PAAD360985	HT CW static pressure adjustment: with separate buffer-unit
PAAD026467	HT CW static pressure adjustment: with common HT/LT expansion tank
PAAD025805	HT CW static pressure adjustment: with separate expansion tank

SEE TABLE

Quantity PER ENGINE			SEQ NO	Material ID	Material Name Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
Net Weight 0,001	Net Weight 0,001	Net Weight 0,001						
1	1	1	004	107.429.532.500	CONCEPT GUIDANCE Freshwater generation	107.429.532		0,001
1	-	-	003	PAAD360181	CENTRAL COOLING WATER SYSTEM HT_static-pressure: Buffer-unit	DAAD132670		0,001
-	1	-	002	PAAD025862	CENTRAL COOLING WATER SYSTEM HT_static-pressure: EXP tank	DAAD011993		0,001
-	-	1	001	PAAD026355	CENTRAL COOLING WATER SYSTEM HT_static-pressure: EXP tank	DAAD012778		0,001

PAAD360985	PAAD026467	PAAD025805
Material ID		

Free space for lic.

Q-Code: XXXXX

Standard: ISO; JIS

Main Drw.: H

Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
A	EAAD083926	14.08.2012	B EAAD089971	25.11.2018	C EAAD092431	20.07.2020		

WIN GD Winterthur Gas & Diesel

Product: W5-8X35-B

COOLING WATER SYSTEMS
INSTALLATION DRAWINGS
Kuehlwassersystem

Units mm kg	NX		Basic Material	Net Weight
Made 09.12.2010 sfe006 Feuerstein		Scale -	Size A3	Page 1/1	Material ID
Chkd 29.12.2010 dst009 Ströddecke		Design Group 9721	Drawing ID DAAD012153	Rev. C
Appd 29.12.2010 dst009 Ströddecke				

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

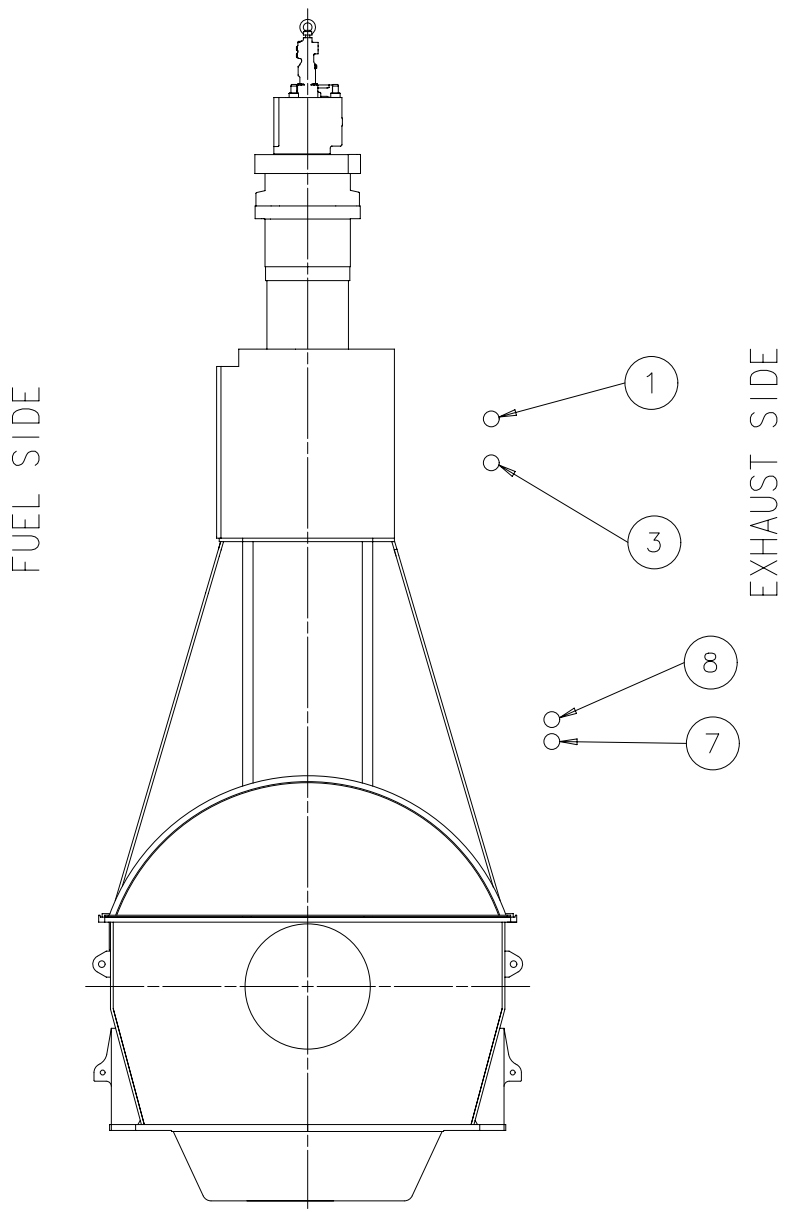
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X35-B

DRIVING END



SPECIFICATION which must be met:

(1) INLET - Cylinder cooling water (HT water)

- Cooling water pressure: 2.0 - 4.0 bar
- Cooling water volume flow: according to GTD specification.
- Cooling water (freshwater) has to be treated according to WinGD's 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 table1 on page 2

(3) OUTLET - Cylinder cooling water (HT water)

- Cooling water temperature set point: 90 °C
  Controller set-point: 90 °C (controller type: PI)
  Steady state condition: 90 ± 2 °C
  Transient condition: 90 ± 4 °C
- A venting device (air separator) must be installed as close as possible after the outlet connection to remove accumulated air from the system

(7) INLET - Scavenge air cooler (SAC) cooling water (LT 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) has to be treated according to WinGD's specification.
- LT cooling water amount on engine side: Given in table1 on page 2

(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.

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	029	PAAD297120	AIR SEPARATOR	DAAD101945		0,001
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

Approved

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

WIN GD Winterthur Gas & Diesel

Product: 5-8X35-B

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	14.07.2020 Sudant Deogade	Scale -	Size A2	Page 1/2	Material ID PAAD360181
TOLERANCING PRINCIPLE ISO8015	Chkd	30.09.2020 jpi101 Pickup	Design Group 9721	Drawing ID DAAD132670		Rev. -
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	30.09.2020 mhu019 Hug				

DID - DIMENSIONAL DRAWING - Confidential

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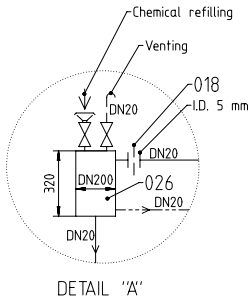
SYSTEM PROPOSAL

Pos.	ENGINE CONNECTIONS *2)
1	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.	ENGINE COMPONENTS *3)
EC01	Scavenge air cooler (SAC)
EC02	Manual vent valve, for each cylinder *16)

Number of cylinders			5	6	7	8
Main engine X35-B (R1 rated)	power	(kW)	4350	5220	6090	6960
	speed	(rpm)	167			
Buffer unit for HT circuit	Cap.	(m^3)	0.8	0.8	0.8	0.8
Cylinder cooling water feed tank only min.	Cap.	(m^3)	1.5	1.5	1.5	1.5
CCW feed and drain tank (combined) min.	Cap.	(m^3)	4	4	4	4
Cooling water expansion tank (LT)	Cap.	(m^3)	Depending on ancillary plants			
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	125	150	150	150
	E	DN	80	80	100	100
	F	DN	80	100	100	100
	I	DN	65	80	80	100
	J	DN	65	80	80	100
	K	DN	20	20	20	20

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	Air separator (link to detail drawing on page 1)
030	Automaic venting unit



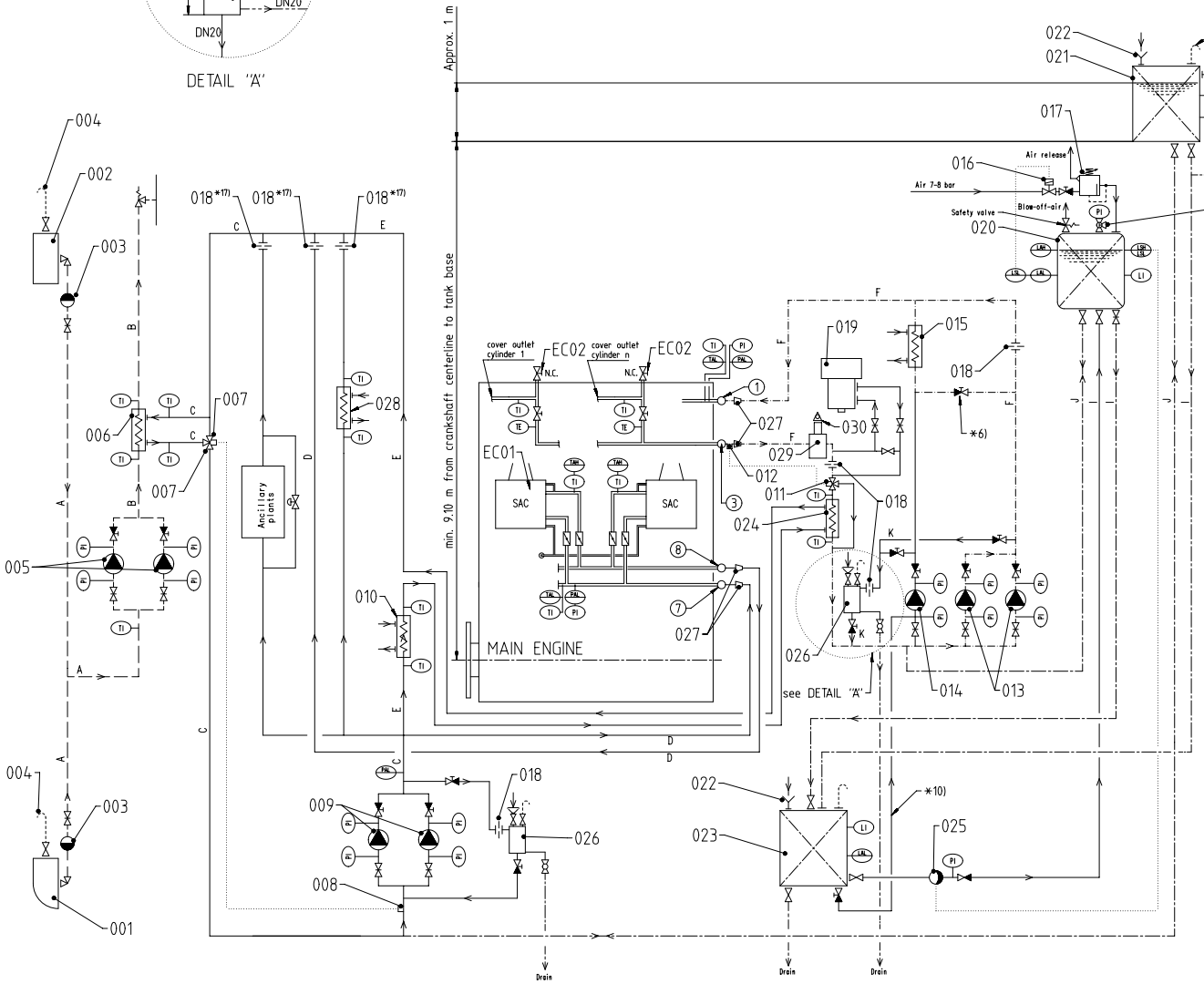


Table 1: Water content on engine side

Cylinder	HT circuit Cyl. C.W. Volume (l)	LT circuit SAC Volume (l)
5	120 l	160 l
6	150 l	160 l
7	170 l	190 l
8	200 l	190 l

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

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) Optional filling line to enable fast system re-filling (e.g. after a complete system drainage) by means of the pre-heating pumps.
*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.
*13) 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 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, only to be installed if needed for hydraulic balancing.
*18) If gas driven auxiliaries are connected to the LT circuit, the LT expansion tank must be gas tight and has to be vented to a safe area outside of engine room.

