

PERFORMANCE CURVES



**KV Vertical In-Line
Close Coupled Pumps**

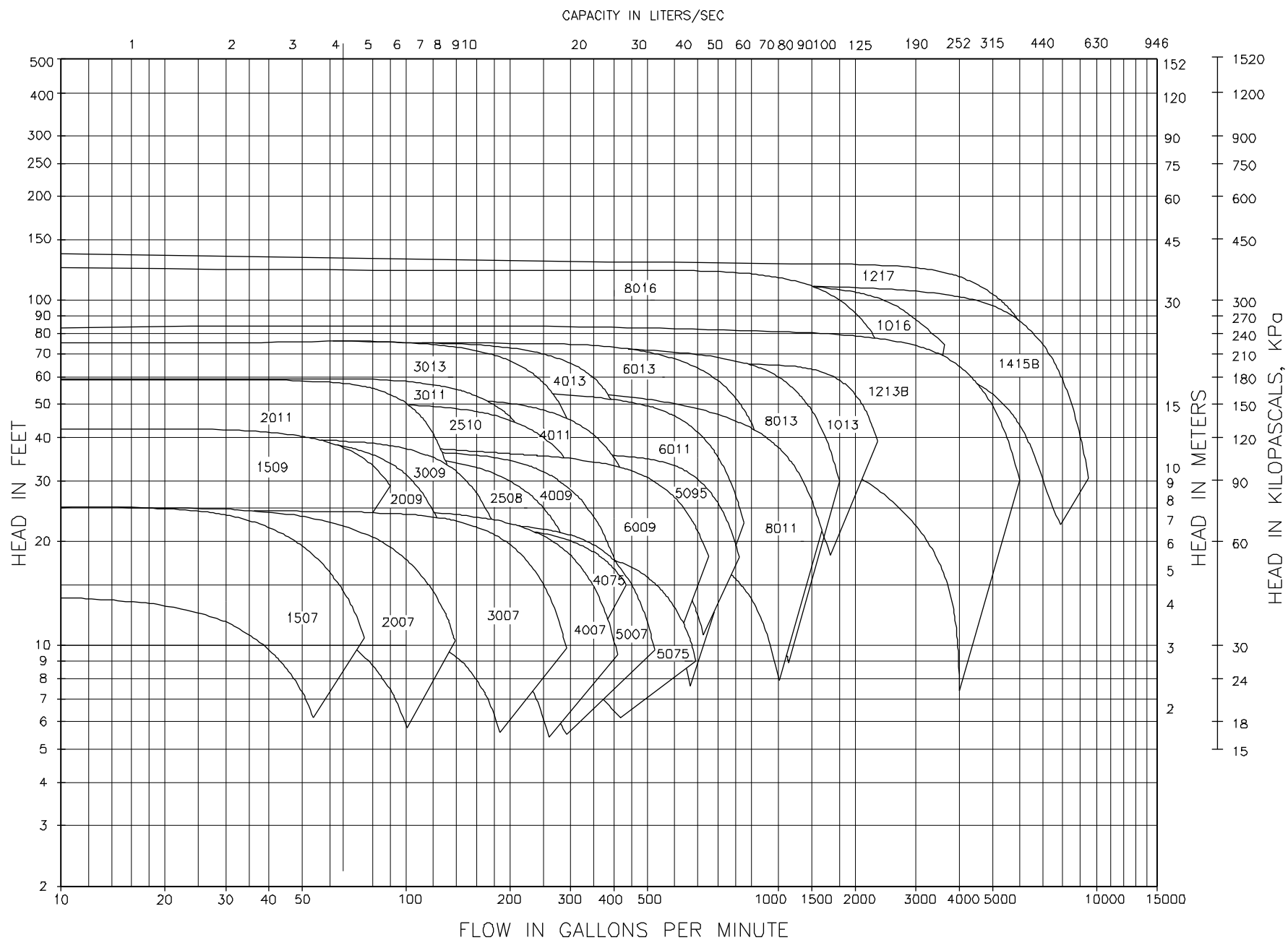


**KS Vertical In-Line
Split Coupled Pumps**

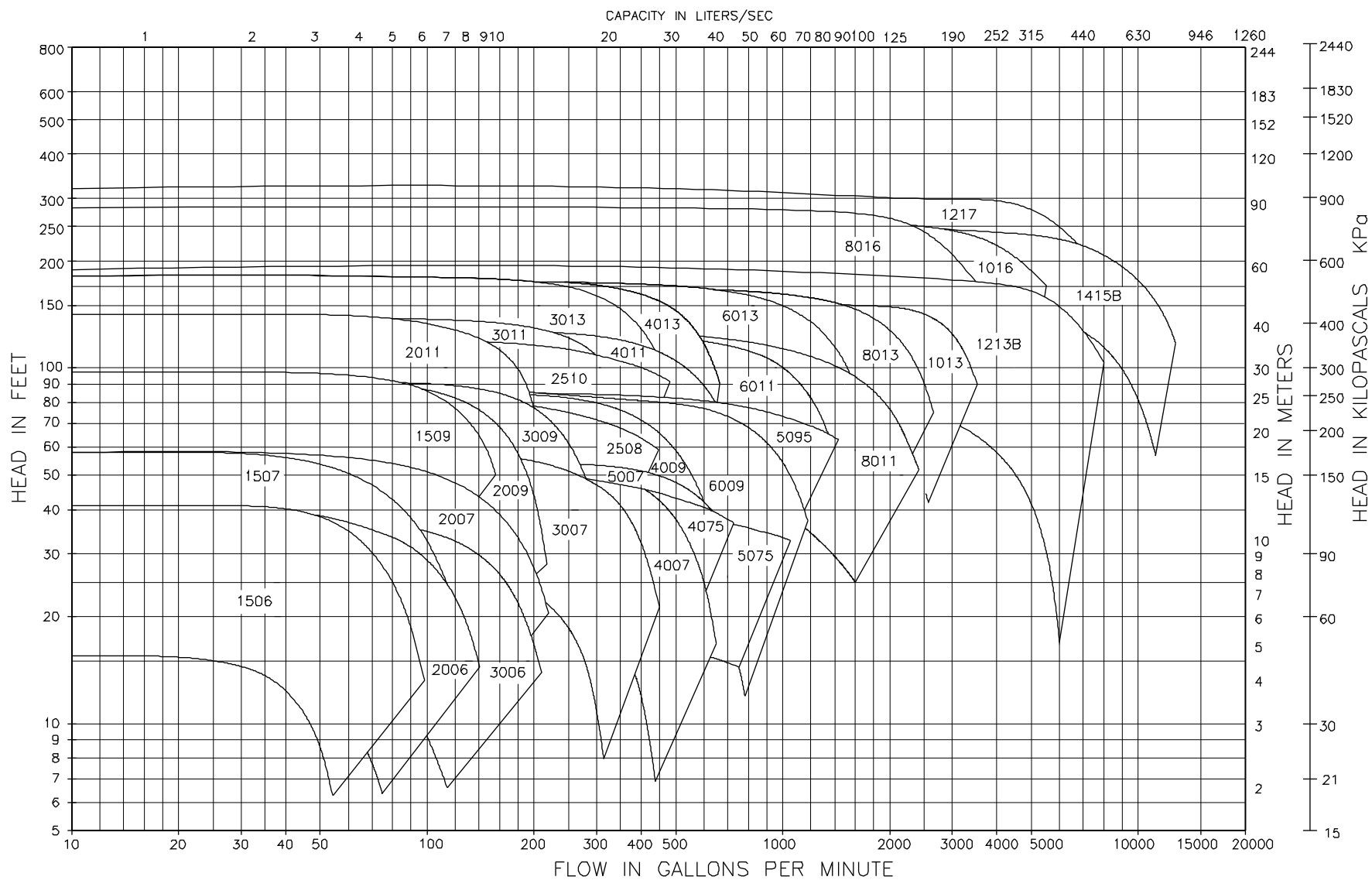
HYDRONIC COMPONENTS & SYSTEMS

**Do it once.
Do it right.**

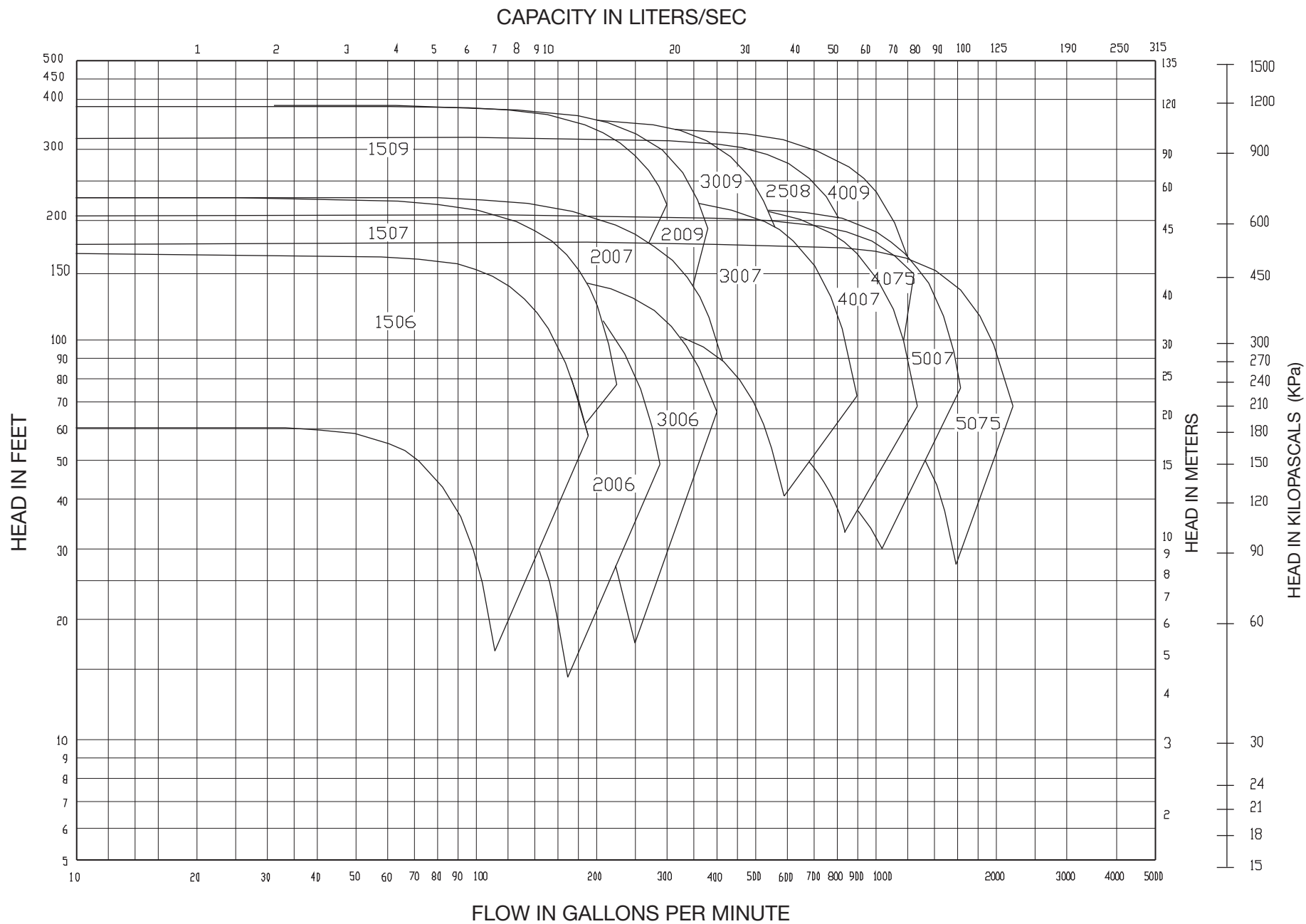


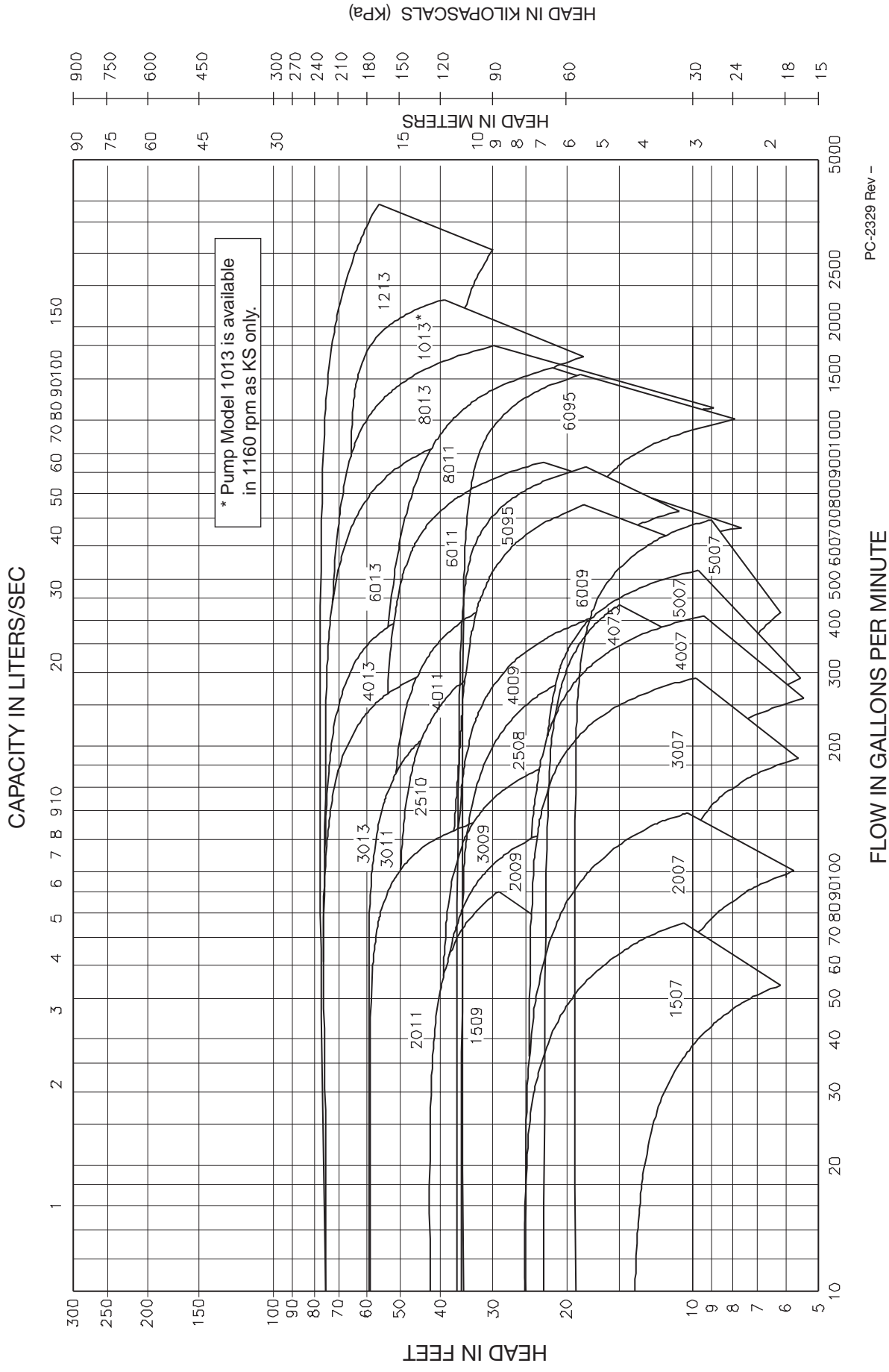


KS QUICK SELECTION CURVE @ 1160RPM



KS-QUICK SELECTION CURVE @ 1760 RPM

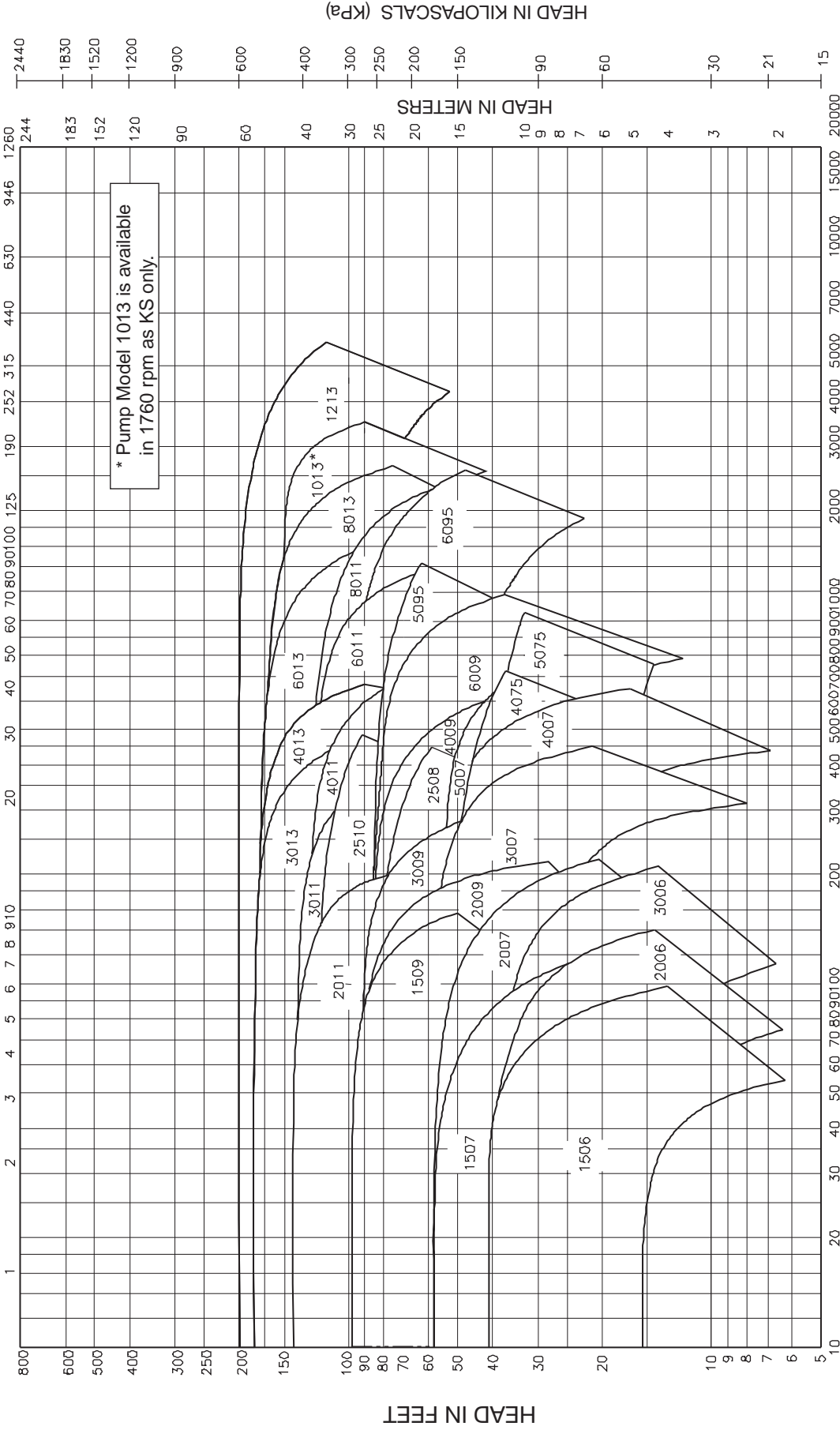




PC-2329 Rev -

KV/KS Pump Quick Selection Curve 1160 RPM

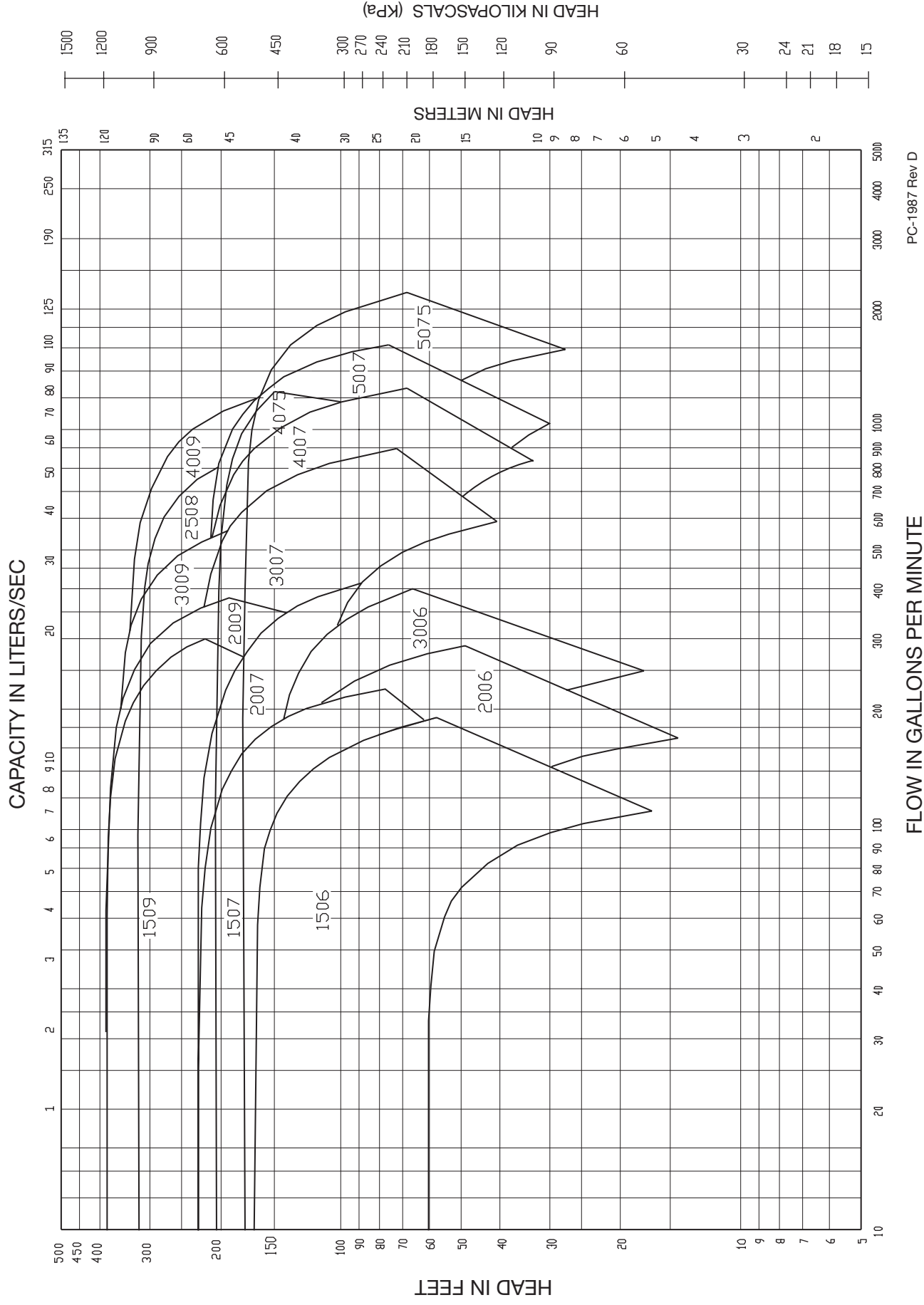
CAPACITY IN LITERS/SEC



PC-2328 Rev -

FLOW IN GALLONS PER MINUTE

KV/KS Pump Quick Selection Curve **1760 RPM**



KV/KS Pump Quick Selection Curve 3500 RPM

CORRECTION FACTORS FOR OTHER SPEEDS

For speeds other than 1750, hydraulic performance and B.H.P. requirements must be corrected before a selection can be made.

The following multipliers are used to correct performance and B.H.P.

	G.P.M.	Head	B.H.P.
1150 to 1750	1.52	2.31	
1750 to 1150			.28
1450 to 1750	1.21	1.46	
1750 to 1450			.58
2900 to 3450	1.19	1.42	
3450 to 2900			.58

Sizing Procedure

1. Using the proper multipliers correct G.P.M. and head.
2. Make pump selection as usual using corrected performance.
3. Determine max. B.H.P. requirement for pump selected.
4. Correct B.H.P. using multiplier, to lower speed.
5. Select motor based on Step 4. Use service factor if applicable.

PUMP FORMULAS

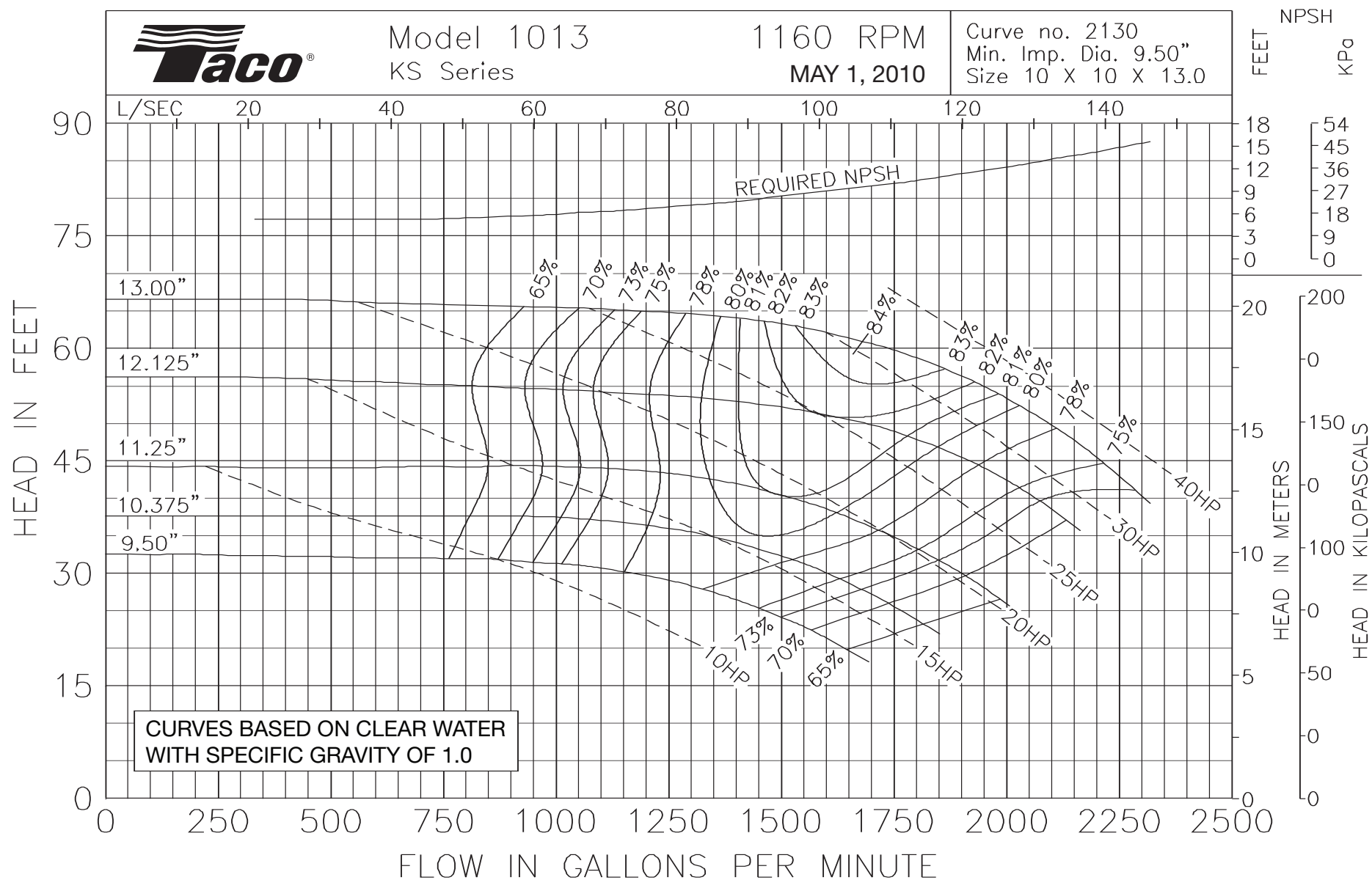
Pressure (PSI)	=	$\frac{\text{Head (Feet)} \times \text{Specific Gravity}}{2.31}$
Head (Feet)	=	$\frac{\text{Pressure (PSI)} \times 2.31}{\text{Specific Gravity}}$
Vacuum (Inches of Mercury)	=	Dynamic Suction Lift (Feet) x .883 x Specific Gravity
Horsepower (Brake)	=	$\frac{\text{GPM} \times \text{Head (Feet)} \times \text{Specific Gravity}}{3960 \times \text{Pump Efficiency}}$
Horsepower (Water)	=	$\frac{\text{GPM} \times \text{Head (Feet)} \times \text{Specific Gravity}}{3960}$
Efficiency (Pump)	=	$\frac{\text{Horsepower (Water)} \times 100 \text{ Per Cent}}{\text{Horsepower (Brake)}}$
NPSH (Available)	=	Positive Factors – Negative Factors

Affinity Laws: Effect of change of speed or impeller diameter on centrifugal pumps.

	GPM Capacity	Ft. Head	BHP
Impeller Diameter Change	$Q_2 = \frac{D_2}{D_1} Q_1$	$H_2 = \left(\frac{D_2}{D_1}\right)^2 H_1$	$P_2 = \left(\frac{D_2}{D_1}\right)^3 P_1$
Speed Change	$Q_2 = \frac{RPM_2}{RPM_1} Q_1$	$H_2 = \left(\frac{RPM_2}{RPM_1}\right)^2 H_1$	$P_2 = \left(\frac{RPM_2}{RPM_1}\right)^3 P_1$

