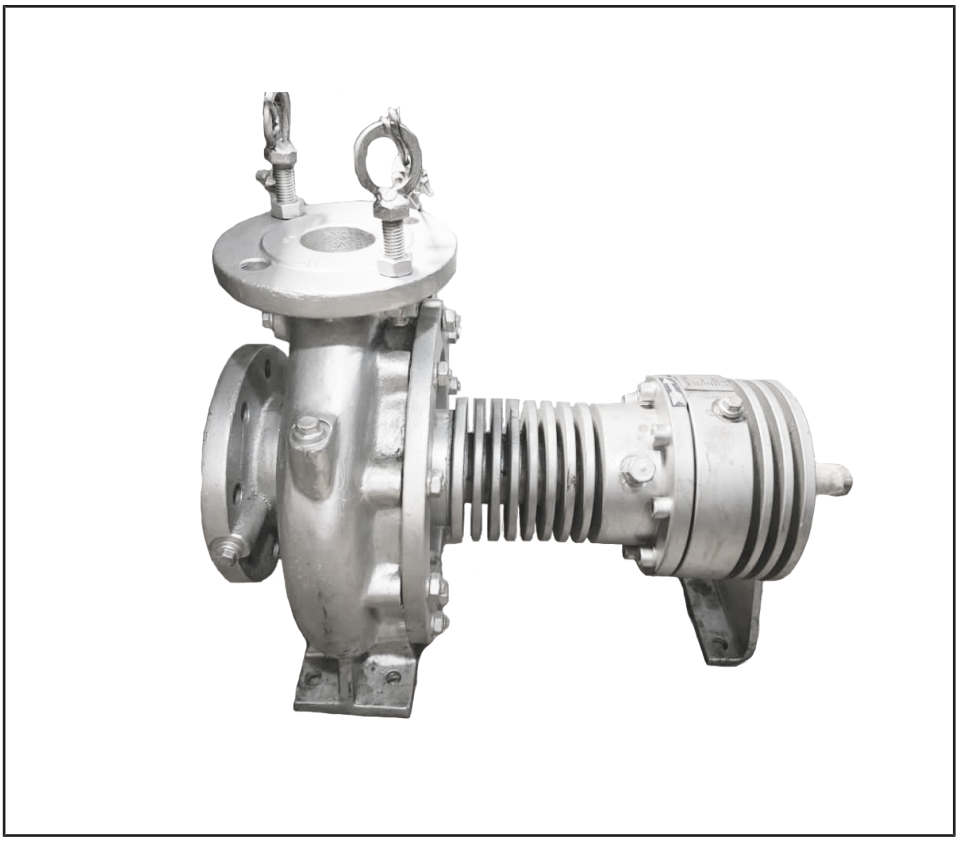
Thermal Oil / Hot Water Pump

VOLCANO

VLETY

Type Series Booklet



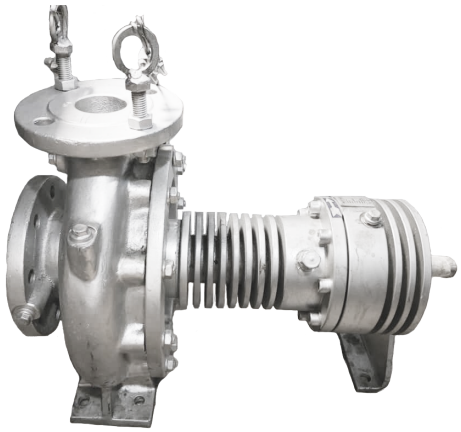
Contents

Centrifugal Pumps with Shaft Seal.

Centrifugal Pumps with Shaft Seal

Thermal Oil Pumps / Hot Water Pumps

VLETY



Main applications

- Heat transfer systems
- Hot water circulation

Fluids handled

- Thermal oil
- High-temperature hot water

Further information on fluids handled

Operating data

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m³/h]	≤ 625	≤ 754
Head	H [m]	≤ 102	≤ 100
Fluid temperature, thermal oil	T [°C]	-30 – +350	
Fluid temperature, hot water	T [°C]	≤ 180	
Operating pressure	p [bar]	≤ 16	

Design details

Design

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

Materials per country

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

Designation

Example: Vlety 050-032-160 SG XDB08LA2

Code	Description		Region
ETNY	Type series		
	Vlety	Vlety	A, B
050	Nominal suction nozzle diameter [mm]		A, B
032	Nominal discharge nozzle diameter [mm]		A, B
160	Nominal impeller diameter [mm]		A, B
S	Casing material		
	S	Nodular cast iron	A
	E	Cast steel	B
G	Impeller material if different from casing material		
	G	Cast iron	A, B
	C	Stainless steel	A, B
	E	Cast steel	B
X	Special design		
	[1]	Standard design	A, B
	X	Special design	A, B
D	Casing cover		
	D	Casing cover for SYT	A, B
B	Sealing system		
	B	Dead-end	A, B
08	Seal code		
	08	AQ_1VGG	A, B
L	Long-coupled design		
	L	Version for heat transfer fluid	A, B
A	Scope of supply		
	A	Pump only (Fig. 0)	A, B
2	Shaft unit		
	2	WS_25_LS	A, B

Further information on the designation

1) Blank

Pump casing

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

Impeller type

- Closed radial impeller with multiply curved vanes

Shaft seal

- Reinforced single mechanical seal, installation dimensions to EN 12756
- Reinforced double mechanical seal, installation dimensions to EN 12756

Bearings

Bearings

Bearing design	Region
Plain bearing, pump end	A, B
Rolling element bearing, drive end	A, B

Bearings used

Overview

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

Lubrication

Bearing design	Region
Lubrication by the fluid pumped, pump end	A, B
Grease lubrication, drive end	A, B

Automation

Automation options:

Automation systems	Region
PumpDrive, motor-mounted version **Only for fluid temperatures ≤ 140 °C**	A
PumpDrive, motor-mounted and cabinet-mounted version **Only for fluid temperatures > 140 °C**	A
KSB SuPremE	A

Coating and preservation

Coating and preservation

Design	Region
Coating and preservation to KSB standard	A, B

Product benefits

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

Acceptance tests and warranty

The following acceptance tests may be performed at a surcharge:

Overview of acceptance tests/warranty

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

Overview of fluids handled

Table of fluids handled and associated material combinations
✗ = standard

Fluid handled	Application limits[2]	Casing/impeller materials					Shaft seal	
		Nodular cast iron/ grey cast iron	Nodular cast iron/ stainless steel	Cast steel/ grey cast iron	Cast steel/ stainless steel	Cast steel/ cast steel	Single mechanical seal AQ_1VGG	Double mechanical seal tandem AQ_1VGG / AQ_1VGG
		SG	SC	EG	EC	EE	Code 08	Code 25
Hot water[3]	t ≤ 180 °C			✗			✗	-
	p ≤ 16 bar							
Thermal oil on mineral oil basis	t ≤ -30 to 350 °C			✗			✗	✗
	p ≤ 16 bar							
Thermal oil on synthetic basis, vapour pressure ≤ 1 bar at operating temperature	t ≤ -30 to 350 °C			✗			✗	✗
	p ≤ 16 bar							
Thermal oil on synthetic basis, vapour pressure ≥ 1 bar at operating temperature	t ≤ -30 to 350 °C			✗			-	✗
	p ≤ 16 bar							

2) The inlet pressure must not fall below atmospheric pressure.
3) Low-salt or fully desalinated water to VdTÜV technical instruction leaflet / AGFW technical instruction leaflet TCN 1466 (VdTÜV) 5/15 (AGFW), edition 02.89

Pressure and temperature limits

Test pressure limits and temperature limits

Pressure limits and temperature limits

Material variant	Fluid temperature	Test pressure[4)]	Region
	[°C]	[bar]	
S	-30 to +350	≤ 25	A
E	-30 to +350	≤ 25	B

In-service pressure limits and temperature limits

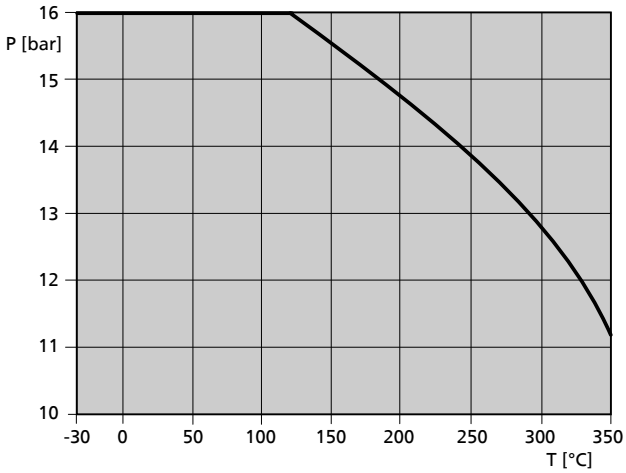


Fig. 1: Pressure/temperature correlation for flanges, material S, to EN 1092-2 and flanges drilled to ASME 125
Pressure/temperature correlation for flanges, material E, to EN 1092-1 and flanges drilled to ASME 150

Materials

Overview of available materials

Part number	Description		Material variant				
			SG	SC	EG	EC	EE
102	Volute casing	Nodular cast iron JS1030 / 536 Gr 60-40-18	A1	A1	-	-	-
		GP240GH+N / A216 Gr WCB	-	-	B1	B1	B1
161	Casing cover	Nodular cast iron JS1030 / A536 Gr 60-40-18	A1	A1	-	-	-
		GP240GH+N / A216 Gr WCB	-	-	B1	B1	B1
210	Shaft	Chrome steel 1.4021 + QTHRC50	A1	A1	-	-	-
		A276 TP 410 Cond H	-	-	B1	B1	B1
230	Impeller	Grey cast iron JL1040 / A 48 CL 35B	A1	-	B1	-	-
		Stainless steel 1.4408 / A743 Gr CF8M	-	A1	-	B2	-
		Cast steel	-	-	-	-	B2
310	Plain bearing	Carbon (KHK)	A1	A1	B1	B1	B1
		SiC / SiC	A1	A1	B2	B2	B2
330	Bearing bracket	Nodular cast iron JS1030 / A536 Gr 60-40-18	A1	A1	B1	B1	B1
411.10/.15	Sealing elements	BU9593 / HDR	A1	A1	-	-	-
		CrNi steel/graphite 1G	-	-	B1	B1	B1
502.01	Casing wear ring, suction side	Grey cast iron JL1040 / CI	A1	A1	B1	B1	B1
		Chrome hard 400	-	-	-	B2	B2
502.02	Casing wear ring, discharge side	Grey cast iron JL1040 / CI	A1	A1	B1	B1	B1
		Chrome hard 400	-	-	-	B2	B2
902	Studs	Steel 8.8	A1	A1	-	-	-
		1.7709+QT / A193 Gr B7	-	-	B1	B1	B1
903	Plug	Steel	A1	A1	B1	B1	B1
920	Nut	8+A2A / 8+B633 SC1 TP3	A1	A1	-	-	-
		1.7218+QT+A2D / A194 Gr 7 / Gr 2H+B633 SC1 TP2	-	-	B1	B1	B1
920.95	Impeller nut	8	A1	A1	B1	B1	B1

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

Technical data

Technical data

Sizes	Bearing bracket	Impeller				Speed limit	
		Impeller outlet width	Impeller inlet diameter	Impeller diameter		Maximum	Minimum
				Maximum	Minimum		
		[mm]	[mm]	[mm]	[mm]	[rpm]	[rpm]
040-025-160	WS_25_LS	6,0	45,2	169	130	3500	800
040-025-200	WS_25_LS	6,0	45,2	209	160	3500	800
050-032-125.1	WS_25_LS	6,6	52,4	139	104	4300	800
050-032-160.1	WS_25_LS	5,7	52,7	170	136	4400	800
050-032-200.1	WS_25_LS	5,6	54,0	204	170	3800	800
050-032-160	WS_25_LS	8,5	60,6	174	136	3500	800
050-032-200	WS_25_LS	7,0	62,9	209	170	3700	800
050-032-250	WS_25_LS	7,5	62,6	261	209	3600	800
065-040-160	WS_25_LS	13,0	70,0	174	128	4400	800
065-040-200	WS_25_LS	9,4	69,4	209	165	3700	800
065-040-250	WS_25_LS	8,4	74,1	260	200	3600	800
065-040-315	WS_35_LS	7,5	75,3	326	260	2300	800
065-050-160	WS_25_LS	16,9	86,9	174	128	4400	800
065-050-200	WS_25_LS	13,8	83,1	219	170	3400	800
065-050-250	WS_25_LS	10,5	84,0	260	215	3500	800
065-050-315	WS_35_LS	10,0	87,0	323	265	2400	800
080-065-160	WS_25_LS	21,0	92,0	174	132	3900	800
080-065-200	WS_25_LS	17,0	99,7	219	175	3600	800
080-065-250	WS_35_LS	15,1	101,0	260	215	3600	800
080-065-315	WS_35_LS	13,7	108,2	320	260	2400	800
100-080-160	WS_25_LS	31,6	124,0	174	138	3500	800
100-080-200	WS_35_LS	24,5	115,0	219	180	3500	800
100-080-250	WS_35_LS	19,0	115,0	269	215	3500	800
100-080-315	WS_35_LS	18,7	115,6	334	269	1900	800
125-100-160	WS_35_LS	37,6	135,0	185	162	3600	800
125-100-200	WS_35_LS	32,5	142,0	219	179	3300	800
125-100-250	WS_35_LS	27,0	145,0	269	210	3500	800
125-100-315	WS_35_LS	23,0	142,0	334	270	1800	800
150-125-200	WS_35_LS	40,7	159,0	224	182	3500	800
150-125-250	WS_35_LS	37,0	162,4	269	218	2000	800
150-125-315	WS_55_LS	30,9	162,0	334	270	2300	800
150-125-400	WS_55_LS	25,9	162,4	419	330	1800	800
200-150-315	WS_55_LS	39,7	191,5	334	264	2100	800
200-150-400	WS_55_LS	33,0	191,4	419	330	1600	800

Dimensions

Fig. 0 pump

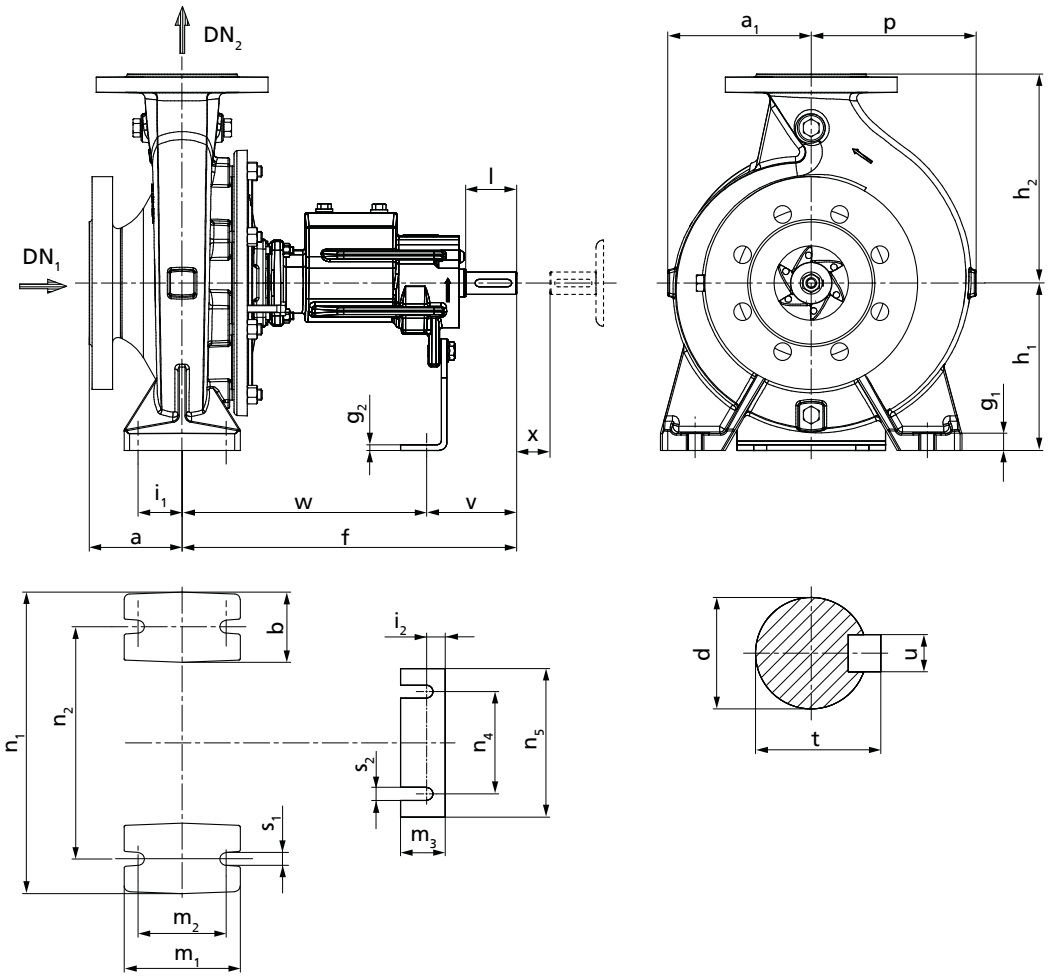


Fig. 2: Dimensions, Fig. 0

Pump dimensions [mm]

Size	Bearing bracket	DN_1 5)	DN_2 5)	a 5)	a_1	b 5)	d 5)	f 5)	g_1	g_2	h_1 5)	h_2 5)	i_1	i_2	l 5)	m_1 5)	m_2
040-025-160	WS_25_LS	40	25	80	118	50	24	360	15	4	132	160	35	23	50	100	70
040-025-200	WS_25_LS	40	25	80	142	50	24	360	15	4	160	180	35	23	50	100	70
050-032-125.1	WS_25_LS	50	32	80	116	50	24	360	15	4	112	140	35	23	50	100	70
050-032-160.1	WS_25_LS	50	32	80	116	50	24	360	15	4	132	160	35	23	50	100	70
050-032-200.1	WS_25_LS	50	32	80	142	50	24	360	18	4	160	180	35	23	50	100	70
050-032-160	WS_25_LS	50	32	80	118	50	24	360	15	4	132	160	35	23	50	100	70
050-032-200	WS_25_LS	50	32	80	142	50	24	360	18	4	160	180	35	23	50	100	70
050-032-250	WS_25_LS	50	32	100	169	65	24	360	18	6	180	225	47,5	25	50	125	95
065-040-160	WS_25_LS	65	40	80	119	50	24	360	15	4	132	160	35	23	50	100	70
065-040-200	WS_25_LS	65	40	100	142	50	24	360	18	4	160	180	35	23	50	100	70
065-040-250	WS_25_LS	65	40	100	169	65	24	360	18	6	180	225	47,5	25	50	125	95
065-040-315	WS_35_LS	65	40	125	207	65	32	470	18	6	225	250	47,5	24	80	125	95
065-050-160	WS_25_LS	65	50	100	128	50	24	360	18	4	160	180	35	23	50	100	70
065-050-200	WS_25_LS	65	50	100	144	50	24	360	18	4	160	200	35	23	50	100	70
065-050-250	WS_25_LS	65	50	100	170	65	24	360	18	6	180	225	47,5	25	50	125	95
065-050-315	WS_35_LS	65	50	125	207	65	32	470	18	6	225	280	47,5	24	80	125	95
080-065-160	WS_25_LS	80	65	100	132	65	24	360	18	4	160	200	47,5	23	50	125	95
080-065-200	WS_25_LS	80	65	100	155	65	24	360	18	6	180	225	47,5	25	50	125	95
080-065-250	WS_35_LS	80	65	100	179	80	32	470	20	6	200	250	60	24	80	160	120

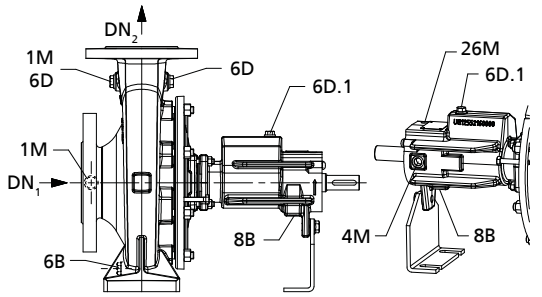
5) Dimensions to EN 733

Size	Bearing bracket	DN_1 [5]	DN_2 [5]	a [5]	a_1	b [5]	d [5]	f [5]	g_1	g_2	h_1 [5]	h_2 [5]	i_1	i_2	l [5]	m_1 [5]	m_2
080-065-315	WS_35_LS	80	65	125	209	80	32	470	20	6	225	280	60	24	80	160	120
100-080-160	WS_25_LS	100	80	125	138	65	24	360	18	6	180	225	47,5	25	50	125	95
100-080-200	WS_35_LS	100	80	125	159	65	32	470	18	4	180	250	47,5	22	80	125	95
100-080-250	WS_35_LS	100	80	125	183	80	32	470	18	6	200	280	60	24	80	160	120
100-080-315	WS_35_LS	100	80	125	218	80	32	470	20	6	250	315	60	24	80	160	120
125-100-160	WS_35_LS	125	100	125	178	80	32	470	18	6	200	280	60	24	80	160	120
125-100-200	WS_35_LS	125	100	125	173	80	32	470	18	6	200	280	60	24	80	160	120
125-100-250	WS_35_LS	125	100	140	188	80	32	470	18	6	225	280	60	24	80	160	120
125-100-315	WS_35_LS	125	100	140	225	80	32	470	18	6	250	315	60	24	80	160	120
150-125-200	WS_35_LS	150	125	140	189	80	32	470	20	6	250	315	60	24	80	160	120
150-125-250	WS_35_LS	150	125	140	226	80	32	470	20	6	250	355	60	24	80	160	120
150-125-315	WS_55_LS	150	125	140	243	100	42	530	20	6	280	355	75	25	110	200	150
150-125-400	WS_55_LS	150	125	140	277	100	42	530	20	6	315	400	75	25	110	200	150
200-150-315	WS_55_LS	200	150	160	255	100	42	530	20	6	280	400	75	25	110	200	150
200-150-400	WS_55_LS	200	150	160	289	100	42	530	20	6	315	450	75	25	110	200	150

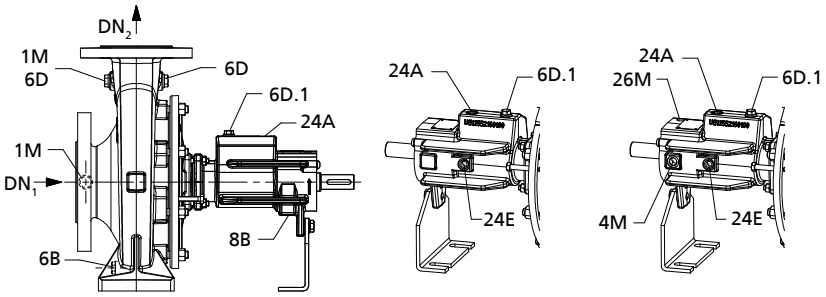
Pump dimensions, continued [mm]

Size	Bearing bracket	DN_1 [5]	DN_2 [5]	m_3 [5]	n_1 [5]	n_2 [5]	n_4	n_5	p	s_1 [5]	s_2 [5]	t	u	v	w [5]	x [5]
040-025-160	WS_25_LS	40	25	48	240	190	110	160	118	14	14	27	8	100	260	100
040-025-200	WS_25_LS	40	25	48	240	190	110	160	142	14	14	27	8	100	260	100
050-032-125.1	WS_25_LS	50	32	48	190	140	110	160	116	14	14	27	8	100	260	100
050-032-160.1	WS_25_LS	50	32	48	240	190	110	160	121	14	14	27	8	100	260	100
050-032-200.1	WS_25_LS	50	32	48	240	190	110	160	142	14	14	27	8	100	260	100
050-032-160	WS_25_LS	50	32	48	240	190	110	160	128	14	14	27	8	100	260	100
050-032-200	WS_25_LS	50	32	48	240	190	110	160	143	14	14	27	8	100	260	100
050-032-250	WS_25_LS	50	32	48	320	250	110	160	178	14	14	27	8	100	260	100
065-040-160	WS_25_LS	65	40	48	240	190	110	160	134	14	14	27	8	100	260	100
065-040-200	WS_25_LS	65	40	48	265	212	110	160	155	14	14	27	8	100	260	100
065-040-250	WS_25_LS	65	40	48	320	250	110	160	179	14	14	27	8	100	260	100
065-040-315	WS_35_LS	65	40	48	345	280	110	160	207	14	14	35	10	130	340	100
065-050-160	WS_25_LS	65	50	48	265	212	110	160	149	14	14	27	8	100	260	100
065-050-200	WS_25_LS	65	50	48	265	212	110	160	163	14	14	27	8	100	260	100
065-050-250	WS_25_LS	65	50	48	320	250	110	160	186	14	14	27	8	100	260	100
065-050-315	WS_35_LS	65	50	48	345	280	110	160	215	14	14	35	10	130	340	100
080-065-160	WS_25_LS	80	65	48	280	212	110	160	160	14	14	27	8	100	260	100
080-065-200	WS_25_LS	80	65	48	320	250	110	160	178	14	14	27	8	100	260	140
080-065-250	WS_35_LS	80	65	48	360	280	110	160	199	19	14	35	10	130	340	140
080-065-315	WS_35_LS	80	65	48	400	315	110	160	229	19	14	35	10	130	340	140
100-080-160	WS_25_LS	100	80	48	320	250	110	160	174	14	14	27	8	100	260	140
100-080-200	WS_35_LS	100	80	48	345	280	110	160	188	19	14	35	10	130	340	140
100-080-250	WS_35_LS	100	80	48	400	315	110	160	209	19	14	35	10	130	340	140
100-080-315	WS_35_LS	100	80	48	400	315	110	160	242	19	14	35	10	130	340	140
125-100-160	WS_35_LS	125	100	48	360	280	110	160	225	19	14	35	10	130	340	140
125-100-200	WS_35_LS	125	100	48	360	280	110	160	212	19	14	35	10	130	340	140
125-100-250	WS_35_LS	125	100	48	400	315	110	160	219	19	14	35	10	130	340	140
125-100-315	WS_35_LS	125	100	48	400	315	110	160	255	19	14	35	10	130	340	140
150-125-200	WS_35_LS	150	125	48	400	315	110	160	242	19	14	35	10	130	340	140
150-125-250	WS_35_LS	150	125	48	400	315	110	160	275	19	14	35	10	130	340	140
150-125-315	WS_55_LS	150	125	48	500	400	110	160	280	24	14	45	12	160	370	140
150-125-400	WS_55_LS	150	125	48	500	400	110	160	309	24	14	45	12	160	370	140
200-150-315	WS_55_LS	200	150	48	550	450	110	160	304	24	14	45	12	160	370	140
200-150-400	WS_55_LS	200	150	48	550	450	110	160	331	24	14	45	12	160	370	140

Connection types



Connections of a pump with single mechanical seal



Connections of a pump with double mechanical seal

Connection types

Connection	Description	Configuration	Position	Region
1M	Pressure gauge connection	Drilled and closed or with pressure sensor	DN_2	A
		Drilled and closed		B
1M optional	Pressure gauge connection	Drilled and closed or with pressure sensor	DN_1	A
		Drilled and closed		B
4M	Temperature measurement	Drilled and closed or with temperature sensor		A, B
6B	Fluid drain	Drilled and closed	-	A, B
6D	Fluid priming and venting	Drilled and closed	DN_2, suction side	A, B
6D optional	Fluid priming and venting	Drilled and closed	DN_2, drive end	A, B
6D.1	Fluid priming and venting	Drilled and closed	-	A, B
8B	Leakage drain	Drilled	-	A, B
24A	Quench liquid outlet	Drilled and closed or with quench piping	-	A, B
24E	Quench liquid inlet	Drilled and closed or with quench piping	-	A, B
26M	Shock pulse measurement	Drilled and closed or with vibration sensor		A, B

Connection dimensions

Size	Bearing bracket	Material variant S			Material variant E
		Connections at the volute casing	Connections at the bearing bracket		Connections at the volute casing
		1M / 6D / 6B	4M	6D.1 / 8B / 24A / 24E / 26M	1M / 6D / 6B
040-025-160	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
040-025-200	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-125.1	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-160.1	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-200.1	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-160	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-200	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
050-032-250	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-040-160	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-040-200	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT

Size	Bearing bracket	Material variant S			Material variant E
		Connections at the volute casing	Connections at the bearing bracket		Connections at the volute casing
		1M / 6D / 6B	4M	6D.1 / 8B / 24A / 24E / 26M	1M / 6D / 6B
065-040-250	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-040-315	WS_35_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-050-160	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-050-200	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-050-250	WS_25_LS	G 1/4	M8	G 1/4	1/4-18 NPT
065-050-315	WS_35_LS	G 1/4	M8	G 1/4	1/4-18 NPT
080-065-160	WS_25_LS	G 3/8	M8	G 1/4	3/8-18 NPT
080-065-200	WS_25_LS	G 3/8	M8	G 1/4	3/8-18 NPT
080-065-250	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
080-065-315	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
100-080-160	WS_25_LS	G 3/8	M8	G 1/4	3/8-18 NPT
100-080-200	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
100-080-250	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
100-080-315	WS_35_LS	G 3/8	M8	G 1/4	3/8-18 NPT
125-100-160	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
125-100-200	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
125-100-250	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
125-100-315	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
150-125-200	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
150-125-250	WS_35_LS	G 1/2	M8	G 1/4	1/2-14 NPT
150-125-315	WS_55_LS	G 1/2	M8	G 1/4	1/2-14 NPT
150-125-400	WS_55_LS	G 1/2	M8	G 1/4	1/2-14 NPT
200-150-200	WS_55_LS	G 1/2	M8	G 1/4	1/2-14 NPT
200-150-400	WS_55_LS	G 1/2	M8	G 1/4	1/2-14 NPT

Flange design

Flange design by materials

Material variant	Standard	Nominal diameter	Pressure class	Region
S	EN 1092-2	DN 25 - DN 200	PN 16	A
	Drilled to ASME B16.1[6)]	DN 25 - DN 200	Class 125	A
E	EN 1092-1	DN 25 - DN 200	PN 16	B
	Drilled to ASME B16.5[6)]	DN 25 - DN 200	Class 150	B

Flange dimensions

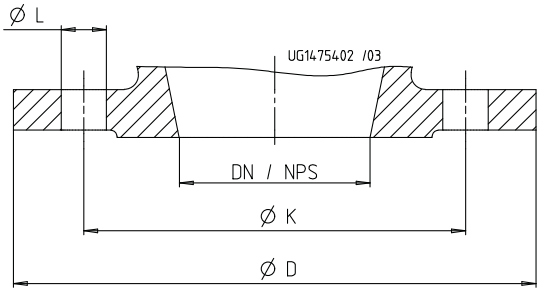


Fig. 3: Illustration of dimensions

6) DN 80 machined like DN 100

Flange dimensions [mm]

DN / NPS	Standard								
	EN 1092-1			EN 1092-2			ASME B 16.1 or ASME B 16.5		
	Material variant E			Material variant S			Material variants S / E		
	PN 16						Class 125 or Class 150		
	Ø K	Ø D	Number of holes L	Ø K	Ø D	Number of holes L	Ø K	Ø D	Number of holes L
25 / NPS 1	85	115	4×∅14	85	115	4×∅14	79,2	115	4×∅15,7
32 / NPS 11/4	100	140	4×∅18	100	140	4×∅19	88,9	140	4×∅15,7
40 / NPS 11/2	110	150	4×∅18	110	150	4×∅19	98,6	150	4×∅15,7
50 / NPS 2	125	165	4×∅18	125	165	4×∅19	120,7	165	4×∅19,1
65 / NPS 21/2	145	185	4×∅18	145	185	4×∅19	139,7	185	4×∅19,1
80 / NPS 3[7)]	160	200 / 230	8×∅18	160	200 / 229[8)]	8×∅19	152,4	200 / 229[8)] / 230[8)]	4×∅19,1
100 / NPS 4	180	230	8×∅18	180	230	8×∅19	190,5	230	8×∅19,1
125 / NPS 5	210	255	8×∅18	210	255	8×∅19	215,9	255	8×∅22,4
150 / NPS 6	240	285	8×∅22	240	285	8×∅23	241,3	285	8×∅22,4
200 / NPS 8	295	345	12×∅22	295	345	12×∅23	298,5	345	8×∅22,4

Equivalents of DN 80 for a flange drilled to ASME

Size	Bearing bracket	Material variants SG, SC		Material variants EG, EC, EE	
		DN 1 ASME 125	DN 2 ASME 125	DN 1 ASME 150	DN 2 ASME 150
080-065-160	25	NPS 4	NPS 2 1/2	NPS 4	NPS 2 1/2
080-065-200	25	NPS 4	NPS 2 1/2	NPS 4	NPS 2 1/2
080-065-250	35	NPS 4	NPS 2 1/2	NPS 4	NPS 2 1/2
080-065-315	35	NPS 4	NPS 2 1/2	NPS 4	NPS 2 1/2

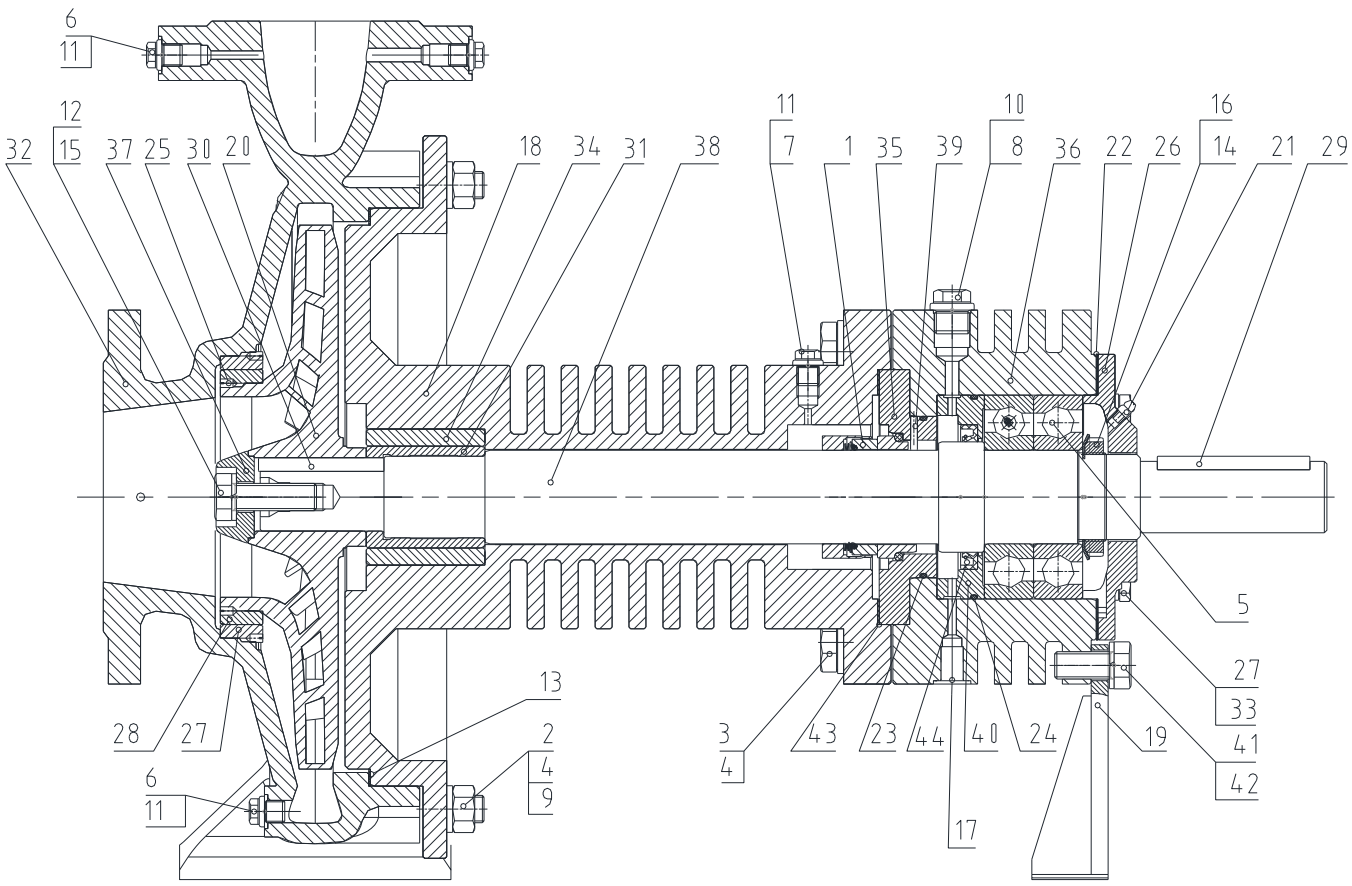
Scope of supply

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

Scope of supply

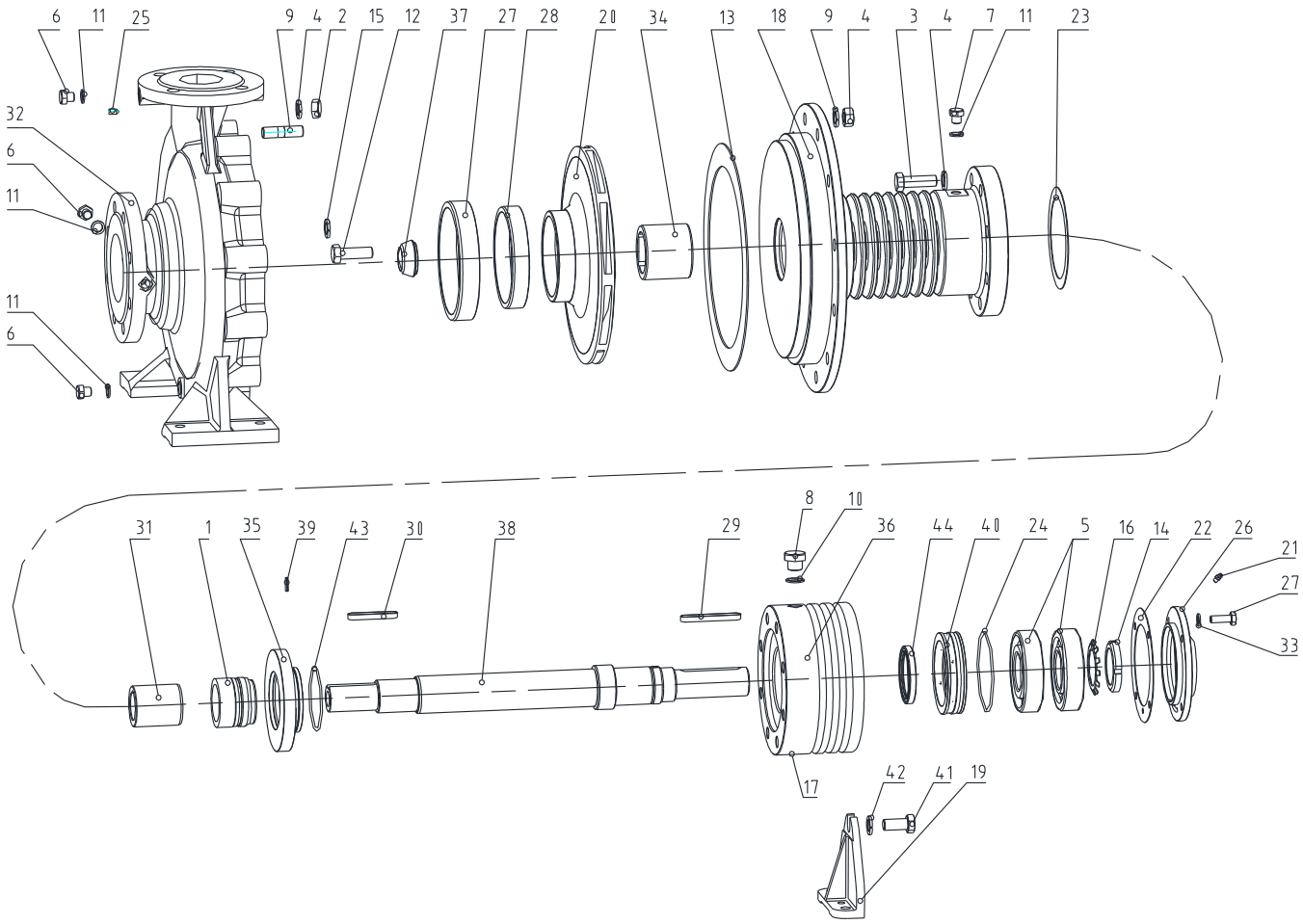
Scope of supply	Region
Pump	A, B
Baseplate	A, B
Coupling	A, B
Coupling guard	A, B
Drive	A, B
Quench pot with pipework (optional)	A
Special accessories as required	A

ASSEMBLY DRAWING WITH PART LIST



1	Mechanical seal	12	Impeller fixing screw	23	O-ring	34	Plate bearing
2	Nut	13	Gasket	24	O-ring	35	Mechanical seal cover
3	Screw	14	Lock nut	25	Screw for wearing rings fixing	36	Bearing bracket
4	Washer	15	Washer	26	Bearing cover	37	Disc
5	Ball bearings	16	Locking washer	27	Casing wearing ring	38	Shaft
6	Screw	17	Leakage connection R1/2”	28	Impeller wearing ring	39	Spring pin
7	Air venting crews	18	Volute casing cover	29	Key	40	Seat ring holder
8	Screw	19	Foot	30	Key	41	Screw
9	Screw	20	Impeller	31	Sleeve	42	Washer
10	Washer	21	Greaser	32	Volute casing	43	Gasket
11	Washer	22	Gasket	33	Washer	44	Lip seal

PUMP EXPLODED VIEW



1	Mechanical seal	12	Impeller fixing screw	23	O-ring	34	Plate bearing
2	Nut	13	Gasket	24	O-ring	35	Mechanical seal cover
3	Screw	14	Lock nut	25	Screw for wearing rings fixing	36	Bearing bracket
4	Washer	15	Washer	26	Bearing cover	37	Disc
5	Ball bearings	16	Locking washer	27	Casing wearing ring	38	Shaft
6	Screw	17	Leakage connection	28	Impeller wearing ring	39	Spring pin
7	Air venting screw	18	Volute casing cover	29	Key	40	Seat ring holder
8	Screw	19	Foot	30	Key	41	Screw
9	Screw	20	Impeller	31	Sleeve	42	Washer
10	Washer	21	Greaser	32	Volute casing	43	Gasket
11	Washer	22	Gasket	33	Washer	44	Lip seal

Vlety bearing bracket WS_25_LS with double mechanical seal

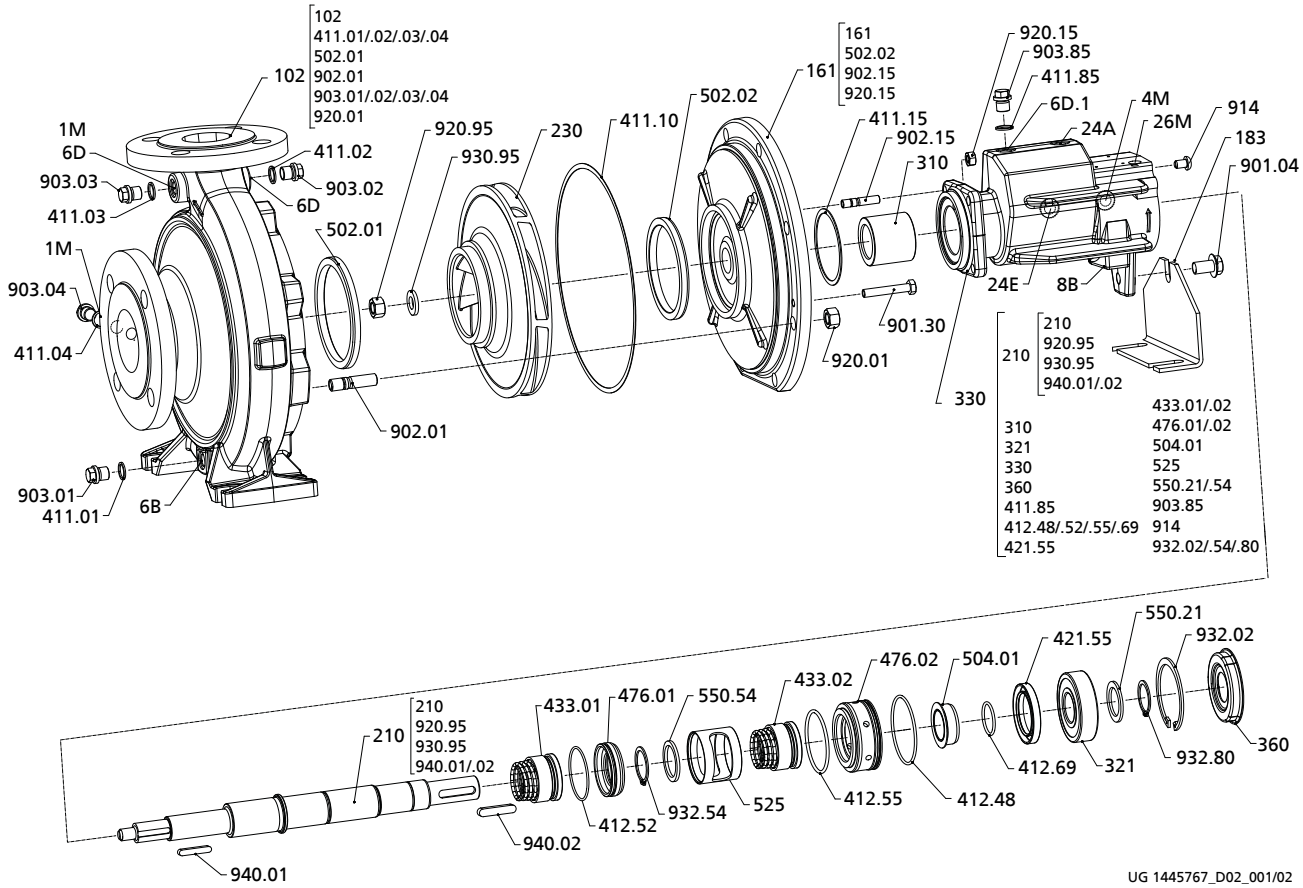


Fig. 5: Exploded view of an Vlety; bearing bracket WS_25_LS with double mechanical seal

List of components

Part number	Description	Part number	Description
102	Volute casing	901.04/.30	Hexagon head bolt
161	Casing cover	902.01/.15	Stud
183	Support foot	903.01/.02/.03/.04/.85	Screw plug
210	Shaft	914	Pan head screw
230	Impeller	920.01/.15/.95	Nut
310	Plain bearing	930.95	Safety device
321	Radial ball bearing	932.02/.54/.80	Circlip
330	Bearing bracket	940.01/.02	Key
360	Bearing cover		
411.01/.02/.03/.04/.10/.15/.85	Joint ring	**Connections**	
412.48/.52/.55/.69	O-ring	1M	Pressure gauge connection
421.55	Lip seal	4M	Temperature measurement connection
433.01/.02	Mechanical seal	6B	Fluid drain
476.01/.02	Mating ring carrier	6D, 6D.1	Fluid priming and venting
502.01/.02[10)]	Casing wear ring	8B	Leakage drain
504.01	Spacer ring	24A	Quench liquid outlet
525	Spacer sleeve	24E	Quench liquid inlet
550.21/.54	Disc	26M	Shock pulse measurement connection

Vlety, bearing brackets WS_35_LS / WS_55_LS

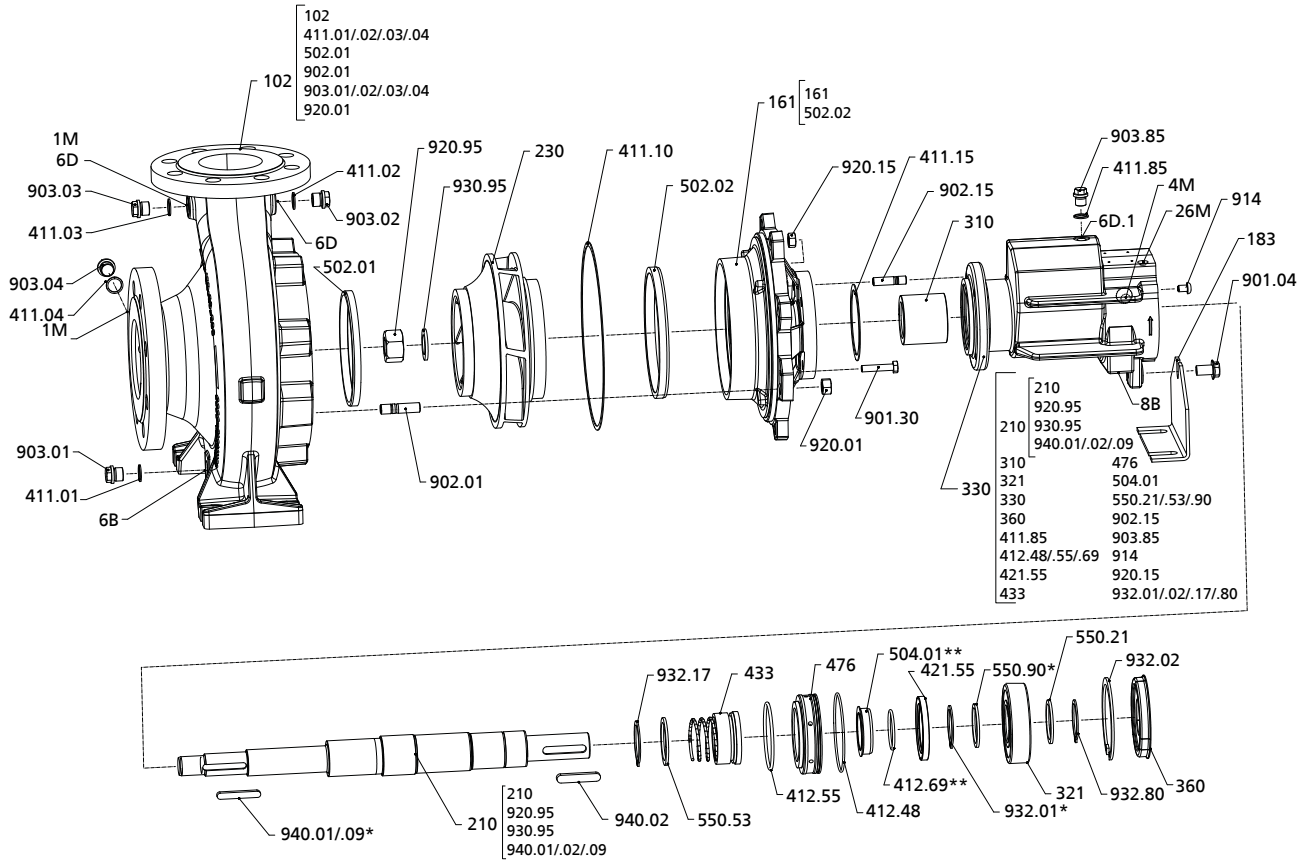


Fig. 6: Exploded view of an Vlety; bearing brackets WS_35_LS / WS_55_LS
For WS_55 only
For WS_35 only

List of components

Part number	Description	Part number	Description
102	Volute casing	901.04/.30	Hexagon head bolt
161	Casing cover	902.01/.15	Stud
183	Support foot	903.01/.02/.03/.04/.85	Screw plug
210	Shaft	914	Pan head screw
230	Impeller	920.01/.15/.95	Nut
310	Plain bearing	930.95	Safety device
321	Radial ball bearing	932.01[11]/.02/.17/.80	Circlip
330	Bearing bracket	940.01/.02/.09[12]	Key
360	Bearing cover		
411.01/.02/.03/.04/.10/.15/.85	Joint ring	**Connections**	
412.48/.55/.69	O-ring	1M	Pressure gauge connection
421.55	Lip seal	4M	Temperature measurement connection
433	Mechanical seal	6B	Fluid drain
476	Mating ring carrier	6D, 6D.1	Fluid priming and venting
502.01/.02	Casing wear ring	8B	Leakage drain
504.01[13]	Spacer ring	26M	Shock pulse measurement connection
550.21/.53/.90[14]	Disc		

Vlety, bearing brackets WS_35_LS / WS_55_LS with double mechanical seal

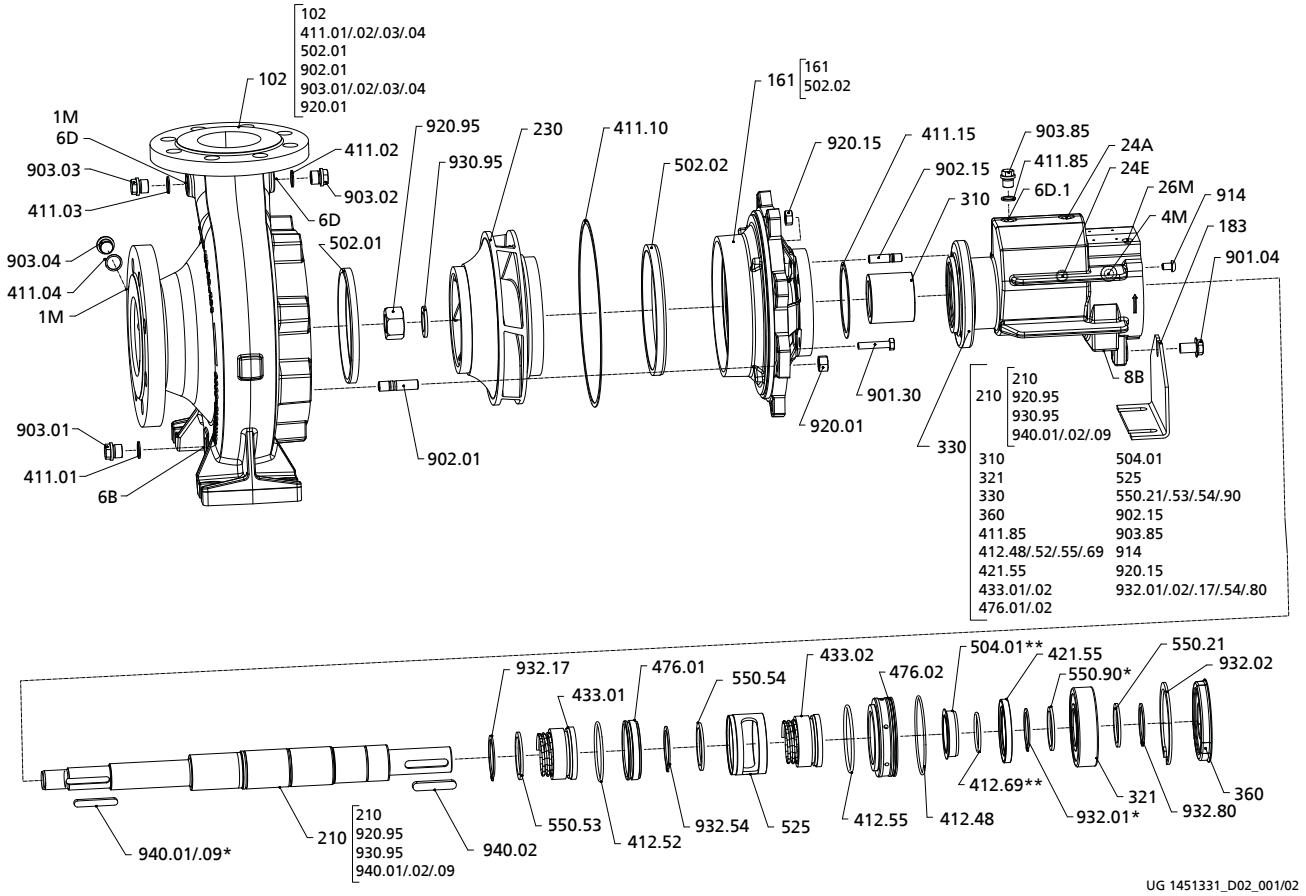


Fig. 7: Exploded view of an Vlety, bearing brackets WS_35_LS / WS_55_LS with double mechanical seal

