Net Weight
0,001

Quantity PER ENGINE	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	002	107.429.532.500	CONCEPT GUIDANCE Freshwater generation	107.429.532		0,001
1	001	PAAD327248	CENTRAL COOLING WATER SYSTEM	DAAD116102		0,001

Approved

MaterialID	Free space for lic.	Q-Code	Main Drw.
PAAD328187		XXXXX Standard: ISO; JIS	H

Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
A	EAAD095237	05.02.2021						

WIN GD
Winterthur Gas & Diesel

Product: W6-9X82DF-1.0

COOLING WATER SYSTEM

Zentralkuehlwassersystem

Units	mm kg	NX	Basic Material	Net Weight

SURFACE PROTECTION SEE GROUP 0344	Made	24.06.2019 dki021 DH.Kim	Scale –	Size A3	Page 1/1	Material ID
TOLERANCING PRINCIPLE ISO8015	Chkd	12.07.2019 wwa008 Wang	Design Group 9721	Drawing ID DAAD116596		Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	12.07.2019 mhu019 Hug				

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SPECIFICATION which must be met:

8 OUTLET - Scavenge air cooler (SAC) cooling water (LT water)

- Cooling water volume flow: according to GTD specification, adjusted by an orifice in the outlet pipe on shipside.

44 OUTLET - Cylinder cooling water air venting

- To be vented to a safe area outside of engine room.

2 INLET - Cylinder cooling water (HT water)

- Cooling water pressure: 4.0 - 5.0 bar
- Cooling water volume flow: according to GTD specification
- Cooling water (freshwater) has to be treated according to WinGD specification.
- A buffer unit must be installed.
- The static pressure at engine inlet must be adjusted by buffer unit pressure setting.
- Pre-heating: The engine must be warmed-up by means of heated HT water to min. 60 °C before engine start.
- HT cooling water amount on engine side: Given in table 1 on page 2

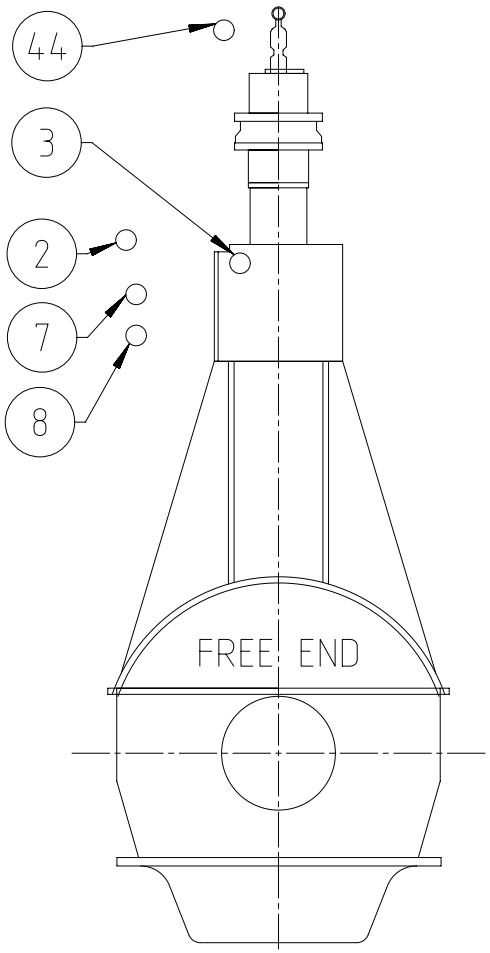
3 OUTLET - Cylinder cooling water (HT water)

Cooling water temperature
- Controller set-point: 90 °C
- Steady state condition: 90 ± 2 °C
- Transient condition: 90 ± 4 °C

7 INLET - Scavenge air cooler (SAC) cooling water (LT water)

- Cooling water pressure: 2.0 - 4.0 bar
- Cooling water temperature: controller set point: 25 °C, max. 36 °C when seawater temperature at 32 °C.
- Cooling water volume flow: according to GTD specification
- Cooling water (freshwater) has to be treated according to WinGD specification.
- LT cooling water amount on engine side: Given in table 1 on page 2.

