Available executions

Execution No.	Material ID	Cylinder No.	Attribute 2: Turbocharger lubrication	
			INTERNAL	EXTERNAL
001	PTAA058056	5		X
002	PTAA058059	5	X	
003	PAAD381281	6		X
004	PAAD381282	6	X	
A 005	PTAA092212	7		X
A 006	PTAA092214	7	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. X52-S2.0

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	npa101				Master Drawing Updated			
–	sna102	mhu019	20.04.2023	CNAA003507	New Master Design		–	–

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			A4	Item ID PTAA025640	Drawing Page/s	1/1

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
001	1	PAAD381280	LUBRICATING OIL SYSTEM			0.001
002	1	PTAA058055	LUBRICATING OIL DRAIN TANK			165
003	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
004	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.			
	5 X52-S2.0		

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	06.04.2023	CNAA003525	Drawing update		4	3
-	npa101	mhu019	05.04.2023	CNAA003511	New MainDesign		-	-

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

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

Dimension

Units	[m] [kg]	Basic Material				Net Weight	165
Main Design	Yes	Design Group	9722	Q-Code	XXXXX	Standard	WDS
Qty per	Engine	A4	Item ID	PTAA058056		BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
001	1	PAAD381280	LUBRICATING OIL SYSTEM			0.001
002	1	PAAD245338	LUBRICATING OIL SYSTEM			0.001
003	1	PTAA058055	LUBRICATING OIL DRAIN TANK			165
004	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
005	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.				
	5 X52-S2.0			

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
A	sde101	mhu019	06.04.2023	CNAA003525	Drawing update		4	3
-	npa101	mhu019	05.04.2023	CNAA003511	New MainDesign		-	-

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

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

Dimension

Units	[m] [kg]	Basic Material				Net Weight	165
Main Design	Yes	Design Group	9722	Q-Code	XXXXX	Standard	WDS
Qty per	Engine	A4	Item ID	PTAA058059		BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
1	1	PAAD381280	LUBRICATING OIL SYSTEM			0.001
3	1	PAAD381279	LUBRICATING OIL DRAIN TANK			165
5	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
6	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.	6 X52-S2.0			

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
-	dki021	mhu019	30.04.2021		-		-	-

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD252824

Bill Of Material

Dimension

Units	[m] [kg]	Basic Material					Net Weight	165
Main Design	Yes	Design Group	9722	Q-Code	XXXXX		Standard	WDS
Qty per	Engine	A4	Item ID	PAAD381281			BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
1	1	PAAD381280	LUBRICATING OIL SYSTEM			0.001
2	1	PAAD245338	LUBRICATING OIL SYSTEM			0.001
3	1	PAAD381279	LUBRICATING OIL DRAIN TANK			165
5	1	107.341.455.500	INSTRUCTION FOR FLUSHING			0.001
6	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.				
	6 X52-S2.0			

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
-	dki021	mhu019	30.04.2021		-		-	-

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

PAAD252825

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

Dimension

Units	[m] [kg]	Basic Material						Net Weight	165
Main Design	Yes	Design Group		9722	Q-Code	XXXXX		Standard	WDS
Qty per	Engine	A4	Item ID	PAAD381282				BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
001	1	PAAD381283	LUBRICATING OIL SYSTEM			0.001
002	1	PTAA092291	LUBRICATING OIL DRAIN TANK			240
003	1	107.341.455	INSTRUCTION FOR FLUSHING			
004	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.	7 X52-S2.0			

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
-	npa101	nhu019	06.05.2024	CNA005292	New MainDesign introduced	Approved	-	-

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

7 cylinder, internal TC LO

Bill Of Material

Dimension					7 cylinder, internal TC LO	
Units	[m] [kg]	Basic Material			Net Weight	165
Main Design	Yes	Design Group	9722	Q-Code X X M	Standard	WDS
Qty per	Engine	A4	Item ID	PTAA092214	BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
001	1	PAAD381283	LUBRICATING OIL SYSTEM			0.001
002	1	PAAD245338	LUBRICATING OIL SYSTEM FOR SEPARATED TC LUBRICATING			0
003	1	PTAA092291	LUBRICATING OIL DRAIN TANK			240
004	1	107.341.455	INSTRUCTION FOR FLUSHING			
005	1	PAAD178480	LUBRICATING OIL DRAIN TANK			0.001

Prod.	7 X52-S2.0			

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis		Activity Code	E	C
-	npa101	nmu019	06.05.2024	CXA005292	New MainDesign introduced	Approved		-	-

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

7 cylinder, external TC LO

Bill Of Material

Dimension							7 cylinder, external TC LO
Units	[m] [kg]	Basic Material				Net Weight	165
Main Design	Yes	Design Group	9722	Q-Code	X X M	Standard	WDS
Qty per	Engine	A4	Item ID	PTAA092212		BOM Page/s	01/01

SEQ NO	QTY	Item ID	Item Name / Dimension	Standard-ID	Basic Material	Net Weight
017	1 m	PAAD308926	HEATING ELEMENT 10QTVR2-CT			0.126

Prod.	X52-S2.0							

Change History

B	npa101	mhu019	10.07.2023	CNAA003997	Drawing Updated	4	3
A	sde101	mhu019	07.07.2022	CNAA002160	Drawing Updated	4	3
-	dki021	mhu019	30.04.2021	EAAD787496	-	-	-
Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis: Approved / Activity Code	E	C

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

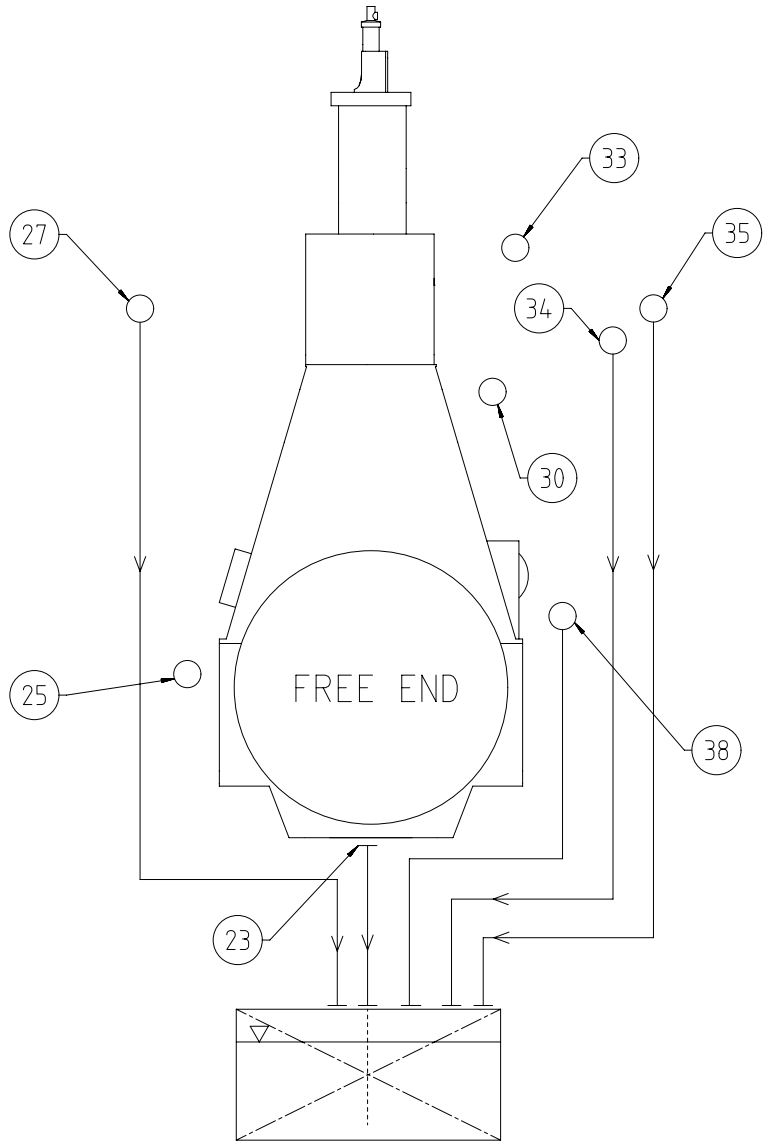
Bill Of Material

Dimension

Units [m] [kg]	Basic Material				Net Weight 0
Main Design	Design Group 9722	Q-Code X X M			Standard WDS
Qty per	A4	Item ID PAAD381280			BOM Page/s 01/01

SPECIFICATION WHICH MUST BE MET:

(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 - 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.
(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: 10-13 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) (B)	INLET - Cylinder lubricating oil - Cylinder lubricating oil temperature: 40^{+10}_{-5} °C. - Trace heating to be applied on the cylinder LO feed line on ship side. - Cylinder lubricating oil static pressure: min. 0.43 bar
(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.

Prod. X52-S2.0

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
B	npa101	mhu019	10.07.2023	CNAA008997	Drawing Updated		4	3
A	sde101	mhu019	07.07.2022	CNAA002160	Drawing Updated		4	3
–	dki021	mhu019	30.04.2021	EAAD787496	–		–	–

Approved

WIN GD Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM

separate BOM available

Dimension

Scale – NX

Units [mm] [kg]

Basic Material

Net Weight 0.000

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Main Design

Design Group 9722 Q-Code X X M

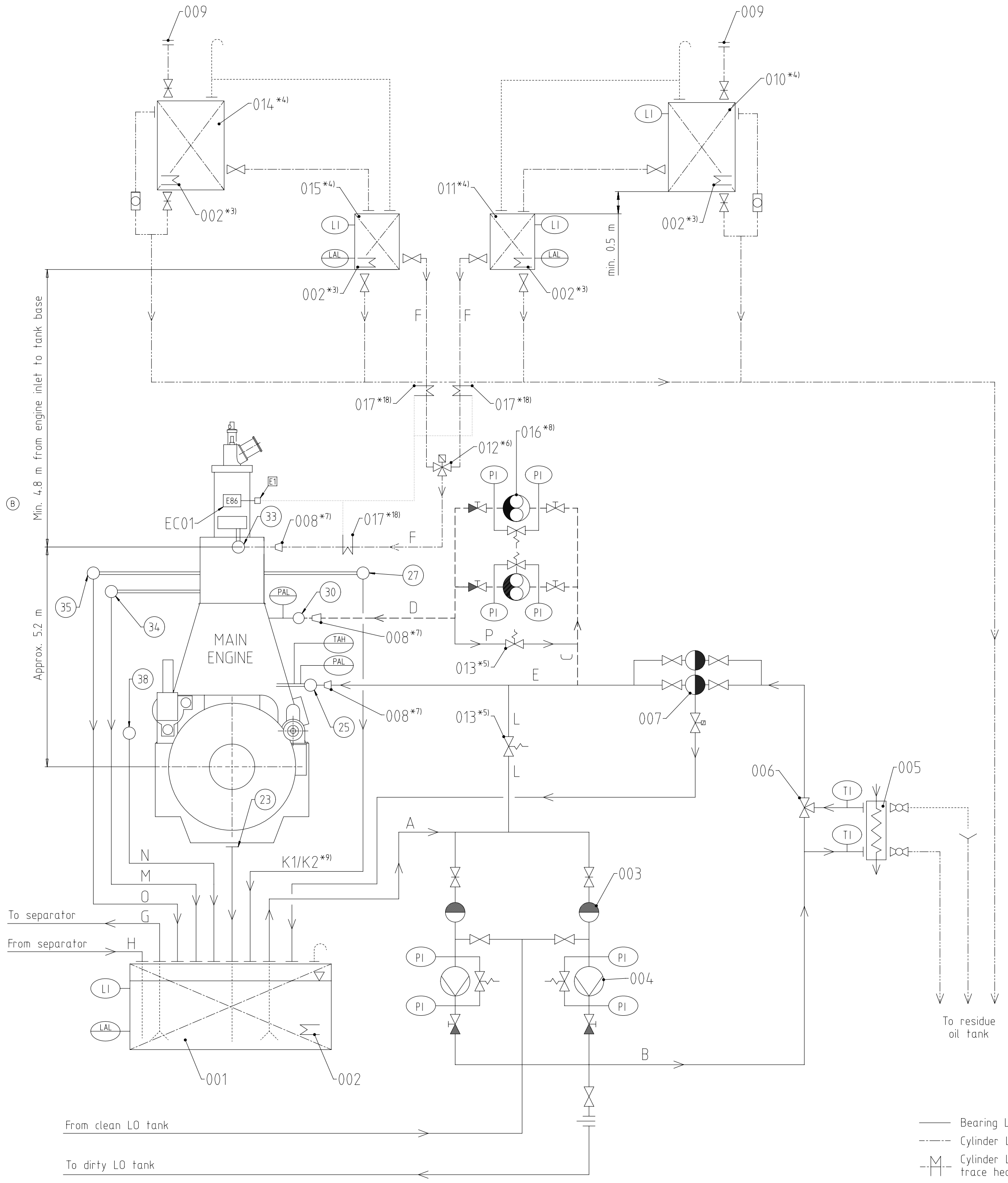
Standard WDS

Qty per A2

Item ID PAAD381280

Drawing Page/s 1/3

SYSTEM PROPOSAL
System oil and cylinder LO supply



Pos.	ENGINE COMPONENTS *17)
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 *9) *14) *15)
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

Number of cylinders			5	6	7	8
Main Engine X52-S2.0 R1 rated	power	(kW)	7500	9000	10500	12000
	speed	(rpm)	120			
Proposal for dimensioning *11)						
LO drain tank	capacity	(m³)	For capacities refer to drawing "LO drain tank-Filling Guideline"			
Main LO pump	capacity	(m³/h)	refer to GTD			
Cyl. LO storage tank	capacity	(m³)	Based on a feed rate of 1g/kWh (pulse)			
Cyl. LO service tank *16)	capacity	(m³)	0.7	0.8	0.9	1.0
Crosshead LO pump	capacity	(m³/h)	refer to GTD			
Nominal pipe diameter	A	DN	200	250	250	250
	B	DN	200	200	200	200
	C	DN	100	100	125	125
	D	DN	80	80	100	100
	E	DN	150	200	200	200
	F	DN	20	20	20	20
	G	The pipe diameters for the LO separator are sized according to the effective throughput capacity of the separator and according to the separator manufacturer's recommendations.				
	H					
	K1	DN	65	65	80	80
	K2	DN	80	80	80	80
	L	DN	80	80	80	80
	M	DN	65	65	65	65
	N	DN	50	50	50	50
	O	DN	65	65	65	65
	P	DN	32	32	32	40

Table 1: LO content on engine side

Cylinder	Volume
5	1455 l
6	1665 l
7	1873 l
8	2029 l

Pos.	SYSTEM COMPONENTS *1)
001	Lubricating oil drain tank (sump tank)
002	Heating device
003	Suction strainer *12)
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 *13) *14)
008	Transition piece (adaptor) *7)
009	Deck connection
010	Low BN cylinder lubricating oil storage tank *4)
011	Low BN cylinder lubricating oil service tank *4)
012	Three-way valve, manually or remotely operated *6)
013	Pressure regulating valve
014	High BN cylinder lubricating oil storage tank *4)
015	High BN cylinder lubricating oil service tank *4)
016	Crosshead lubricating oil pump *8)
017	Electrical trace heating cable (detailed spec. is linked on page 1)

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) Optional heating coil

*4) The cylinder LO service tank with metering 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.

*5) The bypass line with the 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).

*6) 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 change-over.

*7) Installed as required (check with the "Pipe Connection Plan")

*8) The LO pumps (pos. 004) and the crosshead LO pumps (pos. 016) are to be interlocked so that the crosshead LO pumps never can run alone.

*9) The pipe diameter varies depending on the installed TC type.
Project-specific values are provided in the relevant pipe connection plan of DG8020.
As rough guidance please observe the following values:
K1: Pipe diameter for engines equipped with ABB turbocharger
K2: Pipe diameter for engines equipped with MHI turbocharger

*11) All capacities and the given pipe diameters are valid for the mentioned engine rating, including the oil amount for integrated TC lubrication, but excluding additional required oil for applied damper and/or PTO gear and/or all other externally installed ancillaries which are fed by system oil. To make the project specific layout, under consideration of the actual required flow rates / capacities, the guideline as given within DG9730 - "Fluid velocities and flow rates, recommended values for pipework of diesel plants" has to be observed.

*12) Mesh size according to pump suppliers recommendation.

*13) 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.

*14) 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.

*15) 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.

*16) The proposed cylinder LO services tank capacity takes into account a filling interval of 2 days based on the above mentioned feed rate.

*17) To be delivered by the engine manufacturer, i.e. already equipped on engine side.

*18) To be connected to the control box (EC01) on engine side.

