

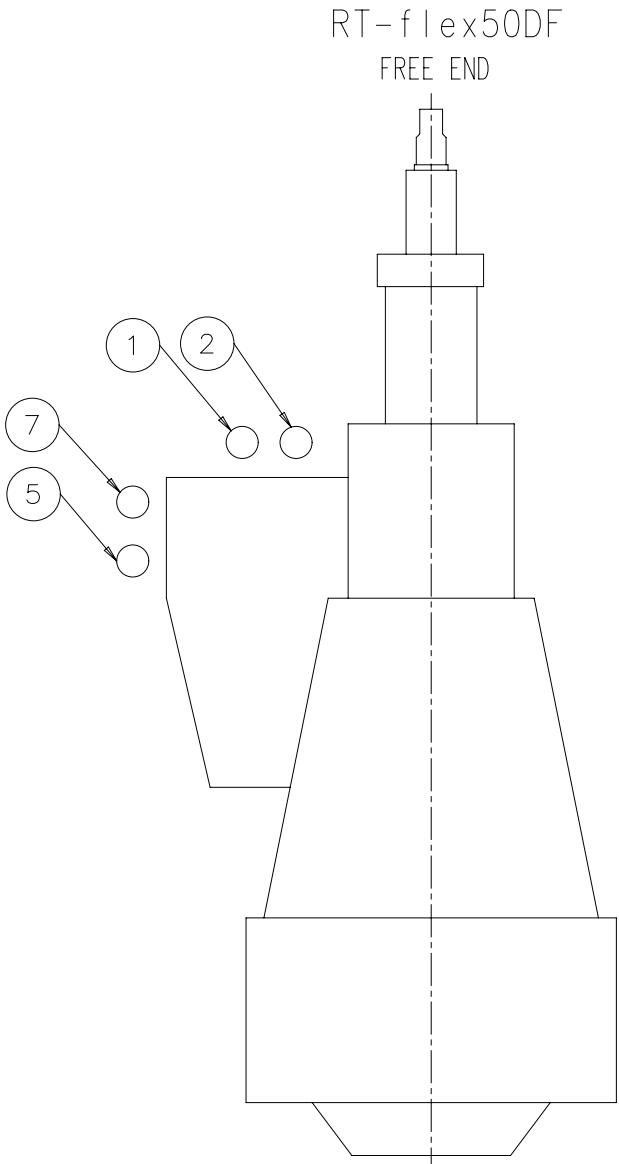
SPECIFICATION which must be met:

⑦	OUTLET - Scavenge air cooler (SAC) cooling water (LT water)
⑤	- Cooling water volume flow: according to GTD specification, adjusted by an orifice in the outlet pipe on shipside.

①	INLET - Cylinder cooling water (HT water)
②	- Cooling water pressure: 3.0 - 5.0 bar
③	- Cooling water volume flow: according to GTD specification
④	- Cooling water (freshwater) must be treated according to WinGD's specification.
⑤	- Pre-heating: The engine must be warmed-up by means of heated HT water to min. 60°C before engine start.
⑥	- HT cooling water amount on engine side: Given in table1 on page 2

②	OUTLET - Cylinder cooling water (HT water)
③	- Cooling water temperature
④	- Controller set-point: 90 °C (controller type: PI)
⑤	- Steady state condition: 90 ± 2 °C
⑥	- Transient condition: 90 ± 4 °C
⑦	- 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.

⑤	INLET - Scavenge air cooler (SAC) cooling water (LT water)
⑥	- Cooling water pressure: 2.0 - 4.0 bar
⑦	- Cooling water temperature set point: 25 °C, max. 36 °C when seawater temperature at 32 °C.
⑧	- Cooling water volume flow: according to GTD specification.
⑨	- Cooling water (freshwater) must be treated according to WinGD's specification.
⑩	- LT cooling water amount on engine side: Given in table1 on page 2.



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
QTY	SEQ NO	Material ID	Material Name Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET

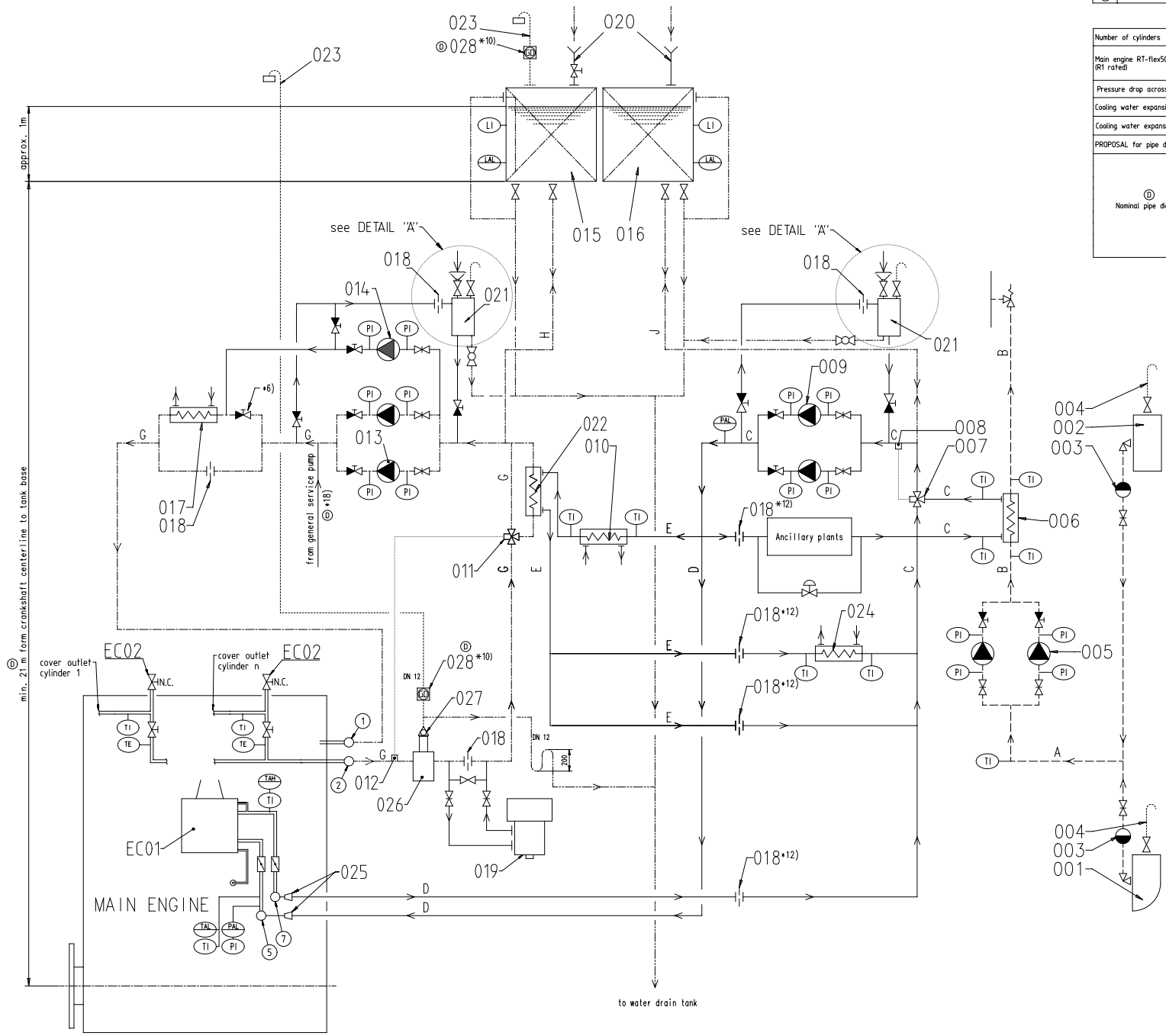
Free space for lic.					Q-Code	Main Drw.
					XXXXXX	
					Standard	
					ISO; JIS	

