ANSI - CURVE BOOK

CHEMICAL PROCESS PUMPS

RAPID ALLWEILER PUMPS

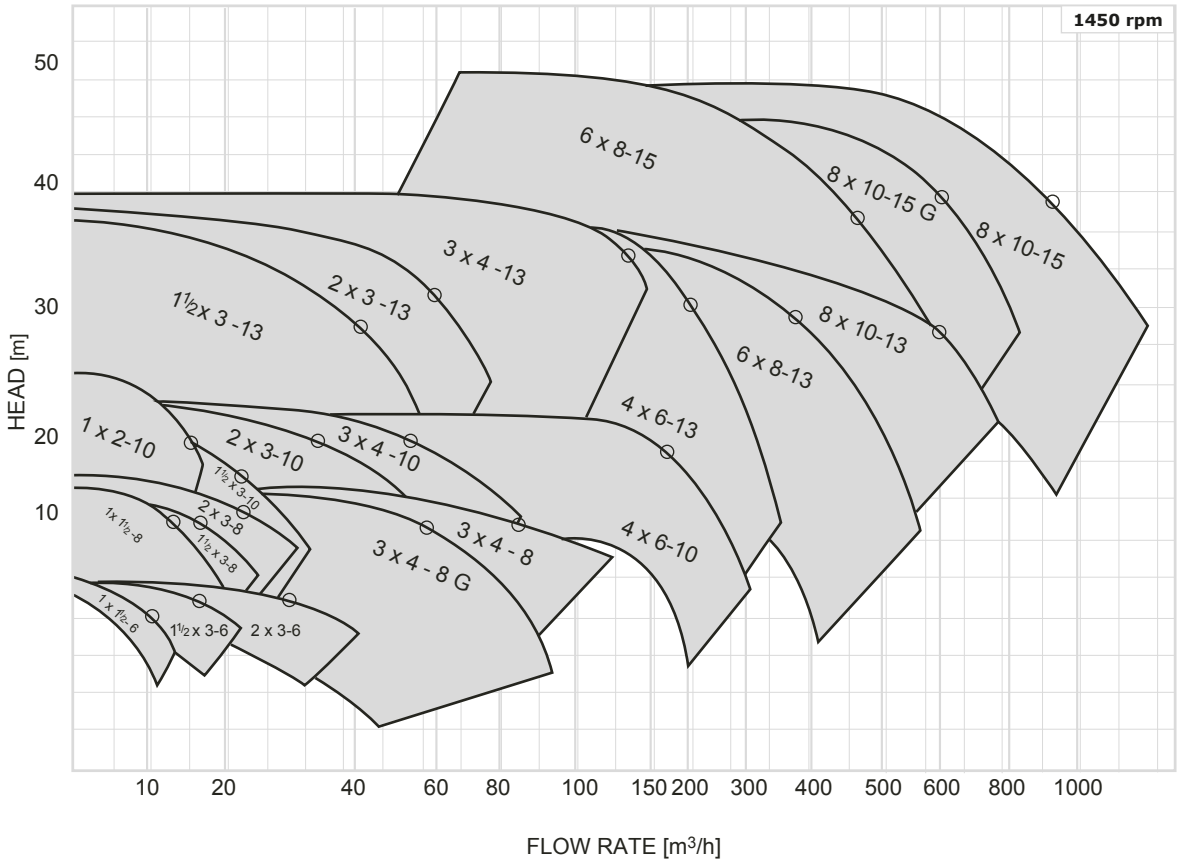
WE HAVE ALL THE TICKS

- FOUNDED IN 1932
- LEADING PROVIDER OF TOP QUALITY PRODUCTS
- LOCAL MANUFACTURE
- ACCREDITED PUMP REPAIR/SERVICE WORKSHOP
- TAILOR MADE PUMPING SOLUTIONS
- STATE OF ART TRAINING CENTRE
- CBS: QUALITY MANAGEMENT SYSTEM
- BEE ACCREDITED
- DEEP APPLICATION KNOWLEDGE

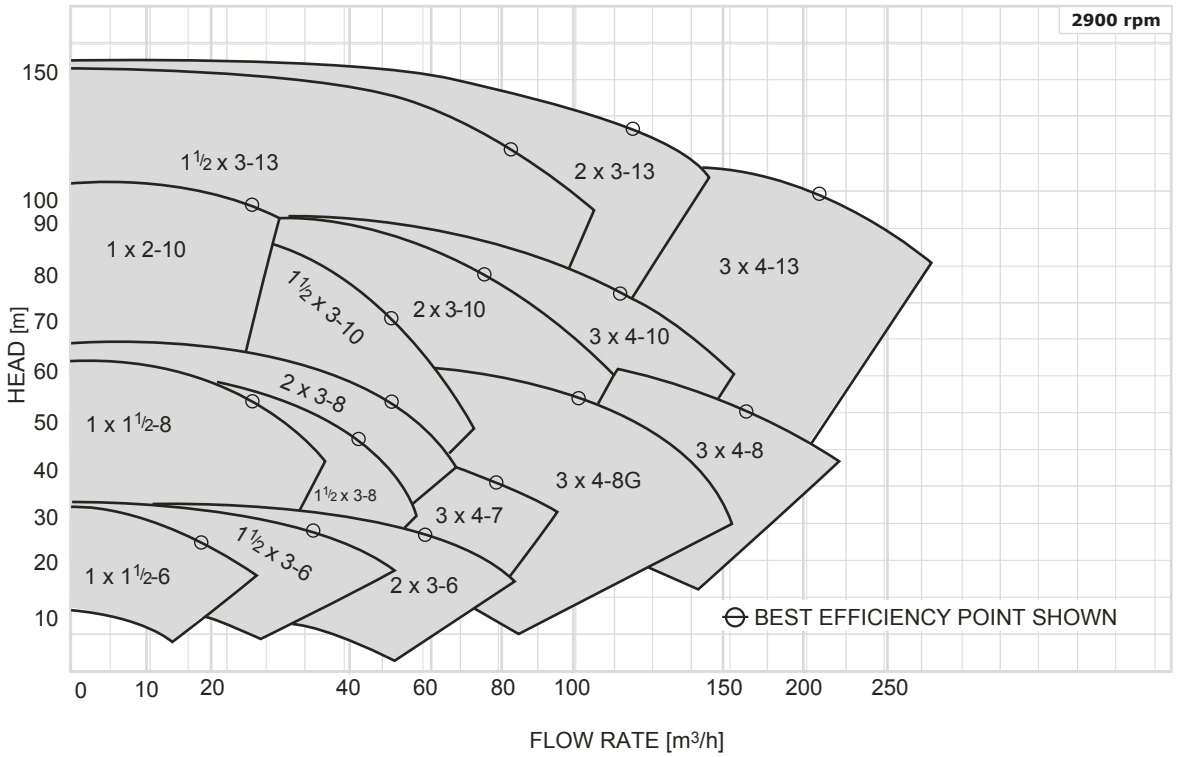
Version 1 - ANSI Curve Book: Rapid Allweiler Pumps

COLFAX Fluid Handling
ALLWEILER

TOMBSTONE CURVES



Size*	Pg. no. 1450	Pg. no. 2900
1x1½-6	2	24
1x1½-8	3	25
1½x3-6	4	26
1½x3-8	5	27
1½x3-10	6	28
1½x3-13	7	29
1x2-10	8	30
2x3-6	9	31
2x3-8	10	32
2x3-10	11	33
2x3-13	12	34
3x4-8G	13	35
3x4-8	14	36
3x4-10	15	37
3x4-13	16	
4x6-10	17	
4x6-13	18	
6x8-13	19	
6x8-15	20	
8x10-13	21	
8x10-15G	22	
8x10-15	23	



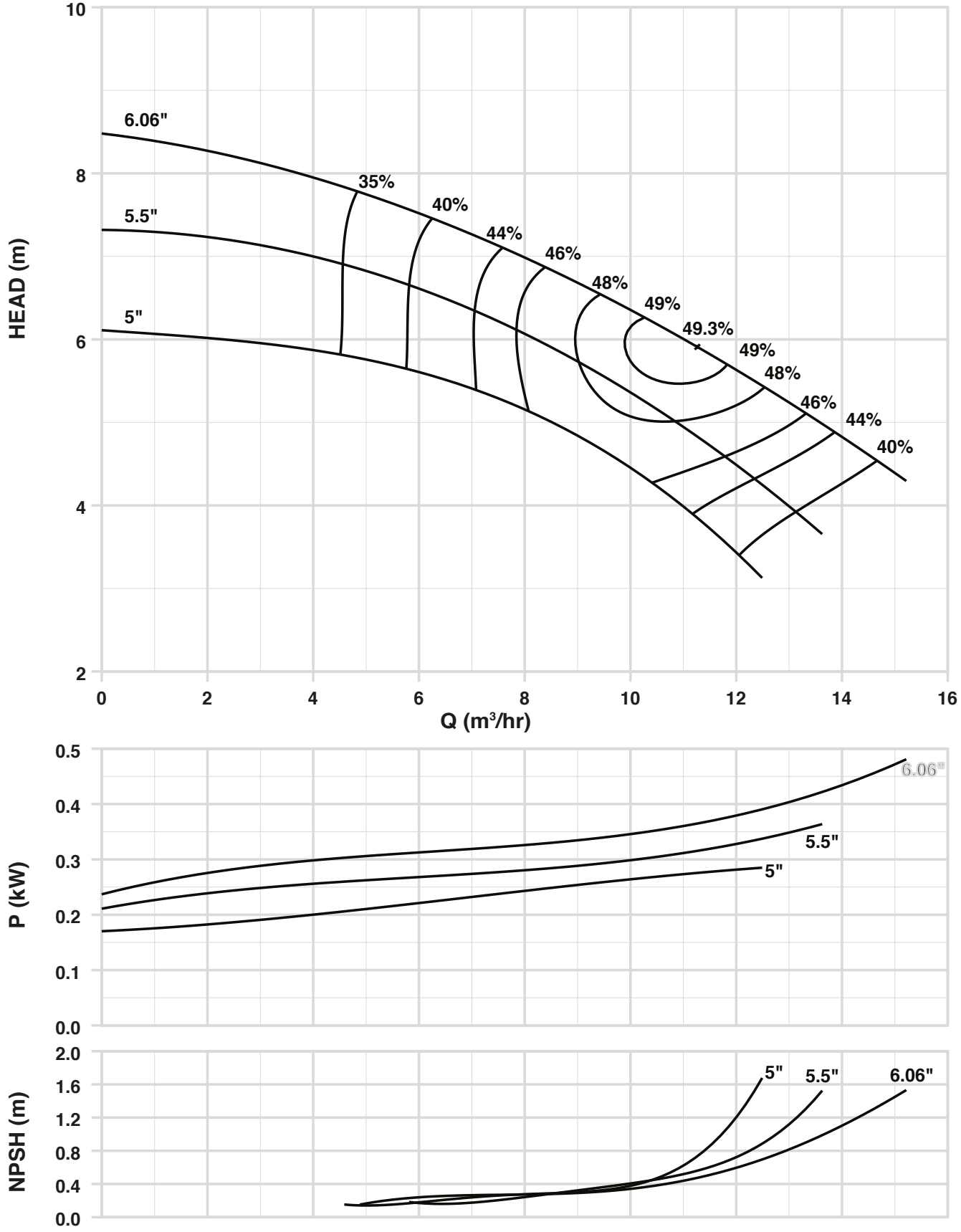
RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE

Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**1 ½”**	**1”**

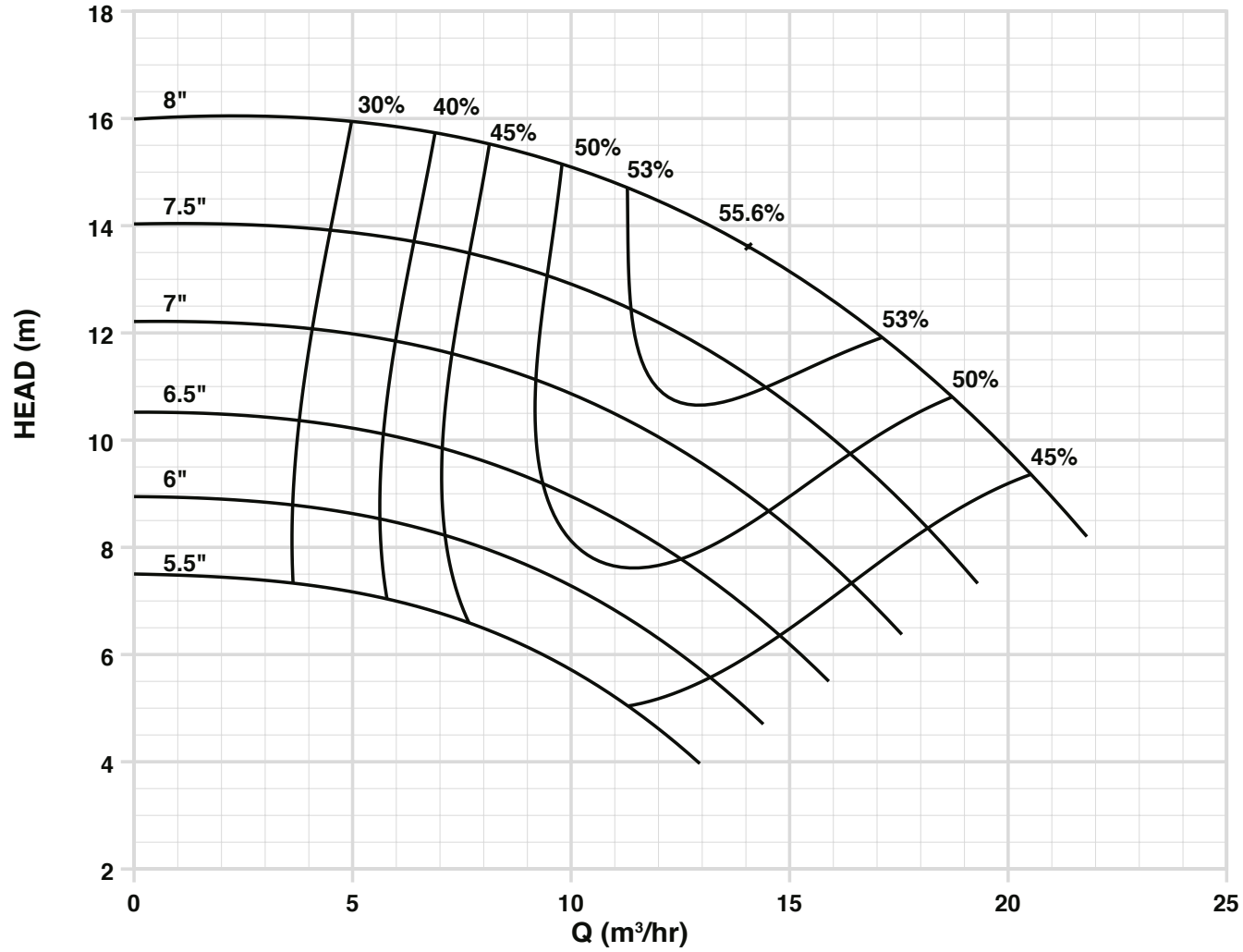
Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

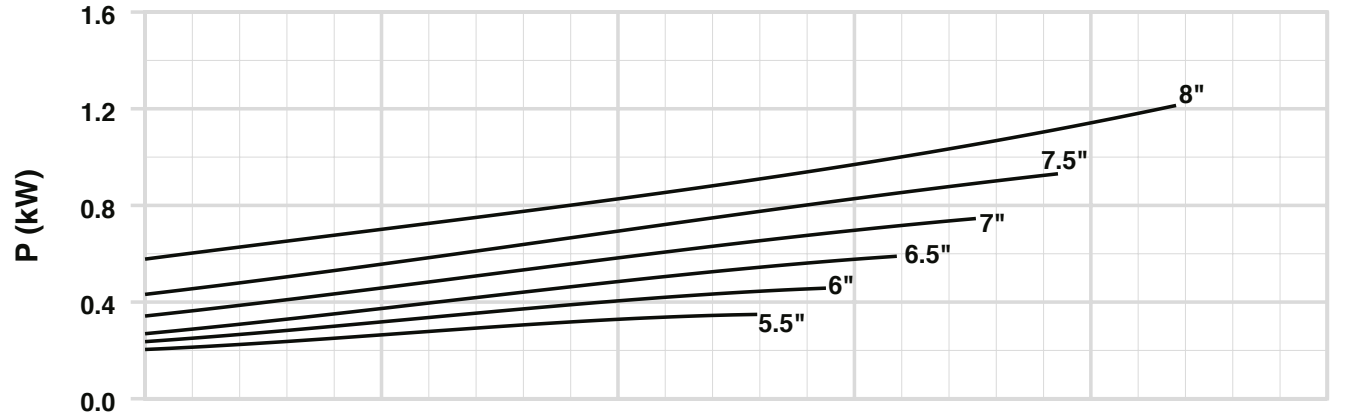
ANSI 343
1 x 1½ - 6
1450 rpm

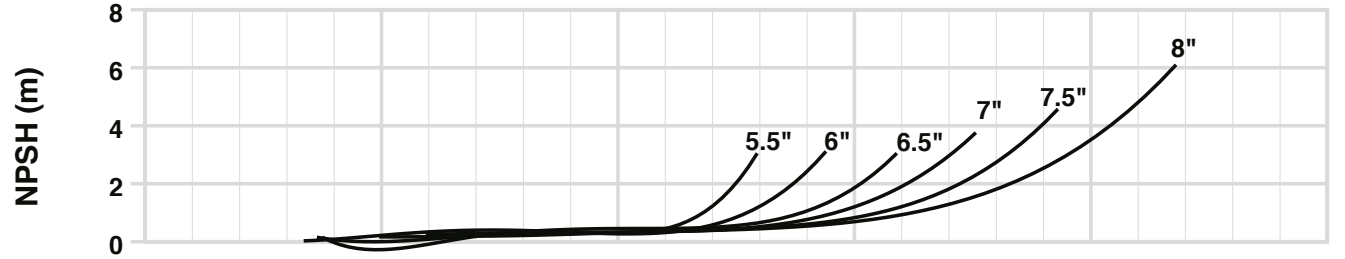


RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 343
Issue Date **OCTOBER 2005**	Suction Diameter **1 ½”**	Discharge Diameter **1”**	**1 x 1½ - 8**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**







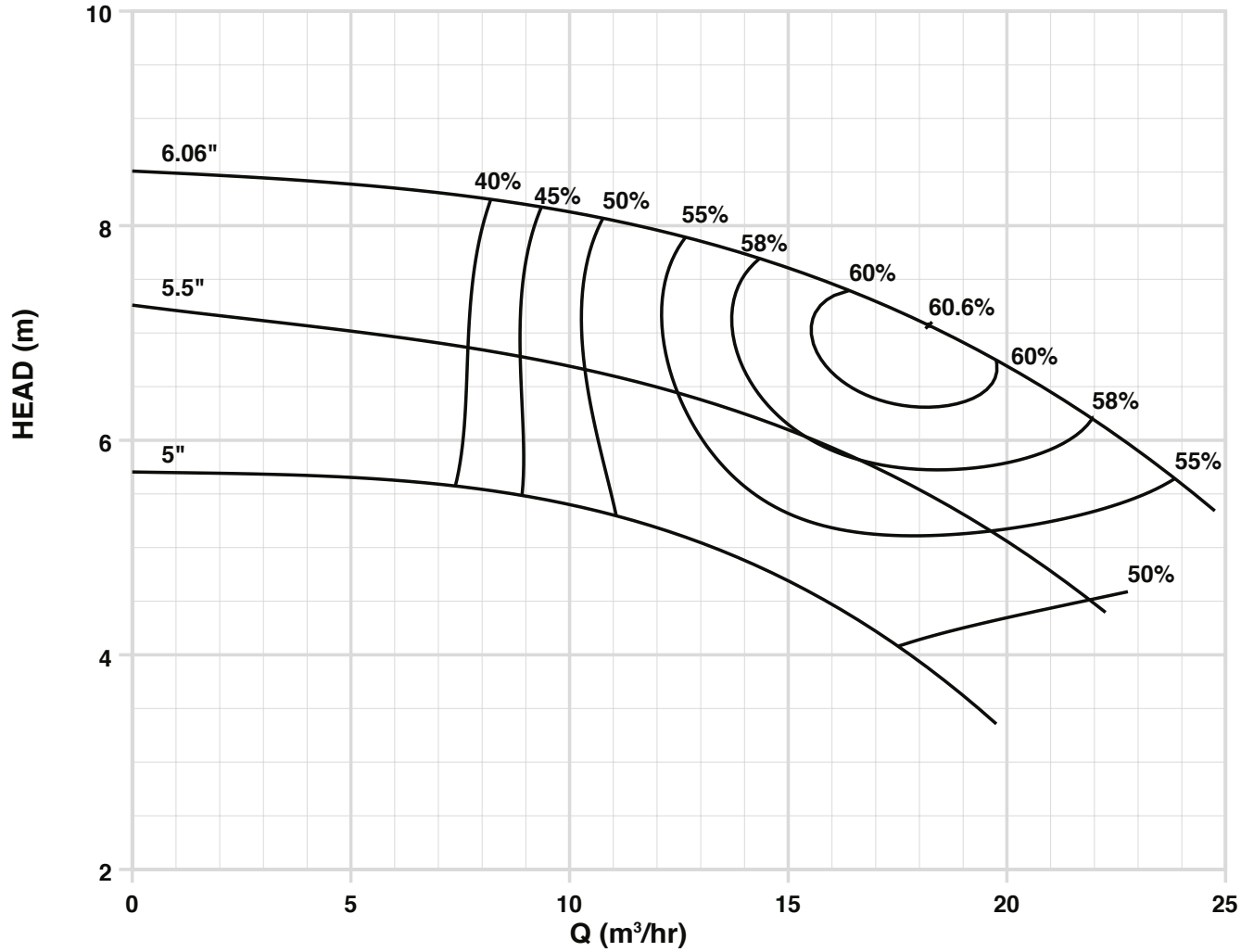
RAPID ALLWEILER PUMPS

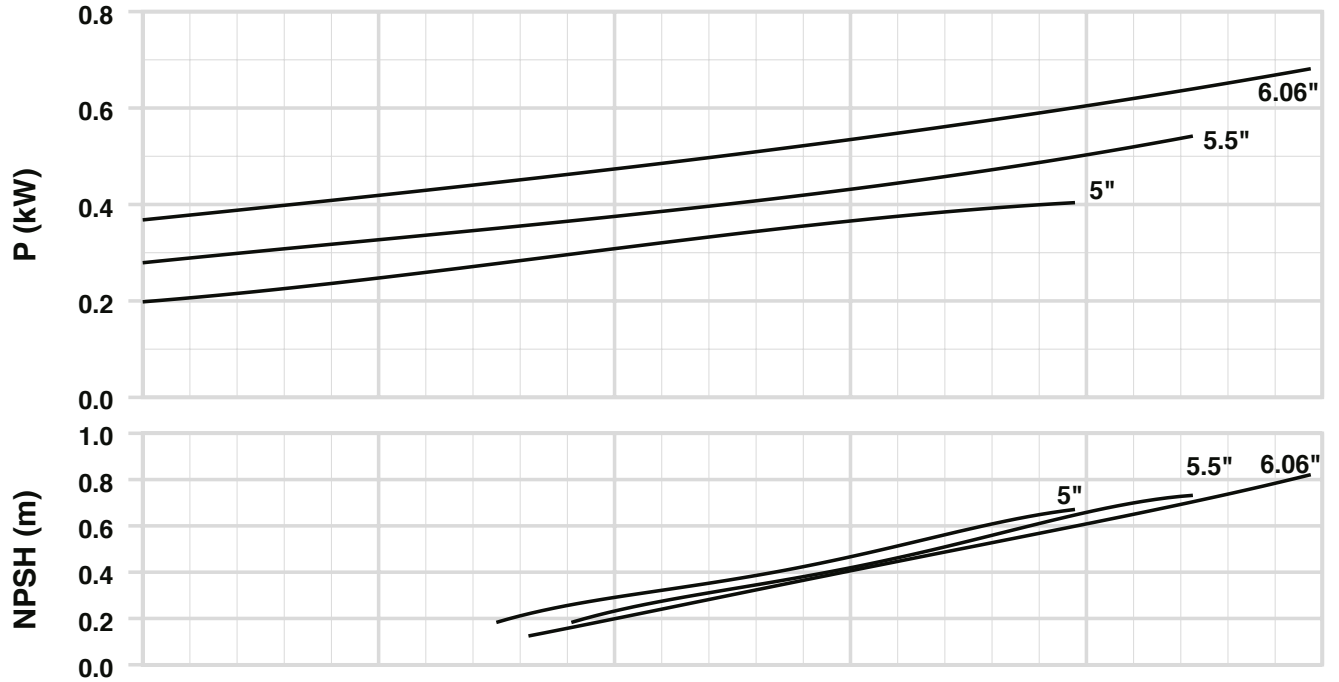
CHARACTERISTIC CURVE

Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**3”**	**1½”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

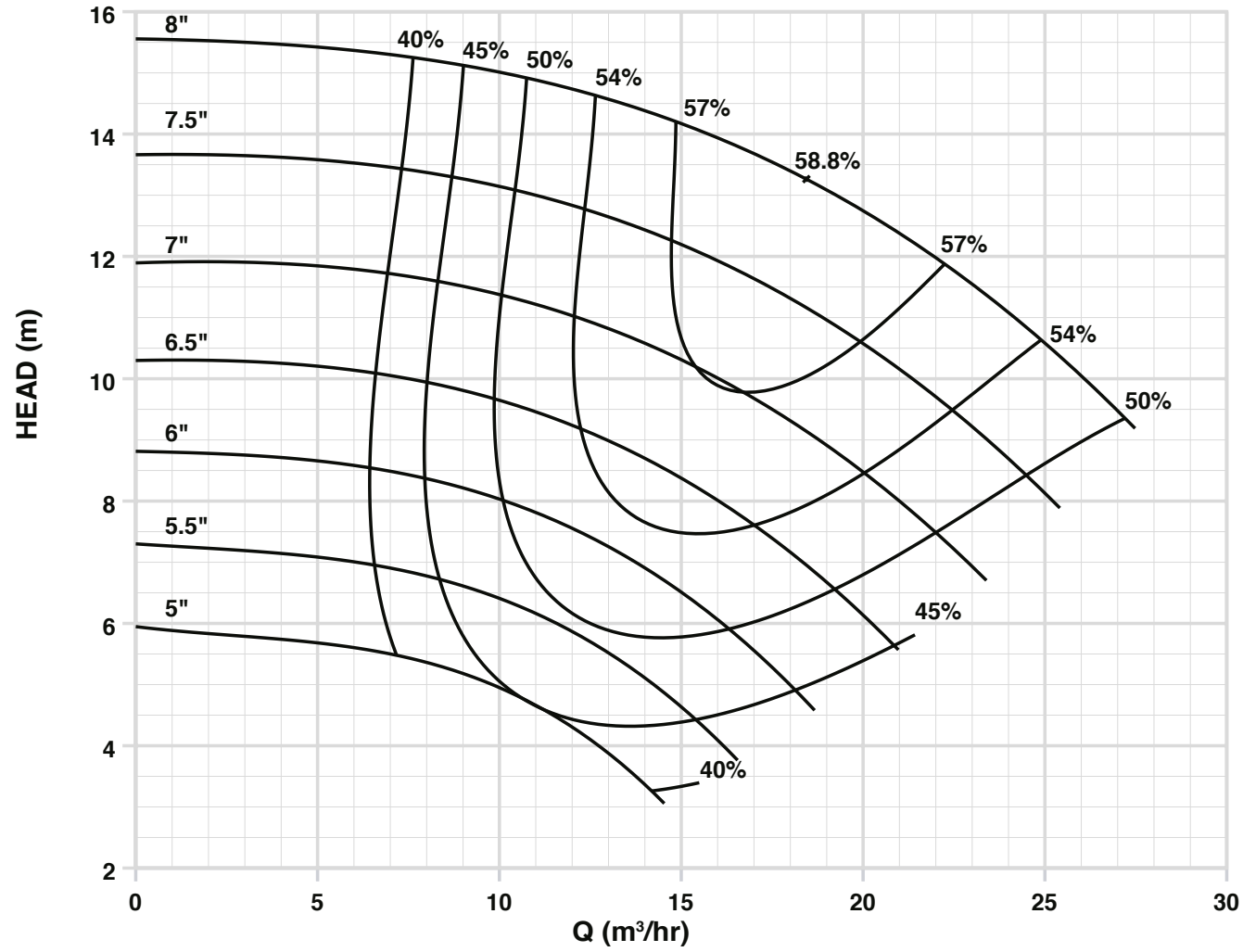
ANSI 343
1½ x 3 - 6
1450 rpm

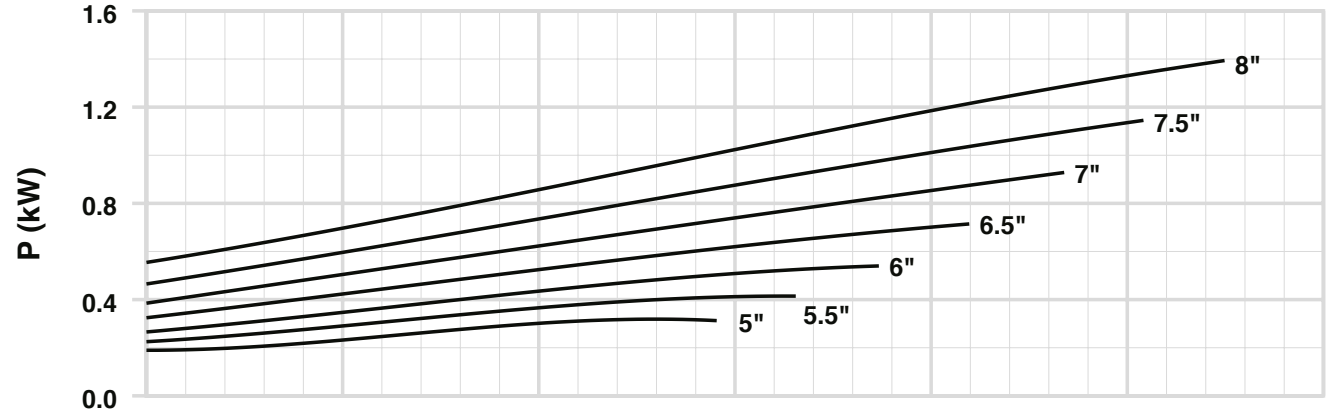


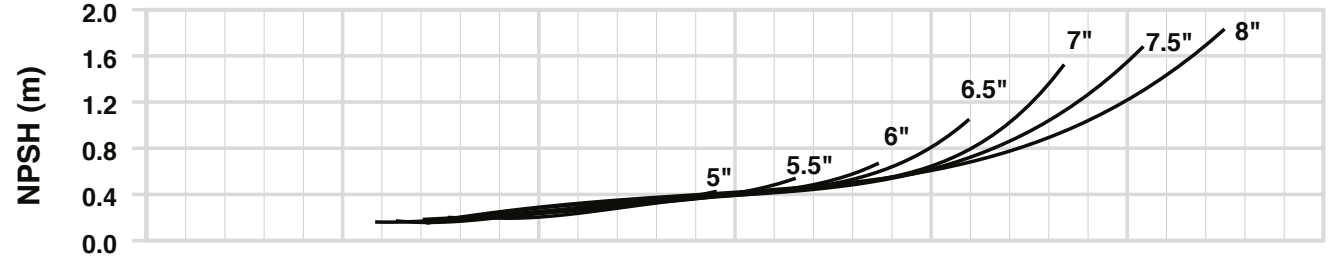


RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 343
Issue Date **OCTOBER 2005**	Suction Diameter **3”**	Discharge Diameter **1½”**	**1½ x 3 - 8**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**



