SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

Available executions

Execution No.	Material ID	Attribute 1: Stays location		
		FUEL PUMP SIDE	EXHAUST SIDE	BOTH SIDES
001	PAAD328674			X
002	PAAD328675		X	
003	PAAD328678	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. X82DF-1.0

Change History

Rev.	Creator	Approver	Approval Date	Change ID	Change Synopsis	Activity Code	E	C
–	sde101				new Design			

WINGD Winterthur Gas & Diesel

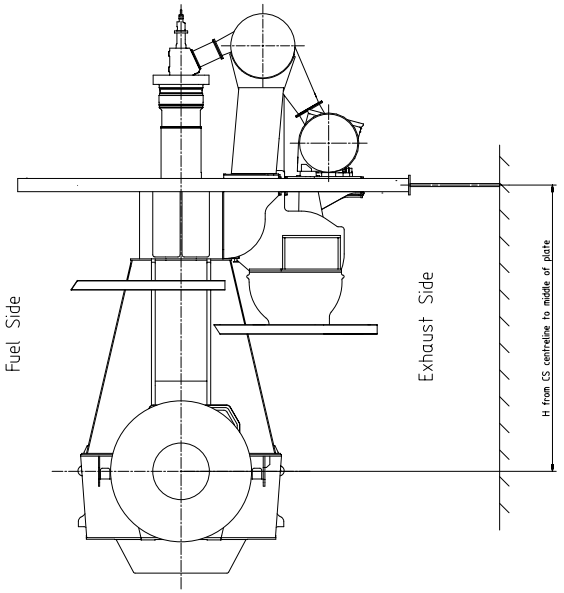
ENGINE STAYS

MIDS master drawing

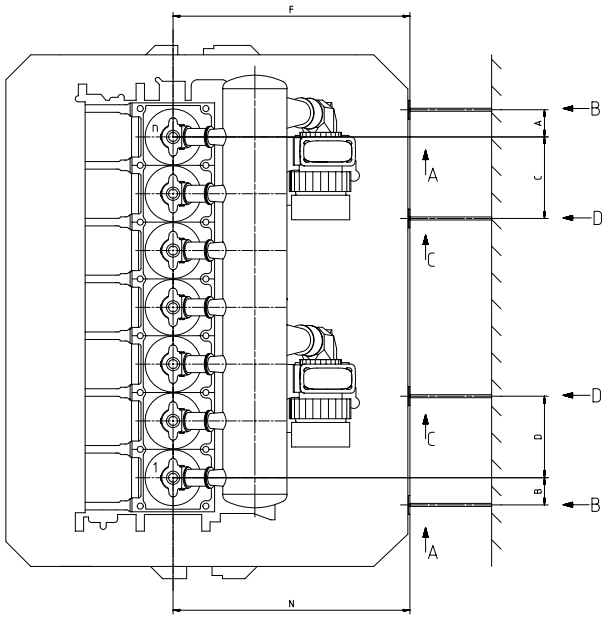
separate BOM available

Dimension

Scale	–	NX	Units [mm] [kg]	Basic Material	Net Weight	0.001
Main Design			Design Group	9715	Q-Code XXXXX	Standard WDS
Qty per			A4	Item ID PTAA024803	Drawing Page/s	1/1



Free End



Driving End

Ⓐ

Position of stay attachment points on platform side

No. of Cyl.	Turbocharger type	A	B	C	D	F	N	H
6	ON REQUEST							
7	2 x A275-L	720	720	2160	2160	6068	6068	7335
	2 x MET71MB	720	720	2160	2160	6068	6068	7335
	2 x MET83MB	720	720	2160	2160	6268	6268	7335
	2 x MET66	720	720	2160	2160	6275	6275	7585
8	ON REQUEST							
9								

Ⓐ

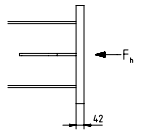
Requirements on stays attachment points at ship hull side (per engine stay)

Max. force acting on ship's hull	$Fh_{max.}$	(kN)	*1)
Minimum stiffness	$k_{min.}$	(N/m)	0.5 x 10^9
Permissible deflection per 100 kN	$Def_{max.}$	(mm)	0.2

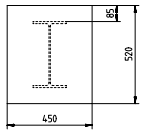
*1) Maximum engine force resulting from lateral moments of X/H type at the project specific rating plus stays pre-tensioning force according to satys supplier's specification