Modif.	A	EAAD085534	12.11.2014	B	EAAD086766	15.09.2016	C	EAAD089971	25.11.2018	D	EAAD092431	25.02.2020
		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date

WIN GD Winterthur Gas & Diesel		Product 5-8RT-flex50DF		CENTRAL COOLING WATER SYSTEM HT_static-pressure: EXP tank			
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Units	mm kg	NX	Basic Material	Net Weight	0,001
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SURFACE PROTECTION SEE GROUP 0344	Made	04.07.2014	mhu019 M.Hug	Scale	-	Size	A3	Page	1/2	Material ID	PAAD166919
TOLERANCING PRINCIPLE ISO8015	Chkd	08.08.2014	bha009 Haag	Design Group	9721	Drawing ID	DAAD052662	Rev.	D		
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	08.08.2014	bha009 Haag								



Pos.	ENGINE COMPONENTS *3)
EC01	Scavenge air cooler (SAC)
① EC02	Manual vent valve, for each cylinder *15)

Pos.	ENGINE CONNECTIONS *2) ①
①	INLET - Cylinder cooling water (HT water)
②	OUTLET - Cylinder cooling water (HT water)
⑤	INLET - Scavenge air cooler (SAC) cooling water (LT water) *7)
⑦	OUTLET - Scavenge air cooler (SAC) cooling water (LT water) *7)

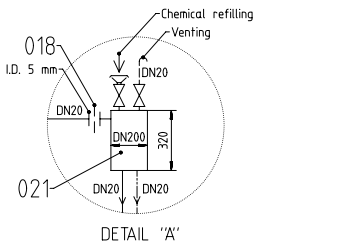
Number of cylinders		5	6	7	8
Main engine RT-flex50DF R1 rated	power (kW)	7200	8640	10080	11520
	speed (rpm)	124			
Pressure drop across the engine	(bar)	1.3			
Cooling water expansion tank (HT)	Cap. (m³)	Recommended: 0.5 m³ min. 10% of HT cooling water			
Cooling water expansion tank (LT)	Cap. (m³)	Depending on ancillary plants min. 10% of LT cooling water			

PROPOSAL for pipe dimensioning *1)						
① Nominal pipe diameter	A	DN	Yard determination, suitable for main engine and ancillary plants			
	B	DN				
	C	DN				
	D	DN	250	200	200	300
	E	DN	100	100	125	125
	G	DN	100	125	125	125
	H	DN	65	65	65	80
	J	DN	80	80	100	100
K	DN	4.0	4.0	4.0	4.0	

Cylinder	HT circuit Cyl. C.W. Volume (l)	LT circuit SAC Volume (l)
5	400 l	510 l a)
6	475 l	560 l a)
7	550 l	610 l a) / 690 l b)
8	625 l	730 l b)

- | | |
|------|---|
| 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 expansion tank (detail drawing linked by partlist on page 1) *17) |
| 016 | LT expansion tank (detail drawing linked by partlist on page 1) *17) |
| 017 | Heater for main engine (HT circuit) |
| 018 | Throttling disc *5) |
| 019 | Freshwater generator |
| 020 | Filling pipe / inlet chemical treatment |
| 021 | Chemical treatment refill unit *4) |
| 022 | Cylinder cooling water cooler |
| 023 | Cylinder cooling water air venting line *16) |
| 024 | MDU/MGU cooler |
| 025 | Transition piece (adapter) *9) |
| 026 | Air separator (link to details drawing on page 1) |
| 027 | Automatic venting unit |
| 028 | Gas detector *10) |

- Remarks: ①
- Shall be installed where required.
- Air vent and drain pipes not shown on drawing.
- Air vent and drain pipes must be fully functional at all inclination angles of the ship at which the engine must be operational.
- It is to be installed by extending the engine outlet to the shipyard.
- 2) Refer to the "Pipe Connection Plan" for the execution and location of the engine pipe connection.
- 3) Generated by the engine manufacturer, it already equipped on engine side.
- 4) To be installed for cooling water after treatment during regular engine operation. Conventional cooling is provided in view of 3. Other designs are possible.
- 5) When using a valve, lock in position prior to avoid mishandling.
- 6) Gaskets: 10%.
- 7) The inlet and outlet pipes to SAC must be designed to allow engine thermal expansion, or be fitted with expansion pieces.
- 8) For the piping, final layout according to actual engine pre-heating requirements.
- 9) Installed as required (check with "Pipe Connection Plan").
- 10) The venting to a safe area outside of the engine room. In addition, depending on flag state and class requirement, the venting line may also be equipped with a gas detector in order to achieve EC compliance.
- 11) All gas detectors and gas detectors must be installed in accordance with the gas as just an example. To make the layout for the project, please refer to 030730 "Fluid velocities and flow rates, recommended values." (workshop of diesel plants) for selecting the appropriate pipe diameter. Rating specific flow rates are provided by GTD.
- 12) Optional, only to be installed if needed for hydraulic balancing.
- 13) A constant temperature of 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 I/W water temperature assumes a main engine inlet temperature of 25 °C. If the cooling water intake requires a temperature lower or greater than the I/W water temperature, a separate water supply system with different temperature control has to be installed (please refer to 030730 "Fluid velocities and flow rates, recommended values." (workshop of diesel plants) for selection of the appropriate pipe diameter).
- 14) A constant temperature of engine outlet must be maintained. Required controller set-point for main engine operation is 90 °C.
- 15) (Optional) For manual release of isolated cylinders after maintenance. To be kept close during engine operation.
- 16) To be vented outside of engine room.
- 17) The engine room auxiliary gas line is connected to the U circuit, the U expansion tank must be gas tight 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.

