

Company: Bonneville Power Administration

Name:

Date: 2/8/2007

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 36G.1 (1 stage)
 Type: VERT.TURBINE
 Synch speed: 900 rpm
 Curve: 09-101
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 880 rpm
 Dia: 27.72 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 40 in
 Discharge: 24 in
 Bowl size: 35.75 in
 Max lateral: 1.2 in
 Thrust K factor: 115 lb/ft

Search Criteria:

Flow: --- US gpm Head: --- ft

Fluid:

Water
 Density: 62.25 lb/ft³
 Viscosity: 1.105 cP
 NPSHa: --- ft
 Temperature: 60 °F
 Vapor pressure: 0.2563 psi a
 Atm pressure: 14.7 psi a

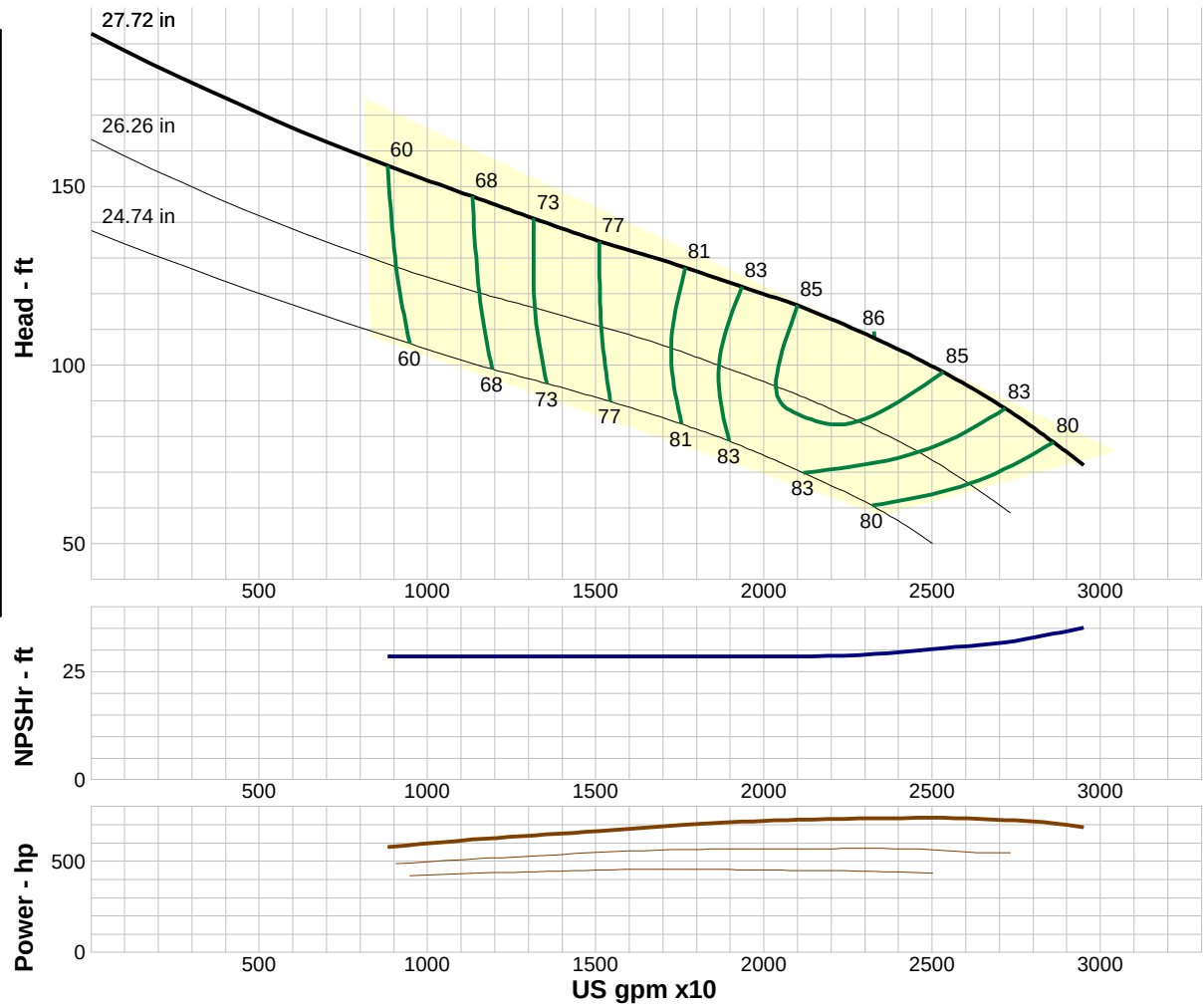
Motor:

Standard: NEMA --- hp
 Enclosure: TEFC Speed: ---
 Frame: ---
 Sizing criteria: Max Power on Design Curve

Pump Limits:

Temperature: 150 °F
 Pressure: 300 psi g
 Sphere size: 2.41 in
 Power: 1489 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	23273 US gpm
Head:	108 ft
Eff:	86%
Power:	735 hp
NPSHr:	29.1 ft
---- Design Curve ----	
Shutoff head:	193 ft
Shutoff dP:	83.3 psi
Min flow:	--- US gpm
BEP:	86% @ 23273 US gpm
NOL power:	738 hp @ 25313 US gpm
-- Max Curve --	
Max power:	738 hp @ 25313 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
28314	880	80.3	80.6	711	33.4
23595	880	106	85.8	735	29.3
18876	880	123	82.5	712	28.5
14157	880	138	75.1	654	28.5
9438	880	154	62	587	28.5

