

1

2

3

4

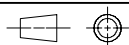
**Available executions**

Execution No.	Material ID	Attribute 1: HT_static-pressure	
		Buffer unit	Exp. tank
001	PAAD332801		X
002	PAAD361000	X	

**NOTE**

The above executions can be configured using the Engine Configurator. Detailed guidance for the executions is provided within the Marine Installation Manual (MIM). If a specific execution of interest is not shown in the above table, then it may still be under development or not available. For further information or in case of a project-specific request, WinGD must be contacted directly.

This publication is designed to provide accurate and authoritative information with regard to the subject-matter covered as it was available at the time of printing. However, the publication deals with complicated technical matters suited only for specialists in the area, and the design of the subject-products is subject to regular improvements, modifications and changes. Consequently, the publisher and copyright owner of this publication cannot accept any responsibility or liability for any eventual errors or omissions in this document or for discrepancies arising from the features of any actual item in the respective product being different from those shown in this publication. The publisher and copyright owner shall under no circumstances be held liable for any financial consequential damages or other loss, or any other damage or injury, suffered by any party making use of this publication or the information contained herein.

Prod.	X40DF-1.0									
Change History	A	mhu019			... Drawing update					
	-	sna102	mhu019	16.06.2023	CNAA003886	new Design	-	-		
	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E C		
<b>WINGD</b>			CENTRAL COOLING WATER SYSTEM MIDS master drawing							
separate BOM available			Dimension							
Scale	-		NX	Units [mm] [kg]	Basic Material		Net Weight	0.001		
Copyright WinGD Ltd. All rights reserved. By taking possession of the drawing the recipient recognizes and honours these rights. Neither the whole nor any part of this drawing may be used in any way for construction, fabrication, marketing or any other purpose nor copied in any way nor made accessible to third parties without the previous written consent of WinGD Ltd.				Main Design	Design Group	9721	Q-Code	XXXXX	Standard	WDS
				Qty per	A4	Item ID	PTAA024834		Drawing Page/s	1/1

1

2

3

4

SEQ NO	QTY	Item ID	Item Name	Dimension	Standard-ID	Basic Material	Net Weight
001	1	PAAD332800	CENTRAL COOLING WATER SYSTEM	SPECIFICATION			0.001
002	1	PTAA080004	CENTRAL COOLING WATER SYSTEM	DESIGN GUIDANCE VALUES			0.001
003	1	DTAA001221	CENTRAL COOLING WATER SYSTEM	PROPOSAL			
004	1	107.429.532	CONCEPT GUIDANCE				

--	--	--	--	--	--	--	--

Prod.	5,6,7,8 X40DF-1.0							
Change History	C	sjo101	mhu019	19.11.2024	CNAA007352	Main Drawing updated	4	3
	B	sna102	mhu019	06.10.2022	CNAA002572	Main Design/Drawing Introduced	-	-
	A	sde101	mhu019	05.10.2020	EAAD092431	Legacy information. See corresponding ChangeNotice	4	3
	-	sde101	mhu019	06.09.2019	EAAD784688	-	-	-
	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Approved	Activity Code

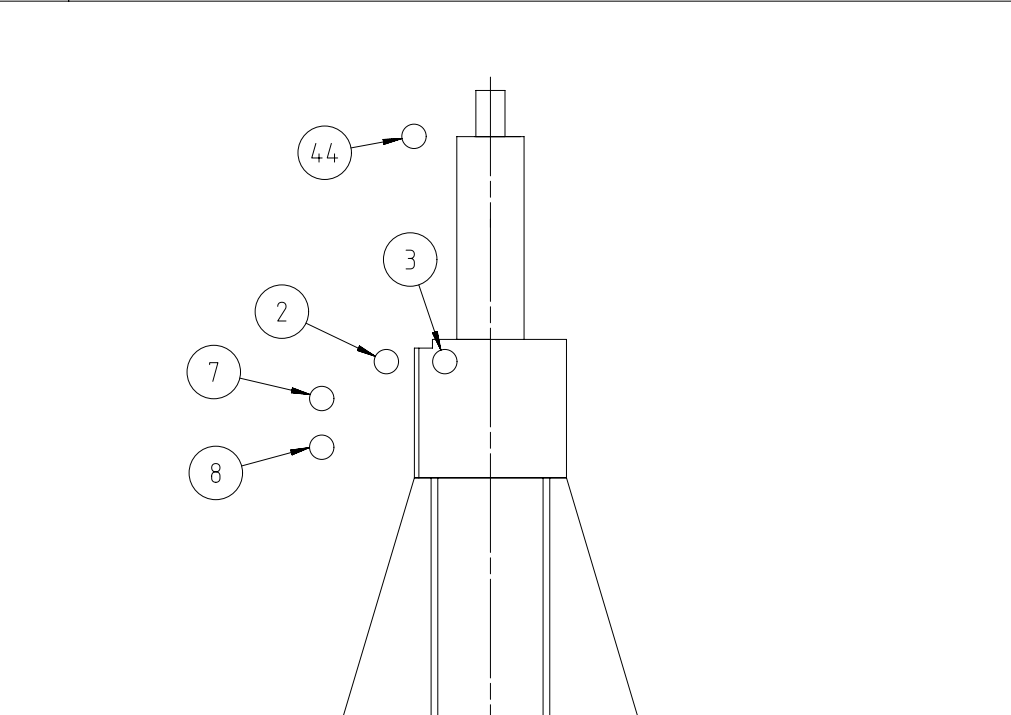
	<h1>COOLING WATER SYSTEMS</h1>
--	--------------------------------

<b>Bill Of Material</b>				Dimension					
Copyright <b>WinGD Ltd.</b> All rights reserved. By taking possession of the document the recipient recognizes and honours these rights. Neither the whole nor any part of this document may be used in any way for construction, fabrication, marketing or any other purpose nor copied in any way nor made accessible to third parties without the previous written consent of <b>WinGD Ltd.</b>		Units	[m] [kg]	Basic Material			Net Weight	0	
		Main Design	Yes	Design Group	9721	Q-Code	X X M	Standard	WDS
		Qty per	Engine	A4	Item ID	<b>PAAD332801</b>		BOM Page/s	01/01

# SPECIFICATION which must be met at the engine interface connections

- 8 OUTLET - Scavenge air cooler cooling water (LT water)
  - CW 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 the engine room.

- 2 INLET - Cylinder cooling water (HT water)
  - CCW supply pressure: 3.0 - 5.0 bar
  - CCW volume flow: according to GTD specification.
  - CCW treatment: freshwater must be treated according to WinGD specification.
  - CCW static pressure: the static pressure must be adjusted with installation of an expansion tank.
  - The expansion tank must be installed at a height of min. 11.3 m ("Hmin\_HT" in the "Installation Drawing") in relation to the CS centerline.
  - Pre-heating: the engine must be warmed-up with heated HT water to min. 60 °C before the engine start.



