

Company: Bonneville Power Administration

Name:

Date: 11/29/2006

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 23HLC.1 (1 stage)
 Type: VERT.TURBINE
 Synch speed: 900 rpm
 Curve: FAIRBANKS
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 885 rpm
 Dia: 13.26 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

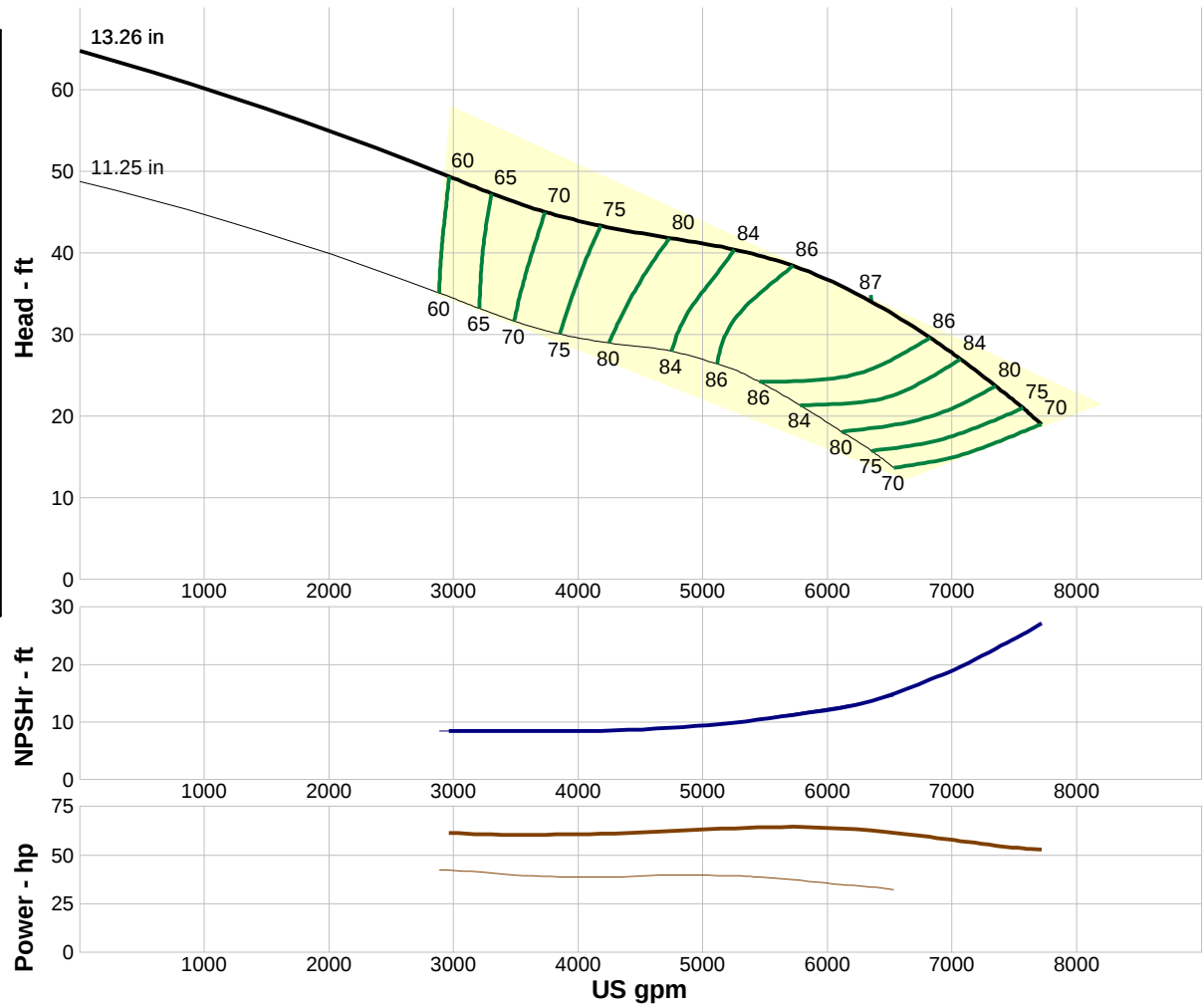
Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 75 hp
 Speed: 900
 Frame: 445T

Pump Limits:

Temperature: 150 °F
 Pressure: --- psi g
 Sphere size: 1.91 in
 Power: 561 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	6350 US gpm
Head:	34 ft
Eff:	87%
Power:	62.7 hp
NPSHr:	13.7 ft
---- Design Curve ----	
Shutoff head:	64.8 ft
Shutoff dP:	28 psi
Min flow:	--- US gpm
BEP:	87% @ 6350 US gpm
NOL power:	64.5 hp @ 5720 US gpm
-- Max Curve --	
Max power:	64.5 hp @ 5720 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
7404	885	23	78.7	54.6	23.5
6170	885	35.3	86.7	63.2	13
4936	885	41.3	81.6	63	9.38
3702	885	45.2	69.7	60.6	8.5
2468	885	---	---	---	---

