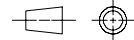


Net Weight												0,001													
1		002		107.429.532.500		CONCEPT GUIDANCE Freshwater generation				107.429.532				0,001											
1		001		PAAD103172		CENTRAL COOLING WATER SYSTEM				DAAD032427				0,001											
Quantity		SEQ NO		Material ID		Material Name				Standard or Drawing		Basic Material Material Standard		Weight GR./NET											
PER ENGINE						Dimension, Occ																			
PAAD103174		Free space for lic.												Q-Code XXXXXX		Main Drw. H									
														Standard ISO; JIS											
				Modif.		(A)		EAAD089971		13.11.2018															
Material ID				Number		Drawn date				Number		Drawn date				Number		Drawn date							
				 Winterthur Gas & Diesel				Product W5-8X72				COOLING WATER SYSTEMS Kuehlwassersystem													
Units				mm kg		NX				Basic Material						Net Weight									
44		Made		19.10.2012		asex06		A.Sekulic		Scale		-		Size		A3		Page		1/1		Material ID			
		Chkd		10.12.2012		wwr001		Wroblewski		Design Group		9721		Drawing ID		DAAD032429						Rev.		A	
0 ISO2768-mK		Appd		12.12.2012		bha009		Haag																	

PER ENGINE

Approved

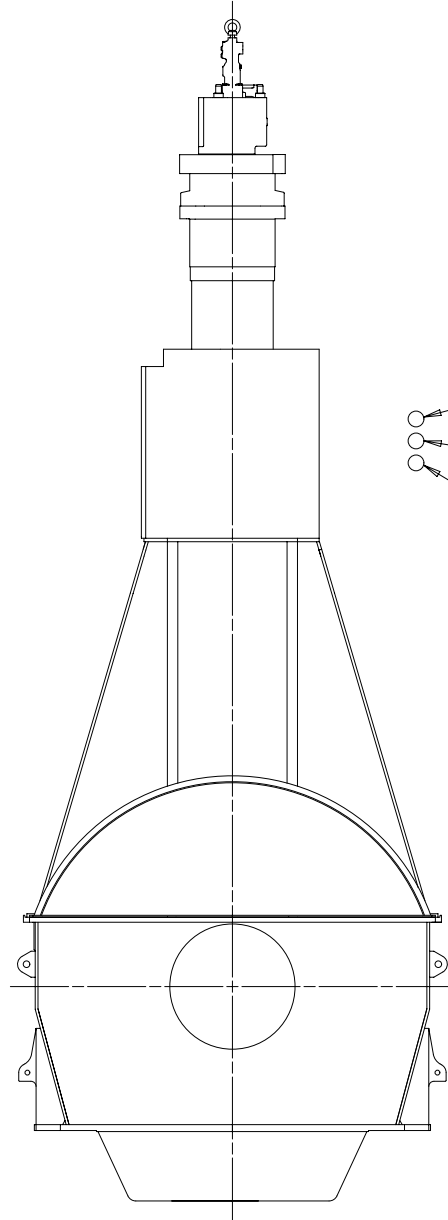
D

0 - DIMENSIONAL DRAWING - Confidential

X72
DRIVING END

FUEL SIDE

EXHAUST SIDE



SPECIFICATION which must be met:

- (H) (1) INLET - Cylinder cooling water (HT water)
- Cooling water pressure: 4.0 - 5.0 bar
- Cooling water volume flow: according to GTD specification.
- Cooling water (freshwater) has to be treated according to WinGD'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
- (H) (2) INLET - Cylinder liner cooling water
- Cooling water to the liner to be branched off before the CCW cooler from the common cooling water feed.
- Cooling water flow: according to GTD specification
- Cooling water pressure: To be adjusted during commissioning with a specified differential pressure *) to engine inlet connection 1.
*) Admissible pressure range has to be determined by flow measurement during seatrial of the first vessel of a ship series to ensure the required flow distribution between liner and cover.
- Cooling water (freshwater) has to be treated according to WinGD's specification.
- (H) (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
- (H) (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
- (H) (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.

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								
QTY	SEQ NO	Material ID	Material Name		Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET							
Free space for lic.							Q-Code	Main Drw.							
							XXXXXX								
							Standard ISO; JIS								
Modif.	E	EAAD087864	22.09.2017	F	EAAD089971	25.11.2018	G	EAAD090593	29.08.2019	H	EAAD092431	28.02.2020			
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date					
 Winterthur Gas & Diesel			Product 5-8X72		CENTRAL COOLING WATER SYSTEM HT_static-pressure: Buffer-unit Zentralkuehlwassersystem										
Units	mm kg	NX				Basic Material					Net Weight 0,001				
Made	asex06		A.Sekulic		Scale	-		Size	A2	Page	1/2		Material ID	PAAD103172	
Chkd	10.12.2012		wwr001 Wroblewski		Design Group		9721		Drawing ID	DAAD032427				Rev.	H
Appd	12.12.2012		bha009 Haag												

SYSTEM PROPOSAL

Pos.	ENGINE CONNECTIONS *2) (H)
①	INLET - Cylinder cooling water (HT water)
②	INLET - Cylinder liner cooling 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	Butterfly valve cover inlet
EC03	Butterfly valve liner inlet
EC04	Manual vent valve, for each cylinder *16)

Number of cylinders	power speed (kW) (rpm)	5	6	7	8
Main engine X72 (R1+ rated) (H)		18050	21660	25270	28880
Buffer unit for HT circuit	Cap. (m³)	0.8	0.8	1.2	1.2
Cylinder cooling water feed tank only min.	Cap. (m³)	1.5	1.5	1.5	1.5
CCW feed and drain tank (combined) min.	Cap. (m³)	4	4	5	5
Cooling water expansion tank (LT)	Cap. (m³)	Depending on ancillary plants			

PROPOSAL for pipe dimensioning *11)

	A	DN	Yard determination, suitable for main engine and ancillary plants
B	DN		
C	DN		
D	DN	200	200
E	DN	150	150
F	DN	150	150
G	DN	150	150
H	DN	65	80
I	DN	32	32
J	DN	65	65
K	DN	20	20

(H) Nominal pipe diameter

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) (H)
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) *10)
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 m³/h at 4 bar)
026	Chemical treatment refill unit *4)
027	Transition piece (adapter) *9)
028	MDO/IMG cooler
029	Air separator (link to details drawing on page 1) (H)
030	Automatic venting unit (H)

Remarks: (H)

- 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.

