SERIES

APN

Process Pumps

N-906 C/ANSI B73.1 (OH-1)

Approved American National Standard ANSI

ANSI B73.1

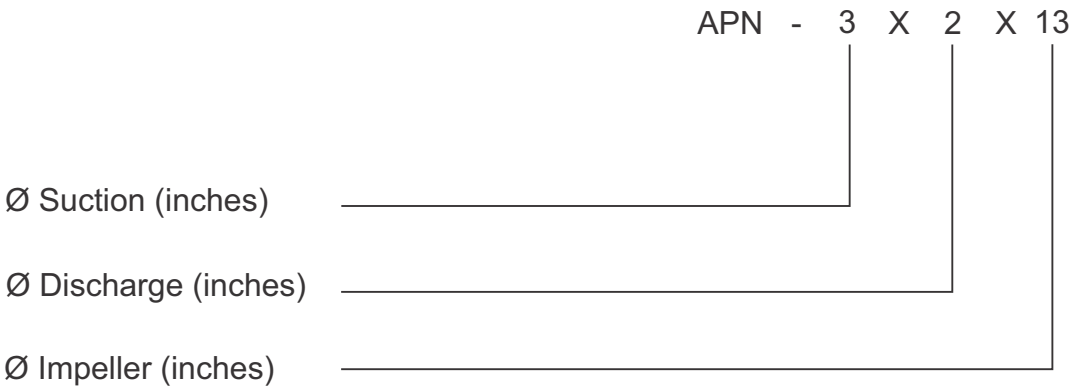
IMBIL®

Pumping Solutions

INTRODUCTION

This catalog describes the pump models of the APN line manufactured by IMBIL and includes technical information on construction techniques and characteristic curves of each model. IMBIL and itsrepresentatives are always at your service to provide you with any further information and technical assistance.

NOMENCLATURE



PUMPS APN

ANSI B73.1

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APPLICATIONS

The pumps from the APN lines are indicated for the pumping in chemical and petrochemical industries, siderurgy, food and drinks industries, sugar and alcohol plants and paper and pulp industry..

CHARACTERISTICS

The pumps are designed according to **ANSI B73.1** 2001 edition, over hung, horizontal shaft pumps, single stage, horizontal suction and vertical center line discharge, with “Back Pull Out” construction allowing the disassembly for eventual maintenance and repair from the back part without affecting the alignment and fixation of the piping..

Spiral housing casted in one single piece, with the fixation supports incorporated. Suction nozzle on the horizontal position and the discharge nozzle on the vertical position at the center line.

The Shaft Sealing is ensured by a gasket in the Standard execution, or optionally by a mechanical seal.

The Shaft has a protective bushing in the stuffing box packing region preventing the contact between the shaft and the pumped liquid.

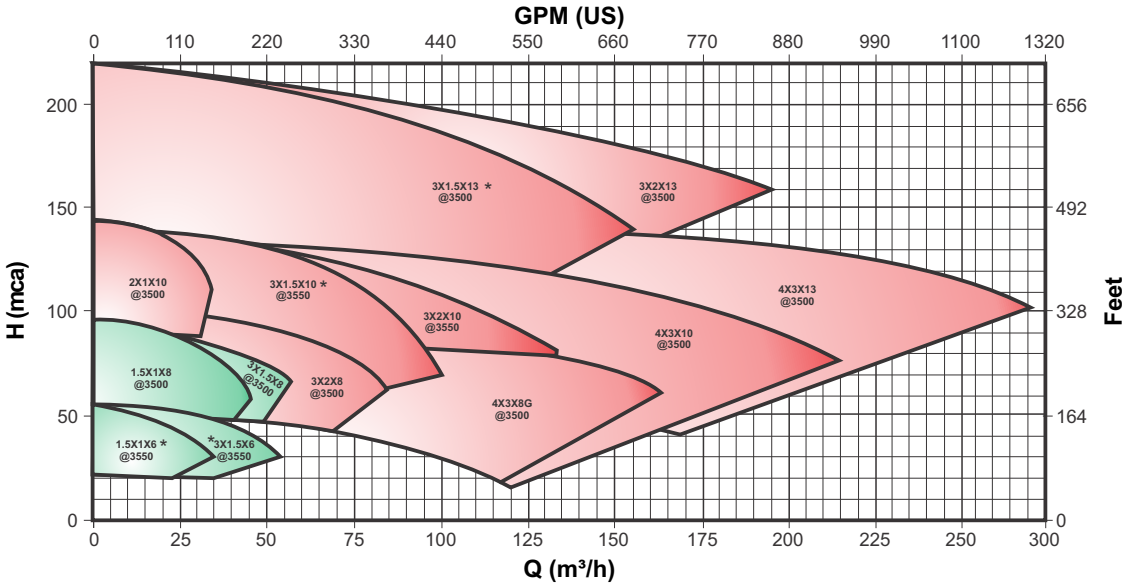
The impeller is open, providing more wear area in comparison with closed impeller.

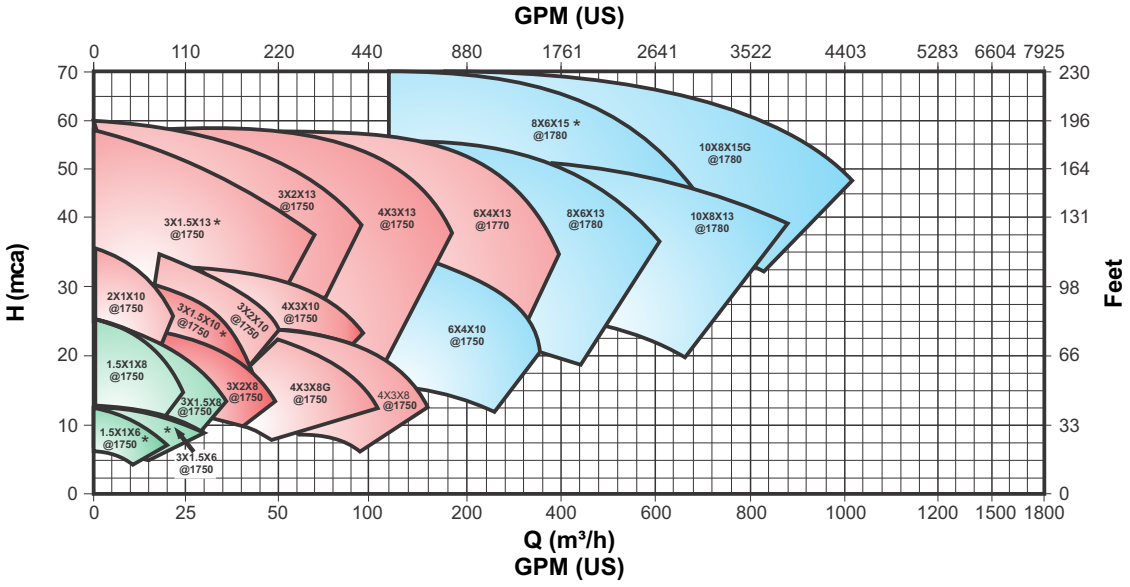
The bearing has a strong construction that assures high rigidity to the set and assures long use life of the bearings.

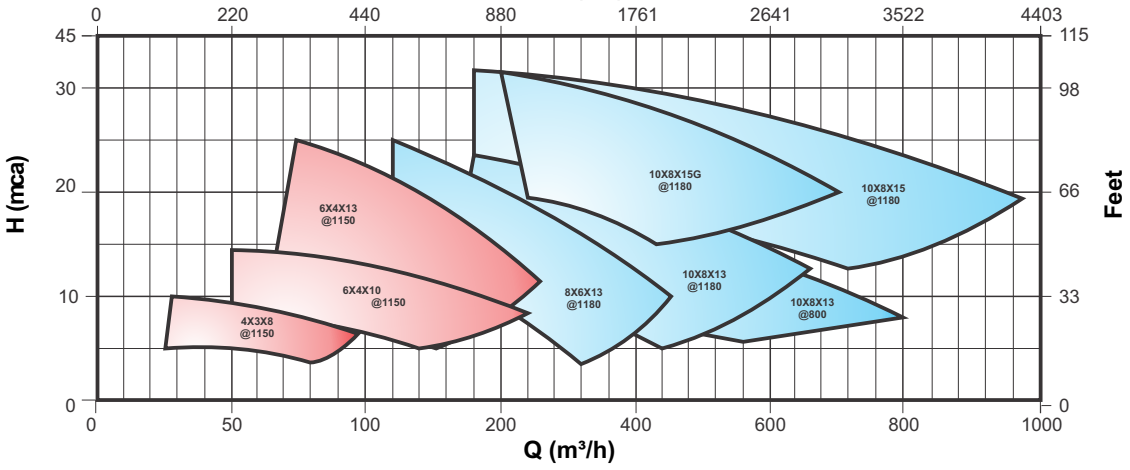
A very important characteristic of the bearing is that is a modular design, interchangeable with several pump sizes. In addition, they can be equipped with a bearing protector, several types of lubrication systems and monitoring systens.

The adjustment of the clearance between the impeller and the volute is made through a simple bearing regulation, which allows maintaining the same performance throughout the pump use life without loosing efficiency, flow and pressure due to natural wearing of the impeller and volute.

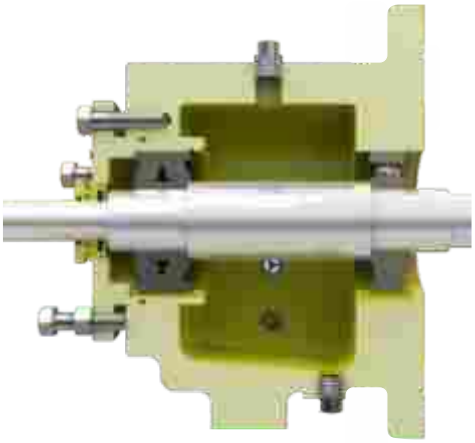
HYDRAULIC COVERAGE







(*) see page 9



BEARING DESIGN

3 year warranty

- Developed to provide longer life for the antifriction bearings (twice longer in average) due to a greater oil storage capacity, which allows a larger and better reduction lubrication and colling side fins (up to 20% heat transfer) too.
- Has a magnetic drain for the removal micro materials that may separate from the parts during the equipment operation.
- Greater rigidity, durability and safety during operation.

IMPELLER DESIGN

- Suitable for a large range of applications;
- Suction design assures easier sliding of fibrous materials;
- Through the impeller's axial adjustment project, assuring the same efficiency without the need for disassembly and maintenance of the pump, or changing a renewable part.
- Has a larger wear surface area than the closed impellers, allowing a uniform wearing and assuring a longer use life of the impeller, which is normally is twice the one of the closed impeller.

BEARING PROTECTOR

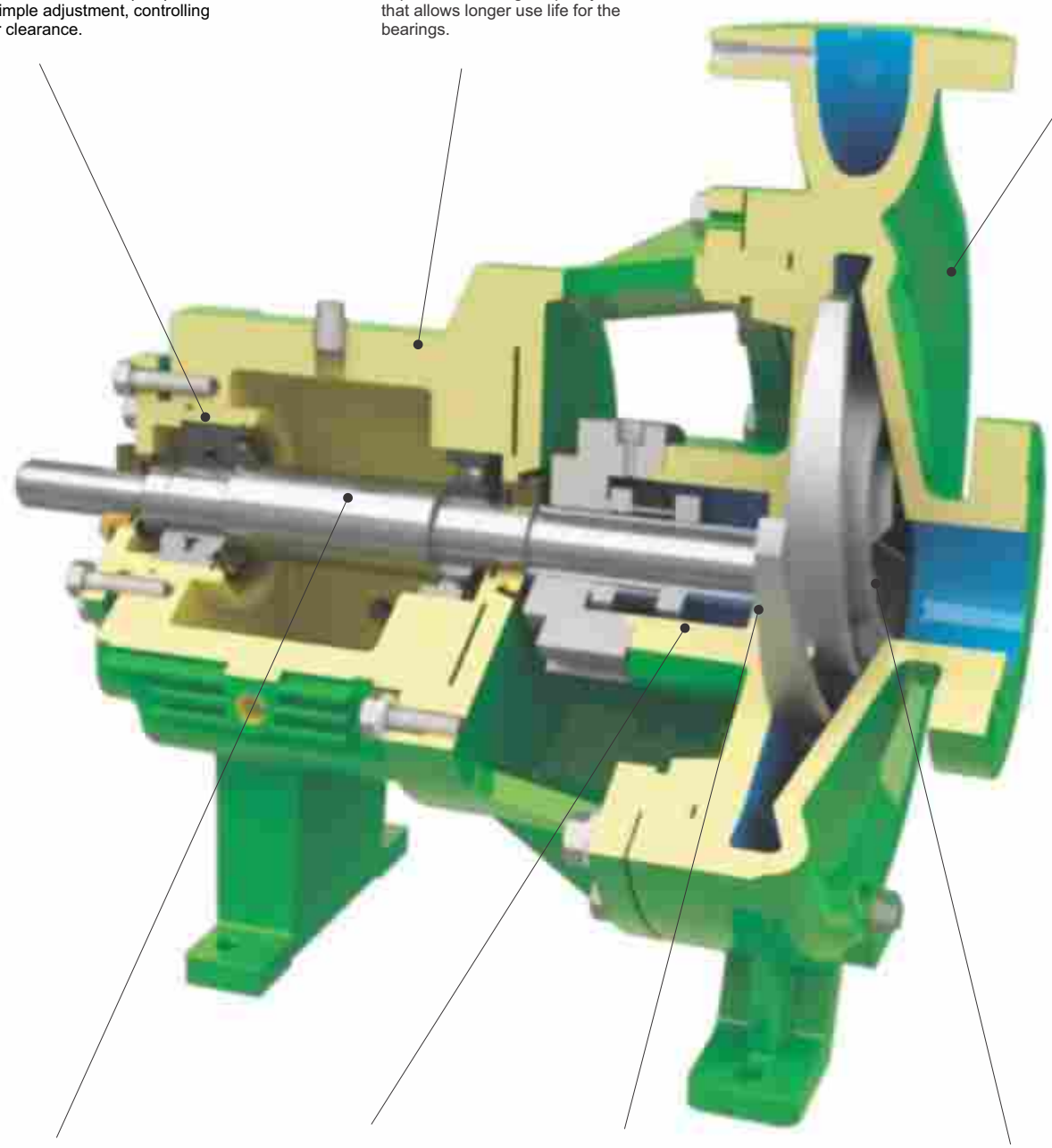
- All the pump sizes are developed to acomodate Bearing Protectors, which guarantee the protection of the bearinghousing and antifriction bearing preventing the entrance of impurities, corrosive liquids and other materials that may contaminate the oil and damage bearing.
- The durability of the Bearing Protector in comparison to the other methods used for sealing is infinitely superior, besides the fact that there is no wearing of the shaft as in the conventional methods.

PROJECT

The original characteristics of flow, pressure and efficiency are maintained throughout the use life of the pump through a simple adjustment, controlling the impeller clearance.

Reinforced bearing to reduce vibrations, improving the stability. Improved oil storage capacity that allows longer use life for the bearings.

Housing designed
ding with the
pull-out" concept
litate maintenance.



Heavy duty shaft design, developed for minimum deflection below 0.05mm to improve the sealing conditions, as per normative requirement.

Sealing box available with gaskets and mechanic seal according to ASME B73.1

Impeller developed to meet the requirements of chemical processes of industries in general, mainly for the pumping of corrosive and abrasive products, solids in suspension and viscous liquids. It has back blades to reduce the axial thrust and reduce the pressure over the sealing box.

Impeller fixed on the shaft through a thread, without the use of a fixation nut, which keeps the impeller entrance free allowing smooth flow and avoiding adherences, interweaving and clogging.

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INTERCHANGEABILITY BETWEEN PUMPS

An advantage of the APN line pumps' design is the modular interchangeability, that is, there are several parts that are common to several pump sizes. Thus, when the user has several pump sizes operating the spare parts stock is reduced since the same part will fit more than one size.
In the table below we present the parts interchangeability between the several pump sizes:

BERING HOUSING 01	ADAPTER	COVER	IMPELLER	VOLUTE CASING	SIZES
					APN 1.5X1X6
					APN 3X1.5X6
					APN 1.5X1X8
					APN 3X1.5X8

BERING HOUSING 03	ADAPTER	COVER	IMPELLER	VOLUTE CASING	SIZE
					APN 8X6X13
					APN 10X8X13
					APN 8X6X15
					APN 10X8X15
					APN 10X8X15G

BERING HOUSING 02	ADAPTER	COVER	IMPELLER	VOLUTE CASING	SIZES
					APN 3X2X8
					APN 4X3X8
					APN 4X3X8G
					APN 2X1X10
					APN 3X1.5X10
					APN 3X2X10
					APN 4X3X10
					APN 6X4X10
					APN 3X1.5X13
					APN 3X2X13
					APN 4X3X13
					APN 6X4X13

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TECHNICAL DATA

TECHNICAL DATA										
Size	Pump Weight (Kg)	Minimun flow		Impeller DIA Max (mm)	Number of vanes	Solid Handling DIA (mm)	Bearing		Bearing Housing	
		3500/2900 rpm	1750/1450 rpm				Radial	Thrust	Size	oil capacity (ml)
APN - 1.5 X 1 X 6	ON REQUEST									
APN - 1.5 X 1 X 8	45	20%	10%	8 (203)	5	0.35 (8,75)	6207	3306	1	400
APN - 3 X 1.5 X 6	ON REQUEST									
APN - 3 X 1.5 X 8	50	20%	10%	8 (203)	5	0.44 (11,11)	6207	3306		
APN - 3 x 2 x 8	95	20%	10%	8.4 (213)	5	0.5 (12,7)	6309	3309		
APN - 4 x 3 x 8	100	20%	10%	8.4 (213)	5	1.125 (28,6)	6309	3309		
APN - 4 x 3 x 8G	100	20%	10%	8.4 (213)	5	0.69 (17,5)	6309	3309		
APN - 2 x 1 x 10	95	25%	10%	10 (254)	5	0.44 (11,11)	6309	3309		
APN - 3 X 1.5 X 10	ON REQUEST									
APN - 3 x 2 x 10	105	30%	15%	10 (254)	5	0.37 (9,52)	6309	3309	2	1450
APN - 4 x 3 x 10	120	30%	15%	10 (254)	5	0.62 (15,87)	6309	3309		
APN - 6 x 4 x 10	140	40%	20%	10 (254)	6	1.0 (25,4)	6309	3309		
APN - 3 X 1.5 X 13	ON REQUEST									
APN - 3 x 2 x 13	130	40%	15%	12.6 (320)	5	0.37 (9,52)	6309	3309		
APN - 4 x 3 x 13	155	40%	40%	13 (330)	6	0.62 (15,87)	6309	3309		
APN - 6 x 4 x 13	185	40%	40%	13 (330)	6	1.0 (25,4)	6309	3309		
APN - 8 x 6 x 13	255	40%	40%	13 (330)	6	1.0 (25,4)	6313	3313		
APN - 10 x 8 x 13	305	40%	40%	13 (330)	6	1.0 (25,4)	6313	3313		
APN - 8 X 6 X 15	ON REQUEST								3	3000
APN - 10 x 8 x 15	340	40%	50%	15 (380)	6	1.125 (28,6)	6313	3313		
APN - 10 x 8 x 15	330	40%	50%	15 (382)	6	0.81 (20,6)	6313	3313		

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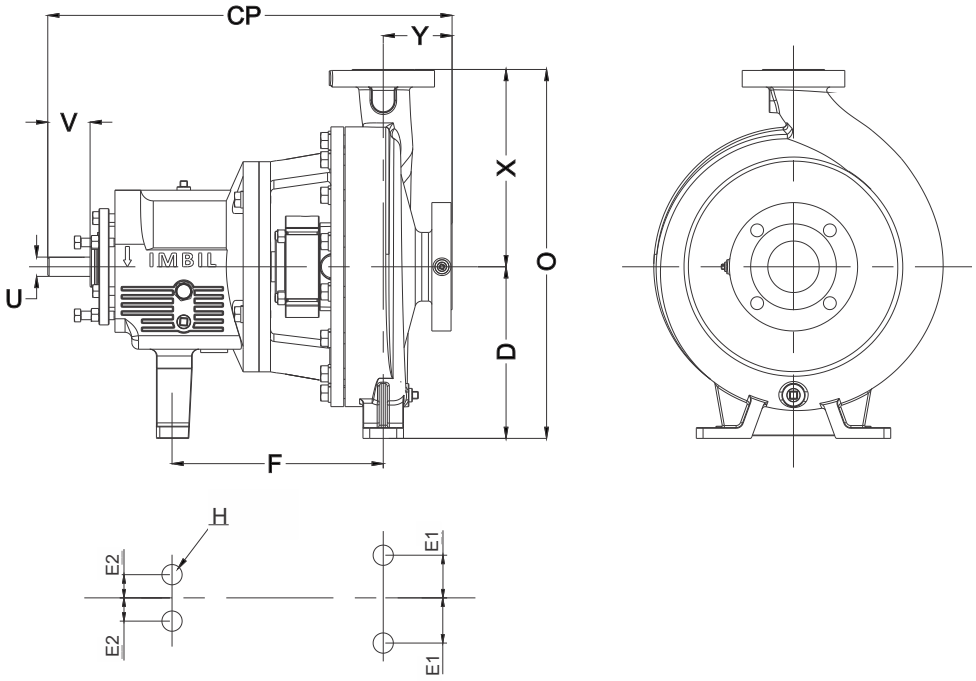
GENERAL ARRANGEMENT



SIZE ANSI B73.1	DISCHARGE (*)	SUCTION (*)	DIMENSION (mm)											
			CP	D	2(E1)	2(E2)	F	H	O	U		V(Mín)	X	Y
										DIA	key			
AA - 1.5 X 1 X 6	25	40	445	133	152	0	184	16	298	22.23	(4.76 X 2.38)	51	165	102
AA - 1.5 X 1 X 8	25	40	445	133	152	0	184	16	298	22.23	(4.76 X 2.38)	51	165	102
AB - 3 X 1.5 X 6	40	80	445	133	152	0	184	16	298	22.23	(4.76 X 2.38)	51	165	102
AB - 3 X 1.5 X 8	40	80	445	133	152	0	184	16	298	22.23	(4.76 X 2.38)	51	165	102
A60 - 3 X 2 X 8	50	80	597	210	248	184	318	16	450	28.58	(6.35 X 3.18)	67	242	102
A70 - 4 X 3 X 8	80	100	597	210	248	184	318	16	490	28.58	(6.35 X 3.18)	67	280	102
A70 - 4 X 3 X 8	80	100	597	210	248	184	318	16	490	28.58	(6.35 X 3.18)	67	280	102
A05 - 2 X 1 X 10	25	50	597	210	248	184	318	16	425	28.58	(6.35 X 3.18)	67	216	102
A50 - 3 X 1.5 X 10	40	80	597	210	248	184	318	16	425	28.58	(6.35 X 3.18)	67	216	102
A60 - 3 X 2 X 10	50	80	597	210	248	184	318	16	450	28.58	(6.35 X 3.18)	67	242	102
A70 - 4 X 3 X 10	80	100	597	210	248	184	318	16	490	28.58	(6.35 X 3.18)	67	280	102
A80 - 6 X 4 X 10	100	150	597	254	248	184	318	16	597	28.58	(6.35 X 3.18)	67	343	102
A20 - 3 X 1.5 X 13	40	80	597	254	248	184	318	16	520	28.58	(6.35 X 3.18)	67	266	102
A30 - 3 X 2 X 13	50	80	597	254	248	184	318	16	546	28.58	(6.35 X 3.18)	67	292	102
A40 - 4 X 3 X 13	80	100	597	254	248	184	318	16	572	28.58	(6.35 X 3.18)	67	318	102
A80 - 6 X 4 X 13	100	150	597	254	248	184	318	16	597	28.58	(6.35 X 3.18)	67	343	102
A90 - 8 X 6 X 13	150	200	860	368	406	229	476	22	775	60.33	(15.88 X 7.94)	102	406	152
A100 - 10 X 8 X 13	200	250	860	368	406	229	476	22	826	60.33	(15.88 X 7.94)	102	457	152
A110 - 8 X 6 X 15	150	200	860	368	406	229	476	22	826	60.33	(15.88 X 7.94)	102	457	152
A120 - 10 X 8 X15	200	250	860	368	406	229	476	22	851	60.33	(15.88 X 7.94)	102	483	152
A120 - 10 X 8 X15	200	250	860	368	406	229	476	22	851	60.33	(15.88 X 7.94)	102	483	152

(*) Flanges according to standard ANSI B16.5 or ANSI B16.1.

