



Customer Document title:

Flowserve Hydraulic Data Sheet

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Flowserve Document No.: **1400944-017-5008-01**

Document Revision No.: **A**

Flowserve Order No.: **1400944**

Flowserve Serial No.: **1400944CHP017A/B**

Pump Type/Size: **MARK 3 STANDARD /**

Quantity: **2**

Customer Name: **DESMET BALLESTRA NORTH AMERICA**

Customer Tag No: **DESMET TAG#:PW503E.2/1,World Energy TAG#:19-P-875A, DESMET TAG#:PW503E.2/2, World Energy TAG#: 19-P-875B**

Customer PO No.: **28493**

End User: **DESMET BALLESTRA NORTH AMERICA**

Please complete and return:

Document Reviewed by:

Document Reviewed date:

- ☐ **APPROVED. NO ACTION REQUIRED**
- ☐ **APPROVED. RE-SUBMIT AS FINAL**
- ☐ **APPROVED WITH COMMENTS.** DOCUMENT WILL BE MODIFIED AND RESUBMITTED AS FINAL.
- ☐ **REJECTED.** CORRECT AND RE-SUBMIT FOR APPROVAL.
- ☐ **FOR INFORMATION.** REVIEW NOT REQUIRED
- ☐ **AS-BUILT**

- Return any documents sent for review with your comments by the stated return date. All documents not returned two weeks after requested Return date will be considered Approved, no action.
- Purchaser's comments and/or corrections within the scope of contract will be made on the first completed document submitted by Flowserve Corp. and returned.
- Corrections, alterations, additions and/or modifications outside scope of contract or made after first submittal may require an additional engineering service charge.
- Items conditionally approved or with deferred approval by purchaser must be specifically stated otherwise delivery may be affected.

Rev	Revision Description	Released	Release Date
	For Information	Morris, Tamika	04-Feb-22

Customer	: DESMET PROCESS & TECHNOLO...	Pump / Stages	: 2K4x3-10RV M3 ST / 1
Customer reference	: WORPAR	Based on curve no.	: MIII7900DV
Item number	: PW503E.2/1, 2/2	Flowserve reference	: 1989206898
Service	: Enzyme Reactor Discharge	Date	: August 27, 2021

Operating Conditions		Materials / Specification	
Capacity (rated/normal)	: 468.1 USgpm / -	Material column code	: D4
Water capacity (CQ=1.00)	: 469.0 USgpm	Pump specification	: ANSI B73.1
Total developed head	: 251.00 ft	Other Requirements Hydraulic selection : No specification Construction : No specification Test tolerance : ANSI/HI 14.6 Grade 1B Driver Sizing : Max Power (SO to EOC) not using SF Seal configuration : Single Seal	
Water head (CH=1.00)	: 251.41 ft		
NPSHa/NPSHa less margin	: 35.6 ft / -		
Maximum suction pressure	: 0.0 psig		
Liquid			
Liquid type	: Other	Veg Oil / Animal Fat Driver margin will not support any significant increase in impeller size	
Liquid description	: Enzyme Reactor Discharge		
Temperature	: 171 °F		
Density / Specific gravity	: - / 0.888		
Solid Size - Actual / Limit	: - / 0.6560 in		
Viscosity / Vapor pressure	: 13.35 cP / -		

Performance			
Hydraulic power	: 26.3 hp	Impeller diameter	
Pump speed	: 3,550 rpm	Rated	: 8.25 in
Pump overall efficiency (CE=0.96)	: 67.7 %	Maximum	: 10.00 in
NPSH required (NPSH3)	: 11.0 ft	Minimum	: 6.00 in
Rated brake power	: 38.9 hp	Ns / Nss	: 1,118 / 12,960 (US units)
Maximum brake power	: 51.9 hp	Minimum continuous flow	: 169.8 USgpm
Driver power rating	: 60.0 hp / 44.7 kW	Maximum head at rated diameter	: 276.61 ft
Casing working pressure	: 106.3 psig	Flow at BEP	: 507.3 USgpm
(based on shut off @ cut dia/rated SG)		Flow as % of BEP	: 92.3 %
Maximum allowable	: 246.6 psig	Efficiency at normal flow	: -
Hydrostatic test pressure	: 413.0 psig	Impeller diameter ratio (rated/max)	: 82.5 %
Estimated rated seal chamber pressure	: 7.7 psig	Head rise to shut off	: 10.2 %
		Total head ratio (rated / max) / (max / rated)	: 62.8 % / 159.2 %

CURVES ARE APPROXIMATE, PUMP IS GUARANTEED FOR ONE SET OF CONDITIONS; CAPACITY, HEAD, AND EFFICIENCY.
 MCSF PROVIDES MECHANICAL PROTECTION ONLY. MINIMUM THERMAL FLOW MUST BE CALCULATED FOR THE SPECIFIC FLUID AND OPERATING CONDITIONS.

