

	PROJECT DESIGNATION DESIGNATION PROJET PLANT PROJECT
	PO NUMBER COMMANDE TSU NUMERO IM22030
	DESIGNATION DESIGNATION TSU Aqueous phase transfer pumps + spare
	DOCUMENT CODE CODE DOCUMENT A1001 + A0105 + A1002
	TSU ITEM NUMBER REPERE TSU 133-PU-2140/2240/2240X
	KSB ITEM NUMBER REPERE KSB 9972457397-300-I-400
	KSB PUMP DESCRIPTION DESIGNATION POMPE KSB MCPK080-050-160 CC XMCEQ00304A

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DOCUMENT NUMBER DOCUMENT NUMERO	9972457397-EDS-001
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SECONDARY DOC REF	9806J-0000-SP-0910-00702
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TITRE TITLE	Equipment Filled-in Data Sheet + Performance Curve + noise data sheet 133-PU-2140/2240/2240X
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REVISION REVISION	DATE DATE	REVISIONS MODIFICATIONS	DRAWN BY DESSINE PAR	CHECKED BY VERIFIE PAR	APPROVED BY APPROUVE PAR
A	27/08/2013	First issue	V. VERDOUX	J. GAONACH	J. GAONACH
B	02/12/2013	Update API Plan 61	V. VERDOUX	J. GAONACH	J. GAONACH