- 3 OUTLET - Cylinder cooling water (HT water)
  - CW temperature:
  - Controller set-point: 90 °C (controller type: PI)
  - Steady state condition: 90 ± 2 °C
  - Transient condition: 90 ± 4 °C

- 7 INLET - Scavenge air cooler cooling water (LT water)
  - CW supply pressure: 2.0 - 4.0 bar
  - CW temperature:
  - Controller set-point: 25 °C, max. 36 °C when seawater temperature at 32 °C.
  - CW volume flow: according to GTD specification.
  - CW treatment: freshwater must be treated according to WinGD specification.
  - The cooling water must be supplied by pipes which are not internally galvanised, because the nitrites of the cooling water treatment attack zinc lining of galvanised pipes and create sludge.
  - CW static pressure: the static pressure must be adjusted by the installation of an expansion tank.
  - The expansion tank must be installed at a height of min. 11.3 m ("Hmin\_LT" in the "Installation Drawing") in relation to the CS centerline.

Used abbreviations:  
 CW: Cooling Water  
 CCW: Cylinder Cooling Water  
 CS: Crank Shaft  
 Cap. : Capacity  
 HT: High Temperature  
 LT: Low Temperature  
 SAC: Scavenge Air Cooler

Prod.	X40DF-1.0												
Change History	B	npa101	mhu019	15.11.2024	CNAA007343	Drawing Updated				4	3		
	A	sde101	mhu019	05.10.2020	EAAD092431	Legacy information. See corresponding ChangeNotice				4	3		
	-	sde101	mhu019	06.09.2019	EAAD784688					-	-		
Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis					Approved	Activity Code	E	C
					CENTRAL COOLING WATER SYSTEM SPECIFICATION								
separate BOM available					Dimension					SPECIFICATION			
Scale	-			NX	Units [mm] [kg]	Basic Material				Net Weight	0.001		
<small>Copyright Winterthur Gas &amp; Diesel Ltd. All rights reserved. By taking possession of the drawing the recipient recognizes and honours these rights. Neither the whole nor any part of this drawing may be used in any way for construction, fabrication, marketing or any other purpose not copied in any way nor made accessible to third parties without the previous written consent of Winterthur Gas &amp; Diesel Ltd.</small>					Main Design	Design Group		9721	Q-Code X X M		Standard	WDS	
Qty per	A3		Item ID	PAAD332800			Drawing Page/s		1/1				

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



**SYSTEM PROPOSAL**  
 Further installation details and variants can be found in the Marine Installation Manual (MIM). Design guidance regarding pipe and tank sizes and information about the system volumes is given in the DESIGN GUIDANCE VALUE drawing. A list of the abbreviations used in this drawing set is provided in the SPECIFICATION drawing. The piping symbols are explained by the PIPING SYMBOL KEY, included in the MIDS "DG9730 - Various Installation Items".

## Design guidance values for the system layout

All values in Table 1 below are based on an R1 rated engine. Based on the project-specific GTD data, layout optimisations are possible.

Table 1: Pipe and tank sizes \*1)


Number of cylinders			5	6	7	8
Pressure drop across the engine		(bar)	1.3			
Cooling water expansion tank (HT)		Cap. (m³)	Depending on ancillary plants min. 10% of HT cooling water			
Cooling water expansion tank (LT)		Cap. (m³)	Depending on ancillary plants min. 10% of LT cooling water			
PROPOSAL for pipe dimensioning *2)						
Nominal pipe diameter	A	DN	Yard determination, suitable for main engine and ancillary plants			
	B	DN				
	C	DN				
	D	DN	200	200	200	200
	E	DN	100	100	100	100
	G	DN	100	100	100	125
	H	DN	40	40	40	40
	J	DN	50	50	50	50

Table 2: LT and HT water volumes on the engine side

Cylinder	HT circuit CCW Volume (l)	LT circuit SAC CW Volume (l)
5	160 l	190 l
6	190 l	190 l
7	220 l	220 l
8	250 l	220 l

**Remarks:**

- \*1) All dimensions refer to the piping and tanks as shown in the SYSTEM PROPOSAL.
- \*2) Guidance regarding the pipe size selection, in relation to the project-specific flow rates in GTD, is given by the drawing FLUID VELOCITIES AND FLOW RATES, as included in the MIDS "DG9730 Various Installation Items"

Prod.											
Change History											
Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Approved		Activity Code	E	C	
-	sjp101	mhu019	15.11.2024	CNA007343	new Design			-	-		
			CENTRAL COOLING WATER SYSTEM DESIGN GUIDANCE VALUES								
separate BOM available			DESIGN GUIDANCE VALUES								
Scale	-	NX		Units [mm] [kg]	Basic Material	Net Weight		0.001			
SURFACE PROTECTION SEE GROUP 0344				Copyright Winterthur Gas & Diesel Ltd. All rights reserved. By taking possession of the drawing the recipient recognizes and renounces these rights, neither the whole nor any part of this drawing may be used in any way for construction, fabrication, marketing or any other purpose nor copied in any way nor made accessible to third parties without the previous written consent of Winterthur Gas & Diesel Ltd.							
TOLERANCING PRINCIPLE ISO8015				Main Design	Design Group	9721	Q-Code	X X M	Standard	WDS	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK				Qty per	A2	Item ID	PTAA080004		Drawing Page/s	1/1	

**SYSTEM PROPOSAL**

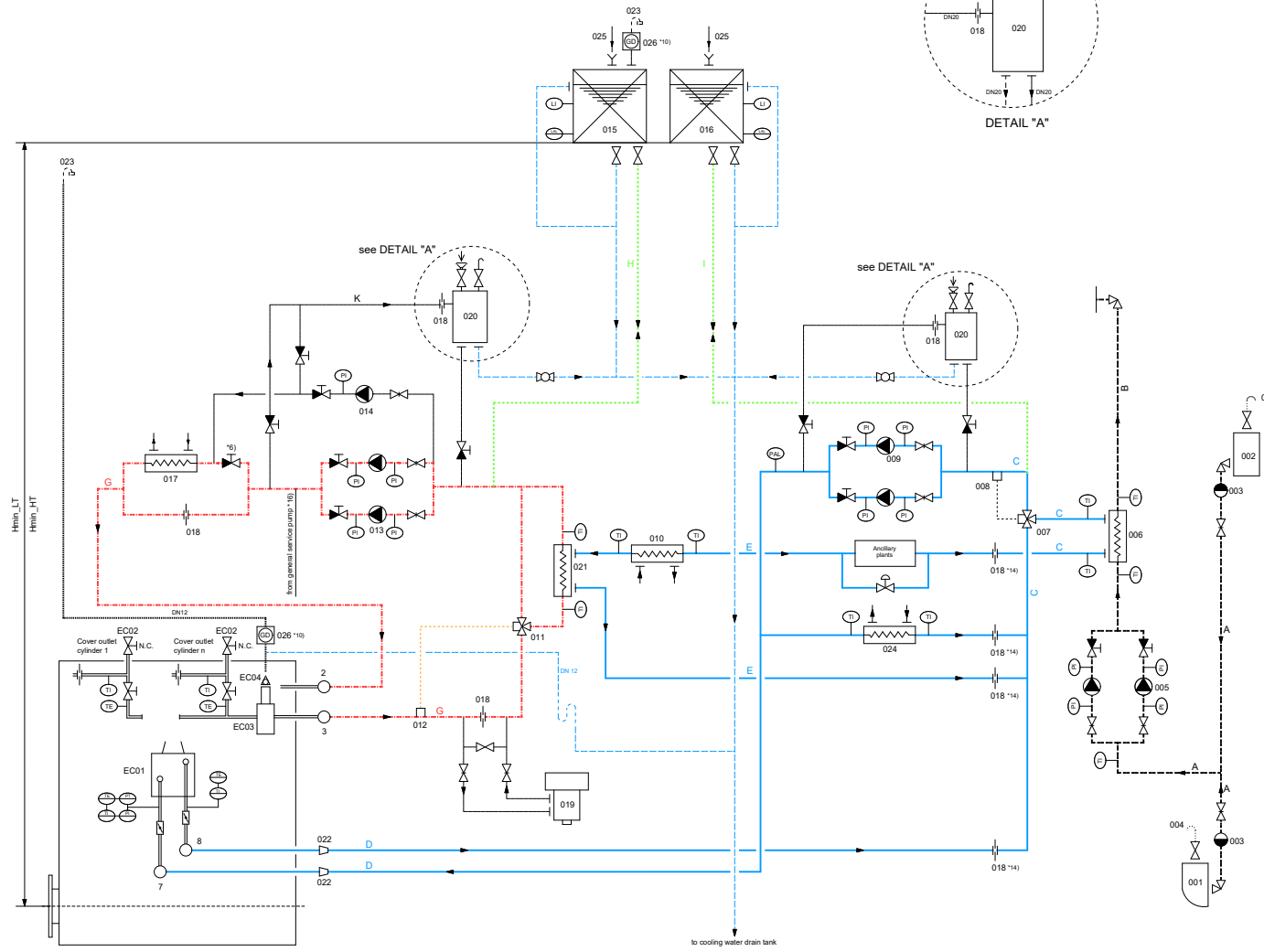
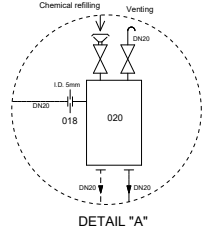
Further installation details and variants can be found in the Marine Installation Manual (MIM). Design guidance regarding pipe and tank sizes and information about the system volumes is given in the DESIGN GUIDANCE VALUE drawing. A list of the abbreviations used in this drawing set is provided in the SPECIFICATION drawing. The piping symbols are explained by the PIPING SYMBOL KEY, included in the MIDS "DG9730 - Various Installation Items".