X82DF-1.0



QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	021	107.245.419.500	EXPANSION TANK	107.245.419		0,001
1	020	107.245.626.500	BUFFER	107.245.626		0,001

Free space for lic.

Q-Code: XXXXX

Standard: ISO; JIS

Main Drw.

Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
A	EAAD091029	19.06.2020						
B	EAAD092431	05.10.2020						
C	EAAD095731	11.12.2020						

WIN GD Winterthur Gas & Diesel

Product: 6-9X82DF-1.0

CENTRAL COOLING WATER SYSTEM
HT_static-pressure: Buffer-unit
Zentralkuehlwassersystem

Units: mm kg | NX | Basic Material | Net Weight 0,001

SURFACE PROTECTION SEE GROUP 0344	Made	13.05.2019	dki021	DH.Kim	Scale -	Size A3 / Page 1/2 / Material ID PAAD327248
TOLERANCING PRINCIPLE ISO8015	Chkd	12.07.2019	wwa008	Wang	Design Group 9721	Drawing ID DAAD116102 / Rev. C
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	12.07.2019	mhu019	Hug		

Approved

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SYSTEM PROPOSAL

Pos.	ENGINE CONNECTIONS *2)
(2)	INLET - Cylinder cooling water (HT water)
(3)	OUTLET - Cylinder cooling water (HT water)
(7)	INLET - Scavenge air cooler (SAC) cooling water (LT water) *7)
(8)	OUTLET - Scavenge air cooler (SAC) cooling water (LT water) *7)
(44)	OUTLET - Cylinder cooling water air venting *10)

Pos.	ENGINE COMPONENTS *3)
EC01	Scavenge air cooler (SAC)
EC02	Automatic venting unit *10)
EC03	Air separator
EC04	Manual vent valve, for each cylinder *16)

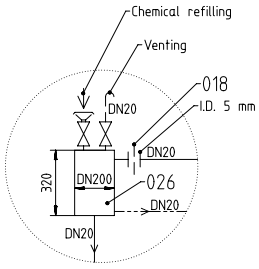
Number of cylinders			6	7	8	9
X82DF-1.0 R1 rated	power	(kW)	25920	30240	34560	38880
	speed	(rpm)	84			
Buffer unit for HT circuit	Cap.	(bar)	1.2	1.2	1.2	1.2
Cylinder cooling water feed tank only min.	Cap.	(m^3)	2.5	2.5	2.5	2.5
CCW feed and drain tank (combined) min.	Cap.	(m^3)	5	5	6	6
Cooling water expansion tank (LT)	Cap.	(m^3)	Depending on ancillary plants			

Nominal pipe diameter						
	A	DN	Yard determination, suitable for main engine and ancillary plants			
	B	DN				
	C	DN				
	D	DN	400	400	400	400
	E	DN	200	200	200	250
	F	DN	200	200	200	250
	I	DN	32	32	32	32
	J	DN	80	80	80	80
	K	DN	20	20	20	20

