

Discharge Preventer Systems Handbook

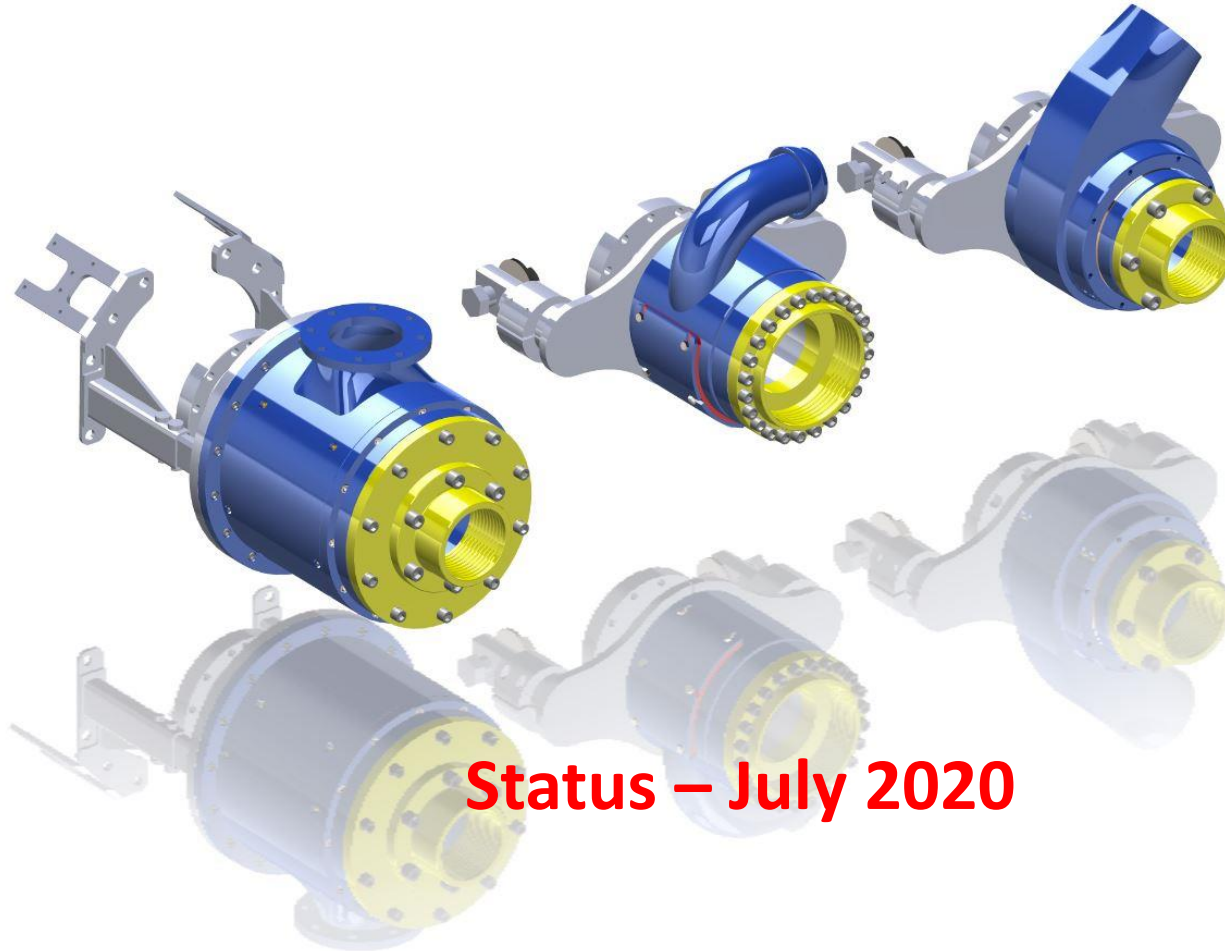


July 2020



Drilling technique for the construction industry




Preventer Summary



Status – July 2020

PREVENTER SUMMARY

Preventer / Diverter Systems

-  For controlled flushing using rotary / rotary drilling
-  Also ground preventer systems available
-  “Floating” preventer for rotary heads with floating spindle

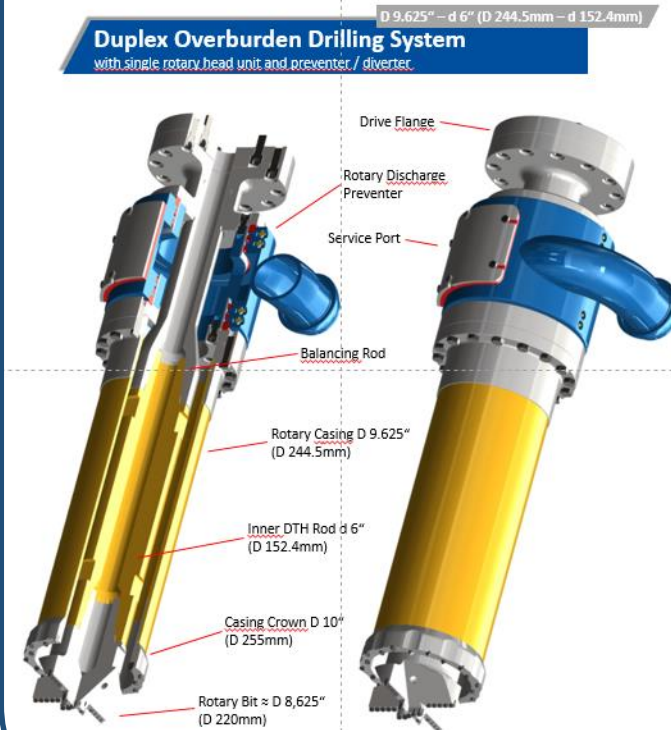
Double Head System Layout



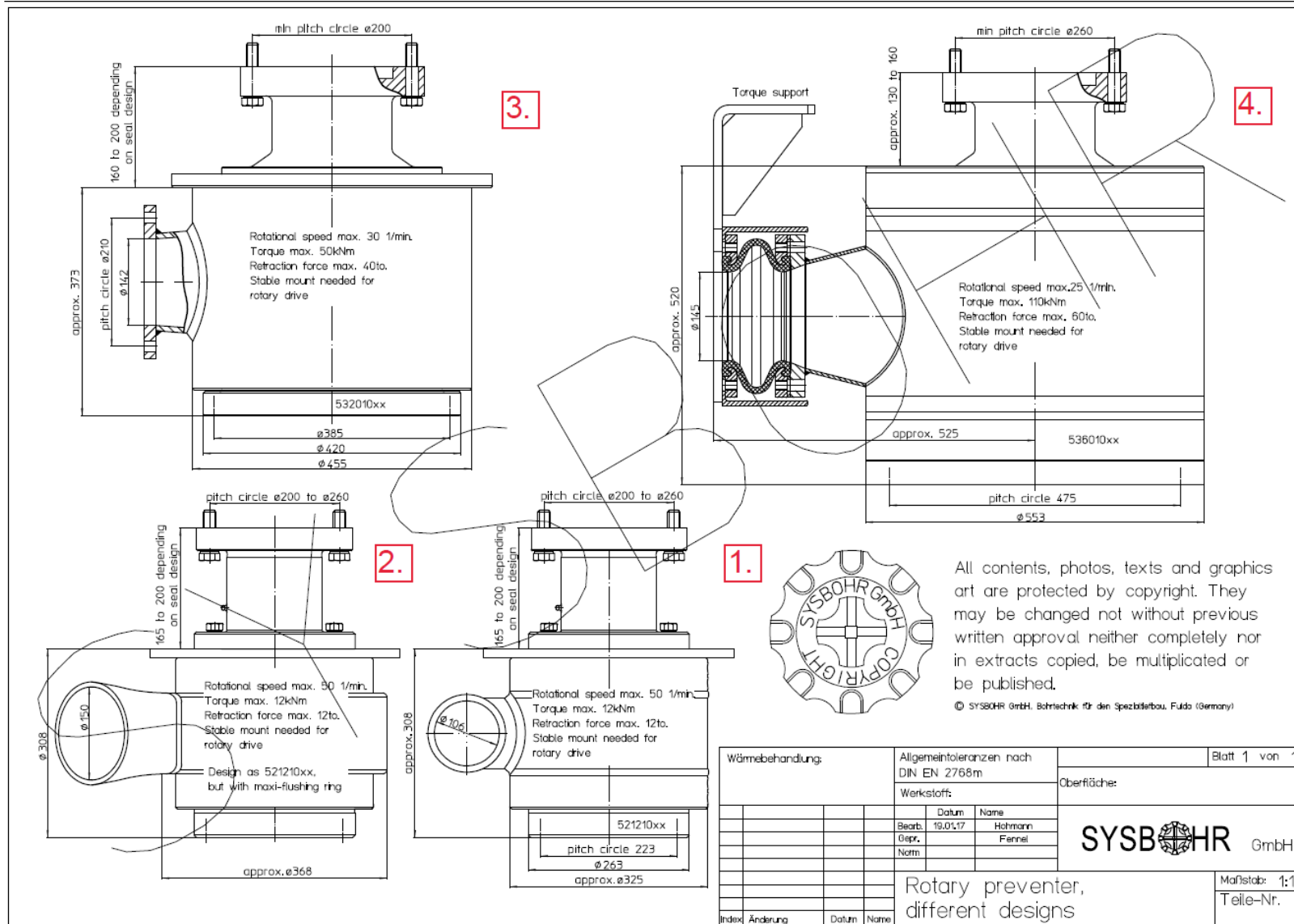
Single Head System Layout

Duplex Overburden Drilling System

with single rotary head unit and preventer / diverter.

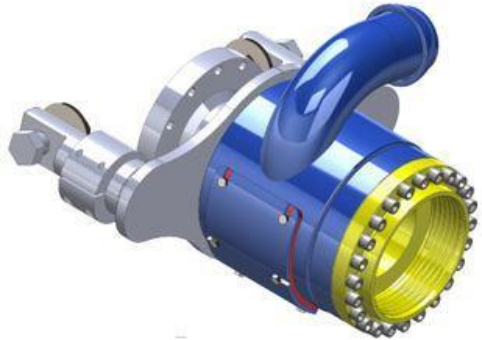
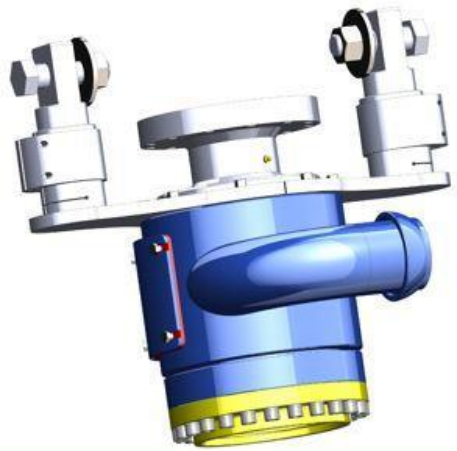


Discharge Preventer Models



- Preventer Model Range**
1. "Small" preventer
 2. "Small" preventer (different discharge pipe)
 3. "Large" (MAXI) preventer
 4. "Heavy duty" preventer

Rotating Preventer for Casings

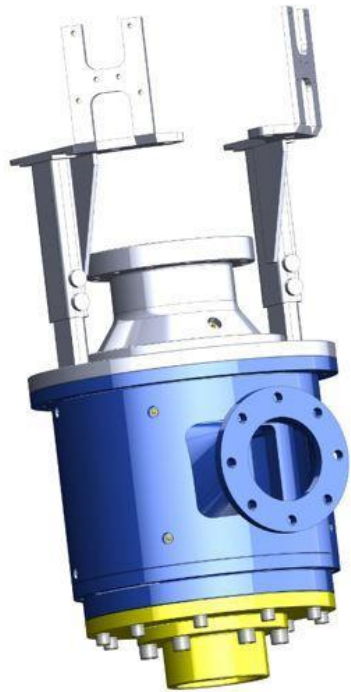


1. & 2. *Small Preventer*

Sysbohr's most popular discharge preventer model is the

- **12 metric tonne** version (retraction force) used in conjunction with a stable mount for double head drilling applications or "floating" mount for DUPLEX drilling via a single rotary head unit with a floating spindle.
- **Max. Torque 12.5kNm***
- **D 114.3 mm (4 ½") up to D 244.5 mm (9 5/8") outer casings.**
- Can be delivered in a standard version or a heavy duty version depending on the conditions at hand. The built-in service port means that the preventer does not have to be removed from the drill rig mast for routine inspection procedures.

**with safety factor*



3. Large (MAXI) Preventer

- **50 metric tonne** version (retraction force) used in conjunction with a stable mount for double head drilling applications or “floating” mount for DUPLEX drilling via a single rotary head unit with a floating spindle.
- **Max. Torque 50kNm***
- **D 219.1 mm (8 5/8”) up to D 406.4 mm (16”) outer casing diameters** . Can be delivered in a standard version or a heavy duty version depending on the conditions at hand. The built-in service port means that the preventer does not have to be removed from the drill rig mast for routine inspection procedures.

*with safety factor



- 1 Installation on a drilling head via suitable flange
 - 2 Sealing device
 - 3 Lubrication of bearings
 - 4 Lubrication of seals
 - 5 Flange connection DIN 2573 DN 150 for the drainage hose
 - 6 Position of flushing ring according to direction of rotation
 - 7 Connection thread for the service pipe to feed a fluid to protect the seals
 - 8 Lubrication of bearings
- ⇒ Anti-twist device is necessary

