

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.
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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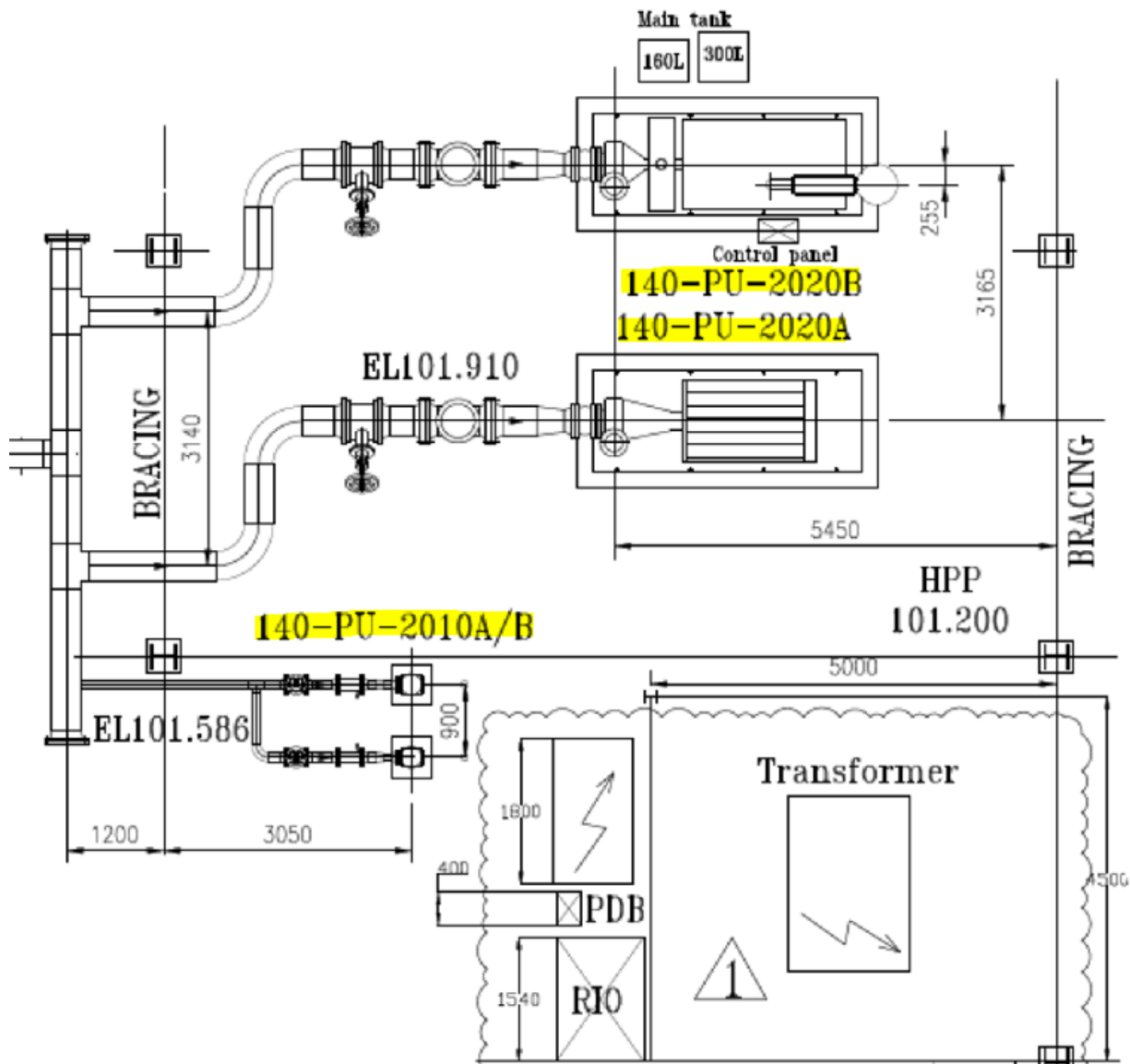
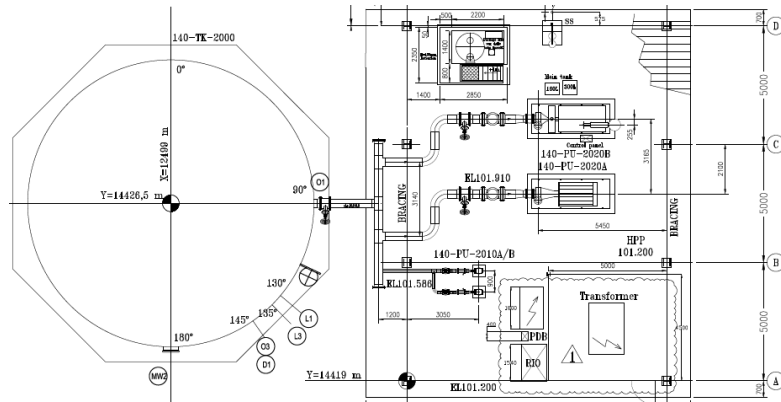
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FIRE-WATER PUMP STATION

