



Client : Phillips UK Ltd  
Project title : Maureen Decommissioning Project  
Doc. No. : MAUR-14006-R-0102  
Doc. title : Data Sheet for Mech. Equipm. Mod. System

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Rev. Date : 13.08.99  
Revision : 01

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02 DATA SHEET FOR SUBSEA PUMPS

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### 01. GENERAL

01.01	Tag. No.	: 52-PA-001A/B, 52-PA-002A/B, 52-PA-003A/B
01.02	Description/no. of units	: 6 off Subsea pumps
01.03	Equipment No.	:
01.04	Inq./P.O. No.	:
01.05	Supplier	: Frank Mohn Flatøy AS
01.06	Manufacturer	: Frank Mohn Flatøy AS
01.07	Size & Type	: SD-200
01.08	Serial No.	: TBA.
01.09	Location Area	: MEM 1, MEM 2, MEM 3
01.10	Area Classification	: Unclassified
01.11	Ref. Functional Specification No.	: MAUR-14006-R-0103
01.12	Ref. Project P&ID No.	: Included in doc. 152003-LLE-080-02

### 02. PUMPED LIQUID DATA

02.01	Liquid Type	: Sea water
02.02	Suction Temp., Normal °C	: 2-11
02.03	Pumping Temp., Max. °C	: 11
02.04	Pumping Temp., Min. °C	: 2
02.05	Density at suction kg/m <sup>3</sup>	: 1026
02.06	Vapour Press. at suction Bara	: 0,01
02.07	Viscosity at Suction cP	: 1,3
02.08	Corrosion / Erosion by	: SEA WATER

### 03. OPERATING CONDITIONS

Ref. note 22.02

03.01	Capacity Rated flow m <sup>3</sup> /h	: 500
03.02	Min. flow m <sup>3</sup> /h	: 0
03.03	Discharge Pressure Barg	: 23(max.)
03.04	Suction Pressure (Barg)	: 2,5 - 9
03.05	Diff. Pressure Bar (Bar)	: 14
03.06	NPSH Available m	: 25
03.07	Hydraulic Power kW	:

### 04. SITE CONDITIONS

04.1	Pump Location,	: Subsea
04.02	Location Area Heated/Unheated	: NA
04.3	Ref. Funct.spec. No.	: MAUR-14006-R-0103



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05. PERFORMANCE

05.01 No. of stages : 1  
 05.02 Performance Curve No. : 1562-009-4  
 05.03 Speed (RPM) : 2502  
 05.04 Efficiency (% at Design Point) : 75  
 05.05 Rated Power (kw) : 259  
 05.06 Min. Cont. Flow, Thermal (m3/h) : 0  
 05.07 Min. Cont. Flow, Stable (m3/h) : 250  
 05.08 NPSHR, 3 % Head Drop (w/Water) : N/A  
 05.09 NPSHR, 40.000 Hr. Imp. Life (w/Water) : N/A  
 05.10 Max. Head, Rated Imp: (m) : 161  
 05.11 Max. Power, Rated Imp. (kW) : 230 (LIMITED BY HYDR. SYSTEM PRESSURE)  
 05.12 Suction Specific Speed (SI units) : 11200

06. CASING CONSTRUCTION (PUMP BODY)

06.01 Casing Mounting, Horizontal/Vertical : VERTICAL  
 06.02 Casing Mounting, Centerline/Foot : N/A  
 06.03 Casing Mounting, Other (State) : N/A  
 06.04 Casing Split, Axial/Radial : AXIAL  
 06.05 Casing Type, Single/Double Volute : DOUBLE VOLUTE  
 06.06 Casing Type, Diffuser/Other (State) : N/A  
 06.07 Casing Design Press Barg : 20  
 06.08 Max. Allowable Press, at 15 °C Barg : 20  
 06.09 Max. Allowable Press at Normal Temp. Barg : 20  
 06.10 Casing Test Press Barg : 30  
 06.11 Casing Design Temp. °C : 90 °C