Free space for Nr.: | Q-Code XXXXX | Main Drw.
Standard ISO; JIS
Modif. | Number | Drawn date | Number | Drawn date | Number | Drawn date | Number | Drawn date | Approved

WinGD Winterthur Gas & Diesel

Product 5-8X35-B

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
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

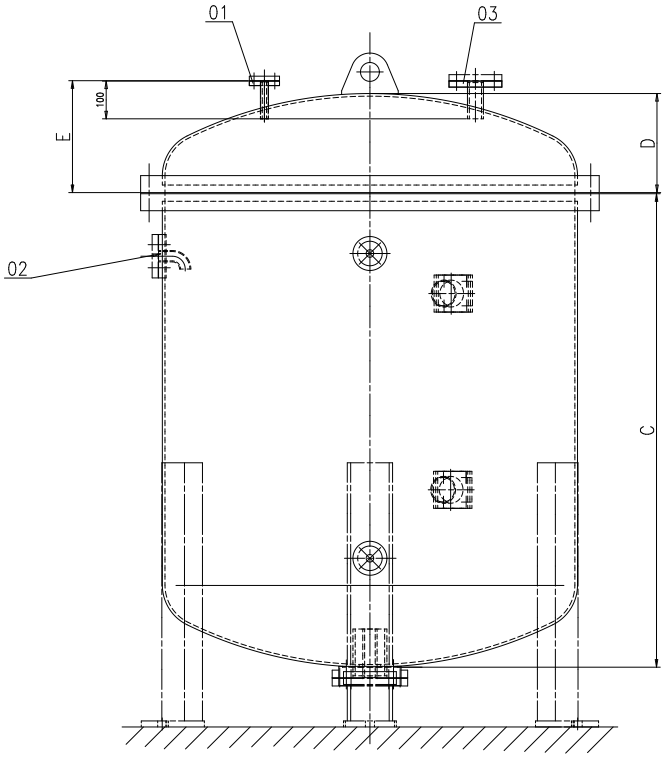
Made 14.07.2020 Sudant Deogade
Chkd 30.09.2020 jipi101 Pickup
Appd 30.09.2020 mhu019 Hug

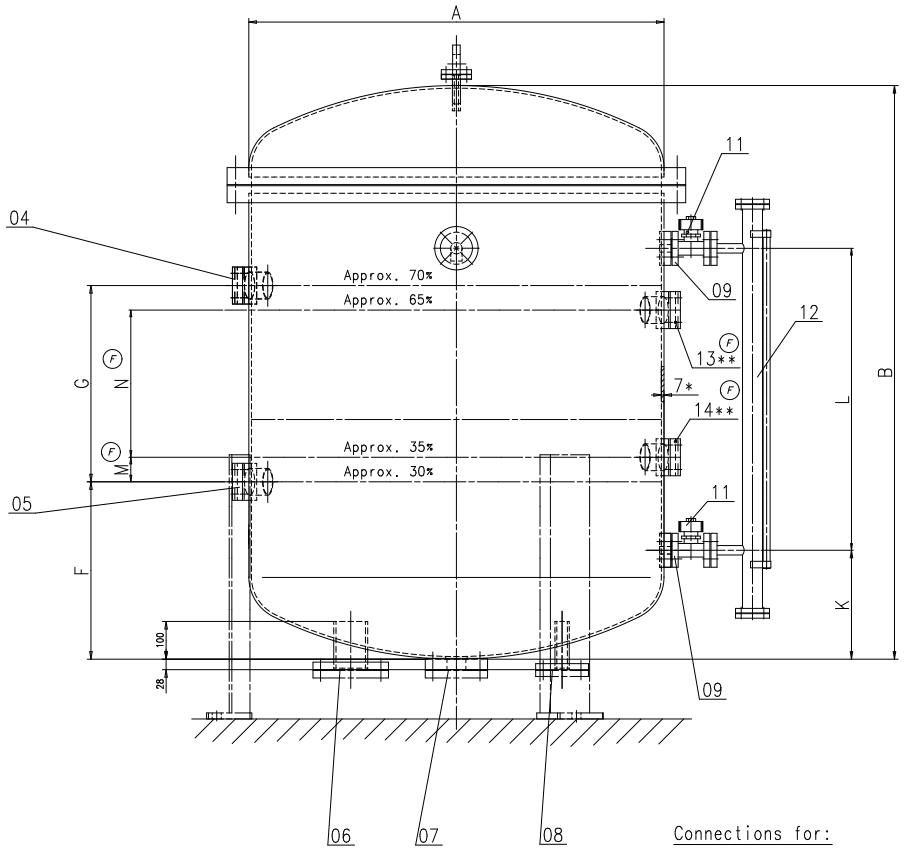
Scale - | Size A1 | Page 2/2 | Material ID PAAD360181
Design Group 9721 | Drawing ID DAAD132670 | Rev. -

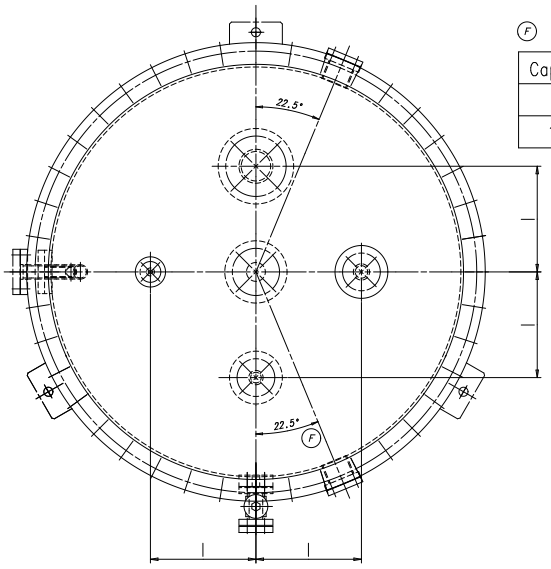
DD - DIMENSIONAL DRAWING - confidential

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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

Mod'l	for spare part No.										Q-Code XXXXX	Mat'n Dr.
											Standard ISO	
Mod'l	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	
SURFACE PROTECTION SEE GROUP 0344	Made	22.08.07	S.STYLIANOU	Scale 1:5	Size A0	Page 1/1	Number/Ref. 107.245.626.500
TOLERANCING PRINCIPLE ISO8015	Chkd			Design Group 9721	Drawing No 107.245.626		Rev. F
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd						

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SPECIFICATION which must be met:

(8) (E) 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.

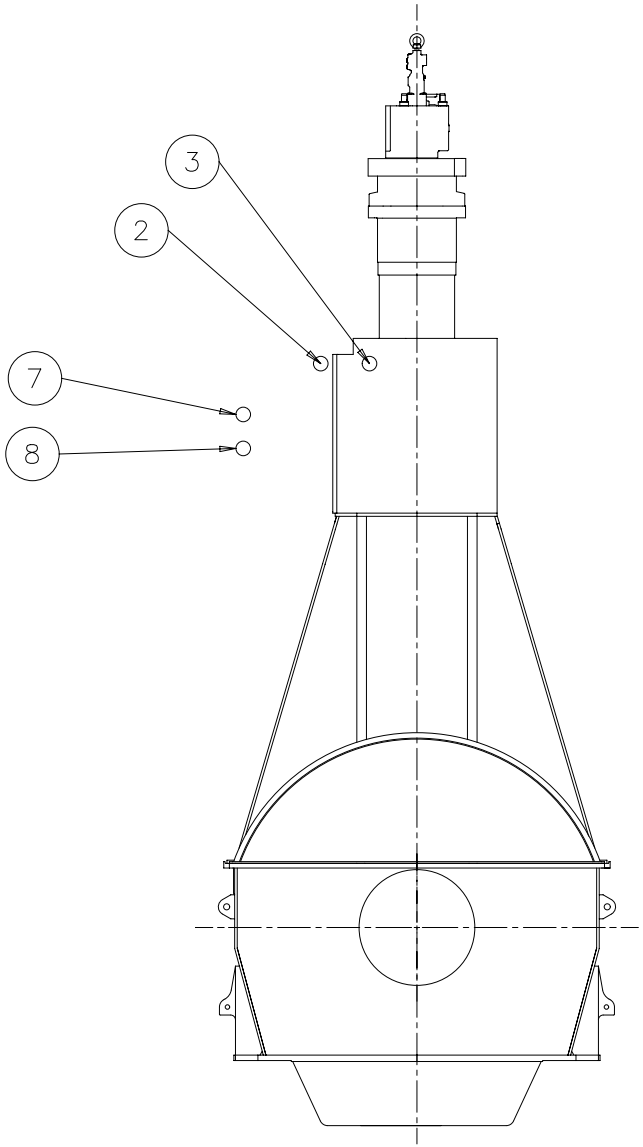
(2) (E) INLET - Cylinder cooling water (HT water)
- Cooling water pressure: 2.0 - 4.0 bar
- Cooling water volume flow: according to GTD specification.
- Cooling water (freshwater) must be treated according to WinGD's specification.
- Pre-heating: The engine must be warmed-up by means of heated HT water to min. 60°C before engine start.
- HT cooling water amount on engine side: Given in table1 on page 2

(3) (E) OUTLET - Cylinder cooling water (HT water)
- Cooling water temperature
- Controller set-point: 90 °C (controller type: PI)
- Steady state condition: 90 ± 2 °C
- Transient condition: 90 ± 4 °C
- A venting device (air separator) must be installed as close as possible after the outlet connection to remove accumulated air from the system

(7) (E) INLET - Scavenge air cooler (SAC) cooling water (LT water)
- Cooling water pressure: 2.0 - 4.0 bar
- Cooling water temperature set-point : 10 - 36 °C
- Cooling water volume flow: according to GTD specification.
- Cooling water (freshwater) must be treated according to WinGD's specification.
- LT cooling water amount on engine side: Given in table1 on page 2

X35-B

FREE END



QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	025	PAAD297120	AIR SEPARATOR	DAAD101945		0,001
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

Approved

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
(B)	EAAD085793	01.06.2015	(C) EAAD086766	15.09.2016	(D) EAAD089971	25.11.2018	(E) EAAD092431	07.09.2020

WIN GD Winterthur Gas & Diesel

Product: 5-8X35-B

CENTRAL COOLING WATER SYSTEM
HT_static-pressure: EXP tank
HT/LT circuit: SEPARATED

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

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

Made	09.12.2010	sfe006 Feuerstein	
Chkd	29.12.2010	dst009 Strödecke	
Appd	29.12.2010	dst009 Strödecke	