List of components

Part number	Description	Part number	Description
102	Volute casing	901.04/.30	Hexagon head bolt
161	Casing cover	902.01/.15	Stud
183	Support foot	903.01/.02/.03/.04/.85	Screw plug
210	Shaft	914	Pan head screw
230	Impeller	920.01/.15/.95	Nut
310	Plain bearings	930.95	Safety device
321	Radial ball bearing	932.01[15]/.02/.17/.54/.80	Circlip
330	Bearing bracket	940.01/.02/.09[16]	Key
360	Bearing cover		
411.01/.02/.03/.04/.10/.15/.85	Joint ring	**Connections**	
412.48/.52/.55/.69[17]	O-ring	1M	Pressure gauge connection
421.55		4M	Temperature measurement connection
433.01/.02	Mechanical seal	6B	Fluid drain
476.01/.02	Mating ring carrier	6D, 6D.1	Fluid priming and venting
502.01/.02	Casing wear ring	8B	Leakage drain
504.01[18]		24A	Quench liquid outlet
525	Spacer sleeve	24E	Quench liquid inlet
550.21/.53/.54/.90[19]	Disc	26M	Shock pulse measurement connection

Vlety, bearing brackets WS_25_LS / WS_55_LS with SiC plain bearing

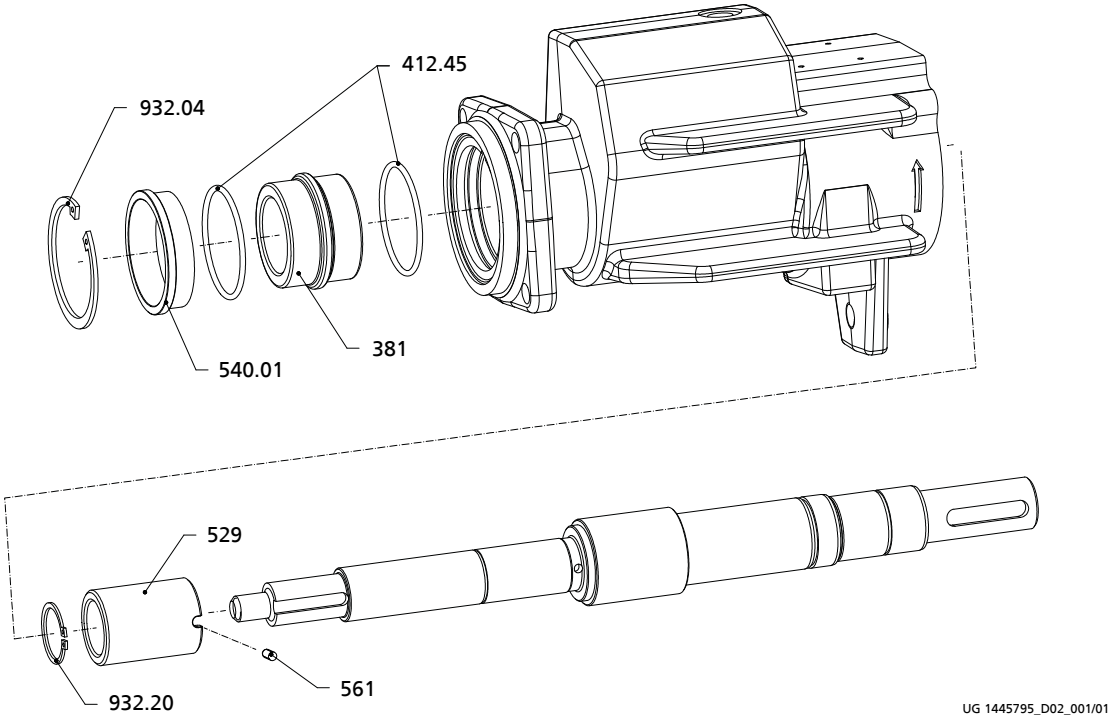


Fig. 8: Exploded view of an Vlety, bearing brackets WS_25_LS / WS_55_LS with SiC plain bearing

List of components

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

Vlety, bearing bracket WS_35_LS with SiC plain bearing

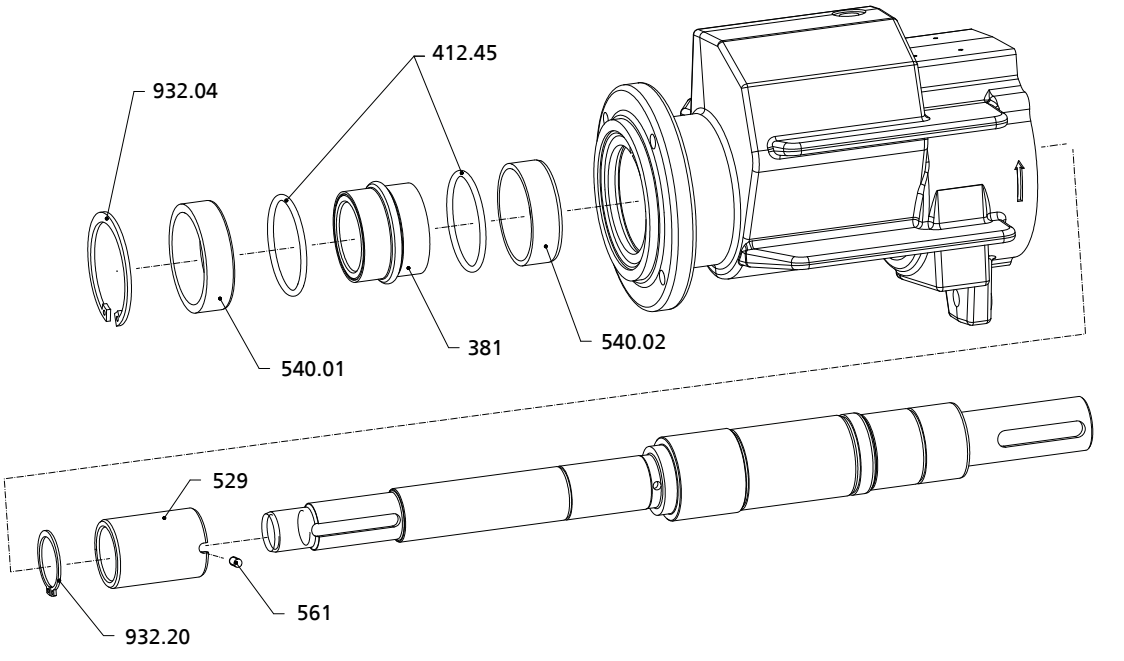


Fig. 9: Exploded view of an Vlety, bearing bracket WS_35_LS with SiC plain bearing

List of components

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

Connections

Auxiliary connections for double mechanical seal

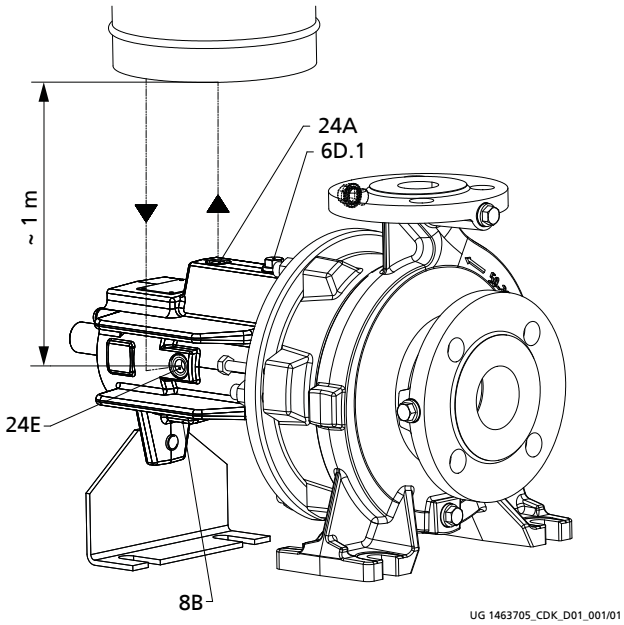


Fig. 10: Auxiliary connections for double mechanical seal

Overview

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

Auxiliary connections for double mechanical seal and monitoring equipment

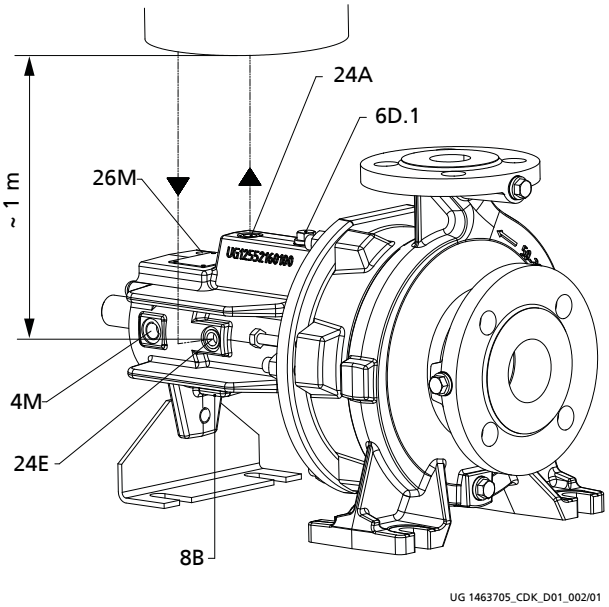


Fig. 11: Connections for double mechanical seal and monitoring equipment

Overview

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

Auxiliary connections for single mechanical seal and monitoring equipment

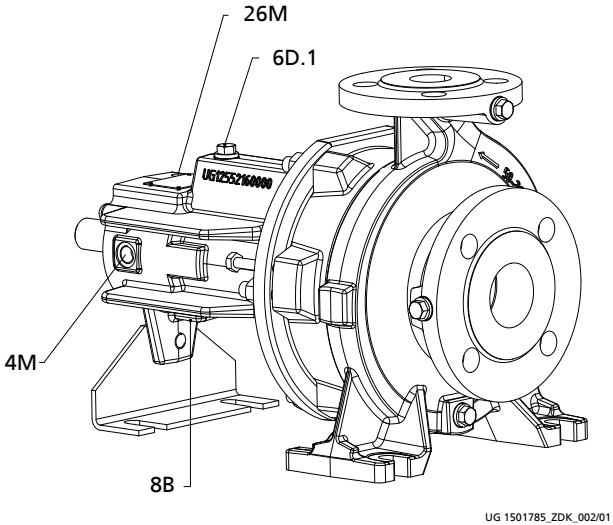


Fig. 12: Connections for single mechanical seal and monitoring equipment

Overview

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

Detailed designation

Designation example

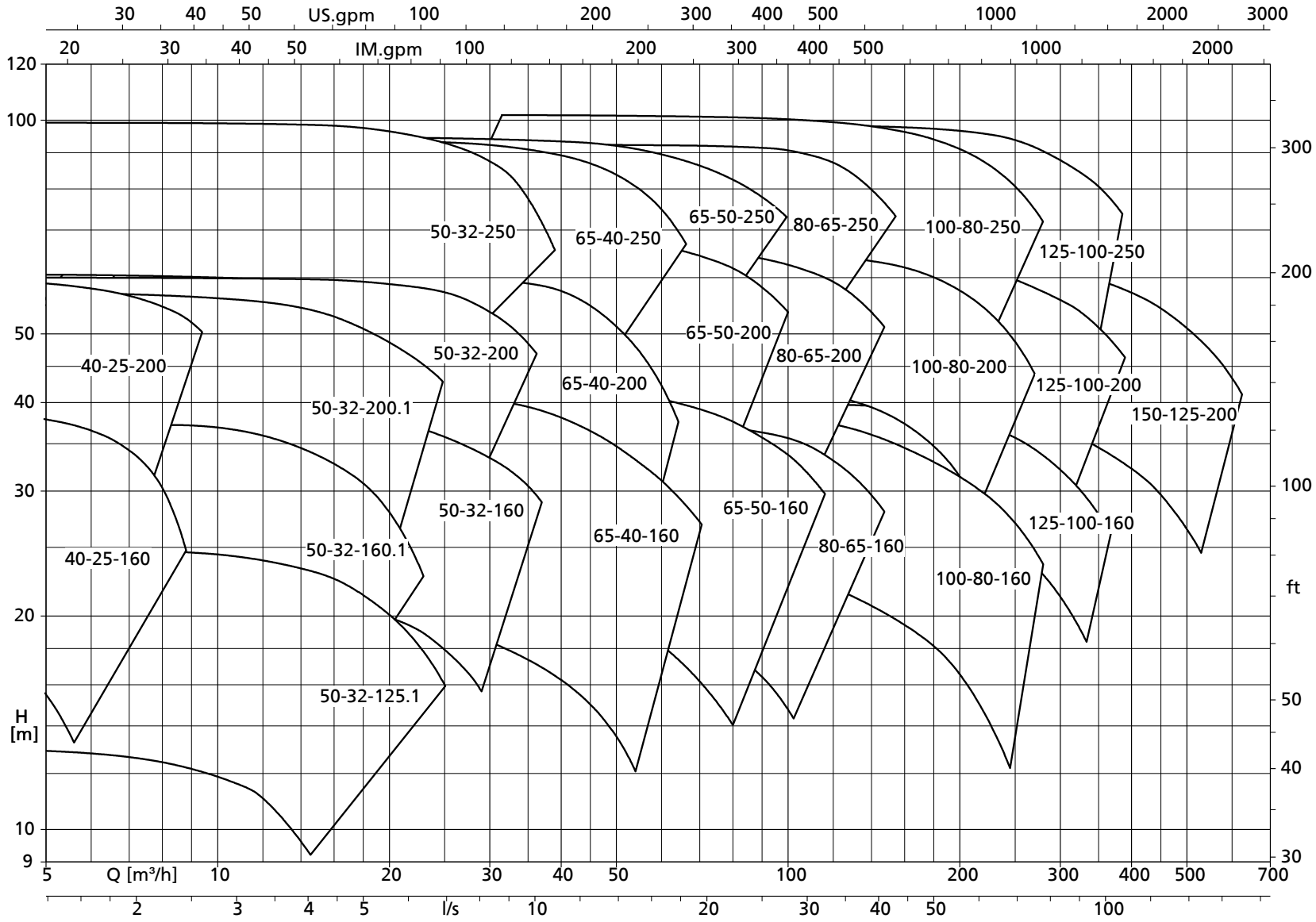
Position																																		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
E	T	N	Y	0	4	0	-	0	2	5	-	2	0	0		S	G		D	B	0	8	L	B	2	0	0	7	5	2	B	P	D	2	
See name plate and data sheet																										See data sheet									

Designation key

Position	Code		Description
1-4	Pump type		
			Vlety
5-16	Size		
		040	Nominal suction nozzle diameter [mm]
		025	Nominal discharge nozzle diameter [mm]
		200	Nominal impeller diameter [mm]
17	Pump casing material		
		S	EN-GJS-400-15
		E	GP240GH+N / A216 GR WCB
18	Impeller material		
		G	EN-GJL-250/A48 CL 35B
		C	1.4408 / A743 CF8M
		E	GP240GH+N / A216 GR WCB
19	Special design		
		_[20)]	Standard
		X	Non-standard BT3D, BT3
20	Casing cover		
			Casing cover
21	Seal code		
		B	Dead-end
22-23	Seal code		
		08	M32N69 (SYT) AQ1VGG
		25	M32N67 (SYT) AQ1VGG M32N67 AQ1VGG
24	Bearing bracket		
		L	Version for heat transfer fluid
25	Scope of supply		
		A	Pump only (Fig. 0)
		B	Pump, baseplate
		C	Pump, baseplate, coupling, coupling guard
		D	Pump, baseplate, coupling, coupling guard, motor
26	Shaft unit		
		2	Shaft unit 25, bearing bracket LS standard
		3	Shaft unit 35, bearing bracket LS standard
		5	Shaft unit 55, bearing bracket LS standard
27-30	Motor rating		
		1 3 2 0	132 kW
		0 0 7 5	7,5 kW
		0 0 0 7	0,75 kW
31	Number of poles		
		2	2 poles
		4	4 poles
		6	6 poles
32	Product generation		
		B	Product generation Etanorm SYT 2014
33-36	PumpDrive		
		P D B	PumpDrive 1st generation, Basic
		P D A	PumpDrive 1st generation, Advanced
		P D 2	PumpDrive 2nd generation
		P D 2 E	PumpDrive 2nd generation, Eco