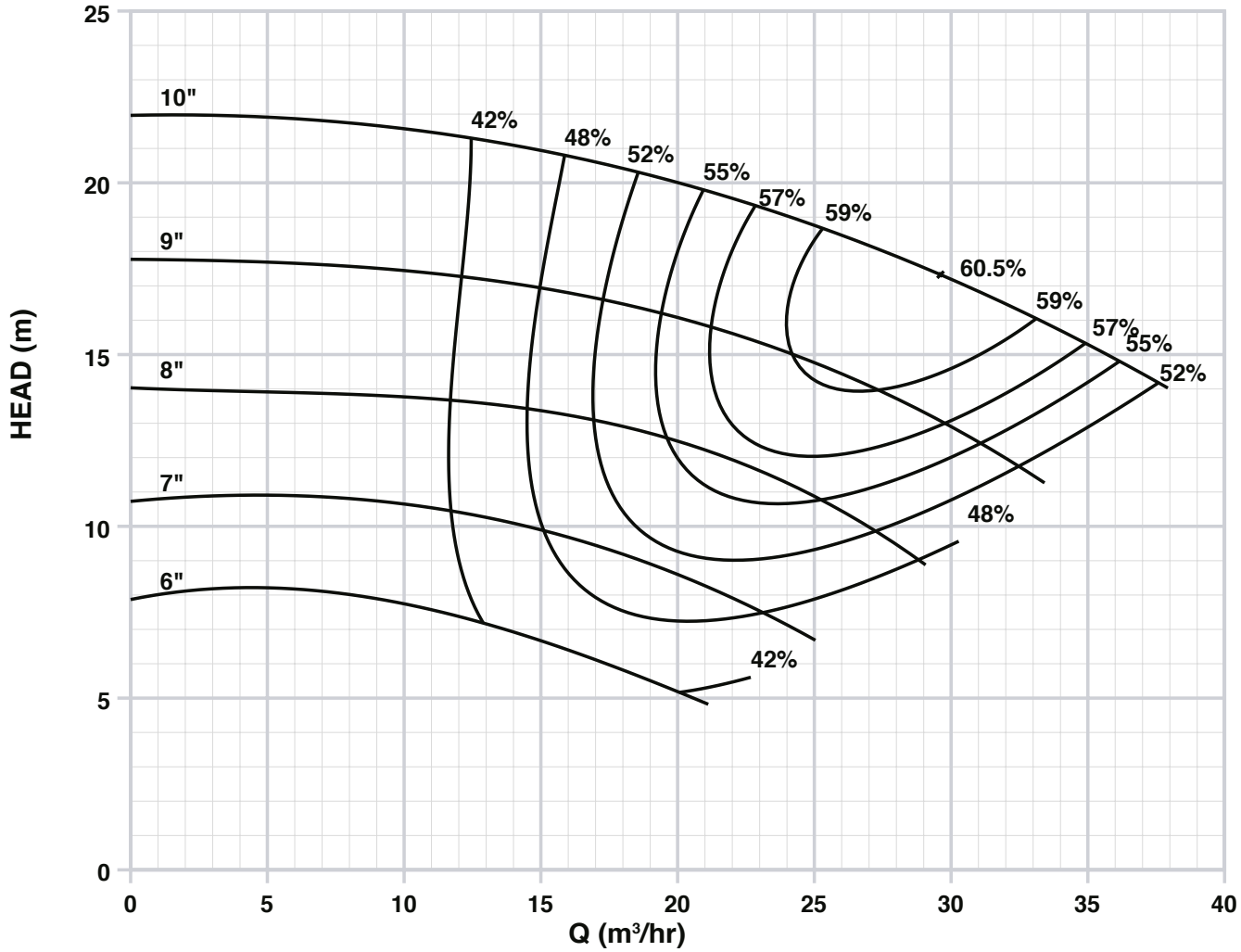


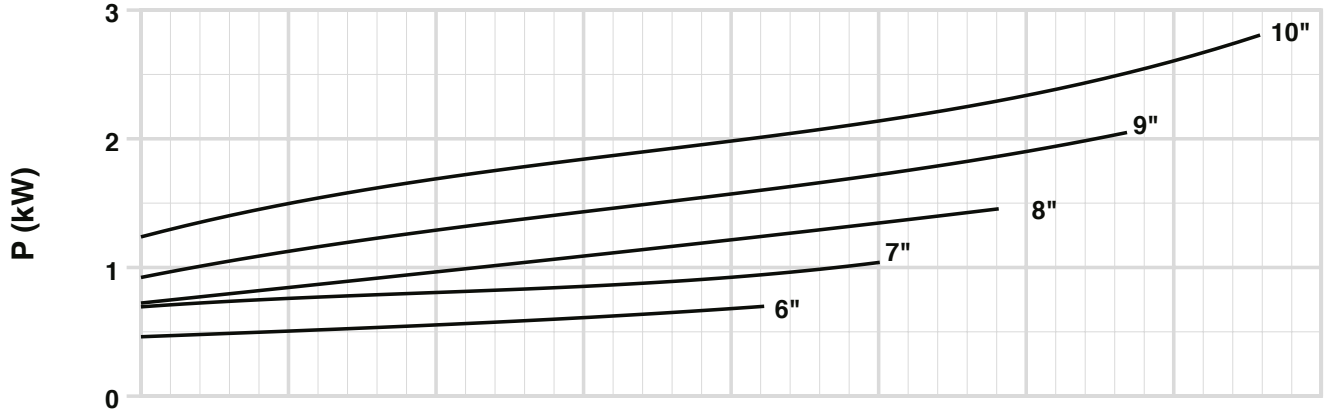


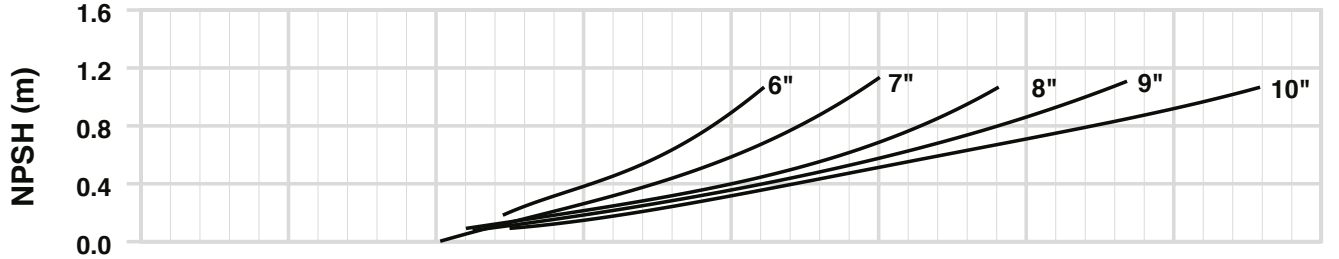
1450

RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **3”**	Discharge Diameter **1½”**	**1½ x 3 - 10**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**

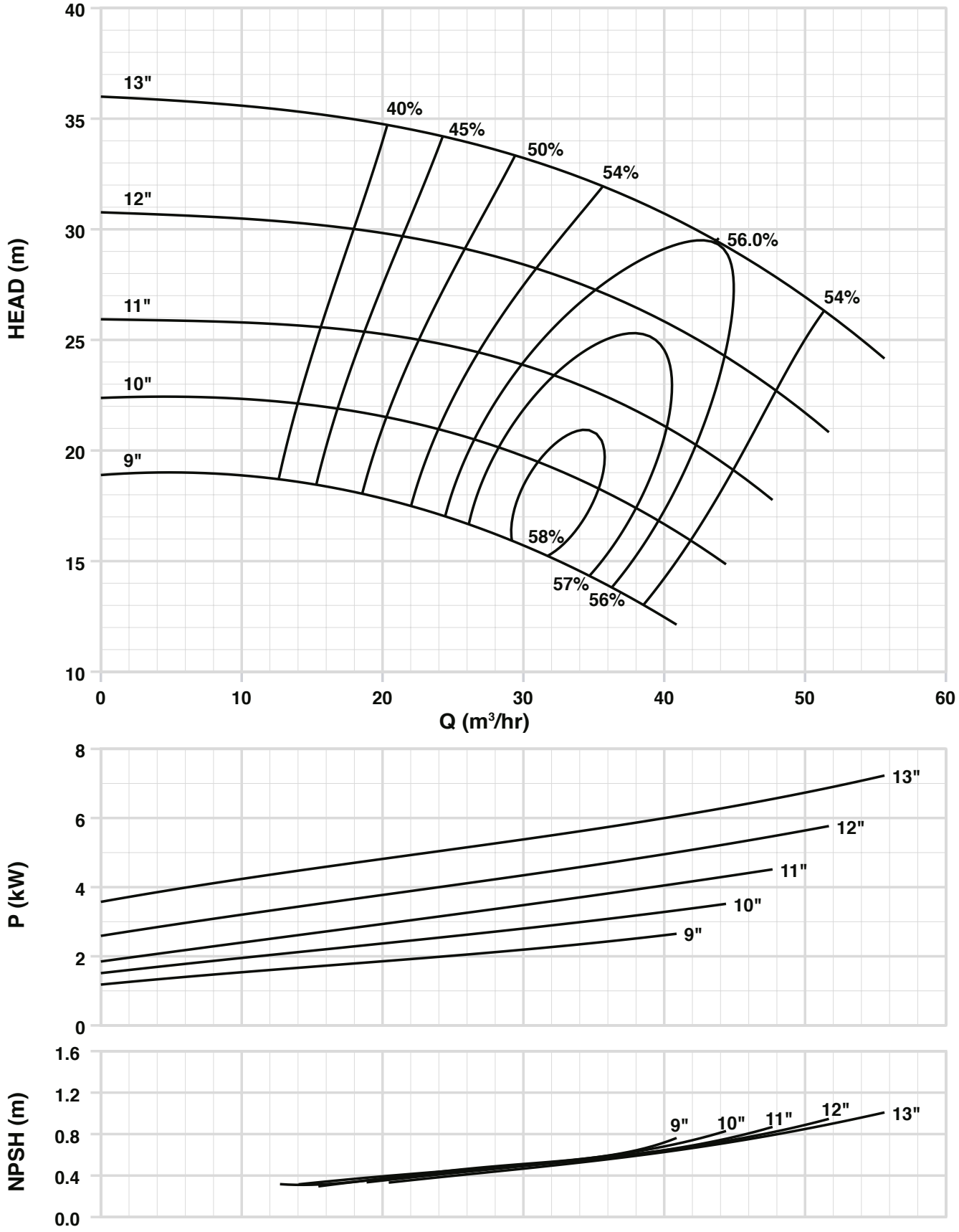






RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **3”**	Discharge Diameter **1½”**	**1½ x 3 - 13**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**



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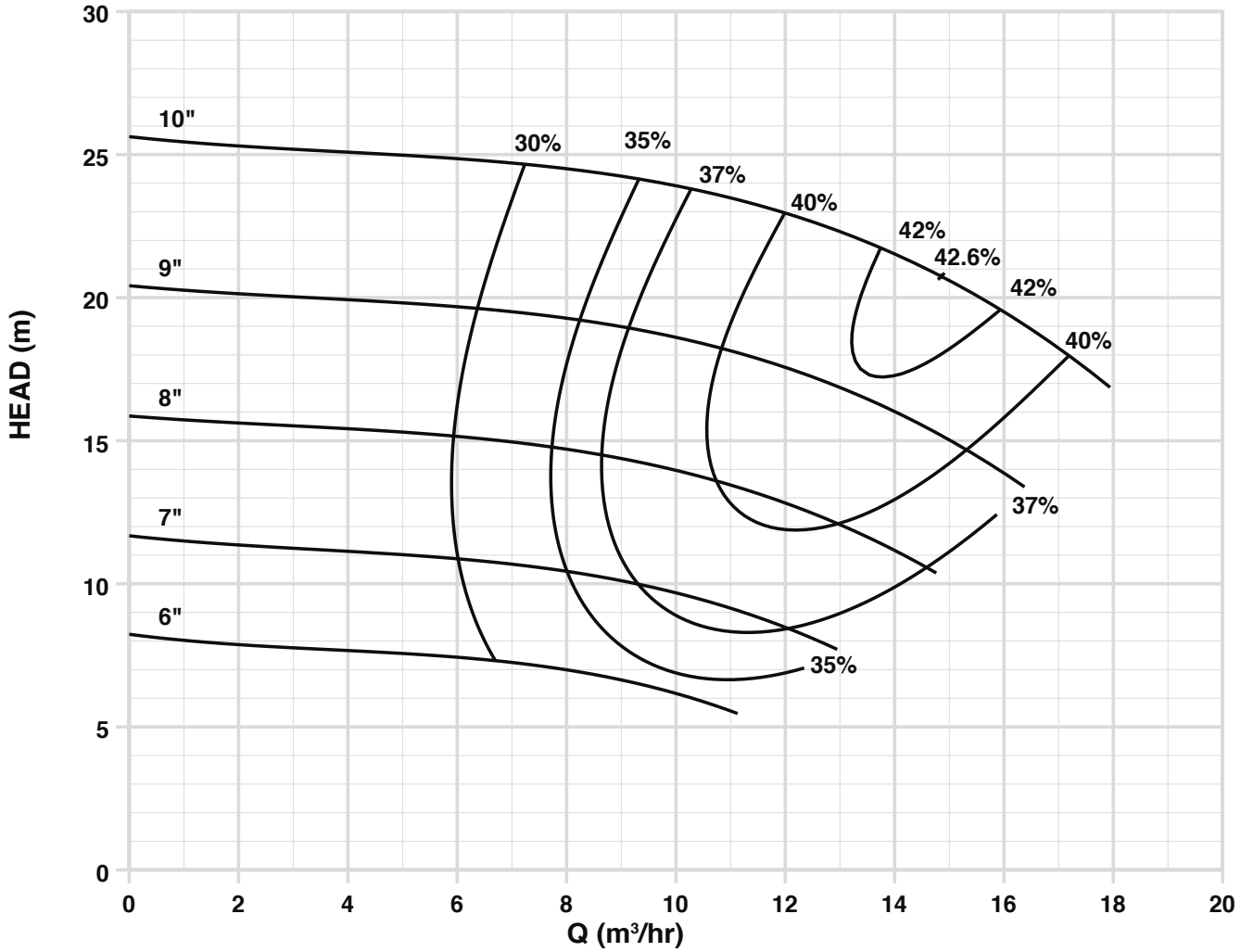
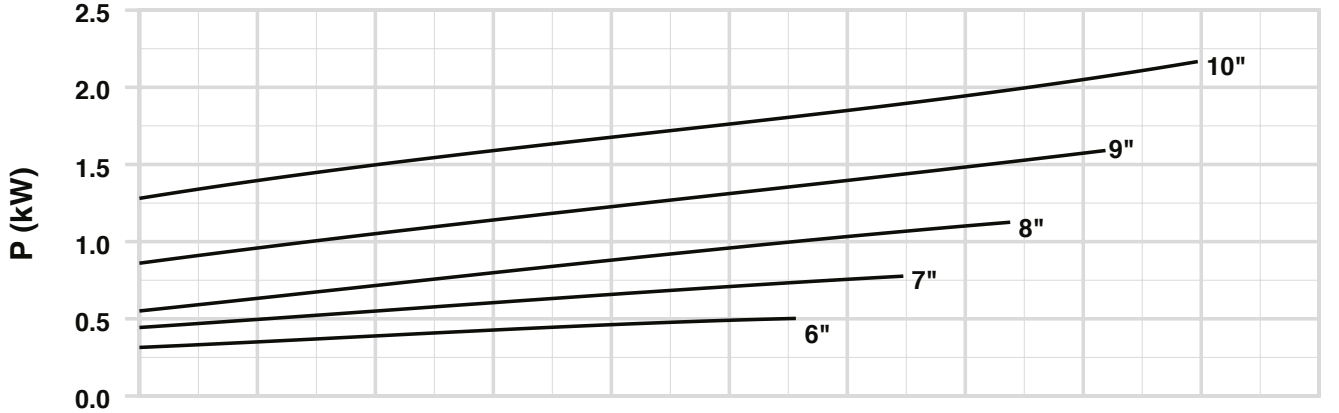
CHARACTERISTIC CURVE

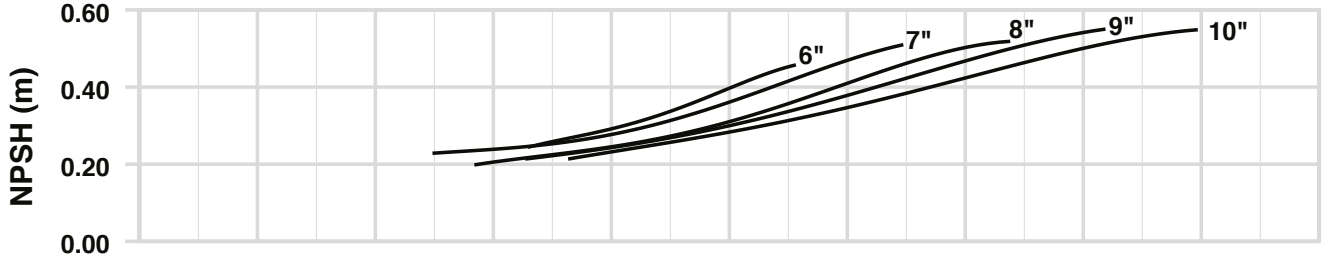
Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**2”**	**1”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 495
1 x 2 - 10
1450 rpm







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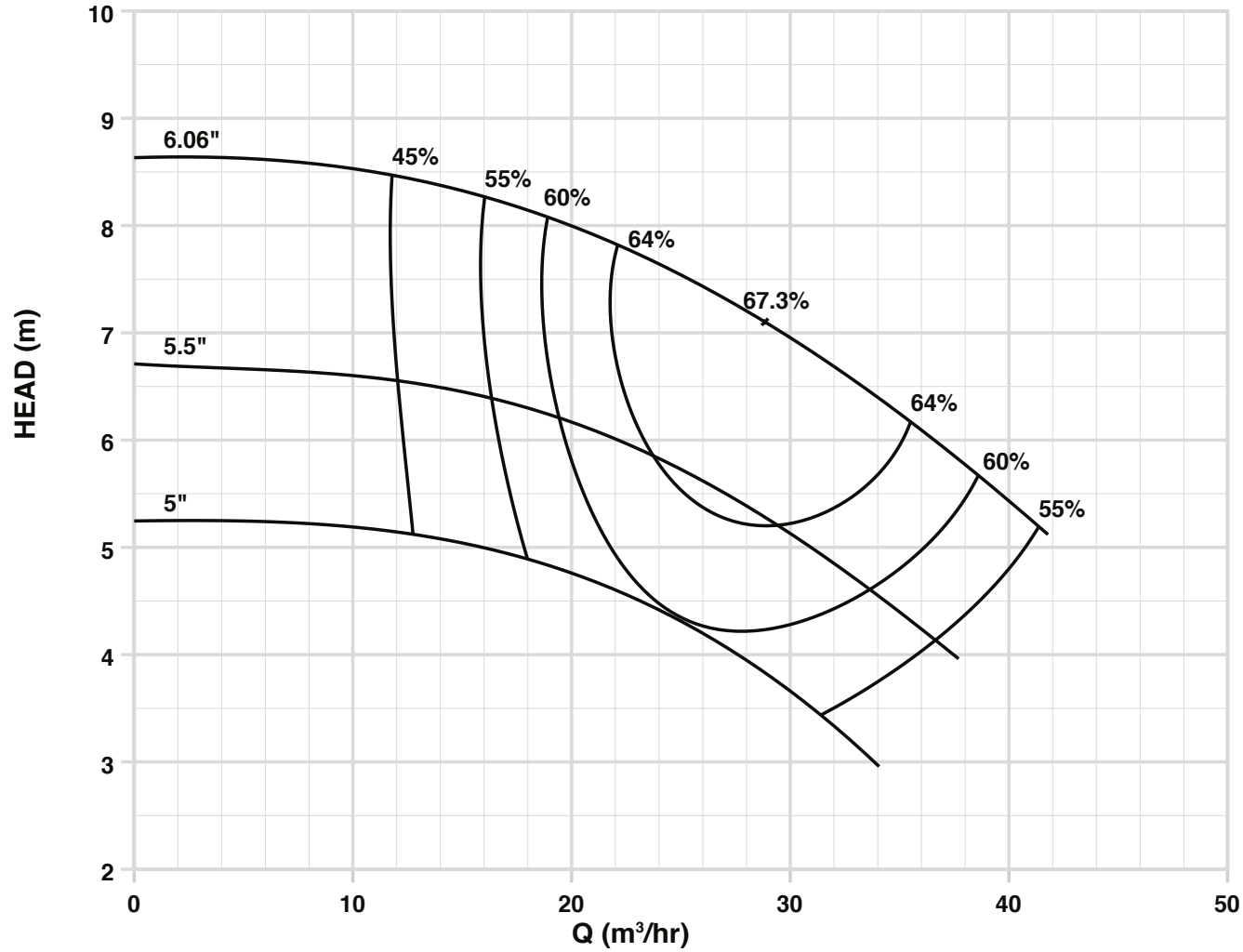
CHARACTERISTIC CURVE

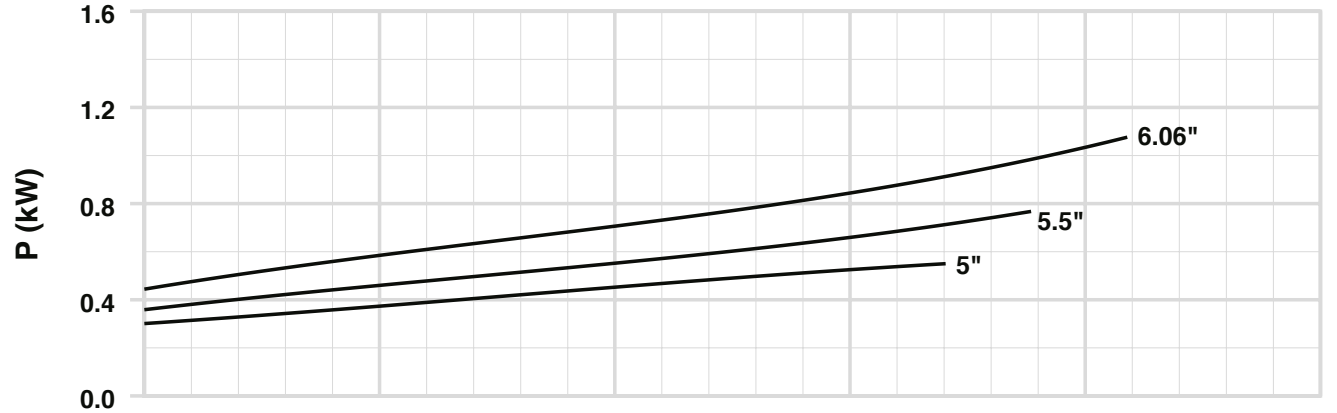
Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**3”**	**2”**

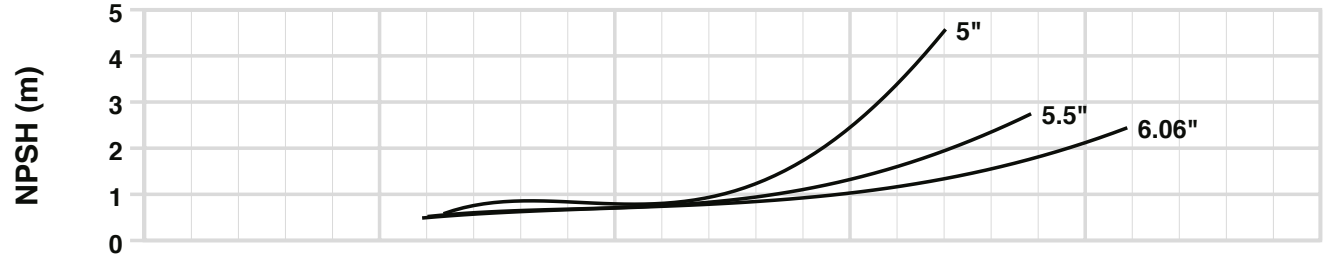
Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 343
2 x 3 - 6

