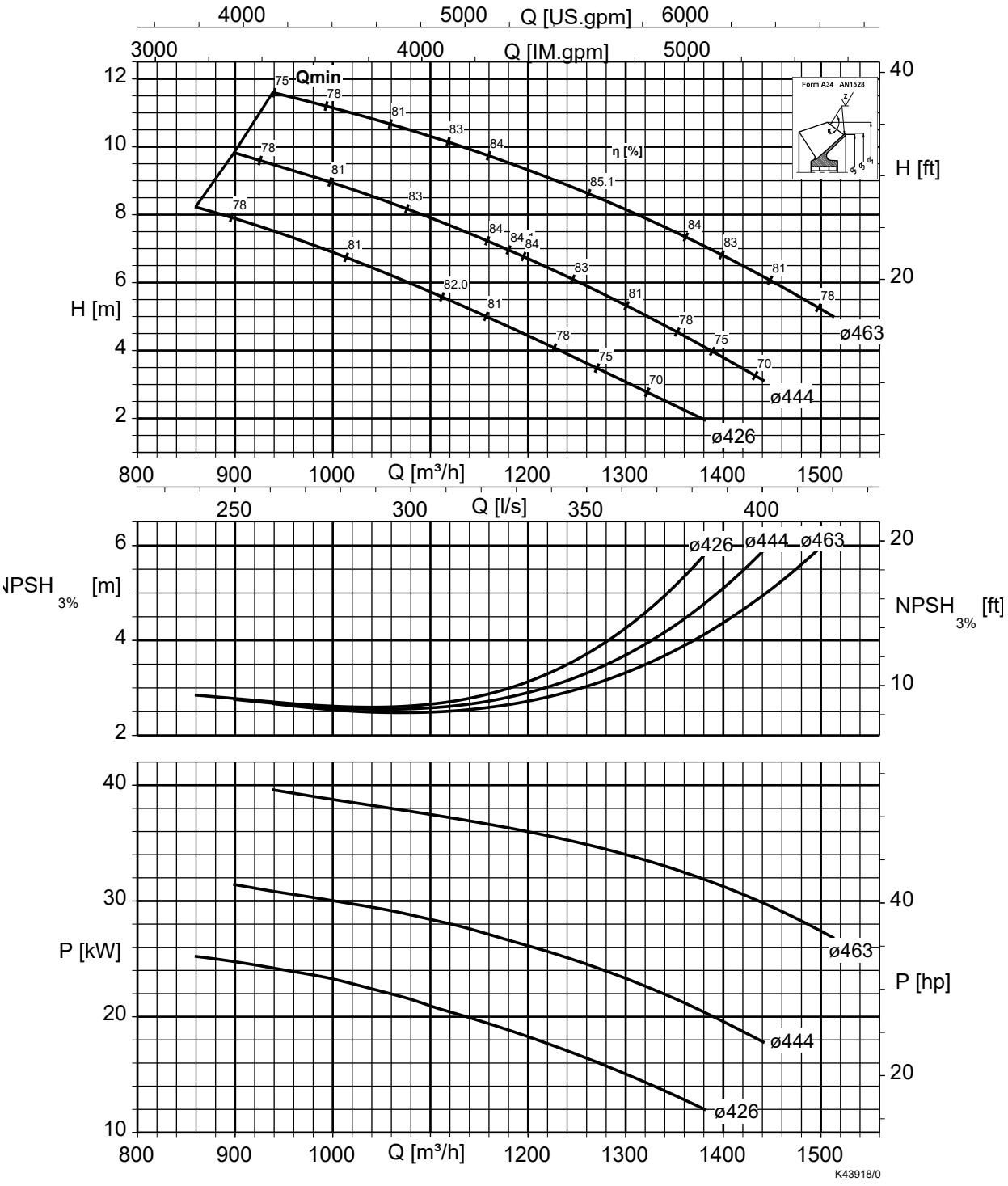
Size	Motor	P2 [kW]		J
		-[31)]	IE3	[kgm²]
700-460	476UT/XT	47	-	1,73
700-460	606UT/XT	60	-	1,73
700-460	806UT/XT	80	-	1,92

Size	Motor	P2 [kW]		J
		-[31)]	IE3	[kgm²]
700-460	1006UT/XT	-	37	2,05
700-460	1206UT/XT	-	45	2,19

31 - = No efficiency classification

Amacan DB2 700-460, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 76 mm

Table 24: Motor data

Size	Motor	P2 [kW]		J
		-[32]	IE3	[kgm²]
700-460	476UT/XT	47	-	1,56
700-460	806UT/XT	-	30	1,75
700-460	1006UT/XT	-	37	1,88

Size	Motor	P2 [kW]		J
		-[32]	IE3	[kgm²]
700-460	1206UT/XT	-	45	2,02

32 - = No efficiency classification

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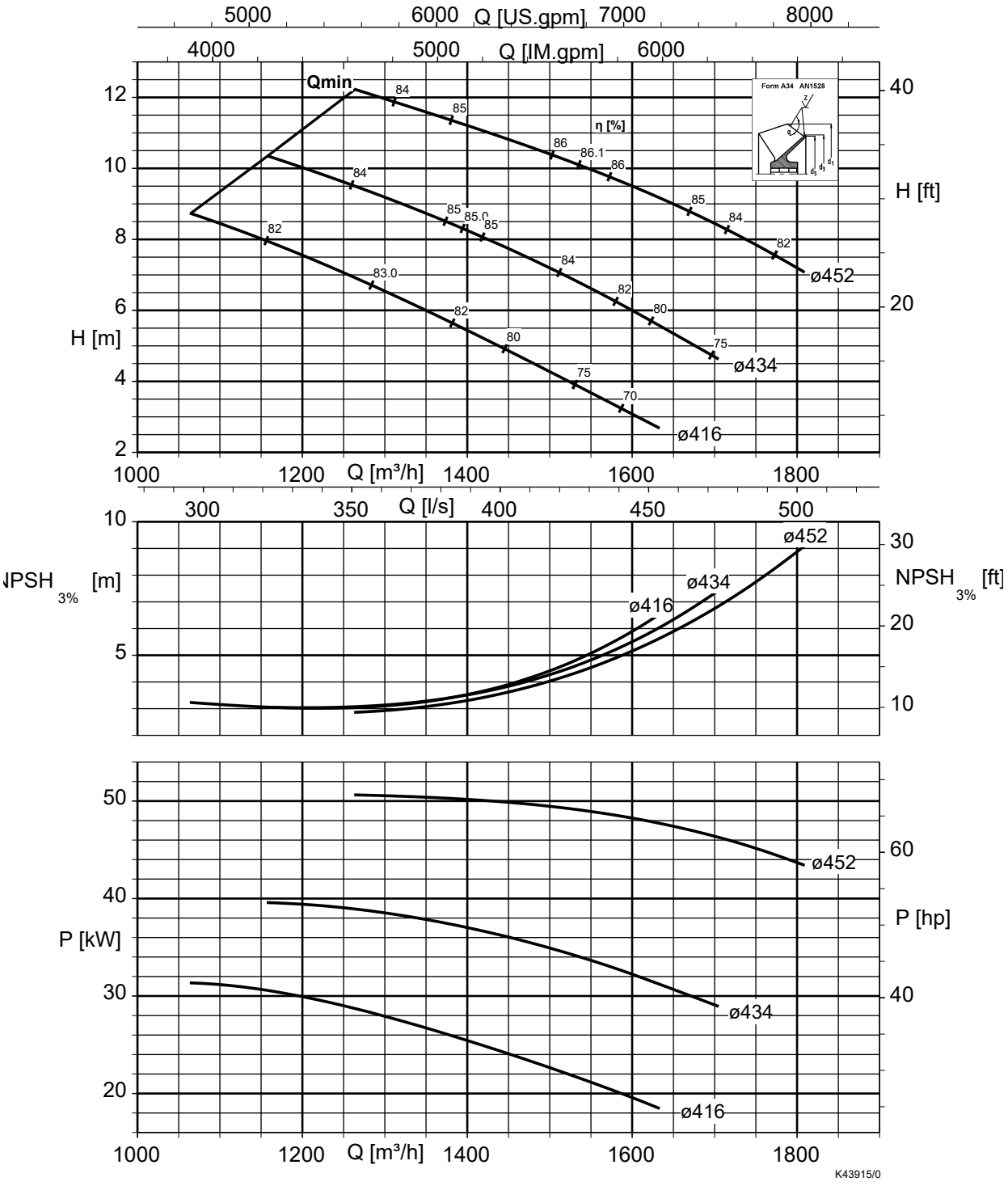
Amacan DB3 700-460, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 76 mm