Pos.	ENGINE COMPONENTS *3)
EC01	Scavenge air cooler (SAC)
EC02	Manual vent valve, for each cylinder *13)
EC03	Air separator
EC04	Automatic venting unit

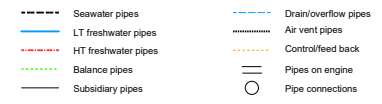
  

Pos.	ENGINE CONNECTIONS *2)
2	INLET - Cylinder cooling water (HT water)
3	OUTLET - Cylinder cooling water (HT water)
7	INLET - Scavenge air cooler (SAC) cooling water (LT water) *7)
8	OUTLET - Scavenge air cooler (SAC) cooling water (LT water) *7)

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 the shipyard's design)
005	Seawater circulating pump
006	Central cooler (LT cooling water)
007	Automatic temperature control valve for LT circuit *11)
008	LT water temperature sensor *11)
009	Cooling water pump for LT circuit
010	Lubricating oil cooler
011	Automatic temperature control valve for HT circuit *12)
012	HT water temperature sensor *12)
013	Cylinder cooling water pump for HT circuit
014	Pre-heating circulating pump (optional, cap. 10% from cylinder cooling pump *8)
015	HT water expansion tank (detail drawing linked in the partlist (BOM)) *15)
016	LT water expansion tank (detail drawing linked in the partlist (BOM)) *15)
017	Pre-heater for main engine (HT circuit)
018	Throttling disc *5)
019	Freshwater generator
020	Chemical water treatment refill unit *4)
021	HT cooling water cooler
022	Transition piece (adapter) *9)
023	Cylinder cooling water air venting line *10)
024	MDO/MGO cooler
025	Filling pipe / inlet chemical treatment
026	Gas detector *10)



- Remarks:
- Air vent and drain pipes are not shown on the drawing. They must 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 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 the engine side.
  - \*4) To be installed for cooling water after-treatment during regular engine operation. Appropriate dimensions are provided in view "A". Other designs are possible.
  - \*5) When using a valve, lock the disc 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 the engine thermal expansion or be fitted with expansion pieces.
  - \*8) For guidance only, the final layout according to the engine pre-heating requirements.
  - \*9) Installed as required (check the "Pipe Connection Plan").
  - \*10) To be vented to a safe area outside the engine room. In addition, depending on a flag state and/or a classification society requirement, the venting line may also be equipped with a gas detector to achieve the IGO compliance.
  - \*11) A constant temperature at the engine (SAC) inlet must be maintained. Recommended controller set-point for the main engine operation is 25 °C. If the auxiliary plants require a temperature lower or higher than the LT water set-point, a separate water supply system with different temperature set-point must be installed (please refer to the system proposal in the MIM).
  - \*12) A constant temperature at engine outlet must be maintained. Recommended controller set-point for main engine operation is 90 °C.
  - \*13) Only to be used for manual venting of isolated cylinders after maintenance. To be kept closed during engine operation.
  - \*14) Optional, only to be installed if needed for hydraulic balancing.
  - \*15) If gas driven auxiliaries are connected to the LT circuit, the LT expansion tank must be gas tight (similar to the layout provided for the HT expansion tank) and has to be vented to a safe area outside of engine room.
  - \*16) Optional connection, to be installed if requested by class rules for emergency engine cooling.



XDF - engine				CENTRAL COOLING WATER SYSTEM			
HT static press.: exp tank, air separator: on-engine				WIN GD			
Winterthur Ltd & Diesel				COMOS			
side101 22/12/2023 Drawing New 4				rmm/kg			
Date: 02/21				XXXXXX			
				DTAA001221			
				Ad			
				11			

SEQ NO	QTY	Item ID	Item Name	Dimension	Standard-ID	Basic Material	Net Weight
001	1	PAAD360765	CENTRAL COOLING WATER SYSTEM	SPECIFICATION			0.001
002	1	PTAA080013	CENTRAL COOLING WATER SYSTEM	DESIGN GUIDANCE VALUES			0.001
003	1	DTAA001219	CENTRAL COOLING WATER SYSTEM	PROPOSAL			
004	1	107.429.532	CONCEPT GUIDANCE				



Prod.	5,6,7,8 X40DF-1.0								
Change History	B	sjo101	mhu019	19.11.2024	CNAA007352	Main Drawing updated	4	3	
	A	sna102	mhu019	06.10.2022	CNAA002572	Main Design/Drawing Introduced	-	-	
	-	sde101	mhu019	05.10.2020	EAAD092431	Legacy information. See corresponding ChangeNotice	4	3	
	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Approved	Activity Code	E

	<h1>COOLING WATER SYSTEMS</h1>
--	--------------------------------

Bill Of Material		Dimension			
Copyright <b>WinGD Ltd.</b> All rights reserved. By taking possession of the document the recipient recognizes and honours these rights. Neither the whole nor any part of this document may be used in any way for construction, fabrication, marketing or any other purpose nor copied in any way nor made accessible to third parties without the previous written consent of <b>WinGD Ltd.</b>	Units	[m] [kg]	Basic Material	Net Weight	0
	Main Design	Yes	Design Group	9721	Q-Code X X M Standard WDS
	Qty per	Engine	A4	Item ID	PAAD361000