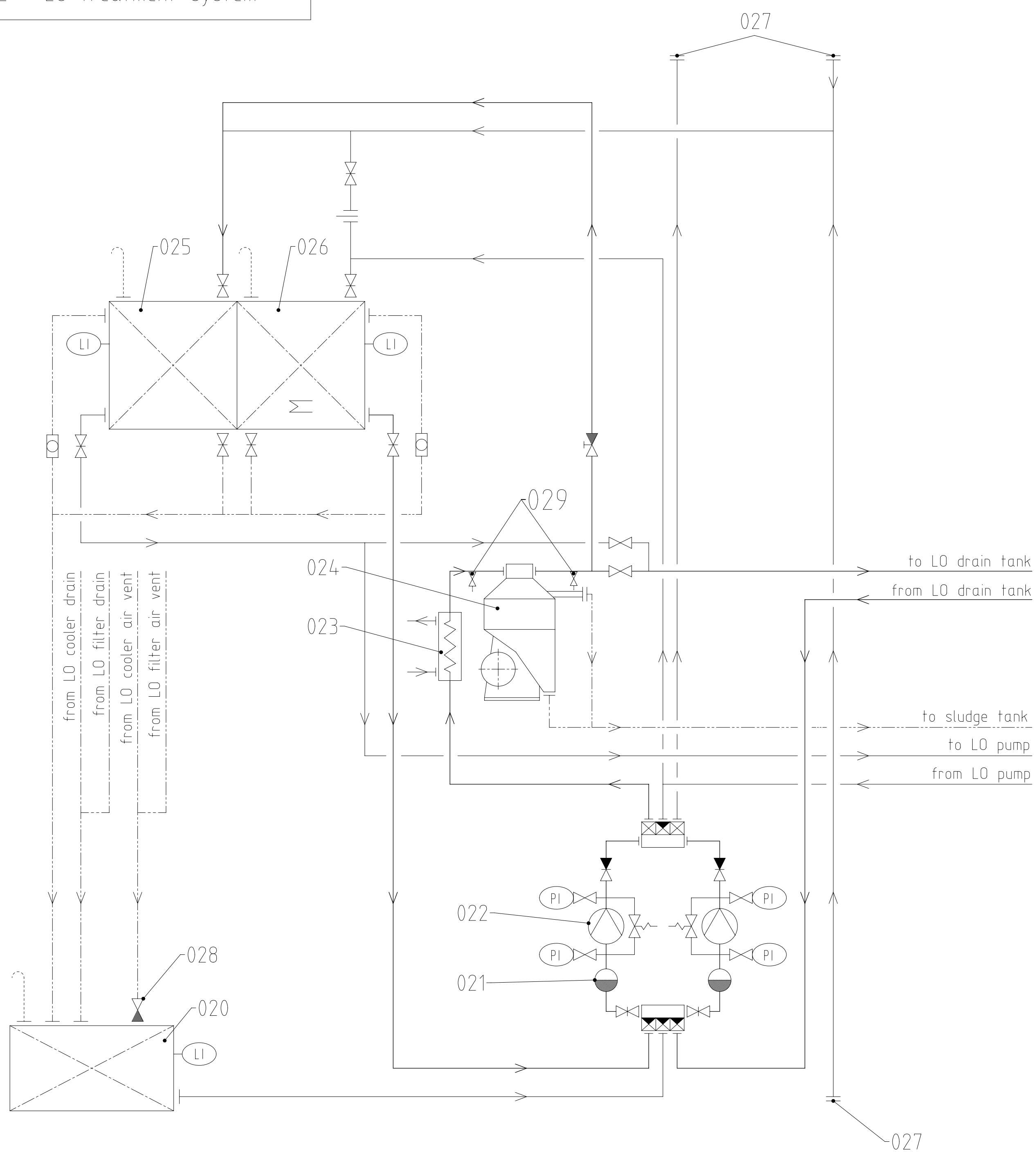
Legend:
- Bearing LO pipes
- Cylinder LO pipes
- Cylinder LO pipes trace heated and insulated
- Pipes on engine
- Transfer/dirty LO pipes
- Overflow/drain pipes
- Air vent pipes
- Crosshead LO pipes
- Pipe connections
- Electrical interface connections

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

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code		
B	npa101	nhn019	10.07.2023	CNAA003997	Drawing Updated	Approved	4	3

[mm] [kg] 1:1 NX A0 Item ID PAAD381280 Drawing Page/s 2/3

SYSTEM PROPOSAL - LO treatment system



Pos.	SYSTEM COMPONENTS *1)	
020	Residue oil tank	
021	Suction strainer *12)	
022	Lubricating oil pump	one for transfer and separator service
		one for separator service
023	Lubricating oil heater with relief valve and temperature control	
024	Self-cleaning centrifugal separator	
025	Clean lubricating oil tank	
026	Dirty lubricating oil tank	
027	Deck connection	
028	Float non-return valve	
029	LO sampaling cock *20)	

X52-S2.0			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	capacity	(l/h)	1020	1230	1430	1640
Residue oil tank	capacity	(m³)	Depending on ship's requirements			

Remarks:

- 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' recommendations.

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

*12) Mesh size according to pump suppliers recommendation.

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

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

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

Change	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis
	B	npa101	mhu019	10.07.2023	CNAA00997	Drawing Updated

Approved

[mm] [kg] 1:1 A1 NX

Item ID PAAD381280

Drawing Page/s 3/3

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
001	1	107.246.799.200	PLATE			15
002	2	PAAD381278	VERTICAL OIL DRAIN			75

Prod.								
	X52-S2.0 X52DF-S1.0	X52DF-S2.0						

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis		Activity Code		
A	sjo101	mhu019	10.11.2023	CNAA004295	Drawing updated			4	3
-	npa101	mhu019	05.04.2023	CNAA003511	new Design			-	-
						Approved			

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL DRAIN TANK

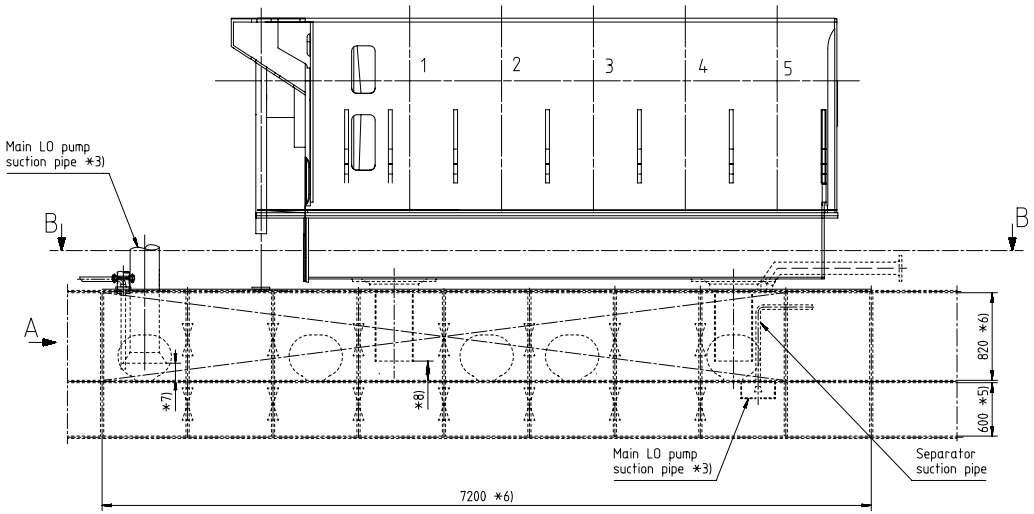
FOR STANDARD ENGINE SEATING

Bill Of Material

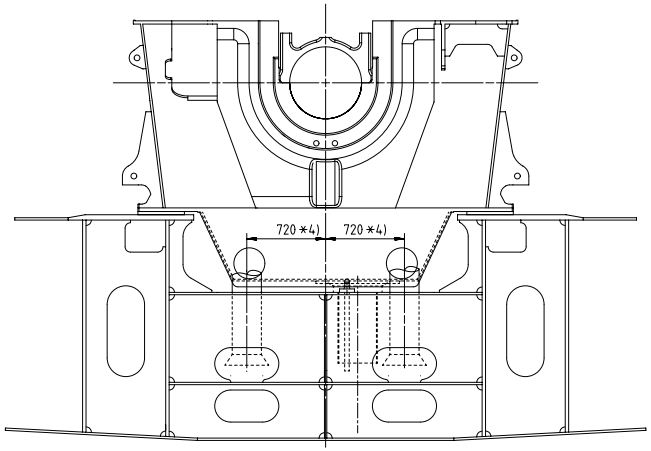
Dimension

Units [m] [kg]	Basic Material			Net Weight	165
Main Design	Design Group	9722	Q-Code X X M	Standard	WDS
Qty per	A4	Item ID	PTAA058055	BOM Page/s	01/01

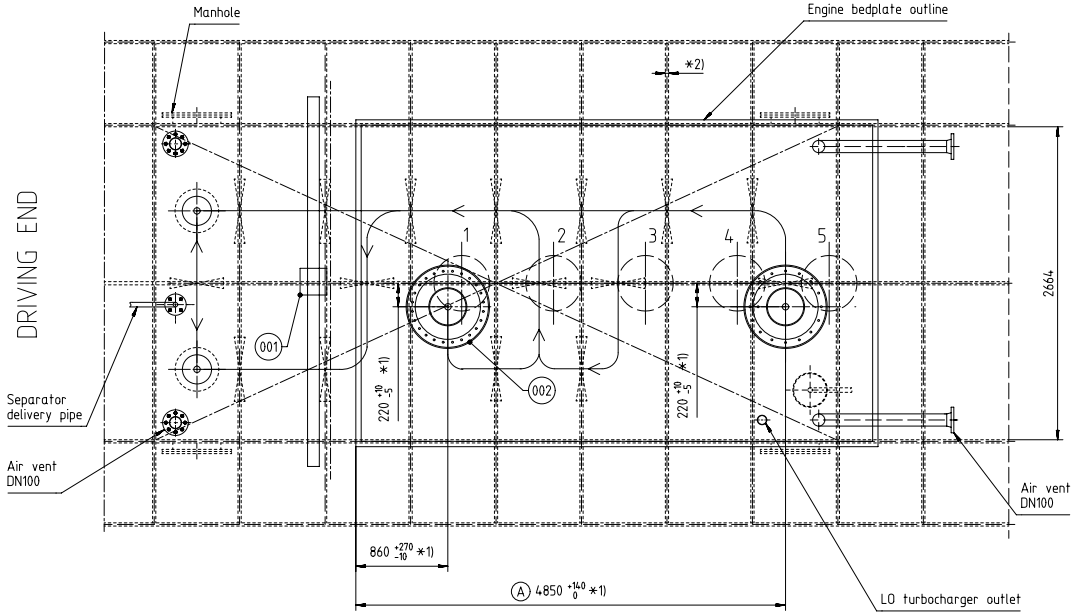
TANK PROPOSAL



A (DRIVING END)



B-B



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.

Proc.	X52-S2.0								
Change History	A	sjo101	mhu019	10.11.2023	CNAA004235	Drawing updated	4	3
	-	npa101	mhu019	05.04.2023	CNAA003511	new Design	-	-
	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C

Approved

WIN GD Winterthur Gas & Diesel

LUBRICATING OIL DRAIN TANK
FOR STANDARD ENGINE SEATING

separate BOM available

Dimension

Scale 1:25 | NX | Units [mm] [kg] | Basic Material | Net Weight 165.0

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	A1	Item ID	PTAA058055	Drawing Page/s	1/1

SEQ NO	QTY	Item ID	Item Name Dimension	Standard-ID	Basic Material	Net Weight
001	1	107.246.799.200	PLATE			15
002	2	PAAD381278	VERTICAL OIL DRAIN			75

Prod.	X52-S2.0 X52DF-S1.0	X52DF-S2.0						

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
B	sjo101	mhu019	10.11.2023	CNAA004295	Drawing updated		4	3
A	sde101	mhu019	19.01.2022	CNAA001373	drawing updated		4	3
-	dki021	mhu019	30.04.2021	EAAD787496	-		-	-

Approved

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL DRAIN TANK

FOR STANDARD ENGINE SEATING

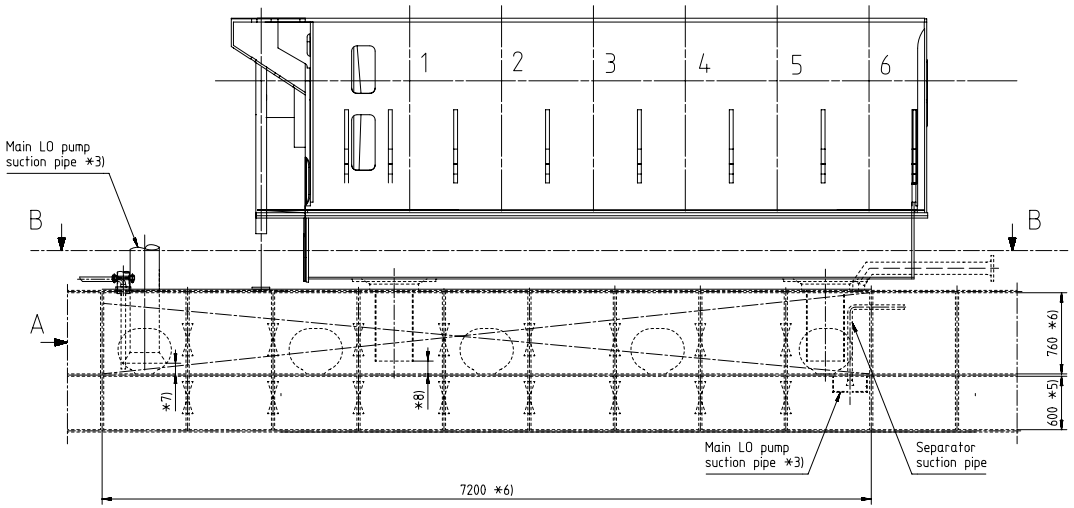
Bill **O**f **M**aterial

Dimension

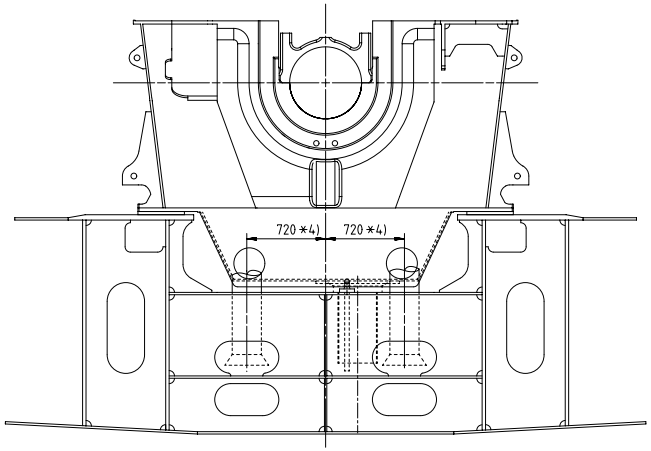
Units [m] [kg]	Basic Material			Net Weight	165
Main Design	Design Group	9722	Q-Code X X M	Standard	WDS
Qty per	A4	Item ID	PAAD381279	BOM Page/s	01/01

TANK PROPOSAL

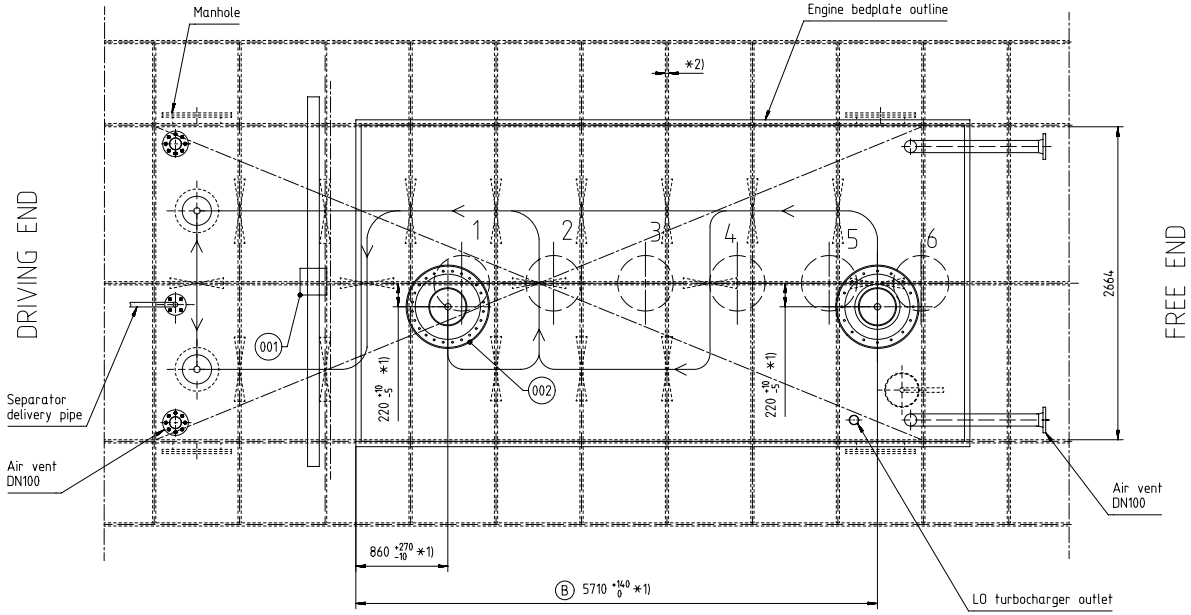
6X52-S2.0/52DF-S1.0



A (DRIVING END)



B-B



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.