Scale: -
Design Group: 9721
Size: A3
Page: 1/2
Material ID: PAAD026355
Drawing ID: DAAD012778
Rev.: E

P/G - P & I DIAGRAM - Internal

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SYSTEM PROPOSAL

Pos.	ENGINE COMPONENTS *3)
EC01	Scavenge air cooler (SAC)
Ⓔ EC02	Manual vent valve, for each cylinder *15)

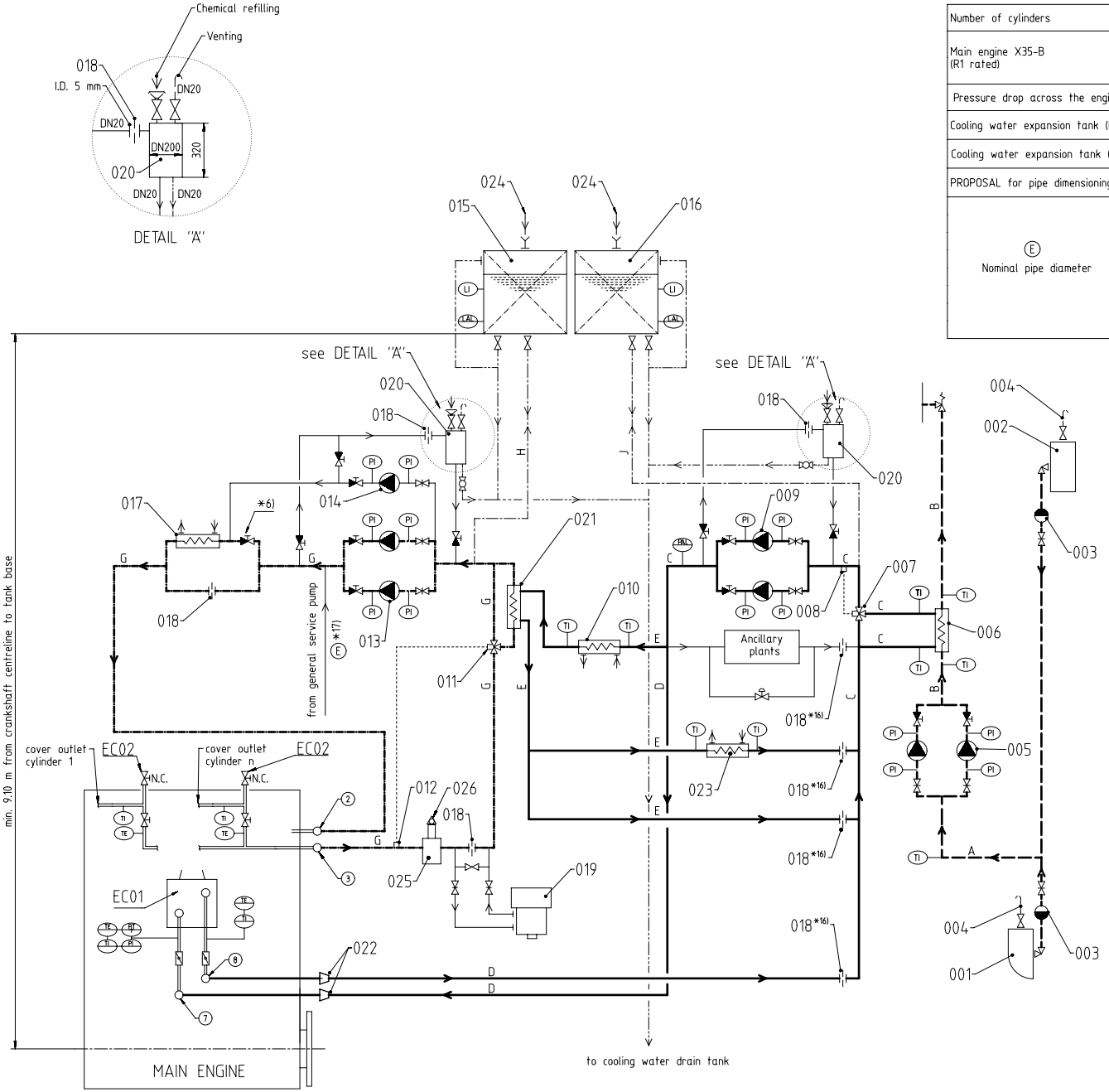
Pos.	ENGINE CONNECTIONS *2) Ⓔ
2	INLET - Cylinder cooling water (HT water)
3	OUTLET - Cylinder cooling water (HT water)
7	INLET - Scavenge air cooler (SAC) cooling water (LT water) *7)
8	OUTLET - Scavenge air cooler (SAC) cooling water (LT water) *7)

Number of cylinders			5	6	7	8
Main engine X35-B (R1 rated)	power	(kW)	4350	5220	6090	6960
	speed	(rpm)	167			
Pressure drop across the engine		(bar)	1.3			
Cooling water expansion tank (HT)	Cap.	(m^3)	Recomended: 0.5m^3 min. 10% of HT cooling water			
Cooling water expansion tank (LT)	Cap.	(m^3)	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	125	150	150	150
	E	DN	80	100	100	100
	G	DN	80	100	100	100
	H	DN	65	80	80	100
	J	DN	65	80	80	100

Ⓔ Table 1: Water content on engine side

Cylinder	HT circuit Cyl. C.W. Volume (l)	LT circuit SAC Volume (l)
5	120 l	160 l
6	150 l	160 l
7	170 l	190 l
8	200 l	190 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	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
Ⓔ 025	Air separator (link to details drawing on page 1)
Ⓔ 026	Automatic venting unit



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

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. 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 approriate pipe diameter. Rating specific flow rates are provided by GTD.
*13) 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 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) Only to be used for manual venting of isolated cylinders after maintenance. To be kept close during engine operation.
*16) Optional, only to be installed if needed for hydraulic balancing.
*17) Optional connection, to be installed if requested by class rules for emergency engine cooling.

Free space for lic.									Q-Code XXXXX	Main Drw.
									Standard ISO; JIS	
Modif.	B EAAD085793	01.06.2015	C EAAD086766	15.09.2016	D EAAD089971	25.11.2018	E EAAD092431	07.09.2020		
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date		

WinGD Winterthur Gas & Diesel

Product 5-8X35-B

CENTRAL COOLING WATER SYSTEM
HT_static-pressure: EXP tank
HT/LT circuit: SEPARATED

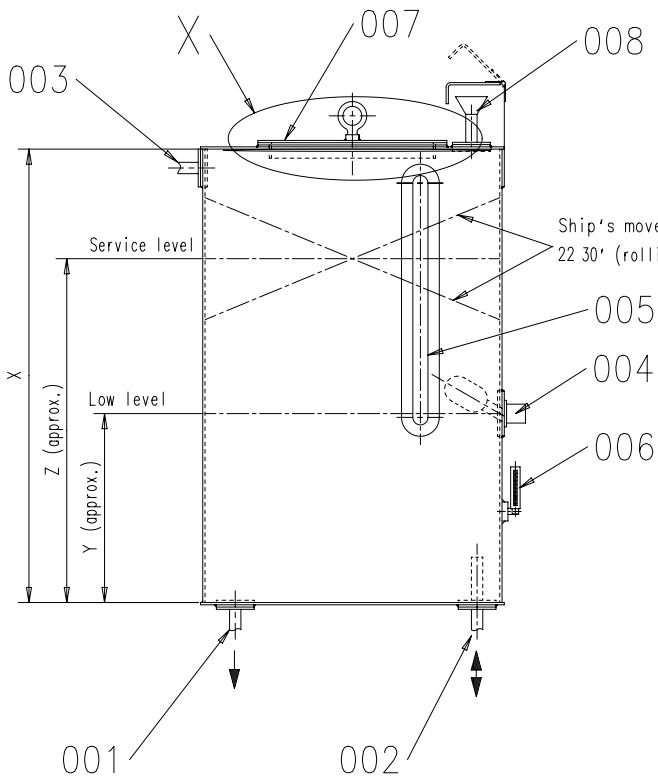
Units	mm kg	NX	Basic Material	Net Weight 0,001

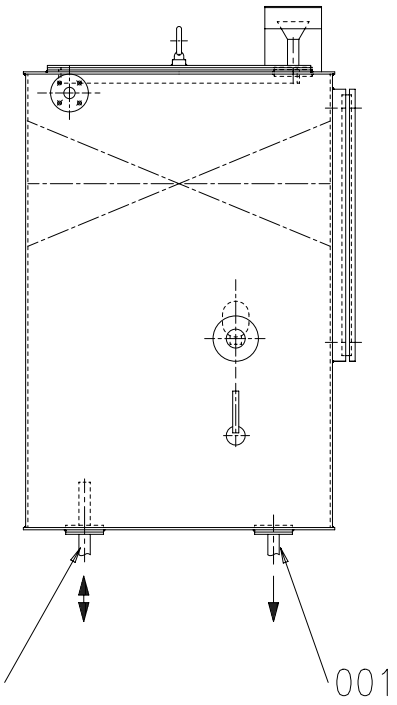
SURFACE PROTECTION SEE GROUP 0344	Made	09.12.2010	sfe006	Feuerstein	Scale	-	Size A1	Page 2/2
TOLERANCING PRINCIPLE ISO8015	Chkd	29.12.2010	dst009	Ströbecke	Design Group	9721	Material ID	PAAD026355
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	29.12.2010	dst009	Ströbecke	Drawing ID	DAAD012778	Rev.	E

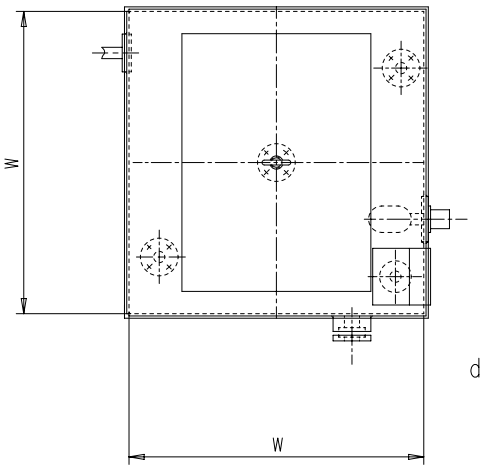
Approved

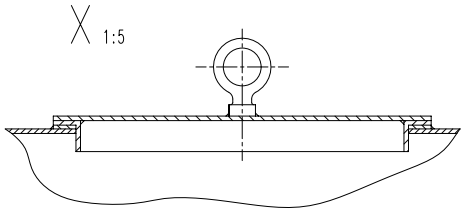
FIG. - P & I DIAGRAM - Internal

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Ⓐ drawing view shows dimensioning scale 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

- 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^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 lic.

Q-Code XXXXX

Main Drw.

