

FIRE-WATER PUMP STATION

DESCRIPTION

NEVER USED, NEVER ASSEMBLED – This skid mounted, FIRE WATER PUMP STATION is manufactured by Flowserve and designed with redundant diesel backup systems with extra fuel capacity to ensure that the pumps are always ready to serve pressurized water for fire suppression water when its needed.

System includes the following items:

- 2 Flowserve Multi V3604 Jockey Pumps with control panels (*Tag 140-PU-2010 A & B*)
- 1 Flowserve Electric Main Fire Water Pump – (*Tag 140-PU-2020A*)
 - Electric Drive – Leroy Somers Motor
 - Control Panel
 - Safety Valves
 - Spool Pieces for the Inlet & Outlet Flanges
- 1 Flowserve Diesel Main Water Pump – (*Tag 140-PU-2020B*)
 - Diesel Drive – Cummins Engine
 - 2 Fuel Tanks for up to 12 hours of run time
 - Control Panel
 - Safety Valves
 - Spool Pieces for the flanges
- Accessories including: Silencer, Exhaust Pipe, Air Release Valve, Pressure Relief Valve, Suction Spool Piece, Discharge Spool Piece
- Set of Spare Parts for commissioning and start-up

I.D.	16C-AR03
OEM	Flowserve
YOM	2014
Location	Indoor Warehouse Dunkirk, France
Condition	NEVER USED
Packaging	Original Crates

Both Main Pumps	SPECIFICATIONS
Design Flow	480 m3/h
Max Flow	720 m3/h
Design Discharge Pressure	11.4 bar g
Differential Pressure	8 bar
Total Head	82 m of LC
Available NPSH	9.5 m
Pump Speed	1490 rpm
Rotation facing Coupling	Clockwise



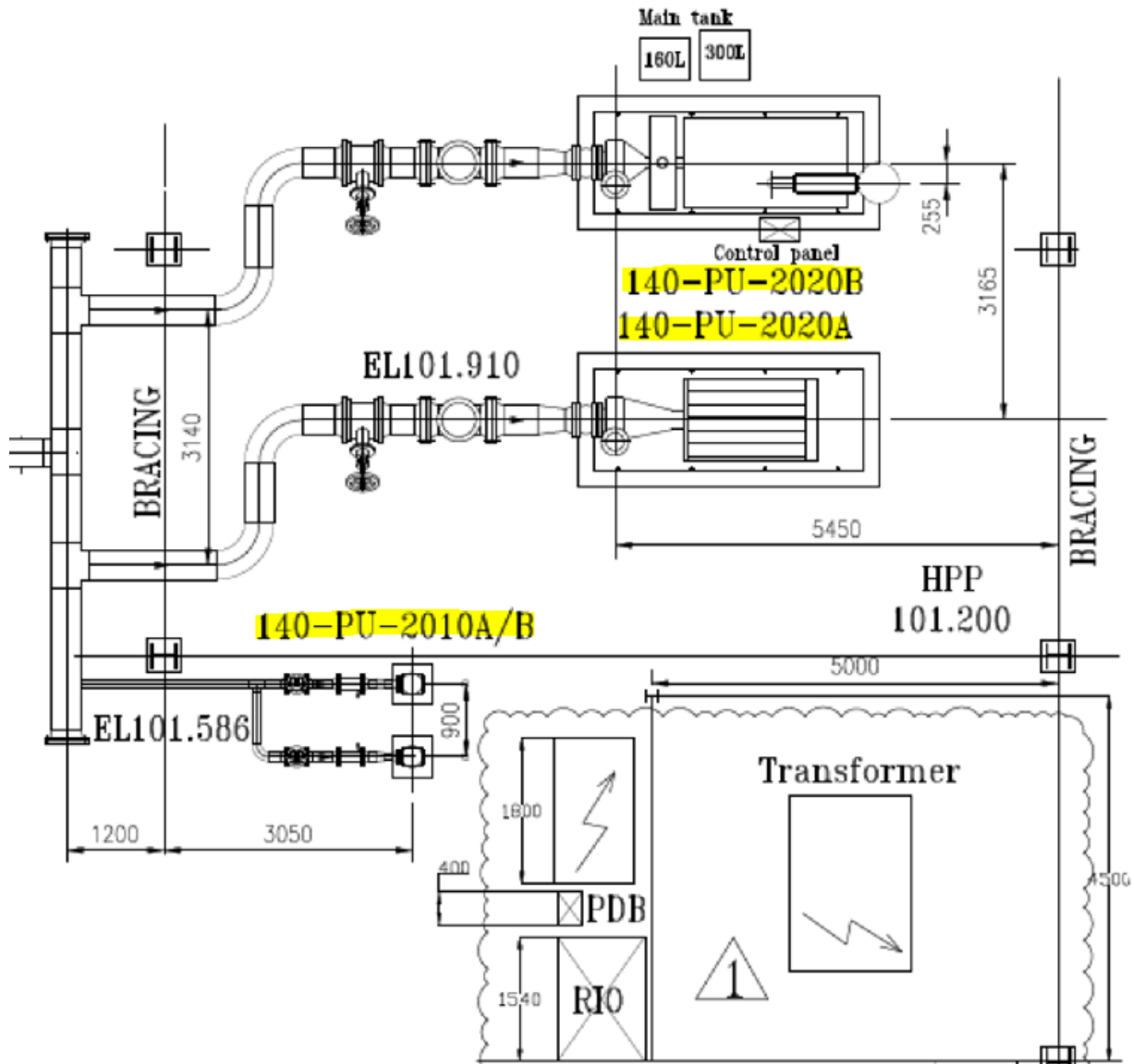
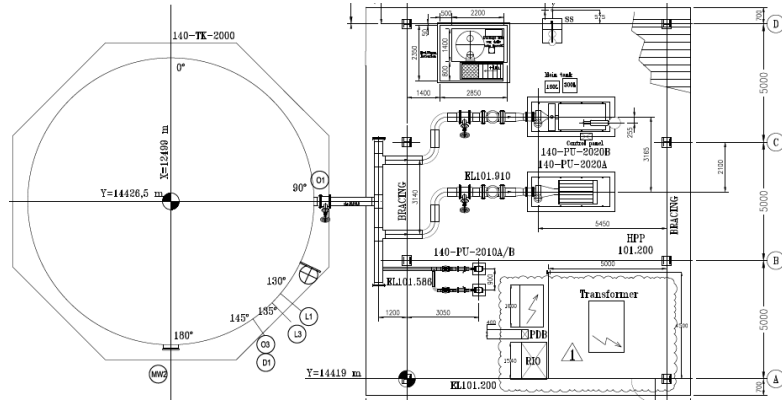
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FIRE-WATER PUMP STATION

DESCRIPTION – LAYOUT

This fire water pumping system is designed to be ready for continuous operational readiness with a redundant diesel main pump available if the main electric pump goes down. Two jockey pumps are also supplied with the system to maintain pressure readiness in the piping system. The system is designed to draw water from a storage tank. **NOTE:** The storage tank is not supplied in this package.



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FIRE-WATER PUMP STATION

DESCRIPTION

FLOWERVE MAIN PUMPS – MODEL “ME”

The electric and the diesel main water pumps supplied in this system are both model “ME”. High-capacity, reliable frame-mounted pump for water supply and treatment, light chemical and general industry applications that need high flow rates. Meets European Regulation No. 547/2012.

Electric Model – ME 200/500

Diesel Model – ME Ti 200/500

- Optimized for high-capacity performance via one-piece casing with tangential discharge
- High efficiency enabled by a precision-cast, closed impeller with machine shrouds and balance holes that also minimize axial thrust
- Low cost of ownership made possible by an open-seal chamber with integral vortex-breaking ribs to extend the mechanical seal life
- Ease of maintenance and inspection resulting from a back-pullout design

ME — High-Capacity Pump



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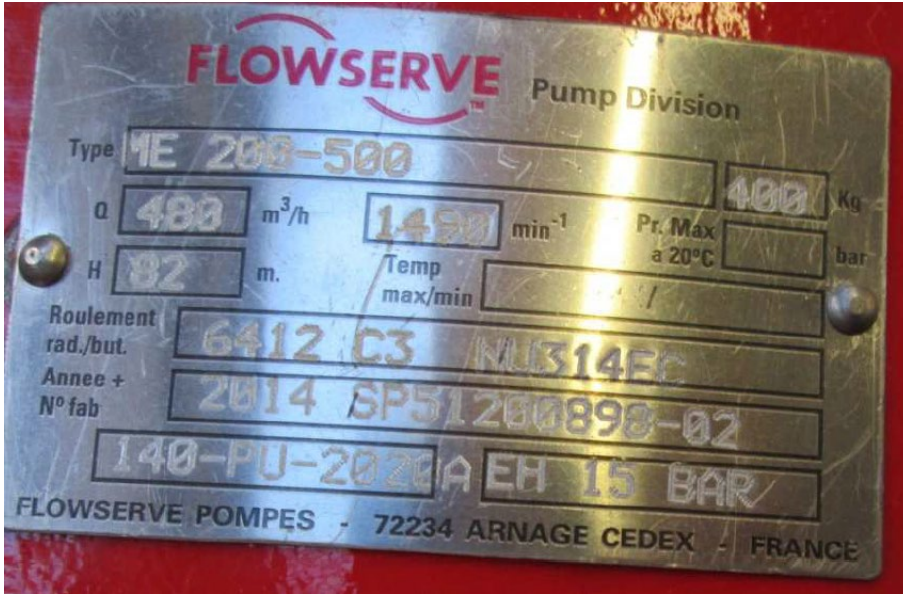
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FIRE-WATER PUMP STATION

