

	1	2	3	4	5	6	7	8	
A									A
B									B
C									C
D									D
E									E
F									F

Options

Turbocharger lubrication

Lubrication oil drain position

Internal

External

Vertical

Horizontal

X

X

X

X

X

Executions

79,2

79,2

169

169

1

1

1

1

007

107.410.001.500

LUBRICATING OIL DRAIN TANK

107.410.001

0,001

1

1

1

1

006

107.341.455.500

INSTRUCTION FOR FLUSHING

107.341.455

0,001

(F)

-

-

1

1

005

PAAD314226

LUBRICATING OIL DRAIN TANK
Vertical drain

DAAD109924

169

1

1

-

-

004

107.246.347.200

LUBRICATING OIL DRAIN TANK
Horizontal drain

107.246.347

79,2

-

1

-

1

002

PAAD245338

LUBRICATING OIL SYSTEM
external turbocharger LO system

DAAD083642

0,001

1

1

1

1

001

107.326.517.500

LUBRICATING OIL SYSTEM

107.326.517

0,001

Quantity

PER ENGINE

SEQ NO

Material ID

Material Name

Dimension, Occ

Standard or Drawing

Basic Material
Material Standard

Weight
GR./NET

PAAD255760

107.326.520.201

PAAD255759

107.326.520.200

Free space for lic.

Q-Code

XXXXX

Standard

ISO; JIS

Main Drw.

H

Modif.

(C)

7-33.292

30.05.2005

(D)

7-77.097

09.12.2009

(E)

EAAD087538

26.04.2017

(F)

EAAD090135

28.03.2019

Number

Drawn date

Number

Drawn date

Number

Drawn date

Number

Drawn date

WIN GD

Winterthur Gas & Diesel

Product

5RT-flex58T-D

5RT-flex58T-E

LUBRICATING OIL SYSTEM

Schmieroelsystem

Units

mm kg

NX

Basic Material

Net Weight

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made

02.03.2012

S. STYLIANOU

Chkd

Appd

09.01.2003

SNA001

Scale

-

Design Group

9722

Size

A3

Page

1/1

Material ID

107.326.520

Rev.

F

Approved

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Executions			
X		X	
	X		X
		X	X
X	X		

	Net Weight			
79,2	79,2	154	154	
1	1	1	1	
1	1	1	1	
-	-	1	1	
1	1	-	-	
-	1	-	1	
1	1	1	1	

Quantity PER ENGINE	
PAAD255966	
PAAD255965	
PAAD255964	
PAAD255963	

SEQ NO	Material ID	Material Name	Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET			
Free space for ltr.					Q-Code XXXXXX	Main Drw. H			
					Standard ISO; JIS				
Modif.	☐		☐		☐		☐		
		Number	Drawn date		Number	Drawn date		Number	Drawn date

 WIN G2 Winterthur Gas & Diesel	Product 6RT-flex58T-B 6RT-flex58T-D 6RT-flex58T-E	LUBRICATING OIL SYSTEM Schmieroelsystem
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Units	mm kg	NX		Basic Material	Net Weight
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SURFACE PROTECTION SEE GROUP 0344	Made	13.03.2017	jba039 J.H Bae	Scale	-	Size	A3	Page	1/1	Material	ID	
TOLERANCING PRINCIPLE ISO8015	Chkd	21.04.2017	wwa008 Wang	Design Group	9722	Drawing	DAAD088129				Rev.	-
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	21.04.2017	mhu019 Hug	ID								

	1	2	3	4	5	6	7	8	
A									
B									
C									
D									
E									
F									

Options

Turbocharger lubrication

Lubrication oil drain position

Internal

External

Vertical

Horizontal

X

X

X

X

Net Weight

79,2

79,2

246

246

1

1

1

1

007

107.410.001.500

LUBRICATING OIL DRAIN TANK

107.410.001

0,001

1

1

1

1

006

107.341.455.500

INSTRUCTION FOR FLUSHING

107.341.455

0,001

A

-

-

1

1

005

PAAD314372

LUBRICATING OIL DRAIN TANK
Vertical drain

DAAD110060

246

1

1

-

-

004

107.246.347.200

LUBRICATING OIL DRAIN TANK
Horizontal drain

107.246.347

79,2

-

1

-

1

002

PAAD245338

LUBRICATING OIL SYSTEM
External turbocharger LO system

DAAD083642

0,001

1

1

1

1

001

107.326.517.500

LUBRICATING OIL SYSTEM

107.326.517

0,001

Quantity PER ENGINE

SEQ NO

Material ID

Material Name

Dimension, Occ

Standard or Drawing

Basic Material Material Standard

Weight GR./NET

PAAD255970

PAAD255969

PAAD255968

PAAD255967

Free space for lic.

Q-Code

XXXXX

Standard

ISO; JIS

Main Drw.

H

Modif.

A

EAAD090135

28.03.2019

Number

Drawn date

Number

Drawn date

Number

Drawn date

Number

Drawn date

Number

Drawn date

WIN GD

Winterthur Gas & Diesel

Product

7RT-flex58T-D

7RT-flex58T-E

LUBRICATING OIL SYSTEM

Schmieroelsystem

Units

mm kg

NX

Basic Material

Net Weight

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made

13.03.2017

jba039

J.H Bae

Scale

-

Size

A3

Page

1/1

Material ID

DAAD088131

Rev.

A

Chkd

21.04.2017

wwa008 Wang

Design Group

9722

Appd

21.04.2017

mhu019 Hug

Drawing ID

DAAD088131

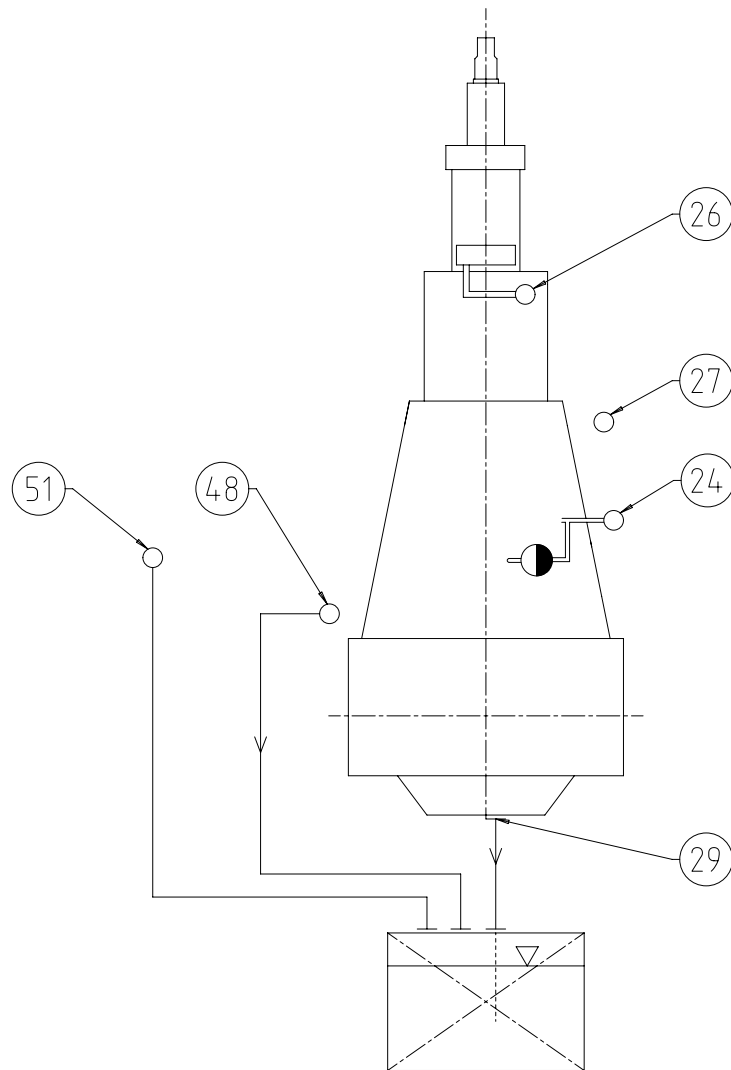
Approved

UID - DIMENSIONAL DRAWING - Confidential

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1	2	3	4	5	6	7	8

RT-flex58T-D
RT-flex58T-E

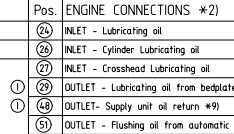


SPECIFICATION WHICH MUST BE MET

24 ①	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: 3.6-5.0 bar *) *) A pressure control device (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 50 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 50 micron (absolute sphere passing mesh) filter. - Offline cleaning of the lubricating oil in the drain tank by self-cleaning centrifugal separators.
26	INLET - Cylinder lubricating oil - Cylinder lubricating oil temperature: 40 ⁺¹⁰ ₋₅ °C. - Cylinder lubricating oil static pressure: 0.4 bar.
27 ①	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: 10.0-12.0 bar *) *) A pressure control device (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 50 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 50 micron (absolute sphere passing mesh) filter. - Offline cleaning of the lubricating oil in the drain tank by self-cleaning centrifugal separators.
29 ①	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.
48 ①	OUTLET- Supply unit oil return - Free flow by gravity to lubricating oil drain tank.
51 ①	OUTLET - Flushing oil from automatic filter - Back-flushing oil to be returned to the lubricating oil drain tank. - The back-flushing pipe must not be connected to other drain pipes.

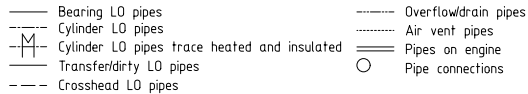
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Modif.	F	EAAD087538	26.04.2017	G	EAAD088812	08.05.2018	H	EAAD089872	19.10.2018	I	EAAD091970	02.01.2020			
Number		Drawn date		Number		Drawn date		Number		Drawn date		Number		Drawn date	
WIN GD Winterthur Gas & Diesel				Product RT-flex58T-D RT-flex58T-E				LUBRICATING OIL SYSTEM MAIN CIRCUIT Schmierölsystem							
Units		mm kg		NX		Basic Material		Net Weight		0,001					
SURFACE PROTECTION SEE GROUP 0344		Made		03.12.2002		S.STYLIANOU		Scale		-		Size		A2	
TOLERANCING PRINCIPLE ISO8015		Chkd						Design Group				Page		1/3	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd		09.01.2003		SNA001		7222		Drawing ID		107.326.517		Rev.	
														I	

Pos.	ENGINE COMPONENTS *3)
EC01	Automatic filter
EC02	Supply unit

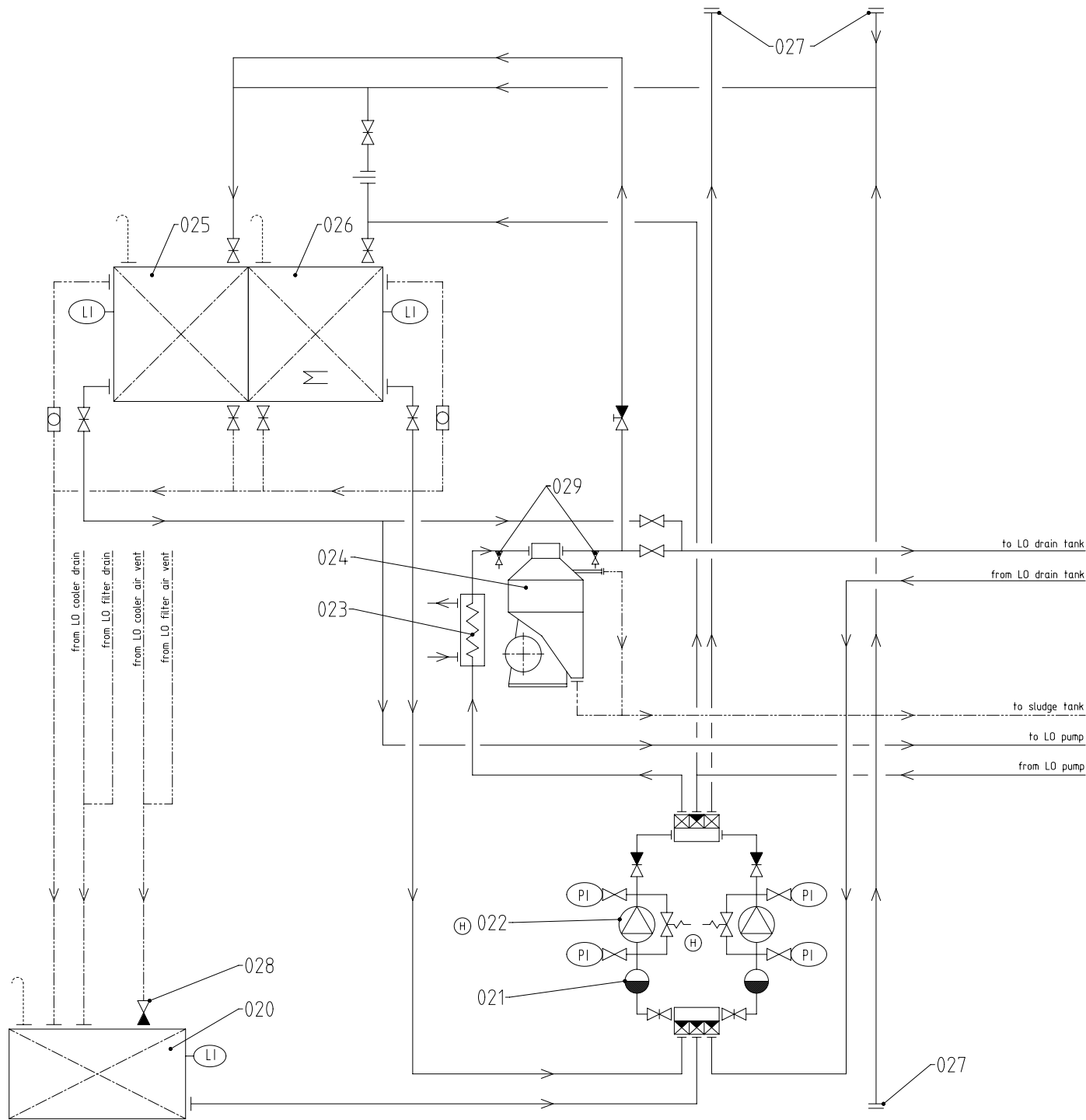
[illegible]

Cylinder	Volume
5	1503 l
6	1734 l
7	1965 l
8	2197 l

- – 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.
- #10 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 oil level in the compartment. If the oil level in 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 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, i.e. by means of 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 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 BNI after the change-over).
- #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 For engine with supply unit at aft end, (engine V2 and T-E version)
- #10 Installed as required (check with the "Pipe Connection Plan")
- #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 prevent back-flushing or blowing into the oil. Back-flushing oil must be treated.
- #12 All capacities and the given pipe diameters are valid for the mentioned engine rating, including the oil amount for integrated T lubrication, but excluding additional required oil for applied damper and/or P10 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, i.e. on the oil, the guideline as given within D9739 – "Fluid velocities and flow rates, recommended values for pipework of diesel plants" has to be observed.
- #14 Mesh size according to pump suppliers recommendation.
- #15 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.
- #16 The proposed cylinder LO services tank capacity takes into account a filling interval of 2 days based on the above mentioned feed rate.

[illegible]

SYSTEM PROPOSAL - LO treatment system



Pos.	SYSTEM COMPONENTS *1)			
020	Residue oil tank			
021	Suction strainer *14)			
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 sampling cock *20)			

RT-flex58T-D/-E		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)	1280	1530	1790	2040
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.
- *14) Mesh size according to pump suppliers recommendation.
- *20) Recommended position for LO sampling to check LO quality / treatment efficiency.