# SPECIFICATION which must be met at the engine interface connections

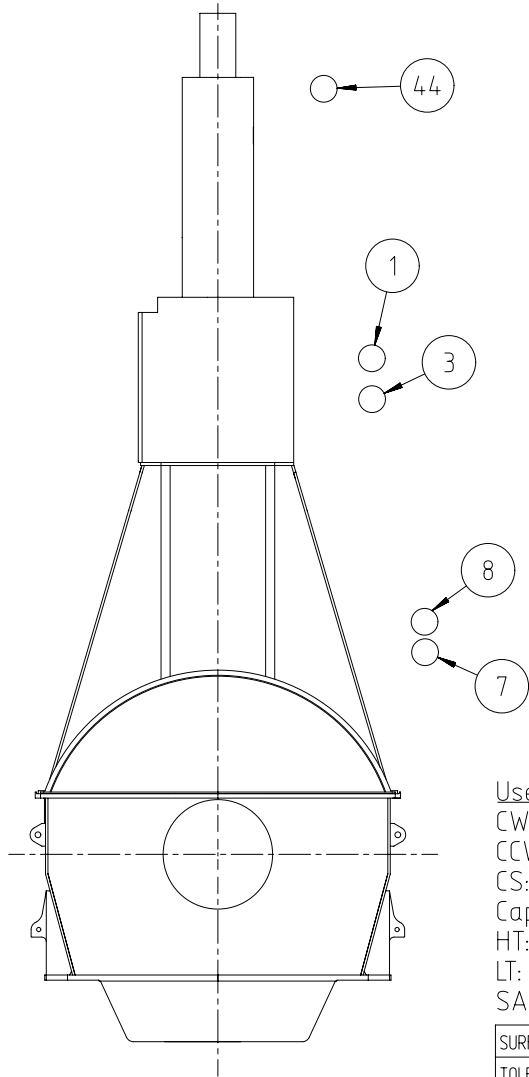
8 OUTLET - Scavenge air cooler cooling water (LT water)  
 - CW volume flow: according to GTD specification, adjusted by an orifice in the outlet pipe on shipside.

44 OUTLET - Cylinder cooling water air venting  
 - To be vented to a safe area outside the engine room.

1 INLET - Cylinder cooling water (HT water)  
 - CCW supply pressure: 3.0 - 5.0 bar  
 - CCW volume flow: according to GTD specification.  
 - CCW treatment: freshwater must be treated according to WinGD specification.  
 - CCW static pressure: a buffer unit must be installed. The static pressure must be adjusted by buffer unit pressure setting.  
 - Pre-heating: the engine must be warmed-up with heated HT water to min. 60 °C before the engine start.

3 OUTLET - Cylinder cooling water (HT water)  
 - CW temperature:  
 Controller set-point: 90 °C (controller type: PI)  
 Steady state condition: 90 ± 2 °C  
 Transient condition: 90 ± 4 °C

7 INLET - Scavenge air cooler cooling water (LT water)  
 - CW supply pressure: 2.0 - 4.0 bar  
 - CW temperature:  
 Controller set-point: 25 °C, max. 36 °C when seawater temperature at 32 °C.  
 - CW volume flow: according to GTD specification.  
 - CW treatment: freshwater must be treated according to WinGD specification.  
 - The cooling water must be supplied by pipes which are not internally galvanised, because the nitrites of the cooling water treatment attack zinc lining of galvanised pipes and create sludge.  
 - CW static pressure: the static pressure must be adjusted by the installation of an expansion tank.  
 - The expansion tank must be installed at a height of min. 13.5 m ("Hmin\_LT" in the "Installation Drawing") in relation to the CS centerline.



Used abbreviations:  
 CW: Cooling Water  
 CCW: Cylinder Cooling Water  
 CS: Crank Shaft  
 Cap. : Capacity  
 HT: High Temperature  
 LT: Low Temperature  
 SAC: Scavenge Air Cooler

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

Prod.	X40DF-1.0									
Change History	A	npa101	mhu019	15.11.2024	CNAA007343	Drawing Updated			4	3
	-	sde101	mhu019	30.09.2020	EAAD786518	-			-	-
	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis			Approved	Activity Code
					CENTRAL COOLING WATER SYSTEM SPECIFICATION					
separate BOM available					Dimension					SPECIFICATION
Scale		-		NX		Units [mm] [kg]		Basic Material		Net Weight 0.001
Copyright Winterthur Gas & Diesel Ltd. All rights reserved. By taking possession of the drawing the recipient recognizes and honours these rights. Neither the whole nor any part of this drawing may be used in any way for construction, fabrication, marketing or any other purpose not copied in any way nor made accessible to third parties without the previous written consent of Winterthur Gas & Diesel Ltd.					Main Design		Design Group		9721	
Qty per		A3		Item ID		PAAD360765		Standard		WDS
								Drawing Page/s		1/1





**SYSTEM PROPOSAL**

Further installation details and variants can be found in the Marine Installation Manual (MIM). Design guidance regarding pipe and tank sizes and information about the system volumes is given in the DESIGN GUIDANCE VALUE drawing. A list of the abbreviations used in this drawing set is provided in the SPECIFICATION drawing. The piping symbols are explained by the PIPING SYMBOL KEY, included in the MIDS "DG9730 - Various Installation Items".

**Design guidance values for the system layout**

All values in Table 1 below are based on an R1 rated engine. Based on the project-specific GTD data, layout optimisations are possible.

Table 1: Pipe and tank sizes \*1)



Number of cylinders			5	6	7	8
Buffer unit for HT circuit	Cap.	(m³)	0.8	0.8	0.8	0.8
Cylinder cooling water feed tank only min.	Cap.	(m³)	1.5	1.5	1.5	1.5
CCW feed and drain tank (combined) min.	Cap.	(m³)	4	4	4	4
Cooling water expansion tank (LT)	Cap.	(m³)	Depending on ancillary plants			
PROPOSAL for pipe dimensioning *2)						
Nominal pipe diameter	A	DN	Yard determination, suitable for main engine and ancillary plants			
	B	DN				
	C	DN				
	D	DN	200	200	200	200
	E	DN	100	100	100	100
	F	DN	100	100	100	125
	I	DN	40	40	40	40
	J	DN	50	50	50	50
K	DN	20	20	20	20	

Table 2: LT and HT water volumes on the engine side

Cylinder	HT circuit CCW Volume (l)	LT circuit SAC CW Volume (l)
5	160 l	190 l
6	190 l	190 l
7	220 l	220 l
8	250 l	220 l

**Remarks:**

- \*1) All dimensions refer to the piping and tanks as shown in the SYSTEM PROPOSAL.
- \*2) Guidance regarding the pipe size selection, in relation to the project-specific flow rates in GTD, is given by the drawing FLUID VELOCITIES AND FLOW RATES, as included in the MIDS "DG9730 Various Installation Items"

