



PAAD311150	Central cooling water system with separated HT-circuit
PAAD311152	Central cooling water system with integrated HT-circuit

Net Weight												
0,001	0,001											
1	1	003	107.429.532.500	CONCEPT GUIDANCE Freshwater generation	107.429.532		0,001					
1	-	002	PAAD311131	CENTRAL COOLING WATER SYSTEM	DAAD108107		0,001					
-	1	001	PAAD311132	CENTRAL COOLING WATER SYSTEM	DAAD108108		0,001					
Quantity PER ENGINE		SEQ NO	Material ID	Material Name Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET					
PAAD311152	PAAD311150	Free space for lic.					Q-Code XXXXXX	Main Drw. H				
							Standard ISO; JIS					
Material ID	Modif.	<input type="radio"/>			<input type="radio"/>			<input type="radio"/>				
			Number	Drawn date		Number	Drawn date		Number	Drawn date		
		 Winterthur Gas & Diesel		Product 5-8RT-flex58T-D		COOLING WATER SYSTEMS Kuehlwassersystem						
Units		mm kg	NX			Basic Material		Net Weight				
0344	Made	01.11.2018	Sudant Deogade		Scale	-	Size	A3	Page	1/1	Material ID	
	Chkd	29.11.2018	wwa008 Wang		Design Group 9721		Drawing ID		DAAD108118		Rev. —	
TO ISO2768-mK	Appd	30.11.2018	mhu019 Hug									

1

2

3

4

5

6

7

8

SPECIFICATION which must be met:

14

OUTLET – Cylinder cooling air vent

– Vented through expansion tank

– Water flow restricted by orifice

RT-flex58T-D

14

1

2

7

5

FREE END

1

INLET – Cylinder cooling water

– Cooling water pressure: 3.0 – 5.0 bar

– Cooling water volume flow: according to GTD specification.

– Cooling water(freshwater) must be treated according to WinGD's specification.

2

OUTLET – Cylinder cooling water

– Cooling water temperature

Controller set-point: 90 °C (Controller type: PI)

Steady state condition: 90 ± 2 °C

Transient condition: 90 ± 4 °C

5

INLET – SAC LT cooling water

– Cooling water pressure: 2.0 – 4.0 bar

– Cooling water temperature: 25 – 36 °C

– Cooling water volume flow: according to GTD specification.

– Cooling water (freshwater) must be treated according to WinGD's specification.

7

OUTLET – SAC LT cooling water

– Cooling water volume flow: according to GTD specification,

adjusted by orifice in outlet pipe on plant side.

1

016

107.245.419.500

EXPANSION TANK

107.245.419

0,001

1

015

107.413.097.500

EXPANSION TANK

107.413.097

0,001

QTY

SEQ NO

Material ID

Material Name

Dimension, Occ

Standard or Drawing

Basic Material

Material Standard

Weight GR./NET

Free space for ltc.

Q-Code

XXXXXX

Main Drw.

Modif.

Number

Drawn date

Number

Drawn date

Number

Drawn date

Number

Drawn date

WIN GD

Winterthur Gas & Diesel

Product

5-8RT-flex58T-D

CENTRAL COOLING WATER SYSTEM

WITH SEPARATED HT CIRCUIT

Zentralkuehlwassersystem

Units

mm kg

NX

Basic Material

Net Weight

0,001

SURFACE PROTECTION SEE GROUP 0344

Made

01.11.2018

Sudant Deogade

Scale

-

Size

A3

Page

1/2

Material ID

PAAD311132

TOLERANCING PRINCIPLE ISO8015

Chkd

29.11.2018

wwa008 Wang

Design Group

9721

Drawing ID

DAAD108108

Rev.