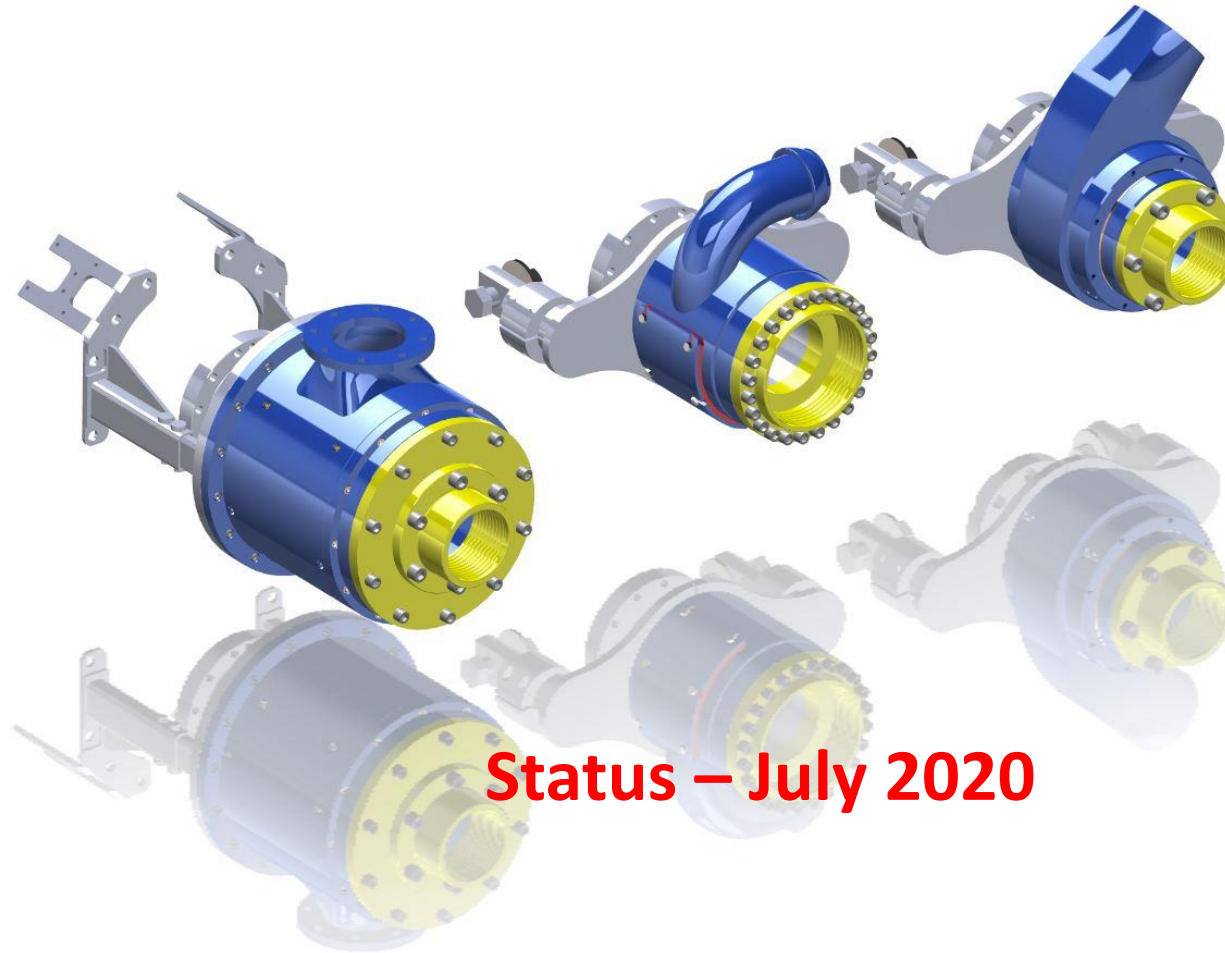


3. Heavy Duty Preventer

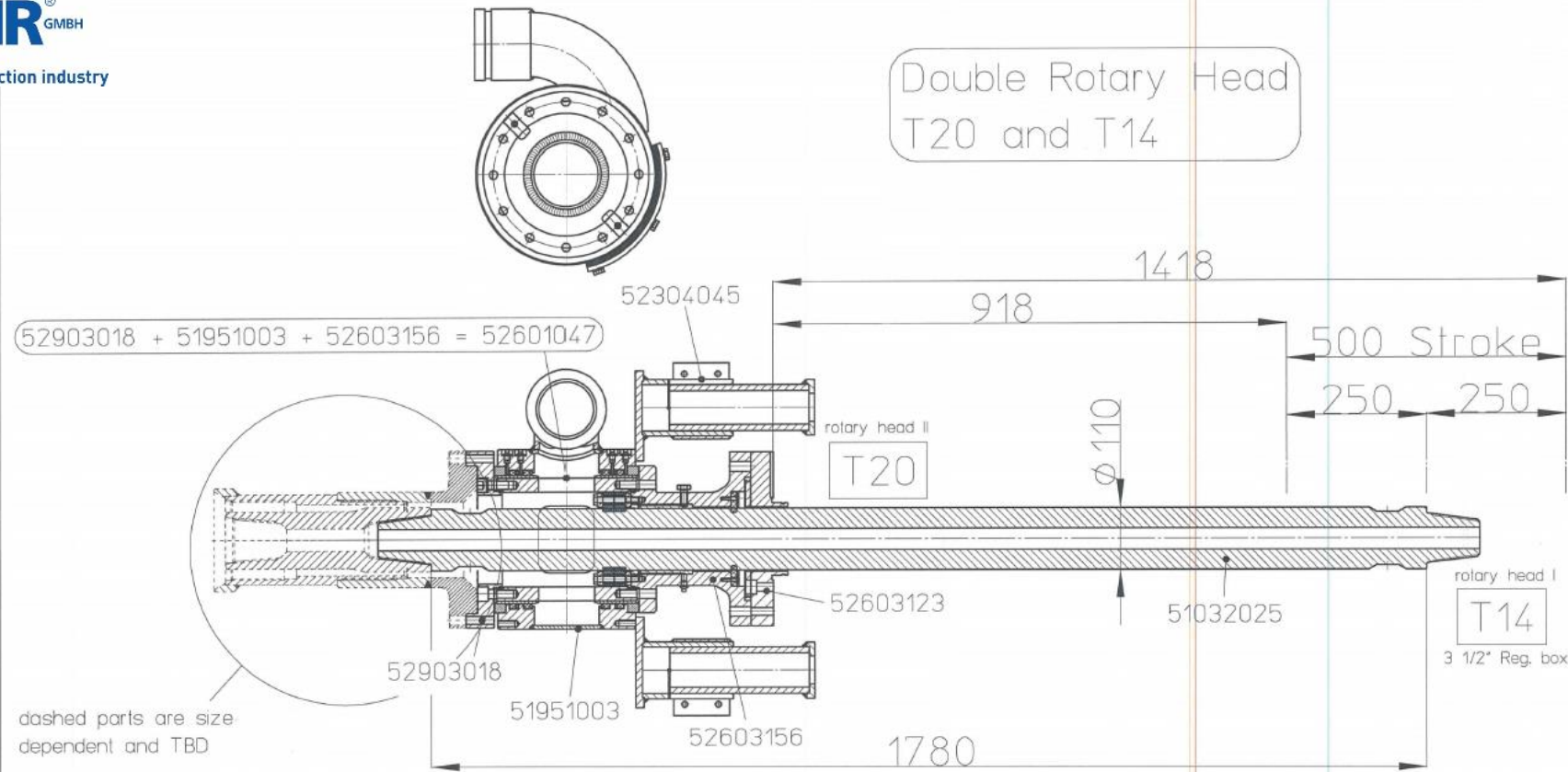
- **60 metric tonne** version (retraction force) used in conjunction with a stable mount for double head drilling applications or “floating” mount for DUPLEX drilling via a single rotary head unit with a floating spindle.
- **Max. Torque 60kNm***
- **D 193 mm (≈7 5/8”) up to D 508 mm (20”) outer casing diameters .**
- **PS: Drainage / discharge hose must be supported due to the high forces encountered.**

*with safety factor

DOUBLE Head (Rotary / Rotary)



Status – July 2020



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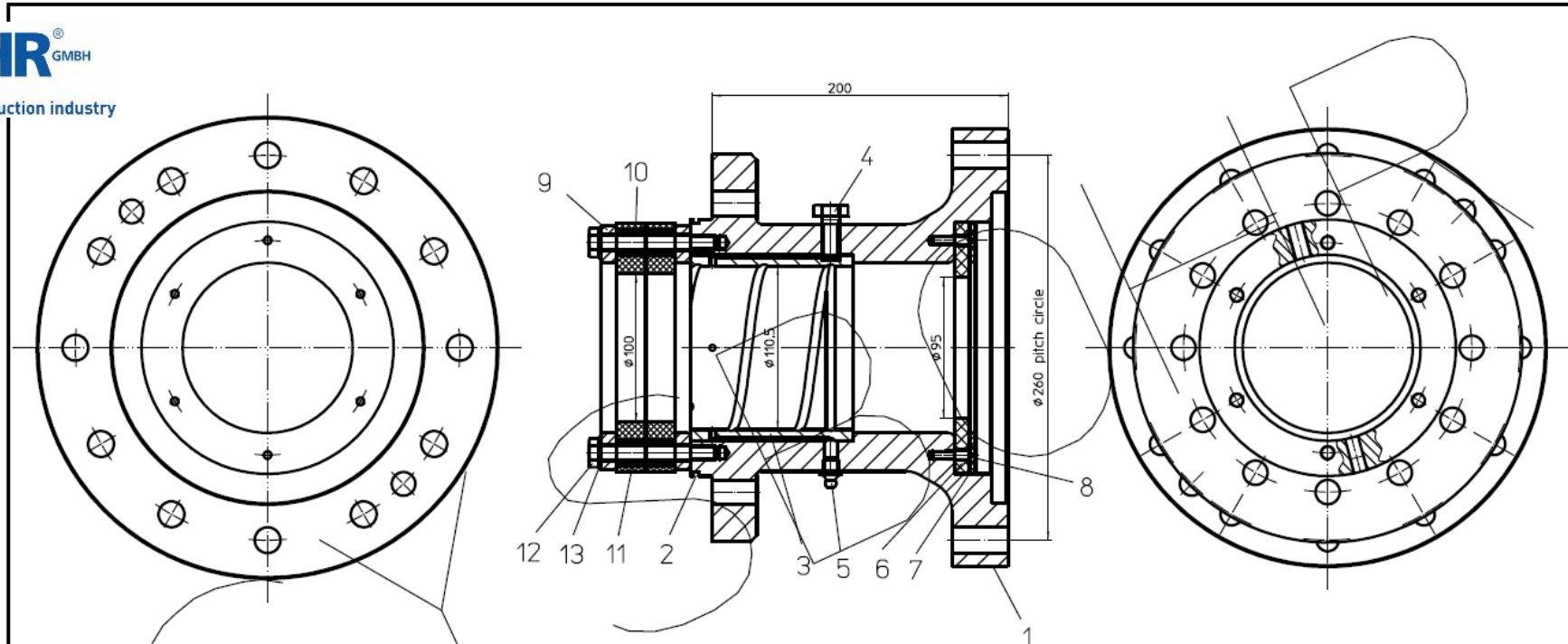
Wärmebehandlung: -	Allgemeintoleranzen nach DIN EN 2768m	Blatt 1 von 1	
	Werkstoff: -	Oberfläche:	
	Datum Name		
	Bearb. 19.06.20 Auh		
	Gepr. Meier		
	Norm		
	DOUBLE ROTARY HEAD system	Maßstab: 1:1	
	T20 and T14	Teile-Nr. -	
Index	Änderung	Datum	Name

Double Head (Fixed Holder - T20 Lower, T14 upper)

T20 Double Head (Fixed Holder - T14 upper, T 20 Lower)

Part Number	Description	Price / Unit [€]	Quantity	Total [€]
52603123	Interface flange T20 rotary head to discharge preventer double flange D 260mm (PCD on double flange side) x D 172mm (PCD on T20 rotary head side)		1	
52601047 = 52603156 + 51951003 + 52903018	Rotary discharge preventer, outer dimensions 510mm x 350mm (including discharge pipe) x D 260mm (pitch circle flange to suit rotary head T20 complete with seals) x D290mm (pitch circle flange for casings), without holder for rotary head, but with discharge connection (to be defined with order). The preventer is designed for F = 12t retraction force and max. torque of 12kNm.		1	
52603156	Double flange to suit rotary head unit II (T20) D 260 mm (PCD on T20 rotary head side) x D 195 mm (PCD on discharge preventer side x 200 mm eff. Length, with blow-out prevention via 3 seals.		1	
51951003	Rotary discharge preventer MAIN BODY ONLY, outer dimensions D 322mm x 260mm x D 195mm (pitch circle diameter for both ends) x with transport braces. Without holder for rotary head, but with discharge connection (to be defined with order). The preventer is designed for F = 12t retraction force and max. torque of 12kNm.		1	
52903018	Flange adapter plate D 290mm (PCD preventer bottom) x D 195mm (PCD on casing drive flange side) x 65mm		1	
52304045	2-POINT TRAVERSE/DISCHARGE PREVENTER HOLDER, "FIXED" TYPE FOR DOUBLE ROTARY HEAD		1	
51032025	Balancing rod D 110; 3 1/2" API REG. Female / Female X 1780 MM effective length, with spanner flats. Thread covers included (X2)		1	

Double Head (Fixed Holder - T 20 Lower, T14 upper)



13	washer	6	00125004
12	hex. screw	6	00933021
11	range spacer for preventer sealing	2	005.0004
10	preventer sealing	2	001.0254
9	flange pulley for preventer sealing	2	51423001
8	countersunk screw	6	07991013
7	flange pulley for sealing	1	51453005
6	sealing	1	001.0421
5	grease nipple	1	07141001
4	hex. screw	1	00933005
3	bronze bush	1	50000079
2	o-ring	1	03770024
1	flange	1	-
Item	Description	Piece	Part-No.:

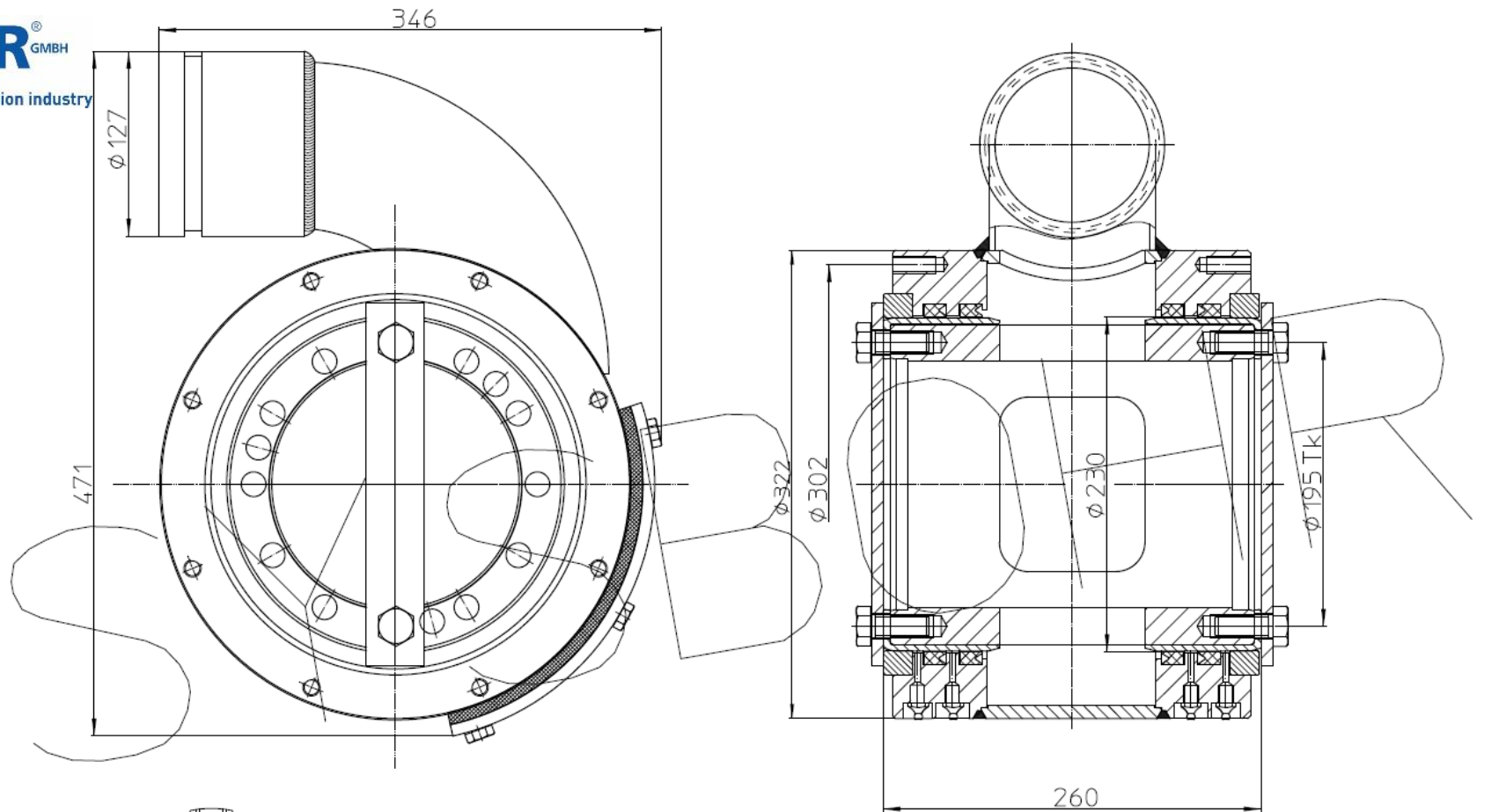


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Datum	Name									
Bearb. 31.01.20	Reinhardt									
Gepr. 31.02.20	Meier									
Norm										
	double flange pitch circle 260-195	Maßstab: 1:1 Teile-Nr. 52603156KDZ								
Zust.	Änderung	Datum	Name							

Double Head (Fixed Holder - T 20 Lower, T14 upper)

