FG

Standardised "EN 733" centrifugal pumps

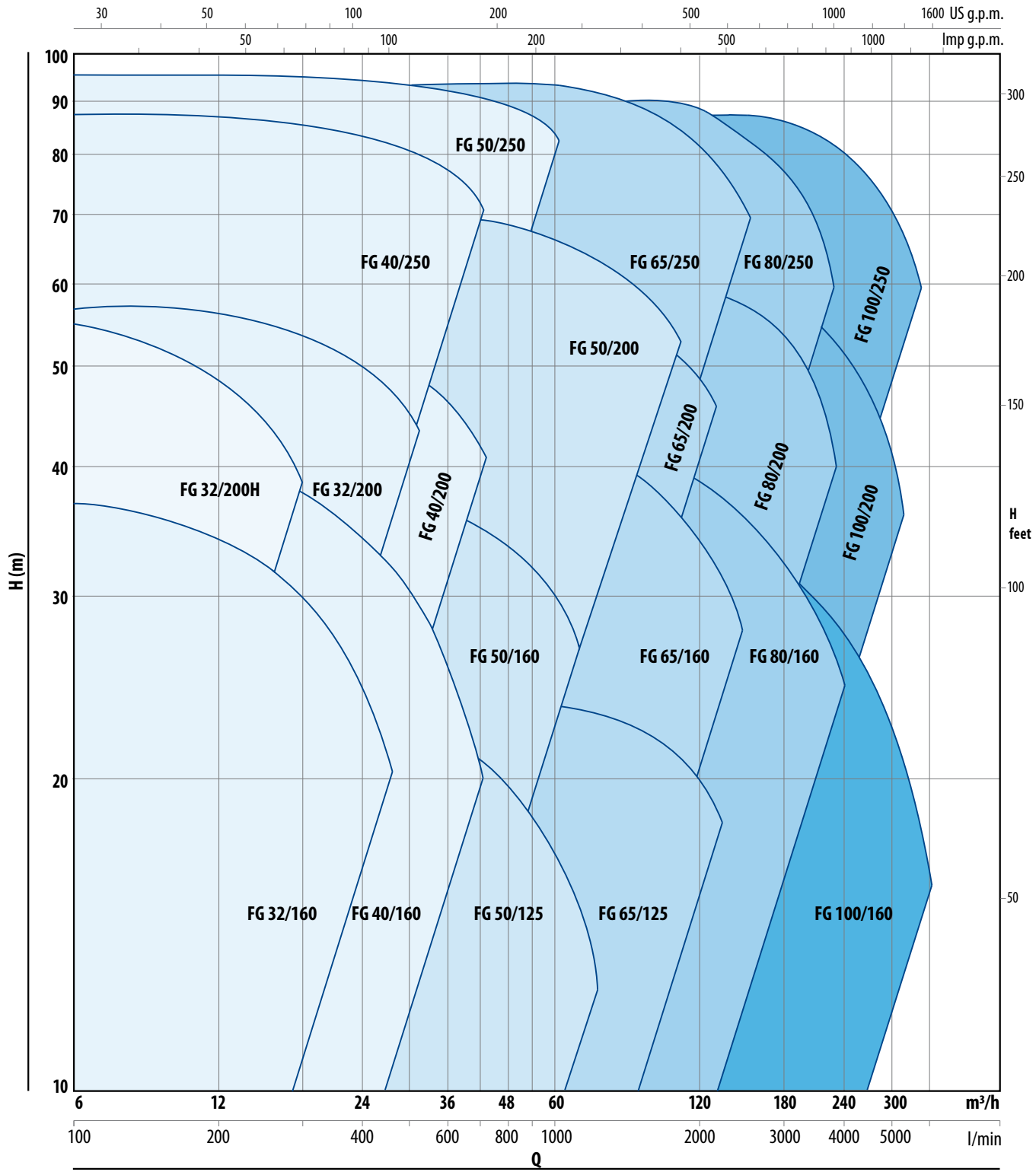
CHARACTERISTIC CURVES

n= 2900 1/min 2 Pole 50 Hz

PEDROLLO®

... the spring of life

PERFORMANCE RANGE **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



- Hydraulic performance and connection dimensions compliant with standard EN 733.
- REGULATION (EU) N. 547/2012
- The declared performances are valid for liquids with density 1000 kg/m³, kinematic viscosity 1 mm²/s and water temperature 15 °C.
- Tolerance of characteristic curves in compliance with EN ISO 9906 Grado 3.

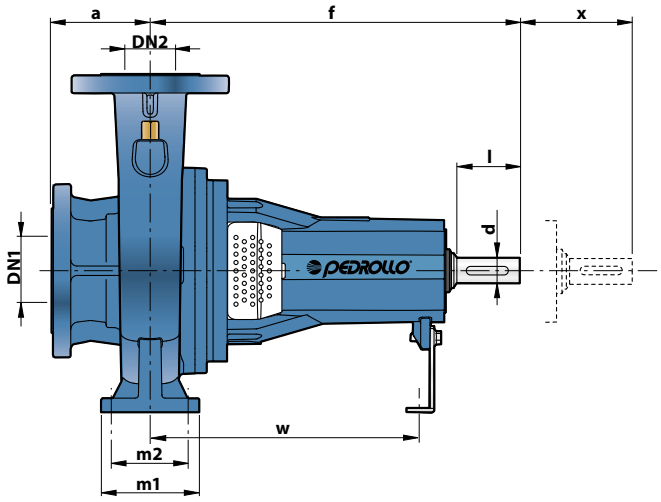
PERFORMANCE DATA

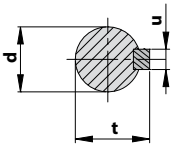
n= 2900 1/min 2 Pole 50 Hz HS= 0 m

MODEL pump	MOTOR PAIRING kW	HP	PERFORMANCE Q m³/h	H metres
FG 32/160C	1.5	2	6 ÷ 21	24 ÷ 14
FG 32/160B	2.2	3	6 ÷ 24	30 ÷ 17
FG 32/160A	3	4	6 ÷ 27	37 ÷ 24
FG 32/200C	4	5.5	6 ÷ 27	44 ÷ 31.5
FG 32/200B	5.5	7.5	6 ÷ 30	51 ÷ 36
FG 32/200A	7.5	10	6 ÷ 30	57 ÷ 44
FG 32/200BH	3	4	6 ÷ 18	45 ÷ 37
FG 32/200AH	4	5.5	6 ÷ 19.2	55 ÷ 44
FG 40/160C	2.2	3	6 ÷ 36	27 ÷ 14
FG 40/160B	3	4	6 ÷ 36	32 ÷ 20
FG 40/160A	4	5.5	6 ÷ 42	38 ÷ 20
FG 40/200B	5.5	7.5	6 ÷ 42	47 ÷ 28
FG 40/200A	7.5	10	6 ÷ 42	55 ÷ 41
FG 40/250C	9.2	12.5	6 ÷ 42	64 ÷ 47
FG 40/250B	11	15	6 ÷ 42	71 ÷ 55
FG 40/250A	15	20	6 ÷ 42	88 ÷ 72
FG 50/125C	2.2	3	18 ÷ 72	17.5 ÷ 6
FG 50/125B	3	4	18 ÷ 72	20.7 ÷ 9
FG 50/125A	4	5.5	18 ÷ 72	23.5 ÷ 13
FG 50/160C	4	5.5	18 ÷ 60	27 ÷ 16
FG 50/160B	5.5	7.5	18 ÷ 66	32 ÷ 21
FG 50/160A	7.5	10	18 ÷ 66	37 ÷ 27
FG 50/200C	11	15	24 ÷ 102	44 ÷ 30
FG 50/200B	15	20	24 ÷ 102	52 ÷ 38
FG 50/200A	18.5	25	24 ÷ 108	61 ÷ 45
FG 50/200AR	22	30	24 ÷ 108	69 ÷ 53
FG 50/250D	9.2	12.5	18 ÷ 54	51 ÷ 32
FG 50/250C	11	15	18 ÷ 54	59 ÷ 42
FG 50/250B	15	20	18 ÷ 60	72 ÷ 59
FG 50/250A	18.5	25	18 ÷ 60	85 ÷ 73
FG 50/250AR	22	30	18 ÷ 60	95 ÷ 83
FG 65/125C	4	5.5	36 ÷ 108	16 ÷ 11
FG 65/125B	5.5	7.5	36 ÷ 120	18 ÷ 13
FG 65/125A	7.5	10	36 ÷ 132	23 ÷ 18
FG 65/160C	9.2	12.5	36 ÷ 132	32 ÷ 22
FG 65/160B	11	15	36 ÷ 144	36.5 ÷ 23
FG 65/160A	15	20	36 ÷ 144	40.5 ÷ 28
FG 65/200B	15	20	24 ÷ 120	45 ÷ 35.5
FG 65/200A	18.5	25	24 ÷ 126	51 ÷ 40
FG 65/200AR	22	30	24 ÷ 126	57 ÷ 46
FG 65/250C	30	40	24 ÷ 141	76 ÷ 53
FG 65/250B	37	50	24 ÷ 150	87 ÷ 62
FG 65/250A	45	60	24 ÷ 156	94.5 ÷ 68

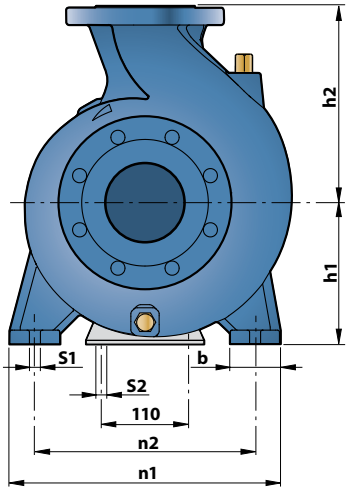
MODEL pump	MOTOR PAIRING kW	HP	PERFORMANCE Q m³/h	H metres
FG 80/160D	11	15	30 ÷ 240	25 ÷ 10
FG 80/160C	15	20	30 ÷ 240	30 ÷ 15
FG 80/160B	18.5	25	30 ÷ 240	35 ÷ 20
FG 80/160A	22	30	30 ÷ 240	40 ÷ 25
FG 80/200B	30	40	30 ÷ 219	56 ÷ 34.5
FG 80/200A	37	50	30 ÷ 234	62 ÷ 40
FG 80/250B	45	60	36 ÷ 216	77 ÷ 54
FG 80/250A	55	75	36 ÷ 234	88.5 ÷ 60
FG 100/160C	15	20	60 ÷ 300	28 ÷ 12
FG 100/160B	18.5	25	60 ÷ 330	32 ÷ 13
FG 100/160A	22	30	60 ÷ 360	35 ÷ 15
FG 100/200C	30	40	48 ÷ 279	51 ÷ 28
FG 100/200B	37	50	48 ÷ 294	57 ÷ 33
FG 100/200A	45	60	48 ÷ 315	63 ÷ 38
FG 100/250B	55	75	48 ÷ 309	75 ÷ 48
FG 100/250A	75	100	48 ÷ 345	89 ÷ 58

DIMENSIONS AND WEIGHT

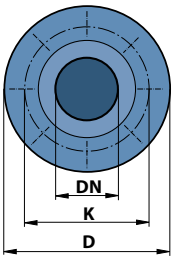




SHAFT DIMENSIONS mm		
d	u	t
24 k6	8	27
32 k6	10	35



DN FLANGES	D mm	K mm	HOLES N°	HOLES Ø (mm)
32	140	100	4	18
40	150	110		
50	165	125		
65	185	145		
80	200	160	8	
100	220	180		
125	250	210		