PICTURES

MAIN ELECTRIC PUMP – FLOWSERVE ME 200/500

TAG No. 140-PU-2020A



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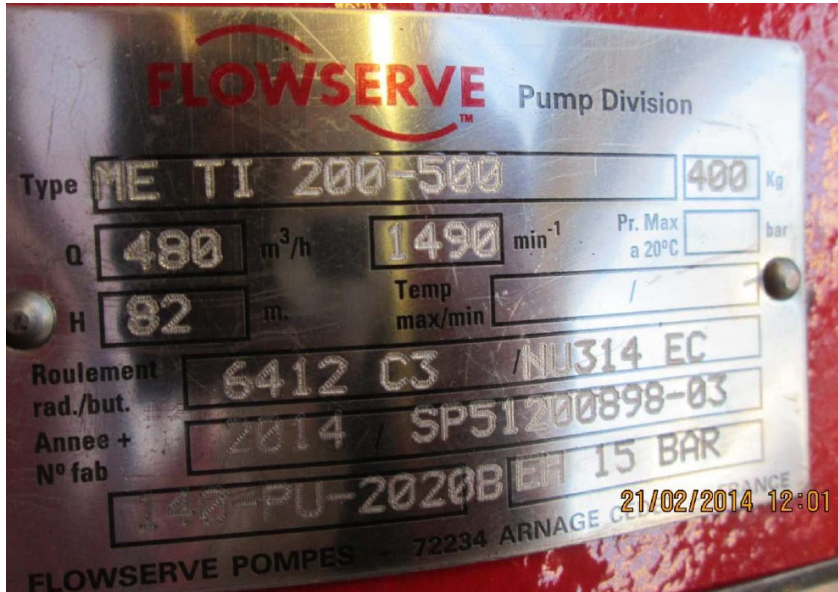
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FIRE-WATER PUMP STATION

PICTURES

MAIN DIESEL BACKUP PUMP – FLOWSERVE ME TI 200/500

TAG No. 140-PU-2020B



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FIRE-WATER PUMP STATION

PICTURES

(2) JOCKEY PUMPS – FLOWSERVE V3604

TAG No. 140-PU-2010 A & B



OTHER ACCESSORIES FROM FLOWSERVE



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APPENDIX A
FLOWSERVE FIRE WATER PUMP SYSTEM
DATA SHEETS



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PO N°: 9806J-0000-PO-0910-003-00 IM22079		Doc Ref. : 51200898-PDS-001	
Requisition n°: 9806J-0000-SR-0910-003		FLS N°: 51200898/51200905	
Equipment tag : 140-PU-2010A 140-PU-2010B		Item n°: SP51200898-01	

**Equipment filled-in Data Sheets
140-PU-2010-A/-B**

Doc Item: A1001
Secondary Doc Ref: 9806J-0000-SP-0910-00307

Rev	Date	STATUS	Written by	Checked by	Approved by
C	17/FEB/2014	FINAL REVIEW	FLOWSERVE	L.CERBELLE	D. BOISSELET
B	30/DEC/2013	FINAL REVIEW	FLOWSERVE	L.CERBELLE	D. BOISSELET
A	05/DEC/2013	FIRST EMISSION	FLOWSERVE	L.CERBELLE	D. BOISSELET
	DD/MMM/YYYY				

Project - Unit	Document type	Material code	Serial number	Revision
9806J -0140	SP	0910	003	C

1									
2									
3									
4									
5									
6	Client:				CENTRIFUGAL PUMP DATA SHEET				
7	Site:				Item No : 140-PU-2010 A/B				
8	Unit: 140				Total quantity: 2				
9	Mechanical Data Sheet for: <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Purchase <input type="checkbox"/> As built				Process reference : 9806J-0140-PDS-1900-003-A				
10	Vendor: Flowserve				Service: Fire Water Jockey Pump				
11	Manufacturer:				Duty: <input checked="" type="checkbox"/> continuous <input type="checkbox"/> batch <input type="checkbox"/> other				
12	Model: Multi V3604 (4)				Location: <input checked="" type="checkbox"/> outdoor <input type="checkbox"/> exposed to elements <input checked="" type="checkbox"/> under shelter				
13	Serial number:				Installation: <input type="checkbox"/> horizontal <input checked="" type="checkbox"/> vertical				
14					Quantity running: 1 (Electrical)				
15					Quantity spare: 1 (Electrical)				
16	Fluid: Process Water				Flow (m3/h): mini 6 normal: 30 maxi: 45				
17	<input type="checkbox"/> corrosive <input type="checkbox"/> abrasive <input type="checkbox"/> explosive <input type="checkbox"/> flammable <input type="checkbox"/> toxic <input checked="" type="checkbox"/> other: *				Discharge pressure (bar g.): (7) 5				
18	Gas content: <input checked="" type="checkbox"/> no <input type="checkbox"/> yes				Suction pressure (bar g.): (7) 0,03 Design: 3,5 barg				
19	Solids content: <input type="checkbox"/> no <input type="checkbox"/> yes				Differential pressure (bar): 5,5				
20	Pumping temperature Tp (°C): mini 5 normal: 35 maxi: 47				Total head (m of LC): 57				
21	Specific gravity: mini: normal: 0,994 maxi:				Available NPSH (m): 9,5				
22	Dynamic viscosity (cP) mini: normal: 1 maxi:				Garanteed point : 30 m3/h @ 57 m				
23	Vapour pressure (bar a.): normal: 0,056 maxi:				Speed control: No				
24	Atmospheric boiling temperature (°C):				Start-up conditions: Open Valve				
25	Specific heat (kJ/ kg/ °C):				Dry run requirements:				
26	* Erosive : presense of sand Note 8 ,				Parallel/ serie operation: N/A				
27					Basic material (wetted parts):				
28	PUMP DESIGN (Vendor to complete)				Remark: Above required flow is the net available Process flow in Purchaser system.				
29	Type: <input type="checkbox"/> classic volute <input type="checkbox"/> segmented <input type="checkbox"/> barrel(HP) <input type="checkbox"/> in-can <input checked="" type="checkbox"/> in-line				Discharge pressure is at pump axis				
30	<input type="checkbox"/> priming volute <input type="checkbox"/> side chanel <input type="checkbox"/> high speed <input type="checkbox"/> w/separate priming				PERFORMANCES (per pump) (Vendor to complete)				
31	<input type="checkbox"/> monostage <input checked="" type="checkbox"/> multistage <input type="checkbox"/> hygienic construction				Rotation facing coupling: <input type="checkbox"/> Clockwise <input checked="" type="checkbox"/> Counter Clockwise				
32	Basic design: <input checked="" type="checkbox"/> Std Manufacturer <input type="checkbox"/> other:				Performance curve reference: Multi-V 3604				
33	Nominal pressure (bar g. @ °C) 16 at 120°C				Pump speed: 2900 rpm				
34	Casing type: <input checked="" type="checkbox"/> moulded <input type="checkbox"/> fabricated <input type="checkbox"/> lined <input type="checkbox"/> other:				Allowable speed range:				
35	<input type="checkbox"/> single volute <input type="checkbox"/> double volute <input type="checkbox"/> jacketed				Maximum Allowable Working Pressure (bar g.) 16 at 120 (°C)				
36	<input type="checkbox"/> with diffuser <input type="checkbox"/> with wear ring <input type="checkbox"/> with throat bushing				Maximum Allowable Temperature (°C): 80 Temperature for metallic parts exposed to sun				
37	Casing nozzles	Orient.	Size	Rating	Performances with offered diameter				
38	Suction	Side	2" 1/2	PN16 RF	mini	normal	rated		
39	Discharge	Side	2" 1/2	PN16 RF	Stable flow (m3/h)	30			
40	Drain			Plugged	Total Head (m)	51			
41	Vent			Plugged (if not self venting)	Required NPSH (m)	(3) 3			
42	Casing split: <input type="checkbox"/> radial <input type="checkbox"/> axial <input checked="" type="checkbox"/> none					Hydraulic impeller efficiency (%) 68			
43	Casing support <input type="checkbox"/> foot <input type="checkbox"/> centerline <input checked="" type="checkbox"/> bearing frame <input type="checkbox"/> other:					Required power at driver shaft (kW): 7			
44	Shaft: <input type="checkbox"/> solid (no sleeve) <input checked="" type="checkbox"/> sleeved					Shut off head (m): 72			
45	Impeller: <input checked="" type="checkbox"/> closed <input type="checkbox"/> semi open <input type="checkbox"/> open <input type="checkbox"/> with wear ring					Flow at Best Efficiency point (m3/h): 34			
46	<input type="checkbox"/> single flux <input type="checkbox"/> double flux <input type="checkbox"/> vortex <input checked="" type="checkbox"/> vane wheel					Impeller diameter (mm): mini: maxi: installed: Standard			
47	<input checked="" type="checkbox"/> radial <input type="checkbox"/> mixed flow <input type="checkbox"/> axial					Dry run capability: NO			
48					SHAFT SEAL (Vendor to complete)				
49	Impeller mount: <input checked="" type="checkbox"/> overhang <input type="checkbox"/> between bearings <input type="checkbox"/> with inducer					<input type="checkbox"/> None <input type="checkbox"/> Packing <input type="checkbox"/> Labyrinth <input type="checkbox"/> Hydrodynamic			
50	Impeller attachment: <input checked="" type="checkbox"/> screwed <input type="checkbox"/> keyed <input type="checkbox"/> other:					<input checked="" type="checkbox"/> Mechanical seal: <input checked="" type="checkbox"/> single <input type="checkbox"/> dual <input type="checkbox"/> cartridge			
51	Bearing type/ lubrif.: Drive End /					<input checked="" type="checkbox"/> contact <input type="checkbox"/> without contact			
52	Non Drive End /					<input type="checkbox"/> spring(s) <input type="checkbox"/> bellow			
53	Baseplate: <input type="checkbox"/> none <input checked="" type="checkbox"/> under pump and drive system <input checked="" type="checkbox"/> anchored <input type="checkbox"/> stilt mounted					Mounting: <input checked="" type="checkbox"/> face to face <input type="checkbox"/> back to back <input type="checkbox"/> tandem			
54	<input type="checkbox"/> moulded <input type="checkbox"/> bended sheet <input type="checkbox"/> fabricated					<input type="checkbox"/> rotating flexible element <input type="checkbox"/> stationary flexible element			
55					Pressurisation: <input type="checkbox"/> N/A <input type="checkbox"/> buffer fluid <input type="checkbox"/> barrier fluid				
56	MATERIALS (Vendor to complete) (5)				fluid: pressure: circulation by:				
57	Casing(s)/ Cover: 316L	Casing wear ring:				Seal chamber: <input type="checkbox"/> cylindric <input type="checkbox"/> tapped (enlarged) <input type="checkbox"/> jacketed			
58	Casing liner:	Casing gasket: Viton				<input type="checkbox"/> integral with casing <input type="checkbox"/> internal <input type="checkbox"/> external <input type="checkbox"/> with throttle bushing			
59	Impeller: 316L	Impeller wear ring: Téflon				Seal manufacturer/ Model:			
60	Shaft: 316L	Shaft sleeve: 316L				Product side			
61	Stuffing box:	Gland:				Atmospheric side			
62	Wetted bolting: 316L	Bearing housing: Cast iron GJL 250							
63	Baseplate:								
64									
65	DRIVE SYSTEM DESCRIPTION (Vendor to complete)				Norme				
66	Driver: Electrical				Max allow. pressure				
67	<input checked="" type="checkbox"/> fixed speed <input type="checkbox"/> Variable speed				Balancing				
68	supplied/ mounted by: Vendor / Vendor				Spring/ Bellow				
69	manufacturer/ model: Leroy Somer				O'Ring/ gaskets				
70	nameplate power/ speed: 7,5 kW / 3000 rpm				Cartridge sleeve:				
71	Connection driver/ pump: <input type="checkbox"/> pulley/ belts <input checked="" type="checkbox"/> direct (close coupled)				End plate:				
72	<input type="checkbox"/> direct(separately coupled) <input type="checkbox"/> gears <input type="checkbox"/> other:								
73									
74	Electrical utility data:								
75	Volts: 690 Hertz: 50 Phase: 3								
76									
77									
78									