Proj.	X52-S2.0 X52DF-S1.0	X52DF-S2.0							
Change History	B	sja101	mhu019	10.11.2023	CNAA001235	Drawing updated	4	3
	A	sde101	mhu019	19.01.2022	CNAA001373	drawing updated	4	3
	-	dki021	mhu019	30.04.2021	EAAD787496	-	-	-
	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C

Approved

WIN GD Winterthur Gas & Diesel

LUBRICATING OIL DRAIN TANK
FOR STANDARD ENGINE SEATING

separate BOM available

Dimension

Scale 1:25 NX | Units [mm] [kg] | Basic Material | Net Weight 165.0

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	A1	Item ID	PAAD381279	Drawing Page/s	1/1

SEQ NO	QTY	Item ID	Item Name / Dimension	Standard-ID	Basic Material	Net Weight
001	1	107.246.799.200	PLATE			15
002	3	PAAD381278	VERTICAL OIL DRAIN			75

Prod.								
	X52-S2.0 X52DF-A-S1.0	X52DF-M-S1.0 X52DF-S1.0	X52DF-S2.0					

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
-	npa101	nmu019	06.05.2024	CNAA005292	new Design	Approved	-	-

WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL DRAIN TANK

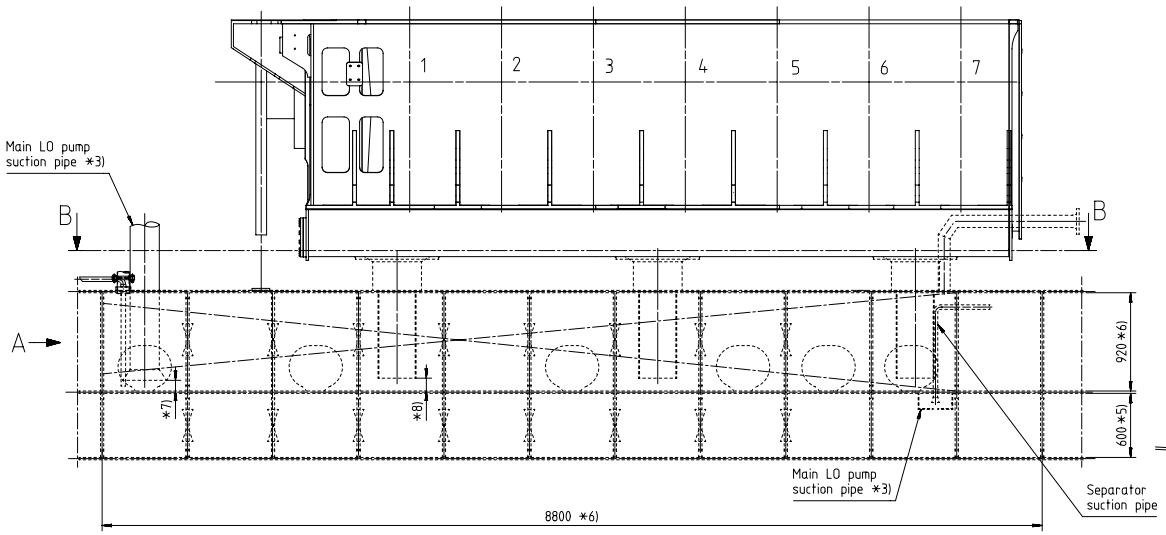
FOR STANDARD ENGINE SEATING

Bill Of Material

Dimension

Units [m] [kg]	Basic Material			Net Weight	240
Main Design	Design Group	9722	Q-Code X X M	Standard	WDS
Qty per	A4	Item ID	PTAA092291	BOM Page/s	01/01

TANK PROPOSAL



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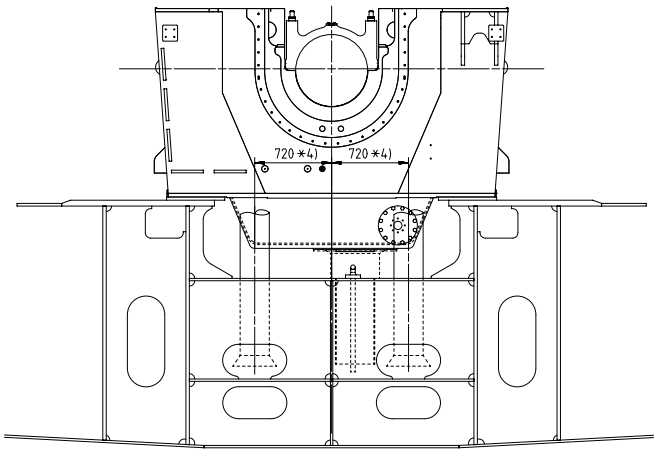
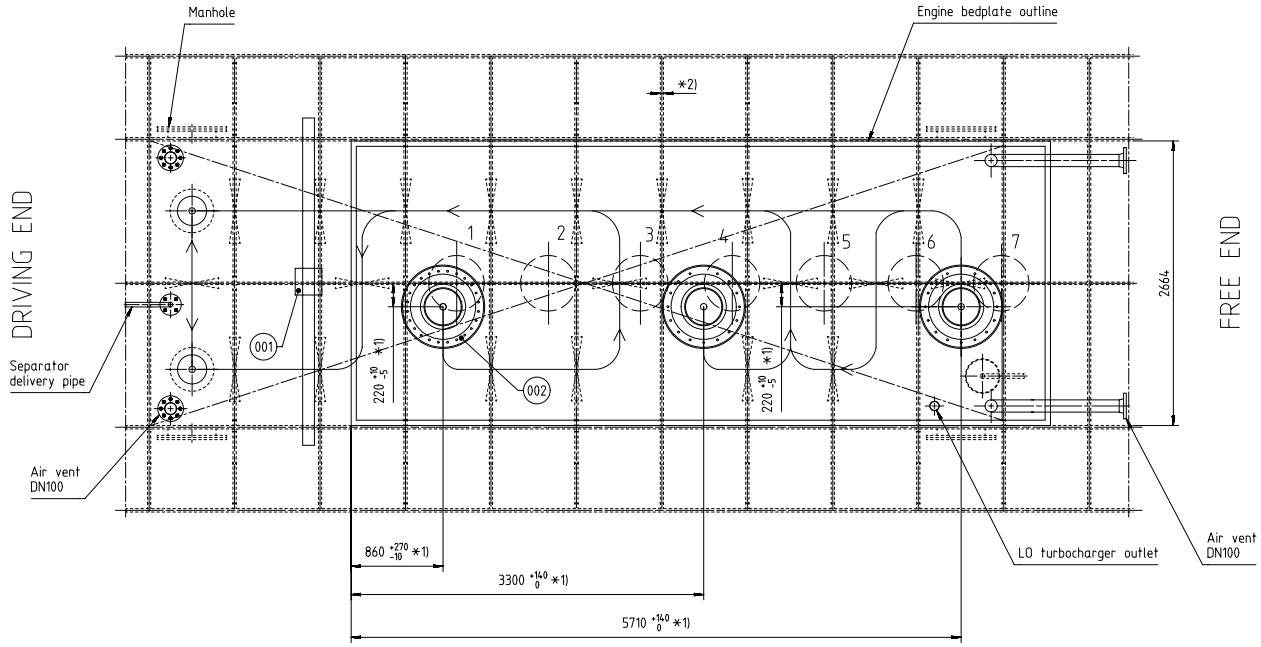


B-B



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.

Proj.	X52-S2.0 X52DF-A-S1.0	X52DF-M-S1.0 X52DF-S1.0	X52DF-S2.0									
Change History												
-	npa101	mhu019	06052024	CMA005232	new Design						-	-
Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis					Activity Code	E	C

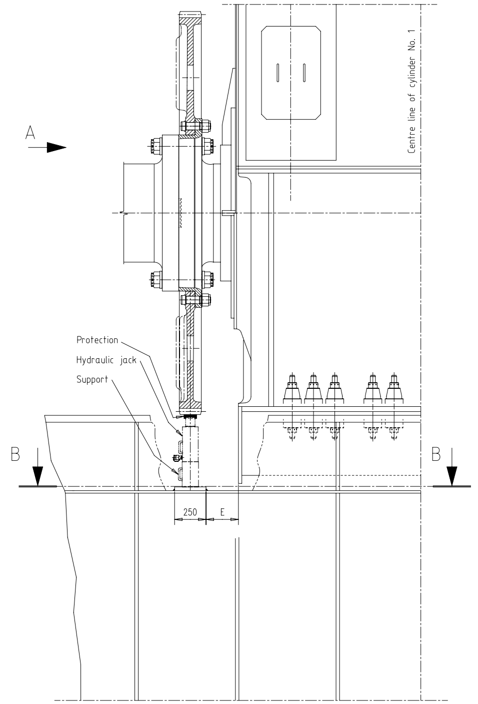
WIN GD Winterthur Gas & Diesel

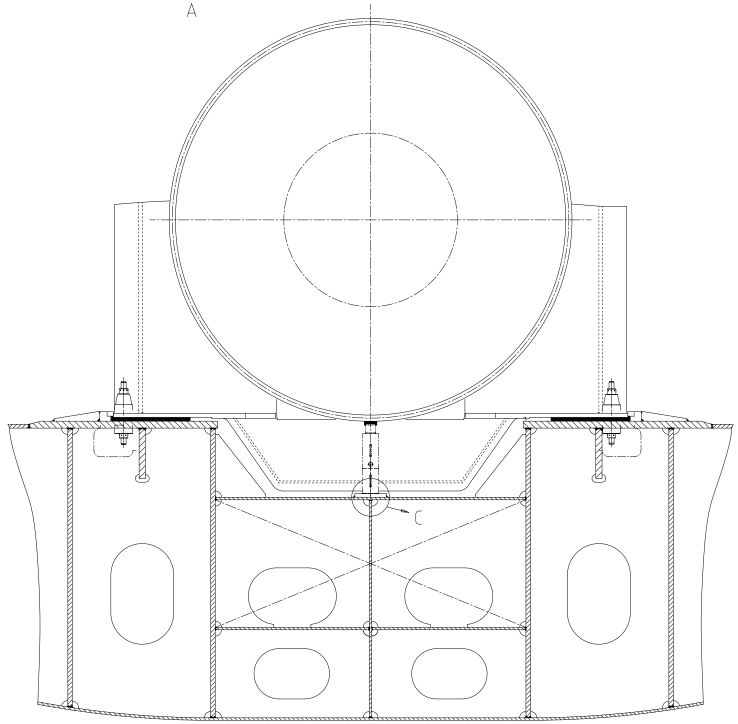
LUBRICATING OIL DRAIN TANK
FOR STANDARD ENGINE SEATING

separate BOM available

Scale 1:25	NX	Dimension	Units [mm] [kg]	Basic Material		Net Weight	240.0
Main Design	Design Group 9722	Q-Code X X M	Standard WDS				
Qty per	A1	Item ID PTAA092291	Drawing Page/s 1/1				

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





(J)

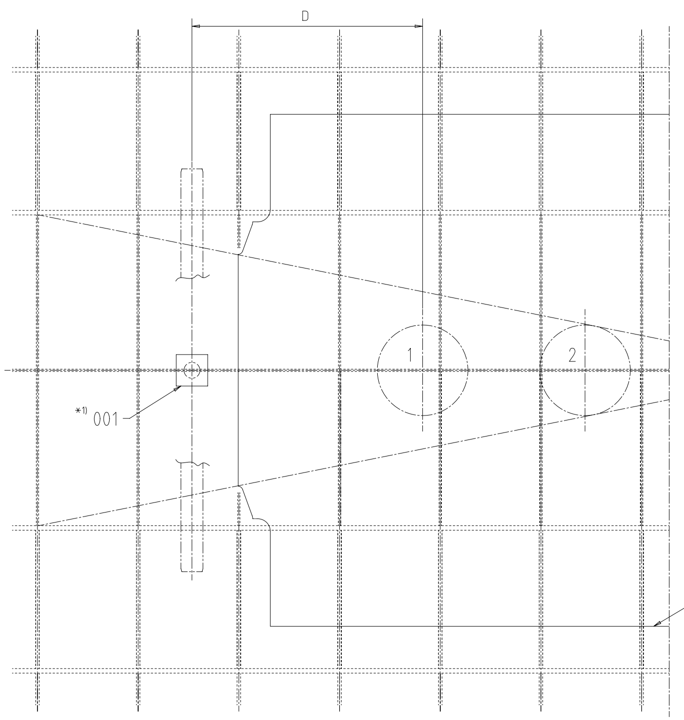
ENGINE TYPE	D (mm)	E *2) (mm)
RT-flex50-D/DF	1387	172
X35-B	1021	130
X40-B/X40DF-1.0	1170	172
X52/X52DF/X52DF-1.1/X52DF-2.1 X52DF-M-1.0/X52DF-A-1.0	1560	247
X52-S2.0/X52DF-S1.0/X52DF-S2.0 X52DF-M-S1.0/X52DF-A-S1.0	1371	247
X62-B/X62DF/X62DF-1.1/X62DF-2.1 X62DF-M-1.0/X62DF-A-1.0	1888	343
X62-S2.0/X62DF-S1.0/X62DF-S2.0 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:

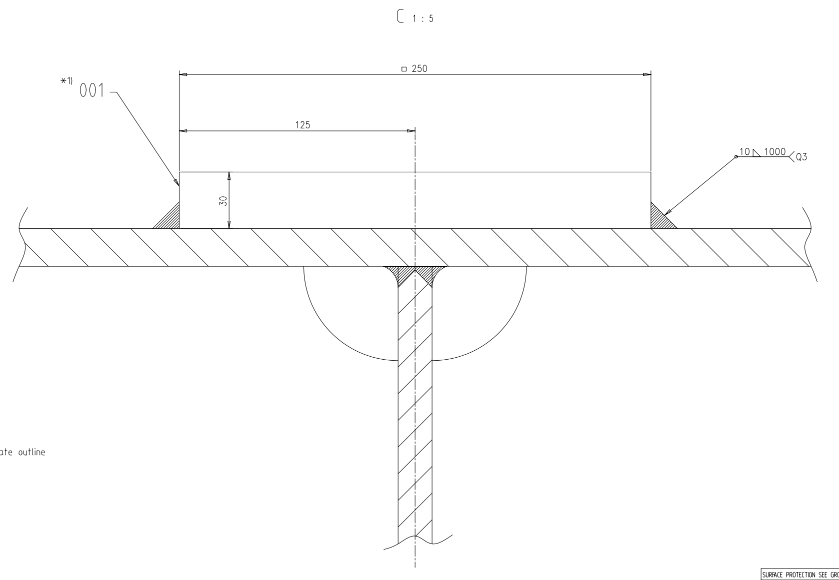
*1) Clear access to the plate is required for supporting the hydraulic jack during flywheel lifting operations.

*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

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

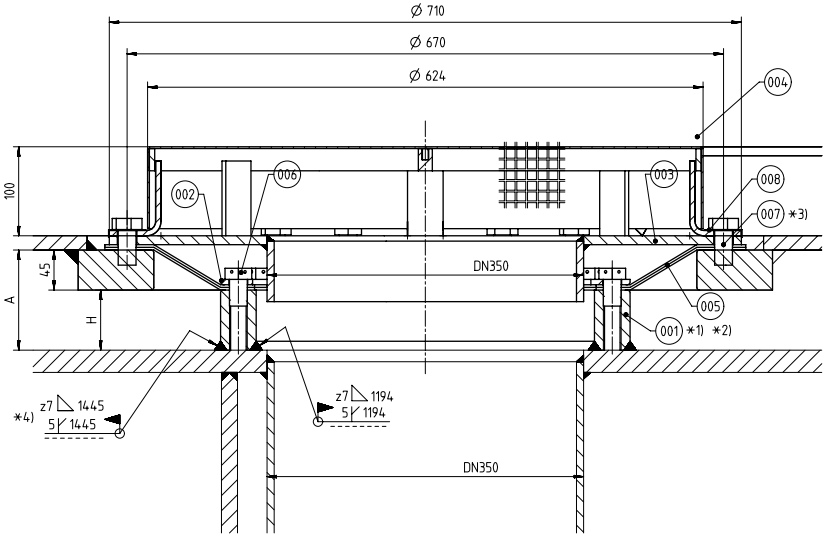
Qty per | A0 | Item ID 107.246.799.200 | Drawing Page/s 1/2

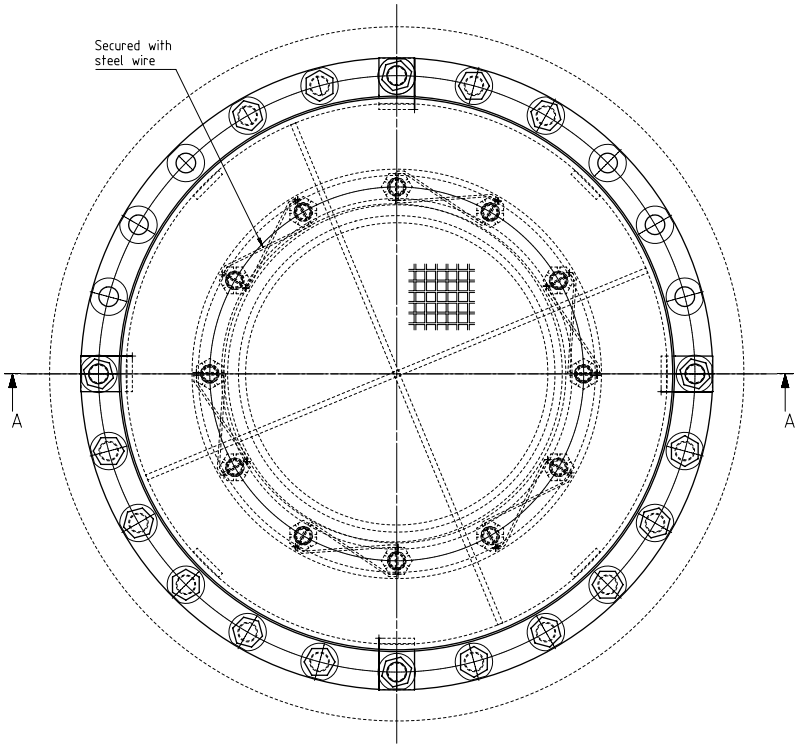
SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

SECTION A-A





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.

*4) No specific quality level required. Oil tight is fundamental.

