

INSPECTION CERTIFICATE

Pump		General		[463363]
Pumptype:	VENUS1-300.410	Serial n°:	57943	
Impeller n°:	836827	Date:	18-11-14	
Dir. of rotation:	C.W. facing shaft end	Customer:	Damen Dredging equipment	
Diameter [mm]:	397	Project:		
Width (d_max) [mm]:	69	Order n°:	4140961-20	
		Item / tagnr.:	-	

Test equipment

Pump is tested with water of [°C]: **15.9**

	Description	Serial n° / Id.n°	Make	Type	Remark
1.	Driver		NIJHUIS	DC & TORQUE METER	330 kW
2.	-				
3.	-				
4.	Discharge Valve				
5.	-				
6.	-				

Performance test

Performance test and acceptance criteria according: **ISO9906 gr.2B**

Test result see PUMP PERFORMANCE TEST SHEET of above mentioned pump serial n°.

	Required data:	Actual test data:
Pump speed [rpm]:	1490	1490
Capacity [m³/h]:	1150	1150
Differential head [mlc]:	40.0	40.1
Shaft power [kW]:	153	146
Pump efficiency [%]:	83.7	86.1
NPSHr [mlc]:		

Performance test witnessed by:

Remarks:

Materials of pump main parts

Pump casing / cover(s): **112 - Ductile Cast Iron - EN-JS1050 - A536-80-55-06 - EN-GJS-500-7**
 Impeller(s): **132 - Ni-Resist D-2B (Austenitic cast iron) - 0.7661 - A439 Type D-2B - GGG-NiCr 20 3**
 Pump shaft(s): **235 - Stainless steel 4122 - 1.4122 - - X39CrMo17-1**

Hydrostatic pressure test

Test pressure [bar]: **13**
 Test period [min]: **30**
 Test result: **No leakage**

Hydrostatic pressure test witnessed by:

Remarks:

Acceptance

Above mentioned data reviewed and accepted:

Date: **18-11-14**

Nijhuis

Nijhuis Pompen BV
 Quality Department
☒ Reviewed - Acc.
☒ Witnessed - Acc.

18-11-2014

Nijhuis Q-C:

M. Tolkamp



PERFORMANCE CURVE



Pumptype: **VENUS1-300.410**
 Serial n°:
 Impeller n°: **836827**
 Dir.of rotation: **C.W. facing shaft end**
 Diameter [mm]: **397 x 69**

