



Customer Document title:

Flowserve Hydraulic Data Sheet

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Flowserve Document No.: **1400944-001-5008-01**

Document Revision No.: **A**

Flowserve Order No.: **1400944**

Flowserve Serial No.: **1400944CHP001A/D**

Pump Type/Size: **MARK 3 STANDARD / 2K4X3-10RV**

Quantity: **4**

Customer Name: **DESMET BALLESTRA NORTH AMERICA**

Customer Tag No: **DESMET TAG#PW503AC.1/1 - World Energy#: 19-P-750A, DESMET TAG#PW503AC.1/2 - World Energy#: 19-P-750B, DESMET TAG#: PW503AC.2/1 - World Energy#: 19-P-850A, DESMET TAG#: PW503AC.2/2, World Energy#: 19-P-850B**

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	: PW503AC.1/1, 1/2, 2/1, 2/2	Flowserve reference	: 1989206898
Service	: Acid Reactor Discharge	Date	: August 25, 2021

Operating Conditions		Materials / Specification	
Capacity (rated/normal)	: 465.5 USgpm / -	Material column code	: D4
Water capacity (CQ=1.00)	: 466.3 USgpm	Pump specification	: ANSI B73.1
Total developed head	: 245.00 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)	: 245.35 ft		
NPSHa/NPSHa less margin	: 35.6 ft / -		
Maximum suction pressure	: 0.0 psig		
Liquid			
Liquid type	: Other	Veg Oil / Animal Fat Driver selection will not support any	
Liquid description	: Acid Reactor Discharge		
Temperature	: 176 °F		
Density / Specific gravity	: - / 0.886		
Solid Size - Actual / Limit	: - / 0.6560 in		
Viscosity / Vapor pressure	: 12.69 cP / -		

Performance	
Hydraulic power	: 25.5 hp
Pump speed	: 3,550 rpm
Pump overall efficiency (CE=0.96)	: 67.7 %
NPSH required (NPSH3)	: 11.0 ft
Rated brake power	: 37.7 hp
Maximum brake power	: 50.2 hp
Driver power rating	: 60.0 hp / 44.7 kW
Casing working pressure	: 103.8 psig
(based on shut off @ cut dia/rated SG)	
Maximum allowable	: 244.8 psig
Hydrostatic test pressure	: 413.0 psig
Estimated rated seal chamber pressure	: 7.7 psig
Impeller diameter	
Rated	: 8.13 in
Maximum	: 10.00 in
Minimum	: 6.00 in
Ns / Nss	: 1,118 / 12,960 (US units)
Minimum continuous flow	: 168.0 USgpm
Maximum head at rated diameter	: 270.76 ft
Flow at BEP	: 500.9 USgpm
Flow as % of BEP	: 92.9 %
Efficiency at normal flow	: -
Impeller diameter ratio (rated/max)	: 81.3 %
Head rise to shut off	: 10.5 %
Total head ratio (rated / max) / (max / rated)	: 61.3 % / 163.2 %

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.