Layout / specification of "inner" stay attachment points

Ⓐ VIEW C
SCALE 1:10

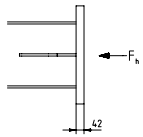


Ⓐ VIEW D
SCALE 1:10



Layout / specification of "outer" stay attachment points

Ⓐ VIEW A
SCALE 1:10



Ⓐ VIEW B
SCALE 1:10

Requirements for application of hydraulic stays on exhaust side

Ⓐ
- The selected stays must have maker's acceptance for one side engine installation.
- Installed on exhaust side (ES).
- The amount of stays must be determined based on the requirement and stays suppliers specification. The transferred forces must be taken into consideration. The engine forces and moments are defined in the relevant engine dynamic data sheet "Forces and Moments" which is linked in the Marine Installation Manual (MIM). Stay pre-tensioning forces (max. piston hydraulic force) must also be considered and are provided by the stays supplier.
- The stay attachment point requirements must be crosschecked with the specification. The maximum forces transferred by the selected stays type must be within the range as defined on this drawing for standard engine execution. If the total force per stay exceeds the permissible range, reinforcement of the platform attachment points can be requested from the engine builder.
- The stays must adapt to the ship hull deformation and reduce the static reaction force acting on the engine and ship hull attachment points.
- The stays must increase the total stiffness of the system to avoid harmful resonance conditions. The dynamic stiffness of the stays (dynamic spring rate) is provided by the stays supplier.
- The stays must dampen accordingly to ensure that the acceptable vibrations (RMS limits) for the WinGD 2-stroke engine are met.
- The performance of the stays must be checked during sea trial by vibration measurements.
- The installation and commissioning of the stays must be in accordance with the supplier's instructions.

Max. permissible force in lateral direction	F_h	(kN)	± 200
Stiffness	k	(N/m)	0.6 x 10^9
Permissible vertical stays displacement	Def_v	(mm)	± 50
Permissible horizontal stays displacement	Def_h	(mm)	± 50
Permissible angular stays displacement	Def_a	(°)	2

Max. permissible force in lateral direction	F_h	(kN)	± 200
Stiffness	k	(N/m)	0.6 x 10^9
Permissible vertical stays displacement	Def_v	(mm)	± 50
Permissible horizontal stays displacement	Def_h	(mm)	± 50
Permissible angular stays displacement	Def_a	(°)	2

Change Index	Index	Name	Date	Change No.	Change Synopsis	Approved	Activity Code
	X82DF-4.0						
	X82DF-2.0						
A	rpa191	mhu030	06.04.2020	CHA0000523	Drawing updated	A	3
–	dre021	mhu019	23.08.2019	EAAD784628	–	–	–

