

Company: Bonneville Power Administration

Name:

Date: 11/29/2006

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 20HLC.1 (1 stage)
 Type: VERT.TURBINE
 Synch speed: 720 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 705 rpm
 Dia: 13.2 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 24 in
 Discharge: --- in
 Bowl size: 21.5 in
 Max lateral: 0.44 in
 Thrust K factor: 49 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

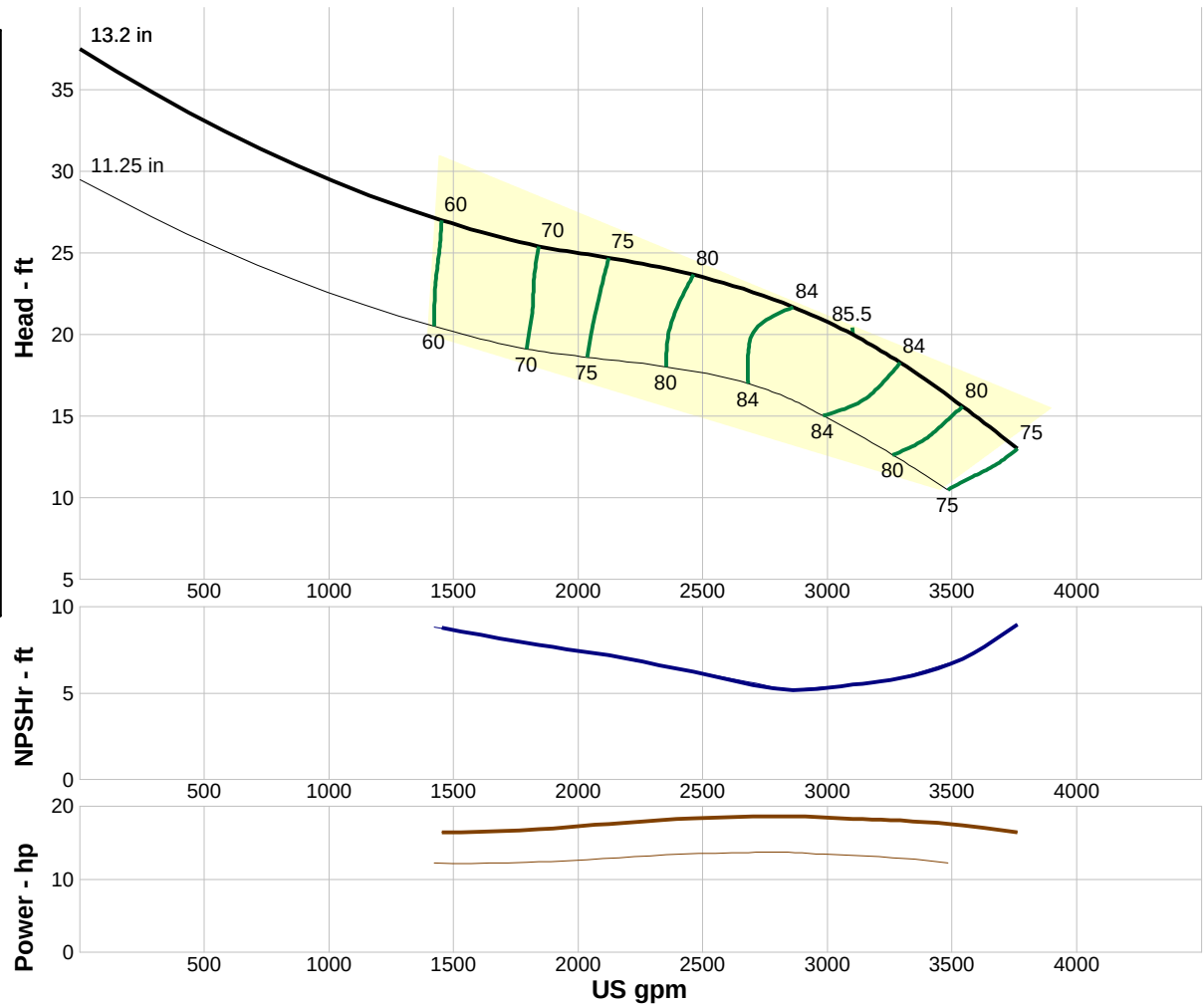
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: --- psi g
 Sphere size: --- in
 Power: 311 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	3100 US gpm
Head:	20 ft
Eff:	85.5%
Power:	18.3 hp
NPSHr:	5.5 ft
---- Design Curve ----	
Shutoff head:	37.5 ft
Shutoff dP:	16.2 psi
Min flow:	--- US gpm
BEP:	85.5% @ 3100 US gpm
NOL power:	18.6 hp @ 2860 US gpm
-- Max Curve --	
Max power:	18.6 hp @ 2860 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
3610	705	14.8	78.4	17.1	7.64
3008	705	20.6	84.9	18.4	5.38
2406	705	23.8	79.2	18.3	6.4
1805	705	25.5	69.1	16.8	7.89
1203	705	---	---	---	---