Company: Bonneville Power Administration
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Pump:

Size: 23HLC.2 (2 stage)
 Type: VERT.TURBINE
 Synch speed: 900 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 885 rpm
 Dia: 13.26 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

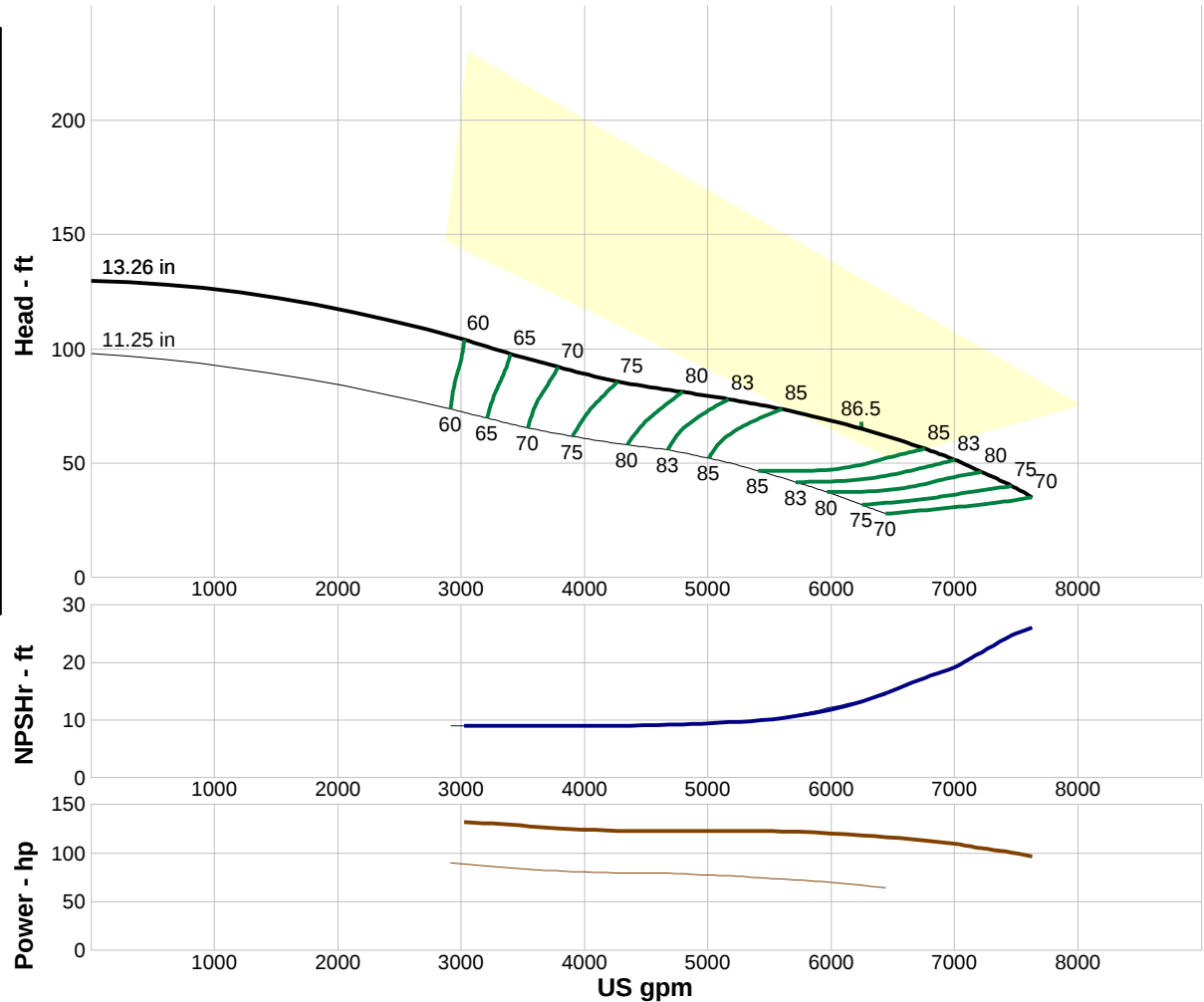
Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 150 hp
 Speed: 900
 Frame: 449T

Pump Limits:

Temperature: 150 °F
 Pressure: --- psi g
 Sphere size: 1.91 in
 Power: 561 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	6245 US gpm
Head:	64.9 ft
Eff:	86.5%
Power:	118 hp
NPSHr:	13.3 ft
---- Design Curve ----	
Shutoff head:	130 ft
Shutoff dP:	56.1 psi
Min flow:	--- US gpm
BEP:	86.5% @ 6245 US gpm
NOL power:	133 hp @ 2875 US gpm
-- Max Curve --	
Max power:	133 hp @ 2875 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
7320	885	43.5	77.8	103	23
6100	885	66.9	86.2	119	12.6
4880	885	80.4	80.7	123	9.37
3660	885	93.9	68.4	127	9
2440	885	---	---	---	---