NetWeight						
0,001						
1	001	PAAD332375	EXHAUST/VENTILATION SYSTEM with one turbocharger	DAAD118349		0,001
Quantity	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET

MaterialID	Modif.	Free space for lic.	Q-Code	Main Drw.
PAAD332456			XXXXX	H
			Standard: ISO; JIS	

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

WIN GD Winterthur Gas & Diesel

Product: W5-8X40DF

Exhaust System

Units	mm kg	NX	Basic Material	Net Weight

SURFACE PROTECTION SEE GROUP 0344	Made	02.07.2019 Sudant Deogade	Scale –	Size A3 / Page 1/1	Material ID
TOLERANCING PRINCIPLE ISO8015	Chkd	06.09.2019 cku010 Claudio	Design Group 9726	Drawing ID DAAD118357	Rev. –
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	06.09.2019 mhu019 Hug			

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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.

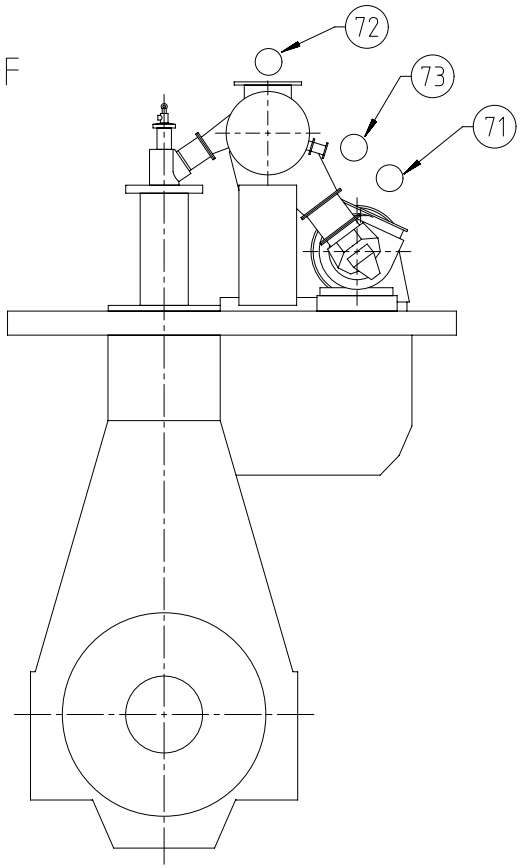
(73) OUTLET - Exhaust gas manifold waste gate

- Size of connection flange described in the pipe connection plan.
- Pipe diameter according to value B, defined on page 2.
- Waste gate connection pipe to main exhaust gas pipe should 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 (new condition) in gas mode and in diesel mode without exhaust gas treatment system: 30 mbar
  Design maximum (new condition) in diesel mode with exhaust gas treatment system: 60 mbar
  Operational maximum in gas mode: 45 mbar
  Operational maximum (fouled condition) in diesel mode without exhaust gas treatment system: 50 mbar
  Operational maximum (fouled condition) in diesel mode with exhaust gas treatment system: 80 mbar
- 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 claculated according to the formula in MIM, TC specific thermal expansion are provided by the TC supplier.
- Explosion relief devices with flameless pressure relief (rupture discs or spring loaded valves) must be installed in accordance with class requirements.
- A continuous (extensive) exhaust gas flow into the engine room must be avoided.
- 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.

X40DF



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	Number	Drawn date

WIN GD Winterthur Gas & Diesel

Product 5-8X40DF

Exhaust System with one turbocharger

Exhaust System

Units mm kg	NX	Basic Material				Net Weight 0,001
SURFACE PROTECTION SEE GROUP 0344	Made 02.07.2019 Sudant Deogade	Scale –	Size A3	Page 1/2	Material ID PAAD332375	
TOLERANCING PRINCIPLE ISO8015	Chkd 06.09.2019 cku010 Claudio	Design Group 9726	Drawing ID DAAD118349			Rev. –
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 06.09.2019 mhu019 Hug					

