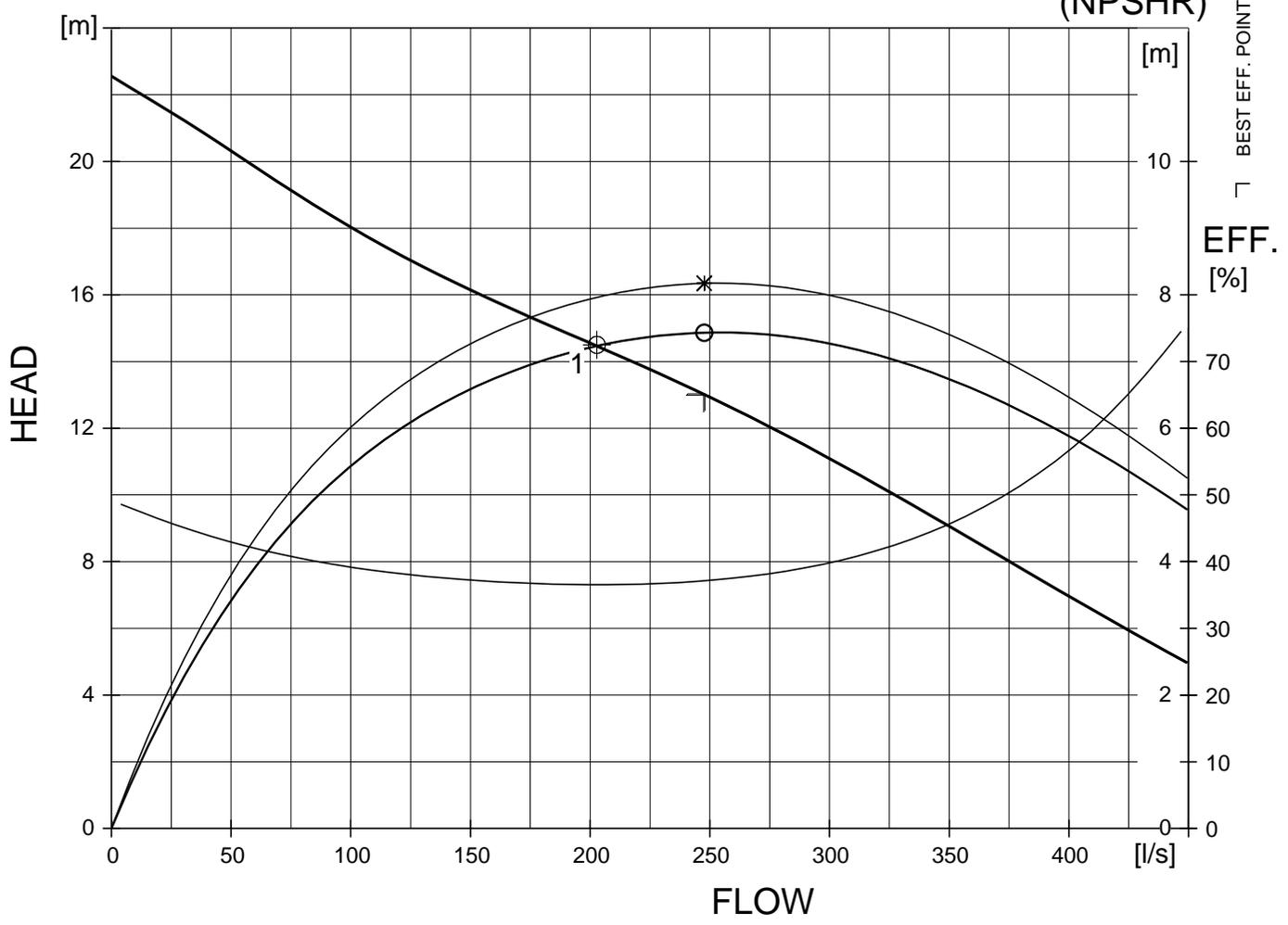
