

Company: Bonneville Power Administration

Name:

Date: 2/8/2007

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 34H.1 (1 stage)
 Type: VERT.TURBINE
 Synch speed: 900 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 880 rpm
 Dia: 21.75 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 32 in
 Discharge: 24 in
 Bowl size: 34.75 in
 Max lateral: 0.38 in
 Thrust K factor: 111 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

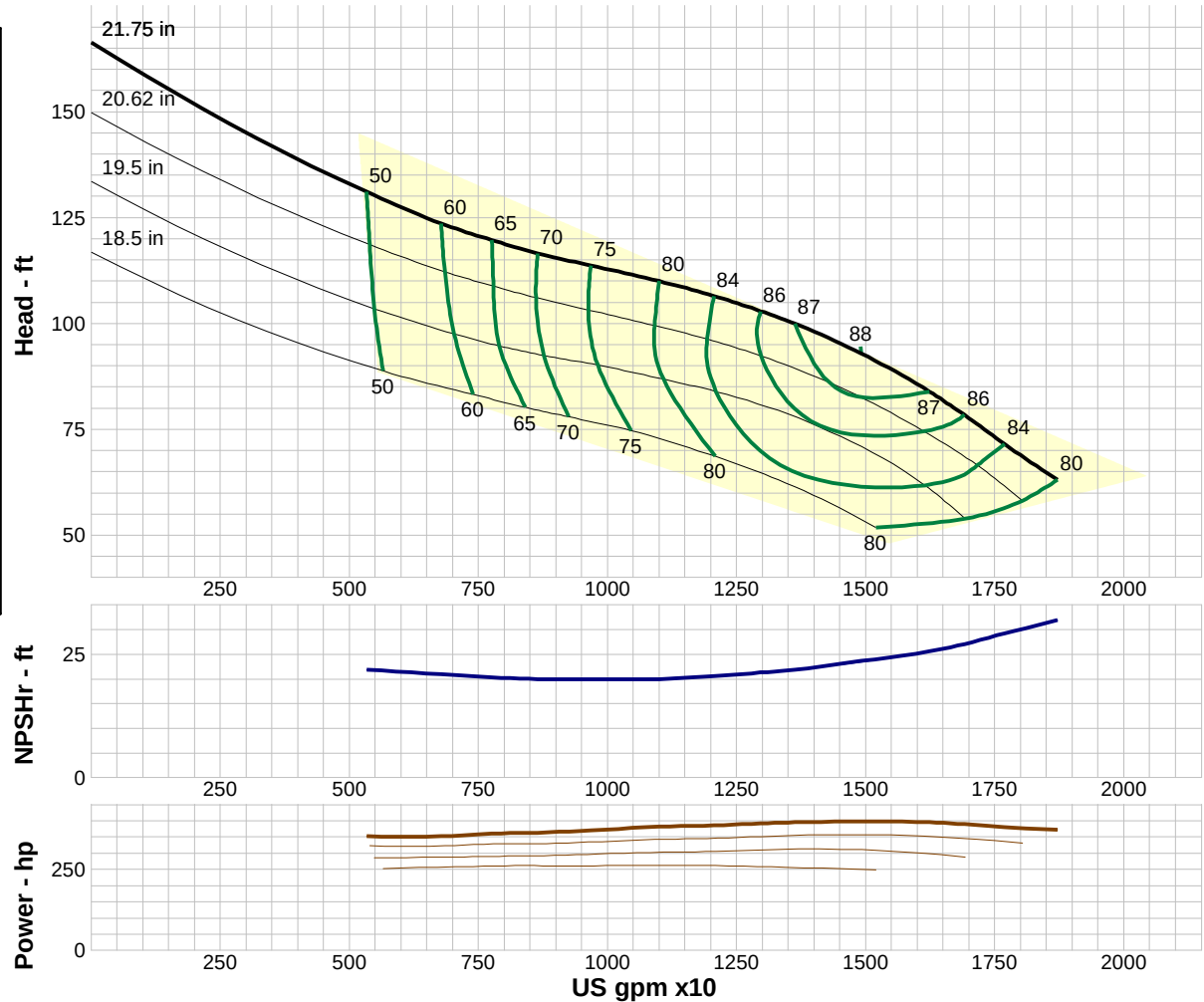
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: 363 psi g
 Sphere size: 3.25 in
 Power: --- hp
 Eye area: --- in²

---- Data Point ----	
Flow:	14903 US gpm
Head:	92.9 ft
Eff:	88%
Power:	397 hp
NPSHr:	23.6 ft
---- Design Curve ----	
Shutoff head:	166 ft
Shutoff dP:	71.9 psi
Min flow:	--- US gpm
BEP:	88% @ 14903 US gpm
NOL power:	397 hp @ 14903 US gpm
-- Max Curve --	
Max power:	397 hp @ 14903 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
17952	880	69.3	82.9	378	30
14960	880	92.5	88	397	23.7
11968	880	107	83.7	385	20.5
8976	880	116	71.6	365	20
5984	880	128	54.6	352	21.5