Prod.													
Change History													
Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Approved		Activity Code	E	C			
-	sjp101	mhu019	15.11.2024	CNA007343	new Design			-	-				
			CENTRAL COOLING WATER SYSTEM DESIGN GUIDANCE VALUES										
separate BOM available			DESIGN GUIDANCE VALUES										
Scale	-			Units [mm] [kg]	Basic Material	Net Weight		0.001					
SURFACE PROTECTION SEE GROUP 0344		TOLERANCING PRINCIPLE ISO8015		GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Copyright Winterthur Gas & Diesel Ltd. All rights reserved. By taking possession of the drawing the recipient recognizes and warrants these rights, neither the whole nor any part of this drawing may be used in any way for construction, fabrication, marketing or any other purpose nor copied in any way nor made accessible to third parties without the previous written consent of Winterthur Gas & Diesel Ltd.		Main Design	Design Group	9721	Q-Code X X M	Standard	WDS
Qty per	A2	Item ID	PTAA080013		Drawing Page/s		1/1						

**SYSTEM PROPOSAL**

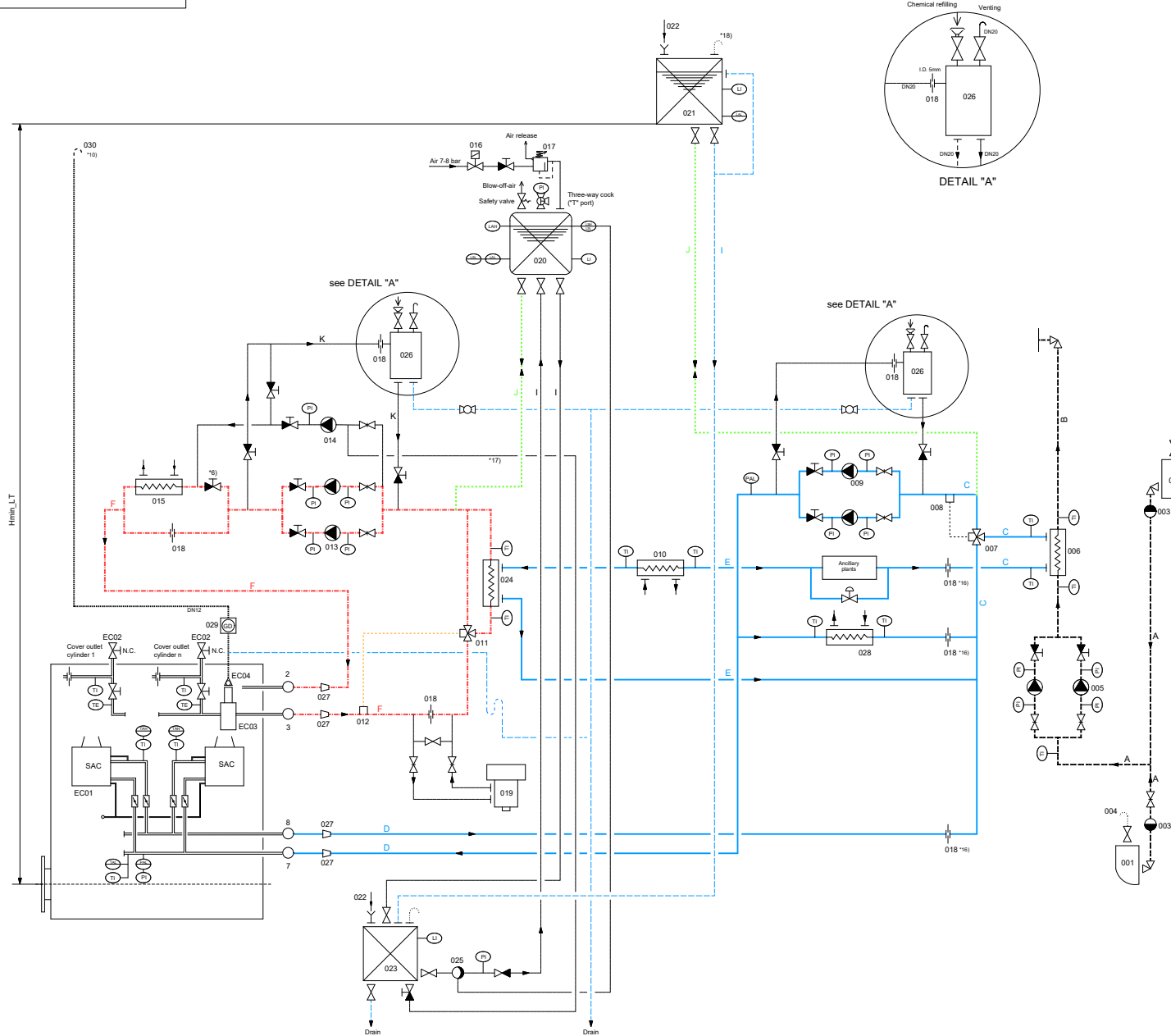
Further installation details and variants can be found in the Marine Installation Manual (MIM). Design guidance regarding pipe and tank sizes and information about the system volumes is given in the DESIGN GUIDANCE VALUE drawing. A list of the abbreviations used in this drawing set is provided in the SPECIFICATION drawing. The piping symbols are explained by the PIPING SYMBOL KEY, included in the MIDS "DG9730 - Various Installation Items".

Pos.	ENGINE COMPONENTS *3)
EC01	Scavenge air cooler (SAC)
EC02	Manual vent valve, for each cylinder *14)
EC03	Air separator
EC04	Automatic venting unit

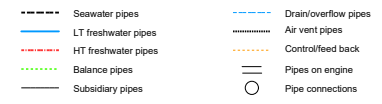
  

Pos.	ENGINE CONNECTIONS *2)
2	INLET - Cylinder cooling water (HT water)
3	OUTLET - Cylinder cooling water (HT water)
7	INLET - Scavenge air cooler (SAC) cooling water (LT water) *7)
8	OUTLET - Scavenge air cooler (SAC) cooling water (LT water) *7)

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 the shipyard's design)
005	Seawater circulating pump
006	Central cooler (LT cooling water)
007	Automatic temperature control valve for LT circuit *11)
008	LT water temperature sensor *11)
009	Cooling water pump for LT circuit
010	Lubricating oil cooler
011	Automatic temperature control valve for HT circuit *12)
012	HT water temperature sensor *12)
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 *13)
018	Throttling disc *5)
019	Freshwater generator
020	Buffer unit for HT circuit (detail drawing linked in the partlist (BOM)) *15)
021	LT water expansion tank (detail drawing linked in the partlist (BOM)) *18)
022	Filling pipe / inlet chemical treatment
023	Cylinder cooling water feed and drain tank (or feed tank only)
024	Cylinder cooling water cooler
025	Supply pump, automatic level control (0.5 m <sup>3</sup> /h at 4 bar)
026	Chemical water treatment refill unit *4)
027	Transition piece (adapter) *9)
028	MDO/MGO cooler
029	Gas detector *19)
030	Cylinder cooling water air venting line *19)