Where Q = GPM, H = Head, P = BHP, D = Impeller Dia., RPM = Pump Speed

Curve no. 2130
Min. Imp. Dia. 9.50"
Size 10 X 10 X 13.0





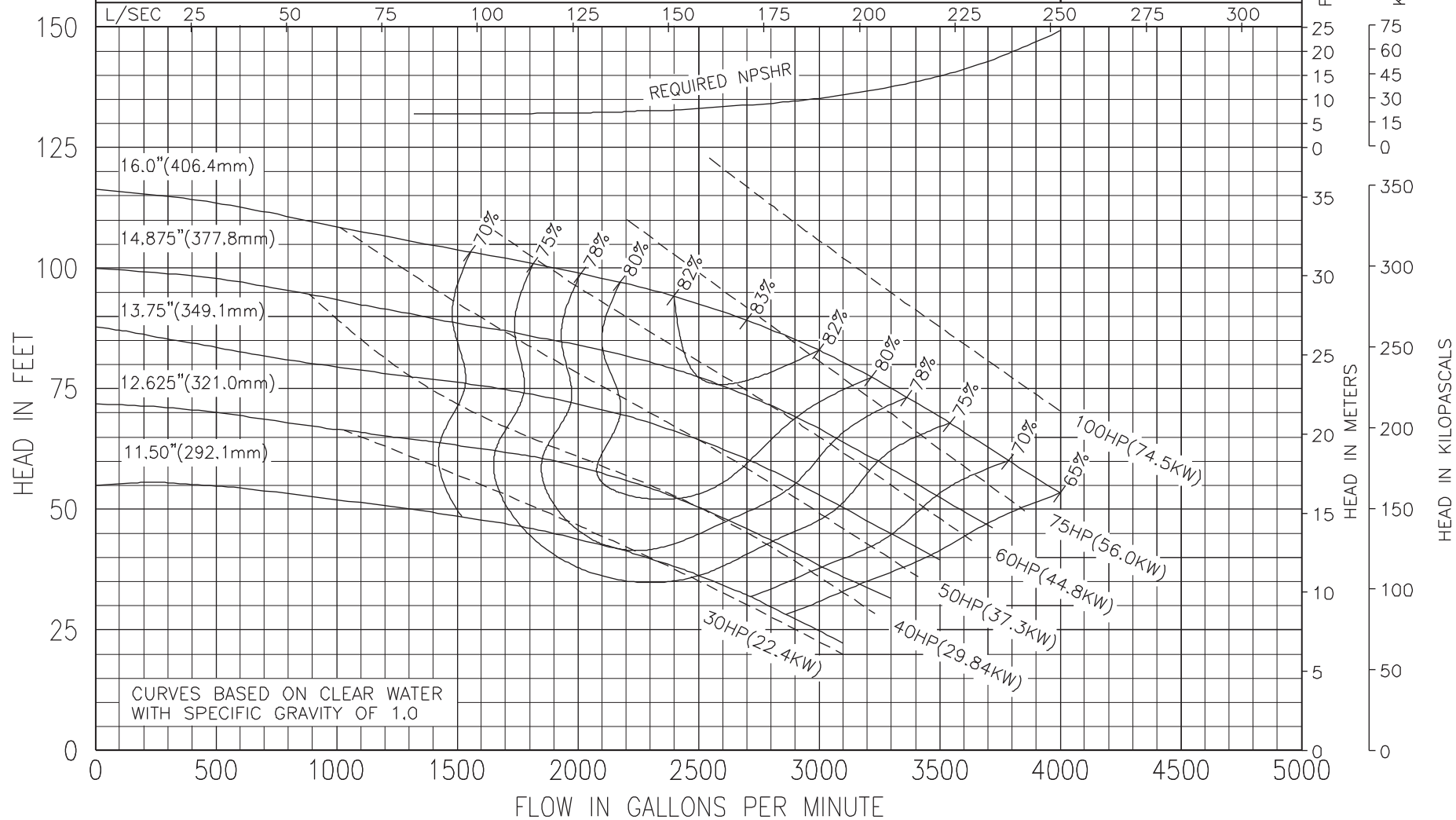
Model 1016

KS Series

1160 RPM

February 27, 2008

Curve no. 2464
Min. Imp. Dia. 11.5"
Size 10 X 10 X 16





Model 1213B
KS Series

1160 RPM
AUGUST 22, 2011

Curve no. 2435
Min. Imp. Dia. 9.5"
Size 12 X 12 X 13

HEAD IN FEET

HEAD IN METERS

HEAD IN KILOPASCALS

125
100
75
50
25
0

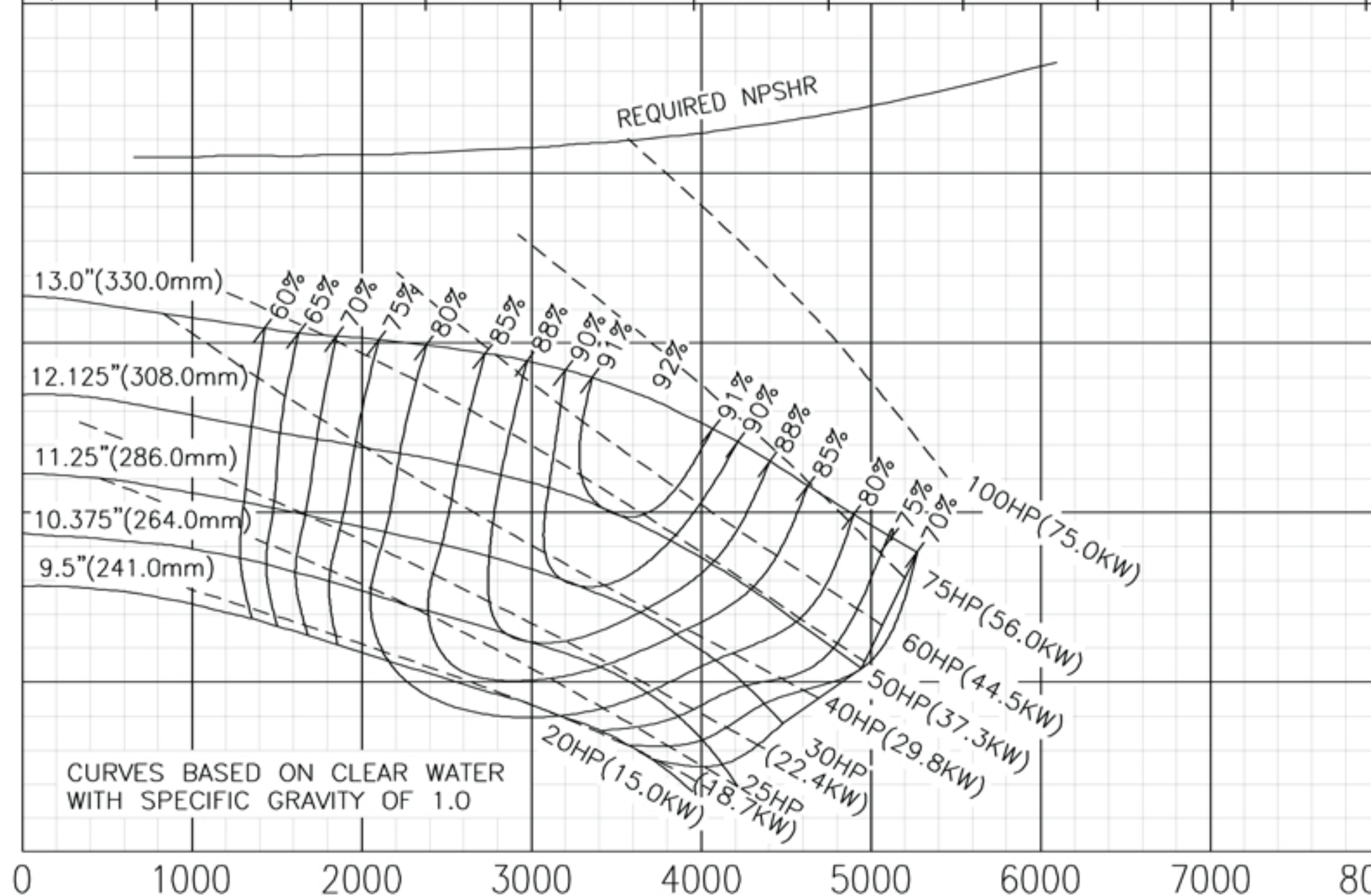
FEET
50
40
30
20
10
0

NPSH
150
120
90
60
30
0

25
20
15
10
5
0

250
200
150
100
50
0

L/SEC 50 100 150 200 250 300 350 400 450 500



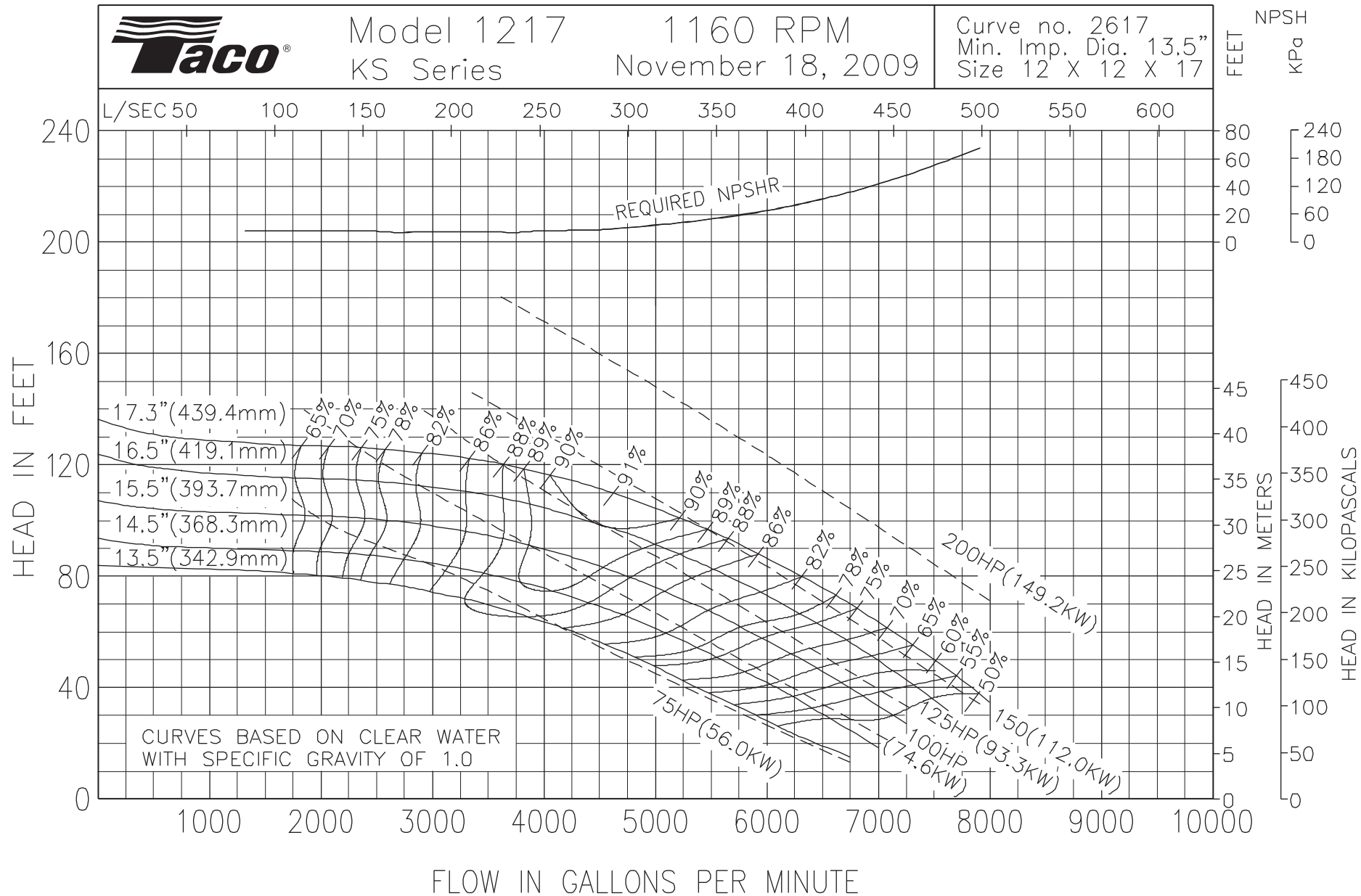
FLOW IN GALLONS PER MINUTE



Model 1217
KS Series

1160 RPM
November 18, 2009

Curve no. 2617
Min. Imp. Dia. 13.5"
Size 12 X 12 X 17





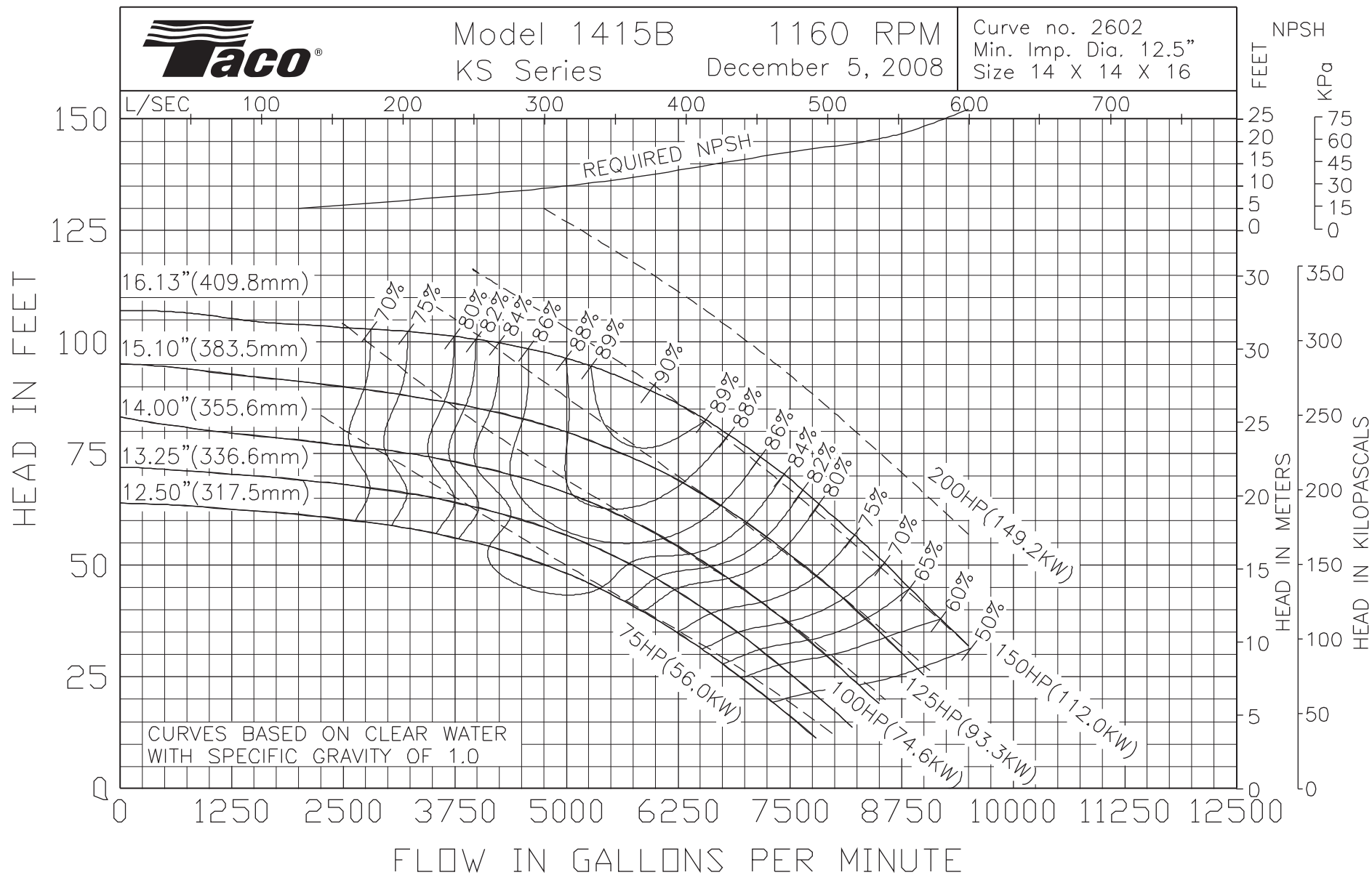
Model 1415B

1160 RPM

KS Series

December 5, 2008

Curve no. 2602
Min. Imp. Dia. 12.5"
Size 14 X 14 X 16

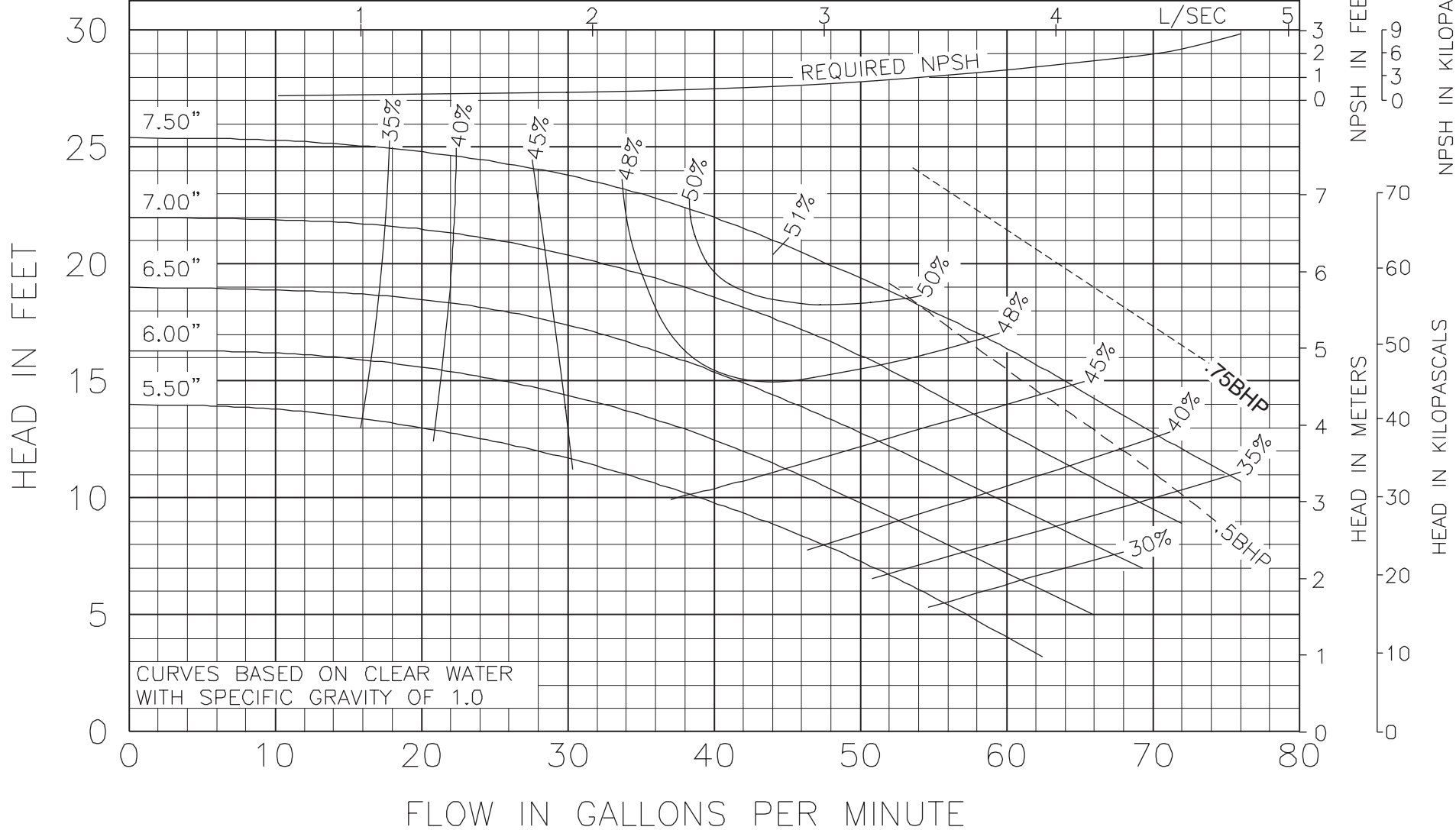


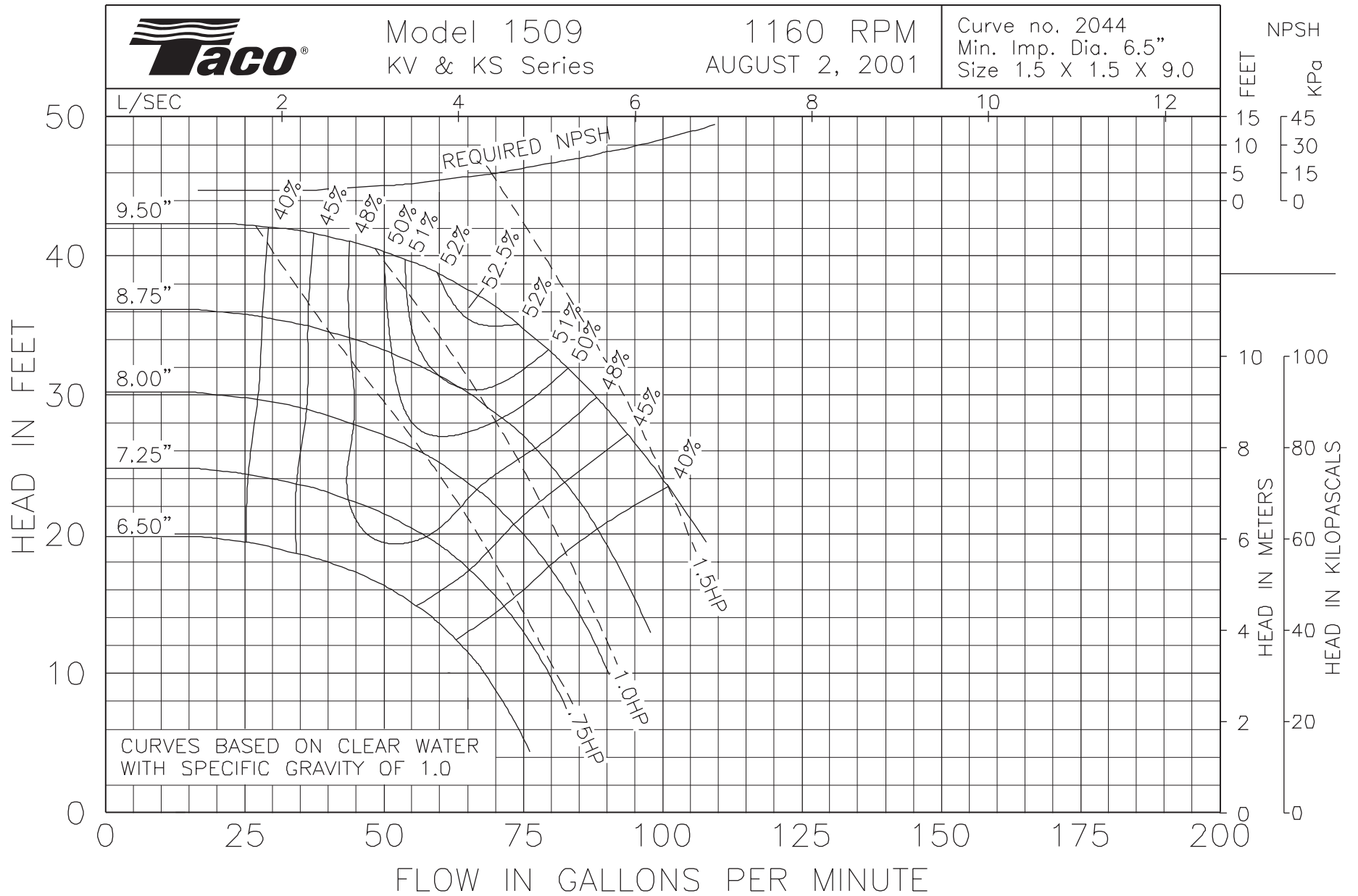


Model 1507
KV & KS Series

1160 RPM
October 23, 2000

Curve no. 1975
Min. Imp. Dia. 5.50
Size 1 1/2 x 1 1/2 x 7



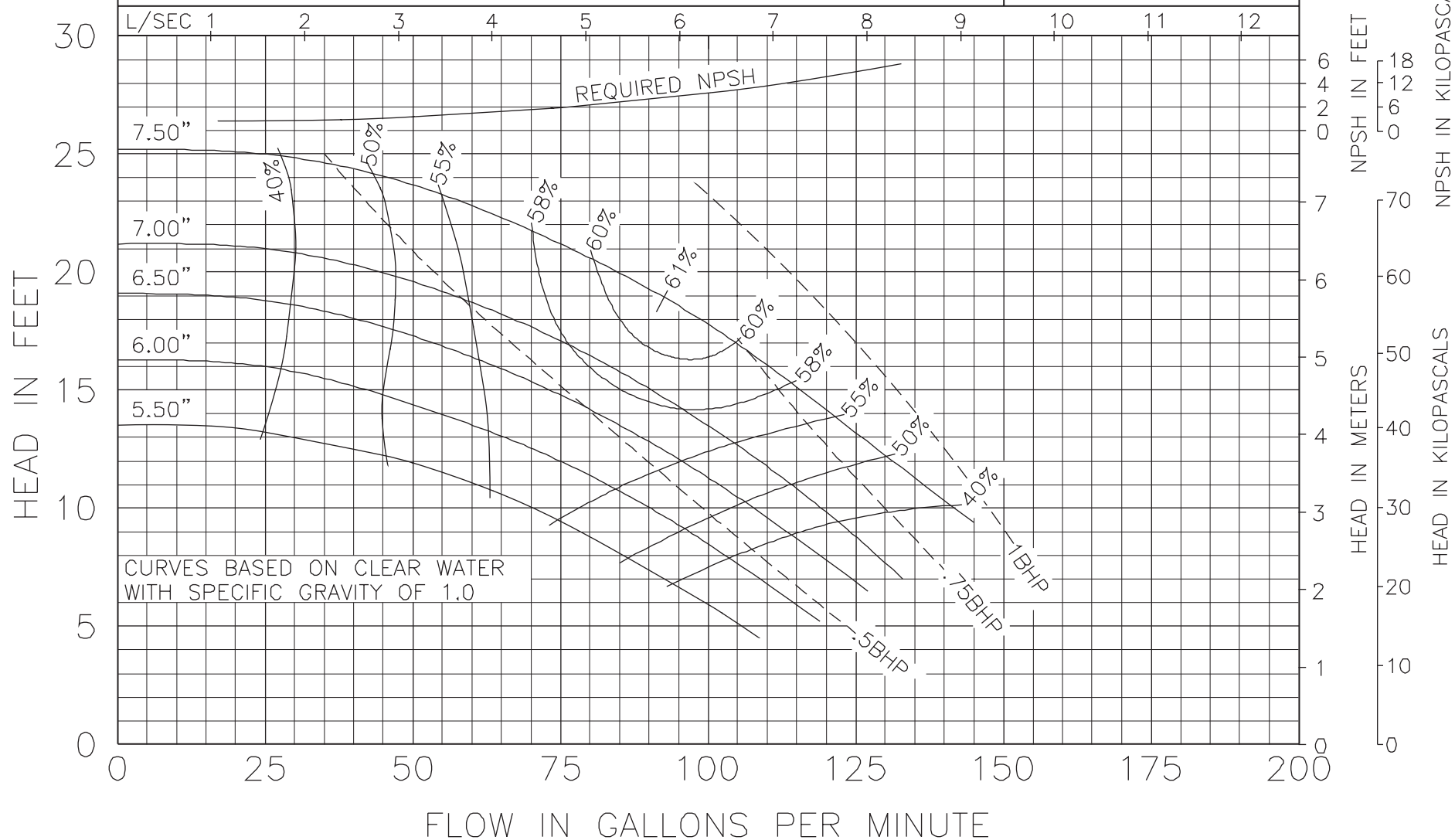


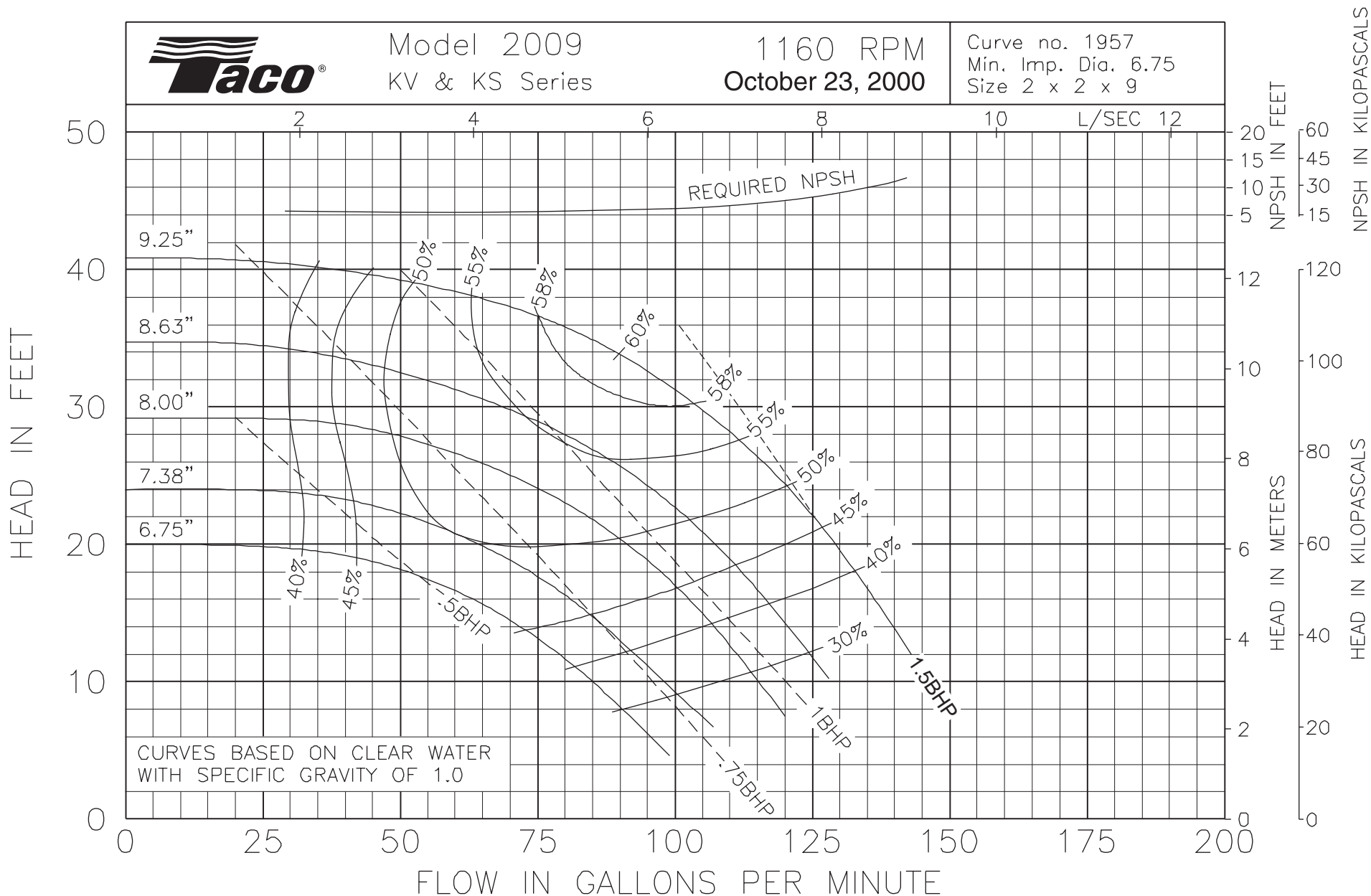


Model 2007
KV & KS Series

1160 RPM
August 31, 2006

Curve no. 1979
Min. Imp. Dia. 5.50
Size 2 x 2 x 7



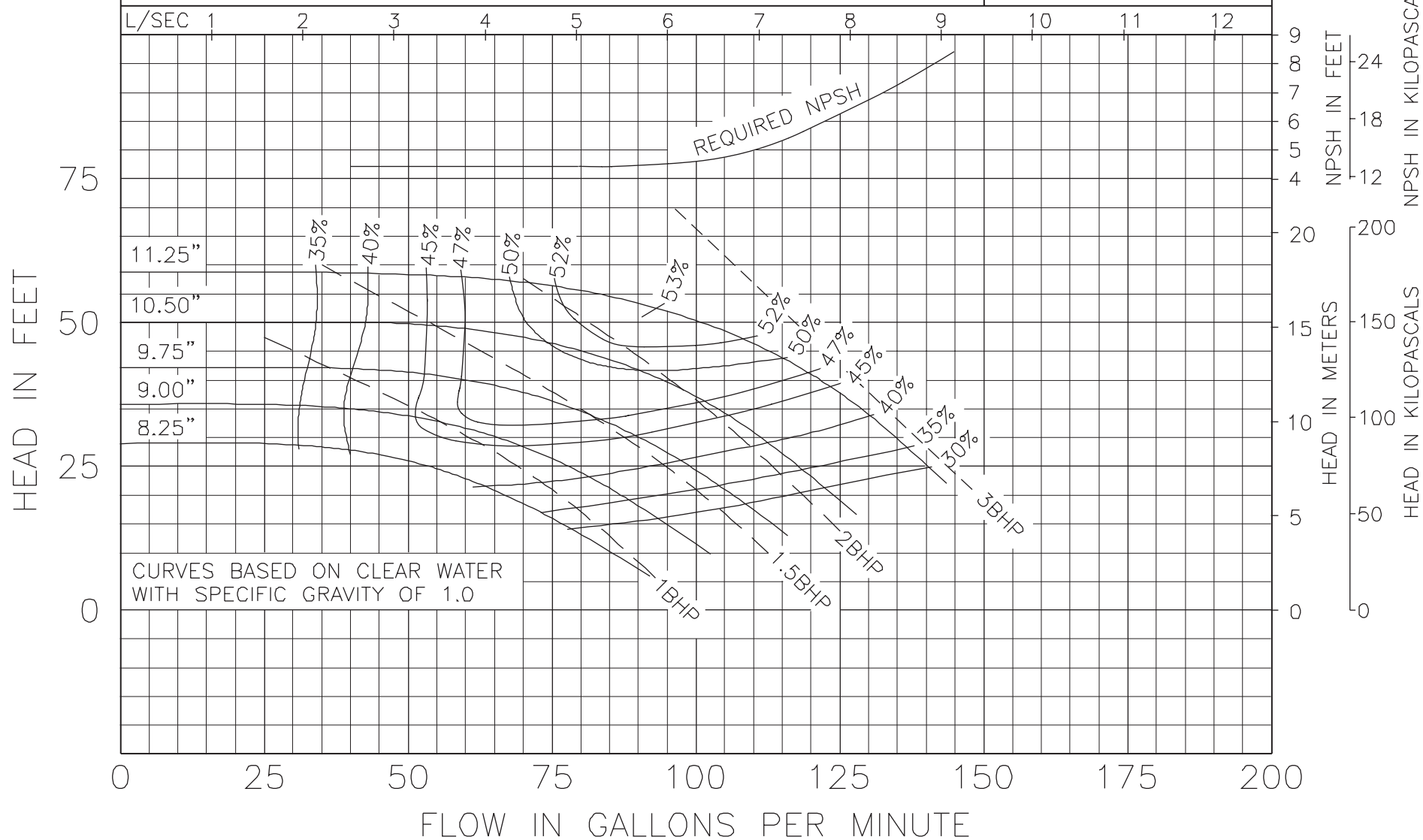


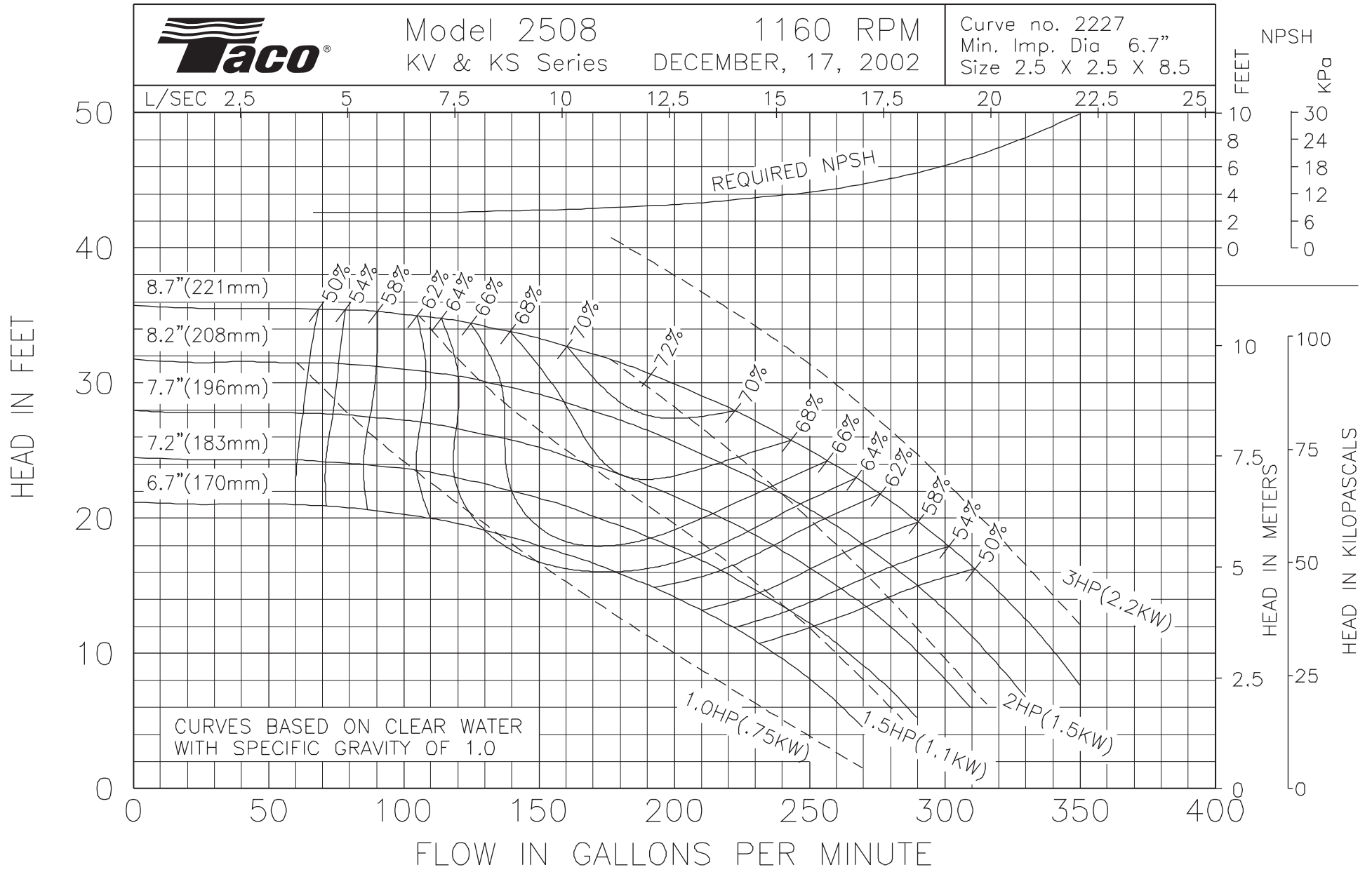


Model 2011
KV & KS Series

1160 RPM
August 31, 2006

Curve no. 1927
Min. Imp. Dia. 8.25
Size 2 x 2 x 11



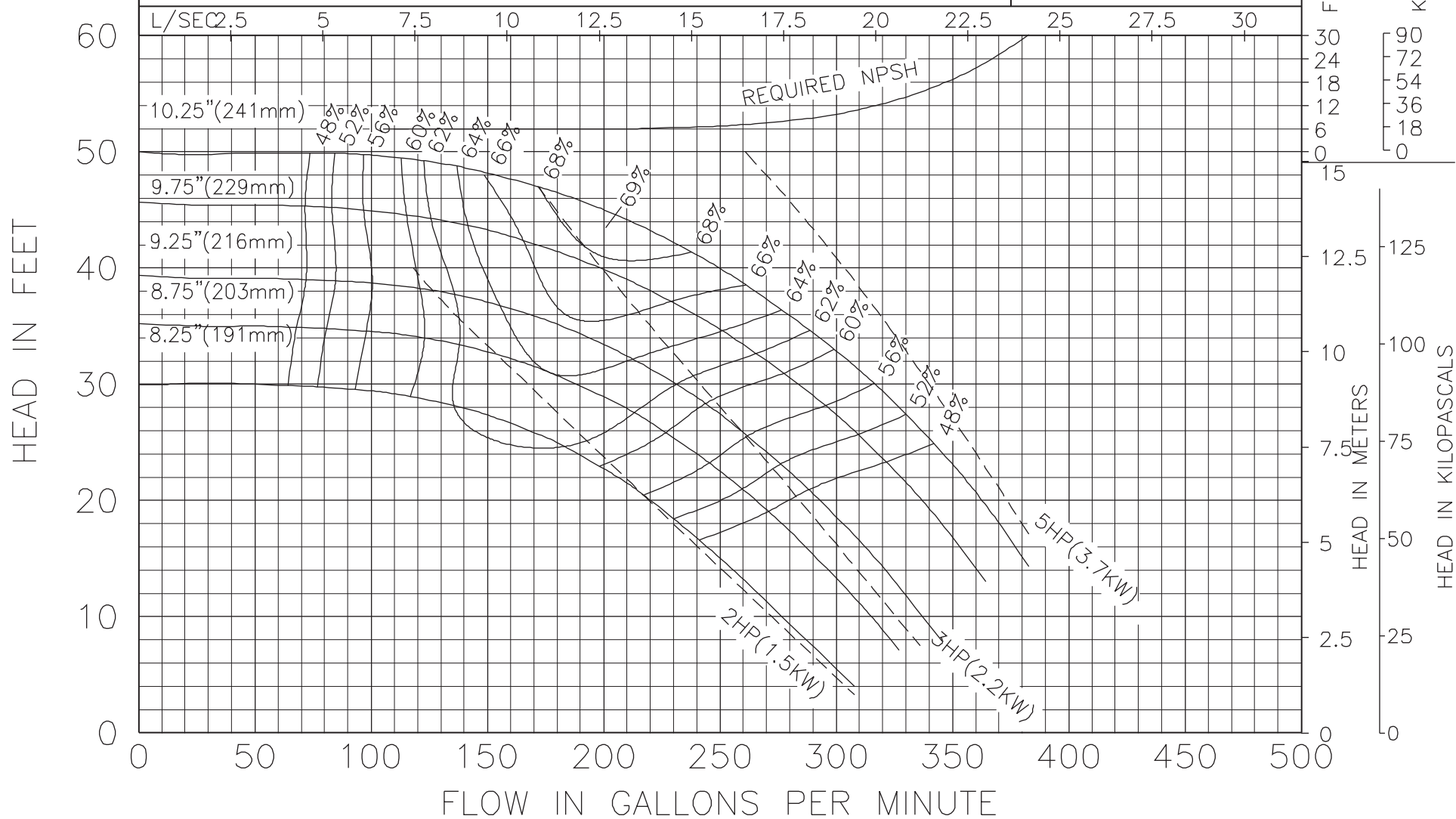


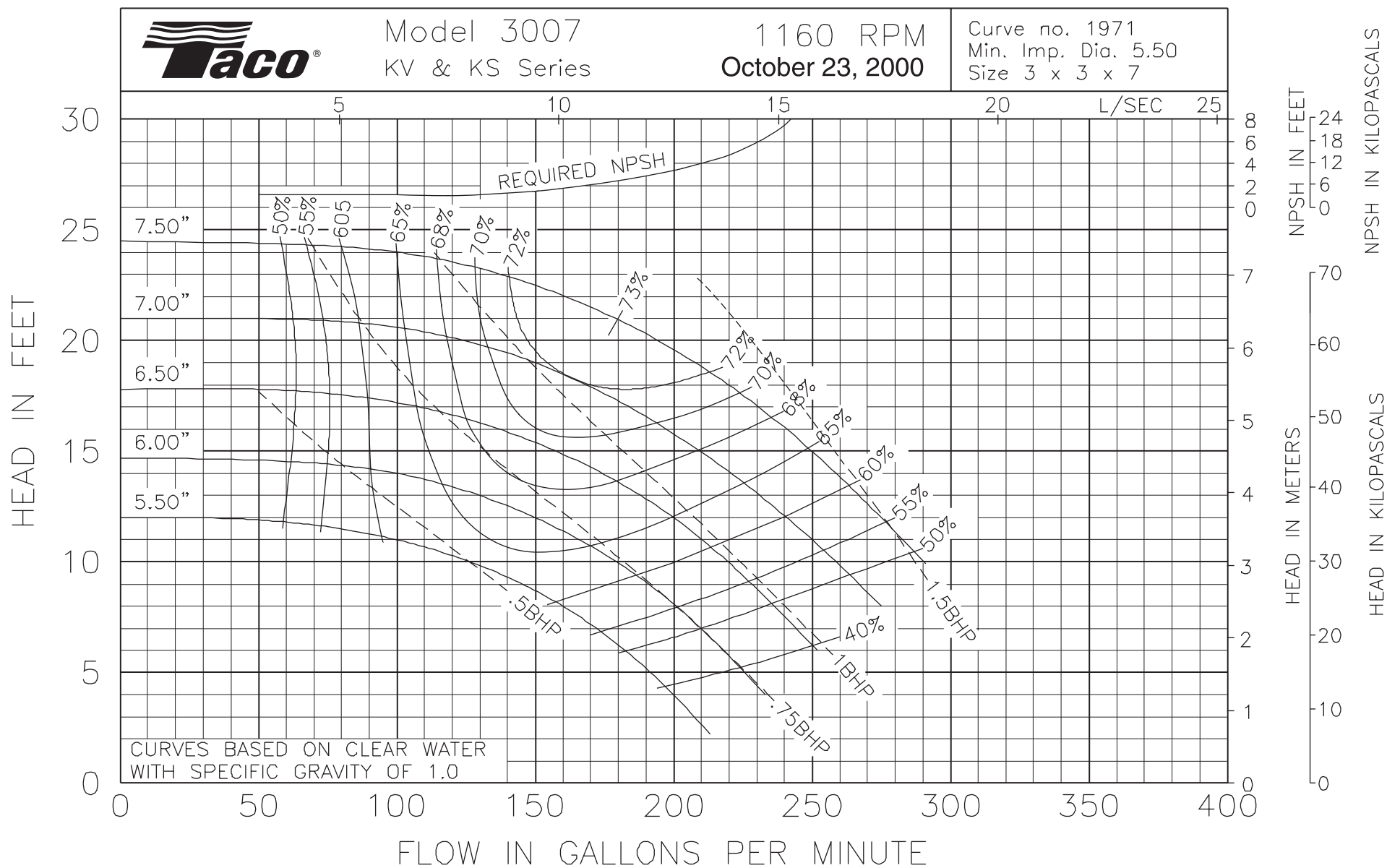


Model 2510
KV & KS Series

1160 RPM
JULY 24, 2003

Curve no. 2234
Min. Imp. Dia. 8.25"