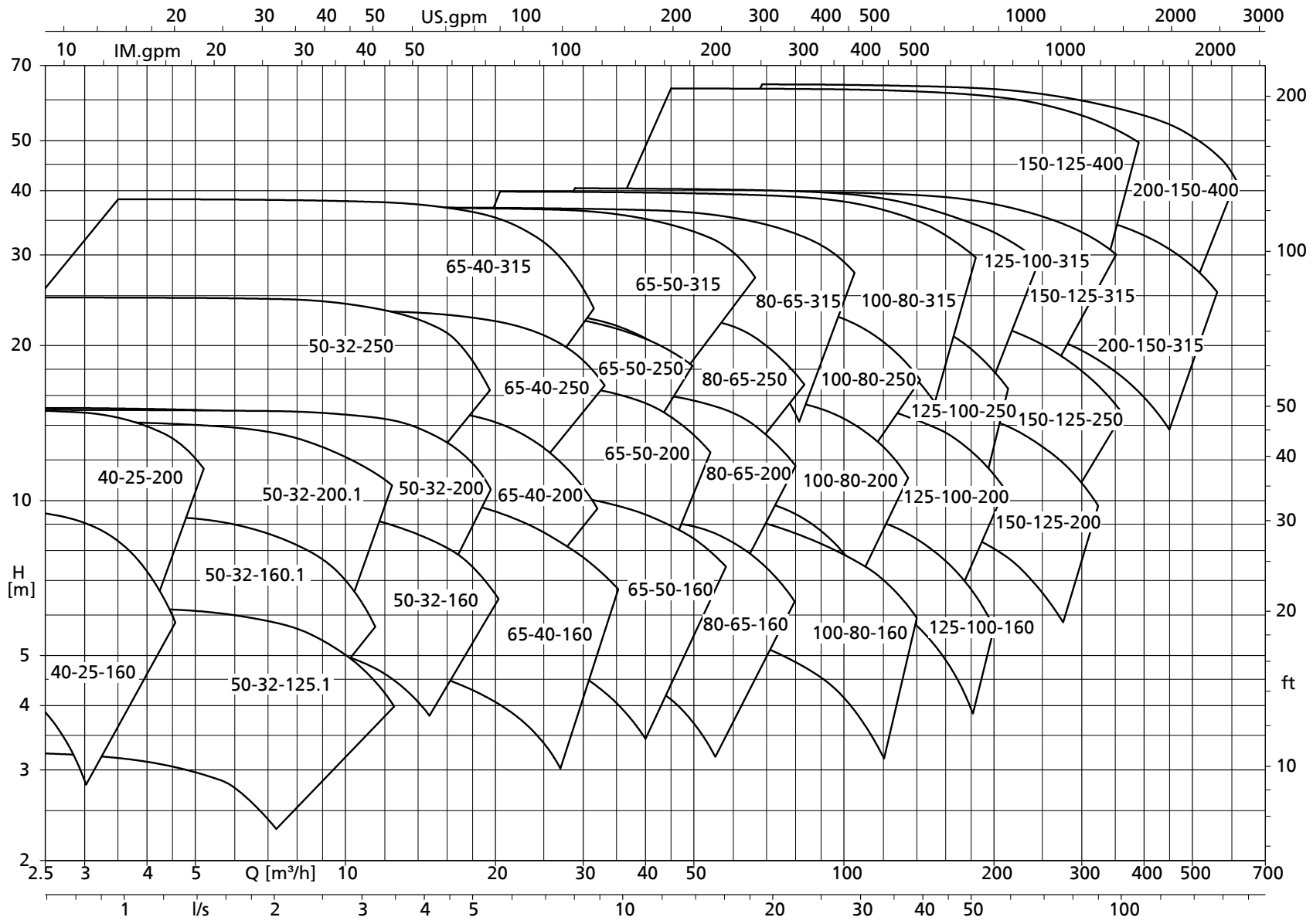
20) Blank

Vlety n = 2900 rpm

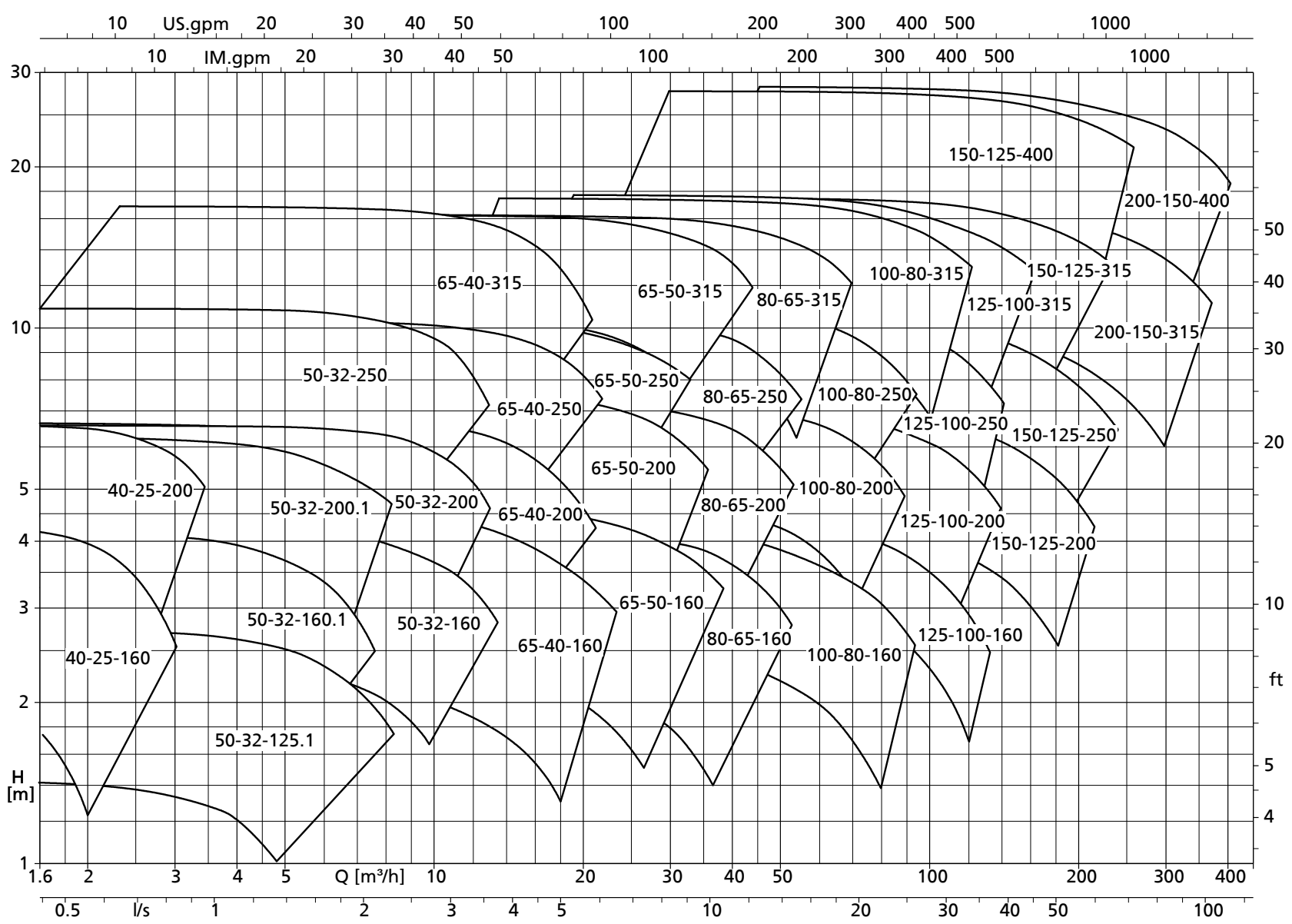


1311.45/11-EN

Vlety n = 1450 rpm



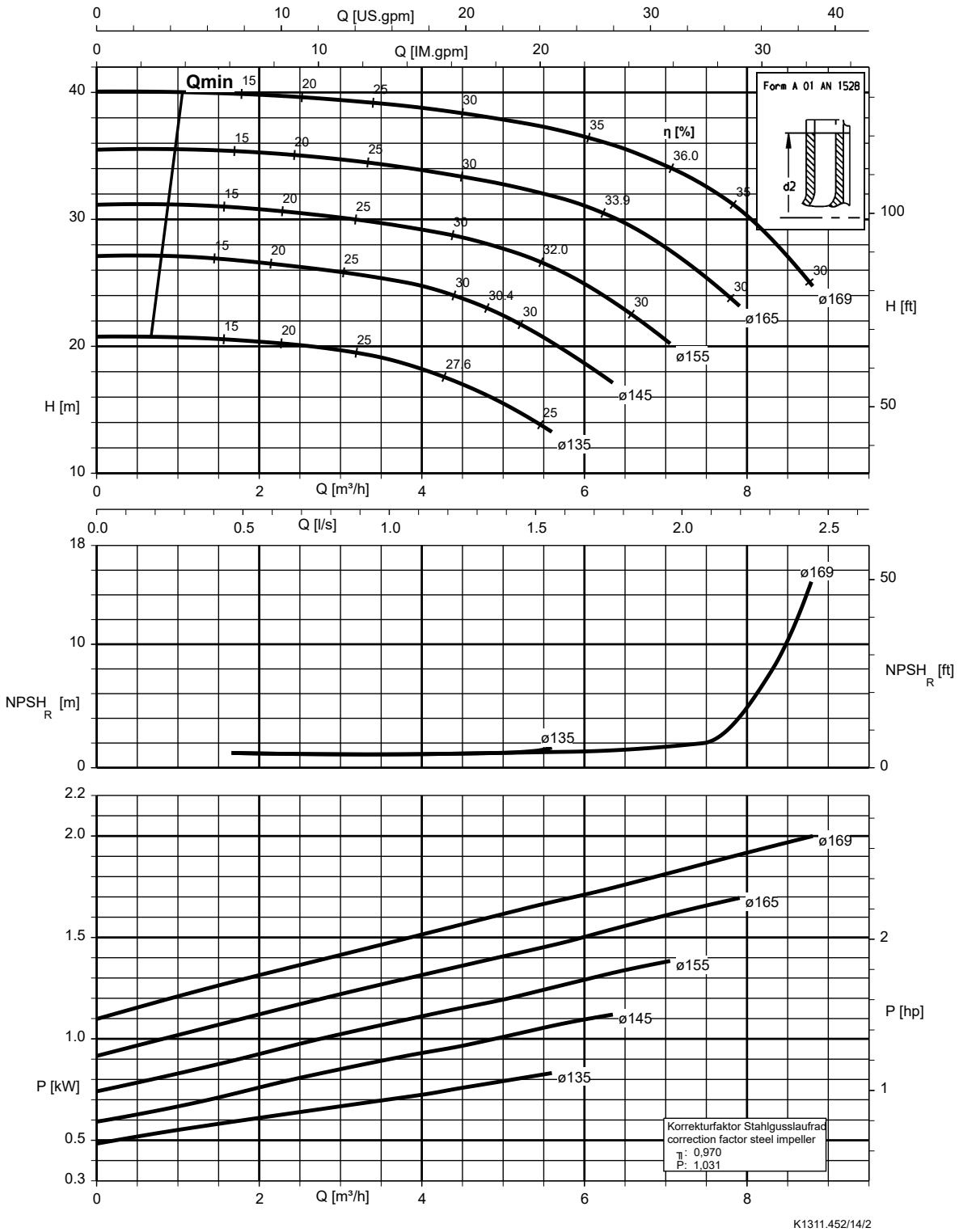
Vlety n = 960 rpm



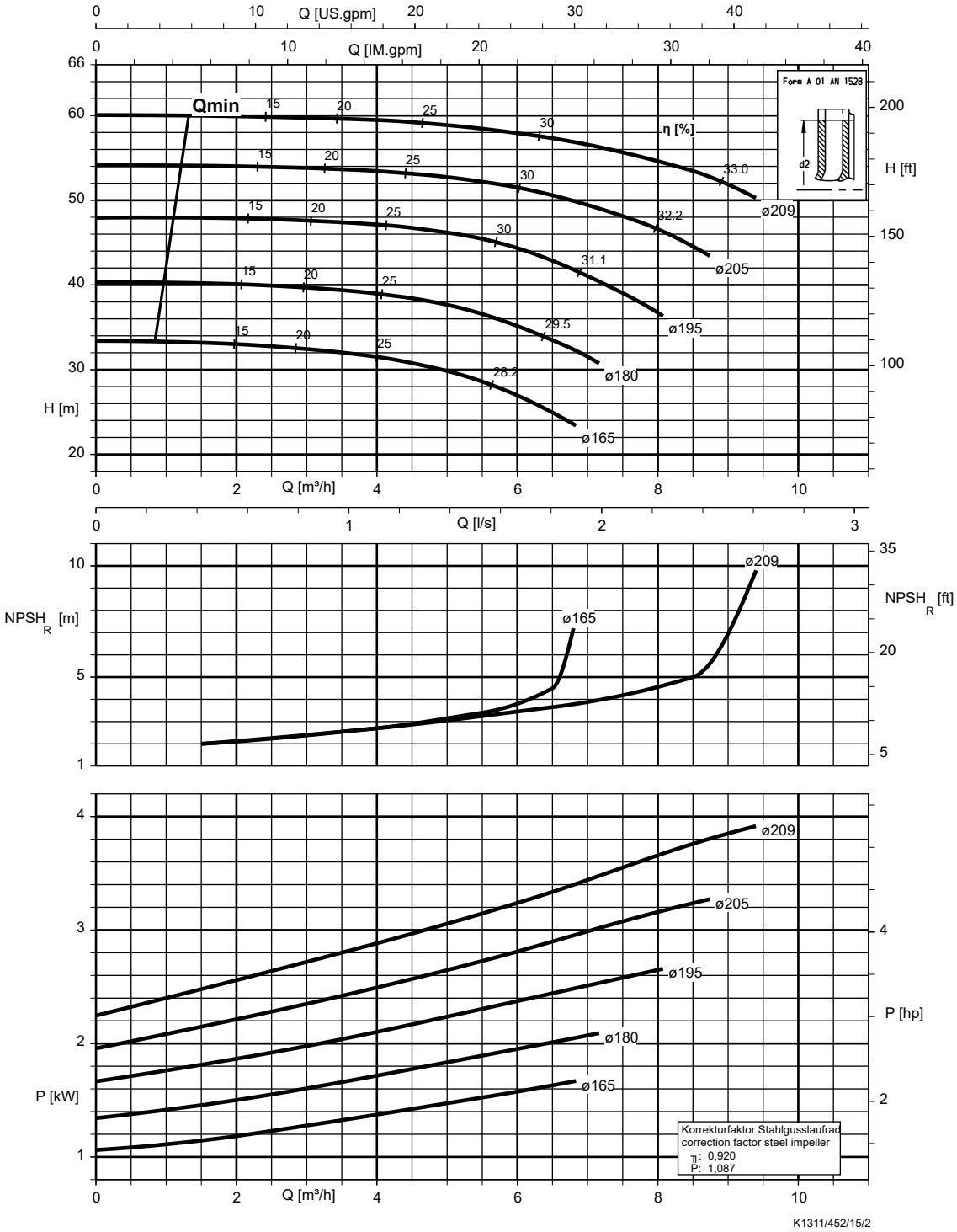
Characteristic curves

n = 2900 rpm

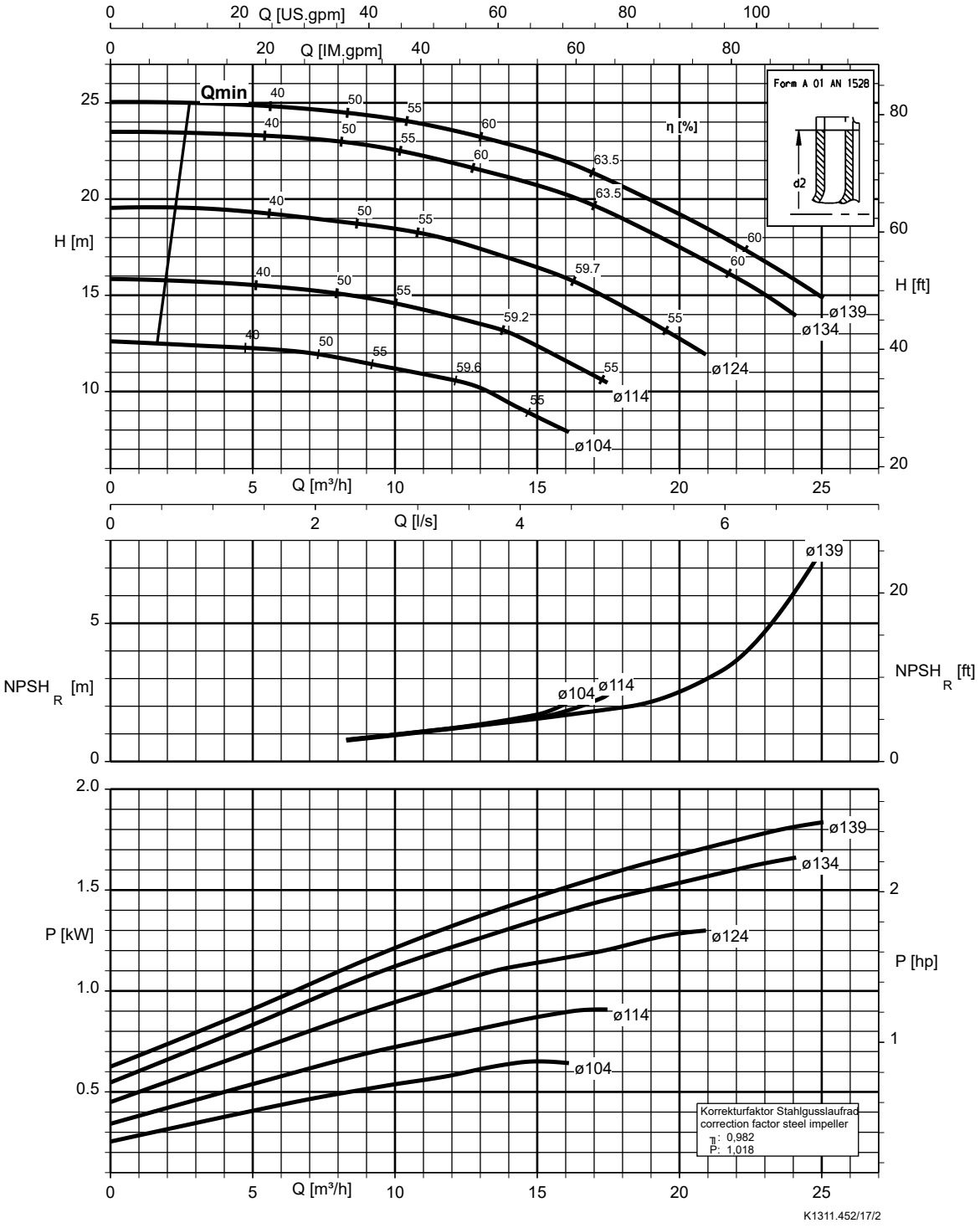
Vlety 040-025-160, n = 2900 rpm



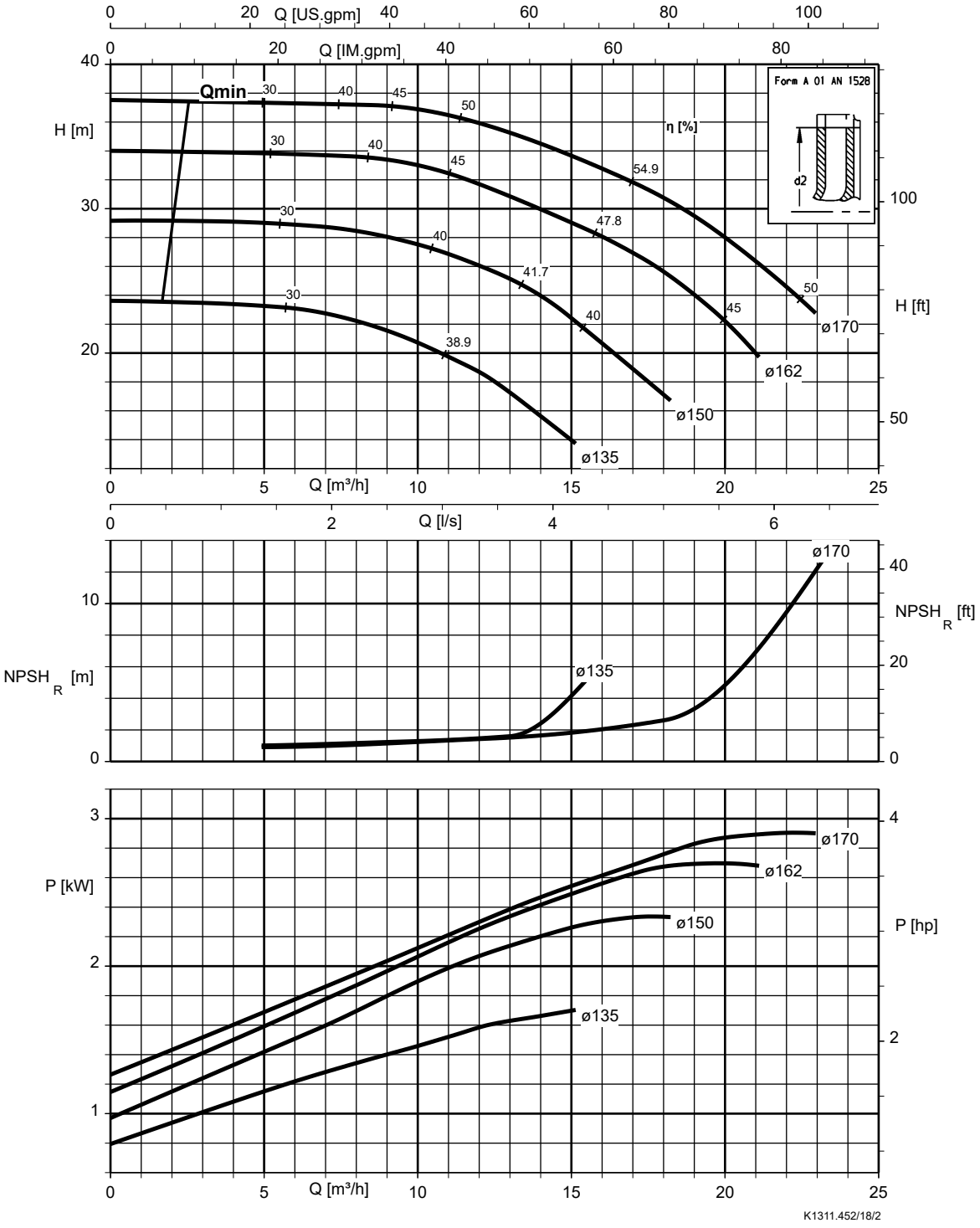
Vlety 040-025-200, n = 2900 rpm



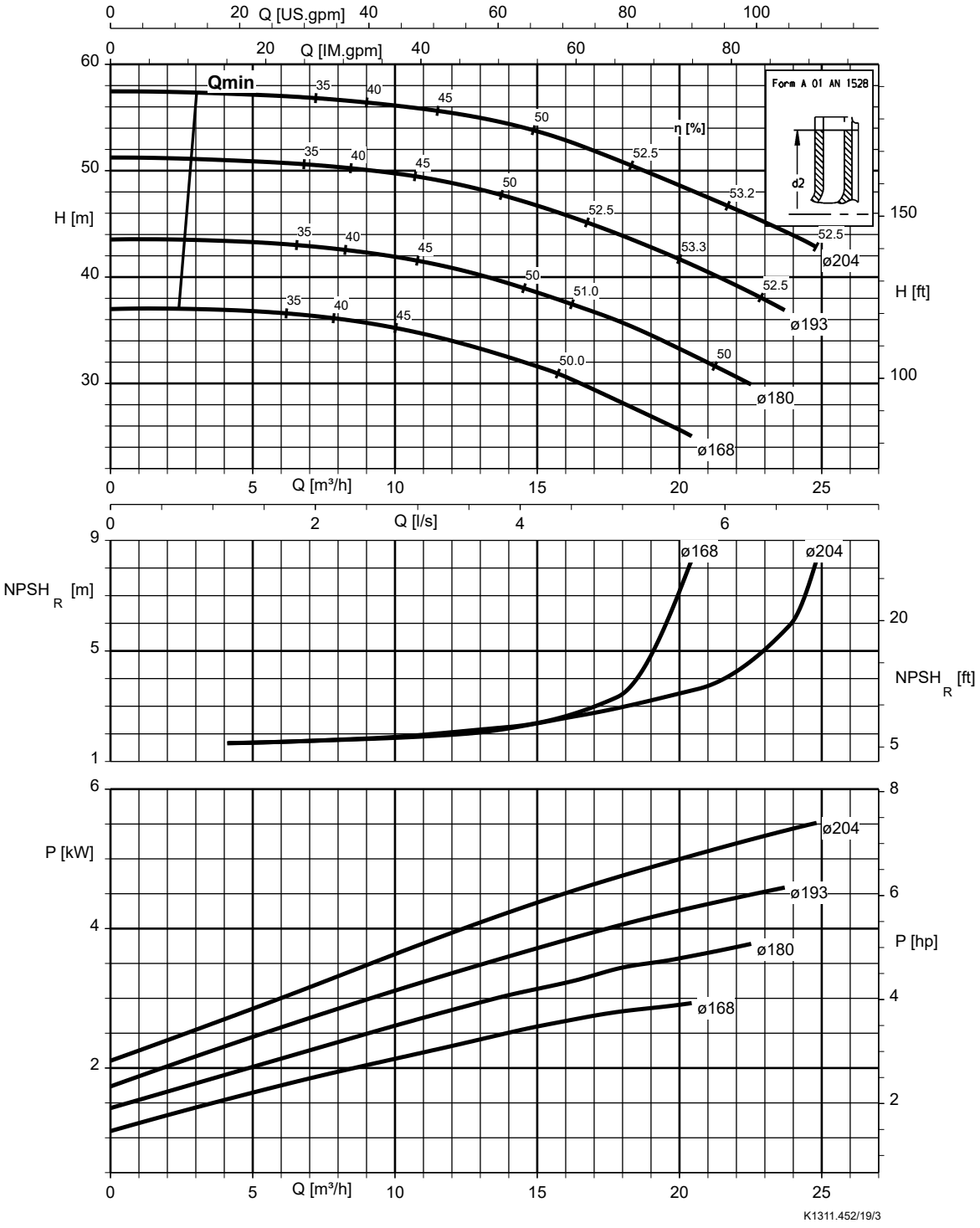
Vlety 050-032-125.1, n = 2900 rpm



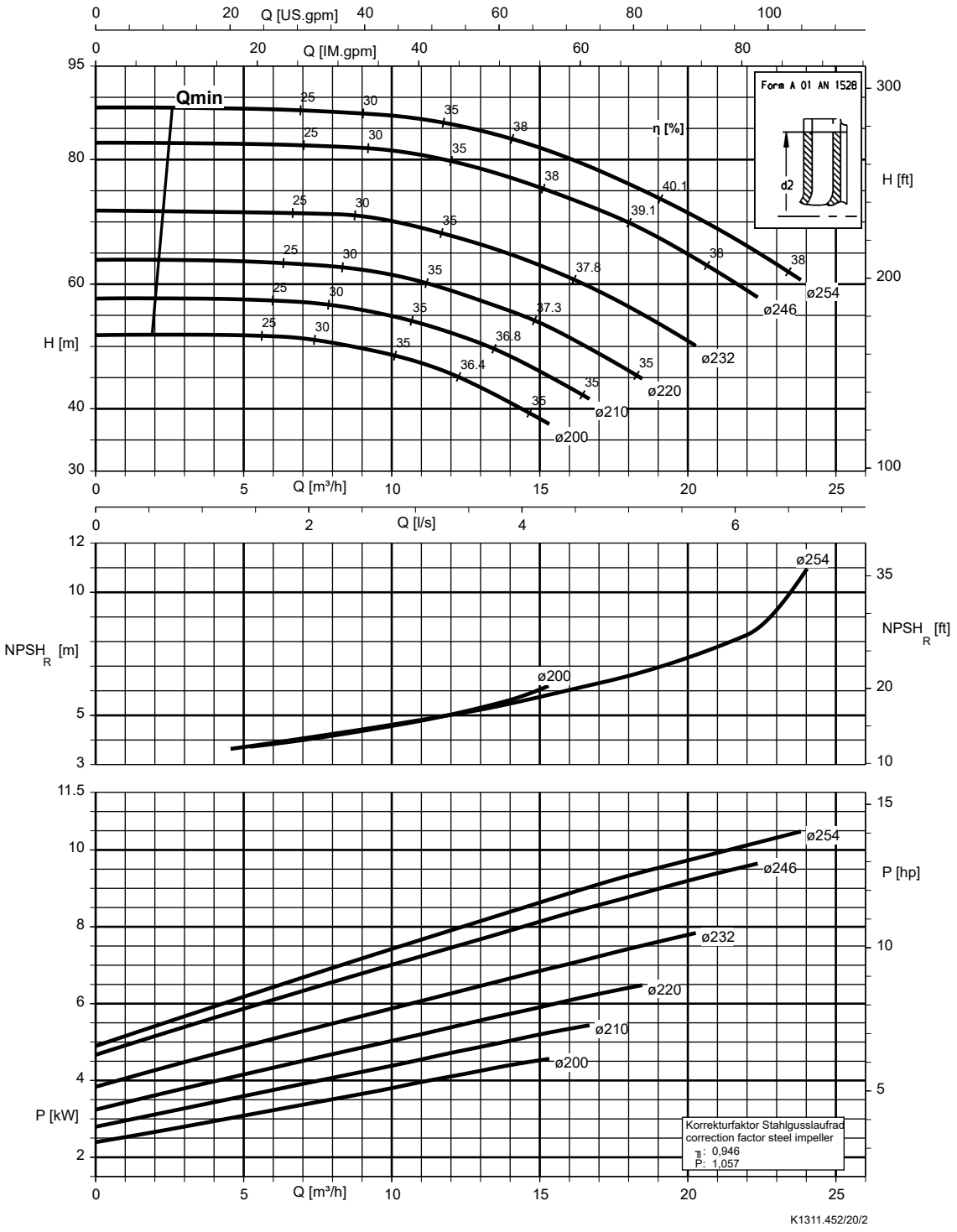
Vlety 050-032-160.1, n = 2900 rpm



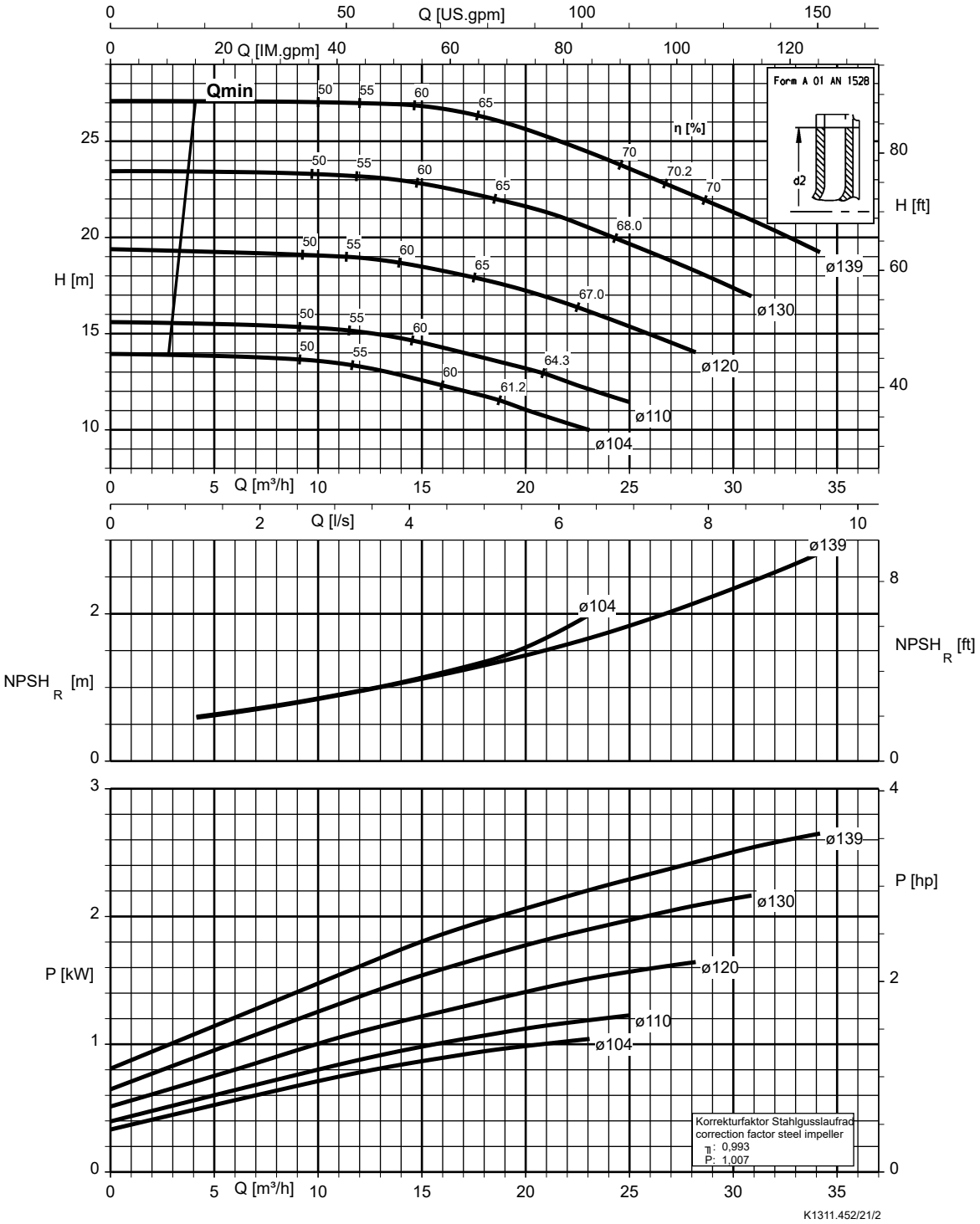
Vlety 050-032-200.1, n = 2900 rpm



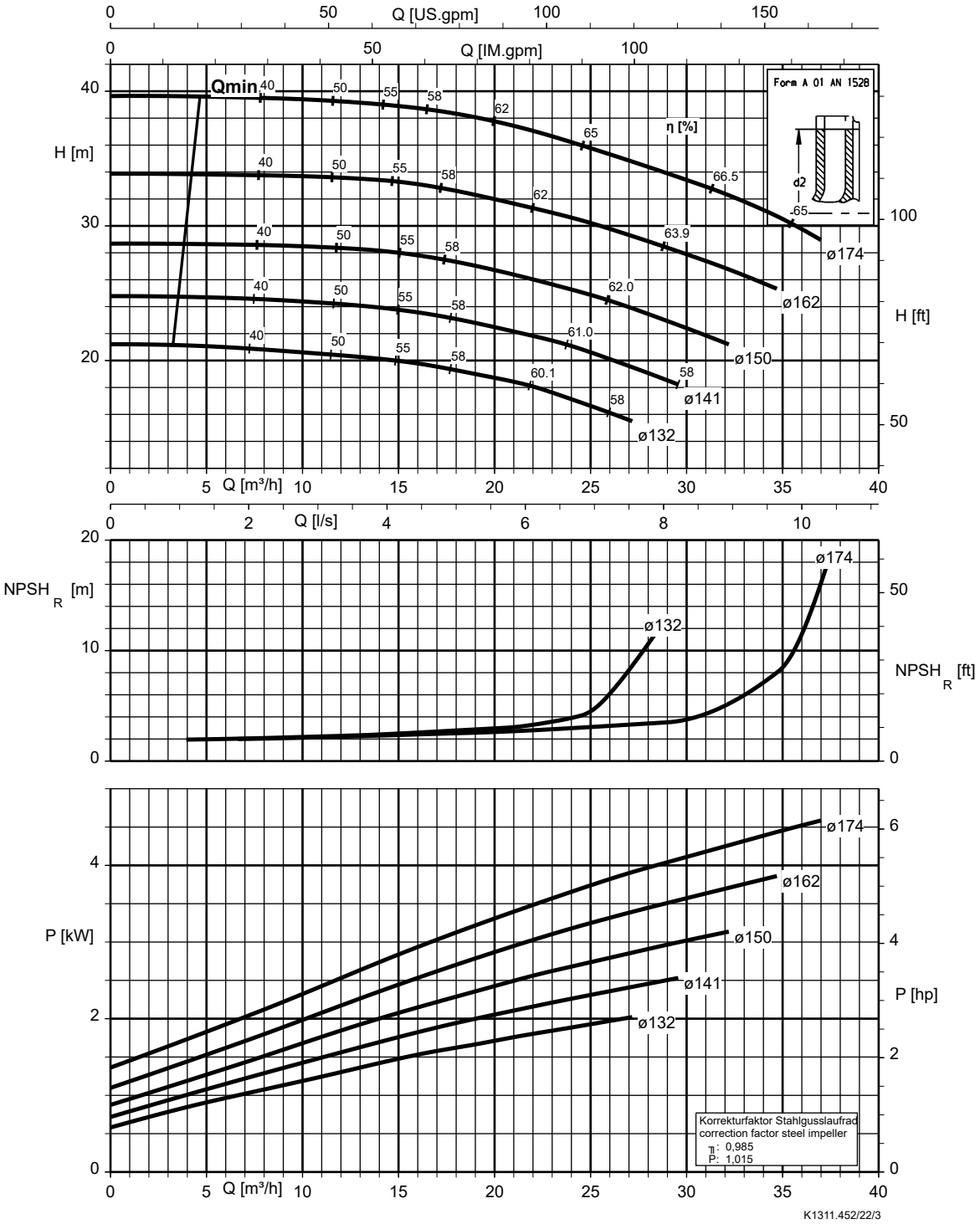
Vlety 050-032-250.1, n = 2900 rpm



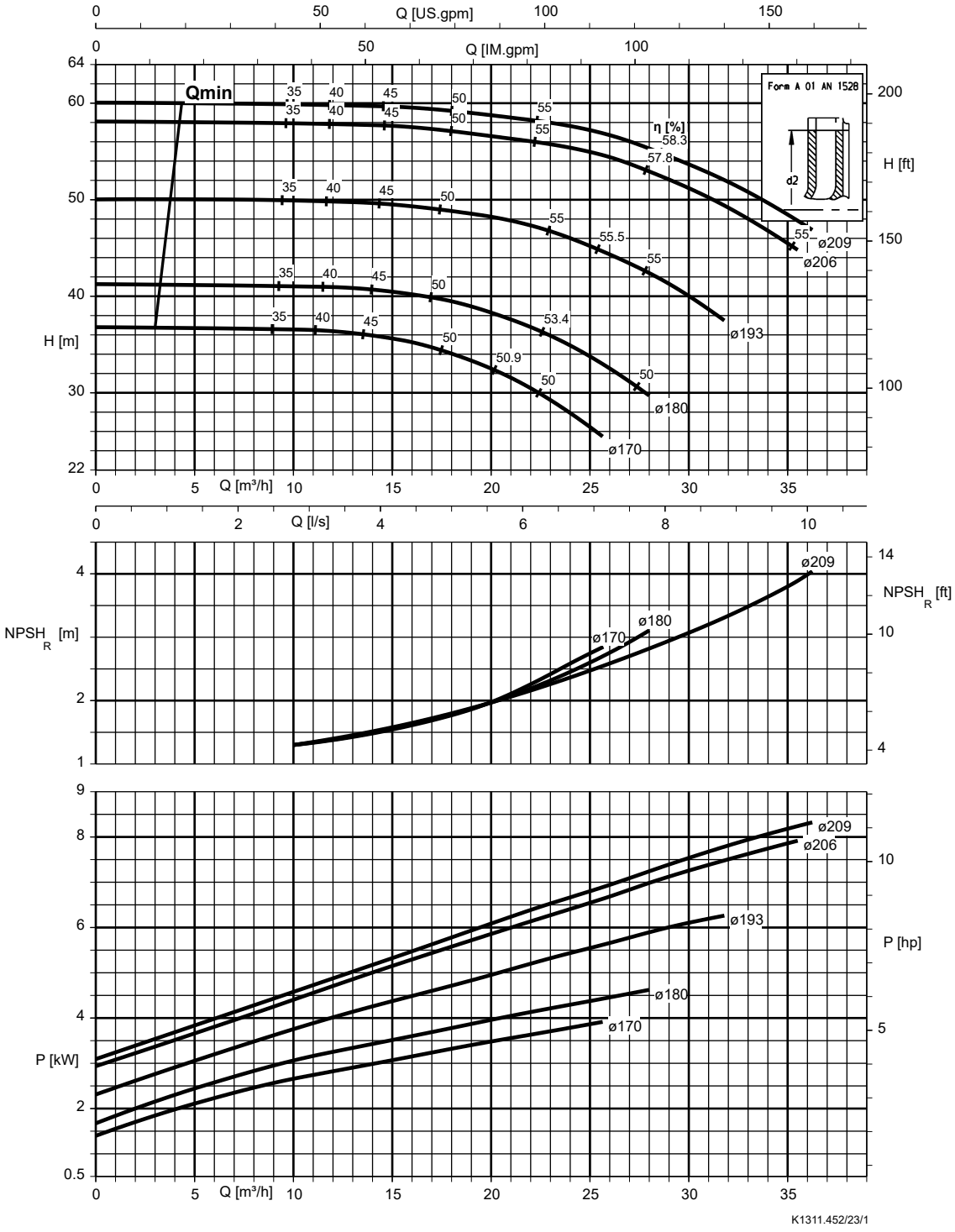
Vlety 050-032-125, n = 2900 rpm



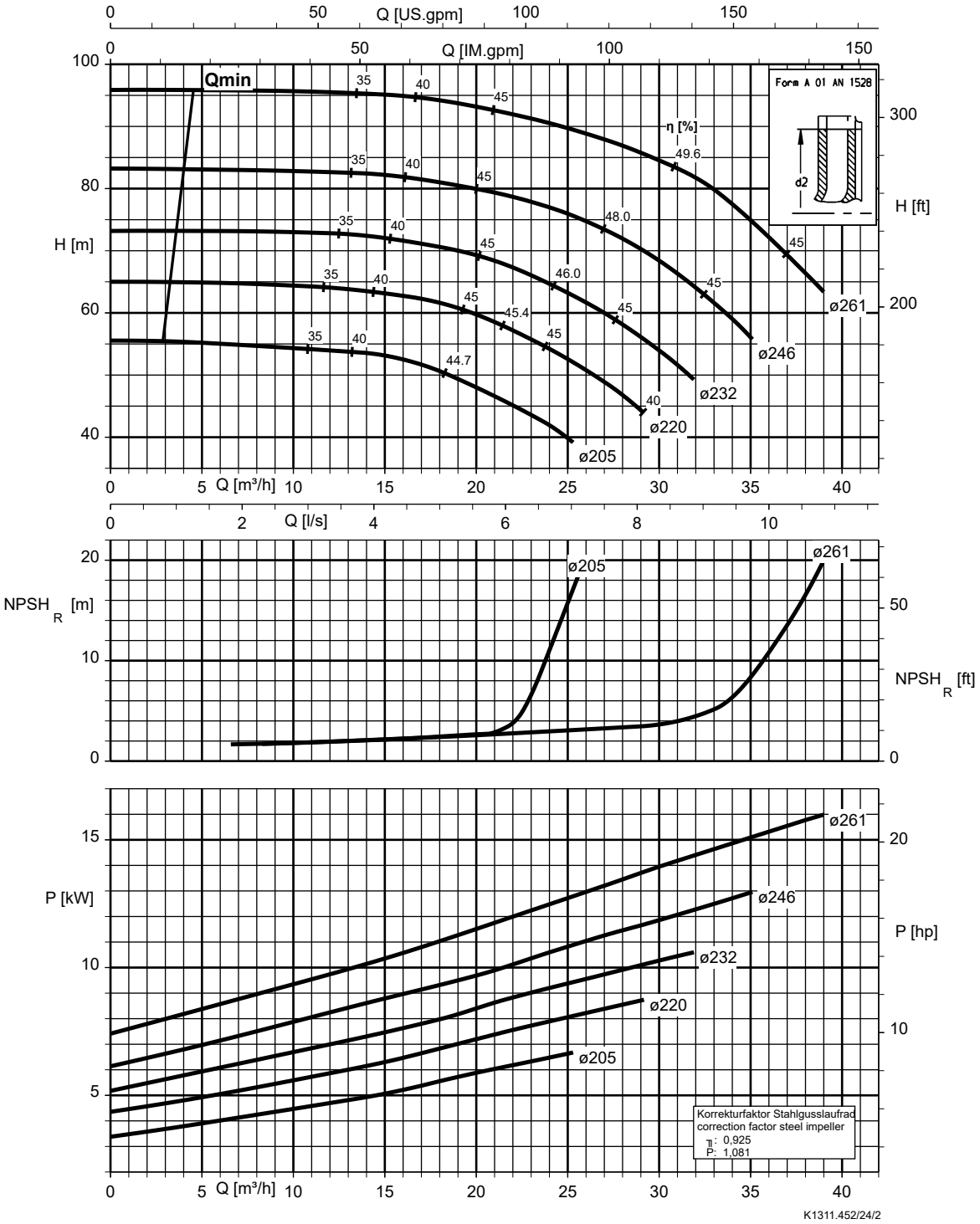
Vlety 050-032-160, n = 2900 rpm



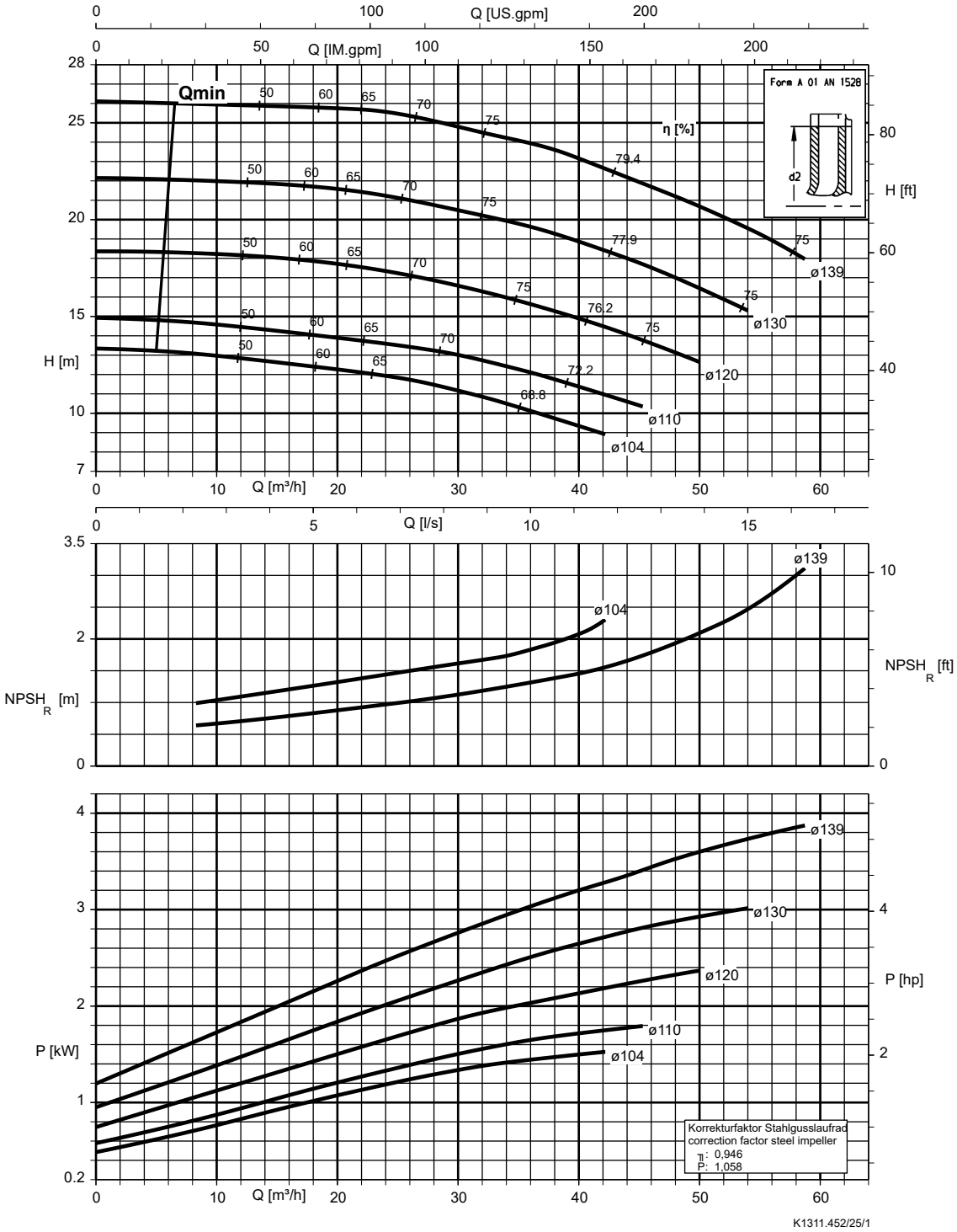
Vlety 050-032-200, n = 2900 rpm



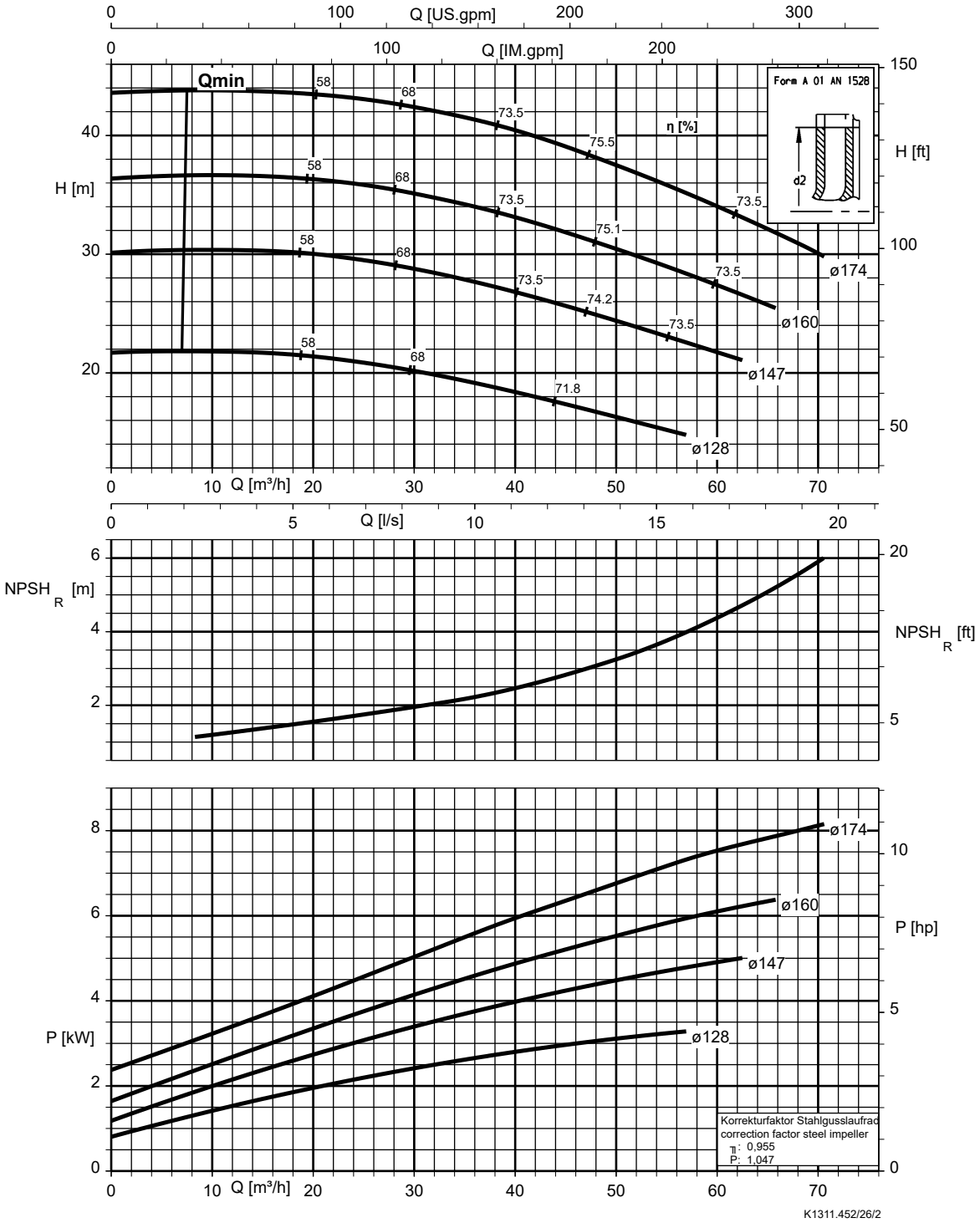
Vlety 050-032-250, n = 2900 rpm



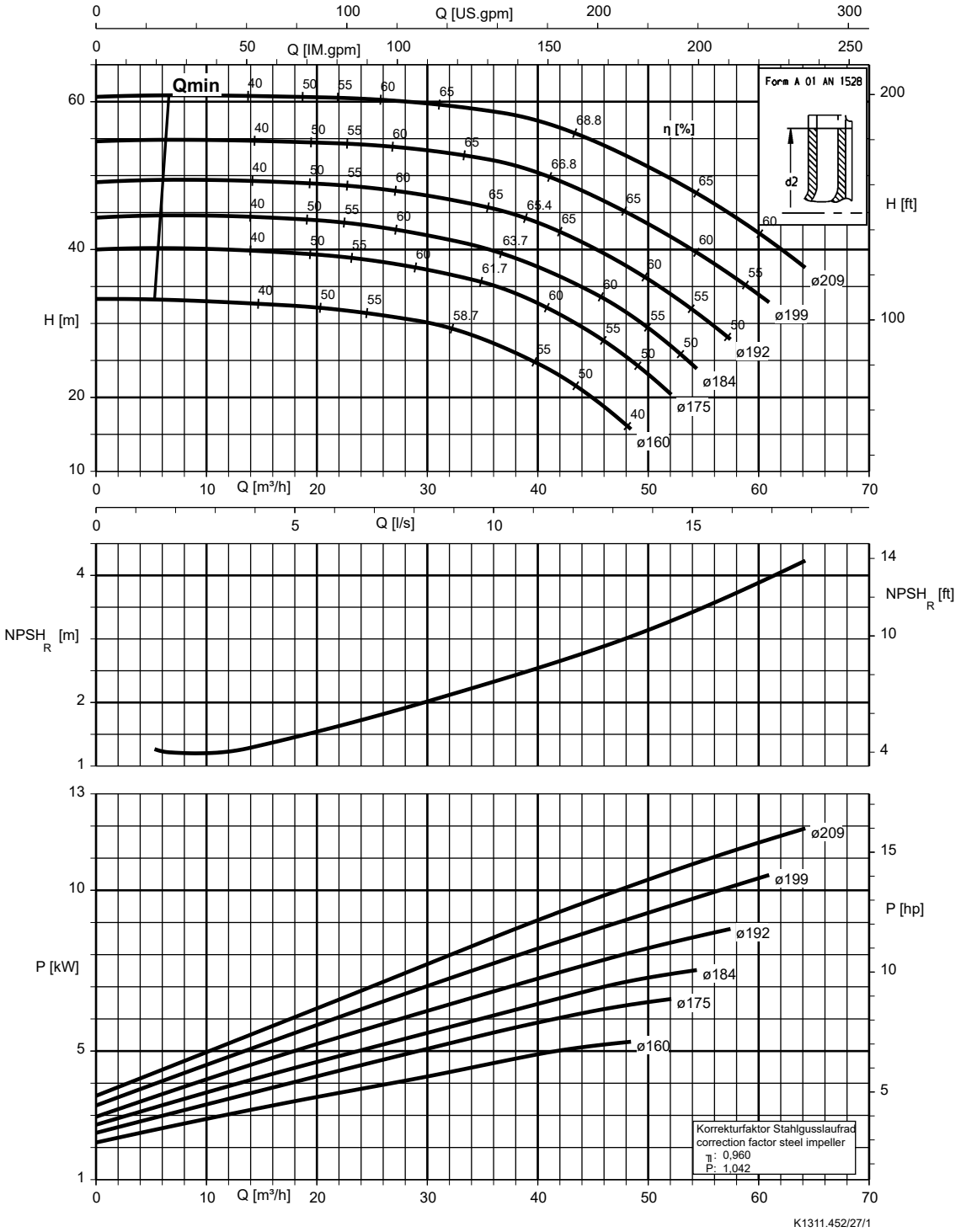
Vlety 065-040-125, n = 2900 rpm



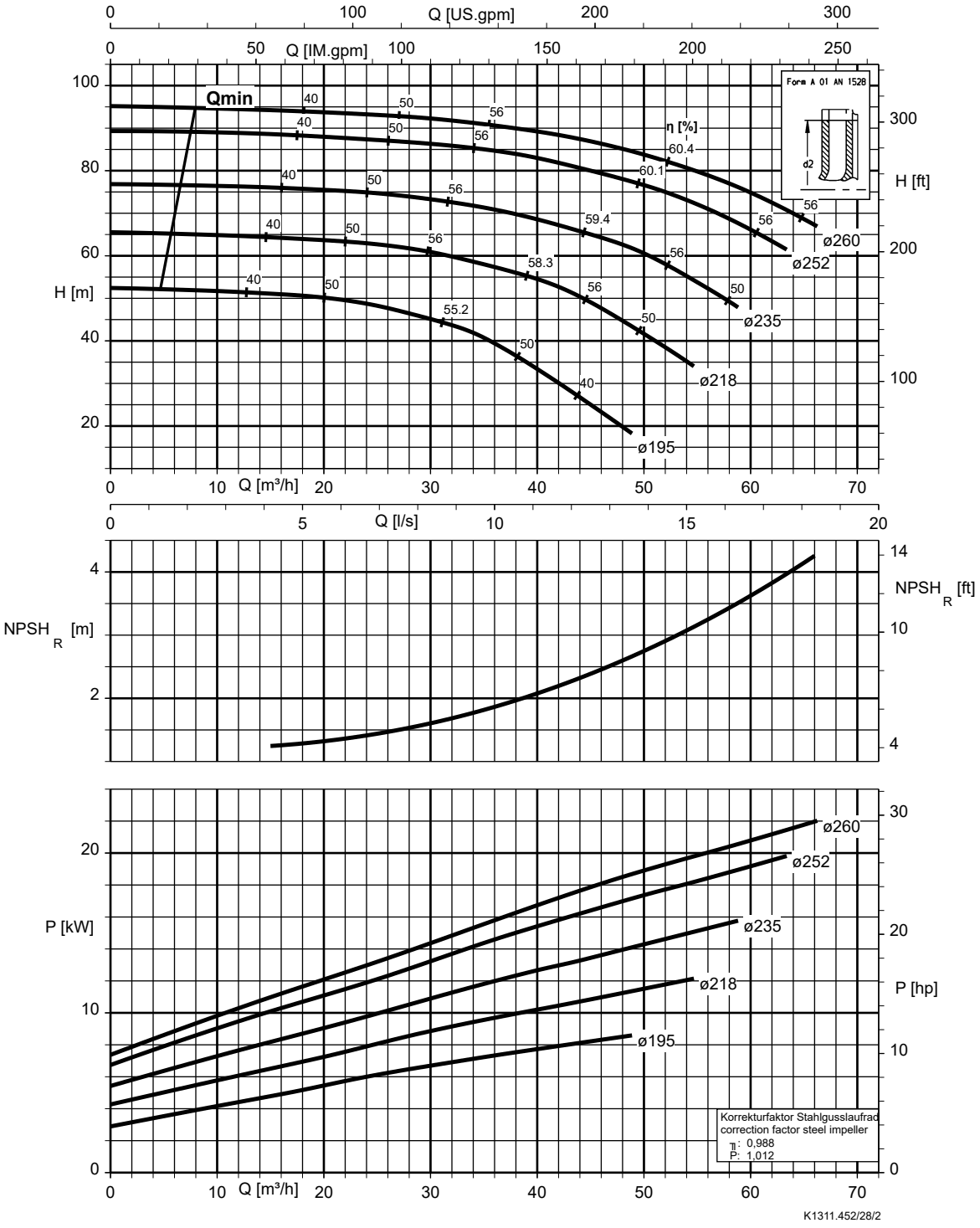
Vlety 065-040-160, n = 2900 rpm



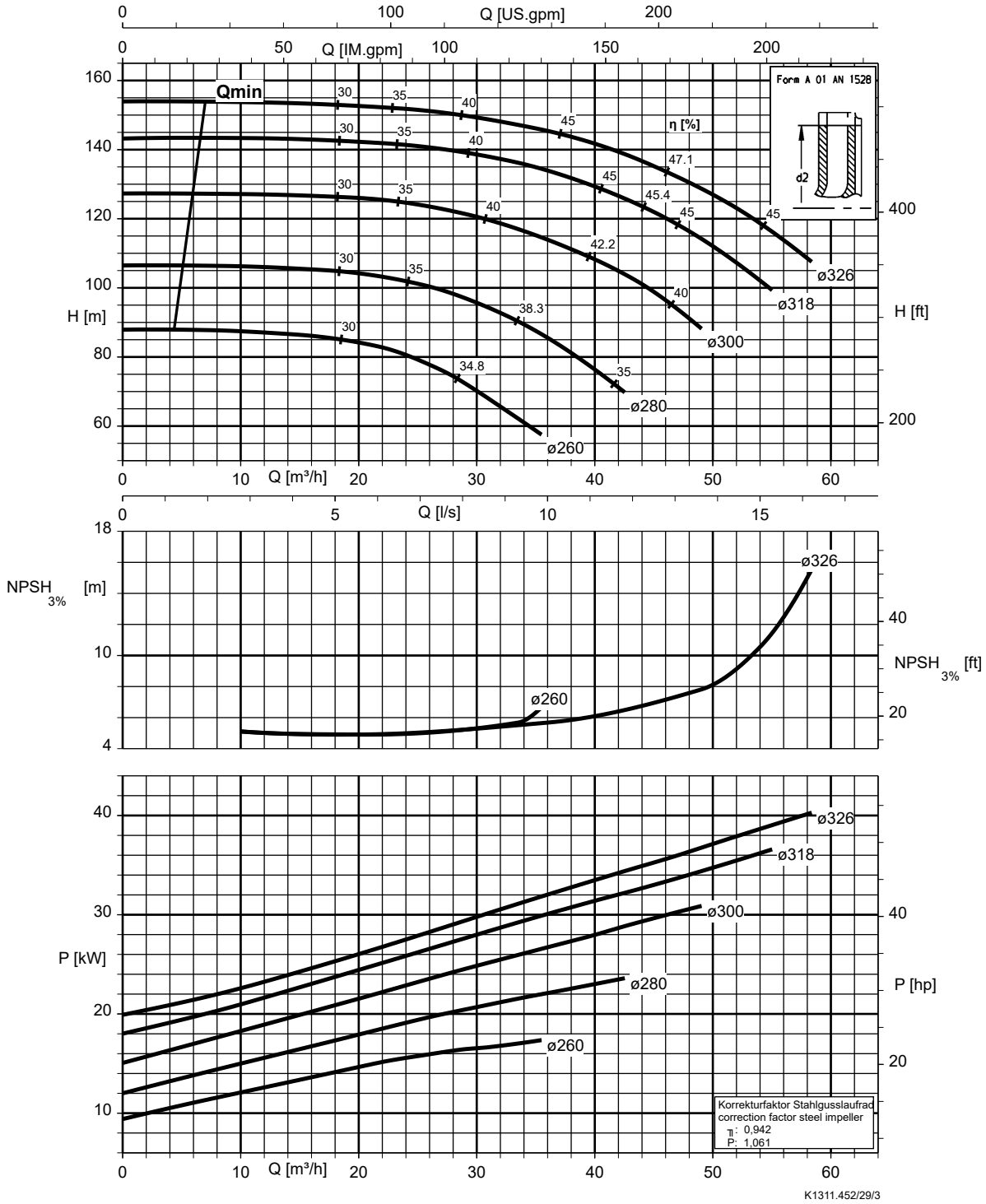
Vlety 065-040-200, n = 2900 rpm