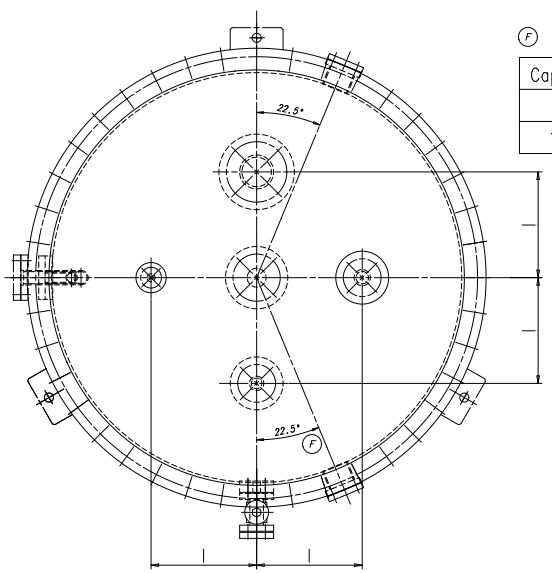
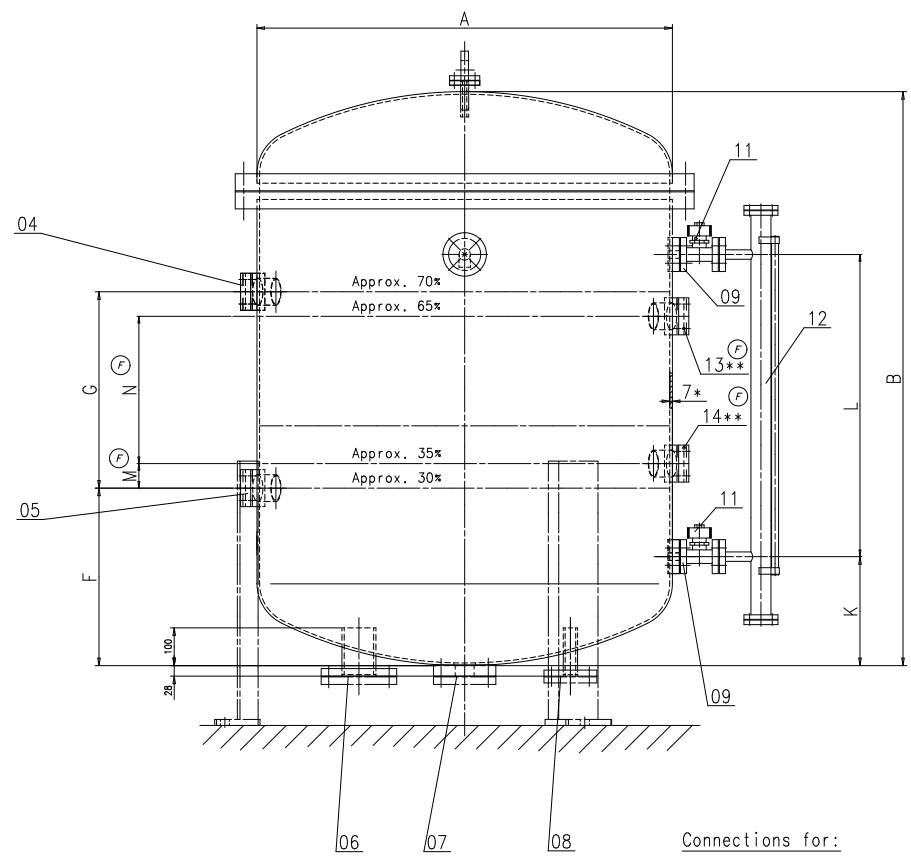
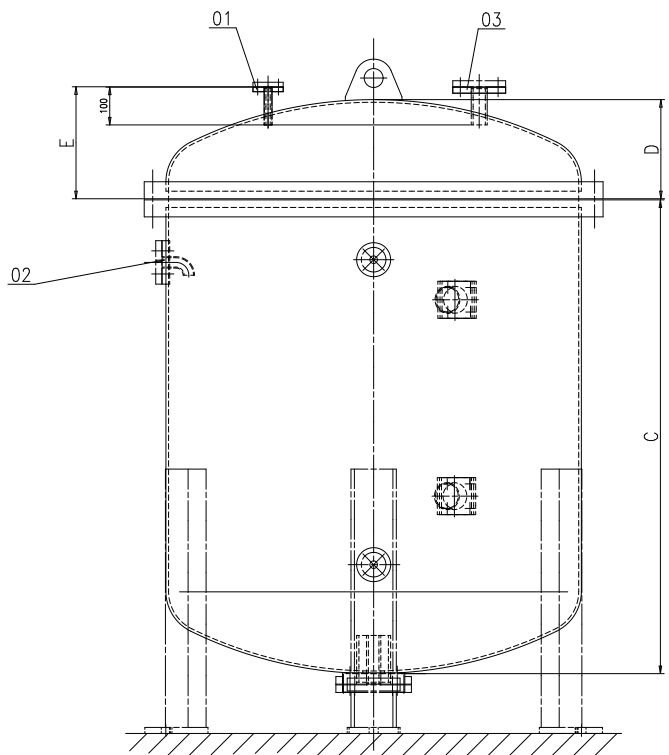
- Remarks:
- Air vent and drain pipes are not shown on the drawing. They must be installed where required.
  - Air vent and drain pipes must be fully functional at all inclination angles of the ship at which the engine must be operational.
  - \*1) To be installed by the shipyard.
  - \*2) Refer to the "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 the engine side.
  - \*4) To be installed for cooling water after-treatment during regular engine operation. Appropriate dimensions are provided in view "A". Other designs are possible.
  - \*5) When using a valve, lock the disc 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 the engine thermal expansion or be fitted with expansion pieces.
  - \*8) For guidance only, the final layout according to the engine pre-heating requirements.
  - \*9) Installed as required (check the "Pipe Connection Plan").
  - \*10) To be vented to a safe area outside of engine room. In addition, depending on flag state and/or class requirements, the venting line may also be equipped with a gas detector in order to achieve IGC compliance.
  - \*11) A constant temperature at the engine (SAC) inlet must be maintained. Recommended controller set-point for the main engine operation is 25 °C. If the auxiliary plants require a temperature lower or higher than the LT water set-point, a separate water supply system with different temperature set-point must be installed (please refer to the system proposal in the MIM).
  - \*12) A constant temperature at the engine outlet must be maintained. Required controller set-point for the main engine operation is 90 °C.
  - \*13) If the selected control air valve does not have the integrated air release functionality, a separate air release valve can be installed as an alternative on the top of the buffer unit.
  - \*14) Only to be used for manual venting of isolated cylinders after maintenance. To be kept closed during engine operation.
  - \*15) If instead of the buffer unit an expansion tank of enclosed type is installed it must be located at min. 25 m above the crankshaft centerline.
  - \*16) Optional, only to be installed if needed for hydraulic balancing.
  - \*17) Optional filling line to enable fast system refilling (e.g. after a complete system drainage) by means of the pre-heating pumps.
  - \*18) If gas-driven auxiliaries are connected to the LT circuit, the LT expansion tank must be gas-tight and must be vented to a safe area outside the engine room.
  - \*19) To be vented to a safe area outside the engine room. In addition, depending on a flag state and/or a classification society requirement, the venting line must also be equipped with a gas detector.



