Requirement for top bracing application

No. of Cyl.	5	6	7	8
Lateral stays	A	B	C	A
Longitudinal stays	B	C	C	C

(A) Remarks:

A: The countermeasure indicated is needed.
B: The countermeasure indicated may be needed and provision for the corresponding countermeasure is recommended.
C: The countermeasure indicated is usually not needed.

		PAAD300718	PAAD300717	PAAD300716	PAAD300714	PAAD300713	PAAD300712	PAAD300711	PAAD300710	PAAD300709	PAAD300707	PAAD300706	PAAD300705
Cyl. No.	5	X	X	X	X	X	X						
	6, 8							X	X	X	X	X	X
(A) Turbocharger Location	ES	X	X	X				X	X	X			
	DE				X	X	X				X	X	X
Stay Location	FS	X			X			X			X		
	ES		X			X			X			X	
	BOTH			X			X			X			X
Net Weight		3590	3590	9367	3590	3590	9367	0,001	0,001	5777	0,001	0,001	5777

Quantity PER ENGINE (columns: Material ID PAAD300718 … PAAD300705, in the order above)

PAAD300718	PAAD300717	PAAD300716	PAAD300714	PAAD300713	PAAD300712	PAAD300711	PAAD300710	PAAD300709	PAAD300707	PAAD300706	PAAD300705	SEQ NO	Material ID	Material Name	Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
-	-	-	-	-	1	-	-	-	-	-	1	007	PAAD292939	ENGINE STAYS	BS, T/C DE	DAAD099414		5777
-	-	-	-	1	-	-	-	-	-	1	-	006	PAAD292572	ENGINE STAYS	ES, T/C DE	DAAD099287		0,001
-	-	-	1	-	-	-	-	-	1	-	-	005	PAAD292727	ENGINE STAYS	FS, T/C DE	DAAD099332		0,001
-	-	1	-	-	-	-	-	1	-	-	-	004	PAAD292907	ENGINE STAYS	BS, T/C ES	DAAD099392		5777
-	1	-	-	-	-	-	1	-	-	-	-	003	PAAD292439	ENGINE STAYS	ES, T/C ES	DAAD099236		0,001
1	-	-	-	-	-	1	-	-	-	-	-	002	PAAD292658	ENGINE STAYS	FS, T/C ES	DAAD099316		0,001
1	1	1	1	1	1	-	-	-	-	-	-	001	PAAD292283	ENGINE STAYS	Longitudinal Stays	DAAD099170		3590

Approved

Free space for lic.		Q-Code XXXXX	Main Drw. H
		Standard ISO; JIS	
Modif.	(A) EAAD089852 Number, 20.09.2018 Drawn date	Number / Drawn date	Number / Drawn date

WIN GD Winterthur Gas & Diesel

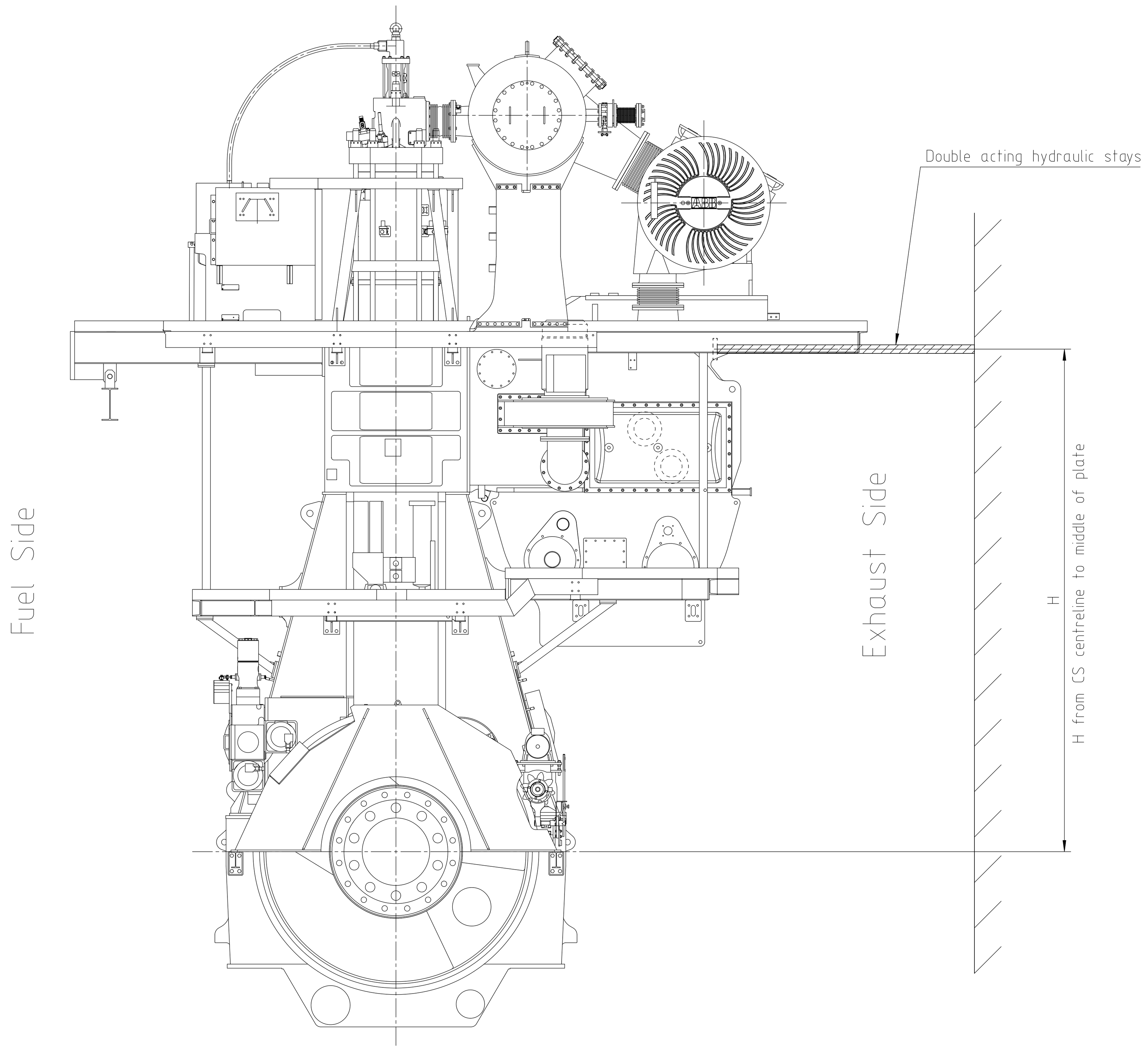
Product: 5-8RT-flex50-D

ENGINE STAYS

Motorabstuetzung

SURFACE PROTECTION SEE GROUP 0344	Units mm kg NX	Basic Material		Net Weight
TOLERANCING PRINCIPLE ISO8015	Made 07.02.2018 dki021 DH.Kim	Scale -	Size A2 Page 1/1	Material ID
	Chkd 17.07.2018 wwa008 Wang	Design Group 9715	Drawing ID DAAD103361	Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.07.2018 mhu019 Hug			

DID - DIMENSIONAL DRAWING - Confidential

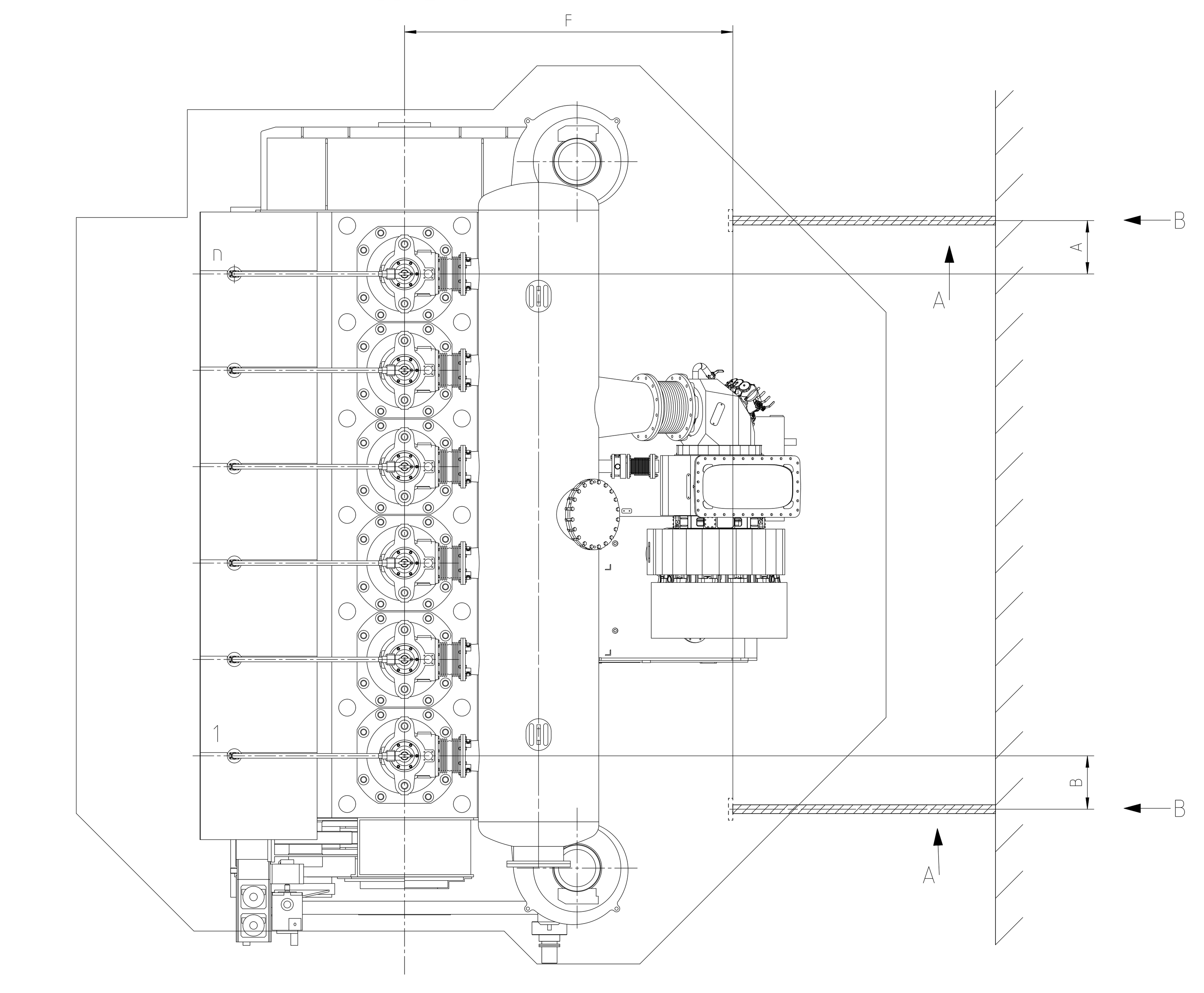


Ⓐ <u>Position of stay attachment points on platform side</u>

No. of Cyl.	Turbocharger type	A	B	F	H
5	1 x A165-L	487	487	3000	4693
	1 x A170-L	487	487	3000	4693
	1 x A265-L	487	487	3000	4693
	1 x MET53MB	487	487	3000	4693
6	1 x A165-L	487	487	3000	4693
	1 x A175-L	487	487	3000	4693
	1 x A265-L	487	487	3000	4693
	1 x A270-L	487	487	3000	4693
	1 x MET60MB	ON REQUEST			
7	1 x A175-L	487	487	3000	4693
	1 x A270-L	ON REQUEST			
	1 x MET60MB				
8	2 x A170-L	ON REQUEST			
	2 x MET48MB				

<u>Requirements for application of hydraulic stays on fuel side</u>

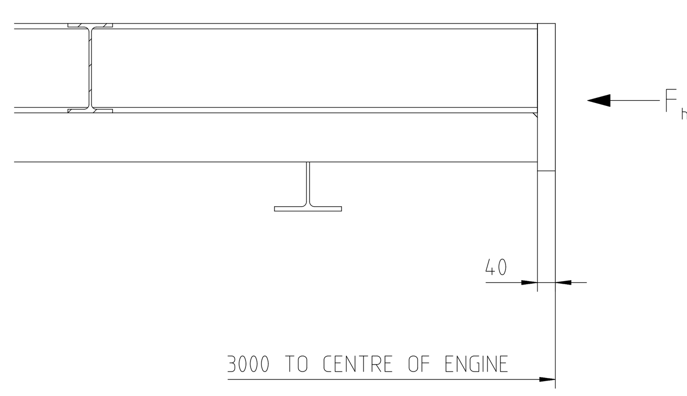
- Layout and delivery of double acting respectively semi double acting hydraulic stays by qualified third party supplier.
  By WinGD approved supplier : Green & Clean Technology Co., Ltd (Korea)
  Hanmi Hydraulic Machinery Co., Ltd (Korea)
  Nantong Navigation Machinery Group Co., Ltd (China) Ⓐ
- Installed 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 provide a certain dampening.
- Acceptable vibrations (RMS limits) for WinGD 2-stroke engines must be met.
- The performance of the stays must be checked during sea trial by vibration measurements.
- Stay position in the vertical direction, respectively the distance to the bottom side of the upper platform beam must be arranged in a way that sufficient space for welding and application of the max. admissible stays inclination remains.
- The installation and commissioning of the stays must be in accordance with the supplier's instructions.



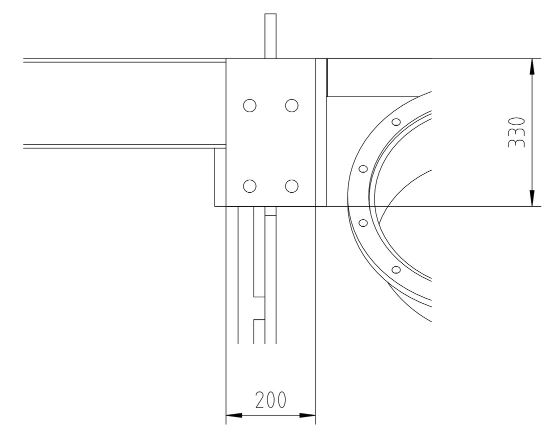
<u>Provided stay attachment points on engine / platform side</u>

Layout of "inner" attachment points according to WinGD standard design

View "A"
(1:10)



View "B"
(1:10)



Max. permissible force in lateral direction	F_h	(kN)	± 240
Stiffness	$k_{min.}$	(N/m)	0.5×10^9
Deflection per 100 kN	$Def_{max.}$	0.2	0.2

<u>Remark:</u>
The Engine outline view is drawn for a 6 cylinder with 1 TC. However, the specification of the stays attachment points in relation to the foremost/aft cylinder is vaild for all cylinder numbers and TC configulation. TC specific stay positions are provided in the table on right hand side.

Free space for lic.		Q-Code XXXXX	Main Drw.		
		Standard ISO; JIS			
Modif.	Ⓐ EAAD089852 (Number)	11.09.2018 (Drawn date)	Number	Drawn date	
WIN GD Winterthur Gas & Diesel	Product 5-8RT-flex50-D	ENGINE STAYS Stays location: ES Motorabstuetzung			
Units mm kg	NX	Basic Material	Net Weight 0,001		
SURFACE PROTECTION SEE GROUP 0344	Made 12.04.2018 dki021 DH.Kim	Scale 1:30	Size A0	Page 1/1	Material ID PAAD292439
TOLERANCING PRINCIPLE ISO8015	Chkd 17.07.2018 wwa008 Wang	Design Group 9715	Drawing ID DAAD099236	Rev. A	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.07.2018 mhu019 Hug				

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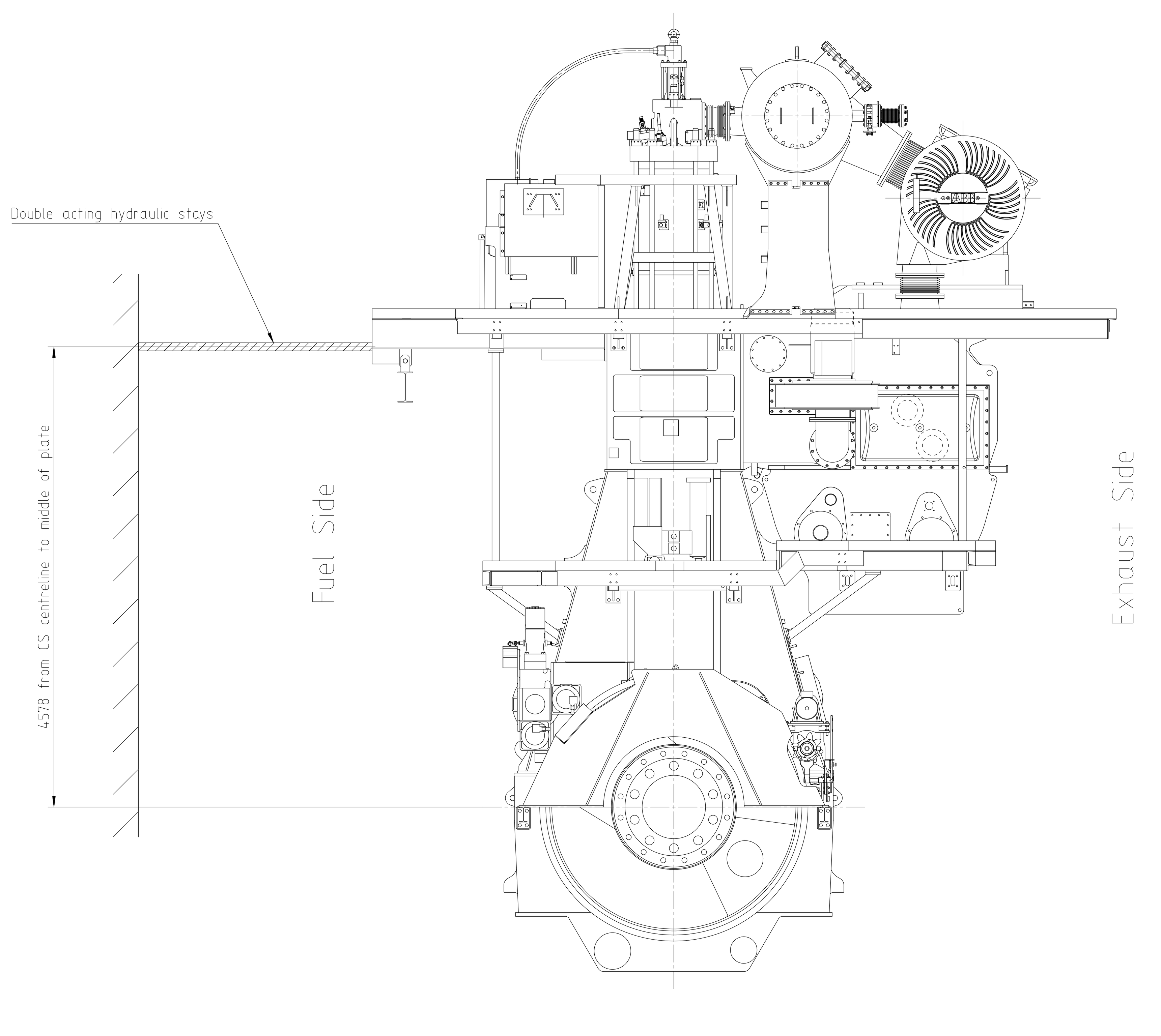
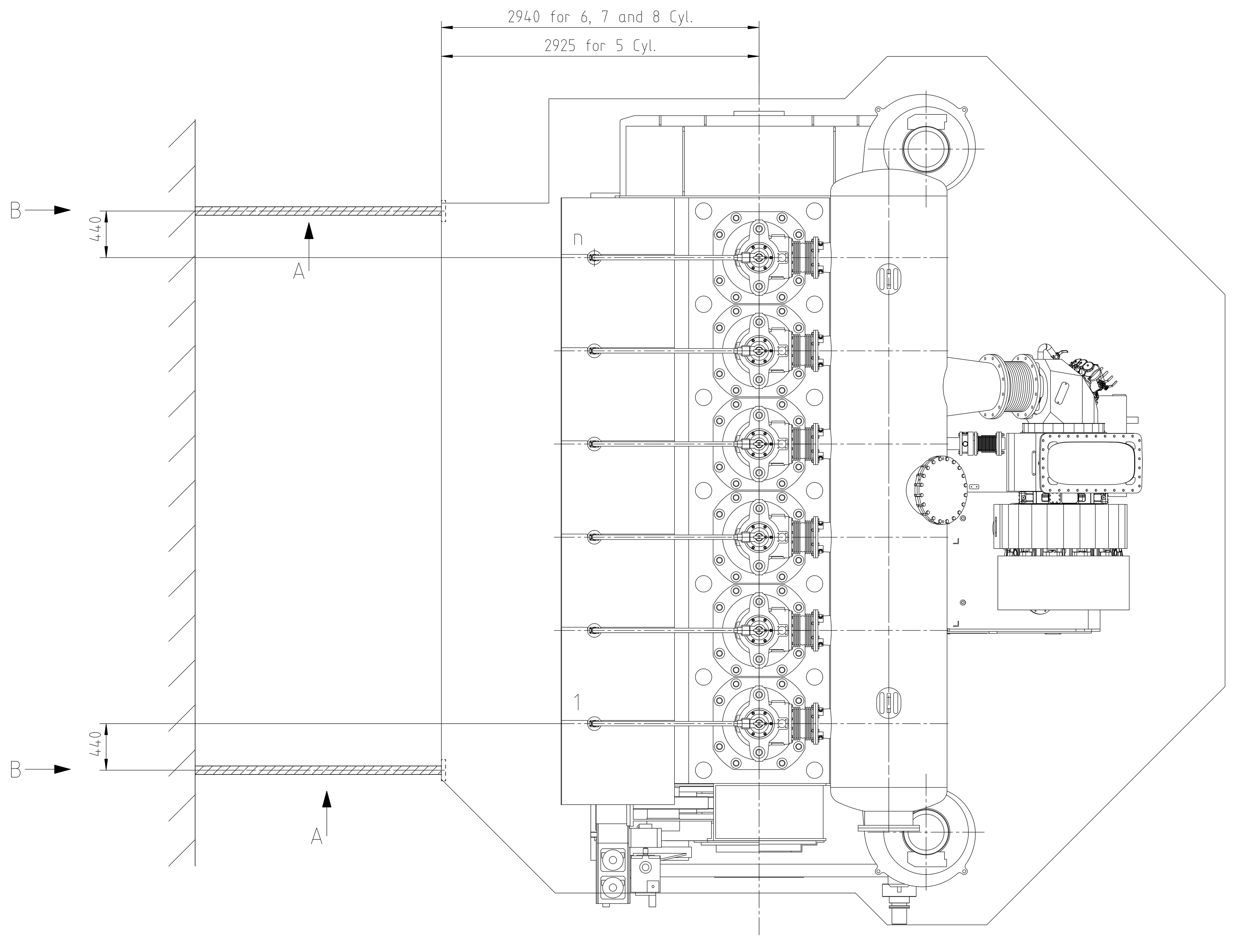
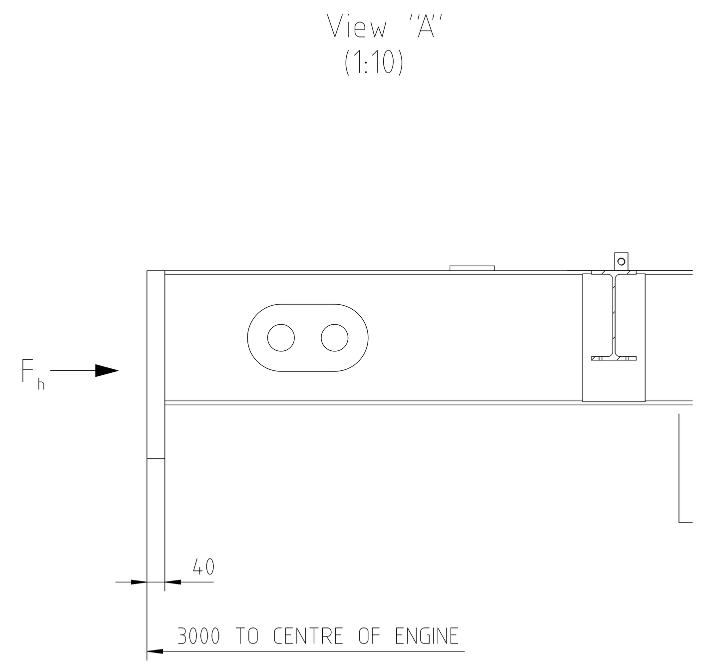
DID - DIMENSIONAL DRAWING - Confidential

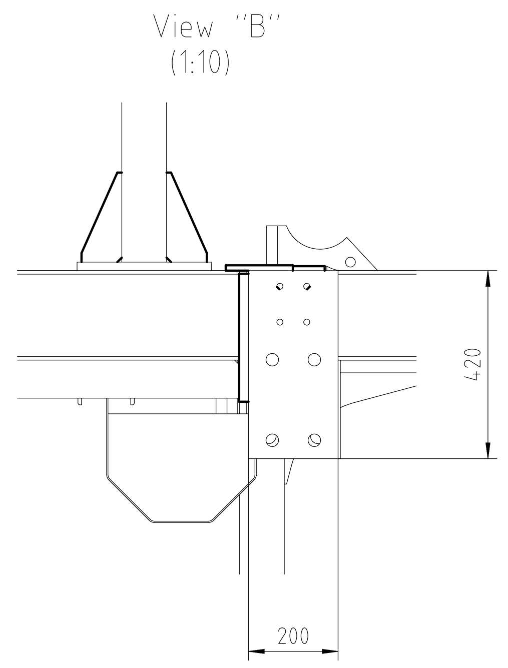




Provided stay attachment points on engine / platform side

Layout of attachment points according to WinGD standard design





Max. permissible force in lateral direction	F_h	(kN)	± 240
Stiffness	$k_{min.}$	(N/m)	0.5×10^9
Deflection per 100 kN	$Def_{max.}$	0.2	0.2

Requirements for application of hydraulic stays on fuel side

- Layout and delivery of double acting respectively semi double acting hydraulic stays by qualified third party supplier.
  By WinGD approved supplier : Green & Clean Technology Co., Ltd (Korea)
  Hanmi Hydraulic Machinery Co., Ltd (Korea)
  Nantong Navigation Machinery Group Co., Led (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 provide a certain dampening.
- Acceptable vibrations (RMS limits) for WinGD 2-stroke engines must be met.
- The performance of the stays must be checked during sea trial by vibration measurements.
- Stay position in the vertical direction, respectively the distance to the bottom side of the upper platform beam must be arranged in a way that sufficient space for welding and application of the max. admissible stays inclination remains.
- The installation and commissioning of the stays must be in accordance with the supplier's instructions.

Remark:
The Engine outline view is drawn for a 6 cylinder with 1 TC. However, the specification of the stays attachment points in relation to the foremost/aft cylinder is vaild for all cylinder numbers and TC configulation. TC specific stay positions are provided in the table on right hand side.

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 5-8RT-flex50-D	ENGINE STAYS Stays location: FS Motorabstuetzung	
Units mm kg	NX	Basic Material	Net Weight 0,001
SURFACE PROTECTION SEE GROUP 0344	Made 18.04.2018 dki021 DH.Kim	Scale 1:30	Size A0 / Page 1/1 / Material ID PAAD292658
TOLERANCING PRINCIPLE ISO8015	Chkd 17.07.2018 wwa008 Wang	Design Group 9715	Drawing ID DAAD099316 / Rev. –
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.07.2018 mhu019 Hug		