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

FLOWSERVE 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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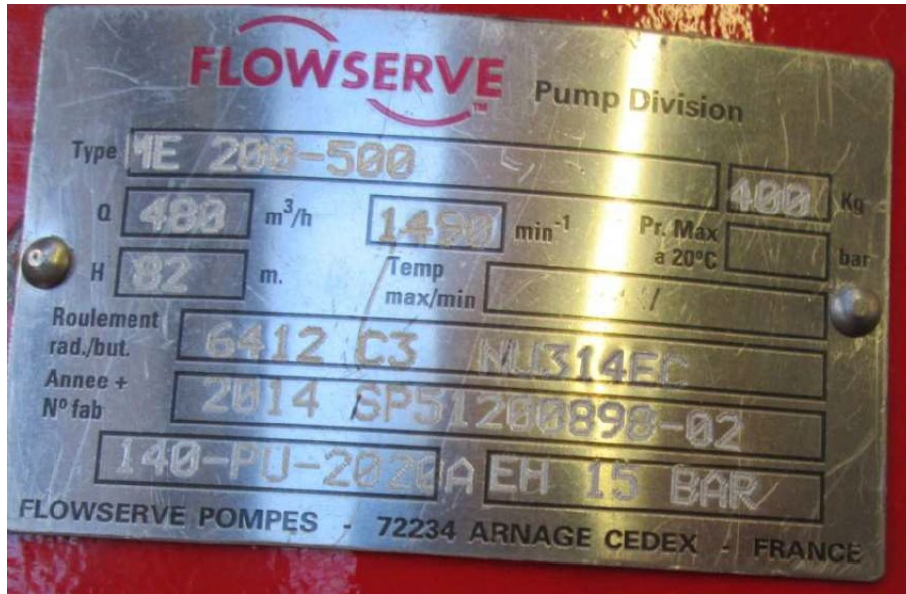
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FIRE-WATER PUMP STATION

PICTURES

MAIN ELECTRIC PUMP – FLOWSERVE ME 200/500

TAG No. 140-PU-2020A



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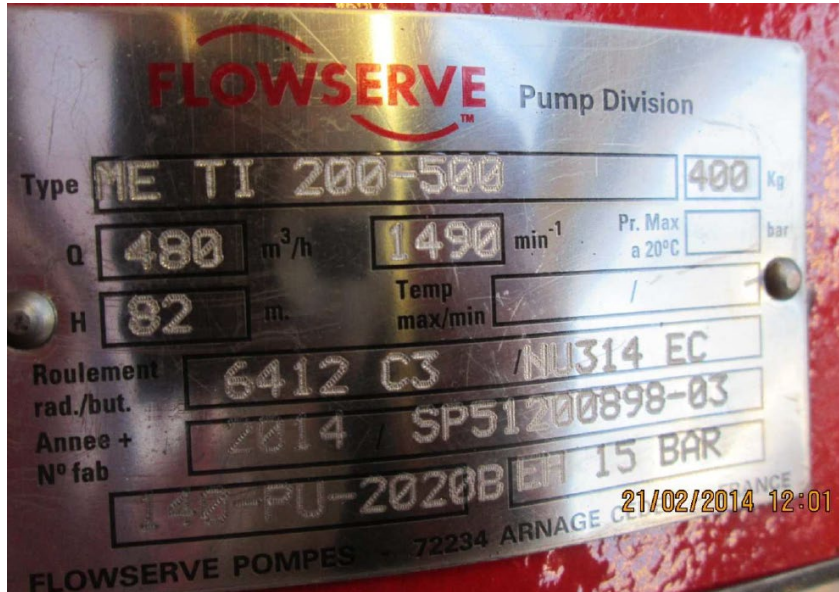
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FIRE-WATER PUMP STATION