Size 2.5 x 2.5 x 10.25



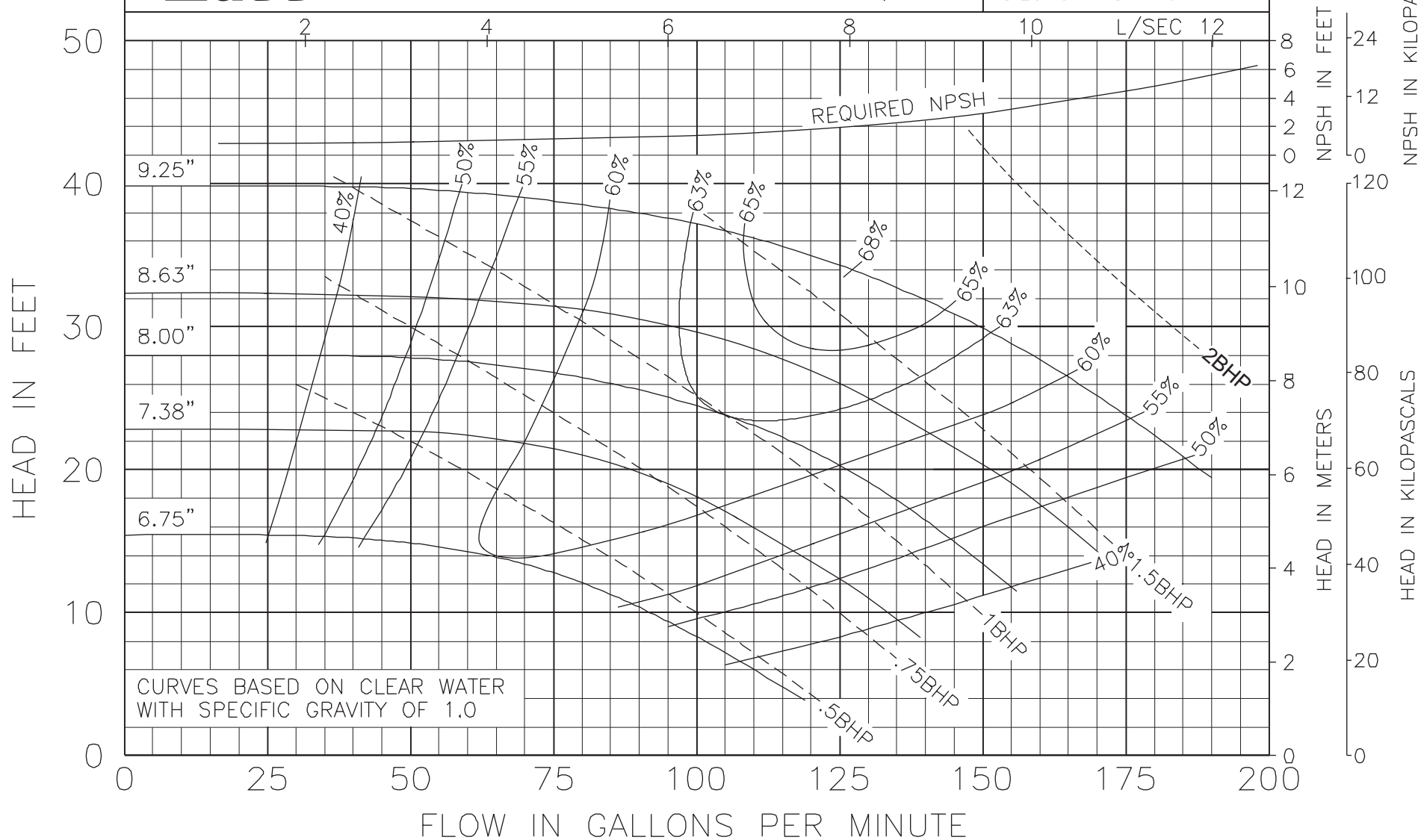


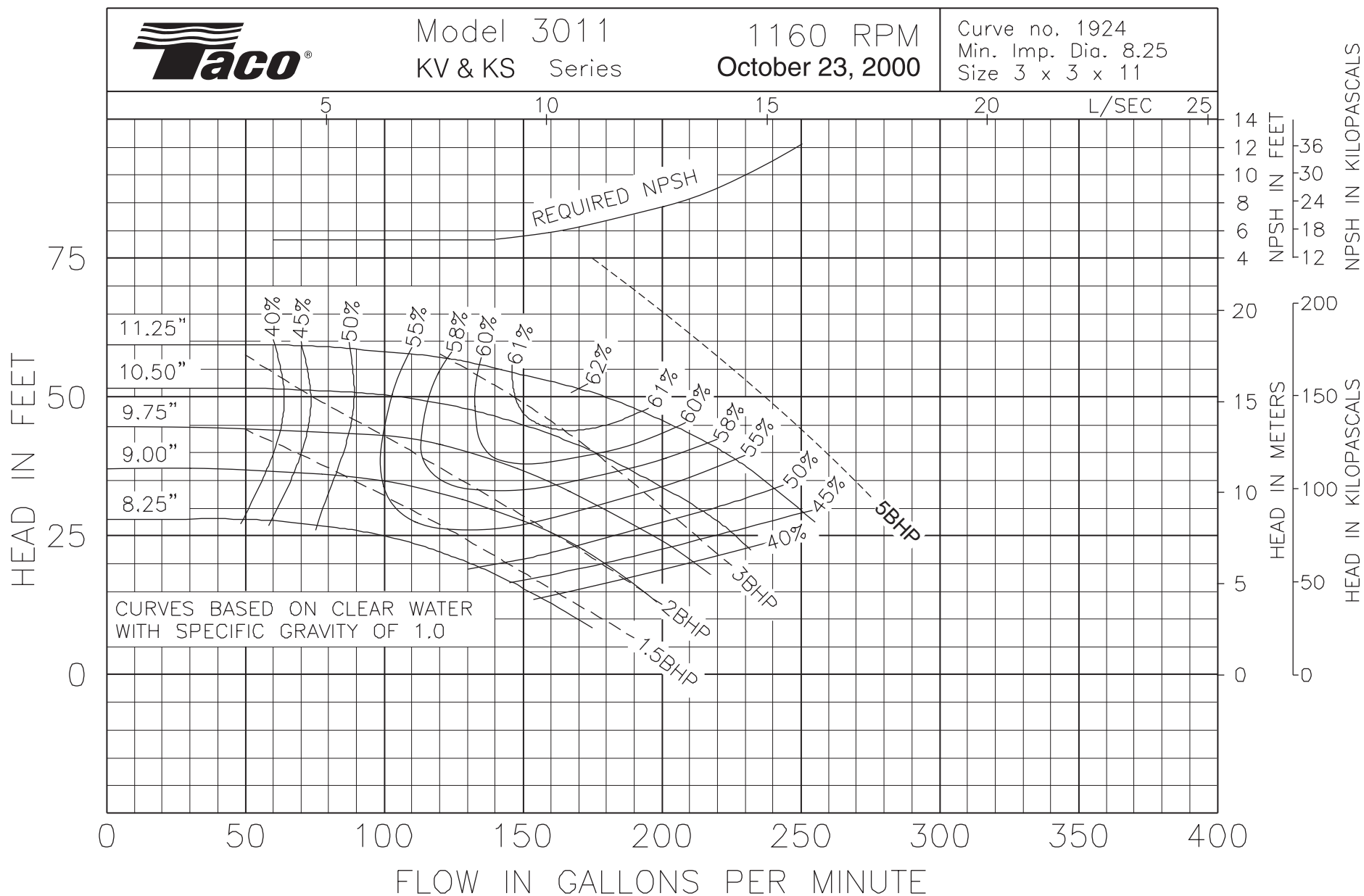


Model 3009
KV & KS Series

1160 RPM
October 23, 2000

Curve no. 1964
Min. Imp. Dia. 6.75
Size 3 x 3 x 9



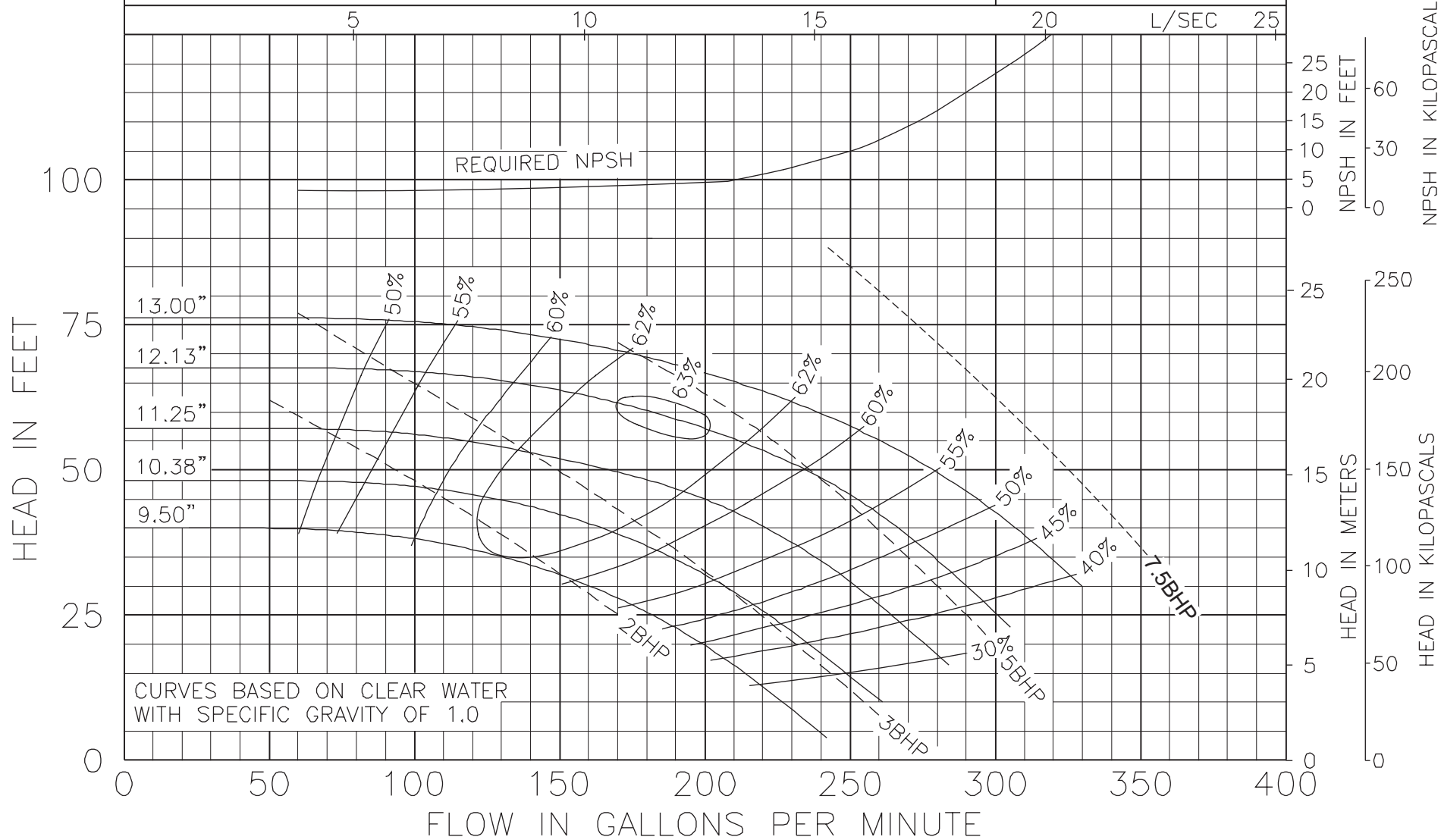


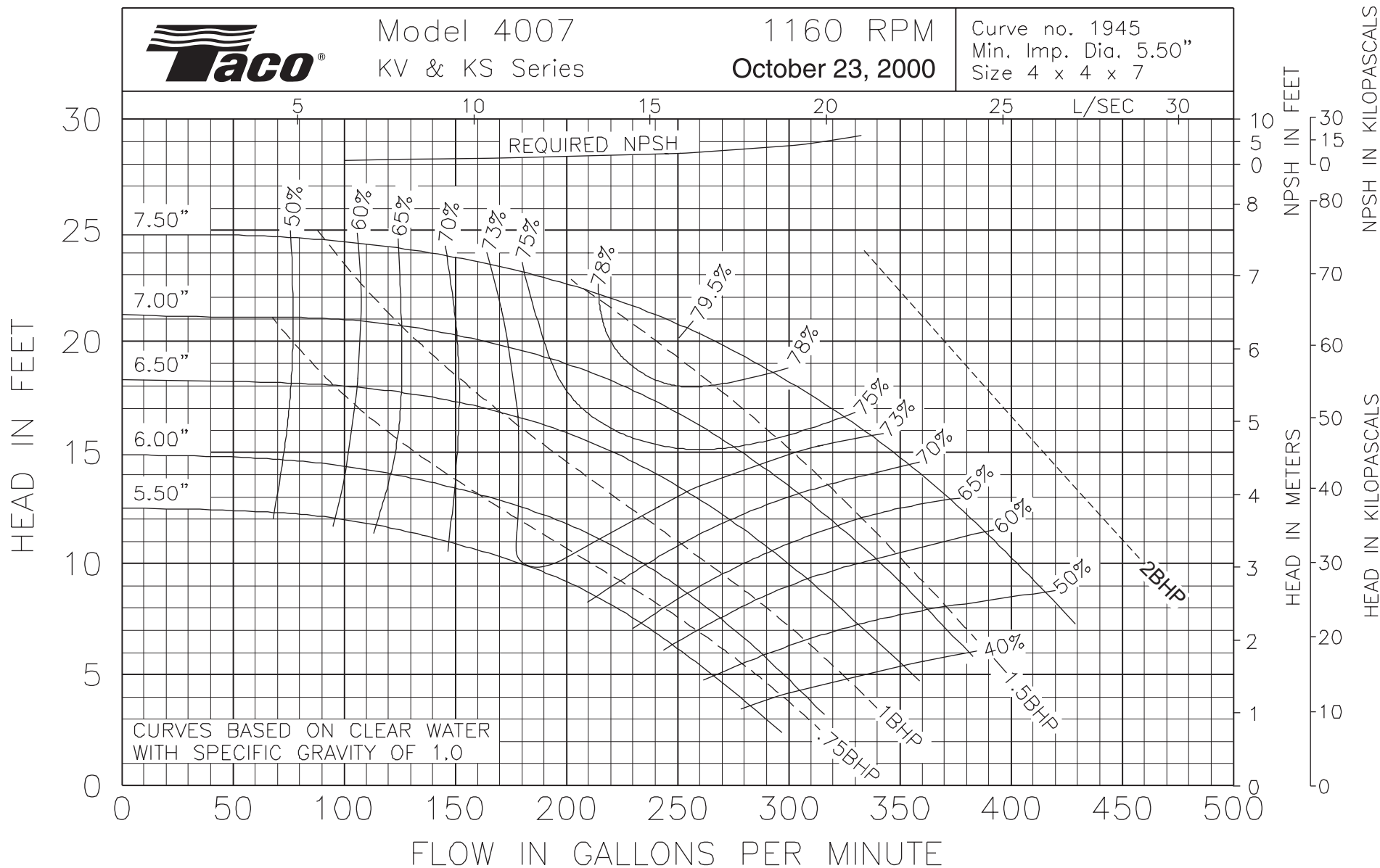


Model 3013
KV & KS Series

1160 RPM
October 23, 2000

Curve no. 1912
Min. Imp. Dia. 9.50
Size 3 x 3 x 13



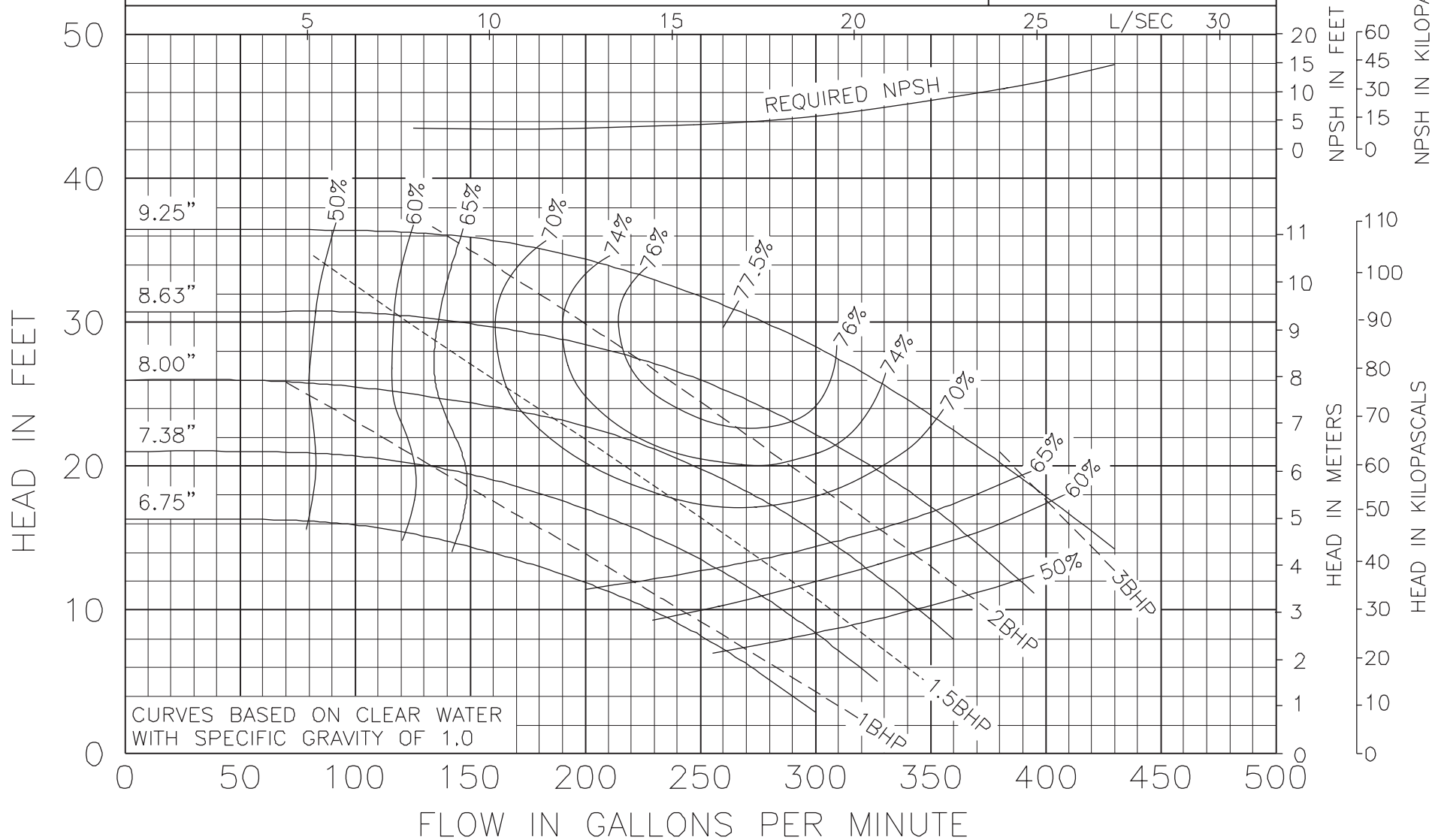




Model 4009
KV & KS Series

1160 RPM
October 23, 2000

Curve no. 1983
Min. Imp. Dia. 6,75
Size 4 x 4 x 9

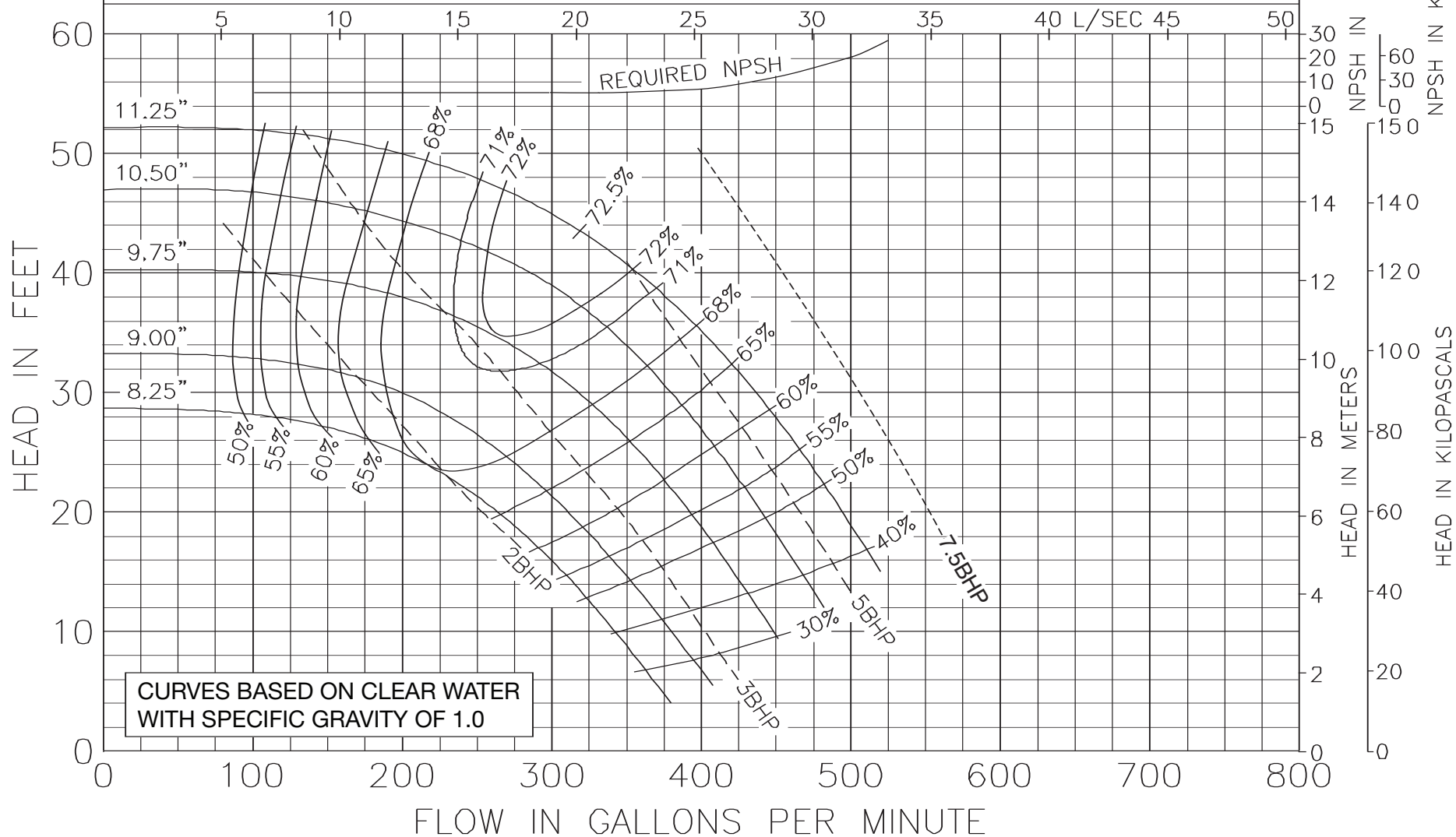




Model 4011
KV & KS Series

1160 RPM
MAY 1, 2010

Curve no. 1948
Min. Imp. Dia. 8.25
Size 4 x 4 x 11

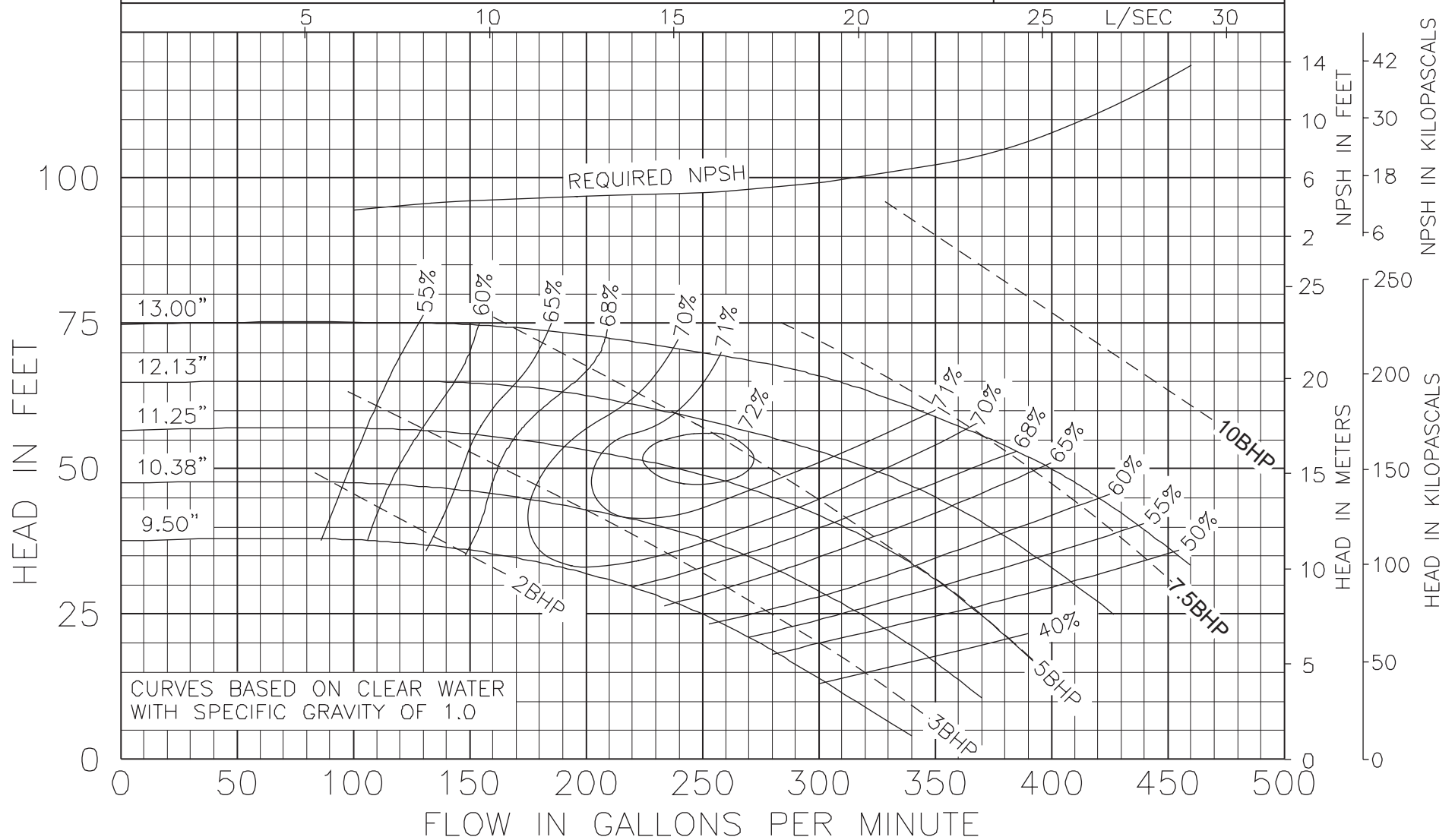


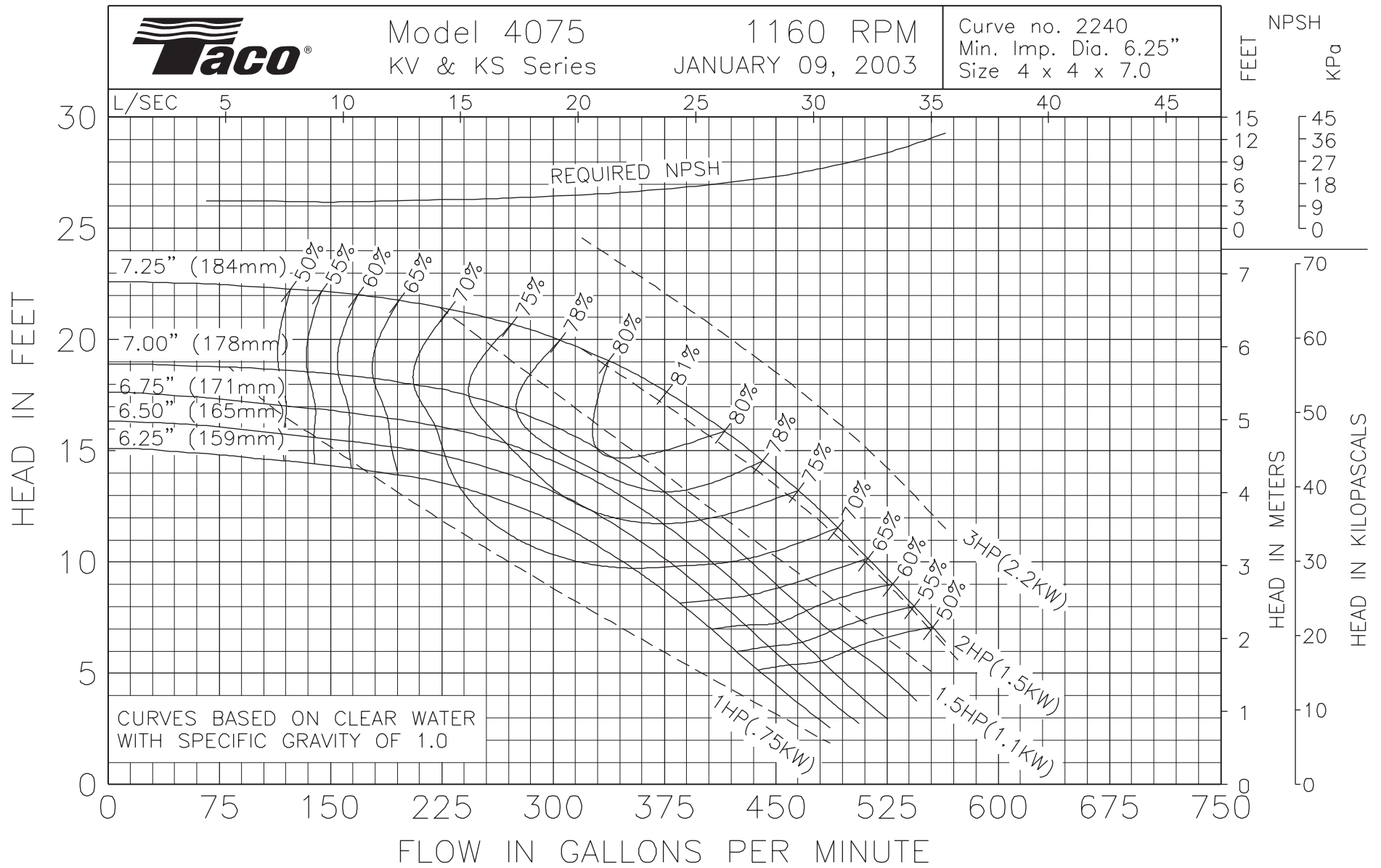


Model 4013
KV & KS Series

1160 RPM
October 23, 2000

Curve no. 1915
Min. Imp. Dia. 9.50
Size 4 x 4 x 13



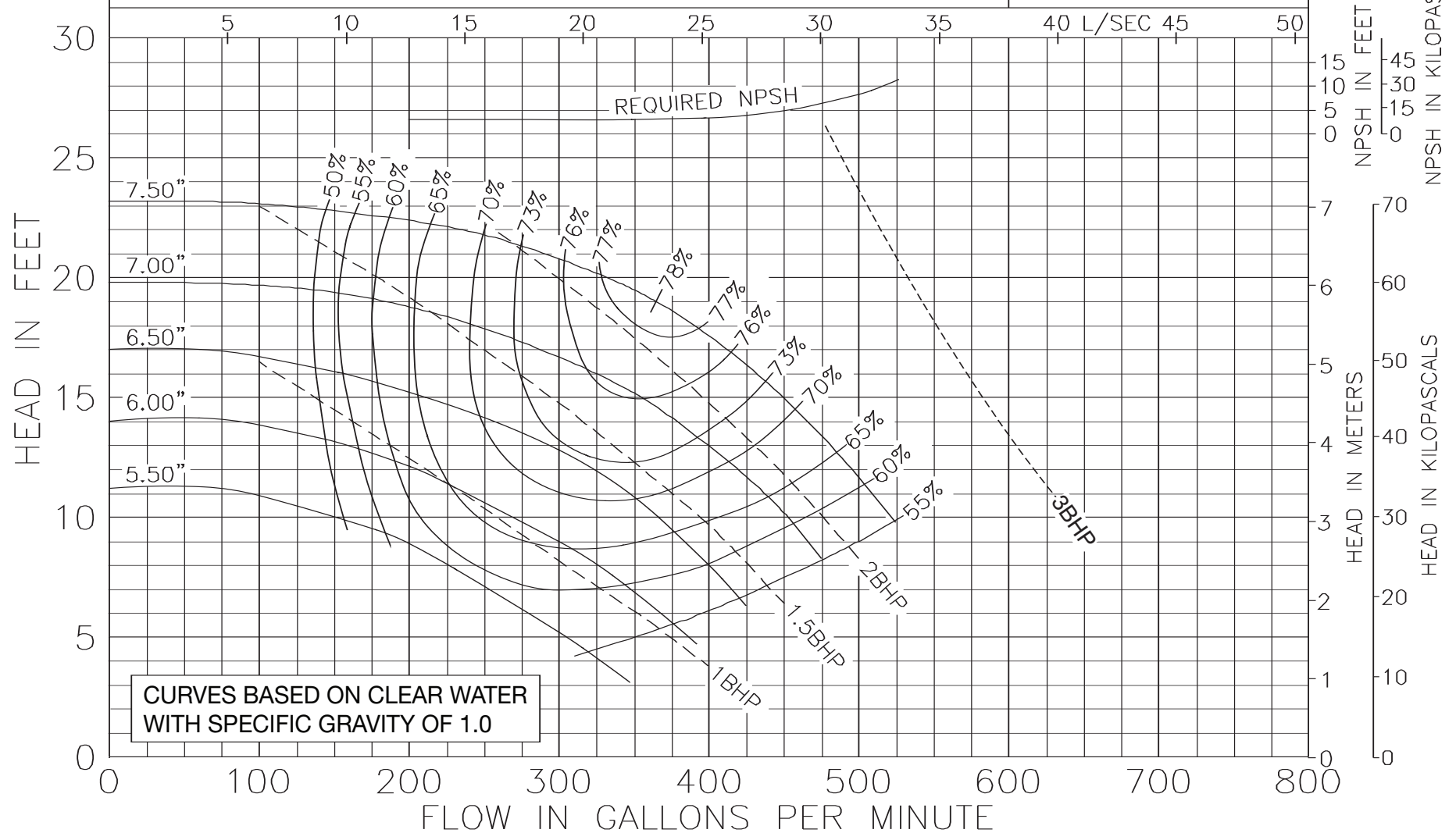




Model 5007
KV & KS Series

1160 RPM
MAY 1, 2010

Curve no. 1952
Min. Imp. Dia. 5.50
Size 5 x 5 x 7

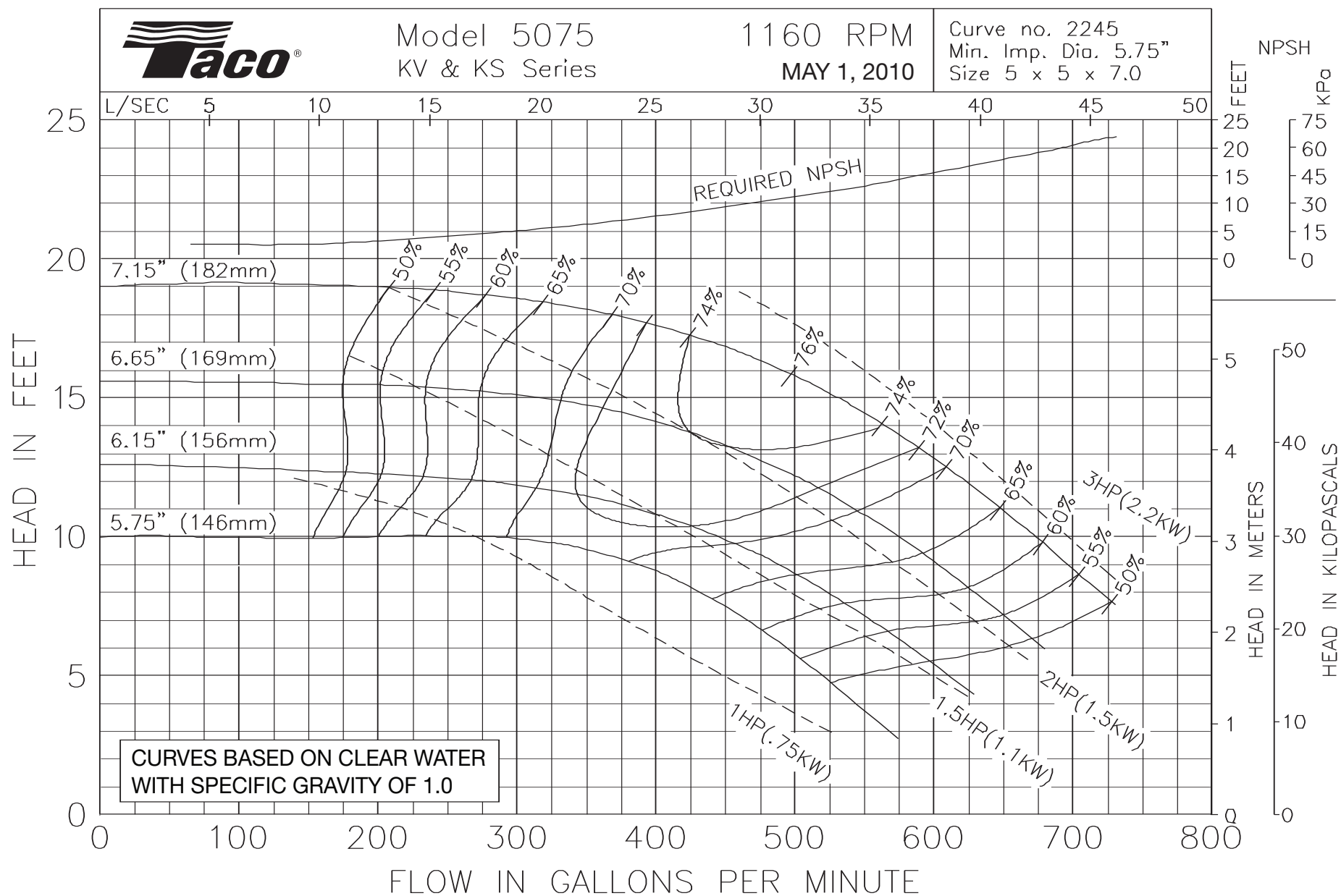




Model 5075
KV & KS Series

1160 RPM
MAY 1, 2010

Curve no. 2245
Min. Imp. Dia. 5.75"
Size 5 x 5 x 7.0

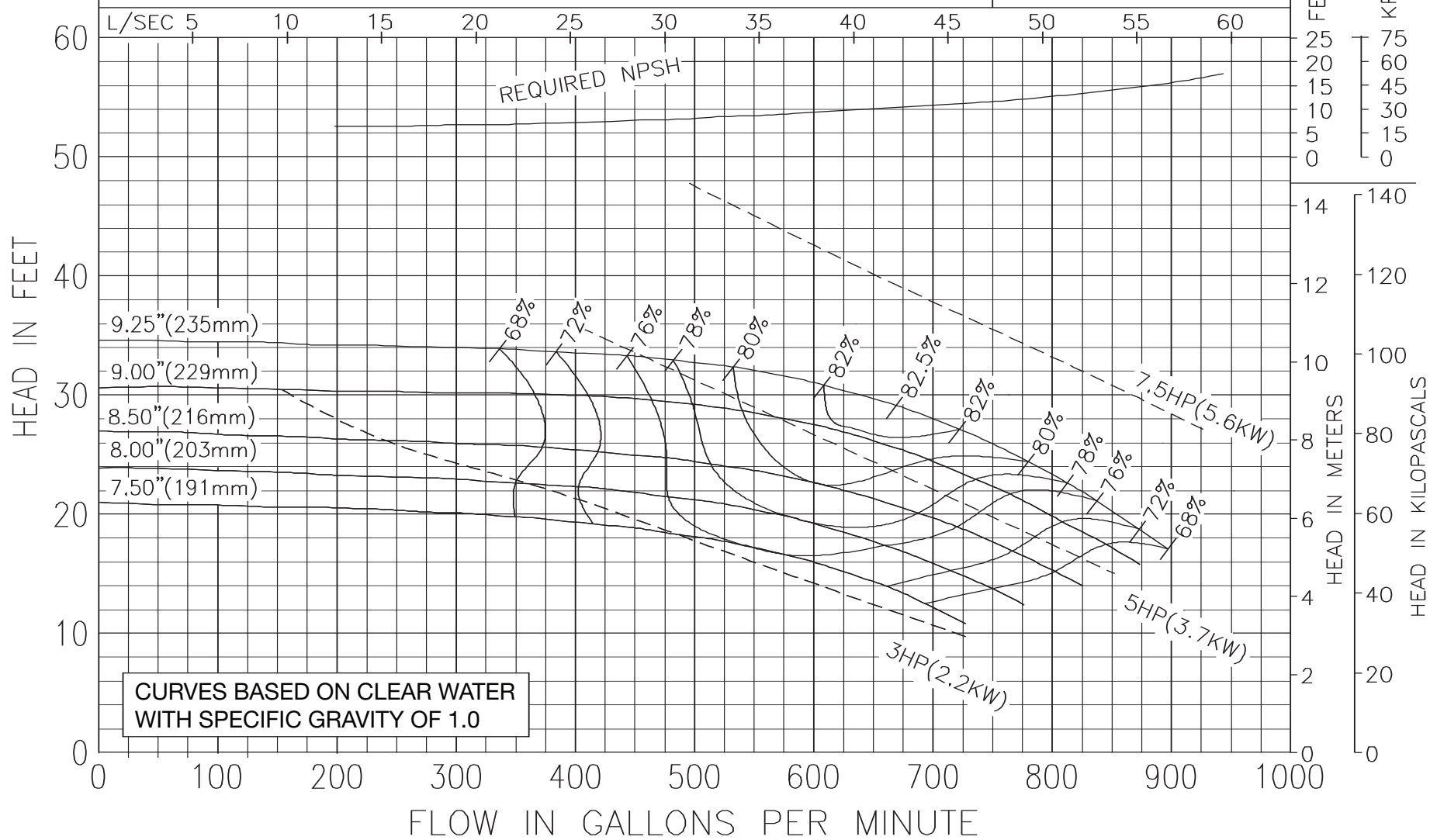




Model 5095
KV & KS Series

1160 RPM
MAY 1, 2010

Curve no. 2493
Min. Imp. Dia. 7.5"
Size 5 X 5 X 9.25

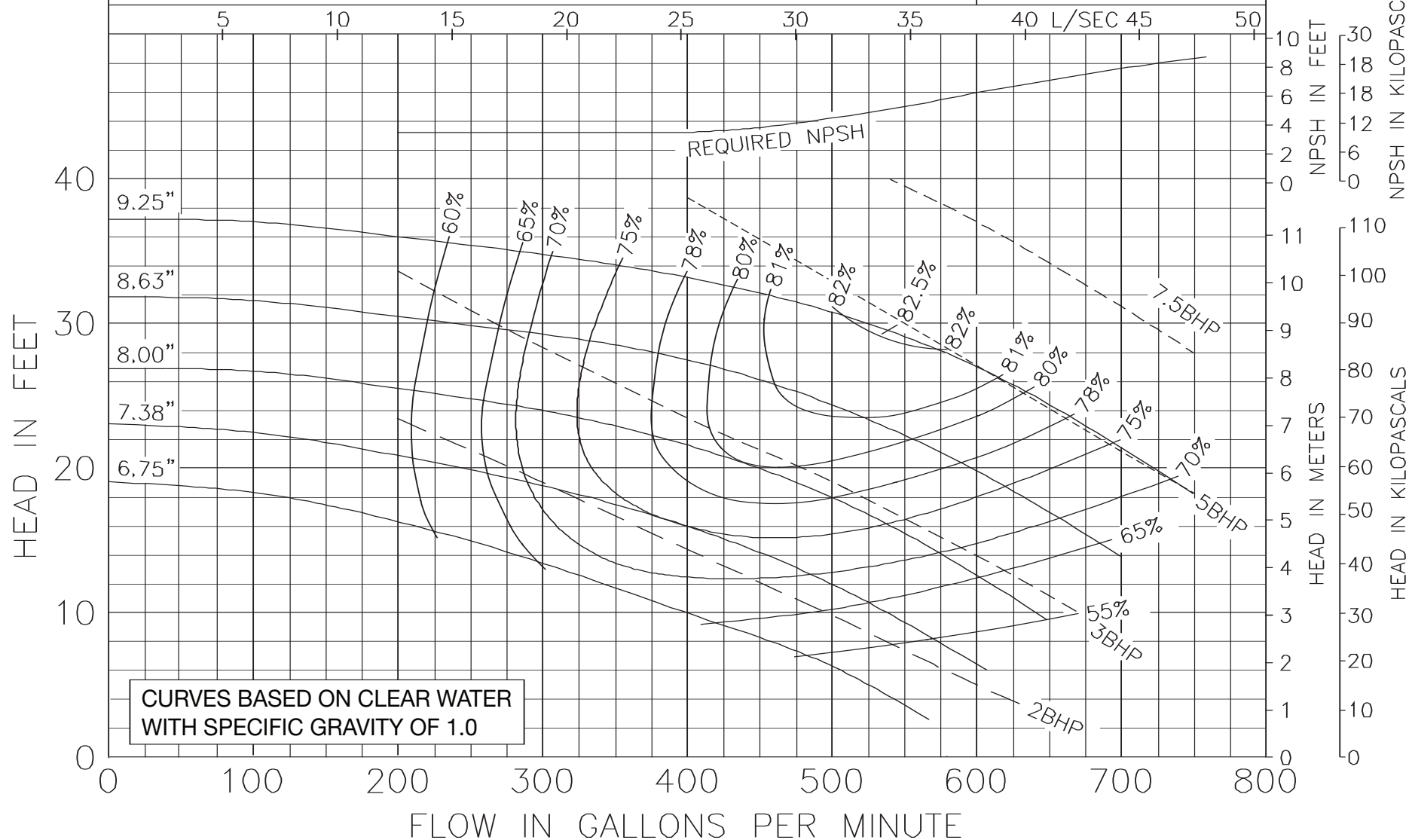




Model 6009
KV & KS Series

1160 RPM
MAY 1, 2010

Curve no. 1903
Min. Imp. Dia. 6.75
Size 6 x 6 x 9

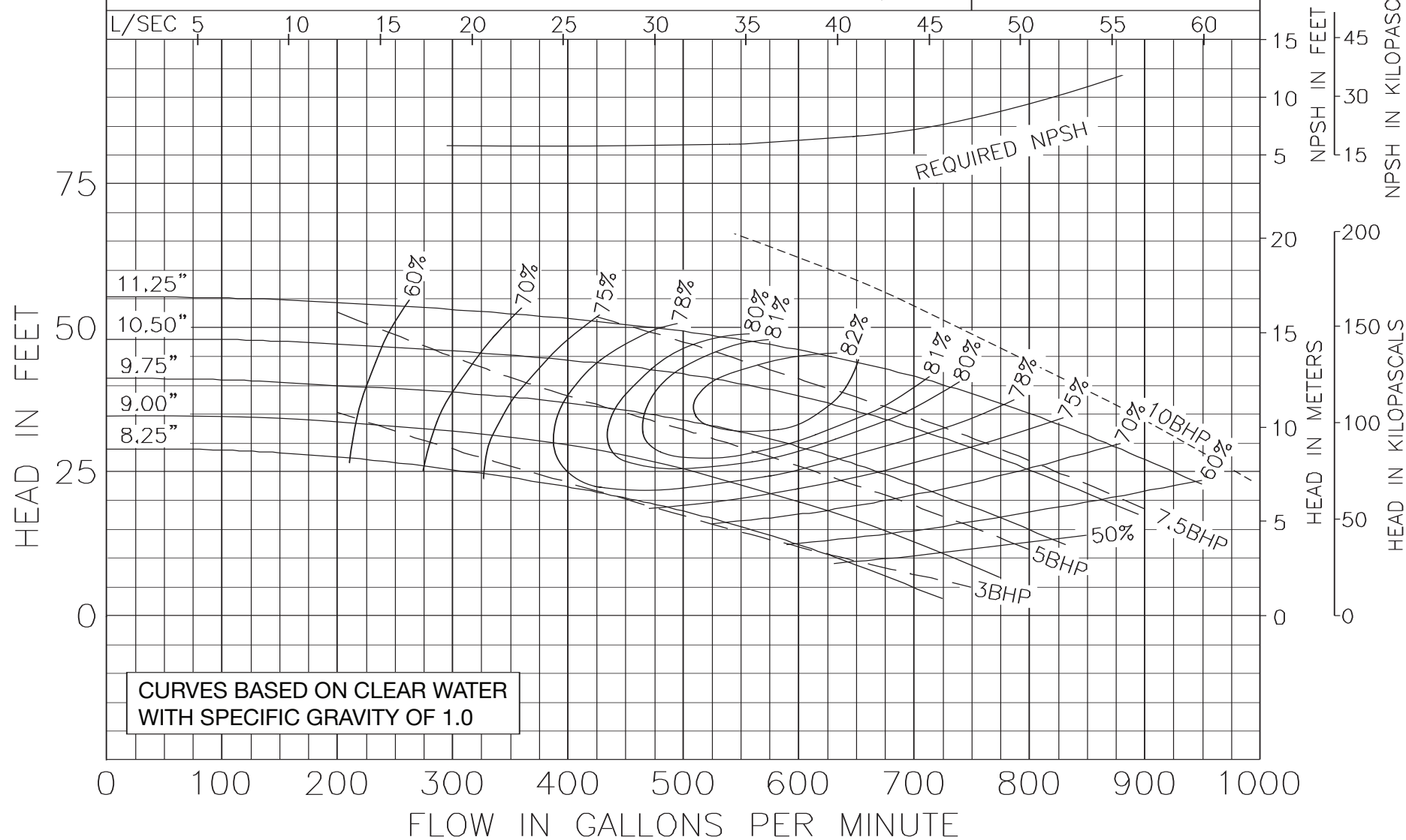




Model 6011
KV & KS Series

1160 RPM
MAY 1, 2010

Curve no. 1906
Imp. Dia. 8.25
Size 6 x 6 x 11



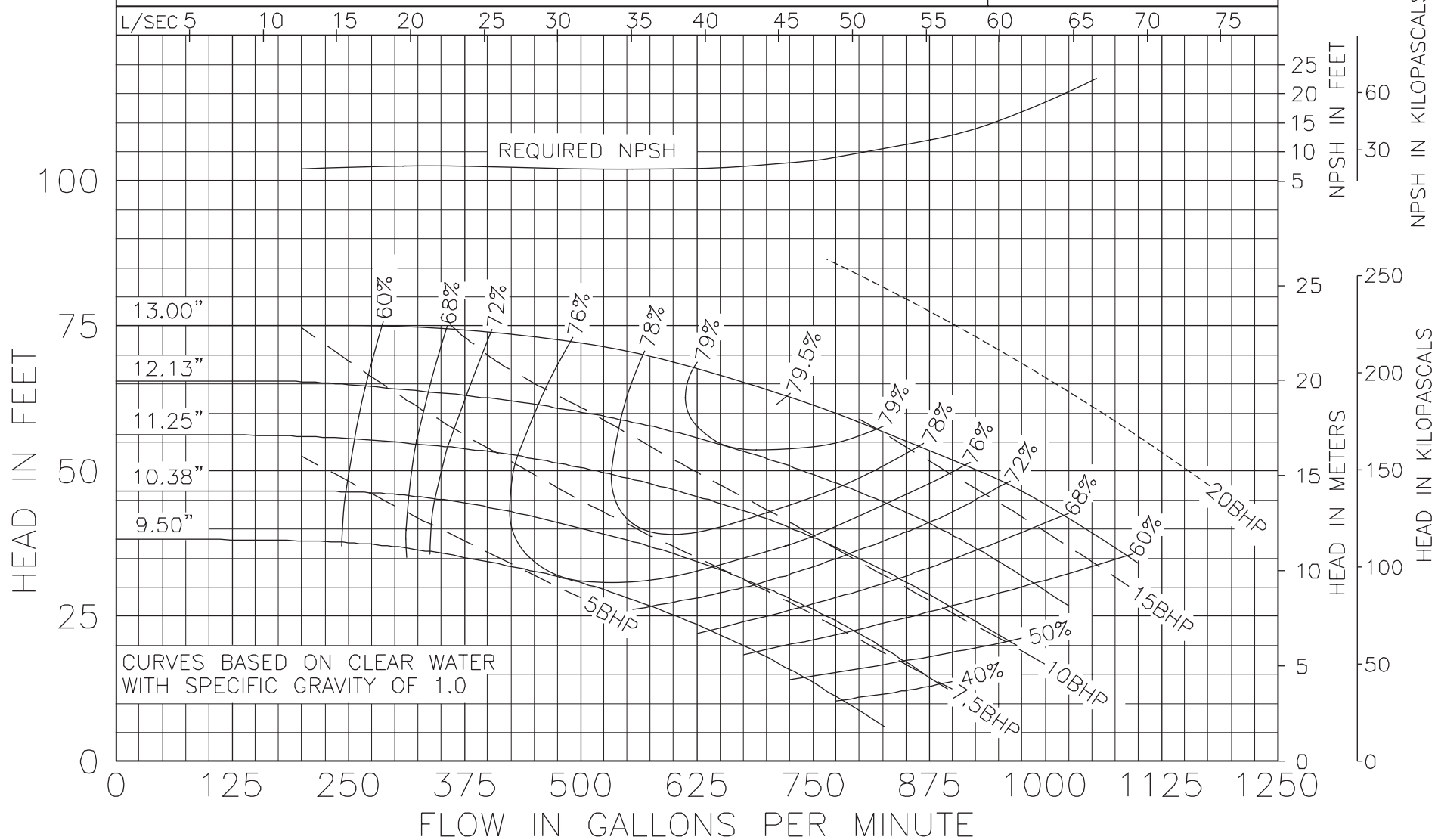
CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0