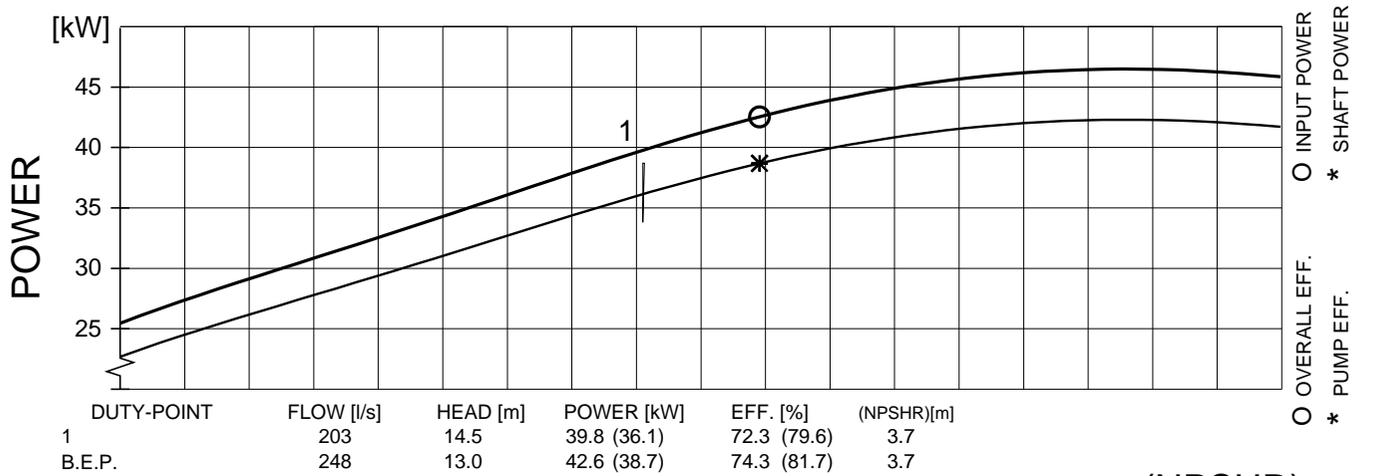


