

Company: Bonneville Power Administration

Name:

Date: 11/29/2006

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 23HH.1 (1 stage)
 Type: VERT.TURBINE
 Synch speed: 1200 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1185 rpm
 Dia: 13.12 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 29 in
 Discharge: 24 in
 Bowl size: 23 in
 Max lateral: 0.88 in
 Thrust K factor: 69 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

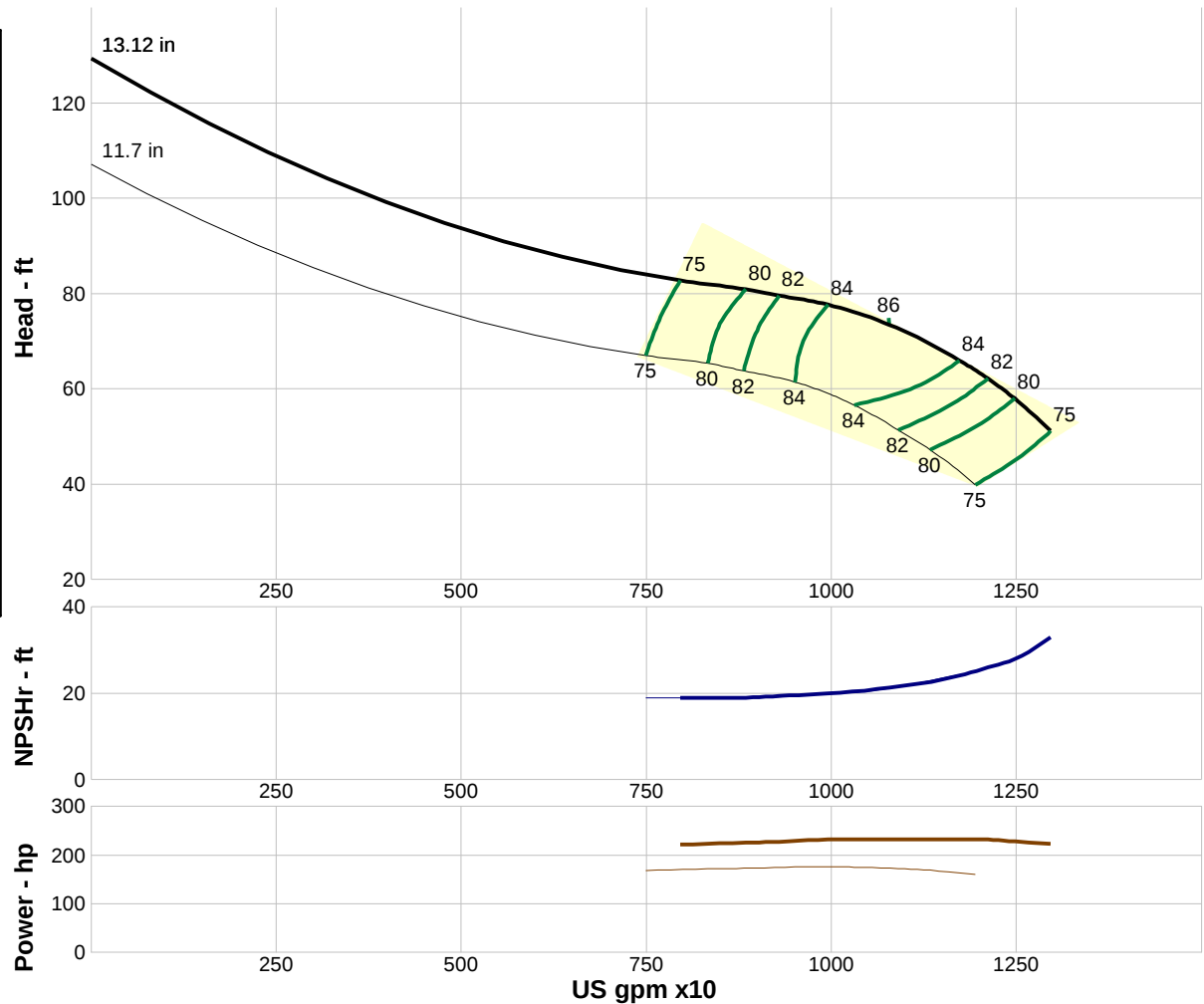
Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 250 hp
 Speed: 1200
 Frame: 449T

Pump Limits:

Temperature: 150 °F
 Pressure: --- psi g
 Sphere size: 1.81 in
 Power: 689 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	10775 US gpm
Head:	73.5 ft
Eff:	86%
Power:	233 hp
NPSHr:	21.3 ft
---- Design Curve ----	
Shutoff head:	129 ft
Shutoff dP:	55.9 psi
Min flow:	--- US gpm
BEP:	86% @ 10775 US gpm
NOL power:	233 hp @ 11724 US gpm
-- Max Curve --	
Max power:	233 hp @ 11724 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
12439	1185	58.4	80.2	229	27.7
10366	1185	75.6	85	232	20.6
8293	1185	82	76.9	223	19
6220	1185	---	---	---	---
4146	1185	---	---	---	---