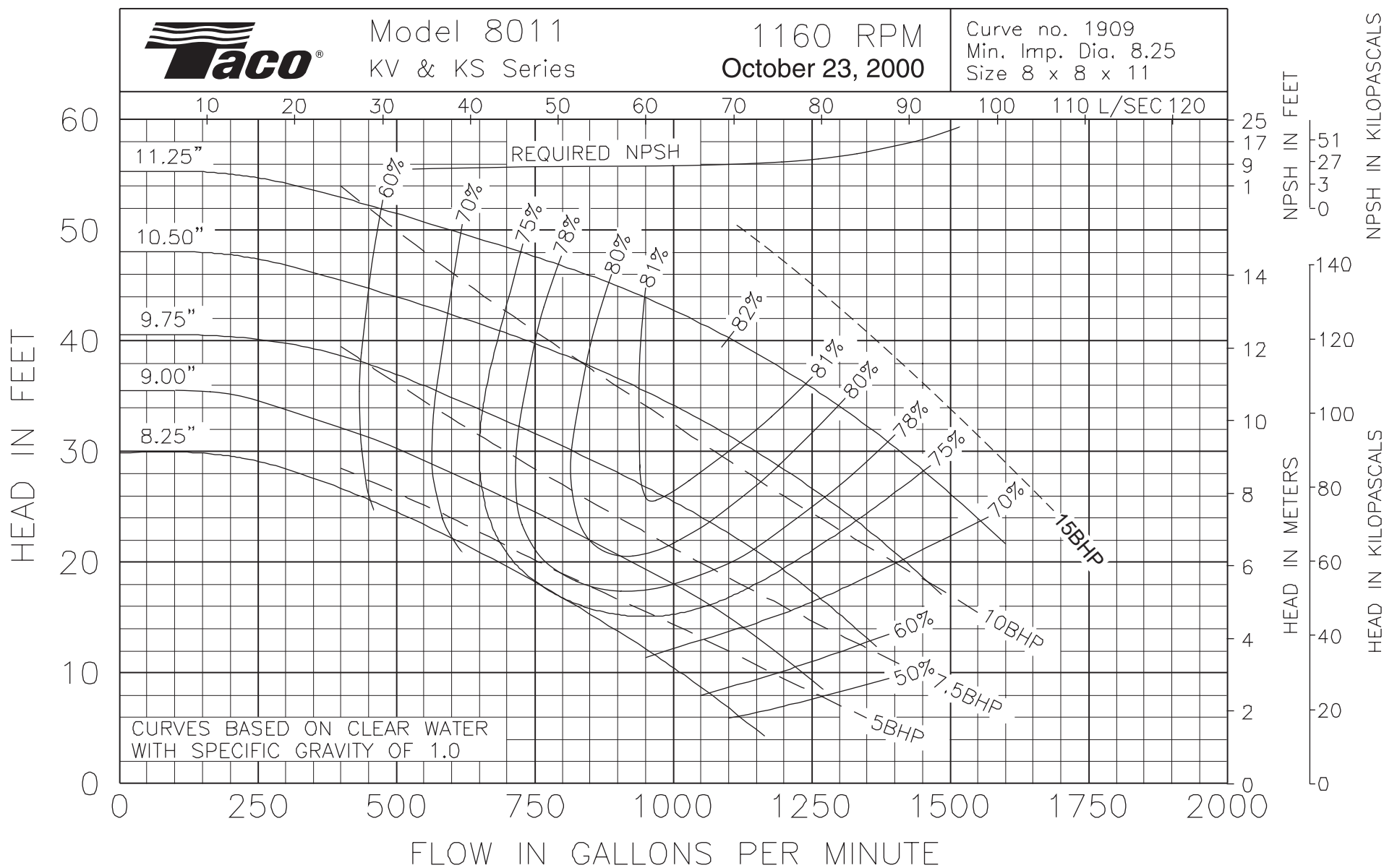


Model 6013
KV & KS Series

1160 RPM
August 31, 2006

Curve no. 1918
Imp. Dia. 9.50
Size 6 x 6 x 13



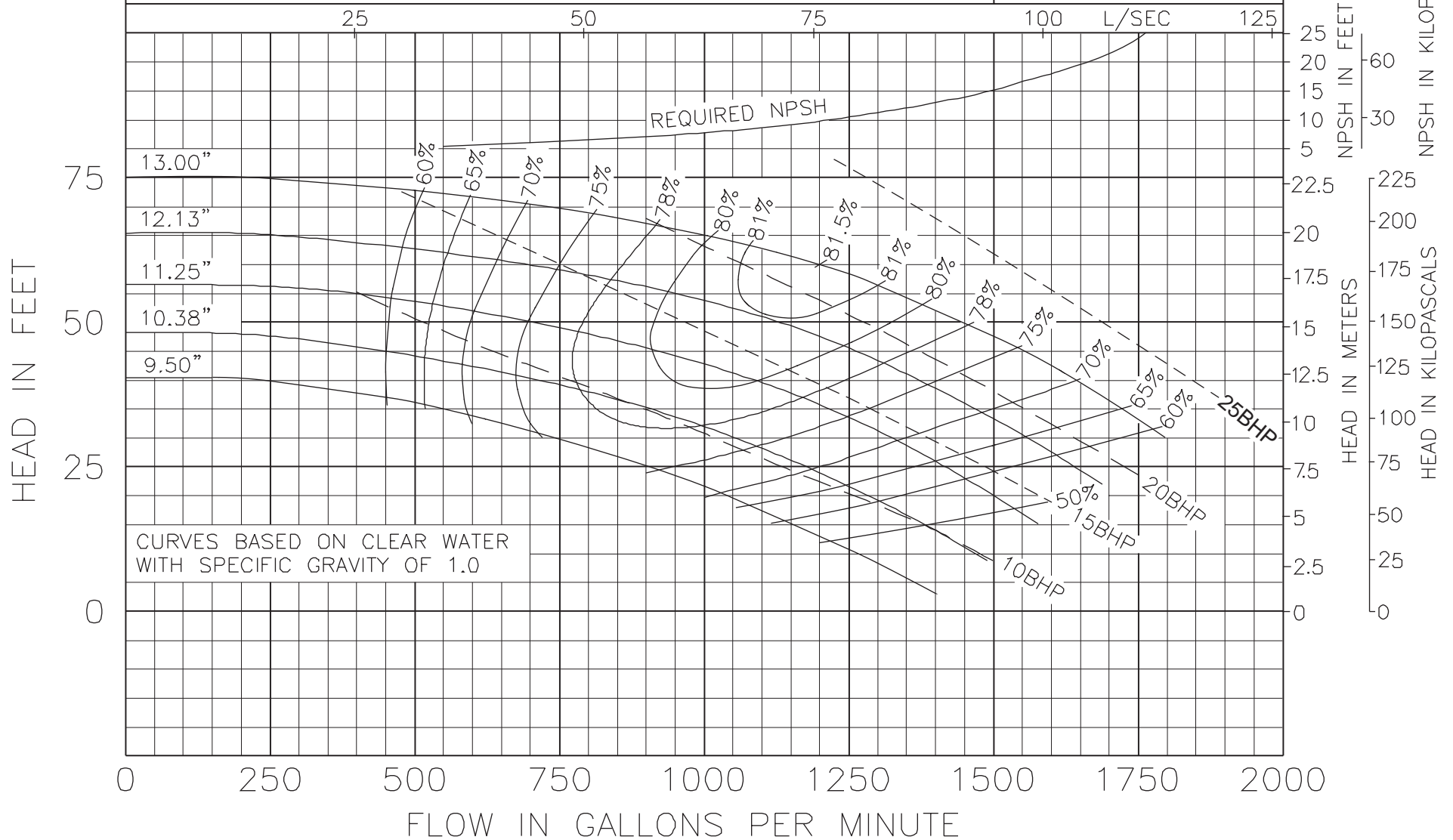




Model 8013
KV & KS Series

1160 RPM
October 23, 2000

Curve no. 1921
Min. Imp. Dia. 9.50"
Size 8 x 8 x 13

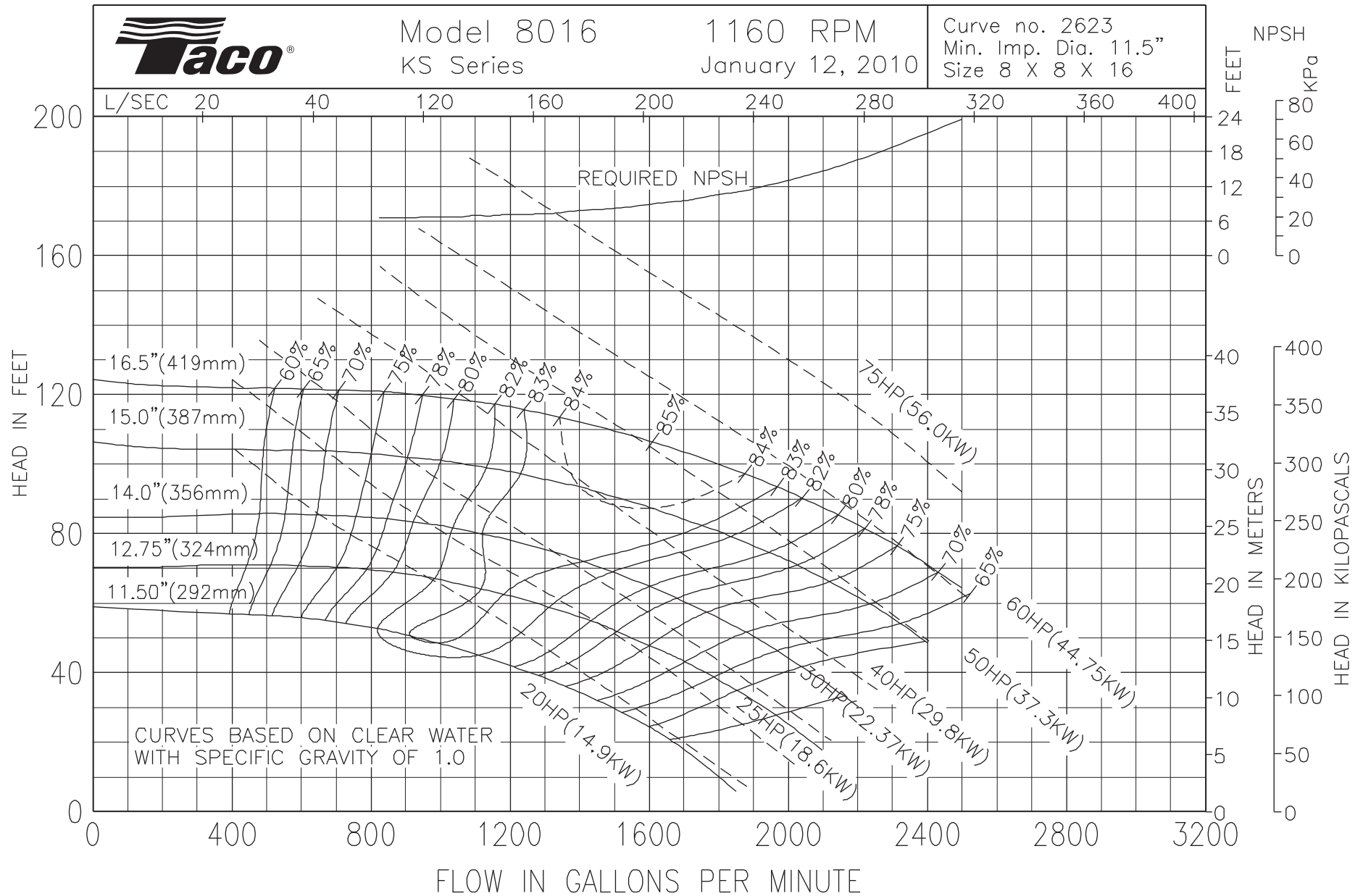


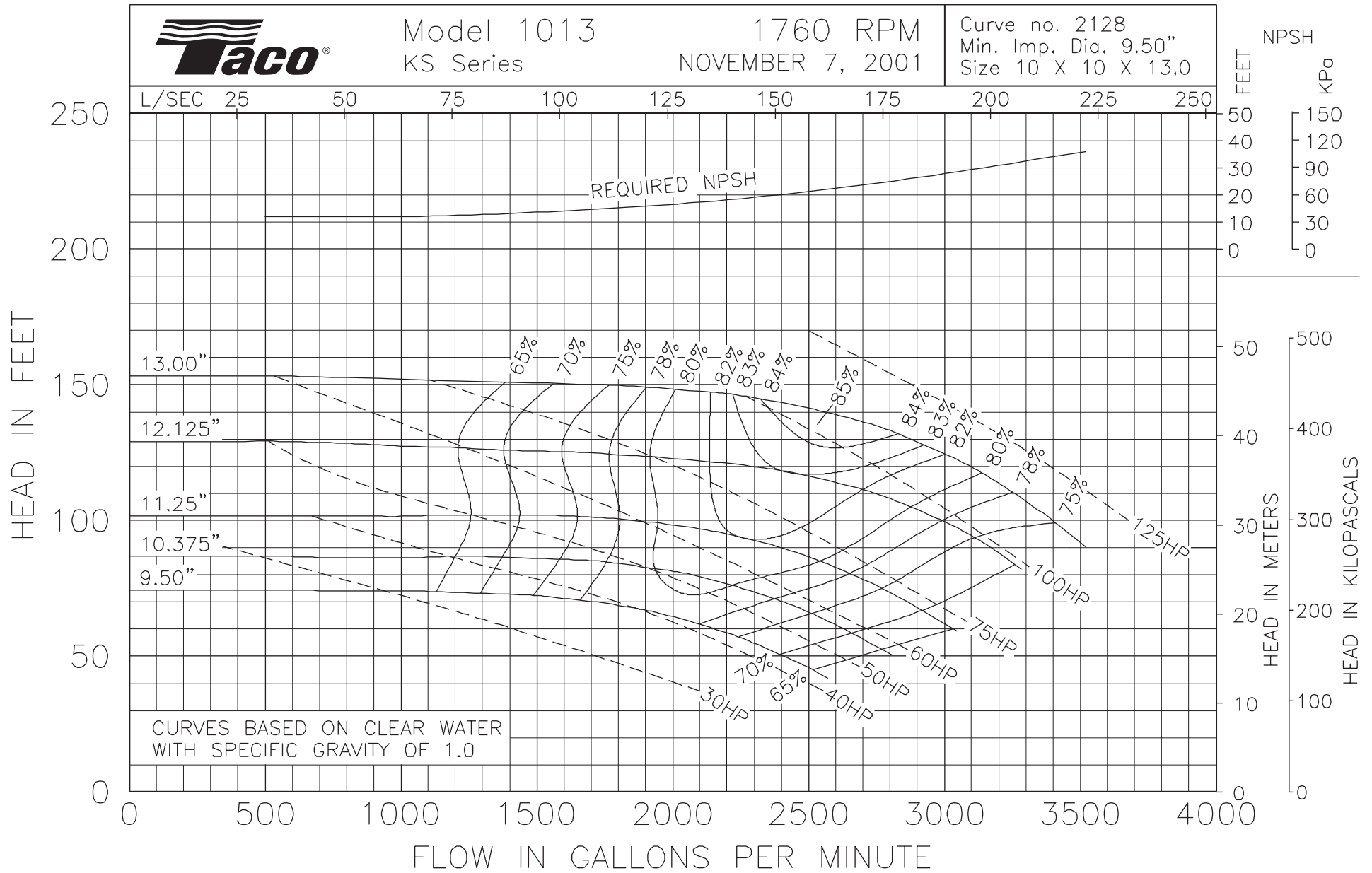


Model 8016
KS Series

1160 RPM
January 12, 2010

Curve no. 2623
Min. Imp. Dia. 11.5"
Size 8 X 8 X 16



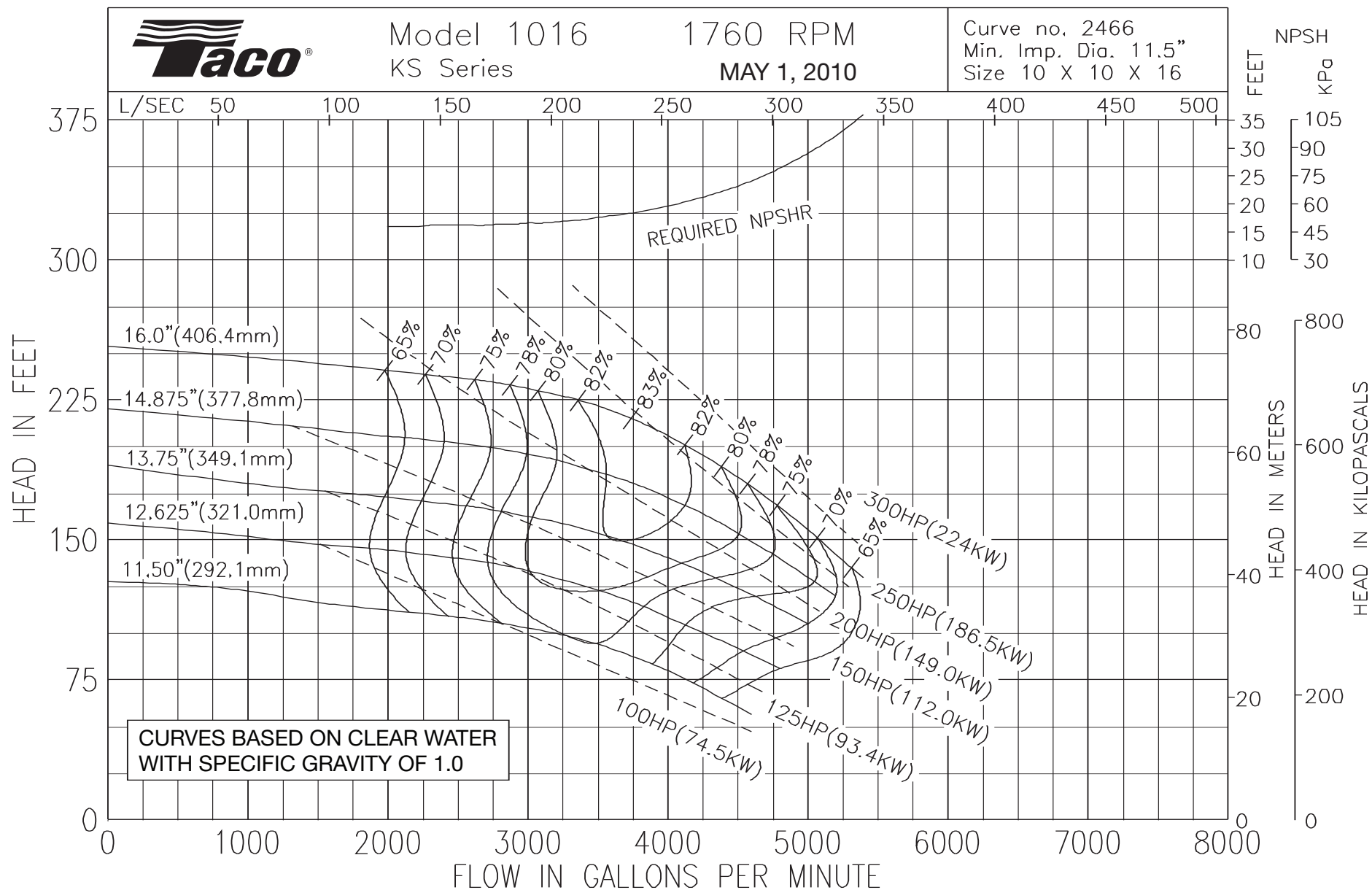




Model 1016
KS Series

1760 RPM
MAY 1, 2010

Curve no. 2466
Min. Imp. Dia. 11.5"
Size 10 X 10 X 16

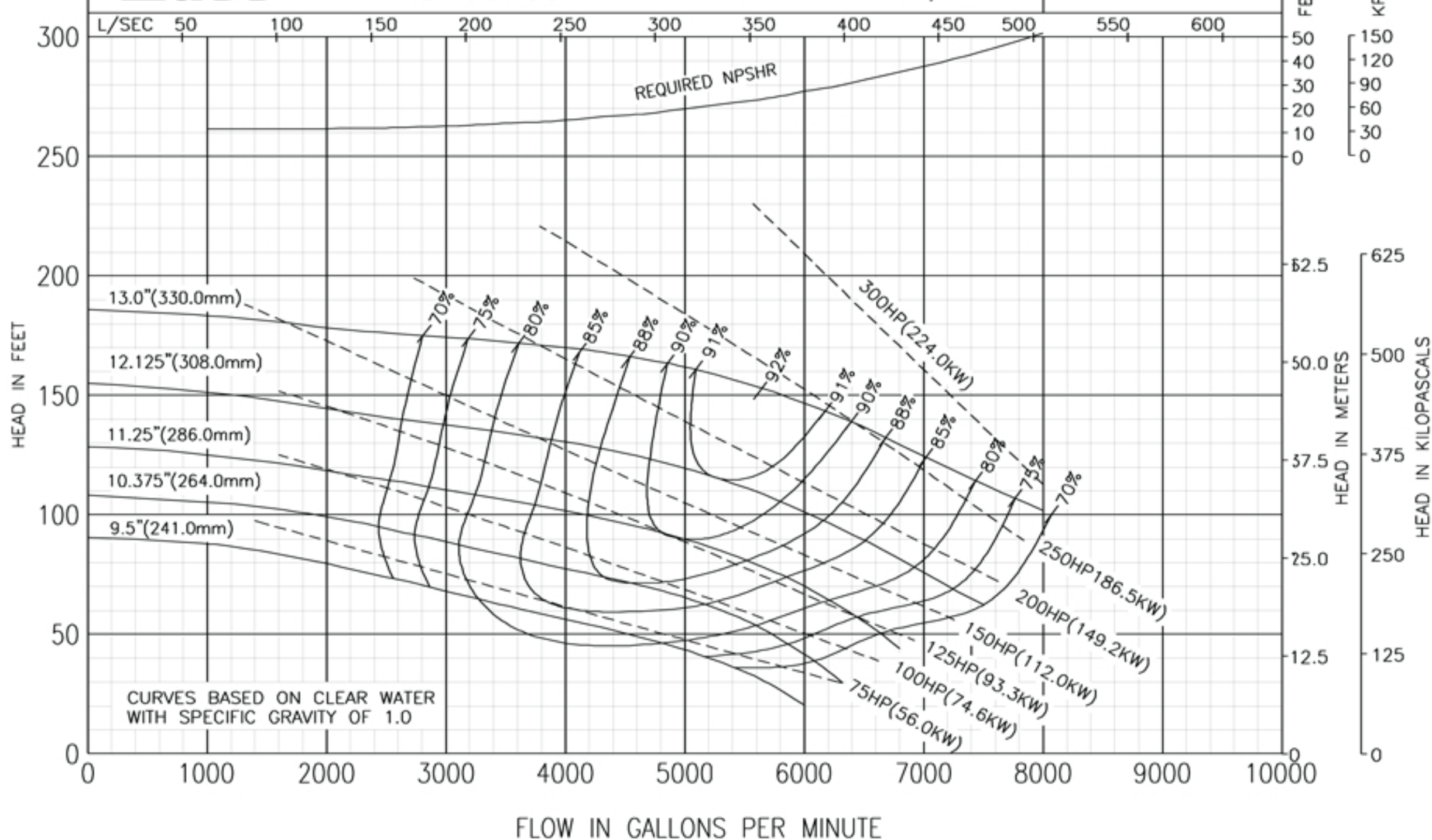




Model 1213B
KS Series

1760 RPM
AUGUST 22, 2011

Curve no. 2437
Min. Imp. Dia. 9.5"
Size 12 X 12 X 13

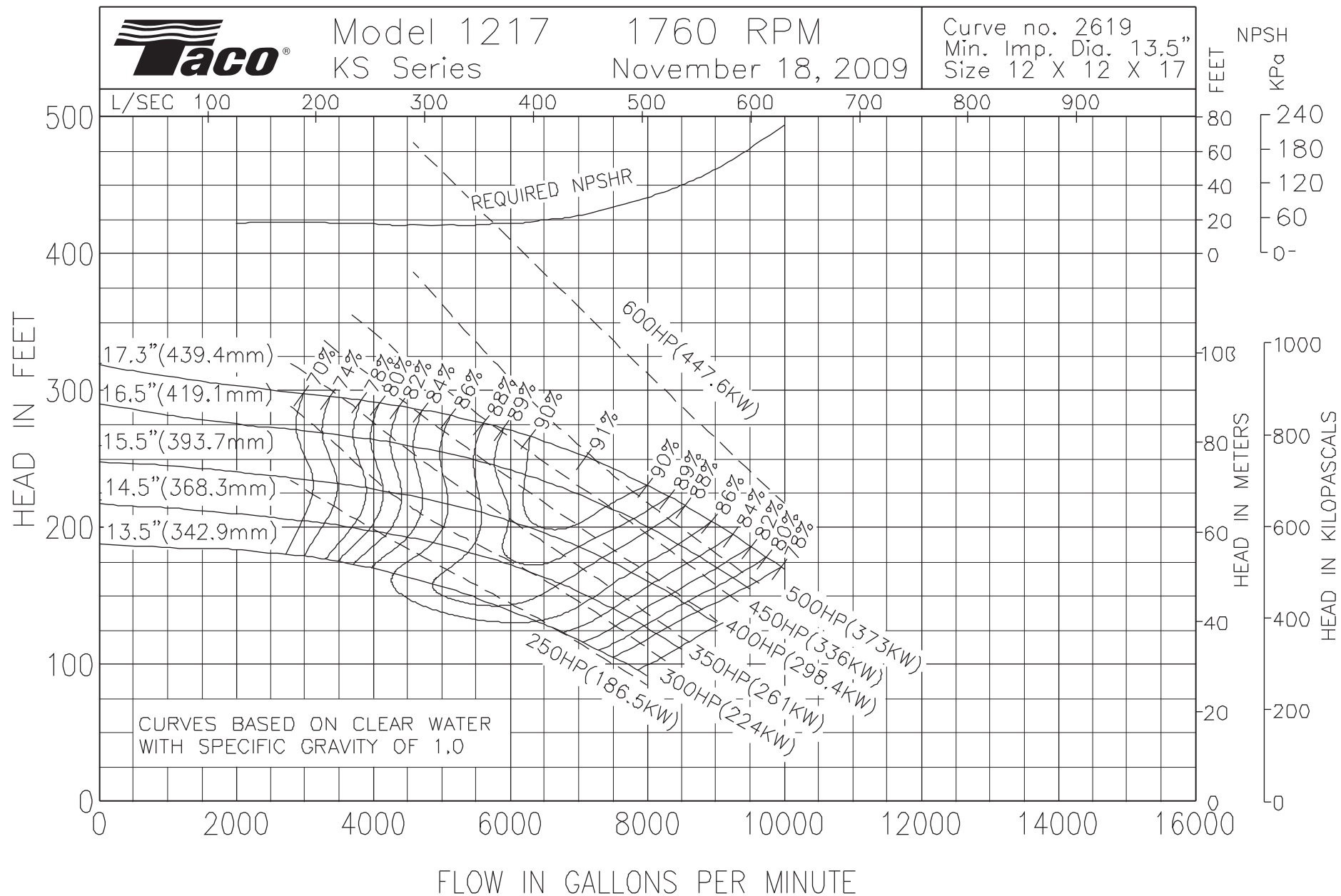




Model 1217
KS Series

1760 RPM
November 18, 2009

Curve no. 2619
Min. Imp. Dia. 13.5"
Size 12 X 12 X 17



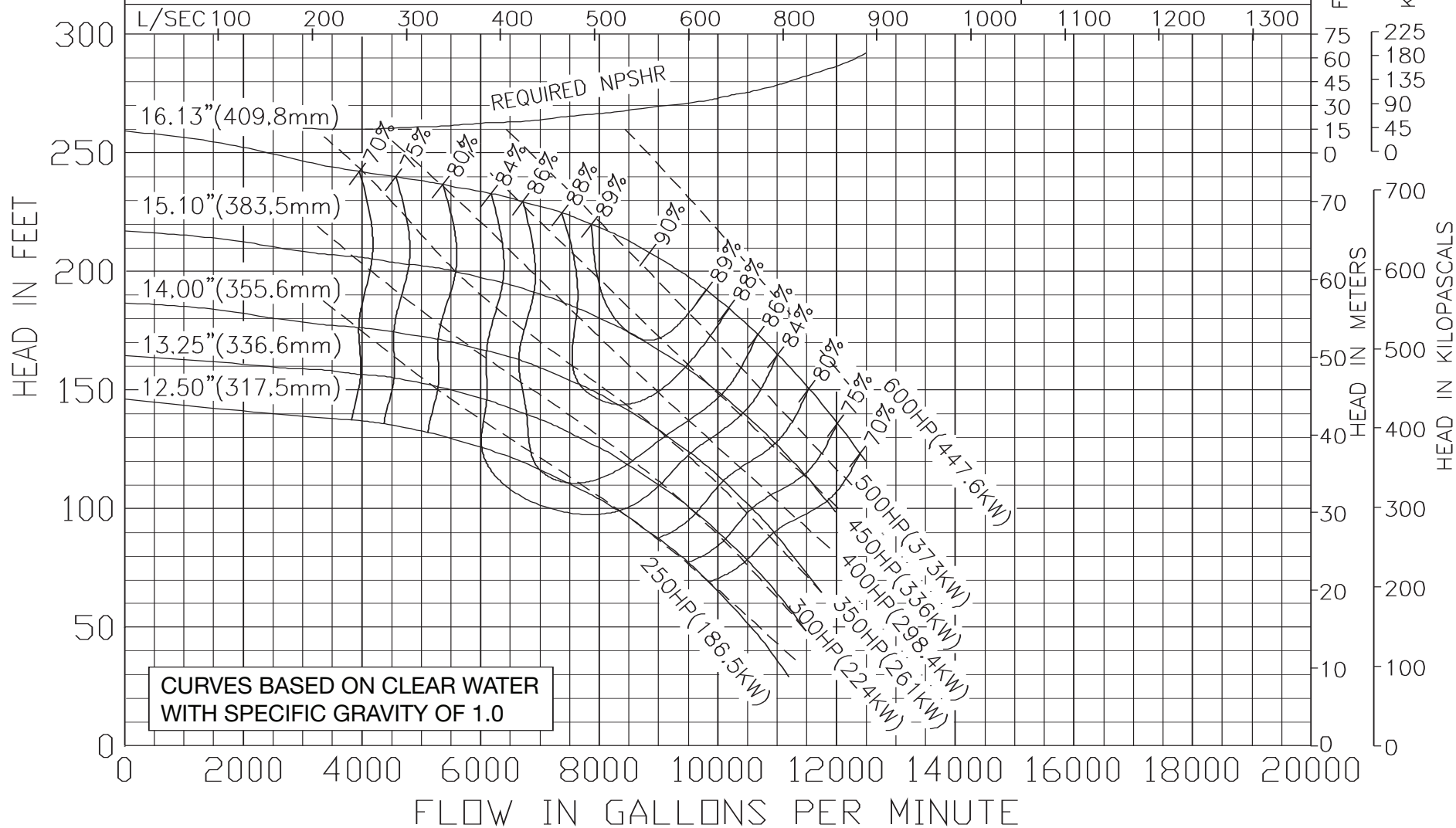


Model 1415B
KS Series

1760 RPM

MAY 1, 2010

Curve no. 2600
Min. Imp. Dia. 12.5"
Size 14 X 14 X 16

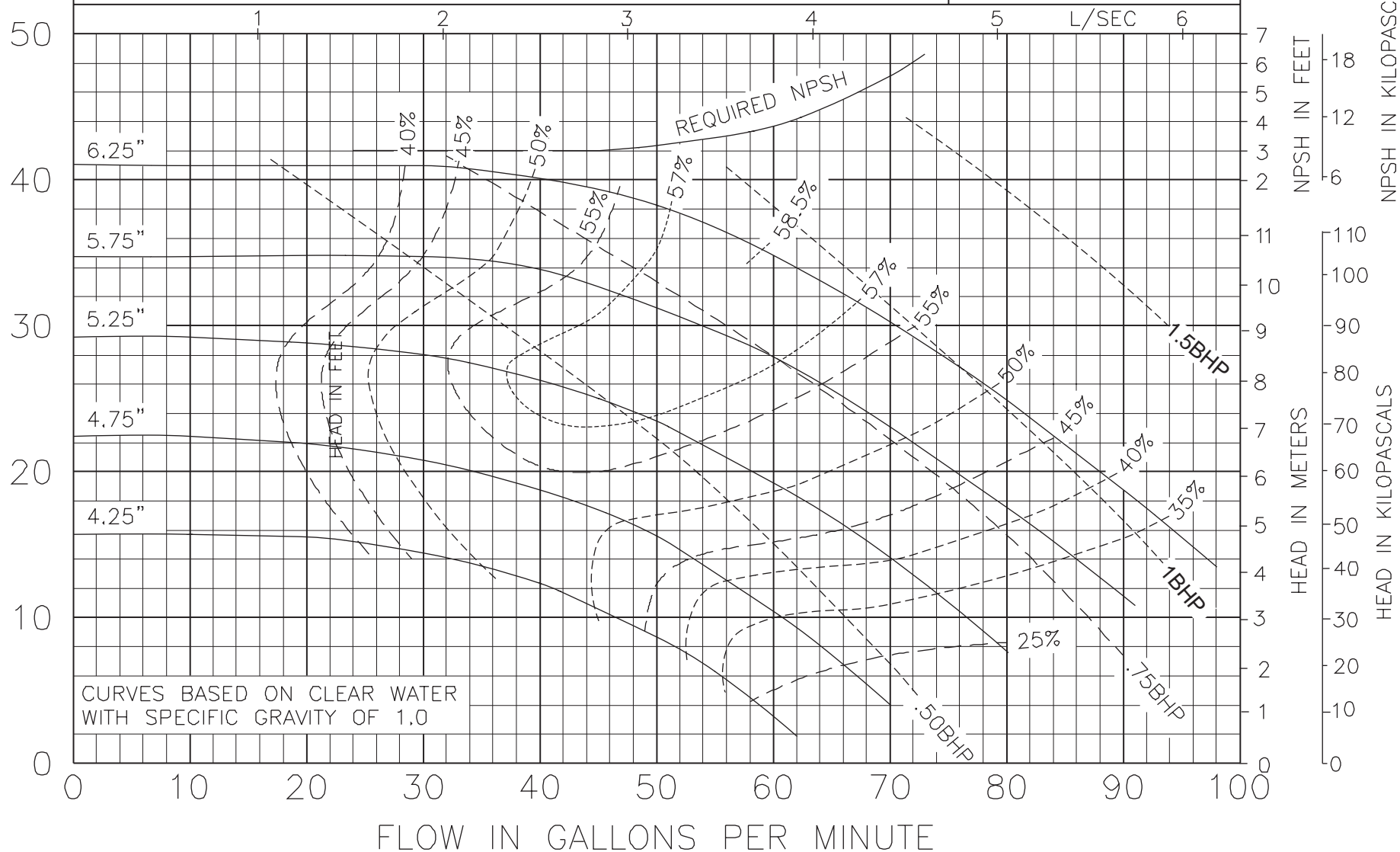




Model 1506
KV & KS Series

1760 RPM
October 23, 2000

Curve no. 1937
Min. Imp. Dia. 4.25
Size 1 1/2 x 1 1/2 x 6