		<h1>PERFORMANCE CURVE</h1>			PRODUCT NP 3312 /705		TYPE	
DATE 2014-10-17		PROJECT			CURVE NO 53-870		ISSUE 1	
POWER FACTOR EFFICIENCY MOTOR DATA		1/1-LOAD 0.82 90.5 % ---	3/4-LOAD 0.79 91.0 % ---	1/2-LOAD 0.70 90.0 % ---	RATED POWER STARTING CURRENT ... RATED CURRENT ... RATED SPEED TOT.MOM.OF INERTIA ... NO. OF BLADES	55 kW 505 A 107 A 735 rpm 3.1 kgm2 3	IMPELLER DIAMETER 470 mm	
COMMENTS			INLET/OUTLET -/300 mm IMP. THROUGHLET ---	RATED SPEED TOT.MOM.OF INERTIA ... NO. OF BLADES	735 rpm 3.1 kgm2 3	MOTOR # 43-30-8FA	STATOR 01D	REV 11
				FREQ. 50 Hz	PHASES 3	VOLTAGE 400 V	POLES 8	
				GEARTYPE ---		RATIO ---		



FLYPS3.1.6.5 (20090313)

(NPSHR) = (NPSH3) + margins
 Performance with clear water and ambient temp 40 °C

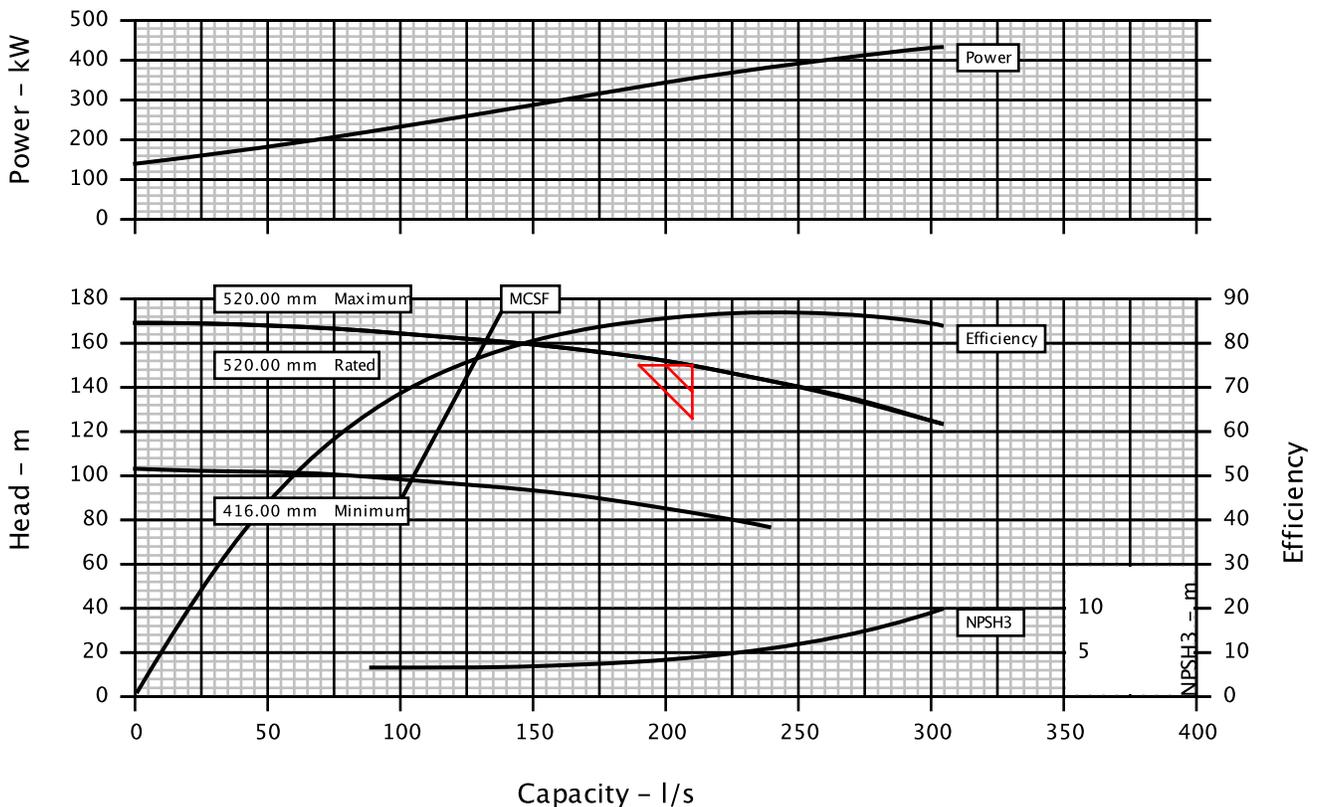


Customer	: FLOWSERVE PUMP DIVISION TKL	Pump / Stages	: 200-LNN-525 / 1
Customer reference	: Pre-Feed	Based on curve no.	: 968R1-AA
Item number	: Broken Hill- PS1 & PS2	Flowserve reference	: 209199894
Service	:	Date	: October 13, 2014

Operating Conditions		Materials / Specification	
Capacity	: 210.0 l/s	Material column code	: B1
Water capacity (CQ=1.00)	: -	Pump specification	: -
Normal capacity	: -	Other Requirements	
Total Developed Head	: 150.00 m	Hydraulic selection : No specification	
Water head (CH=1.00)	: -	Construction : No specification	
NPSH available (NPSHa)	: Ample	Test tolerance : Hydraulic Institute Level B	
NPSHa less NPSH margin	: -	Variable Speed - Maximize Efficiency	
Maximum suction pressure	: 0.0 kPa.g	Driver Sizing : Max Power(MCSF to EOC)with SF	
Liquid			
Liquid type	: Fresh water		
Temperature / Spec. Gravity	: 16 C / 1.000		
Solid Size - Actual / Limit	: - / -		
Viscosity / Vapor pressure	: 1.00 cSt / -		