Table 25: Motor data

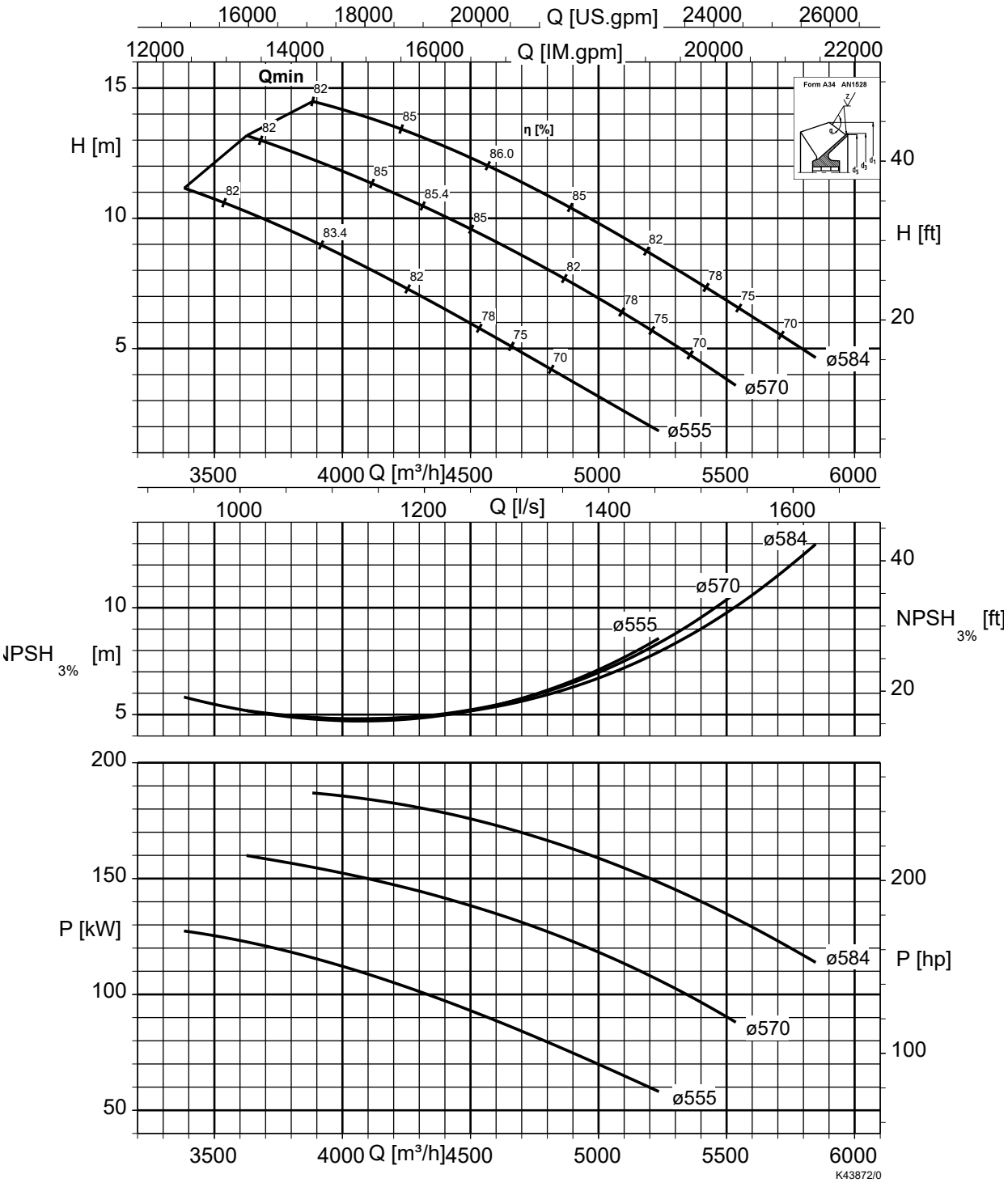
Size	Motor	P2 [kW]		J
		-[33]	IE3	[kgm²]
700-460	476UT/XT	47	-	1,63
700-460	606UT/XT	60	-	1,63
700-460	1006UT/XT	-	37	1,95

Size	Motor	P2 [kW]		J
		-[33]	IE3	[kgm²]
700-460	1206UT/XT	-	45	2,09

33 - = No efficiency classification

Amacan DA3 800-580, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 105 mm

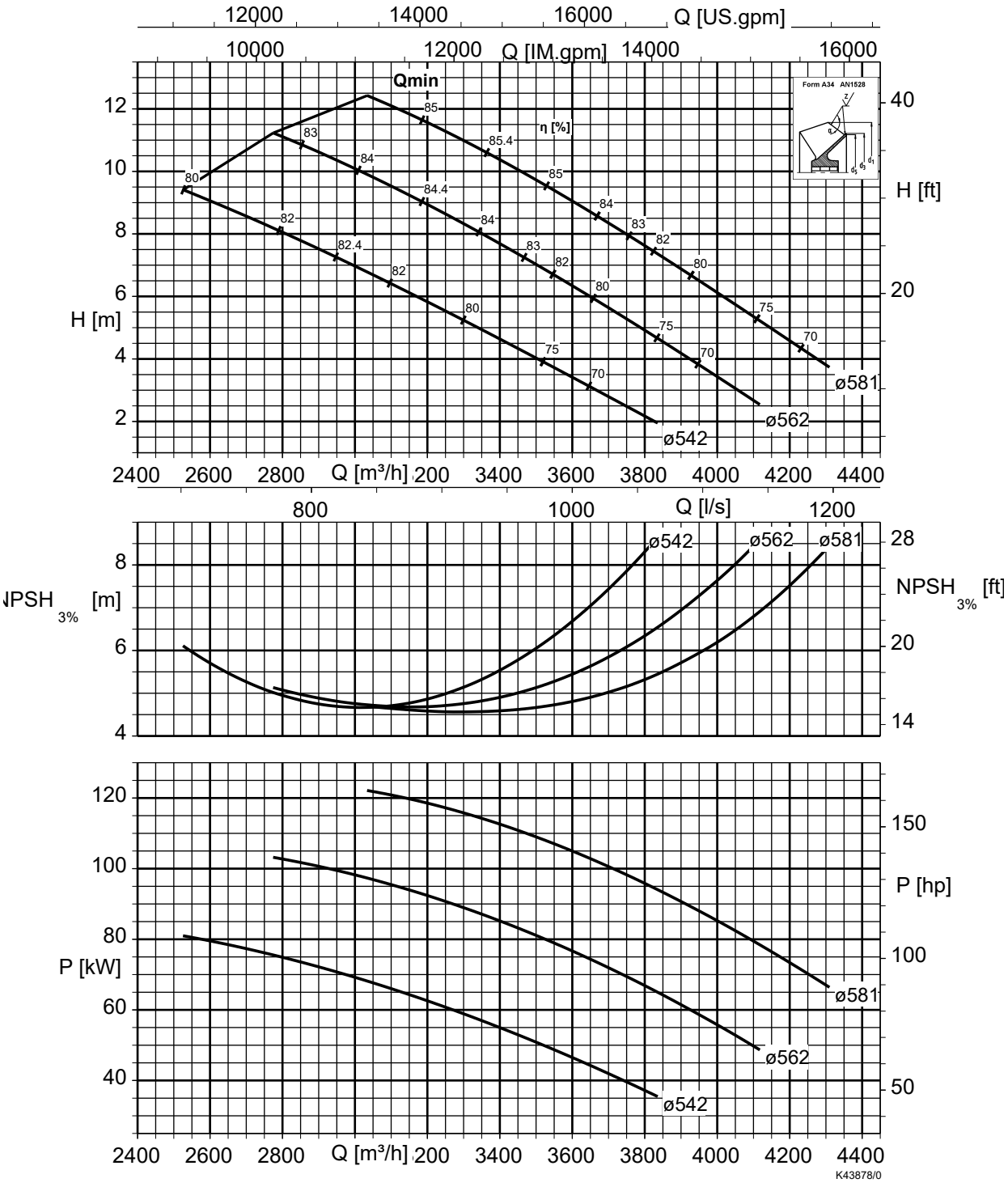
Table 26: Motor data

Size	Motor	P2 [kW]		J
		-[34)]	IE3	[kgm²]
800-580	1556UT/XT	155	-	5,61
800-580	1806UT/XT	180	-	5,89
800-580	2056UT/XT	205	-	6,18
800-580	2506UT	-	135	10,75
800-580	2906UT	-	150	12,02
800-580	3406UT	-	180	13,29