Project	XDF								
Drawn									
Checked									
Issue									
Issue	side101	11/01/2024	Drawing NEW	4					
Drawn									
Checked									
Issue	9221	XXXXXX							

<b>WIN GD</b> Winterthur Gas & Diesel		<b>CENTRAL COOLING WATER SYSTEM</b> HT_static press.; buffer unit, air separator: on-engine
COMOS	rmr/kg	Ad
9221	XXXXXX	<b>DTAA001219</b>



<sup>Ⓢ</sup>

Capacity	A	B	C	D	E	F	G	H	I	K	L	M	N
800l	∅900	1430	1205	222	250	455	520	600	250	250	800	65	390
1200l	∅1100	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
- <sup>Ⓢ</sup> 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 \*\*

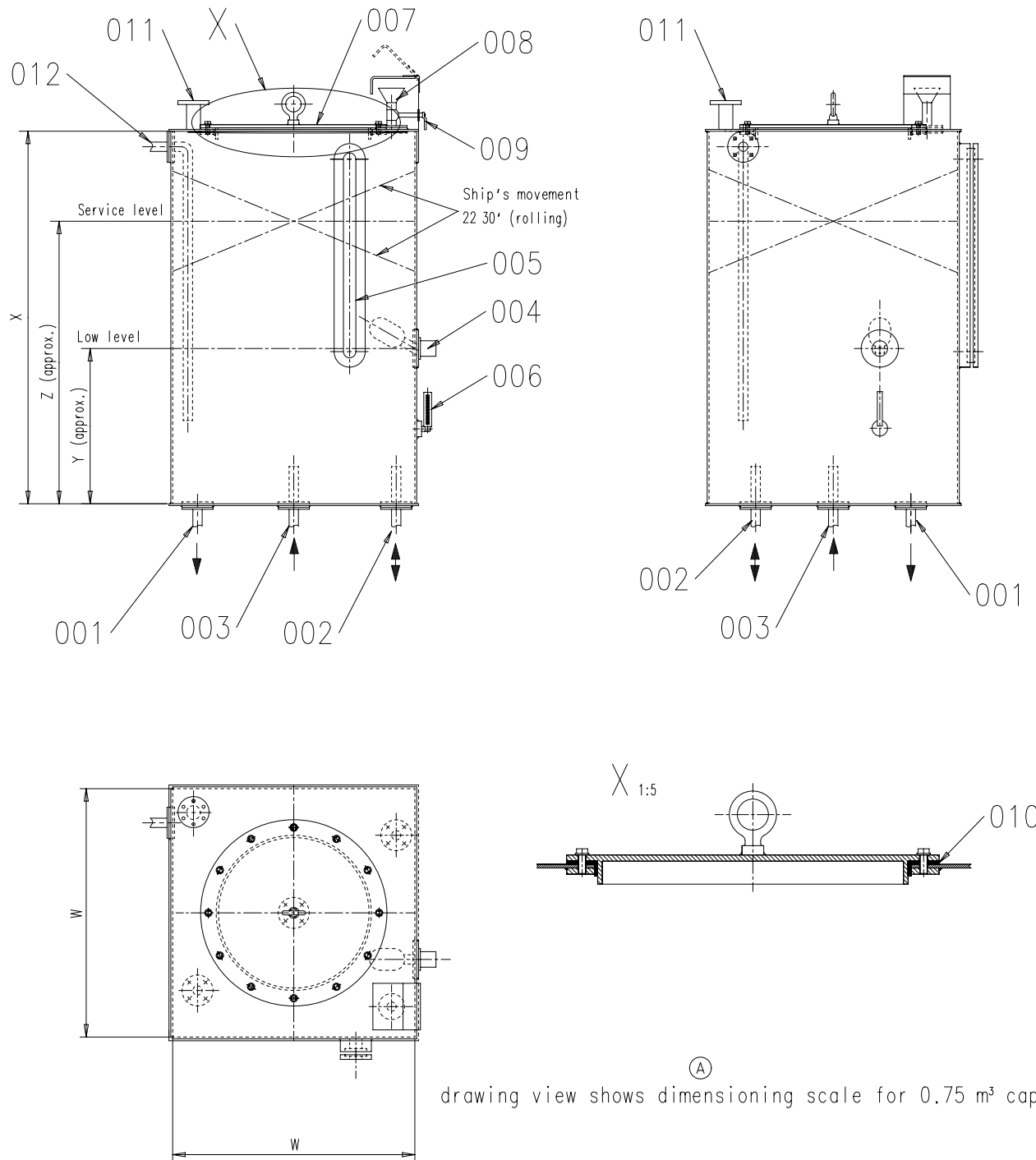
Working pressure : 5 bar  
 \* Wall thickness and test pressure : according to relevant classification society/rules  
 Service temperature : max. 95°C

<sup>Ⓢ</sup> \*\* Tank volume between LSH and LSL shall be no less than 150 litres.

Drawn for 1200l capacity

DATE: 22.09.07		SCALE: 1:5		SHEET: 10		TOTAL SHEETS: 10	
DRAWN BY: S. STILAND		CHECKED BY: S. STILAND		APPROVED BY: S. STILAND		DATE: 10.10.2016	
PROJECT: 107.245.626		ITEM: 07.245.626		SUB-ITEM: F		REV: 1	
DESCRIPTION: BUFFER TO CYL. COOLING WATER SYS Puffer		MATERIAL: W-25		QUANTITY: 1		UNIT: 1	

WIN G O  
 WILKINSON  
 WILKINSON



Pos.	Description
001	Drain from HT circuit
002	Balance pipe from HT circuit
003	Air vent from HT circuit *5)
004	Low level alarm *4)
005	Level indicator *1) *4)
006	Thermometer *4)
007	Inspection cover (manhole) *2)
008	Filling pipe/inlet chemical treatment *2)
009	Cock *3)
010	Sealing
011	Venting *6)
012	Overflow/air vent

Remarks: (A)

- \*1) Level indicator can be omitted if an alternative is fitted.
- \*2) Other gas tight solutions are also possible.
- \*3) Has to be closed always after treatment.
- \*4) Any instrumentation installed in the system has to be certified explosion proof apparatus.
- \*5) This connection is only needed if the HT cooling water system venting is done via the expansion tank.
- \*6) To be vented outside of engine room