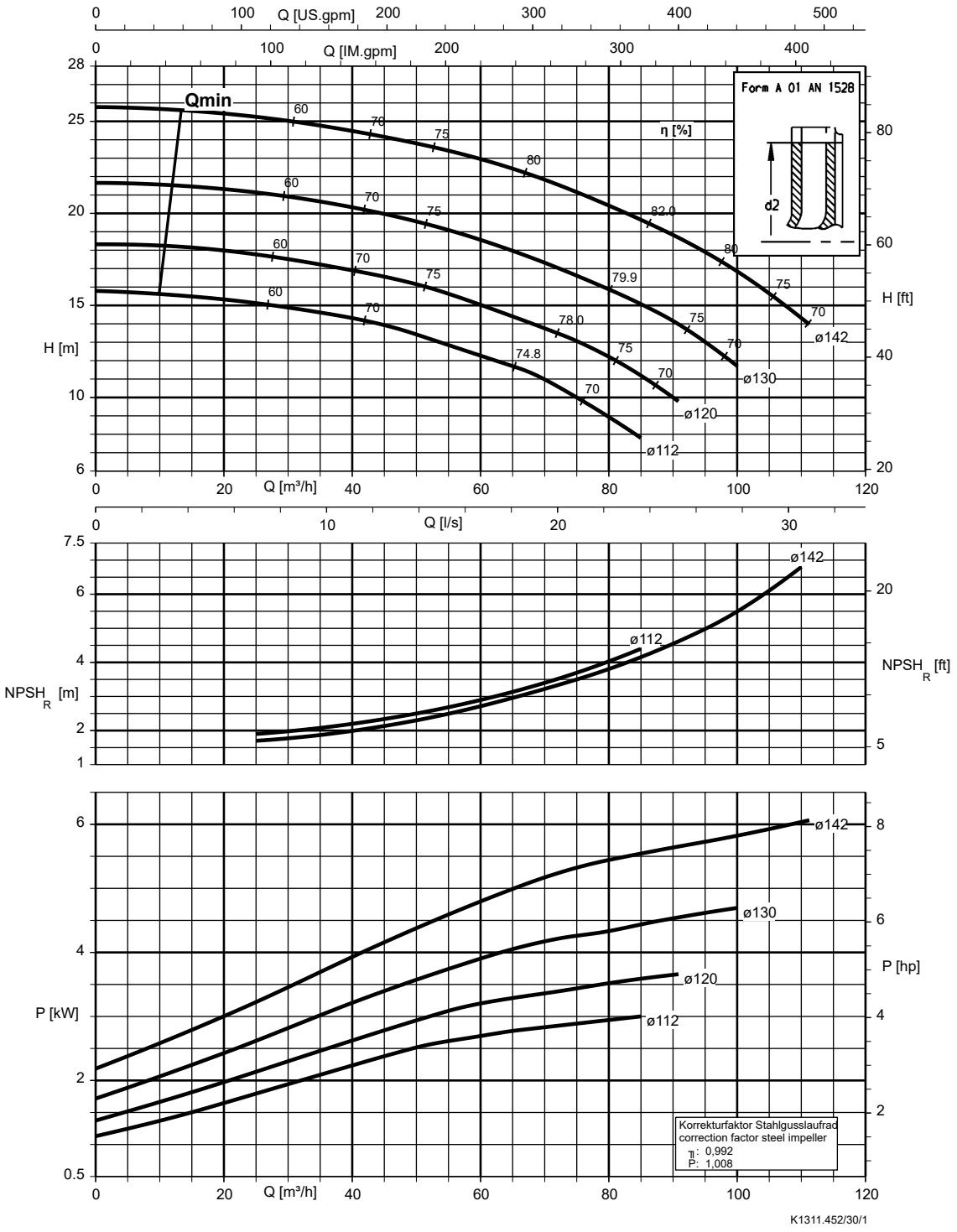
Vlety 065-040-250, n = 2900 rpm



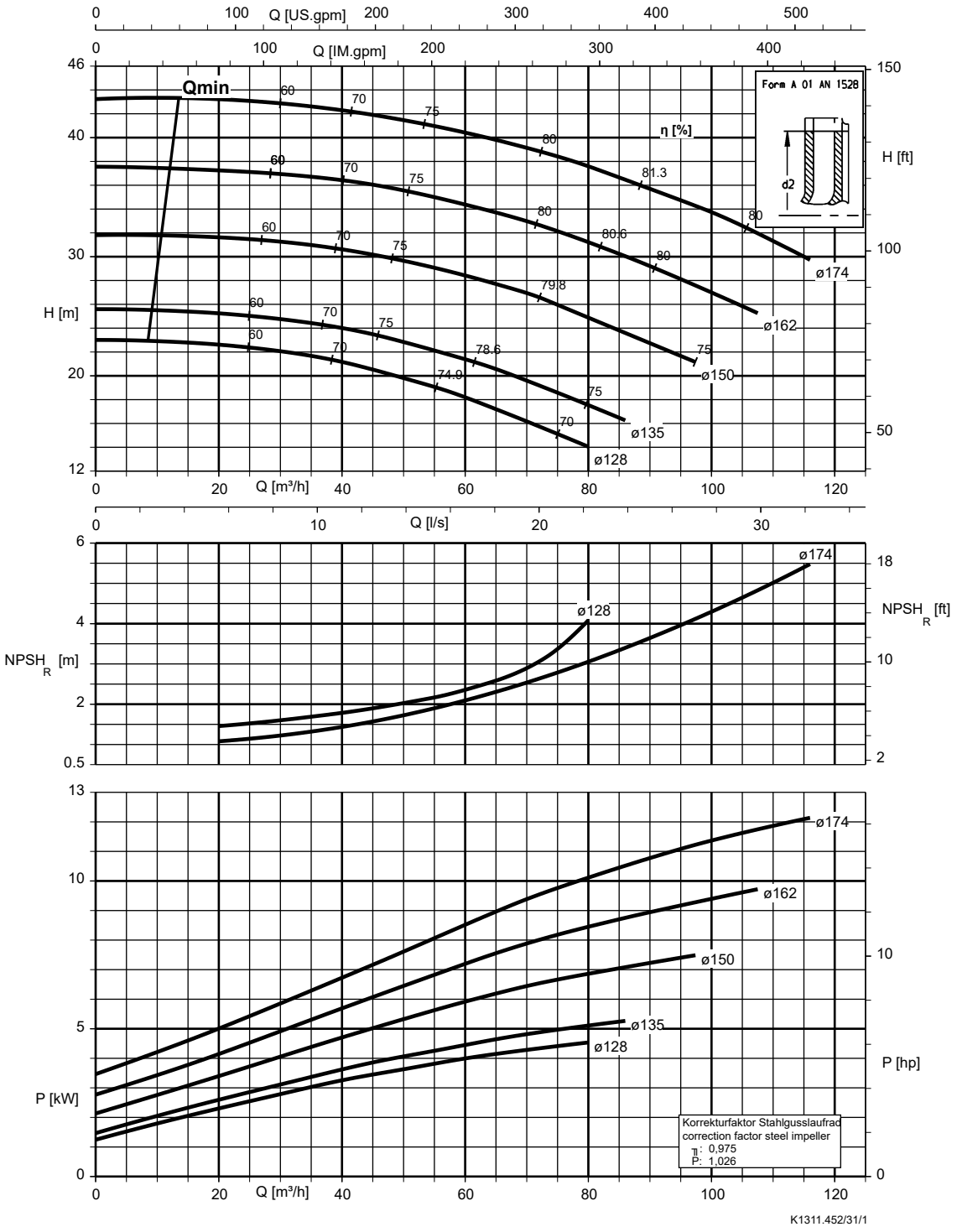
Vlety 065-040-315, n = 2900 rpm



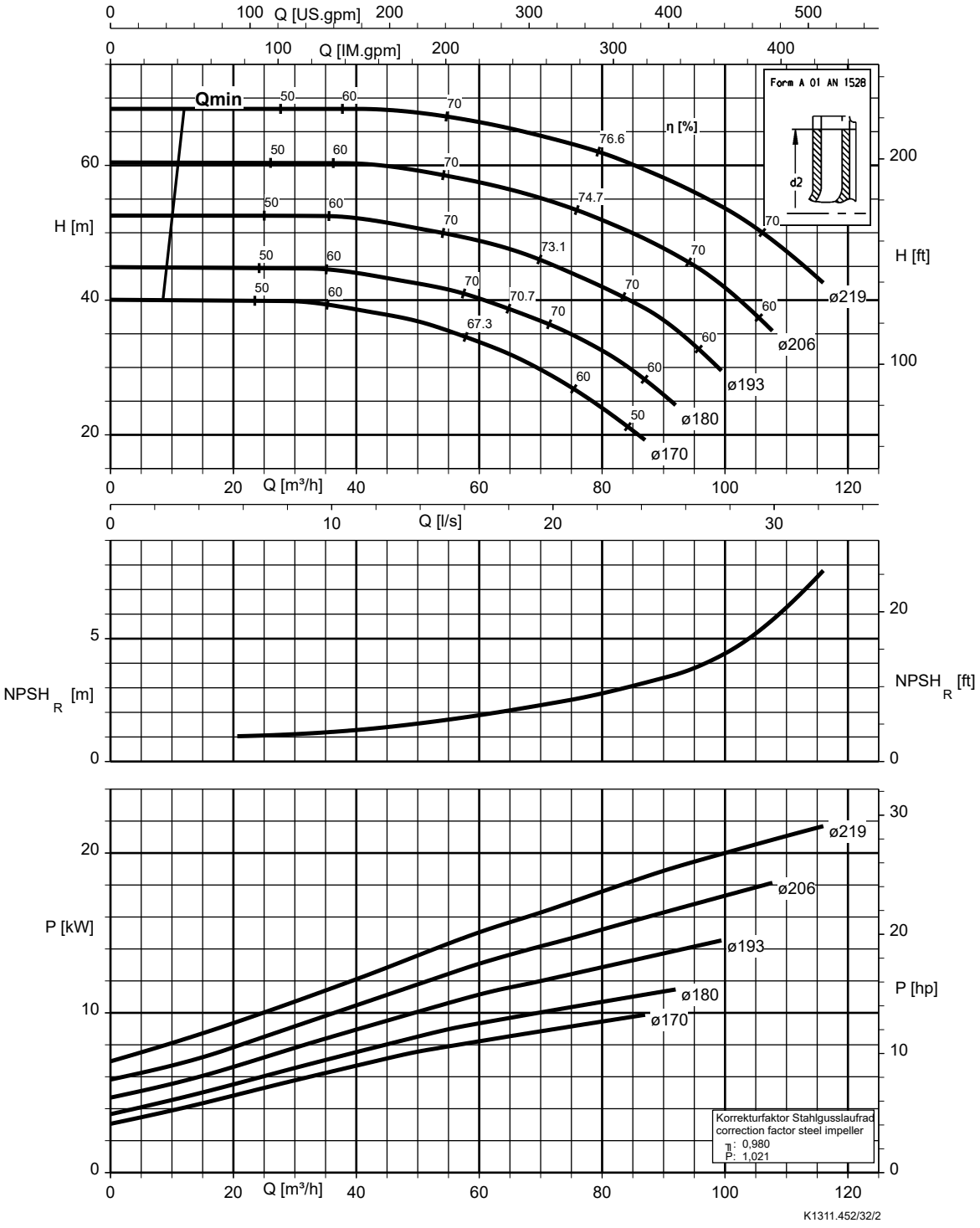
Vlety 065-050-125, n = 2900 rpm



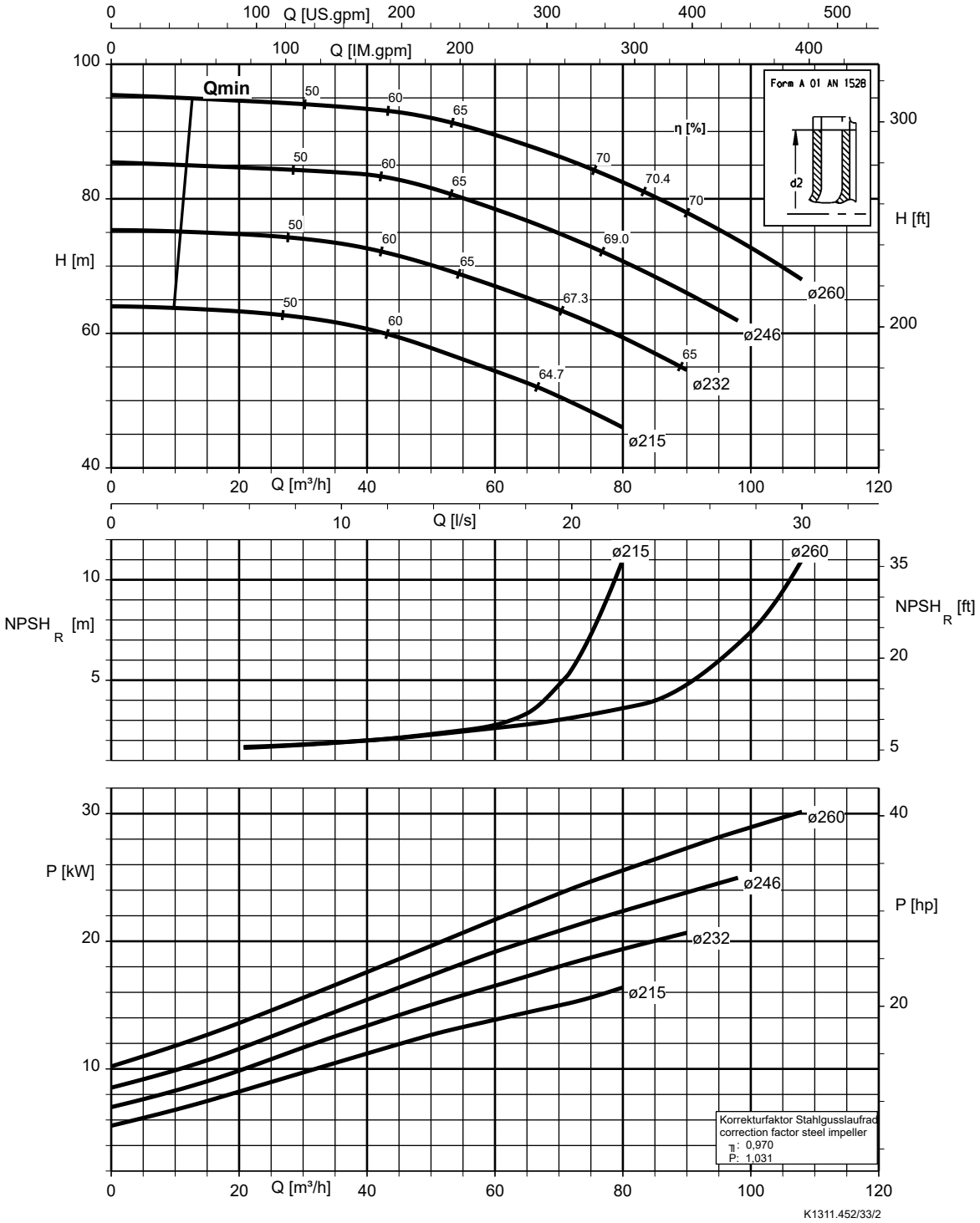
Vlety 065-050-160, n = 2900 rpm



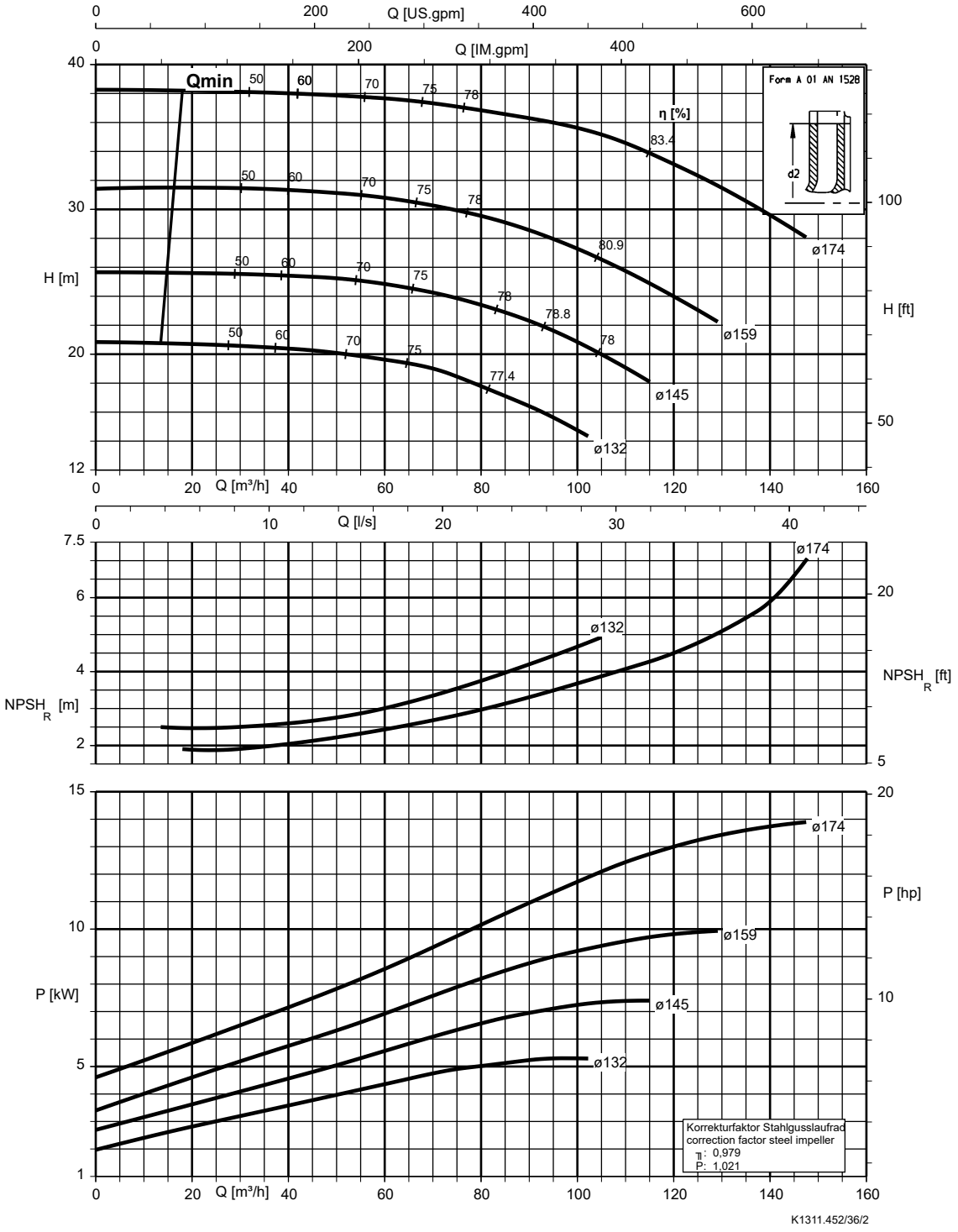
Vlety 065-050-200, n = 2900 rpm



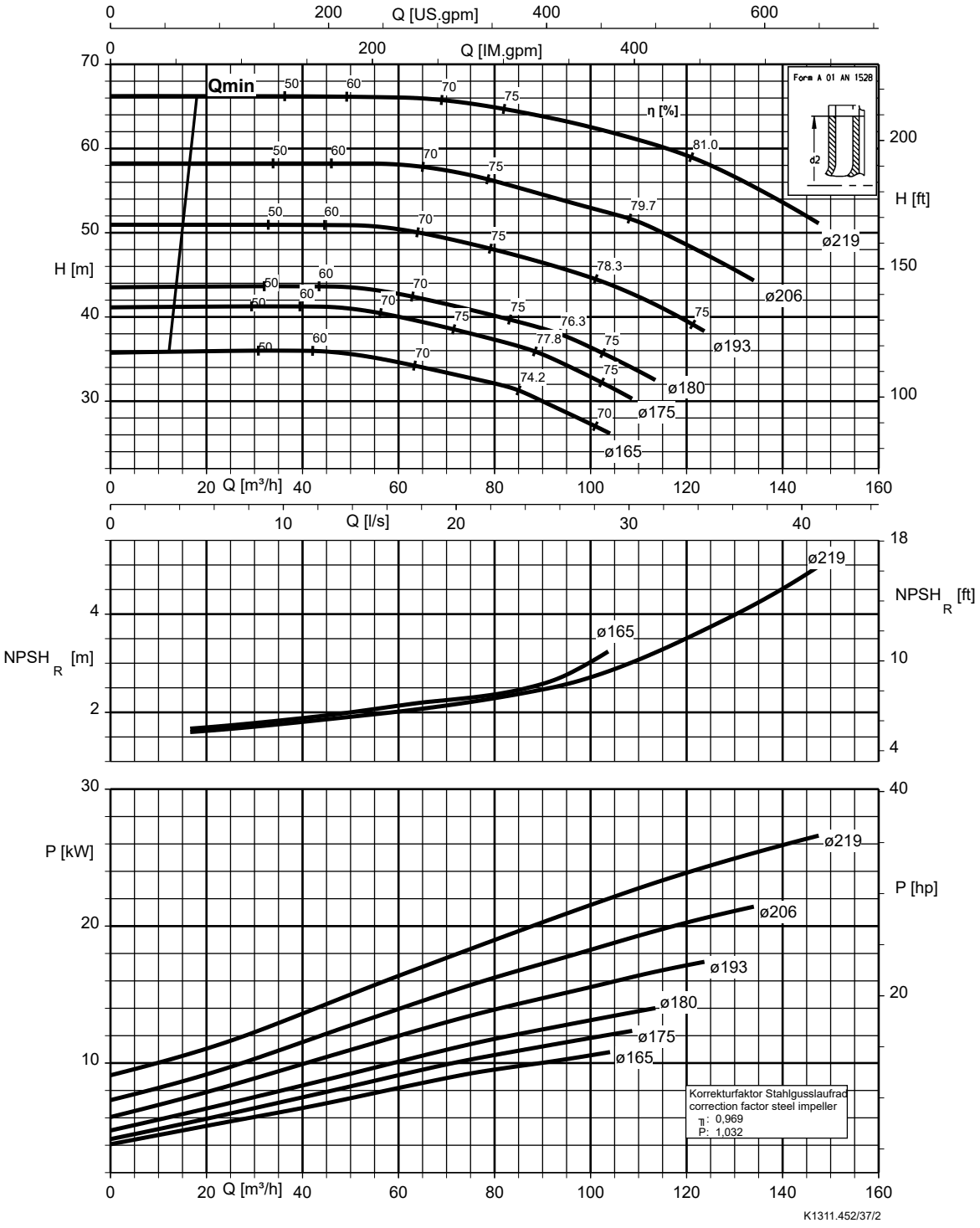
Vlety 065-050-250, n = 2900 rpm



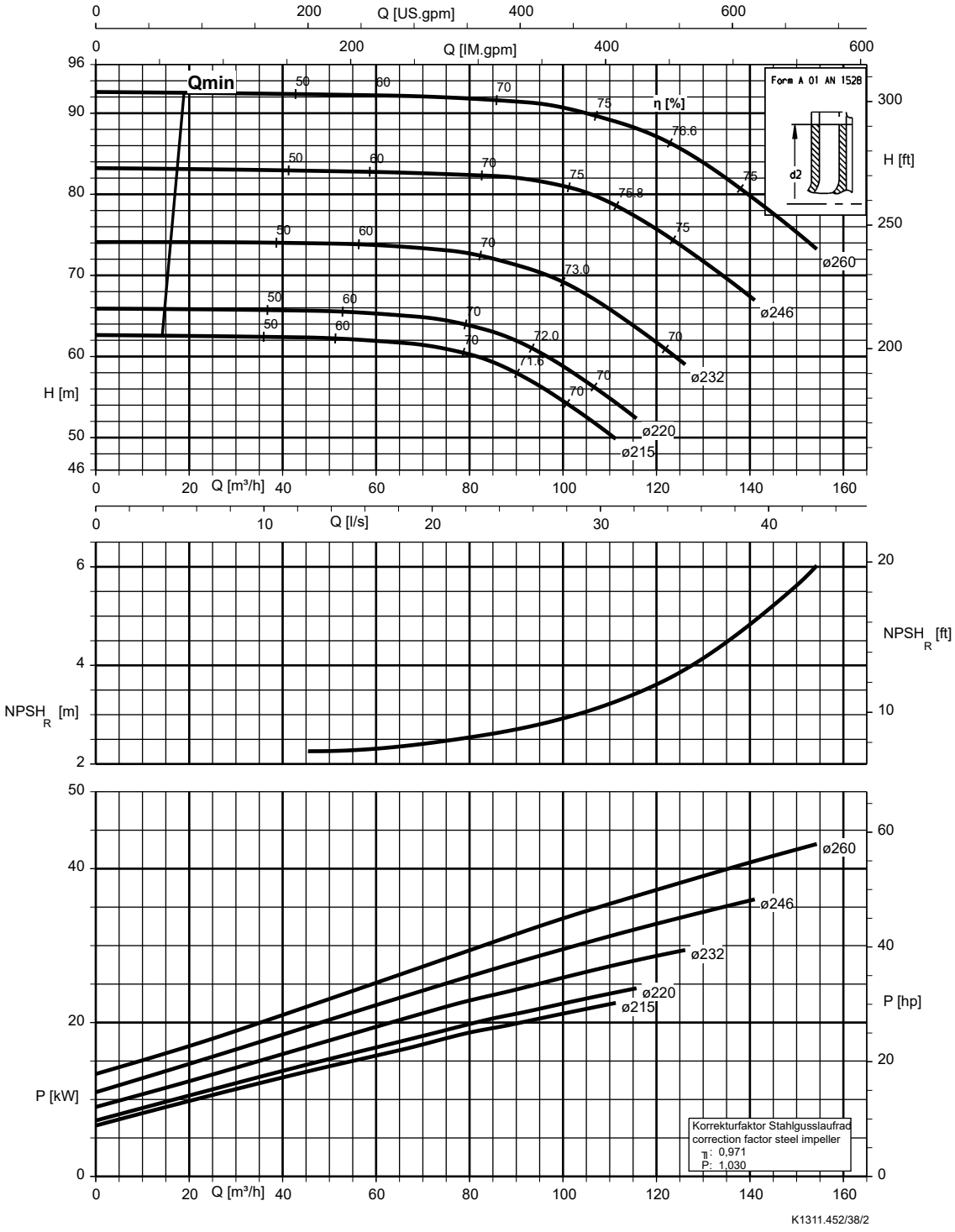
Vlety 080-065-160, n = 2900 rpm



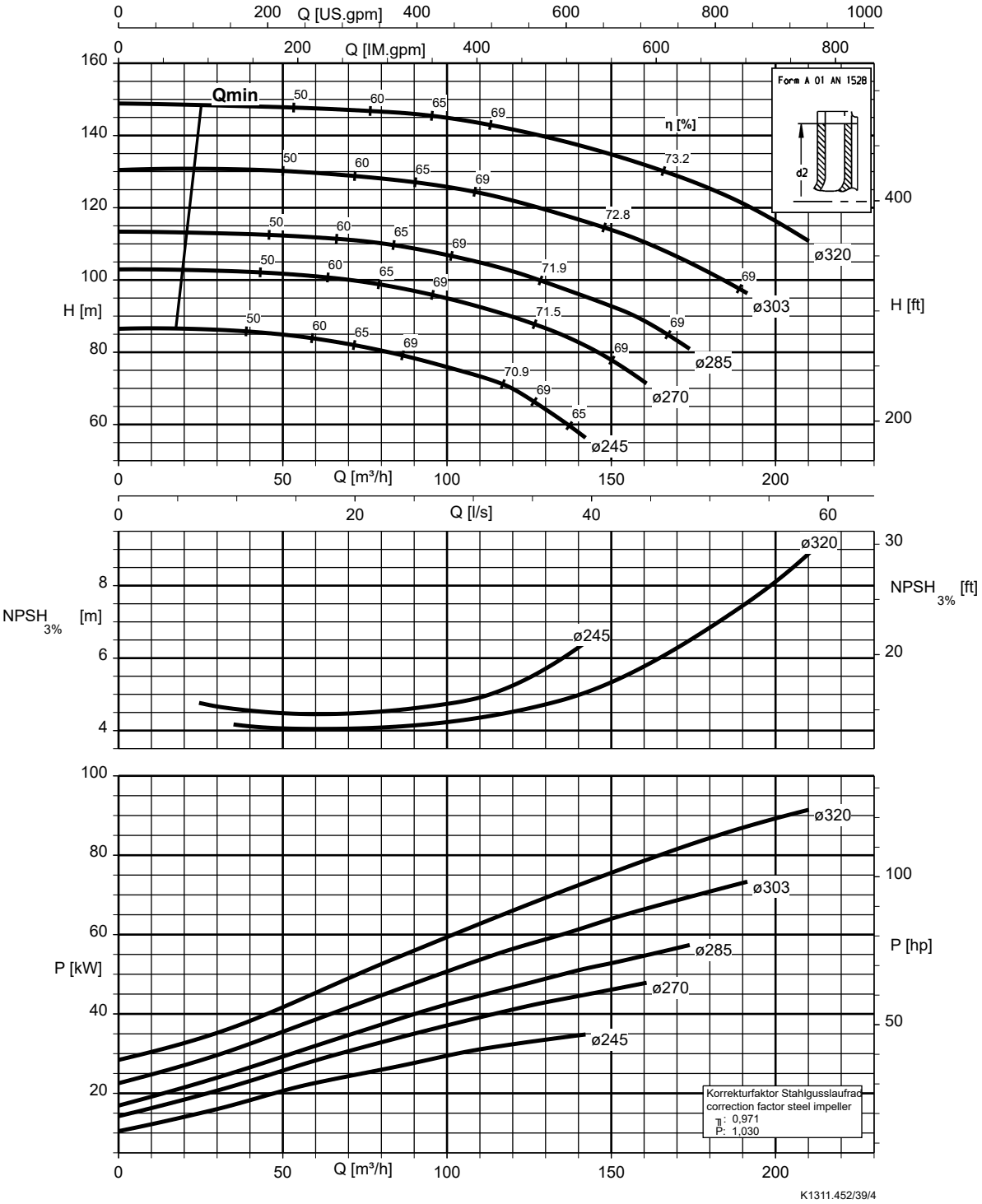
Vlety 080-065-200, n = 2900 rpm



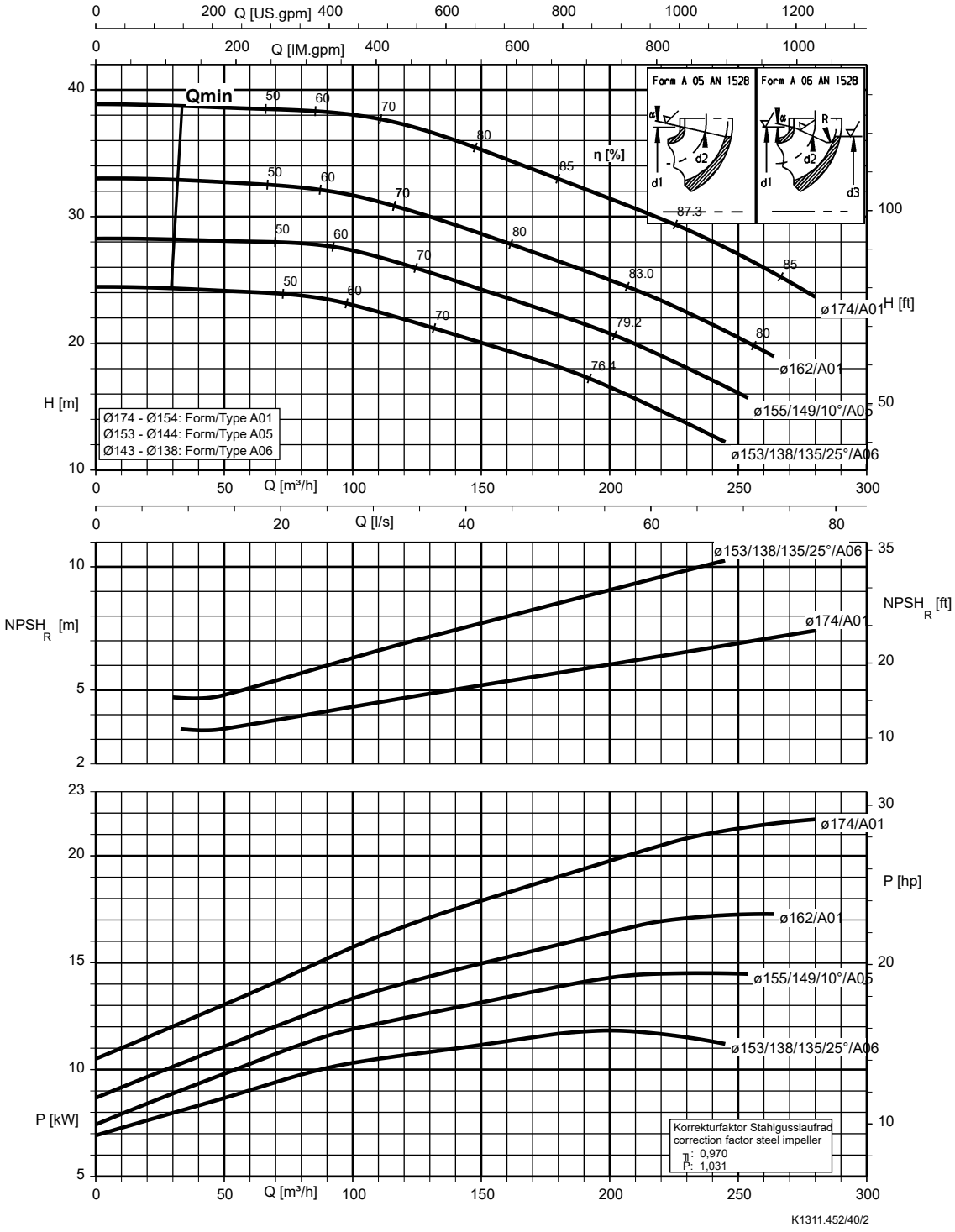
Vlety 080-065-250, n = 2900 rpm



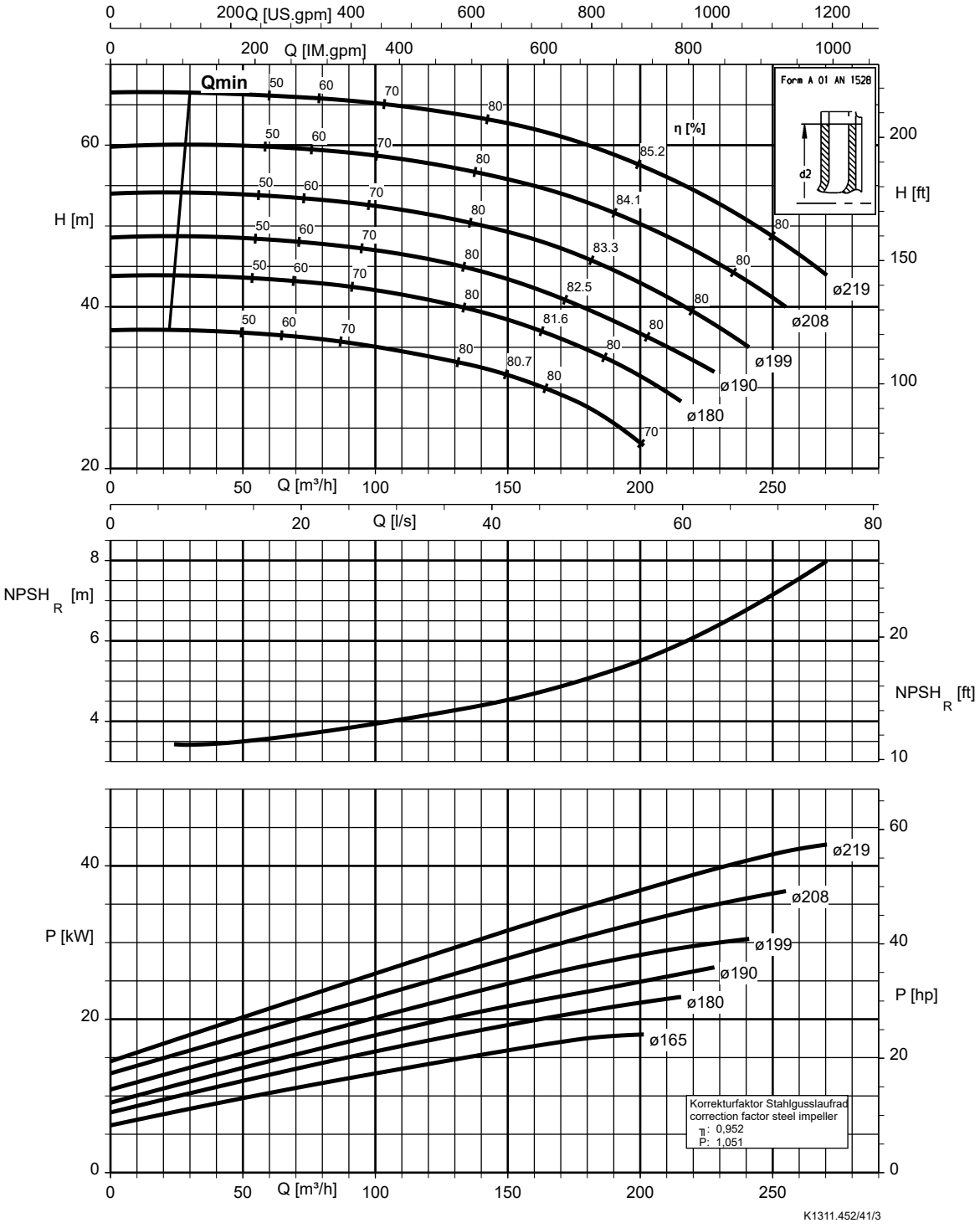
Vlety 080-065-315, n = 2900 rpm



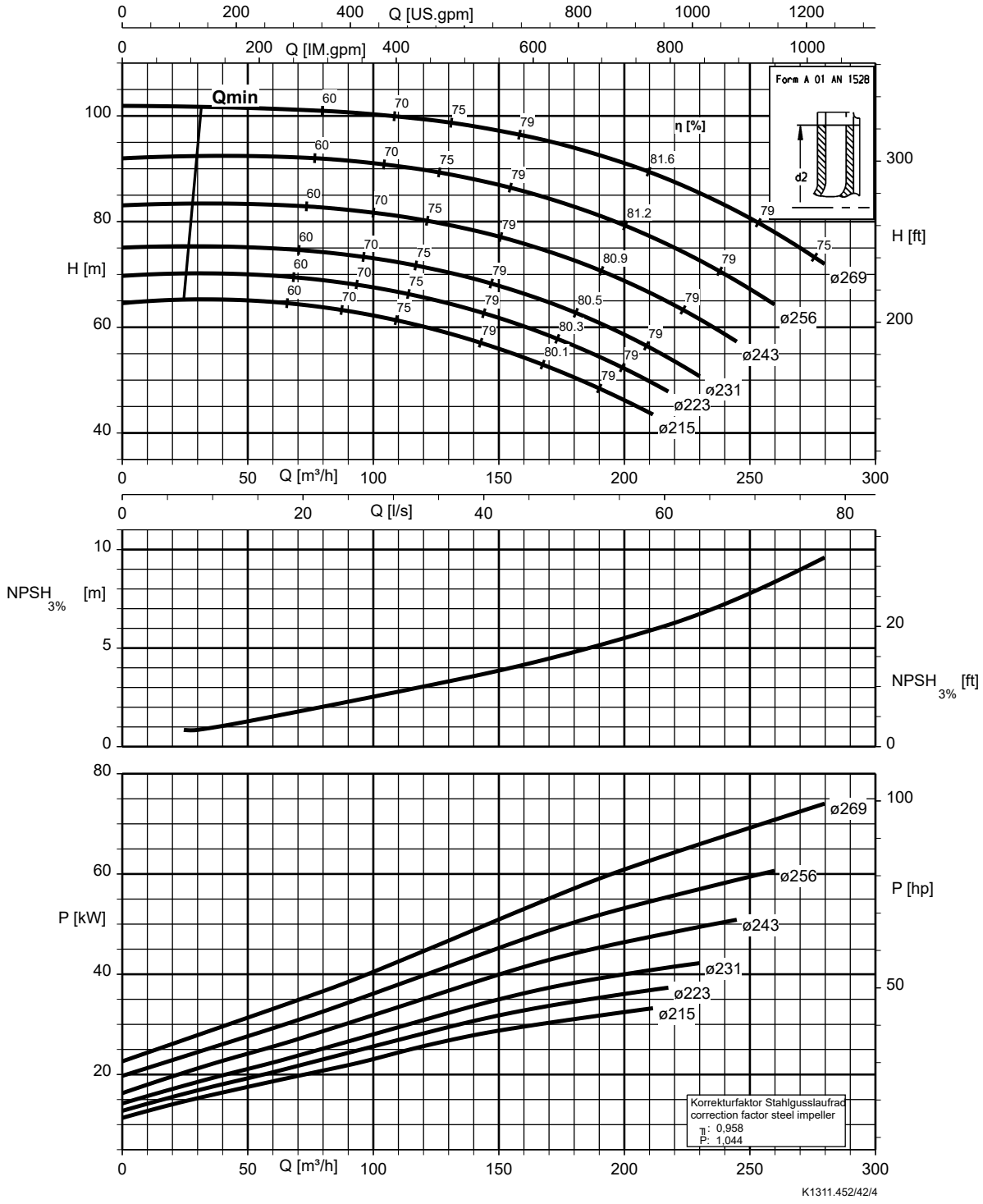
Vlety 100-080-160, n = 2900 rpm



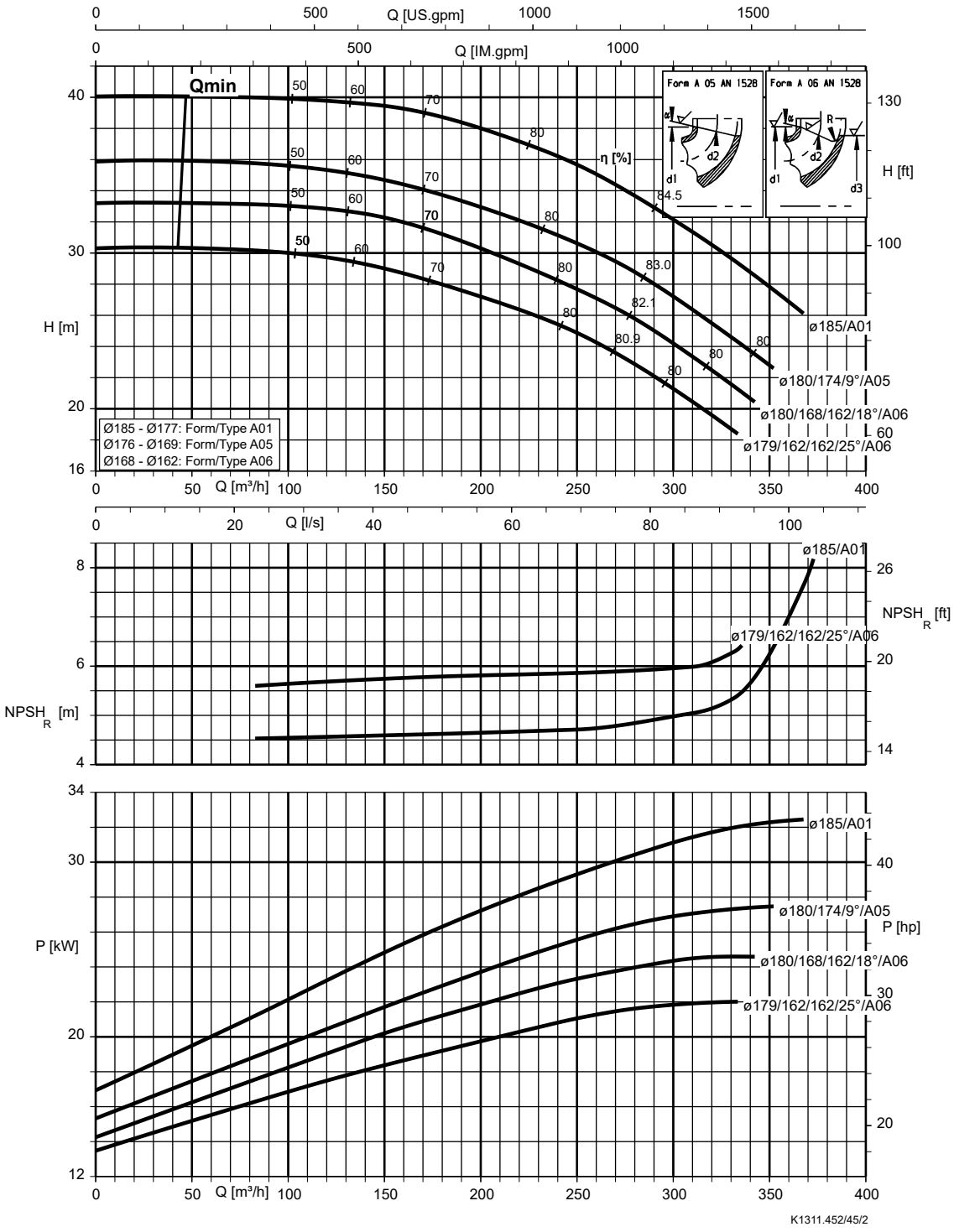
Vlety 100-080-200, n = 2900 rpm



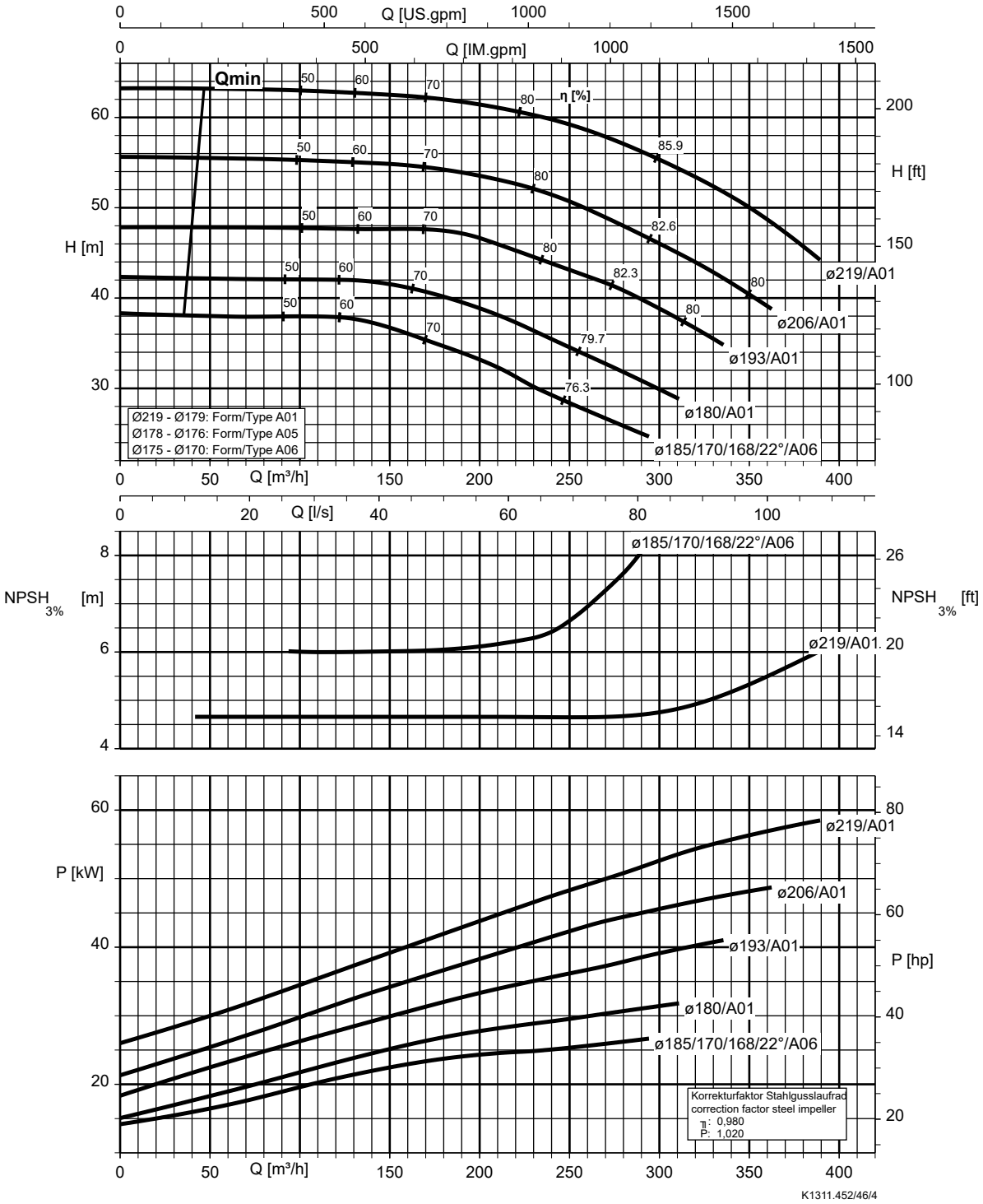
Vlety 100-080-250, n = 2900 rpm



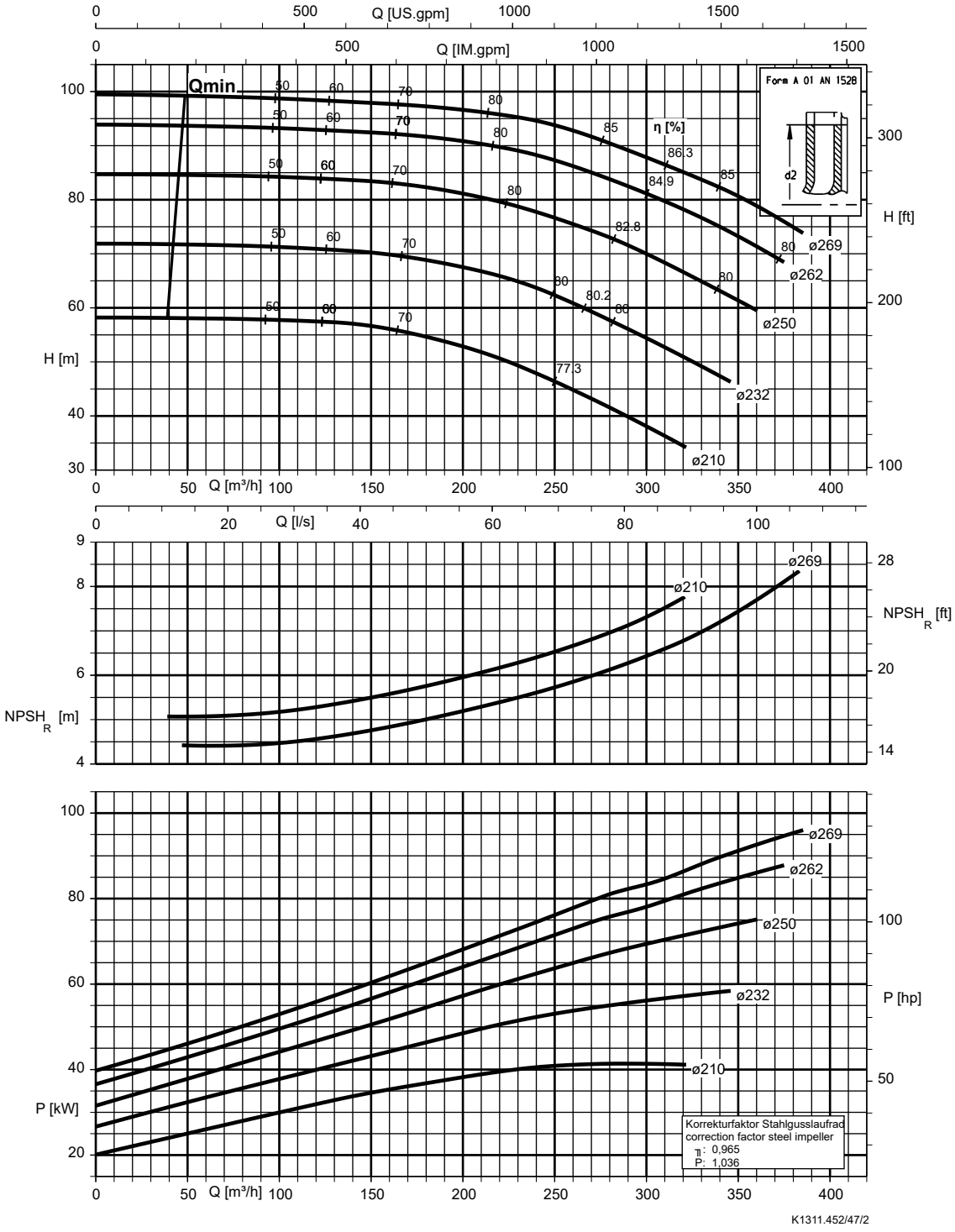
Vlety 125-100-160, n = 2900 rpm



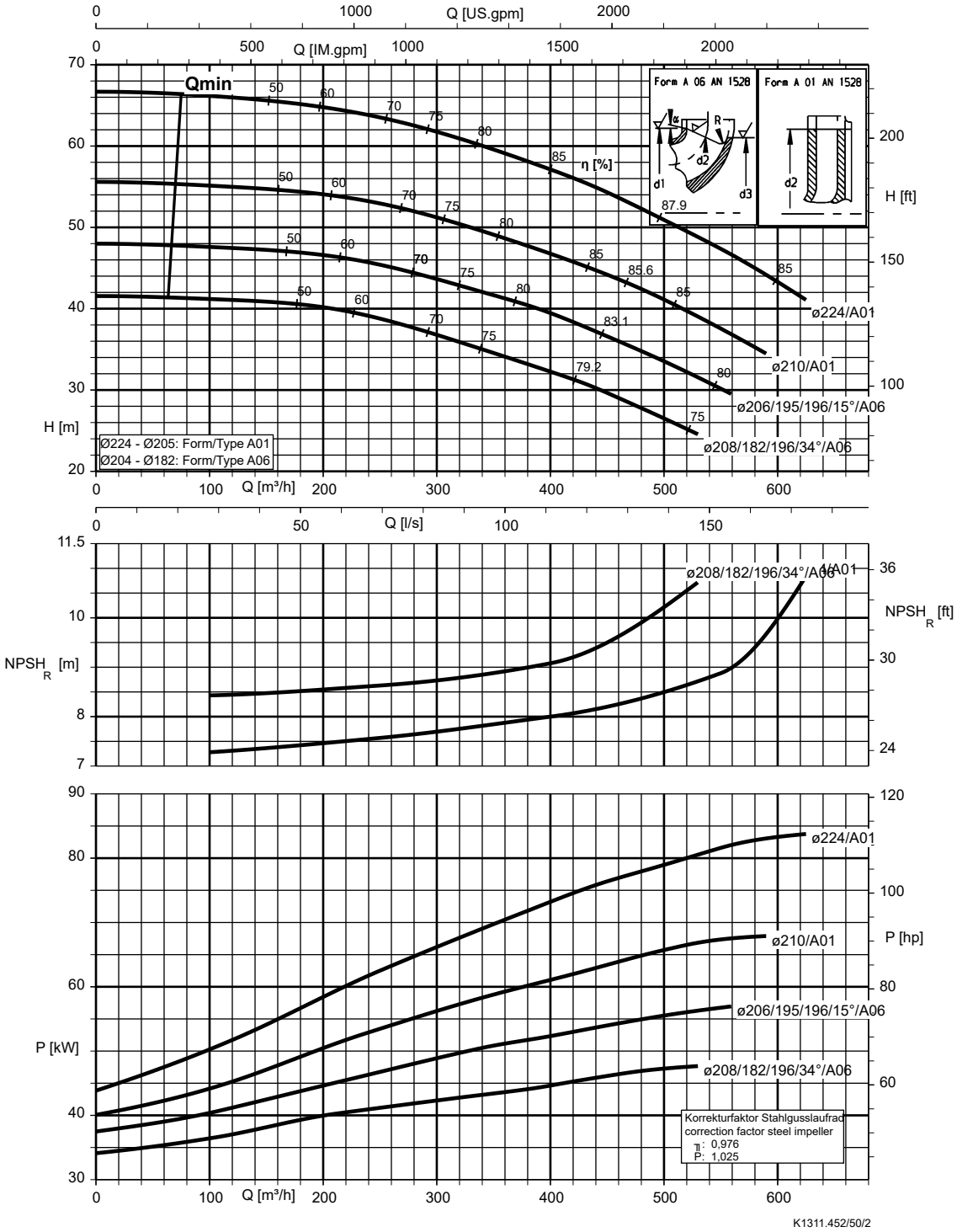
Vlety 125-100-200, n = 2900 rpm



Vlety 125-100-250, n = 2900 rpm

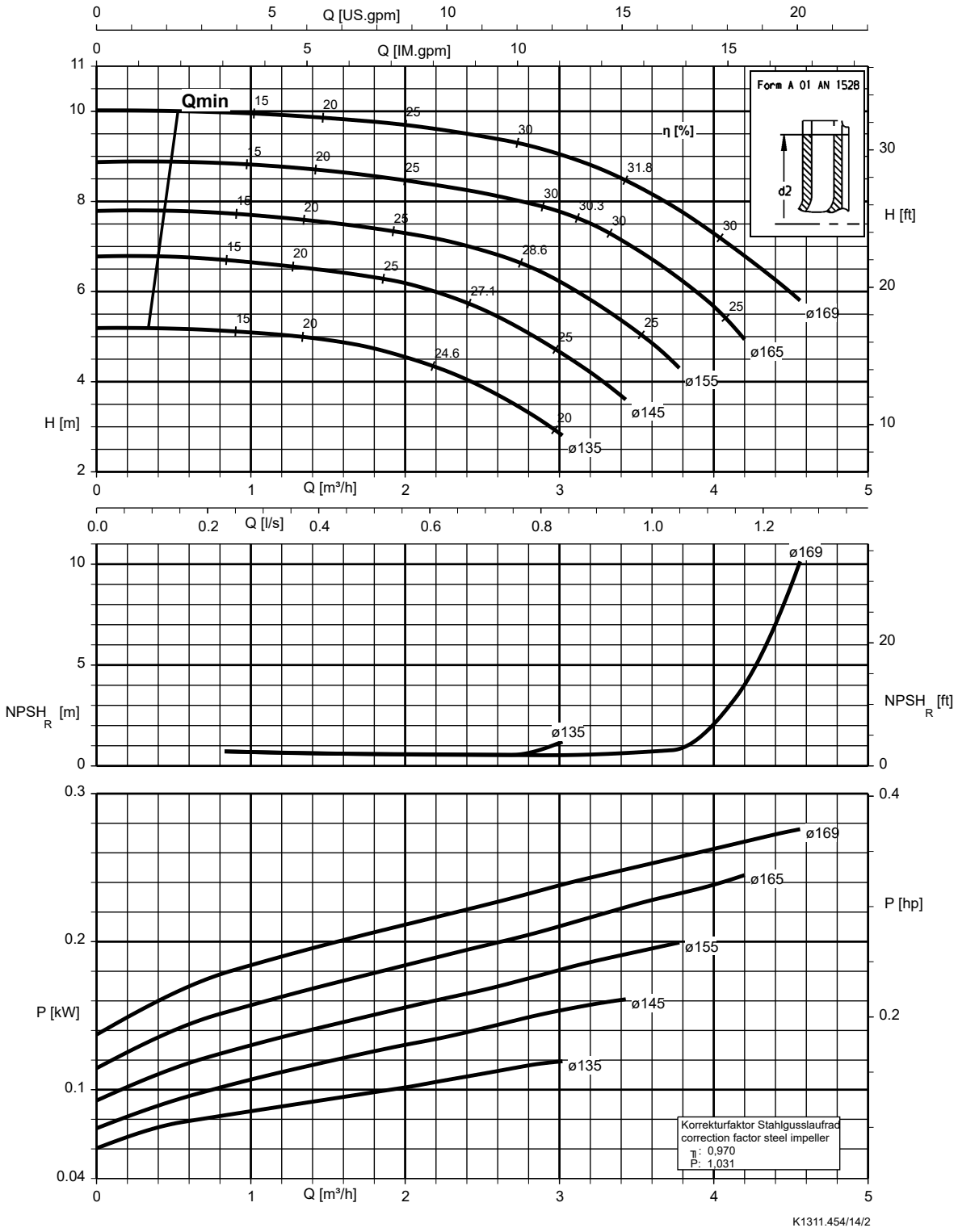


Vlety 150-125-200, n = 2900 rpm

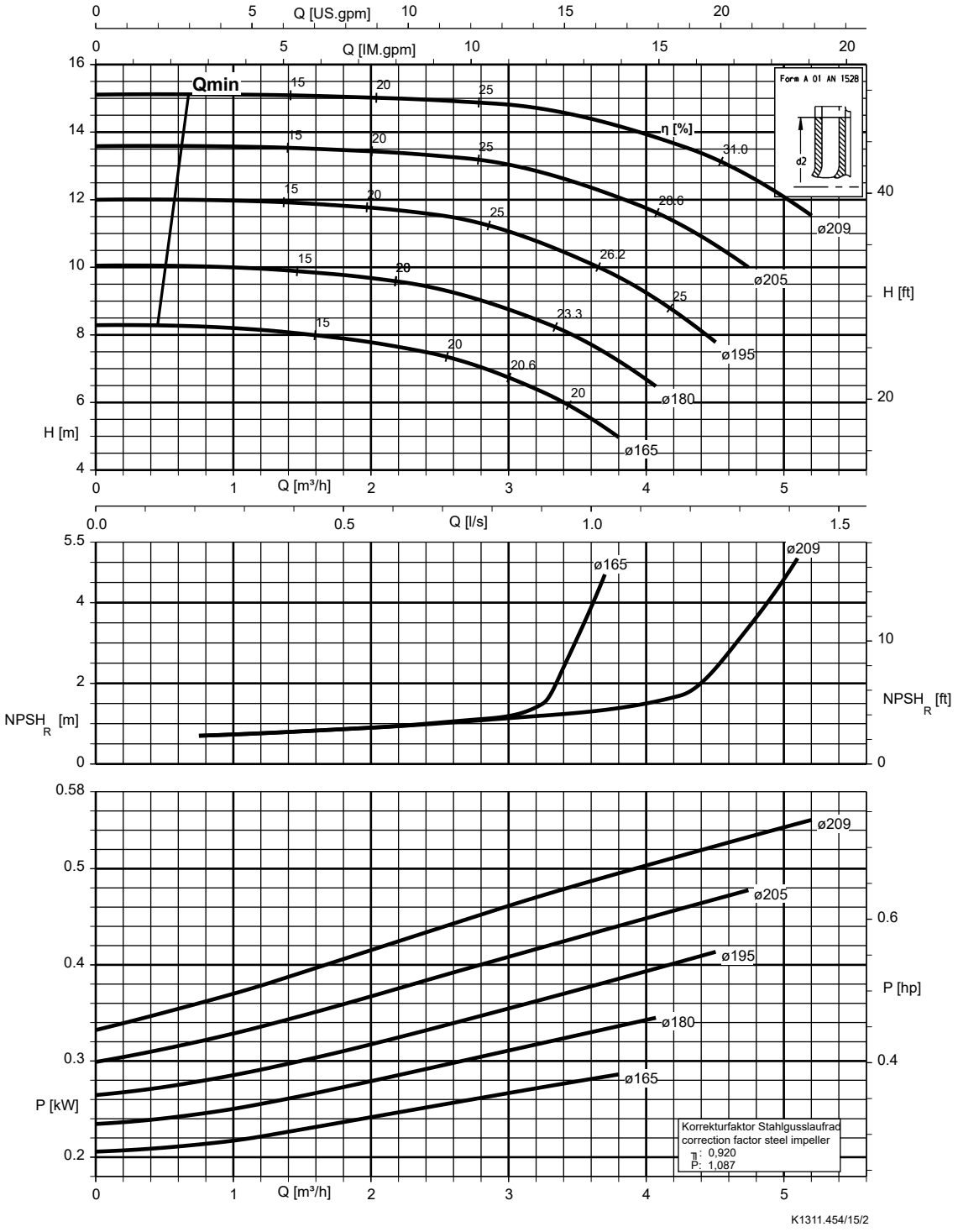