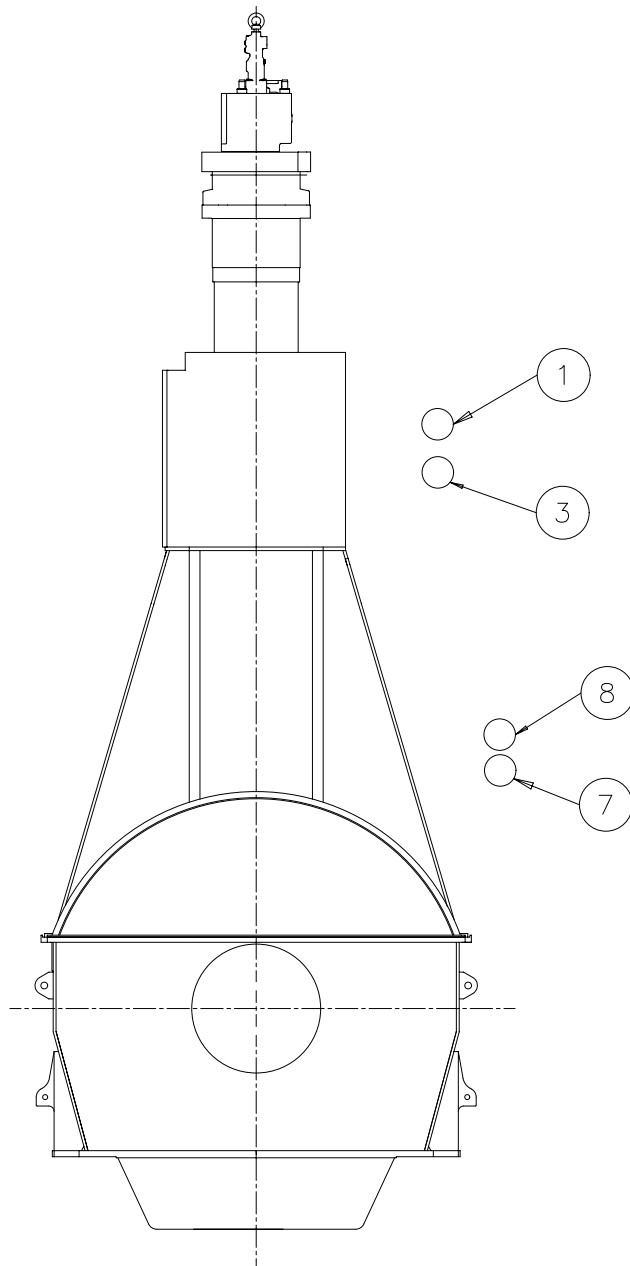


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											Drawn by PSS JS	
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	Number	Order date	Number	Order date	Number	Order date	Number	Order date	Number	Order date	Number	Order date
				CENTRAL COOLING WATER SYSTEM HT static-pressure: EXP tank								
S-BRT-flex50DF												
Date	20.06.16	REV		Desk Material		Size		AS	P/2	Material C	net weight 0,001	
Order	08.08.2014	shu@winco.hu	Design Group		7971		DAAD052662		PAD166919		D	

RT-flex50DF

DRIVING END

FUEL SIDE



EXHAUST SIDE

Specifications which must be met:

1	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.
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	107.245.4.19.500	EXPANSION TANK	107.245.4.19		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
						Q-Code XXXXX Main Drw. Standard ISO; JIS
Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date
WIN GD Winterthur Gas & Diesel			Product 5-8RT-flex50DF	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	16.07.2020	Sudant Deogade	Scale	-	Size A2 Page 1/2
TOLERANCING PRINCIPLE ISO8015	Chkd	30.09.2020	jpi101 Pickup	Design Group		Material ID PAAD360796
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	30.09.2020	mhu019 Hug	7921	Drawing ID	DAAD133012
						Rev. -

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
EC02	Manual vent valve, for each cylinder *16)

Number of cylinders	5	6	7	8
Main engine RT-flex50DF (R1 rated)	power (kW) 7200	8640	10080	11520
Buffer unit for HT circuit	speed (rpm) 124			
Cylinder cooling water feed tank only min.	Cap. (m³) 0.8	0.8	0.8	0.8
CCW feed and drain tank (combined) min.	Cap. (m³) 1.5	1.5	1.5	1.5
Cooling water expansion tank (LT)	Cap. (m³) 4	4	4	4

PROPOSAL for pipe dimensioning *11)

Nominal pipe diameter		Yard determination, suitable for main engine and ancillary plants			
		A	B	C	D
	DN	250	200	200	300
	DN	100	100	125	25
	DN	100	125	125	125
	DN	65	65	65	80
	DN	80	80	100	100
	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	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)
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)
030	Automatic venting unit
031	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 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 appropriate 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 operations 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 type 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.