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Name:

Date: 2/8/2007

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 34H.2 (2 stage)
 Type: VERT.TURBINE
 Synch speed: 900 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 880 rpm
 Dia: 21.75 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 32 in
 Discharge: 24 in
 Bowl size: 34.75 in
 Max lateral: 0.38 in
 Thrust K factor: 111 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

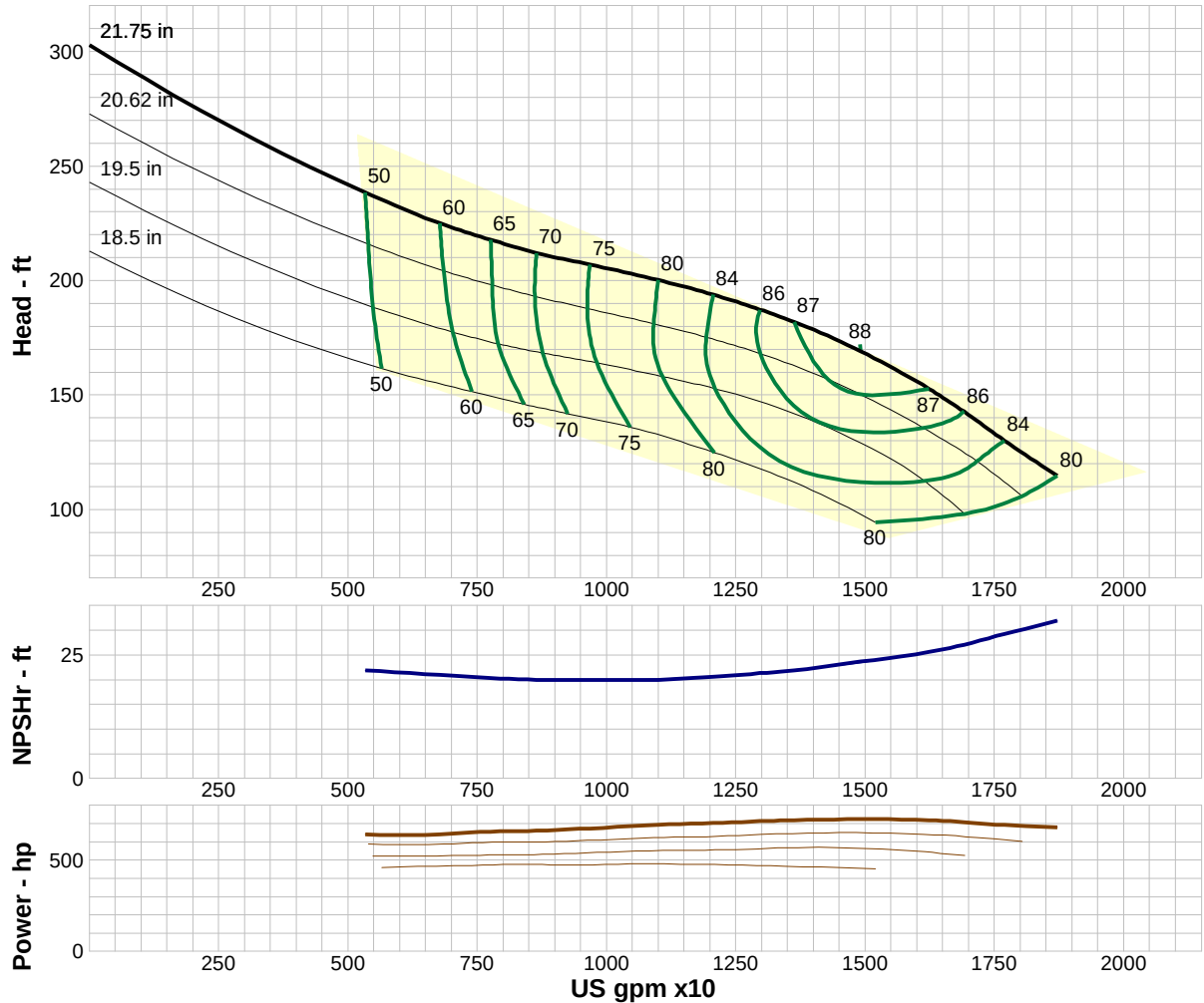
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: 363 psi g
 Sphere size: 3.25 in
 Power: --- hp
 Eye area: --- in²

---- Data Point ----	
Flow:	14903 US gpm
Head:	169 ft
Eff:	88%
Power:	723 hp
NPSHr:	23.6 ft
---- Design Curve ----	
Shutoff head:	303 ft
Shutoff dP:	131 psi
Min flow:	--- US gpm
BEP:	88% @ 14903 US gpm
NOL power:	723 hp @ 14903 US gpm
-- Max Curve --	
Max power:	723 hp @ 14903 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
17952	880	126	82.9	688	30
14960	880	168	88	723	23.7
11968	880	194	83.7	702	20.5
8976	880	210	71.6	665	20
5984	880	232	54.6	641	21.5

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Name:

Date: 2/8/2007

Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 34H.3 (3 stage)
 Type: VERT.TURBINE
 Synch speed: 900 rpm
 Curve:
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 880 rpm
 Dia: 21.75 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 32 in
 Discharge: 24 in
 Bowl size: 34.75 in
 Max lateral: 0.38 in
 Thrust K factor: 111 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

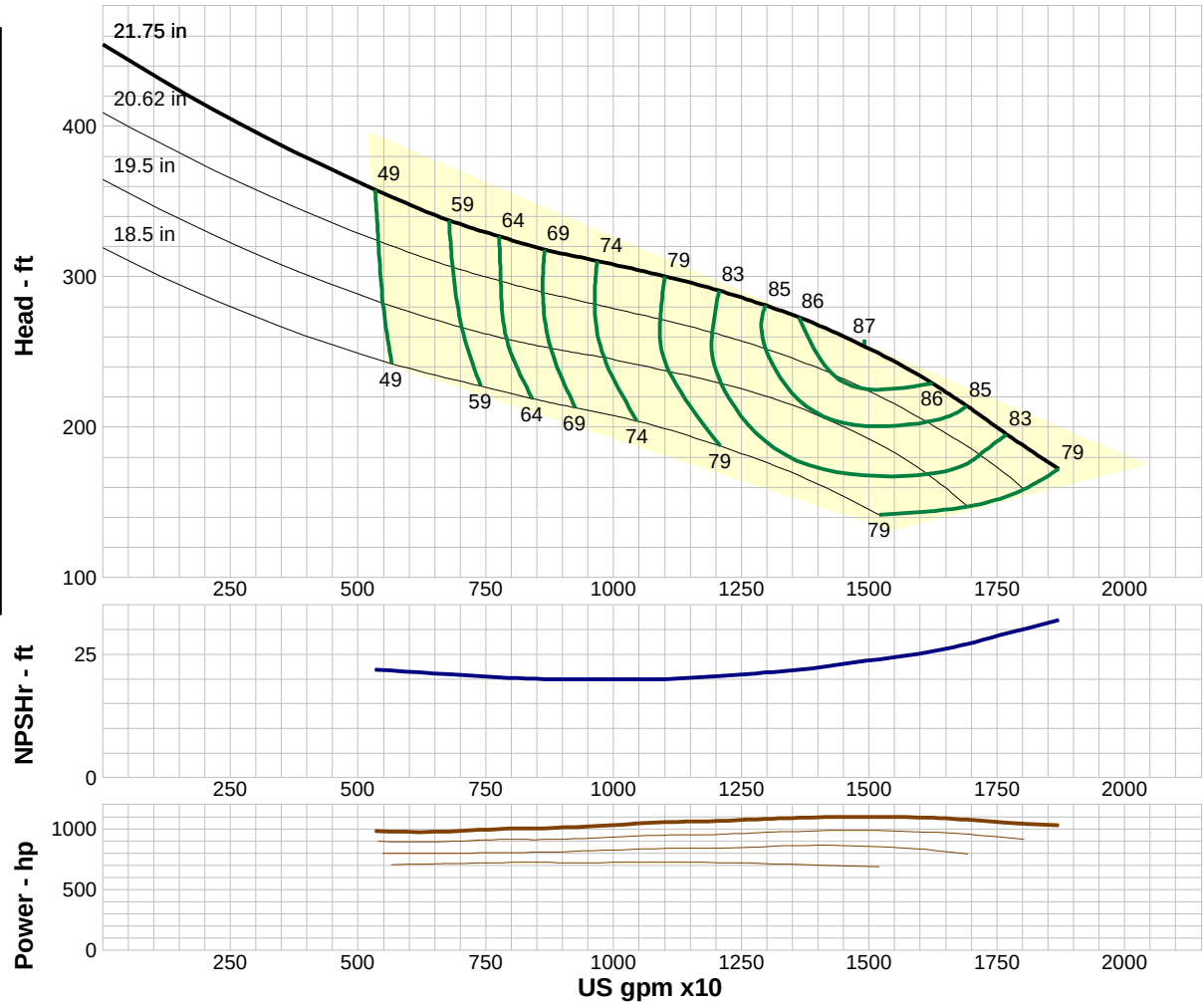
Motor:

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

Pump Limits:

Temperature: 150 °F
 Pressure: 363 psi g
 Sphere size: 3.25 in
 Power: --- hp
 Eye area: --- in²

---- Data Point ----	
Flow:	14903 US gpm
Head:	254 ft
Eff:	87%
Power:	1097 hp
NPSHr:	23.6 ft
---- Design Curve ----	
Shutoff head:	454 ft
Shutoff dP:	196 psi
Min flow:	--- US gpm
BEP:	87% @ 14903 US gpm
NOL power:	1097 hp @ 14903 US gpm
-- Max Curve --	
Max power:	1097 hp @ 14903 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
17952	880	189	81.9	1045	30
14960	880	253	87	1097	23.7
11968	880	292	82.7	1065	20.5
8976	880	316	70.6	1012	20
5984	880	349	53.6	980	21.5