Company: Bonneville Power Administration
 Name:
 Date: 2/8/2007
 Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 36G.2+ (2 stage)
 Type: VERT.TURBINE
 Synch speed: 900 rpm
 Curve: 09-101
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 880 rpm
 Dia: 27.72 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 40 in
 Discharge: 24 in
 Bowl size: 35.75 in
 Max lateral: 1.2 in
 Thrust K factor: 115 lb/ft

Pump Limits:

Temperature: 150 °F
 Pressure: 300 psi g
 Sphere size: 2.41 in
 Power: 1240 hp
 Eye area: --- in²

Search Criteria:

Flow: --- US gpm
 Head: --- ft

Fluid:

Water
 Density: 62.25 lb/ft³
 Viscosity: 1.105 cP
 NPSHa: --- ft
 Temperature: 60 °F
 Vapor pressure: 0.2563 psi a
 Atm pressure: 14.7 psi a

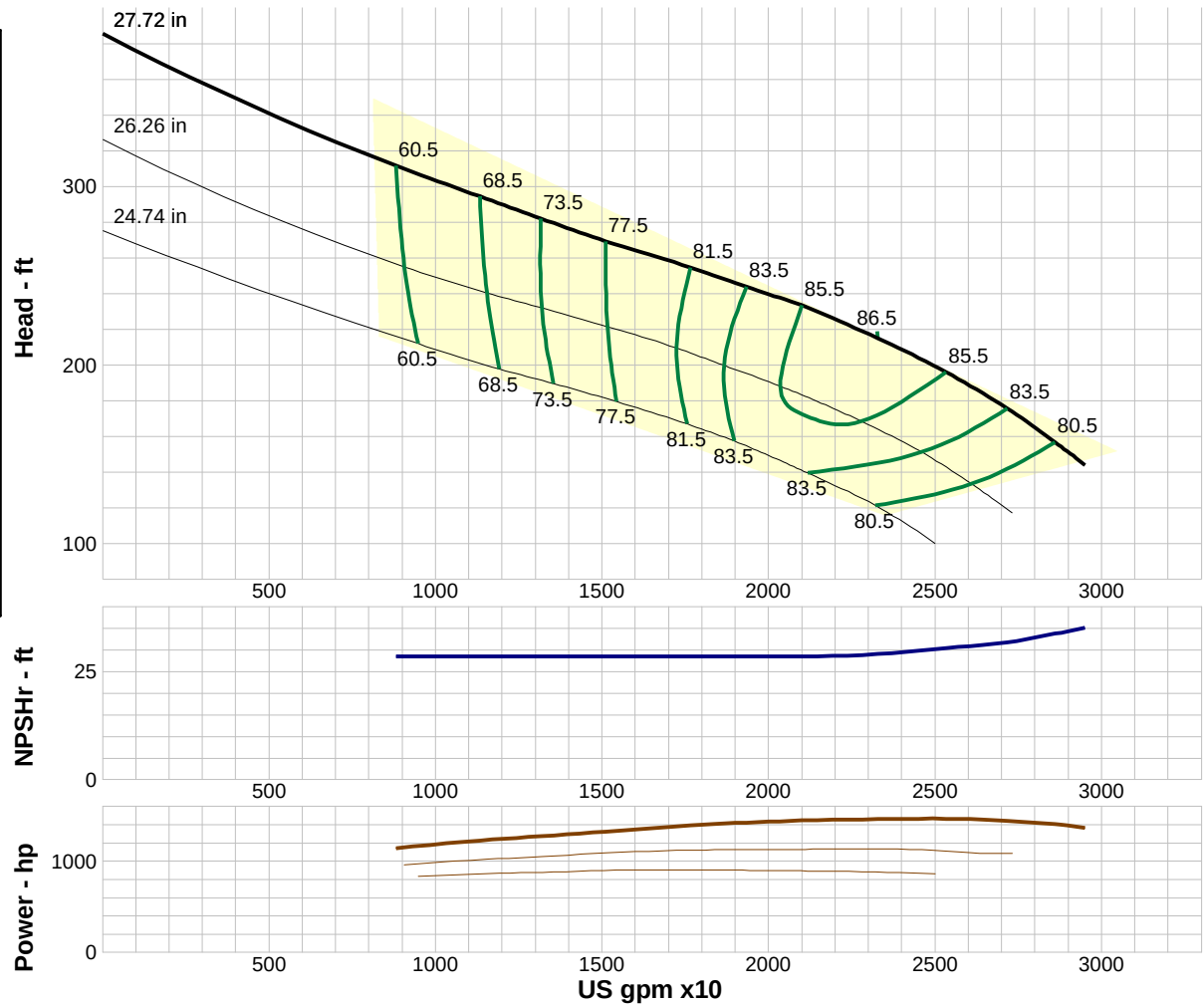
Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 --- hp
 Speed: ---
 Frame: ---

Pump Selection Warnings:

Design curve maximum power exceeds limit for the pump.

---- Data Point ----	
Flow:	23273 US gpm
Head:	215 ft
Eff:	86.5%
Power:	1461 hp
NPSHr:	29.1 ft
---- Design Curve ----	
Shutoff head:	385 ft
Shutoff dP:	167 psi
Min flow:	--- US gpm
BEP:	86.5% @ 23273 US gpm
NOL power:	1466 hp @ 25313 US gpm
-- Max Curve --	
Max power:	1466 hp @ 25313 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
28314	880	161	81.1	1414	33.4
23595	880	212	86.3	1462	29.3
18876	880	247	83	1416	28.5
14157	880	275	75.6	1300	28.5
9438	880	307	62.5	1165	28.5