34 - = No efficiency classification

Amacan DB2 800-580, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 105 mm

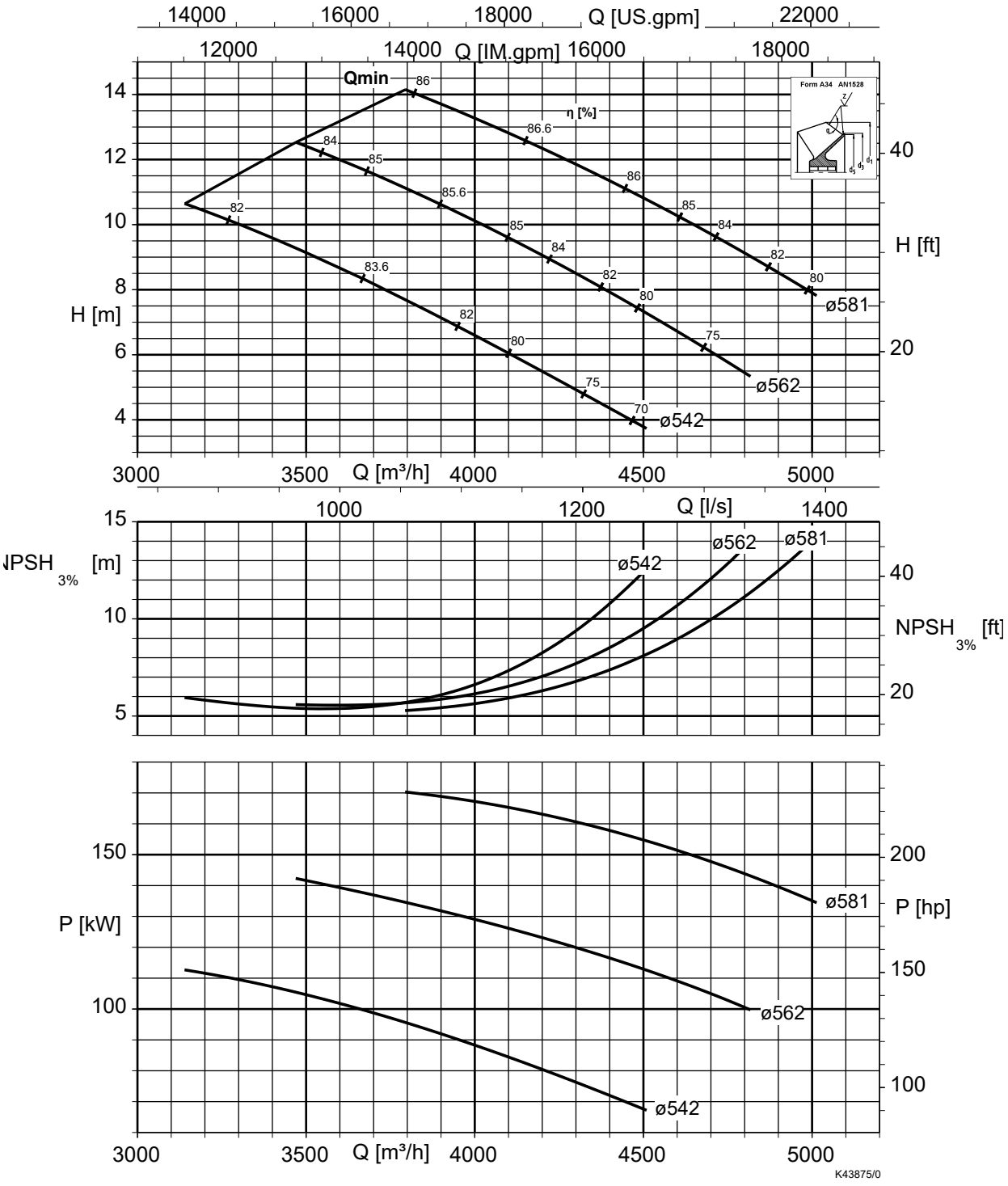
Table 27: Motor data

Size	Motor	P2 [kW]		J
		-[35]	IE3	[kgm²]
800-580	806UT/XT	80	-	3,86
800-580	1006UT/XT	100	-	3,99
800-580	1206UT/XT	115	-	4,13
800-580	1556UT/XT	155	-	5,17
800-580	2506UT	-	135	10,31
800-580	2906UT	-	150	11,58

35 - = No efficiency classification

Amacan DB3 800-580, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 105 mm

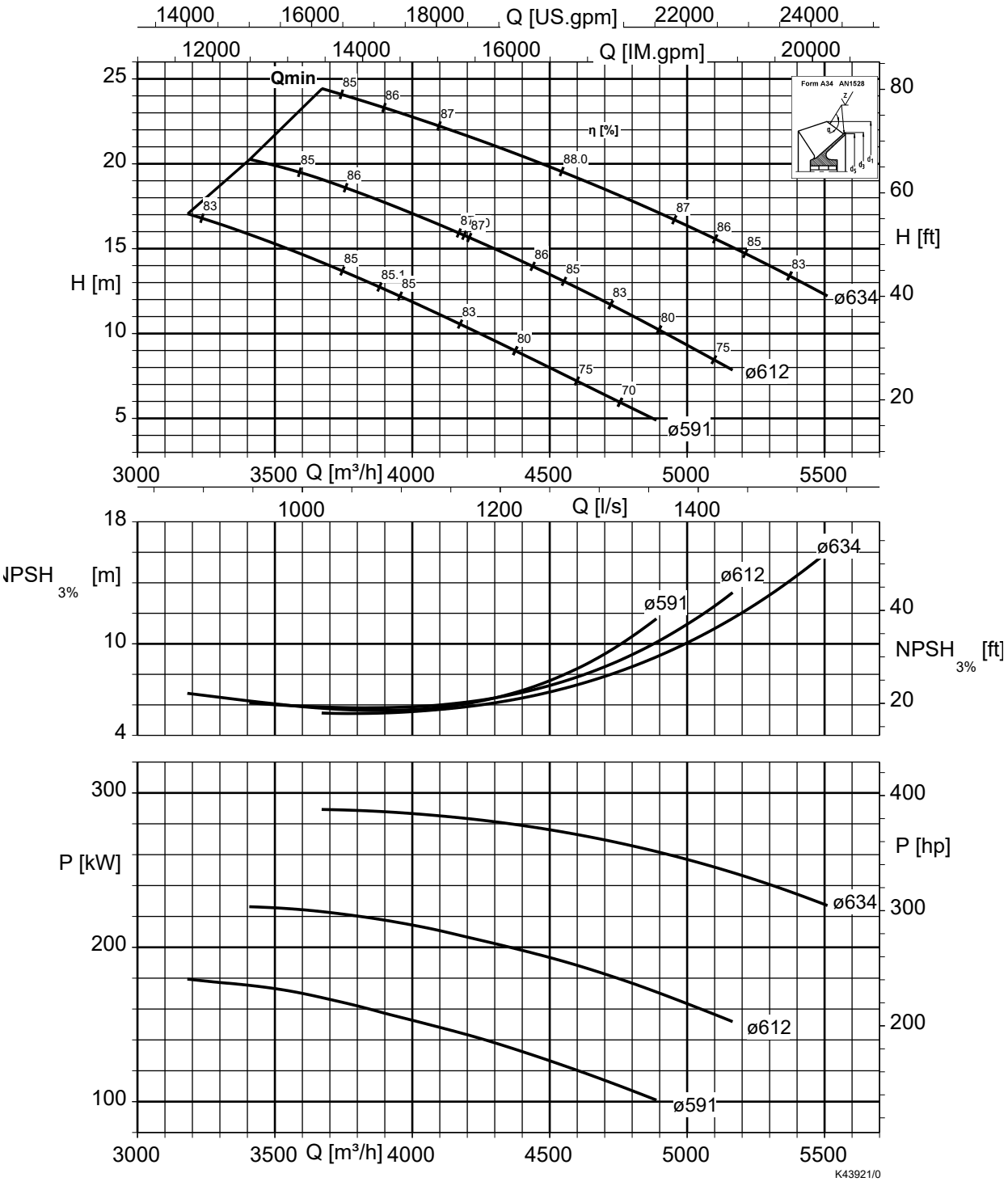
Table 28: Motor data

Size	Motor	P2 [kW]		J
		-[36]	IE3	[kgm²]
800-580	1206UT/XT	115	-	4,12
800-580	1556UT/XT	155	-	5,17
800-580	1806UT/XT	180	-	5,45
800-580	2056UT/XT	205	-	5,74
800-580	2506UT	-	135	10,31
800-580	2906UT	-	150	11,58
800-580	3406UT	-	180	12,85