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

Requisition n°: 9806J-0000-SR-0910-003

Equipment tag : 140-PU-2010A
140-PU-2010B

Doc Ref. : 51200898-PDS-001

FLS N°: 51200898/51200905

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

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
Rev	Date	STATUS	Written by	Checked by	Approved by
	DD/MMM/YYYY				

SPECIFICATION/ Specification										Pag. 2/3
Project - Unit		Document type		Material code		Serial number		Revision		
9806J-0140		SP		0910		003		C		
Client:		CENTRIFUGAL PUMP DATA SHEET				Total quantity: 2				
Site:		Item No : 140-PU-2010 A/B				Quantity running: 1 (Electrical)				
Unit: 140						Quantity spare: 1 (Electrical)				
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										
Vendor: Flowserve		Service: Fire Water Jockey Pump				Installation: <input type="checkbox"/> horizontal <input checked="" type="checkbox"/> vertical				
Manufacturer:		Duty: <input checked="" type="checkbox"/> continuous <input type="checkbox"/> batch <input type="checkbox"/> other				<input type="checkbox"/> flooded <input type="checkbox"/> self priming <input type="checkbox"/> submersible				
Model: Multi V3604 (4)		Location: <input checked="" type="checkbox"/> outdoor <input type="checkbox"/> exposed to elements <input checked="" type="checkbox"/> under shelter				Electrical area classification Not classified				
Serial number:		<input type="checkbox"/> indoor <input type="checkbox"/> heated <input checked="" type="checkbox"/> unheated								
HANDLED PRODUCTS					REQUIRED OPERATING DATA (per pump)					
Fluid: Process Water					Flow (m3/h): mini 6 normal: 30 maxi: 45					
<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					
Gas content: <input checked="" type="checkbox"/> no <input type="checkbox"/> yes					Suction pressure (bar g.): (7) 0,03 Design: 3,5 barg					
Solids content: <input type="checkbox"/> no <input type="checkbox"/> yes					Differential pressure (bar): 5,5					
Pumping temperature Tp (°C): mini 5 normal: 35 maxi: 47					Total head (m of LC): 57					
Specific gravity: mini: normal: 0,994 maxi:					Available NPSH (m): 9,5					
Dynamic viscosity (cP) mini: normal: 1 maxi:					Garanteed point : 30 m3/h @ 57 m					
Vapour pressure (bar a.): normal: 0,056 maxi:					Speed control: No					
Atmospheric boiling temperature (°C):					Start-up conditions: Open Valve					
Specific heat (kJ/ kg/ °C):					Dry run requirements:					
* Erosive : presense of sand Note 8 ,					Parallel/ serie operation: N/A					
					Basic material (wetted parts):					
PUMP DESIGN (Vendor to complete)										
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					Remark: Above required flow is the net available Process flow in Purchaser system.					
<input type="checkbox"/> priming volute <input type="checkbox"/> side channel <input type="checkbox"/> high speed <input type="checkbox"/> w/separate priming					Discharge pressure is at pump axis					
<input type="checkbox"/> monostage <input checked="" type="checkbox"/> multistage <input type="checkbox"/> hygienic construction					PERFORMANCES (per pump) (Vendor to complete)					
Basic design: <input checked="" type="checkbox"/> Std Manufacturer <input type="checkbox"/> other:					Rotation facing coupling: <input type="checkbox"/> Clockwise <input checked="" type="checkbox"/> Counter Clockwise					
Nominal pressure (bar g. @ °C) 16 at 120°C					Performance curve reference: Multi-V 3604					
Casing type: <input checked="" type="checkbox"/> moulded <input type="checkbox"/> fabricated <input type="checkbox"/> lined <input type="checkbox"/> other:					Pump speed: 2900 rpm					
<input type="checkbox"/> single volute <input type="checkbox"/> double volute <input type="checkbox"/> jacketed					Allowable speed range:					
<input type="checkbox"/> with diffuser <input type="checkbox"/> with wear ring <input type="checkbox"/> with throat bushing					Maximum Allowable Working Pressure (bar g.) 16 at 120 (°C)					