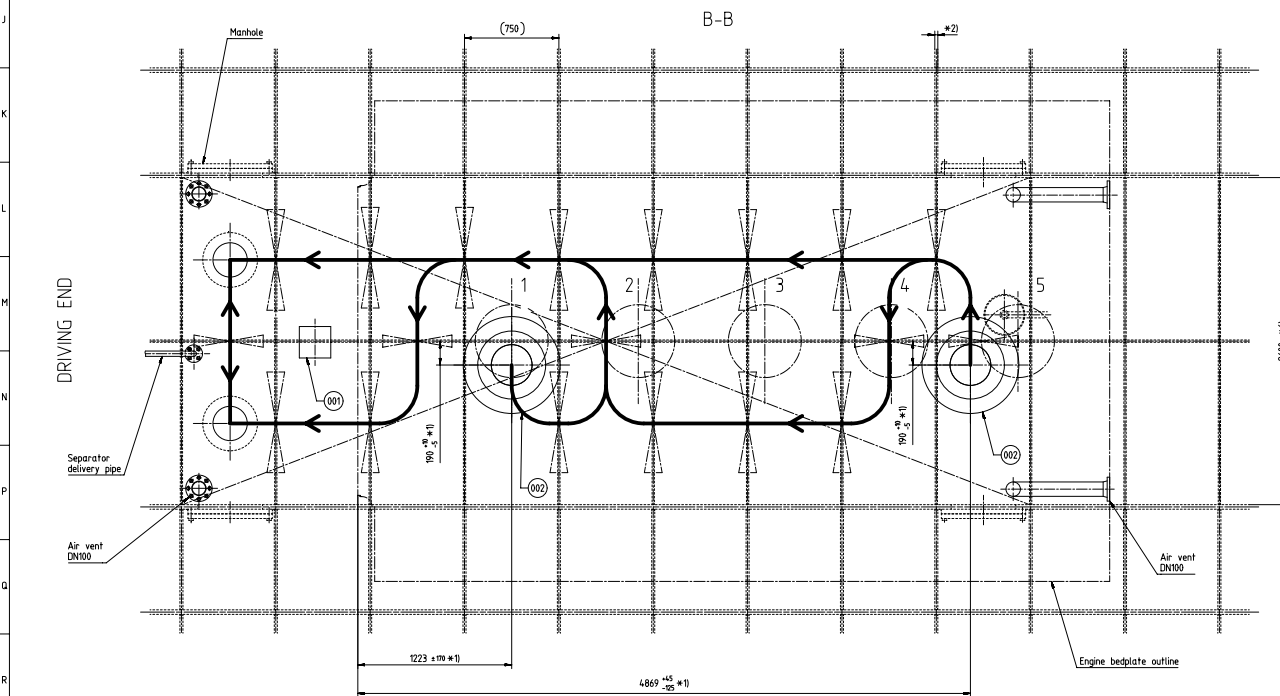
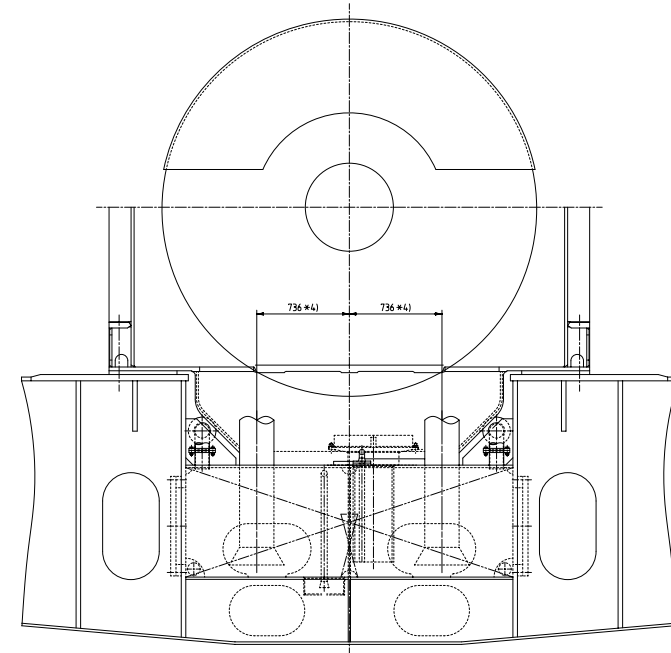
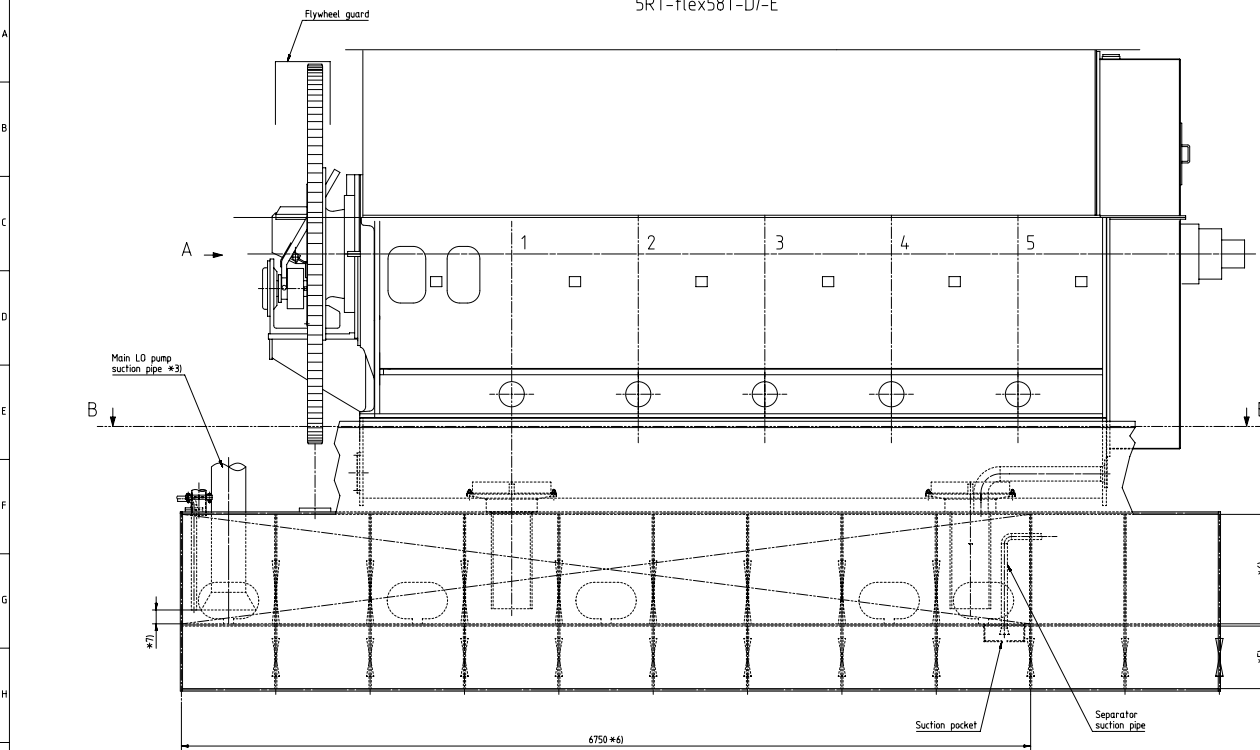
- Main separating piping
- Transfer/dirty LO pipes
- - - Overflow/drain pipes
- Air vent pipes

Free space for file		G-Code XXXXXX Standard ISO; JIS		Main Drw.	
Mod.	(F) EAAD087538 26.04.2017	(G) EAAD088812 08.05.2018	(H) EAAD089872 19.10.2018	(I) EAAD099710 02.01.2020	
Number		Number		Number	
Drawn date		Drawn date		Drawn date	
Product RT-flex58T-D RT-flex58T-E		LUBRICATING OIL SYSTEM MAIN CIRCUIT Schmierölsystem			
Units mm kg		Basic Material		Net Weight 0,001	
Made 03.12.2002 S.STYLIANOU		Scale -		Size A1	
TOLERANCING PRINCIPLE ISO8015		Design Group 9722		Page 3/3	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Drawing ID 107.326.517		Material ID 107.326.517.500	
Appd 09.01.2003 SNA001				Rev. I	

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SRT-flex58T-D/-E

A (DRIVING END)



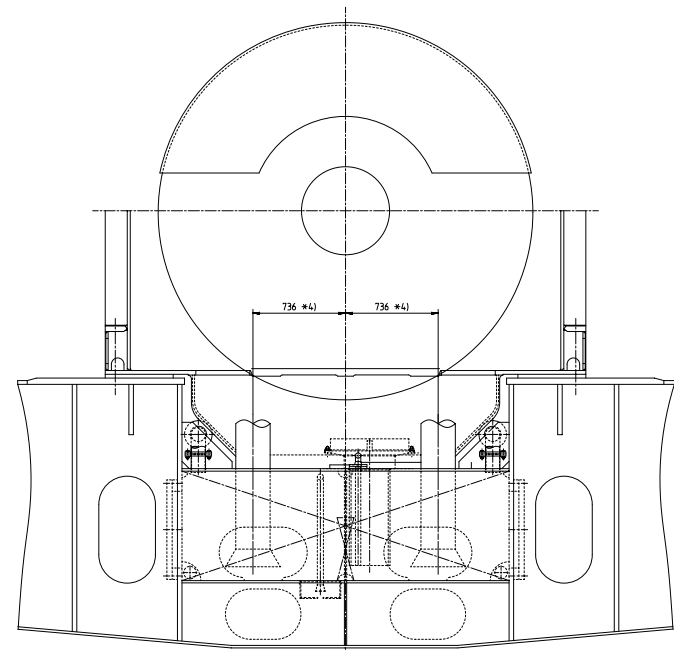
FREE END

REMARKS:

- *1) Drains must be arranged by the shipyard in accordance with the ship hull 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" (DG9710).
- *2) Recommendation regarding plate thickness is given in the Marine Installation Drawing Set (MDS) "ENGINE / SEATING FOUNDATION" (foundation arrangement drawing, DG9710).
- *3) Recommendation regarding the pipe size is given in the system proposal as provided in the MDS "LUBRICATING OIL SYSTEM" (L.O 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 shiplull 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 MDS "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.

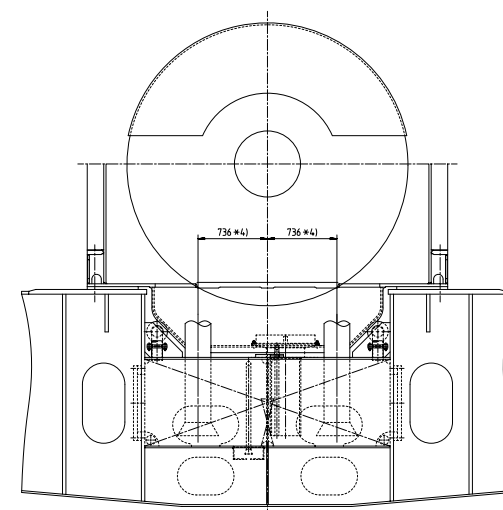
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1	001	107246.799.200	PLATE	107246.799		15.0
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					Material Standard	QTY
					ISO 9001	15.0
					ISO 9001	15.0

Number	Drawn date	Number	Drawn date	Number	Drawn date
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4	25.03.2019	5	25.03.2019	6	25.03.2019
7	25.03.2019	8	25.03.2019	9	25.03.2019
10	25.03.2019	11	25.03.2019	12	25.03.2019



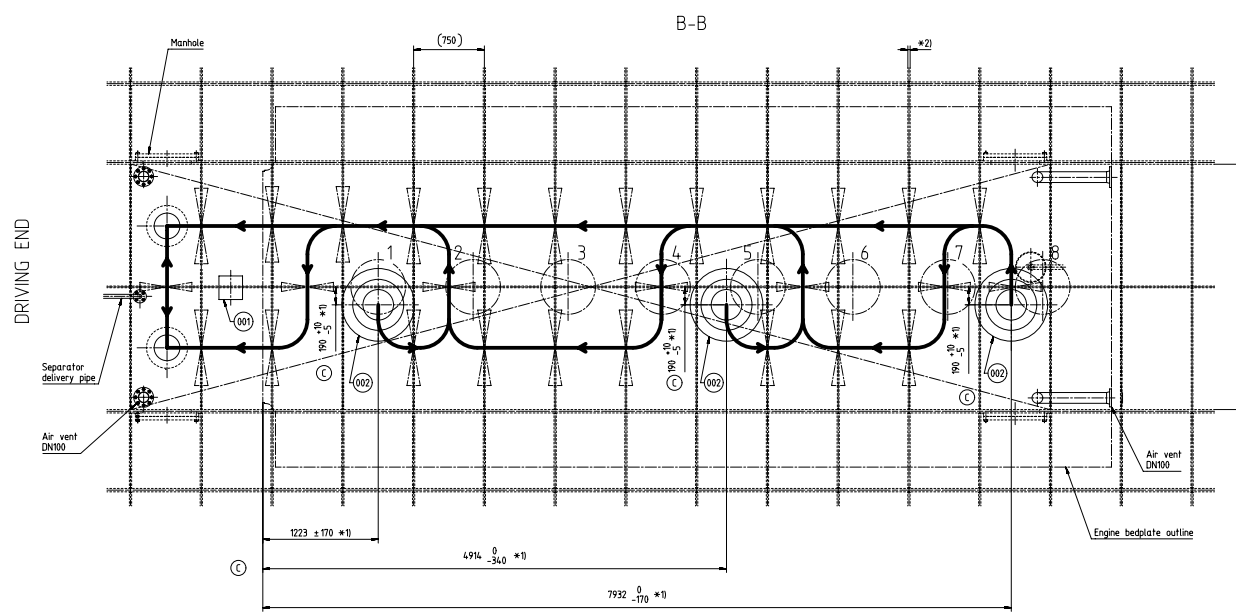
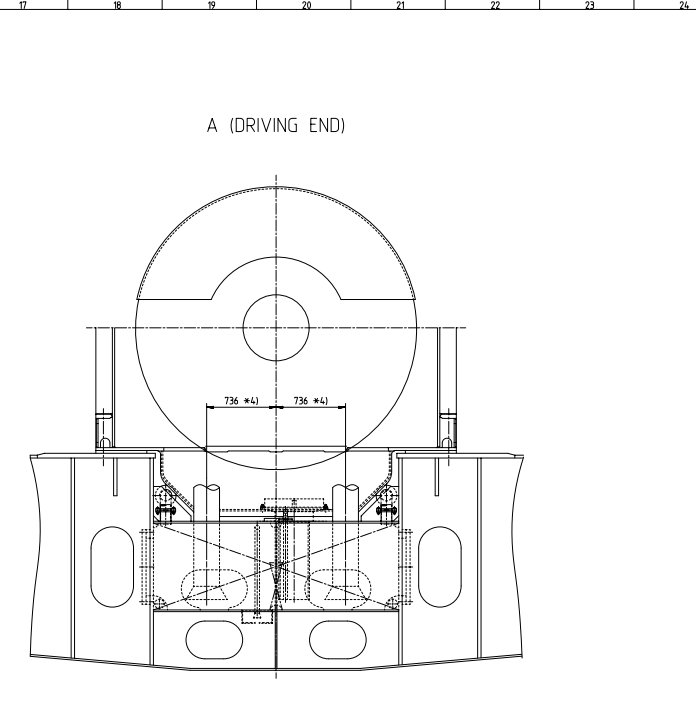
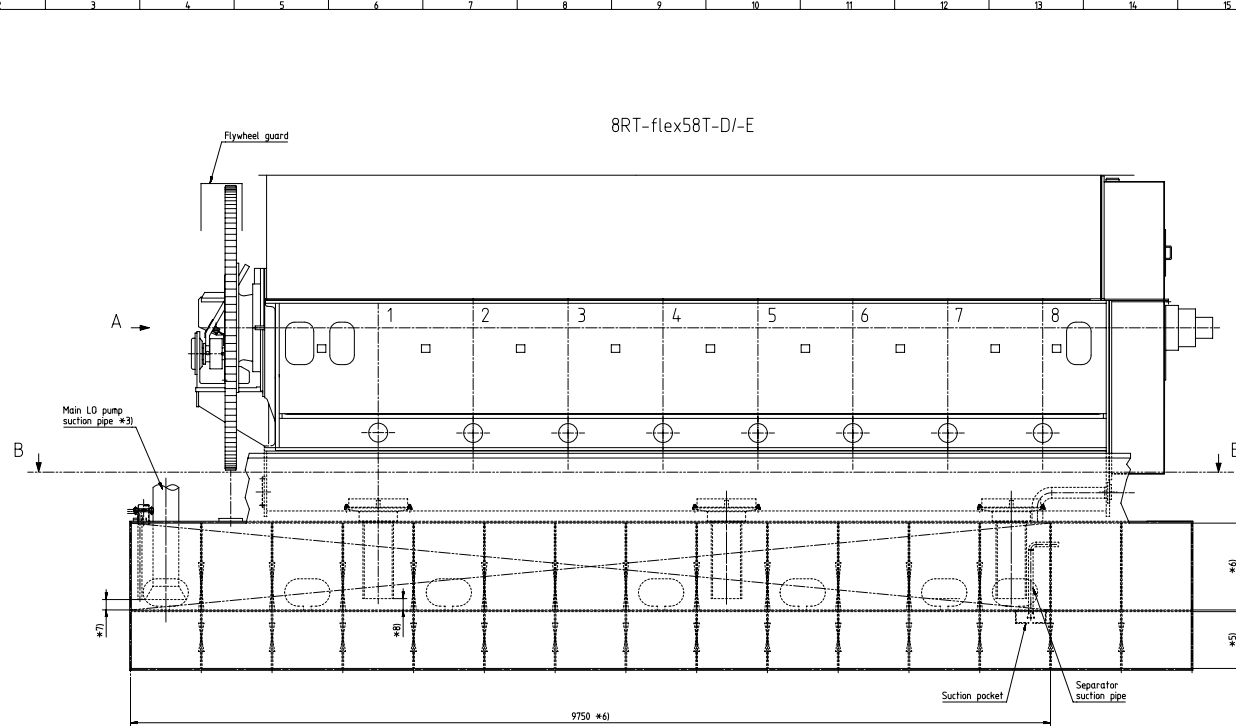
- (B) REMARKS:**
- #1 Drains must be arranged by the shipyard in accordance with the ship hull structure and within the specified tolerance range. As soon as the final positions are determined the engine manufacturer must be informed so that the wedge plate can be installed. It must be installed in compliance with the engine builder drawing "WEDGE PLATE OIL DRAIN" (DG7110).
 - #2 Recommendation regarding plate thickness is given in the Marine Installation Drawing Set (MDS) "ENGINE / SEATING FOUNDATION" (foundation arrangement drawing, DG9710).
 - #3 Recommendation regarding the pipe size is given in the system proposal as provided in the MDS "LUBRICATING OIL SYSTEM" (ILO system drawing, DG9722).
 - #4 Final position depends on the size of the flywheel casing and required space for the main ILO 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 ship hull structure, minimum required filling / circulation volume, pump suction requirements and rules of the relevant classification society. Requirements for design and construction of the ILO tank provided in the MDS "LUBRICATING OIL DRAIN TANK" – Filling Design (DG9722).
 - #7 Distance according to pump makers specification.
 - #8 The drain pipe outlet must be below the min. ILO level (ILO low level alarm height) through a gap of min. half of the drain pipe diameter min. 12x40 to the drain tank bottom has to be maintained.