07. NOZZLES & CONNECTIONS

	SIZE	RATING	FACING	LOCATION
		(ANSI)		(view from motor)
07.01	Suction Nozzle(in)	: N/A		
07.02	Discharge Nozzle (in)	: 200 mm	PN 25	FRAMO STD.
07.03	Balance Nozzle	: N/A		
07.04	Drain	: N/A		
07.05	Vent, casing	: N/A		
07.06	Press. Gauge	: N/A		
07.07	Vent, mech. seal	: N/A		



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08. IMPELLER

08.01 Impeller Diameter, Rated (mm) : 390  
 08.02 Impeller Diameter, Max. (mm) : 415  
 08.03 Impeller Diameter, Min.(mm) : 340  
 08.04 Mounting between BRGS. : 115  
 08.05 Mounting overhung : 267  
 08.06 Rotation (from Coupling End) : CW  
 08.07 Impeller Type, Open : N/A  
 08.08 Impeller Type, Closed : C

09. PACKING & SEALS

HYDR. SIDE

CARGO SIDE

09.01 Packing Manufacturer :  
 09.02 Packing Type : } N/A  
 09.03 Packing Size : }  
 09.04 Packing No. of Rings :  
 09.05 Mech. Seals API Code (610) : BSPFN  
 09.06 Mech. Seal Manufacturer : BURGMANN  
 09.07 Mech. Seal Model & Code : HH 251/65-00  
 09.08 Seal Gland Type :  
 09.09 Seal Material (metal parts) :  
 09.10 Gland Tapping for Flush : } N/A  
 09.11 Gland Quench Conn. : }  
 09.12 Gland Flush Conn. : }  
 09.13 Gland Drain Conn. : }  
 09.14 Gland Ven. Conn. : }  
 09.15 Suction Chamber Press. (Barg) :

BSPFX  
HUHNSEAL  
BFX-066-

10. BEARINGS

10.01 Radial Bearings : CYL. ROLLER, N 213  
 10.02 Thrust Bearings : ANGULAR CONTACT BALL, 3314

11. LUBRICATION TYPE

11.01 Grease : N/A  
 11.02 Oil Ring : N/A  
 11.03 Oil Mist : N/A  
 11.04 Flood : YES  
 11.05 Flinger : N/A  
 11.06 Pressure : N/A



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12. COUPLING N/A (SPLINE)

- 12.01 Coupling Manufacturer :
  - 12.02 Coupling Type :
  - 12.03 Coupling Model :
  - 12.04 Drive half Mounted by :
  - 12.05 Coupling Guard Required :
  - 12.06 Coupling Drive Type :
- } N/A

13. MATERIALS

- 13.01 Casing : AISI 316 L
- 13.02 Impellers : AISI 316 L
- 13.03 Casing Wear Rings : NS 16530
- 13.04 Shaft : ASTM 4340
- 13.05 Shaft Sleeves : AISI 316 L
- 13.06 Interstages Sleeve/Bushing : N/A
- 13.07 Bolting : A4-80
- 13.08 Seal Flush Piping : N/A
- 13.09 Aux. Flush Piping : N/A
- 13.10 Cooling Water Piping : N/A
- 13.11 Lub. Oil Piping : N/A

14. AUXILIARY SYSTEMS

- 14.01 Seal Flush Piping Plan :
  - 14.02 Seal Flush Piping Type, Tubing/Pipe :
  - 14.03 Aux. Flush Piping Plan :
  - 14.04 Aux. Flush Piping Type, Tubing/Pipe :
  - 14.05 Cooling Water Piping Plan :
  - 14.06 Cooling Water Piping Type, Tubing/Pipe :
  - 14.07 Piping Assembly method, Thread/Flange :
  - 14.08 Piping Assembly Seal Weld/Socket Weld :
  - 14.09 External Seal Flush Fluid :
  - 14.10 Sight Flow Indicators :
  - 14.11 Total Cooling Water Quantity, m<sup>3</sup>/h :
  - 14.12 Cooling Water Press. Barg :
  - 14.13 Packing Cooling Quantity, m<sup>3</sup>/h :
- } N/A