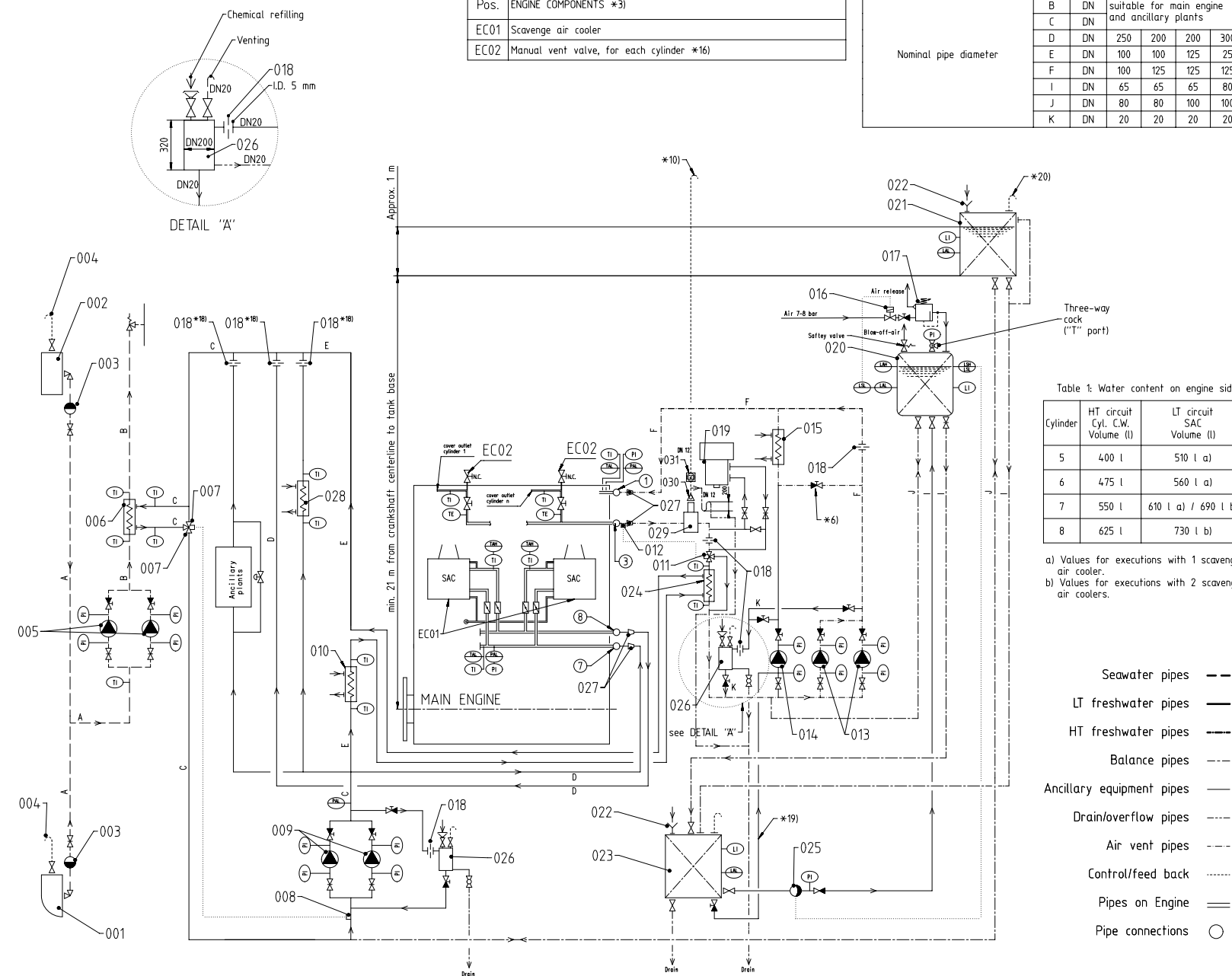


Table 1: Water content on engine side

Cylinder	HT circuit Cyl. C.W. Volume (l)	LT circuit SAC Volume (l)
5	400 l	510 l a)
6	475 l	560 l a)
7	550 l	610 l a) / 690 l b)
8	625 l	730 l b)

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

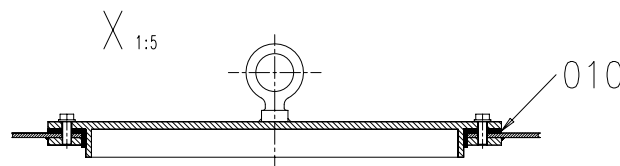
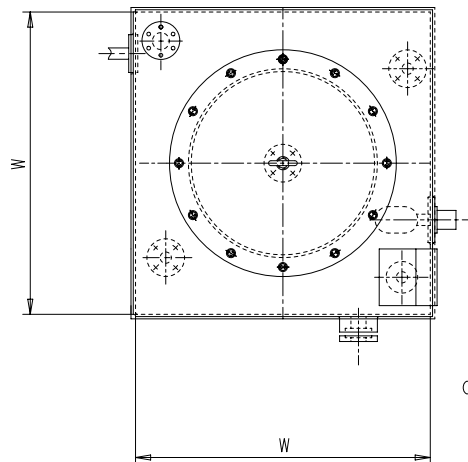
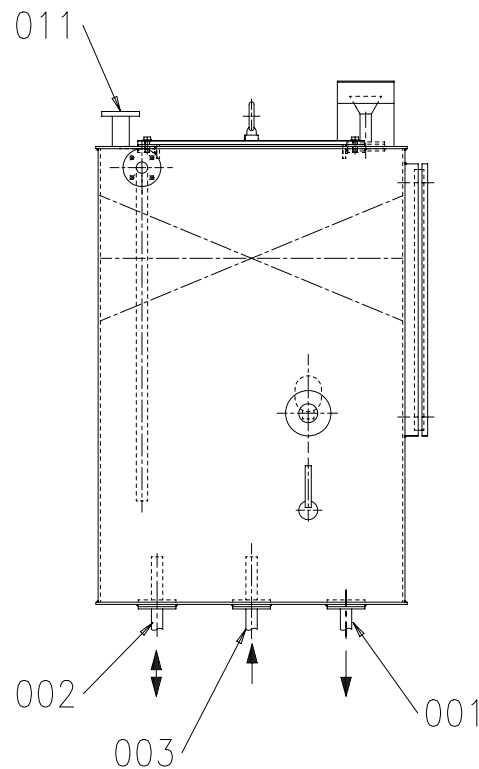
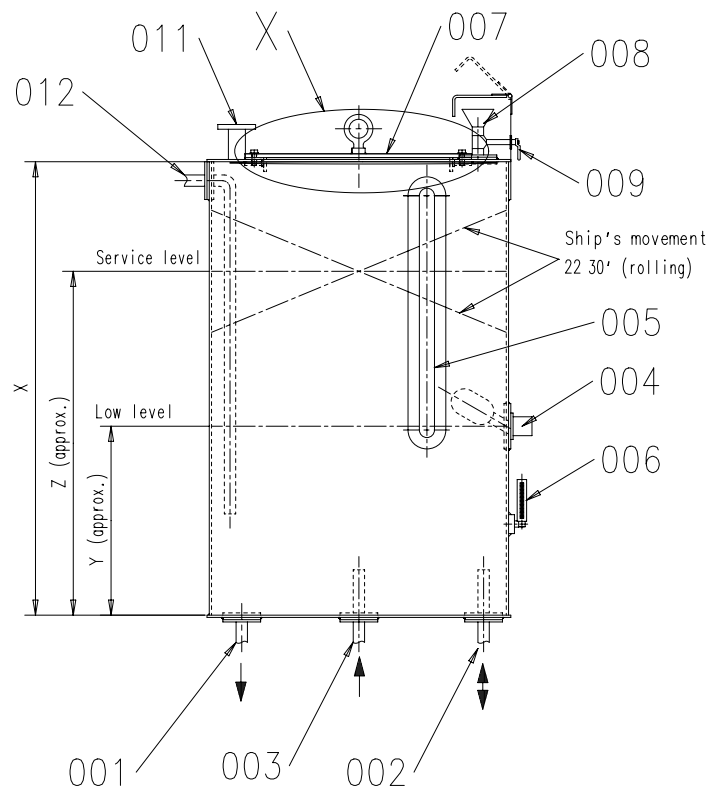
- Seawater pipes ---
- LT freshwater pipes —
- HT freshwater pipes —
- Balance pipes ---
- Ancillary equipment pipes —
- Drain/overflow pipes ----
- Air vent pipes ---
- Control/feed back
- Pipes on Engine ==
- Pipe connections ○