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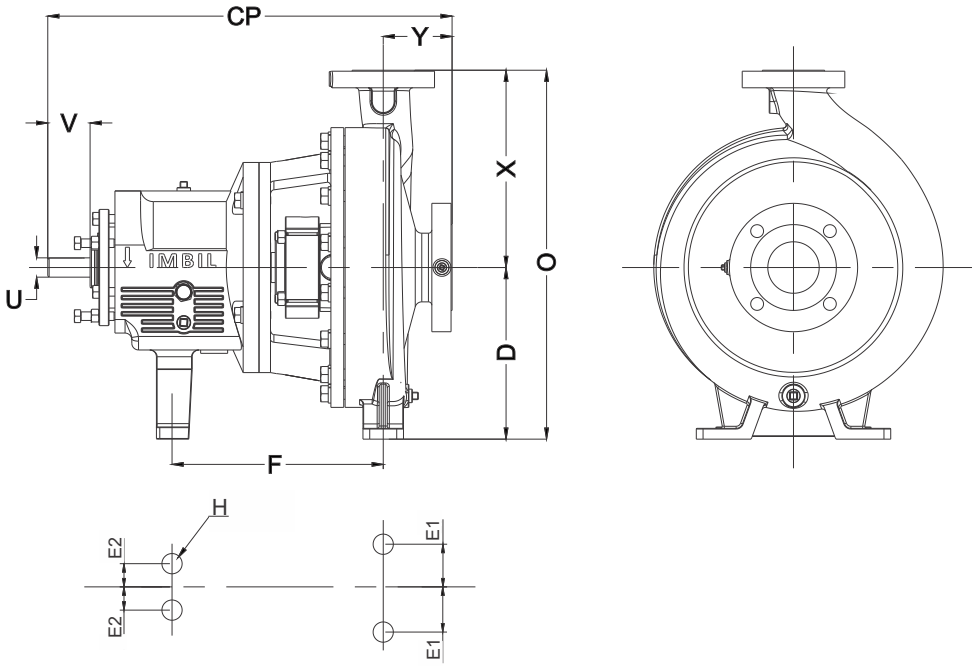
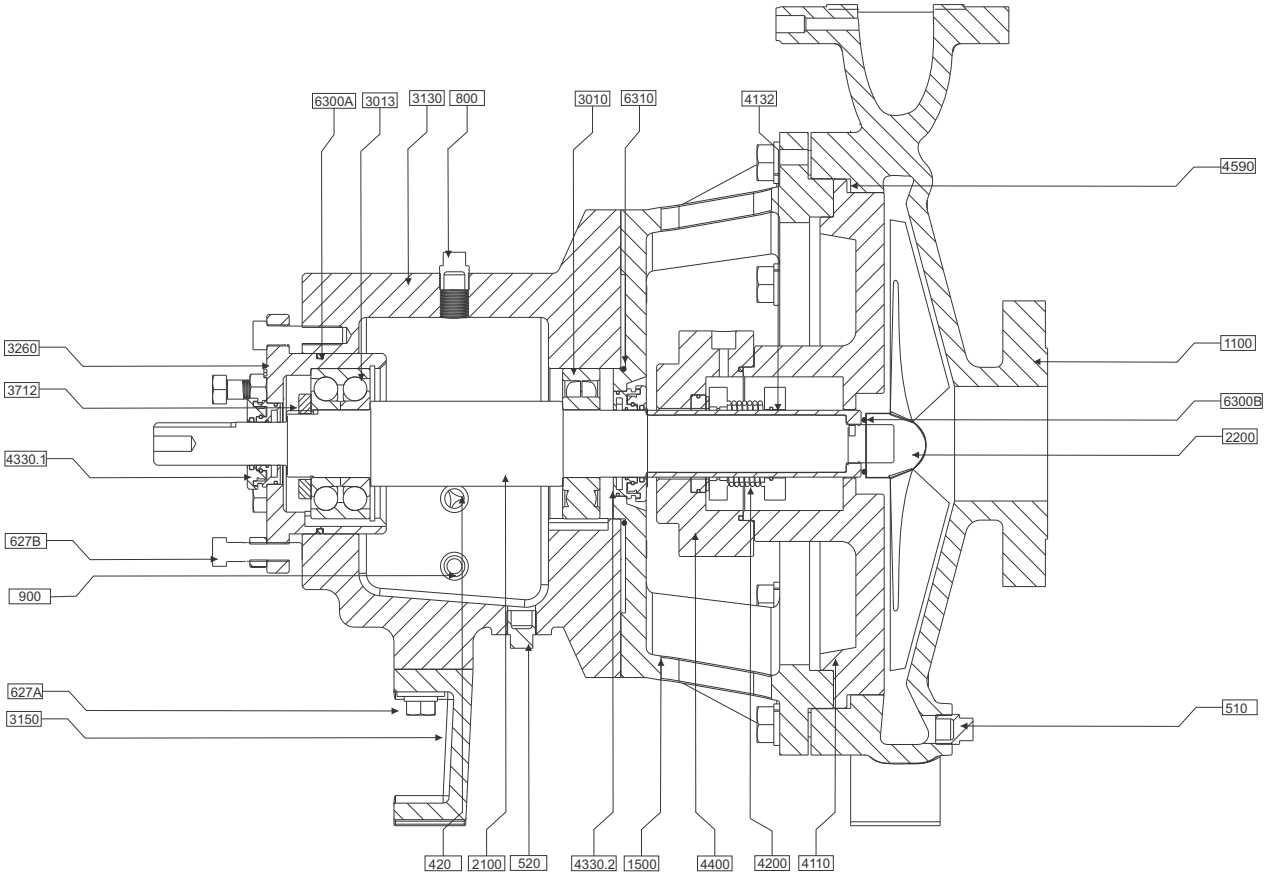
DIMENSION DRAWING



SIZE ANSI B73.1	DISCHARGE (*)	SUCTION (*)	DIMENSION (mm)											
			CP	D	2(E1)	2(E2)	F	H	O	U		V(Mín)	X	Y
										DIA	key			
AA - 1.5 X 1 X 6	1	1.5	17.5	5.25	6	0	7.25	0.625	11.75	0.875	0.188 X 0.094	2	6.5	4
AA - 1.5 X 1 X 8	1	1.5	17.5	5.25	6	0	7.25	0.625	11.75	0.875	0.188 X 0.094	2	6.5	4
AB - 3 X 1.5 X 6	1.5	3	17.5	5.25	6	0	7.25	0.625	11.75	0.875	0.188 X 0.094	2	6.5	4
AB - 3 X 1.5 X 8	1.5	3	17.5	5.25	6	0	7.25	0.625	11.75	0.875	0.188 X 0.094	2	6.5	4
A60 - 3 X 2 X 8	2	3	23.5	8.25	9.75	7.25	12.5	0.625	17.75	1.125	0.25 X 0.125	2.625	9.5	4
A70 - 4 X 3 X 8	3	4	23.5	8.25	9.75	7.25	12.5	0.625	19.25	1.125	0.25 X 0.125	2.625	11	4
A70 - 4 X 3 X 8	3	4	23.5	8.25	9.75	7.25	12.5	0.625	19.25	1.125	0.25 X 0.125	2.625	11	4
A05 - 2 X 1 X 10	1	2	23.5	8.25	9.75	7.25	12.5	0.625	16.75	1.125	0.25 X 0.125	2.625	8.5	4
A50 - 3 X 1.5 X 10	1.5	3	23.5	8.25	9.75	7.25	12.5	0.625	16.75	1.125	0.25 X 0.125	2.625	8.5	4
A60 - 3 X 2 X 10	2	3	23.5	8.25	9.75	7.25	12.5	0.625	17.75	1.125	0.25 X 0.125	2.625	9.5	4
A70 - 4 X 3 X 10	3	4	23.5	8.25	9.75	7.25	12.5	0.625	19.25	1.125	0.25 X 0.125	2.625	11	4
A80 - 6 X 4 X 10	4	6	23.5	10	9.75	7.25	12.5	0.625	23.5	1.125	0.25 X 0.125	2.625	13.5	4
A20 - 3 X 1.5 X 13	1.5	3	23.5	10	9.75	7.25	12.5	0.625	20.5	1.125	0.25 X 0.125	2.625	10.5	4
A30 - 3 X 2 X 13	2	3	23.5	10	9.75	7.25	12.5	0.625	21.5	1.125	0.25 X 0.125	2.625	11.5	4
A40 - 4 X 3 X 13	3	4	23.5	10	9.75	7.25	12.5	0.625	22.5	1.125	0.25 X 0.125	2.625	12.5	4
A80 - 6 X 4 X 13	4	6	23.5	10	9.75	7.25	12.5	0.625	23.5	1.125	0.25 X 0.125	2.625	13.5	4
A90 - 8 X 6 X 13	6	8	33.875	14.5	16	9	18.75	0.875	30.5	2.375	0.625 X 0.313	4	16	6
A100 - 10 X 8 X 13	8	10	33.875	14.5	16	9	18.75	0.875	32.5	2.375	0.625 X 0.313	4	18	6
A110 - 8 X 6 X 15	6	8	33.875	14.5	16	9	18.75	0.875	32.5	2.375	0.625 X 0.313	4	18	6
A120 - 10 X 8 X15	8	10	33.875	14.5	16	9	18.75	0.875	33.5	2.375	0.625 X 0.313	4	19	6
A120 - 10 X 8 X15	8	10	33.875	14.5	16	9	18.75	0.875	33.5	2.375	0.625 X 0.313	4	19	6

Flanges according to standard ANSI B16.5
or ANSI B16.1.

SECTIONAL DRAWING



420	Bull eye		
510	Casing Drain Plug (Optional)	3150	Foot
520	Magnetic Drain	3260	Bearing End Cover
627A	Screw	3712	Bearing Locknut and Lockwasher
627B	Screw	4110	Cover
800	Vent	4132	Shaft Sleeve
900	Plug	4200	Seal Chamber (Mechanical Seal)
1100	Casing	4330.1	INPRO Oil Seal (Optional)
1500	Adapter	4330.2	INPRO Oil Seal (Optional)
2100	Shaft	4400	Gland
2200	Impeller	4590	Casing Gasket
3010	Radial Bearing	6300A	O-ring Bearing Housing
3013	Thrust Bearing	6300B	O-ring Impeller
3130	Bearing Housing	6310	O-ring Adapter
REF.	**DESCRIPTION**	**REF.**	**DESCRIPITION**

MATERIALS

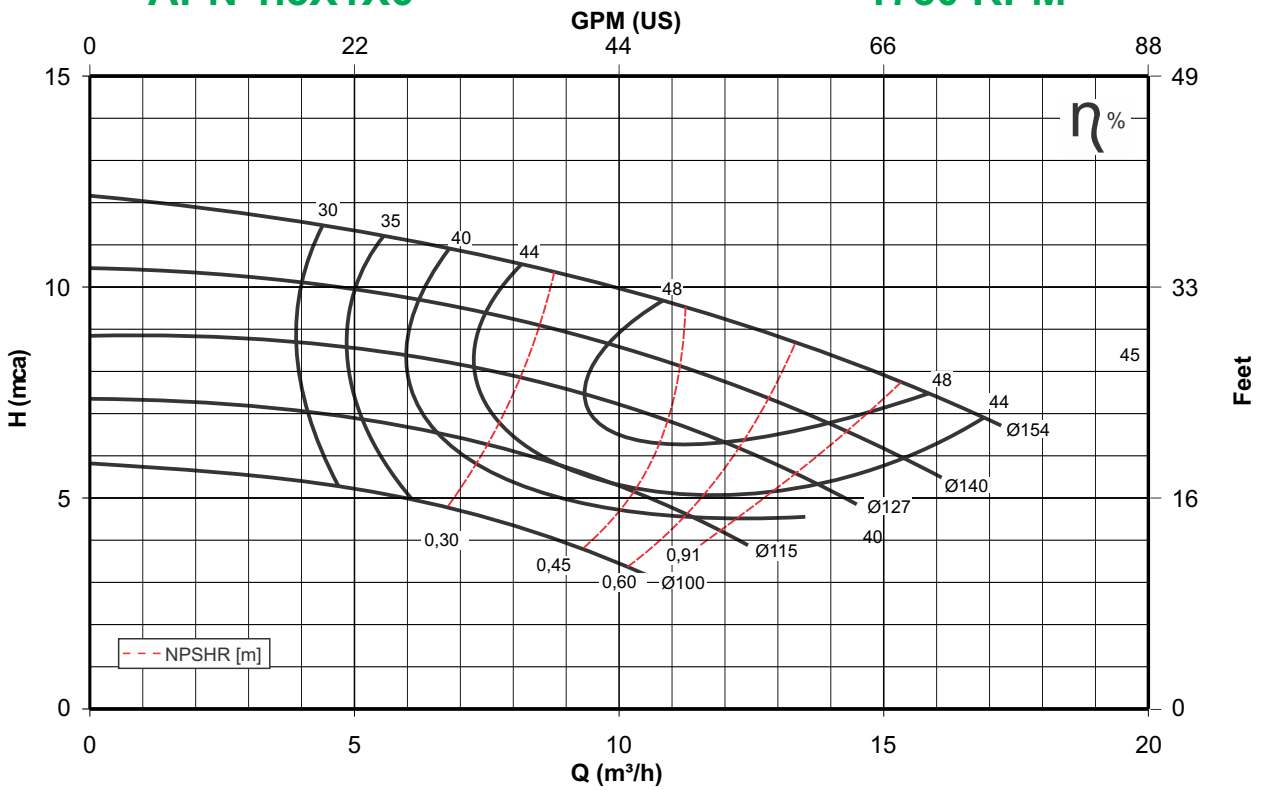
MATERIALS								
Number Item	Part Name	MATERIALS						
		Ductile Iron	316SS	DUPLEX	SUPER DUPLEX	ALLOY 20	MONEL	HASTELLOY B & C
420	Bull Eye	Steel/Glass						
510	Casing Drain Plug (Optional	Steel	316SS	Alloy 20			Monel	Hastelloy
627A	Screw	Steel						
627B	Screw	Steel						
800	Vent	Steel						
1100	Casing	Ductile Iron	316SS	Duplex	S. Duplex	Alloy 20	Monel	Hastelloy
1500	Adapter	Ductile Iron						
2100	Shaft	SAE4140					316SS	
2200	Ipeller	Ductile Iron	316SS	Duplex	S. Duplex	Alloy 20	Monel	Hastelloy
3010	Radial Bearing	Single row						
3013	Thrust Bearing	Double row						
3130	Bearing Housing	Ductile Iron						
3150	Foot	Ductile Iron						
3260	Bearing End Cover	Ductile Iron						
3500	Packing Gland	Ductile Iron	316SS	Duplex	S. Duplex	Alloy 20	Monel	Hastelloy
3600	Lantern Ring	316SS						
3712	Bearing Locknut and Lockwasher	Steel						
4110	Cover	Ductile Iron	316SS	Duplex	S. Duplex	Alloy 20	Monel	Hastelloy
4132	Saft Sleeve	316SS		Alloy 20			Monel	Hastelloy
4200	Seal Chamber (Mechanical Seal)	ASME B73.1						
4330.1	INPRO Oil Seal	BRZ						
4330.2	INPRO Oil Seal	BRZ						
4400	Gland	316SS		As seal manufacturer				
4590	Casing Gasket							

NOTE

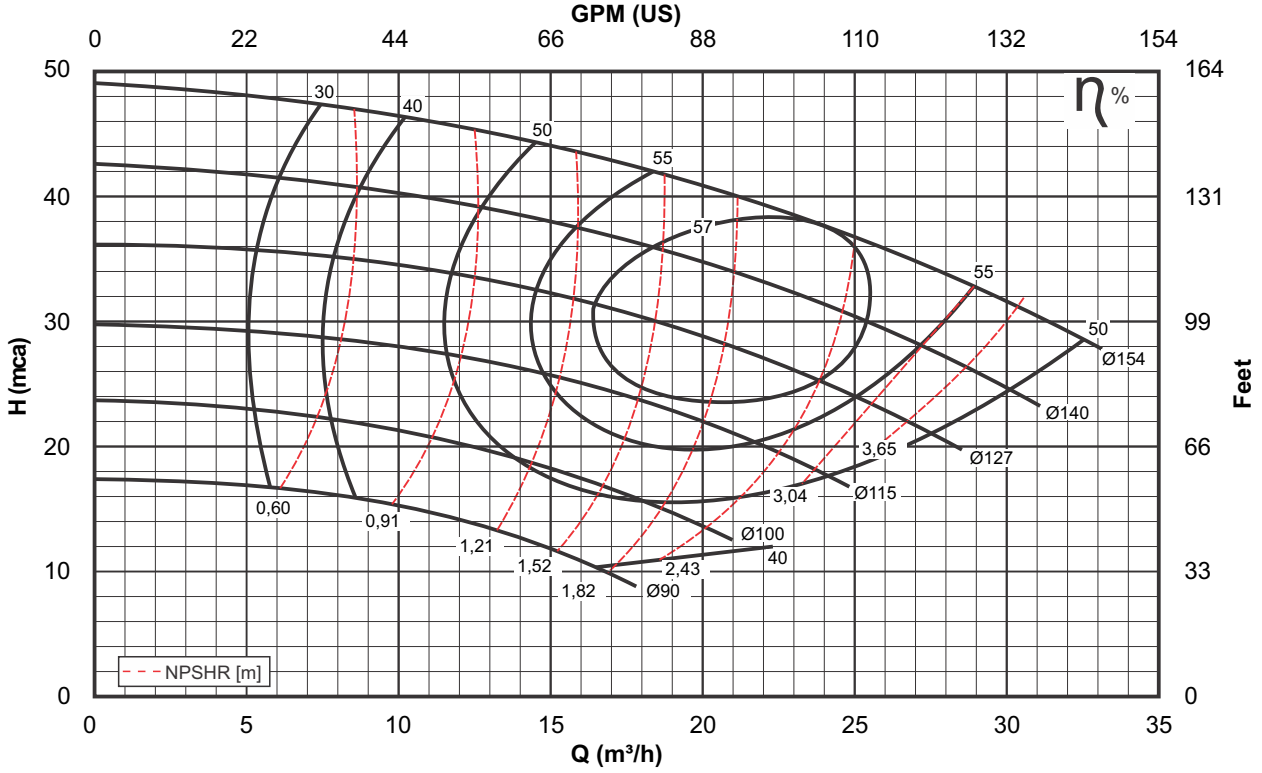
Reserve the right to make changes in our products, whenever necessary, without, therefore, incur obligations of any kind.