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15.	INSPECTIONS & TEST	REQUIRED	WITNESS
15.01	Hydrostatic	:YES	NO
15.02	Performance	:YES	YES
15.03	NPSH	:NO	NO
15.04	Mech. Run	:YES	YES
15.05	Noise Level	:NO	NO

16. DRIVER

16.01 Type : Hydraulic motor  
 16.2 Driver Data Sheet No. : N/A.

17. MOTOR

	HYDRAULIC	ELECTRIC (OPTION)
17.01 Manufacturer	: BRUENINGHAUS HYDROMATIK	
17.02 Type of Mounting	: VERTICAL	
17.03 Frame Size	: DISPLACEMENT : 250 ccm/rev.	
17.04 Explosion Protection (EEX-e/d/p)	: }	
17.05 IP rating	: }	
17.05 Type Standard/Special	: }	
17.06 AC/DC	: }	
17.07 Nominal Voltage (V)	: }	
17.08 Frequency (Hz)	: }	
17.09 Speed (r.p.m.)	: }	
17.10 Rated Power (kw)	: }	
17.11 Run-up time (s)	: }	
17.12 Nominal Torque (Nm)	: }	

N/A

18. BASE PLATE

(N/A, SUPPORTED FROM TOPPLATE.)

18.01 Ref. Functional Specification No. : MAUR-14006-R-0103  
 18.02 No. of Supports : }  
 18.03 Type of Support : } N/A  
 18.4 Base Plate Material : }



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19. VERTICAL SUBMERGED PUMP DETAILS

19.01	Pit or Pump Depth (m)	:N/A
19.02	Pump Length (m)	:N/A
19.03	Min. Submerg.Req. (m)	:N/A
19.04	Column Pipe, Flanged/Threaded	:N/A
19.05	Line Shaft, Open/Closed	:N/A
19.06	Guide Bushings, Bowl/Line Shaft	:N/A
19.07	Guide Bushing lube Type	:N/A
19.08	Float Switch	:N/A
19.09	Float and Rod Material	:N/A
19.10	Pump Thrust, Up/Down (N)	:N/A

20. WEIGHTS

20.01	Weight of Pump (kg)	: 320
20.02	Weight of Baseplate (kg) (TOPPLATE)	: 95
20.03	Weight of Motor (kg)	: 73
20.04	Weight of Gear (kg)	:NA
20.05	Total Dry Weight (kg)	: 550
20.06	Total Oper. Weight (kg)	: 595

