

TRANSMED system installation on the “Niolon”

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Version 0.1

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27/06/2011



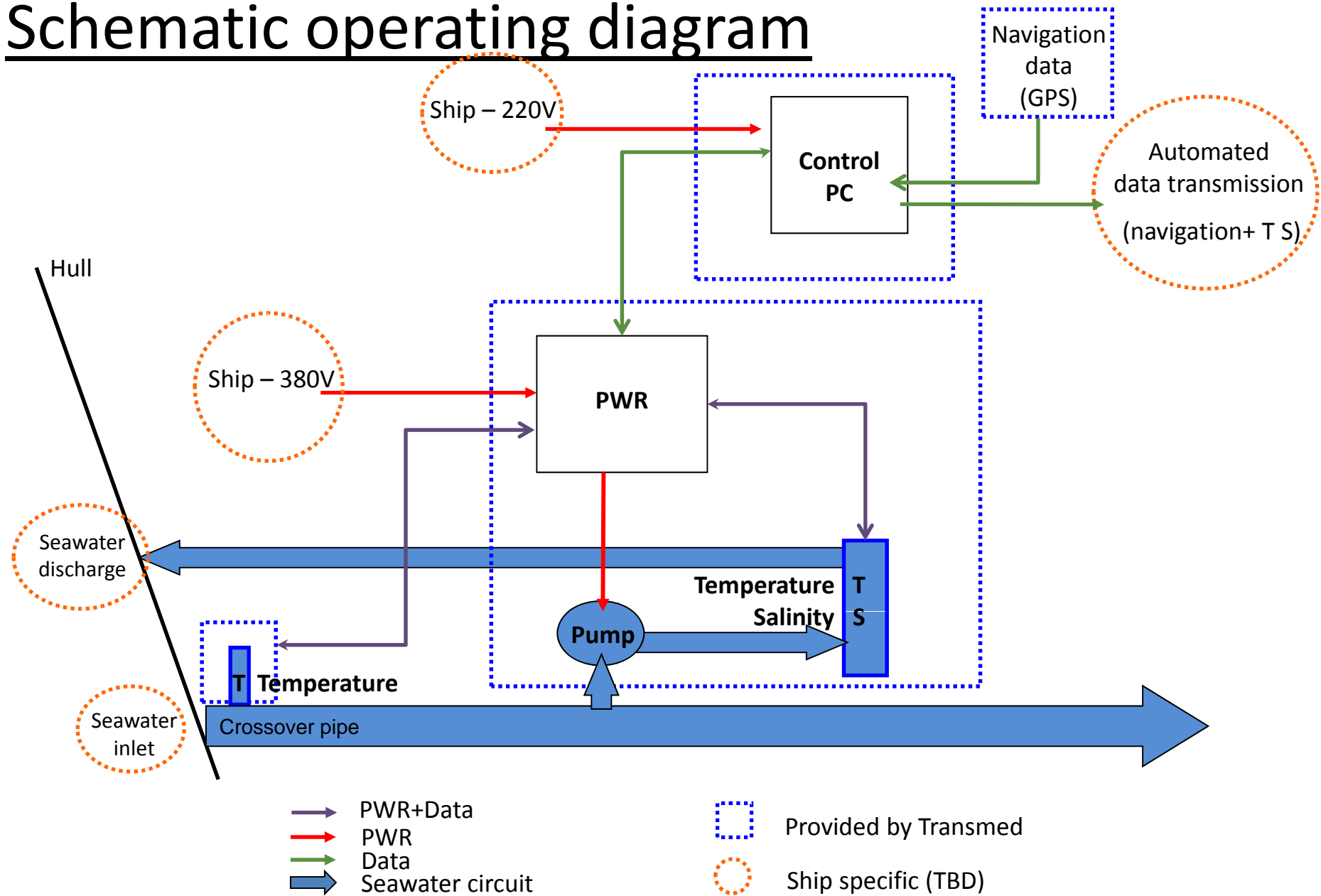
Division Technique UPS 855
Institut National des Sciences de l'Univers Transmed



TRANSMED system installation on the “Niolon”

- The TRANSMED system aims at measuring the surface (few meters below) **seawater temperature and salinity** autonomously and continuously while the ship is underway. Data are acquired ~every 15 seconds and averaged over ~1 minute. The 1-minute data are stored with the corresponding **latitude and longitude** information. **Data are transmitted** to data centers ashore within a few days (optimally in near-real time).
- A first temperature probe (**T**) is located as close to the water intake as possible to avoid modifying the seawater temperature. The seawater is pumped (**P**) from a crossover pipe and feeds the thermosalinograph (**TS**). The water is then discharged. A power supply chest (**PWR**) and a **PC** make the system run autonomously. T and TS data transmitted to the PC using the **ship’s Ethernet network**.
- Navigation data originate from our **GPS**, and are sent to **PC** via a RJ45 category 5 cable. TS data are transmitted ashore using the **ship’s Ethernet network** and **mailing facility** (TBD)

