

PROJECT 8010014-3
TDI PLANT
KAROON

TECHNICAL
DOCUMENTATION

Equipment Engineering

Section 4.4
Equipment Documentation

Mechanical Catalogues

File No 9

Proprietary Equipment (PE)

Lot No 3.
S 02.

1	ITEM F36704, CARBON CATCH FILTER
2	ITEM F36705A/R POLYMERIC ADSORBENT CATCH FILTER
3	ITEM F36706A/R, CARBON CATCH FILTER
4	
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11	
12	

  	Isocyanate Project, Phase 1 TDI Plant Project No. 8010014-3 Equipment Engineering Documentation 4.4 Equipment Documentation	Ref 4.4 Explan.	Page No 1 (1)
		Date Jun 04, 2003	Created/Rev by Annn 
EXPLANATIONS TO EQUIPMENT DOCUMENTATION		Revision	Check  Appr 

Missing information

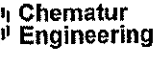
Missing information in enclosed "4.3.1 Equipment Specification Sheet": see other documentation included in file "4.4 Equipment Documentation".

Contradictory information

In case of contradictory information given in "4.3.1 Equipment Specification Sheet" and other documentation included in file "4.4 Equipment Documentation", other documentation included in file "4.4 Equipment Documentation" is valid.

		Isocyanate Project, Phase 1 TDI Plant PROJECT 8010014-3 TDI PLANT Equipment Engineering Documentation 4.3.1 Equipment Specification Sheet		Ref F 36704	Page No 1(3)
				Date Jan 13, 2002	Created/Rev by Pek/Arnn
EQ. SPEC. - FILTER				Revision B/ Jul 17, 2003	Check Appr
Item Name : CARBON CATCH FILTER				Item No : F36704	Qty: 1
Type : Replaceable cartridge 12VW-27/3-3F-S				PID : 3-67-01	Supplier : PE
Manufacturer : AMA / Breidenbach				PFS :	Building No:
Manufacturing No : F-8136-1				P.O. No : 4500860	360
Weight: Empty: 271kg Operating: 335kg Max: 335kg				Weights are: ☐ Preliminary ☒ Final	
FILTRATING PURPOSE					
☒ Clear Filtration ☐ Recovery of Residue ☐ Thickening ☐					
Required process result:					
REMARKS ☐ Yes ☒ No					
FEED DATA					
Description of Liquid Phase:					
Nitrogen gas with trace of HCLG, CDC and ODCBC.					
Density at OT kg/m3 3.8 Viscosity at OT mPa s 0.022					
☐ Acid ☐ Neutral ☐ Alkaline ☐ Toxic ☐ Hazard pH value:					
Description of Solids:					
Small amonts of activated carbon and/or polymeric adsorbent.					
☐ Crystalline ☐ Crumbly ☐ Slimey ☐ Sticky ☐ Pasty ☐ Hygroscopic					
Conc: %Weight, %Vol, g/l Sedimentation speed: cm/min					
Particle Size %					
and Distribution μm					
REMARKS ☒ Yes ☐ No					
OPERATING DATA					
Chamber:				Vessel	
Operating Pressure: bar a				4.5	
Operating Temperature (OT): °C				125	
Max Allowed Pressure Drop: 1 bar				Total Filter Area: m ²	
Filter Aid: ☐ Yes ☒ No				Filter Rating: 10 μm	
☐ Continuous ☐ Intermittent ☒ Batchwise					
Duty: h/24h				Batchsize: m3	
Capacity: 132 m3/h				No of batches / 24h:	
Backwash: ☐ Yes ☒ No				Filtering time/Batch: min	
Washing of Residue in the Filter: ☐ Yes ☒ No					
Washing Media:				Washing Temperature: °C	
Discharging of Residue as a: ☐ Slurry ☐ Paste ☐ Dry Cake					
Drying Media:				Drying Temperature: °C	
Pre-Coating: ☐ Yes ☒ No				Pre-Coating Component:	
REMARKS ☐ Yes ☒ No					

 Chematur Engineering 		Isocyanate Project, Phase 1 TDI Plant PROJECT 8010014-3 TDI PLANT Equipment Engineering Documentation 4.3.1 Equipment Specification Sheet		Ref F 36704	Page No 2(3)
				Date Jan 13, 2002	Created/Rev by Pek/Amim
EQ. SPEC. - FILTER		Revision B/ Jul 17, 2003		Check 	Appr. 
Item Name : CARBON CATCH FILTER				Item No : F36704	
DESIGN DATA					
Design Code		ASME Sec VIII, Div 1			
Chamber		Vessel			
Design Pressure (Top Head) bar a		13.0			
Design Vacuum bar a		N A			
Design Temperature deg C		200			
Corrosion Allowance mm		3			
REMARKS ☐ Yes ☒ No					
MATERIAL					
Shell		CS			
Head/Covers		CS			
Body -Flanges		CS			
-Gaskets		RF PTFE			
-Bolts and Nuts		GI			
Nozzle -Flanges		CS			
-Pipes		CS			
-Gaskets		RF PTFE			
-Bolts and Nuts		GI			
Support		CS			
REMARKS ☒ Yes ☐ No					
EQUIPMENT DATA					
FILTER ELEMENTS					
☒ Cartridge ☐ Basket ☐ Bag ☐ Plate ☐					
No of filter elements:		9		Material: Glass fibre	
REMARKS ☒ Yes ☐ No					
DRIVE SYSTEM ☐ Yes ☒ No					
☐ Electric ☐ Hydraulic ☐		☐ Direct ☐ Gear ☐			
Rotation Speed ☐ Fixed rpm		☐ Adjustable rpm			
SEALING ☐ Sealless ☐ Packing ☐ Mechanical ☐ Double ☐ Single					
Manufacturer:		Type:			
Manufacturers code:		Seal Fluid:			
Flow:	l/min	Temp:	°C	Pressure:	bar a
MATERIAL					
Shaft, wetted part:					
REMARKS ☐ Yes ☐ No					
EL. MOTOR					
Power		Protection			
Voltage		EEx			
Frequency		Manufacturer			
Motor Speed		Size IEC-Std			
REMARKS ☐ Yes ☐ No					

  		Isocyanate Project, Phase 1 TDI Plant PROJECT 8010014-3 TDI PLANT Equipment Engineering Documentation 4.3.1 Equipment Specification Sheet		Ref F 36704	Page No 3(3)
		Date Jan 13, 2002		Created/Rev. by Pek/Amir	
EQ. SPEC. - FILTER		Revision B/ Jul 17, 2003		Check Amir	Appr. Aey
Item Name : CARBON CATCH FILTER				Item No : F36704	
MISCELLANEOUS DATA				1	
LOCATION ☐ Indoor ☒ Outdoor				2	
COVER (BOLTING) ☒ Normal ☐ Quick Operation Davit ☐ Yes ☐ No				3	
TYPE OF SUPPORT:				4	
HEATING/COOLING ☐ Yes ☒ No				5	
Media: Flow: l/min				6	
INSULATION ☒ Yes ☐ No				7	
Type: HE1 Thickness: 100 mm Support included ☐ Yes ☒ No				8	
ANCHOR BOLT ☐ Yes ☒ No				9	
Type: Dimension:				10	
Quantity: Material:				11	
SURFACE TREATMENT				12	
☐ SS-pickled and passivated ☒ CS-painted				13	
				14	
REMARKS ☐ Yes ☒ No				15	
TEST/ACCEPTANCE				16	
Acceptance Code ASME Sec VIII, Div 1				17	
Acceptance As per code				18	
Test Pressure bar a As per code				19	
Kind of Test As per code				20	
Non Destructive Test As per code				21	
Other Test As per code				22	
REMARKS ☐ Yes ☒ No				23	
REMARKS				24	
FEED DATA: HCLG=Anhydrous Hydrogenchloride (gas); CDC=Carbonyldichloride;				25	
ODCBC=Ortho Dichlorobenzene, trace of CDC and HCL				26	
MATERIAL: CS = Carbon Steel; RF PTFE = Reinforced PTFE; GI = Galvanized Steel				27	
				28	
EQUIPMENT DATA: Cartridge type GW10-A-30SE				29	
				30	B
				31	
				32	
				33	
				34	
				35	
				36	
				37	
				38	
				39	
				40	
ENCLOSURE				41	
☐ Nozzle Data List ☐ Pamphlet ☐ Sketch of System				42	
☐ Word Document				43	

8.3 Standardized parts

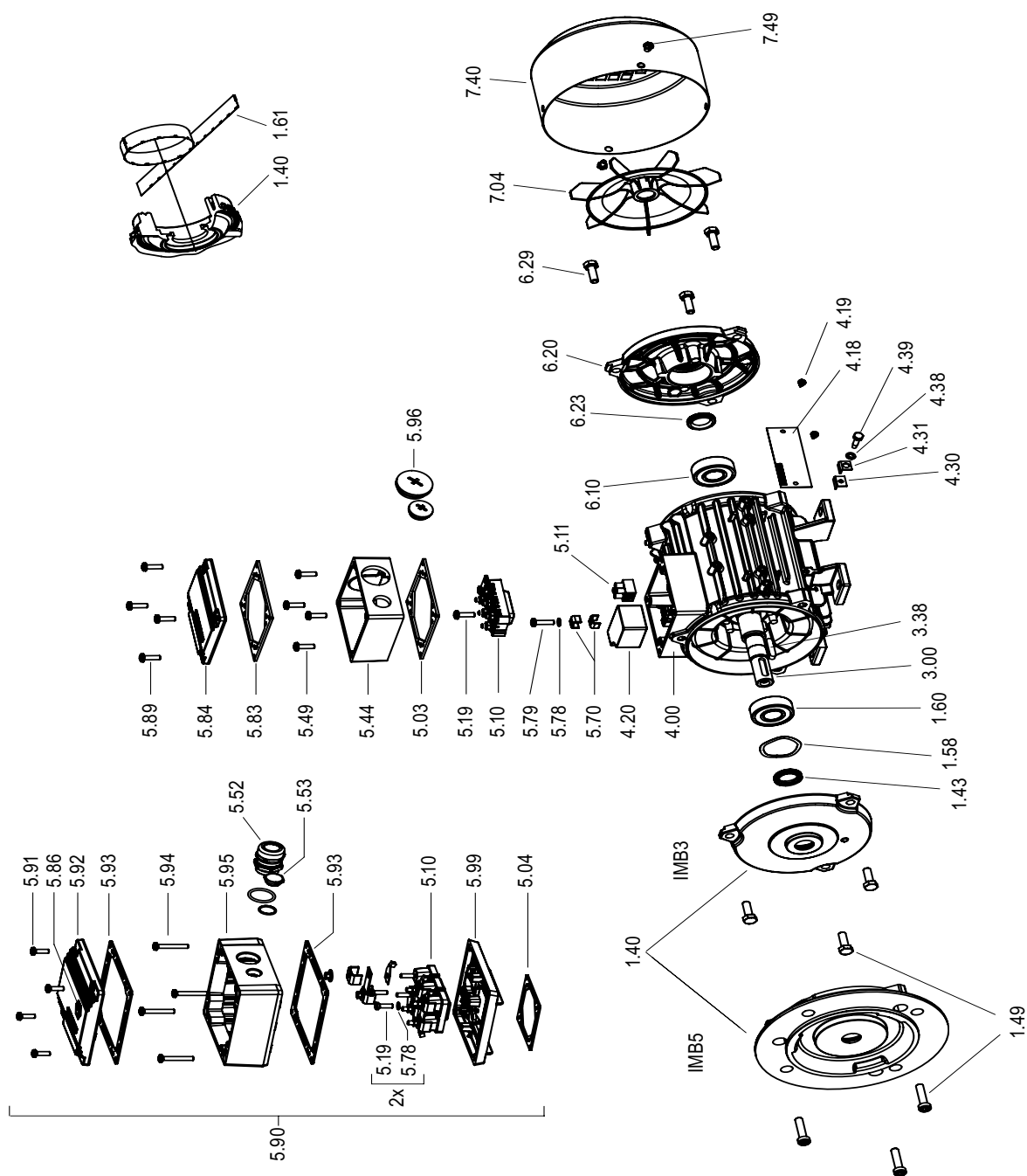
Standardized parts

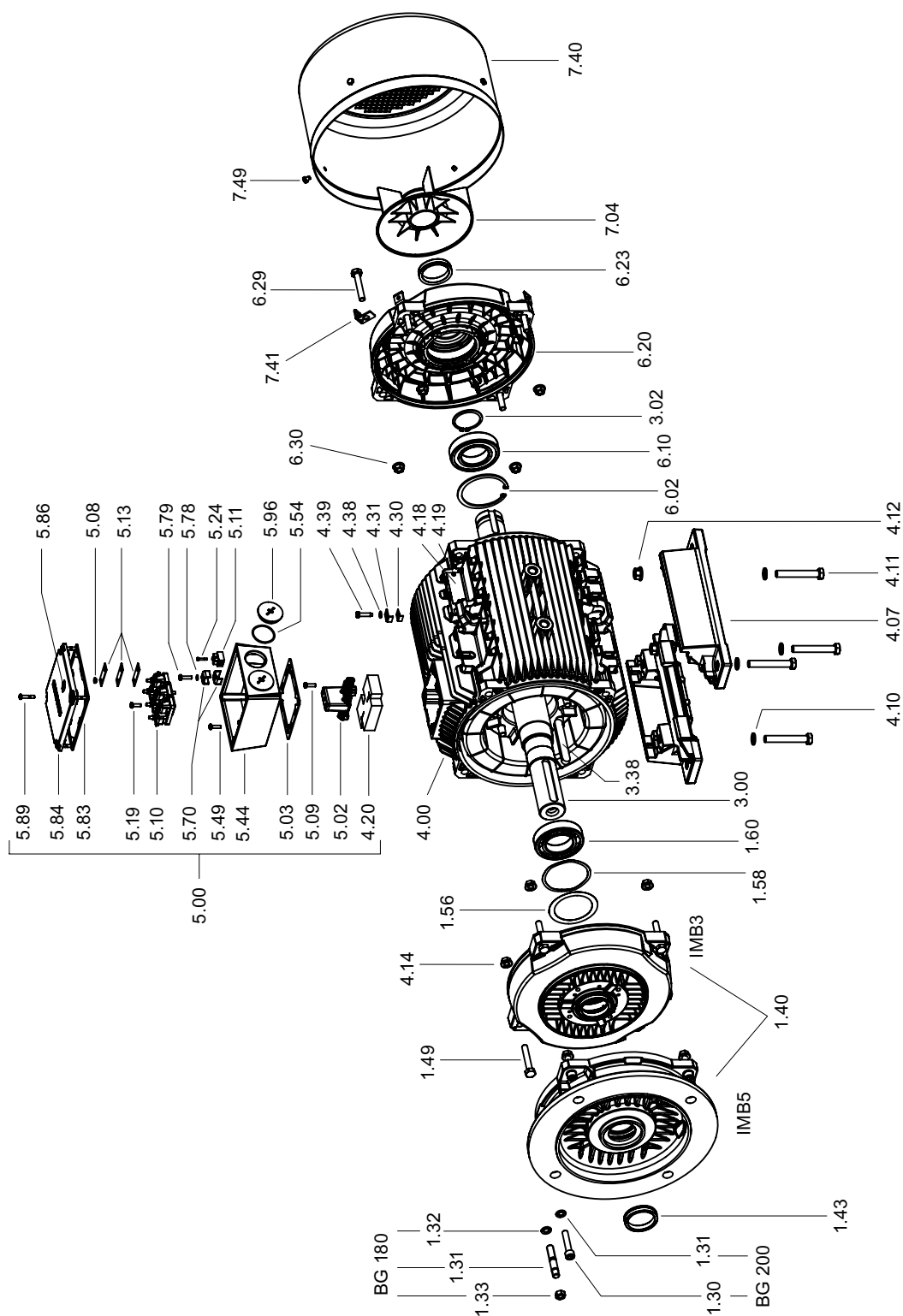
Standardized parts are to be obtained from free trade outlets in accordance with their necessary dimensions, materials and surface finish.

No	Standard	Picture	No	Standard	Picture
1.31 4.10 4.38 5.08 5.16 5.18 5.48 5.78 5.88 7.48	DIN 128		1.30 1.32 1.45 1.49 4.11 5.09 5.17 5.19 5.24 5.42 5.49 5.79 5.87 5.89 5.91 5.94 6.29 6.45 7.49	DIN 939	
3.02 6.02 7.12	DIN 471			DIN 6912	
	DIN 472			DIN 7964	
4.04	DIN 580			DIN EN ISO 4014	
	DIN 582			DIN EN ISO 4017	
1.60 6.10	DIN 625			DIN EN ISO 4762	
3.38	DIN 6885			DIN EN ISO 7045	
1.33 6.30	DIN EN 24032			DIN EN ISO 7049	
			4.05 7.48	DIN EN ISO 7089 DIN EN ISO 7090	