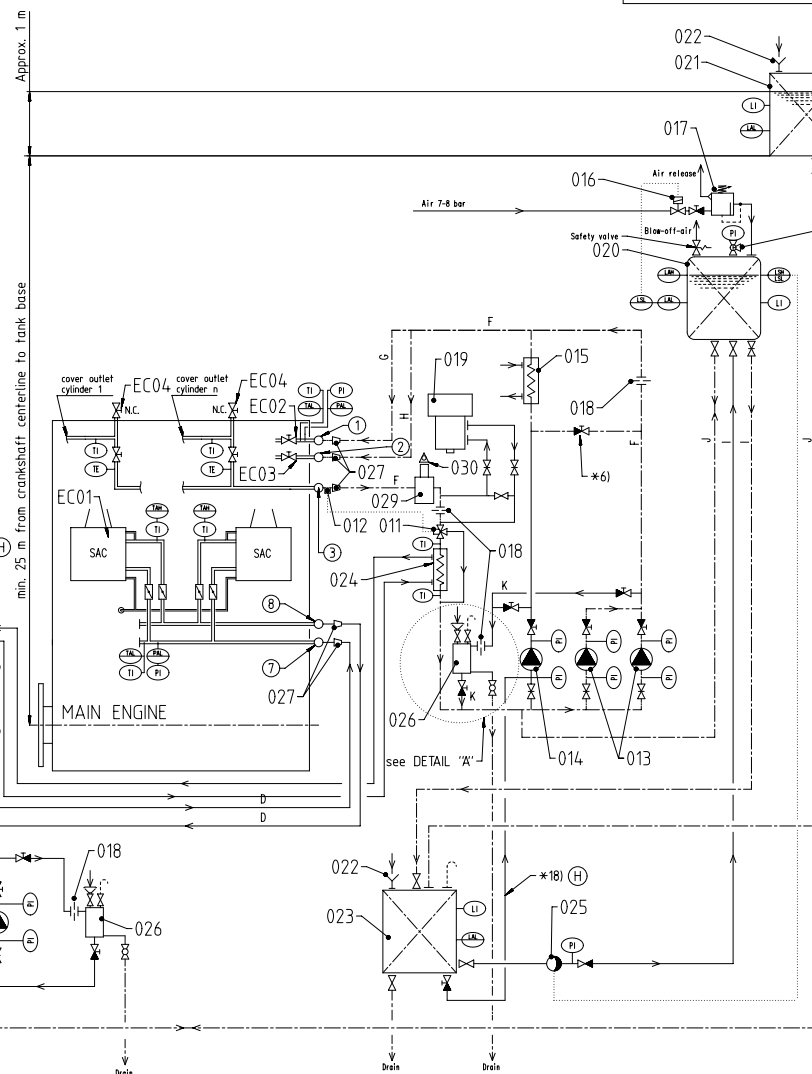
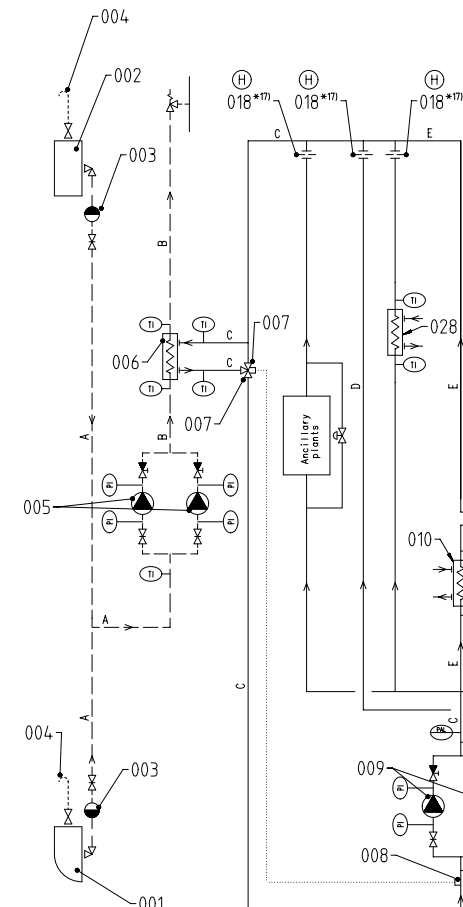
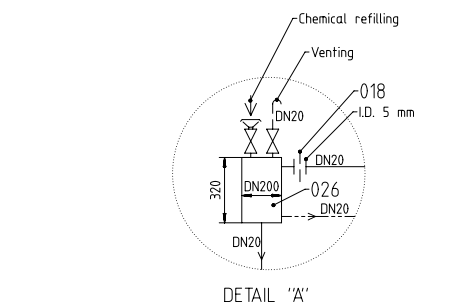
- *1) To be delivered by external supplier and to be installed by the shipyard.
- *2) Refer to the "Pipe Connection Plan" for the execution and location of the engine pipe connection.
- *3) To be delivered by the engine manufacturer, i.e. already equipped on engine side.
- *4) To be installed for cooling 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) 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.
- *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 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) Optional filling line to enable fast system re-filling (e.g. after complete system drainage) by means of the pre-heating pumps.

