

1

2

3

4

5

6

7

8

A

B

C

D


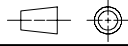
E

F

TC Amount	1				X	X	X
	2	X	X	X			
SCR	Without			X			X
	LP SCR		X			X	
	HP SCR	X			X		

Net Weight						
0,001	0,001	0,001	0,001	0,001	0,001	0,001
1	1	1	-	-	-	
-	-	-	1	1	1	
1	-	-	1	-	-	

Quantity PER ENGINE						SEQ NO	Material ID	Material Name	Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET					
PAAD284468	PAAD284467	PAAD284466	PAAD284465	PAAD284464	PAAD284462	Free space for ltc.							Q-Code XXXXXX	Main Drw. H			
Material ID													Modif.				
							Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date

 Winterthur Gas & Diesel		Product 5-8RT-flex58T-D		Exhaust System Abgassystem					
		Units mm kg		NX				Basic Material	

SURFACE PROTECTION SEE GROUP 0344		Made	12.02.2018 dki021 DH.Kim		Scale	-		Size	A3	Page	1/1		Material ID			
TOLERANCING PRINCIPLE ISO8015		Chkd	14.02.2018 wwa008 Wang		Design Group		9726		Drawing ID		DAAD096768			Rev.	-	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd	28.02.2018 mhu019 Hug													

Approved

D

E

F

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Specifications which must be met:

- 72

OUTLET - Exhaust gas by-pass

- The installation of a by-pass line between exhaust gas manifold and turbocharger may be requested by owner and class if only one turbocharger is installed.
Its purpose is to allow engine operation even after a turbocharger failure.

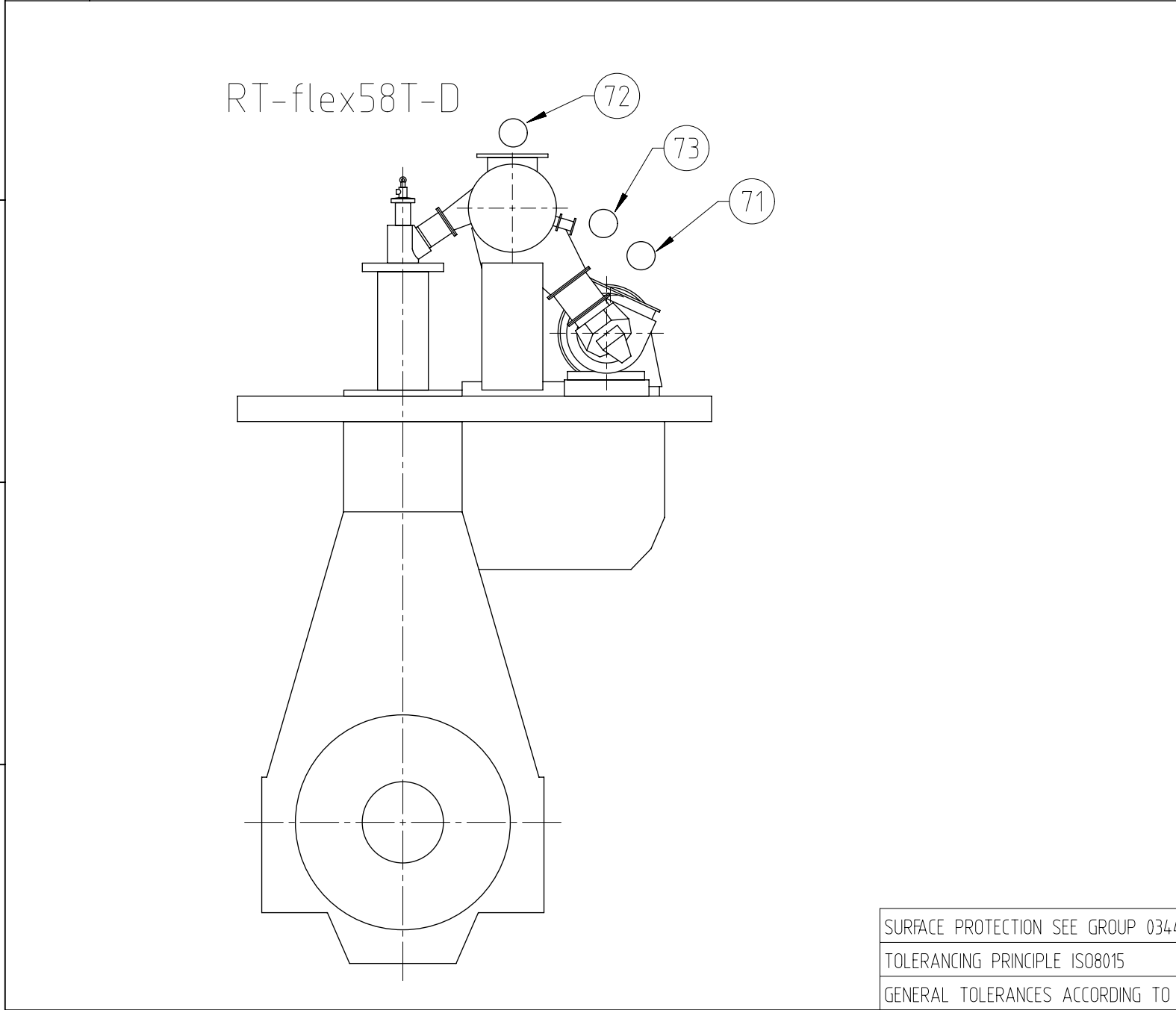
- Blinded off during normal operation.
- 73