[illegible]



- #1 Drains must be arranged by the shipyard in accordance with the ship's structure and within the specified tolerance range. As soon as the final positions are determined the engine manufacturer must be informed so that the final bedplate and final pump design can be adapted in compliance with the engine builder drawing "BEDPLATE OIL DRAIN" (DG110).
 - #2 Recommendation regarding plate thickness is given in the Marine Installation Drawing Set (MDS) "ENGINE / SEATING FOUNDATION" (foundation arrangement drawing, DG070).
 - #3 Recommendation regarding the pipe size is given in the system proposal as provided in the MDS "LUBRICATING OIL SYSTEM" (LO system drawing, DG072).
 - #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 ship's structure, minimum required filling / crutation volume, pump suction requirements and rules of the relevant classification society. Requirements / design criteria for the tank layout are provided in the MDS "LUBRICATING OIL DRAIN NAK – Filling Guidelines" (DG072).
 - #7 Distance according to pump makers specification.
- The drain pipe outlet must be below the min. LO level (LO level alarm height) though a gap of min. half of the drain pipe diameter (min. 1/2WMD) to the drain tank surface has to be maintained.

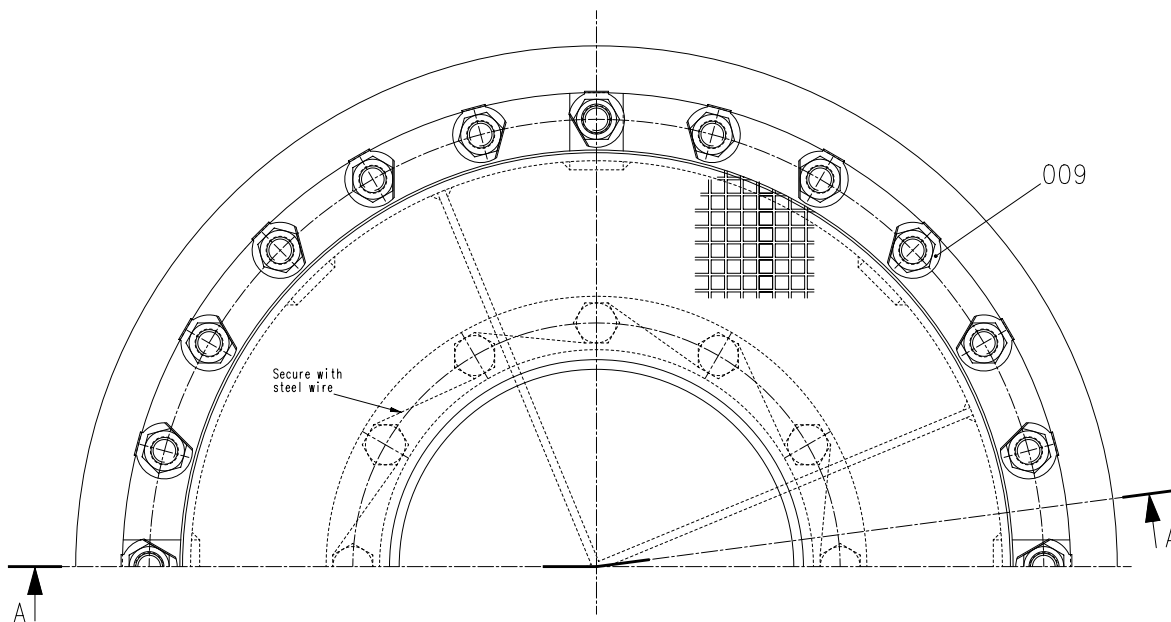
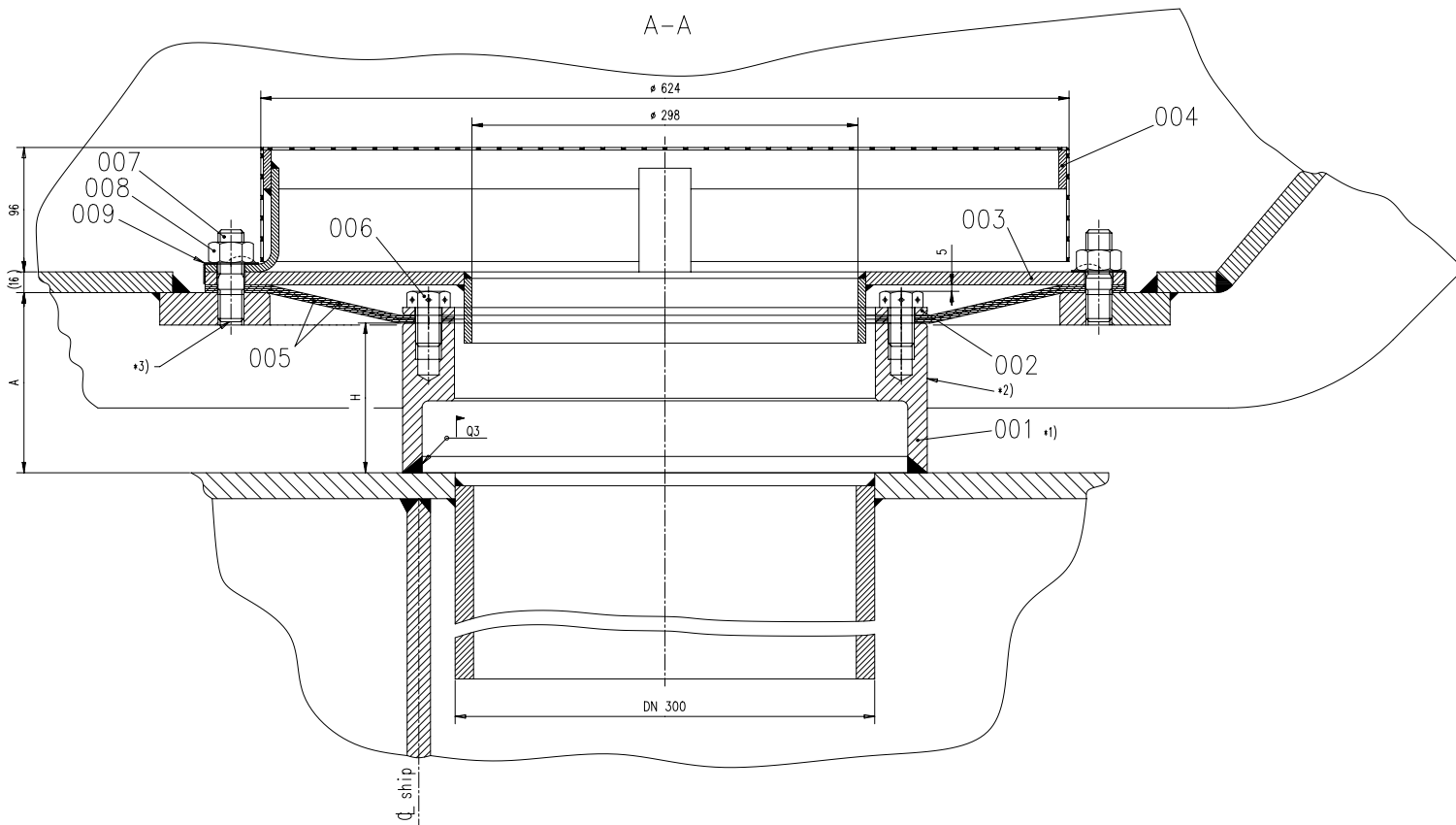
[illegible]



FREE END

- REMARKS:**
- *1) Drains must be arranged by the shipyard in accordance with the shipull 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 (MDS) "ENGINE / SEATING FOUNDATION" (foundation arrangement drawing, DG7710).
 - *3) Recommendation regarding the pipe size is given in the system proposal as provided in the MDS "LUBRICATING OIL SYSTEM" (LO system drawing, DG7722).
 - *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 shipull 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 MDS "LUBRICATING OIL DRAIN TANK - Filling Guidelines" (DG7722).
 - *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.

3	002	107246.982.200	VERTICAL OIL DRAIN	107246.982		76,0
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1	1	107246.799.200	107246.799.200	107246.799.200	107246.799.200	107246.799.200
1	1	107246.982.200	107246.982.200	107246.982.200	107246.982.200	107246.982.200
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REMARKS:

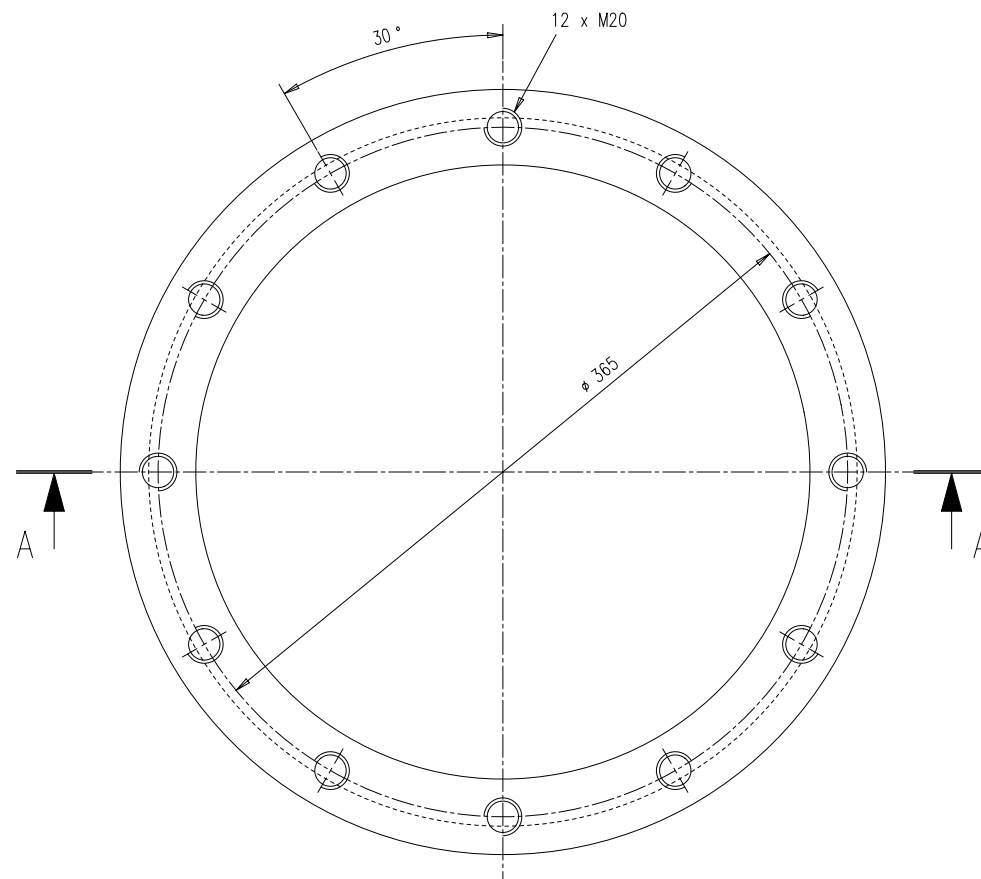
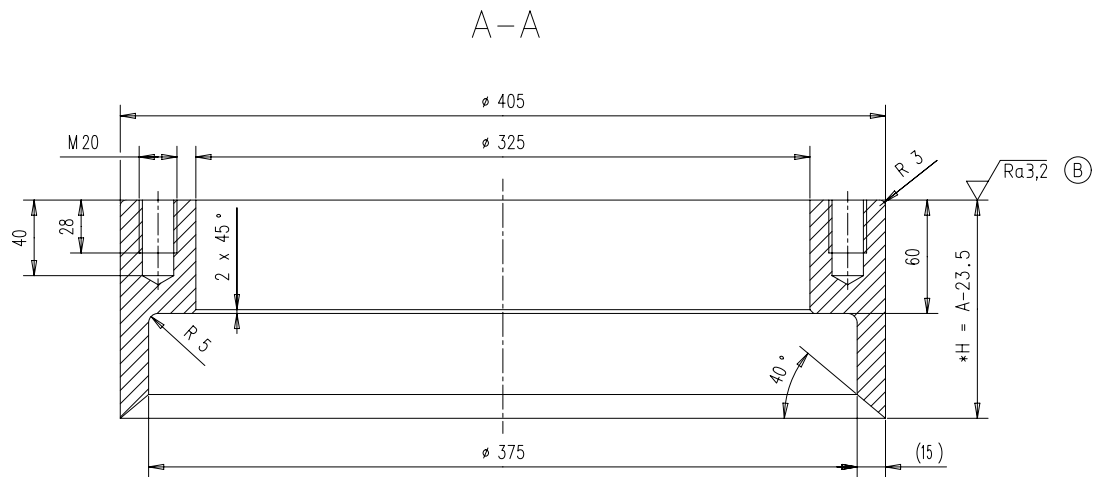
- *1) To be aligned after engine is in final position.
- *2) Pos. 001, 002, 005 and 006 to be pre-assembled prior to alignment. After alignment the Pos. 001 (flange) can be welded in place.
- *3) Driven in oil tight with jointing compound.

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

Items 001 to 009 are yard delivery

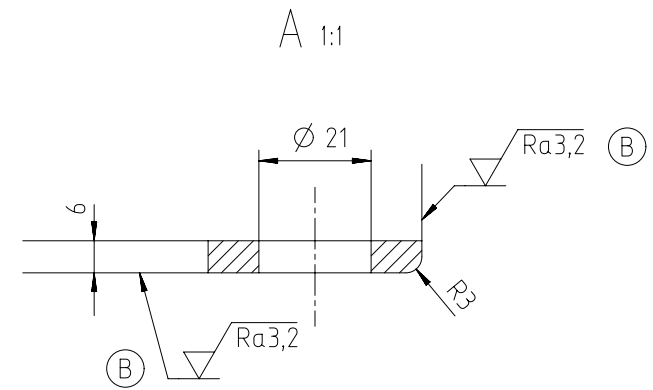
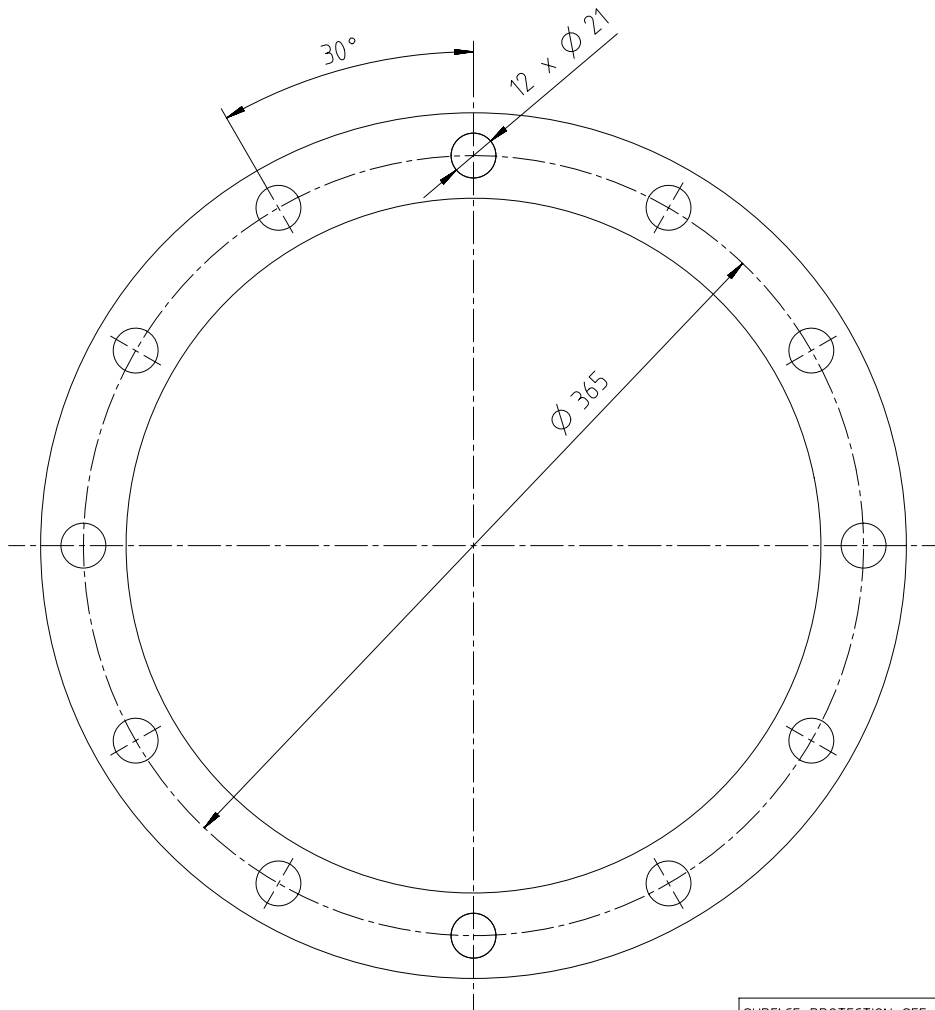
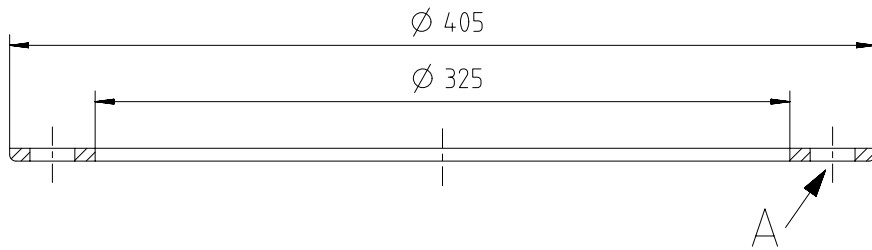
24	009	015.507.360.910	TAB WASHER	21	DIN 93	Steel Zn 5 bk	0,1
24	008	015.201.012.510	HEXAGON NUT	M20	ISO 4032	8	0,064
24	007	015.101.214.271	STUD	M20x4,5		8,8	0,17
12	006	015.151.374.201	HEXAGON HEAD SCREW	M20x30		8,8	0,12
2	005	107.246.190.001	RUBBER GASKET		107.246.190	NER 70 Sh	1,2
1	004	107.049.681.200	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
QTY	SEQ. NO.	Material ID	Material Name	Dimension, Qty	Standard or Drawing	Basic Material Material: Standard	Weight GR/NET
						Q-Code XXXXXX	Man. Drw.
						Standard ISO, JIS	