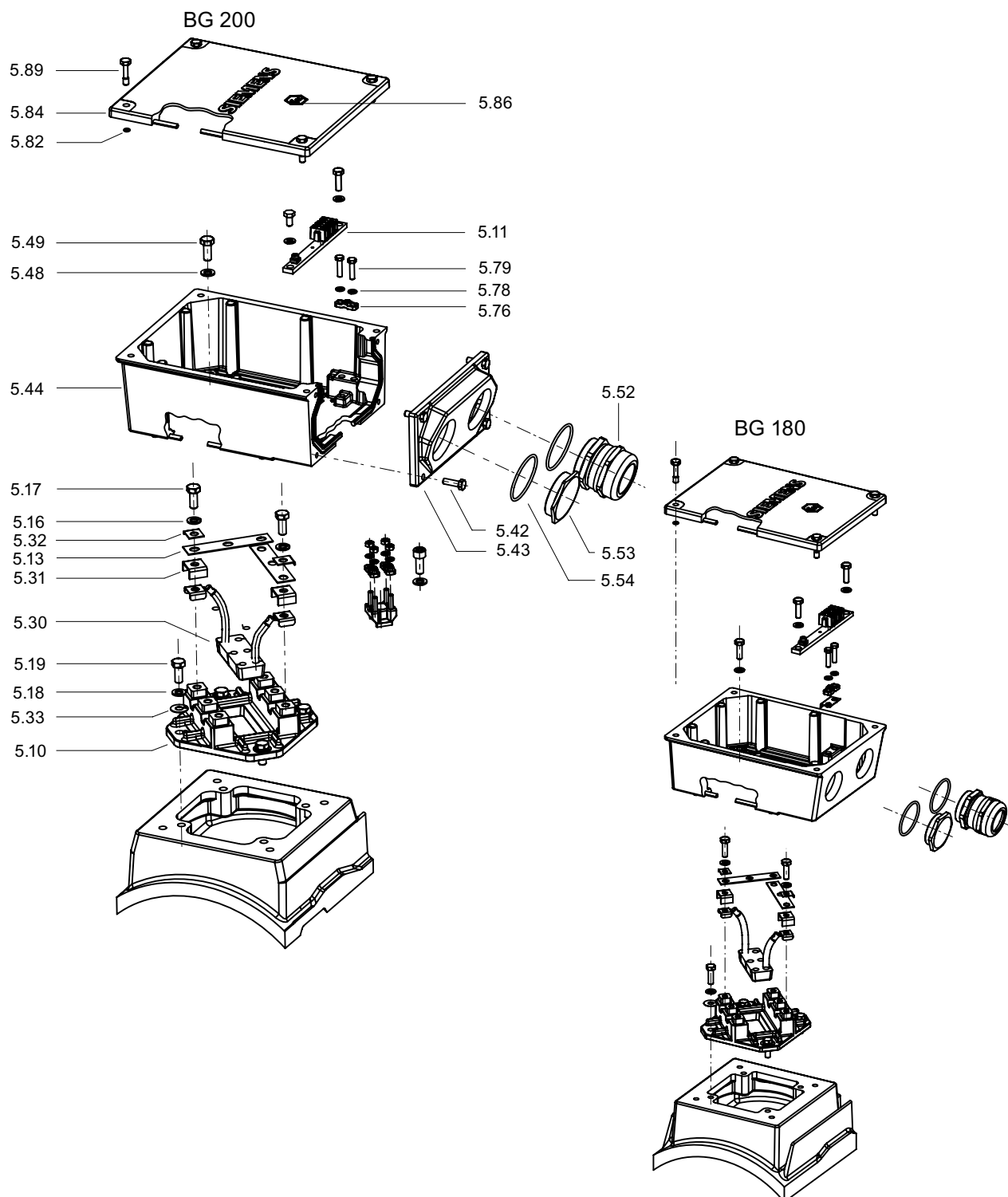
8.4 Exploded drawings

8.4.1 1LA,1LP,1MA,1MF,1PP6/7/9 FS 56...90L

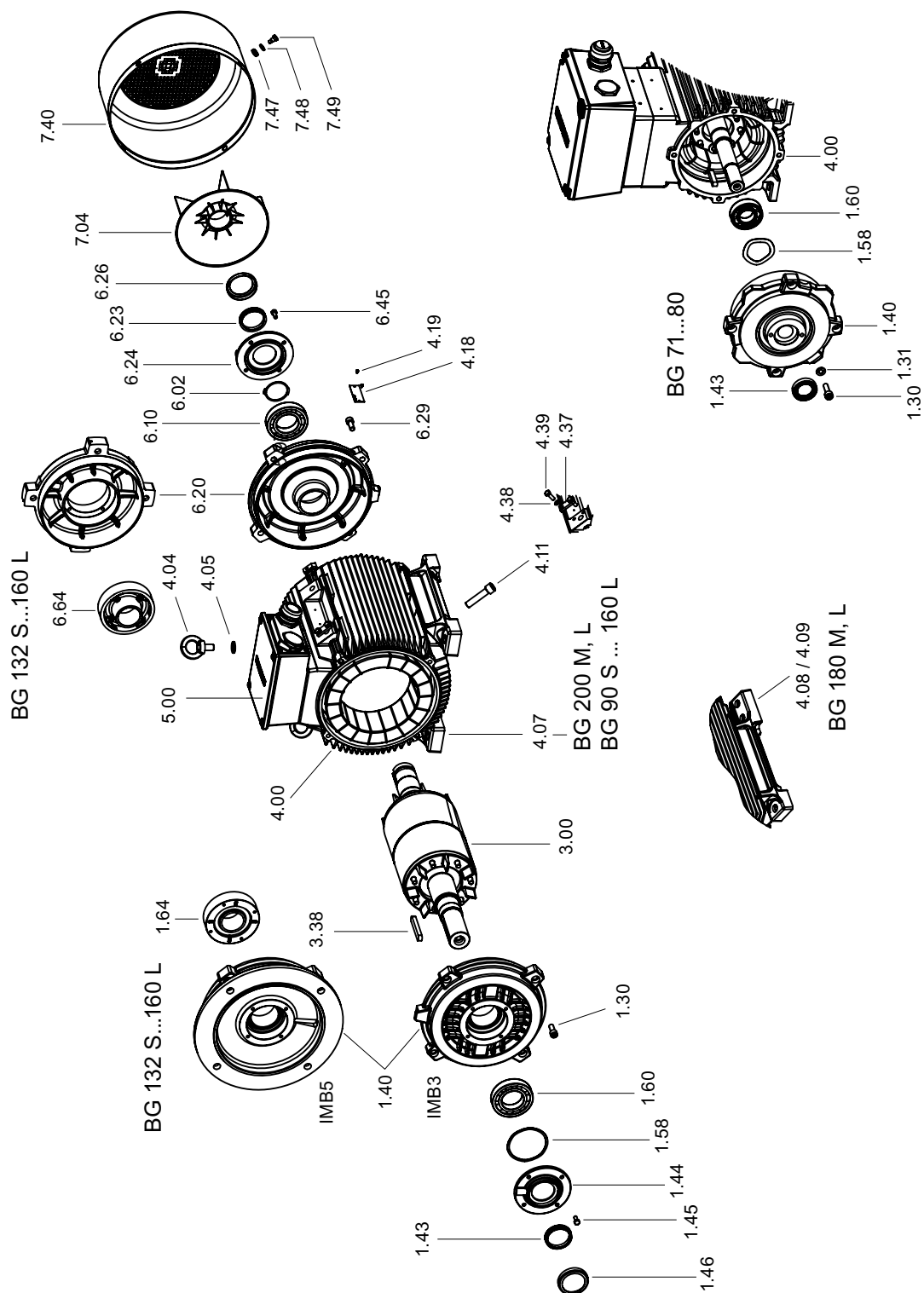




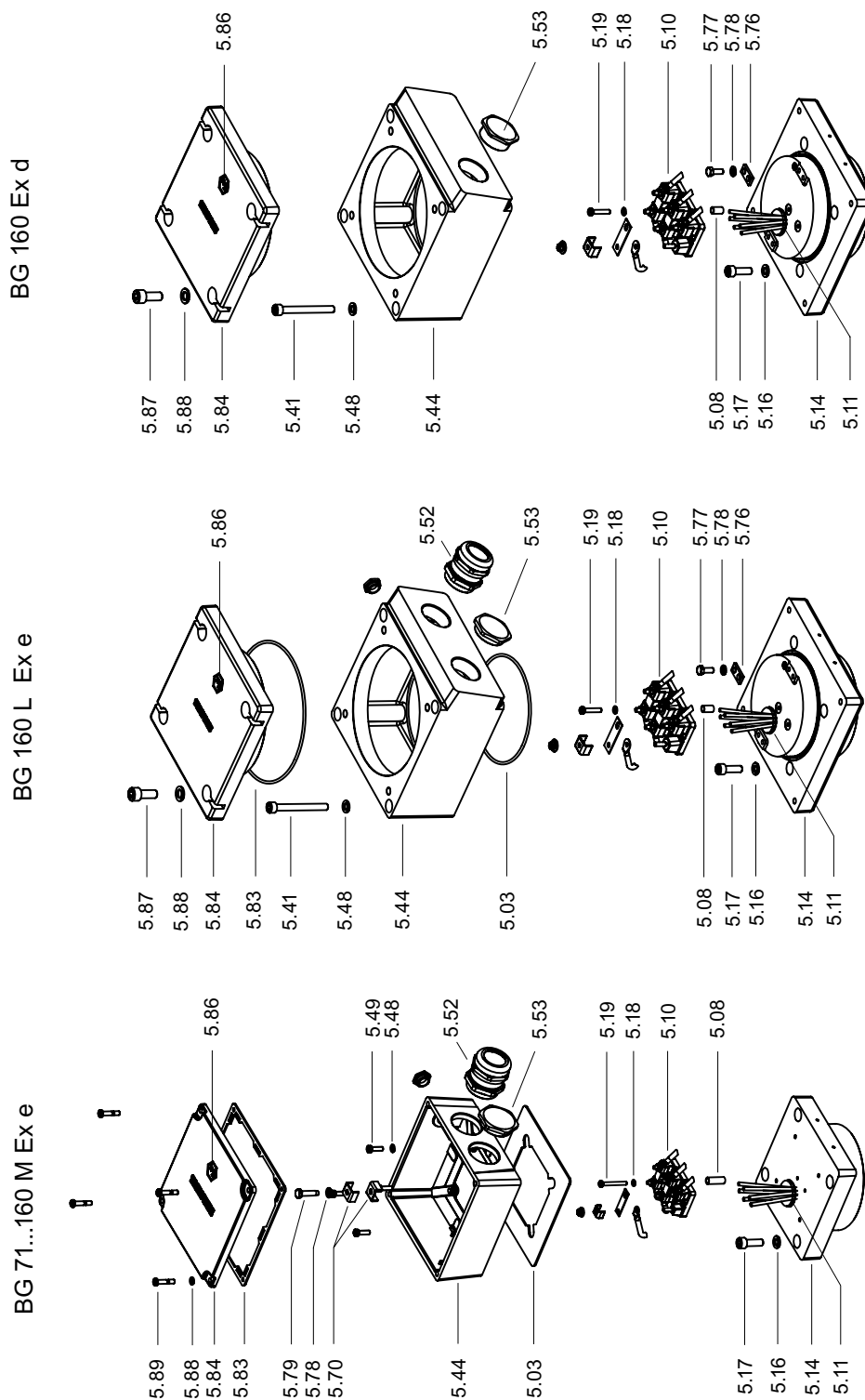
8.4.5 Terminal box 1MA6180...200



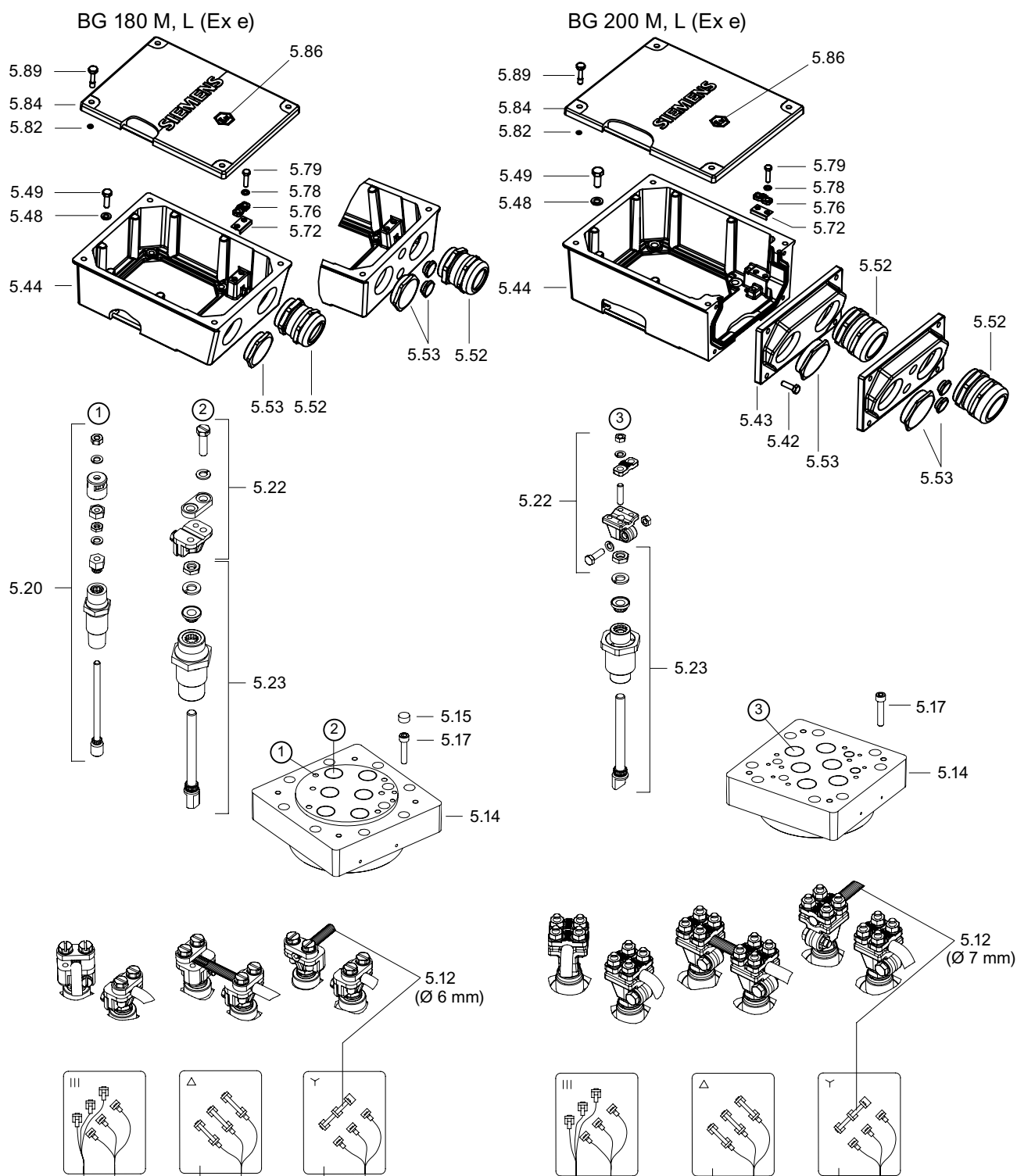
8.4.6 1MJ6070...200



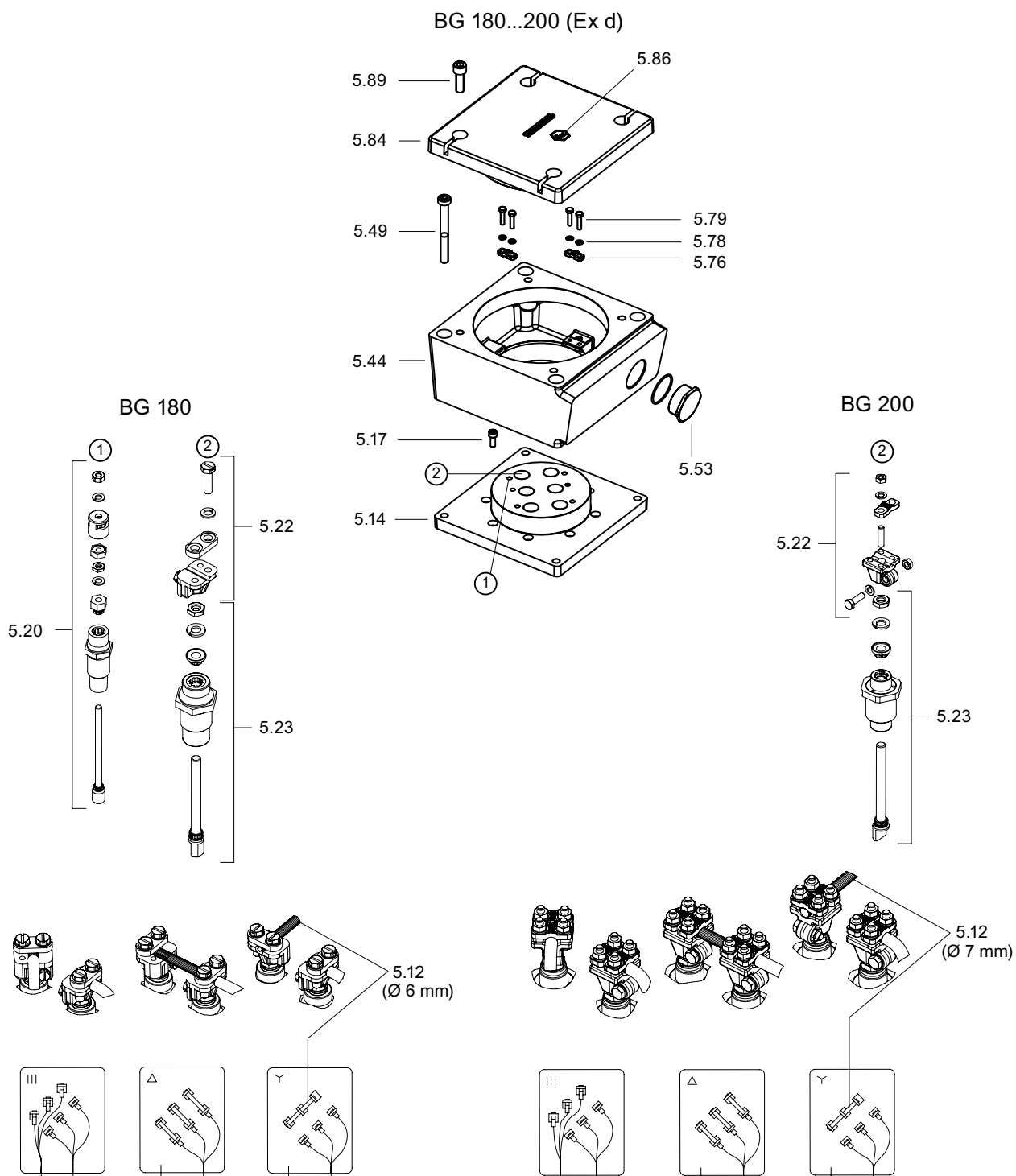
8.4.7 Terminal box 1MJ6070...160



8.4.8 Terminal box 1MJ6180...200 (Ex e)

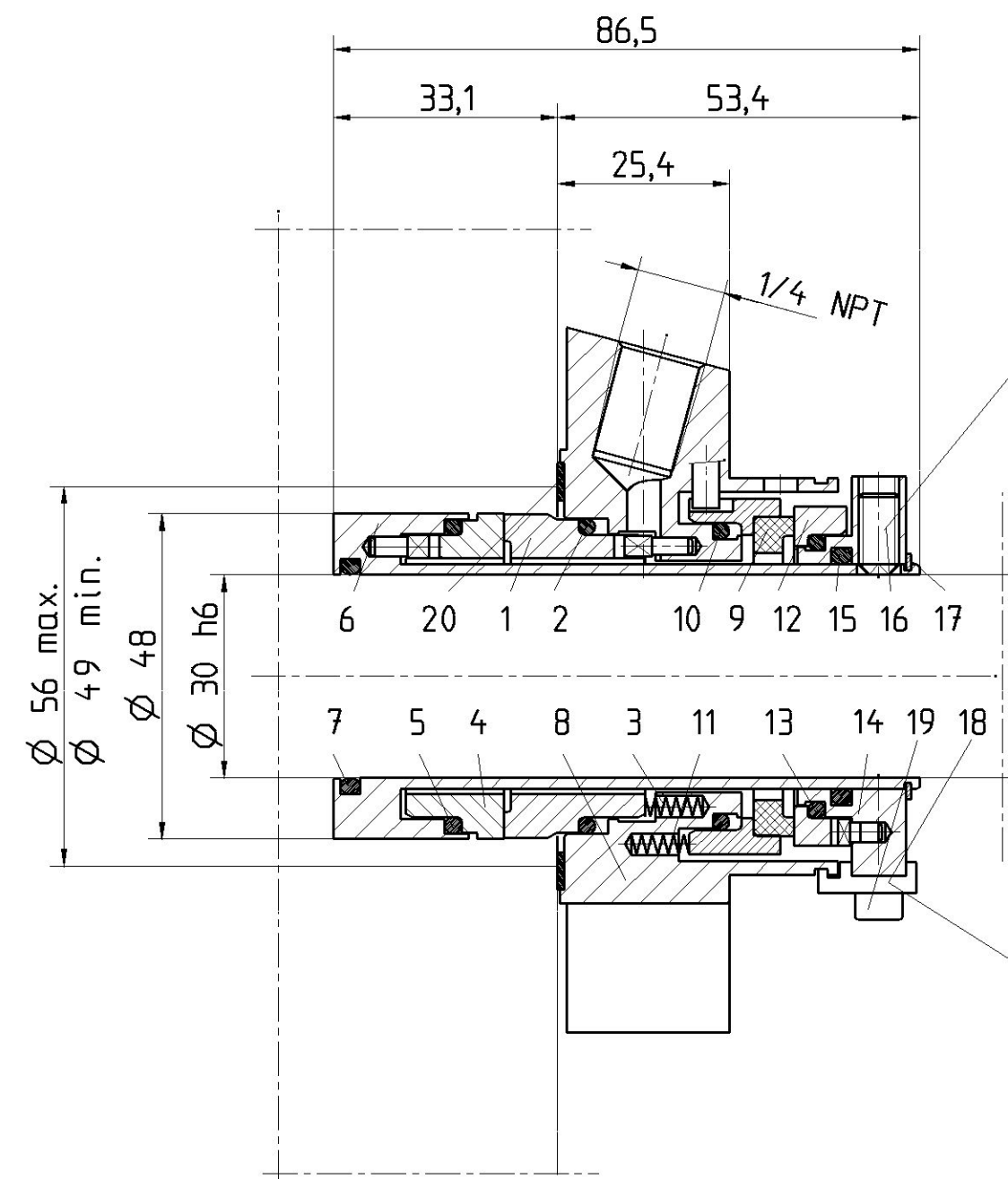


8.4.9 Terminal box 1MJ6180...200 (Ex d)



CAD-ZEICHNUNG - keine manuelle Änderung !

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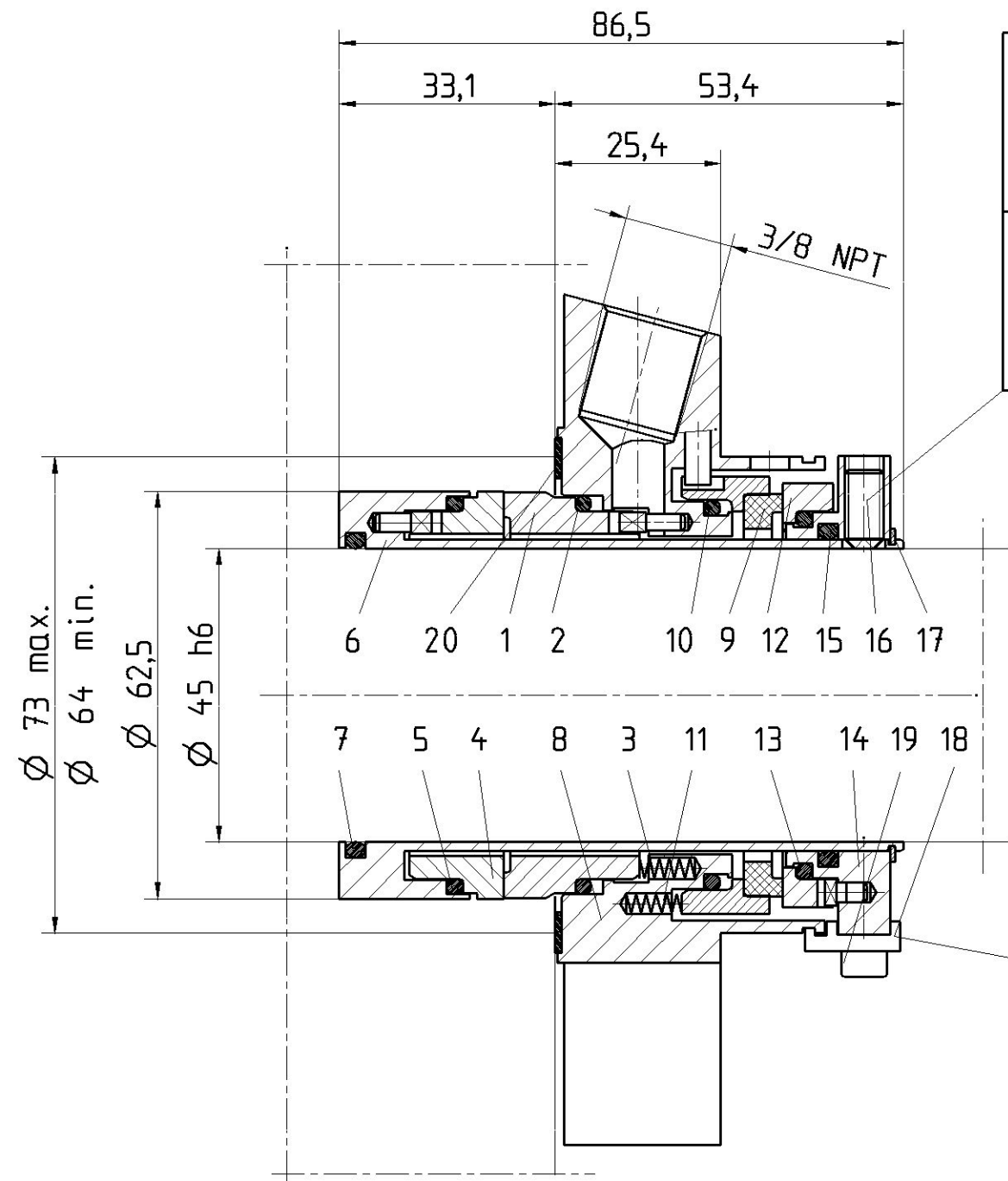
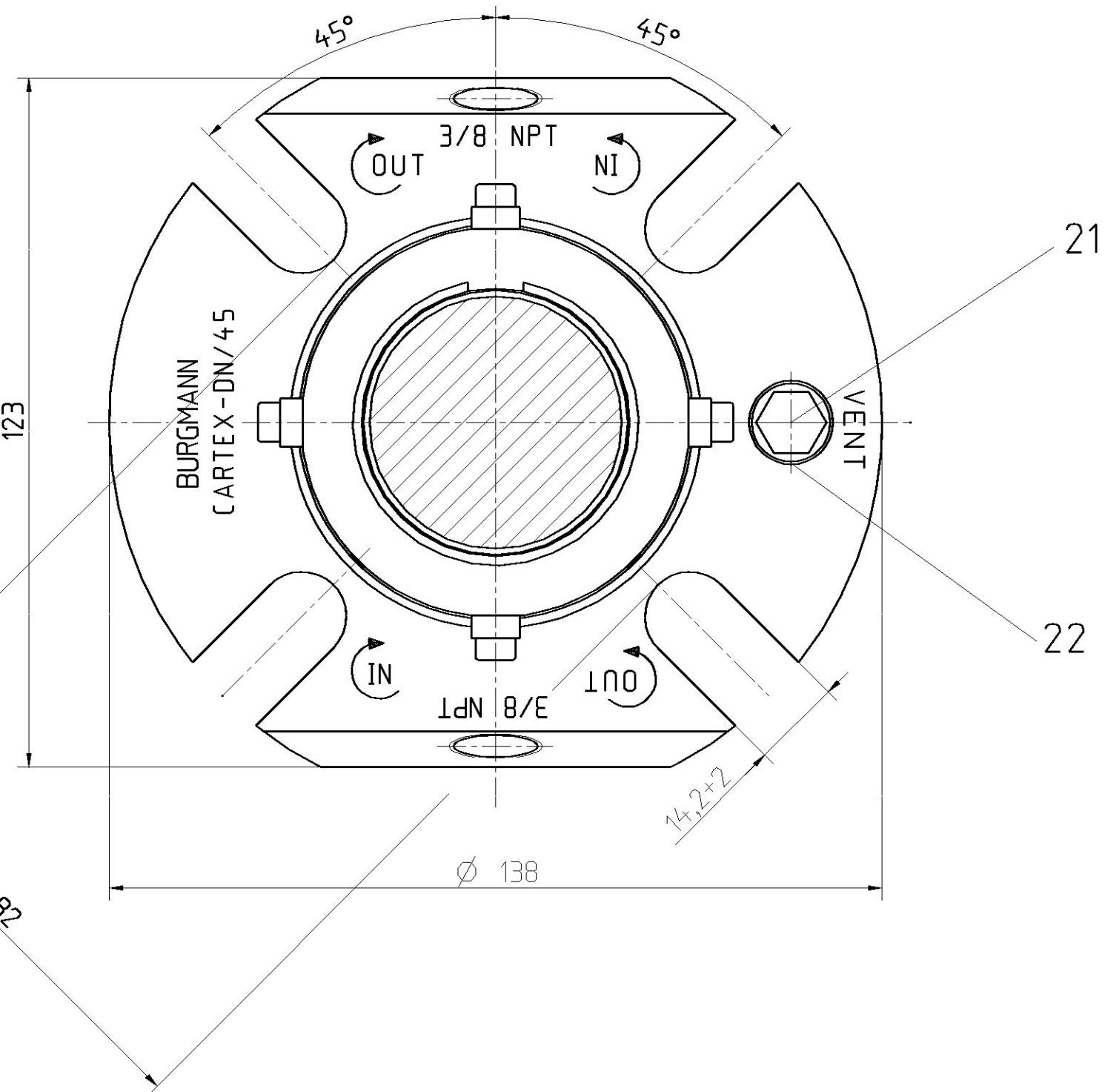


Montagelehren nach der Montage entfernt
Assembly fixtures removed after installation