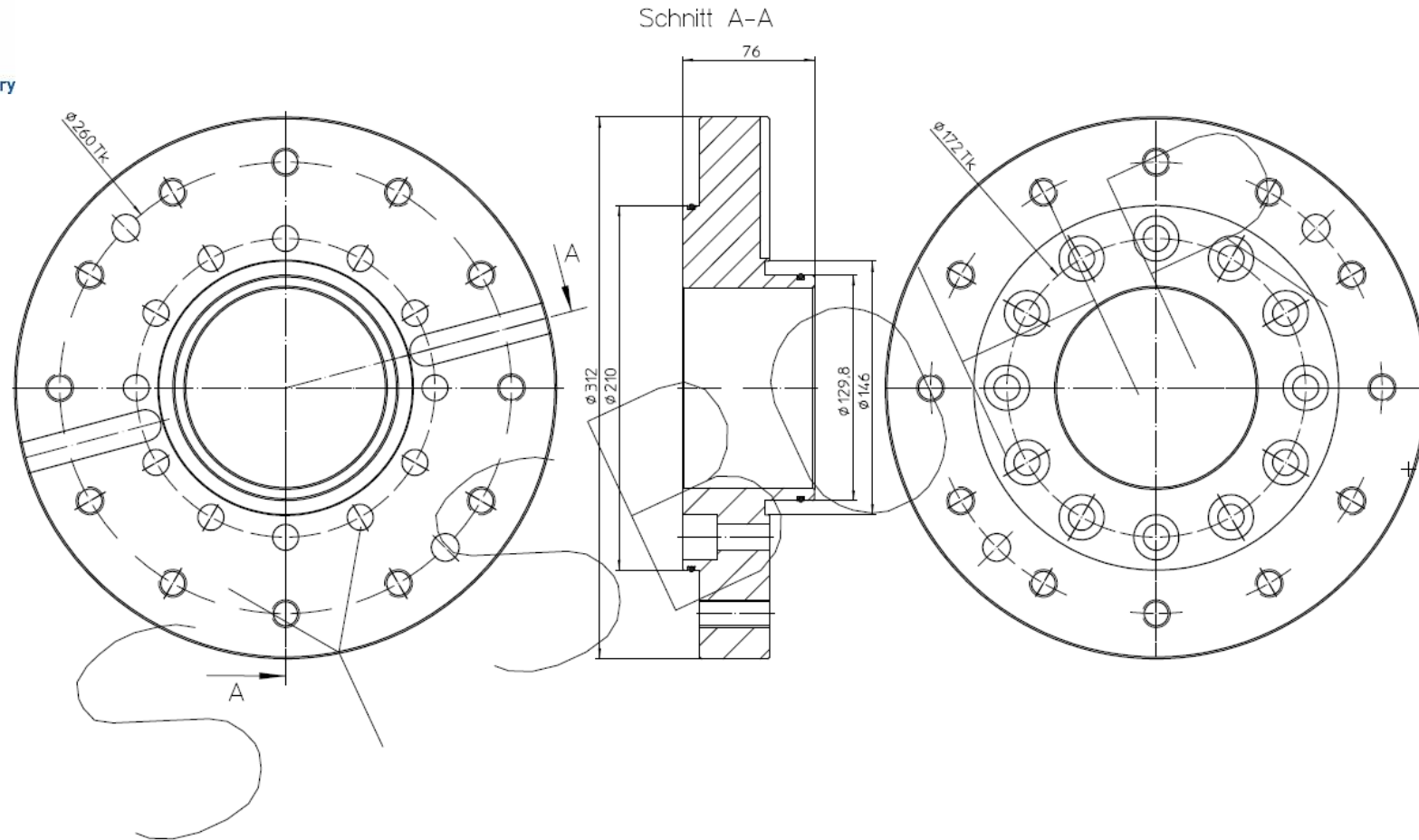


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	Werkstoff: -	Oberfläche:
	Datum Name	SYSBOHR GmbH
	Bearb. 06.11.19 Meier	
	Gepr. 06.11.19 Meier	
	Norm	
	Drehpreventer ø230 mit PM Auswurf und Wartungsöffnung 2xø195 Tk o.Ab- & Antriebsflansch mit Trantsicherung	Maßstab: 1:1
Zust. Änderung Datum Name		Teile-Nr. 51951003

Double Head (Fixed Holder - T 20 Lower, T14 upper)

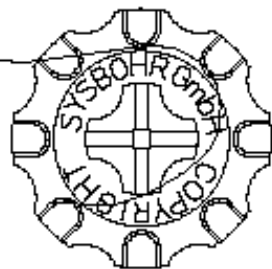
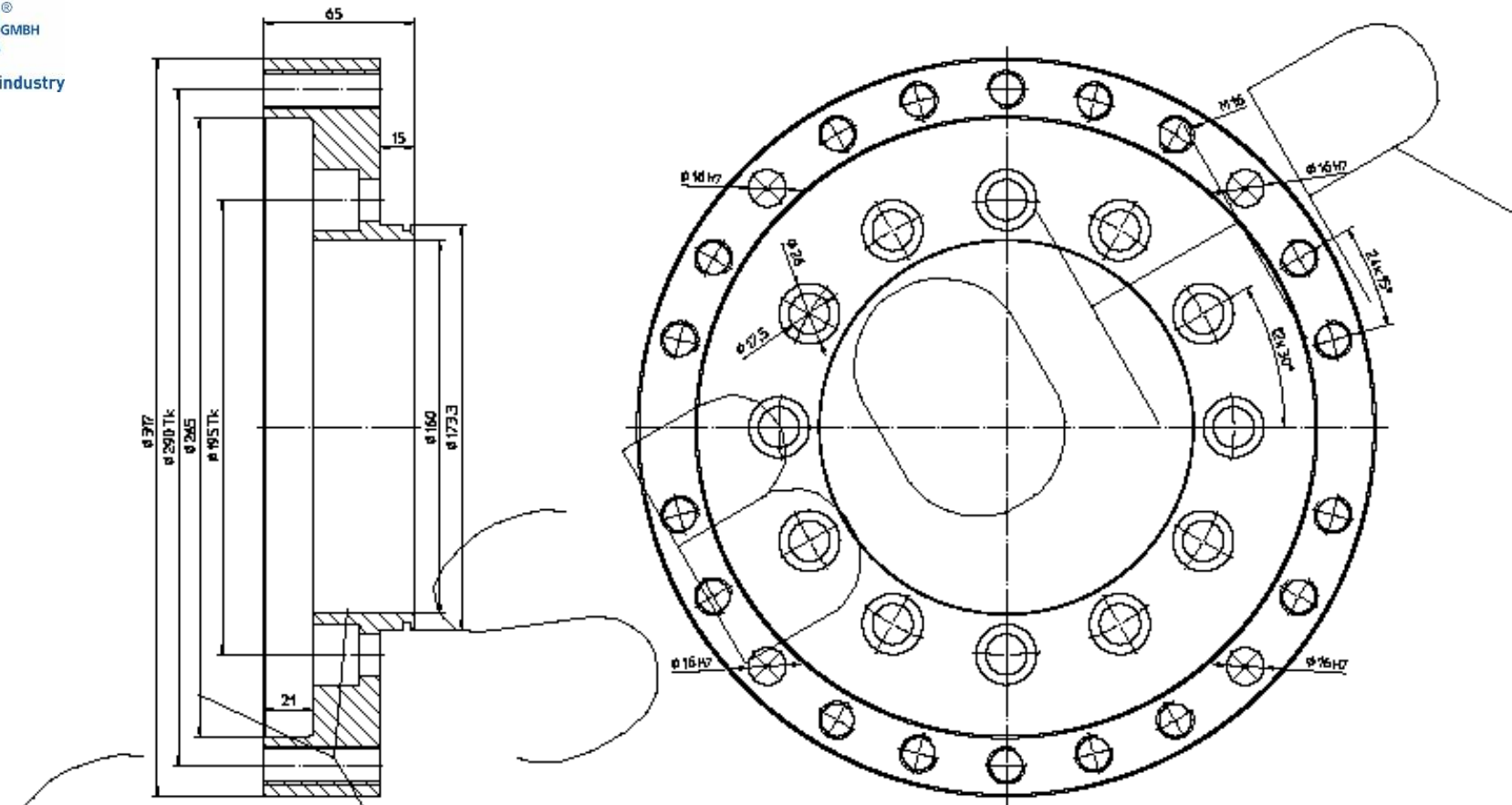


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Werkstoff:		-			
	Datum:	Name:			
	Bearb.:	Herzog			
	Gepr.:	Meier			
	Norm:				
				Flanschscheibe ø312 - Tk260 12xM16	
				x Tk172 12xø15 passend zu T20	
Index	Änderung	Datum	Name	Maßstab: 1:1	
				Teile-Nr. 52603123	

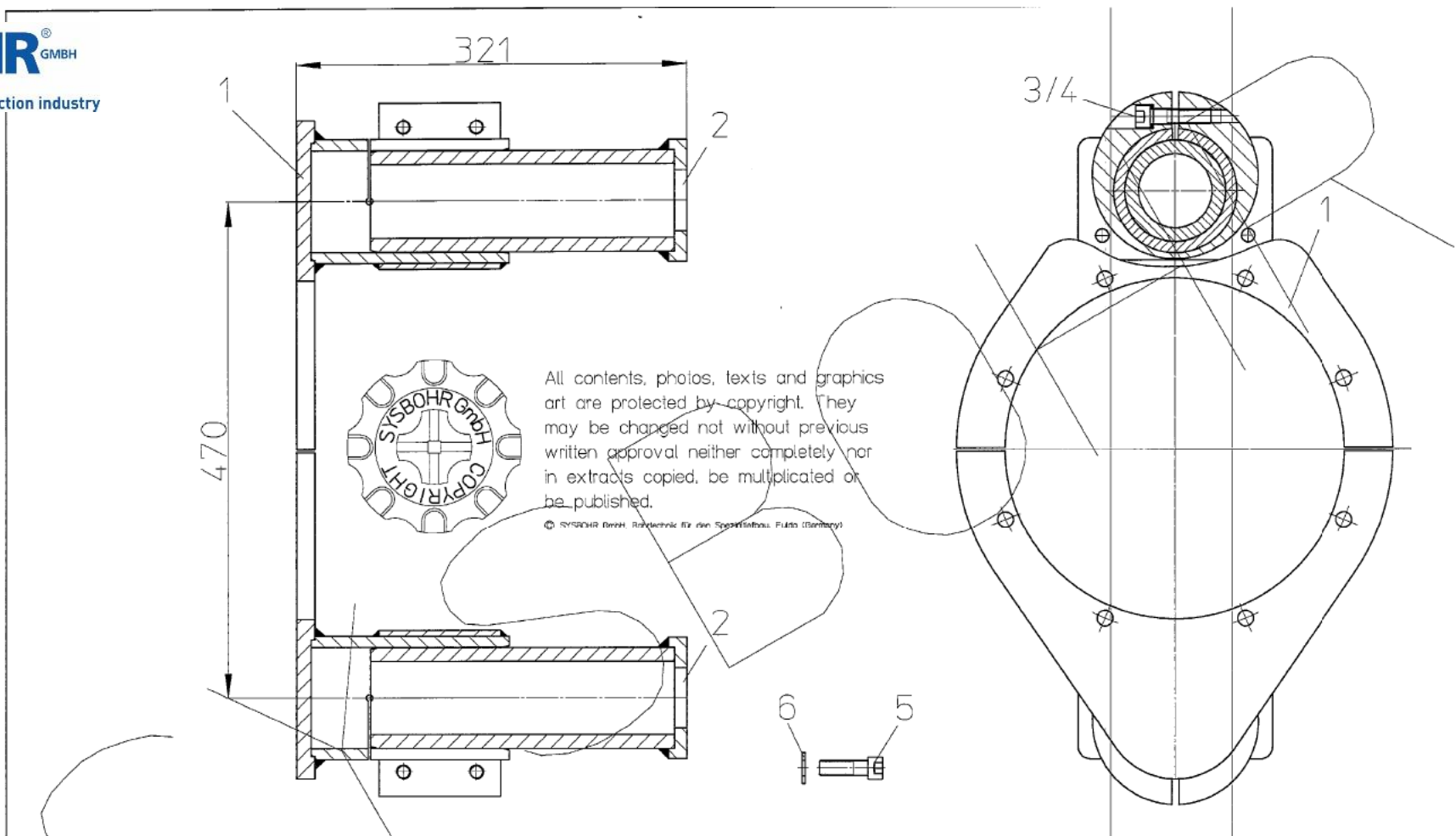
Double Head (Fixed Holder - T 20 Lower, T14 upper)



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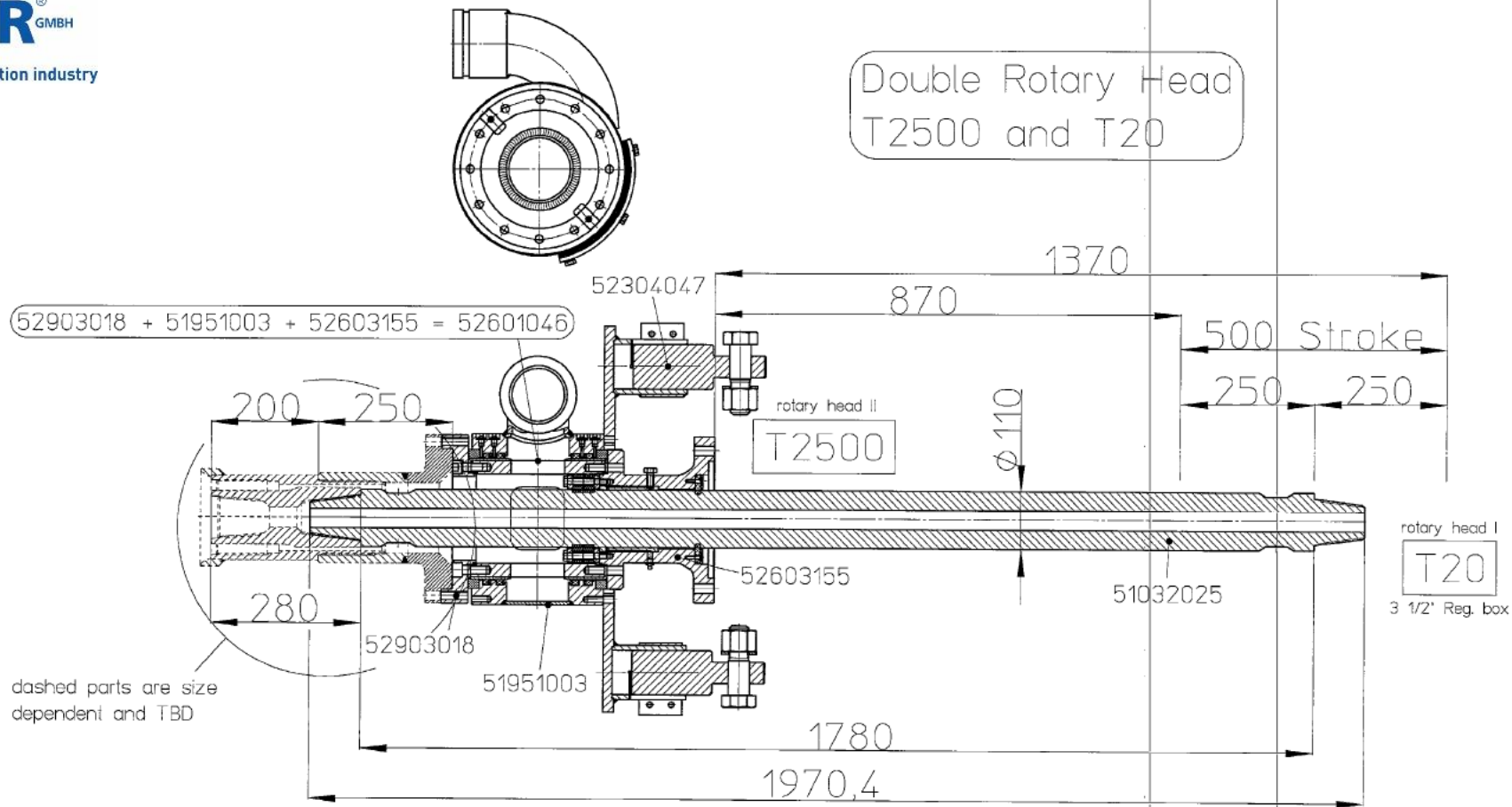
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	Verkostoffe	Oberfläche
	Datum Name	SYSBOHR GmbH
	Regel: 30.08.2010	
	Über: Lohse	
	Norm: Meier	
	Flansch TK290 x TK195 x 65 Gl.	Verstärkte 1:1
Insk: Änderung	Datum Name	Teile-Nr. 52903018



6	Nord-Lock washer	8	002.0021	Wärmebehandlung:	Allgemeintoleranzen nach DIN EN 2768m	Blatt 1 von 1
5	Cylinder washer	8	00912070			
4	Nord-Lock screw	4	002.0021	Werkstoff:	Datum Name 23.07.18 Fennel 09pr. Meier	Oberfläche:
3	Cylinder bolt	4	00912026			
2	Flange with guide tube	2	52304046	SYSBOHR GmbH		Maßstab: 1:1
1	Support plate PCD 302	1	52304043			
Item	Description	Piece	Part-No.:	Zust. Änderung	Datum Name	2-point traverse holder for T20 rotary head (fixed)
						Teile-Nr. 52304045