Schematic operating diagram



Plumbing

In red: elements provided by TRANSMED

- W12 - Input to valve V3
- V3 - Gate valve (to prevent return flow to TS and allow isolating TRANSMED circuit)
- W13 - Output from valve V3
- W14 - To discharge. Must be as close to the main discharge as possible (~0 pressure)

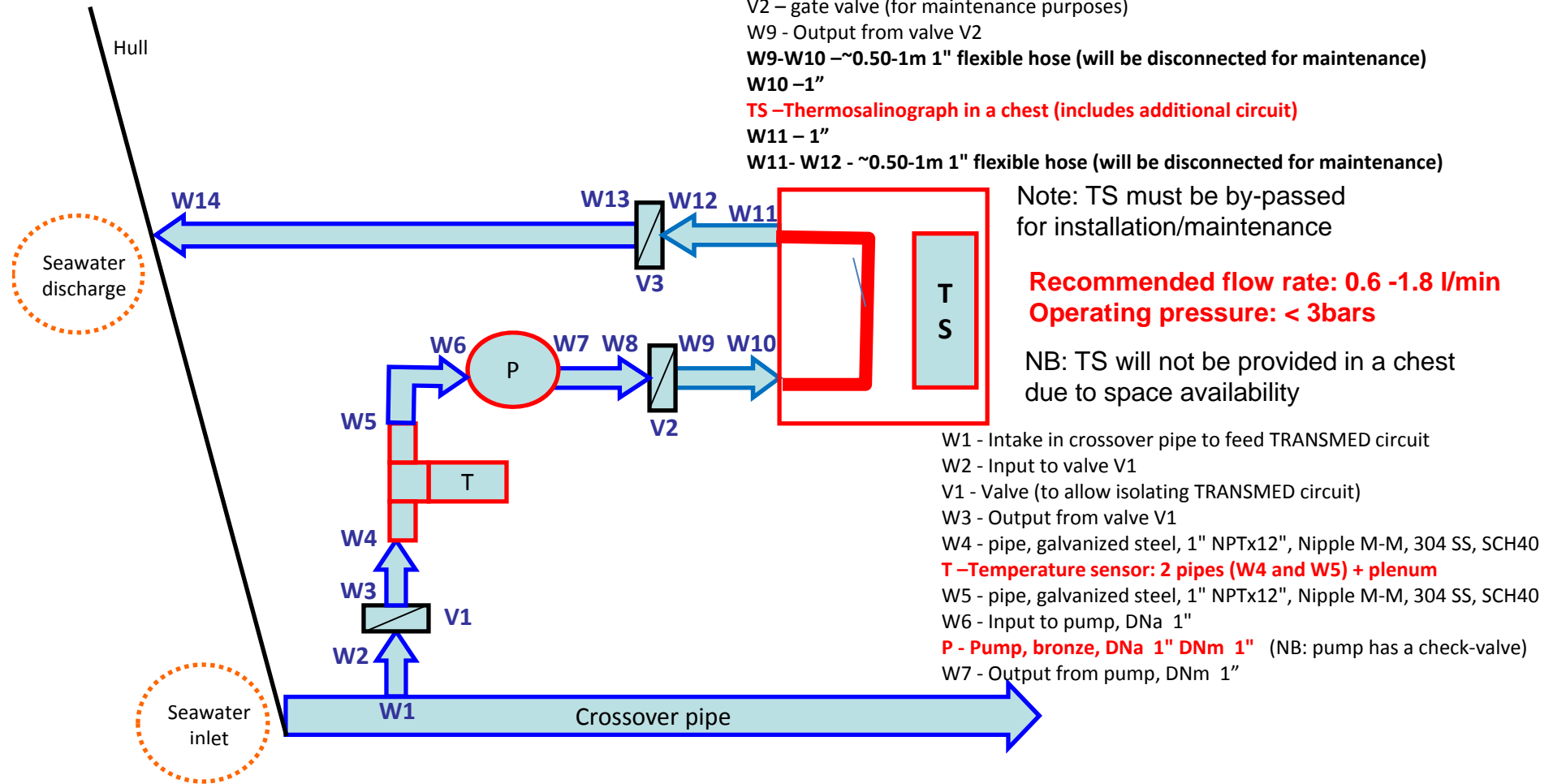
TS works continuously while underway

- W8 - Input to valve V2
- V2 - gate valve (for maintenance purposes)
- W9 - Output from valve V2
- W9-W10 - ~0.50-1m 1" flexible hose (will be disconnected for maintenance)
- W10 - 1"
- TS - Thermosalinograph in a chest (includes additional circuit)
- W11 - 1"
- W11- W12 - ~0.50-1m 1" flexible hose (will be disconnected for maintenance)