SPECIFICATION/ Specification										Pag. 2/4	Rev.
Project - Unit Document type Material code Serial number Revision 9806J-0133 SP 0910 002 1											
CENTRIFUGAL PUMP DATA SHEET										Total quantity: 3	
Site: Item No : 133-PU-2140 / 2240 / 2240-X										Quantity running: 2	
Unit: 133										Quantity spare: 1 work shop (8)	
Mechanical Data Sheet for: ☐ Inquiry ☒ Purchase ☐ As built										Process reference : 9806J-0133-PDS-0910-002-B	
Vendor: KSB										Service: Aqueous phase transfer pumps	Installation: ☒ horizontal ☐ vertical
Manufacturer:										Duty: ☒ continuous ☐ batch ☐ other	☐ flooded ☐ self priming ☐ submersible
Model: MCPK 80-050-160 CC										Location: ☒ outdoor ☒ exposed to elements ☐ under shelter	Electrical area classification: None classified area
Serial number:										☐ indoor ☐ heated ☒ unheated	
HANDLED PRODUCTS					REQUIRED OPERATING DATA (per pump)						
Fluid: Aqueous phase (Note 1, 2, 7, 9)					Flow (m3/h): mini 6,49 (3) normal: 35 rated: 35 maxi:						
☒ corrosive ☒ abrasive ☐ explosive ☐ flammable ☐ toxic ☐ other:					Discharge pressure (bar g.): 1,3						
Gas content: ☒ no ☐ yes					Suction pressure (bar g.): -0,08 maxi: 0,5						
Solids content: ☐ no ☒ yes					Differential pressure (bar): 1,34						
Pumping temperature Tp (°C): mini: normal: 90 maxi:					Total head (m of LC): 9,1						
Specific gravity at TP: mini: normal: 1,5 maxi:					Available NPSH (m): 5						
Dynamic viscosity at Tp (Cp): normal: 7 maxi: 20					Garanteed point : 35 m3/h @ 9,1 m With Dinamic Viscosity 30 Cp						
Vapour pressure at TP (bar a.): mini: normal: 0,2 maxi:					Speed control: No						
Atmospheric boiling temperature (°C):					Start-up conditions: Close Valve						
Specific heat (kJ/ kg/ °C):					Dry run requirements:						
					Parallel/ serie operation: Parallel						
					Basic material (wetted parts):						
PUMP DESIGN (Vendor to complete)											
Type: ☒ classic volute ☐ segmented ☐ barrel(HP) ☐ in-can ☐ in-line										Remark: Note 2	
☐ priming volute ☐ side chanel ☐ high speed ☐ w/separate priming											
☒ monostage ☐ multistage ☐ hygienic construction											
Basic design: ☒ Std Manufacturer ☐ other:										Rotation facing coupling: ☒ Clockwise ☐ Counter Clockwise from drive	
Nominal pressure (bar g. @ °C): By Vendor at (°C):										Performance curve reference: KGP 454/31	
Casing type: ☐ moulded ☐ fabricated ☐ lined ☐ other:										Pump speed: 1469 RPM	
☒ single volute ☐ double volute ☐ jacketed										Allowable speed range:	
☐ with diffuser ☒ with wear ring ☐ with throat bushing										Maximum Allowable Working Pressure (bar g.): 16 at 115 (°C)	
Casing nozzles										Maximum Allowable Temperature (°C): 115	
Orient. Size Rating Facing Remarks:										Performances with offered diameter	
Suction End NPS3 CL 150 RF all flanges: Dimensions as per EN 1092-1 Drilled as per ASME B 16.5										mini normal rated max	
Discharge Top NPS2 CL 150 RF										Stable flow (m3/h) 6,49 34,99 54	
Drain Plugged										Total Head (m) 10,1 9,09 7,2	
Vent Plugged										Required NPSH (m) 1,5 2,2 4,3	
Casing split: ☒ radial ☐ axial ☐ none										Hydraulic impeller efficiency (%) 30 72,9 71	
Casing support ☒ foot ☐ centerline ☐ bearing frame ☐ other:										Required power at driver shaft (kW): 1,78	
Shaft: ☒ solid (no sleeve) ☐ sleeved										Shut off head (m): 10,2	
Impeller: ☒ closed ☐ semi open ☐ open ☒ with wear ring										Flow at Best Efficiency point (m3/h): 43	
☐ single flux ☐ double flux ☐ vortex ☒ vane wheel										Impeller diameter (mm): mini 135 maxi: 174 installed: 167	
☒ radial ☐ mixed flow ☐ axial										Dry run capability:	
Impeller mount: ☒ overhang ☐ between bearings ☐ with inducer											
Impeller attachment: ☒ screwed ☐ keyed ☐ other:										SHAFT SEAL (Vendor to complete)	
Bearing type/ lubrif.: Drive End ball 3208 / oil										☐ None ☐ Packing ☐ Labyrinth ☐ Hydrodynamic	
Non Drive Encroller NU208-E / oil											
Baseplate: ☐ none ☒ under pump and drive system ☐ anchored ☐ stilt mounted										☒ Mechanical seal: ☒ single ☐ dual ☒ cartridge Burgmann/ Cartex-TN	
☐ moulded ☐ bended sheet ☐ fabricated										☐ contact ☐ without contact Cartridge Mechanical seal with external	
										☐ spring(s) ☐ bellow circulation and vapour quench	
MATERIALS (Vendor to complete)										Mounting: ☐ face to face ☐ back to back ☐ tandem	
Casing(s)/ Cover: 1.4408 (~CF8M) Casing wear ring: CrNiMo Steel										☐ rotating flexible element ☐ stationary flexible element	
Casing liner: Casing gasket:											
Impeller: 1.4408 (~CF8M) Impeller wear ring CrNiMo Steel										Pressurisation: ☒ N/A ☐ buffer fluid ☐ barrier fluid	
Shaft: Tempered steel C45+N Shaft sleeve: CrNiMo Steel										fluid: pressure: circulation by:	
Stuffing box: Gland:										Seal chamber: ☐ cylindric ☐ tapped (enlarged) ☐ jacketed	
Wetted bolting: Bearing housing: Ductile cast iron JS1025 ☒ integral with casing ☐ internal ☐ external ☐ with throttle bushing											
Baseplate: Welded steel										Seal manufacturer/ Model: Burgmann/ Cartex-TN (Note 6) API Plan 61	
DRIVE SYSTEM DESCRIPTION (Vendor to complete)										Product side Atmospheric side	
Driver: Electrical (Note 5)										Norme	
☒ fixed speed ☐ Variable speed										Max allow. pressure	
supplied/ mounted by: By Vendor / By Vendor										Balancing	
manufacturer/ model: LEROY SOMER / 4P FLSC 112M										Spring/ Bellow	
nameplate power/ speed: 3 kw / 1469 rpm										O'Ring/ gaskets	
Connection driver/ pump: ☐ pulley/ belts ☐ direct (close coupled)										Cartridge sleeve:	
☒ direct(separately coupled) ☐ gears ☐ other:										End plate:	
Electrical utility data:											
Volts: 690 Hertz: 50 Phase: 3											