OUTLET - Exhaust gas manifold waste gate

- Size and layout of connection flange is provided in the "Pipe Connection Plan"

- Pipe diameter according to parameter "B" on page 2.

- Waste gate connection pipe to main exhaust gas pipe must be kept as short as possible to avoid swirl and extensive back pressure.



- 71

OUTLET - Exhaust gas turbocharger

- Exhaust gas temperature and volume flow: according to GTD

- The total back pressure of the exhaust gas system must be kept in the admissible range of:
Design maximum: 30 mbar
Fouled maximum: 50 mbar
The radius of pipe bends must not be smaller than 1.5 x DN

- Pipe dimensions laid out according to the recommended gas velocities provided in the the Marine Installation Manual (MIM) and by GTD.

- The exhaust piping must be arranged in a way to avoid gases from accumulating.


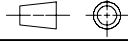
- The piping layout must consider the thermal expansion and vibration from turbocharger (TC) and main engine (ME).
Thermal expansion of the ME to be calculated according to the formula in MIM, TC specific thermal expansion are provided by the TC supplier.

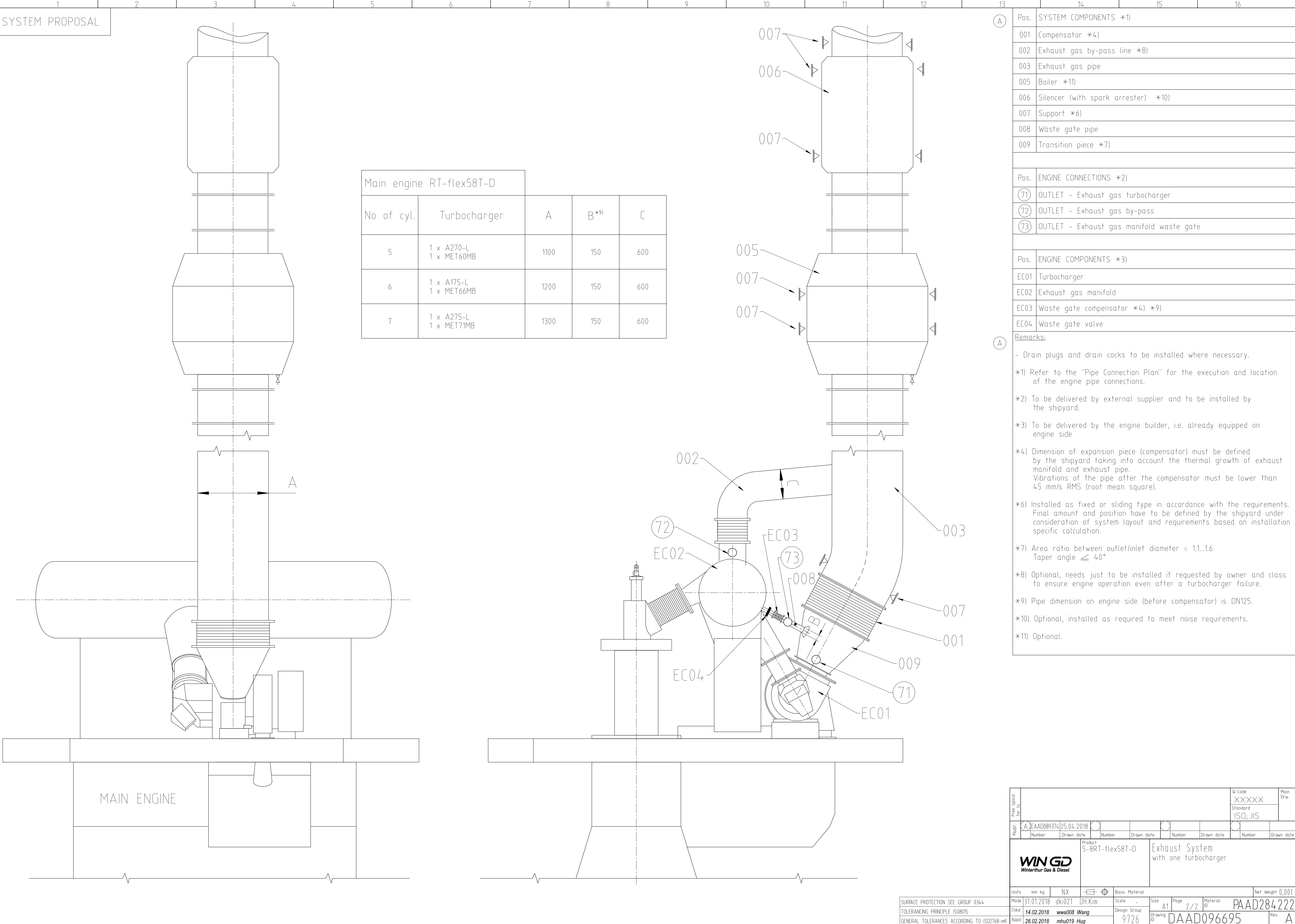
- Supports (fixation points) for carrying piping and exhaust gas system components deadweight must be installed in sufficient size and amount.
Inadmissible tensions in the piping and forces acting on the turbocharger are not acceptable.