-

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Appd

30.11.2018

mhu019 Hug

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Approved

DID - DIMENSIONAL DRAWING - Confidential

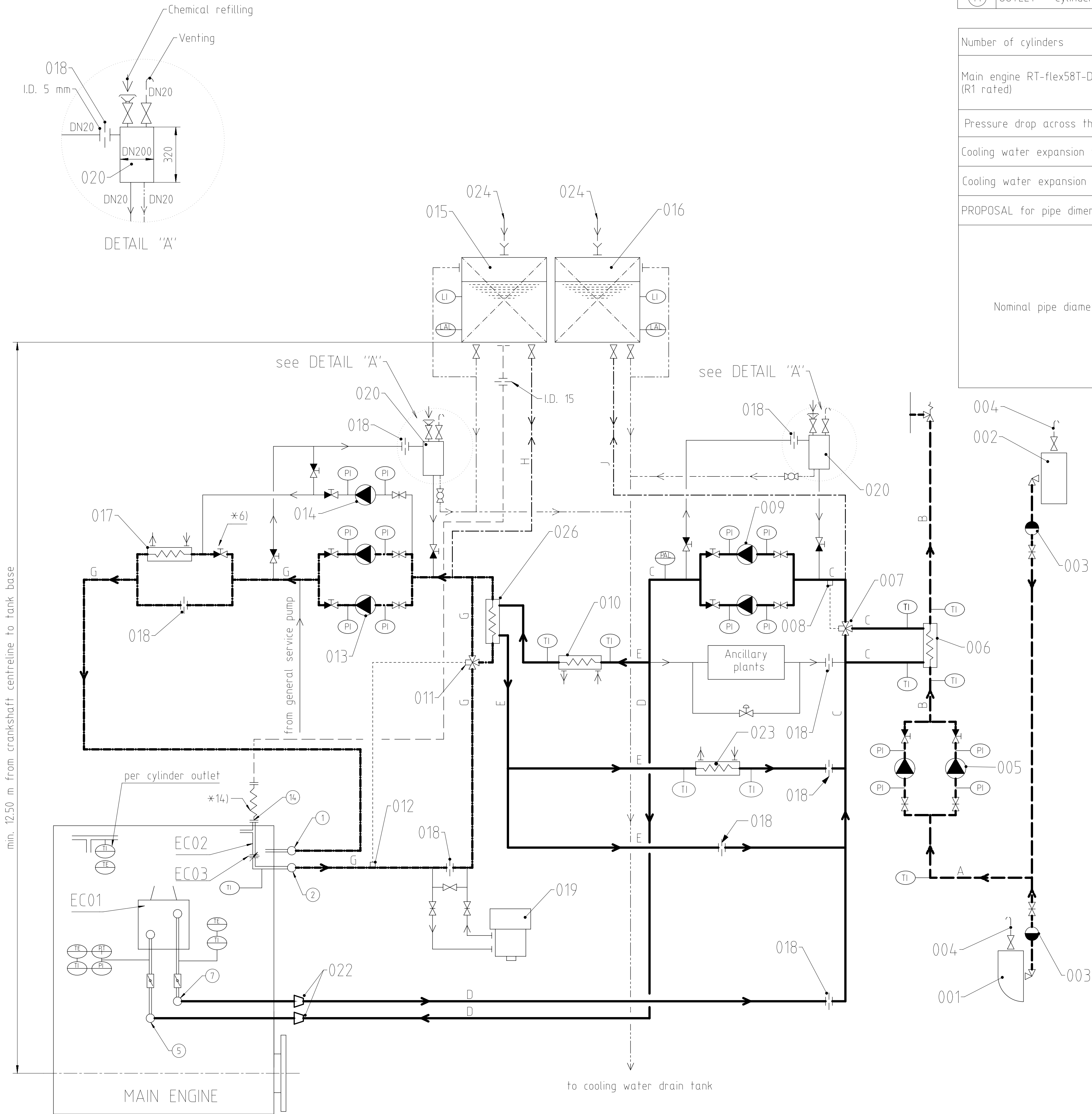
SYSTEM PROPOSAL

Pos.	ENGINE COMPONENTS *3)
EC01	Scavenge air cooler (SAC)
EC02	Air vent pipe CCW system
EC03	Throttling disc (adjustable orifice)

Pos.	ENGINE CONNECTIONS *2)
①	INLET - HT cooling water (free or driving end)
②	OUTLET - HT cooling water (free or driving end)
⑤	INLET - Scavenge air cooler, LT cooling water *7)
⑦	OUTLET - Scavenge air cooler, LT cooling water and air vent *7)
⑭	OUTLET - Cylinder cooling water air vent *14)

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 seawater cooler
007	Automatic temperature control valve for LT circuit *12)
008	LT water temperature sensor *12)
009	Cooling water pump for LT circuit
010	Lubricating oil cooler
011	Automatic temperature control valve for HT circuit *13)
012	HT water temperature sensor *13)
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 (link to detail drawing on page 1)
016	LT water expansion tank (link to detail drawing on page 1)
017	Pre-heater for main engine (HT circuit)
018	Throttling disc *5)
019	Freshwater generator
020	Chemical treatment refill unit *4)
021	HT cooling water cooler
022	Transition piece (adapter) *9)
023	MDO/MGO cooler
024	Filling pipe / inlet chemical treatment

Number of cylinders			5	6	7	8
Main engine RT-flex58T-D (R1 rated)	power	(kW)	11300	13560	15820	18080
	speed	(rpm)	105			
Pressure drop across the engine		(bar)	1.3			
Cooling water expansion tank (HT)	Cap.	(m³)	Recommended: 1.0 m³ 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 *11)						
Nominal pipe diameter	A	DN	Yard determination, suitable for main engine and ancillary plants			
	B	DN				
	C	DN				
	D	DN	200	200	200	300
	E	DN	125	125	150	150
	G	DN	125	150	150	150
	H	DN	65	80	80	100
	J	DN	65	80	80	100
	K	DN	50	50	50	50