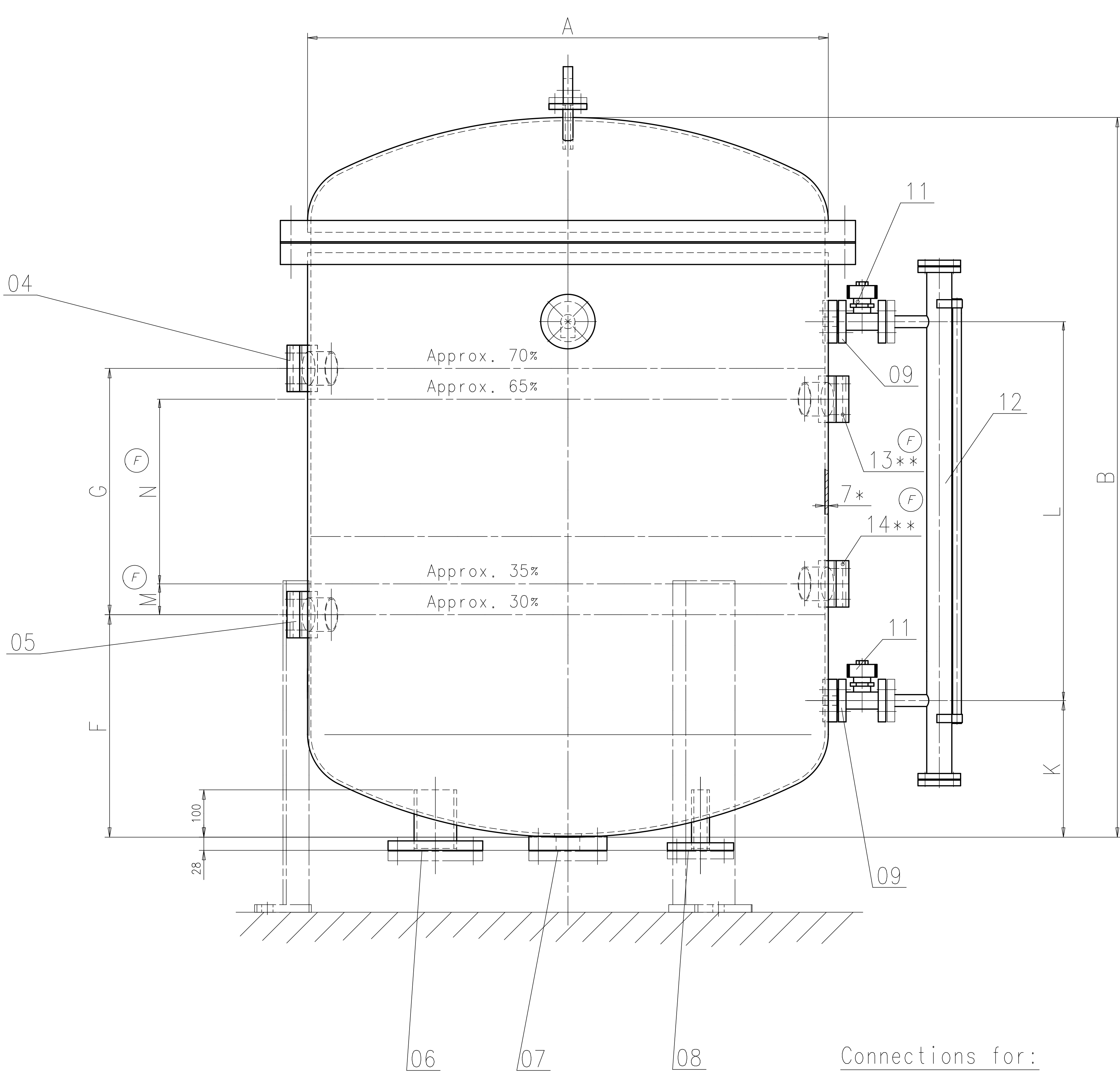
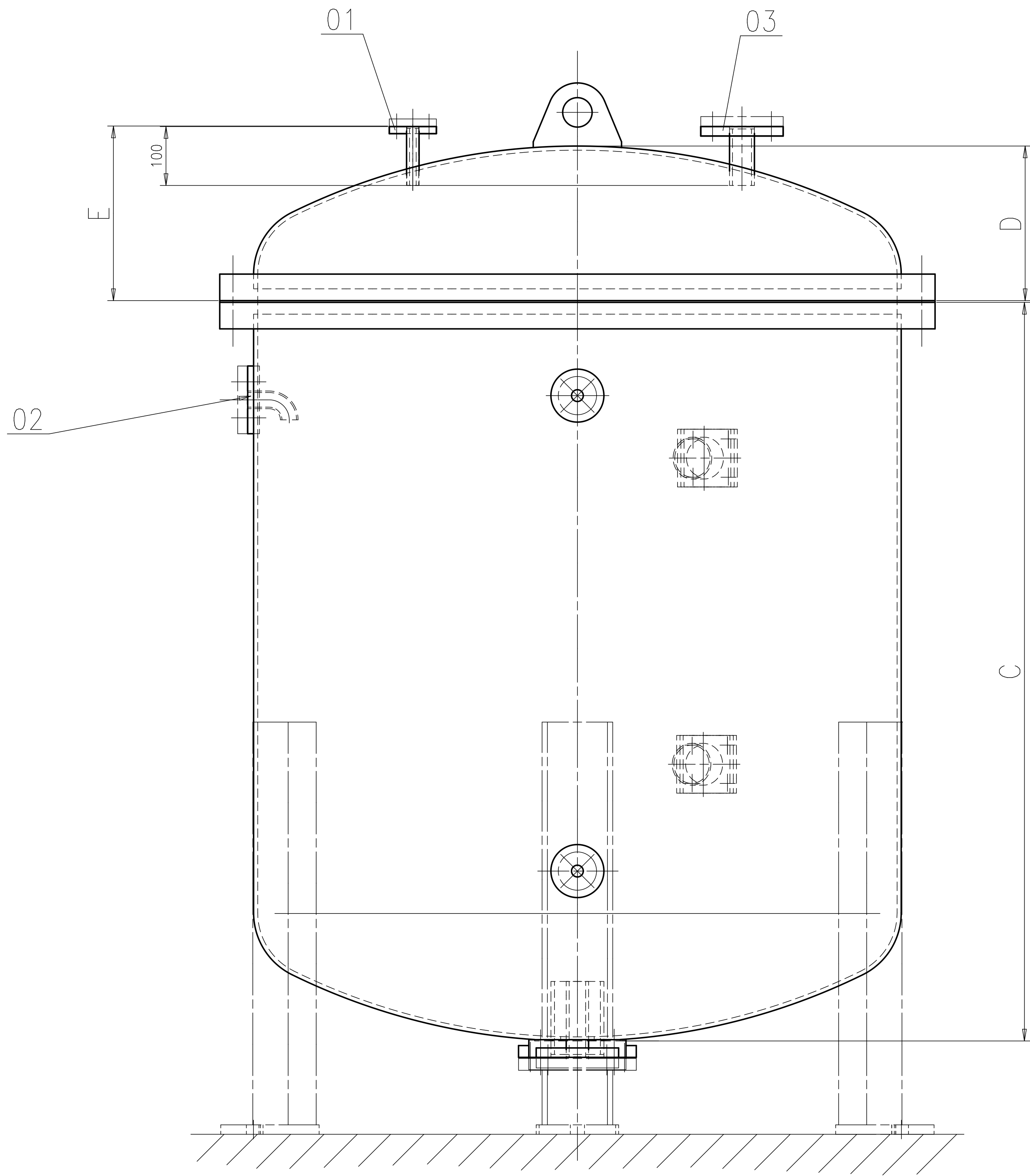
Table 1: Water content on engine side

Cylinder	HT circuit Cyl. C.W. Volume (l)	LT circuit SAC Volume (l)
5	1000 l	750 l
6	1450 l	750 l a) / 1300 l b)
7	1700 l	950 l a) / 1450 l b)
8	1950 l	950 l a) / 1600 l b)

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

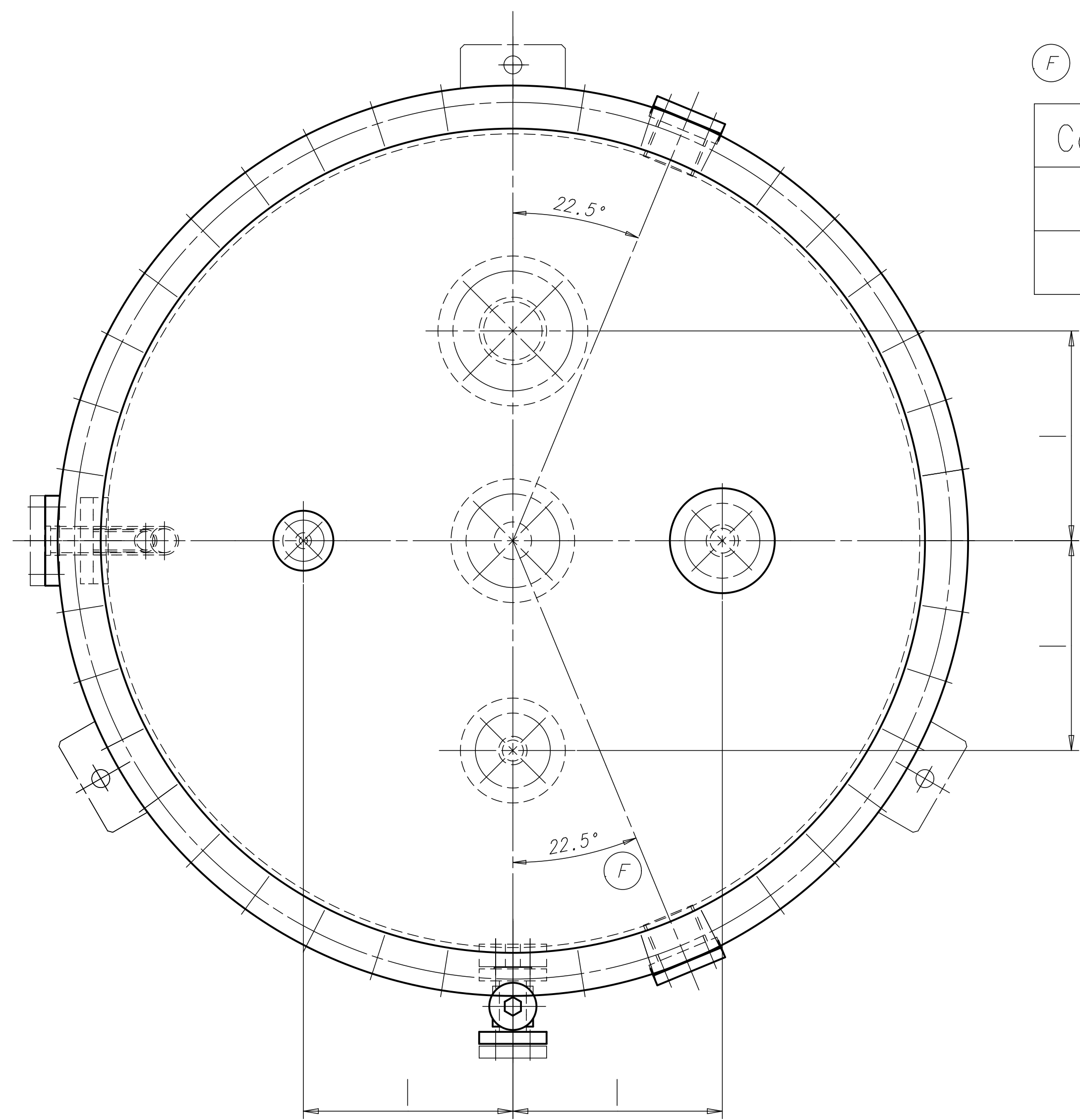
- Seawater pipes ---
- LT freshwater pipes —
- HT freshwater pipes ---
- Balance pipes ---
- Ancillary equipment pipes —
- Drain/overflow pipes ----
- Air vent pipes ----
- Control/feed back
- Pipes on Engine ==
- Pipe connections ○