Approved

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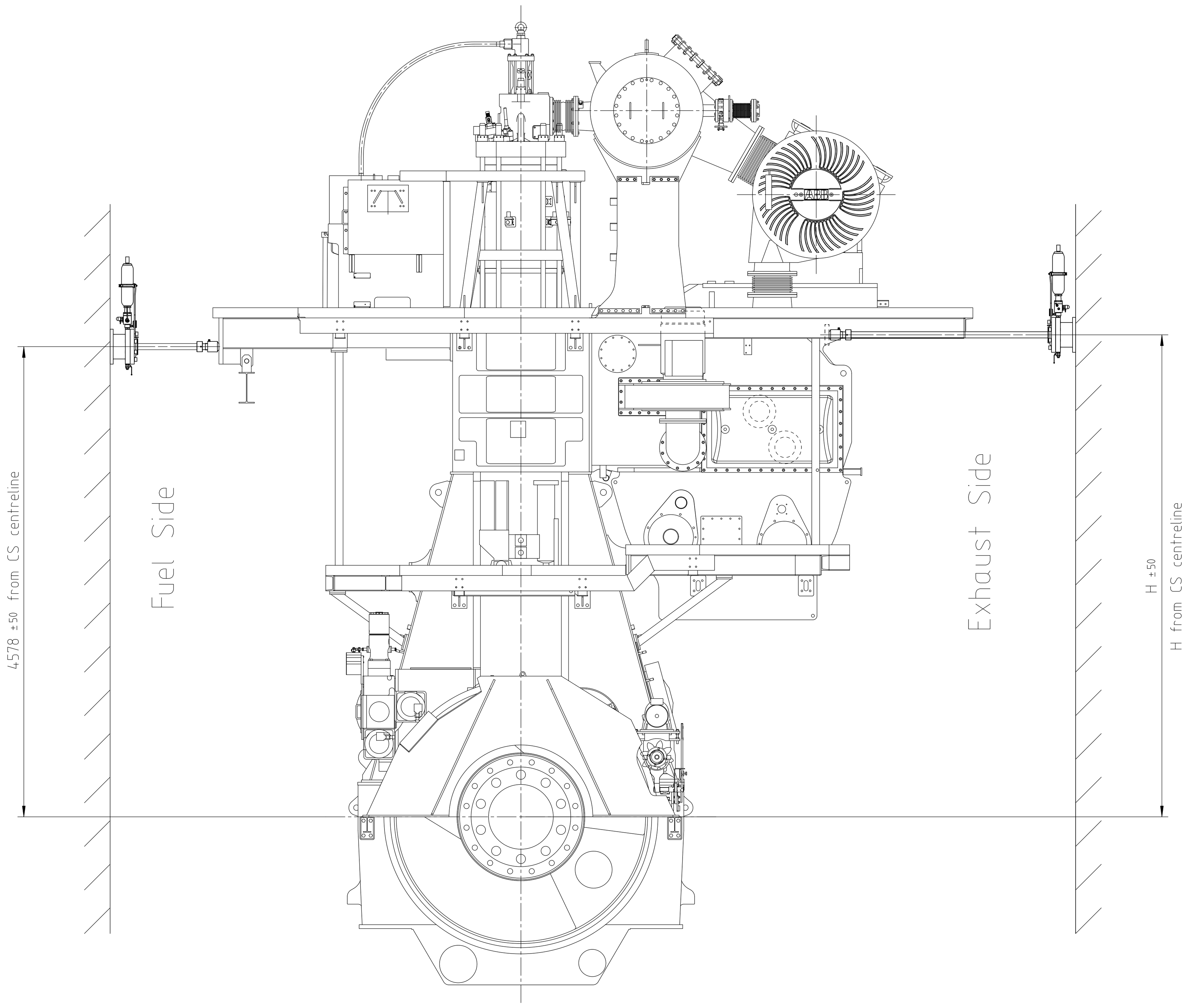
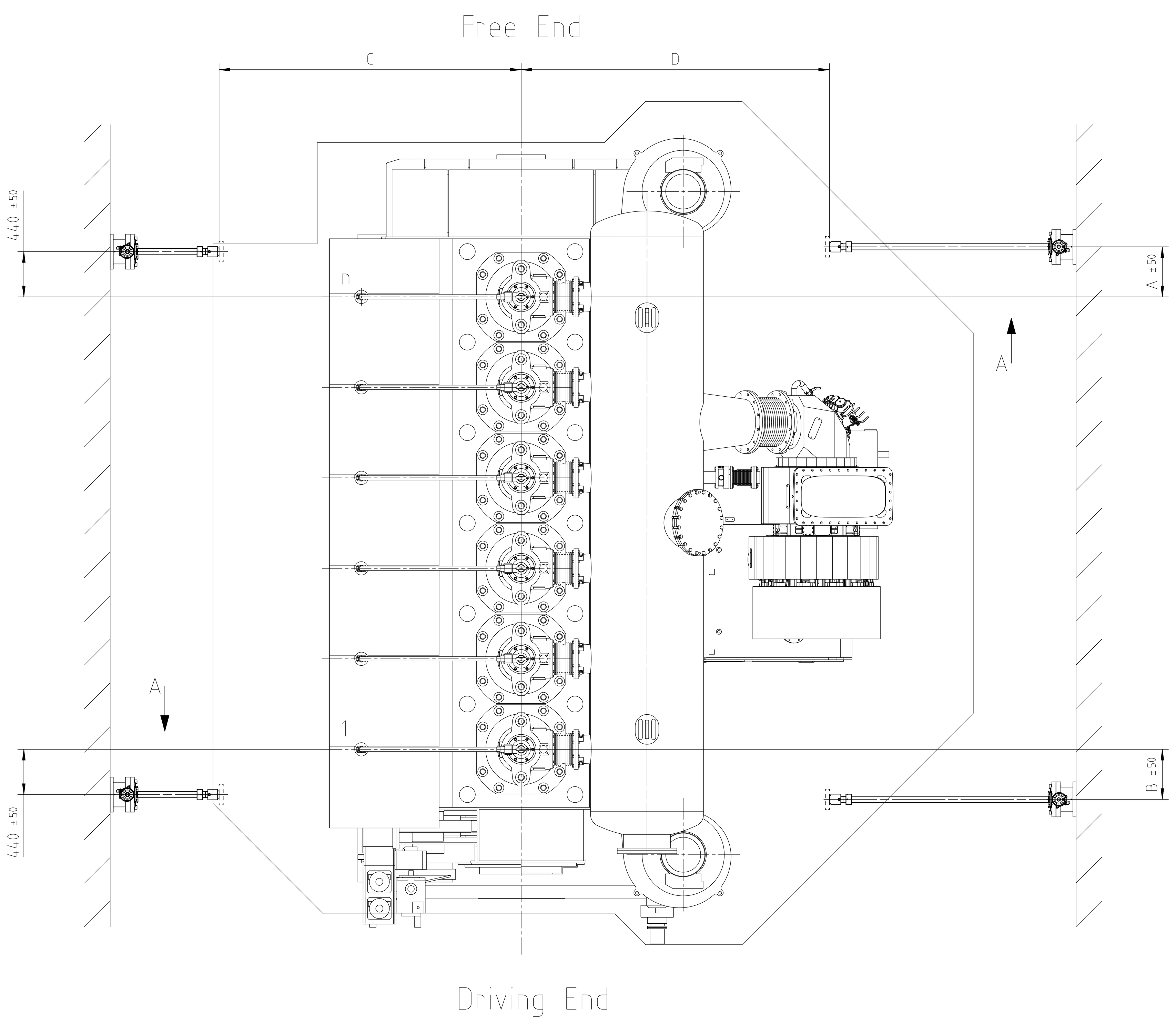
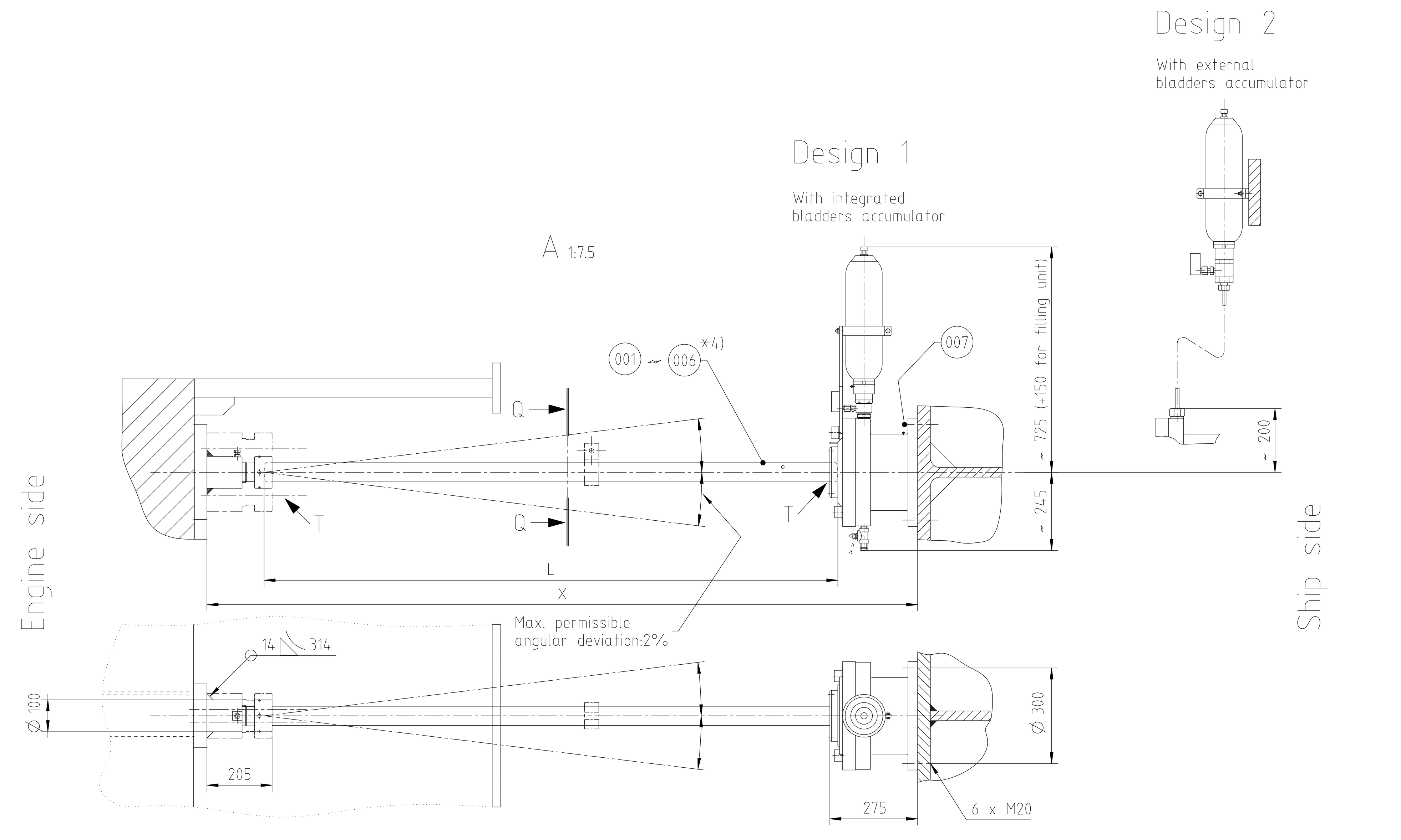
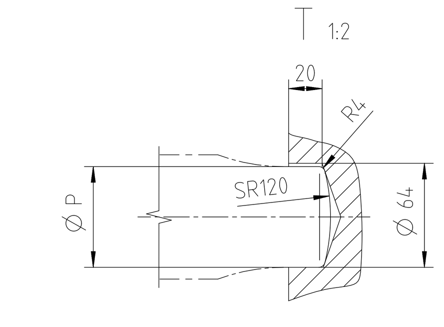
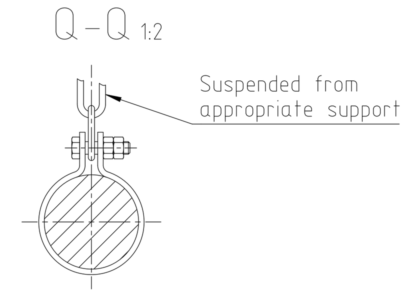








Drawn for Ø P = 60 mm



Ⓐ Position of stay attachment points on platform side

No. of Cyl.	Turbocharger type	A	B	C	D	H
5	1 x A165-L	487	487	2925	1320	4693
	1 x A170-L	487	487	2925	1320	4693
	1 x A265-L	487	487	2925	1320	4693
	1 x MET53MB	487	487	2925	1320	4693
6	1 x A165-L	487	487	2940	1320	4693
	1 x A175-L	487	487	2940	1320	4693
	1 x A265-L	487	487	2940	1320	4693
	1 x A270-L	487	487	2940	1320	4693
	1 x MET60MB	ON REQUEST				
7	1 x A175-L	487	487	2940	1320	4693
	1 x A270-L	ON REQUEST				
	1 x MET60MB					
8	2 x A170-L	ON REQUEST				
	2 x MET48MB					

Specification for application of stays according to WinGD design

Hydraulic stays of single acting type attached on fuel pump side (FS) and exhaust side (ES)

Requirements for ship side attachment points

Max. engine force *1)	$Fe_{max.}$	(kN)	80
Max. stay pretensioning force *2)	$Fs_{max.}$	(kN)	160
Max. force acting on ship's hull *3)	$Fh_{max.}$	(kN)	240
Minimum stiffness	$k_{min.}$	(N/m)	0.5×10^9
Permissible deflection per 100 kN	$Def_{max.}$	(mm)	0.2

*1) Relevant engine forces resulting from lateral moments of X/H-type at R1 rating as provided in the engine dynamic data sheet "Forces and Moments" are considered. The provided value represents the transmitted force per stay (2 pcs per side).

*2) The max. stay pre-tensioning force results from the oil pressure in the hydraulic cylinder at max. piston recess (value provided in the stay assembly instruction).

*3) The max. force acting on ship's hull is the sum of the max. resulting engine force and the max. stay pre-tensioning force. It has to be considered for the layout of the attachment points on ship hull side.

Pos. No. *4)	MATERIAL ID	L (mm)	Ø E (mm)	
001	107.165.800.200	up to 1500	60	With integrated bladders accumulator
002	PAAD278465	1501 to 2200	75	
003	PAAD278467	2201 to 2800	90	
004	107.165.800.201	up to 1500	60	With external bladders accumulator
005	PAAD278507	1501 to 2200	75	
006	PAAD278509	2201 to 2800	90	

X defines the clear width between engine attachment points on engine and ship side.

X to be determined by shipyard.

When determining $X_{min.}$ and L observe: $X_{min.}$ = 1260mm, L = X - 430mm

*4) Depending on the requirement either the stay execution of Pos. 001, 002, 003, 004, 005 or Pos. 006 has to be selected.

Remark:
The Engine outline view is drawn for a 6 cylinder with 1 TC. However, the specification of the stays attachment points in relation to the foremost/aft cylinder is vaild for all cylinder numbers and TC configulation. TC specific stay positions are provided in the table on right hand side.

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	008	107.165.820.500	HYDRAULIC LATERAL DEVICE	107.165.820		0,001
24	007	015.151.044.341	HEXAGON HEAD SCREW M20x60	ISO 4017	8.8	0,196
4	006	PAAD278509	HYDRAULIC CYLINDER	107.165.800		295
4	005	PAAD278507	HYDRAULIC CYLINDER	107.165.800		231
4	004	107.165.800.201	HYDRAULIC CYLINDER	107.165.800		188
4	003	PAAD278467	HYDRAULIC CYLINDER	107.165.800		300
4	002	PAAD278465	HYDRAULIC CYLINDER	107.165.800		236
4	001	107.165.800.200	HYDRAULIC CYLINDER	107.165.800		193

Free space for lic. | Q-Code XXXXX | Standard ISO; JIS | Main Drw.

Modif. | A | EAAD089852 (Number) | 11.09.2018 (Drawn date)

WIN GD Winterthur Gas & Diesel

Product: 5-8RT-flex50-D

ENGINE STAYS
Stays location: BOTH SIDES
Motorabstuetzung

Units mm kg	NX	Basic Material	Net Weight 5777
Made 16.05.2018 dki021 DH.Kim	Scale 1:30	Size A0	Page 1/1
Chkd 17.07.2018 wwa008 Wang	Design Group 9715	Material ID PAAD292907	
Appd 17.07.2018 mhu019 Hug		Drawing ID DAAD099392	Rev. A

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

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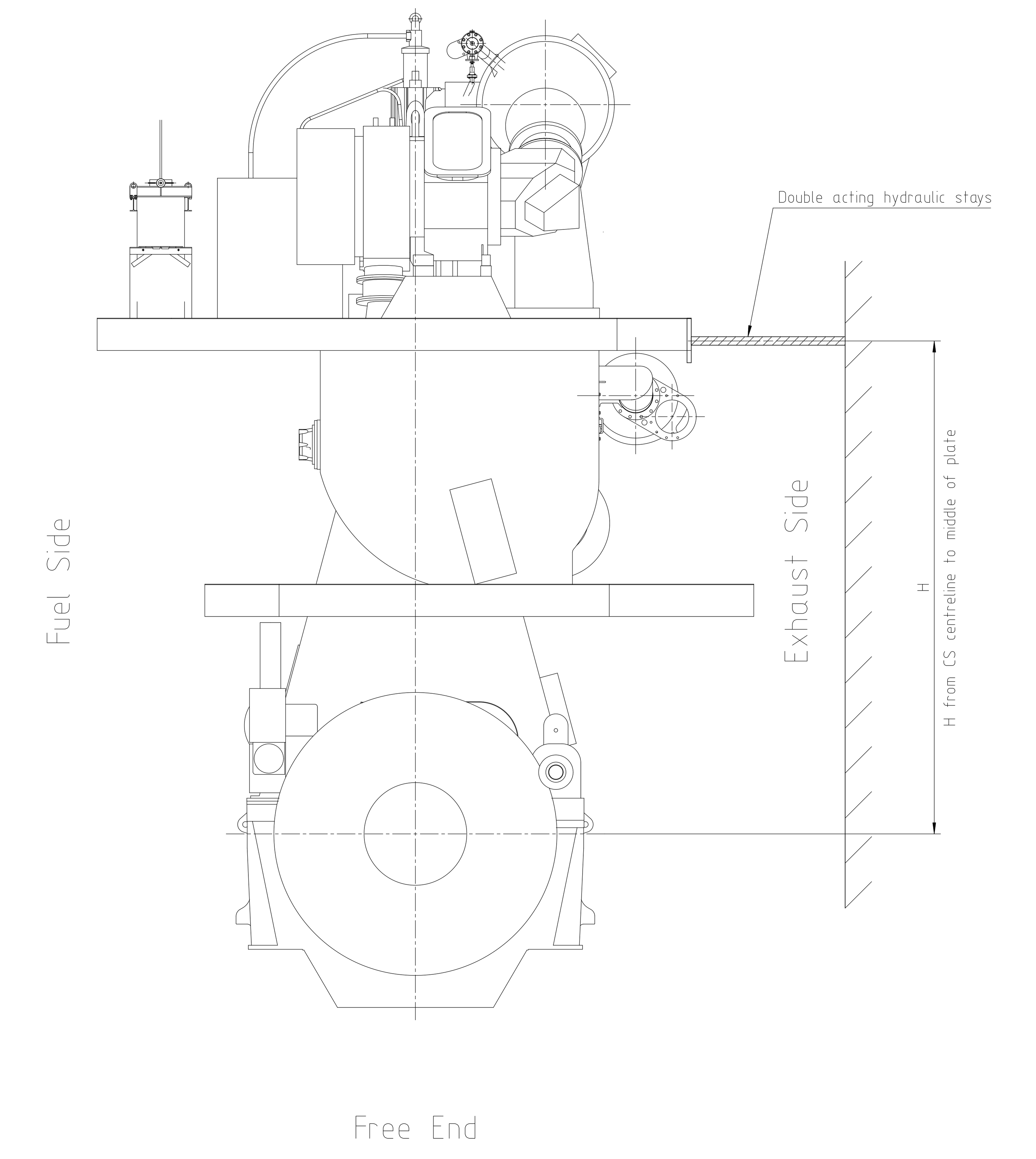
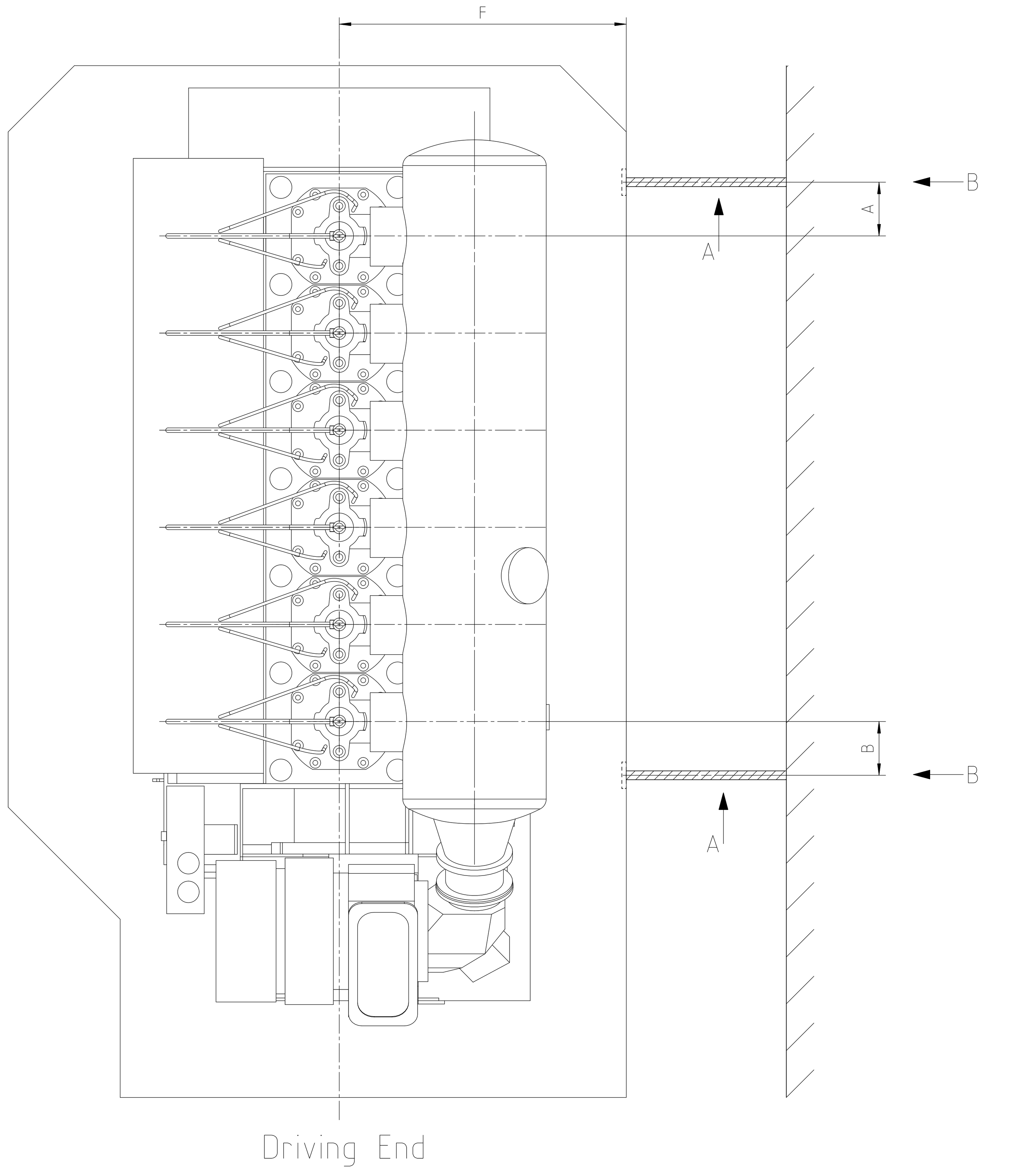




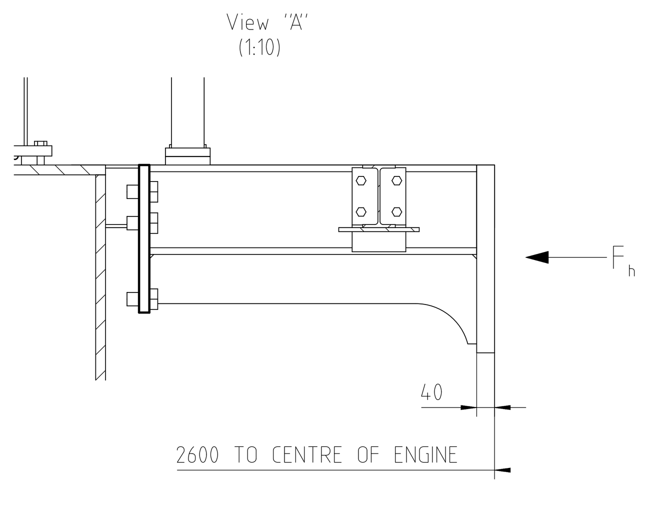
Remark:
The Engine outline view is drawn for a 6 cylinder with 1 TC. However, the specification of the stays attachment points in relation to the foremost/aft cylinder is vaild for all cylinder numbers and TC configulation. TC specific stay positions are provided in the table on right hand side.

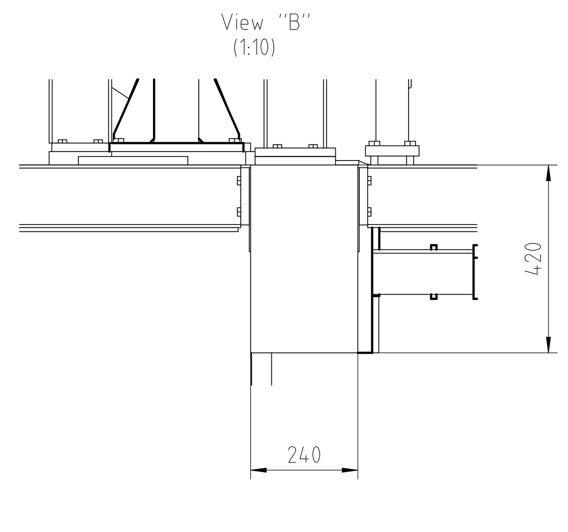
(A) Position of stay attachment points on platform side

No. of Cyl.	Turbocharger type	A	B	F	H
5	1 x A165-L	487	487	2600	4663
	1 x A170-L	487	487	2600	4663
	1 x A265-L	487	487	2600	4663
	1 x MET53MB	487	487	2600	4663
6	1 x A165-L	487	487	2600	4663
	1 x A170-L	487	487	2600	4663
	1 x A175-L	487	487	2600	4663
	1 x A265-L	487	487	2600	4663
	1 x A270-L	487	487	2600	4663
	1 x MET60MB	ON REQUEST			
7	1 x A175-L	487	487	2600	4663
	1 x A270-L	ON REQUEST			
	1 x MET60MB				
8	2 x A170-L	ON REQUEST			
	2 x MET48MB				

Provided stay attachment points on engine / platform side

Layout of attachment points according to WinGD standard design





Max. permissible force in lateral direction	F_h	(kN)	± 240
Stiffness	$k_{min.}$	(N/m)	0.5×10^9
Deflection per 100 kN	$Def_{max.}$	0.2	0.2

Requirements for application of hydraulic stays on fuel side

- Layout and delivery of double acting respectively semi double acting hydraulic stays by qualified third party supplier.
  By WinGD approved supplier : Green & Clean Technology Co., Ltd (Korea)
  Hanmi Hydraulic Machinery Co., Ltd (Korea)
  Nantong Navigation Machinery Group Co., Ltd (China) (A)
- 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 provide a certain dampening.
- Acceptable vibrations (RMS limits) for WinGD 2-stroke engines must be met.
- The performance of the stays must be checked during sea trial by vibration measurements.
- Stay position in the vertical direction, respectively the distance to the bottom side of the upper platform beam must be arranged in a way that sufficient space for welding and application of the max. admissible stays inclination remains.
- The installation and commissioning of the stays must be in accordance with the supplier's instructions.

Free space for lic.
Q-Code: XXXXX
Standard: ISO; JIS
Main Drw.
Modif.: (A) EAAD089852 11.09.2018 (Number / Drawn date)

WIN GD Winterthur Gas & Diesel
Product: 5-8RT-flex50-D
ENGINE STAYS
Stays location: ES
Motorabstuetzung

Units mm kg	NX	Basic Material	Net Weight 0,001
SURFACE PROTECTION SEE GROUP 0344	Made 11.04.2018 dki021 DH.Kim	Scale 1:30	Size A0 / Page 1/1 / Material ID PAAD292572
TOLERANCING PRINCIPLE ISO8015	Chkd 17.07.2018 wwa008 Wang	Design Group 9715	Drawing ID DAAD099287 / Rev. A
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Appd 17.07.2018 mhu019 Hug		

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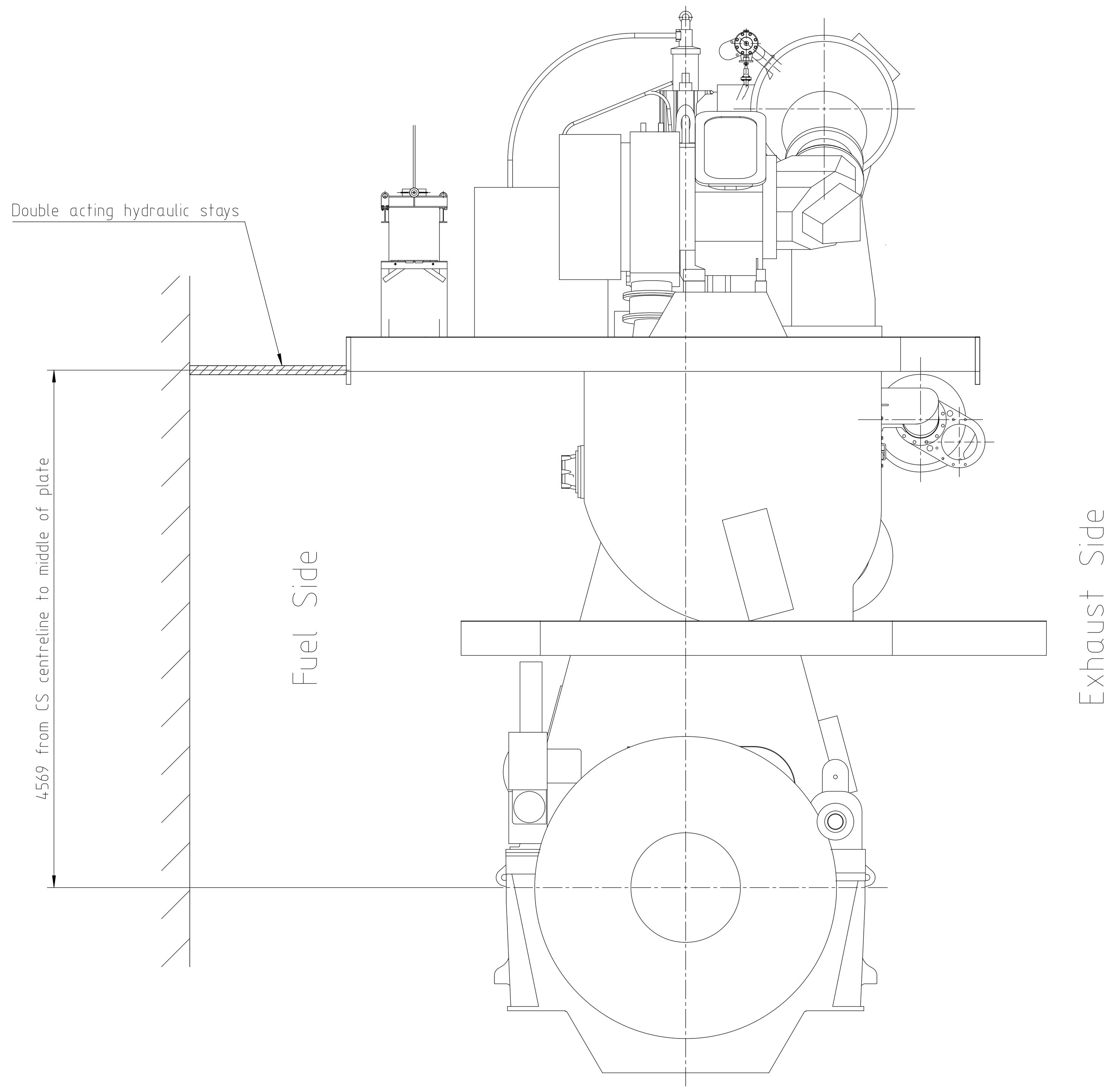
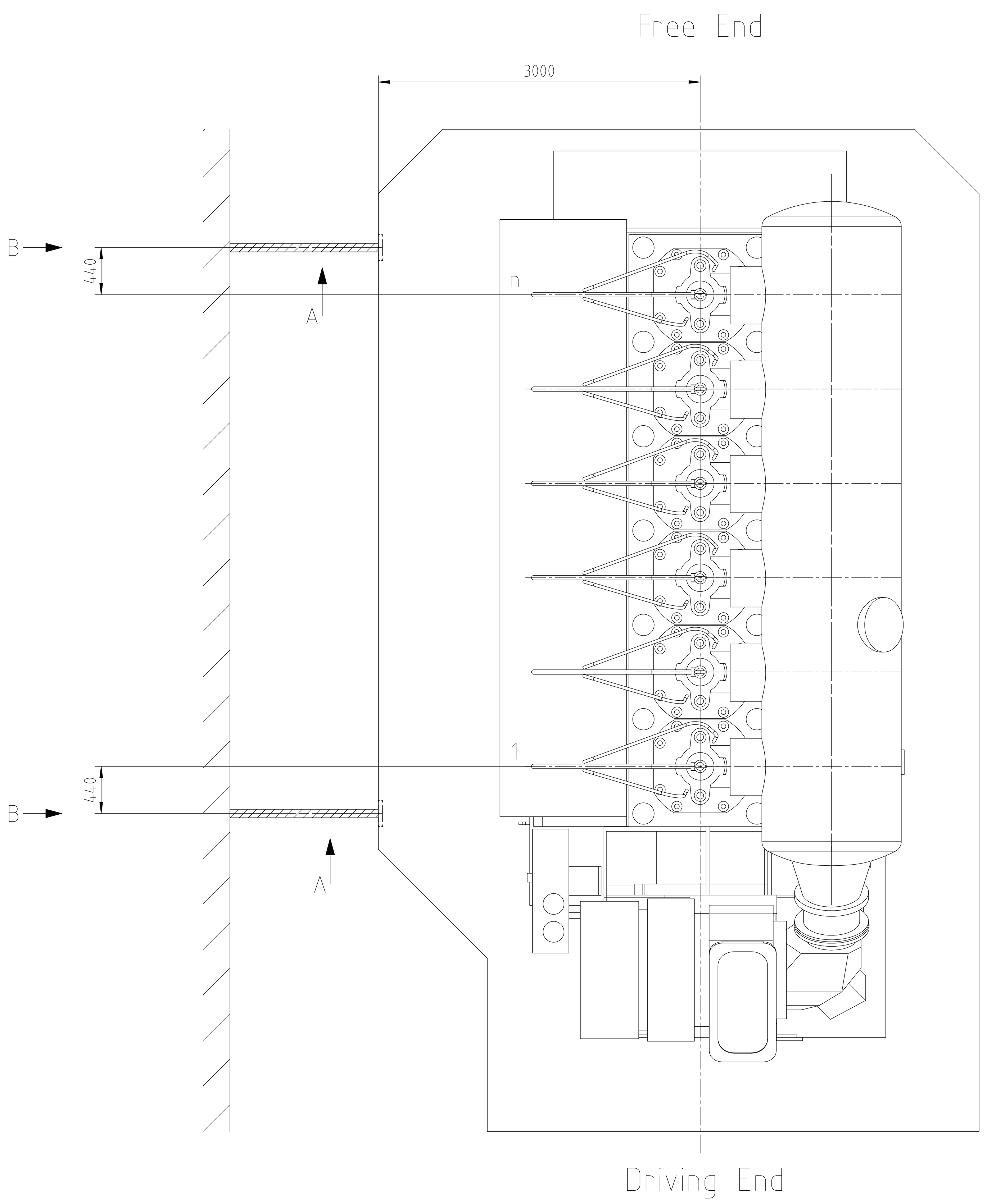
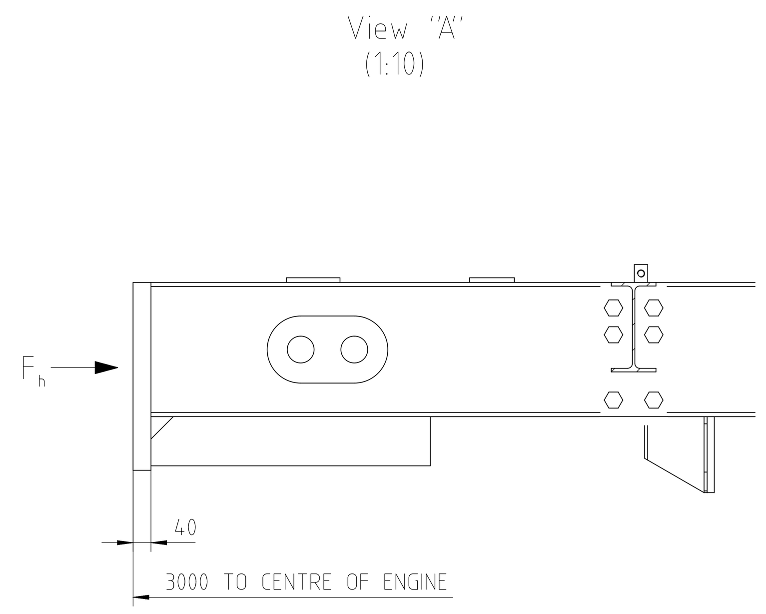
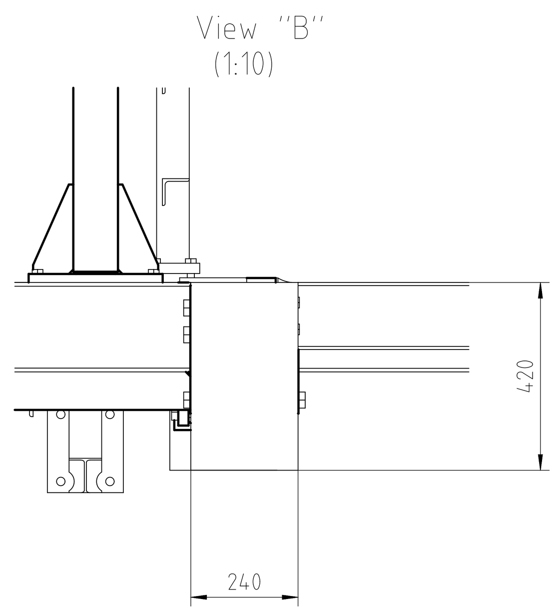




