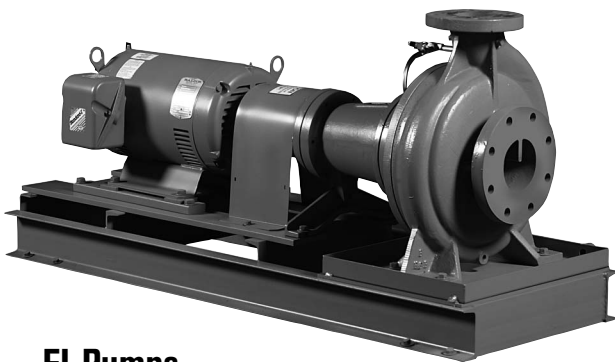
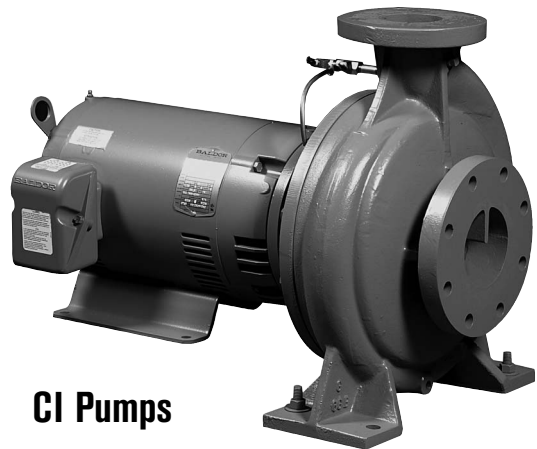


PERFORMANCE CURVES



FI Pumps



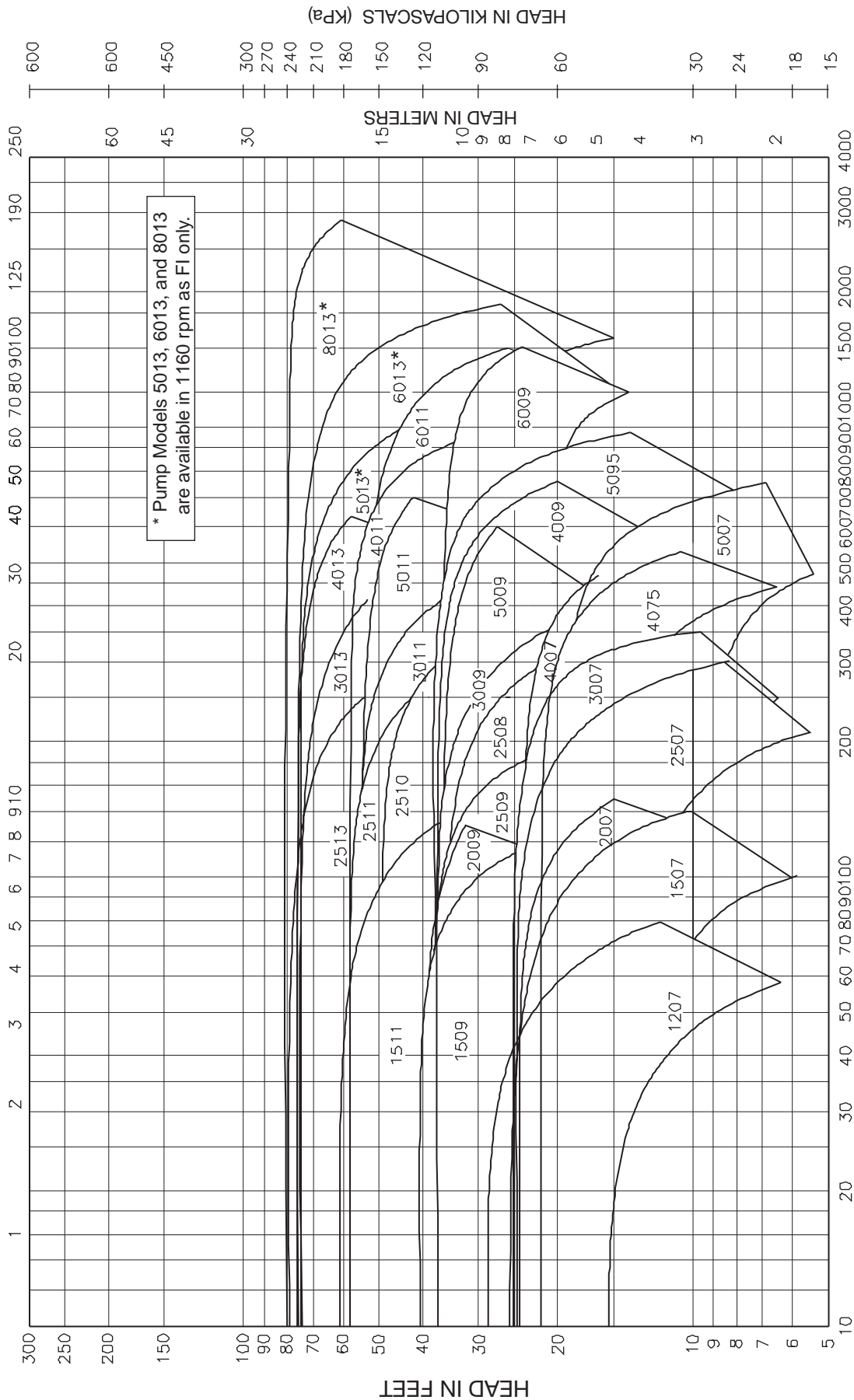
CI Pumps

HYDRONIC COMPONENTS & SYSTEMS

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



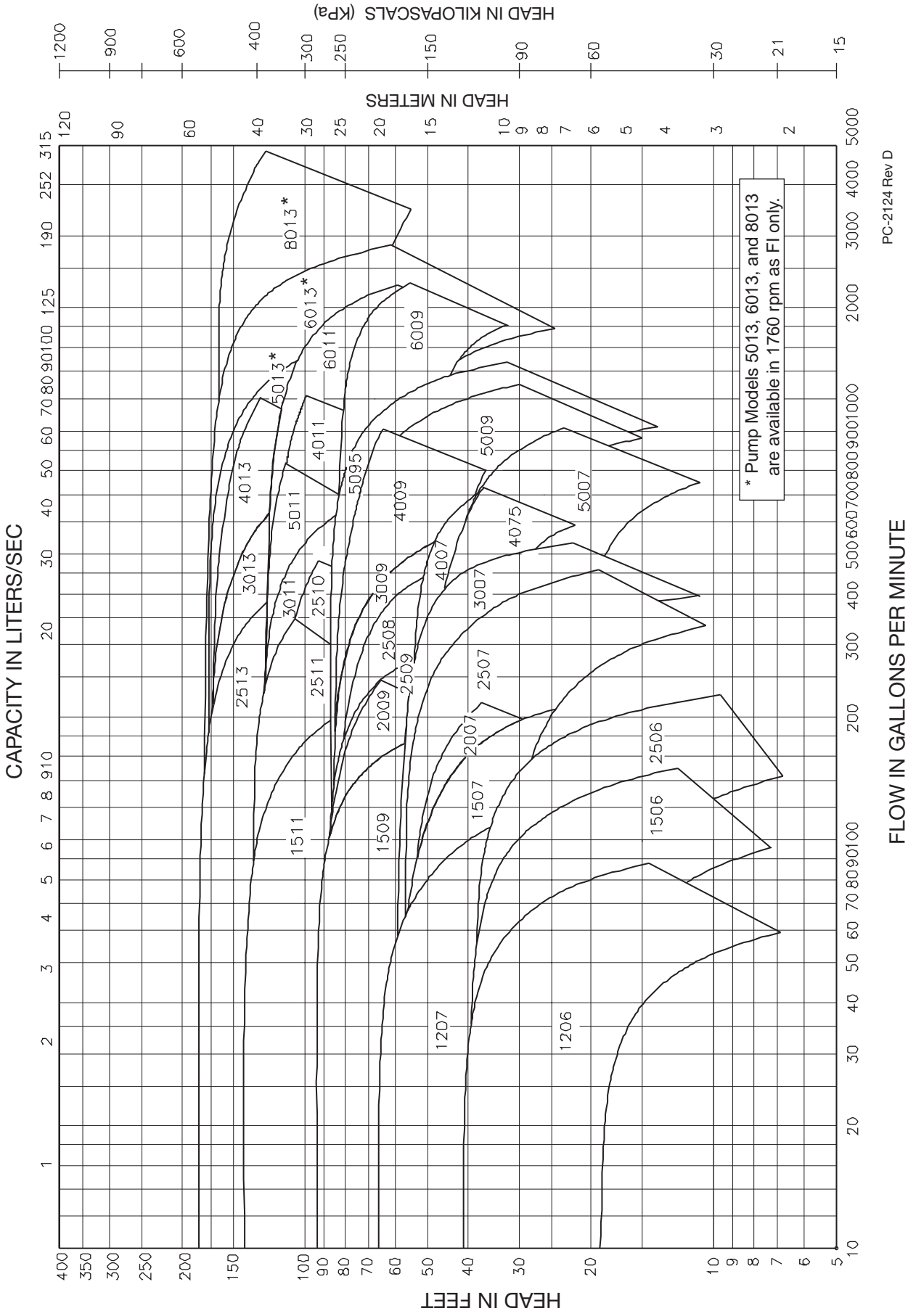
CAPACITY IN LITERS/SEC



PC-2125 Rev B

FLOW IN GALLONS PER MINUTE

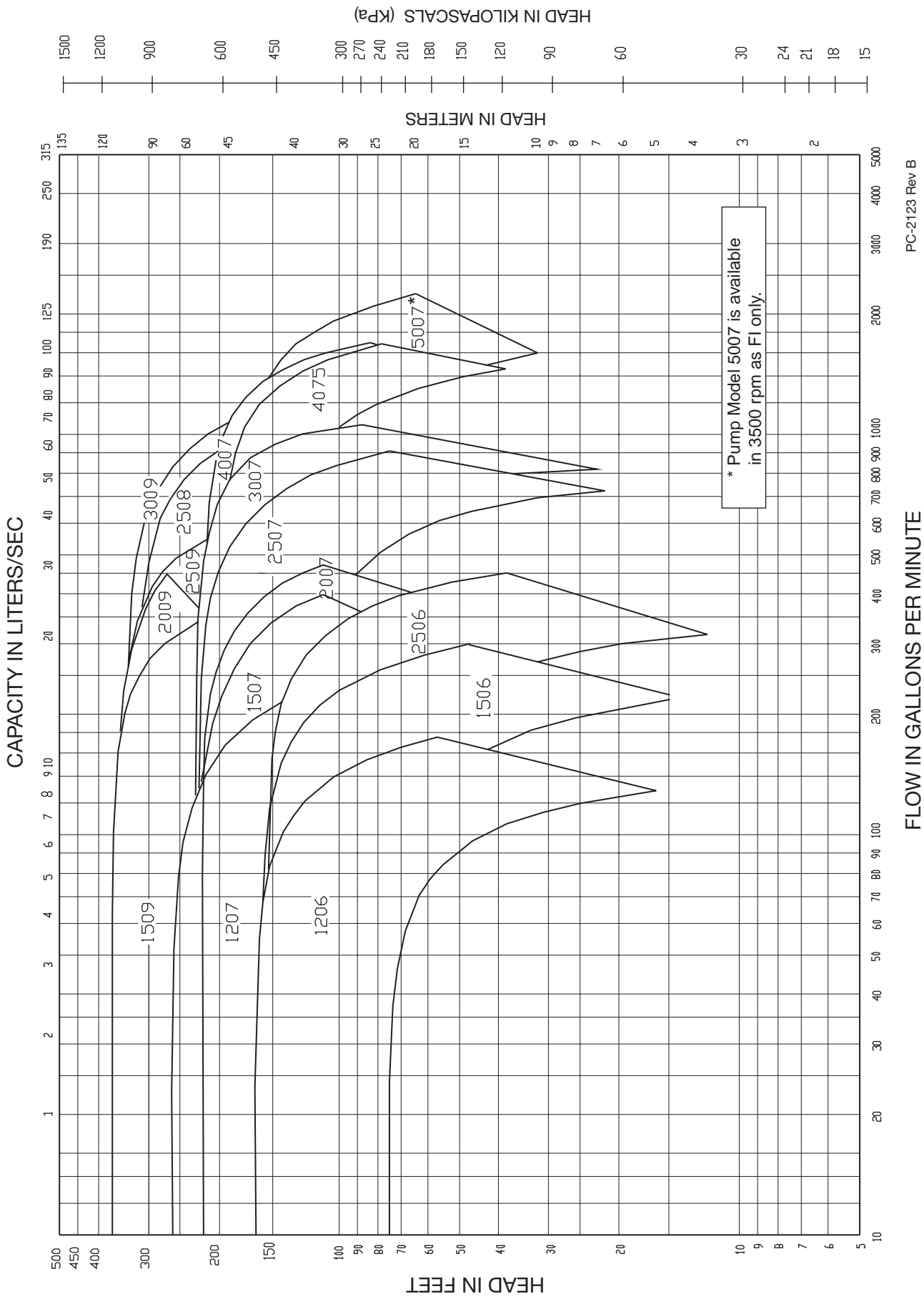
**FI/CI Pump Quick Selection Curve
1160 RPM**



PC-2124 Rev D

FLOW IN GALLONS PER MINUTE

FI/CI Pump Quick Selection Curve 1760 RPM



PC-2123 Rev B

FI/CI 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.

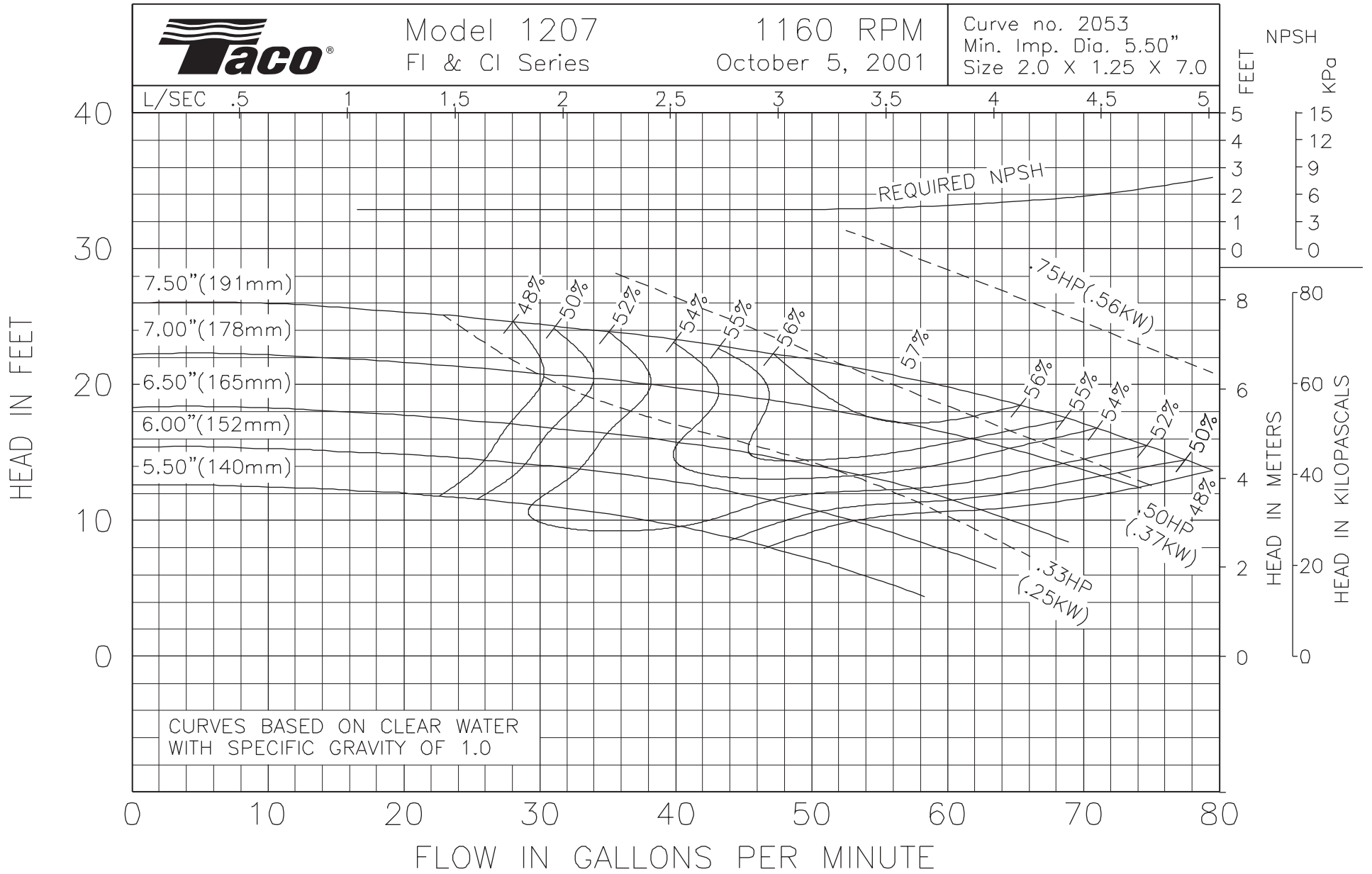
PUMP FORMULAS

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	$Q_2 = \frac{\text{RPM}_2}{\text{RPM}_1} Q_1$	$H_2 = \left(\frac{\text{RPM}_2}{\text{RPM}_1}\right)^2 H_1$	$P_2 = \left(\frac{\text{RPM}_2}{\text{RPM}_1}\right)^3 P_1$

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

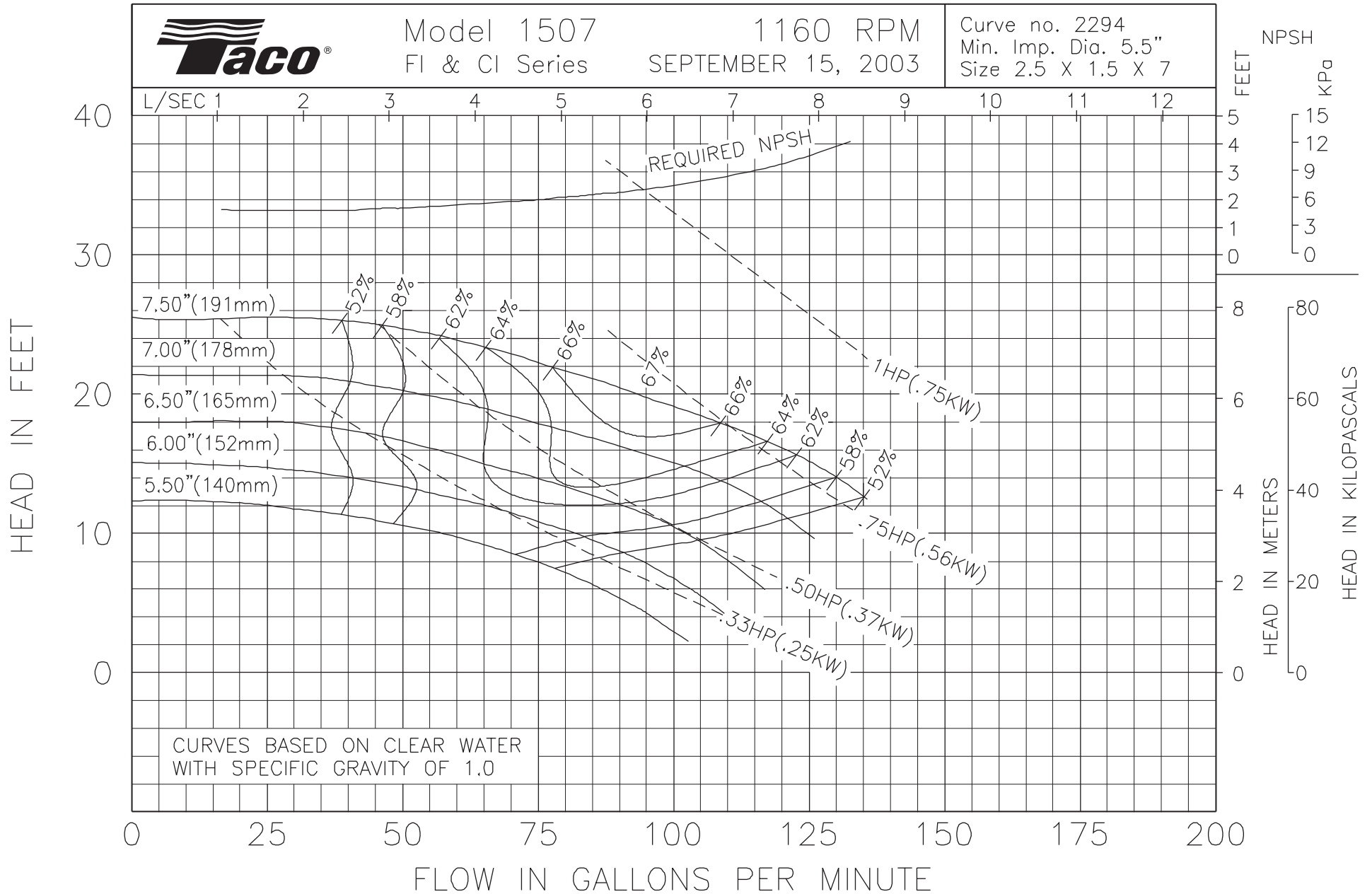




Model 1507
FI & CI Series

1160 RPM
SEPTEMBER 15, 2003

Curve no. 2294
Min. Imp. Dia. 5.5"
Size 2.5 X 1.5 X 7

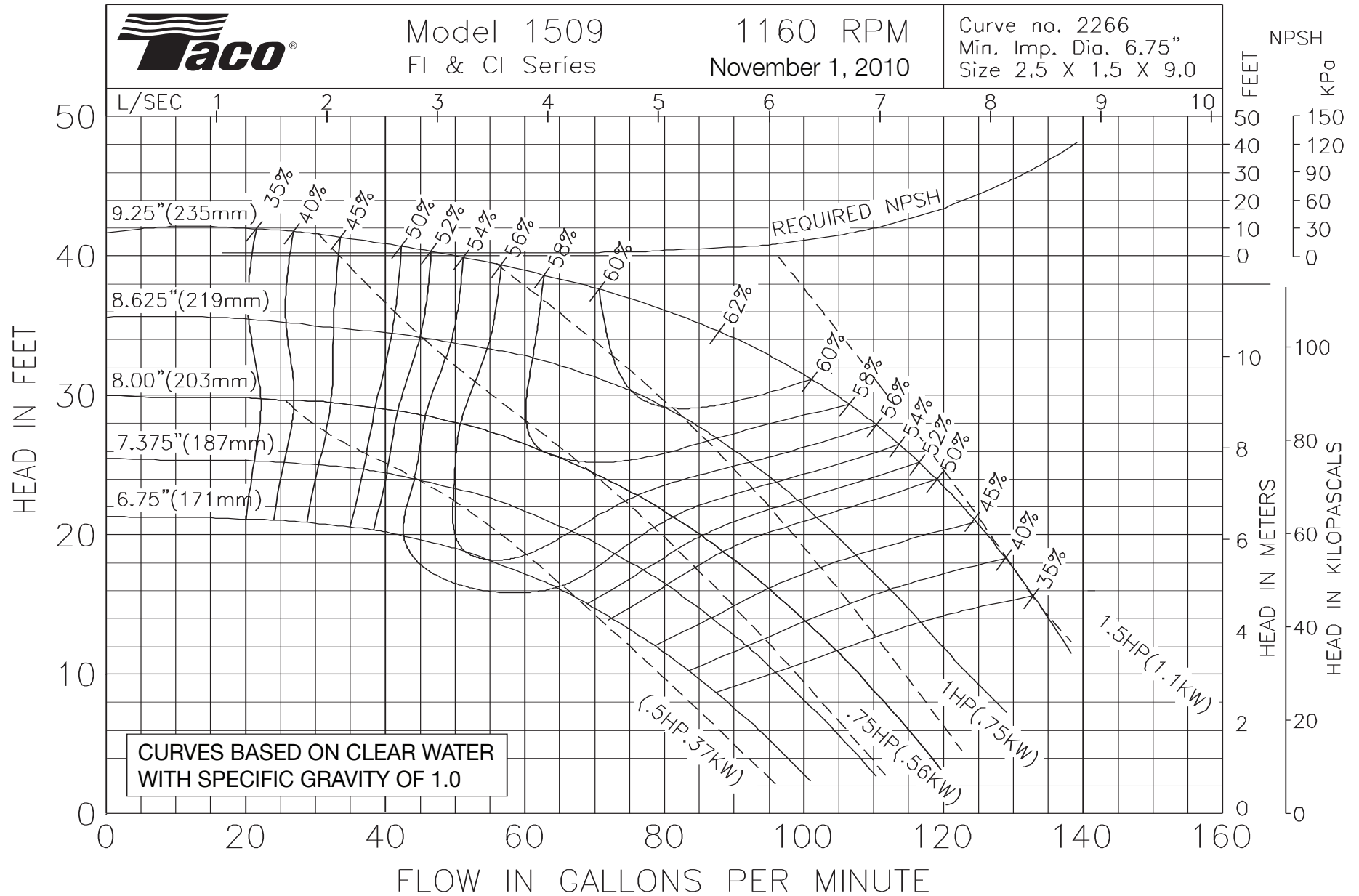




Model 1509
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2266
Min. Imp. Dia. 6.75"
Size 2.5 X 1.5 X 9.0



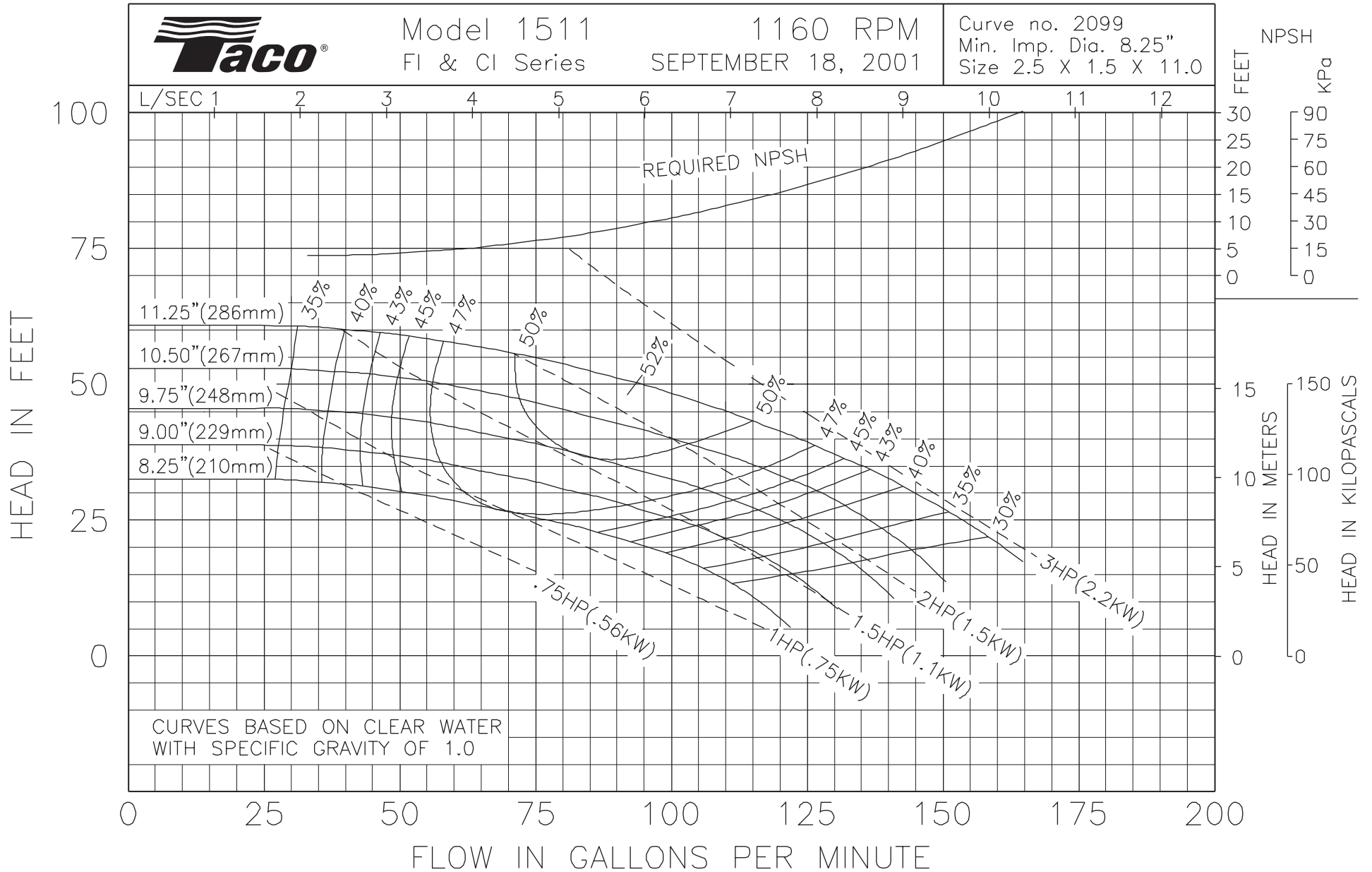
CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0



Model 1511
FI & CI Series

1160 RPM
SEPTEMBER 18, 2001

Curve no. 2099
Min. Imp. Dia. 8.25"
Size 2.5 X 1.5 X 11.0



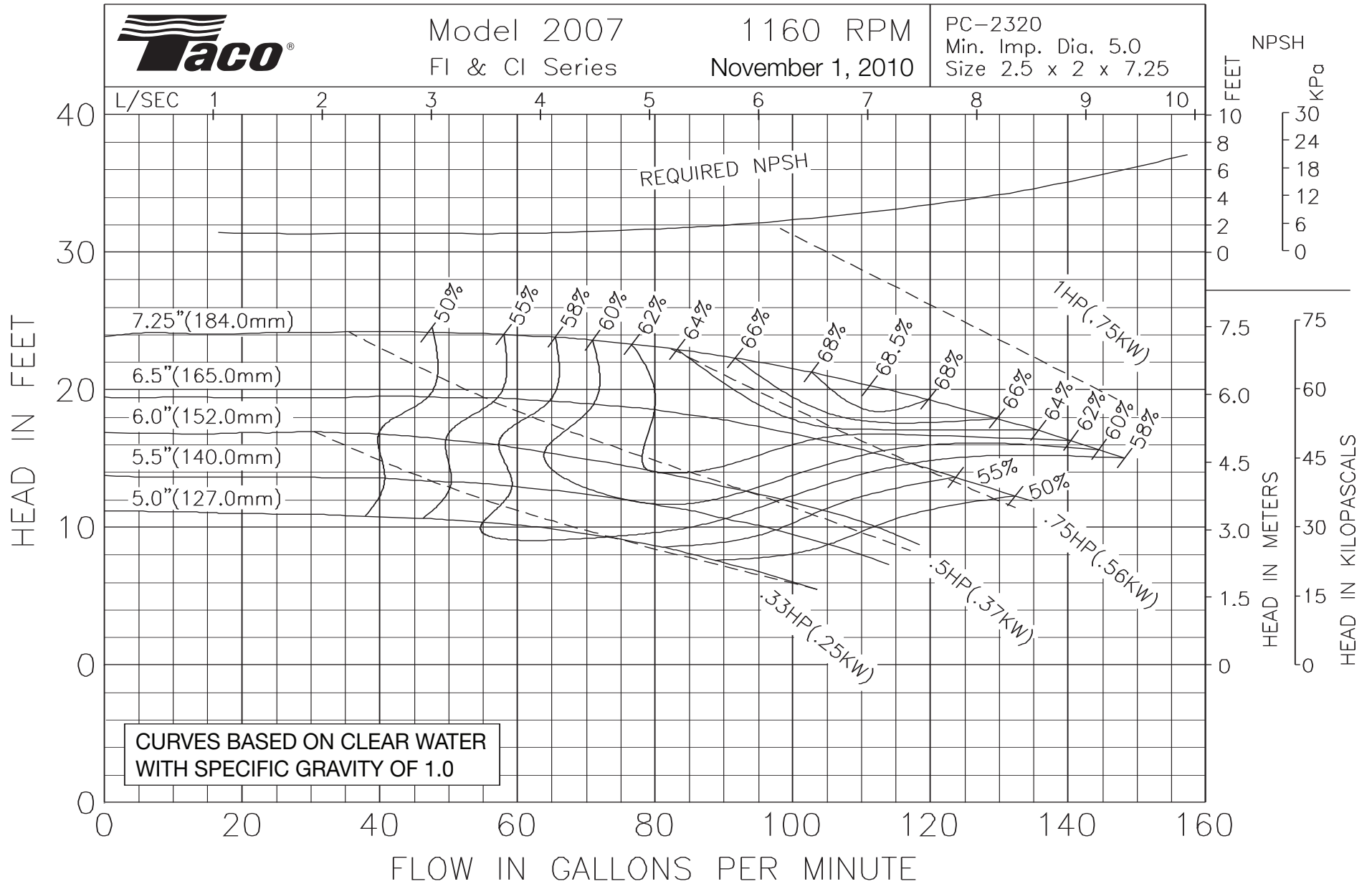
CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0



Model 2007
FI & CI Series

1160 RPM
November 1, 2010

PC-2320
Min. Imp. Dia. 5.0
Size 2.5 x 2 x 7.25

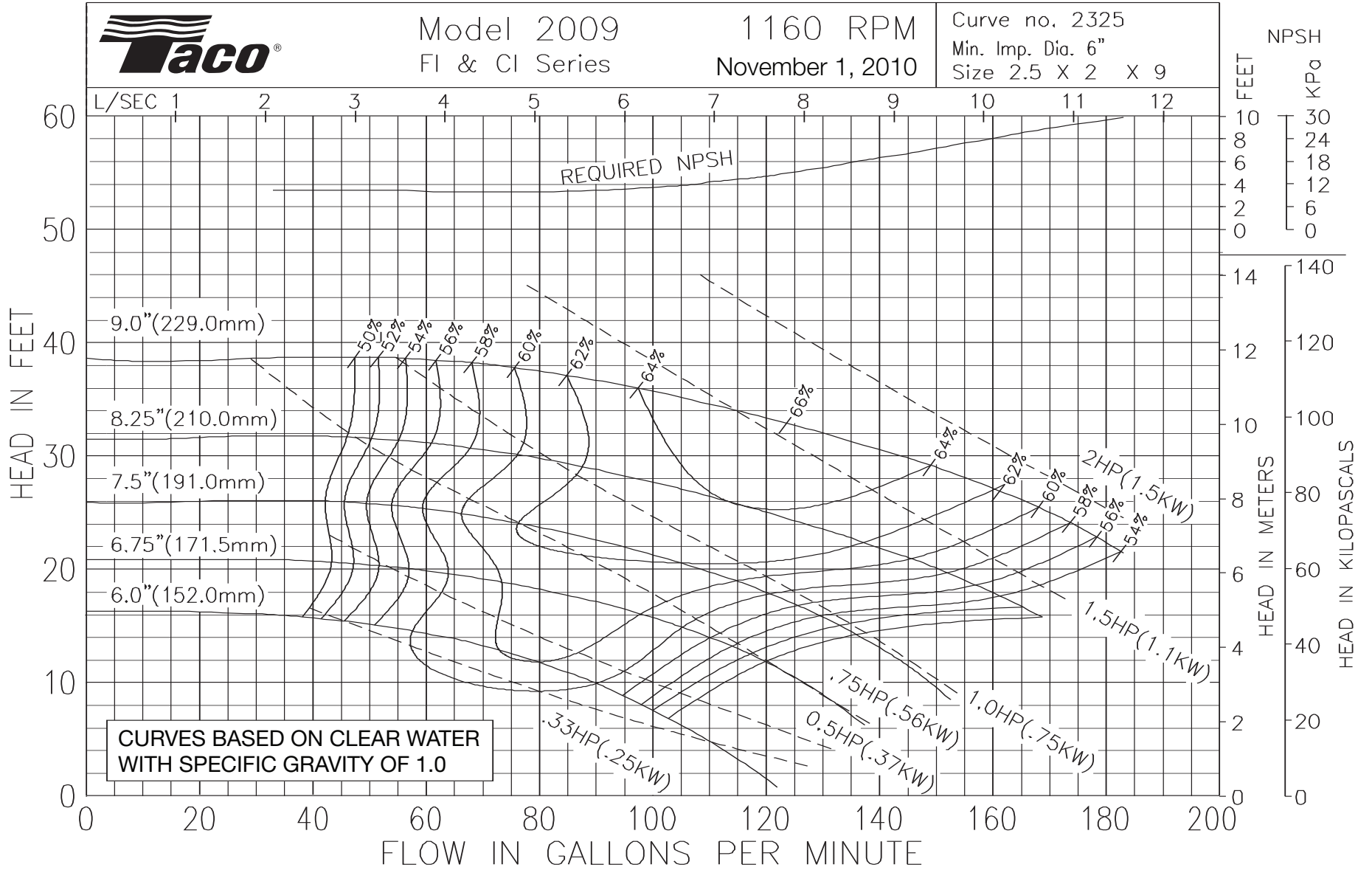


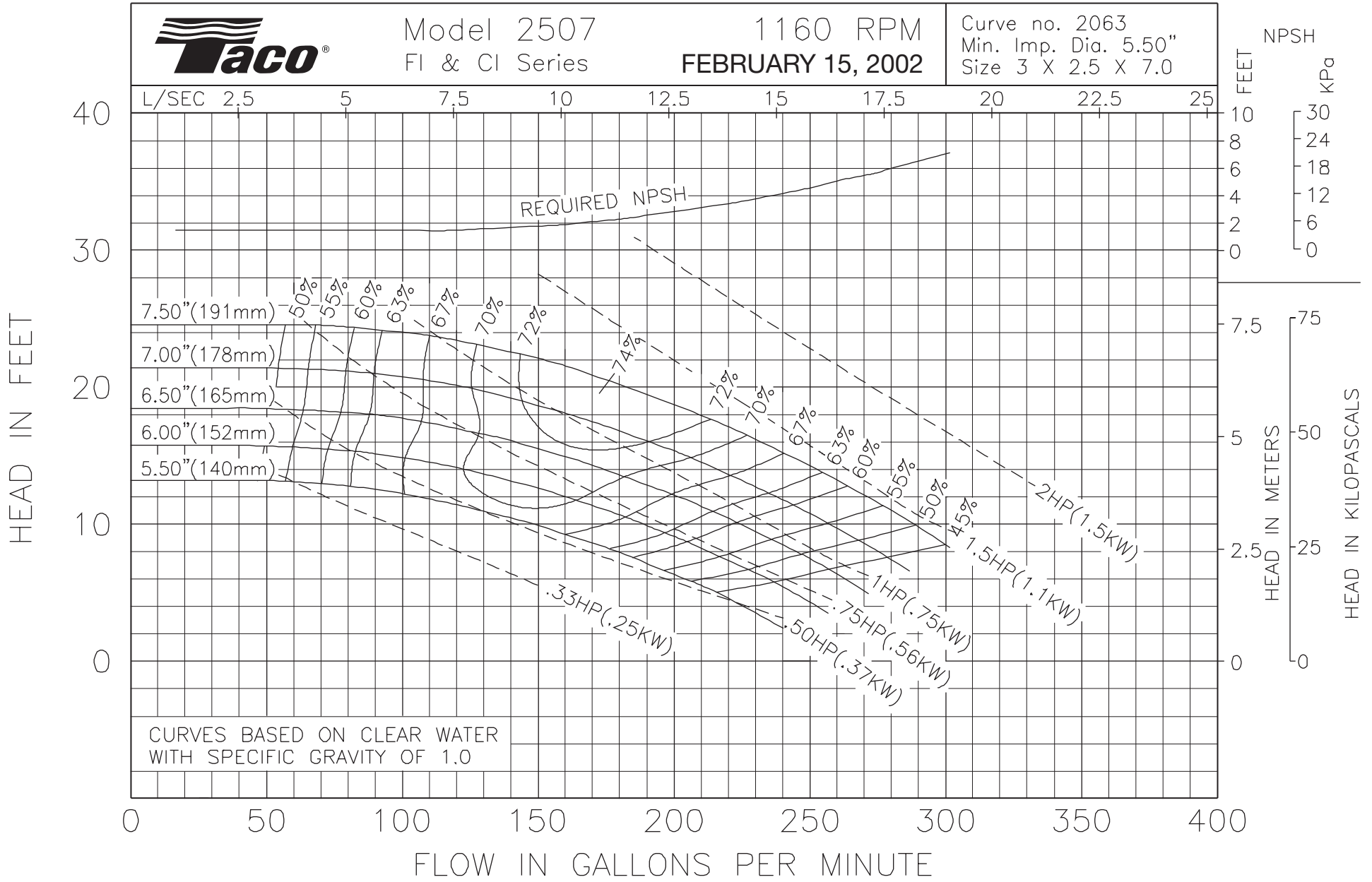


Model 2009
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2325
Min. Imp. Dia. 6"
Size 2.5 X 2 X 9