1450 rpm







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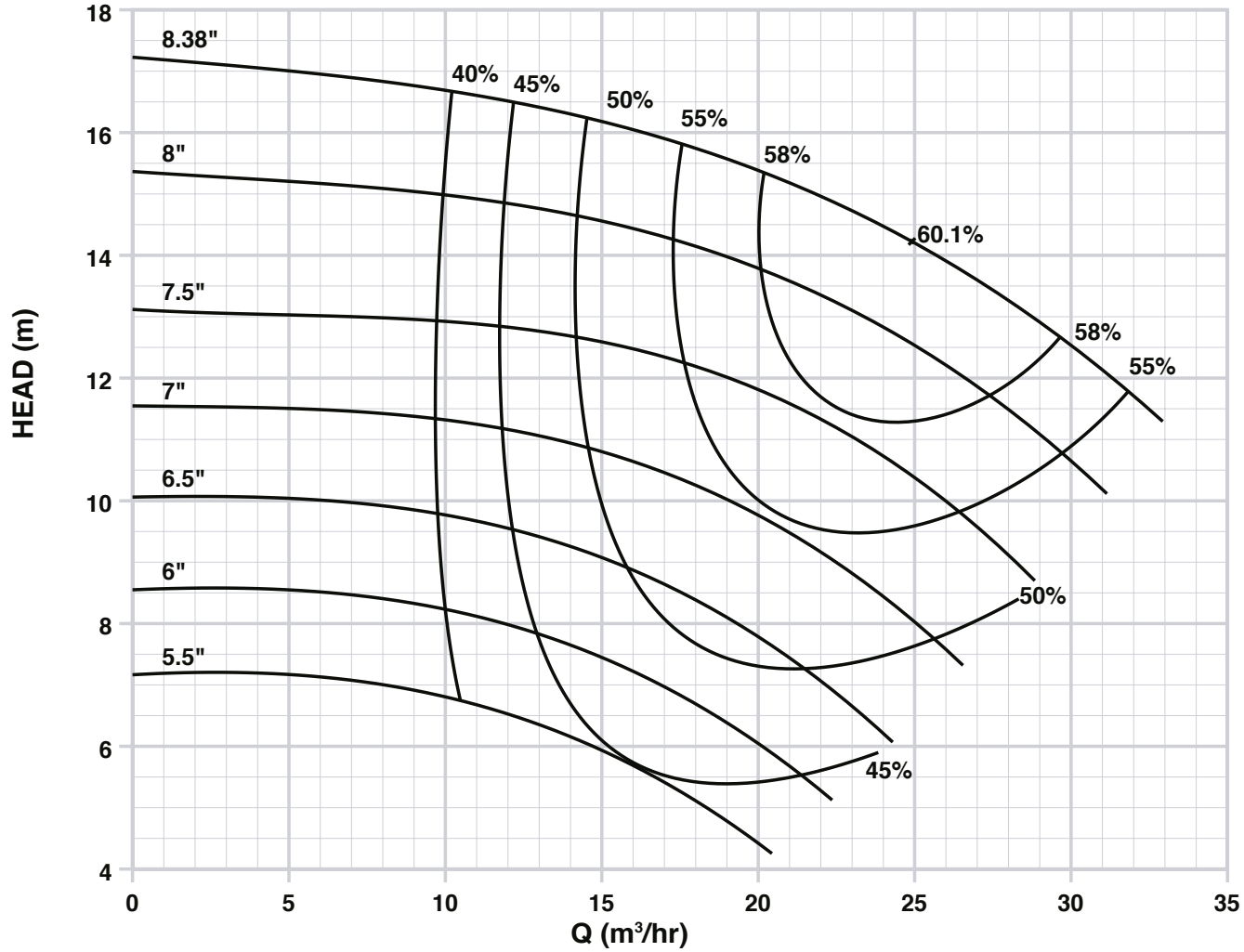
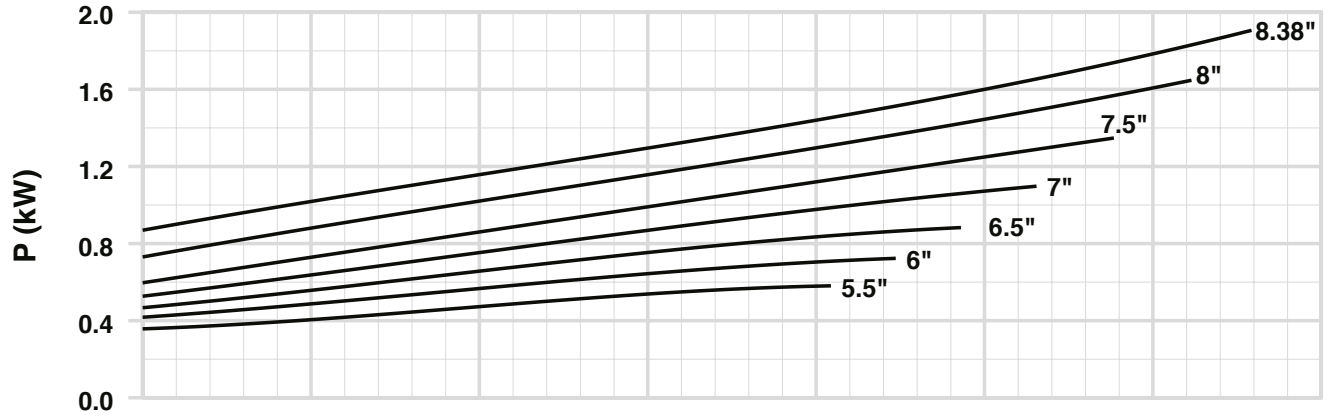
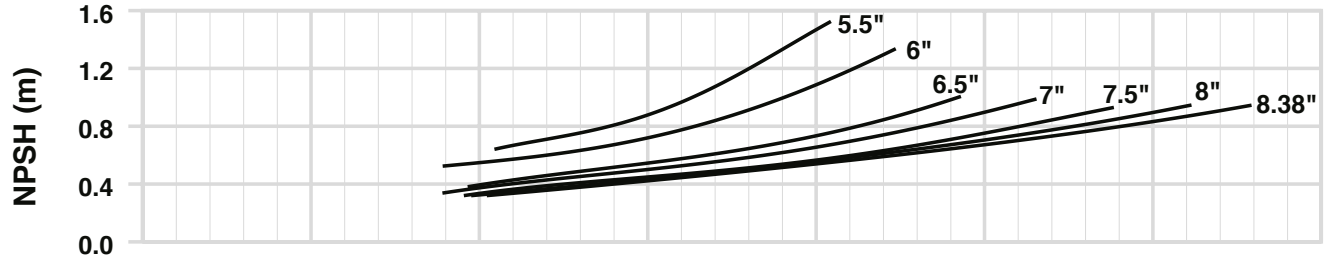
CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **3”**	Discharge Diameter **2”**	**2 x 3 - 8**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**







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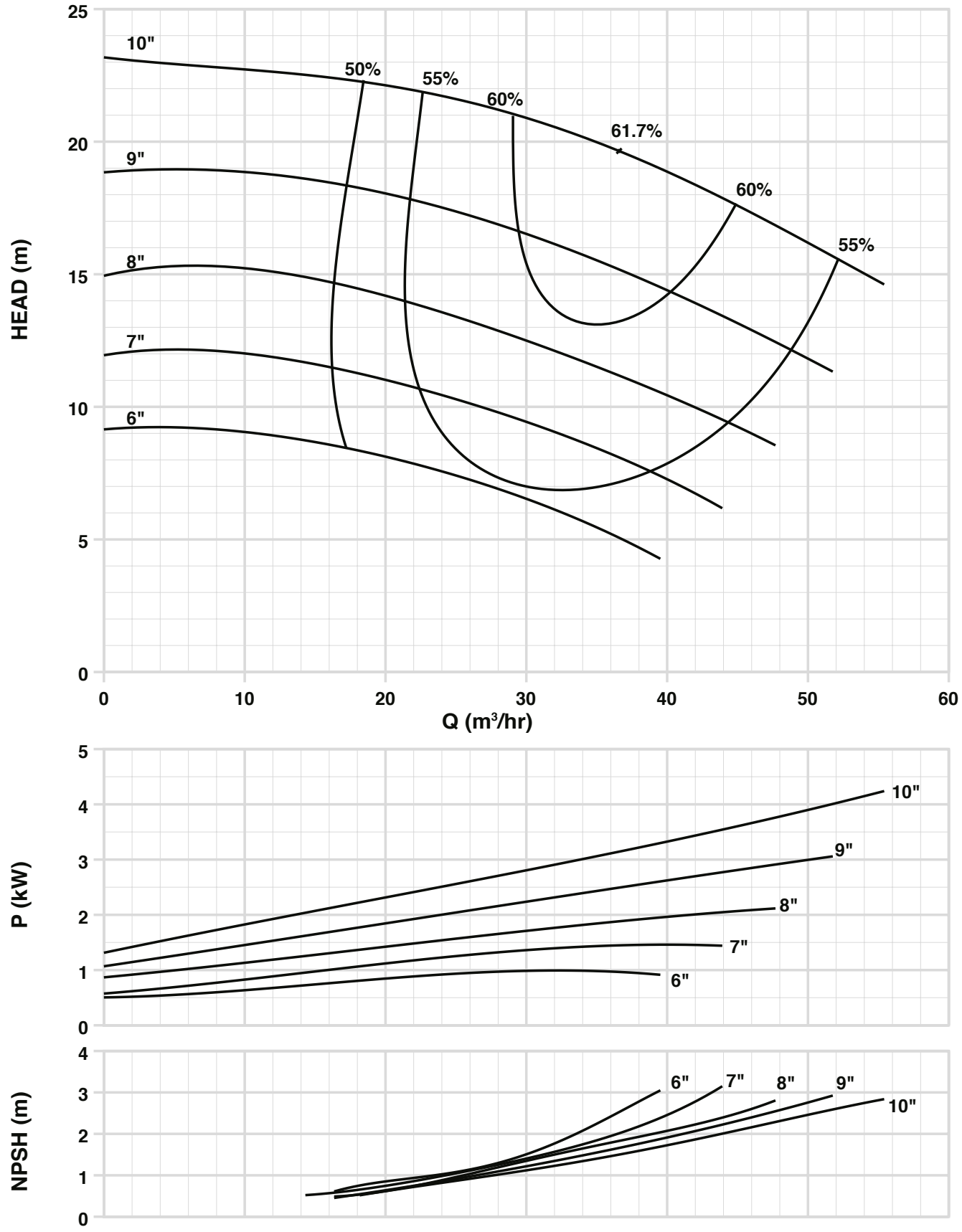
CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **3”**	Discharge Diameter **2”**	**2 x 3 - 10**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**



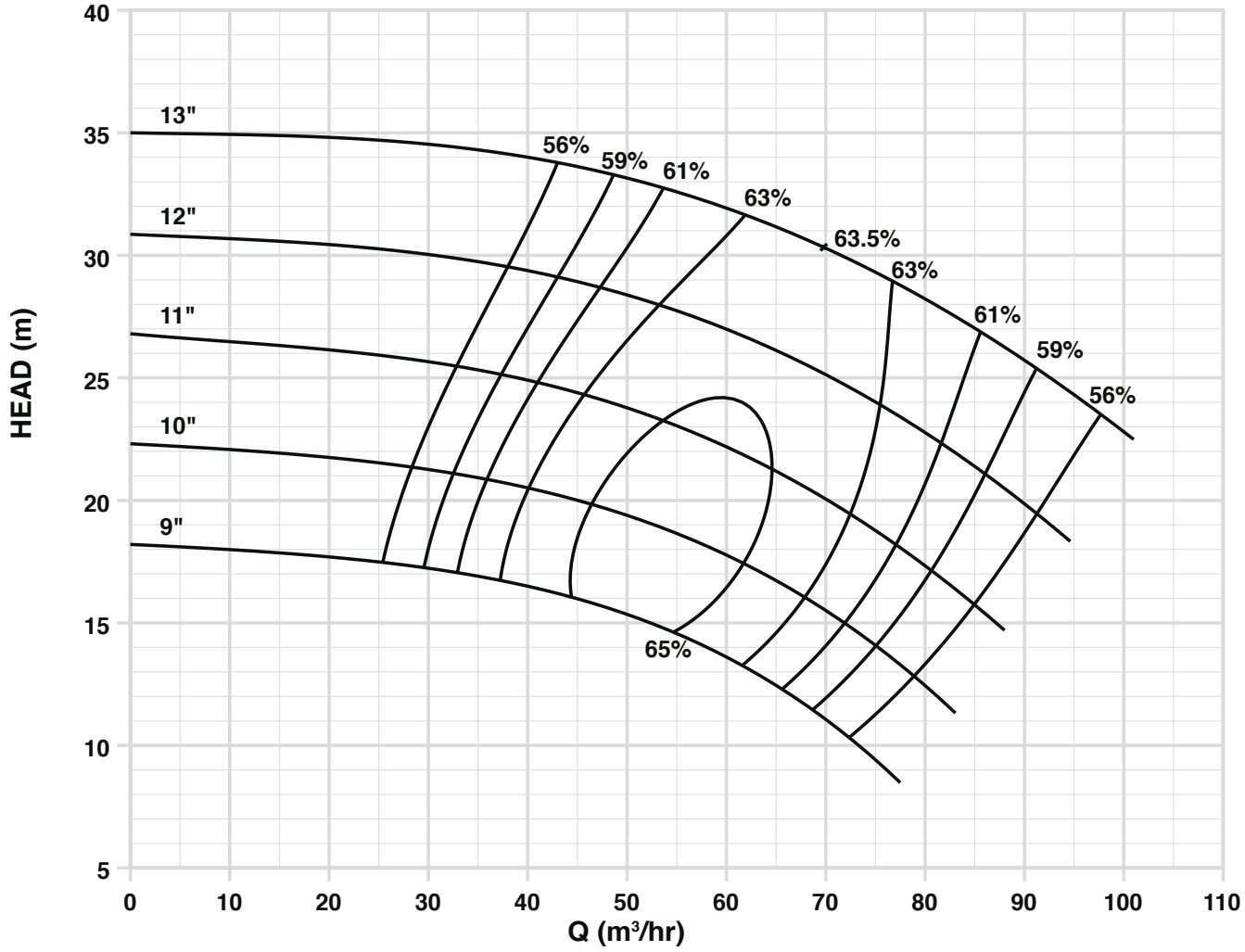
RAPID ALLWEILER PUMPS

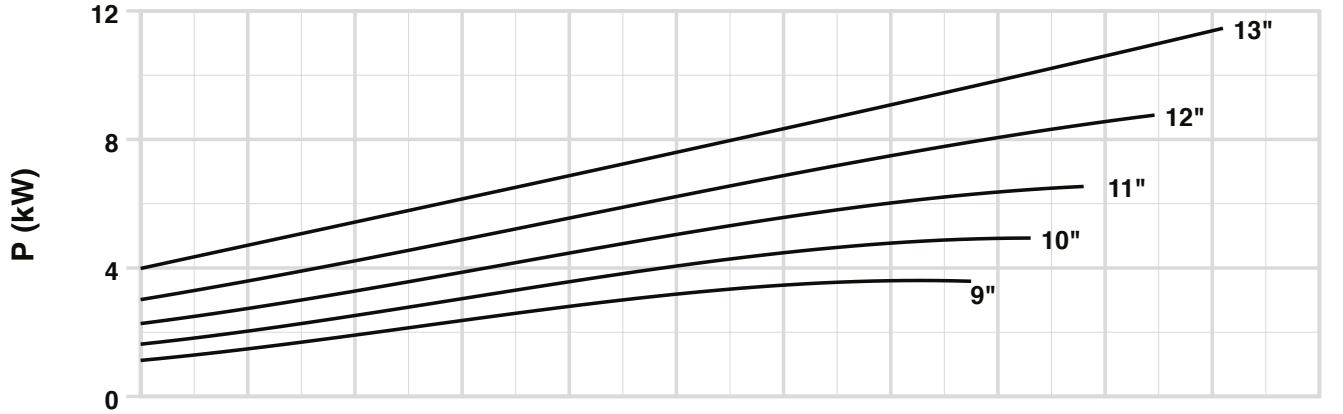
CHARACTERISTIC CURVE

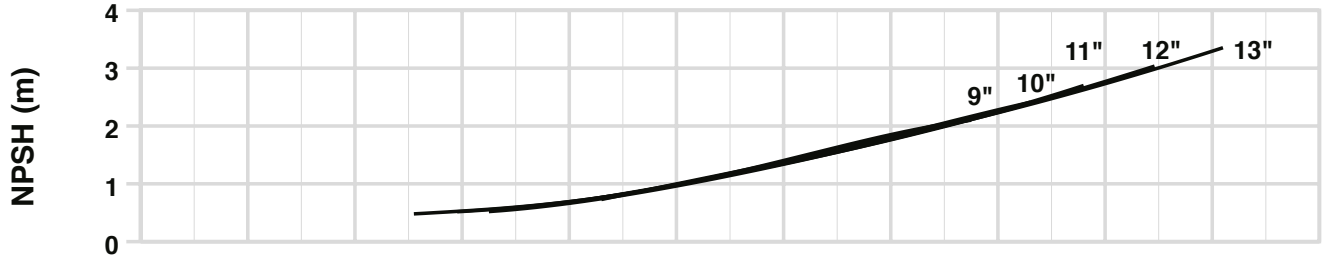
Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**3”**	**2”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 495
2 x 3 - 13
1450 rpm







RAPID ALLWEILER PUMPS

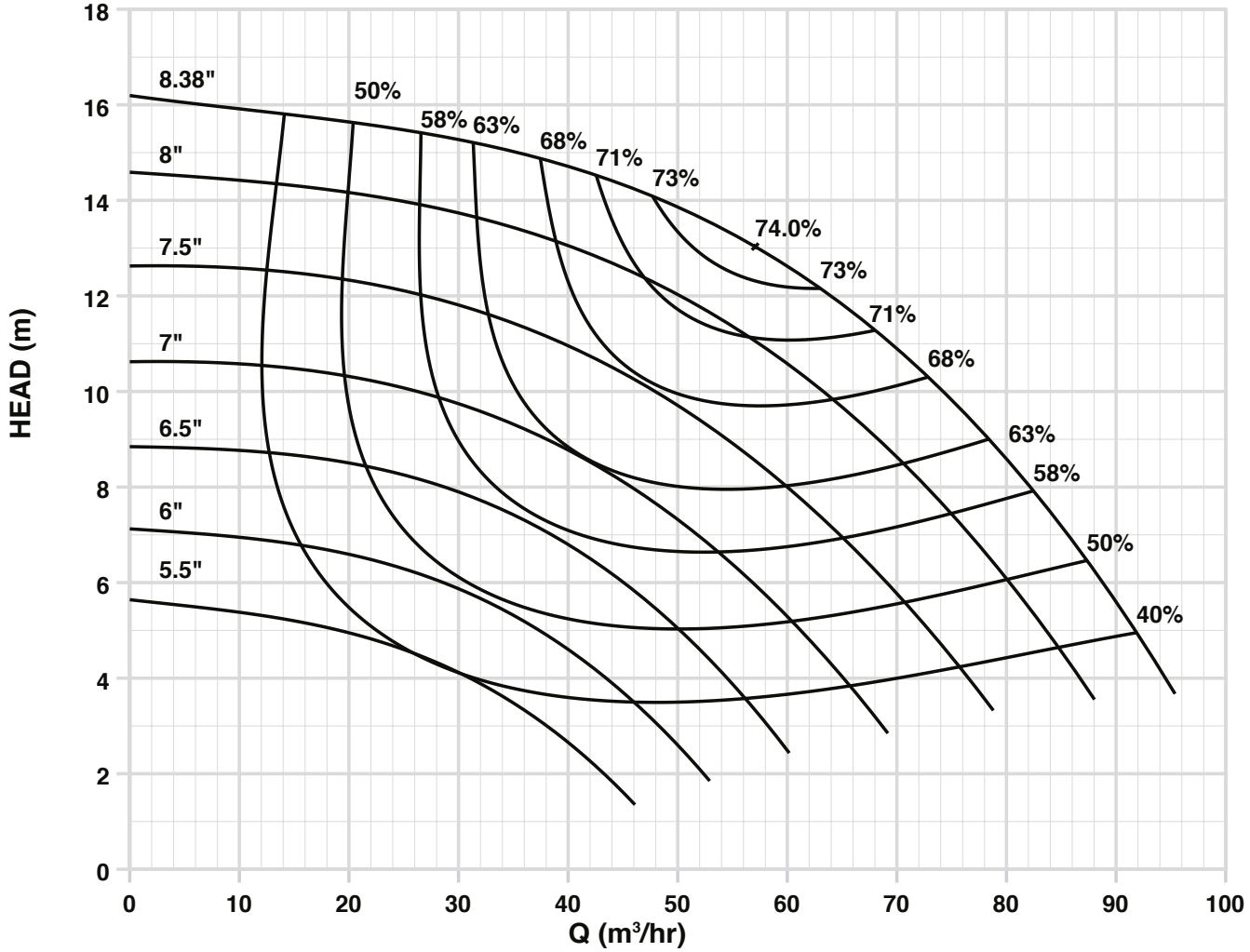
CHARACTERISTIC CURVE

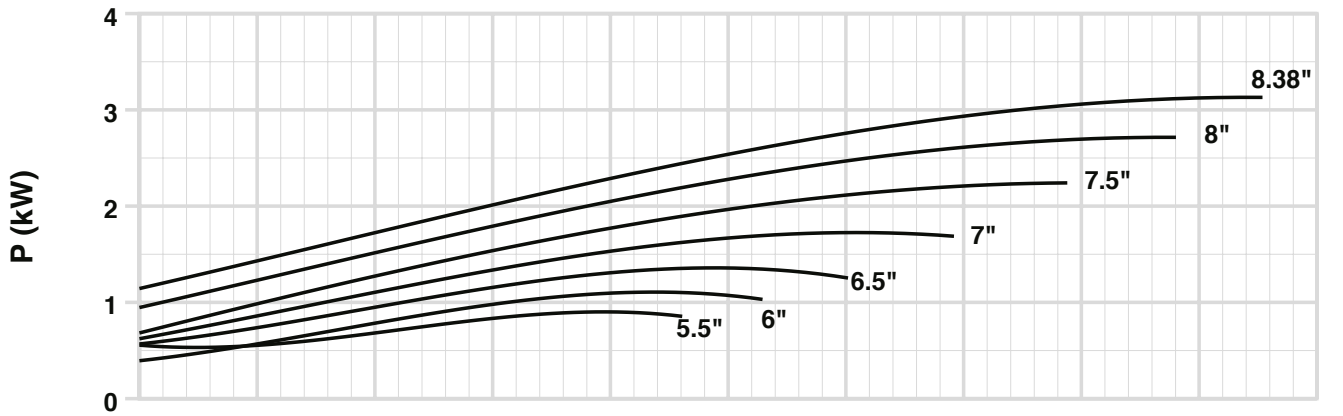
Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**4”**	**3”**

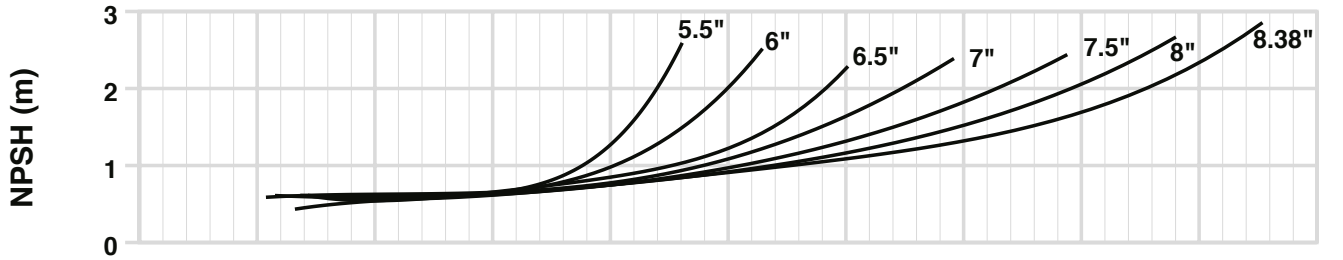
Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 495
3 x 4 - 8G

1450 rpm



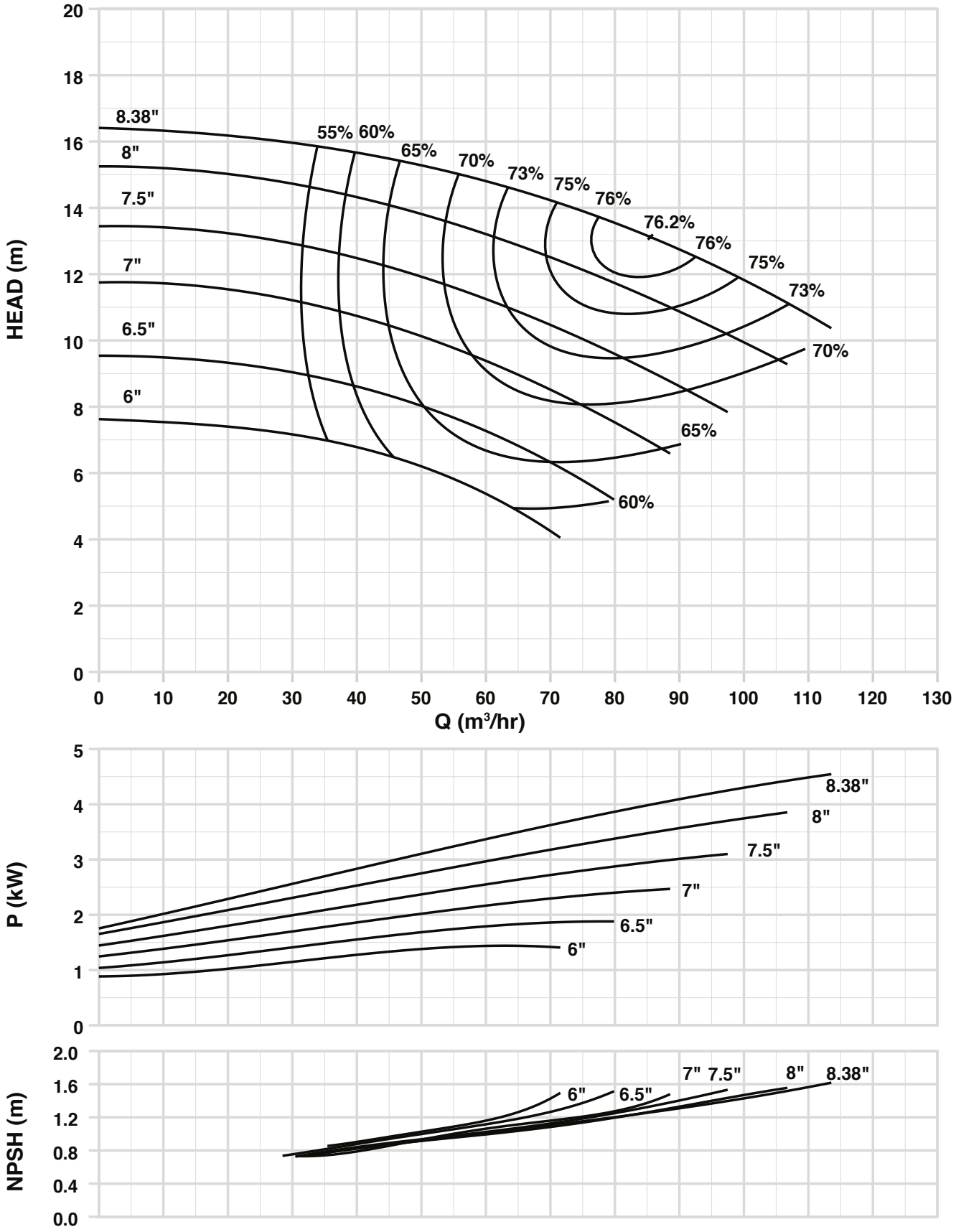




1450

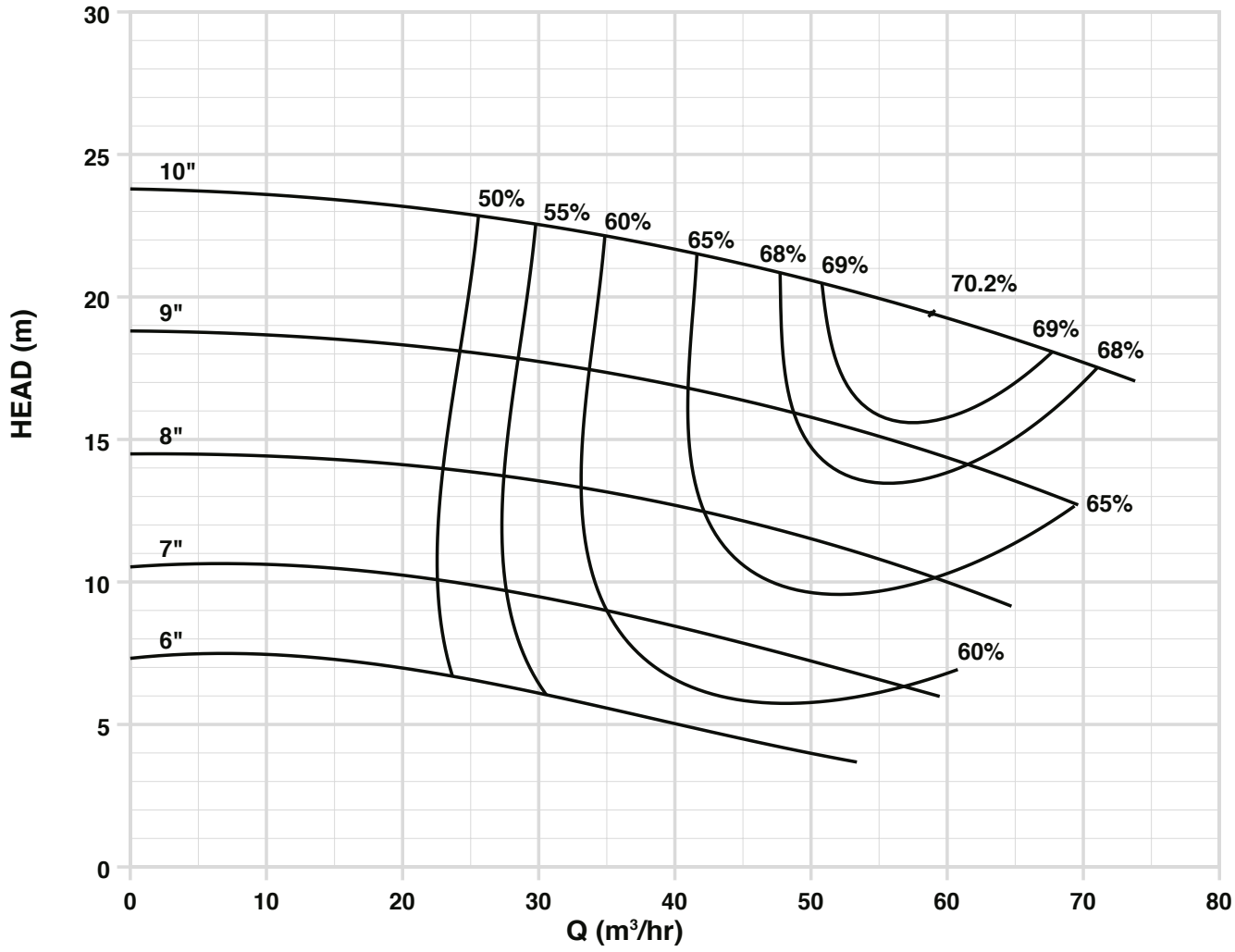
RAPID ALLWEILER PUMPS

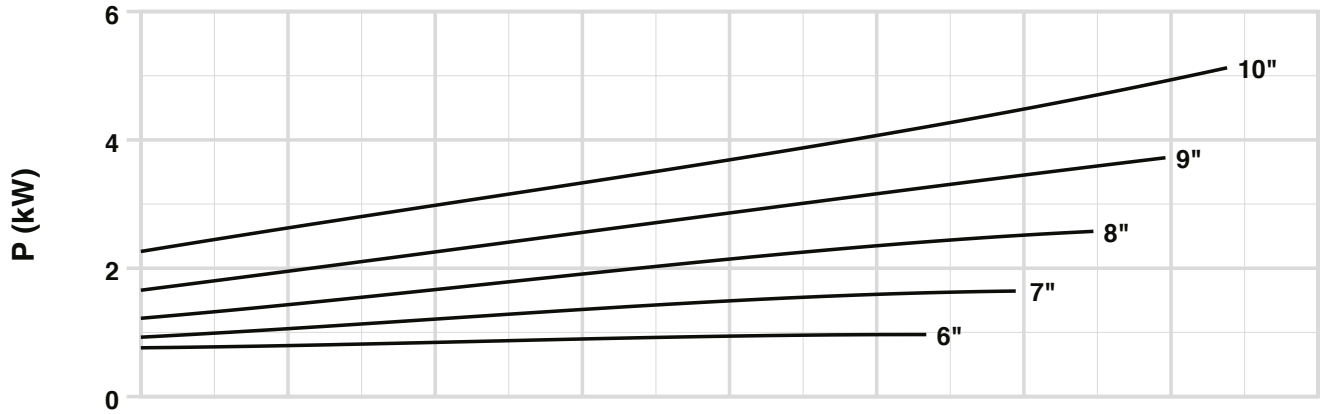
CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **4”**	Discharge Diameter **3”**	**3 x 4 - 8**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**