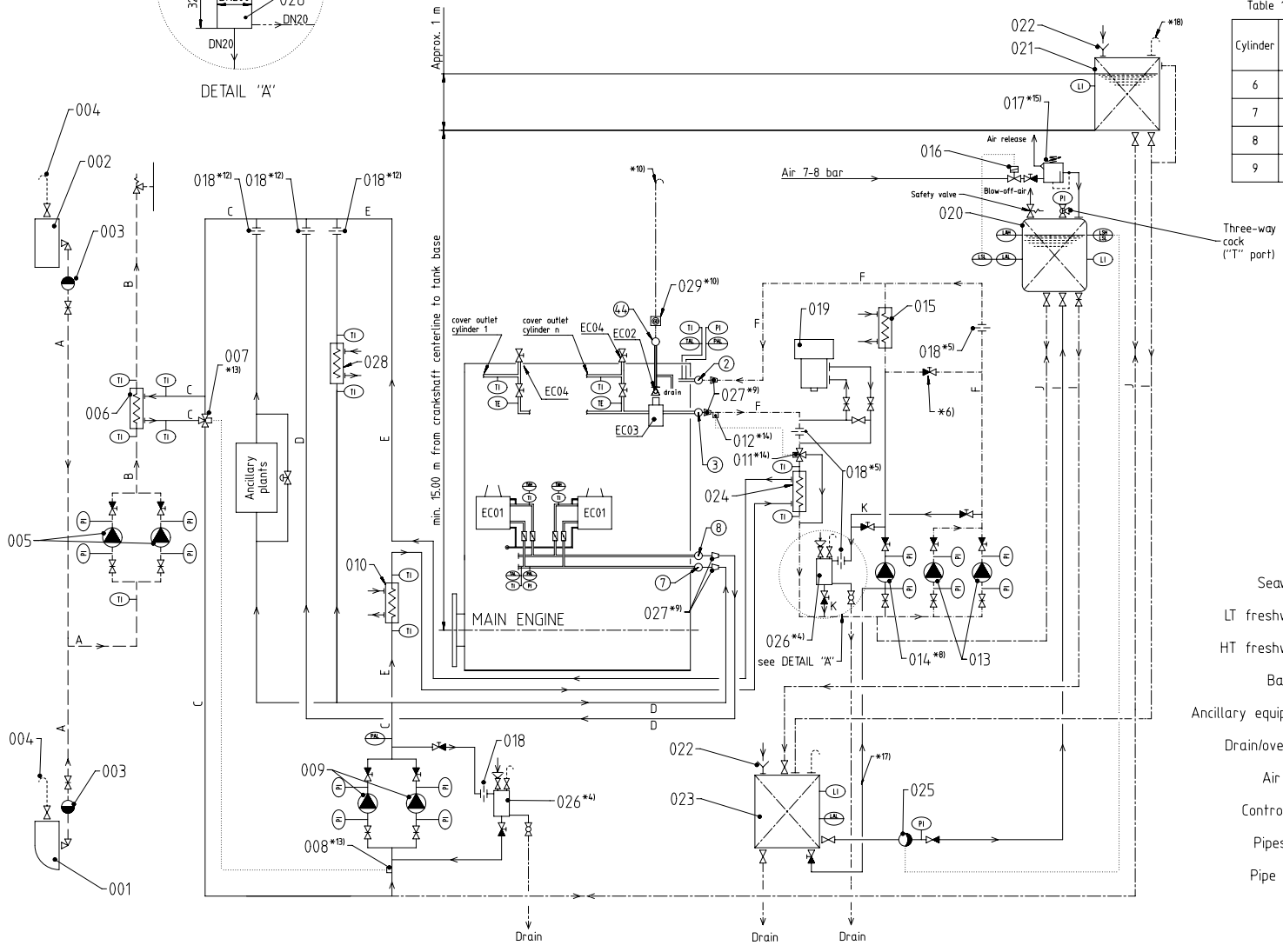
Table 1: Water content on engine side

Cylinder	HT circuit Cyl. C.W. Volume (l)	LT circuit SAC Volume (l)
6	2300 l	1120 l
7	2700 l	1120 l
8	3050 l	1200 l
9	3400 l	1200 l

Pos.	SYSTEM COMPONENTS *1)
001	Low sea chest
002	High sea chest
003	Seawater strainer
004	Air vent (air vent pipe or equal venting system acc. to shipyard's design)
005	Seawater circulating pump
006	Central cooler (LT cooling water)
007	Automatic temperature control valve for LT circuit *13)
008	LT water temperature sensor *13)
009	Cooling water pump for LT circuit
010	Lubricating oil cooler
011	Automatic temperature control valve for HT circuit *14)
012	HT water temperature sensor *14)
013	Cylinder cooling water pump for HT circuit
014	Pre-heating circulating pump (optional), cap. 10% from cylinder cooling pump *8)
015	Pre-heater for main engine (HT circuit)
016	Solenoid valve (air inlet to be interlocked with min. water level)
017	Control air valve with air release function *15) (to be adjusted to ensure CW pressure at ME inlet 4 - 5 bar(g))
018	Throttling disc *5)
019	Freshwater generator
020	Buffer unit for HT circuit (link to detail drawing on page 1)
021	LT water expansion tank (link to detail drawing on page 1) *18)
022	Filling pipe / inlet chemical treatment
023	Cylinder cooling water feed & drain tank (or feed tank only)
024	Cylinder cooling water cooler
025	Supply pump, automatic level control (0.5 m^3/h at 4 bar)
026	Chemical treatment refill unit *4)
027	Transition piece (adapter) *9)
028	MDO/MGO cooler
029	Gas detector *10)



DETAIL "A"



Remarks:

- Air vent and drain pipes not shown on drawing. Shall be installed where required.
- Air vent and drain pipes must be fully functional at all inclination angles of the ship at which the engine must be operational.