Note: TS must be by-passed for installation/maintenance

Recommended flow rate: 0.6 -1.8 l/min
Operating pressure: < 3bars

NB: TS will not be provided in a chest due to space availability



- W1 - Intake in crossover pipe to feed TRANSMED circuit
- W2 - Input to valve V1
- V1 - Valve (to allow isolating TRANSMED circuit)
- W3 - Output from valve V1
- W4 - pipe, galvanized steel, 1" NPTx12", Nipple M-M, 304 SS, SCH40
- T - Temperature sensor: 2 pipes (W4 and W5) + plenum
- W5 - pipe, galvanized steel, 1" NPTx12", Nipple M-M, 304 SS, SCH40
- W6 - Input to pump, DNa 1"
- P - Pump, bronze, DNa 1" DNm 1" (NB: pump has a check-valve)
- W7 - Output from pump, DNm 1"

TS Thermosalinograph
 T Temperature
 P Pump

V1-V3 gate Valves
 SeaWater circuit W1-W14

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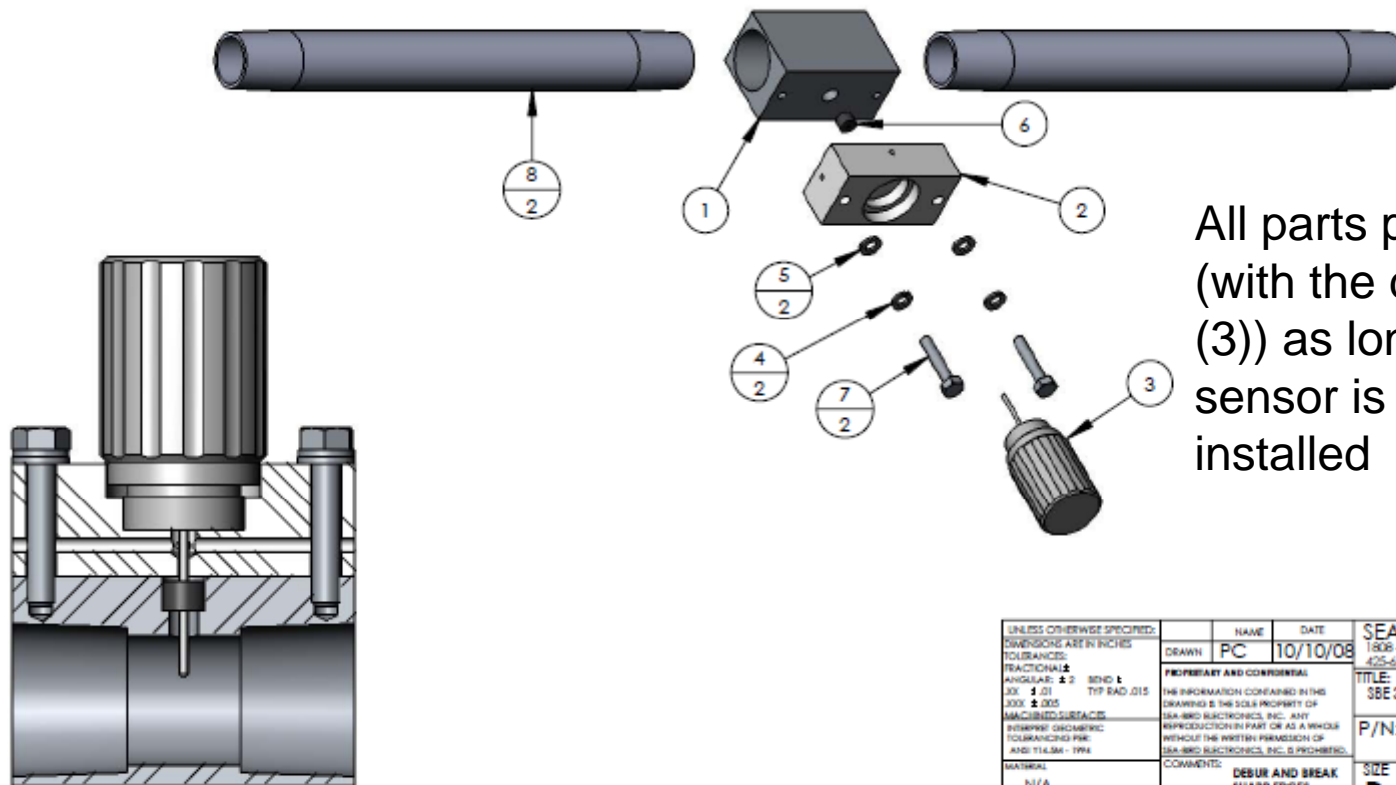
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ITEM NO.	PART NO.	DRAWING NO.	DESCRIPTION	QTY.
1	231580	21641	SBE38 Temperature Plenum	1
2	231581	21642	SBE38 Temperature Plenum Retainer	1
3	231582	21643	SBE38 Remote Temperature Plug	1
4	30254	N/A	Washer, 1/4 Split Ring Lock, SS	2
5	30570	N/A	Washer, 1/4" Flat, 960C416, SS	2
6	30809	21018D	Morrison Seal .047 ID x .41 OD Nitrile	1
7	31001	N/A	Bolt, 1/4-20 x 1 3/8 Hex Hd, SS	2
8	31263	N/A	Pipe, 1" NPT x 12", Nipple M-M, 304 SS, SCH40	2