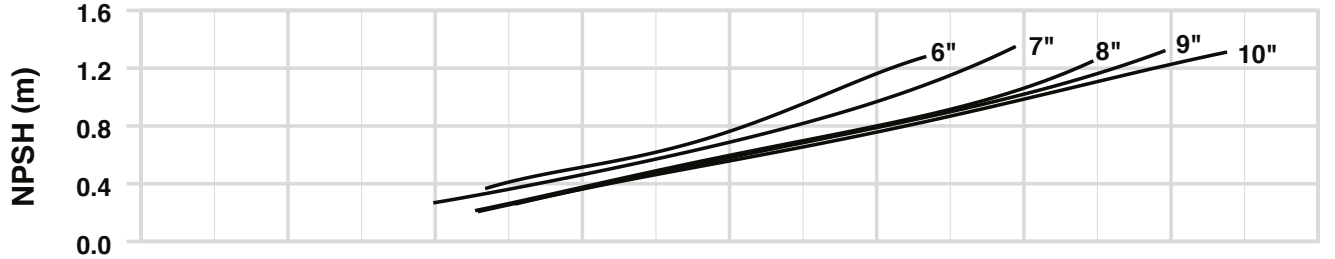


RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **4”**	Discharge Diameter **3”**	**3 x 4 - 10**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**







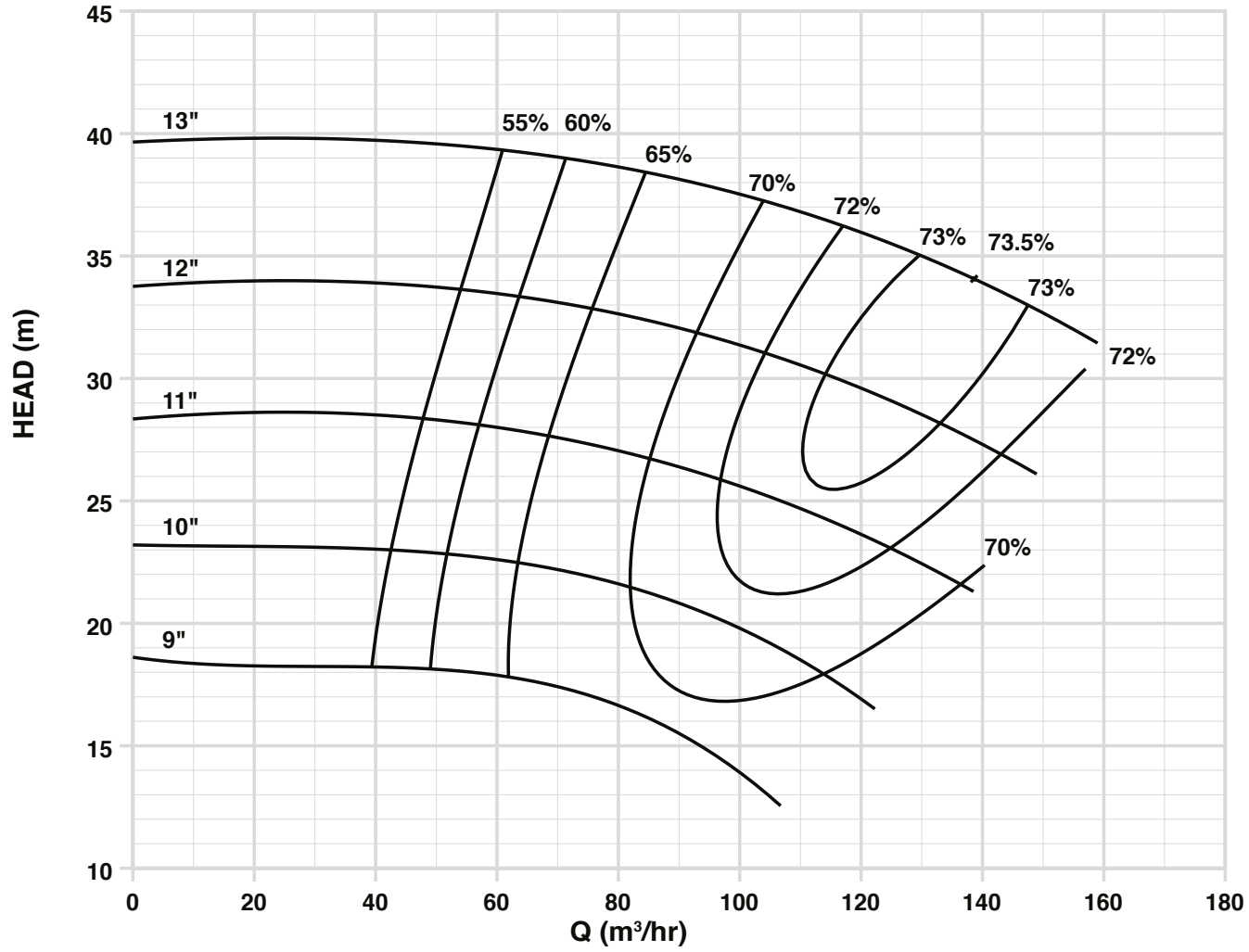
RAPID ALLWEILER PUMPS

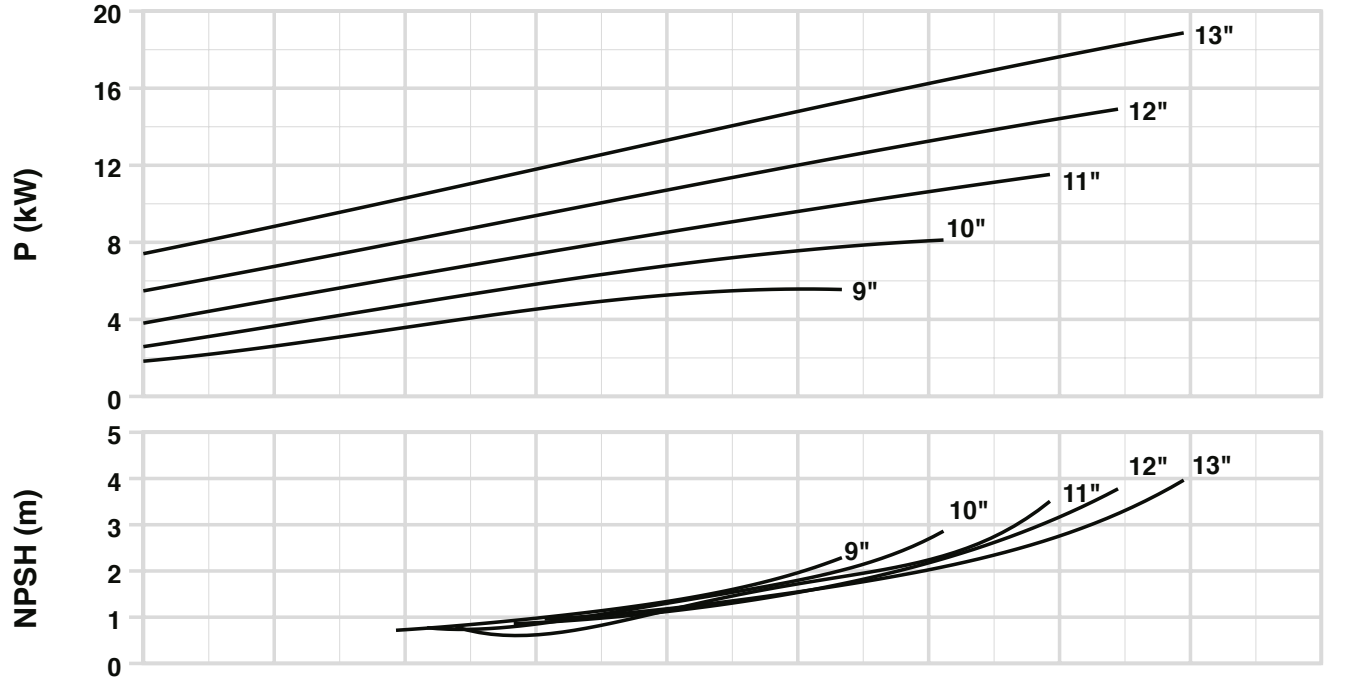
CHARACTERISTIC CURVE

Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**4”**	**3”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

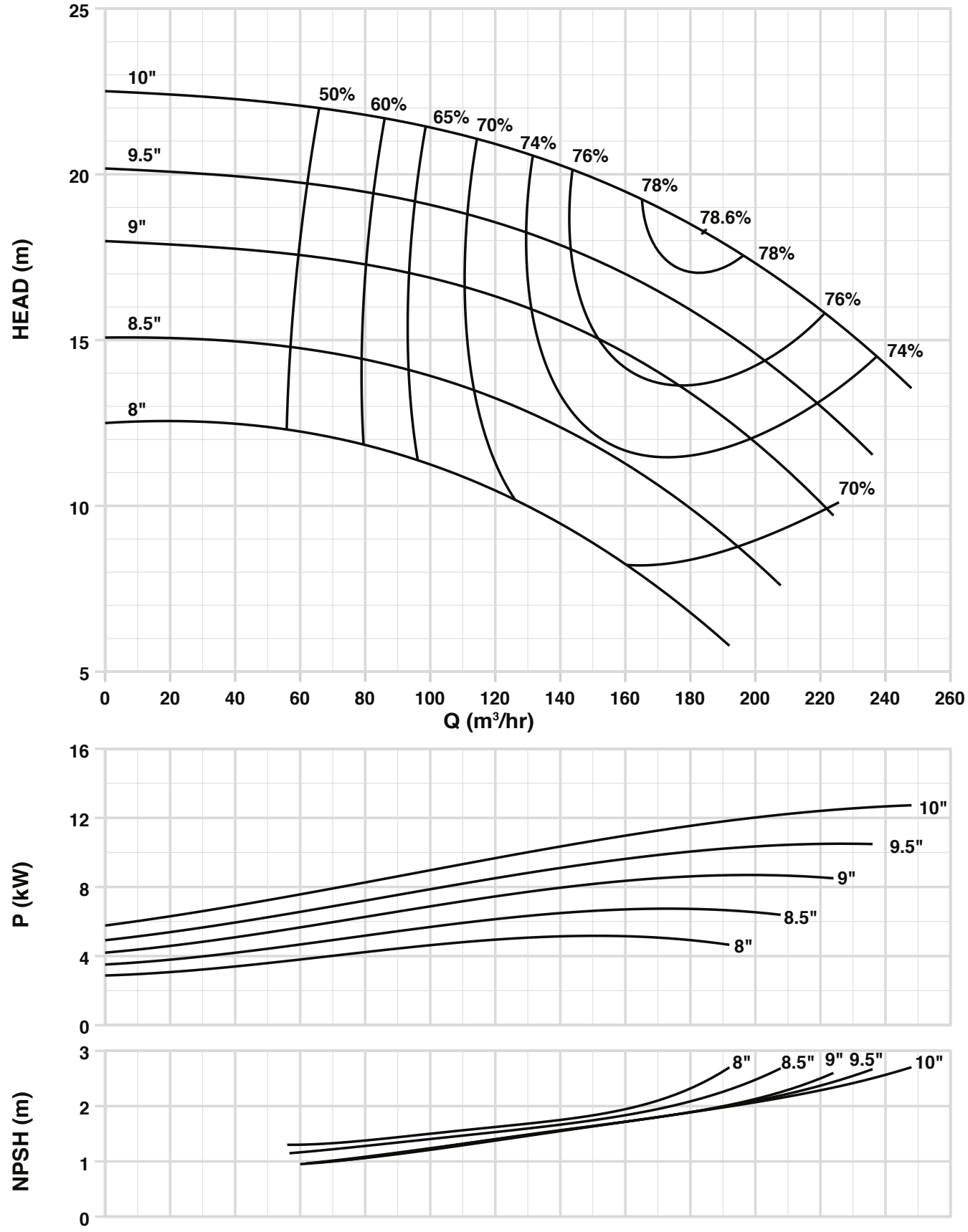
ANSI 495
3 x 4 - 13
1450 rpm





RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **6”**	Discharge Diameter **4”**	**4 x 6 - 10**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**



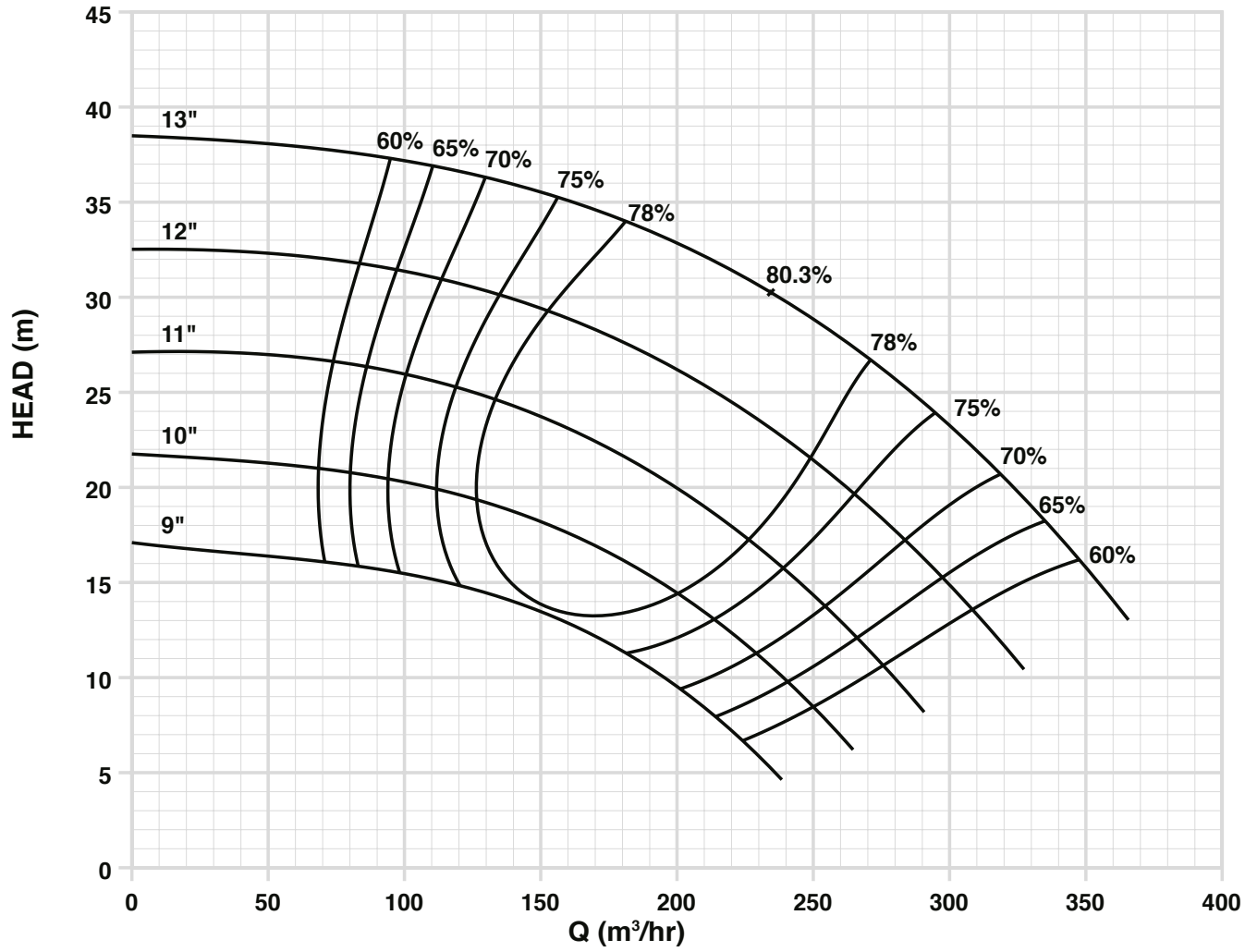
RAPID ALLWEILER PUMPS

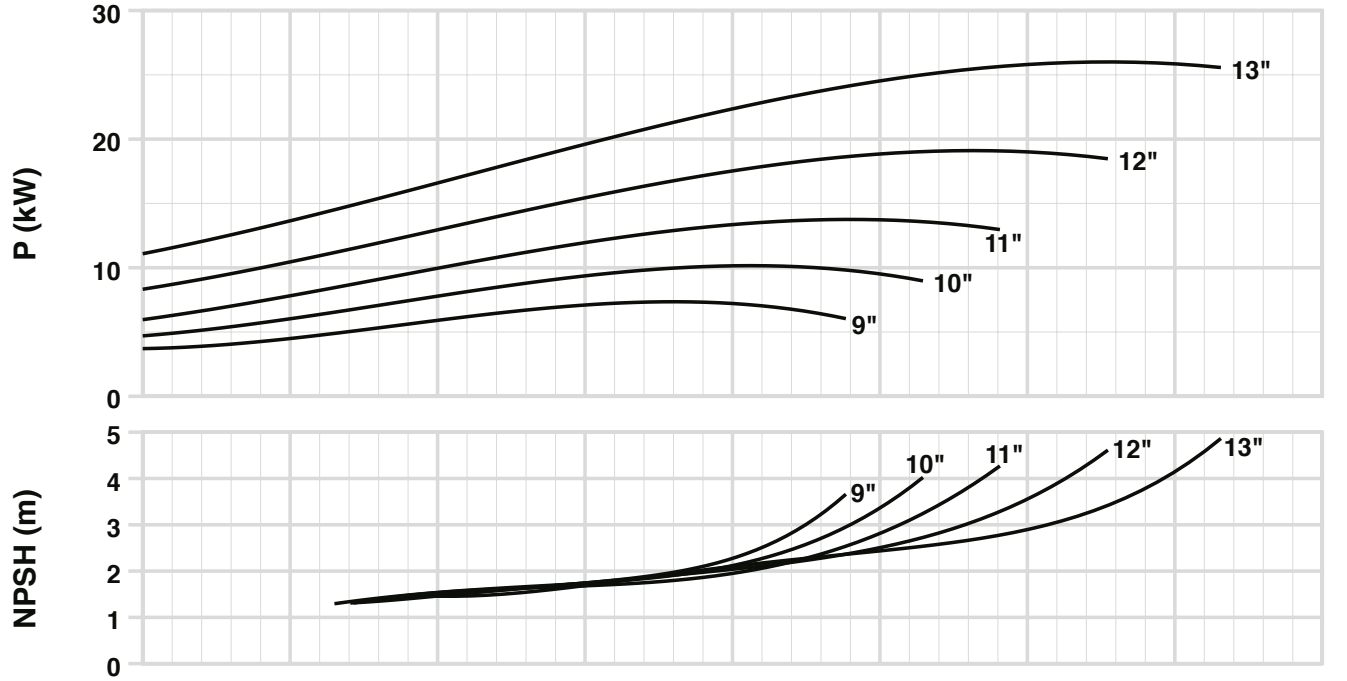
CHARACTERISTIC CURVE

Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**6”**	**4”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

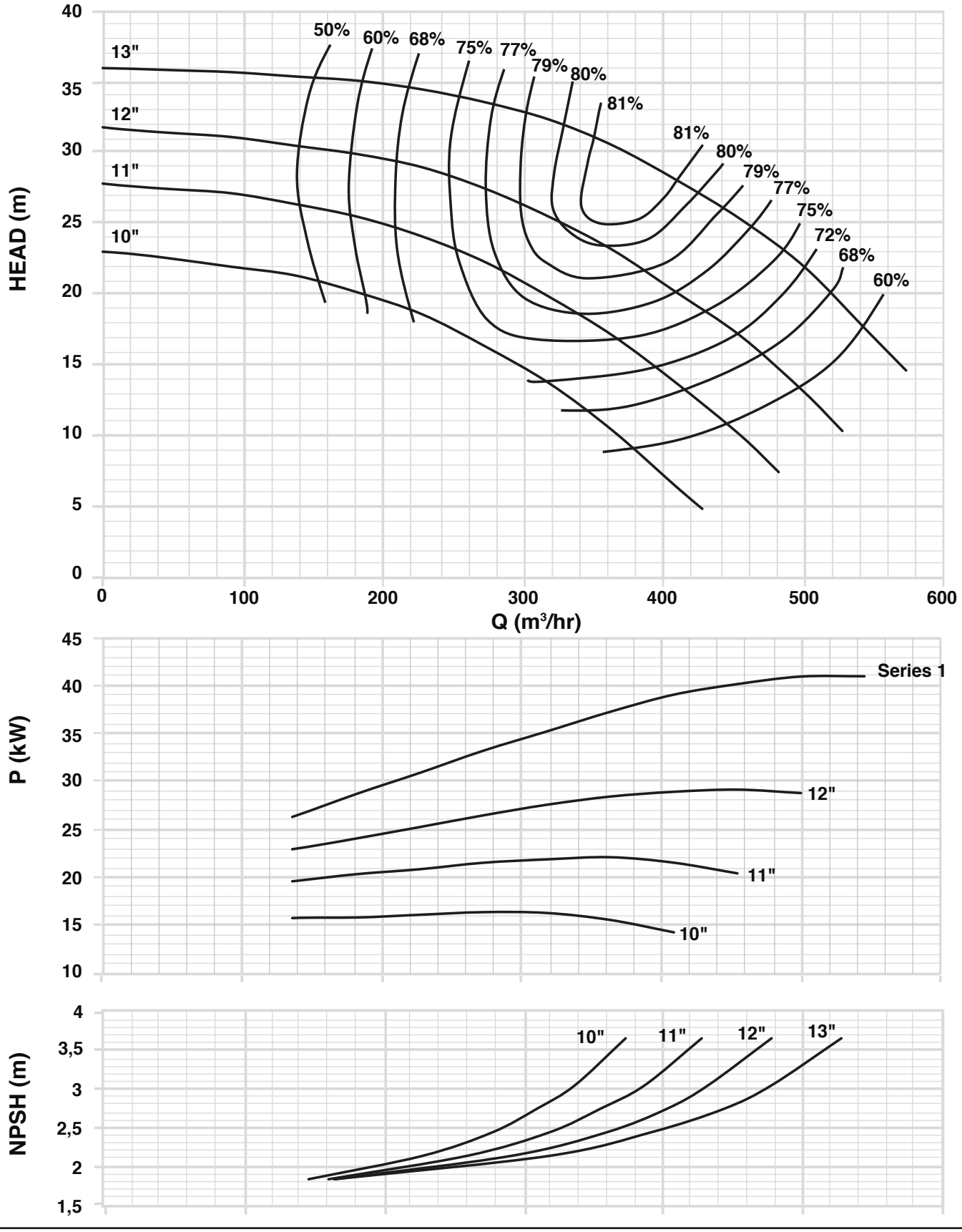
ANSI 495
4 x 6 - 13
1450 rpm





RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 708
Issue Date **MARCH 1967**	Suction Diameter **8”**	Discharge Diameter **6”**	**6 x 8 - 13**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**



1450

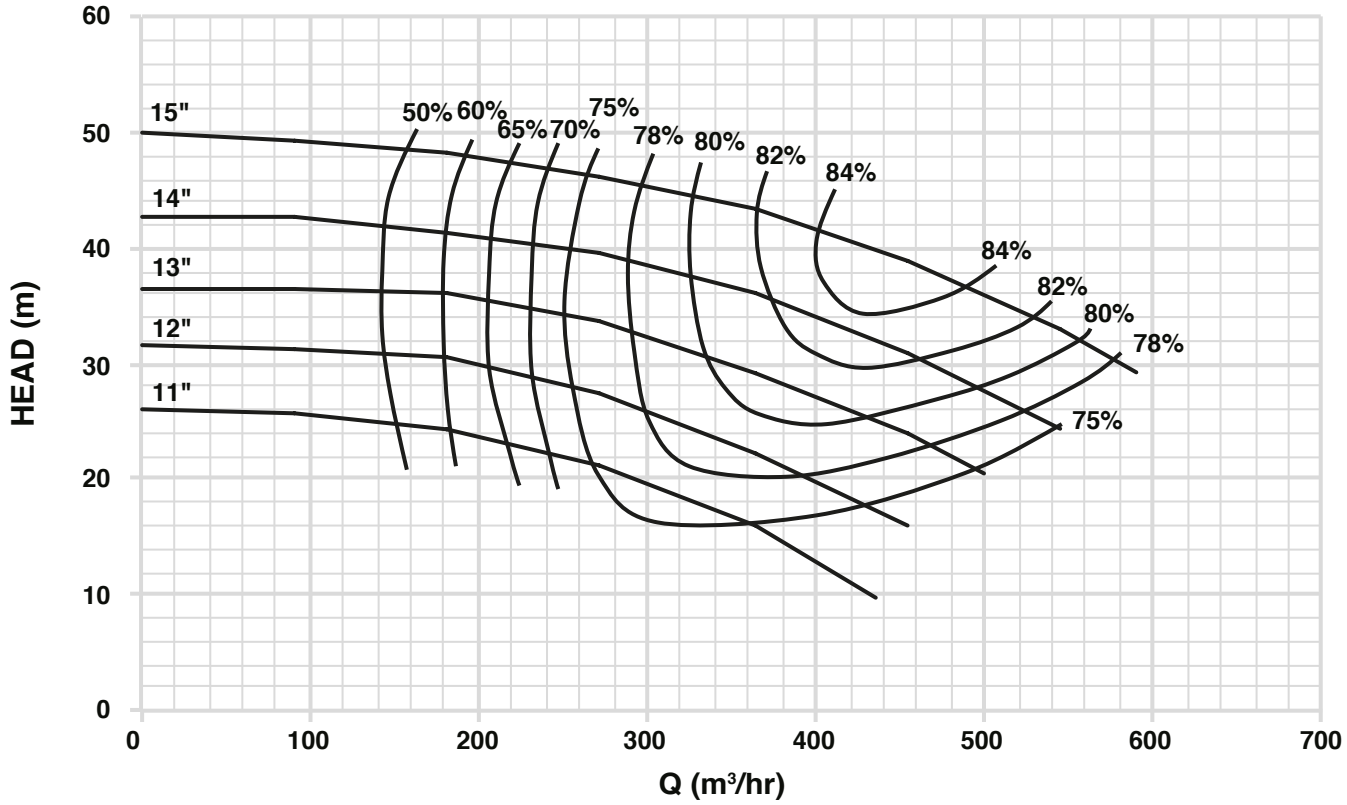
RAPID ALLWEILER PUMPS

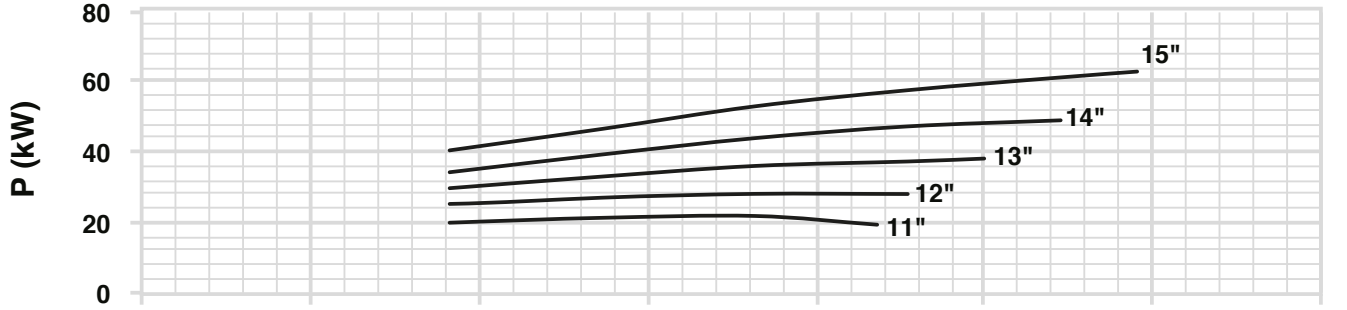
CHARACTERISTIC CURVE

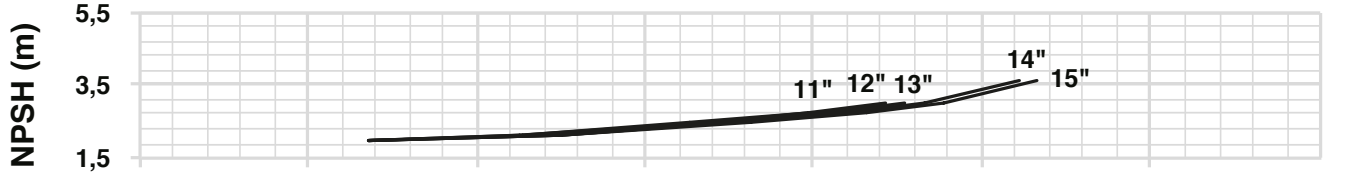
Issue Date	Suction Diameter	Discharge Diameter
MARCH 1967	**8”**	**6”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 708
6 x 8 - 15
1450 rpm