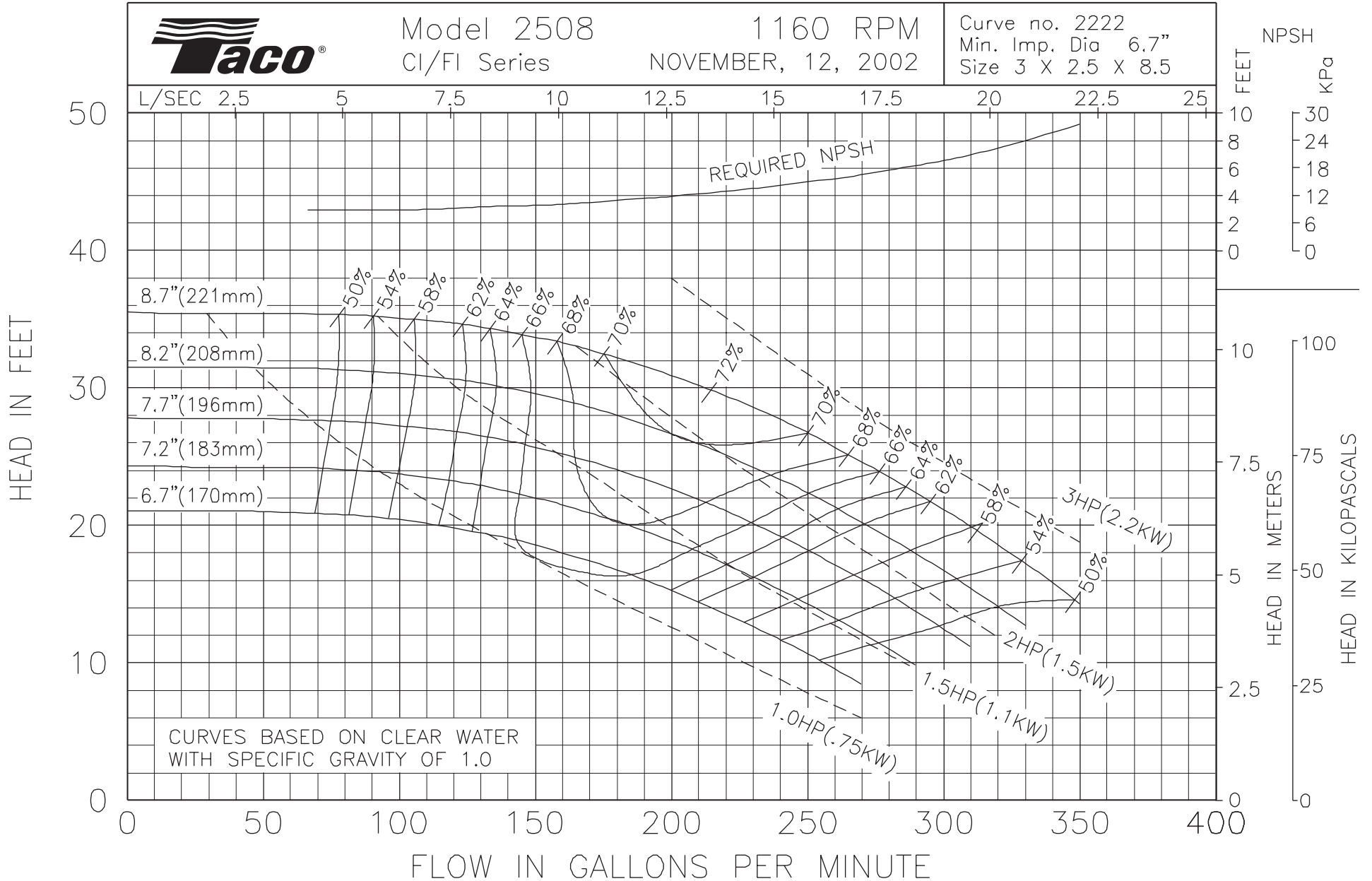




Model 2508
CI/FI Series

1160 RPM
NOVEMBER, 12, 2002

Curve no. 2222
Min. Imp. Dia 6.7"
Size 3 X 2.5 X 8.5

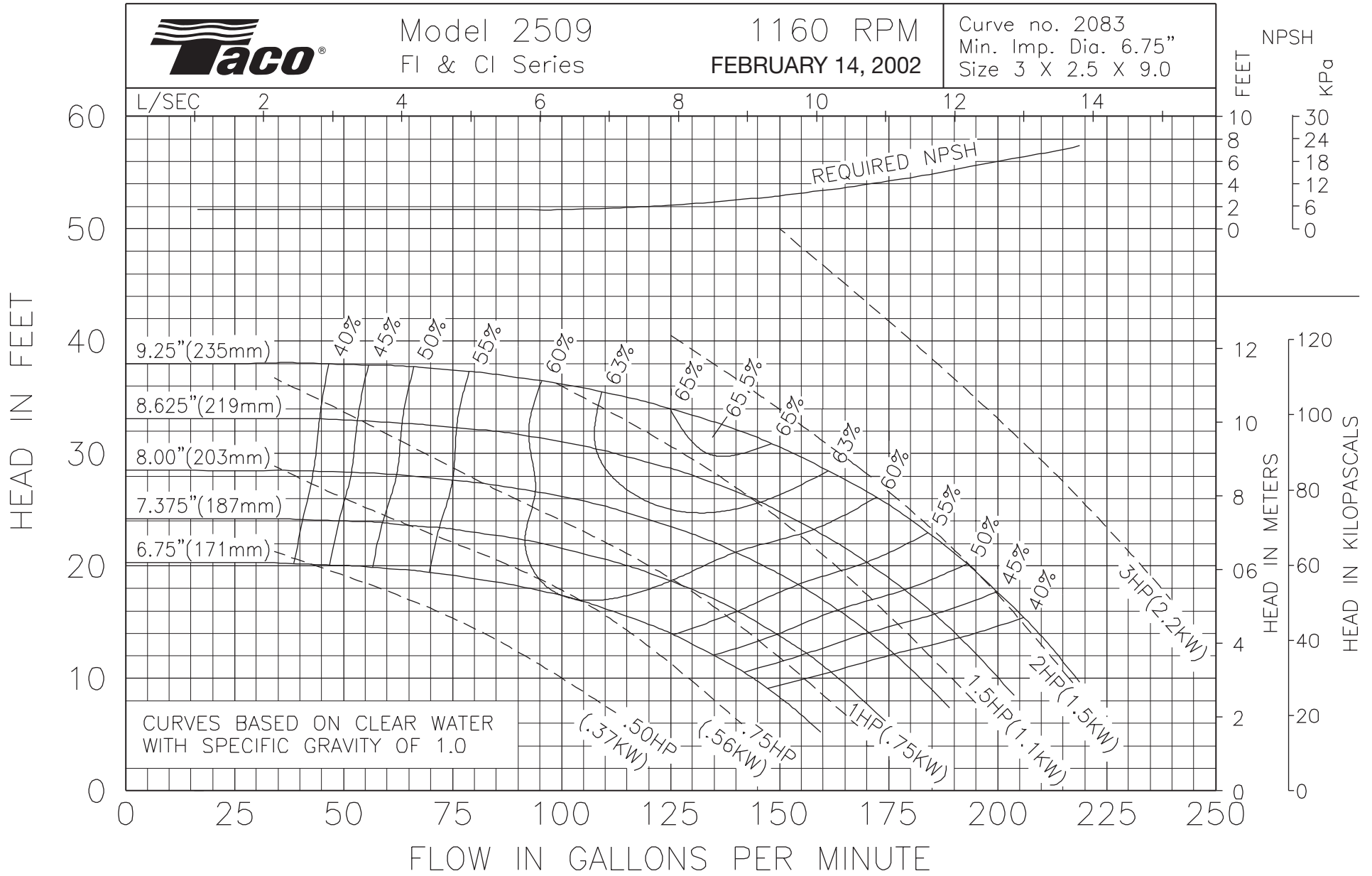




Model 2509
FI & CI Series

1160 RPM
FEBRUARY 14, 2002

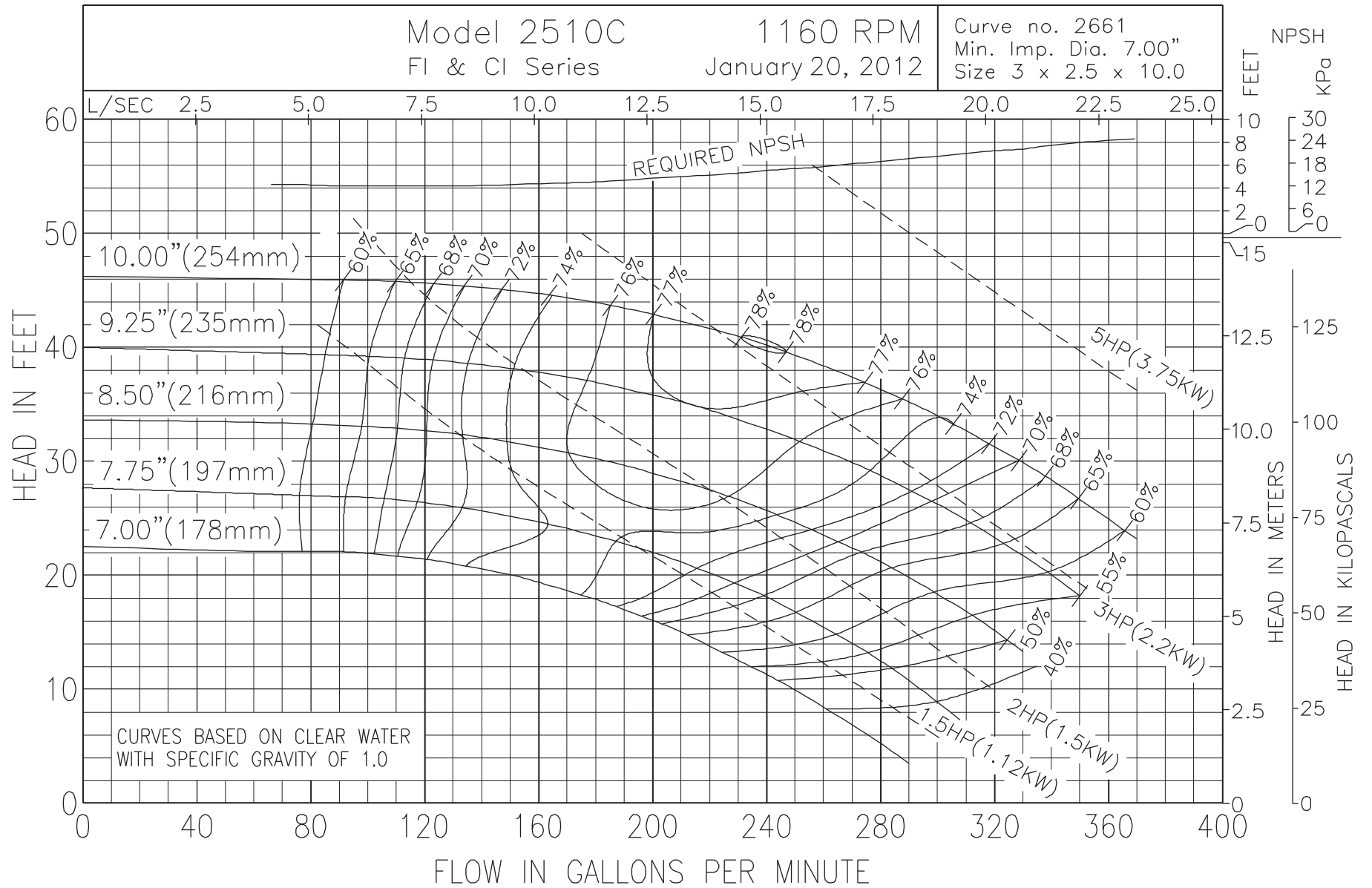
Curve no. 2083
Min. Imp. Dia. 6.75"
Size 3 X 2.5 X 9.0



Model 2510C
FI & CI Series

1160 RPM
January 20, 2012

Curve no. 2661
Min. Imp. Dia. 7.00"
Size 3 x 2.5 x 10.0

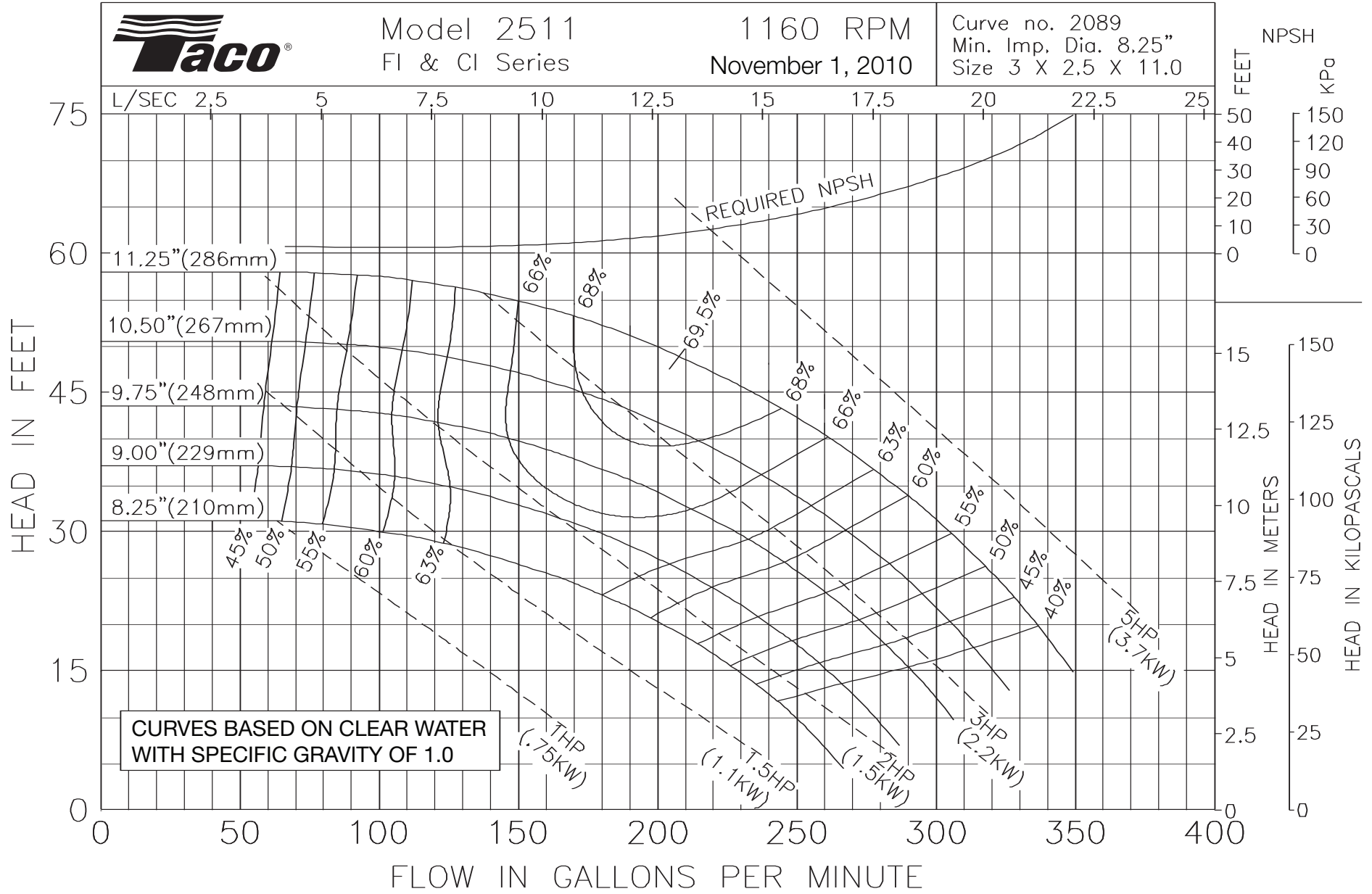




Model 2511
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2089
Min. Imp. Dia. 8.25"
Size 3 X 2.5 X 11.0

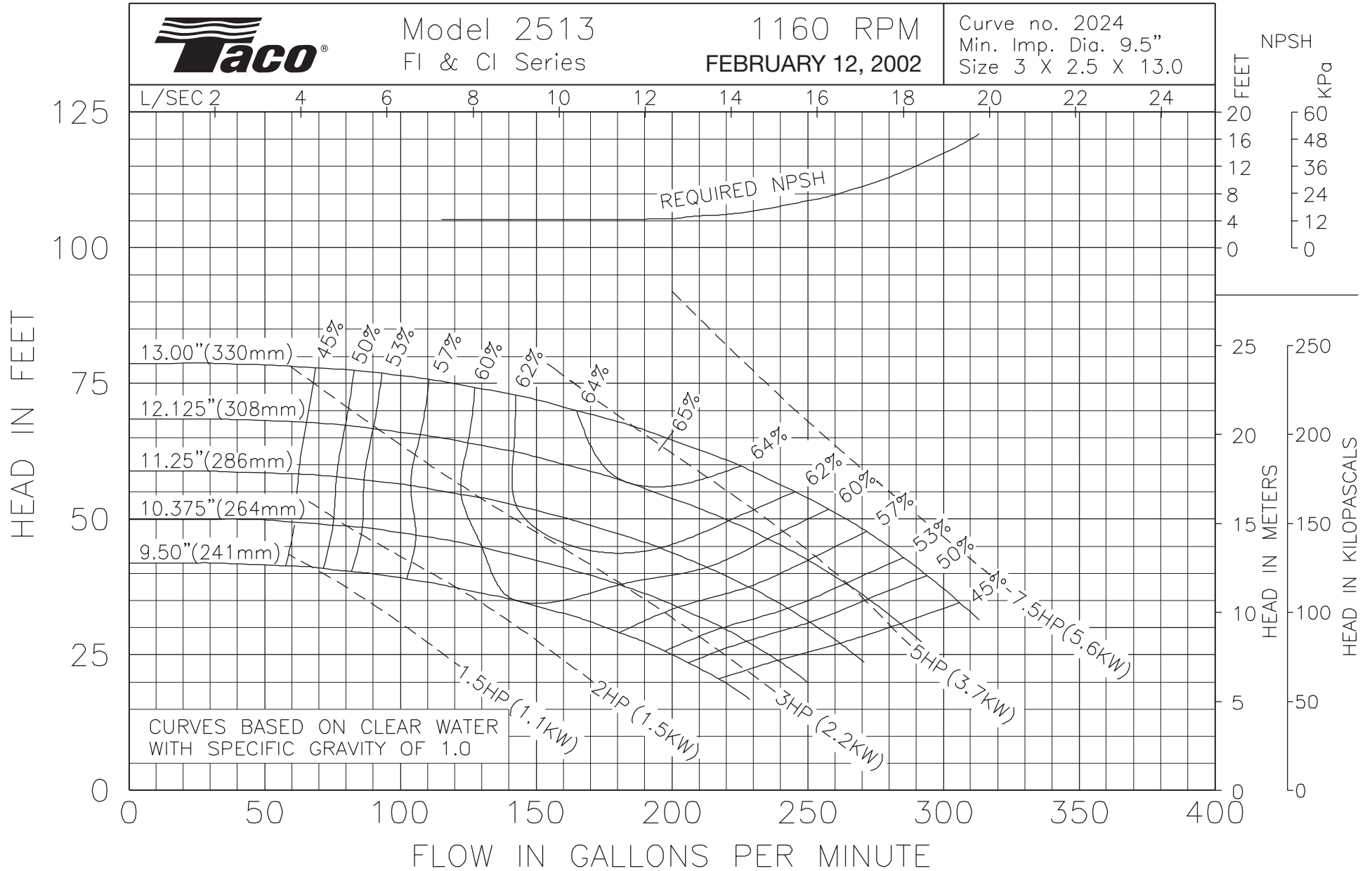


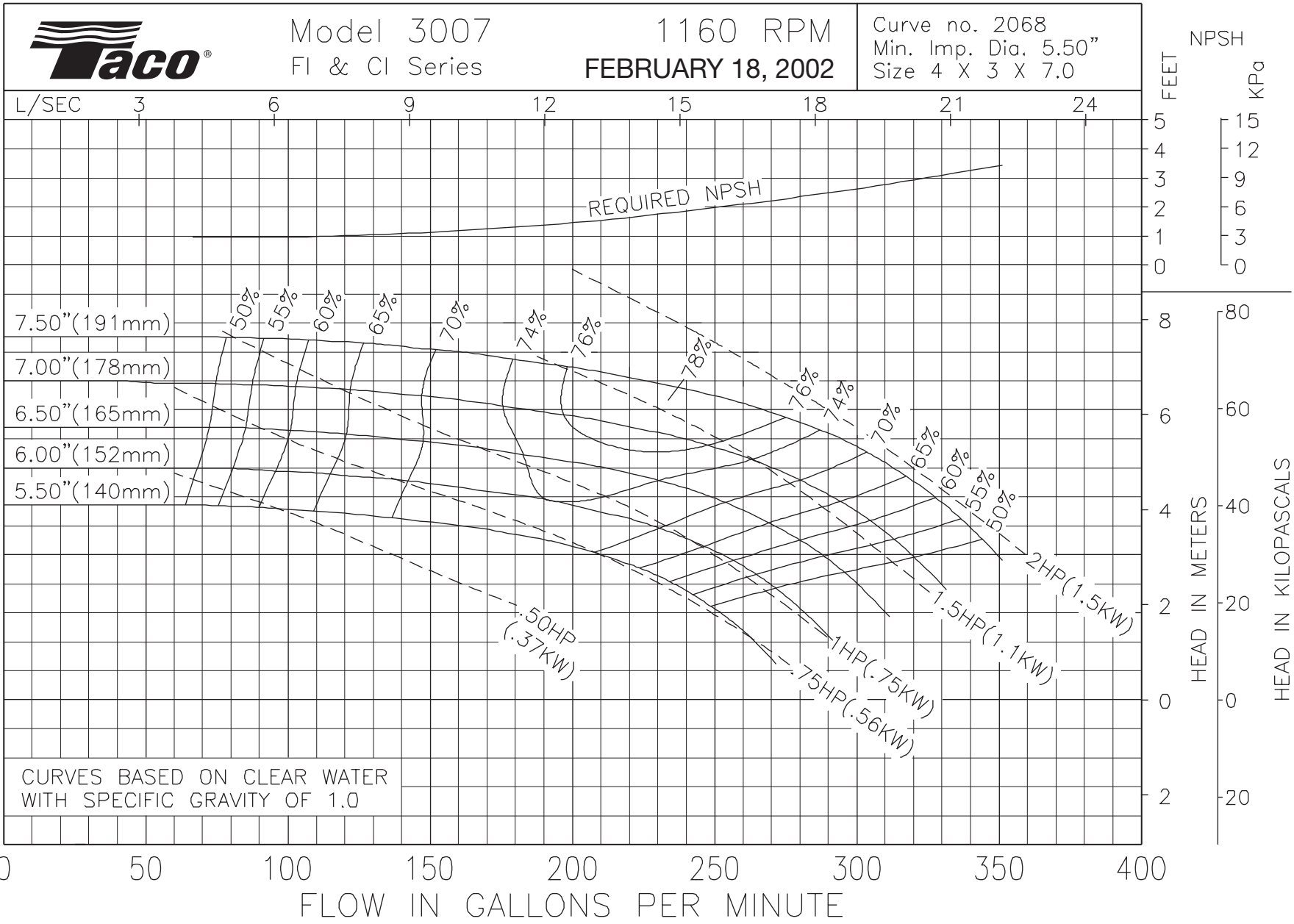


Model 2513
FI & CI Series

1160 RPM
FEBRUARY 12, 2002

Curve no. 2024
Min. Imp. Dia. 9.5"
Size 3 X 2.5 X 13.0



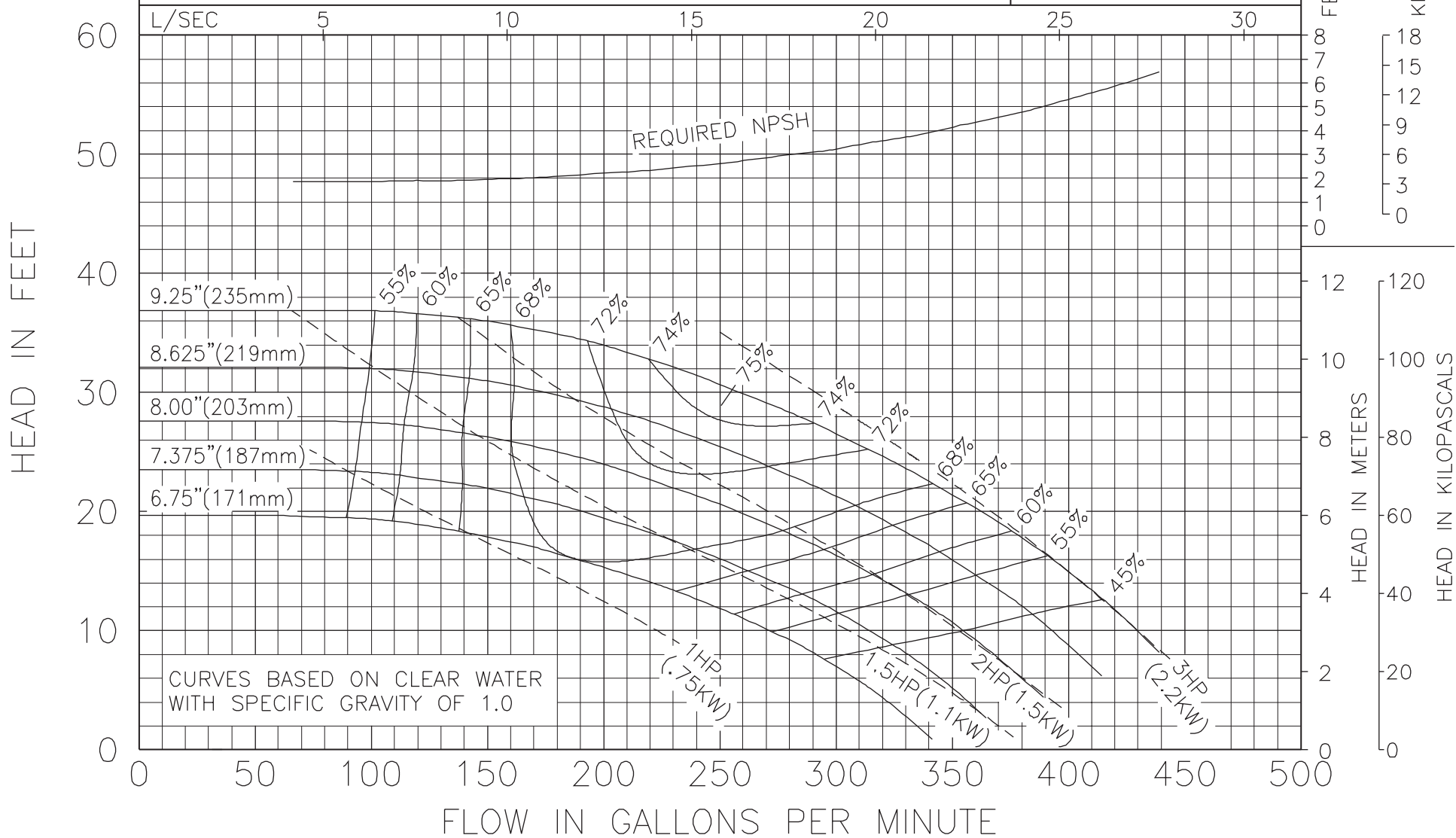




Model 3009
FI & CI Series

1160 RPM
FEBRUARY 12, 2002

Curve no. 2029
Min. Imp. Dia. 6.75"
Size 4 X 3 X 9.0

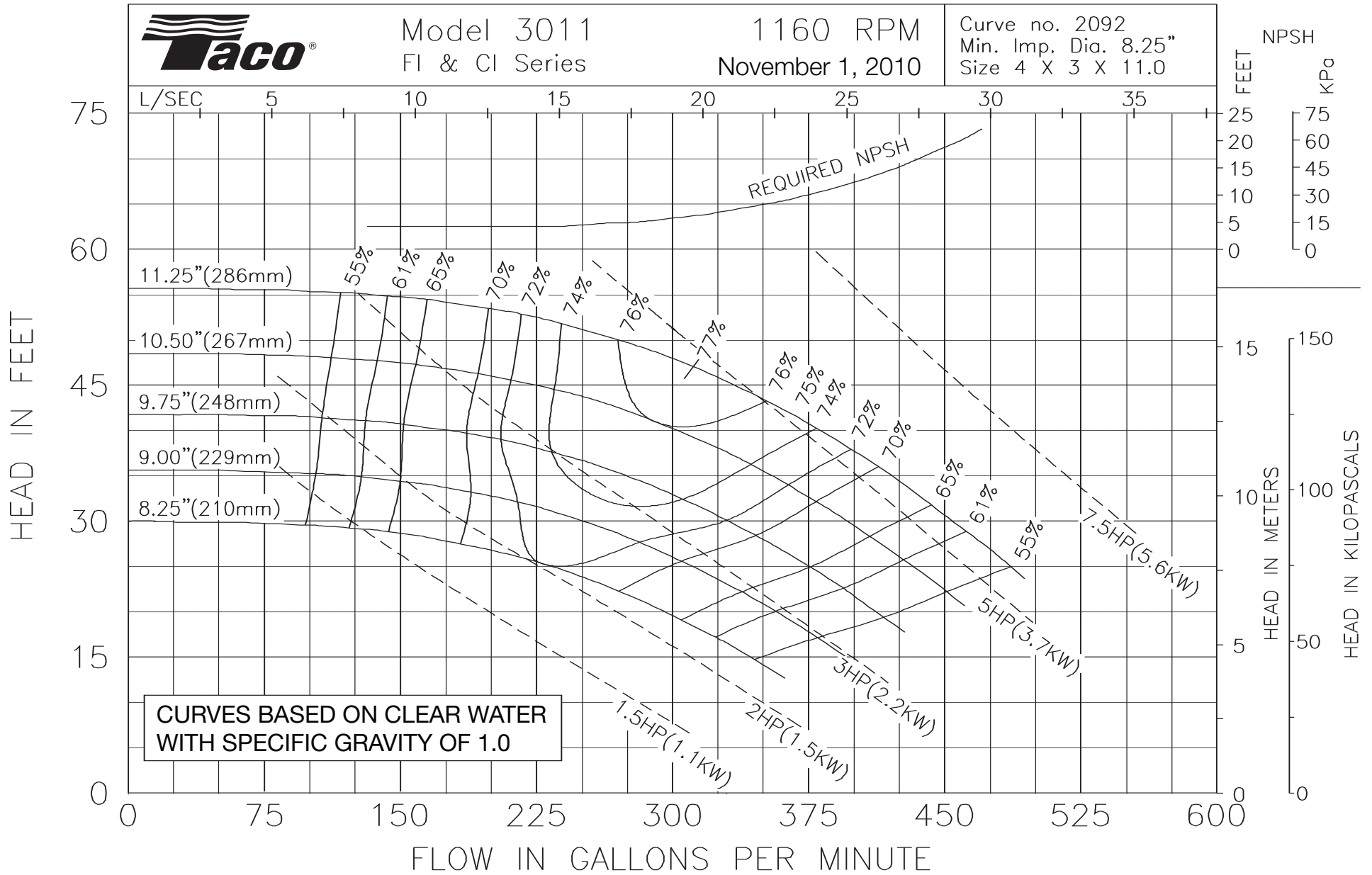




Model 3011
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2092
Min. Imp. Dia. 8.25"
Size 4 X 3 X 11.0

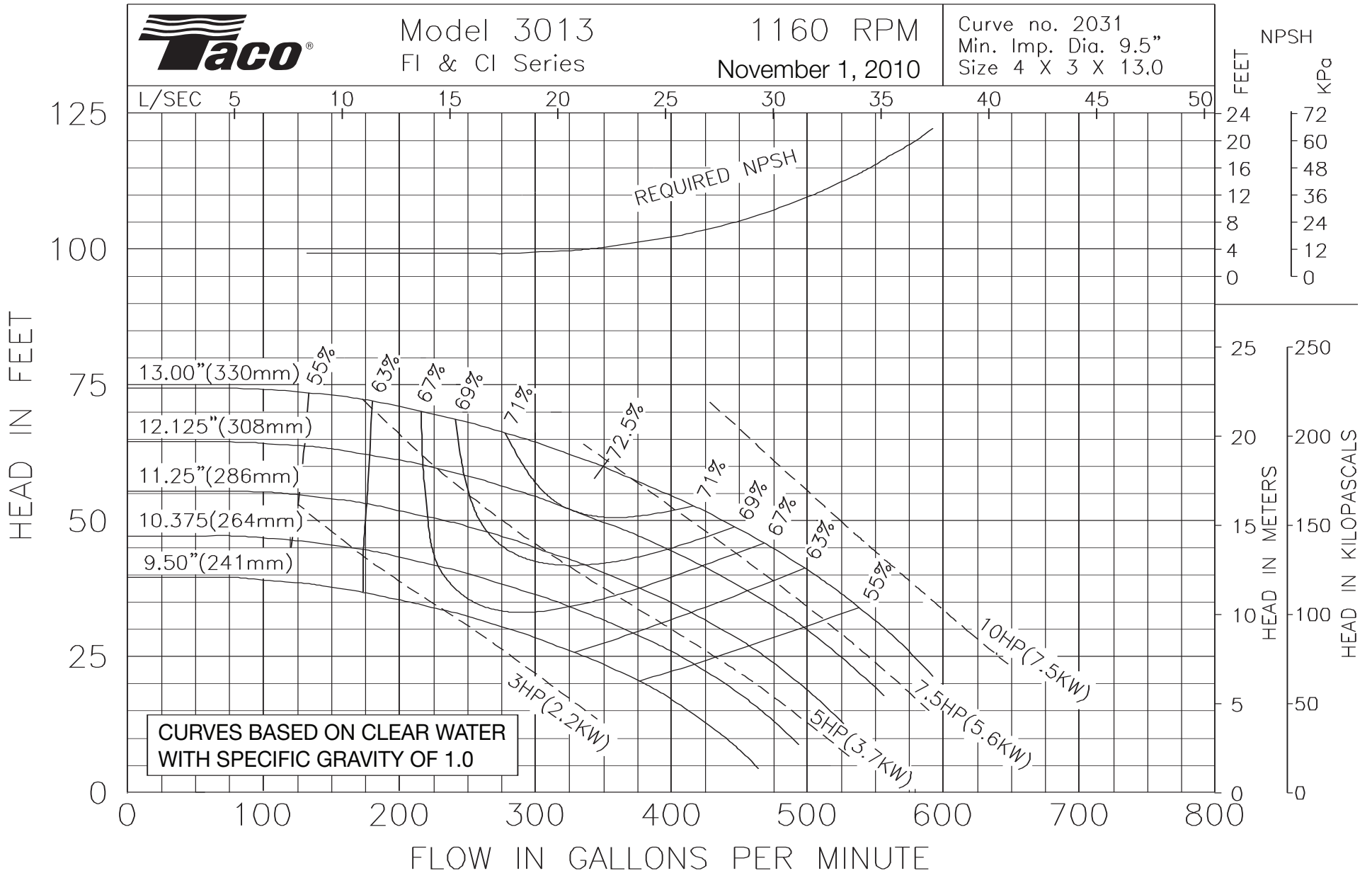




Model 3013
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2031
Min. Imp. Dia. 9.5"
Size 4 X 3 X 13.0

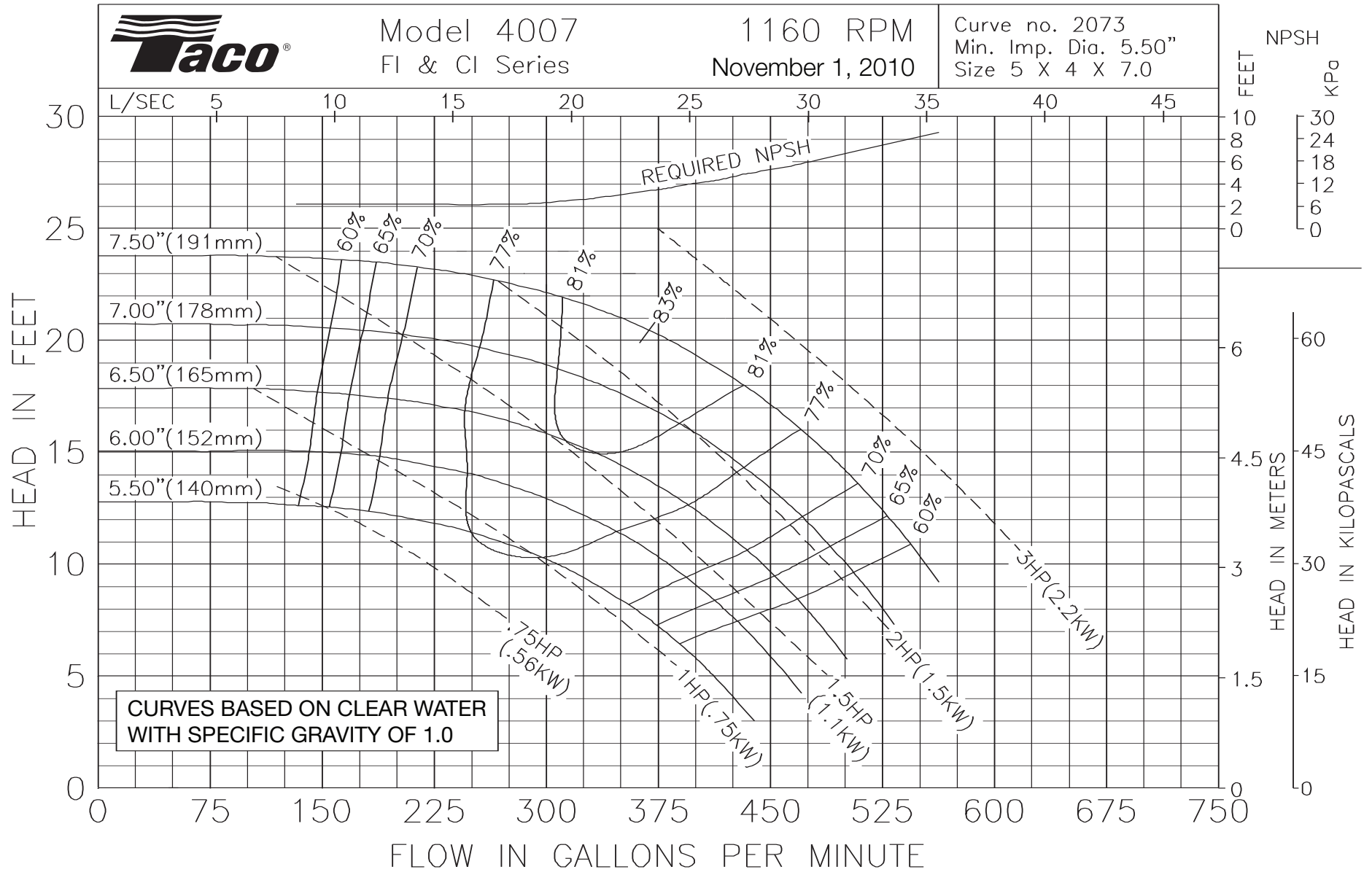




Model 4007
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2073
Min. Imp. Dia. 5.50"
Size 5 X 4 X 7.0