IMBIL Pumping Solutions

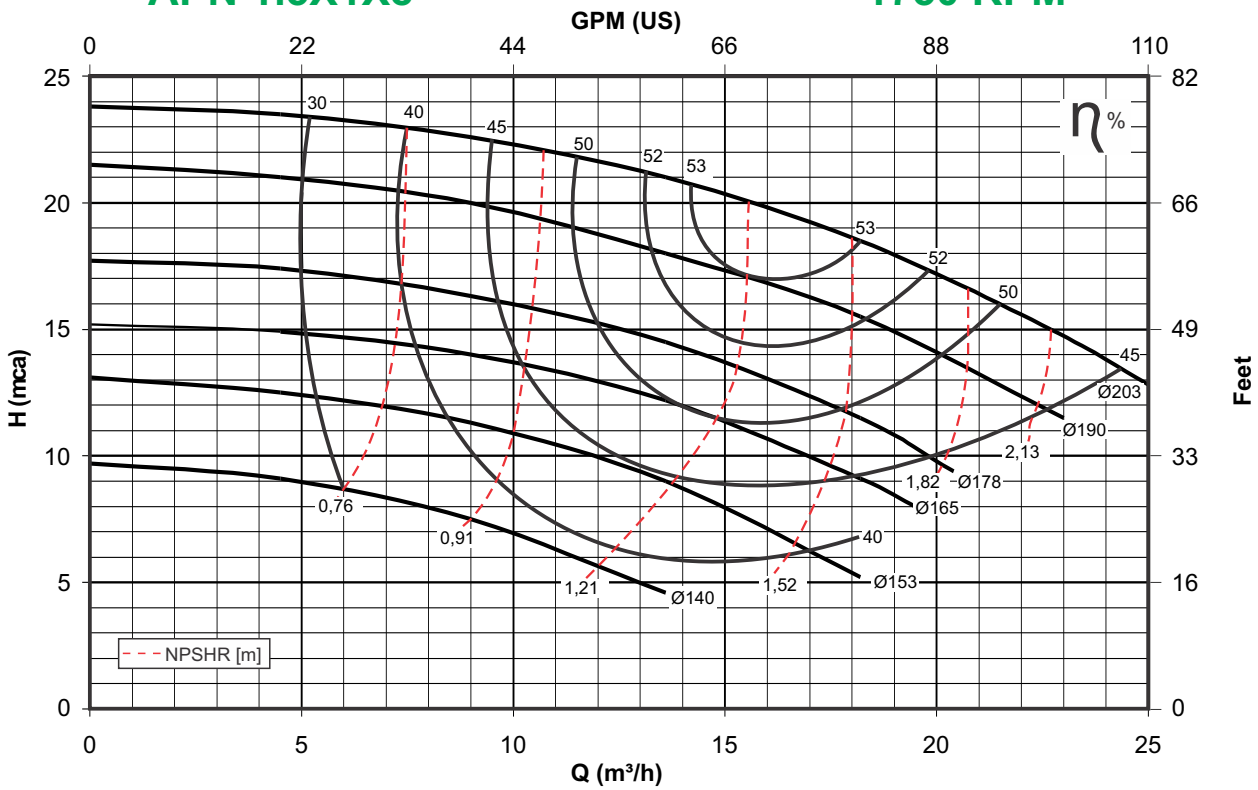
APN 1.5X1X6 — 1750 RPM



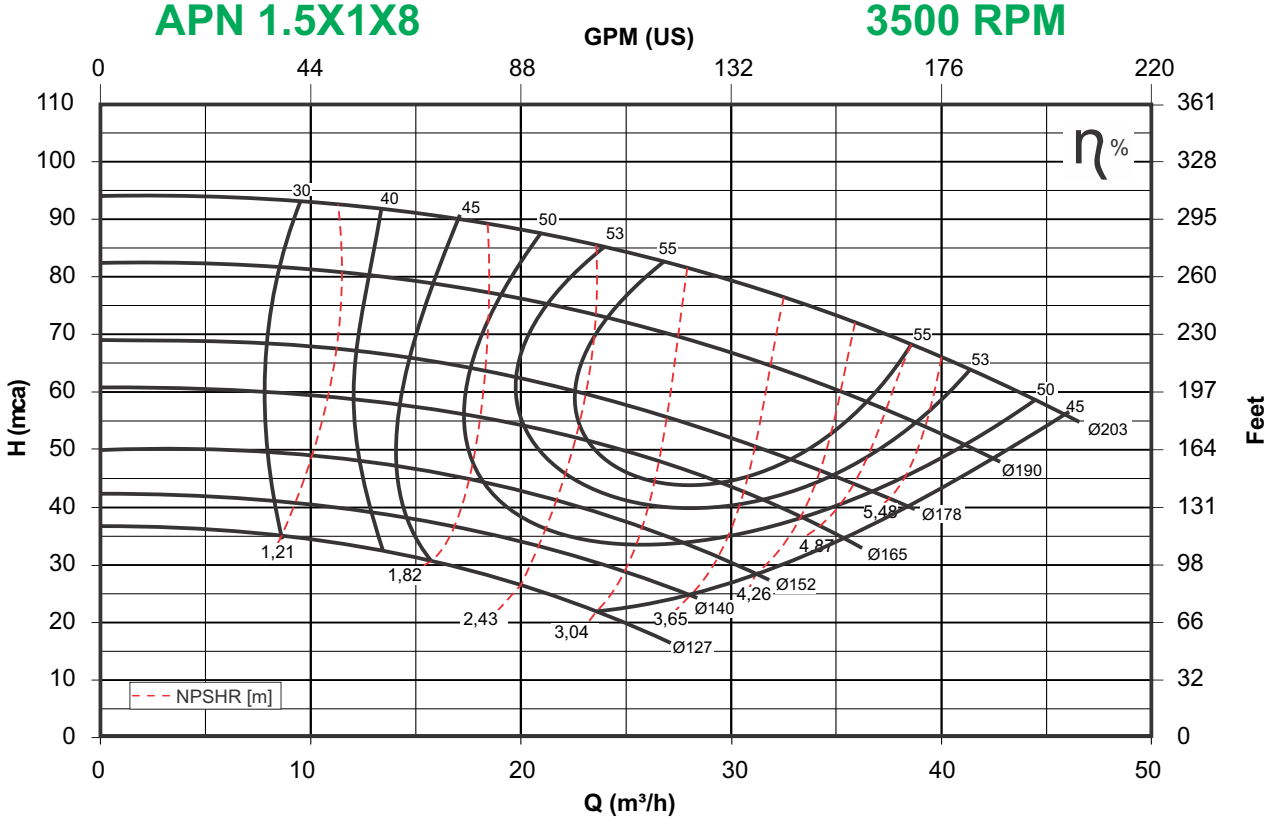
APN 1.5X1X6 — 3500 RPM



APN 1.5X1X8 — 1750 RPM



APN 1.5X1X8 — 3500 RPM



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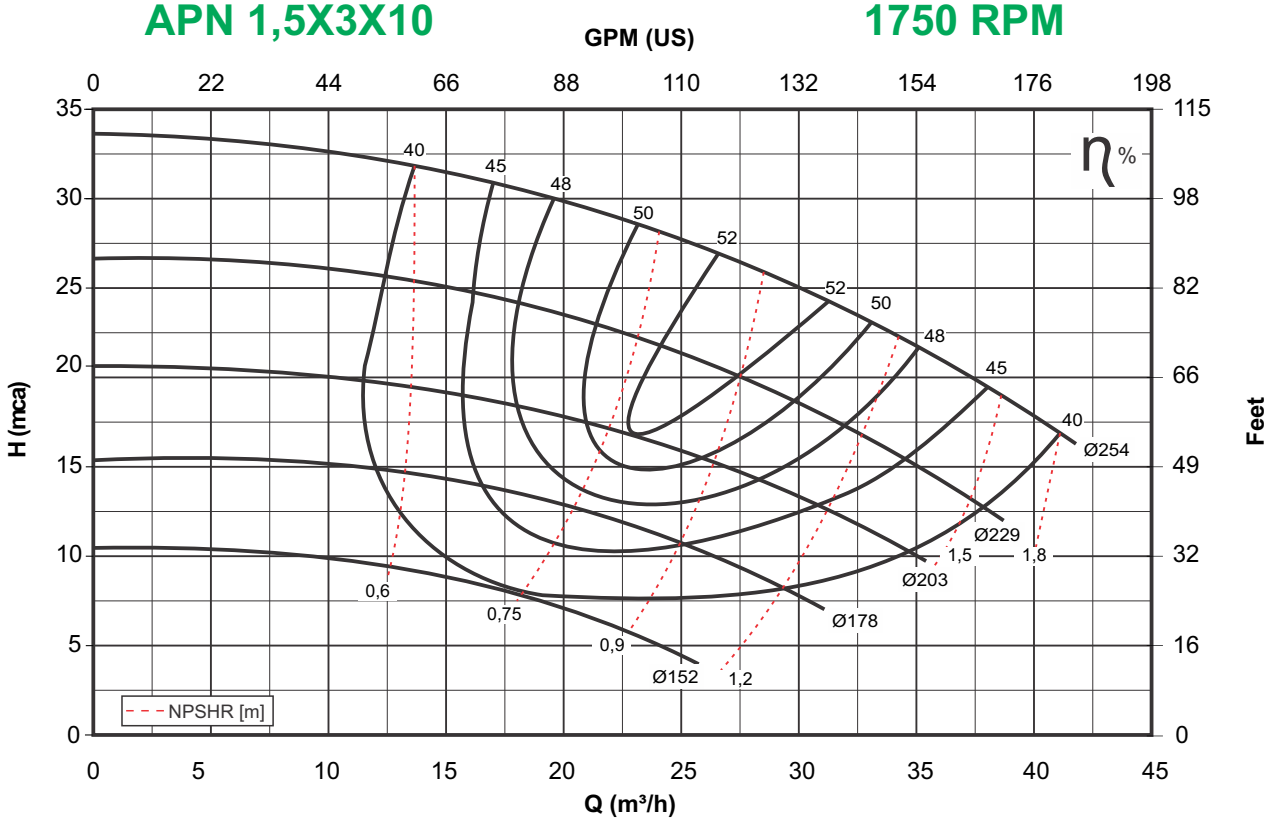
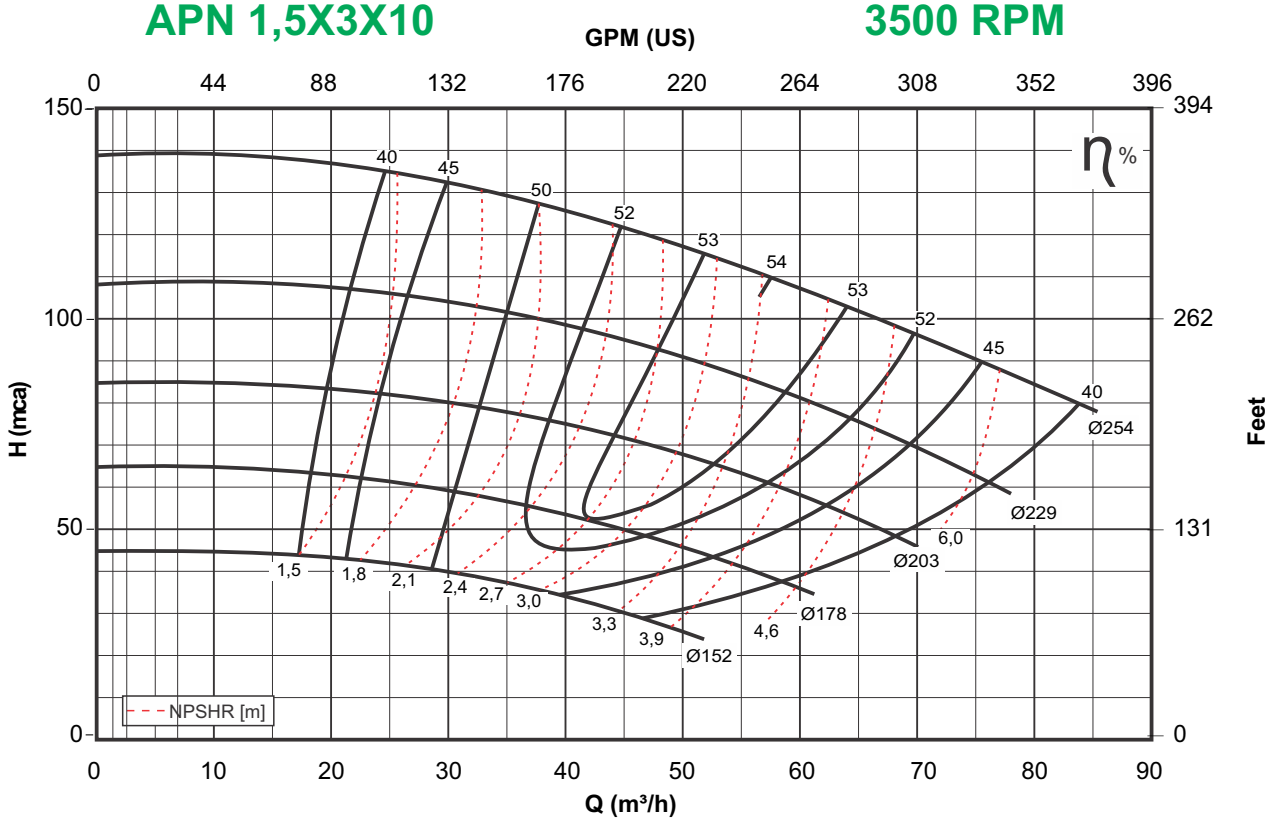
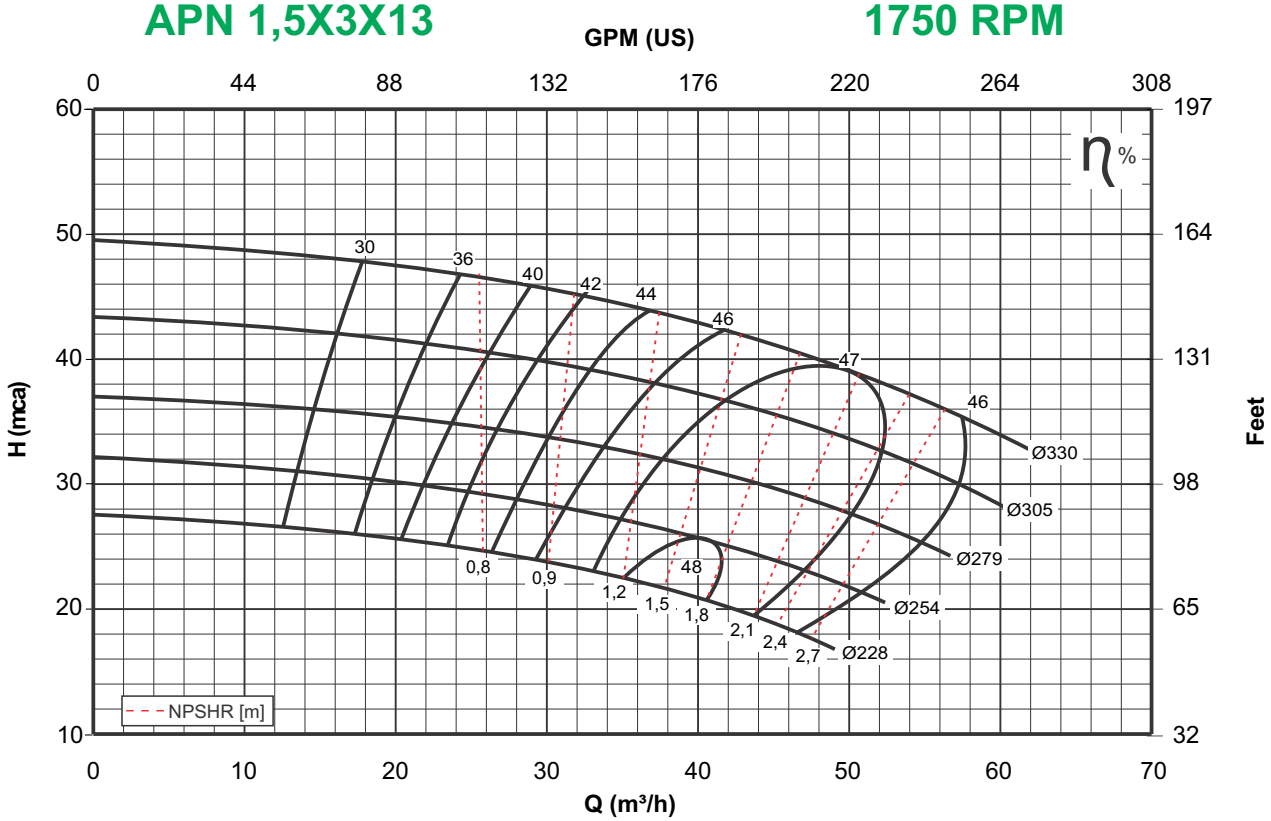
APN 1,5X3X10 — 1750 RPM