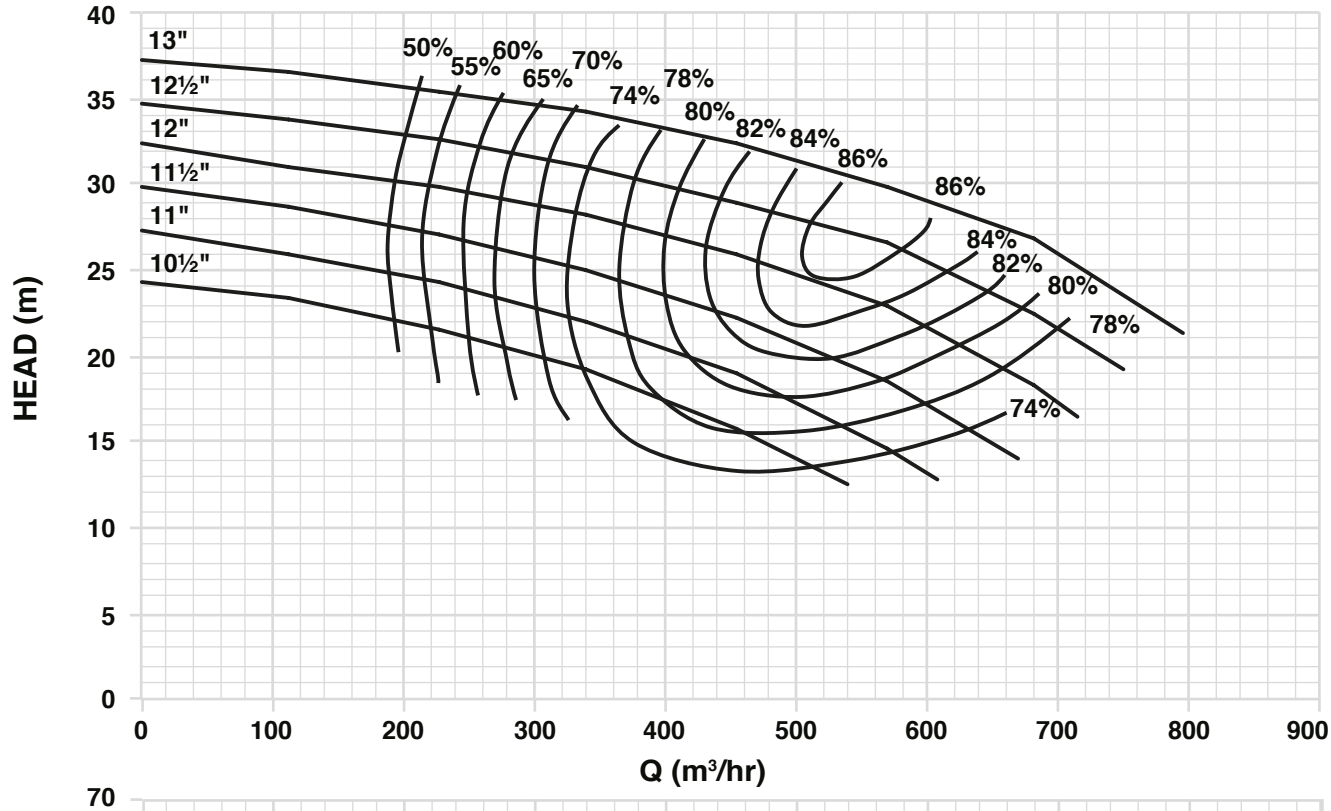


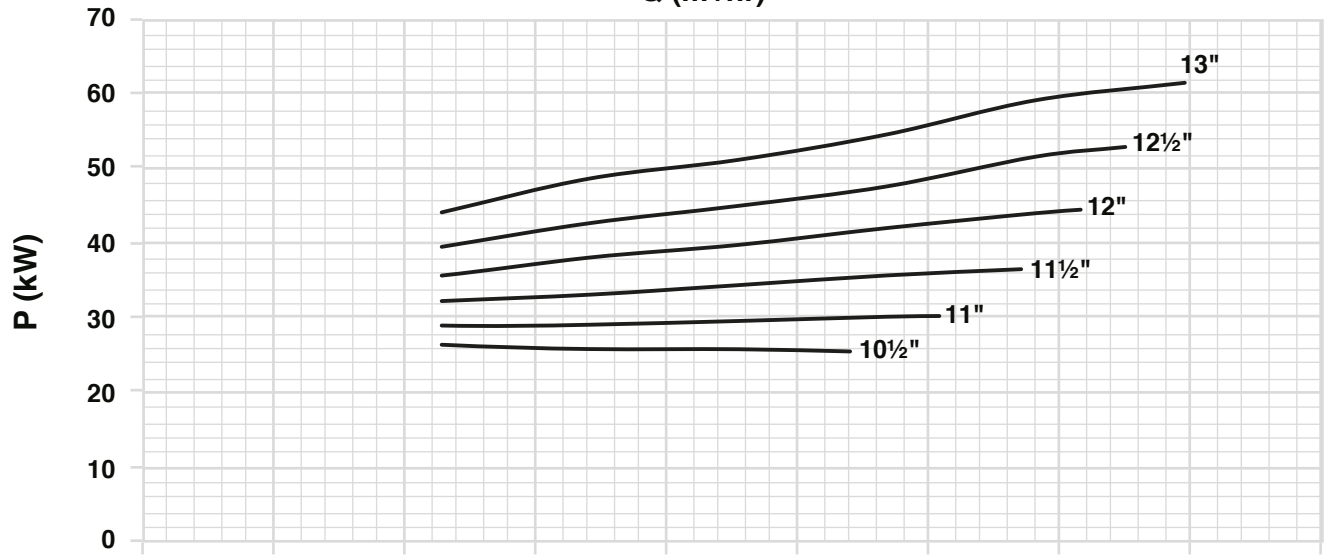


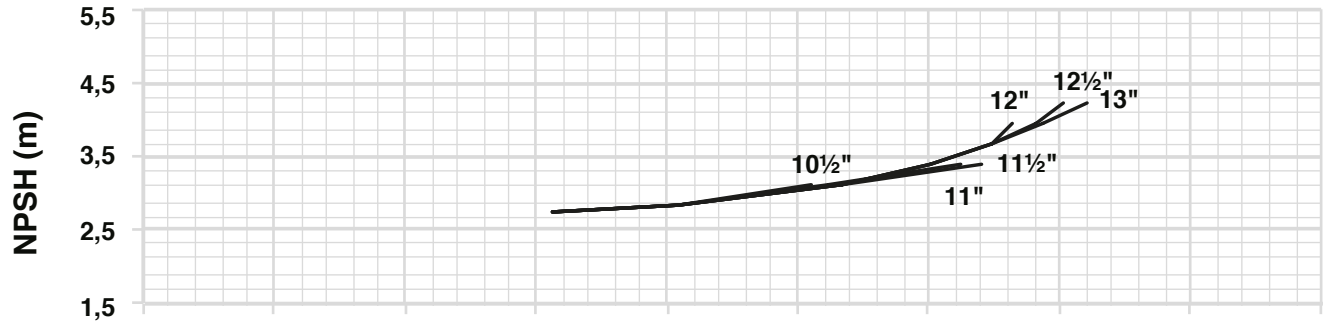


RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 708
Issue Date **MARCH 1967**	Suction Diameter **10”**	Discharge Diameter **8”**	**8 x 10 - 13**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**



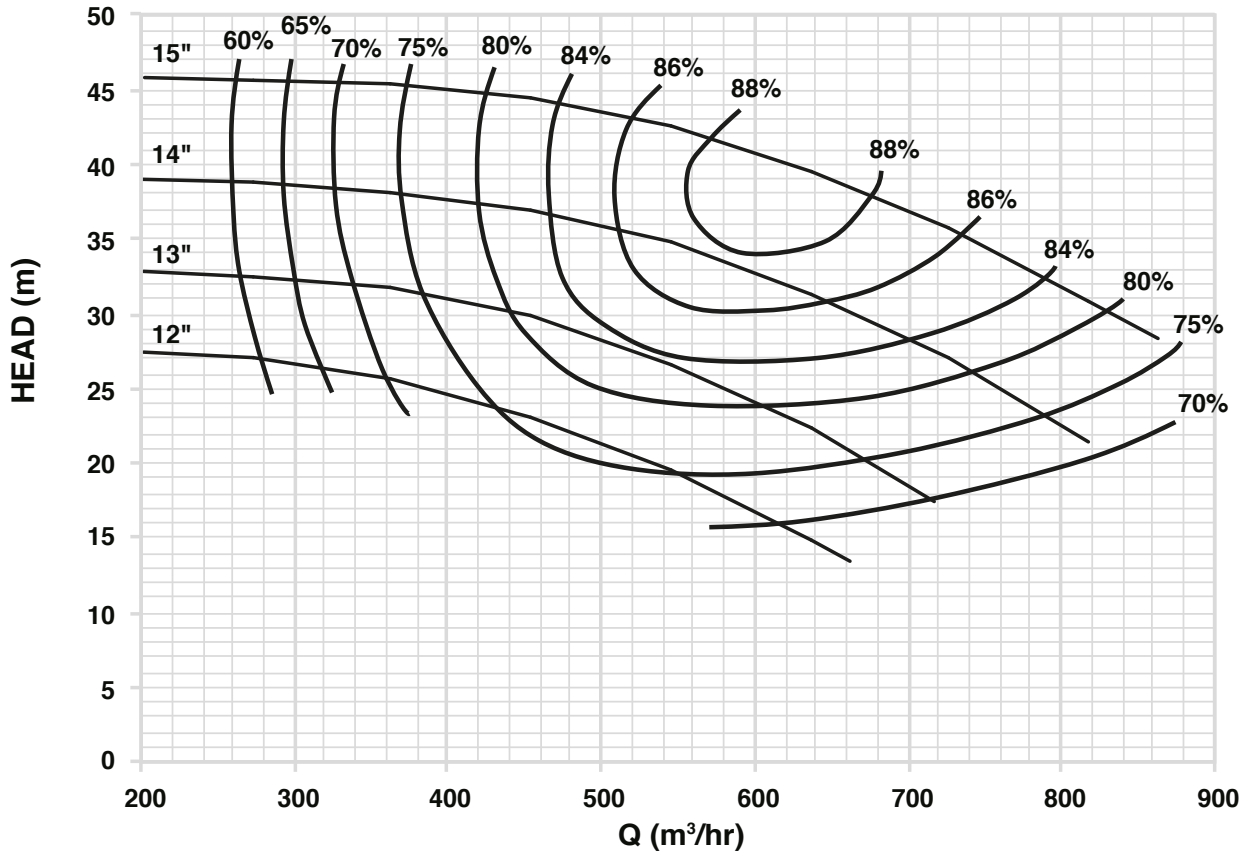


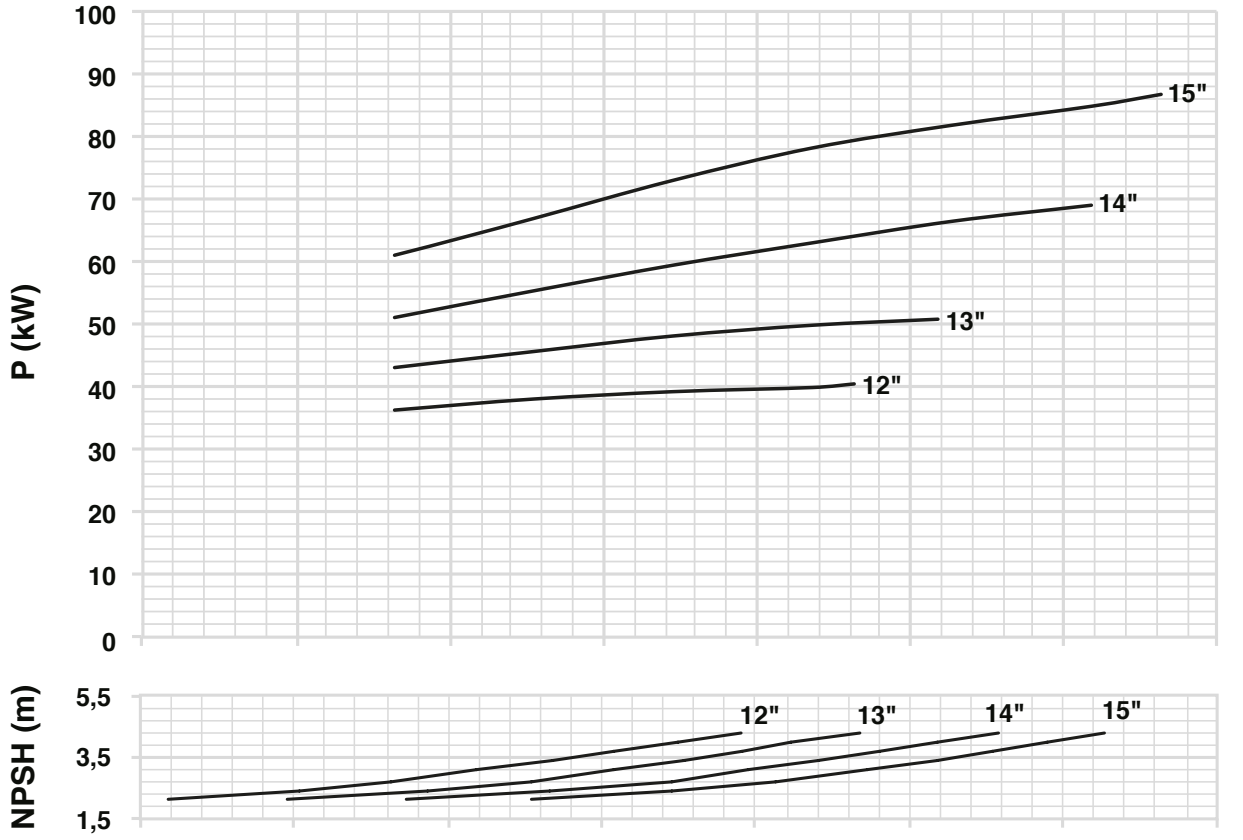


1450

RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 708
Issue Date **MARCH 1967**	Suction Diameter **10”**	Discharge Diameter **8”**	**8 x 10 - 15G**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**1450 rpm**





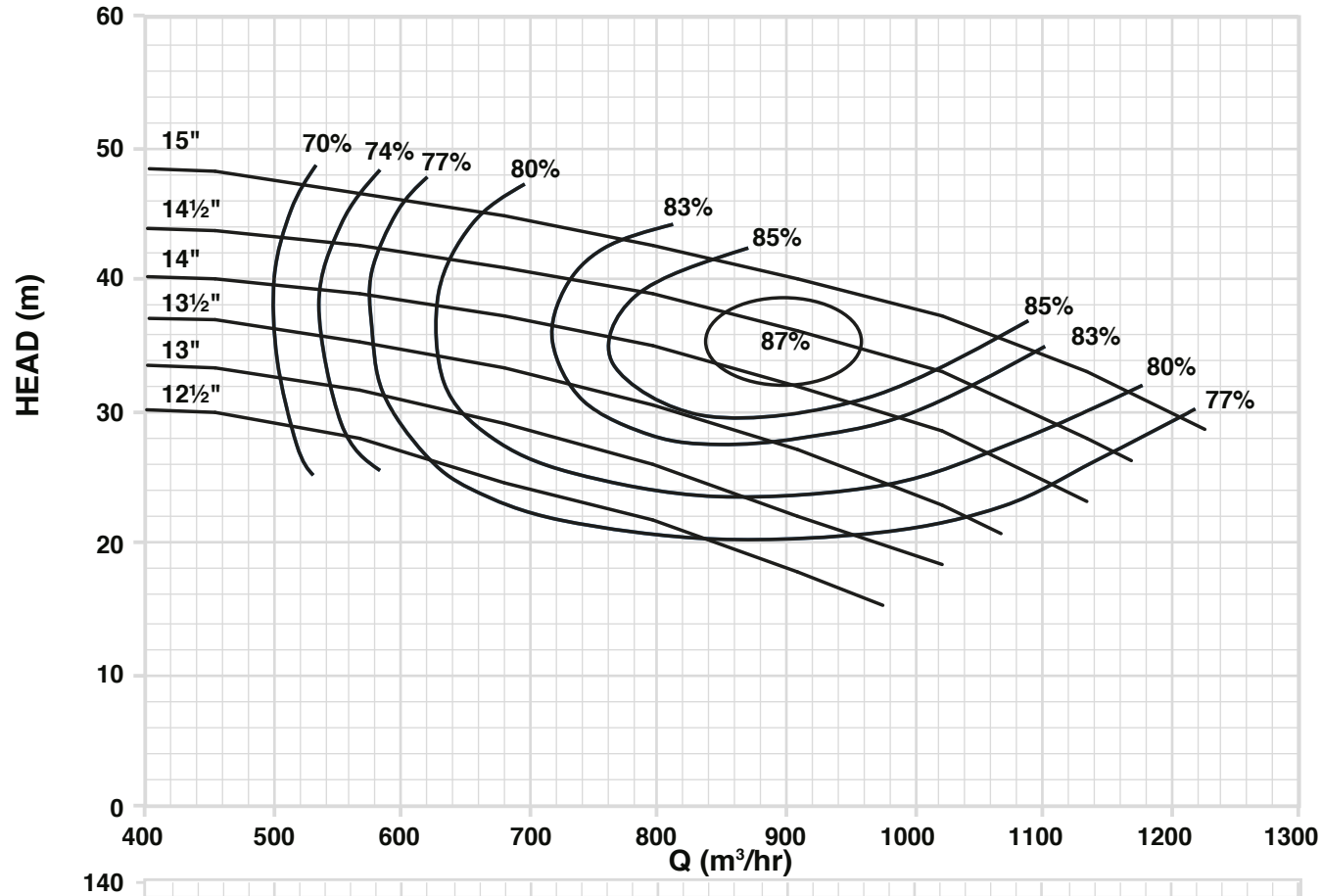
RAPID ALLWEILER PUMPS

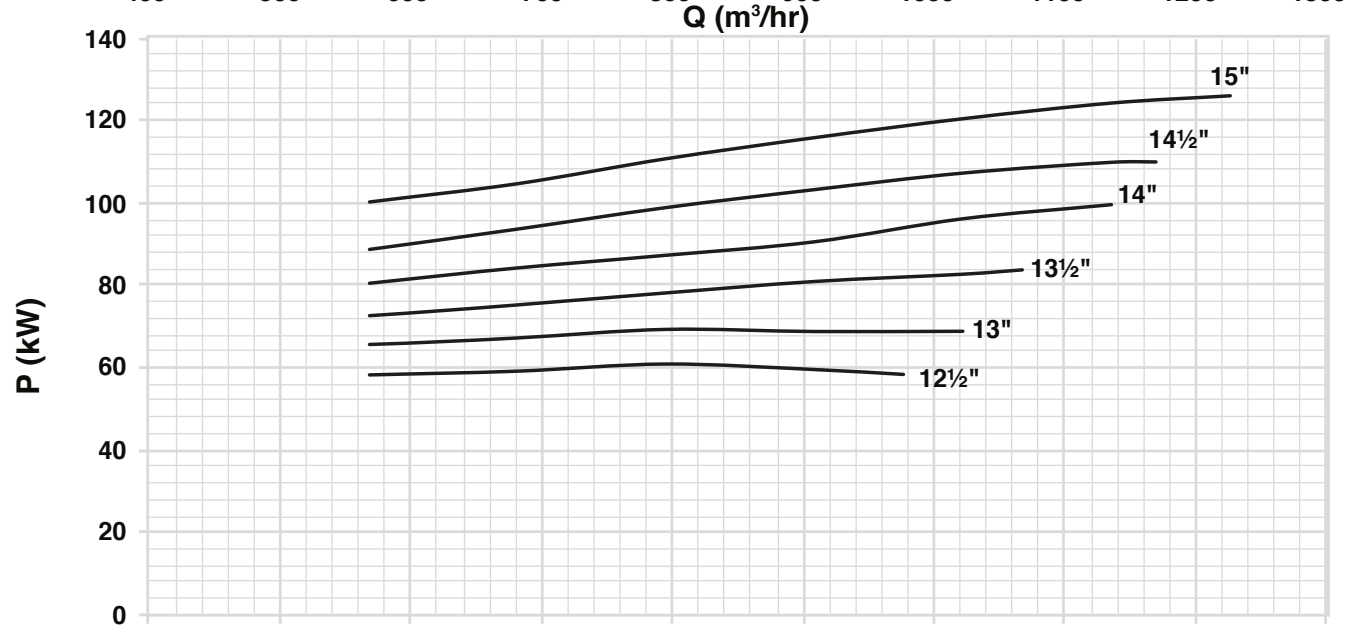
CHARACTERISTIC CURVE

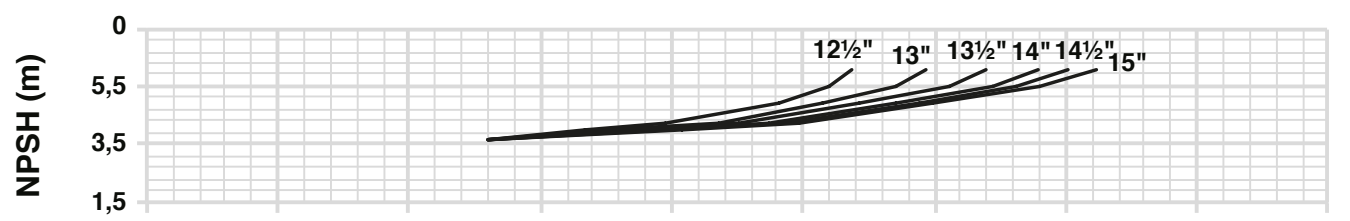
Issue Date	Suction Diameter	Discharge Diameter
MARCH 1967	**10”**	**8”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 708
8 x 10 - 15
1450 rpm







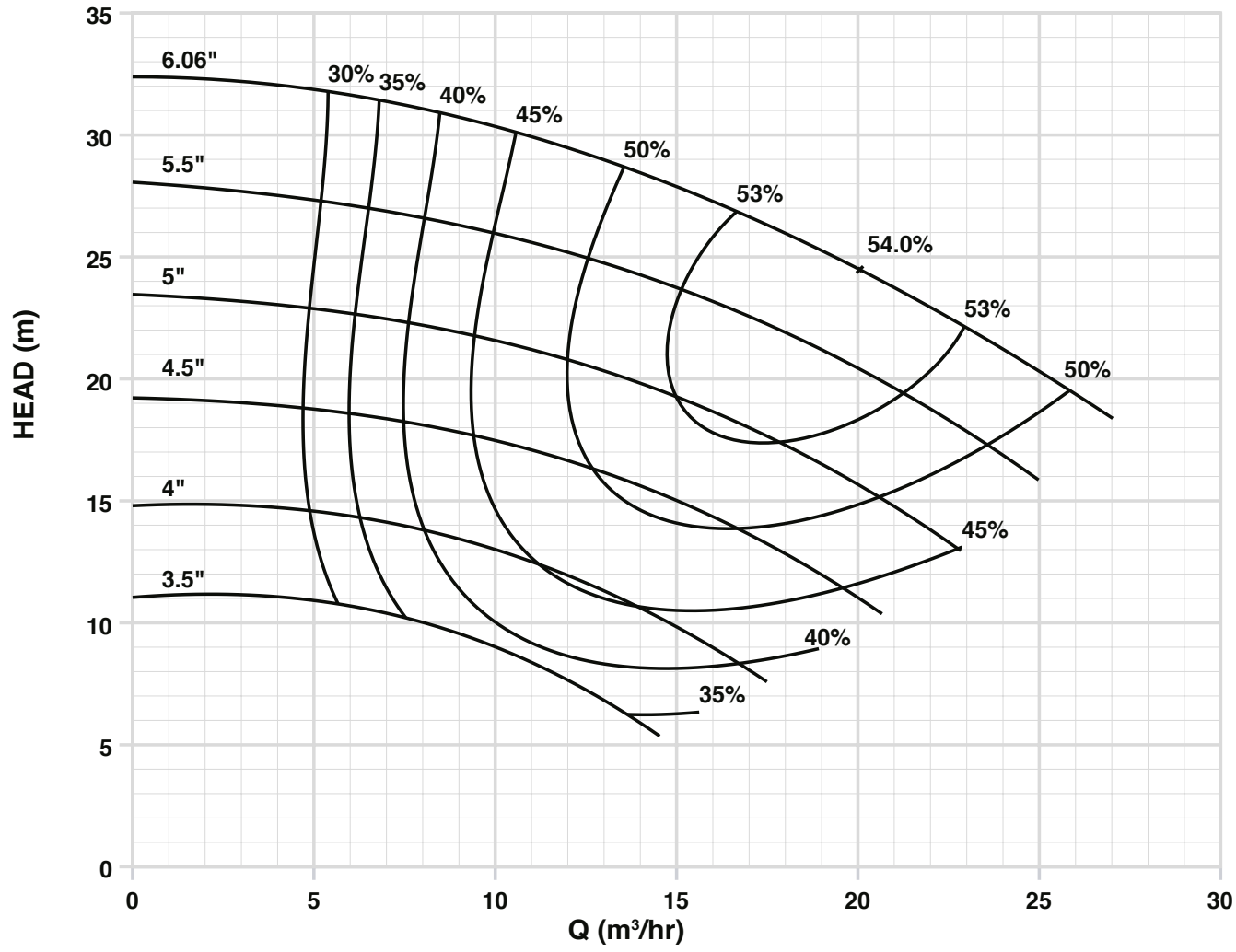
RAPID ALLWEILER PUMPS

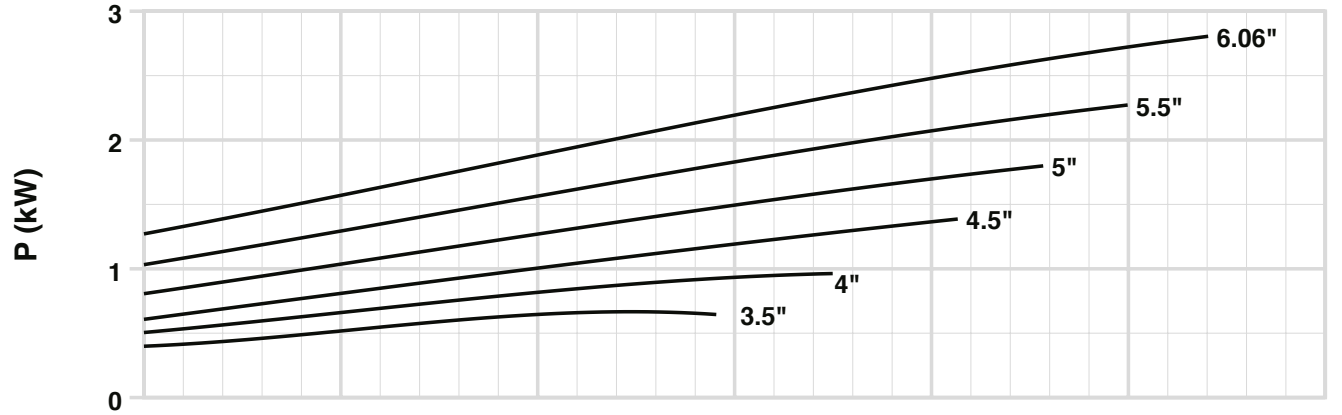
CHARACTERISTIC CURVE

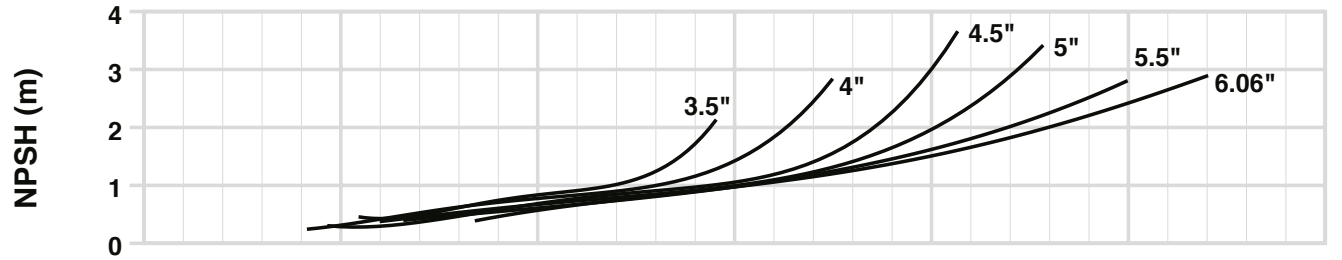
Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**1½”**	**1”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 343
1 x 1½ - 6
2900 rpm