		NORMAL		K/T		NORMAL		K/T	
GASKET	22	FLACHDICHTUNG	BURATHERM		BURATHERM	1			
HEAD SCREW PLUG	21	VERSCHLUSSSCHRAUBE	A4-50		ASTM A193 Gr.B8M	1	DIN5586-A-G1/8 A		
GASKET	20	FLACHDICHTUNG	BURATHERM	T 2	BURATHERM PTFE glassfibre reinf.	1			
HSR CAP SCREW	19	ZYLINDERSCHRAUBE	A4-70		ASTM A193 Gr.B8M	4	DIN912-M4X8		
ASSEMBLY FIXTURE	18	MONTAGELEHRE	PEEK40GF		PEEK40GF	4			
RETAINING RING	17	SICHERUNGSRING	1.4571		ASTM A276 (316Ti)	1			
SET SCREW	16	GEWINDESTIFT	A4-70		ASTM A193 Gr.B8M	4	DIN916-M6X12		
O-RING	15	RUNDDICHTRING	V		FKM	1	32,99X2,62		
DRIVER	14	MITNEHMER	1.4571		ASTM A276 (316Ti)	1			
O-RING	13	RUNDDICHTRING	V		FKM	1	36,17X2,62		
SEAT	12	GEGENRING	BUKA22		SILICON CARBIDE	1			
SPRING	11	FEDER	2.4610 (HAST.C4)		ASTM B574	6			
O-RING	10	RUNDDICHTRING	V		FKM	1	39,34X2,62		
SEAL FACE	9	GLEITRING	BUK01+1.4571		CARBON GRAPHITE +ASTM A276 (316Ti)	1			
COVER	8	DECKEL	1.4571		ASTM A276 (316Ti)	1			
O-RING	7	RUNDDICHTRING	V	T	FKM	PTFE	1	29,82X2,62	30,00X2,62
SHAFT SLEEVE	6	WELLENHUELSE	1.4571		ASTM A276 (316Ti)	1			
O-RING	5	RUNDDICHTRING	V	T	FKM	PTFE	1	40,94X2,62	41,70X2,62
SEAT	4	GEGENRING	BUKA22		SILICON CARBIDE	1			
SPRING	3	FEDER	2.4610 (HAST.C4)		ASTM B574	8			
O-RING	2	RUNDDICHTRING	V/K		FKM/FFKM	1	40,94X2,62		
SEAL FACE	1	GLEITRING	BUKA22/BUK01		SILICON CARBIDE CARBON GRAPHITE	1			
Pos. / Item		Benennung / Description		Burgmann Werkstoffbezeichnung Material designation		ASTM	Stueck Qty.	Bemerkung / Remarks	
		Freimasstol. nach general tolerances according to ISO 2768-m	Nennmasse [mm] Nominal dimensions	0,5-6	> 6-30	>30-120	>120-400	>400-1000	>1000-2000
		Abmasse [mm] Tolerances		± 0,1	± 0,2	± 0,3	± 0,5	± 0,8	± 1,2
Nr. No.		Aenderung Modification	Datum Date	Name Name	Datum Date	Name Name	Oberflächenbeschaffenheit nach Method of indicating surface to ISO 1302 (µm)		
		REV.1	12.10.04	HOLZER	18.06.2003	RESEN.	Toleranzklasse nach Tolerances according to ISO 2768-mK		
					24.06.2003	RESENBERG	Burgmann Dichtungswerke GmbH & Co KG D - 82502 Wolfratshausen		
					Norm Standard	Normgep.			
					Massstab Scale	BURGMANN-GLEITRINGDICHTUNG BURGMANN MECHANICAL SEAL			
					1:1				
					Zeichnungs-Nr. / Drawing No.			Artikel-Nr./Ref.No.	
					CARTEX-DN/30-00				
Entstanden aus / Originated from				Ersatz fuer / Replacement for			Ersetzt durch / Replaced by		
CAD									

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Gewindestifte gleichmaessig in mehreren Schritten ueber Kreuz anziehen.
Mit Loctite Nr. 243 gesichert.
Anzugsmoment: 7 Nm

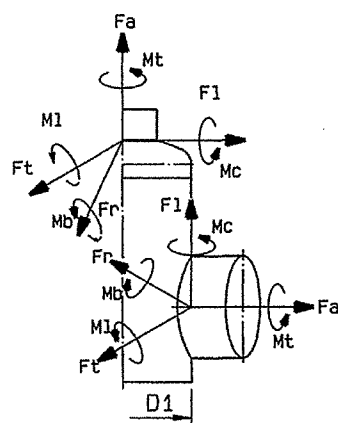
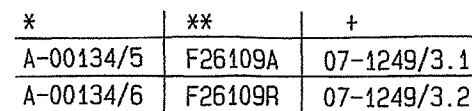
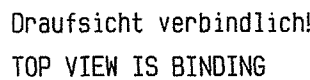
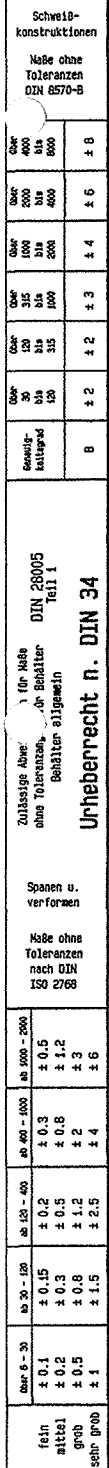
Tighten set screws equally, crosswise, in several steps.
Secured with Loctite No. 243.
Tighten torque: 7 Nm

Montagelehren nach der Montage entfernt
Assembly fixtures removed after installation
Enlever les gabarits de montage apres le montage

INTEGRIERTE FOERDEREINRICHTUNG INTEGRATED PUMP DEVICE

VERTIKALANORDNUNG VERTICAL ARRANGEMENT	HORIZONTALANORDNUNG HORIZONTAL ARRANGEMENT
Anschuesse abhaengig von der Wellendrehrichtung benutzen IN ist stets unten OUT ist stets oben VENT hier ohne Bedeutung Use the connections depending on the direction of rotation IN has to be at the bottom OUT has to be at the top VENT is of no importance here	VENT ist oben anzuordnen Anschuesse abhaengig von der Wellendrehrichtung benutzen IN/OUT dementsprechend wechseln VENT has to be at the top Use the connections depending on the direction of rotation choose IN/OUT correspondingly

			NORMAL		K/T		NORMAL			K/T	
JOINT PLAT	GASKET	22	FLACHDICHTUNG	BURATHERM	BURATHERM		1				
BOUCHON	HEAD SCREW PLUG	21	VERSCHLUSSSCHRAUBE	A4-50	ASTM A193 Gr.B8M		1	DIN5586-A-G1/8 A			
JOINT PLAT	GASKET	20	FLACHDICHTUNG	BURATHERM	T 2	BURATHERM PTFE glassfibre reinf.	1				
VIS A TETE CYLIND.	HSH CAP SCREW	19	ZYLINDERSCHRAUBE	A4-70	ASTM A193 Gr.B8M		4	DIN912-M4X8			
CALE DE MONTAGE	ASSEMBLY FIXTURE	18	MONTAGELEHRE	PEEK40GF	PEEK40GF		4				
CIRCLIPS	RETAINING RING	17	SICHERUNGSRING	1.4571	ASTM A276 (316Ti)		1				
VIS SANS TETE	SET SCREW	16	GEWINDESTIFT	A4-70	ASTM A193 Gr.B8M		4	DIN916-M6X12			
JOINT TORIQUE	O-RING	15	RUNDICHTRING	V	FKM		1	47,29X2,62			
ENTRAINEUR	DRIVER	14	MITNEHMER	1.4571	ASTM A276 (316Ti)		1				
JOINT TORIQUE	O-RING	13	RUNDICHTRING	V	FKM		1	50,47X2,62			
CONTRE GRAIN	SEAT	12	GEGENRING	BUKA22	SILICON CARBID		1				
RESSORT	SPRING	11	FEDER	2.4610 (HAST.C4)	ASTM B574		8				
JOINT TORIQUE	O-RING	10	RUNDICHTRING	V	FKM		1	53,64X2,62			
GRAIN	SEAL FACE	9	GLEITRING	BUK01+1.4571	CARBON GRAPHIT ASTM A276 (316Ti)		1				
COUVERCLE	COVER	8	DECKEL	1.4571	ASTM A276 (316Ti)		1				
JOINT TORIQUE	O-RING	7	RUNDICHTRING	V	T	FKM PTFE	1	45,69X2,62	45,00X2,62		
CHEMISE D'ARBRE	SHAFT SLEEVE	6	WELLENHUELSE	1.4571	ASTM A276 (316Ti)		1				
JOINT TORIQUE	O-RING	5	RUNDICHTRING	V	T	FKM PTFE	1	55,25X2,62	56,00X2,62		
CONTRE GRAIN	SEAT	4	GEGENRING	BUKA22	SILICON CARBID		1				
RESSORT	SPRING	3	FEDER	2.4610 (HAST.C4)	ASTM B574		10				
JOINT TORIQUE	O-RING	2	RUNDICHTRING	V/K	FKM/FFKM		1	55,25X2,62			
GRAIN	SEAL FACE	1	GLEITRING	BUKA22/BUK01	SILICON CARBID CARBON GRAPHIT		1				
Pos. / Item			Benennung / Description		Burgmann Werkstoffbezeichnung Material designation		Stueck Qty.	Bemerkung / Remarks			
Freimasstol. nach General tolerances according to ISO 2768-m			Nennmasse (mm) Nominal dimensions		0,5-6		>6-30	>30-120	>120-400	>400-1000	>1000-2000
			Abmasse (mm) Tolerances		± 0,1		± 0,2	± 0,3	± 0,5	± 0,8	± 1,2
Nr. No.			Aenderung Modification		Datum Date		Name Name		Oberflächenbeschaffenheit nach Method of indicating surface to ISO 1302 (µm)		
REV.I			12.10.04 HOLZER		Gezeichnet Drawn		23.06.2003 RESEN.		Toleranzklasse nach		
REV.II			14.02.05 HOLZER		Geprueft Checked		24.06.2003 RESENBERG		Tolerances according to		
					Norm Standard		Normgep.		ISO 2768-mK		
					Massstab Scale		BURGMANN-GLEITRINGDICHTUNG				
					1:1		BURGMANN MECHANICAL SEAL				
					Zeichnungs-Nr. / Drawing No.						
					Artikel-Nr./Ref.No.						
					BURGMANN Dichtungswerke GmbH & Co. KG D-82502 Wolfratshausen						
					BURGMANN-GLEITRINGDICHTUNG						
					BURGMANN MECHANICAL SEAL						
					Zeichnungs-Nr. / Drawing No.						
					Artikel-Nr./Ref.No.						
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					BURGMANN-GLEITRINGDICHTUNG						
					BURGMANN MECHANICAL SEAL						
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					BURGMANN-GLEITRINGDICHTUNG						
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					BURGMANN MECHANICAL SEAL						
					Zeichnungs-Nr. / Drawing No.						
					Artikel-Nr./Ref.No.						
					BURGMANN Dichtungswerke GmbH & Co. KG D-82502 Wolfratshausen						
					BURGMANN-GLEITRINGDICHTUNG						
					BURGMANN MECHANICAL SEAL						
					Zeichnungs-Nr. / Drawing No.						
					Artikel-Nr./Ref.No.						
					BURGMANN Dichtungswerke GmbH & Co. KG D-82502 Wolfratshausen						
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					Zeichnungs-Nr. / Drawing No.						
					Artikel-Nr./Ref.No.						



Stutzentabelle / LIST OF NOZZLES

Technische Daten / TECHNICAL DATAS * without U-Stamp

Stutzeninnenkanten/INNER NOZZLE EDGES:

Stützeninnenkanten runden:	$s \geq 6 \text{ mm}$	$R = 3$
INTERNAL NOZZLE EDGES:	$s < 6 \text{ mm}$	$R = 0.5 \times s$

Waermebehandlung n. dem Schweißen /POST WELD HEAT TREATMENT :

UCS-56 (d)	
Gehäuse und Deckel/HOUSING AND COVER	
Ofeneintrittstemperatur / FURNACE INLET TEMPERATURE	< 427 °C
Aufheizrate / HEATING-UP RATE	222 °C/h
Spannungsangabe / STRESS RELIEVING	620 - 640 °C
Haltezeit / HOLDING TIME	min. 30 minutes.
Abkühlrate / RATE OF COOLING	260 °C/h
ab ~ 427 °C an ruhender Luft BELOW ~ 427 °C AT STILL AIR	

Zerstörungsfreie Prüfungen / NONDESTRUCTIVE TESTING:

Nach der Wärmebehandlung / After Post Weld Heat Treatment

Röntgen = 100%	Sichtkontrolle = 100%	MP oder FE = 100%
X-RAY = 100%	VISUAL TESTING = 100%	MP OR DP = 100%

Oberflächenbehandlung / SURFACE TREATMENT:

C-STAHL / CARBON STEEL
- Stahlperlen gestrahlt/STEEL BEADS BLASTING: Sa 2 1/2
- Anstrich -außen/ Painting outside: 3-4.3.3-04 Alt.2
 - Grundanstrich / PRIMER COAT : 2-COMPONENT ZINC RICH EPOXY PRIMER DFT 40 µm
 INTERZING 72
 - Endenstrich / FINISH COAT : 2-COMPONENT OXIRAN ESTER DFT 120 µm
 DUASOLID 50
COLOUR : RAL 7038 LIGHT GREY

ODCB-PMA Filter F26109A / F26109R

Komm.-Nr.:	A-00134/07
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Maße ohne Toleranzangabe nach DIN ISO 2768
DIMENSIONS WITHOUT TOLERANCES ARE ACC. DIN

☐ fein
FINE

☐ FINE	☒ MIDDLE	☐ ROUGH	☐ VERY ROUGH	01	Nozzle N4 - Blind Flansch	15.6.07	Seekat	
Eingerichtete Maß werden bei der Abnahme besonders geprüft eingetragene Maße sind durch die Darstellung ersichtlich.					REV.	Änderung	Datum	Name

DIRECTIONS WITH FRAME ARE CHECKED PARTICULAR DURING INSPECTION		12.1	DESCRIPTION	DATE	NAME
Werkstoff/MATERIAL		ODCB-PMA Filter			

SA-516-60/SA-105-N
SA-106-B

Maßstab/SCALE	CAD	mf	Datum/DATE	Name/NAME	Zeichnungs-Nr./DRAWING-Nr.
1:5			09.05.2007	Schäfers	

1:5	ISKA-BAB	DRUM	09.05.2007	Seekatz	Zeichnungs-Nr./DRAWING-NO. WZ/ 4 001 201
1: 1		projeckt CHECKED	09.05.2007	Gen.	
		not check			

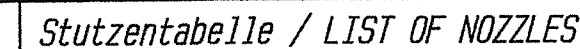
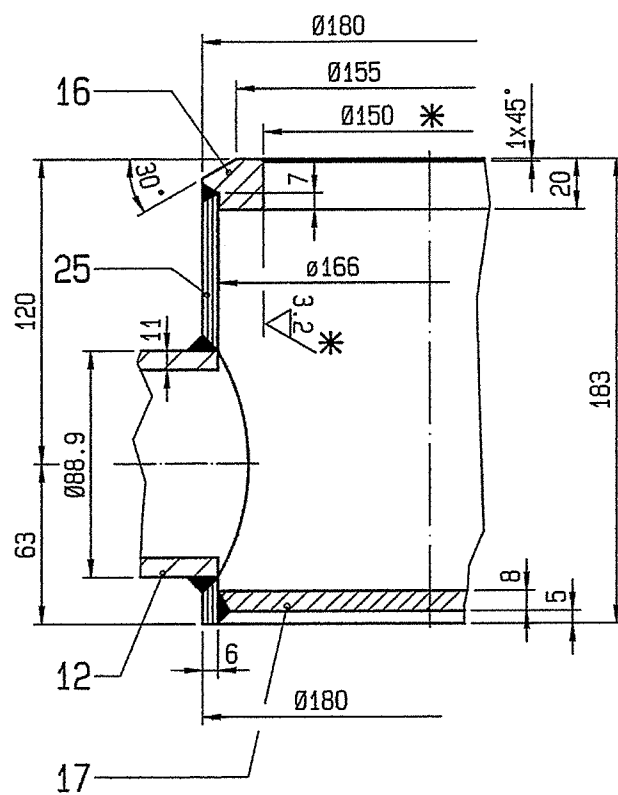
Ers. f./SUBSTITUTE FOR		Ers. d./SUPERSEDE BY	
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FAUDI

Zeichnungs-Nr. / DRAWING-NR.

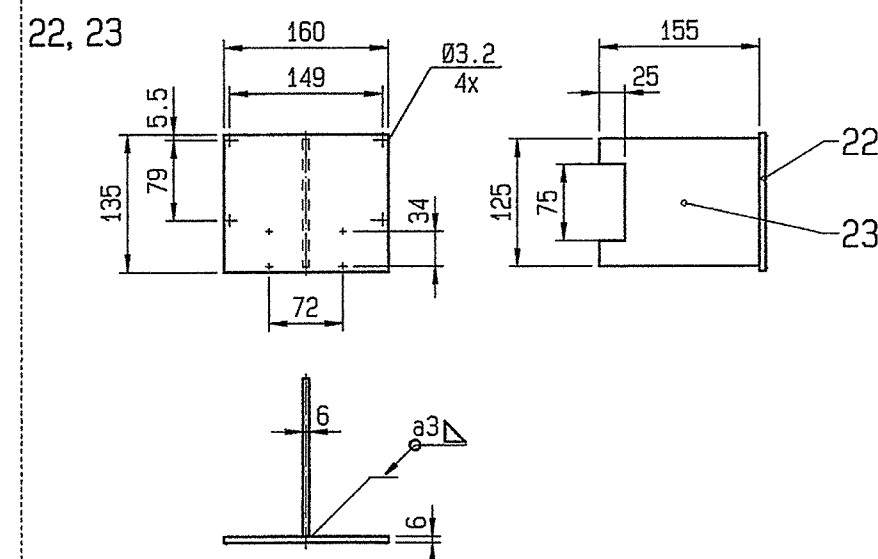
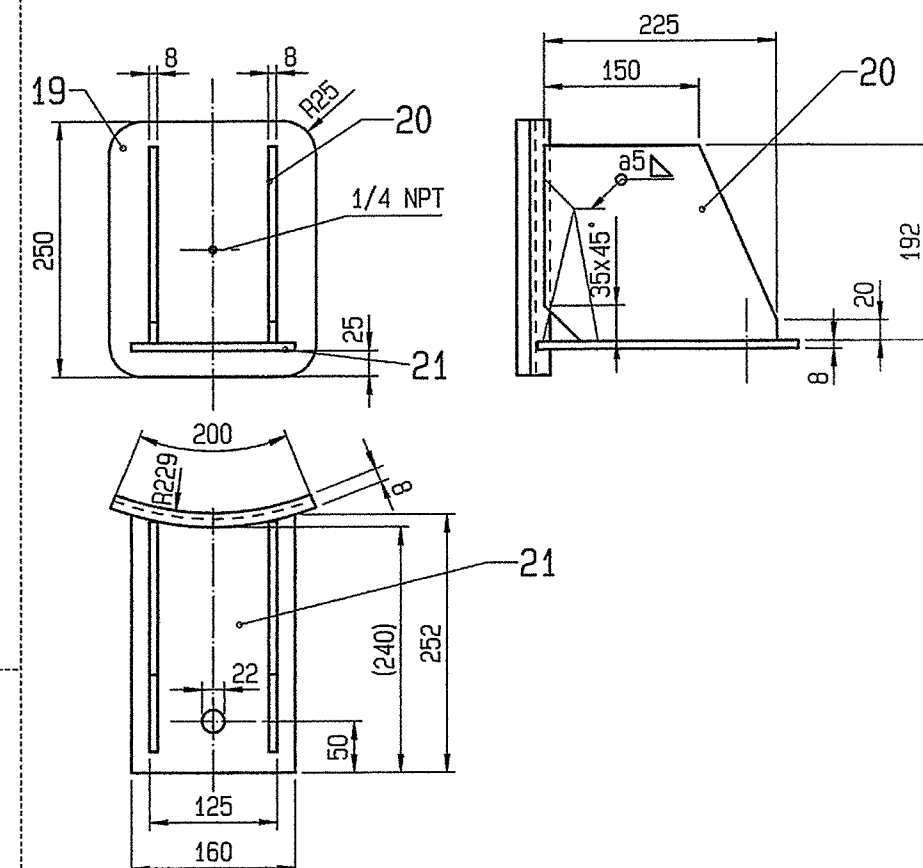
47/ 4 001 201

4 001 201



STÜTZEN NR. NOZZLE NO.	NENNWEITE NOMIN. SIZE	NENNDRUCK PRESSURE RATING	DICHTFLÄCHE FACING	FLANSCHENTYP TYPE OF FLANGES	ROHRSTÜTZEN NOZZLE PIPE	BENENNUNG NAME	
N1	3"	300 lbs	RF	ASME B16.5 WN	Ø88.9x11.1	Eintritt/INLET	
N2	3"	300 lbs	RF		Ø88.9x11.1	Austritt/OUTLET	
N3	3"	300 lbs	RF		Ø88.9x10	Entleerung/DRAIN	
	-	-	-			-	-
N5	1"	300 lbs	RF		Ø33.7x4.55	Heiz.-Ein/HEAT-IN	
N6	1"	300 lbs	RF		Ø33.7x4.55	Heiz.-Aus/HEAT-OUT	

19-21



Techn. Daten/Technical Data:

Zugehörige Zeichnungen:

Corresponding Drawing:

4 001 201

Stutzeninnenkanten/INNER NOZZLE EDGES:

Stutzeninnenkanten runden:

$$\begin{aligned} s \geq 6 \text{ mm} & \quad R = 3 \\ s < 6 \text{ mm} & \quad R = 0.5 * s \end{aligned}$$

Waermebehandlung n. dem Schweißen /POST WELD HEAT TREATMENT :

siehe / see 4 001 201

Zerstörungsfreie Prüfungen / NONDESTRUCTIVE TESTING:

siehe / see 4 001 201

Oberflächenbehandlung / SURFACE TREATMENT:

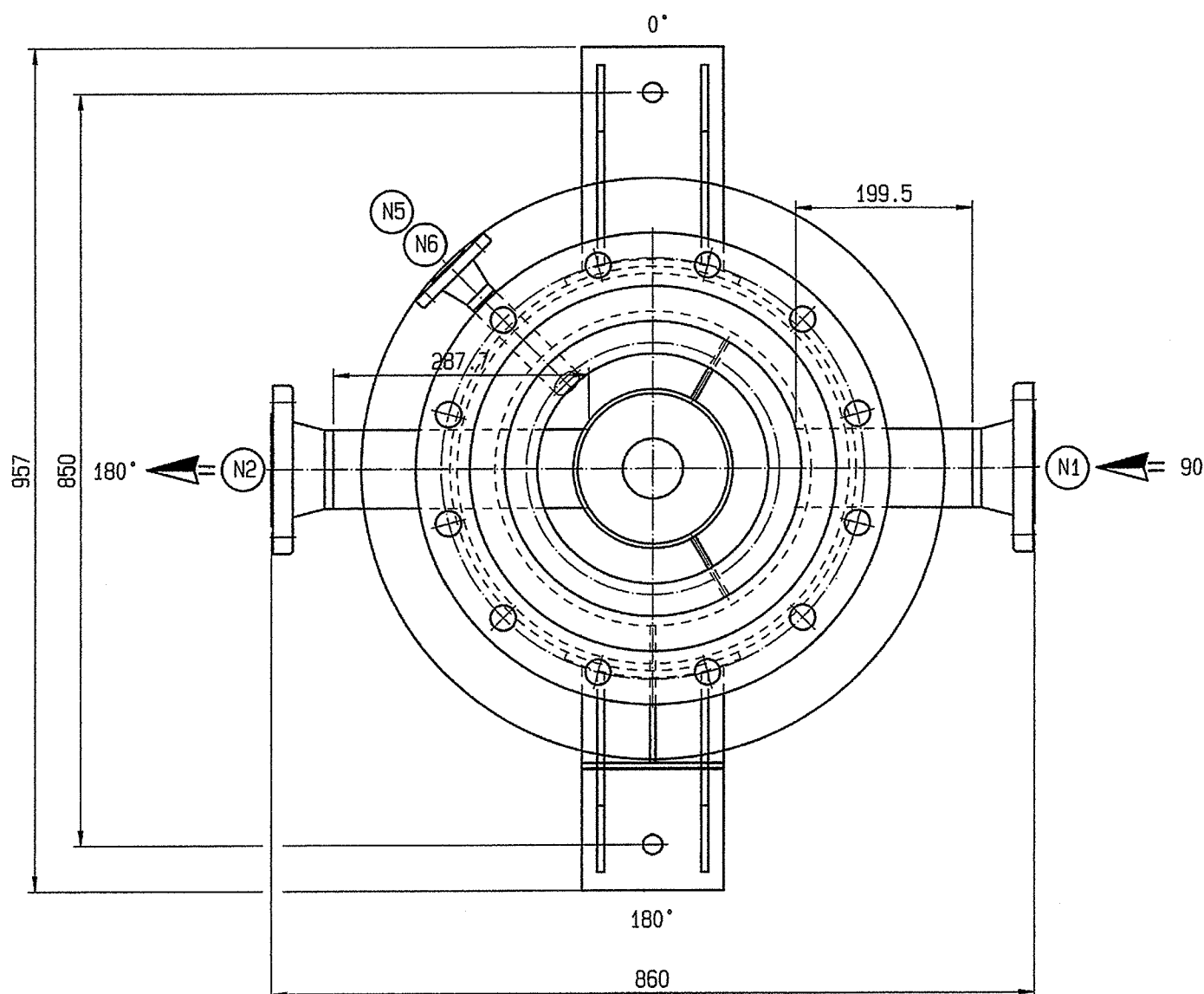
siehe / see 4 001 201

Schweißplan / WELDING PROCEDURE

Schweißdetails / WELDING DETAILS

nicht bemaßte Details/not dimensioned details

Nicht benähte Kehlnähte $a = 0,7 \times s \text{ min.; min. } 3\text{mm}$ FILLET WELDS WITHOUT DIMENSIONING $a = 0,7 \times s \text{ MIN.; MIN. } 3\text{MM}$ Abkürzungen / ABBREVIATIONS: - E-Hand = SMAW - WIG/MAG = GMAW - WIG = GTAW - UP = SAW W = Wurzellage / ROOT PASS G = Gegenlage / SEALING RUN F = Füllige / BETWEEN-PASS D = Decklage / ETINAL PASS.	1, 2 WPS 1.31 (W+S) UP 3, 4, 5 WPS 1.23.1 H = WIG F = E-Hand D = E-Hand 6, 7, 8 WPS 1.23.1 H = WIG F = E-Hand D = E-Hand 9, 10, 11, 12 WPS 1.23.1 H = WIG F = E-Hand D = E-Hand 13, 14, 15, 16 WPS 1.23.1 H = WIG F = E-Hand D = E-Hand 17, 18, 19 WPS 1.23.1 H = WIG F = E-Hand D = E-Hand
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ODCB-PMA Filter F26109A / F26109R

Komm.-Nr.: A-00134-07

Maße ohne Toleranzangabe nach DIN ISO 2768 DIMENSIONS WITHOUT TOLERANCES ARE ACC. DIN ISO 2768		04			
		03			
☐ fein FINE		☒ mittel MIDDLE		☐ grob ROUGH	
		02			
		01			
☐ Einzelmaße käden werden bei der Abnahme besonders geprüft! DIMENSIONS WITH FRAME ARE CHECKED PARTICULAR DURING INSPECTION		REV.		Änderung DESCRIPTION	Datum DATE
Werkstoff/MATERIAL SA-106-60/SA-106-B SA-105-N		ODCB-PMA Filter Housing		FAUD	
Maßstab/SCALE 1:5 1:1 1:2.5		m f			
CAD		m f		Zeichnungs-Nr. /DRAWING-Nr.	
ISKA-BAB		PERSONAL SIGNATURE 07.05.2007 PERSONAL SIGNATURE 07.05.2007 FOR REPAIR APPROVED		Seitzke Gerlach	
Ers. f./SUBSTITUTE FOR		Ers. d./SUPERSEDE BY		4 001 215	

Schweiß-
konstruktionen
Kasse ohne
Toleranzen
DIN 6570-8

400	bis	± 8
200	bis	± 6
100	bis	± 4
315	bis	± 3
150	bis	± 2
30	bis	± 2
Gewalt- testigend	B	

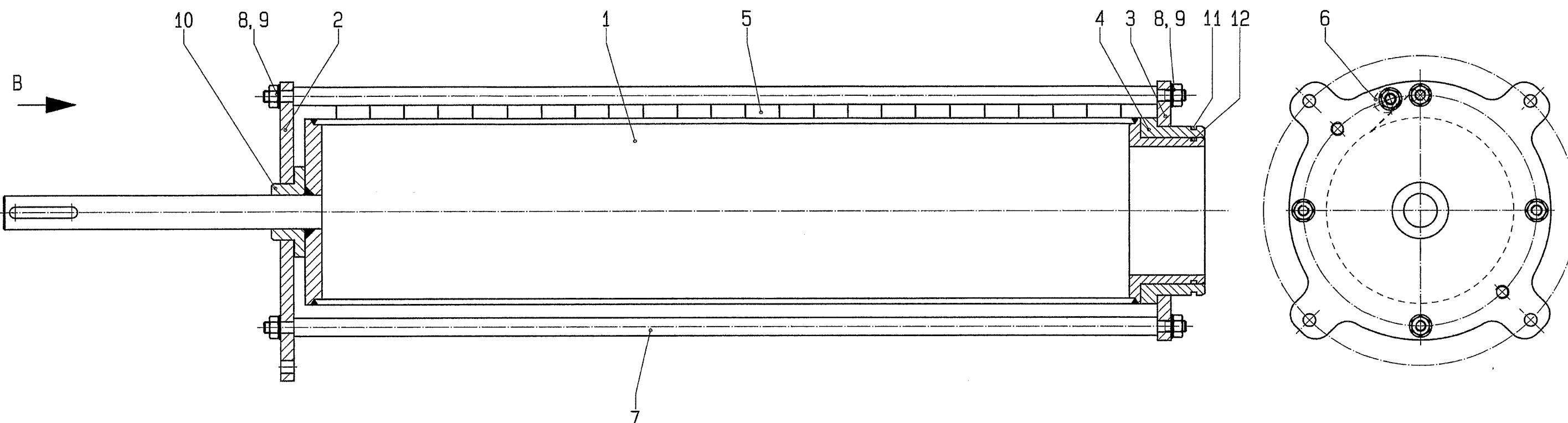
Zulässige Abweichungen für Kasse
ohne Toleranzangabe für Behälter
Behälter allgemein
Unheberrecht n. DIN 34

Spanen u.
verformen

Masse ohne
Toleranzen
nach DIN
ISO 2768

ab 120 - 400	ab 400 - 1000	ab 1000 - 2000
± 0,2	± 0,3	± 0,5
± 0,5	± 0,8	± 1,2
± 0,5	± 1,2	± 2
± 1,2	± 2	± 4
± 2,5	± 4	± 6

Fein
mittel
grob
sehr grob



Maße ohne Toleranzangabe nach DIN ISO 2768 DIMENSIONS WITHOUT TOLERANCES ARE ACC. DIN ISO 2768		04		
☐ fein FINE ☒ mittel MIDDLE ☐ grob ROUGH ☐ sehr grob VERY ROUGH		03		
☐ Eingenahete Maße werden bei der Abnahme besonders geprüft DIMENSIONS WITH FRAME ARE CHECKED PARTICULAR DURING INSPECTION		02		
		01		
Werkstoff/MATERIAL 1.4541/1.4301		Filterelement kpl. mit Abstreifvorrichtung 87 /D=165		Datum DATE
Maßstab/SCALE 1: 2.5	CAD ISKA-BAB	mf	Datum/DATE 02.07.2007	Name/NAME Seekatz
			Geprüft/Checked 02.07.2007	Ger. Ger.
Ers. f./SUBSTITUTE FOR		Ers. d./SUPERSEDE BY		

FAUDI
Zeichnungs-Nr./DRAWING-NO.
WZ/ 4 001 288

Schweiß-
konstruktionen
Maße ohne
Toleranzen
DIN 8570-5

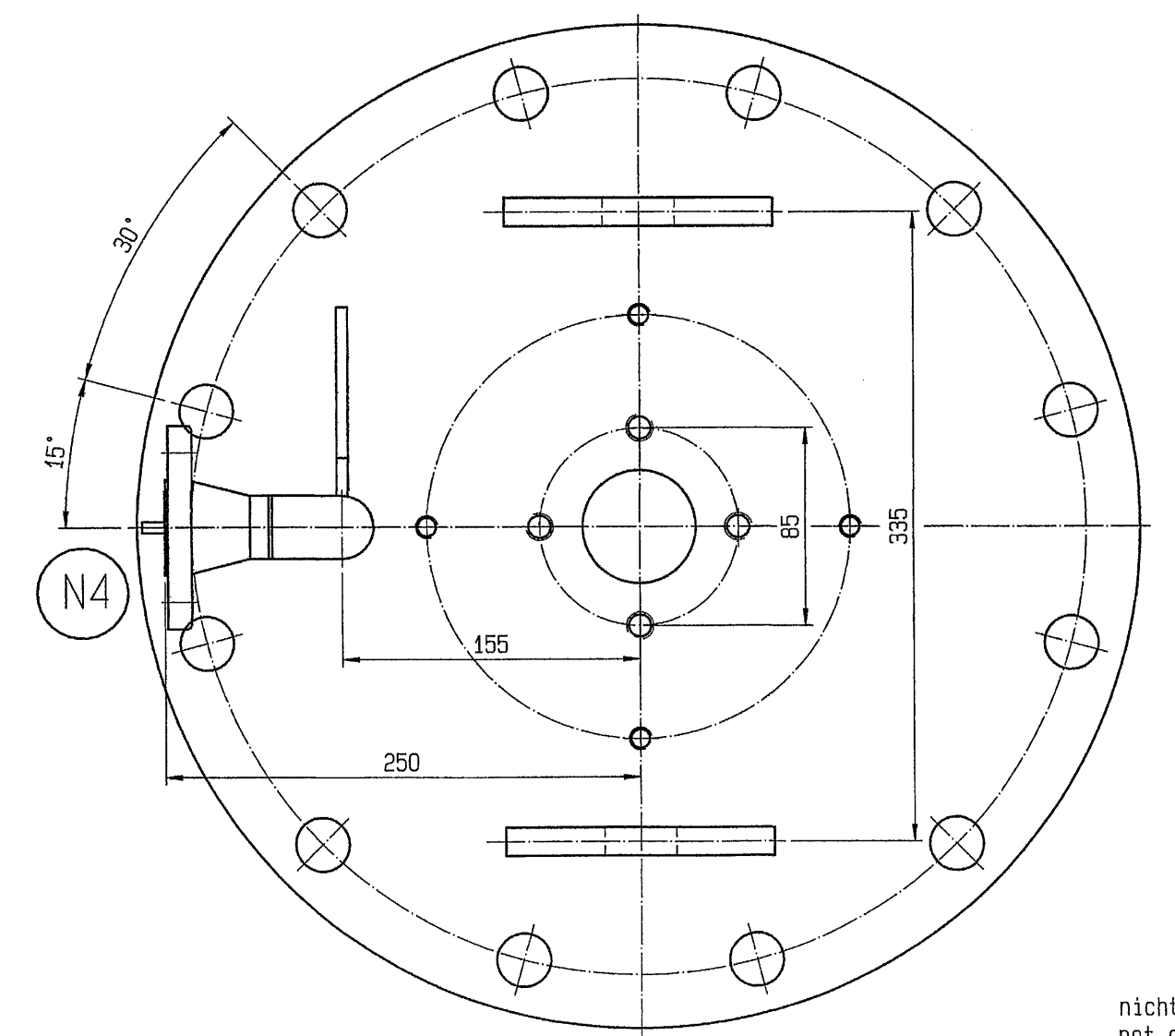
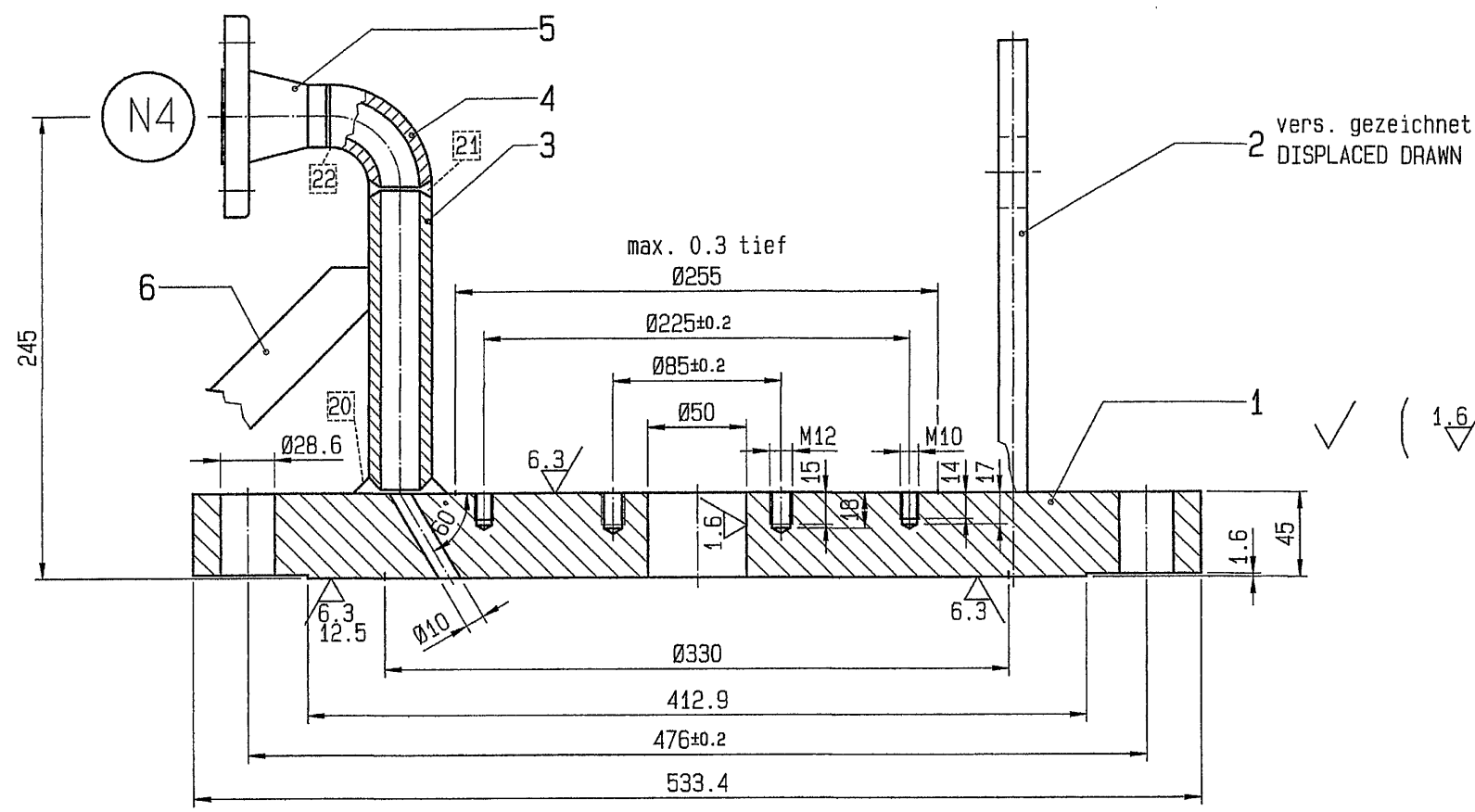
4000	bis	4500	± 8
2000	bis	4000	± 6
1000	bis	2000	± 4
315	bis	1000	± 3
120	bis	315	± 2
30	bis	120	± 2
Bewehrungs- steg	B		

zusätzliche Abmessung...
ohne Toleranzangabe für Behälter
Behälter allgemein
Urheberrecht n. DIN 34

Spanen u.
verformen
Maße ohne
Toleranzen
nach DIN
ISO 2768

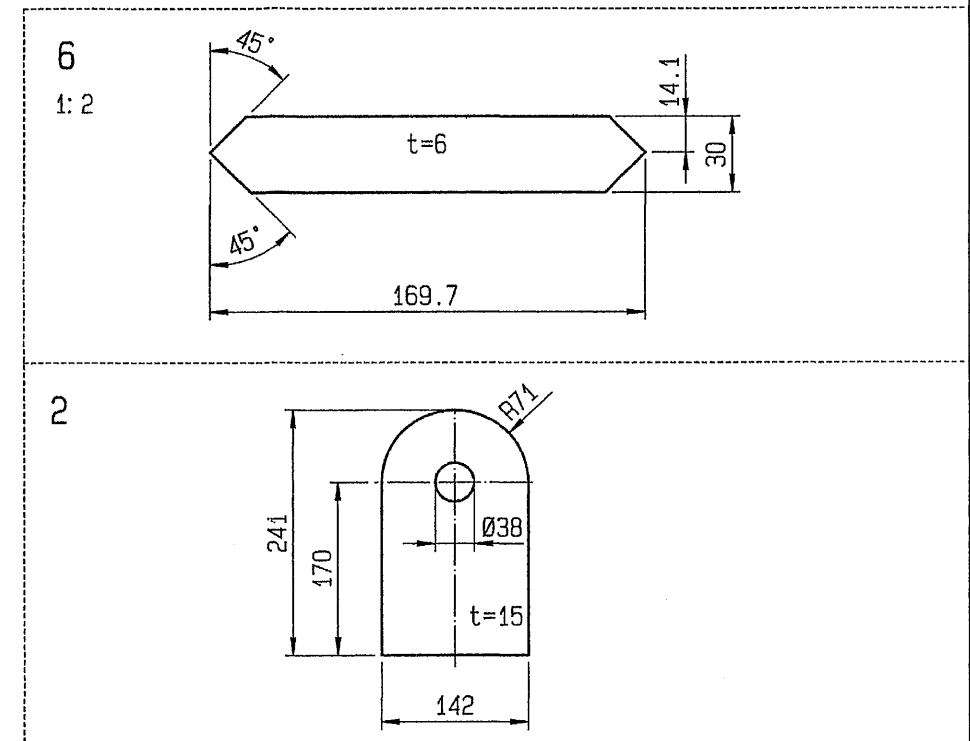
0 - 30	± 0,1
30 - 120	± 0,15
120 - 400	± 0,3
400 - 1000	± 0,5
1000 - 2000	± 0,8
2000 - 4000	± 1,2
4000 - 6000	± 1,6
6000 - 8000	± 2,0
8000 - 10000	± 2,5
10000 - 15000	± 3,0
15000 - 20000	± 4,0
20000 - 30000	± 5,0
30000 - 40000	± 6,0
40000 - 50000	± 8,0
50000 - 60000	± 10,0
60000 - 70000	± 12,0
70000 - 80000	± 15,0
80000 - 90000	± 18,0
90000 - 100000	± 20,0

fein
mittel
grob
sehr grob



Stutzentabelle / LIST OF NOZZLES

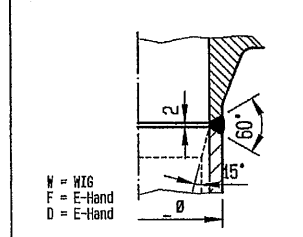
STUTZEN NR. NOZZLE NO.	NENNWEITE NOMIN. SIZE	NENNDRUCK PRESSURE RATING	DICHTFLÄCHE FACING	FLANSCHART TYPE OF FLANGES	ROHRSTUTZEN NOZZLE PIPE	BENENNUNG NAME
N4	1 "	150 lbs	RF	ASME B16.5 WN	Ø 33.4x9.1	Entlüftung/Vent



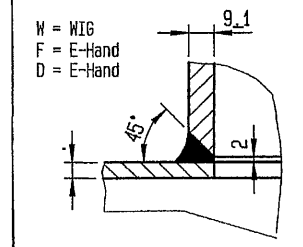
Schweißdetails WELD DETAILS

Nicht bemaßte Kehlnähte
a = 0.7 x s min.; min. 3mm.
FILLET WELDS WITHOUT DIMENSIONING
a = 0.7 x s MIN.; MIN. 3MM.
Abkürzungen / ABBREVIATIONS:
E-Hand = SMAW
MIG/MAG = GMAW
WIG = GTAW
UP = SAW
W = Wurzellage / ROOT PASS
G = Gegenlage / SEALING RUN
F = Füllage / BETWEEN-BEAD
D = Decklage / FINAL PASS

21, 22 WPS 1.23.1



20 WPS 1.23.1



Techn. Daten/Technical Data:

Zugehörige Zeichnungen:
Corresponding Drawing: 4 001 201

Stutzeninnenkanten/INNER NOZZLE EDGES:
Stutzeninnenkanten runden: s ≥ 6 mm R = 3
INTERNAL NOZZLE EDGES: s < 6 mm R = 0.5 * s

Wärmebehandlung n. dem Schweißen /POST WELD HEAT TREATMENT:
siehe / see 4 001 201

Zerstörungsfreie Prüfungen / NONDESTRUCTIVE TESTING:
siehe / see 4 001 201

Oberflächenbehandlung / SURFACE TREATMENT:
siehe / see 4 001 201

ODCB-PMA Filter F26109A / F261096R

Komm.-Nr.: A00134/07

Maße ohne Toleranzangabe nach DIN ISO 2768 DIMENSIONS WITHOUT TOLERANCES ARE ACC. DIN ISO 2768	04			
☐ fein FINE ☒ mittel MIDDLE ☐ grob ROUGH ☐ sehr grob VERY ROUGH	03			
☐ E-Hand ☐ F-Hand ☐ D-Hand	02			
☐ E-Hand ☐ F-Hand ☐ D-Hand	01			
Eingerahmte Maße werden bei der Abnahme besonders geprüft DIMENSIONS WITH FRAME ARE CHECKED PARTICULAR DURING INSPECTION	REV.	Änderung DESCRIPTION	Datum DATE	Name NAME

