Available executions

Execution No.	Material ID	Cylinder No.	Attribute 1: Turbocharger lubrication	
			INTERNAL	EXTERNAL
001	PAAD310809	5		X
002	PAAD310810	5	X	
003	PAAD310789	6		X
004	PAAD310791	6	X	
005	PAAD281096	7		X
006	PAAD281097	7	X	
007	PAAD326413	8		X
008	PAAD326414	8	X	

NOTE
The above executions can be configured using the Engine Configurator.
Detailed guidance for the executions is provided within the Marine Installation Manual (MIM). If a specific execution of interest is not shown in the above table, then it may still be under development or not available. For further information or in case of a project-specific request, WinGD must be contacted directly.

Prod.	X52DF X52DF-1.1	X52DF-2.1						

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
–	sna102				New Master Design			

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

MIDS master drawing

separate BOM available

Dimension

Scale	–	NX	Units [mm] [kg]	Basic Material	Net Weight	0.001
Main Design			Design Group	9722	Q-Code XXXXX	Standard WDS
Qty per			A3	Item ID PTAA025561		Drawing Page/s 1/1

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
002	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
003	1	PAAD245338	LUBRICATING OIL SYSTEM			0.001
004	1	PAAD204254	LUBRICATING OIL DRAIN TANK			0.001
005	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
006	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.			
5 X52DF 5 X52DF-1.1	5 X52DF-2.1		

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice		4	3
-	sde101	mhu019	08.07.2019	EAAD090034	Legacy information. See corresponding ChangeNotice		4	3

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD254043

Bill **O**f **M**aterial

Dimension

Units	[m] [kg]	Basic Material				Net Weight	0.001
Main Design	Yes	Design Group	9722	Q-Code	XXXXX	Standard	WDS
Qty per	Engine	A4	Item ID	PAAD310809		BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
002	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
004	1	PAAD204254	LUBRICATING OIL DRAIN TANK			0.001
005	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
006	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.			
5 X52DF 5 X52DF-1.1	5 X52DF-2.1		

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice		4	3
-	sde101	mhu019	08.07.2019	EAAD090034	Legacy information. See corresponding ChangeNotice		4	3

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD254043

Bill **O**f **M**aterial

Dimension

Units	[m] [kg]	Basic Material				Net Weight	0.001
Main Design	Yes	Design Group	9722	Q-Code	XXXXX	Standard	WDS
Qty per	Engine	A4	Item ID	PAAD310810		BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
2	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
3	1	PAAD245338	LUBRICATING OIL SYSTEM			0.001
4	1	PAAD178472	LUBRICATING OIL DRAIN TANK			0.001
5	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
6	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.				
	6 X52DF 6 X52DF-1.1	6 X52DF-2.1		

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice		4	3
-	sde101	mhu019	08.07.2019	EAAD090034	Legacy information. See corresponding ChangeNotice		4	3

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD254057

Bill **O**f **M**aterial

Dimension

Units	[m] [kg]	Basic Material				Net Weight	0.001
Main Design	Yes	Design Group	9722	Q-Code	XXXXX	Standard	WDS
Qty per	Engine	A4	Item ID	PAAD310789		BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
2	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
4	1	PAAD178472	LUBRICATING OIL DRAIN TANK			0.001
5	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
6	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.			
	6 X52DF 6 X52DF-1.1	6 X52DF-2.1	

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice		4	3
-	sde101	mhu019	08.07.2019	EAAD090034	Legacy information. See corresponding ChangeNotice		4	3

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD254057

Bill **O**f **M**aterial

Dimension

Units	[m] [kg]	Basic Material				Net Weight	0.001
Main Design	Yes	Design Group	9722	Q-Code	XXXXX	Standard	WDS
Qty per	Engine	A4	Item ID	PAAD310791		BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
2	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
2	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
3	1	PAAD245338	LUBRICATING OIL SYSTEM			0.001
4	1	PAAD277820	LUBRICATING OIL DRAIN TANK			246
5	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
6	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.			
7 X52DF 7 X52DF-1.1	7 X52DF-2.1		

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice		4	3
-	mhu019	dst009	22.12.2017	EAAD088733	Legacy information. See corresponding ChangeNotice		3	3

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD278013

Bill **O**f **M**aterial

Dimension

Units	[m] [kg]	Basic Material				Net Weight	246
Main Design	Yes	Design Group	9722	Q-Code	XXXXX	Standard	WDS
Qty per	Engine	A4	Item ID	PAAD281096		BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
2	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
2	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
4	1	PAAD277820	LUBRICATING OIL DRAIN TANK			246
5	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
6	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.			
7 X52DF 7 X52DF-1.1	7 X52DF-2.1		

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice		4	3
-	mhu019	dst009	22.12.2017	EAAD088733	Legacy information. See corresponding ChangeNotice		3	3

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD278014

Bill **O**f **M**aterial

Dimension

Units	[m] [kg]	Basic Material				Net Weight	246
Main Design	Yes	Design Group	9722	Q-Code	XXXXX	Standard	WDS
Qty per	Engine	A4	Item ID	PAAD281097		BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
2	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
3	1	PAAD245338	LUBRICATING OIL SYSTEM			0.001
4	1	PAAD288014	LUBRICATING OIL DRAIN TANK			246
5	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
6	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.			
8 X52DF 8 X52DF-1.1	8 X52DF-2.1		

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice		4	3
-	sde101	mhu019	08.07.2019	EAAD090034	Legacy information. See corresponding ChangeNotice		4	3

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD278130

Bill Of Material

Dimension

Units	[m] [kg]	Basic Material						Net Weight	246
Main Design	Yes	Design Group		9722	Q-Code	XXXXX		Standard	WDS
Qty per	Engine	A4	Item ID	PAAD326413				BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
2	1	PAAD281046	LUBRICATING OIL SYSTEM without iCAT			0.001
4	1	PAAD288014	LUBRICATING OIL DRAIN TANK			246
5	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
6	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.			
8 X52DF 8 X52DF-1.1	8 X52DF-2.1		

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice		4	3
-	sde101	mhu019	08.07.2019	EAAD090034	Legacy information. See corresponding ChangeNotice		4	3

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD278130

Bill **O**f **M**aterial

Dimension

Units	[m] [kg]	Basic Material					Net Weight	246
Main Design	Yes	Design Group	9722	Q-Code	XXXXX		Standard	WDS
Qty per	Engine	A4	Item ID	PAAD326414			BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name / Dimension	Standard-ID	Basic Material	Net Weight
016	1 m	PAAD308926	HEATING ELEMENT 10QTVR2-CT			0.126

Prod.								
	X52DF X52DF-1.1	X52DF-2.1						

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code		
E	npa101	mhu019	12.11.2024	CNAA007222	Drawing updated		4	3
D	npa101	mhu019	10.07.2023	CNAA003997	Drawing Updated		4	3
C	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice		4	3
-	mhu019	dst009	21.12.2017	EAAD782174	-		-	-
Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C

WIN GD

LUBRICATING OIL SYSTEM

without iCAT

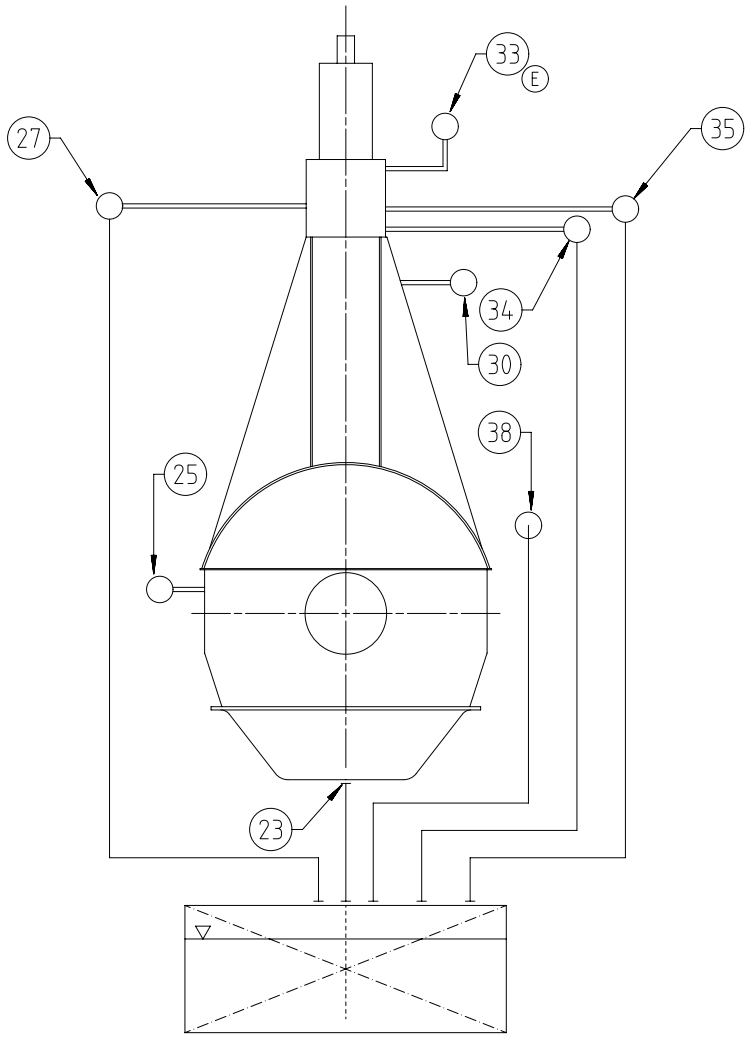
Bill Of Material

Dimension

Units [m] [kg]	Basic Material			Net Weight	0.001
Main Design	Design Group	9722	Q-Code X X M	Standard	WDS
Qty per	A4	Item ID	PAAD281046	BOM Page/s	01/01

SPECIFICATION which must be met:

(34)	OUTLET- Servo system oil return (engine driving end) - Free flow by gravity to lubricating oil drain tank
(35)	OUTLET- Servo system oil return (engine free end) - Free flow by gravity to lubricating oil drain tank
(38)	OUTLET- Supply unit oil return - Free flow by gravity to lubricating oil drain tank



(23)	OUTLET - Lubricating oil from bedplate - Oil return via vertical oil drain to lubricating oil drain tank: Vertical oil drain position must be within the permissible range as specified on the LO drain tank drawing The shipyard is to inform the engine manufacturer of the final position
(25)	INLET - Lubricating oil - Lubricating oil temperature: - Controller set-point: 45 °C (controller type: PI) - Steady state condition: 45 ± 2 °C - Transient condition: 45 ± 4 °C - Lubricating oil pressure: 4-5 bar *) *) A pressure control devise (e.g. a bypass line with a pressure regulating valve or pump flow adjustment, or a frequency converter to adjust the pump speed) is needed - Lubricating oil volume flow: according to GTD - LO amount on engine side: mentioned in table 1 on page 2 - Lubricating oil cleanliness: - Full flow filtered by a 35 micron (absolute sphere passing mesh) automatic self-cleaning filter - Bypass flow of the automatic self-cleaning filter (only active during maintenance of the automatic self-cleaning filter) filtered by a 35 micron (absolute sphere passing mesh) filter - Offline cleaning of the lubricating oil in the drain tank by self-cleaning centrifugal separators
(27)	OUTLET - Turbocharger lubricating oil - Must be not connected to other oil return lines - Pipe outlet above the oil level in the LO drain tank or a drain pipe with venting holes above the max. oil level to be installed - Connected to the lubricating oil drain tank, opposite to the main lubricating oil pump, i.e - on tank's forward end if main lubricating oil pump suction is on tank's aft end - on tank's aft end if main lubricating oil pump suction is on tank's forward end - on tank's forward or aft end if main lubricating oil pump suction is in middle of tank
(30)	INLET - Crosshead Lubricating oil - Lubricating oil temperature: - Controller set-point: 45 °C (controller type: PI) - Steady state condition: 45 ± 2 °C - Transient condition: 45 ± 4 °C - Lubricating oil pressure: 11-13 bar *) *) A pressure control devise (e.g. a bypass line with a pressure regulating valve or pump flow adjustment, or a frequency converter to adjust the pump speed) is needed - Lubricating oil volume flow: according to GTD - Lubricating oil cleanliness: - Full flow filtered by a 35 micron (absolute sphere passing mesh) automatic automatic self-cleaning filter - Bypass flow of the automatic self-cleaning filter (only active during maintenance of the automatic self-cleaning filter) filtered by a 35 micron (absolute sphere passing mesh) filter - Offline cleaning of the lubricating oil in the drain tank by self-cleaning centrifugal separators
(33) (E)	INLET - Cylinder lubricating oil - Cylinder lubricating oil temperature: 40^{+10}_{-5} °C - Cylinder lubricating oil static pressure: min. 0.2 bar - Trace heating to be applied on the cylinder LO feed line on ship side

Prod.	X52DF X52DF-1.1	X52DF-2.1						
Change History	E	npa101	mhu019	12.11.2024	CNAA007222	Drawing updated	4	3
	D	npa101	mhu019	10.07.2023	CNAA003997	Drawing Updated	4	3
	C	sde101	mhu019	28.04.2021	EAAD095915	Legacy information. See corresponding ChangeNotice	4	3
	–	mhu019	dst009	21.12.2017	EAAD782174	–	–	–
	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis Approved	Activity Code	E	C

WIN GD

LUBRICATING OIL SYSTEM
without iCAT

separate BOM available

Dimension

Scale – NX | Units [mm] [kg] | Basic Material | Net Weight 0.001

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

Main Design	Design Group 9722	Q-Code X X M	Standard WDS
Qty per	A2	Item ID PAAD281046	Drawing Page/s 1/3

SYSTEM PROPOSAL
System oil and cylinder LO supply

Pos.	ENGINE COMPONENTS *3)
EC01	Trace heating cable control box

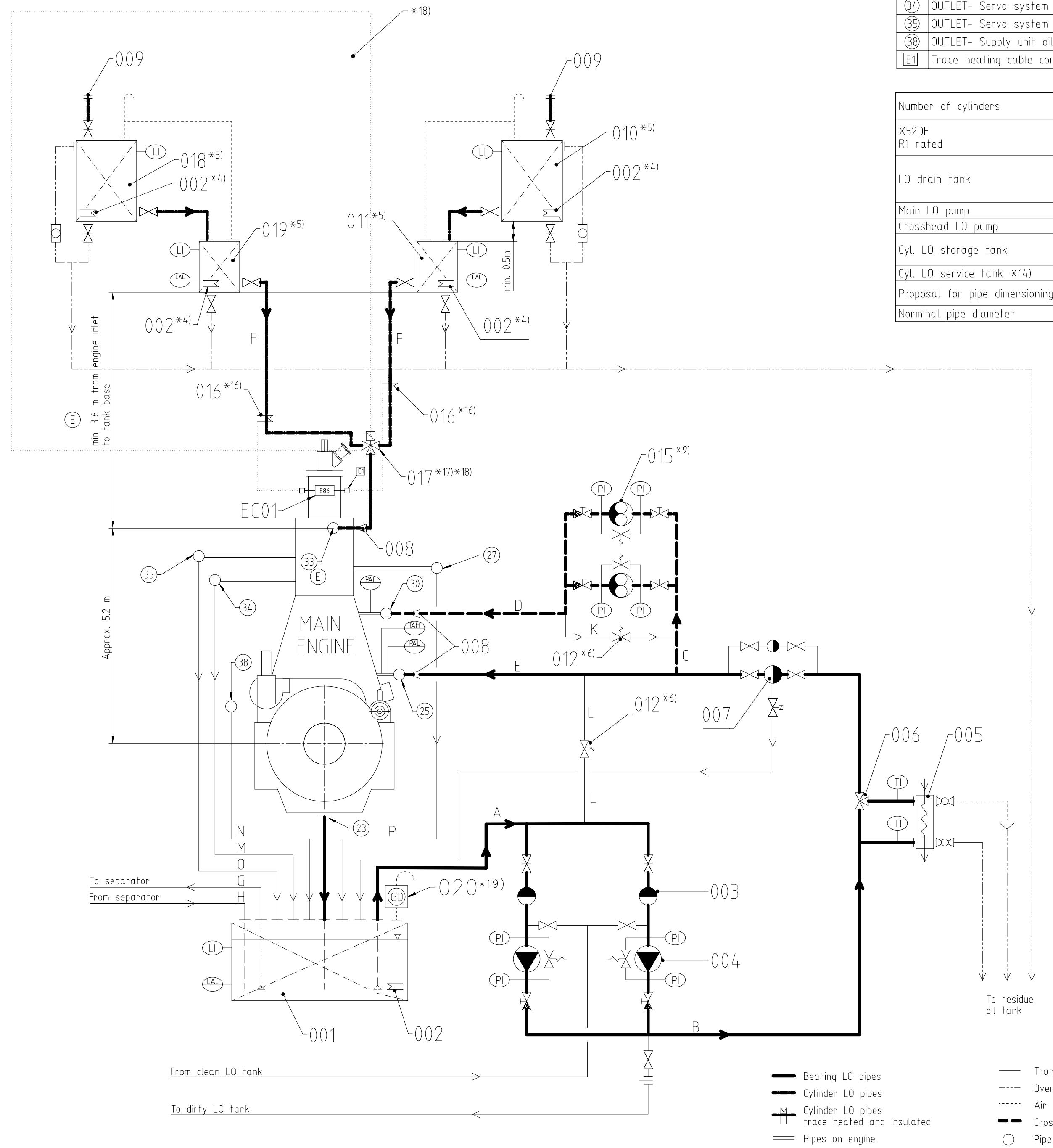
Pos.	ENGINE CONNECTIONS *2)
23	OUTLET - Lubricating oil from bedplate
25	INLET - Lubricating oil
27	OUTLET - Turbocharger lubricating oil *12) *13)
30	INLET - Crosshead lubricating oil
33	INLET - Cylinder lubricating oil
34	OUTLET- Servo system oil return (engine driving end)
35	OUTLET- Servo system oil return (engine free end)
38	OUTLET- Supply unit oil return
E1	Trace heating cable control box connection

Pos.	SYSTEM COMPONENTS *1)
001	Lubricating oil drain tank (sump tank)
002	Heating device *4)
003	Suction strainer *15)
004	Lubricating oil pump
005	Lubricating oil cooler
006	Autom. temperature control valve, constant temp. at engine inlet: 45°C
007	Automatic self-cleaning filter, 35 micron, with backflushing oil treatment *11) *12)
008	Transition piece (adaptor) *7)
009	Deck connection
010	Grade 1 Cylinder lubricating oil storage tank *5)
011	Grade 1 Cylinder lubricating oil service tank *5)
012	Pressure regulating valve *6)
015	Crosshead lubricating oil pump *8)
016	Electrical trace heating cable (detailed spec. are linked on page 1)
017	Three-way valve, manually or remotely operated
018	Grade 2 Cylinder lubricating oil storage tank *5) *18)
019	Grade 2 Cylinder lubricating oil service tank *5) *18)
020	Gas detector *19)