Model 1507

KV & KS Series

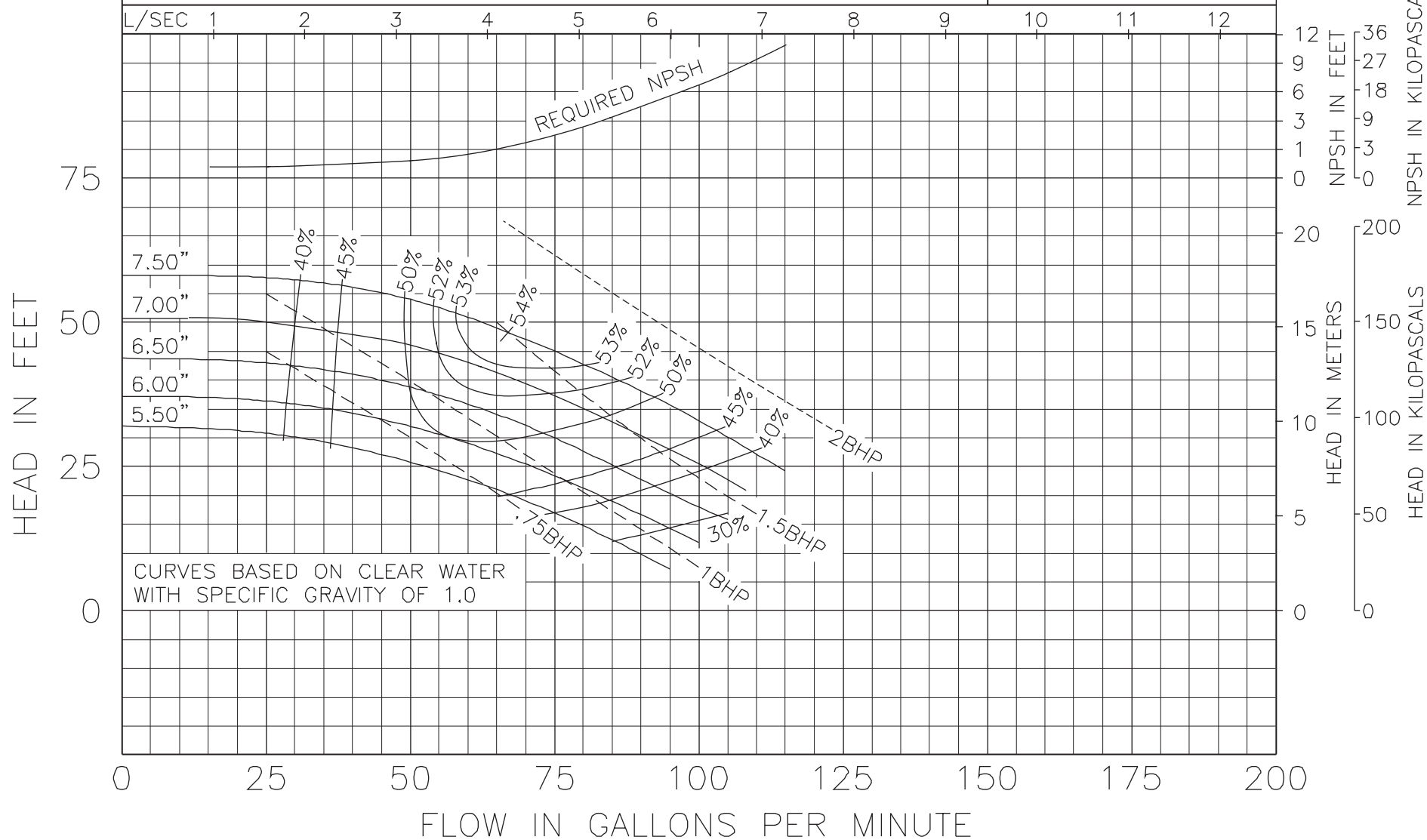
1760 RPM

August 31, 2006

Curve no. 1973

Min. Imp. Dia. 5.50

Size 1 1/2 x 1 1/2 x 7

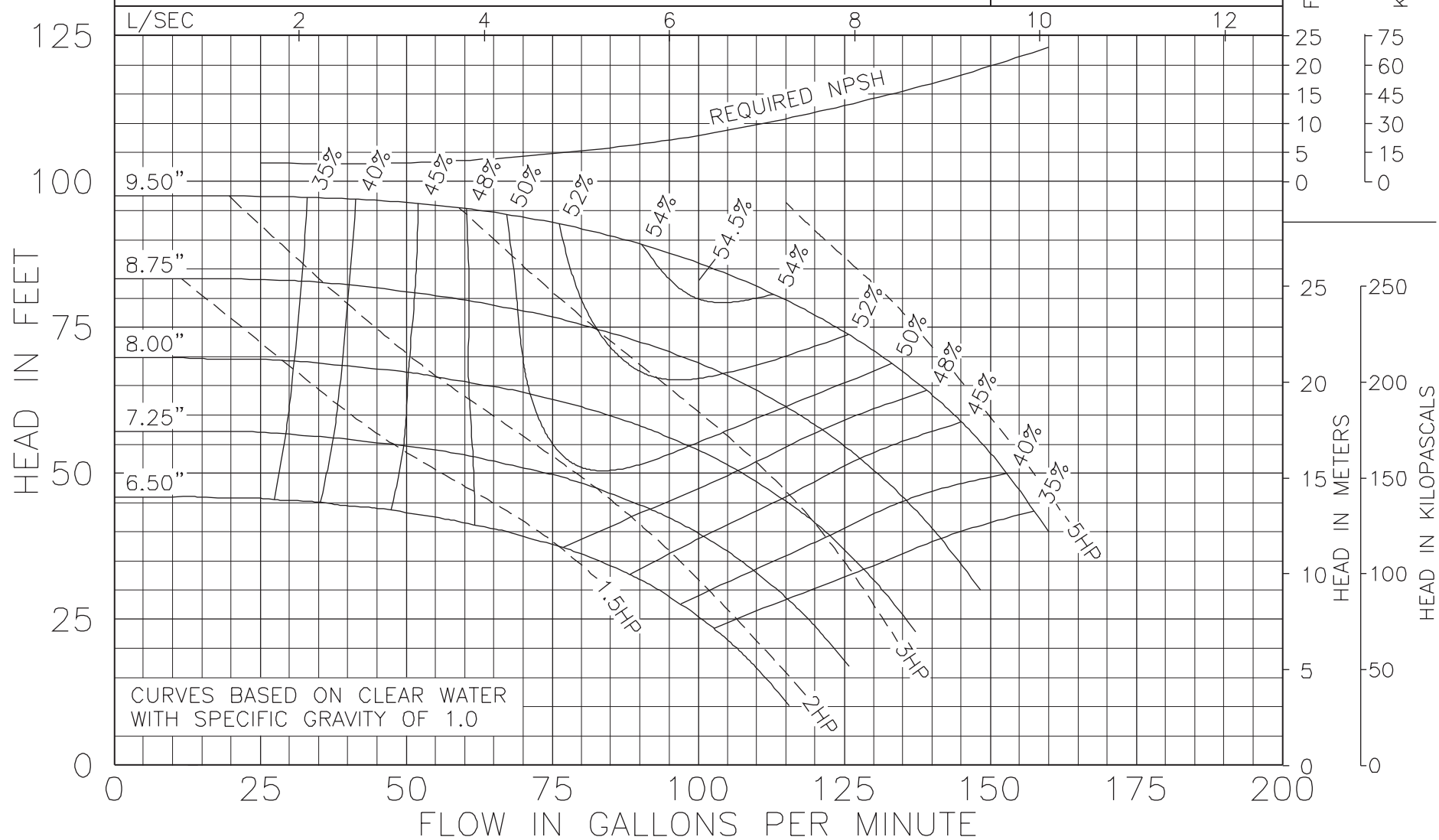


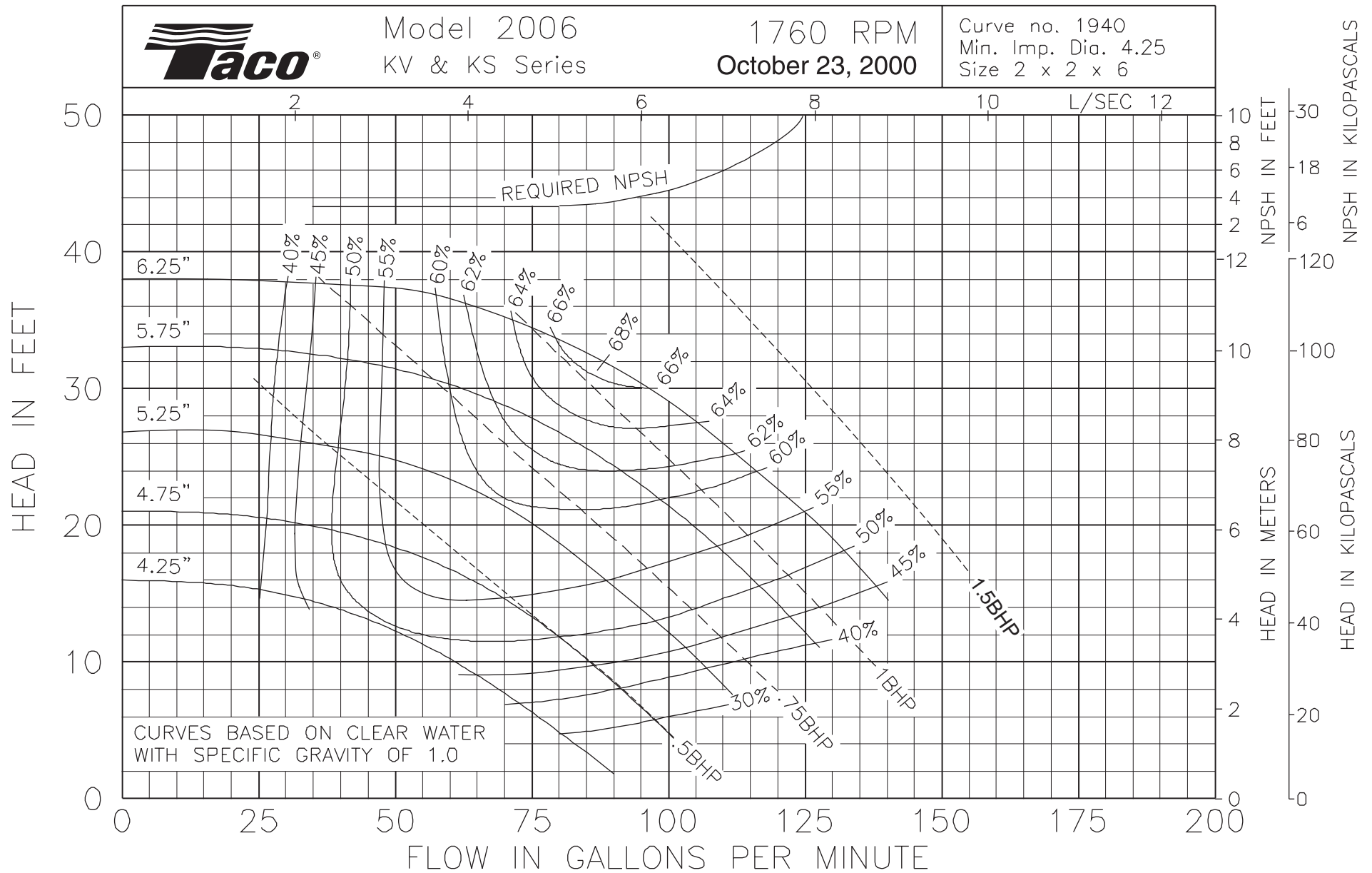


Model 1509
KV & KS Series

1760 RPM
AUGUST 2, 2001

Curve no. 2046
Min. Imp. Dia. 6.5"
Size 1.5 X 1.5 X 9.0



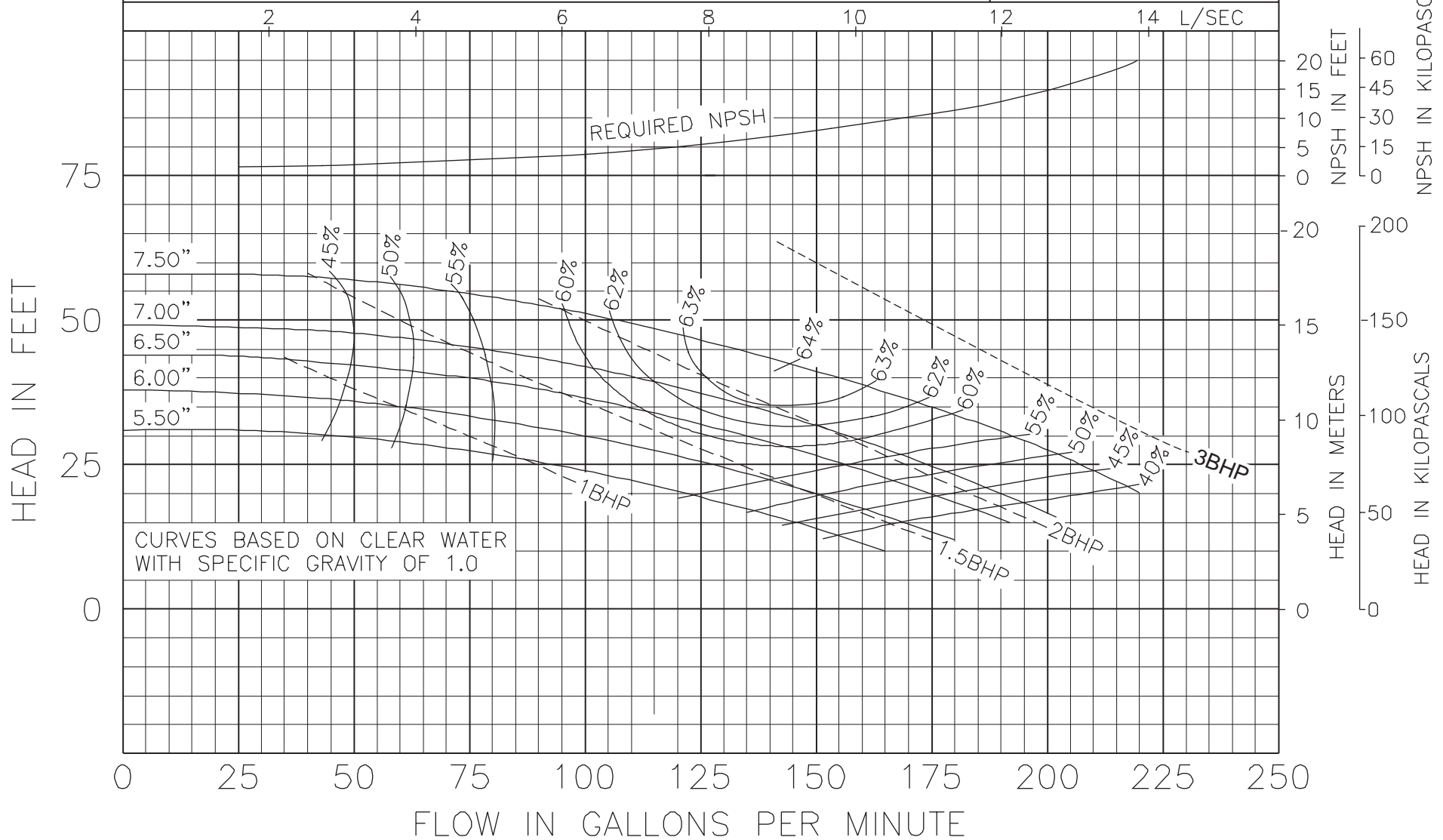


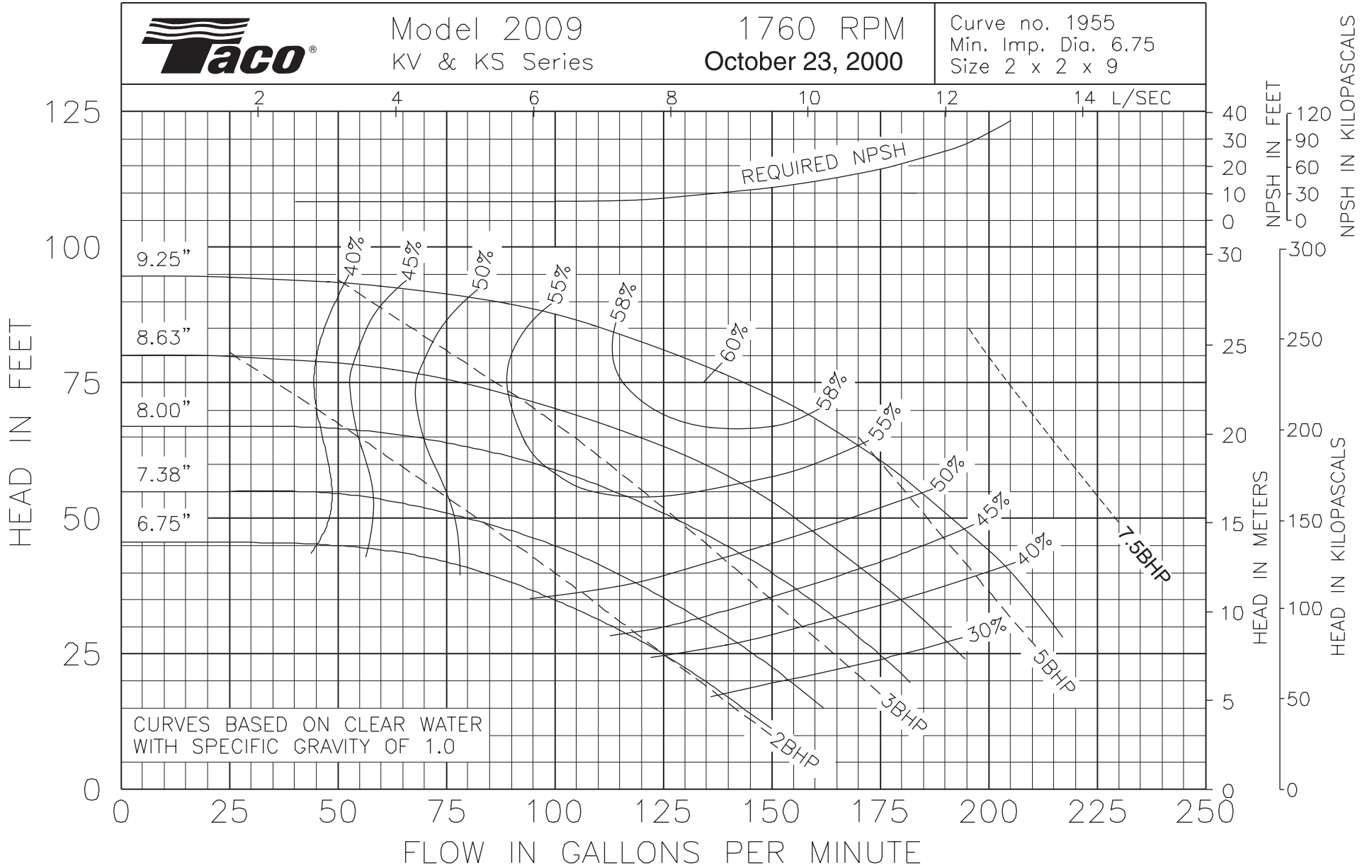


Model 2007
KV & KS Series

1760 RPM
October 23, 2000

Curve no. 1977
Min. Imp. Dia. 5.50
Size 2 x 2 x 7



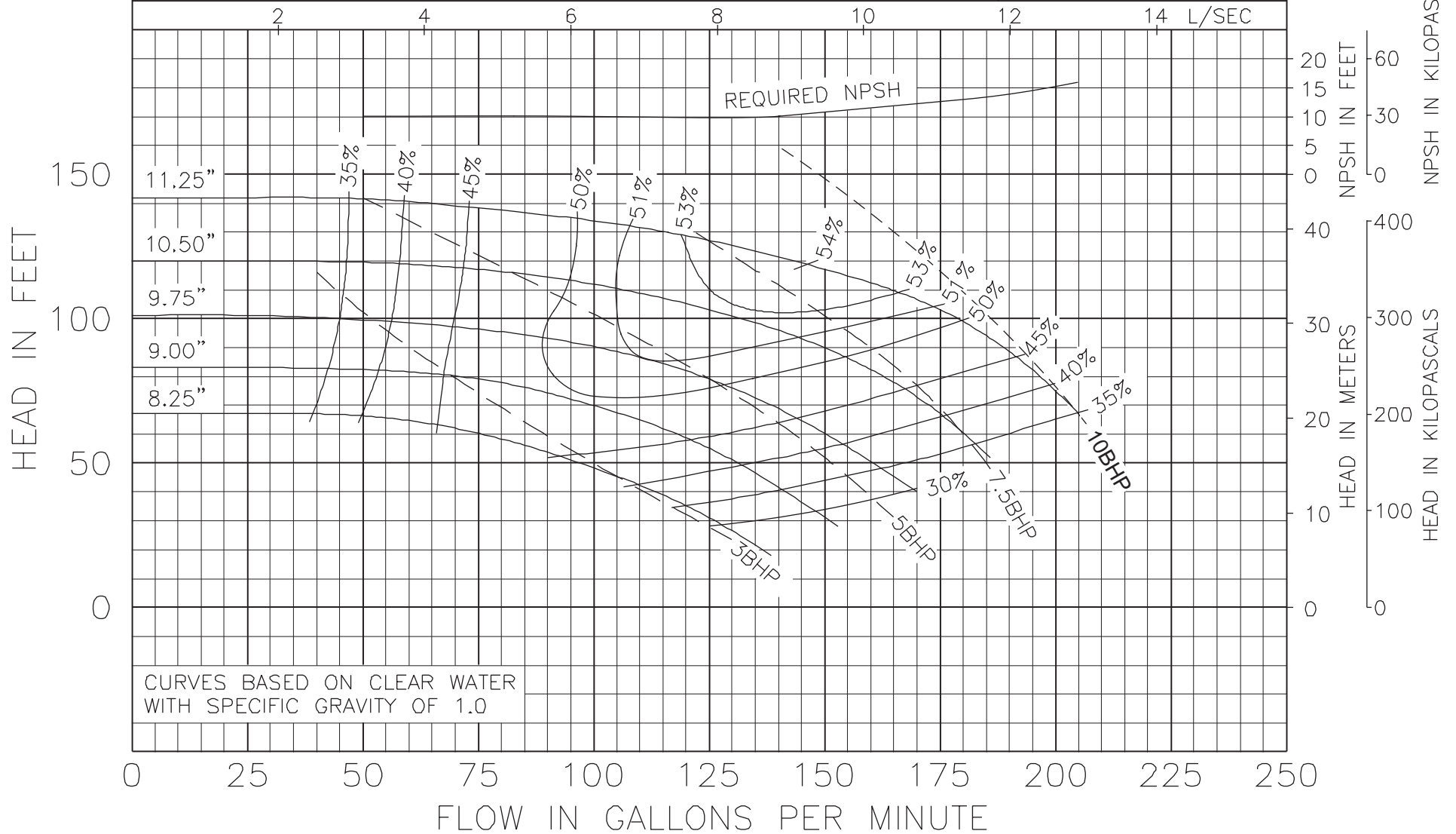




Model 2011
KV & KS Series

1760 RPM
October 23, 2000

Curve no. 1929
Min. Imp. Dia. 8.25
Size 2 x 2 x 11

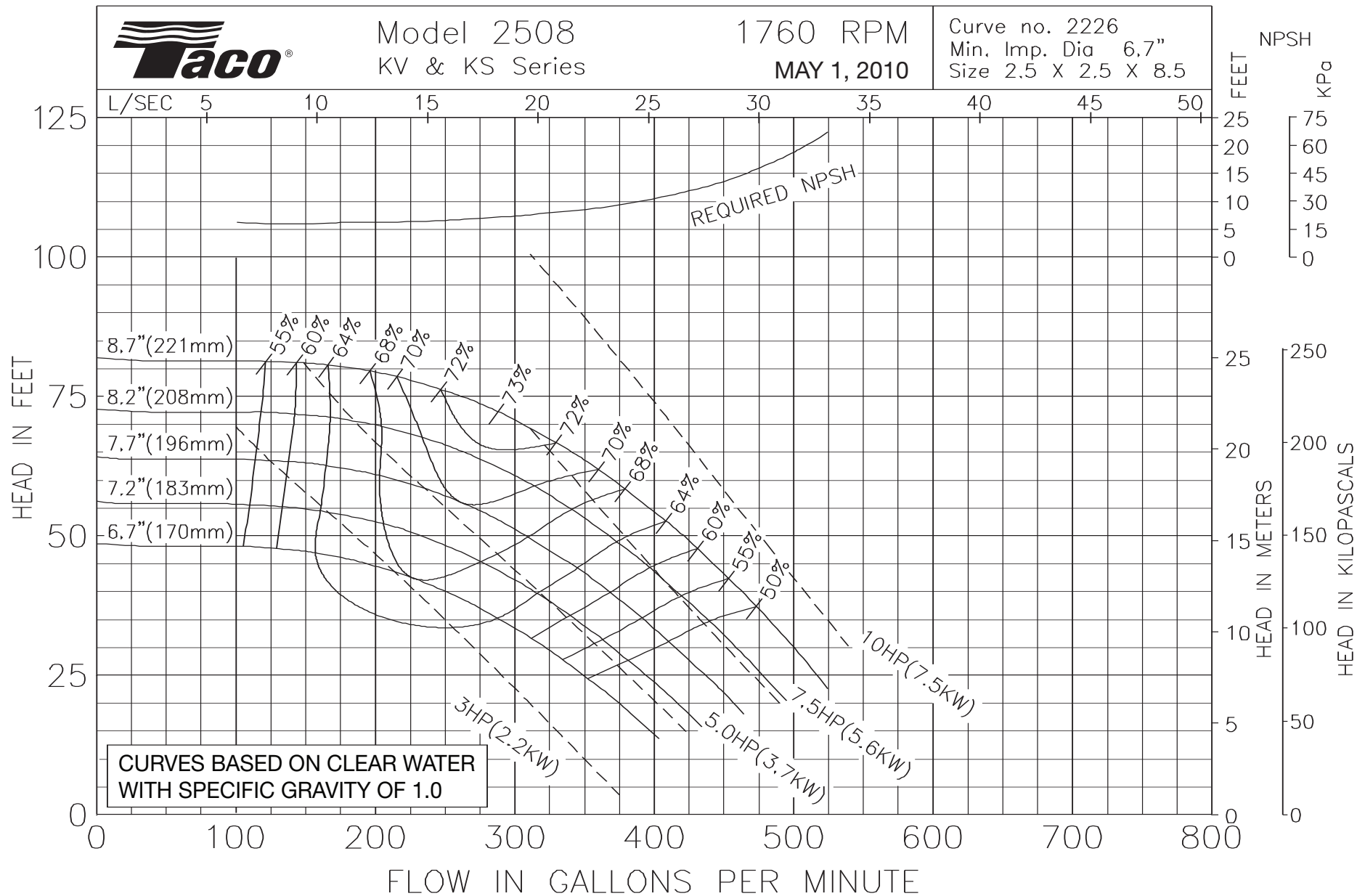




Model 2508
KV & KS Series

1760 RPM
MAY 1, 2010

Curve no. 2226
Min. Imp. Dia 6.7"
Size 2.5 X 2.5 X 8.5

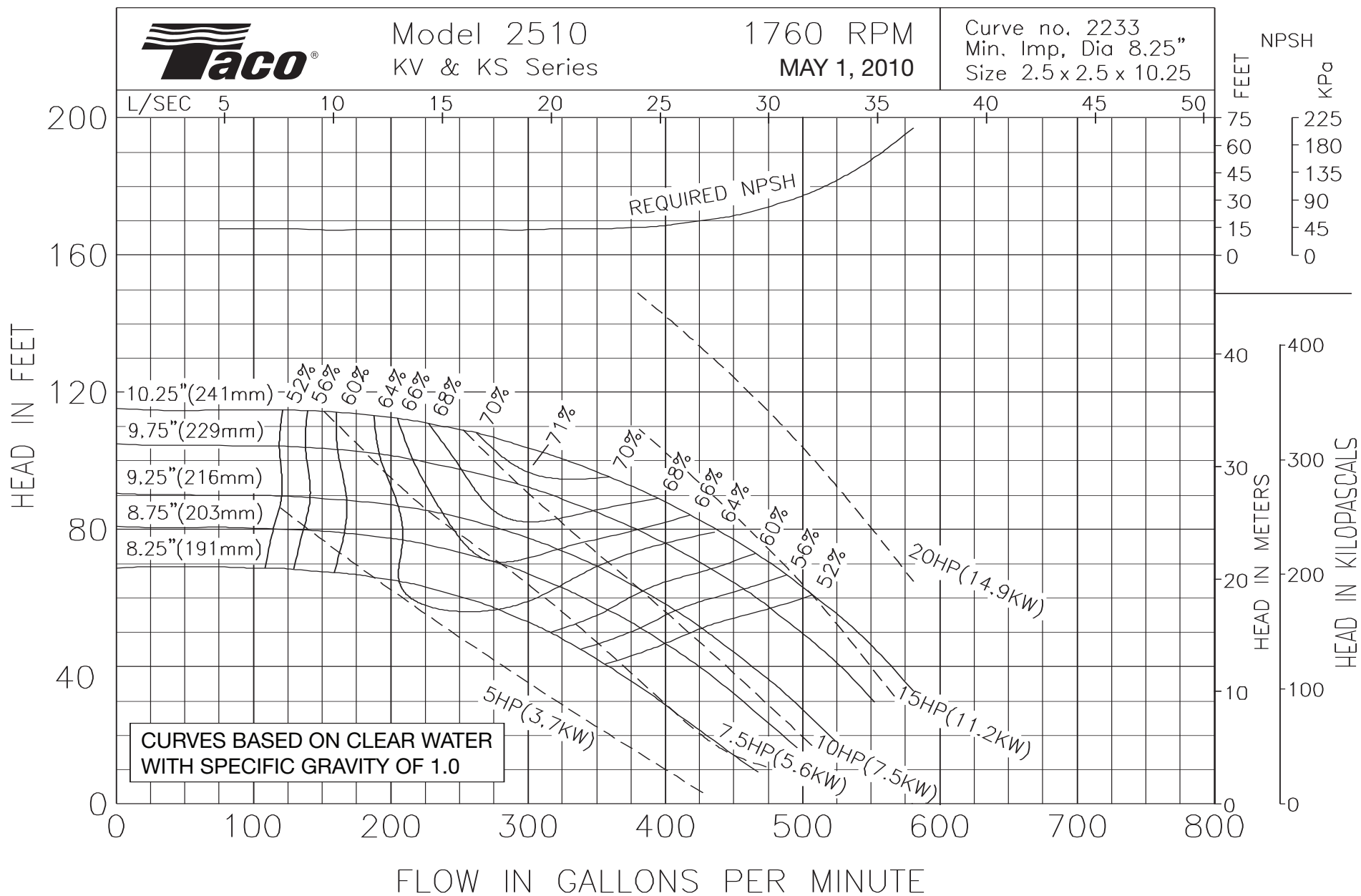


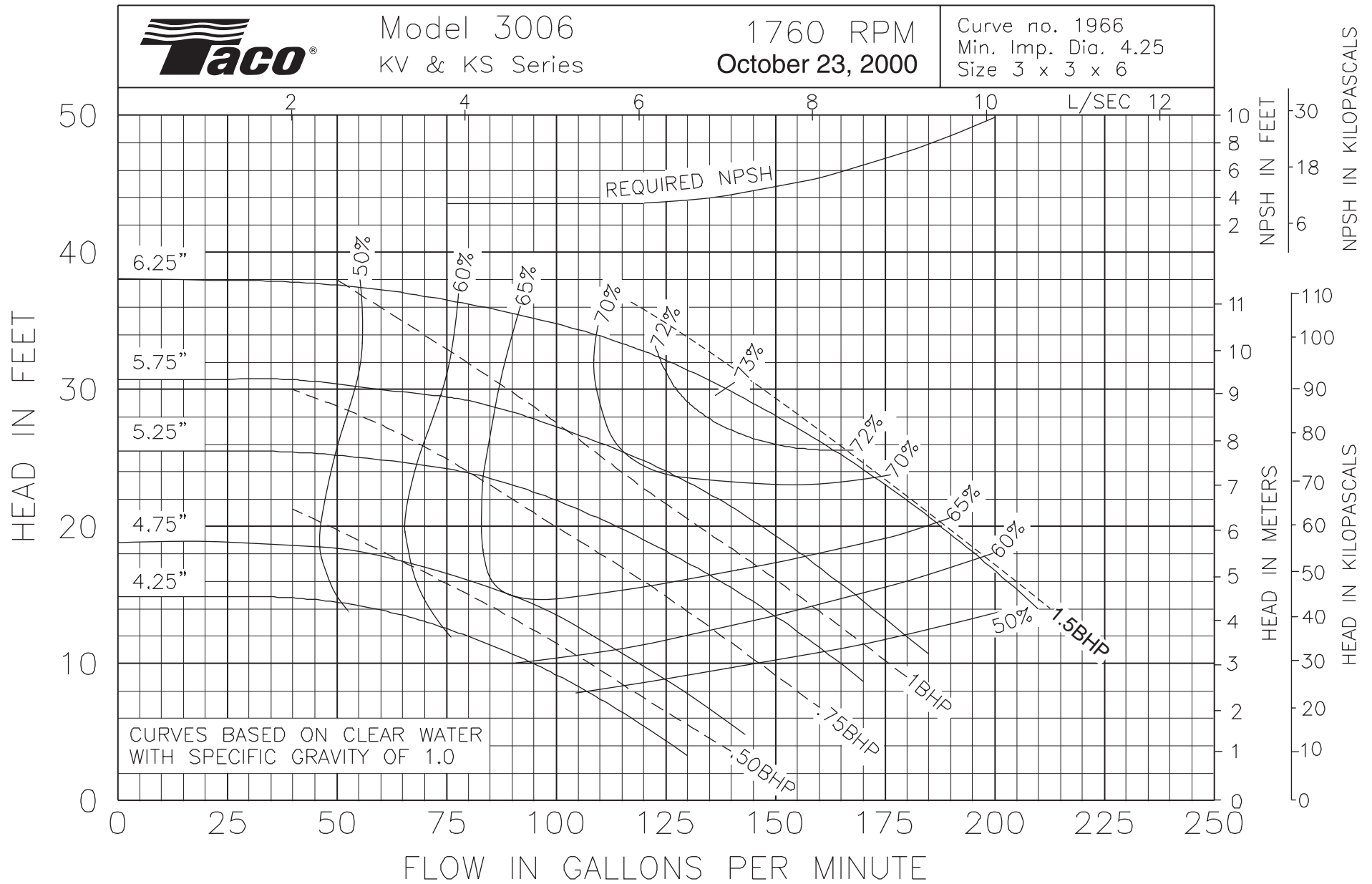


Model 2510
KV & KS Series

1760 RPM
MAY 1, 2010

Curve no. 2233
Min. Imp. Dia 8.25"
Size 2.5 x 2.5 x 10.25



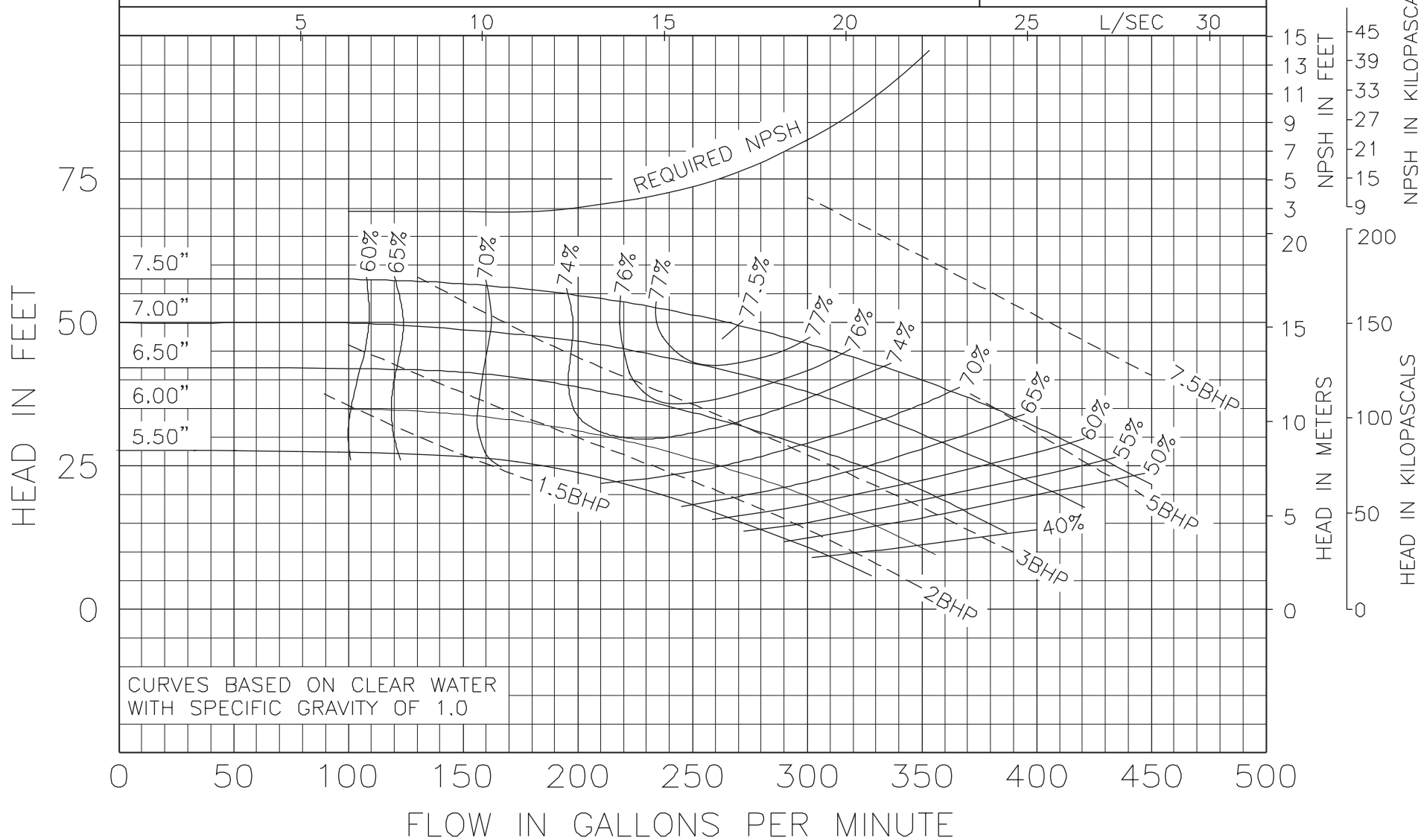


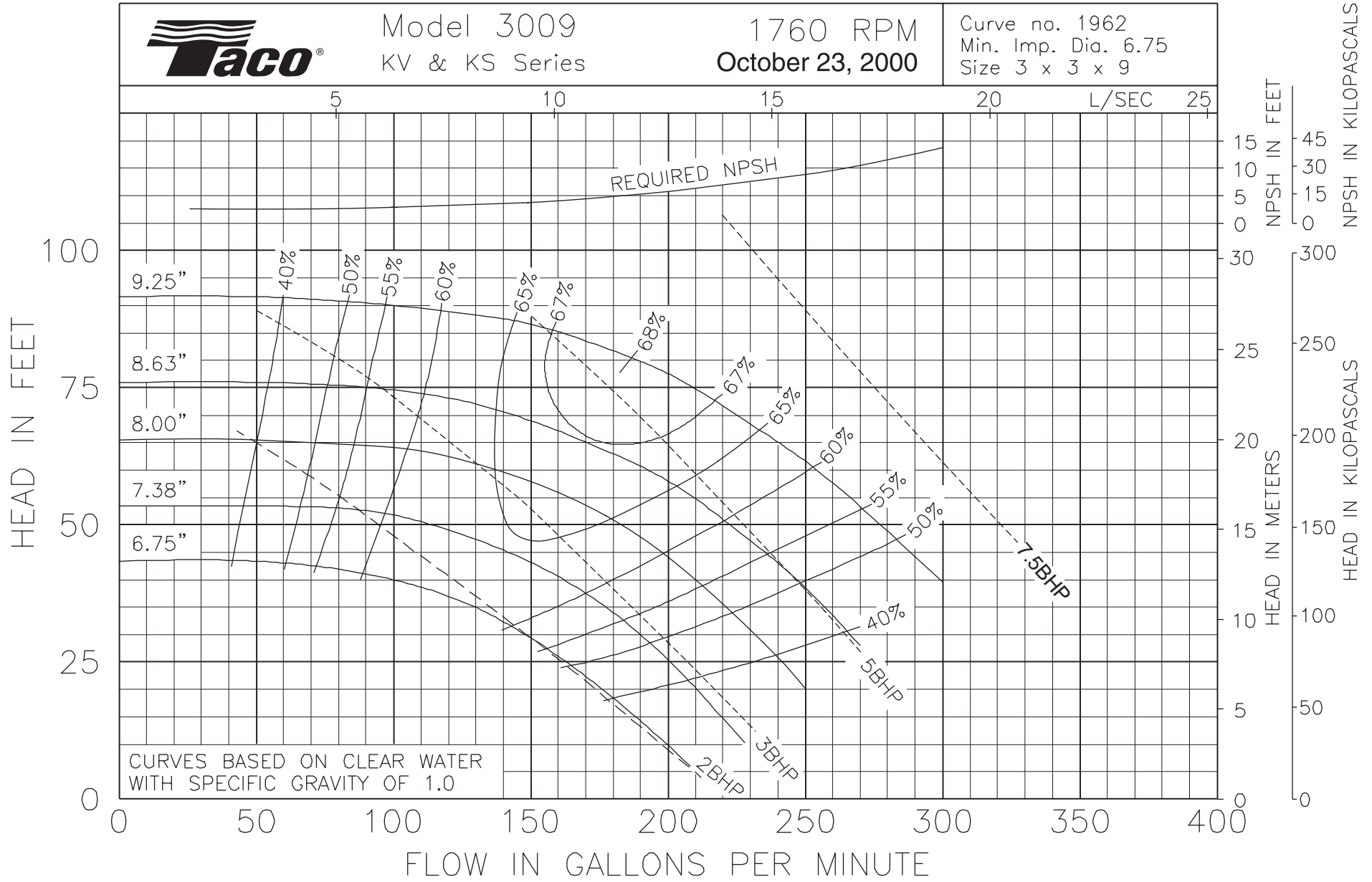


Model 3007
KV & KS Series

1760 RPM
October 23, 2000

Curve no. 1969
Min. Imp. Dia. 5.50