Standard ISO; JIS

Modif. | Number | Drawn date | Number | Drawn date | Number | Drawn date | Number | Drawn date | Number | Drawn date

Ⓐ | EAAD091567 | 15.11.2019

WIN GD Winterthur Gas & Diesel

Product W-2S

EXPANSION TANK
CENTRAL COOLING WATER HT CIRCUIT
Ausgleichstank
Zentralkuehlwassersystem HT circuit

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

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made 16.04.2009 M.PRSTEC | Chkd | Appd 30.04.2009 MPR002 Prstec

Scale 1:10 | Design Group 9721

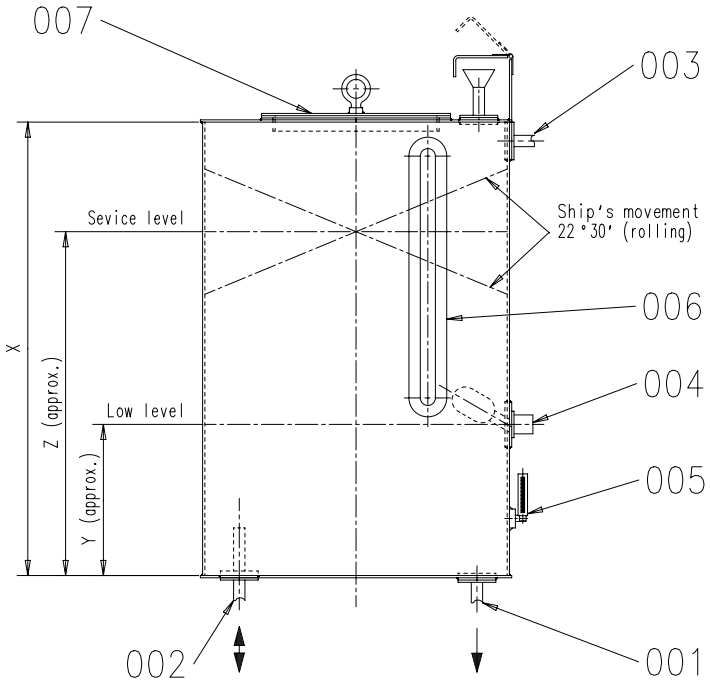
Size A2 | Page 1/1 | Material ID 107.413.097.500

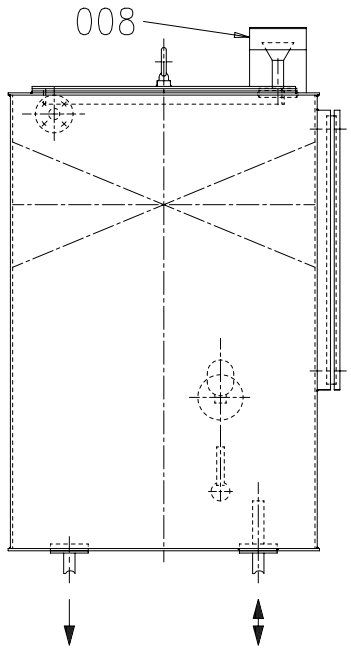
Drawing ID 107.413.097 | Rev. A

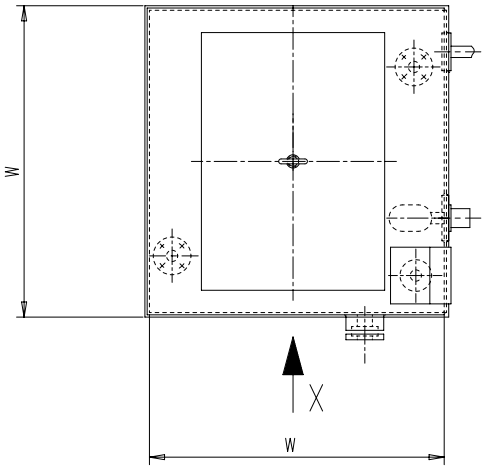
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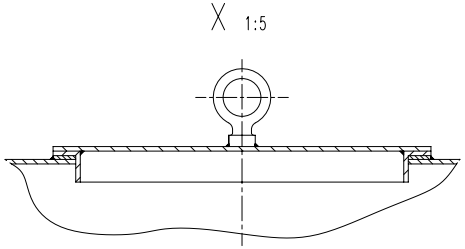
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Drawn for 0.75 m^3 capacity

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

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Q-Code XXXXX

Standard ISO; JIS

Main Drw.

Approved

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				

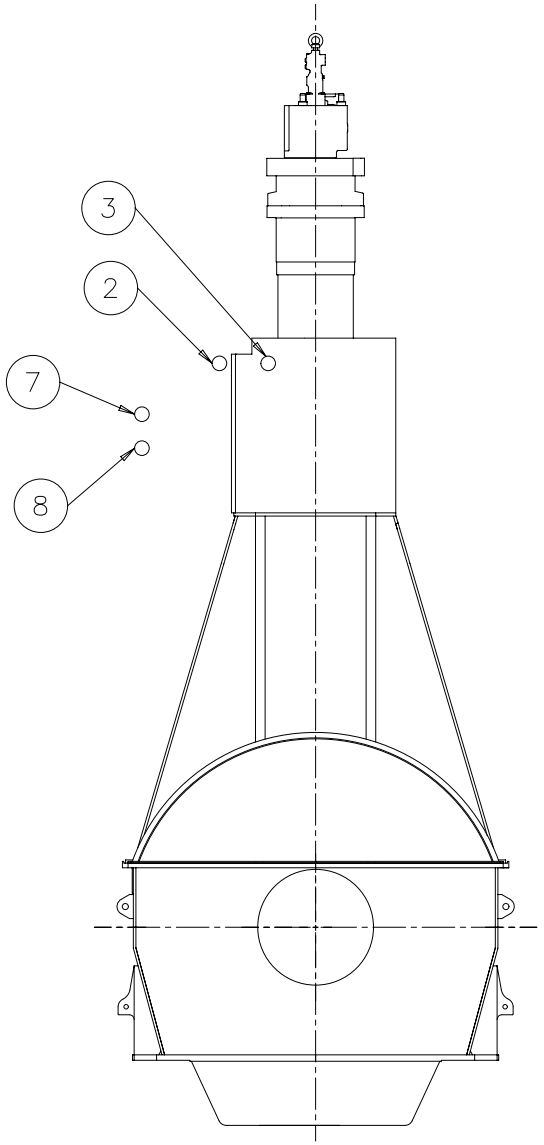
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SPECIFICATION which must be met:

(8) (G)	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.

X35-B
FREE END



(2) (G)	INLET - Cylinder cooling water (HT water) - Cooling water pressure: 2.0 - 4.0 bar - Cooling water volume flow: according to GTD specification. - Cooling water (freshwater) must be treated according to WinGD's specification. - 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 table1 on page 2
(3) (G)	OUTLET - Cylinder cooling water (HT water) - Cooling water temperature - Controller set-point: 90 °C (controller type: PI) - Steady state condition: 90 ± 2 °C - Transient condition: 90 ± 4 °C - A venting device (air separator) must be installed as close as possible after the outlet connection to remove accumulated air from the system
(7) (G)	INLET - Scavenge air cooler (SAC) cooling water (LT water) - Cooling water pressure: 2.0 - 4.0 bar - Cooling water temperature set-point : 10 - 36 °C - Cooling water volume flow: according to GTD specification. - Cooling water (freshwater) must be treated according to WinGD's specification. - LT cooling water amount on engine side: Given in table1 on page 2

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	022	PAAD297120	AIR SEPARATOR	DAAD101945		0,001
1	002	107.413.098.500	EXPANSION TANK	107.413.098		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
	(D)	EAAD085793	01.06.2015	(E)	EAAD086766	15.09.2016	(F)	EAAD089971	25.11.2018	(G)	EAAD092431	07.09.2020

WIN GD Winterthur Gas & Diesel

Product: 5-8X35-B

CENTRAL COOLING WATER SYSTEM
HT_static-pressure: EXP tank
HT/LT circuit: INTEGRATED

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

SURFACE PROTECTION SEE GROUP 0344	Made	09.12.2010	sfe006 Feuerstein	Scale -	Size A3	Page 1/2
TOLERANCING PRINCIPLE ISO8015	Chkd	29.12.2010	dst009 Stródecke	Design Group 9721	Material ID	PAAD025862
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	29.12.2010	dst009 Stródecke		Drawing ID	DAAD011993 Rev. G

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SYSTEM PROPOSAL

Pos.	ENGINE COMPONENTS *3)
EC01	Scavenge air cooler (SAC)
Ⓖ EC02	Manual vent valve, for each cylinder *15)

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)

Number of cylinders			5	6	7	8
Main engine X35-B (R1 rated)	power (kW)		4350	5220	6090	6960
	speed (rpm)		167			
Pressure drop across the engine		(bar)	1.3			
Cooling water expansion tank (HT)	Cap.	(m^3)	Recommended: 0.5 m^3 min. 10% of HT cooling water			
Cooling water expansion tank (LT)	Cap.	(m^3)	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	125	150	150	150
	E	DN	80	80	100	100
	F	DN	80	100	100	100
	G	DN	80	100	100	100
	H	DN	65	80	80	100
	J	DN	65	80	80	100

Pos.	SYSTEM COMPONENTS *1)
001	Chemical treatment refil unit *4)
002	HT / LT water expansion tank (link to detail drawing 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 cooler (LT cooling water)
009	Automatic temperature control valve for LT circuit *13)
010	LT water temperature sensor *13)
011	Cooling water pump for LT circuit
012	Lubricating oil cooler
013	Automatic temperature control valve for HT circuit *14)
014	HT water temperature sensor *14)
015	Cylinder cooling water pump for HT circuit
016	Pre-heating circulating pump (optional), cap. 10% from cylinder cooling pump *8)
017	Heater for main engine (HT circuit)
018	Throttling disc *5)
019	Freshwater generator
020	Filling pipe / inlet chemical treatment
021	MDO/MGO cooler
Ⓖ 022	Air separator (link to details drawing on page 1)
Ⓖ 023	Automatic venting unit