Project - Unit	Document type	Material code	Serial number	Revision
9806J -0140	SP	0910	003	C

6		ACCESSORIES (Vendor to complete)			SUPPLY BY
7	Pulleys/ belts:				
8	Coupling(s): N/A				
9					
10	Safety guards: N/A				VENDOR
11	Gear box: Type:	Nameplate power/ speed:	Service factor:		
12	Manufacturer/ model:				
13					
14					
15	Seal pot: Volume (l):	Material:	Design/ fabric. code:	<input type="checkbox"/> baseplate mounted	<input type="checkbox"/> stand alone
16	Available connections: <input type="checkbox"/> filling <input type="checkbox"/> drain		<input type="checkbox"/> flushing inlet	<input type="checkbox"/> flushing outlet	<input type="checkbox"/> pressurisation
17	<input type="checkbox"/> inlet coil		<input type="checkbox"/> outlet coil	<input type="checkbox"/> gauge	<input type="checkbox"/> other
18	Type of connections: <input type="checkbox"/> threaded		<input type="checkbox"/> flanged	<input type="checkbox"/>	
19	Baseplate, with <input type="checkbox"/> drip recovery (D=25 mm mini)	<input type="checkbox"/> handling devices	<input type="checkbox"/> earthing lugs	<input type="checkbox"/> seal pot support	
20	<input type="checkbox"/> equipotential connections		<input type="checkbox"/> anchor bolts	<input type="checkbox"/> Cooler support	
21	Control/ Instrumentation:				
22	Temperature:				
23	Vibrations:				
24	For motor refer to specification 9806J-0440-JSS-1691-001 and Leroy Somer frame agreement				
25					
26	Variable Speed Drive : No Applicable				
27					
28 AUXILLIARY CIRCUITS DESCRIPTION (Vendor to complete)					
29	Function	Fluid/ Flow (name / m3/hr)	Material	P/ T design (kPa g. / °C)	Main features
30					
31					
32					
33					
34					
35					
36					
37 INSPECTION AND TESTS (Vendor to complete) (2)					
38	Shop inspection	<input type="checkbox"/> no <input type="checkbox"/> yes			By Vendor
39	Material certificates	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	Type 2 for all parts		By Vendor
40	Hydraulic test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	with (1,3 x nominal pressure) during 10 mn		By Vendor
41	NPSH test	<input checked="" type="checkbox"/> no <input type="checkbox"/> yes	Only if difference between NPSHa and NSPHr < 1m		By Vendor
42	Performance test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	5 points of measurement.		By Vendor
43	Balancing test	<input checked="" type="checkbox"/> no <input type="checkbox"/> yes			By Vendor
44	Vibrations measurement	<input checked="" type="checkbox"/> no <input type="checkbox"/> yes			By Vendor
45	Sound level measurement	<input checked="" type="checkbox"/> no <input type="checkbox"/> yes			By Vendor
46	Dismantling after test	<input type="checkbox"/> no <input type="checkbox"/> yes	only if required after defects are measured		By Vendor
47					
48					
49 MISCELLANEOUS (Vendor to complete)					
50	Painting:	<input checked="" type="checkbox"/> Standard Vendor	<input checked="" type="checkbox"/> Other: RAL 3000	By Vendor	
51	Tracing/ Insulation:				
52	Special tools:				
53					
54	Weights (kg):	<input checked="" type="checkbox"/> Bare pump: 77 kg	<input type="checkbox"/> Driver: 73 kg	<input type="checkbox"/> Baseplate:	<input type="checkbox"/> Total: 150
55					
56					
57 NOTES:					
58	(1) Nominal pressure is the Maximum Allowable Working Pressure (MAWP), refer to Specification 9806J-0000-JSS-0910-001 paragraph 4.8.				
59	(2) Standard Manufacturer Tests				
60	(3) NPSHa must be over 1 m to NPSHr @ pump max flow (APSAD R1)				
61	(4) Pump is the same that 425-PU-1020 AB				
62	(5) Vendor shall indicate the material of each pump part.				
63	(6) Maximum flowrate correspond to 130% of the nominal flowrate. According to APSAD R1, 75% head shall be provided at 130% of nominal flowrate.				
64	(7) At normal flow and minimum water level above suction flange.				
65	(8) Particle size shall not exceed 0,5 mm.				
66					
67					
68					
69					
70					
71 GENERAL REMARK :					
72	- Pump shall comply with APSAD R1 requirements				
73	- Resistant material nameplate (tag number, vendor name and adress, pump datas) with resistant fixation must be provided by Vendor.				
74	- Direction of rotation (arrow) shall be marked with permanent mark,				
75					
76					

PO N°: 9806J-0000-PO-0910-003-00 IM22079		Doc Ref. : 51200898-PDS-002	
Requisition n°: 9806J-0000-SR-0910-003		FLS N°: 51200898/51200905	
Equipment tag : 140-PU-2020A		Item n°: SP51200898-02	