Size 3 x 3 x 7



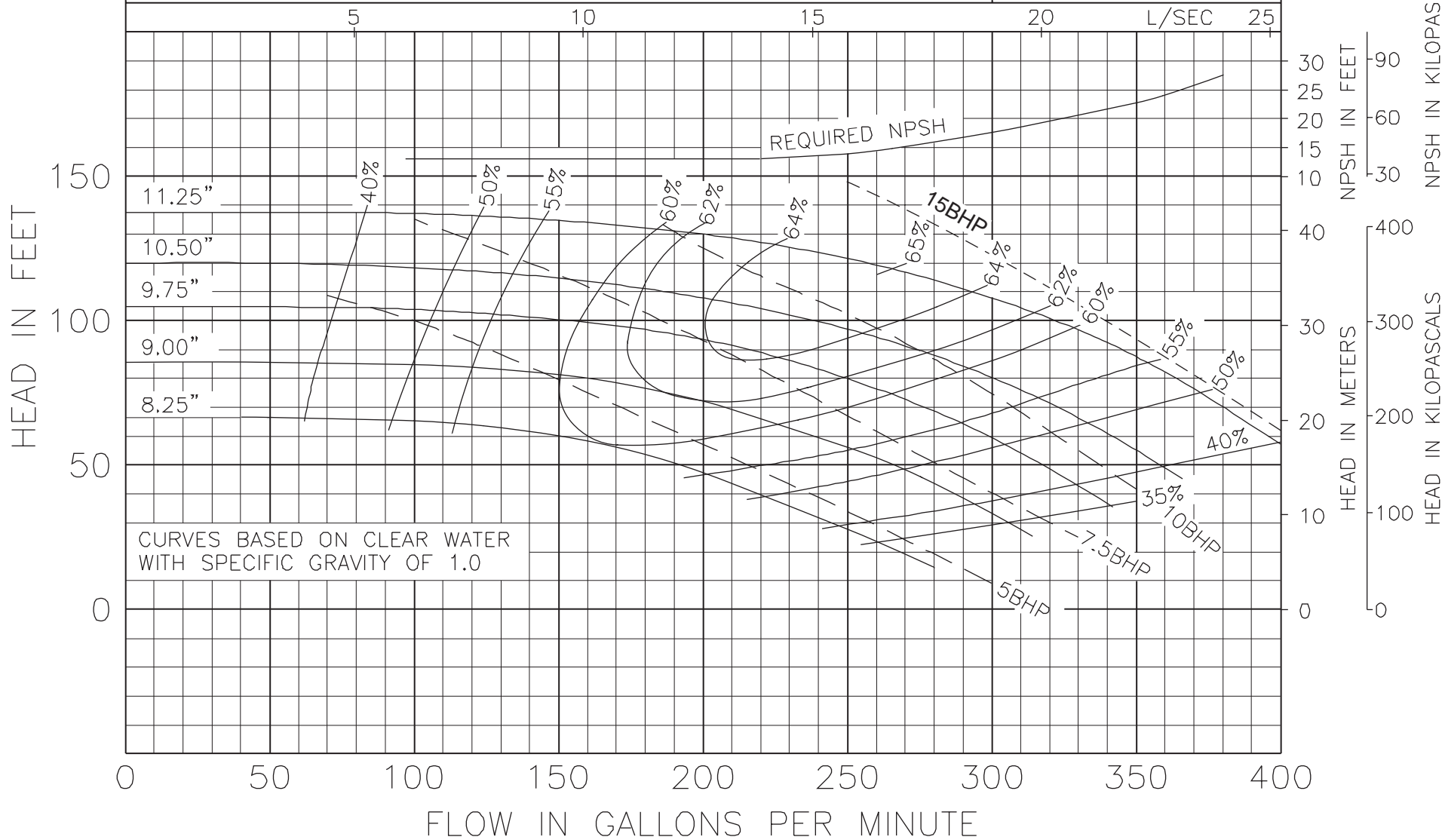


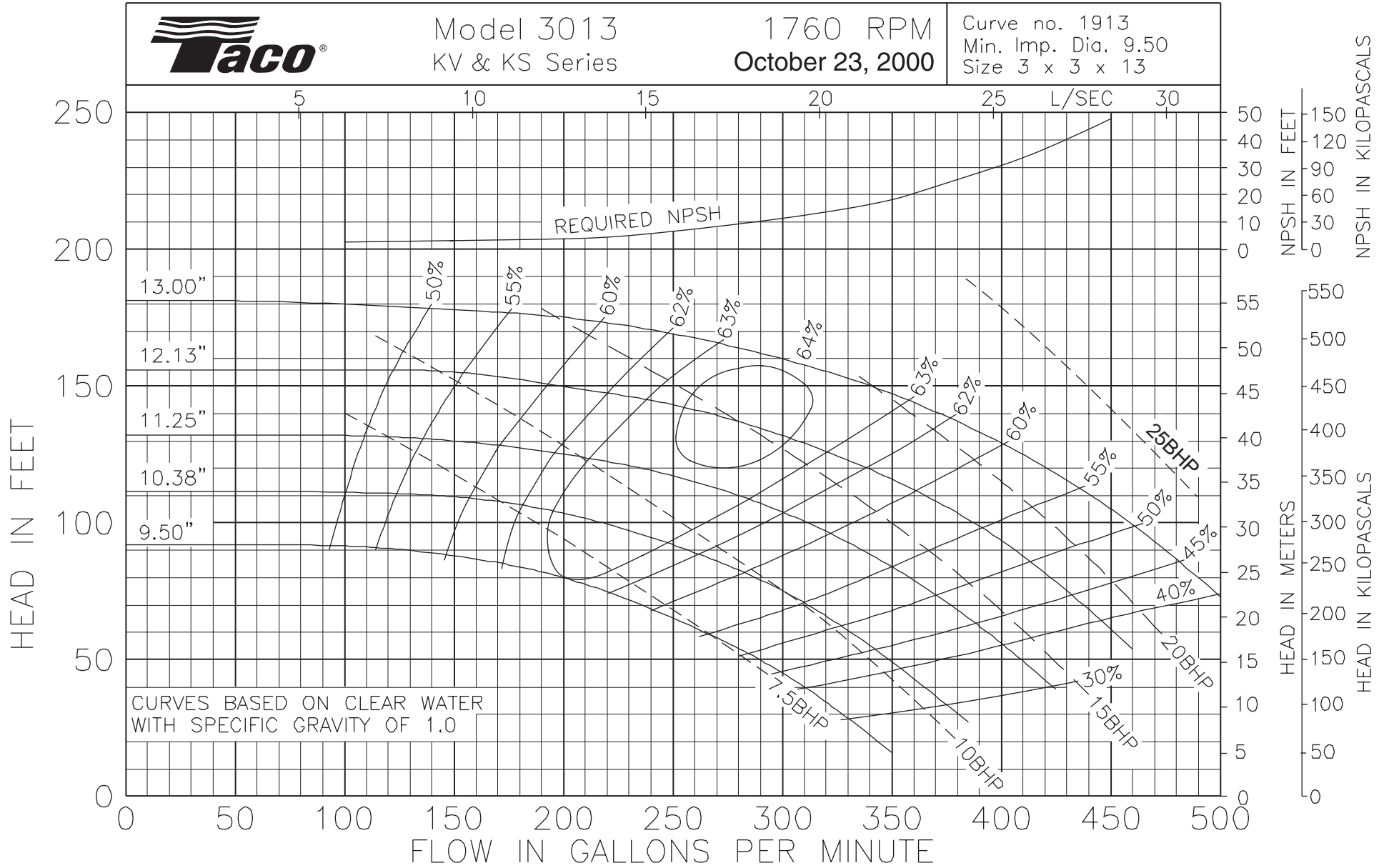


Model 3011
KV & KS Series

1760 RPM
October 23, 2000

Curve no. 1926
Min. Imp. Dia. 8.25
Size 3 x 3 x 11



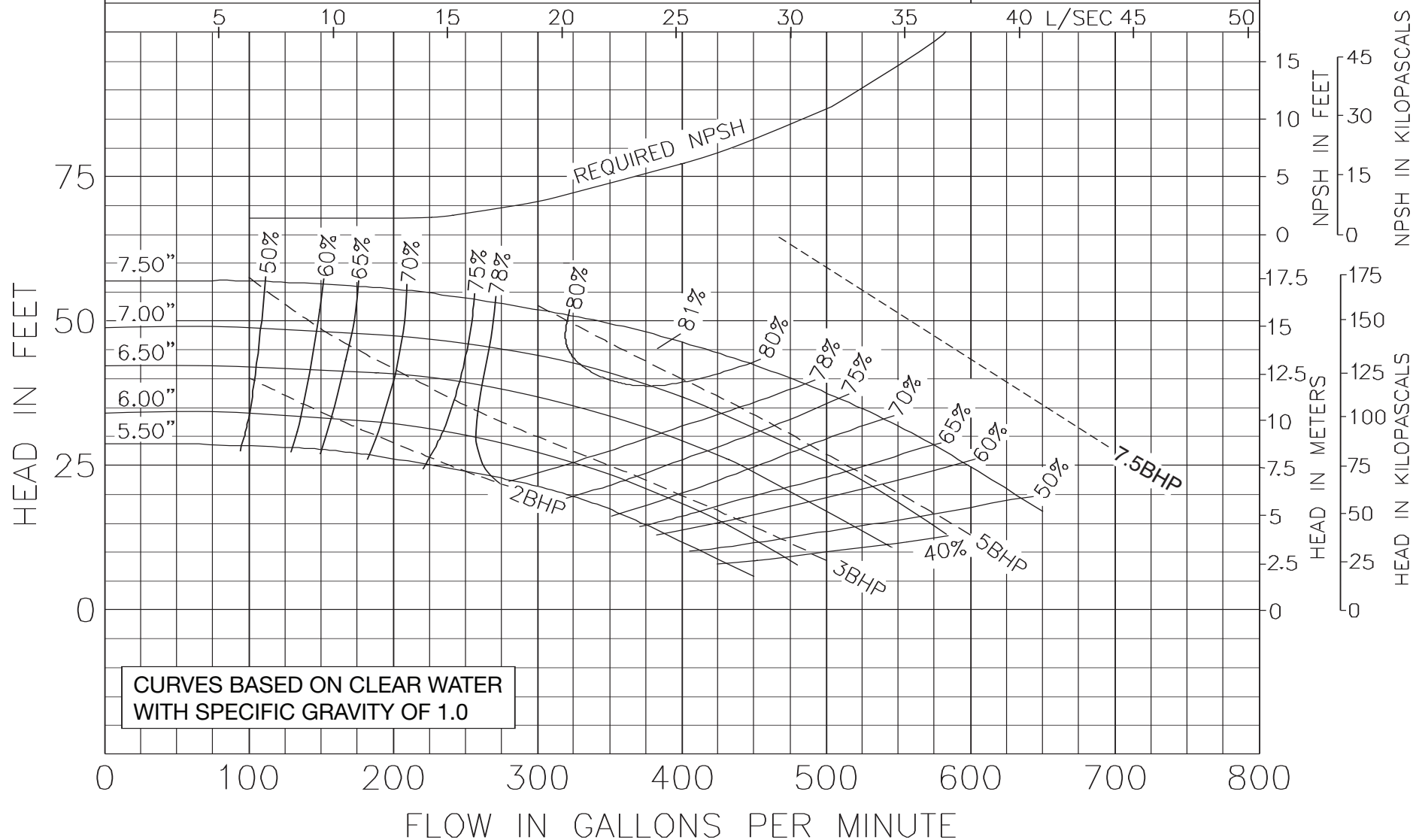




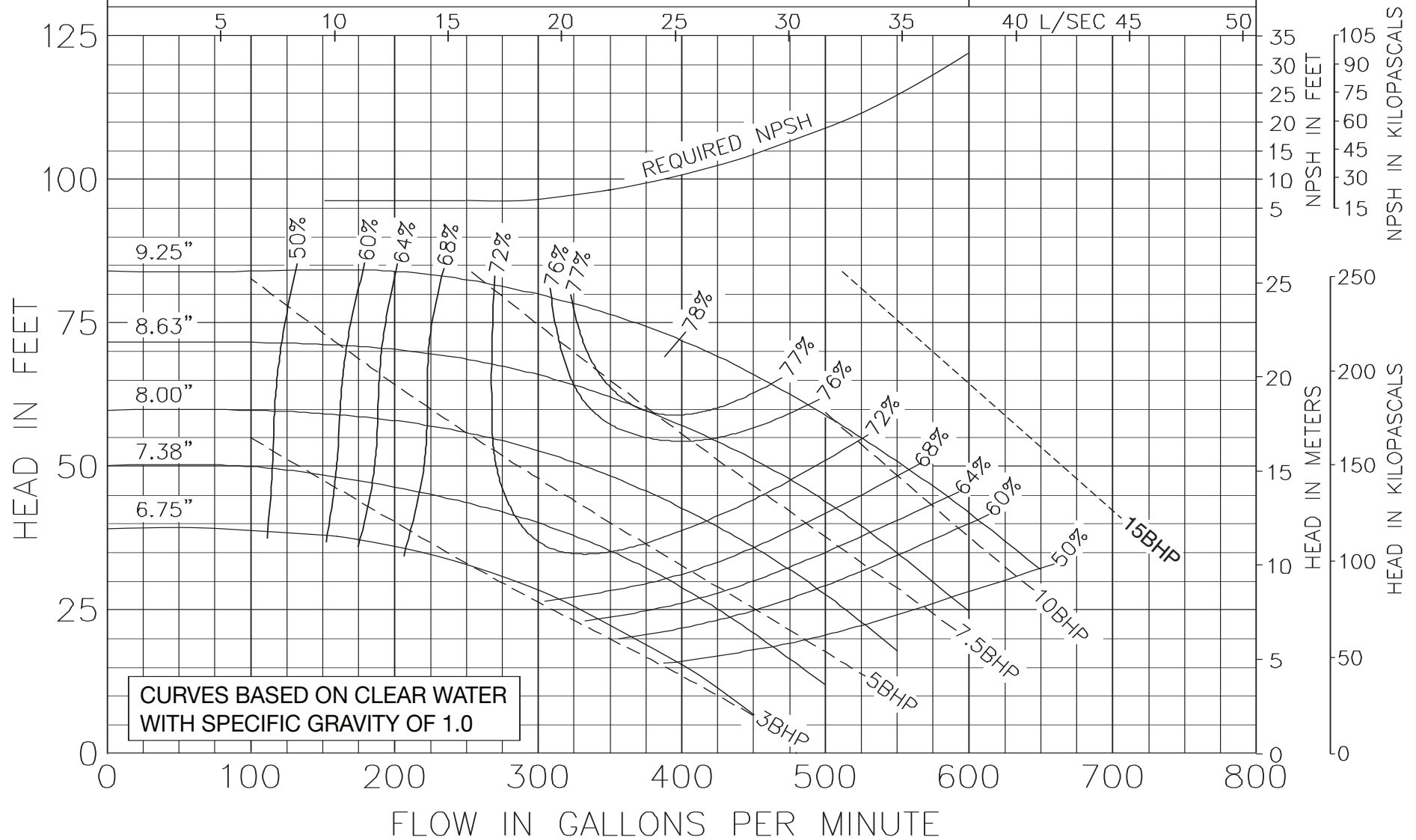
Model 4007
KV & KS Series

1760 RPM
MAY 1, 2010

Curve no. 1943
Min. Imp. Dia. 5.50
Size 4 x 4 x 7



Curve no. 1981
Min. Imp. Dia. 6.75
Size 4 x 4 x 9

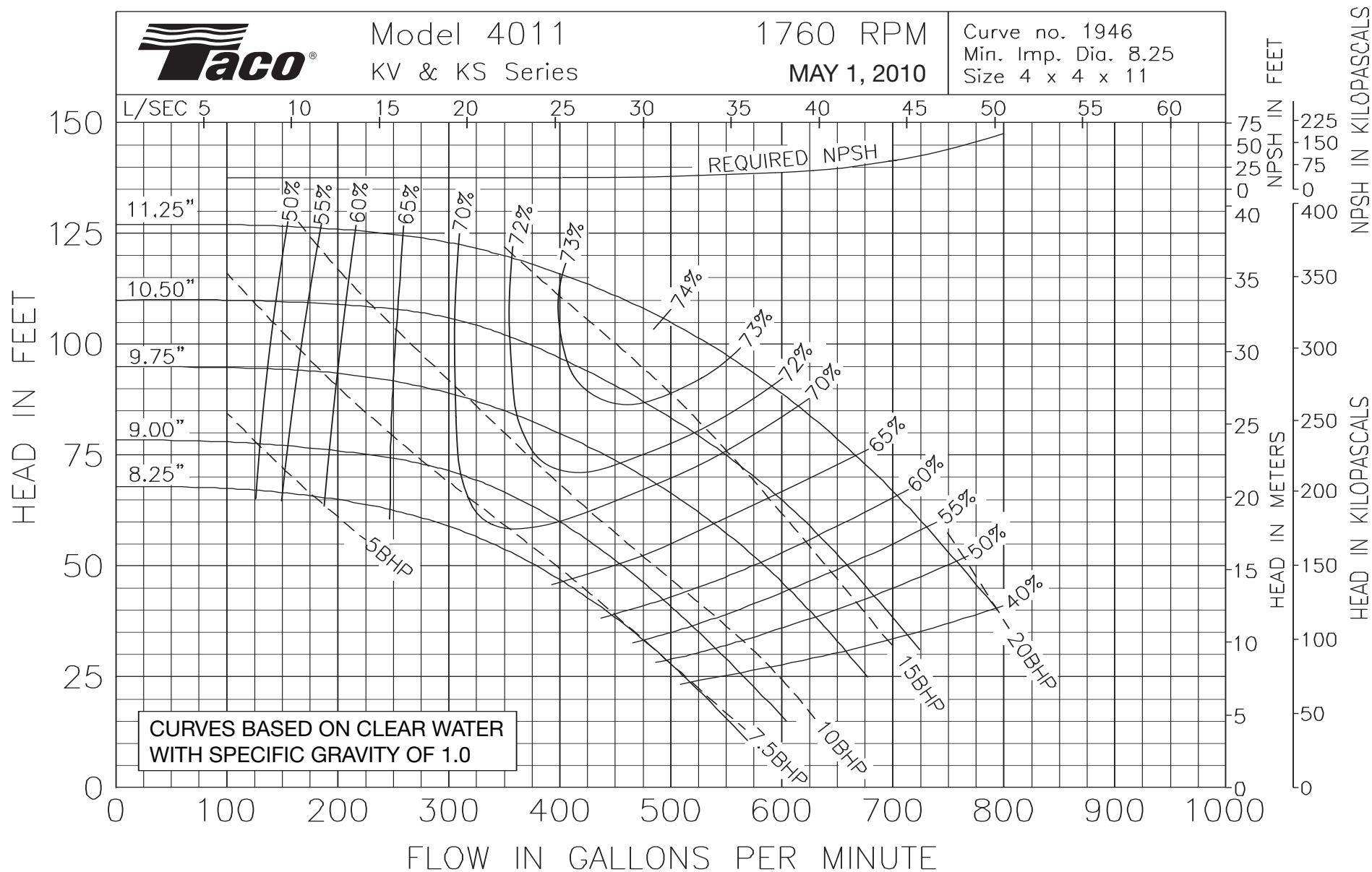




Model 4011
KV & KS Series

1760 RPM
MAY 1, 2010

Curve no. 1946
Min. Imp. Dia. 8.25
Size 4 x 4 x 11

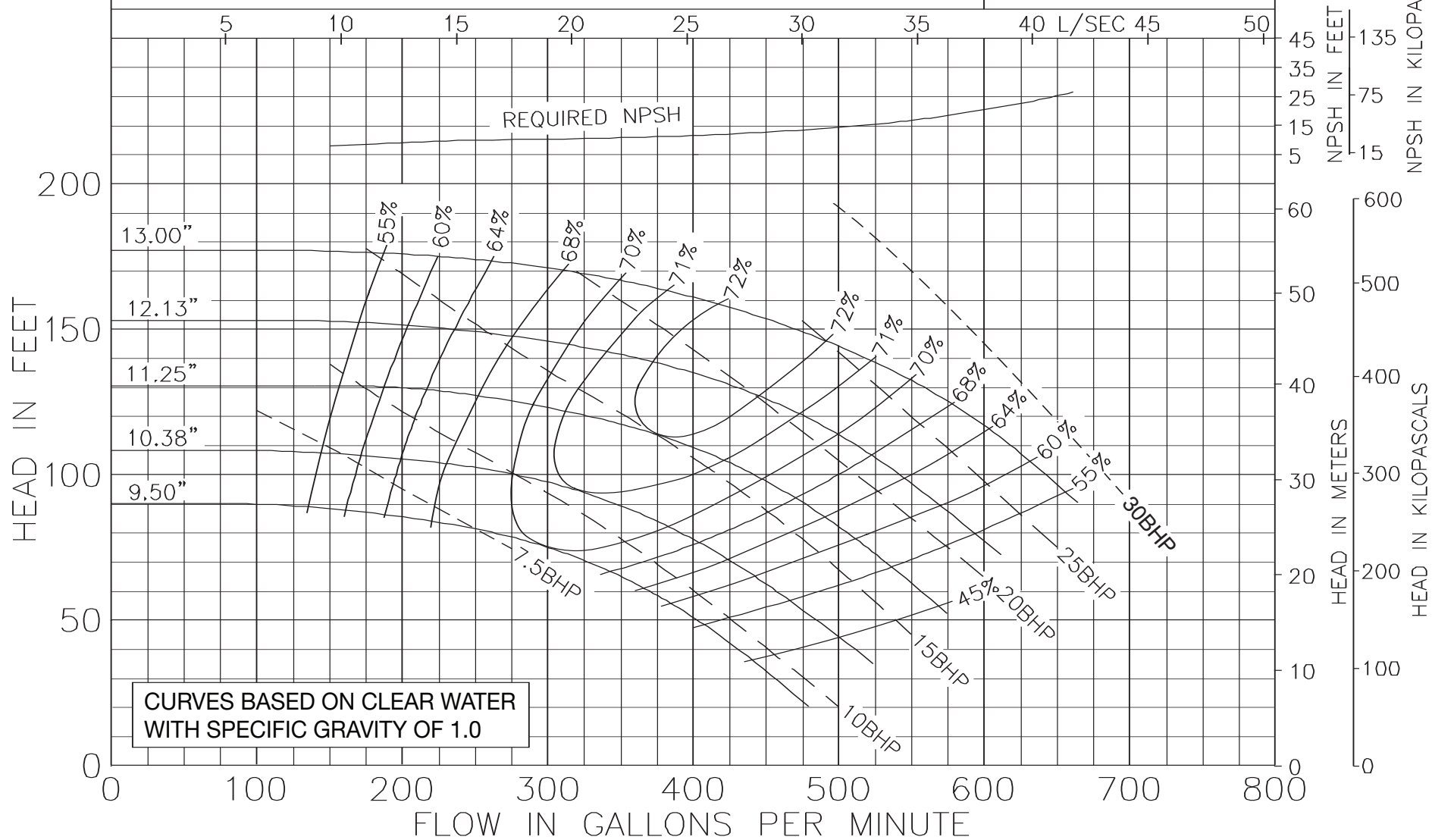




Model 4013
KV & KS Series

1760 RPM
MAY 1, 2010

Curve no. 1916
Min. Imp. Dia. 9,50
Size 4 x 4 x 13

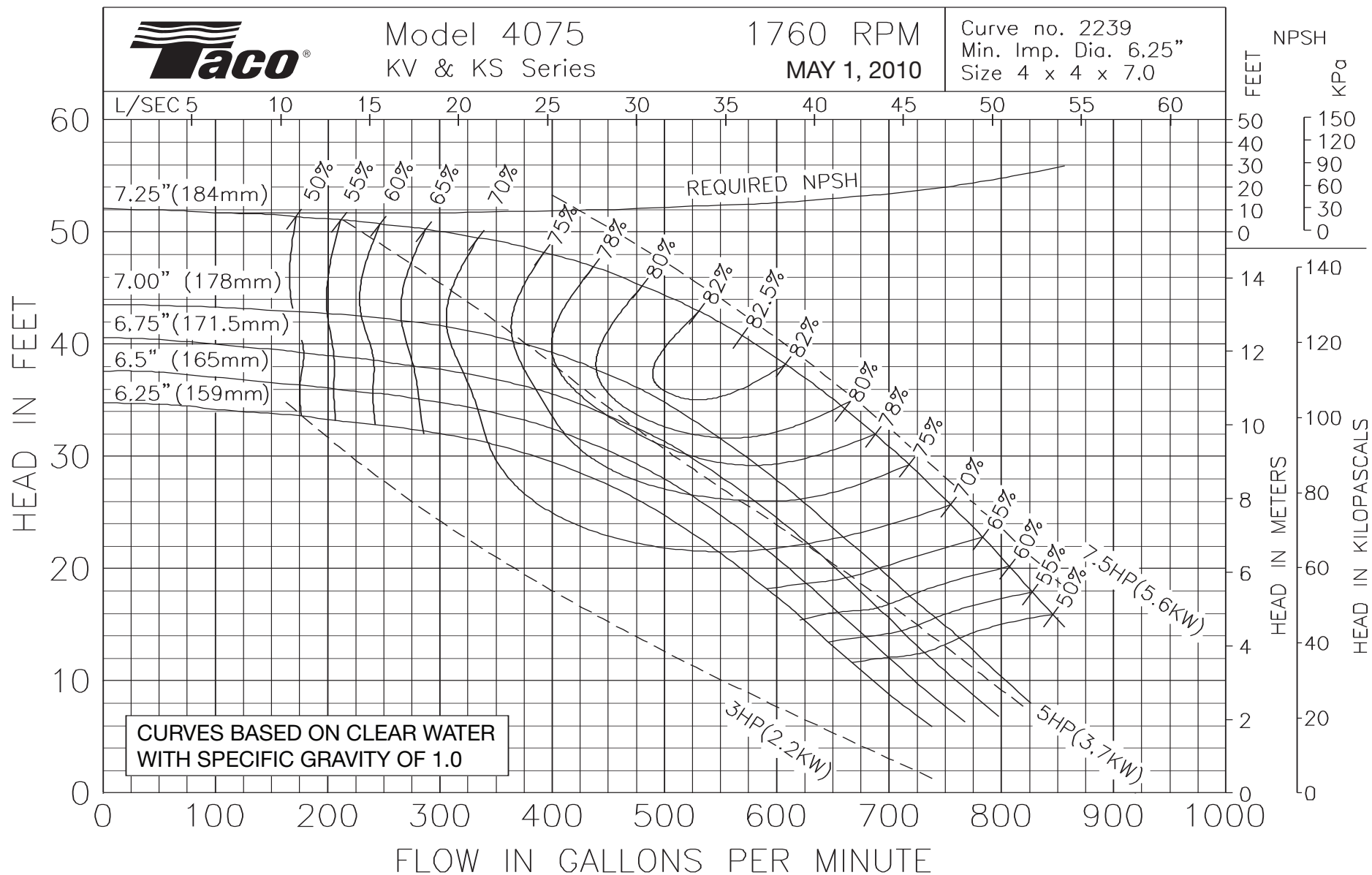




Model 4075
KV & KS Series

1760 RPM
MAY 1, 2010

Curve no. 2239
Min. Imp. Dia. 6.25"
Size 4 x 4 x 7.0

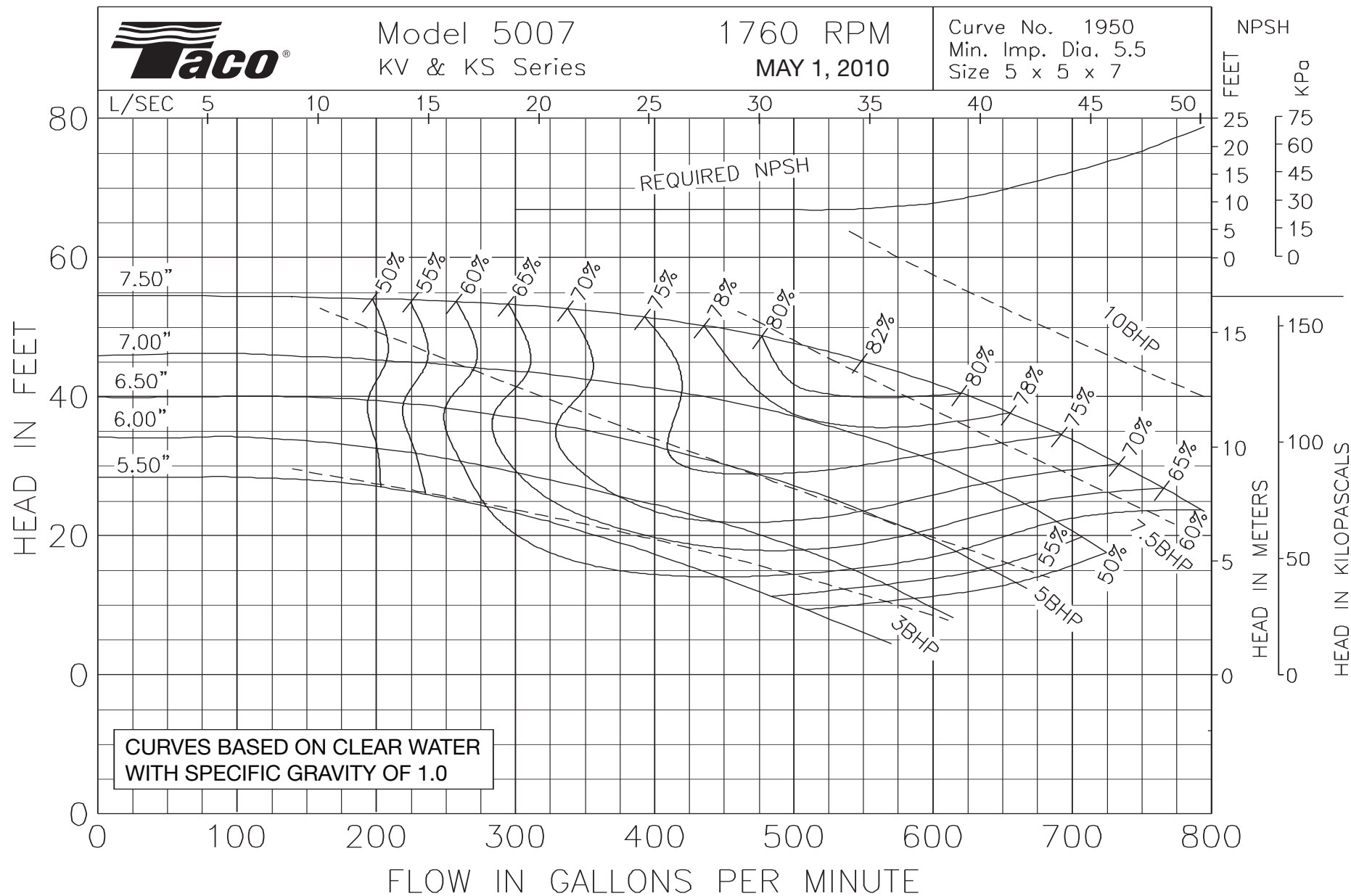




Model 5007
KV & KS Series

1760 RPM
MAY 1, 2010

Curve No. 1950
Min. Imp. Dia. 5.5
Size 5 x 5 x 7

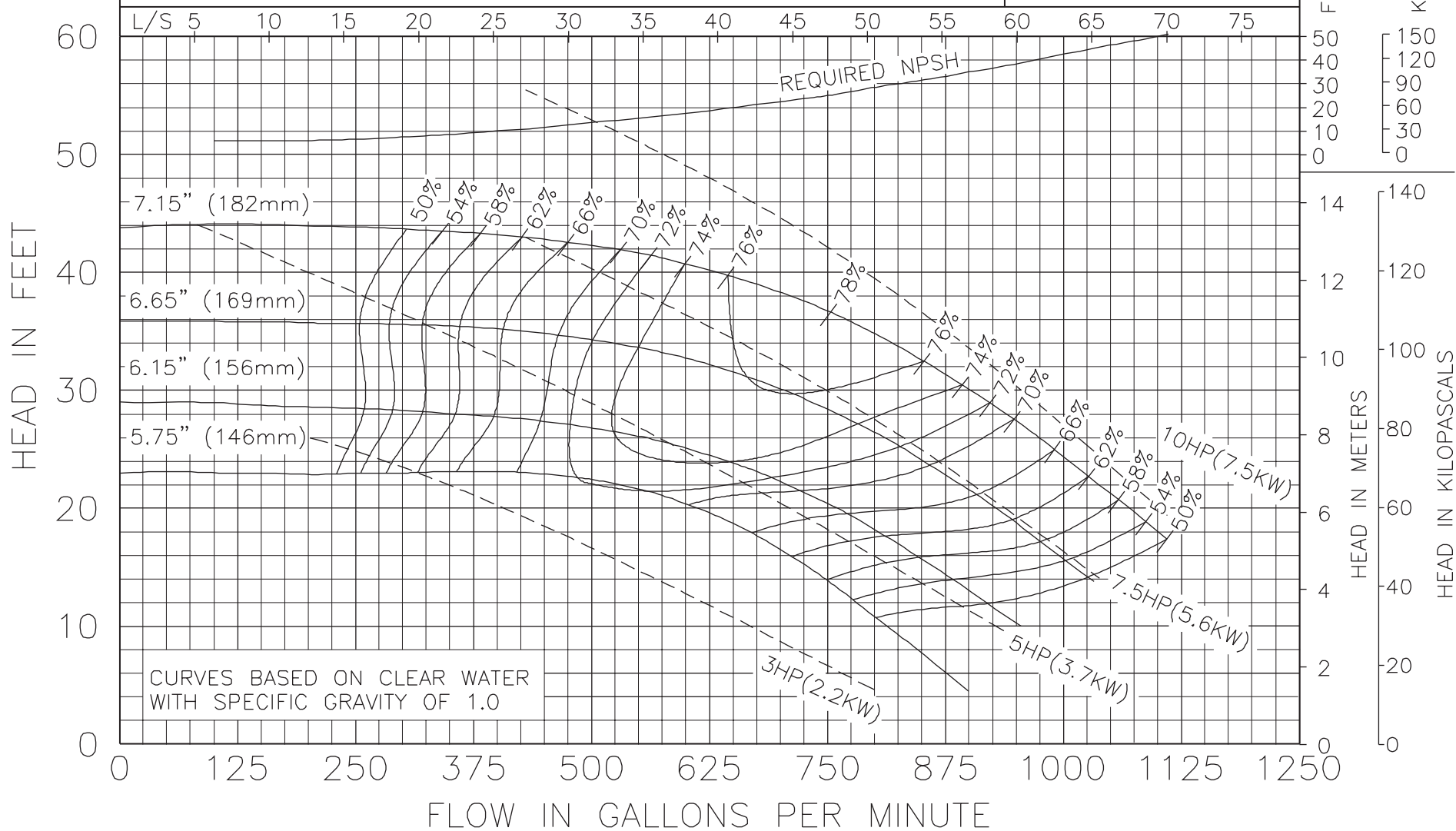




Model 5075
KV & KS Series

1760 RPM
August 31, 2006

Curve no. 2244
Min. Imp. Dia. 5.75"
Size 5 x 5 x 7.0

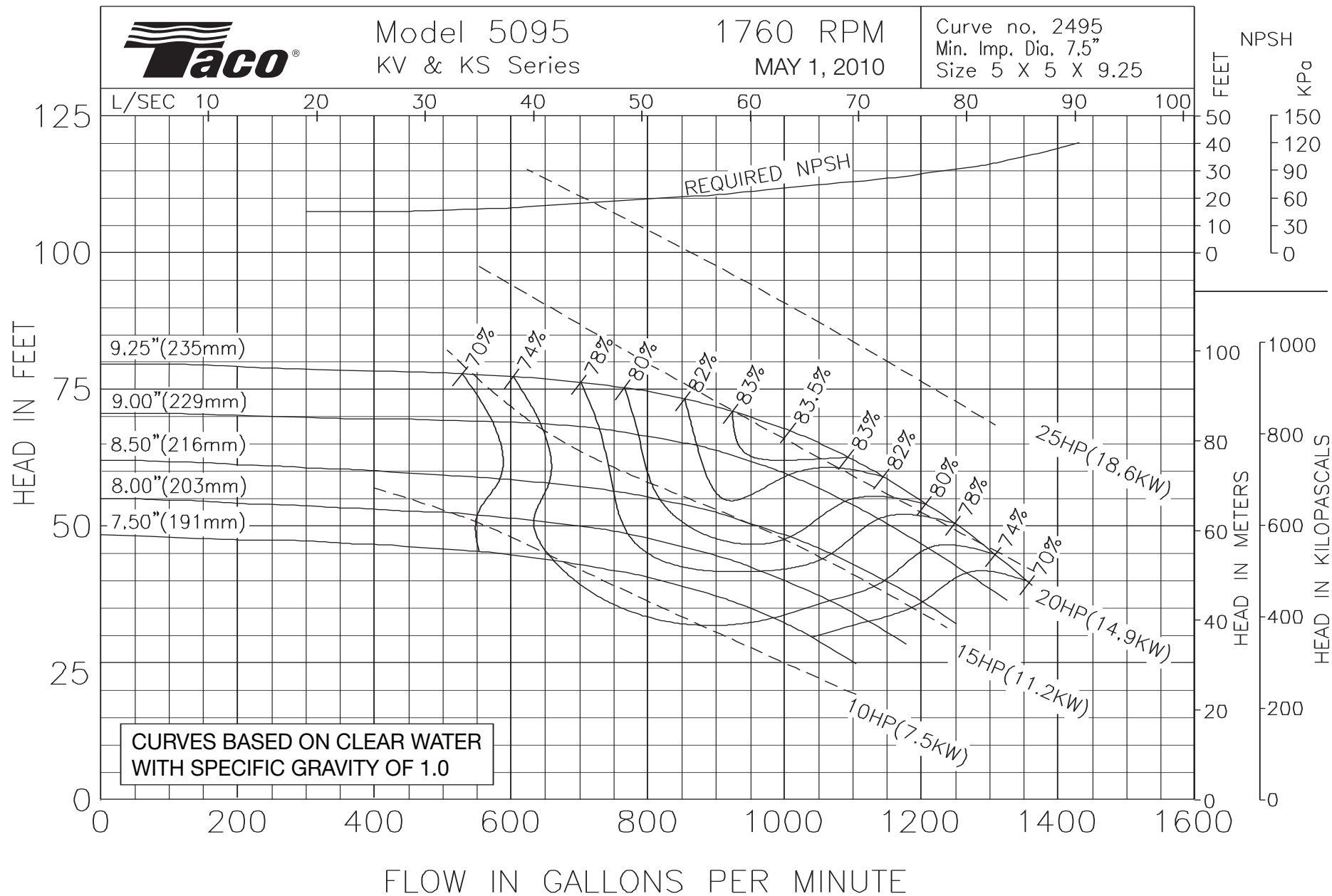