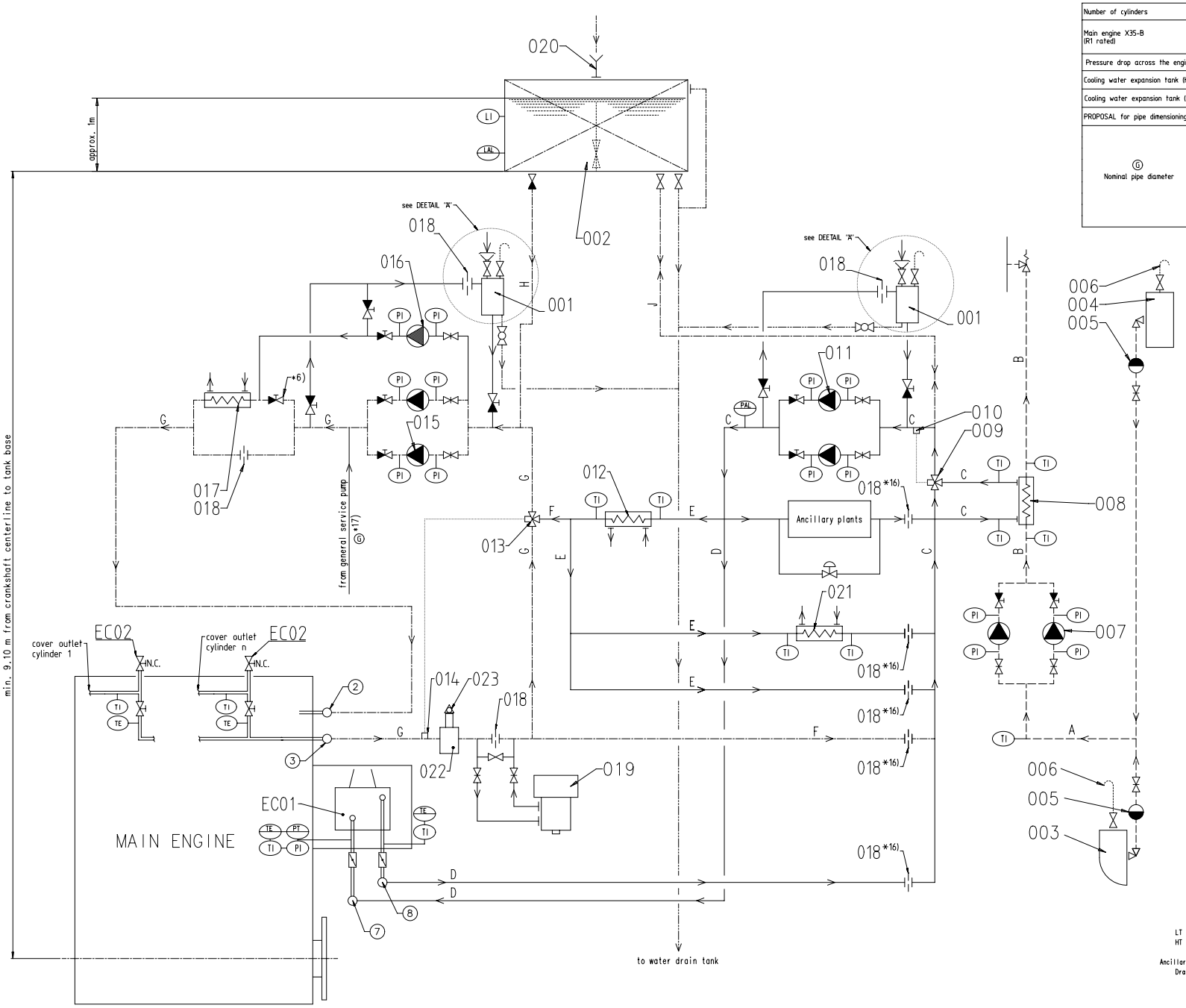
Ⓖ Table 1: Water content on engine side

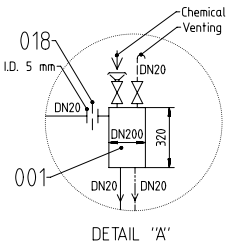
Cylinder	HT circuit Cyl. C.W. Volume (l)	LT circuit SAC Volume (l)
5	120 l	160 l
6	150 l	160 l
7	170 l	190 l
8	200 l	190 l

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.
*13) 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 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 MM).
*14) A constant temperature at engine outlet must be maintained. Required controller set-point for main engine operation is 90 °C.
*15) Only to be used for manual venting of isolated cylinders after maintenance. To be kept close during engine operation.
*16) Optional, only to be installed if needed for hydraulic balancing.
*17) Optional connection, To be installed if requested by class rules for emergency engine cooling.





DETAIL "A"

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

Mark	Prev. status for ID	Number	Drawn date	Number	Drawn date	Number	Drawn date
D	EAAD085793	01.06.2015	E EAAD086766	15.09.2016	F EAAD089971	25.11.2018	G EAAD092431 07.09.2020

G-Code XXXXX | Main Drw.
Standard ISO, JIS

Product 5-8X35-B

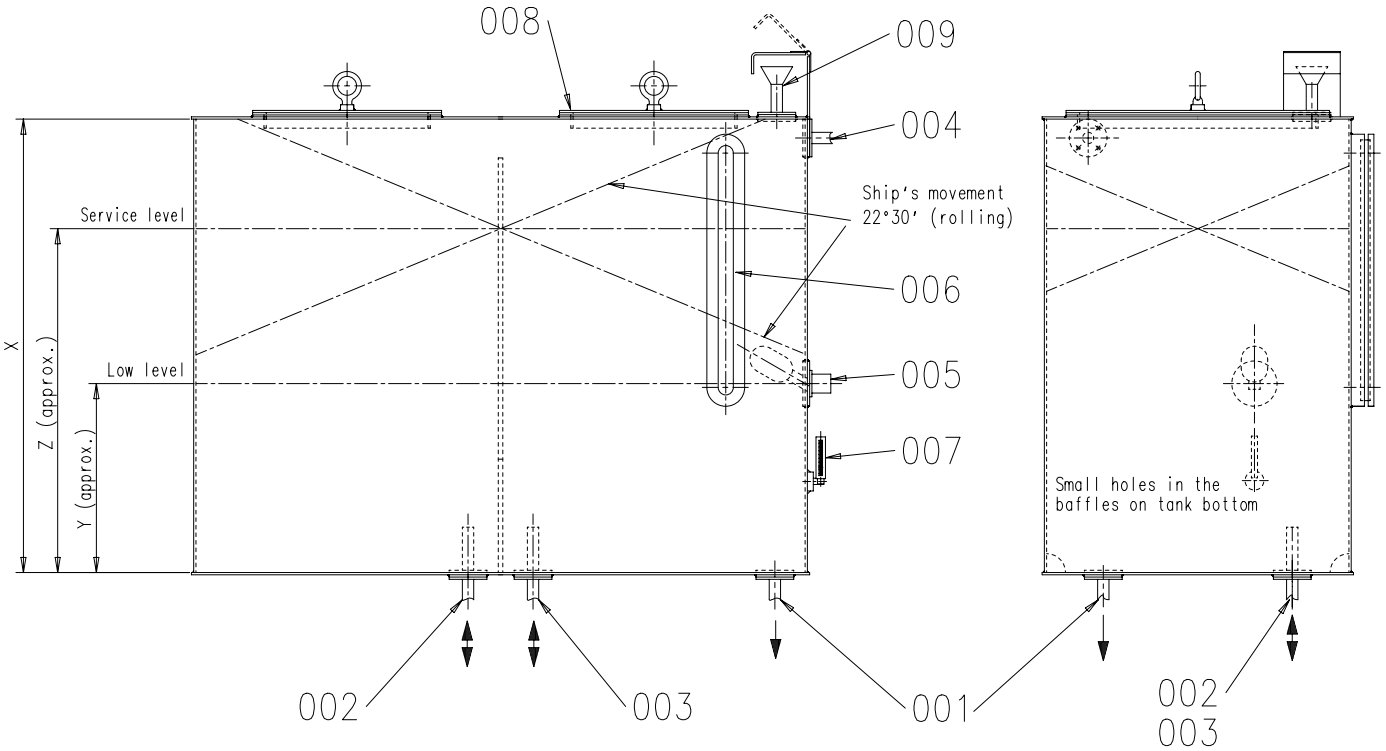
CENTRAL COOLING WATER SYSTEM
HT_static-pressure: EXP tank
HT/LT circuit: INTEGRATED

WinGD Winterthur Gas & Diesel

Units	mm kg	NX	Basic Material	Net Weight 0.001
Made	09.12.2010 sfe006 Feuerstein	Scale -	Size A0	Page 2/2
Chkd	20.12.2010 da009 Stridsklev	Design Group 9721	Material ID PAAD025862	
Appd	20.12.2010 da009 Stridsklev		Drawing ID PAAD011993	Rev. G

SURFACE PROTECTION SEE GROUP 9344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

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

Remarks:

*1) Level indicator can be omitted if an alternative is fitted.

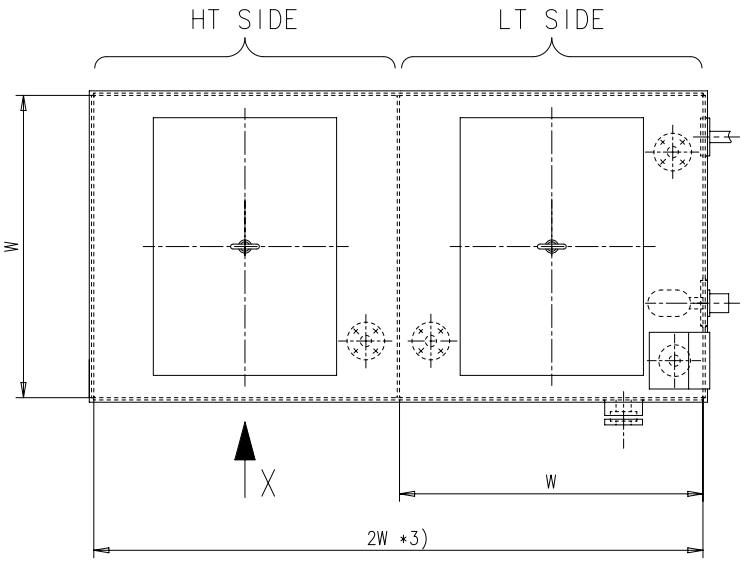
*2) Other designs like hinged covers, etc. are also possible

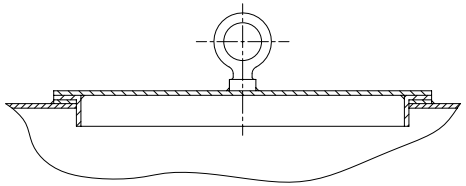
*3) Depending on actual ancillary plants, LT tank capacity to be increased accordingly

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

Table 1: Tank dimensions

Total capacity *3)	W	X	Y	Z
(m^3)	(mm)	(mm)	(mm)	(mm)
1.0	800	800	330	640
1.5	800	1200	500	960
2.0	800	1600	670	1280
2.5	1000	1250	530	1000
3.0	1000	1500	630	1200
3.5	1000	1750	730	1400
4.0	1000	2000	830	1600





Drawn for 1.5 m^3 capacity

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Free space for lic.									Q-Code XXXXX	Main Drw.
									Standard ISO; JIS	
Modif.	A	EAAD095237	29.10.2020							
	Number		Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	

WIN GD Winterthur Gas & Diesel

Product W-2S

EXPANSION TANK

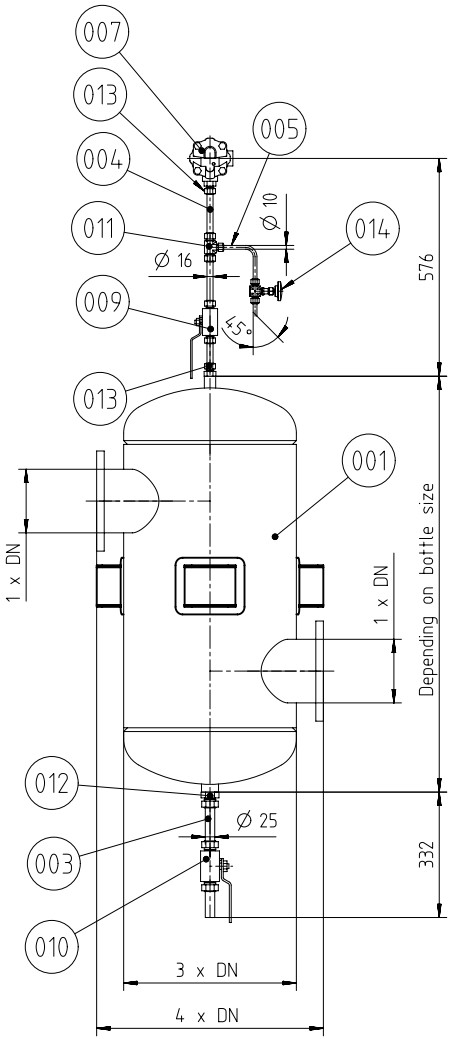
Ausgleichstank

Units	mm kg	NX	Basic Material	Net Weight 0,001

SURFACE PROTECTION SEE GROUP 0344	Made 16.04.2009 M. PRSTEC	Scale -	Size A2	Page 1/1	Material ID 107.413.098.500	
TOLERANCING PRINCIPLE ISO8015	Chkd	Design Group 9721	Drawing ID 107.413.098		Rev. A	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 30.04.2009 MPR002					