- 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")
- *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 appropriate pipe diameter. Rating specific flow rates are provided by GTD.
- *12) A constant temperature at engine inlet must be maintained. Temperature set-point can be selected between 10 - 36 °C. WinGD recommends a set-point of 25 °C. A lower LT water temperature assists the main engine to reach lower BSFC. If the ancillary plants require a lower or greater LT water temperature a separate water supply system with different temperature set-point has to be installed (please refer to the system proposal in MM)
- *13) A constant temperature at engine outlet must be maintained. Required controller set-point for main engine operation is 90 °C.
- *14) Depending on vibration a flexible hose connection may be recommendable.

Free space for file	0-Code XXXXX		Main Drw.
Modif.	Number	Drawn date	Number
Product	5-8RT-flex58T-D		CENTRAL COOLING WATER SYSTEM WITH SEPARATED HT CIRCUIT
Standard	ISO; JIS		Zentralkuehlwassersystem
Units	mm kg	NX	Basic Material
Scale	-		Size A1
Page	2/2		Material ID PAAD311132
Rev.	-		DAAD108108

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Modif. Number Drawn date

Product 5-8RT-flex58T-D

Standard ISO; JIS

Units mm kg NX

Scale -

Size A1

Page 2/2

Material ID PAAD311132

Rev. -

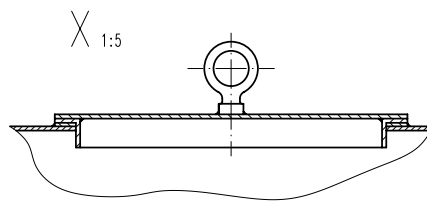
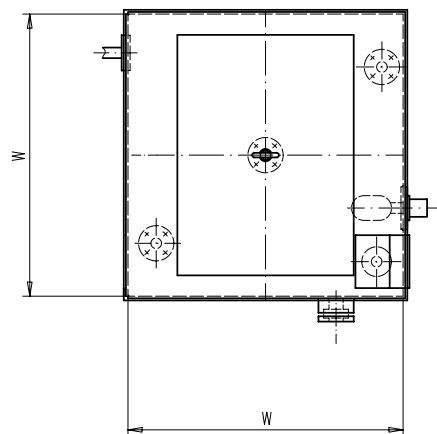
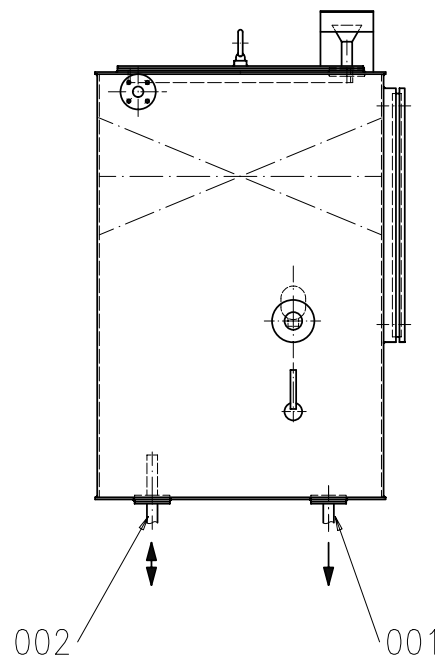
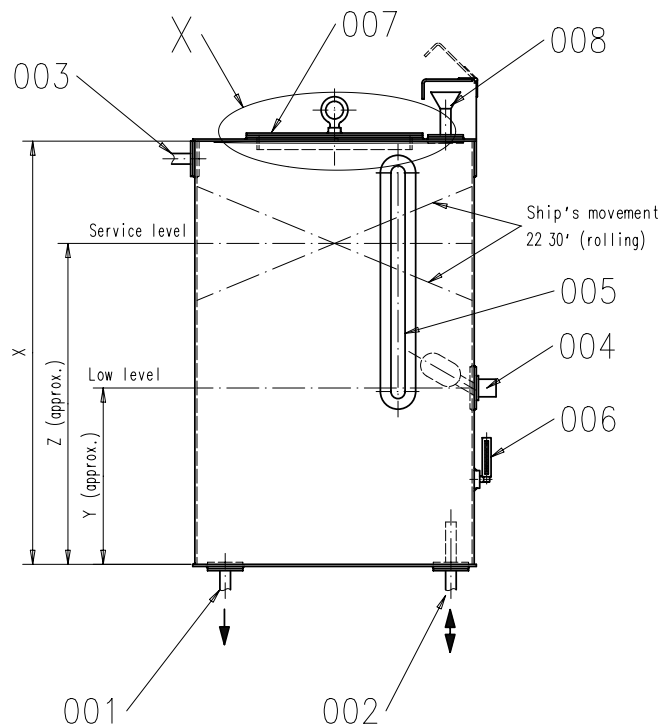
DAAD108108