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(F)

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123456789101112131415161718192021222324252627282930313233343536373839404142434445464748495051525354555657585960616263646566676869707172737475767778798081828384858687888990919293949596979899100		1 2 3 4 5 6 7 8 9 10 11 12		13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100		101 102 103 104 105 106 107 108 109 110 111 112		113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200	
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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	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)

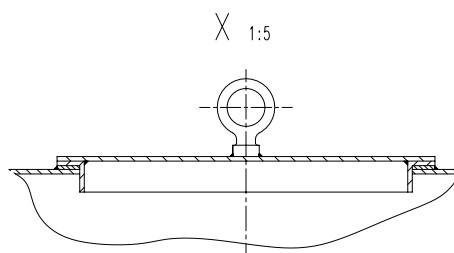
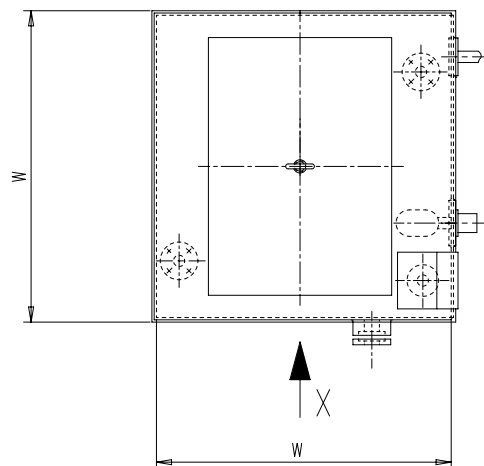
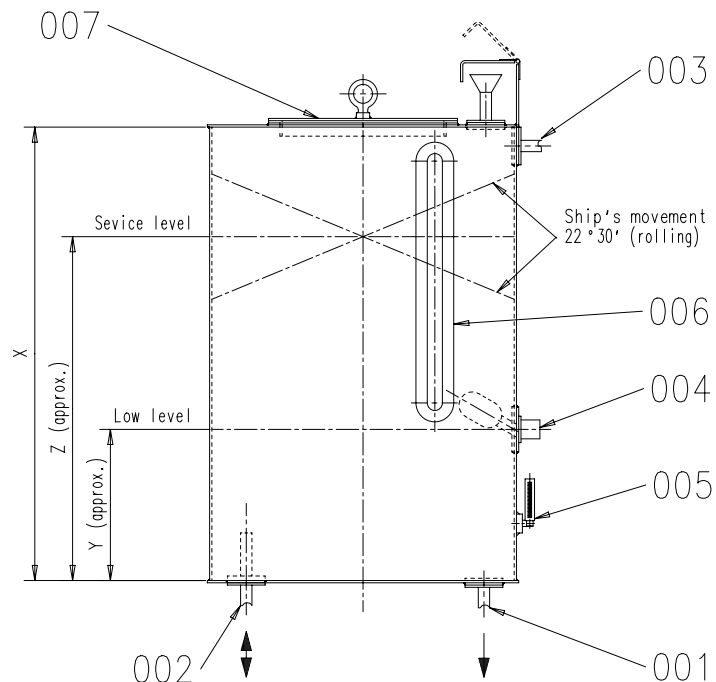
- *1) Level indicator can be omitted if an alternative is fitted.
- *2) Other gas tight solutions are also possible.
- *3) Has to be closed always after treatment.
- *4) Any instrumentation installed in the system has to be certified explosion proof apparatus.
- *5) This connection is only needed if 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
(m³)	(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 XXXXXX Standard ISO; JIS		Main Drw.	
Modif.	EAAD091567	15.11.2019			
Number		Drawn date	Number	Drawn date	Number
Product W-25		EXPANSION TANK CENTRAL COOLING WATER HT CIRCUIT Ausgleichstank Zentralkuehlwassersystem HT circuit			
Units mm kg		NX		Net Weight 0,001	
SURFACE PROTECTION SEE GROUP 0344		Made 07.07.2014 mhu019 M.Hug		Scale 1:10	
TOLERANCING PRINCIPLE ISO8015		Chkd 08.08.2014 bha009 Haag		Size A2 Page 1/1	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd 08.08.2014 bha009 Haag		Drawing ID 9721	
				Material ID PAAD166922	
				Rev. A	
				DAAD052664	



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:

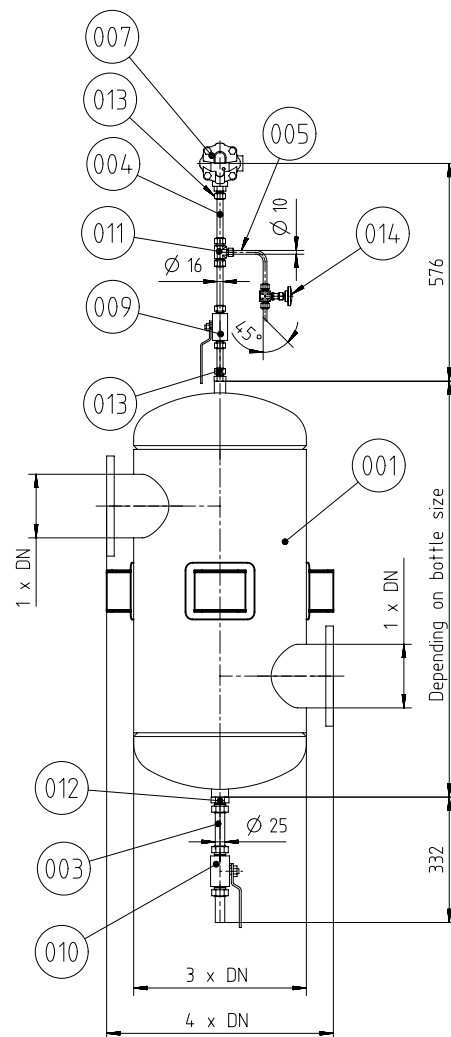
- *1) Level indicator can be omitted if an alternative is fitted.
- *2) Other designs like hinged covers, etc. are also possible

- 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	
TOLERANCING PRINCIPLE ISO8015		Chkd						Size		A2	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd		11.06.1997		WCH001 Service User		Design Group		9721	
		Drawing ID						Material ID		107.245.419.500	
		Rev.						Drawing ID		107.245.419	



PIPE LENGTHS TO BE DECIDED BY SHIPYARD

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
QTY	SEQ NO	Material ID	Material Name Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET

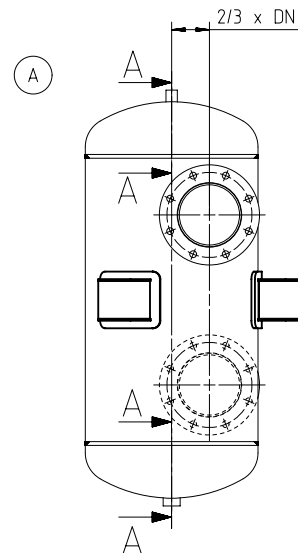
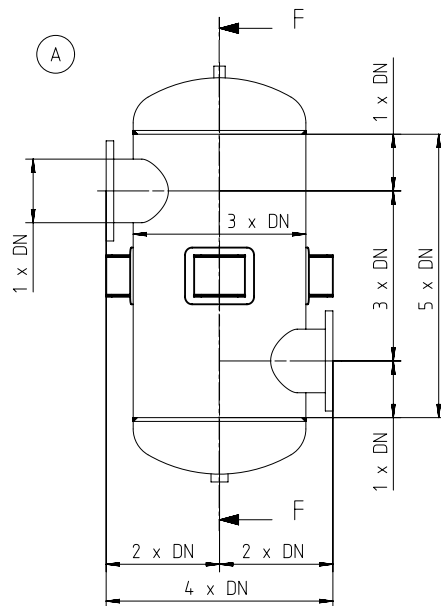
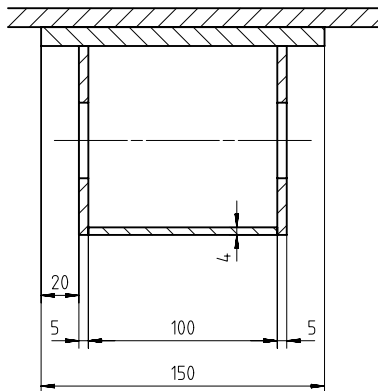
Modif.	Free space for file		Q-Code XXXXXX Standard ISO; JIS		Main Drw.			
A EAAD090871		26.09.2019	B EAAD096344	10.03.2021				
Number		Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
WIN GD Winterthur Gas & Diesel			Product W-25		AIR SEPARATOR			
Units	mm kg	NX	Basic Material		Net Weight 0.001			
Made	06.06.2018 Kashyap Patel		Scale	1:10	Size	A2	Page	1/1
Chkd	17.07.2018 wwa008 Wang		Design Group		Material ID		PAAD297120	
Appd	17.07.2018 mhu019 Hug		9721		Drawing ID		DAAD101945	
SURFACE PROTECTION SEE GROUP 0344			TOLERANCING PRINCIPLE ISO8015		Rev.		B	

TOLERANCE GRADES						
TOL. GRADE	1	2	3	4	5	6
A	±1.0	*	±2.0	±2.0	±0.5	±0.5
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
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	Wasser WATER	Pruefueberdruck TEST OVERPRESSURE	7.5	bar
Schweiss Qualitaet WELDING QUALITY LEVEL	D		Toleranzklasse TOLERANCE GRADE	B	Befr.druck OPER. PRESS.	5 bar

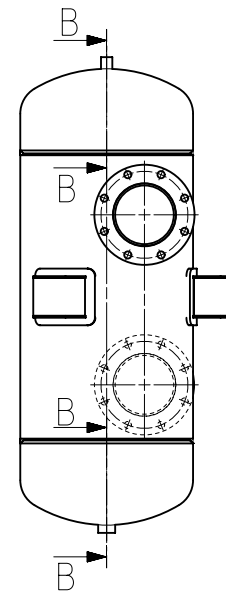
AIR SEPARATOR PROPOSAL

SECTION H-H
SCALE 1:2



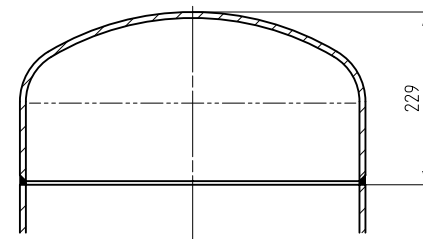
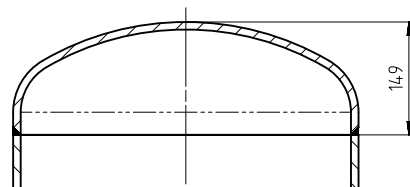
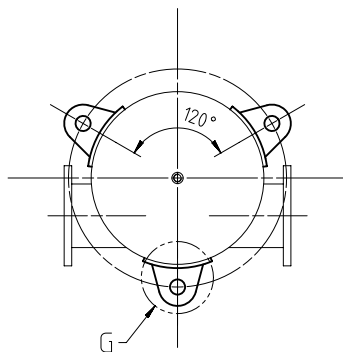
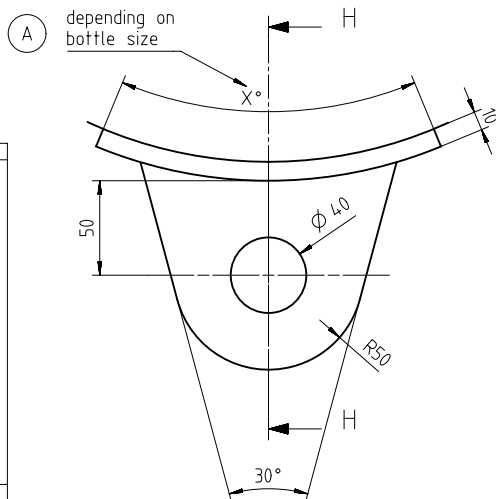
SECTION A-A
SCALE 1:5