**Equipment filled-in Data Sheets
140-PU-2020A**

Doc Item: A1001
Secondary Doc Ref: 9806J-0000-SP-0910-00308

B	19/FEB/2014	FINAL REVIEW	FLOWSERVE	L.CERBELLE	D. BOISSELET
A	23/OCT/2013	FIRST EMISSION	FLOWSERVE	L.CERBELLE	D. BOISSELET
Rev	Date	STATUS	Written by	Checked by	Approved by
	DD/MMM/YYYY				

Project - Unit	Document type	Material code	Serial number	Revision
9806J-0140	SP	0910	002	0

6	Client:		CENTRIFUGAL PUMP DATA SHEET		Total quantity: 1			
7	Site:		Item No : 140-PU-2020 A		Quantity running: 1 ("A" electrical)			
8	Unit: 140				Quantity spare: (9)			
9	Mechanical Data Sheet for: <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Purchase <input type="checkbox"/> As built Process reference : 9806J-0140-PDS-1900-002-A							
10	Vendor: Flowserve		Service: Main Fire Water Pump		Installation: <input checked="" type="checkbox"/> horizontal <input type="checkbox"/> vertical			
11	Manufacturer:		Duty: <input type="checkbox"/> continuous <input type="checkbox"/> batch <input checked="" type="checkbox"/> Emergency/weekly tests		<input type="checkbox"/> flooded <input type="checkbox"/> self priming <input type="checkbox"/> submersible			
12	Model: ME-200-500		Location: <input checked="" type="checkbox"/> outdoor <input type="checkbox"/> exposed to elements <input checked="" type="checkbox"/> under shelter		Electrical area classification Not classified			
13	Serial number:		<input type="checkbox"/> indoor <input type="checkbox"/> heated <input checked="" type="checkbox"/> unheated					
14	HANDLED PRODUCTS			REQUIRED OPERATING DATA (per pump)				
15	Fluid: Process Water		Flow (m3/h): mini 193 (6) normal: 480 maxi: 720					
16	<input type="checkbox"/> corrosive <input type="checkbox"/> abrasive <input type="checkbox"/> explosive <input type="checkbox"/> flammable <input type="checkbox"/> toxic <input checked="" type="checkbox"/> other: *		Discharge pressure (bar g.): (7) (8) 8 Design: 11,4 barg					
17	Gas content: <input checked="" type="checkbox"/> no <input type="checkbox"/> yes		Suction pressure (bar g.): 0,03 Design: 3,5 barg					
18	Solids content: <input type="checkbox"/> no <input type="checkbox"/> yes		Differential pressure (bar): 8					
19	Pumping temperature Tp (°C): mini: 5 normal: 35 maxi: 47		Total head (m of LC): 82					
20	Specific gravity: mini: normal: 0,994 maxi:		Available NPSH (m): 9,5					
21	Dynamic viscosity (cP) mini: normal: 1 maxi:		Garanteed point : 480 m3/h @ 82 m					
22	Vapour pressure (bar a.): normal: 0,056 maxi:		Speed control: No					
23	Atmospheric boiling temperature (°C):		Start-up conditions: Open Valve (10)					
24	Specific heat (kJ/ kg/ °C):		Dry run requirements:					
25	* Erosive : Presence of sand		Parallel/ serie operation: N/A					
26	Basic material (wetted parts):							
27	PUMP DESIGN (Vendor to complete)							
28	Type: <input checked="" type="checkbox"/> classic volute <input type="checkbox"/> segmented <input type="checkbox"/> barrel(HP) <input type="checkbox"/> in-can <input type="checkbox"/> in-line			Remark: Above required flow is the net available Process flow in Purchaser system.				
29	<input type="checkbox"/> priming volute <input type="checkbox"/> side chanel <input type="checkbox"/> high speed <input type="checkbox"/> w/separate priming			Discharge pressure is at pump axis				
30	<input checked="" type="checkbox"/> monostage <input type="checkbox"/> multistage <input type="checkbox"/> hygienic construction			PERFORMANCES (per pump) (Vendor to complete)				
31				Rotation facing coupling: <input checked="" type="checkbox"/> Clockwise <input type="checkbox"/> Counter Clockwise				
32	Basic design: <input checked="" type="checkbox"/> Std Manufacturer <input type="checkbox"/> other:			Performance curve reference: 5974660C				
33	Nominal pressure (bar g. @ °C) (1) at (°C):			Pump speed: 1490 rpm				
34	Casing type: <input checked="" type="checkbox"/> moulded <input type="checkbox"/> fabricated <input type="checkbox"/> lined <input type="checkbox"/> other:			Allowable speed range:				
35	<input checked="" type="checkbox"/> single volute <input type="checkbox"/> double volute <input type="checkbox"/> jacketed			Maximum Allowable Working Pressure (bar g.) (1) at (°C)				
36	<input type="checkbox"/> with diffuser <input type="checkbox"/> with wear ring <input type="checkbox"/> with throat bushing			Maximum Allowable Temperature (°C): 80 Temperature for metallic parts exposed to sun				
37	Casing nozzles	Orient.	Size	Rating	Performances with offered diameter			
38	Suction	End	10"	150# RF	mini	normal	rated	
39	Discharge	Top	8"	150# RF	Stable flow (m3/h)	193	480	
40	Drain			Plugged	Total Head (m)		82	
41	Vent			Plugged (if not self venting)	Required NPSH (m)	(3)	4,5	
42	Casing split: <input checked="" type="checkbox"/> radial <input type="checkbox"/> axial <input type="checkbox"/> none			Required power at driver shaft (kW): 142				
43	Casing support <input checked="" type="checkbox"/> foot <input type="checkbox"/> centerline <input type="checkbox"/> bearing frame <input type="checkbox"/> other:			Shut off head (m): 94				
44	Shaft: <input checked="" type="checkbox"/> solid (no sleeve) <input type="checkbox"/> sleeved			Flow at Best Efficiency point (m3/h):				
45	Impeller: <input checked="" type="checkbox"/> closed <input type="checkbox"/> semi open <input type="checkbox"/> open <input type="checkbox"/> with wear ring			Impeller diameter (mm): mini: 402 maxi: 502 installed: 496				
46	<input checked="" type="checkbox"/> single flux <input type="checkbox"/> double flux <input type="checkbox"/> vortex <input type="checkbox"/> vane wheel			Maximum power : 172 kw				
47	<input type="checkbox"/> radial <input type="checkbox"/> mixed flow <input type="checkbox"/> axial							
48								
49	Impeller mount: <input checked="" type="checkbox"/> overhang <input type="checkbox"/> between bearings <input type="checkbox"/> with inducer			SHAFT SEAL (Vendor to complete)				
50	Impeller attachment: <input checked="" type="checkbox"/> screwed <input checked="" type="checkbox"/> keyed <input type="checkbox"/> other:			<input type="checkbox"/> None <input checked="" type="checkbox"/> Packing <input type="checkbox"/> Labyrinth <input type="checkbox"/> Hydrodynamic				
51	Bearing type/ lubrif.: Drive End 6412C3 / Grease							
52	Non Drive End NU 314 EC / Grease							
53	Baseplate: <input type="checkbox"/> none <input checked="" type="checkbox"/> under pump and drive system <input checked="" type="checkbox"/> anchored <input type="checkbox"/> stilt mounted			<input type="checkbox"/> Mechanical seal: <input type="checkbox"/> single <input type="checkbox"/> dual <input type="checkbox"/> cartridge				
54	<input type="checkbox"/> moulded <input type="checkbox"/> bended sheet <input checked="" type="checkbox"/> fabricated			<input type="checkbox"/> contact <input type="checkbox"/> without contact				
55				<input type="checkbox"/> spring(s) <input type="checkbox"/> bellow				
56	MATERIALS (Vendor to complete) (5)							
57	Casing(s)/ Cover: ASTM A743 Gr. CA-6NM		Casing wear ring: NA		Mounting: <input type="checkbox"/> face to face <input type="checkbox"/> back to back <input type="checkbox"/> tandem			
58	Casing liner: -		Casing gasket: Nitrile 70 Sh		<input type="checkbox"/> rotating flexible element <input type="checkbox"/> stationary flexible element			
59	Impeller: Z6CND18-12 M		Impeller wear ring: NA		Pressurisation: <input type="checkbox"/> N/A <input type="checkbox"/> buffer fluid <input type="checkbox"/> barrier fluid			
60	Shaft: X30Cr13 Rm 850-1000Nmm²		Shaft sleeve: NA		fluid: pressure: circulation by:			
61	Stuffing box: ASTM A743 Gr. CA-6NM		Gland: BURGMANN 6026 12X12		Seal chamber: <input type="checkbox"/> cylindric <input type="checkbox"/> tapped (enlarged) <input type="checkbox"/> jacketed			
62	Wetted bolting: NA		Bearing housing: EN-GJL-250		<input type="checkbox"/> integral with casing <input type="checkbox"/> internal <input type="checkbox"/> external <input type="checkbox"/> with throttle bushing			
63	Baseplate: CS				Seal manufacturer/ Model: API Plan			
64								
65	DRIVE SYSTEM DESCRIPTION (Vendor to complete)							
66	Driver: (9) Electrical		Norme					
67	<input checked="" type="checkbox"/> fixed speed <input type="checkbox"/> Variable speed		Max allow. pressure					
68	supplied/ mounted by: Vendor / Vendor		Balancing					
69	manufacturer/ model: Leroy Somer		Spring/ Bellow					
70	nameplate power/ speed: 200 kw / 1500 rpm		O'Ring/ gaskets					
71	Connection driver/ pump: <input type="checkbox"/> pulley/ belts <input type="checkbox"/> direct (close coupled)		Cartridge sleeve:					
72	<input checked="" type="checkbox"/> direct (separately coupled) <input type="checkbox"/> gears <input type="checkbox"/> other:		End plate:					
73	Electrical utility data:							
74	Volts: 690 Hertz: 50 Phase: 3							
75	<input checked="" type="checkbox"/> Starting system : DOL							
76	<input type="checkbox"/> Reservoir ;							
77	Engine consumption :							
78	Site conditions : Refer to 9806J 0440 JSD 1600 008							