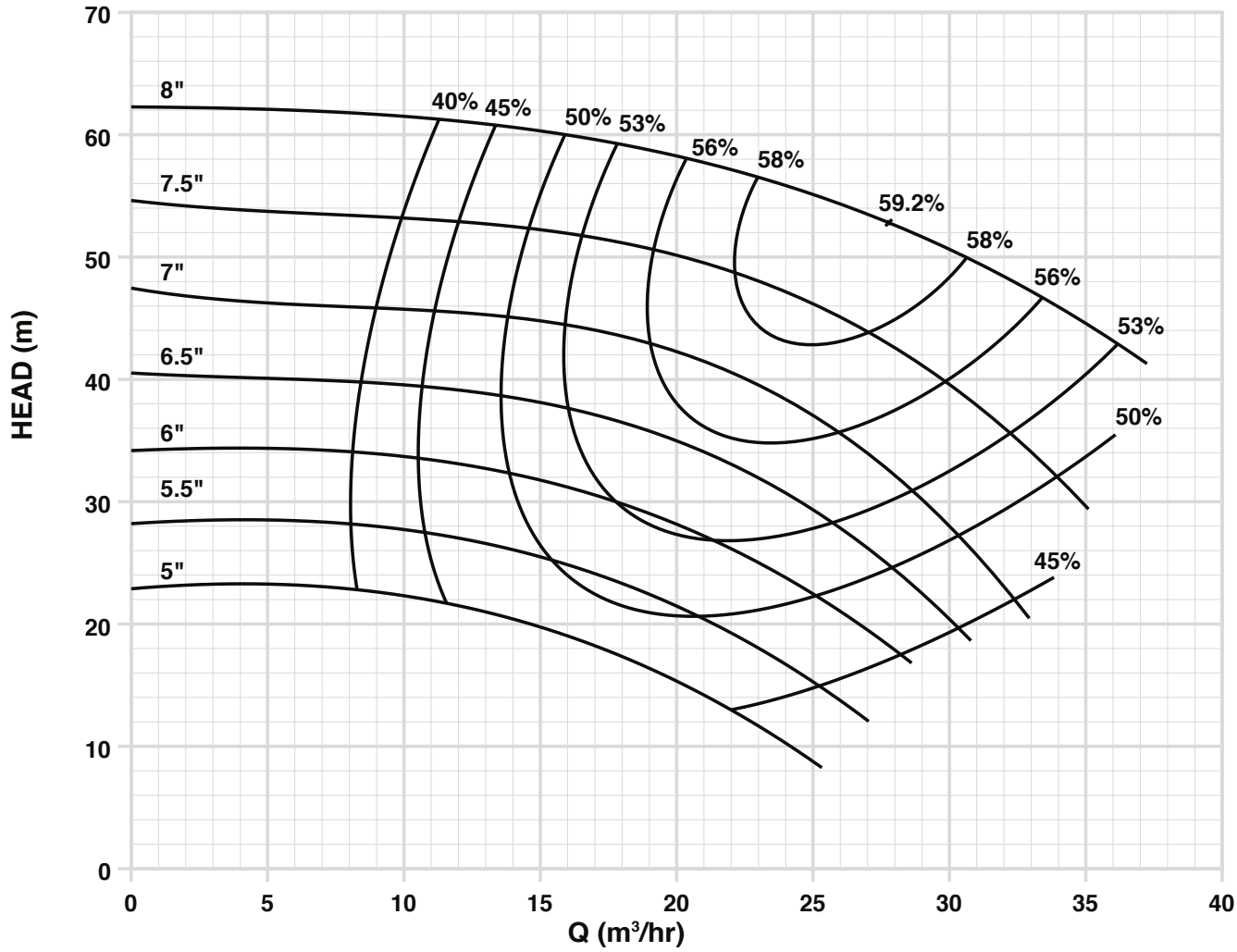


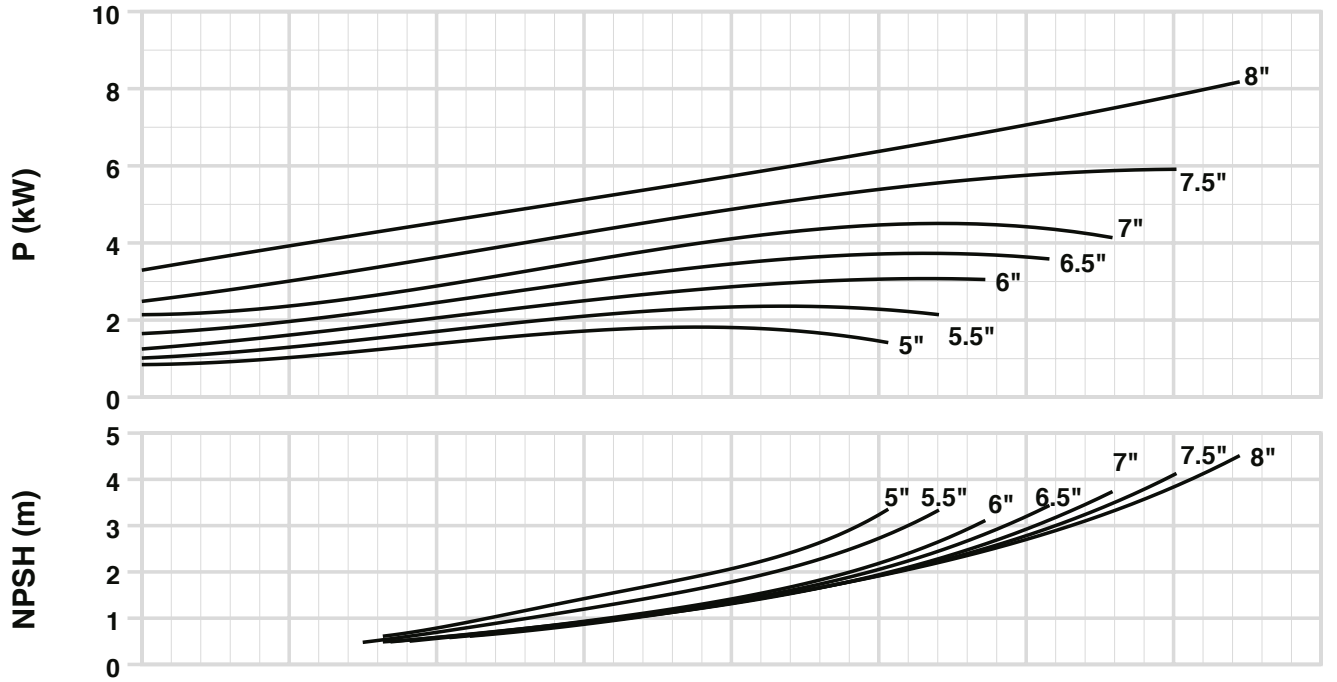




RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 343
Issue Date **OCTOBER 2005**	Suction Diameter **1½”**	Discharge Diameter **1”**	**1 x 1½ - 8**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**2900 rpm**





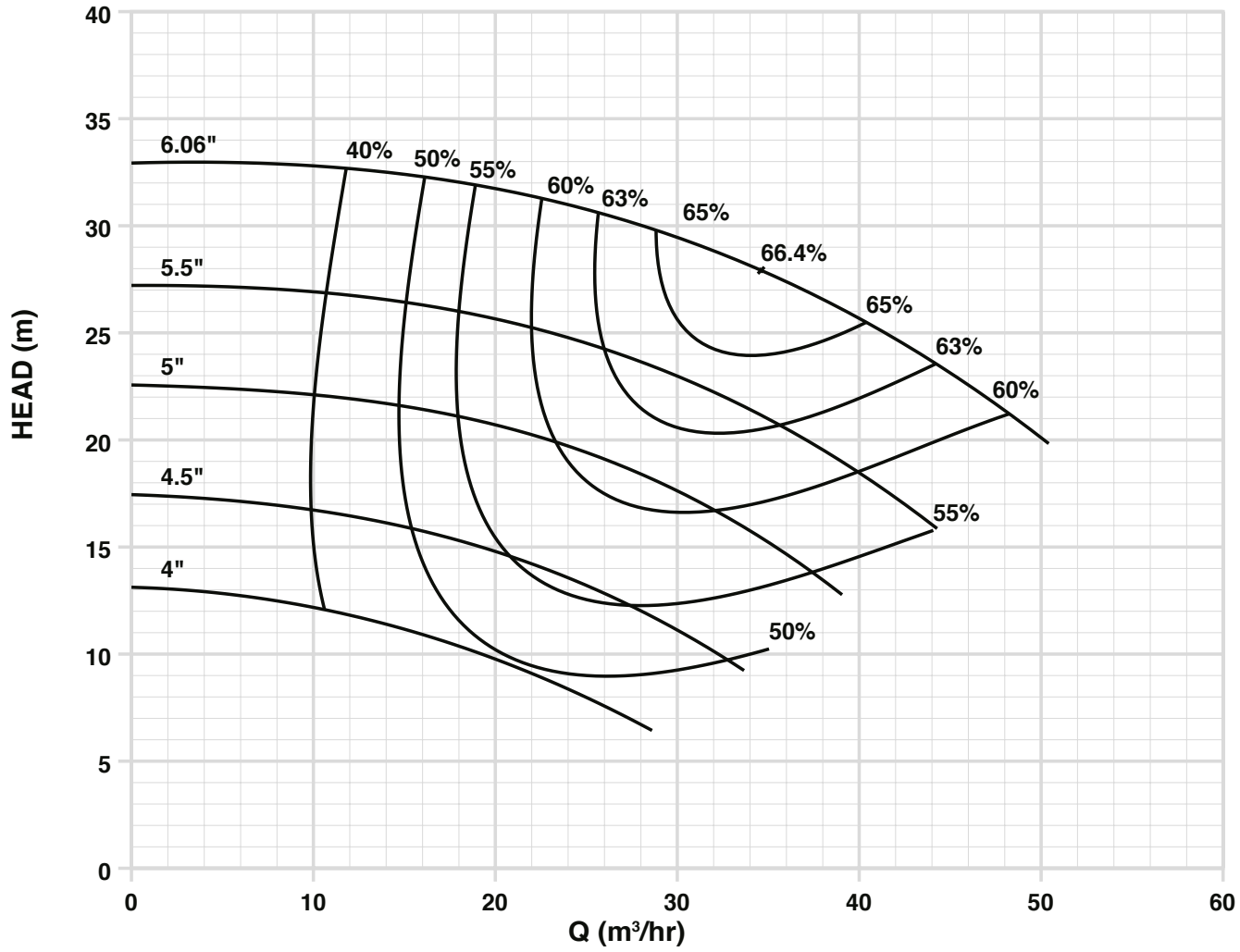
RAPID ALLWEILER PUMPS

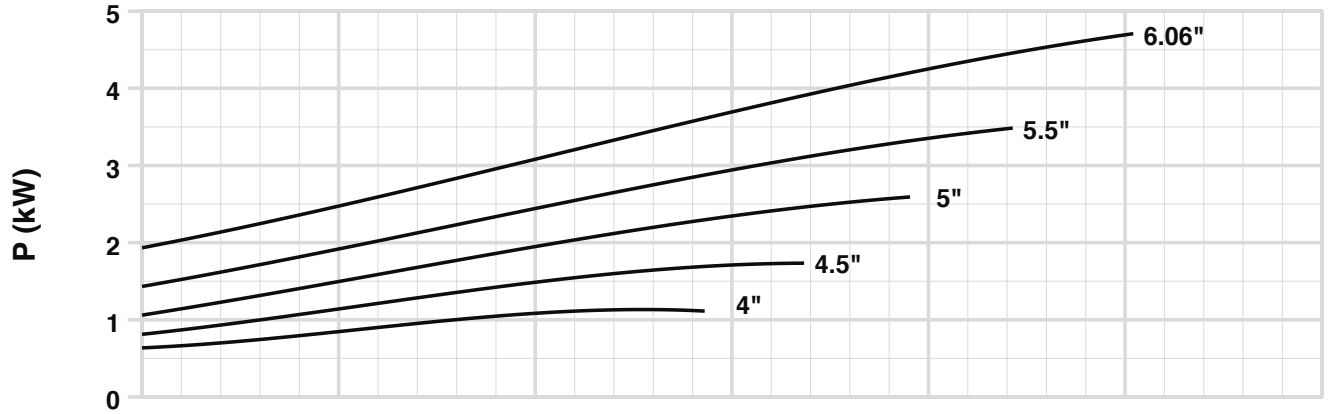
CHARACTERISTIC CURVE

Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**3”**	**1½”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 343
1½ x 3 - 6
2900 rpm





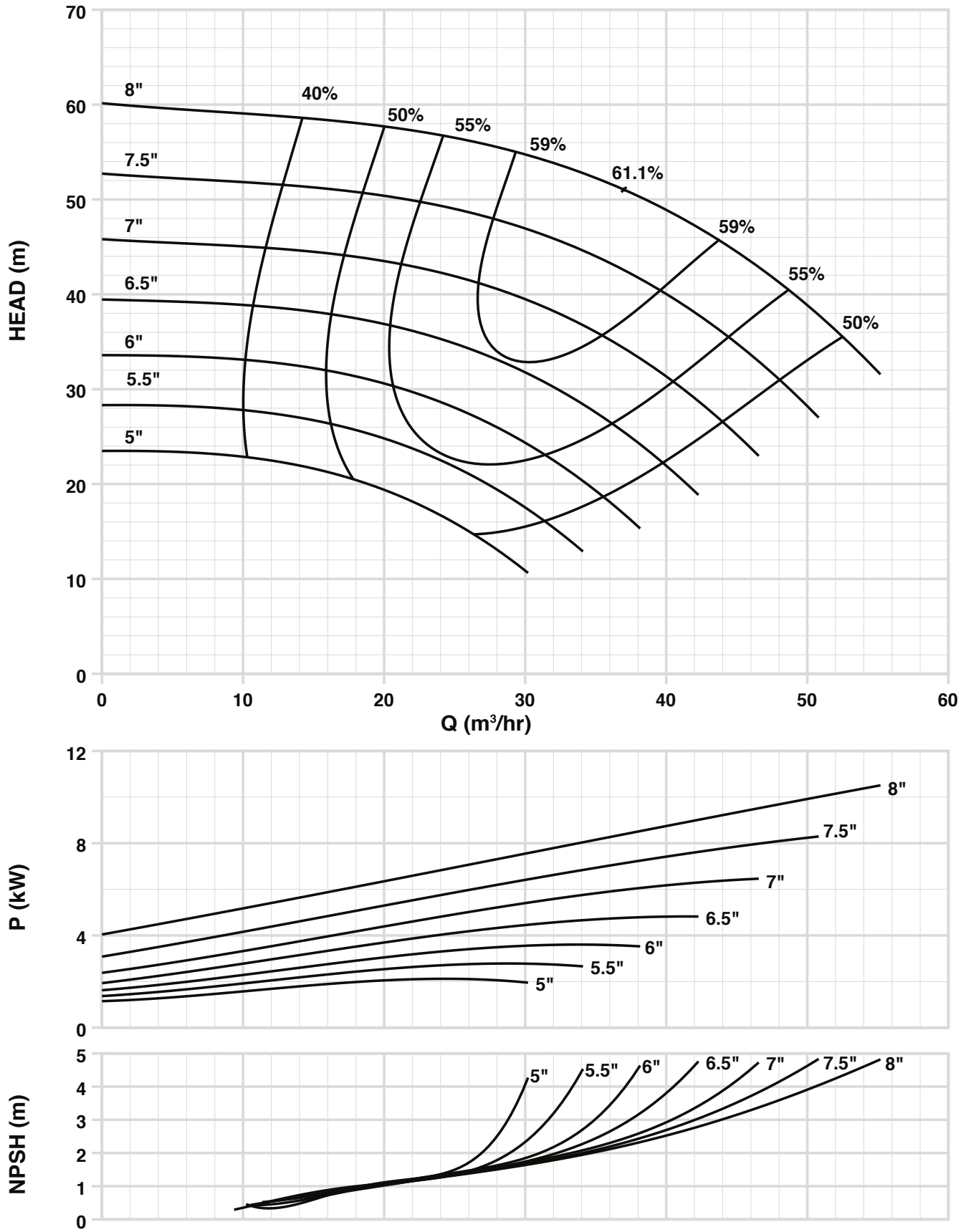
RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE

Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**3”**	**1½”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 495
1½ x 3 - 8
2900 rpm



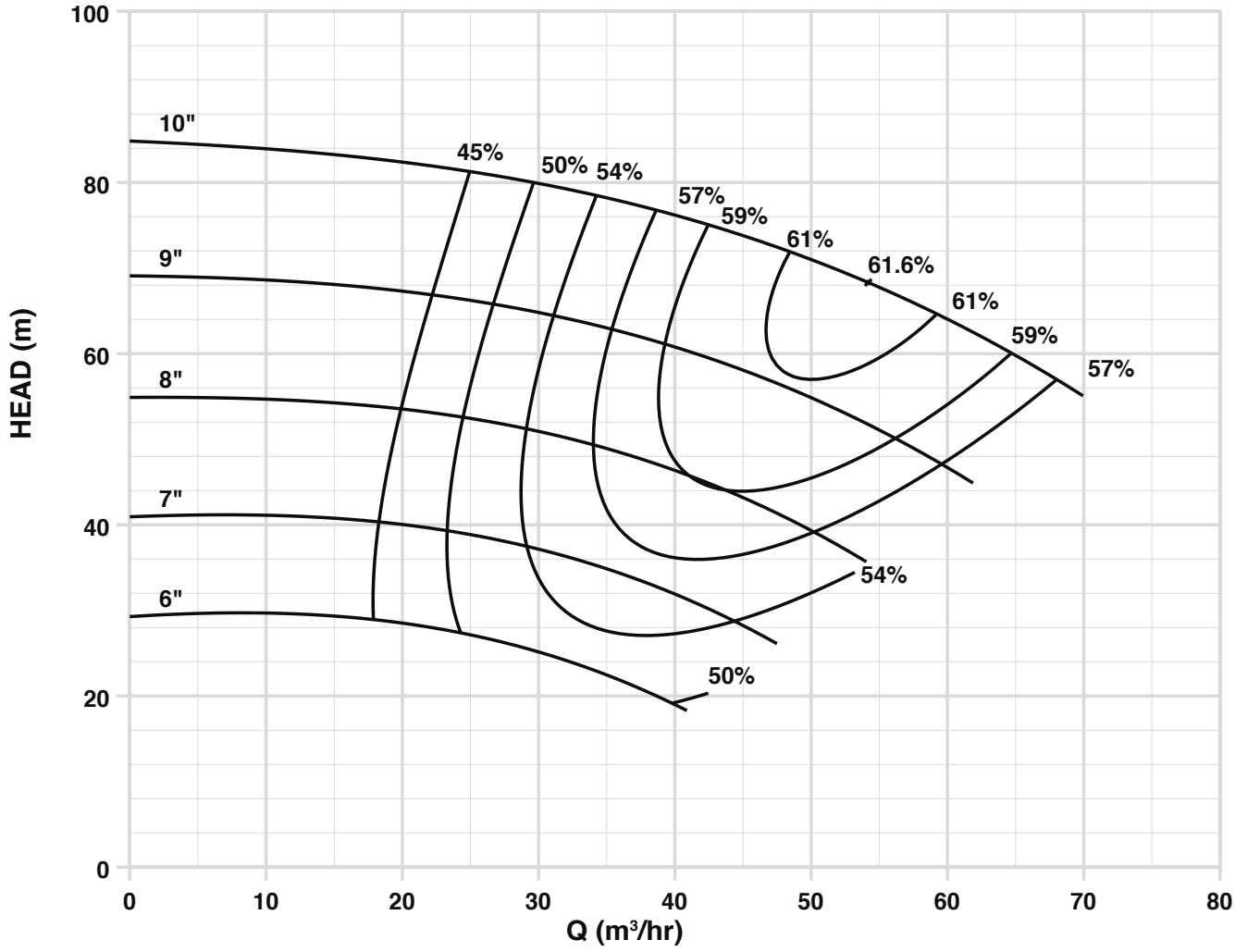
RAPID ALLWEILER PUMPS

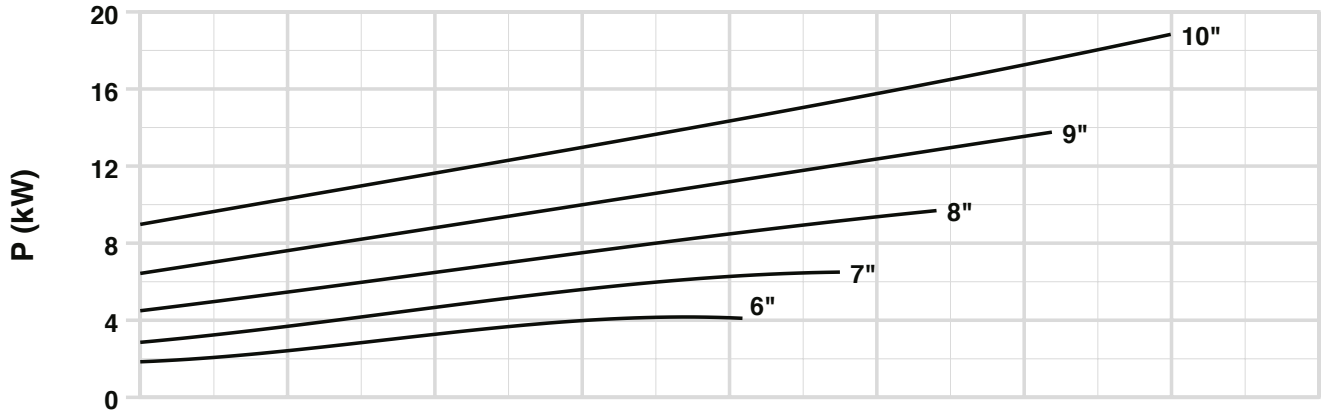
CHARACTERISTIC CURVE

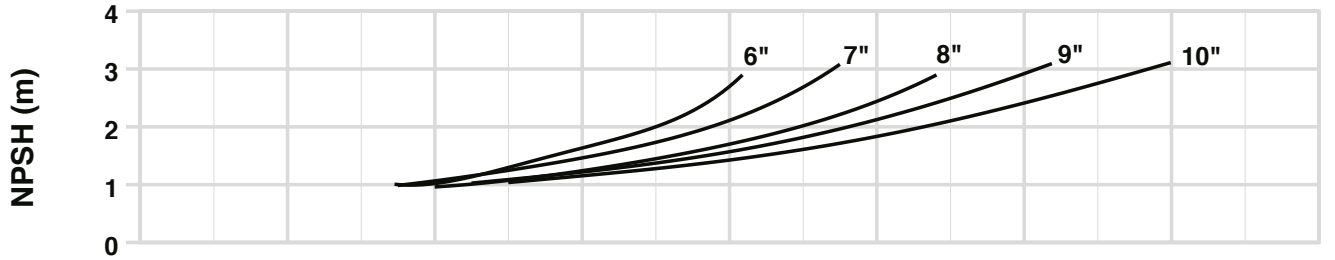
Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**3”**	**1½”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 495
1½ x 3 - 10
2900 rpm