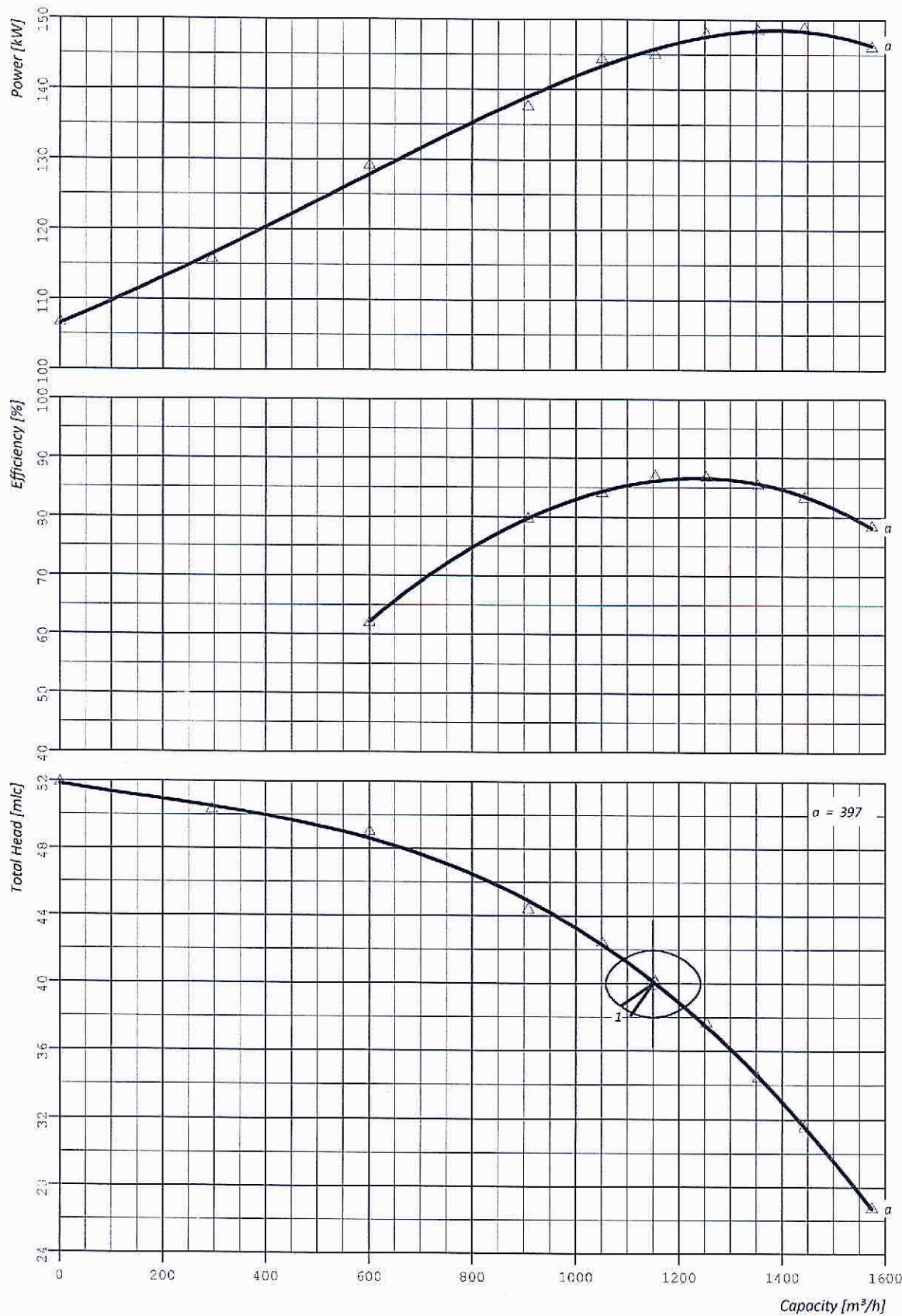
Operational:
 Test speed [1/min]: **1490**
 Test medium: **Water**
 Temp. [°C]: **15.9**
 Dens. [kg/m³]: **999**
 Visc. [mm²/s]: **1.115**

General:
 Serial n°: **57943** [463363]
 Date: **18-11-14**
 Customer: **Damen Dredging equipment**
 Project:
 Order n°: **4140961-20**
 Item / tagnr.: -

Remarks:

Proj. H. Damkot

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PERFORMANCE CURVE

Curves as per:
 ISO9906 gr.2B

Required point [1]:

[...]
 Q : **1150** [m³/h]
 H : **40.0** [mlc]

PUMP PERFORMANCE TEST SHEET

Pump

Pumptype: **VENUS1-300.410**
 Impeller n°: **836827**
 Dir. of rotation: **C.W. facing shaft end**
 Diameter [mm]: **397**
 Width (d_max) [mm]: **69**

General

Serial n°: **57943**
 Date: **18-11-14**
 Customer: **Damen Dredging equipment**
 Project:
 Order n°: **4140961-20**
 Item / tagnr.: **-**

[463363]

Test Data

The pump is tested with: **Water**
 Temperature [°C]: **15.90**
 Density [kg/m³]: **999**
 Bar. reading [mbar]: **1007**

Driver

Not applicable (torque meter)

Measured on:

Suction line [mm]: **350**
 Discharge line [mm]: **300**

Average test speed [1/min]: **1489**
 Correction factor for power calculation [-]: **1.000**

n°	Q [m³/h]	H suct. [mlc]	H disch. [mlc]	Hv diff [mlc]	H man. [mlc]	n [1/min]	P display [kW]	P shaft [kW]	Eff. p [%]
1	0.0	-1.27	50.60	0.00	51.9	1488	106.80	106.80	0.0
2	294.9	-1.39	48.89	0.03	50.3	1489	115.90	115.90	34.8
3	600.6	-1.73	47.15	0.13	49.0	1489	129.30	129.30	62.0
4	908.1	-2.29	41.80	0.30	44.4	1489	137.70	137.70	79.7
5	1050.8	-2.68	39.36	0.40	42.4	1488	144.50	144.50	84.0
6	1574.6	-4.40	21.44	0.90	26.7	1489	146.20	146.20	78.4
7	1443.4	-3.82	26.95	0.75	31.5	1489	148.90	148.90	83.2
8	1353.3	-3.53	30.23	0.66	34.4	1488	148.60	148.60	85.3
9	1253.2	-3.18	33.91	0.57	37.7	1488	148.10	148.10	86.7
10	1154.1	-2.89	36.74	0.48	40.1	1489	145.10	145.10	86.9

Remarks

Q-H curve drop at Q [m³/h]: **0**
 Q cavitation limit left [m³/h]: **0** right [m³/h]: **0**
 Proj. H. Damkot

PERFORMANCE CURVE



Pumptype: **VENUS1-300.410**
 Serial n°:
 Impeller n°: **836827**
 Dir.of rotation: *C.W. facing shaft end*
 Diameter [mm]: **397 x 69**

