B

PAAD168474	HT CW static pressure adjustment: with separate buffer-unit
PAAD361062	HT CW static pressure adjustment: with separate expansion tank

SEE TABLE

Net Weight								
0,001	0,001							
1	1	003	107.429.532.500	CONCEPT GUIDANCE Freshwater generation	107.429.532		0,001
1	-	002	PAAD360930	CENTRAL COOLING WATER SYSTEM HT_static-pressure: EXP tank	DAAD133074		0,001
-	1	001	PAAD168477	CENTRAL COOLING WATER SYSTEM HT_static-pressure: Buffer-unit	DAAD053413		0,001
Quantity PER ENGINE		SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
PAAD361062	PAAD168474						
Material ID							

Approved

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	EAAD089971	25.11.2018	B	EAAD092431	20.07.2020						

WIN GD
Winterthur Gas & Diesel

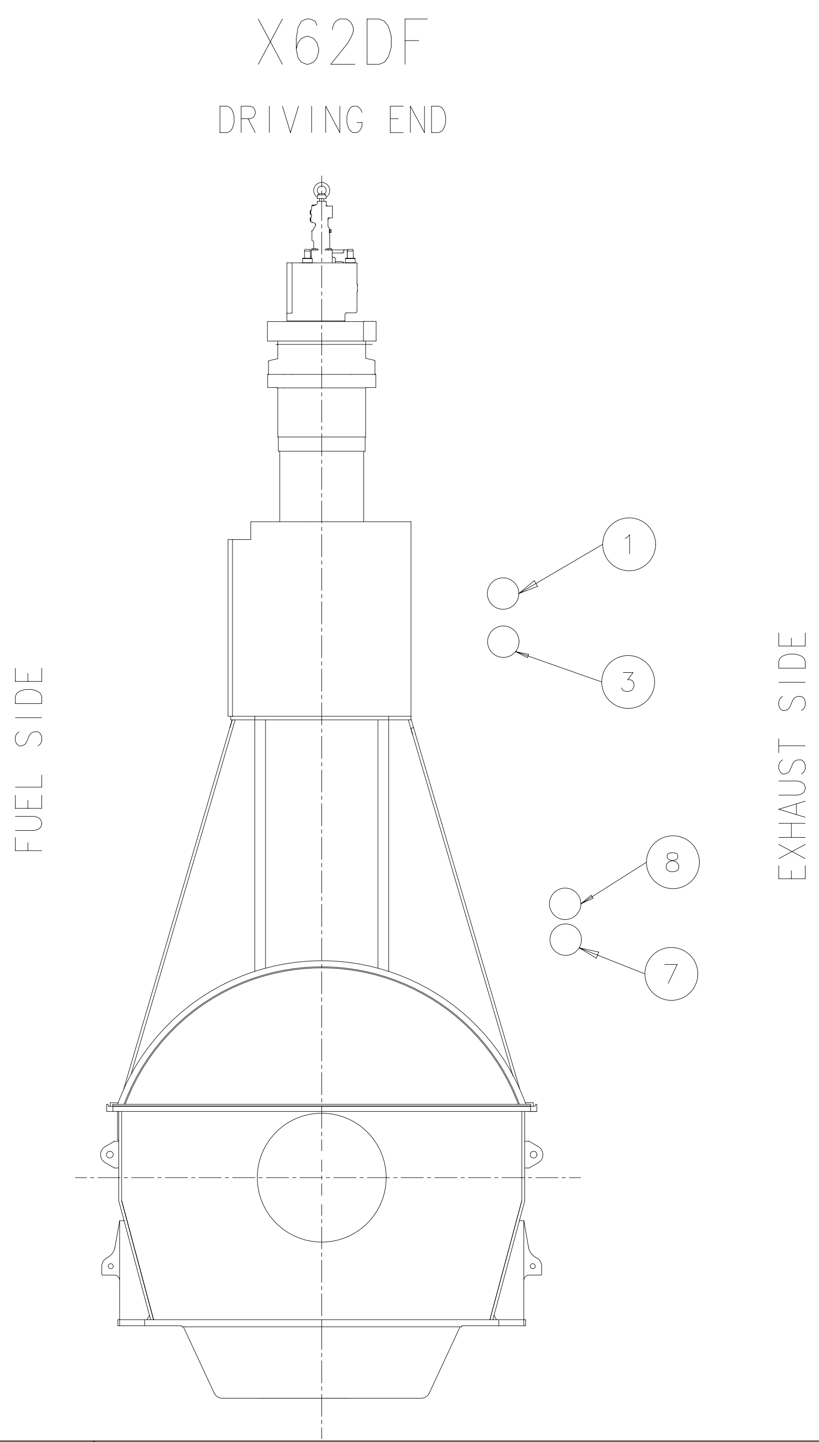
Product
W5-8X62DF

COOLING WATER SYSTEMS
INSTALLATION DRAWINGS
Kuehlwassersystem

Units	mm kg	NX	Basic Material	Net Weight
Made	29.07.2014 mhu019 M.Hug	Scale -	Size A3	Page 1/1	Material ID
Chkd	16.01.2015 wwa008 Wang	Design Group 9721	Drawing ID DAAD053407	Rev. B
Appd	16.01.2015 bha009 Haag			

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

DID - DIMENSIONAL DRAWING - Confidential



Specifications which must be met:

1 (E)	INLET - Cylinder cooling water (HT 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. - 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 devise (air separator) must be installed as close as possible after the outlet connection. Venting air must be released to a safe area outside of the engine room.
7 (E)	INLET - Scavenge air cooler (SAC) cooling water (LT water) - Cooling water pressure: 2.0 - 4.0 bar - Cooling water temperature set point: 25 °C, max. 36 °C when seawater temperature at 32 °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.
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.

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

Free space for lic.

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

Modif.	Number	Drawn date
B	EAAD087864	22.09.2017
C	EAAD089971	25.11.2018
D	EAAD090795	06.12.2019
E	EAAD092431	27.02.2020

Approved

WIN GD Winterthur Gas & Diesel

Product: 5-8X62DF

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	29.07.2014	mhu019	M.Hug
Chkd	16.01.2015	wwa008	Wang
Appd	16.01.2015	bha009	Haag

Scale: _ | Size: A2 | Page: 1/2 | Material ID: PAAD168477
Design Group: 9721 | Drawing ID: DAAD053413 | Rev.: E