FLANGES

MODEL	PORTS		DIMENSIONS mm															kg
	DN1	DN2	a	f	h1	h2	b	m1	m2	n1	n2	s1	s2	w	x	d	l	
FG 32/160	50	32	80	360	132	160	50	100	70	240	190	14	14	260	100	24	50	**32**
FG 32/200					160	180	55	95		245								**35**
FG 32/200H					160	180	55											**35**
FG 40/160	65	40	100		132	160	50	100		240								**35**
FG 40/200					160	180	55			265	212							**38**
FG 40/250					180	225	65	125	95	320	250							**58**
FG 50/125	65	50			132	160	50	100	70	240	190							**30**
FG 50/160					160	180	55			265	212							**35**
FG 50/200					160	200	50											**45**
FG 50/250					180	225	65	125	95	320	250							**50**
FG 65/125	80	65			160	180	65			280	212							**42**
FG 65/160					160	200	65											**45**
FG 65/200					180	225	65			320	250				140			**50**
FG 65/250				470	200	250	80	160	120	360	280	18		340		32	80	**71**
FG 80/160	100	80	125	360	180	225	65	125	95	320	250	14		260		24	50	**48**
FG 80/200				470	180	250	65			345	280			340		32	80	**65**
FG 80/250					200	280	80	160	120	400	315	18						**79**
FG 100/160	125	100		360	200	280	80			360	280			260		24	50	**55**
FG 100/200				470	200	280	80							340		32	80	**75**
FG 100/250			140		225	280	80			400	315							**88**

IMPELLERS TRIMMING

To reduce the performances of radial or semi-axial pumps, at the same speed of rotation, the outside diameter of the impeller should be reduced.
The trimming should be limited to the value where the impeller blades still overlap when we look at them radially.
The diagrams of pump characteristics usually show curves for several impeller diameters
To calculate the diameter reduction a rule of thumb can be applied; an exact calculation is not possible since the geometric similarity of the impeller blades is not preserved when trimming the impeller.
The impellers with conic exit width are trimmed on the blades as shown in the characteristic curves diagrams (as shown in Fig. 1).
The relationship between Q and H and the outside diameter (average if required) of the impeller is resumed in the following approximate equation (index 1=condition prior to the reduction in diameter, index 2=condition after reduction)

$$(Ø1/Ø2)^2 \approx Q1/Q2 \approx H1/H2$$ **Equation (1)**

There follows:

$$Ø2 \approx Ø1 \cdot \sqrt{(Q2/Q1)} \approx Ø1 \cdot \sqrt{(H2/H1)}$$ **Equation (2)**

The parameters required to determine the reduced diameter are found as shown in fig. 2.
After identifying the new P2 working point in the performance chart, draw a straight line between the origin (Q = 0 and H = 0) and this point to intersect at a P1 point the available performance curve at diameter Ø1.
Therefore the values Q and H with index 1 and 2 can be found and then used with Equation 2 to determine the new trimming diameter Ø2.

CAREFUL: after turning down impeller, calculate the new input power using the following equation

$$N=(Q \cdot H \cdot \gamma) / (367 \cdot \eta/100)$$

Nomenclature:
N = power in kW
Q = flow rate in m³/h
H = total head in m
γ = density in kg/dm³
η = pump efficiency

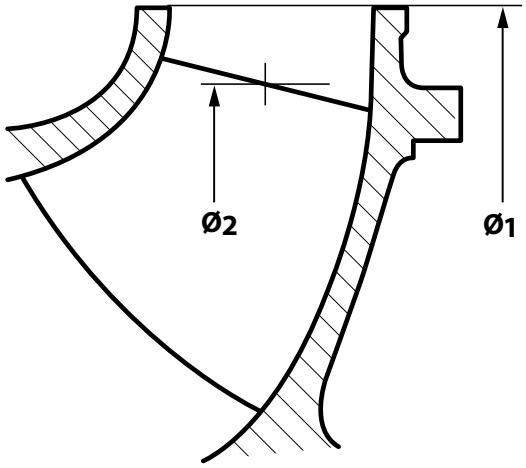


Fig. 1: Contour for cutting back the vanes of an impeller with a mixed flow exit

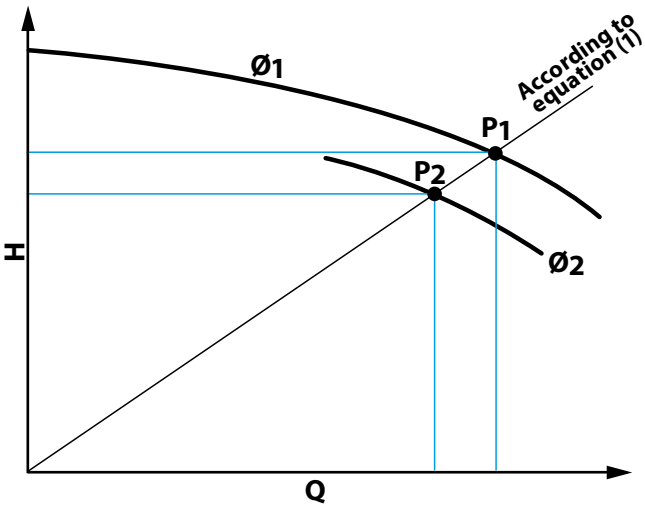
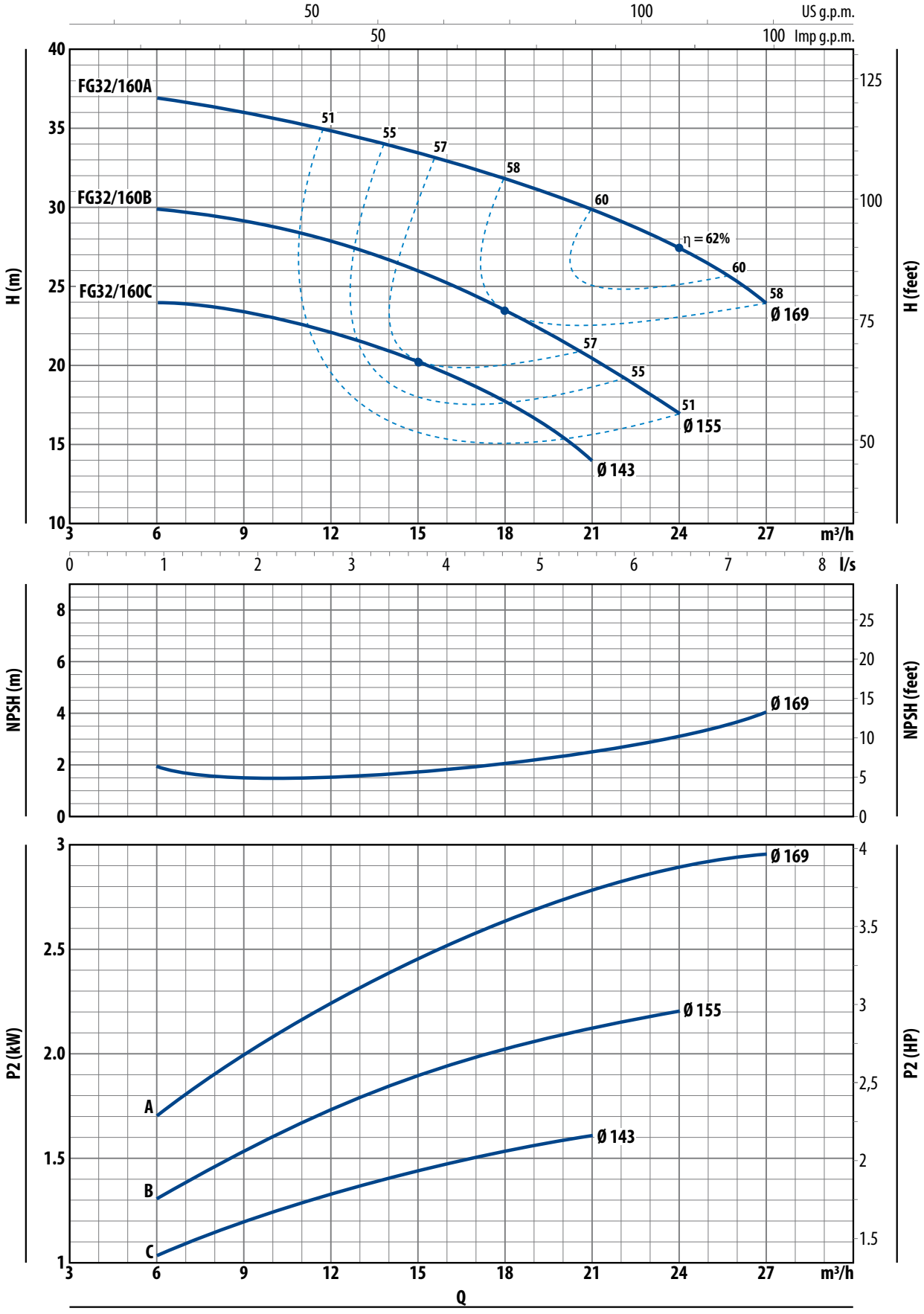