- Exhaust gas pipes of several engines must not be connected.

- Drains in adequate size and amount must be installed in the exhaust gas piping.

- When the noise level on the bridge wing exceeds the class requirement (normally 60 - 70 dB(A)) a silencer must be applied.

Free space for lic.	Q-Code XXXXXX								Main Drw.
	Standard ISO; JIS								
Modif.	A	EAAD089374	25.04.2018						
		Number	Drawn date		Number	Drawn date		Number	Drawn date
		Product 5-8RT-flex58T-D		Exhaust System with one turbocharger					
Units mm kg		NX				Basic Material		Net Weight 0,001	
SURFACE PROTECTION SEE GROUP 0344		Made 31.01.2018 dki021 DH.Kim		Scale -		Size A3		Page 1/2	
TOLERANCING PRINCIPLE ISO8015		Chkd 14.02.2018 wwa008 Wang		Design Group 9726		Material ID PAAD284222		Rev. A	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd 28.02.2018 mhu019 Hug				Drawing ID DAAD096695			



Main engine RT-flex58T-D				
No of cyl.	Turbocharger	A	B**9)	C
5	1 x A270-L 1 x MET60MB	1100	150	600
6	1 x A175-L 1 x MET66MB	1200	150	600
7	1 x A275-L 1 x MET71MB	1300	150	600


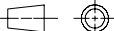
Pos.	SYSTEM COMPONENTS *1)
001	Compensator *4)
002	Exhaust gas by-pass line *8)
003	Exhaust gas pipe
005	Boiler *11)
006	Silencer (with spark arrester) *10)
007	Support *6)
008	Waste gate pipe
009	Transition piece *7)

Pos.	ENGINE CONNECTIONS *2)
71	OUTLET - Exhaust gas turbocharger
72	OUTLET - Exhaust gas by-pass
73	OUTLET - Exhaust gas manifold waste gate

Pos.	ENGINE COMPONENTS *3)
EC01	Turbocharger
EC02	Exhaust gas manifold
EC03	Waste gate compensator *4) *9)
EC04	Waste gate valve

Remarks:

- Drain plugs and drain cocks to be installed where necessary.
- *1) Refer to the "Pipe Connection Plan" for the execution and location of the engine pipe connections.
- *2) To be delivered by external supplier and to be installed by the shipyard.
- *3) To be delivered by the engine builder, i.e. already equipped on engine side
- *4) Dimension of expansion piece (compensator) must be defined by the shipyard taking into account the thermal growth of exhaust manifold and exhaust pipe.
Vibrations of the pipe after the compensator must be lower than 45 mm/s RMS (root mean square).
- *6) Installed as fixed or sliding type in accordance with the requirements. Final amount and position have to be defined by the shipyard under consideration of system layout and requirements based on installation specific calculation.
- *7) Area ratio between outlet/inlet diameter = 1.1...1.6
Taper angle $\leq 40^\circ$
- *8) Optional, needs just to be installed if requested by owner and class to ensure engine operation even after a turbocharger failure.
- *9) Pipe dimension on engine side (before compensator) is DN125.
- *10) Optional, installed as required to meet noise requirements.
- *11) Optional.

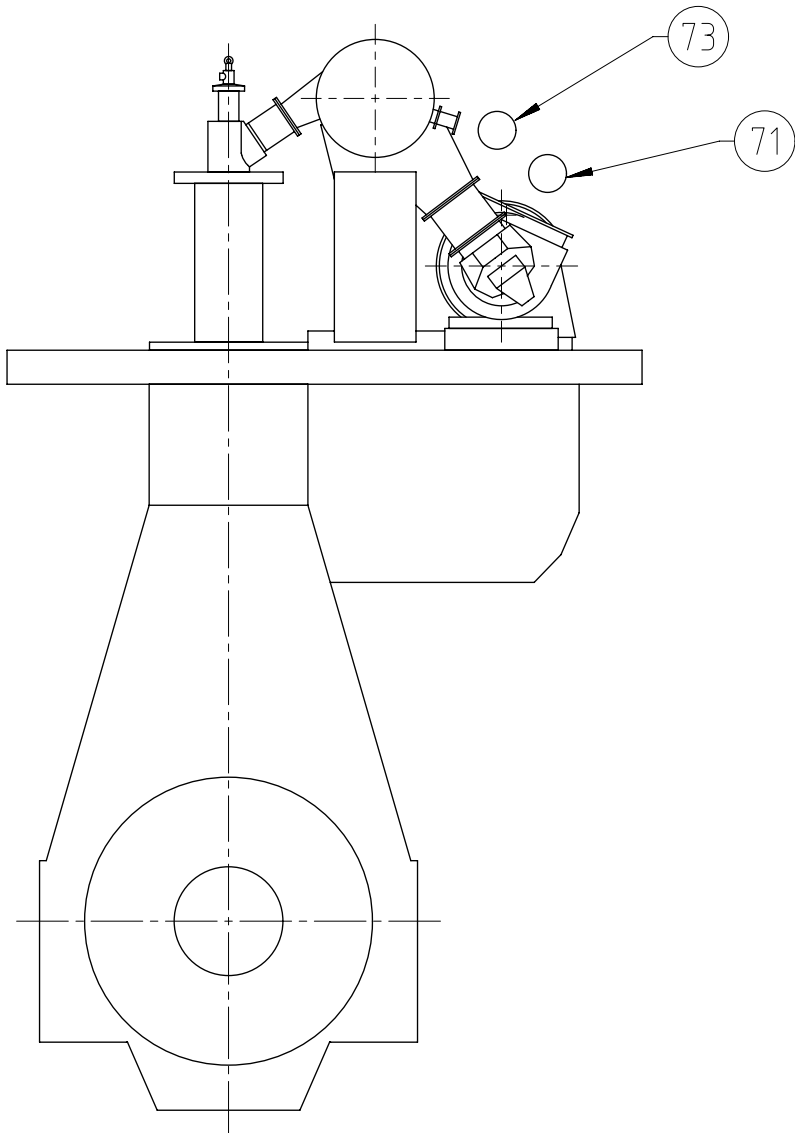
Free space for list	A-Code XXXXXX						Main Dwg.	
	Standard ISO, JIS							
Moist	A	EAAD089374	25.04.2018					
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date
 WIN GD <i>Winterthur Gas & Diesel</i>		Product 5-8RT-flex58T-D		Exhaust System with one turbocharger				
Units	mm kg	NX		 Basic Material		Net Weight 0,001		
Make	31.01.2018	dk1021	DH.Kim	Scale	-	Size	A1	
Chkd	14.02.2018	wwa008 Wang	Design Group	Page	2/2	Material ID	PAAD284222	
Appd	28.02.2018	mu019 Hug		9726	Drawing ID	DAAD096695	Rev.	A

Specifications which must be met:

73


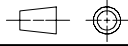
- OUTLET - Exhaust gas manifold waste gate
- Size and layout of connection flange is provided in the "Pipe Connection Plan"
 - Pipe diameter according to parameter "B" on page 2.
 - Waste gate connection pipe to main exhaust gas pipe must be kept as short as possible to avoid swirl and extensive back pressure.