*1) To be delivered by external supplier and to be installed by the shipyard.
*2) Refer to the "Pipe Connection Plan" for the execution and location of the engine pipe connection.
*3) To be delivered by the engine manufacturer, i.e. already equipped on engine side.
*4) To be installed for cooling water after-treatment during regular engine operation. Convenient dimensions are provided in view "A". Other designs are possible.
*5) When using a valve, lock in proper position to avoid mishandling.
*6) Only when pos. 014 is installed.
*7) The inlet and outlet pipes to SAC must be designed to allow engine thermal expansion, or be fitted with expansion pieces.
*8) For guidance only, final layout according to actual engine pre-heating requirements.
*9) Installed as required (check with "Pipe Connection Plan").
*10) To be vented to a safe area outside of engine room. In addition, depending on flag state and/or class requirement, the venting line may also be equipped with a gas detector in order to achieve IGC compliance.
*11) All given diameters are valid for the mentioned rating and serve just as an example. To make the layout for the project specific rating please refer to DG9730 "Fluid velocities and flow rates, recommended values for pipework of diesel plants" for selecting the approriate pipe diameter. Rating specific flow rates are provided by GTD.
*12) Optional, only to be installed if needed for hydraulic balancing.
*13) A constant temperature at engine (SAC) inlet must be maintained. Required controller set-point for main engine operation is 25 °C. If the ancillary plants require a temperature lower or greater than the LT water set-point, a separate water supply system with different temperature set-point has to be installed (please refer to the system proposal in MIM)
*14) A constant temperature at engine outlet must be maintained. Required controller set-point for main engine operation is 90 °C.
*15) If the selected control air valve does not have the integrated air release functionality a separate air release valve can be installed as alternative on the top of the buffer unit.
*16) Only to be used for manual venting of isolated cylinders after maintenance. To be kept close during engine operation.
*17) Optional filling line to enable fast system re-filling (e.g. after a complete system drainage) by means of the pre-heating pumps.
*18) If gas driven ancillaries (e.g. gensets) are connected to the LT system, the LT expansion tank must be of gas tight type and has to be vented outside of engine room.

Seawater pipes
LT freshwater pipes
HT freshwater pipes
Balance pipes
Ancillary equipment pipes
Drain/overflow pipes
Air vent pipes
Control/feed back
Pipes on Engine
Pipe connections

Free space for lic.									Q-Code XXXXX	Main Drw.
									Standard ISO; JIS	
Modif.	A EAAD091029	19.06.2020	B EAAD092431	05.10.2020	C EAAD095731	11.12.2020				
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date		

WIN GD Winterthur Gas & Diesel	Product 6-9X82DF-1.0	CENTRAL COOLING WATER SYSTEM HT_static-pressure: Buffer-unit Zentralkuehlwassersystem		
Units mm kg	NX	Basic Material		Net Weight 0,001
SURFACE PROTECTION SEE GROUP 0344	Made 13.05.2019 dki021 DH.Kim	Scale -	Size A1	Page 2/2
TOLERANCING PRINCIPLE ISO8015	Chkd 12.07.2019 wwa008 Wang	Design Group 9721	Material ID PAAD327248	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 12.07.2019 mhu019 Hug	Drawing ID DAAD116102	Rev. C	