Number of cylinders			5	6	7	8
X52DF R1 rated	power	(kW)	7450	8940	10430	11920
	speed	(rpm)	105			
LO drain tank		(m³)	For capacities refer to drawing "LO drain tank-Filling Guideline"			
Main LO pump	capacity	(m³/h)	refer to GTD			
Crosshead LO pump	capacity					
Cyl. LO storage tank	capacity	(m³)	based on a feed rate of 1g/kWh (pulse)			
Cyl. LO service tank *14)	capacity	(m³)	0.4	0.5	0.6	0.6
Proposal for pipe dimensioning *10)						
Norminal pipe diameter	A	DN	200	250	250	250
	B	DN	200	200	200	200
	C	DN	80	100	100	100
	D	DN	65	80	80	80
	E	DN	200	200	200	200
	F	DN	25	25	25	25
	G		The pipe diameters for LO separator are sized acc. to the effective throughput capacity of the separator and according to the separator manufacturer's recommendations.			
	H					
	K	DN	32	32	32	40
	L	DN	80	100	100	100
	M	DN	65	65	65	65
	N	DN	50	50	50	50
	O	DN	65	65	65	65
	P	DN	65	65	65	65

Table 1: LO content on engine side

Cylinder	Volume
5	1618 l
6	1850 l
7	2081 l
8	2254 l

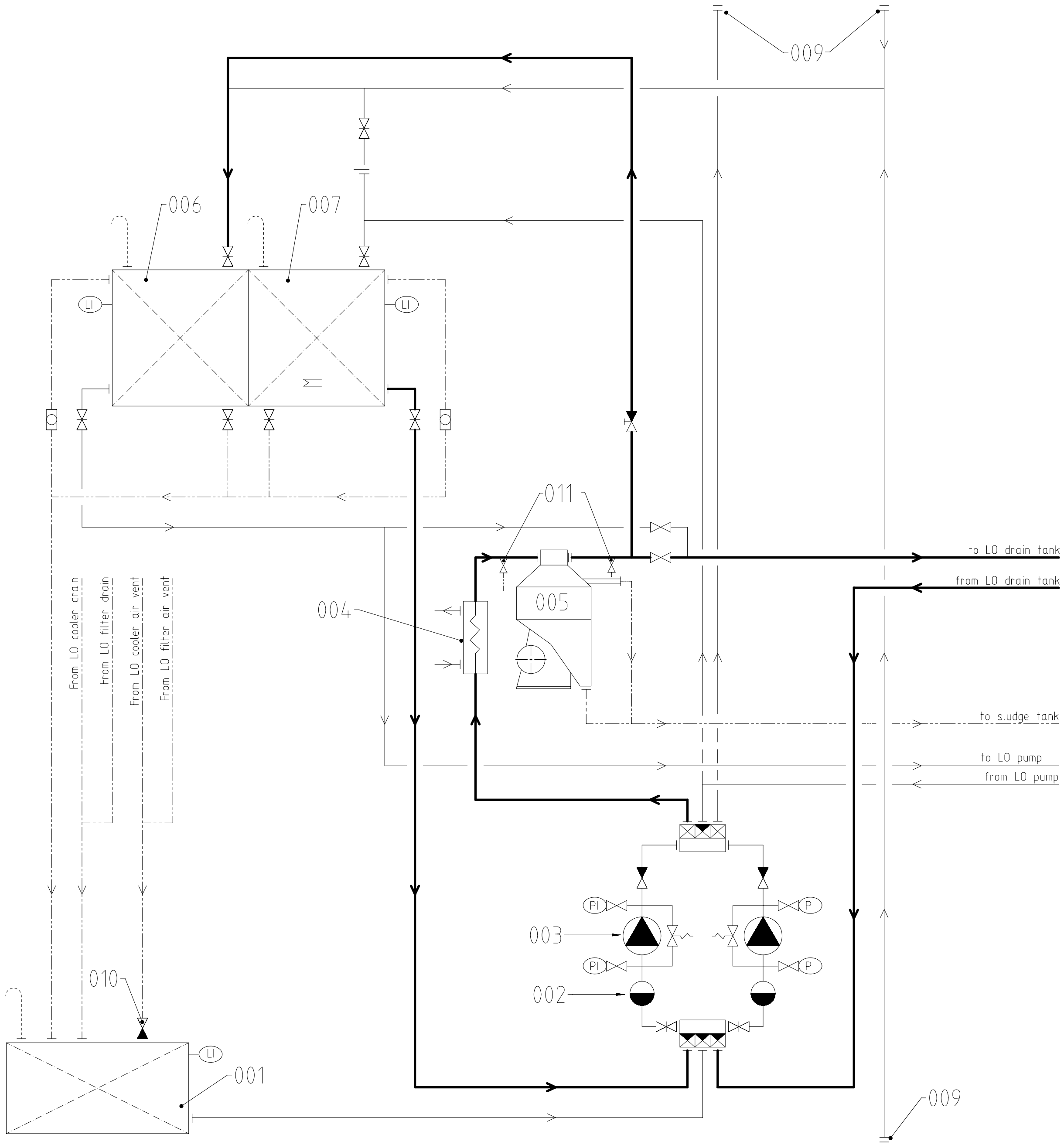


Remarks:

- Air vent pipes and drain valves where necessary.
- 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 "Pipe Connection Plan" for exact position and execution of the pipe connection.
*3) To be delivered by the engine manufacturer, i.e. already equipped on engine side.
*4) Optional heating coil
*5) The cylinder LO service tank with measuring device provides the possibility to supervise the cylinder LO consumption of the engine. Alternatively, if the cylinder LO service tank is omitted so that the engine is fed directly from the cylinder LO storage tank, the height of the storage tank must match the minimum height specified for the service tank. If additional elements are installed in the supply line to the engine (e.g. a flowmeter) this height must be increased to compensate the pressure drop.
*6) The bypass line with pressure regulating valve can be omitted if one of the following conditions is fulfilled:
  - The pump speed is adjusted according to the required pressure at engine inlet, (e.g. by a frequency controller)
  - The pumps have built-in pressure regulating valves
  - The pump built-in safety valve is in any case mandatory and not to be used for pressure regulation (pure safety function).
*7) Installed as required (check with the "Pipe Connection Plan")
*8) The LO pumps (pos. 004) and the crosshead LO pumps (pos. 015) are to be interlocked. The crosshead LO are not to be opperated without the LO pumps.
*10) All capacities and the given diameters are valid for the mentioned rating including the integrated turbocharger lubrication, but excluding any possibly installed damper and PTO gears. 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.
*11) If the back-flushing process is driven by compressed air and the back-flushing oil is returned to the LO drain tank the oil outlet must be above the max. oil level. Alternatively, a drain pipe with venting holes above the max. oil level needs to be installed to avoid back-flushing air blowing into the oil. Back-flushing oil must be treated.
*12) The oil return pipe must not be connected to other drain pipes. If the oil is returned to the LO drain tank it is recommended to connect the oil outlet
  - as close as possible to the separator suction pipe
  - opposite to the main LO pump, i.e.
  - on tanks' forward end if the main LO pump is on tanks' aft end
  - on tanks' aft end if the main LO pump is on tanks' forward end
  - on tanks' forward or aft end if the main LO pump is in the middle of the tank.
*13) The oil outlet in the LO drain tank must be above the max. oil level or as an alternative a drain pipe with venting holes above the max. oil level needs to be installed.
*14) The proposed cylinder LO services tank capacity takes into account a filling interval of 2 days based on the above mentioned feed rate.
*15) Mesh size according to pump suppliers recommendation.
*16) To be connected to the control box (EC01) on engine side.
*17) Three-way valve has to be fitted as close as possible to the engine inlet. This is to reduce the volume of remaining oil in the system (with the previous BN) after the chnage-over.
*18) Optional, only to be installed if two different cylinder lubrication oil grades instead of a single grade cylinder lubricating oil is selected (e.g. for commercial reasons).
*19) Conditional, if requested be the flag state and/or class to achieve compliance. This must be installed in accordance with all associated requirements, e.g. maximum distance from the tank venting outlet connection.

SYSTEM PROPOSAL - LO treatment system



Pos.	SYSTEM COMPONENTS *1)
001	Residue oil tank
002	Suction strainer *15)
003	Lubricating oil pump: one for transfer and separator service / one for separator service
004	Lubricating oil heater with relief valve and temperature control
005	Self-cleaning centrifugal separator
006	Clean lubricating oil tank
007	Dirty lubricating oil tank
009	Deck connection
010	Float non-return valve
011	LO sampling cock *16)

X52DF			Number of cylinders			
			5	6	7	8
Clean LO tank	capacity	(m³)	equal or bigger than LO drain tank volume			
Dirty LO tank	capacity	(m³)	equal or bigger than LO drain tank volume			
LO separator *20)	capacity	(l/h)	1020	1230	1430	1640
Residue oil tank	capacity	(m³)	Depending on ship's requirements			

Remark:

- Air vents and drain valves where necessary
- Air vent and drain pipes must be fully functional at all inclination angles of the ship at which the engine must be operational (check Class rules)
- Pipe diameters to be designed according to shipyards' practice and component suppliers' recommendation

*1) To be delivered by external supplier and to be installed by the shipyard.

*15) Mesh size according to pump suppliers recommendation.

*16) Recommended position for LO sampling to check LO quality / treatment efficiency.

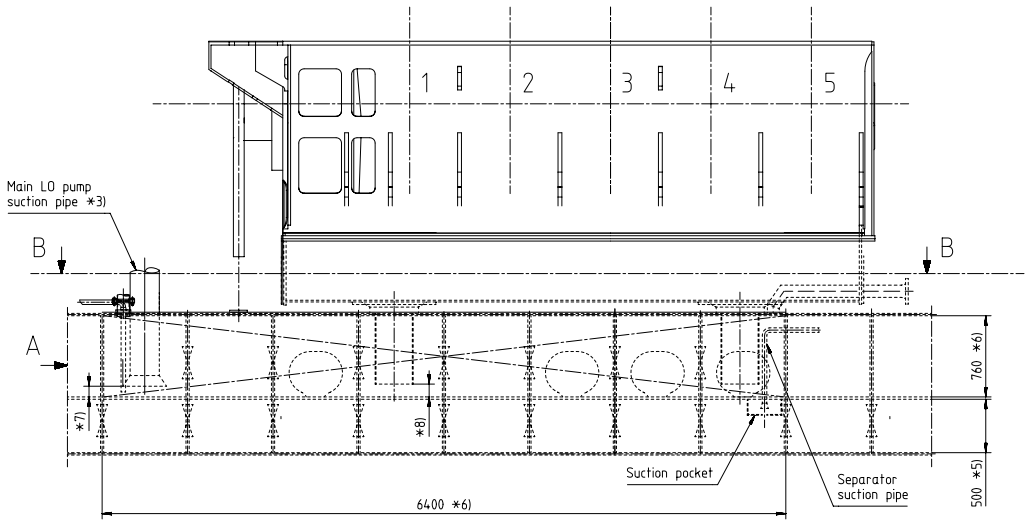
*20) Based on the min. recommended tank filling level (h1) as mentioned in the "Filling Guideline" drawing. If a larger tank volume is applied, LO separators capacity needs to be increased accordingly (it is recommended that the oil is circulated at least two times per day).

Main separating piping
Transfer / dirty LO pipes
Overflow / drain pipes
Air vent pipes

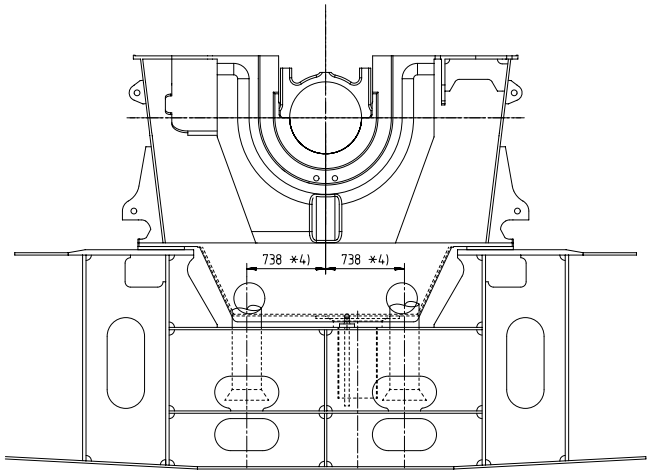
SURFACE PROTECTION SEE GROUP 0344	E	npa101	mhu019	12.11.2024	CNAA007222	Drawing updated	4	3
TOLERANCING PRINCIPLE ISO8015	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis Approved	Activity Code E	C
GENERAL TOLERANCES ACCORDING TO ISO2768-mK			[mm] [kg]	- NX	A1	Item ID PAAD281046	Drawing Page/s	3/3

TANK PROPOSAL

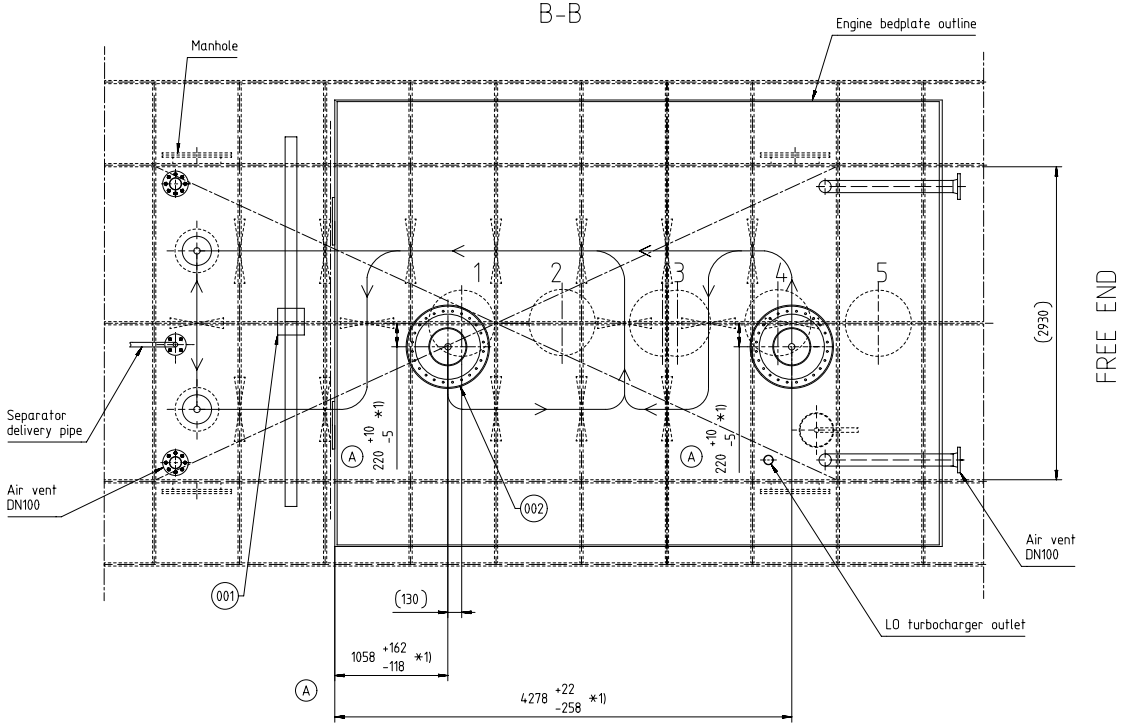
5X52/DF



A (DRIVING END)



B-B



(A) REMARKS:

*1) Drains must be arranged by the shipyard in accordance with the shiphull structure and within the specified tolerance range. As soon as the final positions are determined the engine manufacturer must be informed so that the bedplate (oil pan) holes can be machined in compliance with the engine builder drawing "BEDPLATE OIL DRAIN" (DG1110).

*2) Recommendation regarding plate thickness is given in the Marine Installation Drawing Set (MIDS) "ENGINE / SEATING FOUNDATION" (foundation arrangement drawing, DG9710).

*3) Recommendation regarding the pipe size is given in the system proposal as provided in the MIDS "LUBRICATING OIL SYSTEM" (LO system drawing, DG9722).

*4) Final position depends on the size of the flywheel casing and required space for the main LO pump.

*5) Final height must be in accordance with the rules of the relevant classification society.

*6 Proposal, final tank dimensions are to be determined by the shipyard in accordance with the shiphull structure, minimum required filling / circulation volume, pump suction requirements and rules of the relevant classification society. Requirements / design criteria for the tank layout are provided in the MIDS "LUBRICATING OIL DRAIN TANK - Filling Guidelines" (DG9722).

*7) Distance according to pump makers specification.

*8) The drain pipe outlet must be below the min. LO level (LO low level alarm height) though a gap of min. half of the drain pipe diameter (min. 1/2*DN) to the drain tank bottom has to be maintained.