21. SURFACE PREPARATION AND PAINTING

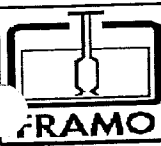
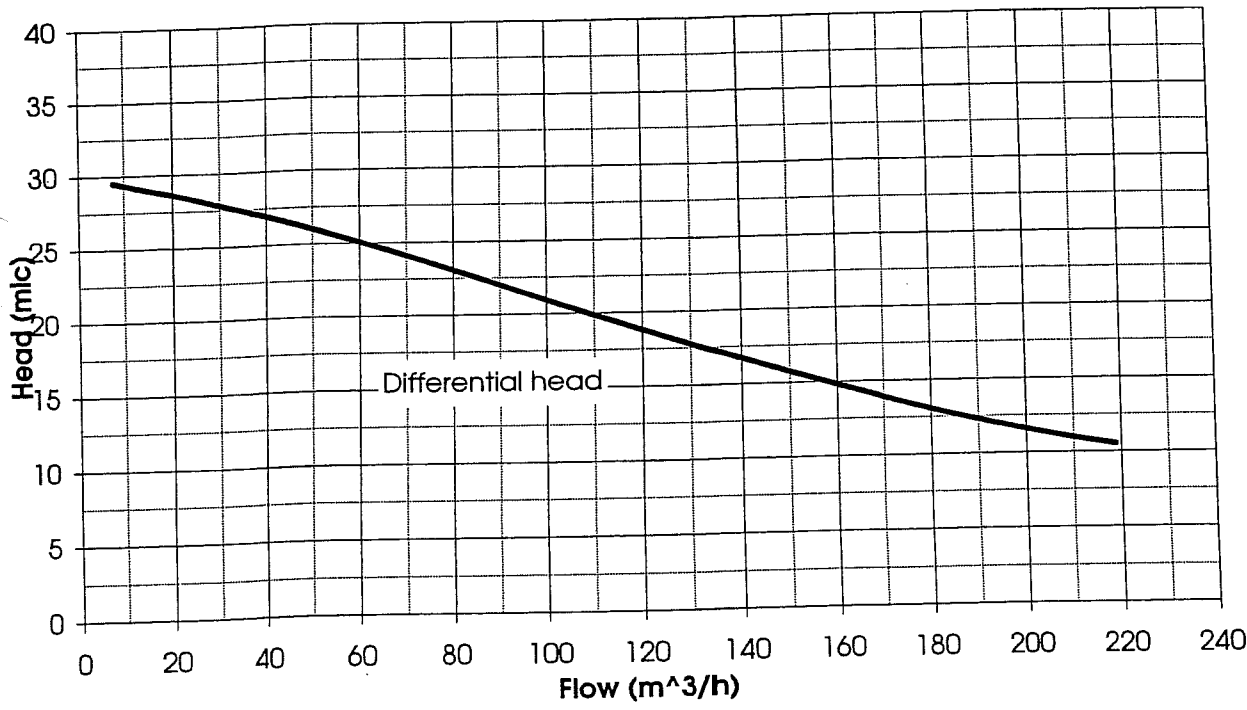
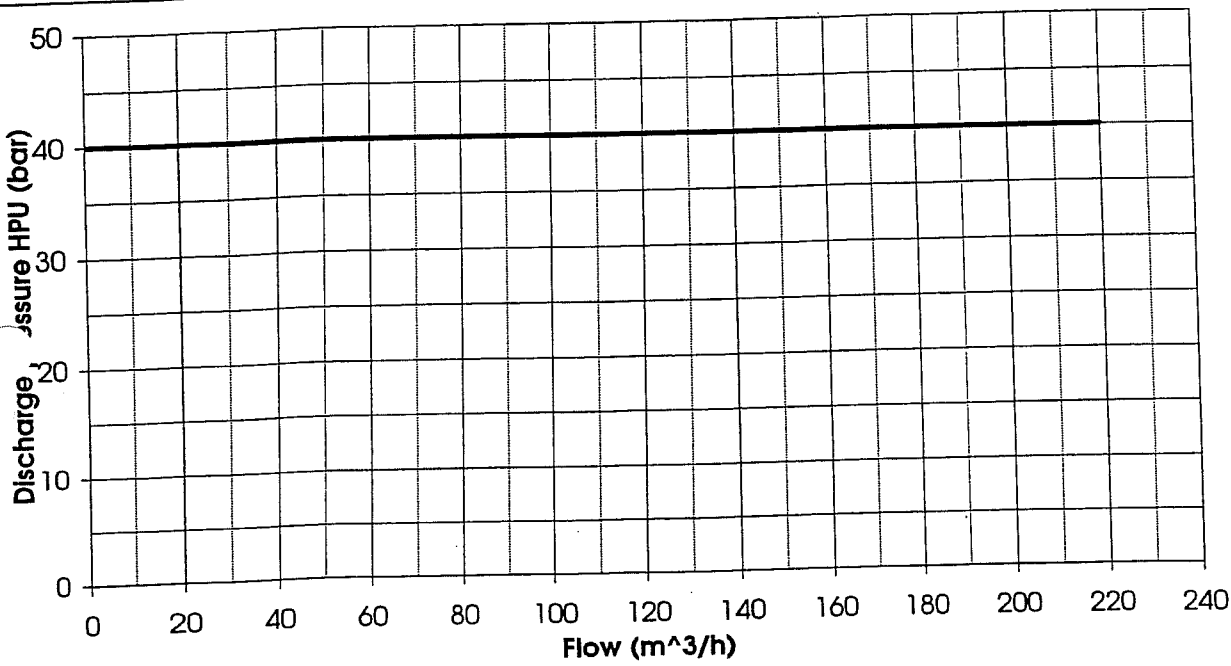
21.01	Purchaser Doc. Ref.	:
21.02	System	: PICKLED S.S. / PROTECTED BY ANODES
21.03	Colour Coding, External Surfaces	:

22. GENERAL NOTES

22.01	Supplier to complete the data sheet.
22.02	The pumps are pumping against the following main cases: Ballast pump characteristics: Skirt retrieval characteristics: Head: 14 barg Head: 1-3 barg
22.03	Bidder to specify design code for pumps.
22.04	Bidder to include vendor standard data sheets for hydraulic motor.
22.05	All pressure retaining parts shall as a minimum have 2.2 material certificates

# PERFORMANCE DIAGRAM FOR FRAMO PUMPS

Pump type: SD200	Medium: Sea water	Project no: 623414
Imp.drg.no: 0367-0372-1	Density: 1025 kg/m <sup>3</sup>	Remarks:
Imp.diam (mm): 390	Visc: 1,00 cSt	
Speed (rpm):	Temp: 5,0 deg	

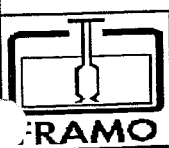
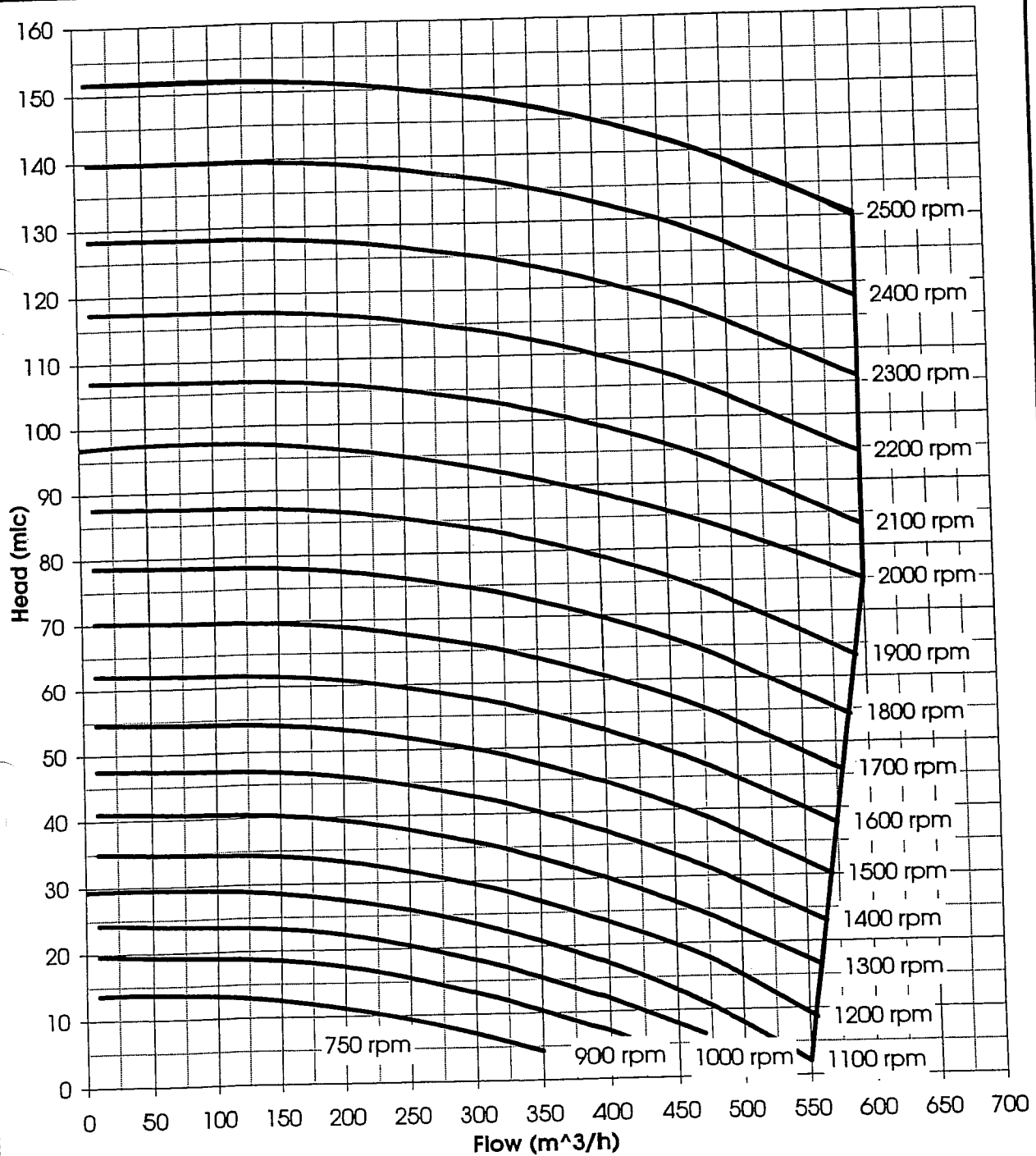