Provided stay attachment points on engine / platform side

Layout of "inner" attachment points according to WinGD standard design





Max. permissible force in lateral direction	F_h	(kN)	± 240
Stiffness	$k_{min.}$	(N/m)	0.5×10^9
Deflection per 100 kN	$Def_{max.}$	0.2	0.2

Requirements for application of hydraulic stays on fuel side

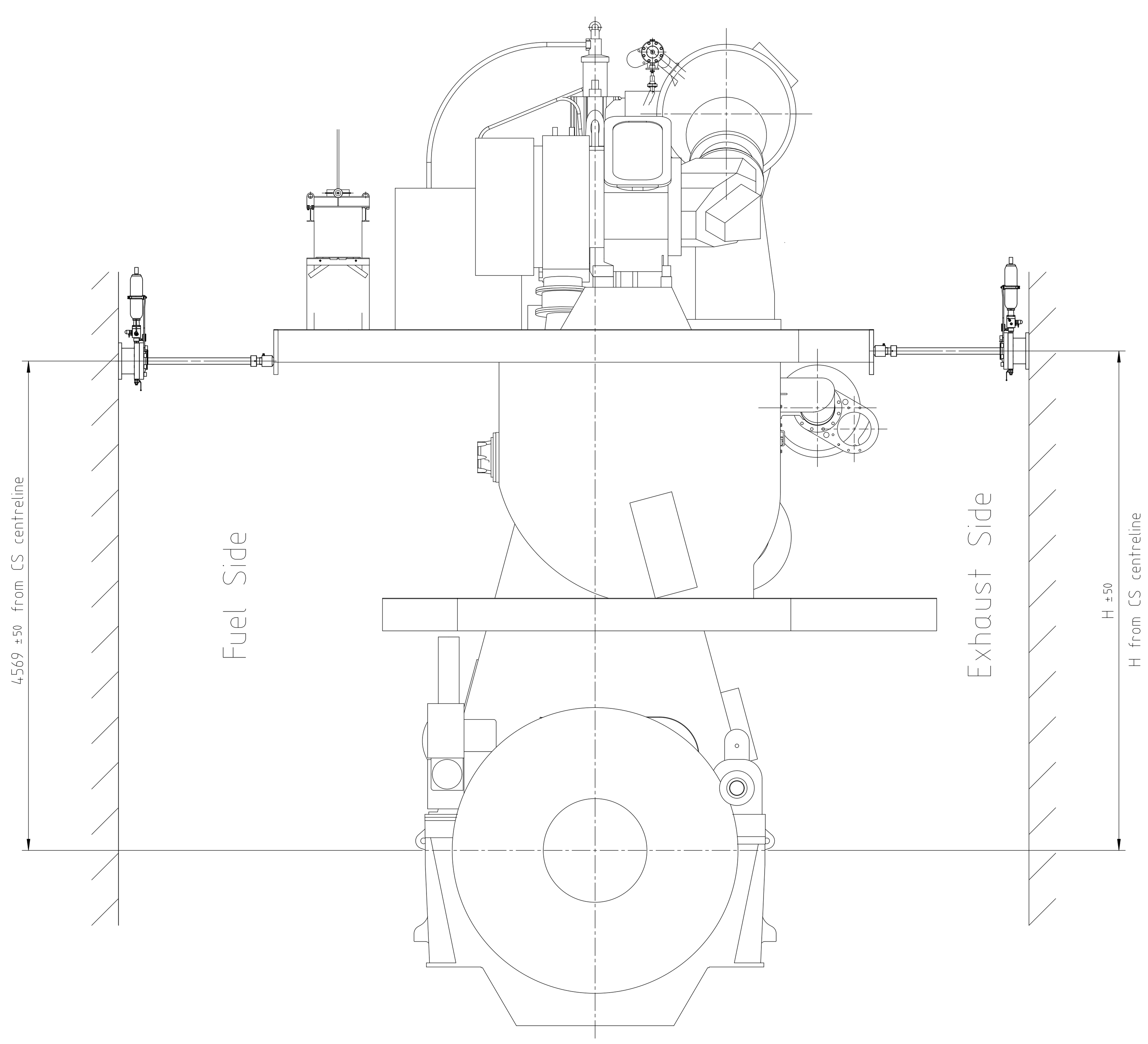
- Layout and delivery of double acting respectively semi double acting hydraulic stays by qualified third party supplier.
  By WinGD approved supplier : Green & Clean Technology Co., Ltd (Korea)
  Hanmi Hydraulic Machinery Co., Ltd (Korea)
  Nantong Navigation Machinery Group Co., Led (China)
- Installed 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 provide a certain dampening.
- Acceptable vibrations (RMS limits) for WinGD 2-stroke engines must be met.
- The performance of the stays must be checked during sea trial by vibration measurements.
- Stay position in the vertical direction, respectively the distance to the bottom side of the upper platform beam must be arranged in a way that sufficient space for welding and application of the max. admissible stays inclination remains.
- The installation and commissioning of the stays must be in accordance with the supplier's instructions.

Remark:
The Engine outline view is drawn for a 6 cylinder with 1 TC. However, the specification of the stays attachment points in relation to the foremost/aft cylinder is vaild for all cylinder numbers and TC configulation. TC specific stay positions are provided in the table on right hand side.

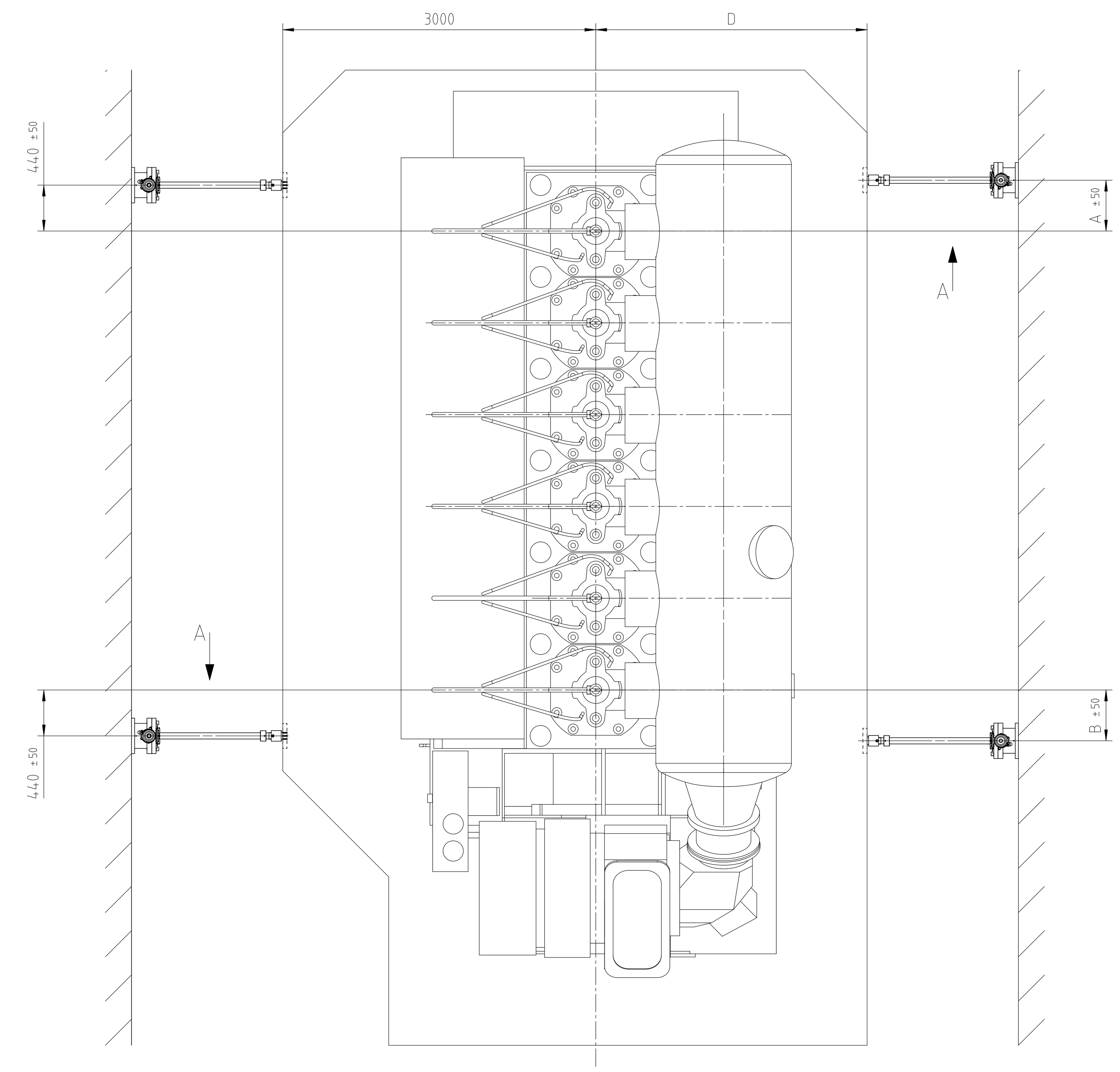
Free space for lic.	
Q-Code	XXXXX
Standard	ISO; JIS
Main Drw.	
Modif.	Number / Drawn date / Number / Drawn date / Number / Drawn date / Number / Drawn date
WIN GD Winterthur Gas & Diesel	
Product	5-8RT-flex50-D
Title	ENGINE STAYS Stays location: FS Motorabstuetzung
Units	mm kg
	NX
Basic Material	
Net Weight	0,001
SURFACE PROTECTION SEE GROUP 0344	
TOLERANCING PRINCIPLE ISO8015	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	
Made	18.04.2018 dki021 DH.Kim
Chkd	17.07.2018 wwa008 Wang
Appd	17.07.2018 mhu019 Hug
Scale	1:30
Design Group	9715
Size	A0
Page	1/1
Material ID	PAAD292727
Drawing ID	DAAD099332
Rev.	–

Approved

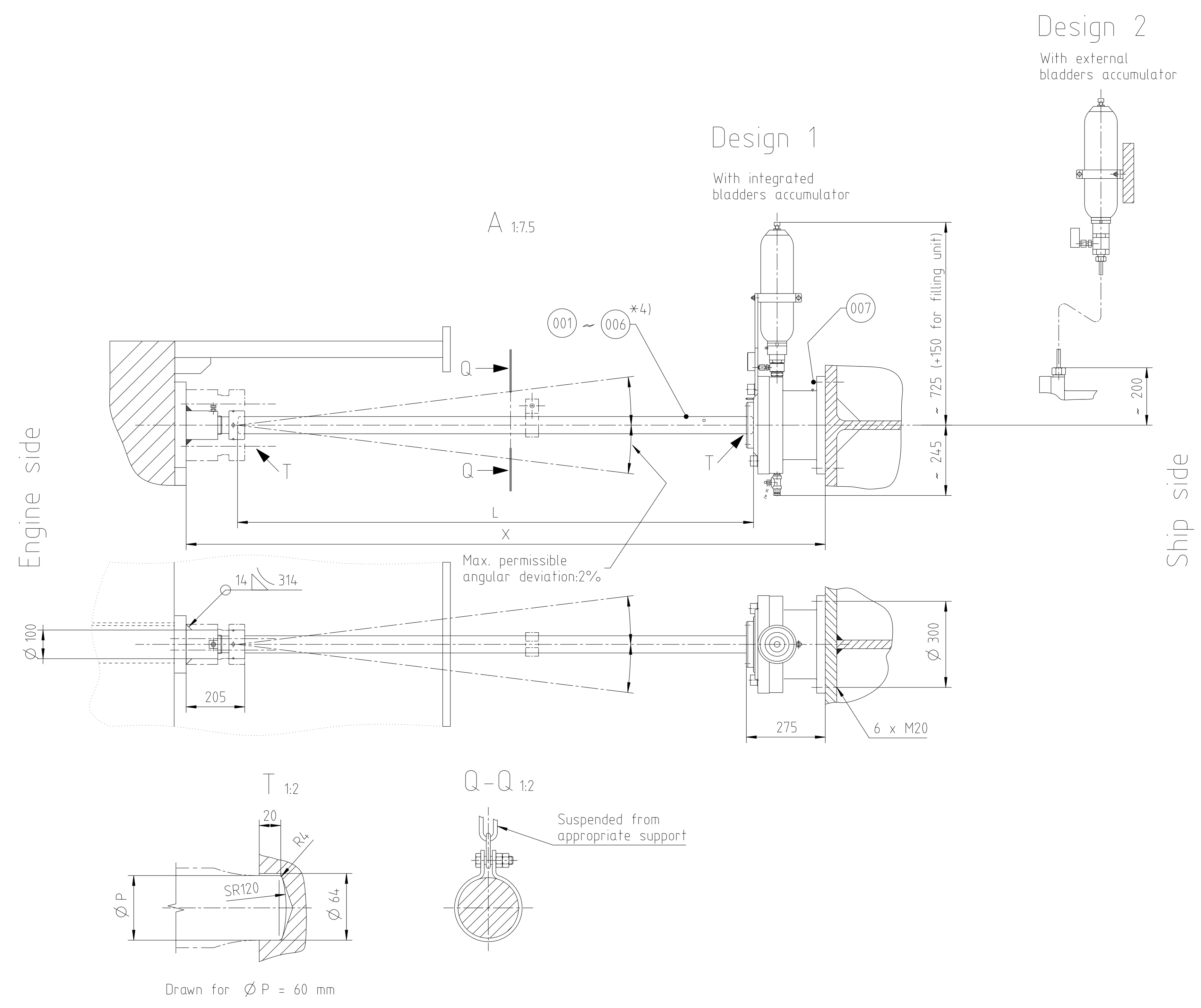
DID - DIMENSIONAL DRAWING - Confidential



Free End



Driving End



(A) Position of stay attachment points on platform side

No. of Cyl.	Turbocharger type	A	B	D	H
5	1 x A165-L	487	487	2600	4663
	1 x A170-L	487	487	2600	4663
	1 x A265-L	487	487	2600	4663
	1 x MET53MB	487	487	2600	4663
6	1 x A165-L	487	487	2600	4663
	1 x A170-L	487	487	2600	4663
	1 x A175-L	487	487	2600	4663
	1 x A265-L	487	487	2600	4663
	1 x A270-L	487	487	2600	4663
	1 x MET60MB	ON REQUEST			
7	1 x A175-L	487	487	2600	4663
	1 x A270-L	ON REQUEST			
	1 x MET60MB	ON REQUEST			
8	2 x A170-L	ON REQUEST			
	2 x MET48MB	ON REQUEST			

Specification for application of stays according to WinGD design

Hydraulic stays of single acting type attached on fuel pump side (FS) and exhaust side (ES)

Requirements for ship side attachment points

Max. engine force *1)	$Fe_{max.}$	(kN)	80
Max. stay pretensioning force *2)	$Fs_{max.}$	(kN)	160
Max. force acting on ship's hull *3)	$Fh_{max.}$	(kN)	240
Minimum stiffness	$k_{min.}$	(N/m)	0.5×10^9
Permissible deflection per 100 kN	$Def_{max.}$	(mm)	0.2

*1) Relevant engine forces resulting from lateral moments of X/H-type at R1 rating as provided in the engine dynamic data sheet "Forces and Moments" are considered. The provided value represents the transmitted force per stay (2 pcs per side).

*2) The max. stay pre-tensioning force results from the oil pressure in the hydraulic cylinder at max. piston recess (value provided in the stay assembly instruction).

*3) The max. force acting on ship's hull is the sum of the max. resulting engine force and the max. stay pre-tensioning force. It has to be considered for the layout of the attachment points on ship hull side.

Pos. No. *4)	MATERIAL ID	L (mm)	Ø E (mm)	
001	107.165.800.200	up to 1500	60	With integrated bladders accumulator
002	PAAD278465	1501 to 2200	75	
003	PAAD278467	2201 to 2800	90	
004	107.165.800.201	up to 1500	60	With external bladders accumulator
005	PAAD278507	1501 to 2200	75	
006	PAAD278509	2201 to 2800	90	

X defines the clear width between engine attachment points on engine and ship side.

X to be determined by shipyard.

When determining $X_{min.}$ and L observe: X_{min} = 1260mm, L = X - 430mm

*4) Depending on the requirement either the stay execution of Pos. 001, 002, 003, 004, 005 or Pos. 006 has to be selected.

Remark:
The Engine outline view is drawn for a 6 cylinder with 1 TC. However, the specification of the stays attachment points in relation to the foremost/aft cylinder is vaild for all cylinder numbers and TC configulation. TC specific stay positions are provided in the table on right hand side.

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	008	107.165.820.500	HYDRAULIC LATERAL DEVICE	107.165.820		0,001
24	007	015.151.044.341	HEXAGON HEAD SCREW M20x60	ISO 4017	8.8	0,196
4	006	PAAD278509	HYDRAULIC CYLINDER	107.165.800		295
4	005	PAAD278507	HYDRAULIC CYLINDER	107.165.800		231
4	004	107.165.800.201	HYDRAULIC CYLINDER	107.165.800		188
4	003	PAAD278467	HYDRAULIC CYLINDER	107.165.800		300
4	002	PAAD278465	HYDRAULIC CYLINDER	107.165.800		236
4	001	107.165.800.200	HYDRAULIC CYLINDER	107.165.800		193

Free space for lic. | Q-Code XXXXX | Standard ISO; JIS | Main Drw.

Approved

Modif.		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
	A	EAAD089852	11.09.2018									

WIN GD Winterthur Gas & Diesel

Product 5-8RT-flex50-D

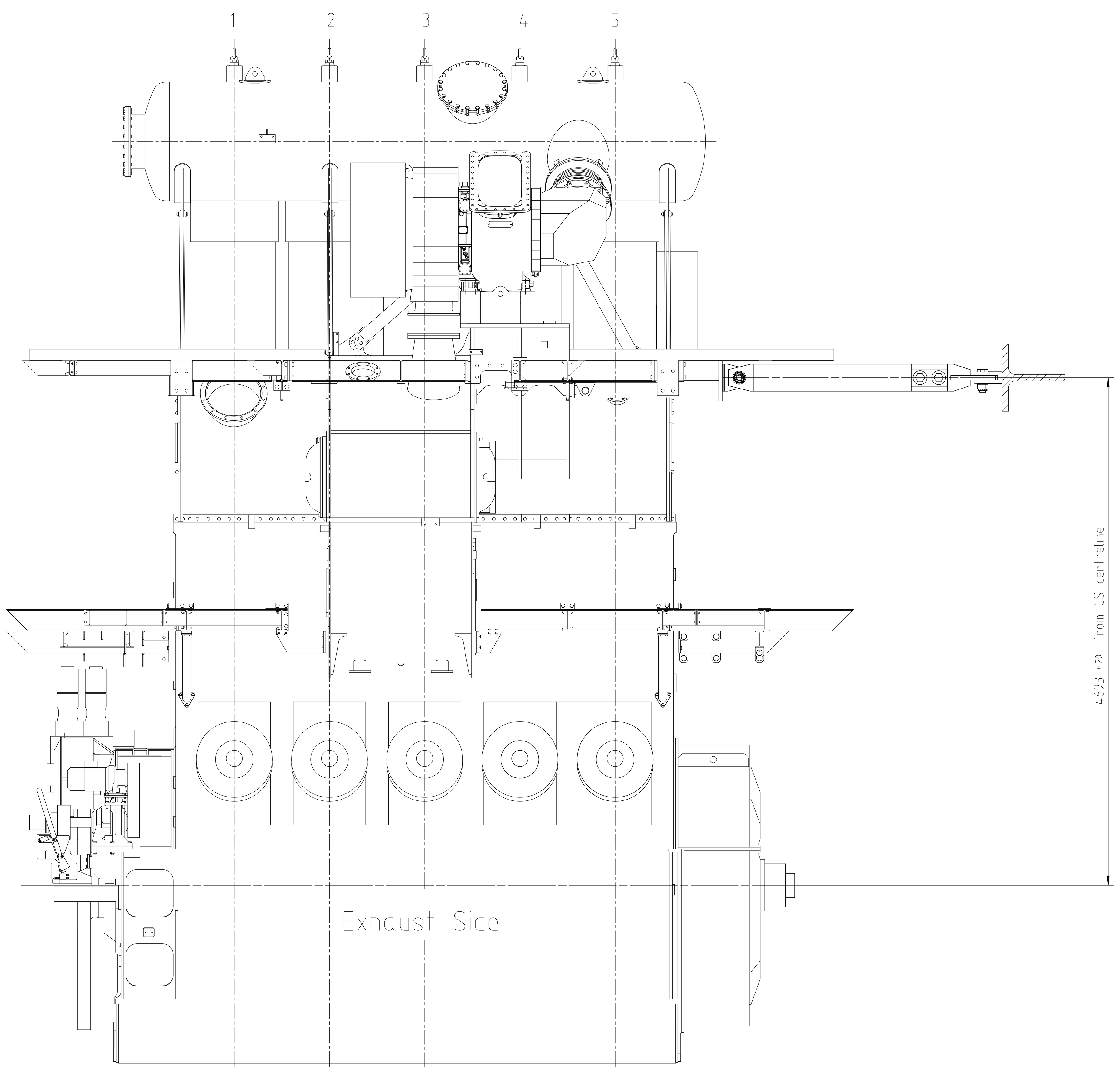
ENGINE STAYS
Stays location: BOTH SIDES
Motorabstuetzung

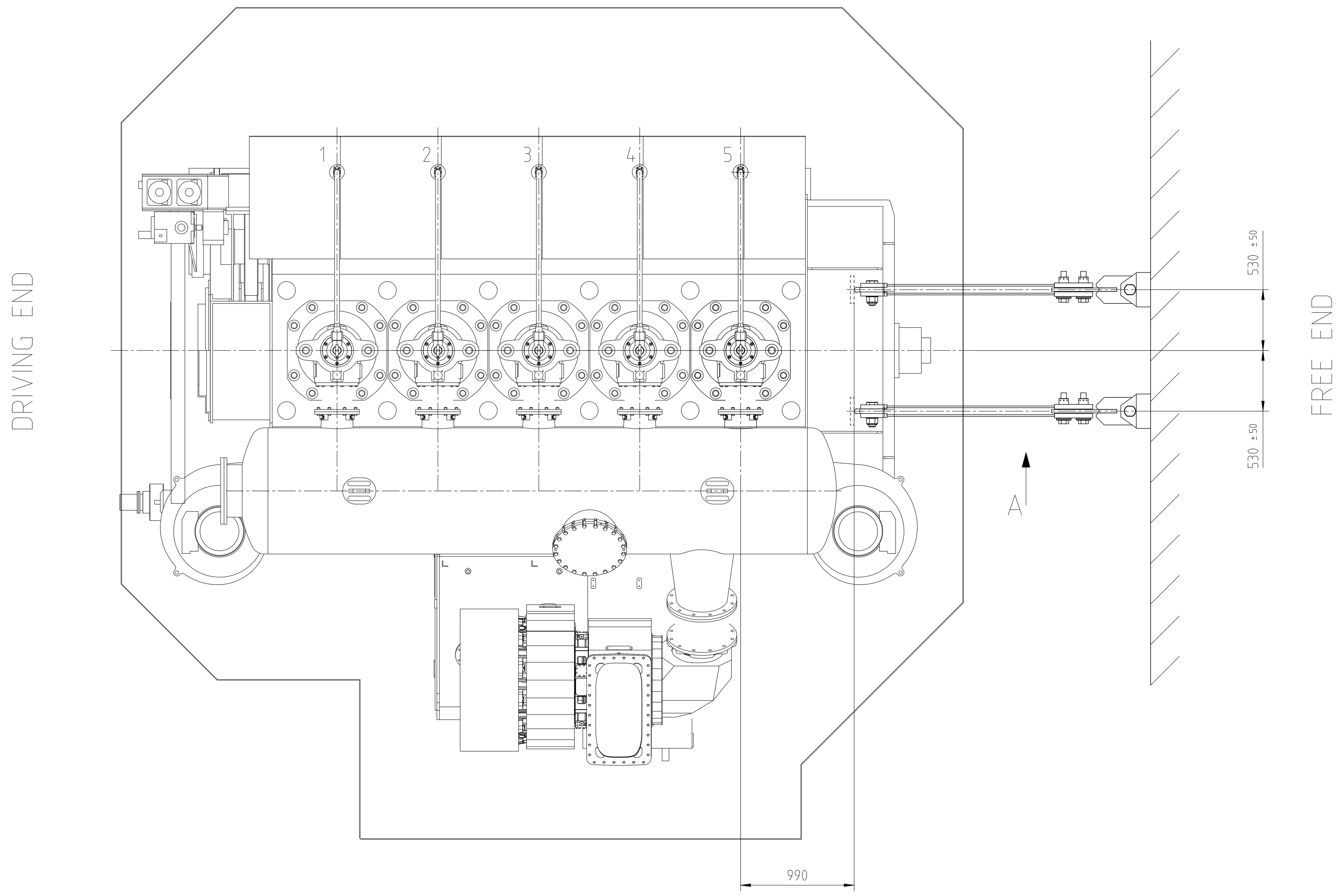
Units mm kg	NX		Basic Material	Net Weight 5777
Made 25.04.2018 dki021 DH.Kim	Scale 1:30	Size A0	Page 1/1	Material ID PAAD292939
Chkd 17.07.2018 wwa008 Wang	Design Group 9715	Drawing ID DAAD099414		Rev. A
Appd 17.07.2018 mhu019 Hug				

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

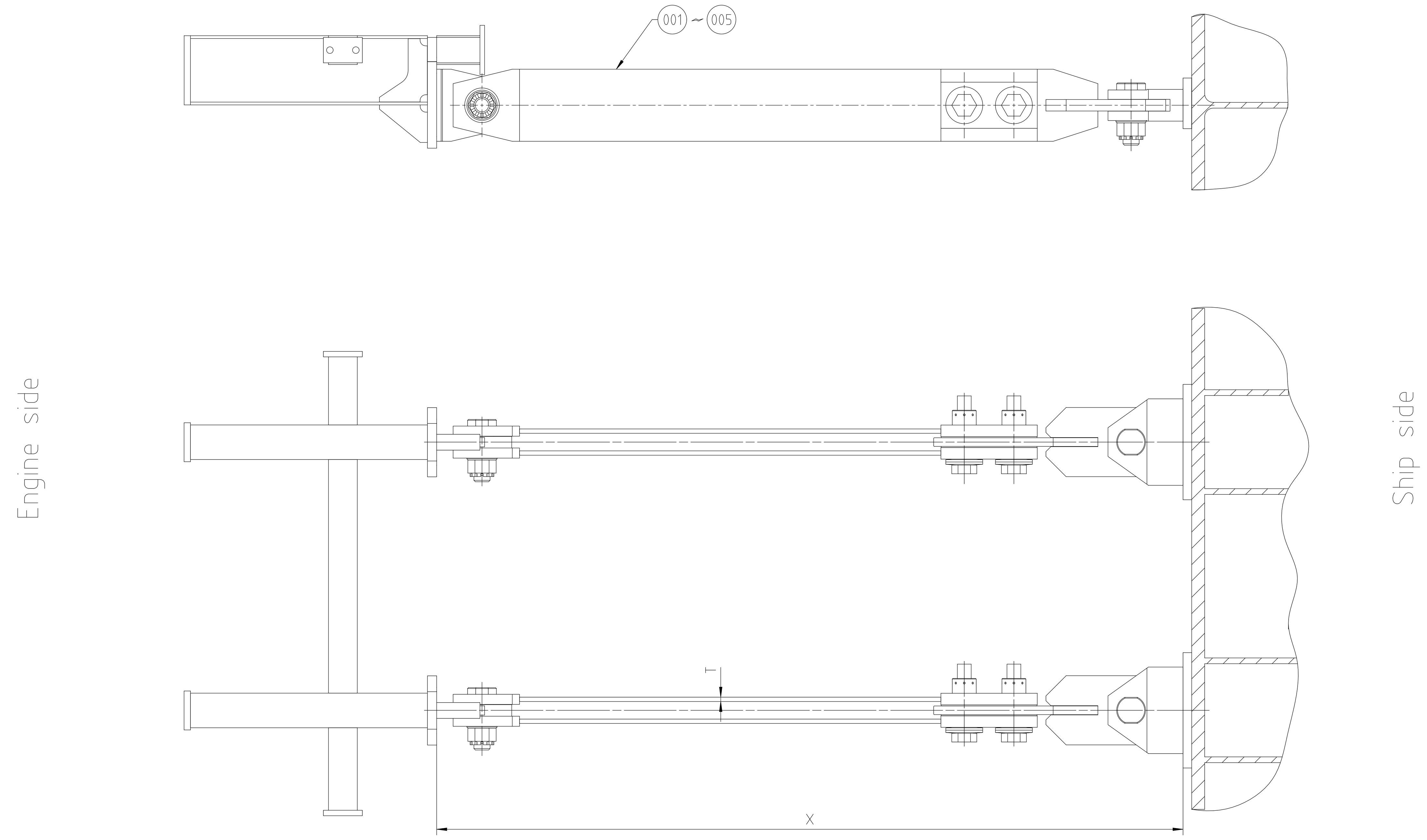
DID - DIMENSIONAL DRAWING - Confidential

Application of longitudinal stays *1)





VIEW A
(1 : 10)



Specification for application of stays according to WinGD design

Stays of friction type *1)
- Transmission of tensile and compressive forces.
- Attached on engine free end (FE).

Requirements for ship side attachment point

Max. force acting on ship's hull *2)	$Fh_{max.}$	(kN)	80
Minimum stiffness	$k_{min.}$	(N/m)	0.8×10^9
Permissible deflection per 100 kN	$Def_{max.}$	(mm)	0.125

*1) Stays of friction type must be only installed in longitudinal direction. As an alternative also stays of hydraulic type can be applied.

*2) Relevant engine forces resulting from lateral moments of X/H-type at R1 rating are considered. The provided value represents the transmitted force per stay (2 pcs per side) which has to be considered for the layout of the attachment points on ship hull side.

Pos. No. *3)	Material ID	X (mm)	T (mm)
001	PAAD046700	2000 - 2280	15
002	PAAD046701	2281 - 2560	20
003	PAAD046702	2561 - 2840	25
004	PAAD046703	2841 - 3120	30
005	PAAD046704	3121 - 3400	35

X defines the clear width between engine attachment points and ship side (to be determined by shipyard)

X min. = 2000 mm
X max. = 3400 mm

*3) Depending on the requirement either the stay execution of Pos. 001, 002, 003, 004 or Pos. 005 has to be selected.

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	006	107.246.429.500	ASSEMBLY INSTRUCTIONS	107.246.429		0,001
2	005	PAAD046704	ENGINE STAYS/ FRICTION TYPE	DAAD018242		417
2	004	PAAD046703	ENGINE STAYS/ FRICTION TYPE	DAAD018242		387
2	003	PAAD046702	ENGINE STAYS/ FRICTION TYPE	DAAD018242		359
2	002	PAAD046701	ENGINE STAYS/ FRICTION TYPE	DAAD018242		330
2	001	PAAD046700	ENGINE STAYS/ FRICTION TYPE	DAAD018242		302

Free space for lic.
Q-Code XXXXX
Standard ISO; JIS
Main Drw.

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

WIN GD Winterthur Gas & Diesel

Product 5RT-flex50-D

ENGINE STAYS
Stays location: FE
Motorabstuetzung

Units mm kg | NX | Basic Material | Net Weight 3590

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made 18.04.2018 dki021 DH.Kim
Chkd 17.07.2018 wwa008 Wang
Appd 17.07.2018 mhu019 Hug

Scale 1:25 | Size A0 | Page 1/1 | Material ID PAAD292283
Design Group 9715 | Drawing ID DAAD099170 | Rev. –

Approved

DID - DIMENSIONAL DRAWING - Confidential

Single acting hydraulic type stays according to WinGD design

to be installed on exhaust and fuel pump side

Please consult WinGD directly in case you have a specific question or need support.