2	002	107.246.182.200	VERTICAL OIL DRAIN	107.246.182		76,9
1	001	107.246.799.200	PLATE	107.246.799		15,0
QTY	SEQ NO	Material ID	Material Name Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
Free space for Mc.					Q-Code XXXXX	Main Drw.
					Standard ISO; JIS	

Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
A	EAAD090135	02.01.2019						

WIN GD Winterthur Gas & Diesel

Product 5X52 5X52DF

LUBRICATING OIL DRAIN TANK WITH VERTICAL DRAINS

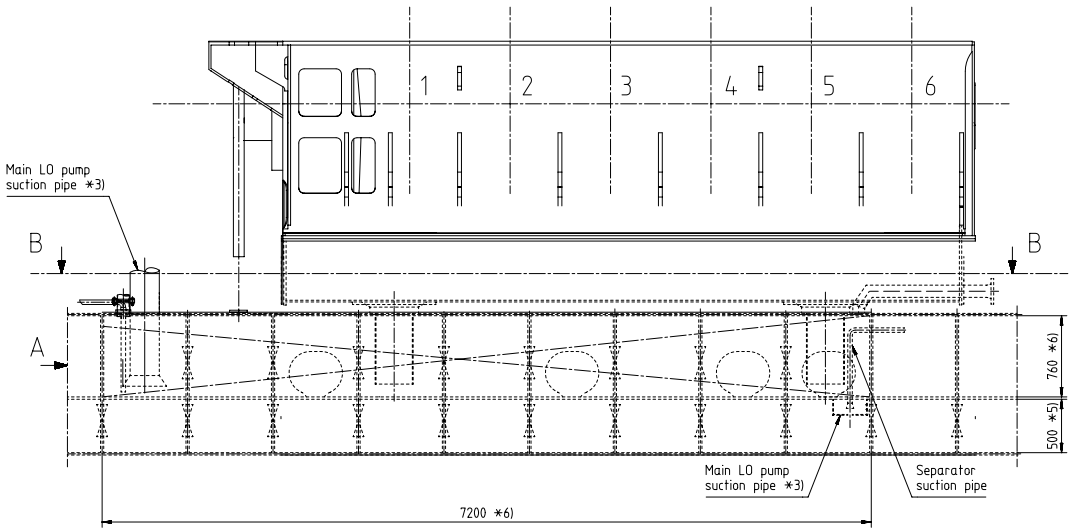
Units mm kg | NX | Basic Material | Net Weight 169

SURFACE PROTECTION SEE GROUP 0344	Made	14.09.2015	Jaimin Prajapati	Scale 1:25	Size A1	Page 1/1	Material ID PAAD204254
TOLERANCING PRINCIPLE ISO8015	Chkd	26.11.2015	mhu019 Hug	Design Group 9722	Drawing ID DAAD070533		Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	26.11.2015	bha009 Haag				

3D - DIMENSIONAL DRAWING - Confidential - Approved

TANK PROPOSAL

6X52/DF



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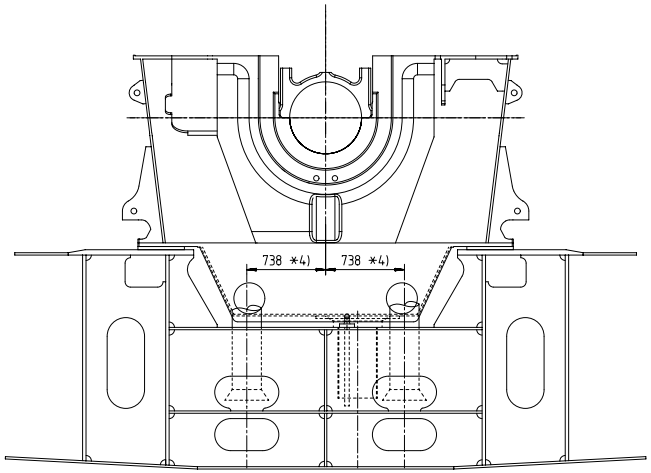
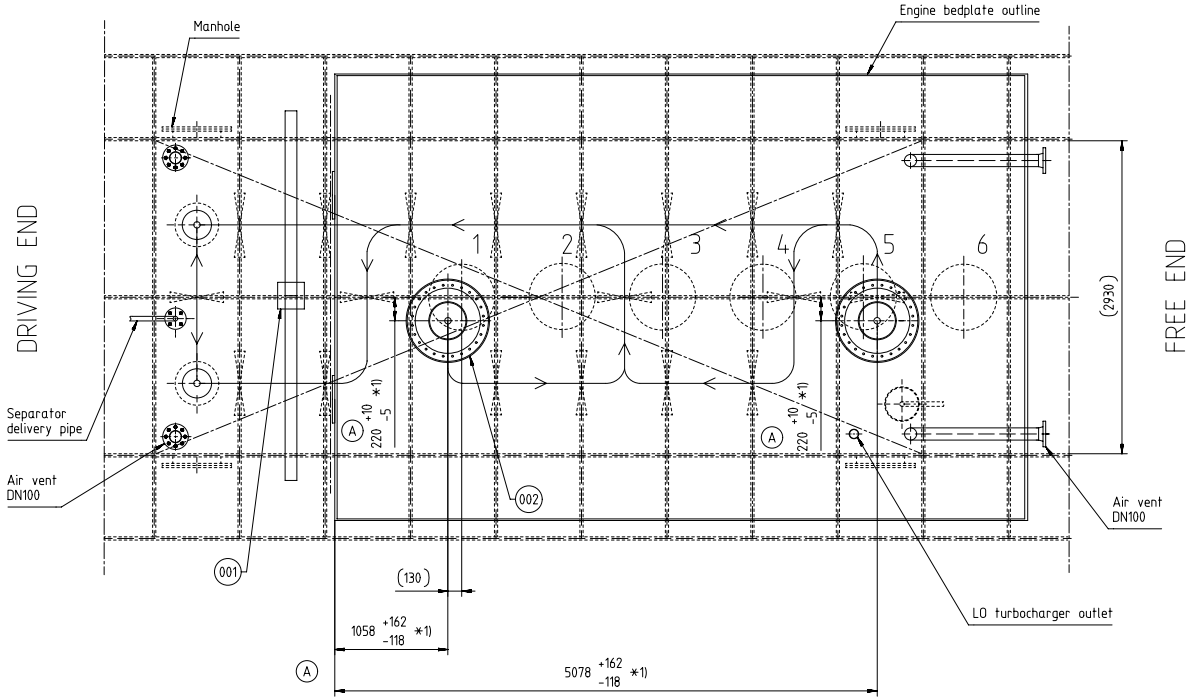


B-B



REMARKS:

(A)

*1) Drains must be arranged by the shipyard in accordance with the shiphull structure and within the specified tolerance range. As soon as the final positions are determined the engine manufacturer must be informed so that the bedplate (oil pan) holes can be machined in compliance with the engine builder drawing "BEDPLATE OIL DRAIN" (DG1110).

*2) Recommendation regarding plate thickness is given in the Marine Installation Drawing Set (MIDS) "ENGINE / SEATING FOUNDATION" (foundation arrangement drawing, DG9710).

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*7) Distance according to pump makers specification.

*8) The drain pipe outlet must be below the min. LO level (LO low level alarm height) though a gap of min. half of the drain pipe diameter (min. 1/2*DN) to the drain tank bottom has to be maintained.

2	002	107.246.182.200	VERTICAL OIL DRAIN	107.246.182		76,9
1	001	107.246.799.200	PLATE	107.246.799		15,0
QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
Free space for Mc.					Q-Code: XXXXX Standard: ISO; JIS	Main Drw.
Modif.	A	EAAD090935	02.01.2019			

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

WIN GD Winterthur Gas & Diesel

Product: 6X52 6X52DF

LUBRICATING OIL DRAIN TANK
WITH VERTICAL DRAINS

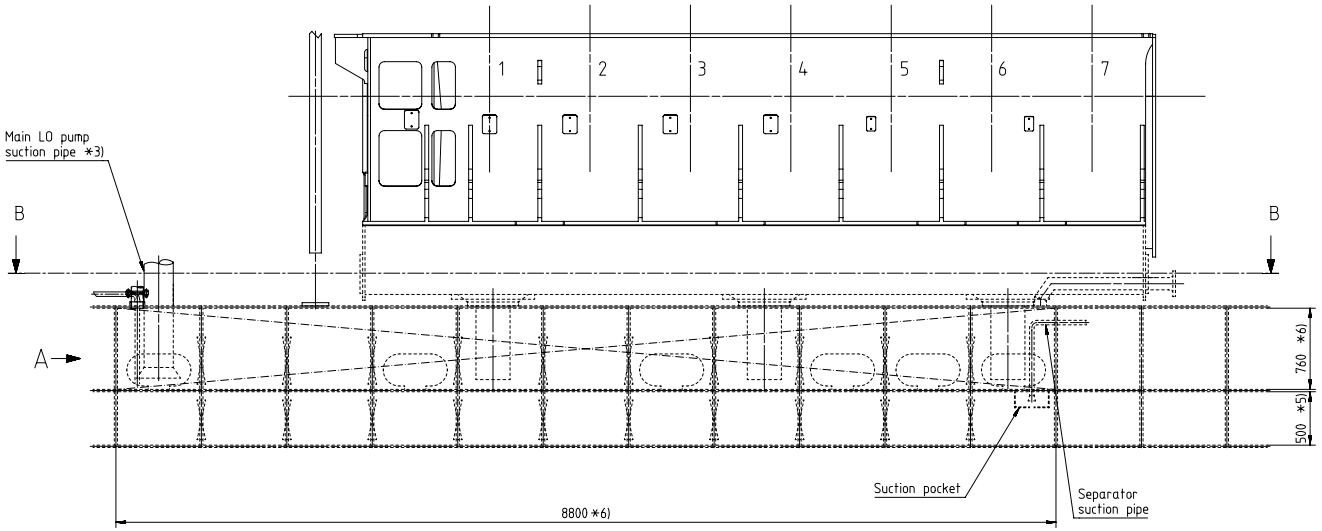
Units: mm kg	NX		Basic Material			Net Weight 169	
SURFACE PROTECTION SEE GROUP 0344	Made	10.12.2014	wwa008 W.WANG	Scale 1:25	Size A1	Page 1/1	Material ID PAAD178472
TOLERANCING PRINCIPLE ISO8015	Chkd	16.01.2015	mhu019 Hug	Design Group 9722	Drawing ID DAAD061872		Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	16.01.2015	bha009 Haag				

Approved

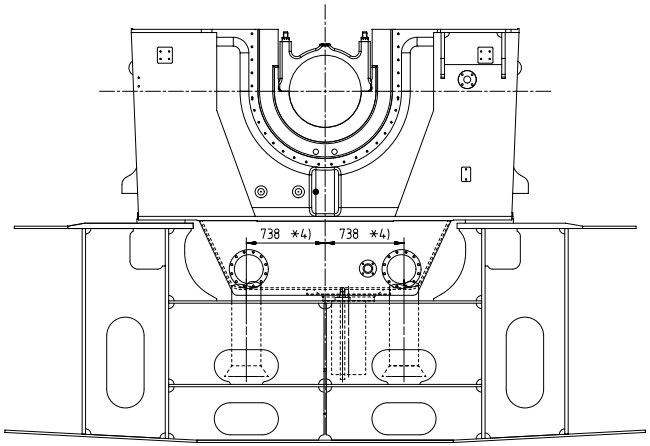
3D - DIMENSIONAL DRAWING - confidential

TANK PROPOSAL

7X52/DF



A (DRIVING END)



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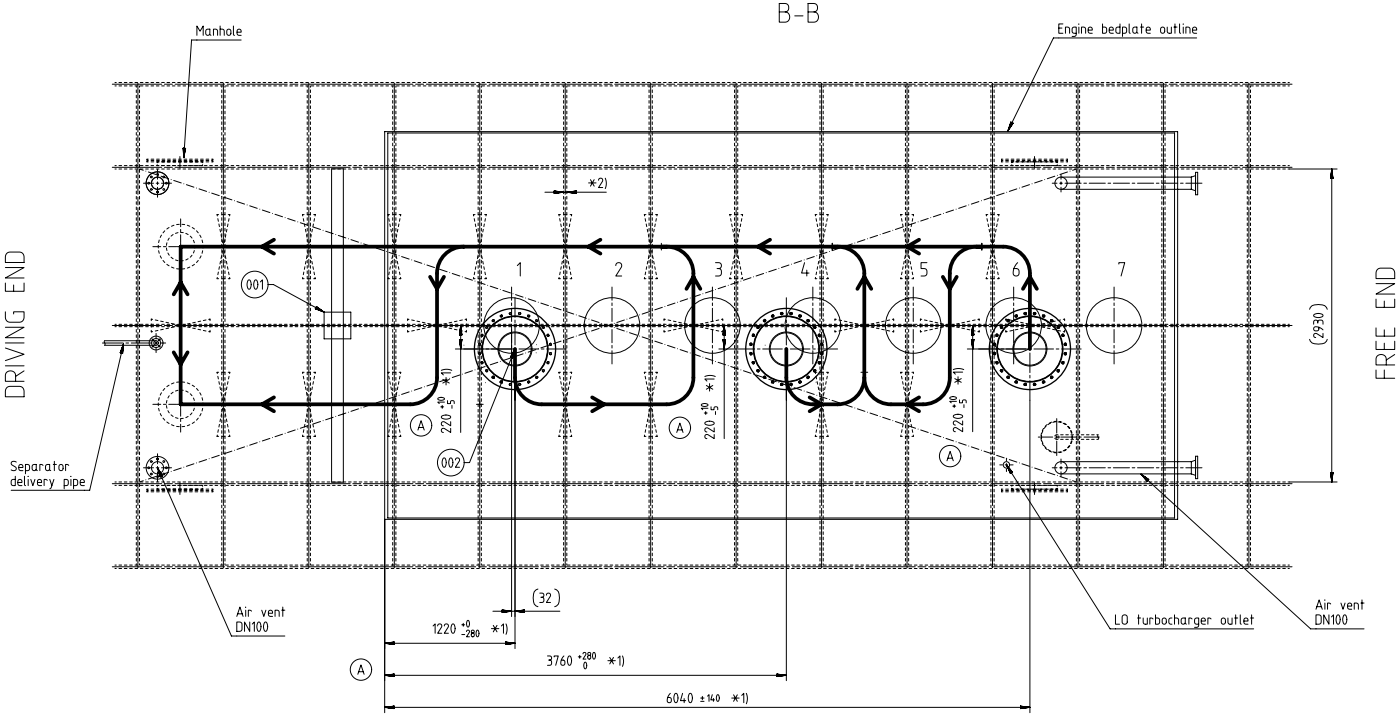

(A) REMARKS:

*1) Drains must be arranged by the shipyard in accordance with the shiphull structure and within the specified tolerance range. As soon as the final positions are determined the engine manufacturer must be informed so that the bedplate (oil pan) holes can be machined in compliance with the engine builder drawing "BEDPLATE OIL DRAIN" (DG1110).

*2) Recommendation regarding plate thickness is given in the Marine Installation Drawing Set (MIDS) "ENGINE / SEATING FOUNDATION" (foundation arrangement drawing, DG9710).

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*7) Distance according to pump makers specification.

*8) The drain pipe outlet must be below the min. LO level (LO low level alarm height) though a gap of min. half of the drain pipe diameter (min. 1/2*DN) to the drain tank bottom has to be maintained.

Pos	Item	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
3	002	107.246.182.200	VERTICAL OIL DRAIN	107.246.182		76,9
1	001	107.246.799.200	PLATE	107.246.799		15,0

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

Modif. A EAAD090135 02.01.2019

Product 7X52 7X52DF

LUBRICATING OIL DRAIN TANK WITH VERTICAL DRAINS

Units mm kg | NX | Basic Material | Net Weight 246

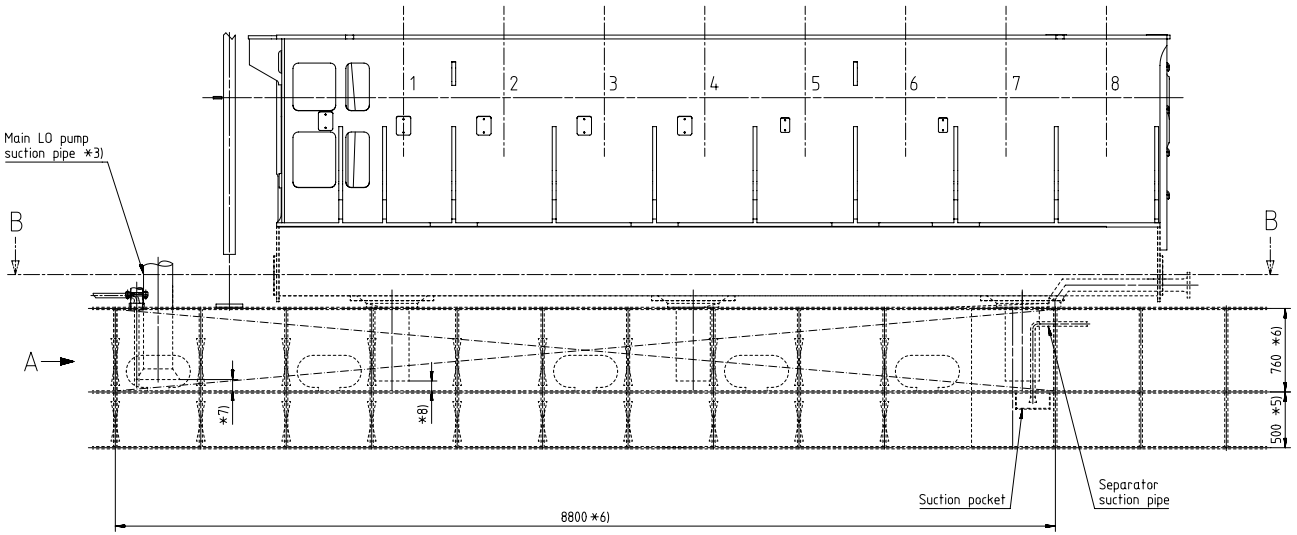
SURFACE PROTECTION SEE GROUP 0344	Made	16.10.2017	dki021	DH.Kim	Scale 1:25	Size A1
TOLERANCING PRINCIPLE ISO8015	Chkd	16.10.2017	wwa008	Wang	Design Group 9722	Page 1/1
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	17.10.2017	mhu019	Hug	Drawing ID DAAD093645	Material ID PAAD277820 Rev. A

DD - DIMENSIONAL DRAWING - Confidential

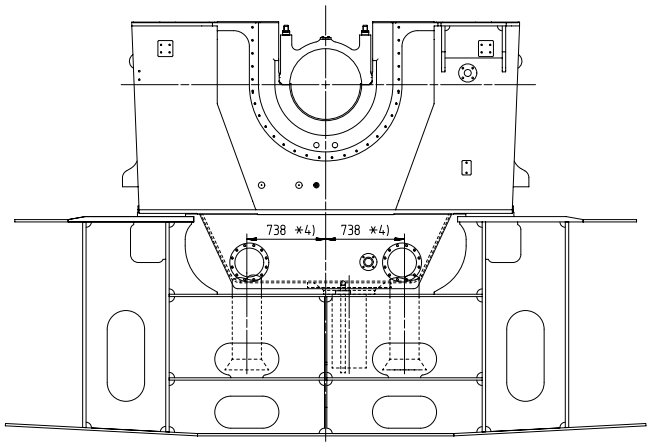
Approved

TANK PROPOSAL

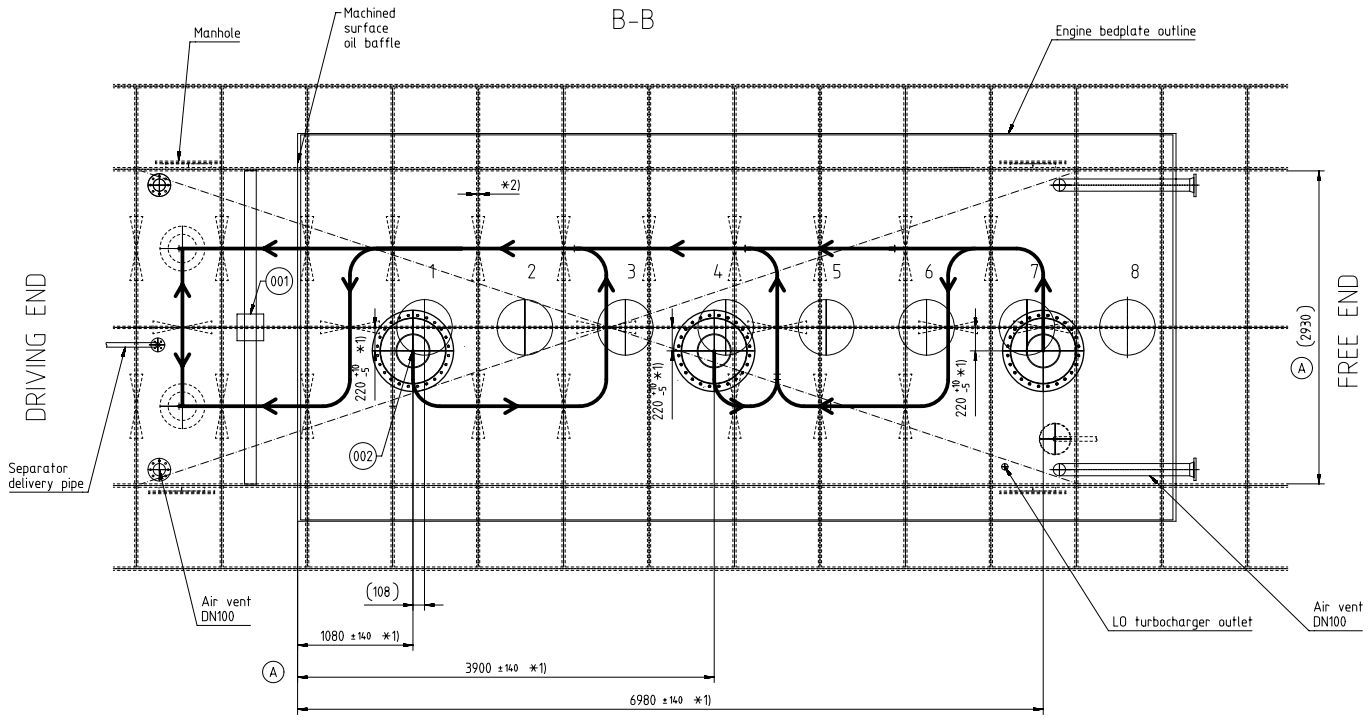
8X52/DF



A (DRIVING END)



B-B



(A) REMARKS:

*1) Drains must be arranged by the shipyard in accordance with the shiphull structure and within the specified tolerance range. As soon as the final positions are determined the engine manufacturer must be informed so that the bedplate (oil pan) holes can be machined in compliance with the engine builder drawing "BEDPLATE OIL DRAIN" (DG1110).