A	To be measured after alignment of the engine
H	A - 45 mm

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
24	008	015.507.360.910	TAB WASHER 21	DIN 93	Steel Zn 5 bk	0,1
24	007	015.151.044.261	HEXAGON HEAD SCREW M20x40	ISO 4017	8.8	0,155
12	006	015.151.374.201	HEXAGON HEAD SCREW M20x30		8.8	0,12
2	005	PAAD104199	RUBBER GASKET	DAAD032827	NBR Perbunan	1,5
1	004	PAAD381274	OIL STRAINER	DAAD143410		8,3
1	003	PAAD104189	COVER	DAAD032819		24,9
1	002	PAAD104051	RING	DAAD032783	W-FU-235-JR	2,4
1	001	PAAD104868	WELDING FLANGE	DAAD032919	W-FU-235-JR	29,0

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

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

WIN GD Winterthur Gas & Diesel

Product W-2S

VERTICAL OIL DRAIN

Oelablauf vertikal

Units mm kg | NX | Basic Material | Net Weight 75

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made 30.04.2021 dki021 DH.Kim | Chkd 30.04.2021 jpi101 Pickup | Appd 30.04.2021 mhu019 Hug

Scale 1:3 | Design Group 9722 | Size A1 | Page 1/1 | Material ID PAAD381278

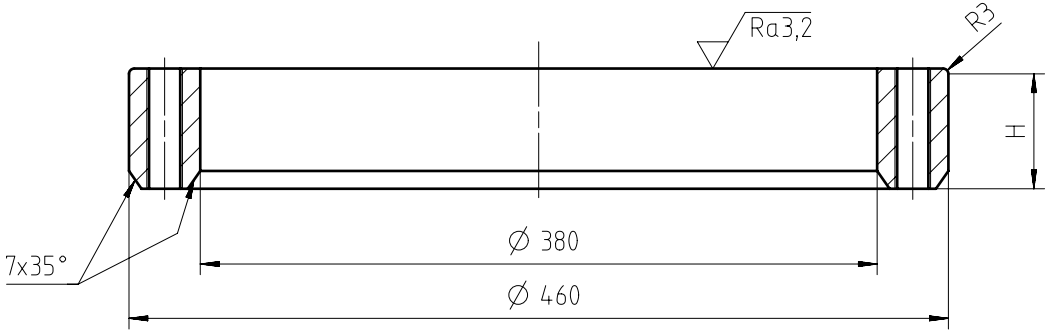
Drawing ID DAAD143415 | Rev. -

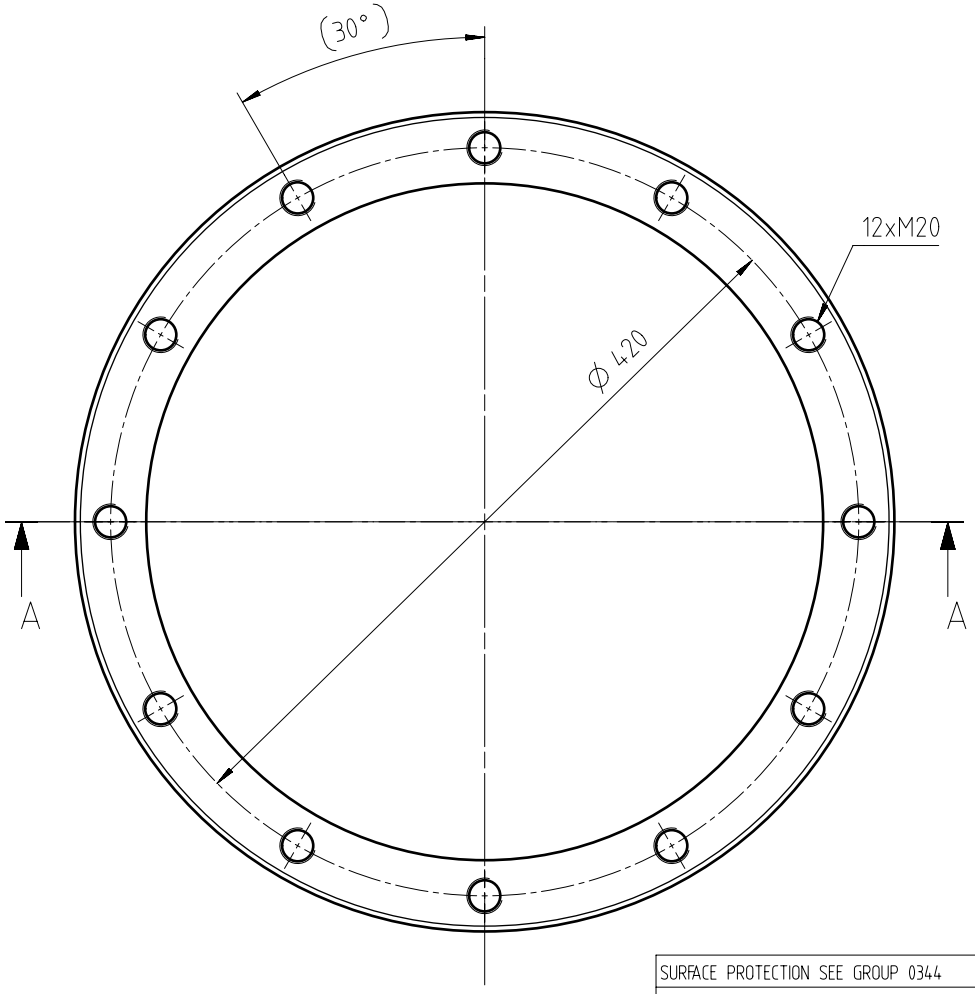
ISO - DIMENSIONAL DRAWING - Confidential

Approved

B

SECTION A-A





Ra12,5 (√) SHARP EDGES REMOVED

H depends on chock thickness

H = A - 45 mm

for the relation of A see Drawing DAAD033160

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	EAAD084385	07.04.2015	B	EAAD091530	28.01.2020						

WIN GD Winterthur Gas & Diesel

Product W-2S

WELDING FLANGE

Anschweissflansch

Units	mm kg	NX	Basic Material	W-FU-235-JR	Net Weight 29
Made	05.11.2012 asex06 A.Sekulic		Scale 1:3	Size A3	Page 1/1	Material ID PAAD104868
Chkd	03.12.2012 mhu019 Hug		Design Group 9720	Drawing ID DAAD032919	Rev. B
Appd	03.12.2012 wwr001 Wroblewski				

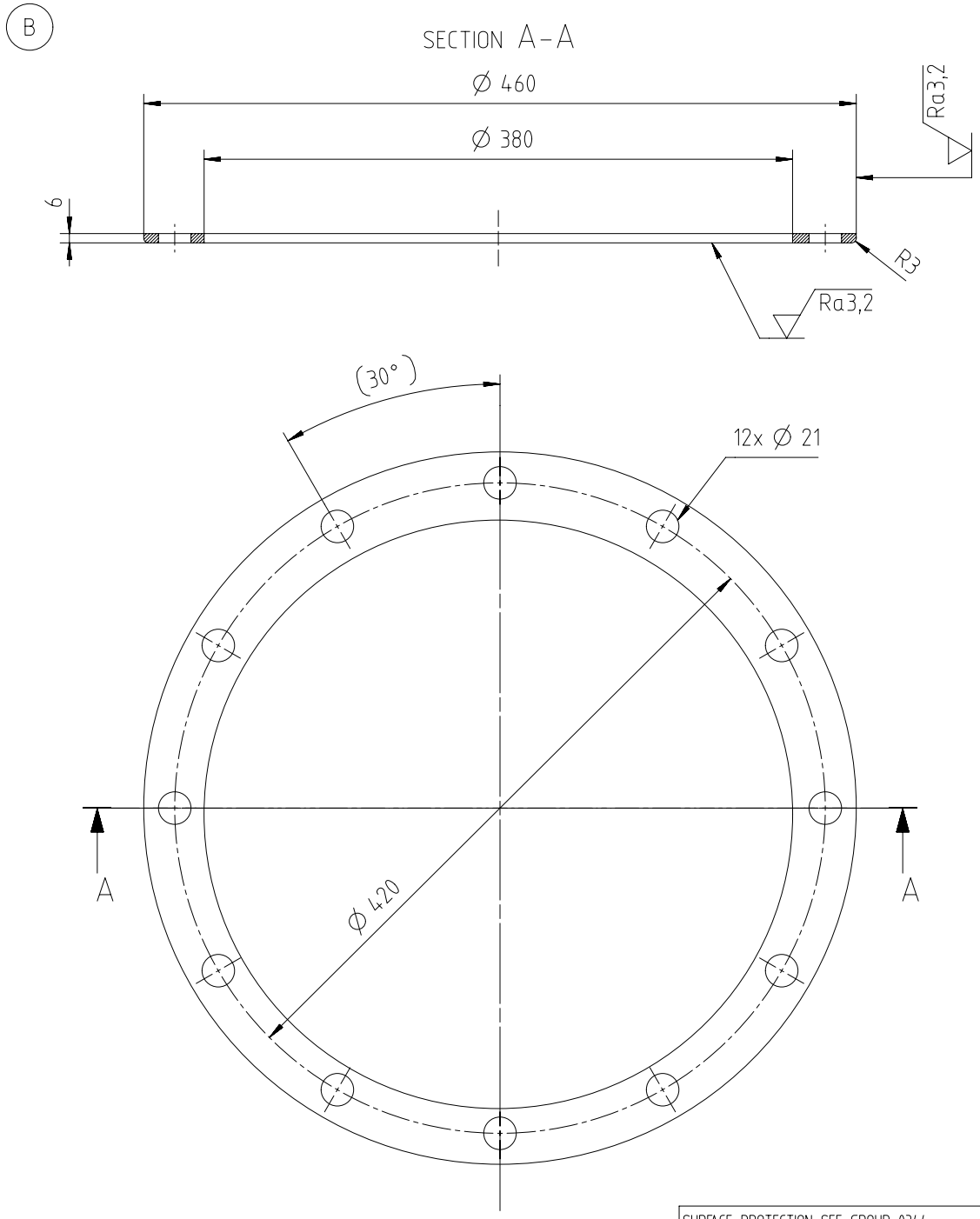
SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Approved

DID - DIMENSIONAL DRAWING - Confidential



Ra12,5 (✓) SHARP EDGES REMOVED

Free space for lic.								Q-Code XXXXX		Main Drw.		
								Standard ISO; JIS				
Modif.	A	EAAD084385	07.04.2015	B	EAAD091530	28.01.2020						
		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date

WIN GD Winterthur Gas & Diesel

Product W-2S

RING

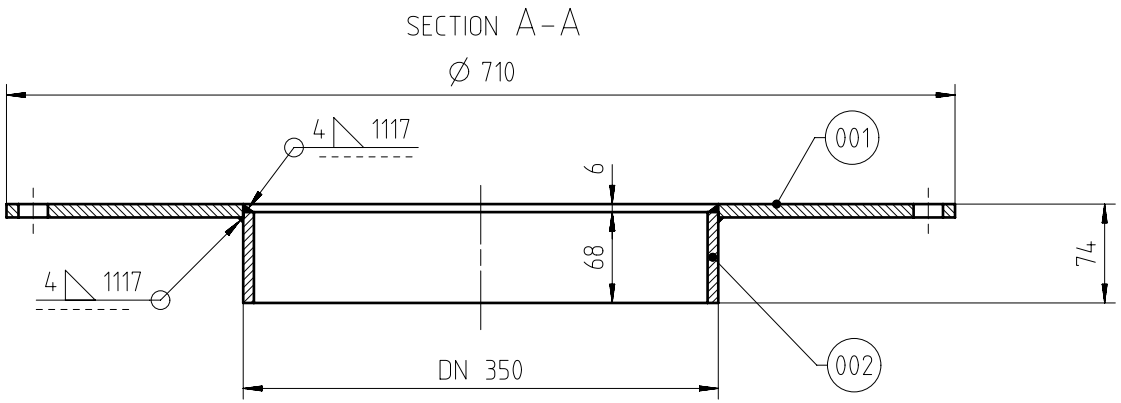
Ring

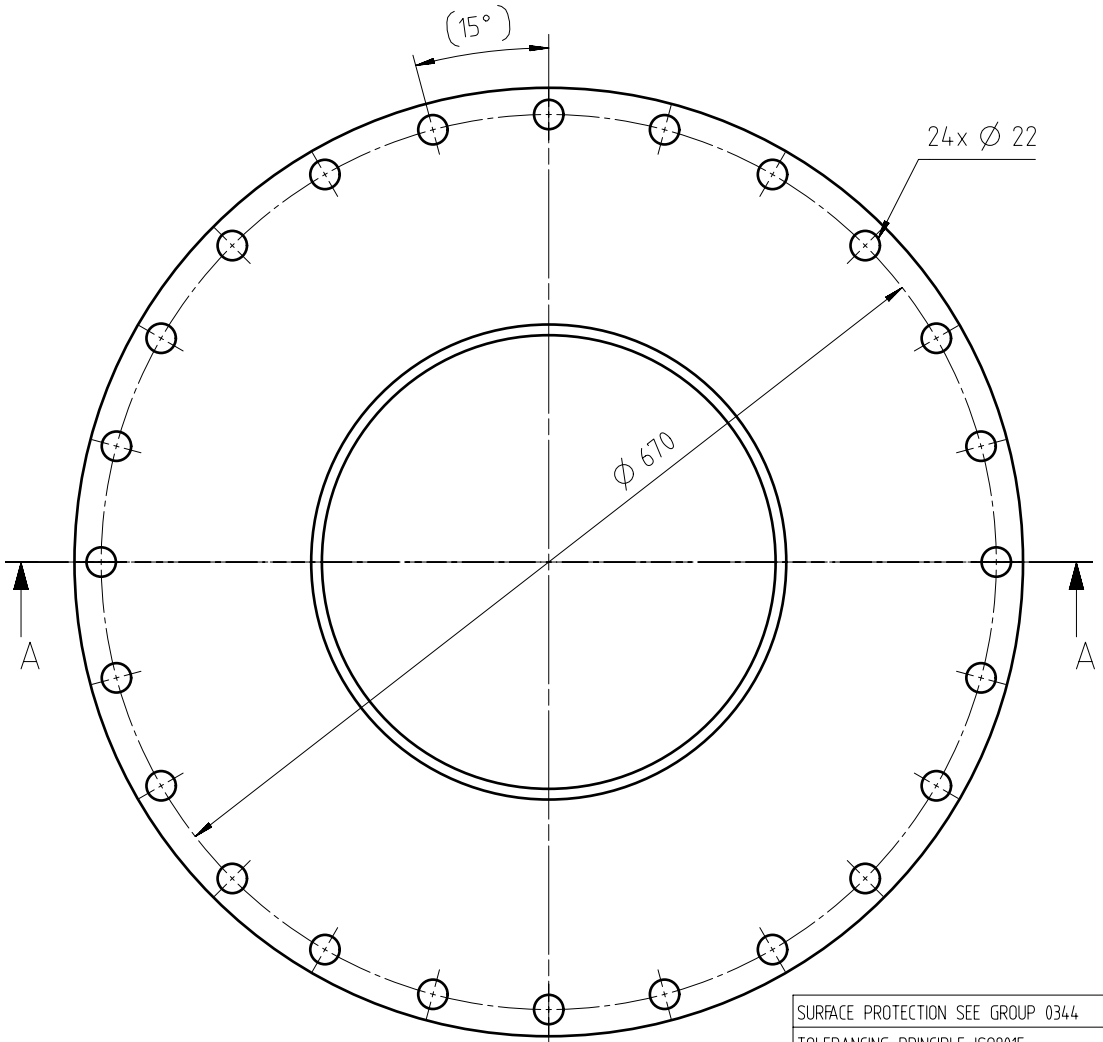
Units mm kg	NX		Basic Material W-FU-235-JR			Net Weight 2,4
Made 30.10.2012 asex06 A.Sekulic			Scale 1:3	Size A3	Page 1/1	Material ID PAAD104051
Chkd 03.12.2012 mhu019 Hug			Design Group 9722	Drawing ID DAAD032783		Rev. B
Appd 03.12.2012 wwr001 Wroblewski						

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

Approved

DID - DIMENSIONAL DRAWING - Confidential





QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	002	PAAD349288	TUBE	DAAD126868	W-FU-235-JR	2,4
1	001	PAAD104141	PLATE	DAAD032811	W-FU-235-JR	22,5

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	EAAD084385	07.04.2015	B EAAD091530	29.01.2020				