Double Head (Fixed Holder - T20 Lower, T14 upper)

Double Rotary Head
T2500 and T20



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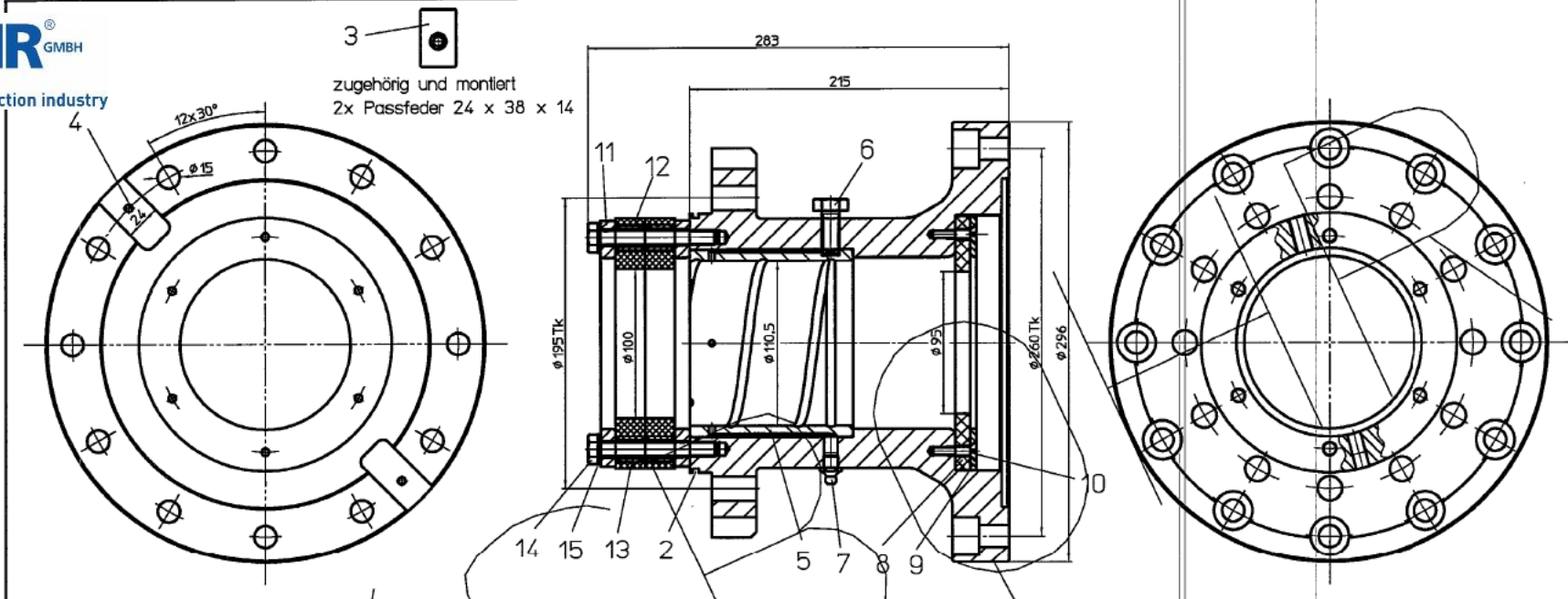
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	Datum	Name
	Bearb. 09.05.20	Aulh
	Gepr.	Meier
	Norm	
	SYSBOHR GmbH	
	DOUBLE ROTARY HEAD system	Maßstab: 1:1
	T2500 and T20	Teile-Nr. -
Index	Änderung	Datum Name

Double Head (Fixed Holder - T 2500 Lower, T20 upper)

T2500 Double Head (Fixed Holder - T20 / T14 upper, T 2500 Lower)

Part Number	Description	Price / Unit [€]	Quantity	Total [€]
52601046 = 52603155 + 51951003 + 52903018	Rotary discharge preventer, outer dimensions 510mm x 350mm (including discharge pipe) x D 260mm (pitch circle flange to suit rotary head T2500 complete with seals) x D290mm (pitch circle flange for casings), without holder for rotary head, but with discharge connection (to be defined with order). The preventer is designed for F = 12t retraction force and max. torque of 12kNm.		1	
52603155	Double flange to suit rotary head unit II (T2500) and Pitch Circle Diameter (PCD) D 260mm on rotary head side x D 195mm on preventer side of pos. 4 with blow-out preventer.		1	
51951003	Rotary discharge preventer MAIN BODY ONLY, outer dimensions D 322mm x 260mm x D 195mm (pitch circle diameter for both ends) x with transport braces. Without holder for rotary head, but with discharge connection (to be defined with order). The preventer is designed for F = 12t retraction force and max. torque of 12kNm.		1	
52903018	Flange adapter plate D 290mm (PCD preventer bottom) x D 195mm (PCD on casing drive flange side) x 65mm.		1	
52304047	2-point traverse / discharge preventer holder, "fixed" type for rotary head II (T2500) double rotary head unit.		1	
51032025	Balancing rod D 110; 3 1/2" API REG. Female / Female X 1780 MM effective length, with spanner flats. Thread covers included (X2)		1	

Double Head (Fixed Holder - T 2500 Lower, T20 upper)



15	Scheibe	6	00125004
14	Sechskantschraube	6	00933021
13	Satz Abstandshalter	2	005.0004
12	Preventerdichtung	2	001.0254
11	Scheibe	2	51423001
10	Senkkopfschraube	6	07991013
9	Scheibe	1	51453005
8	Dichtung	1	001.0421
7	Schmiernippel	1	07141001
6	Sechskantschraube	1	00933005
5	Rotgussbuchse	1	50000079
4	Zylinderschraube	2	00912037
3	Passfeder	2	002.0068
2	O-Ring	1	03770024
1	Flanschkörper	1	Blatt 2
Pos.	Benennung:	Stück	Teile-Nr.:

Wärmebehandlung:

Allgemeintoleranzen nach DIN EN 2768m

Werkstoff: -

Oberfläche:

	Datum	Name
Bearb.	09.01.20	Reihardt
Gepr.	09.01.20	Meier
Norm		

SYSBOHR GmbH

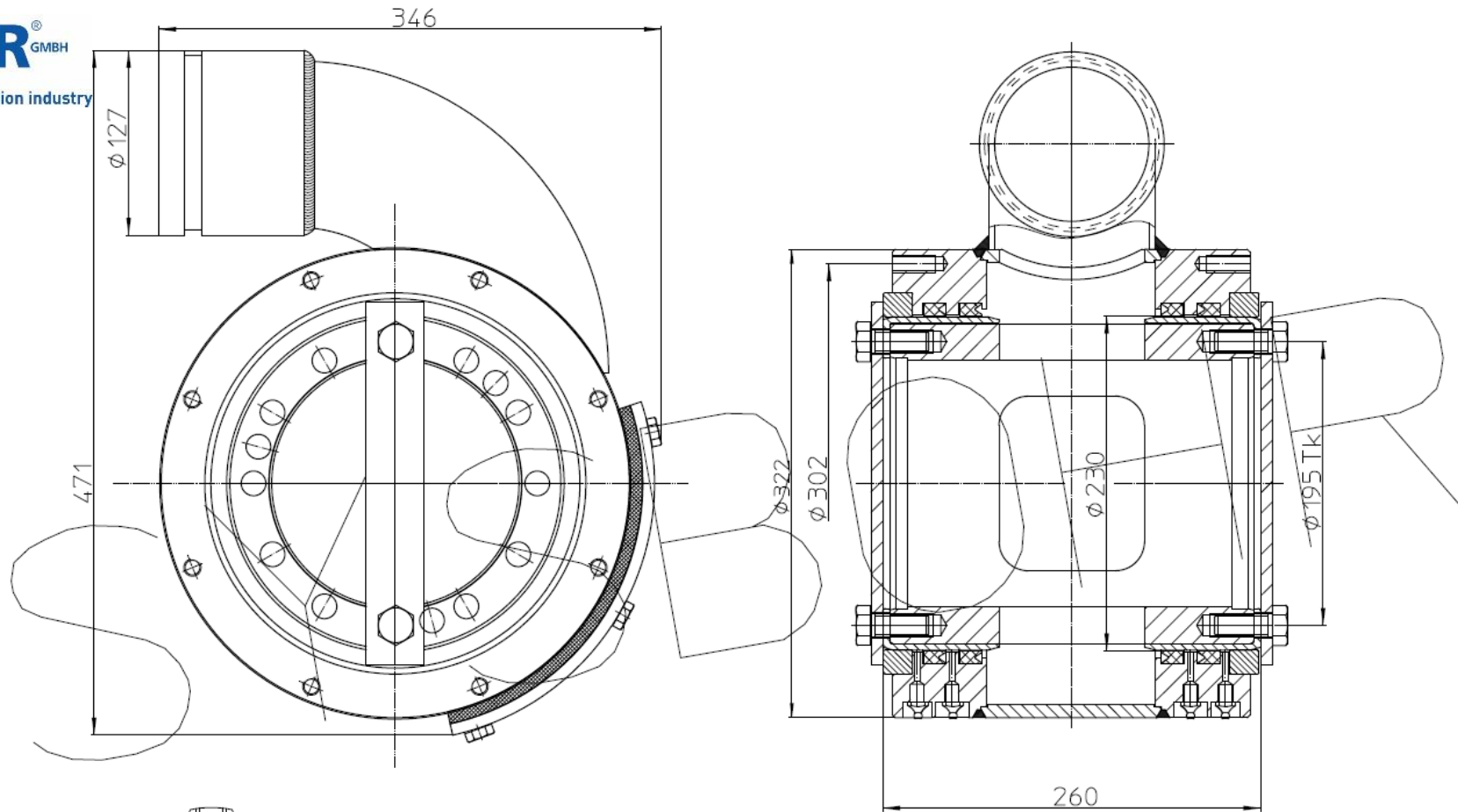
Doppelflansch Tk.260/Tk.195 für ø110 und 3x Dichtscheibe, passend an T2500

Maßstab: 1:1
Teile-Nr. 52603155

Blatt 1 von 1

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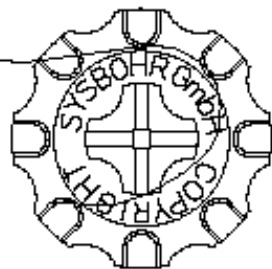
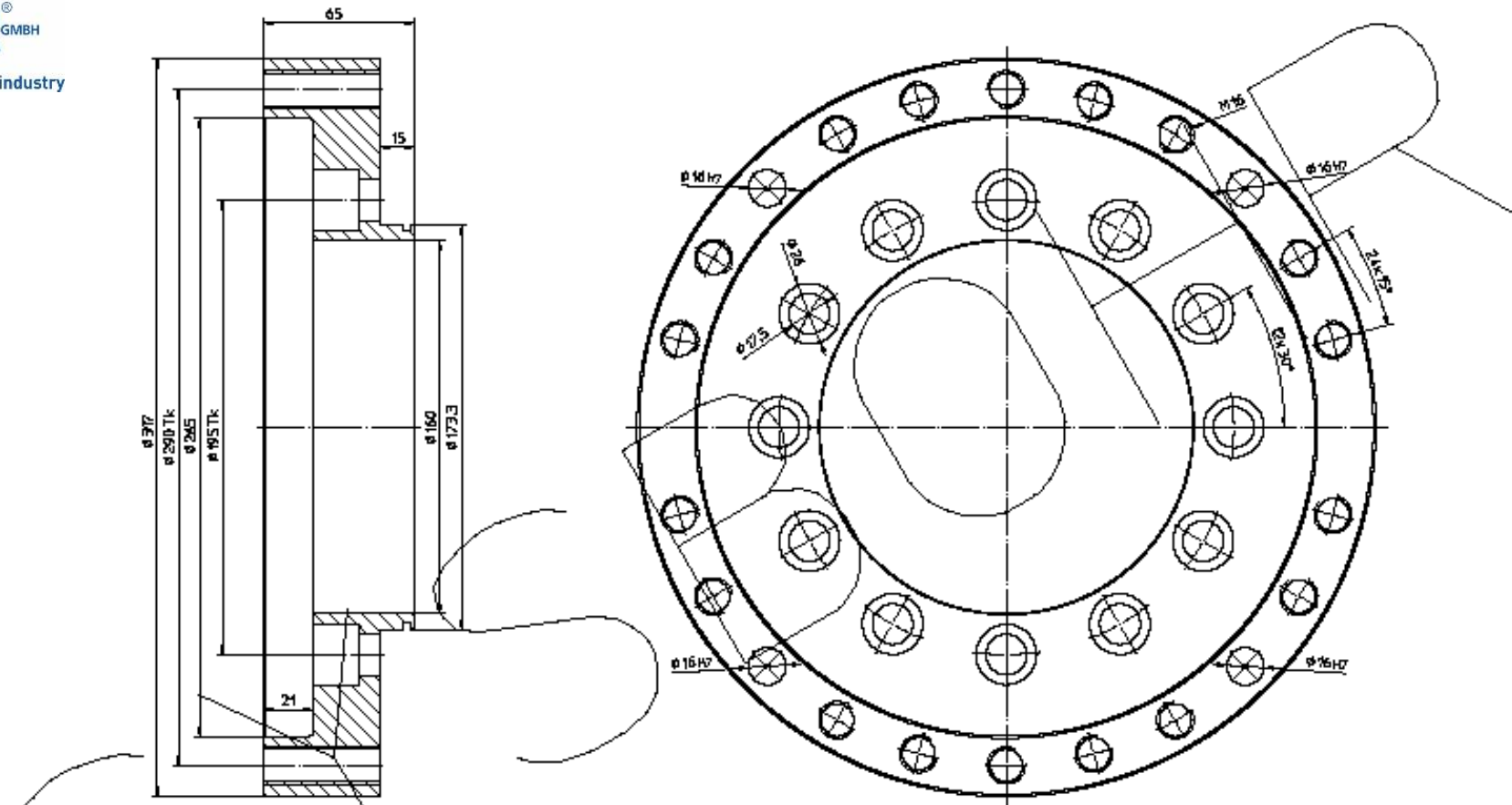


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	Datum Name	SYSBOHR GmbH
	Bearb. 06.11.19 Meier	
	Gepr. 06.11.19 Meier	
	Norm	
	Drehpreventer ø230 mit PM Auswurf und Wartungsöffnung 2xø195 Tk o.Ab- & Antriebsflansch mit Trantsicherung	Maßstab: 1:1
Zust. Änderung Datum Name		Teile-Nr. 51951003