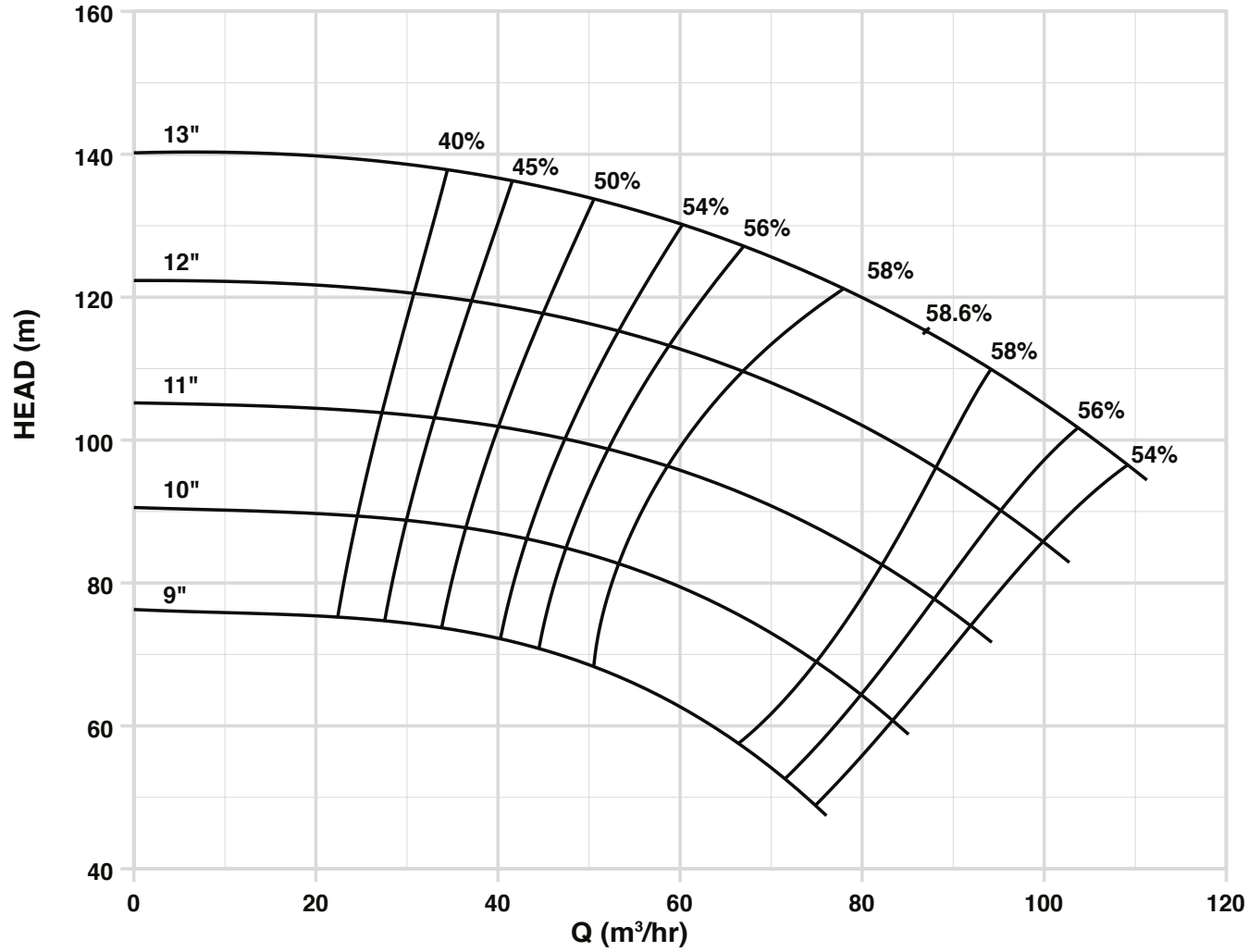
RAPID ALLWEILER PUMPS

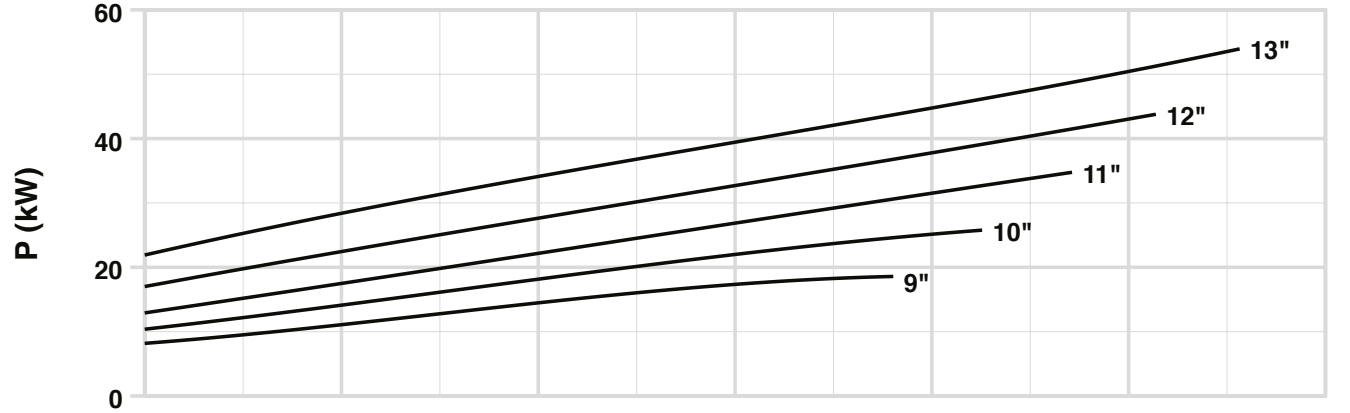
CHARACTERISTIC CURVE

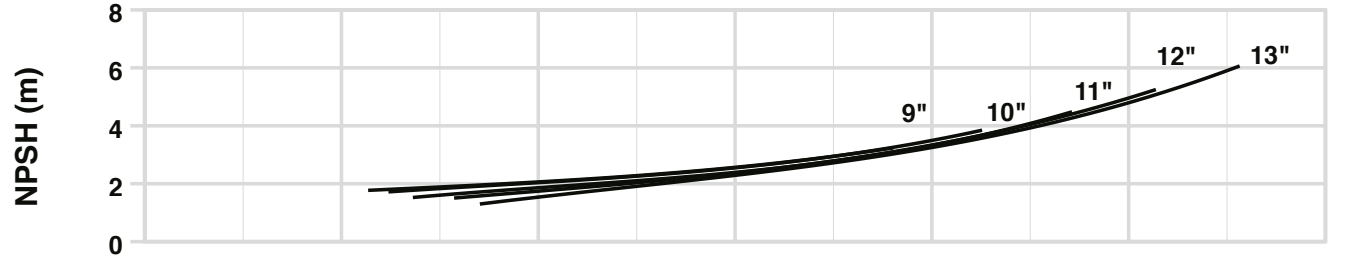
Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**3”**	**1½”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 495
1½ x 3 - 13
2900 rpm







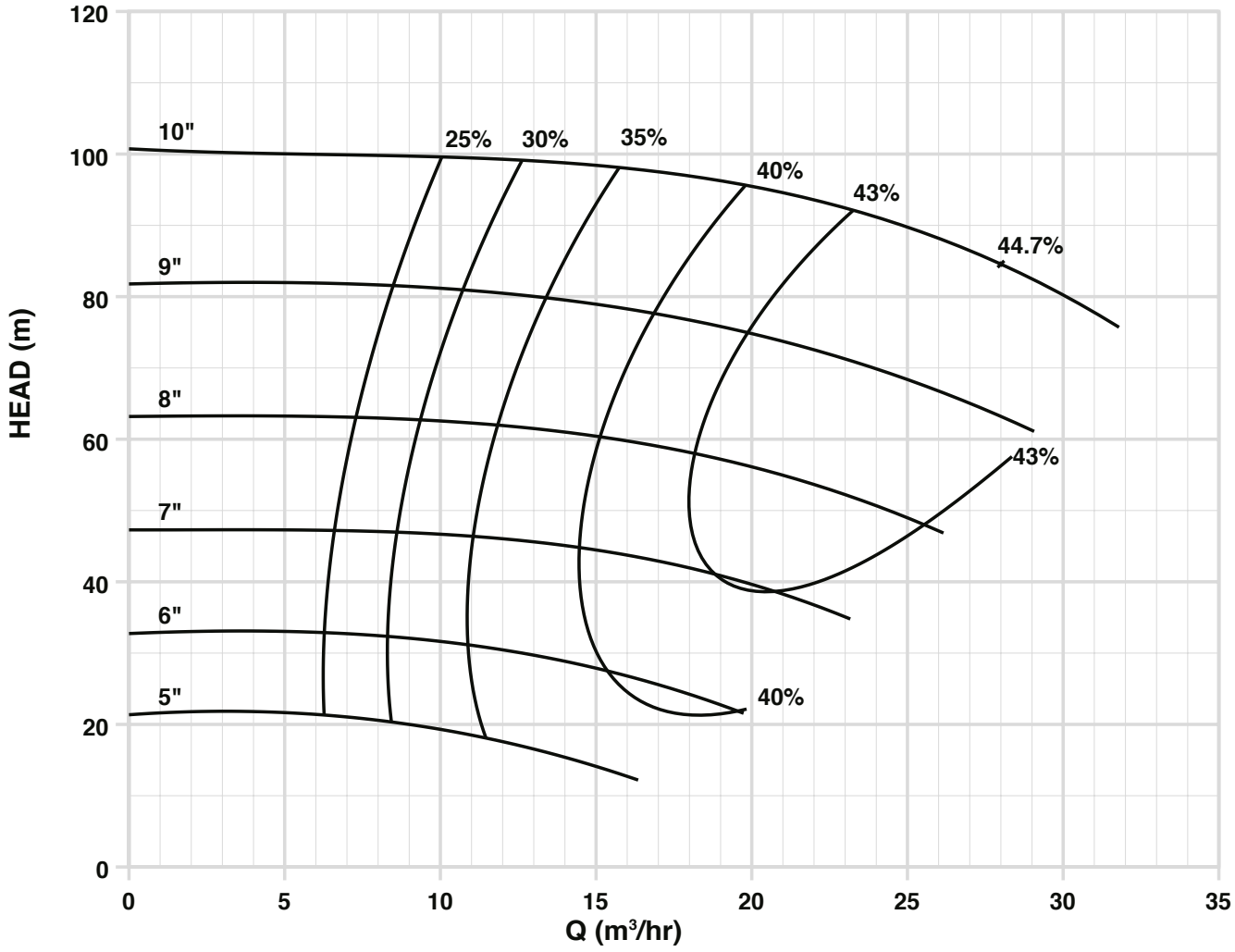
RAPID ALLWEILER PUMPS

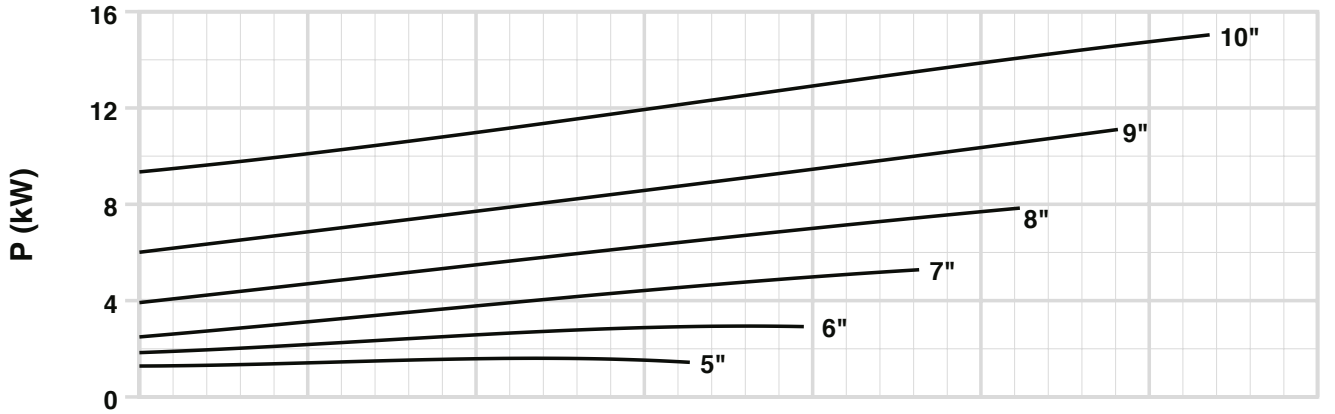
CHARACTERISTIC CURVE

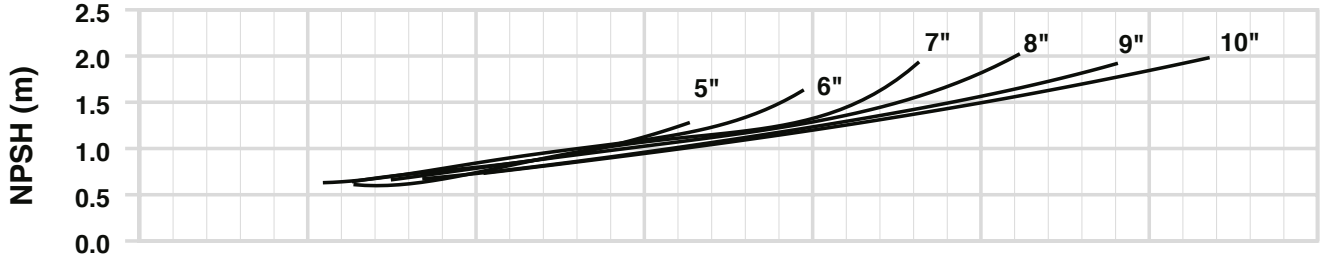
Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**2”**	**1”**

Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 495
1 x 2 - 10
2900 rpm

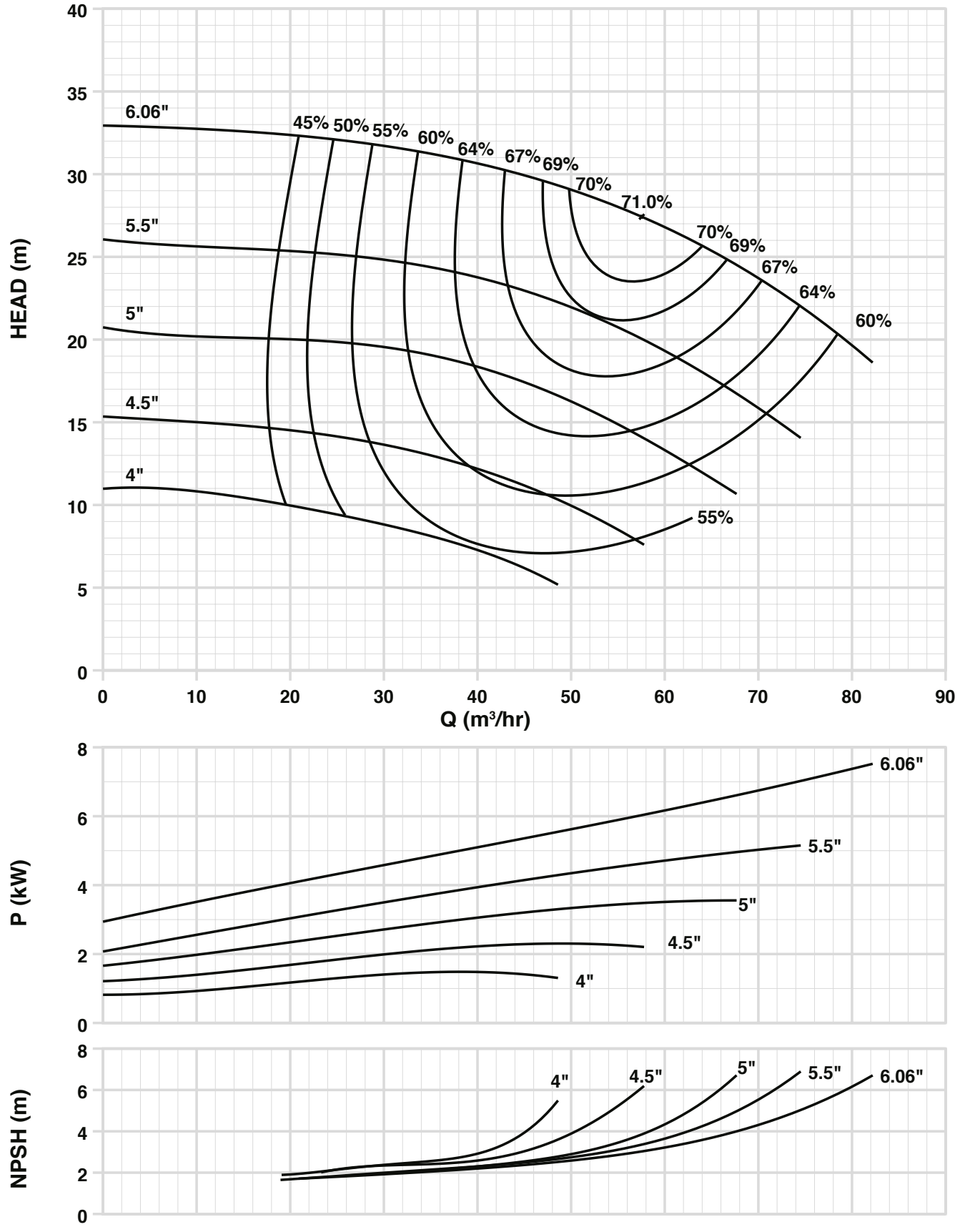






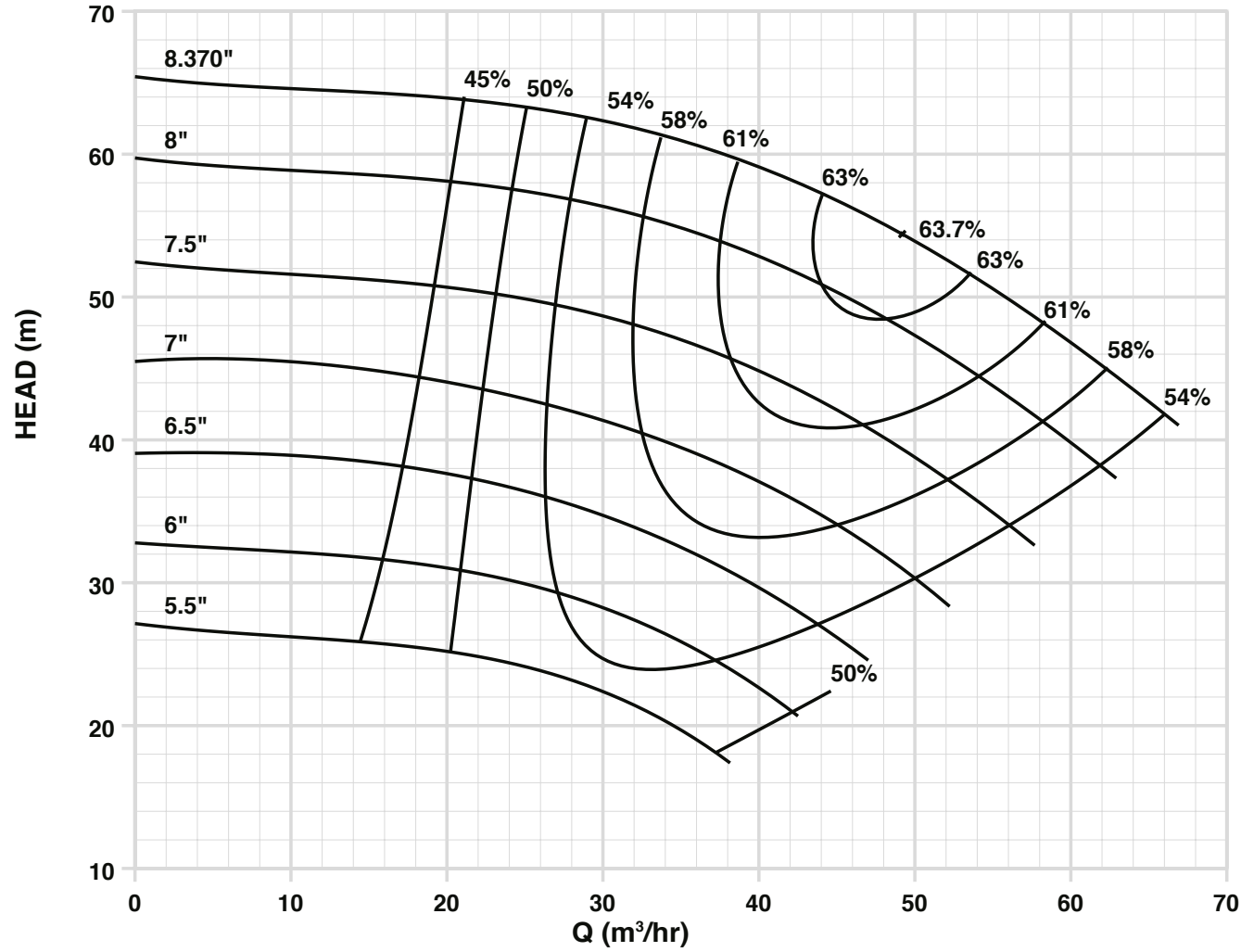
RAPID ALLWEILER PUMPS

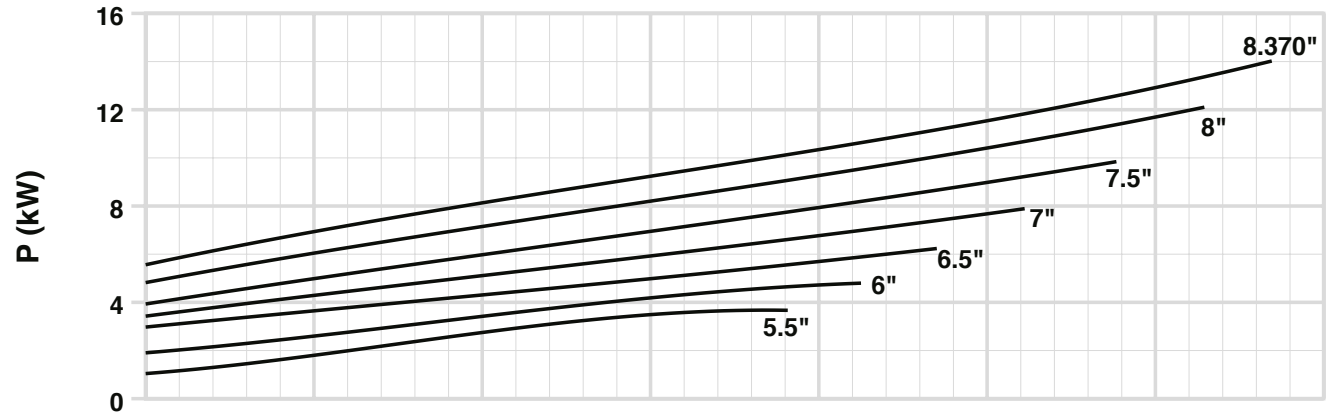
CHARACTERISTIC CURVE			ANSI 343
Issue Date **OCTOBER 2005**	Suction Diameter **3”**	Discharge Diameter **2”**	**2 x 3 - 6**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**2900 rpm**

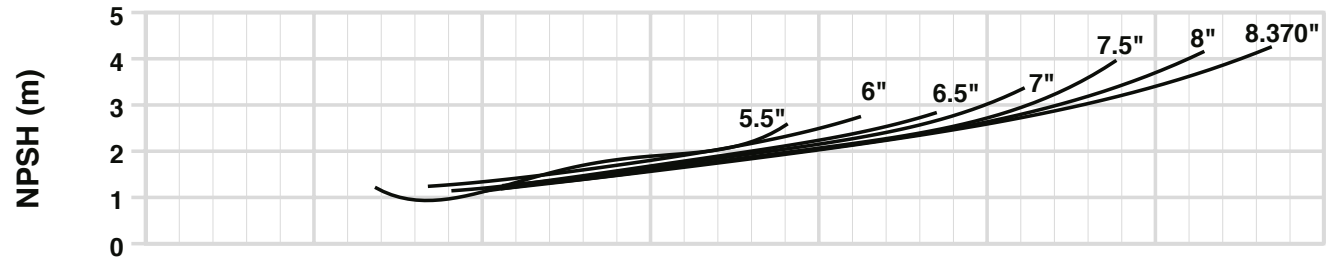


RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **3”**	Discharge Diameter **2”**	**2 x 3 - 8**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**2900 rpm**







RAPID ALLWEILER PUMPS

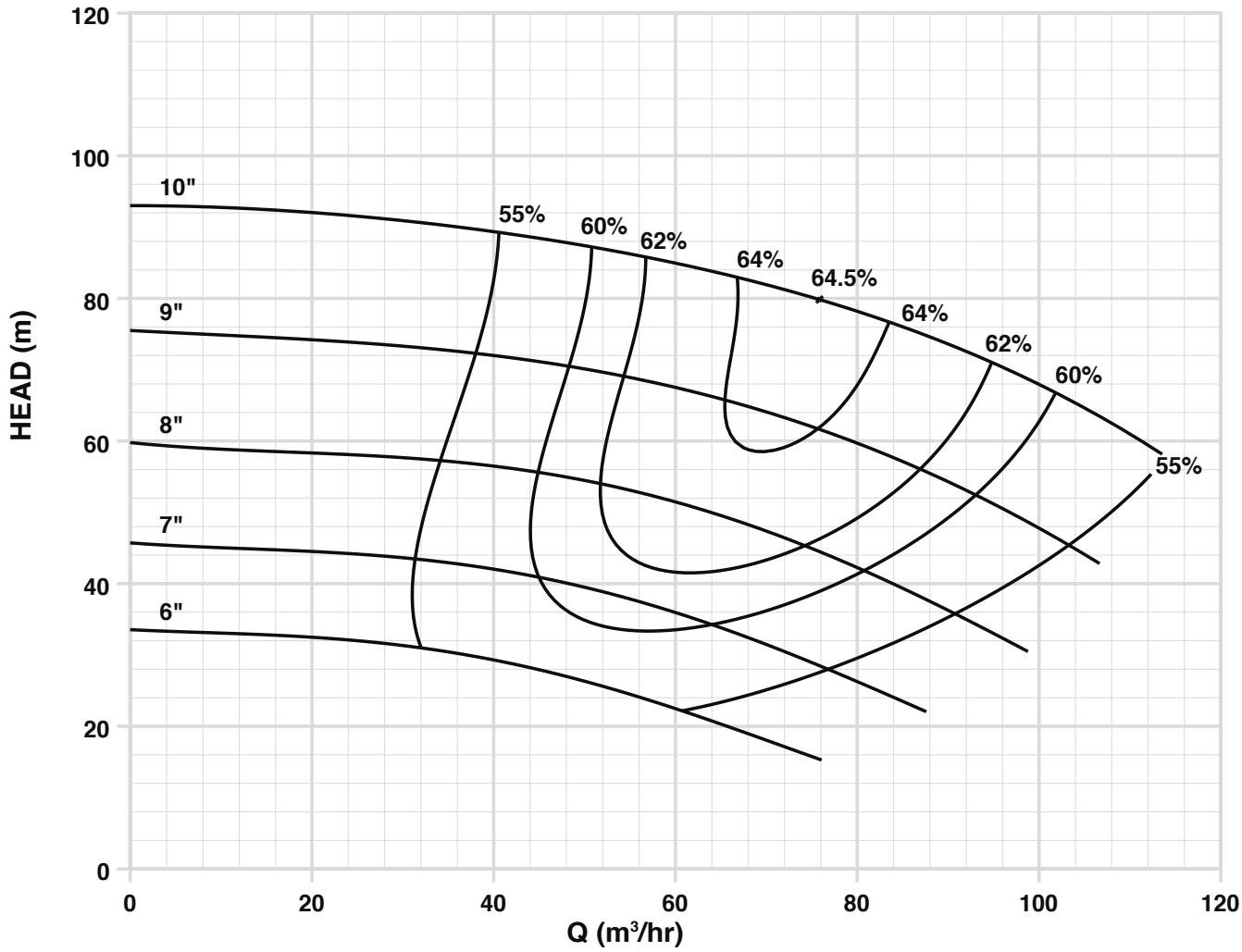
CHARACTERISTIC CURVE

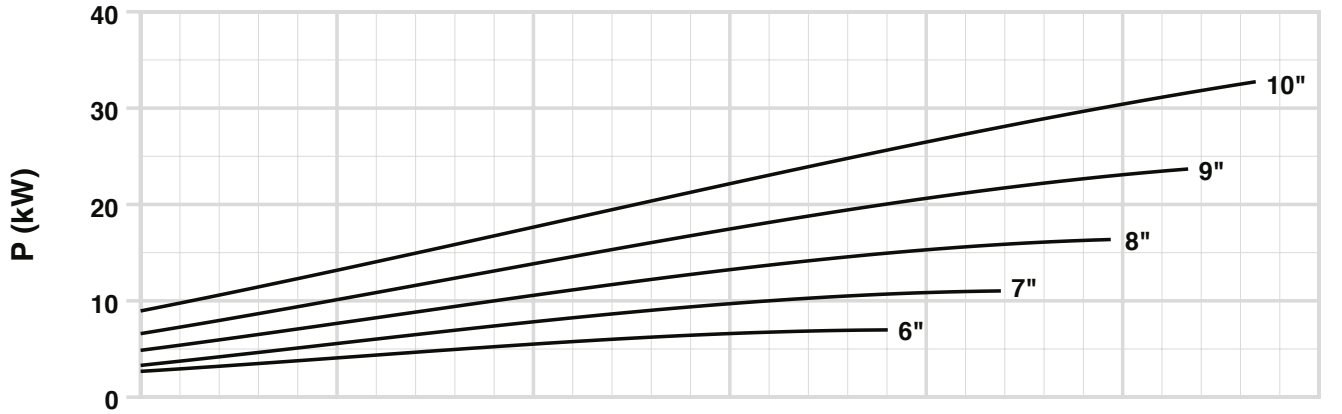
Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**3”**	**2”**

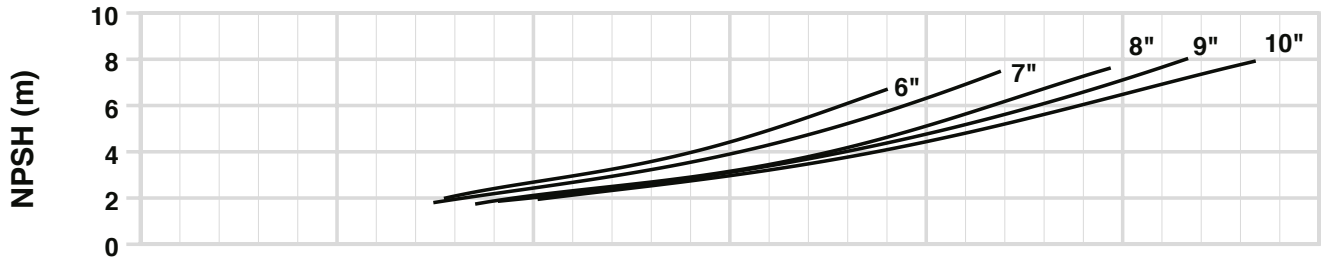
Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