DATE	REVISION	DESCRIPTION	AUTH	DR	CHK
10/10/08	.01	Converted to Solidworks	CB	PC	CB

Mounting kit for T sensor



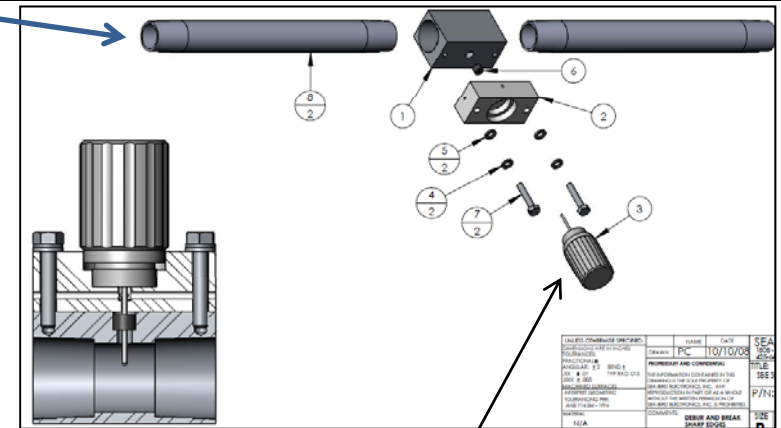
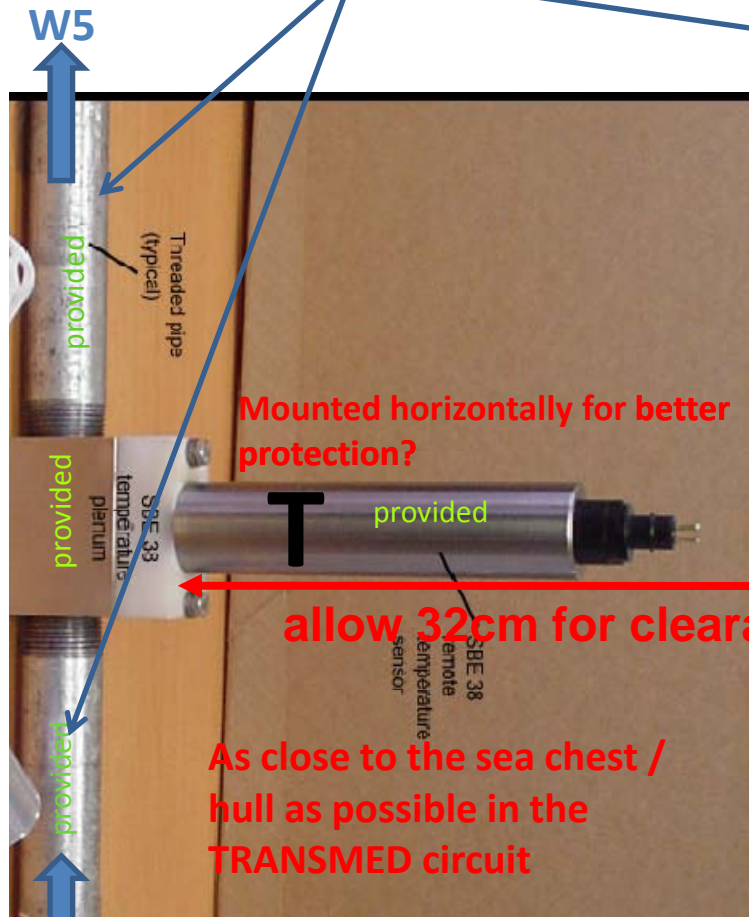
All parts provided (with the dummy plug (3)) as long as the T sensor is not installed

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± ANGULAR: ±2 BEND ± DIA: ±.01 TYP RAD .015 HOLE: ±.005 MACHINED SURFACES: SURFACE: GRINDING TOLERANCING PER: ANSI Y14.3M - 1994	DRAWN: PC DATE: 10/10/08	SEA-BIRD ELECTRONICS, INC. 1808 - 136TH PLACE NE, BELLEVUE, WA 98005 425-643-8866
PROPERTY AND CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SEA-BIRD ELECTRONICS, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SEA-BIRD ELECTRONICS, INC. IS PROHIBITED.	REV: .01	TITLE: SBE 38 External Temp Plenum Mount Assembly
MATERIAL: N/A	COMMENTS: DEBUR AND BREAK SHARP EDGES	P/N: 50244
FINISH: N/A	Old Part/Draw Info: N/A / N/A	SIZE: B DWG. NO.: 67071 REV: .01
DO NOT SCALE DRAWING		SCALE: 2:5 SHEET 1 OF 1