36 - = No efficiency classification

Amacan DA3 900-630, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 105 mm

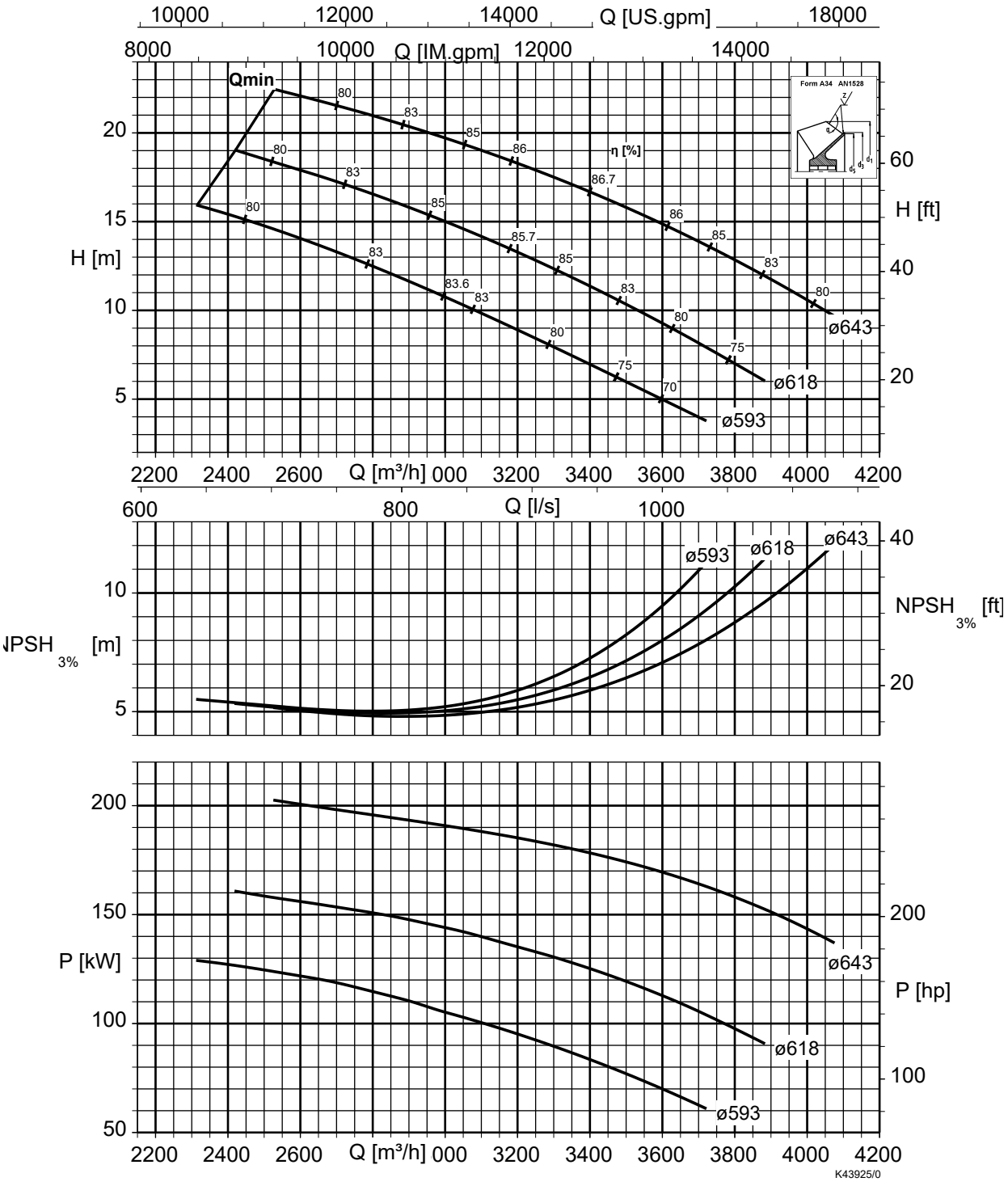
Table 29: Motor data

Size	Motor	P2 [kW]		J
		-[37]	IE3	[kgm²]
900-630	1806UT/XT	180	-	9,77
900-630	2056UT/XT	205	-	10,07
900-630	2506UT/XT	250	-	14,87
900-630	2906UT/XT	290	-	16,14
900-630	3406UT/XT	340	180	17,41

37 - = No efficiency classification

Amacan DB2 900-630, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 105 mm

Table 30: Motor data

Size	Motor	P2 [kW]		J
		-[38)]	IE3	[kgm²]
900-630	1556UT/XT	155	-	7,34
900-630	1806UT/XT	180	-	7,61
900-630	2056UT/XT	205	-	7,91
900-630	2506UT/XT	250	135	12,71
900-630	2906UT/XT	-	150	13,98
900-630	3406UT/XT	-	180	15,25

38 - = No efficiency classification

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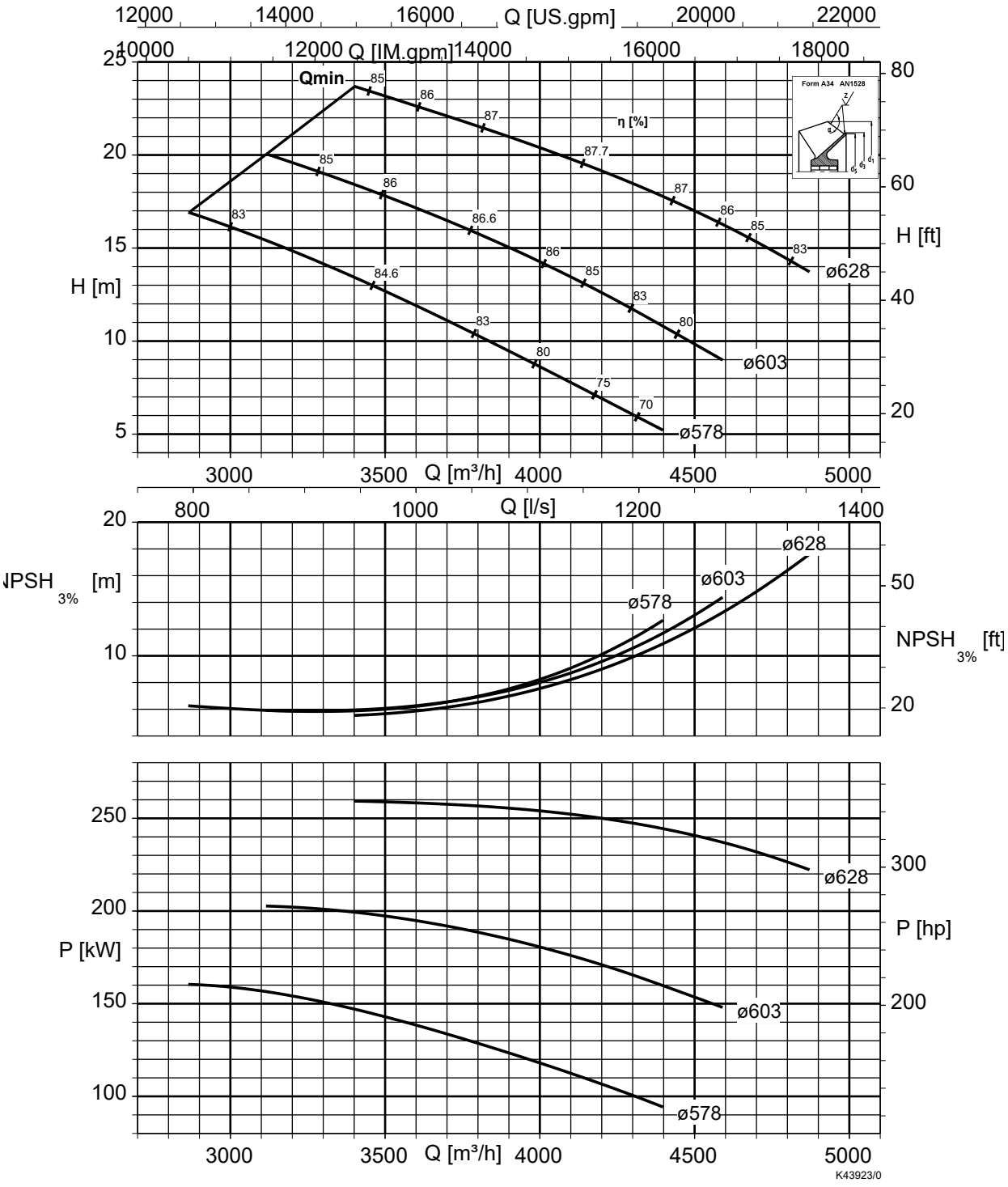
Amacan DB3 900-630, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 105 mm