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

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Winterthur, Switzerland

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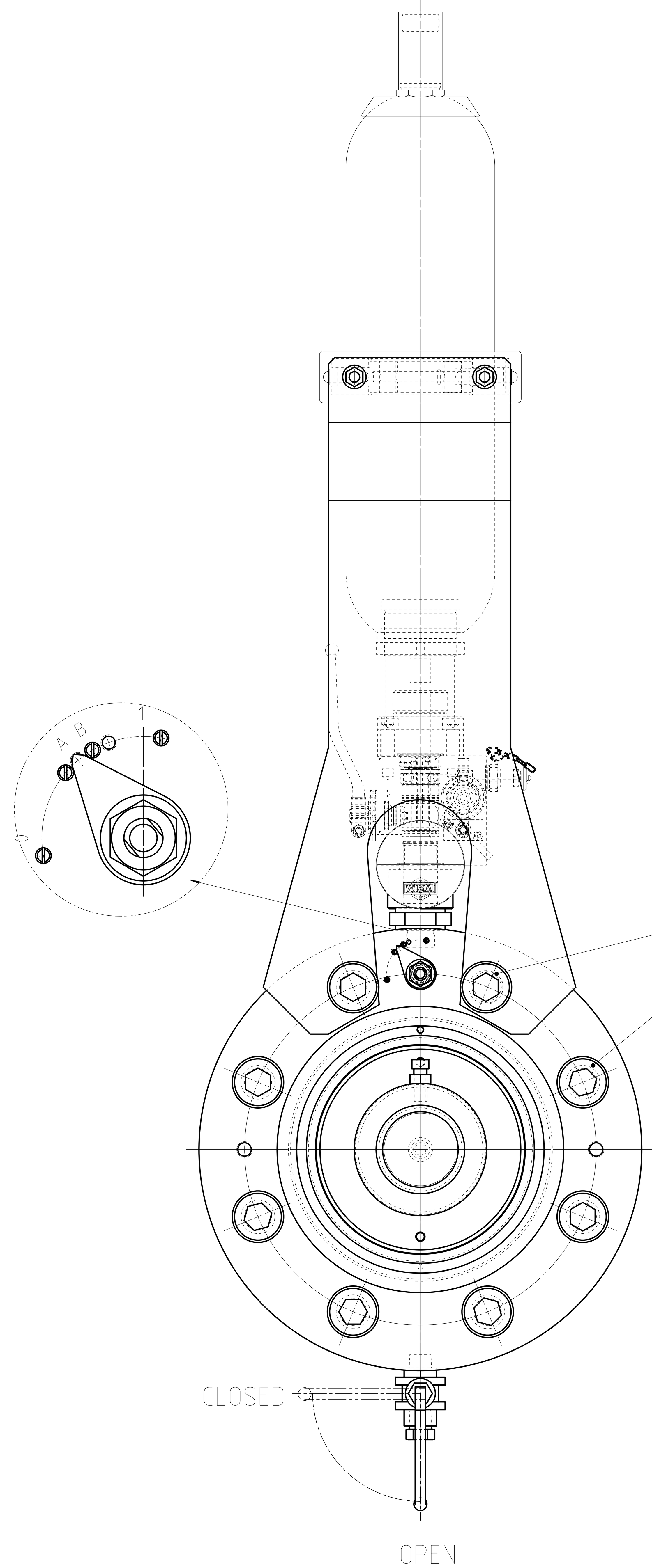
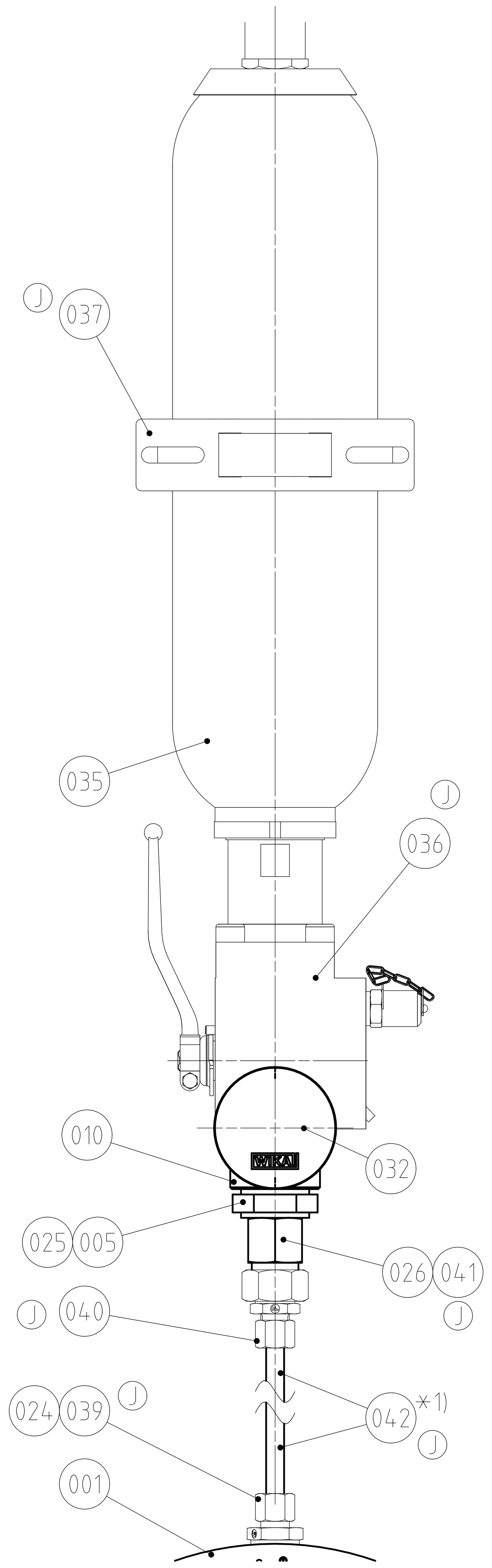
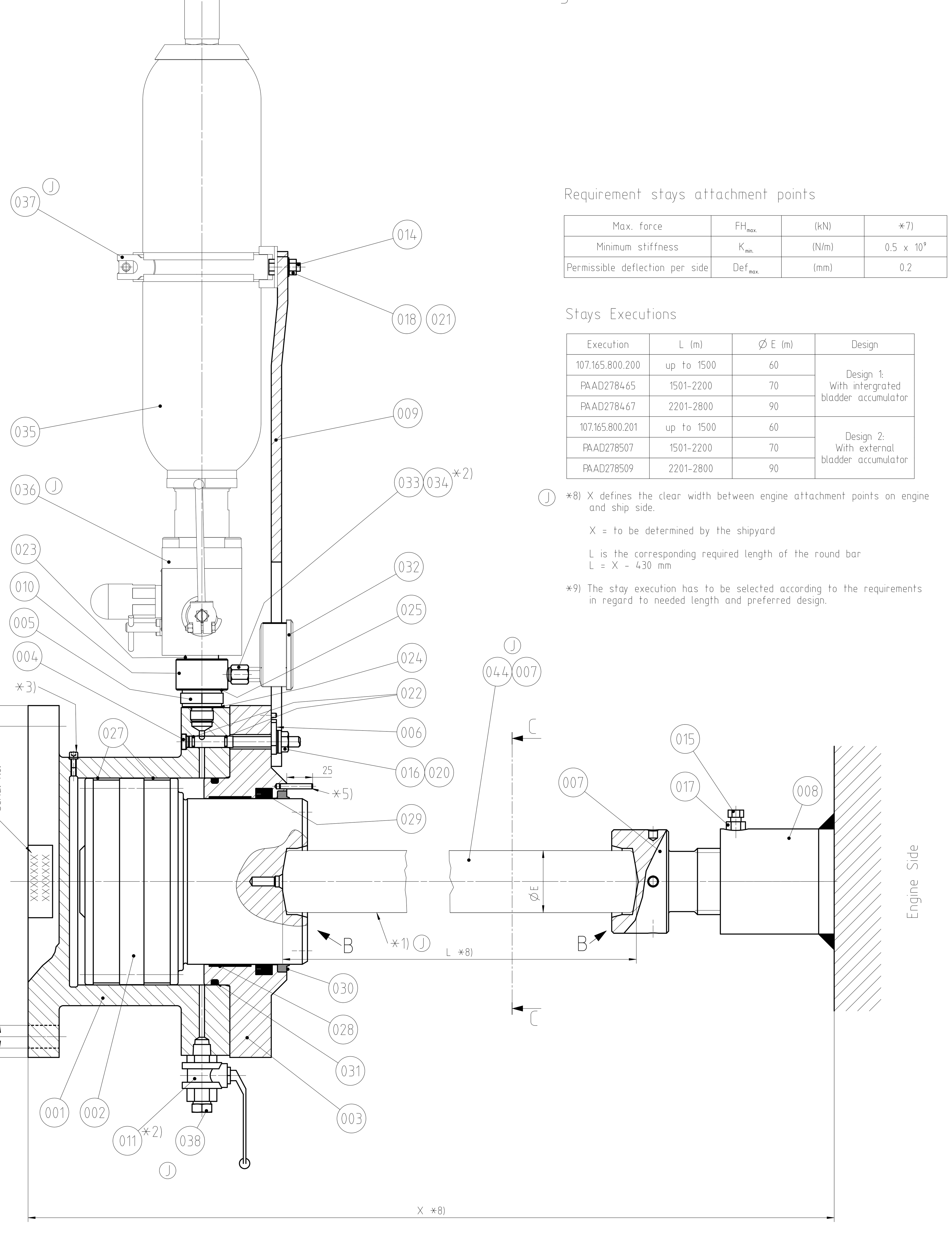


DESIGN 2: With external bladder accumulator



DESIGN 1: With integrated bladder accumulator



REMARKS:

*1) Yard delivery
*2) Seal thread with "Teflon-tape"
*3) Air vent
*4) Tightening with 400 Nm
*5) Indicator Pin

*7) Consists of max. resulting engine force as provided in the relevant engine dynamic data sheet "Forces and Moments" AND the max. stays reaction force as provided in the Stays Assembly Instruction "107.165.820".

* Pressure test of the whole assembly is needed. Test Pressure: 250 bar. Test Procedure described in Stays Assembly Instruction "107.165.820".

Requirement stays attachment points

Max. force	$FH_{max.}$	(kN)	*7)
Minimum stiffness	$K_{min.}$	(N/m)	0.5×10^9
Permissible deflection per side	$Def_{max.}$	(mm)	0.2

Stays Executions

Execution	L (m)	Ø E (m)	Design
107.165.800.200	up to 1500	60	Design 1: With intergrated bladder accumulator
PAAD278465	1501-2200	70	
PAAD278467	2201-2800	90	
107.165.800.201	up to 1500	60	Design 2: With external bladder accumulator
PAAD278507	1501-2200	70	
PAAD278509	2201-2800	90	

*8) X defines the clear width between engine attachment points on engine and ship side.

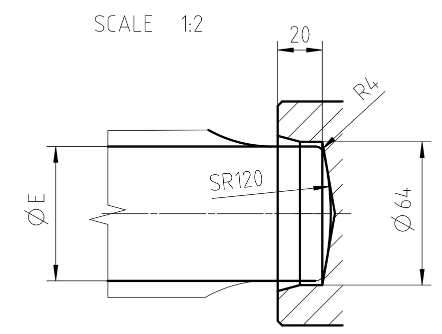
X = to be determined by the shipyard

L is the corresponding required length of the round bar
L = X - 430 mm

*9) The stay execution has to be selected according to the requirements in regard to needed length and preferred design.

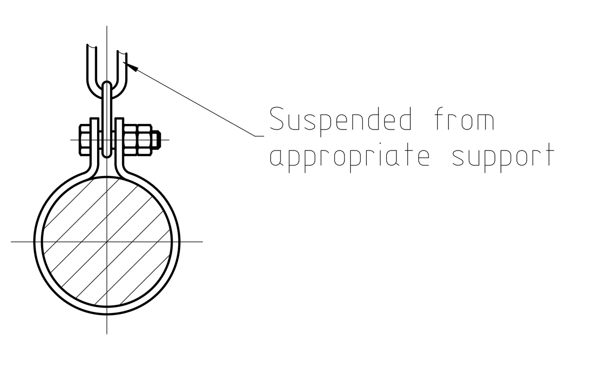
DETAIL B

SCALE 1:2



SECTION C-C

SCALE 1:2



Drawn for Ø E = 60 mm

295	231	188	300	236	193	SEQ NO	Material ID	Material Name	Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
1	1	1	1	1	1	047	107.165.820.500	HYDRAULIC LATERAL DEVICE		107.165.820		0,001
1	-	-	1	-	-	046	PAAD005758	ROUND BAR	2201 to 2800	DAAD006100	W-FU-325-N	140
-	1	-	-	1	-	045	PAAD005756	ROUND BAR	1501 to 2200	DAAD006100	W-FU-325-N	76,0
-	-	1	-	-	1	044	PAAD005752	ROUND BAR	up to 1500	DAAD006100	W-FU-325-N	33,0
1	1	1	1	1	1	043	107.165.818.001	TEST AND FILLING UNIT		107.165.818		3,05
1	1	1	-	-	-	042	107.165.822.003	TUBE SEAMLESS	10x2	107.165.822	St	0,001
1	1	1	-	-	-	041	107.165.822.002	STRAIGHT UNION	M22x1.5	107.165.822	St	0,2
1	1	1	-	-	-	040	PAAD243234	REDUCER	18/10	107.165.822	St	0,16
1	1	1	-	-	-	039	107.165.822.001	STRAIGHT UNION	M22x1.5	107.165.822	St	0,2
1	1	1	1	1	1	038	107.165.814.001	PLUG	3/8"-NPT	107.165.814	St	0,03
1	1	1	1	1	1	037	107.329.413.003	STRAP	D114	107.329.413	St	0,2
1	1	1	1	1	1	036	PAAD242562	CONNECTING BLOCK		107.329.413	St	4,3
1	1	1	1	1	1	035	107.329.413.001	BLADDER ACCUMULATOR		107.329.413		10,0
1	1	1	1	1	1	034	107.165.812.003	JOINT		107.165.812	Cu	0,001
1	1	1	1	1	1	033	107.165.812.002	CON.REDUCER	G1/4"-Gc1/4"	107.165.812	Brass	0,1
1	1	1	1	1	1	032	107.165.812.001	PRESSURE GAUGE	MG63 G1/4"	107.165.812	Steel	0,21
1	1	1	1	1	1	031	107.165.811.005	O-RING	189.2x5.7	107.165.811		0,02
1	1	1	1	1	1	030	107.165.811.004	SCRAPER RING		107.165.811		0,1
1	1	1	1	1	1	029	107.165.811.003	GROOVED RING		107.165.811		0,08
1	1	1	1	1	1	028	107.165.811.002	GUIDE TAPE		107.165.811		0,16
2	1	2	2	2	2	027	107.165.811.001	PISTON GUIDE		107.165.811		0,04
1	1	1	-	-	-	026	021.051.002.005	GASKET	20x12x0,5		E-Cu57;C 1100 P	0,001
1	1	1	1	1	1	025	021.051.003.411	GASKET	34x27x1		Cu-ETP C 1100 P	0,005
1	1	1	1	1	1	024	021.051.003.015	GASKET	30x22x1		E-Cu57;C 1100 P	0,005
1	1	1	1	1	1	023	107.165.800.023	SEALING RING	32x26.5x5		Brass	0,001
2	2	2	2	2	2	022	021.501.000.702	O RING	7,65x1,78		NBR 90 Sh	0,002
-	-	-	2	2	2	021	015.505.500.410	TENSION WASHER	8,4x18		51CrV4+QT;SUP 10	0,002
1	1	1	1	1	1	020	015.505.500.510	TENSION WASHER	10,5x22		51CrV4+QT;SUP 10	0,003
8	8	8	8	8	8	019	015.505.511.010	TENSION WASHER	26x39,5		51CrV4+QT;SUP 10	0,009
-	-	-	2	2	2	018	015.201.011.510	HEXAGON NUT	M8	ISO 4032	8	0,012
1	1	1	1	1	1	017	015.201.011.710	HEXAGON NUT	M10	ISO 4032	8.8	0,011
1	1	1	1	1	1	016	015.201.601.710	COLLAR NUT	M10		C45E;S45C	0,018
1	1	1	1	1	1	015	015.251.745.201	HEXAGON HEAD SCREW WITH DOG POIN	M10x30	DIN 561	C45E;S45C	0,027
-	-	-	2	2	2	014	015.151.035.161	HEXAGON HEAD SCREW	M8x25	ISO 4017	8.8	0,026
8	8	8	6	6	6	013	015.251.416.461	HEXAGON SOCKET HEAD CAP SCREW	M24x90	ISO 4762	8.8	0,435
-	-	-	2	2	2	012	015.251.416.501	HEXAGON SOCKET HEAD CAP SCREW	M24x100	ISO 4762	8.8	0,47
1	1	1	1	1	1	011	107.245.489.001	BALL VALVE	3/8" NPT	107.245.489	St	0,3
1	1	1	1	1	1	010	107.165.821.001	INTERMEDIATE RING		107.165.821	W-FU-325-N	0,3
-	-	-	1	1	1	009	107.165.815.001	SUPPORT		107.165.815	W-FU-235-JR	5,5
1	1	1	1	1	1	008	107.165.810.001	SCREWED SLEEVE	M64x4	107.165.810	W-FU-235-N-T	3,6
1	1	1	1	1	1	007	107.165.809.001	SUPPORT		107.165.809	W-FU-325-N	4,5
1	1	1	1	1	1	006	107.165.806.001	POINTER		107.165.806	W-FU-235-J0	0,01
1	1	1	1	1	1	005	107.165.808.001	CONNECTING PIECE		107.165.808	W-FU-325-N	0,5
1	1	1	1	1	1	004	107.165.804.001	VALVE SPINDLE		107.165.804	W-FU-580-QT	0,1
1	1	1	1	1	1	003	107.165.803.200	COVER		107.165.803		23,0
1	1	1	1	1	1	002	107.165.802.001	PISTON		107.165.802	W-FU-325-N	42,0
1	1	1	1	1	1	001	107.165.801.001	CYLINDER		107.165.801	W-FU-580-QT	58,0

Quantity: Net Weight

Material ID					
PAAD278509	PAAD278507	107.165.800.201	PAAD278467	PAAD278465	107.165.800.200

Free space for lic.

Q-Code: 1QXP1
Standard: ISO; JIS
Main Drw.

Modif.	Number	Drawn date
G	EAAD028436	04.09.2002
H	EAAD084475	09.04.2013
I	EAAD086682	16.01.2018
J	EAAD089112	04.04.2018

WIN GD Winterthur Gas & Diesel

Product: W-2S

HYDRAULIC CYLINDER
TO ENGINE STAYS

HYDRAULIC CYLINDER
zu Motorabstuetzung

Units: mm kg | NX | Basic Material | Net Weight

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Made: 02.03.1983 S. Stylianou
Chkd:
Appd: 02.03.1983 WCH001 Service User

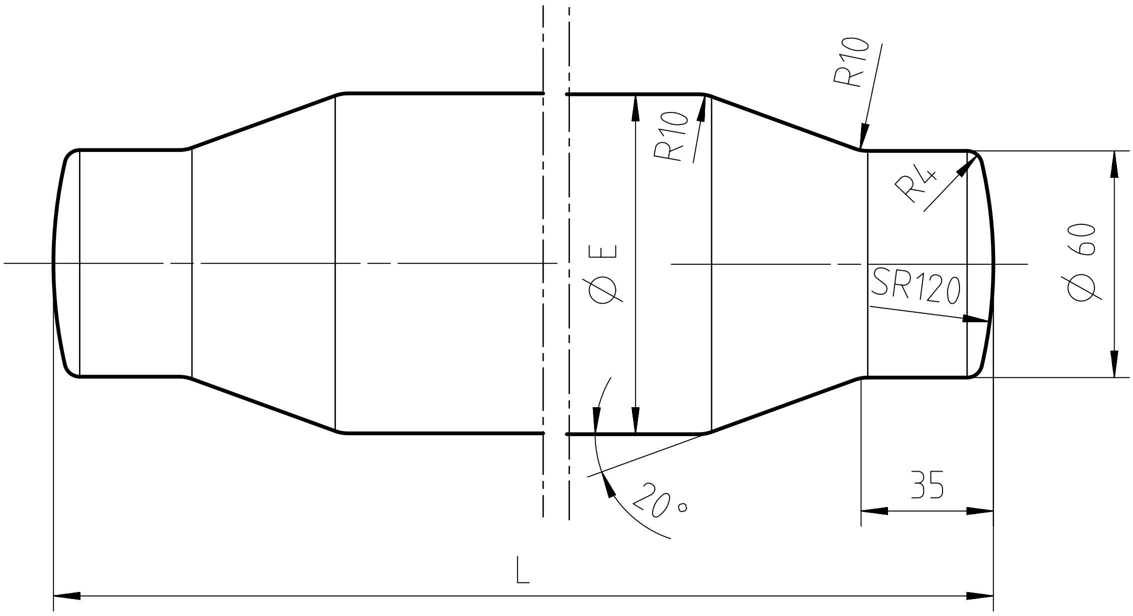
Scale 1:2 | Size A0 | Page 1/1 | Material ID
Design Group 9715 | Drawing ID 107.165.800 | Rev. J

Approved

DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Material ID	L (mm)	Ø E (mm)
PAAD005752	up to 1500	60
PAAD005756	1501 to 2200	75
PAAD005758	2201 to 2800	90



QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	003	PAAD005758	ROUND BAR 2201 to 2800	DAAD006100	W-FU-325-N	140
1	002	PAAD005756	ROUND BAR 1501 to 2200	DAAD006100	W-FU-325-N	76,0
1	001	PAAD005752	ROUND BAR up to 1500	DAAD006100	W-FU-325-N	33,0

Approved

Free space for lic.

Q-Code: XXXXX
Standard: ISO; JIS
Main Drw.

Modif.		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
	A	EAAD086682	15.01.2018									

WIN GD
Winterthur Gas & Diesel

Product: W-2S

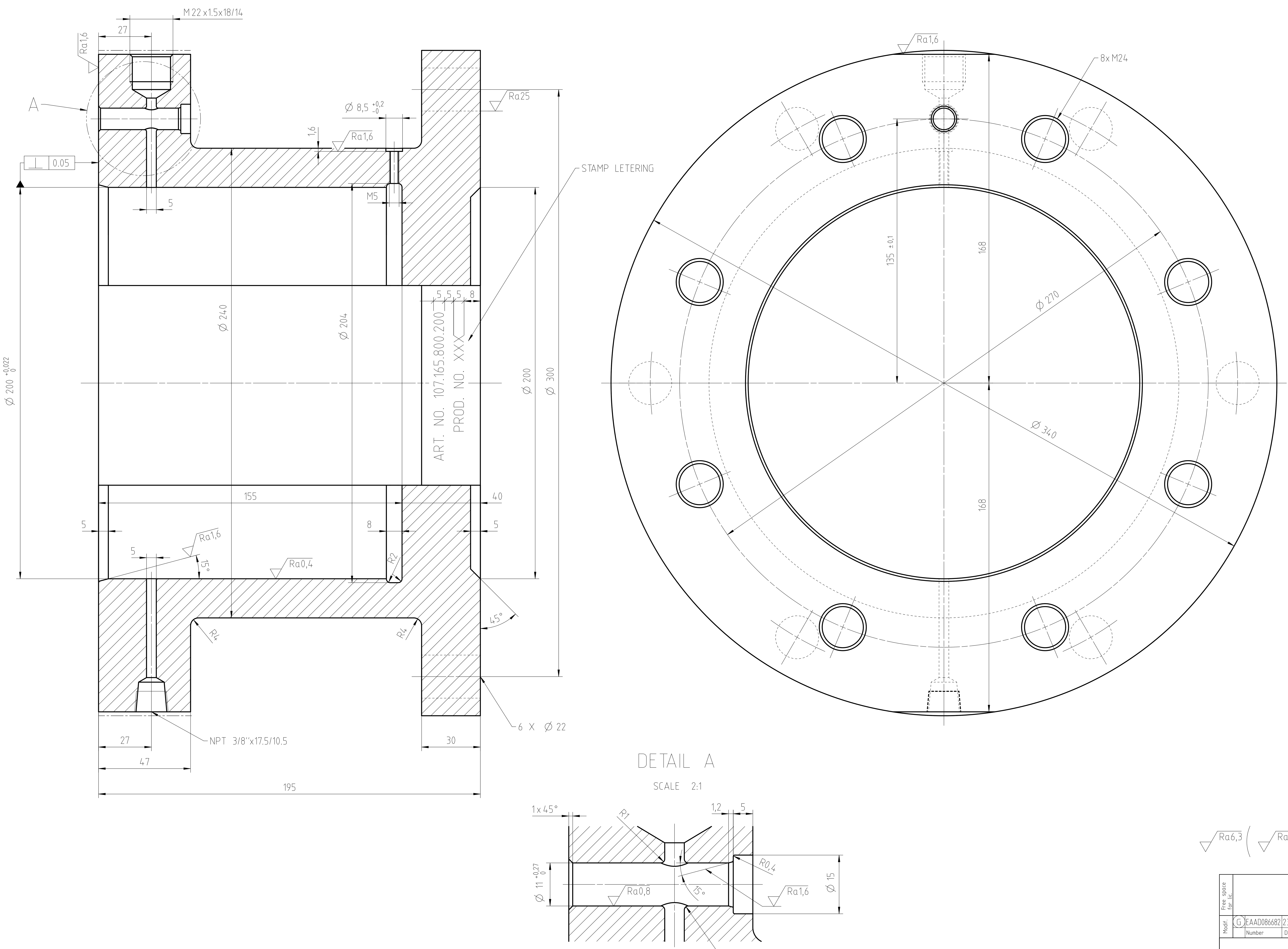
ROUND BAR

ROUND BAR

Units mm kg	NX	Basic Material	Net Weight
Made	09.06.2010 wwr001 Wroblewski	Scale 1:2	Size A4
Chkd	21.09.2010 jba029 Baumann	Design Group 9715	Page 1/1
Appd	23.09.2010 dst009 Strödecke	Material ID	

Drawing ID: DAAD006100 Rev. A

DID - DIMENSIONAL DRAWING - Confidential



Ra6,3 (Ra25 Ra1,6 Ra0,8 Ra0,4) SHARP EDGES REMOVED

Free space for lic.							Q-Code 1QXP1 / Standard ISO; JIS	Main Drw.
Modif.	G	EAAD086682	23.10.2017					
		Number	Drawn date	Number	Drawn date	Number	Drawn date	Number / Drawn date

WIN GD Winterthur Gas & Diesel

Product W-2S

CYLINDER

CYLINDER

Units mm kg	NX	Basic Material W-FU-580-QT	Net Weight 58
Made 19.11.2016 Heydecker	Scale 1:1	Size A1 / Page 1/1	Material ID 107.165.801.001
Chkd	Design Group 9715	Drawing ID 107.165.801	Rev. G
Appd 05.11.1996 WDMS2			

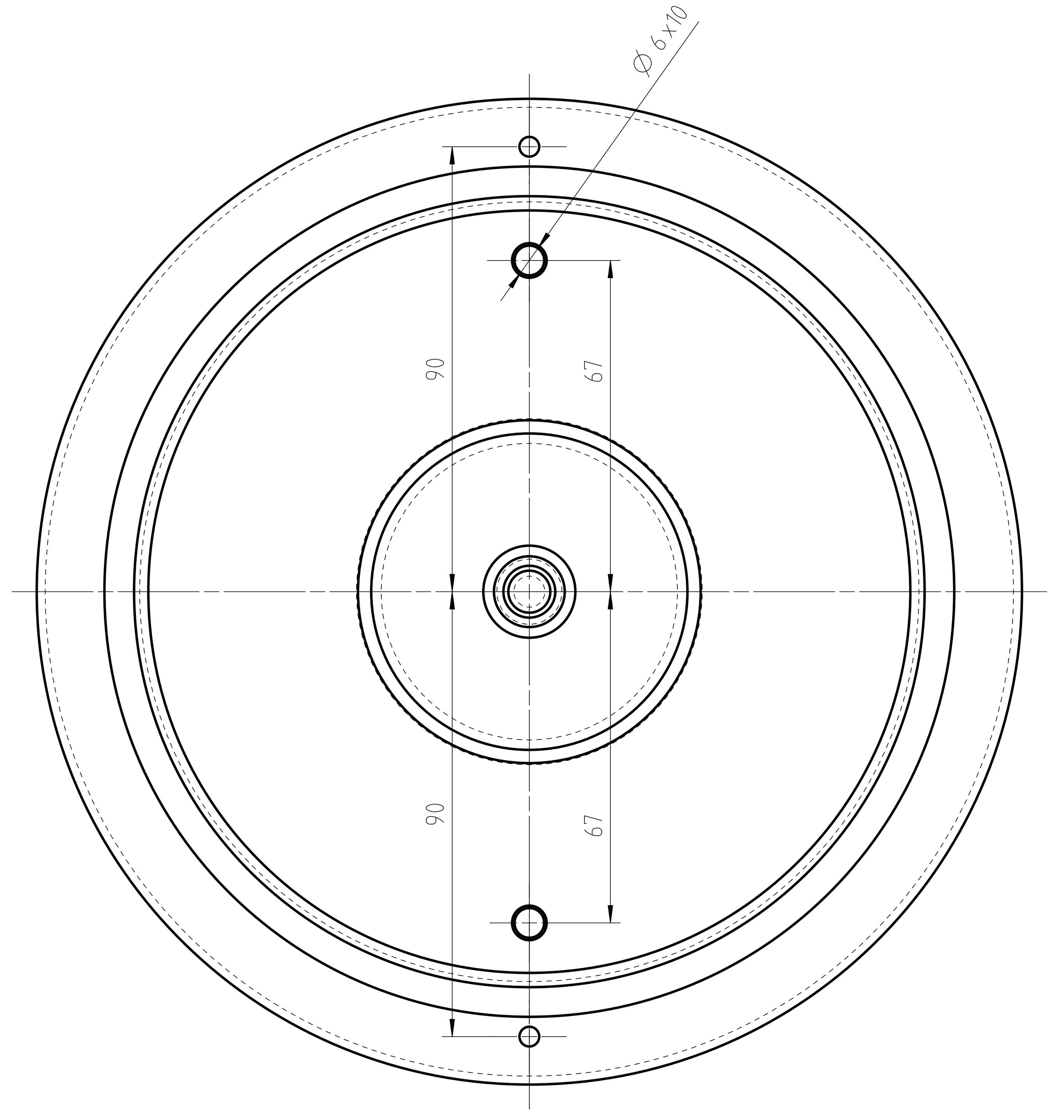
SURFACE PROTECTION SEE GROUP 0344

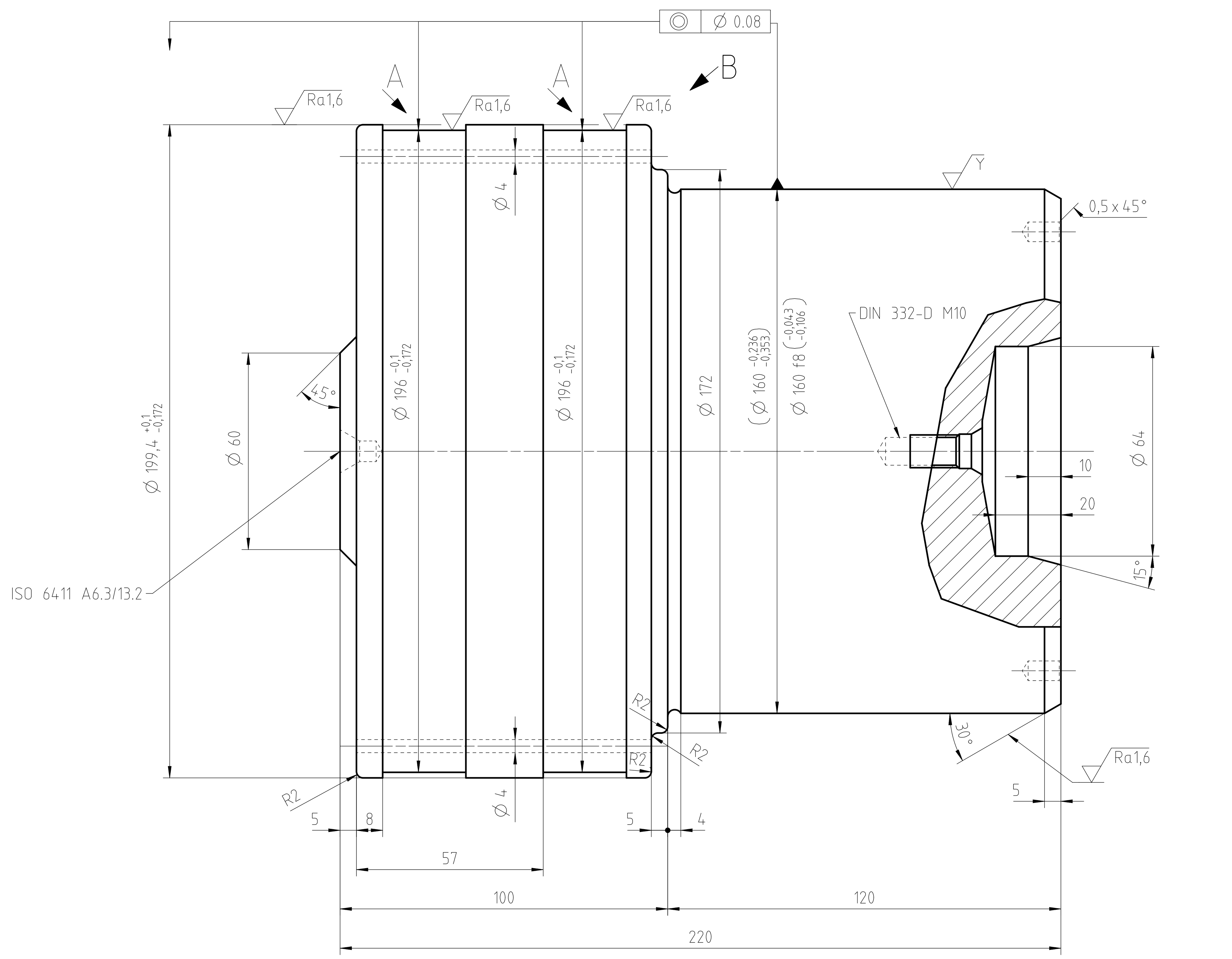
TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Approved