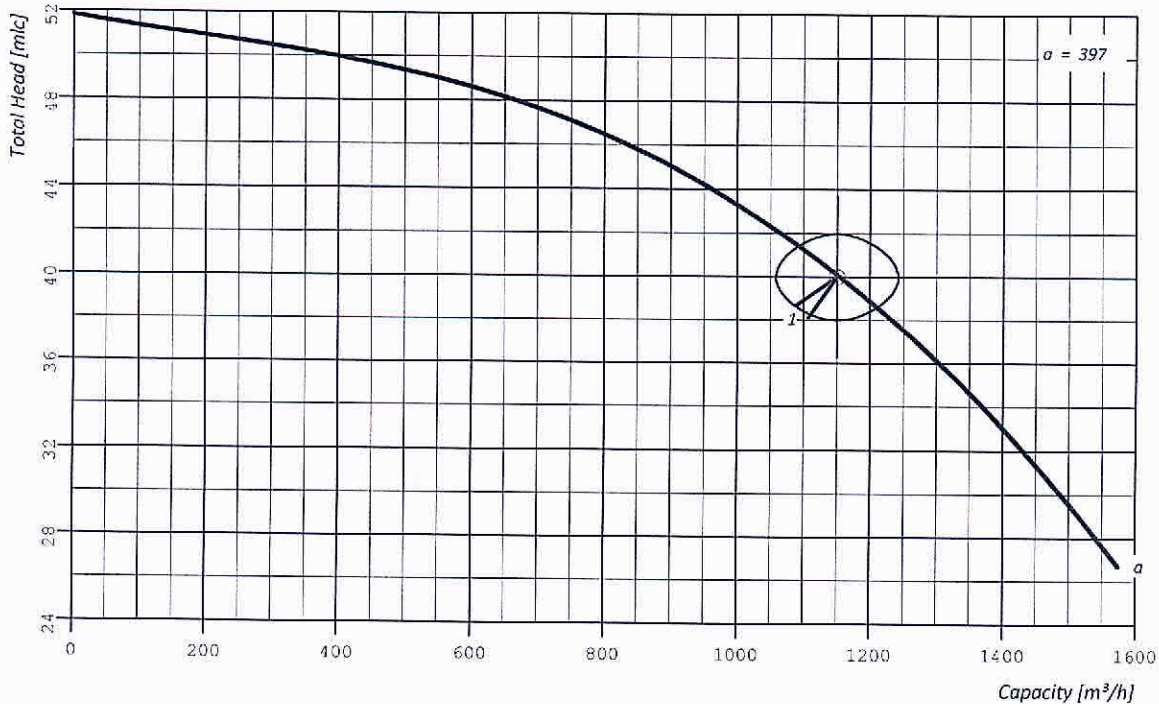
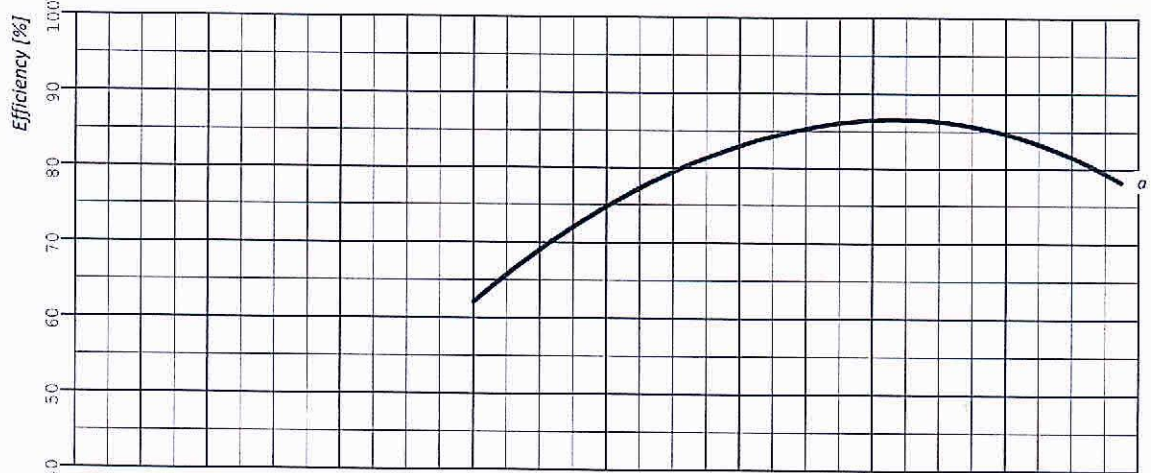
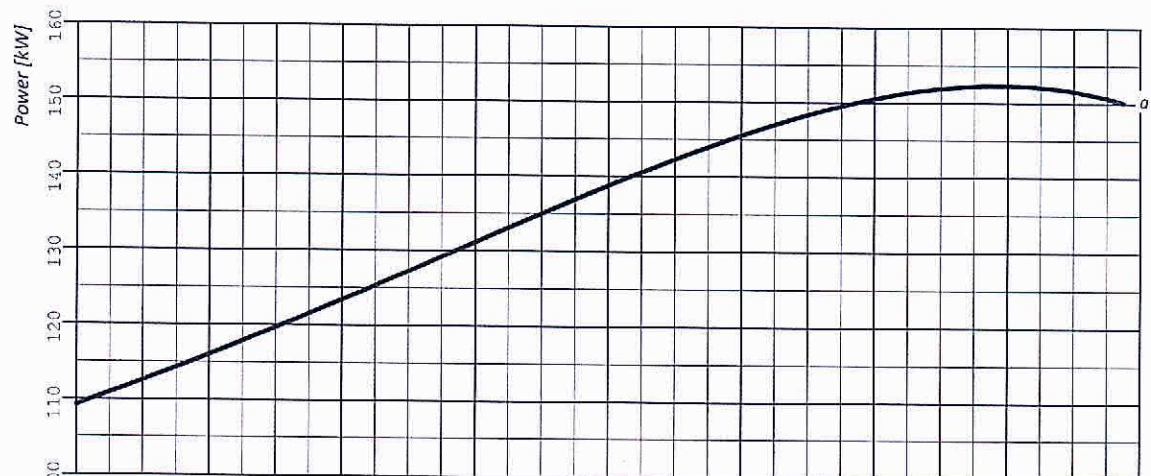
Operational:
 Test speed [1/min]: **1490**
 Test medium: *Seawater*
 Temp. [°C]: **10**
 Dens. [kg/m³]: **1025**
 Visc. [mm²/s]: **1.31**

General:
 Serial n°: **57943** [463363]
 Date: **18-11-14**
 Customer: *Damen Dredging equipment*
 Project:
 Order n°: **4140961-20**
 Item / tagnr.: -

Remarks:

Proj. H. Damkot - Curve converted to: 1025 kg/m³ (999)

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Curves as per:
 ISO9906 gr.2B

Required point [1]:
 [...]