WINGD Wintertur Gas & Diesel

30.11.2018 mhu019 Hug

29.11.2018 wwa008 Wang

01.11.2018 Sudant Deogade



drawn for 0.75 m³ capacity

Pos.	Description
001	Drain from HT circuit
002	Balance pipe from HT circuit
003	Overflow/air vent
004	Low level alarm
005	Level indicator *1)
006	Thermometer
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 recapacity and pipe diameters refer to drawing 'Central cooling water system' and 'Jacket cooling water system'

Table 1: Tank dimensions

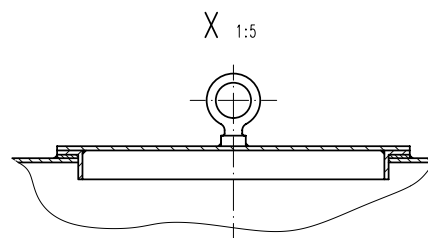
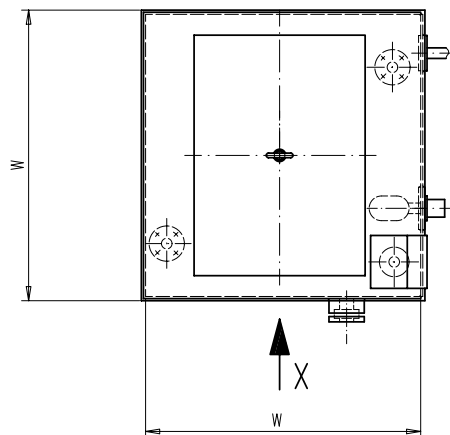
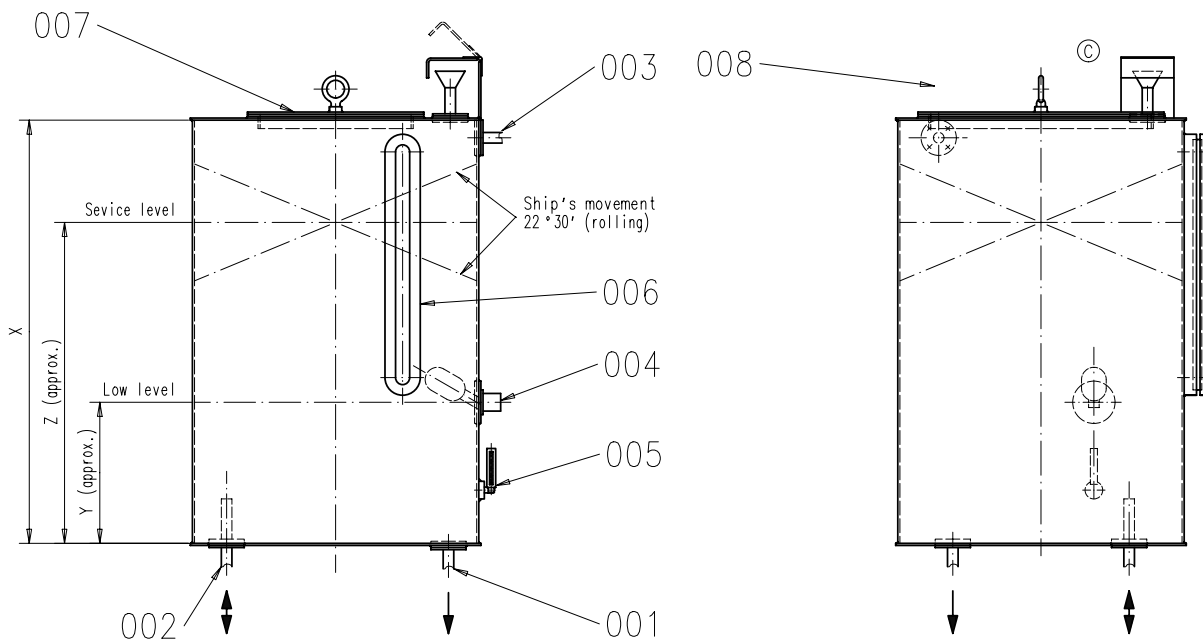
HT Tank capacity	W	X	Y	Z
(m ³)	(mm)	(mm)	(mm)	(mm)
0.5	800	800	330	640
0.75	800	1200	500	960
1.0	800	1600	670	1280
1.25	1000	1250	530	1000
1.5	1000	1500	630	1200
1.75	1000	1750	730	1400
2.0	1000	2000	830	1600