WIN GD Winterthur Gas & Diesel

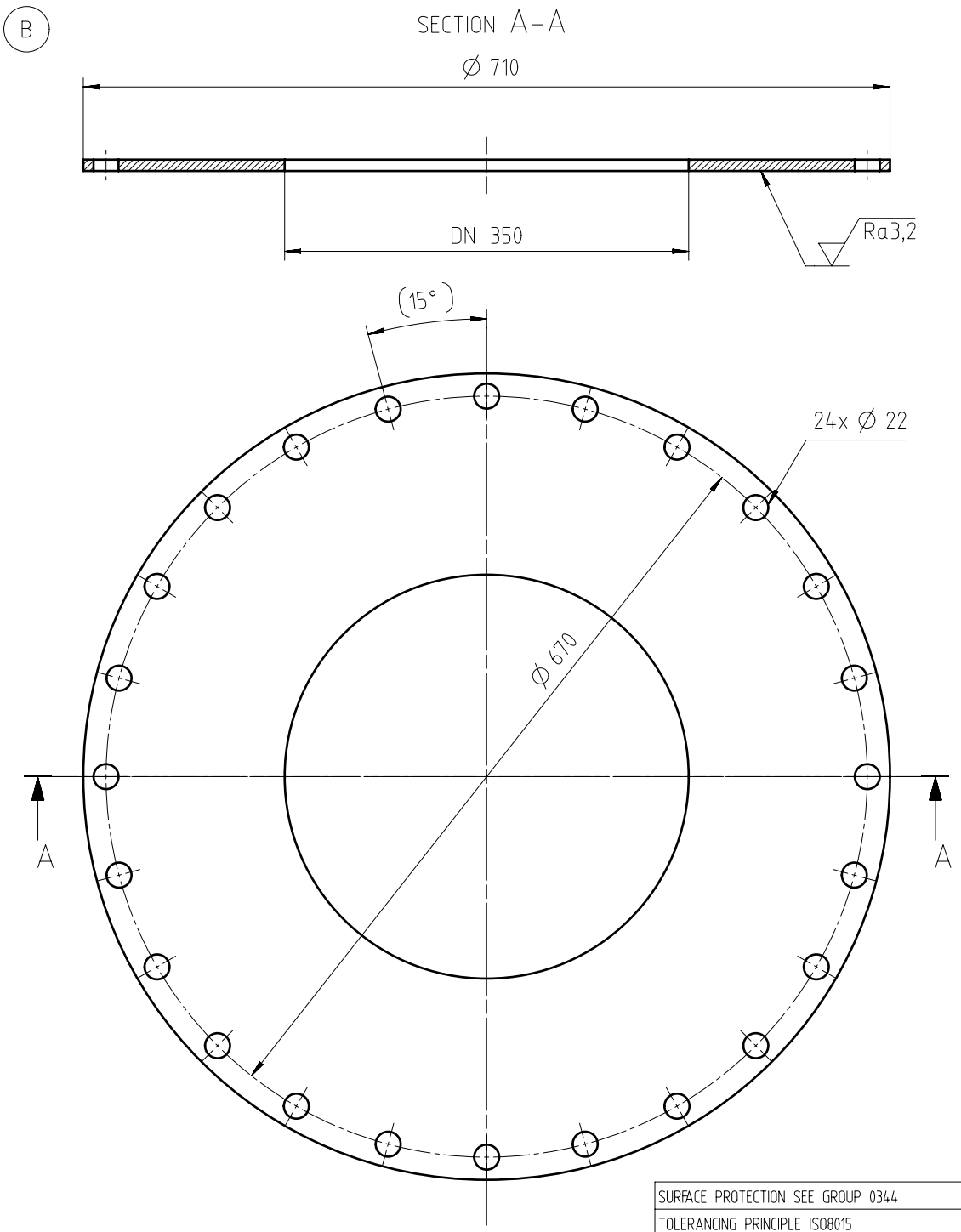
Product W-2S

COVER
VERTICAL OIL DRAIN
Deckel

Units mm kg	NX	Basic Material			Net Weight 24,9
Made 31.10.2012 asex06 A.Sekulic	Scale 1:4	Size A3	Page 1/1	Material ID PAAD104189	
Chkd 04.12.2012 mhu019 Hug	Design Group 9722	Drawing ID DAAD032819		Rev. B	
Appd 04.12.2012 wwr001 Wroblewski					

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

DID - DIMENSIONAL DRAWING - Confidential



Ra12,5 (✓) SHARP EDGES REMOVED

Free space for lic.										Q-Code XXXXX		Standard ISO; JIS	Main Drw.
Modif.	A	EAAD084385	07.04.2015	B	EAAD091530	28.01.2020							
		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date	

WIN GD Winterthur Gas & Diesel

Product W-2S

PLATE

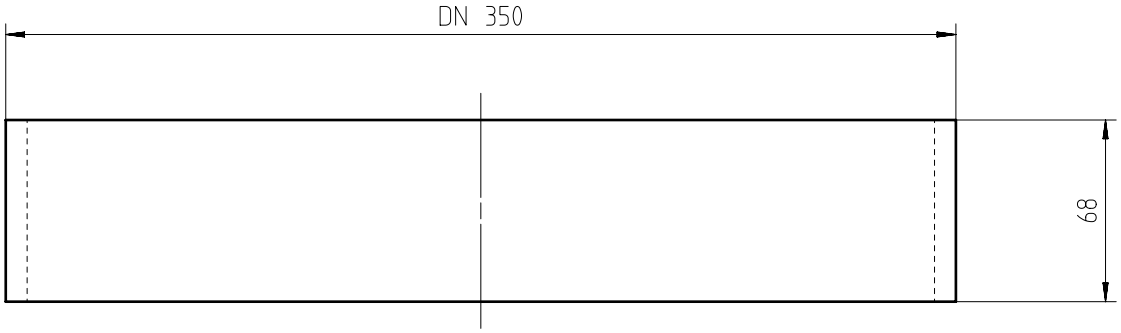
Blech

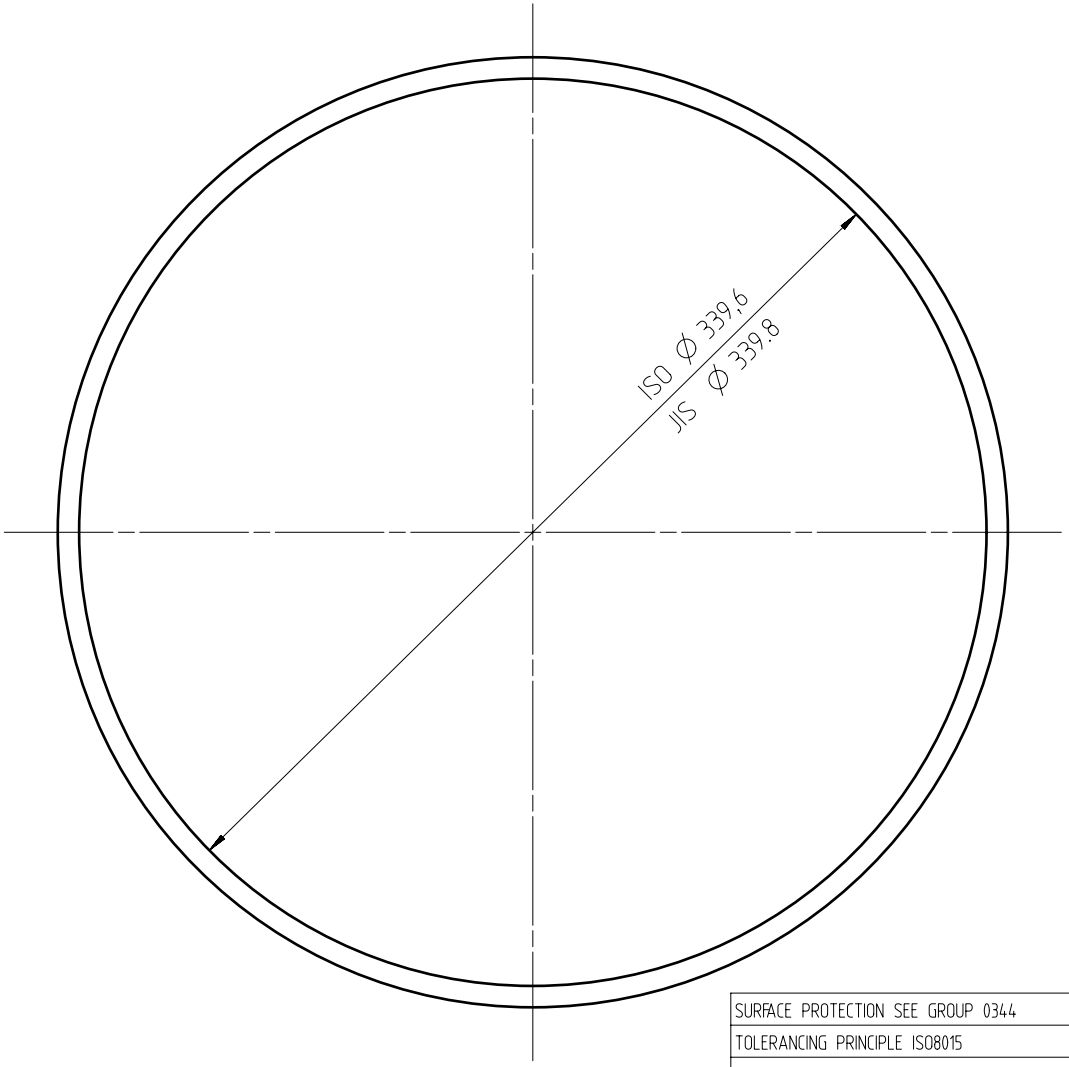
Units mm kg	NX		Basic Material W-FU-235-JR			Net Weight 22,5
Made 31.10.2012 asex06 A.Sekulic	Scale 1:4	Size A3	Page 1/1	Material ID PAAD104141		
Chkd 03.12.2012 mhu019 Hug	Design Group 9720	Drawing ID DAAD032811			Rev. B	
Appd 03.12.2012 wwr001 Wroblewski						

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

Approved

DID - DIMENSIONAL DRAWING - Confidential





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		

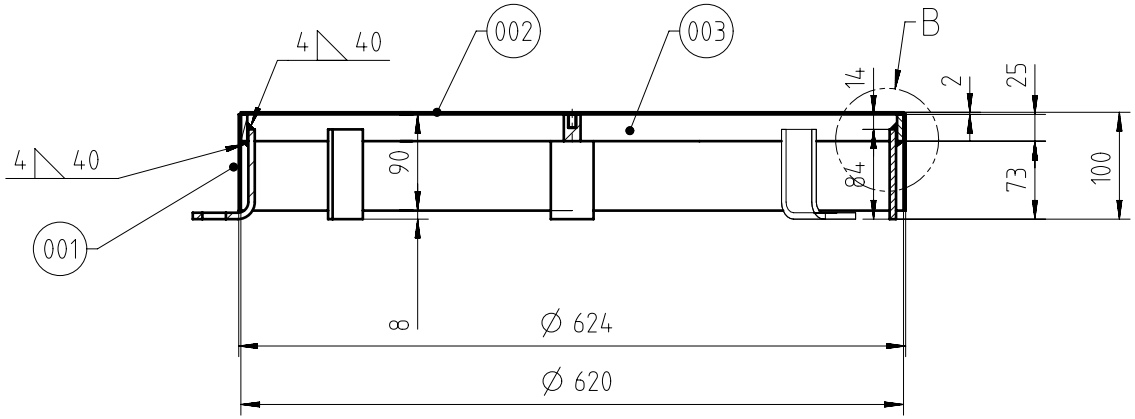
WIN GD Winterthur Gas & Diesel

Product W-2S	TUBE Rohrstueck				
Units mm kg	NX	Basic Material W-FU-235-N-T			Net Weight 2,4
SURFACE PROTECTION SEE GROUP 0344	Made 29.01.2020 dki021 DH.Kim	Scale 1:2	Size A3	Page 1/1	Material ID PAAD349288
TOLERANCING PRINCIPLE ISO8015	Chkd 27.02.2020 jpi101 Pickup	Design Group 9722	Drawing ID DAAD126868		Rev. –
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.03.2020 mhu019 Hug				

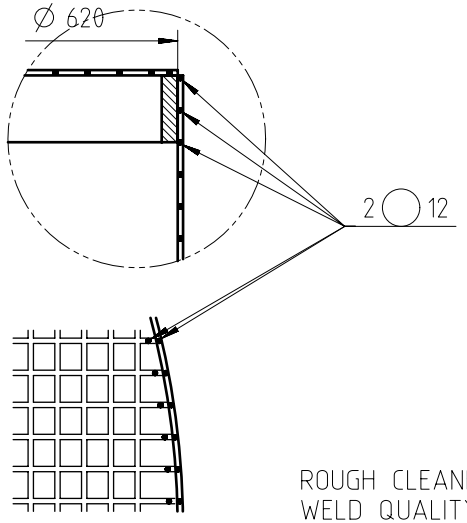
Approved

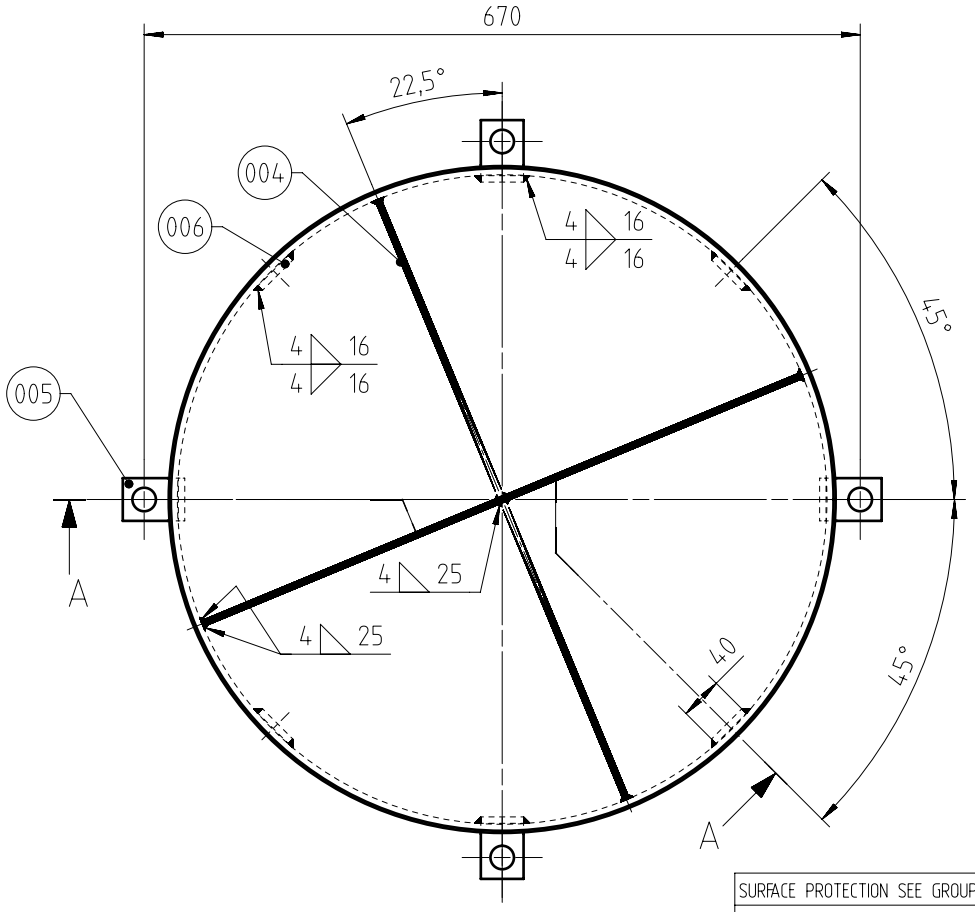
DID - DIMENSIONAL DRAWING - Confidential

SECTION A-A



DETAIL B
SCALE 1:2





ROUGH CLEANED
WELD QUALITY CLASS Q3

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
4	006	PAAD381277	FLAT BAR 40x6x151	DAAD143414	W-FU-235-JR	0,2
4	005	PAAD381276	HOLDER	DAAD143413	W-FU-235-JR	0,24
2	004	PAAD104882	FLAT BAR 608x25x6	DAAD032933	W-FU-235-JR	0,85
1	003	PAAD104881	RING 608x25x6	DAAD032928	W-FU-235-JR	2,7
1	002	PAAD104875	PERFORATED SHEET NO ZINC PLATED D620	DAAD126992	W-FU-235-JR	1,4
1	001	PAAD381275	PERFORATED SHEET NO ZINC PLATED BNO ZINC PLATED	DAAD143411	W-FU-235-JR	0,7

Approved

Free space for lic.

Q-Code XXXXX
Standard ISO; JIS
Main Drw.

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

WIN GD Winterthur Gas & Diesel

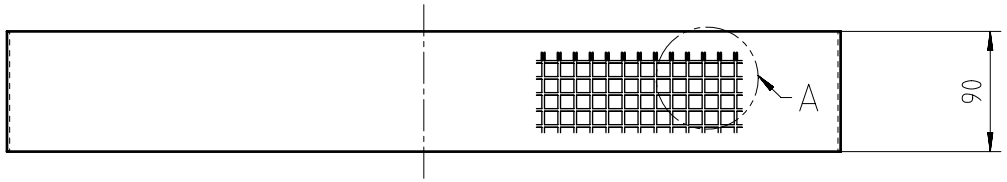
Product W-2S

OIL STRAINER
FOR OIL DRAIN IN BEDPLATE
Oelsieb

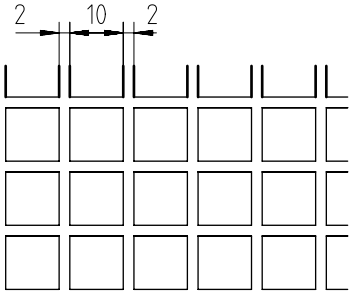
Units	mm kg	NX	Basic Material	Net Weight 8,3
Made	30.04.2021 dki021 DH.Kim	Scale 1:5	Size A3	Page 1/1	Material ID PAAD381274
Chkd	30.04.2021 jpi101 Pickup	Design Group 9722	Drawing ID DAAD143410	Rev. –
Appd	30.04.2021 mhu019 Hug			