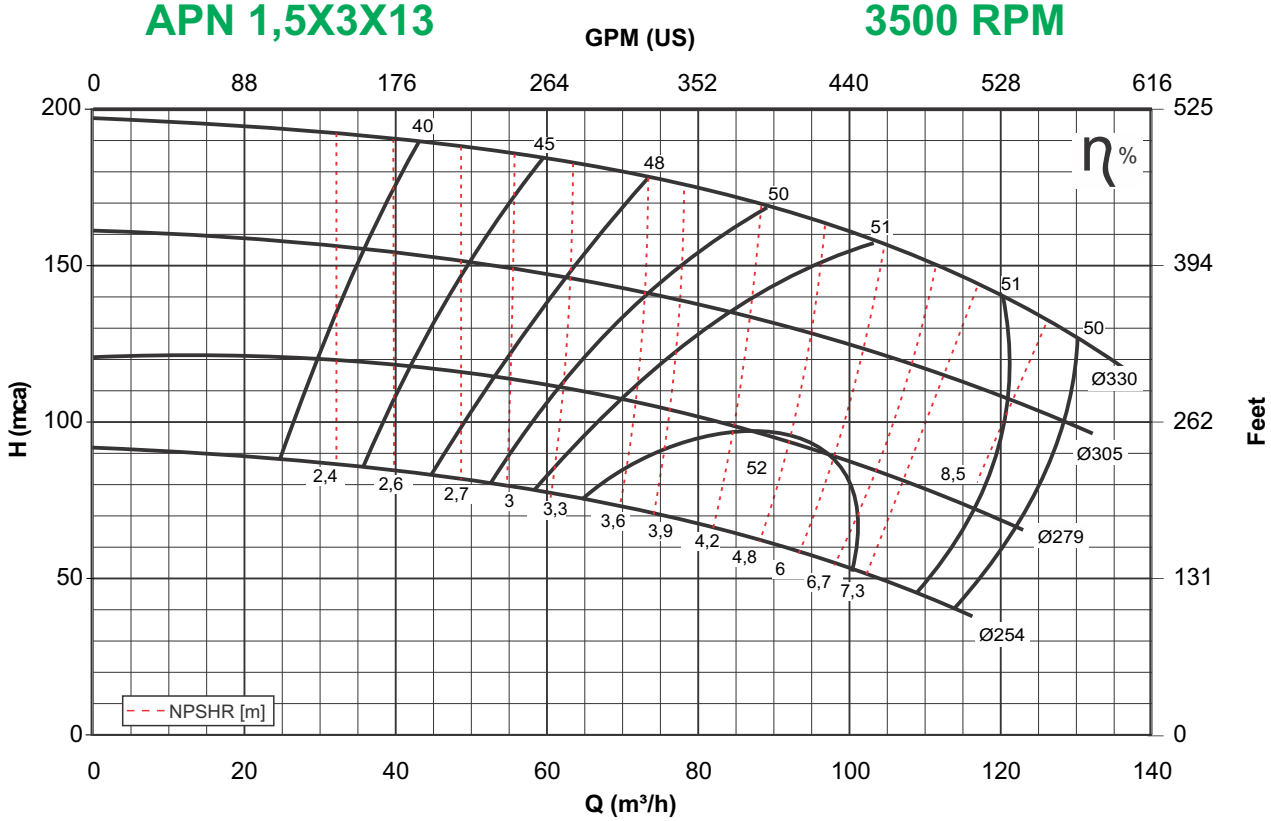
APN 1,5X3X10 — 3500 RPM



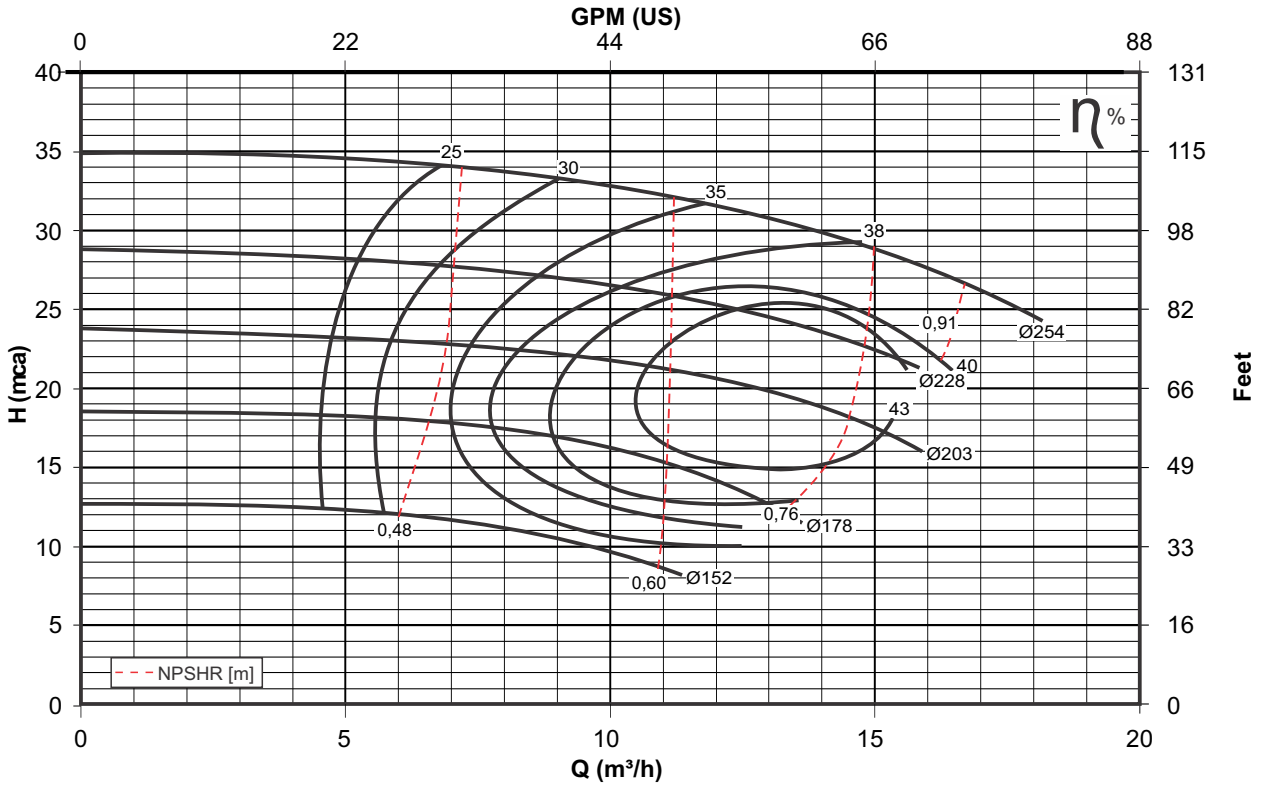
APN 1,5X3X13 — 1750 RPM



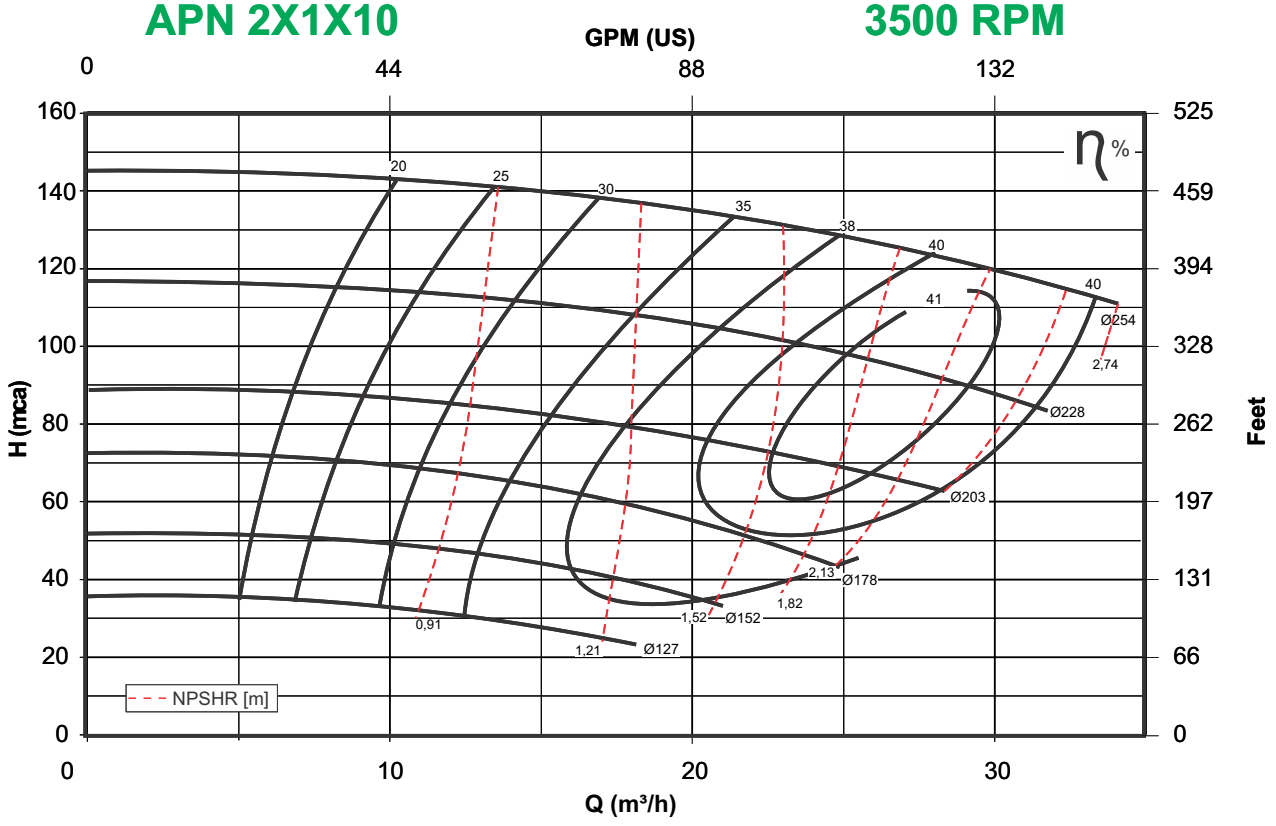
APN 1,5X3X13 — 3500 RPM



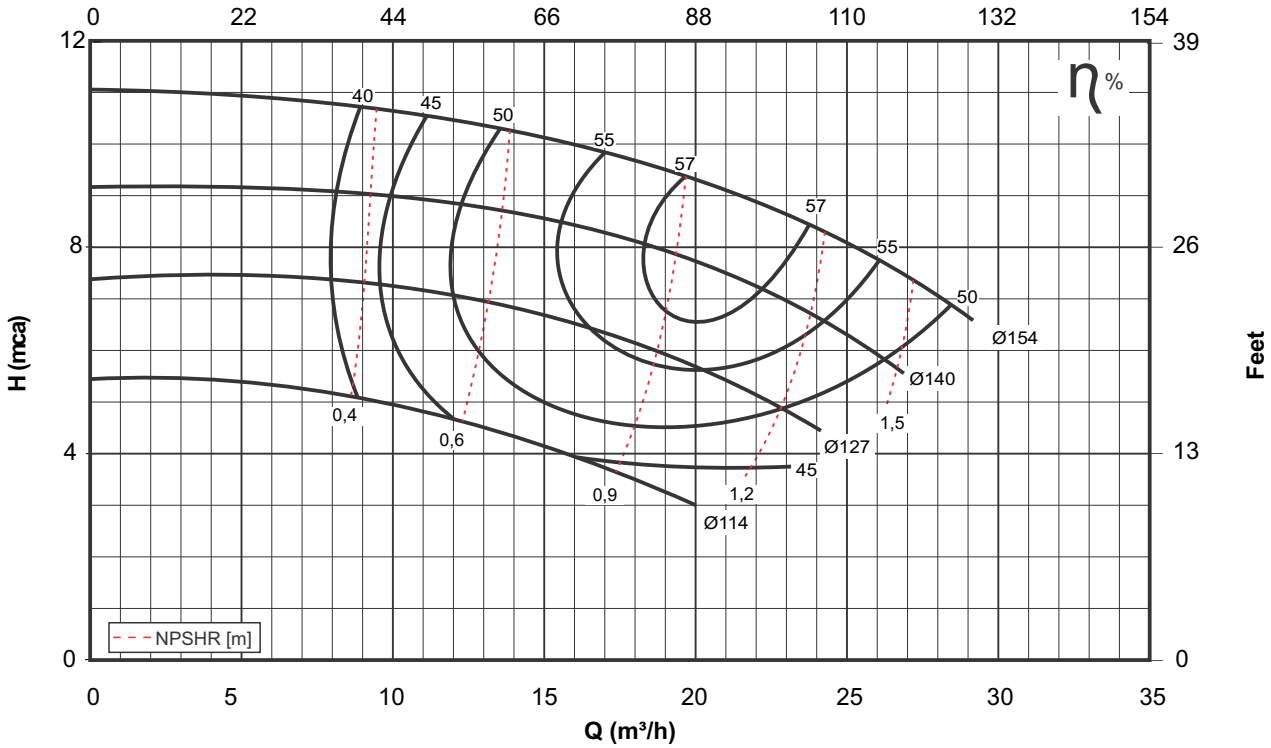
APN 2X1X10 — 1750 RPM



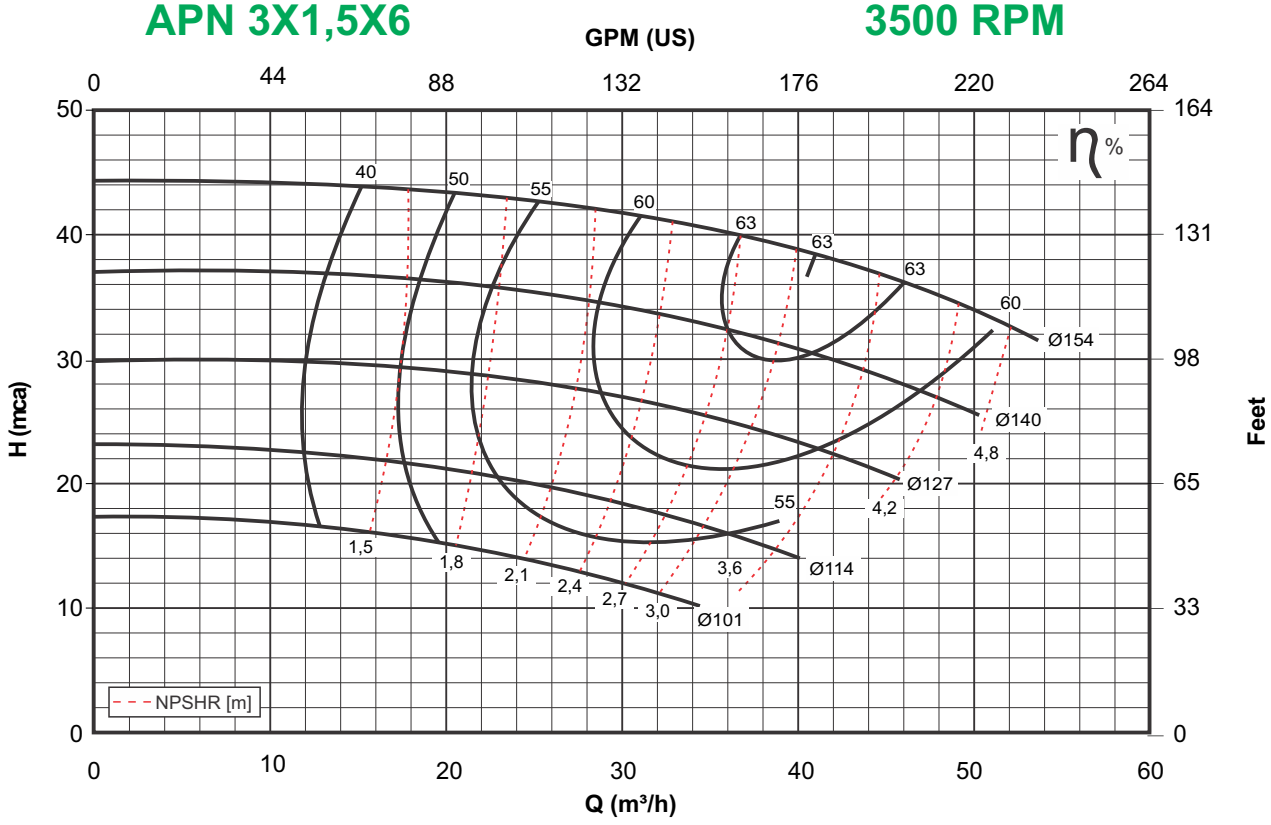
APN 2X1X10 — 3500 RPM



APN 3X1,5X6 — 1750 RPM



APN 3X1,5X6 — 3500 RPM



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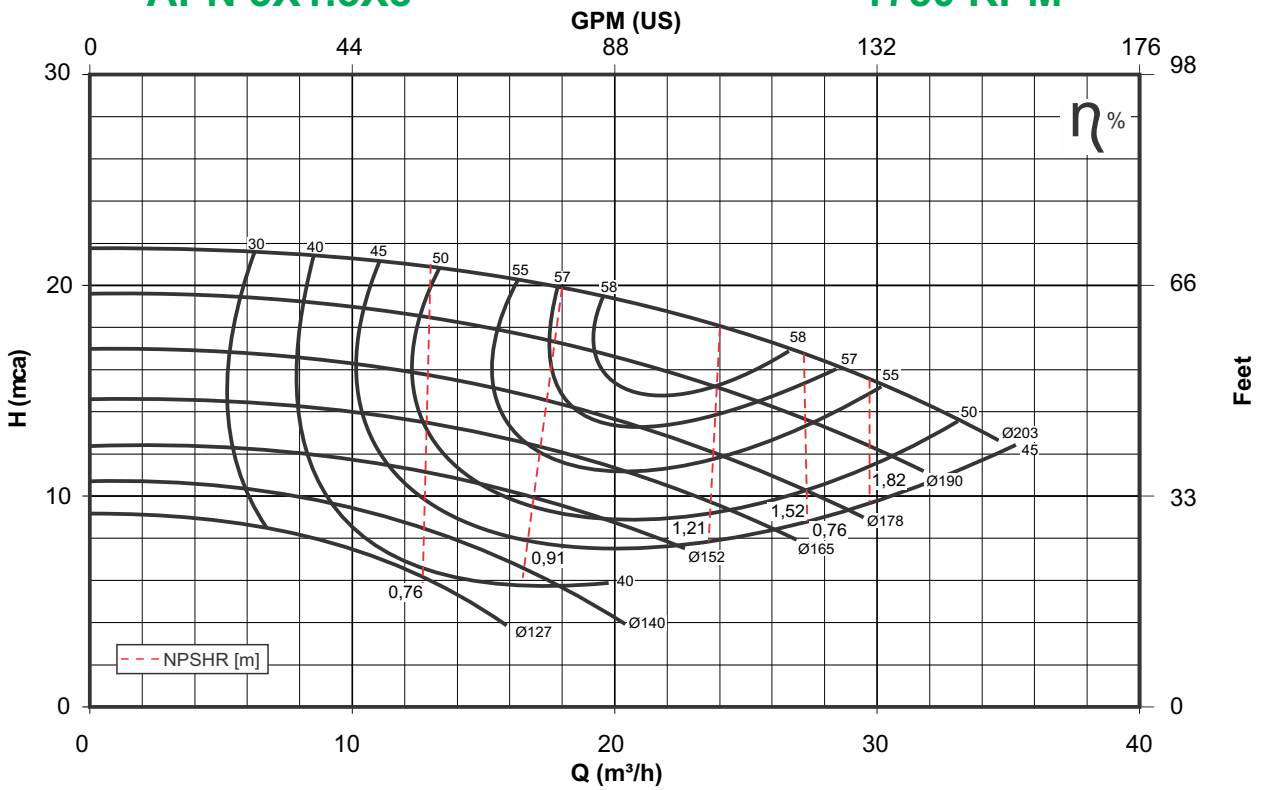
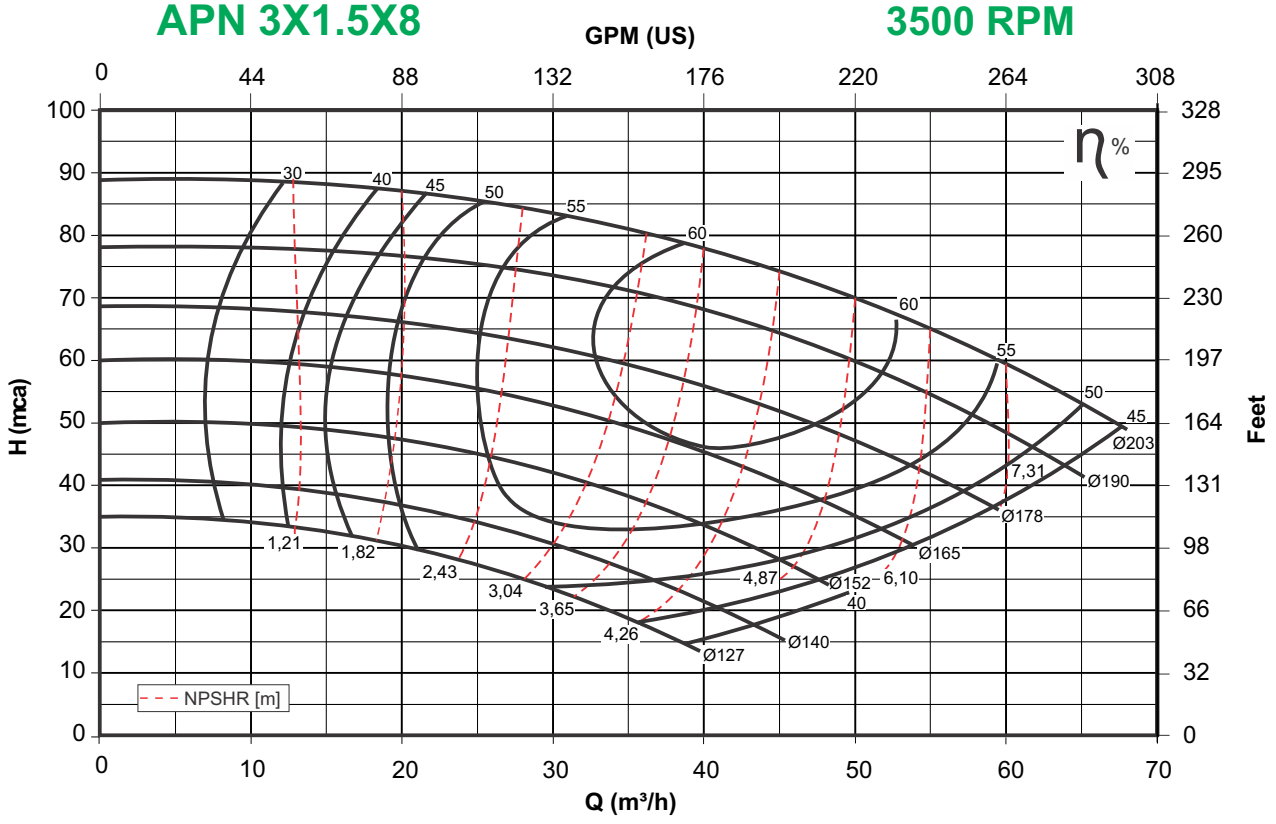


APN 3X1.5X8 — 3500 RPM



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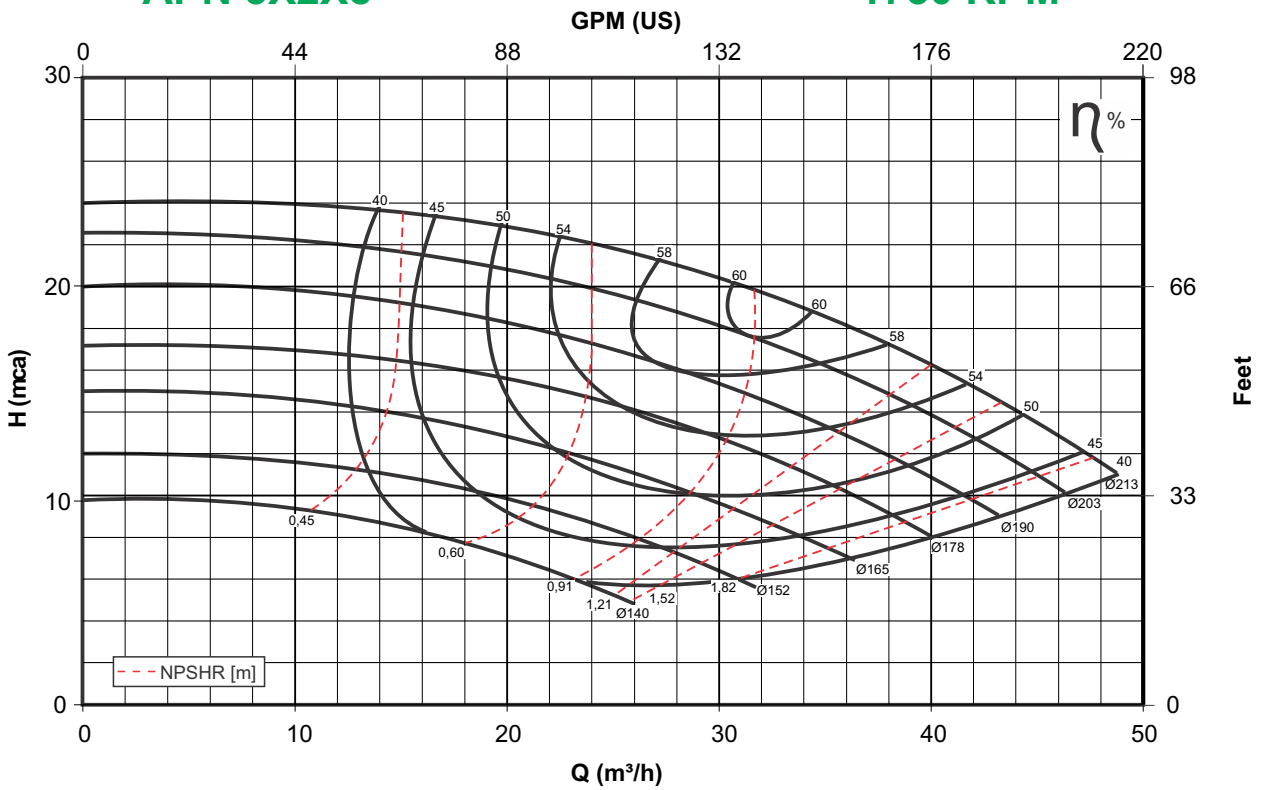
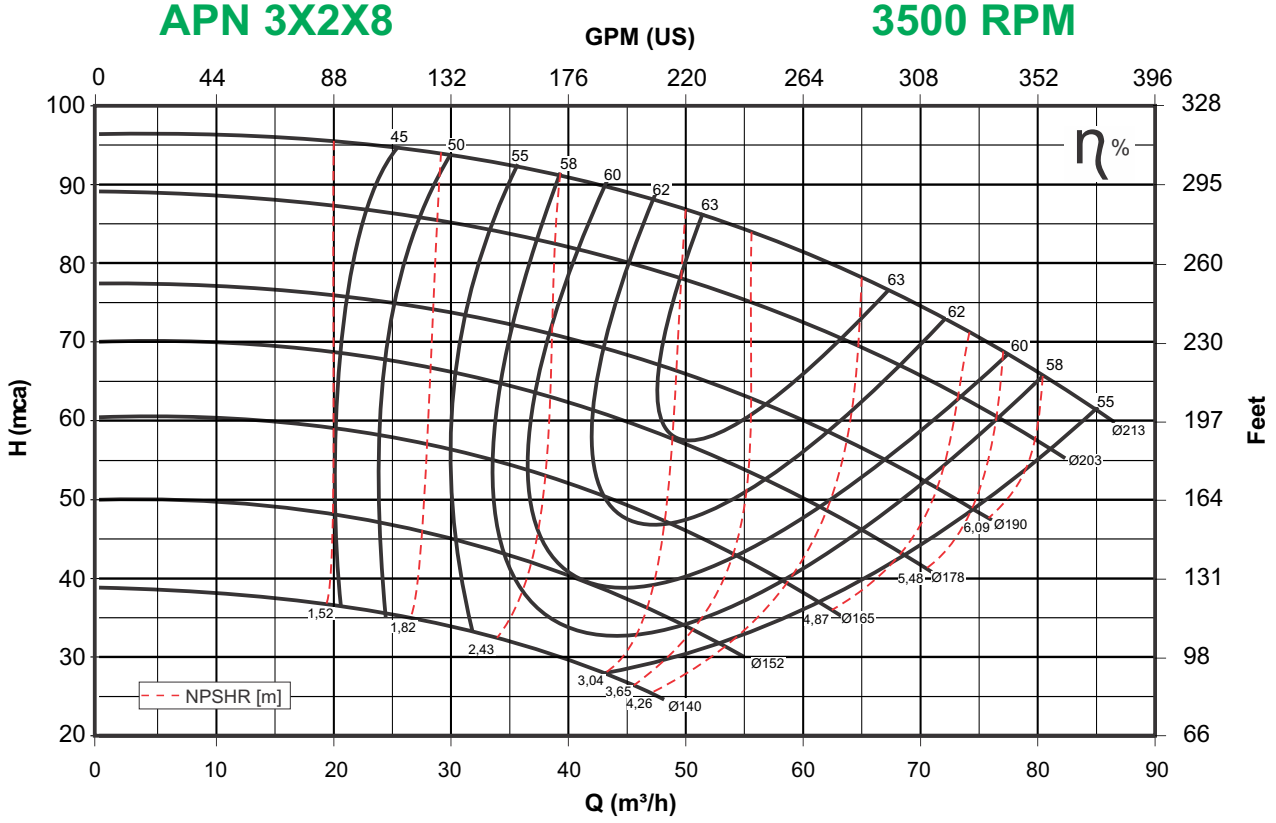
APN 3X2X8 — 1750 RPM