Project - Unit	Document type	Material code	Serial number	Revision
9806J -0140	SP	0910	002	0

ACCESSORIES (Vendor to complete)						SUPPLY BY
Pulleys/ belts:						VENDOR VENDOR VENDOR
Coupling(s): Flexible , service factor 1,5 min.						
Accessories : (4)						
Safety guards: No sparking type						
Gear box: Type:		Nameplate power/ speed:		Service factor:		
Manufacturer/ model:						
Seal pot: Volume (l): Material: Design/ fabric. code: <input type="checkbox"/> baseplate mounted <input type="checkbox"/> stand alone						
Available connections: <input type="checkbox"/> filling <input type="checkbox"/> drain <input type="checkbox"/> flushing inlet <input type="checkbox"/> flushing outlet <input type="checkbox"/> pressurisation						
<input type="checkbox"/> inlet coil <input type="checkbox"/> outlet coil <input type="checkbox"/> gauge <input type="checkbox"/> other						
Type of connections: <input type="checkbox"/> threaded <input type="checkbox"/> flanged <input type="checkbox"/>						
Baseplate, with <input type="checkbox"/> drip recovery (D=25 mm mini) <input checked="" type="checkbox"/> handling devices <input checked="" type="checkbox"/> earthing lugs <input type="checkbox"/> seal pot support						
<input type="checkbox"/> equipotential connections <input type="checkbox"/> anchor bolts <input type="checkbox"/> Cooler support						
Control/ Instrumentation: Local cabinet according to APSAD R1 requirements not certified (installed on common skid)						VENDOR
Vibrations: Pump : Only flat surface for magnetic measuring equipment						
For motor refer to specification 9806J-0440-JSS-1691-001						
Reservoir Capacity : Material : Location:						VENDOR
Visual level : <input checked="" type="checkbox"/> handling devices <input checked="" type="checkbox"/> earthing lugs						
Back-up reservoir Capacity : Material : Location:						VENDOR
Visual level : <input checked="" type="checkbox"/> handling devices <input checked="" type="checkbox"/> earthing lugs						

AUXILLIARY CIRCUITS DESCRIPTION (Vendor to complete)					
Function	Fluid/ Flow (name / m3/hr)	Material	P/ T design (kPa g. / °C)	Main features	

INSPECTION AND TESTS (Vendor to complete)					
Shop inspection	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	Please refer to ITP 51200898-ITP-002			By Vendor
Material certificates	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	Type 2 for all parts			By Vendor
Hydraulic test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	with (1,5 x nominal pressure) during 10 mn			By Vendor
NPSH test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	Only if difference between NPSHa and NSPhr < 1m			By Vendor
Performance test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	5 points of measurement. Including mechanical running test 2 hrs (2)			By Vendor
Balancing test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	Please refer to ITP 51200898-ITP-002			By Vendor
Vibrations measurement	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	at guaranteed point with limit indicated in 9806J-0000-JSS-0910-001			By Vendor
Sound level measurement	<input type="checkbox"/> no <input type="checkbox"/> yes				By Vendor
Dismantling after test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	only if required after defects are measured			By Vendor

MISCELLANEOUS (Vendor to complete)					
Painting:	<input checked="" type="checkbox"/> Standard Vendor	<input checked="" type="checkbox"/> Other:	RAL 3000		By Vendor
Tracing/ Insulation:					
Special tools:					
Weights (kg): <input type="checkbox"/> Bare pump: 400 <input type="checkbox"/> Driver: 1500 Elec <input type="checkbox"/> Baseplate: 1000 kg <input type="checkbox"/> Total: 3480 kg Elec					
1000 Diesel 3250 kg Diesel					

- NOTES:**
- (1) Nominal pressure is the Maximum Allowable Working Pressure (MAWP), refer to Specification 9806J-0000-JSS-0910-001 paragraph 4.8.
 - (2) One witnessed Performances with slave motor or contract motor and one witnessed functional test with diesel engine
 - (3) NPSHa must be over 1 m to NSPhr @ pump max flow (APSAD R1)
 - (4) Each pump shall be delivered with pressure relieve valve and Air Release valve (SS 316). Loose delivery. Set point to be adjusted at installation : 11,4 barg.
 - (5) Vendor shall indicate the material of each pump part.
 - (6) Maximum flowrate correspond to 130% of the nominal flowrate. According to APSAD R1, 75% head shall be provided at 130% of nominal flowrate.
 - (7) At normal flow and minimum water level above suction flange.
 - (8) Electric drive: the unit shall be complete with pressure relief valve, air release valve and control cabinet
 - (10) Pump can be started locally or on pressure drop but shall only be stopped locally.

GENERAL REMARK :

- To be protected from solar radiations
- Pump shall comply with APSAD R1 requirements
- Resistant material nameplate (tag number, vendor name and adress, pump datas) with resistant fixation must be provided by Vendor.
- Direction of rotation (arrow) shall be marked with permanent mark,

PO N°: 9806J-0000-PO-0910-003-00 IM22079		Doc Ref. : 51200898-PDS-003	
Requisition n°: 9806J-0000-SR-0910-003		FLS N°: 51200898/51200905	
Equipment tag : 140-PU-2020B		Item n°: SP51200898-03	

**Equipment filled-in Data Sheets
140-PU-2020B**

Doc Item: A1001
Secondary Doc Ref: 9806J-0000-SP-0910-00309

B	19/FEB/2014	FINAL REVIEW	FLOWSERVE	L.CERBELLE	D. BOISSELET
A	23/OCT/2013	FIRST EMISSION	FLOWSERVE	L.CERBELLE	D. BOISSELET
Rev	Date	STATUS	Written by	Checked by	Approved by
	DD/MMM/YYYY				

Project - Unit	Document type	Material code	Serial number	Revision
9806J-0140	SP	0910	002	0