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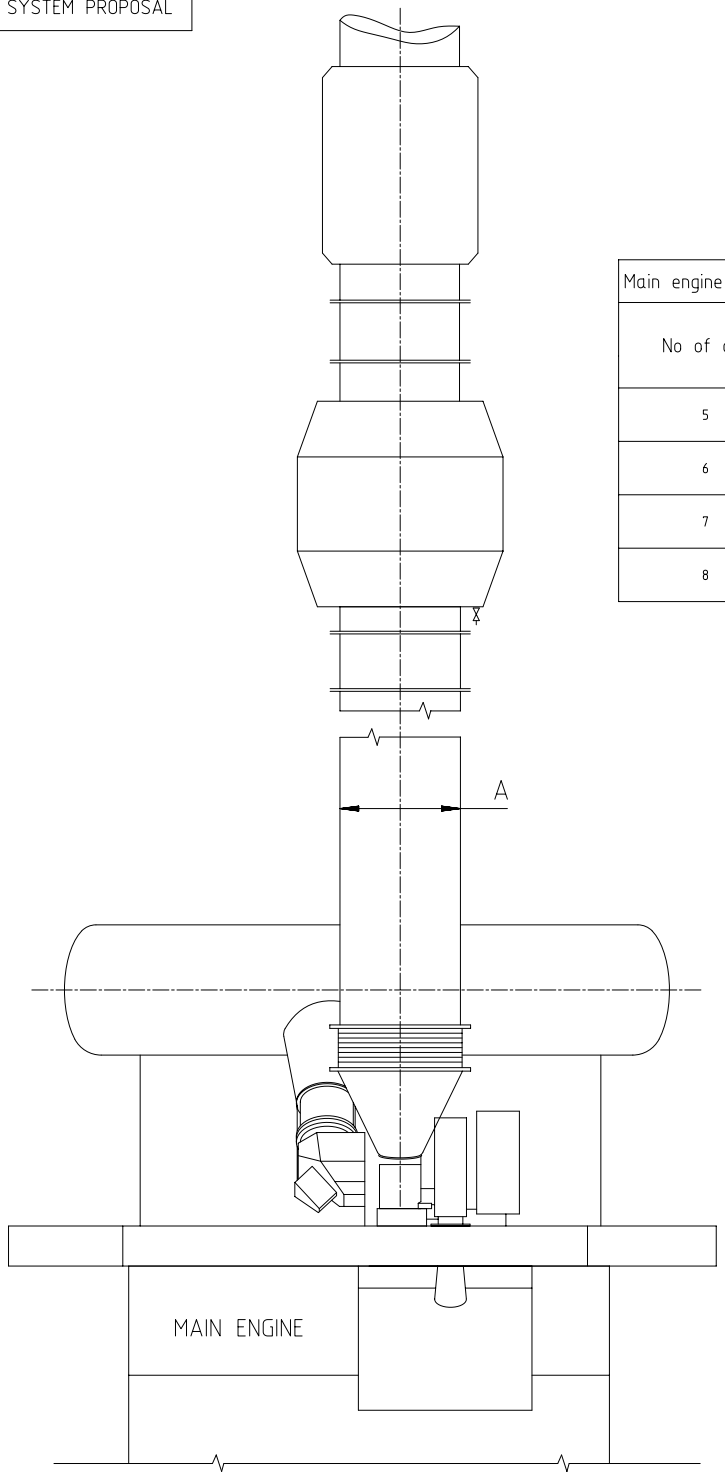
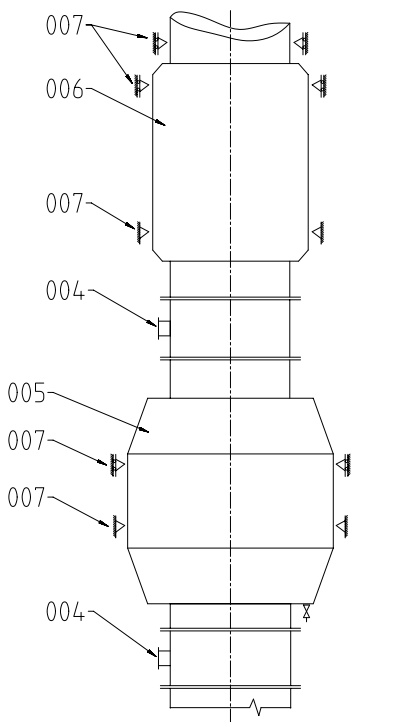
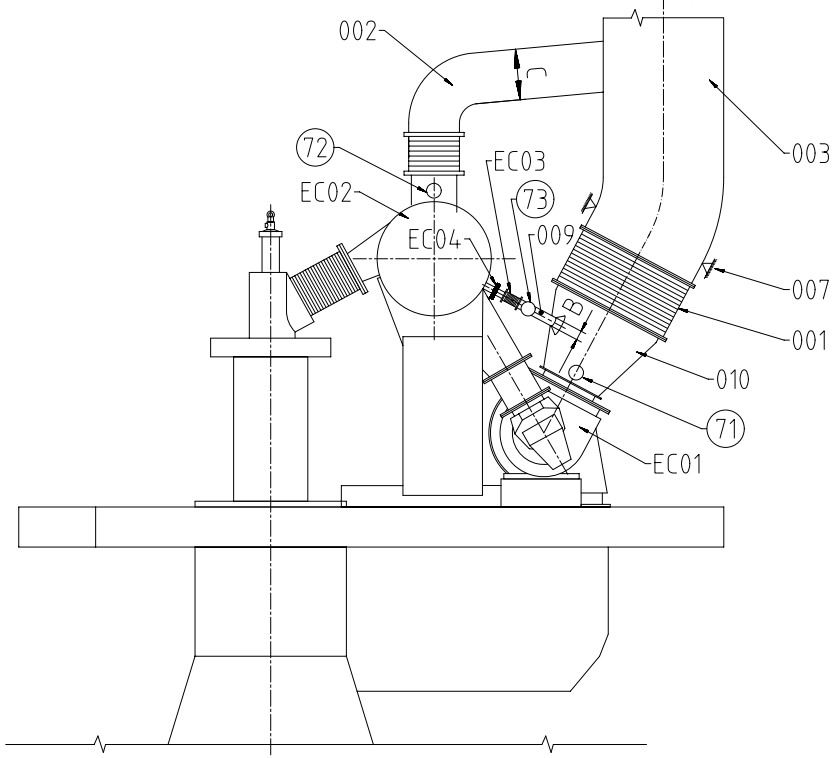
SYSTEM PROPOSAL