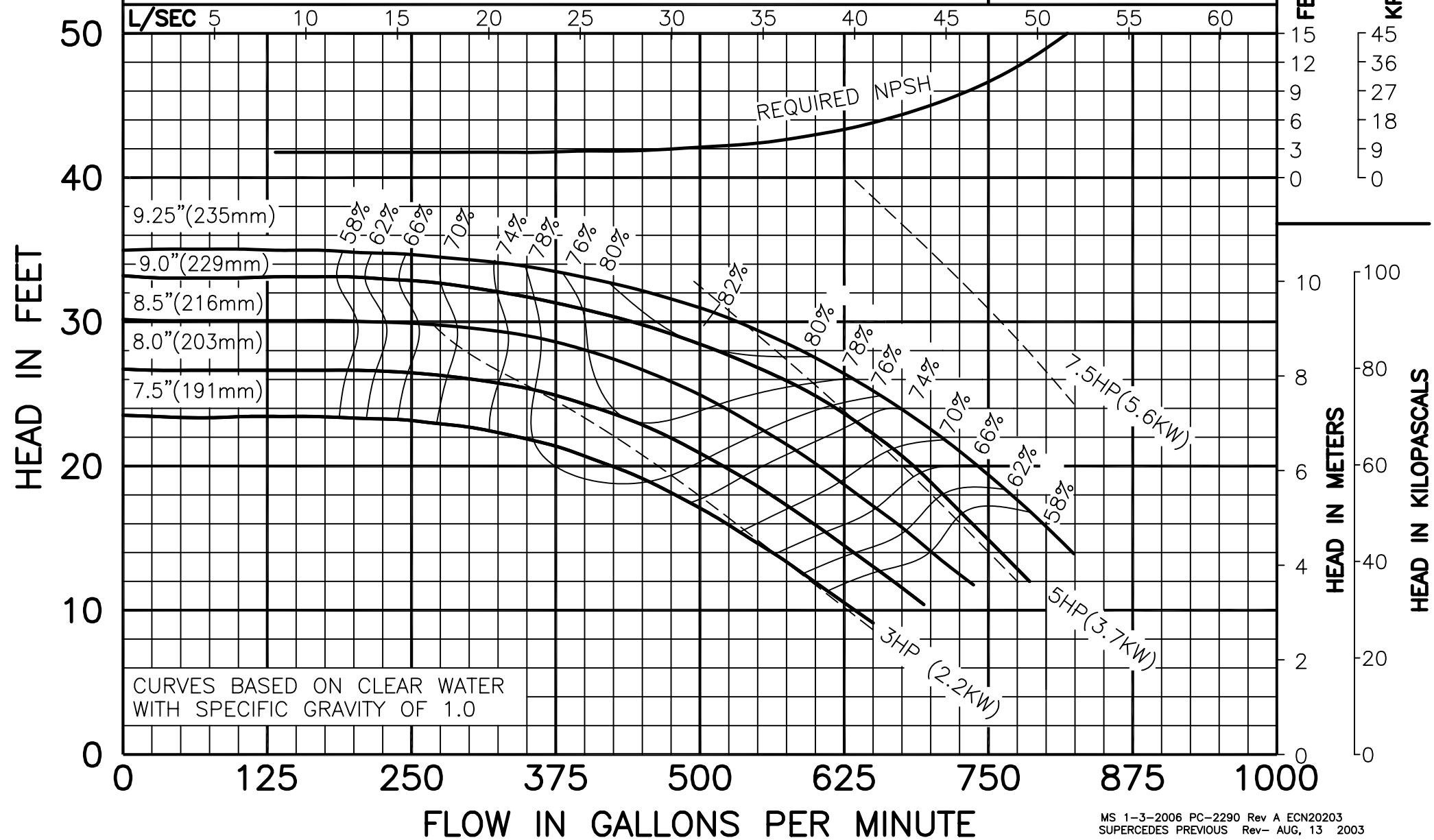




Model 4009
FI & CI Series

1160 RPM
JANUARY, 3 2006

Curve no. 2290
Min. Imp. Dia 7.5"
Size 5 x 4 x 9.25

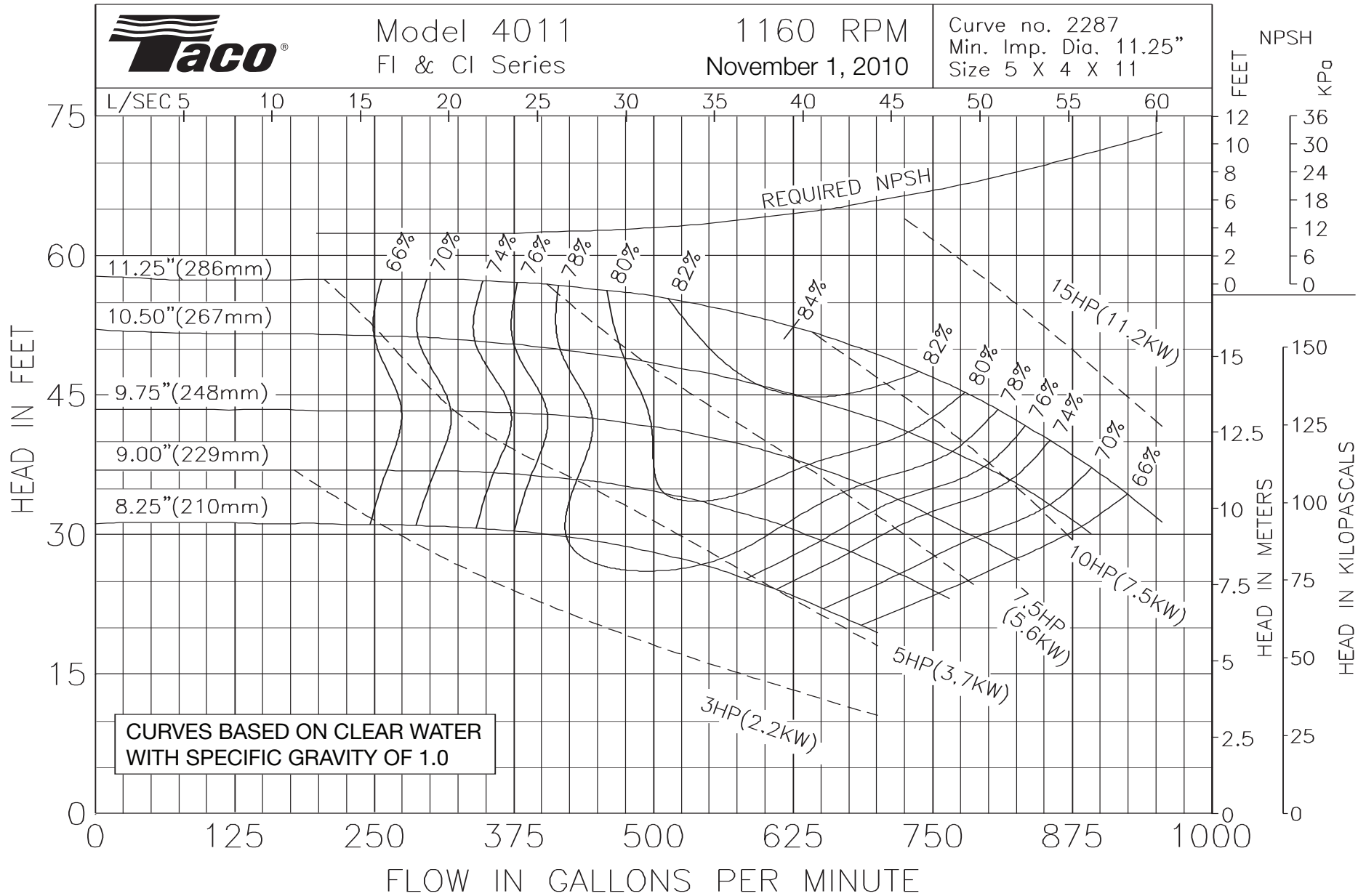




Model 4011
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2287
Min. Imp. Dia. 11.25"
Size 5 X 4 X 11

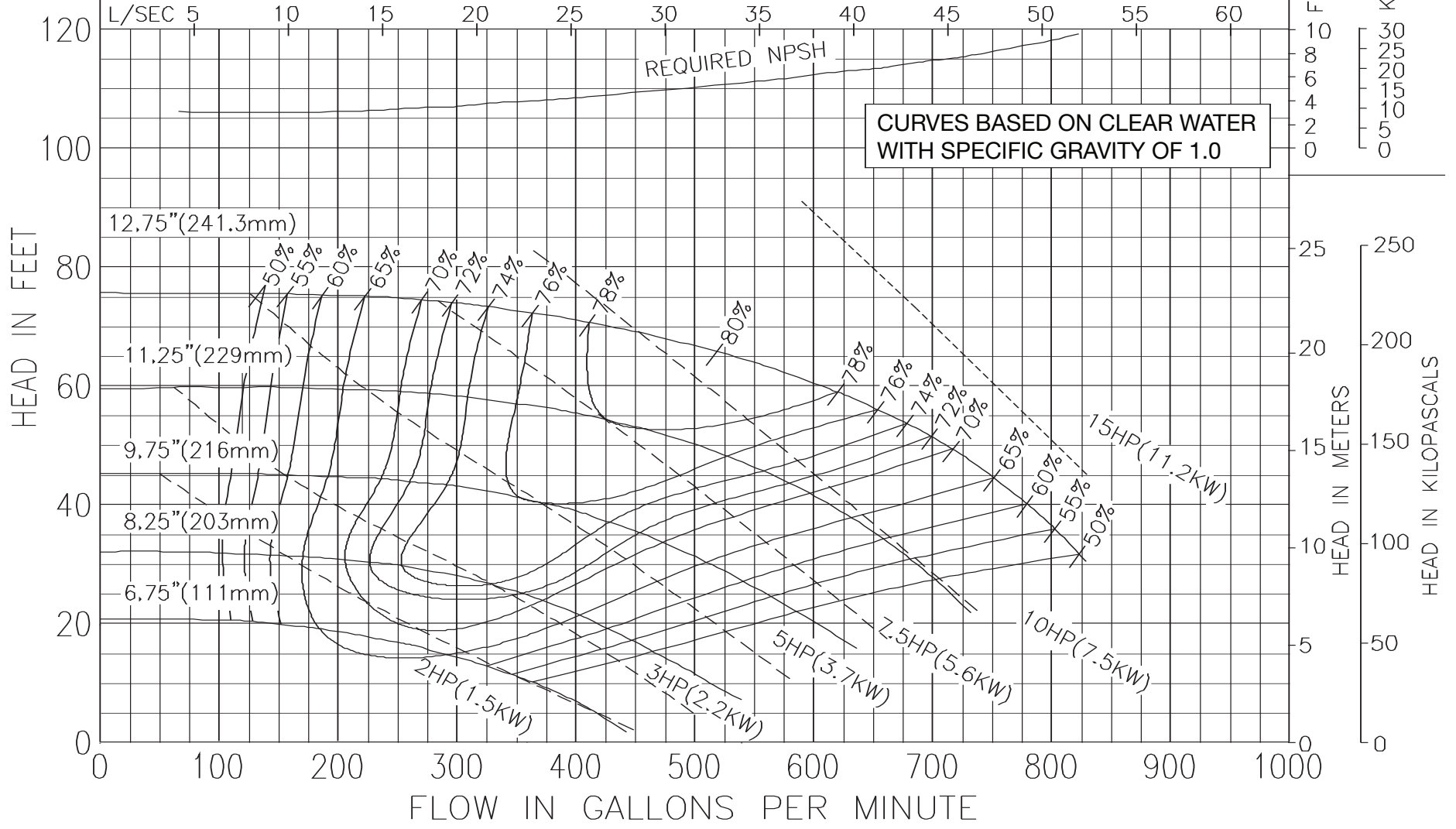




Model 4013
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2313
Min. Imp. Dia. 6.75"
Size 5 X 4 X 13

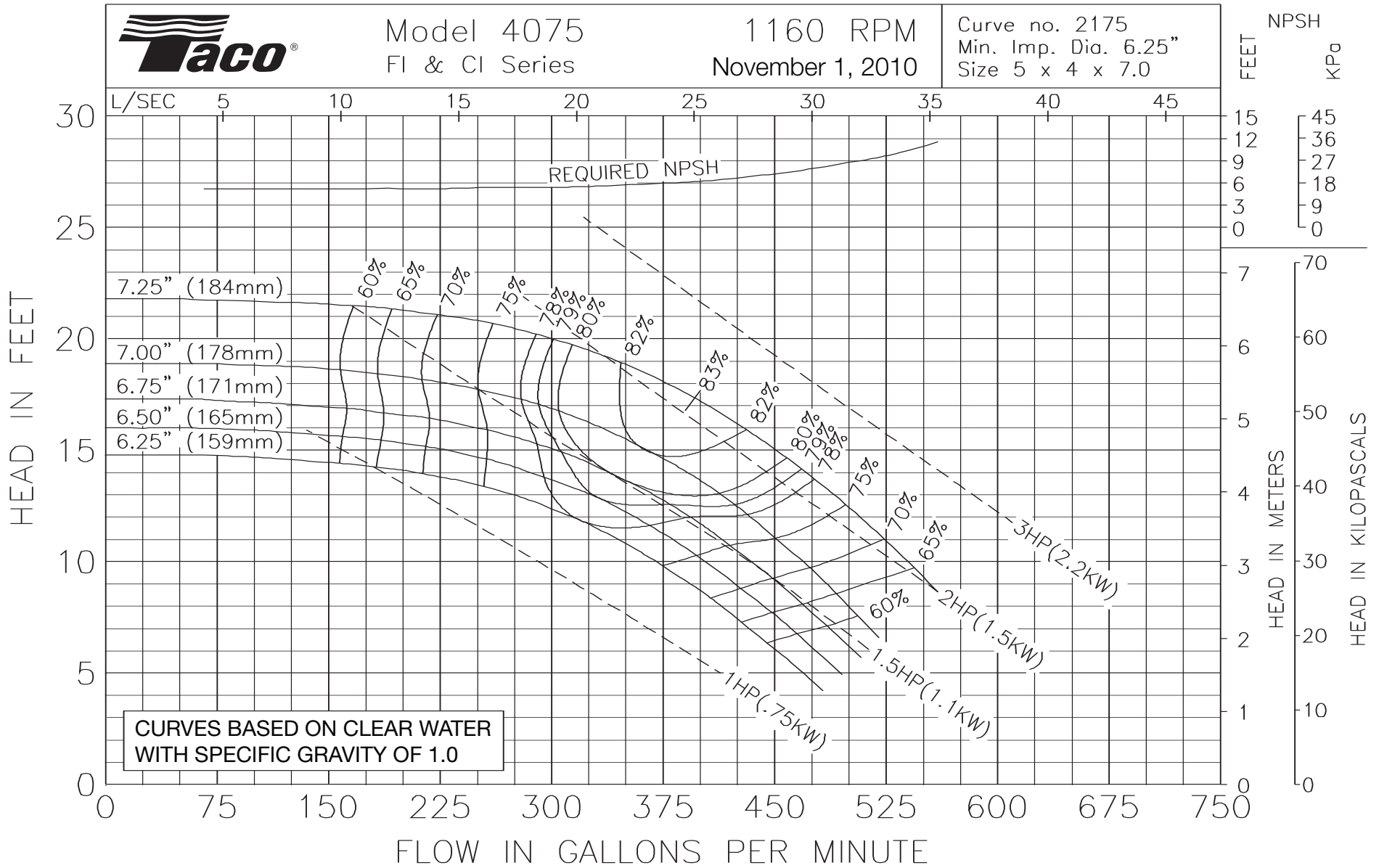




Model 4075
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2175
Min. Imp. Dia. 6.25"
Size 5 x 4 x 7.0

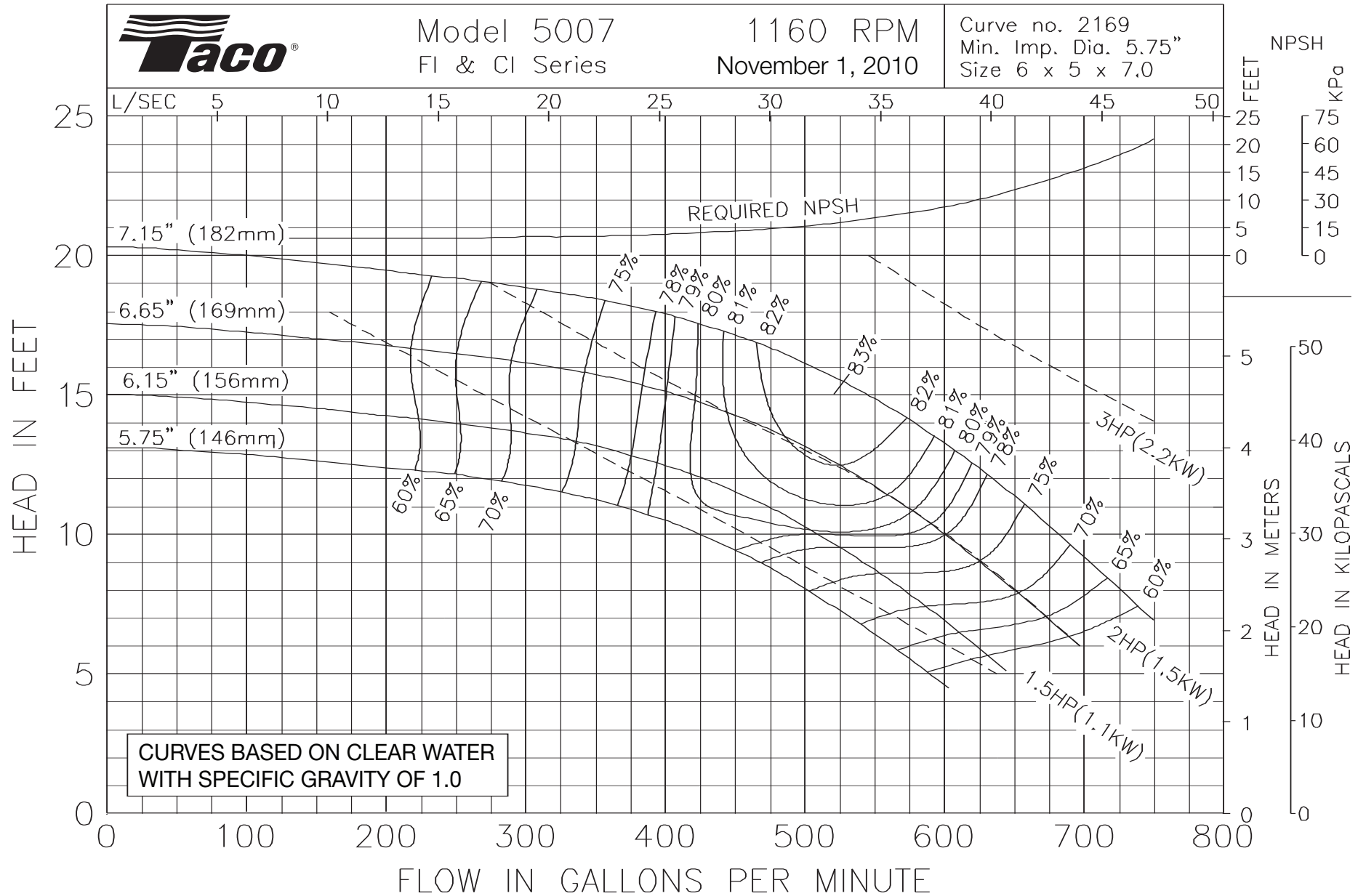




Model 5007
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2169
Min. Imp. Dia. 5.75"
Size 6 x 5 x 7.0

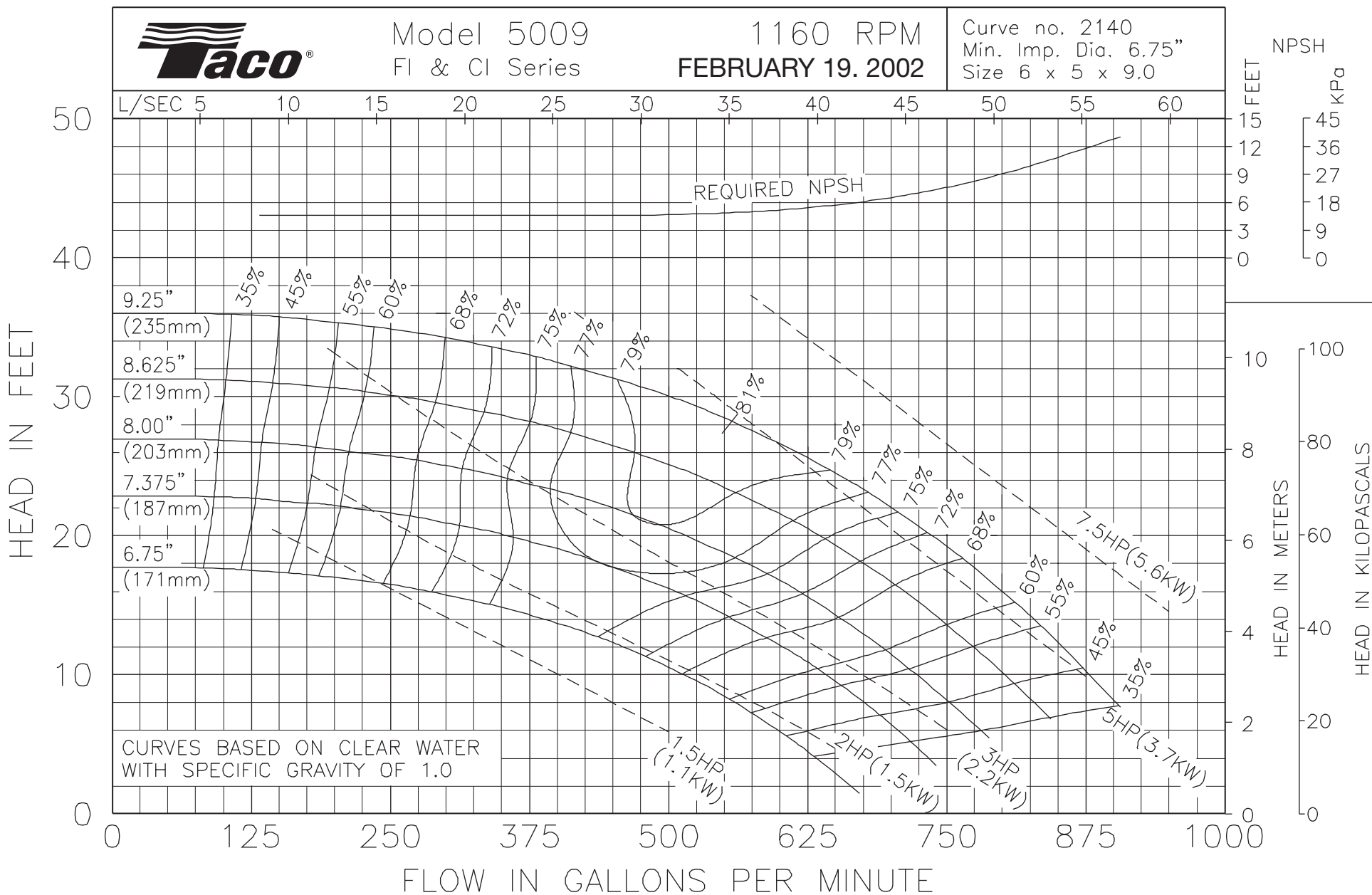




Model 5009
FI & CI Series

1160 RPM
FEBRUARY 19, 2002

Curve no. 2140
Min. Imp. Dia. 6.75"
Size 6 x 5 x 9.0



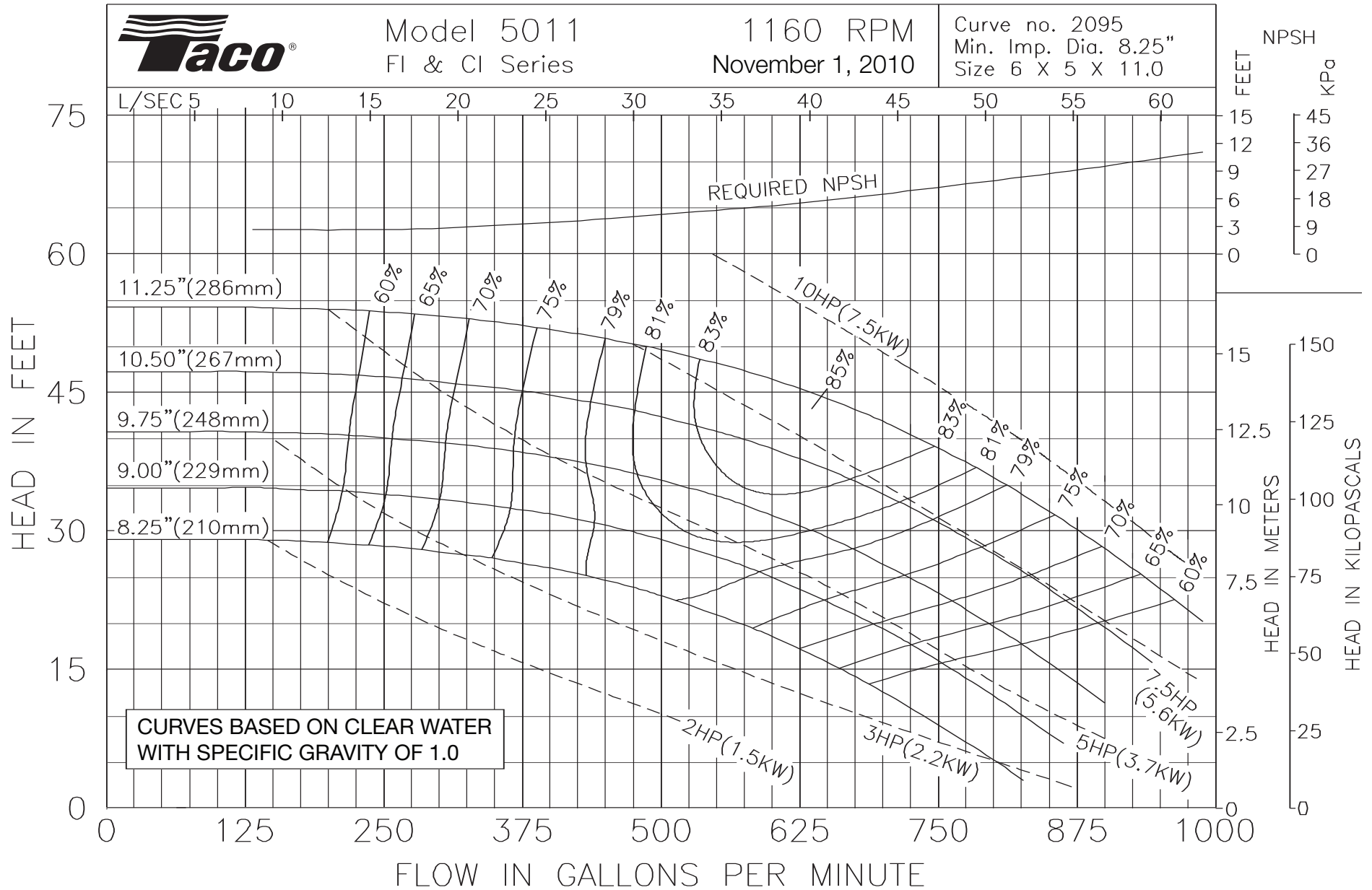
CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0



Model 5011
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2095
Min. Imp. Dia. 8.25"
Size 6 X 5 X 11.0