Fig. 2: Determination of the reduced impeller diameter Ø2

FG32/160

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m

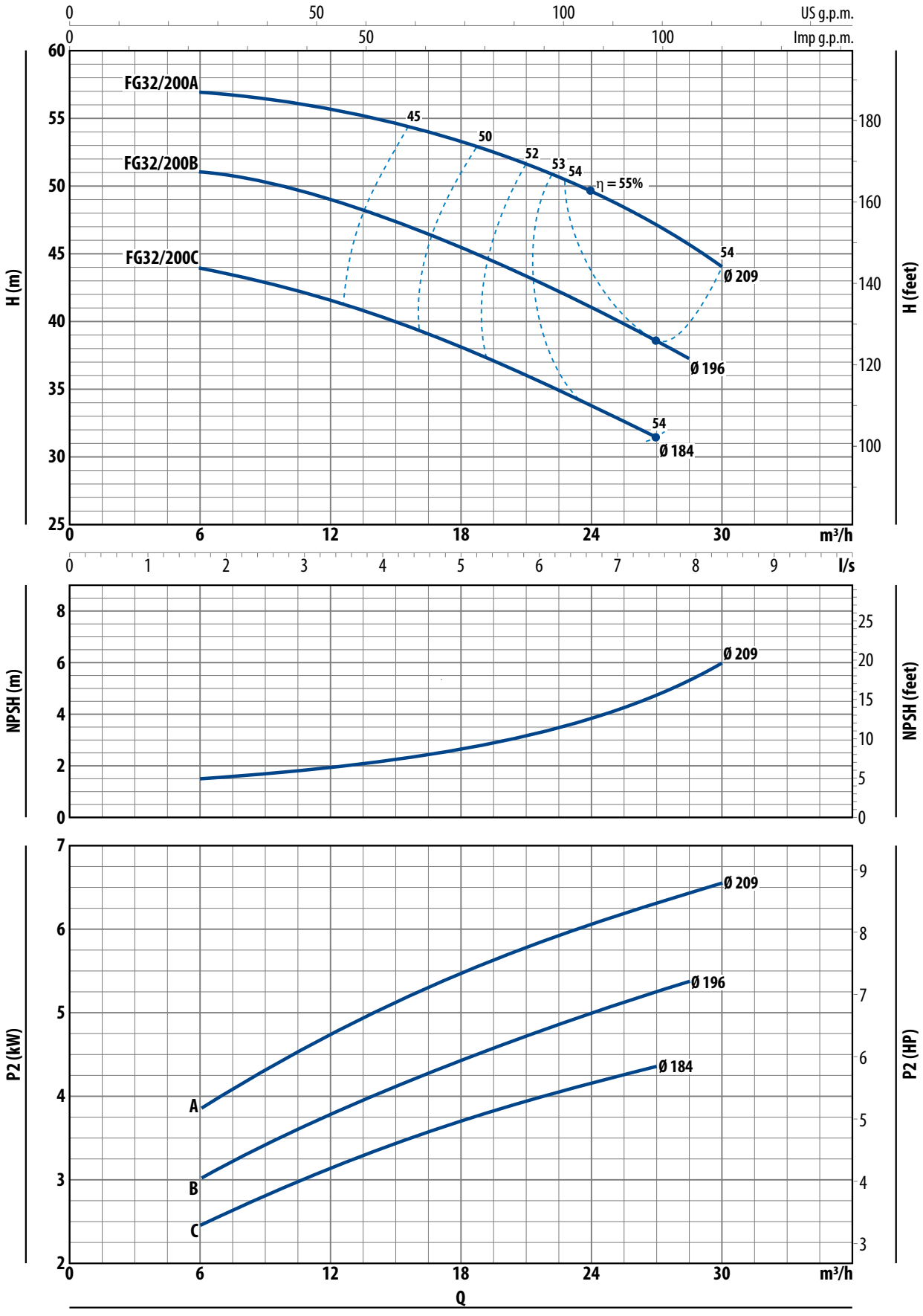


FG32/200

PEDROLLO ... the spring of life

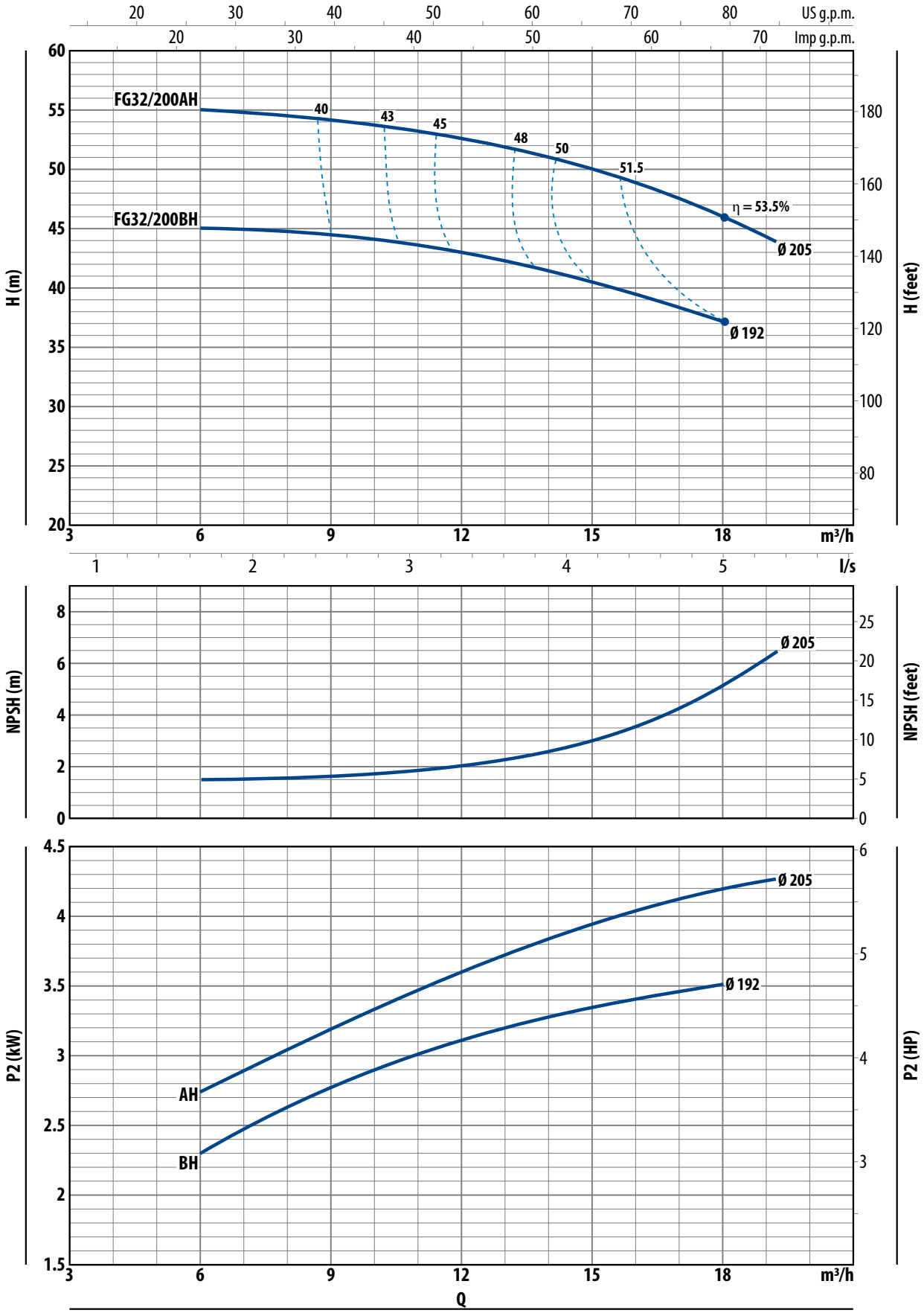
CHARACTERISTIC CURVES

n= 2900 1/min 2 Pole 50 Hz HS= 0 m



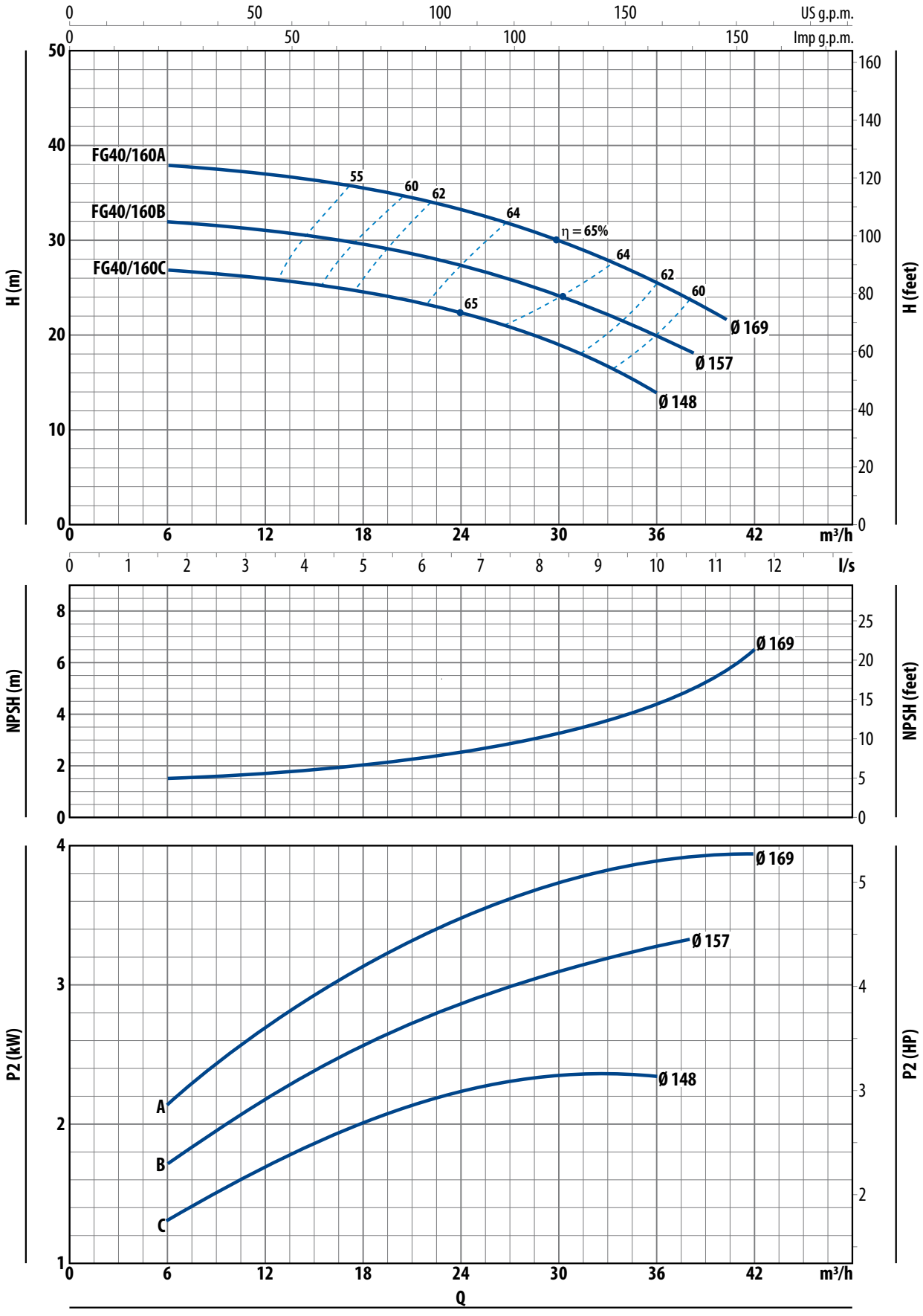
FG32/200H