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PIPE LENGTHS TO BE DECIDED BY SHIPYARD

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	014	107.324.704.001	NEEDLE VALVE DN7	107.324.704	Steel	0,438
2	013	107.324.101.017	SCREW-IN UNION DN12xG1/2	107.324.101	Steel	0,125
1	012	107.324.101.021	SCREW-IN UNION DN20xG1	107.324.101	Steel	0,329
1	011	107.324.131.007	TEE UNION DN12 x DN7	107.324.131	Steel	0,25
1	010	107.324.703.005	BALL VALVE DN20	107.324.703	Steel	1,24
1	009	107.324.703.003	BALL VALVE DN12	107.324.703	Steel	
1	007	PAAD185947	AUTOMATIC VENTING UNIT Rp1/2	DAAD065150		2,5
1m	005	005.405.131.043	PIPE DN7 / 10 x 1.5		W-FU-235-N-T	0,31
1m	004	005.405.131.087	PIPE DN12 / 16 x 2		W-FU-235-N-T	0,69
0,25m	003	005.405.131.131	PIPE DN20 / 25 x 2		W-FU-235-N-T	1,13
1	001	PAAD297112	AIR SEPARATOR	DAAD101890		139

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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	EAAD090871	26.09.2019	B	EAAD096344	10.03.2021			

WIN GD Winterthur Gas & Diesel

Product W-2S

AIR SEPARATOR

Units mm kg | NX | Basic Material | Net Weight 0.001

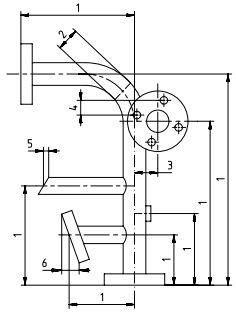
Made	06.06.2018	Kashyap Patel	Scale 1:10	Size A2	Page 1/1	Material ID PAAD297120
Chkd	17.07.2018	wwa008 Wang	Design Group 9721	Drawing ID DAAD101945		Rev. B
Appd	17.07.2018	mhu019 Hug				

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

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TOLERANCE GRADES



TOL. GRADE	DIMENSION NO. 1	2	3	4	5	6	
A	±1.0	*	±2.0	±2.0	±0.5	±0.5	≤DN150
B	±3.0	*	±3.0	±2.0	±0.5	±0.5	
C	±6.0	*	±3.0	±2.0	±0.5	±0.5	
A	±2.0	*	±2.0	±2.0	±1.0	±1.0	>DN150
B	±4.0	*	±3.0	±3.0	±1.0	±1.0	
C	±6.0	*	±3.0	±3.0	±1.0	±1.0	

* for these tolerances see chapter 2.2 of the piping instruction 4-107.354.915

Rohrklasse PIPE CLASS	III	Medium MEDIUM	Wasser WATER	Pruefueberdruck TEST OVERPRESSURE	7.5	bar
Schweiss Qualitaet WELDING QUALITY LEVEL	D	Toleranzklasse TOLERANCE GRADE	B	Betr.druck OPER. PRESS.	5	bar

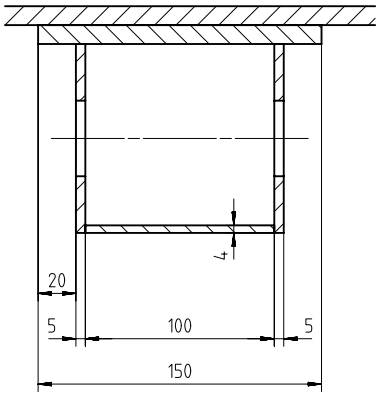
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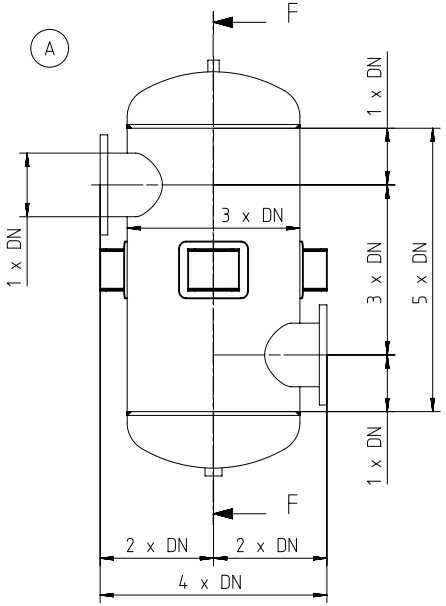
AIR SEPARATOR PROPOSAL

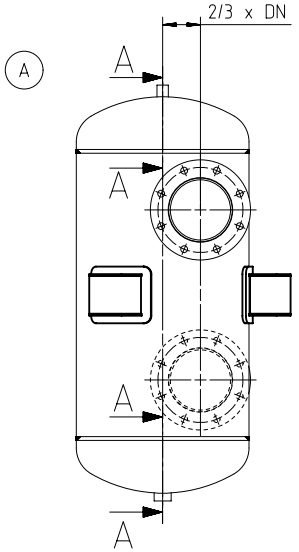
ISO

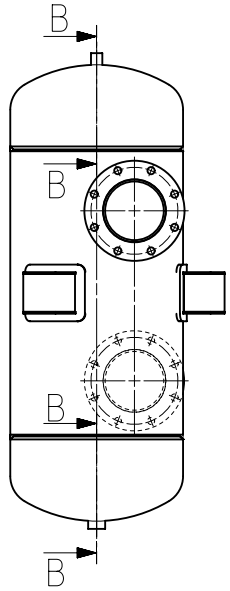
JIS

SECTION H-H
SCALE 1:2





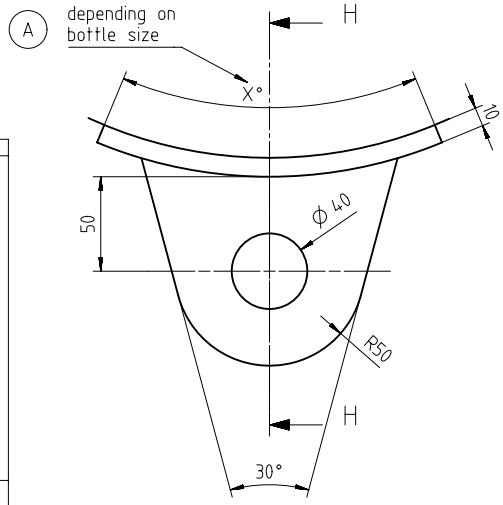


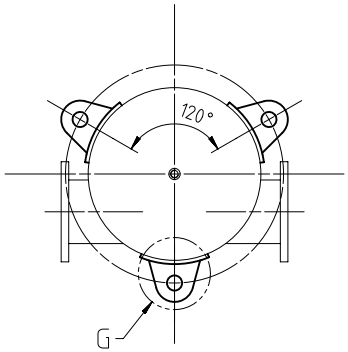


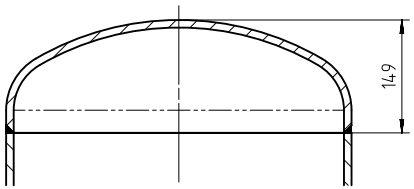
SECTION A-A
SCALE 1:5

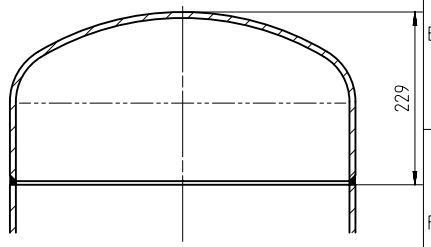
SECTION B-B
SCALE 1:5

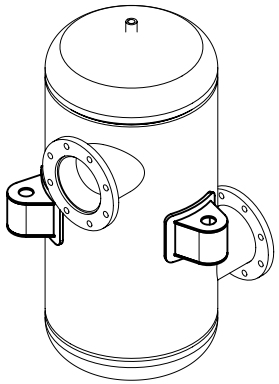
DETAIL G
SCALE 1:2





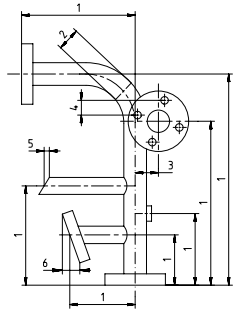






Qualitaetsstufe D (siehe 4-107.345.444)
WELD QUALITY LEVEL D (SEE 4-107.345.444)

TOLERANCE GRADES



TOL. GRADE	DIMENSION NO. 1	2	3	4	5	6	
A	±1.0	*	±2.0	±2.0	±0.5	±0.5	≤DN150
B	±3.0	*	±3.0	±2.0	±0.5	±0.5	
C	±6.0	*	±3.0	±2.0	±0.5	±0.5	
A	±2.0	*	±2.0	±2.0	±1.0	±1.0	>DN150
B	±4.0	*	±3.0	±3.0	±1.0	±1.0	
C	±6.0	*	±3.0	±3.0	±1.0	±1.0	

* for these tolerances see chapter 2.2 of the piping instruction 4-107.354.915

Rohrklasse PIPE CLASS	III	Medium MEDIUM	Wasser WATER	Pruefueberdruck TEST OVERPRESSURE	7.5	bar
Schweiss Qualitaet WELDING QUALITY LEVEL	D	Toleranzklasse TOLERANCE GRADE	B	Betr.druck OPER. PRESS.	5	bar

SURFACE PROTECTION SEE GROUP 0344	Chkd	17.07.2018	wwa008 Wang
TOLERANCING PRINCIPLE ISO8015	Appd	17.07.2018	mhu019 Hug

Free space for lic.					Q-Code XXXXX	Main Drw.
					Standard ISO; JIS	
Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date
A	EAAD090871	09.09.2019				