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First introduced at
RT-flex82C

Number	Drawn date	Number	Drawn date	Number	Drawn date
Q-Code	X X X X X	Substitute for		Scale	1:10/1:5
Ausgleichstank			Drawn: M.PRSTEC 16.04.09		
Zentralkuehlwassersystem HT circuit			Wartsila Switzerland Ltd		
EXPANSION TANK			CAD		
CENTRAL COOLING WATER HT CIRCUIT			WARTSILA		
Design group	ISO	Page:			
9721	JIS	2-107.413.097			

SURFACE PROTECTION SEE GROUP 0344
GENERAL TOLERANCES ACCORDING TO ISO/2768-m



Drawn for 0.75 m³ 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)
009	

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

Free space for lib.					Q-Code		XXXXX		Main Dwg.
					Standard		ISO JIS		
Modif.	A	7-14.356	11.06.1997	B	7-37.090	26.09.2005	C	EAAD083145	14.09.2011
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number
Product		RTMOT RT-flex			EXPANSION TANK CENTRAL COOLING WATER LT CIRCUIT Ausgleichstank Zentralkuehlwassersystem LT				
Units		mm kg		IDE		Basic Material		Net Weight 0.001	
Made		11.06.1997 T.LANDERT			Scale		1:10		Size
Chkd					Design Group		9721		Page
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd 16.06.1997 wdm2 Administrator			Drawing ID		107.245.419		Rev.
									C

SPECIFICATION which must be met:

16

OUTLET - Cylinder cooling air vent
- Vented through expansion tank
- Water flow restricted by orifice

1

INLET - Cylinder cooling water
- Cooling water pressure: 3.0 - 5.0 bar
- Cooling water volume flow according to GTD specification.
- Cooling water (freshwater) must be treated according to WinGD's specification.