Performance			
Hydraulic power	: 308 kW	Impeller diameter	
Pump speed	: 1910 rpm	Rated	: 520.0 mm
Efficiency (CE=1.00)	: 86.4 %	Maximum	: 520.0 mm
		Minimum	: 416.0 mm
NPSH required (NPSH3)	: 4.3 m	Suction specific speed	: 9440 US units
Rated power	: 357 kW	Minimum continuous flow	: 131.8 l/s
Maximum power	: 437 kW	Maximum head @ rated dia	: 168.95 m
Driver power	: 450 kW / 603 hp	Flow at BEP	: 244.1 l/s
Casing working pressure	: 1654.4 kPa.g	Flow as % of BEP	: 86.0 %
(based on shut off and Rated specific gravity @ Cut dia)		Efficiency at normal flow	: -
Maximum allowable	: 2500.0 kPa.g	Impeller dia ratio (rated/max)	: 100.0 %
Hydrostatic test pressure	: 4000.1 kPa.g	Head rise to shut off	: 12.6 %
Est. rated seal chamb. press.	: -	Total head ratio (rated/max)	: 100.0 %

CURVES ARE APPROXIMATE, PUMP IS GUARANTEED FOR ONE SET OF CONDITIONS; CAPACITY, HEAD, AND EFFICIENCY.



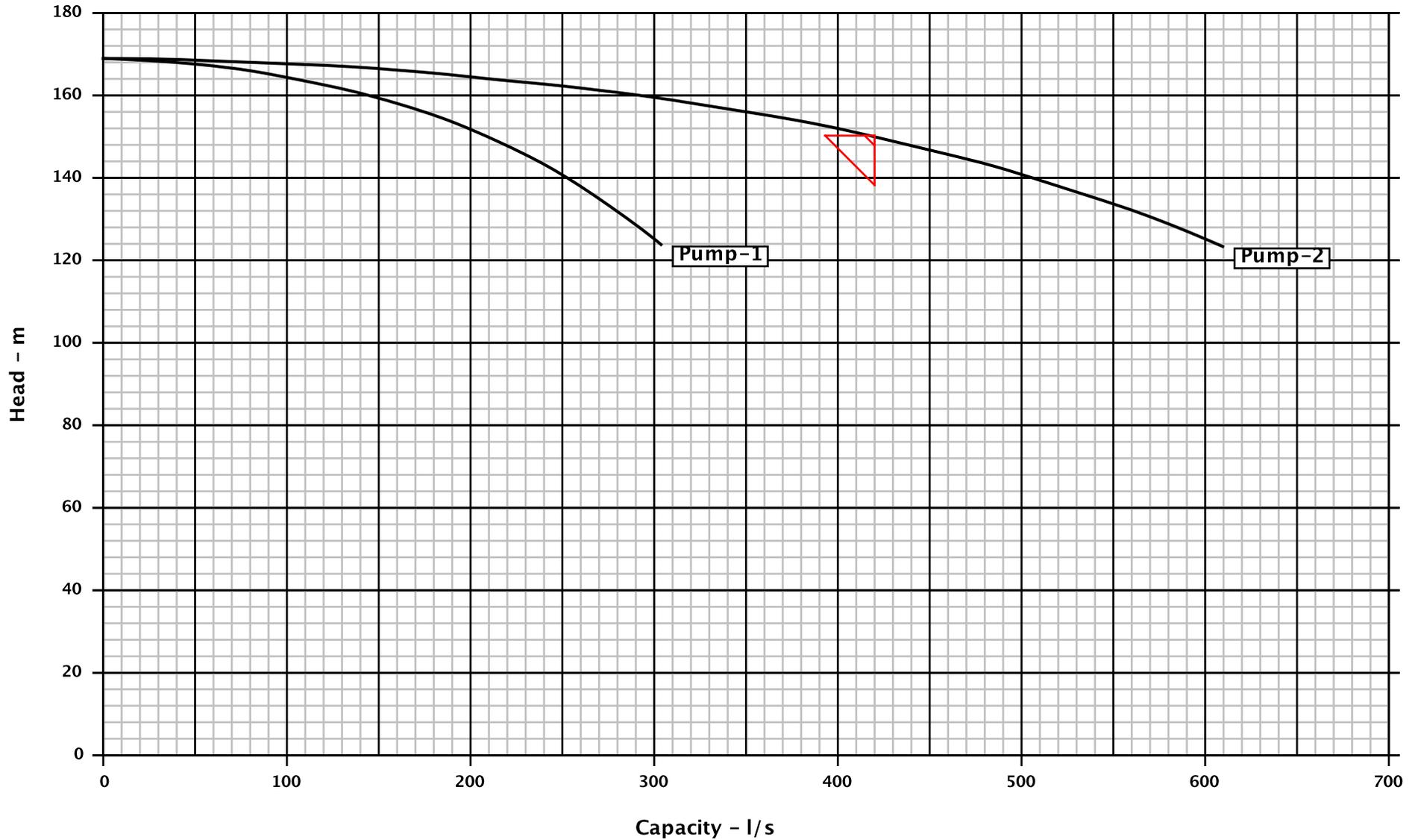
Customer : FLOWSERVE PUMP
Item number : Broken Hill- PS1 & PS2
Service :
Flowserve reference : 209199894
Date : October 13, 2014