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	Sign	Date		
Constr.	RB	28.01.00	Phillips Maureen	1562-165-4
Checked	THo	28.01.00		
			Id.no	

# PERFORMANCE DIAGRAM FOR FRAMO PUMPS

Pump type:	SD200	Medium:	Sea water	Project no:	623414
Imp.drg.no:	0367-0372-1	Density:	1025 kg/m <sup>3</sup>	Remarks:	
Imp.diam (mm) :	390	Visc:	1,00 cSt		
Speed (rpm) :		Temp:	20,0 deg		

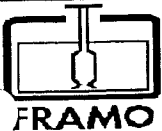
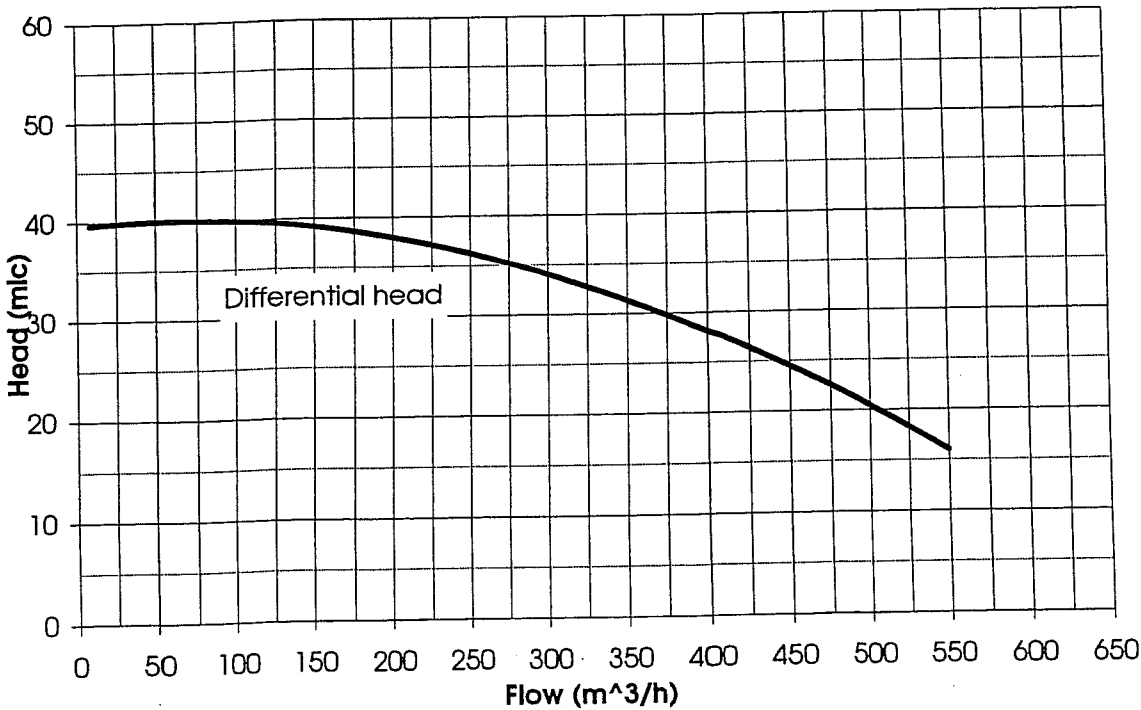
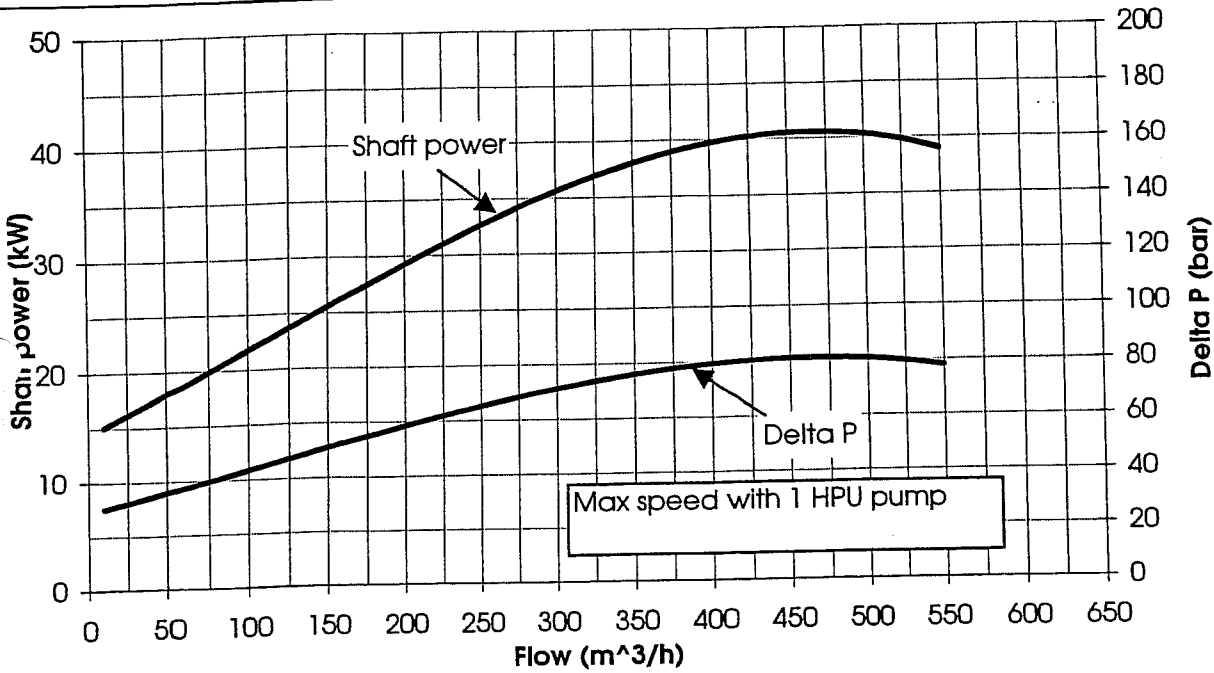


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	Sign	Date		
Constr.	RB	26.01.00	Phillips Maureen	
Checked	THo	28.01.00		1562-163-4
			Id.no	

# PERFORMANCE DIAGRAM FOR FRAMO PUMPS

Pump type:	SD200	Medium:	Sea water	Project no:	623414
Imp.drg.no:	0367-0372-1	Density	1025 kg/m <sup>3</sup>	Remarks:	
Imp.diam (mm) :	390	Visc:	1,00 cSt		
Speed (rpm) :	1 280	Temp:	20,0 deg		



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	Sign	Date
Constr.	RB	28.01.00
Checked	THo	28.01.00