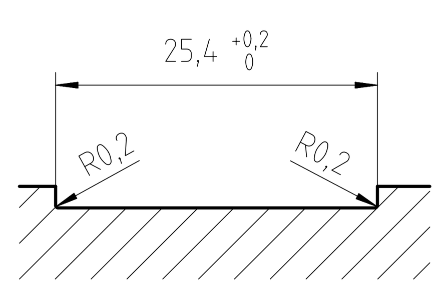
DID - DIMENSIONAL DRAWING - Confidential





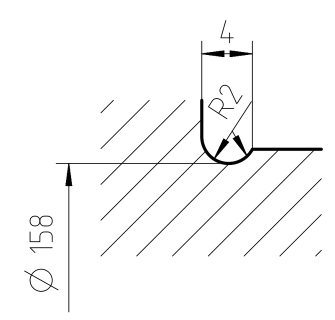
VIEW A

SCALE 2:1



VIEW B

SCALE 2:1



Ra6,3 (Ra1,6 Y = Polish ; Electro-hard Chrome Plated 0.065.....0.155 Ra0,4)

SHARP EDGES REMOVED

Free space for lic.							Q-Code XXXXX	Main Drw.
							Standard ISO; JIS	
Modif.	B	EAAD086682	20.10.2017					
		Number	Drawn date	Number	Drawn date	Number	Drawn date	Number / Drawn date
WIN GD Winterthur Gas & Diesel		Product W-2S		PISTON		PISTON		
Units mm kg	NX		Basic Material W-FU-325-N				Net Weight 42	
Made 02.11.1983 Heydecker			Scale 1:1	Size A1	Page 1/1	Material ID 107.165.802.001		
Chkd			Design Group 9715	Drawing ID 107.165.802			Rev. B	
Appd 05.11.1996 WDMS2								

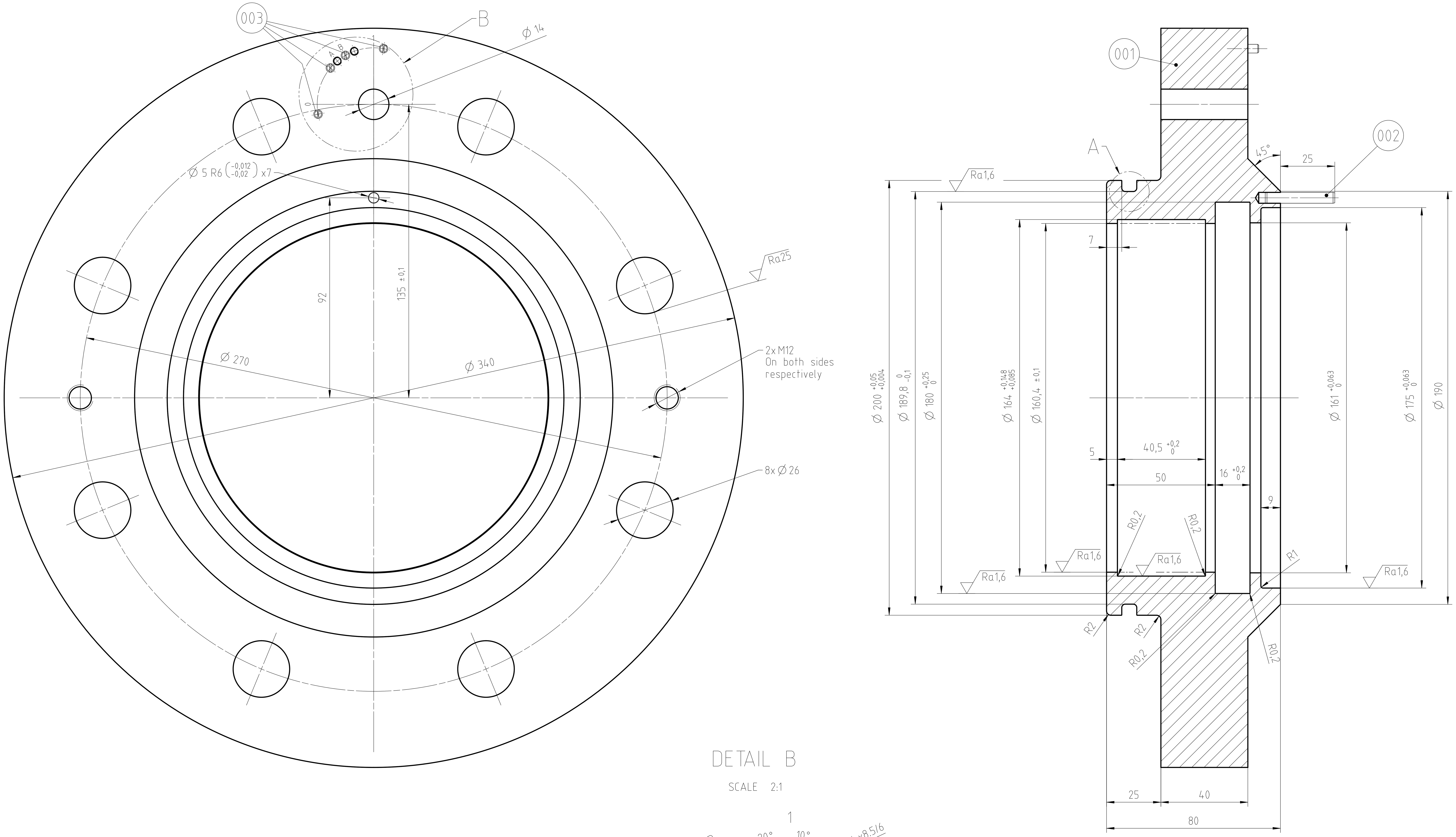
SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

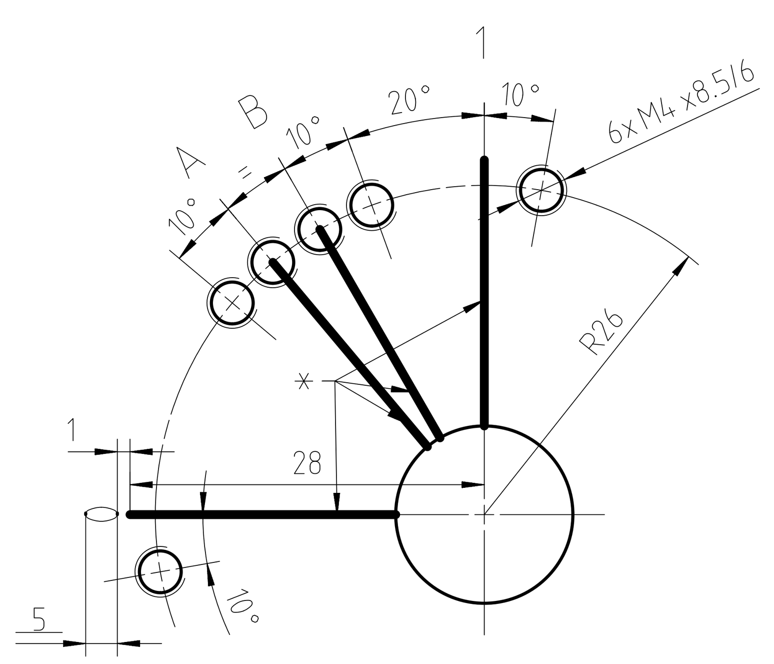
Approved

DID - DIMENSIONAL DRAWING - Confidential



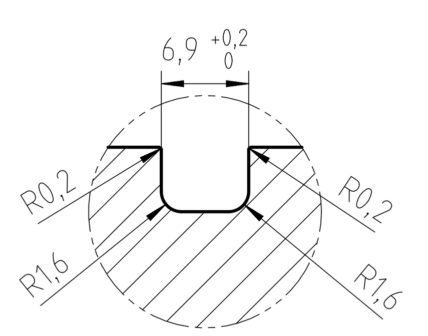
DETAIL B

SCALE 2:1



DETAIL A

SCALE 2:1



Ra6,3 (Ra25 Ra1,6) SHARP EDGES REMOVED

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
4	003	015.401.001.041	SLOTTED HEADLESS SCREW M4x10	DIN 427	5.8	0,001
1	002	017.024.006.223	DOWEL PIN 5x32	ISO 2338	Steel	0,005
1	001	107.165.803.001	COVER	107.165.803	W-FU-325-N	23,0

Free space for lic.

Q-Code: 1QXP1

Standard: ISO; JIS

Main Drw.

Modif.	Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
E	EAAD086682	20.10.2017									

WIN GD
Winterthur Gas & Diesel

Product: W-2S

COVER

COVER

∗ MARK LINES CLEARLY

STAMP LETTERING

SURFACE PROTECTION SEE GROUP 0344

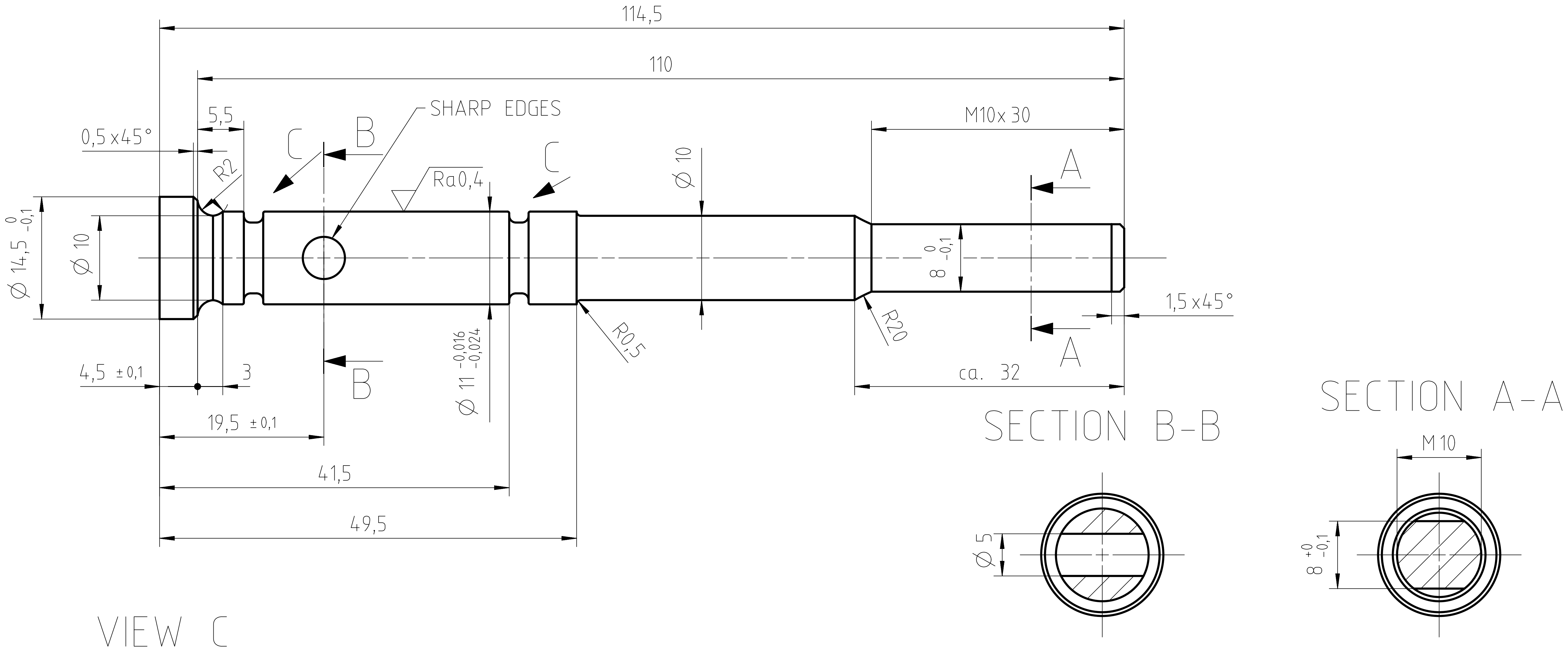
TOLERANCING PRINCIPLE ISO8015

GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Units mm kg	NX		Basic Material		Net Weight 23
Made	11.04.1983 Heydecker	Scale 2:1	Size A1	Page 1/1	Material ID 107.165.803.200
Chkd		Design Group 9715	Drawing ID 107.165.803		Rev. E
Appd	05.11.1996 WDMS2				

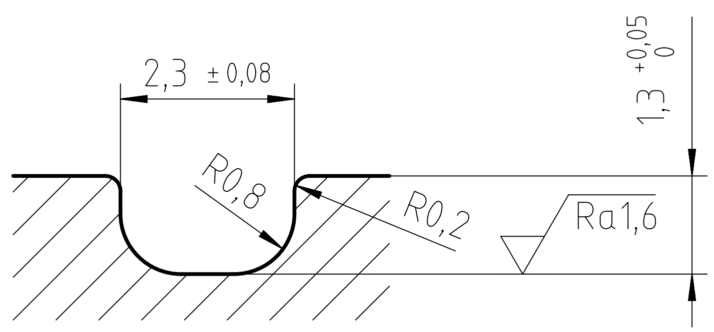
Approved

DID - DIMENSIONAL DRAWING - Confidential



VIEW C

SCALE 10:1



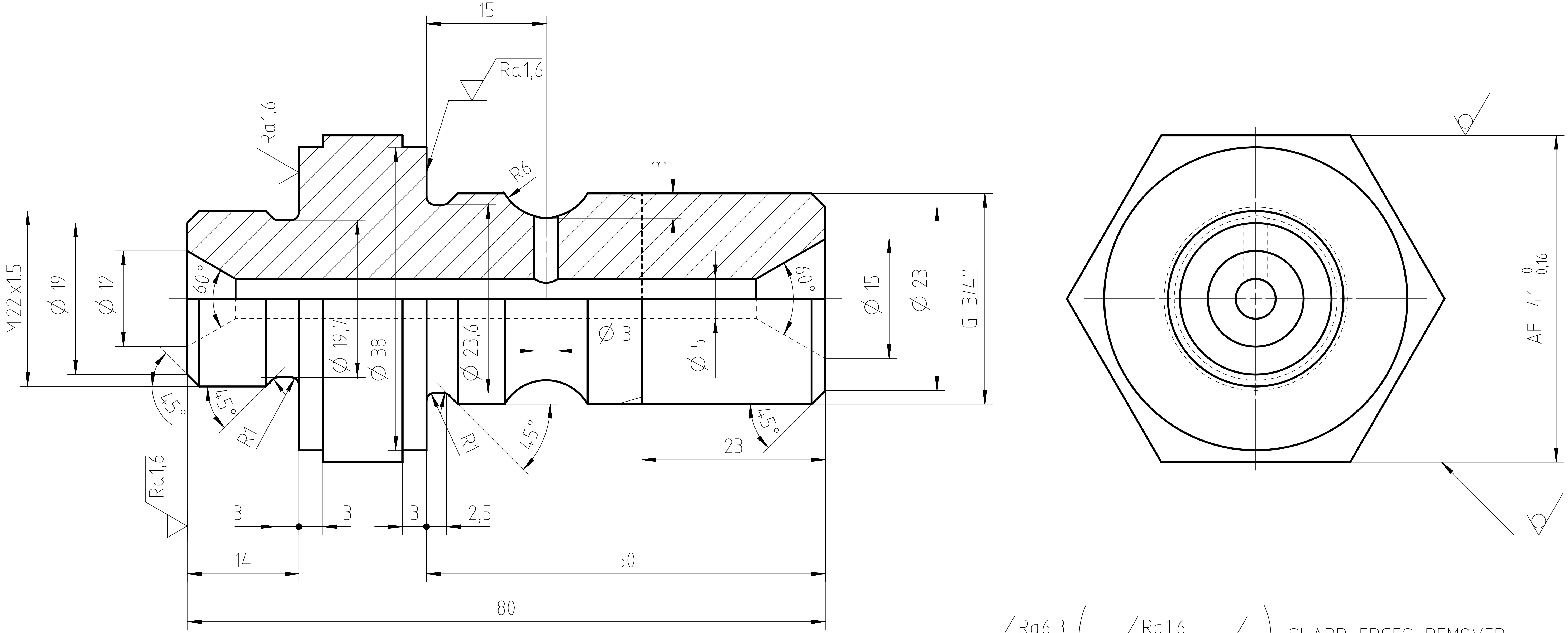
Ra6,3 (Ra1,6 Ra0,4) SHARP EDGES REMOVED

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Free space for lic.		Q-Code XXXXX	Main Drw.
		Standard ISO; JIS	
Modif.	C EAAD086682 (Number) 20.10.2017 (Drawn date)	Number / Drawn date	Number / Drawn date / Number / Drawn date
WIN GD Winterthur Gas & Diesel	Product W-2S	VALVE SPINDLE	VALVE SPINDLE
Units mm kg	NX	Basic Material W-FU-580-QT	Net Weight 0,1
Made 11.02.1983 Heydecker	Scale 2:1	Size A3 / Page 1/1	Material ID 107.165.804.001
Chkd	Design Group 9715	Drawing ID 107.165.804	Rev. C
Appd *05.11.1996 WDMS2*			

Approved

DID - DIMENSIONAL DRAWING - Confidential



Ra6,3 (Ra1,6) SHARP EDGES REMOVED

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
	B	EAAD086682	20.10.2017									

WIN GD
Winterthur Gas & Diesel

Product W-2S

CONNECTING PIECE

CONNECTING PIECE

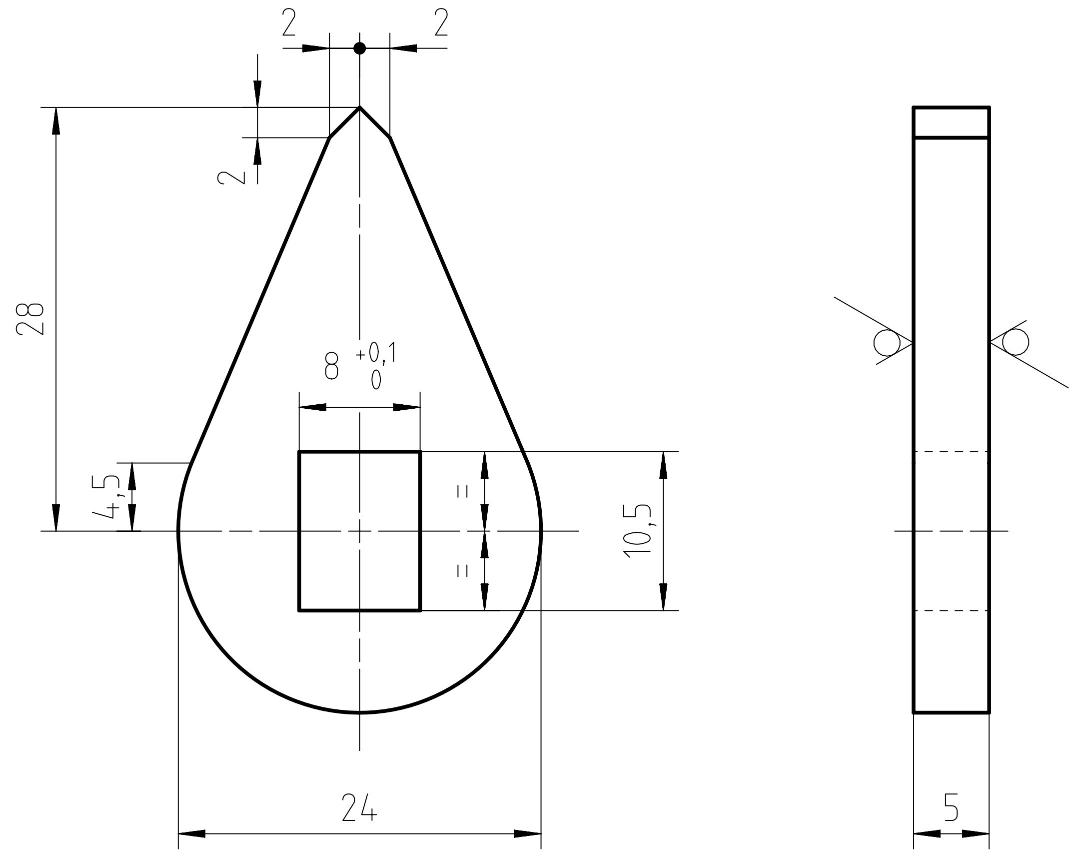
Units mm kg	NX		Basic Material W-FU-325-N		Net Weight 0,5
Made 27.10.2016 Abraham Dasari		Scale 1:1	Size A3	Page 1/1	Material ID 107.165.808.001
Chkd		Design Group 9715	Drawing ID 107.165.808		Rev. B
Appd 05.11.1996 WDMS2					

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Approved

DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK



Ra6,3

SHARP EDGES REMOVED, SAND BLASTED, BURNISHED

Approved

Free space for lic.

Q-Code	Main Drw.
XXXXX	
Standard	
ISO; JIS	

Modif.		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
	B	EAAD086682	20.10.2017									

WIN GD
Winterthur Gas & Diesel

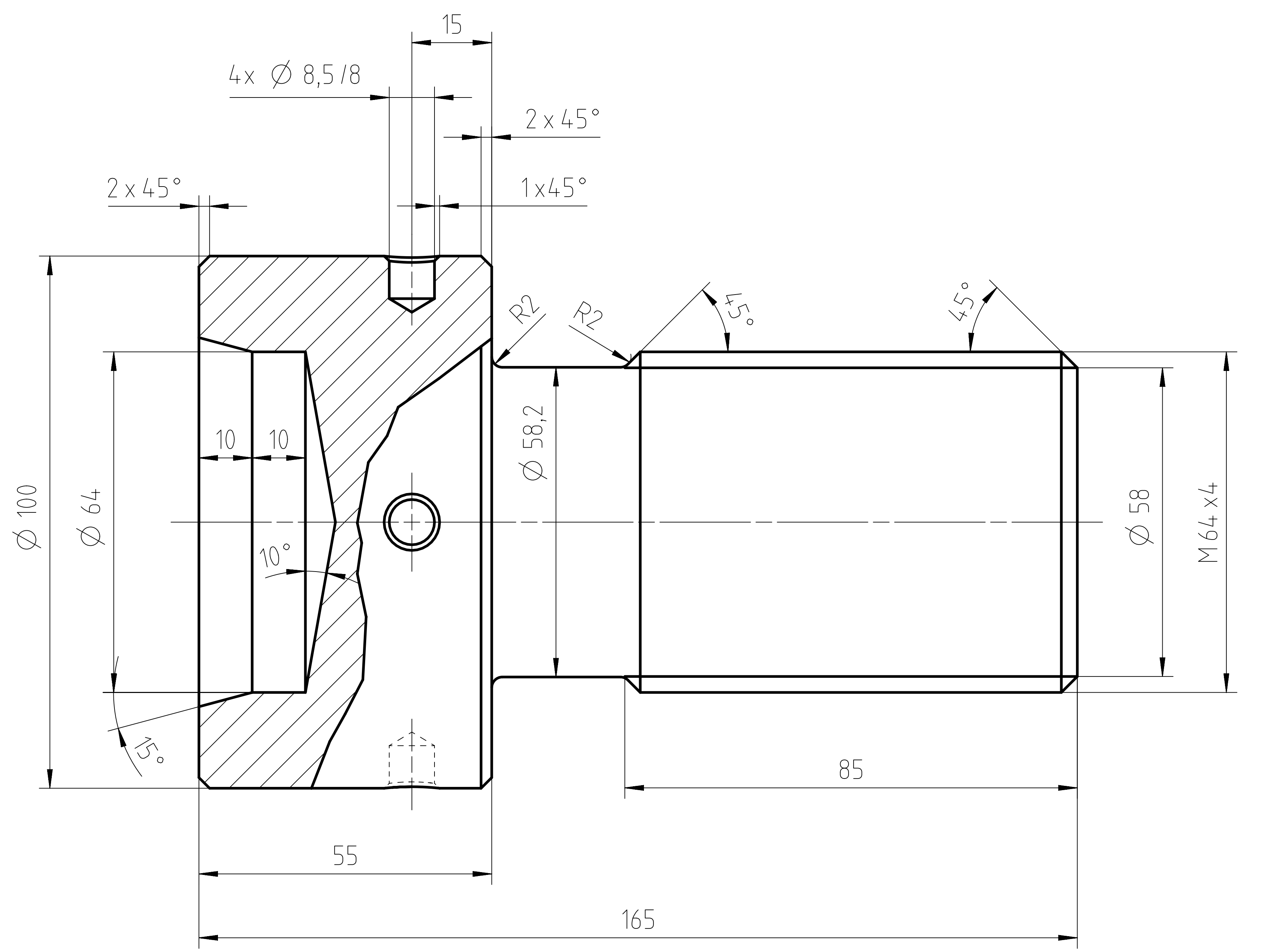
Product
W-2S

POINTER

POINTER

Units mm kg	NX		Basic Material W-FU-235-J0		Net Weight 0,01
Made 11.02.1983 Heydecker			Scale 2:1	Size A4	Page 1/1	Material ID 107.165.806.001
Chkd			Design Group 9715	Drawing ID 107.165.806	Rev. B
Appd 05.11.1996 WDMS2					

DID - DIMENSIONAL DRAWING - Confidential



Ra6,3

SHARP EDGES REMOVED

Approved

Free space for lic.	Q-Code XXXXX	Main Drw.
	Standard ISO; JIS	

Modif.	A	EAAD086682	20.10.2017								
		Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date

WIN GD
Winterthur Gas & Diesel

Product W-2S

SUPPORT

SUPPORT

Units mm kg	NX		Basic Material W-FU-325-N	Net Weight 4,5
Made 11.02.1983 Heydecker		Scale 1:1	Size A3 / Page 1/1	Material ID 107.165.809.001
Chkd		Design Group 9715	Drawing ID 107.165.809	Rev. A
Appd 06.11.1996 WDMS2				

SURFACE PROTECTION SEE GROUP 0344

TOLERANCING PRINCIPLE ISO8015

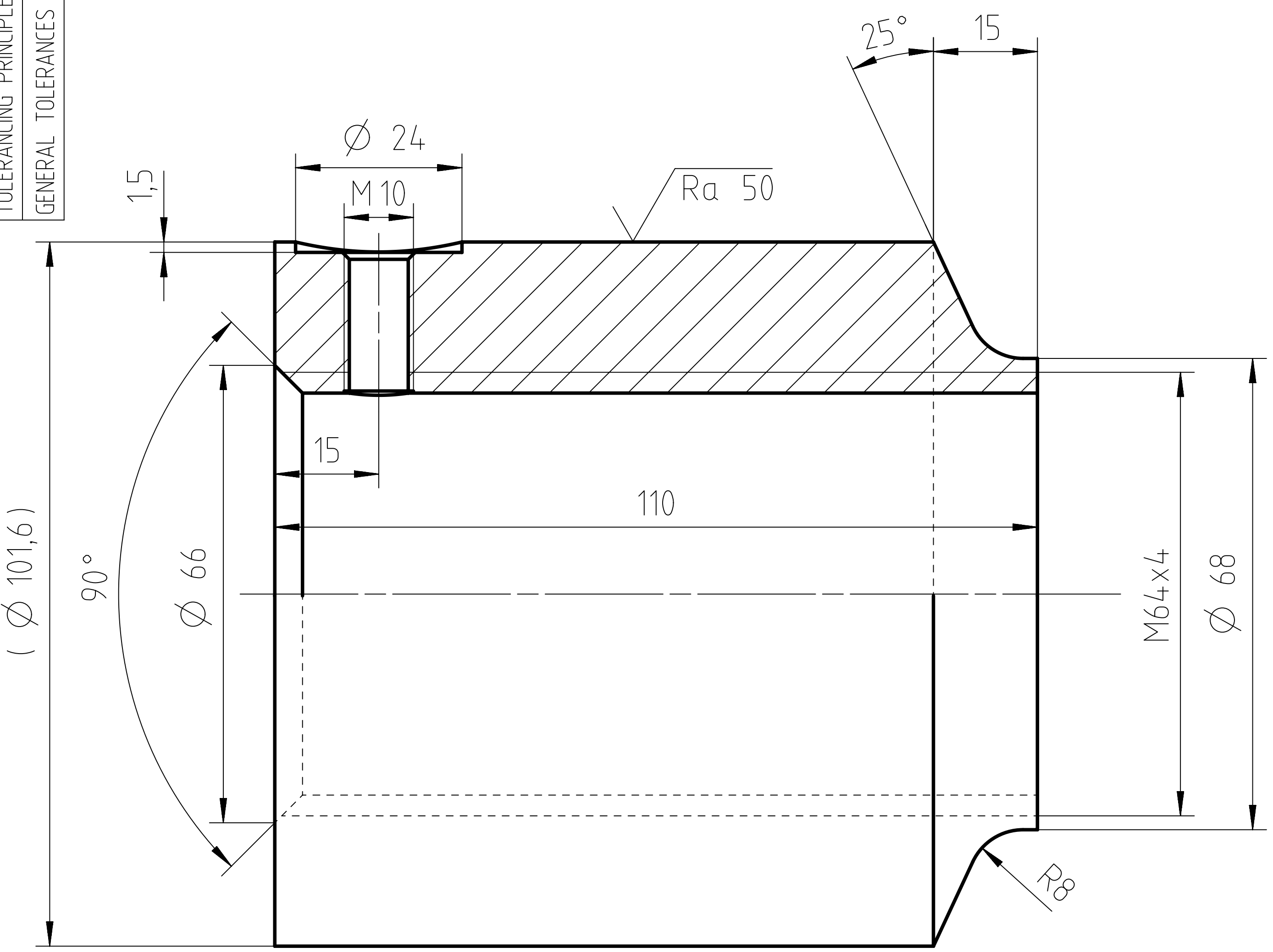
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Ra6.3

(√) SHARP EDGES REMOVED



Approved

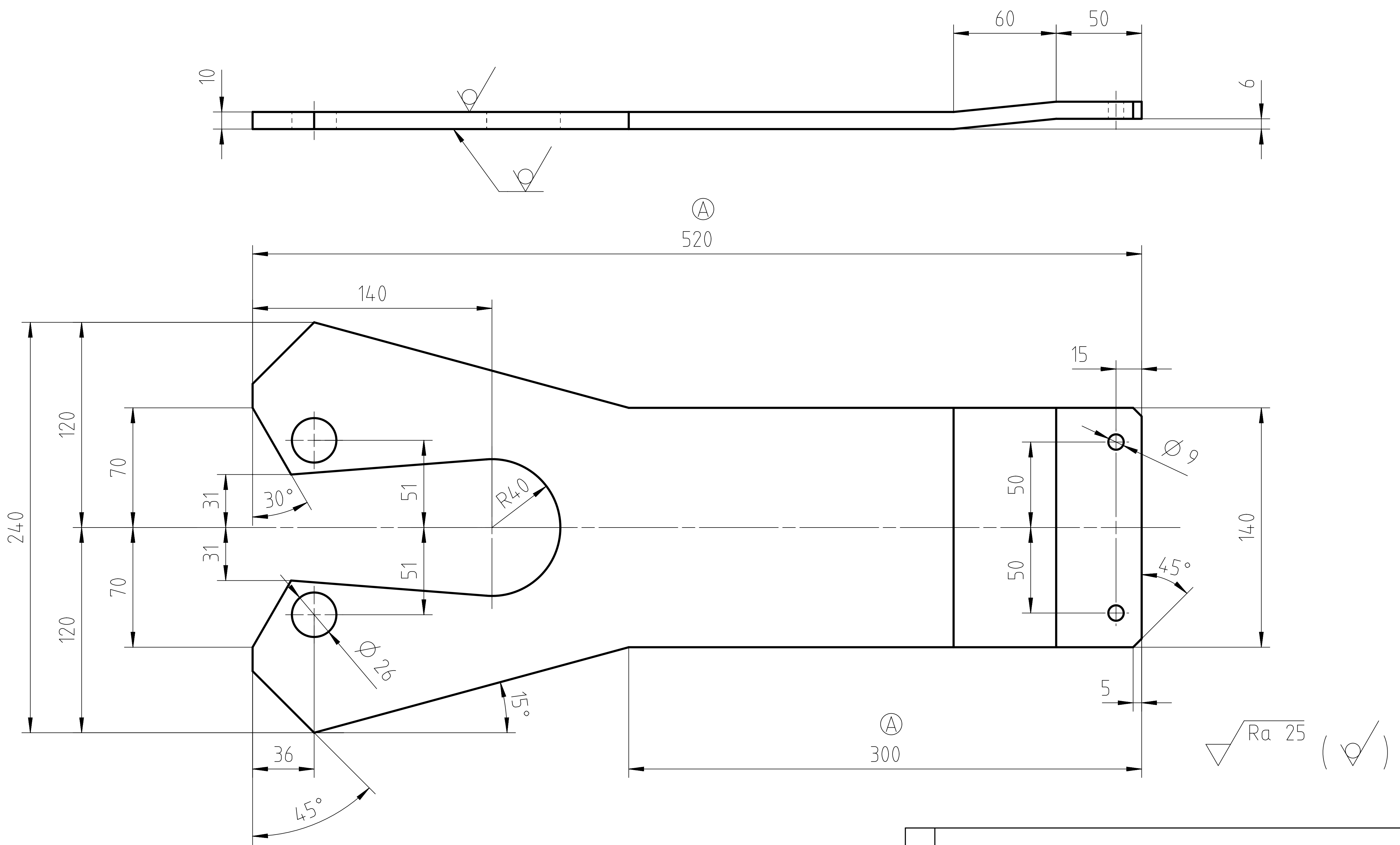
Free space for lic.						Q-Code XXXXX	Main Drw.
						Standard ISO; JIS	
Modif.	A 7-14.494	30.10.2001	B EAAD086682	23.10.2017			
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number / Drawn date