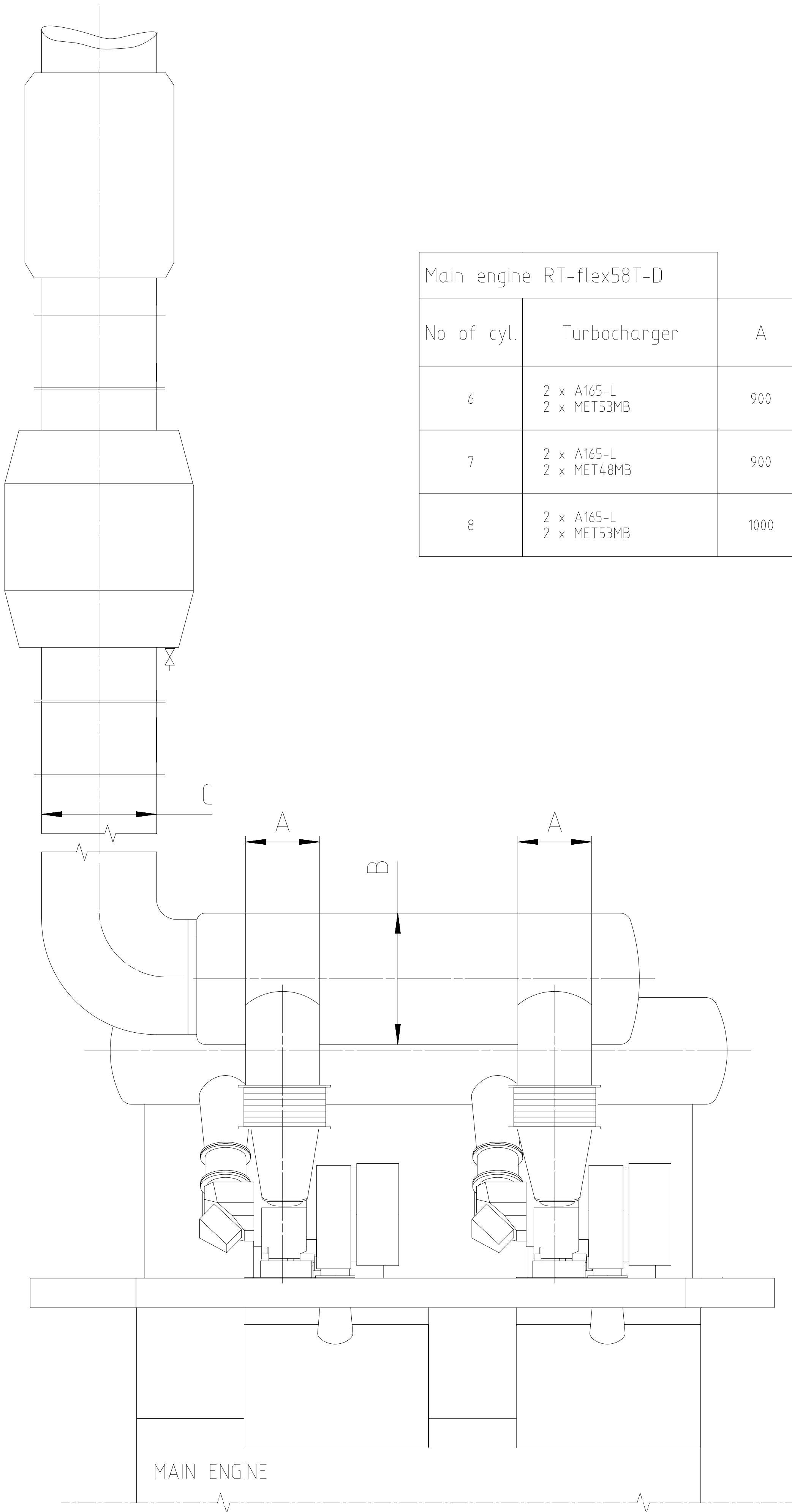
RT-flex58T-D



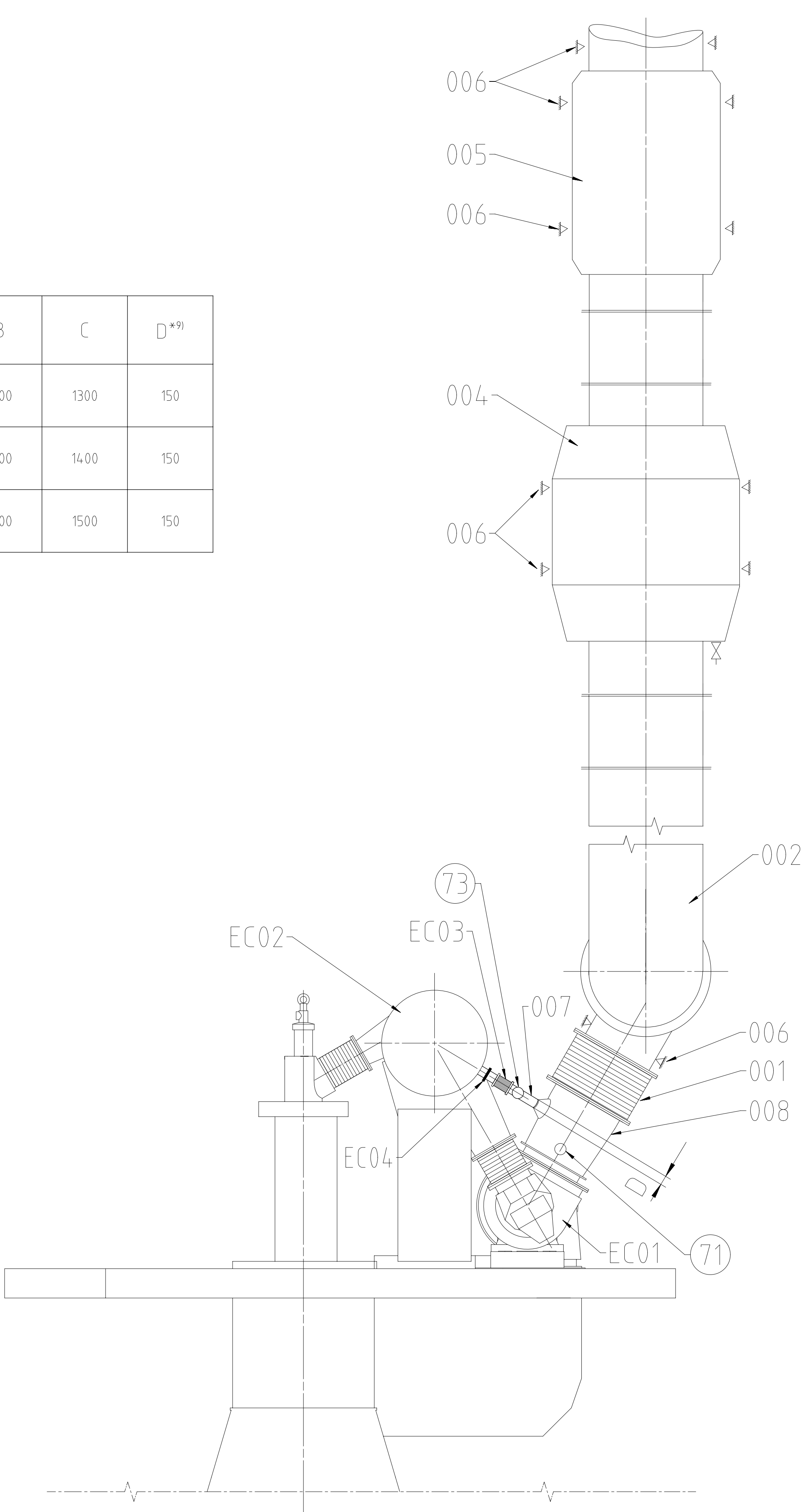
71

- OUTLET - Exhaust gas turbocharger
- Exhaust gas temperature and volume flow: according to GTD
 - The total back pressure of the exhaust gas system must be kept in the admissible range of:
Design maximum: 30 mbar
Fouled maximum: 50 mbar
The radius of pipe bends must not be smaller than 1.5 x DN
 - Pipe dimensions laid out according to the recommended gas velocities provided in the the Marine Installation Manual (MIM) and by GTD.
 - The exhaust piping must be arranged in a way to avoid gases from accumulating.
 - The piping layout must consider the thermal expansion and vibration from turbocharger (TC) and main engine (ME).
Thermal expansion of the ME to be calculated according to the formula in MIM, TC specific thermal expansion are provided by the TC supplier.
 - Supports (fixation points) for carrying piping and exhaust gas system components deadweight must be installed in sufficient size and amount. Inadmissible tensions in the piping and forces acting on the turbocharger are not acceptable.
 - Exhaust gas pipes of several engines must not be connected.
 - Drains in adequate size and amount must be installed in the exhaust gas piping.
 - When the noise level on the bridge wing exceeds the class requirement (normally 60 - 70 dB(A)) a silencer must be applied.

Free space for lic.	Q-Code XXXXXX								Main Drw.
	Standard ISO; JIS								