*2) Recommendation regarding plate thickness is given in the Marine Installation Drawing Set (MIDS) "ENGINE / SEATING FOUNDATION" (foundation arrangement drawing, DG9710).

*3) Recommendation regarding the pipe size is given in the system proposal as provided in the MIDS "LUBRICATING OIL SYSTEM" (LO system drawing, DG9722).

*4) Final position depends on the size of the flywheel casing and required space for the main LO pump.

*5) Final height must be in accordance with the rules of the relevant classification society.

*6 Proposal, final tank dimensions are to be determined by the shipyard in accordance with the shiphull structure, minimum required filling / circulation volume, pump suction requirements and rules of the relevant classification society. Requirements / design criteria for the tank layout are provided in the MIDS "LUBRICATING OIL DRAIN TANK - Filling Guidelines" (DG9722).

*7) Distance according to pump makers specification.

*8) The drain pipe outlet must be below the min. LO level (LO low level alarm height) though a gap of min. half of the drain pipe diameter (min. 1/2*DN) to the drain tank bottom has to be maintained.

Pos	Number	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
3	002	107.246.182.200	VERTICAL OIL DRAIN	107.246.182		76,9
1	001	107.246.799.200	PLATE	107.246.799		15,0

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

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

A | EAAD090135 | 02.01.2019

WIN GD Winterthur Gas & Diesel

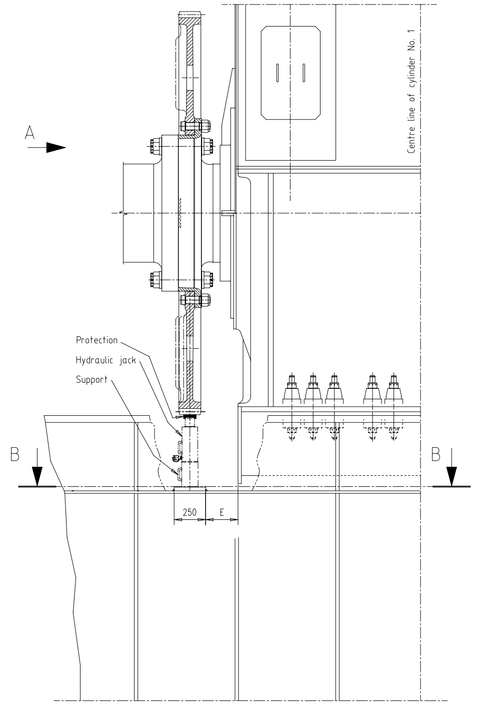
Product 8X52 8X52DF

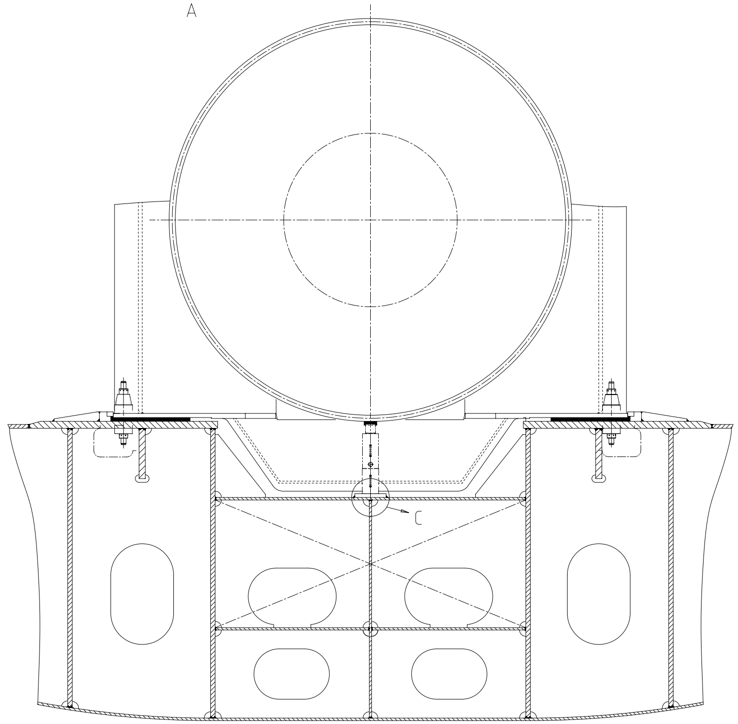
LUBRICATING OIL DRAIN TANK WITH VERTICAL DRAINS

Units mm kg | NX | Basic Material | Net Weight 246

SURFACE PROTECTION SEE GROUP 0344	Made	09.03.2018	Sudant Deogade	Scale	1:25	Size A1	Page 1/1
TOLERANCING PRINCIPLE ISO8015	Chkd	27.04.2018	wwa008 Wang	Design Group	9722	Material ID	PAAD288014
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	03.05.2018	mhu019 Hug	Drawing ID	DAAD097843	Rev.	A

3D - DIMENSIONAL DRAWING - Confidential - Approved





Ⓙ

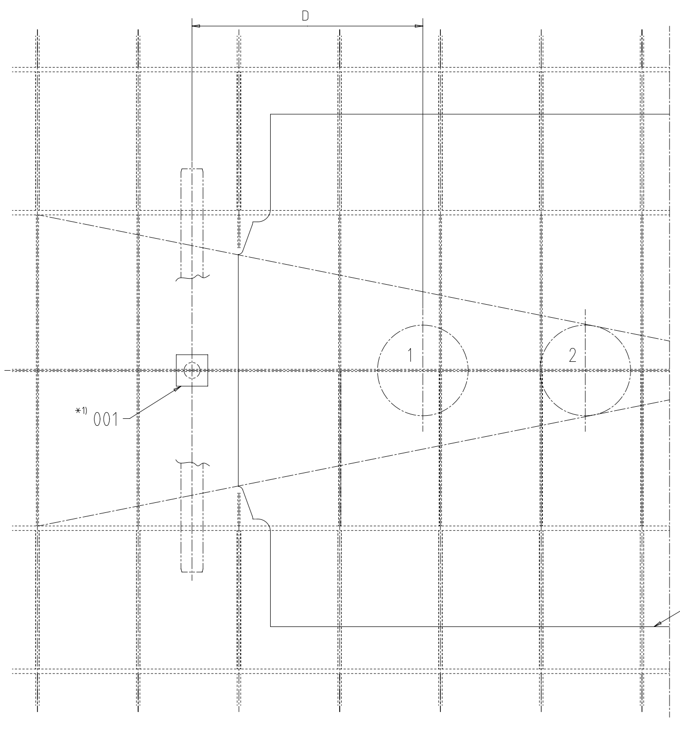
ENGINE TYPE	D (mm)	E *2) (mm)
RT-flex50-D/DF	1387	172
X35-B	1021	130
X40-B/X40DF-1.0	1170	172
X52/X52DF/X52DF-1.1/X52DF-2.1 X52DF-M-1.0/X52DF-A-1.0	1560	247
X52-S2.0/X52DF-S1.0/X52DF-S2.0 X52DF-M-S1.0/X52DF-A-S1.0	1371	247
X62-B/X62DF/X62DF-1.1/X62DF-2.1 X62DF-M-1.0/X62DF-A-1.0	1888	343
X62-S2.0/X62DF-S1.0/X62DF-S2.0 X62DF-M-S1.0/X62DF-A-S1.0	1628	343
X72-B/X72DF/X72DF-1.1/X7DF-2.1 X72DF-M-1.0/X72DF-A-1.0	2131	274
X72DF-1.2/X72DF-2.2	1901	274
X82-B	2395	460
X82-2.0/X82DF-1.0/X82DF-2.0 X82DF-M-1.0/X82DF-A-1.0	2201	594
X92-B/X92DF/92DF-2.0 X92DF-M-1.0/X92DF-A-1.0	2687	560

REMARKS:

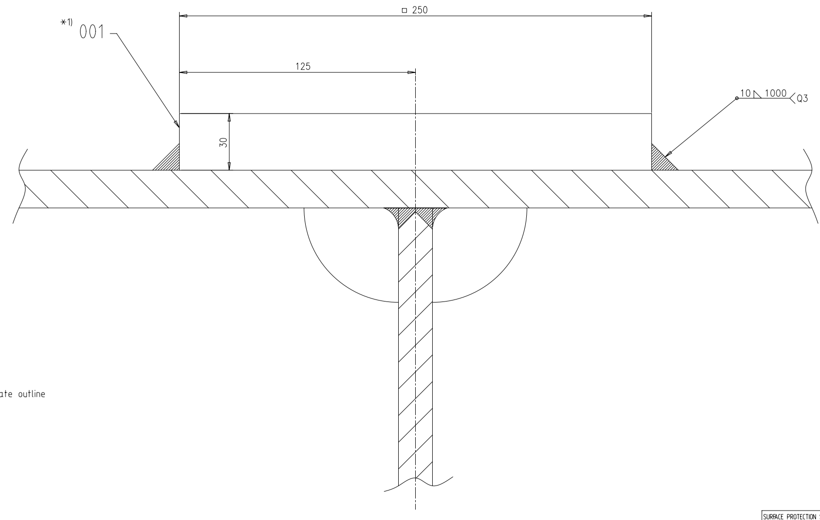
*1) Clear access to the plate is required for supporting the hydraulic jack during flywheel lifting operations.

*2) Approximate value, only for reference

B-B



C 1 : 5



Prod.	CX40DF CX52	RT-flex48T-D RT-flex50-D	RT-flex58T-D RT-flex58T-D V1	RT-flex58T-D V2 RT-flex58T-E	RT-flex60C RT-flex60C-B	RT-flex68-B RT-flex68-D	RT-flex68-D_L RT-flex82C	RT-flex82T [...]

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	E	C
J	dki021	mhu019	31.01.2023	CNAA003091	Drawing Updated	4	3
I	sde101	mhu019	28.04.2021	EAAD095725	Legacy information. See corresponding ChangeNotice	4	3
H	wwa008	bha009	11.09.2015	EAAD086107	Legacy information. See corresponding ChangeNotice	4	-
A	WinGD	grpadm	03.04.2001	EAAD014485	-	-	-

Change History — Approved — Activity Code

WIN GD Winterthur Gas & Diesel

PLATE
PLATE

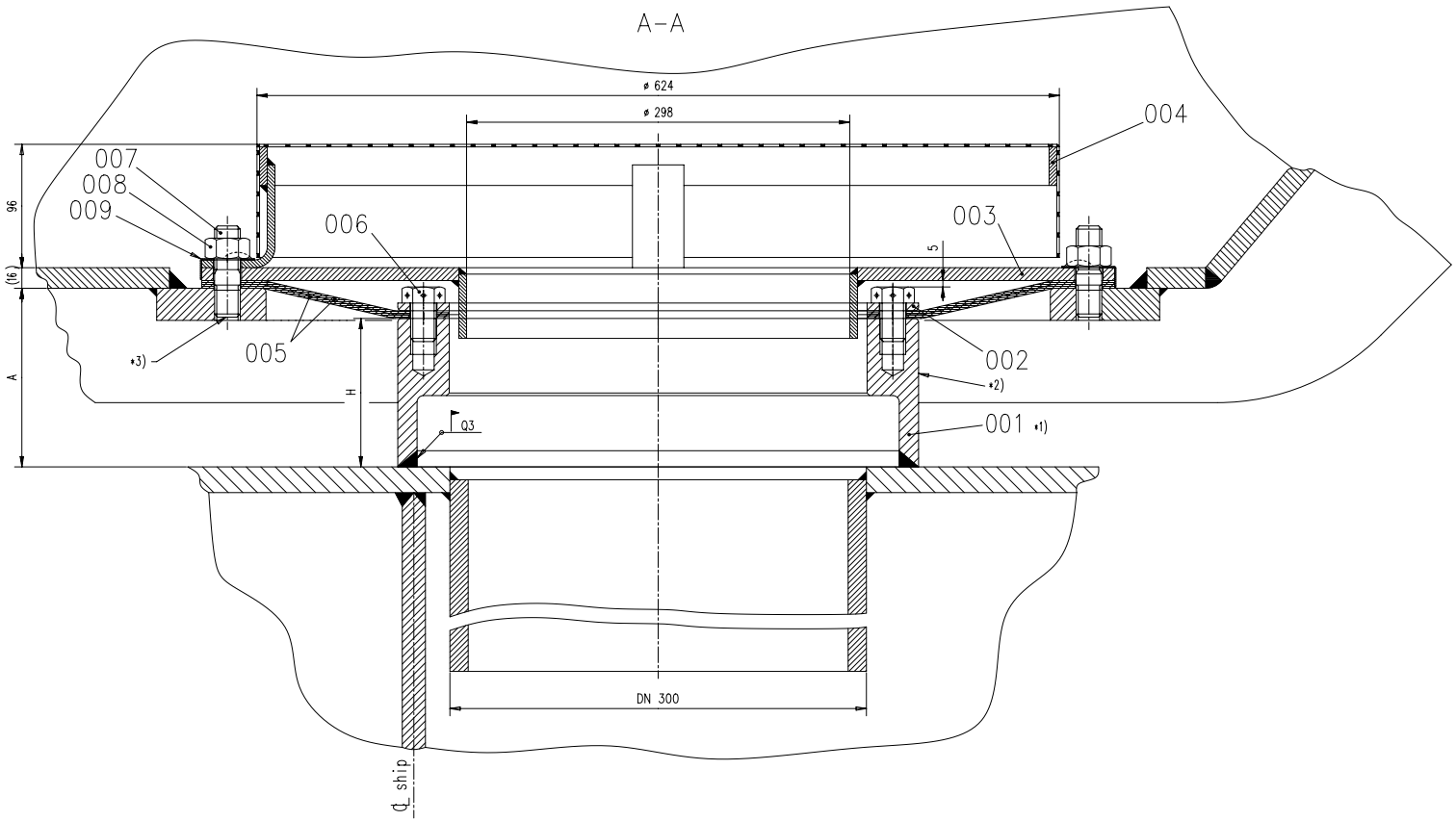
separate BOM available — Dimension

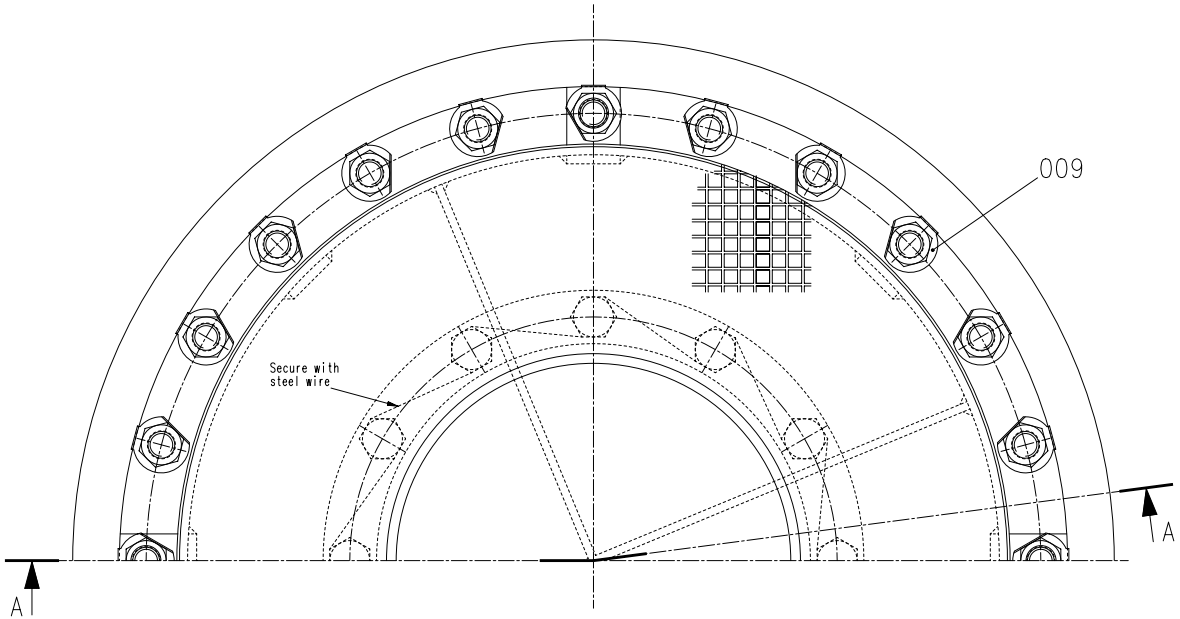
Scale 1:15 — NX — Units [mm] [kg] — Basic Material — Net Weight 15.00

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

Main Design — Design Group 9722 — Q-Code XXXXX — Standard WDS

Qty per — A0 — Item ID 107.246.799.200 — Drawing Page/s 1/2





REMARKS:

*1) To be aligned after engine is in final position.

*2) Pos. 001, 002, 005 and 006 to be pre-assembled prior to alignment. After alignment the Pos. 001 (flange) can be welded in place.

*3) Driven in oil tight with jointing compound.