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



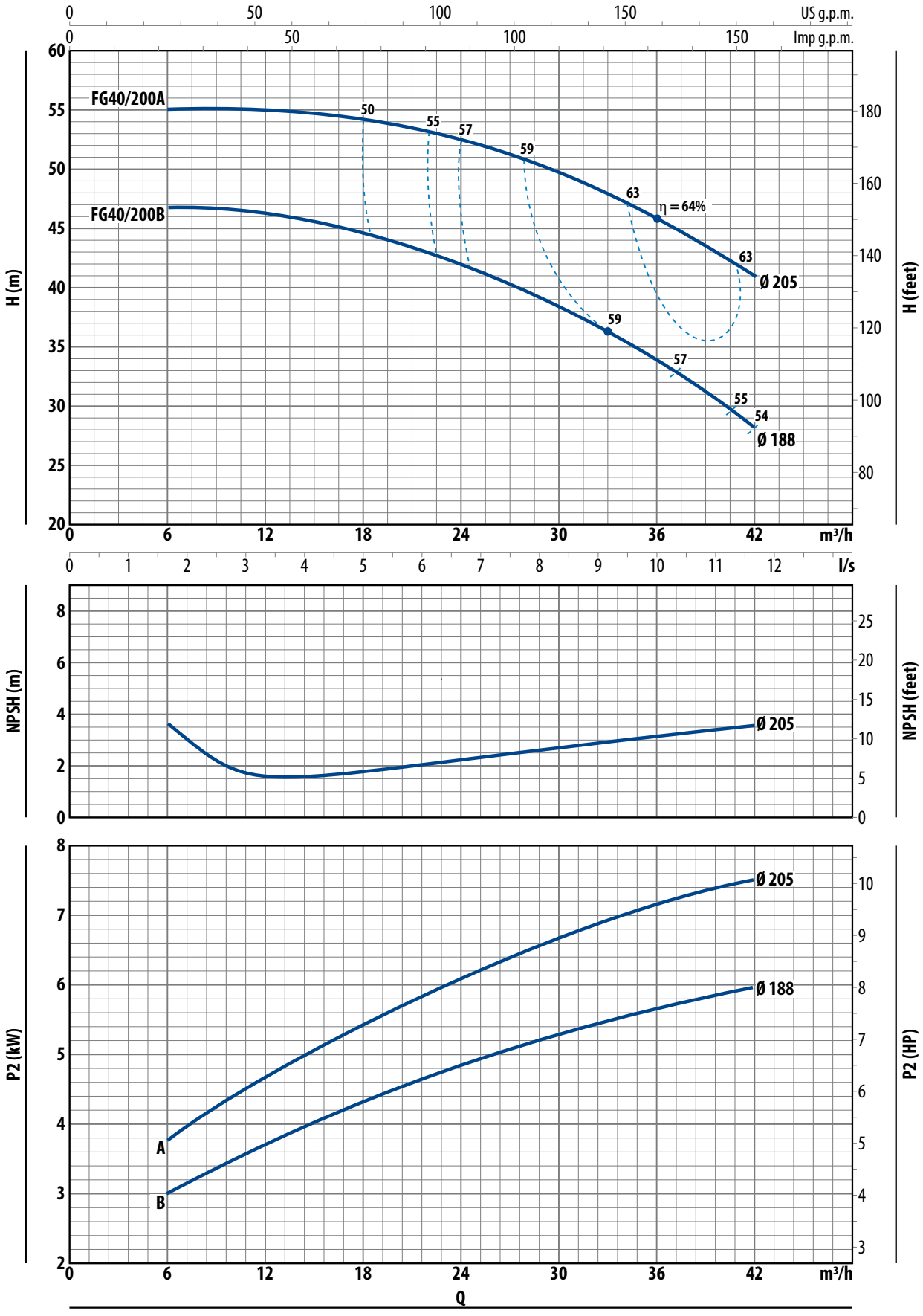
FG40/160

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



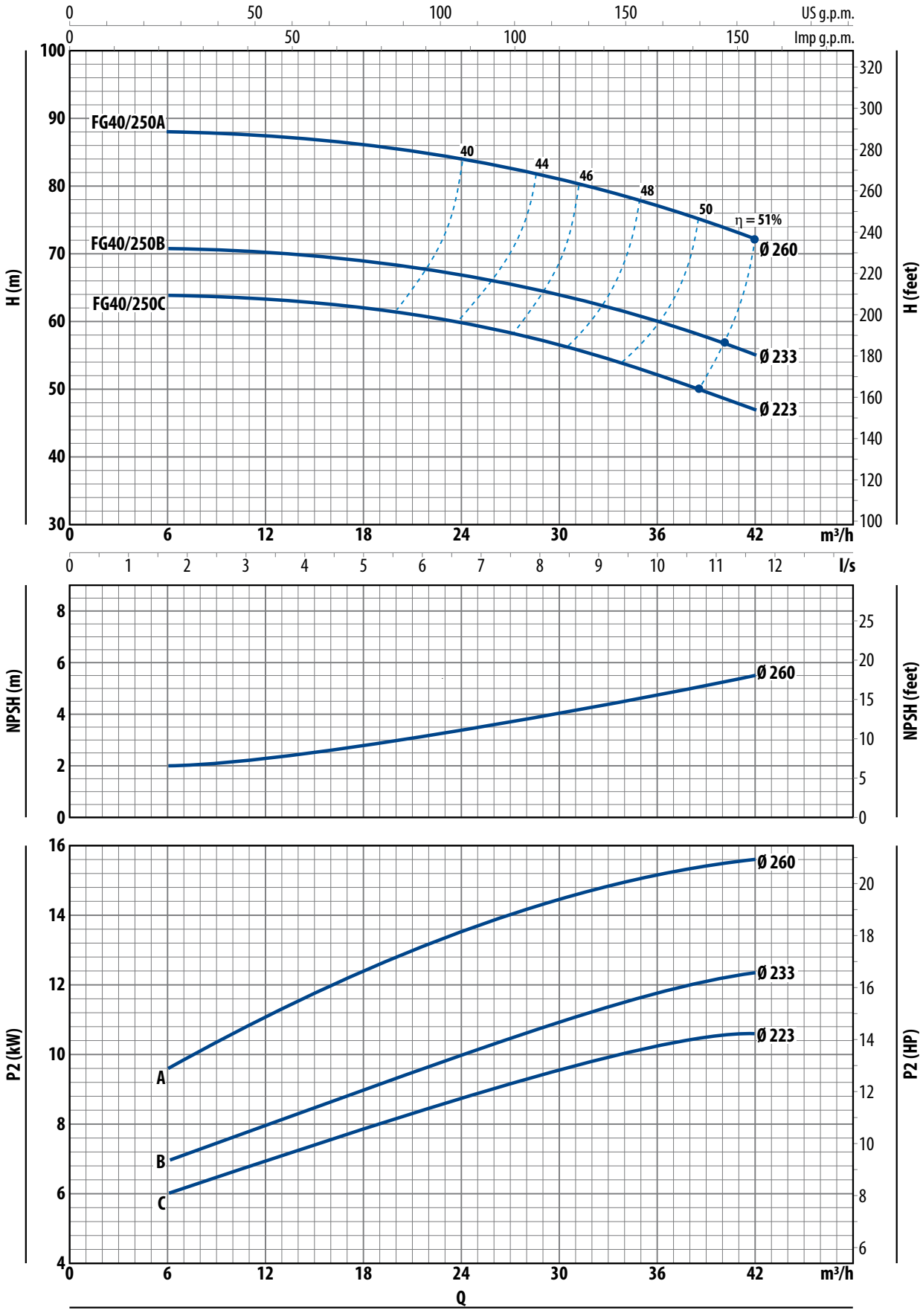
FG40/200

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



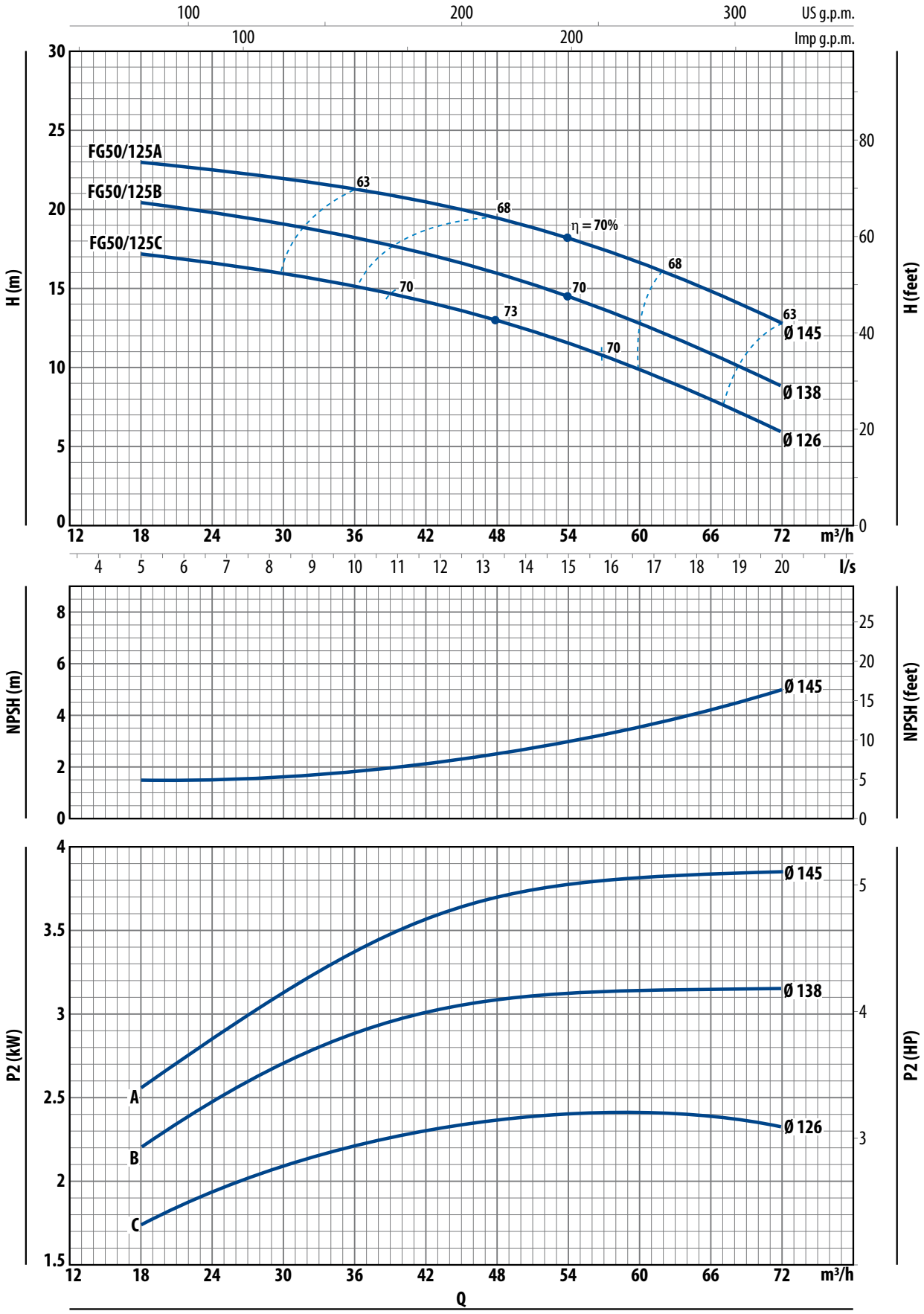
FG40/250

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



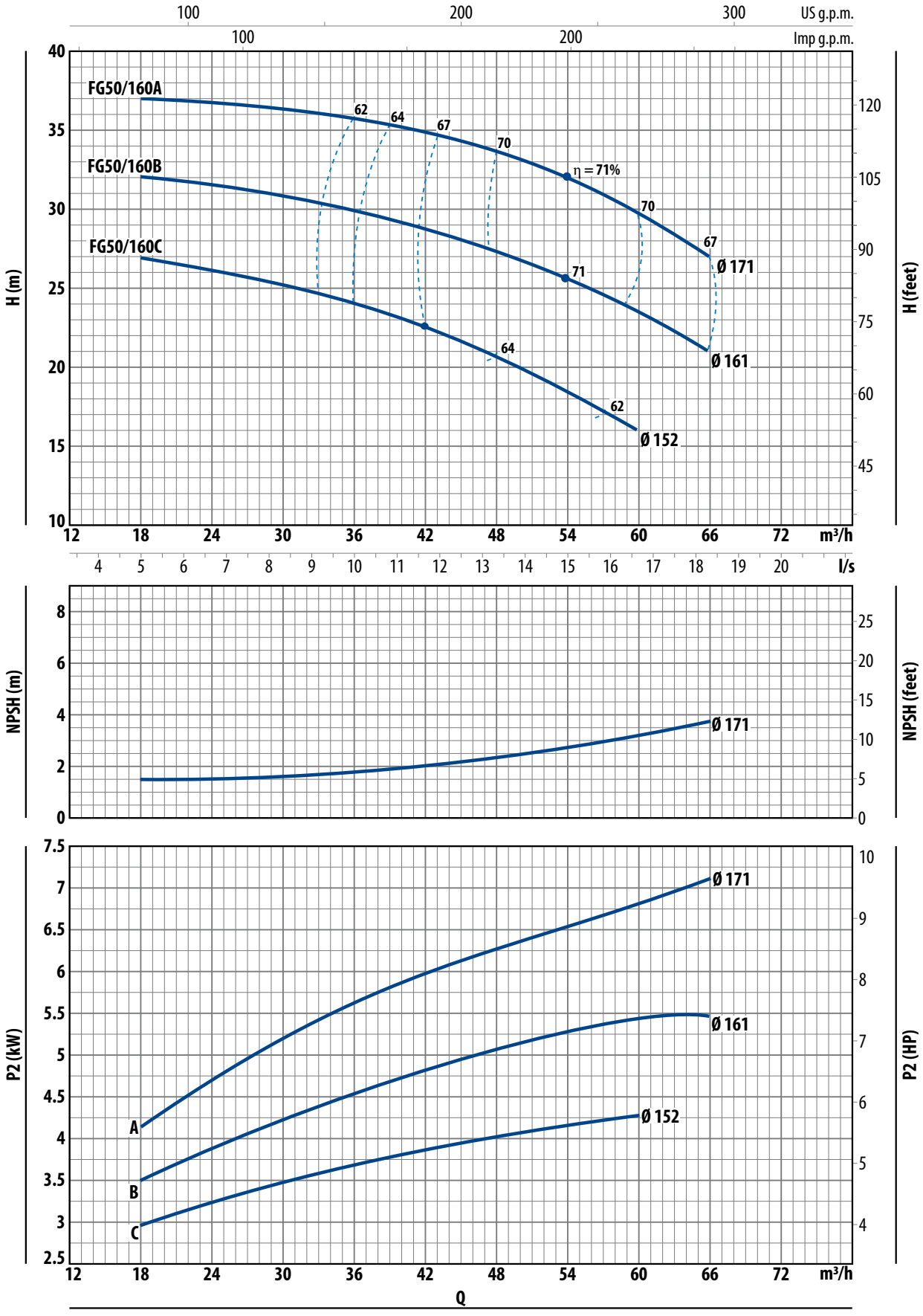