APN 3X2X8 — 3500 RPM



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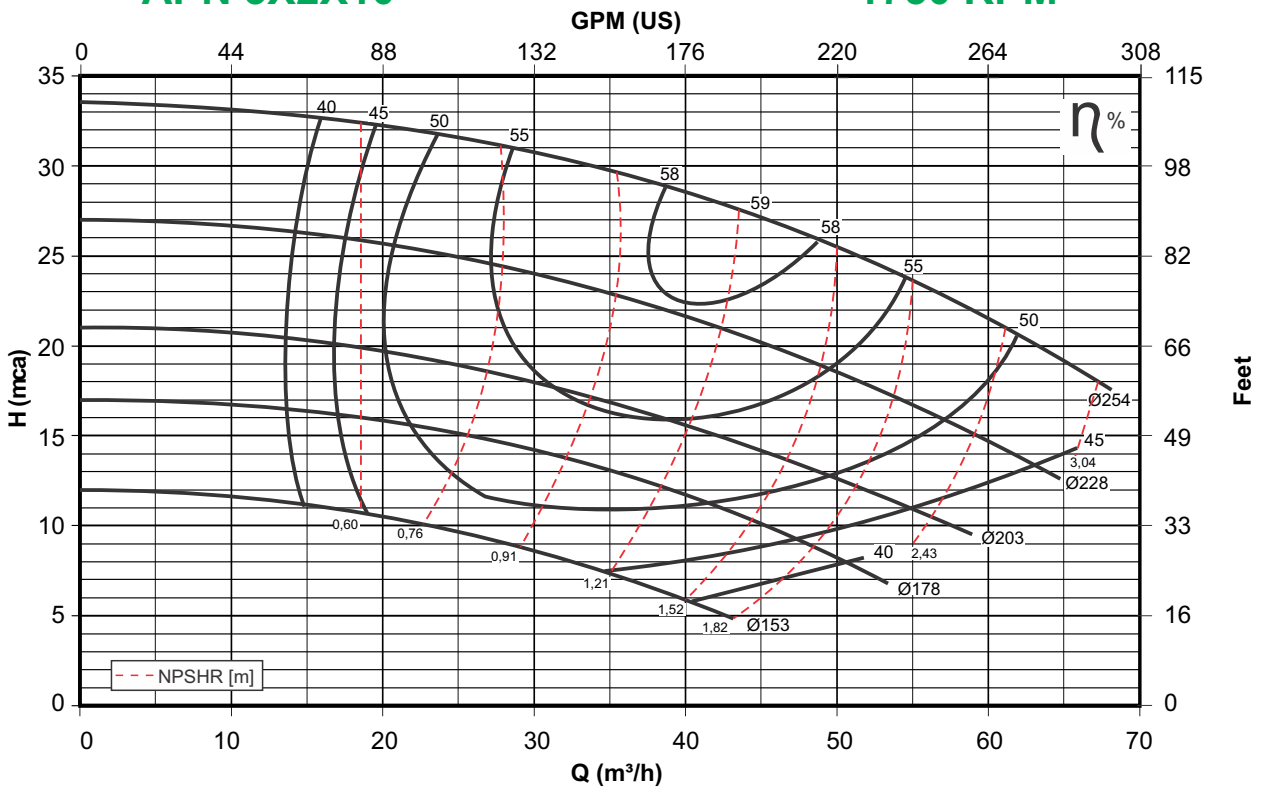
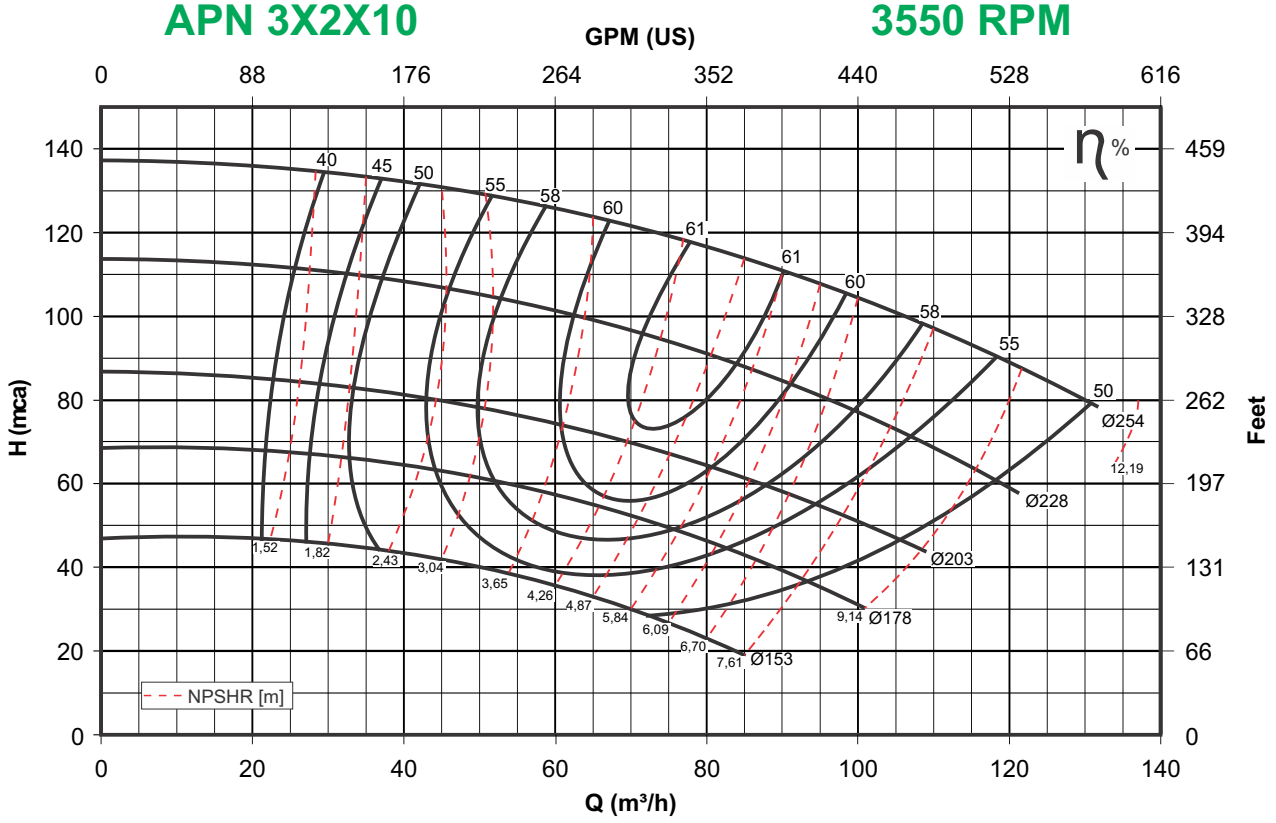


APN 3X2X10 — 3550 RPM



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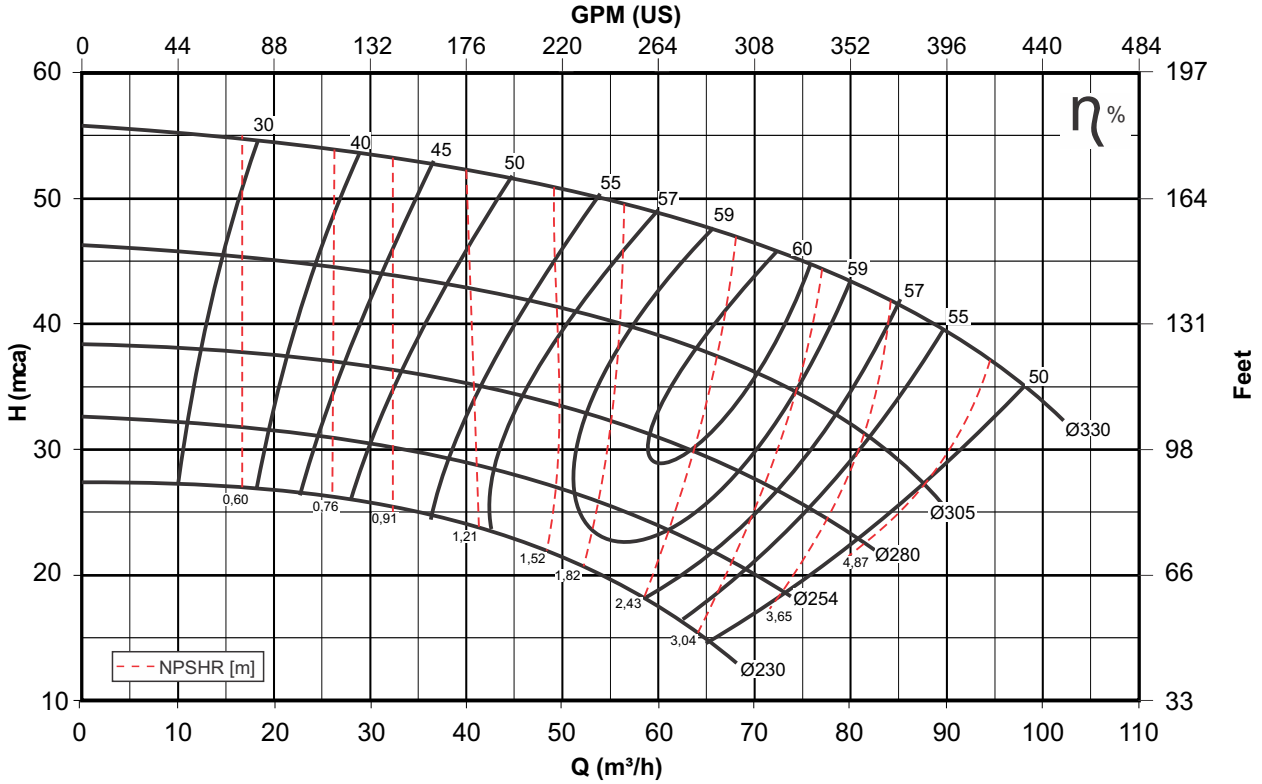
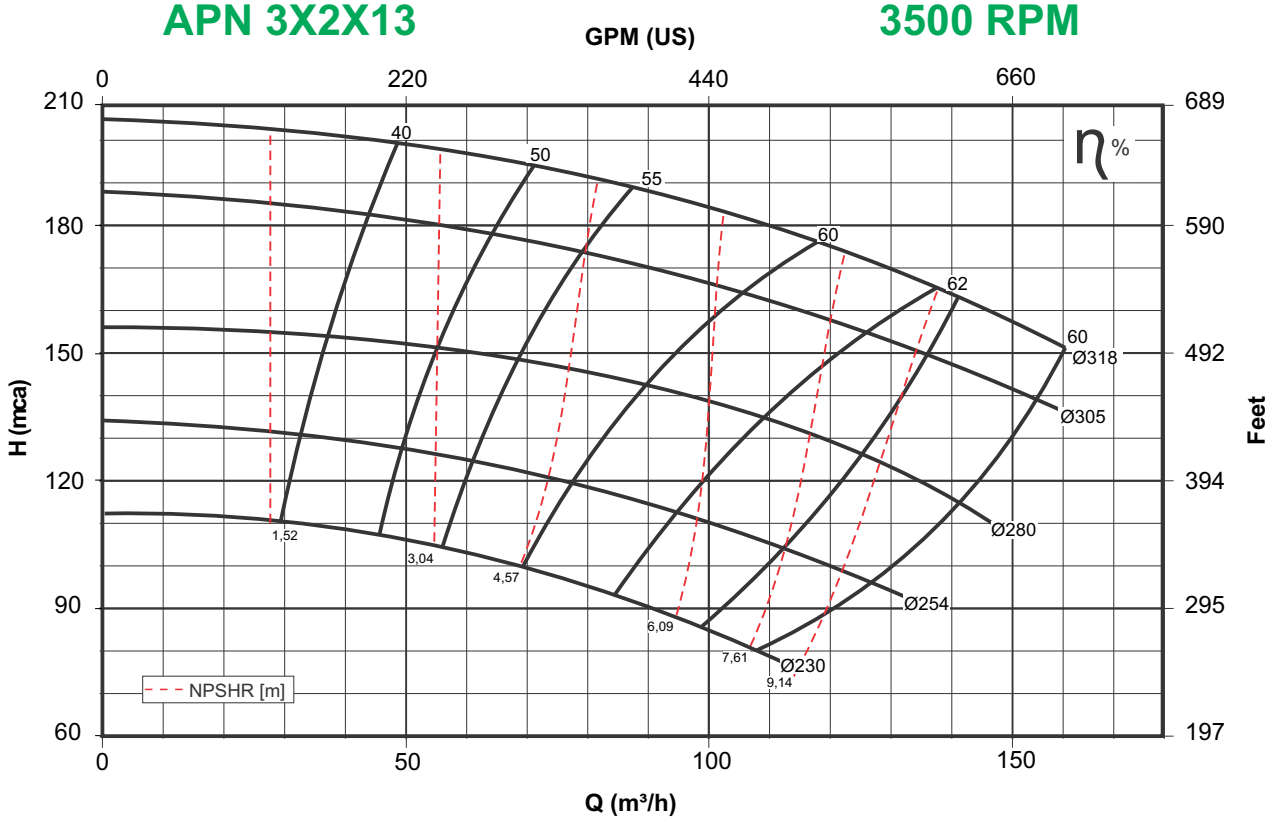
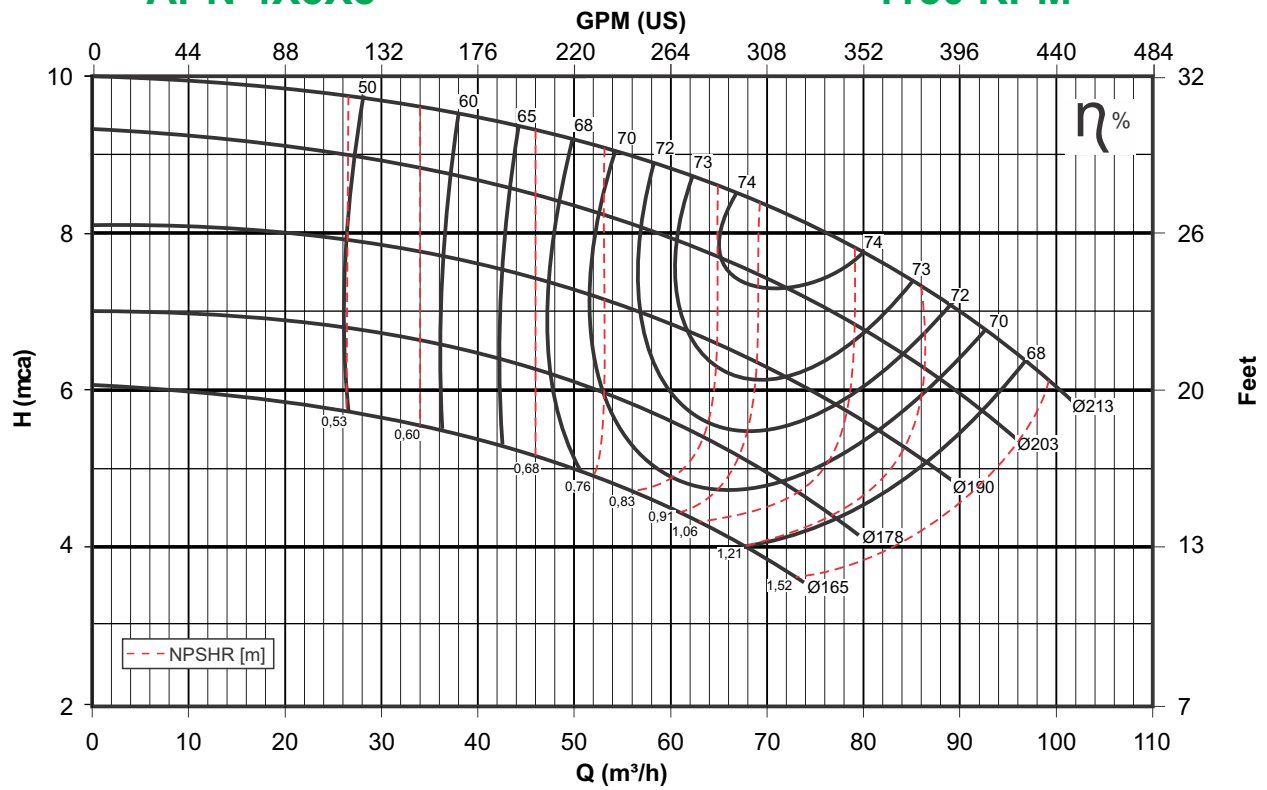


APN 3X2X13 — 3500 RPM



APN 4X3X8 — 1150 RPM



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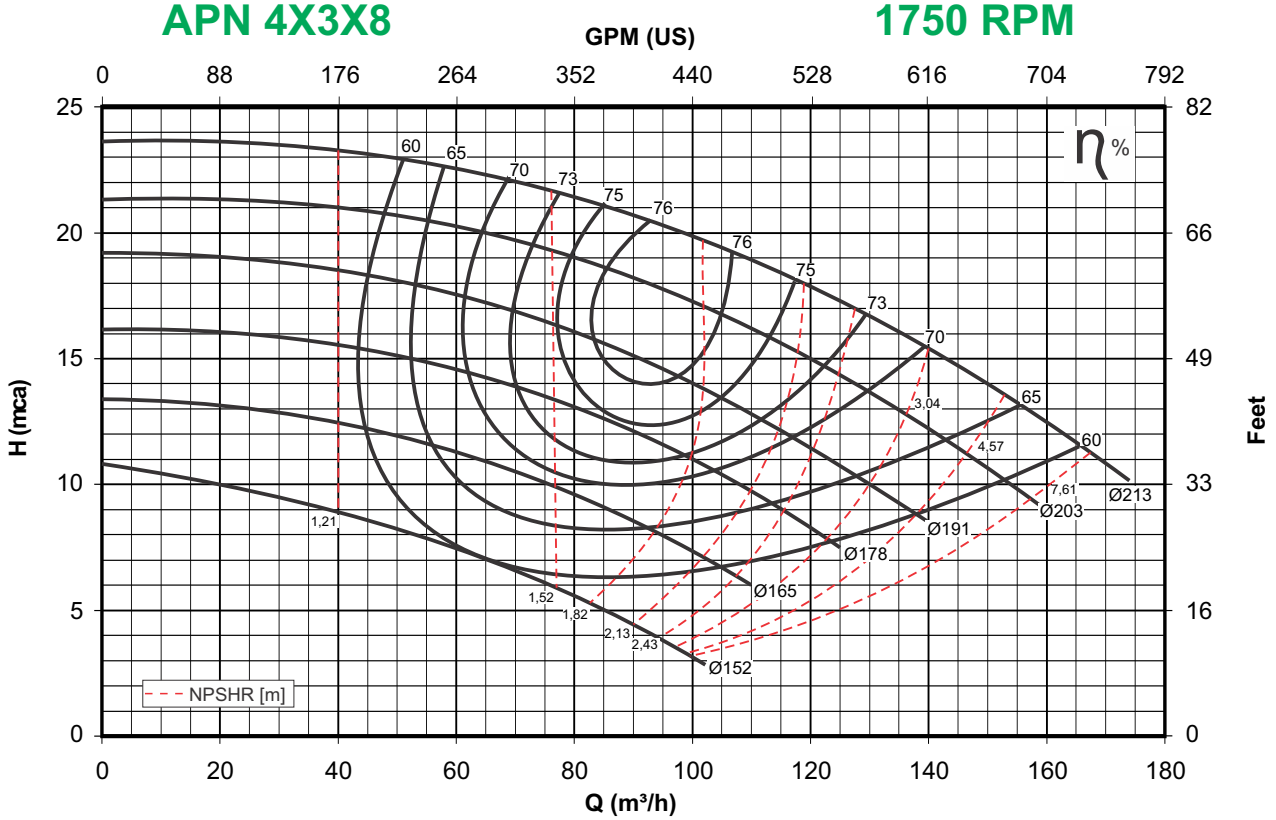

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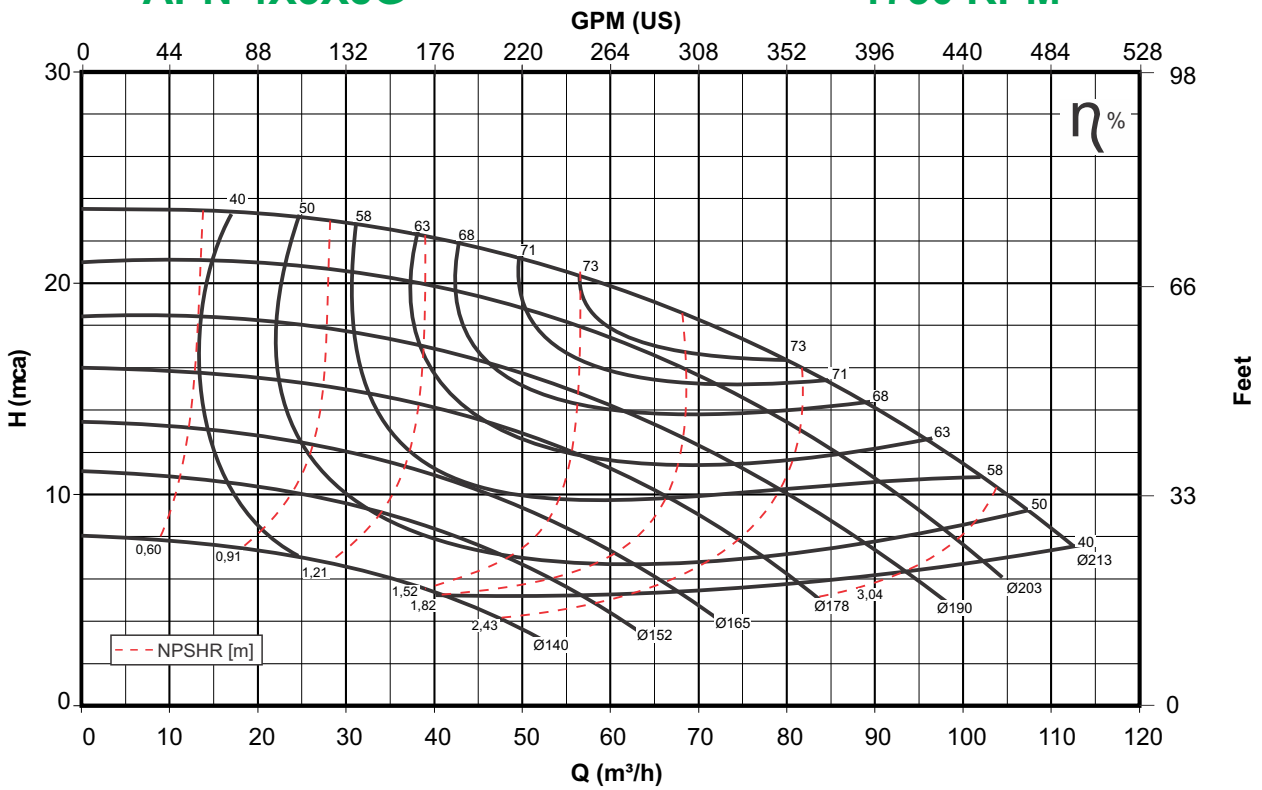
APN 4X3X8G 1750 RPM