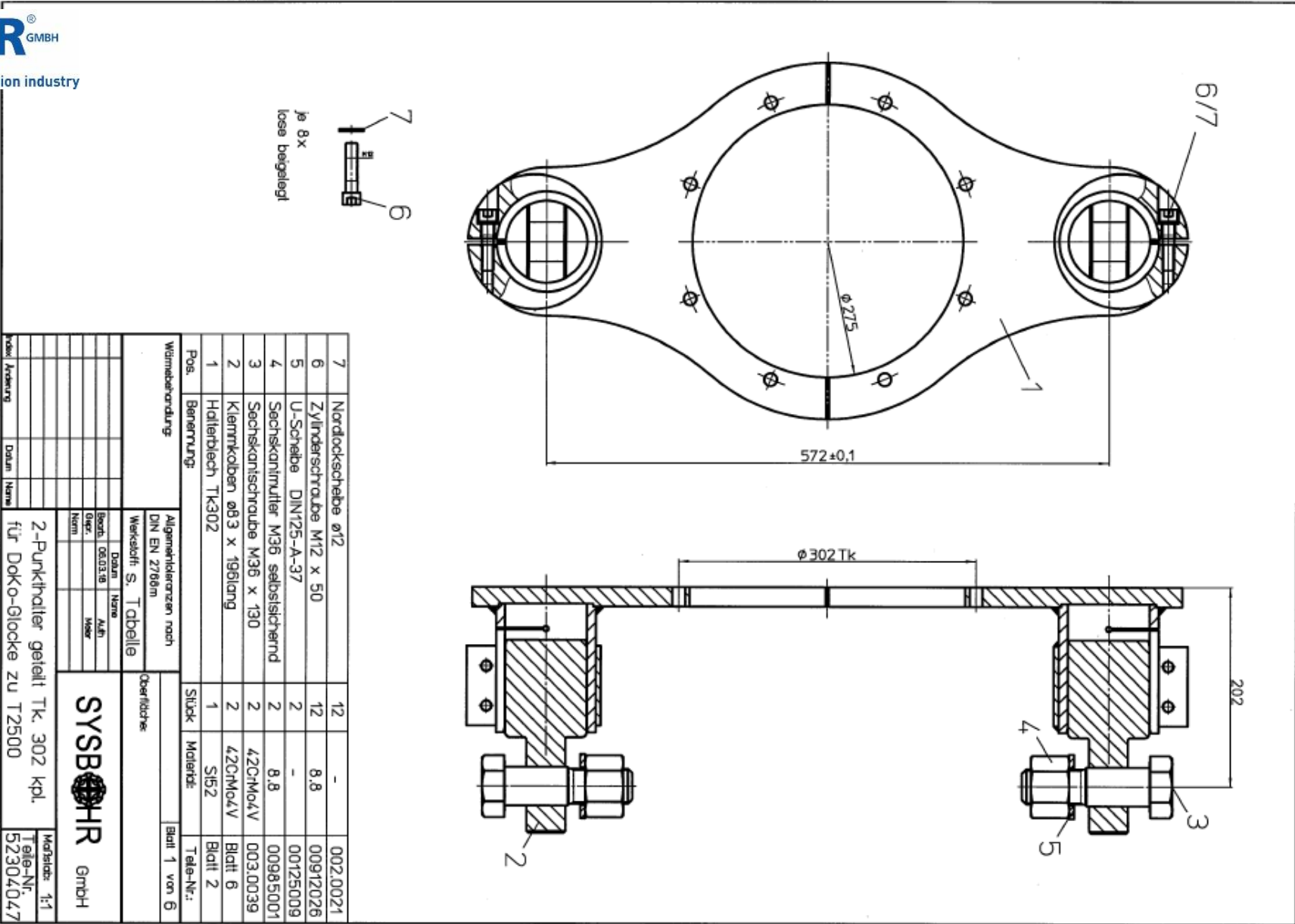
Double Head (Fixed Holder - T 2500 Lower, T20 upper)




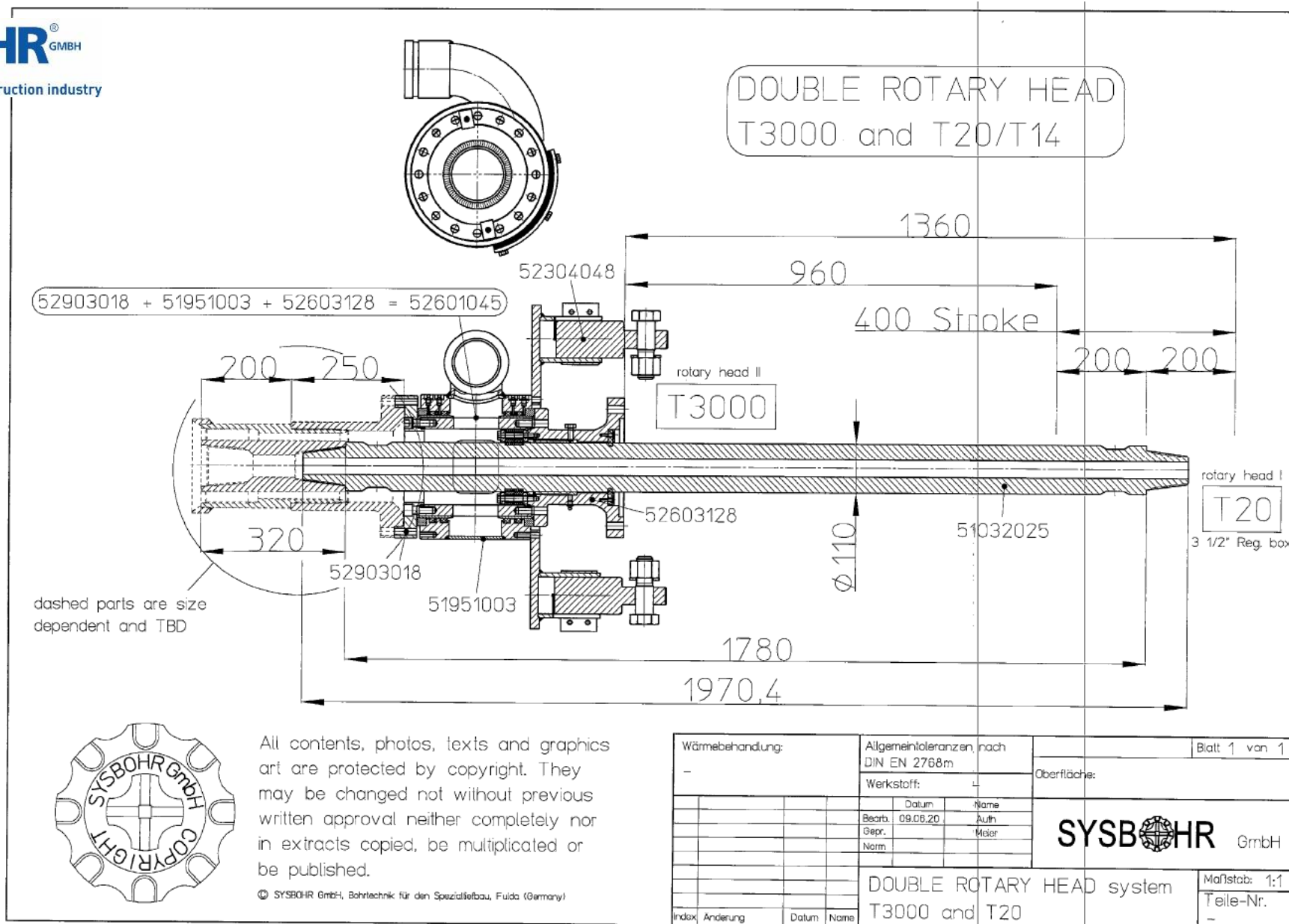
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Wärmebehandlung	Allgemeintoleranzen nach DIN EN 2788m	Blatt 1 von 1
	Verstärkstoffe	Oberfläche:
	Datum Name	SYSBOHR GmbH
	Regel: 30.08.2010	
	Über: Lohse	
	Norm: Meier	
	Flansch Tk290 x Tk195 x 65 Gl.	Verstärkte 1:1
Insk: Anleitung	Datum Name	Teile-Nr. 52903018



7	Nordlockscheibe ø12	12	-	002.0021
6	Zylinderschraube M12 x 50	12	8,8	00912026
5	U-Scheibe DIN125-A-37	2	-	00125009
4	Sechskantmutter M36 selbstsichernd	2	8,8	00985001
3	Sechskantschraube M36 x 130	2	4ZCrMo4V	003.0039
2	Klemmköben ø83 x 196lang	2	4ZCrMo4V	Blatt 6
1	Haltenblech TK302	1	St52	Blatt 2
Pos. Benennung:		Stück	Materie	Teile-Nr.:
Wahlbezeichnung:		Allgemeinheiten nach		
		DIN EN 2768m		
Werkstoff: S. Tabelle		Oberfläche:		
Bezeichnung	Datum	Name	Abt.	 2-Punkthalter geteilt TK. 302 kpl. für Doko-Glocke zu T2500
Best.	06.03.18		Masch.	
Gepr.				
Nenn.				
Maßstab: 1:1 Teile-Nr.: 52304047				



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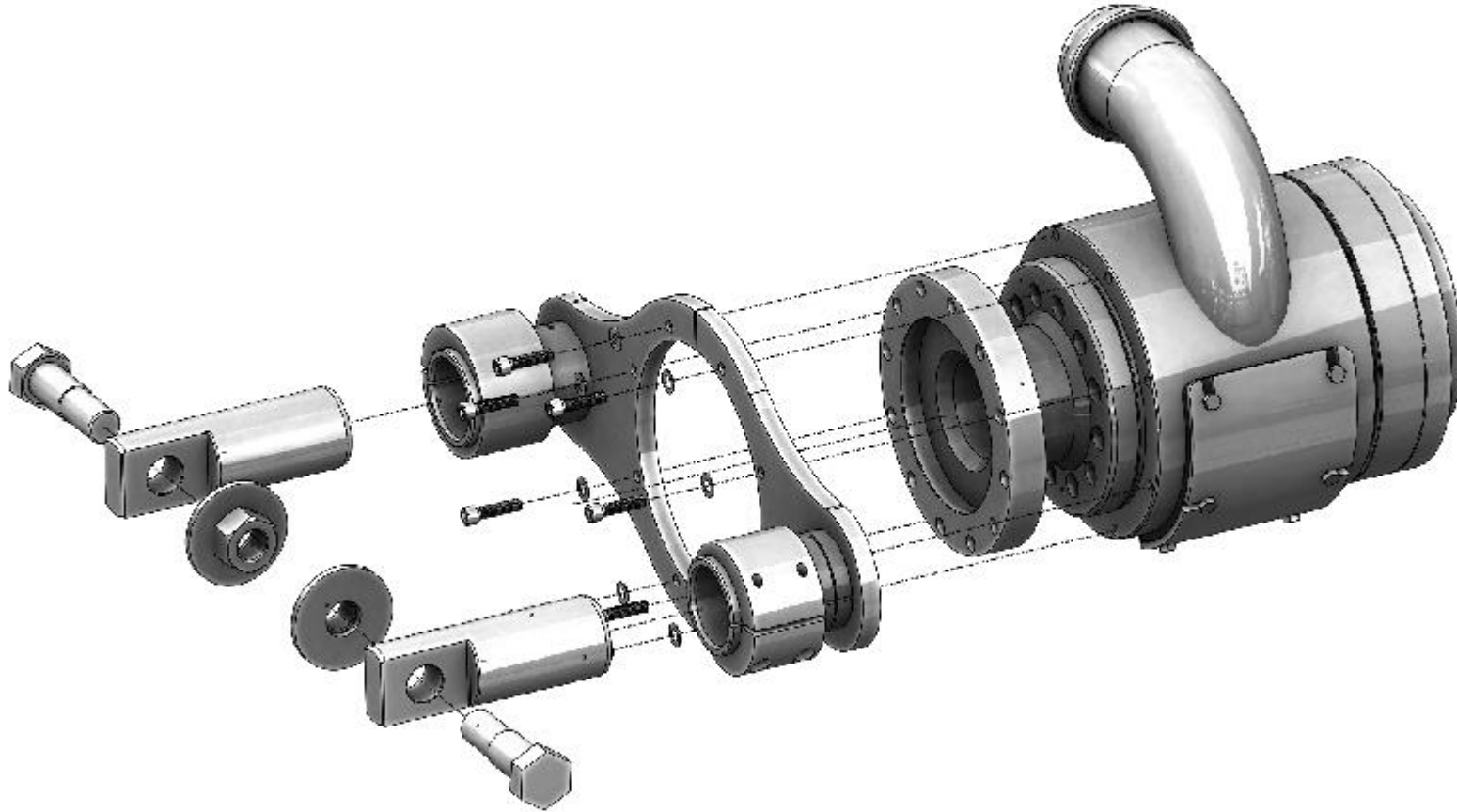
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Double Head (Fixed Holder - T 3000 Lower, T20 upper)

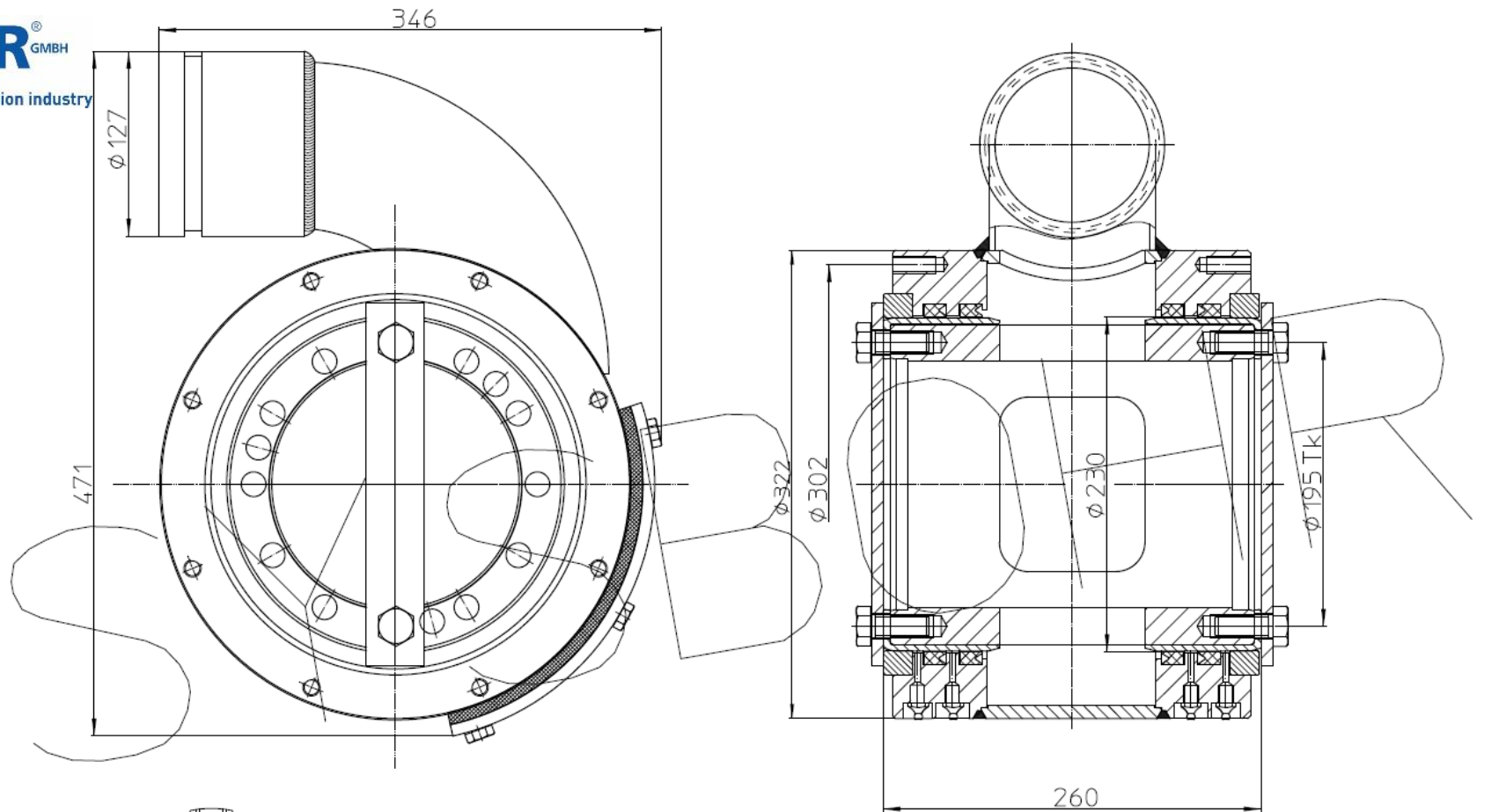
**T3000 Double Head (Fixed Holder - T20 upper, T 3000 Lower)
SMALL PREVENTER**

Part Number	Description	Price / Unit [€]	Quantity	Total [€]
52601045 = 52603128 + 51951003 + 52903018	Rotary discharge preventer, outer dimensions 510mm x 350mm (including discharge pipe) x D 260mm (pitch circle flange to suit rotary head T2500 complete with seals) x D290mm (pitch circle flange for casings), without holder for rotary head, but with discharge connection (to be defined with order). The preventer is designed for F = 12t retraction force and max. torque of 12kNm.		1	
52603128	Double flange to suit rotary head unit II (T3000) and Pitch Circle Diameter (PCD) D 260mm on rotary head side x D 195mm on preventer side of pos. 4 with blow-out		1	
51951003	Rotary discharge preventer MAIN BODY ONLY, outer dimensions D 322mm x 260mm x D 195mm (pitch circle diameter for both ends) x with transport braces. Without holder for rotary head, but with discharge connection (to be defined with order). The preventer is designed for F = 12t retraction force and max. torque of 12kNm.		1	
52903018	Flange adapter plate D 290mm (PCD preventer bottom) x D 195mm (PCD on casing drive flange side) x 65mm.		1	
52304048	2-point traverse / discharge preventer holder, "fixed" type for rotary head II (T3000) double rotary head unit.		1	
51032025	Balancing rod D 110; 3 1/2" API REG. Female / Female X 1780 MM effective length, with spanner flats. Thread covers included (X2)		1	