Model	EAAD014.378	10.07.1998	EAAD014.420	25.01.1999	EAAD014.567	20.11.2019		
Number	17.08.1995	A. Horsfjord	Scale	1:2	Size	A1	Page	1/1
Design Group	9722	06.02.1996	MLL011	LUTH	Material ID	107.246.182	Rev.	D
Units	mm kg	NX	Basic Material	W-2S	Product	VERTICAL OIL DRAIN ASSEMBLY DRAWING	Net Weight	76,7
Surface Protection	SEE GROUP 0344	TOLERANCING PRINCIPLE	ISO 8015	GENERAL TOLERANCES	ACCORDING TO ISO 2768-mK	WINGD	Winkelmann Gas & Diesel Ltd	



Ⓑ $\sqrt{Ra12,5}$ (✓) SHARP EDGES REMOVED
*For dimension <H> see drawing 1-107.246.182

Modif.	Free space for lic.				Q-Code XXXXXX Standard ISO; JIS				Main Drw.	
	A	EAAD014378	10.07.1998	B	EAAD091567	18.11.2019				
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
WIN GD Winterthur Gas & Diesel		Product W-2S				WELDING FLANGE Anschweisflansch				
		Basic Material W-FU-235-JR				Net Weight 28				
Units		mm	kg	NX		Scale		1:2	Size	A2
SURFACE PROTECTION SEE GROUP 0344		Made		21.08.1995		A. Horsfjord		Page		1/1
TOLERANCING PRINCIPLE ISO8015		Chkd				Design Group		Material ID		107.246.183.001
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd		17.10.1995		MLU011 Lütthi		Drawing ID		107.246.183
								Rev.		B

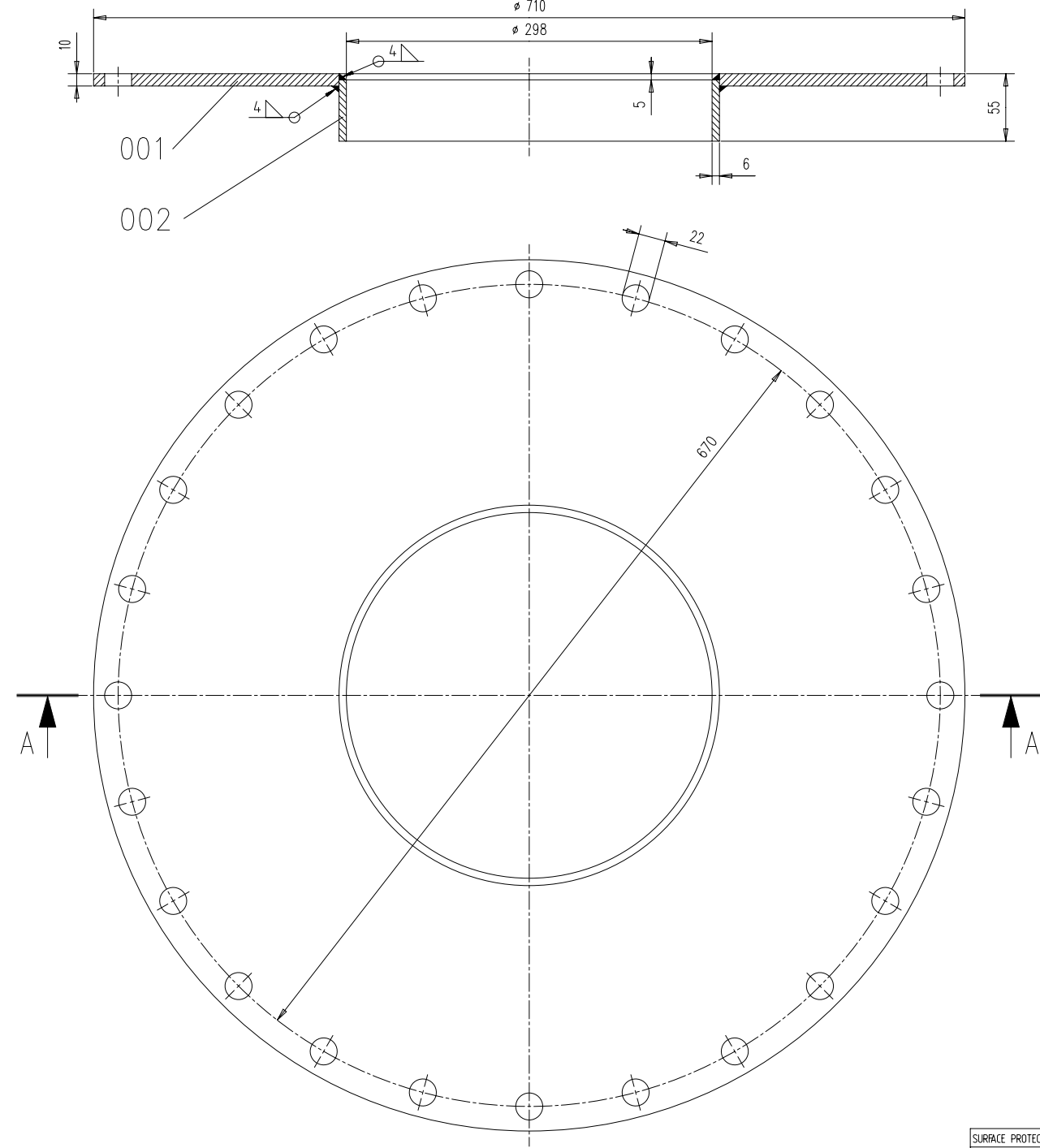


SHARP EDGES REMOVED

Free space for lic.								Q-Code XXXXXX	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	
WIN GD Winterthur Gas & Diesel			Product W-2S			RING Ring				
Units	mm kg	NX		Basic Material W-FU-235-JR					Net Weight 2	
Made	21.08.1995 A. Horsfjord			Scale 1:2.5		Size A3	Page 1/1	Material ID	107.246.186.001	
Chkd				Design Group						
Appd	17.10.1995 MLU011 Lüthi			9722		Drawing ID 107.246.186				Rev. B

A-A

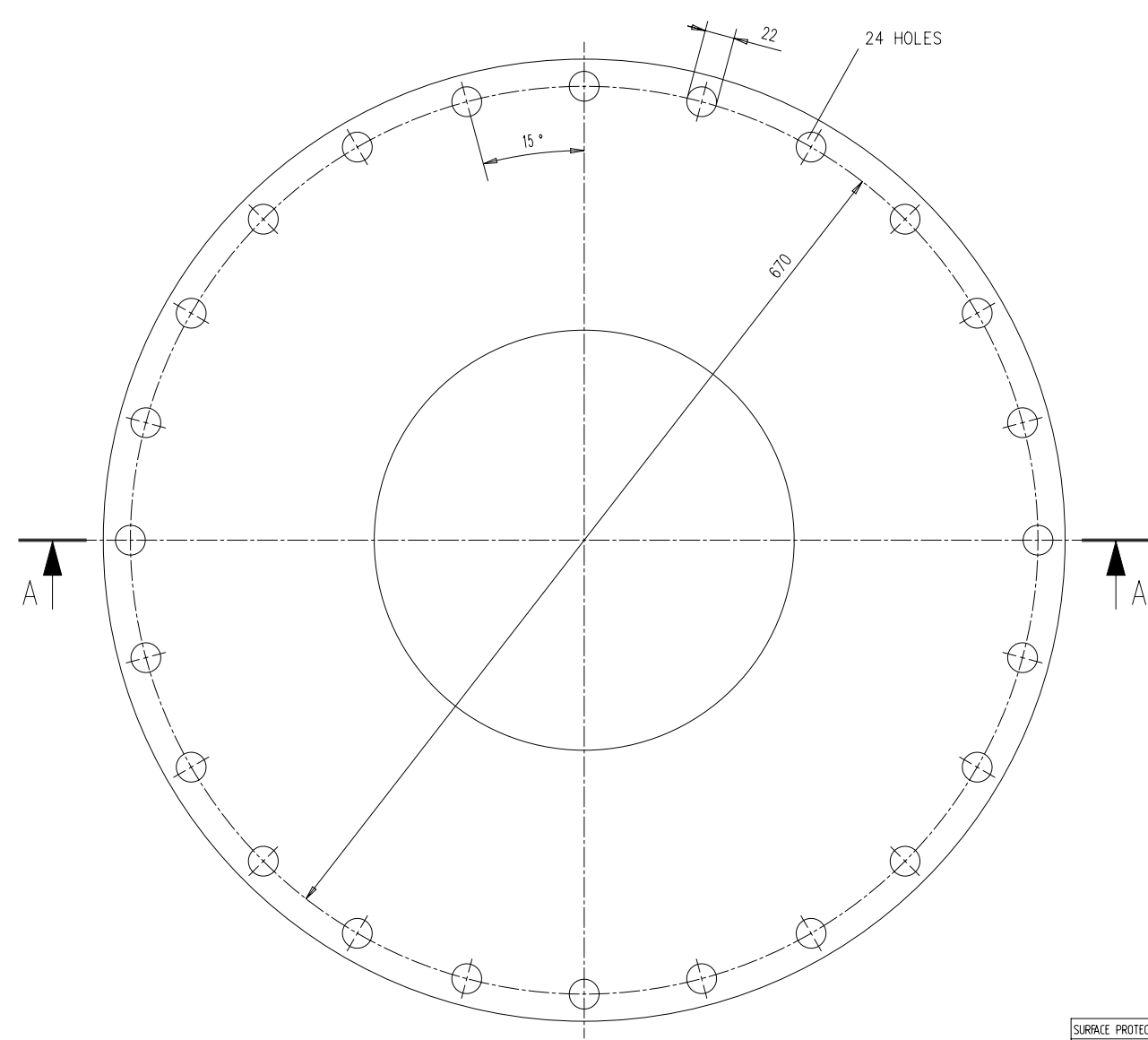
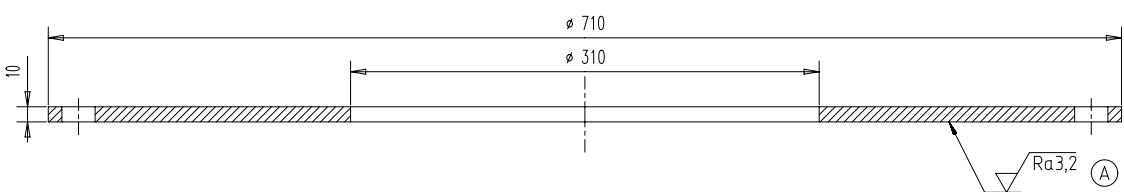
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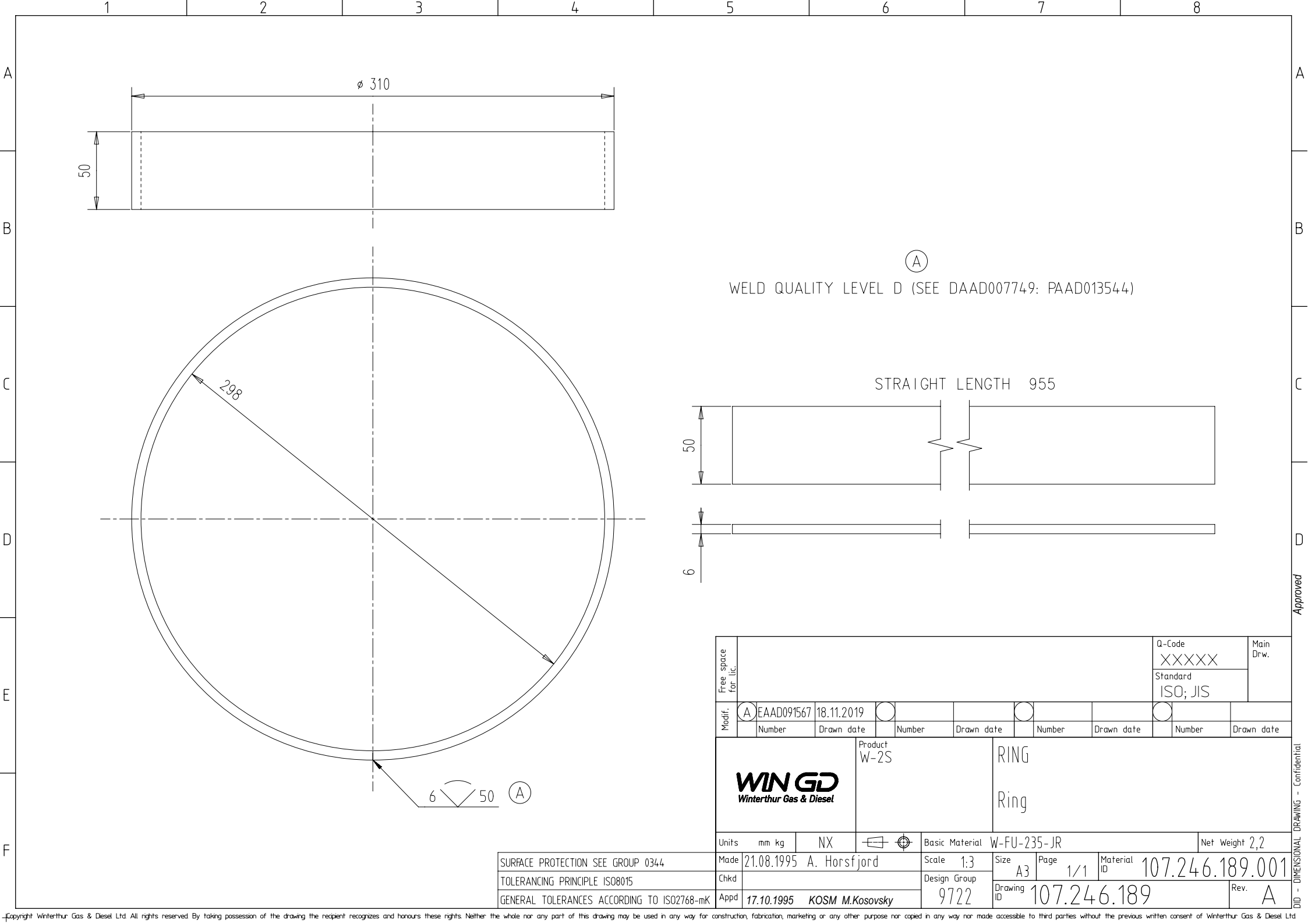
(A) WELD QUALITY LEVEL D (SEE DAAD007749; PAAD013544)