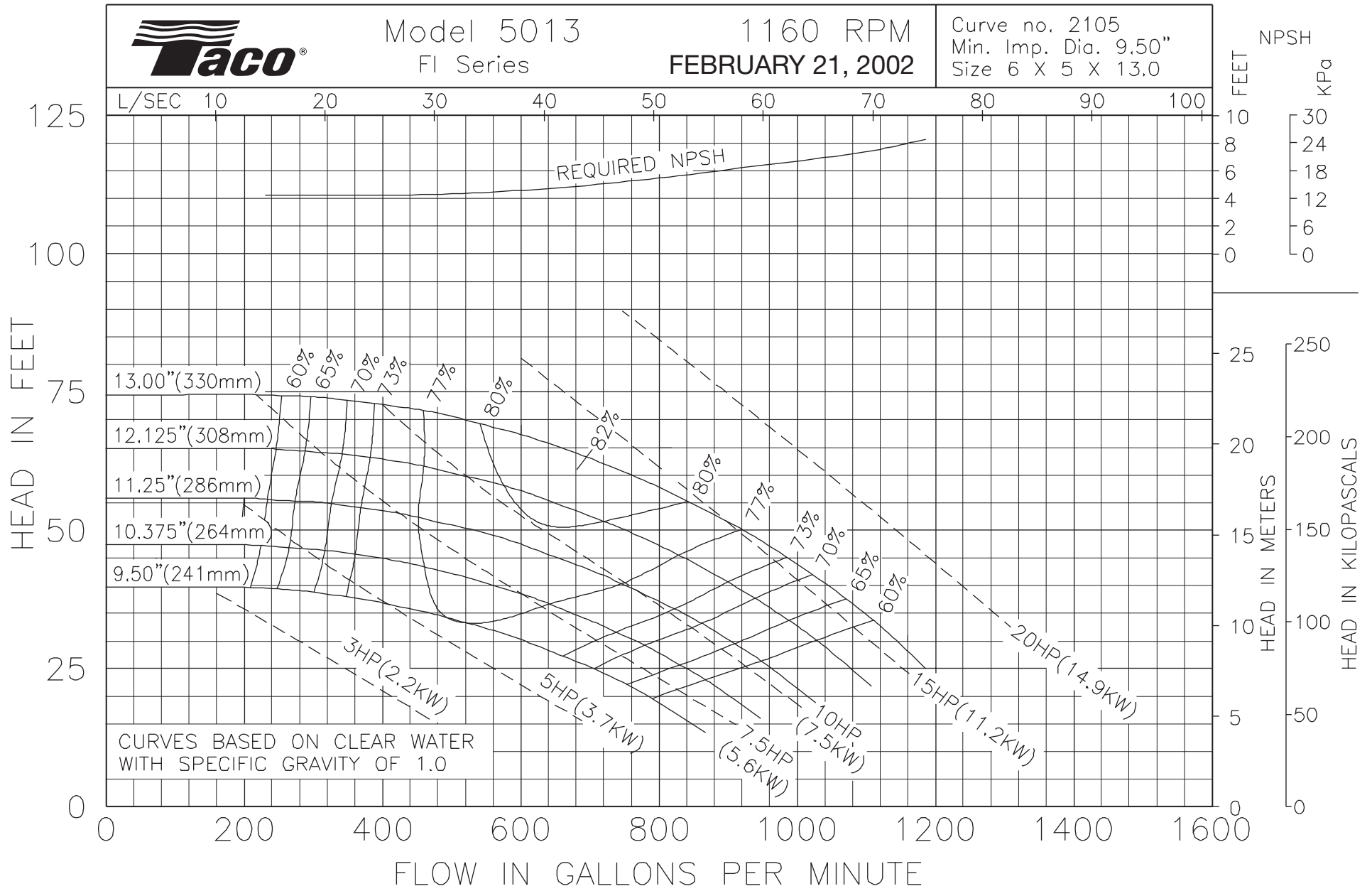




Model 5013
FI Series

1160 RPM
FEBRUARY 21, 2002

Curve no. 2105
Min. Imp. Dia. 9.50"
Size 6 X 5 X 13.0

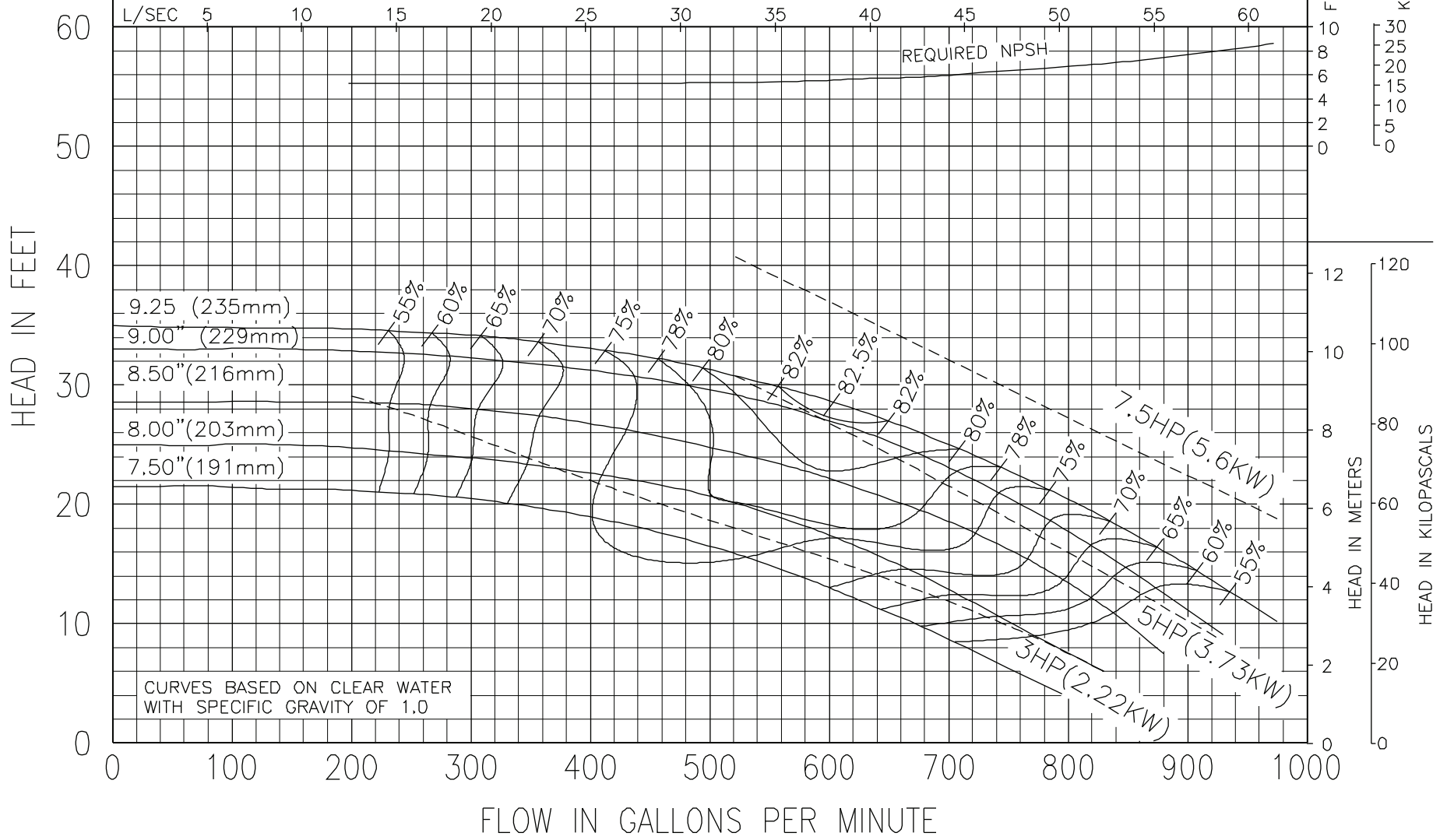


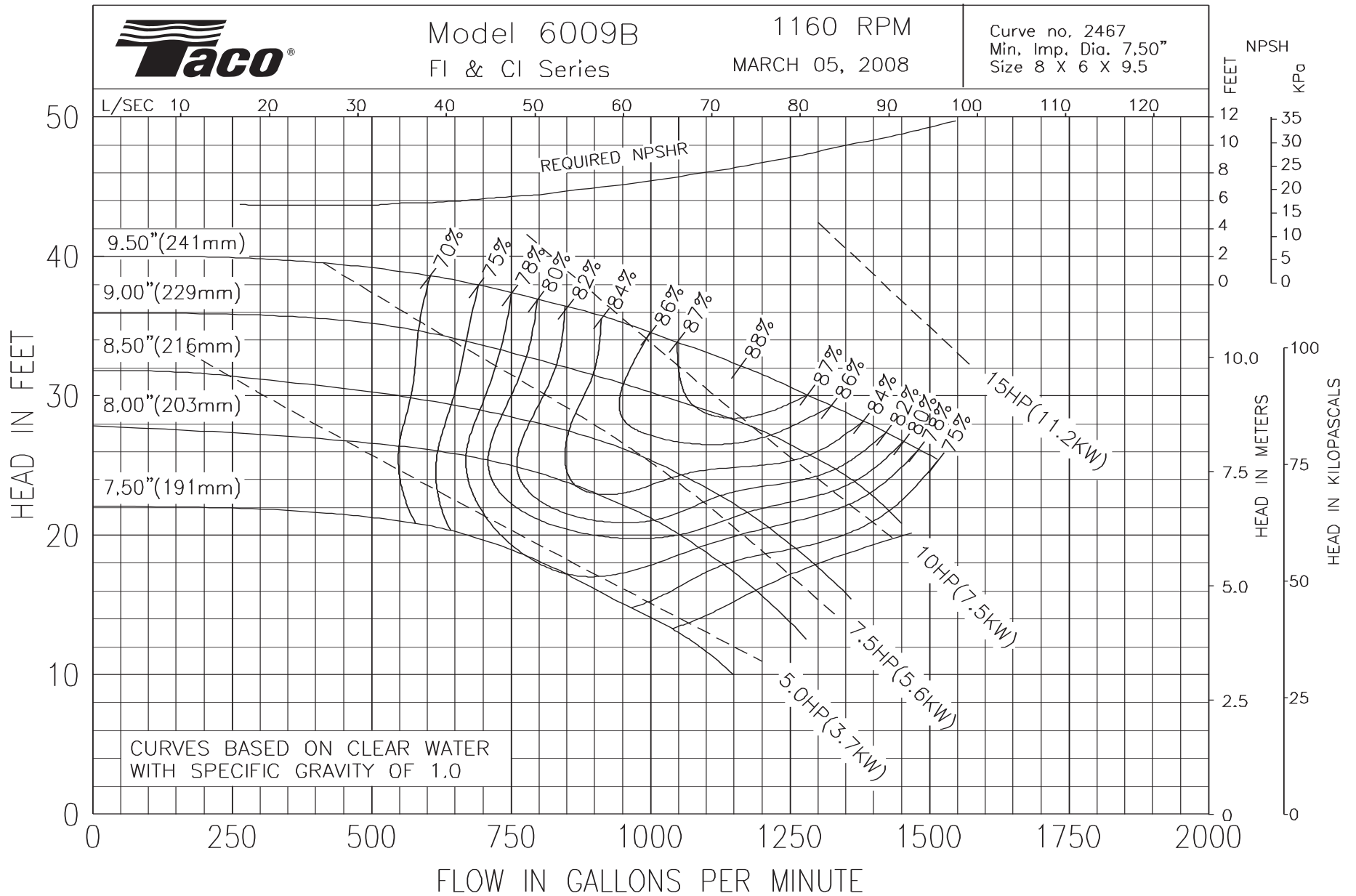


Model 5095
FI & CI Series

1160 RPM
May 14, 2008

Curve no. 2479
Min. Imp. Dia. 7.50
Size 6 x 5 x 9.25



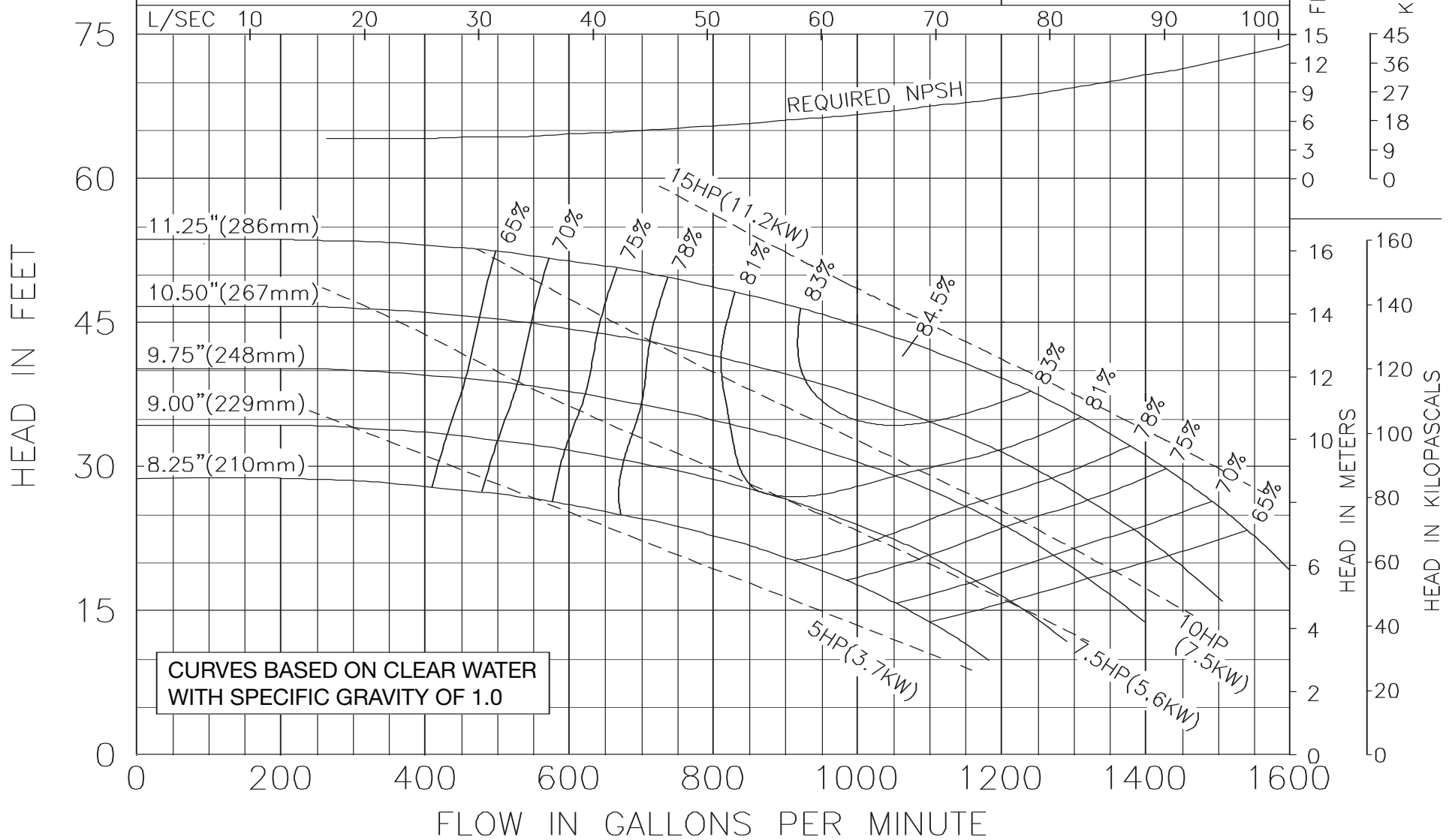




Model 6011
FI & CI Series

1160 RPM
November 1, 2010

Curve no. 2102
Min. Imp. Dia. 8.25
Size 8 X 6 X 11.0

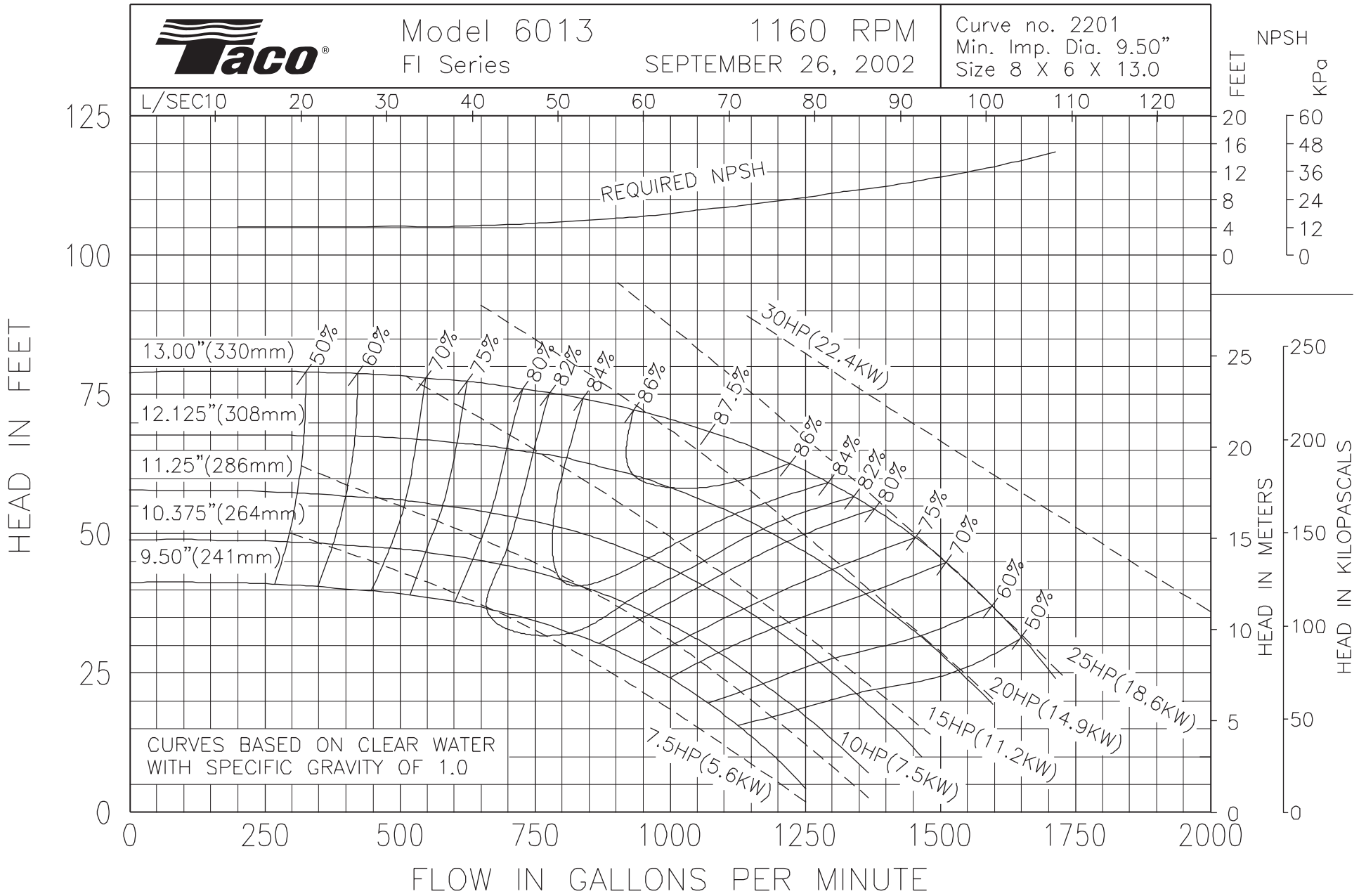




Model 6013
FI Series

1160 RPM
SEPTEMBER 26, 2002

Curve no. 2201
Min. Imp. Dia. 9.50"
Size 8 X 6 X 13.0

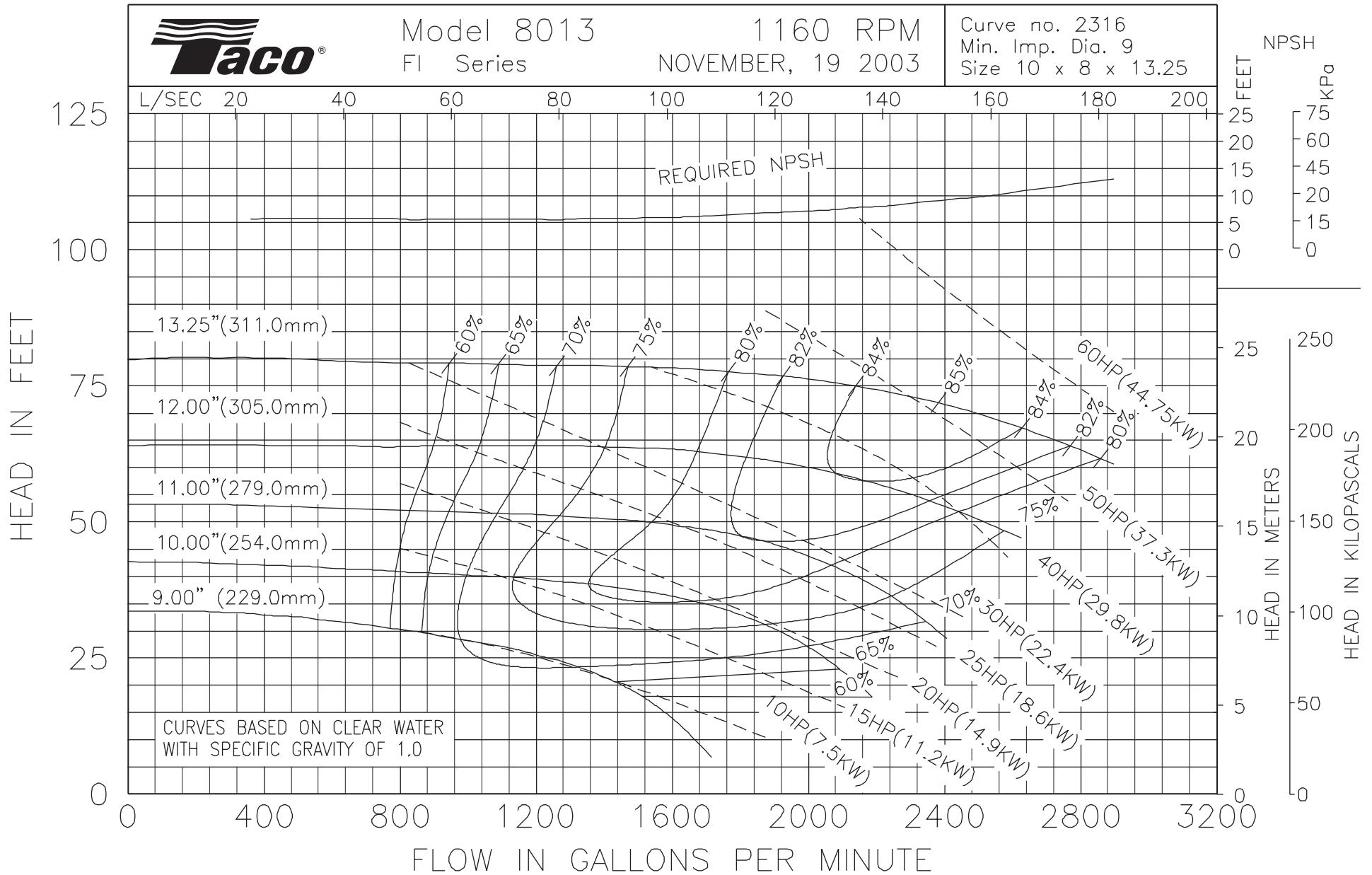




Model 8013
FI Series

1160 RPM
NOVEMBER, 19 2003

Curve no. 2316
Min. Imp. Dia. 9
Size 10 x 8 x 13.25

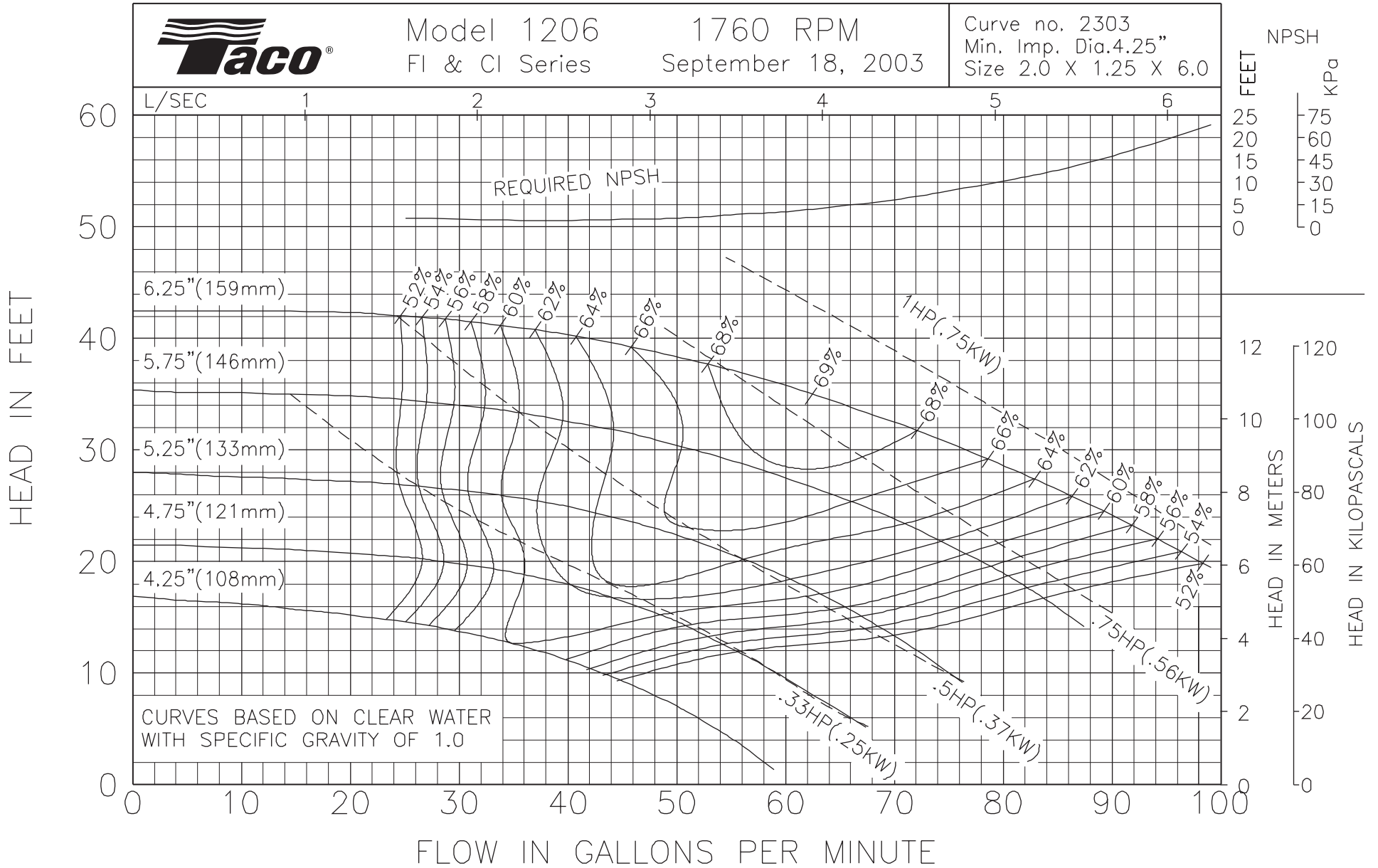




Model 1206
FI & CI Series

1760 RPM
September 18, 2003

Curve no. 2303
Min. Imp. Dia. 4.25"
Size 2.0 X 1.25 X 6.0

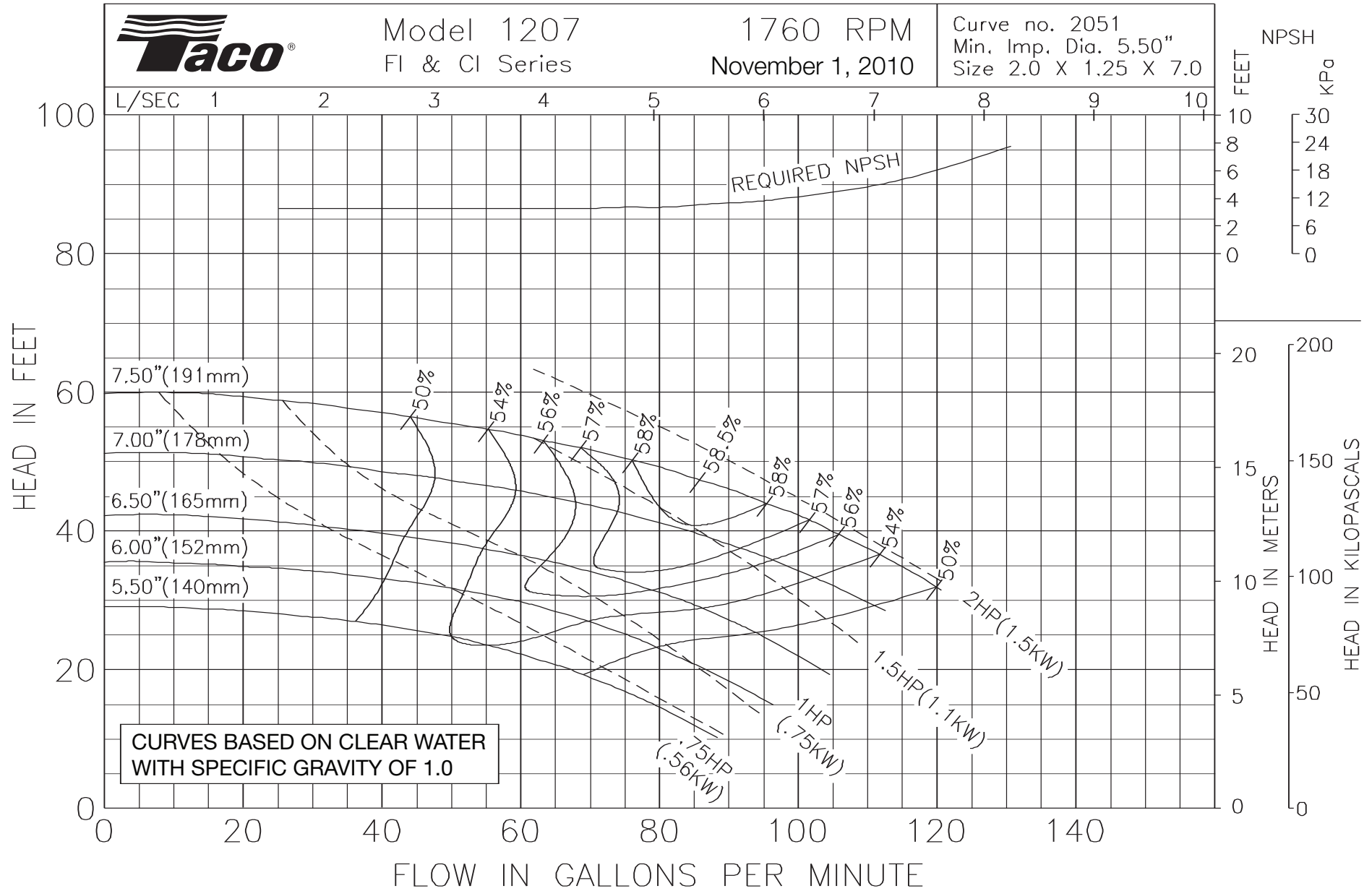


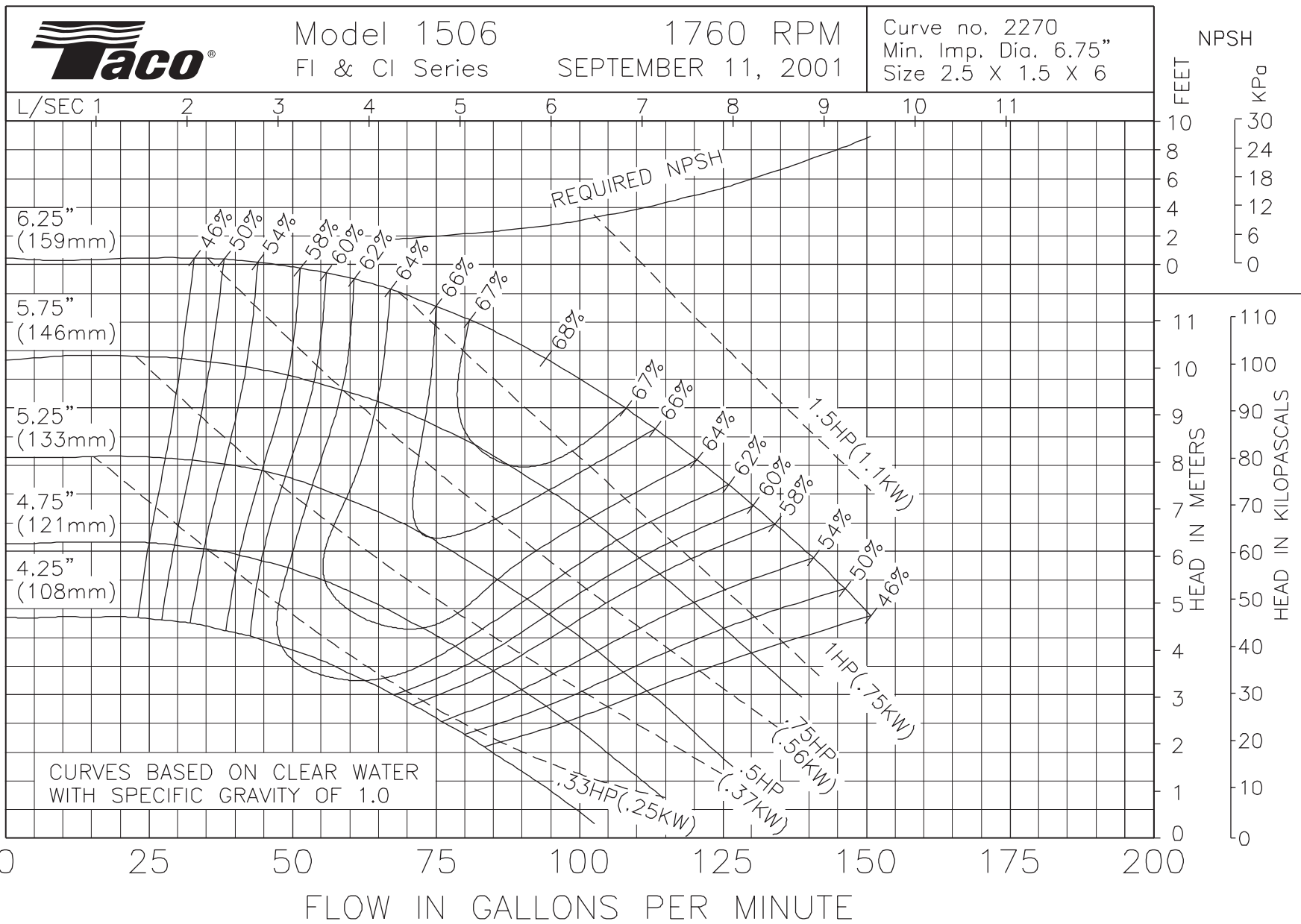


Model 1207
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2051
Min. Imp. Dia. 5.50"
Size 2.0 X 1.25 X 7.0



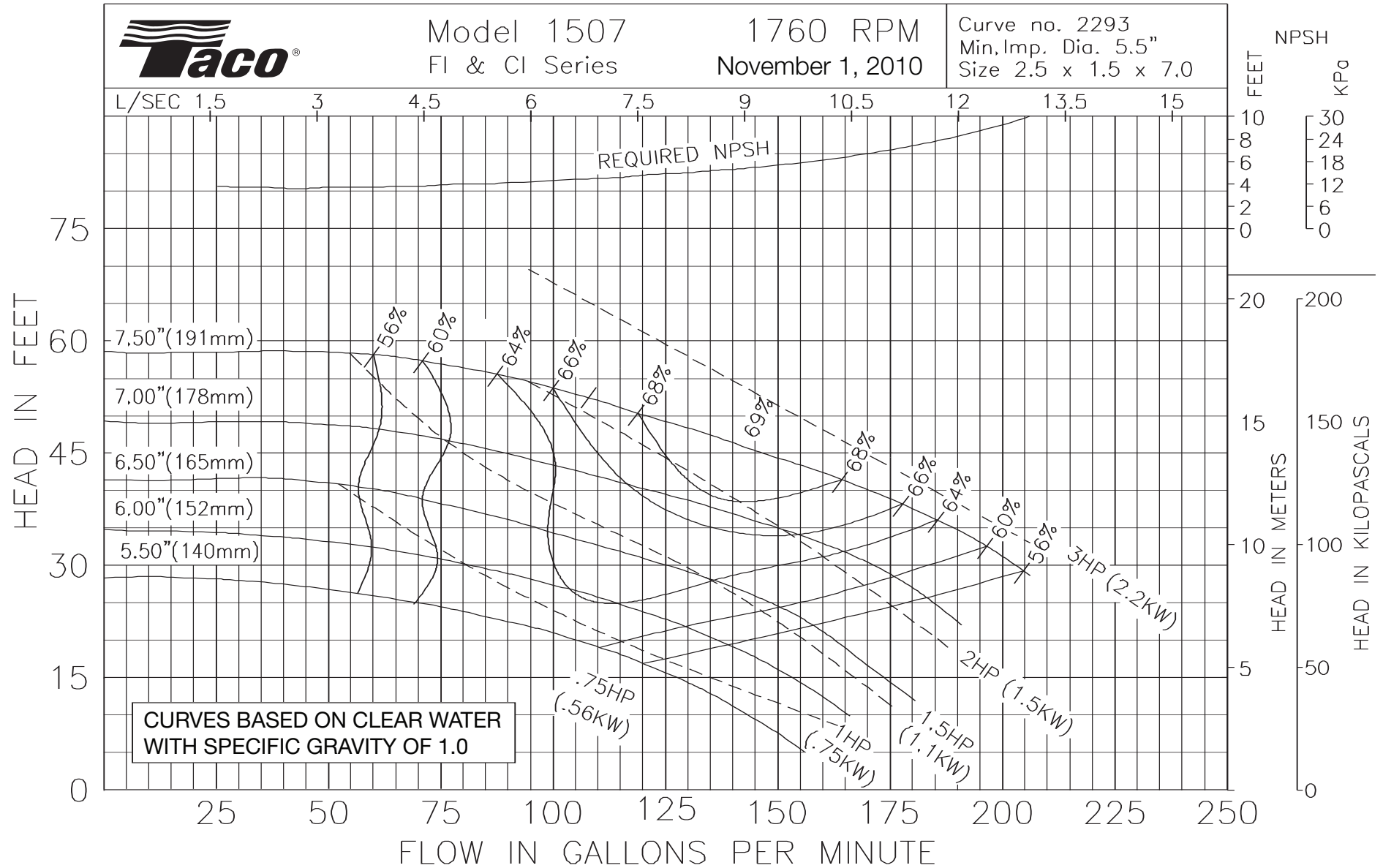




Model 1507
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2293
Min. Imp. Dia. 5.5"
Size 2.5 x 1.5 x 7.0

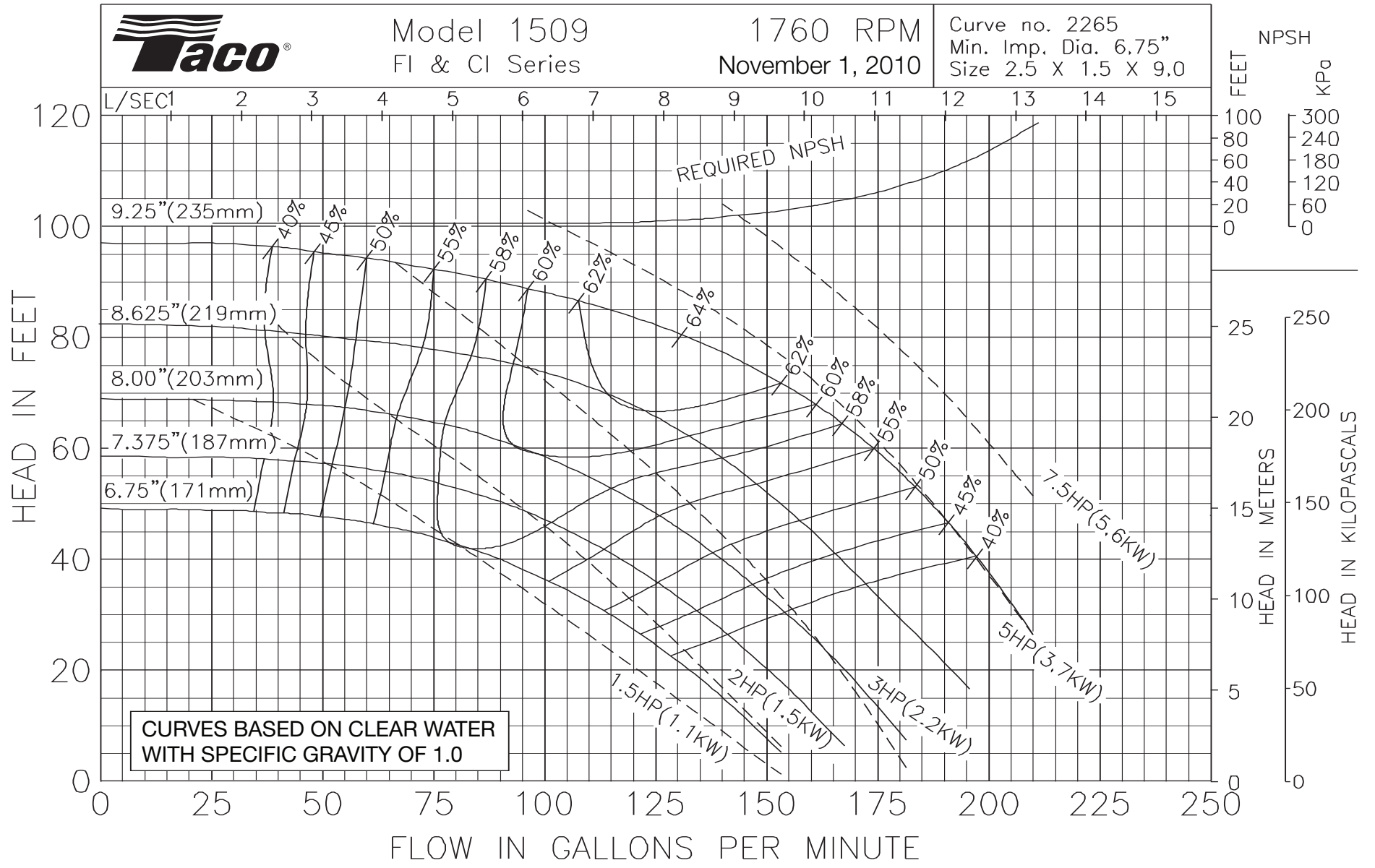




Model 1509
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2265
Min. Imp. Dia. 6.75"
Size 2.5 X 1.5 X 9.0



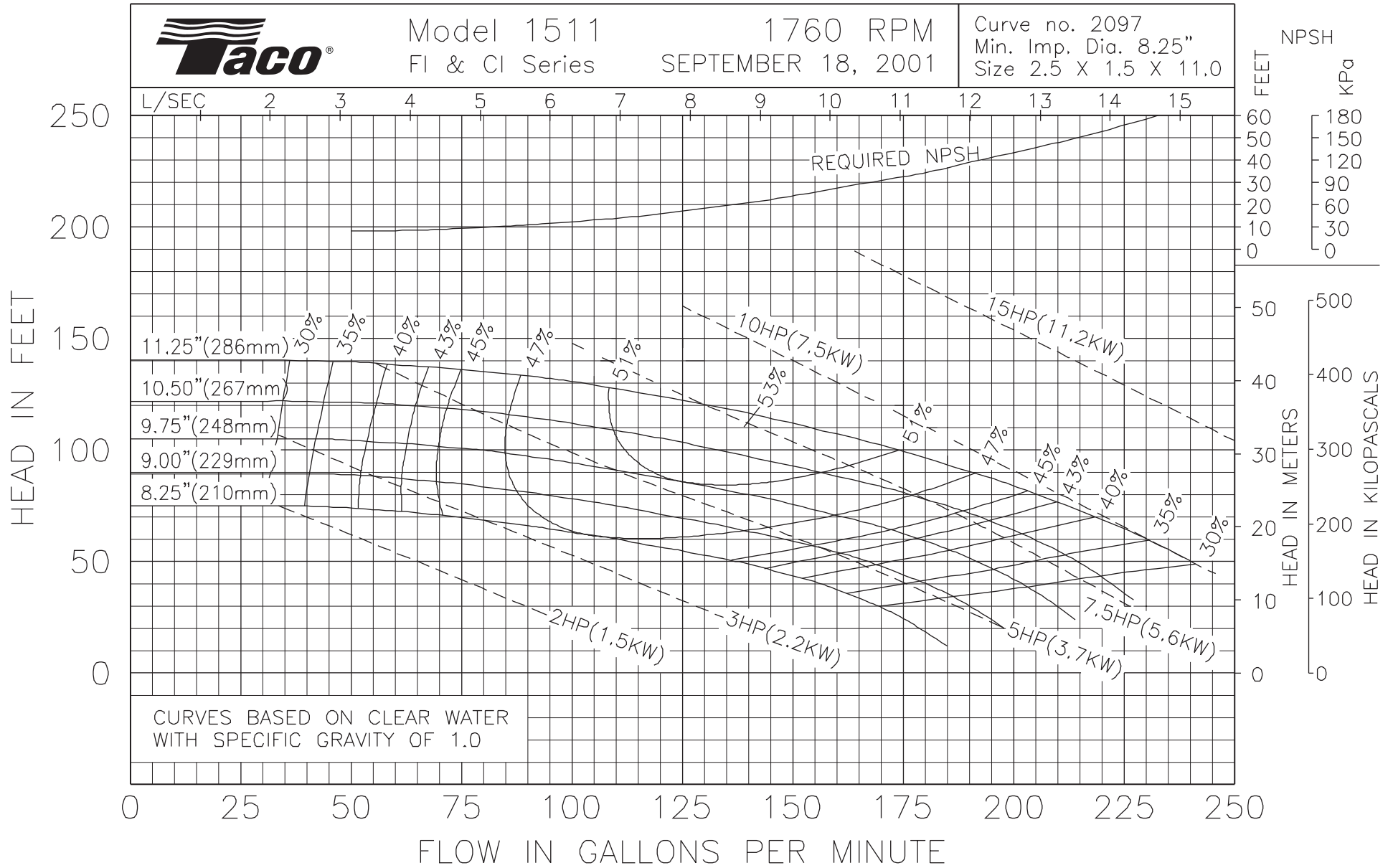
CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0