n = 1450 rpm

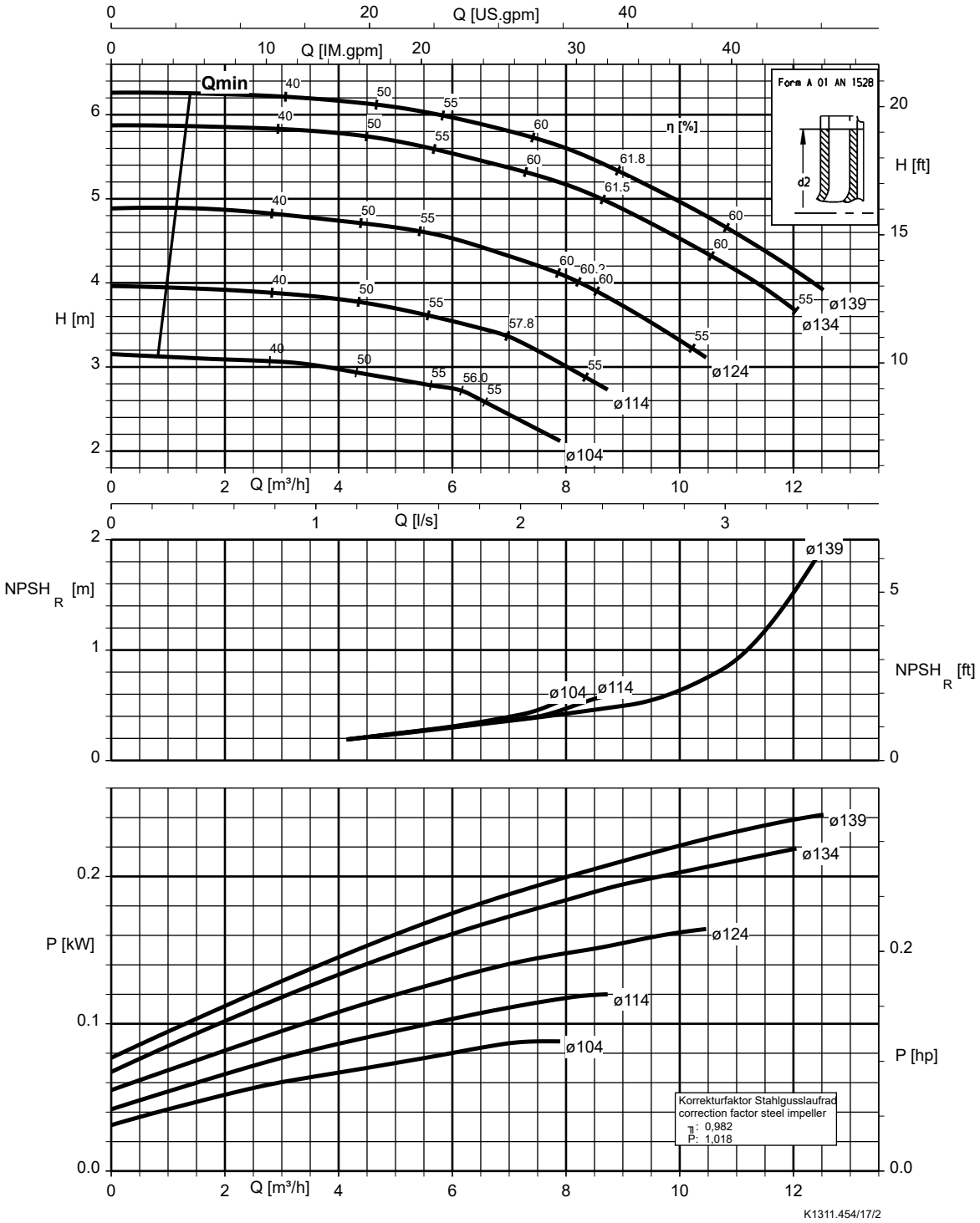
Vlety 040-025-160, n = 1450 rpm



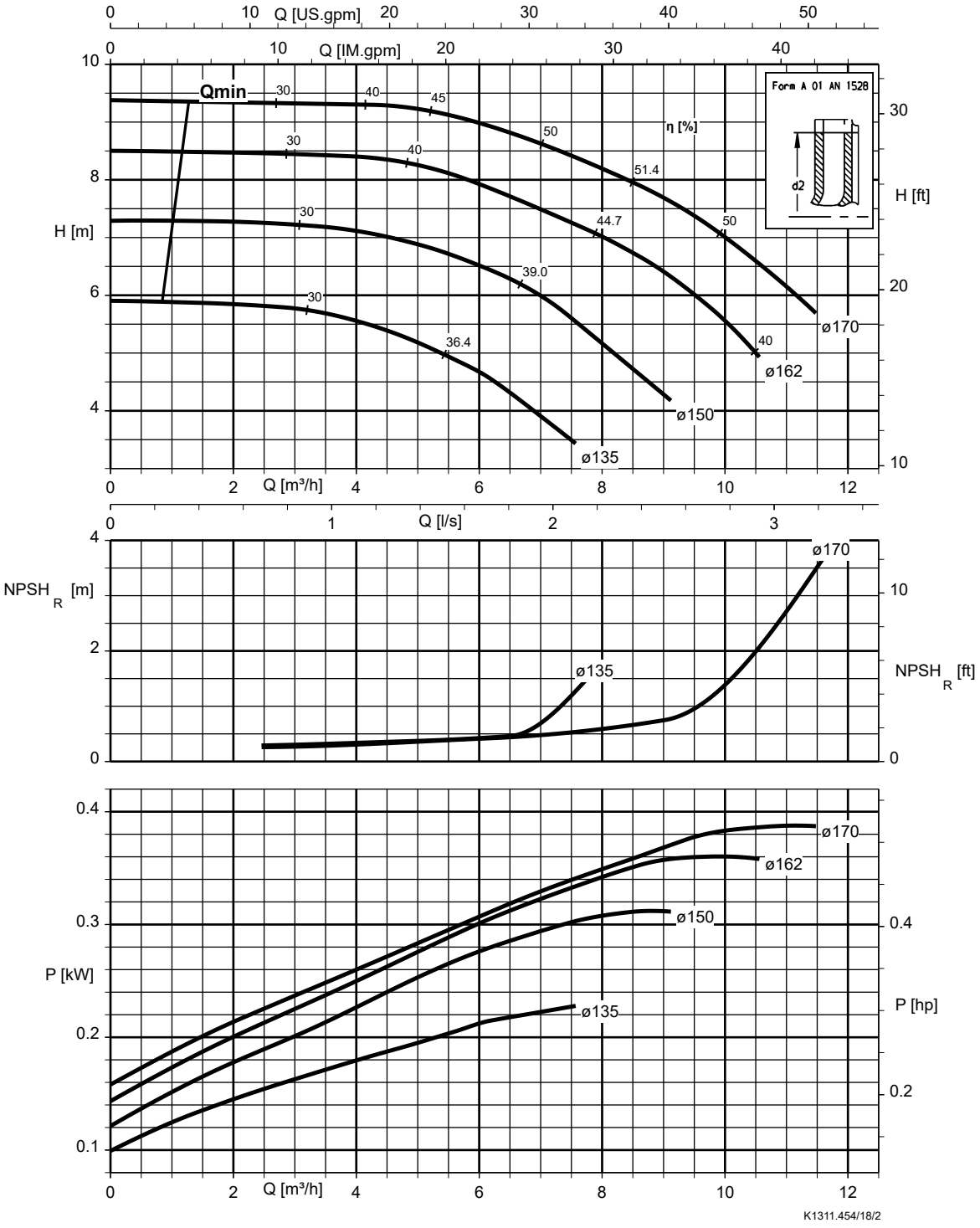
Vlety 040-025-200, n = 1450 rpm



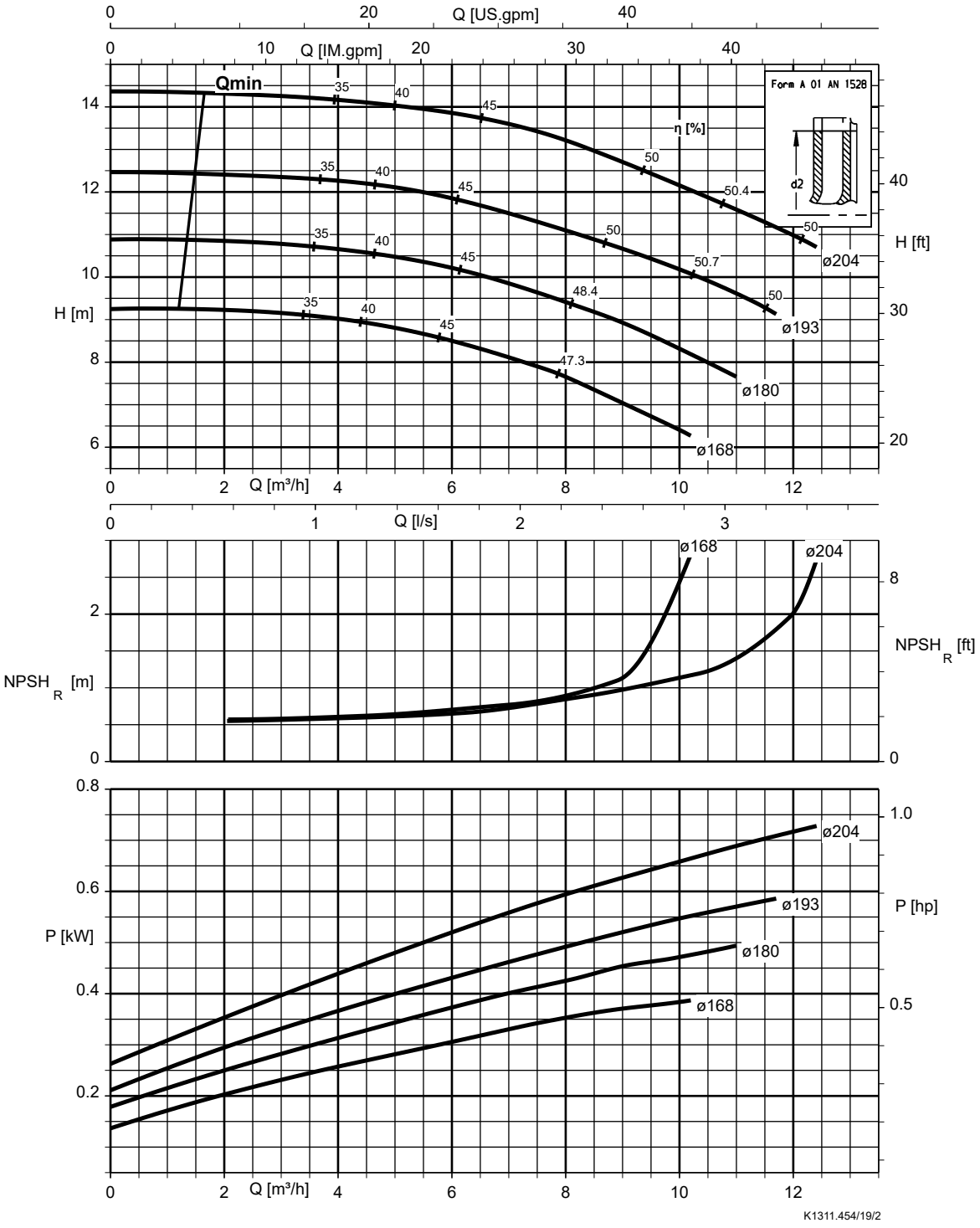
Vlety 050-032-125.1, n = 1450 rpm



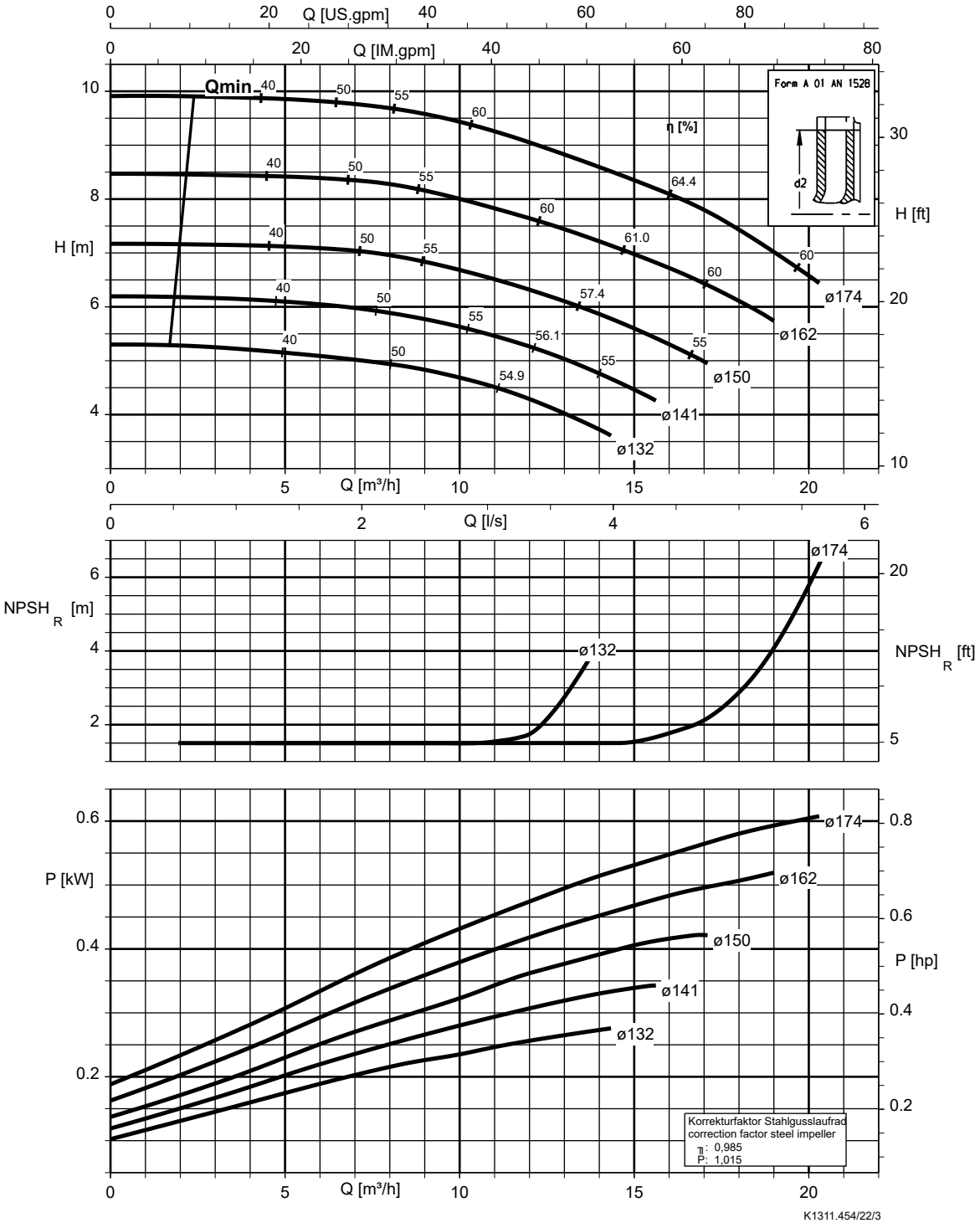
Vlety 050-032-160.1, n = 1450 rpm



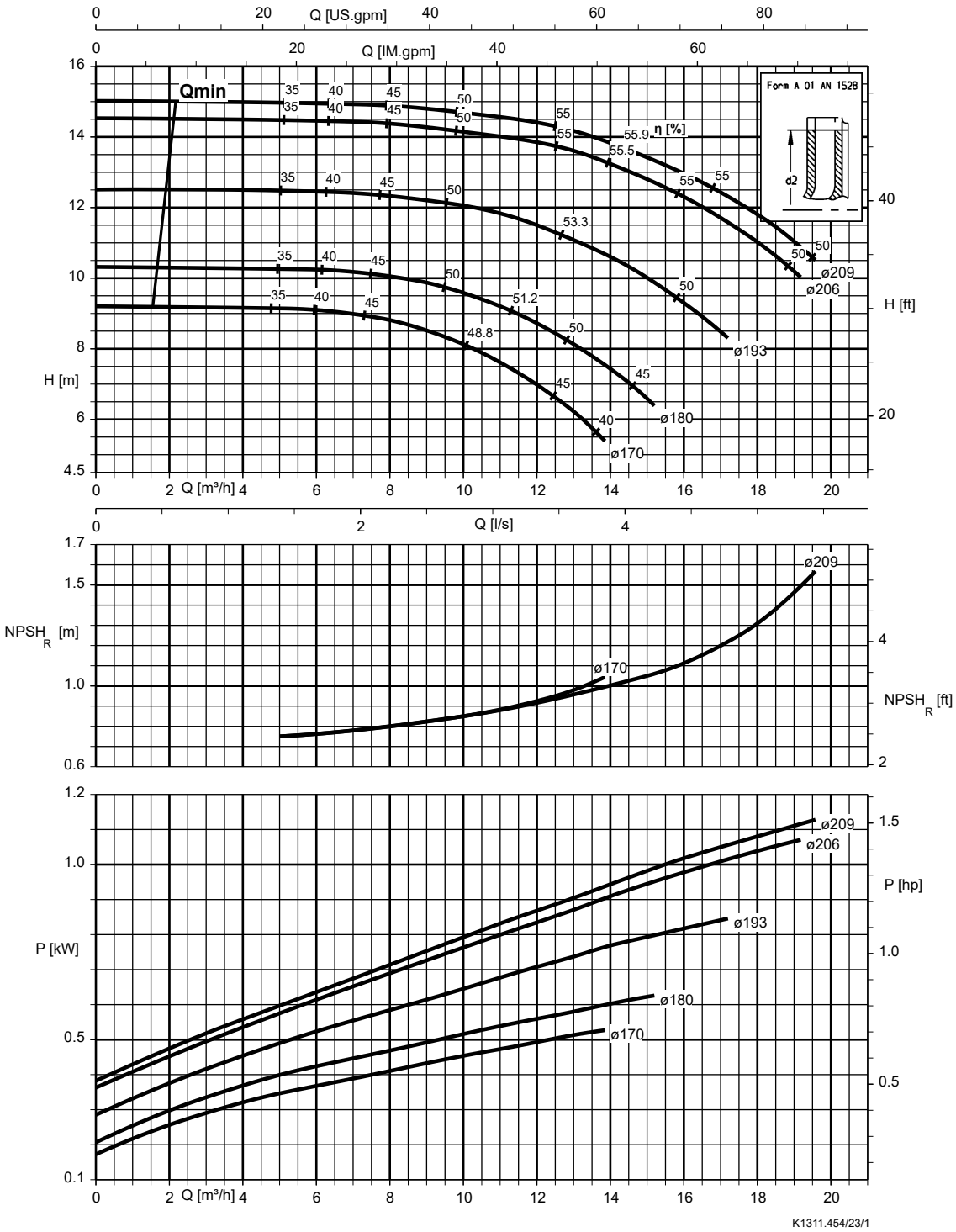
Vlety 050-032-200.1, n = 1450 rpm



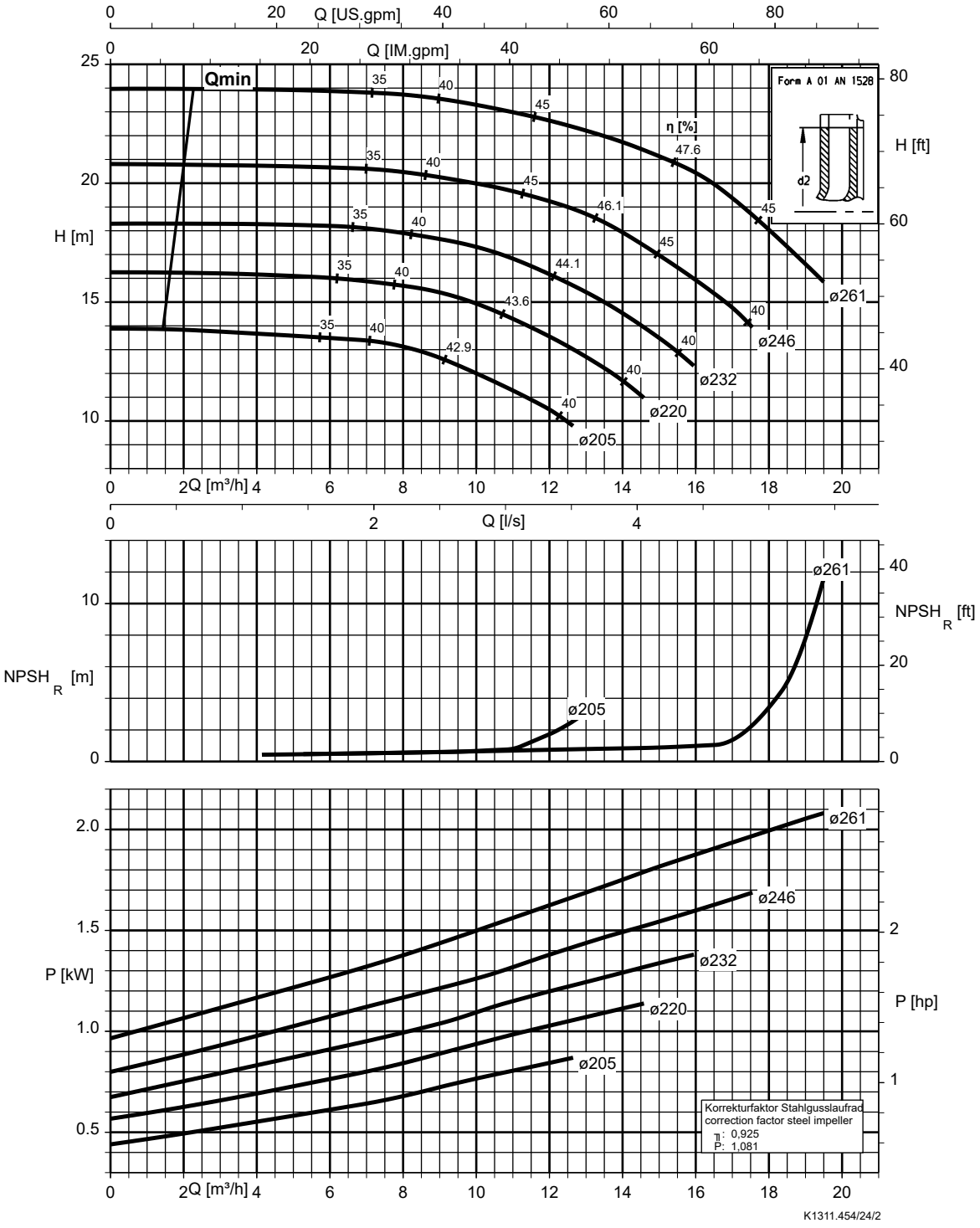
Vlety 050-032-160, n = 1450 rpm



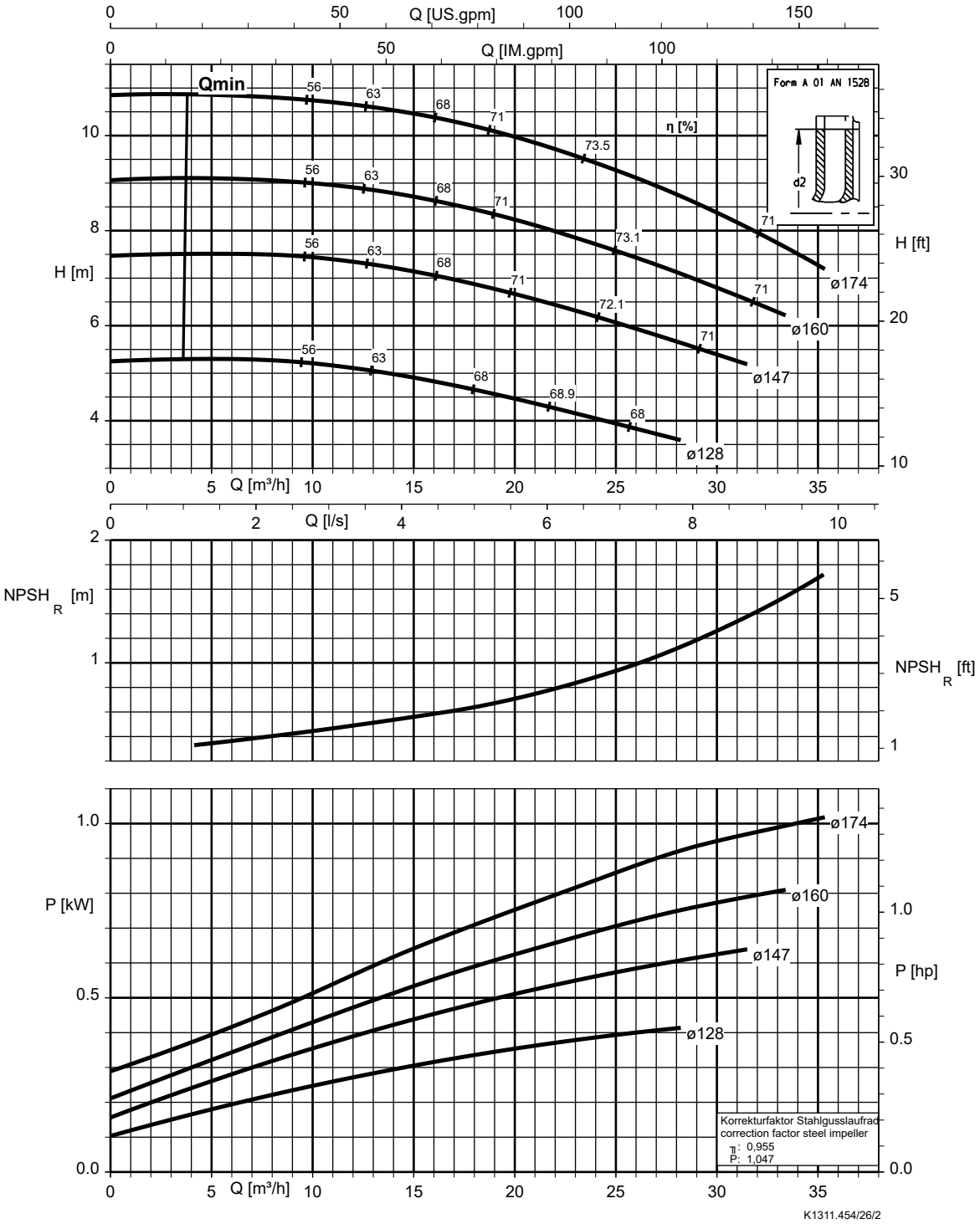
Vlety 050-032-200, n = 1450 rpm



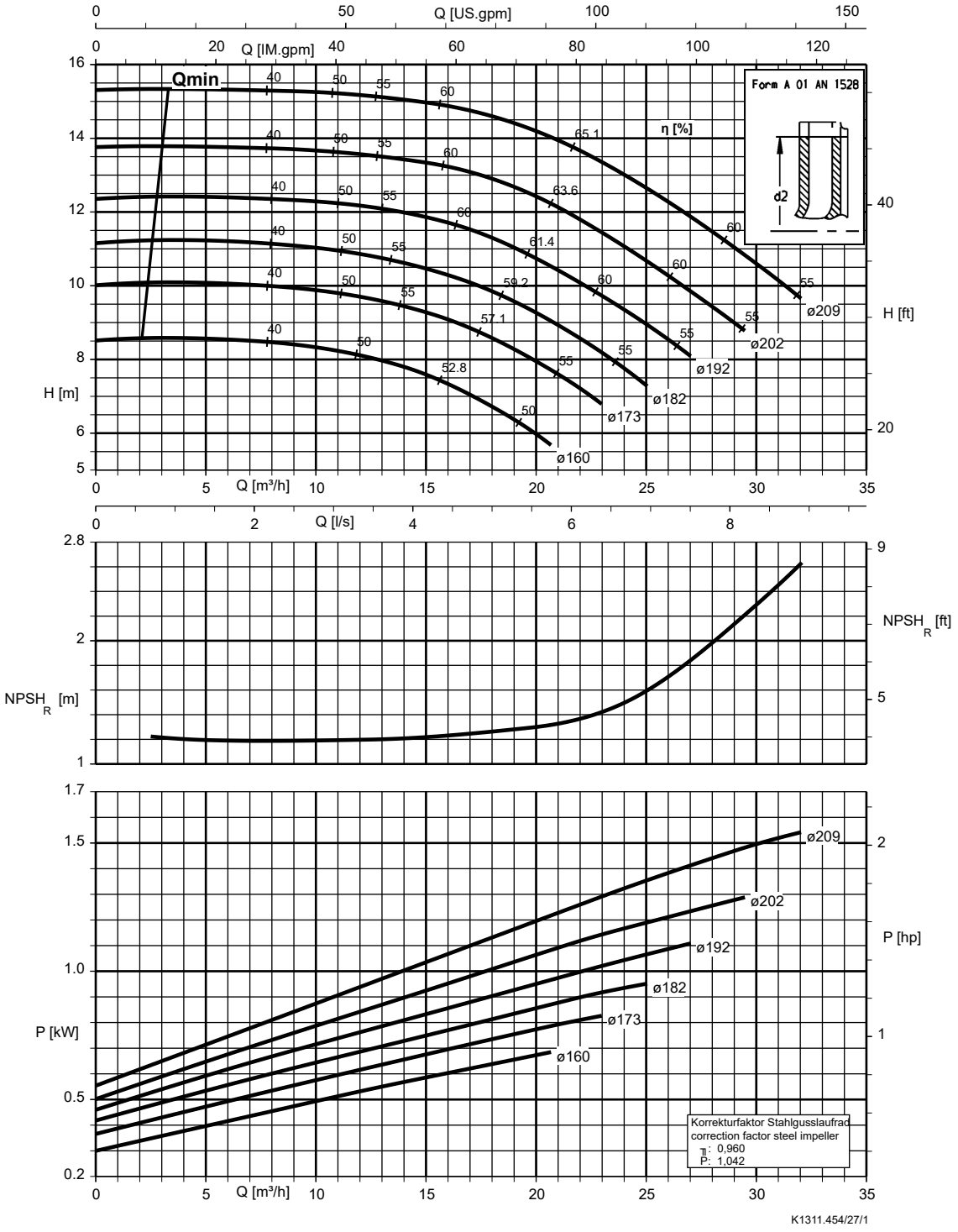
Vlety 050-032-250, n = 1450 rpm



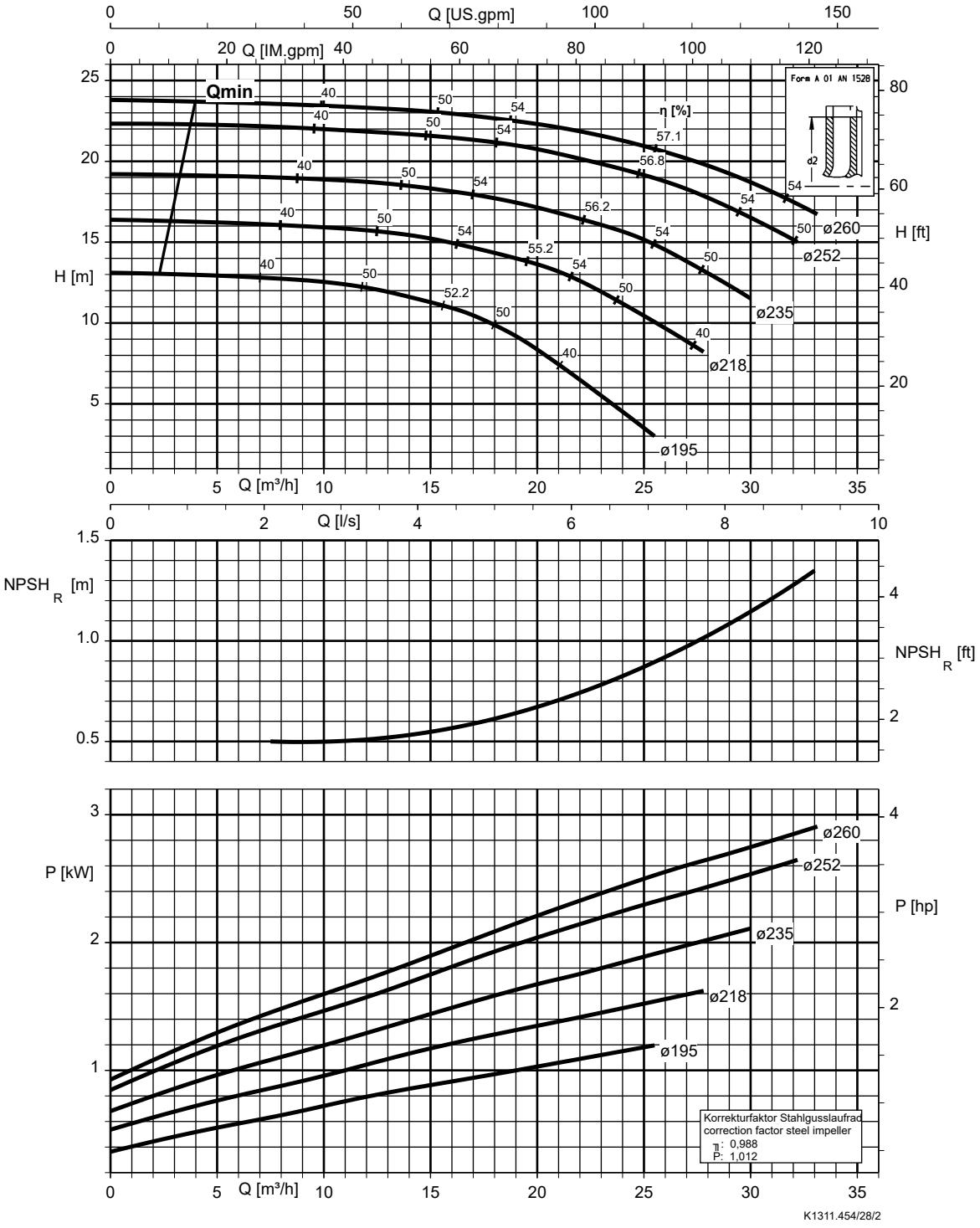
Vlety 065-040-160, n = 1450 rpm



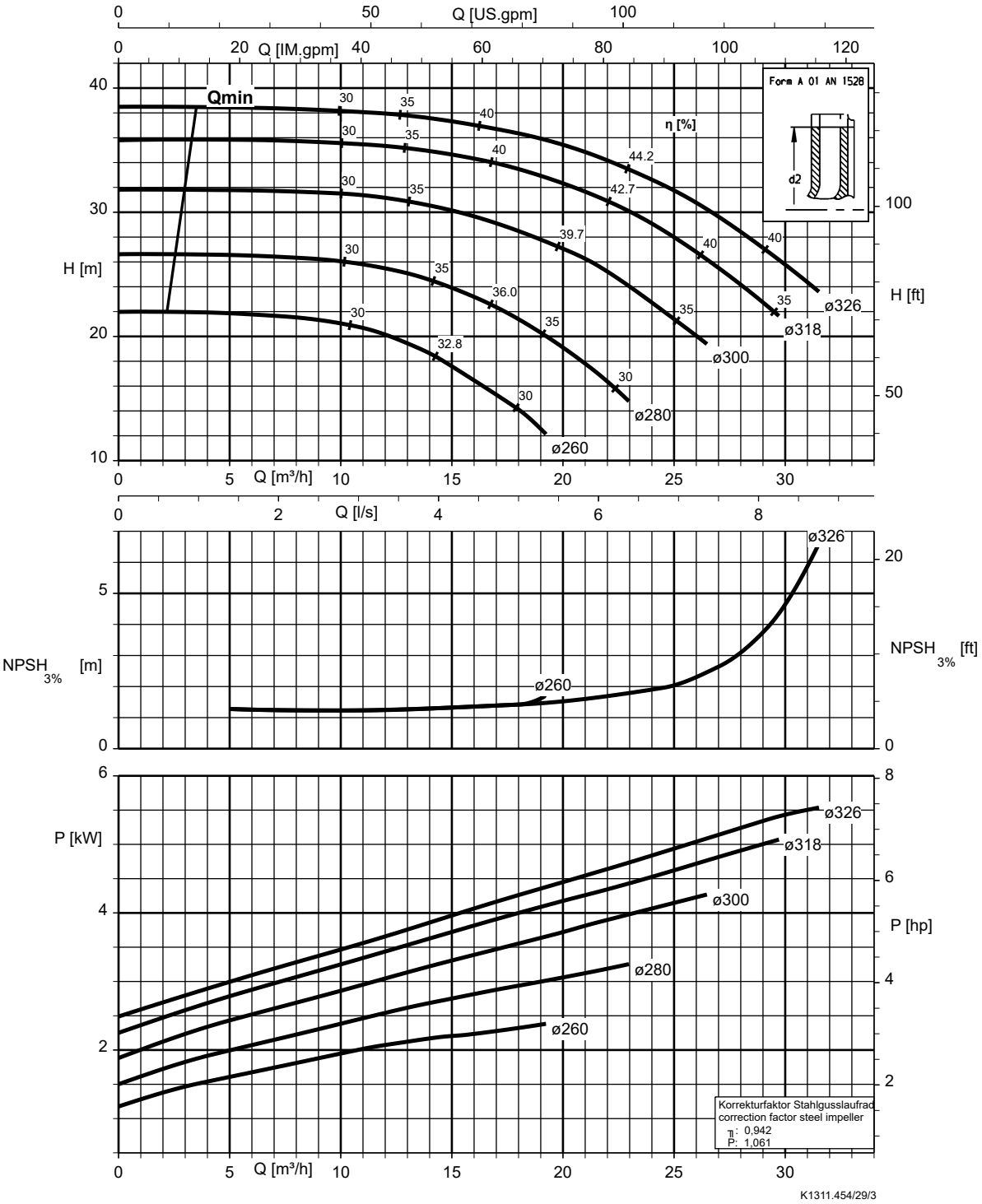
Vlety 065-040-200, n = 1450 rpm



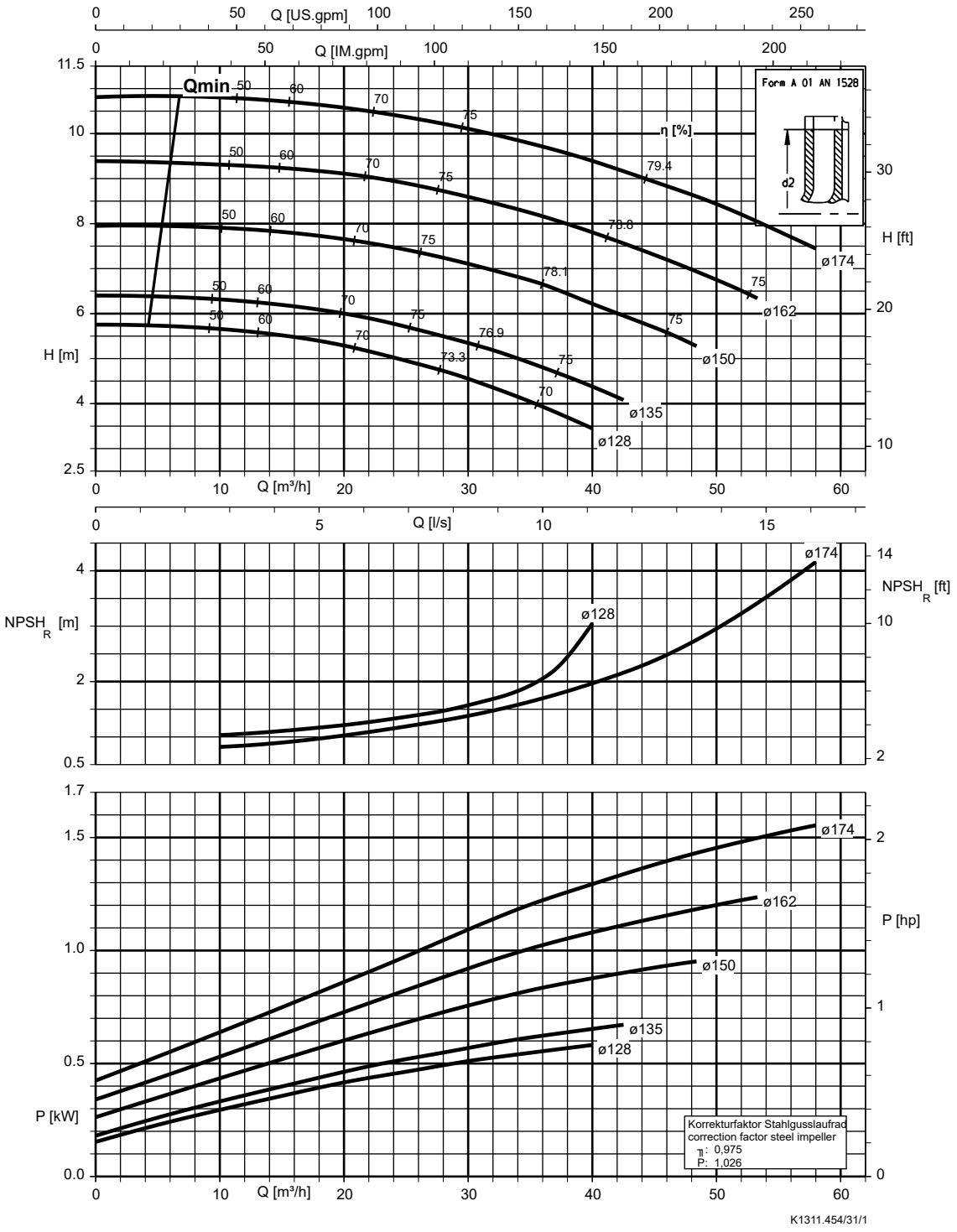
Vlety 065-040-250, n = 1450 rpm



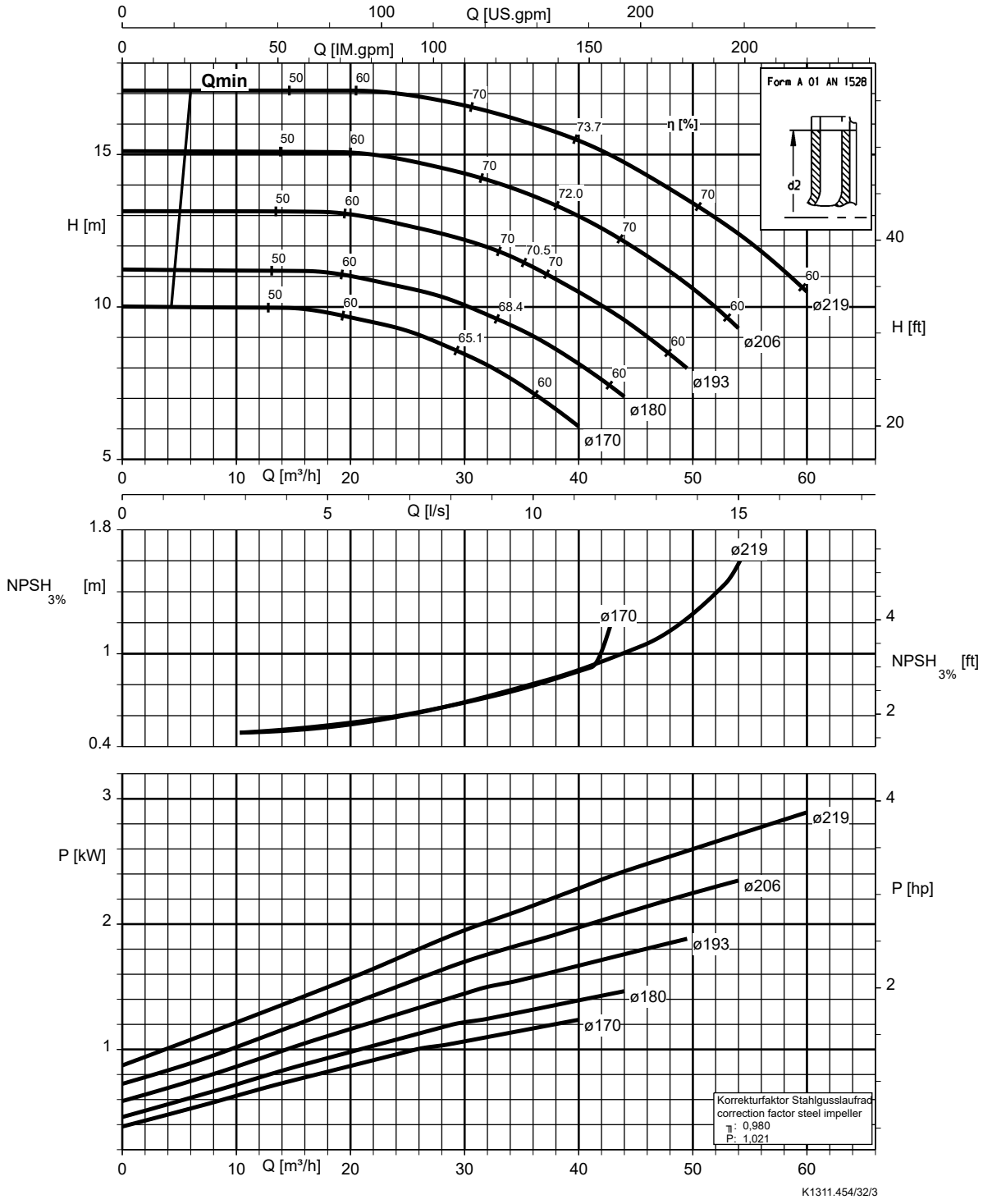
Vlety 065-040-315, n = 1450 rpm



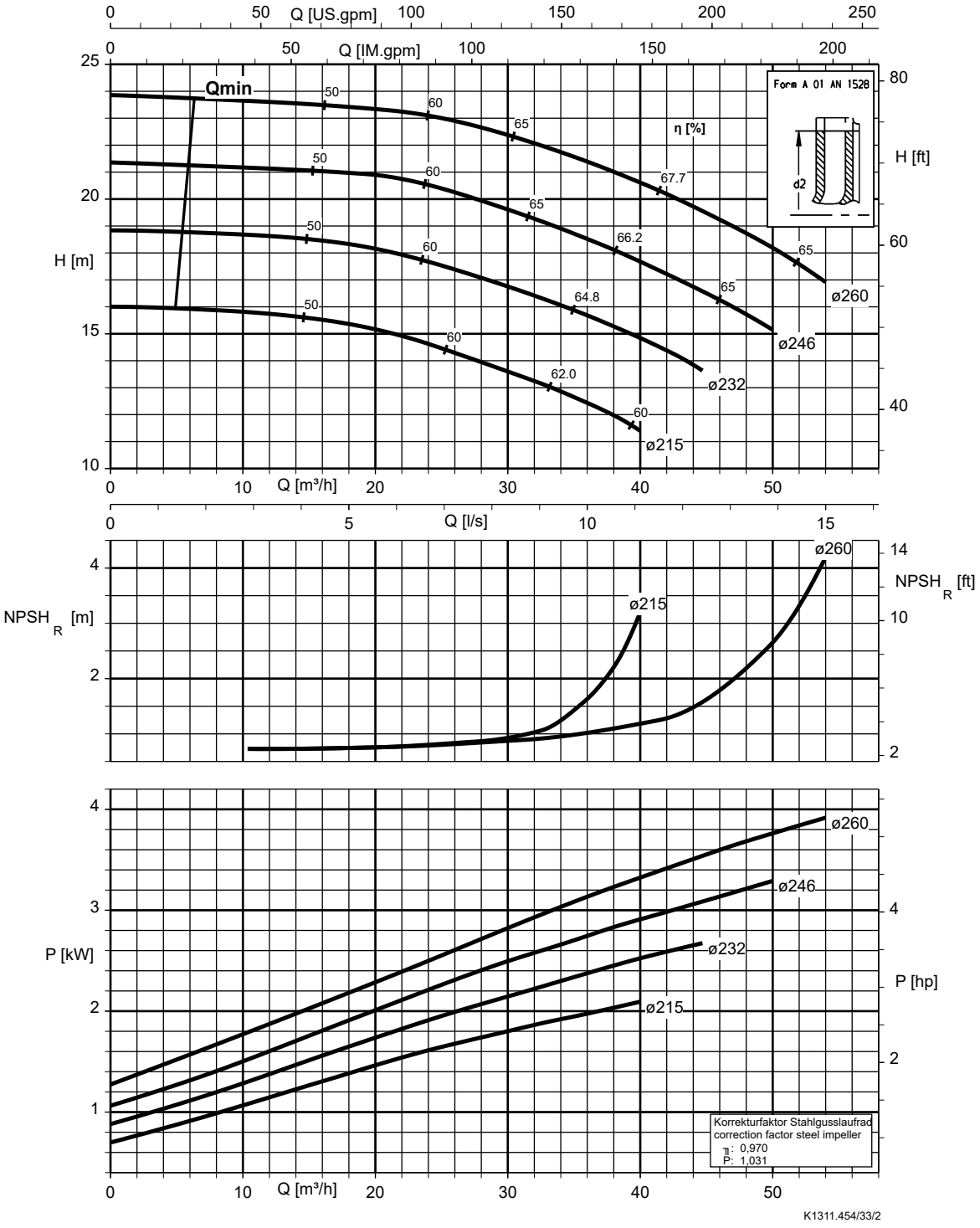
Vlety 065-050-160, n = 1450 rpm



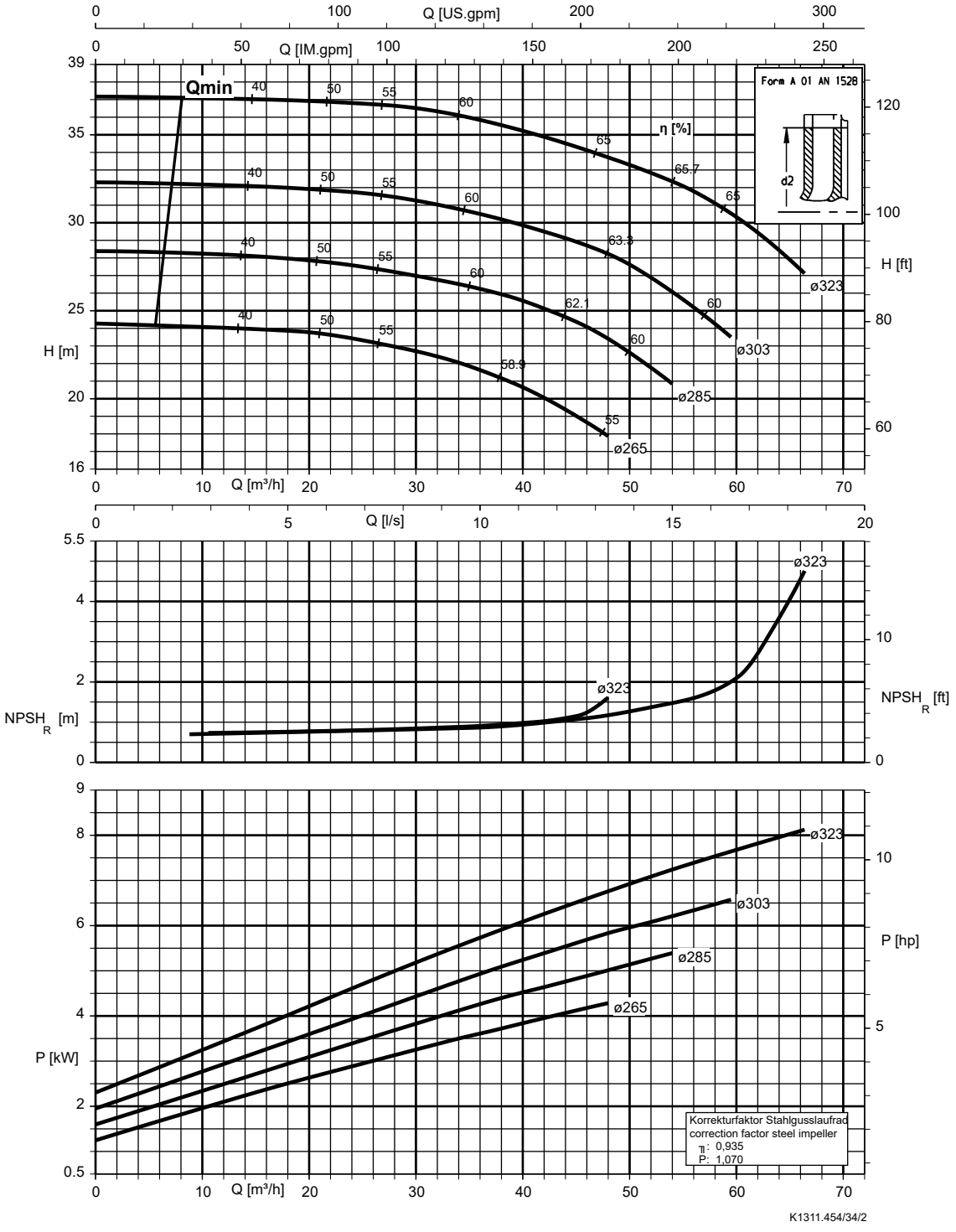
Vlety 065-050-200, n = 1450 rpm



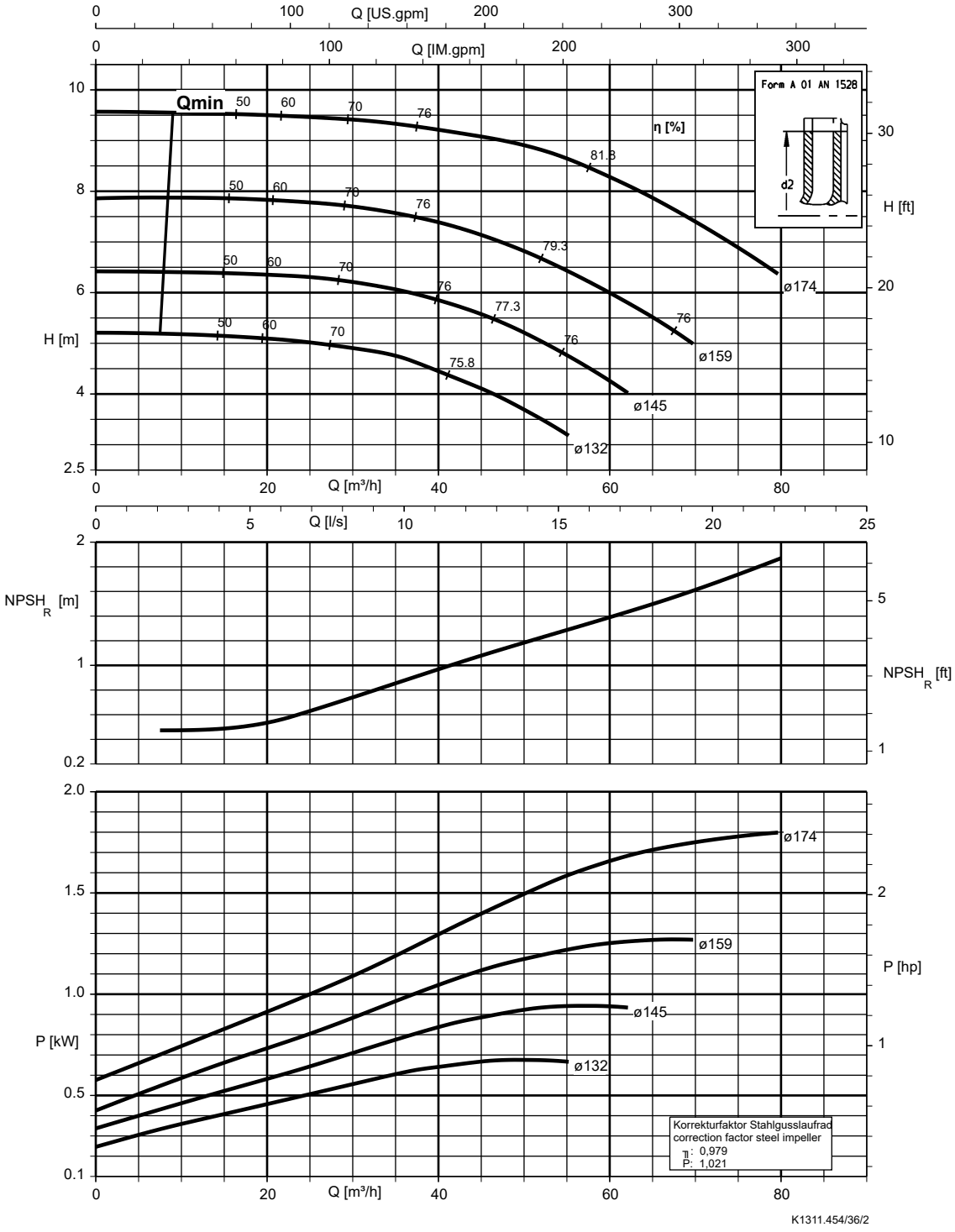
Vlety 065-050-250, n = 1450 rpm



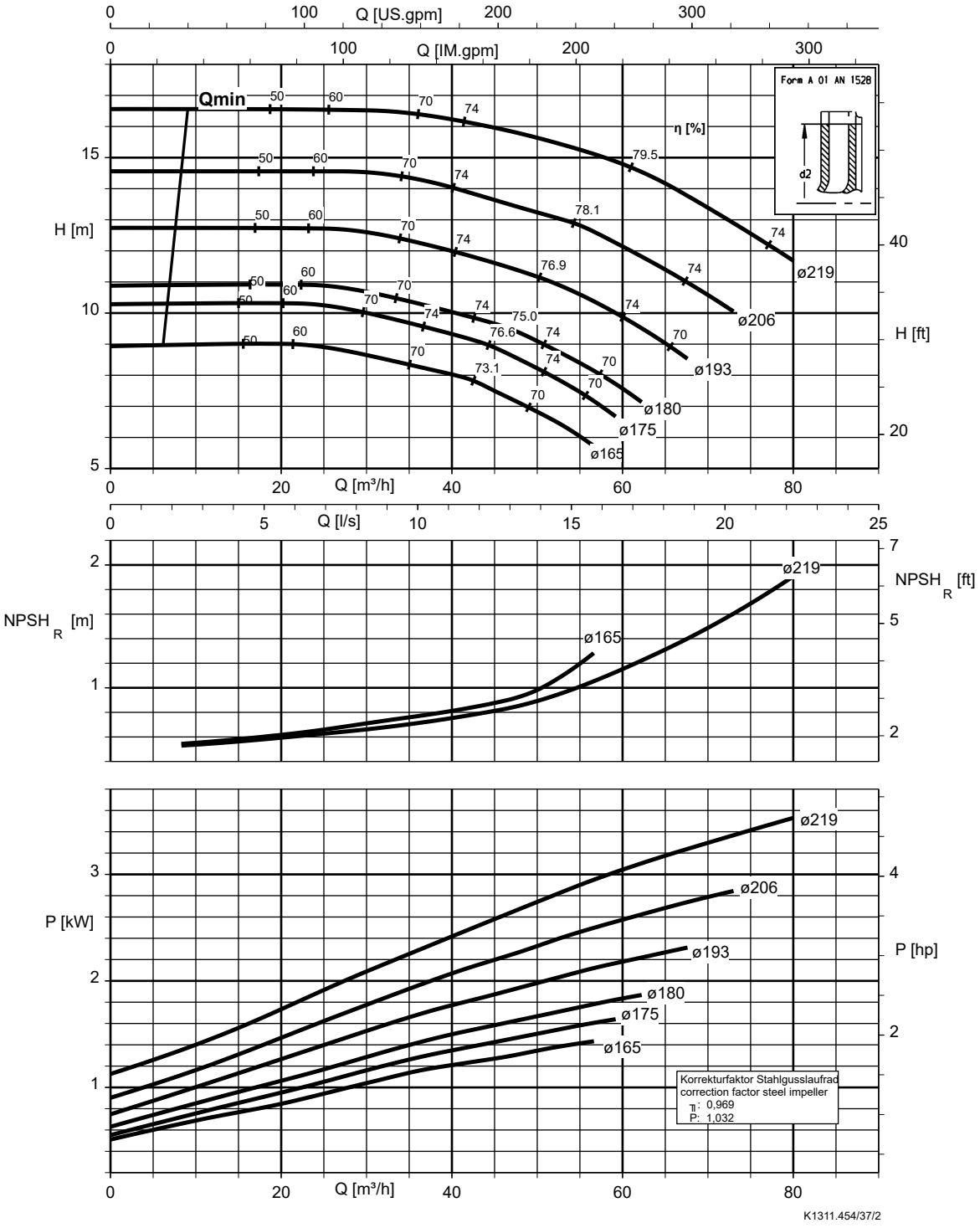
Vlety 065-050-315, n = 1450 rpm



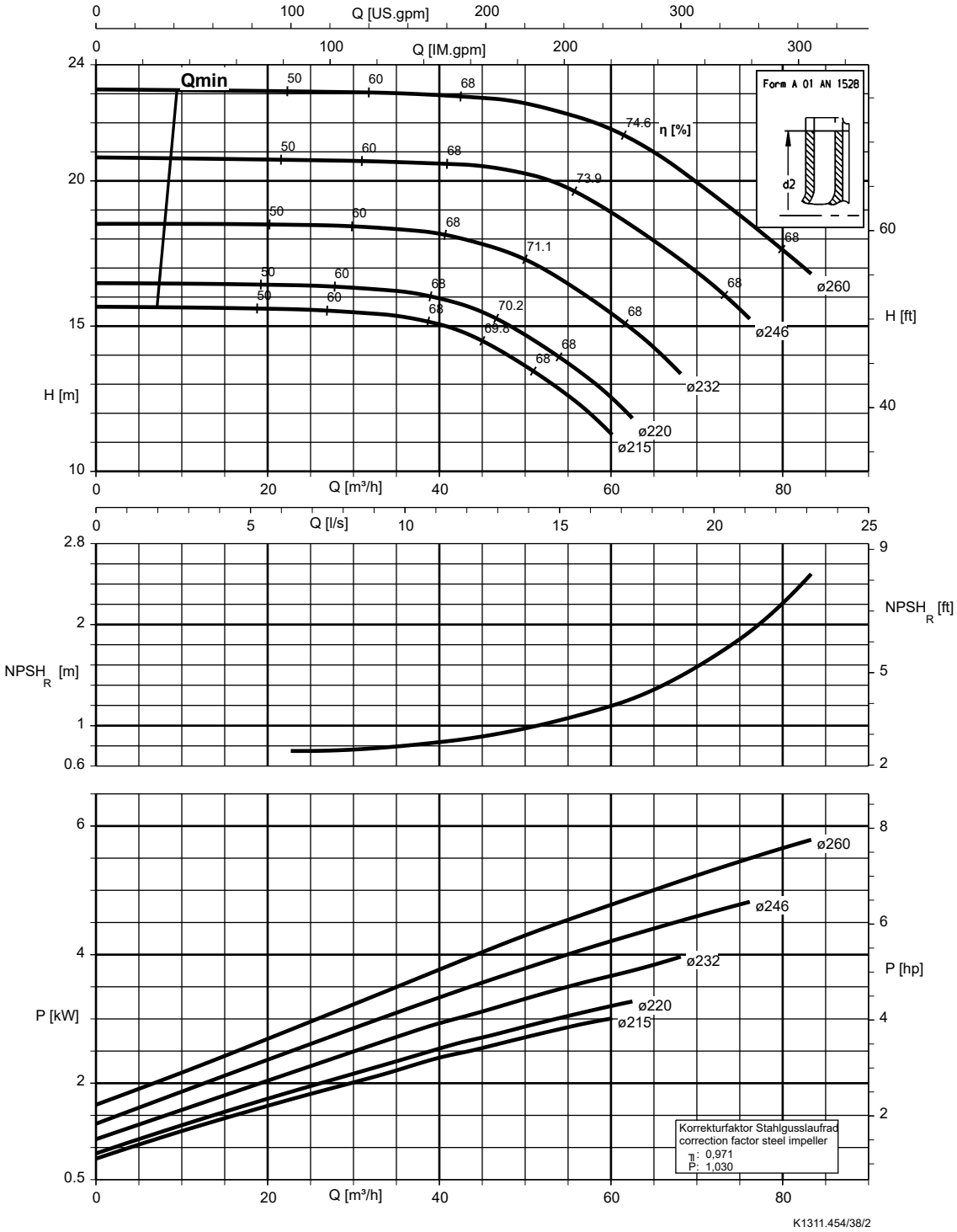
