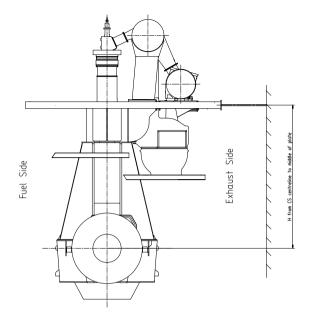
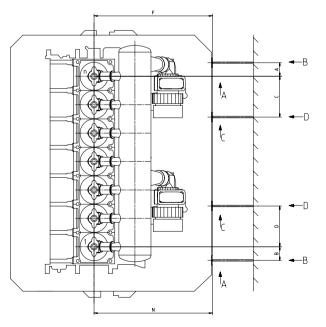
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(A) Position of stay attachment points on platform side											
No. of Cyl.	Turbocharger type	A	в	C	D	F	N	н			
6	ON REQUEST										
	2 x A275-L	720	720	2160	2160	6068	6068	7335			
7	2 x MET71MB	720	720	2160	2160	6068	6068	7335			
	2 x MET83MB	720	720	2160	2160	6268	6268	7335			
	2 x MET66	720	720	2160	2160	6275	6275	7585			
8											
9	ON REQUEST										

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

Max. force acting on ship's hull	Fh _{nax}	(kN)	*1)
Minimum stiffness	k _{nin}	(N/m)	0.5 x 10°
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

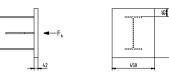
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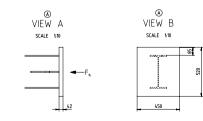
SCALE 1:10

Layout / specification of "inner" stay attachment points





Layout / specification of "outer" stay attachment points



Requirements for application of hydraulic stays on exhaust side

(A) - The selected stays must have maker's acceptance for one side engine installation.

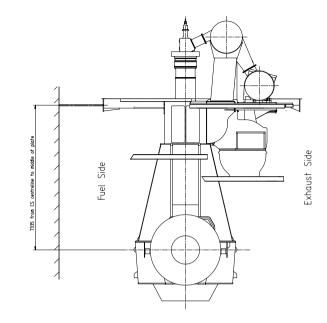
- Installed on exhaust side (ES).
- The amount of stays must be determined based on the requirement and stays suppliers specification. The transferred forces must be taken into consideration.
 The engine forces and moments are defined in the relevant engine dynamic data sheet "Forces and Moments" which is linked in the Marine Installation Manual (MM). 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,	(kN)	± 200
Stiffness	k	(N/m)	0.6 x 10°
Permissible vertical stays displacement	Def,	(mm)	± 50
Permissible horizontal stays displacement	Def	(mm)	± 50
Permissible angular stays displacement	Def	(°)	2

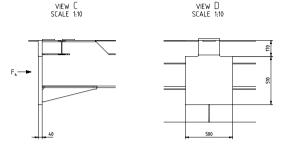
Max. permissible force in lateral direction	F,	(kN)	± 200
Stiffness	k	(N/m)	0.6 x 10°
Permissible vertical stays displacement	Def,	(mm)	± 50
Permissible horizontal stays displacement	Def⊾	(mm)	± 50
Permissible angular stays displacement	Def	(°)	2

Surface protection see group 0344 Toleranding principle isobots





Layout / Specification of "inner" stays platform attachment points



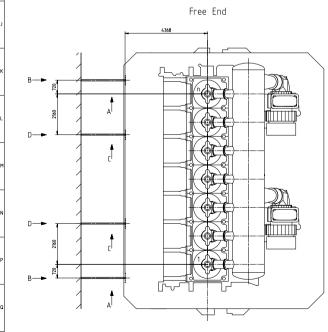
Max. permissible force in lateral direction	F.	(kN)	± 200
Stiffness	k	(N/m)	0.5 × 10°
Permissible vertical stays displacement	Def,	(mm)	± 50
Permissible horizontal stays displacement	Def	(mm)	± 50
Permissible angular stays displacement	Defa	(°)	2

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)
 Hannii Hydraulic Machinery Co., Ltd (Korea)
 Nantong Navigation Machinery Group Co., Ltd (China)

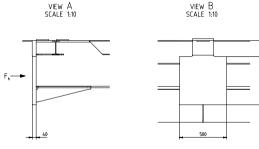
- Installed on fuel side (FS).

- 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.



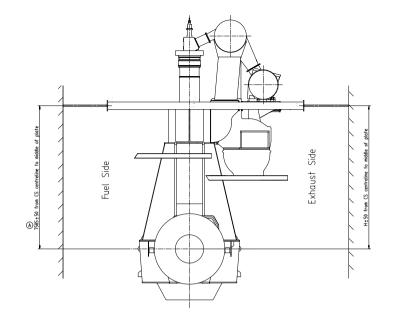






Max. permissible force in lateral direction	F,	(kN)	± 200
Stiffness	k	(N/m)	0.5 x 10°
Permissible vertical stays displacement	Def,	(mm)	± 50
Permissible horizontal stays displacement	Def	(mm)	± 50
Permissible angular stays displacement	Def.	(°)	2







No. of Cyl.	Turbocharger type	А	В	F	н					
6	ON REQUEST									
	2 x A275-L	720	720	6068	7335					
7	2 x MET71MB	720	720	6068	7335					
'	2 x MET83MB	720	720	6268	7335					
	2 x MET66	720	720	6275	7585					
8	10	ON REQUEST								
9	U	UESI								

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

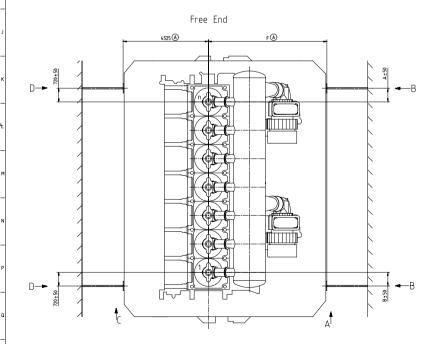
Max. force acting on ship's hull	Fh _{eax}	(kN)	× 1)
Minimum stiffness	k _{nin}	(N/m)	0.5 x 10°
Permissible deflection per 100 kN	Def _{max}	(mm)	0.2

*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

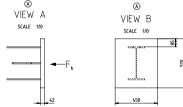
Layout / specification of stay attachment points on exhaust side

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

- (A) 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 meanly are famely into training and the relevant engine dynamic data sheet "Forces and Moments" which is linked in the Marine Installation Manual (MMM). Stay pre-femsioning 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.

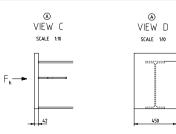






Max. permissible force in lateral direction	F,	(kN)	± 200
Stiffness	k	(N/m)	0.6 × 10°
Permissible vertical stays displacement	Def,	(mm)	± 50
Permissible horizontal stays displacement	Def,	(mm)	± 50
Permissible angular stays displacement	Def_	(°)	2

Layout / specification of stay attachment points on fuel side

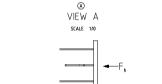


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F,	(kN)	± 200
k	(N/m)	0.5 x 10°
Def,	(mm)	± 50
Def⊾	(mm)	± 50
Def	(°)	2
	k Def _v Def _h	k (N/m) Def _v (mm) Def _h (mm)

Surface protection see group 0344 Toleranding principle isobots

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TRACK CHANGES

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

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