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



Pump:

Size: 23HH.2 (2 stage)
 Type: VERT.TURBINE
 Synch speed: 1200 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1185 rpm
 Dia: 13.12 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 29 in
 Discharge: 24 in
 Bowl size: 23 in
 Max lateral: 0.88 in
 Thrust K factor: 69 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

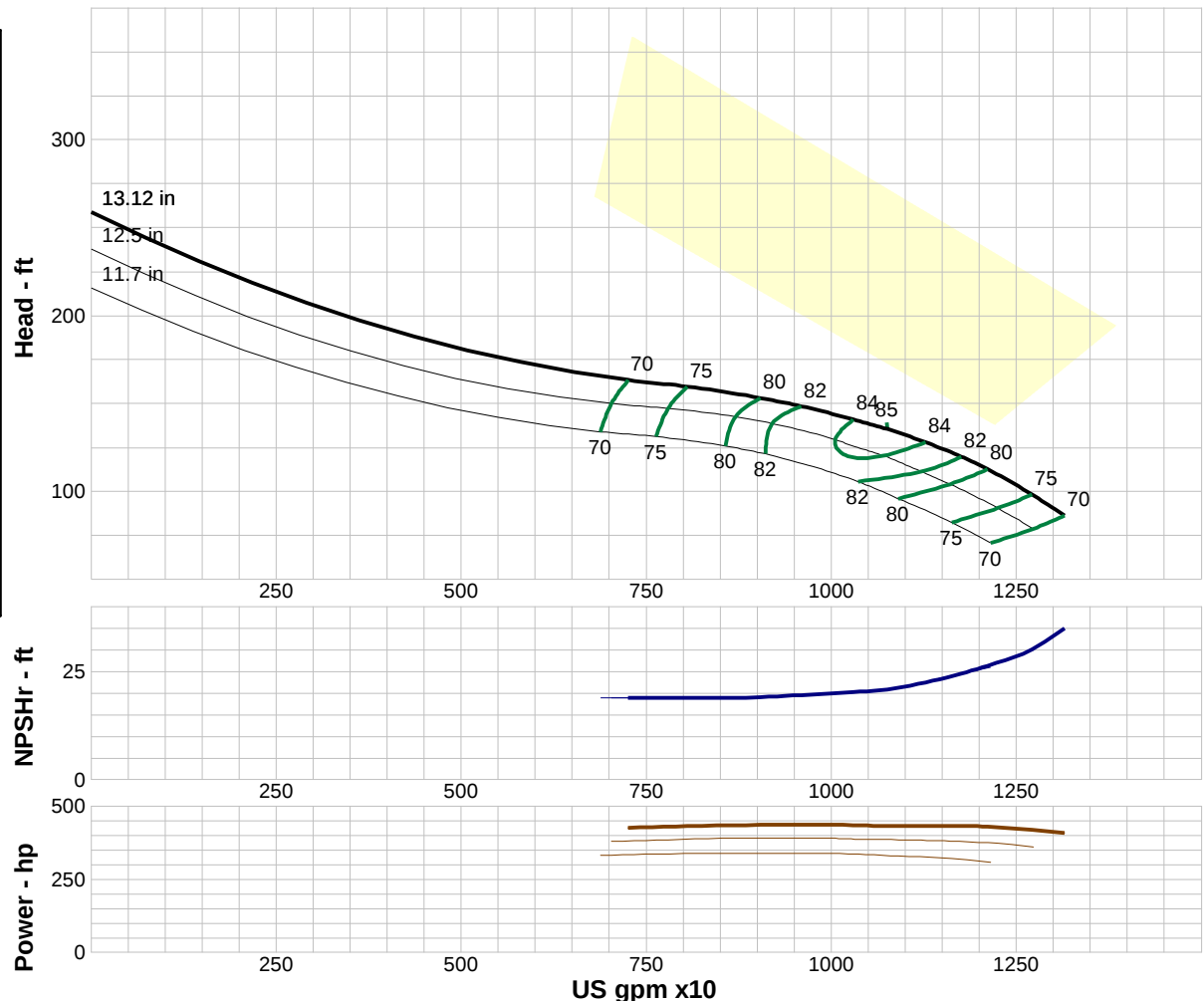
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: --- psi g
 Sphere size: 1.81 in
 Power: 689 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	10748 US gpm
Head:	136 ft
Eff:	85%
Power:	433 hp
NPSHr:	20.9 ft
---- Design Curve ----	
Shutoff head:	259 ft
Shutoff dP:	112 psi
Min flow:	--- US gpm
BEP:	85% @ 10748 US gpm
NOL power:	438 hp @ 9586 US gpm
-- Max Curve --	
Max power:	438 hp @ 9586 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
12619	1185	100	75.7	422	29.6
10516	1185	138	84.5	434	20.6
8413	1185	157	76.8	434	19
6310	1185	---	---	---	---
4206	1185	---	---	---	---