1									
2									
3									
4									
5									
6	Client:		CENTRIFUGAL PUMP DATA SHEET		Total quantity: 1				
7	Site:		Item No : 140-PU-2020 B		Quantity running:				
8	Unit: 140				Quantity spare: 1 ("B" diesel) (9)				
9	Mechanical Data Sheet for: <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Purchase <input type="checkbox"/> As built Process reference : 9806J-0140-PDS-1900-002-A								
10	Vendor: Flowserve		Service: Main Fire Water Pump		Installation: <input checked="" type="checkbox"/> horizontal <input type="checkbox"/> vertical				
11	Manufacturer:		Duty: <input type="checkbox"/> continuous <input type="checkbox"/> batch <input checked="" type="checkbox"/> Emergency/weekly tests		<input type="checkbox"/> flooded <input type="checkbox"/> self priming <input type="checkbox"/> submersible				
12	Model: ME-200-500		Location: <input checked="" type="checkbox"/> outdoor <input type="checkbox"/> exposed to elements <input checked="" type="checkbox"/> under shelter		Electrical area classification Not classified				
13	Serial number:		<input type="checkbox"/> indoor <input type="checkbox"/> heated <input checked="" type="checkbox"/> unheated						
14	HANDLED PRODUCTS		REQUIRED OPERATING DATA (per pump)						
15	Fluid: Process Water		Flow (m3/h): mini 193 (6) normal: 480 maxi: 720						
16	<input type="checkbox"/> corrosive <input type="checkbox"/> abrasive <input type="checkbox"/> explosive <input type="checkbox"/> flammable <input type="checkbox"/> toxic <input checked="" type="checkbox"/> other: *		Discharge pressure (bar g.): (7) (8) 8 Design: 11,4 barg						
17	Gas content: <input checked="" type="checkbox"/> no <input type="checkbox"/> yes		Suction pressure (bar g.): 0,03 Design: 3,5 barg						
18	Solids content: <input type="checkbox"/> no <input type="checkbox"/> yes		Differential pressure (bar): 8						
19	Pumping temperature Tp (°C): mini: 5 normal: 35 maxi: 47		Total head (m of LC): 82						
20	Specific gravity: mini: normal: 0,994 maxi:		Available NPSH (m): 9,5						
21	Dynamic viscosity (cP) mini: normal: 1 maxi:		Garanteed point : 480 m3/h @ 82 m						
22	Vapour pressure (bar a.): normal: 0,056 maxi:		Speed control: No						
23	Atmospheric boiling temperature (°C):		Start-up conditions: Open Valve (10)						
24	Specific heat (kJ/ kg/ °C):		Dry run requirements:						
25	* Erosive : Presence of sand		Parallel/ serie operation: N/A						
26	Basic material (wetted parts):								
27	PUMP DESIGN (Vendor to complete)								
28	Type: <input checked="" type="checkbox"/> classic volute <input type="checkbox"/> segmented <input type="checkbox"/> barrel(HP) <input type="checkbox"/> in-can <input type="checkbox"/> in-line		Remark: Above required flow is the net available Process flow in Purchaser system.						
29	<input type="checkbox"/> priming volute <input type="checkbox"/> side chanel <input type="checkbox"/> high speed <input type="checkbox"/> w/separate priming		Discharge pressure is at pump axis						
30	<input checked="" type="checkbox"/> monostage <input type="checkbox"/> multistage <input type="checkbox"/> hygienic construction		PERFORMANCES (per pump) (Vendor to complete)						
31			Rotation facing coupling: <input checked="" type="checkbox"/> Clockwise <input type="checkbox"/> Counter Clockwise						
32	Basic design: <input checked="" type="checkbox"/> Std Manufacturer <input type="checkbox"/> other:		Performance curve reference: 5974660C						
33	Nominal pressure (bar g. @ °C) (1) at (°C):		Pump speed: 1490 rpm						
34	Casing type: <input checked="" type="checkbox"/> moulded <input type="checkbox"/> fabricated <input type="checkbox"/> lined <input type="checkbox"/> other:		Allowable speed range:						
35	<input checked="" type="checkbox"/> single volute <input type="checkbox"/> double volute <input type="checkbox"/> jacketed		Maximum Allowable Working Pressure (bar g.) (1) at (°C)						
36	<input type="checkbox"/> with diffuser <input type="checkbox"/> with wear ring <input type="checkbox"/> with throat bushing		Maximum Allowable Temperature (°C): 80 Temperature for metallic parts exposed to sun						
37	Casing nozzles	Orient.	Size	Rating	Performances with offered diameter				
38	Suction	End	10"	150# RF	mini	normal	rated		
39	Discharge	Top	8"	150# RF	Stable flow (m3/h)				
40	Drain				Total Head (m)				
41	Vent				Required NPSH (m)				
42	Casing split: <input checked="" type="checkbox"/> radial <input type="checkbox"/> axial <input type="checkbox"/> none		Plugged			Hydraulic impeller efficiency (%)			
43	Casing support <input checked="" type="checkbox"/> foot <input type="checkbox"/> centerline <input type="checkbox"/> bearing frame <input type="checkbox"/> other:		Plugged (if not self venting)			Required power at driver shaft (kW): 142			
44	Shaft: <input checked="" type="checkbox"/> solid (no sleeve) <input type="checkbox"/> sleeved					Shut off head (m): 94			
45	Impeller: <input checked="" type="checkbox"/> closed <input type="checkbox"/> semi open <input type="checkbox"/> open <input type="checkbox"/> with wear ring					Flow at Best Efficiency point (m3/h):			
46	<input checked="" type="checkbox"/> single flux <input type="checkbox"/> double flux <input type="checkbox"/> vortex <input type="checkbox"/> vane wheel					Impeller diameter (mm): mini: 402 maxi: 502 installed: 496			
47	<input type="checkbox"/> radial <input type="checkbox"/> mixed flow <input type="checkbox"/> axial					Maximum power : 172 kw			
48						SHAFT SEAL (Vendor to complete)			
49	Impeller mount: <input checked="" type="checkbox"/> overhang <input type="checkbox"/> between bearings <input type="checkbox"/> with inducer					<input type="checkbox"/> None <input checked="" type="checkbox"/> Packing <input type="checkbox"/> Labyrinth <input type="checkbox"/> Hydrodynamic			
50	Impeller attachment: <input checked="" type="checkbox"/> screwed <input checked="" type="checkbox"/> keyed <input type="checkbox"/> other:								
51	Bearing type/ lubrif.: Drive End 6412C3 / Grease								
52	Non Drive End NU 314 EC / Grease								
53	Baseplate: <input type="checkbox"/> none <input checked="" type="checkbox"/> under pump and drive system <input checked="" type="checkbox"/> anchored <input type="checkbox"/> stilt mounted					<input type="checkbox"/> Mechanical seal: <input type="checkbox"/> single <input type="checkbox"/> dual <input type="checkbox"/> cartridge			
54	<input type="checkbox"/> moulded <input type="checkbox"/> bended sheet <input checked="" type="checkbox"/> fabricated					<input type="checkbox"/> contact <input type="checkbox"/> without contact			
55						<input type="checkbox"/> spring(s) <input type="checkbox"/> bellow			
56	MATERIALS (Vendor to complete) (5)					Mounting: <input type="checkbox"/> face to face <input type="checkbox"/> back to back <input type="checkbox"/> tandem			
57	Casing(s)/ Cover: ASTM A743 Gr. CA-6NM		Casing wear ring: NA		<input type="checkbox"/> rotating flexible element <input type="checkbox"/> stationary flexible element				
58	Casing liner: -		Casing gasket: Nitrile 70 Sh						
59	Impeller: Z6CND18-12 M		Impeller wear ring: NA		Pressurisation: <input type="checkbox"/> N/A <input type="checkbox"/> buffer fluid <input type="checkbox"/> barrier fluid				
60	Shaft: X30Cr13 Rm 850-1000Nmm²		Shaft sleeve: NA		fluid: pressure: circulation by:				
61	Stuffing box: ASTM A743 Gr. CA-6NM		Gland: BURGMANN 6026 12X12		Seal chamber: <input type="checkbox"/> cylindric <input type="checkbox"/> tapped (enlarged) <input type="checkbox"/> jacketed				
62	Wetted bolting: NA		Bearing housing: EN-GJL-250		<input type="checkbox"/> integral with casing <input type="checkbox"/> internal <input type="checkbox"/> external <input type="checkbox"/> with throttle bushing				
63	Baseplate: CS					Seal manufacturer/ Model: API Plan			
64						Product side		Atmospheric side	
65	DRIVE SYSTEM DESCRIPTION (Vendor to complete)					Norme			
66	Driver: (9) Diesel					Max allow. pressure			
67	<input checked="" type="checkbox"/> fixed speed <input type="checkbox"/> Variable speed					Balancing			
68	supplied/ mounted by: Vendor / Vendor					Spring/ Bellow			
69	manufacturer/ model: CUMMINS / 6CTAA8,3G4					O'Ring/ gaskets			
70	nameplate power/ speed: Diesel 241 kw -1500 rpm					Cartridge sleeve:			
71	Connection driver/ pump: <input type="checkbox"/> pulley/ belts <input type="checkbox"/> direct (close coupled)					End plate:			
72	<input checked="" type="checkbox"/> direct (separately coupled) <input type="checkbox"/> gears <input type="checkbox"/> other:								
73	Electrical utility data:								
74	Volts: 230V Hertz: Phase:								
75	<input checked="" type="checkbox"/> Starting system : Battery 24V (10)								
76	<input checked="" type="checkbox"/> Reservoir ; Yes - Main and Back Up								
77	Engine consumption : 207 gr / kW-h at full load								
78	Site conditions : Refer to 9806J 0440 JSD 1600 008								

Project - Unit	Document type	Material code	Serial number	Revision
9806J -0140	SP	0910	002	0