SPECIFICATION/ Specification					Pag. 3/4	Rev.
Project - Unit		Document type	Material code	Serial number	Revision	
9806J -0133		SP	0910	002	1	
ACCESSORIES (Vendor to complete)					SUPPLY BY	
Pulleys/ belts:						
Coupling(s): Flexible (Spacing type), service factor 1,5 min.					VENDOR	
Safety guards: No sparking type (Brass CUZn)					VENDOR	
Gear box: Type:		Nameplate power/ speed:		Service factor:		
Manufacturer/ model:						
Seal pot: Material: Design/ fabric. code:					☐ baseplate mounted ☐ stand alone	
Available connections: ☐ filling ☐ drain ☐ flushing inlet ☐ flushing outlet ☐ pressurisation						
☐ inlet coil ☐ outlet coil ☐ gauge ☐ other						
Type of connections: ☐ threaded ☐ flanged ☐						
Baseplate, with ☐ drip recovery (D=25 mm mini) ☒ handling devices ☒ earthing lugs ☒ Feet					VENDOR	
☐ equipotential connections ☐ anchor bolts ☐ Cooler support						
Control/ Instrumentation:						
Temperature:						
Vibrations: Pump : Only flat surface for magnetic measuring equipment						
Variable Speed Drive :						
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	☐ no ☐ yes				By Vendor	
Material certificates	☐ no ☐ yes	Type 3,1 for Stanlee Steel parts, Type 2.2 for other parts (according to EN 10204)			By Vendor	
Hydraulic test	☐ no ☒ yes	with (1,5 x nominal pressure) during 30 minutes.			By Vendor	
NPSH test	☐ no ☐ yes	Required only if difference between NPSHa and NSPHr < 1m at rated point			By Vendor	
Performance test	☐ no ☐ yes	5 points of measurement. Including mechanical running test 2 hrs, according to JSS-0910-001, Point 7.6.2			By Vendor	
Balancing test	☐ no ☒ yes	Vendor to detail procedure, according to ISO 1940 G 6.3			By Vendor	
Vibrations measurement	☐ no ☐ yes	at guaranteed point with limit indicated in 9806J-0000-JSS-0910-001			By Vendor	
Sound level measuremer	☐ no ☐ yes	85 dB(a) @ 1m			By Vendor	
Dismantling after test	☐ no ☐ yes	only if required after defects are measured			By Vendor	
MISCELLANEOUS (Vendor to complete)						
Painting:	☒ Standard Vendor ☐ Other:				By Vendor	
Tracing/ Insulation:					By Vendor	
Special tools:	If required				By Vendor	
Weights (kg):	☐ Bare pump:	☐ Driver:	☐ Baseplate:	☒ Total:	168 kg	
NOTES:						
(1) Water: 15%wt; Ammonium nitrate: 61%wt; Calcium nitrate: 23,7%wt; HMT (Hexa Methylene Tetramine): 0,3% wt.						
(2) Refert to Site Conditions doc no. 9806J-0440-JSD-1600-008. Any metallic part directly exposed to sun shall de design for 80 °C.						
(3) Vendor shall indicate continous stable minimum flow .						
(4) NPSHa must be over 0,5 m to NPSHr at pump max flow.						
(5) Low Voltage Electric motor is subject to frame agreement with LEROY SOMER. Refer to specification 9806J-0440-JSS-1691-001						
(6) Mechanical seal should not allow any leak. Vendor shall advice type, model and API plan selected (if applicable) for this services. Detail scope shall be provided.						
(7) Pump to be able to cope with air aspiration during truck unloading.						
(8) Provide a common spare pump in warehouse.						
(9) Scope of supply 133-PU-2140 / 2240 133-PU-2240-X						
- Pump + Coupling + Motor - Pump						
- Base plate + Feet						
GENERAL REMARK :						
- Resistant matial 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,						
- Final coat of paint must be coated after test final inspection.						

Project - Unit	Document type	Material code	Serial number	Revision
9806J -0133	SP	0910	002	1