DID - DIMENSIONAL DRAWING - Confidential

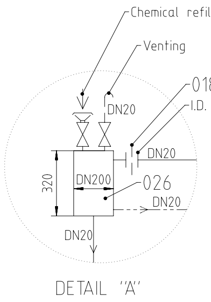
SYSTEM PROPOSAL

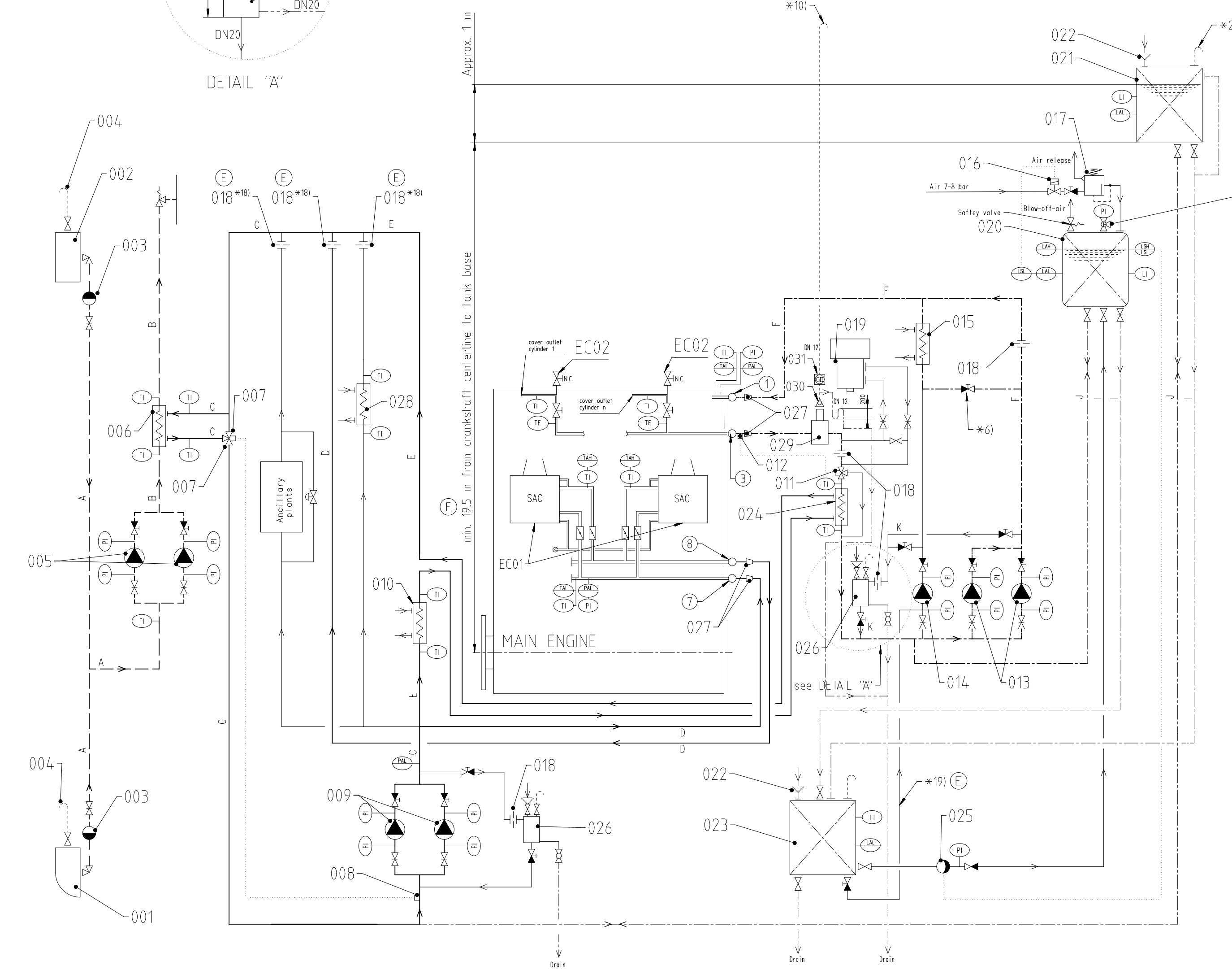
Pos.	ENGINE CONNECTIONS *2) (E)
1	INLET - Cylinder cooling water (HT water)
3	OUTLET - Cylinder cooling water (HT water)
7	INLET - Scavenge air cooler (SAC) cooling water (LT water) *7)
8	OUTLET - Scavenge air cooler (SAC) cooling water (LT water) *7)

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

Number of cylinders			5	6	7	8
Main engine X62DF (R1 rated)	power	(kW)	11925	14310	16695	19080
	speed	(rpm)	(E) 103			
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)						
(E) Nominal pipe diameter	A	DN	Yard determination, suitable for main engine and ancillary plants			
	B	DN				
	C	DN				
	D	DN	250	250	250	250
	E	DN	125	125	150	150
	F	DN	125	125	150	150
	I	DN	32	32	32	32
	J	DN	80	80	80	80
	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) (E)
007	Automatic temperature control valve for LT circuit *13)
008	Temperature sensor of regulating system *13)
009	Cooling water pump for LT circuit
010	Lubricating oil cooler
011	Automatic temperature control valve for HT circuit *14)
012	Temperature sensor of regulating system *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) *17)
021	LT water expansion tank (link to detail drawing on page 1) *20) (E)
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 details drawing on page 1) (E)
030	Automaic venting unit (E)
031	Gas detector *10) (E)





Three-way cock ("T" port)

(E)

Table 1: Water content on engine side

Cylinder	HT circuit Cyl. C.W. Volume (l)	LT circuit SAC Volume (l)
5	650 l	700 l
6	775 l	775 l a) / 1500 l b)
7	925 l	850 l a) / 1450 l b)
8	1050 l	2200 l

a) Values for executions with 1 scavenge air cooler.
b) Values for executions with 2 scavenge air coolers.

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: (E)

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

*1) To be delivered by external supplier and to be installed by the shipyard.
*2) Refer to the "Pipe Connection Plan" for the execution and location of the engine pipe connection.
*3) To be delivered by the engine manufacturer, i.e. already equipped on engine side.
*4) To be installed for cooling water after-treatment during regular engine operation. Convenient dimensions are provided in view "A". Other designs are possible.
*5) When using a valve, lock in proper position to avoid mishandling.
*6) Only when pos. 014 is installed.
*7) The inlet and outlet pipes to SAC must be designed to allow engine thermal expansion, or be fitted with expansion pieces.
*8) For guidance only, final layout according to actual engine pre-heating requirements.
*9) Installed as required (check with "Pipe Connection Plan")
*10) To be vented to a safe area outside of engine room. In addition, depending on flag state and/or class requirement, the venting line may also be equipped with a gas detector in order to achieve IGC compliance.
*11) All given diameters are valid for the mentioned rating and serve just as an example. To make the layout for the project specific rating please refer to DG9730 "Fluid velocities and flow rates, recommended values for pipework of diesel plants" for selecting the approriate pipe diameter. Rating specific flow rates are provided by GTD.
*13) A constant temperature at engine (SAC) inlet must be maintained. Required controller set-point for main engine operationis is 25 °C. If the ancillary plants require a temperature lower or greater than the LT water set-point, a separate water supply system with different temperature set-point has to be installed (please refer to the system proposal in MIM)
*14) A constant temperature at engine outlet must be maintained. Required controller set-point for main engine operation is 90 °C.
*15) If the selected control air valve does not have the integrated air release functionality a separate air release valve can be installed as alternative on the top of the buffer unit.
*16) Only to be used for manual venting of isolated cylinders after maintenance. To be kept close during engine operation.
*17) If instead of the buffer unit an expansion tank of enclosed tpye is installed it must be located at min. 23 m above the crankshaft centerline.
*18) Optional, only to be installed if needed for hydraulic balancing.
*19) Optional filling line to enable fast system re-filling (e.g. after complete system drainage) by means of the pre-heating pumps.
*20) 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 lic.		Q-Code XXXXX	Main Drw.
		Standard ISO; JIS	

Modif.	Number	Drawn date
B	EAAD087864	22.09.2017
C	EAAD089971	25.11.2018
D	EAAD090795	06.12.2019
E	EAAD092431	27.02.2020

WIN GD Winterthur Gas & Diesel

Product 5-8X62DF

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

Units mm kg	NX	Basic Material	Net Weight 0,001
Made	29.07.2014 mhu019 M.Hug	Scale -	Size A1 · Page 2/2 · Material ID PAAD168477
Chkd	16.01.2015 wwa008 Wang	Design Group 9721	Drawing ID DAAD053413 · Rev. E
Appd	16.01.2015 bha009 Haag		