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)

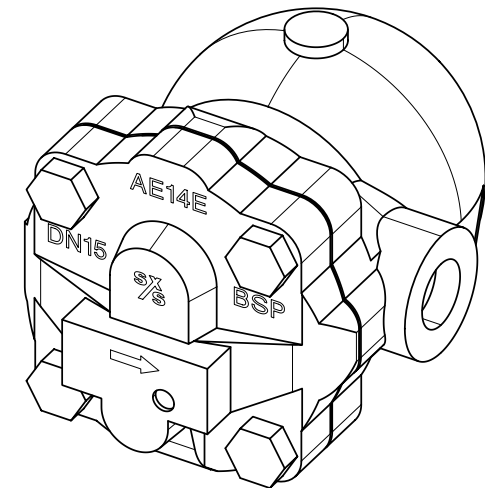
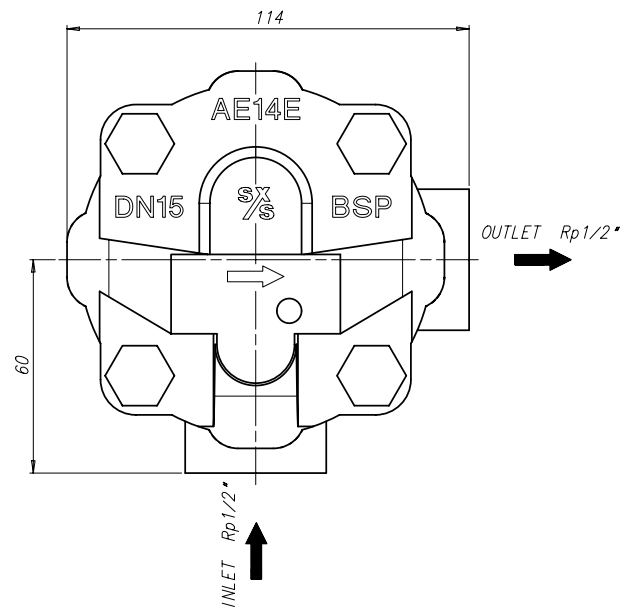
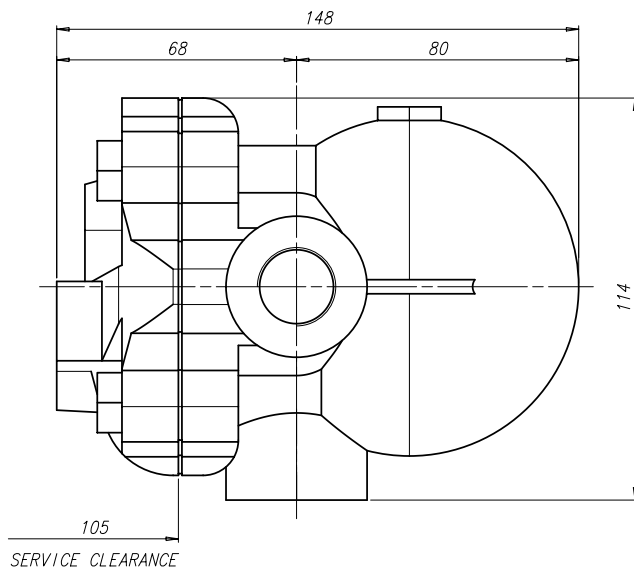
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Modif. A		EAAD090871		09.09.2019	
Number		Drawn date		Number	
Drawn date		Number		Drawn date	
Number		Drawn date		Number	
Drawn date		Number		Drawn date	
Product W-2S		AIR SEPARATOR		Net Weight 0.001	
Units mm kg NX		Basic Material		Material ID	
Made 05.06.2018 Kashyap patel		Scale 1:10		Size A2	
Chkd 17.07.2018 wwa008 Wang		Design Group		Page 1/1	
Appd 17.07.2018 mhu019 Hug		9721		Drawing ID DAAD101890	
SURFACE PROTECTION SEE GROUP 0344		TOLERANCING PRINCIPLE ISO8015		Rev. A	

Approved
Drawing - Confidential

TOLERANCE GRADES						
TOL.	DIMENSION NO.					
GRADE	1	2	3	4	5	6
A	±1.0	*	±2.0	±2.0	±0.5	±0.5
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
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 22 of the piping instruction 4-107.354.915

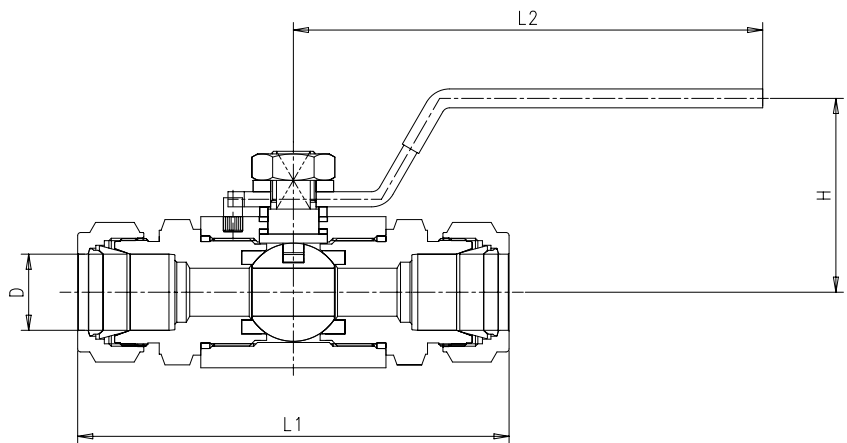
Rohrklasse	III	Medium	Wasser	Pruefueberdruck	7.5	bar
PIPE CLASS	III	MEDIUM	WATER	TEST OVERPRESSURE	7.5	bar
Schweiss Qualitaet	D	Toleranzklasse	B	Betr.druck	5	bar
WELDING QUALITY LEVEL	D	TOLERANCE GRADE	B	OPER. PRESS.	5	bar