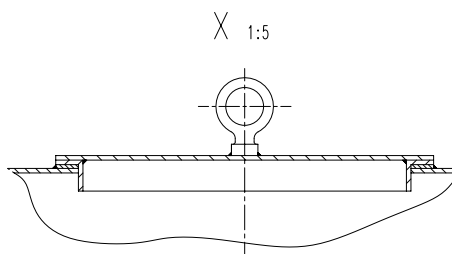
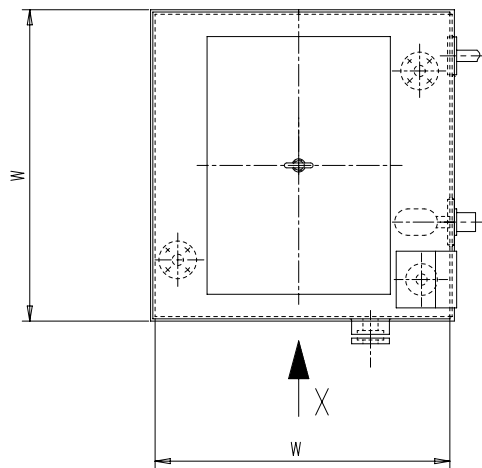
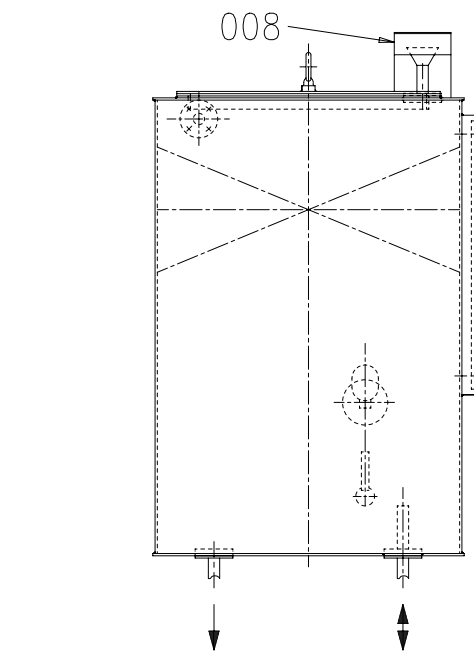
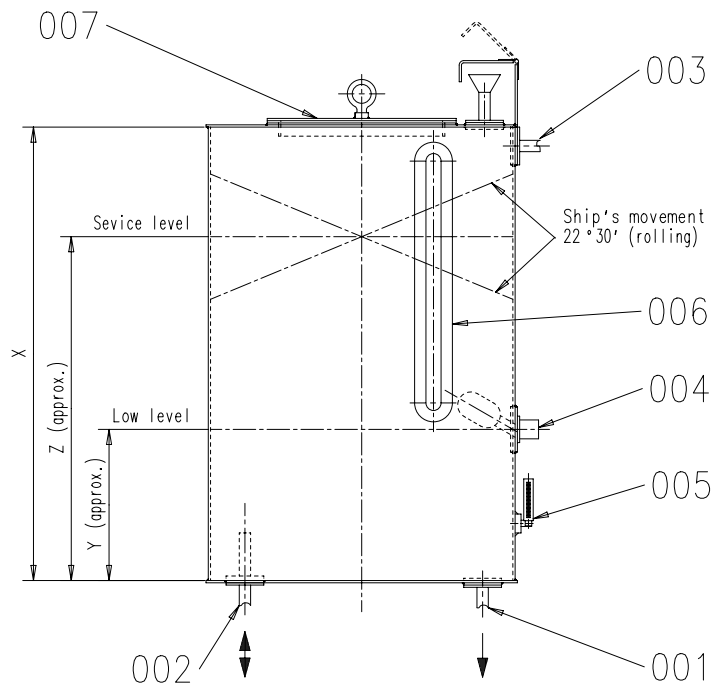
- Tank dimensions are defined by the Tank capacity, as seen in Table 1. For capacity and pipe diameter, refer to drawing 'Central cooling water system'.

Table 1: Tank dimensions

HT Tank capacity	W	X	Y	Z
(m <sup>3</sup> )	(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

(A) drawing view shows dimensioning scale for 0.75 m<sup>3</sup> capacity

Free space for file	Q-Code XXXXX				Main Drw.
	Standard ISO; JIS				
Modif.	(A) EAAD091567	15.11.2019			
	Number	Drawn date	Number	Drawn date	Number
Product		EXPANSION TANK			
W-25		CENTRAL COOLING WATER HT CIRCUIT			
WIN GD		Ausgleichstank			
Winterthur Gas & Diesel		Zentralkuehlwassersystem HT circuit			
Units	mm kg	NX	Basic Material	Net Weight 0,001	
Made	07.07.2014	mhu019	M.Hug	Scale	1:10
Chkd	08.08.2014	bha009	Haag	Size	A2
Appd	08.08.2014	bha009	Haag	Page	1/1
SURFACE PROTECTION SEE GROUP 034.4		Design Group		Material ID PAAD166922	
TOLERANCING PRINCIPLE ISO8015		9721		Drawing ID DAAD052664	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK				Rev. A	



Drawn for 0.75 m<sup>3</sup> 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 ( m <sup>3</sup> )	W ( mm )	X ( mm )	Y ( mm )	Z ( 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

Free space for file	Q-Code XXXXX				Main Drw.							
	Standard ISO; JIS											
Modif.	A	EAAD014356	16.06.1997	B	7-37090	16.08.2007	C	EAAD083145	25.01.2012	D	EAAD091029	12.09.2019
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date		


**W-2S**  
**EXPANSION TANK**  
**CENTRAL COOLING WATER LT CIRCUIT**  
**Ausgleichstank**  
**Zentralkuehlwassersystem LT**

Units	mm kg	NX	Basic Material	Net Weight	0,001					
Made	11.06.1997	T.LANDERT	Scale	1:10	Size	A2	Page	1/1	Material ID	107.245.419.500
Chkd			Design Group			Drawing ID	107.245.419		Rev.	D
Appd	11.06.1997	WCH001	Service User							

SURFACE PROTECTION SEE GROUP 034.4  
 TOLERANCING PRINCIPLE ISO8015  
 GENERAL TOLERANCES ACCORDING TO ISO2768-mK

## MIDS - Cooling Water System (DG9721)

WinGD X40DF-1.0

### TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2019-09-09	DRAWING SET	First web upload
2020-09-02	107.245.419 DAAD052664	new revision
2020-10-06	DAAD118518 DAAD118517 DAAD132980 107.245.626	new revision
2024-11-20	PTAA080013-- DTAA001219-- DTAA001221-- PAAD332800-B PAAD332801-C PAAD360765-A PAAD361000-B PTAA080004--	New revision

### DISCLAIMER

© Copyright by WinGD Ltd.

All rights reserved. No part of this document may be reproduced or copied in any form or by any means (electronic, mechanical, graphic, photocopying, recording, taping or other information retrieval systems) without the prior written permission of the copyright owner.

THIS PUBLICATION IS DESIGNED TO PROVIDE AN ACCURATE AND AUTHORITATIVE INFORMATION WITH REGARD TO THE SUBJECT-MATTER COVERED AS WAS AVAILABLE AT THE TIME OF PRINTING. HOWEVER, THE PUBLICATION DEALS WITH COMPLICATED TECHNICAL MATTERS SUITED ONLY FOR SPECIALISTS IN THE AREA, AND THE DESIGN OF THE SUBJECT-PRODUCTS IS SUBJECT TO REGULAR IMPROVEMENTS, MODIFICATIONS AND CHANGES. CONSEQUENTLY, THE PUBLISHER AND COPYRIGHT OWNER OF THIS PUBLICATION CAN NOT ACCEPT ANY RESPONSIBILITY OR LIABILITY FOR ANY EVENTUAL ERRORS OR OMISSIONS IN THIS BOOKLET OR FOR DISCREPANCIES ARISING FROM THE FEATURES OF ANY ACTUAL ITEM IN THE RESPECTIVE PRODUCT BEING DIFFERENT FROM THOSE SHOWN IN THIS PUBLICATION. THE PUBLISHER AND COPYRIGHT OWNER SHALL UNDER NO CIRCUMSTANCES BE HELD LIABLE FOR ANY FINANCIAL CONSEQUENTIAL DAMAGES OR OTHER LOSS, OR ANY OTHER DAMAGE OR INJURY, SUFFERED BY ANY PARTY MAKING USE OF THIS PUBLICATION OR THE INFORMATION CONTAINED HEREIN.