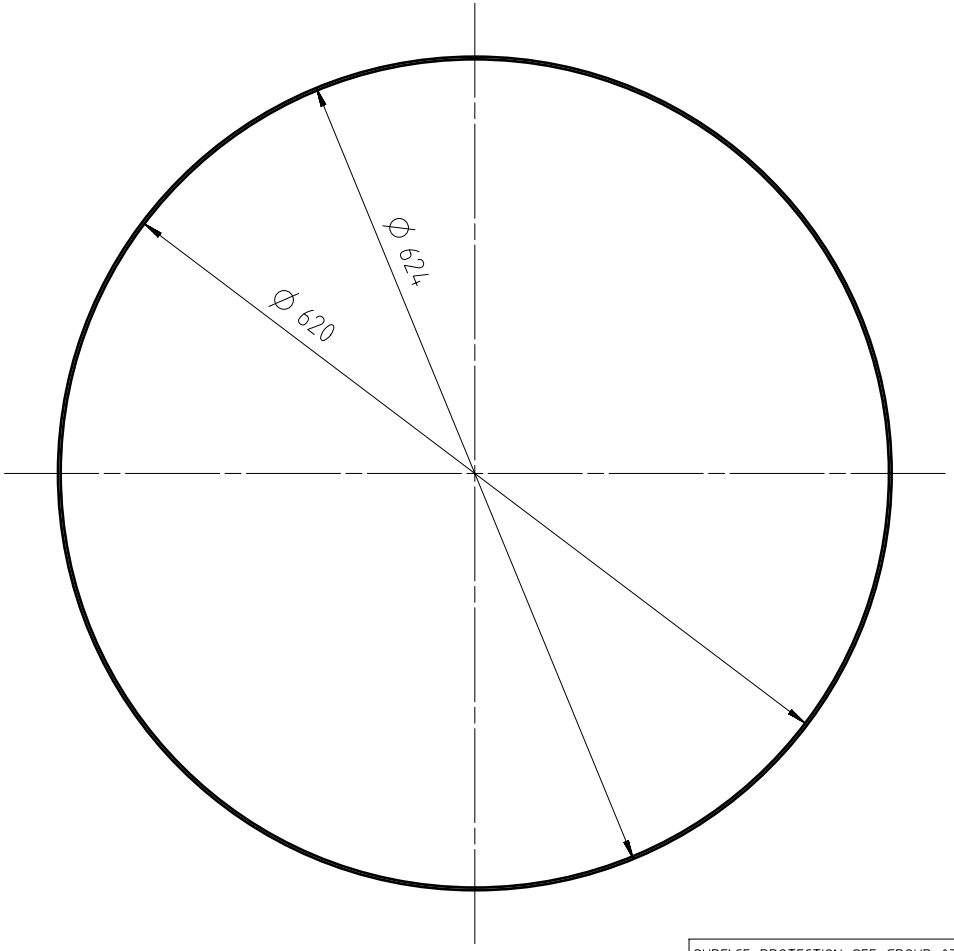
SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

DID - DIMENSIONAL DRAWING - Confidential



DETAIL A
SCALE 1:1





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							Standard ISO; JIS		
Modif.		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date

WIN GD Winterthur Gas & Diesel

Product W-2S

PERFORATED SHEET

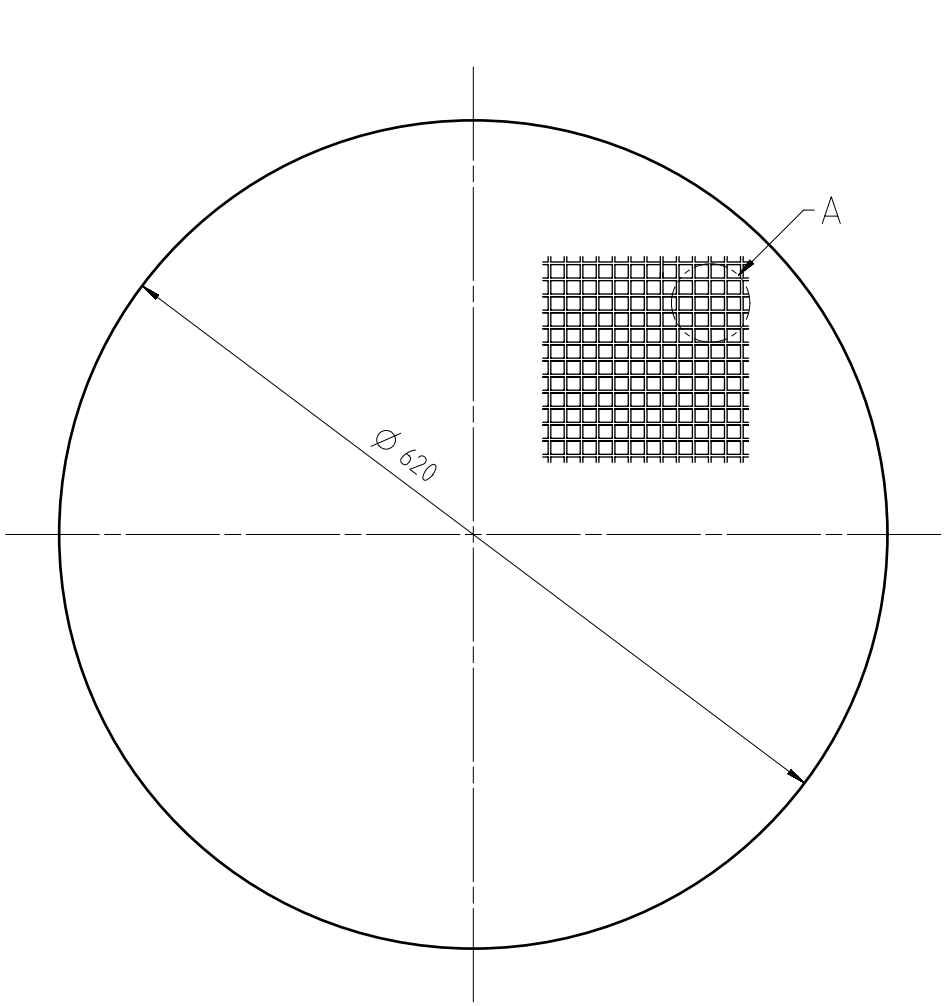
Lochblech

Units mm kg	NX		Basic Material W-FU-235-JR		Net Weight 0,7
Made 30.04.2021 dki021 DH.Kim		Scale 1:4	Size A3	Page 1/1	Material ID PAAD381275
Chkd 30.04.2021 jpi101 Pickup		Design Group 9722	Drawing ID DAAD143411		Rev. –
Appd 30.04.2021 mhu019 Hug					

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

Approved

DID - DIMENSIONAL DRAWING - Confidential



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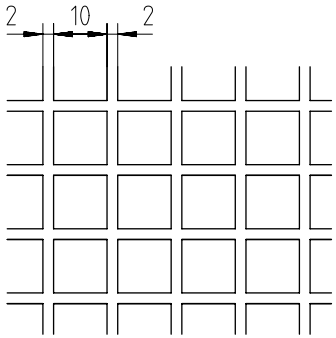
SCALE 1:1



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								Standard ISO; JIS		
Modif.		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date

WIN GD Winterthur Gas & Diesel

Product W-2S

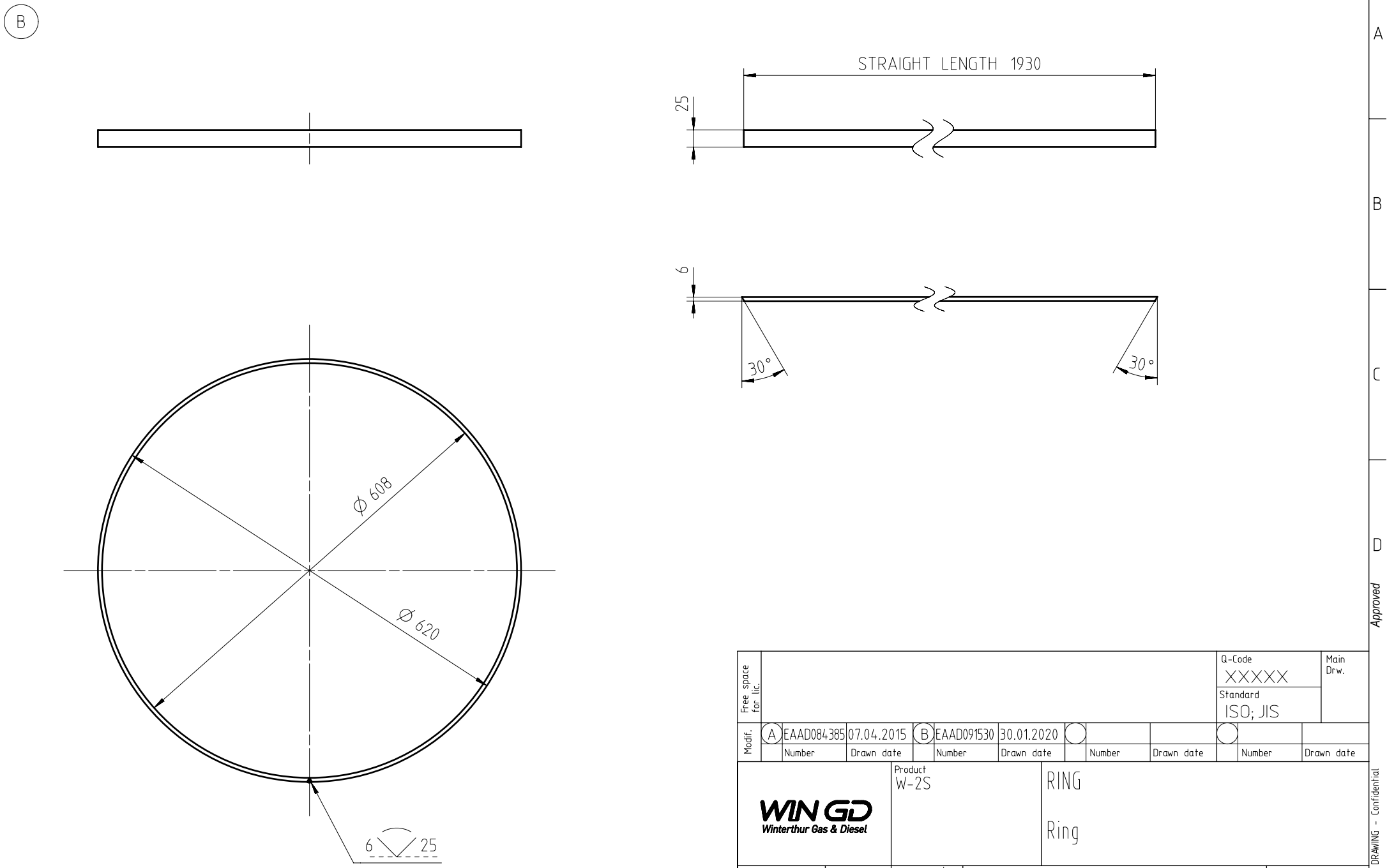
PERFORATED SHEET

Lochblech

Units mm kg	NX		Basic Material W-FU-235-JR		Net Weight 1,4
SURFACE PROTECTION SEE GROUP 0344	Made	03.02.2020 dki021 DH.Kim	Scale 1:4	Size A3	Page 1/1	Material ID PAAD104875
TOLERANCING PRINCIPLE ISO8015	Chkd	27.02.2020 jpi101 Pickup	Design Group 9722	Drawing ID DAAD126992		Rev. –
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	17.03.2020 mhu019 Hug				

Approved

DID - DIMENSIONAL DRAWING - Confidential



Free space for lic.								Q-Code XXXXX		Main Drw.	
								Standard ISO; JIS			
Modif.	A	EAAD084385	07.04.2015	B	EAAD091530	30.01.2020					
		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 2,7
Made 06.11.2012 asex06 A.Sekulic			Scale 1:5	Size A3 / Page 1/1	Material ID PAAD104881
Chkd 03.12.2012 mhu019 Hug			Design Group 9722	Drawing ID DAAD032928	Rev. B
Appd 03.12.2012 wwr001 Wroblewski					

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

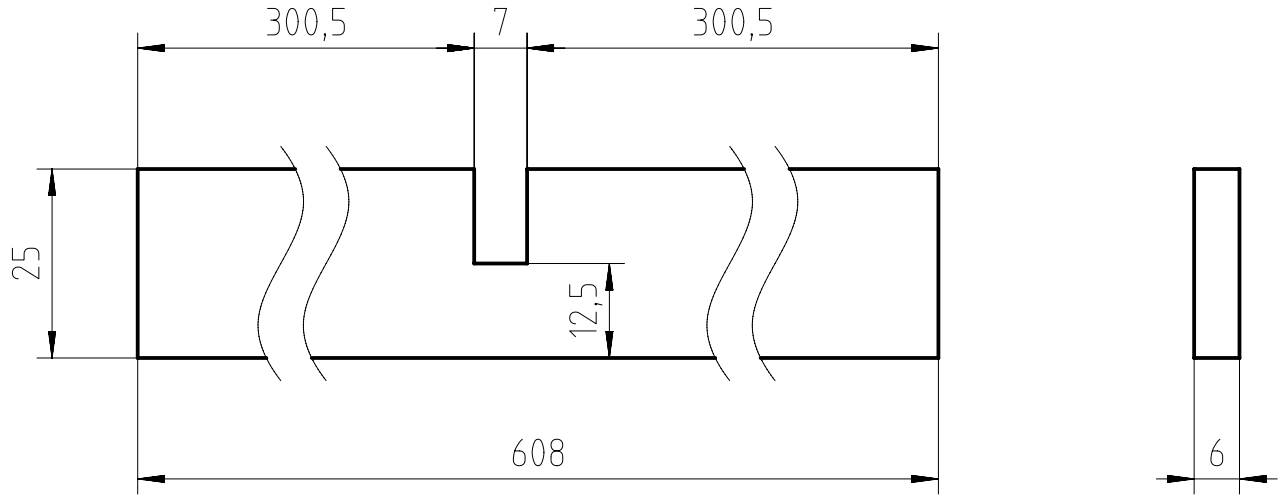
Approved

DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK



B

Approved

Free space for lic.

Q-Code: XXXXX

Standard: ISO; JIS

Main Drw.

Modif.		Number	Drawn date
	A	EAAD084385	07.04.2015
	B	EAAD091530	30.01.2020

WIN GD
Winterthur Gas & Diesel

Product: W-2S

FLAT BAR
ON FRAME FOR OIL STRAINER
Flachstahl

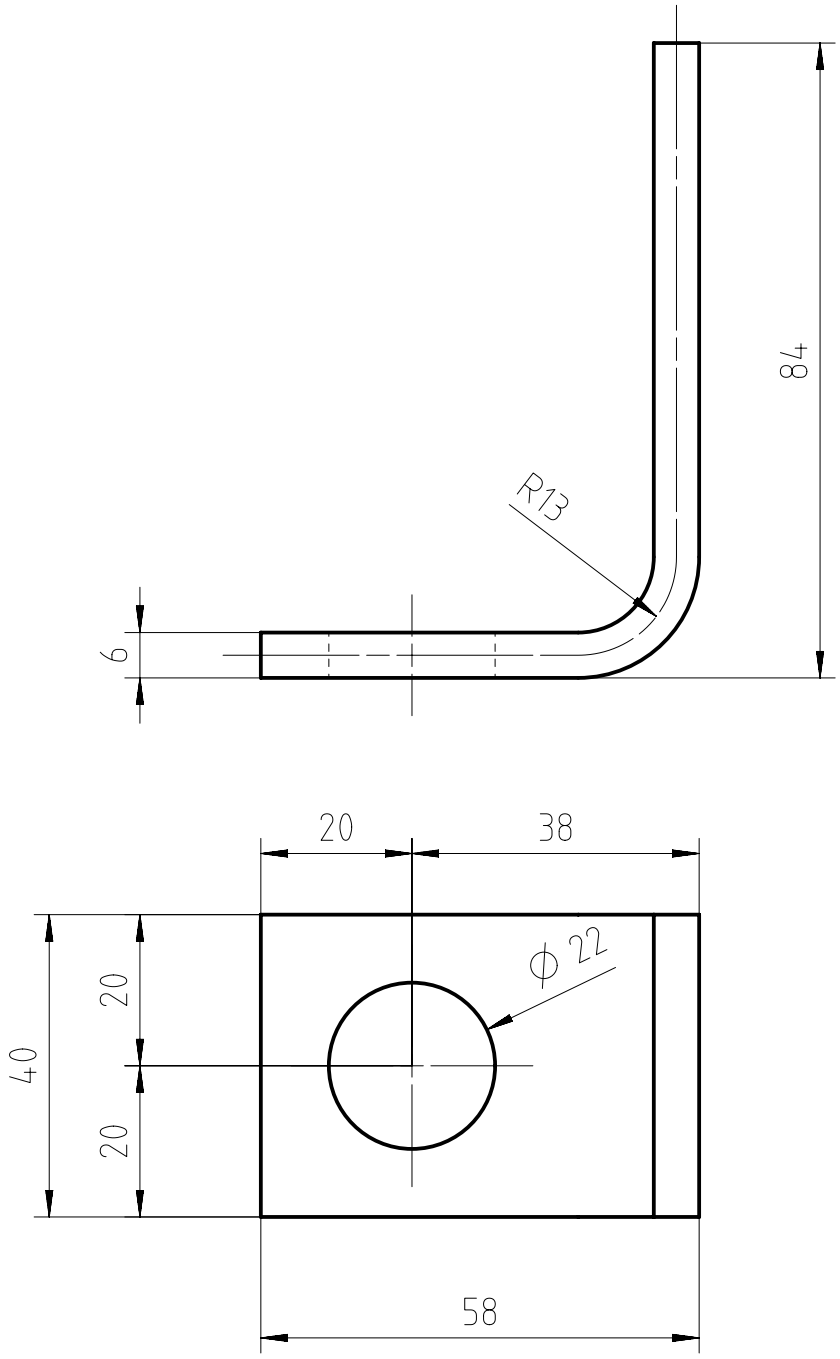
Units	mm kg	NX	Basic Material	W-FU-235-JR	Net Weight 0,85
Made	06.11.2012 asex06 A.Sekulic		Scale 1:1	Size A4 / Page 1/1	Material ID PAAD104882
Chkd	03.12.2012 mhu019 Hug		Design Group 9722	Drawing ID DAAD032933	Rev. B
Appd	03.12.2012 wwr001 Wroblewski				