Model 1511
FI & CI Series

1760 RPM
SEPTEMBER 18, 2001

Curve no. 2097
Min. Imp. Dia. 8.25"
Size 2.5 X 1.5 X 11.0

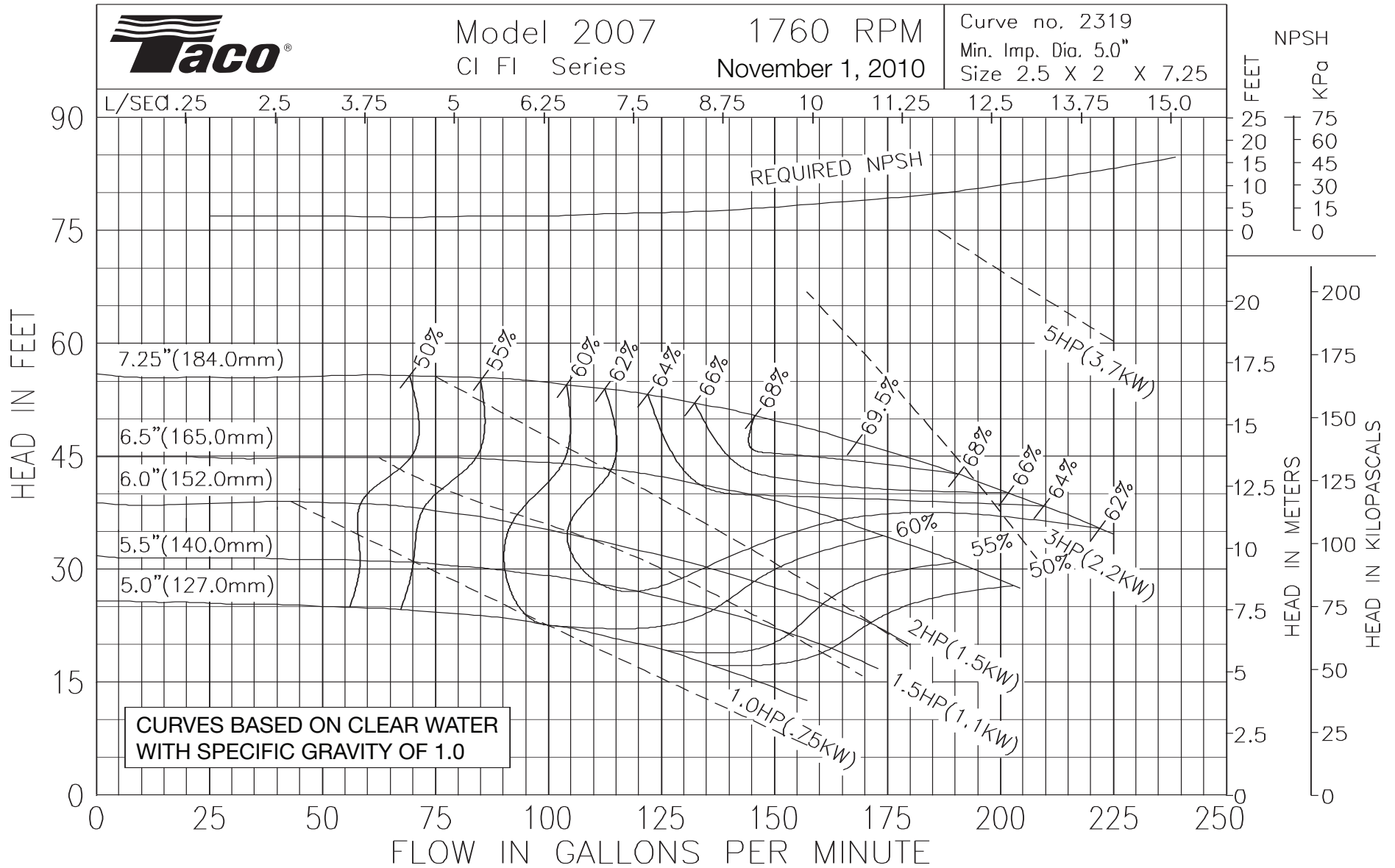




Model 2007
CI FI Series

1760 RPM
November 1, 2010

Curve no. 2319
Min. Imp. Dia. 5.0"
Size 2.5 X 2 X 7.25

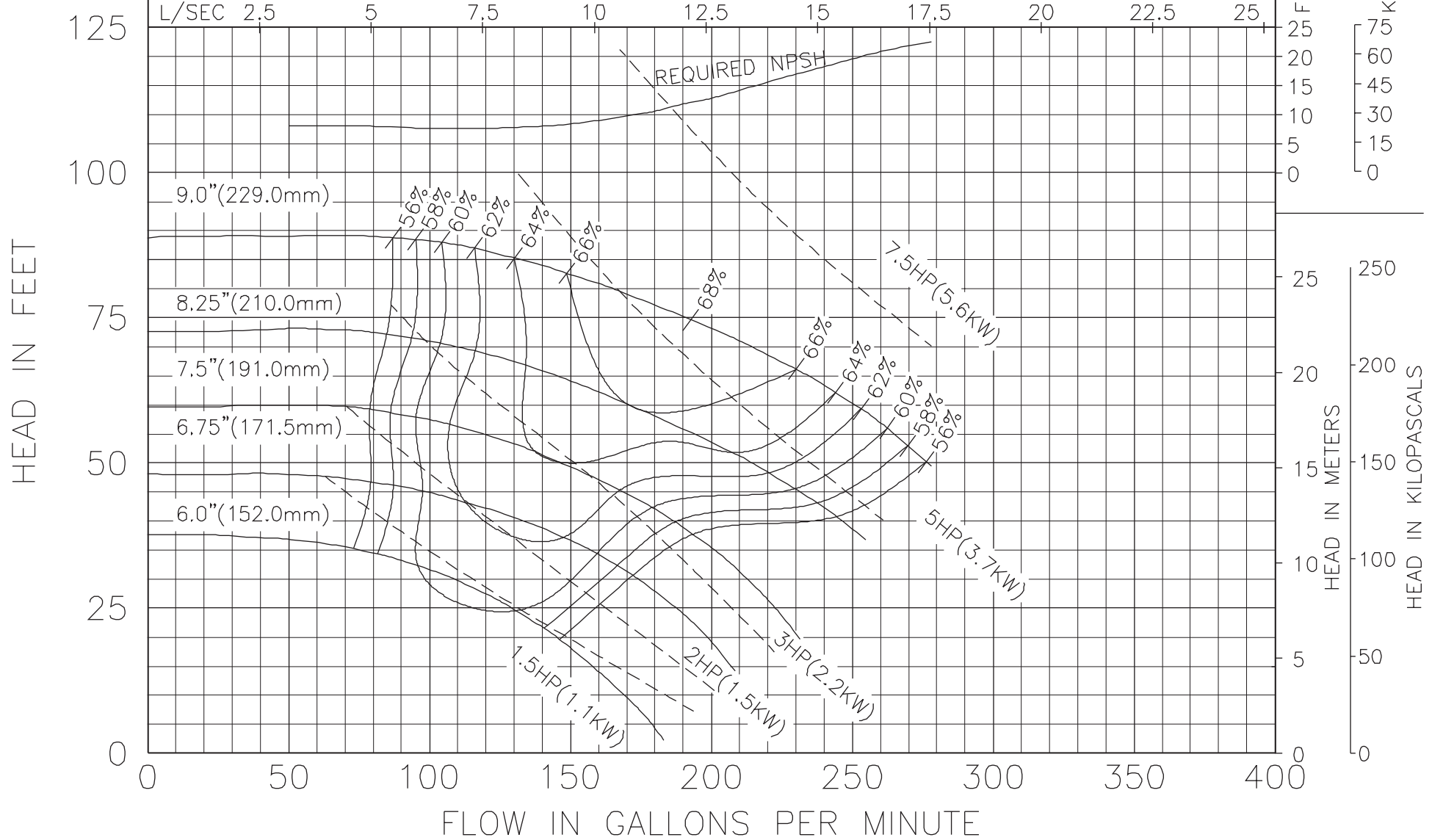




Model 2009
FI & CI Series

1760 RPM
DECEMBER, 9 2003

PC-2324
Min. Imp. Dia. 6.0
Size 2.5 x 2 x 9

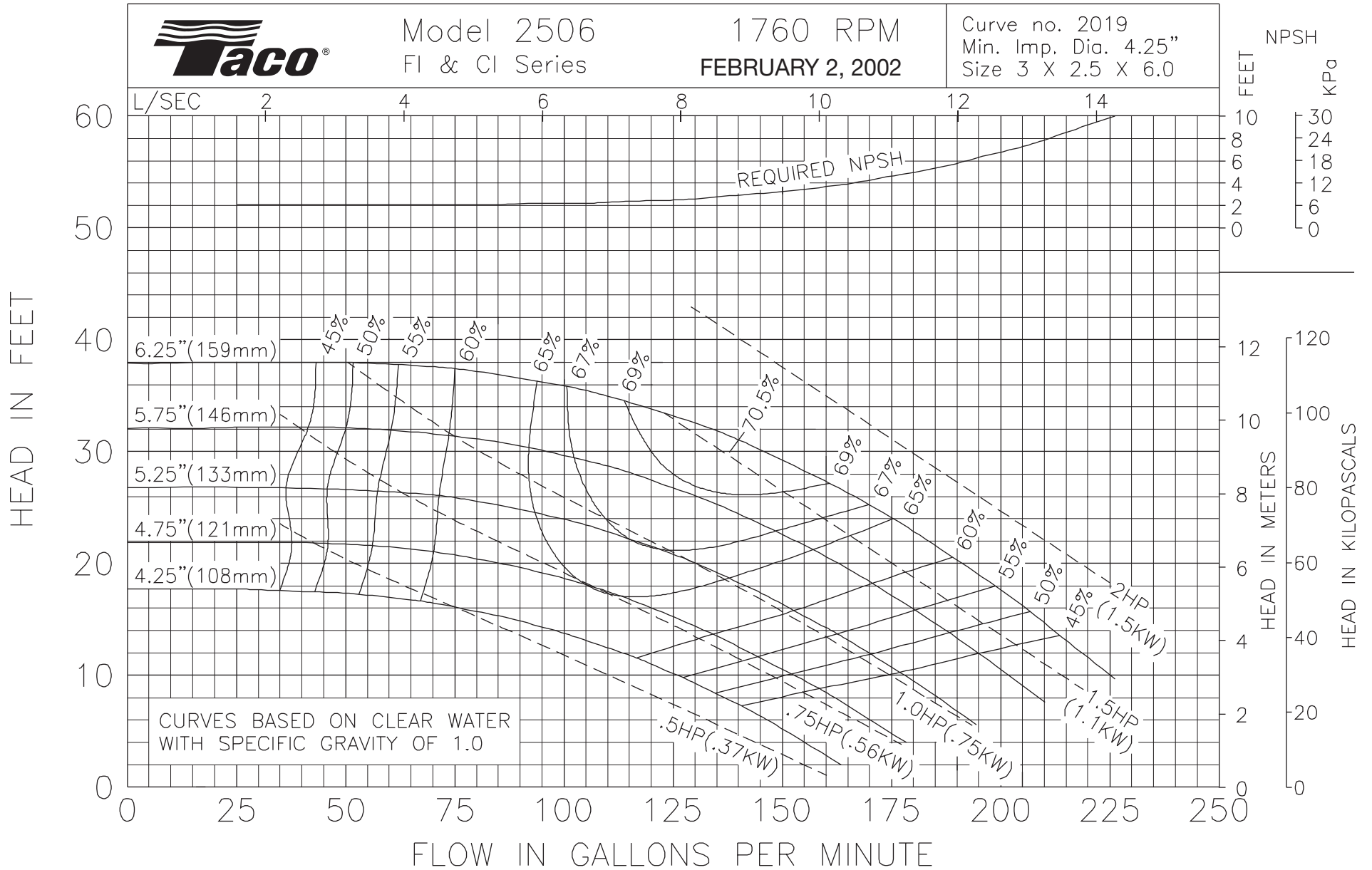




Model 2506
FI & CI Series

1760 RPM
FEBRUARY 2, 2002

Curve no. 2019
Min. Imp. Dia. 4.25"
Size 3 X 2.5 X 6.0

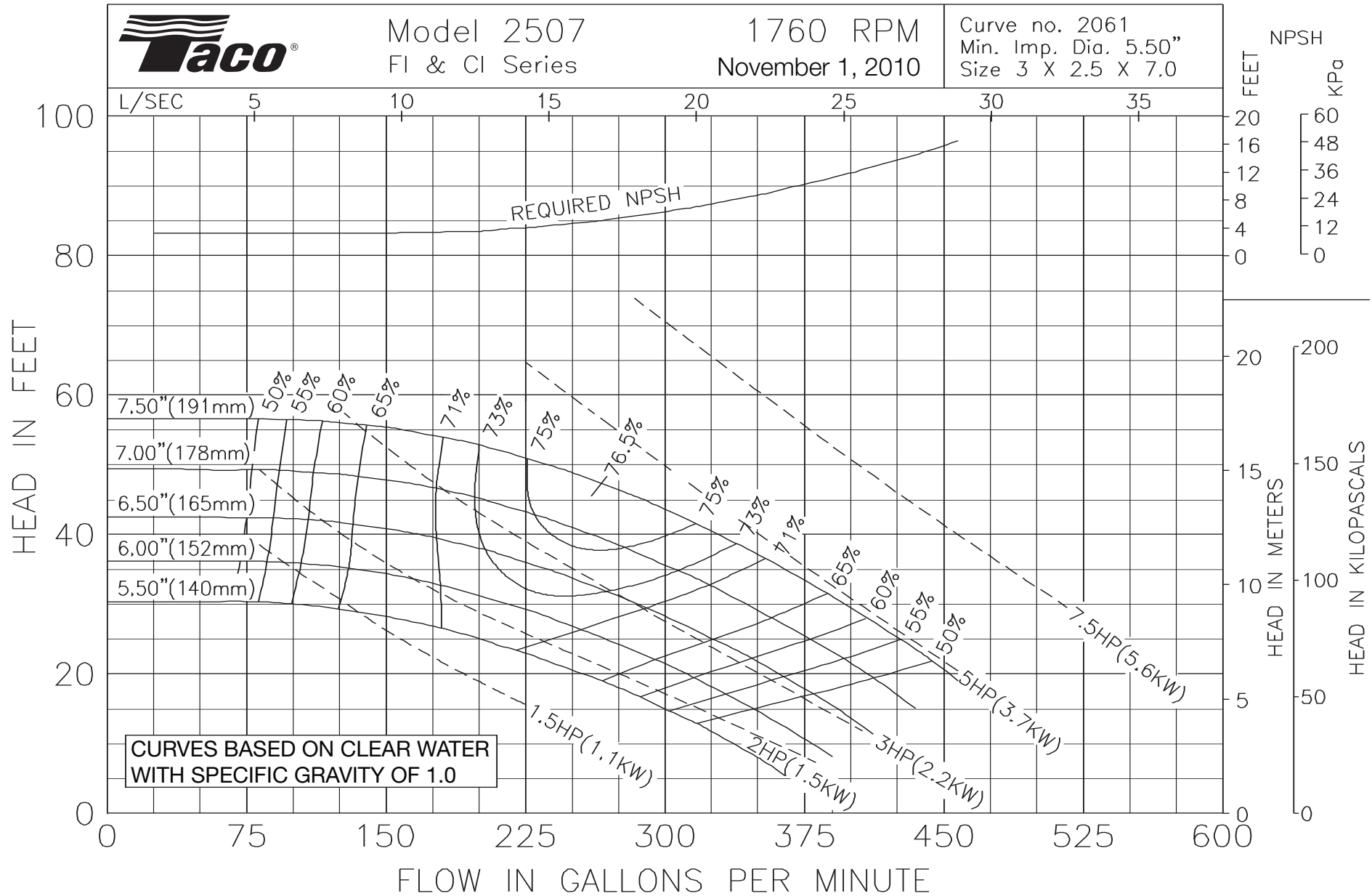




Model 2507
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2061
Min. Imp. Dia. 5.50"
Size 3 X 2.5 X 7.0

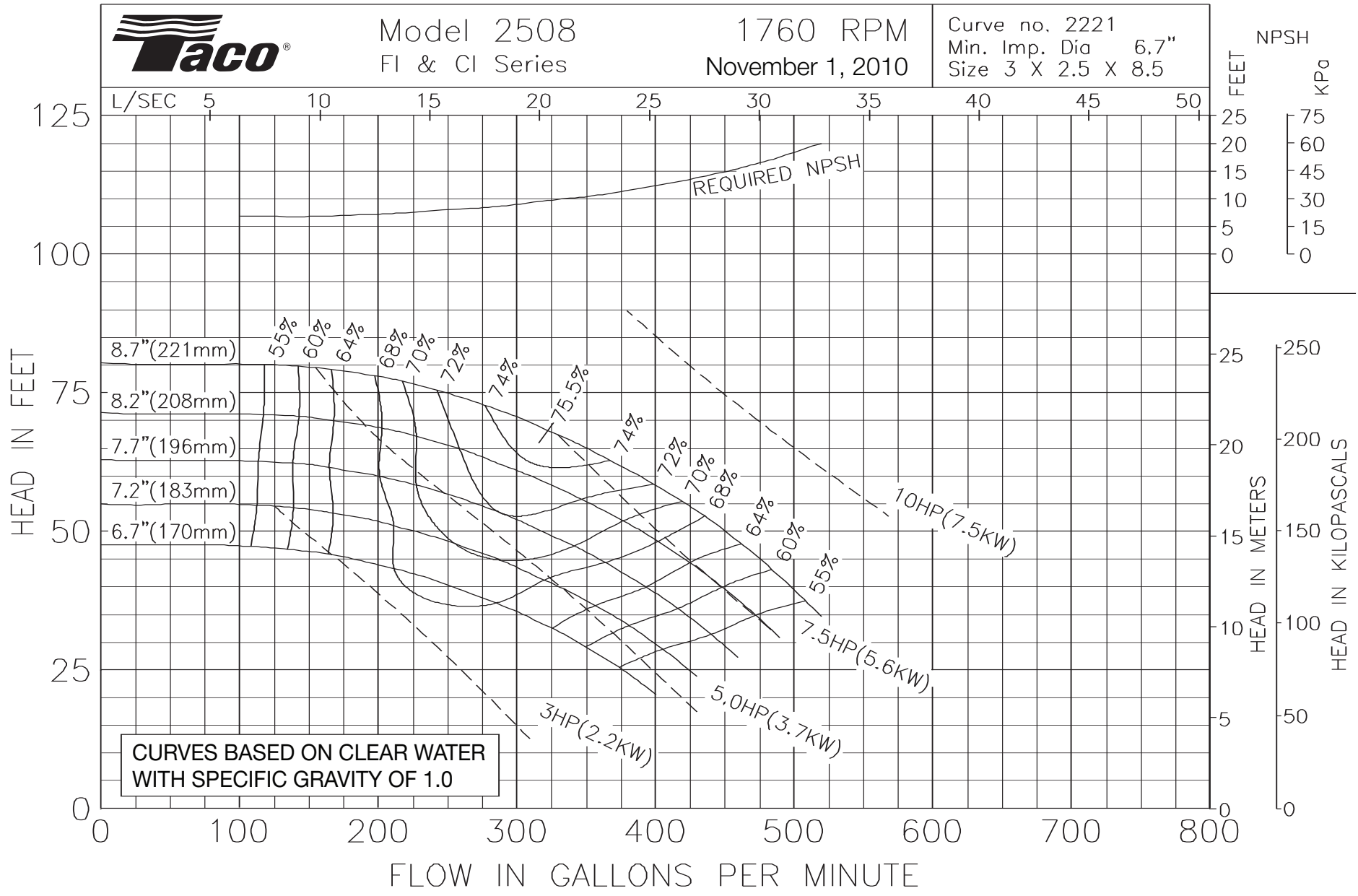




Model 2508
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2221
Min. Imp. Dia 6.7"
Size 3 X 2.5 X 8.5

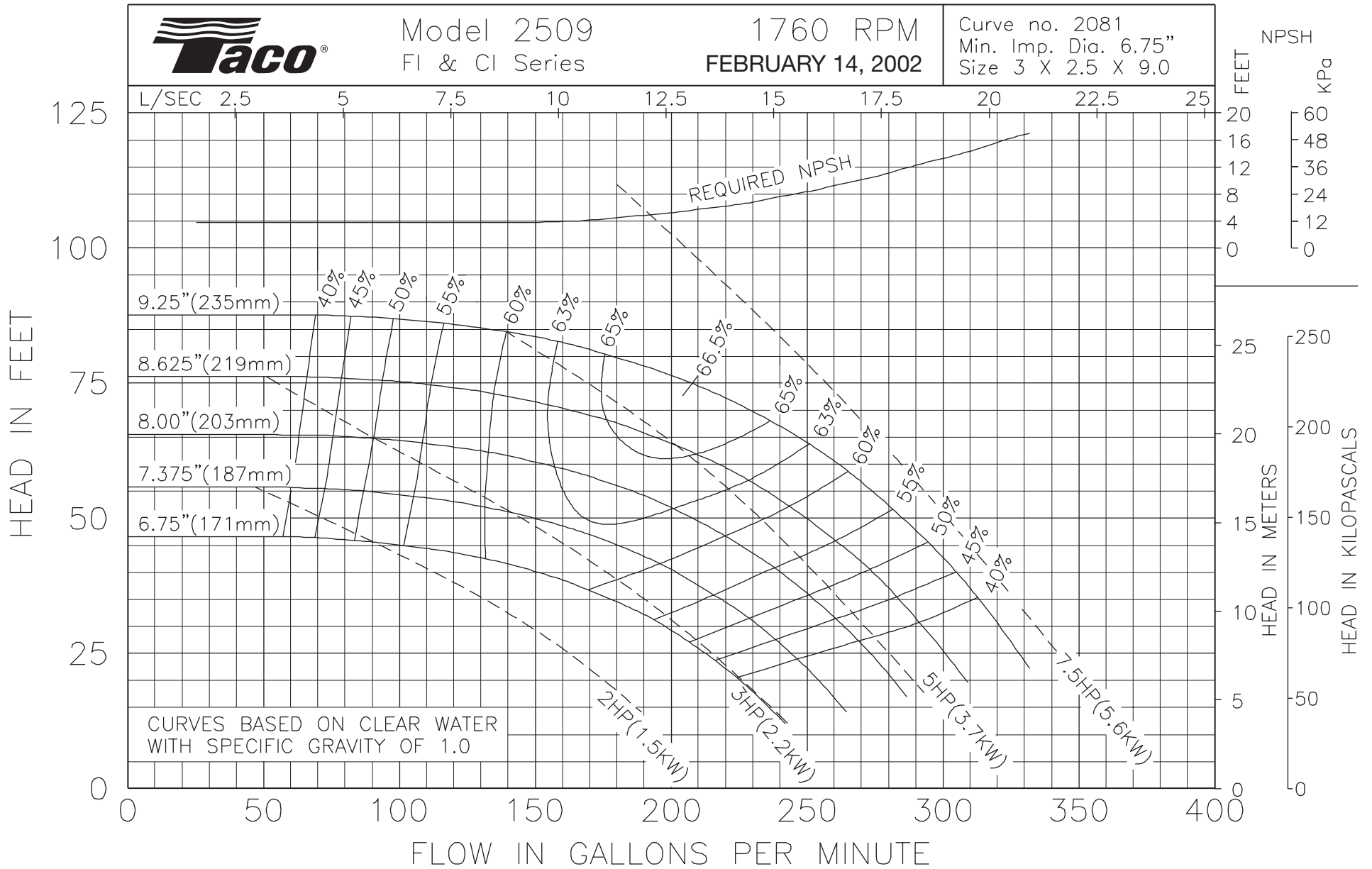




Model 2509
FI & CI Series

1760 RPM
FEBRUARY 14, 2002

Curve no. 2081
Min. Imp. Dia. 6.75"
Size 3 X 2.5 X 9.0

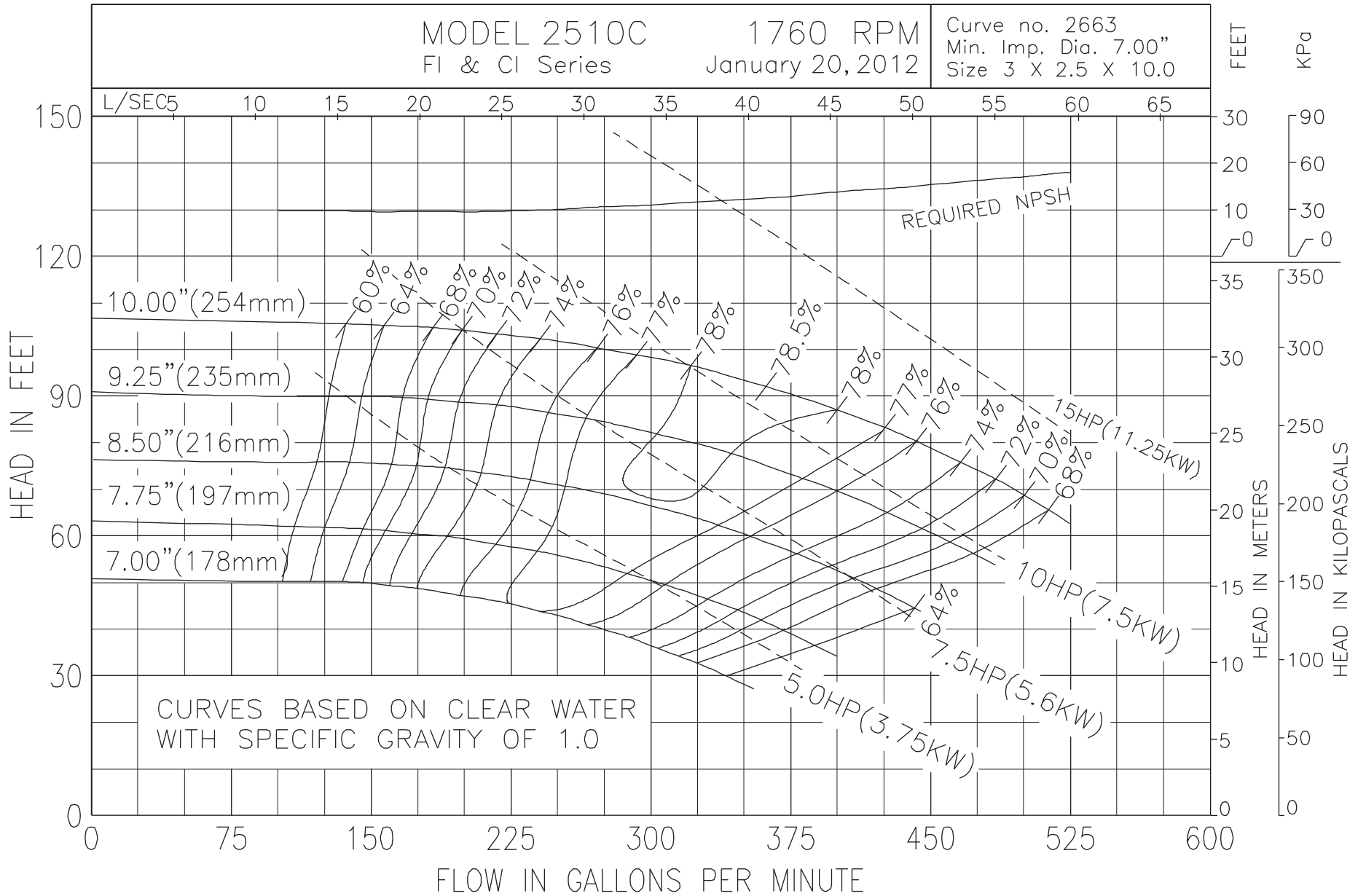


CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0

MODEL 2510C
FI & CI Series

1760 RPM
January 20, 2012

Curve no. 2663
Min. Imp. Dia. 7.00"
Size 3 X 2.5 X 10.0

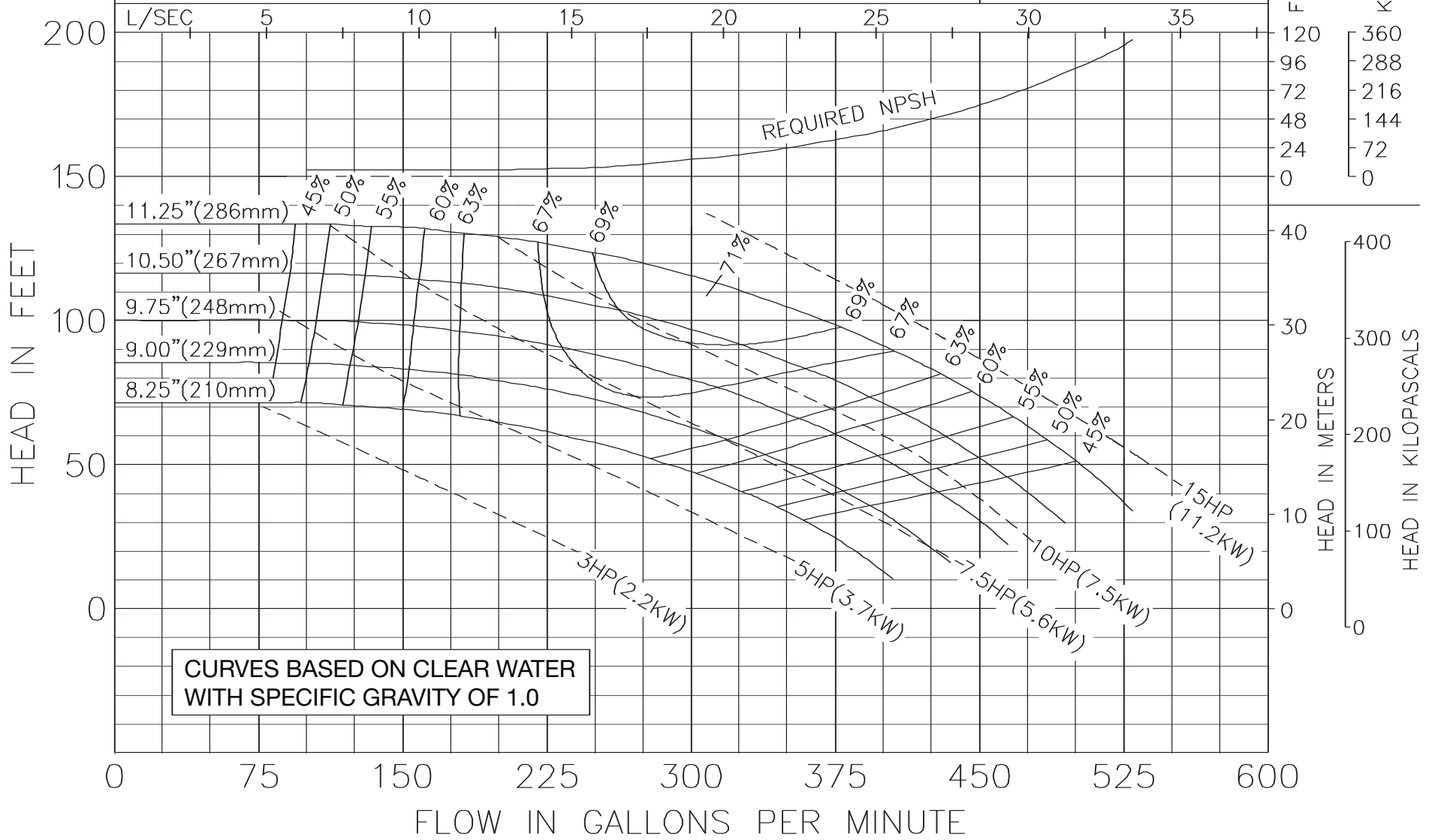




Model 2511
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2087
Min. Imp. Dia. 8.25"
Size 3 X 2.5 X 11.0

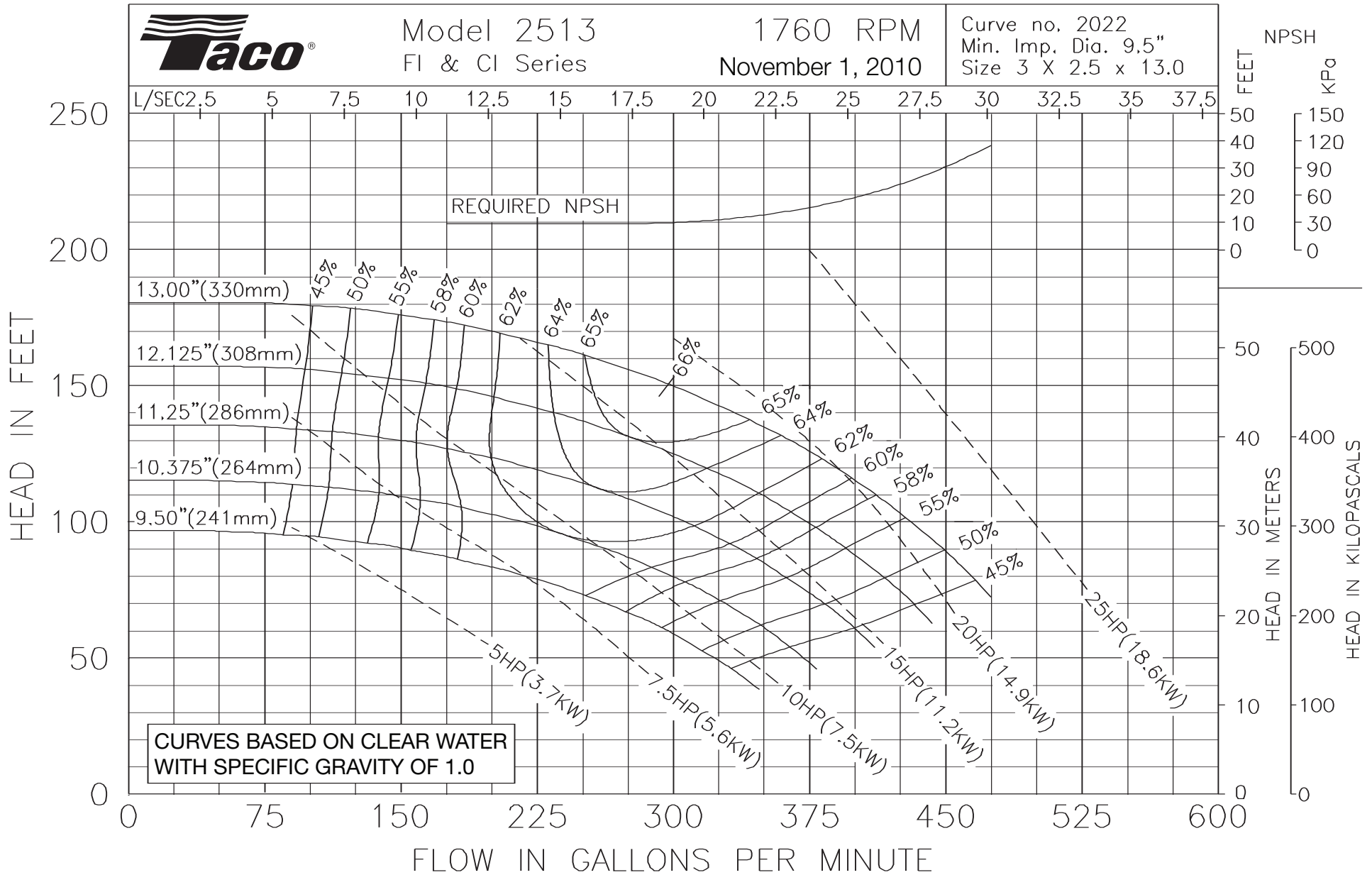




Model 2513
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2022
Min. Imp. Dia. 9.5"
Size 3 X 2.5 x 13.0

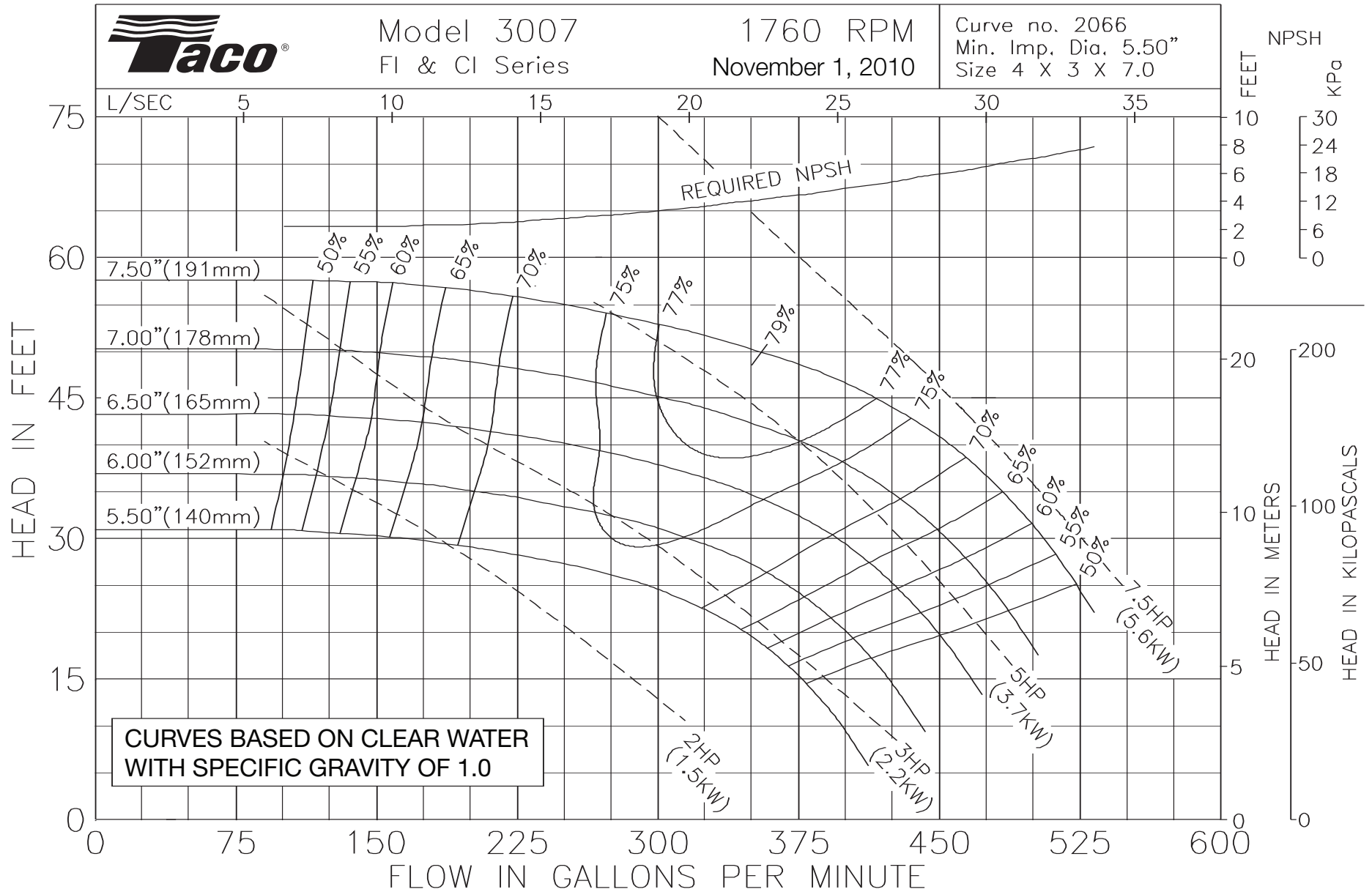




Model 3007
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2066
Min. Imp. Dia. 5.50"
Size 4 X 3 X 7.0

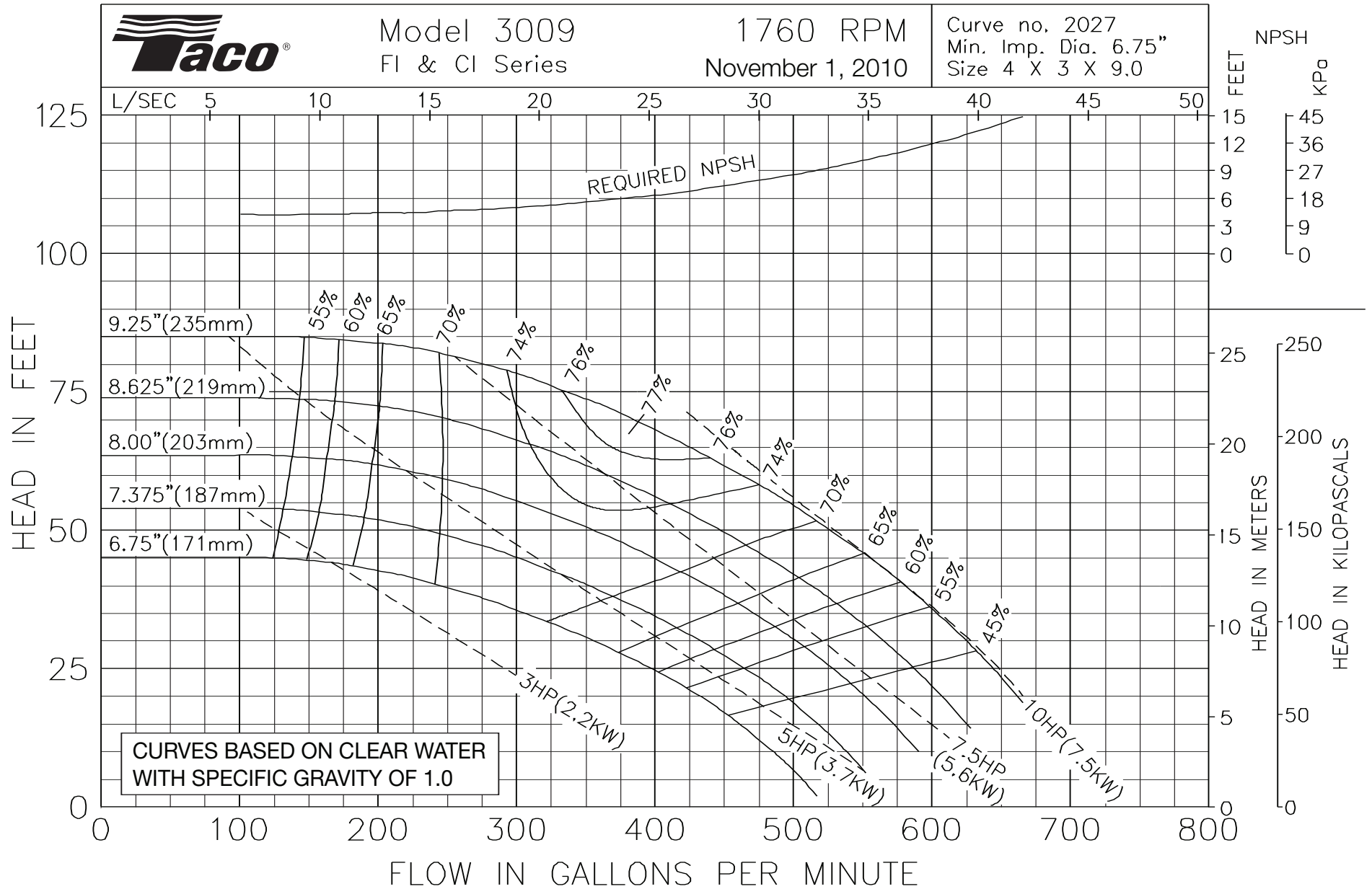




Model 3009
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2027
Min. Imp. Dia. 6.75"
Size 4 X 3 X 9.0

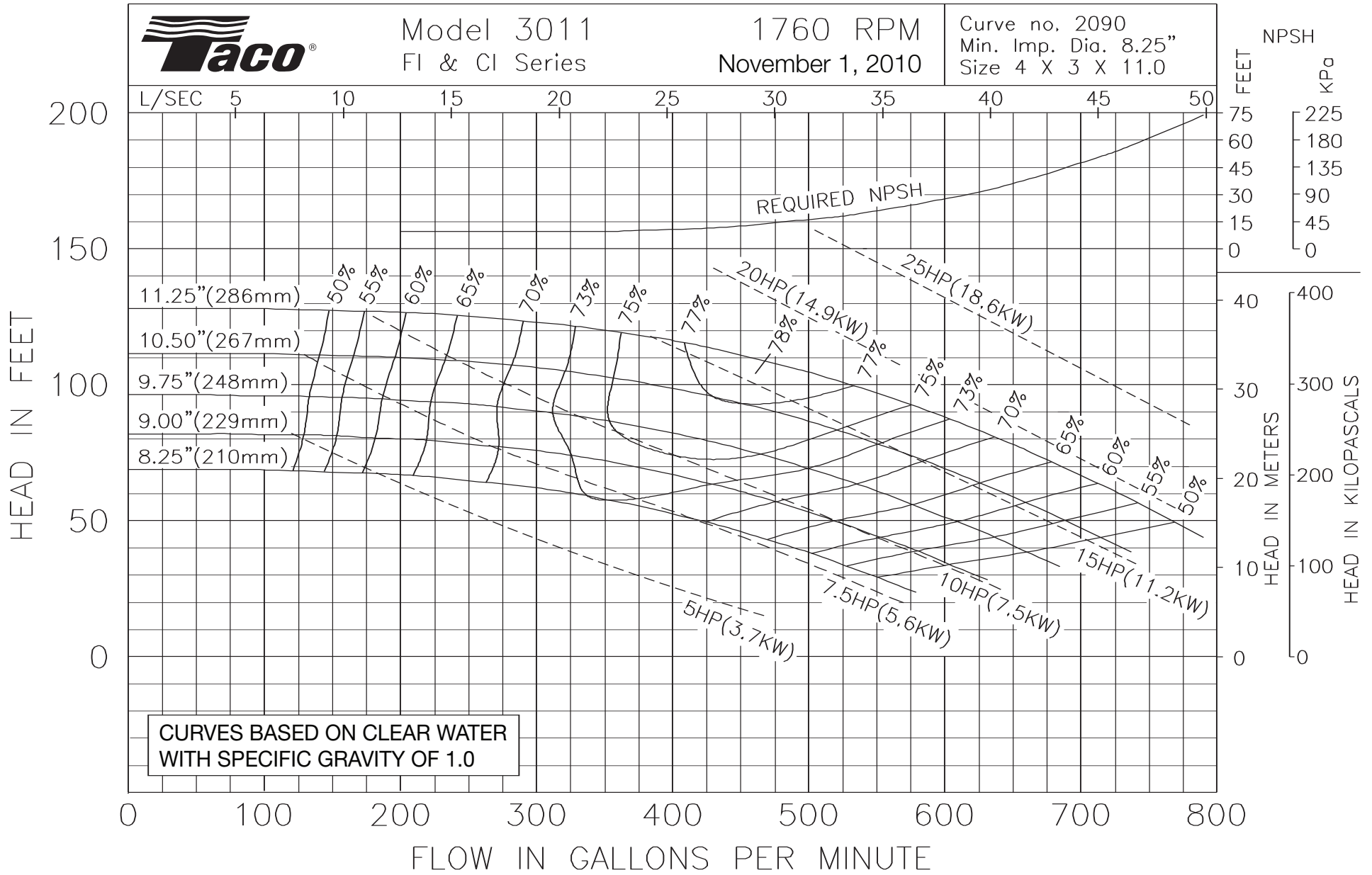




Model 3011
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2090
Min. Imp. Dia. 8.25"
Size 4 X 3 X 11.0