T

W4 W5: pipe, galvanized steel, 1" NPTx12",
Nipple M-M, 304 SS, SCH40

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Since T is removed a plug is provided



MicroTSG (Thermosalinograph)

TS

SBE 45

SPECIFICATIONS

Measurement Range

Conductivity: 0-7 S/m (0-70 mS/cm)
 Temperature *: -5 to 35 °C

Initial Accuracy

Conductivity: 0.0003 S/m (0.003 mS/cm)
 Temperature *: 0.002 °C
 Salinity: 0.005 PSU, typical

Typical Stability (per month)

Conductivity: 0.0003 S/m (0.003 mS/cm)
 Temperature *: 0.0002 °C
 Salinity: 0.003 PSU, typical

Resolution

Conductivity: 0.00001 S/m (0.0001 mS/cm)
 Temperature *: 0.0001 °C
 Salinity: 0.0002 PSU, typical

Calibration Range

Conductivity: 0-6 S/m (60 mS/cm); physical calibration 2.6-6 S/m (26-60 mS/cm), plus zero conductivity (air)
 Temperature *: +1 to +32 °C

Time Resolution

1 second

Clock Stability

13 seconds/month

Input Power

8-30 VDC

Acquisition Current

34 mA at 8 VDC; 30 mA at 12-30 VDC

Quiescent Current

10 microamps

Acquisition Rate

1 Hz maximum

Operating Pressure

34.5 decibars (50 psi) maximum

Flow Rate

10 to 30 ml/sec (0.16 to 0.48 gal/min)

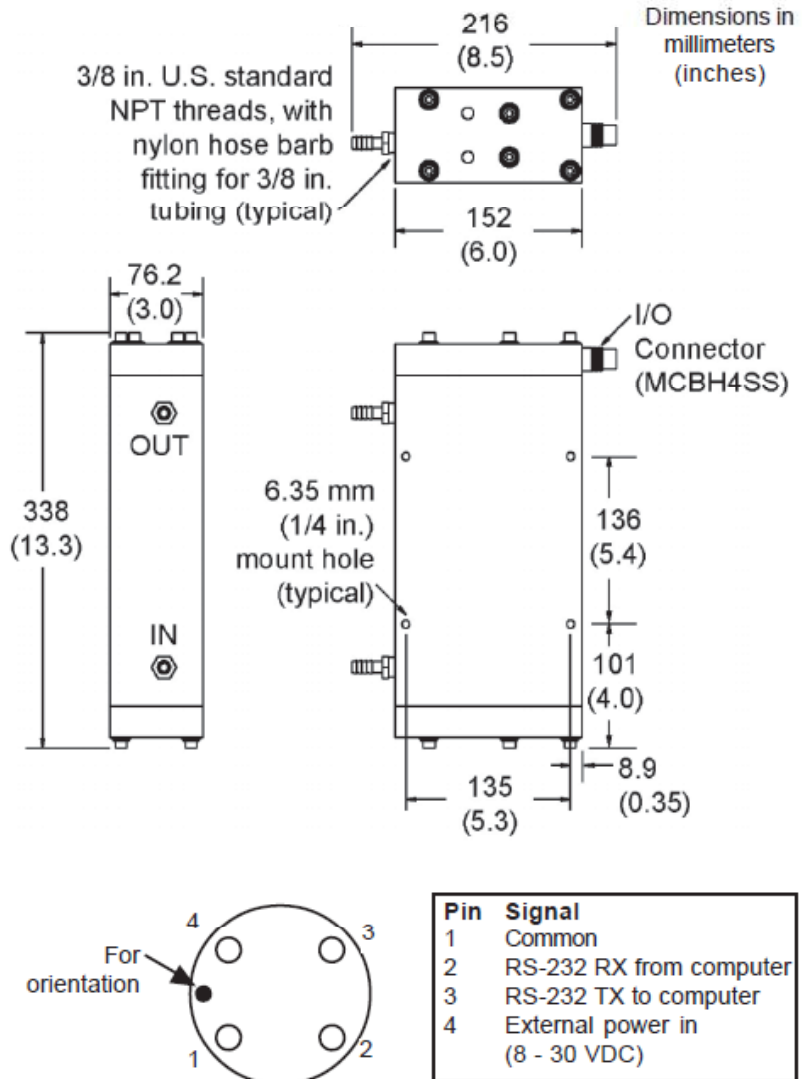
Materials

PVC housing

Weight

4.6 kg (10.2 lbs)

* For specifications for optional SBE 38 remote temperature sensor, see SBE 38 datasheet.