Werkstoff/MATERIAL
SA-516-60

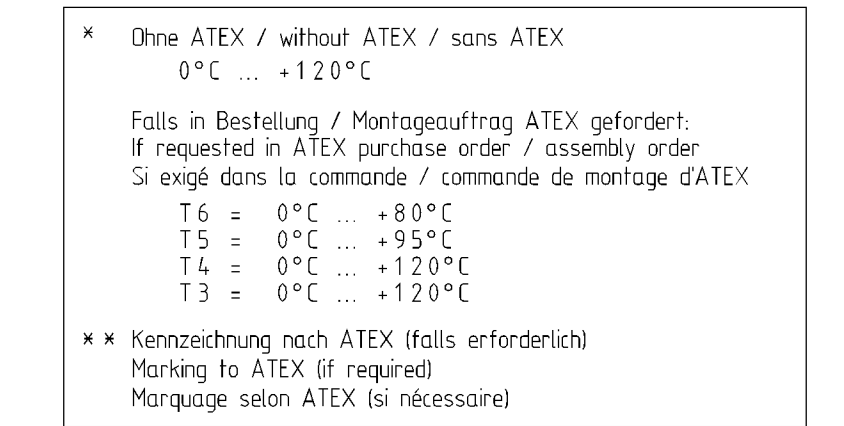
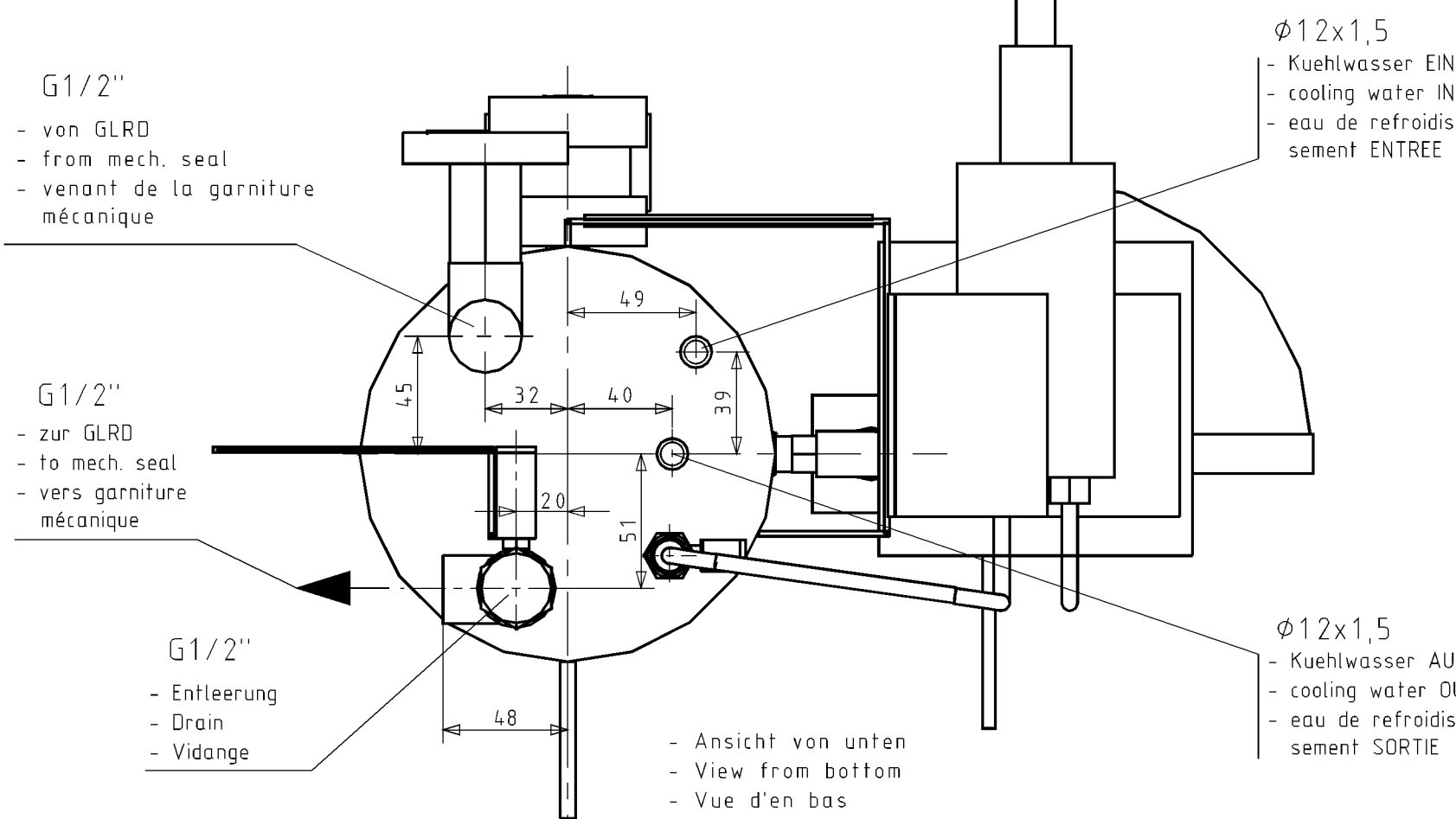
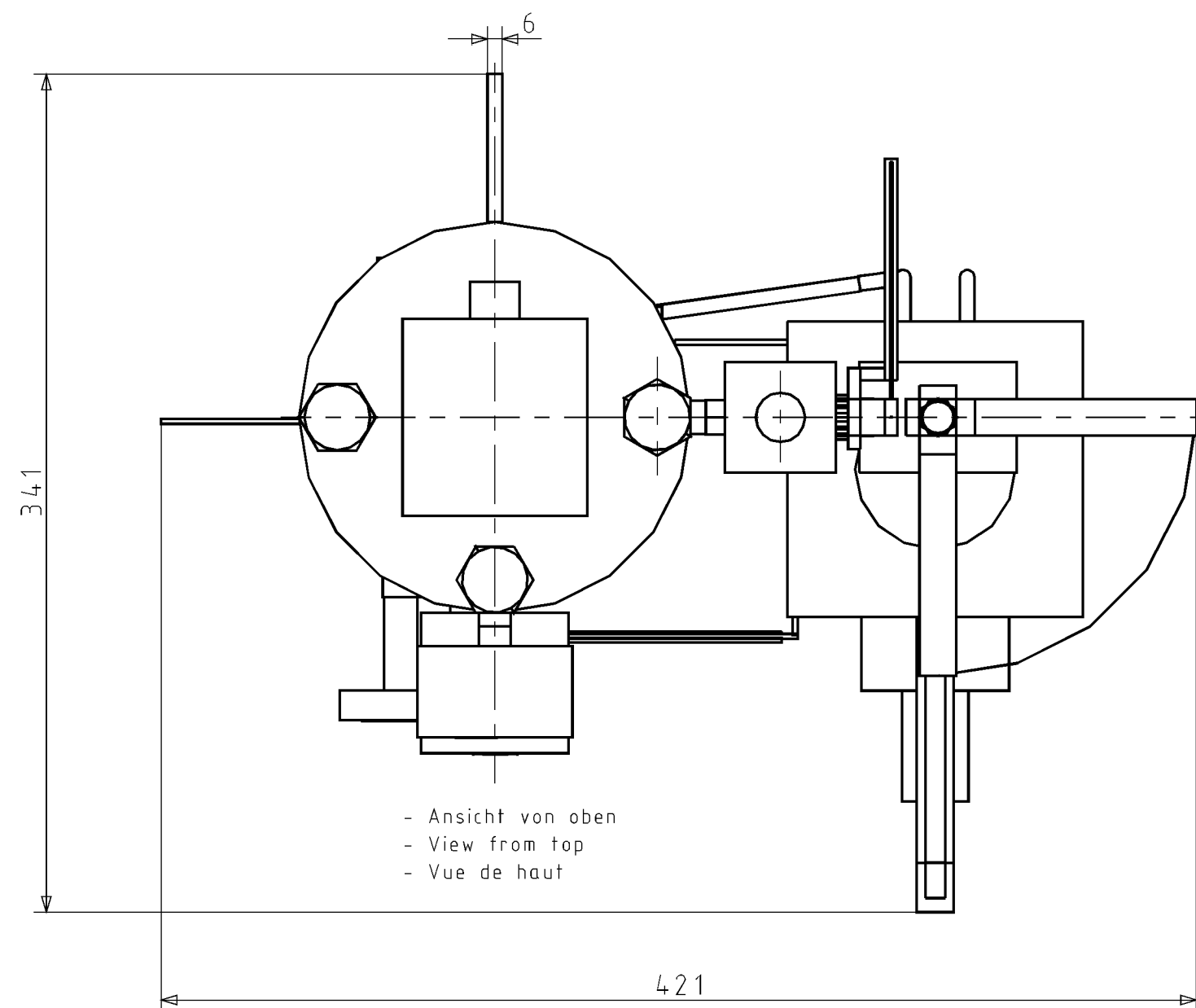
Maßstab/SCALE
1: 2

Ers. f./SUBSTITUTE FOR
Ers. d./SUPERSEDE BY

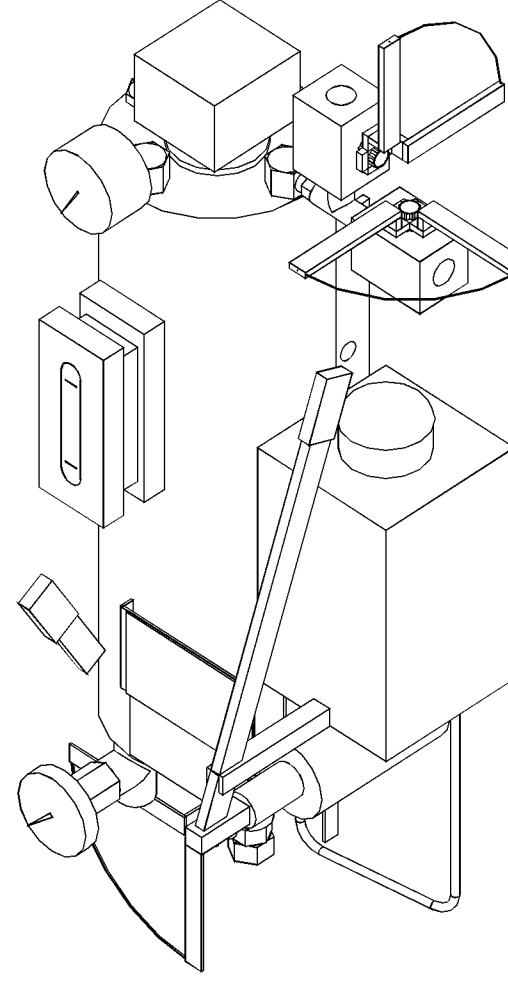
FAUDI

Zeichnungs-Nr./DRAWING-NO.
4 001 289

CAD – ZEICHNUNG – keine manuelle Änderung !
 Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patenterteilung oder Gebrauchsmuster-Eintragung vorbehalten.



Auslegung, Konstruktion und Herstellung
gemäss Druckgeräteeintrichtlinie 97/23/EG.
Design according to the Pressure
Equipment Directive (PED) 97/23/EC.
Etude, conception et réalisation selon la directive
sur les dispositifs à pression 97/23/CE.



Pos.6 SPN4016-00	
Behälterinhalt	2 L
Tank volume	2 L
Contenu de réservoir	2 L
Zul. Betriebsueberdruck	0 bar
Max. operating pressure	0 bar
Suppression de service admissible	0 bar
Zul. Betriebstemperatur	70°C
Max. operating temperature	70°C
Température de service admissible	70°C
Foerdervolumen	16 cm
Displaced volume	16 cm
Volume déplacé	16 cm
Foerdrdruck	16 ba
Delivery pressure	16 ba
Pression de refoulement	16 ba

<u>Pos.2 SPS2000-00</u>	
Zul. Betriebsüberdruck	max. 30 bar
Max. operating pressure	max. 30 bar (g)
Surpression de service admise	max. 30 bar
Prüfdruck	40 bar
Test pressure	40 bar (g)
Pression d'essai	40 bar
Zul. Betriebstemperatur	max. +180°C
Max. operating temperature	max. +180°C
Température de service admise	max. +180°C
Dichte des Mediums	min 700 kg/m³
Density of fluid	min 700 kg/m³
Densité du fluide	min 700 kg/m³
Kontaktart	Schutzgaskontakt (Reed-Kontakt)
Type of contact	Reed contact
Type de contact	Contact sous gaz protecteur
Kontaktfunktion	Umschalter
Contact function	Change-over contact
Fonction du contact	Commuteur

Ex-Schutz

Zuendschutzart II 1/2 G EEx ia IIC T3-T6
KEMA 01 - ATEX 1053X
Nur zum Anschluss an einen
beschränkten eigensicheren Stromkreis
mit max. 100mA
Prozesstemperatur: T6 ≤ 80°C
T5 ≤ 95°C
T4 ≤ 130°C
T3 ≤ 180°C

Explosion protection Type of protection II 1/2 G EEx ia IIC T3-T6
KEMA 01 - ATEX 1053X
Connect only to a certified intrinsically
safe circuit with max. 100mA
Process temperature: T6 ≤ 80°C
 T5 ≤ 95°C
 T4 ≤ 130°C
 T3 ≤ 180°C

Protection antideflagrante

Execution antideflagrante II 1/2 G EEx ia IIC T3-T6

KEMA 01 - ATEX 1053X

Raccorder seulement a un circuit
a securite avec max100mA

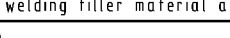
Temperature de service : T6 60°C
T5 95°C
T4 130°C
T3 180°C

Schutzart	IP 65
System of protection	IP 65
Execution antideflagrante	IP 65

Anschlusschema gezeichnet bei Schwimmer nicht am Schaltpunkt	
Connecting diagram shown with float not in switch point position	
Schéma de raccord montre le flotteur n'étant pas au point d'interrupteur	

Pos.3 SP23-092-00	
Zul. Betriebsüberdruck	16 bar
Max. operating pressure	16 bar [g]
Suppression de service admise	16 bar
Zul. Betriebstemperatur	200°C
Max. operating temperature	200°C
Température de service admise	200°C
Anzeigebereich	0-16 bar
Indicator ranges	0-16 bar
Etendues de mesure	0-16 bar

Pos./Item	Bemerkung/Description	DIN	Werkstoffbezeichnung/Material designation	Burgenummer Qty.	Stueck Qty.	Bemerkung/Remarks
9	Adapter Adapter Accessoire		1,4571 1,4571 1,4571	1	1	TS2001/A001-04
8	Kugelhahn Ball valve Robinet a bouc. sph.		----- ----- -----	1	1	SP14-013-00
6	Nachpessereinheit Refill unit Unité reformation		----- ----- -----	1	1	SPN4016-00
5	Ventil - Gruppe Valve - Group		----- ----- -----	1	1	SP17-006-00
4	Messeneinrichtung Measuring unit Dispositif de mesure		----- ----- -----	1	1	SP23-093-00
3	Messeneinrichtung Measuring unit Dispositif de mesure		----- ----- -----	1	1	SP23-092-00
2	Niveauschalter Level switch Interupt. a niveau		1,4571 1,4571 1,4571	1	1	SFS2000-00
1	Thermophosphorbeh. Thermophosphon vessel Reper. thermophosph		1,4571 316 Ti Z 5 GDT/ 17,12	1	1	TS1016/A007-00

Freimaßstab, nach General tolerances according to EN ISO 13920 D		Nennmaße [mm] Nominal dimensions		2-30	30-120	120-400	400-1000	1000-2000	2000-4000
		Abmaße [mm] Tolerances		± 1	± 4	± 7	± 9	± 12	± 16
Nr.	Anderung	Datum	Name	Datum	Name	Schweißverfahren und Zusatzwerkstoff nach WN 139 Welding process and welding filler material acc.to WN 139			
•	Rev. 1	15.01.01	Hautz	14.03.00	Doehl	Toleranzklasse nach Tolerances according to EN ISO 13920 - DH 			
•	Rev. 2	15.01.03	Boehm						
•	Rev. 3	30.07.04	Spong	14.03.00	Boehl				
IV	04.10.90	29.11.04	Schoppa		Norm Standard	Burgmann Industries GmbH & Co. KG D-82515 Wolfratshausen			
•	Rev. 5	26.07.05	Häsch			THERMOSIPHON SYSTEM THERMOSIPHON SYSTEM SYSTEME THERMOSIPHON			
Zeichnungs-Nr. / Drawing No.				1:2,5		Artikel-Nr./Ref.No.			
TS 1016/M063-D1									
Erstanden aus / Originated from			Ersatz fuer / Replacement for			Ersetzt durch / Replaced by			VS



PROJECT 8010014-1 NB/AN
Equipment Engineering Document
4.3.1 Equipment Specification

Date
aug 31, 2005

Created/Rev by	Annn
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Revision
1A

Check	Appr
-------	------

EQ. SPEC. -

Qty: **1**

Supplier :

GEL

Building No:

121

Weight: Empty: kg Operating: kg Maximum: kg Weights are: ☐ Preliminary ☐ Final

INSTALLATION:

On the inlet pipe inside tank S12301.

APPLICATION:

Enhancement of water/aniline separation calming of inlet flow.

OPERATING DATA:

Temperature: 40°C

Pressure: 1.013 bar a (atm)

Density of Water: 979 kg/m³

Density of Aniline: 1022 kg/m³

Viscosity of Water: 1.85 mPa s**Viscosity of Aniline: 0.60 mPa s**

Flow rate, Water: 1810 kg/h

Flow rate, Aniline: 5041 kg/h

MATERIAL: By Vendor

MISCELLANEOUS DATA

INSULATION ☐ Yes ☒ No

ANCHOR BOLT ☐ Yes ☒ No

Type: Thickness: mm

Type: Dimension:

Support included: ☐ Yes ☐ No

Quantity: Material:

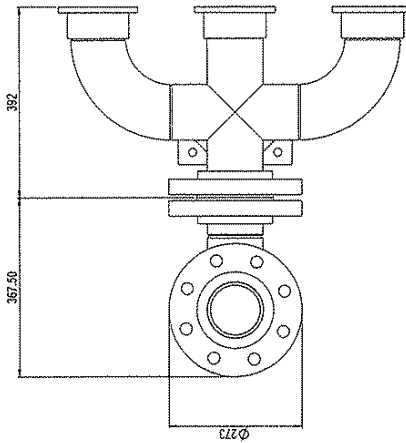
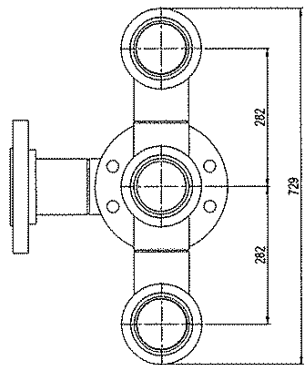
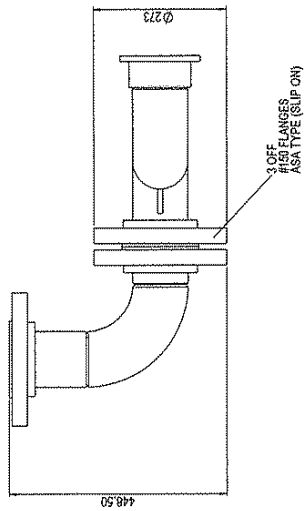
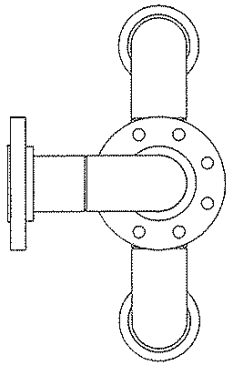
ENCLOSURE

☐ ☐ ☐ ☐ Word Document

 		Isocyanate Project, Phase 2 NB/AN PROJECT 8010014-1 NB/AN Equipment Engineering Document 4.3.1 Equipment Specification		Ref X 12301	Page No 1(1)
				Date Oct 11, 2007	Created/Rev by Annn
EQ. SPEC. -		Revision 1D		Check	Appr
Item Name : Coalescer		Item No : X12301		Qty: 1	
Type : Duasec MS Type 3		PID : PID-1-23-01		Supplier : GEL	
Manufacturer : Sulzer		PFS : PFD-1-23-01		Building No:	
Manufacturing No :		P.O. No :		121	
Weight: Empty: 50kg Operating: kg Maximum: kg		Weights are: ☒ Preliminary ☐ Final			
INSTALLATION:					
On the inlet pipe inside tank S12301.					
APPLICATION:					
Enhancement of water/aniline separation calming of inlet flow.					
OPERATING DATA:					
Temperature: 40°C					
Pressure: 1.013 bar a (atm)					
Density of Water phase: 979 kg/m3					
Density of Aniline phase: 1023 kg/m3					
Viscosity of Water phase: 0.60 mPa s					
Viscosity of Aniline phase: 1.90 mPa s					
Flow rate, max, Water phase: 1882 kg/h					
Flow rate, max, Aniline phase: 5510 kg/h					
MATERIAL: By Vendor					
Item X12305 is an identical coalescer to item X12301. Item X12305 is supplied by CEAB. Manufacturer: Sulzer Chemtec, Size type and installation, see enclosed Sulzer drawings: CTUKW0049 and					
MISCELLANEOUS DATA					
INSULATION ☐ Yes ☒ No		ANCHOR BOLT ☐ Yes ☒ No			
Type: Thickness: mm		Type: Dimension:			
Support included: ☐ Yes ☐ No		Quantity: Material:			
ENCLOSURE					
☐ ☐ ☐ Word Document					

PARADOX :MEKSPECS:GENWOH1.FSL

Doc. No.: 1-121-DSH-ME-0027



Revision	Rev	By	Appr	Date	Notes
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REV STATE