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

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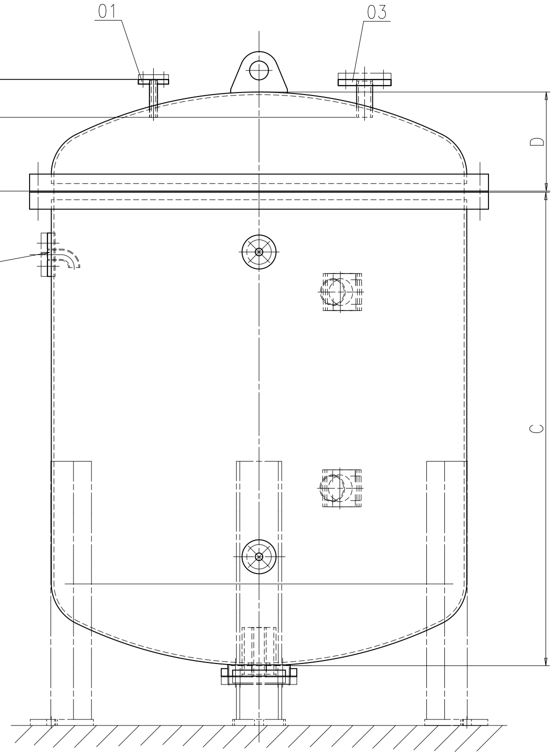
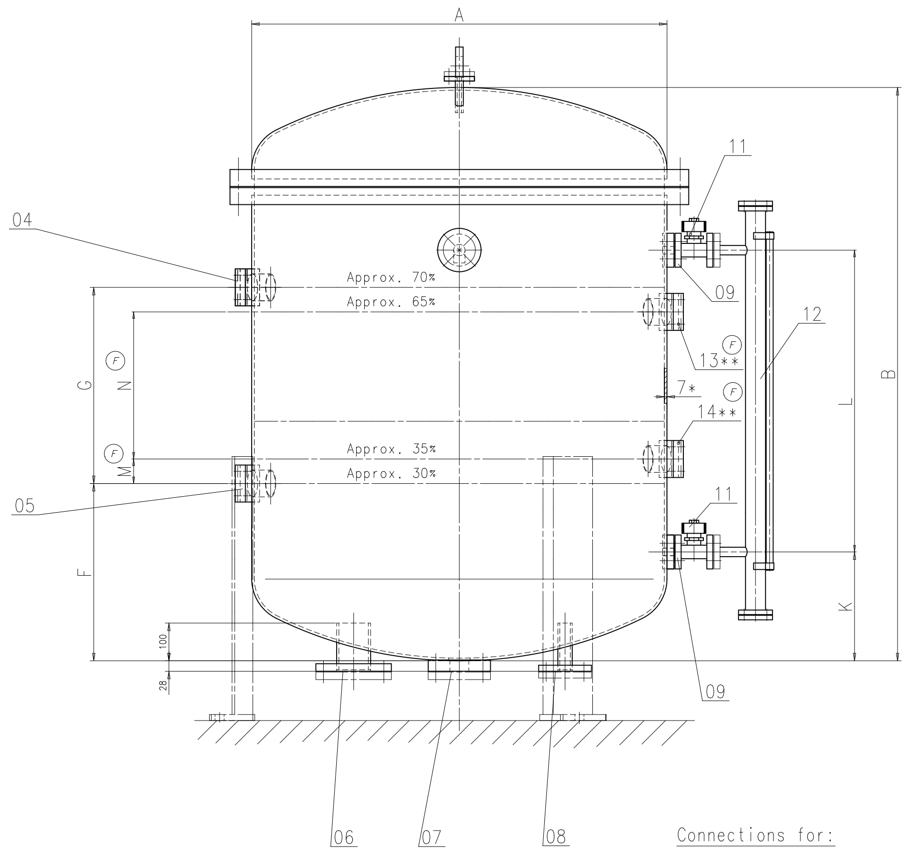
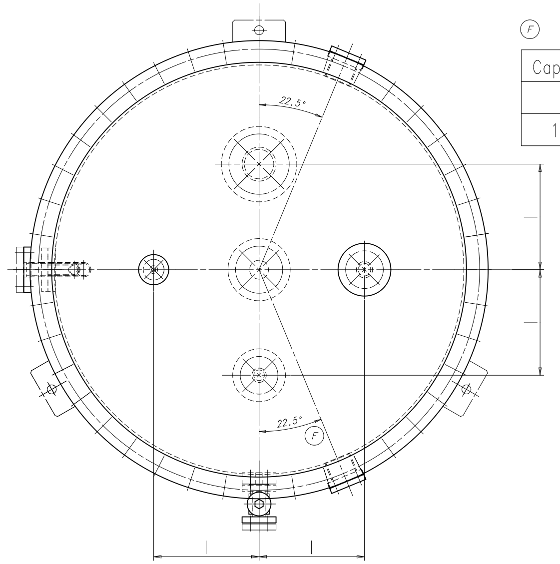
Tank Proposal (F)







(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

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.

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 **

Drawn for 1200l capacity

Free space for lic.									Q-Code XXXXX	Standard ISO	Main Drw.
Modif.	C	7-61.644 (Number)	05.03.2008 (Drawn date)	D	EAAD084051 (Number)	14.08.2012 (Drawn date)	E	EAAD085172 (Number)	22.04.2014 (Drawn date)	F	EAAD087035 (Number) 12.10.2016 (Drawn date)

Winterthur Gas & Diesel

Product W-2S

BUFFER
TO CYL.COOLING WATER SYS
Puffer

SURFACE PROTECTION SEE GROUP 0344	Units mm kg	IDE	Basic Material	Net Weight 0.001
TOLERANCING PRINCIPLE ISO8015	Made 22.09.00 S.STYLIANOU	Scale 1:5	Size A0	Page 1/1	Material ID 107.245.626.500
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Chkd	Appd	Design Group 9721	Drawing ID 107.245.626	Rev. F

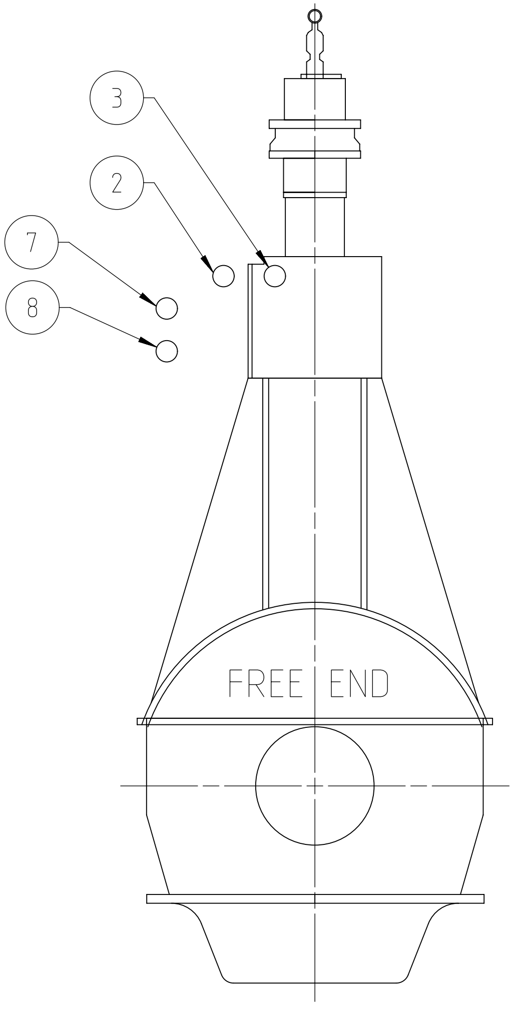
DID - DIMENSIONAL DRAWING - Confidential

Approved

SPECIFICATION which must be met:

8	OUTLET - Scavenge air cooler (SAC) cooling water (LT water) - Cooling water volume flow: according to GTD specification, adjusted by an orifice in the outlet pipe on shipside.
2	INLET - Cylinder cooling water (HT 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. - 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 - Controller set-point: 90 °C (controller type: PI) - Steady state condition: 90 ± 2 °C - Transient condition: 90 ± 4 °C - A venting devise (air separator) must be installed as close as possible after the outlet connection. Venting air must be released to a safe area outside of the engine room.
7	INLET - Scavenge air cooler (SAC) cooling water (LT water) - Cooling water pressure: 2.0 - 4.0 bar - Cooling water temperature set point: 25 °C, max. 36 °C when seawater temperature at 32 °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.