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
- 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 **

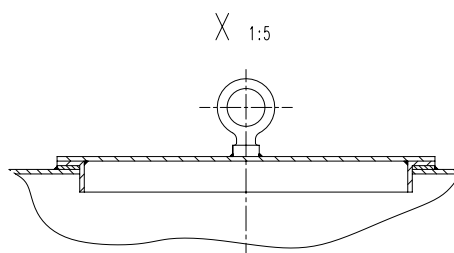
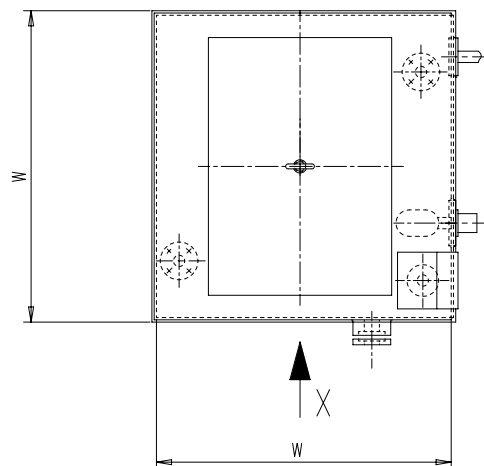
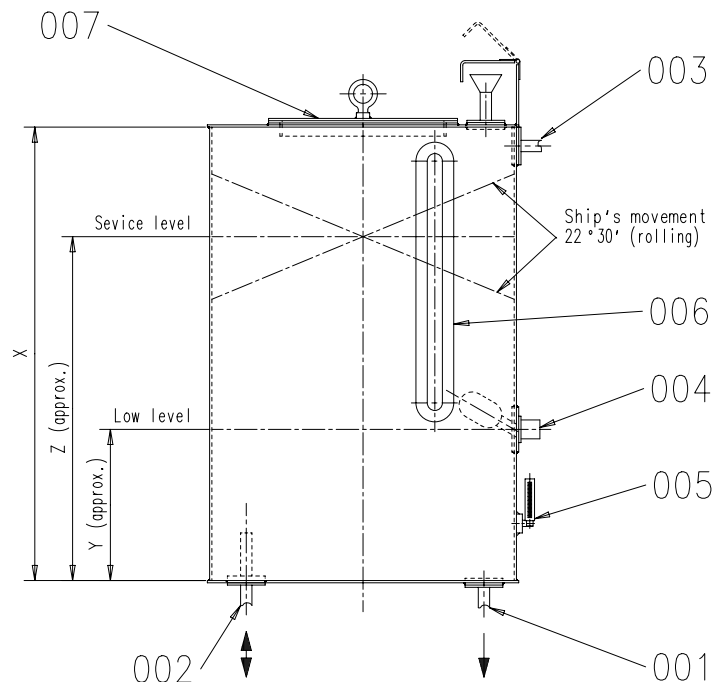


Capacity	A	B	C	D	E	F	G	H	I	K	L	M	N
800l	ø900	1430	1205	222	250	455	520	600	250	250	800	65	390
1200l	ø1100	1520	1255	262	300	470	520	650	280	290	800	65	390

Working pressure : 5 bar
* Wall thickness and test pressure : according to relevant classification society/rules
Service temperature : max. 95°C
** Tank volume between LSH and LSL shall be no less than 150 litres.

Drawn for 1200l capacity

Form 1000-01 Rev. 1.0		D-Code XXXXX Standard ISO		Mfr. No. 107.245.626	
Model	7-61.644	Date	05.03.2008	Product	W-2S
Number	05.03.2008	Drawn date	14.08.2012	Number	05.03.2008
Units	mm kg	IDE	1:5	Scale	1:5
Basic Material	107.245.626	Material	107.245.626	Net Weight	0.001
Surface Protection	SEE GROUP 0344	Scale	1:5	Size	A0
Chkd	22.09.2000	Design Group	9721	Page	1/1
GENERAL TOLERANCES ACCORDING TO ISO 2768-MK	22.09.2000	WCH001 Service Use	9721	Rev.	F



Drawn for 0.75 m³ capacity

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

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'

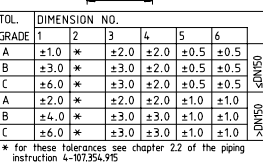
Table 1: Tank dimensions

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

Modif.	Free space for lic.						Q-Code XXXXXX Standard ISO; JIS	Main Drw.			
	A	EAAD014356	16.06.1997	B	7-37.090	16.08.2007	C	EAAD083145	25.01.2012	D	EAAD091029
Number		Drawn date		Number		Drawn date		Number		Drawn date	
								Product W-25		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	
TOLERANCING PRINCIPLE ISO8015		Chkd				Design Group		Material ID 107.245.419.500		Rev. D	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd 11.06.1997		WCH001 Service User		9721		Drawing ID 107.245.419			