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

WIN GD
Winterthur Gas & Diesel

Product
W-2S

HOLDER
ON FRAME FOR OIL STRAINER
Halter

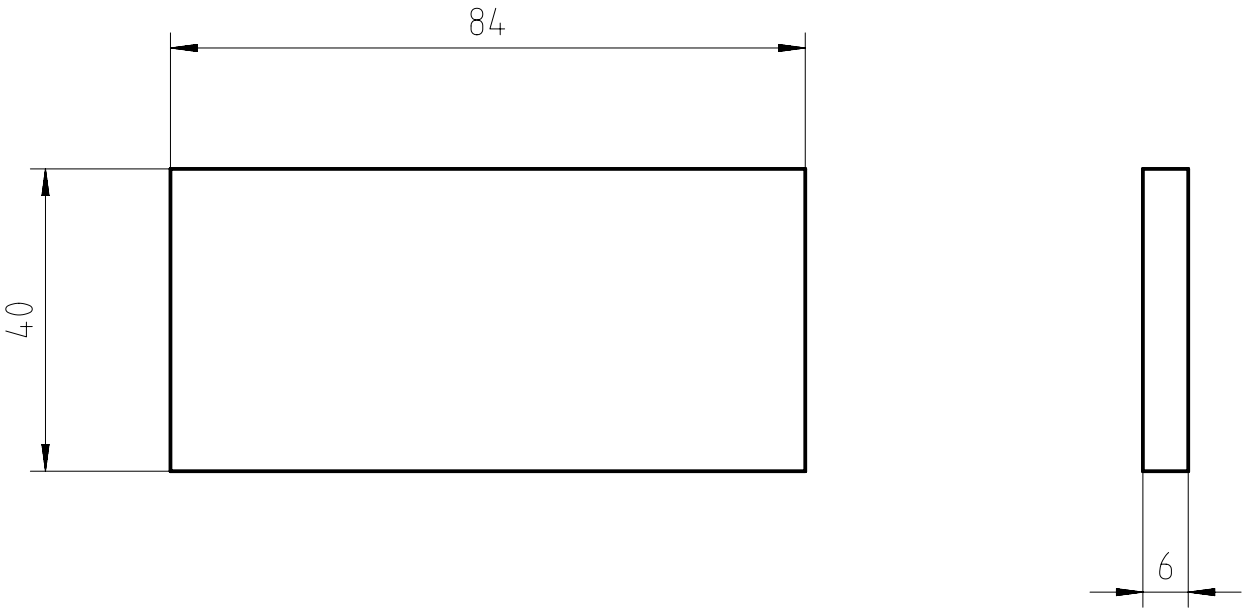
Units	mm kg	NX	Basic Material	W-FU-235-JR	Net Weight	0,24
Made	30.04.2021 dki021 DH.Kim		Scale	1:1	Size A4 / Page 1/1	Material ID PAAD381276
Chkd	30.04.2021 jpi101 Pickup		Design Group	9722	Drawing ID DAAD143413	Rev. –
Appd	30.04.2021 mhu019 Hug					

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

WIN GD
Winterthur Gas & Diesel

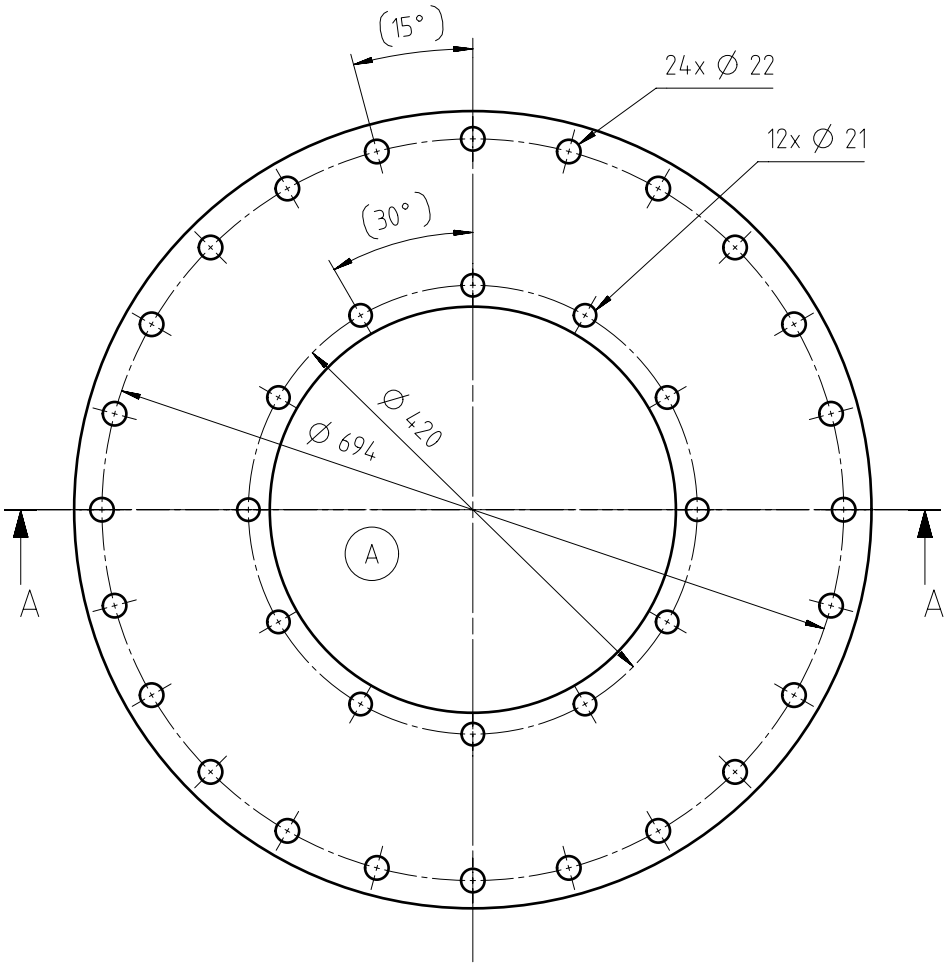
Product W-2S

FLAT BAR

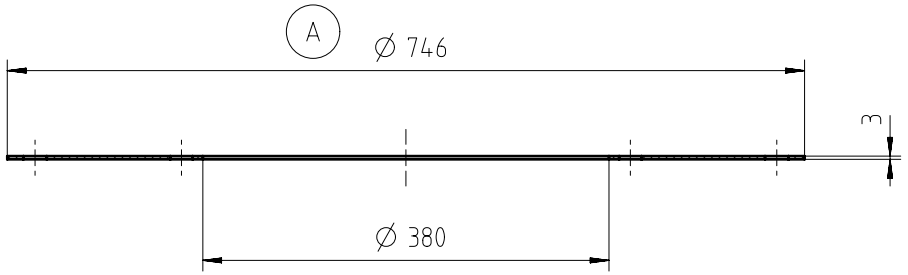
Flachstahl

Units	mm kg	NX	Basic Material	W-FU-235-JR	Net Weight	0,2
Made	30.04.2021 dki021 DH.Kim		Scale	1:1	Size A4 / Page 1/1 / Material ID	PAAD381277
Chkd	30.04.2021 jpi101 Pickup		Design Group	9722	Drawing ID	DAAD143414
Appd	30.04.2021 mhu019 Hug				Rev.	–

DID - DIMENSIONAL DRAWING - Confidential



SECTION A-A



Free space for lic.									Q-Code XXXXX		Main Drw.
									Standard ISO; JIS		
Modif.	A	EAAD091530	30.01.2020								
		Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date		

WIN GD Winterthur Gas & Diesel

Product W-2S

RUBBER GASKET

Gummidichtung

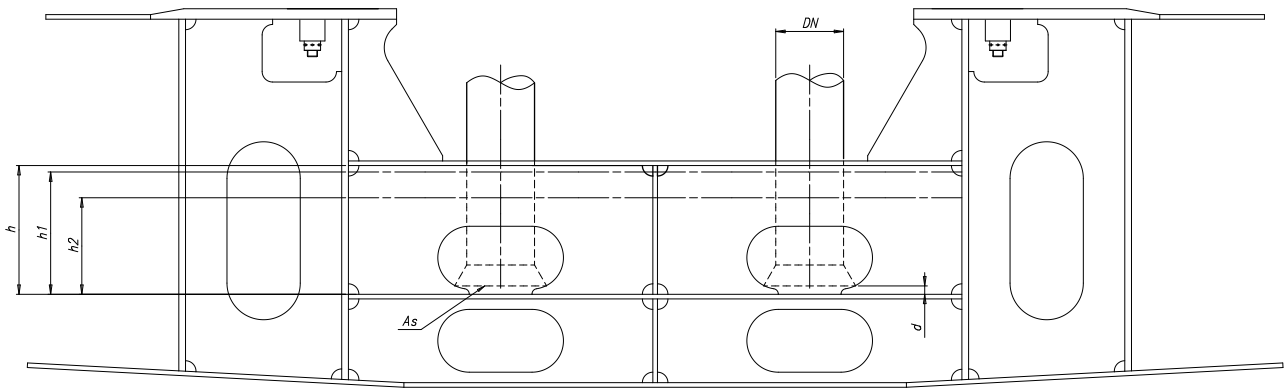
Units mm kg	NX	Basic Material NBR Perbunan			Net Weight 1,5
SURFACE PROTECTION SEE GROUP 0344	Made 31.10.2012 asex06 A.Sekulic	Scale 1:5	Size A3	Page 1/1	Material ID PAAD104199
TOLERANCING PRINCIPLE ISO8015	Chkd 03.12.2012 mhu019 Hug	Design Group 9722	Drawing ID DAAD032827		Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 03.12.2012 wwr001 Wroblewski				

Approved

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°

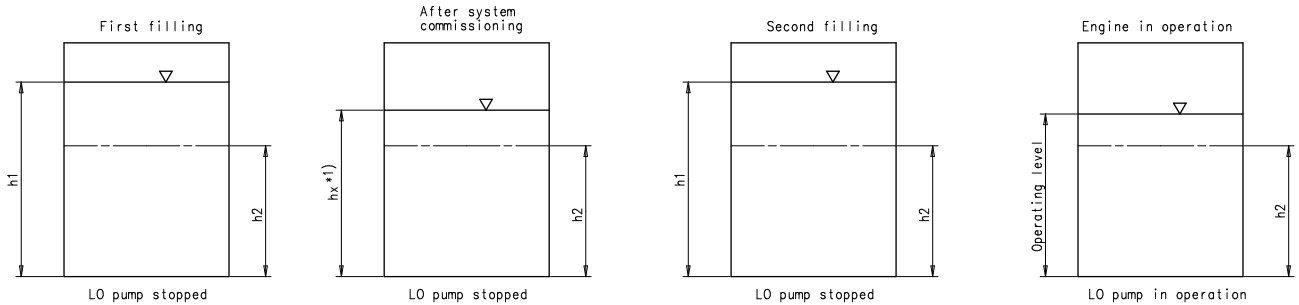
Additionally this level has to be above or equal to the minimum retention volume (Vr) for M/E operation.

*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

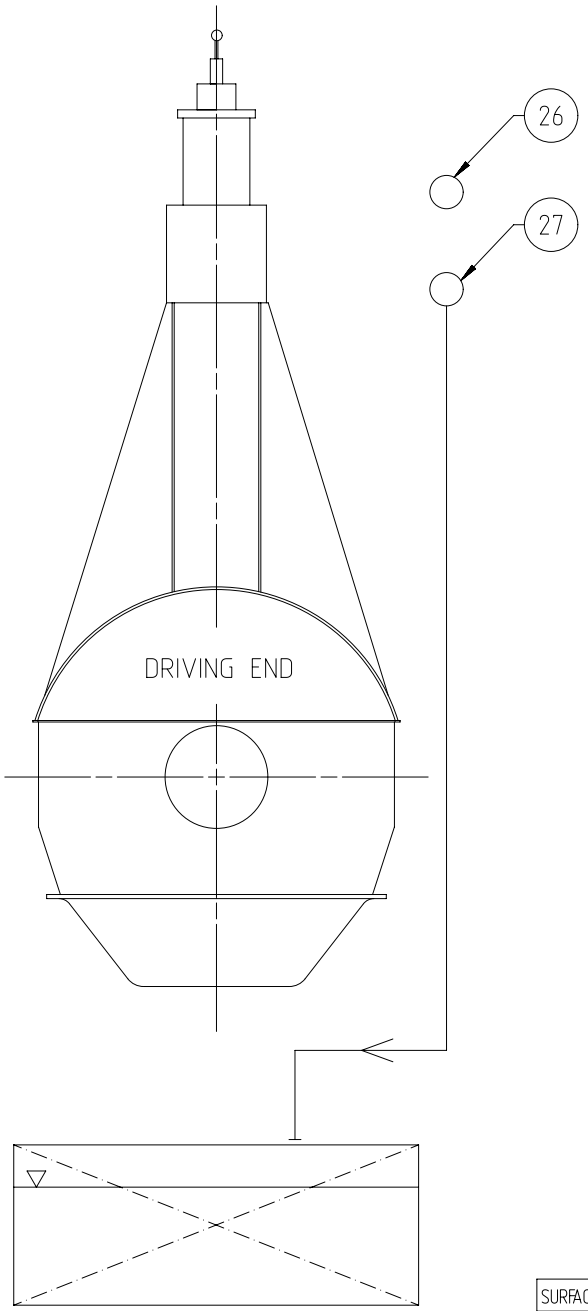
Units mm kg	IDE	Basic Material				Net Weight 0.001	
SURFACE PROTECTION SEE GROUP 0344	Mode	10.12.2014	wnaOO8 W.WANG	Scale 1:25	Size A1	Page 1/1	Material ID PAAD178480
TOLERANCING PRINCIPLE ISO8015	Chkd	16.01.2015	mhu019 Hug	Design Group 9722	Drawing ID DAAD061878		Rev. B
GENERAL TOLERANCES ACCORDING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

Approved

SPECIFICATION which must be met

26
C
	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

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.



Prod.

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
C	dki021	mhu019	02052024	CNAA005688	Drawing updated.		4	3
B	dki021	mhu019	21.01.2022	CNAA001108	see ChangeNotice		4	3
A	dki021	mhu019	08.09.2020	EAAD091530	Legacy information. See corresponding ChangeNotice		4	-
-	dki021	bha009	16.12.2016	EAAD781009	-		-	-

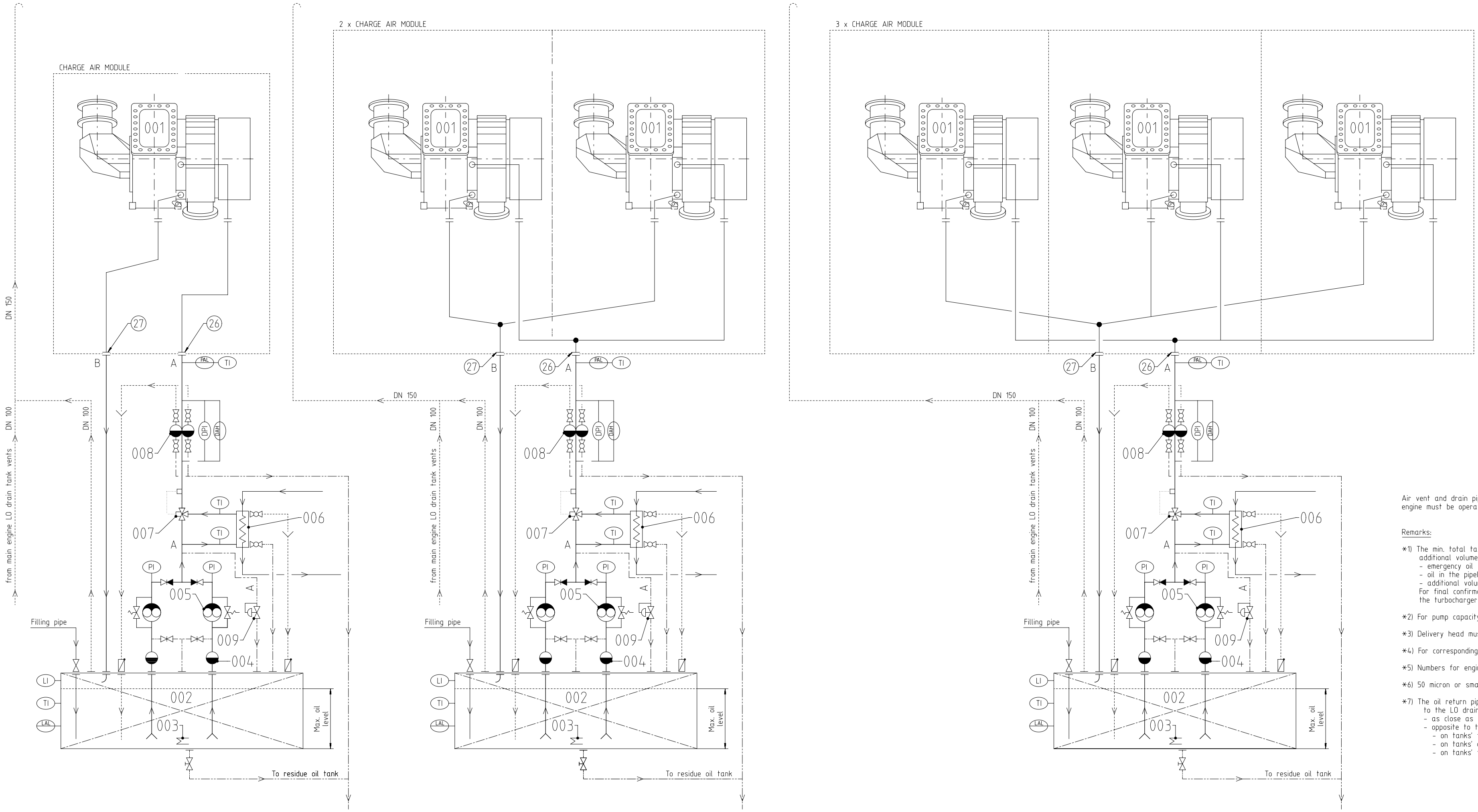
WIN GD
Winterthur Gas & Diesel

LUBRICATING OIL SYSTEM
FOR SEPARATED TC LUBRICATING

Dimension					
Scale - NX	Units [mm] [kg]	Basic Material		Net Weight	0.001
Main Design	Design Group 9722	Q-Code X X M		Standard	WDS
Qty per	A3	Item ID PAAD245338		Drawing Page/s	1/5

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

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.