Table 31: Motor data

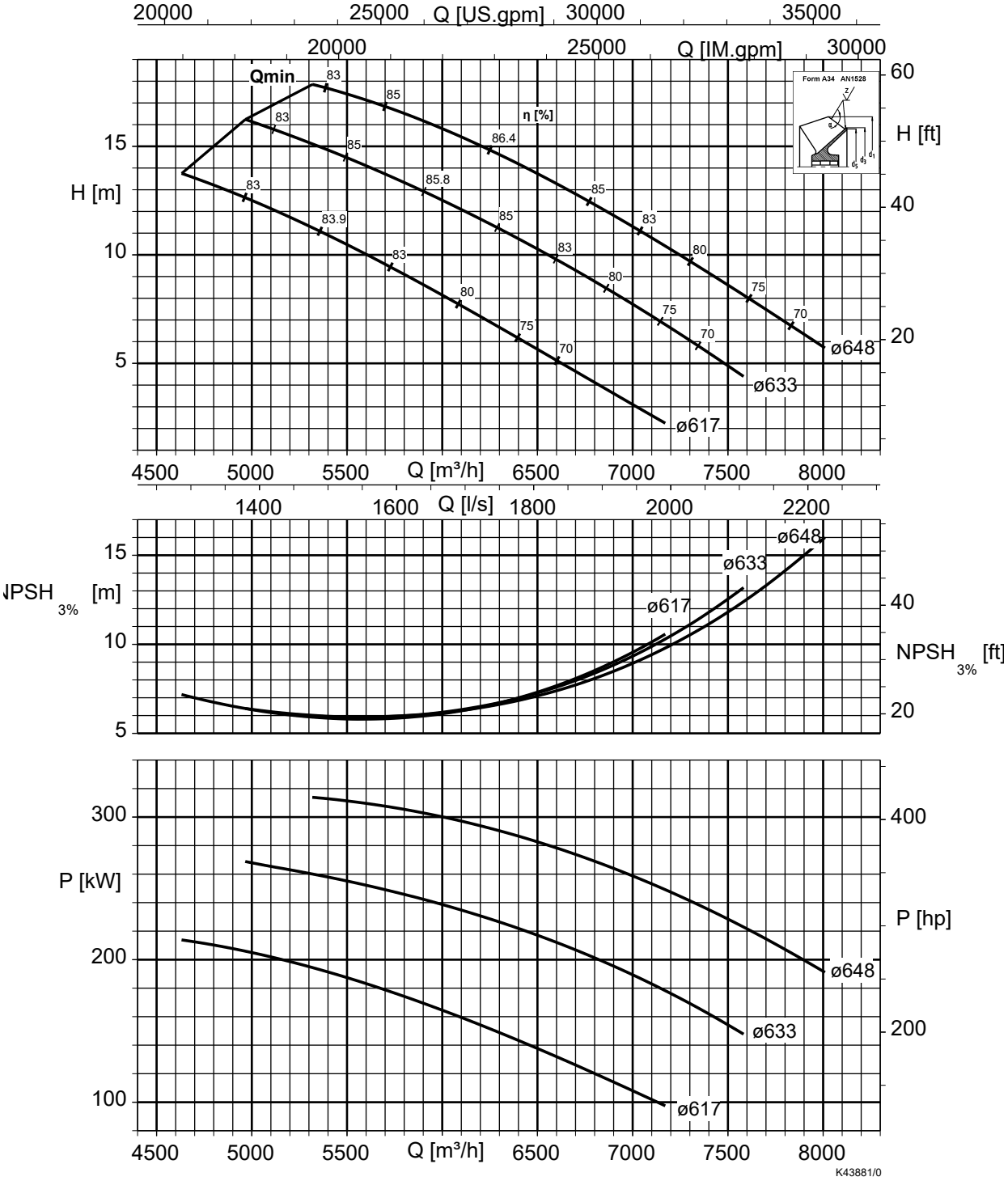
Size	Motor	P2 [kW]		J
		-[39]	IE3	[kgm²]
900-630	1806UT/XT	180	-	7,8
900-630	2056UT/XT	205	-	8,1
900-630	2506UT/XT	250	-	12,9

Size	Motor	P2 [kW]		J
		-[39]	IE3	[kgm²]
900-630	2906UT/XT	290	-	14,17
900-630	3406UT/XT	340	180	15,44

39 - = No efficiency classification

Amacan DA3 900-650, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 116 mm

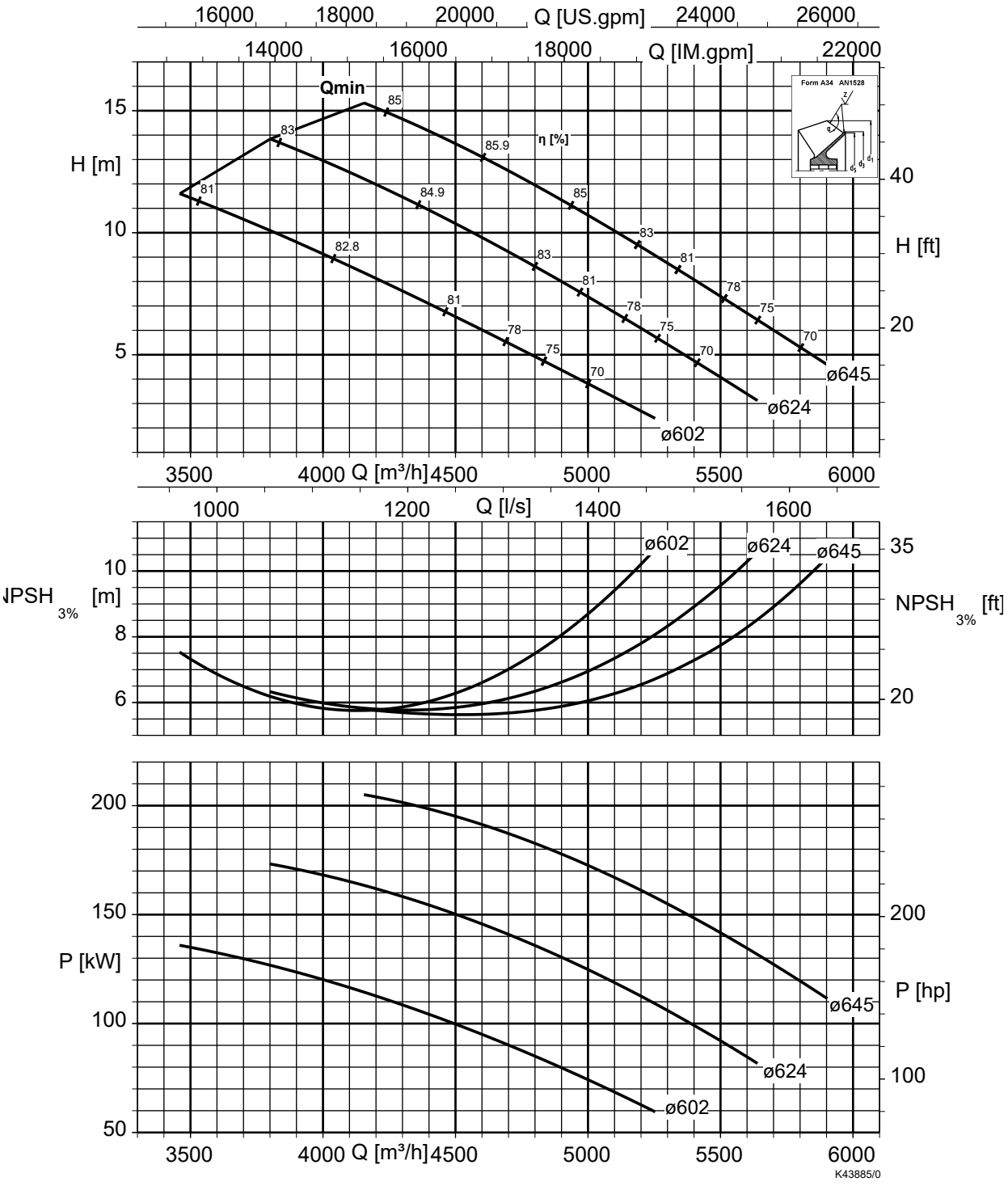
Table 32: Motor data

Size	Motor	P2 [kW]		J
		-[40]	IE3	[kgm²]
900-650	2506UT/XT	250	-	13,51
900-650	2906UT/XT	290	-	14,78
900-650	3406UT/XT	340	-	16,05