ANSI 495
2 x 3 - 10

2900 rpm

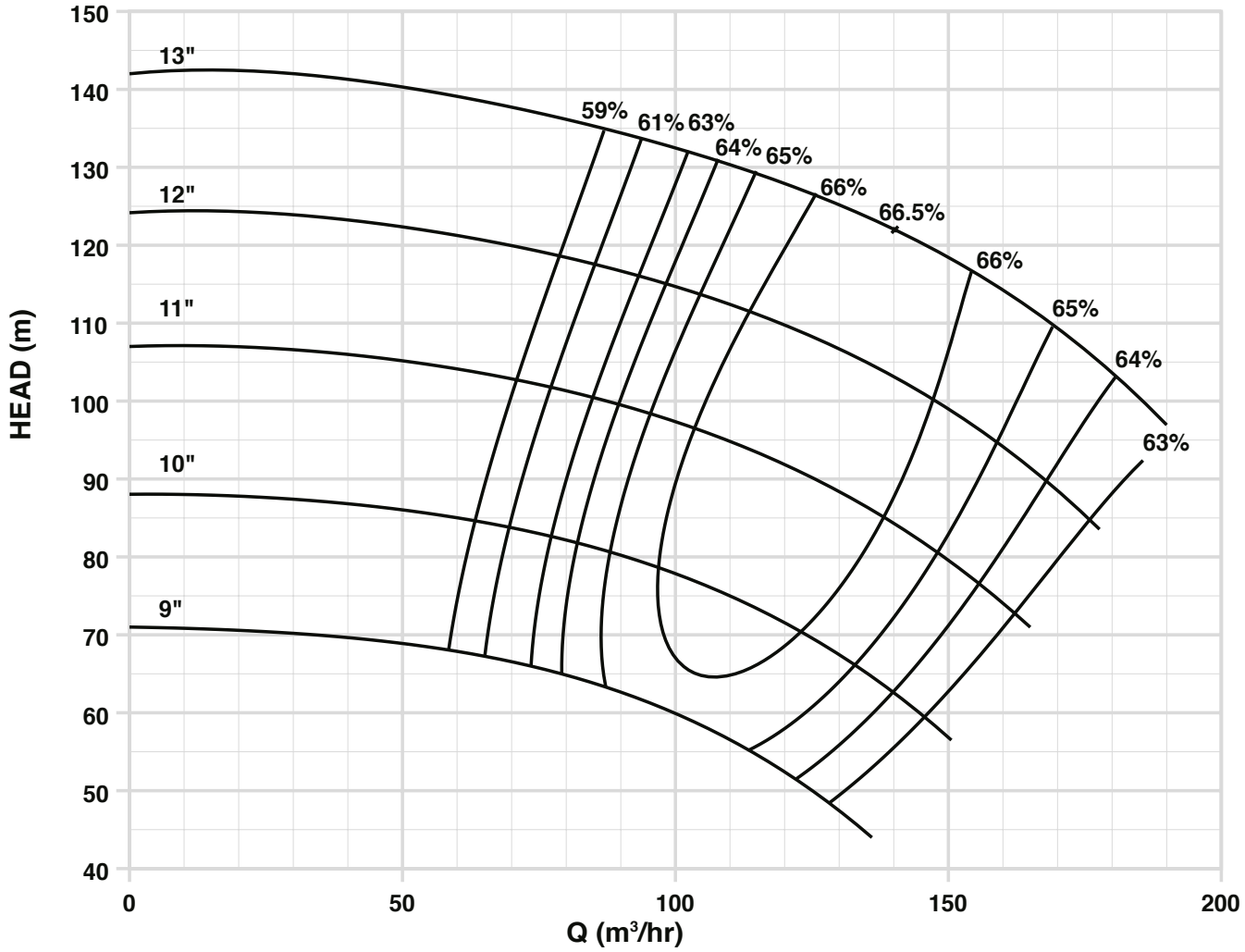


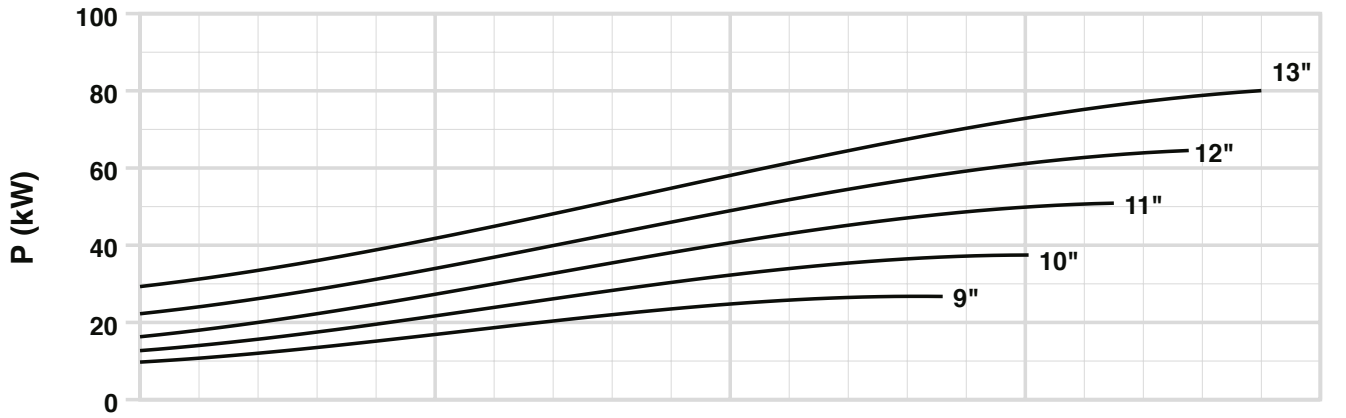


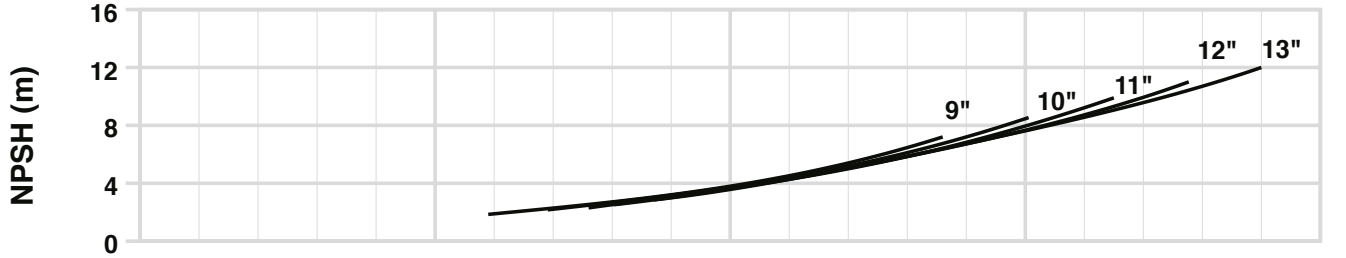


RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **3”**	Discharge Diameter **2”**	**2 x 3 - 13**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**2900 rpm**







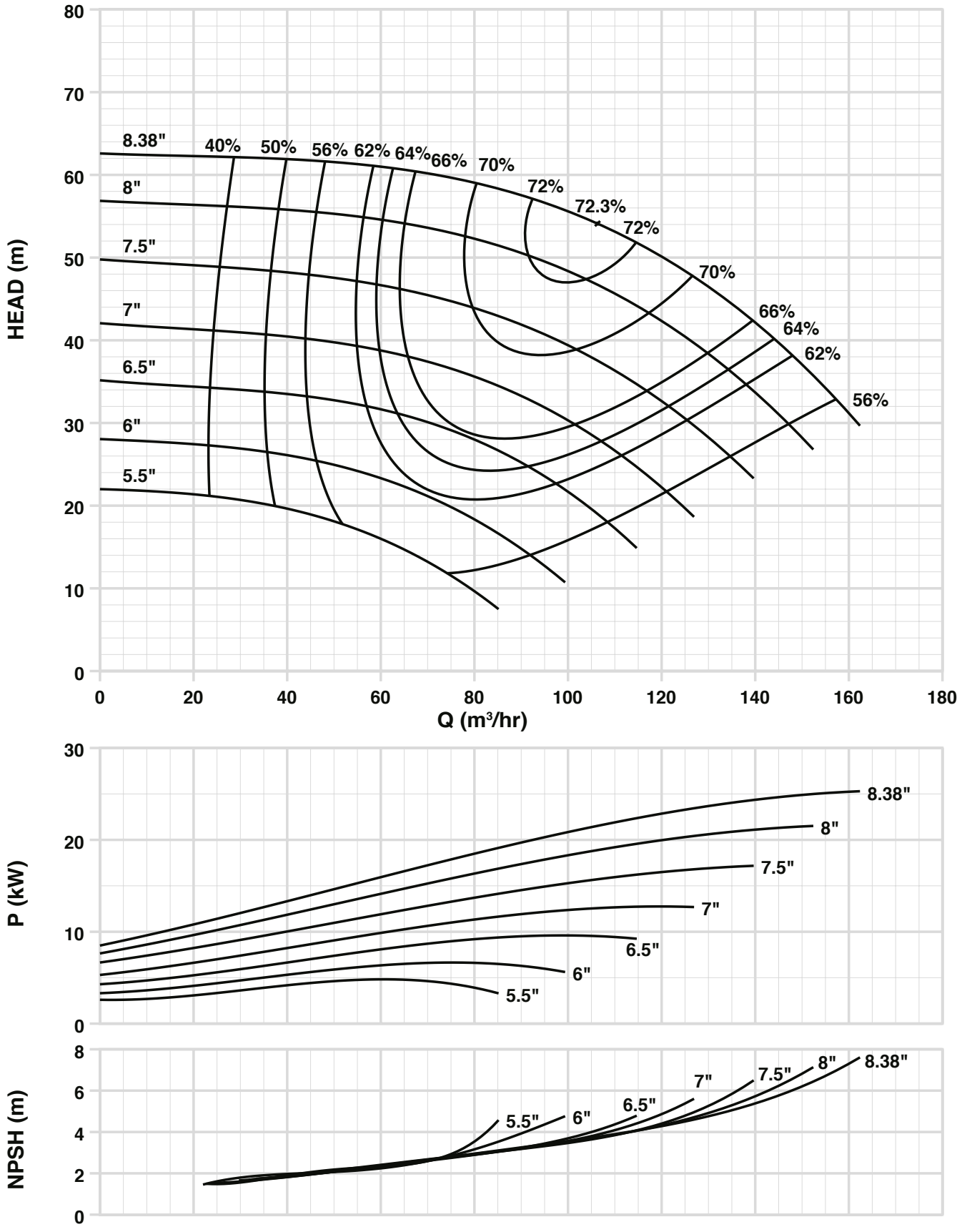
RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE

Issue Date	Suction Diameter	Discharge Diameter
OCTOBER 2005	**4”**	**3”**

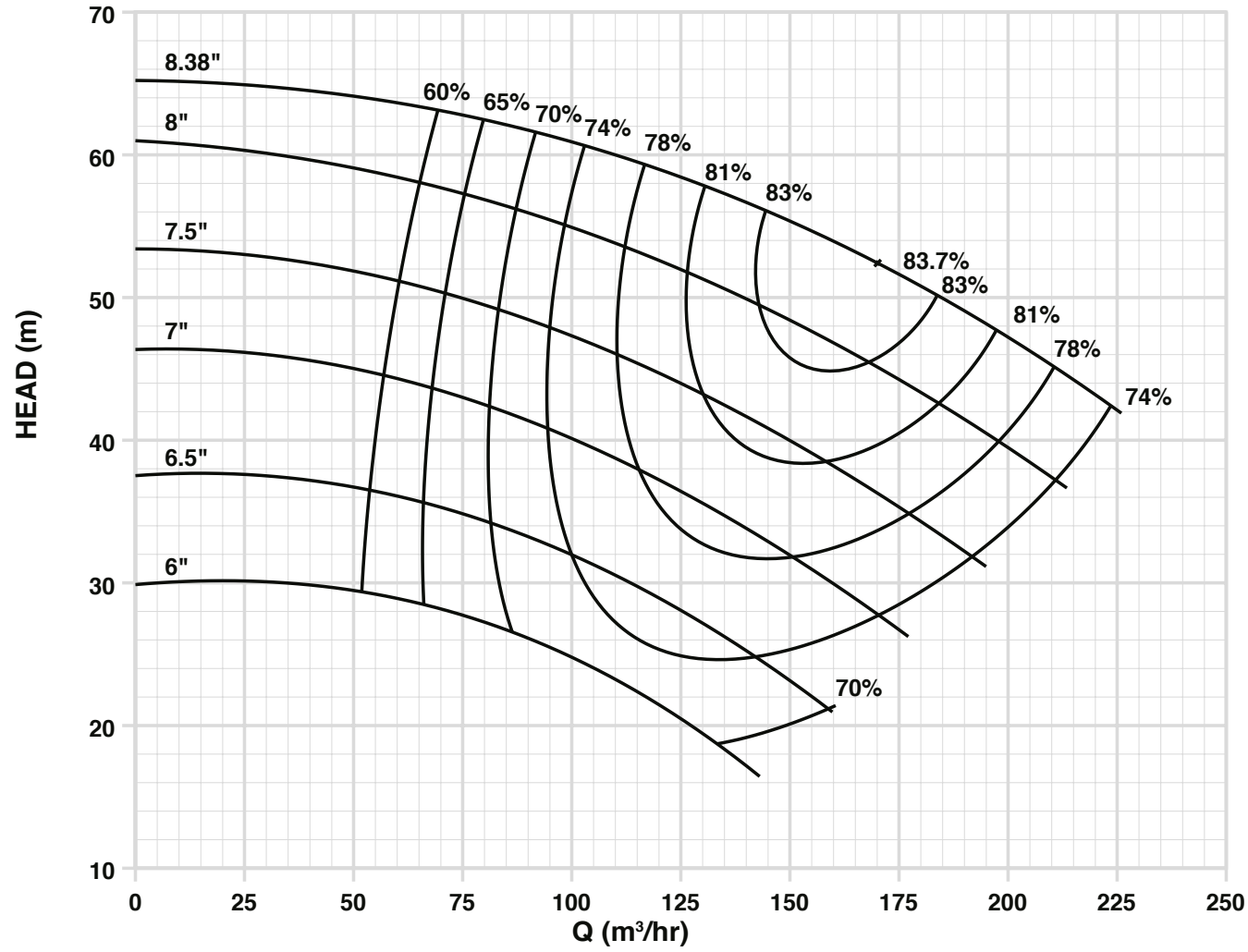
Based on water density 1000 kg/m3 and viscosity 1 cSt.
Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B

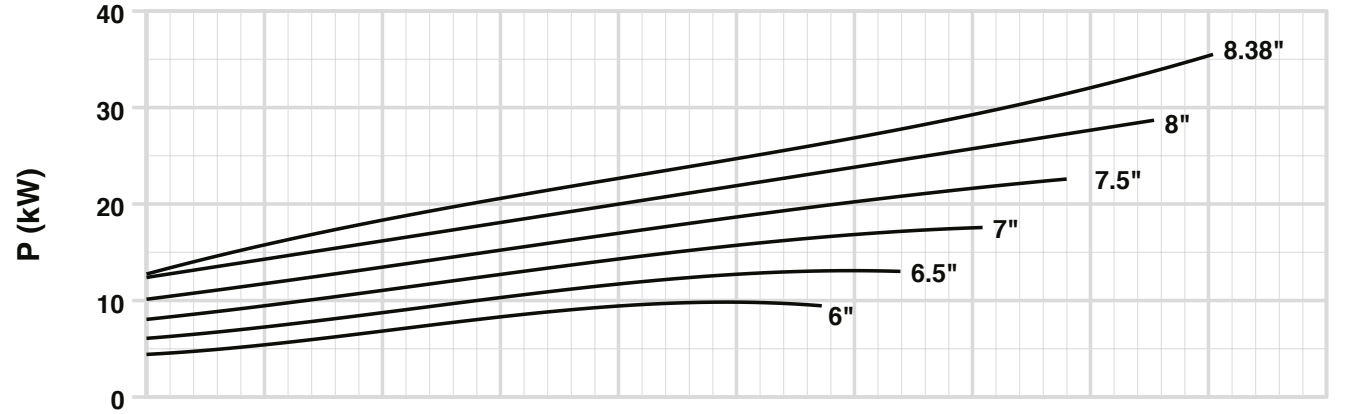
ANSI 495
3 x 4 - 8G
2900 rpm

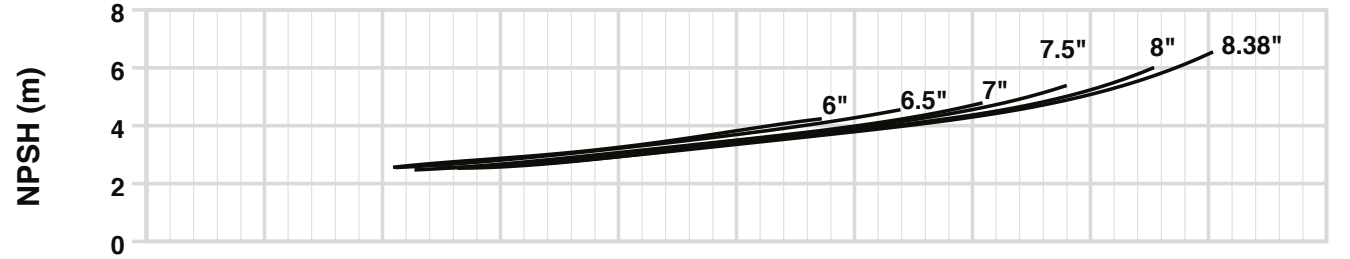


RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **4”**	Discharge Diameter **3”**	**3 x 4 - 8**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**2900 rpm**

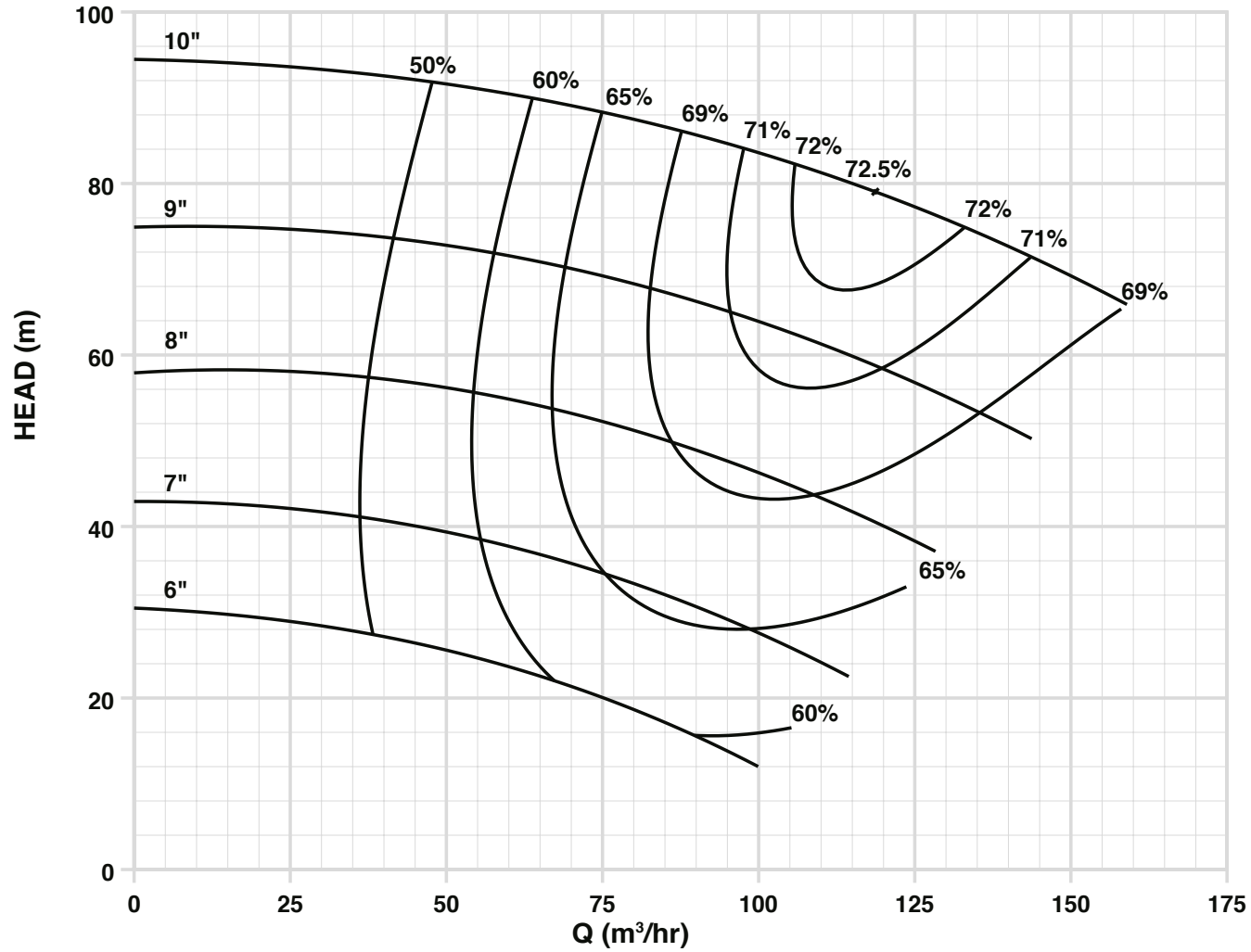


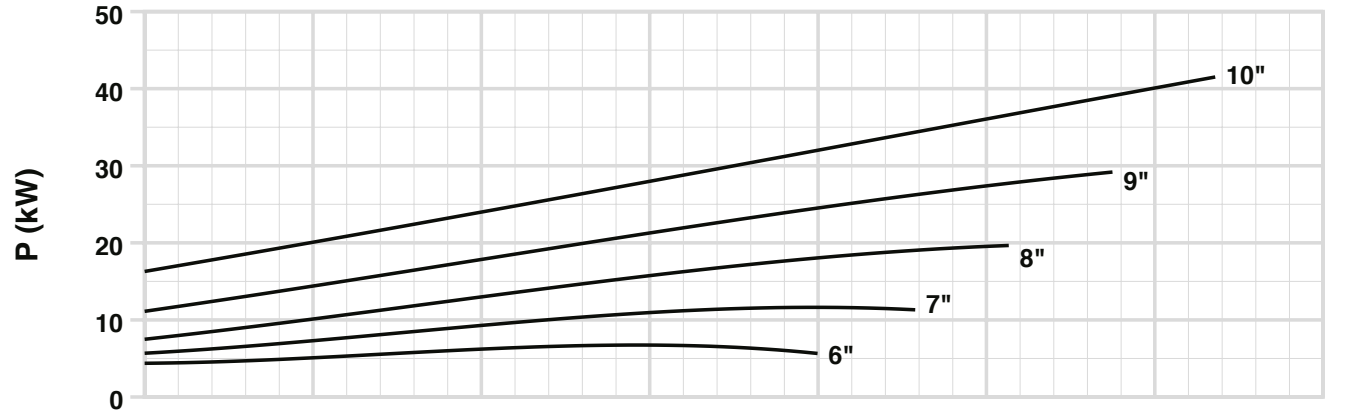


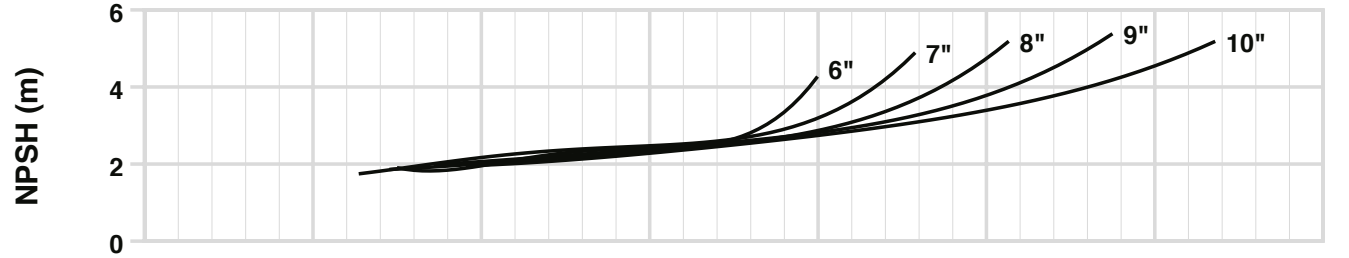


RAPID ALLWEILER PUMPS

CHARACTERISTIC CURVE			ANSI 495
Issue Date **OCTOBER 2005**	Suction Diameter **4”**	Discharge Diameter **3”**	**3 x 4 - 10**
Based on water density 1000 kg/m3 and viscosity 1 cSt. Head, capacity and efficiency according to ISO Standard 2548: 1973 Annex B			**2900 rpm**







2900

Notes

Notes

RAPID ALLWEILER

RAW

Rapid Allweiler Way

COMMUNICATION

- Define Requirement
- Provide Solution
- Order Confirmation/Weekly Feedback
- Utilize MRP and KANBAN processes to ensure alignment between all departments

QUALITY

- CBS Quality Management System
- Continuous QC Inspection in Manufacturing Process
- External suppliers vetted and quality checked

COMMITMENT

Our Core Value System:

- Can Do
- Trust
- Family
- Growth Orientated
- Passionate

SATISFACTION

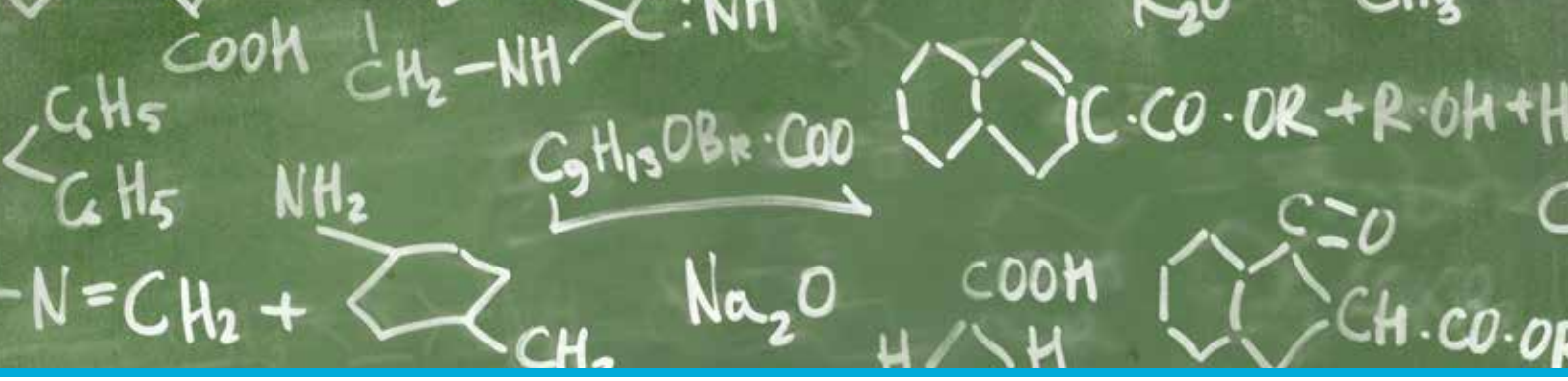
- Delivered as Promised, Quality and on Time
- Engage in ongoing feedback
  - Once Product is Delivered
  - When Product is Commissioned

" Delivered as Promised"

ALLWEILER

Est. 1932

COLFAX Fluid Handling



BASIC FORMULAS

H= Head(m) Q = Flow(m³/h) Eff = Pump Eff% Density = SG

Capacity

l/sec x 3.6 = m³/h	m³/h ÷ 3.6 = l/sec
Imp gpm x 0.2271 = m³/h	m³/h x 4.403 = Imp gpm
US gpm ÷ 0.246 = l/min	l/min x 0.246 = US gpm
10000 kg/hr =	$\frac{10m^3h}{\text{Density(SG)}}$

Head/Pressure

Ft ÷ 3.28 = m	m x 3.28048 = Ft
Bar x 100 = kpa	
m x 9.805 = kpa	kpa x 0.102 = m
m x 0.098 = Bar	Bar x 10.19 = m
m x 1.45 = psi	
psi x 6.895 = kpa	

Power

hp x 0.746 = kw	kw x 1.340483 = hp
kw abs =	$\frac{Q \times H \times SG}{367 \times Eff(\%)}$
kw =	$\frac{Amps \times Volts \times Power\ Factor \times 1.732}{1000}$
RPM =	$\frac{Hz \times 120}{No\ of\ Poles}$
Hz =	$\frac{RPM \times No\ Of\ Poles}{120}$
Velocity m/sec =	$\frac{Q \times 353.63}{(Pipe\ Dia)^2}$

Efficiency

EFF(%) = $\frac{Q \times H \times SG}{367 \times kw(abs)}$

Temperature

Deg.C = (deg.F-32) x 0.556

Deg.F = (1.8 x deg.C) + 32

Peripheral Speed

Peripheral Speed(Impeller) = $\frac{imp.dia.(mm) \times \pi \times N(Rpm)}{60 \times 1000}$

Viscosity

vis Viscous Liquid

w Water

Given: Qvis in m³/h kinematic viscosity v in mm²/s

Hvis in m pvis in kg/dm³

Qw = $\frac{Qvis}{CQ}$

Hw = $\frac{Hvis}{CH}$

Qw = C% x %w

Pvis = $\frac{Qvis \times Hvis \times Pvis}{367 \times Eff(\%)\ vis}$

Centrifugal and Axial Flow Pump Affinity Laws:

Speed changes & impeller diameter remains the same:

Q1/Q2 = N1/N2

H1/H2 = $(N1/N2)^2$

P1/P2 = $(N1/N2)^3$

Impeller diameter changes and speed remains the same:

Q1/Q2 = D1/D2

H1/H2 = $(D1/D2)^2$

P1/P2 = $(D1/D2)^3$

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