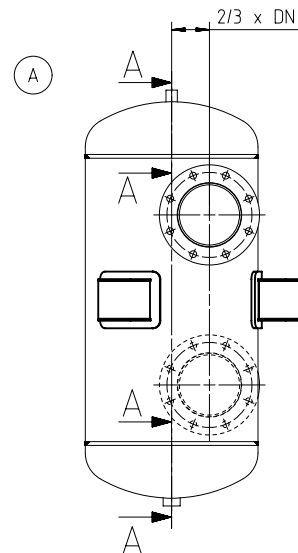
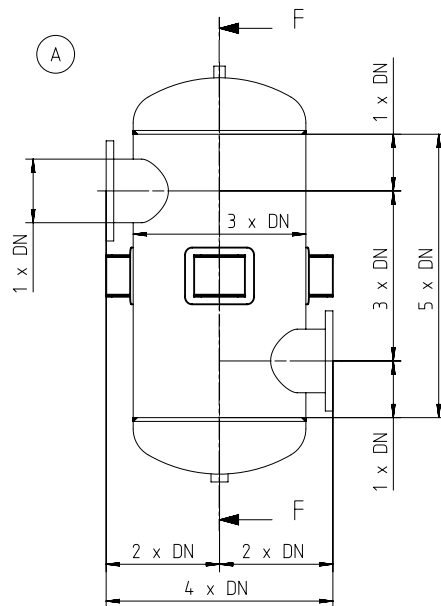
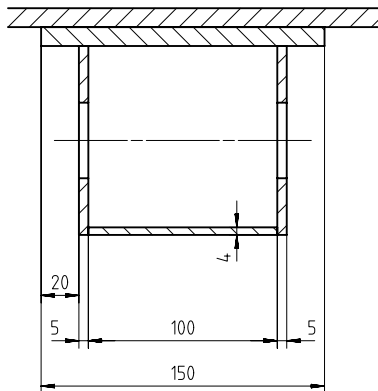
Free space for lit.											A-Code XXXXXX		Main Drw.	
											Standard ISO; JIS			
Modi.	(A)	EAAD090871	26.09.2019	(B)	EAAD096344	10.03.2021	(C)							
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date		
 WIN GD Winterthur Gas & Diesel						Product W-2S		AIR SEPARATOR						
Units	mm kg	NX				Basic Material						Net Weight 0.001		
Made	06.06.2018		Kashyap Patel			Scale	1:10		Size	A2	Page	1/1	Material ID	PAAD297120
Chkd	17.07.2018		mhu008 Wang			Design Group	9721		Drawing ID	DAAD101945			Rev.	B
Appd	17.07.2018		mhu019 Hug											



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

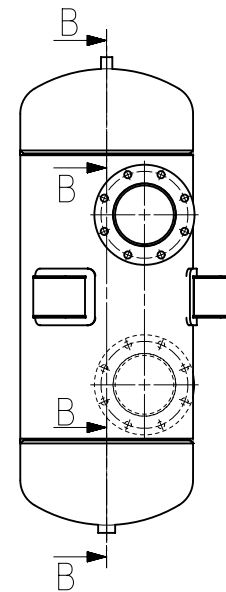
AIR SEPARATOR PROPOSAL

SECTION H-H
SCALE 1:2



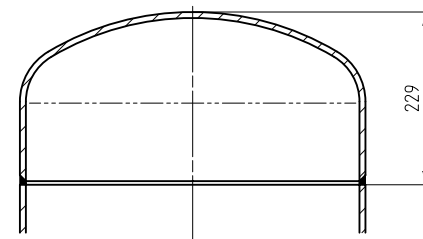
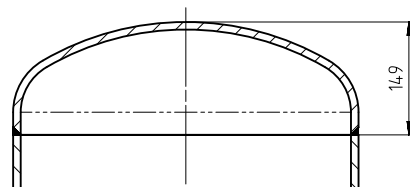
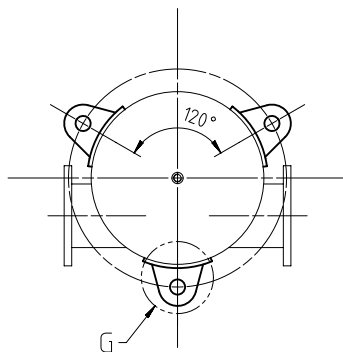
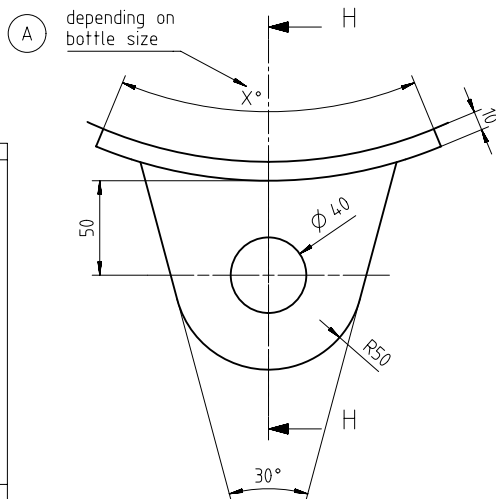
SECTION A-A
SCALE 1:5

JIS



SECTION B-B
SCALE 1:5

DETAIL G
SCALE 1:2



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

Free space for file		Q-Code XXXXX		Main Drw.	
Standard ISO; JIS					
Modif.	EAAD090871	09.09.2019			
Number	Drawn date	Number	Drawn date	Number	Drawn date
Product W-25		AIR SEPARATOR			
WIN GD Winterthur Gas & Diesel					
Units	mm kg	NX	Basic Material	Net Weight 0.001	
Made	05.06.2018	Kashyap patel	Scale 1:10	Size A2	Page 1/1
Chkd	17.07.2018	www008 Wang	Design Group	Material ID	PAAD297112
Appd	17.07.2018	mhu019 Hug	9721	Drawing ID	DAAD101890
SURFACE PROTECTION SEE GROUP 0344		TOLERANCING PRINCIPLE ISO8015		Rev. A	

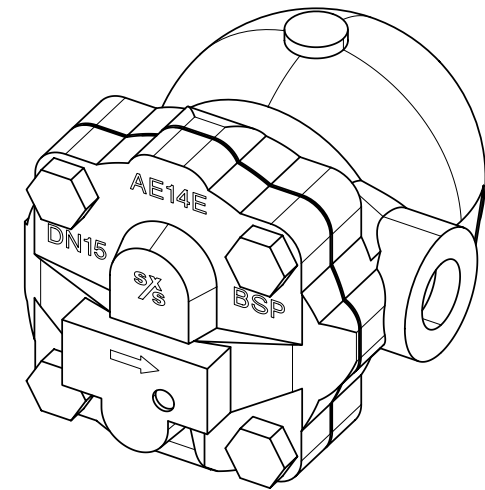
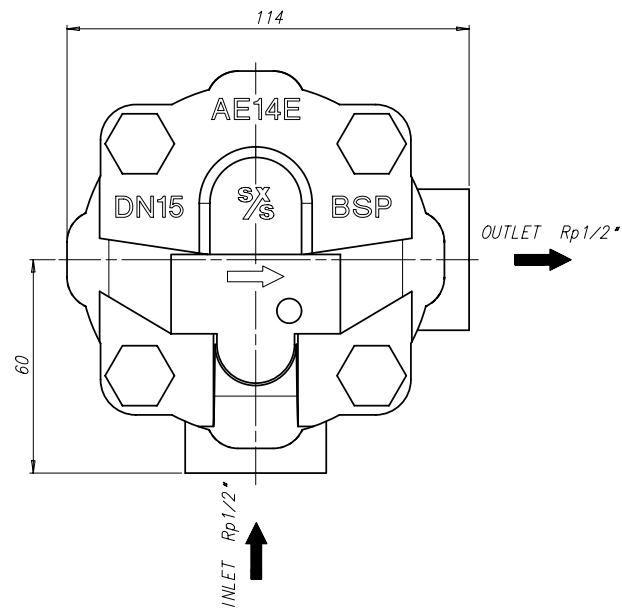
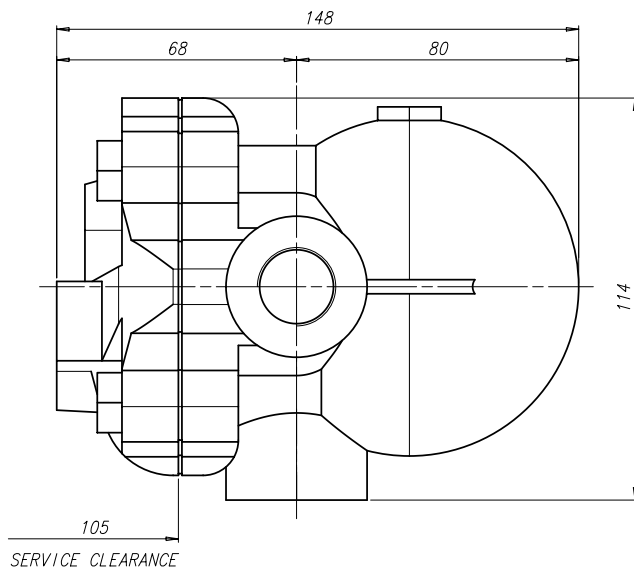
Rohrklasse	III	Medium	Wasser	Pruefueberdruck	7.5	bar
PIPE CLASS	III	MEDIUM	WATER	TEST OVERPRESSURE	7.5	bar
Schweiss Qualitaet	D	Toleranzklasse	B	Betr.druck	5	bar
WELDING QUALITY LEVEL	D	TOLERANCE GRADE	B	OPER. PRESS.	5	bar