Q : 1150 [m³/h]

H : 40.0 [mlc]

PERFORMANCE CURVE

INSPECTION CERTIFICATE

Pump		General		[463362]
Pumptype:	VENUS1-300.410	Serial n°:	57942	
Impeller n°:	836827	Date:	18-11-14	
Dir.of rotation:	C.W. facing shaft end	Customer:	Damen Dredging equipment	
Diameter [mm]:	397	Project:		
Width (d_max) [mm]:	69	Order n°:	4140961-10	
		Item / tagnr.:	-	

Test equipment

Pump is tested with water of [°C]: **15.9**

	Description	Serial n° / Id.n°	Make	Type	Remark
1.	Driver		NIJHUIS	DC & TORQUEMETER	330 kW
2.	-				
3.	-				
4.	Discharge Valve				
5.	-				
6.	-				

Performance test

Performance test and acceptance criteria according: **ISO9906 gr.2B**

Test result see PUMP PERFORMANCE TEST SHEET of above mentioned pump serial n°.

	Required data:	Actual test data:
Pump speed [rpm]:	1490	1490
Capacity [m³/h]:	1150	1150
Differential head [mlc]:	40.0	40.1
Shaft power [kW]:	153	148
Pump efficiency [%]:		
NPSHr [mlc]:		

Performance test witnessed by:

Remarks:

Materials of pump main parts

Pump casing / cover(s): **112 - Ductile Cast Iron - EN-JS1050 - A536-80-55-06 - EN-GJS-500-7**
 Impeller(s): **132 - Ni-Resist D-2B (Austenitic cast iron) - 0.7661 - A439 Type D-2B - GGG-NiCr 20 3**
 Pump shaft(s): **235 - Stainless steel 4122 - 1.4122 - - X39CrMo17-1**
 -
 -

Hydrostatic pressure test

Test pressure [bar]: **13**
 Test period [min]: **30**
 Test result: **No leakage**

Hydrostatic pressure test witnessed by:

Remarks:

Acceptance

Above mentioned data reviewed and accepted:

Date: **18-11-14**

Nijhuis

Nijhuis Pompen BV
 Quality Department

☒ Reviewed - Acc.
☒ Witnessed - Acc.

18-11-2014

Nijhuis Q-C:
 M. Tolcamp



PUMP PERFORMANCE TEST SHEET

Pump

Pumptype: **VENUS1-300.410**
 Impeller n°: **836827**
 Dir. of rotation: **C.W. facing shaft end**
 Diameter [mm]: **397**
 Width (d_max) [mm]: **69**

General

Serial n°: **57942**
 Date: **18-11-14**
 Customer: **Damen Dredging equipment**
 Project:
 Order n°: **4140961-10**
 Item / tagnr.: **-**

[463362]

Test Data

The pump is tested with: **Water**
 Temperature [°C]: **15.90**
 Density [kg/m³]: **999**
 Bar. reading [mbar]: **1007**

Driver

Not applicable (torque meter)

Measured on:

Suction line [mm]: **350**
 Discharge line [mm]: **300**

Average test speed [1/min]: **1488**
 Correction factor for power calculation [-]: **1.000**

n°	Q [m³/h]	H suct. [mlc]	H disch. [mlc]	Hv diff [mlc]	H man. [mlc]	n [1/min]	P display [kW]	P shaft [kW]	Eff. p [%]
1	0.0	-1.29	50.72	0.00	52.0	1488	105.90	105.90	0.0
2	190.4	-1.34	49.72	0.01	51.1	1488	112.60	112.60	23.5
3	333.4	-1.44	49.15	0.04	50.6	1487	117.30	117.30	39.2
4	489.1	-1.60	48.42	0.09	50.1	1487	124.80	124.80	53.5
5	649.8	-1.82	47.07	0.15	49.0	1488	131.30	131.30	66.1
6	827.7	-2.13	44.04	0.25	46.4	1488	137.40	137.40	76.1
7	983.8	-2.50	40.95	0.35	43.8	1488	142.00	142.00	82.6
8	1586.5	-4.35	20.87	0.91	26.1	1488	146.50	146.50	77.0
9	1363.7	-3.55	29.69	0.67	33.9	1488	150.60	150.60	83.6
10	1153.7	-2.94	36.64	0.48	40.1	1488	148.00	148.00	85.0

Remarks

Q-H curve drop at Q [m³/h]: **0**
 Q cavitation limit left [m³/h]: **0** right [m³/h]: **0**
 Proj. H.Da

