

Company: Bonneville Power Administration
 Name:
 Date: 11/29/2006
 Selection: Missing Fairbanks Vertical Turbines



Pump:

Size: 18E.1 (1 stage)
 Type: VERT.TURBINE
 Synch speed: 1800 rpm
 Curve: 18-183
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1770 rpm
 Dia: 13.7 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 17.25 in
 Discharge: 12 in
 Bowl size: 17.5 in
 Max lateral: 0.38 in
 Thrust K factor: 27 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

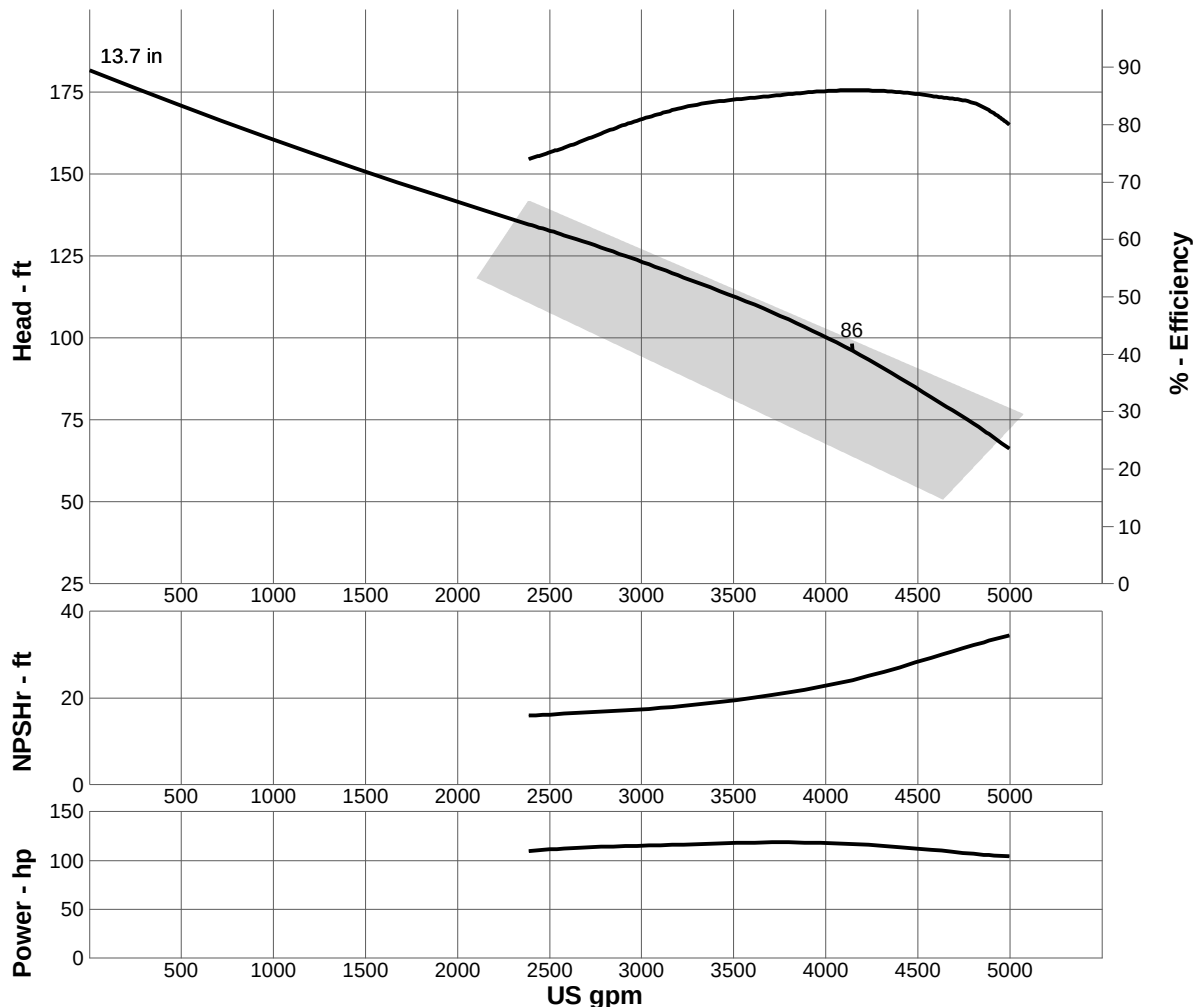
Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 125 hp
 Speed: 1800
 Frame: 444T

Pump Limits:

Temperature: 150 °F
 Pressure: 300 psi g
 Sphere size: 1.62 in
 Power: 781 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	4143 US gpm
Head:	96.1 ft
Eff:	86%
Power:	117 hp
NPSHr:	24.2 ft
---- Design Curve ----	
Shutoff head:	182 ft
Shutoff dP:	78.5 psi
Min flow:	--- US gpm
BEP:	86% @ 4143 US gpm
NOL power:	119 hp @ 3706 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
4793	1770	74	83.4	107	32.1
3994	1770	100	85.7	117	23
3195	1770	119	82.7	116	18.1
2396	1770	134	74.1	110	16
1598	1770	---	---	---	---

Company: Bonneville Power Administration
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Pump:

Size: 18E.2+ (2 stage)
 Type: VERT.TURBINE
 Synch speed: 1800 rpm
 Curve: 18-183
 Specific Speeds:
 Dimensions:
 Vertical Turbine:
 Speed: 1770 rpm
 Dia: 13.7 in
 Impeller:
 Ns: ---
 Nss: ---
 Suction: 17.25 in
 Discharge: 12 in
 Bowl size: 17.5 in
 Max lateral: 0.38 in
 Thrust K factor: 27 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

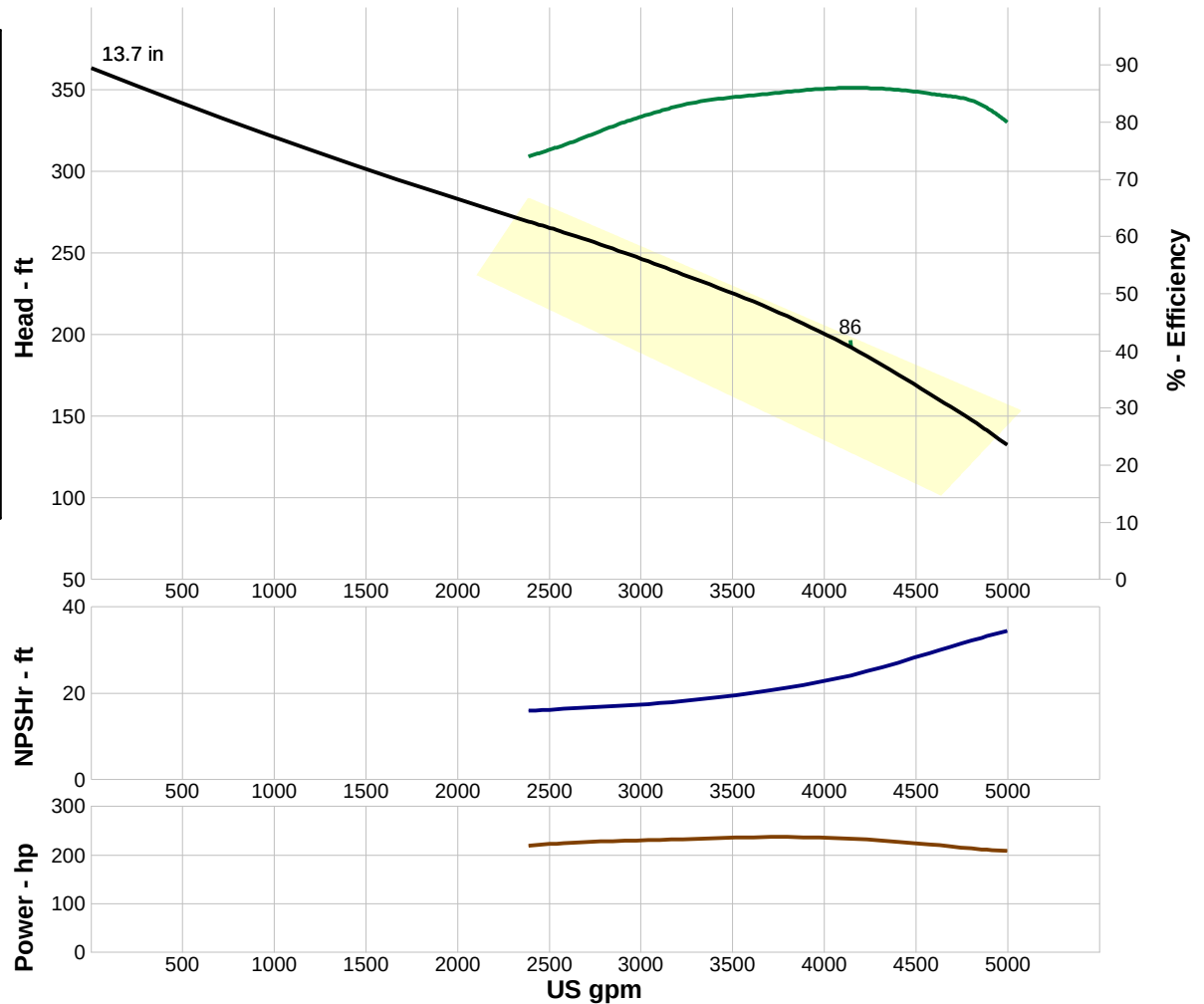
Motor:

Standard: NEMA
 Enclosure: TEFC
 Sizing criteria: Max Power on Design Curve
 Size: 250 hp
 Speed: 1800
 Frame: 447T

Pump Limits:

Temperature: 150 °F
 Pressure: 300 psi g
 Sphere size: 1.62 in
 Power: 781 hp
 Eye area: --- in²

---- Data Point ----	
Flow:	4143 US gpm
Head:	192 ft
Eff:	86%
Power:	234 hp
NPSHr:	24.2 ft
---- Design Curve ----	
Shutoff head:	363 ft
Shutoff dP:	157 psi
Min flow:	--- US gpm
BEP:	86% @ 4143 US gpm
NOL power:	237 hp @ 3706 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
4793	1770	148	83.4	214	32.1
3994	1770	200	85.7	235	23
3195	1770	238	82.7	232	18.1
2396	1770	269	74.1	219	16
1598	1770	---	---	---	---