1

2

3

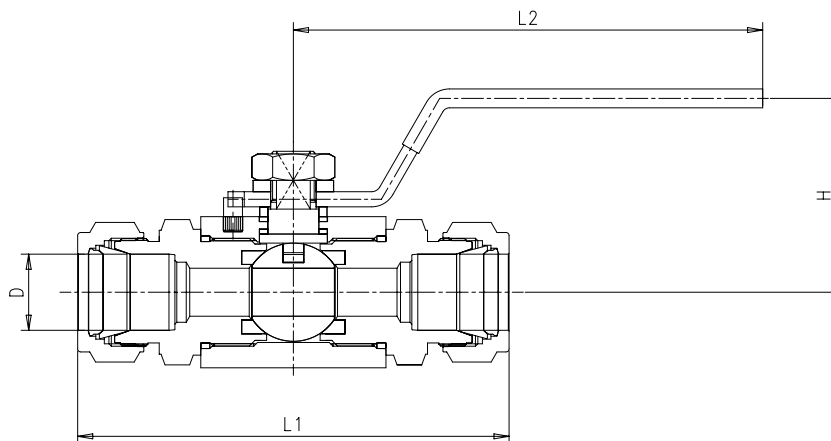
Copyright Winterthur Gas & Diesel Ltd. All rights reserved. By taking possession of the drawing the recipient recognizes and honours these rights. Neither the whole nor any part of this drawing may be used in any way for construction, fabrication, marketing or any other purpose nor copied in any way nor made accessible to third parties without the previous written consent of Winterthur Gas & Diesel Ltd.



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 TEMPERATURE (TMO): 127° C
MAX. PRESSURE DIFFERENCE: 14 bar

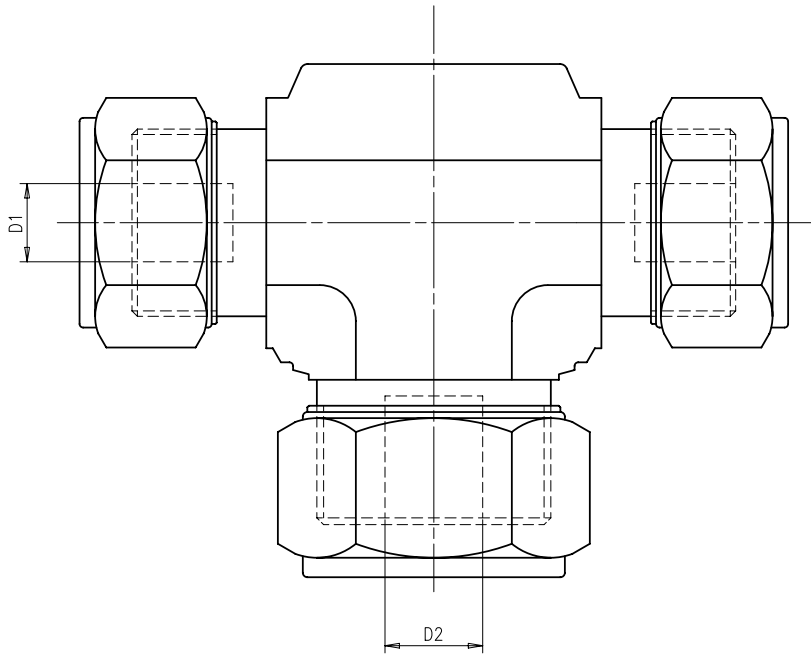
Free space for lib.		Q-Code XQXXX		Main Drw.	
Standard ISO		JIS			
Modif.	Number	Drawn date	Number	Drawn date	Number
Product W-2S		AUTOMATIC VENTING UNIT ORDER DRAWING Entlüftungsautomat Bestellzeichnung			
Units mm kg IDE		Basic Material		Net Weight 2.5	
SURFACE PROTECTION SEE GROUP 0344		Made 08.04.2015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



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			

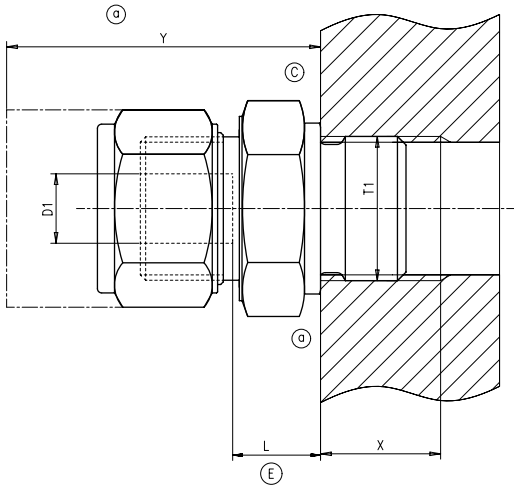
siehe Hauptzeichnung für Spezifikation
SEE MAIN DRAWING FOR SPECIFICATION

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
QTY	SEQ NO	Material ID	Material Name	Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
Modif.		Free space for lic.				Q-Code XXXXXX Standard ISO; JIS	Main Drw.
		A EAAD700077	13.04.2011	B EAAD083575	01.10.2012	C EAAD096344	12.03.2021
		Number	Drawn date	Number	Drawn date	Number	Drawn date
 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
TOLERANCING PRINCIPLE ISO8015		Chkd	S.Gasser		Design Group	Size	A2
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd	04.05.2005	MFR001	Frei	0333	1/1
		Drawing ID		107.324.703		Material ID	Rev.
							C