ACCESSORIES (Vendor to complete)						SUPPLY BY
Pulleys/ belts:						VENDOR VENDOR VENDOR
Coupling(s): Cardan (diesel) service factor 1,5 min.						
Accessories : (4)						
Safety guards: No sparking type						
Gear box: Type:		Nameplate power/ speed:		Service factor:		
Manufacturer/ model:						
Seal pot: Volume (l): Material: Design/ fabric. code: <input type="checkbox"/> baseplate mounted <input type="checkbox"/> stand alone						
Available connections: <input type="checkbox"/> filling <input type="checkbox"/> drain <input type="checkbox"/> flushing inlet <input type="checkbox"/> flushing outlet <input type="checkbox"/> pressurisation						
<input type="checkbox"/> inlet coil <input type="checkbox"/> outlet coil <input type="checkbox"/> gauge <input type="checkbox"/> other						
Type of connections: <input type="checkbox"/> threaded <input type="checkbox"/> flanged <input type="checkbox"/>						
Baseplate, with <input type="checkbox"/> drip recovery (D=25 mm mini) <input checked="" type="checkbox"/> handling devices <input checked="" type="checkbox"/> earthing lugs <input type="checkbox"/> seal pot support						VENDOR
<input type="checkbox"/> equipotential connections <input type="checkbox"/> anchor bolts <input type="checkbox"/> Cooler support						
Control/ Instrumentation: Local control cabinet according to APSAD R1 requirements not certified (installed on common skid)						
Vibrations: Pump : Only flat surface for magnetic measuring equipment						
For motor refer to specification 9806J-0440-JSS-1691-001						VENDOR
Reservoir Capacity : 6 hours at maximum power Material : Location: Installed on separated skid						
Visual level : Yes & Alarm for low level <input checked="" type="checkbox"/> handling devices <input checked="" type="checkbox"/> earthing lugs						
Back-up reservoir Capacity : 3 hours at maximum power Material : Location: Installed on separated skid						VENDOR
Visual level : Yes <input checked="" type="checkbox"/> handling devices <input checked="" type="checkbox"/> earthing lugs						
AUXILLIARY CIRCUITS DESCRIPTION (Vendor to complete)						
Function	Fluid/ Flow (name / m3/hr)	Material	P/ T design (kPa g. / °C)	Main features		
INSPECTION AND TESTS (Vendor to complete)						
Shop inspection	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	Please refer to ITP 51200898-ITP-002				By Vendor
Material certificates	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	Type 2 for all parts				By Vendor
Hydraulic test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	with (1,5 x nominal pressure) during 10 mn				By Vendor
NPSH test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	Only if difference between NPSHa and NSPhr < 1m				By Vendor
Performance test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	5 points of measurement. Including mechanical running test 2 hrs (2)				By Vendor
Balancing test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	Please refer to ITP 51200898-ITP-002				By Vendor
Vibrations measurement	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	at guaranteed point with limit indicated in 9806J-0000-JSS-0910-001				By Vendor
Sound level measurement	<input type="checkbox"/> no <input type="checkbox"/> yes					By Vendor
Dismantling after test	<input type="checkbox"/> no <input checked="" type="checkbox"/> yes	only if required after defects are measured				By Vendor
MISCELLANEOUS (Vendor to complete)						
Painting:	<input checked="" type="checkbox"/> Standard Vendor <input checked="" type="checkbox"/> Other: RAL 3000					By Vendor
Tracing/ Insulation:						
Special tools:						
Weights (kg): <input type="checkbox"/> Bare pump: 400 <input type="checkbox"/> Driver: 1000 Diesel <input type="checkbox"/> Baseplate: 1000 kg <input type="checkbox"/> Total: 3250 kg Diesel						
NOTES:						
(1) Nominal pressure is the Maximum Allowable Working Pressure (MAWP), refer to Specification 9806J-0000-JSS-0910-001 paragraph 4.8.						
(2) One witnessed Performances with slave motor or contract motor and one witnessed functional test with diesel engine						
(3) NPSHa must be over 1 m to NPSHr @ pump max flow (APSAD R1)						
(4) Each pump shall be delivered with pressure relieve valve and Air Release valve (SS 316). Loose delivery. Set point to be adjusted at installation : 11,4 barg.						
(5) Vendor shall indicate the material of each pump part.						
(6) Maximum flowrate correspond to 130% of the nominal flowrate. According to APSAD R1, 75% head shall be provided at 130% of nominal flowrate.						
(7) At normal flow and minimum water level above suction flange.						
(8) Electric drive: the unit shall be complete with pressure relief valve, air release valve and control cabinet						
(9) Diesel engine drive: the unit shall be complete with diesel tanks, associated piping instrumentation ,pressure relief valve , air release valve the cooling system required for diesel engine ,the control cabinet						
(10) Pump can be started locally or on pressure drop but shall only be stopped locally.						
GENERAL REMARK :						
- To be protected from solar radiations						
- Pump shall comply with APSAD R1 requirements						
- Resistant material nameplate (tag number, vendor name and adress, pump datas) with resistant fixation must be provided by Vendor.						
- Direction of rotation (arrow) shall be marked with permanent mark,						

PO N°: Requisition n°: Equipment tag : 140-PU-2010A 140-PU-2010B		Doc Ref. : 5 FLS N°: Item n°:
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Performance Curves
140-PU-2010-A/B
Electrical Drive

TSU Doc Item: A1002
 Secondary Doc Ref:

B	30/DEC/2013	FINAL REVIEW	SALMSON	L.CERBELLE	E. LE MAREC
A	19/NOV/2013	FIRST EMISSION	SALMSON	L.CERBELLE	E. LE MAREC
Rev	Date	STATUS	Written by	Checked by	Approved by
	DD/MMM/YYYY				

Etabli par:
MARGUERITE
Visa:
Vérifié par:
CORDELLIER
Visa:

MULTi-V3604 / MVI3204

2 POLES

4042287

Ed 02

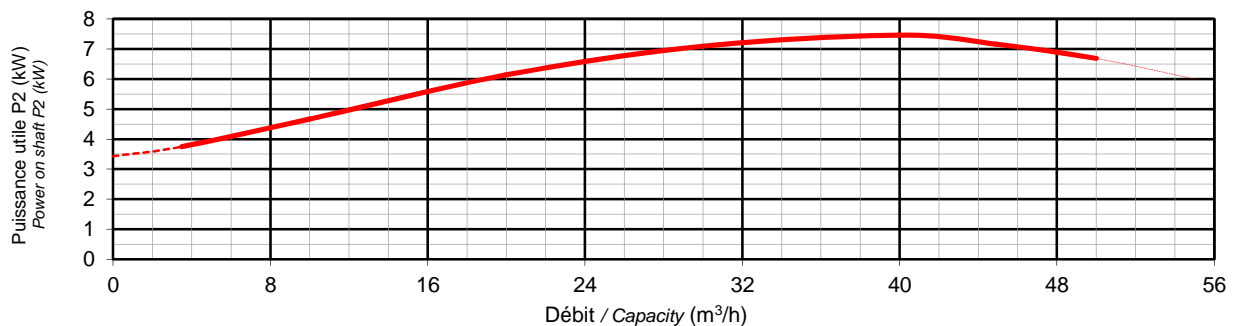
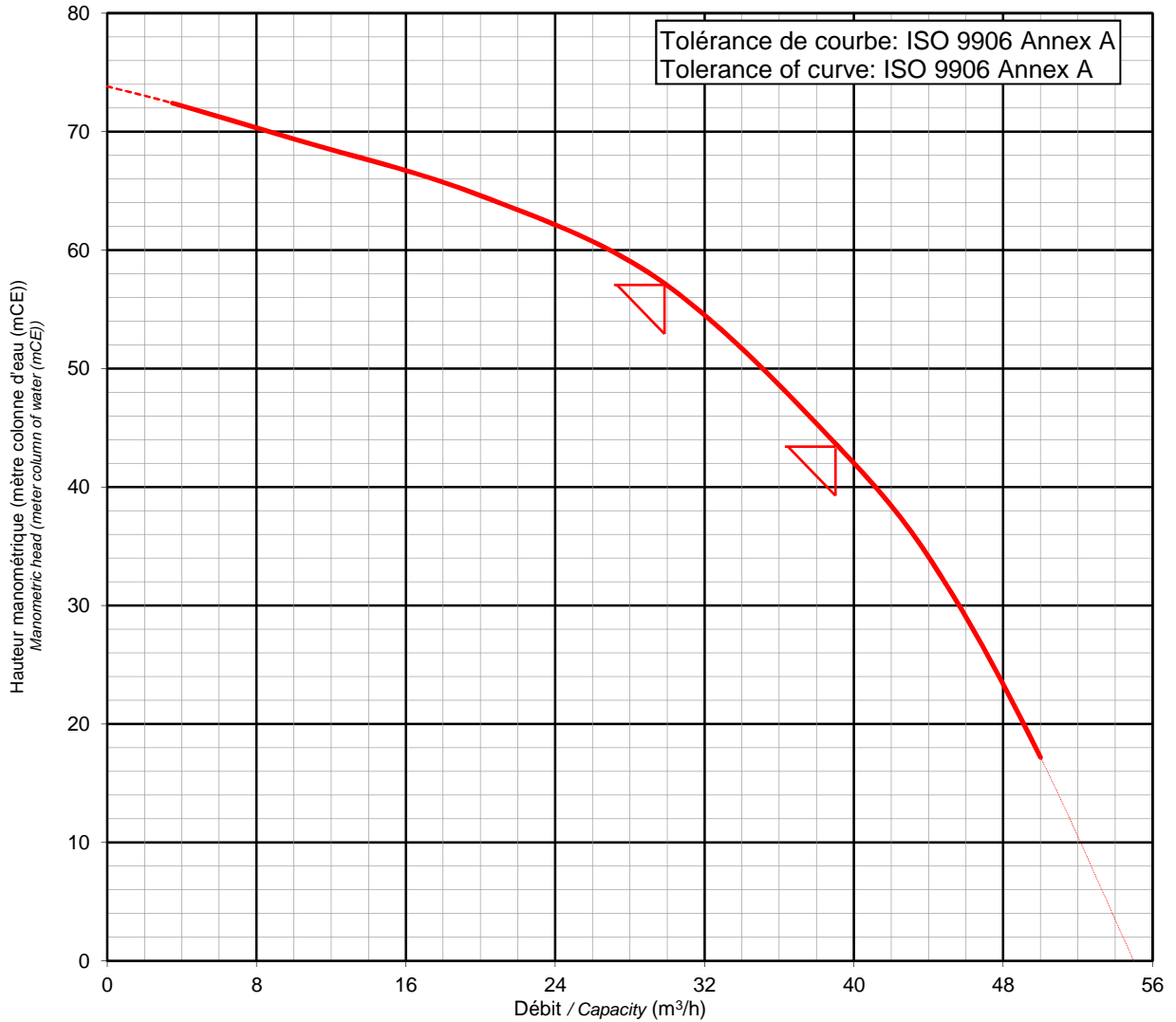
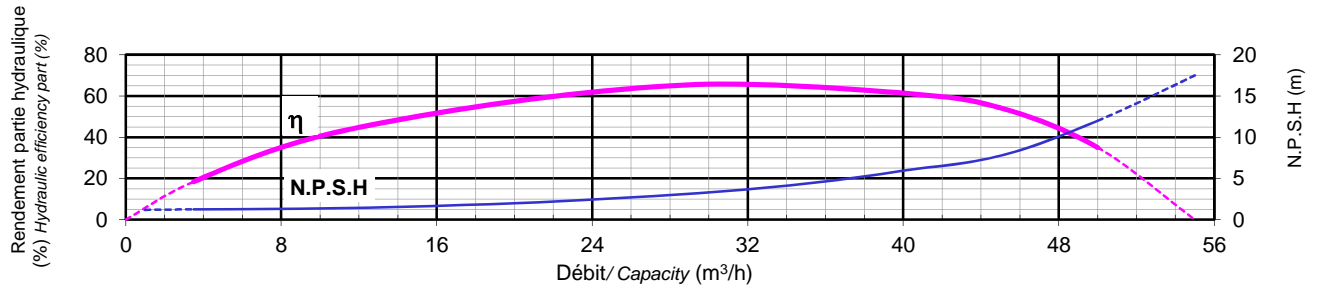
Courbes vitesses réelles / Curves real speed