Capacity : 210.0 l/s
Head : 150.00 m
Specific gravity : 1.000
Pump speed : 1910 rpm

Pump size & type : 200-LNN-525
Based on curve no. : 968R1-AA
Number of stages : 1

CURVES ARE APPROXIMATE, PUMP IS GUARANTEED FOR ONE SET OF CONDITIONS; CAPACITY, HEAD, AND EFFICIENCY.

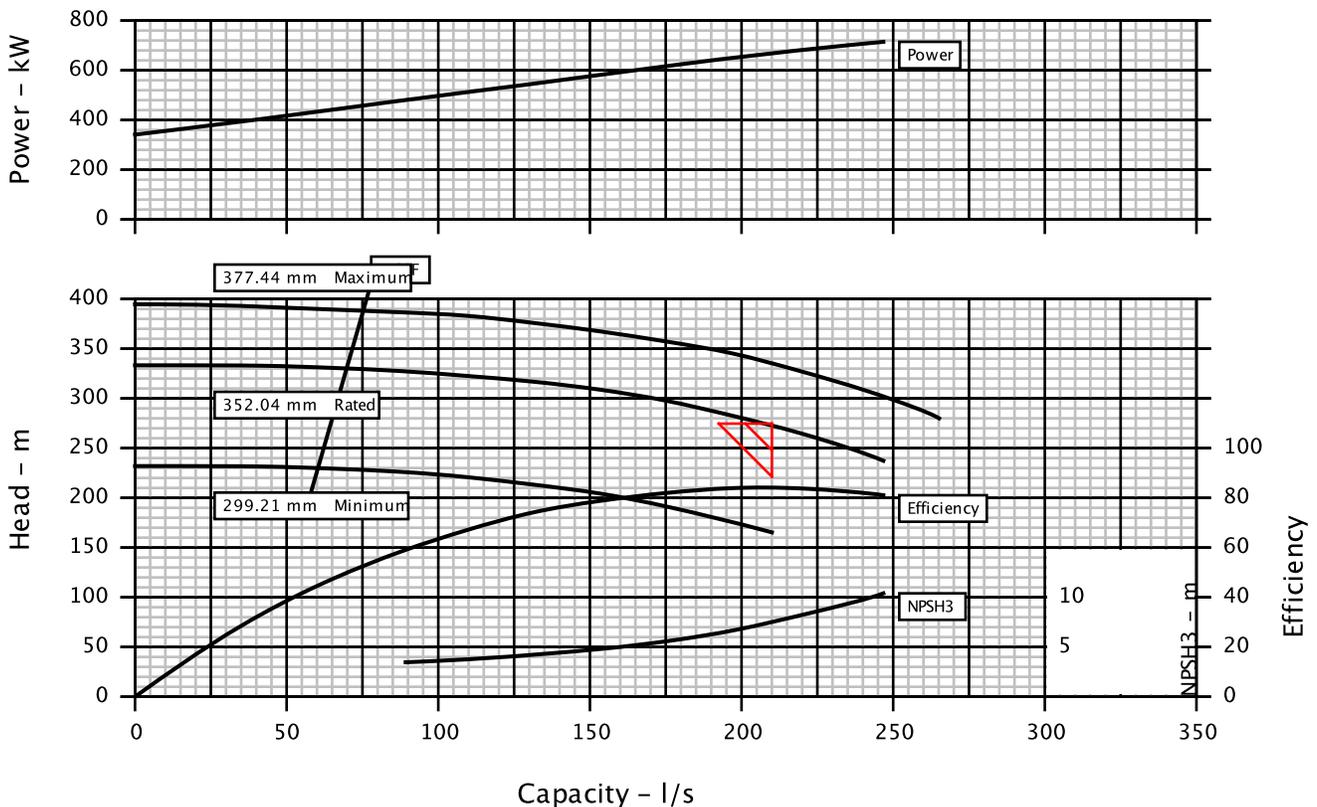


Customer	: FLOWSERVE PUMP DIVISION TKL	Pump / Stages	: 8X15DMXD-B / 2
Customer reference	: Pre-Feed	Based on curve no.	: 8X15DMXD-2-1
Item number	: Broken Hill -PS3	Flowserve reference	: 209199894
Service	:	Date	: October 13, 2014

Operating Conditions		Materials / Specification	
Capacity	: 210.0 l/s	Material column code	: S6
Water capacity (CQ=1.00)	: -	Pump specification	: -
Normal capacity	: -	Other Requirements	
Total Developed Head	: 274.00 m	Hydraulic selection : No specification	
Water head (CH=1.00)	: -	Construction : No specification	
NPSH available (NPSHa)	: Ample	Test tolerance : Hydraulic Institute Level B	
NPSHa less NPSH margin	: -	Variable Speed - Maximize Efficiency	
Maximum suction pressure	: 0.0 kPa.g	Driver Sizing : Max Power(MCSF to EOC)with SF	
Liquid		Seal configuration : Single Seal	
Liquid type	: Fresh water		
Temperature / Spec. Gravity	: 16 C / 1.000		
Solid Size - Actual / Limit	: - / -		
Viscosity / Vapor pressure	: 1.00 cSt / -		