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

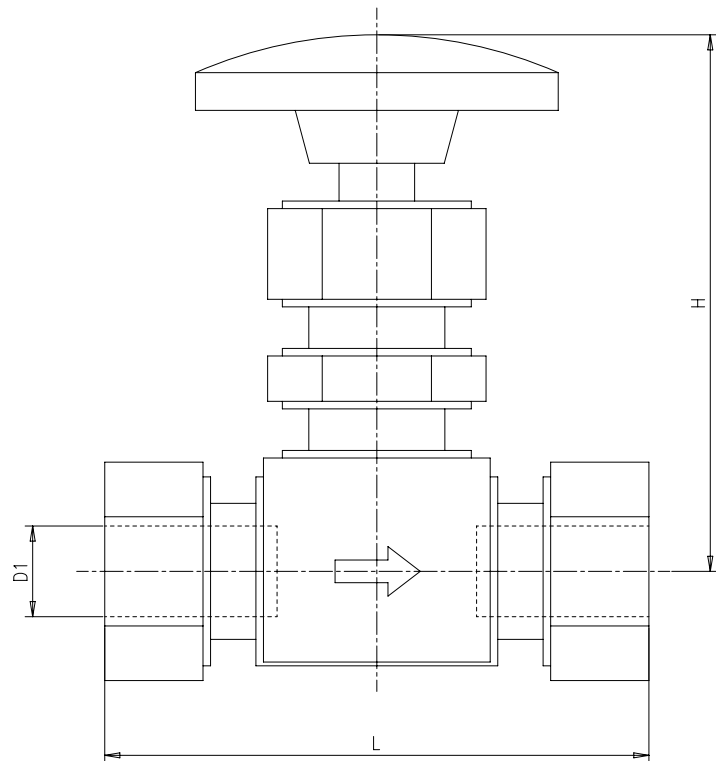
B siehe Hauptzeichnung für Spezifikation SEE MAIN DRAWING FOR SPECIFICATION									
1	015	107.324.131.015	TEE UNION	25 x 20 x 25	107.324.131	Steel	Steel	0.642	
1	014	107.324.131.014	TEE UNION	25 x 16 x 25	107.324.131	Steel	Steel	0.615	
1	013	107.324.131.013	TEE UNION	20 x 25 x 20	107.324.131	Steel	Steel	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	
QTY	SEQ NO	Material ID	Material Name	Dimension/Occ.Dimension	Standard or Drawing	Basic Material Material Standard	Q-Code XXXXX	Weight DR / NET	Main Draw.
Free space for title							Standard ISO JIS		
Modif.	A	EAAD700021	13.01.2011	B	EAAD083575	24.02.2012			
	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			Modif.	17.12.2004	W.DOE1G	Scale	1:1	Size	A1
TOLERANCING PRINCIPLE ISO8015			Chkd			Design Group		Page	1/1
GENERAL TOLERANCES ACCORDING TO ISO2768-mK			Appd	28.04.2005	mfr001 Frei	Drawing ID	0333	Material ID	107.324.131
								Rev.	B



(G)						(E)		
	Material ID	DN	TUBE D1	T1	X	Y	L	Order Number
(a)	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
(b)	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
(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
(d)	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
(e)	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
(f)	107.324.101.021	DN20	25	G1	21	70	10.5	DMC 25M-16GB-C
(g)	107.324.101.022	DN20	25	G1 1/4	23	75	12.9	DMC 25M-20GB-C
(h)	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.