CENTRIFUGAL PUMP DATA SHEET

Total quantity: 3

Site: Item No : 133-PU-2140 / 2240 / 2240-X

Quantity running: 2

Unit: 133

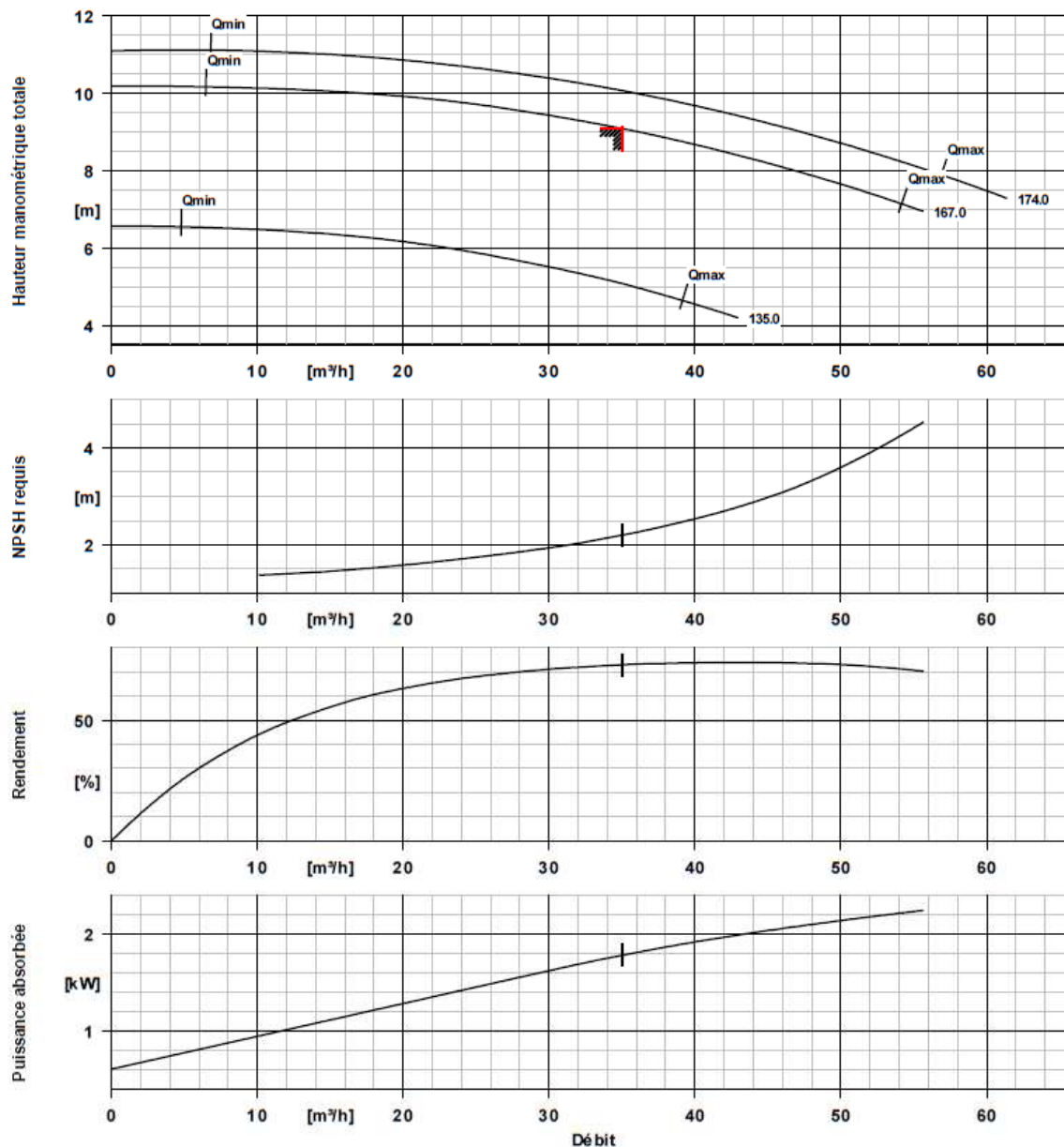
Quantity spare: 1 work shop (8)

Mechanical Data Sheet for: ☐ Inquiry ☒ Purchase ☐ As built Process reference : 9806J-0133-PDS-0910-002-B

MCPK080-050-160 CC XMCEQ00304A

No. de version: 1

Pompe chimie norm. EN 22858/ISO 2858/ISO 5199



Caractéristiques de courbe

Vitesse de rotation 1469 rpm
 Densité liquide pompé 1500 kg/m³
 Viscosité 20,00 mm²/s
 Débit 34,99 m³/h
 Débit demandé 35,00 m³/h
 Hauteur manométrique totale 9,09 m
 Hauteur manométrique totale demandée 9,10 m

Rendement 72,9 %
 Puissance absorbée 1,78 kW
 NPSH requis 2,20 m
 Numéro de courbe KGP.454/31
 Diamètre de roue effectif 167,0 mm
 Norme de réception ISO 9906 classe 1B

4.6 Noise characteristics

Table 8: Surface sound pressure level L_{pA} ⁴⁾⁵⁾

Rated power input P_N [kW]	Pump			Pump set		
	960 rpm 760 rpm [dB]	1450 rpm [dB]	2900 rpm [dB]	960 rpm 760 rpm [dB]	1450 rpm [dB]	2900 rpm [dB]
1.5	52	53	54	56	58	63
2.2	53	55	56	58	60	66
3	55	56	57	60	62	68
4	56	58	59	61	63	69
5.5	58	59	61	62	65	71
7.5	59	61	62	64	66	72
11	61	63	64	65	68	74
15	63	65	66	67	69	75
18.5	64	66	67	68	70	76
22	65	67	68	68	71	77
30	66	68	70	70	72	78
37	67	70	71	70	73	79
45	68	71	72	71	74	80
55	69	72	73	72	74	80
75	71	73	75	73	76	81
90	71	74	76	73	76	82
110	72	75	77	74	77	82
132	73	76	78	75	77	83
160	74	77	79	75	78	84
200	75	78	80	76	79	84
250	-	79	81	-	80	85

- 4) Spatial average; as per ISO 3744 and EN 12639; valid for pump operation in the $Q/Q_{opt} = 0.8 - 1.1$ range and for non-cavitating operation. If noise levels are to be guaranteed: Add +3 dB for measuring and constructional tolerance.
- 5) Increase for 60 Hz operation: 3500 rpm+3 dB; 1750 rpm +1 dB; 1160 rpm:±0 dB