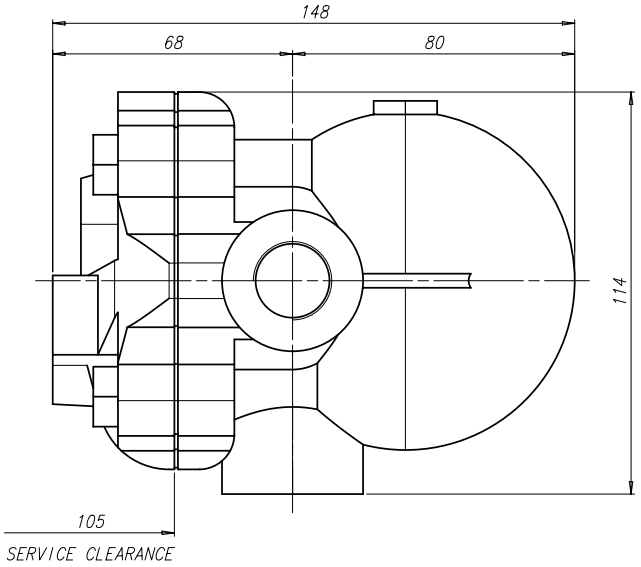
WIN GD Winterthur Gas & Diesel

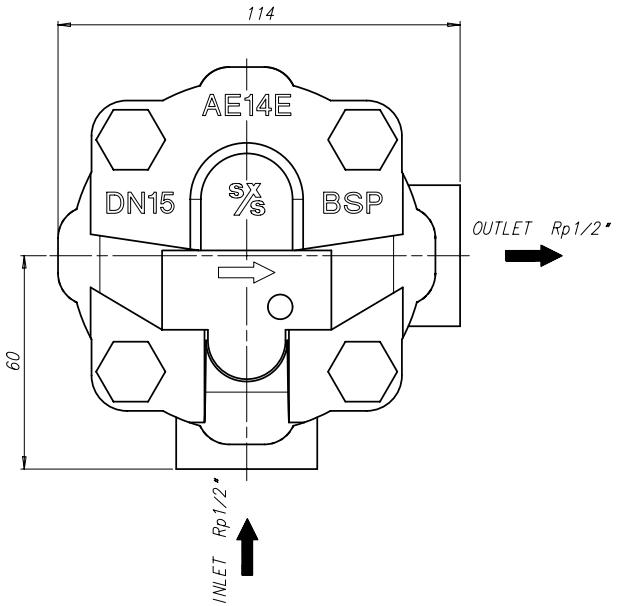
Product W-2S	AIR SEPARATOR		
Units mm kg	NX	Basic Material	Net Weight 0.001
Made 05.06.2018 Kashyap patel	Scale 1:10	Size A2	Page 1/1
Design Group 9721	Material ID PAAD297112		
Drawing ID DAAD101890	Rev. A		

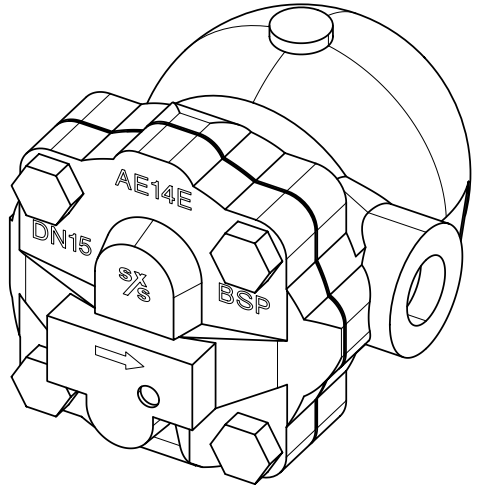
Approved

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SUPPLIER:

SPIRAX SARCO AG

www.SpiraxSarco.com

SPECIFICATIONS:

AUTOMATIC AIR VENT SPIRAX SARCO TYPE AE14E, PN16, SIZE Rp1/2"

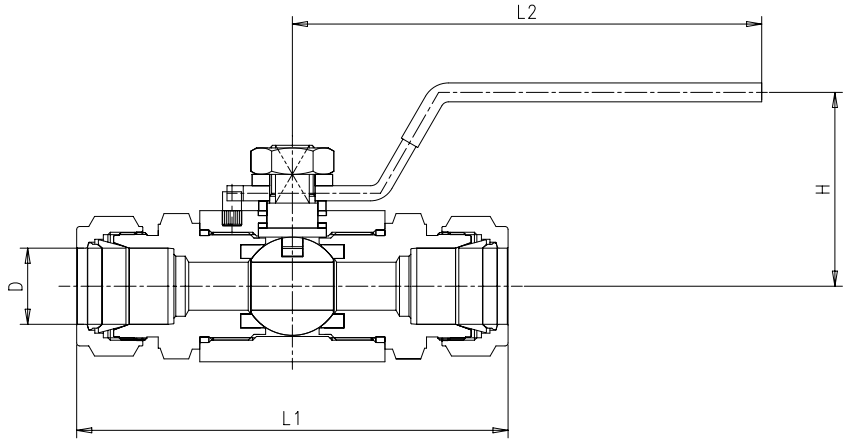
PRESSURE LEVEL :	PN16
MAX. OPERATING PRESSURE (PMO):	14 bar
MAX. OPERATING TEPERATURE (TMO):	127° C
MAX. PRESSURE DIFFERENCE:	14 bar

Free space for lic.							Q-Code XQXXX		Main Drw.
							Standard ISO JIS		
Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	
WIN GD Winterthur Gas & Diesel			Product W-2S		AUTOMATIC VENTING UNIT ORDER DRAWING Entlueftungsautomat Bestellzeichnung				
Units mm kg	IDE		Basic Material					Net Weight 2.5	
SURFACE PROTECTION SEE GROUP 0344	Made	08.04.2015 Aditya Gole	Scale 1:1	Size A2	Page 1/1	Material ID PAAD185947			
TOLERANCING PRINCIPLE ISO8015	Chkd	27.05.2015 ast044 Stephan	Design Group 8611						
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	27.05.2015 bha009 Haag		Drawing ID DAAD065150				Rev. –	

Approved

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Artikel Nummer	DN	TUBE D	L1	L2	H	MAX. WORKING PRESSURE	OPERATING TEMPERATURE (°C)	Seat Material
107.324.703.001	DN07	10	104.91	108.75	38.41	6000 (413bar)	-30 to +180	PCTFE
107.324.703.002	DN09	12	109.71	108.75	38.41			
107.324.703.003	DN12	16	114.96	124.2	51.3			
107.324.703.004	DN15	20	114.16	124.2	53.1			
107.324.703.005	DN20	25	134.08	149.2	58.1			

siehe Hauptzeichnung für Spezifikation
SEE MAIN DRAWING FOR SPECIFICATION

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	005	107.324.703.005	BALL VALVE DN20	107.324.703	Steel	1,24
1	004	107.324.703.004	BALL VALVE DN15	107.324.703	Steel	1,03
1	003	107.324.703.003	BALL VALVE DN12	107.324.703	Steel	0,55
1	002	107.324.703.002	BALL VALVE DN9	107.324.703	Steel	0,511
1	001	107.324.703.001	BALL VALVE DN7	107.324.703	Steel	0,494

Approved

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	EAAD700077	13.04.2011	B EAAD083575	01.10.2012	C EAAD096344	12.03.2021		

WIN GD Winterthur Gas & Diesel

Product W-2S

BALL VALVE

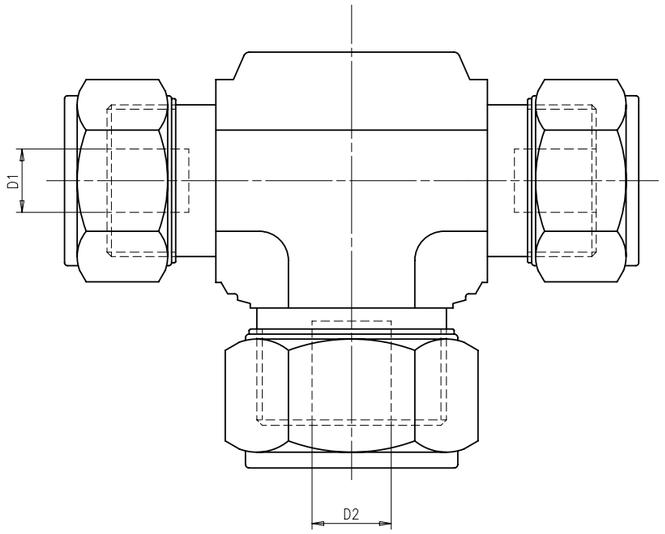
Kugelhahn

Units	mm kg	NX	Basic Material	Net Weight

SURFACE PROTECTION SEE GROUP 0344	Made	29.04.2005 sga006 S.GASSER	Scale 1:1	Size A2	Page 1/1	Material ID
TOLERANCING PRINCIPLE ISO8015	Chkd	S.Gasser	Design Group 0333	Drawing ID 107.324.703		Rev. C
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	04.05.2005 MFR001 Frei				

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Artikel Nummer	DN	TUBE D1	TUBE D2
107.324.131.001	DN07	**10**	6
107.324.131.002	DN09	**12**	8
107.324.131.003	DN09	**12**	10
107.324.131.004	DN09	**12**	16
107.324.131.005	DN12	**16**	6
107.324.131.006	DN12	**16**	8
107.324.131.007	DN12	**16**	10
107.324.131.008	DN12	**16**	12
107.324.131.009	DN12	**16**	20
107.324.131.010	DN15	**20**	10
107.324.131.011	DN15	**20**	12
107.324.131.012	DN15	**20**	16
107.324.131.013	DN15	**20**	25
107.324.131.014	DN20	**25**	16
107.324.131.015	DN20	**25**	20

Ⓑ *siehe Hauptzeichnung für Spezifikation*
SEE MAIN DRAWING FOR SPECIFICATION

QTY	SEQ NO	Material ID	Material Name	Dimension/Occ.Dimension	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
1	015	107.324.131.015	TEE UNION	25 x 20 x 25	107.324.131	Steel Steel	0.642
1	014	107.324.131.014	TEE UNION	25 x 16 x 25	107.324.131	Steel Steel	0.615
1	013	107.324.131.013	TEE UNION	20 x 25 x 20	107.324.131	Steel Steel	0.592
1	012	107.324.131.012	TEE UNION	20 x 16 x 20	107.324.131	Steel Steel	0.471
1	011	107.324.131.011	TEE UNION	20 x 12 x 20	107.324.131	Steel Steel	0.443
1	010	107.324.131.010	TEE UNION	20 x 10 x 20	107.324.131	Steel Steel	0.46
1	009	107.324.131.009	TEE UNION	16 x 20 x 16	107.324.131	Steel Steel	0.442
1	008	107.324.131.008	TEE UNION	16 x 12 x 16	107.324.131	Steel Steel	0.262
1	007	107.324.131.007	TEE UNION	16 x 10 x 16	107.324.131	Steel Steel	0.25
1	006	107.324.131.006	TEE UNION	16 x 8 x 16	107.324.131	Steel Steel	0.243
1	005	107.324.131.005	TEE UNION	16 x 6 x 16	107.324.131	Steel Steel	0.241
1	004	107.324.131.004	TEE UNION	12 x 16 x 12	107.324.131	Steel Steel	0.271
1	003	107.324.131.003	TEE UNION	12 x 10 x 12	107.324.131	Steel Steel	0.195
1	002	107.324.131.002	TEE UNION	12 x 8 x 12	107.324.131	Steel Steel	0.19
1	001	107.324.131.001	TEE UNION	10 x 6 x 10	107.324.131	Steel Steel	0.127

Free space for Lic. | Q-Code XXXXX | Standard ISO JIS | Main Drw.