The water supply to TS must not have bubbles
 TS must not empty (even when stopped during calls)



Pump (1/2):

"ACB"

SELF-PRIMING MOTOR PUMPS
"ACB" SERIES
With liquid ring



Gianneschi (<http://www.gianneschi.net>)

Model: ACB90E

APPLICAZIONI:

Esaurimento sentina, lavaggio catene, antincendio, travaso gasolio, alimentazione impianti, ecc

COSTRUZIONE:

Corpo pompa:BRONZO
Girante:LEGA SPECIALE DI OTTONE
Albero:ACCIAIO INOX AISI 316
Tenuta meccanica: DI ALTA QUALITÀ IN CERAMICA, GRAFITE INOX

MOTORI:

Isolamento:Classe "F"
Protezioni: "IP 22" per C.C. ; "IP 44/55" per C.A.
Voltaggi: ... V.12 ; 24 C.C. ; V.230M ; 230/400T C.A. 50 Hz

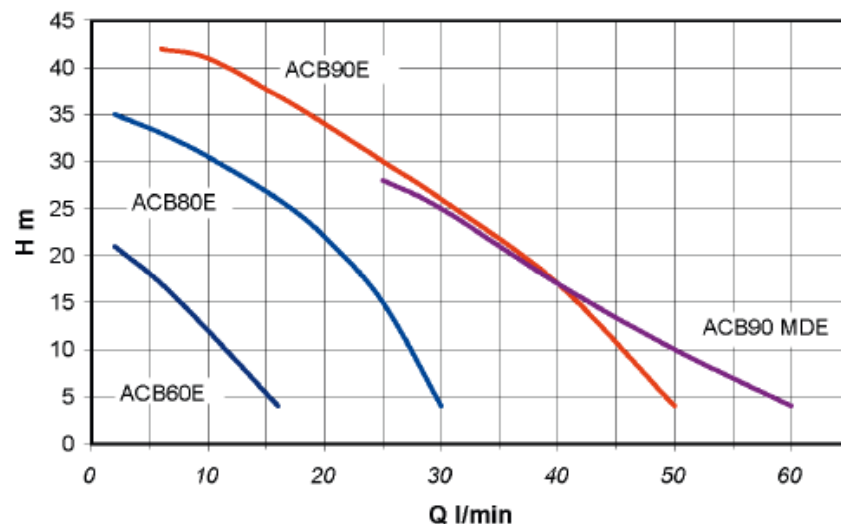
GARANZIA:

Un anno (vedi condizioni generali di vendita)

GENERALITÀ:

Le el/pompe autoadescanti serie "ACB", ad anello liquido con girante stellare, hanno una eccezionale capacità di autoaspirazione (fino a 9 m). Solo al primo avviamento, o dopo un lungo periodo di inutilizzo, si rende necessario il riempimento del corpo pompa, poi, si adescano automaticamente anche con il tubo di aspirazione vuoto. Si consiglia di installare sulla bocca di aspirazione un filtro ed una valvola a clapet.

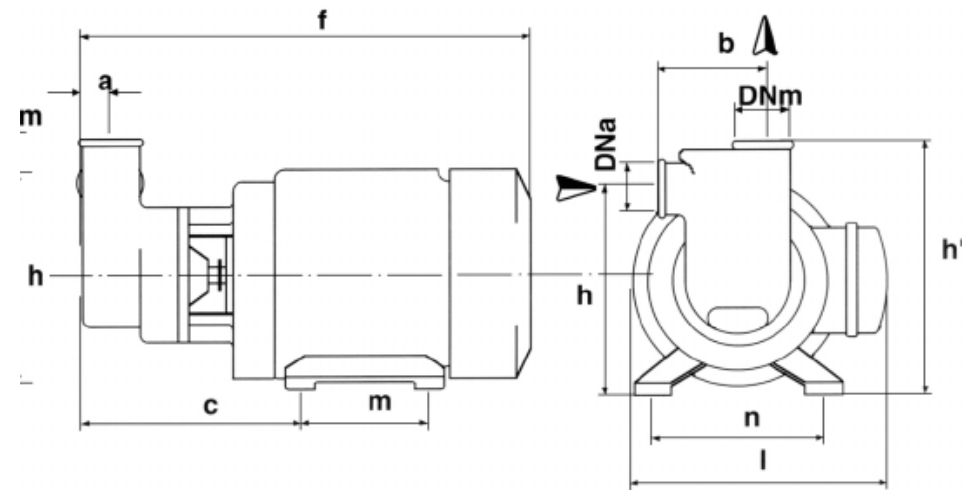
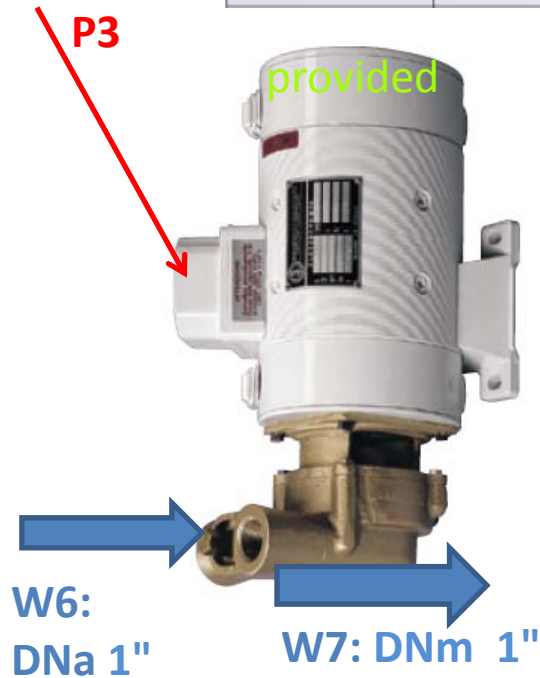
CORRENTE ALTERNATA - ALTERNATING CURRENT