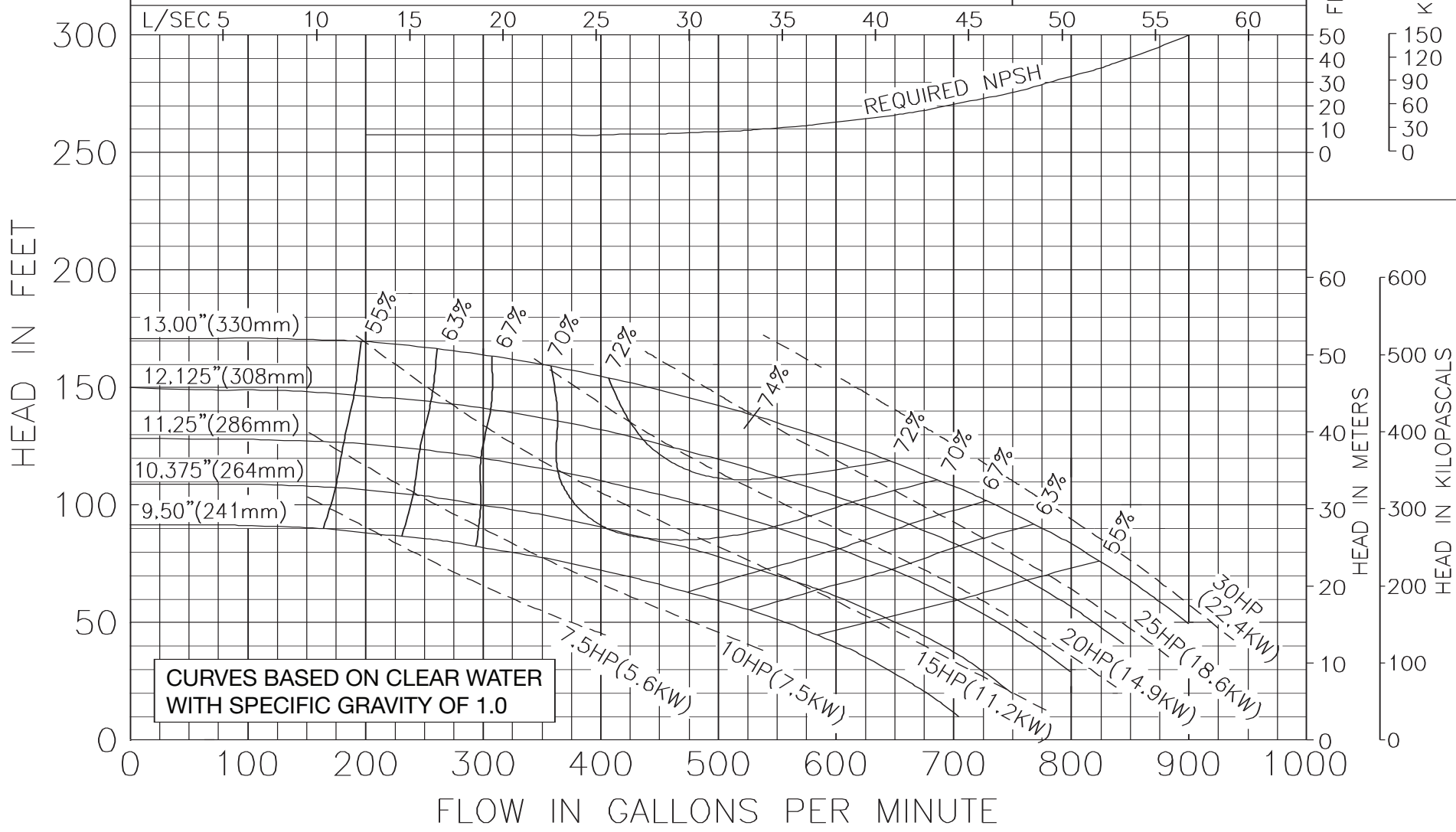
CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0



Model 3013
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2032
Min. Imp. Dia. 9.50"
Size 4 X 3 X 13.0

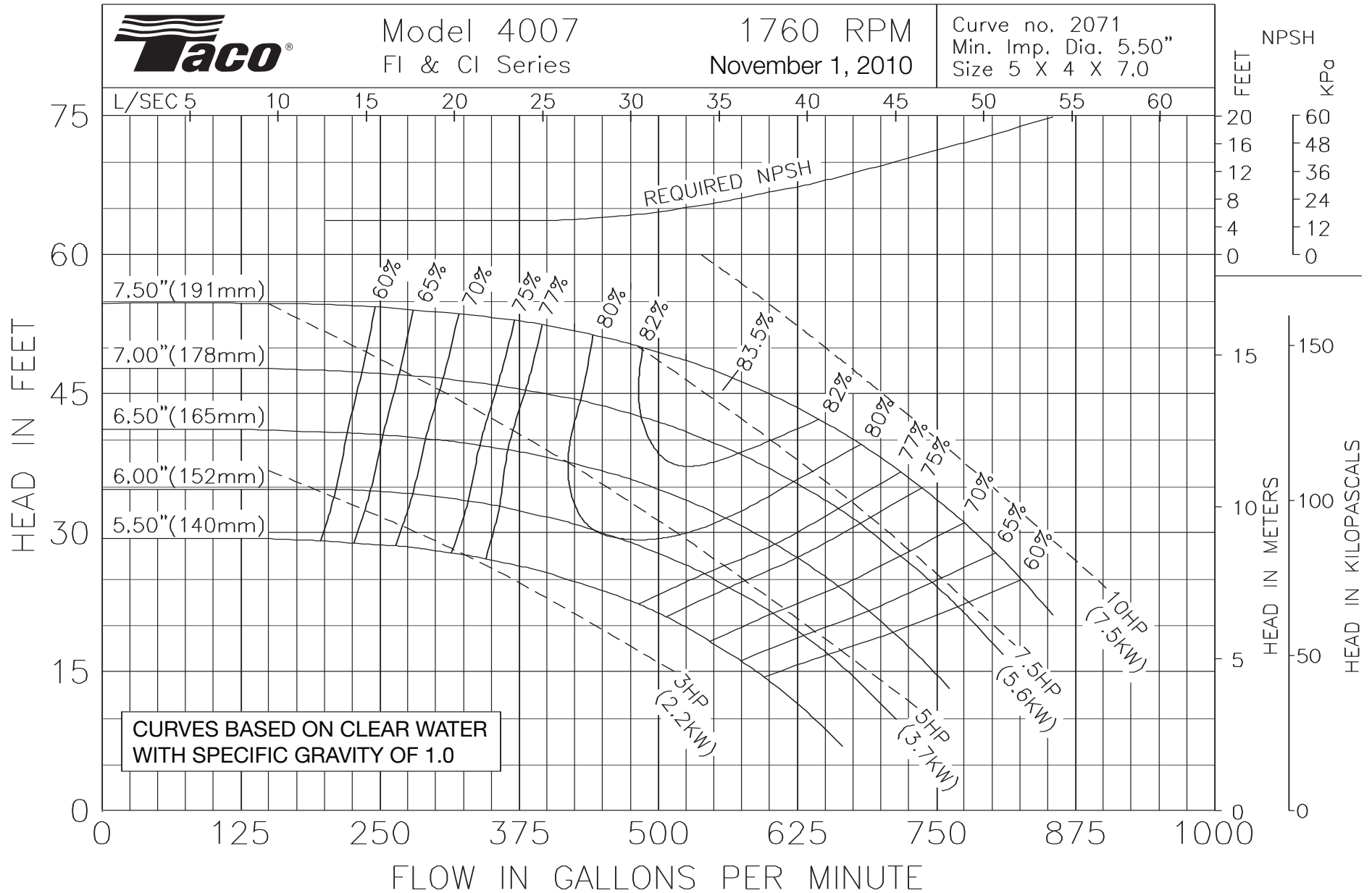




Model 4007
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2071
Min. Imp. Dia. 5.50"
Size 5 X 4 X 7.0

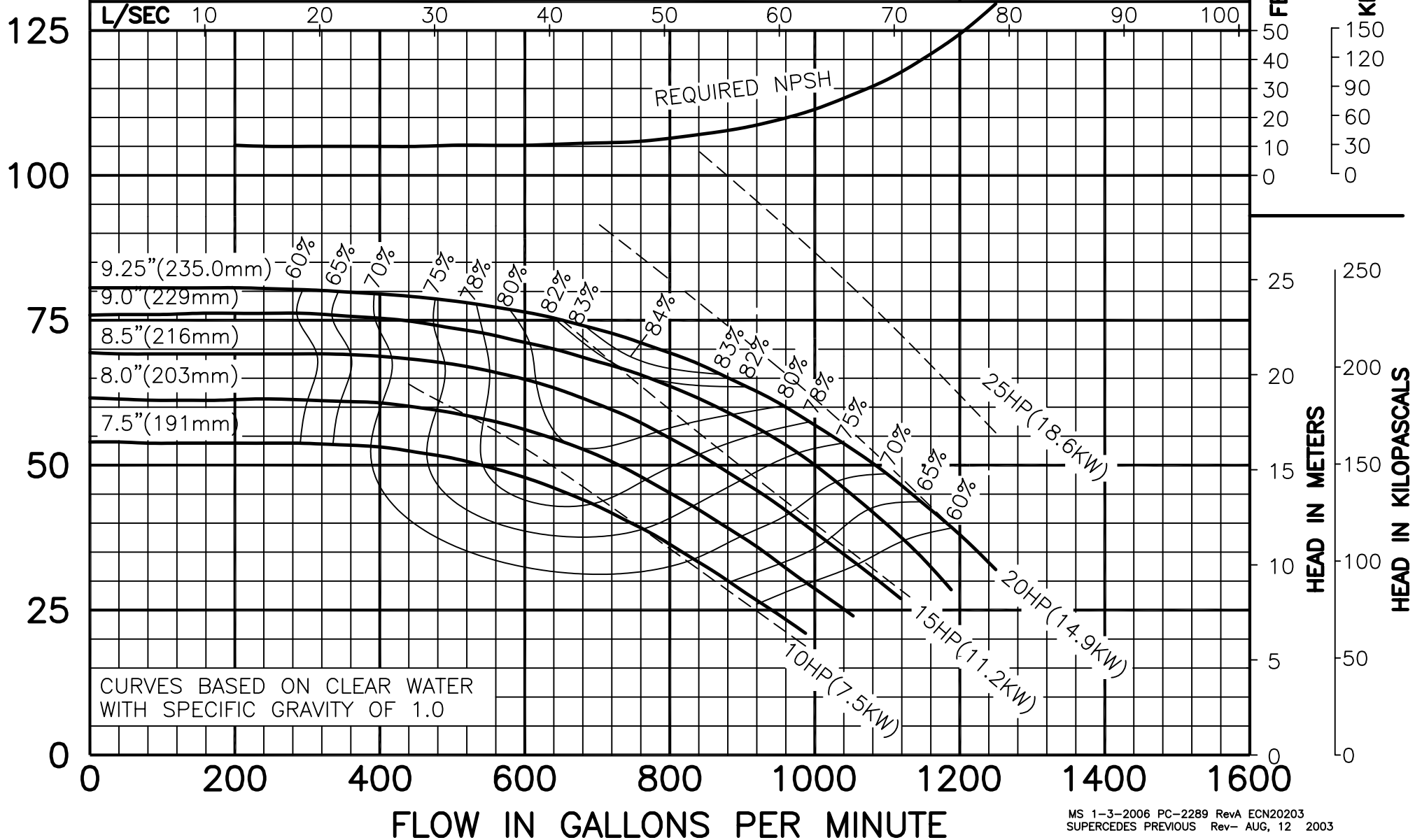




Model 4009
FI & CI Series

1760 RPM
JANUARY, 3 2006

Curve no. 2289
Min. Imp. Dia. 7.5
Size 5 x 4x 9.25

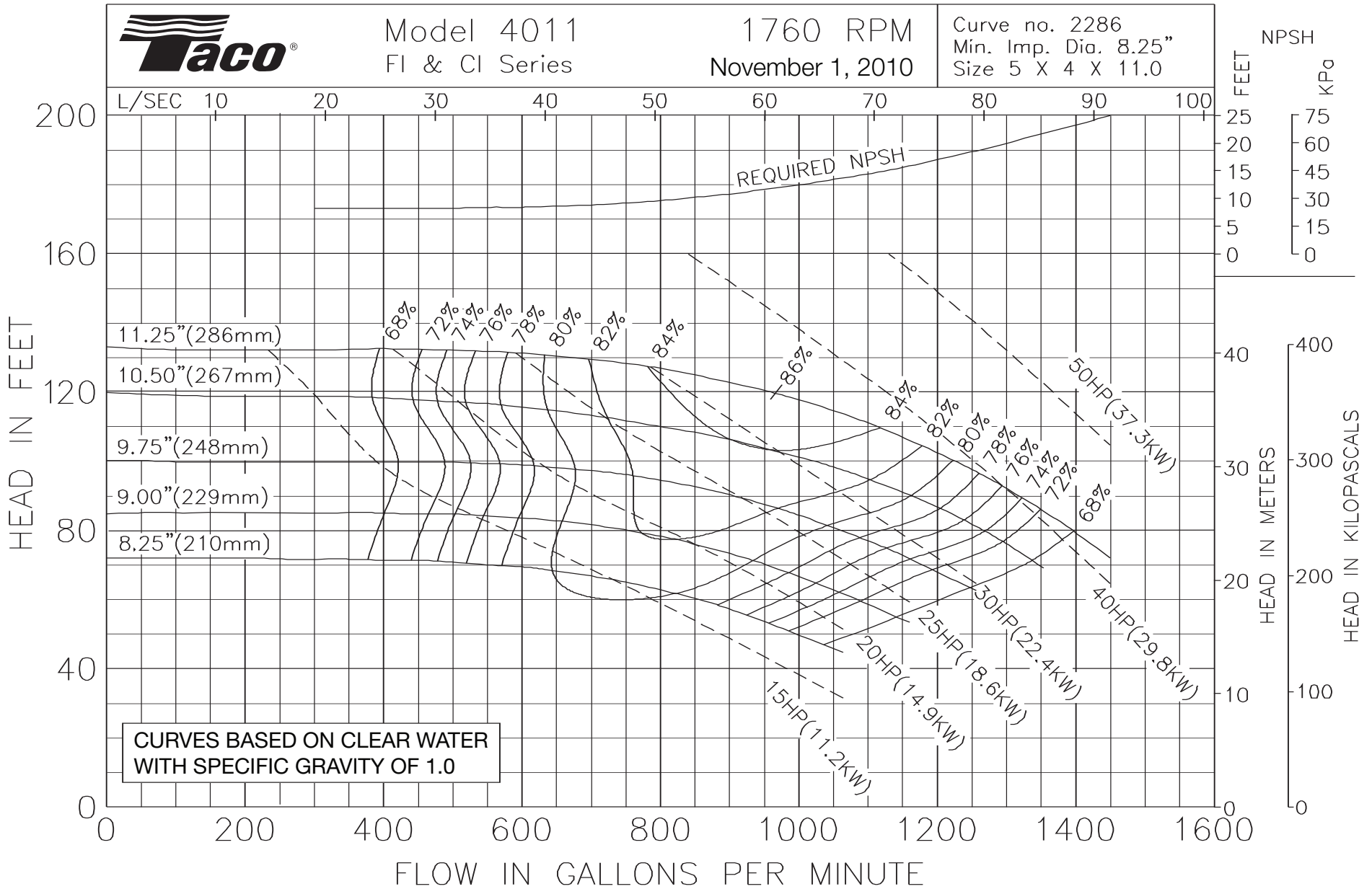




Model 4011
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2286
Min. Imp. Dia. 8.25"
Size 5 X 4 X 11.0

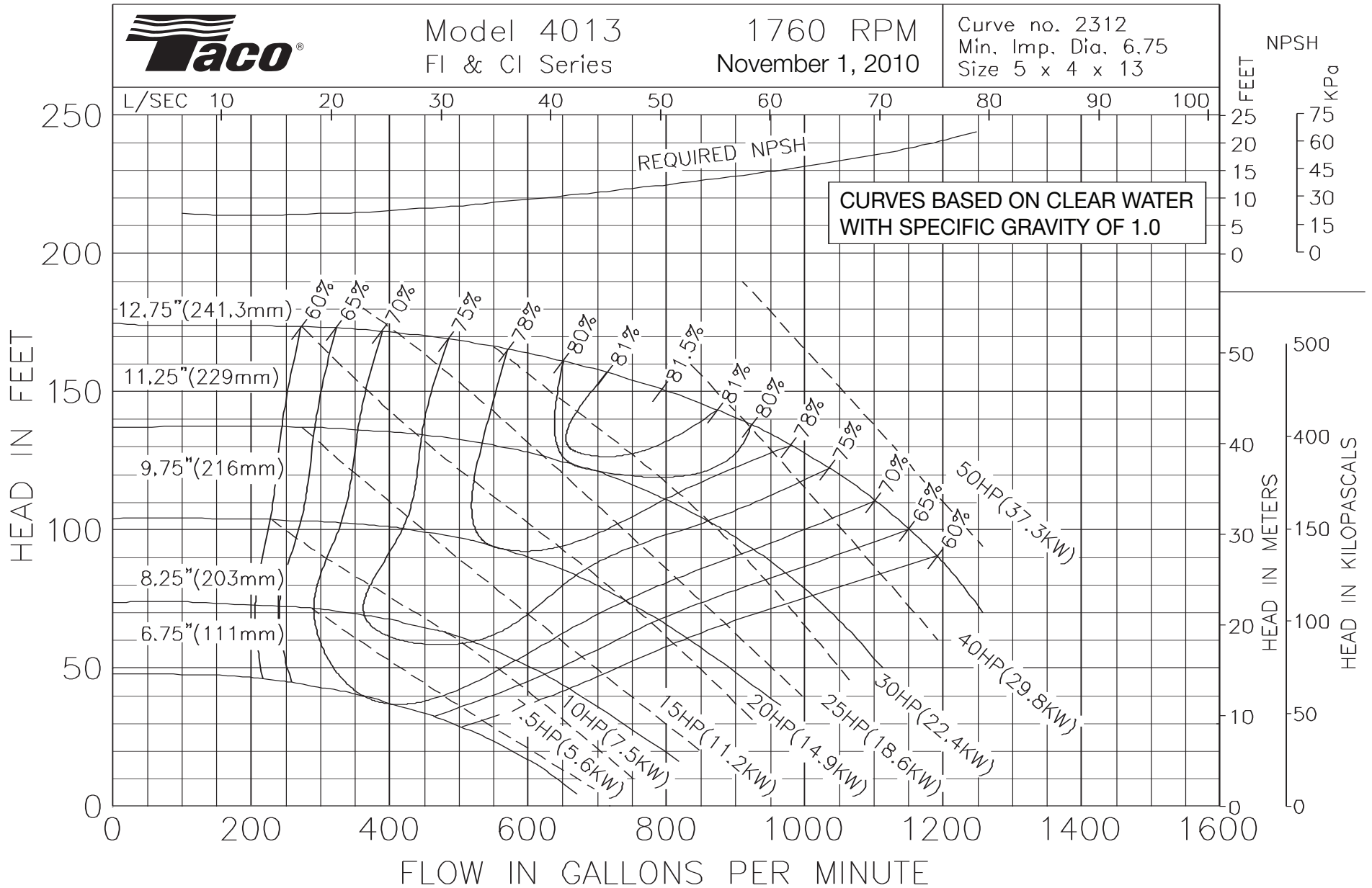




Model 4013
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2312
Min. Imp. Dia. 6.75
Size 5 x 4 x 13

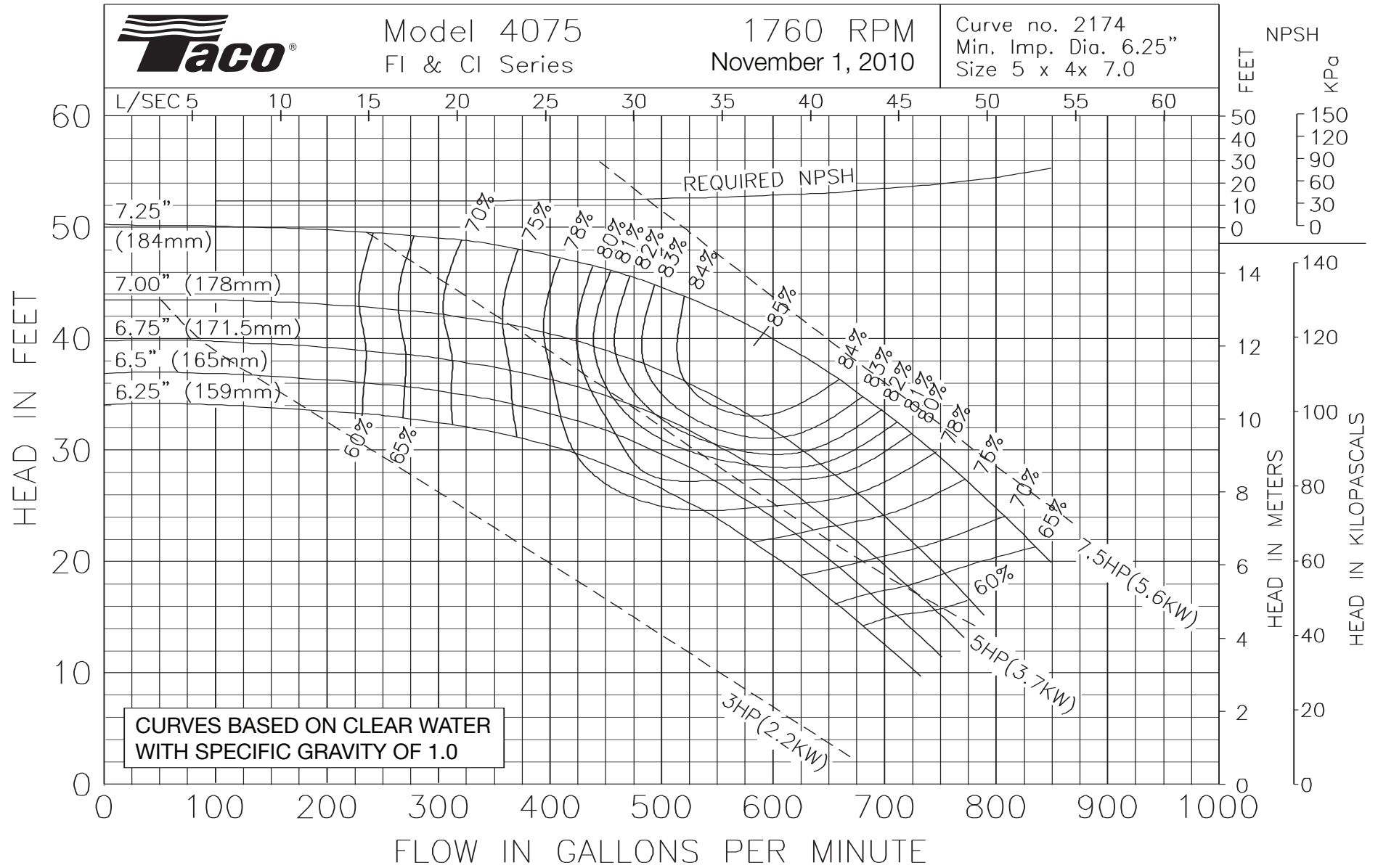




Model 4075
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2174
Min. Imp. Dia. 6.25"
Size 5 x 4x 7.0

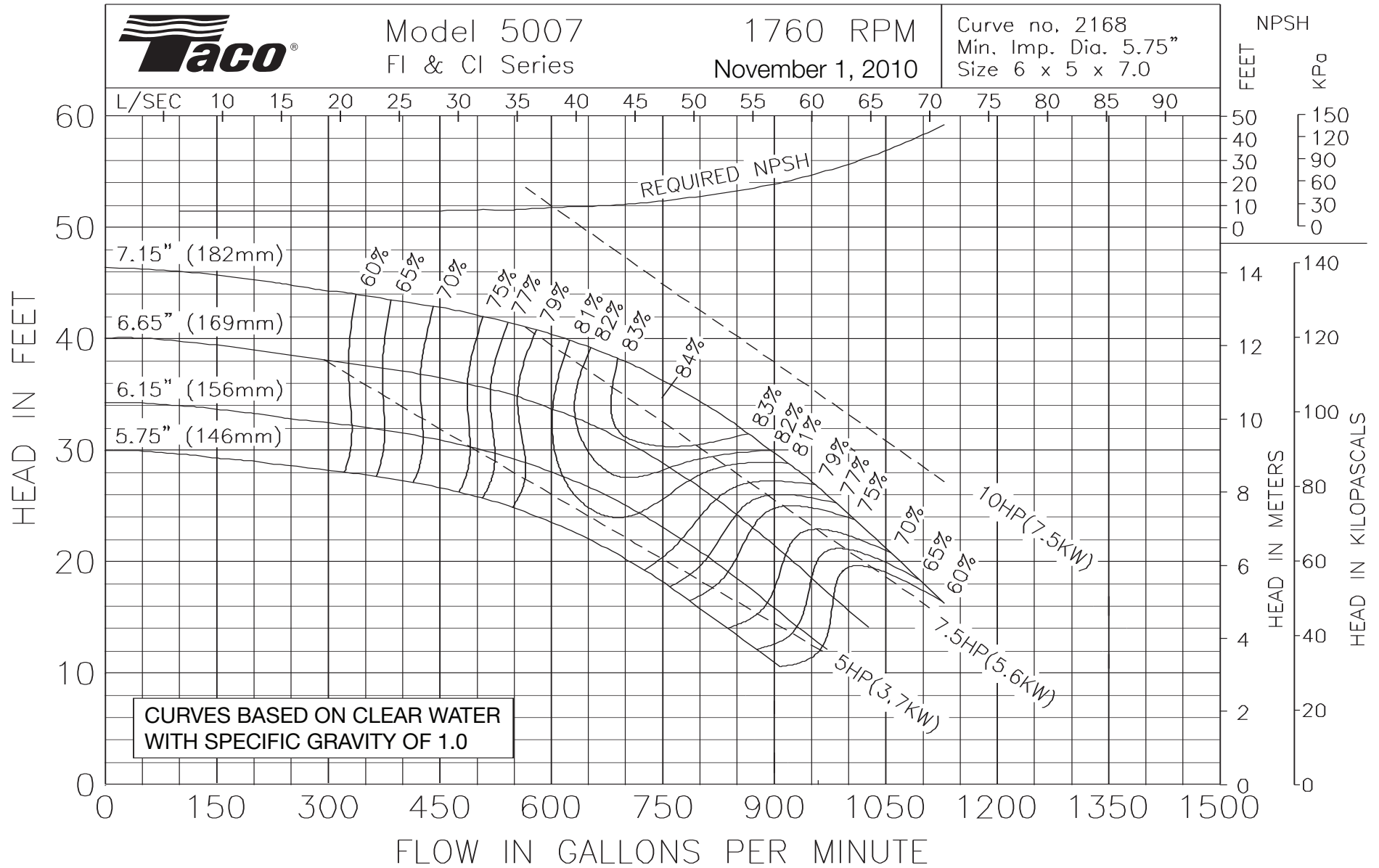




Model 5007
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2168
Min. Imp. Dia. 5.75"
Size 6 x 5 x 7.0

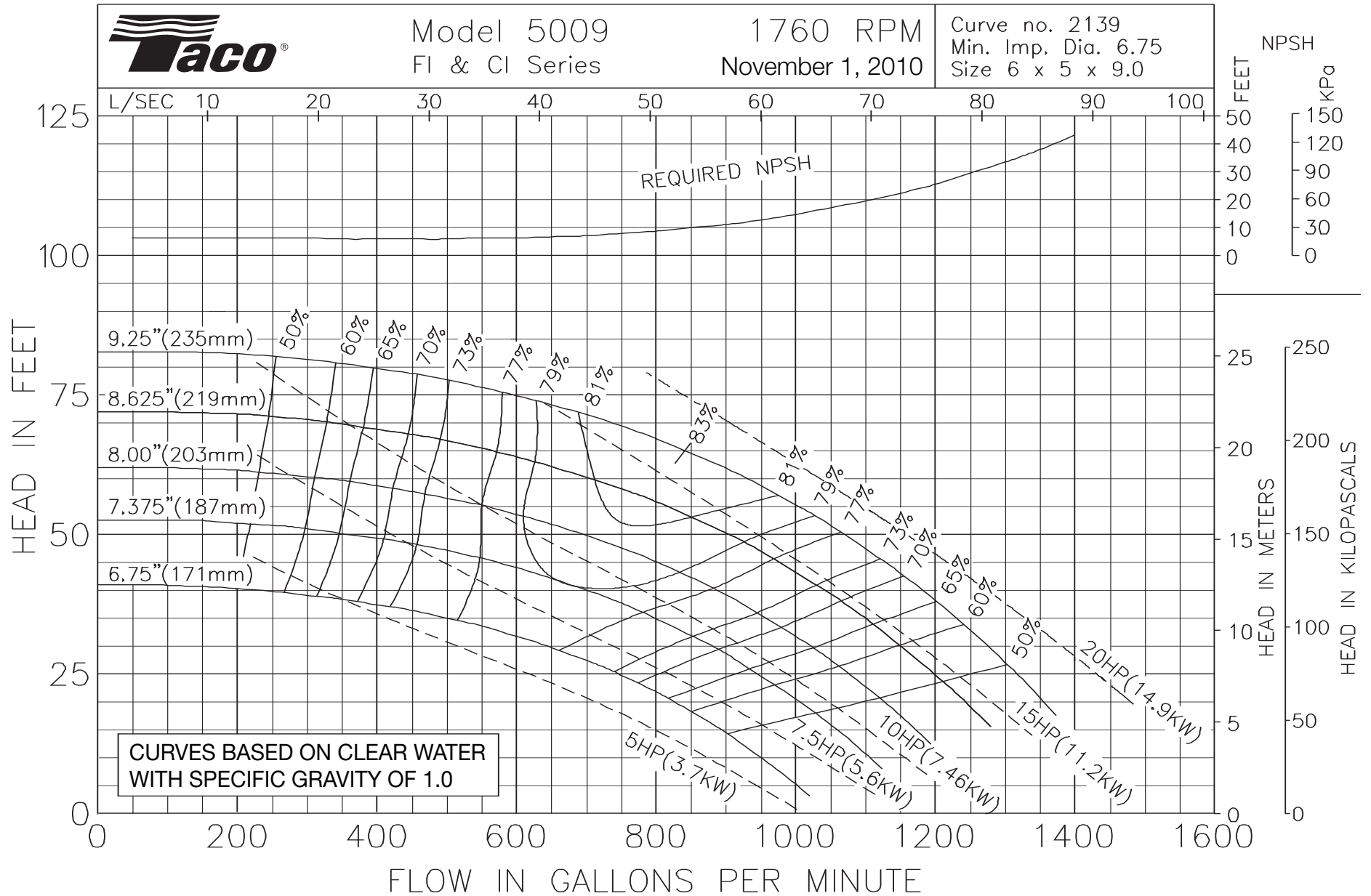




Model 5009
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2139
Min. Imp. Dia. 6.75
Size 6 x 5 x 9.0

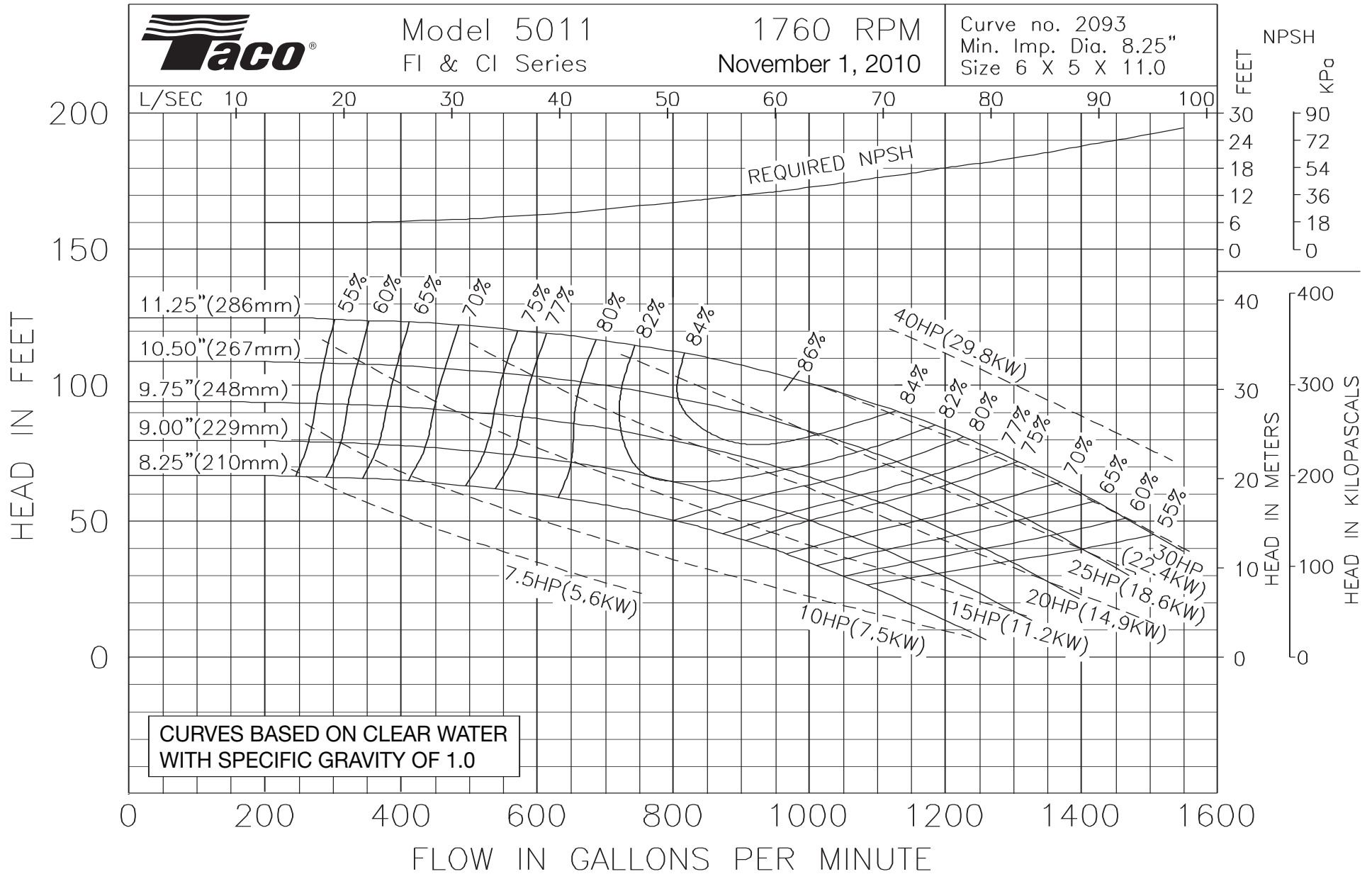




Model 5011
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2093
Min. Imp. Dia. 8.25"
Size 6 X 5 X 11.0

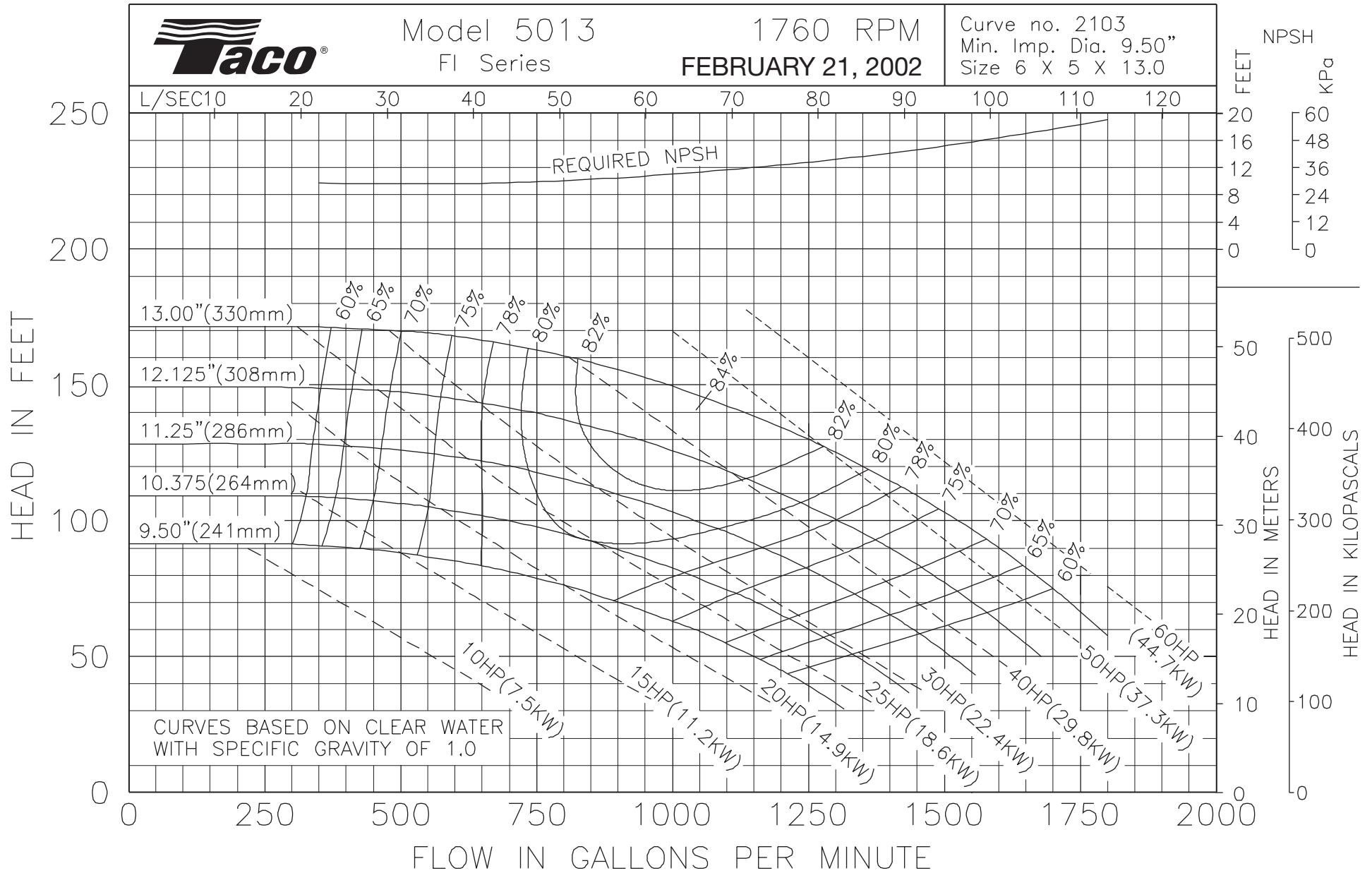





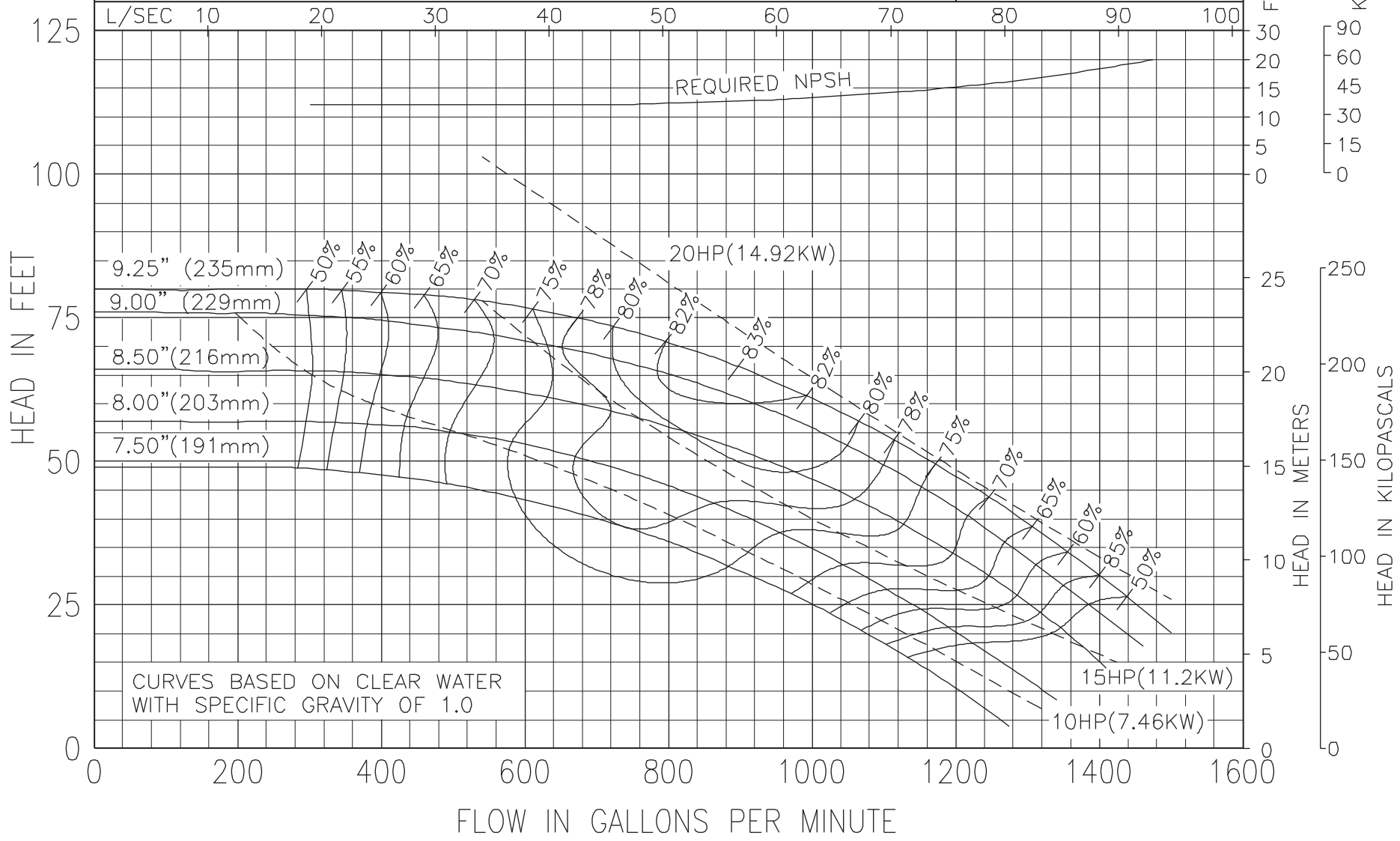
Model 5013
FI Series

1760 RPM
FEBRUARY 21, 2002

Curve no. 2103
Min. Imp. Dia. 9.50"
Size 6 X 5 X 13.0



	Model 5095	1760 RPM	Curve no. 2477
	FI & CI Series	May 14, 2008	Min. Imp. Dia. 7.5 Size 6 x 5 x 9.25