Modif. | A EAAD700021 13.01.2011 | B EAAD083575 24.02.2012 | Approved

Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date

WIN GD Winterthur Gas & Diesel

Product W-2S

TEE UNION

T-Verschraubung

Units mm kg | IDE | Basic Material | Net Weight

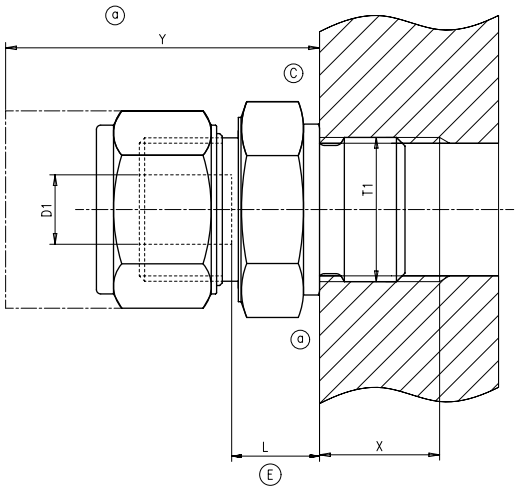
SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made 17.12.2004 W.DOERIG | Chkd | Appd 28.04.2005 mfr001 Frei

Scale 1:1 | Design Group 0333 | Size A1 | Page 1/1 | Material ID | Drawing ID 107.324.131 | Rev. B

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	Material ID	DN	TUBE D1	T1	X	ⓐ Y	L	Ⓔ Order Number
	107.324.101.001	DN04	6	G1/8	9	45	9.9	DMC 6M-2GB-C
ⓐ	107.324.101.002	DN04	6	G1/4	14	50	11.1	DMC 6M-4GB-C
	107.324.101.003	DN04	6	G3/8	14	50	12.4	DMC 6M-6GB-C
	107.324.101.004	DN04	6	G1/2	17	55	15.2	DMC 6M-8GB-C
	107.324.101.005	DN06	8	G1/8	9	45	9.9	DMC 8M-2GB-C
ⓐ	107.324.101.006	DN06	8	G1/4	14	50	11.1	DMC 8M-4GB-C
	107.324.101.007	DN06	8	G3/8	14	50	12.4	DMC 8M-6GB-C
	107.324.101.008	DN06	8	G1/2	17	55	15.2	DMC 8M-8GB-C
	107.324.101.009	DN07	10	G1/4	14	50	11	DMC 10M-4GB-C
ⓐ	107.324.101.010	DN07	10	G3/8	14	50	12.2	DMC 10M-6GB-C
	107.324.101.011	DN07	10	G1/2	17	60	15.1	DMC 10M-8GB-C
	107.324.101.012	DN09	12	G1/4	14	55	8.6	DMC 12M-4GB-C
ⓐ	107.324.101.013	DN09	12	G3/8	14	55	9.1	DMC 12M-6GB-C
	107.324.101.014	DN09	12	G1/2	17	60	12	DMC 12M-8GB-C
	107.324.101.015	DN09	12	G3/4	19	65	14.3	DMC 12M-10GB-C
	107.324.101.016	DN12	16	G3/8	14	55	8.3	DMC 16M-6GB-C
ⓐ	107.324.101.017	DN12	16	G1/2	17	60	10.4	DMC 16M-8GB-C
	107.324.101.018	DN15	20	G1/2	17	65	10.3	DMC 20M-8GB-C
	107.324.101.019	DN15	20	G3/4	19	65	11.1	DMC 20M-12GB-C
	107.324.101.020	DN20	25	G3/4	19	70	10.5	DMC 25M-12GB-C
ⓐ	107.324.101.021	DN20	25	G1	21	70	10.5	DMC 25M-16GB-C
ⓑ	107.324.101.022	DN20	25	G1 1/4	23	75	12.9	DMC 25M-20GB-C
ⓑ	107.324.101.023	DN20	25	G1 1/2	25	80	14.5	DMC 25M-24GB-C

Drawn for Dk-Lok
Material: Steel
PN needs to meet the working pressure of Dk-Lok products. Ⓔ

Ⓓ *siehe Hauptzeichnung für Spezifikation*
SEE MAIN DRAWING FOR SPECIFICATION

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	023	107.324.101.023	SCREW-IN UNION 25xG1 1/2	107.324.101	Steel	0,733
1	022	107.324.101.022	SCREW-IN UNION 25xG1 1/4	107.324.101	Steel	0,543
1	021	107.324.101.021	SCREW-IN UNION 25xG1	107.324.101	Steel	0,329
1	020	107.324.101.020	SCREW-IN UNION 25xG3/4	107.324.101	Steel	0,247
1	019	107.324.101.019	SCREW-IN UNION 20xG3/4	107.324.101	Steel	0,223
1	018	107.324.101.018	SCREW-IN UNION 20xG1/2	107.324.101	Steel	0,173
1	017	107.324.101.017	SCREW-IN UNION 16xG1/2	107.324.101	Steel	0,125
1	016	107.324.101.016	SCREW-IN UNION 16xG3/8	107.324.101	Steel	0,094
1	015	107.324.101.015	SCREW-IN UNION 12xG3/4	107.324.101	Steel	0,195
1	014	107.324.101.014	SCREW-IN UNION 12xG1/2	107.324.101	Steel	0,126
1	013	107.324.101.013	SCREW-IN UNION 12xG3/8	107.324.101	Steel	0,084
1	012	107.324.101.012	SCREW-IN UNION 12xG1/4	107.324.101	Steel	0,076
1	011	107.324.101.011	SCREW-IN UNION 10xG1/2	107.324.101	Steel	0,116
1	010	107.324.101.010	SCREW-IN UNION 10xG3/8	107.324.101	Steel	0,069
1	009	107.324.101.009	SCREW-IN UNION 10xG1/4	107.324.101	Steel	0,056
1	008	107.324.101.008	SCREW-IN UNION 8xG1/2	107.324.101	Steel	0,112
1	007	107.324.101.007	SCREW-IN UNION 8xG3/8	107.324.101	Steel	0,063
1	006	107.324.101.006	SCREW-IN UNION 8xG1/4	107.324.101	Steel	0,043
1	005	107.324.101.005	SCREW-IN UNION 8xG1/8	107.324.101	Steel	0,031
1	004	107.324.101.004	SCREW-IN UNION 6xG1/2	107.324.101	Steel	0,111
1	003	107.324.101.003	SCREW-IN UNION 6XG3/8	107.324.101	Steel	0,063
1	002	107.324.101.002	SCREW-IN UNION 6XG1/4	107.324.101	Steel	0,045
1	001	107.324.101.001	SCREW-IN UNION 6xG1/8	107.324.101	Steel	0,028

Free space for info

Q-Code: XXXXX
Standard: ISO; JIS
Main Drw.

Work's Number / Drawn date / Number / Drawn date / Number / Drawn date / Number / Drawn date

B	7-34.170	18.07.2005	C	7-54.378	08.06.2007	D	EAAD083575	01.10.2012
E	EAAD091014	28.11.2019						

Approved

WIN GD Winterthur Gas & Diesel

Product: W-2S

SCREW-IN UNION

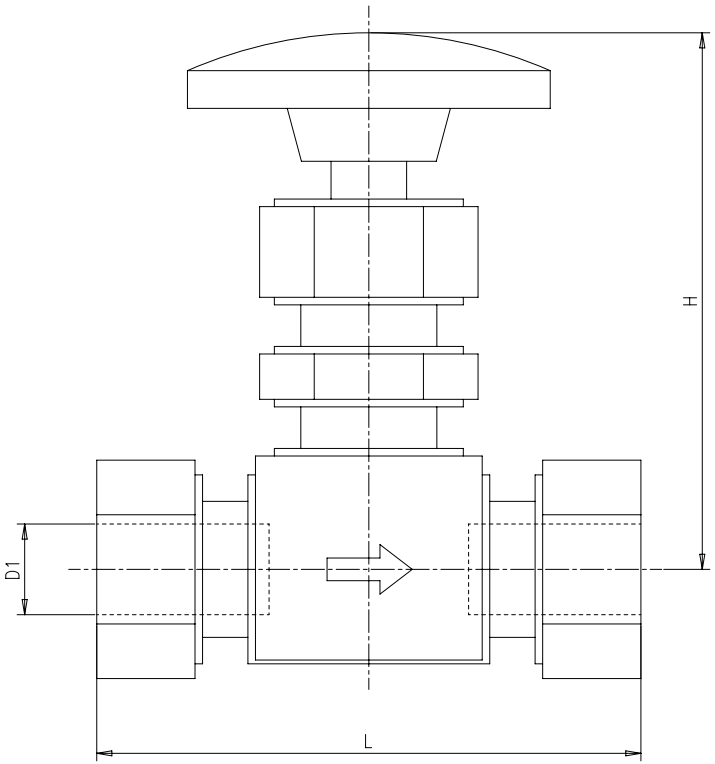
Einschraubverschraubung

Units: mm kg | NX | Basic Material | Net Weight

SURFACE PROTECTION SEE GROUP 0344	Made 17.12.2004 wdo001 W.Doerig	Scale 1:1	Size A1	Page 1/1	Material ID
TOLERANCING PRINCIPLE ISO8015	Chkd	Design Group 0333	Drawing ID 107.324.101		Rev. E
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 28.02.2005 PST007				

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Artikel Nummer	DN	TUBE D1	L	H(open)
107.324.704.001	DN07	10	66	71
107.324.704.002	DN09	12	72	71
107.324.704.003	DN12	16	94	99
107.324.704.004	DN15	20	97	99
107.324.704.005	DN20	25	97	99
107.324.704.006	DN06	8	59,2	60

siehe Hauptzeichnung für Spezifikation
SEE MAIN DRAWING FOR SPECIFICATION

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	006	107.324.704.006	NEEDLE VALVE DN6	107.324.704	Steel	0,304
1	005	107.324.704.005	NEEDLE VALVE DN20	107.324.704	Steel	1,34
1	004	107.324.704.004	NEEDLE VALVE DN15	107.324.704	Steel	1,19
1	003	107.324.704.003	NEEDLE VALVE DN12	107.324.704	Steel	0,903
1	002	107.324.704.002	NEEDLE VALVE DN9	107.324.704	Steel	0,495
1	001	107.324.704.001	NEEDLE VALVE DN7	107.324.704	Steel	0,438

Approved

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
B	7-61.981	12.03.2008	C EAAD700013	19.01.2011	D EAAD083575	01.10.2012	E EAAD096344	12.03.2021

WIN GD Winterthur Gas & Diesel

Product: W-2S

NEEDLE VALVE
Nadelventil

Units mm kg	NX	Basic Material			Net Weight
SURFACE PROTECTION SEE GROUP 0344	Made 19.05.2005 sga006 S.GASSER	Scale 2:1	Size A2	Page 1/1	Material ID
TOLERANCING PRINCIPLE ISO8015	Chkd	Design Group 0333	Drawing ID 107.324.704		Rev. E
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 19.05.2005 MFR001 Frei				

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MIDS - WinGD X35-B - Cooling Water System (DG9721)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2017-02-17	DRAWING SET	First web upload
2018-12-02	DAAD012153 DAAD012778 DAAD011993	Main and system drgs. – new revision
2020-09-02	107.413.097 107.245.419	System drgs – new revision
2020-10-05	DAAD012153 DAAD011993 DAAD012778 DAAD132670 DAAD101945 107.245.626 DAAD101890 DAAD065150 107.324.131 107.324.101 107.324.703	Main and system drgs – new revision
2021-02-24	107.324.101 107.413.098	System drgs – new revision
2021-03-30	DAAD101945 107.324.703 107.324.704	System drgs – new revision

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