

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: 720 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 705 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

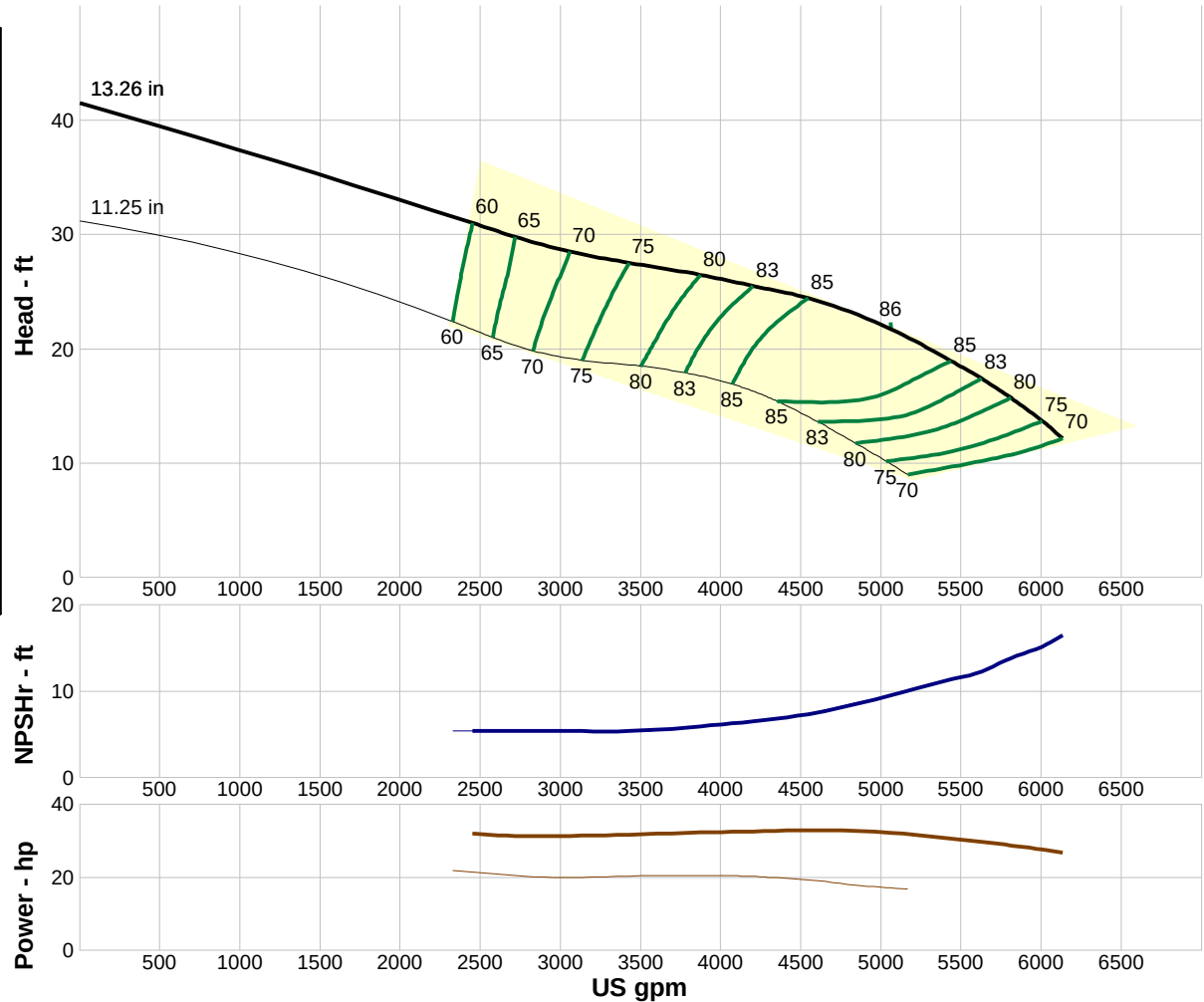
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: --- psi g
 Sphere size: 1.91 in
 Power: 450 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	5060 US gpm
Head:	21.7 ft
Eff:	86%
Power:	32.3 hp
NPSHr:	9.55 ft
---- Design Curve ----	
Shutoff head:	41.5 ft
Shutoff dP:	17.9 psi
Min flow:	--- US gpm
BEP:	86% @ 5060 US gpm
NOL power:	33 hp @ 4545 US gpm
-- Max Curve --	
Max power:	33 hp @ 4545 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
5885	705	14.9	78	28.4	14.4
4904	705	22.6	85.7	32.5	8.89
3923	705	26.3	80.5	32.4	6.04
2942	705	28.9	68.3	31.4	5.4
1962	705	---	---	---	---

Company: Bonneville Power Administration

Name:

Date: 11/29/2006

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 23HLC.2 (2 stage)
 Type: VERT.TURBINE
 Synch speed: 720 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 705 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

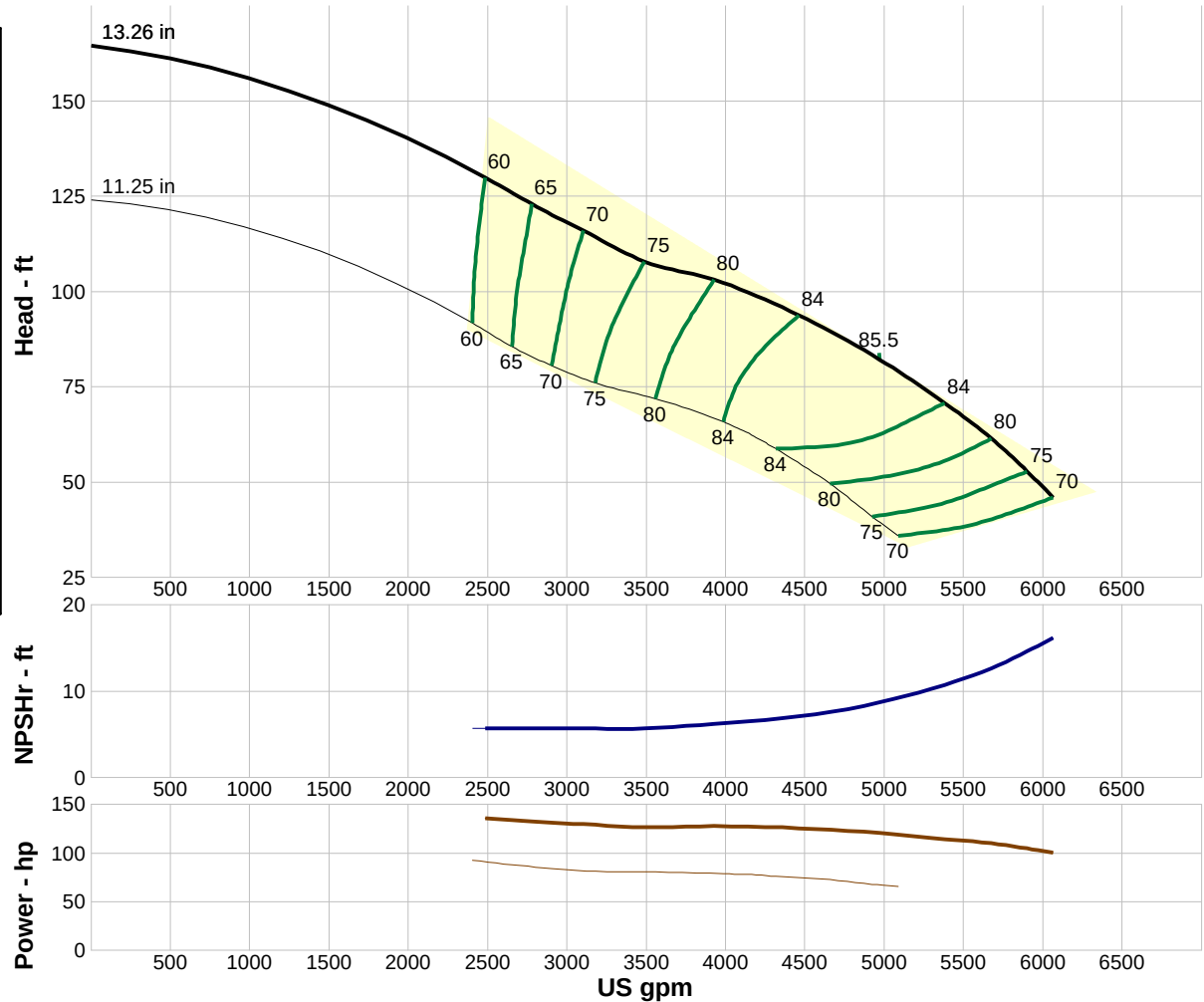
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: --- psi g
 Sphere size: 1.91 in
 Power: 450 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	4970 US gpm
Head:	82.2 ft
Eff:	85.5%
Power:	121 hp
NPSHr:	8.72 ft
---- Design Curve ----	
Shutoff head:	165 ft
Shutoff dP:	71.2 psi
Min flow:	--- US gpm
BEP:	85.5% @ 4970 US gpm
NOL power:	137 hp @ 2367 US gpm
-- Max Curve --	
Max power:	137 hp @ 2367 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
5818	705	55.9	76.8	107	13.9
4848	705	84.9	85.1	122	8.34
3878	705	104	79.5	128	6.18
2909	705	120	67.1	131	5.7
1939	705	---	---	---	---