Modif.	A	EAAD089374	25.04.2018						
		Number	Drawn date		Number	Drawn date		Number	Drawn date
		Product 5-8RT-flex58T-D		Exhaust System with two turbochargers					
Units mm kg		NX				Basic Material		Net Weight 0,001	
SURFACE PROTECTION SEE GROUP 0344		Made 30.01.2018 dki021 DH.Kim		Scale -		Size A3		Page 1/2	
TOLERANCING PRINCIPLE ISO8015		Chkd 14.02.2018 wwa008 Wang		Design Group 9726		Material ID PAAD284457		Rev. A	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK		Appd 28.02.2018 mhu019 Hug				Drawing ID DAAD096766			



Main engine RT-flex58T-D					
No of cyl.	Turbocharger	A	B	C	D ^{*9)}
6	2 x A165-L 2 x MET53MB	900	1500	1300	150
7	2 x A165-L 2 x MET48MB	900	1700	1400	150
8	2 x A165-L 2 x MET53MB	1000	1800	1500	150



Pos.	SYSTEM COMPONENTS *1)
001	Compensator *4)
002	Exhaust gas pipe
004	Boiler *11)
005	Silencer (with spark arrester) *10)
006	Support *6)
007	Waste gate pipe
008	Transition piece *7)

Pos.	ENGINE CONNECTIONS *2)
71	OUTLET - Exhaust gas turbocharger
73	OUTLET - Exhaust gas manifold waste gate

Pos.	ENGINE COMPONENTS *3)
EC01	Turbocharger
EC02	Exhaust gas manifold
EC03	Waste gate compensator *4) *9)
EC04	Waste gate valve

Remarks:

- Drain plugs and drain cocks to be installed where necessary.
- *1) Refer to the "Pipe Connection Plan" for the execution and location of the engine pipe connections.
- *2) To be delivered by external supplier and to be installed by the shipyard.
- *3) To be delivered by the engine builder, i.e. already equipped on engine side