X62DF



QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	026	PAAD297120	AIR SEPARATOR	DAAD101945		0,001
1	016	107.245.419.500	EXPANSION TANK	107.245.419		0,001
1	015	PAAD166922	EXPANSION TANK	DAAD052664		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: 5-8X62DF

CENTRAL COOLING WATER SYSTEM
HT_static-pressure: EXP tank

Units	mm kg	NX	Basic Material
Net Weight	0,001		
Made	17.07.2020	Sudant Deogade	Scale -
Chkd	30.09.2020	jpi101 Pickup	Design Group 9721
Appd	30.09.2020	mhu019 Hug	

Size A3 | Page 1/2 | Material ID PAAD360930

Drawing ID DAAD133074 | Rev. –

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

DID - DIMENSIONAL DRAWING - Confidential

SYSTEM PROPOSAL

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

Table 1: Water content on engine side

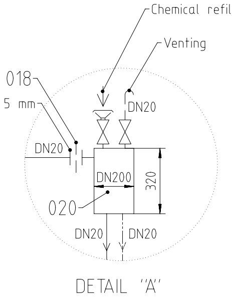
Cylinder	HT circuit Cyl. C.W. Volume (l)	LT circuit SAC Volume (l)
5	650 l	700 l
6	775 l	775 l a) / 1500 l b)
7	925 l	850 l a) / 1450 l b)
8	1050 l	2200 l

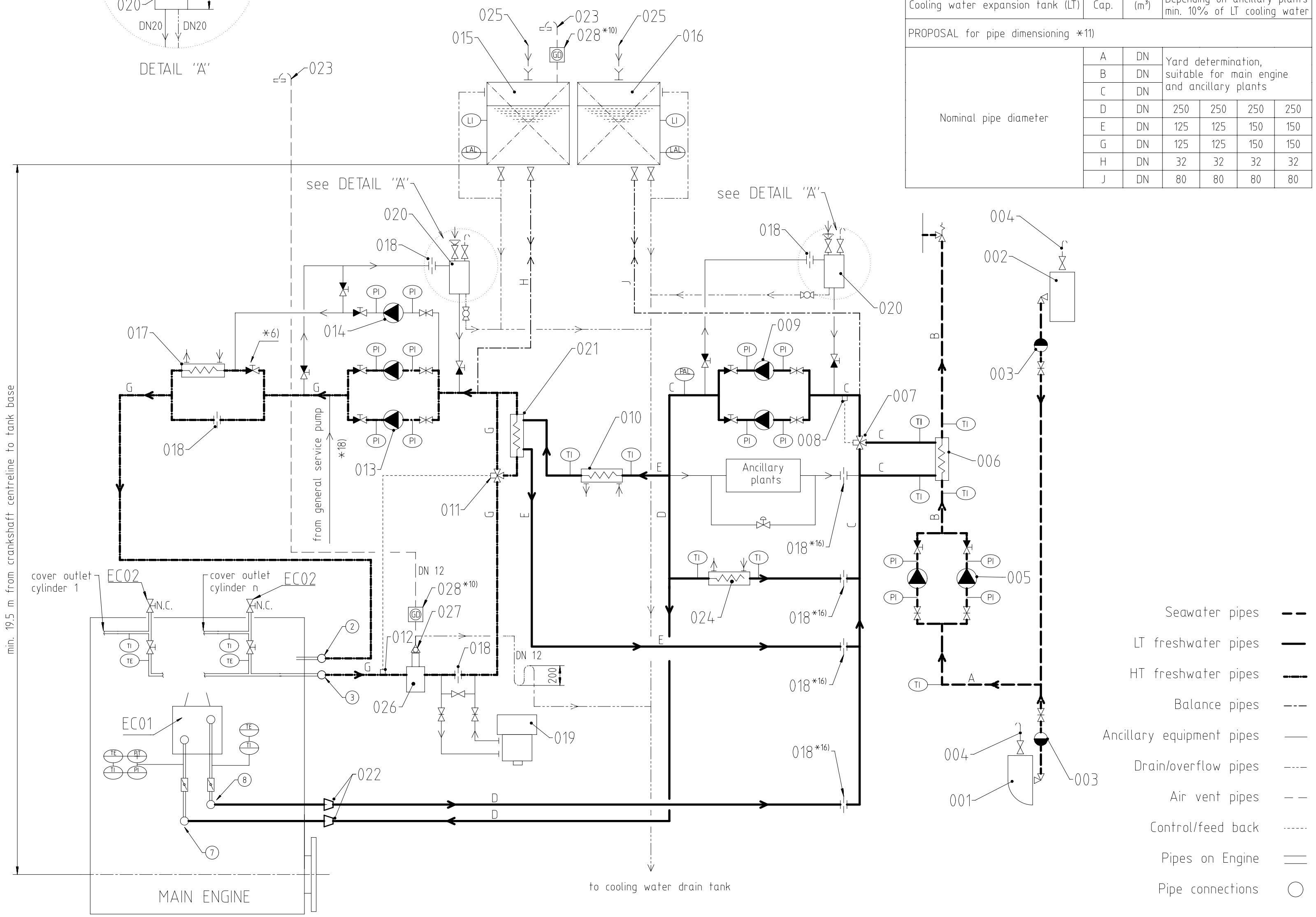
a) Values for executions with 1 scavenge air cooler.
b) Values for executions with 2 scavenge air coolers.

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 X62DF (R1 rated)	power	(kW)	11925	14310	16695	19080
	speed	(rpm)	103			
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 *11)						
Nominal pipe diameter	A	DN	Yard determination, suitable for main engine and ancillary plants			
	B	DN				
	C	DN				
	D	DN	250	250	250	250
	E	DN	125	125	150	150
	G	DN	125	125	150	150
	H	DN	32	32	32	32
	J	DN	80	80	80	80

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) *17)
016	LT water expansion tank (link to detail drawing on page 1) *17)
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	Cylinder cooling water air venting line *10)
024	MDO/MGO cooler
025	Filling pipe / inlet chemical treatment
026	Air separator (link to details drawing on page 1)
027	Automatic venting unit
028	Gas Detector *10)