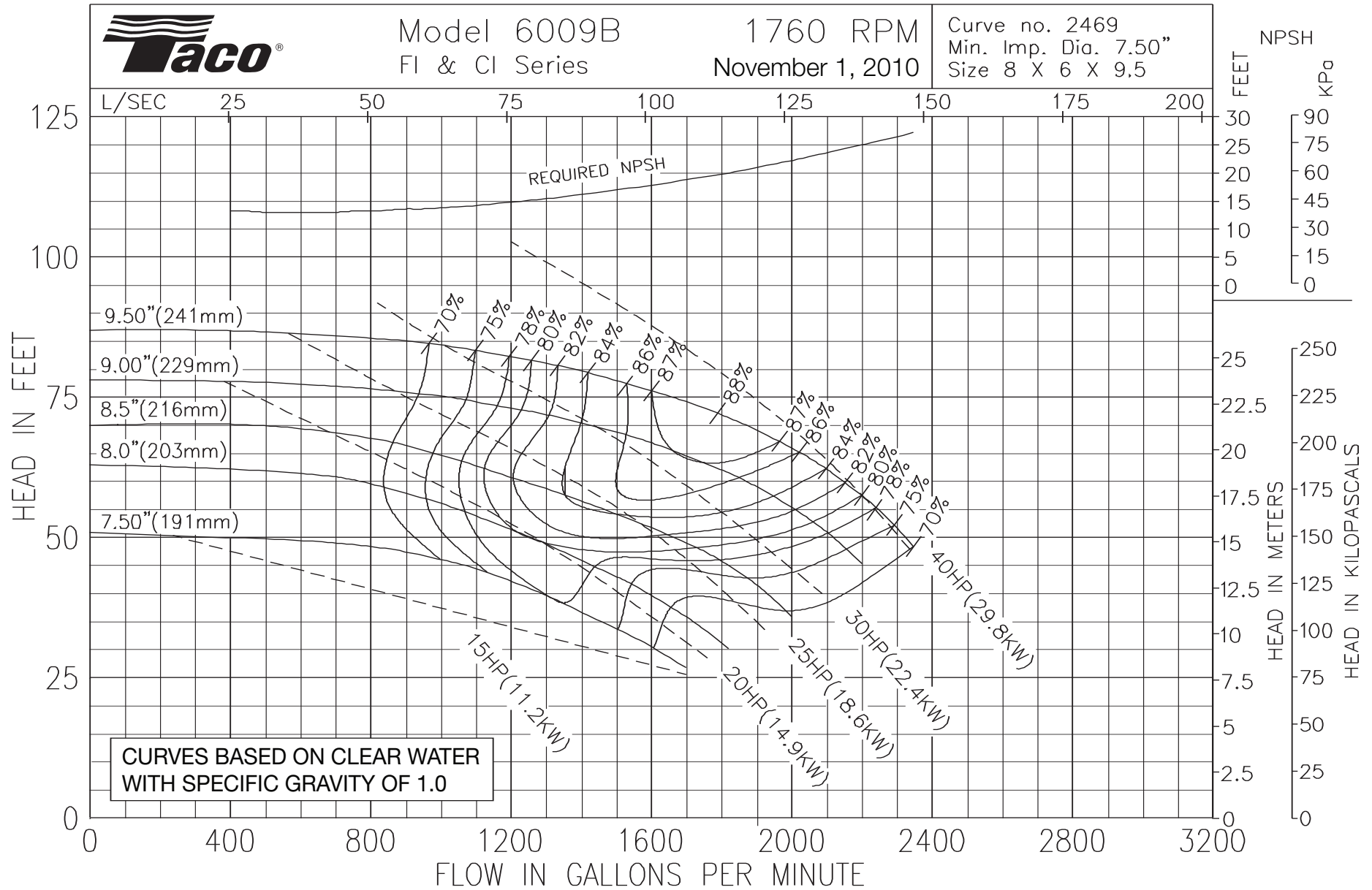


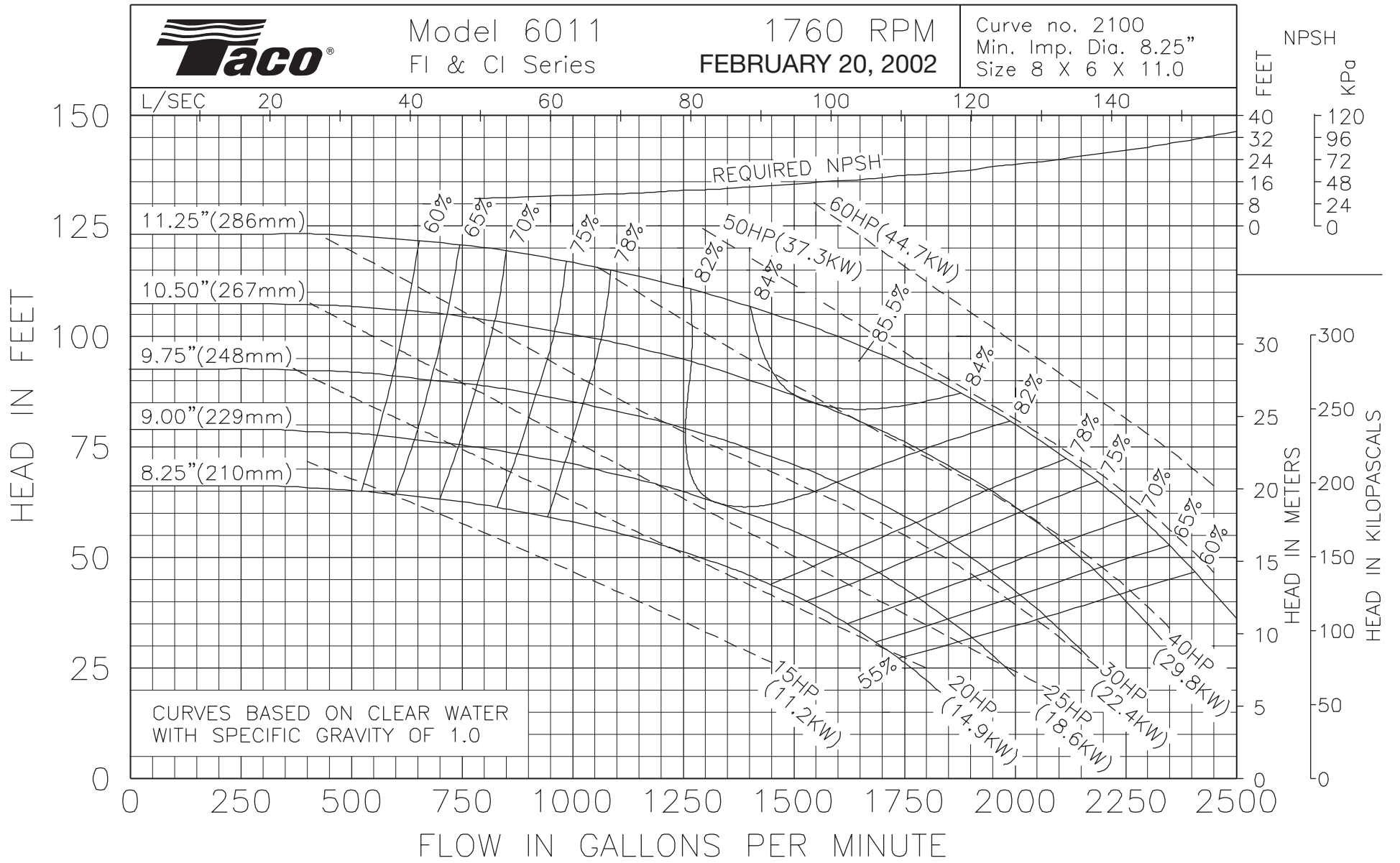


Model 6009B
FI & CI Series

1760 RPM
November 1, 2010

Curve no. 2469
Min. Imp. Dia. 7.50"
Size 8 X 6 X 9,5



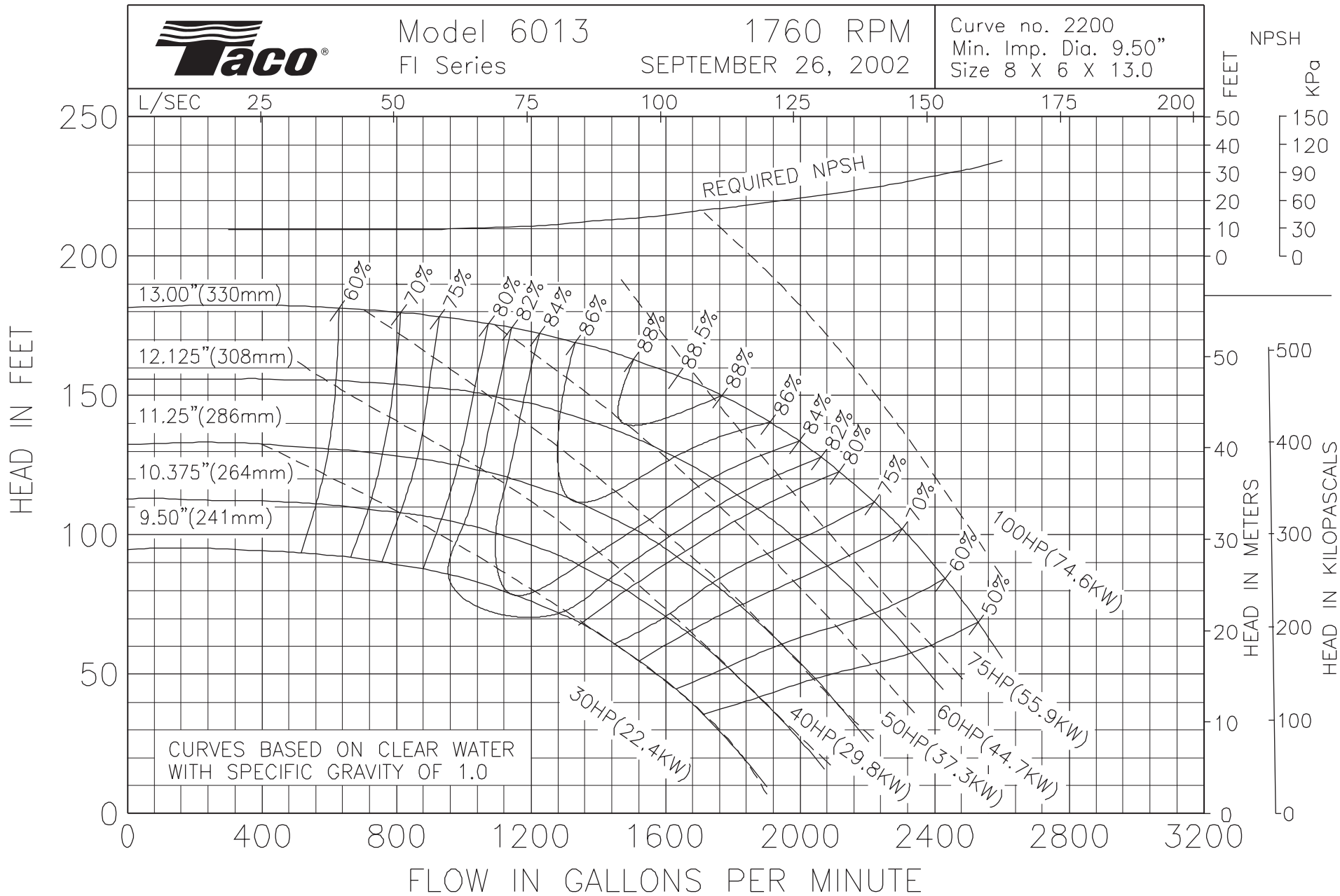





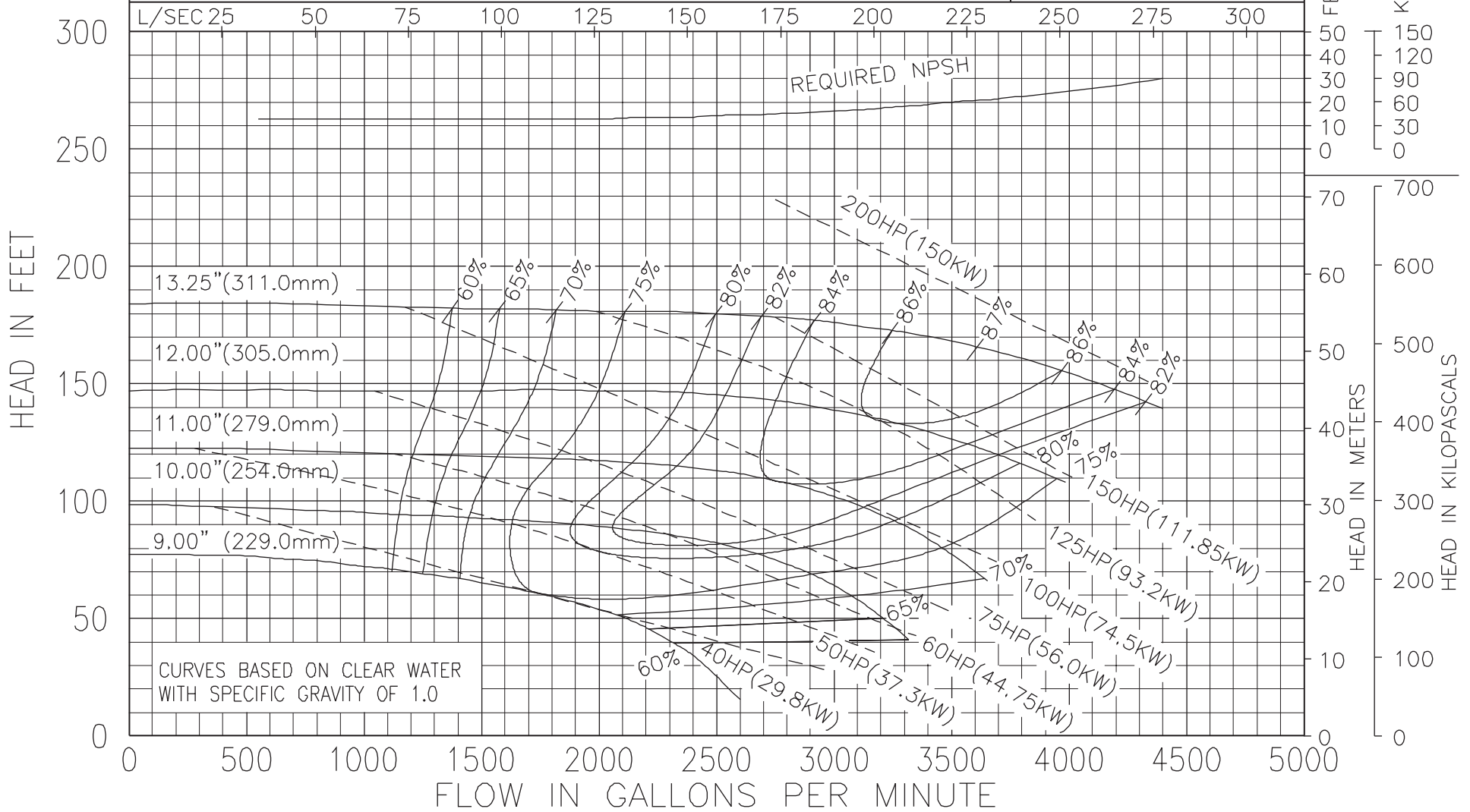
Model 6013
FI Series

1760 RPM
SEPTEMBER 26, 2002

Curve no. 2200
Min. Imp. Dia. 9.50"
Size 8 X 6 X 13.0



	Model 8013	1760 RPM	Curve no. 2315
	FI Series	NOVEMBER 19, 2003	Min. Imp. Dia. 9" Size 10 X 8 X 13.25

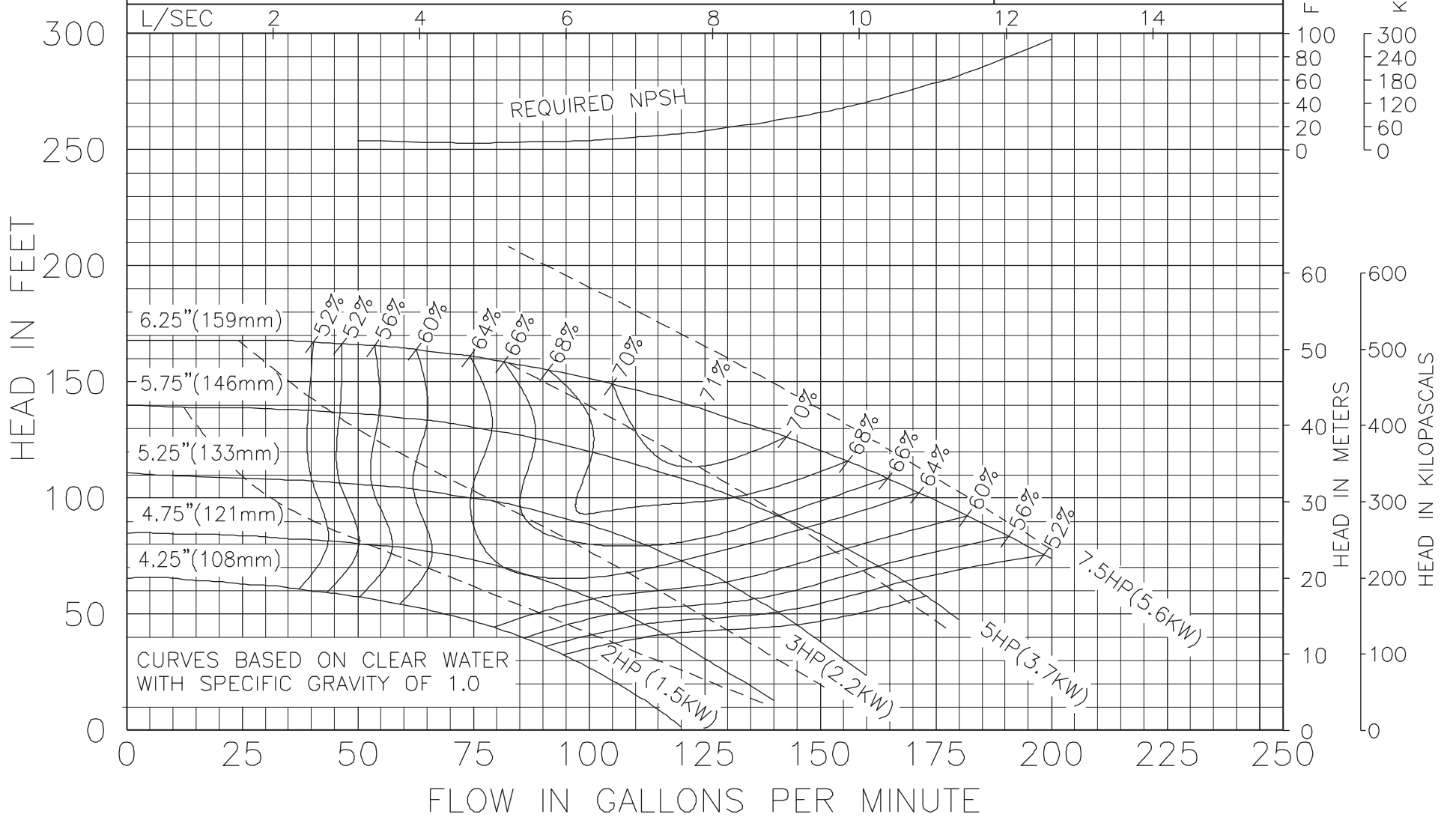




Model 1206
FI & CI Series

3500 RPM
September 18, 2003

Curve no. 2302
Min. Imp. Dia. 4.25"
Size 2.0 X 1.25 X 6.0

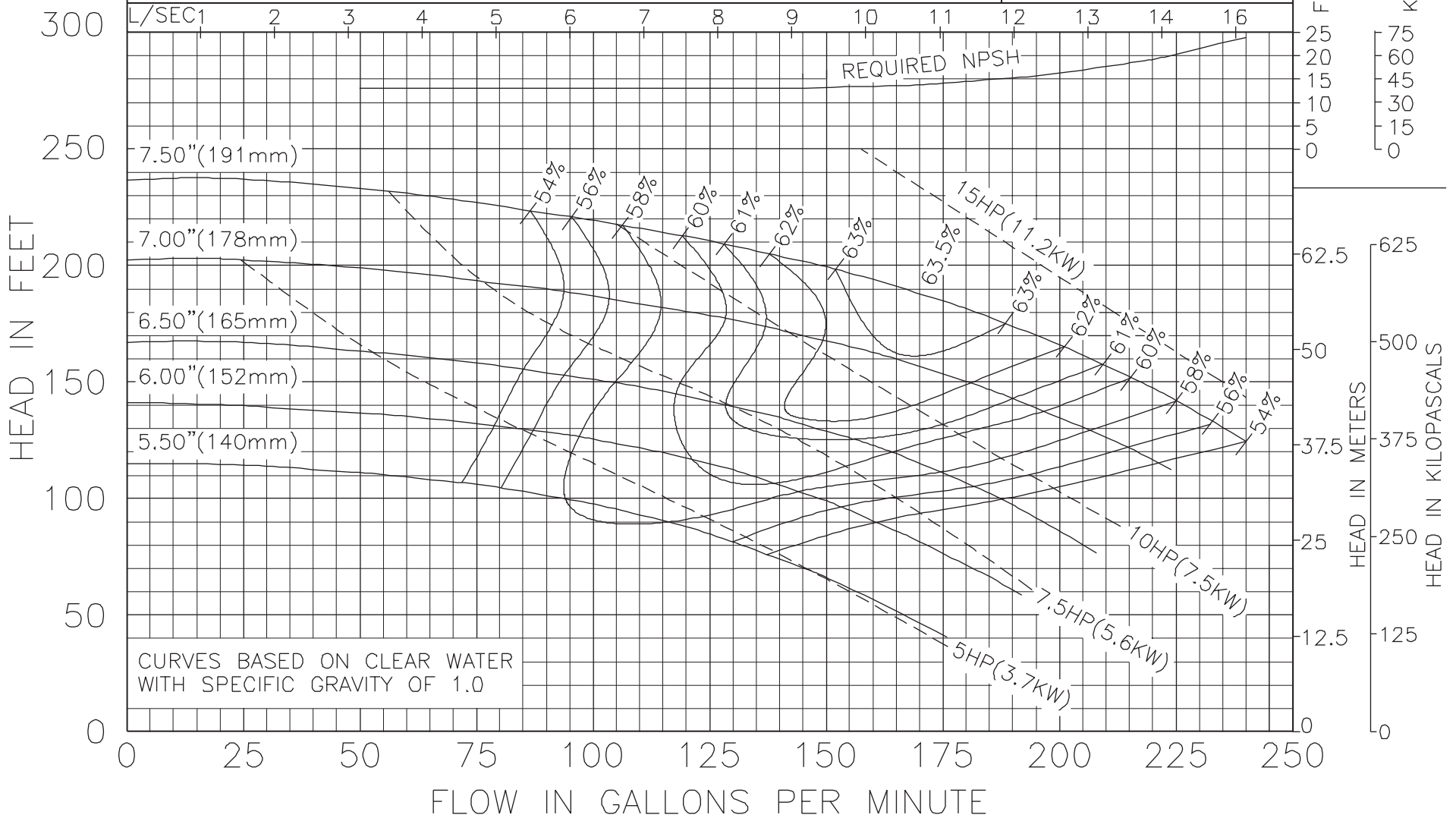




Model 1207
FI & CI Series

3500 RPM
August 30, 2006

Curve no. 2049
Min. Imp. Dia. 5.50"
Size 2.0 X 1.25 X 7.0

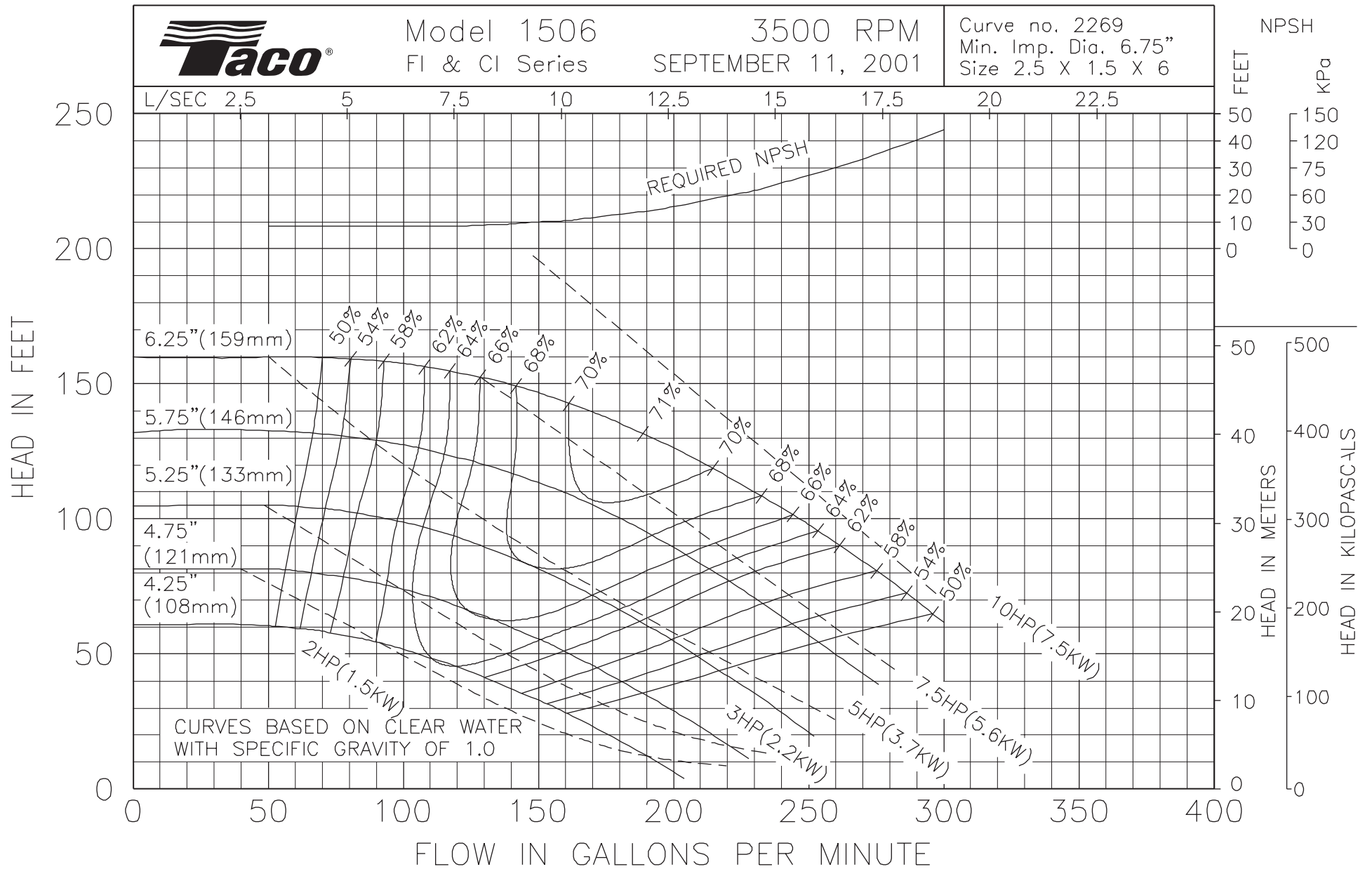




Model 1506
FI & CI Series

3500 RPM
SEPTEMBER 11, 2001

Curve no. 2269
Min. Imp. Dia. 6.75"
Size 2.5 X 1.5 X 6

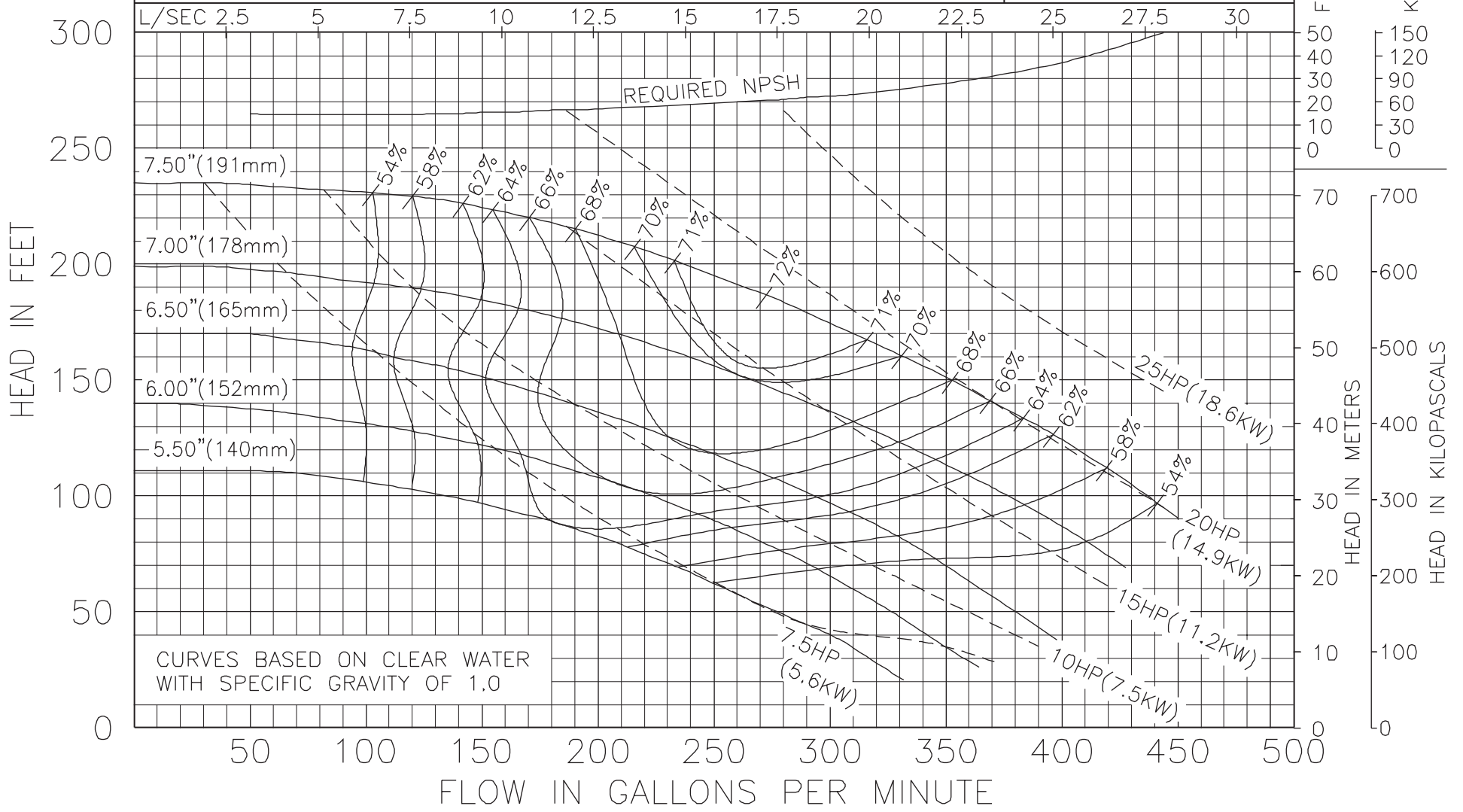




Model 1507
FI & CI Series

3500 RPM
AUGUST 30, 2006

Curve no. 2292
Imp. Dia. 5.5"
Size 2.5 x 1.5 x 7.0

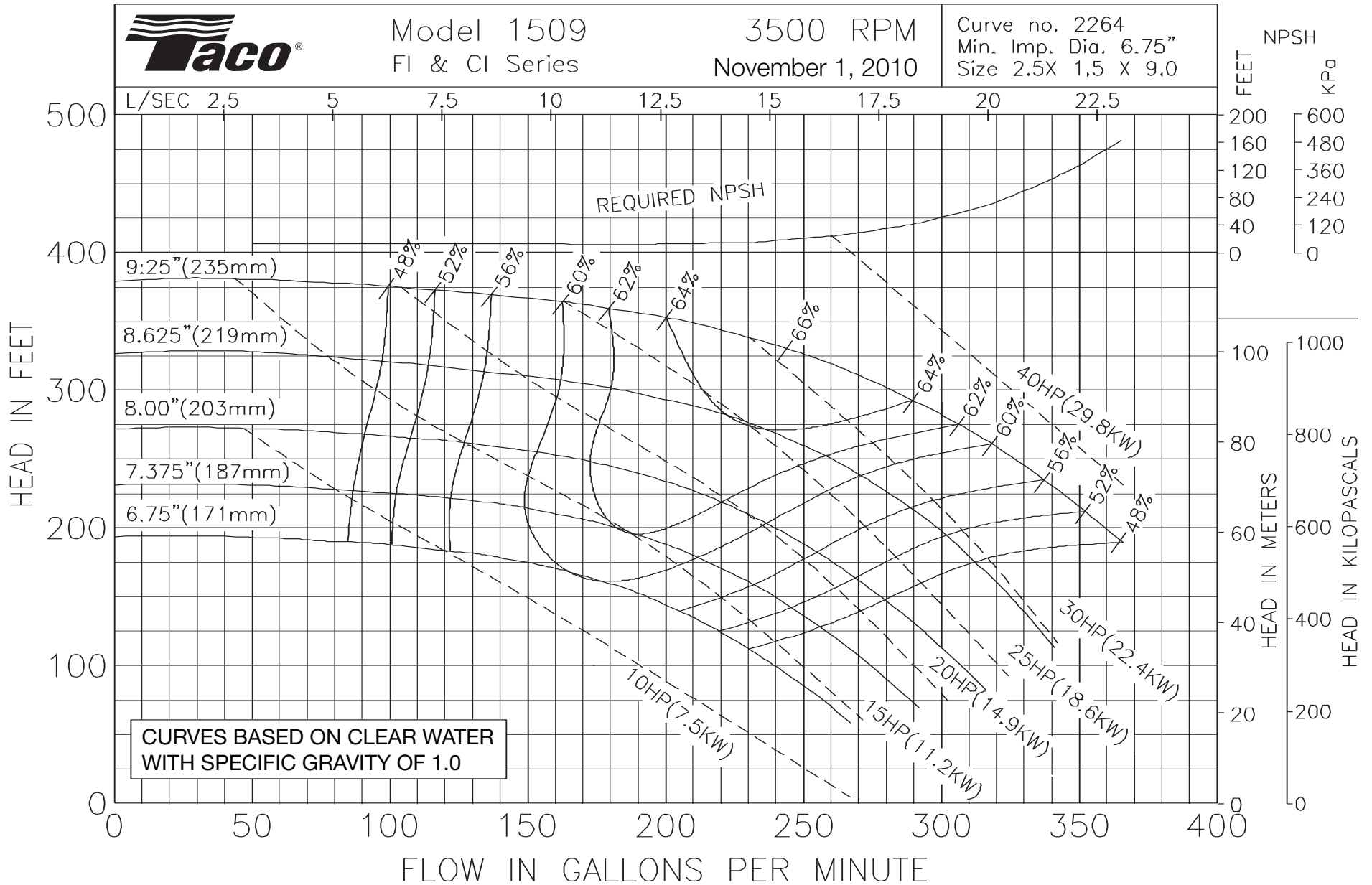




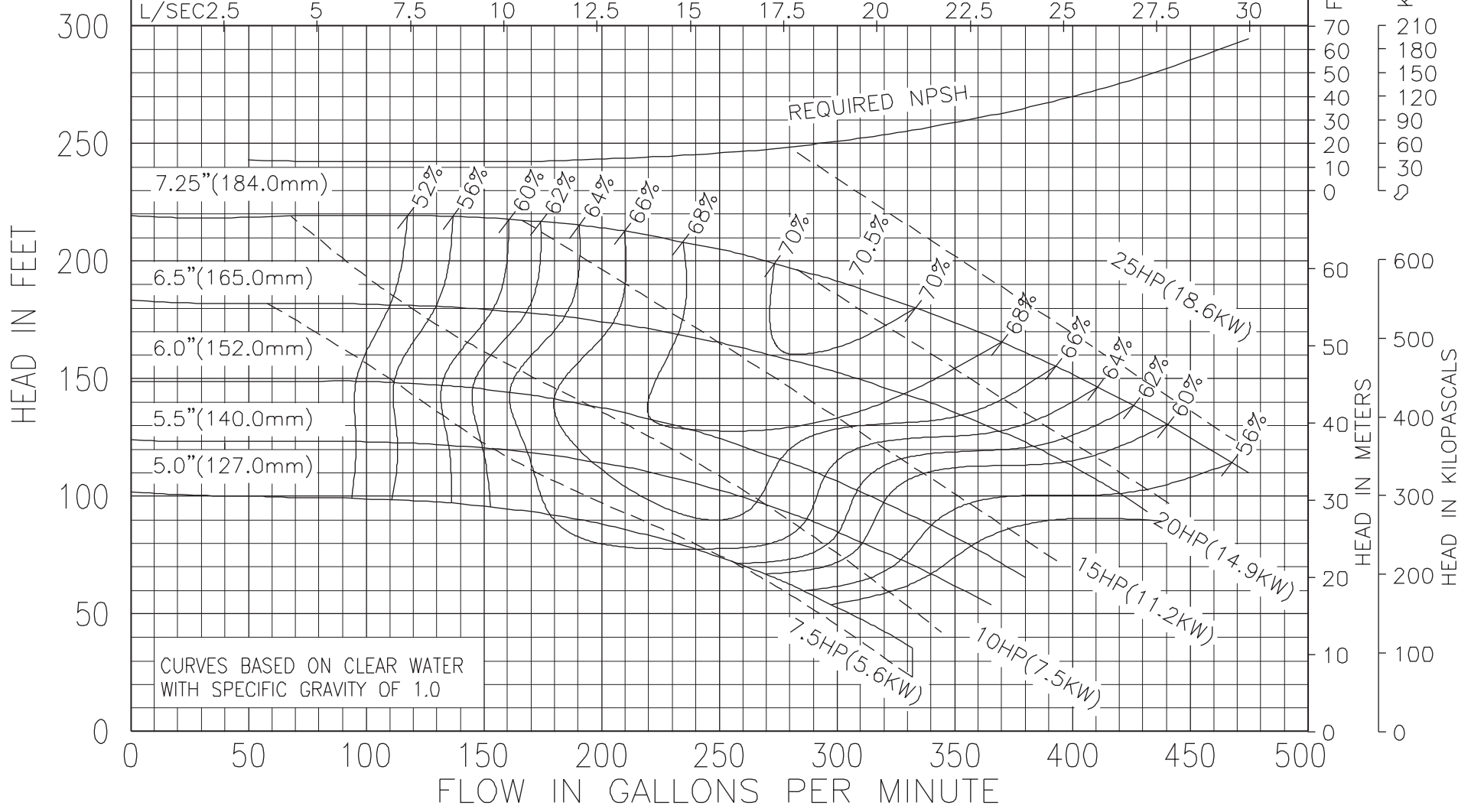
Model 1509
FI & CI Series

3500 RPM
November 1, 2010

Curve no. 2264
Min. Imp. Dia. 6.75"
Size 2.5X 1.5 X 9.0



	Model 2007	3500 RPM	Curve no. 2318
	CI FI Series	DECEMBER 2, 2003	Min. Imp. Dia. 5.0" Size 2.5 X 2 X 7.25