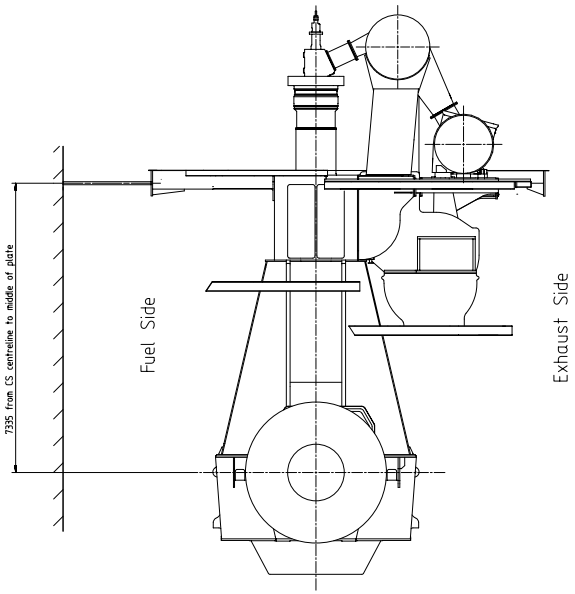
WIN GD Winterthur Gas & Diesel

ENGINE STAYS

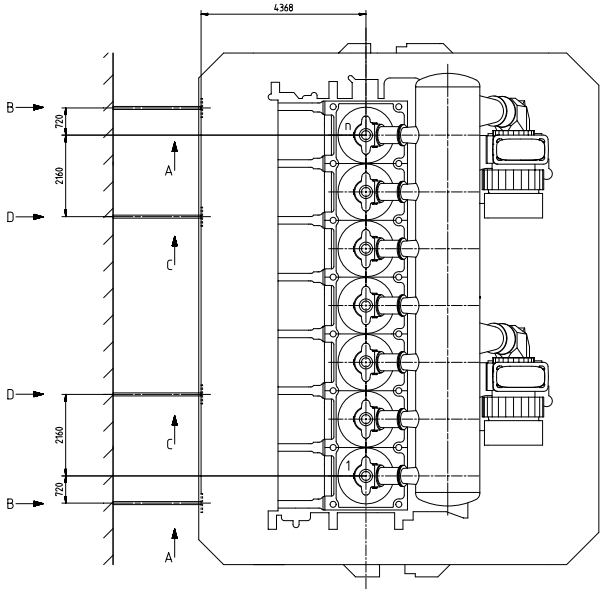
Exhaust Side

Scale 1:50	NX	Units [mm] [kg]	Basic Material		Net Weight	0.001	
Main Design		Design Group	9715	Co-Code XXXXX	Standard	WDS	
Qty per		A0	Item to	PAAD328592	Drawing Pages	1/1	

SURFACE PROTECTION SEE GROUP 9344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK



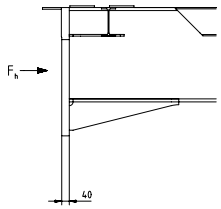
Free End



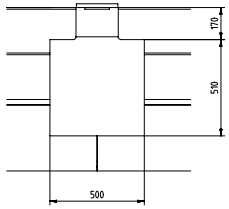
Driving End

Layout / Specification of "inner" stays platform attachment points

VIEW C
SCALE 1:10



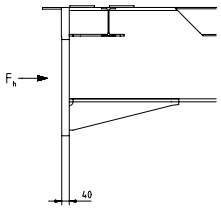
VIEW D
SCALE 1:10



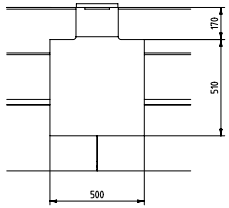
Max. permissible force in lateral direction	F_h	(kN)	± 200
Stiffness	k	(N/m)	0.5 x 10^9
Permissible vertical stays displacement	Def_v	(mm)	± 50
Permissible horizontal stays displacement	Def_h	(mm)	± 50
Permissible angular stays displacement	Def_a	(°)	2

Layout / Specification of "outer" stays platform attachment points

VIEW A
SCALE 1:10



VIEW B
SCALE 1:10



Max. permissible force in lateral direction	F_h	(kN)	± 200
Stiffness	k	(N/m)	0.5 x 10^9
Permissible vertical stays displacement	Def_v	(mm)	± 50
Permissible horizontal stays displacement	Def_h	(mm)	± 50
Permissible angular stays displacement	Def_a	(°)	2

Requirements for application of hydraulic stays on fuel side

- The selected stays must have maker's acceptance for one side engine installation.
  WinGD approved supplier : Green & Clean Technology Co., Ltd (Korea)
  Hanmi Hydraulic Machinery Co., Ltd (Korea)
  Nantong Navigation Machinery Group Co., Ltd (China)
- Installed on fuel side (FS).
- The amount of stays must be determined based on the requirement and stays suppliers specification.
  The transferred forces must be taken into consideration.
  The engine forces and moments are defined in the relevant engine dynamic data sheet "Forces and Moments" which is linked in the Marine Installation Manual (MIM).
  Stay pre-tensioning forces (max. piston hydraulic force) must also be considered and are provided by the stays supplier.
- The stay attachment point requirements must be crosschecked with the specification.
  The maximum forces transferred by the selected stays type must be within the range as defined on this drawing for standard engine execution. If the total force per stay exceeds the permissible range, reinforcement of the platform attachment points can be requested from the engine builder.
- The stays must adapt to the ship hull deformation and reduce the static reaction force acting on the engine and ship hull attachment points.
- The stays must increase the total stiffness of the system to avoid harmful resonance conditions.
  The dynamic stiffness of the stays (dynamic spring rate) is provided by the stays supplier.
- The stays must dampen accordingly to ensure that the acceptable vibrations (RMS limits) for the WinGD 2-stroke engine are met.
- The performance of the stays must be checked during sea trial by vibration measurements.
- The installation and commissioning of the stays must be in accordance with the supplier's instructions.