50 HZ



Ed01: 12/11/98

Ed02: 29/03/99
AC: 073957/YM



Origine essais / Tests origin : D'après essai qualif / From qualification tests 06&07/98 + 09/04
Conditions d'essais / Tests conditions : Eau/Water = 20°C - Densité/Density = 1 - Viscosité/Viscosity = 1mm²/s



<p>PO N°: IM22079</p> <p>Requisition n°:</p> <p>Equipment tag : 140-PU-2020A</p>		<p>Doc Ref. :</p> <p>FLS N°: Item n°:</p>	
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**Performance Curves
140-PU-2020A
Electrical Drive**

TSU Doc Item: A1002
Secondary Doc Ref:

C	15/NOV/2013	FINAL	FLOWSERVE	L. CERBELLE	E. LE MAREC
B	26/SEP/2013	FINAL	FLOWSERVE	L. CERBELLE	E. LE MAREC
A	26/AUG/2013	FIRST EMISSION	FLOWSERVE	L. CERBELLE	E. LE MAREC
Rev	Date	STATUS	Written by	Checked by	Approved by
	DD/MMM/YYYY				

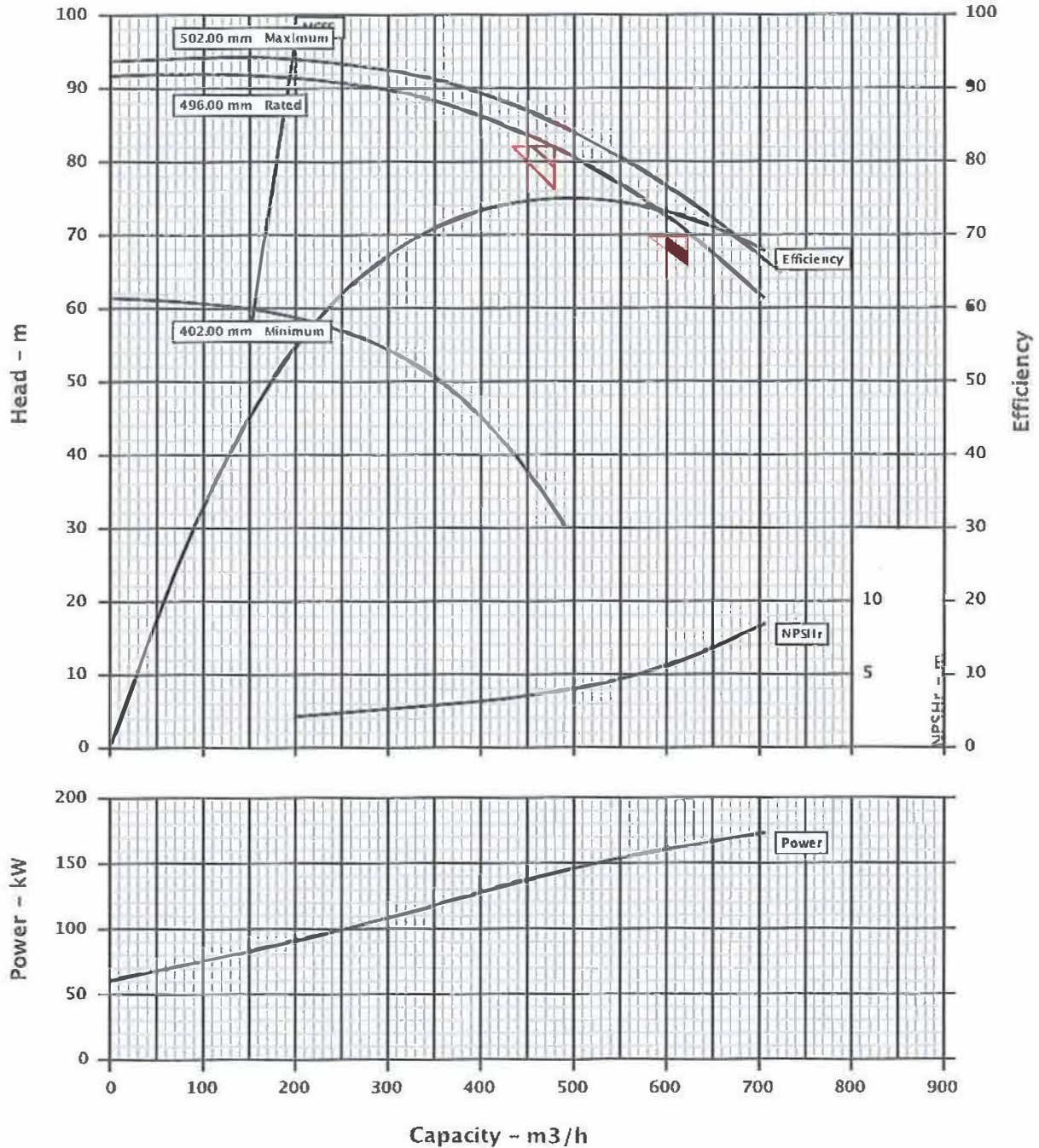


Pump size & type : ME 200-500
 Based on curve no. : 5974660C
 Number of stages : 1

Customer :
 Item number : 140PU2020
 Service :
 Flowserve reference : 94091 Version 1
 Date : January 24, 2013

Capacity : 480.0 m3/h
 Head : 82.00 m
 Specific gravity : 1.000
 Pump speed : 1490 rpm
 Test tolerance : ISO 9906 Level 1

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



IMOURAREN URANIUM PROJECT

PO N°:

Doc Ref. :

Requisition n°:

FLS N°:

Equipment tag : 140-PU-2020B

Item n°:

Performance Curves
140-PU-2020B
Diesel Drive

TSU Doc Item: A1002
 Secondary Doc Ref:

C	15/NOV/2013	FINAL	FLOWSERVE	L. CERBELLE	E. LE MAREC
B	26/SEP/2013	FINAL	FLOWSERVE	L. CERBELLE	E. LE MAREC
A	26/AUG/2013	FIRST EMISSION	FLOWSERVE	L. CERBELLE	E. LE MAREC
Rev	Date	STATUS	Written by	Checked by	Approved by
	DD/MMM/YYYY				



Pump size & type : ME 200-500
 Based on curve no. : 5974660C
 Number of stages : 1

Customer :
 Item number : 140PU2020
 Service :
 Flowserve reference : 94091 Version 1
 Date : January 24, 2013

Capacity : 480.0 m³/h
 Head : 82.00 m
 Specific gravity : 1.000
 Pump speed : 1490 rpm
 Test tolerance : ISO 9906 Level 1

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