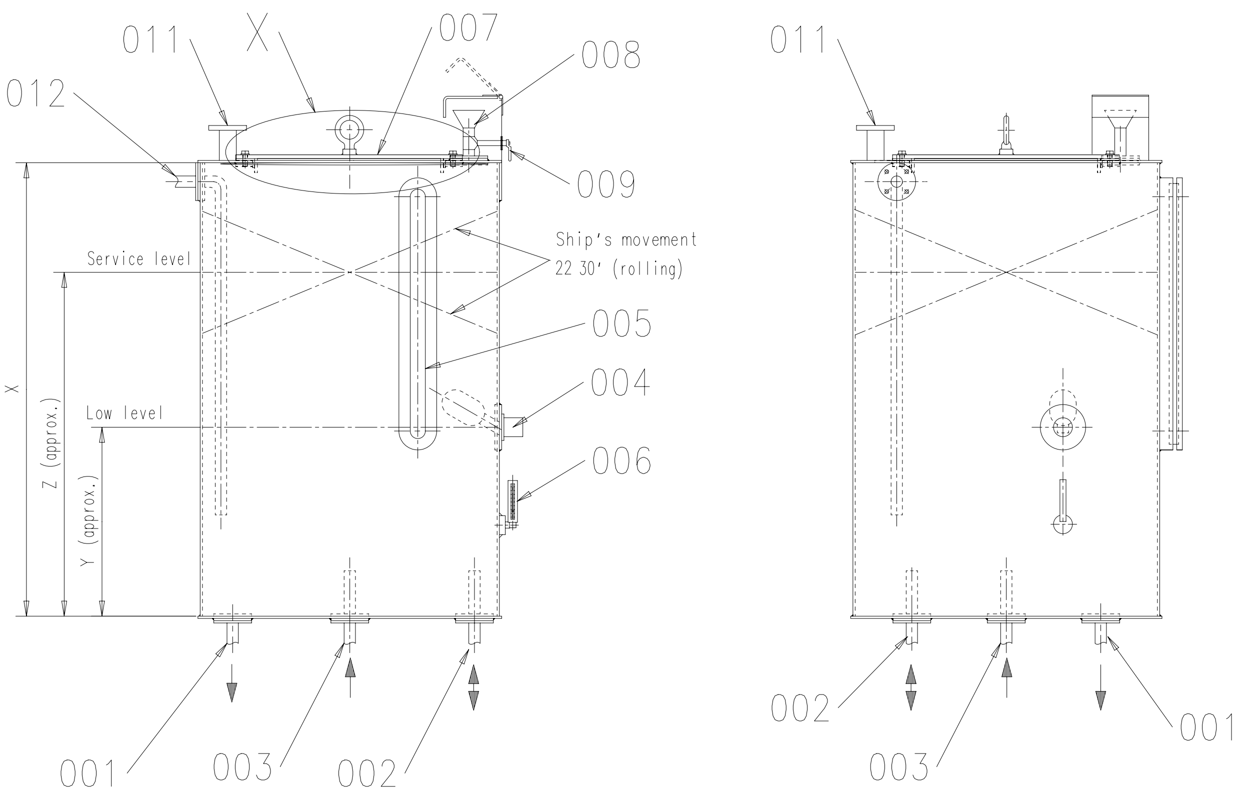


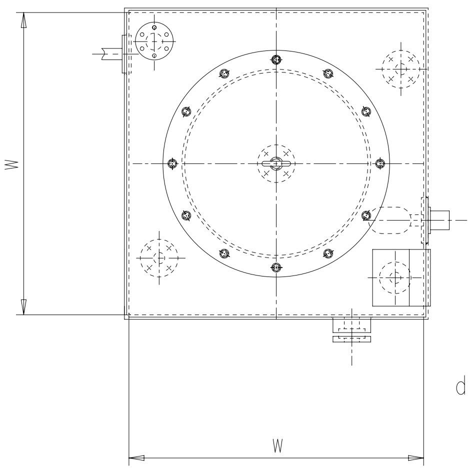
Remarks:
- Air vent and drain pipes not shown on drawing. Shall be installed where required.
- Air vent and drain pipes must be fully functional at all inclination angles of the ship at which the engine must be operational.

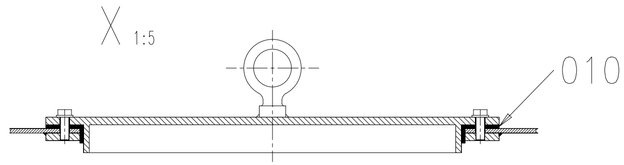
*1) To be delivered by external supplier and to be installed by the shipyard.
*2) Refer to the "Pipe Connection Plan" for the execution and location of the engine pipe connection.
*3) To be delivered by the engine manufacturer, i.e. already equipped on engine side.
*4) To be installed for cooling water after-treatment during regular engine operation. Convenient dimensions are provided in view "A". Other designs are possible.
*5) When using a valve, lock in proper position to avoid mishandling.
*6) Only when pos. 014 is installed.
*7) The inlet and outlet pipes to SAC must be designed to allow engine thermal expansion, or be fitted with expansion pieces.
*8) For guidance only, final layout according to actual engine pre-heating requirements.
*9) Installed as required (check with "Pipe Connection Plan")
*10) To be vented to a safe area outside of engine room. In addition, depending on flag state and/or class requirement, the venting line may also be equipped with a glass detector in order to achieve IGC compliance.
*11) All given diameters are valid for the mentioned rating and serve just as an example. To make the layout for the project specific rating please refer to DG9730 "Fluid velocities and flow rates, recommended values for pipework of diesel plants" for selecting the approriate pipe diameter. Rating specific flow rates are provided by GTD.
*13) A constant temperature at engine (SAC) inlet must be maintained. Recommended controller set-point for main engine operation is 25 °C. If the ancillary plants require a temperature lower or greater than the LT water set-point, a separate water supply system with different temperature set-point has to be installed (please refer to the system proposal in MIM)
*14) A constant temperature at engine outlet must be maintained. Recommended 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) 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.
*18) Optional connection, to be installed if requested by class rules for emergency engine cooling.

Q-Code	XXXXX
Standard	ISO; JIS
Product	5-8X62DF
Title	CENTRAL COOLING WATER SYSTEM HT_static-pressure: EXP tank
Company	WIN GD Winterthur Gas & Diesel
Units	mm kg
Made	17.07.2020 Sudant Deogade
Chkd	30.09.2020 jpi101 Pickup
Appd	30.09.2020 mhu019 Hug
Scale	-
Size	A1
Page	2/2
Design Group	9721
Material ID	PAAD360930
Drawing ID	DAAD133074
Net Weight	0,001
Rev.	-

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







(A) drawing view shows dimensioning scale for 0.75 m³ capacity

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^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
Standard ISO; JIS
Main Drw.

Modif. (A) EAAD091567 15.11.2019
Number | Drawn date | Number | Drawn date | Number | Drawn date | Number | Drawn date