40 - = No efficiency classification

Amacan DB2 900-650, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 116 mm

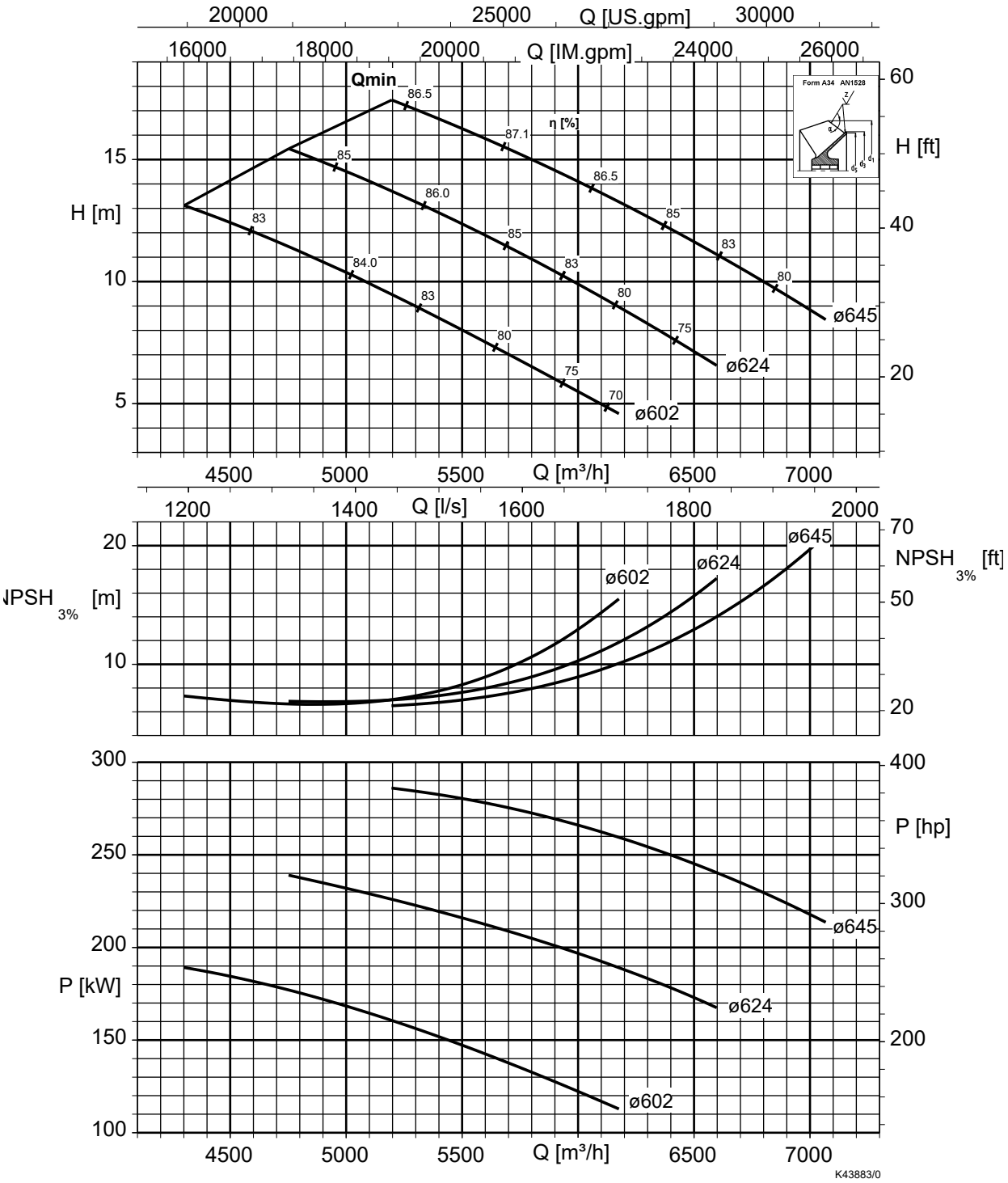
Table 33: Motor data

Size	Motor	P2 [kW]		J
		-[41]	IE3	[kgm²]
900-650	1556UT/XT	155	-	7,38
900-650	1806UT/XT	180	-	7,65
900-650	2056UT/XT	205	-	7,95
900-650	2506UT/XT	250	135	12,75
900-650	2906UT/XT	-	150	14,02
900-650	3406UT/XT	-	180	15,29

41 - = No efficiency classification

Amacan DB3 900-650, n = 960 rpm

Characteristic curves in acc. with ISO 9906 / 2 / 2B. n = speed



Free passage = 116 mm

Table 34: Motor data

Size	Motor	P2 [kW]		J
		-[42]	IE3	[kgm²]
900-650	2056UT/XT	205	-	7,95
900-650	2506UT/XT	250	-	12,75
900-650	2906UT/XT	290	-	14,02

Size	Motor	P2 [kW]		J
		-[42]	IE3	[kgm²]
900-650	3406UT/XT	340	-	15,29

42 - = No efficiency classification

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Dimensions [mm]

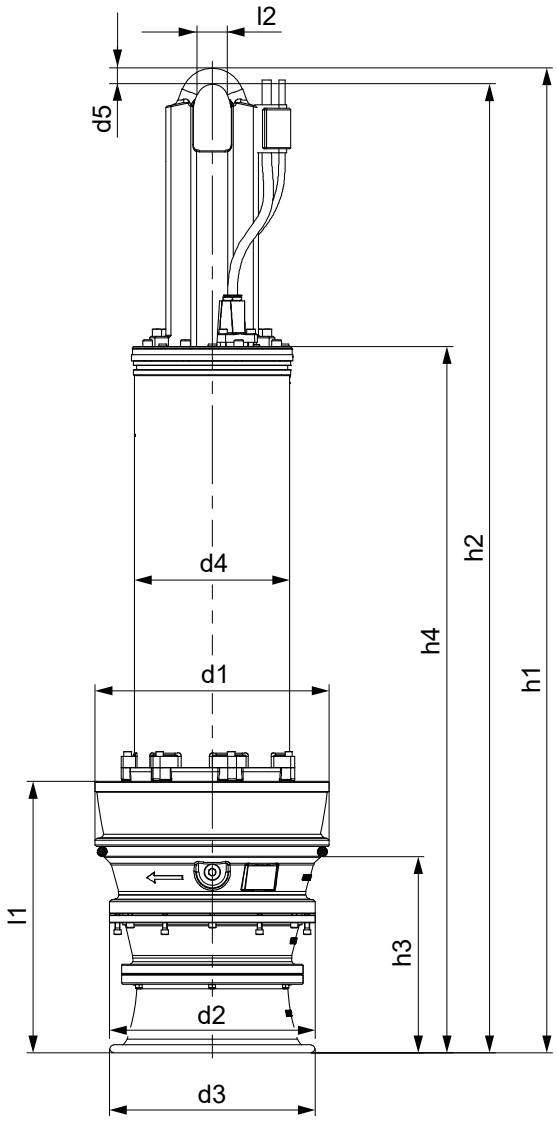

Fig. 1: Pump set dimensions

Table 35: Pump set dimensions [mm]

Size	Motor size	Number of poles	d_1	d_2	d_3	d_4	d_5	h_1	h_2	h_3	h_4	l_1	l_2	[kg][43)]
600-390	70	4	582	500	530	385	40	2279	2239	517	1588	722	80	945
600-390	80	4	582	500	530	385	40	2279	2239	517	1588	722	80	970
600-390	90	4	582	500	530	385	40	2479	2439	517	1788	722	80	1070
600-390	105	4	582	500	530	385	40	2479	2439	517	1788	722	80	1110
600-390	130	4	582	500	530	385	40	2479	2439	517	1788	722	80	1150
600-390	47	6	582	500	530	385	40	2279	2239	517	1588	722	80	945
600-390	65	6	582	500	530	385	40	2279	2239	517	1588	722	80	960
600-390	80	6	582	500	530	385	40	2479	2439	517	1788	722	80	1060
700-390	170	4	582	500	530	475	40	2800	2760	517	2109	722	80	1555
700-390	190	4	582	500	530	475	40	2800	2760	517	2109	722	80	1605
600-420	70	4	580	510	510	385	40	2243	2203	486	1552	673	80	905
600-420	90	4	580	510	510	385	40	2443	2403	486	1752	673	80	1045
600-420	105	4	580	510	510	385	40	2443	2403	486	1752	673	80	1085
600-420	130	4	580	510	510	385	40	2443	2403	486	1752	673	80	1125

43 Pump set in material variant G3, with 10-metre power cable and 5-metre support rope The indicated weights are reference values only. Refer to the data sheet for the exact weight.