2

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

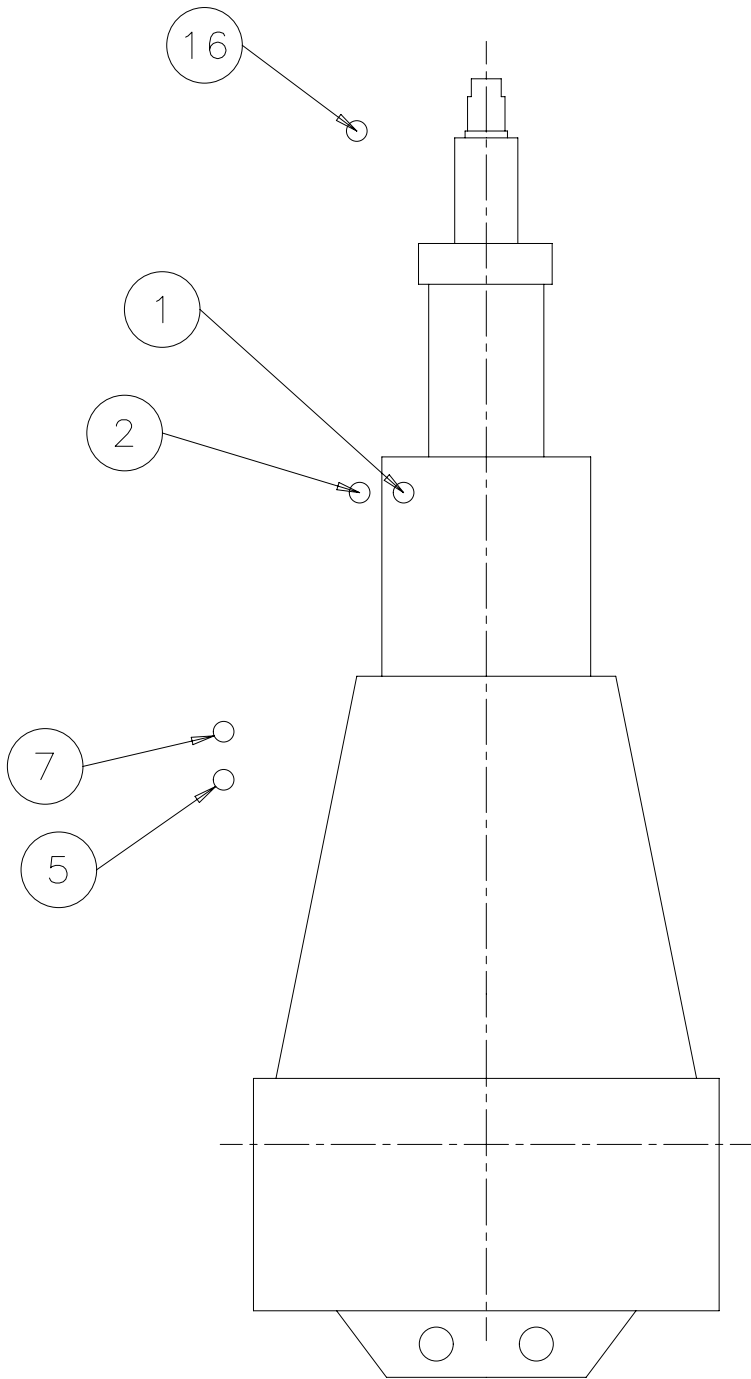
5

INLET - SAC LT cooling water
- Cooling water pressure: 2.0 - 4.0 bar
- Cooling water temperature: 10 - 36 °C
- Cooling water volume flow: according to GTD specification.
- Cooling water (freshwater) must be treated according to WinGD's specification.

7

OUTLET - SAC LT cooling water
- Cooling water volume flow: according to GTD specification, adjusted by orifice in outlet pipe on plant side.

RT-flex58T-D



FREE END

1	002	107.413.098.500	EXPANSION TANK		107.413.098		0,001
QTY	SEQ NO	Material ID	Material Name	Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
Free space for lic.						Q-Code XXXXXX	Main Drw.
						Standard ISO; JIS	
Modif.							
	Number	Drawn date		Number	Drawn date		Number
			Product 5-8RT-flex58T-D		CENTRAL COOLING WATER SYSTEM WITH INTEGRATED HT CIRCUIT Zentralkuehlwassersystem		
			Units mm kg NX		Basic Material		Net Weight 0,001
SURFACE PROTECTION SEE GROUP 0344			Made	01.11.2018 Sudant Deogade	Scale -	Size A3	Page 1/2
TOLERANCING PRINCIPLE ISO8015			Chkd	29.11.2018 wwa008 Wang	Design Group	Material ID	PAAD311131
GENERAL TOLERANCES ACCORDING TO ISO2768-mK			Appd	30.11.2018 mhu019 Hug	9721	Drawing ID	DAAD108107
						Rev.	-