A	To be measured after alignment of the engine
H	A–23.5mm

Items 001 to 009 are yard delivery

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
24	009	015.507.360.910	TAB WASHER 21	DIN 93	Steel Zn 5 bk	0,1
24	008	015.201.012.510	HEXAGON NUT M20	ISO 4032	8	0,064
24	007	015.101.214.271	STUD M20x45		8.8	0,17
12	006	015.151.374.201	HEXAGON HEAD SCREW M20x30		8.8	0,12
2	005	107.246.190.001	RUBBER GASKET	107.246.190	NBR 70 Sh	1,2
1	004	107.049.681.200	OIL STRAINER	107.049.681		8,3
1	003	107.246.187.200	COVER	107.246.187		26,6
1	002	107.246.186.001	RING	107.246.186	W-FU-235-JR	2,0
1	001	107.246.183.001	WELDING FLANGE	107.246.183	W-FU-235-JR	28,0

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

Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
B	EAAD014378	10.07.1998	C EAAD014420	25.01.1999	D EAAD091567	20.11.2019		

Approved

WIN GD Winterthur Gas & Diesel

Product W-25

VERTICAL OIL DRAIN ASSEMBLY DRAWING

Oelablauf vertikal

Units mm kg | NX | Basic Material | Net Weight 76,7

SURFACE PROTECTION SEE GROUP 0344

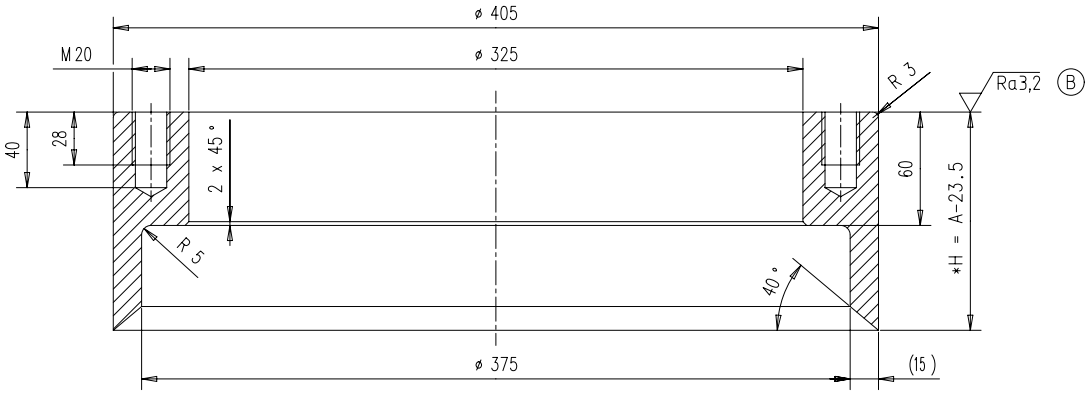
TOLERANCING PRINCIPLE ISO8015

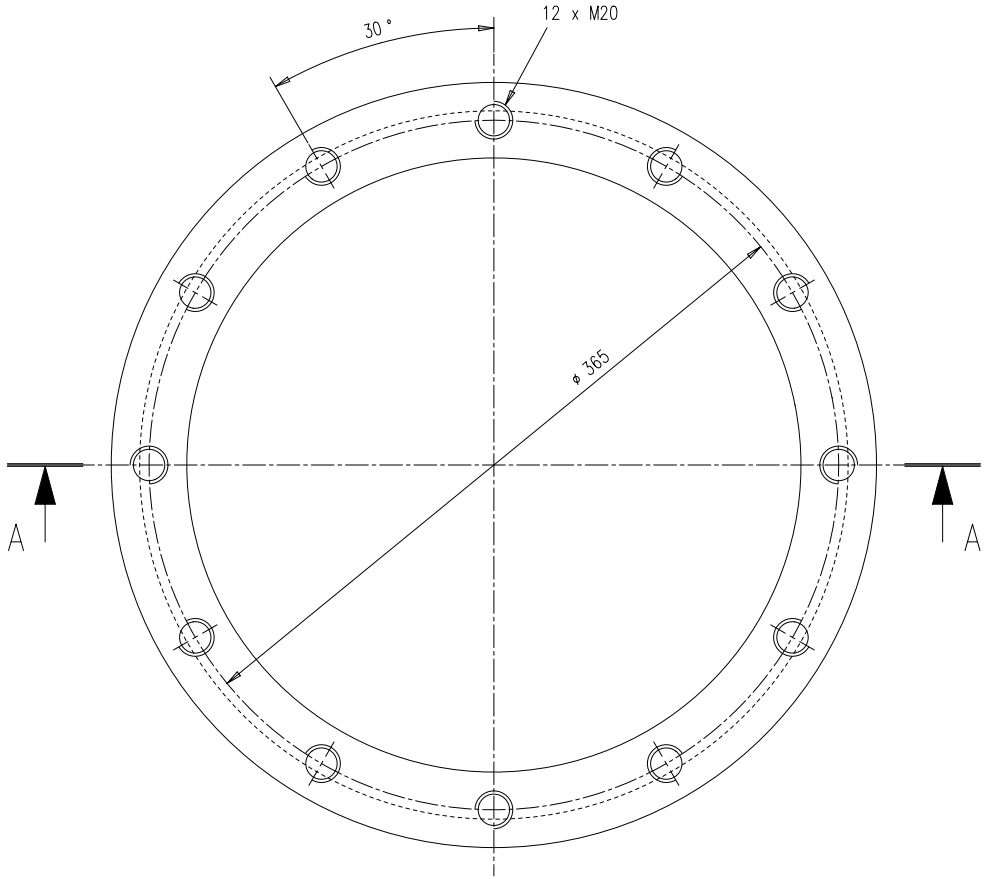
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made 17.08.1995 A. Horsfjord | Chkd | Appd 06.02.1996 MLU011 Lüthi

Scale 1:2 | Design Group 9722 | Size A1 | Page 1/1 | Material ID 107.246.182.200

Drawing ID 107.246.182 | Rev. D





B Ra12,5 (✓) SHARP EDGES REMOVED

*For dimension <H> see drawing 1-107.246.182

Modif.												
	A	EAAD014378	10.07.1998	B	EAAD091567	18.11.2019						
		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date

Free space for lic.

Q-Code XXXXX

Standard ISO; JIS

Main Drw.

Approved

WIN GD Winterthur Gas & Diesel

Product W-2S

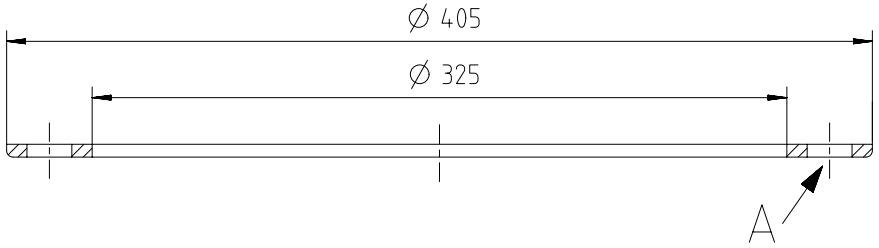
WELDING FLANGE

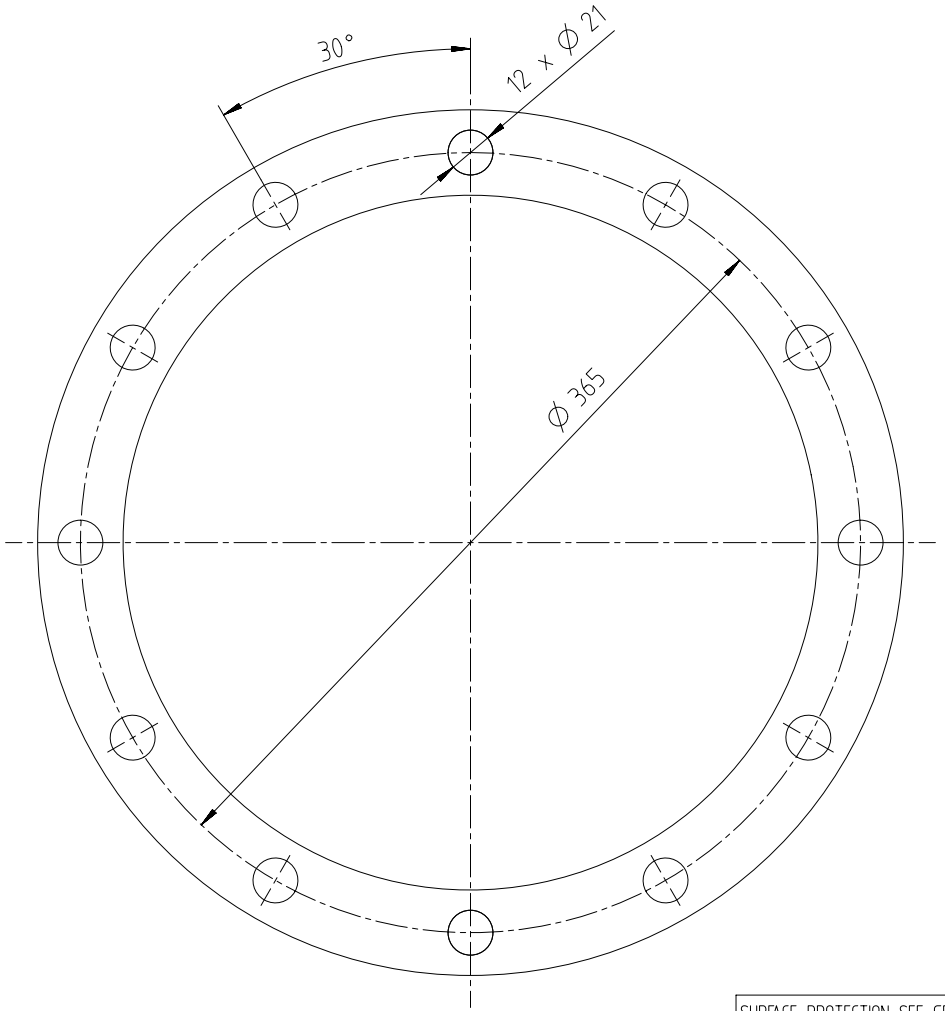
Anschweissflansch

Units	mm kg	NX	Basic Material	W-FU-235-JR	Net Weight 28

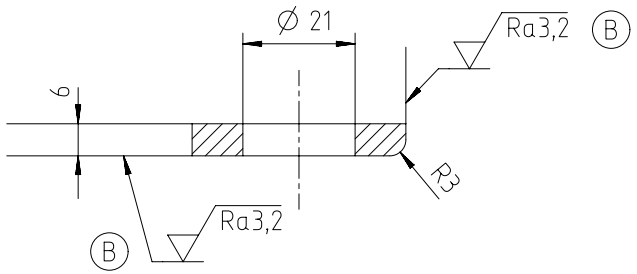
SURFACE PROTECTION SEE GROUP 0344	Made	21.08.1995 A. Horsfjord	Scale 1:2	Size A2	Page 1/1	Material ID	107.246.183.001
TOLERANCING PRINCIPLE ISO8015	Chkd		Design Group 9722	Drawing ID	107.246.183	Rev.	B
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	17.10.1995 MLU011 Lüthi					

DID - DIMENSIONAL DRAWING - Confidential





A 1:1



B Ra12,5 (√) SHARP EDGES REMOVED

Free space for lic.								Q-Code XXXXX		Main Drw.	
								Standard ISO; JIS			
Modif.	A	EAAD014378	10.07.1998	B	EAAD091567	18.11.2019					
		Number	Drawn date		Number	Drawn date		Number	Drawn date	Number	Drawn date

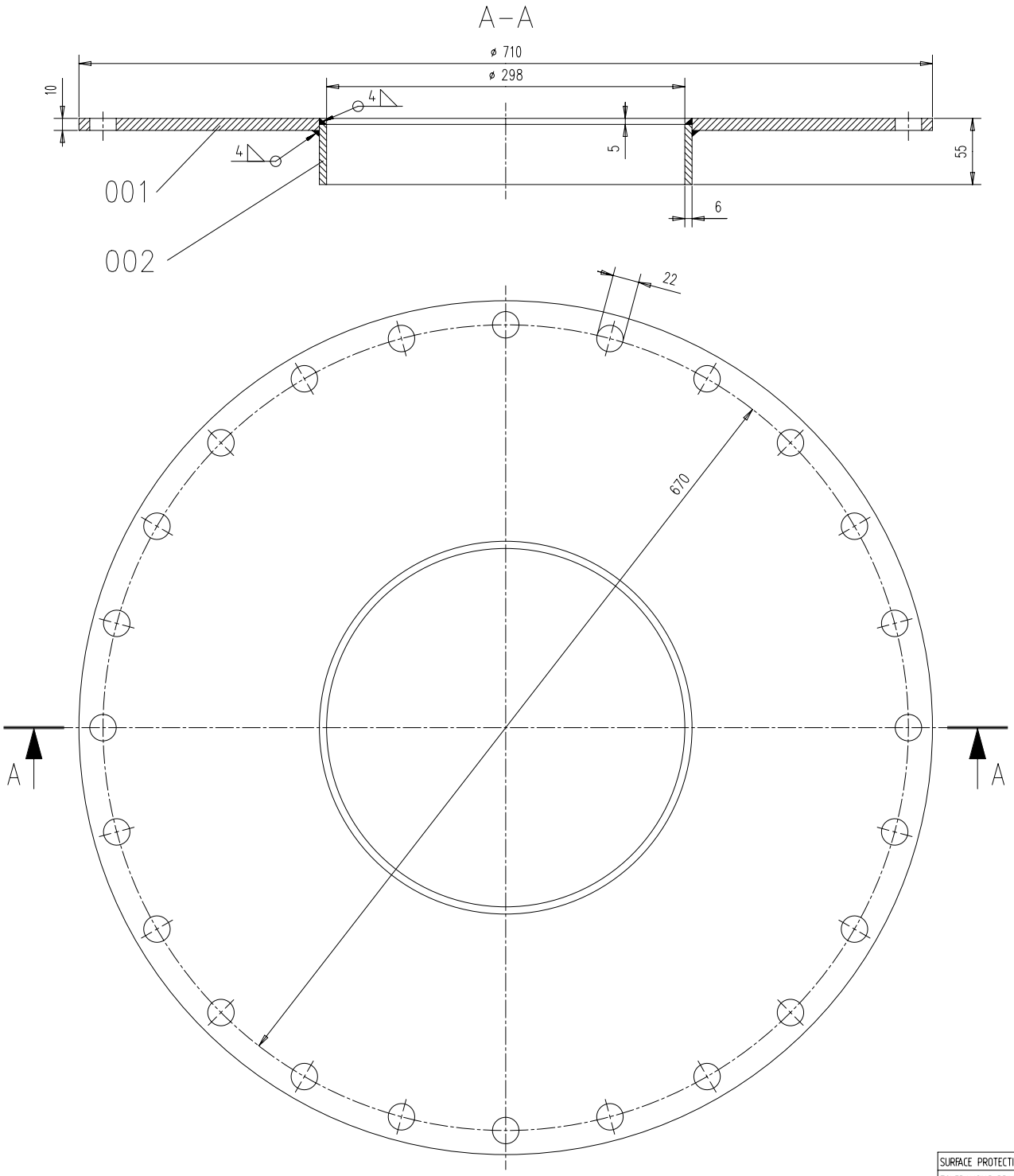
WIN GD Winterthur Gas & Diesel

Product W-2S	RING		
	Ring		
Units mm kg	NX	Basic Material W-FU-235-JR	Net Weight 2

SURFACE PROTECTION SEE GROUP 0344	Made 21.08.1995 A. Horsfjord	Scale 1:2.5	Size A3	Page 1/1	Material ID 107.246.186.001
TOLERANCING PRINCIPLE ISO8015	Chkd	Design Group 9722	Drawing ID 107.246.186		Rev. B
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.10.1995 MLU011 Lüthi				

Approved

DID - DIMENSIONAL DRAWING - Confidential



Ⓐ WELD QUALITY LEVEL D (SEE DAAD007749: PAAD013544)

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	002	107.246.189.001	RING	107.246.189	W-FU-235-JR	2,2
1	001	107.246.188.001	PLATE	107.246.188	W-FU-235-JR	24,4

Free space for lic.

Q-Code: XXXXX

Standard: ISO; JIS

Main Drw.

Modif.: A EAAD091567 18.11.2019

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

WIN GD Winterthur Gas & Diesel

Product: W-2S

COVER

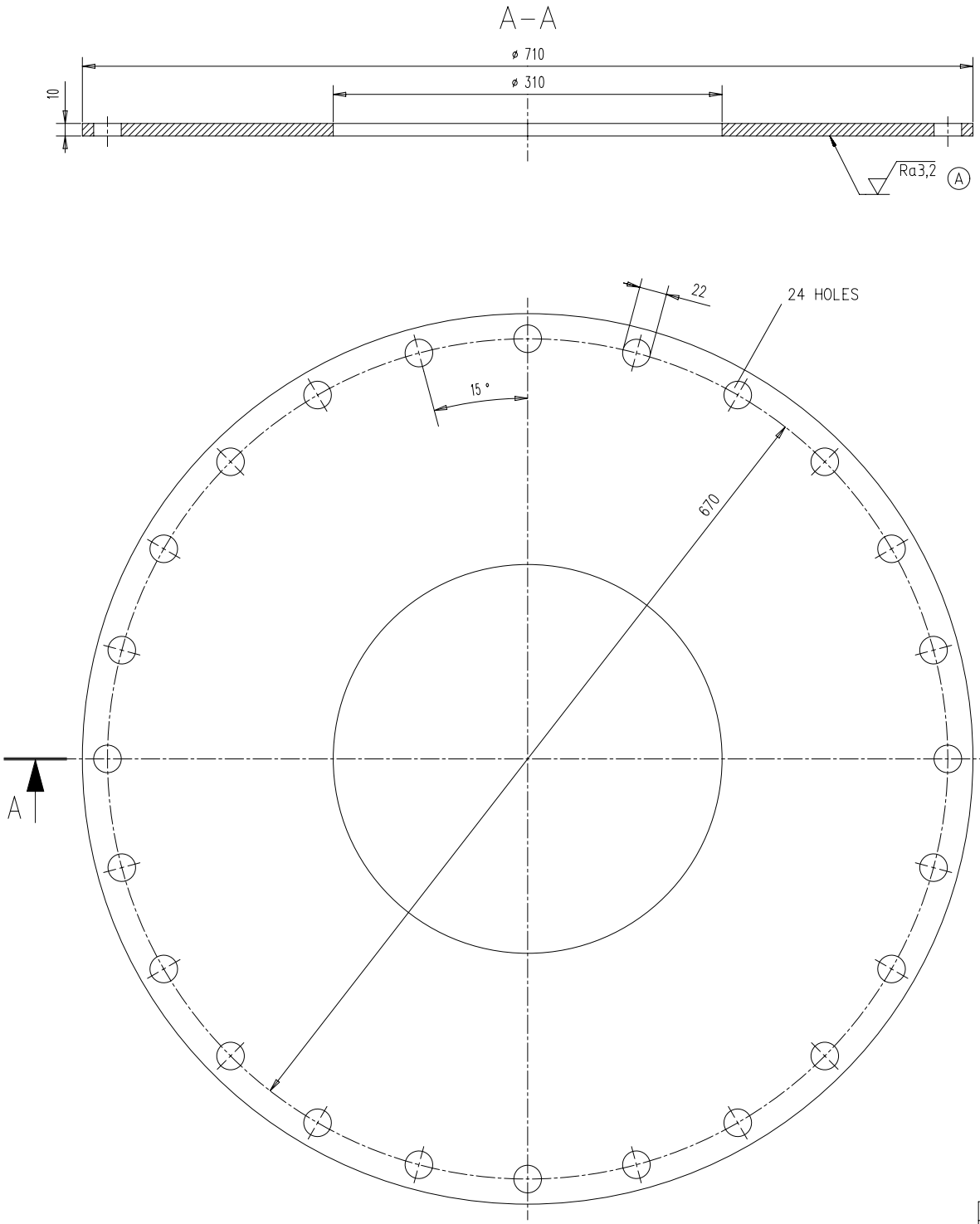
Deckel

Units: mm kg | NX | Basic Material | Net Weight 26,6

SURFACE PROTECTION SEE GROUP 0344	Made 21.08.1995 A. Horsfjord	Scale 1:2.5	Size A2	Page 1/1	Material ID 107.246.187.200	
TOLERANCING PRINCIPLE ISO8015	Chkd	Design Group 9722	Drawing ID 107.246.187		Rev. A	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.10.1995 MLU011 Lüthi					