Documentation Part A

5. Spare Part List

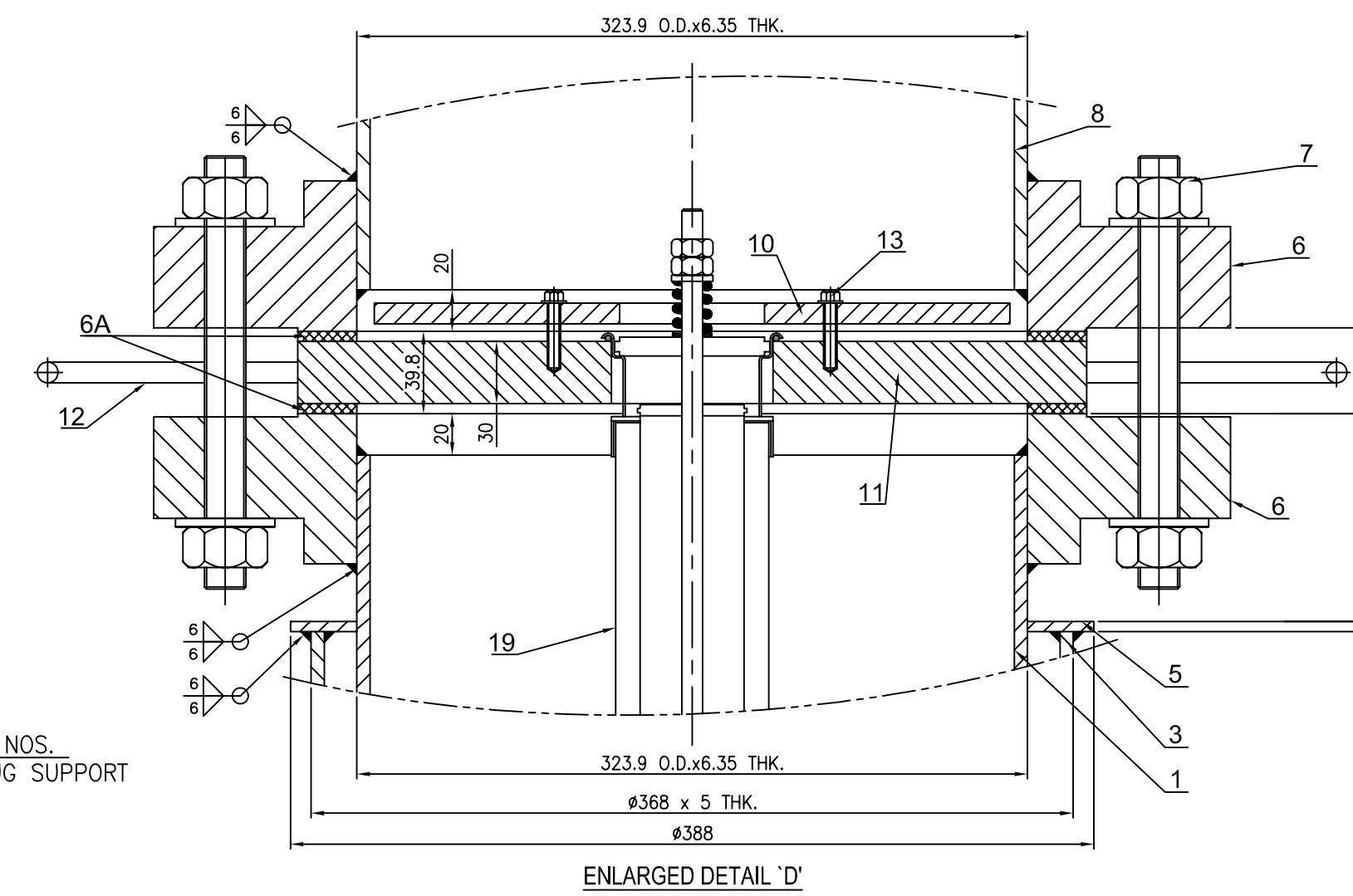
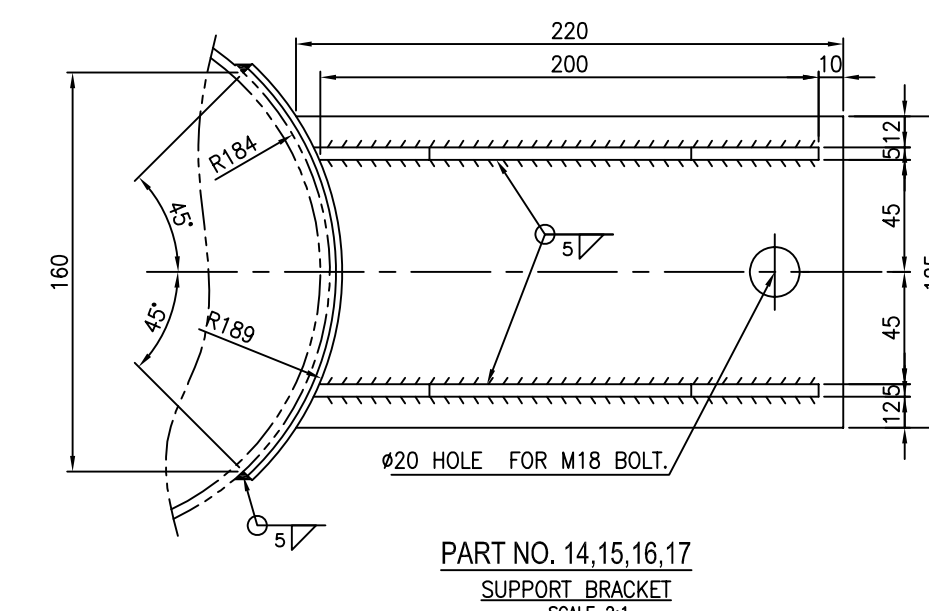
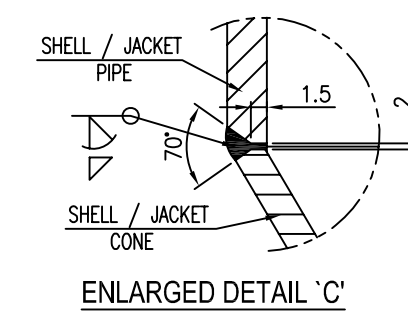
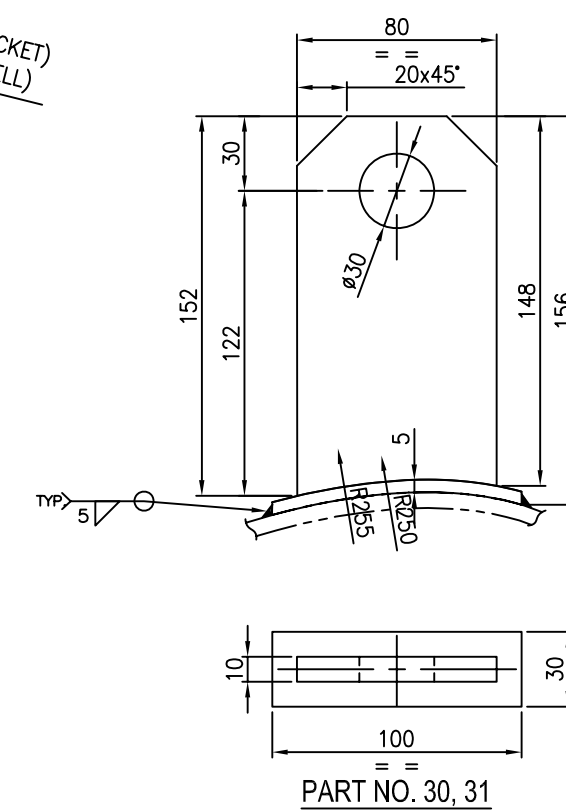
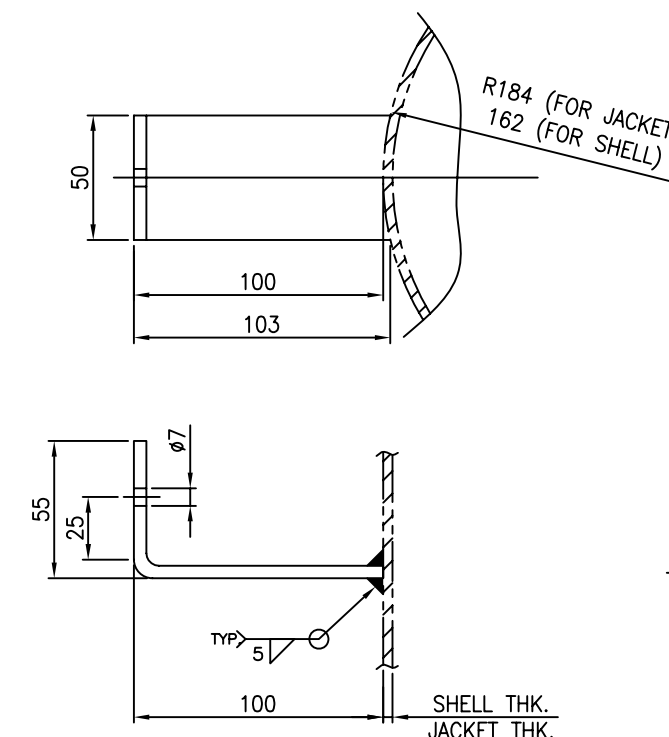
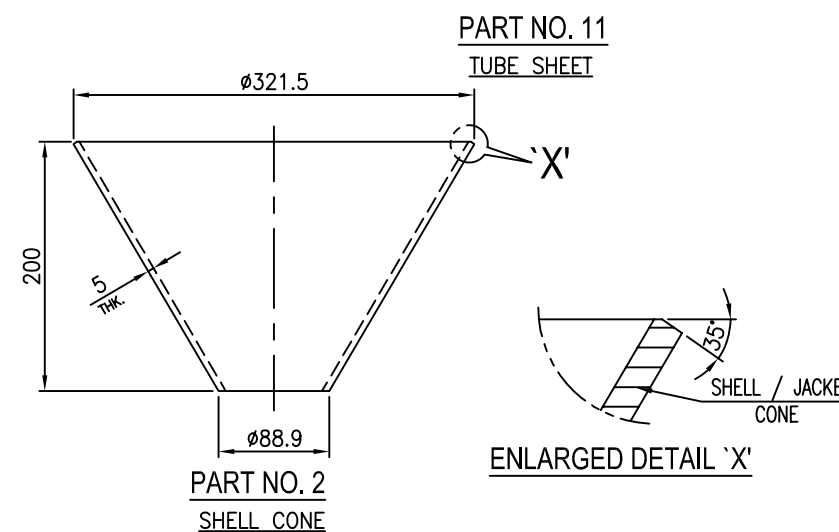
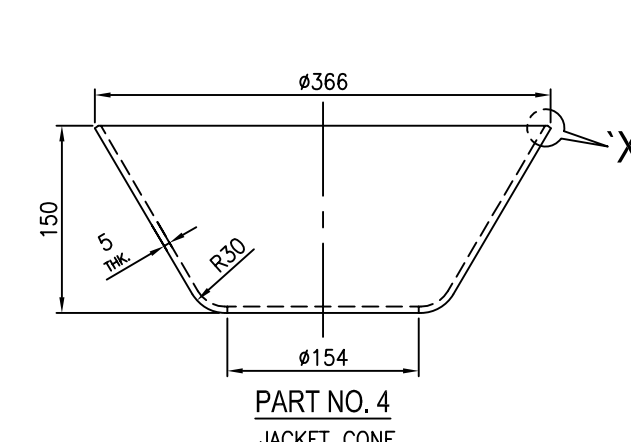
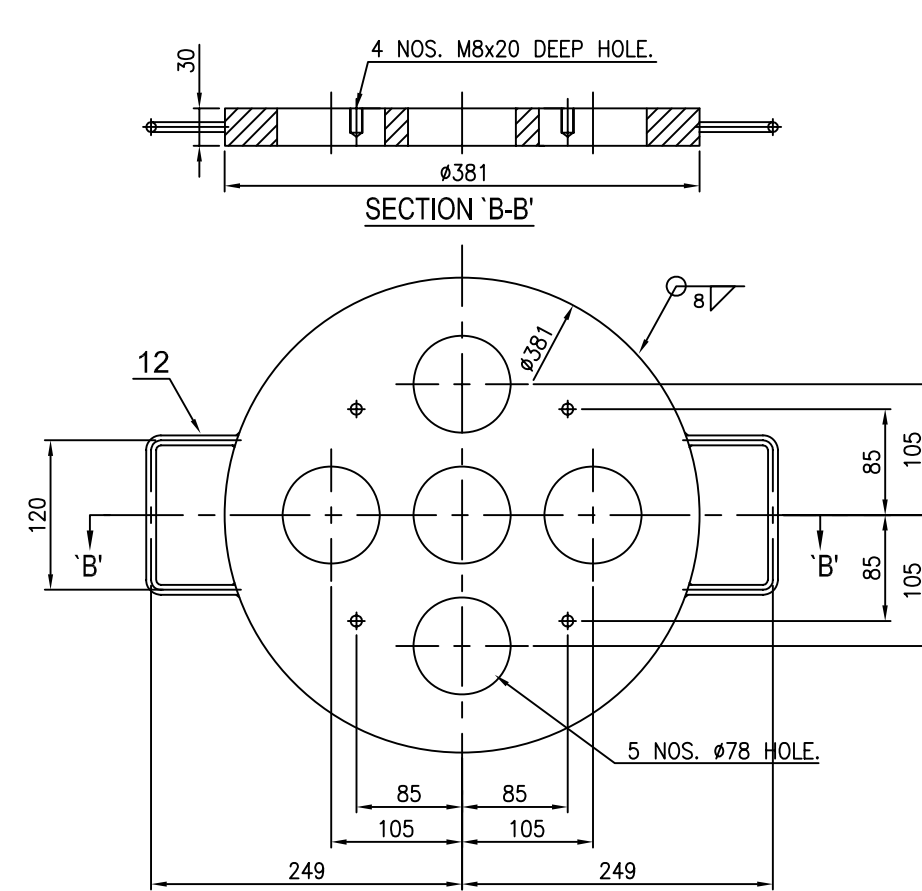
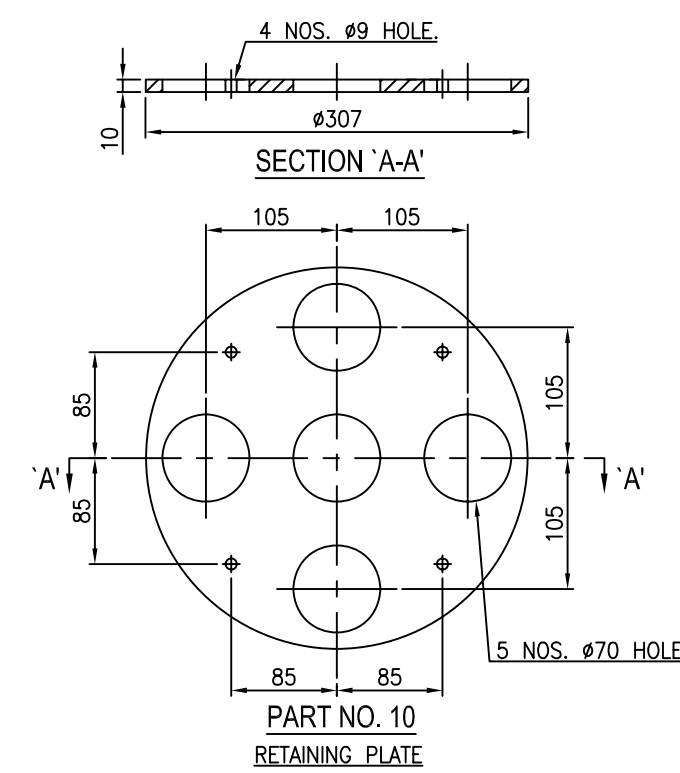
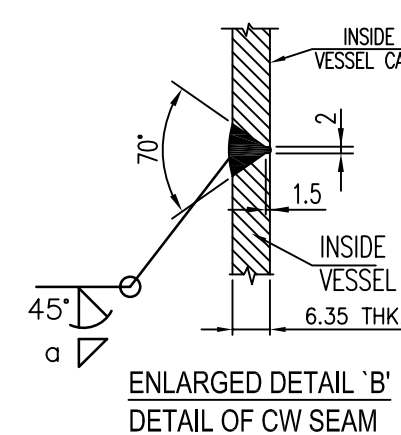
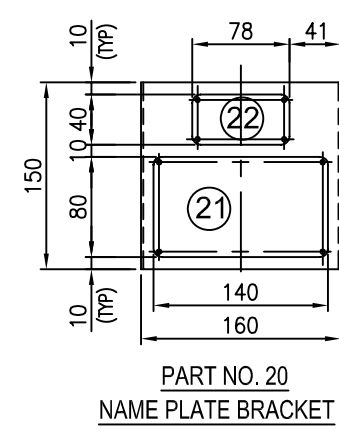
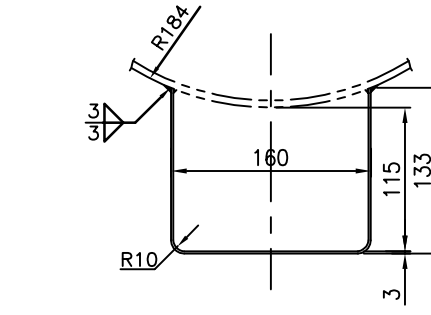
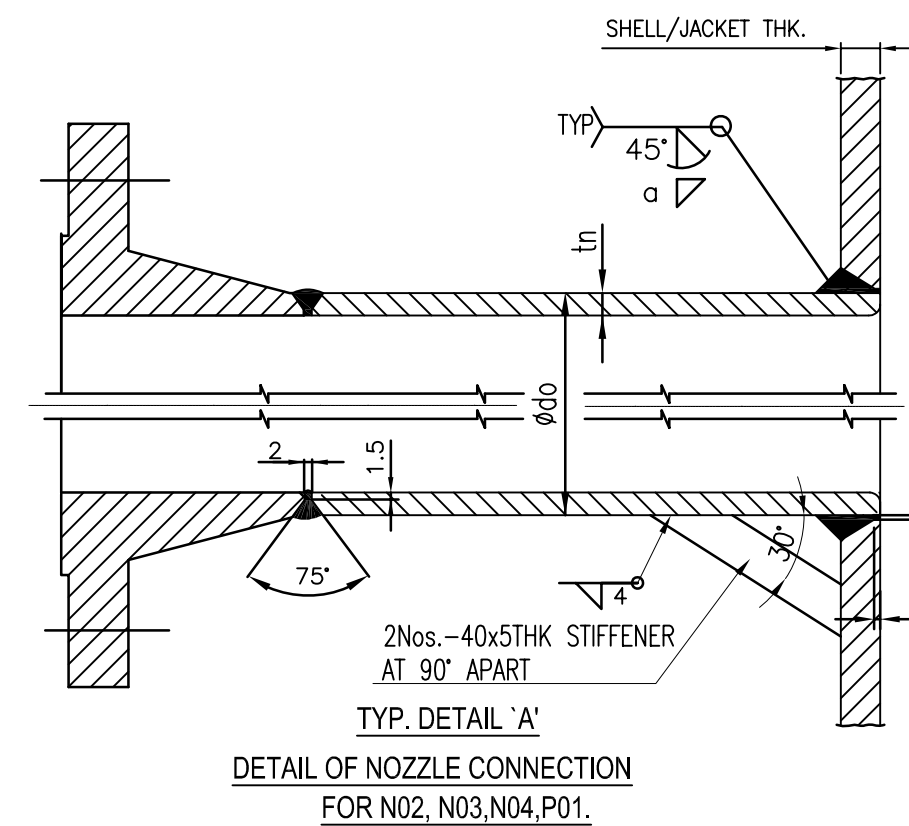
SPARE PARTS LIST - EQUIPMENT

CEAB's Item No.	PARTS DESCRIPTION	MANUFACTURERS REFERENCE				No OF PIECES PER ITEM	RECOMM. QTY		PRICE PER ITEM	TOTAL PRICE	CURR- ENCY	CHEMATUR SPARE PART No
		ASSEMBLY DWG		DETAIL DWG	CODE or ITEM		START UP	2 YEAR OPER.				
		DWG No	POS									
F41204	Vapour Ammonia Filter F41204	PU-FC-F41204										
	Gasket OD 381 x ID 324 x 4,5	PU-FC-F41204	6a		F41204/6a	2		2				SPM.....
	Stud + 2 Hex. Nut M30x200lg	PU-FC-F41204	7		F41204/7	16		2				SPM.....
	Filterelement Aerolith 10	PU-FC-F41204	19		88003200	5		5				SPM.....
	Gasket Filterelement	PU-FC-F41204			85321200	10		10				SPM.....
	o-Ring Adapter	PU-FC-F41204			85566600	5		5				SPM.....
												SPM.....
						Total PXXXXX						
P.....	Valid for Items: P____, P____, P____, P____, (_ pcs)											
												SPM.....
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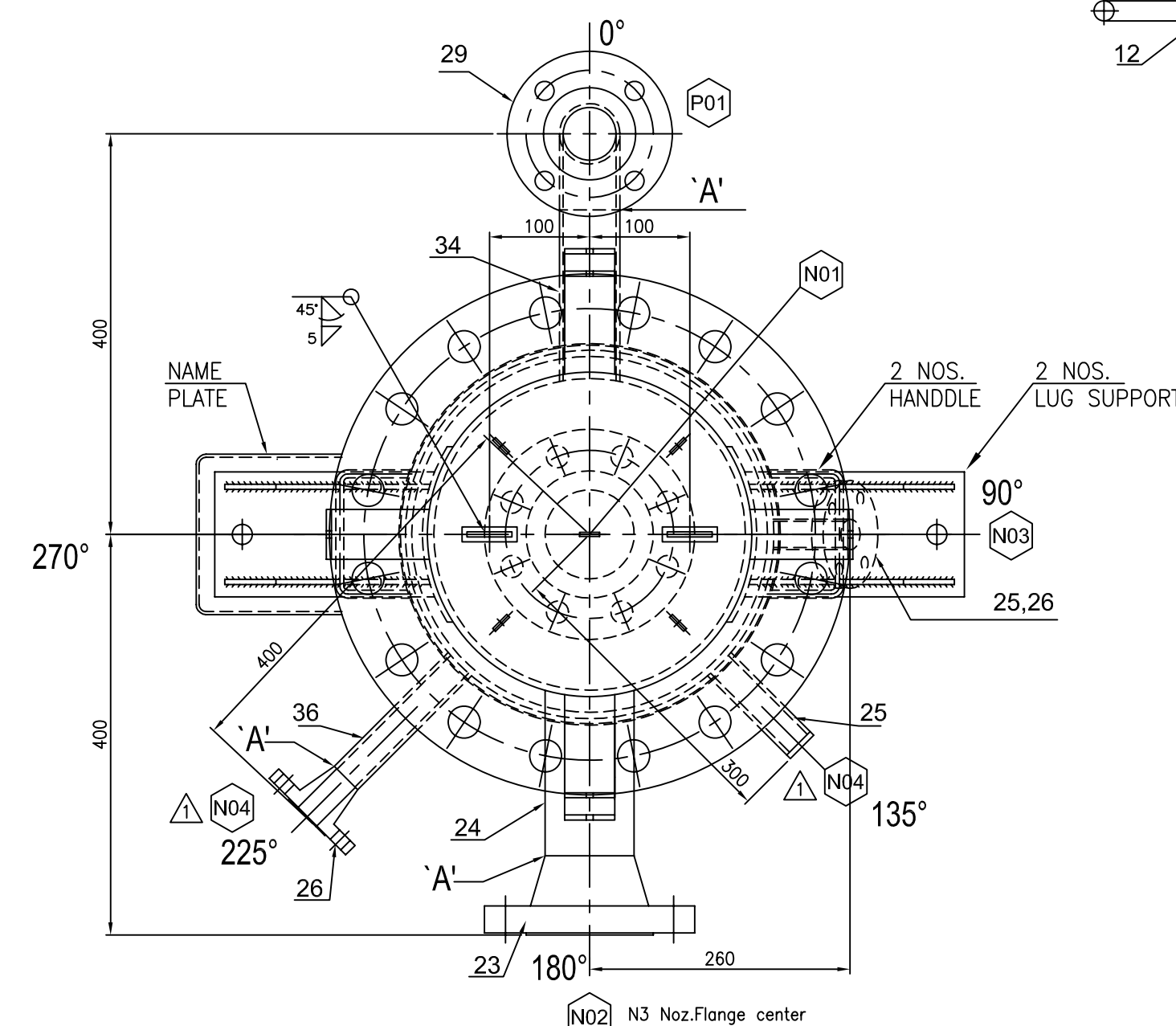
Documentation Part A

2. General Drawing



NOZZLE LOADS :-

SIZE INCH (mm)	1 (25)	2 (50)	3 (80)
F (N)	300	700	2000
T (N)	300	700	2000
M (Nm)	150	250	500



VIEW FROM 'Y'- KEY PLAN

DESIGN DATA:-

DESIGN CODE :- ASME SECTION VIII DIV.1, EDITION 2004, ADDENDA 2005	
FLUID :- VAPOUR AMMONIA	
DENSITY OF FLUID kg/m ³	7.56 
ASME CODE STAMP (not U stamp)	NO.
INSULATION m.m.	TYPE HE1 :- 100 mm THK.
FIRE PROOFING	NO
OPERATING PRESSURE BAR (a) / JACKET	13 / 4.5 
DESIGN PRESSURE BAR (a) / JACKET	24 / 7
OPERATING TEMPERATURE °C / JACKET	121 / 148 
DESIGN TEMPERATURE °C / JACKET	177 / 170
DIFF. PRESSURE TUBE SHEET	5 BAR.
VOLUME HOUSING / JACKET LITERS	INSIDE SHELL:125 / OUTSIDE JACKET:25
JOINT EFFICIENCY (S/H) %.	85 / 100
CORROSION ALLOWANCE m.m.	NIL
HYDRO TEST PRESS. BAR (g)	30
MDMT °C	-29
EMPTY / HYDRO WEIGHT (Kg)	375 / 600 
IMPACT TEST	NA
WIND LOAD DESIGN CODE	ASCE7-95, IMP FACTOR 1.0
WIND SPEED km/hr	130
EARTHQUAKE LOAD DESIGN CODE	UBC 1997, ZONE 2B
EXTERNAL LOADING ON EQUIPMENT / NOZZLE	REFER NOZZLE LOAD TABLE
INSPECTION	PALL / CLIENT / Notif. Body
QUANTITY	1 NO.