- *4) Dimension of expansion piece (compensator) must be defined by the shipyard taking into account the thermal growth of exhaust manifold and exhaust pipe.
Vibrations of the pipe after the compensator must be lower than 45 mm/s RMS (root mean square).
- *6) Installed as fixed or sliding type in accordance with the requirements. Final amount and position have to be defined by the shipyard under consideration of system layout and requirements based on installation specific calculation.
- *7) Area ratio between outlet/inlet diameter = 1.1...1.6
Taper angle $\leq 40^\circ$
- *9) Pipe dimension on engine side (before compensator) is DN125.
- *10) Optional, installed as required to meet noise requirements.
- *11) Optional.

Free space for l.c.		0-Code XXXXXX Standard ISO; JIS		Main Drw.	
Modif.	A	EAAD089374	25.04.2018		
Number		Drawn date		Number	Drawn date
Product 5-8RT-flex58T-D		Exhaust System with two turbochargers		Net Weight 0,001	
Units	mm kg	NX	Basic Material	Scale	-
Made	30.01.2018	dk1021	DH.Kim	Size	A1
Chkd	14.02.2018	wwa008 Wang	Design Group	Page	2/2
Appd	28.02.2018	mhu019 Hug	Drawing ID	DAAD096766	Rev.
SURFACE PROTECTION SEE GROUP 0344		TOLERANCING PRINCIPLE ISO8015		GENERAL TOLERANCES ACCORDING TO ISO2768-mK	
Material ID		PAAD284457		Rev.	

MIDS_WinGD-RT-flex58T-D_EXHAUST-SYSTEM

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2018-04-25	DRAWING SET	First web upload

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