Approved

ASD - ASSEMBLY DRAWING - Internal



Free space for lic.								Q-Code XXXXX		Main Drw.
								Standard ISO; JIS		
Modif.	A	EAAD091567	18.11.2019							
		Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	

WIN GD Winterthur Gas & Diesel

Product W-2S

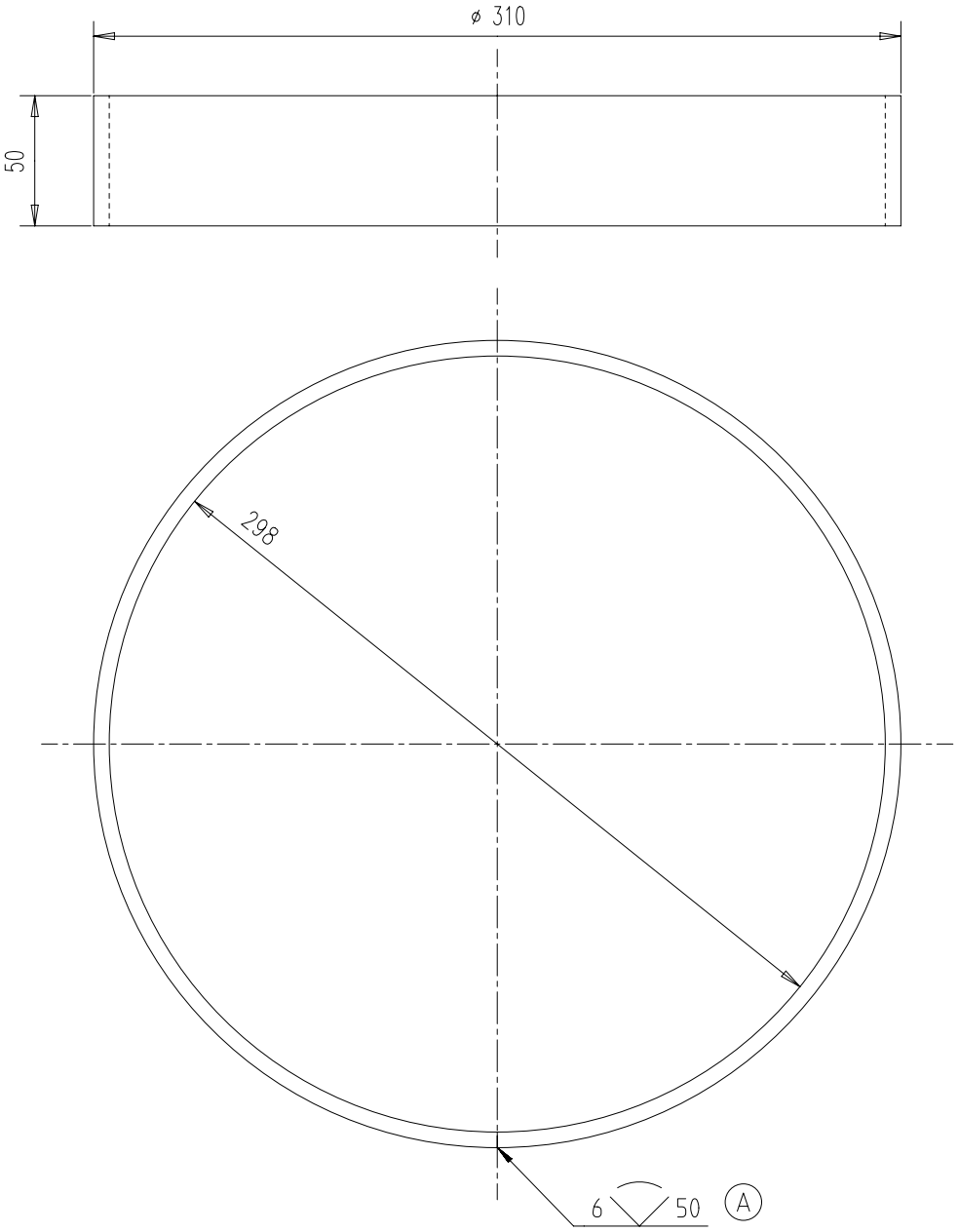
PLATE

Blech

Units mm kg	NX		Basic Material W-FU-235-JR		Net Weight 24,4
SURFACE PROTECTION SEE GROUP 0344	Made 21.08.1995 A. Horsfjord	Scale 1:2.5	Size A2	Page 1/1	Material ID 107.246.188.001
TOLERANCING PRINCIPLE ISO8015	Chkd	Design Group 9722	Drawing ID 107.246.188		Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.10.1995 MLU011 Lüthi				

Approved

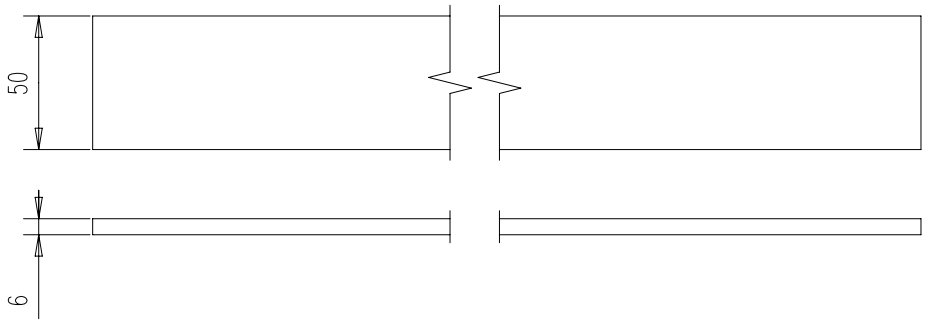
DID - DIMENSIONAL DRAWING - Confidential



A

WELD QUALITY LEVEL D (SEE DAAD007749: PAAD013544)

STRAIGHT LENGTH 955



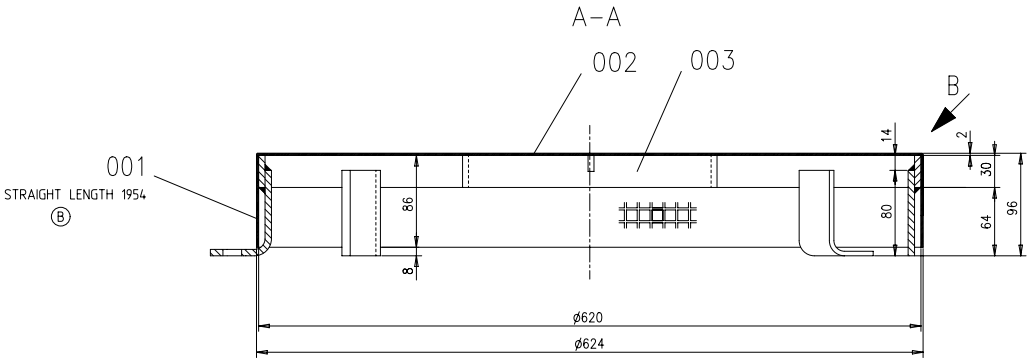
Free space for lic.								Q-Code XXXXX		Main Drw.	
								Standard ISO; JIS			
Modif.	A	EAAD091567	18.11.2019								
		Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date		

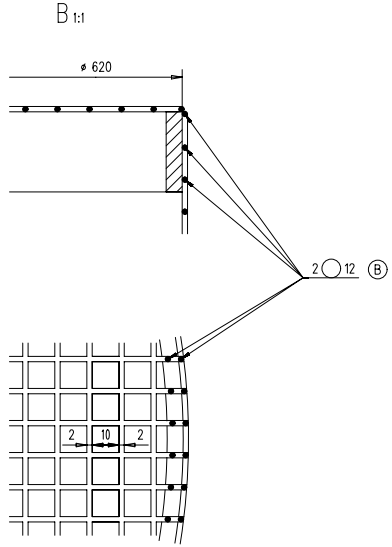
WIN GD Winterthur Gas & Diesel

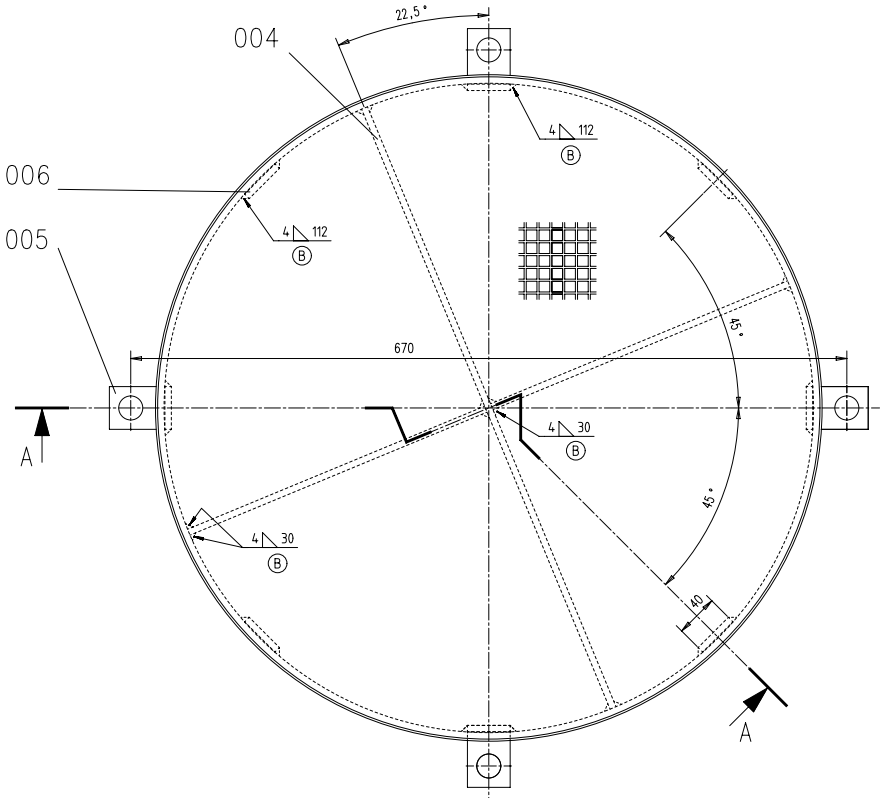
Product W-2S	RING Ring				
Units mm kg	NX	Basic Material W-FU-235-JR			Net Weight 2,2
SURFACE PROTECTION SEE GROUP 0344	Made 21.08.1995 A. Horsfjord	Scale 1:3	Size A3	Page 1/1	Material ID 107.246.189.001
TOLERANCING PRINCIPLE ISO8015	Chkd	Design Group 9722	Drawing ID 107.246.189		Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.10.1995 KOSM M.Kosovsky				

Approved

DID - DIMENSIONAL DRAWING - Confidential







ROUGH CLEANED

Ⓑ WELD QUALITY LEVEL D (SEE DAAD007749: PAAD013544)

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
4	006	107.049.681.006	FLAT BAR	107.049.681	W-FU-235-JR	0,15
4	005	107.049.665.001	HOLDER	107.049.665	W-FU-235-JR	0,24
2	004	107.049.666.001	FLAT BAR	107.049.666	W-FU-235-JR	0,85
1	003	107.049.664.001	RING	107.049.664	W-FU-235-JR	2,7
1	002	107.049.681.002	PERFORATED SHEET	107.049.681	W-FU-235-JR	1,4
1	001	107.049.681.001	PERFORATED SHEET	107.049.681	W-FU-235-JR	0,9

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

Modif.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
	A EAAD028037	04.02.2002	B EAAD091567	19.11.2019				

WIN GD Winterthur Gas & Diesel

Product W-25

OIL STRAINER

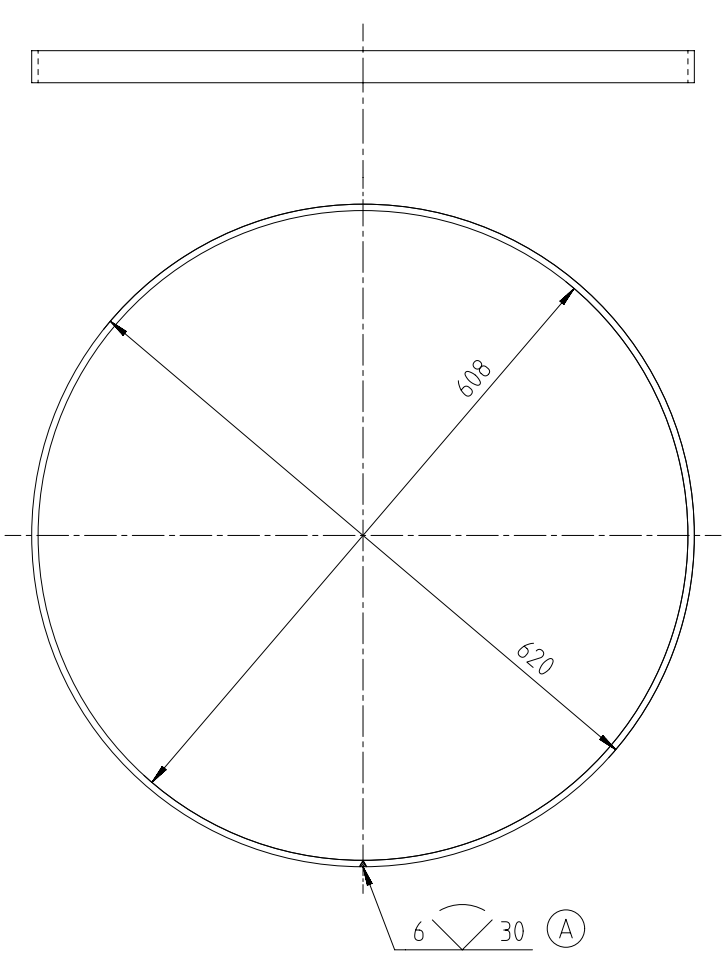
Oelsieb

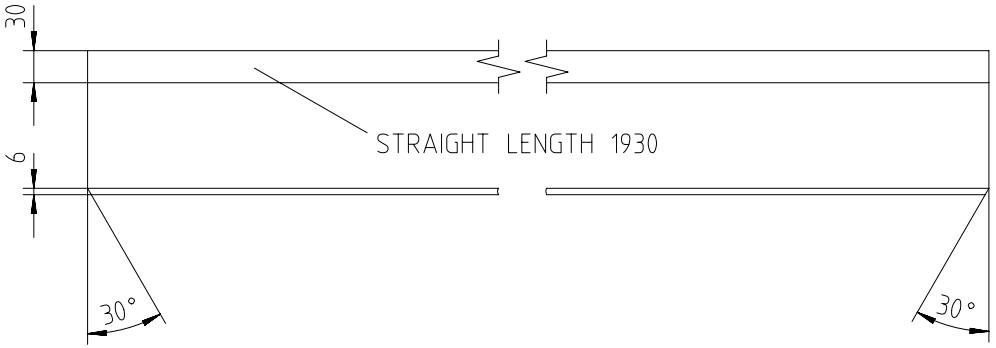
Units mm kg | NX | Basic Material | Net Weight 8,3

SURFACE PROTECTION SEE GROUP 0344	Made	19.06.1978 S.NATALI	Scale 1:2.5	Size A1	Page 1/1	Material ID	107.049.681.200
TOLERANCING PRINCIPLE ISO8015	Chkd		Design Group 9722	Drawing ID	107.049.681	Rev.	B
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	19.06.1978 WCH001 Service User					

ASD - ASSEMBLY DRAWING - Internal

Approved





(A) WELD QUALITY LEVEL D (SEE DAAD007749: PAAD013544)

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

RING
ON FRAME FOR OIL STRAINER

Units mm kg	NX		Basic Material W-FU-235-JR		Net Weight 2,7
SURFACE PROTECTION SEE GROUP 0344	Made 20.03.1995 M. Winiger		Scale 1:5	Size A3 / Page 1/1	Material ID 107.049.664.001
TOLERANCING PRINCIPLE ISO8015	Chkd		Design Group 1110	Drawing ID 107.049.664	Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 13.06.1978 WCH001 Service User				

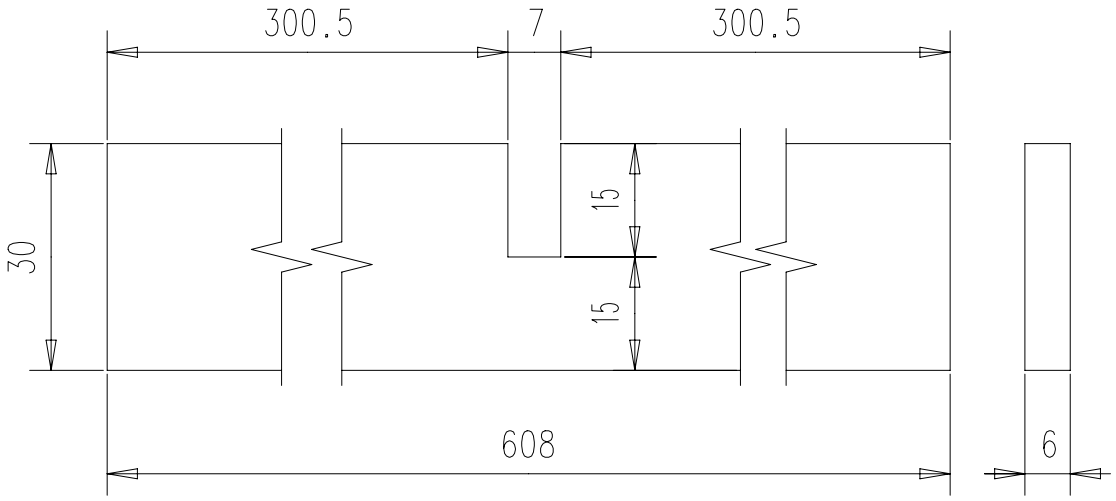
Approved

DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK



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	EAAD091567	15.11.2019						

WIN GD
Winterthur Gas & Diesel

Product: W-2S

FLAT BAR

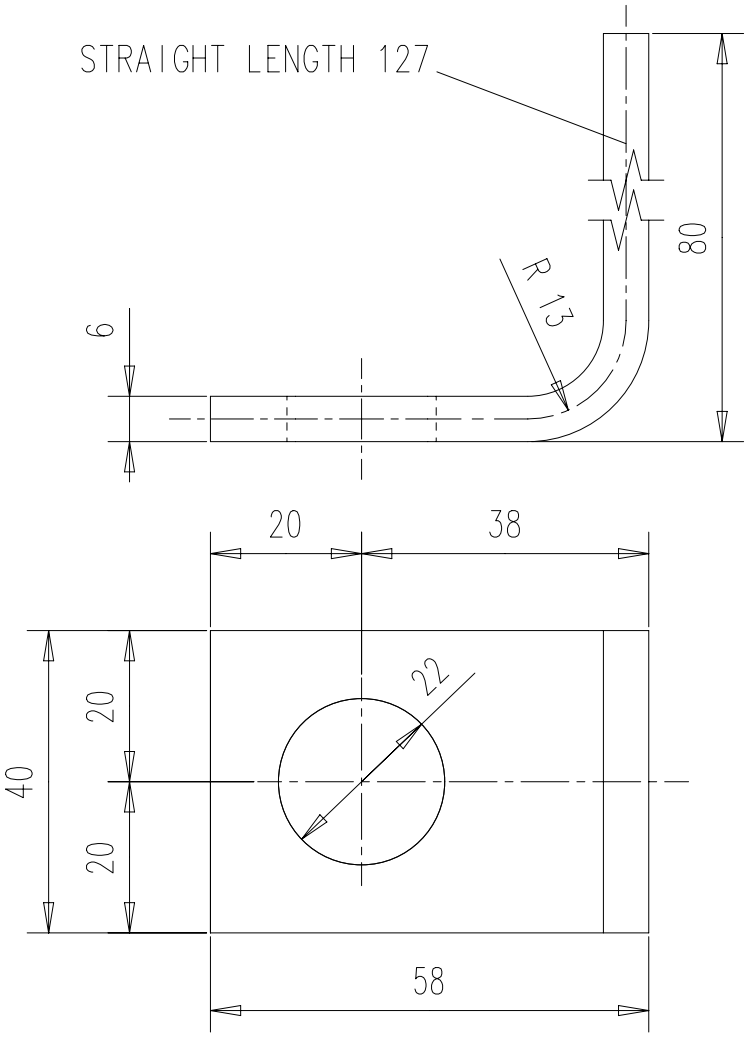
Units	mm kg	NX	Basic Material	W-FU-235-JR	Net Weight	0,85
Made	20.03.1995 M. Winiger		Scale	1:1	Size A4 / Page 1/1	Material ID 107.049.666.001
Chkd			Design Group	1110	Drawing ID 107.049.666	Rev. A
Appd	13.06.1978 WCH001 Service User					

DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK



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	EAAD091567	15.11.2019						

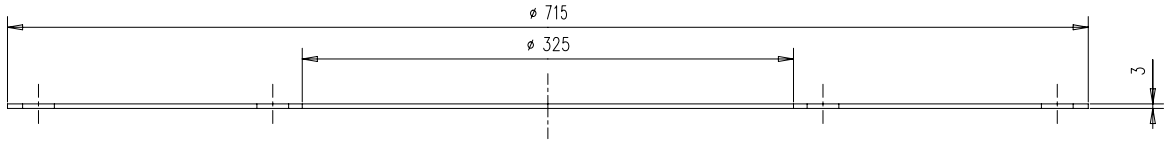
WIN GD Winterthur Gas & Diesel

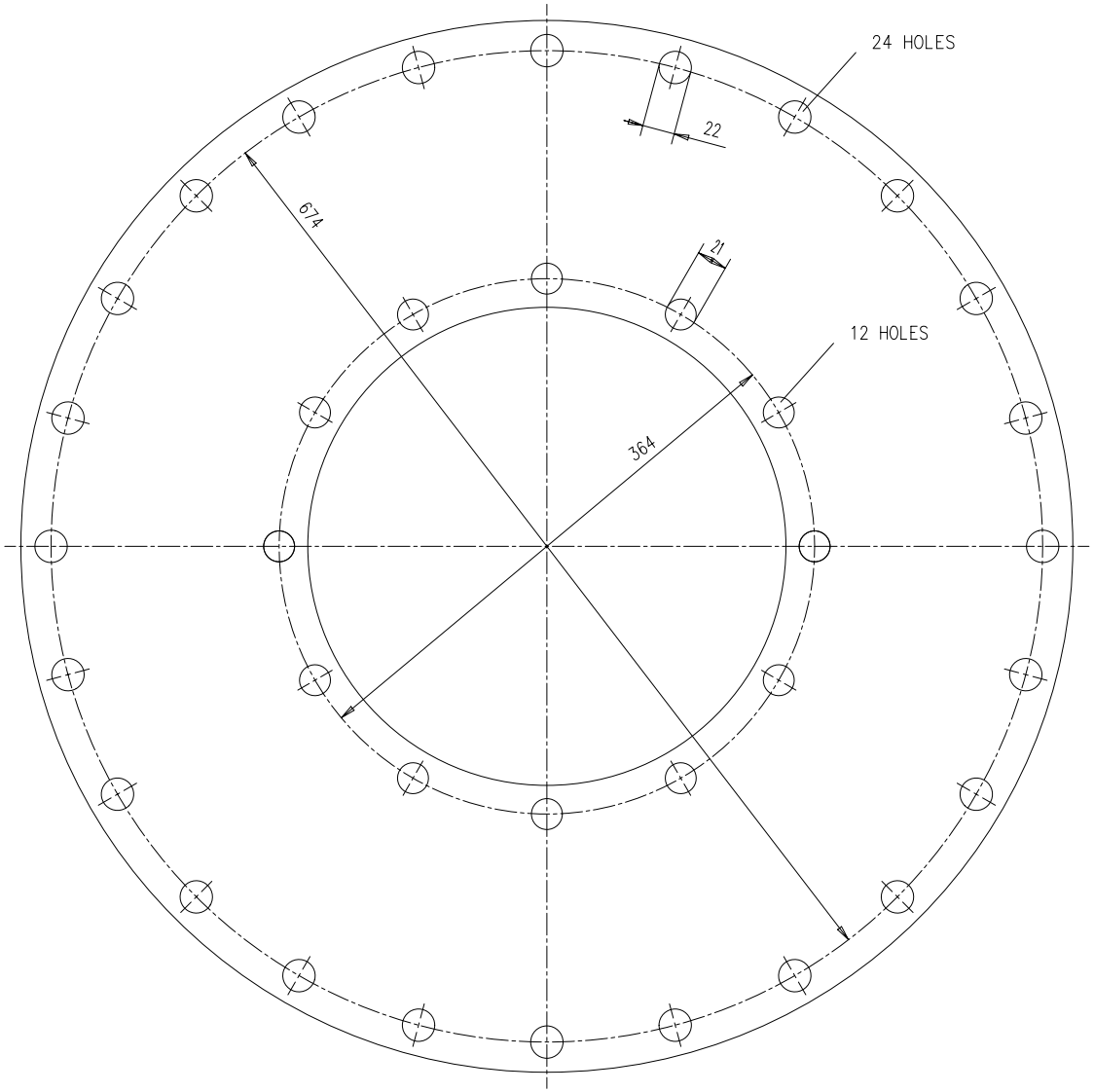
Product W-2S

HOLDER

Units	mm kg	NX	Basic Material	W-FU-235-JR	Net Weight	0,24
Made	20.03.1995 M. Winiger		Scale	1:1	Size A4	Page 1/1
Chkd			Design Group	1110	Material ID	107.049.665.001
Appd	13.06.1978 WCH001 Service User				Drawing ID	107.049.665
					Rev.	A

DID - DIMENSIONAL DRAWING - Confidential





Free space for lic.									Q-Code XXXXX		Main Drw.
									Standard ISO; JIS		
Modif.	A	EAAD091567	19.11.2019								
		Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date		

WIN GD Winterthur Gas & Diesel

Product W-2S

RUBBER GASKET

Gummidichtung

Units mm kg	NX		Basic Material NBR 70 Sh		Net Weight 1,2
SURFACE PROTECTION SEE GROUP 0344	Made 21.08.1995 A. Horsfjord	Scale 1:2.5	Size A2	Page 1/1	Material ID 107.246.190.001
TOLERANCING PRINCIPLE ISO8015	Chkd	Design Group 9722	Drawing ID 107.246.190		Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.10.1995 KOSM M.Kosovsky				

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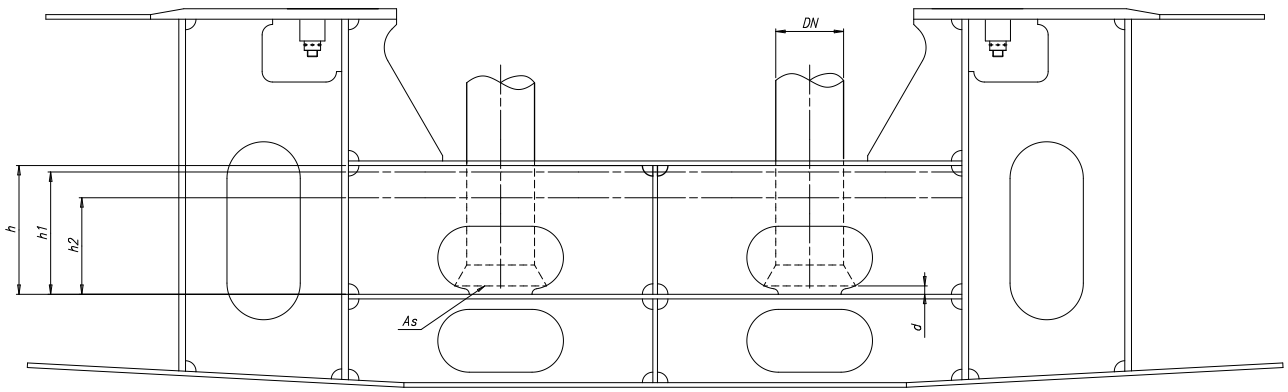
DID - DIMENSIONAL DRAWING - Confidential

Specifications that need to be met:

Ⓑ *W-X52/W-X52DF*



Dimensioning guidelines and capacities for tank design

	No. of cylinders			4	5	6	7	8
Ⓑ	h	Recommended total tank height	(mm)	according to installation requirements				
		Recommended total tank volume: 105% *4)	(m3)	10	12	13	15	17
Ⓑ	h1	Recommended filling level	(mm)	according to installation requirements				
		Recommended volume: 100% *4)	(m3)	9	11	13	14	16
	h2	Low-level alarm	(mm)	*2)				
		Volume	(m3)					
Ⓑ	Vr	Min. retention volume *5)	(m3)	6	7	8	9	10
	d	Distance between suction pipe and bottom of tank	(mm)	*3)				
	As	Suction area		min. 1.5 x suction pipe area (DN)				

REMARKS:

*1) Level after filling of external system. Volume and level in the LO drain tank depend on capacity of pipes, coolers, filters, etc. The oil volume in tank contains a part of the oil quantity, which drains back when the pumps are stopped.

*2) The low-level alarm (h2) has to be positioned in such a way that a proper pump suction is ensured under the conditions defined by the classification societies.

Minimum inclination angles comply with the rules of classification societies:

Heel to each side	15°
Rolling to each side	±22.5
Trim	500/L, max. 5° L: ship length in meter Example L = 250 m Trim = 500/250 = 2°
Pitching	± 7.5°

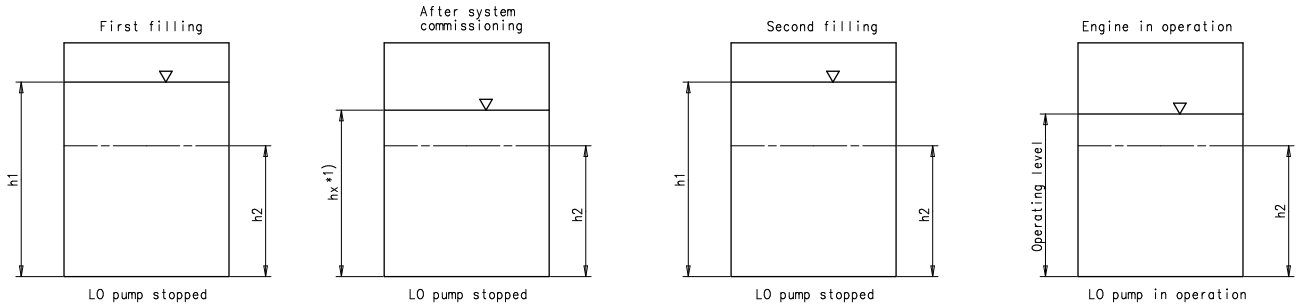
Additionally this level has to be above or equal to the minimum retention volume (Vr) for M/E operation.

*3) Distance (d) between suction pipe inlet of main LO pumps and LO drain tank bottom has to be in accordance with the requirements of the pump manufacturer. As guideline the following formula can be applied: d = DN/4 + 40, d = min. 80 mm.

Ⓑ *4) The stated tank volume represent the min. requirement. Final tank dimensions have to be aligned in regard to dimensional restricions by ship and engine structure and the pump suction requirement.

Ⓑ *5) To be maintained during engine operation (LO pump suction without LO drain back-flow (emergency case) is ensured for at least 3 minutes).

LO DRAIN TANK - FILLING PROCESS



Free space for i.c.								Q-Code XXXXX	Main Dra.
								Standard ISO JIS	
Modif.	A EAAD086282	16.11.2015	B EAAD086531	31.03.2016					
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	

WIN GD Winterthur Gas & Diesel

Product W-52

LUBRICATING OIL DRAIN TANK
FILLING GUIDELINE

Units mm kg	IDE	Basic Material				Net Weight 0.001	
SURFACE PROTECTION SEE GROUP 0344	Mode	10.12.2014	wnaOO8 W.WANG	Scale 1:25	Size A1	Page 1/1	Material ID PAAD178480
TOLERANCING PRINCIPLE ISO8015	Chkd	16.01.2015	mhu019 Hug	Design Group 9722	Drawing ID DAAD061878		Rev. B
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	16.01.2015	bha009 Haag				

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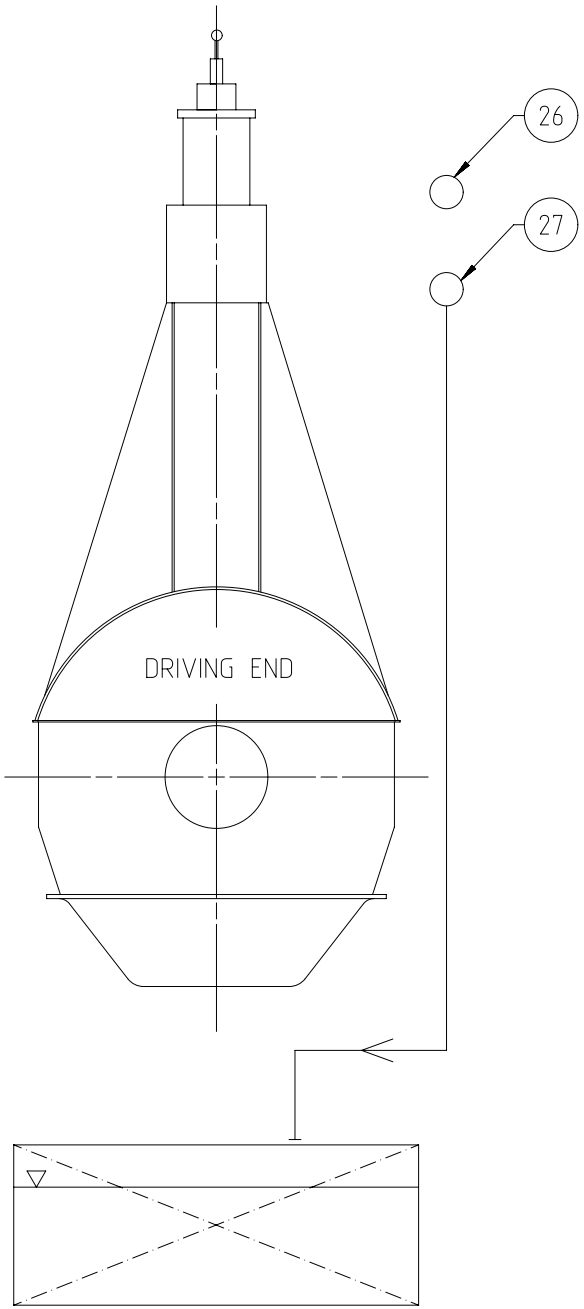

SPECIFICATION which must be met

(26) INLET - Turbocharger lubricating oil

- Lubricating oil temperature:
  - ABB: 30 ~ 85 °C
  - MHI: 35 ~ 50 °C
- Lubricating oil pressure
  - ABB: 0.8 ~ 2.5 bar
  - MHI: 0.6 ~ 1.5 bar
- Lubricating oil volume flow: according to the turbocharger maker's recommendation
- Lubricating oil cleanliness:
  - Full flow filtered by a 50 micron (absolute sphere passing mesh) automatic self-cleaning filter
  - Offline cleaning of the oil return (including back-flushing oil)

(27) OUTLET - Turbocharger lubricating oil

- Oil return to lubricating oil drain tank
- Oil return pipe must not be connected to other drain pipes.
- Oil outlet must be above the max. oil level in the tank or as an alternative a drain pipe with venting holes above the max. oil level needs to be installed.