NOZZLE CONNECTIONS :-

NOZ. NO	SERVICE	SIZE NB (INCH)	NOZ. SCH.	QTY.	FLANGE	
					FACE	TYPE
N01	GAS INLET	80NB (3")	40S	1	WNRF	ANSI B16.5, #300
N02	GAS OUTLET	80NB (3")	40S	1	WNRF	ANSI B16.5, #300
N03	JACKET INLET	25NB (1")	40S	1	WNRF	ANSI B16.5, #150
N04	JACKET OUTLET	25NB (1")	40S	2 Δ	WNRF	ANSI B16.5, #150
P01	PRESSURE GAUGE	50NB (2")	40S	1	WNRF	ANSI B16.5, #300

36.	NOZZLE PIPE N04	25 NB x 40S x 160 LG.	1	SA 312 TP 316L	-
35.	ELBOW 90°-P01	50 NBx40S x ASMEB16.9	1	SA 403 WP 316L	-
34.	NOZZLE PIPE N04	50 NB x 40S x 172 LG.	1	SA 312 TP 316L	-
33.	NOZZLE PIPE-P01	50 NB x 40S x 54 LG.	1	SA 312 TP 316L	-
32.	INSULATION CLIPSE	PLATE 50 x 100 x 5 THK.	5	SA 240 - 304	-
31.	LIFTING LUG PAD	100 x 30 x 5 THK.	2	SA 240 - 304	-
30.	LIFTING LUG	150 x 80 x 10 THK.	2	SA 240 - 304	-
29.	NOZZLE FLANGE-P01	50 NBx40S x ANSI B16.5, 300#, WNR.F	1	SA 182 F316L	-
28.	DELETED	-	-	-	-
27.	GUSSET PLATE	45 x 10 x 3 THK.	12	SA 240 - 304	-
26.	NOZZLE FLANGE-N03/N04	25 NBx40S x ANSI B16.5, 150#, WNR.F	2	SA 182 F316L	-
25.	NOZZLE PIPE N03/N04	25 NB x 40S x 95 LG.	2	SA 312 TP 316L	-
24.	NOZZLE PIPE-N02	80NB x 40S x 165 LG.	1	SA 312 TP 316L	-
23.	NOZZLE FLANGE-N01/N02	80NBx40SxANSI B16.5, 300#,WNR.F	2	SA 182 F316L	-
22.	CLIENT NAME PLATE	REFER DETAIL DRG.(SH. 2 OF 2)	1	SA 240 - 304	CUSTOMER SPEC
21.	PALL NAME PLATE	REFER DETAIL DRG. (SH. 2 OF 2)	1	SA 240 - 304	-
20.	NAME PLATE BRKT.	PLATE 430 x 150 x 3 THK.	1	SA 240 - 304	-
19.	FILTER ELEMENT	AEROLITH #70/40x1000 LG.CYLINDER	5	CERAMIC	-
18.	INSULATION CLIPSE	PLATE 50 x 160 x 5 THK.	12	SA 240 - 316L	-
17.	STUD	M18 x 100 LG. 	2	SA 193 Gr. B7, SA 194 Gr. 2H	-
16.	SUPPORT BRACKET	PLATE 220 x 125 x 10 THK.	2	SA 240 - 304	-
15.	SUPPORT BRACKET	PLATE 200 x 154 x 5 THK.	4	SA 240 - 304	-
14.	SUPPORT BRKT. PAD	PLATE 185 x 200 x 5 THK.	2	SA 240 - 316L	-
13.	STUD	M8 x 35 LG.	4	SA 193 Gr. B7, SA 194 Gr. 2H	-
12.	HANDEL	ROD #8 x 265 LG.	2	SS 316	-
11.	TUBE SHEET	PLATE #381 x 30 THK.	1	SA 240 - 316L	-
10.	RETAINING PLATE	PLATE #307 x 10 THK.	1	SA 240 - 316L	-
9.	DISH END TOP	DN300 x 6 THK.	1	SA 240 - 316L	-
8.	SHELL PIPE TOP	OD.323.9 x 6.35 THK x 269 LG.	1	SA 312 TP 316L	-
7.	STUD+2 HEX. NUT+SPARE	M30 x 200 LG.	16+2 91	SA 193 Gr. B7, SA 194 Gr. 2H	-
6A.	GASKET	OD. 381 x ID. 324 x 4.5 THK.	2+2 91	SS 316 SPRL WIND DOWHE FILLER	-
6.	SHELL FLANGE	DN300x ANSI B16.5, 300#, SORF.	2	SA 182 F316L	-
5.	JACKET COVER	OD.388 x I.D. 324 x 5 THK.	1	SA 240 - 316L	-
4.	JACKET CONE	#366 x #154 x 5 THK x 150 LG.	1	SA 240 - 316L	-
3.	JACKET PIPE	OD.368 x 5 THK. x 1050 LG.	1	SA 240 - 316L	-
2.	SHELL CONE	#321.5 x #88.9 x 5 THK x 200 LG.	1	SA 240 - 316L	-
1.	SHELL PIPE BOTTOM	OD.323.9 x 6.35 THK x 1130 LG.	1	SA 312 TP 316L	-
P.No.	DESCRIPTION	SIZE	QTY.	MATL. SPECN.	REMARK

2	10.12.07	AS BUILT DRAWING (DIMENSIONS MARKED AS []))			Universal	S.V.W.	MAN		
1	16.08.07	P01 ARRANGEMENT CHANGED AS PER MAN COMMENTS			S.P.Ent.	SW	HC		
REVISION	DATE	DESCRIPTION			DRAWN	CHECK	APPR		
Product					Customer	MAN PROJECT.			
Title	DETAIL OF VAPOUR ARMONIA FILTER ITEM NO. F41204 HOUSING PART NO. FHS054 F41204				Drawn By	S.P.ENT.	11.06.07	 Third Angle Projection	
					Checked By	Sanjay W.	12.06.07		
					Approved By				Scale 1:6
					Drawing Number	PU-FC F41204 (SH. 1 OF 2)			Rev 2
		Pall Corporation Pall Advanced Separation Systems Engineering Group, PALL India, Pune.							

Pall GmbH SeitzSchenk
Planiger Straße 137
D-55543 Bad Kreuznach



Customer:	MAN Ferrostaal
Customer Order No.:	4500089464/331-06-30134/28.03.2007
Pall Order Confirmation No.:	P2/101076991
Description:	Vapour Ammonia Filter
Part No.:	FHAS054F41204
Drawing No.:	PU-FC-F41204
Manufacturing / Serial No.:	13337
Item / Tag No.:	F41204

Documentation Part A

List of contents

1. Equipment Specifications, General Operation and Design Data
2. General Drawing
3. Final Assessment
4. Table of Certificates
5. Spare Part List
6. Installation, Operation, & Maintenance Instructions



Documentation Part A

6. Installation, Operation, & Maintenance Instructions

101076991.19.17

F41204
Filter Housings
Installation and Service Instructions



THESE INSTRUCTIONS ARE FOR THE USE OF SUITABLY TRAINED PERSONNEL
FAMILIAR WITH SAFE WORKING PRACTICES

SYMBOLS USED

	<i>THESE CALL ATTENTION TO A HAZARD WHICH MAY BE A THREAT TO THE HEALTH OR WELL BEING OF PERSONNEL.</i>
	These call attention to instructions which must be followed to avoid damaging the product, equipment or surroundings.
	These call attention to information that will aid operation and/or installation of the equipment.

HAZARDS



ENSURE HOUSING CONNECTIONS ARE COMPATIBLE WITH SYSTEM PIPEWORK.



DO NOT OPEN THE HOUSING WITH RESIDUAL PRESSURE IN THE SYSTEM

CUSTOMER RESPONSIBILITY



Ensure all personnel employ safe working practices when handling and installing all items or pressure equipments



To ensure that the specified pressure limits are not exceeded under all circumstances including that of external fire.



To ensure that any process fluids or gases are compatible with the materials of construction. Refer to housing name plate and Appendix for details.



Excessive pipe loads should be avoided when mounting the filter in its operating position.



Care must be taken not to damage the cartridge when removing the packaging.



Liquids with boiling points of less than 100°C must not be used as lubricants for cartridges with double O-ring seals. The vapour pressure at service temperatures may result in high pressures between the seals.



Filter housing is supplied WITHOUT cartridge



Install housing into system before fitting cartridge. For limitations of use refer to the addendum to this manual.

1. SPECIFICATIONS

Refer to the appendix attached to this instruction or to the nameplate attached to the filter housing and the sales drawing.

2. RECEIPT OF EQUIPMENT

Dispose of the packaging according to good environmental procedures.

3. GENERAL SOURCES OF INFORMATION

For details of construction materials refer to the addendum to this manual. Please refer to Pall or an approved distributor for the availability of options.

For further information on integrity testing, sterilisation and sanitation or specific cartridge installations refer to Pall.

4. INTRODUCING PROCESS FLUID

It is recommended that the filter should be installed in a system, as shown in Figure 1.

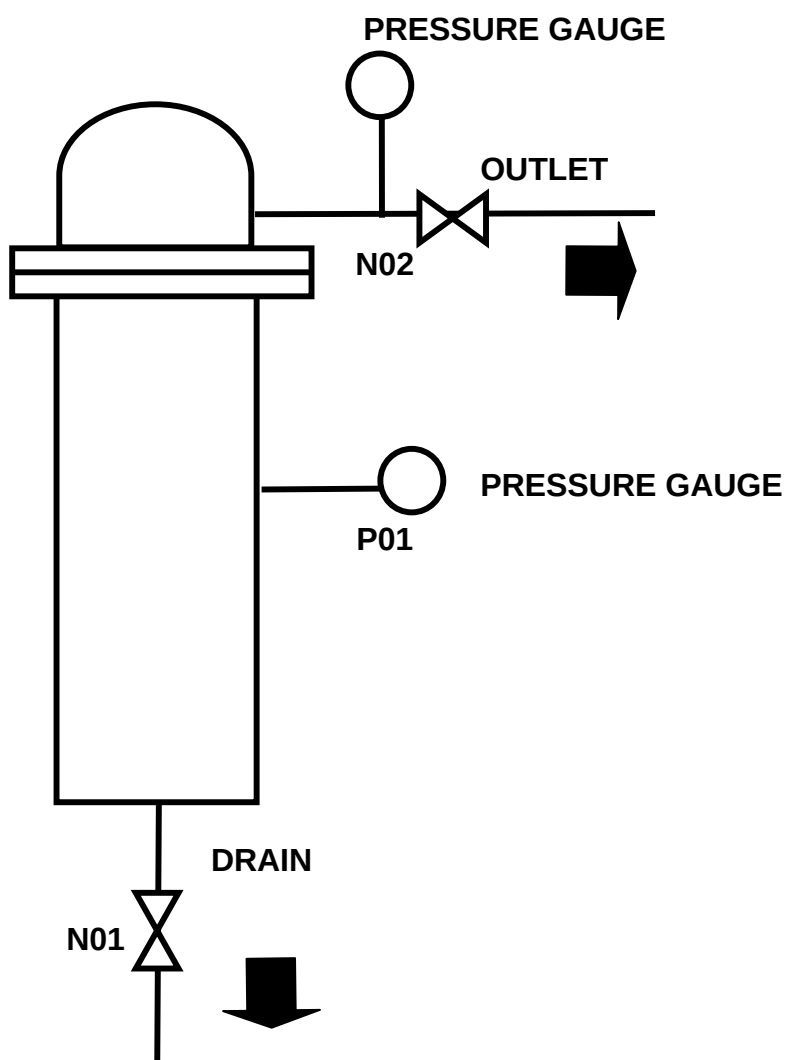


Figure 1 Typical Schematic Flow Diagram
(Vent Valve & Drain valve in system pipe work) Customer Supply

Step	GAS
1	Ensure valves N01, N02, and P01 are closed.
2	Partly open N01 to pressurise filter housing.
3	Fully open N01. Check for leaks using soapy water or sonic leak detector.
4	If any leaks are apparent shut N01 and depressurise and drain using vent valve or pipe work supplied by others.
5	Rectify leakage by tightening connection or replacing seal at leak point.
6	Restart from Step 1.
7	Slowly open N02 to bring housing on stream.

5. REPLACING CARTRIDGE

Step	GAS
1	Close N01 and N02.
2	Depressurise using and drain using vent valve or pipe work supplied by others.
4	Remove filter closure flange as shown in Figure 2.
5	For removal and replacement of the cartridge refer to Section 6.
6	Clean and inspect filter housing.
7	It is recommended that the housing seals be replaced during re-assembly.
8	Commission filter in accordance with Section 4 for Gases.

6. CARTRIDGE INSTALLATION AND REMOVAL

Cartridge installation is the same for both housing types.

6.1 STORAGE

Store the cartridges in clean, dry conditions and wherever practical in the box as delivered

Do not remove the cartridge from its polythene bag until ready to use.

To prevent accidental contamination, wherever practical retain the open polythene bag around the body of the cartridge whilst fitting it into the housing, removing the bag only when the cartridge is inserted firmly into the tube sheet or over the tie-rod

6.2 INTEGRITY TESTING

Where an integrity testable grade of filter is being installed, it must be integrity tested prior to use. PALL approved integrity test methods must be used, as described in PALL publication SD803 and SD803 appendix. For further details on filters and applications requiring testing, please consult PALL or an approved distributor

6.3 INSTALLATION

6.3.1 Unscrew and remove the studbolt sets securing the filter closure flange. Lift filter closure flange clear of the vessel flange.

6.3.2 Install the 5 Aerolith cartridges as follows:

Pall filler cartridges are high quality products manufactured to exacting standards, and its essential that care is taken when handling them and fitting them into housings

Please follow these instructions closely. The efficiency of the cartridge can be impaired by careless treatment.

Aerolith Cartridges – description refers to items on Appendix 1

Cartridge Assembly

NOTE: Assemble cartridges in a clean environment to avoid contamination and foreign objects.

- i) Verify that the part numbers on the cartridge components corresponds to your requirements.
- ii) Screw item 7 onto item 4, hand tighten.
- iii) Fit first gasket 10, slide over item 4 and put in place on item 7.
- iv) Cut open the polythene bag containing the cartridge (11). DO NOT open by pushing the cartridge through the bag.
- v) Slide the cartridge cylinder (11) over item 4 to sit on the gasket 10 in item 7.
- vi) Place second gasket 10 on end of cartridge cylinder (11).
- vii) If there is a deferent o-ring (9) supplied separately for item 6 remove original and fit new o-ring (9) before fitting to assembly by lowering the flanged section over the end of the cartridge (11). Ensure gasket (10) is in place.
- viii) If there is a deferent o-ring (8) supplied separately for item 5 remove original and fit new o-ring (8) before fitting to assembly by lowering item 5 over item 6, ensure o-ring (9) is not damaged if needed lubricate with water or process fluid.
- ix) Slide washer (2) over item 4, then do the same with spring 3 and then second washer (2). Then fit first nut (1) to item 4 and tighten till spring (3) is compressed to 25mm in length.
- x) Fit the second nut (1) onto item 4 and hand tighten against the first nut (1). Then using a open head spanner hold the lower nut (first nut (1)) and tighten the top nut (second nut (2)) with a torque wrench to 24 Nm.

Assembled Cartridge Installation

- i) Lower the pre assembled cartridges through the hole in the filter plate until cartridge assembly is supported by its flange.
- ii) Check that the o-ring (8) is fitted correctly leaving no gaps.
- iii) Repeat steps i) to ii) for the remaining filters.
- iv) The filter pressure plate should now be fitted. Align the bolt hole in the pressure plate with the stud bolts in the filter plate below.
- v) The filter pressure plate nuts (M8) can now be fitted. Tighten them using a

diagonally opposite sequence to the torque setting of 20Nm in a minimum of two stages.

6.3.3 Fit new seal in the vessel flange.

6.3.4 Lift the filter closure flange into position on the vessel flange.

6.3.5 Insert the studbolt sets. Tighten studbolt sets in a diagonally opposite sequence to the torque setting of 301Nm in a minimum of three stages.

	<i>The calculation of torque values for vessel and pipe flange stud bolts is complex and is dependent on a number of engineering factors, which are not fully explored in this IOM. The torque value(s) quoted in this IOM are those stated in the 'FACOM' torque tightening guidelines and are considered to be correct for this application.</i>
---	--

	<i>It is recommended that flange stud bolts are cleaned and <u>LUBRICATED</u> prior to torque-tightening. A lubricated stud bolt can result in 100% more sealing stress on the gasket due to lower thread friction.</i>
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6.4 DISPOSABLE CARTRIDGES

Disposable cartridges should be disposed of in accordance with local Health and Safety Precautions

7. **SCIENTIFIC AND LABORATORY SERVICES**

Pall operates a technical service to assist in the application of our filter products. The service is available to you and we encourage your questions so that we can help. In addition a full network of technical representatives are available throughout the world.

8. HOUSINGS AND NAMEPLATES

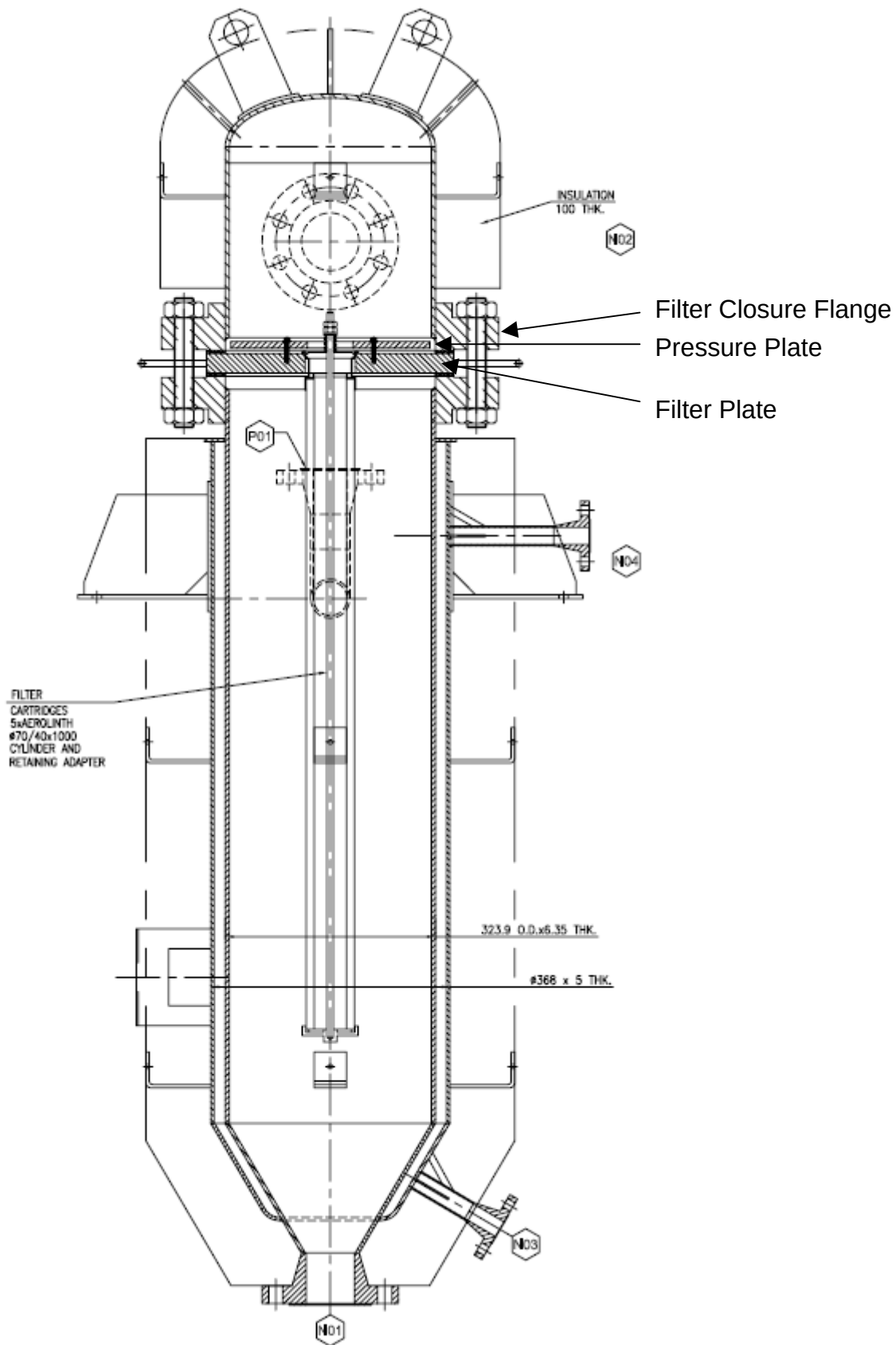


Figure 2 F41204 Style Housings

 PROJECT 8010014-4 NA PLANT KAROON Technical Documentation Equipment Engineering 4.4 Equipment Documentation Mechanical Catalogues File No 11 Item No: F41201, F41204, F41604, X41610	 PROJECT 8010014-4 NA PLANT KAROON Technical Documentation Equipment Engineering 4.4 Equipment Documentation Mechanical Catalogues File No 11 Item No: F41201, F41204, F41604, X41610	 PROJECT 8010014-4 NA PLANT KAROON Technical Documentation Equipment Engineering 4.4 Equipment Documentation Mechanical Catalogues File No 11 Item No: F41201, F41204, F41604, X41610	 PROJECT 8010014-4 NA PLANT KAROON Technical Documentation Equipment Engineering 4.4 Equipment Documentation Mechanical Catalogues File No 11 Item No: F41201, F41204, F41604, X41610	 PROJECT 8010014-4 NA PLANT KAROON Technical Documentation Equipment Engineering 4.4 Equipment Documentation Mechanical Catalogues File No 11 Item No: F41201, F41204, F41604, X41610 ARKIV
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**PROJECT 8010014-4
NA PLANT
KAROON**

**TECHNICAL
DOCUMENTATION**

Equipment Engineering

Section 4.4
Equipment Documentation
Mechanical Catalogues

File No 11

1	ITEM F41201, LIQUID AMMONIA FILTER
2	ITEM F41204, AMMONIA FILTER
3	ITEM F41604, DISCHARGE AIR FILTER
4	ITEM X41610, SAMPLE SINK
5	
6	
7	
8	
9	
10	
11	
12	

  	Isocyanate Project, Phase 2 Project No. 8010014-1, -2 and -4 Equipment Engineering Documentation 4.4 Equipment Documentation	Ref 4.4 Explanations.	Page No 1 (1)	
		Date Aug 10, 2007	Created/Rev by Annn 	
		EXPLANATIONS TO EQUIPMENT DOCUMENTATION		
		Revision 1A	Check 	Appr 

Missing information

Missing information in enclosed "4.3.1 Equipment Specification Sheet": see other documentation included in file "4.4 Equipment Documentation".

Contradictory information

In case of contradictory information given in "4.3.1 Equipment Specification Sheet" and other documentation included in file "4.4 Equipment Documentation", other documentation included in file "4.4 Equipment Documentation" is valid.