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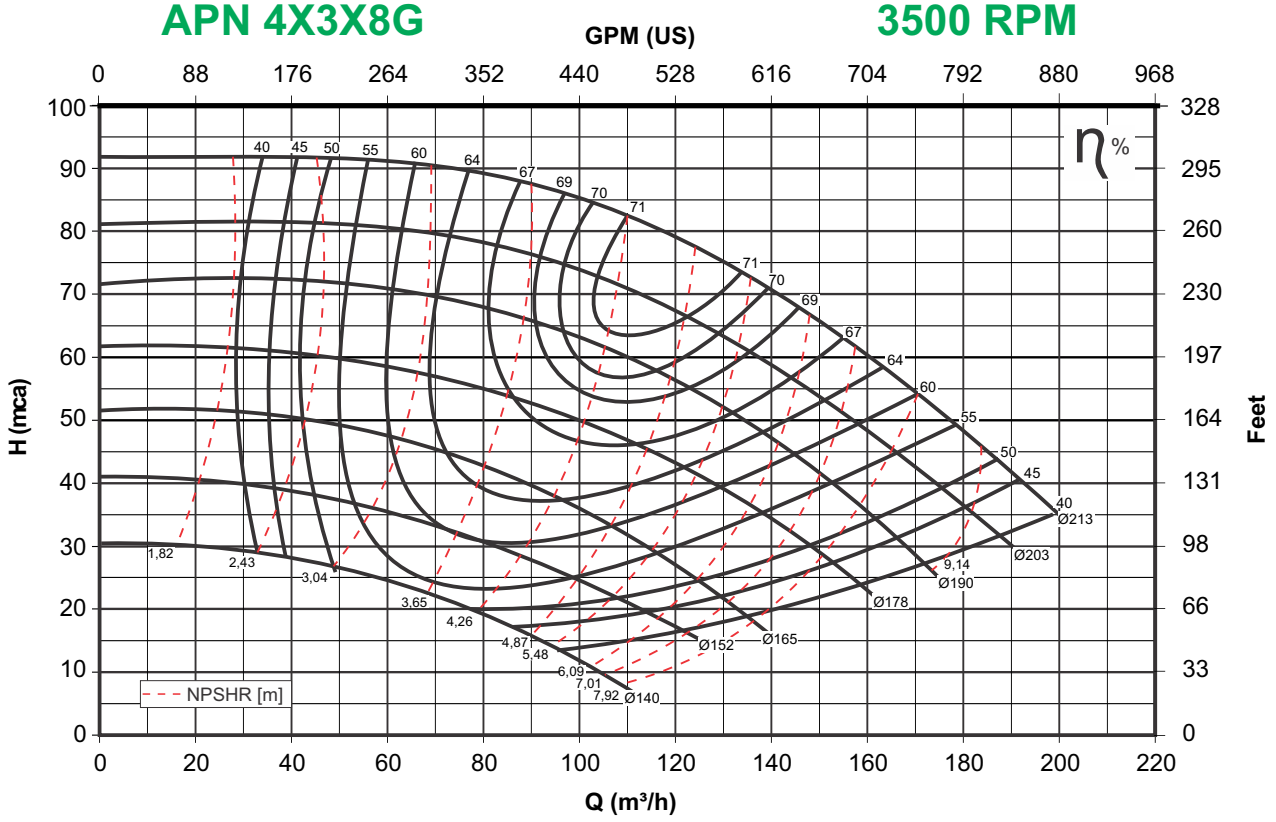

IMBIL Pumping Solutions

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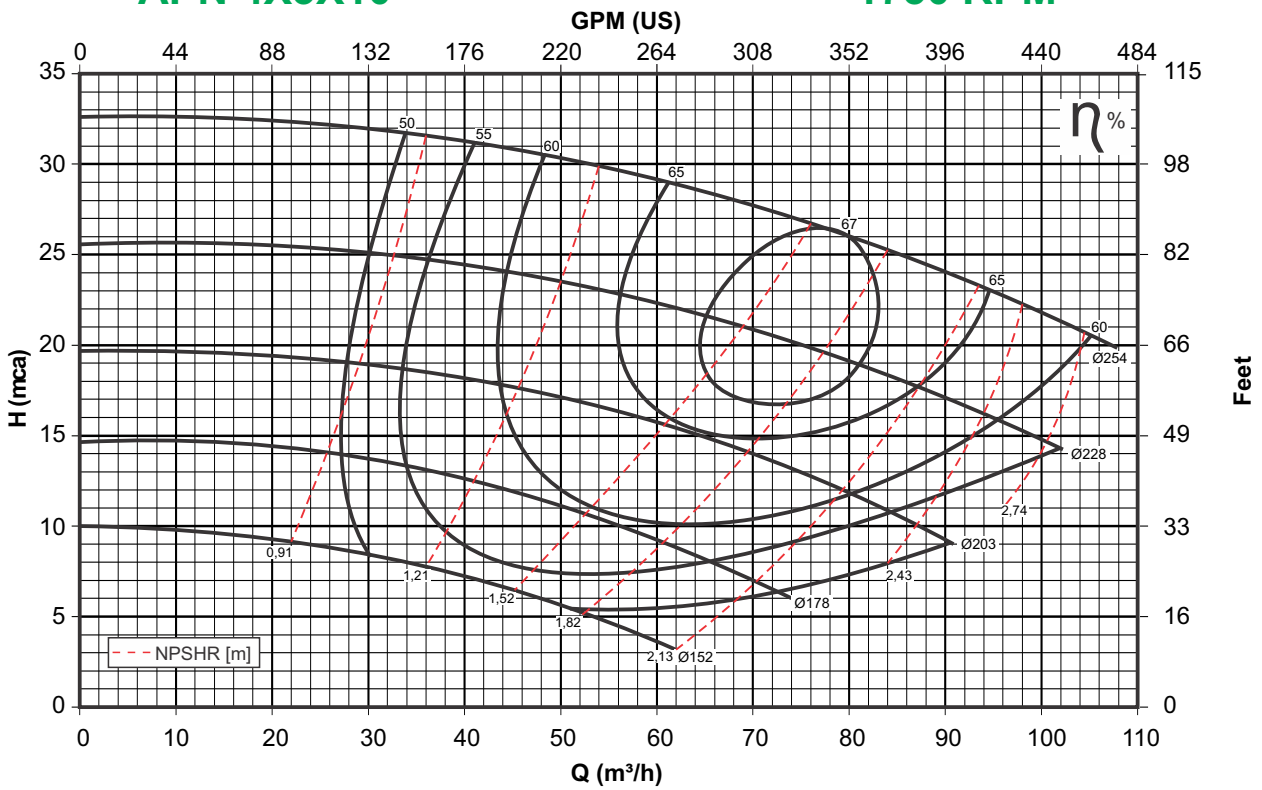

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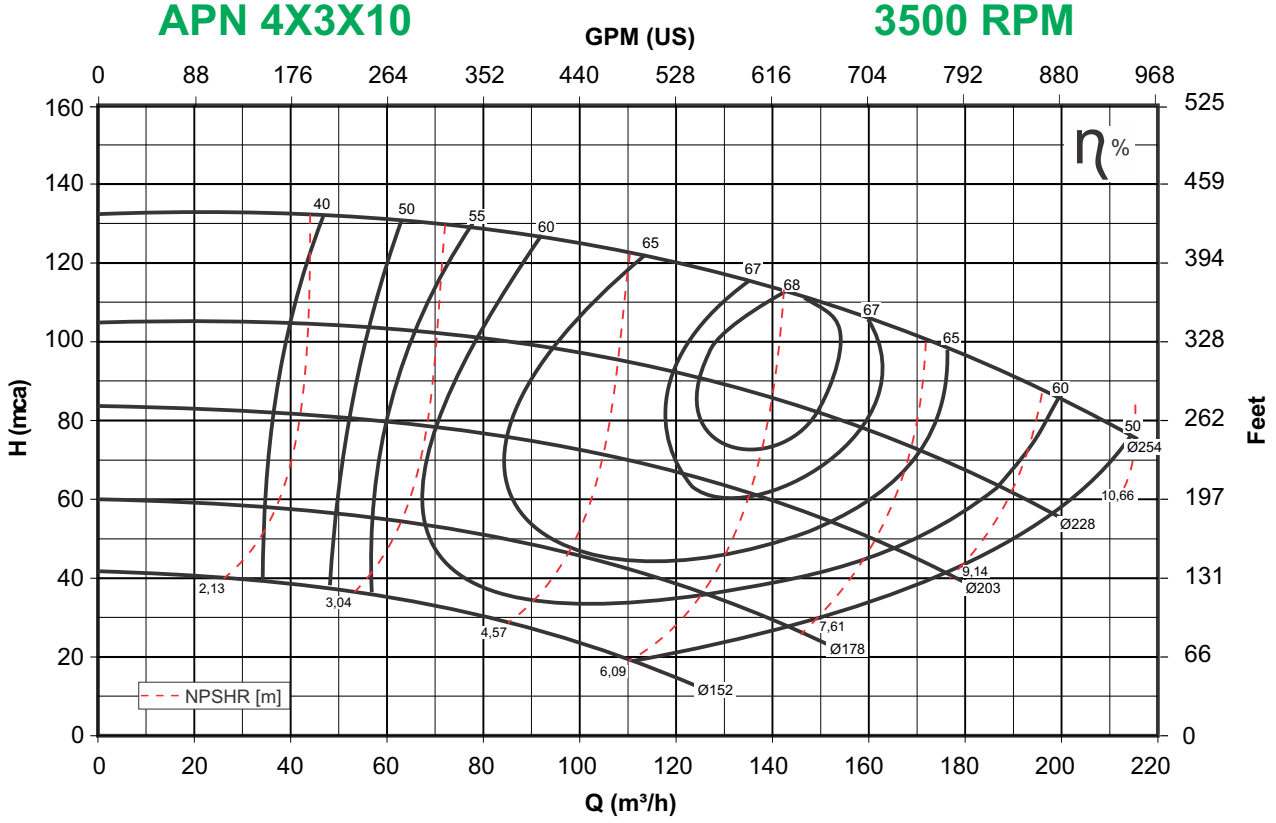

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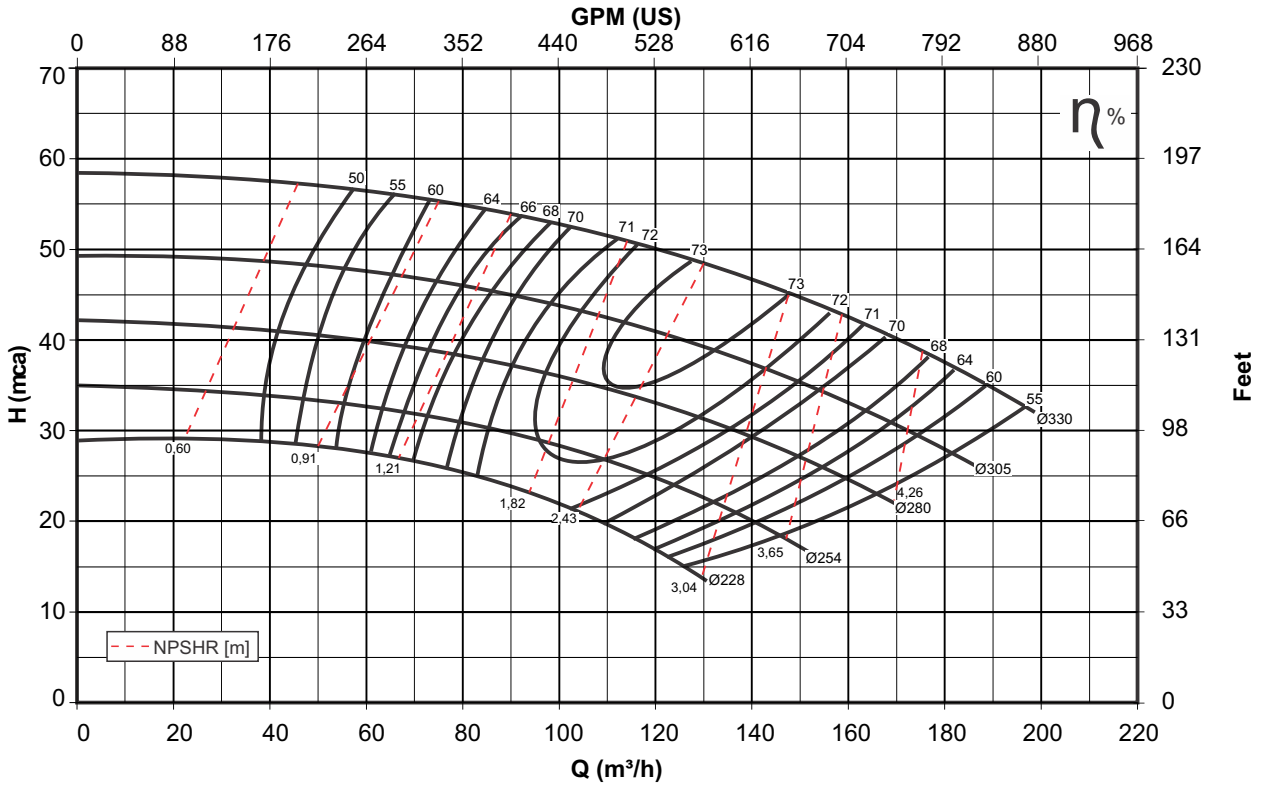
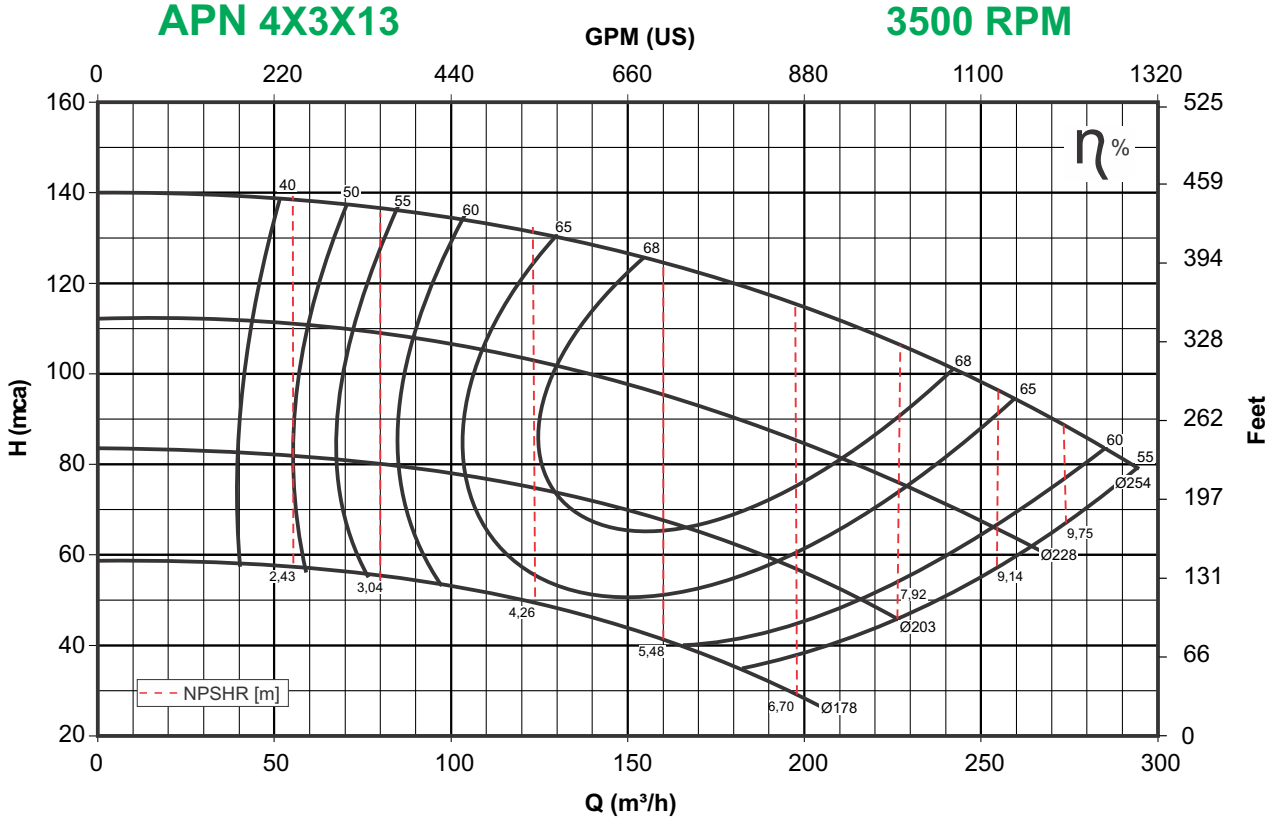


APN 4X3X13 — 3500 RPM



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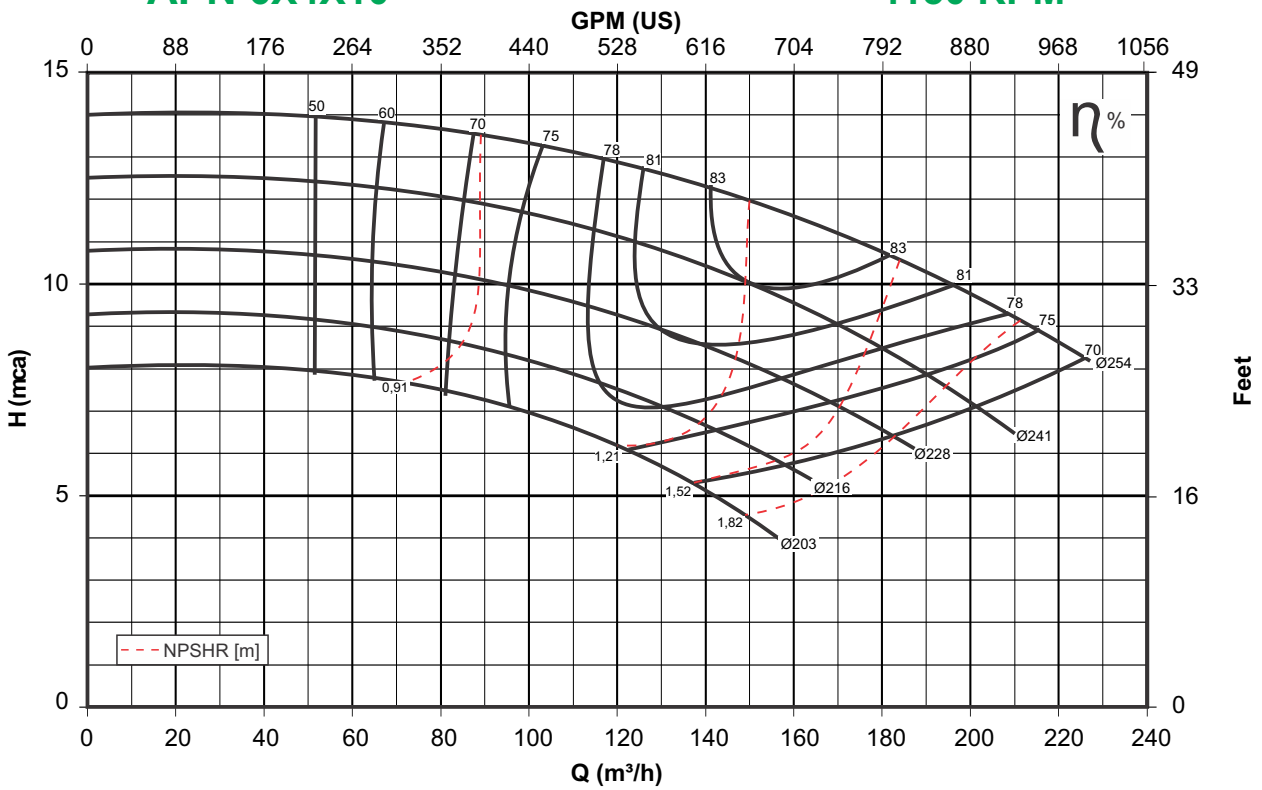
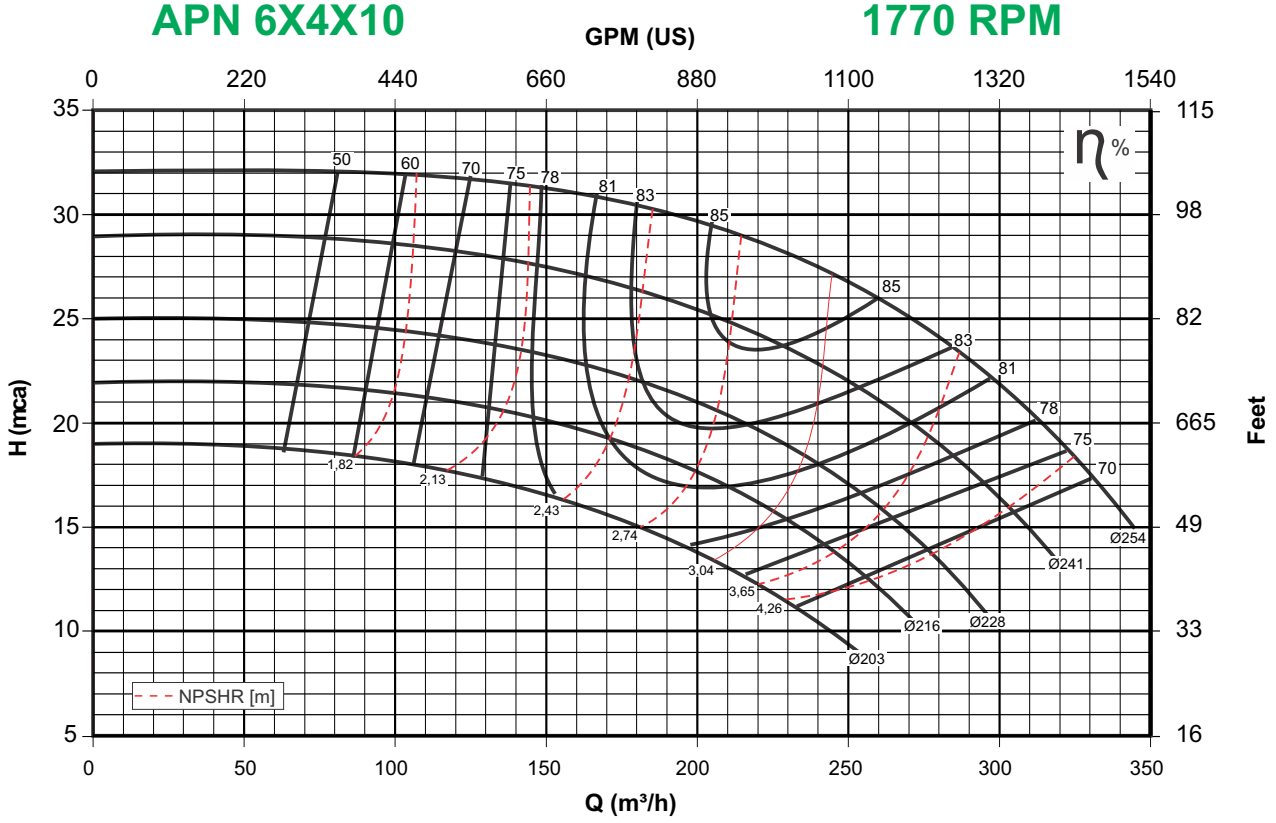
APN 6X4X10 — 1150 RPM