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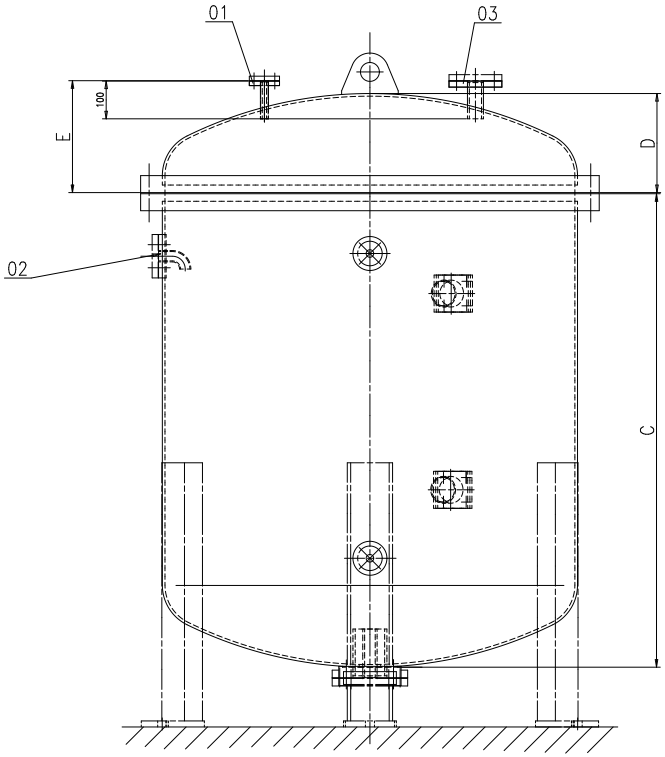
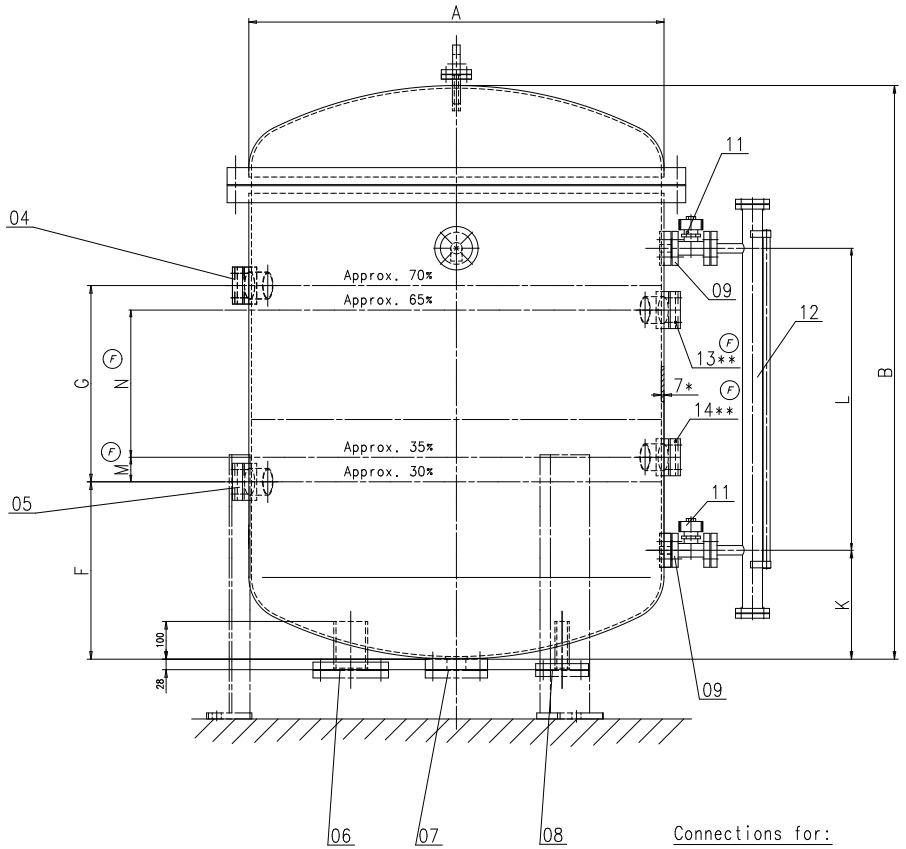
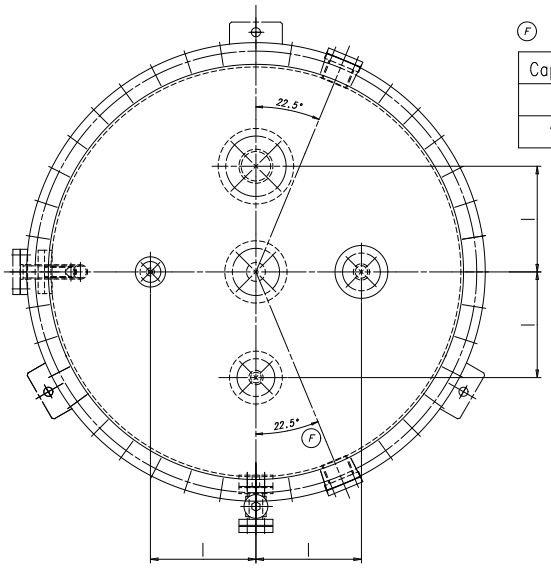
Tank Proposal (F)