PERFORMANCE CURVE



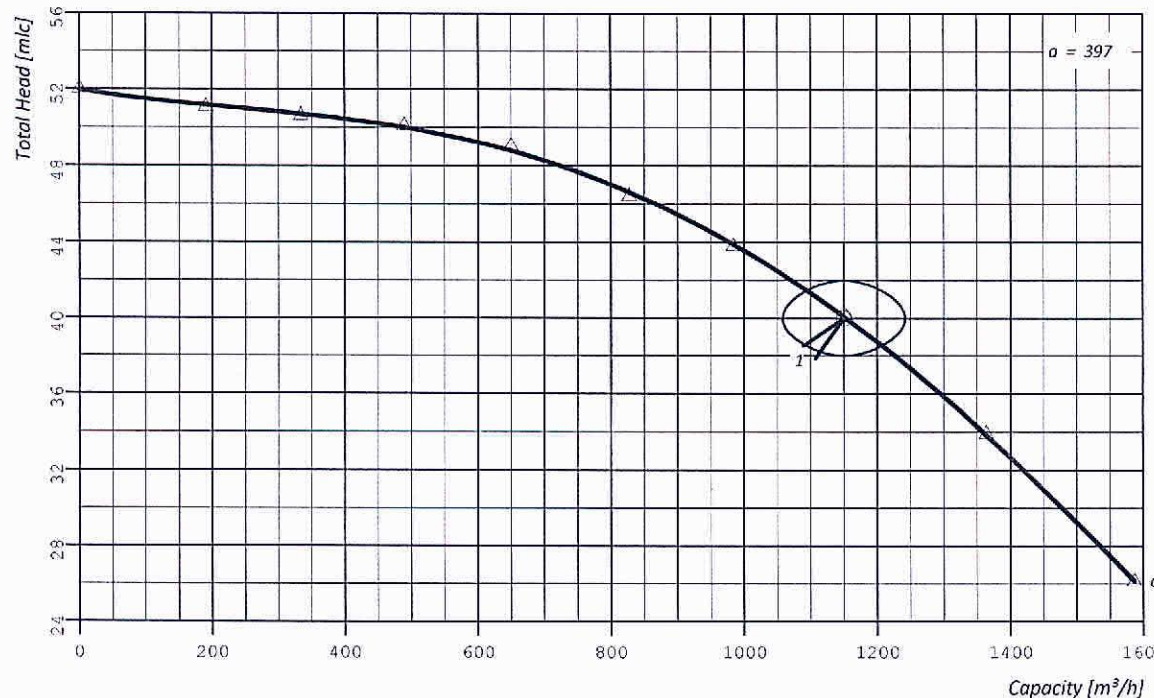
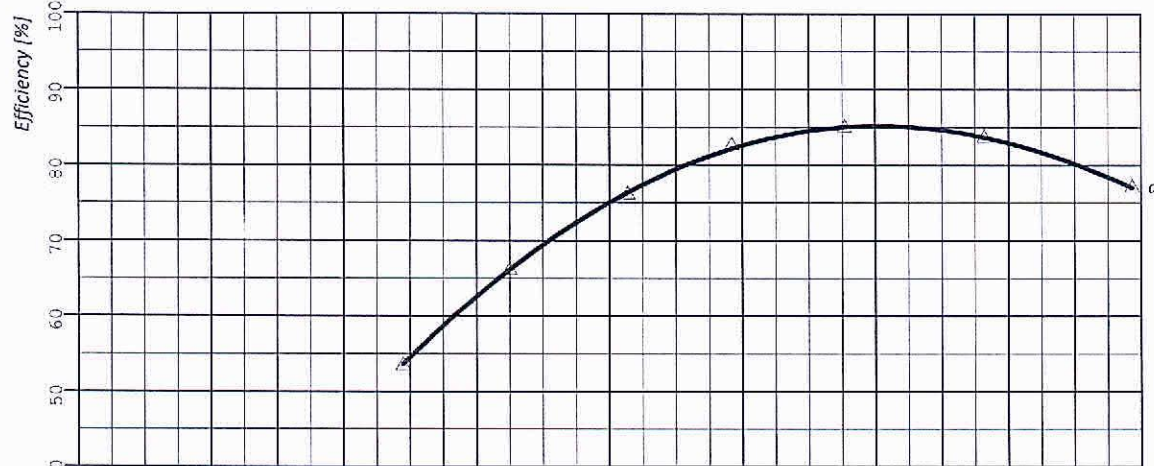
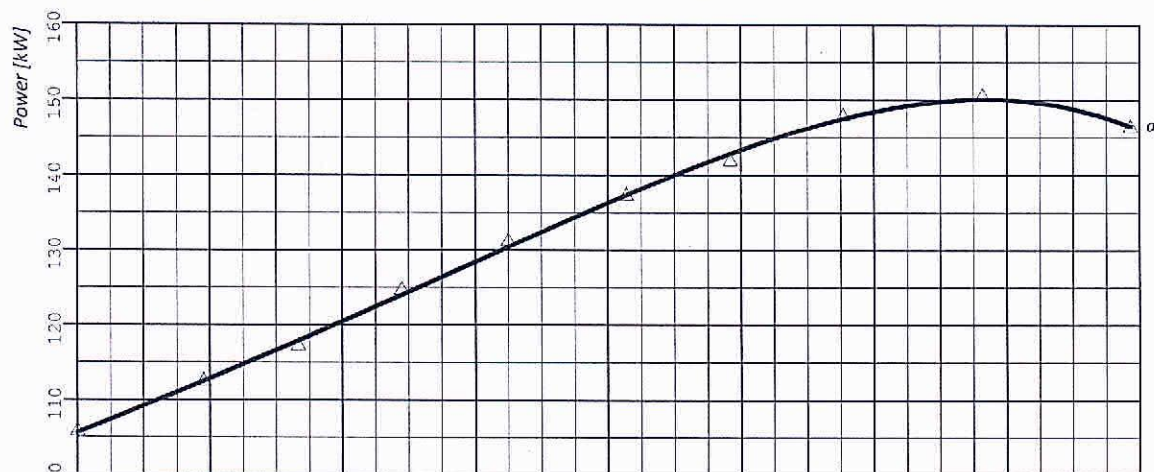
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 Test medium: **Water**
 Temp. [°C]: **15.9**
 Dens. [kg/m³]: **999**
 Visc. [mm²/s]: **1.115**

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 Project:
 Order n°: **4140961-10**
 Item / tagnr.: -

Remarks:
 Proj. H.Da

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PERFORMANCE CURVE

Curves as per:
 ISO9906 gr.2B

Required point [1]:
 [...]