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

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

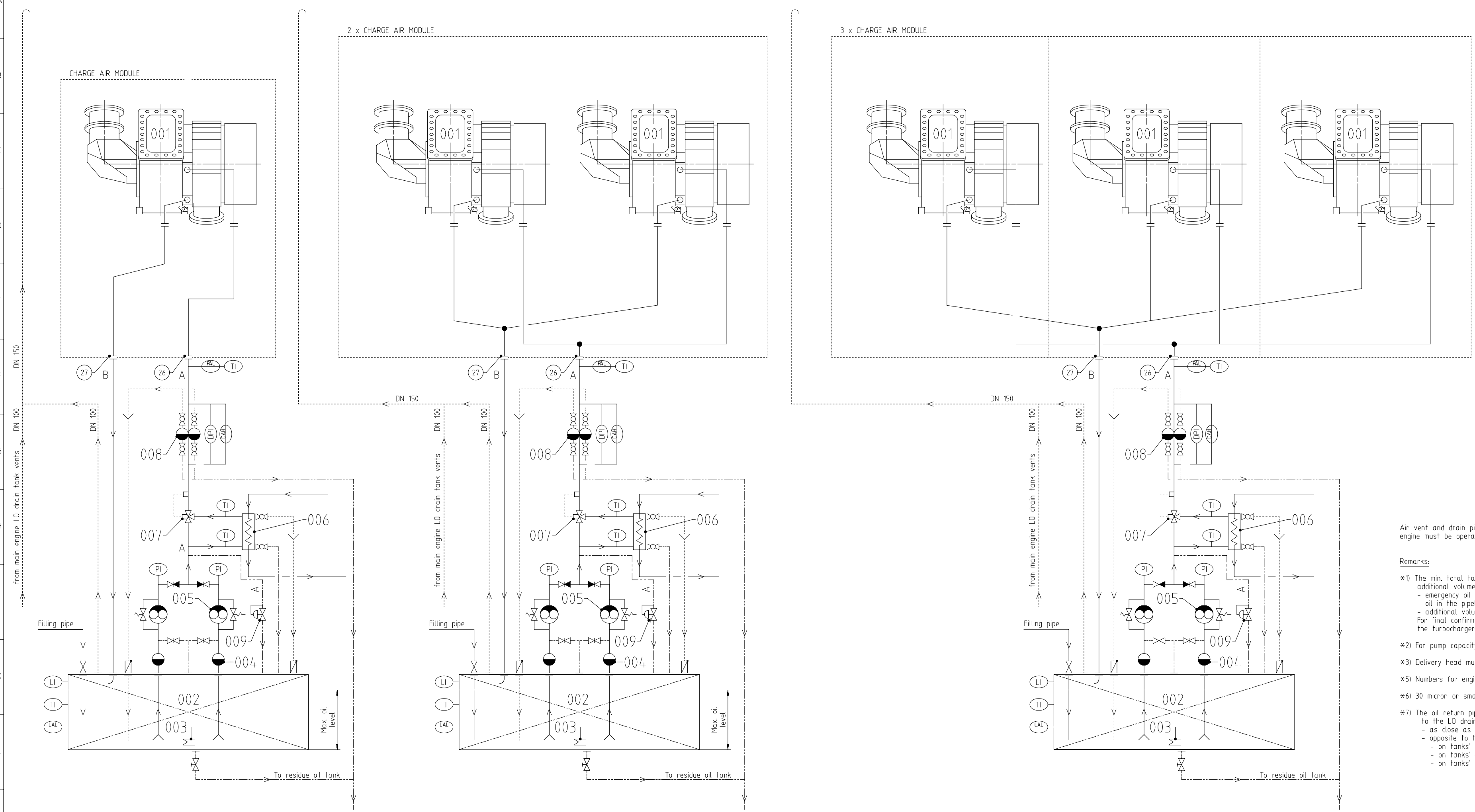
——— Bearing LO pipes
——— Transfer/dirty LO pipes
– · – · Overflow/drain pipes
········ Air vent pipes
○ Pipe connections
⇉ Pipes on engine

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

Product						
Change	Rev. C	Creator dki021	Approver nhu019	Approval Date 02.05.2024	Change ID CNAA005688	Change Synopsis: Drawing updated. Approved — Activity Code E 4, C 3

[mm] [kg] – NX A0 Item ID PAAD245338 Drawing Page/s 2/5

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.

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.

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

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

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

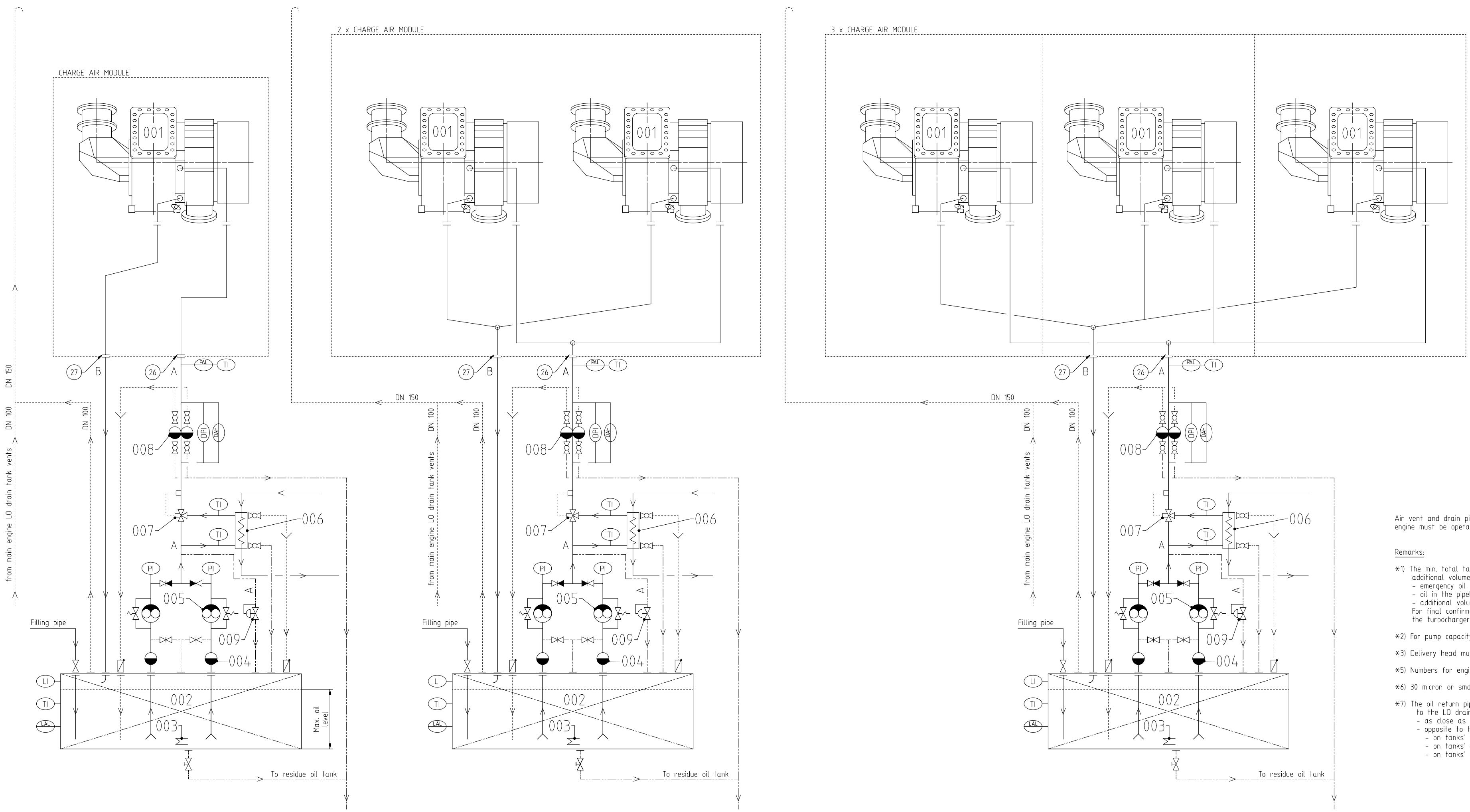
- Bearing LO pipes
- Transfer/dirty LO pipes
- Overflow/drain pipes
- Air vent pipes
- Pipe connections
- Pipes on engine

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

Change	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code		
	C	dki021	nfm.019	02.05.2024	CNAA005688	Drawing updated.	Approved	4 E	3 C

[mm] [kg] - NX A0 Item ID PAAD245338 Drawing Page/s 3/5

Pos.	Description
001	MHI-Turbocharger (MET-MB)
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.

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.

1 SET OF TURBOCHARGER			MET33MB	MET37MB	MET42MB	MET48MB	MET53MB	MET60MB	MET66MB	MET71MB	MET83MB	MET90MB
LO tank	min. retention volume	m^3	0.21	0.26	0.31	0.41	0.49	0.61	0.77	1.01	1.23	1.50
	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	20	25	25	32	32	32	32	32	40	50
	B	DN	40	50	50	65	65	80	80	100	100	125
	C	DN	40	50	50	65	65	80	80	80	100	100

2 SETS OF TURBOCHARGERS			MET33MB	MET37MB	MET42MB	MET48MB	MET53MB	MET60MB	MET66MB	MET71MB	MET83MB	MET90MB
LO tank	min. retention volume	m^3	0.41	0.52	0.62	0.82	0.99	1.22	1.53	2.02	2.46	2.99
	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	40	40	50	50	50	50	65	80
	B	DN	80	100	100	125	125	125	150	200	200	200
	C	DN	50	65	65	80	80	100	100	100	125	125

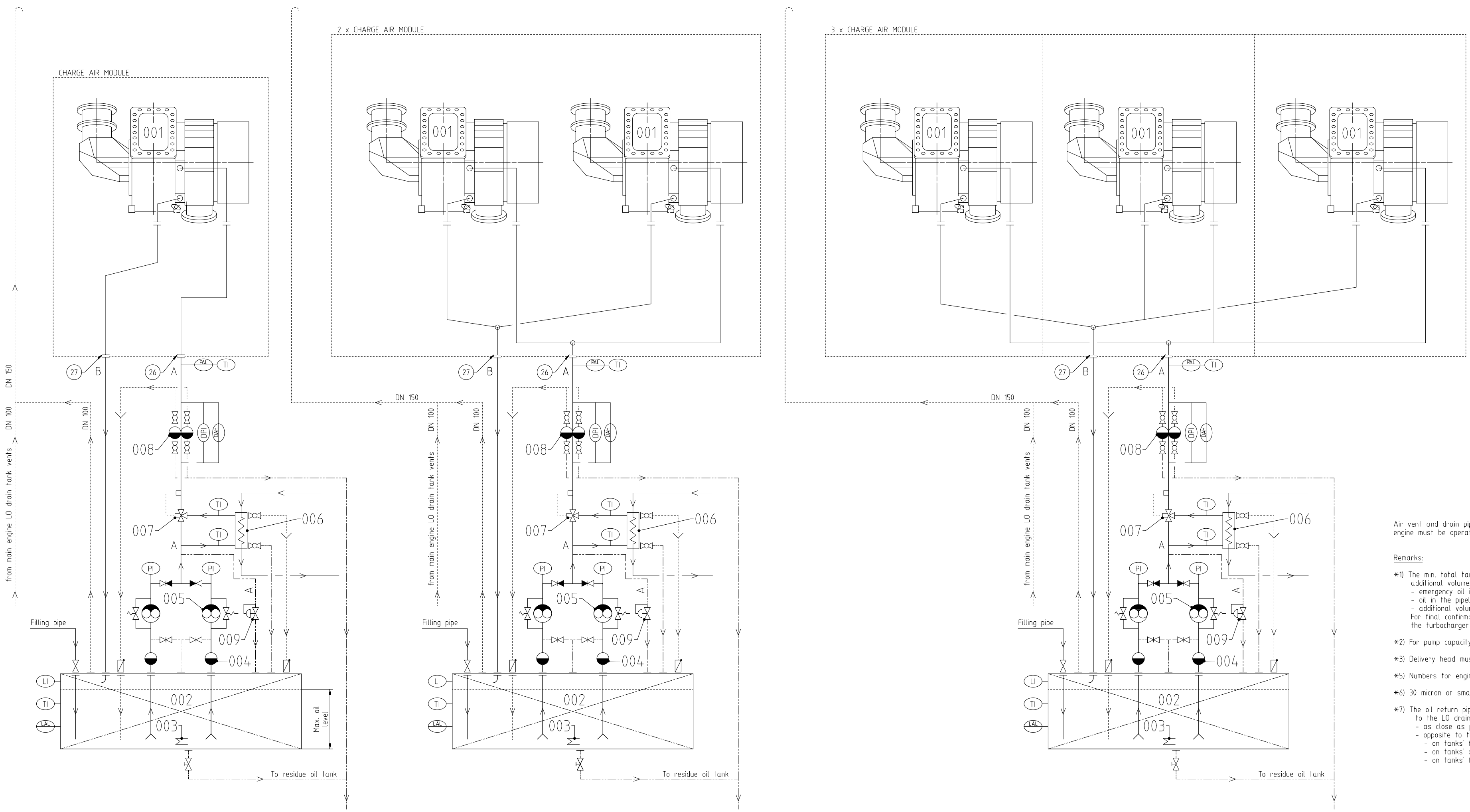
3 SETS OF TURBOCHARGERS			MET53MB	MET60MB	MET66MB	MET71MB	MET83MB	MET90MB
LO tank	min. retention volume	m^3	0.41	0.52	0.62	0.82	0.99	1.22
	min. total tank capacity	m^3	*1)					
LO pump *2)	capacity	m^3	Refer to GTD					
	capacity	l/min						
	delivery *3)	bar	4.0					
Nominal pipe diameter	A	DN	65	65	65	65	80	100
	B	DN	150	150	200	200	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

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

Change	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
	C	dki021	nhu019	02.05.2024	CNAA005688	Drawing updated. Approved		4	3

[mm] [kg] - NX A0 Item ID PAAD245338 Drawing Page/s 4/5



Pos.	Description
001	MHI-Turbocharger (MET-MBII)
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)
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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.

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.

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- as close as possible to the separator suction pipe
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  - 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				MET33MBII	MET37MBII	MET42MBII	MET48MBII	MET53MBII	MET60MBII	MET66MBII	MET71MBII	MET83MBII	MET90MBII
LO tank	min. retention volume		m³	0.27	0.34	0.42	0.53	0.67	0.82	1.04	1.22	1.67	2.02
	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	20	25	25	32	32	32	32	32	40	50
		B	DN	40	50	50	65	65	80	80	100	100	125
		C	DN	40	50	50	65	65	80	80	80	100	100

2 SETS OF TURBOCHARGERS				MET33MBII	MET37MBII	MET42MBII	MET48MBII	MET53MBII	MET60MBII	MET66MBII	MET71MBII	MET83MBII	MET90MBII
LO tank	min. retention volume		m³	0.54	0.69	0.83	1.06	1.33	1.65	2.08	2.44	3.33	4.04
	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	40	40	40	50	50	50	50	65	80
		B	DN	80	100	100	125	125	125	150	200	200	200
		C	DN	50	65	65	80	80	100	100	100	125	125

2 SETS OF TURBOCHARGERS				MET53MBII	MET60MBII	MET66MBII	MET71MBII	MET83MBII	MET90MBII
LO tank	min. retention volume		m³	2.00	2.47	3.13	3.66	5.00	6.06
	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	65	80	100
		B	DN	150	150	200	200	250	250
		C	DN	100	125	125	125	150	150

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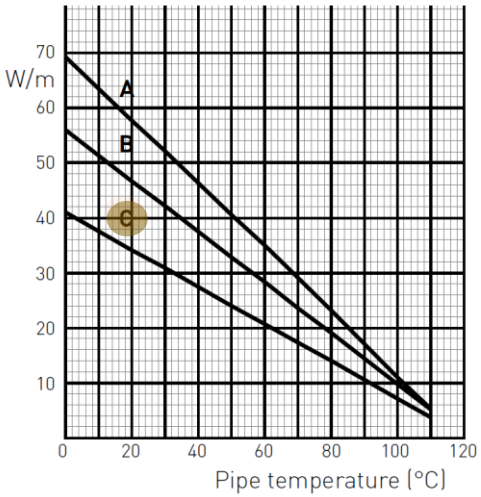
SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Change	Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code		
	C	dki021	nhu019	02.05.2024	CNAA005688	Drawing updated. Approved		4	3
								E	C

[mm] [kg] - NX A0 Item ID PAAD245338 Drawing Page/s 5/5

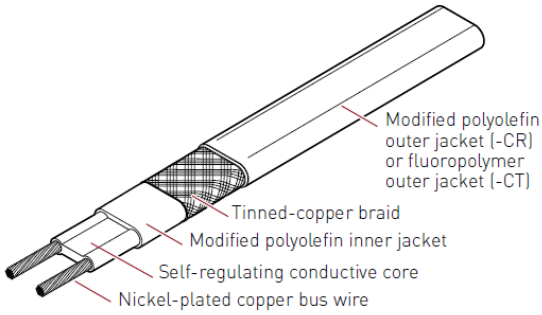
Self-Regulating Heating Cable 10QTVR2-CT

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 - WinGD X52-S2.0 – Lubricating Oil System (DG9722)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2021-05-10	DRAWING SET	First web upload
2022-07-13	PAAD381280	System drg. – new revision
2023-04-06	PTAA058056 PTAA058059	New execution for 5cyl. added
2023-07-14	PAAD381280B	new execution
2023-11-15	PAAD381279B PTAA058055A	New execution
2024-05-07	PTAA245339C PTAA092291- PTAA092212- PTAA092214-	New execution for 7 cyl.

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