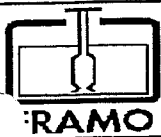
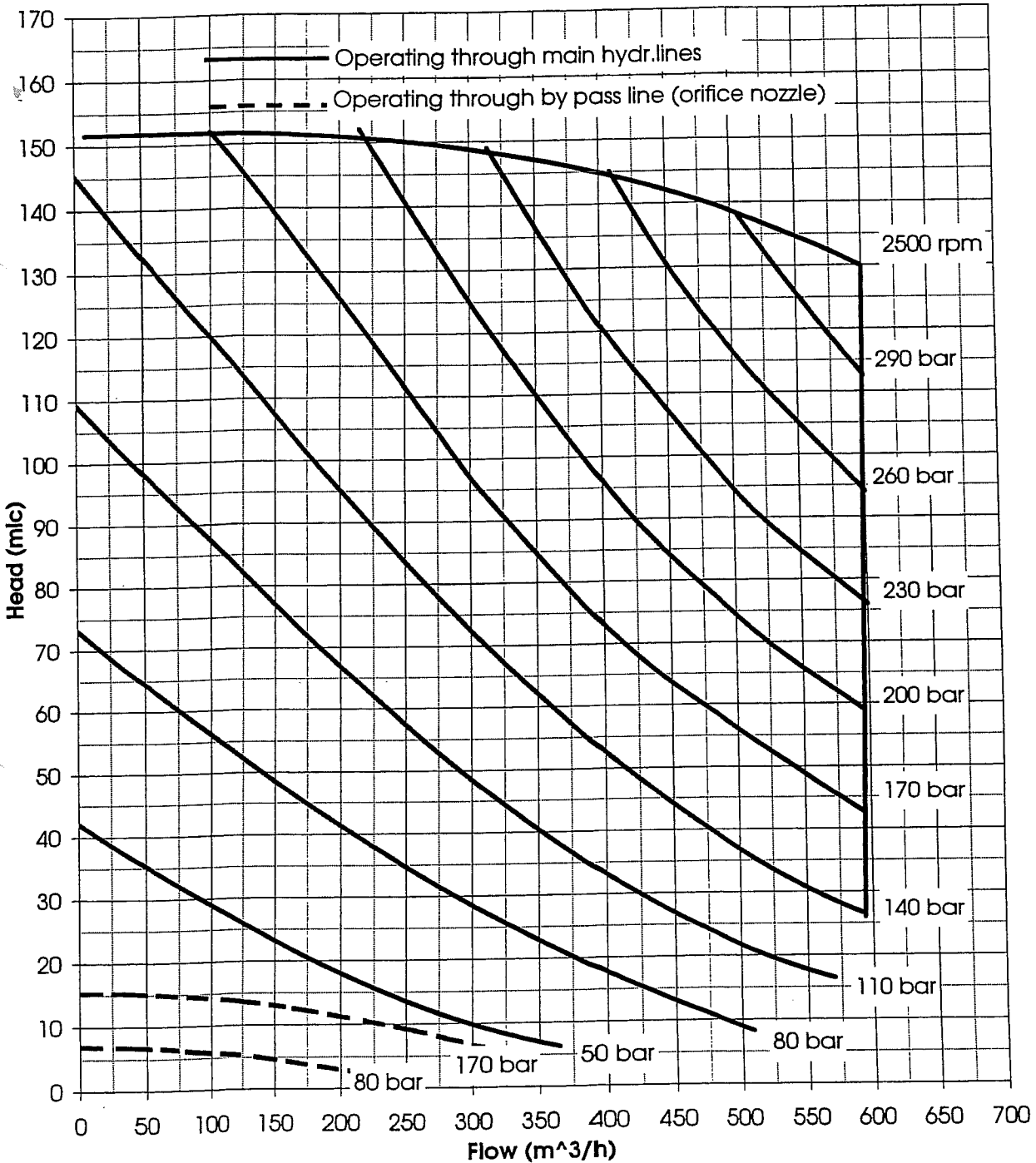
Phillips Maureen

Id.no

1562-164-4

# PERFORMANCE DIAGRAM FOR FRAMO PUMPS

Pump type: SD200	Medium: Sea water	Project no: 623414
Imp.drg.no: 0367-0372-1	Density: 1025 kg/m <sup>3</sup>	Remarks:
Imp.diam (mm): 390	Visc: 1,00 cSt	
Speed (rpm):	Temp: 20,0 deg	



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	Sign	Date		
Constr.	RB	07.03.00	Phillips Maureen	
Checked	THo	08.03.00		
			Id.no	1562-256-4