Winterthur Gas & Diesel

Product W-2S

SCREWED SLEEVE
ENGINE STAYS
SCREWED SLEEVE
Motorabstuetzung

Units mm kg	NX	Basic Material W-FU-235-N-T	Net Weight 3,6
Made 11.02.1983 Heydecker	Scale 1:1	Size A4	Page 1/1
Chkd	Design Group 9715	Material ID 107.165.810.001	
Appd *11.02.1983 WCH001 Service User*		Drawing ID 107.165.810	Rev. B



SHARP EDGES ERMOVED

SAND BLASTED

Free space for lic.				Q-Code XXXXX	Main Drw.
				Standard ISO; JIS	

Modif.								
A	EAAD086682	23.10.2017						
	Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date

WIN GD
Winterthur Gas & Diesel

Product W-2S

SUPPORT

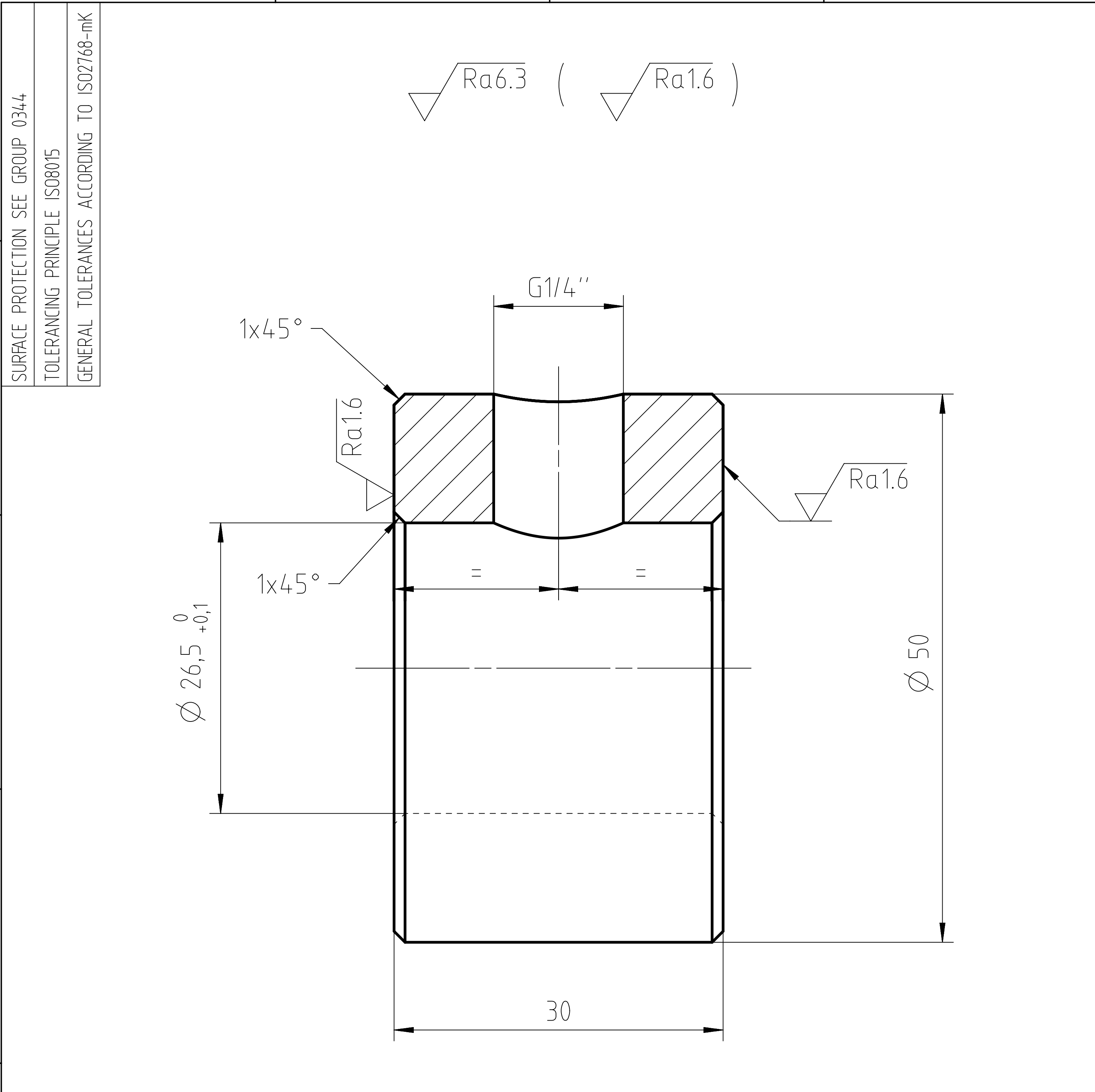
Support

Units mm kg	NX		Basic Material W-FU-235-JR		Net Weight 5,5
Made 11.02.1983 Heydecker		Scale 1:2.5	Size A3	Page 1/1	Material ID 107.165.815.001
Chkd		Design Group 9715	Drawing ID 107.165.815		Rev. A
Appd 06.11.1996 WDMS2					

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Approved

DID - DIMENSIONAL DRAWING - Confidential



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
	B	EAAD086682	23.10.2017									

Winterthur Gas & Diesel

Product: W-2S

INTERMEDIATE RING

INTERMEDIATE RING

Units mm kg	NX		Basic Material W-FU-325-N		Net Weight 0,3
Made 21.08.1984 Pipa		Scale 2:1	Size A4	Page 1/1	Material ID 107.165.821.001
Chkd		Design Group 9715	Drawing ID 107.165.821		Rev. B
Appd 06.11.1996 WDMS2					

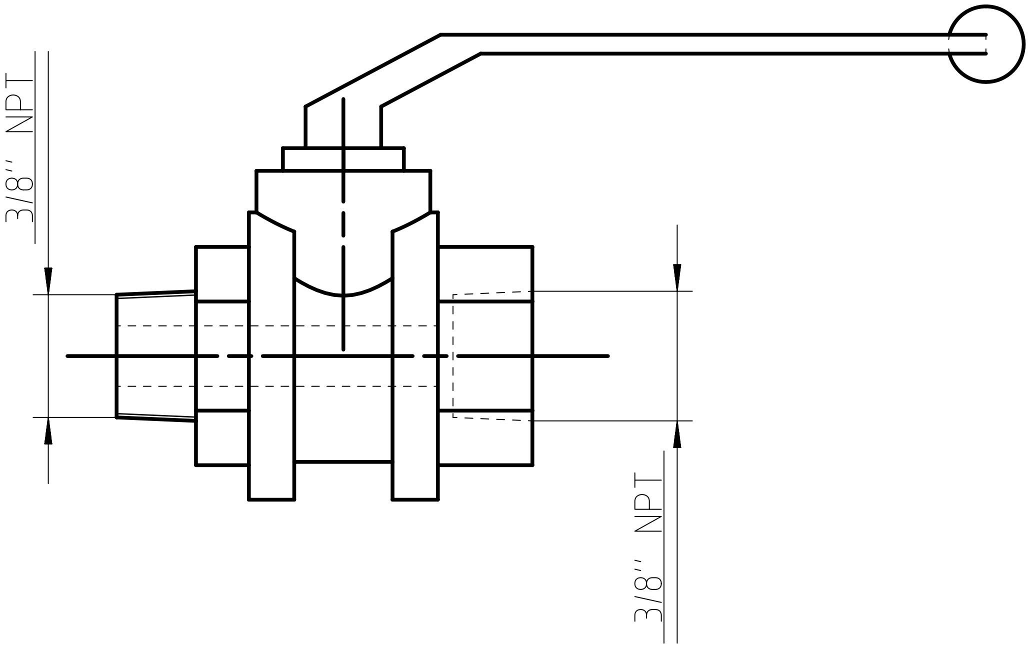
Approved

DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

BALL VALVE

TYPE:	PN 500 - DN 8 - NPT 3/8"
BODY:	STEEL
BALL:	STEEL, HARD CHROMED
JOINTS:	POLYAMIDE
ORDER NUMBER:	KHG V500.104 / Type 1
SUPPLIER:	Indufer AG. Rütistrasse 18 8952 Schlieren Switzerland



Approved

Free space for lic.								Q-Code XXXXX	Standard ISO; JIS	Main Drw.
Modif.	A	EAAD086682	23.10.2017							
		Number	Drawn date	Number	Drawn date	Number	Drawn date	Number	Drawn date	

WIN GD
Winterthur Gas & Diesel

Product W-2S

BALL VALVE
ORDER DRAWING
BALL VALVE
Bestellzeichnung

Units mm kg	NX		Basic Material St	Net Weight 0,3
Made	16.03.1995 A. Horsfjord	Scale 1:1	Size A4	Page 1/1
Chkd		Design Group 9715	Material ID 107.245.489.001	
Appd	*16.03.1995 WCH001 Service User*		Drawing ID 107.245.489	Rev. A

Pos.	Name	ORDER NO.
001	PISTON GUIDE	Type: EKF 200 196 25 Order No: 99963
002	GUIDE TAPE	Type: FB 503-40-2/PTFE 177024 Order No: 18326139 (2x40, tape cuted by length) Order No: 00162472 (2x40, tape endless)
003	GROOVED RING	Type: S8 160 180 15 B209 70NBR Order No: 24027656
004	SCRAPER	Type: AU ASOB 160 x 175 x 12,30 94 AU 925 Order No.: 336658
005	O-RING	Type: OR 189,87 x 6,99 72 NBR 872 Order No: 14452183

SUPPLIER: Freudenberg Sealing Technologies AG
Thurgauerstrasse 39
8050 Zürich
Switzerland

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
1	005	107.165.811.005	O-RING 189.2x5.7	107.165.811		0,02
1	004	107.165.811.004	SCRAPER RING	107.165.811		0,1
1	003	107.165.811.003	GROOVED RING	107.165.811		0,08
1	002	107.165.811.002	GUIDE TAPE	107.165.811		0,16
2	001	107.165.811.001	PISTON GUIDE	107.165.811		0,04

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Approved

Free space for lic.

Q-Code: XQXXX
Standard: ISO; JIS
Main Drw.

Modif.	Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
A	EAAD086682	20.10.2017									

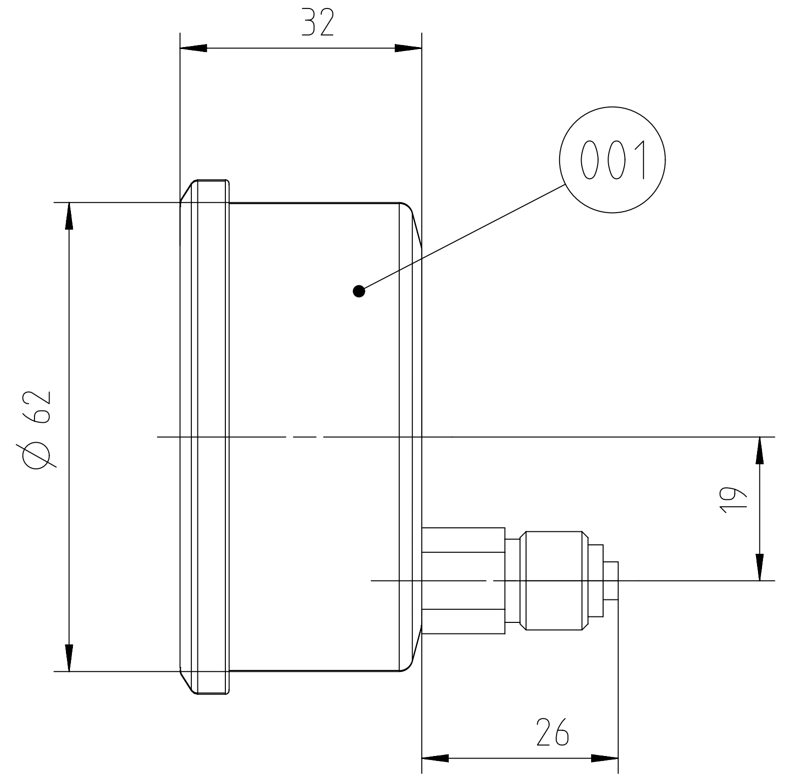
WIN GD
Winterthur Gas & Diesel

Product: W-2S

SET OF SEALS
ORDER DRAWING

SET OF SEALS
Bestellzeichnung

Units: mm kg	NX	Basic Material	Net Weight 0,44
Made: 11.02.1983 Heydecker	Scale: _	Size: A4	Page: 1/1
Chkd	Design Group: 9715	Material ID: 107.165.811.200	
Appd: 05.11.1996 WDMS2		Drawing ID: 107.165.811	Rev.: A



001 PRESSURE GAUGE WITH BOURDON, TUBE. GLYCERINE FILLED

TYPE:	WIKA 213.53.063
HOUSING DIAMETER:	63 mm
SCALE GRADUATION:	0-250 bar
CONNECTION AT BACK:	G 1/4B rue
ORDER NUMBER:	9022449

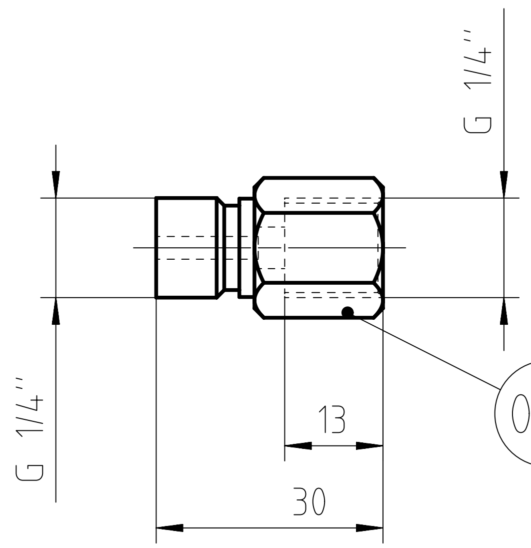
002 CONNECTION REDUCER G1/4 x 1/4 NPT

TYPE:	WIKA 910.14
ORDER NUMBER:	9054936

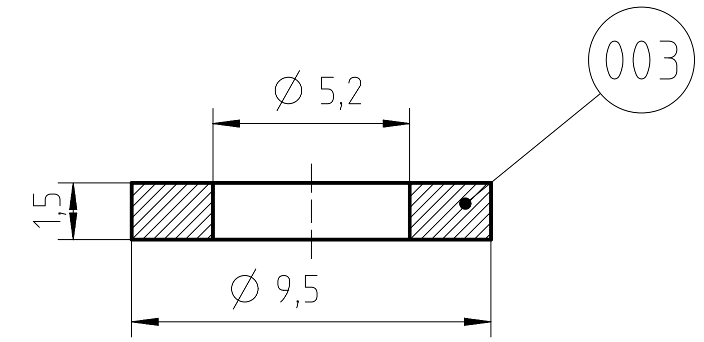
003 FLAT COPPER JOINT G1/4

TYPE:	WIKA 910.17
ORDER NUMBER:	9091424

SUPPLIER: MANOMETER AG
Industriestrasse 11
6285 Hitzkirch
Switzerland



5:1



QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	003	107.165.812.003	JOINT	107.165.812	Cu	0,001
1	002	107.165.812.002	CON.REDUCER G1/4''-Gc1/4''	107.165.812	Brass	0,1
1	001	107.165.812.001	PRESSURE GAUGE MG63 G1/4''	107.165.812	Steel	0,21

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Q-Code XQXXX
Standard ISO; JIS
Main Drw.

Modif.	Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
A	EAAD086682	20.10.2017									

WIN GD
Winterthur Gas & Diesel

Product W-2S

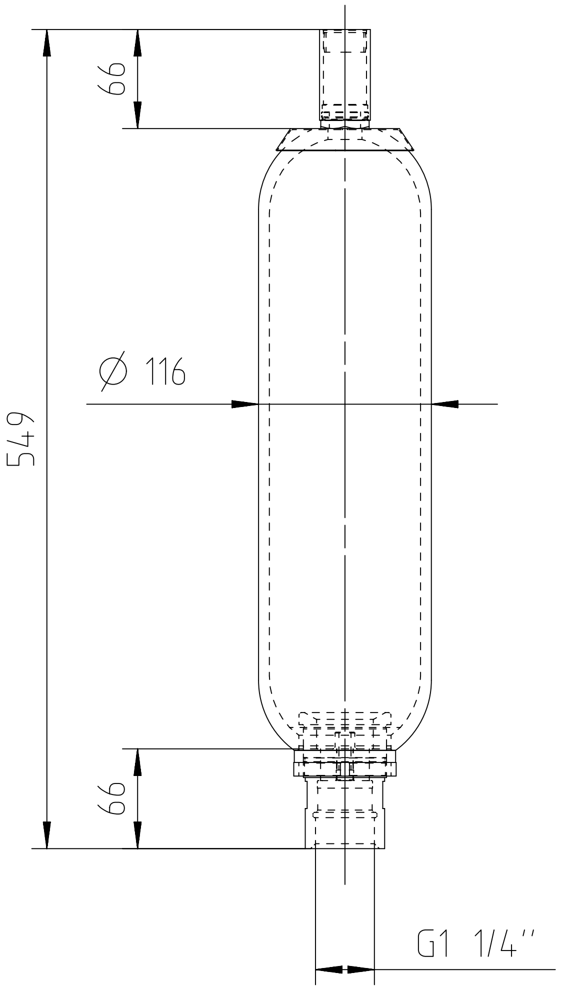
PRESSURE GAUGE
ORDER DRAWING
PRESSURE GAUGE
Bestellzeichnung

Units mm kg	NX		Basic Material	Net Weight 0,32
Made 29.10.1982 Heydecker		Scale 1:1	Size A3	Page 1/1
Chkd		Design Group 9715	Material ID 107.165.812.200	
Appd 05.11.1996 WDMS2			Drawing ID 107.165.812	Rev. A

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

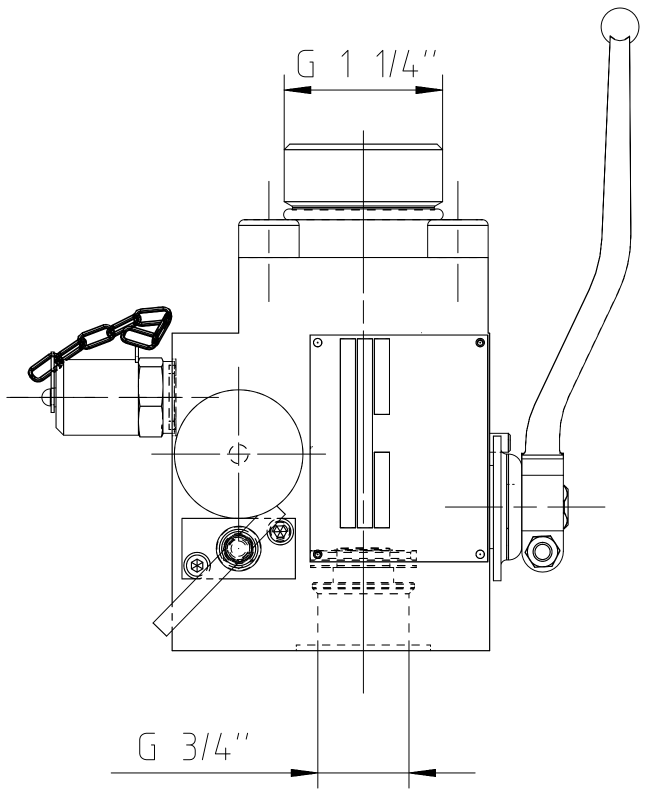
DID - DIMENSIONAL DRAWING - Confidential

001



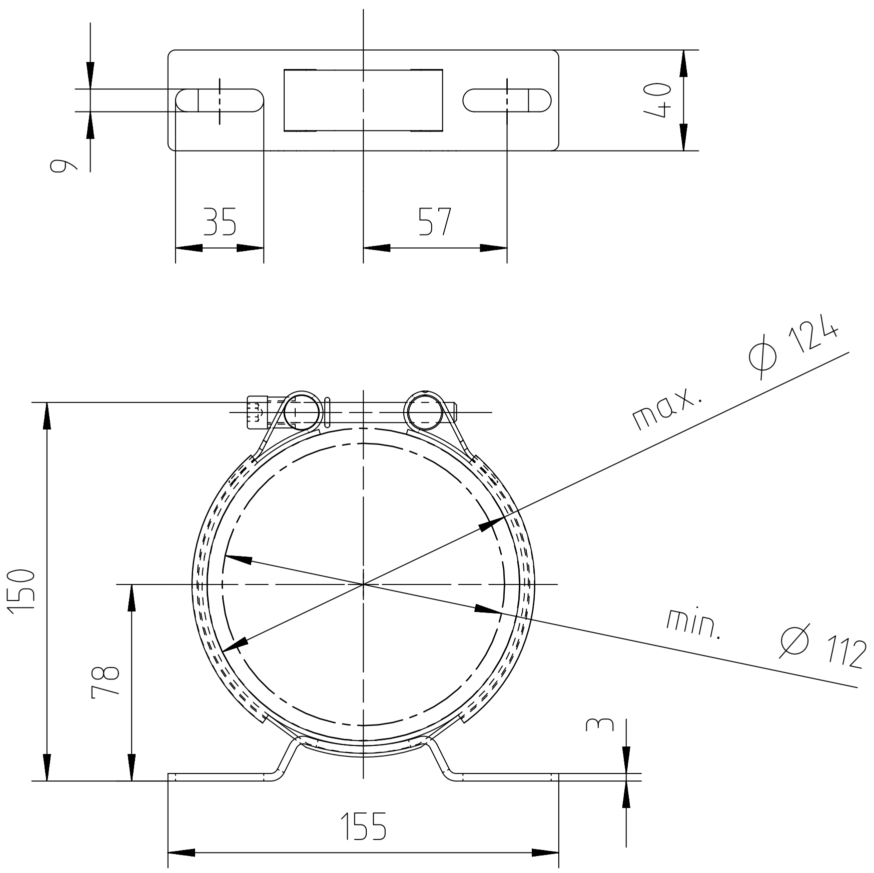
002 ©

SCALE 1:2



003

SCALE 1:3



QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	003	107.329.413.003	STRAP D114	107.329.413	St	0,2
1	002	PAAD242562	CONNECTING BLOCK	107.329.413	St	4,3
1	001	107.329.413.001	BLADDER ACCUMULATOR	107.329.413		10,0

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Free space for lic.

Q-Code: XQXXX

Main Drw.

Standard: ISO; JIS

Modif.	Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
	A	7-28.674	03.07.2003	B	EAAD084475	09.04.2013	C	EAAD086682	20.10.2017		

001	Bladder accumulator:	Type: (OLEAR) EHV 2.5-350/90
	Nominal volume:	2.4 l
	Connection:	G 1 1/4'' CYL
	Working temp.:	-15°C to +80°C
	Order number:	10854701120
002	Safety Block	Type: DI16MS/1/210 CV
	Order number:	35128811G02
003	Clamping strap:	Type: E 114
	Order number:	20251003648

SUPPLIER: PARKER HANNIFIN EUROPE SARL
LA TUILIERE 6
1163 ETOY
SWITZERLAND

WIN GD
Winterthur Gas & Diesel

Product: W-2S

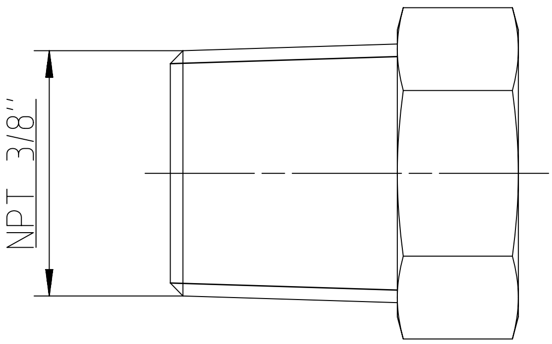
BLADDER ACCUMULATOR
ORDER DRAWING
BLADDER ACCUMULATOR
Bestellzeichnung

Units	mm kg	NX	Basic Material	Net Weight 14,5
Made	21.08.2002 S. Stylianou	Scale 1:5	Size A3	Page 1/1	Material ID 107.329.413.200
Chkd		Design Group 9715	Drawing ID 107.329.413	Rev. C
Appd	03.09.2002 SNA001			

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK



PART - Plug 3/8'' NPT

ORDER NUMBER - 134.0094

SUPLIER - Derendinger AG
Technoramastr. 19
8408, Winterthur
SWITZERLAND.

Approved

Free space for lic.

Q-Code: XXXXX
Standard: ISO; JIS
Main Drw.

Modif.	Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
A	EAAD086682	20.10.2017									

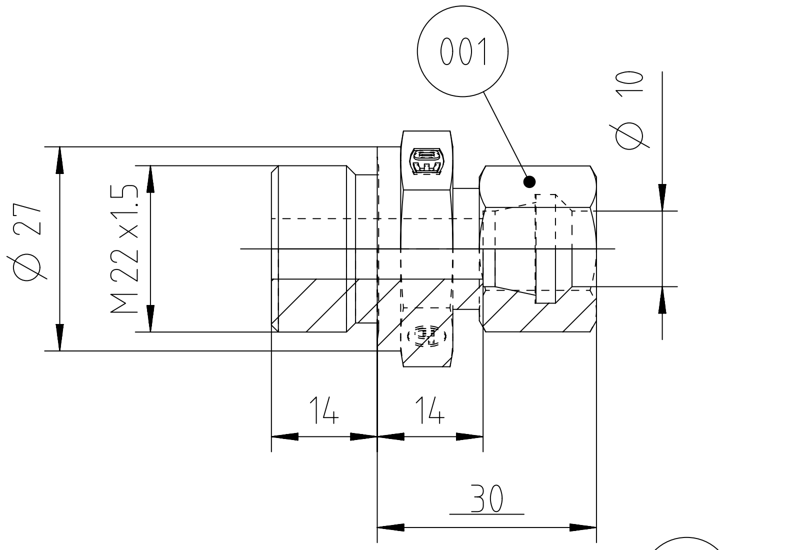
WIN GD
Winterthur Gas & Diesel

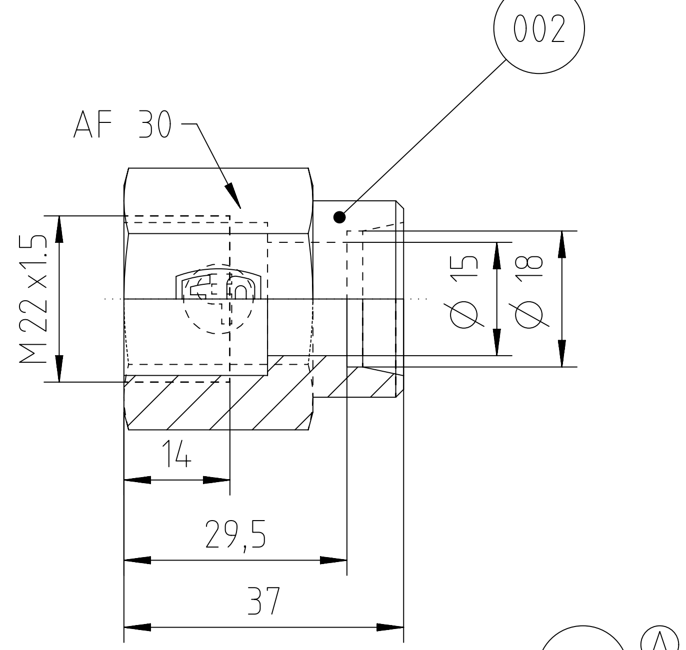
Product: W-2S

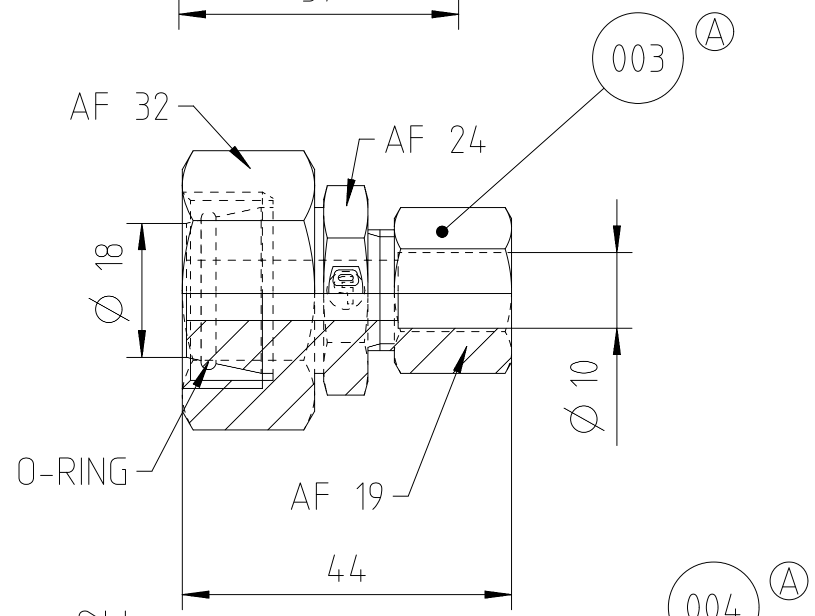
PLUG
ORDER DRAWING
PLUG
Bestellzeichnung

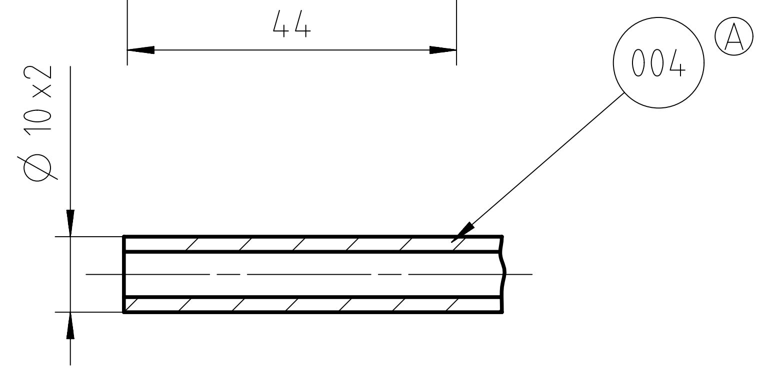
Units mm kg	NX	Basic Material St	Net Weight 0,03
Made 11.02.1983 Heydecker	Scale 2:1	Size A4	Page 1/1
Chkd	Design Group 9715	Material ID 107.165.814.001	
Appd 06.11.1996 WDMS2		Drawing ID 107.165.814	Rev. A

DID - DIMENSIONAL DRAWING - Confidential









001	STRAIGHT UNION (MALE)	Type: GE10LM22x15CF / steel, zinc coated / outer thread M22x1.5 to inner pipe Ø 10 Order No: GE10LM22x15CF
002	STRAIGHT UNION (FEMALE)	Type: GAI18LMCFX / steel, zinc coated / inner thread M22x1.5 to inner pipe Ø 18 Order No: GAI18LMCFX
003	REDUCER	Type: RED18/10LCF (10L) / steel, zinc coated / pipe Ø 18 to pipe Ø 10 Order No: RED18/10LCF (10L)
004	TUBE SEAMLESS	Type: R10X2CF Order No: R10X2CF / steel, zinc coated / DIN 2391/C Ø 10x2

SUPPLIER : TECALTO AG
Rautistr. 58
8048 Zürich
SWITZERLAND.

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	004	107.165.822.003	TUBE SEAMLESS 10x2	107.165.822	St	0,001
1	003	PAAD243234	REDUCER 18/10	107.165.822	St	0,16
1	002	107.165.822.002	STRAIGHT UNION M22x1.5	107.165.822	St	0,2
1	001	107.165.822.001	STRAIGHT UNION M22x1.5	107.165.822	St	0,2

Free space for lic.

Q-Code: XQXXX
Standard: ISO; JIS
Main Drw.