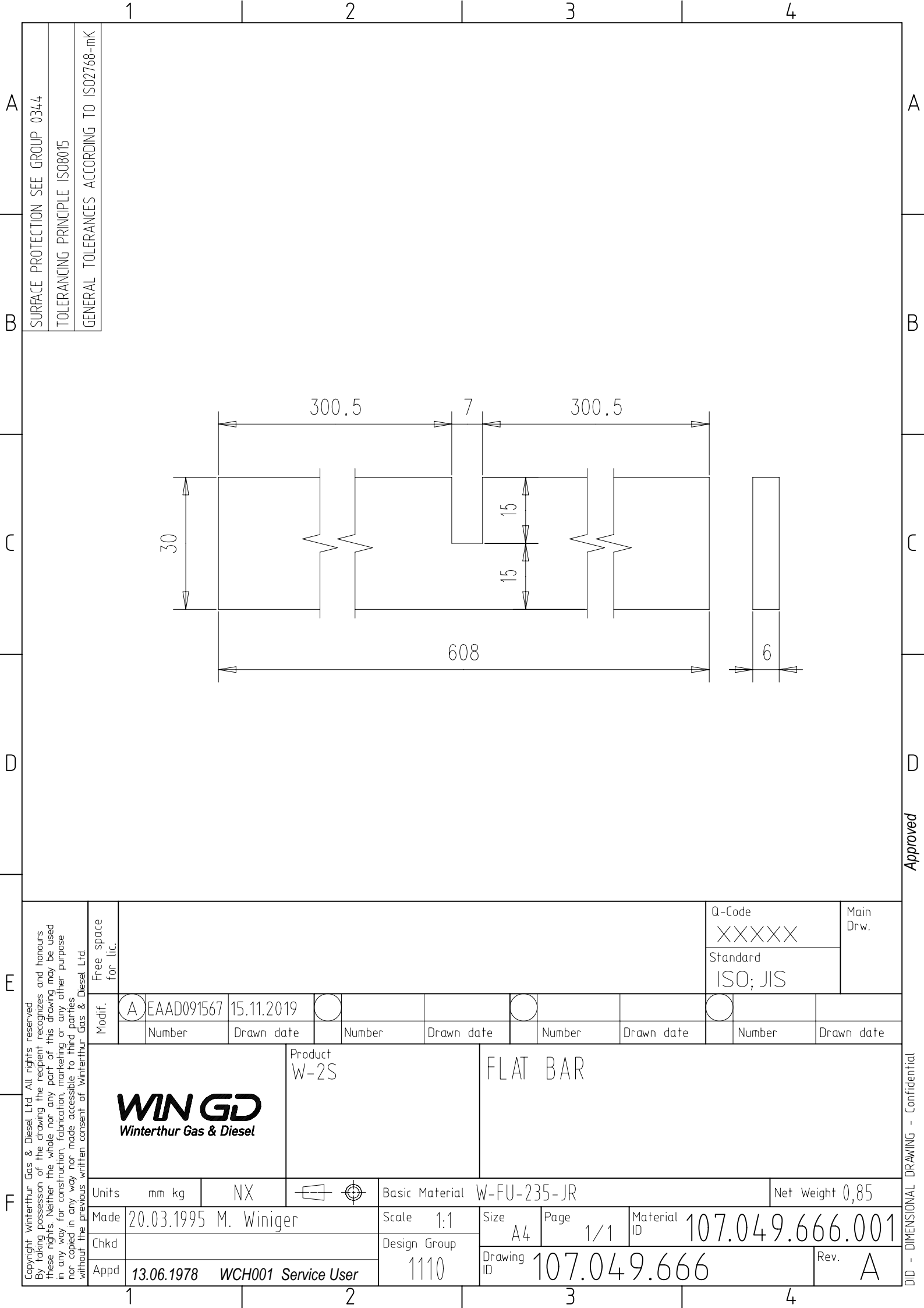
1	002	107.246.189.001	RING			107.246.189	W-FU-235-JR	2,2	
1	001	107.246.188.001	PLATE			107.246.188	W-FU-235-JR	24,4	
QTY	SEQ NO	Material ID	Material Name			Standard or Drawing	Basic Material Material Standard	Weight GR./NET	
Free space for lic.							Q-Code	Main Drw.	
							XXXXXX		
							Standard ISO; JIS		
Modif.	A	EAAD091567	18.11.2019						
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	
 Winterthur Gas & Diesel			Product W-2S		COVER				
					Deckel				
Units	mm kg	NX				Basic Material	Net Weight 26,6		
Made	21.08.1995 A. Horsfjord		Scale 1:2,5		Size A2	Page 1/1	Material ID	107.246.187.200	
Chkd			Design Group		Drawing ID 107.246.187				Rev. A
Appd	17.10.1995 MLU011 Lüthi		9722						
for fabrication, modification or any other purpose not covered in any way nor made accessible to third parties without the previous written consent of Winterthur Gas & Diesel Ltd.									

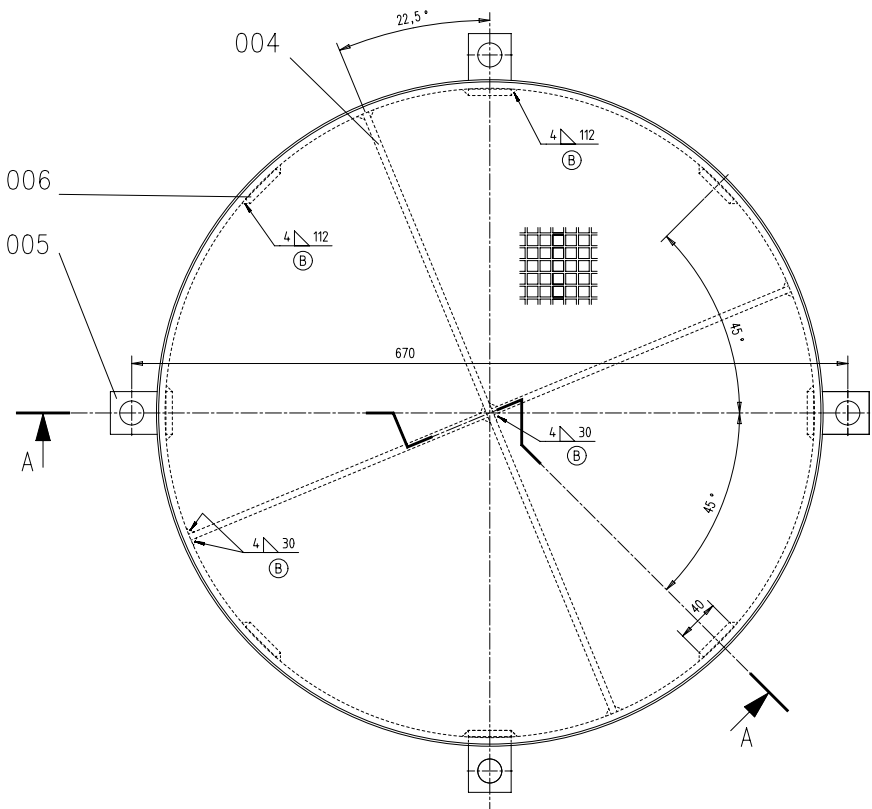
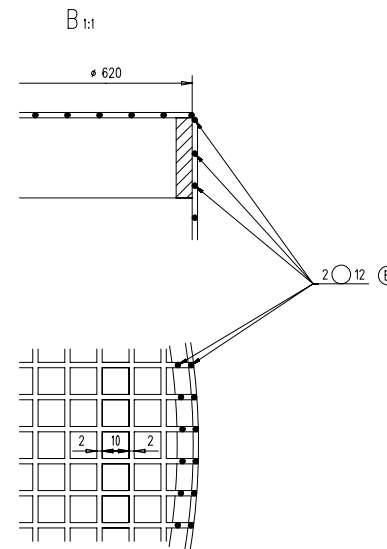
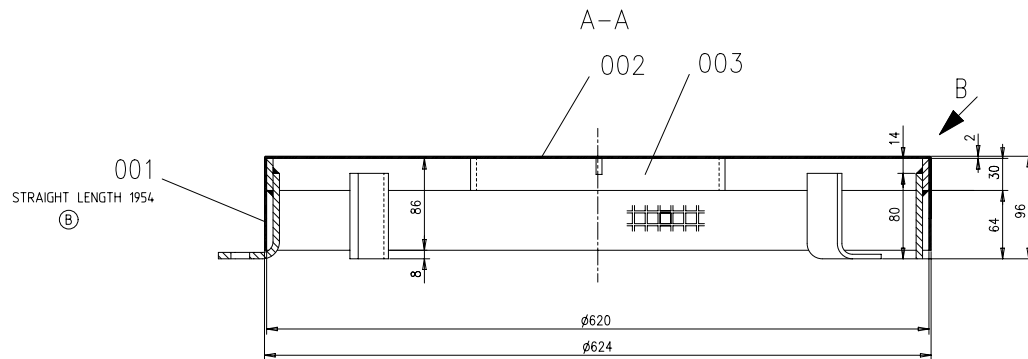
A-A



Modif.	Free space for lic.						Q-Code XXXXXX Standard ISO; JIS		Main Drw.		
	A		EAAD091567		18.11.2019						
Units		mm kg		NX		Product W-2S		PLATE		Net Weight 24,4	
Basic Material		W-FU-235-JR		Scale 1:2.5		Size A2		Page 1/1		Material ID 107.246.188.001	
Design Group		9722		Drawing ID 107.246.188		Rev. A					
SURFACE PROTECTION SEE GROUP 0344		Made 21.08.1995 A. Horsfjord		Chkd		Appd 17.10.1995 MLU011 Luthi					
TOLERANCING PRINCIPLE ISO8015											
GENERAL TOLERANCES ACCORDING TO ISO2768-mK											





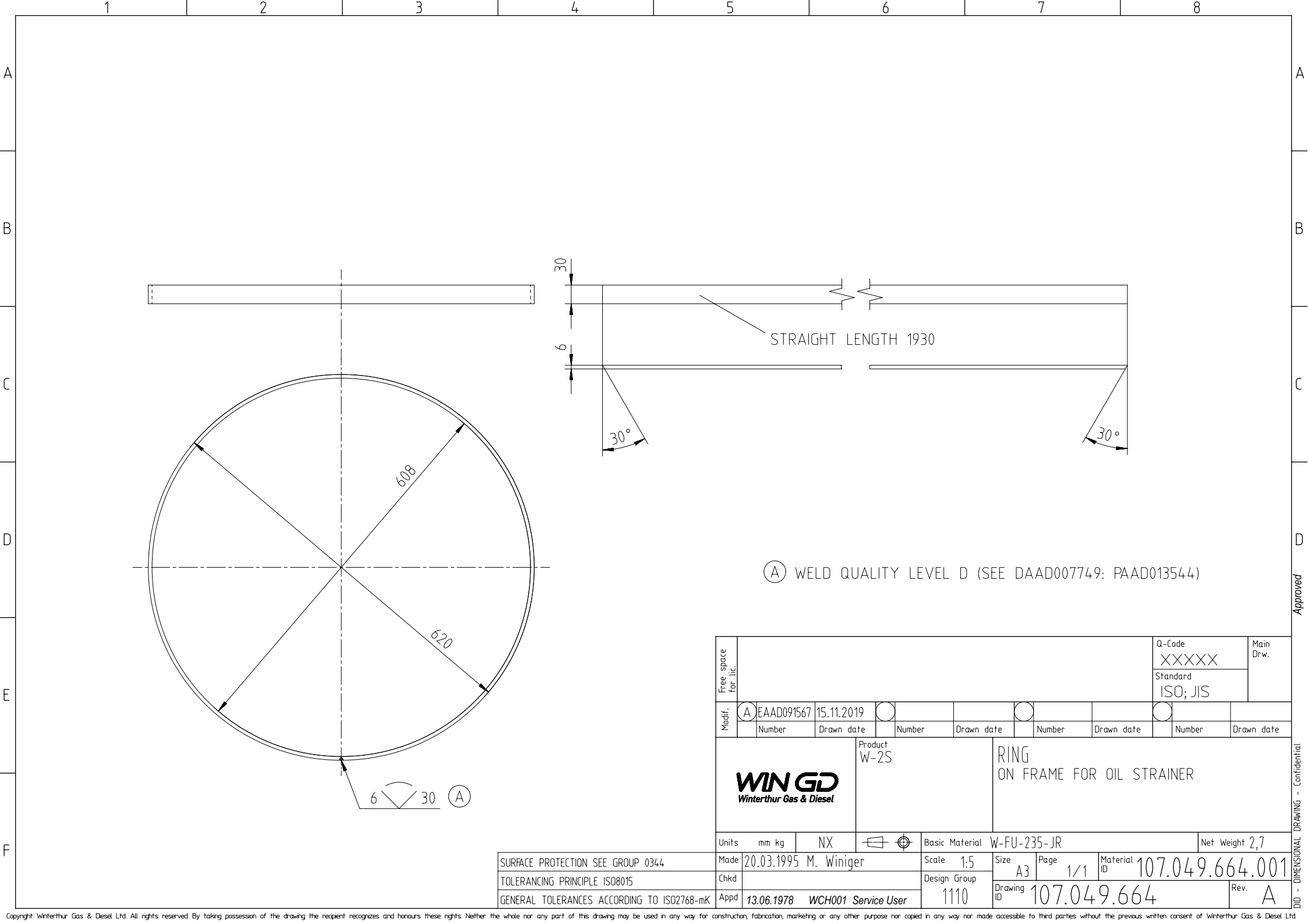


ROUGH CLEANED

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

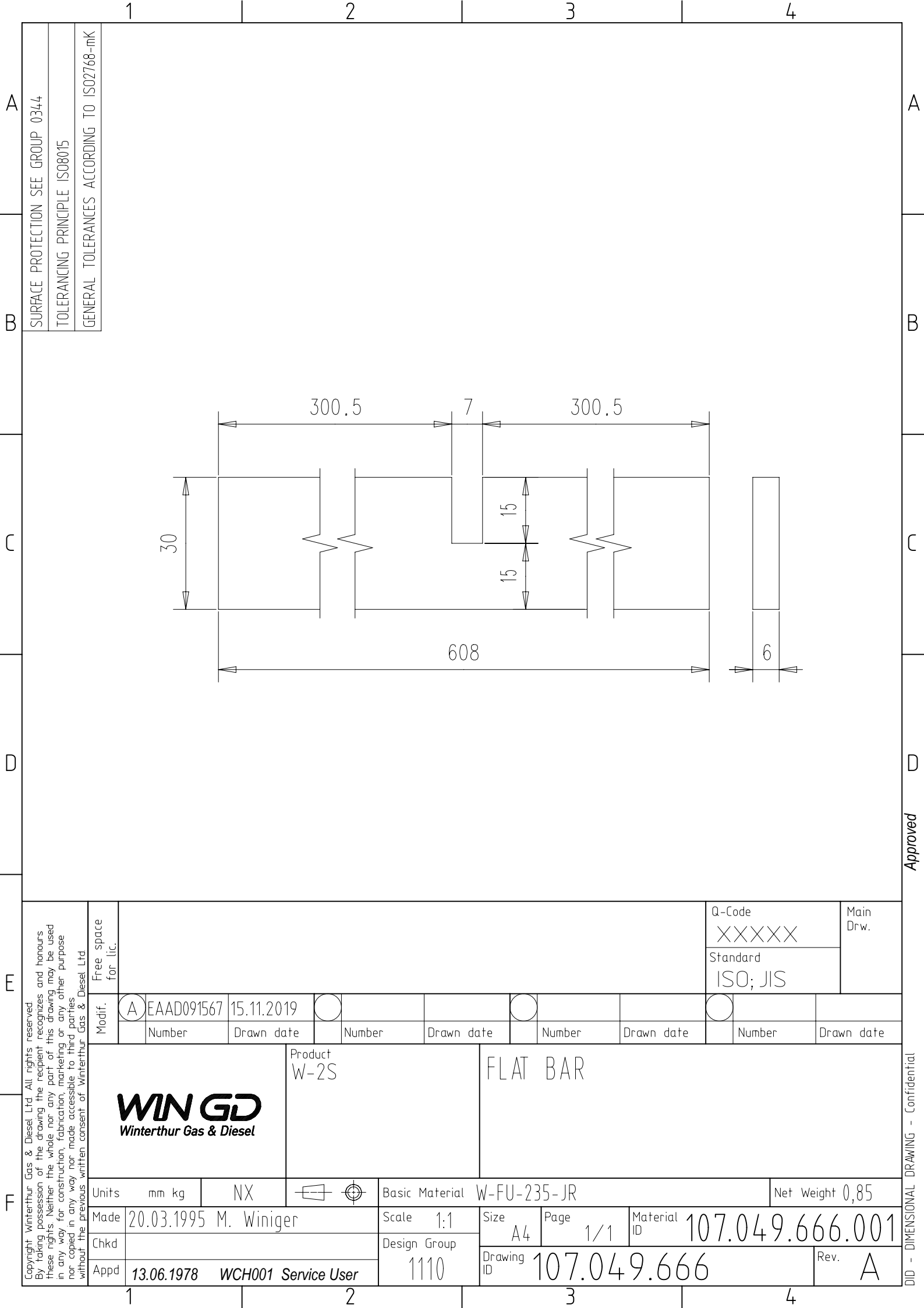
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4	005	107.049.665.001	HOLDER	107.049.665	W-FU-235-JR	0,24
2	004	107.049.666.001	FLAT BAR	107.049.666	W-FU-235-JR	0,85
1	003	107.049.664.001	RING	107.049.664	W-FU-235-JR	2,7
1	002	107.049.681.002	PERFORATED SHEET	107.049.681	W-FU-235-JR	1,4
1	001	107.049.681.001	PERFORATED SHEET	107.049.681	W-FU-235-JR	0,9
QTY	SEQ. NO.	Material ID	Material Name	Standard or Drawing	Basic Material	Weight GR/NET
					Q-Code	Man. Drw.
					XXXXXX	
					Standard	
					ISO	
Mod.	A	EAAD028037	04.02.2002	B	EAAD091567	19.11.2019
	Number	Drawn date	Number	Drawn date	Number	Drawn date