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

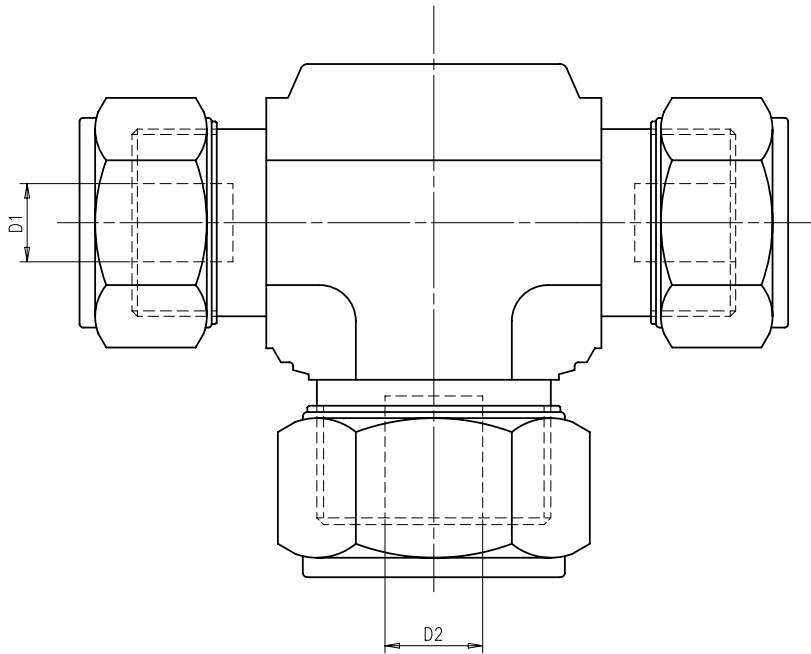
Free space for lib.		Q-Code		Main	
		XQXXX		Drw.	
		Standard		ISO	
				JIS	
Modif.	Number	Drawn date	Number	Drawn date	Number
Product		W-2S			
WIN GD		AUTOMATIC VENTING UNIT			
Winterthur Gas & Diesel		ORDER DRAWING			
		Entlüftungsautomat			
		Bestellzeichnung			
Units	mm kg	IDE	Basic Material	Net Weight 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
		8611		Design Group	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			

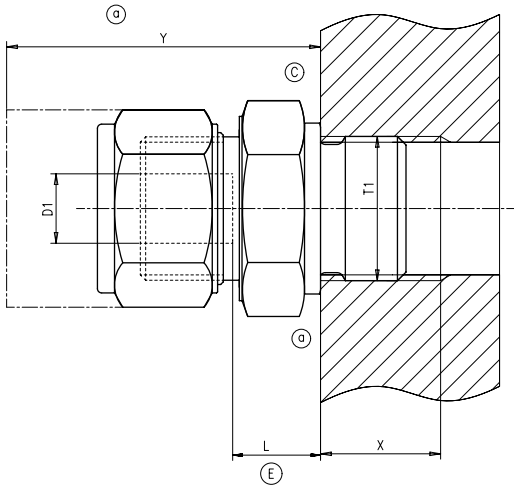
siehe Hauptzeichnung für Spezifikation
SEE MAIN DRAWING FOR SPECIFICATION

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

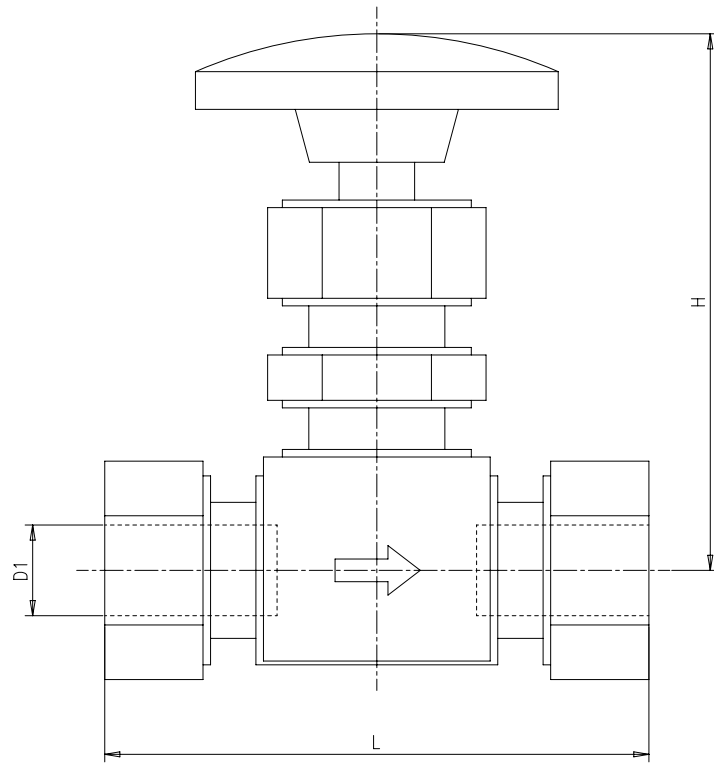
B siehe Hauptzeichnung für Spezifikation SEE MAIN DRAWING FOR SPECIFICATION									
1	015	107.324.131.015	TEE UNION	25 x 20 x 25	107.324.131	Steel	Steel	0.642	
1	014	107.324.131.014	TEE UNION	25 x 16 x 25	107.324.131	Steel	Steel	0.615	
1	013	107.324.131.013	TEE UNION	20 x 25 x 20	107.324.131	Steel	Steel	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.
							Standard ISO JIS		
Modell	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			Modell	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
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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	Dimension, Occ	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
Made	19.05.2005		sga006		S.GASSER		Scale	2:1
Chkd							Size	A2
							Page	1/1
							Material ID	
Appd	19.05.2005		MFR001		Frei		Design Group	0333
							Drawing ID	107.324.704
								Rev. E

MIDS - WinGD RT-flex50DF - Cooling Water System (DG9721)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2017-02-24	DRAWING SET	First web upload
2018-12-13	DAAD052661 DAAD052662	Main and system drg – new revision
2020-09-02	DAAD052664 107.245.419	System drgs – new revision
2020-10-07	DAAD052661 DAAD052662 DAAD133012 DAAD101945 107.245.626 DAAD101890 DAAD065150 107.324.131 107.324.101 107.324.703	Main and system drg – 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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