Size	Motor size	Number of poles	d_1	d_2	d_3	d_4	d_5	h_1	h_2	h_3	h_4	l_1	l_2	[kg][43)]
700-420	170	4	580	510	510	475	40	2764	2724	486	2073	673	80	1530
700-420	190	4	580	510	510	475	40	2764	2724	486	2073	673	80	1580
700-420	215	4	580	510	510	475	40	2764	2724	486	2073	673	80	1610
700-460	90	4	678	580	610	385	40	2550	2510	553	1859	807	80	1130
700-460	105	4	678	580	610	385	40	2550	2510	553	1859	807	80	1175
700-460	130	4	678	580	610	385	40	2550	2510	553	1859	807	80	1215
700-460	150	4	678	580	610	475	40	2724	2684	553	2033	807	80	1625
700-460	170	4	678	580	610	475	40	2724	2684	553	2033	807	80	1625
700-460	190	4	678	580	610	475	40	2724	2684	553	2033	807	80	1670
700-460	215	4	678	580	610	475	40	2724	2684	553	2033	807	80	1700
700-460	47	6	678	580	610	385	40	2350	2310	553	1659	807	80	1020
700-460	60	6	678	580	610	385	40	2350	2310	553	1659	807	80	1020
700-460	80	6	678	580	610	385	40	2550	2510	553	1859	807	80	1145
700-460	100	6	678	580	610	385	40	2550	2510	553	1859	807	80	1190
700-460	120	6	678	580	610	385	40	2550	2510	553	1859	807	80	1235
700-460	155	6	678	580	610	475	40	2724	2684	553	2033	807	80	1605
800-460	275	4	678	580	610	555	50	3121	3071	553	2531	807	90	2310
800-460	300	4	678	580	610	555	50	3121	3071	553	2531	807	90	2375
800-580	80	6	778	695	705	385	40	2603	2563	636	1912	900	80	1335
800-580	100	6	778	695	705	385	40	2603	2563	636	1912	900	80	1380
800-580	120	6	778	695	705	385	40	2603	2563	636	1912	900	80	1425
800-580	155	6	778	695	705	475	40	2777	2737	636	2086	900	80	1795
800-580	180	6	778	695	705	475	40	2777	2737	636	2086	900	80	1825
800-580	205	6	778	695	705	475	40	2777	2737	636	2086	900	80	1880
800-580	250	6	778	695	705	555	50	3174	3124	636	2584	900	90	2530
800-580	290	6	778	695	705	555	50	3174	3124	636	2584	900	90	2670
800-580	340	6	778	695	705	555	50	3174	3124	636	2584	900	90	2800
900-630	155	6	876	790	790	475	40	2928	2888	593	2237	1085	80	2110
900-630	180	6	876	790	790	475	40	2928	2888	593	2237	1085	80	2140
900-630	205	6	876	790	790	475	40	2928	2888	593	2237	1085	80	2195
900-630	250	6	876	790	790	555	50	3179	3129	593	2589	1085	90	2835
900-630	290	6	876	790	790	555	50	3179	3129	593	2589	1085	90	2975
900-630	340	6	876	790	790	555	50	3179	3129	593	2589	1085	90	3105
900-650	155	6	876	760	770	475	40	2872	2832	680	2181	1028	80	2015
900-650	180	6	876	760	770	475	40	2872	2832	680	2181	1028	80	2040
900-650	205	6	876	760	770	475	40	2872	2832	680	2181	1028	80	2100
900-650	250	6	876	760	770	555	50	3122	3072	680	2532	1028	90	2740
900-650	290	6	876	760	770	555	50	3122	3072	680	2532	1028	90	2875
900-650	340	6	876	760	770	555	50	3122	3072	680	2532	1028	90	3010

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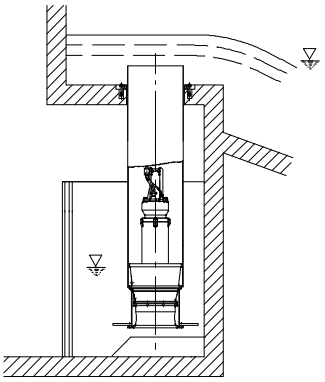
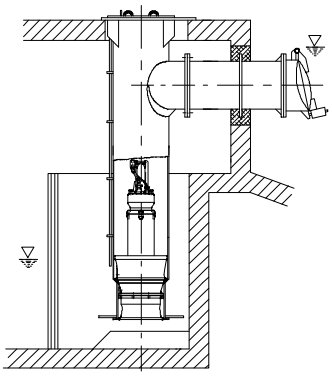
Installation types

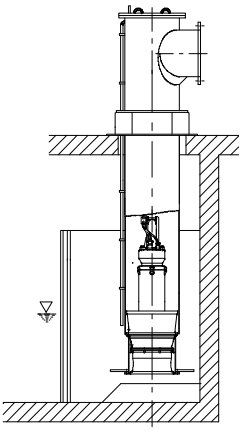
Table 36: Overview of installation types



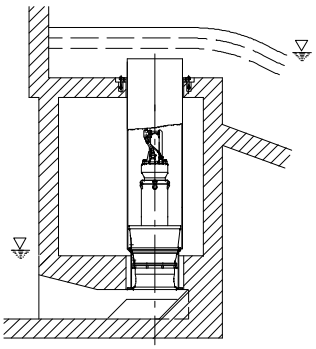
BU[44]/BUS[45] discharge tube
Overflow design with open intake chamber



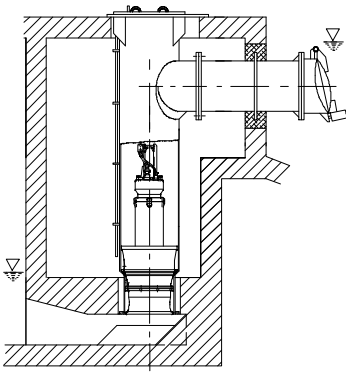
CU[44]/CUS[45] discharge tube
Underfloor discharge with open intake chamber



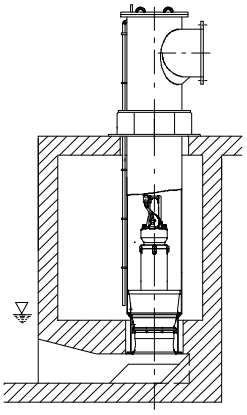
DU[44]/DUS[45] discharge tube
Above-floor discharge nozzle with open intake chamber



BG[44] discharge tube
Overflow design for installation in covered intake chamber for low suction-side water levels



CG[44] discharge tube
Design with underfloor discharge for installation in covered intake chamber for low suction-side water levels



DG[44] discharge tube
Design with above-floor discharge nozzle for installation in covered intake chamber for low suction-side water levels

Scope of supply

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

- Pump set complete with power cables
- O-ring
- Back-up name plate

Optional accessories:

- Support rope
- Accessories for installing the cable guide:
  - Fitting
  - Fitting
  - Turnbuckle
  - Support
  - Shackle
  - Cable clamps
- Cable support sleeves
- Flow-straightening vane to prevent floor vortices
- Discharge tube

44 Design without suction umbrella
45 Design with suction umbrella

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.

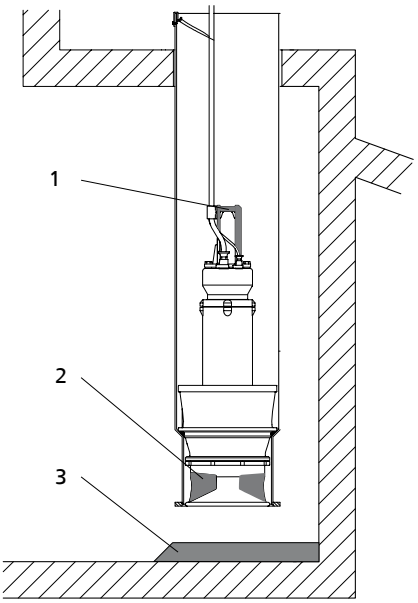
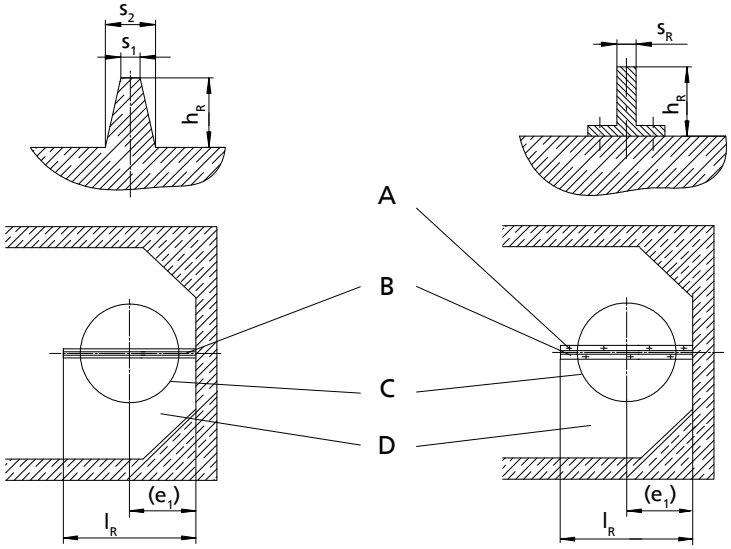