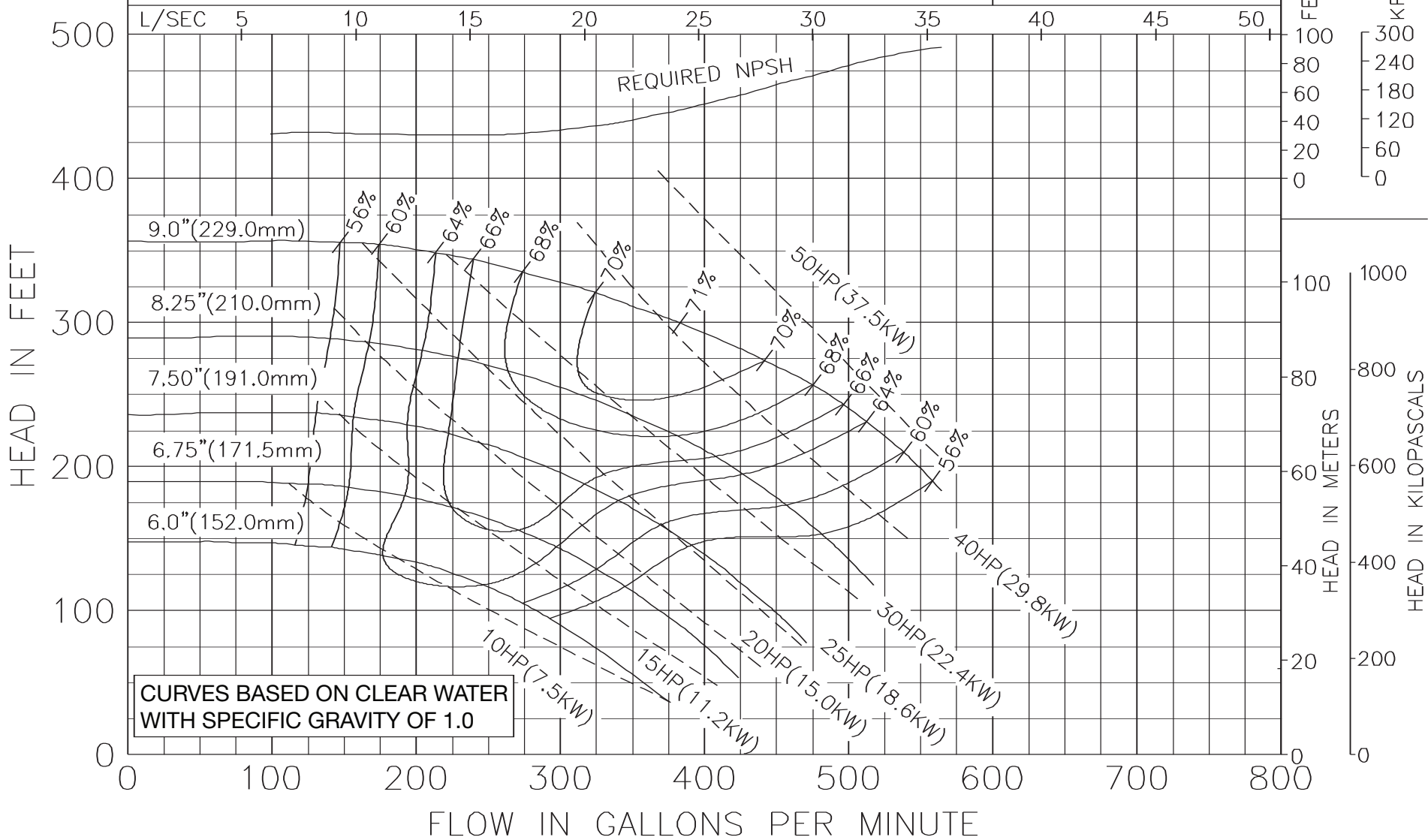




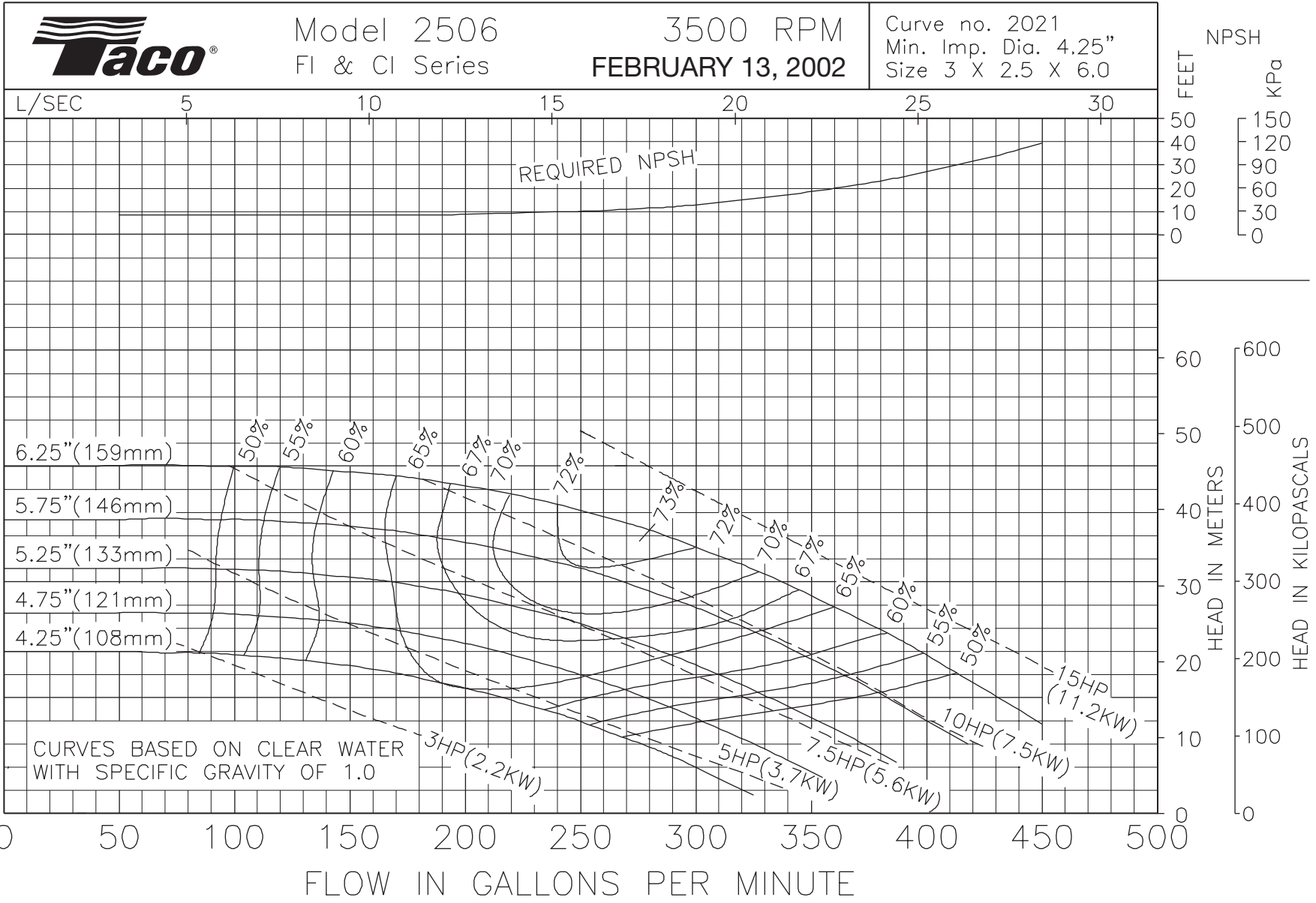
Model 2009
FI & CI Series

3500 RPM
November 1, 2010

PC-2323
Min. Imp. Dia. 6.0
Size 2.5 x 2 x 9



CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0

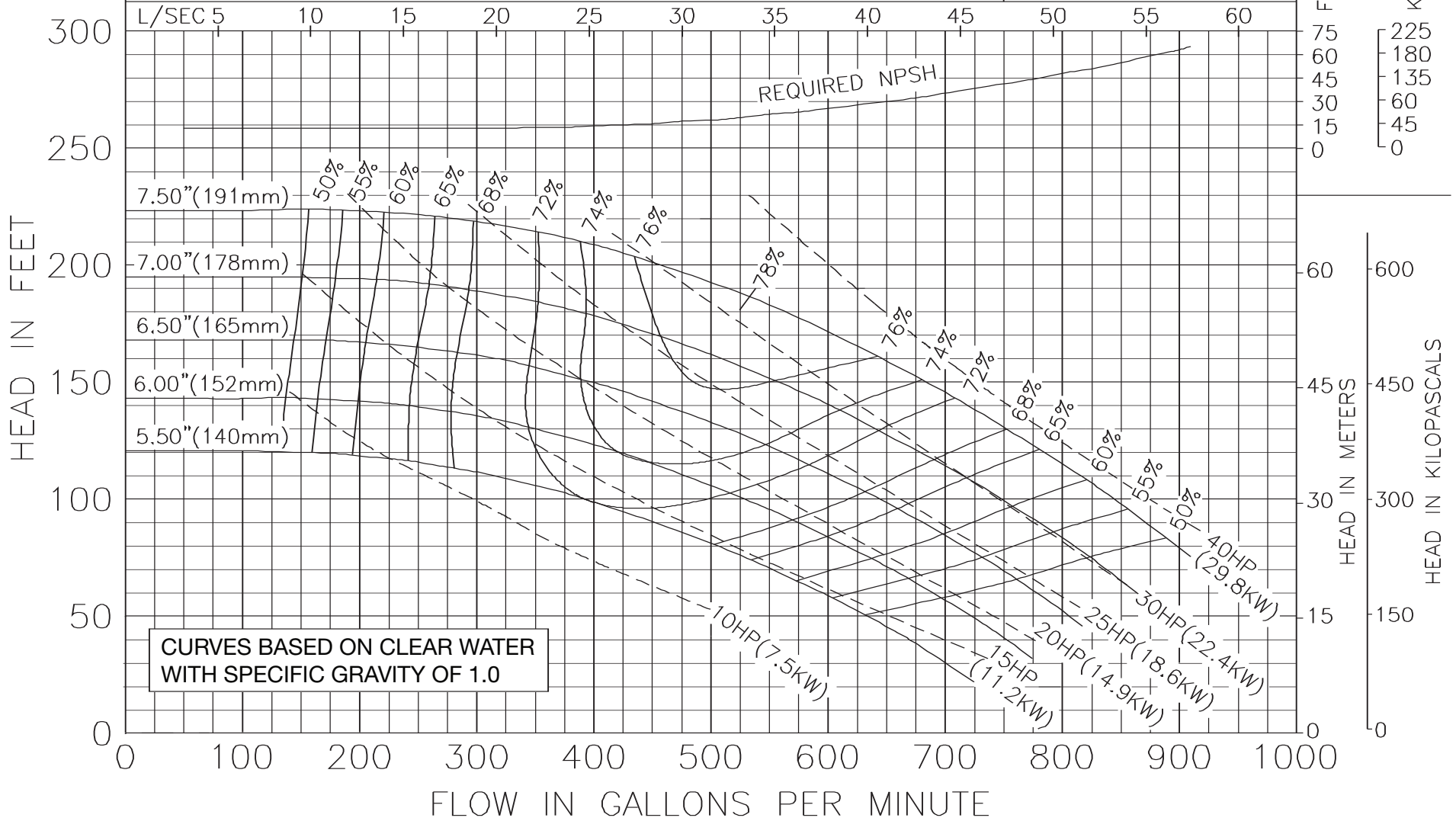




Model 2507
FI & CI Series

3500 RPM
November 1, 2010

Curve no. 2059
Min. Imp. Dia. 5.50"
Size 3 X 2.5 X 7.0

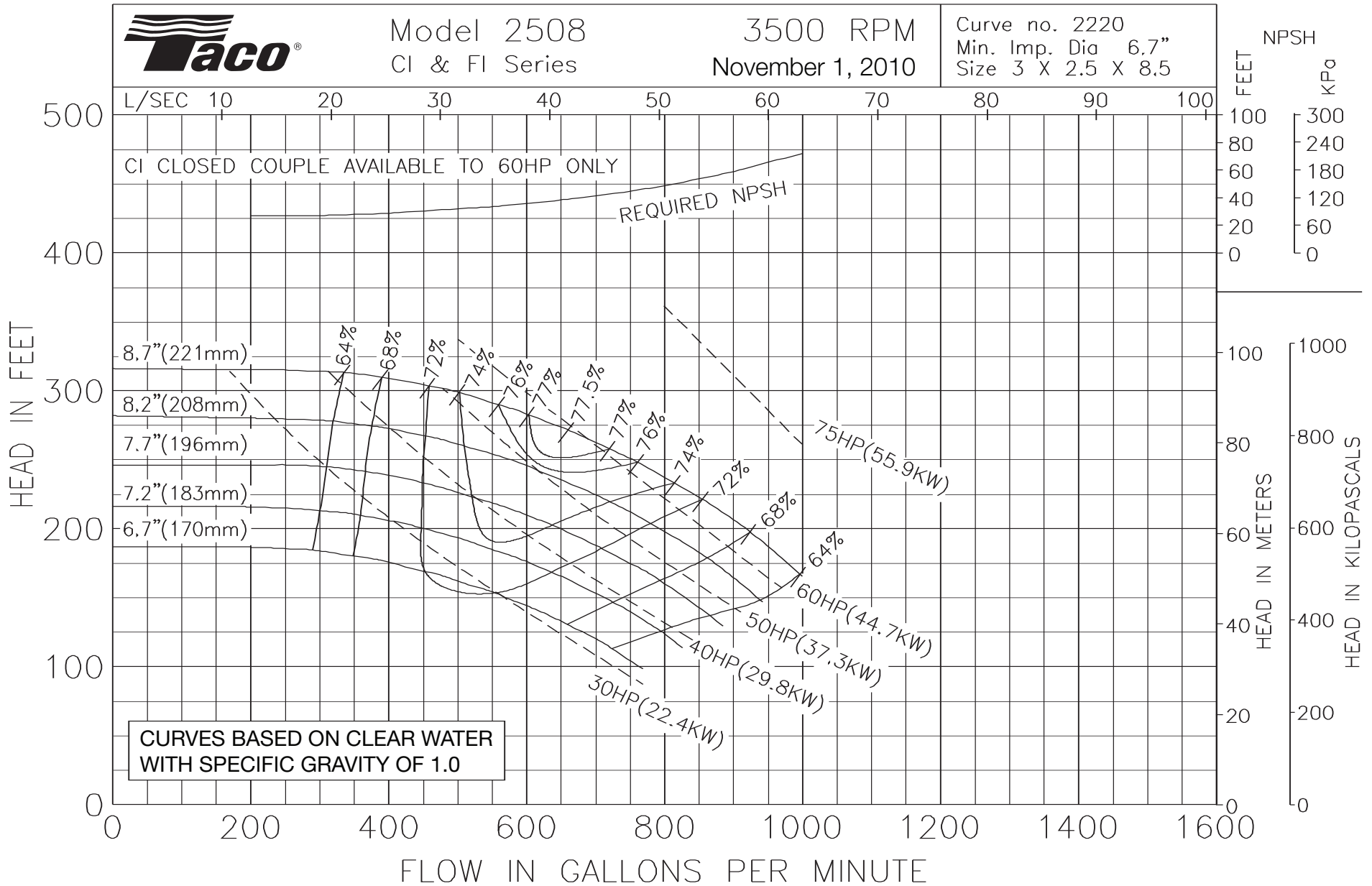




Model 2508
CI & FI Series

3500 RPM
November 1, 2010

Curve no. 2220
Min. Imp. Dia 6.7"
Size 3 X 2.5 X 8.5

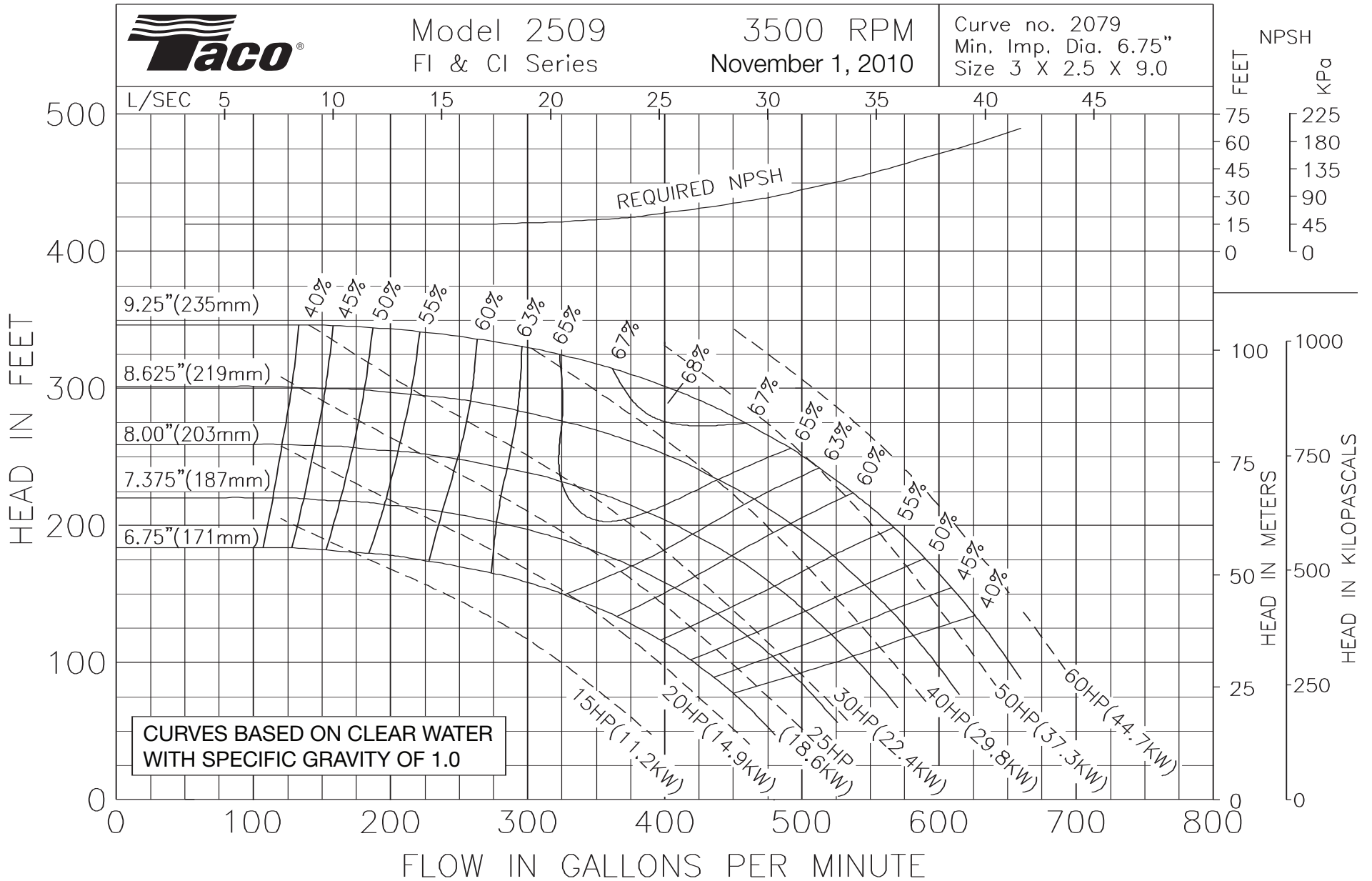


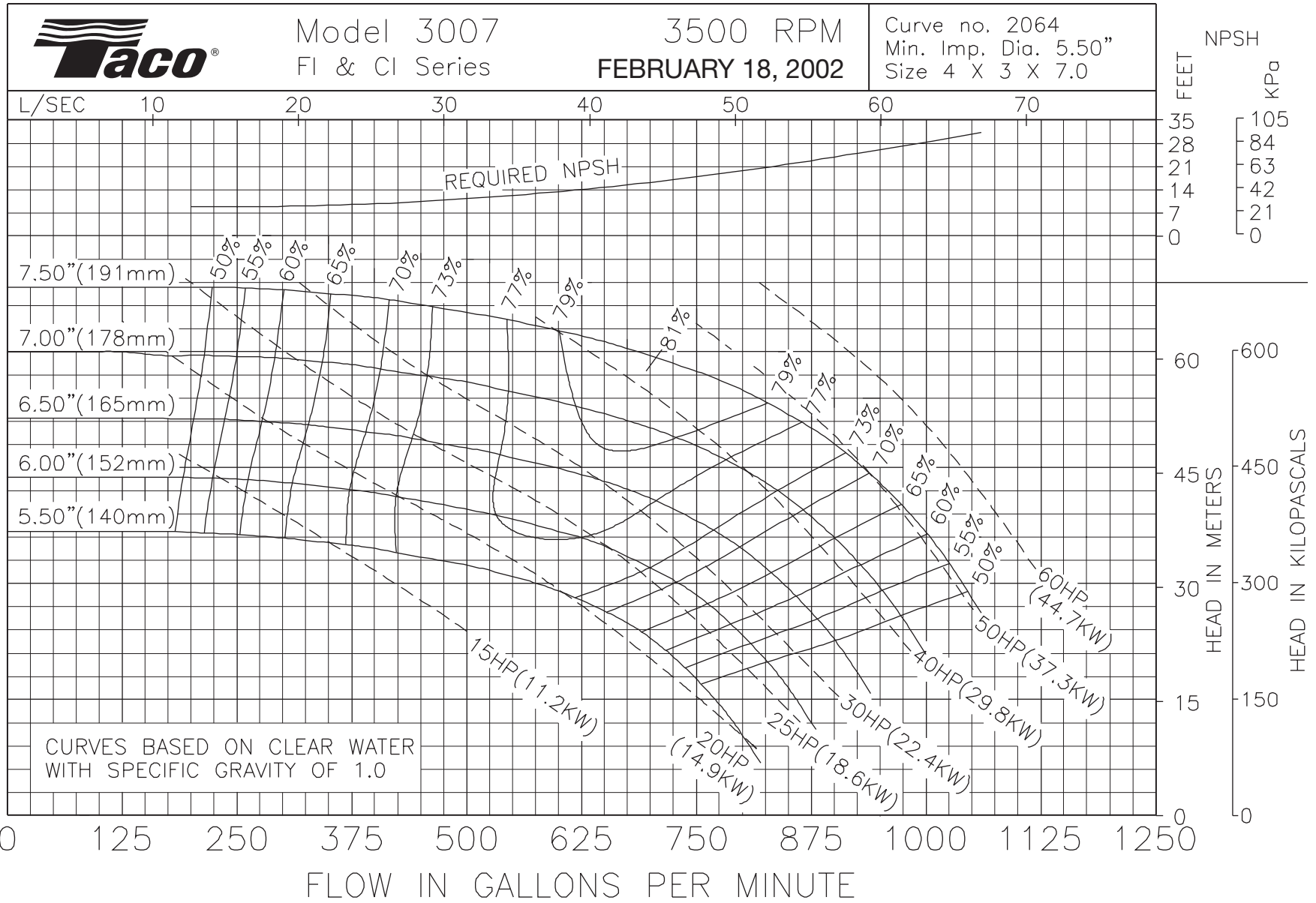


Model 2509
FI & CI Series

3500 RPM
November 1, 2010

Curve no. 2079
Min. Imp. Dia. 6.75"
Size 3 X 2.5 X 9.0



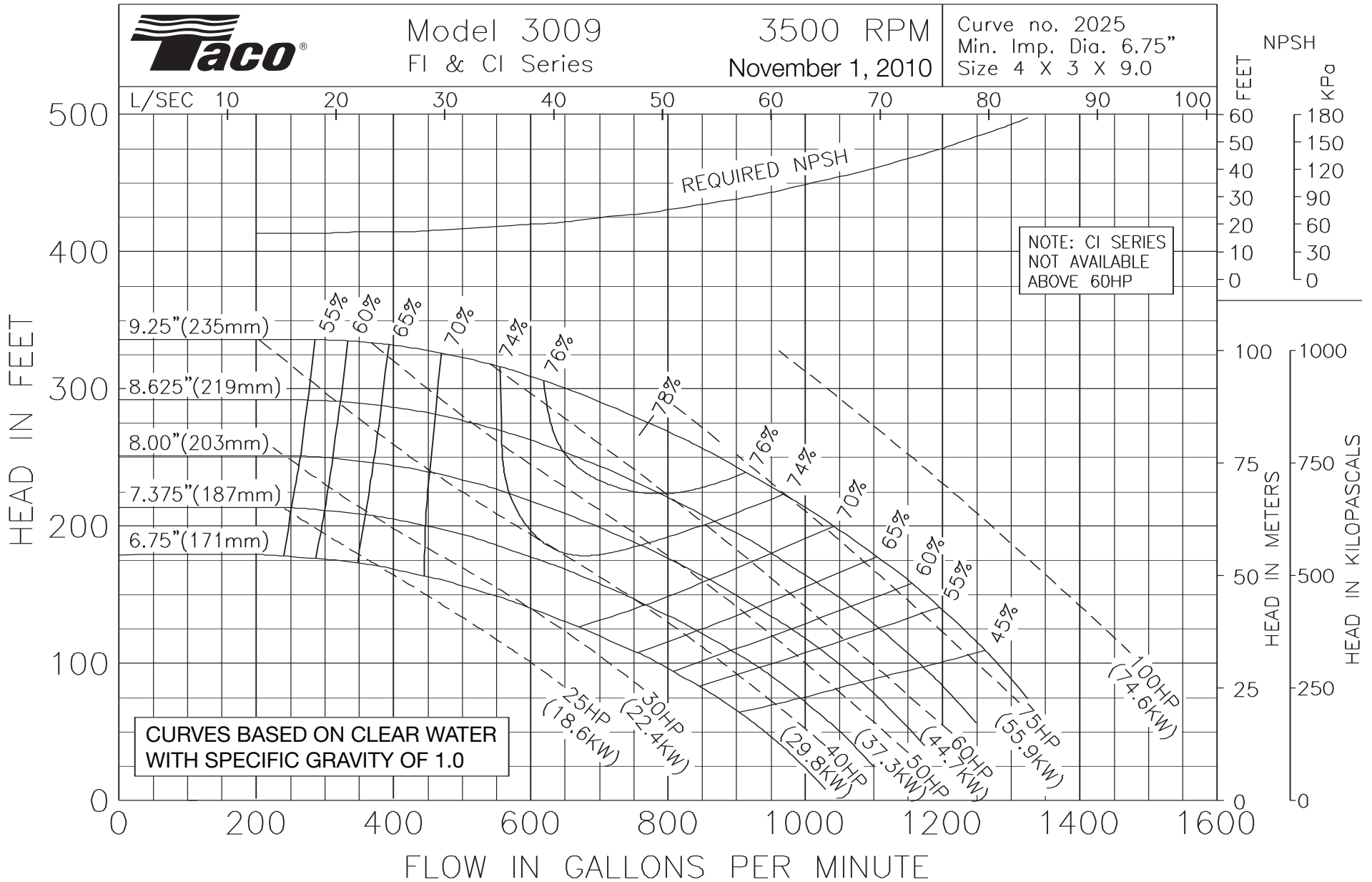




Model 3009
FI & CI Series

3500 RPM
November 1, 2010

Curve no. 2025
Min. Imp. Dia. 6.75"
Size 4 X 3 X 9.0

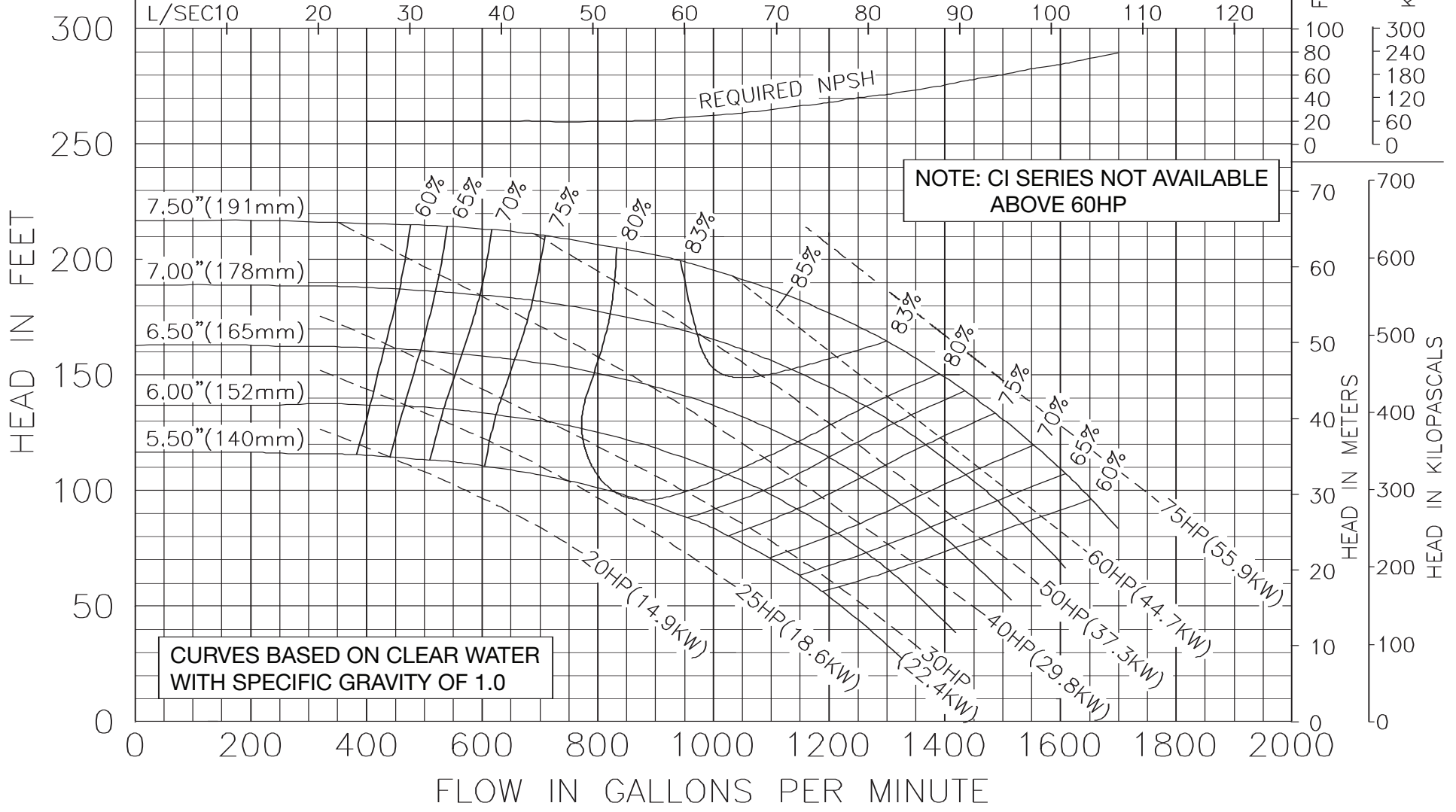




Model 4007
FI & CI Series

3500 RPM
November 1, 2010

Curve no. 2069
Min. Imp. Dia. 5.50"
Size 5 X 4 X 7.0



CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0

NOTE: CI SERIES NOT AVAILABLE
ABOVE 60HP

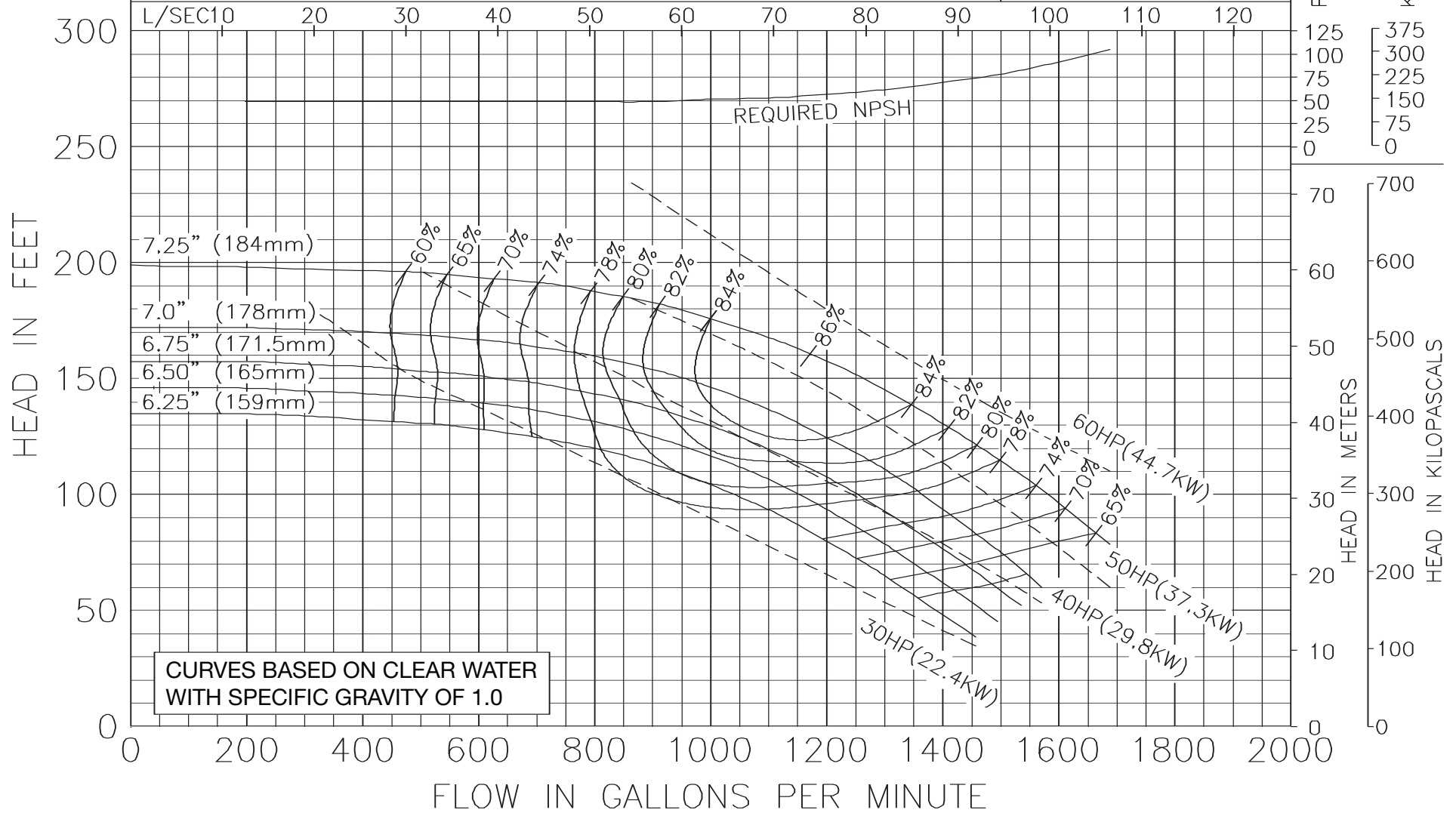
REQUIRED NPSH



Model 4075
FI & CI Series

3500 RPM
November 1, 2010

Curve no. 2192
Min. Imp. Dia. 6.25"
Size 5 x 4 x 7

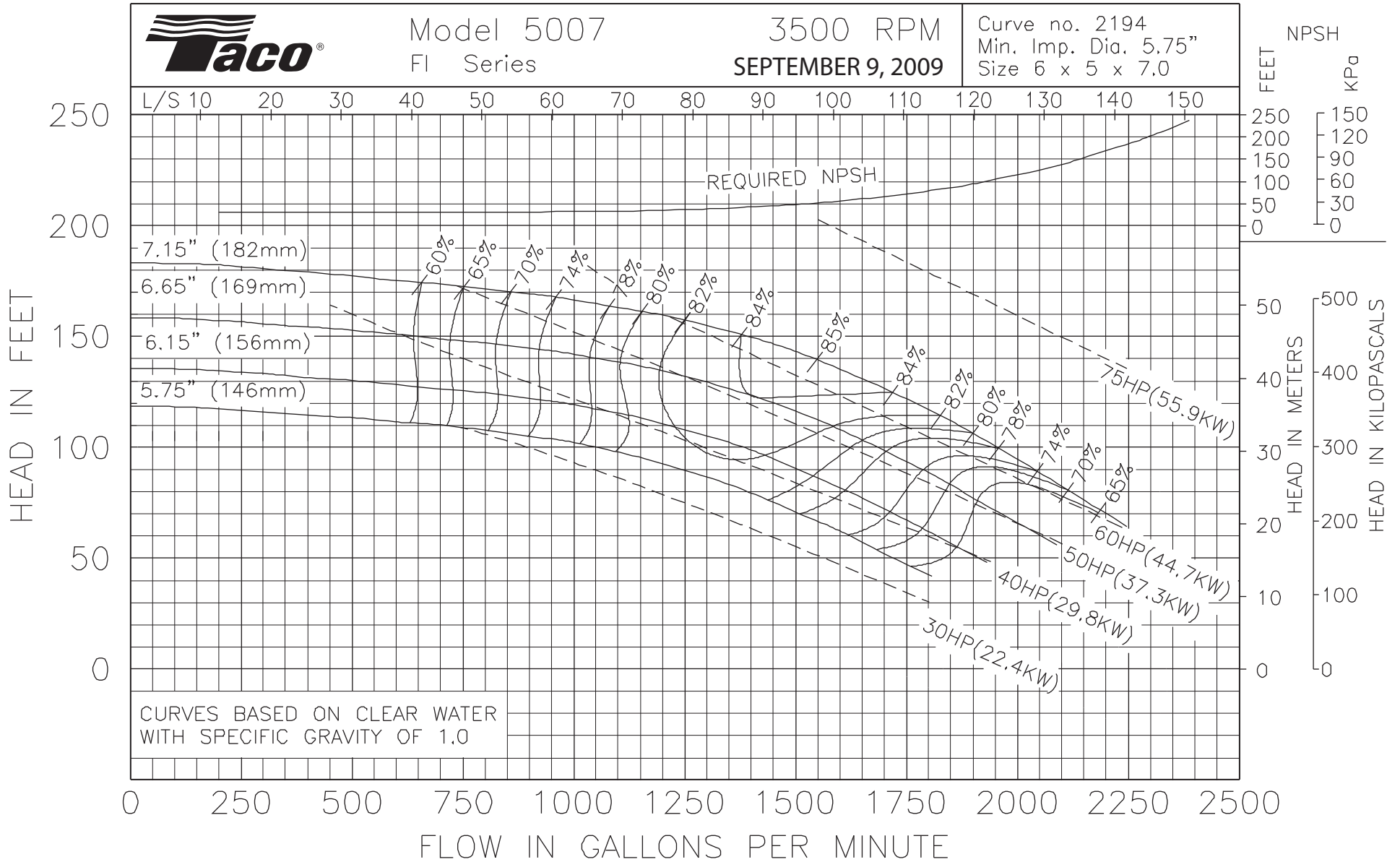




Model 5007
FI Series

3500 RPM
SEPTEMBER 9, 2009

Curve no. 2194
Min. Imp. Dia. 5.75"
Size 6 x 5 x 7.0



CURVES BASED ON CLEAR WATER
WITH SPECIFIC GRAVITY OF 1.0