Prev. issues for ref.								G-Code XXXXX		Main Drv.	
								Standard ISO, JIS			
Appl.	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date			

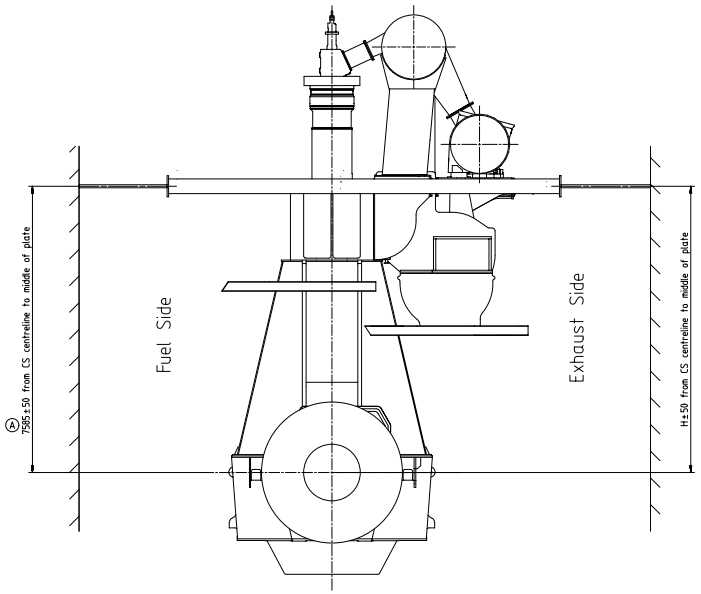
WinGD Winterthur Gas & Diesel

Product 6-9X82DF

ENGINE STAYS
Stays location: FS
Motorabstuetzung

Units	mm kg	NX		Basic Material			Net Weight 0,001
Made	21.08.2019	dki021 DH.Kim		Scale 1:50	Size A0	Page 1/1	Material ID PAAD328608
Chkd	23.08.2019	ckd009 Ströbecke		Design Group 9715	Drawing ID PAAD116806		Rev. –
Appd	23.08.2019	mfu019 Hug					

SURFACE PROTECTION SEE GROUP 9344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK



Ⓐ

Position of stay attachment points on platform side

No. of Cyl.	Turbocharger type	A	B	F	H
6	ON REQUEST				
7	2 x A275-L	720	720	6068	7335
	2 x MET71MB	720	720	6068	7335
	2 x MET83MB	720	720	6268	7335
	2 x MET66	720	720	6275	7585
8	ON REQUEST				
9					

Ⓐ

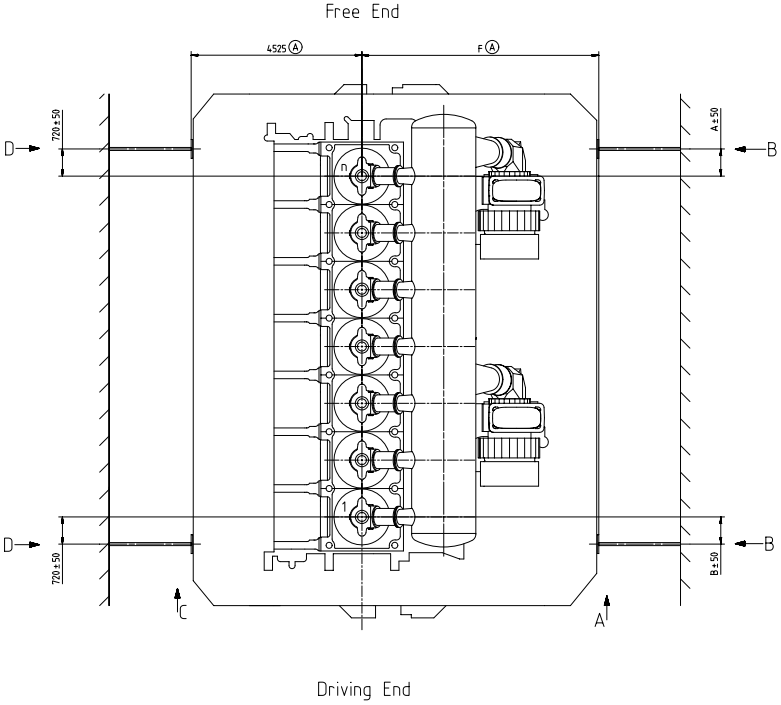
Requirements on stays attachment points at ship hull side (per engine stay)