Pump 2/2:

W6 - W7: bronze, 1"

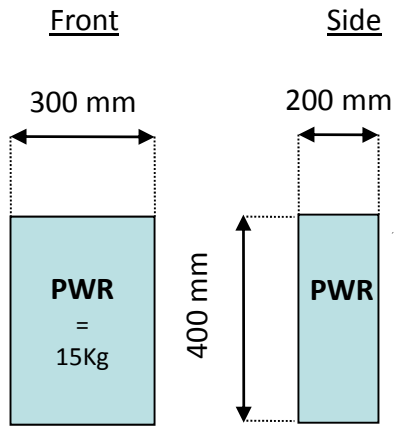
EL/POMPA EL/PUMP	POTENZA POWER kW	ASS. ABS. A	VOLTAGGIO VOLTAGE V	GIRI/1' RPM 2900	PORTATA l/min					DELIVERY l/min				
					2	6	10	16	20	25	30	40	50	60
					PORTATA m ³ /h					DELIVERY m ³ /h				
					0.12	0.36	0.6	0.96	1.2	1.5	1.8	2.4	3	3.6
					PREVALENZA TOTALE mH ₂ O					TOTAL MANOMETRIC HEAD mH ₂ O				
ACB 90 E	0.45	-	230M+230/400T	2900		42	41	37	34	30	25	17	4	



ELETTROPOMPA EL/PUMP	f	h	h'	l	a	b	m	n	c	DNa	DNm	Kg	
ACB 90 E	c.a.-a.c.	312	142	183	175	26	85	90	112	154	1"	1"	14

Dimensions

Engine room / PWR chest



PWR: ~15kg

Pump : 12kg (see slide 9)