WINGO		Product		OIL STRAINER		Net Weight 8,3	
Wingothur Gas & Diesel		W-25		Oelsieb			
Units	mm kg	NX	Basic Material	Scale	1:2,5	Size	A1
Surf. Protection	SEE GROUP 0344	Made	19.06.1978	S.N.A.T.A.L.I.	Design Group	Page	1/1
TOLERANCING PRINCIPLE	ISO8015	Chd	19.06.1978	WCH001	Service User	Material ID	107.049.681.200
GENERAL TOLERANCES	ACCORDING TO ISO2768-mK	Appd	19.06.1978	WCH001	Service User	Drawing ID	107.049.681
						Rev.	B

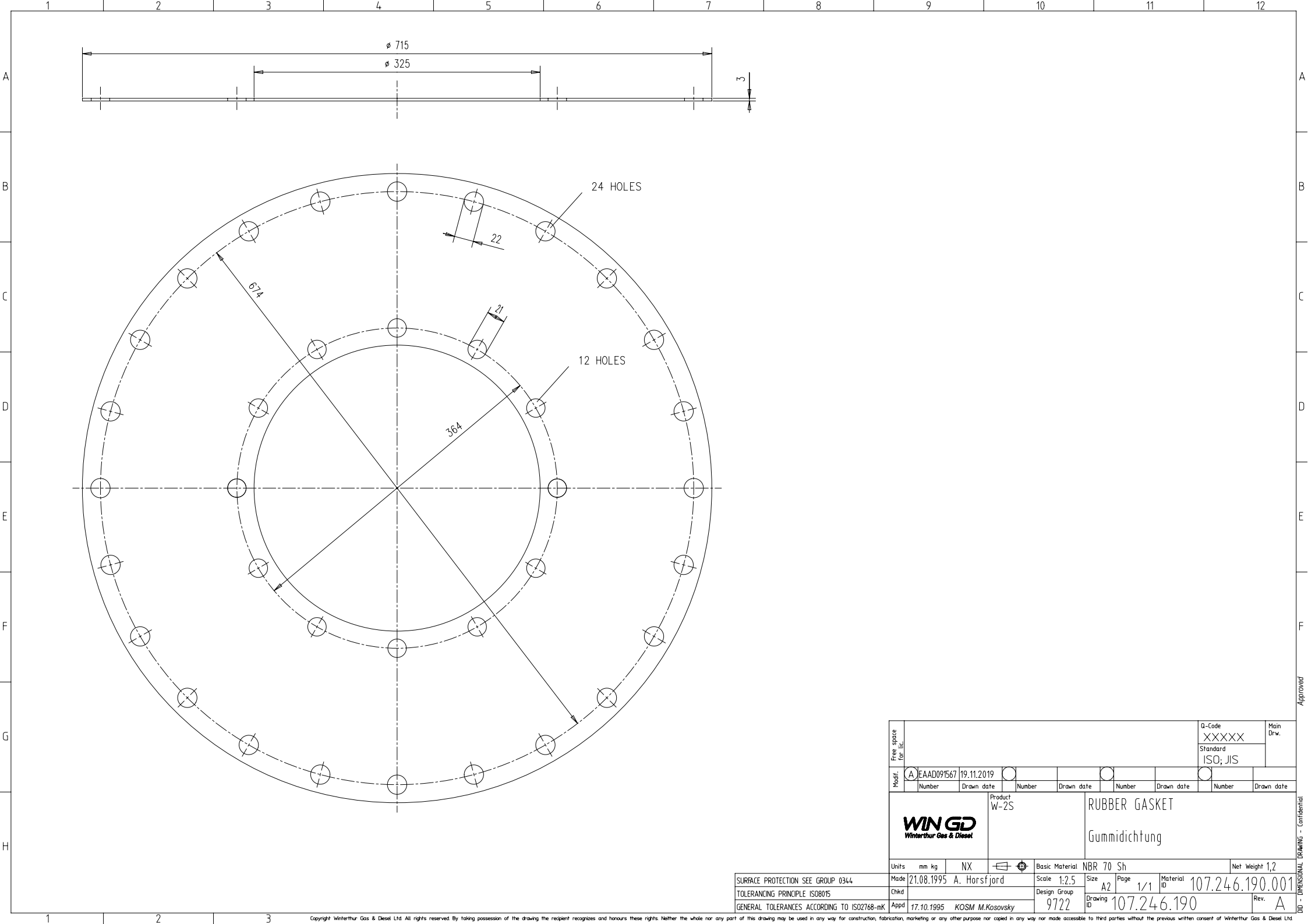


(A) WELD QUALITY LEVEL D (SEE DAAD007749: PAAD013544)

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 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							

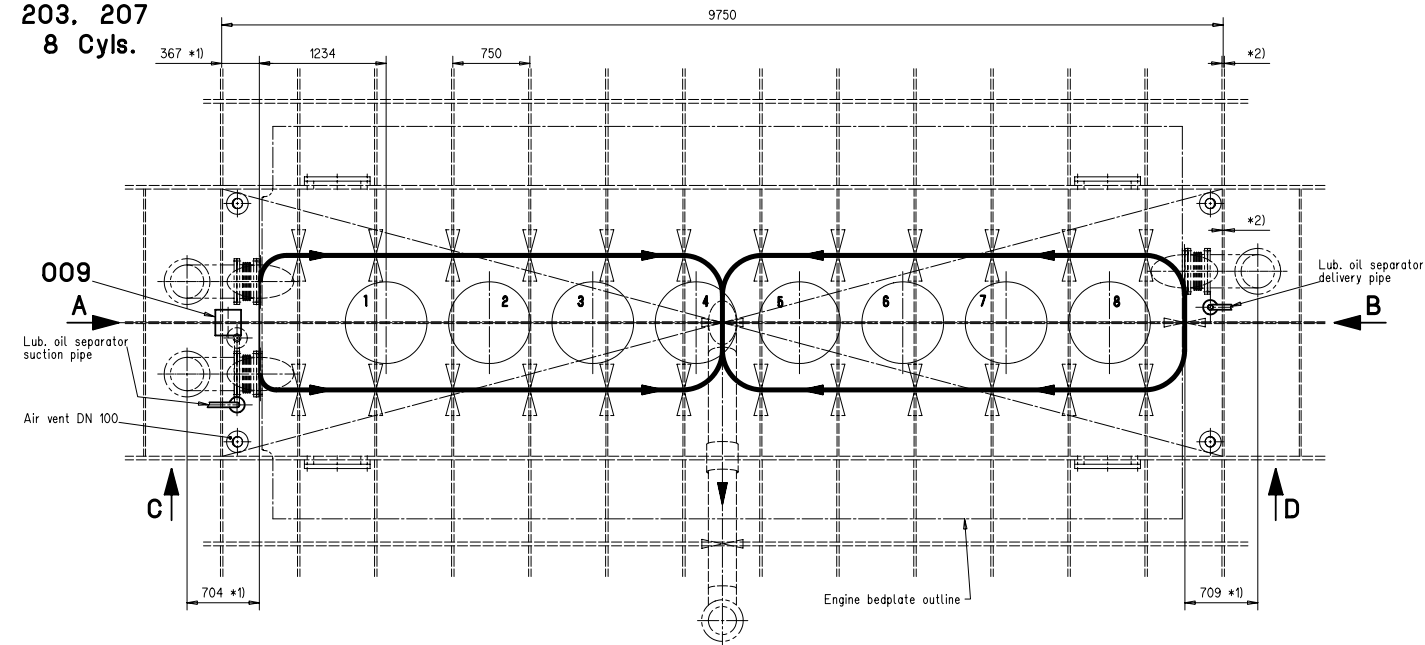


	1	2	3	4																				
A	SURFACE PROTECTION SEE GROUP 03/44																							
B	TOLERANCING PRINCIPLE ISO8015																							
	GENERAL TOLERANCES ACCORDING TO ISO2768-mK																							
	STRAIGHT LENGTH 127 6 20 38 58 40 20 20 22 R 13 80																							
C																								
D																								
	Approved																							
F	Copyright Winterthur Gas & Diesel Ltd. All rights reserved. By taking possession of the drawing the recipient recognizes and honours these rights. Neither the whole nor any part of this drawing may be used in any way for construction, fabrication, marketing or any other purpose nor copied in any way nor made accessible to third parties without the previous written consent of Winterthur Gas & Diesel Ltd. Free space for lic. Q-Code XXXXXX Standard ISO; JIS Main Drw.																							
	<table><tr><td>Modif.</td><td>A</td><td>EAAD091567</td><td>15.11.2019</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>Number</td><td>Drawn date</td><td></td><td>Number</td><td>Drawn date</td><td></td><td>Number</td><td>Drawn date</td><td></td></tr></table>				Modif.	A	EAAD091567	15.11.2019								Number	Drawn date		Number	Drawn date		Number	Drawn date	
Modif.	A	EAAD091567	15.11.2019																					
	Number	Drawn date		Number	Drawn date		Number	Drawn date																
	WIN GD Winterthur Gas & Diesel		Product W-2S		HOLDER																			
F	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			Material ID	107.049.665.001																
	Appd	13.06.1978 WCH001 Service User		1110	Drawing ID		107.049.665		Rev. A															
	1	2	3	4																				

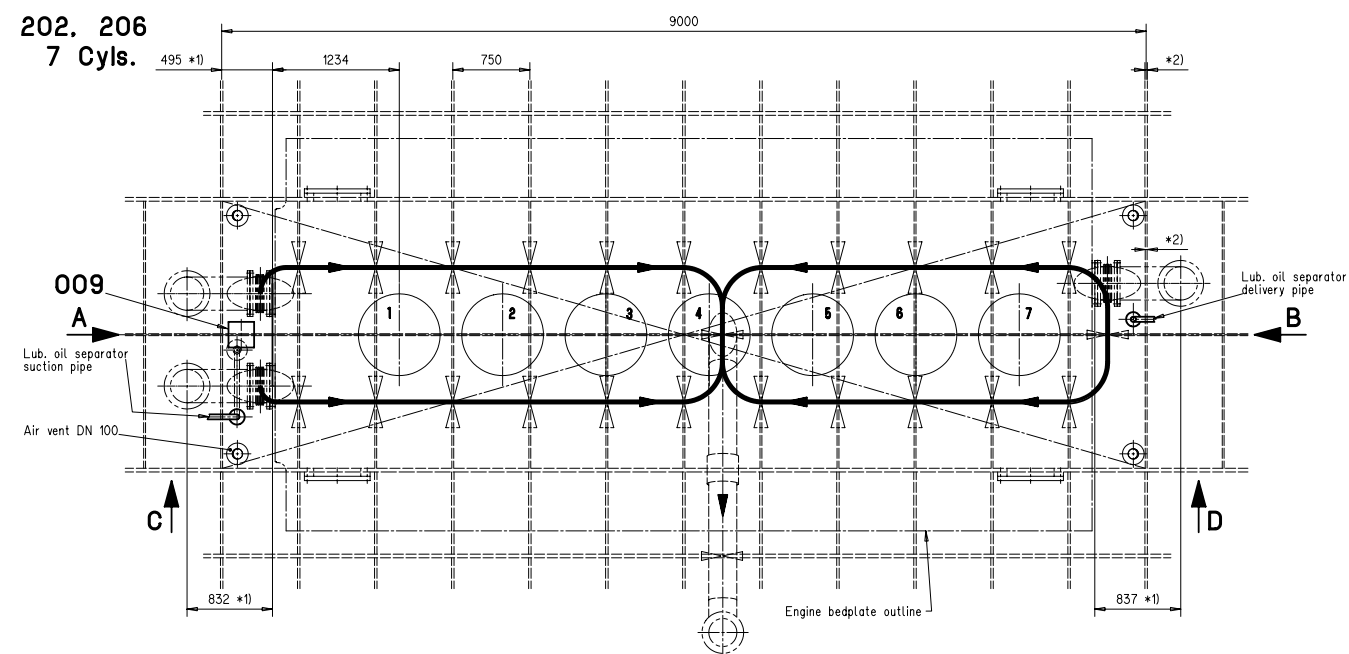


Modif.	Free space for file							Q-Code XXXXXX Standard ISO; JIS		Main Drw.
	A	EAAD091567	19.11.2019							
	Number	Drawn date	Product	Number	Drawn date	Number	Drawn date	Number	Drawn date	
WIN GD Winterthur Gas & Diesel			W-2S	RUBBER GASKET Gummidichtung						
Units	mm kg	NX		Basic Material	NBR 70 Sh				Net Weight 1,2	
Made	21.08.1995 A. Horsfjord			Scale 1:2.5	Size	Page	Material ID	107.246.190.001		
Chkd				Design Group 9722	A2	1/1				
Appd	17.10.1995 KOSM M.Kosovsky				Drawing ID	107.246.190			Rev. A	

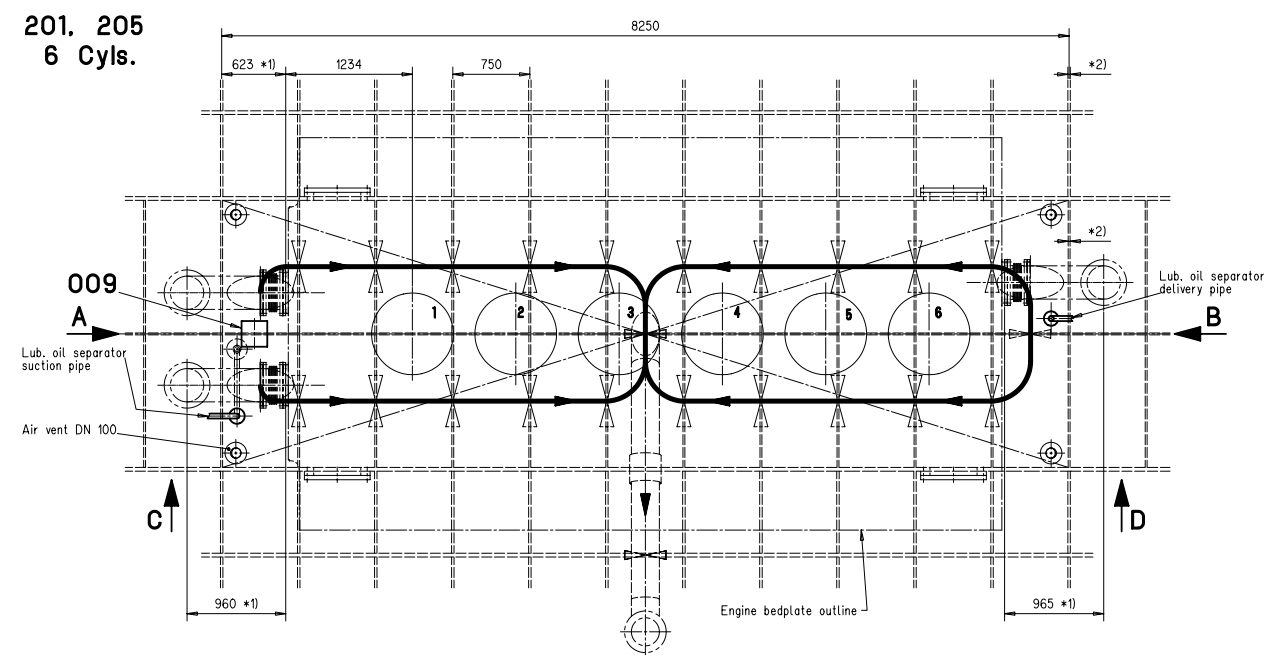
203, 207
8 Cyls.



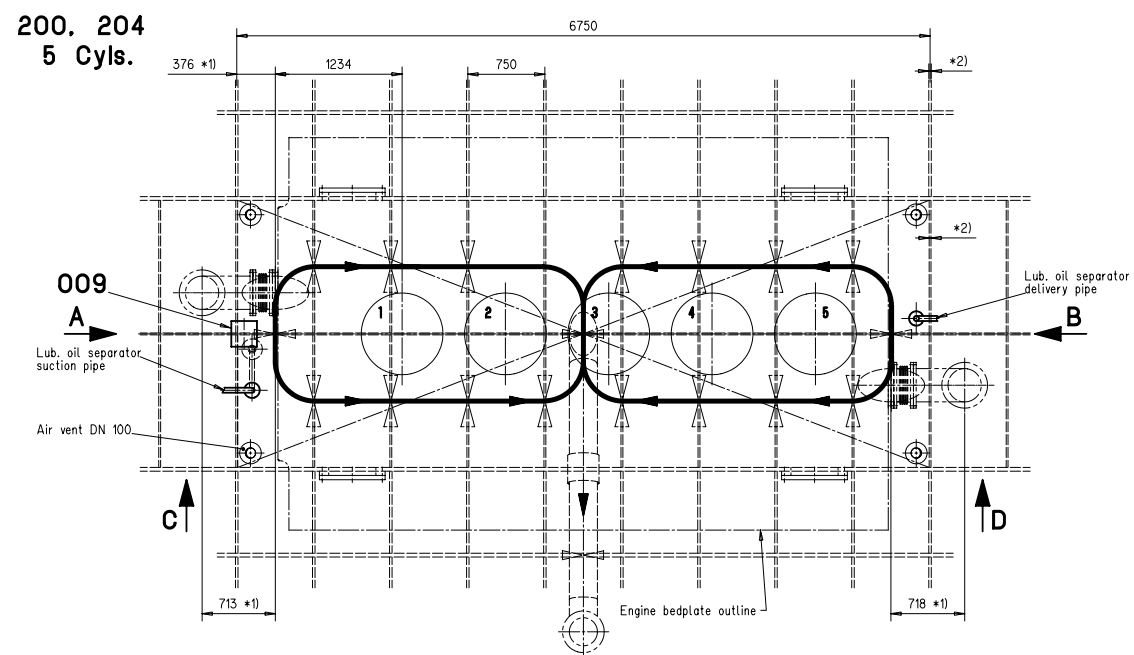
202, 206
7 Cyls.