Approved

Modif.	Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
A	EAAD086682	15.01.2018									

WIN GD
Winterthur Gas & Diesel

Product: W-2S

STRAIGHT UNION
ORDER DRAWING
STRAIGHT UNION
Bestellzeichnung

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Units	mm kg	NX	
Made	21.02.1984 Pipa	Scale 1:1	Size A3
Chkd		Design Group 9715	Page 1/1
Appd	06.11.1996 WDMS2	Drawing ID 107.165.822	Rev. A

Basic Material
Net Weight
Material ID

DID - DIMENSIONAL DRAWING - Confidential

ORDER SHEET

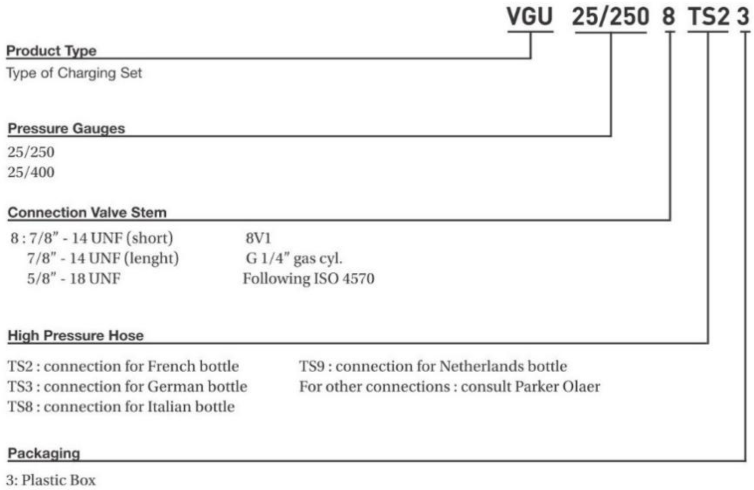
CHARGING SET

VGU 25/250 8 TS2 3

The standard VGU Kit comprises of:
- VGU universal tester and pressurizer (end M28 x 1.50).
- Pressure gauge kit from 0 to 25 bar.
- Pressure gauge kit from 0 to 250 bar.
- Connection adaptors for inflation valves (7/8’’ – 5/8’’ – 8V1 - M28 x 1.50-1/4" BSP).
- High pressure hose, 2.5 m long, for connecting to a nitrogen source.
- Hexagon socket screw key 6mm.
- Spare parts kit including rings.
- Operating instruction in French, English, and German.
- Plastic protective case.
- Additional nitrogen flasks connections for the following countries:

1) GB, AUS, NZ:	R$^{5}/_{8}$" external	Part No. 993507-02800
2) F, B, E:	21.7 x $^{1}/_{14}$" internal	Part No. 993513-02800
3) Italy:	21.7 x $^{1}/_{14}$" external	Part No. 993509-02800
4) USA:	24.51 x $^{1}/_{14}$" external	Part No. 993508-02800
5) Brazil:	R½" internal	Part No. 993512-02800
6) Japan:	22 x $^{1}/_{14}$" internal	Part No. 993510-02800
7) Japan:	W 23 x $^{1}/_{14}$" external	Part No. 993511-02800

KEY TO MODEL DESIGNATION



SUPPLIER: **PARKER HANNIFIN EUROPE SARL**
LA TUILIERE 6
1163 ETOY
SWITZERLAND

Substitute for:								PC	Q-Code	X X X X X		
Modif	B	7-14.418	10.11.1999	C	EAAD086682	27.05.2016						
		Number	Drawn Date		Number	Drawn Date		Number	Drawn Date		Number	Drawn Date

WIN GD Winterthur Gas & Diesel	Product **W-2S**	**Test and Filling Unit** **To Engine Stays (Hydraulic Type)**

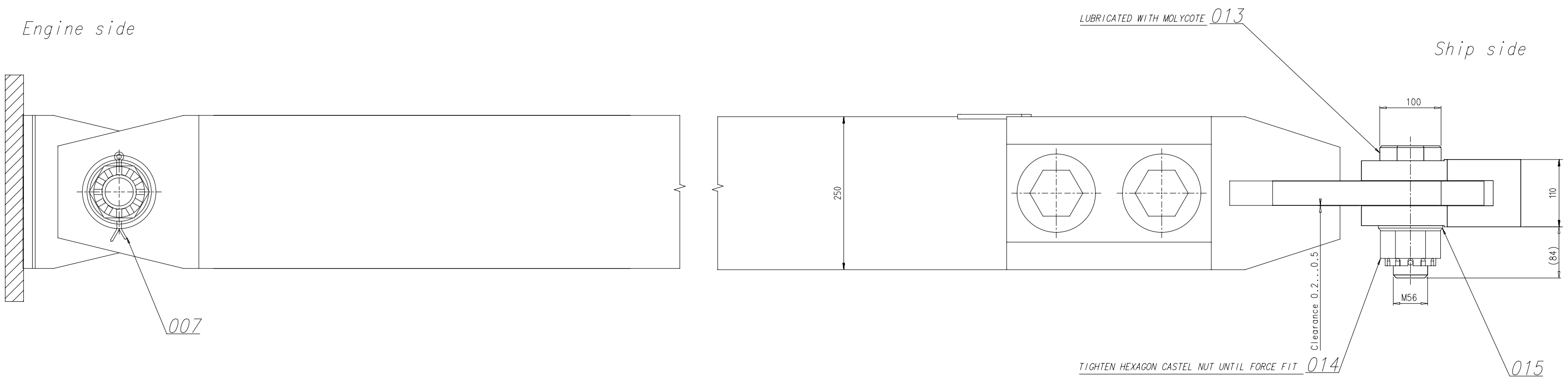
Made	28.10.1982 Pipa	Main Drw.	Page 1 / 1	Material ID **107.165.818.001**
Chkd		Design Group		
Appd		**9715**	Drawing ID **107.165.818**	Rev **C**

Friction type stays according to WinGD design

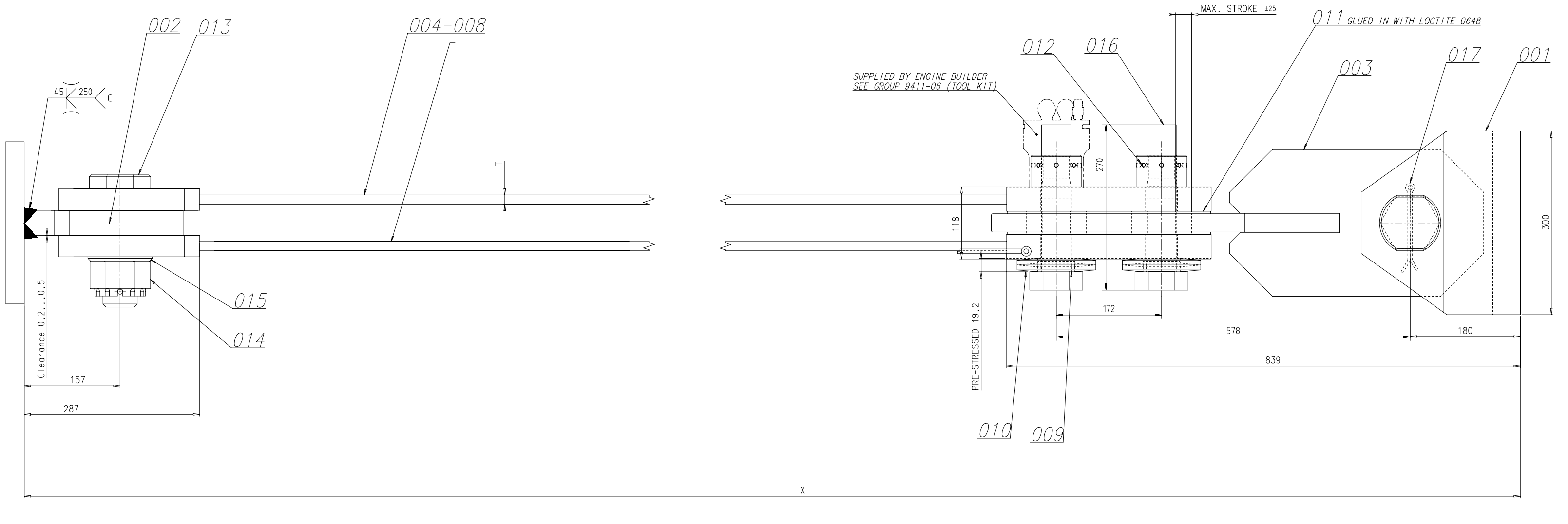
ONLY to be installed in longitudinal direction on engine driving end or free end

Please consult WinGD directly in case you have a specific question or need support.

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



Material ID	X (mm)	T (mm)
PAAD046700	2000-2280	15
PAAD046701	2281-2560	20
PAAD046702	2561-2840	25
PAAD046703	2841-3120	30
PAAD046704	3121-3400	35



NOTE:

X= CLEAR WIDTH BETWEEN ENGINE AND SHIP SIDE; TO BE DETERMINED BY SHIPYARD (SEE MAIN DRAWING)

Quantity 417	Quantity 387	Quantity 359	Quantity 330	Quantity 302	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
2	2	2	2	2	017	015.509.017.503	SPLIT PIN 8x100	ISO 1234	Steel Zn-plated	0,04
2	2	2	2	2	016	015.151.024.781	HEXAGON HEAD BOLT M48x240	ISO 4014	8.8	4,29
2	2	2	2	2	015	015.500.102.330	WASHER 58	DIN 125-1	Steel blank	0,425
2	2	2	2	2	014	015.201.304.610	CASTLE NUT M56	Acc. WinGD	C45E;S45C	1,63
2	2	2	2	2	013	PAAD026437	BOLT	DAAD012368	C45E S45C	7,17
2	2	2	2	2	012	107.345.876.008	ROUND NUT M48	107.345.876	W-FA-42CrMo-QT	1,42
2	2	2	2	2	011	PAAD902269	SHIM 4THICK	DAAD902593		2,3
4	4	4	4	4	010	107.246.311.001	DISC SPRING 125 X 61 X 8	107.246.311		0,55
2	2	2	2	2	009	107.246.316.001	RING 60 x 50 x 17	107.246.316	RSt 37-2	0,12
2	-	-	-	-	008	PAAD902262	ENGINE STAYS	DAAD902592		137
-	2	-	-	-	007	PAAD902268	ENGINE STAYS	DAAD902592		122
-	-	2	-	-	006	PAAD902257	ENGINE STAYS	DAAD902592		108
-	-	-	2	-	005	PAAD902247	ENGINE STAYS	DAAD902592		93,8
-	-	-	-	2	004	PAAD902252	ENGINE STAYS	DAAD902592		79,6
1	1	1	1	1	003	PAAD902231	CLAMPING PART	DAAD902576		54,9
1	1	1	1	1	002	PAAD026436	SUPPORT	DAAD012141	W-FU-355-J0	15,6
1	1	1	1	1	001	PAAD026295	SUPPORT	DAAD012142	W-FU-235-J0	35,4
PAAD046704	PAAD046703	PAAD046702	PAAD046701	PAAD046700						

Net Weight · Material ID

Free space for lic.

Q-Code XXXXX · Standard ISO; JIS · Main Drw.

Modif.	Number	Drawn date
A	EAAD086524	19.04.2016
B	EAAD095725	18.01.2021

WIN GD Winterthur Gas & Diesel

Product W-2S

ENGINE STAYS/ FRICTION TYPE

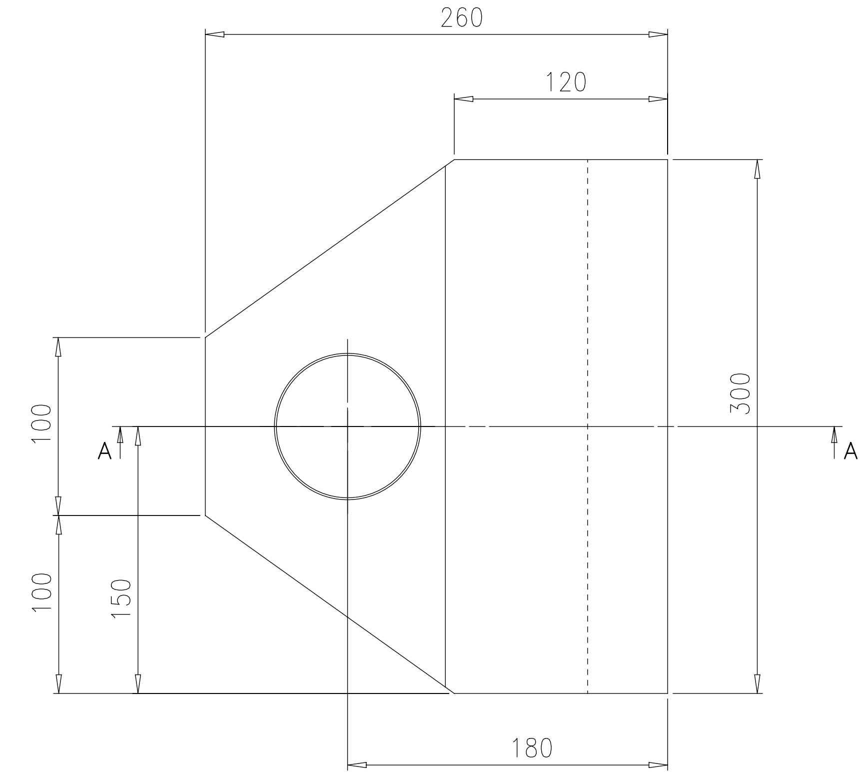
Motorenabstuetzung mit Reibbelag

Units mm kg	NX	Basic Material	Net Weight
Made	10.06.2011 sfe006 Feuerstein	Scale 1:3	Size A0 · Page 1/1 · Material ID
Chkd	11.07.2011 wwr001 Wroblewski	Design Group 9715	Drawing ID DAAD018242 · Rev. B
Appd	11.07.2011 dst009 Strödecke		

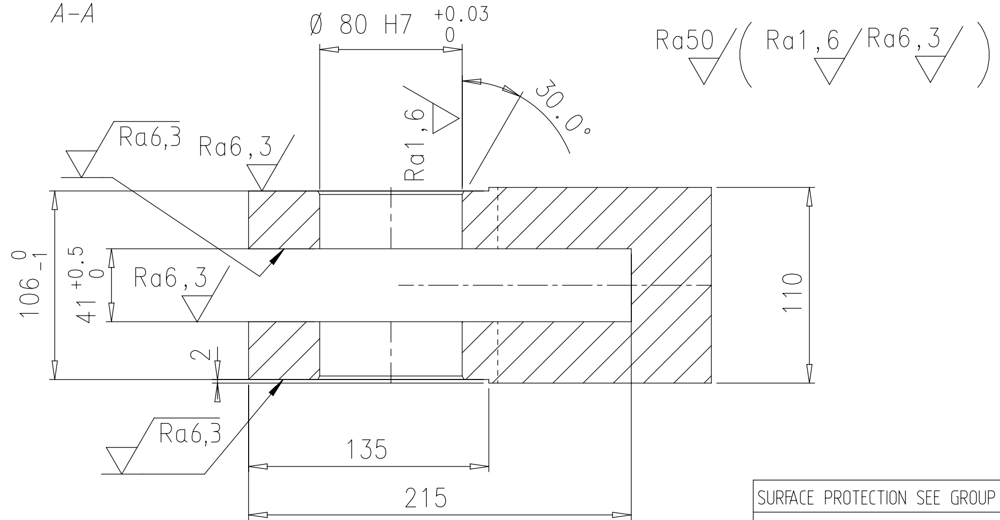
SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Approved

PD - PRODUCTION DRAWING - Confidential



A-A

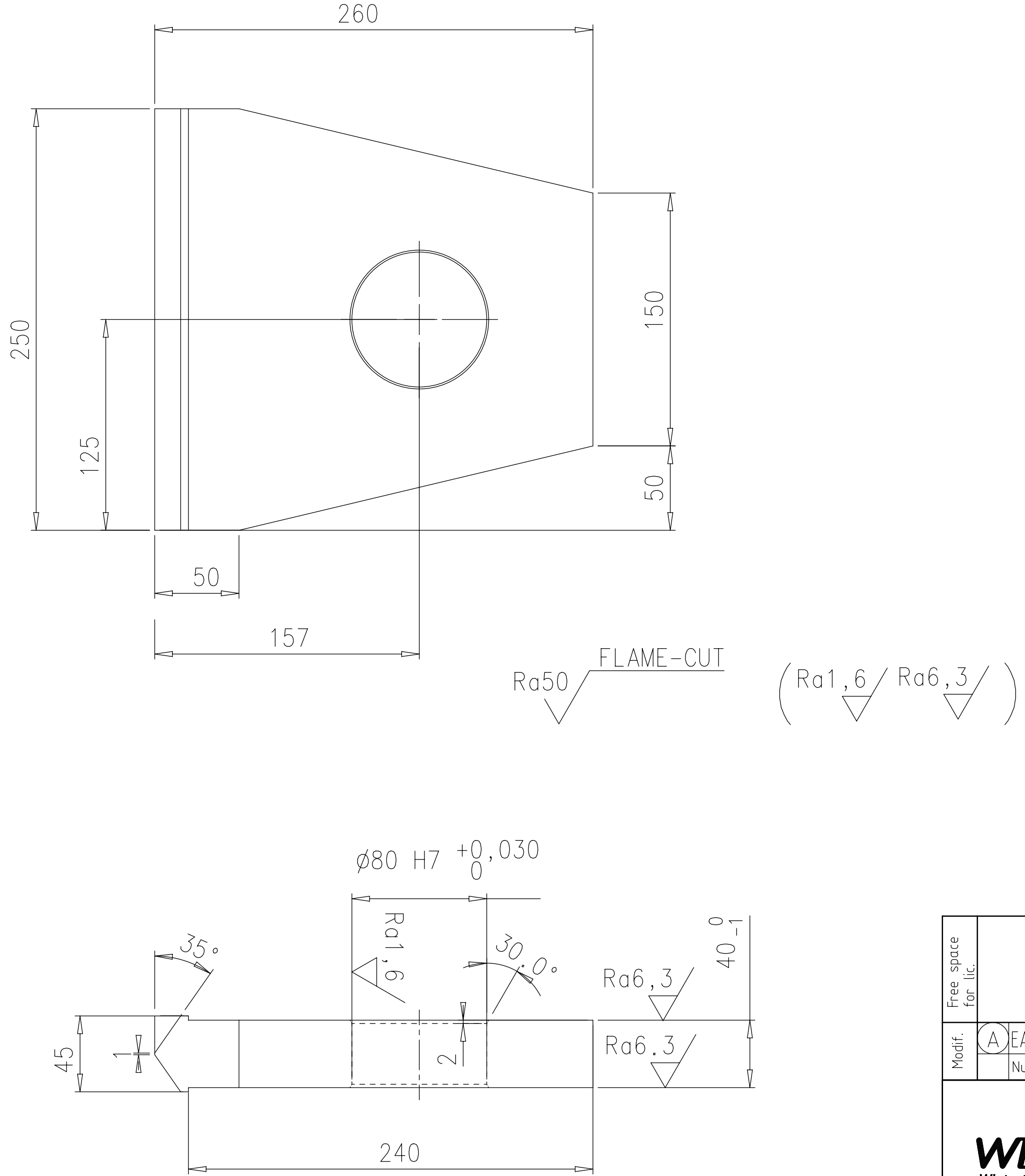


SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Free space for lic.				Q-Code XXXXX	Standard ISO; JIS	Main Drw.
Modif.	A EAAD095725 (Number)	28.04.2021 (Drawn date)	B EAAD096559 (Number)	29.04.2021 (Drawn date)	Number / Drawn date	Number / Drawn date
WIN GD Winterthur Gas & Diesel	Product W-2S	SUPPORT TO ENGINE STAYS, FRICTION	SUPPORT zu Motorabstuetzung			
Units mm kg	NX	Basic Material W-FU-235-J0			Net Weight 35,4	
Made 17.12.2010 mhu019 M.Hug	Scale 1:3	Size A3	Page 1/1	Material ID PAAD026295		
Chkd 19.01.2011 sfe006 Feuerstein	Design Group 9715	Drawing ID DAAD012142			Rev. B	
Appd 19.01.2011 dst009 Strödecke						

Approved

PD - PRODUCTION DRAWING - Confidential



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
	A	EAAD095725	28.04.2021	B	EAAD096559	29.04.2021						

WIN GD
Winterthur Gas & Diesel

Product W-2S

SUPPORT
TO ENGINE STAYS, FRICTION
Support
zu Motorabstuetzung

Units mm kg	NX	Basic Material W-FU-355-J0	Net Weight 15,6
Made 20.12.2010 mhu019 M.Hug	Scale 1:3	Size A3	Page 1/1
Chkd *19.01.2011 sfe006 Feuerstein*	Design Group 9715	Material ID PAAD026436	
Appd *19.01.2011 dst009 Strödecke*		Drawing ID DAAD012141	Rev. B

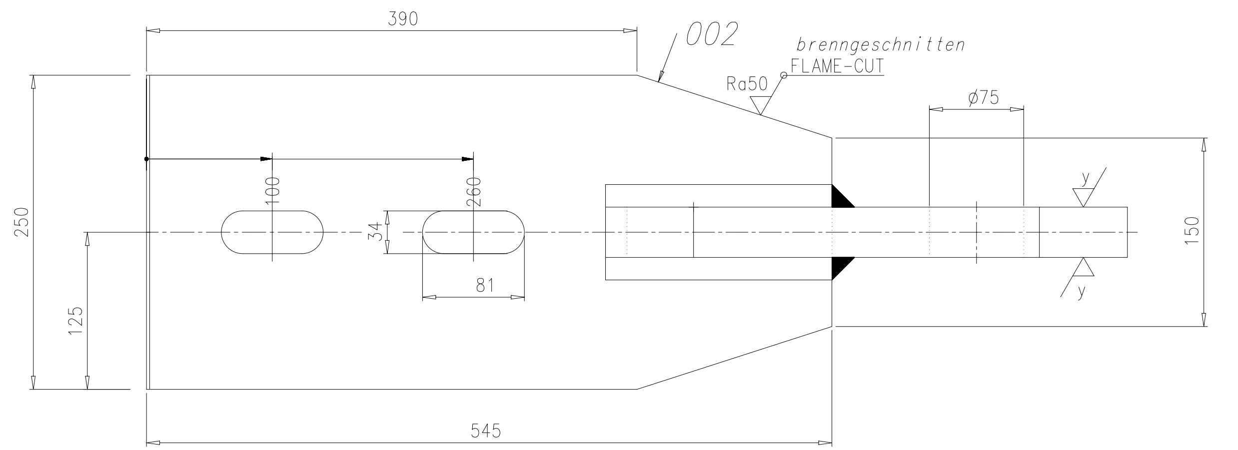
SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

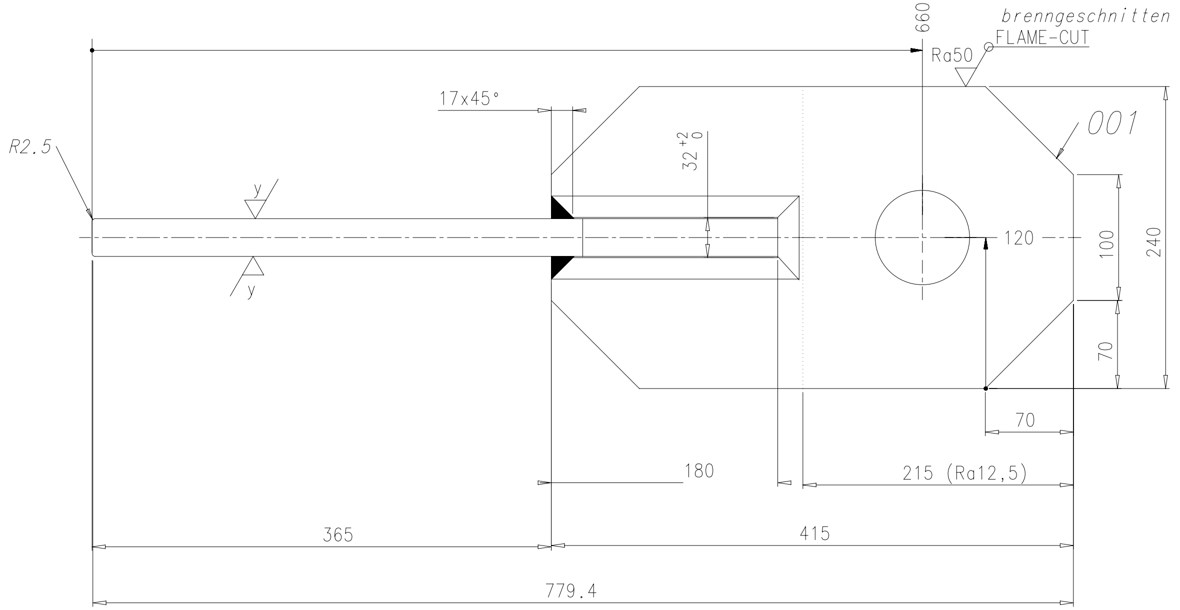
Approved

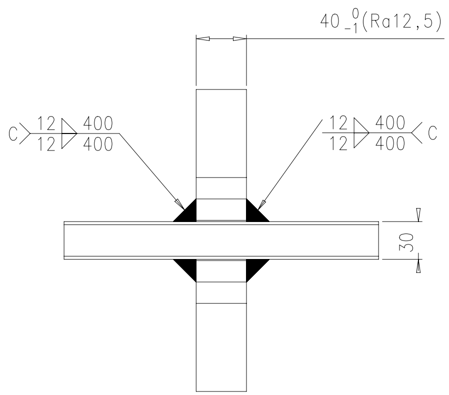
PD - PRODUCTION DRAWING - Confidential

RA50 (✓)

y = Ra12.5 SANDBLASTED BEFORE WELDING







QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	002	PAAD027199	PLATE	DAAD012457	W-FU-355-J0	26,9
1	001	PAAD027091	PLATE	DAAD012457	W-FU-235-J0	37,7

Approved

Free space for lic.

Q-Code XXXXX

Standard ISO; JIS

Main Drw.

Modif.	Number	Drawn date
A	EAAD082648	12.07.2011
B	EAAD095725	28.04.2021
C	EAAD096559	29.04.2021

WIN GD Winterthur Gas & Diesel

Product W-2S

CLAMPING PART
WELDED, TO ENGINE STAYS
Klemmteil
geschweisst, zu Motorabstuetzung

Units mm kg | NX | Basic Material | Net Weight 64,6

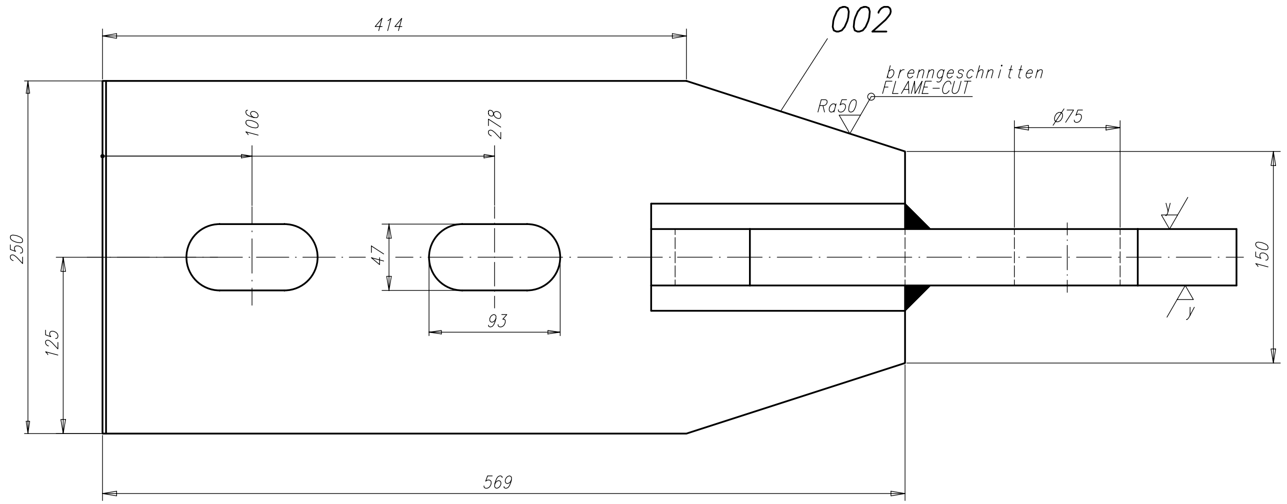
SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

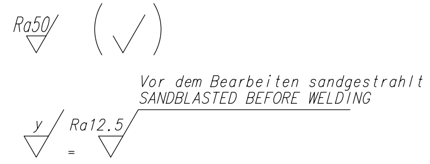
Made	22.12.2010	mhu019 M.Hug
Chkd	19.01.2011	sfe006 Feuerstein
Appd	19.01.2011	dst009 Strödecke

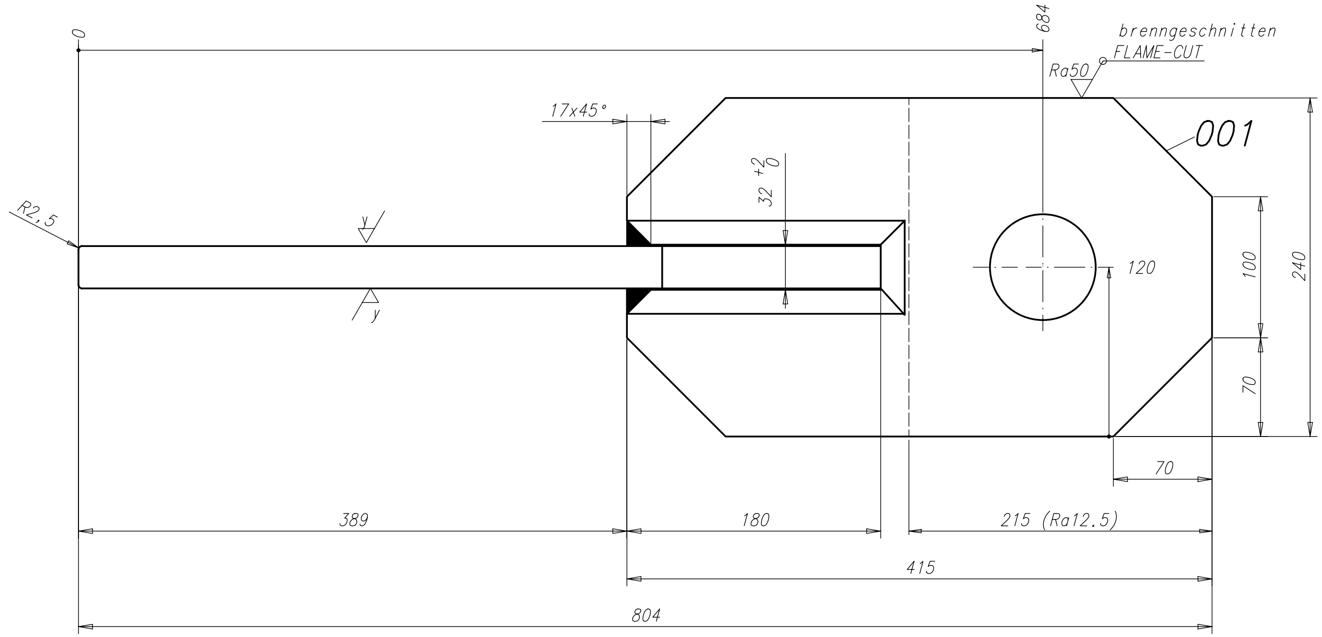
Scale 1:1 | Size A2 | Page 1/1 | Material ID PAAD027261

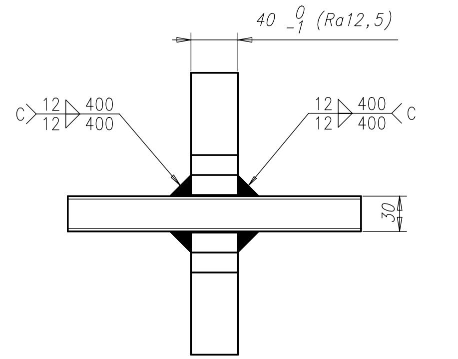
Design Group 9715 | Drawing ID DAAD012457 | Rev. C

PD - PRODUCTION DRAWING - Confidential









QTY	SEQ NO	Material ID	Material Name	Dimension/Occ.Dimension	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
1	002	PAAD902229	PLATE	30 THICK	DAAD902577	S235JRG2 SS400	30.1
1	001	PAAD902253	PLATE	40 THICK	DAAD902577	S355J2G3 SM520C	24.7