APN 6X4X10 — 1770 RPM



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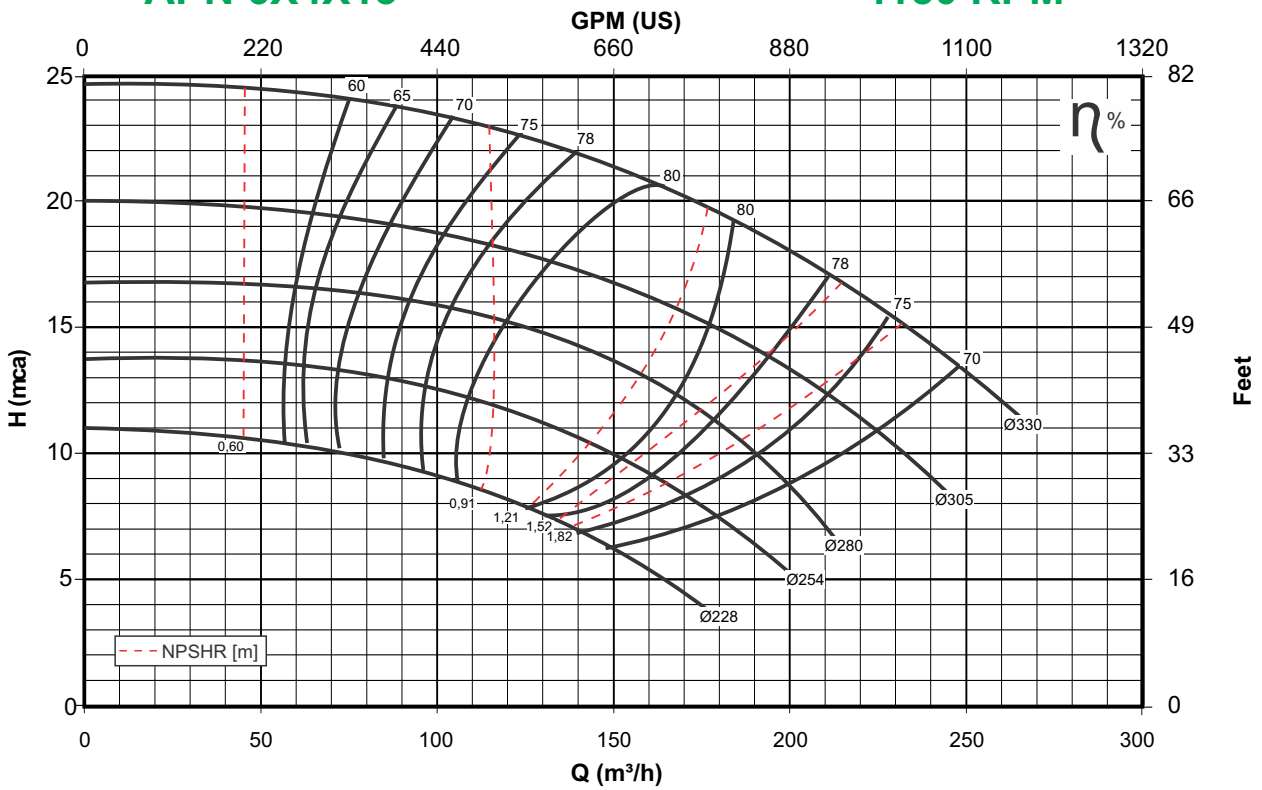

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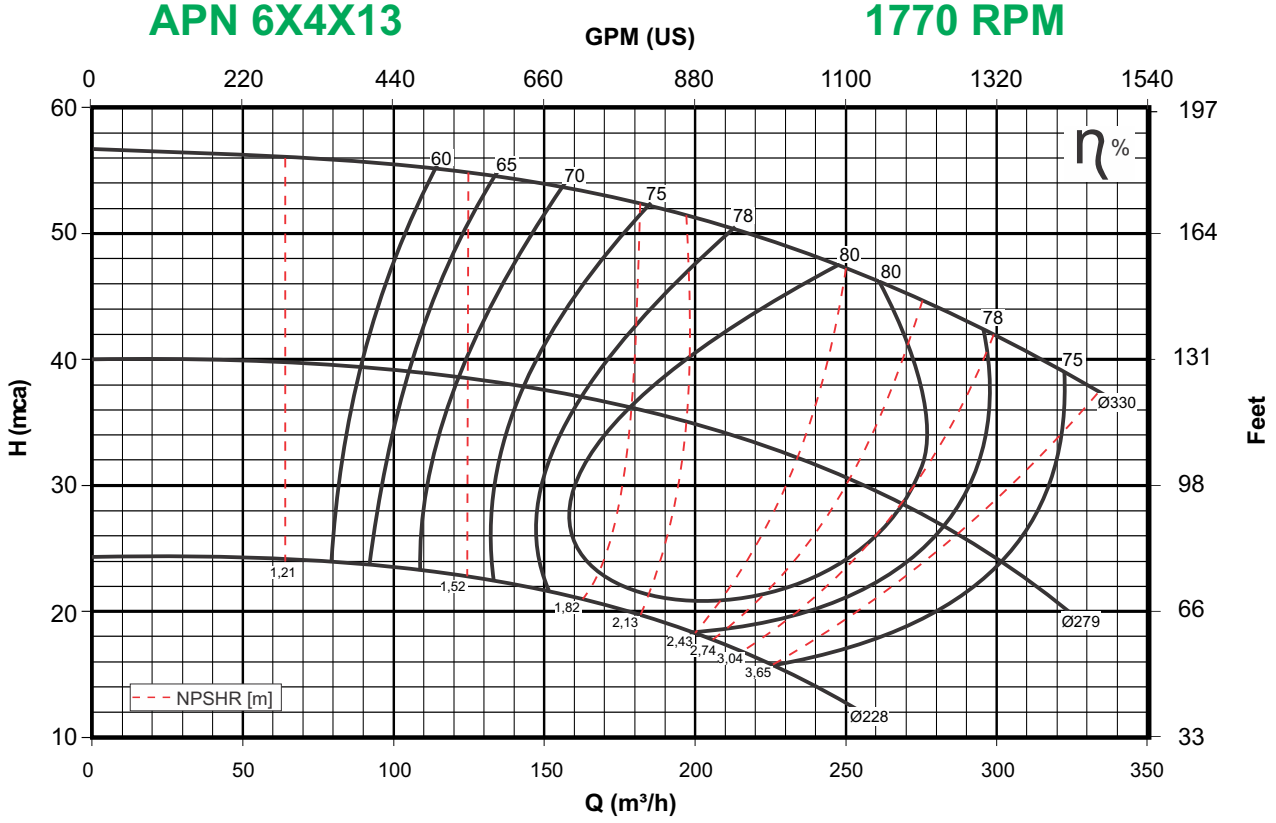
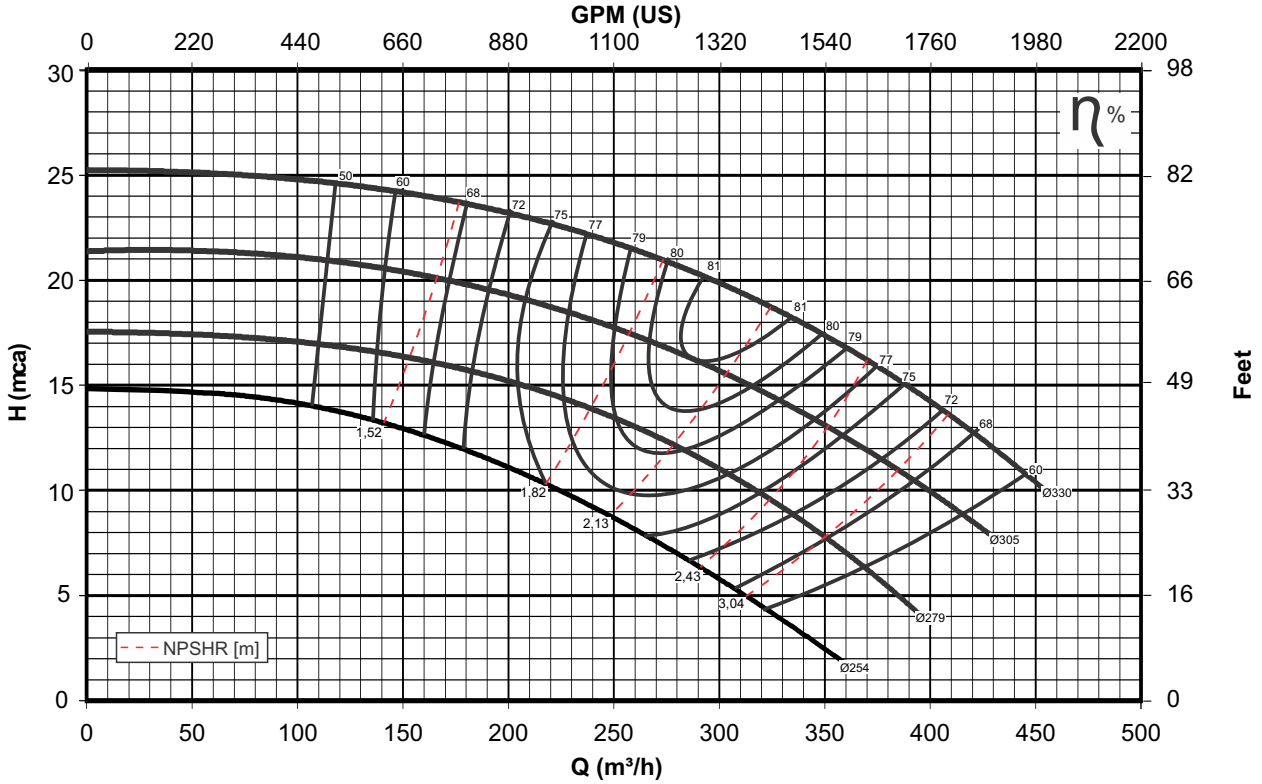


APN 8X6X13 — 1180 RPM



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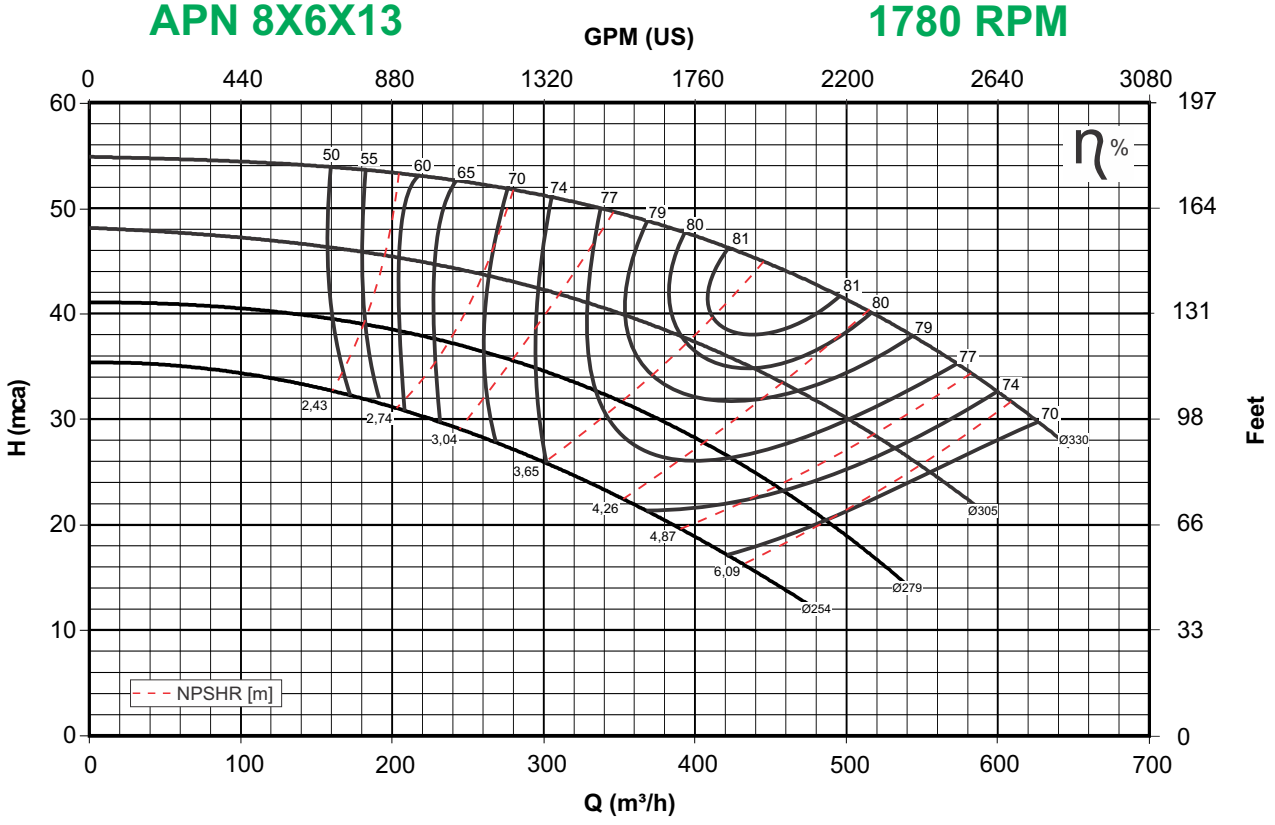

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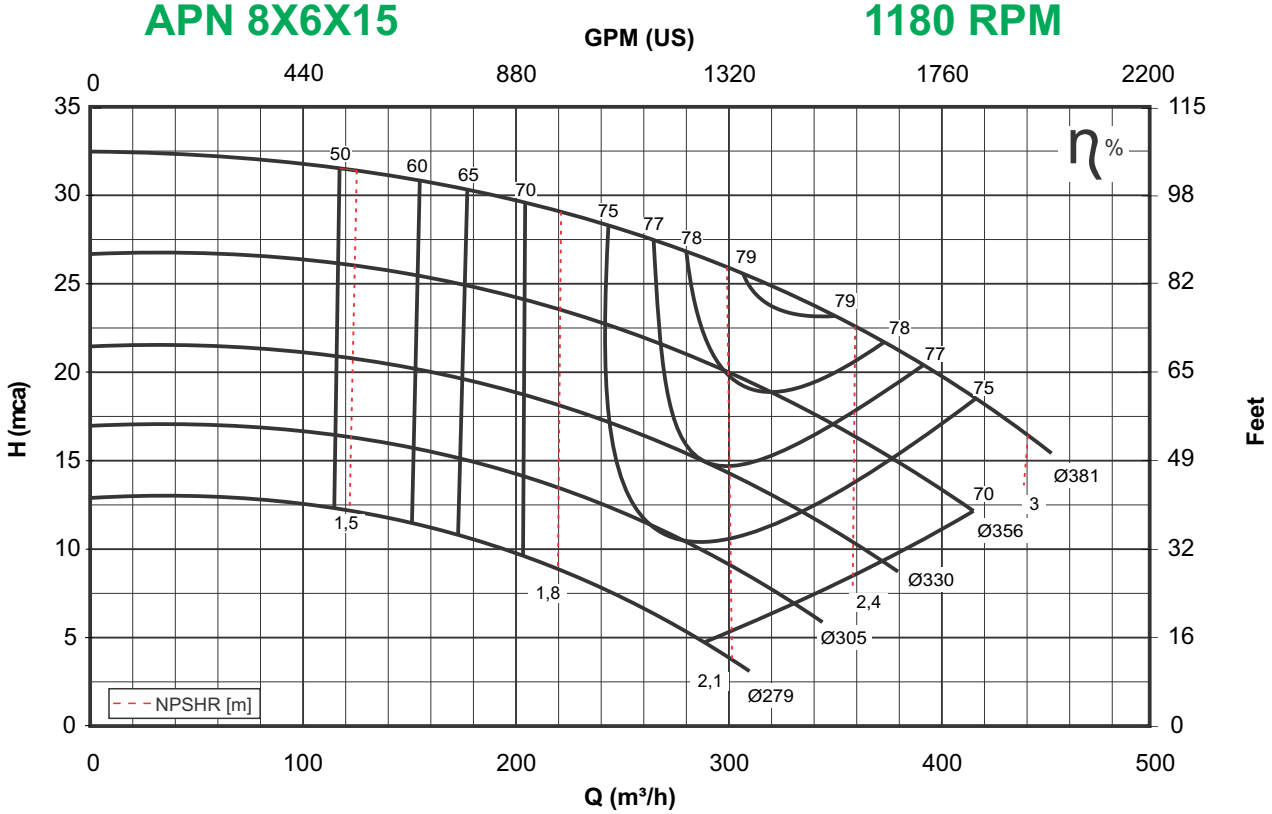

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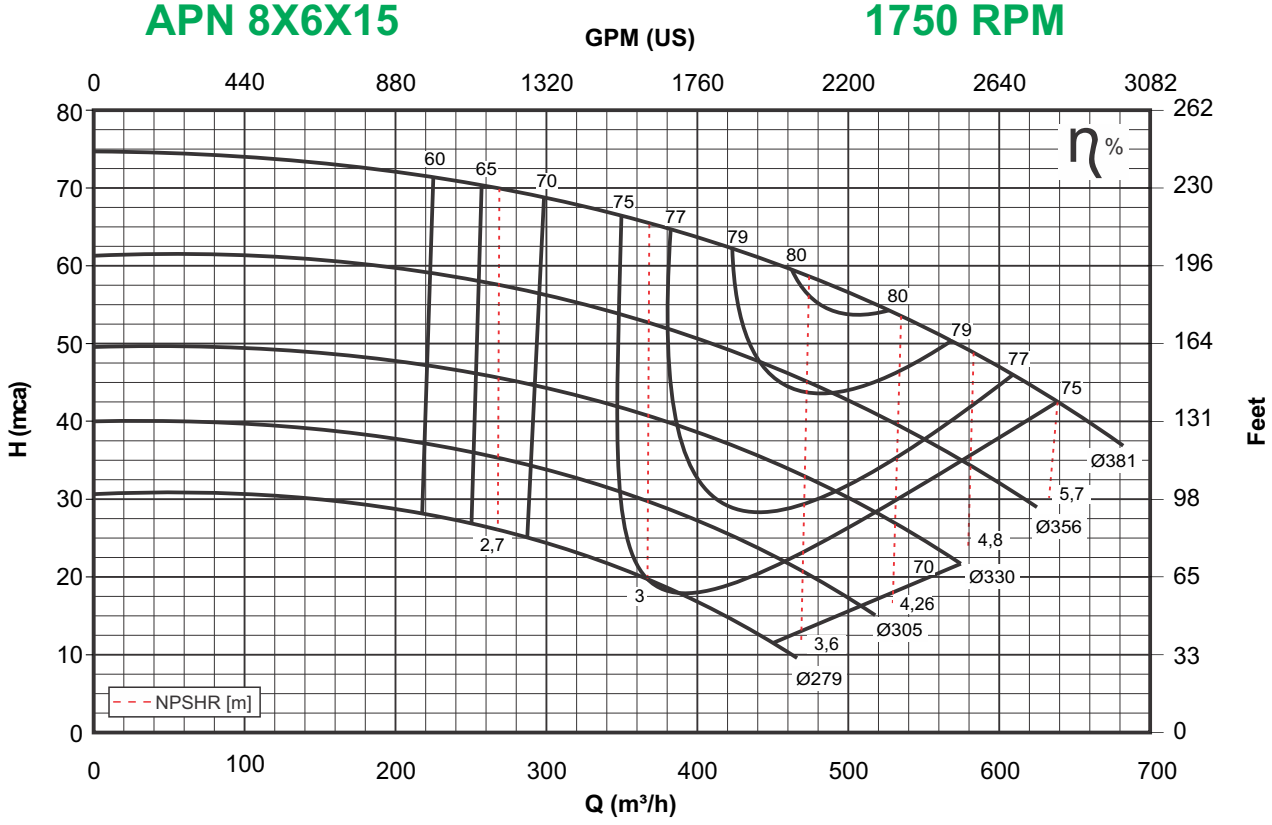