Double Head (Fixed Holder - T 3000 Lower, T20 upper)



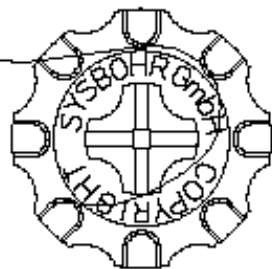
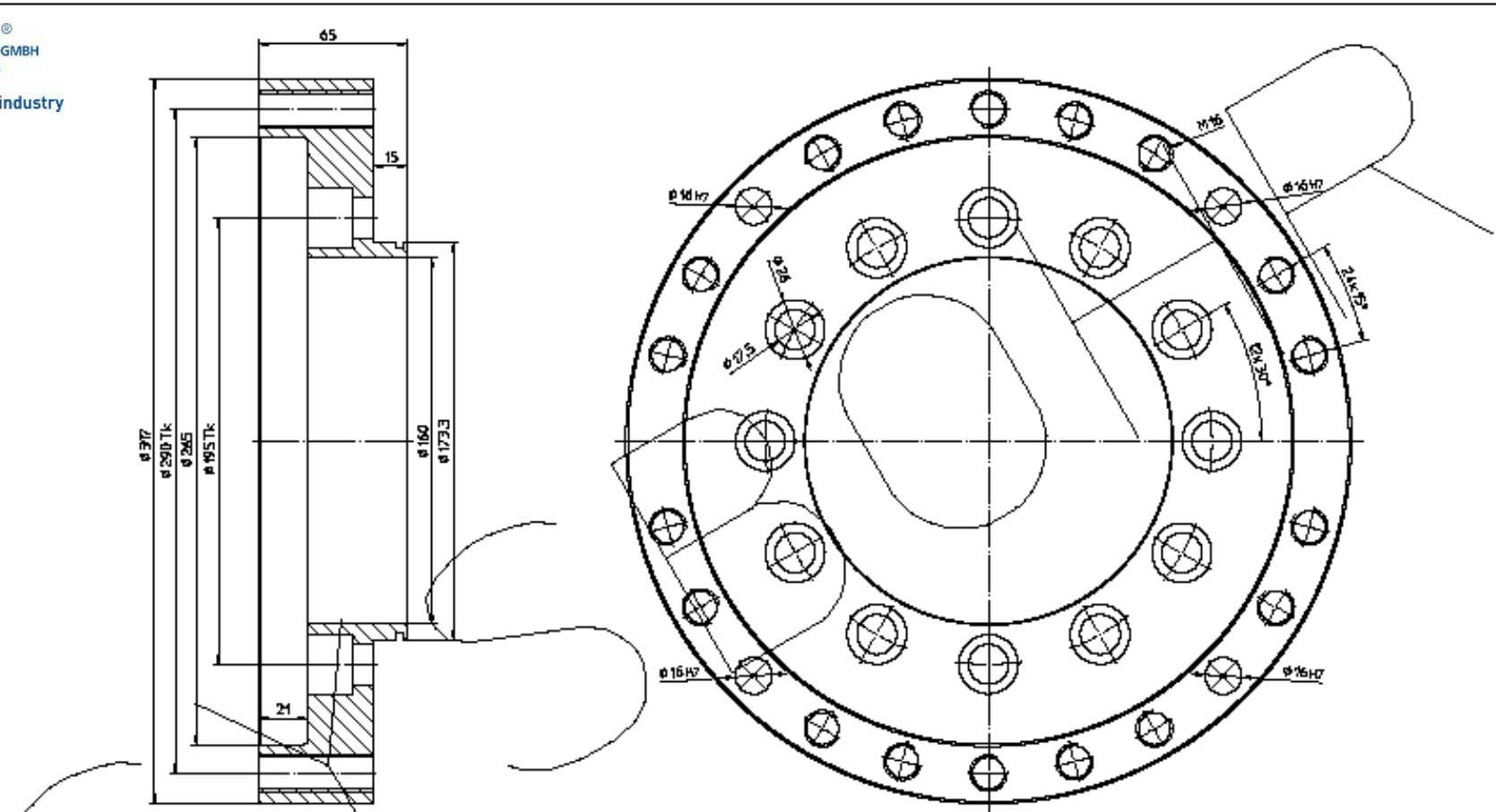
Double Head (Fixed Holder - T 3000 Lower, T20 upper)



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	Werkstoff: -	Oberfläche:
	Datum Name	SYSBOHR GmbH
	Bearb. 06.11.19 Meier	
	Gepr. 06.11.19 Meier	
	Norm	
	Drehpreventer ø230 mit PM Auswurf und Wartungsöffnung 2xø195 Tk o.Ab- & Antriebsflansch mit Trantsicherung	Maßstab: 1:1
Zust. Änderung Datum Name		Teile-Nr. 51951003



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	Verstärkstoffe	Oberfläche:
	Datum Name	SYSBOHR GmbH
	Regel: 30.08.2010	
	Über: Lohse	
	Norm: Meier	
	Flansch TK290 x TK195 x 65 Gl.	Verstärkte 1:1
Insk: Anleitung	Datum Name	Teile-Nr. 52903018

617

1

2

3

4

5

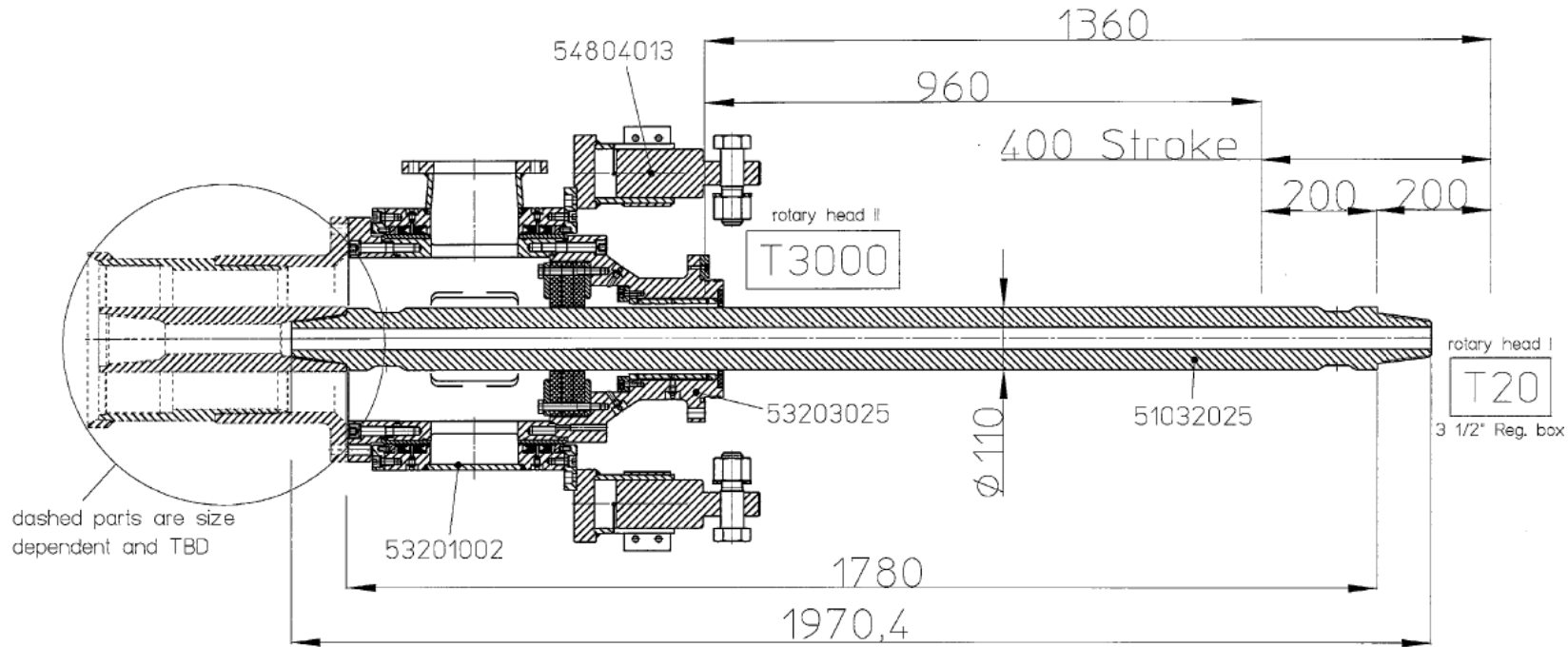
6

7

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7	Nord-Lock washer	12	002.0021
6	Cylinder screw	12	00912026
5	Washer	2	00125009
4	Hexagonal washer	2	00985001
3	Hexagonal ball	2	Blatt 7
2	Clamp pin	2	Blatt 6
1	Support plate PCD 302	1	Blatt 2
Item		Pieces	Part-No.:
Description			
Wärmebehandlung			
Allgemeinbezeichnungen nach		Oberflächen:	
DIN EN 2768m			
Werkstoff:			
Name		SYSBOHR GmbH	
Datum			
Bezugs-Gez. Norm		2303/16	
Fertig-Maß			
2-point traverse holder for		Maßstab: 1:1	
T3000 rotary head		Teller-Nr. 52304048	
Revid. Änderung			
Datum			
Name			

DOUBLE ROTARY HEAD
T3000 and T20



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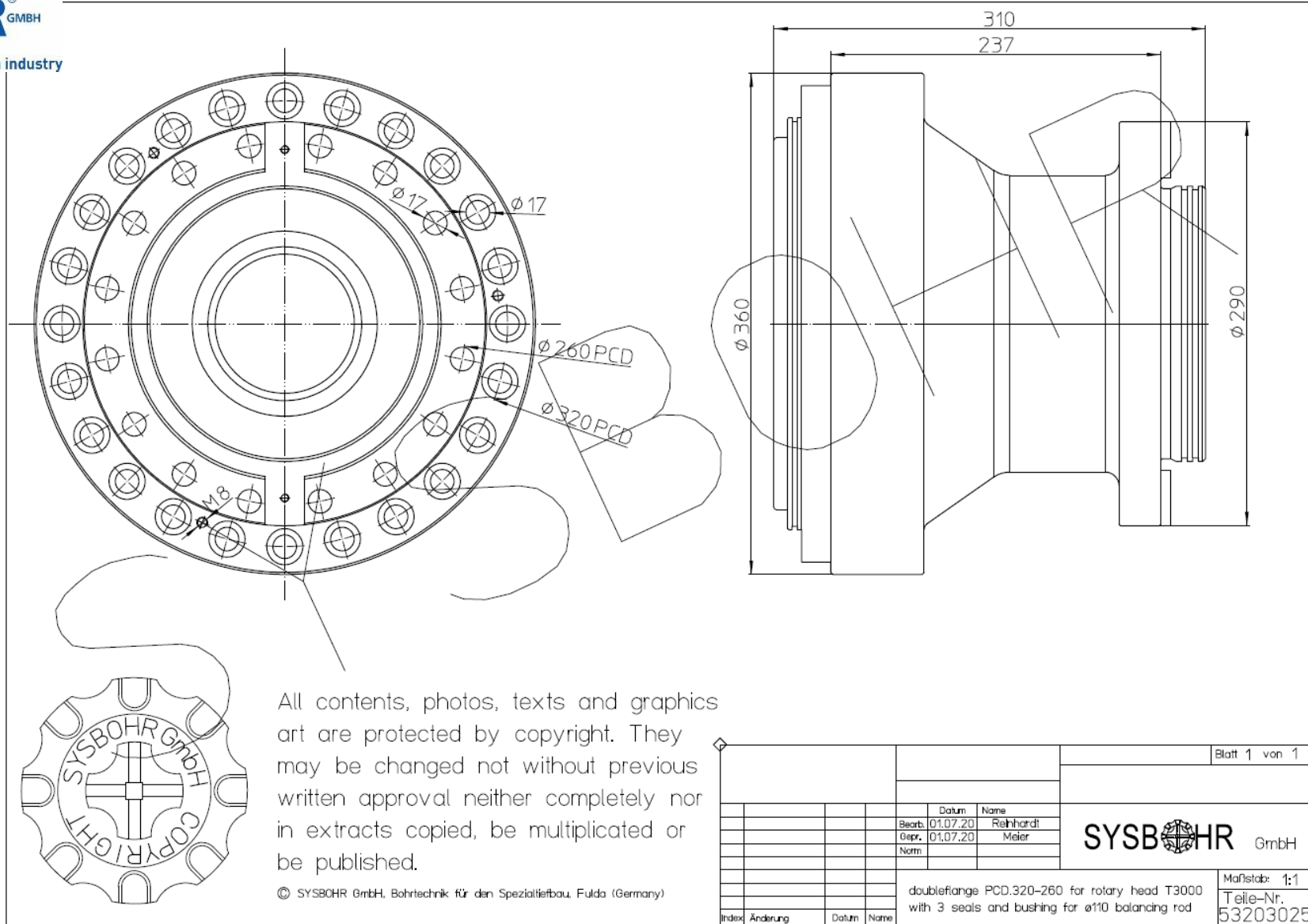
Wärmebehandlung: -	Allgemeintoleranzen nach DIN EN 2768m	Blatt 1 von 1												
	Werkstoff: -	Oberfläche:												
	<table border="1"> <thead> <tr> <th></th> <th>Datum</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>Bearb.</td> <td>09.06.20</td> <td>Aulh</td> </tr> <tr> <td>Bepr.</td> <td></td> <td>Meier</td> </tr> <tr> <td>Norm</td> <td></td> <td></td> </tr> </tbody> </table>		Datum	Name	Bearb.	09.06.20	Aulh	Bepr.		Meier	Norm			<p>SYSBOHR GmbH</p>
	Datum	Name												
Bearb.	09.06.20	Aulh												
Bepr.		Meier												
Norm														
	DOUBLE ROTARY HEAD system T3000 and T20, with larger preventer	<table border="1"> <tr> <td>Maßstab: 1:1</td> </tr> <tr> <td>Teile-Nr. -</td> </tr> </table>	Maßstab: 1:1	Teile-Nr. -										
Maßstab: 1:1														
Teile-Nr. -														
Index Änderung	Datum	Name												

Double Head (Fixed Holder - T 3000 Lower, T20 upper)

**T3000 Double Head (Fixed Holder - T20 upper, T 3000 Lower)
LARGE PREVENTER**

Part Number	Description	Price / Unit [€]	Quantity	Total [€]
53201002 (larger Preventer)	Rotary discharge preventer D 365 x D 320mm (PCD) without holder for rotary head, but with discharge connection DN 125 PN 16 EN 1092. The preventer is rated at F = 40t retraction force and Max. Torque = 50 kNm.		1	
53203025	Double flange D 360mm x D320mm (pitch suitable for rotary head unit II - T3000 and discharge preventer Art.-Nr. 53201002)		1	
54804013 (larger Preventer)	2-POINT TRAVERSE/DISCHARGE PREVENTER HOLDER, "FIXED" TYPE FOR DOUBLE ROTARY HEAD		1	
51032025	Balancing rod D 110; 3 1/2" API REG. Female / Female X 1780 MM effective length, with spanner flats. Thread covers included (X2)		1	

Double Head (Fixed Holder - T 3000 Lower, T20 upper)