(F)

Capacity	A	B	C	D	E	F	G	H	I	K	L	M	N
800l	ø900	1430	1205	222	250	455	520	600	250	250	800	65	390
1200l	ø1100	1520	1255	262	300	470	520	650	280	290	800	65	390

Connections for:

- 01 Compressed air supply from control air valve, DN15 with blank flange
- 02 Pressure indicator, DN25 with blank flange
- 03 Safety and relief valve adjustment 5,5 bar DN32 with blank flange
- 04 Level alarm high, with blank flange
- 05 Level alarm low, with blank flange
- 06 Compensation, DN80 with blank flange
- 07 Drain, DN32 with blank flange
- 08 Feed, DN32 with blank flange
- 09 Flanges for level indicator
- (F) 11 Valve for level indicator, self-closing type
- 12 Level indicator
- 13 Level switch high, with blank flange **
- 14 Level switch low, with blank flange **

Working pressure : 5 bar

* Wall thickness and test pressure : according to relevant classification society/rules

Service temperature : max. 95°C

(F) ** Tank volume between LSH and LSL shall be no less than 150 litres.

Drawn for 1200l capacity

Q-Code	XXXXX	Mat'n Dr.
Standard	ISO	

Mod'l	for spare part No.	C	7-91.644	05.03.2008	D	EA0084051	14.08.2012	E	EA0085172	22.04.2014	F	EA0087035	12.10.2016
			Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date