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

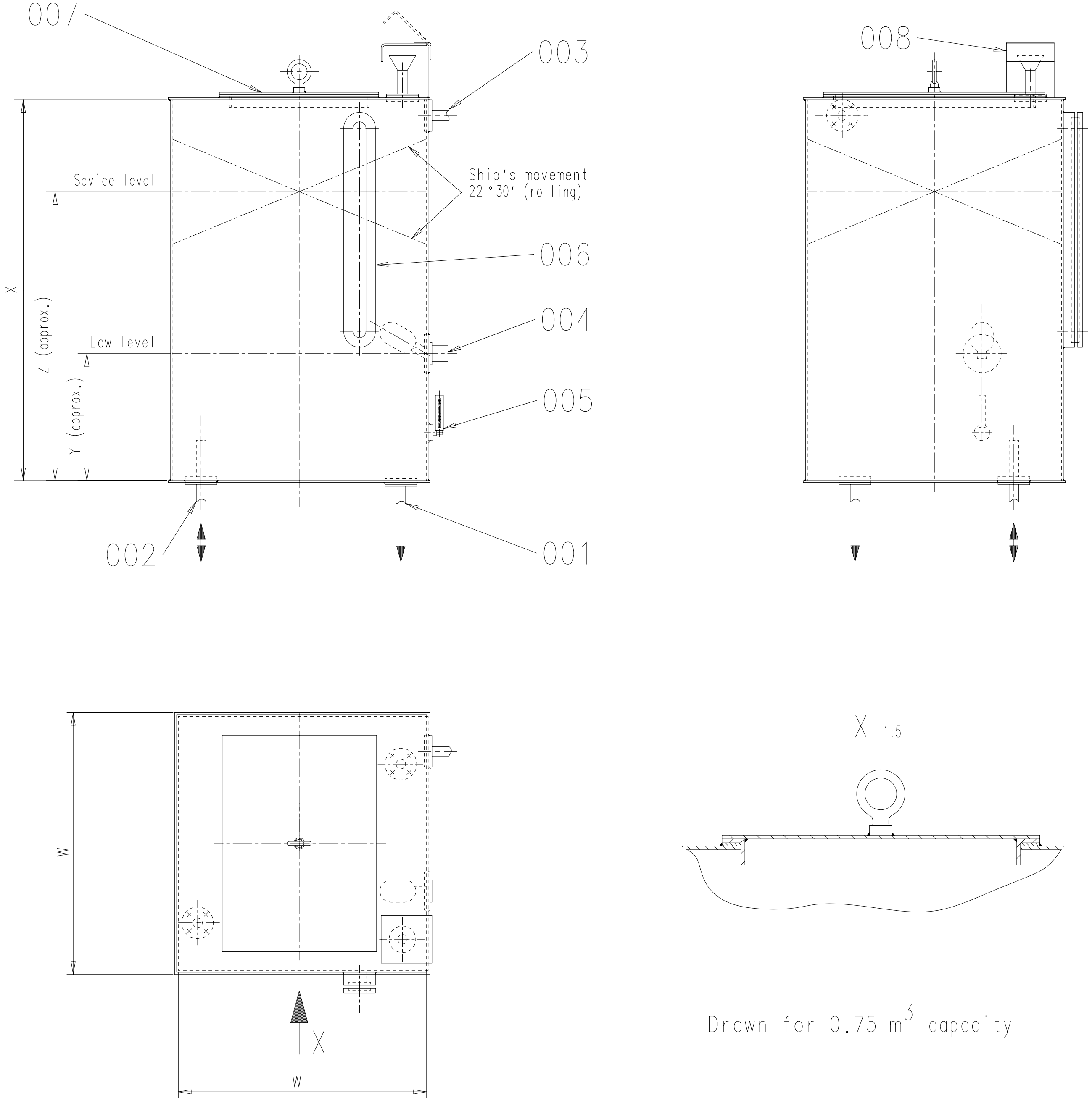
SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made 07.07.2014 mhu019 M.Hug
Chkd 08.08.2014 bha009 Haag
Appd 08.08.2014 bha009 Haag

Scale 1:10 | Size A2 | Page 1/1 | Material ID PAAD166922
Design Group 9721 | Drawing ID DAAD052664 | Rev. A

Approved

DID - DIMENSIONAL DRAWING - Confidential



Pos.	Description (D)
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

Free space for lic.

Q-Code XXXXX
Main Drw.
Standard ISO; JIS

Modif.	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

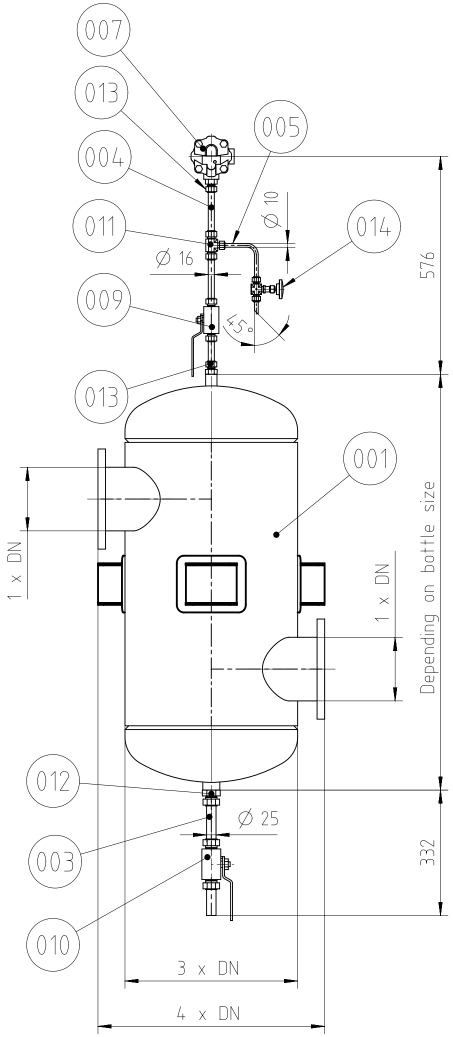
SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made 11.06.1997 T.LANDERT
Chkd
Appd 11.06.1997 WCH001 Service User

Scale 1:10 | Size A2 | Page 1/1 | Material ID 107.245.419.500
Design Group 9721 | Drawing ID 107.245.419 | Rev. D

Approved

DID - DIMENSIONAL DRAWING - Confidential



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

Approved

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
	A	EAAD090871	26.09.2019	B	EAAD096344	10.03.2021						

WIN GD
Winterthur Gas & Diesel

Product W-2S

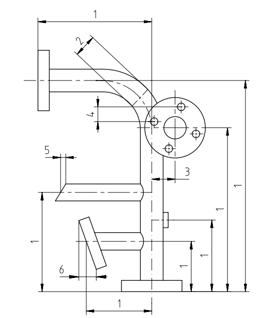
AIR SEPARATOR

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			

DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015

TOLERANCE GRADES



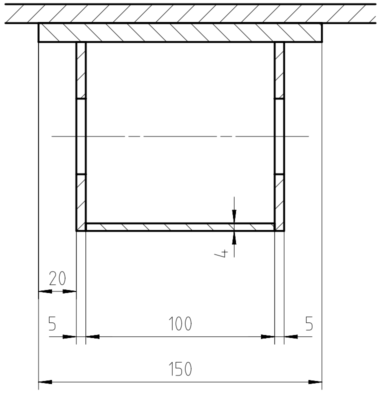
TOL. GRADE	DIMENSION NO. 1	2	3	4	5	6	
A	±1.0	*	±2.0	±2.0	±0.5	±0.5	≤DN150
B	±3.0	*	±3.0	±2.0	±0.5	±0.5	≤DN150
C	±6.0	*	±3.0	±2.0	±0.5	±0.5	≤DN150
A	±2.0	*	±2.0	±2.0	±1.0	±1.0	>DN150
B	±4.0	*	±3.0	±3.0	±1.0	±1.0	>DN150
C	±6.0	*	±3.0	±3.0	±1.0	±1.0	>DN150

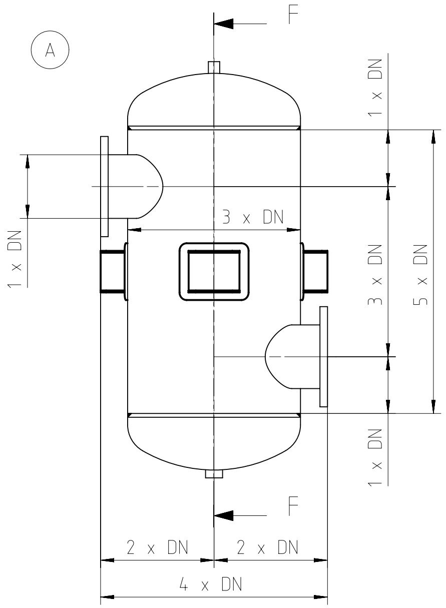
* for these tolerances see chapter 2.2 of the piping instruction 4-107.354.915