					Maximum Allowable Temperature (°C): 80 Temperature for metallic parts exposed to sun					
Casing nozzles	Orient.	Size	Rating		Performances with offered diameter	mini	normal	rated		
Suction	Side	2" 1/2	PN16 RF	With counter flange	Stable flow (m3/h)			30		
Discharge	Side	2" 1/2	PN16 RF	With counter flange	Total Head (m)			51		
Drain				Plugged	Required NPSH (m)	(3)		3		
Vent				Plugged (if not self venting)	Hydraulic impeller efficiency (%)			68		
Casing split: <input type="checkbox"/> radial <input type="checkbox"/> axial <input checked="" type="checkbox"/> none					Required power at driver shaft (kW): 7					
Casing support <input type="checkbox"/> foot <input type="checkbox"/> centerline <input checked="" type="checkbox"/> bearing frame <input type="checkbox"/> other:					Shut off head (m): 72					
Shaft: <input type="checkbox"/> solid (no sleeve) <input checked="" type="checkbox"/> sleeved					Flow at Best Efficiency point (m3/h): 34					
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: maxi: installed: Standard					
<input type="checkbox"/> single flux <input type="checkbox"/> double flux <input type="checkbox"/> vortex <input checked="" type="checkbox"/> vane wheel					Dry run capability: NO					
<input checked="" type="checkbox"/> radial <input type="checkbox"/> mixed flow <input type="checkbox"/> axial										
SHAFT SEAL (Vendor to complete)										
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					
Impeller attachment: <input checked="" type="checkbox"/> screwed <input type="checkbox"/> keyed <input type="checkbox"/> other:										
Bearing type/ lubric.: Drive End /										
Non Drive End /										
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 checked="" type="checkbox"/> Mechanical seal: <input checked="" type="checkbox"/> single <input type="checkbox"/> dual <input type="checkbox"/> cartridge					
<input type="checkbox"/> moulded <input type="checkbox"/> bended sheet <input type="checkbox"/> fabricated					<input checked="" type="checkbox"/> contact <input type="checkbox"/> without contact					
					<input type="checkbox"/> spring(s) <input type="checkbox"/> bellows					
MATERIALS (Vendor to complete) (5)					Mounting: <input checked="" type="checkbox"/> face to face <input type="checkbox"/> back to back <input type="checkbox"/> tandem					
Casing(s)/ Cover: 316L					<input type="checkbox"/> rotating flexible element <input type="checkbox"/> stationary flexible element					
Casing liner:										
Impeller: 316L					Pressurisation: <input type="checkbox"/> N/A <input type="checkbox"/> buffer fluid <input type="checkbox"/> barrier fluid					
Shaft: 316L					fluid: pressure: circulation by:					
Stuffing box:					Seal chamber: <input type="checkbox"/> cylindric <input type="checkbox"/> tapped (enlarged) <input type="checkbox"/> jacketed					
Wetted bolting: 316L					<input type="checkbox"/> integral with casing <input type="checkbox"/> internal <input type="checkbox"/> external <input type="checkbox"/> with throttle bushing					
Baseplate:					Seal manufacturer/ Model:					
					Product side Atmospheric side					
DRIVE SYSTEM DESCRIPTION (Vendor to complete)										
Driver: Electrical					Norme					
<input checked="" type="checkbox"/> fixed speed <input type="checkbox"/> Variable speed					Max allow. pressure					
supplied/ mounted by: Vendor / Vendor					Balancing					
manufacturer/ model: Leroy Somer					Spring/ Bellow					
nameplate power/ speed: 7,5 kW / 3000 rpm					O'Ring/ gaskets					
Connection driver/ pump: <input type="checkbox"/> pulley/ belts <input checked="" type="checkbox"/> direct (close coupled)					Cartridge sleeve:					
<input type="checkbox"/> direct(separately coupled) <input type="checkbox"/> gears <input type="checkbox"/> other:					End plate:					
Electrical utility data:										
Volts: 690 Hertz: 50 Phase: 3										