Model 5095
KV & KS Series

1760 RPM
MAY 1, 2010

Curve no. 2495
Min. Imp. Dia. 7.5"
Size 5 X 5 X 9.25

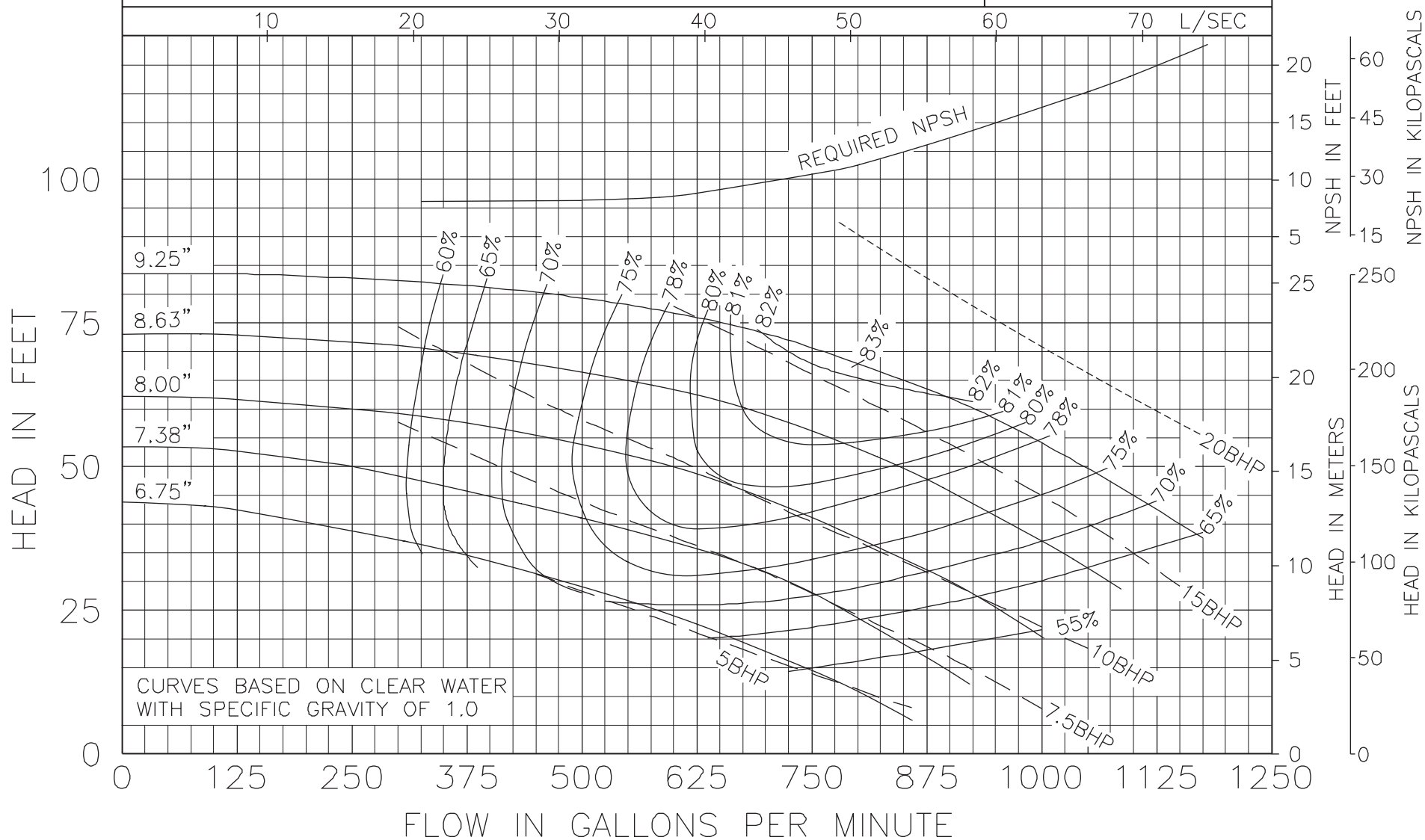


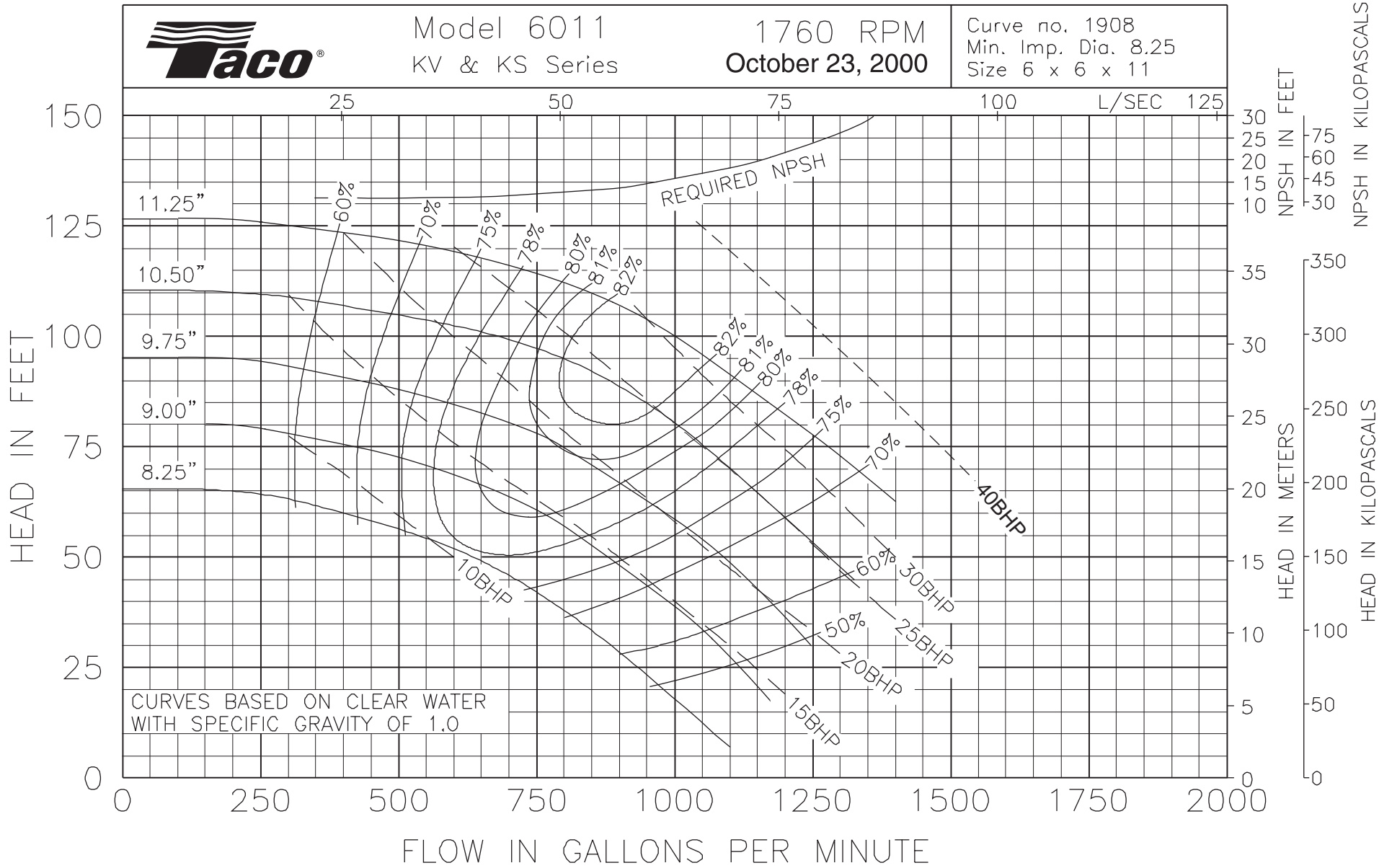


Model 6009
KV & KS Series

1760 RPM
October 23 2000

Curve no. 1905
Min. Imp. Dia. 6.75
Size 6 x 6 x 9



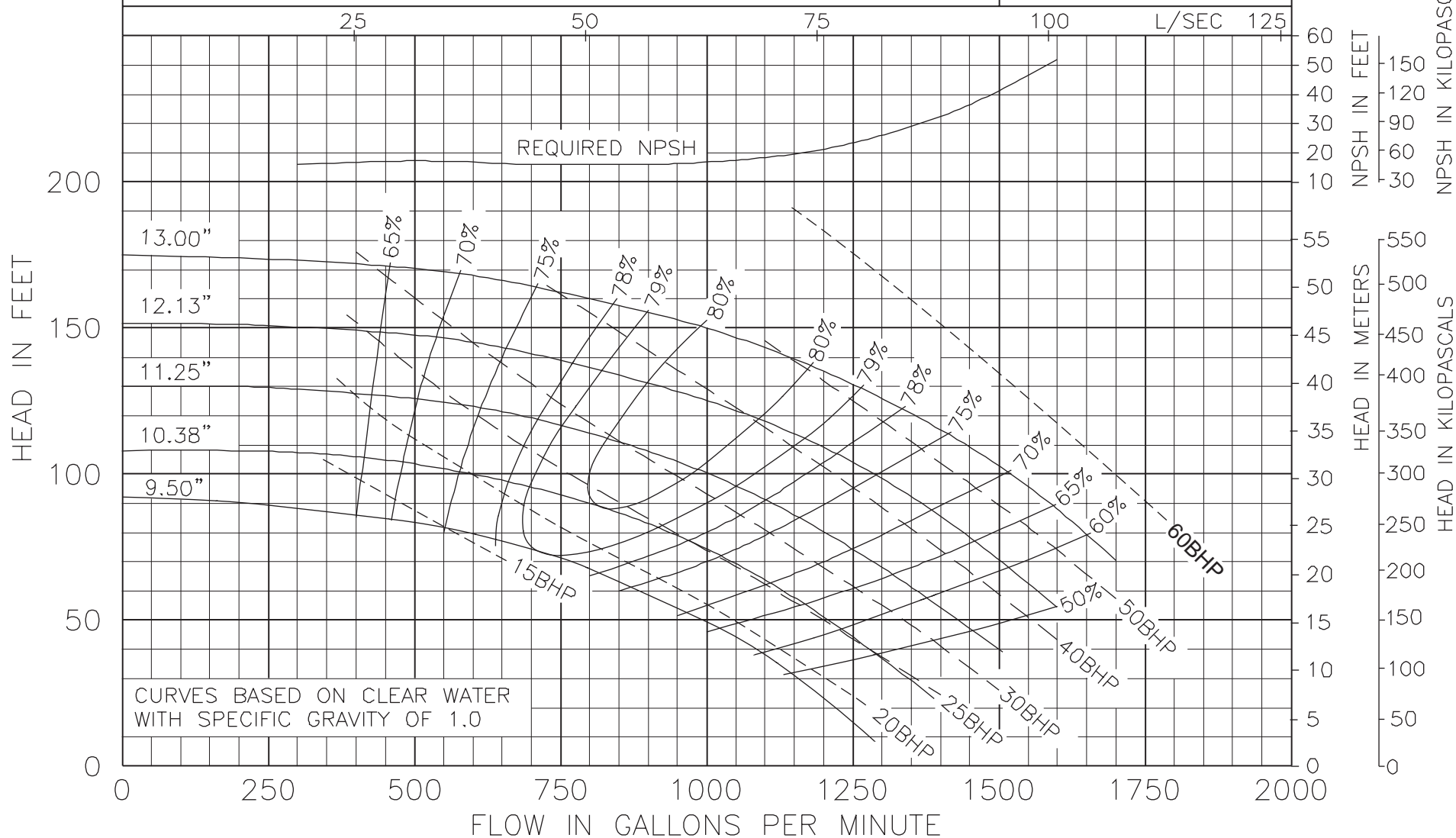




Model 6013
KV & KS Series

1760 RPM
October 23, 2000

Curve no. 1920
Min. Imp. Dia. 9.50"
Size 6 x 6 x 13

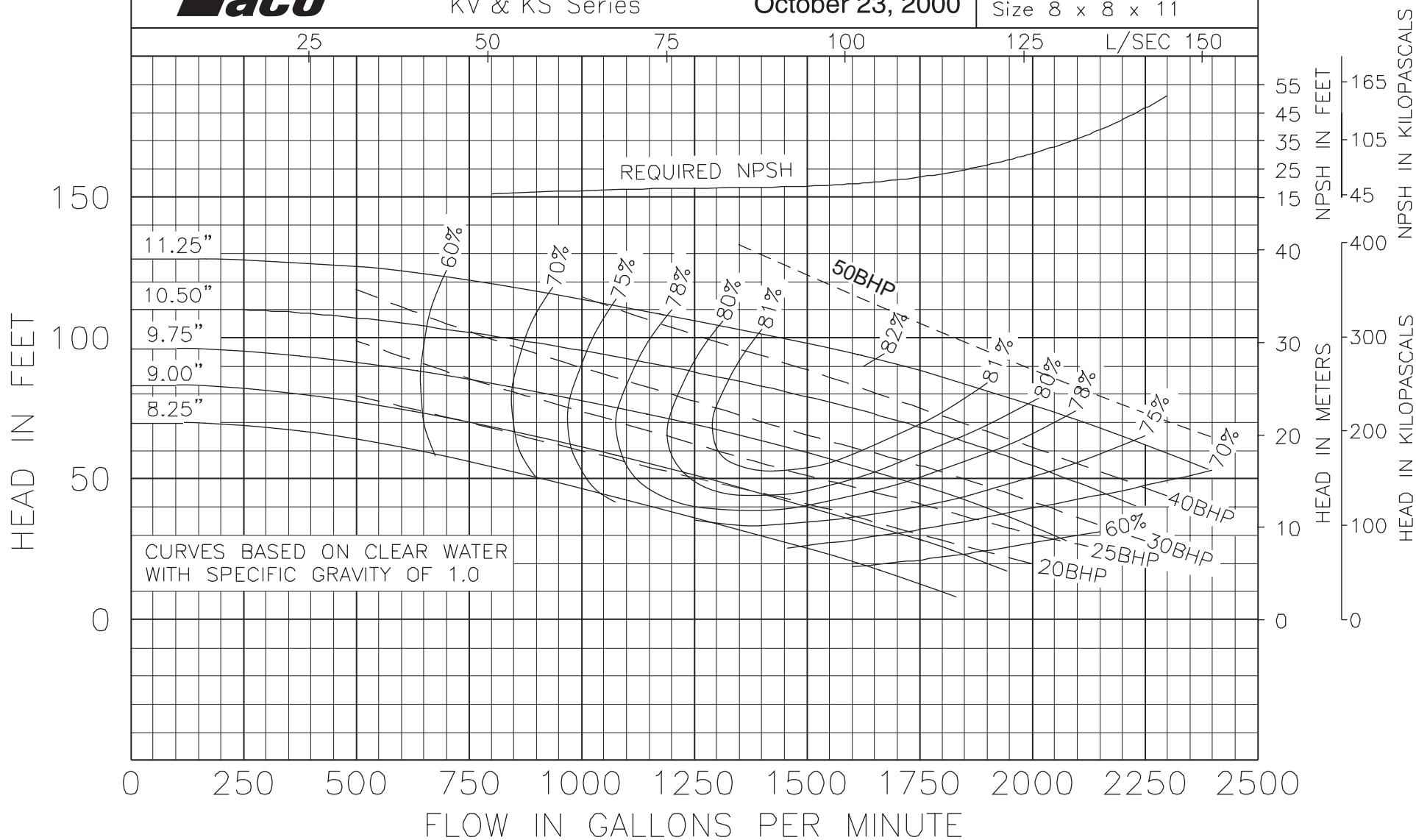


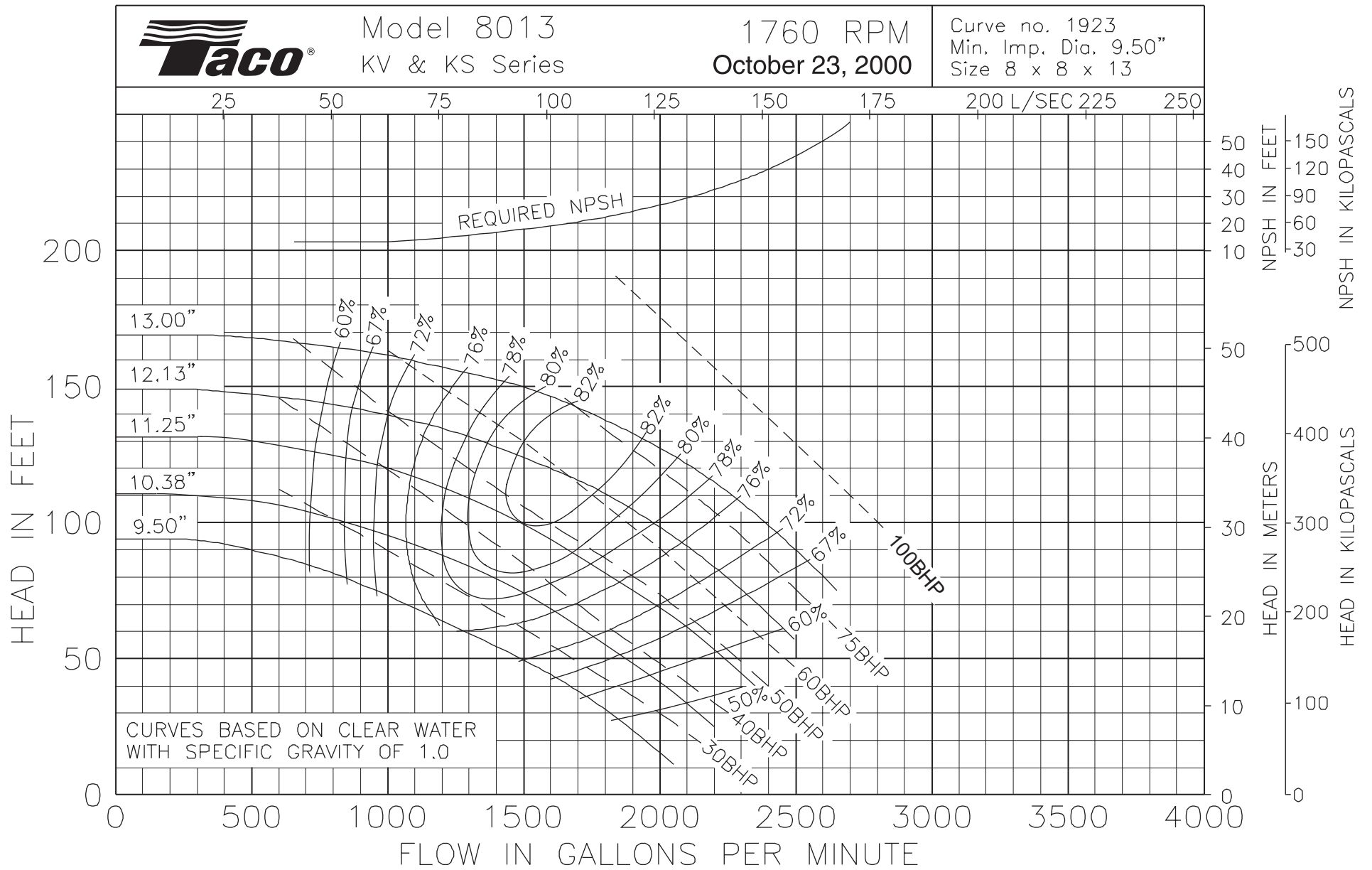


Model 8011
KV & KS Series

1760 RPM
October 23, 2000

Curve no. 1911
Min. Imp. Dia. 8.25
Size 8 x 8 x 11



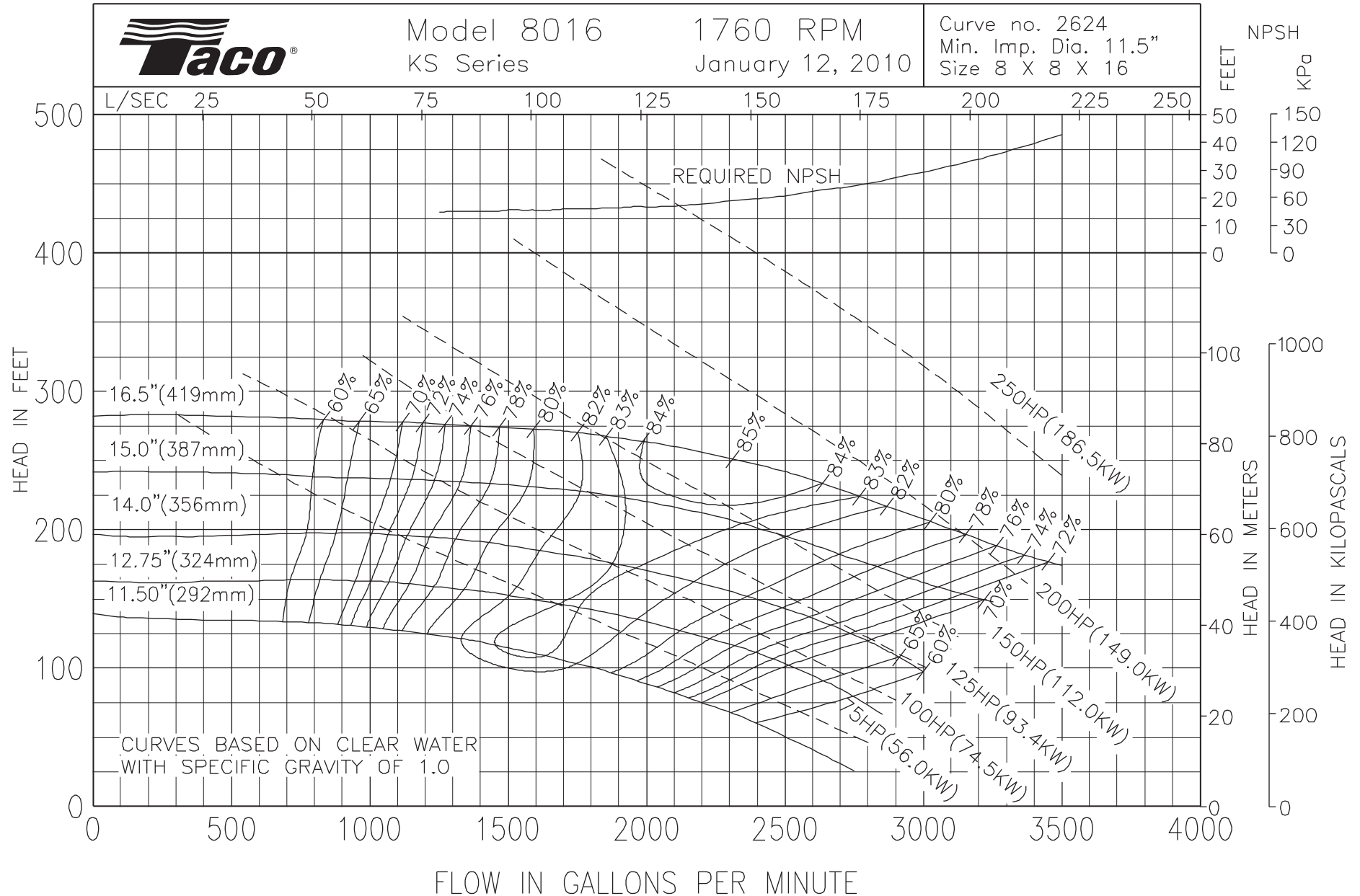




Model 8016
KS Series

1760 RPM
January 12, 2010

Curve no. 2624
Min. Imp. Dia. 11.5"
Size 8 X 8 X 16

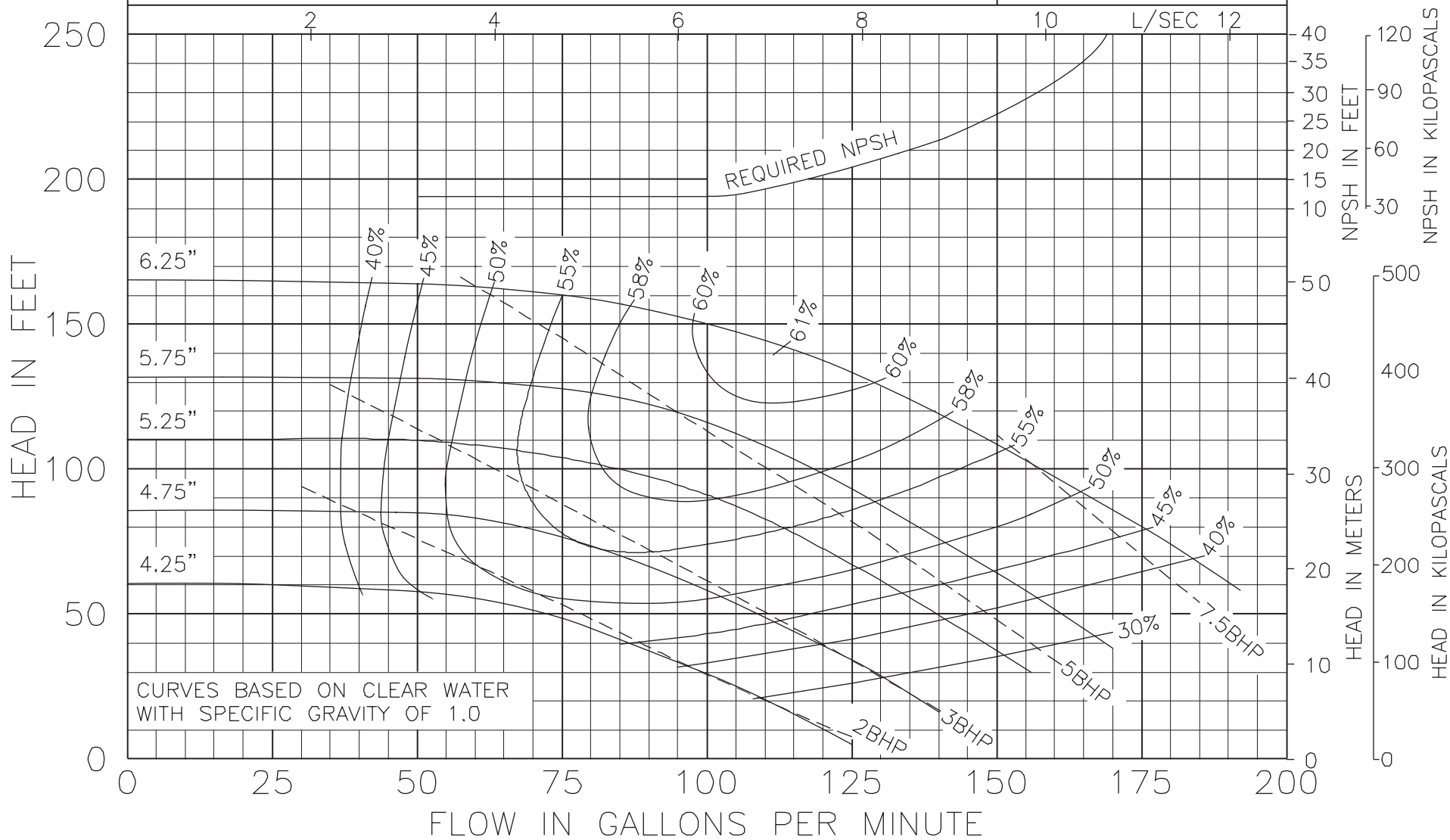




Model 1506
KV & KS Series

3500 RPM
October 23, 2000

Curve no. 1936
Min. Imp. Dia. 4.25
Size 1 1/2 x 1 1/2 x 6

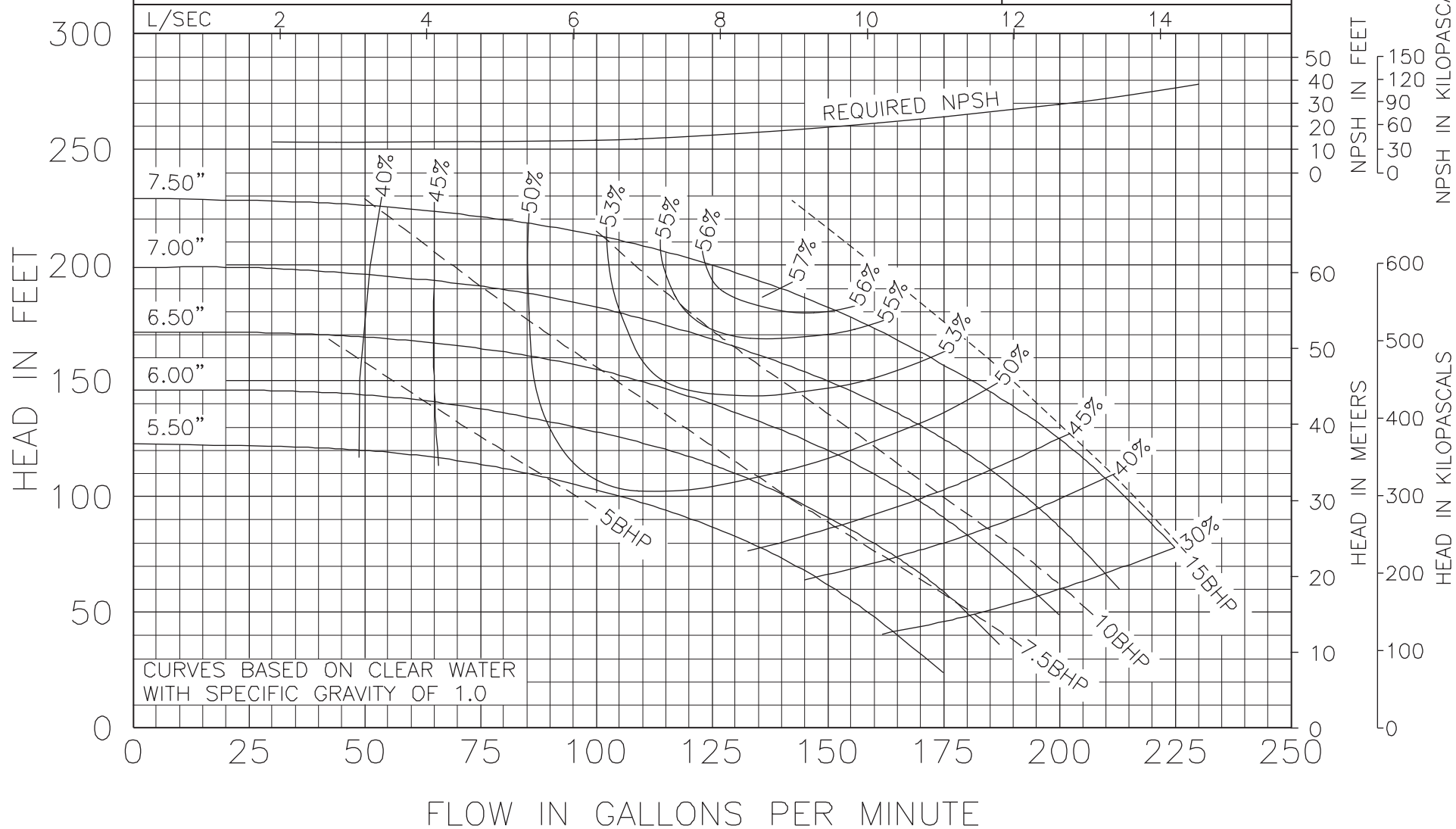


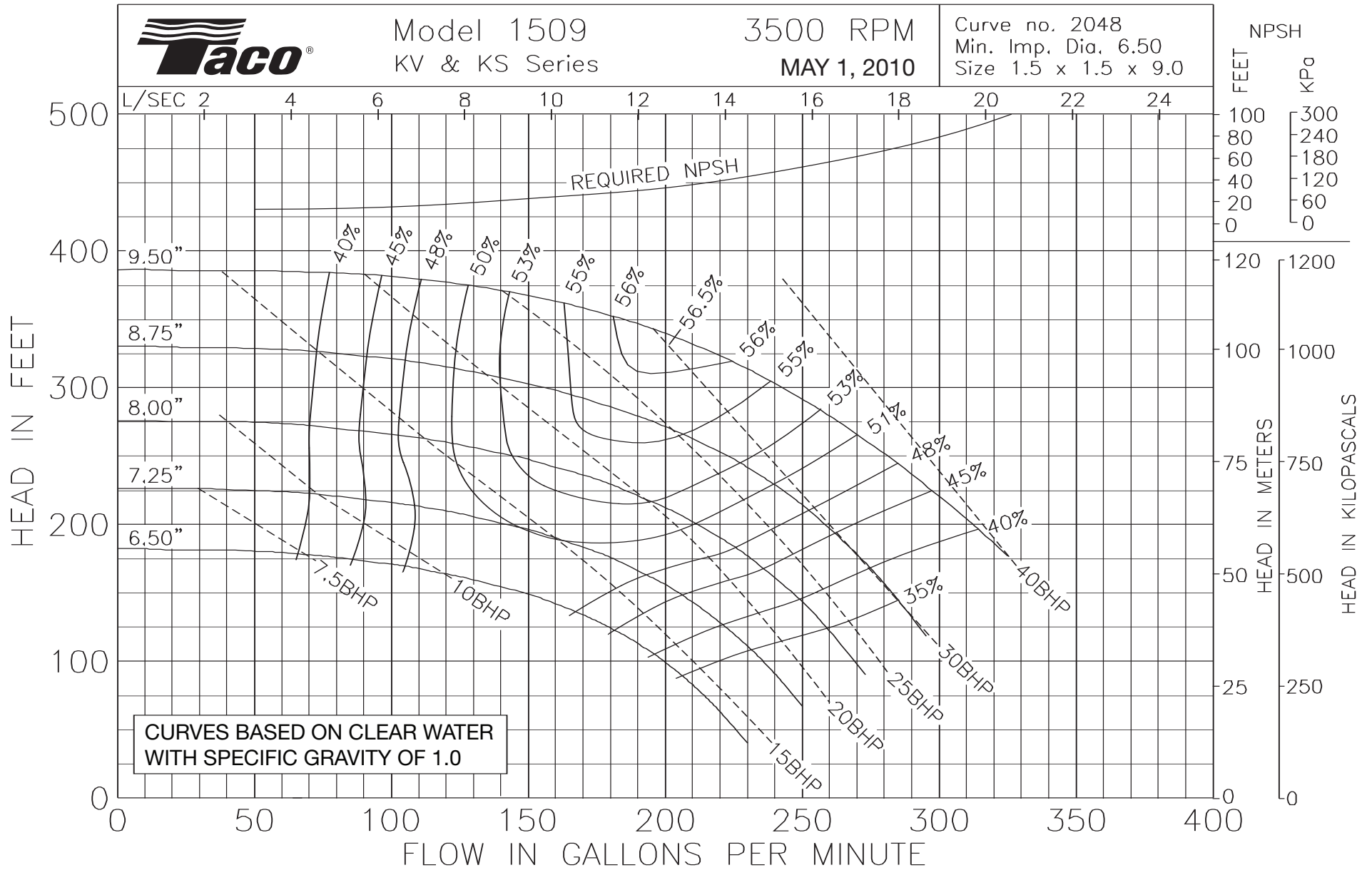


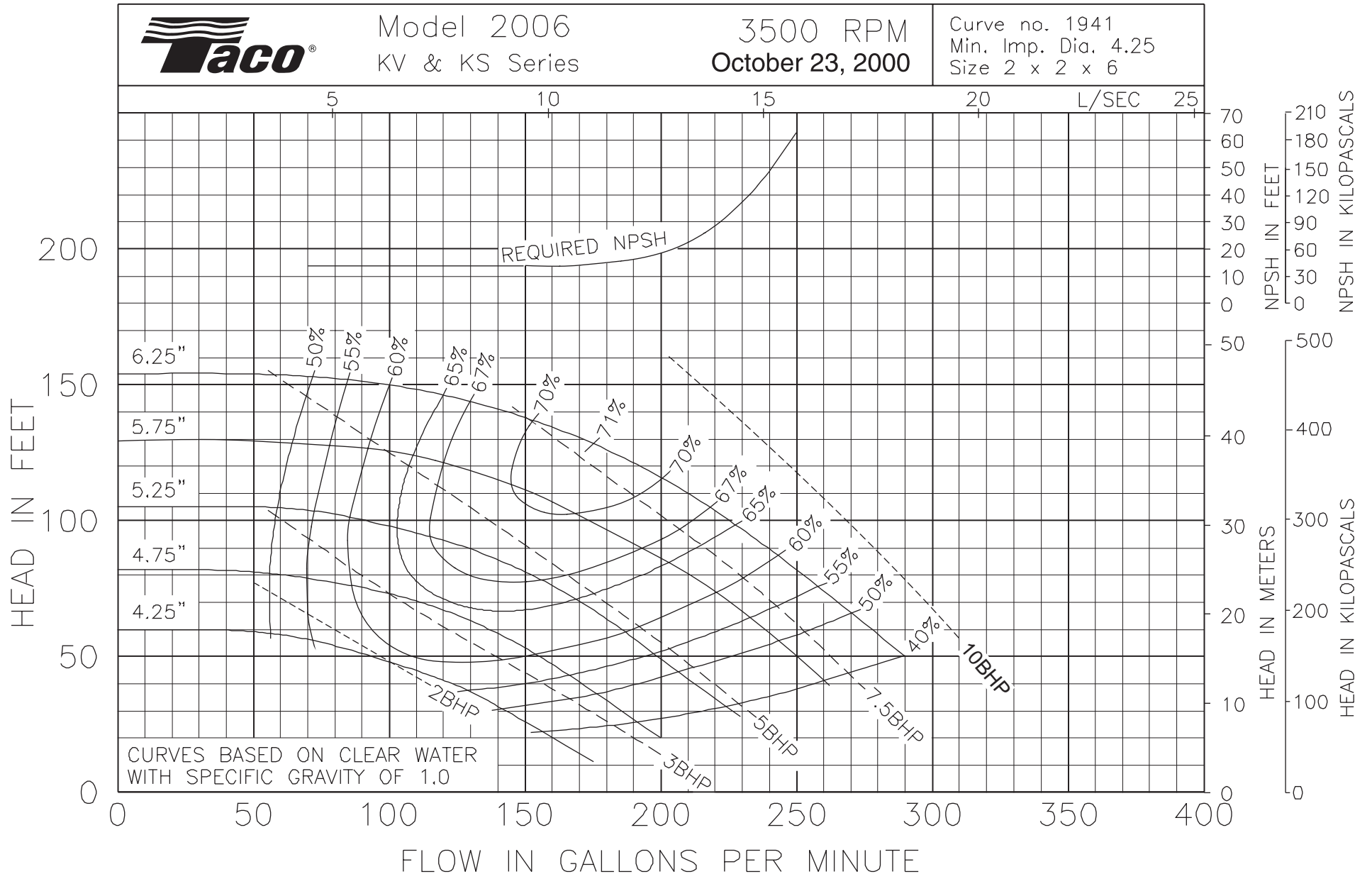
Model 1507
KV & KS Series

3500 RPM
August 31, 2006

Curve no. 1972
Imp. Dia. 5.50
Size 1 1/2 x 1 1/2 x 7





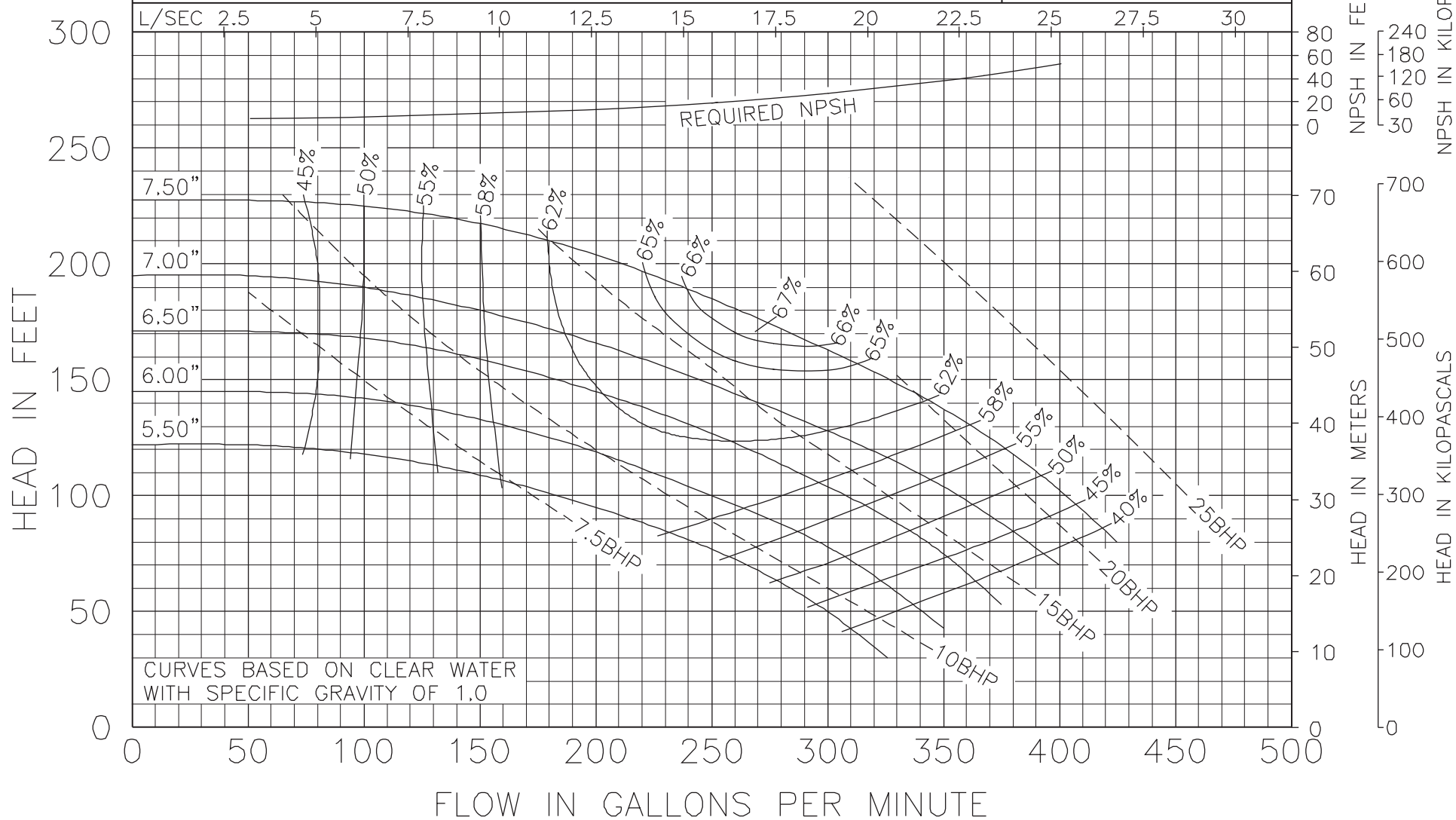