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

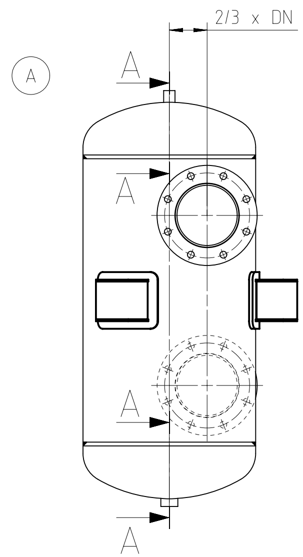
AIR SEPARATOR PROPOSAL

SECTION H-H
SCALE 1:2





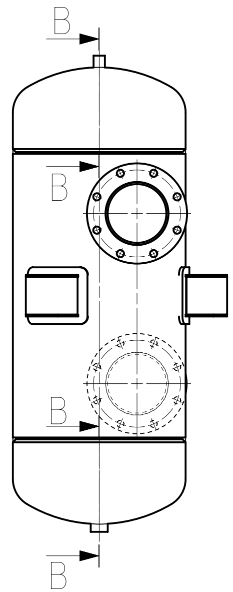
ISO



SECTION A-A

SCALE 1:5

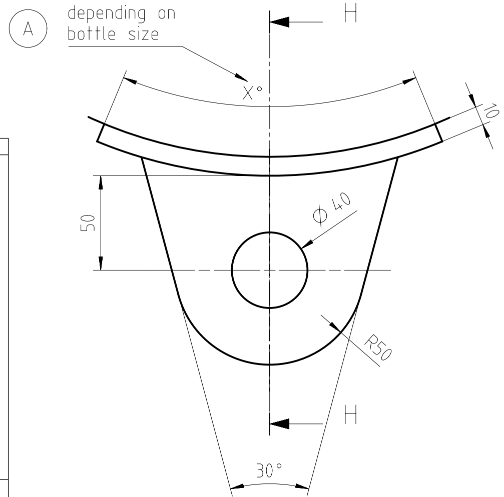
JIS

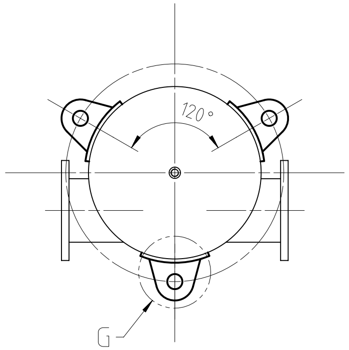


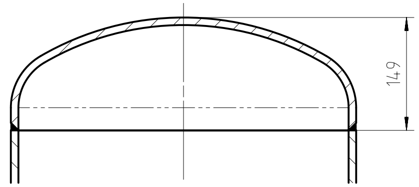
SECTION B-B

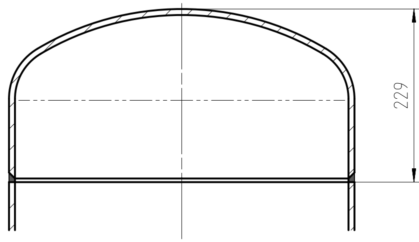
SCALE 1:5

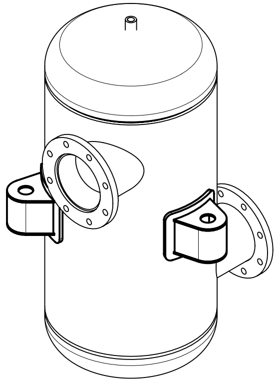
DETAIL G
SCALE 1:2





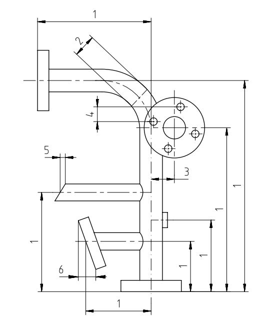






Qualitaetsstufe D (siehe 4-107.345.444)
WELD QUALITY LEVEL D (SEE 4-107.345.444)

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
TOLERANCING PRINCIPLE ISO8015

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

WIN GD
Winterthur Gas & Diesel

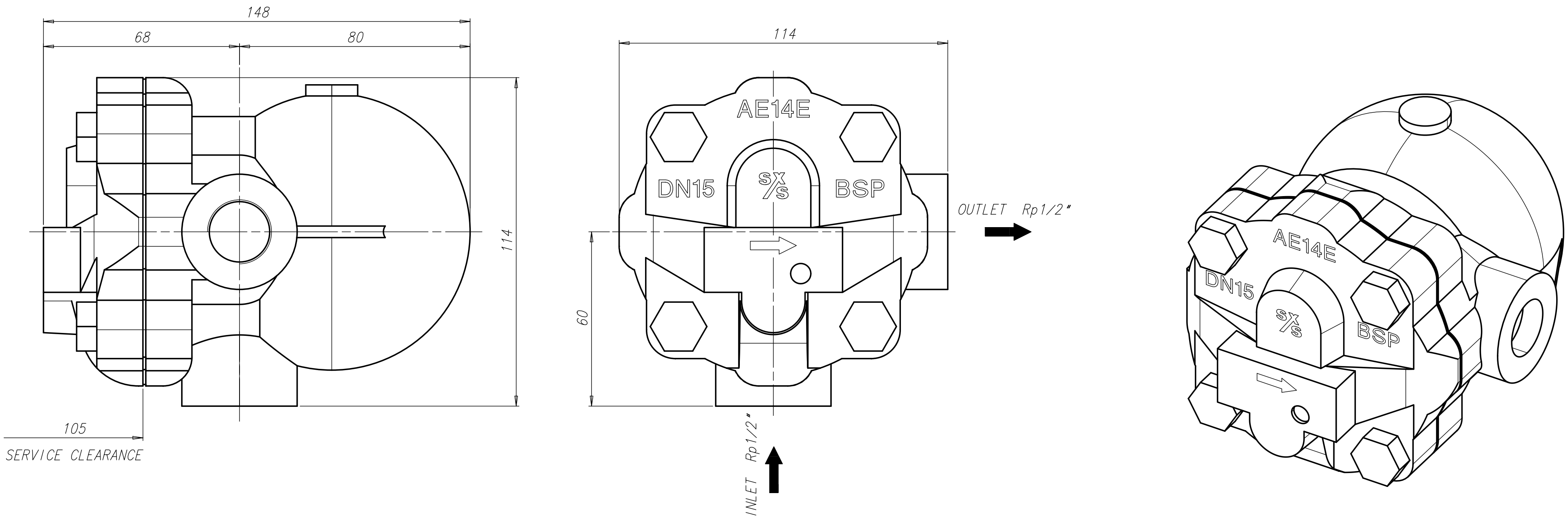
Product W-2S

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	Material ID PAAD297112
Chkd	17.07.2018 wwa008 Wang	Design Group 9721	Drawing ID DAAD101890		Rev. A
Appd	17.07.2018 mhu019 Hug				