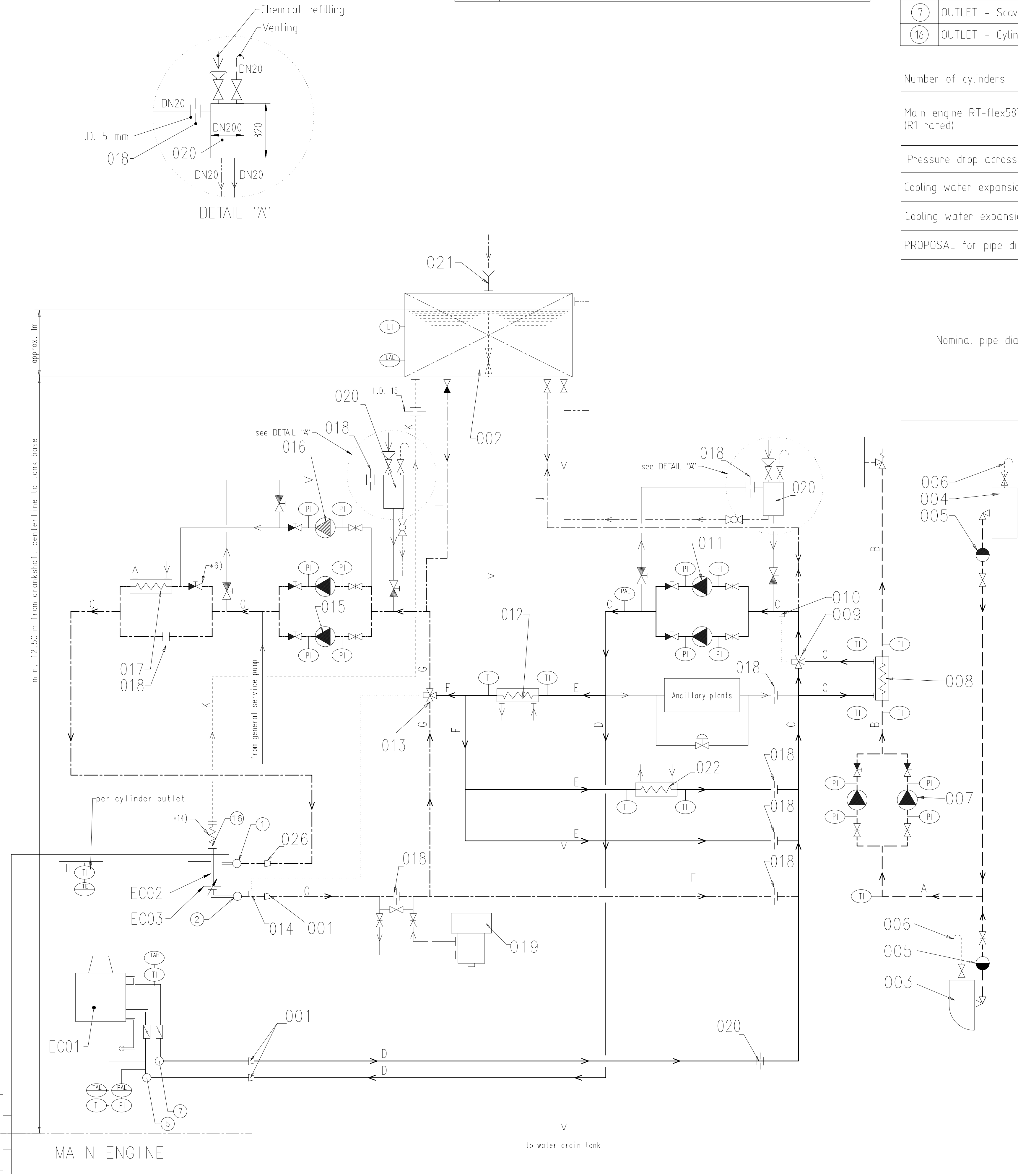
SYSTEM PROPOSAL

Pos.	ENGINE COMPONENTS *3)
EC01	Scavenge air cooler (SAC)
EC02	Air vent pipe CCW system
EC03	Throttling disc (adjustable orifice)

Pos.	ENGINE CONNECTIONS *2)
①	INLET - HT cooling water (free or driving end)
②	OUTLET - HT cooling water (free or driving end)
⑤	INLET - Scavenge air cooler, LT cooling water *7)
⑦	OUTLET - Scavenge air cooler, LT cooling water and air vent *7)
⑬	OUTLET - Cylinder cooling water air vent *14)

Pos.	SYSTEM COMPONENTS *1)
001	Transition piece (adapter) *9)
002	HT / LT expansion tank (detail drawing linked by partlist on page 1)
003	Low sea chest
004	High sea chest
005	Seawater strainer
006	Air vent (air vent pipe or equal venting system acc. to shipyard's design)
007	Seawater circulating pump
008	Central seawater cooler
009	Automatic temperature control valve for LT circuit *12)
010	LT water temperature sensor *12)
011	Cooling water pump for LT circuit
012	Lubricating oil cooler
013	Automatic temperature control valve for HT circuit *13)
014	HT water temperature sensor *13)
015	Cylinder cooling water pump for HT circuit
016	Pre-heating circulating pump (optional), cap. 10% from cylinder cooling pump *8)
017	Pre-heater for main engine (HT circuit)
018	Throttling disc *5)
019	Freshwater generator
020	Chemical treatment refill unit *4)
021	Filling pipe/inlet chemical treatment
022	MDO/MGO cooler