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	EAAD091530	20.11.2019						

WIN GD Winterthur Gas & Diesel

Product: W-2S

LUBRICATING OIL SYSTEM
Separated TC lubricating
Schmieroelsystem

Units	mm kg	NX	Basic Material	Net Weight 0,001

SURFACE PROTECTION SEE GROUP 0344	Made	05.12.2016	dki021	DH Kim	Scale -	Size A3 / Page 1/5 / Material ID PAAD245338
TOLERANCING PRINCIPLE ISO8015	Chkd	16.12.2016	wwa008	Wang	Design Group 9722	Drawing ID DAAD083642 / Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	16.12.2016	bha009	Haag		

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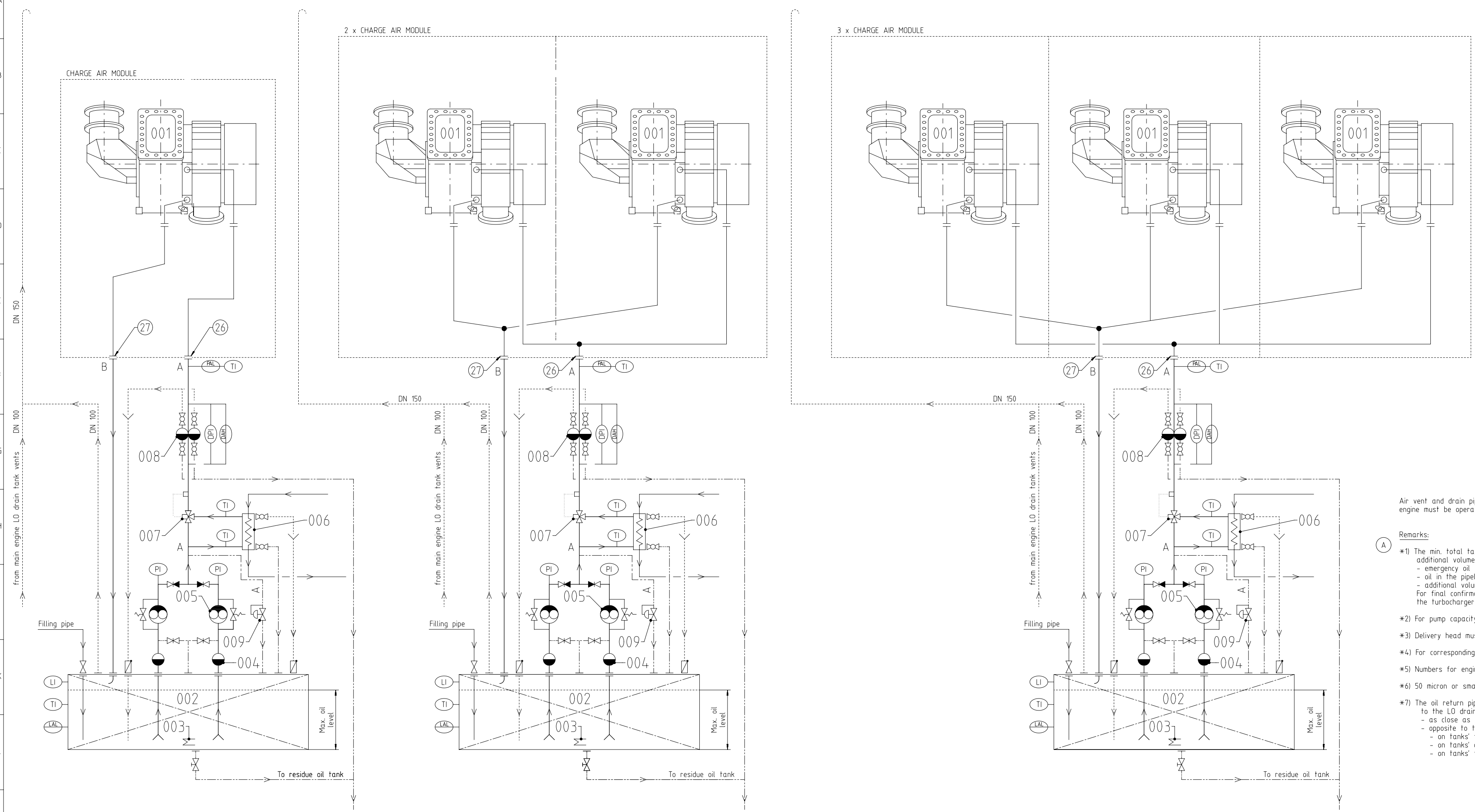

Pos.	Description
001	ABB-Turbocharger
002	Lubricating oil drain tank
003	Heating coil
004	Suction filter
005	Lubricating oil pump
006	Lubricating oil cooler
007	Automatic temperature control valve
008	Lubricating oil filter *6)
009	Pressure regulating valve
(26)	INLET - Turbocharger lubricating oil *5)
(27)	OUTLET - Turbocharger lubricating oil *5) *7)

Air vent and drain pipes must be fully functional at all inclination angles of the ship at which the engine must be operational.

(A) Remarks:

*1) The min. total tank capacity must consider the min. retention volume, plus the following additional volume:
- emergency oil in the integrated head tank
- oil in the pipeline which drains back, when pump is stopped
- additional volume for air

For final confirmation of the min. total tank capacity, please contact the turbocharger manufacturer.

*2) For pump capacity, temperature and oil viscosity, please refer to the GTD program.

*3) Delivery head must be according to the actual piping layout.

*4) For corresponding data, please refer to manufacturer of turbocharger.

*5) Numbers for engine pipe connections, please refer to the pipe connection plan for specific engine.

*6) 50 micron or smaller (absolute, sphere passing mesh).

*7) The oil return pipe must not be connected to other drain pipes. If the oil is returned to the LO drain tank it is recommended to connect the oil outlet
- as close as possible to the separator suction pipe
- opposite to the main LO pump, i.e.
  - on tanks' forward end if the main LO pump is on tanks' aft end
  - on tanks' aft end if the main LO pump is on tanks' forward end
  - on tanks' forward or aft end if the main LO pump is in the middle of the tank.

1 SET OF TURBOCHARGER			A165-L A265-L	A170-L A270-L	A175-L A275-L	A180-L A280-L	A185-L A285-L	A190-L
LO tank	min. retention volume	m³	*4)					
	min. total tank capacity	m³	*1)					
LO pump *2)	capacity	m³	Refer to GTD					
	capacity	l/min						
	delivery *3)	bar	4.0					
Nominal pipe diameter	A	DN	32	32	32	40	40	40
	B	DN	65	65	65	80	80	80
	C	DN	65	65	65	80	80	80

2 SETS OF TURBOCHARGERS			A165-L A265-L	A170-L A270-L	A175-L A275-L	A180-L A280-L	A185-L A285-L	A190-L
LO tank	min. retention volume	m³	*4)					
	min. total tank capacity	m³	*1)					
LO pump *2)	capacity	m³	Refer to GTD					
	capacity	l/min						
	delivery *3)	bar	4.0					
Nominal pipe diameter	A	DN	40	50	50	50	65	65
	B	DN	80	100	100	100	125	125
	C	DN	80	100	100	100	125	125

(A)

3 SETS OF TURBOCHARGERS			A175-L A275-L	A180-L A280-L	A185-L A285-L	A190-L
LO tank	min. retention volume	m³	*4)			
	min. total tank capacity	m³	*1)			
LO pump *2)	capacity	m³	Refer to GTD			
	capacity	l/min				
	delivery *3)	bar	4.0			
Nominal pipe diameter	A	DN	65	65	65	80
	B	DN	125	125	150	150
	C	DN	125	125	150	150

Bearing LO pipes
Transfer/dirty LO pipes
Overflow/drain pipes
Air vent pipes
Pipe connections
Pipes on engine

Free space for lic.	
Q-Code	XXXXX
Standard	ISO; JIS
Main Drw.	
Modif.	(A) EAAD091530 (Number) 20.11.2019 (Drawn date)
WIN GD Winterthur Gas & Diesel	Product: W-2S
Title	LUBRICATING OIL SYSTEM Separated TC lubricating Schmieroelsystem
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	05.12.2016 dki021 DH Kim
Chkd	16.12.2016 wwa008 Wang
Appd	16.12.2016 bha009 Haag
Scale	-
Design Group	9722
Size	A0
Page	2/5
Material ID	PAAD245338
Drawing ID	DAAD083642
Rev.	A

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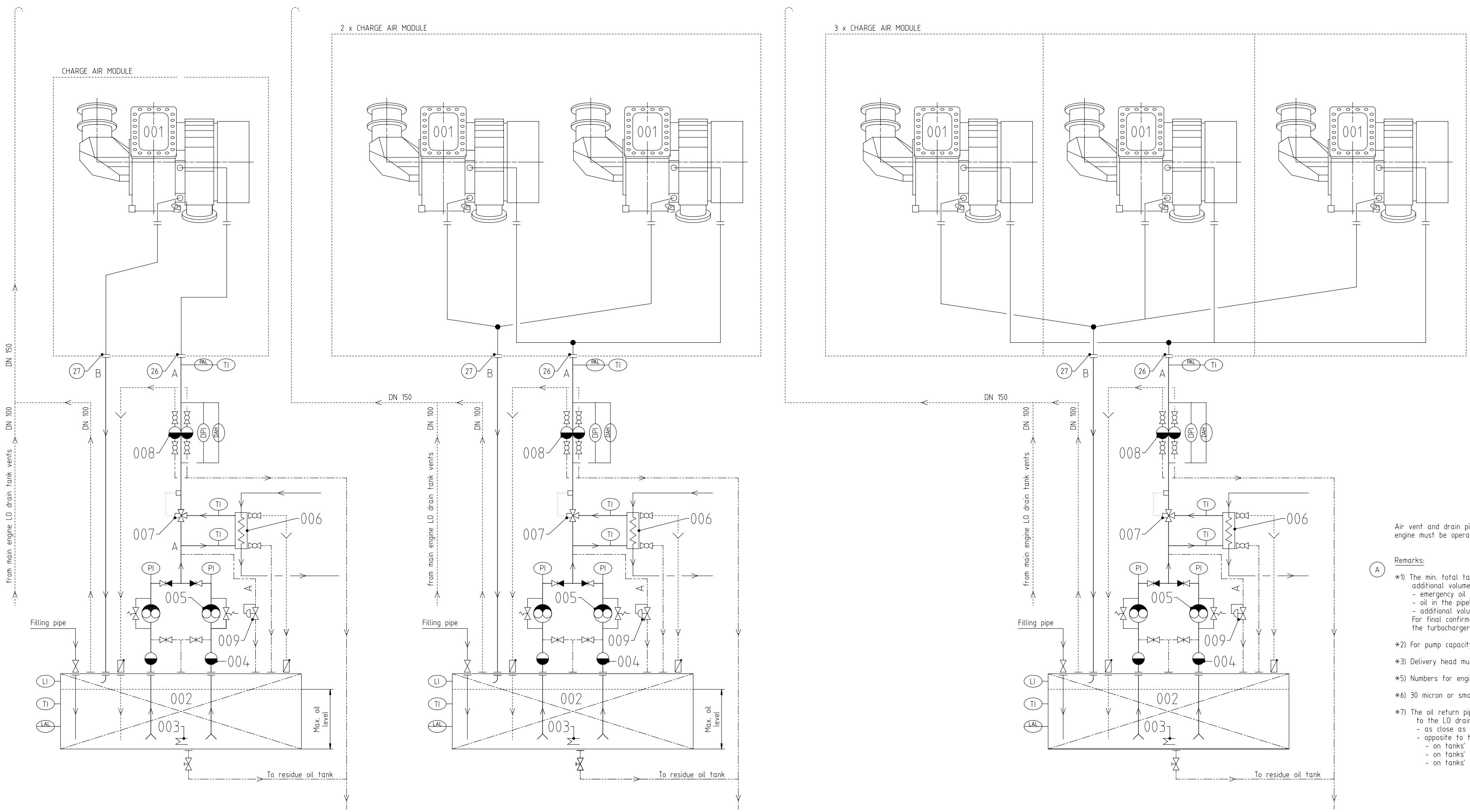
DID - DIMENSIONAL DRAWING - Confidential

Pos.	Description
001	MHI-Turbocharger (MET-MA)
002	Lubricating oil drain tank
003	Heating coil
004	Suction filter
005	Lubricating oil pump
006	Lubricating oil cooler
007	Automatic temperature control valve
008	Lubricating oil filter *6)
009	Pressure regulating valve
26	INLET - Turbocharger lubricating oil *5)
27	OUTLET - Turbocharger lubricating oil *5) *7)



Air vent and drain pipes must be fully functional at all inclination angles of the ship at which the engine must be operational.

(A) Remarks:

*1) The min. total tank capacity must consider the min. retention volume, plus the following additional volume:
- emergency oil in the integrated head tank
- oil in the pipeline which drains back, when pump is stopped
- additional volume for air

For final confirmation of the min. total tank capacity, please contact the turbocharger manufacturer.

*2) For pump capacity, temperature and oil viscosity, please refer to the GTD program.

*3) Delivery head must be according to the actual piping layout.

*5) Numbers for engine pipe connections, please refer to the pipe connection plan for specific engine.

*6) 30 micron or smaller (absolute, sphere passing mesh).

*7) The oil return pipe must not be connected to other drain pipes. If the oil is returned to the LO drain tank it is recommended to connect the oil outlet
- as close as possible to the separator suction pipe
- opposite to the main LO pump, i.e.
  - on tanks' forward end if the main LO pump is on tanks' aft end
  - on tanks' aft end if the main LO pump is on tanks' forward end
  - on tanks' forward or aft end if the main LO pump is in the middle of the tank.

(A)

1 SET OF TURBOCHARGER			MET33MA	MET42MA	MET53MA	MET60MA	MET66MA	MET71MA	MET83MA	MET90MA
LO tank	min. retention volume	m^3	0.18	0.27	0.43	0.53	0.67	0.88	1.07	1.30
	min. total tank capacity	m^3	*1)							
LO pump *2)	capacity	m^3	Refer to GTD							
	capacity	l/min								
	delivery *3)	bar	4.0							
Nominal pipe diameter	A	DN	25	32	40	50	50	50	50	65
	B	DN	40	50	65	80	80	100	100	125
	C	DN	40	50	65	80	80	80	100	100

(A)

2 SETS OF TURBOCHARGERS			MET33MA	MET42MA	MET53MA	MET60MA	MET66MA	MET71MA	MET83MA	MET90MA
LO tank	min. retention volume	m^3	0.36	0.54	0.86	1.06	1.33	1.76	2.14	2.60
	min. total tank capacity	m^3	*1)							
LO pump *2)	capacity	m^3	Refer to GTD							
	capacity	l/min								
	delivery *3)	bar	4.0							
Nominal pipe diameter	A	DN	32	40	50	65	65	65	80	100
	B	DN	100	125	125	150	150	200	200	200
	C	DN	50	65	80	100	100	100	125	125

(A)

3 SETS OF TURBOCHARGERS			MET53MA	MET60MA	MET66MA	MET71MA	MET83MA	MET90MA
LO tank	min. retention volume	m^3	1.29	1.59	2.00	2.64	3.21	3.90
	min. total tank capacity	m^3	*1)					
LO pump *2)	capacity	m^3	Refer to GTD					
	capacity	l/min						
	delivery *3)	bar	4.0					
Nominal pipe diameter	A	DN	65	80	80	80	100	100
	B	DN	150	200	200	250	250	250
	C	DN	100	125	125	125	150	150

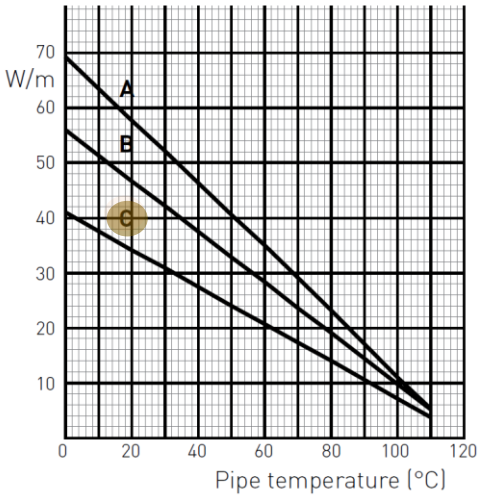
Bearing LO pipes
Transfer/dirty LO pipes
Overflow/drain pipes
Air vent pipes
Pipe connections
Pipes on engine

Q-Code	XXXXX	Standard	ISO; JIS
Modif.	(A) EAAD091530	Drawn date	20.11.2019
WIN GD Winterthur Gas & Diesel	Product W-2S	LUBRICATING OIL SYSTEM Separated TC lubricating Schmieroelsystem	
Units mm kg	NX	Basic Material	Net Weight 0,001
SURFACE PROTECTION SEE GROUP 0344	Made 05.12.2016 dki021 DH Kim	Scale -	Size A0 · Page 3/5 · Material ID PAAD245338
TOLERANCING PRINCIPLE ISO8015	Chkd 16.12.2016 wwa008 Wang	Design Group 9722	Drawing ID DAAD083642 · Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 16.12.2016 bha009 Haag		

DID - DIMENSIONAL DRAWING - Confidential

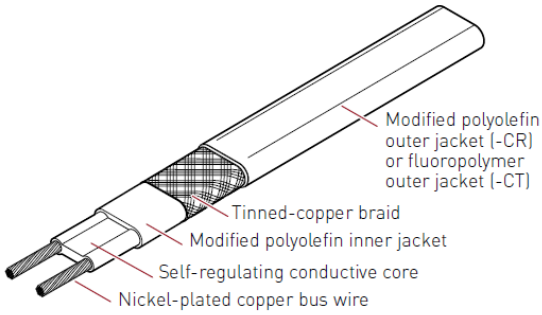
Self-Regulating Heating Cable 10QTVR2-CT

Order drawing



C 10QTVR2-CT

Heating cable construction



Specification:

Description:	10QTVR2-CT
Order No.:	391991-000
Area Classification:	Non-hazardous and hazardous locations
Traced surface type:	Metal and plastic
Chemical Resistance:	Exposure to aqueous inorganic chemicals: Use -CR (modified polyolefin outer jacket) Exposure to organic chemicals or corrosives: Use -CT (fluoropolymer outer jacket)
Supply Voltage:	200-277 VAC
Temperature Rating:	Maximum maintain or continuous exposure temperature (power on) 225°F (110°C) Maximum intermittent exposure temperature, 1000 hours (power on) 225°F (110°C) Minimum installation temperature –76°F (–60°C)
Minimum Bending Radius:	13 mm at 20°C 35 mm at -60°C
Height:	4.5 mm
Width:	11.8 mm
Weight:	0.126 kg/m

Supplier: PENTAIR
www.pentairthermal.com

MAXIMUM CIRCUIT LENGHT BASED ON TYPE 'C' CIRCUIT BREAKERS ACCORDING TO EN60898
SUPPLY VOLTAGE 230 VAC

Electrical protection sizing	Start-up temperature	Maximum heating cable length per circuit [m]
16A	-20°C	65
	+10°C	80
25A	-20°C	95
	+10°C	115
32A	-20°C	115
	+10°C	115
40A	-20°C	115
	+10°C	115

Substitute for:												PC	Q-Code	X	S	X	X	X
Modif	A	EAAD090454	05.03.2019															
		Number	Drawn Date		Number	Drawn Date		Number	Drawn Date		Number	Drawn Date						

WIN GD Winterthur Gas & Diesel

Product **W-2S**

Heating Element
Order Drawing

Made	24.10.2018	P. Kowalski	Main Drw.	Page 1 / 1	Material ID **PAAD308926**
Chkd	24.10.2018	R. Leutwyler	Design Group **0009**		
Appd	24.10.2018	W. Östreicher		Drawing ID **DAAD106761**	Rev **A**

MIDS - LUBRICATING-OIL-SYSTEM (DG9722)

WinGD X52DF/1.1/2.1

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2017-08-07	DRAWING SET	First web upload
2017-10-17	DAAD093728 DAAD093645	Main drg – new drawing (7cyl) Tank drg - new drawing (7cyl)
2017-12-22	DAAD093728 DAAD087210 DAAD095139	Main drg – new revision System drg – new revision (with iCAT) System drg – new drawing (without iCAT)
2018-05-03	DAAD097861	Drg set for 8cyl. – first web upload
2019-07-17	DAAD070533 DAAD061872 DAAD093645 DAAD097843 DAAD087210 DAAD087386 DAAD087387 DAAD097861	Main, tank and system drgs – new revision
2020-09-22	DAAD087210 DAAD095139 107.246.182 107.246.183 107.246.186 107.246.187 107.246.188 107.246.189 107.049.681 107.049.664 107.049.666 107.049.665 107.246.190 DAAD083642	System and tank assembly drgs – new revision

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2020-11-25	DAAD095139	System drg – new revision
2021-05-05	DAAD087386 DAAD087387 DAAD093728 DAAD097861 DAAD087210 DAAD095139 107.246.799	Main and system drgs – new revision Hydraulic jack plate position drg – new revision
2023-07-12	PAAD281046D	New revision

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