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

Approved

WIN GD
Winterthur Gas & Diesel

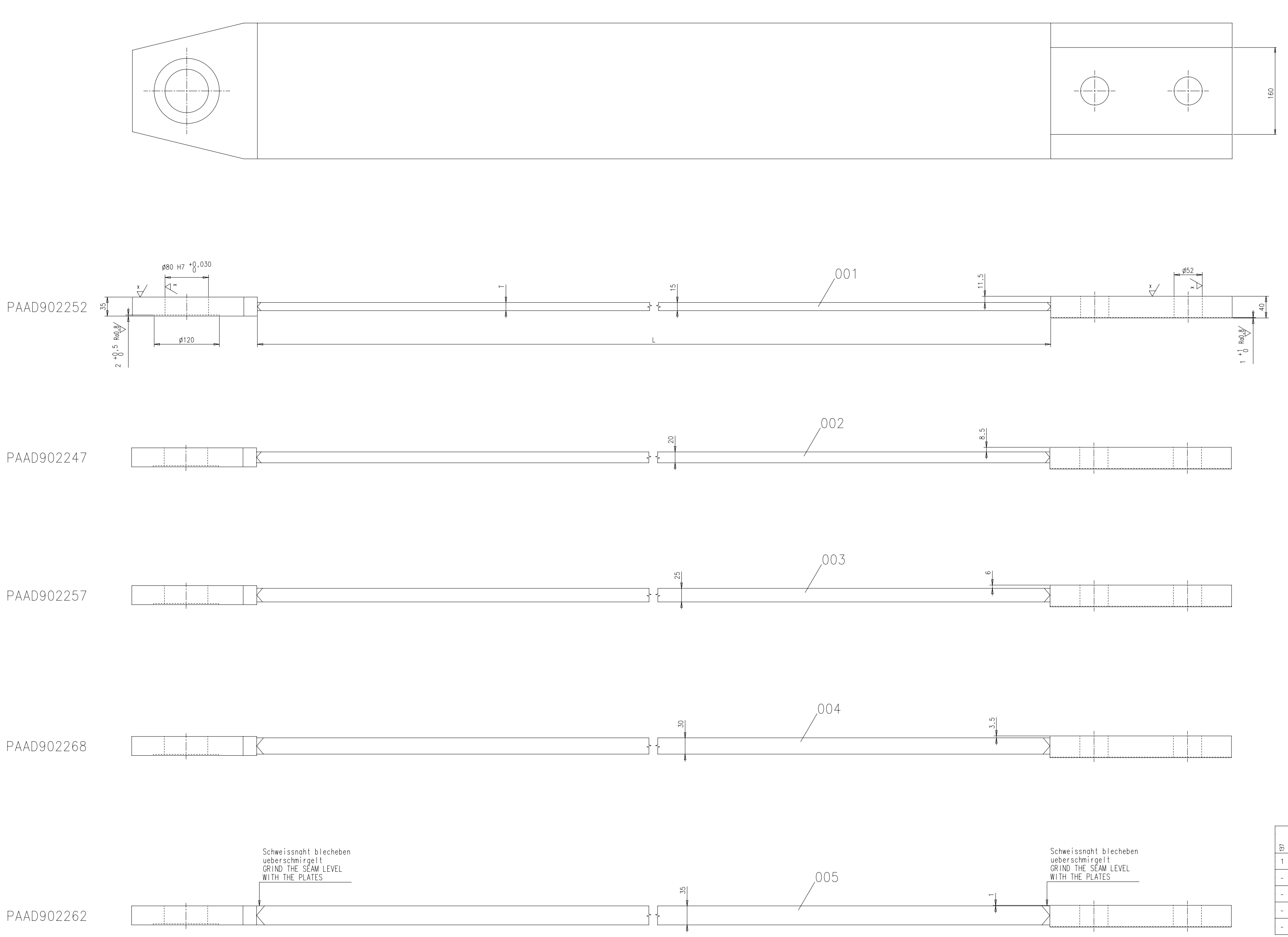
Product W-2S

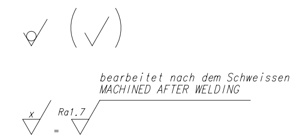
CLAMPING PART
WELDED, TO ENGINE STAYS
Klemmteil
geschweisst, zu Motorabstuetzung

Units mm kg	IDE	Basic Material	Net Weight 55.0
Made 31.05.2011 Pradip Soman	Scale 1:3	Size A2	Page 1/1
Chkd 07.07.2011 mhu019 Hug	Design Group 9715	Material ID	PAAD902230
Appd 07.07.2011 dst009 Stroedecke		Drawing ID DAAD902577	Rev. –

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

DID - DIMENSIONAL DRAWING - Confidential





MATERIAL ID	DIMENSIONS IN MM		
	X	T	L
PAAD902252	2000-2280	15	X - 1126
PAAD902247	2281-2560	20	
PAAD902257	2561-2840	25	
PAAD902268	2841-3120	30	
PAAD902262	3121-3400	35	

Fuer Mass X siehe H-Zeichnung
FOR MEASURE X SEE MAIN DRAWING

Net Weight 137	Net Weight 122	Net Weight 108	Net Weight 93,8	Net Weight 79,6	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
1	-	-	-	-	005	PAAD902259	ENGINE STAYS	DAAD902591		137
-	1	-	-	-	004	PAAD902264	ENGINE STAYS	DAAD902591		122
-	-	1	-	-	003	PAAD902254	ENGINE STAYS	DAAD902591		108
-	-	-	1	-	002	PAAD902242	ENGINE STAYS	DAAD902591		93,8
-	-	-	-	1	001	PAAD902249	ENGINE STAYS	DAAD902591		79,6
Quantity										
PAAD902262	PAAD902268	PAAD902257	PAAD902247	PAAD902252						
Material ID										

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
A	EAAD095725	28.04.2021	B	EAAD096559	29.04.2021						

WIN GD
Winterthur Gas & Diesel

Product W-2S

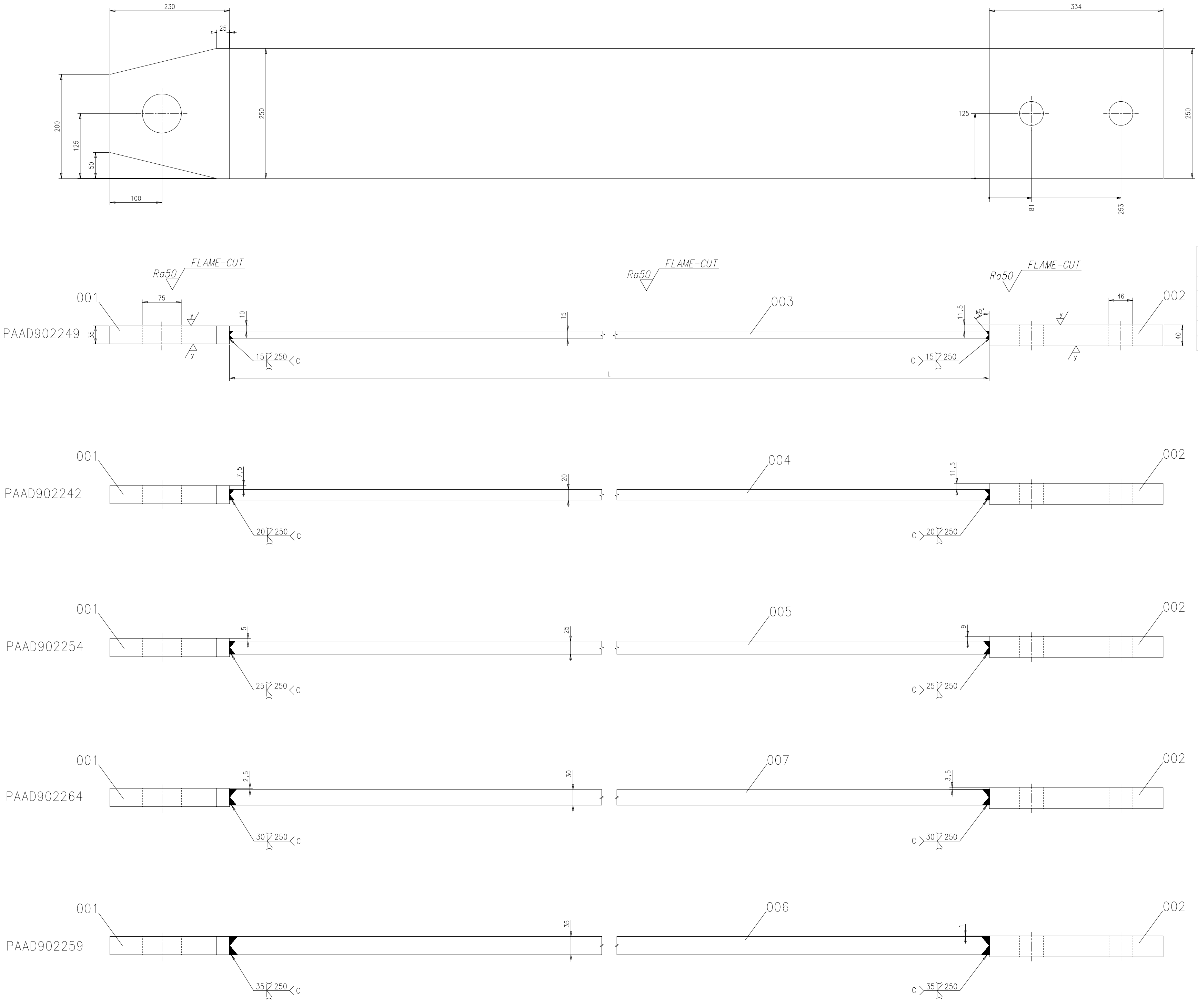
ENGINE STAYS
MACHINED, TO ENGINE STAYS

Motorabstuetzung
bearbeitet zu motorabstuzung

SURFACE PROTECTION SEE GROUP 0344	Units mm kg	NX	Basic Material	Net Weight
TOLERANCING PRINCIPLE ISO8015	Made 01.06.2011 Pradip Soman	Scale 1:3	Size A0	Page 1/1
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Chkd 07.07.2011 wwr001 Wroblewski	Design Group 9715	Material ID	
	Appd 07.07.2011 dst009 Strödecke		Drawing ID DAAD902592	Rev. B

Approved

DID - DIMENSIONAL DRAWING - Confidential



y / Ra12,5 SANDBLASTED BEFORE WELDING

MATERIAL ID	DIMENSIONS IN MM		
	X	T	L
PAAD902249	2000-2280	15	X - 1126
PAAD902242	2281-2560	20	
PAAD902254	2561-2840	25	
PAAD902264	2841-3120	30	
PAAD902259	3121-3400	35	

Fuer Mass X siehe H-Zeichnung
FOR MEASURE X SEE MAIN DRAWING

Quantity / Net Weight 137	122	108	93,8	79,6	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material / Material Standard	Weight GR./NET
1	-	-	-	-	007	PAAD902251	PLATE 30THICK	DAAD902591	W-FU-235-JR	85,4
-	1	-	-	-	006	PAAD902250	PLATE 35Thick	DAAD902591	W-FU-235-JR	99,6
-	-	1	-	-	005	PAAD902248	PLATE 25THICK	DAAD902591	W-FU-235-JR	71,2
-	-	-	1	-	004	PAAD902244	PLATE 20THICK	DAAD902591	W-FU-235-JR	56,9
-	-	-	-	1	003	PAAD902246	PLATE 15THICK	DAAD902591	W-FU-235-JR	42,7
1	1	1	1	1	002	PAAD902245	PLATE 40THICK	DAAD902591	W-FU-235-JR	25,2
1	1	1	1	1	001	PAAD902243	PLATE 35THICK	DAAD902591	W-FU-235-JR	11,8
PAAD902259	PAAD902264	PAAD902254	PAAD902242	PAAD902249	Material ID					

Free space for lic.

Q-Code XXXXX
Standard ISO; JIS
Main Drw.

Modif.	Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
A	EAAD095725	28.04.2021	B	EAAD096559	29.04.2021						

WIN GD Winterthur Gas & Diesel

Product W-2S

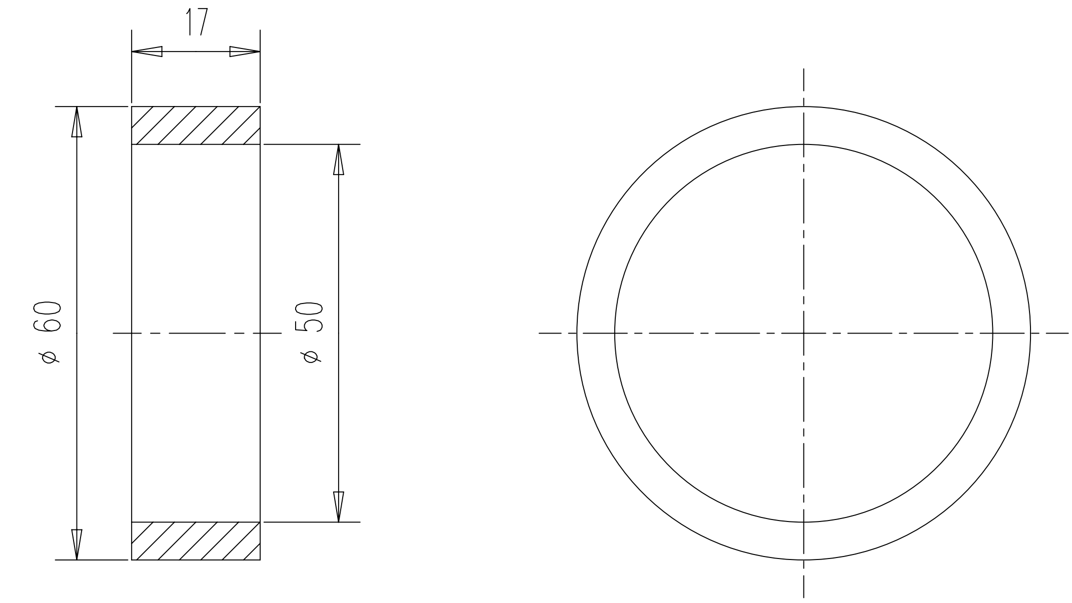
ENGINE STAYS
WELDED, TO ENGINE STAYS
Motorabstuetzung
geschweisst, zu Motarabstuetzung

SURFACE PROTECTION SEE GROUP 0344	Units mm kg	NX	Basic Material	Net Weight
TOLERANCING PRINCIPLE ISO8015	Made 01.06.2011 Pradip Soman	Scale 1:3	Size A0	Page 1/1	Material ID
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	Chkd 07.07.2011 wwr001 Wroblewski	Design Group 9715	Drawing ID DAAD902591	Rev. B
	Appd 07.07.2011 dst009 Strödecke			

Approved
DID - DIMENSIONAL DRAWING - Confidential

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Ra12,5 SHARP EDGES REMOVED



Approved

Free space for lic.

Q-Code: XXXXX
Standard: ISO; JIS
Main Drw.

Modif.	Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
A	EAAD083026	25.07.2011	B	EAAD095725	28.04.2021	C	EAAD096559	29.04.2021			

WIN GD
Winterthur Gas & Diesel

Product: W-2S

RING
TO ENGINE STAYS, FRICTION TYPE
Ring

Units: mm kg	NX	Basic Material: W-FU-235-JR	Net Weight: 0,12
Made: 08.09.1998 S. Sylianou	Scale: 1:1	Size: A4	Page: 1/1
Chkd	Design Group: 9715	Material ID: 107.246.316.001	
Appd: 08.09.1998 WCH001 Service User		Drawing ID: 107.246.316	Rev.: C

ASD - ASSEMBLY DRAWING - Internal

001 DISC SPRING

MATERIAL	50 Cr V 4
MODULUS OF ELASTICITY	$E = 2,06 \times 10^5$ N/mm2
OPERATING TEMPERATURE	-50...+200 °C
SURFACE PROTECTION	PHOSPHATED AND OILED (RUST PREVENTING OIL)

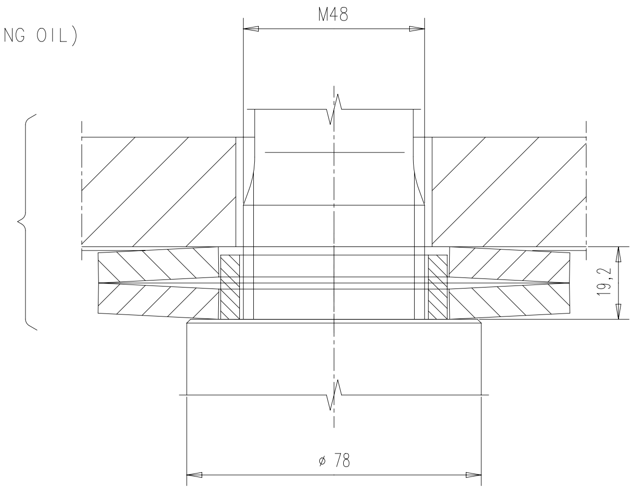
FOR ASSEMBLY OF THE DISC SPRING PACKET SEE SKETCH

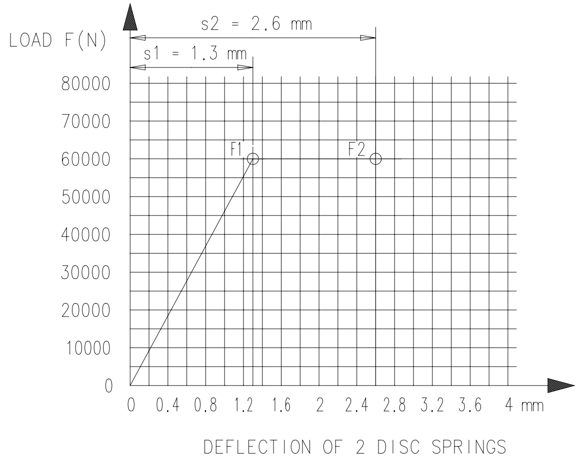
F1 = 60000 N BY DEFLECTION s1 = 1.3 mm OF 1 DISC

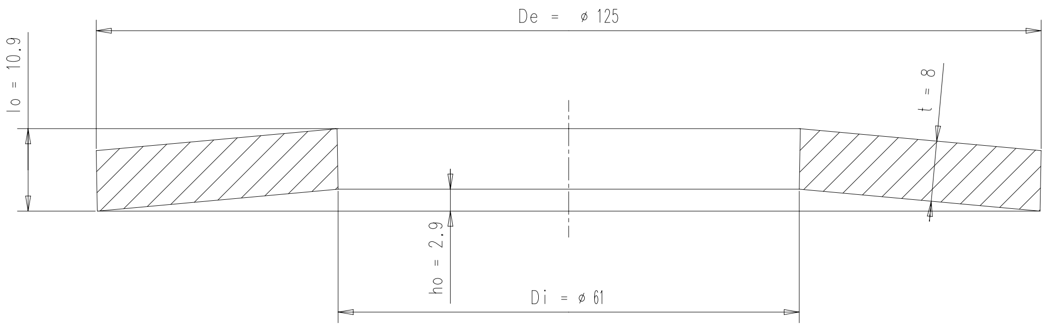
F2 = F1 BY DEFLECTION s2 = 2.6 mm OF 2 DISCS

$\frac{ho}{s} = 0.50$

$s = \frac{ho}{0.50}$







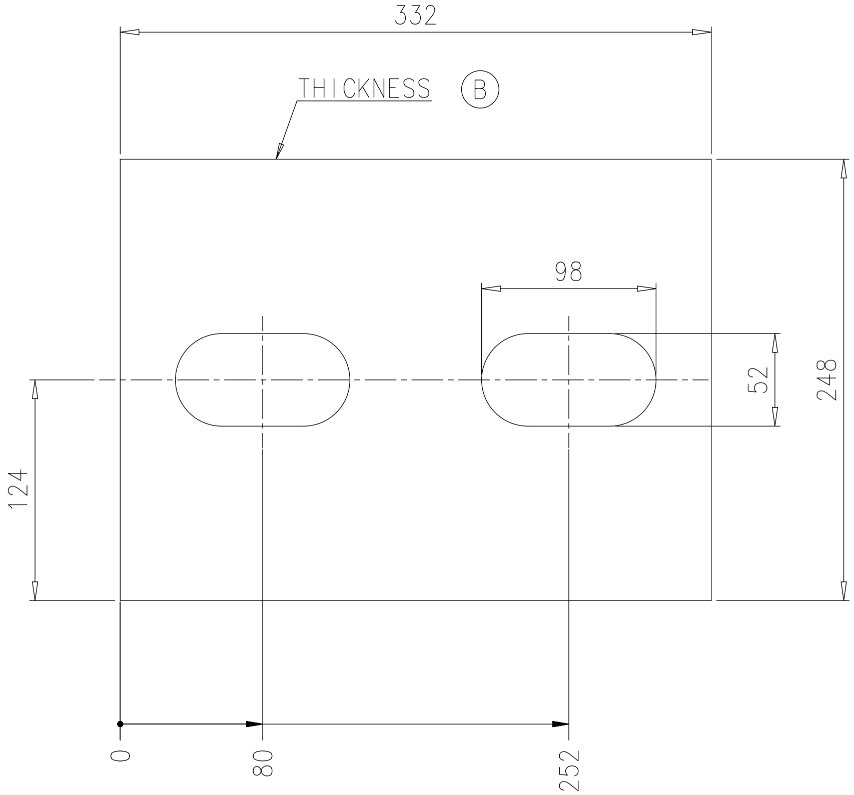
SUPPLIER: URS INGOLD
P.O. Box 180
Oelestrasse 7
CH-3800 Interlaken

Approved

Free space for lic.						Q-Code XQXXX / Standard ISO; JIS	Main Drw.
Modif.	(A) 7-29.688 / 25.10.2004	(B) EAAD083026 / 25.07.2011	(C) EAAD095725 / 28.04.2021	(D) EAAD096559 / 29.04.2021			
	Number / Drawn date	Number / Drawn date	Number / Drawn date	Number / Drawn date			
WIN GD Winterthur Gas & Diesel	Product W-2S	DISC SPRING TO ENGINE STAYS, FRICTION TYPE Tellerfeder					
Units mm kg	NX		Basic Material			Net Weight 0,55	
Made 08.09.1998 S. Natali		Scale -	Size A2	Page 1/1	Material ID 107.246.311.001		
Chkd		Design Group 9715	Drawing ID 107.246.311			Rev. D	
Appd 08.09.1998 WCH001 Service User							

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

DID - DIMENSIONAL DRAWING - Confidential



(B)

SPECIFICATION:

TECHNICAL DATA: AVERAGE COEFFICIENT OF FRICTION DRY: $\mu = 0,42$
MAX. PERMISSIBLE SURFACE PRESSURE: $p = 250 N/cm^2$

MATERIAL: ASBESTOS FREE FRICTION MATERIAL,
ALSO SUITABLE FOR USING IN OIL.

Free space for lic.						Q-Code XXXXX Standard ISO; JIS	Main Drw.
Modif.	(A) EAAD095725 Number	28.04.2021 Drawn date	(B) EAAD096559 Number	29.04.2021 Drawn date	Number	Drawn date	Number / Drawn date

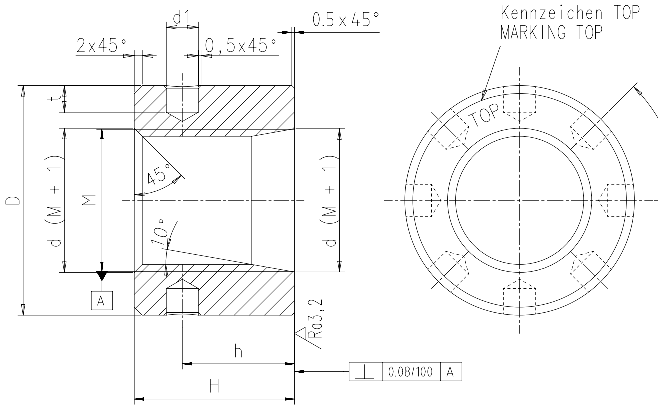
WIN GD Winterthur Gas & Diesel	Product W-2S	SHIM TO ENGINE STAYS, FRICTION Beilage zu Motorabstutzung

SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Units mm kg	NX		Basic Material		Net Weight 2,3
Made 31.05.2011	Pradip Soman	Scale 1:3	Size A3	Page 1/1	Material ID PAAD902269
Chkd 07.07.2011	mhu019 Hug	Design Group 9715	Drawing ID DAAD902593		Rev. B
Appd 07.07.2011	dst009 Strödecke				

Approved

DID - DIMENSIONAL DRAWING - Confidential



POS.	M	D	d	H	h	d1	t
001	M27	47	28	29	20	$6^{+0.2}_{0}$	7
002	M30	52	31	33	23	$6^{+0.2}_{0}$	7
003	M33	57	34	36	25	$6^{+0.2}_{0}$	7
004	M36	62	37	39	27	$6^{+0.2}_{0}$	7
005	M39	67	40	42	29	$6^{+0.2}_{0}$	7
006	M42	73	43	46	32	$6^{+0.2}_{0}$	7
007	M45	78	46	49	34	$6^{+0.2}_{0}$	7
008	M48	83	49	52	36	$6^{+0.2}_{0}$	7
009	M52	90	53	56	39	$6^{+0.2}_{0}$	7
010	M56	97	57	61	43	$9.5^{+0.2}_{0}$	10
011	M60	104	61	65	46	$9.5^{+0.2}_{0}$	10
012	M64	110	65	70	49	$9.5^{+0.2}_{0}$	10
013	M68	117	69	74	52	$9.5^{+0.2}_{0}$	10
014	M72	124	73	78	55	$9.5^{+0.2}_{0}$	10
015	M76	131	77	82	57	$9.5^{+0.2}_{0}$	10
016	M80	138	81	87	61	$14^{+0.2}_{0}$	15
017	M85	146	86	92	64	$14^{+0.2}_{0}$	15
018	M90	155	91	98	69	$14^{+0.2}_{0}$	15
019	M95	164	96	103	72	$14^{+0.2}_{0}$	15
020	M100	172	101	108	76	$14^{+0.2}_{0}$	15

Ra6,3 (Ra3,2)

MATERIAL:	W-FA-42CrMo-QT (D)
D >40 – ≤100	verguetet Rm = 900–1100 N/mm² HEAT TREATED
D >100 – ≤160	verguetet Rm = 800–950 N/mm² HEAT TREATED
D >160 – ≤250	verguetet Rm = 750–900 N/mm² HEAT TREATED

QTY	SEQ NO	Material ID	Material Name / Dimension, Occ	Standard or Drawing	Basic Material Material Standard	Weight GR./NET
1	020	107.345.876.020	ROUND NUT M100	107.345.876	W-FA-42CrMo-QT	13,2
1	019	107.345.876.019	ROUND NUT M95	107.345.876	W-FA-42CrMo-QT	11,4
1	018	107.345.876.018	ROUND NUT M90	107.345.876	W-FA-42CrMo-QT	9,7
1	017	107.345.876.017	ROUND NUT M85	107.345.876	W-FA-42CrMo-QT	8,1
1	016	107.345.876.016	ROUND NUT M80	107.345.876	W-FA-42CrMo-QT	6,8
1	015	107.345.876.015	ROUND NUT M76	107.345.876	W-FA-42CrMo-QT	5,9
1	014	107.345.876.014	ROUND NUT M72	107.345.876	W-FA-42CrMo-QT	5,0
1	013	107.345.876.013	ROUND NUT M68	107.345.876	W-FA-42CrMo-QT	4,2
1	012	107.345.876.012	ROUND NUT M64	107.345.876	W-FA-42CrMo-QT	3,5
1	011	107.345.876.011	ROUND NUT M60	107.345.876	W-FA-42CrMo-QT	2,9
1	010	107.345.876.010	ROUND NUT M56	107.345.876	W-FA-42CrMo-QT	2,36
1	009	107.345.876.009	ROUND NUT M52	107.345.876	W-FA-42CrMo-QT	1,86
1	008	107.345.876.008	ROUND NUT M48	107.345.876	W-FA-42CrMo-QT	1,42
1	007	107.345.876.007	ROUND NUT M45	107.345.876	W-FA-42CrMo-QT	1,2
1	006	107.345.876.006	ROUND NUT M42	107.345.876	W-FA-42CrMo-QT	0,96
1	005	107.345.876.005	ROUND NUT M39	107.345.876	W-FA-42CrMo-QT	0,79
1	004	107.345.876.004	ROUND NUT M36	107.345.876	W-FA-42CrMo-QT	0,63
1	003	107.345.876.003	ROUND NUT M33	107.345.876	W-FA-42CrMo-QT	0,49
1	002	107.345.876.002	ROUND NUT M30	107.345.876	W-FA-42CrMo-QT	0,37
1	001	107.345.876.001	ROUND NUT M27	107.345.876	W-FA-42CrMo-QT	0,25

Free space for lic. | Q-Code XQXXX | Standard ISO; JIS | Main Drw.

Modif.	Number	Drawn date
A	EAAD700017	13.01.2011
B	EAAD084319	06.02.2013
C	EAAD087822	28.07.2017
D	EAAD095725	18.01.2021

WIN GD Winterthur Gas & Diesel

Product W-2S

ROUND NUT

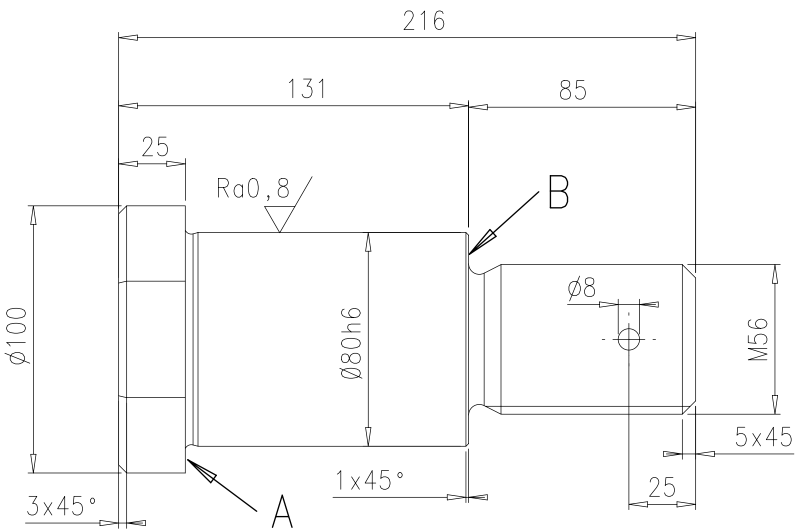
Rundmutter

Units mm kg	NX	Basic Material	Net Weight
Made	19.08.2004 pne001 P.Neracher	Scale 1:1	Size A1 · Page 1/1 · Material ID
Chkd		Design Group 3306	Drawing ID 107.345.876 · Rev. D
Appd	20.08.2004 PNE001 Neracher		

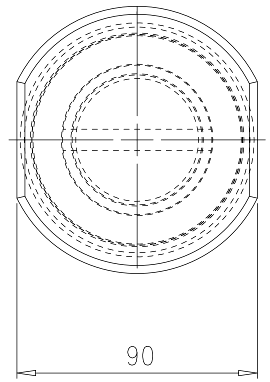
SURFACE PROTECTION SEE GROUP 0344
TOLERANCING PRINCIPLE ISO8015
GENERAL TOLERANCES ACCORDING TO ISO2768-mK

Approved

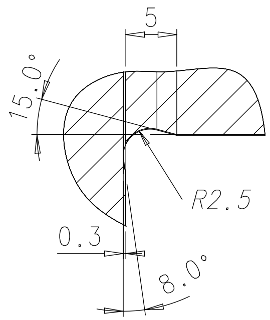
DID - DIMENSIONAL DRAWING - Confidential



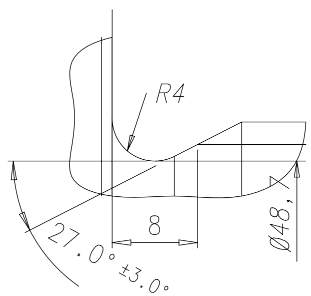
Ra3,2 (√) NORMALIIZED, SHARP EDGES REMOVED, BURNSHED



A M2:1



B M2:1



Free space for lic.	
Q-Code	XXXXX
Standard	ISO; JIS
Main Drw.	

Modif.	Number	Drawn date		Number	Drawn date		Number	Drawn date		Number	Drawn date
A	EAAD095725	28.04.2021	B	EAAD096559	29.04.2021						

WIN GD Winterthur Gas & Diesel

Product: W-2S

BOLT
TO ENGINE STAYS, FRICTION

Bolzen
zu Motorabstutzung

SURFACE PROTECTION SEE GROUP 0344	
TOLERANCING PRINCIPLE ISO8015	
GENERAL TOLERANCES ACCORDING TO ISO2768-mK	

Units	mm kg	NX	Basic Material W-FU-325-N	Net Weight 7.17
Made	16.12.2010	mhu019 M.Hug	Scale 1:2	Size A3 / Page 1/1 / Material ID PAAD026437
Chkd	19.01.2011	sfe006 Feuerstein	Design Group 9715	Drawing ID DAAD012368 / Rev. B
Appd	19.01.2011	dst009 Strödecke		

PD - PRODUCTION DRAWING - Confidential

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MIDS - WinGD RT-flex50-D - Engine Stays (DG9715)

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2017-02-24	DRAWING SET	First web upload
2018-04-20	107.354.281 107.165.800	Main drawing – new revision Hydraulic stays assembly – new drawing revision
2018-07-23	DRAWING SET	Previous drawing set replaced with new execution
2018-10-05	DAAD103361 DAAD099236 DAAD099392 DAAD099287 DAAD099414	Main and System drgs – new revision
2021-05-19	DAAD018242 DAAD012142 DAAD012141 DAAD012457 DAAD902591 DAAD902592 107.246.316 107.246.311 DAAD902593 107.345.876 DAAD012368_	Stays assembly part drgs – new revision

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