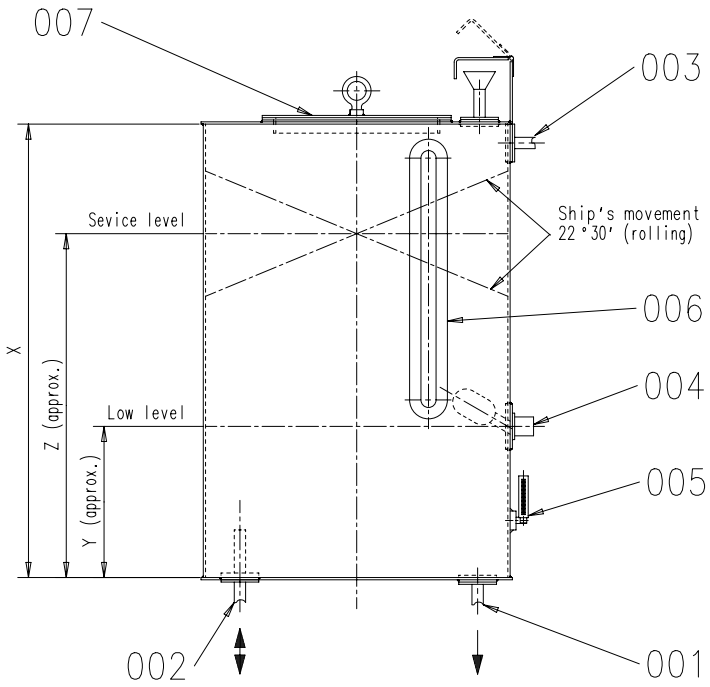
WIN GD Winterthur Gas & Diesel

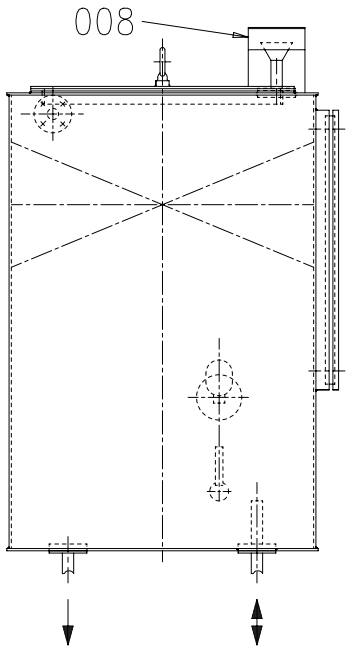
Product M-25

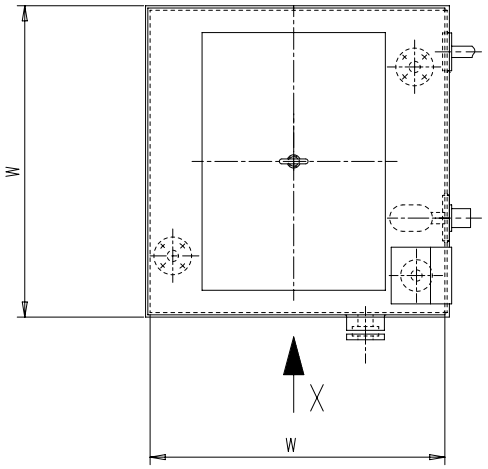
BUFFER
TO CYL.COOLING WATER SYS
Puffer

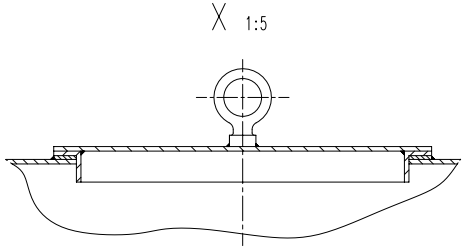
Units	mm kg	IDE	Basic Material	Net Weight 0.001
Made	22.08.07	S.STYLIANOU	Scale 1:5	Size A0 Page 1/1 MasterFolio 107.245.626.500
Chkd			Design Group 9721	Drawing No 107.245.626 Rev. F
Appd				

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK









Drawn for 0.75 m^3 capacity

Pos.	Description Ⓓ
001	Drain
002	Balance pipe from LT circuit
003	Overflow/air vent
004	Low level alarm
005	Thermometer
006	Level indicator *1)
007	Inspection cover *2)
008	Filling pipe/inlet chemical treatment *2)

Remarks:

*1) Level indicator can be omitted if an alternative is fitted.
*2) Other designs like hinged covers, etc. are also possible

- For required tank capacity and pipe diameters refer to drawing 'Central cooling water system'

Table 1: Tank dimensions

LT tank capacity	W	X	Y	Z
(m^3)	(mm)	(mm)	(mm)	(mm)
0.5	800	800	330	640
0.75	800	1200	500	960
1.0	800	1600	670	1280
1.25	1000	1250	530	1000
1.5	1000	1500	630	1200
1.75	1000	1750	730	1400
2.0	1000	2000	830	1600

Approved

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Q-Code XXXXX

Standard ISO; JIS

Main Drw.

Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
A	EAAD014356	16.06.1997	B 7-37.090	16.08.2007	C EAAD083145	25.01.2012	D EAAD091029	12.09.2019

WIN GD Winterthur Gas & Diesel

Product W-2S

EXPANSION TANK
CENTRAL COOLING WATER LT CIRCUIT
Ausgleichstank
Zentralkuehlwassersystem LT

Units	mm kg	NX	Basic Material	Net Weight 0,001
SURFACE PROTECTION SEE GROUP 0344	Made 11.06.1997 T.LANDERT	Scale 1:10	Size A2	Page 1/1	Material ID 107.245.419.500
TOLERANCING PRINCIPLE ISO8015	Chkd	Design Group 9721	Drawing ID 107.245.419	Rev. D
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 11.06.1997 WCH001 Service User			

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WinGD X82DF-1.0 – Cooling Water System (DG9721)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2019-07-12	DRAWING SET	First web upload
2020-06-19	DAAD116102 107.245.419	System drg. – new revision LT expansion tank – new revision
2021-02-24	DAAD116596 DAAD116102	Main and system drawings – new revision
2021-04-22	DAAD116102	System drawing – new revision

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