Max. force acting on ship's hull	Fh_{max}	(kN)	*1)
Minimum stiffness	$k_{min.}$	(N/m)	0.5 x 10^9
Permissible deflection per 100 kN	$Def_{max.}$	(mm)	0.2

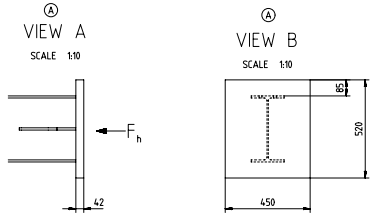
*1) Maximum engine force resulting from lateral moments of X/H type at the project specific rating plus stays pre-tensioning force according to satys supplier's specification

Requirements for application of hydraulic stays on fuel side AND exhaust side

Ⓐ
- The selected stays must have maker's acceptance for both side engine installation.
- Installed on fuel side (FS) AND exhaust side (ES).
- The amount of stays must be determined based on the requirement and stays suppliers specification. The transferred forces must be taken into consideration. The engine forces and moments are defined in the relevant engine dynamic data sheet "Forces and Moments" which is linked in the Marine Installation Manual (MIM). Stay pre-tensioning forces (max. piston hydraulic force) must also be considered and are provided by the stays supplier.
- The stay attachment point requirements must be crosschecked with the specification. The maximum forces transferred by the selected stays type must be within the range as defined on this drawing for standard engine execution. If the total force per stay exceeds the permissible range, reinforcement of the platform attachment points can be requested from the engine builder.
- The stays must adapt to the ship hull deformation and reduce the static reaction force acting on the engine and ship hull attachment points.
- The stays must increase the total stiffness of the system to avoid harmful resonance conditions. The dynamic stiffness of the stays (dynamic spring rate) is provided by the stays supplier.
- The stays must dampen accordingly to ensure that the acceptable vibrations (RMS limits) for the WinGD 2-stroke engine are met.
- The performance of the stays must be checked during sea trial by vibration measurements.
- The installation and commissioning of the stays must be in accordance with the supplier's instructions.

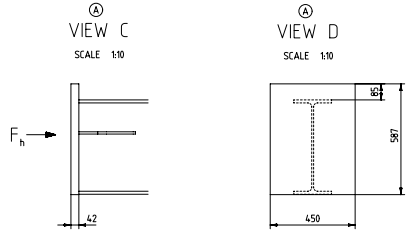


Layout / specification of stay attachment points on exhaust side



Max. permissible force in lateral direction	F_h	(kN)	± 200
Stiffness	k	(N/m)	0.6 x 10^9
Permissible vertical stays displacement	Def_v	(mm)	± 50
Permissible horizontal stays displacement	Def_h	(mm)	± 50
Permissible angular stays displacement	Def_α	(°)	2

Layout / specification of stay attachment points on fuel side



Max. permissible force in lateral direction	F_h	(kN)	± 200
Stiffness	k	(N/m)	0.5 x 10^9
Permissible vertical stays displacement	Def_v	(mm)	± 50
Permissible horizontal stays displacement	Def_h	(mm)	± 50
Permissible angular stays displacement	Def_α	(°)	2

Change Index	Date	Author	Approved	Activity Code	Change Synopsis	Page	Pages
A	08.04.2020	OWA000023			Drawing updated	4	3
–	23.08.2019	EAAD784628			–	–	–

WinGD Winterthur Gas & Diesel

ENGINE STAYS

Dimension					Both Sides
Scale 1:50	NX	Units [mm] [kg]	Basic Material		Net Weight 0.001
Main Design		Design Group	9715	Co-Code XXXXX	Standard WDS
Qty per		A0	Item ID	PAAD328616	Drawing Pages 1/1

SURFACE PROTECTION SEE GROUP 9344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

MIDS - Engine Stays (DG9715)

WinGD X82DF-1.0/DF-2.0

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2019-08-23	DRAWING SET	First web upload
2023-04-06	PAAD328592-A PAAD328616-A	New drg. revision

Winterthur Gas & Diesel Ltd.
Winterthur Gas & Diesel AG.
Winterthur Gas & Diesel S.A.

Schützenstrasse 3
PO Box 414, CH-8401
Winterthur, Switzerland

Tel. +41 (0)52 264 8844
Fax +41 (0)52 264 8866

www.wingd.com