Company: Bonneville Power Administration

Name:

Date: 11/29/2006

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 20HLC.2 (2 stage)
 Type: VERT.TURBINE
 Synch speed: 720 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 705 rpm
 Dia: 13.2 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 24 in
 Discharge: --- in
 Bowl size: 21.5 in
 Max lateral: 0.44 in
 Thrust K factor: 49 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

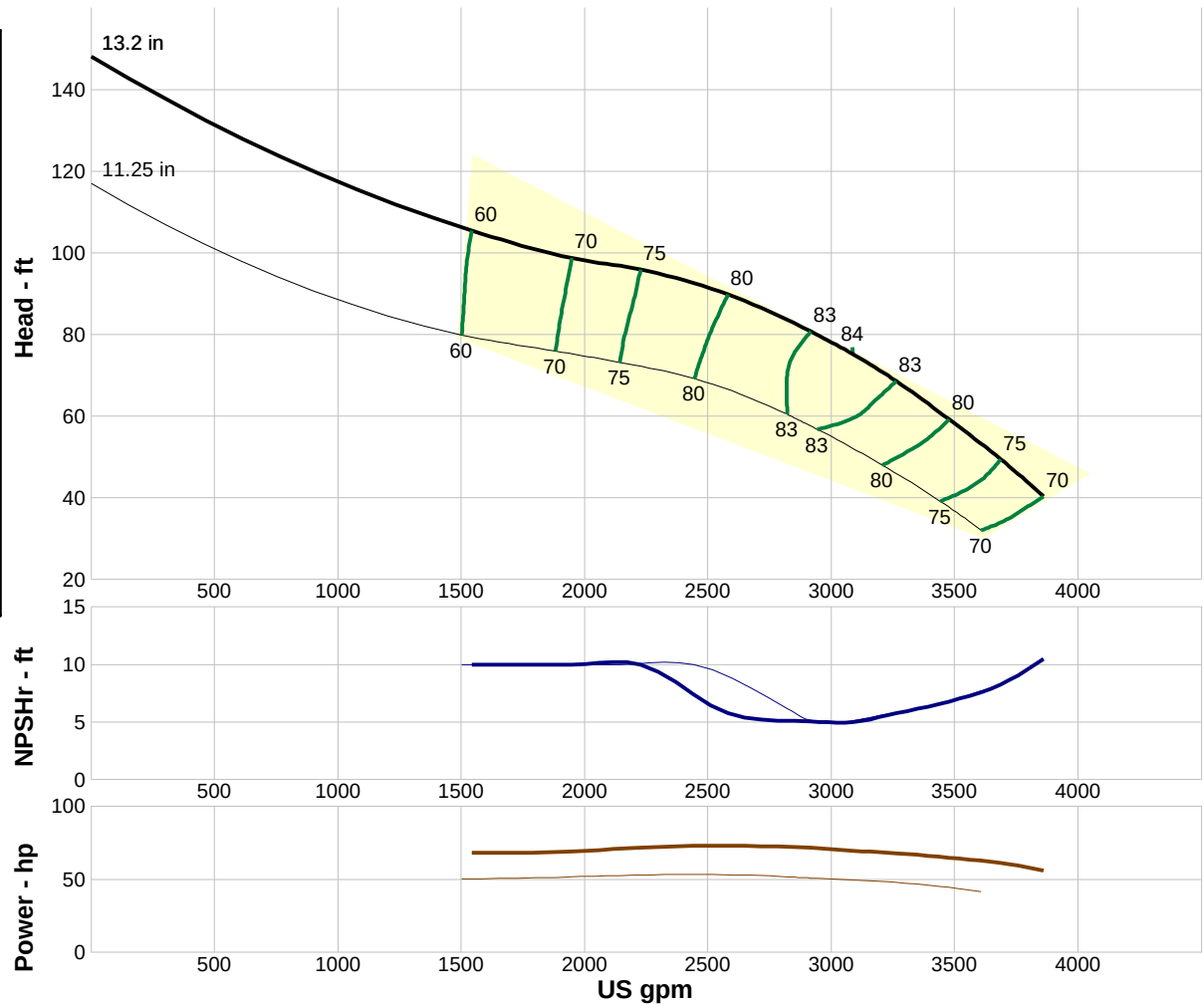
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: --- psi g
 Sphere size: --- in
 Power: 311 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	3086 US gpm
Head:	75.2 ft
Eff:	84%
Power:	69.7 hp
NPSHr:	5.01 ft
---- Design Curve ----	
Shutoff head:	148 ft
Shutoff dP:	64 psi
Min flow:	--- US gpm
BEP:	84% @ 3086 US gpm
NOL power:	73.1 hp @ 2580 US gpm
-- Max Curve --	
Max power:	73.1 hp @ 2580 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
3704	705	48.4	74.5	60.8	8.53
3087	705	75.1	84	69.7	5.01
2470	705	91.7	78.5	72.7	7.08
1852	705	100	67.7	69.1	10
1235	705	---	---	---	---