Model 2007
KV & KS Series

3500 RPM
AUGUST 31, 2006

Curve no. 1976
Min. Imp. Dia. 5.50
Size 2 x 2 x 7

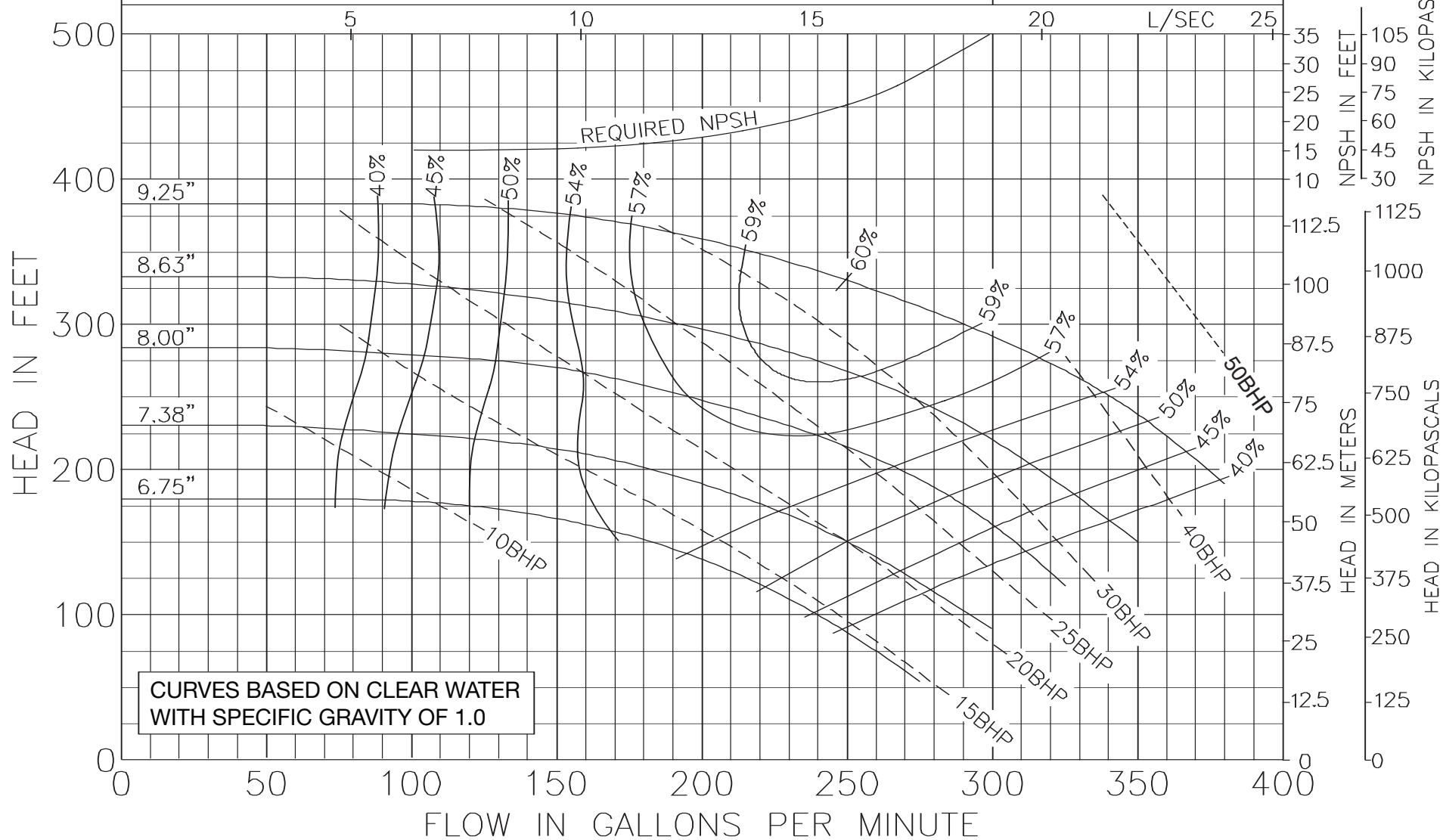


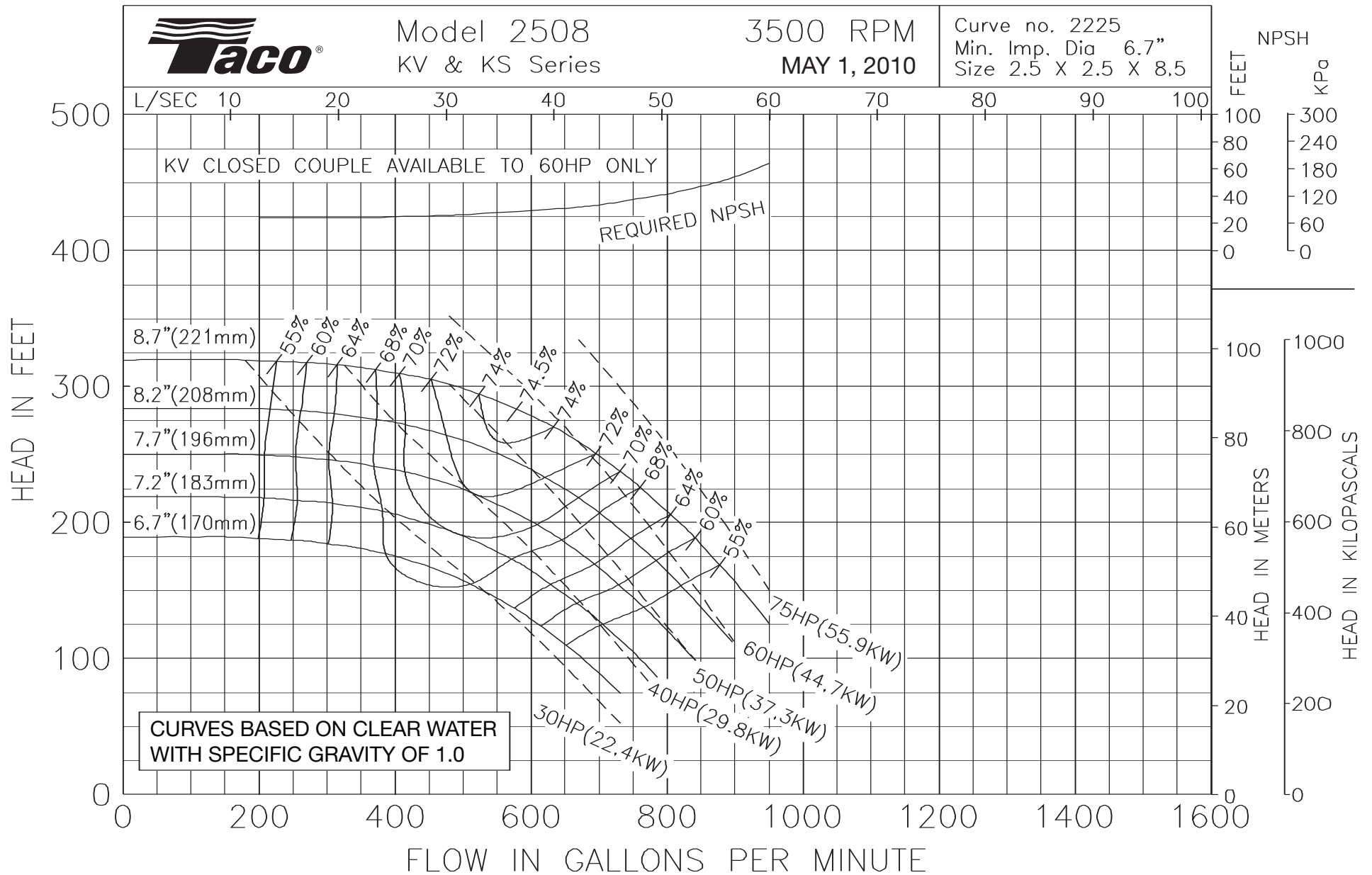


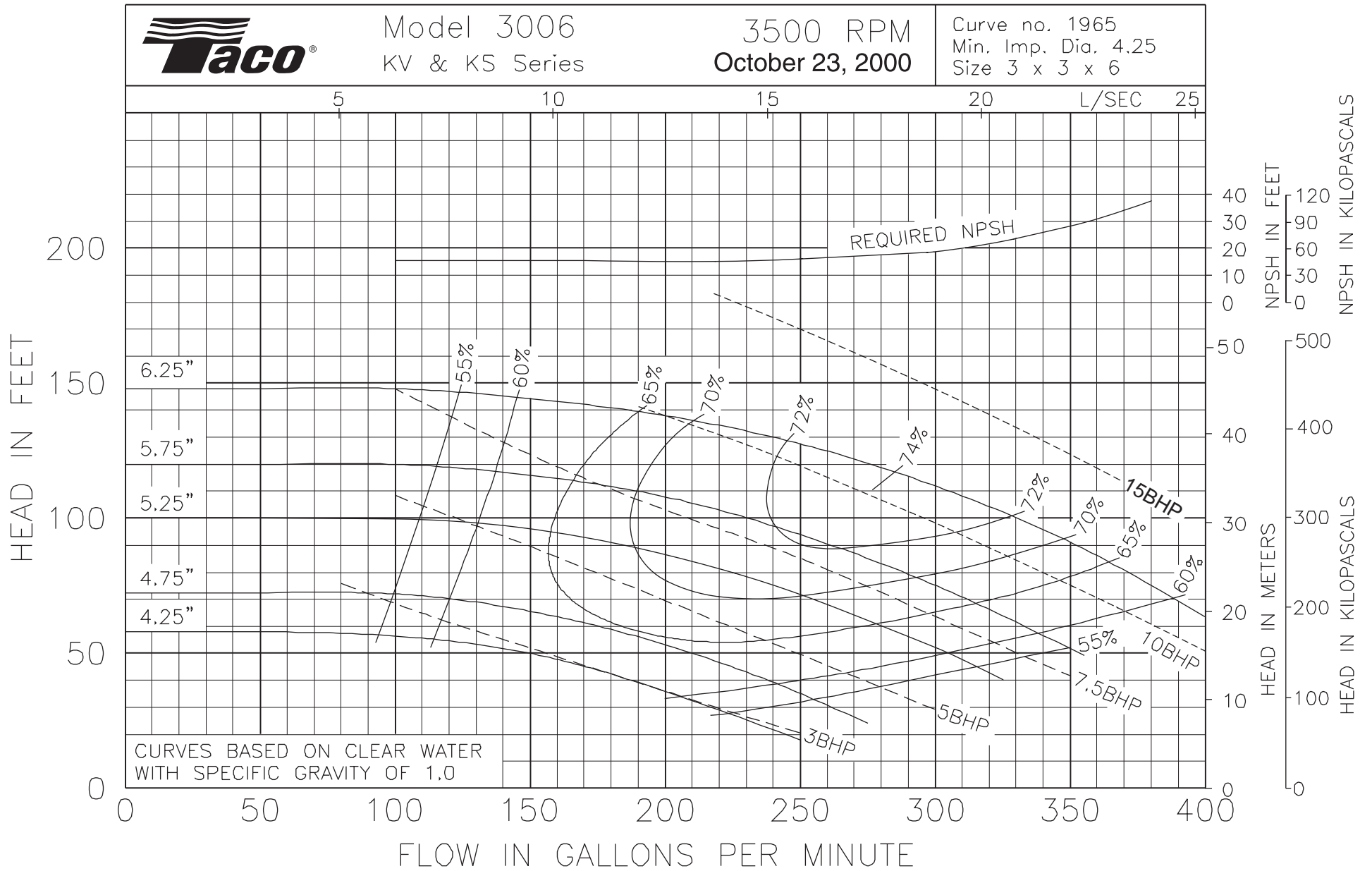
Model 2009
KV & KS Series

3500 RPM
MAY 1, 2010

Curve no. 1954
Min. Imp. Dia. 6.75
Size 2 x 2 x 9





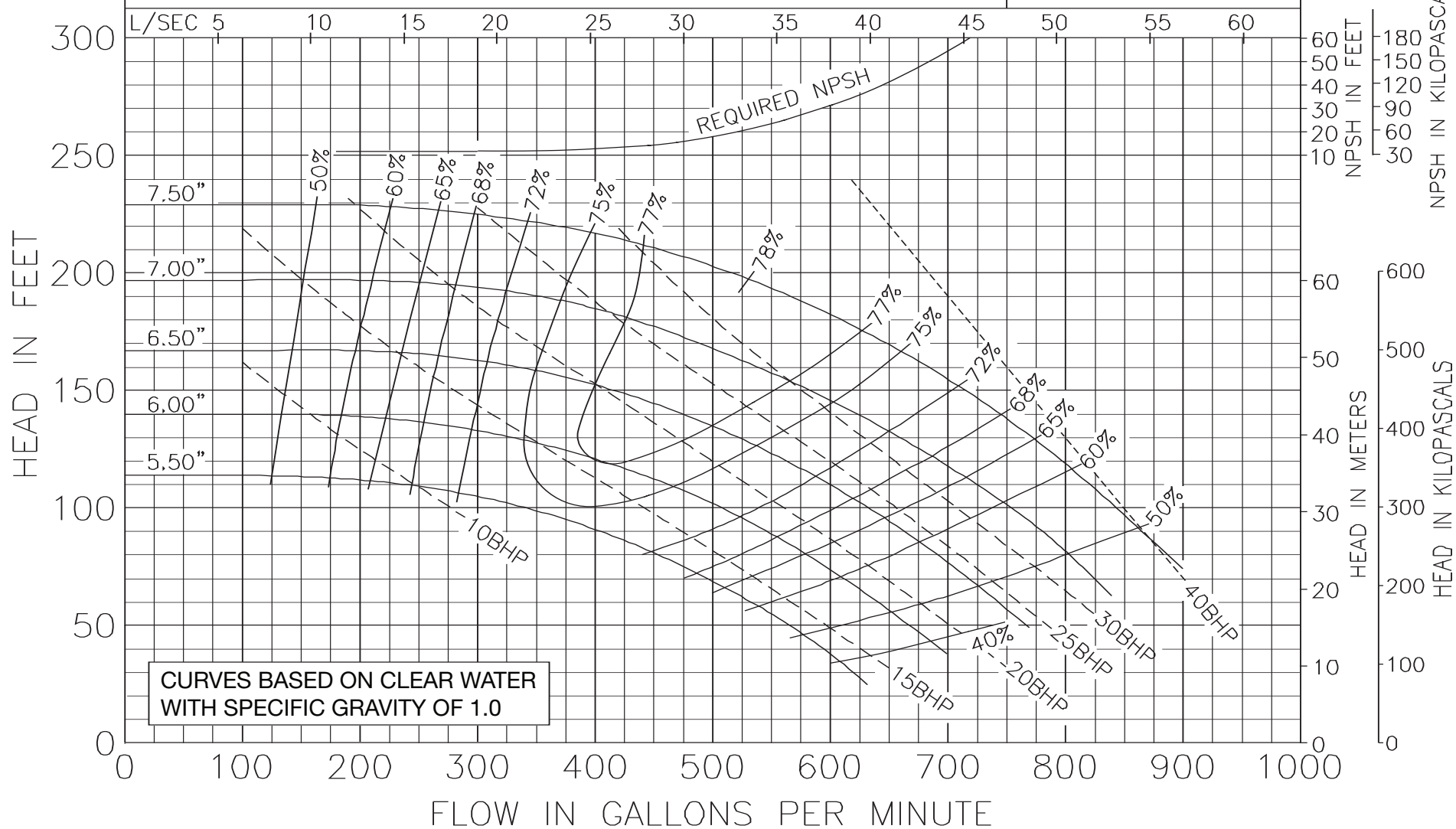




Model 3007
KV & KS Series

3500 RPM
MAY 1, 2010

Curve no. 1968
Imp. Dia. 5.50
Size 3 x 3 x 7

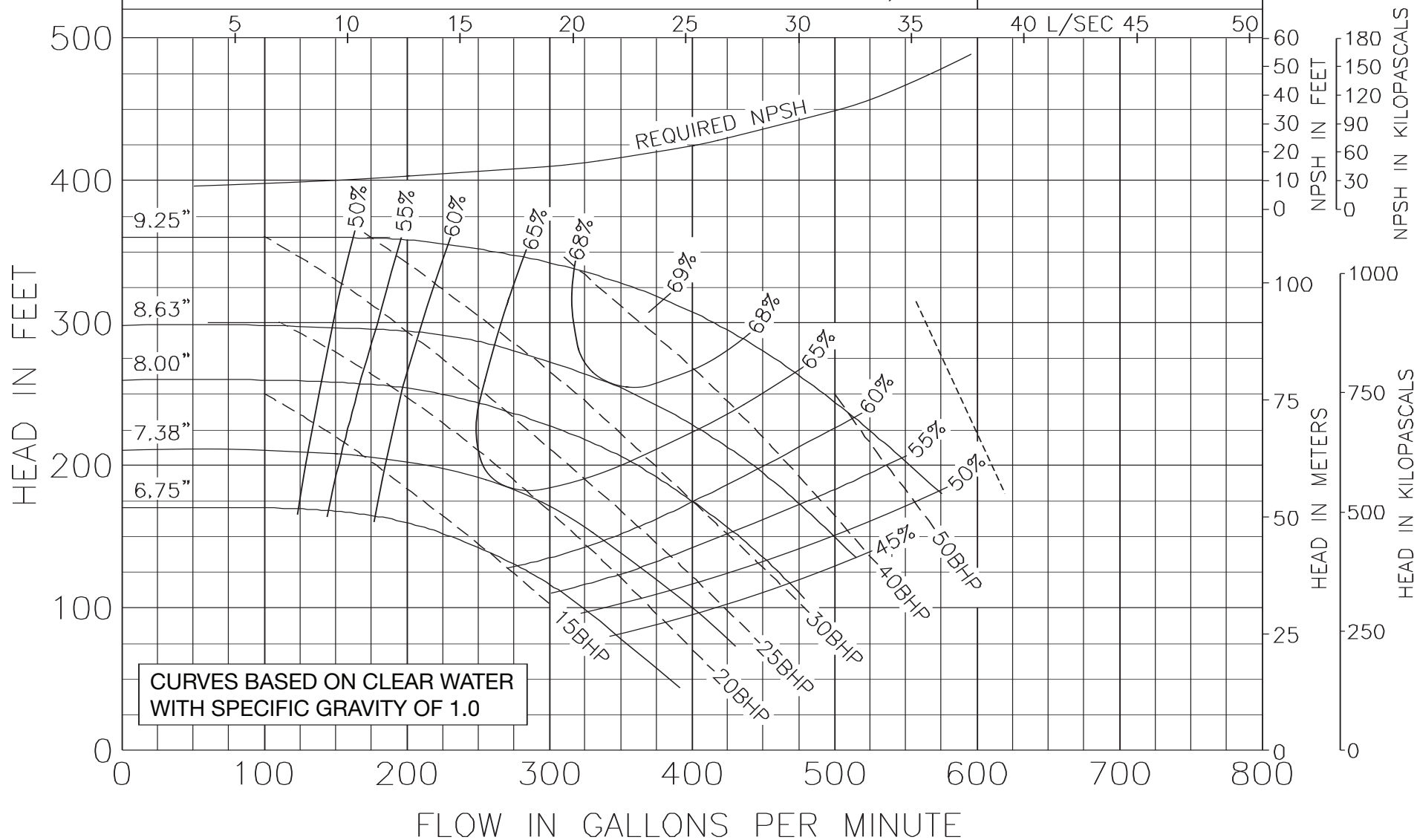




Model 3009
KV & KS Series

3500 RPM
MAY 1, 2010

Curve no. 1961
Min. Imp. Dia. 6.75
Size 3 x 3 x 9

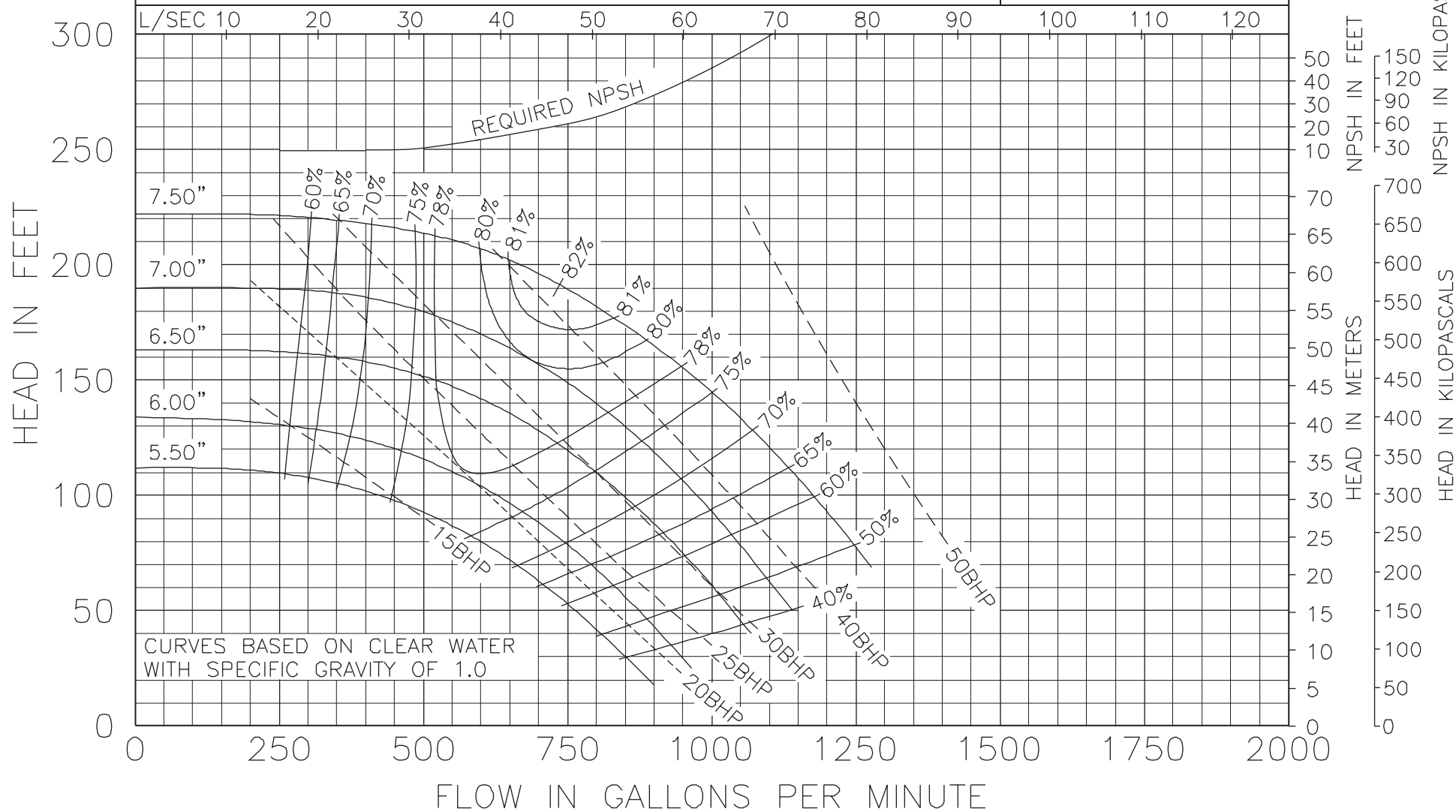




Model 4007
KV & KS Series

3500 RPM
August 31, 2006

Curve no. 1944
Min. Imp. Dia. 5.50
Size 4 x 4 x 7

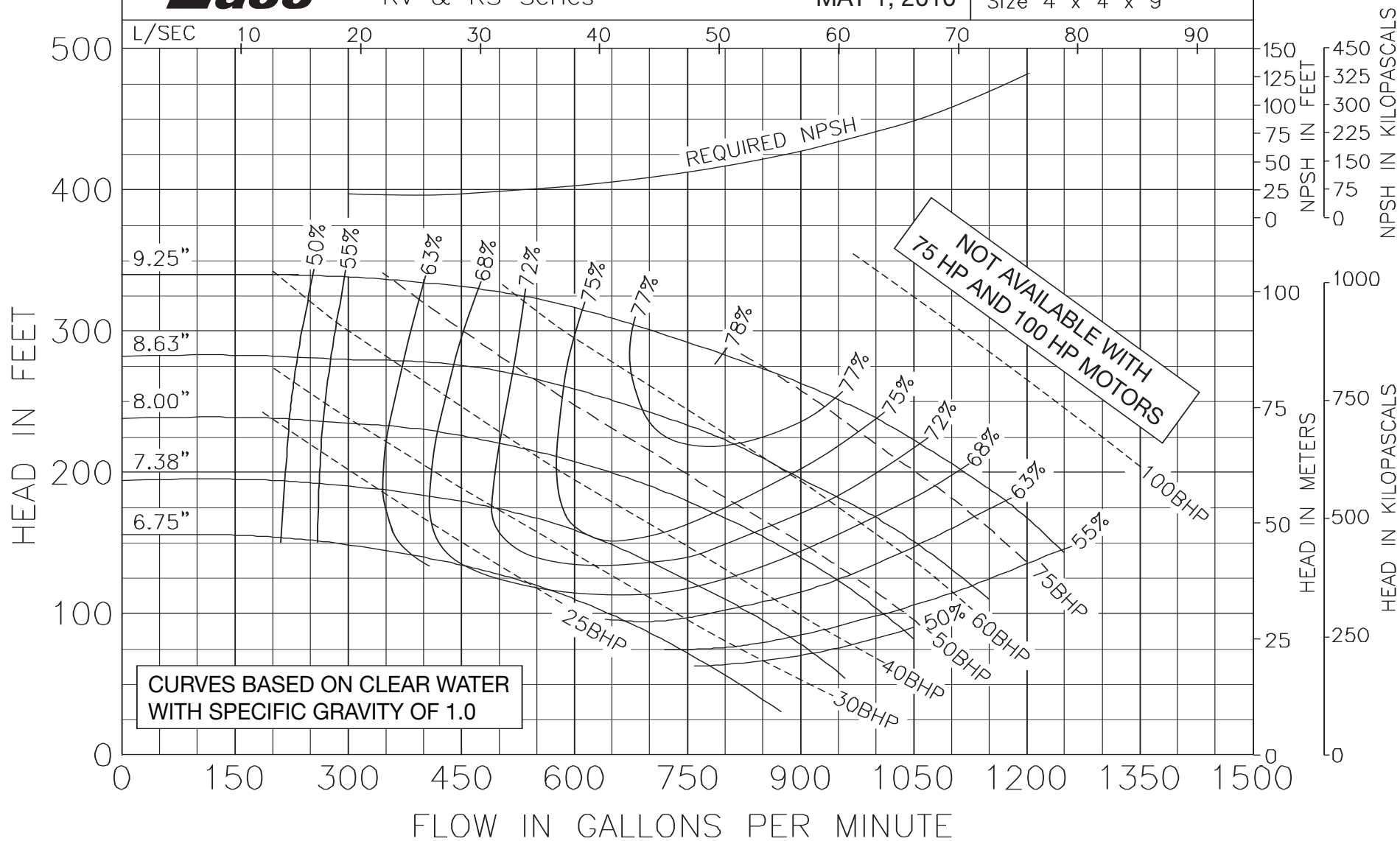


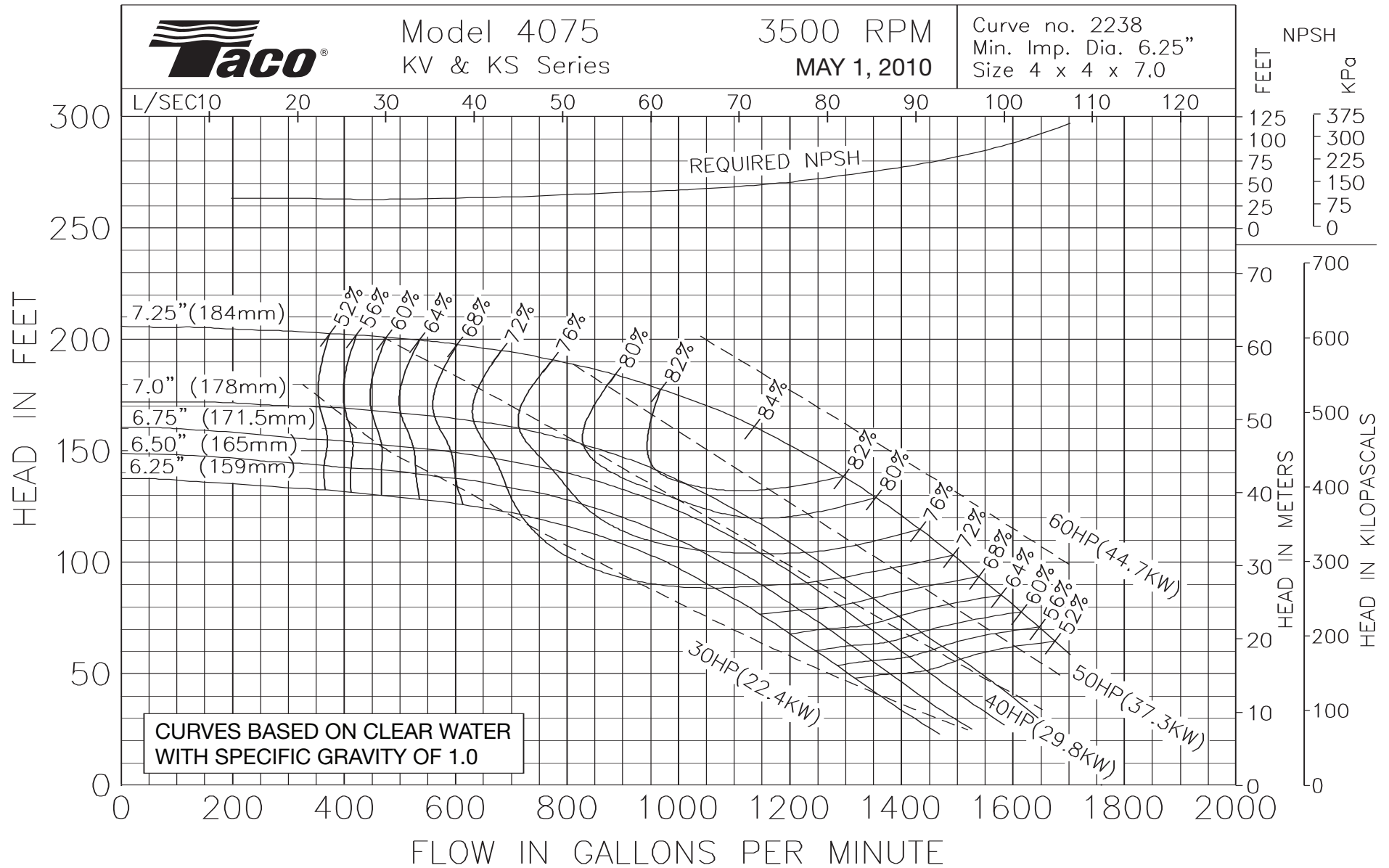


Model 4009
KV & KS Series

3500 RPM
MAY 1, 2010

Curve no. 1980
Min. Imp. Dia. 6,75
Size 4 x 4 x 9



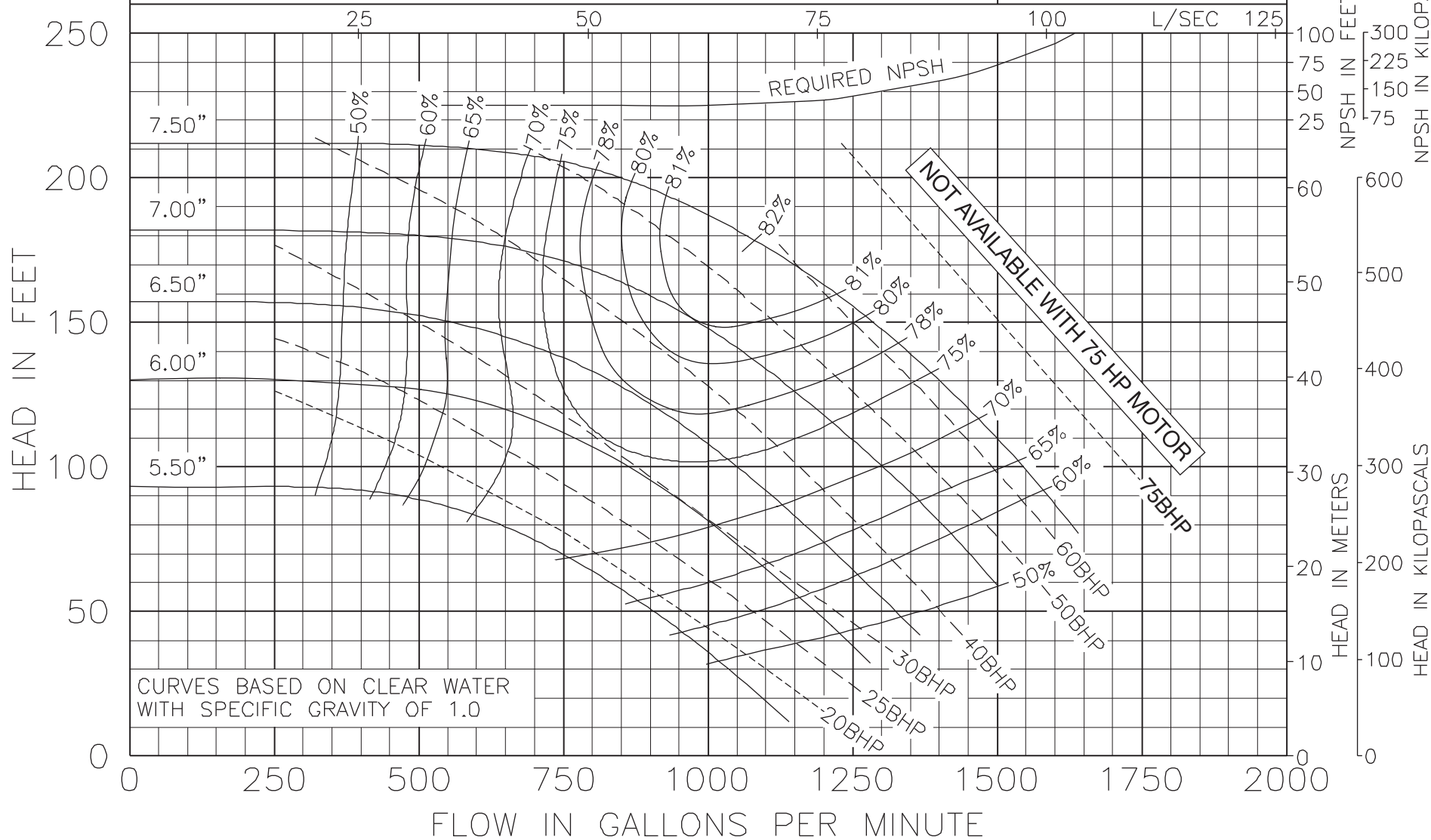




Model 5007
KV & KS Series

3500 RPM
September 9, 2009

Curve no. 1949
Min. Imp. Dia. 5.50
Size 5 x 5 x 7





Model 5075
KV & KS Series

3500 RPM
MAY 1, 2010

Curve no. 2243
Min. Imp. Dia. 5.75"
Size 5 x 5 x 7.0