Main engine X40DF				
No of cyl.	A (mm) *14)	B (mm) *10) *14)		C (mm) *14)
		CPP	FPP	
5	800	150	125	125
6	800	200	150	125
7	900	200	150	125
8	1000	200	150	125





Pos.	SYSTEM COMPONENTS *1)
001	Compensator *9)
002	Exhaust gas by-pass *8)
003	Exhaust gas pipe *11)
004	Explosion relief device *13) (rupture discs or spring loaded valves) *5)
005	Boiler *13)
006	Silencer (with spark arrester) *12)
007	Support *4)
009	Waste gate pipe
010	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 *9) *10)
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 by delivered by the engine builder, i.e. already equipped on engine side

*4) Installed as fixed or sliding type in accordance with requirements. In between fixed supports a compensator (bellow) must be installed. Final amount and position have to be determined by the shipyard under consideration of the system layout and requirements based on installation specific calculation.

*5) Type of device (rupture discs or self-closing spring loaded valve) to be selected in accordance with class requirements and/or specification of the shipowner. Final amount and position must be defined by the system designer/shipyard under consideration of the system layout and requirements determined by calculation. For installation with rupture discs it is required to either send an opening control signal to the safety system, which trigger an engine shutdown to avoid a continuous exhaust gas flow into the engine room, or to apply a duct leading the exhaust to the outside.

*7) Area ratio between outlet/inlet diameter = 1.1...1.6 Taper angle = ≤ 40°

*8) Optional, needs just to be installed if requested by owner and class to ensure engine operation even after a turbocharger failure.

*9) 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).

*10) Pipe dimension on engine side (before compensator) is one nominal pipe size smaller.

*11) The radius of pipe bends should be not smaller than 1.5 x DN.

*12) Optional, installed as required to meet noise requirements.

*13) Optional.

*14) The provided dimensions refer to an R1 rated engine and serve just as proposal. To make the project specific layout, data as provided by GTD and by the turbocharger supplier must be taken into account.

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 5-8X40DF
Exhaust System with one turbocharger
Exhaust System

Units mm kg | NX | Basic Material | Net Weight 0,001

SURFACE PROTECTION SEE GROUP 0344	Made	02.07.2019	Sudant Deogade	Scale -	Size A1	Page 2/2
TOLERANCING PRINCIPLE ISO8015	Chkd	06.09.2019	cku010 Claudio	Design Group 9726	Material ID	PAAD332375
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd	06.09.2019	mhu019 Hug	Drawing ID	DAAD118349	Rev. -

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MIDS WinGD X40DF - EXHAUST SYSTEM (DG9726)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2019-09-09	DRAWING SET	First web upload

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