Fig. 2: Installation position of the pump set

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

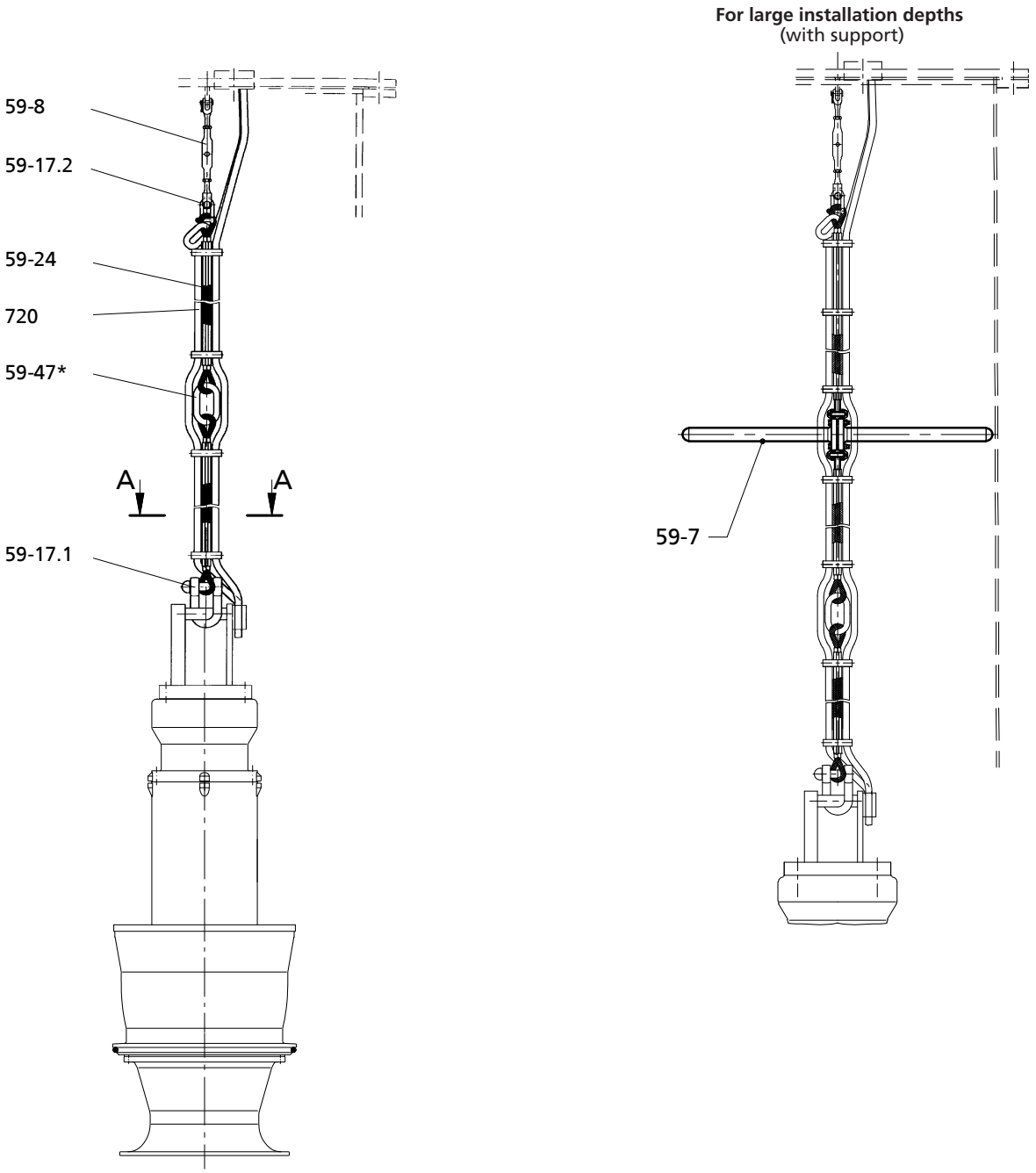
Variant 1
Flow-straightening vane cast from concrete

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



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

Table 37: 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

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

Cross-section of cable support

A-A

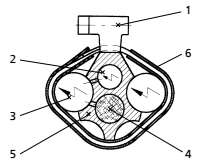


Table 38: List of components

Part No.	Description	Part No.	Description
1	Cable clamp (all approx. 300 mm to 400 mm)	4	Support rope 59-24
2	Control cable	5	Fitting
3	Power cable	6	Clamp cover

Discharge tube cover with cable gland

Design: with welding sleeve

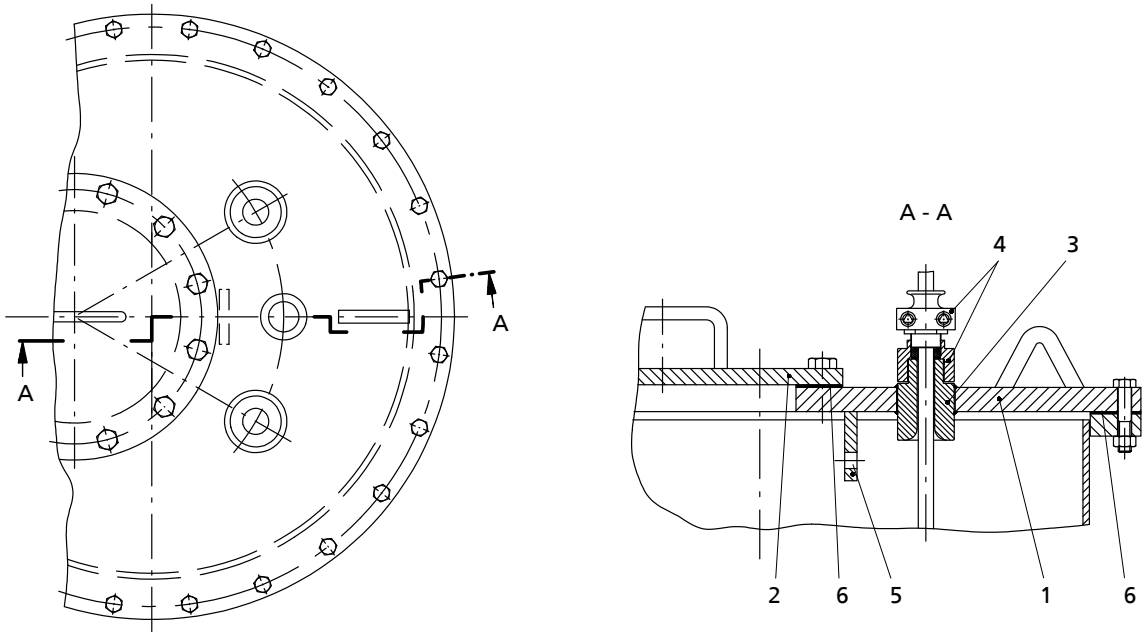


Fig. 3: Design variant with welding sleeve

Table 39: List of components

Part No.	Description	Part No.	Description
1	Discharge tube cover[46)]	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

46 Discharge tube cover also available in split design.

General assembly drawing with list of components

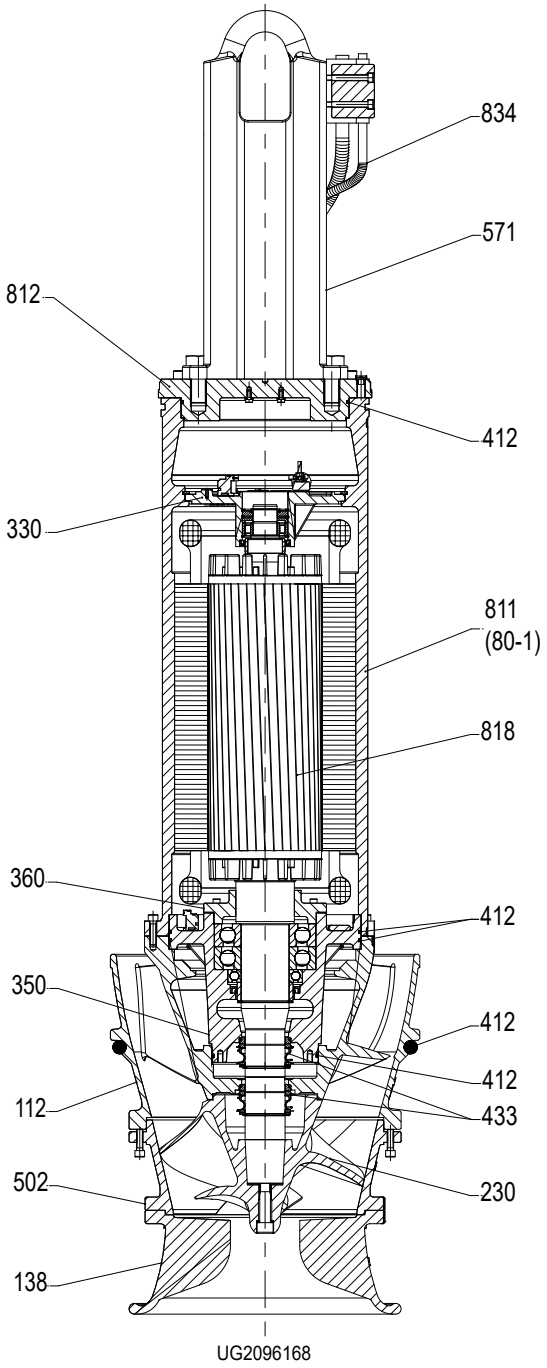


Fig. 4: General assembly drawing

Table 40: List of components

Part No.	Description	Part No.	Description
80-1	Motor unit	433	Mechanical seal
112	Pump bowl	502	Casing wear ring
138	Bellmouth	571	Bail
230	Impeller	811	Motor housing
330	Bearing bracket	812	Motor housing cover
350	Bearing housing	818	Rotor
360	Bearing cover	834	Cable gland
412	O-ring		

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