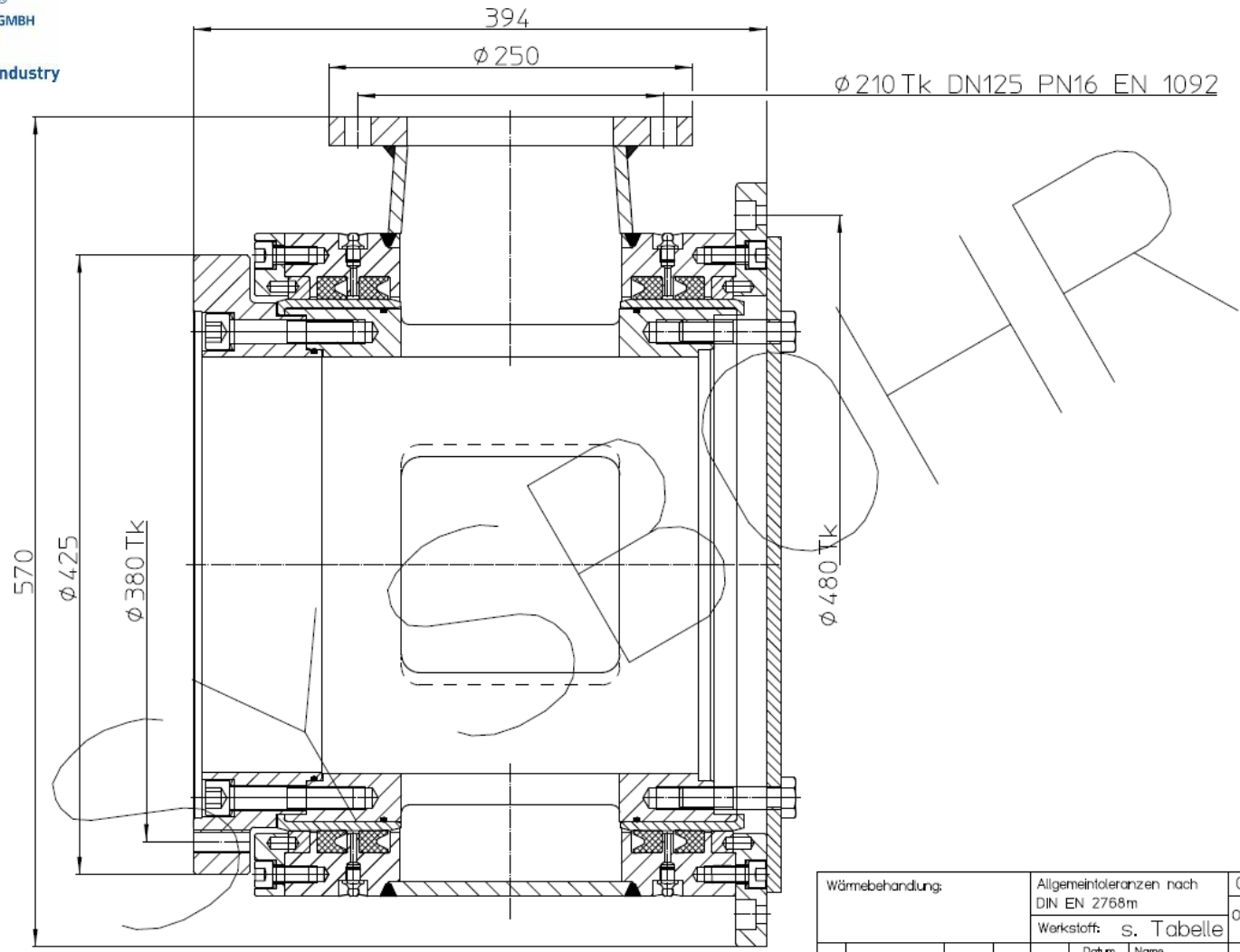


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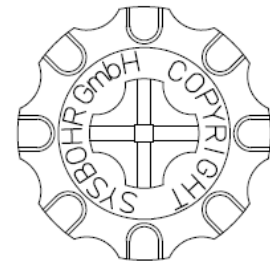
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			Blatt 1 von 1		
	Datum	Name			
	Bearb.	01.07.20			Reinhardt
	Gepr.	01.07.20	Meier		
	Norm				
			Maßstab: 1:1		
			Teile-Nr.		
			53203025		
Index	Änderung	Datum	Name		

Double Head (Fixed Holder - T 3000 Lower, T20 upper)

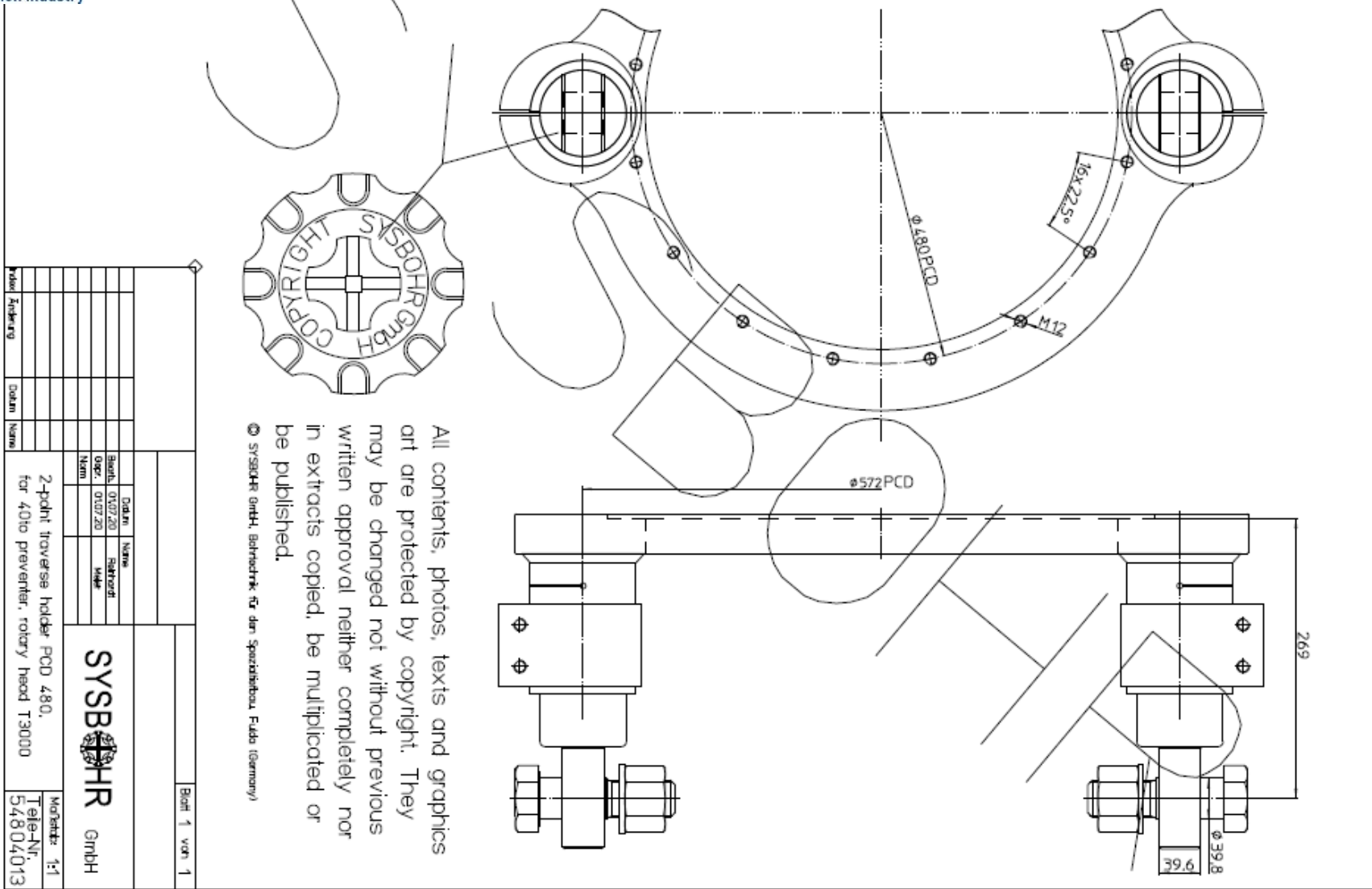


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Wärmebehandlung:	Allgemeintoleranzen nach DIN EN 2768m		Gewicht: ca.190kg	Blatt 1 von 1
	Werkstoff: s. Tabelle		Oberfläche:	
	Datum	Name		
	06.11.19	Meier		
		Meier		
	Drehpreventer Tk320 für 40 to.Rückzug mit DN125 Ableitung, passend zu Flansch 53803001			Maßstab: 1:1
Index	Änderung	Datum	Name	Teile-Nr. 53201002

Double Head (Fixed Holder - T 3000 Lower, T20 upper)



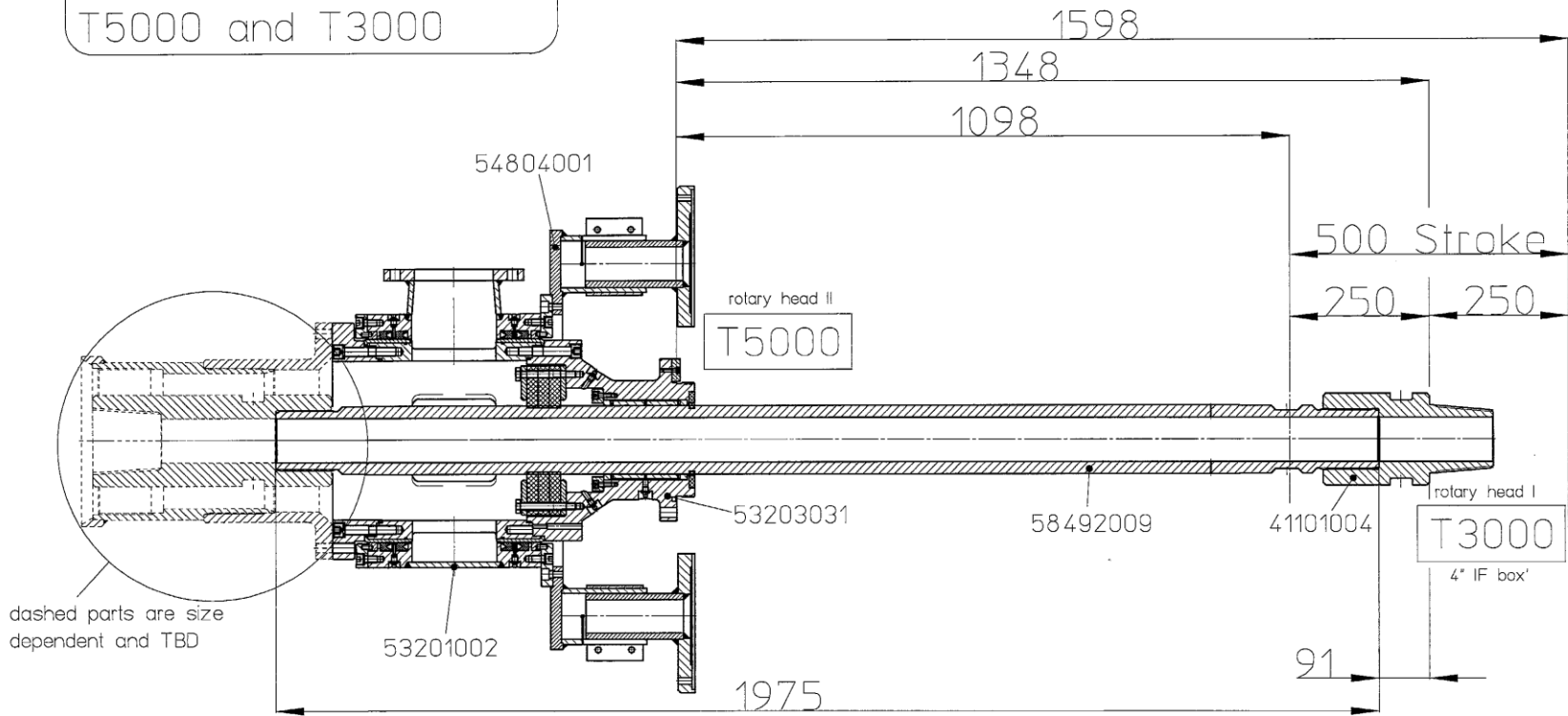
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Blatt 1 von 1	
SYSBOHR GmbH	
2-point traverse holder PCD 480, for 40to preventer, rotary head T3000	
Modell: Änderung	
Datum: 01.07.20	
Name: Bahndorfer	
Zeichner: Mager	
Merkmal: 1:1	
Telef-Nr. 54804013	

Double Head (Fixed Holder - T 3000 Lower, T20 upper)

DOUBLE ROTARY HEAD
T5000 and T3000



dashed parts are size dependent and TBD



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Wärmebehandlung: -	Allgemeintoleranzen nach DIN EN 2768m	Blatt 1 von 1
	Werkstoff: -	Oberfläche:
	Datum	Name
	Bearb. 19.08.20	Auth
	Gepr.	Meier
	Norm	
	DOUBLE ROTARY HEAD system	Maßstab: 1:1
index: Änderung	Datum	Name
	T5000 and T3000	
		Teile-Nr. -

Double Head (Fixed Holder - T 5000 Lower, T 3000 upper)

**T5000 Double Head (Fixed Holder - T3000 upper, T 5000 Lower)
LARGE PREVENTER**

Part Number	Description	Price / Unit [€]	Quantity	Total [€]
53201002 (larger Preventer)	Rotary discharge preventer D 365 x D 320mm (PCD) without holder for rotary head, but with discharge connection DN 125 PN 16 EN 1092. Preventer is rated at F = 40t retraction force and Max. Torque = 50 kNm.		1	
53203031	Flange D 360mm x D320mm (pitch suitable for rotary head unit T5000 and discharge preventer Art.-Nr. 53201002)		1	
54804001	2-POINT TRAVERSE/DISCHARGE PREVENTER HOLDER, "FIXED" TYPE FOR DOUBLE ROTARY HEAD		1	
58492009	BALANCING ROD D 123, S 108 RHT MALE / MALE X 1975 MM TOTAL LENGTH		1	
41101004	ADAPTER D 165, 4" API IF MALE X S 108 RHT FEMALE X 305 MM TOTAL LENGTH		1	

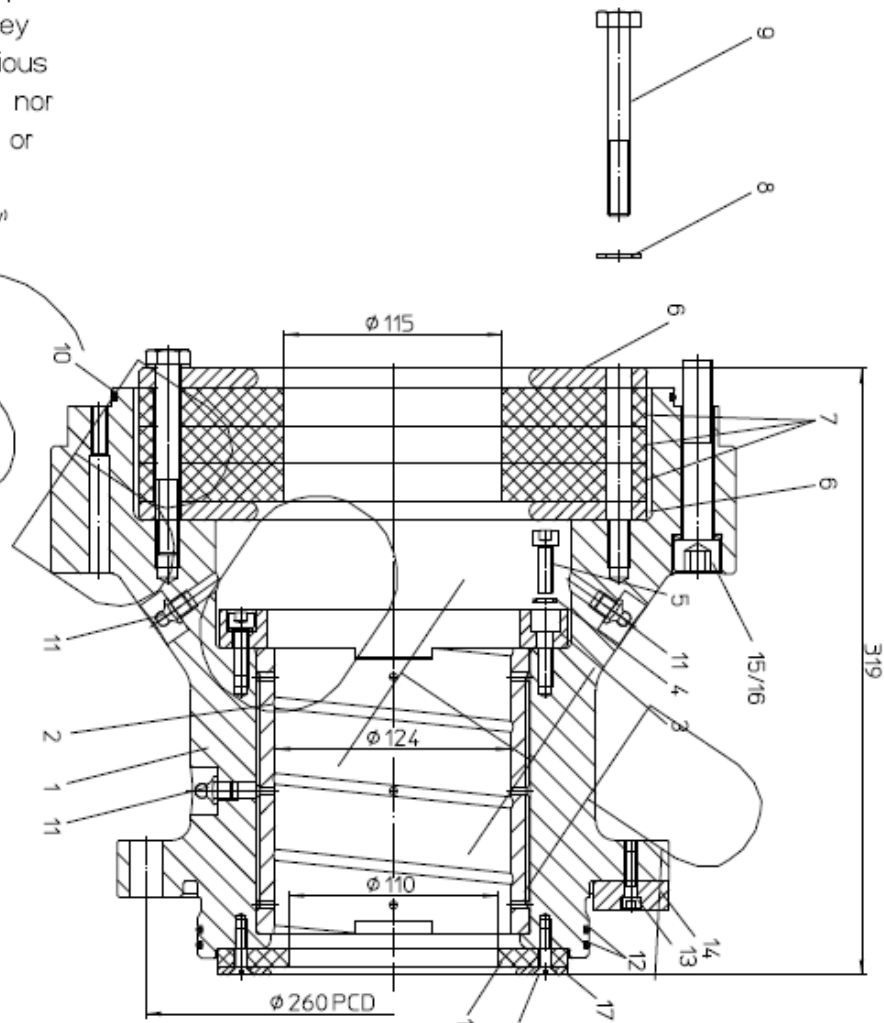
Double Head (Fixed Holder - T 5000 Lower, T 3000 upper)