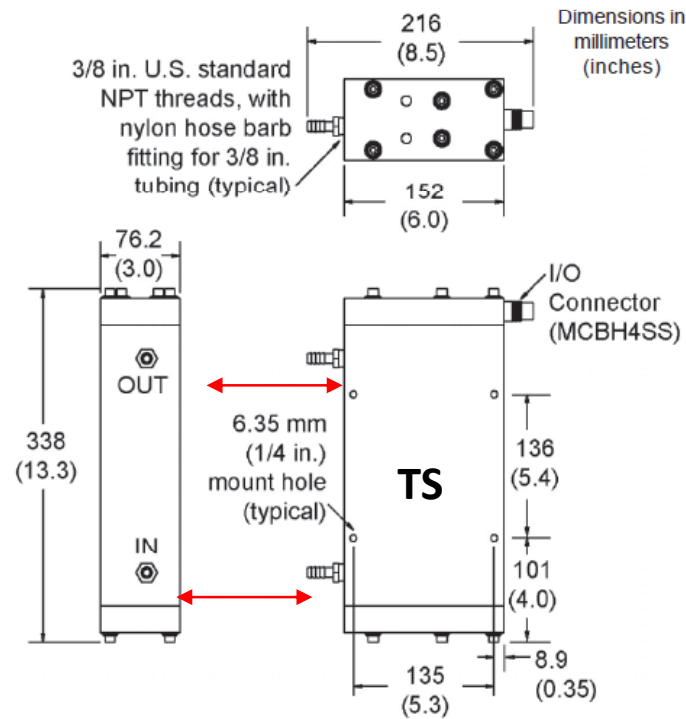
T: ~2kg

TS: ~5kg



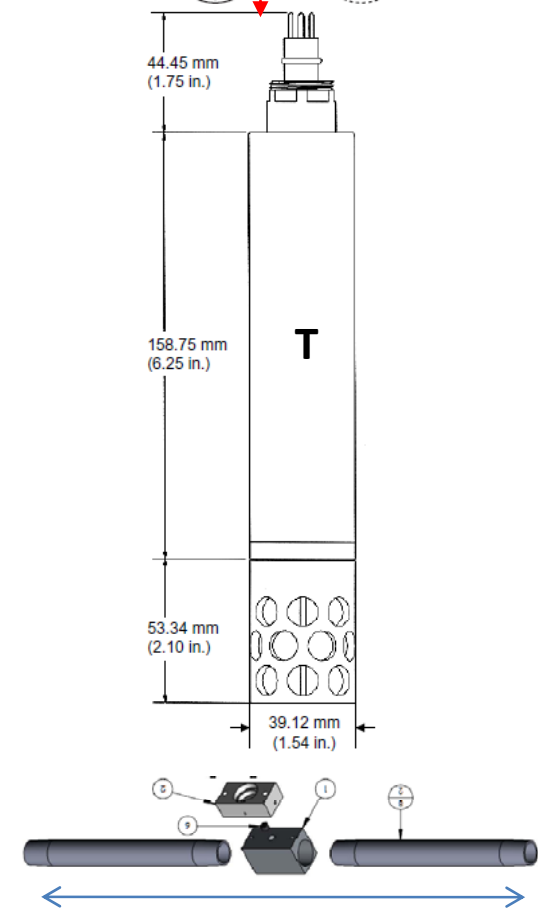
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Engine room / TS



Engine room / T

Allow clearance
(at least 10cm)



Length after assembly: ~ 62 cm

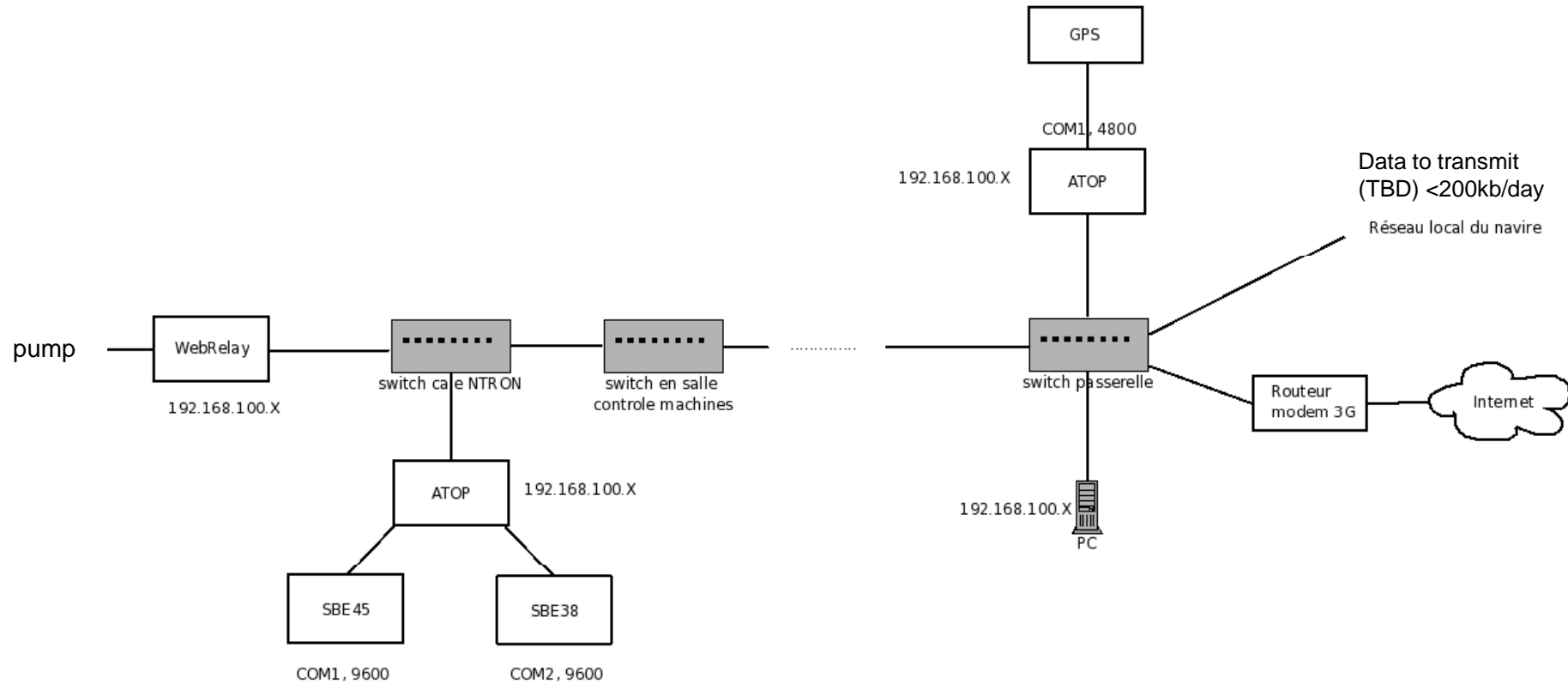
←→ Clearance !! (TBD)

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Network (To be updated!)

ATOP = convertisseur série / IP



MISE A JOUR 27/06/2011