FG50/125

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



FG50/160

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



FG50/200

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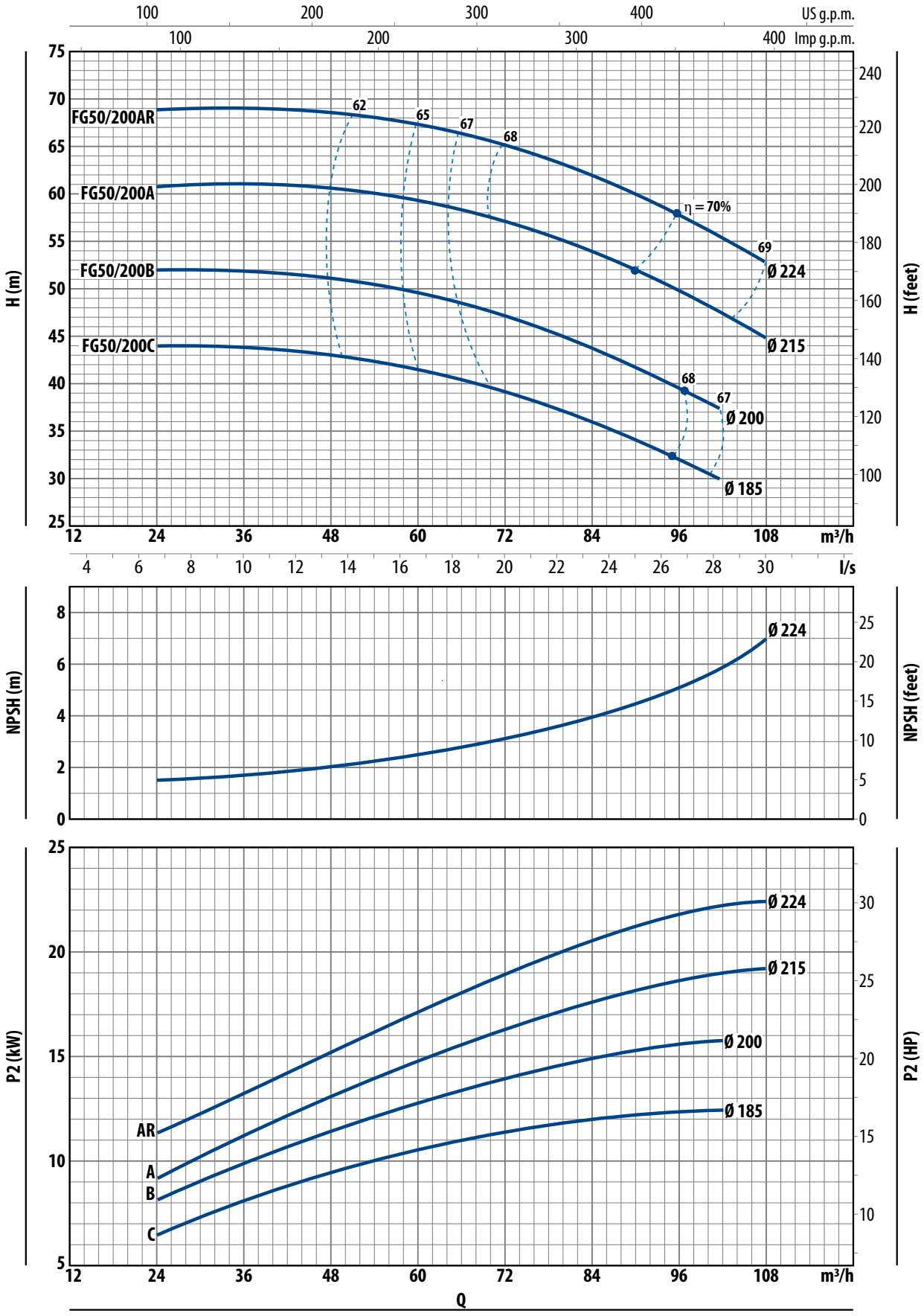

FG50/250

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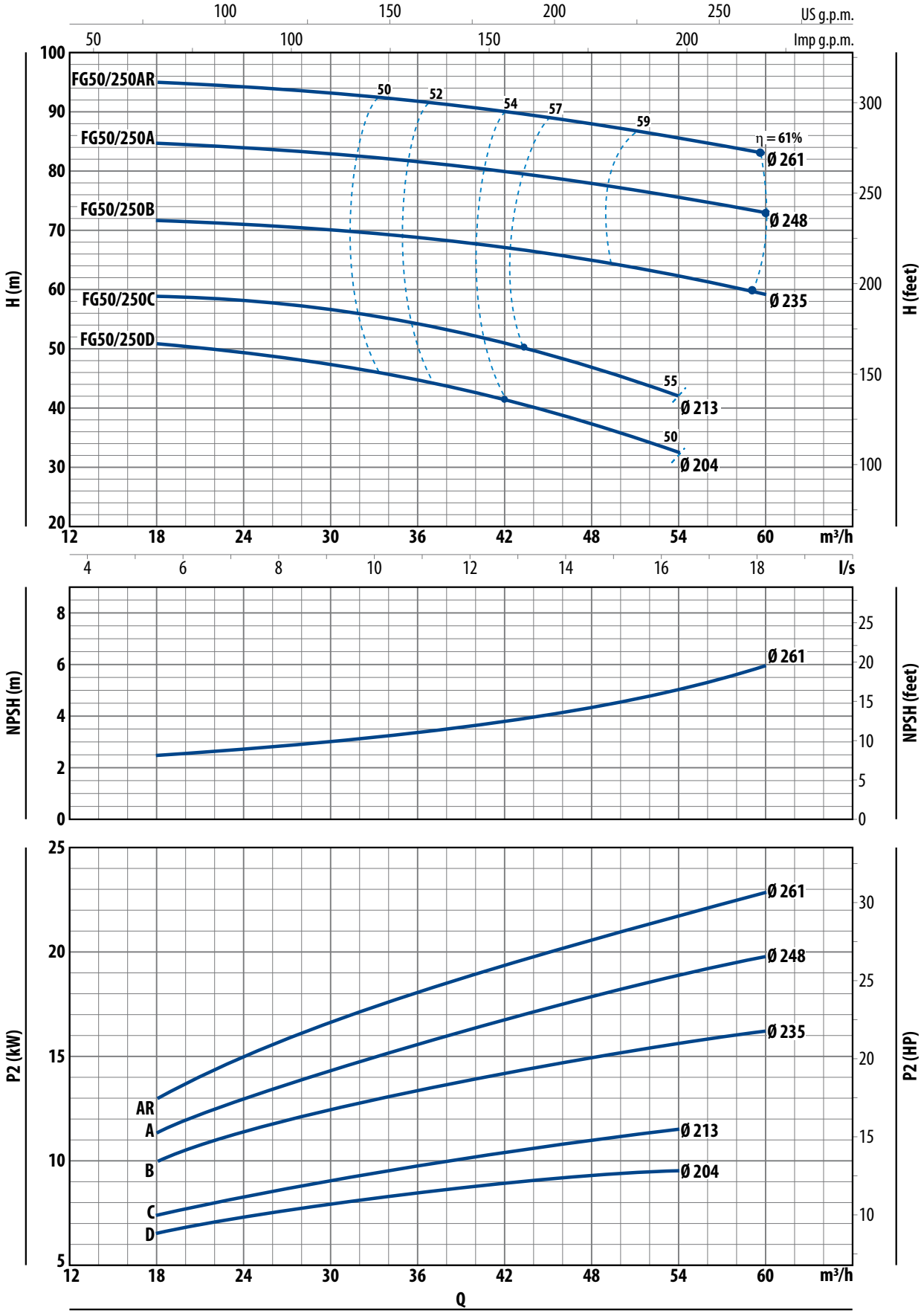
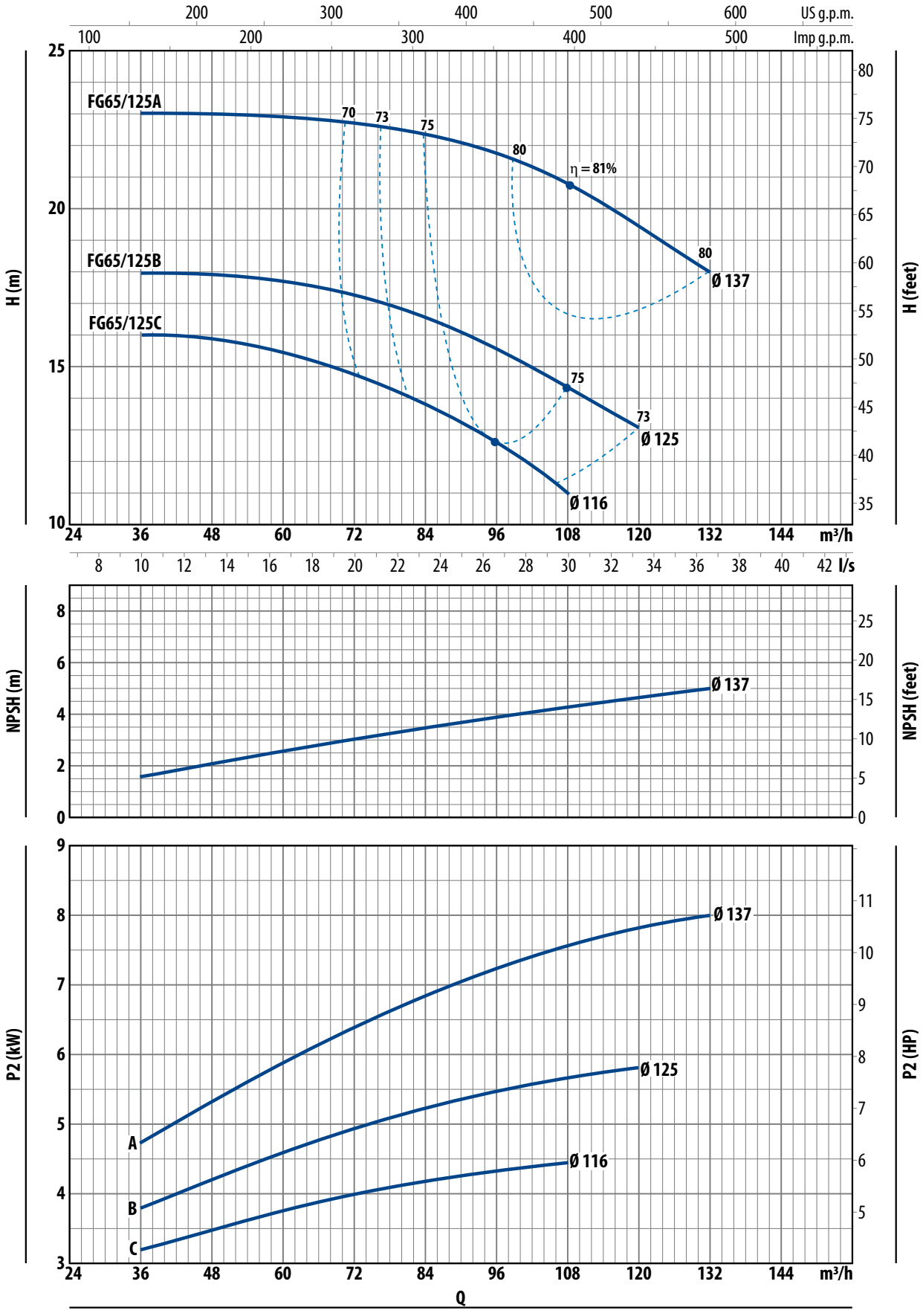