Vlety 080-065-160, n = 1450 rpm



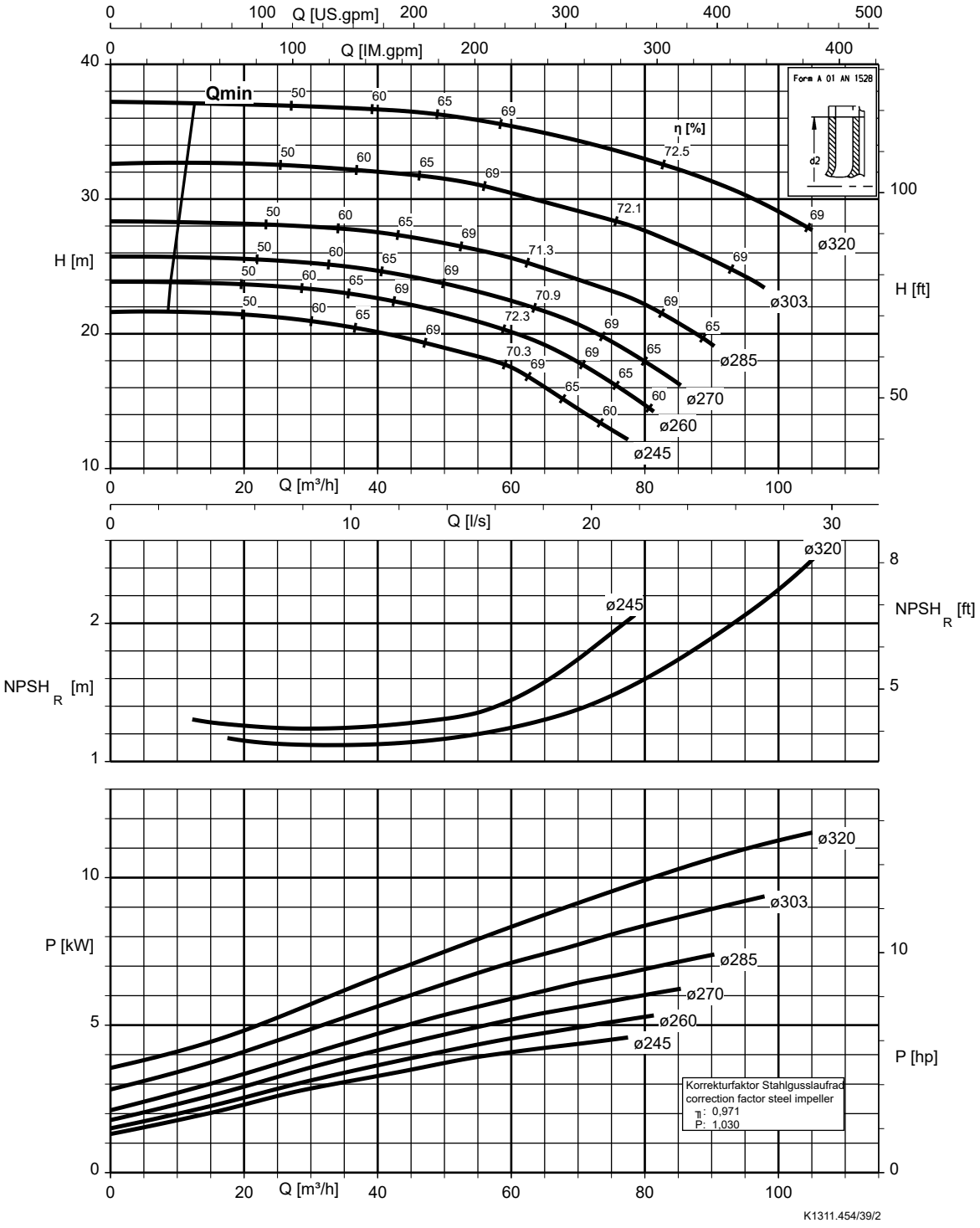
Vlety 080-065-200, n = 1450 rpm



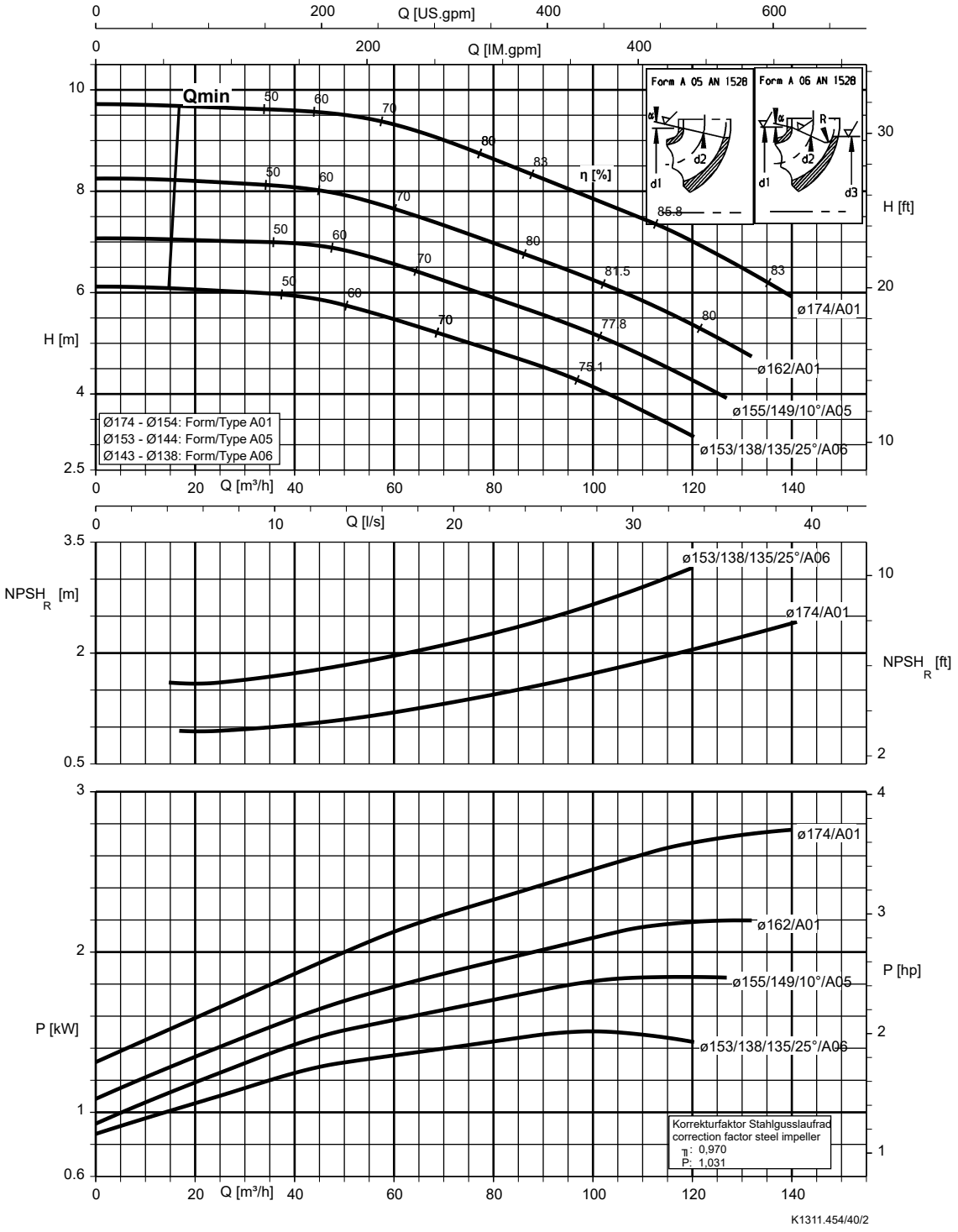
Vlety 080-065-250, n = 1450 rpm



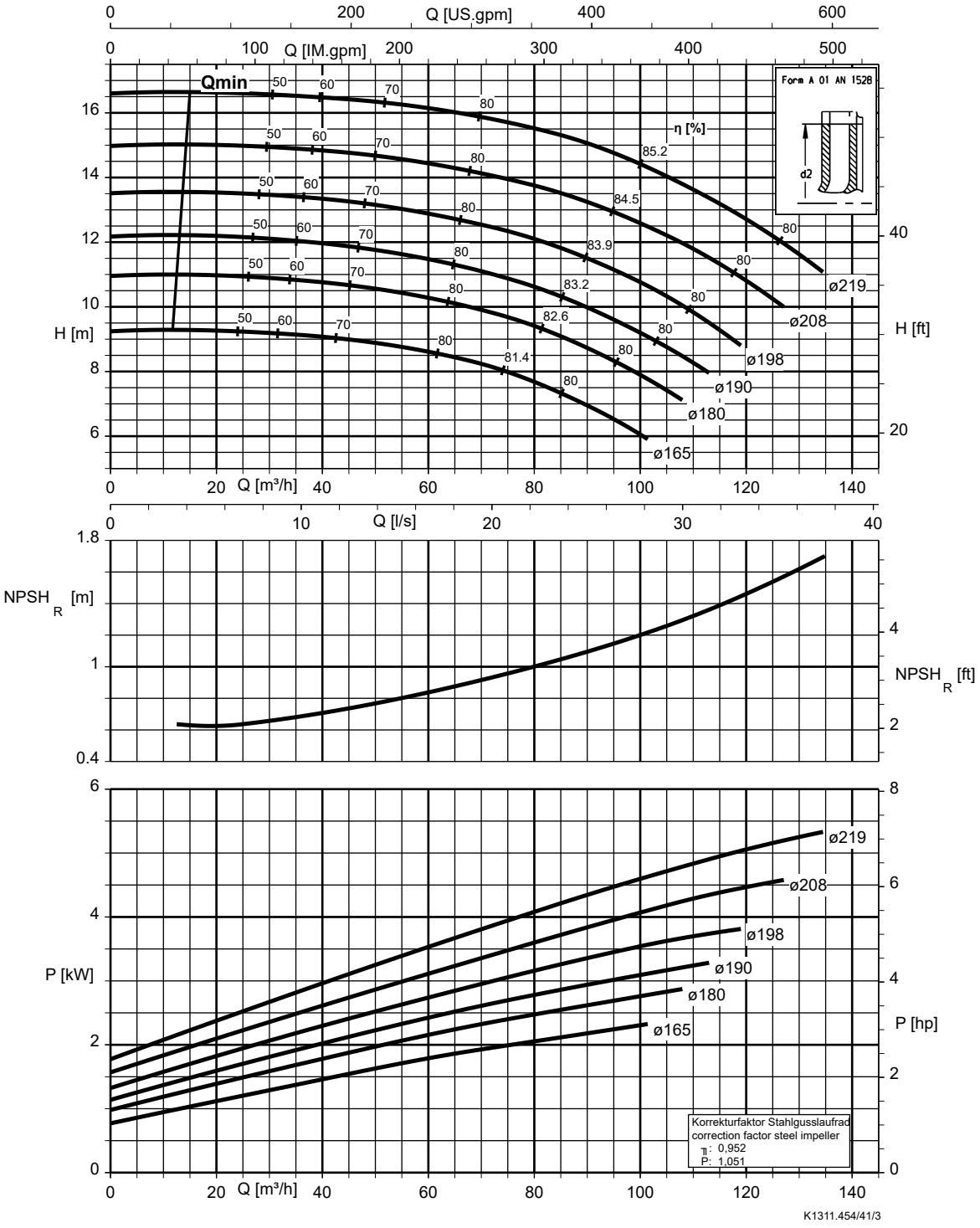
Vlety 080-065-315, n = 1450 rpm



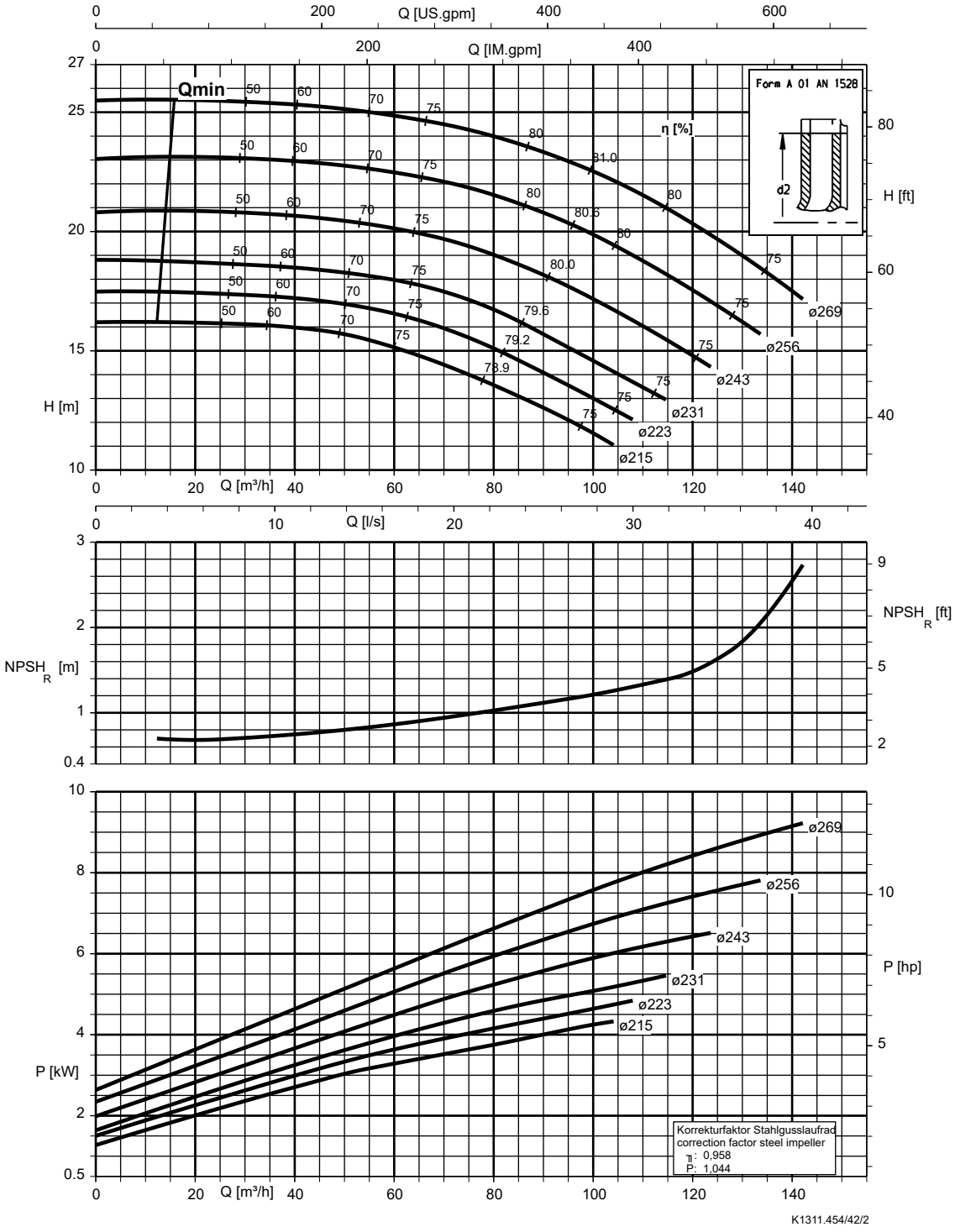
Vlety 100-080-160, n = 1450 rpm



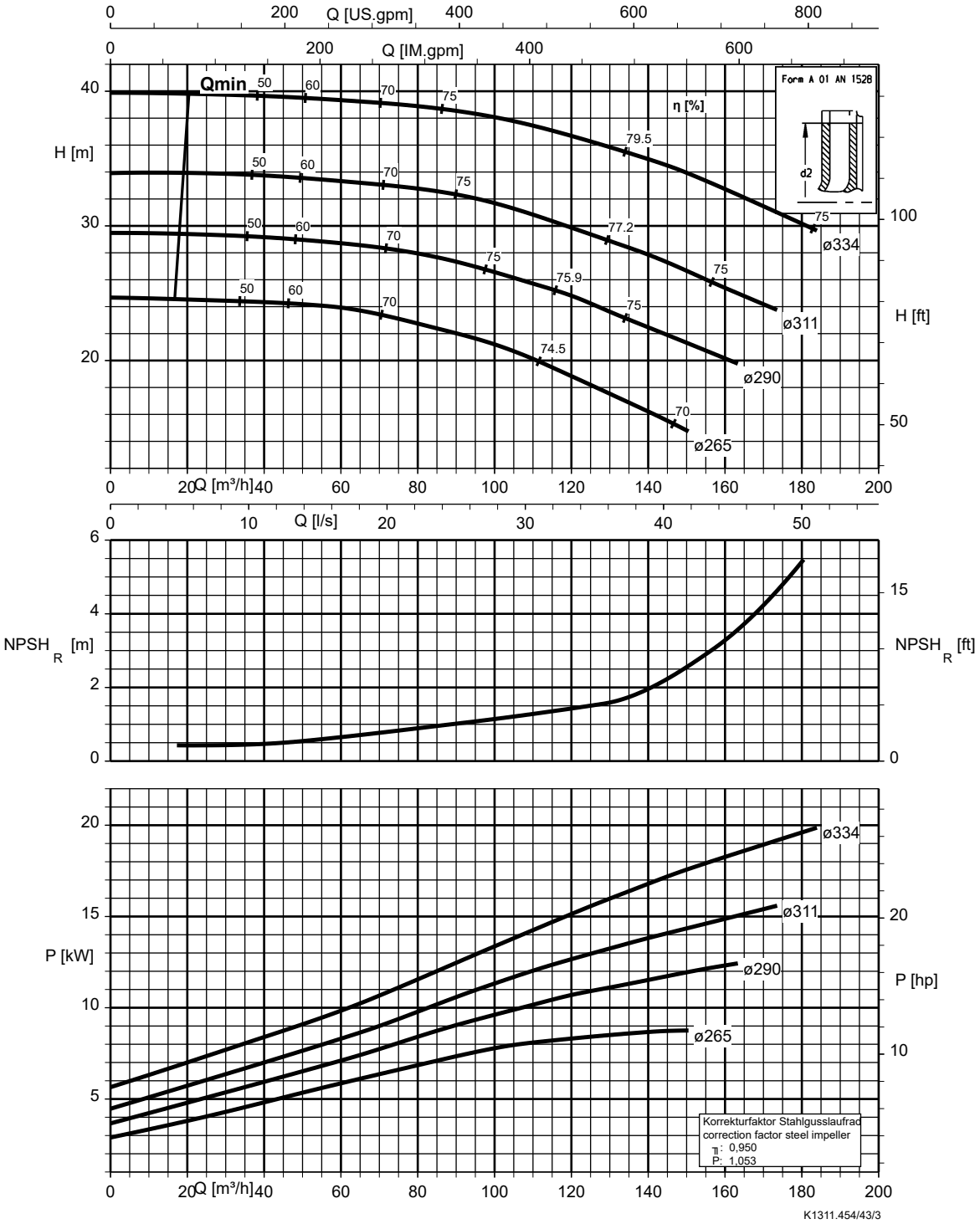
Vlety 100-080-200, n = 1450 rpm



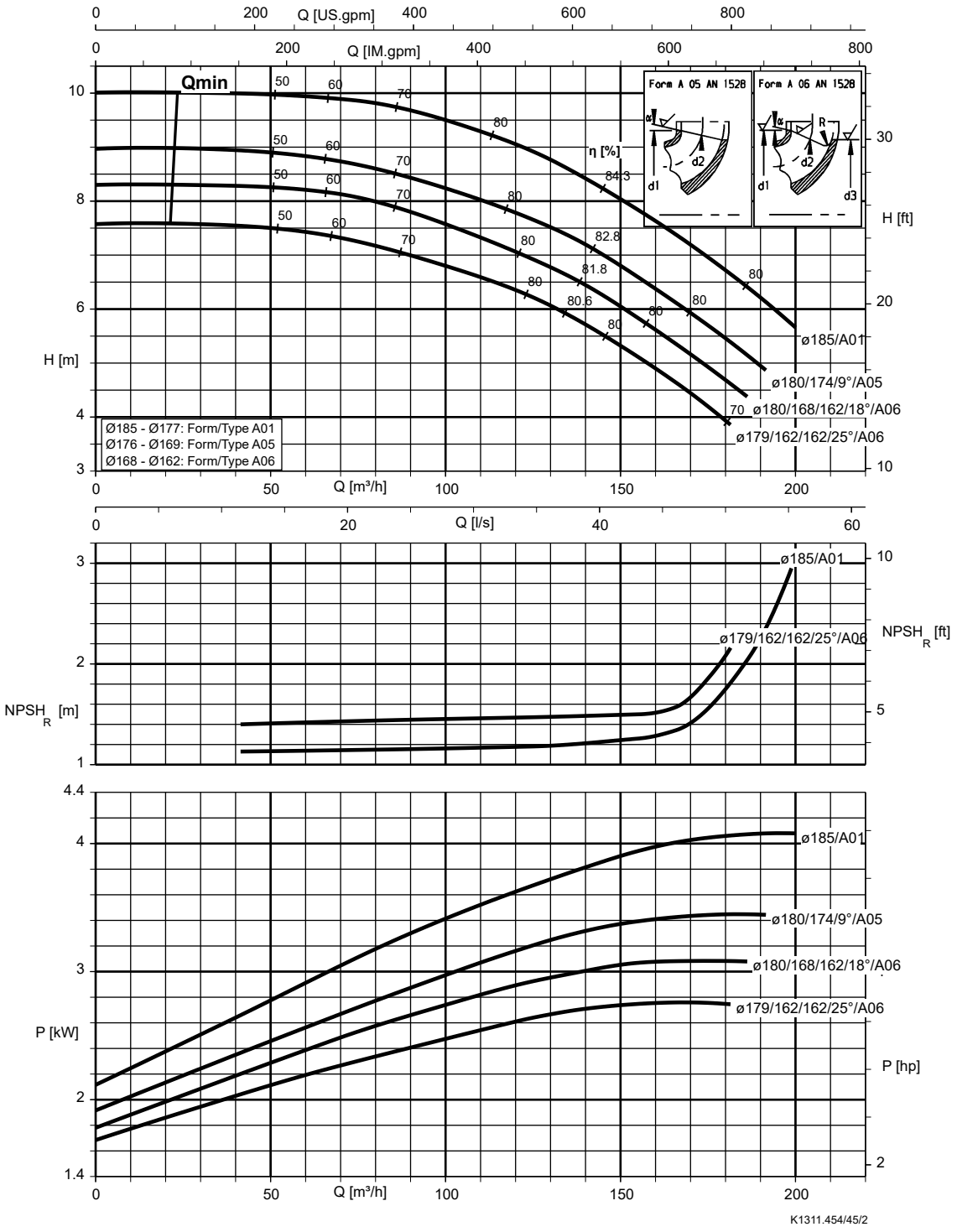
Vlety 100-080-250, n = 1450 rpm



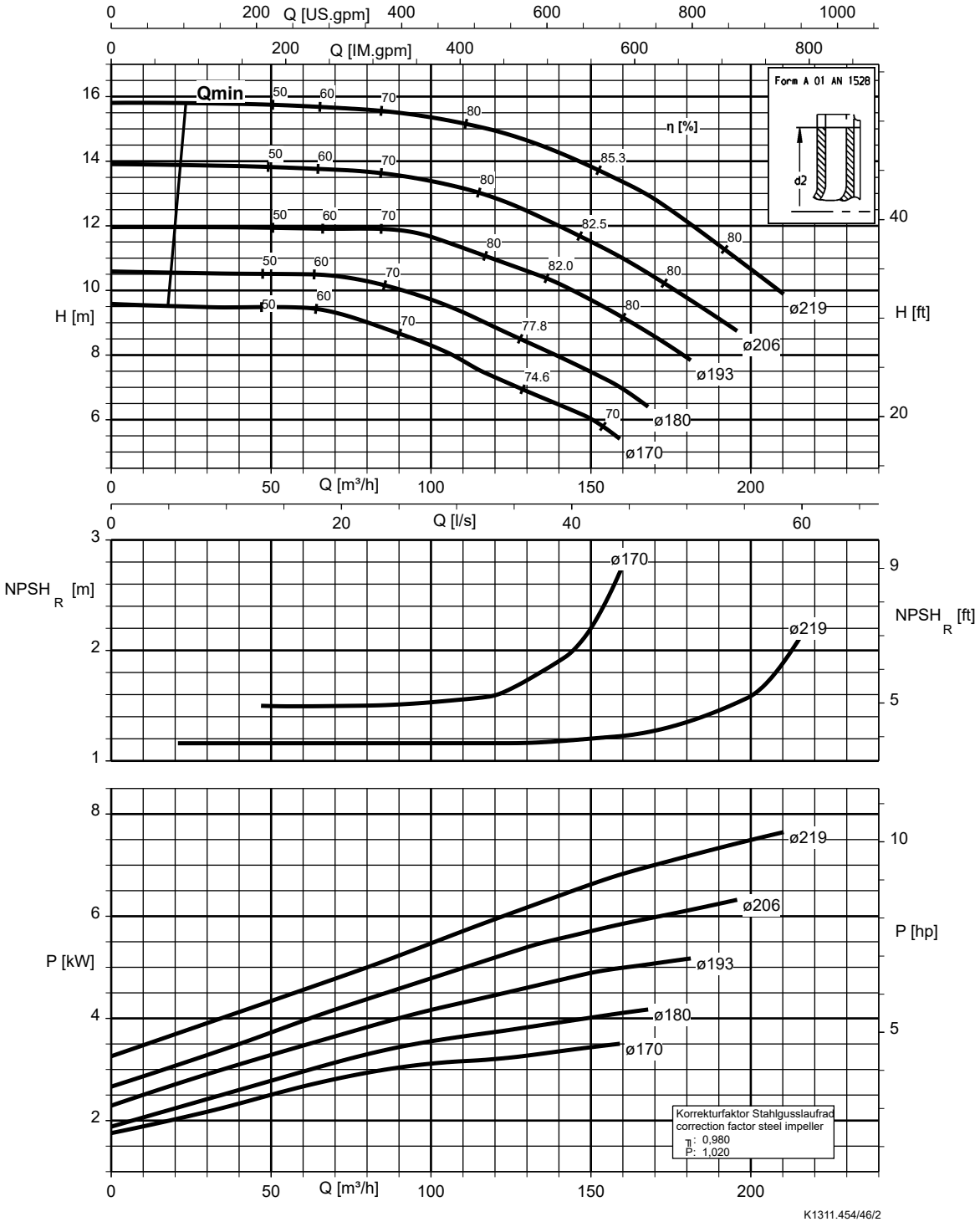
Vlety 100-080-315, n = 1450 rpm



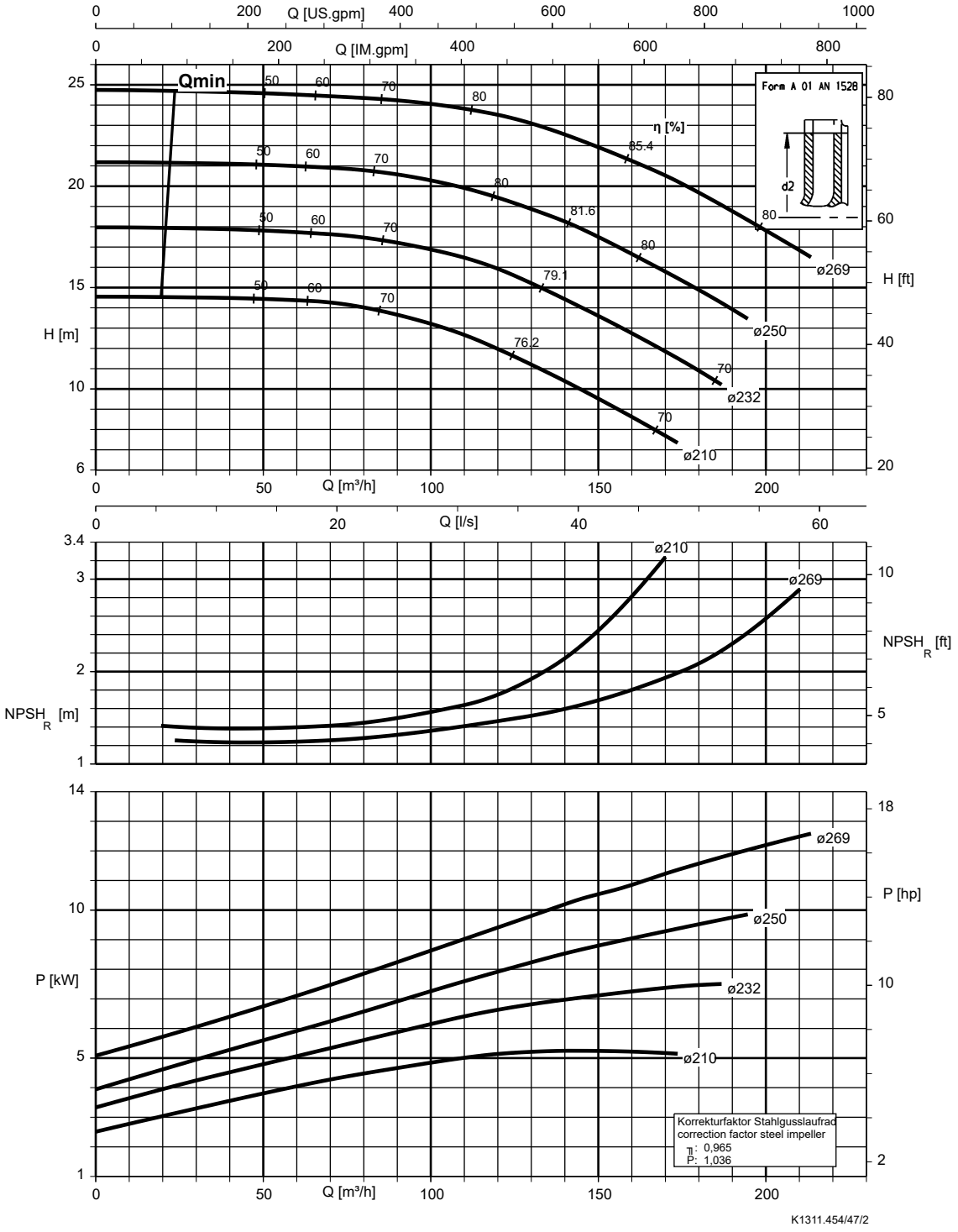
Vlety 125-100-160, n = 1450 rpm



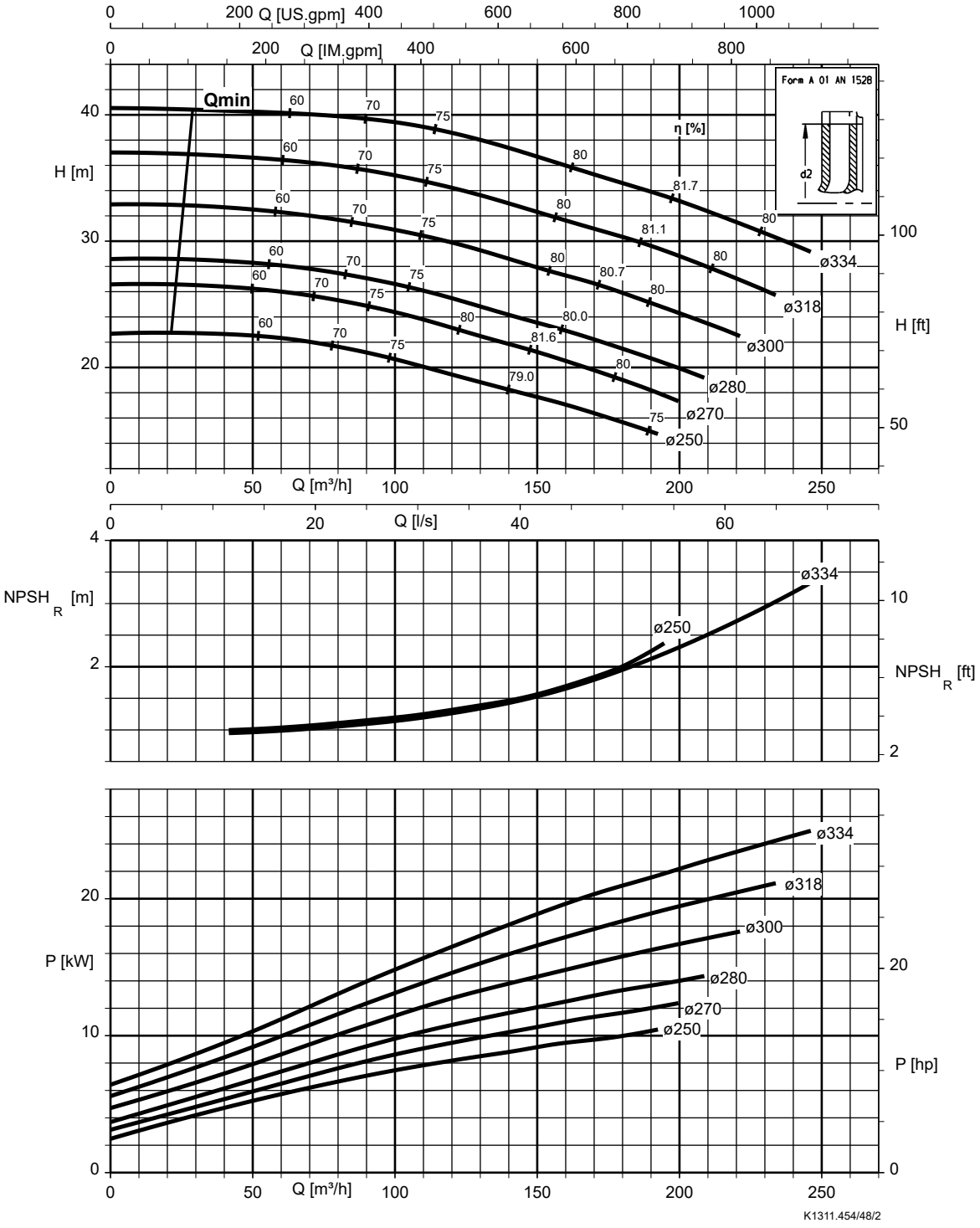
Vlety 125-100-200, n = 1450 rpm



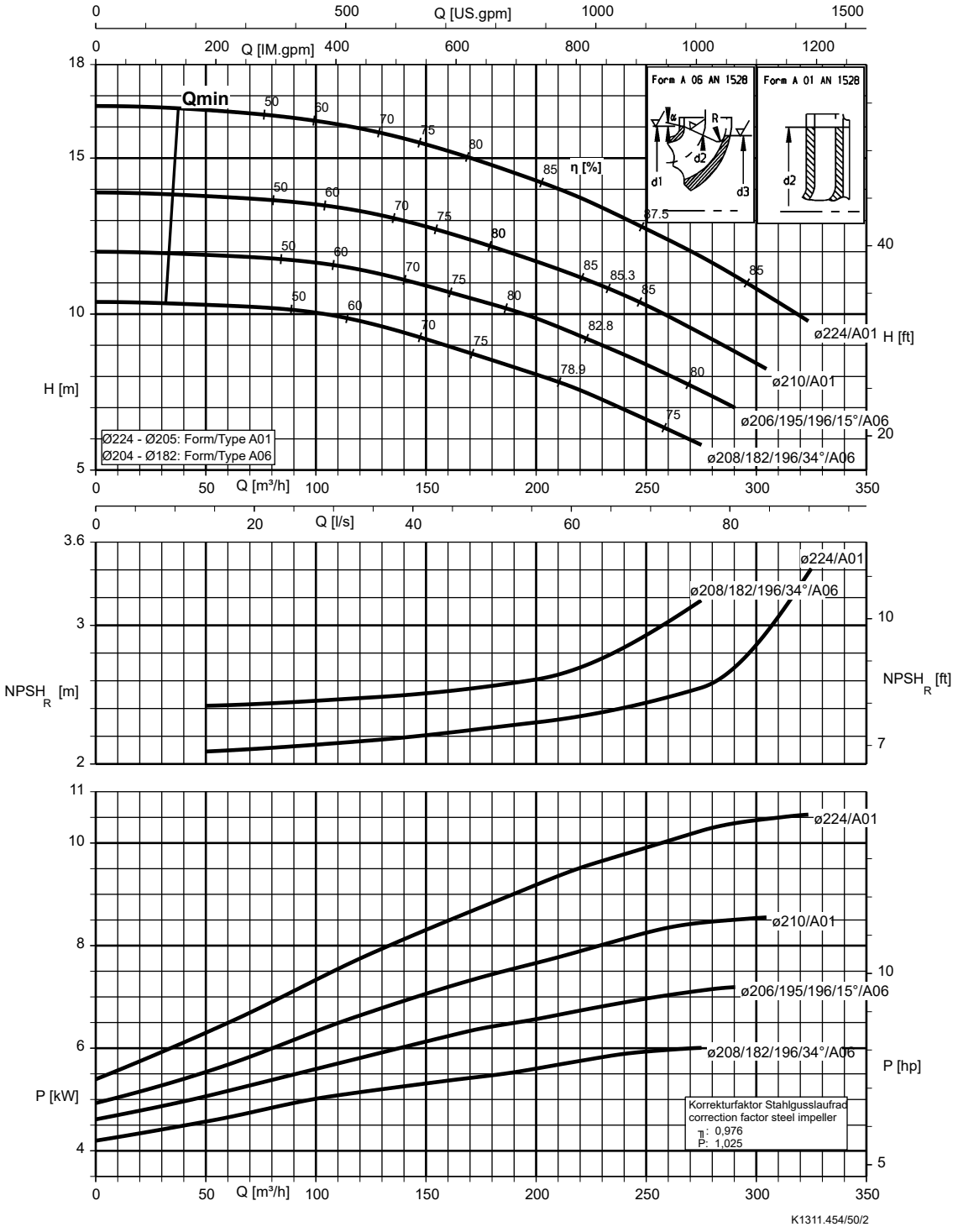
Vlety 125-100-250, n = 1450 rpm



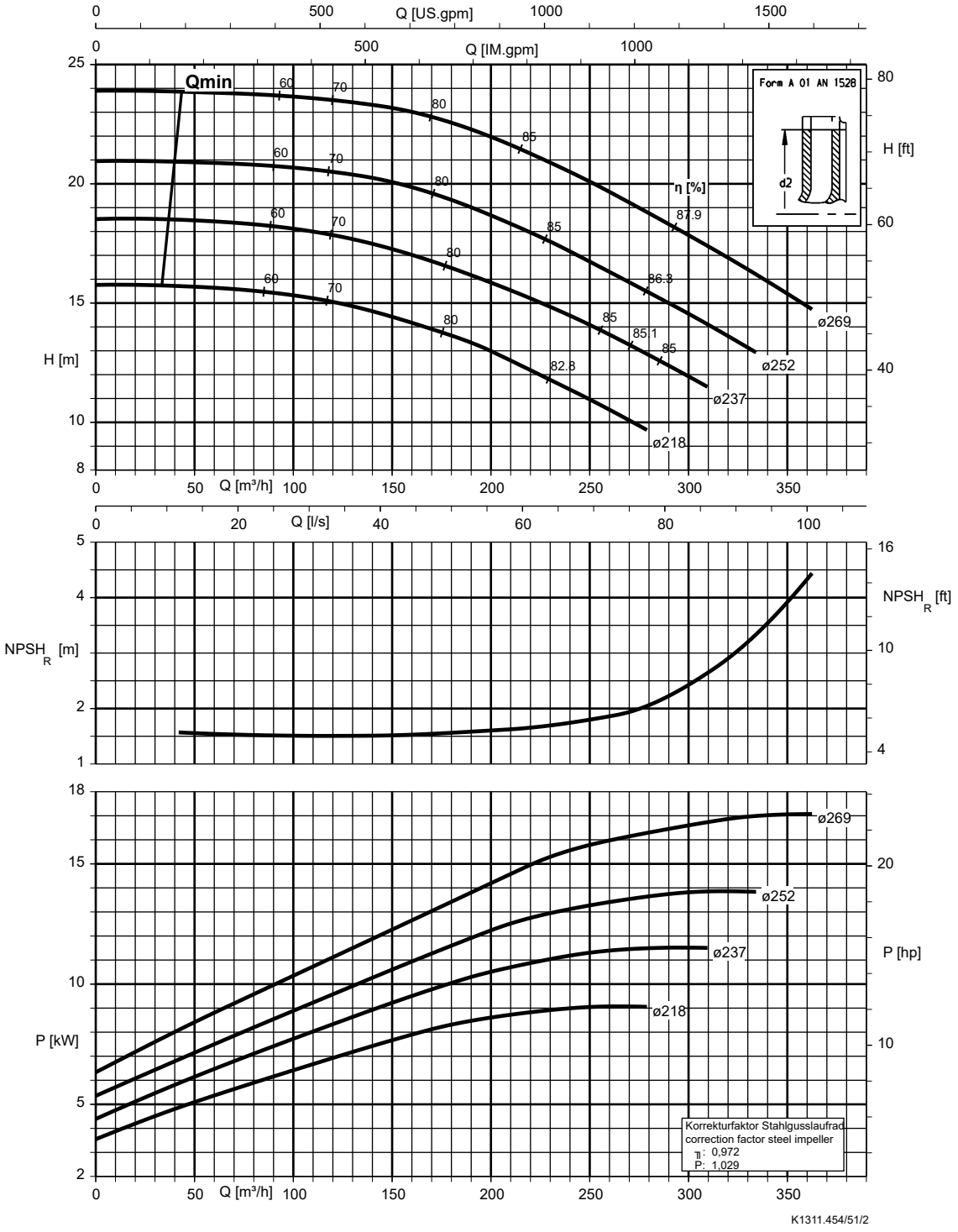
Vlety 125-100-315, n = 1450 rpm



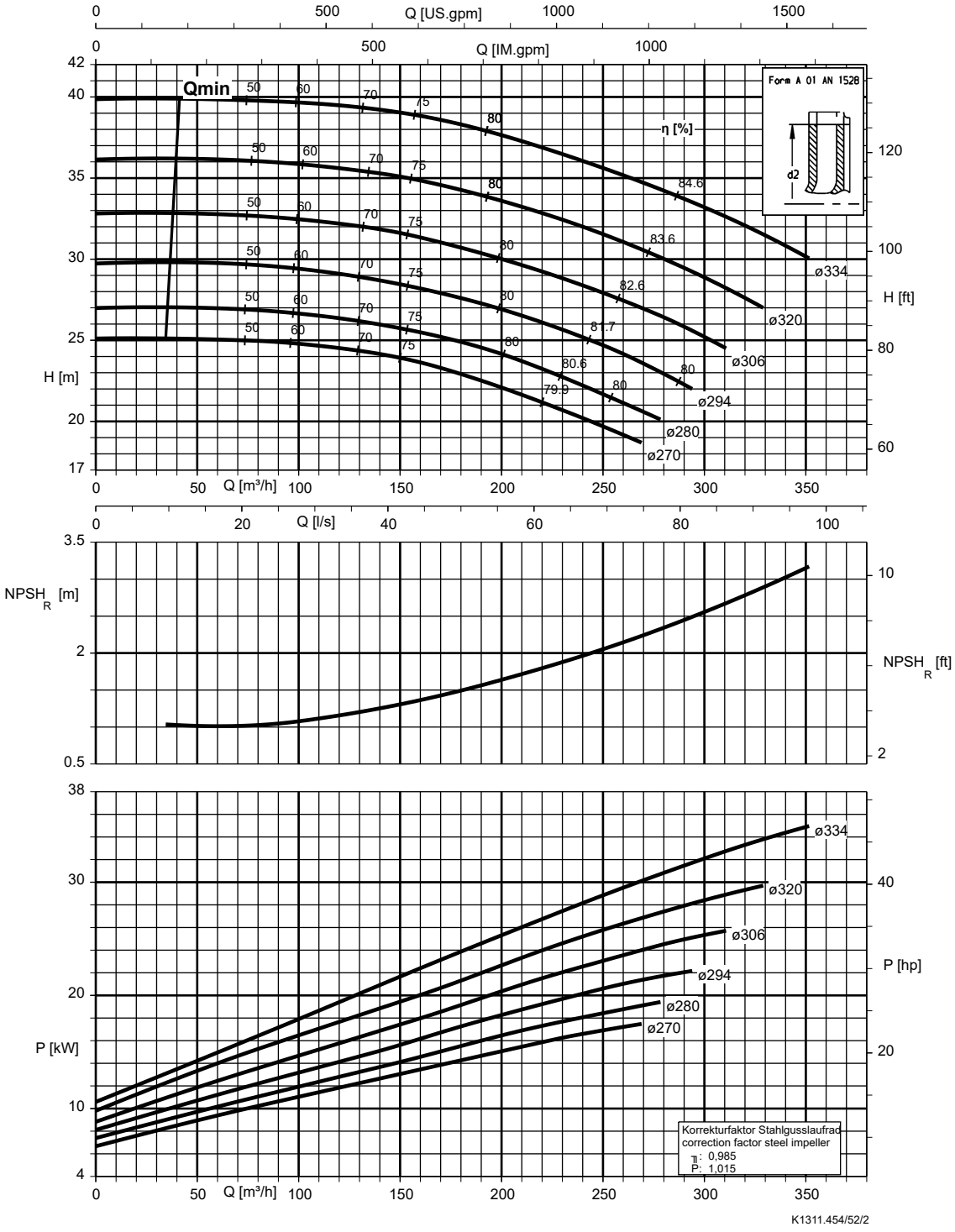
Vlety 150-125-200, n = 1450 rpm



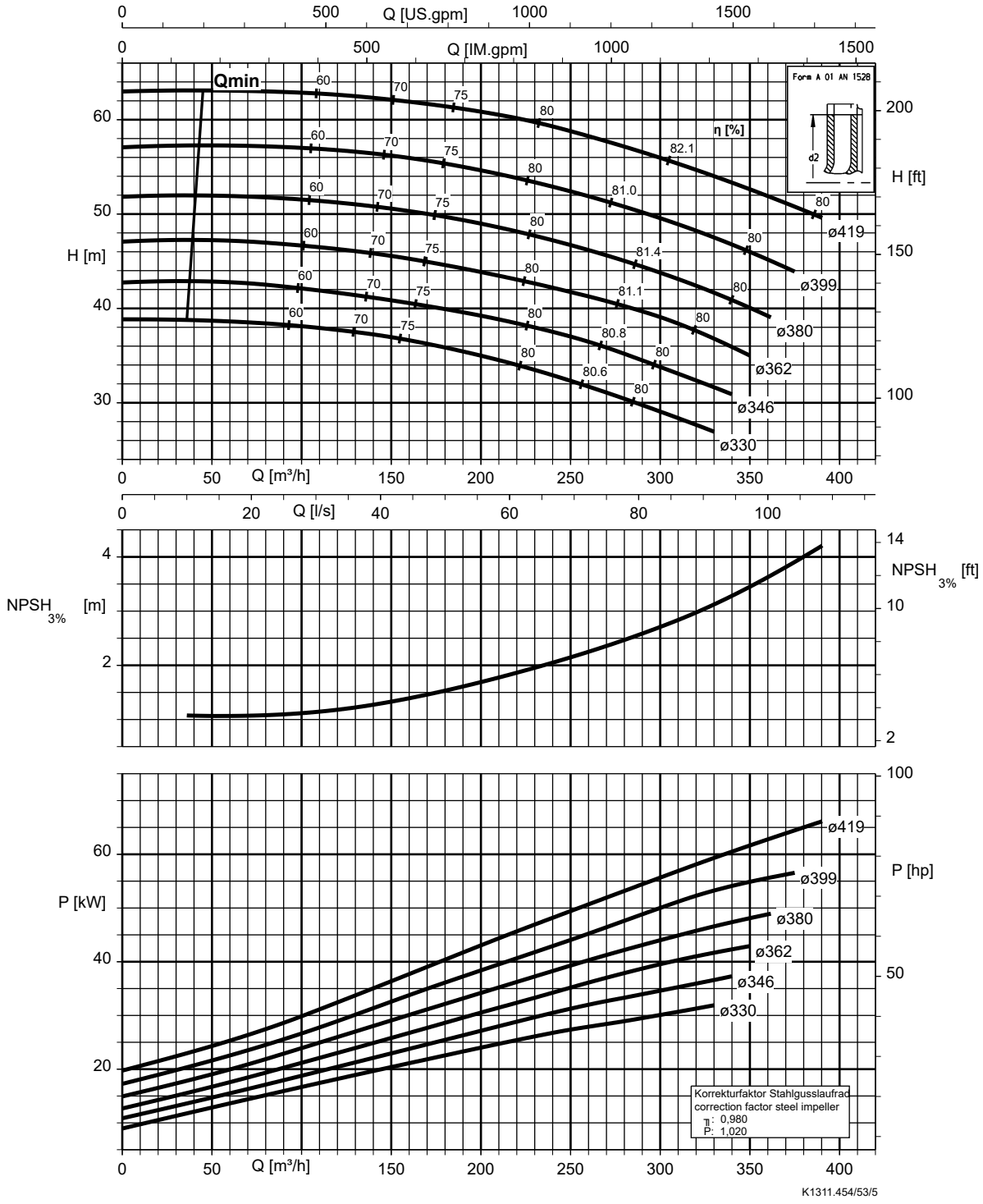
Vlety 150-125-250, n = 1450 rpm



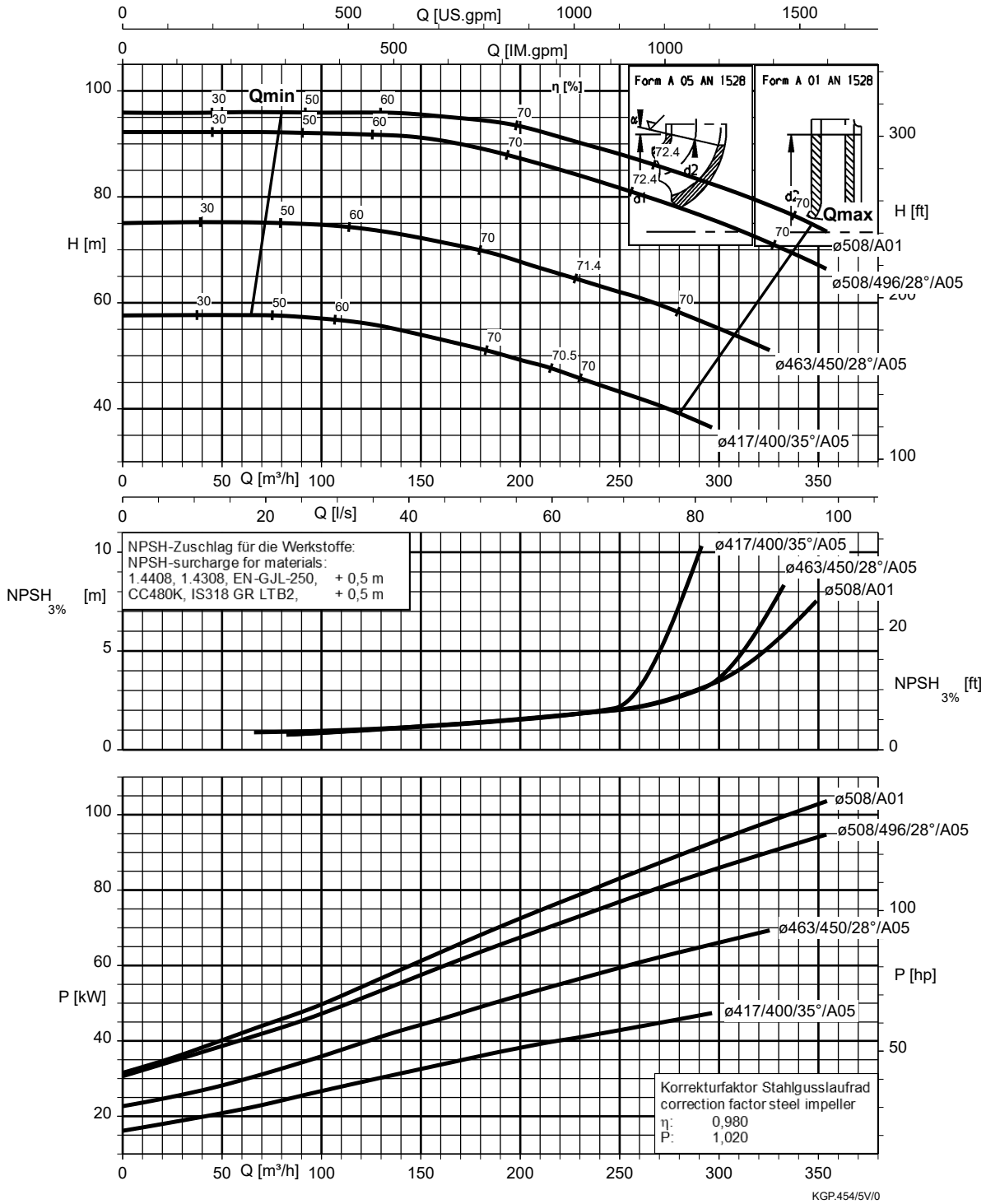
Vlety 150-125-315, n = 1450 rpm



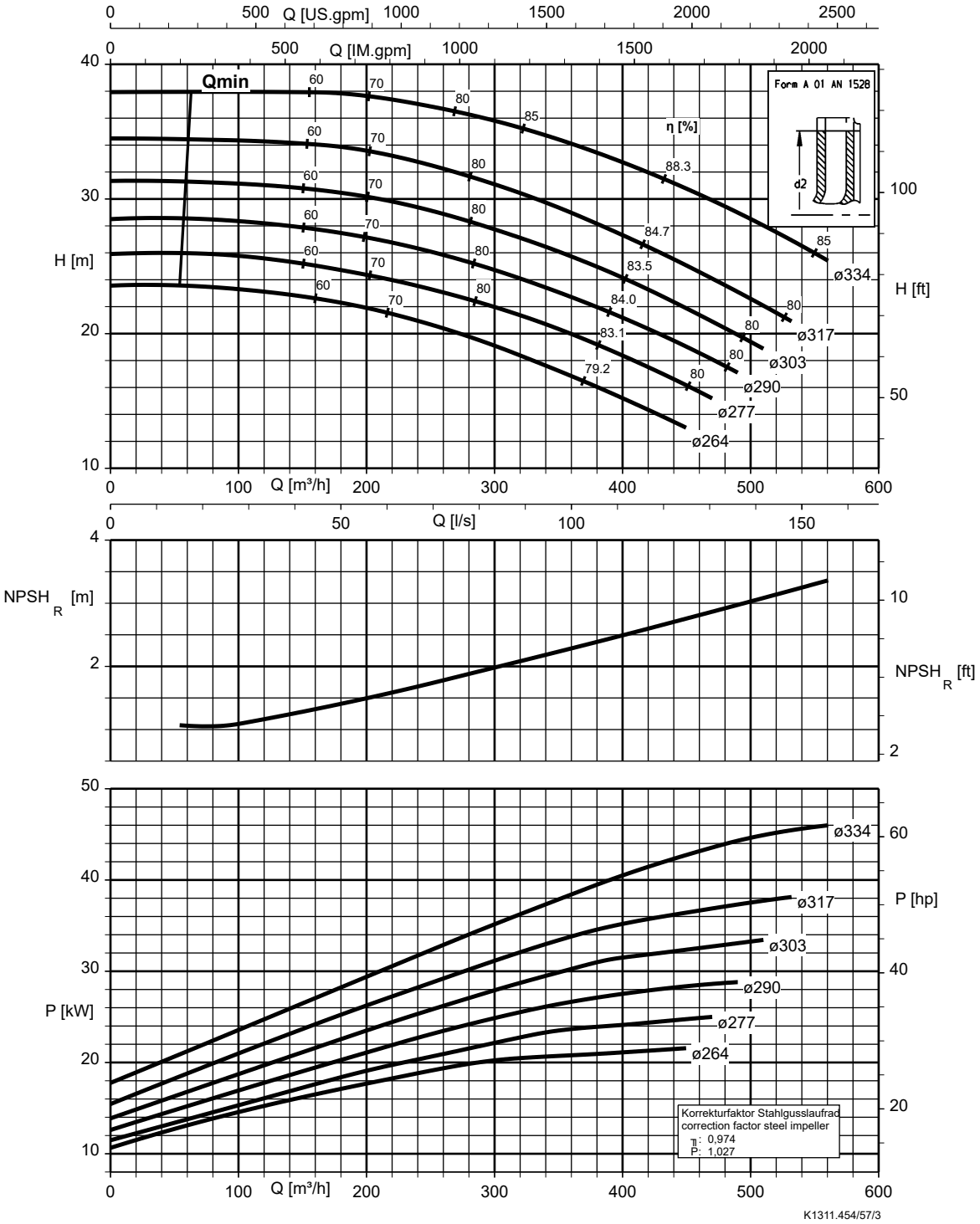
Vlety 150-125-400, n = 1450 rpm



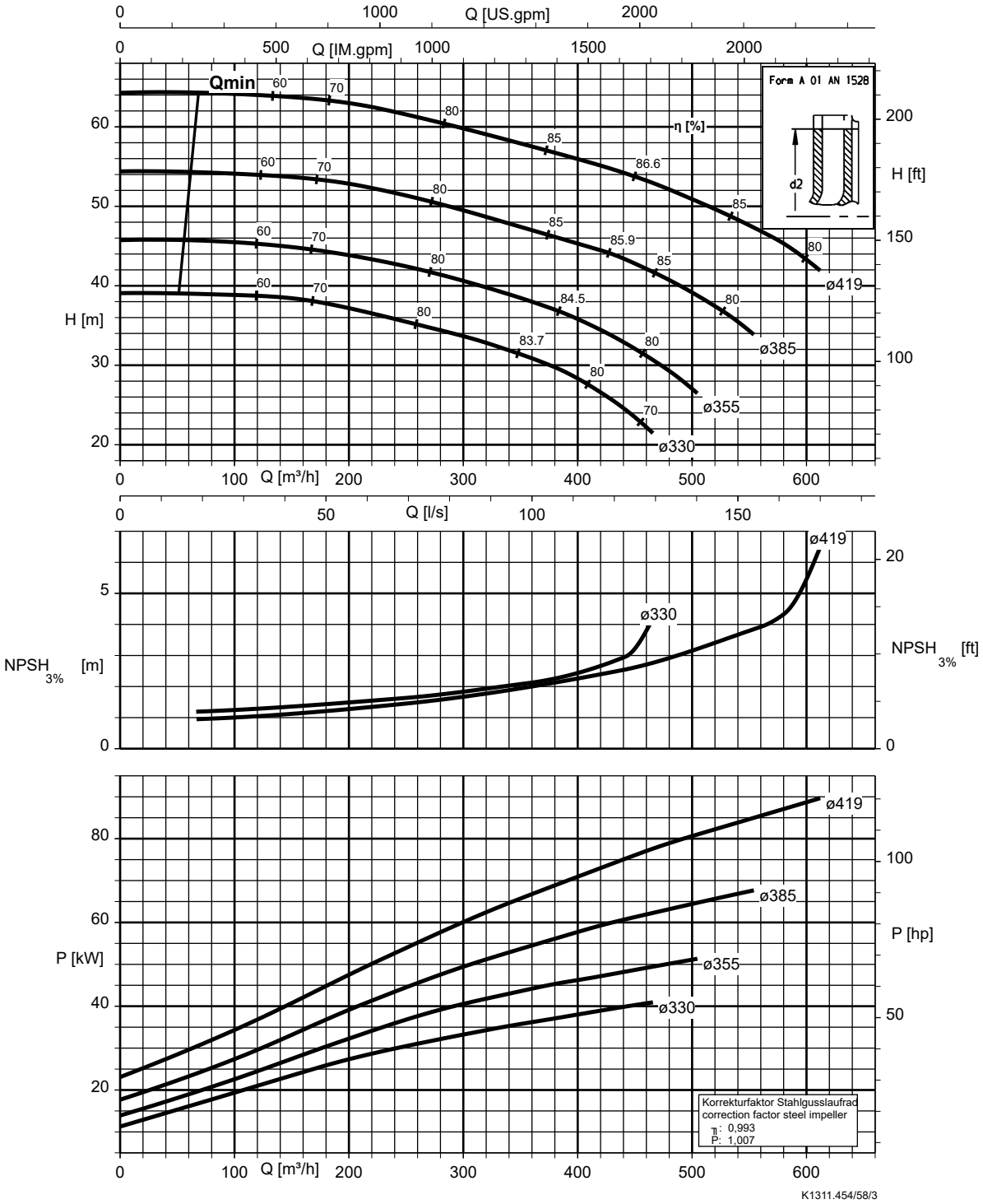
Vlety 150-125-510, n = 1450 rpm



Vlety 200-150-315, n = 1450 rpm