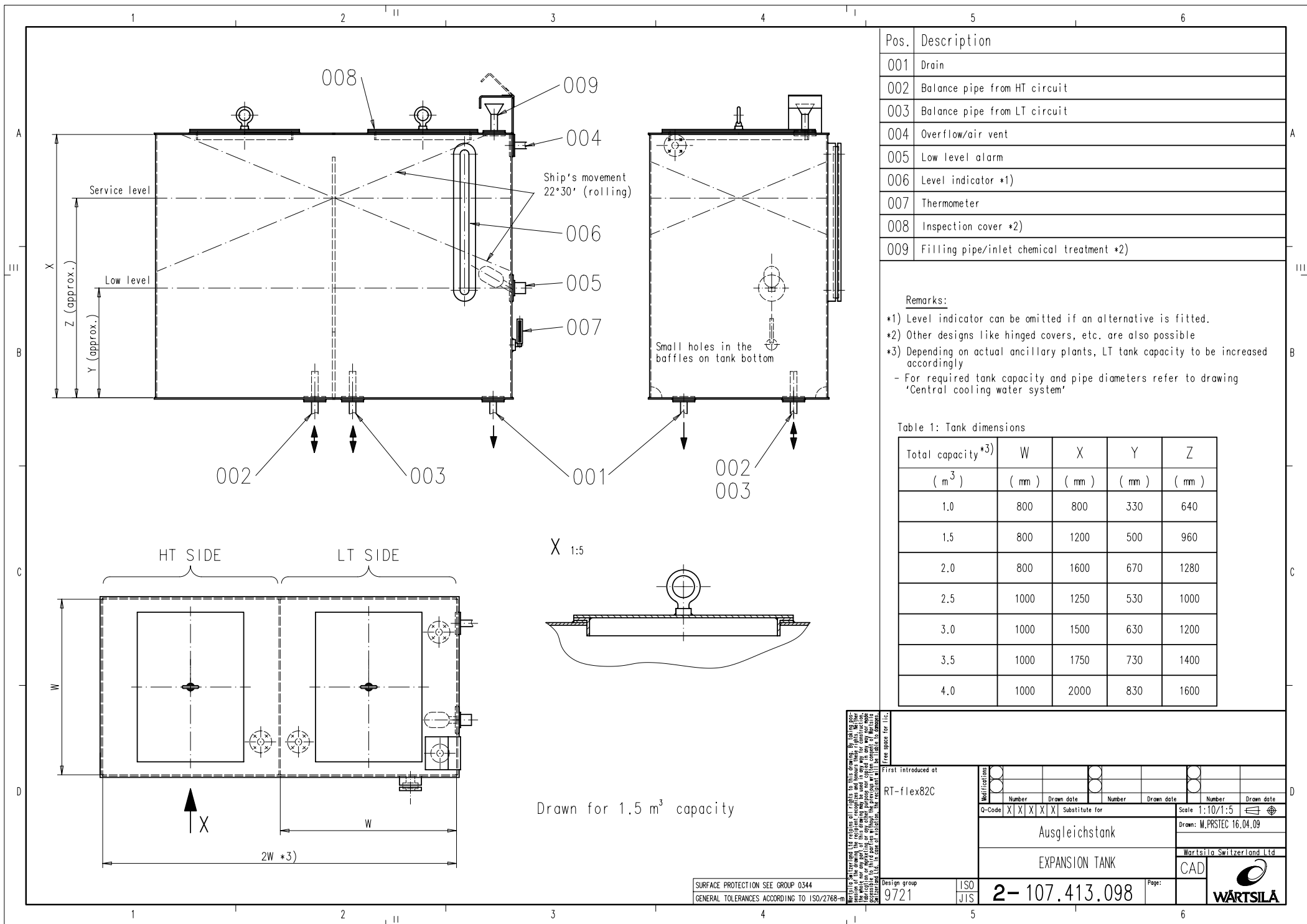
- Remarks:
- Air vent and drain pipes not shown on drawing. Shall be installed where required.
 - Air vent and drain pipes must be fully functional at all inclination angles of the ship at which the engine must be operational.
- *1) To be delivered by external supplier and to be installed by the shipyard.
*2) Refer to the "Pipe Conection 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. 016 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")
*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 appropriate pipe diameter. Rating specific flow rates are provided by GTD.
*12) A constant temperature at engine inlet must be maintained. Temperature set-point can be selected between 10 - 36 °C. WinGD recommends a set-point of 25 °C. A lower LT water temperature assists the main engine to reach lower BSFC . If the ancillary plants require a lower or greater LT water temperature a separate water supply system with different temperature set-point has to be installed (please refer to the system proposal in MIM)
*13) A constant temperature at engine outlet must be maintained. Required controller set-point for main engine operation is 90 °C.
*14) Depending on vibration a flexible hose connection may be recommendable.



Number of cylinders			5	6	7	8
Main engine RT-flex58T-D (R1 rated)	power	(kW)	11300	13560	15820	18080
	speed	(rpm)	105			
Pressure drop across the engine		(bar)	1.3			
Cooling water expansion tank (HT)	Cap.	(m³)	Recommended: 1.0 m³ 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 *11)						
Nominal pipe diameter	A	DN	Yard determination, suitable for main engine and ancillary plants			
	B	DN				
	C	DN				
	D	DN	200	200	200	300
	E	DN	125	125	150	150
	G	DN	125	150	150	150
	H	DN	65	80	80	100
	J	DN	65	80	80	100
	K	DN	50	50	50	50

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

SURFACE PROTECTION SEE GROUP 0344	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	0-Code XXXXX Standard ISO; JIS	Main Drw.
TOLERANCING PRINCIPLE ISO8015	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	WINGD Winterthur Gas & Diesel	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Product 5-8RT-flex58T-D	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	CENTRAL COOLING WATER SYSTEM WITH INTEGRATED HT CIRCUIT Zentralkuehlwassersystem	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Units mm kg NX	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Scale -	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Size A1	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Page 2/2	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Material ID	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	PAAD311131	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Drawing ID	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	DAAD108107	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Rev.	
	Modf.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	-	



MIDS - WinGD RT-flex58T-D - Cooling Water System (DG9721)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2017-05-29	DRAWING SET	First web upload
2018-12-13	DAAD108118 DAAD108108 DAAD108107	Main and system drgs – new revision

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