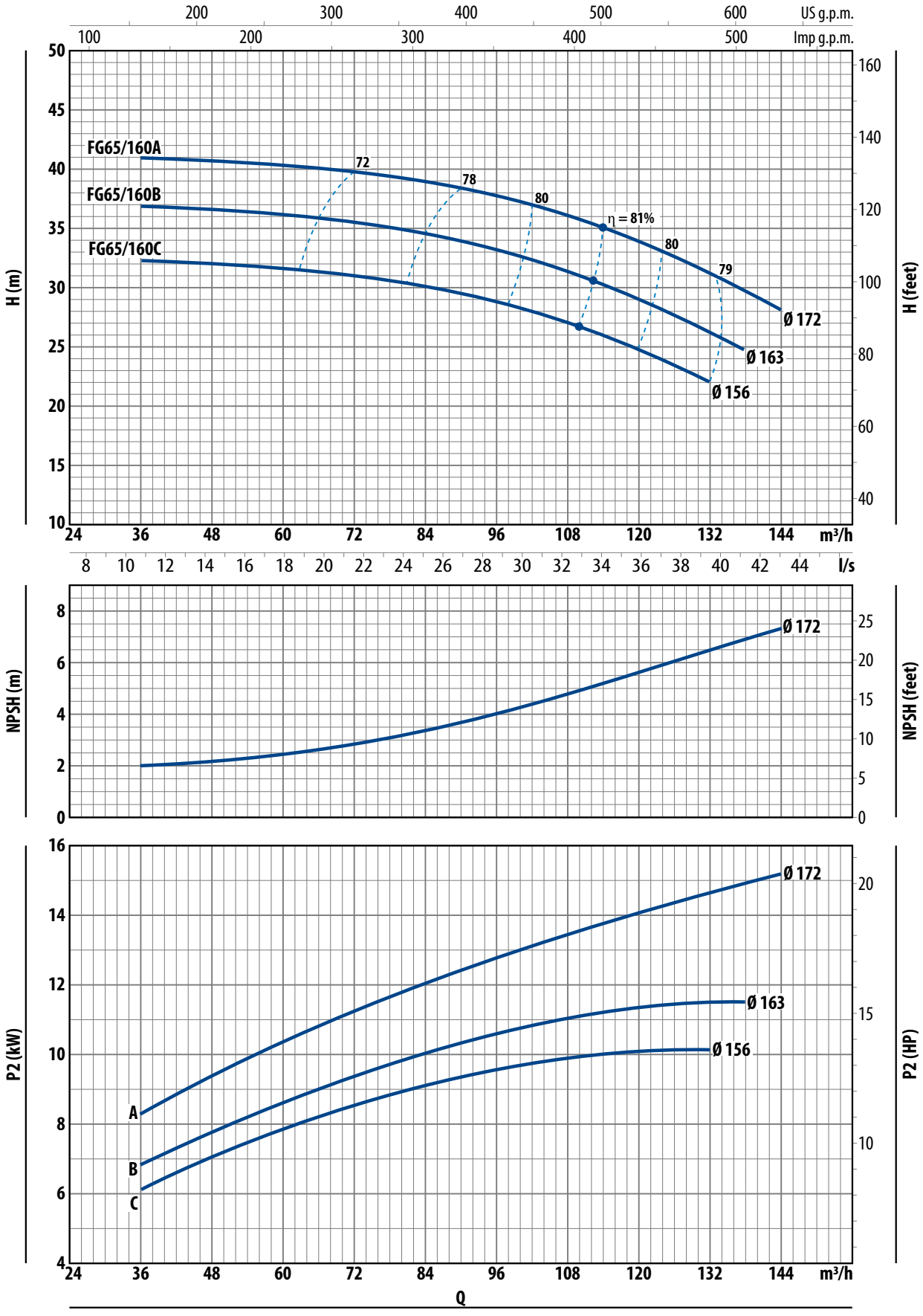
FG65/125

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



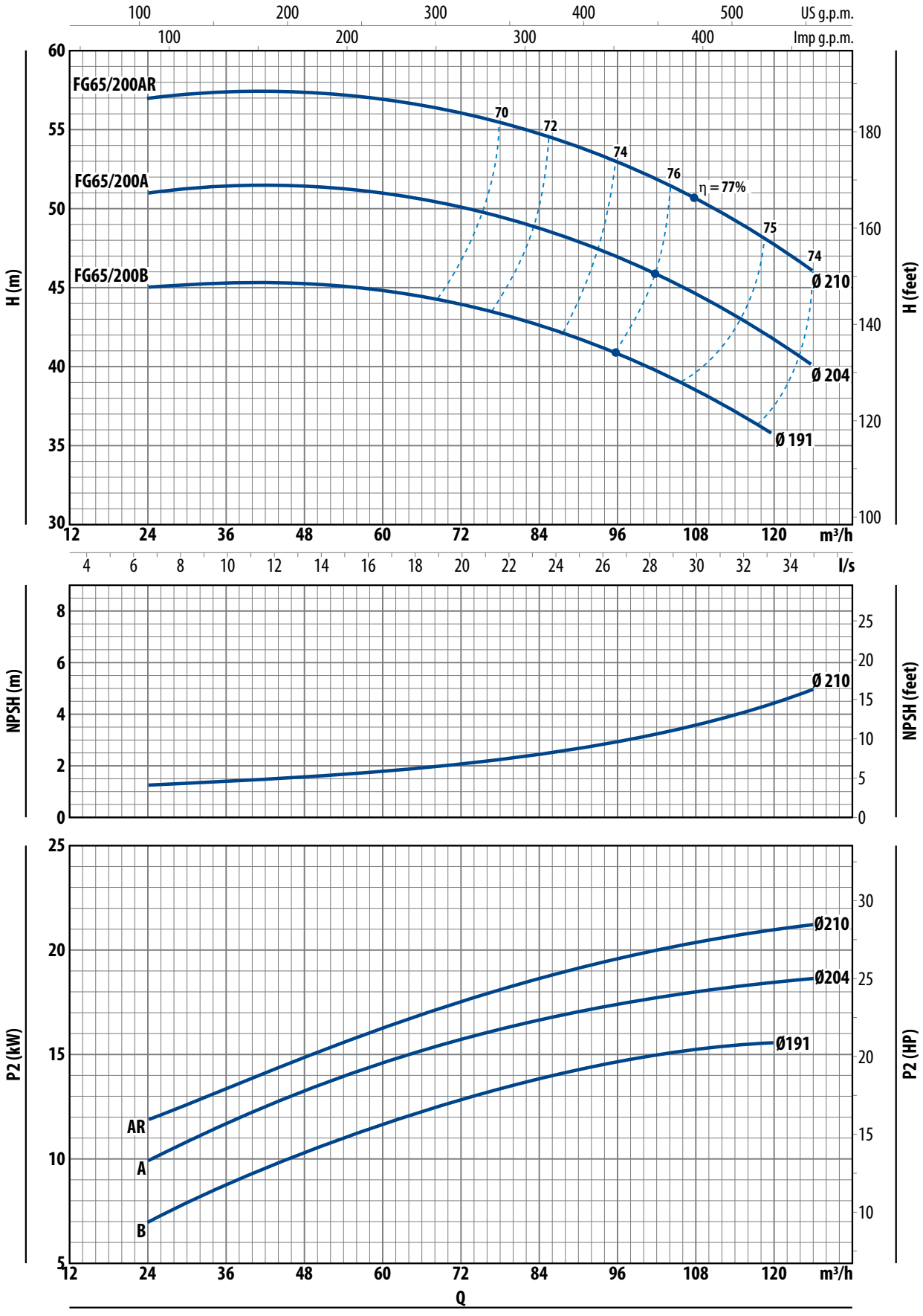
FG65/160

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



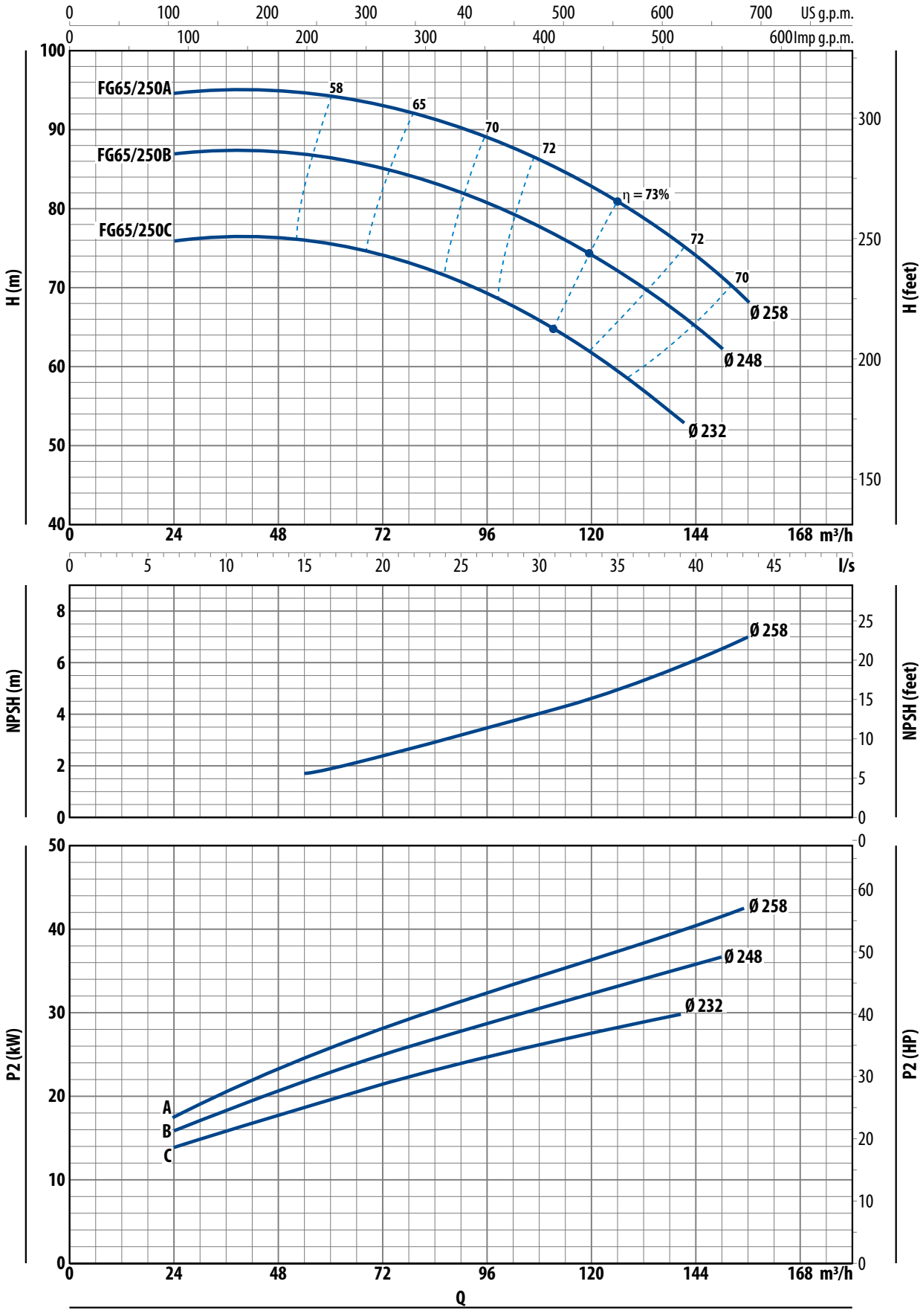
FG65/200

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



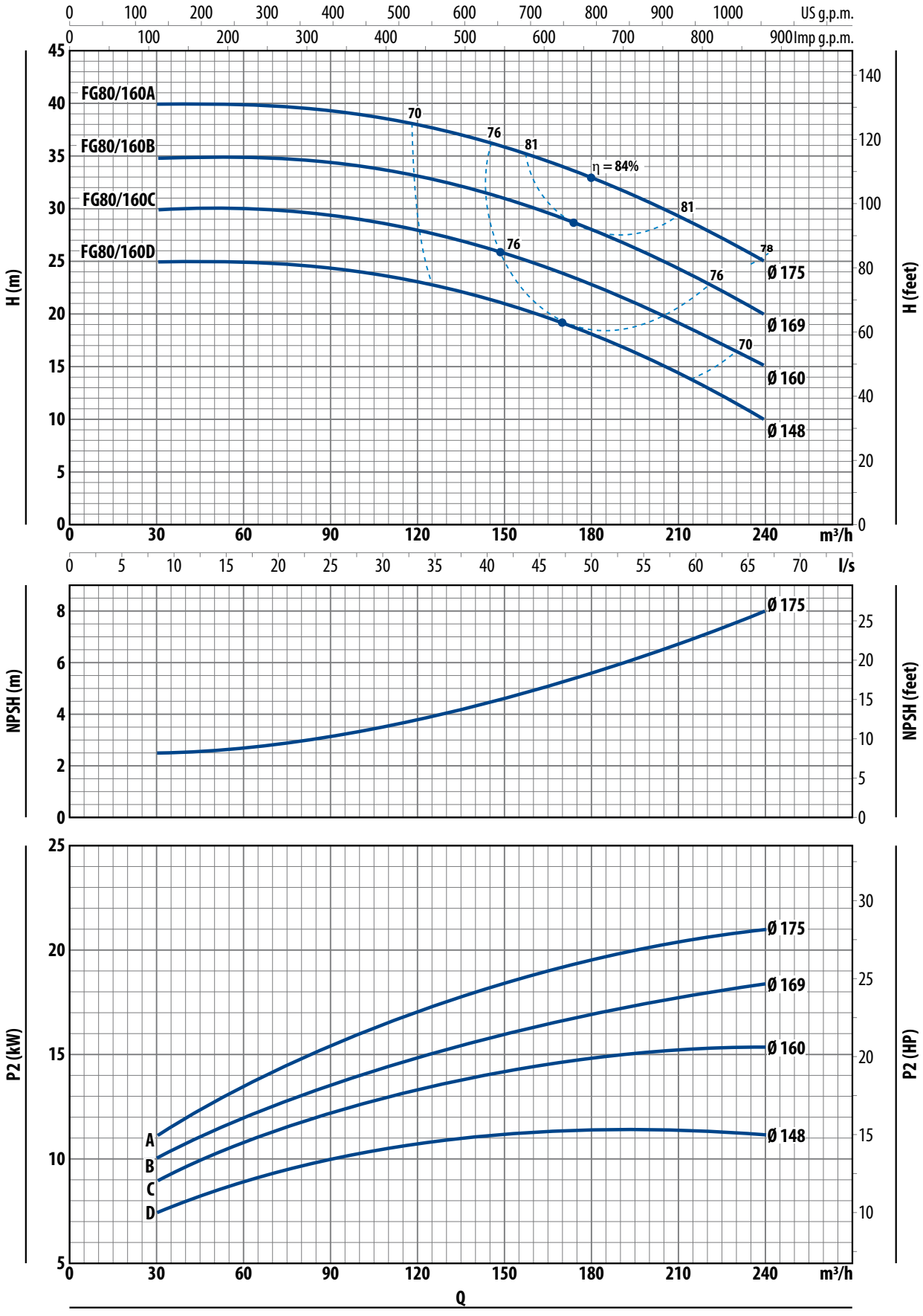
FG65/250

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



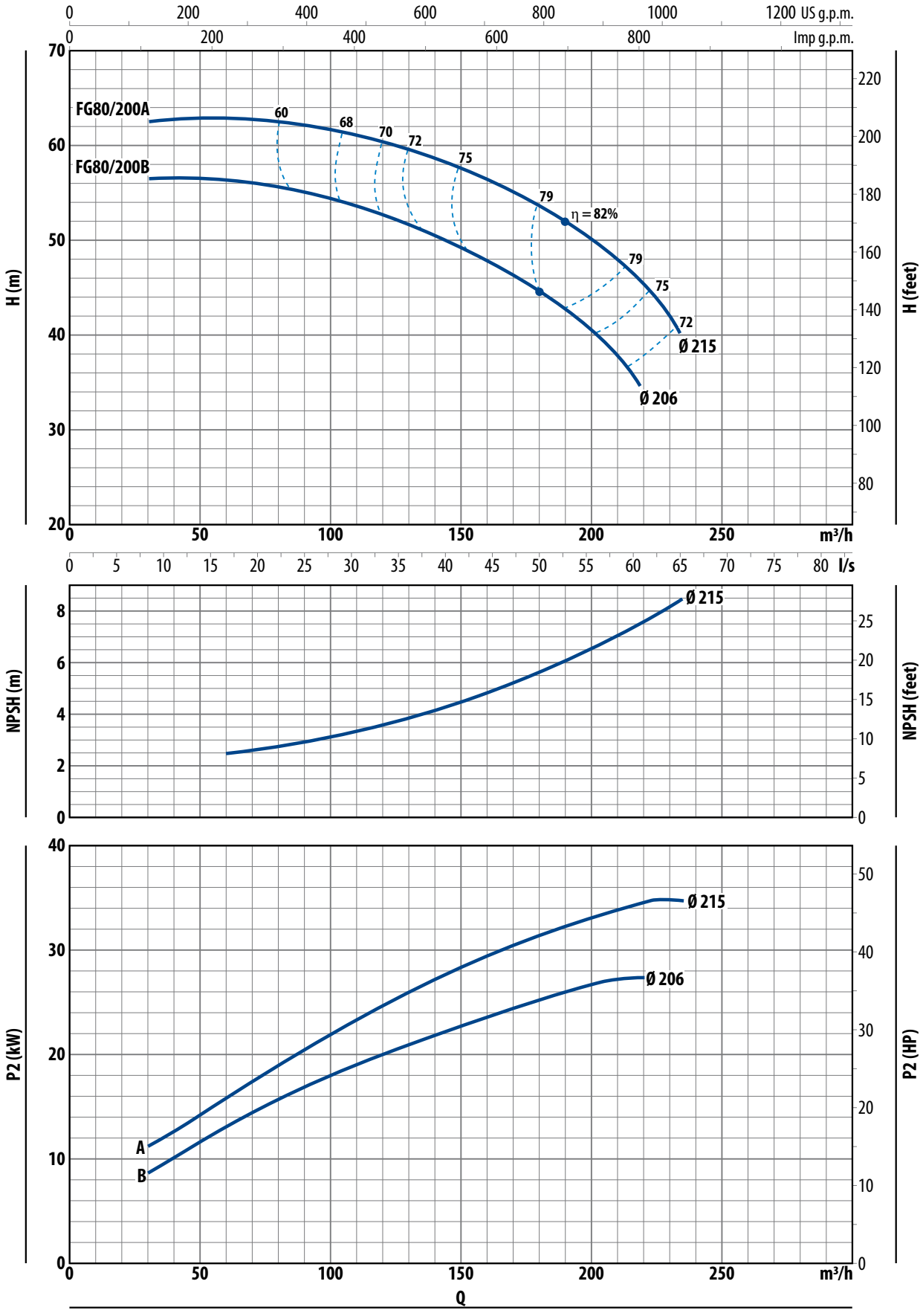
FG80/160