Approved

DID - DIMENSIONAL DRAWING - Confidential



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

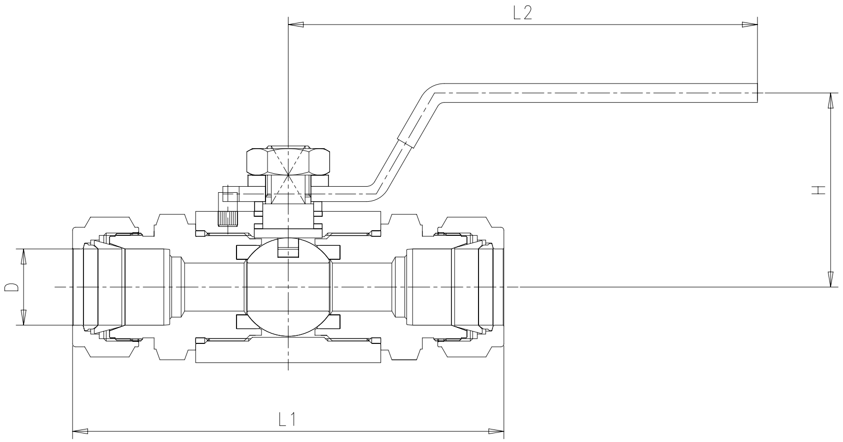
SURFACE PROTECTION SEE GROUP 0344	Made	08.04.2015 Aditya Gole
TOLERANCING PRINCIPLE ISO8015	Chkd	27.05.2015 ast044 Stephan
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	27.05.2015 bha009 Haag

Scale 1:1 | Size A2 | Page 1/1 | Material ID PAAD185947

Design Group 8611 | Drawing ID DAAD065150 | Rev. –

Approved

DID - DIMENSIONAL DRAWING - Confidential



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
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

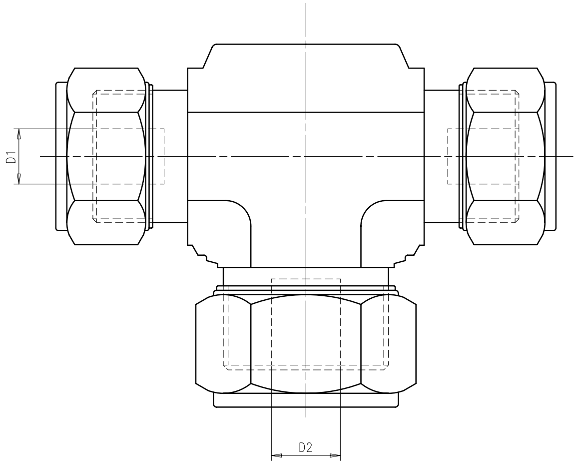
Basic Material
Net Weight

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

Made 29.04.2005 sga006 S.GASSER
Chkd S.Gasser
Appd 04.05.2005 MFR001 Frei

Scale 1:1
Design Group 0333
Size A2
Page 1/1
Material ID
Drawing ID 107.324.703
Rev. C

DID - DIMENSIONAL DRAWING - Confidential



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

(B) *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

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)	EAAD700021	13.01.2011	(B)	EAAD083575	24.02.2012	( )			( )		

WIN GD Winterthur Gas & Diesel

Product W-2S

TEE UNION

T-Verschraubung

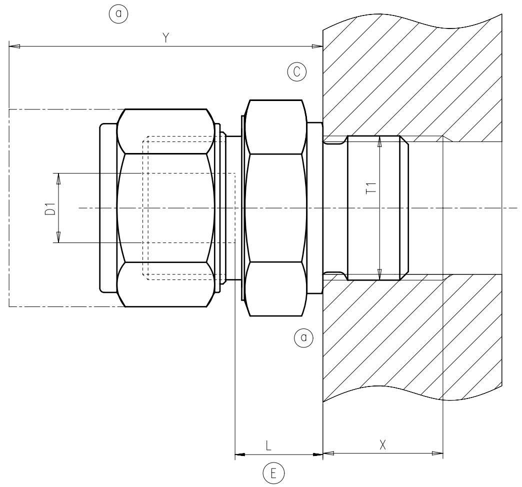
Units mm kg | IDE | Basic Material | Net Weight

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

DID - DIMENSIONAL DRAWING - Confidential



	Material ID	DN	TUBE D1	T1	X	Y (a)	L	Order Number (E)
	107.324.101.001	DN04	6	G1/8	9	45	9.9	DMC 6M-2GB-C
a	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
a	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
a	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
a	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
a	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
a	107.324.101.021	DN20	25	G1	21	70	10.5	DMC 25M-16GB-C
b	107.324.101.022	DN20	25	G1 1/4	23	75	12.9	DMC 25M-20GB-C
b	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. (E)

(D) 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 lic.
Q-Code XXXXX
Standard ISO; JIS
Main Drw.

Modif.	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

WIN GD Winterthur Gas & Diesel

Product W-2S

SCREW-IN UNION

Einschraubverschraubung

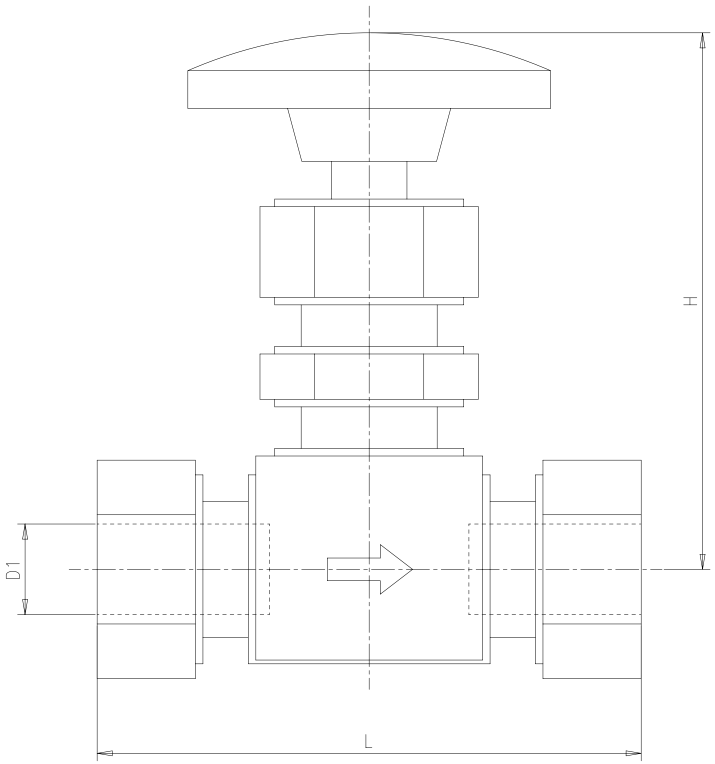
Units mm kg | NX | Basic Material | Net Weight

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

Made 17.12.2004 wdo001 W.Doerig
Chkd
Appd 28.02.2005 PST007

Scale 1:1 | Size A1 | Page 1/1 | Material ID
Design Group 0333 | Drawing ID 107.324.101 | Rev. E

Approved
DID - DIMENSIONAL DRAWING - Confidential



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
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
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made 19.05.2005 sga006 S.GASSER
Chkd
Appd 19.05.2005 MFR001 Frei

Scale 2:1
Design Group 0333
Size A2
Page 1/1
Material ID
Drawing ID 107.324.704
Rev. E

DID - DIMENSIONAL DRAWING - Confidential

MIDS - WinGD X62DF - Cooling Water System (DG9721)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2016-11-07	DRAWING SET	First web upload
2017-01-12	107.245.626	BUFFER UNIT – new drawing revision implemented
2017-09-20	DAAD053413	SYSTEM drawing – new revision
2018-12-12	DAAD053407 DAAD053413	Main and system drg. – new revision
2019-09-26	DAAD101945 DAAD101890	Air separator drgs – new revision
2019-12-09	DAAD053413	SYSTEM drawing – new revision (release uniflow concept)
2020-09-02	107.245.419	System drg – new revision
2020-10-08	DAAD053407 DAAD053413 DAAD133074 DAAD052664 107.245.626 107.324.703 107.324.704	Main and System drgs. – new revision
2021-02-24	107.324.101	System drg – new revision
2021-03-30	DAAD101945 107.324.703 107.324.704	System drgs – new revision

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