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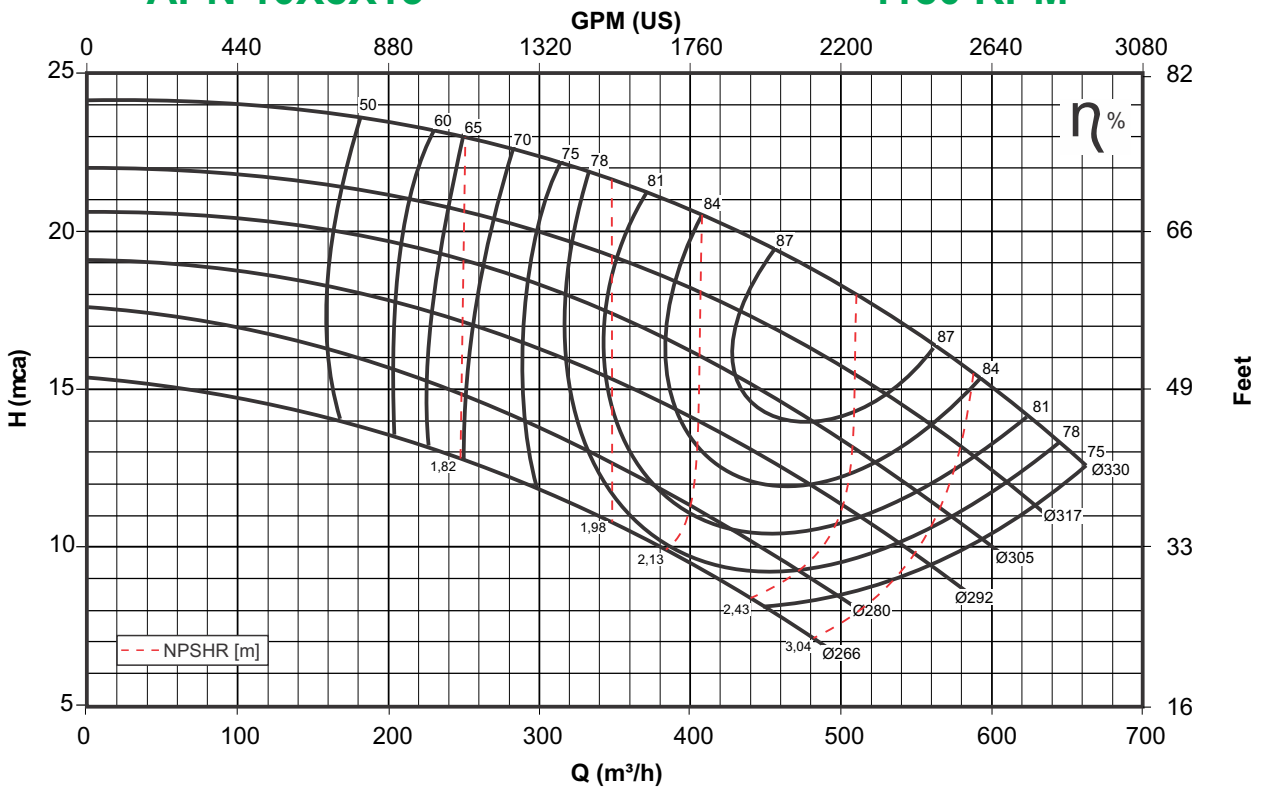

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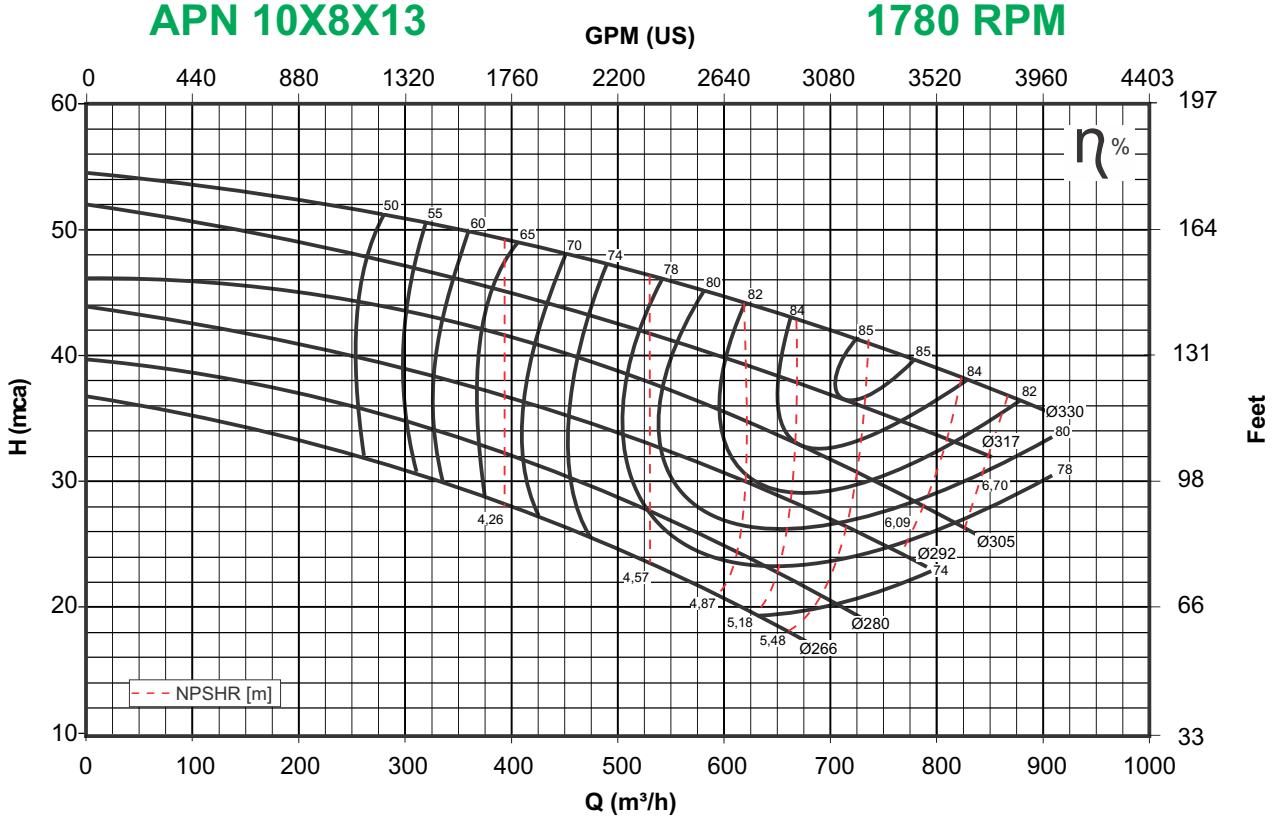

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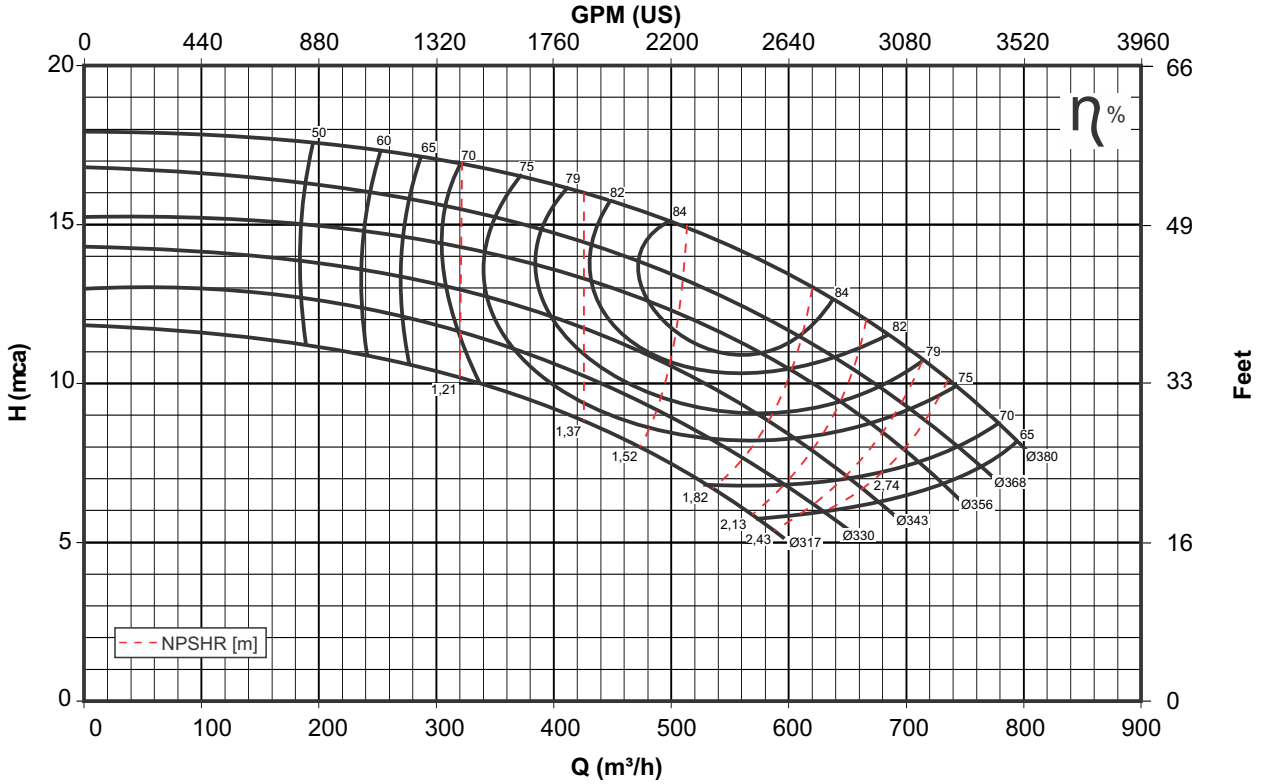
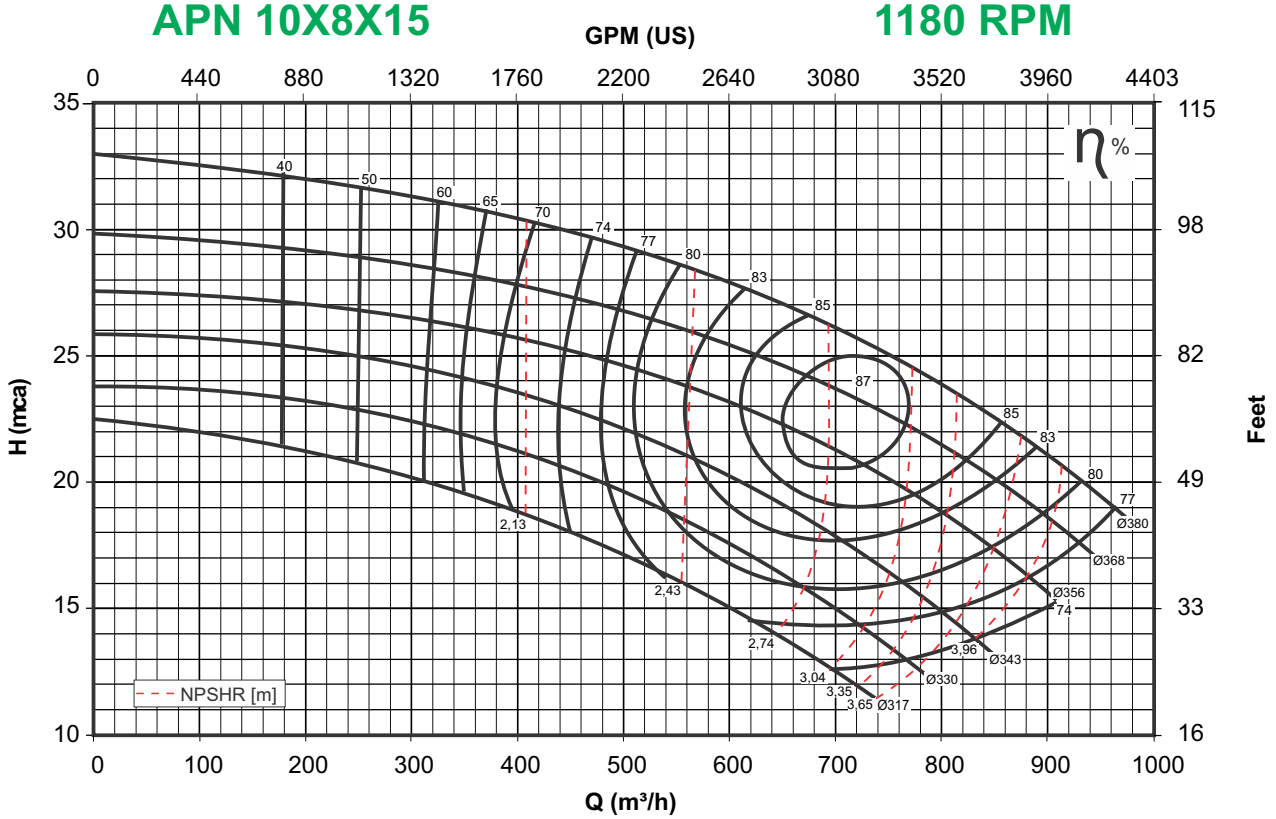


APN 10X8X15 — 1180 RPM



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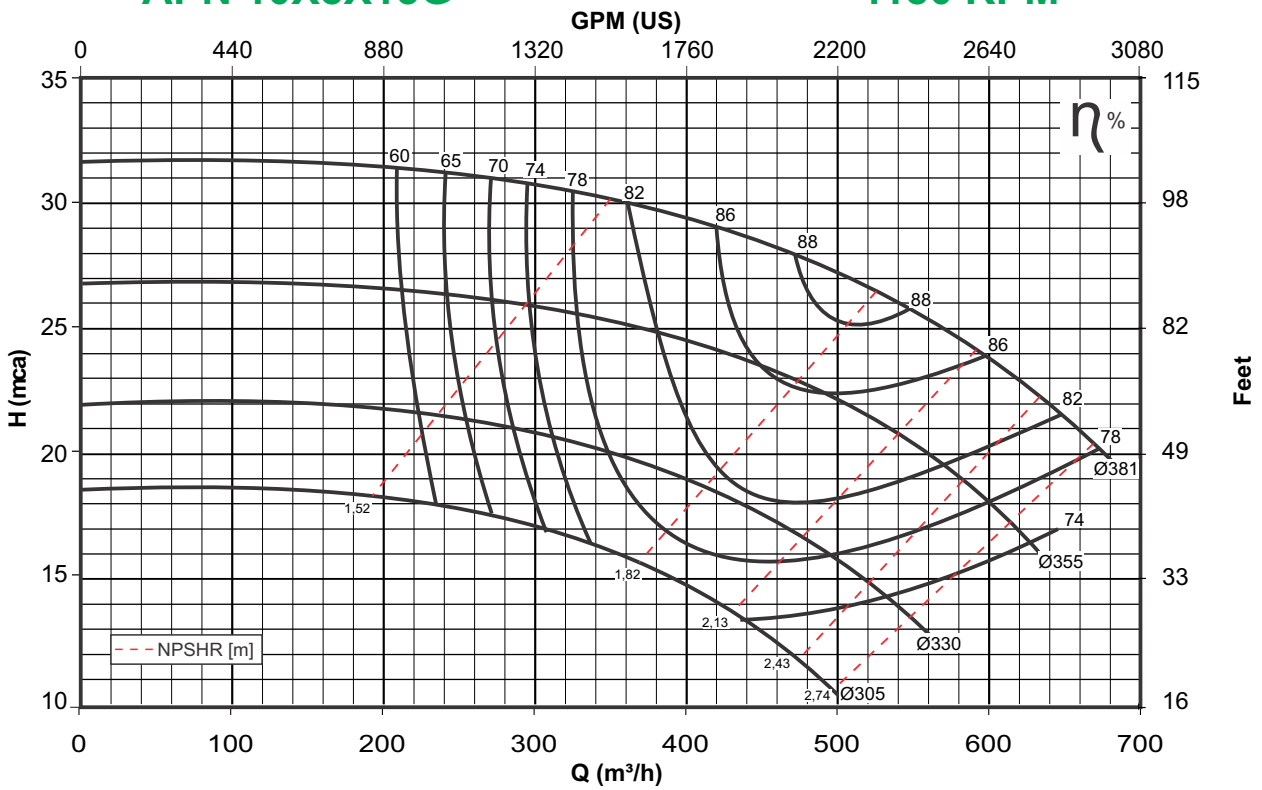

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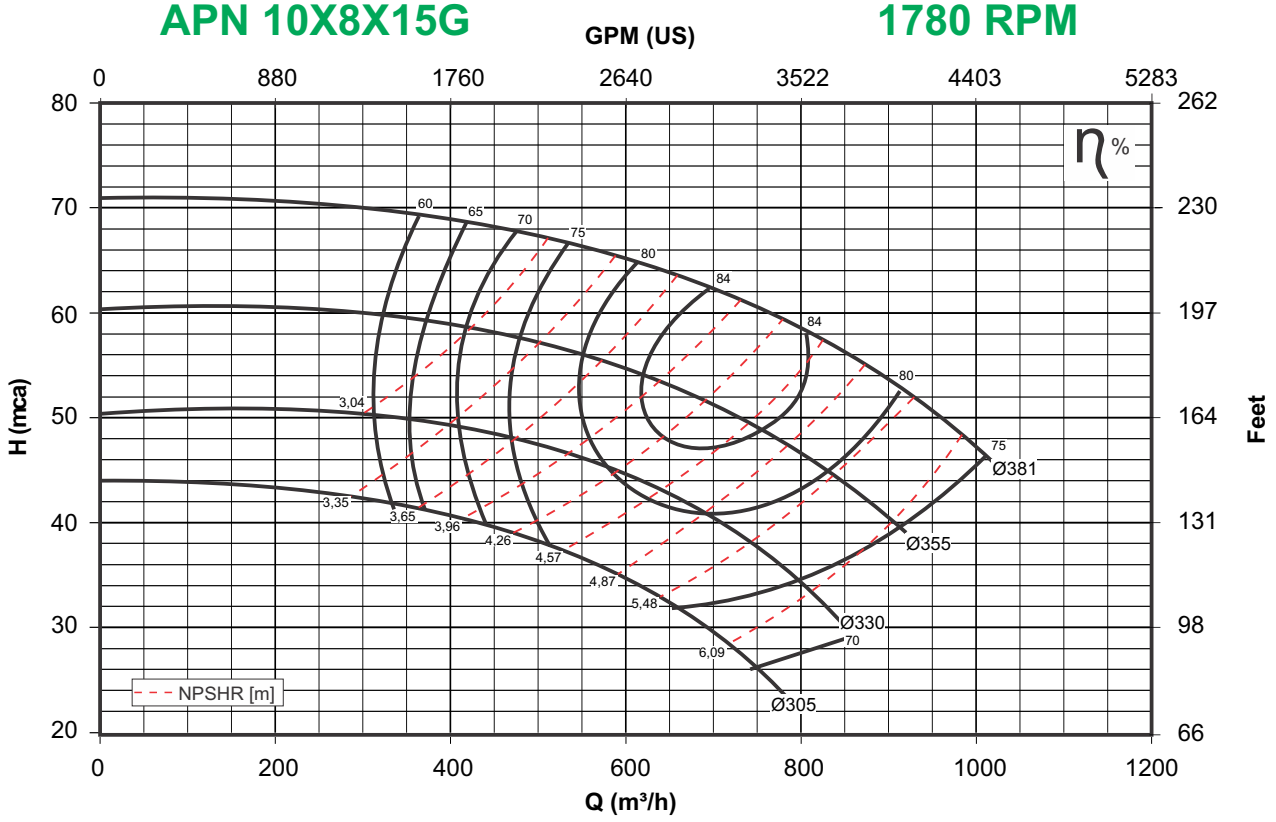

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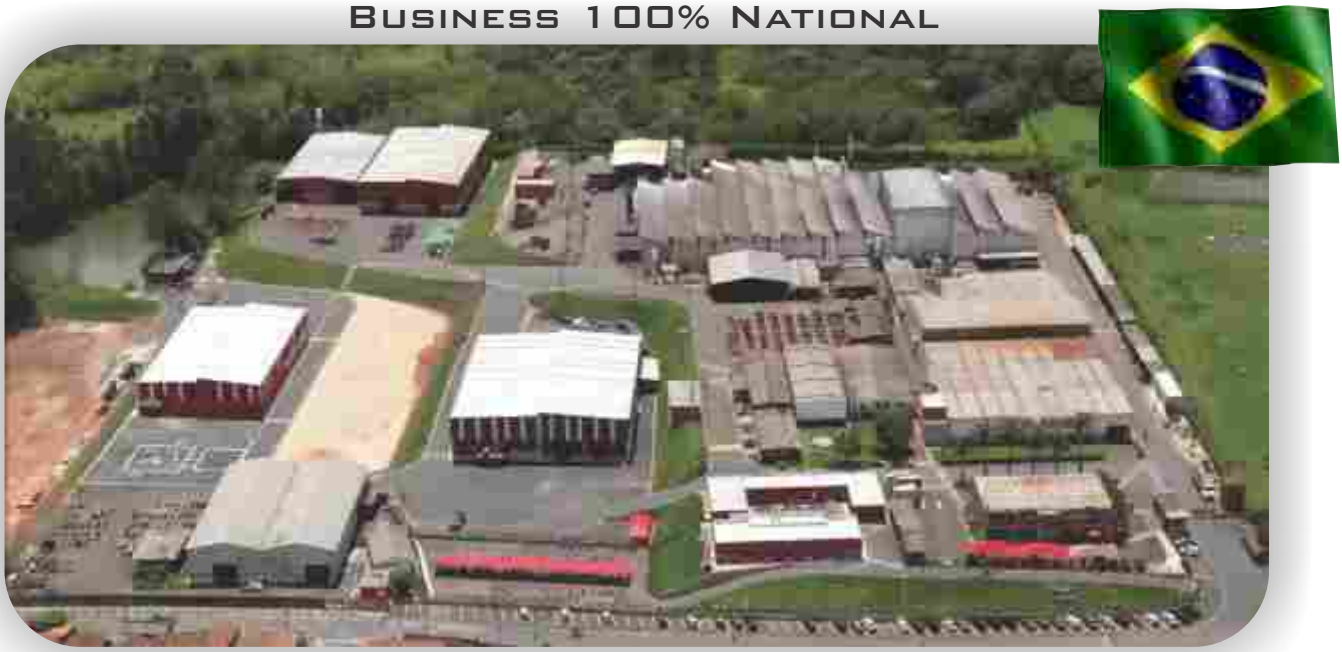
Business 100% National



Area 120.000m²

IMBIL - Pumping Solutions.

Acting in the Global Pump Market, IMBIL - Industry and Maintenance of Pumps ITA LLC, is located in the city of Itapira - São Paulo, covering an area of 120.000 square meters.

It has advanced technological resources, practices modern management and engineering techniques and stimulates a continuous development of skills, abilities and attitudes of employees.

The Quality Management System is certified to international standard ISO 9001 - 2000 by Bureau Veritas Certification.

Currently IMBIL accelerates the development of its Integrated Social and Environmental Management.

The Commercial, Administrative and Industrial functions are fully interconnected by Business Management software in a fiber optic and wireless network connecting more than one hundred stations.

Supported by two own foundries and model-making facilities, IMBIL is selfsufficient in the production of its castings, applying a wide range of materials, especially those resistant to abrasion and corrosion.

The Lean Manufacturing philosophy, that aims to reduce the time between order placement and shipment of the product, results not only in shorter lead times but also in greater flexibility.

We offer an adequate and personalized After Sales serviec, from support in the Start-Up phase to integral equipment maintenance, and yet, as per the Service Contract, operate Pumping Installations in the Sugar&Ethanol, Steel and Mining Industries and industrial plants in general.

All this human, technological and financial resources are driven by the IMBIL MISSION: “Providing Pumping Solutions and related services, attending the needs and expectations of its customers in the Global Market and respecting the ethical principles that govern its relations with employees, partners, environment and society”.