SPECIFICATION/ Specification						Pag. 3/3
Project - Unit		Document type	Material code	Serial number	Revision	
9806J-0140		SP	0910	003	C	
ACCESSORIES (Vendor to complete)						SUPPLY BY
Pulleys/ belts:						
Coupling(s): N/A						
Safety guards: N/A						VENDOR
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 type="checkbox"/> handling devices <input 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:						
Temperature:						
Vibrations:						
For motor refer to specification 9806J-0440-JSS-1691-001 and Leroy Somer frame agreement						
Variable Speed Drive : No Applicable						
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) (2)						
Shop inspection <input type="checkbox"/> no <input type="checkbox"/> yes						
Material certificates <input type="checkbox"/> no <input checked="" type="checkbox"/> yes Type 2 for all parts						
Hydraulic test <input type="checkbox"/> no <input checked="" type="checkbox"/> yes with (1,3 x nominal pressure) during 10 mn						
NPSH test <input checked="" type="checkbox"/> no <input type="checkbox"/> yes Only if difference between NPSHa and NSPHr < 1m						
Performance test <input type="checkbox"/> no <input checked="" type="checkbox"/> yes 5 points of measurement.						
Balancing test <input checked="" type="checkbox"/> no <input type="checkbox"/> yes						
Vibrations measurement <input checked="" type="checkbox"/> no <input type="checkbox"/> yes						
Sound level measurement <input checked="" type="checkbox"/> no <input type="checkbox"/> yes						
Dismantling after test <input type="checkbox"/> no <input type="checkbox"/> yes only if required after defects are measured						
MISCELLANEOUS (Vendor to complete)						
Painting: <input checked="" type="checkbox"/> Standard Vendor <input checked="" type="checkbox"/> Other: RAL 3000						
Tracing/ Insulation:						
Special tools:						
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						
NOTES:						
(1) Nominal pressure is the Maximum Allowable Working Pressure (MAWP), refer to Specification 9806J-0000-JSS-0910-001 paragraph 4.8.						
(2) Standard Manufacturer Tests						
(3) NPSHa must be over 1 m to NPSHr @ pump max flow (APSAD R1)						
(4) Pump is the same that 425-PU-1020 AB						
(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) Particle size shall not exceed 0,5 mm.						
GENERAL REMARK :						
- 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

Requisition n°: 9806J-0000-SR-0910-003

Equipment tag : 140-PU-2020A

Doc Ref. : 51200898-PDS-002

FLS N°: 51200898/51200905

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				

1		SPECIFICATION/ Specification				Pag. 2/3	Rev.
2		<div> <div>Project - Unit</div> <div>Document type</div> <div>Material code</div> <div>Serial number</div> <div>Revision</div> </div>					
3		<div> <div>9806J-0140</div> <div>SP</div> <div>0910</div> <div>002</div> <div>0</div> </div>					
4							
5							
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	mini	normal
38	Suction	End	10"	150# RF	Stable flow (m3/h)	193	480
39	Discharge	Top	8"	150# RF	Total Head (m)		82
40	Drain			Plugged	Required NPSH (m) (3)		4,5
41	Vent			Plugged (if not self venting)	Hydraulic impeller efficiency (%)		
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/ lubric.: 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							
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						

SPECIFICATION/ Specification						Pag. 3/3	Rev.
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							VENDOR
<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)							
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