① siehe Hauptzeichnung für Spezifikation SEE MAIN DRAWING FOR SPECIFICATION									
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	
QTY	SEQ NO	Material ID	Material Name	Dimension, Oct	Standard or Drawing	Basic Material	Weight GR/NET	Main Drw.	
								G-code XXXXXX Shrinker ISO, JIS	
107.324.101.023	18.07.2005	107.324.101.023	18.07.2005	107.324.101.023	18.07.2005	107.324.101.023	18.07.2005	107.324.101.023	18.07.2005
107.324.101.022	08.06.2007	107.324.101.022	08.06.2007	107.324.101.022	08.06.2007	107.324.101.022	08.06.2007	107.324.101.022	08.06.2007
107.324.101.021	01.10.2012	107.324.101.021	01.10.2012	107.324.101.021	01.10.2012	107.324.101.021	01.10.2012	107.324.101.021	01.10.2012
107.324.101.020	28.11.2019	107.324.101.020	28.11.2019	107.324.101.020	28.11.2019	107.324.101.020	28.11.2019	107.324.101.020	28.11.2019
107.324.101.019	08.06.2007	107.324.101.019	08.06.2007	107.324.101.019	08.06.2007	107.324.101.019	08.06.2007	107.324.101.019	08.06.2007
107.324.101.018	08.06.2007	107.324.101.018	08.06.2007	107.324.101.018	08.06.2007	107.324.101.018	08.06.2007	107.324.101.018	08.06.2007
107.324.101.017	08.06.2007	107.324.101.017	08.06.2007	107.324.101.017	08.06.2007	107.324.101.017	08.06.2007	107.324.101.017	08.06.2007
107.324.101.016	08.06.2007	107.324.101.016	08.06.2007	107.324.101.016	08.06.2007	107.324.101.016	08.06.2007	107.324.101.016	08.06.2007
107.324.101.015	08.06.2007	107.324.101.015	08.06.2007	107.324.101.015	08.06.2007	107.324.101.015	08.06.2007	107.324.101.015	08.06.2007
107.324.101.014	08.06.2007	107.324.101.014	08.06.2007	107.324.101.014	08.06.2007	107.324.101.014	08.06.2007	107.324.101.014	08.06.2007
107.324.101.013	08.06.2007	107.324.101.013	08.06.2007	107.324.101.013	08.06.2007	107.324.101.013	08.06.2007	107.324.101.013	08.06.2007
107.324.101.012	08.06.2007	107.324.101.012	08.06.2007	107.324.101.012	08.06.2007	107.324.101.012	08.06.2007	107.324.101.012	08.06.2007
107.324.101.011	08.06.2007	107.324.101.011	08.06.2007	107.324.101.011	08.06.2007	107.324.101.011	08.06.2007	107.324.101.011	08.06.2007
107.324.101.010	08.06.2007	107.324.101.010	08.06.2007	107.324.101.010	08.06.2007	107.324.101.010	08.06.2007	107.324.101.010	08.06.2007
107.324.101.009	08.06.2007	107.324.101.009	08.06.2007	107.324.101.009	08.06.2007	107.324.101.009	08.06.2007	107.324.101.009	08.06.2007
107.324.101.008	08.06.2007	107.324.101.008	08.06.2007	107.324.101.008	08.06.2007	107.324.101.008	08.06.2007	107.324.101.008	08.06.2007
107.324.101.007	08.06.2007	107.324.101.007	08.06.2007	107.324.101.007	08.06.2007	107.324.101.007	08.06.2007	107.324.101.007	08.06.2007
107.324.101.006	08.06.2007	107.324.101.006	08.06.2007	107.324.101.006	08.06.2007	107.324.101.006	08.06.2007	107.324.101.006	08.06.2007
107.324.101.005	08.06.2007	107.324.101.005	08.06.2007	107.324.101.005	08.06.2007	107.324.101.005	08.06.2007	107.324.101.005	08.06.2007
107.324.101.004	08.06.2007	107.324.101.004	08.06.2007	107.324.101.004	08.06.2007	107.324.101.004	08.06.2007	107.324.101.004	08.06.2007
107.324.101.003	08.06.2007	107.324.101.003	08.06.2007	107.324.101.003	08.06.2007	107.324.101.003	08.06.2007	107.324.101.003	08.06.2007
107.324.101.002	08.06.2007	107.324.101.002	08.06.2007	107.324.101.002	08.06.2007	107.324.101.002	08.06.2007	107.324.101.002	08.06.2007
107.324.101.001	08.06.2007	107.324.101.001	08.06.2007	107.324.101.001	08.06.2007	107.324.101.001	08.06.2007	107.324.101.001	08.06.2007
107.324.101.023	18.07.2005	107.324.101.023	18.07.2005	107.324.101.023	18.07.2005	107.324.101.023	18.07.2005	107.324.101.023	18.07.2005
107.324.101.022	08.06.2007	107.324.101.022	08.06.2007	107.324.101.022	08.06.2007	107.324.101.022	08.06.2007	107.324.101.022	08.06.2007
107.324.101.021	01.10.2012	107.324.101.021	01.10.2012	107.324.101.021	01.10.2012	107.324.101.021	01.10.2012	107.324.101.021	01.10.2012
107.324.101.020	28.11.2019	107.324.101.020	28.11.2019	107.324.101.020	28.11.2019	107.324.101.020	28.11.2019	107.324.101.020	28.11.2019
107.324.101.019	08.06.2007	107.324.101.019	08.06.2007	107.324.101.019	08.06.2007	107.324.101.019	08.06.2007	107.324.101.019	08.06.2007
107.324.101.018	08.06.2007	107.324.101.018	08.06.2007	107.324.101.018	08.06.2007	107.324.101.018	08.06.2007	107.324.101.018	08.06.2007
107.324.101.017	08.06.2007	107.324.101.017	08.06.2007	107.324.101.017	08.06.2007	107.324.101.017	08.06.2007	107.324.101.017	08.06.2007
107.324.101.016	08.06.2007	107.324.101.016	08.06.2007	107.324.101.016	08.06.2007	107.324.101.016	08.06.2007	107.324.101.016	08.06.2007
107.324.101.015	08.06.2007	107.324.101.015	08.06.2007	107.324.101.015	08.06.2007	107.324.101.015	08.06.2007	107.324.101.015	08.06.2007
107.324.101.014	08.06.2007	107.324.101.014	08.06.2007	107.324.101.014	08.06.2007	107.324.101.014	08.06.2007	107.324.101.014	08.06.2007
107.324.101.013	08.06.2007	107.324.101.013	08.06.2007	107.324.101.013	08.06.2007	107.324.101.013	08.06.2007	107.324.101.013	08.06.2007
107.324.101.012	08.06.2007	107.324.101.012	08.06.2007	107.324.101.012	08.06.2007	107.324.101.012	08.06.2007	107.324.101.012	08.06.2007
107.324.101.011	08.06.2007	107.324.101.011	08.06.2007	107.324.101.011	08.06.2007	107.324.101.011	08.06.2007	107.324.101.011	08.06.2007
107.324.101.010	08.06.2007	107.324.101.010	08.06.2007	107.324.101.010	08.06.2007	107.324.101.010	08.06.2007	107.324.101.010	08.06.2007
107.324.101.009	08.06.2007	107.324.101.009	08.06.2007	107.324.101.009	08.06.2007	107.324.101.009	08.06.2007	107.324.101.009	08.06.2007
107.324.101.008	08.06.2007	107.324.101.008	08.06.2007	107.324.101.008	08.06.2007	107.324.101.008	08.06.2007	107.324.101.008	08.06.2007
107.324.101.007	08.06.2007	107.324.101.007	08.06.2007	107.324.101.007	08.06.2007	107.324.101.007	08.06.2007	107.324.101.007	08.06.2007
107.324.101.006	08.06.2007	107.324.101.006	08.06.2007	107.324.101.006	08.06.2007	107.324.101.006	08.06.2007	107.324.101.006	08.06.2007
107.324.101.005	08.06.2007	107.324.101.005	08.06.2007	107.324.101.005	08.06.2007	107.324.101.005	08.06.2007	107.324.101.005	08.06.2007
107.324.101.004	08.06.2007	107.324.101.004	08.06.2007	107.324.101.004	08.06.2007	107.324.101.004	08.06.2007	107.324.101.004	08.06.2007
107.324.101.003	08.06.2007	107.324.101.003	08.06.2007	107.324.101.003	08.06.2007	107.324.101.003	08.06.2007	107.324.101.003	08.06.2007
107.324.101.002	08.06.2007	107.324.101.002	08.06.2007	107.324.101.002	08.06.2007	107.324.101.002	08.06.2007	107.324.101.002	08.06.2007
107.324.101.001	08.06.2007	107.324.101.001	08.06.2007	107.324.101.001	08.06.2007	107.324.101.001	08.06.2007	107.324.101.001	08.06.2007
107.324.101.023	18.07.2005	107.324.101.023	18.07.2005	107.324.101.023	18.07.2005	107.324.101.023	18.07.2005	107.324.101.023	18.07.2005
107.324.101.022	08.06.2007	107.324.101.022	08.06.2007	107.324.101.022	08.06.2007	107.324.101.022	08.06.2007	107.324.101.022	08.06.2007
107.324.101.021	01.10.2012	107.324.101.021	01.10.2012	107.324.101.021	01.10.2012	107.324.101.021	01.10.2012	107.324.101.021	01.10.2012
107.324.101.020	28.11.2019	107.324.101.020	28.11.2019	107.324.101.020	28.11.2019	107.324.101.020	28.11.2019	107.324.101.020	28.11.2019
107.324.101.019	08.06.2007	107.324.101.019	08.06.2007	107.324.101.019	08.06.2007	107.324.101.019	08.06.2007	107.324.101.019	08.06.2007
107.324.101.018	08.06.2007	107.324.101.018	08.06.2007	107.324.101.018	08.06.2007	107.324.101.018	08.06.2007	107.324.101.018	08.06.2007
107.324.101.017	08.06.2007	107.324.101.017	08.06.2007	107.324.101.017	08.06.2007	107.324.101.017	08.06.2007	107.324.101.017	08.06.2007
107.324.101.016	08.06.2007	107.324.101.016	08.06.2007	107.324.101.016	08.06.2007	107.324.101.016	08.06.2007	107.324.101.016	08.06.2007
107.324.101.015	08.06.2007	107.324.101.015	08.06.2007	107.324.101.015	08.06.2007	107.324.101.015	08.06.2007	107.324.101.015	08.06.2007
107.324.101.014	08.06.2007	107.324.101.014	08.06.2007	107.324.101.014	08.06.20				



siehe Hauptzeichnung für Spezifikation
SEE MAIN DRAWING FOR SPECIFICATION

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

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					
QTY	SEQ NO	Material ID	Material Name		Standard or Drawing	Basic Material Material Standard	Weight GR./NET					
Free space for file						Q-Code	Main Drw.					
						XXXXXX						
						Standard						
						ISO; JIS						
Modif.	B	7-61981	12.03.2008	C	EAAD700013	19.01.2011	D	EAAD083575	01.10.2012	E	EAAD096344	12.03.2021
		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
 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	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd	19.05.2005	MFR001	Frei							Rev.	E

MIDS - WinGD X72 - Cooling Water System (DG9721)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2016-10-16	DRAWING SET	First web upload
2017-01-11	107.245.626	Buffer drg – new revision
2017-09-20	DAAD032427	System drg – new revision
2018-12-12	DAAD032429 DAAD032427	Main and system drg. – new revision
2019-08-28	DAAD032427	System drg.- new revision
2019-09-26	DAAD101945 DAAD101890	Air separator drg – new revision
2020-09-02	107.245.419	System drg – new revision
2020-10-09	DAAD032427 107.324.703 107.324.704	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

DISCLAIMER

© Copyright by Winterthur Gas & Diesel Ltd.

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

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