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



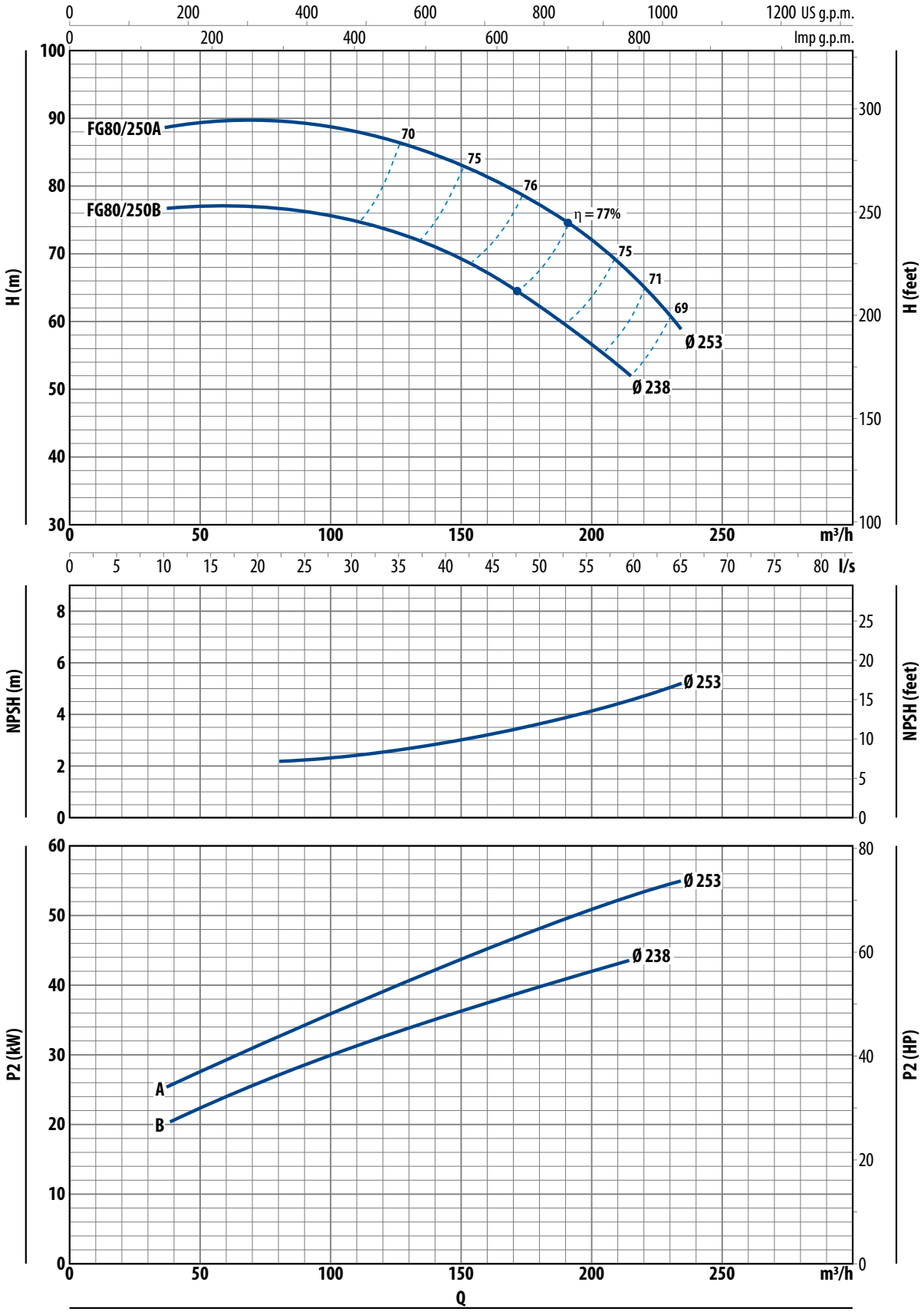
FG80/200

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



FG80/250

CHARACTERISTIC CURVES **n= 2900 1/min 2 Pole 50 Hz** HS= 0 m



FG100/160

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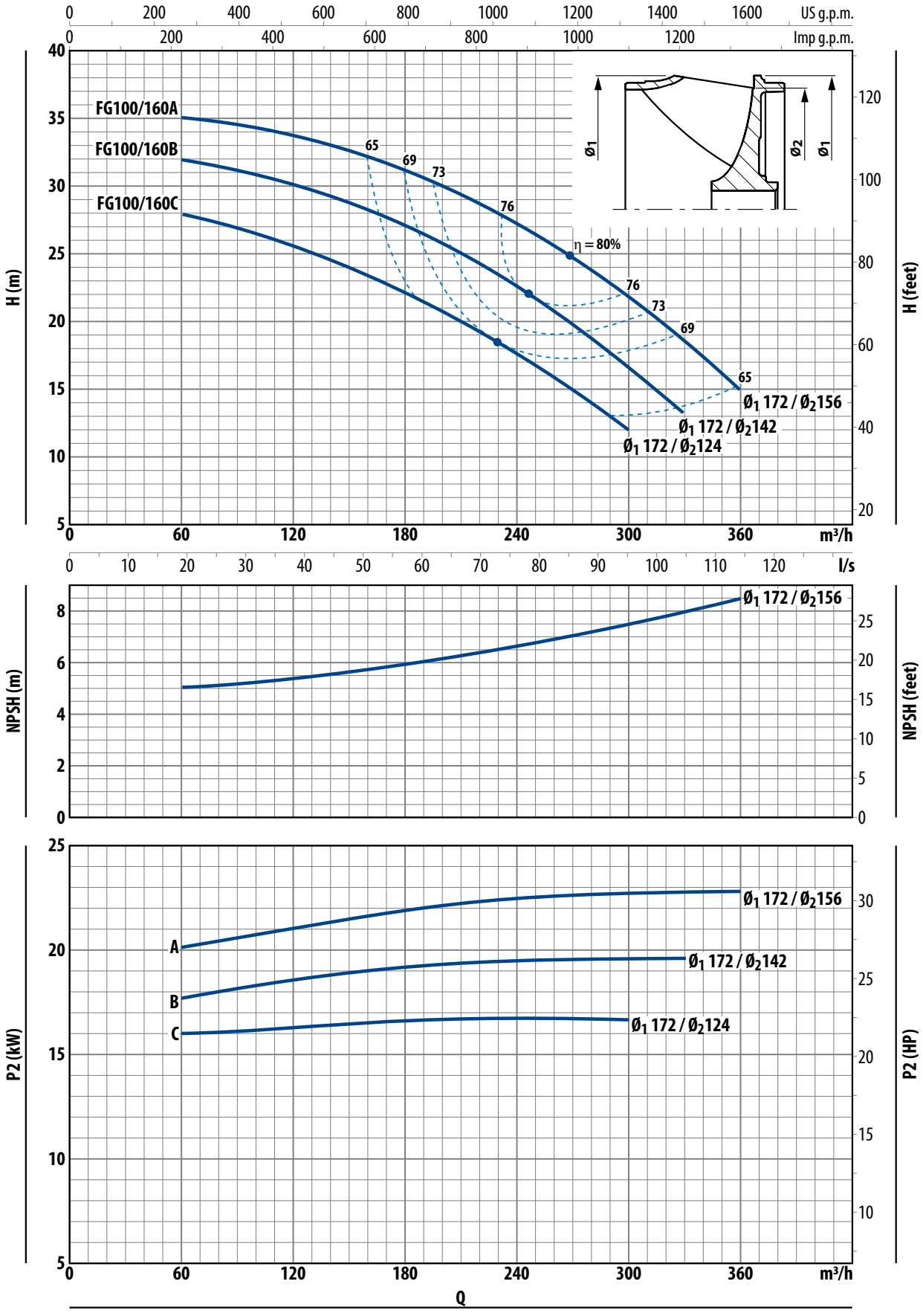

FG100/200

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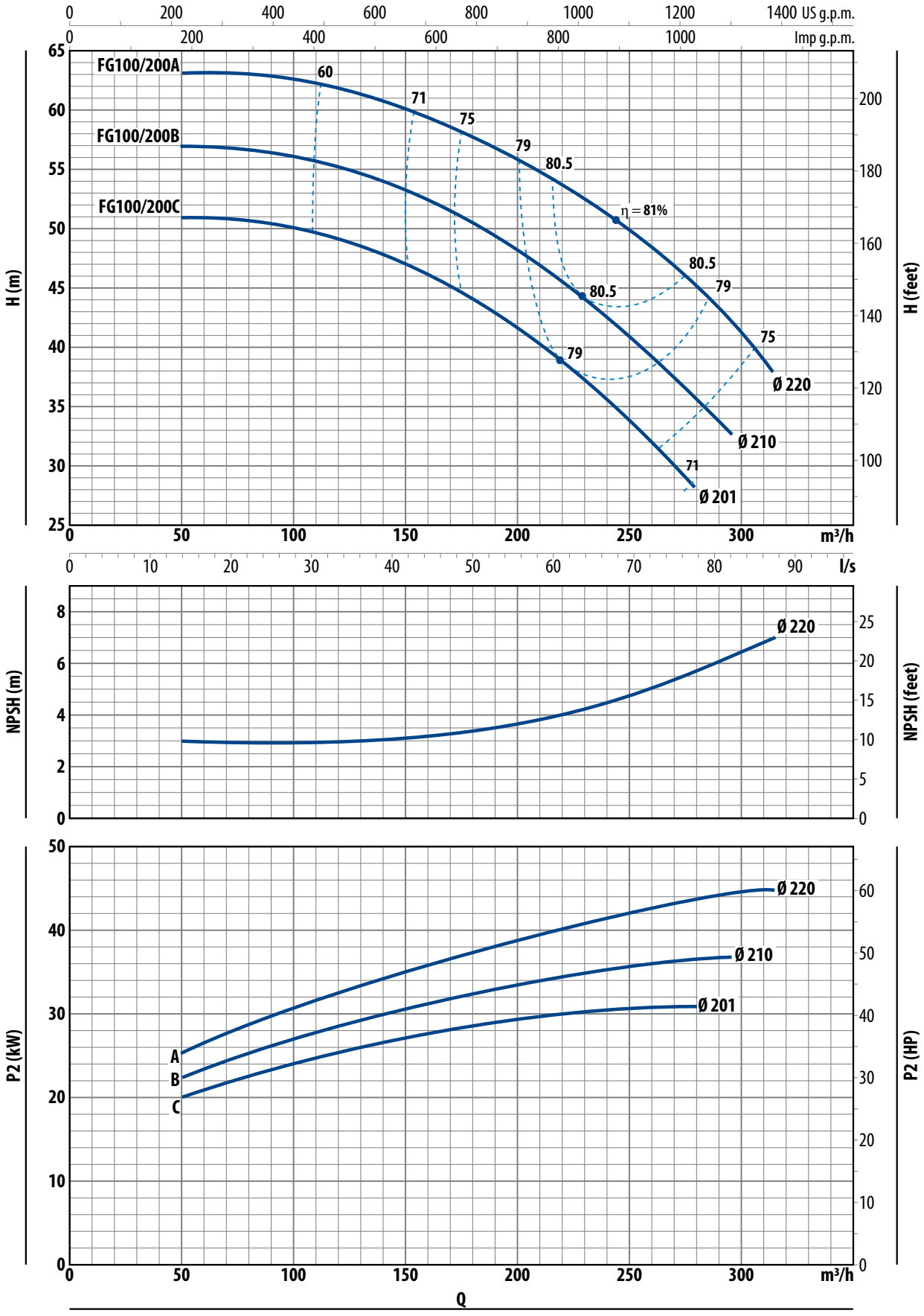

FG100/250