Requisition n°: 9806J-0000-SR-0910-003

Equipment tag : 140-PU-2020B

Doc Ref. : 51200898-PDS-003

FLS N°: 51200898/51200905

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				

1		SPECIFICATION/ Specification				Pag. 2/3	Rev.
2		Project - Unit				Document type	Material code
3		9806J -0140				SP	0910
4						Serial number	Revision
5						002	0
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	mini	normal
38	Suction	End	10"	150# RF	Stable flow (m3/h)	193	480
39	Discharge	Top	8"	150# RF	Total Head (m)		82
40	Drain			Plugged	Required NPSH (m) (3)		4,5
41	Vent			Plugged (if not self venting)	Hydraulic impeller efficiency (%)		
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/ lubric.: 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"/> bellows					
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							
65	DRIVE SYSTEM DESCRIPTION (Vendor to complete)				Product side Atmospheric side		
66	Driver: (9) Diesel	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: CUMMINS / 6CTAA8,3G4	Spring/ Bellow					
70	nameplate power/ speed: Diesel 241 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: 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						

SPECIFICATION/ Specification						Pag. 3/3	Rev.
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							
Reservoir Capacity : 6 hours at maximum power Material : Location: Installed on separated skid							VENDOR
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 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							
(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°:

Doc Ref. : 5

Requisition n°:

FLS N°:

Equipment tag : 140-PU-2010A
140-PU-2010B

Item n°:

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

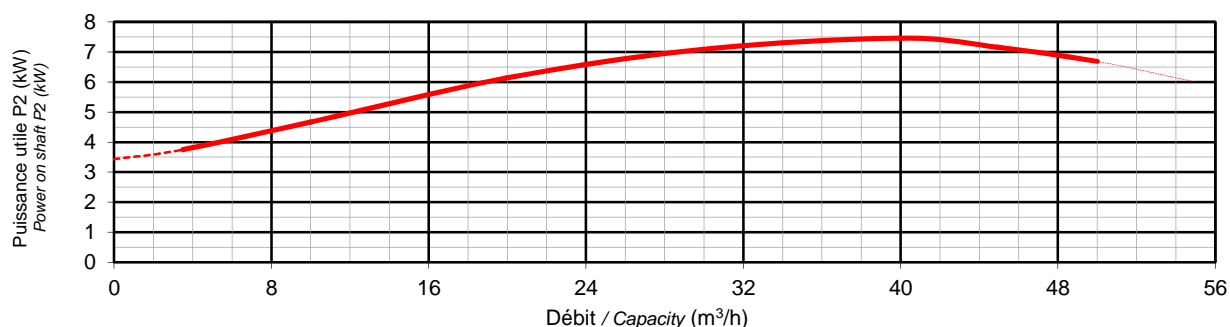
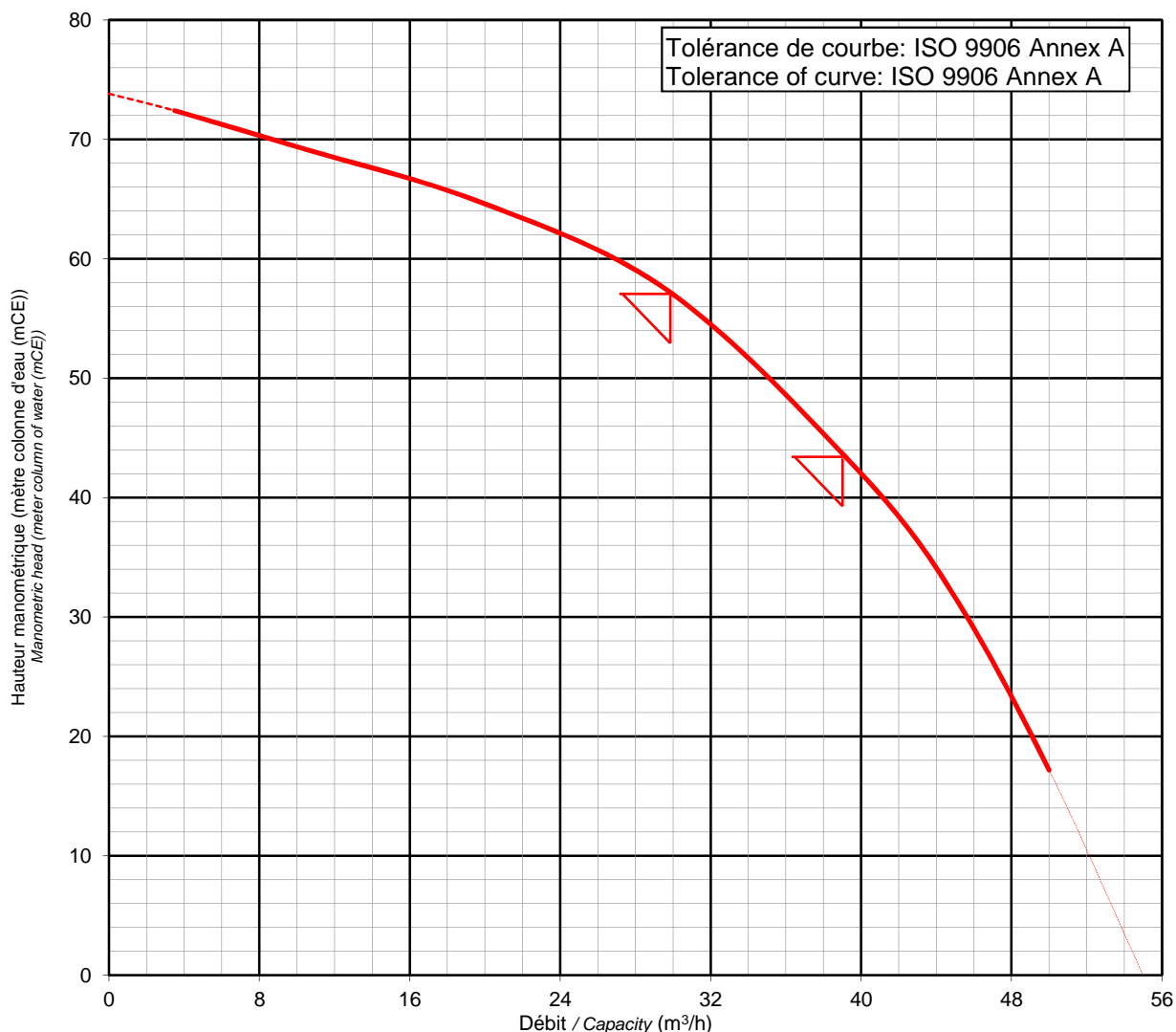
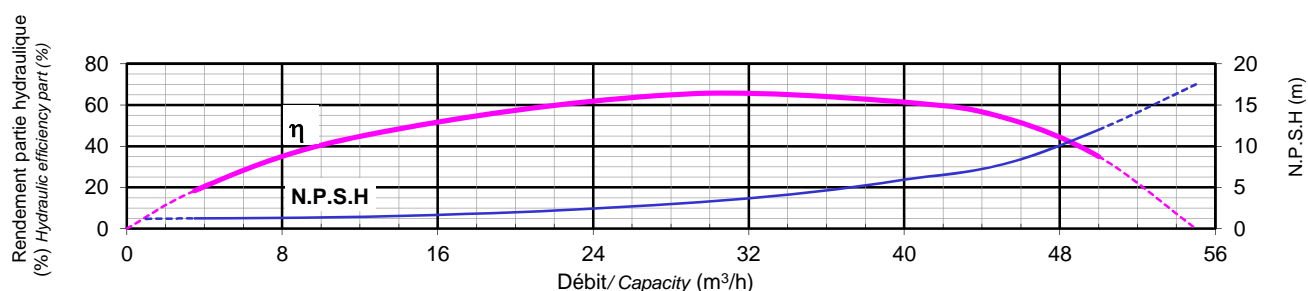
50 HZ



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

PO N°: IM22079

Doc Ref. :

Requisition n°:

FLS N°: Item n°:

Equipment tag : 140-PU-2020A

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				

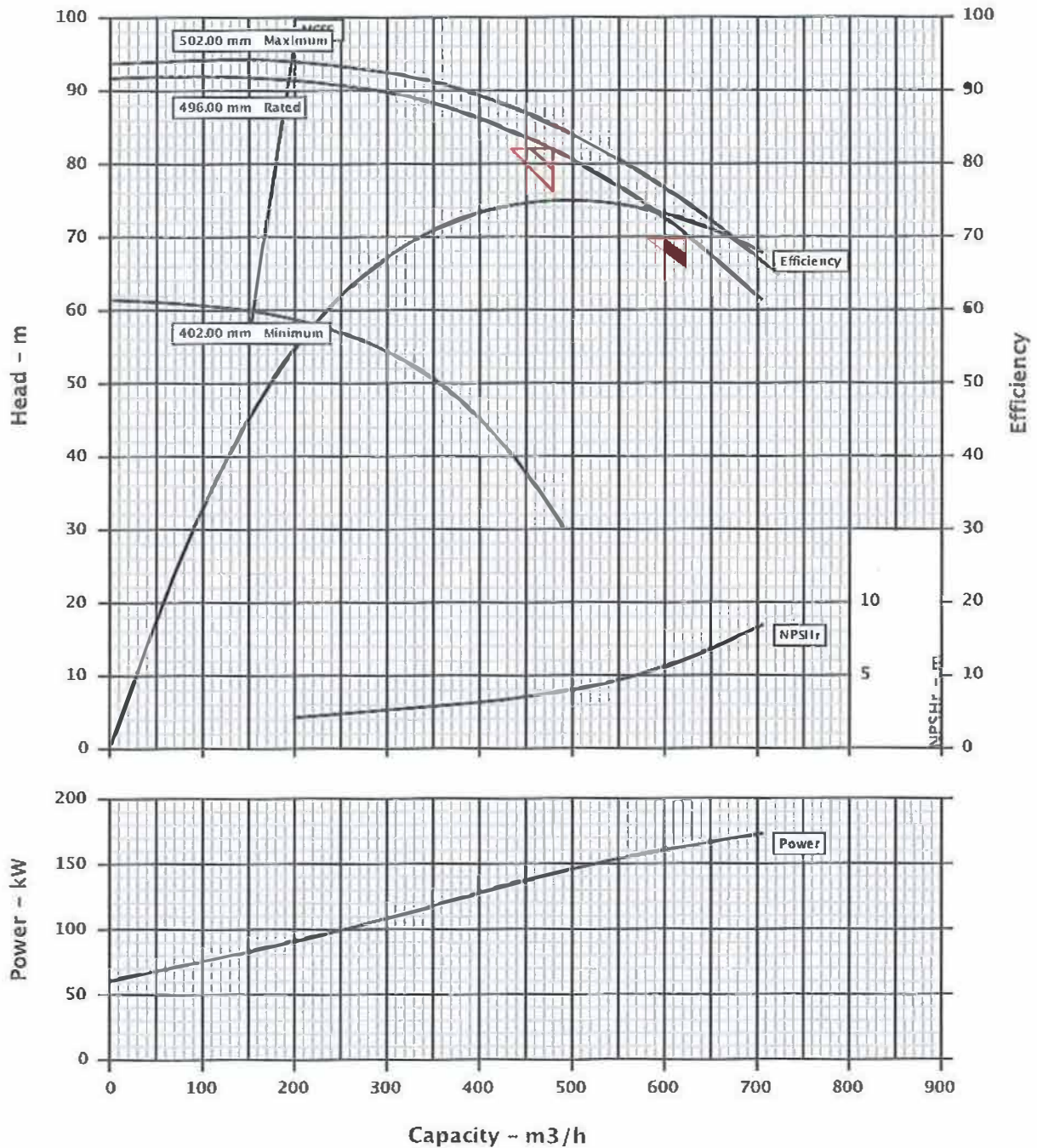


Pump size & type : ME 200-500
Based on curve no. : 5974660C
Number of stages : 1

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.