201, 205
6 Cyls.



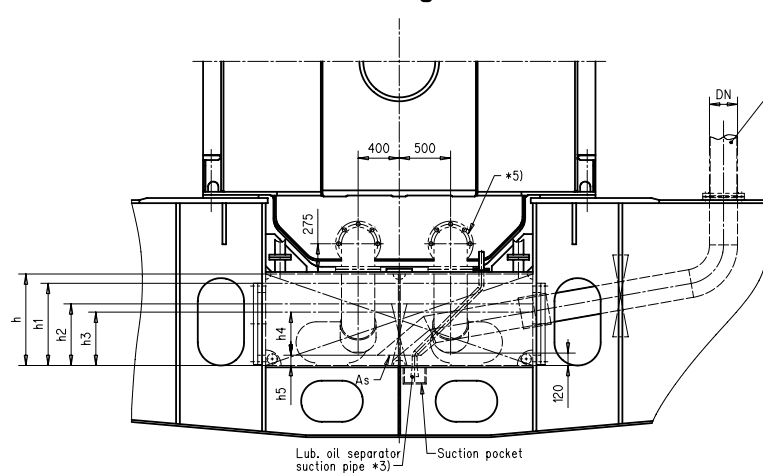
200, 204
5 Cyls.



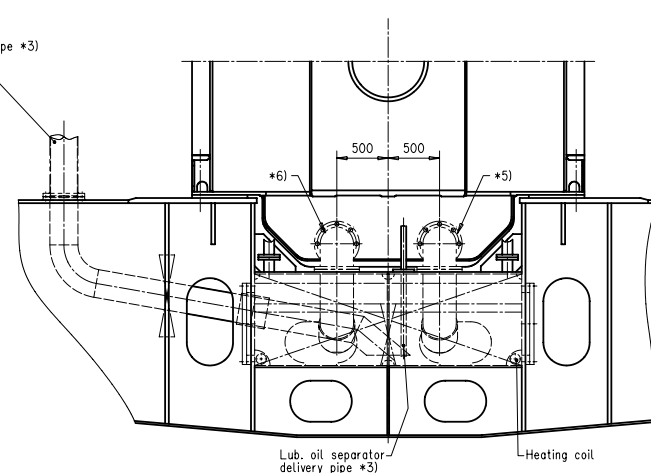
Dimensioning guidelines and capacities for tank design

			No. of cylinders			
			5	6	7	8
h	Total tank height	(mm)	860	800	880	940
	Total tank volume:	(m ³)	15.1	17.3	20.5	23.8
h1	Initial filling level	(mm)	800	750	810	870
	volume: 100%	(m ³)	14	16	19	22
h2	Service level	(mm)	600	560	610	650
	volume: ~ 75%	(m ³)	10.5	12	14.3	16.5
h3	Low level alarm	(mm)	520	490	530	570
	volume: ~ 65%	(m ³)	9.1	10.4	12.4	14.3
h4	Pipe immersion height (from lower oil level) min 1.5 x DN					
	Distance between suction pipe and bottom of tank = DN/3					
As			Suction Area			
			min. 1.5x suction pipe area (DN)			
Vs			Velocity			
			2m/s			
200	5 Cyls.	Execution with oval expansion piece	204	5 Cyls.	Execution with flexible connecting piece	
201	6 Cyls.		205	6 Cyls.		
202	7 Cyls.		206	7 Cyls.		
203	8 Cyls.		207	8 Cyls.		

A (Driving end)

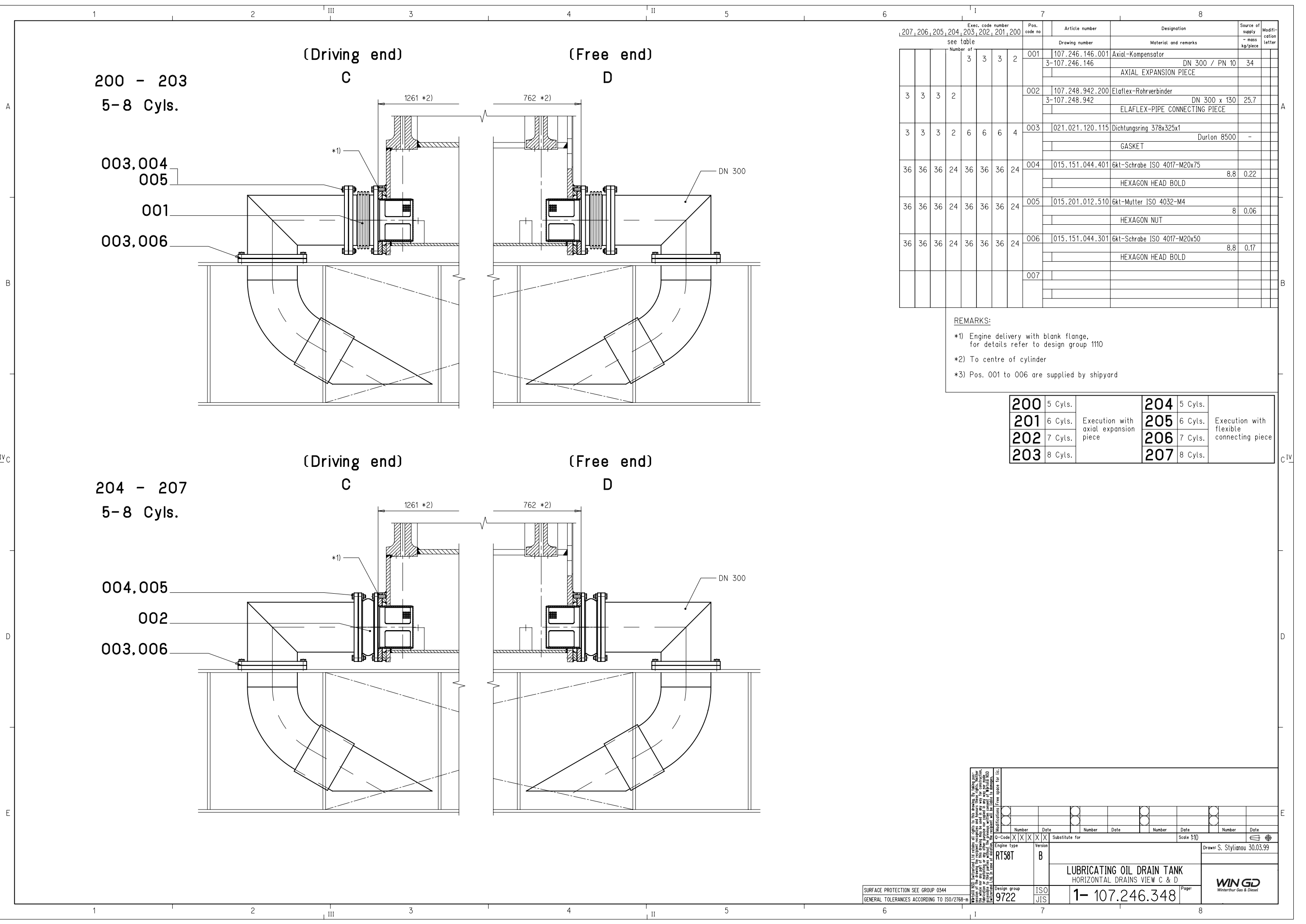


B (Free end)



REMARKS:

- *1) Proposal, final position to be determined by shipyard in accordance with engine builder (refer to design group 1110).
- *2) Plate thickness refer to drawing "Engine foundation" design group 9710.
- *3) Dimension according to drawing "lub. oil system" main circuit
- *4) The values are based on a required lub. oil capacity of approx. 1.36l/kW at CMCR.
- *5) Valid only for engines with 6, 7 and 8 cylinders
- *6) Valid only for engines with 5 cylinders



Exec. code number							Pos. code no	Article number	Designation	Source of supply ~ mass kg/piece	Modifi- cation letter	
see table												
Number of							Drawing number	Material and remarks				
				3	3	3	2	001	107.246.146.001	Axial-Kompensator		
									3-107.246.146	DN 300 / PN 10	34	
										AXIAL EXPANSION PIECE		
3	3	3	2					002	107.248.942.200	Elaflex-Rohrverbinder		
									3-107.248.942	DN 300 x 130	25.7	
										ELAFLEX-PIPE CONNECTING PIECE		
3	3	3	2	6	6	6	4	003	021.021.120.115	Dichtungsring 378x325x1		
										Durlon 8500	-	
										GASKET		
36	36	36	24	36	36	36	24	004	015.151.044.401	6kt-Schraube ISO 4017-M20x75	8.8	0.22
										HEXAGON HEAD BOLD		
36	36	36	24	36	36	36	24	005	015.201.012.510	6kt-Mutter ISO 4032-M4	8	0.06
										HEXAGON NUT		
36	36	36	24	36	36	36	24	006	015.151.044.301	6kt-Schraube ISO 4017-M20x50	8.8	0.17
										HEXAGON HEAD BOLD		
								007				

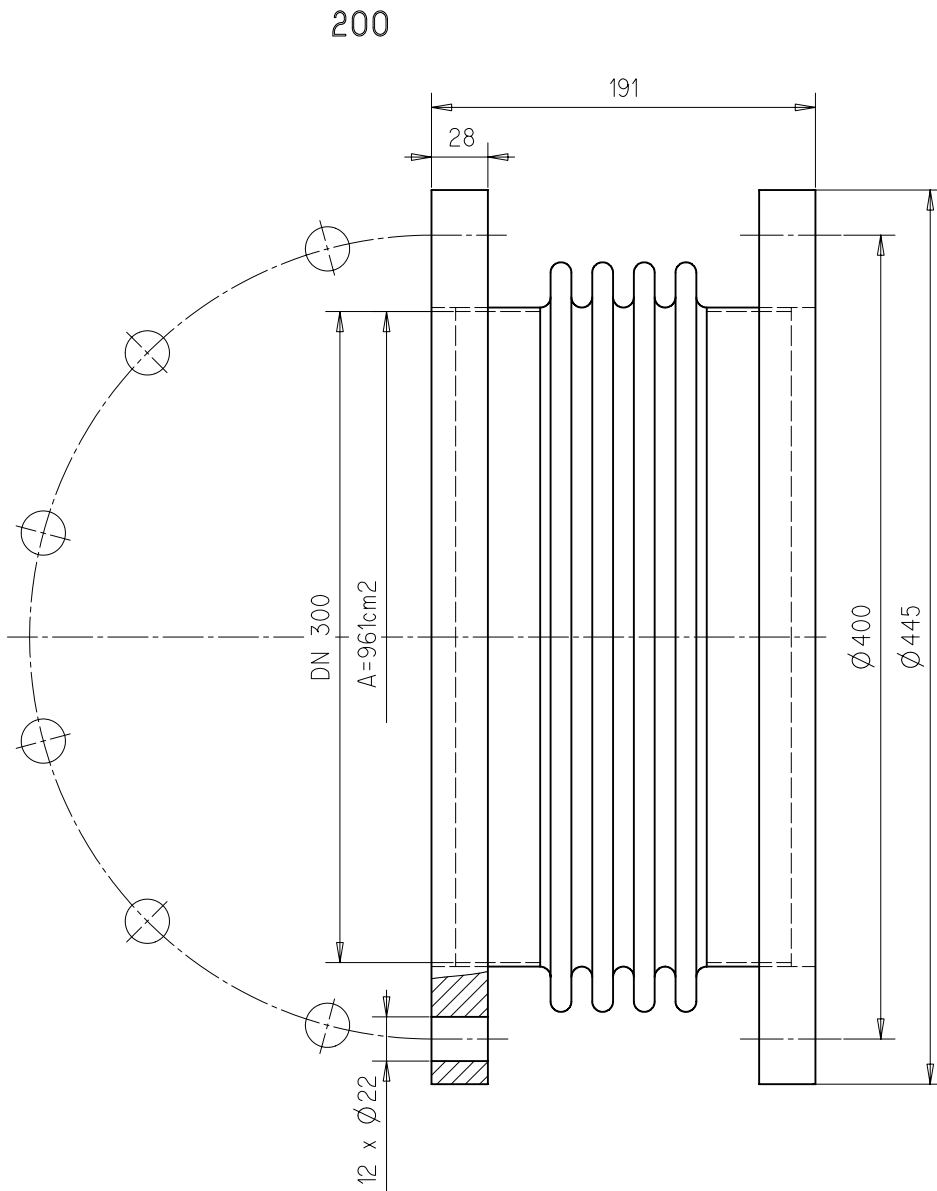
REMARKS:

*1) Engine delivery with blank flange, for details refer to design group 1110

*2) To centre of cylinder

*3) Pos. 001 to 006 are supplied by shipyard

200	5 Cyls.	Execution with axial expansion piece	204	5 Cyls.	Execution with flexible connecting piece
201	6 Cyls.		205	6 Cyls.	
202	7 Cyls.		206	7 Cyls.	
203	8 Cyls.		207	8 Cyls.	



Exec. code number	Pos. code no	Article number	Designation	Source of supply	Modifi-
200				~ mass kg/piece	cation letter
Number of		Drawing number	Material and remarks		
1	001	107.246.146.001	Axial-Kompensator DN300/PN10x191		
	3-		1.4541, 1.4571 Flansch aus RSt 37-2	34	
			AXIAL EXPANSION PIECE		
	002				

Wartsila NSD, Switzerland Ltd retains all rights to this drawing. By taking possession of this drawing, the recipient agrees to use it only for the purpose intended and to return it to the issuer if it is no longer required. The whole or any part of this drawing may be used in any way for construction, fabrication or marketing or any other purpose not copied in any way for made accessible to third parties without the previous written consent of Wartsila NSD Switzerland Ltd. In case of violation, the recipient will be liable to damages.									
Modifications Free space for lic.									
1									
Number	Date	Number	Date	Number	Date	Number	Date	Number	Date
X	X	X	X	X	X	X	X	X	X
Substitute for							Scale 1:2,5		
Engine type		Version		Axial-Kompensator				Drawn: S. Stylianou 26.01.98	
RT62U		B		DN 300 / PN 10					
				AXIAL EXPANSION PIECE					
				DN 300 / PN 10					
Design group		ISO		3-107.246.146				Page: 1/1	
9717									

SURFACE PROTECTION SEE GROUP 0344

GENERAL TOLERANCES ACCORDING TO ISO/2768-m

WINGD
Winterthur Gas & Diesel

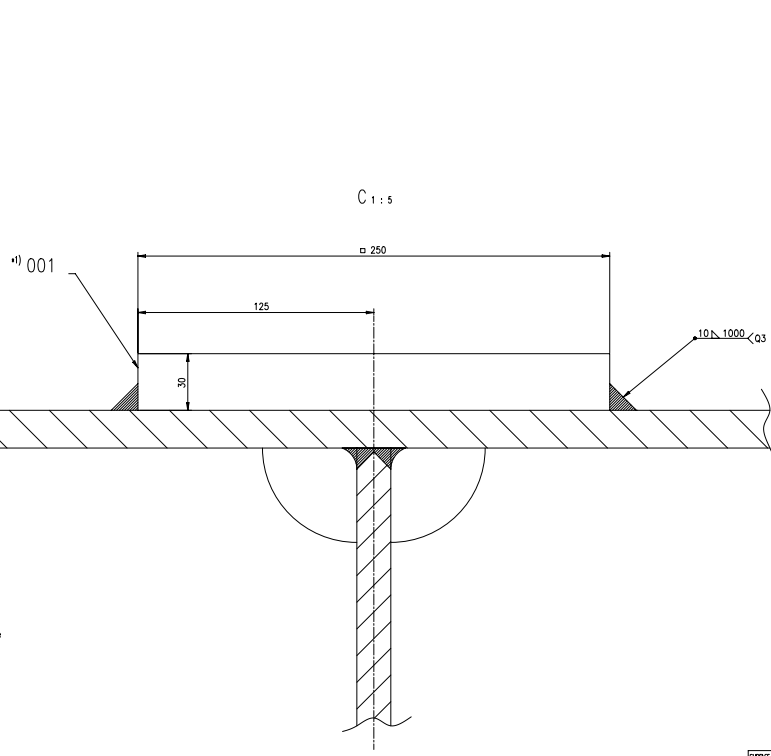
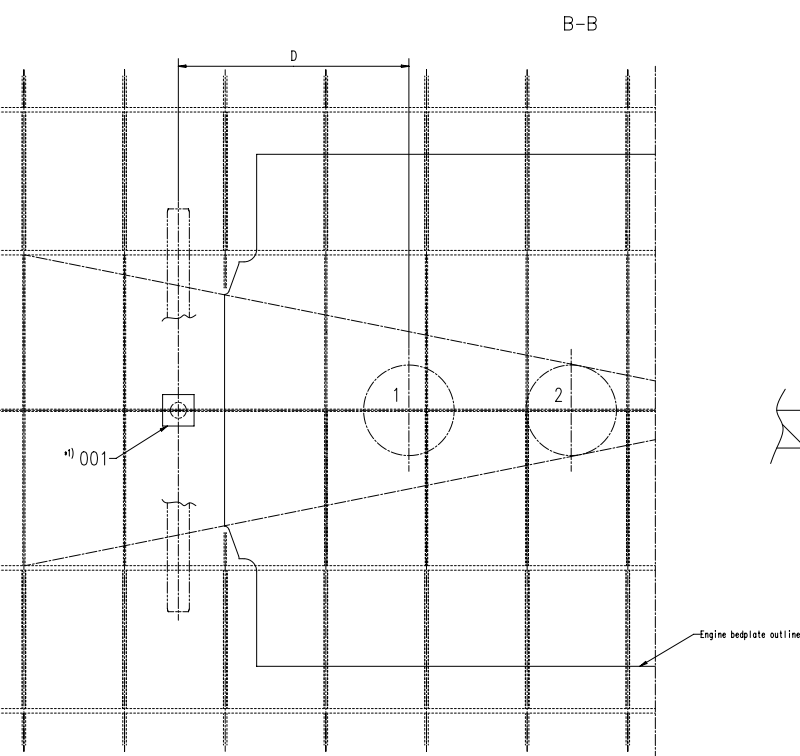
Technical drawing of a circular structure, likely a pipe or duct, showing a cross-section and a longitudinal view. The drawing includes the following dimensions and features:

- Overall Diameter:** $\varnothing 445$
- Internal Diameter:** $\varnothing 338$
- Wall Thickness:** $Q = 800 \text{ cm}^2$
- Longitudinal View Dimensions:**
 - Top Flange Thickness:** 3
 - Flange Diameter:** 23
 - Flange Height:** $12 \times \varnothing 22$
 - Internal Profile:** A wavy line representing the internal structure, with a maximum height of 130 .
 - Bottom Flange Thickness:** 3
 - Bottom Flange Diameter:** 23
 - Bottom Flange Height:** $12 \times \varnothing 22$
- Other Dimensions:**
 - DN300** (Nominal Diameter)
 - $\varnothing 400$** (Internal Diameter)

Exec. code number			Pos. code no	Article number	Designation	Source of supply	Modification letter
200							
Number of				Drawing number	Material and remarks	~ mass kg/piece	
		1	001	107.248.942.001	Elaflex-Rohrverbinder DN 300x130		
			3-		ERV-G 300.10 gs	25.7	
					PIPE CONNECTING PIECE		
					ERV-G 300.10 gs		
		*	002	107.248.359.500	Spezifikation		
				4-107.248.359	fuer Elaflex-Rohrverbinder		
					SPECIFICATION FOR ELAFLEX		
				E4-107.248.359	PIPE CONNECTING PIECE		
		kg					
		25.7					

INSTALLATION: -LUBRICATING OIL
-FRESH WATER
-SEA-WATER AND BRACKISH WATER

Modifications Free space for l.c. (in case of violation, the recipient will be liable to damages.)															
Number Date		Number Date		Number Date		Number Date		Number Date		Number Date		Number Date		Number Date	
O-Code ☒ ☒ ☒ ☒ ☒		Substitute for						Scale 1:2,5							
Engine type		Version		Elaflex-Rohrverbinder DN300x130 ELAFLEX-PIPE CONNECTING PIECE								Drawn: M. Mark 22.07.97 O. Kohler 22.07.97			
Design group 9717		ISO 3-107.248.942										Page:			



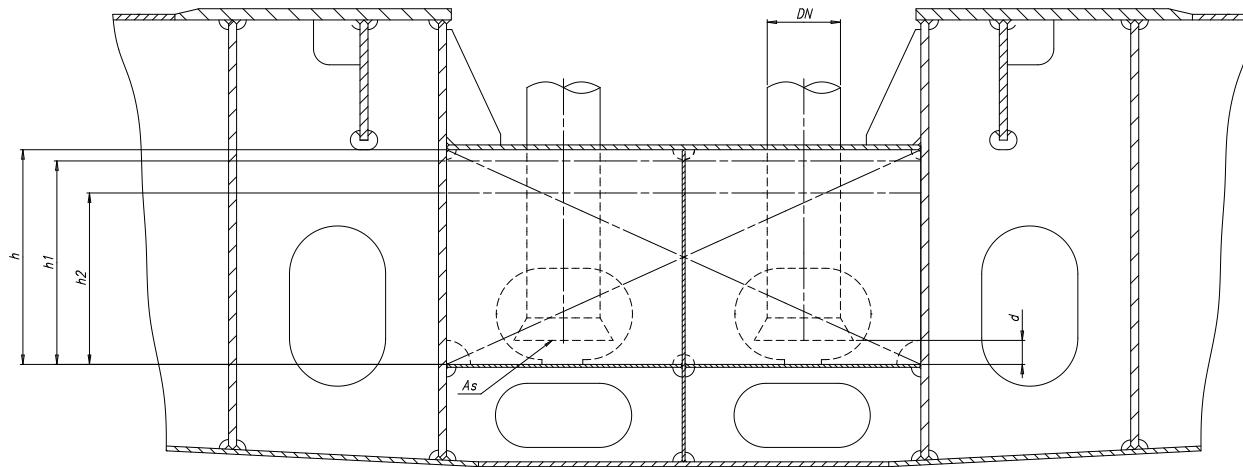
ENGINE TYPE	D	E
RT-fl ex50-D/DF	1387	165
X82-B	2395	460
X35-B	1015	124
X40-B	1170	172
X52/X52DF/X52DF-1,0/X52DF-2,1	1630	325
X62-B/X62DF/X62DF-1,1/X62DF-2,1	1888	343
X72-B/X72DF/X72DF-1,1&1,2/X72DF-2,1&2,2	2131	370
X82-2,0/X82DF-1,0	2395	460
X92-B-/X92DF	2677	334

REMARKS:

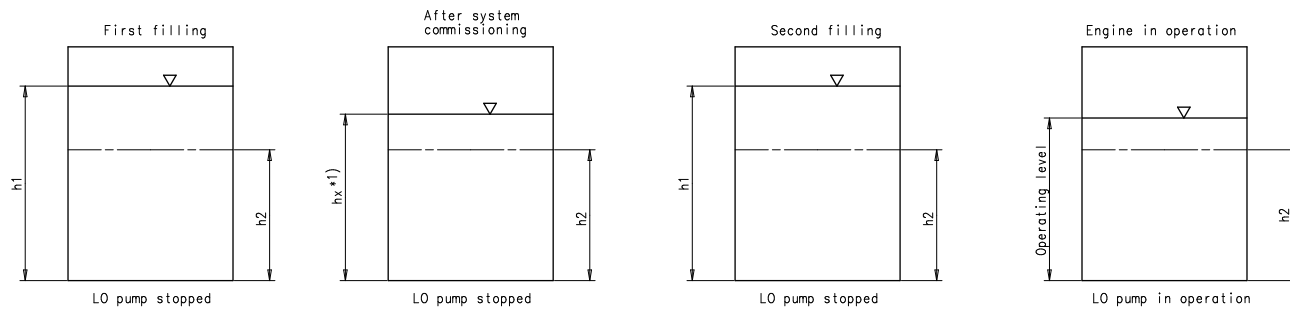
*1) Access to the plate has to be kept clear for the hydraulic jack, to lift up the flywheel during removal of lower main bearing shell.

[illegible]

Ⓑ RT-flex58T-B/-D/-E



LO DRAIN TANK - FILLING PROCESS



Specifications that need to be met:

Dimensioning guidelines and capacities for tank design

		No. of cylinders		5	6	7	8
(B)	h	Recommended total tank height	(mm)	acc. to installation requirements			
		Recommended total tank volume: 105% *5)	(m³)	14	16	18	20
(B)	h1	Recommended filling level	(mm)	acc. to installation requirements			
		Recommended volume: 100% *5)	(m³)	13	15	17	19
(B)	h2	Low-level alarm	(mm)	*2)			
		Volume	(m³)				
(B)	Vr	Min. retention volume *3)	(m³)	8	9	11	12
	d	Distance between suction pipe and bottom of tank	(mm)	*4)			
	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.

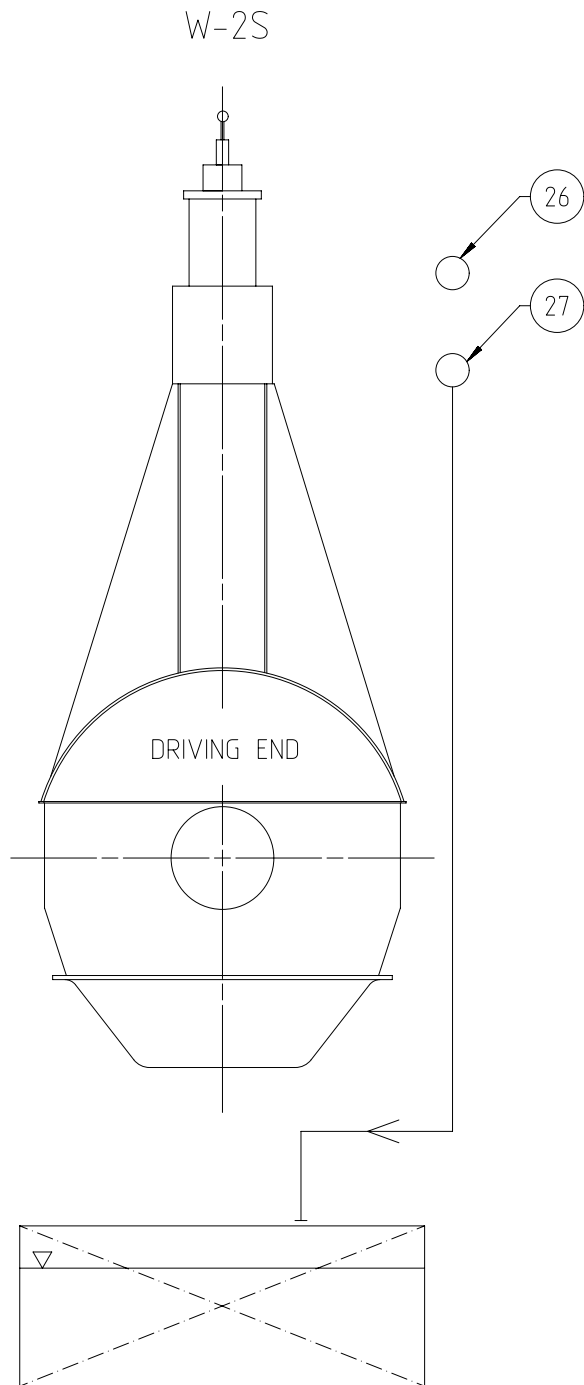
Minimum inclination angles comply with the rules of classification societies:

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) To be maintained during engine operation (LO pump suction without LO drain back-flow (emergency case) is ensured for at least 3 minutes).
- *4) Distance (d) between the suction pipe inlet of the main LO pumps and LO drain tank bottom has to be in accordance with the requirements of pump manufacturer. As guideline the following formula can be applied: $d = DN/4 + 40$, $d = \text{min. } 80 \text{ mm}$.
- Ⓑ *5) The stated tank volume represent the min. requirement. Final tank dimensions have to be aligned in regard to dimensional restrictions by ship and engine structure and the pump suction requirement.

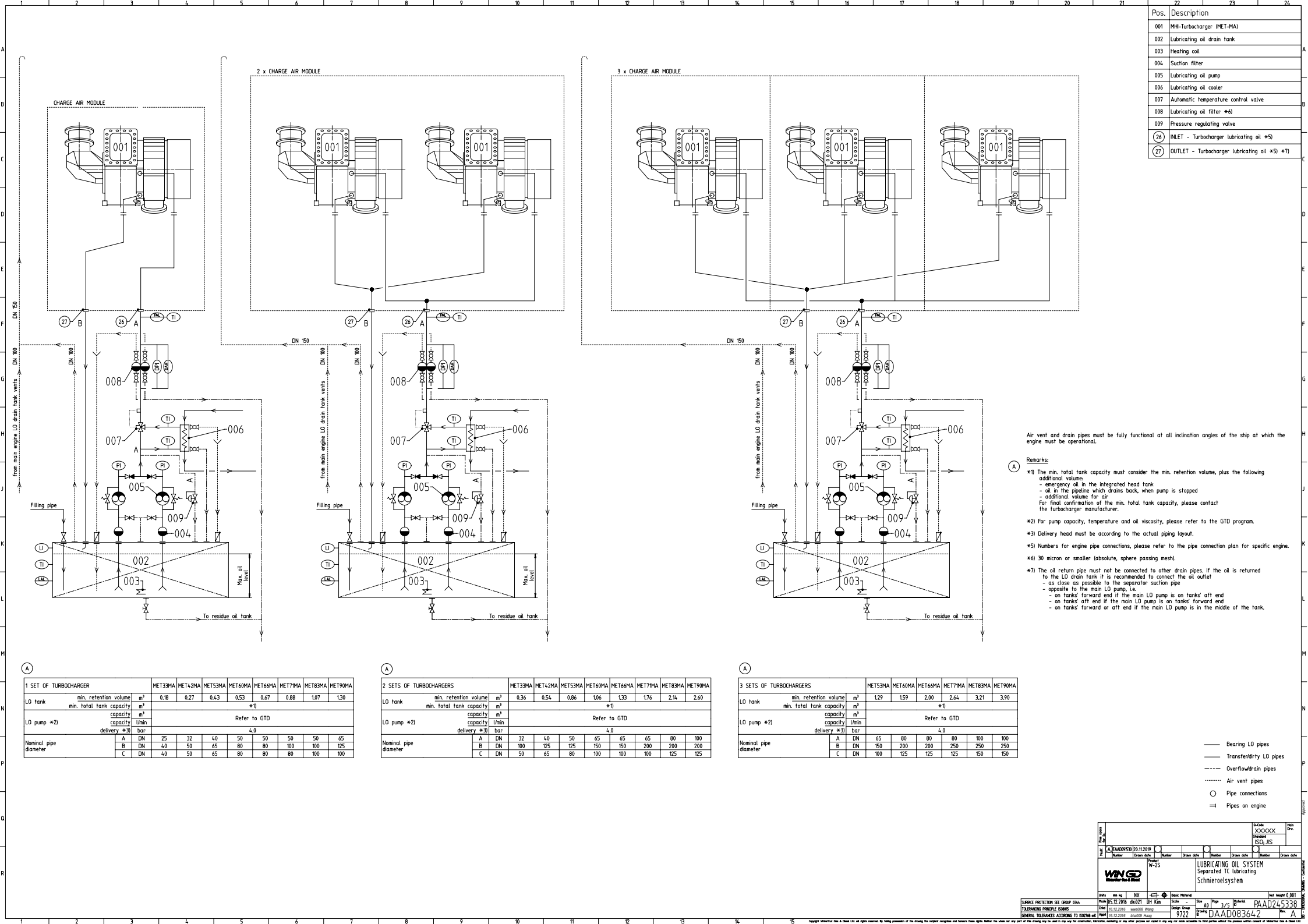
WinCC Wincor Gas & Diesel		Product W-58		LUBRICATING OIL DRAIN TANK FILLING GUIDELINE	
Units	mm kg IDE	Basic Material	Scale	1:25	Size A1
SURFACE PROTECTION SEE GROUP 0344		Mode	09.02.2013	W. WROBLEWSKI	Page 1/1
TOLERANCING PRINCIPLE ISO8015		Chid	07.10.2009	WWR001 Wroblewski	Material ID 107.410.001.500
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd	07.10.2009	WWR001 Wroblewski	9722
		Rev.			B



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								Main Drw.					
	Standard ISO; JIS													
Modif.	A	EAAD091530	20.11.2019											
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date						
		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	dk1021	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										



MIDS_WinGD-RT-flex58T/-D/-E_LUBRICATING-OIL-SYSTEM (DG9722)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2017-05-28	DRAWING SET	First web upload
2018-05-24	107.326.517	System drg – new revision
2018-10-18	107.326.517	System drg – new revision
2019-07-19	107.326.520 DAAD109924 107.335.023 DAAD110060 DAAD088131 107.326.973	Main and tank drgs – new revision/new drgs
2020-09-22	107.326.517 107.246.182 107.246.183 107.246.186 107.246.187 107.246.188 107.246.189 107.049.666 107.049.681 107.049.664 107.049.666 107.049.665 107.246.190 DAAD083642	System and tank assembly drgs – new revision
2021-05-19	107.246.799	Hydraulic jack plate positioning drawing – new revision

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