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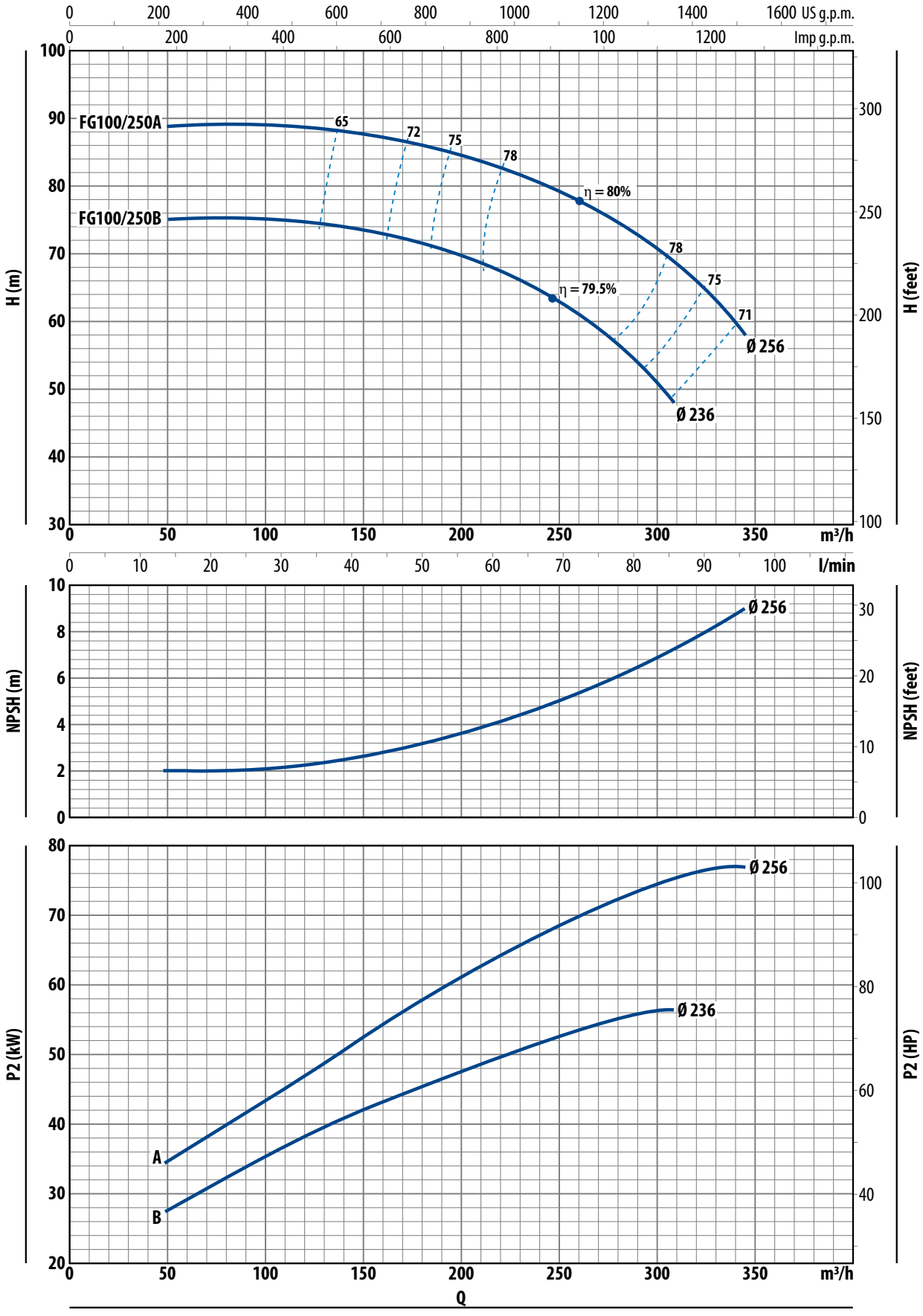

REGULATION (EU) N. 547/2012

- Minimum efficiency index MEI ≥ 0,10 for water pumps according to the (EU) Regulation current from the 1th of January 2013.
- The benchmark for most efficient water pumps is MEI ≥ 0,70.
- The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.
- The operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.
- Information on benchmark efficiency is available www.europump.org/efficiencycharts.

Notes