Performance			
Hydraulic power	: 563 kW	Impeller diameter	
Pump speed	: 2874 rpm	Rated	: 352.0 mm
Efficiency (CE=1.00)	: 84.3 %	Maximum	: 377.4 mm
		Minimum	: 299.2 mm
NPSH required (NPSH3)	: 7.4 m	Suction specific speed	: 10250 US units
Rated power	: 668 kW	Minimum continuous flow	: 70.1 l/s
Maximum power	: 710 kW	Maximum head @ rated dia	: 334.64 m
Driver power	: 750 kW / 1006 hp	Flow at BEP	: 205.7 l/s
Casing working pressure	: 3864.5 kPa.g	Flow as % of BEP	: 102.1 %
(based on shut off and Rated specific gravity with Max dia)		Efficiency at normal flow	: -
Maximum allowable	: 4136.9 kPa.g	Impeller dia ratio (rated/max)	: 93.3 %
Hydrostatic test pressure	: 6205.3 kPa.g	Head rise to shut off	: 22.1 %
Est. rated seal chamb. press.	: -	Total head ratio (rated/max)	: 81.5 %

CURVES ARE APPROXIMATE, PUMP IS GUARANTEED FOR ONE SET OF CONDITIONS; CAPACITY, HEAD, AND EFFICIENCY.



Customer : FLOWSERVE PUMP
Item number : Broken Hill -PS3
Service :
Flowserve reference : 209199894
Date : October 13, 2014



Capacity : 210.0 l/s
Head : 274.00 m
Specific gravity : 1.000
Pump speed : 2874 rpm

Pump size & type : 8X15DMXD-B
Based on curve no. : 8X15DMXD-2-1
Number of stages : 2

CURVES ARE APPROXIMATE, PUMP IS GUARANTEED FOR ONE SET OF CONDITIONS; CAPACITY, HEAD, AND EFFICIENCY.