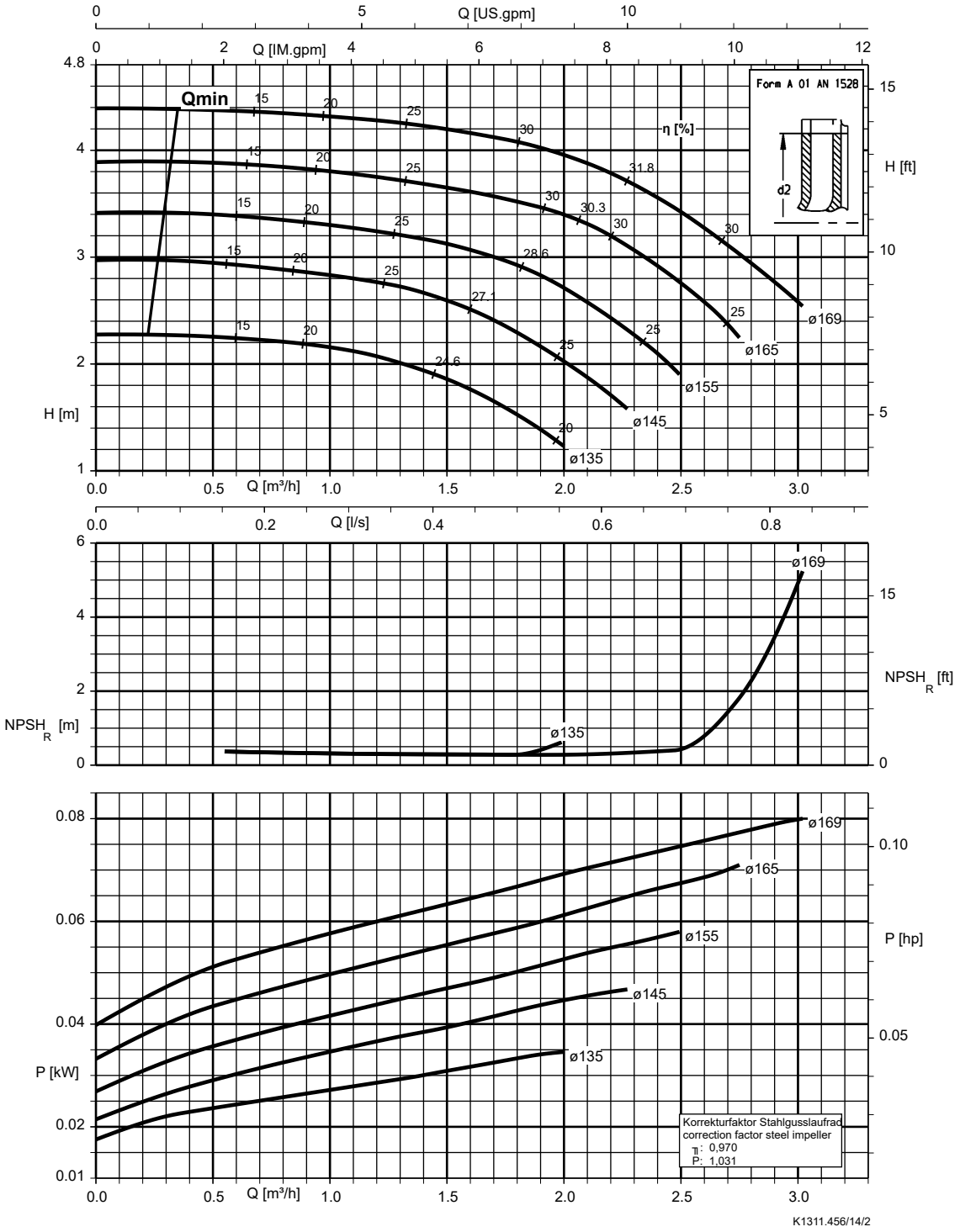


Vlety 200-150-400, n = 1450 rpm

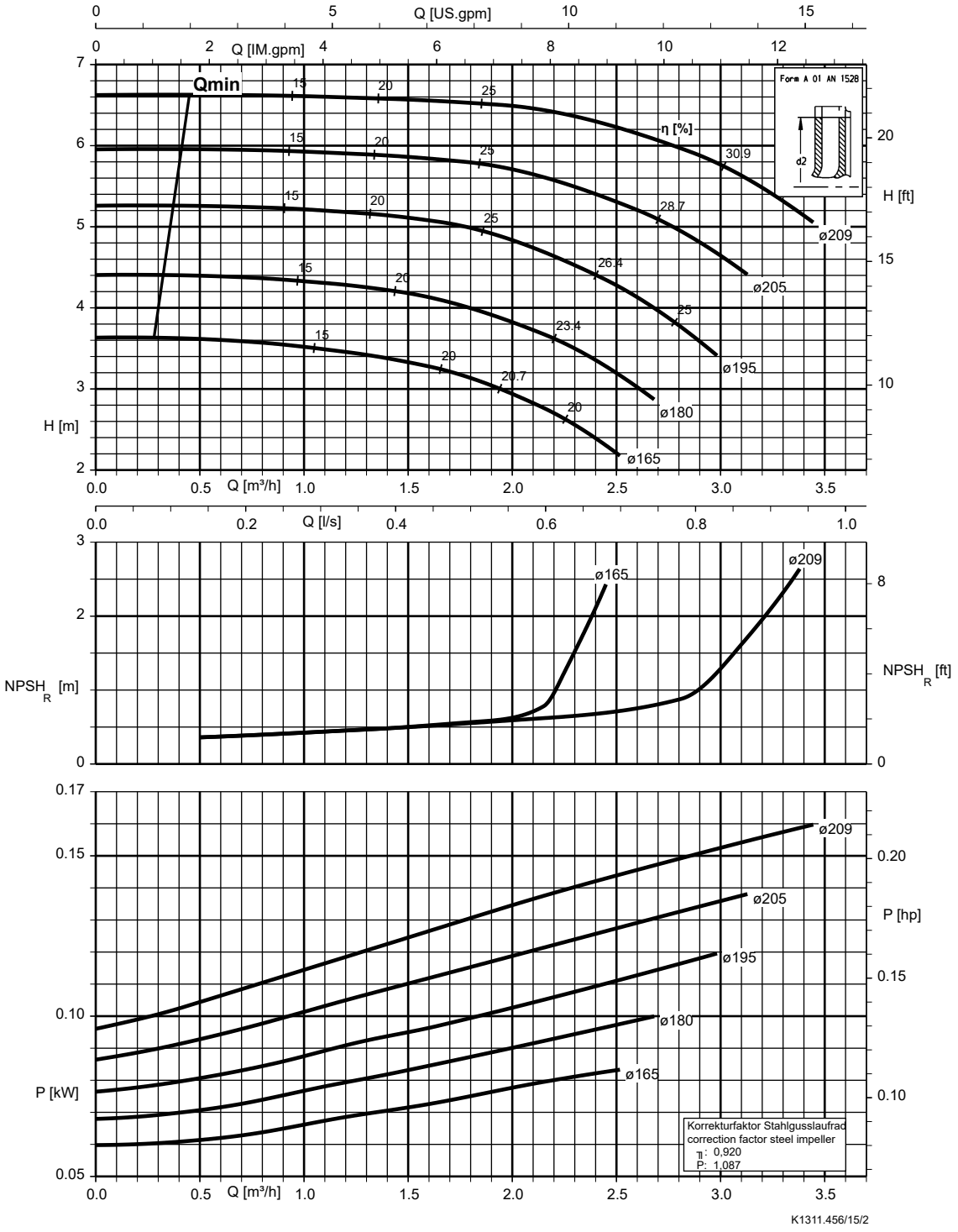


n = 960 rpm

Vlety 040-025-160, n = 960 rpm

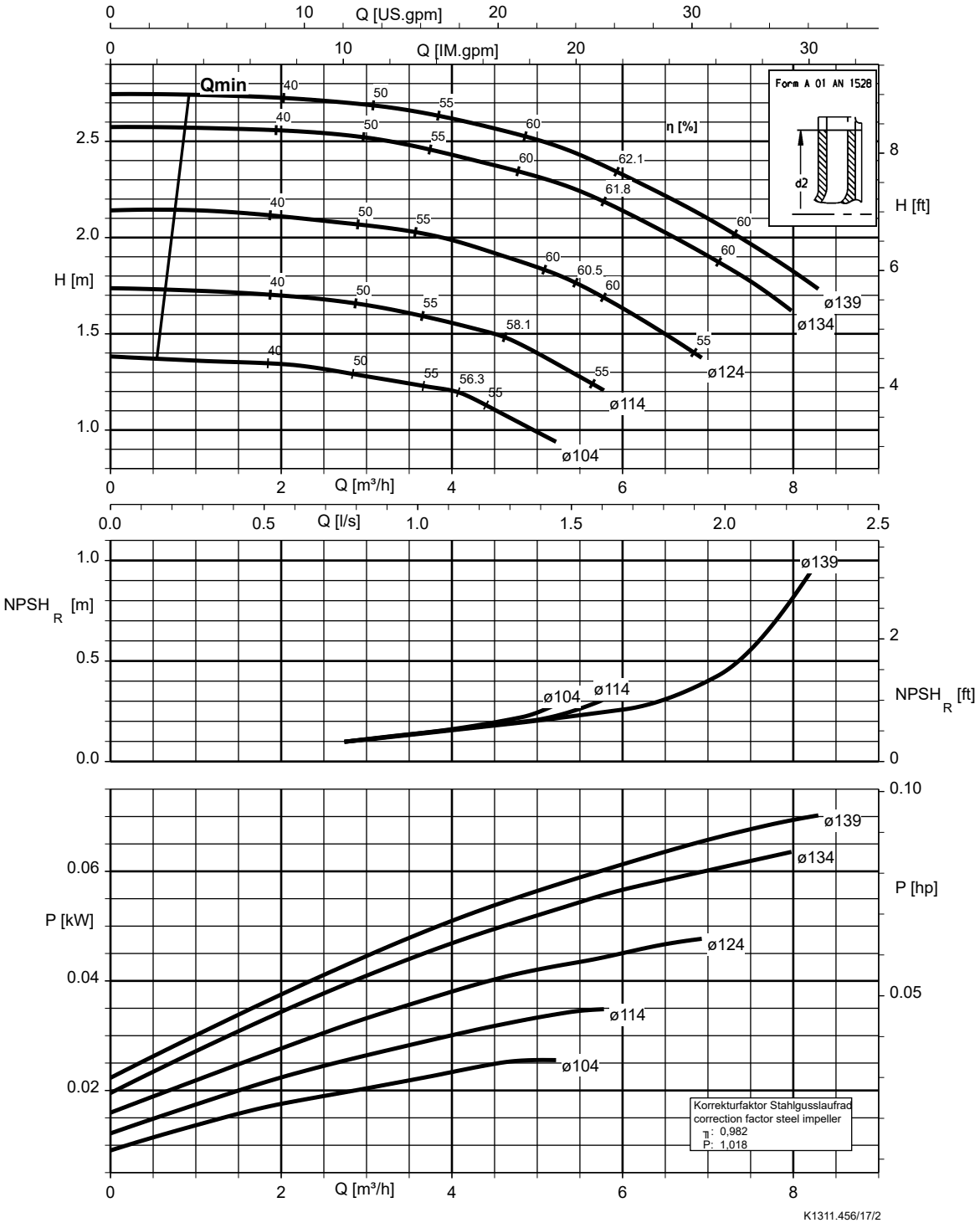


Vlety 040-025-200, n = 960 rpm

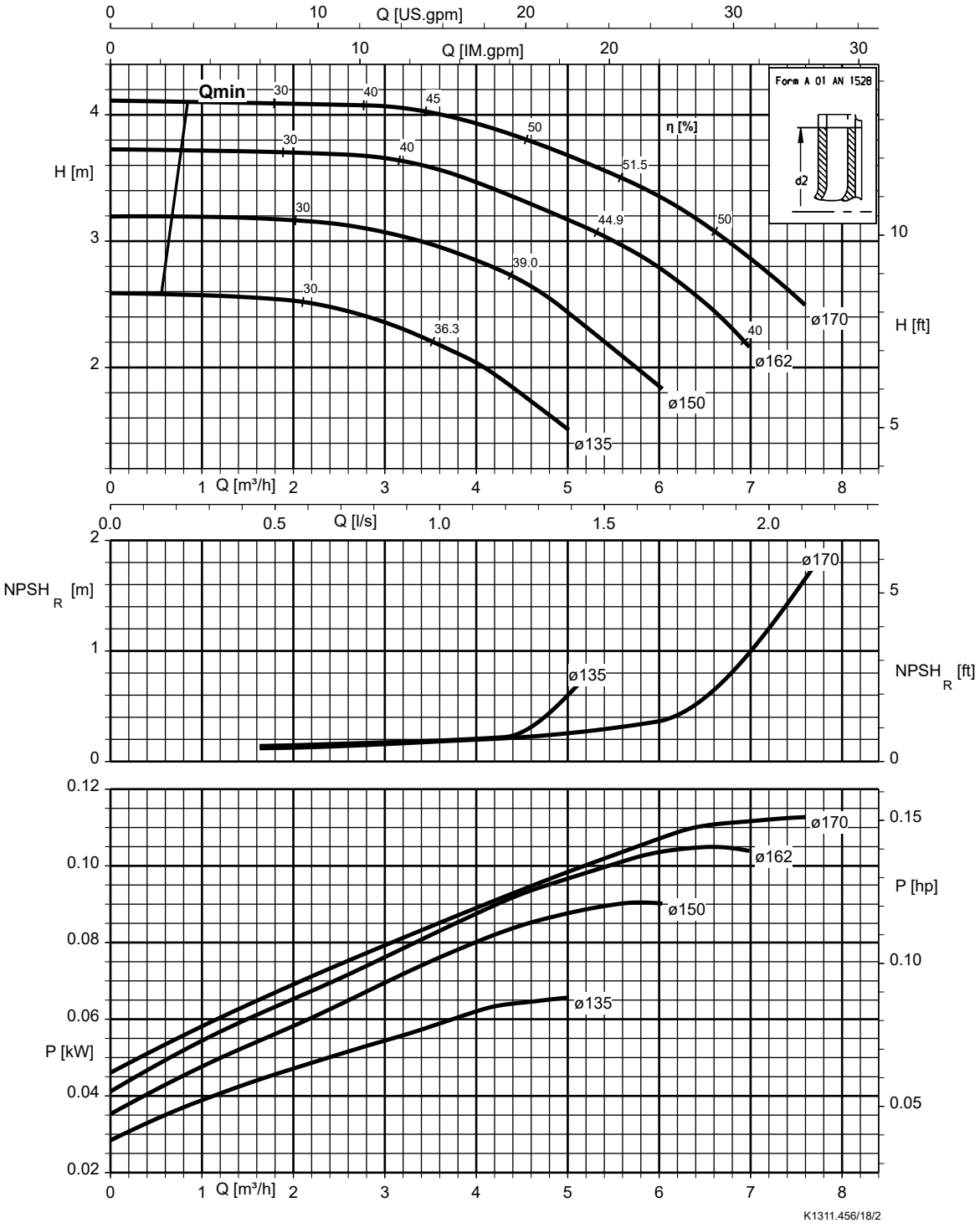


Vlety 050-032-125.1, n = 960 rpm

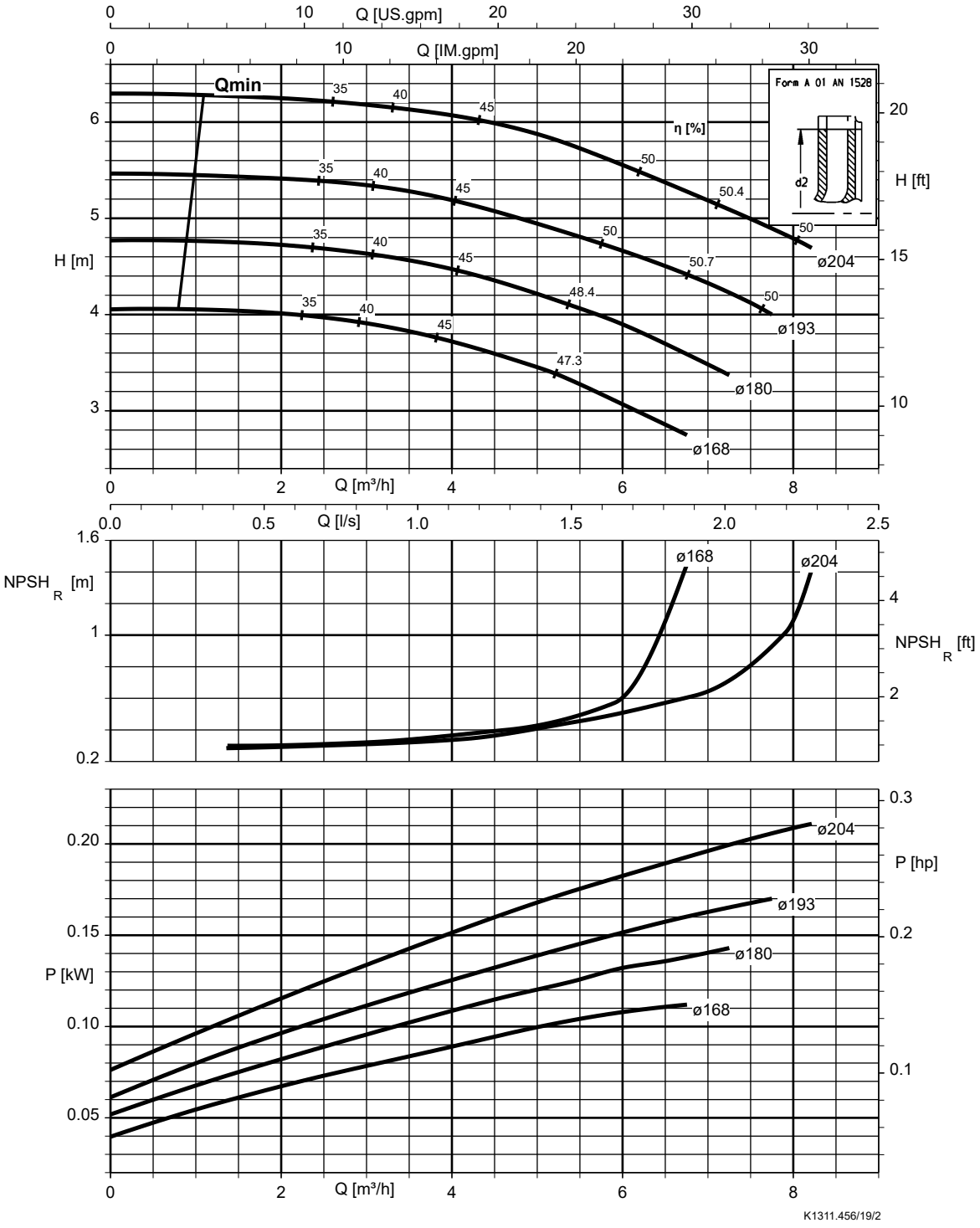
Thermal Oil and Hot Water Pump



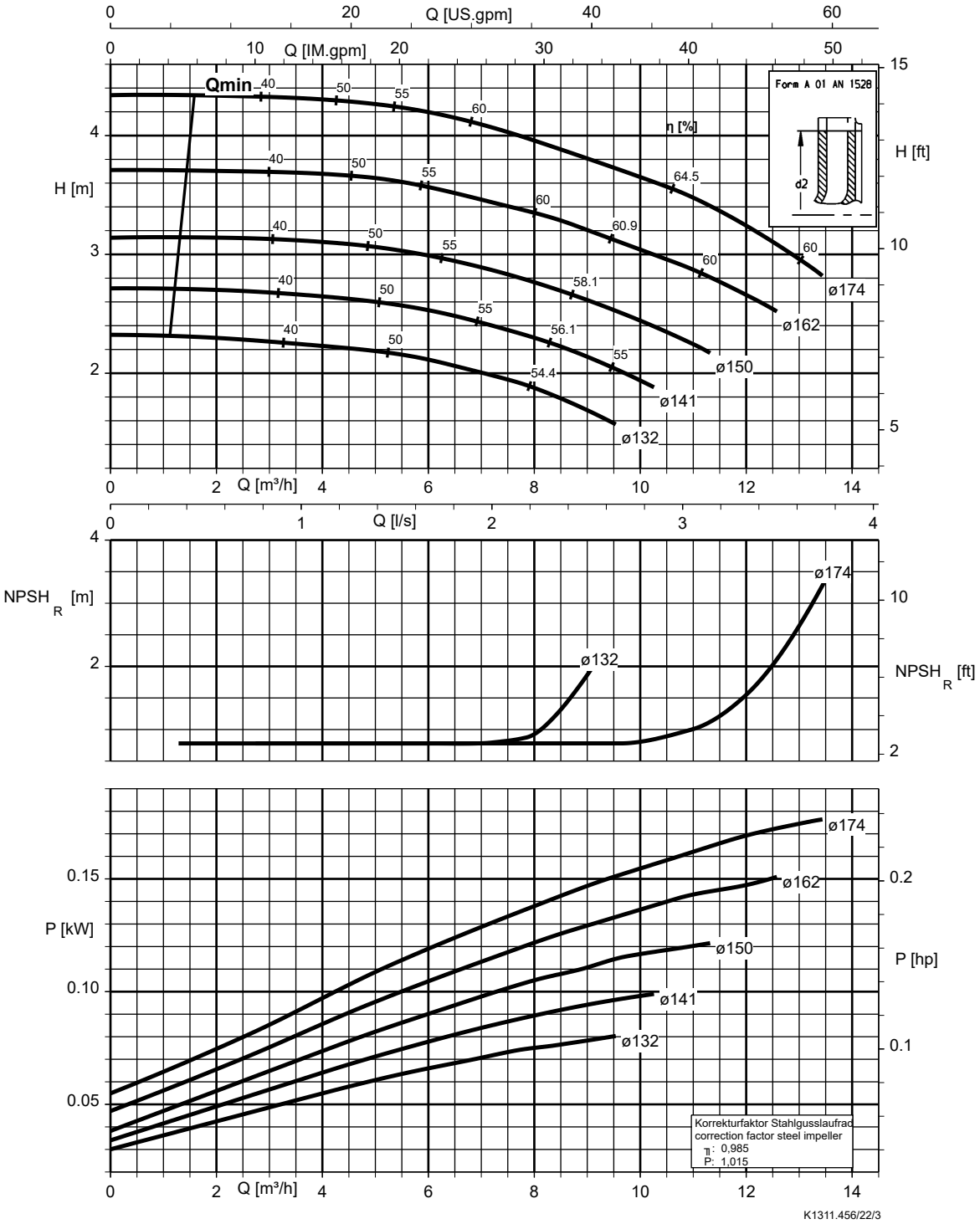
Vlety 050-032-160.1, n = 960 rpm



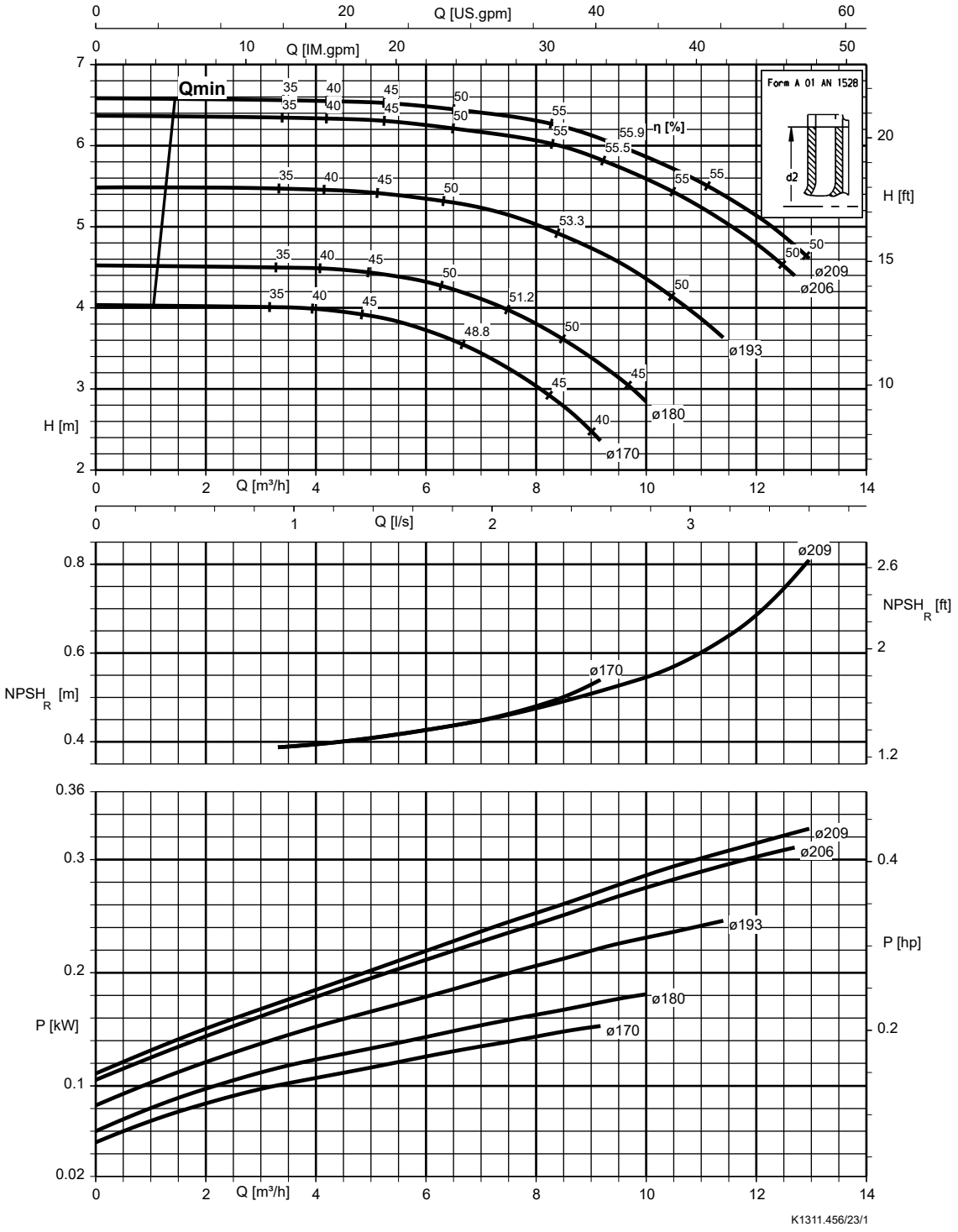
Vlety 050-032-200.1, n = 960 rpm



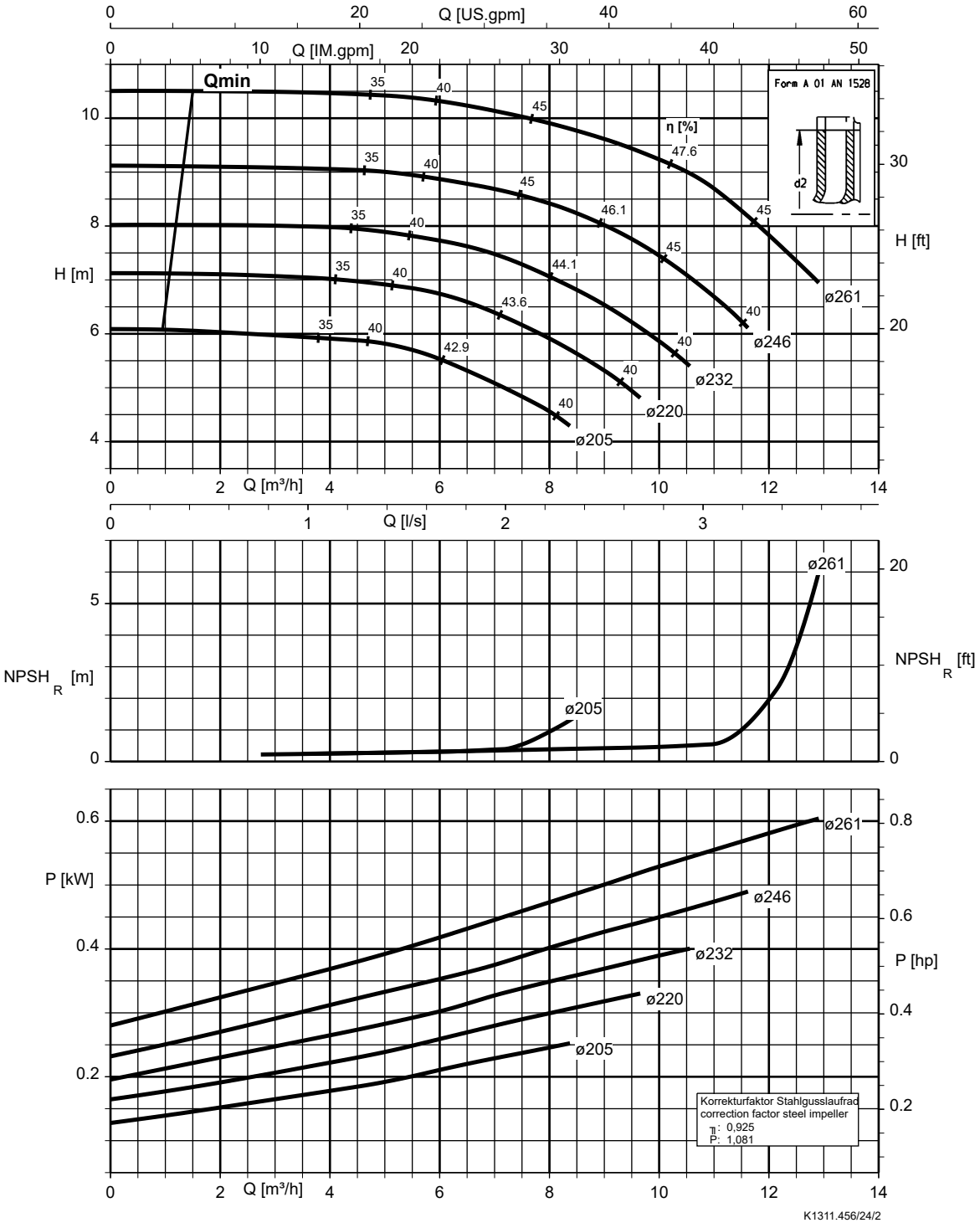
Vlety 050-032-160, n = 960 rpm



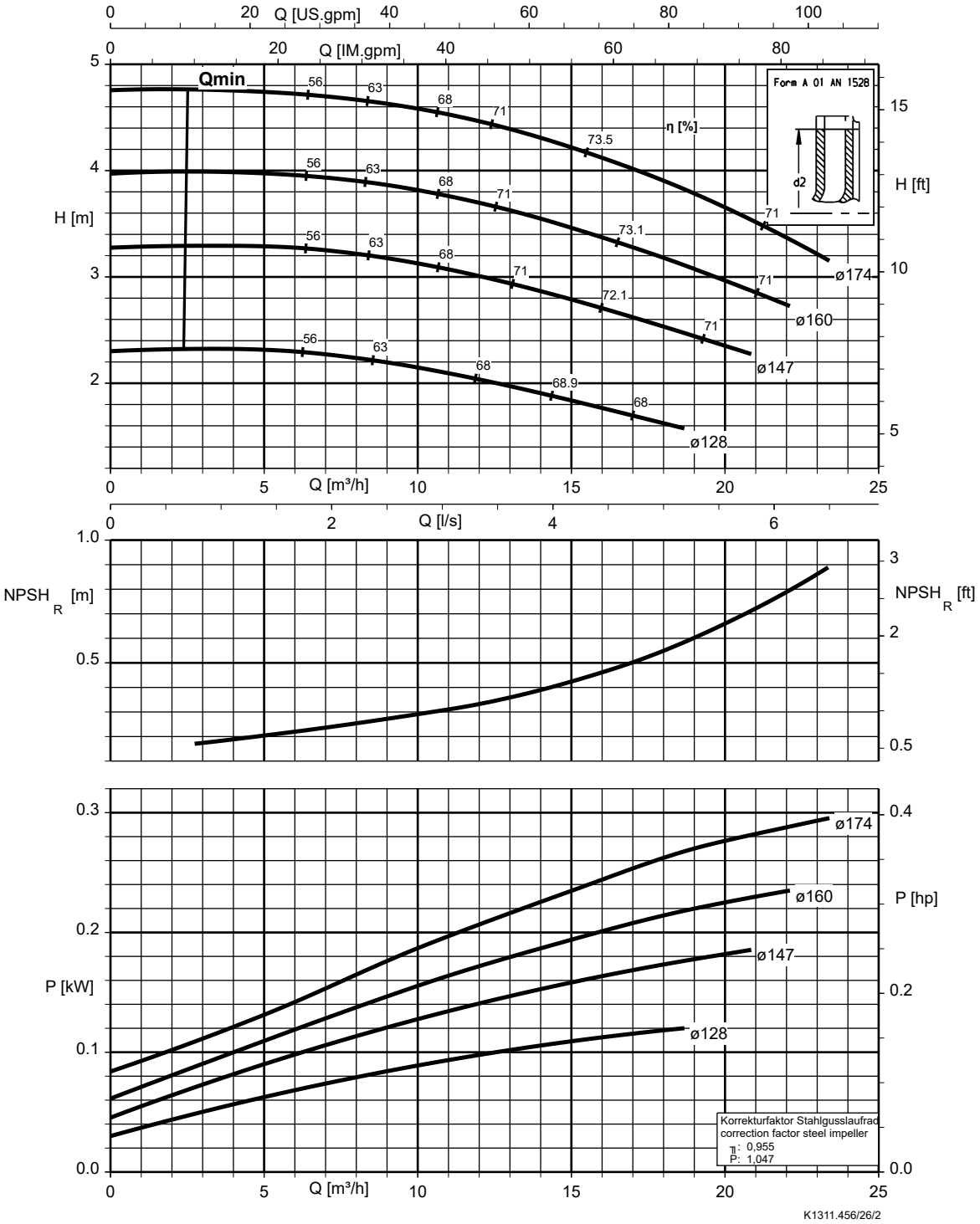
Vlety 050-032-200, n = 960 rpm



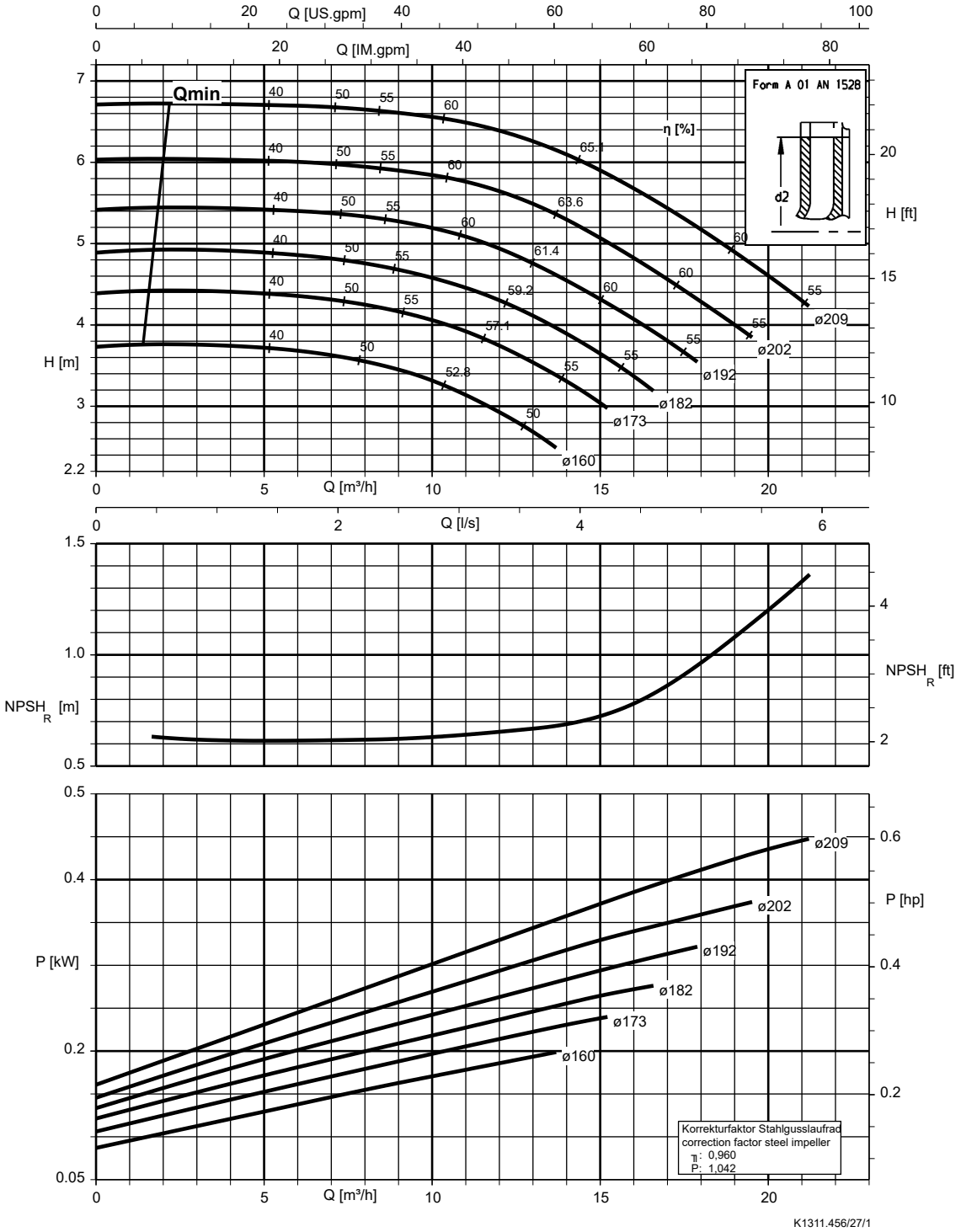
Vlety 050-032-250, n = 960 rpm



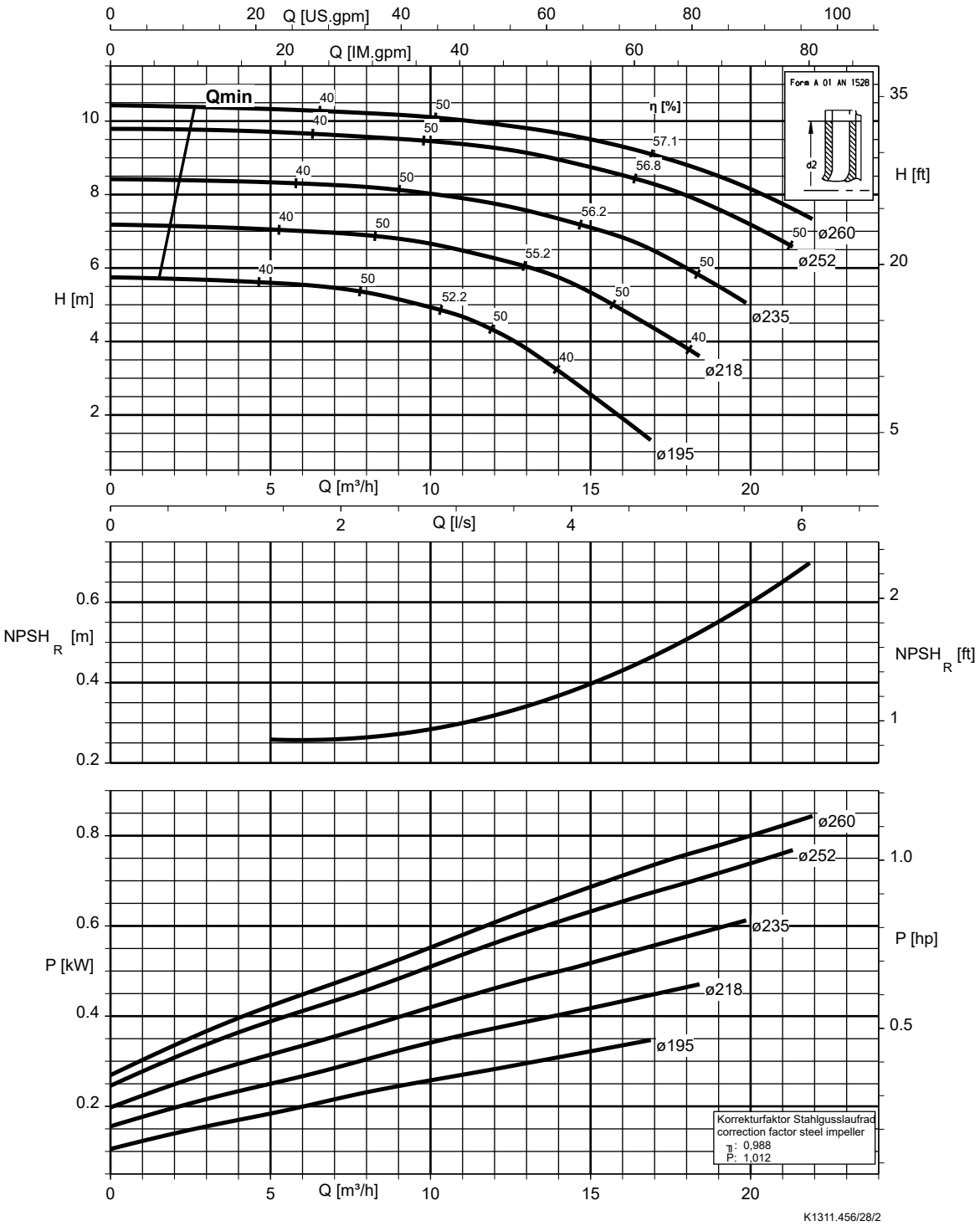
Vlety 065-040-160, n = 960 rpm



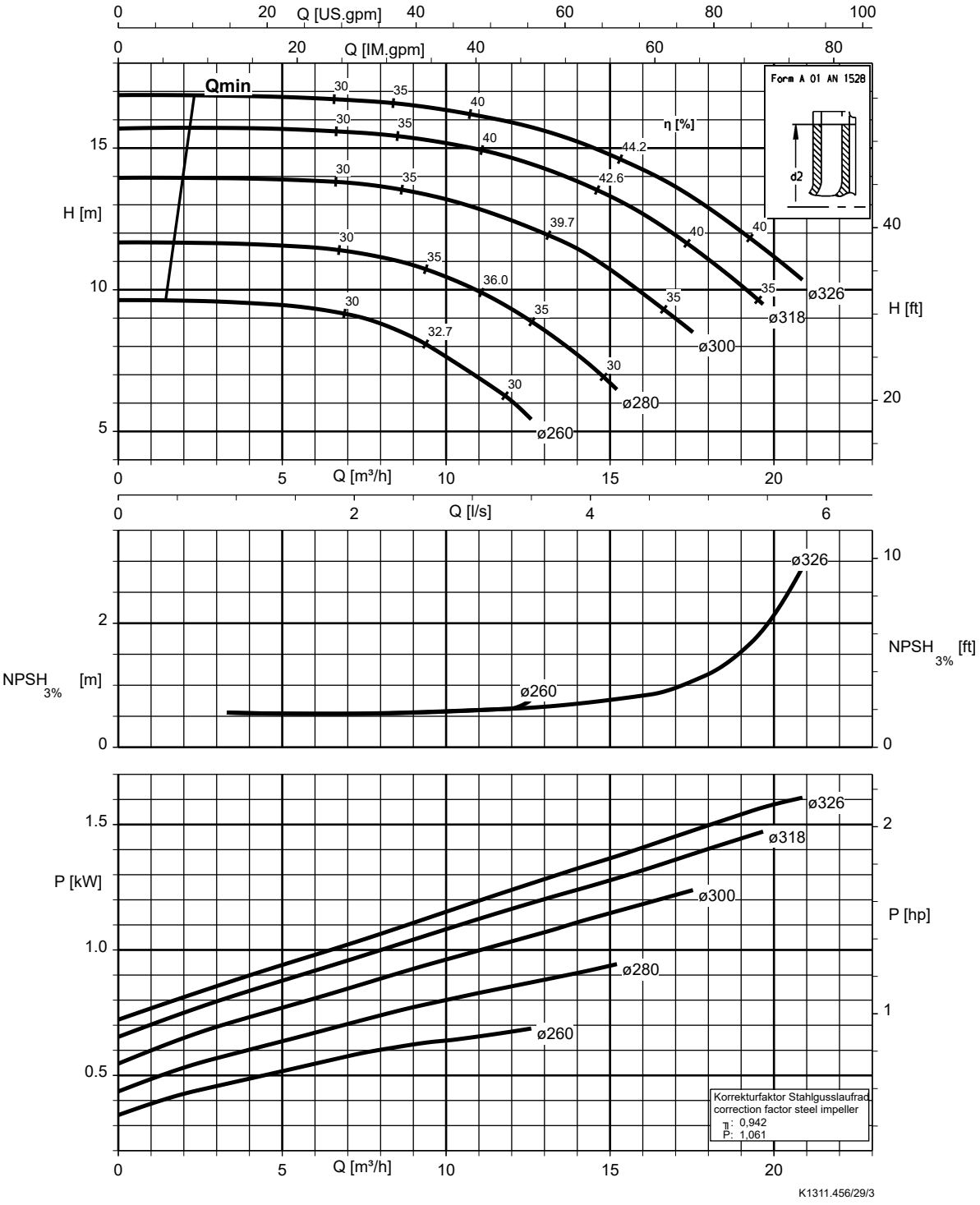
Vlety 065-040-200, n = 960 rpm



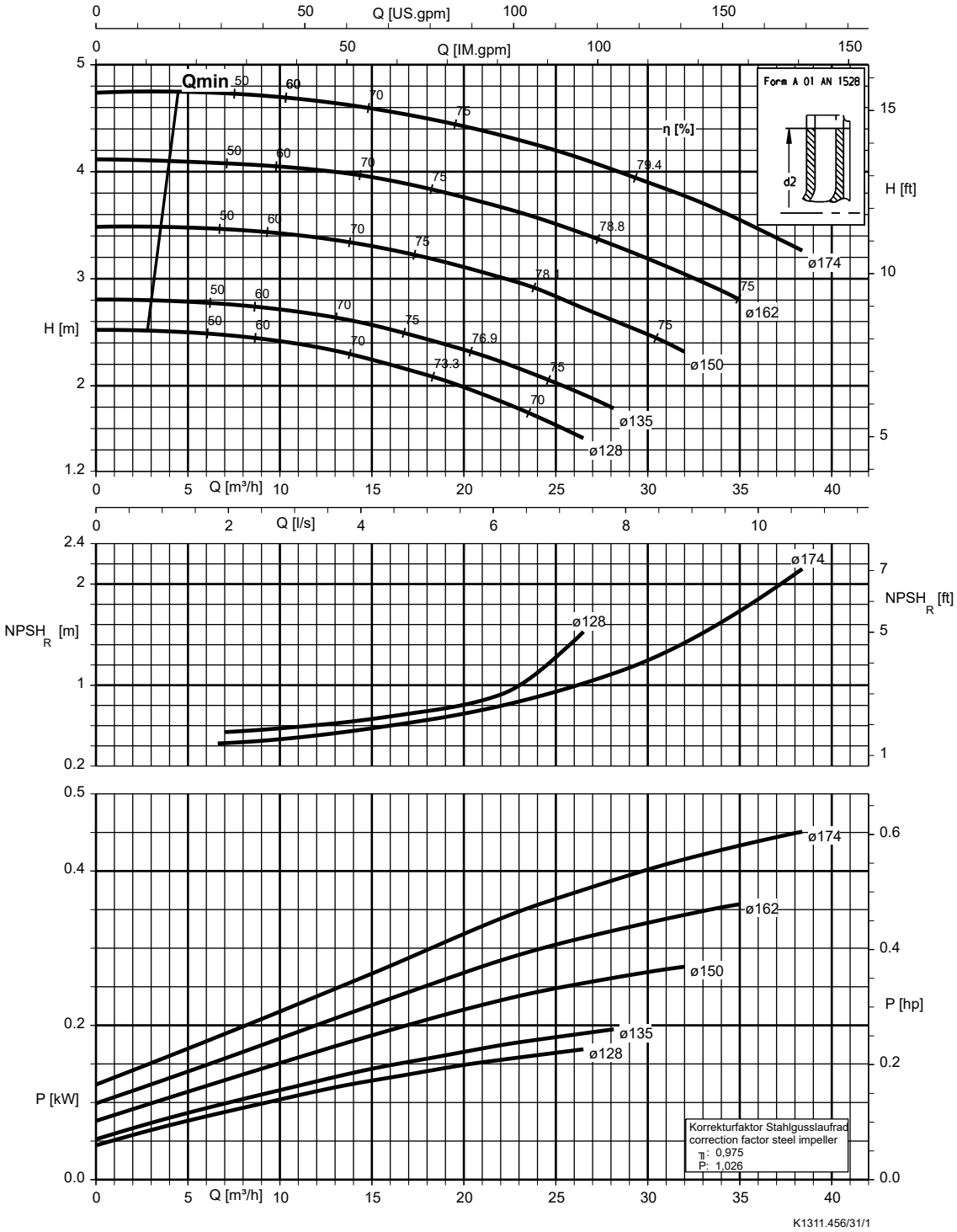
Vlety 065-040-250, n = 960 rpm



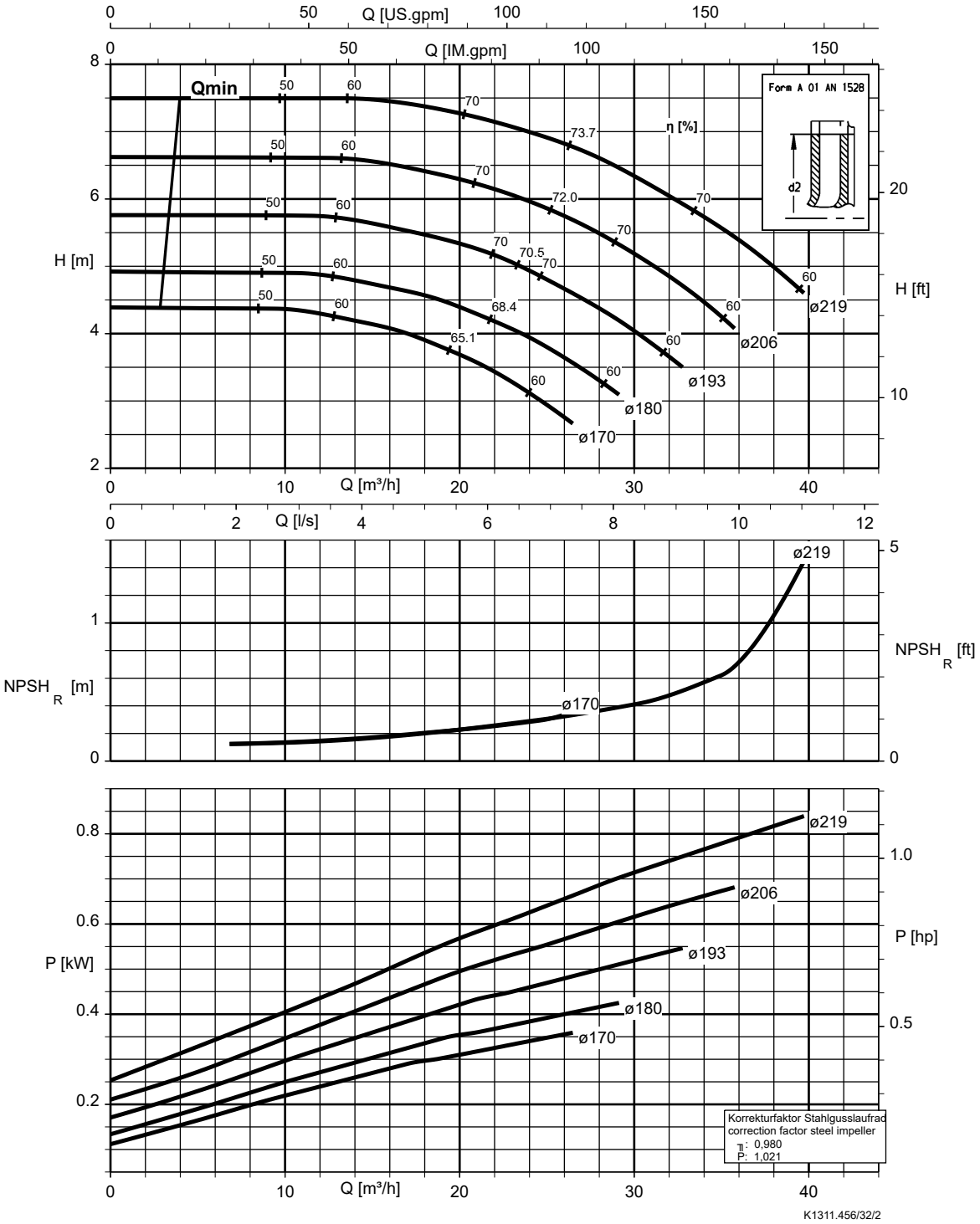
Vlety 065-040-315, n = 960 rpm



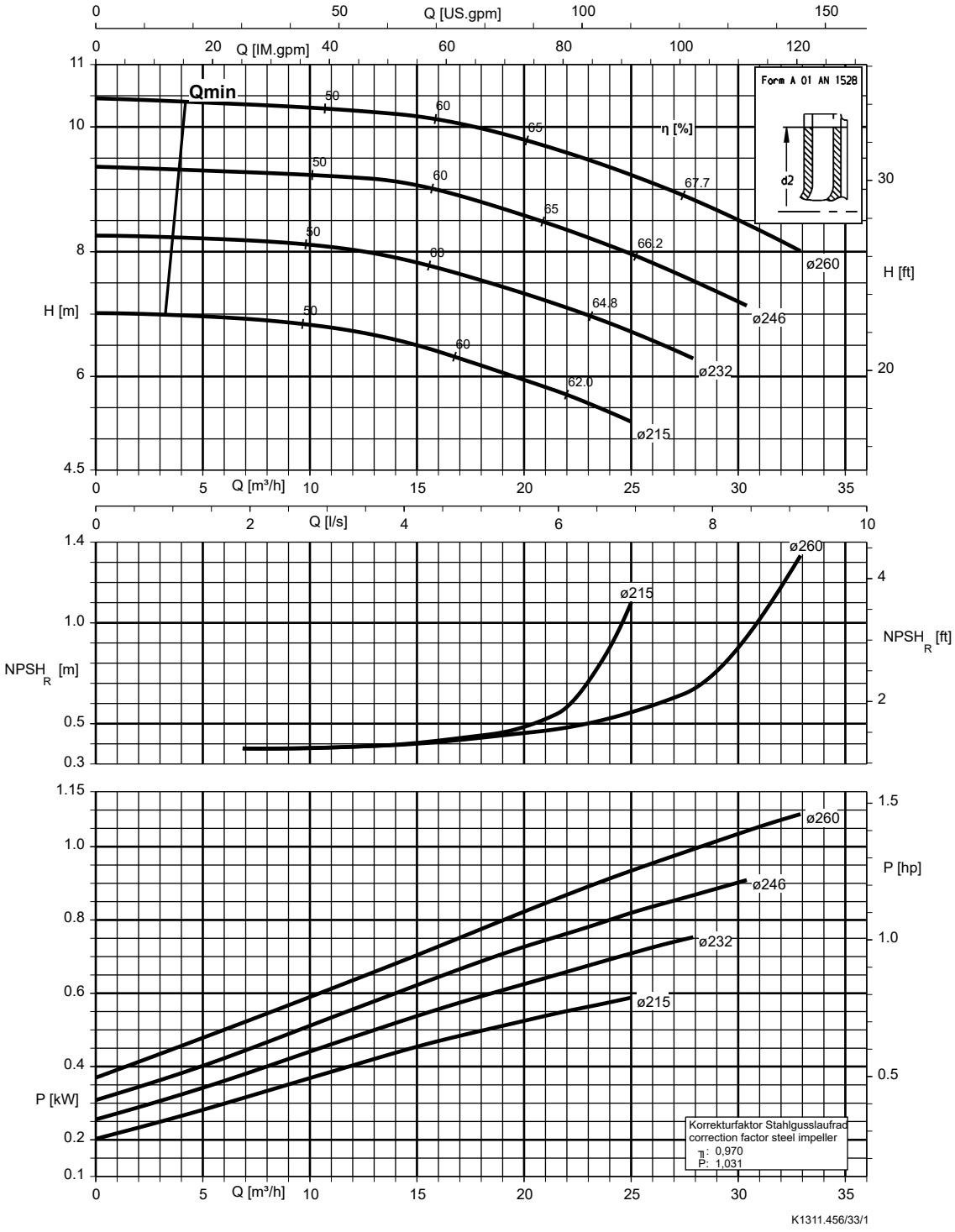
Vlety 065-050-160, n = 960 rpm



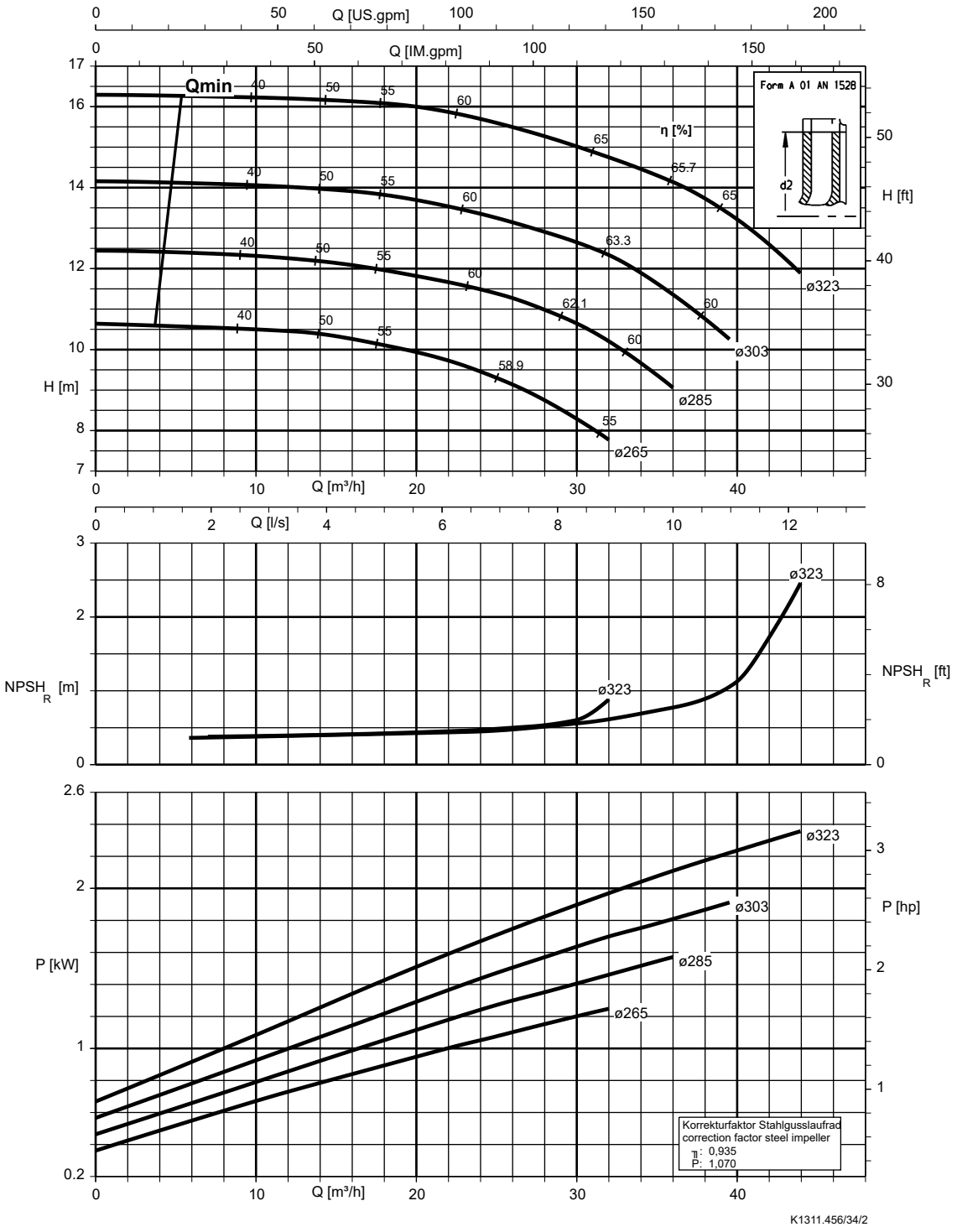
Vlety 065-050-200, n = 960 rpm



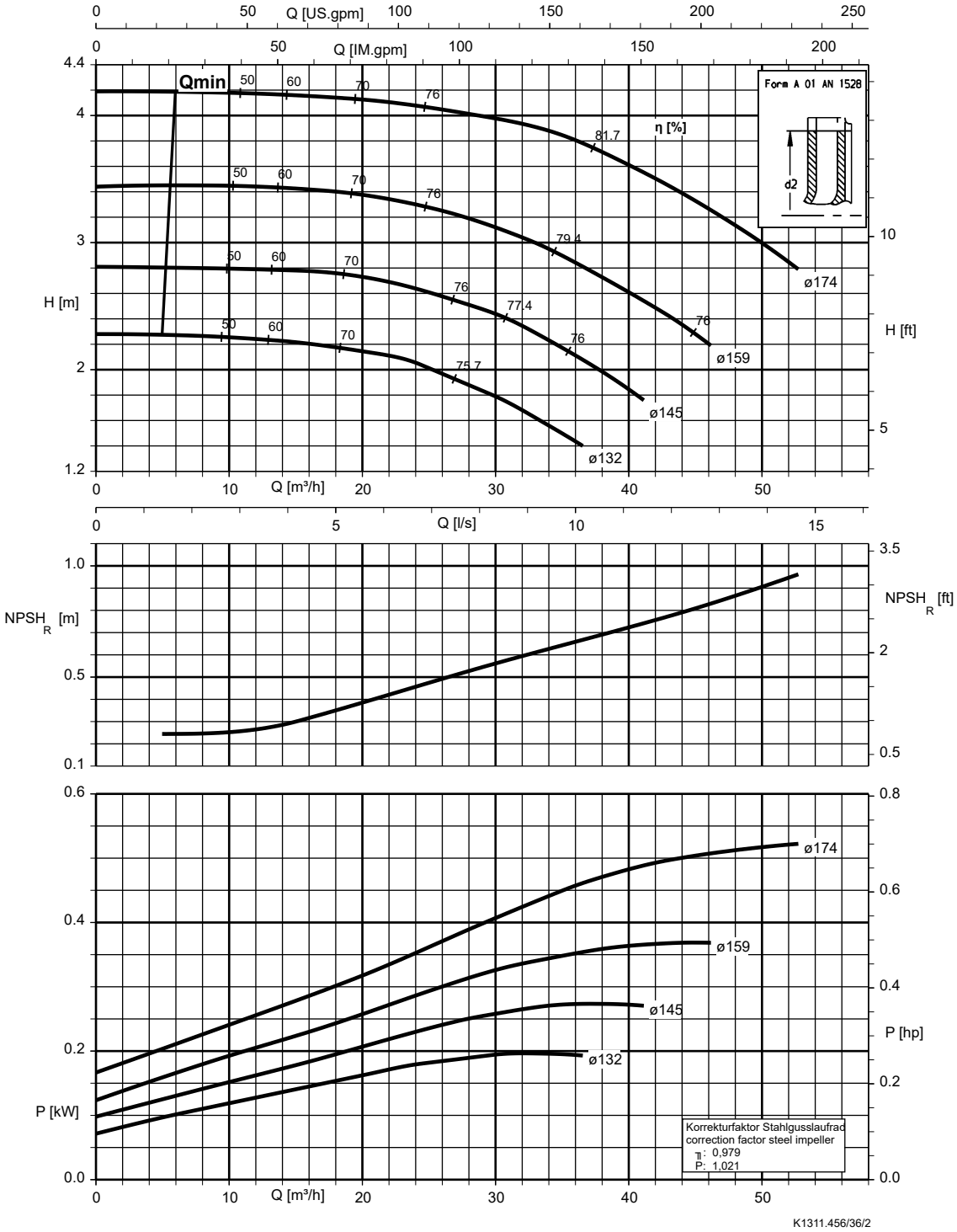
Vlety 065-050-250, n = 960 rpm