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pos.	name	pcs.	part-no.
1	flange casting	1	53203032
2	brass ring	1	50000056
3	flange	6	51603026
4	washer	6	002.0047
5	cylinder head screw	6	00912008
6	flange	2	52373001
7	seal	3	001.0302
8	washer	4	00125005
9	hexagon head screw	4	00931012
10	O-ring	1	03770116
11	lubrication nipple	3	07141001
12	O-ring	2	03770100
13	cylinder head screw	2	00912052
14	feather key	2	002.0100
15	cylinder head screw	24	00912053
16	washer	24	002.0018
17	ring	1	51603047
18	countersunk screw	6	07991013
19	seal	1	0010442

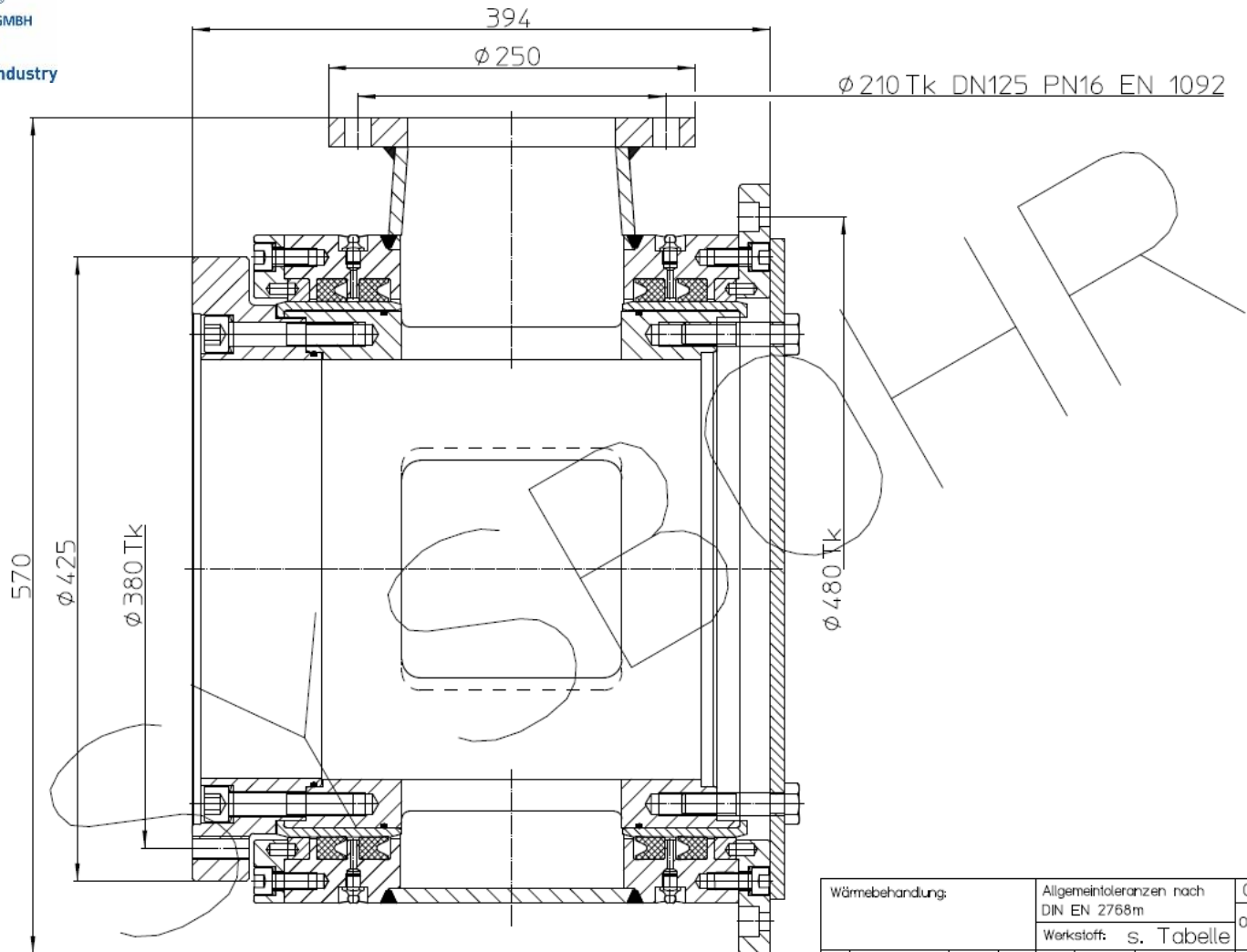


Bank	DATE	Name
03/07/20		REWEIGHT
03/07/20		MADE

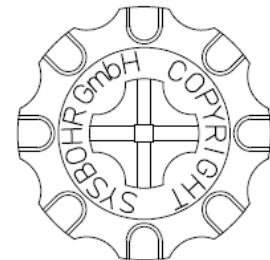
double flange PCD320 x PCD260-T5000
with brass ring Ø124 and four seals

MoDate: 14
Tele-Nr.
53203031

SYSBOHR GmbH

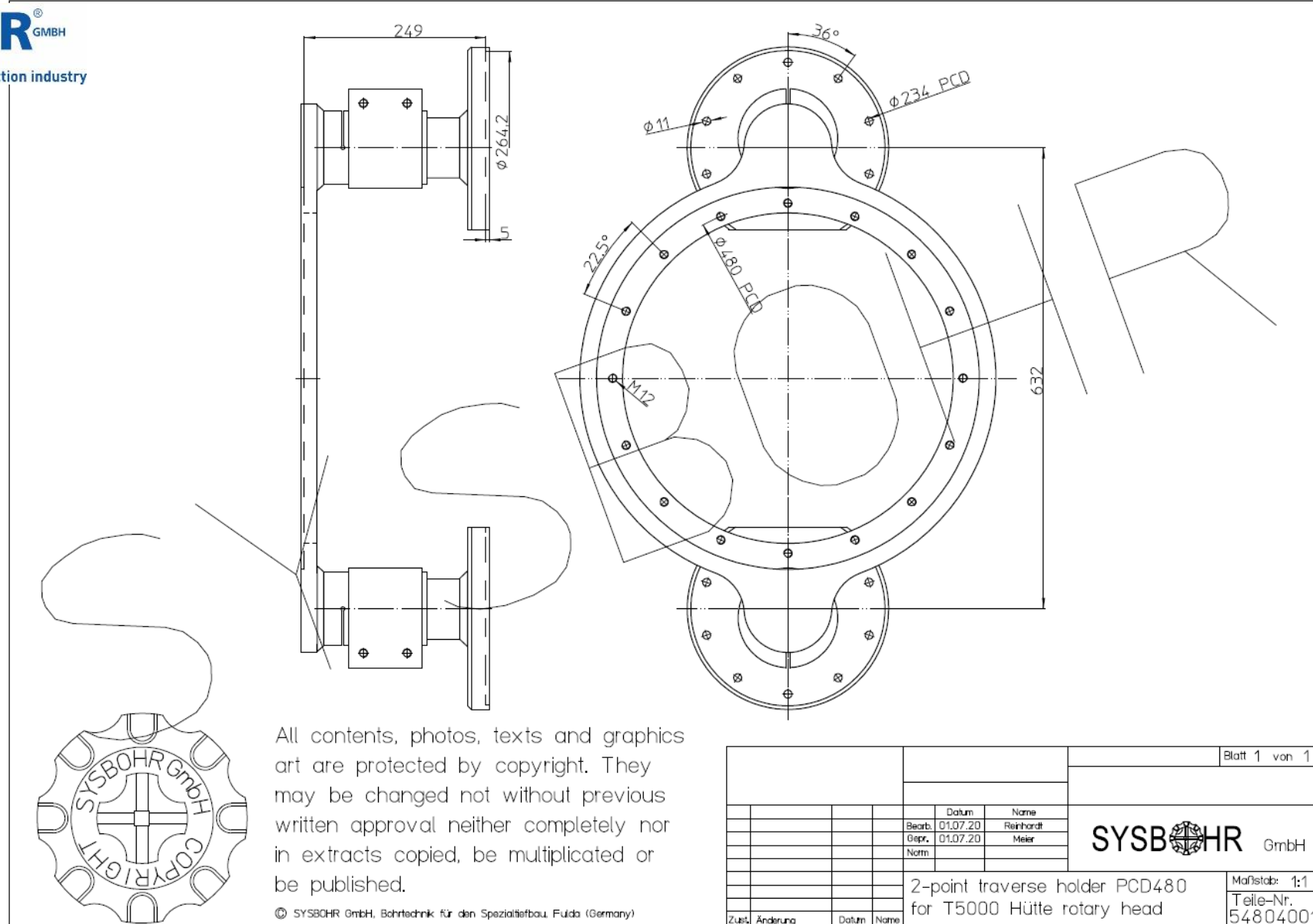


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Wärmebehandlung:	Allgemeintoleranzen nach DIN EN 2768m	Gewicht: ca.190kg	Blatt 1 von 1
	Werkstoff: s. Tabelle	Oberfläche:	
	Datum Name		
	Bearb. 06.11.19 Meier		
	Gepr. Meier		
	Norm		
	Drehpreventer Tk320 für 40 to.Rückzug mit DN125 Ableitung, passend zu Flansch 53803001	Maßstab: 1:1	Teile-Nr. 53201002
Index	Änderung	Datum	Name

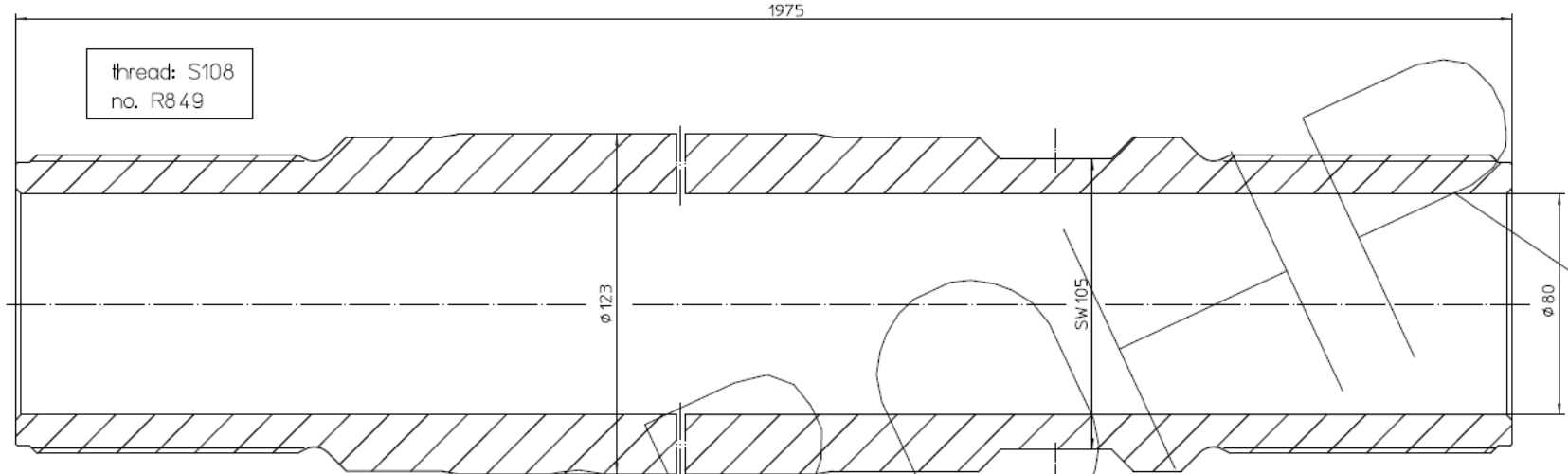
Double Head (Fixed Holder - T 5000 Lower, T 3000 upper)



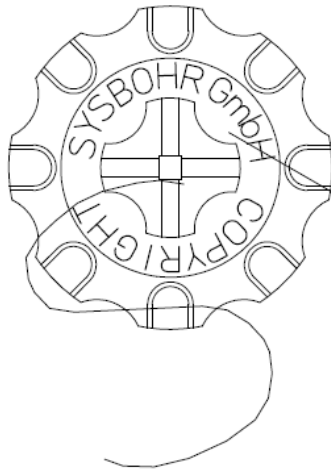
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			Blatt 1 von 1	
			Datum	Name
			Bearb. 01.07.20	Reinhardt
			Gepr. 01.07.20	Meier
			Norm	
			SYSBOHR GmbH	
			2-point traverse holder PCD480 for T5000 Hütte rotary head	
			Maßstab: 1:1	
			Teile-Nr. 54804001	
Zust.	Änderung	Datum	Name	



thread: S108
no. R849

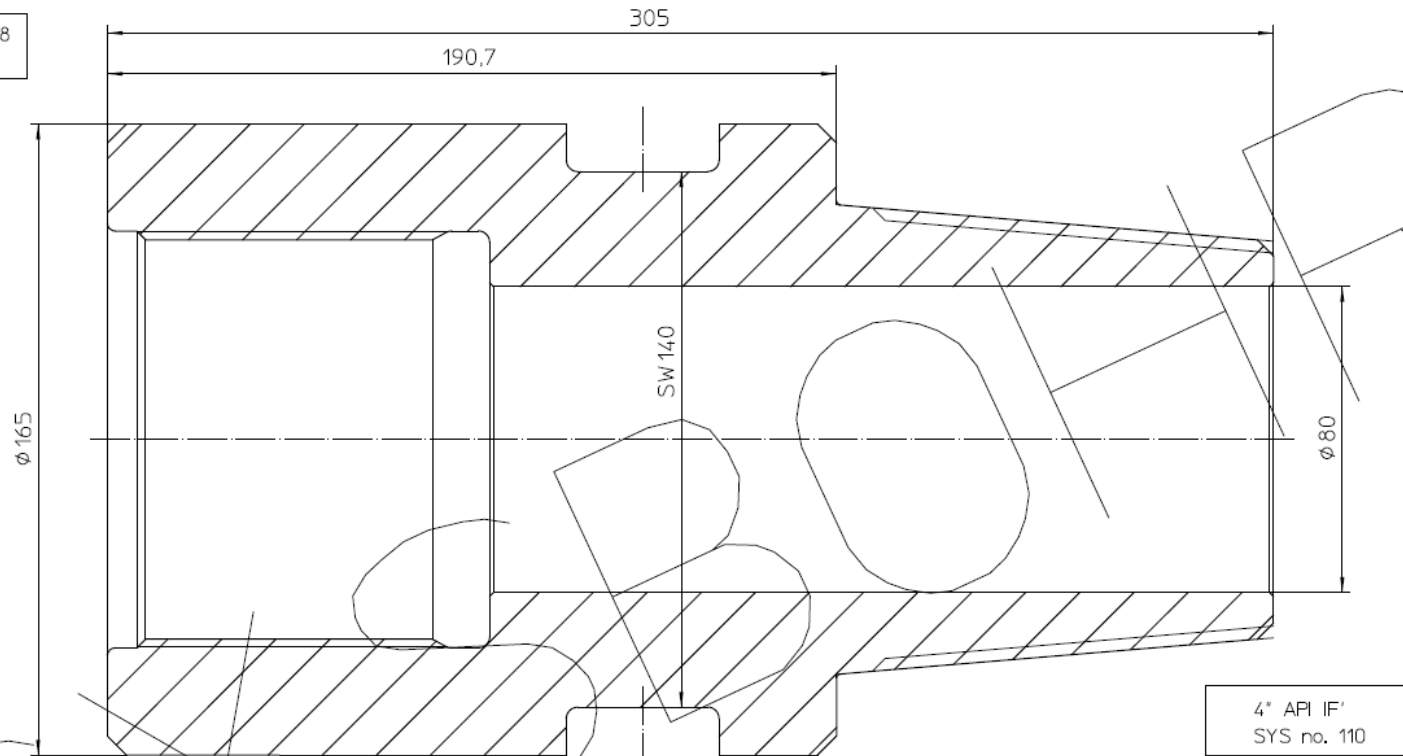


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				Blatt 1 von 1	
		Datum	Name		
		Bearb.	Holmann		
		Gepr.	Meier		
		Norm			
				balancing rod $\phi 123 \times S108$ RHT	
				male-male, with sw, 1975 length	
				Maßstab: 1:1	
				Teile-Nr. 58492009	

thread: S108
no. R849



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				Blatt 1 von 1		
		Datum	Name			
		Bearb.	01.07.20			Hohmann
		Gepr.				Meier
		Norm				
				adapter $\varnothing 165 \times 4''$ API IF male \times S108 RHT. female with sw \times 305 length		
Index	Änderung	Datum	Name	Maßstab:	1:1	
				Teile-Nr.	41101004	



Drilling technique for the construction industry