Q : 1150 [m³/h]
 H : 40.0 [mlc]

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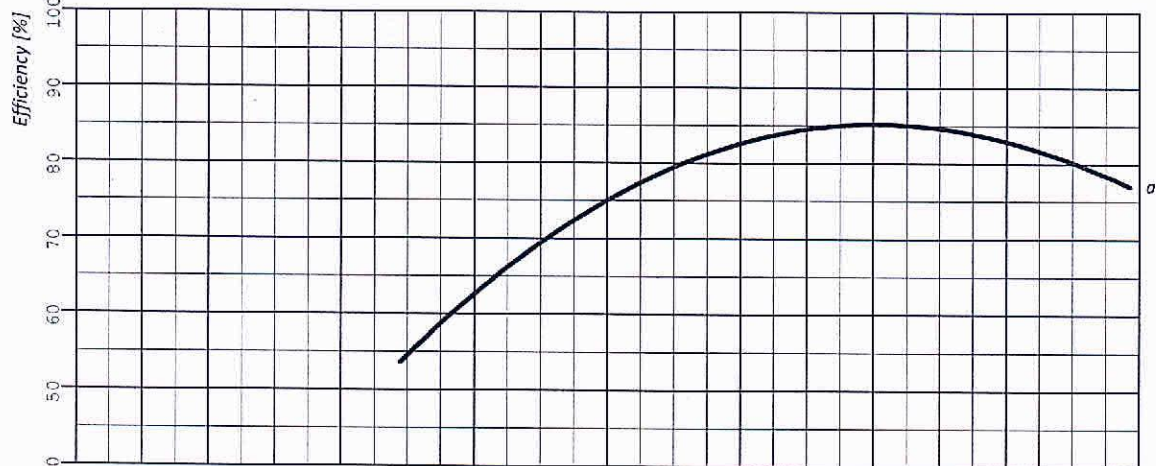
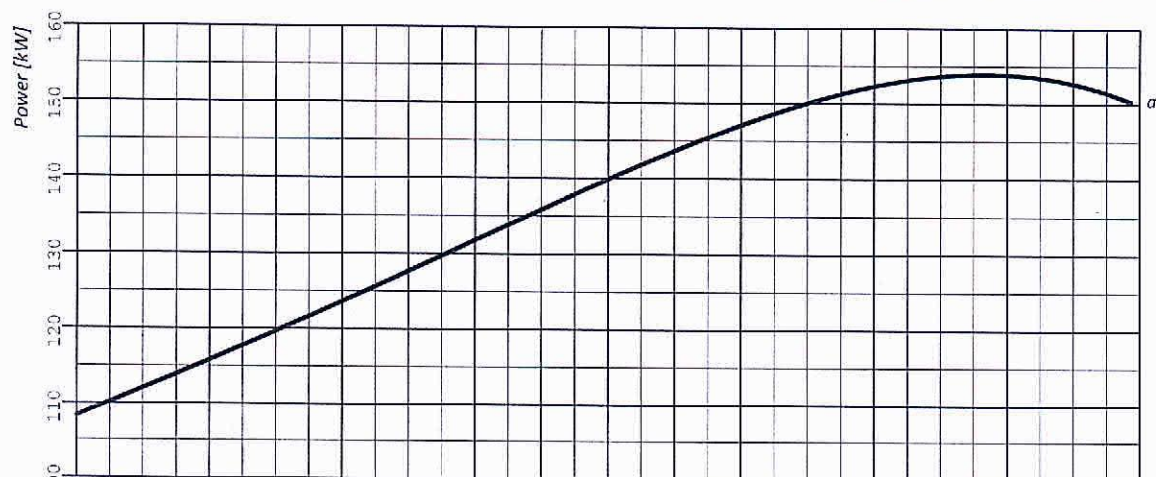
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General:
 Serial n°: 57942 [463362]
 Date: 18-11-14
 Customer: Damen Dredging equipment
 Project:
 Order n°: 4140961-10
 Item / tagnr.: -

Remarks:

Proj. H.Da - Curve converted to: 1025 kg/m³ (999)

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Curves as per:
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Required point [1]:
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