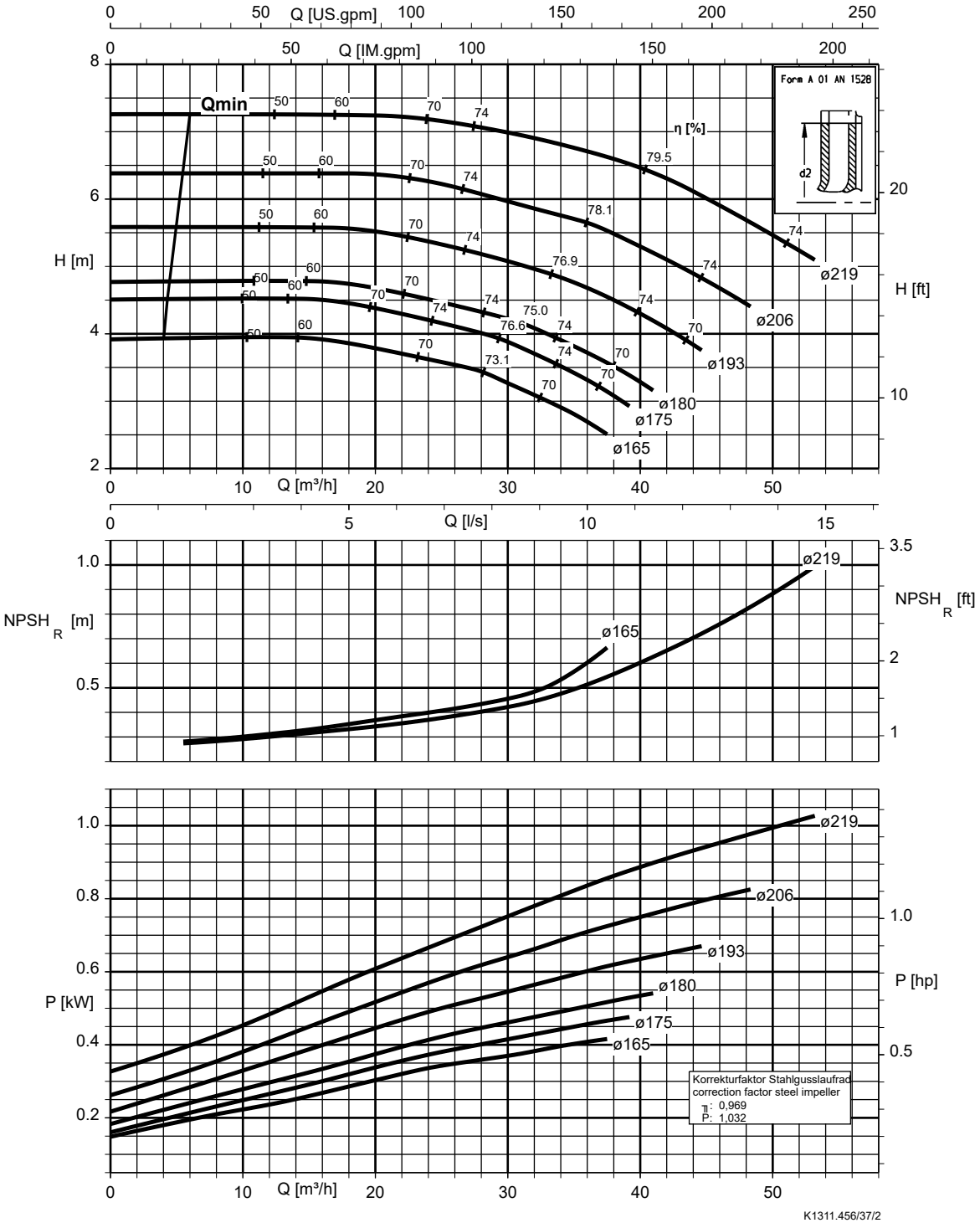
Vlety 065-050-315, n = 960 rpm



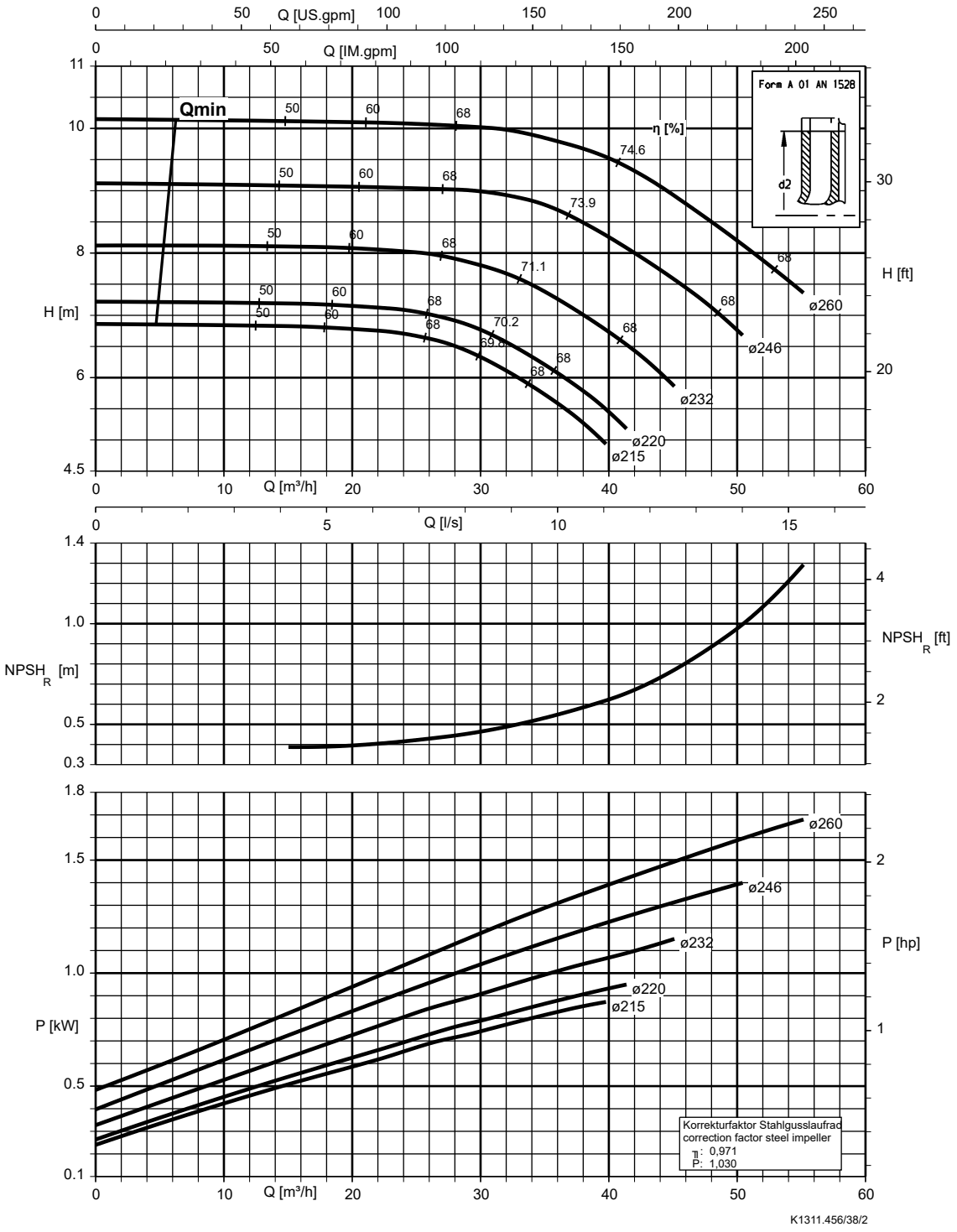
Vlety 080-065-160, n = 960 rpm



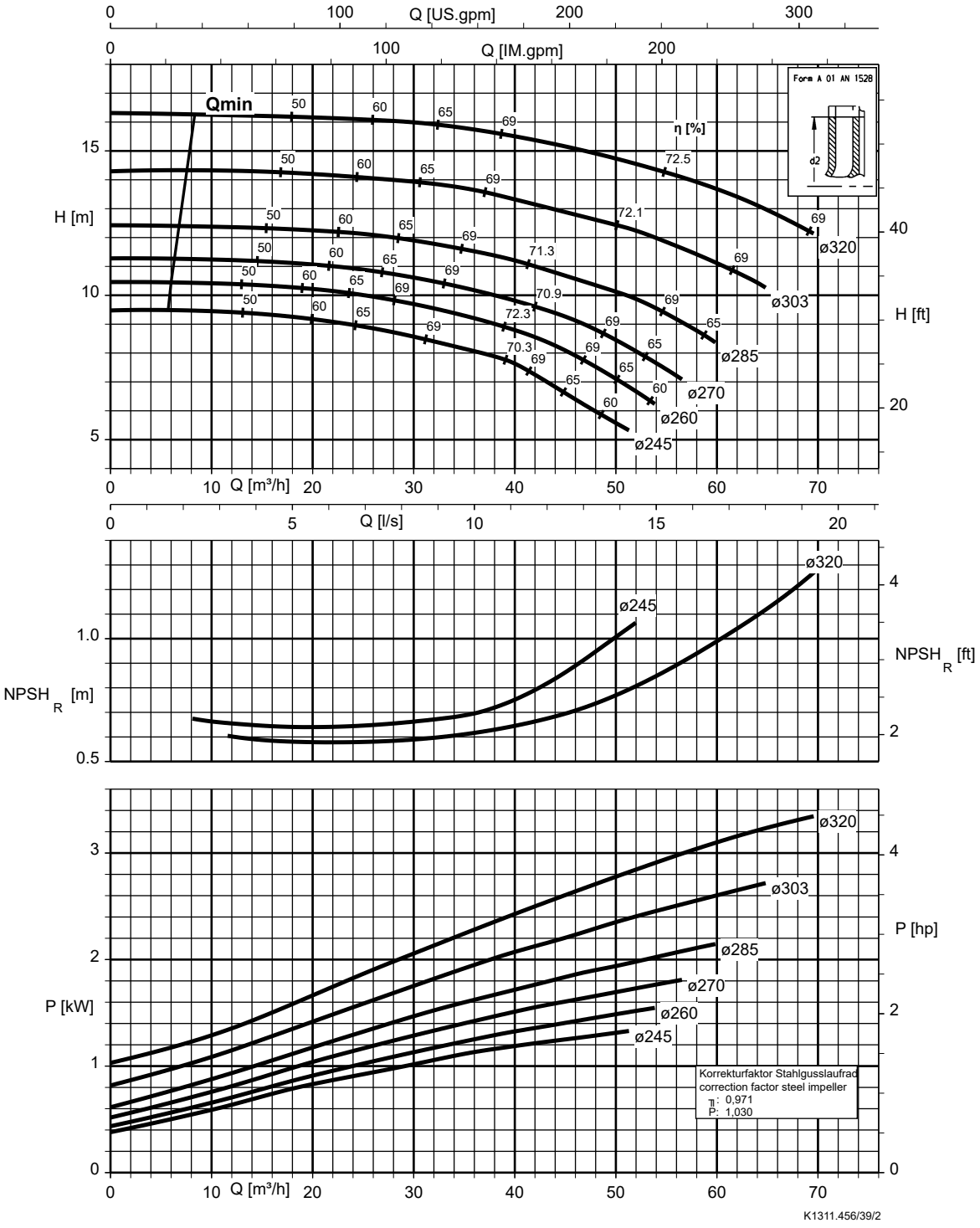
Vlety 080-065-200, n = 960 rpm



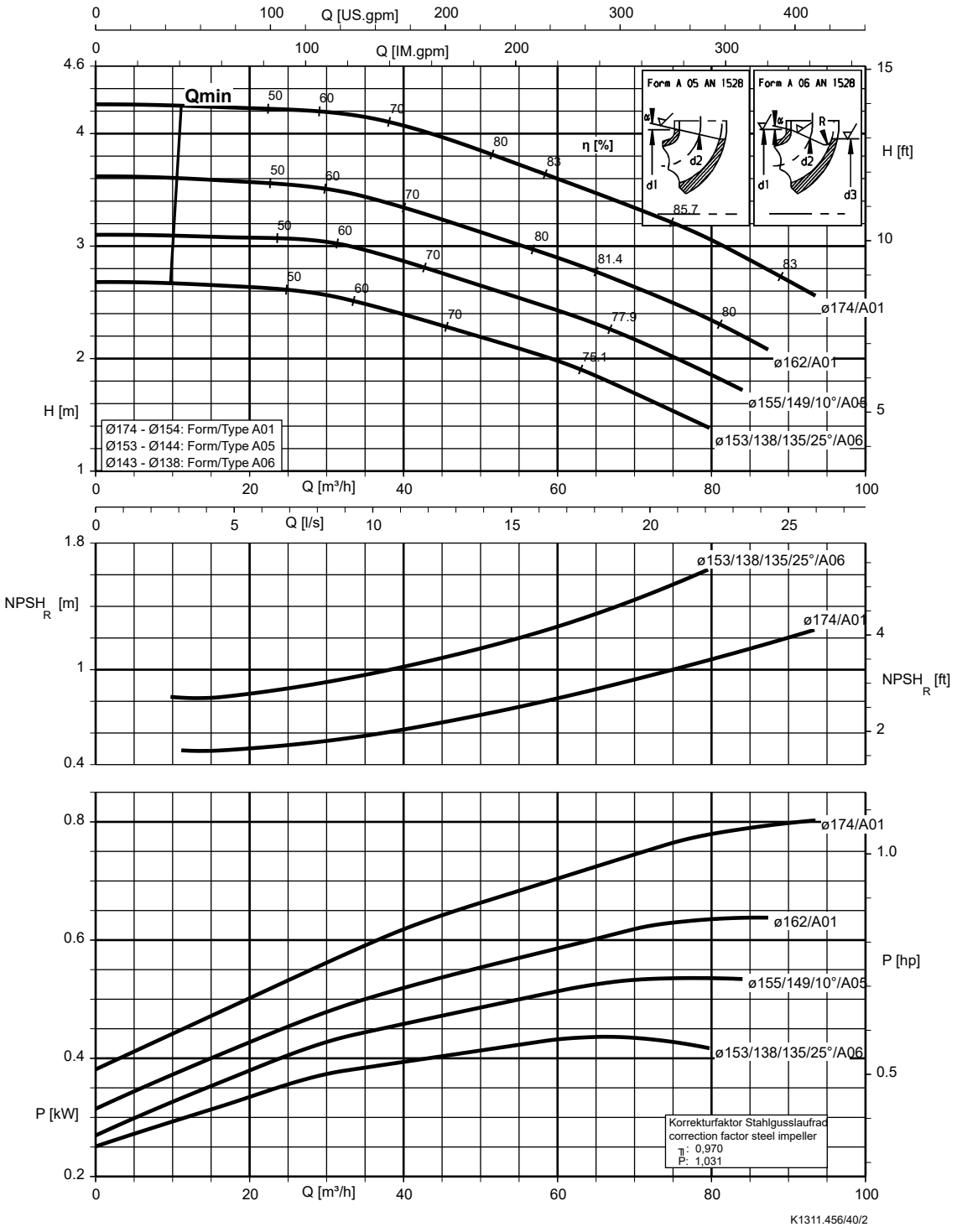
Vlety 080-065-250, n = 960 rpm



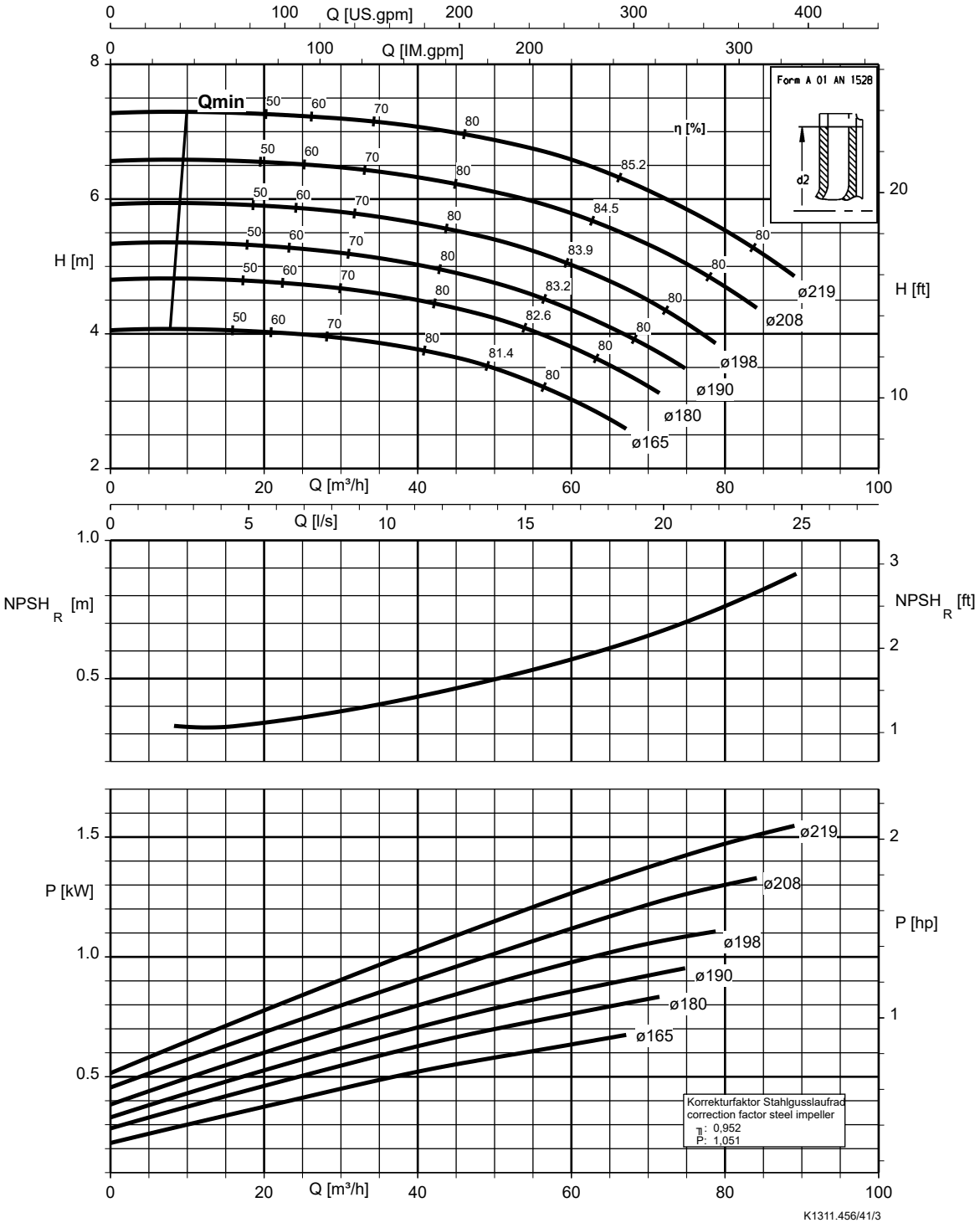
Vlety 080-065-315, n = 960 rpm



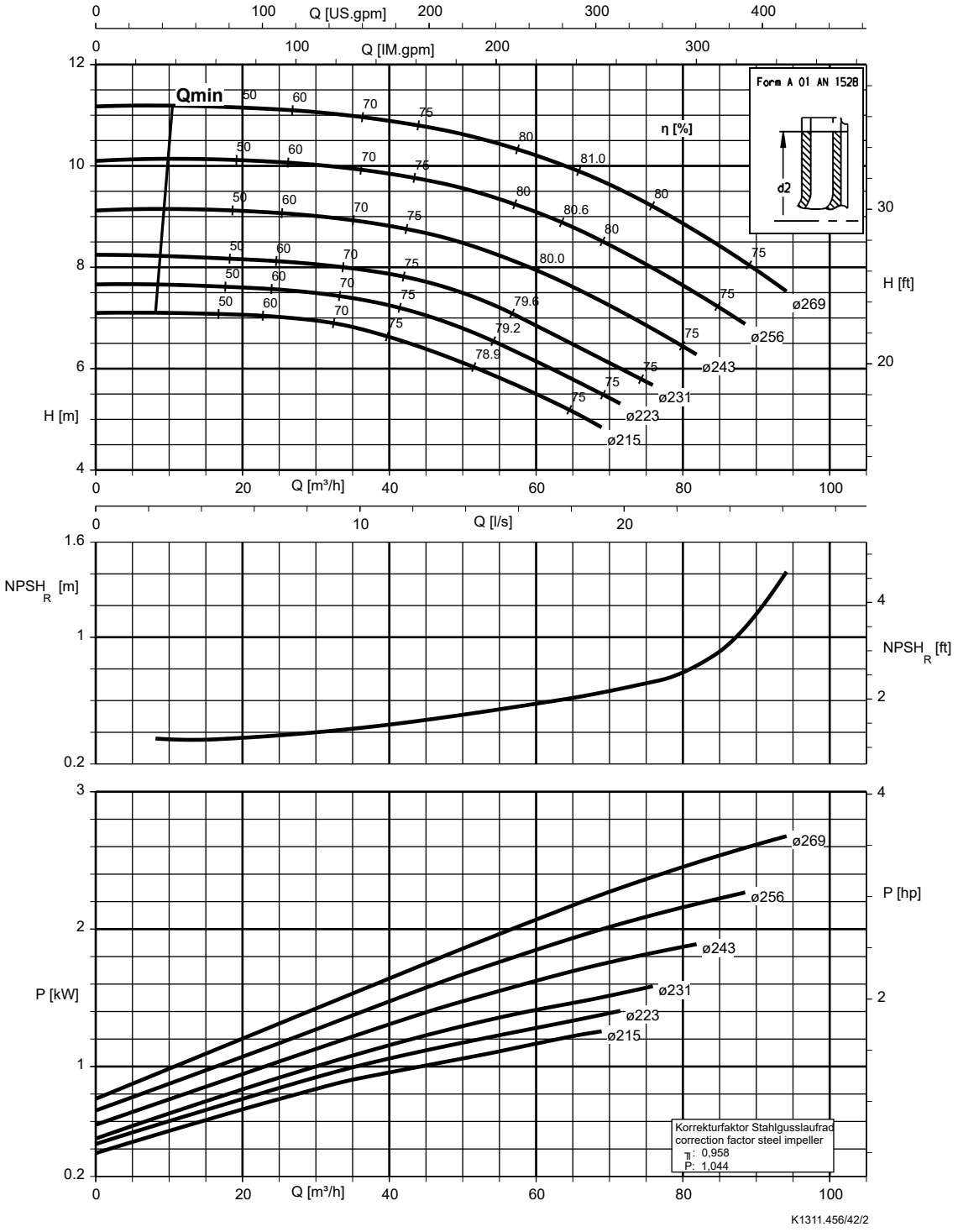
Vlety 100-080-160, n = 960 rpm



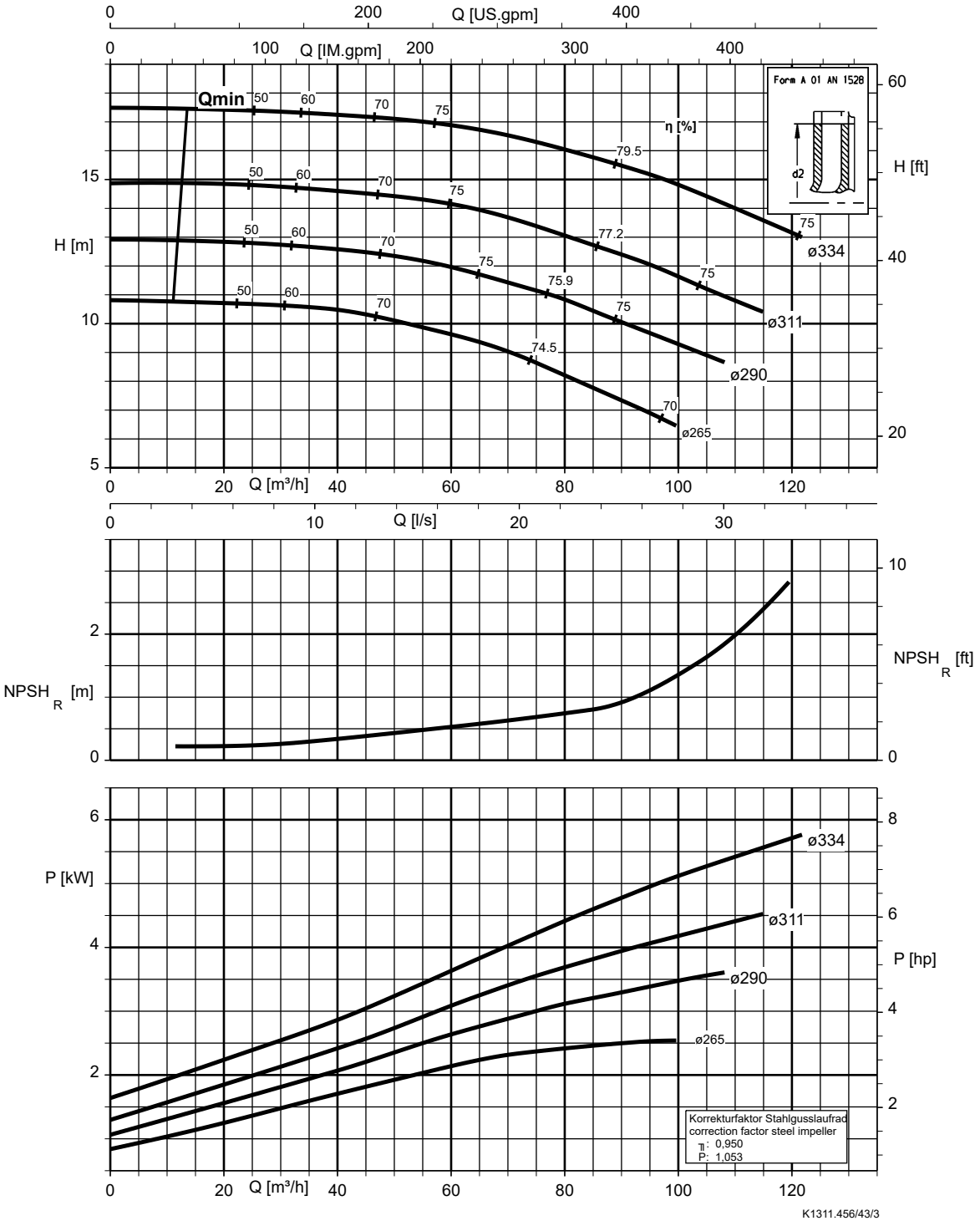
Vlety 100-080-200, n = 960 rpm



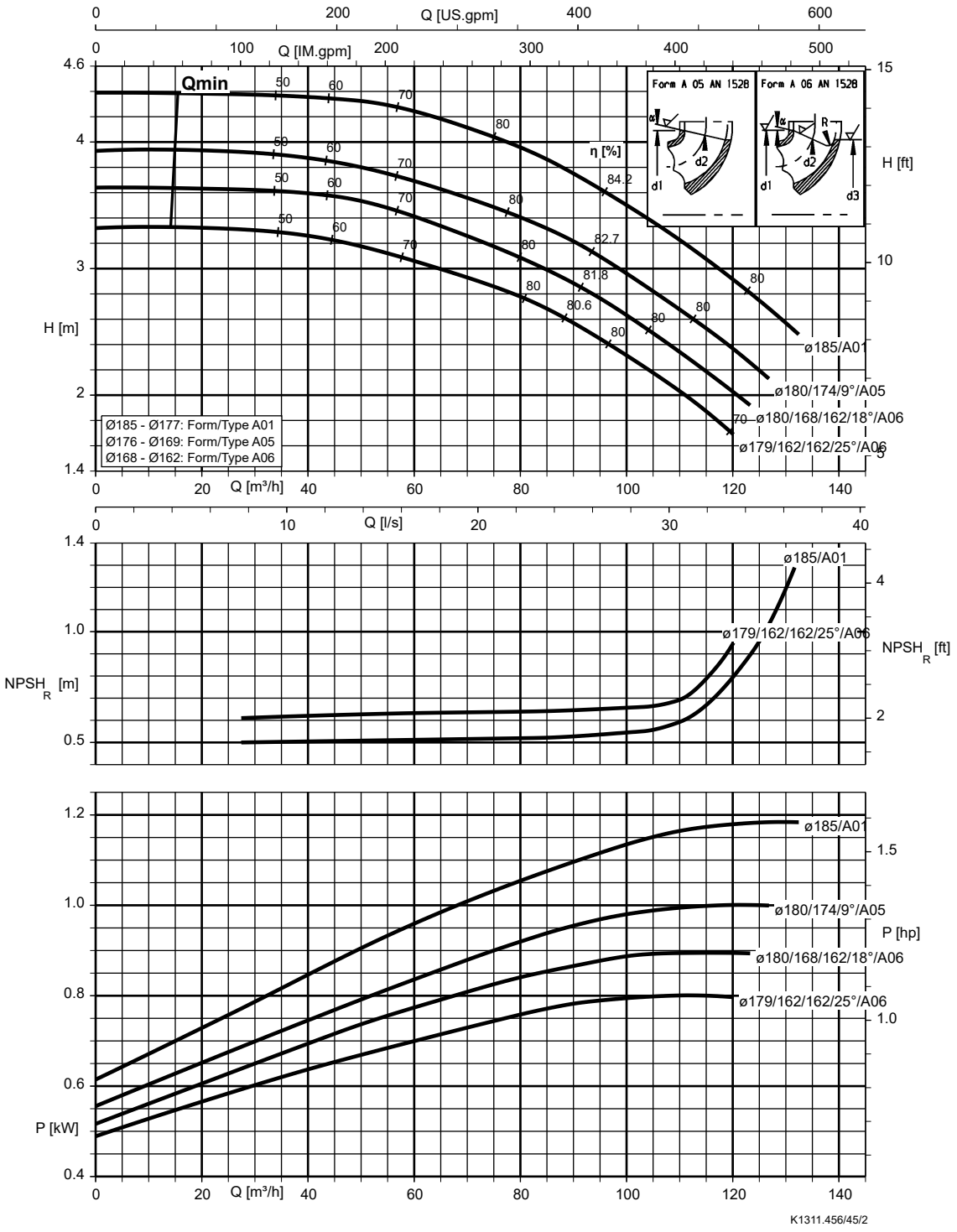
Vlety 100-080-250, n = 960 rpm



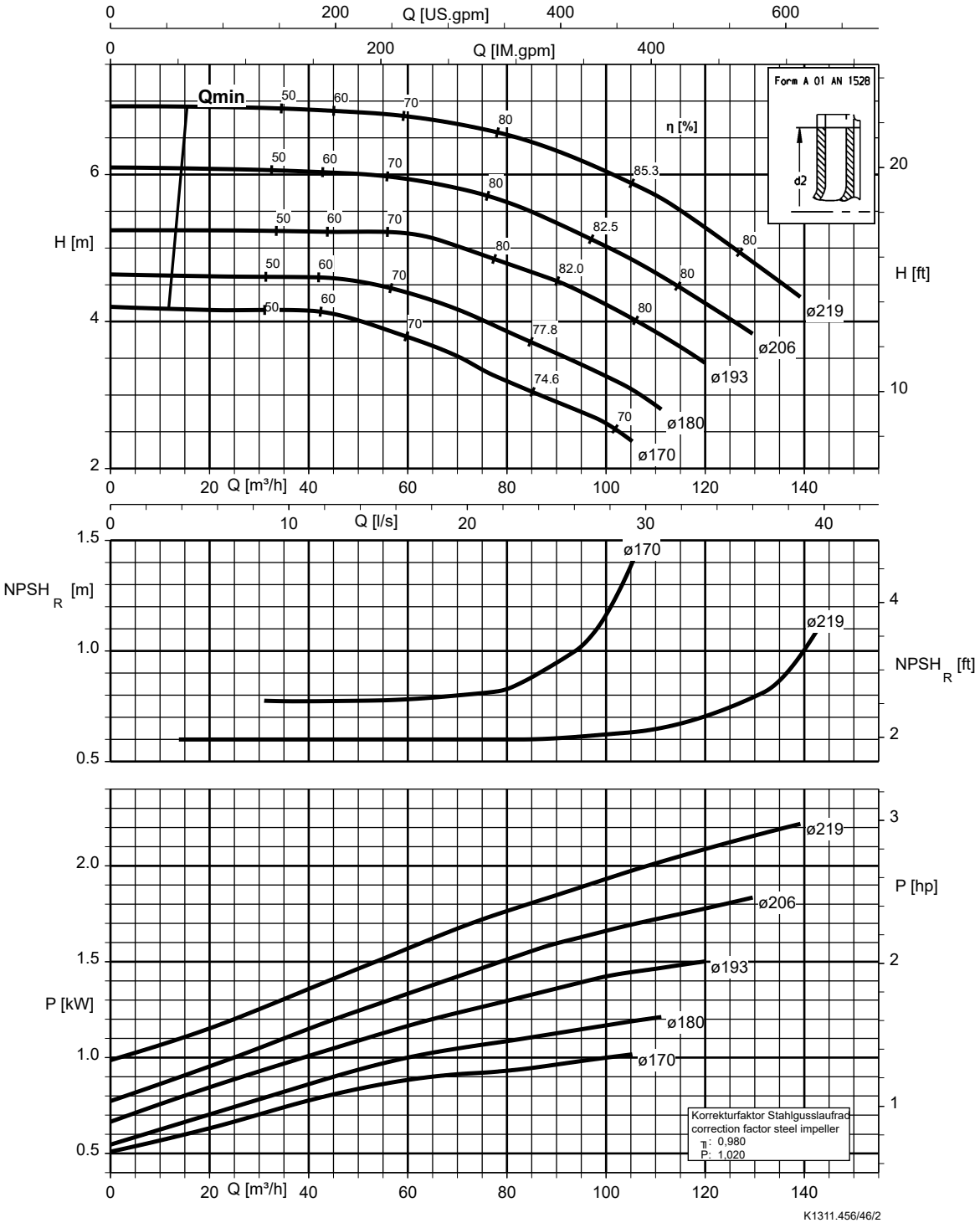
Vlety 100-080-315, n = 960 rpm



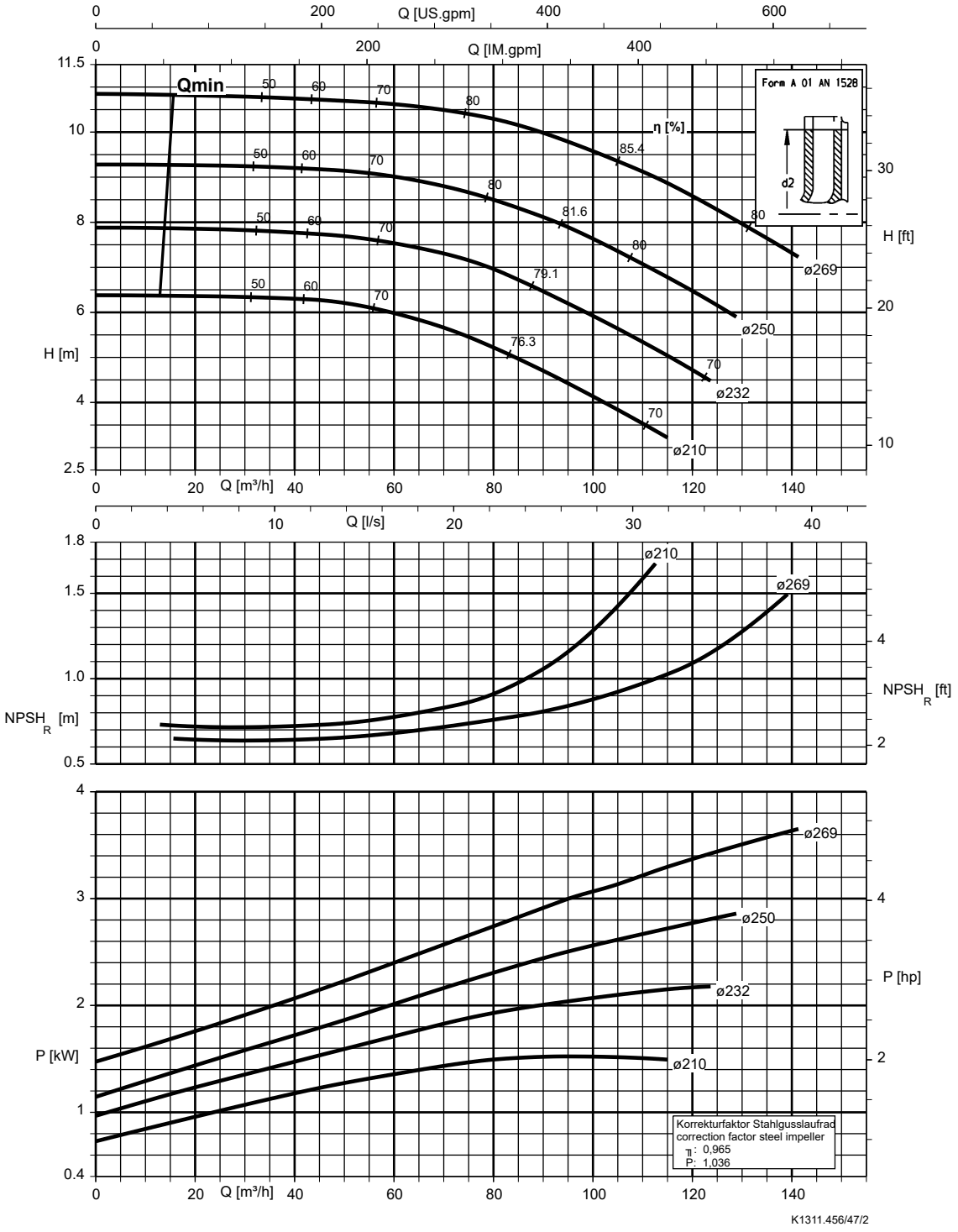
Vlety 125-100-160, n = 960 rpm



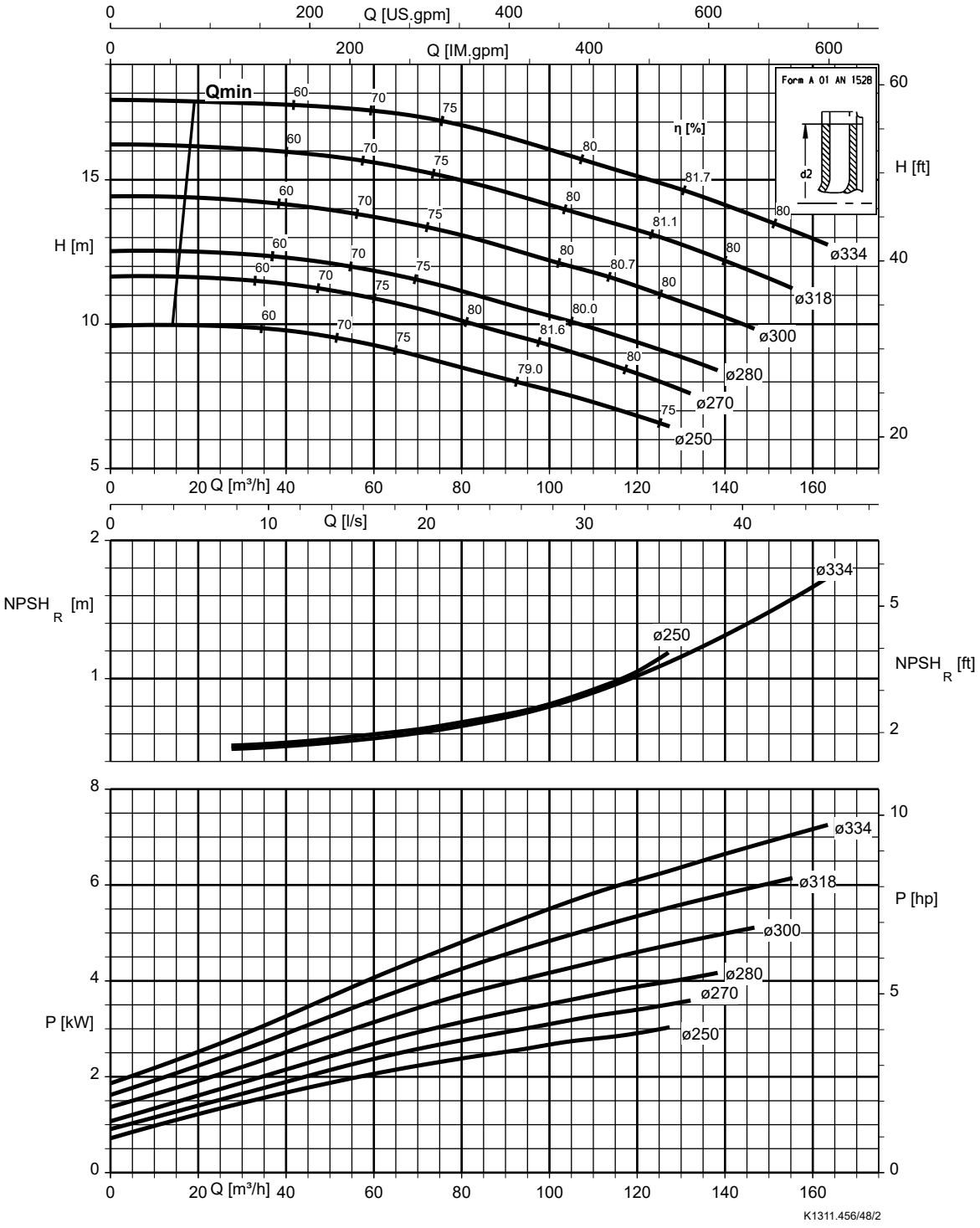
Vlety 125-100-200, n = 960 rpm



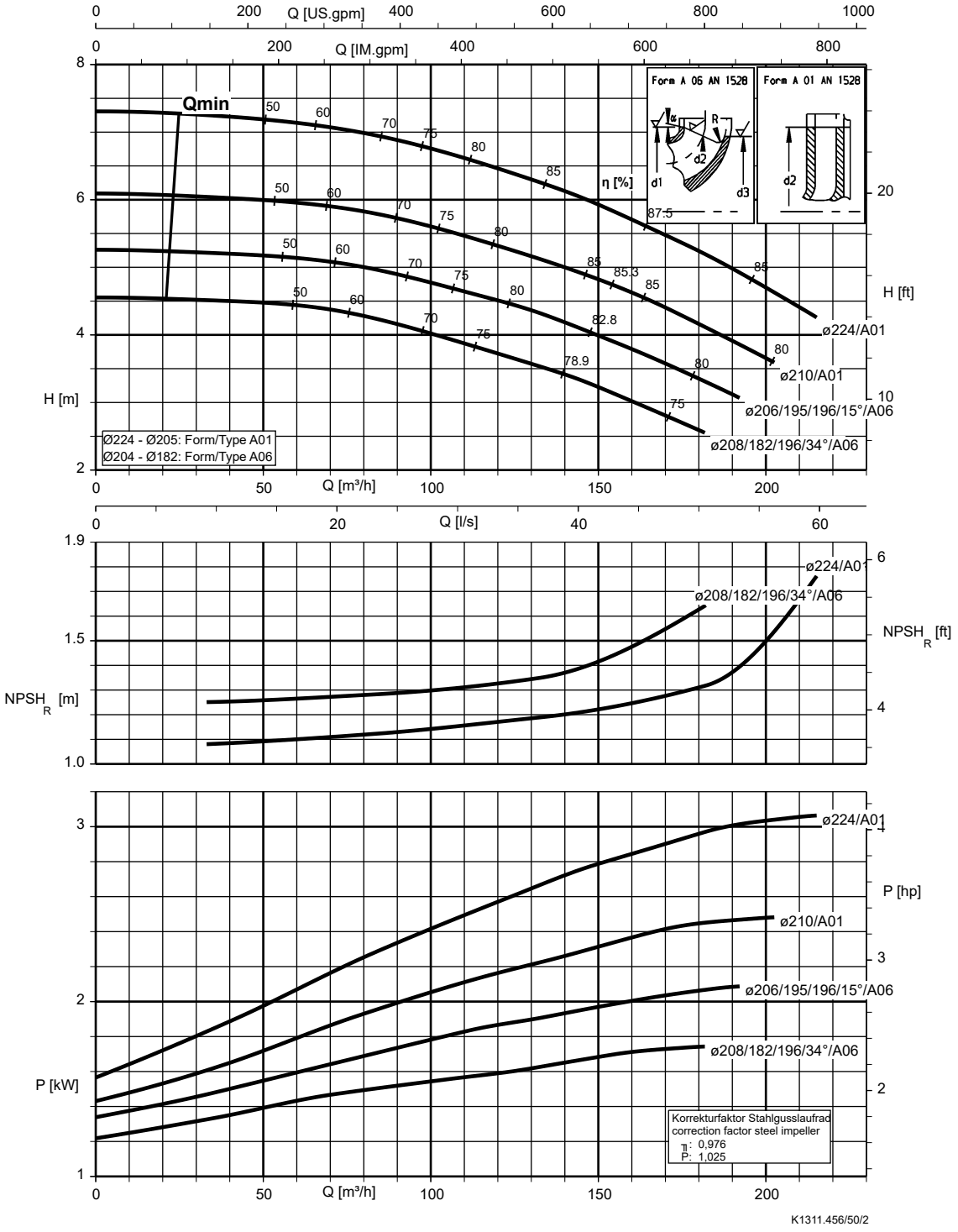
Vlety 125-100-250, n = 960 rpm



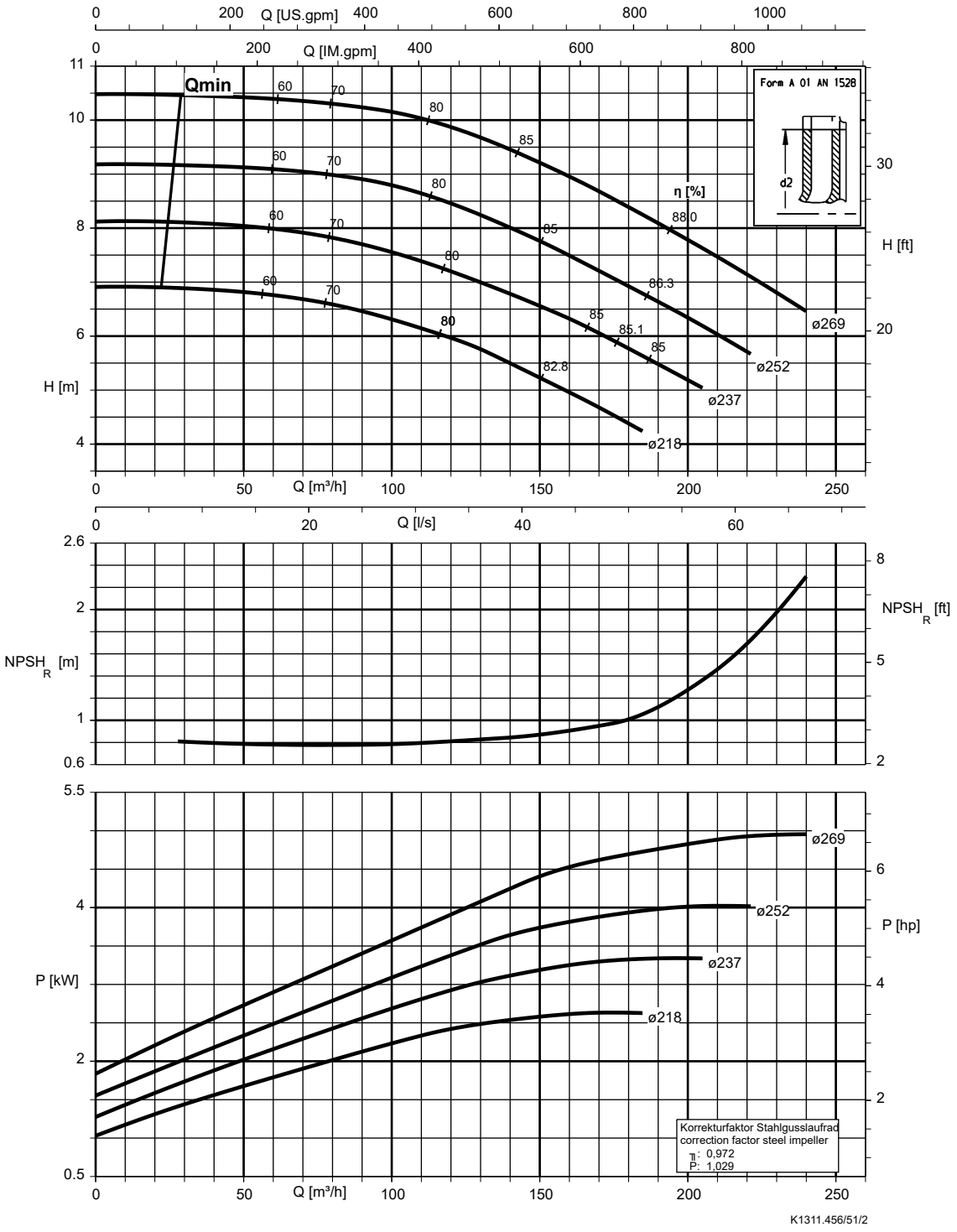
Vlety 125-100-315, n = 960 rpm



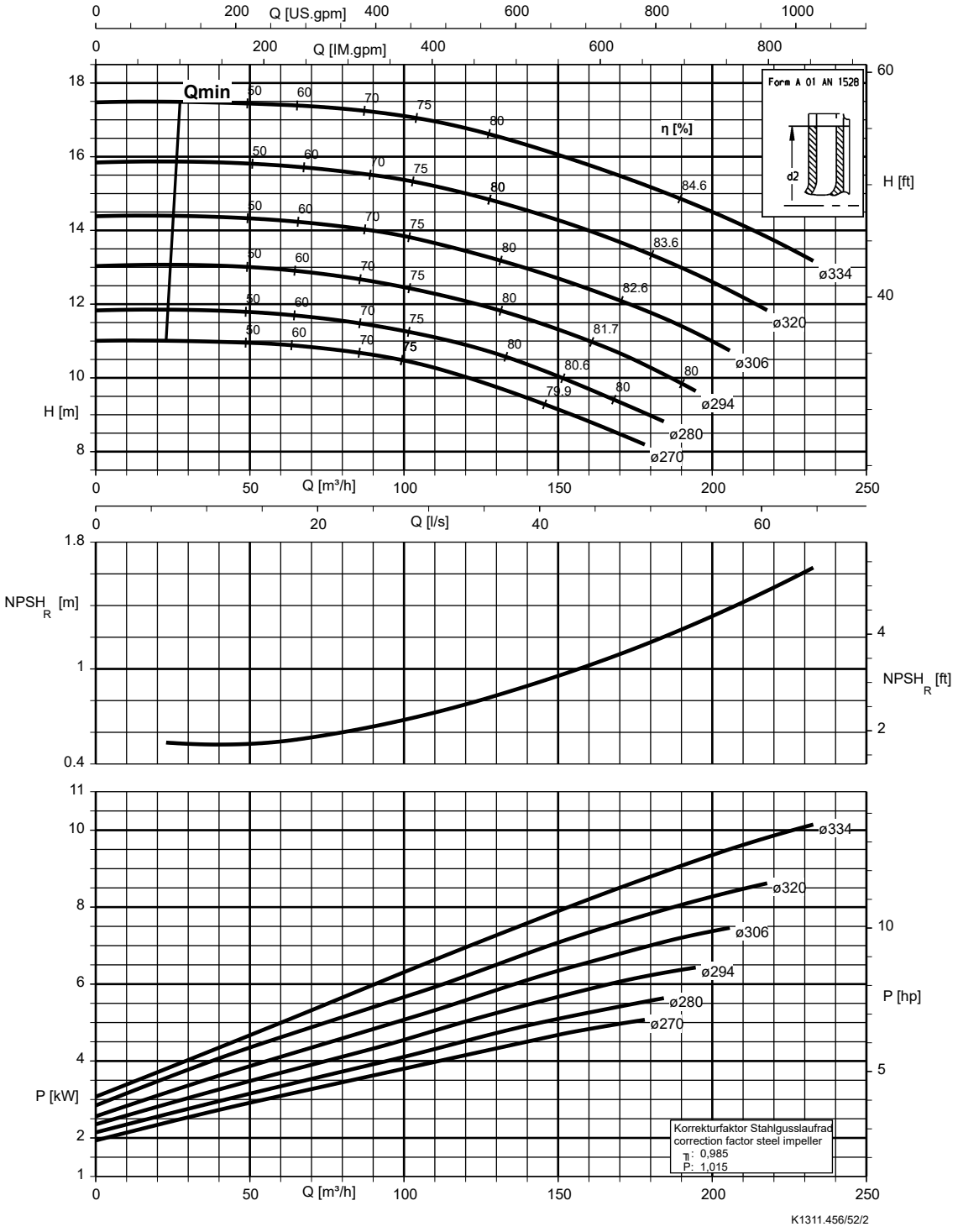
Vlety 150-125-200, n = 960 rpm



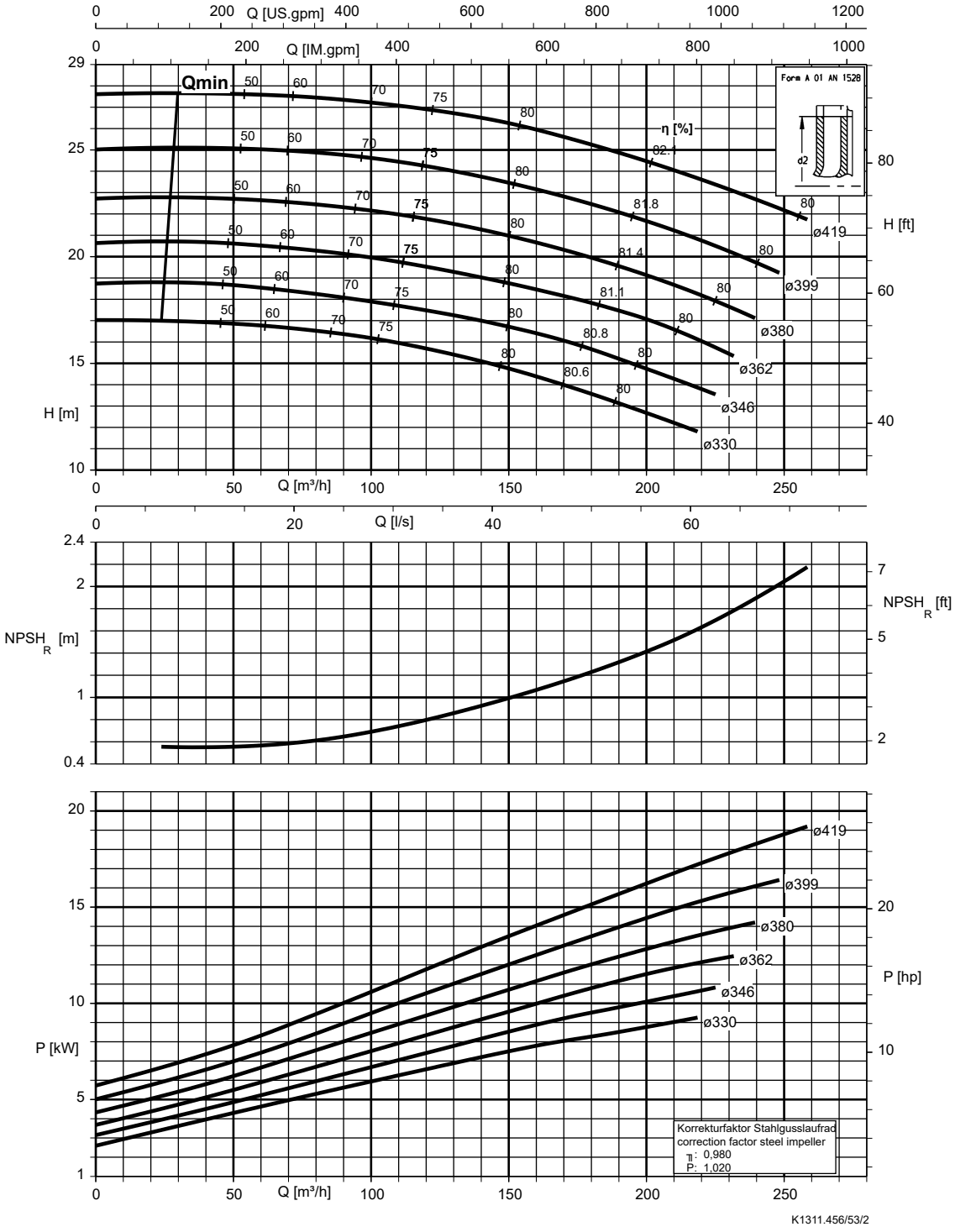
Vlety 150-125-250, n = 960 rpm



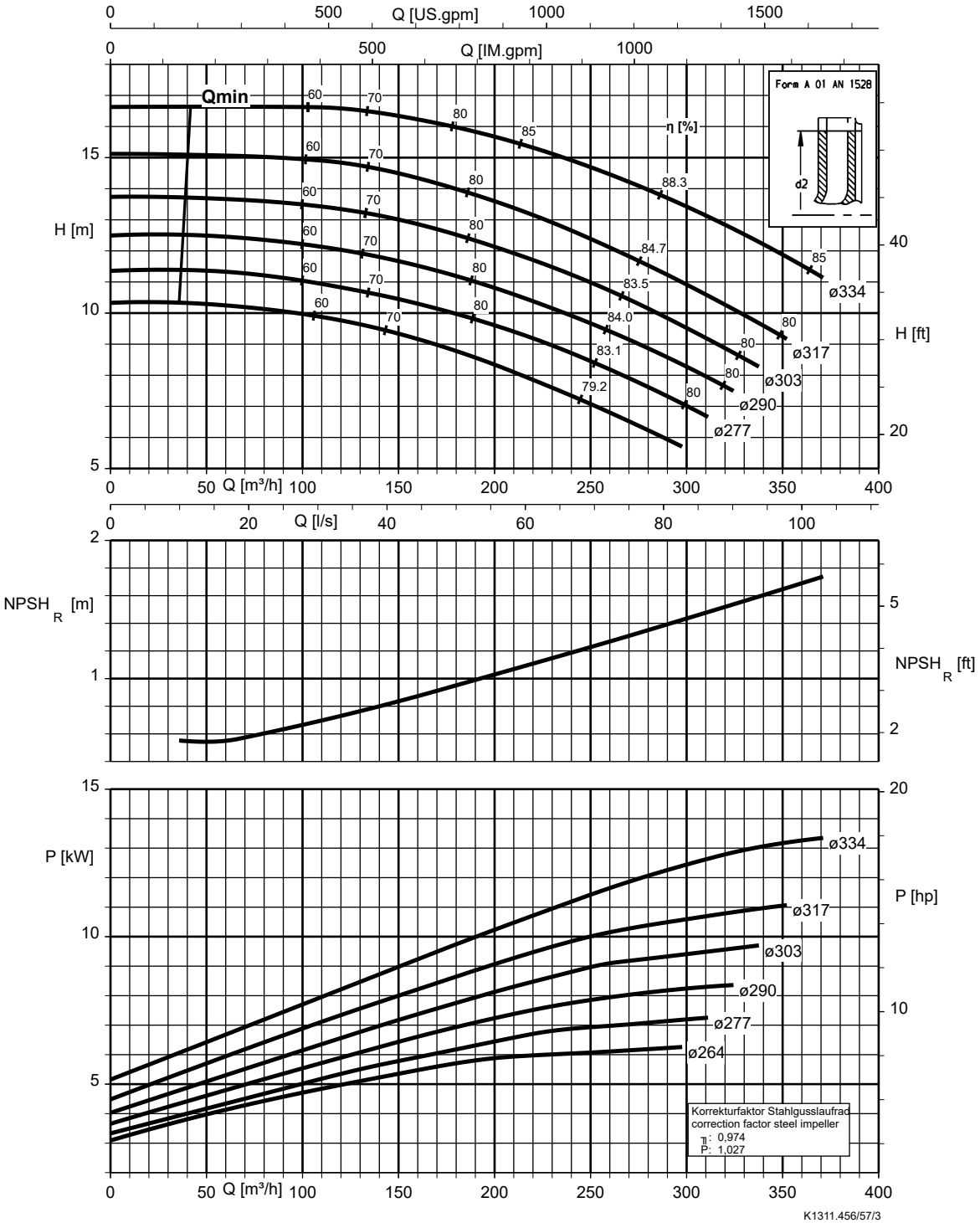
Vlety 150-125-315, n = 960 rpm



Vlety 150-125-400, n = 960 rpm



Vlety 200-150-315, n = 960 rpm



Vlety 200-150-400, n = 960 rpm