  		Isocyanate Project, Phase 2 NA Plant PROJECT 8010014-4 NA PLANT Equipment Engineering Document 4.3.1 Equipment Specification		Ref F 41204	Page No 1(1)
		Date Apr 25, 2008		Created/Rev by Annn	
EQ. SPEC. -		Revision 2D		Check	Appr
Item Name : Ammonia Filter		Item No : F41204		Qty: 1	
Type : Replacable Cartridge		PID : PID-4-12-01		Supplier : KE	
Manufacturer : Pall		PFS : PFS-4-12-01		Building No: 410	
Manufacturing No : 13337		P.O. No : 20659			
Weight: Empty: 375kg Operating: kg Maximum: kg		Weights are: ☐ Preliminary ☒ Final			
MEDIA DATA					
Vapour ammonia					
FUNCTION					
To filter all foreign material from the Ammonia to prevent damage to the platinum catalyst.					
OPERATION					
Continuous					
MATERIAL HANDLED					
Composition Vol% (density: 7.56 kg/m3)					
Ammonia, NH3 99.5					
Water, H2O 0.5					
DESIGN CRITERIA					
Type: Pressure Filter; Elements to have internal hex. drives and be removable from top of vessel.					
Operating Flow: 2,381 kg/hr					
Max. Flow: 3,000 kg/hr JACKET media LPS					
Operating Temperature: 121°C Operation T 148 °C					
Design Temperature: 177°C (Mechanical design only) Design T 170°C					
Operating Pressure: 13 bar(a) Operation p 4.5 bar(a)					
Design Pressure: 24 bar(a) Design p 7.0 bar(a)					
Filter Area: To be determined by manufacturer.					
Filter Efficiency: 100% 3 micron and larger and 98% on 1.3 microns					
Pressure Drop: 5.2 kPa (Elements max. clean)					
Face Velocity: 5 m/min (based on normal flow)					
MATERIALS OF CONSTRUCTION					
All surfaces in contact with Ammonia; SS 316L; Hex Drives (NPT fitting) : Nitronic 60					
5 pc Aerolith 10, 88003200, Cearamic, Rating 1.5 µm.					
Media Back-up Mesh: SS 304L					
CODE REQUIREMENTS (Vessel): ASME Section VIII, Division 1					
REMARKS					
1. Housing to be vertical with body flanges designed to sandwich filter element.					
2. Sealing : FEP encapsulated Viton o-ring					
MISCELLANEOUS DATA					
INSULATION ☒ Yes ☐ No		ANCHOR BOLT ☐ Yes ☒ No			
Type: HE1 Thickness: 100 mm		Type: Dimension:			
Support included: ☐ Yes ☐ No		Quantity: Material:			
ENCLOSURE					
☐ ☐ ☐ ☐ Word Document					

PARADOX : MEKSPECS:GENWOH1.FSL

Doc. No.: 4-410-DSH-ME-0008



Documentation Part A

1. Equipment Specifications,
General Operation and Design Data

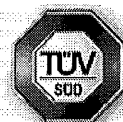
Equipment Specification, General Operation and Design Data

DESCRIPTION	Vapour Ammonia Filter
Item / Tag No.	F41204
OPERATING CONDITIONS	
Fluid type	Gas
Fluid	Vapour ammonia
Flow [m ³ /h]	3000 kg/h
Operating temp. [°C] Vessel / Jacket	121 / 148
Operating pressure [bar a] Vessel / Jacket	13 / 4.5
Density [kg/m ³]	7.56
Viscosity [mPas]	
Required rating	100% 3µm / 98% 1,3µm
FILTER VESSEL	
Part No.	FHAS054F41204
Design pressure [bar a] Vessel / Jacket	24 / 7
Design temperature [°C] Vessel / Jacket	177 / 170
Material	SA312 TP 316L
Corrosion allowance [mm]	0
Surface treatment	Pickled and passivated
Gasket	SS316 Spiral wound graphite filler
Housing diameter	324 mm
Heating jacket	Yes
Insulation/insulation support	100 mm
Housing inlet/outlet	3"
Jacket inlet/outlet	1"
Pressure gauge	2"
Flange face	WNRF
Qty. of cartridges	5
Drawing	PU-FC-F41204 Rev.2
FILTER ELEMENT	
Part No.	Aerolith 10
Filter media	88003200
Filter rating	Ceramic
Gasket element / o-ring adapter	1,5µm
Element diameter	Rivatherm 85321200 / AFLAS 8566600
Element length	70/40 mm
Max. oper. Temperature	1000 mm
Max. differential pressure	500°C
Sales bulletin No.	4,5 bar
Delta-p clean	R&D/wa200104
	40 mbar



Documentation Part A

3. Final Assessment



Industrie Service

Testing Laboratory of TÜV SÜD Industrie Service GmbH**Report regarding the Final Assessment
of Pressure Vessels**

Manufacturer: **Kopf Apparatebau und
Schweißtechnik GmbH
Stützenstraße 6
72172 Sulz-Bergfelden**

Order No.: **41070409**

Equipment Type: **Pressure Vessel**

Place of manufact.: **72172 Sulz-Bergfelden**

Test / Inspection Specification: following ASME-Code Sect. VIII, Div. 1 (without U-Stamp)

Marking / Labeling of the pressure equipment: Marking on name plate

- Year built: **2007**
- Manufacturing / Serial number: **13337**
- Intended Use: **VAPOUR AMMONIA FILTER**

Item-Nr.: **FHAS054 F41204**

Chamber designation:	Room 1		
Min./Max. allowable pressure PS (bar):	24 / 7		
Max./min. allowable temperature TS (°C):	121 / 148		
Volume V (Liter):	125 / 25		
Fluid:	Ammonia		

Design examination on: **10.09.2007** by: **DET NORSKE VERITAS Pune – 411 001**

Examination report no.: -

Drawing-No.: **PU-FC-F41204**

Final Inspection on: **12.10.2007** by the Testing Laboratory of
TÜV SÜD Industrie Service GmbH.

Pressure test on: **12.10.2007** by the Testing Laboratory of
TÜV SÜD Industrie Service GmbH.

Chamber designation:	Room 1		
Test pressure (bar):	30		
Pressure test medium:	Water		

Duration: 30 minutes. During and after the pressure test no leaks or remaining deviations of shape have been detected.

Conclusion: The Final Inspection and pressure test were performed in compliance with the requirements of the Directive. The performance of the inspections / tests and their results showed no deviations.

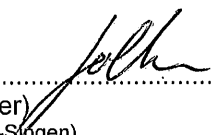
- The pressure equipment has been marked next to the manufacturing No. with the stamp

TÜ
SW

TÜV SÜD Industrie Service GmbH

For the Testing Laboratory:

Sulz, the 12. October 2007


.....
(Gollmer)
(IS-DD1-Singen)



Documentation Part A

4. Table of Certificates

Table of Certificates

**KOPF Apparatebau-
und Schweißtechnik GmbH**
Ein Unternehmen der KOPF-Gruppe

Order No.: 41070409 **Client:** Pall GmbH
Manufacturing No.: 13337 **Drawing No.:** PU-FC-F41204
Description: VAPOUR AMMONIA FILTER / FHAS054F41204

Pos-Nr.:	Description:	Heat-No.:	Restamp-No.:	Manufacturer:	Number of Certificate-Pages:
1, 8	Shell Pipe	43994	5132	Butting GmbH & Co. KG	2
2 4	Shell Cone Jacket Cone	56916		Outokumpu Stainless AB	3
3	Jacket Pipe	702135	5119	Ugine & Alz Belgium NV	1
5	Jacket Cover	464836		Outokumpu Stainless AB	3
6	Shell Flange	62077		Jiangyin Hengyou Hardware Machinfry Co., Ltd	1
7	Nut + Spare	1060203 37286		Sonderschrauben Güldner	2
9	Dish End Top	E402172-36		Walzwerk Burg GmbH	4
10	Dretaining Plate	624168		Ugine & Alz Belgium NV	2
11	Tube Sheet	C1606878		Shanxiu Taigang Stainless Steel Co., Ltd	1
13	Stud	580973		Sonderschrauben Güldner	1
14	Support Brkt. Pad	464836		Outokumpu Stainless AB	3
15	Support Bracket	632059		Ugine & Alz Belgium NV	2
16	Support Bracket	705166		Ugine & Alz Belgium NV	2
17	Stud	594312		Sonderschrauben Güldner	1
23	Nozzle Flange	E70072		Bäem Nordic Flanges AB	1

Table of Certificates

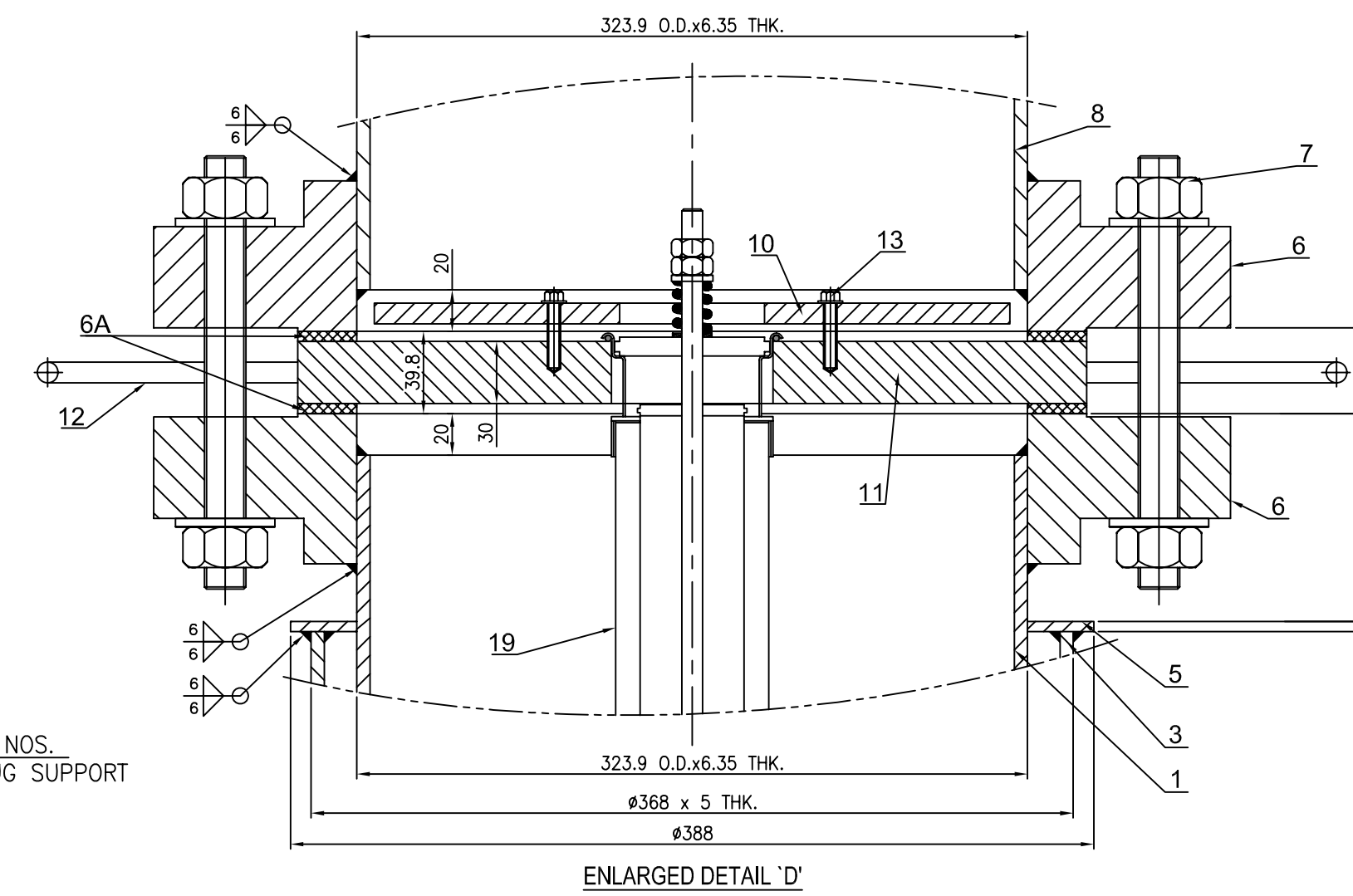
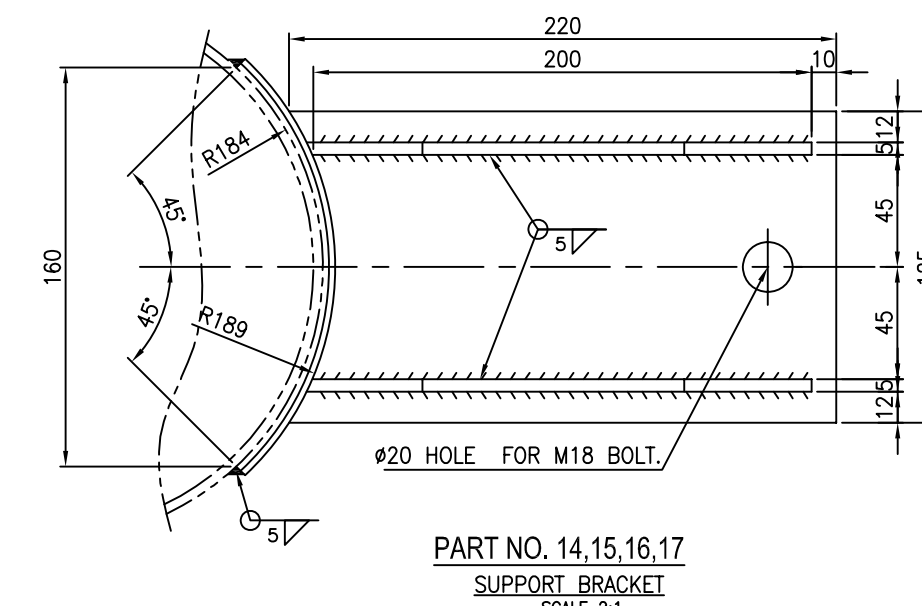
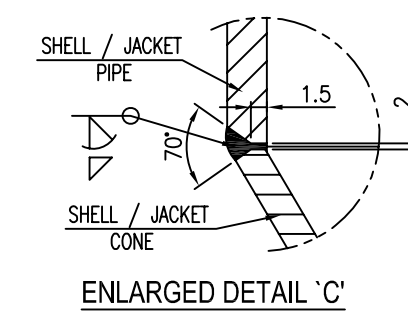
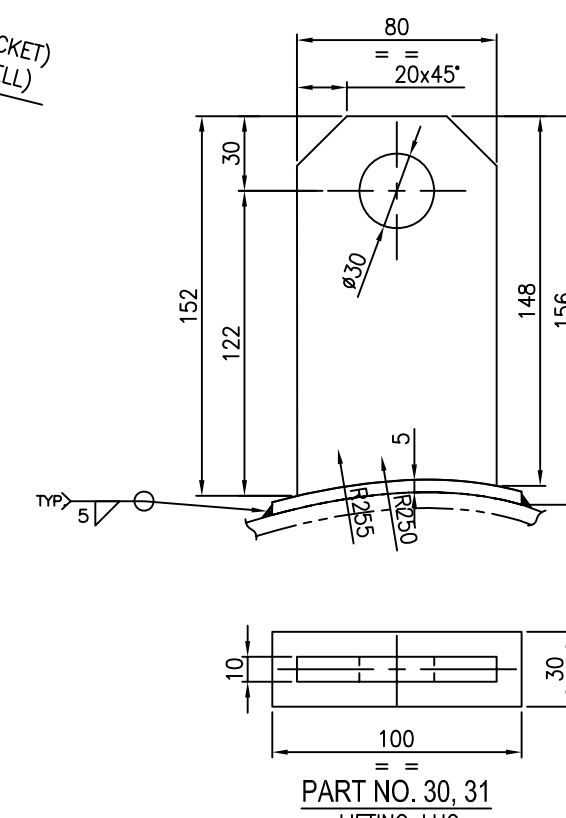
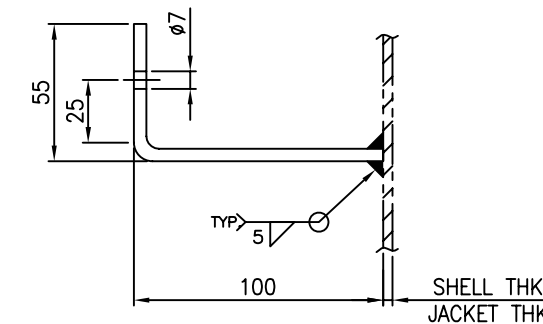
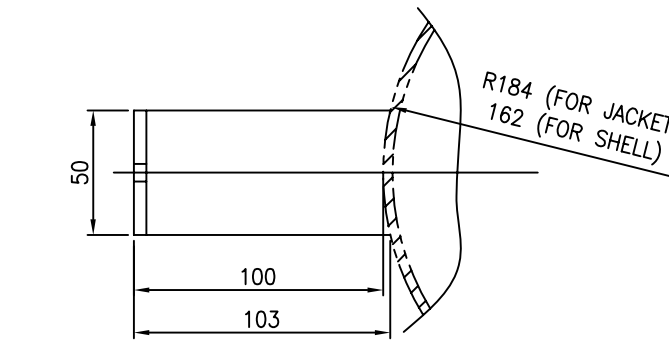
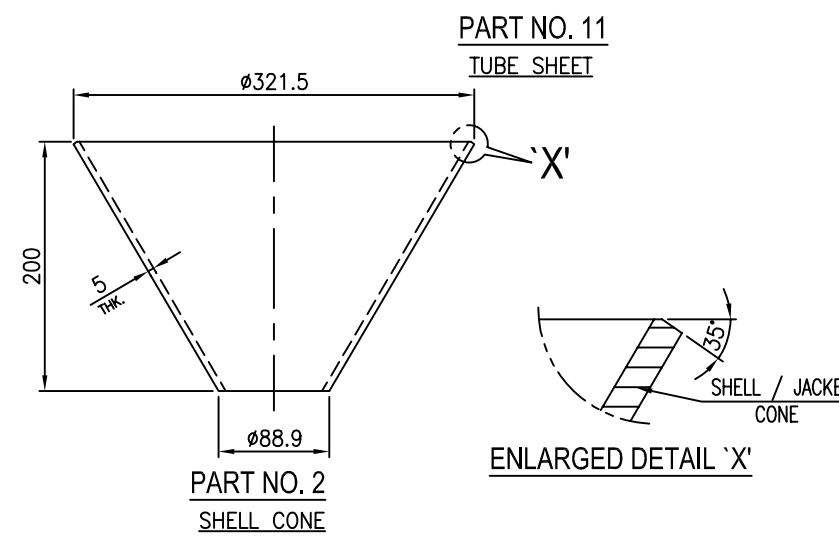
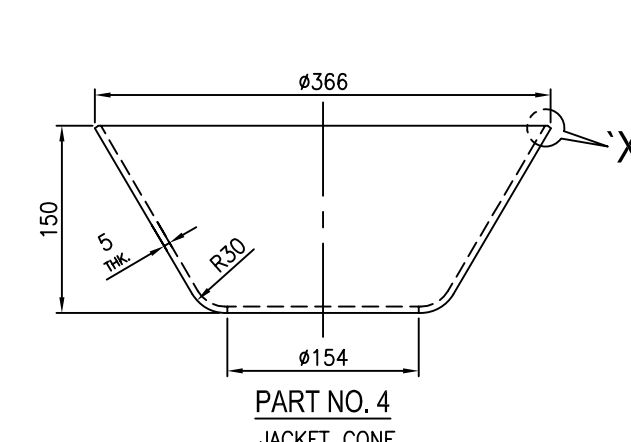
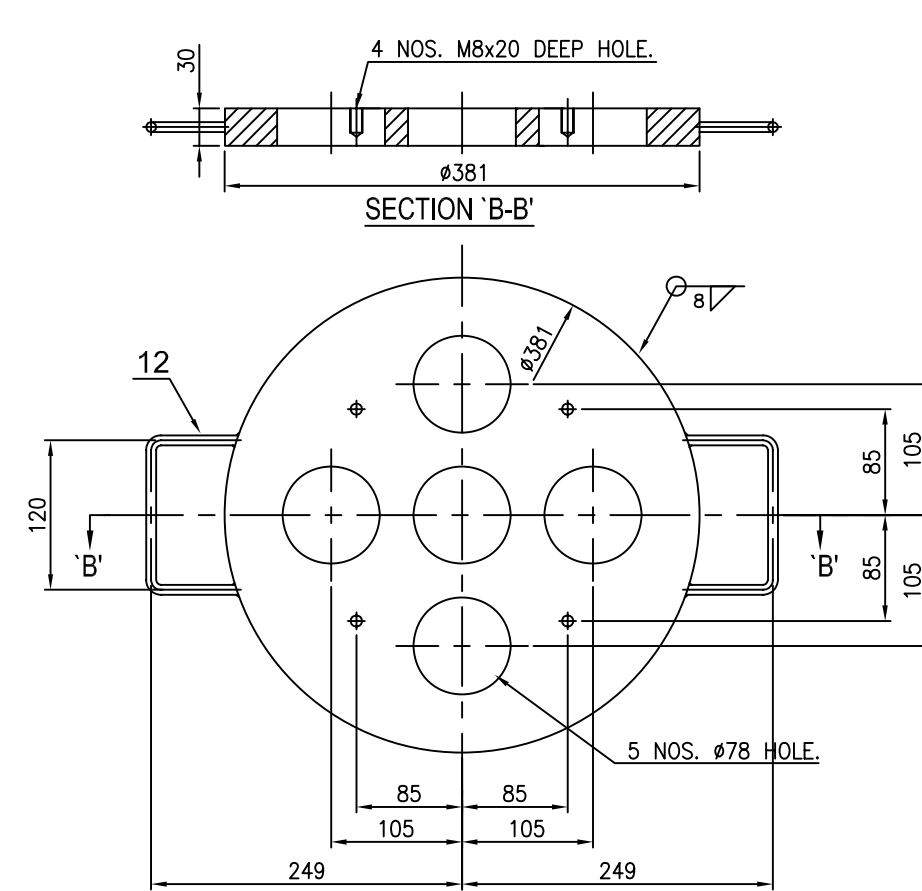
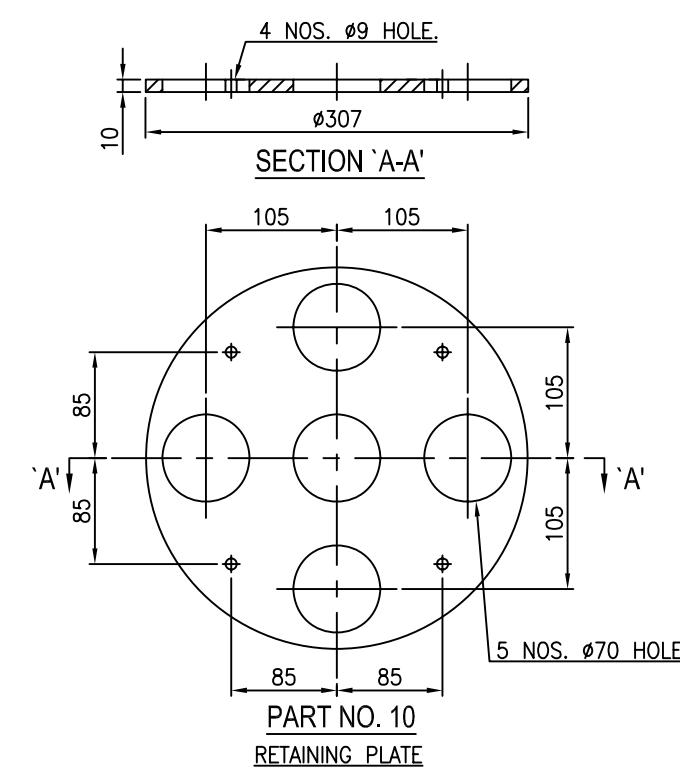
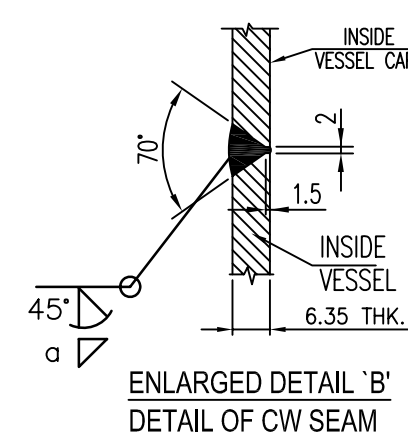
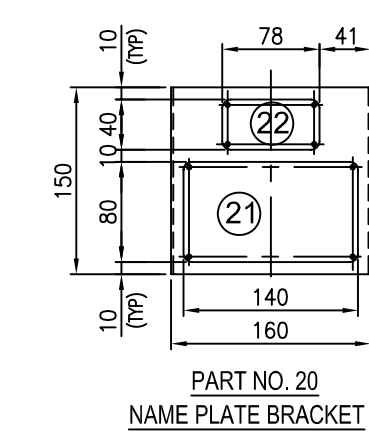
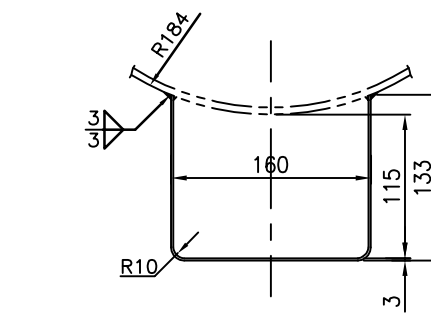
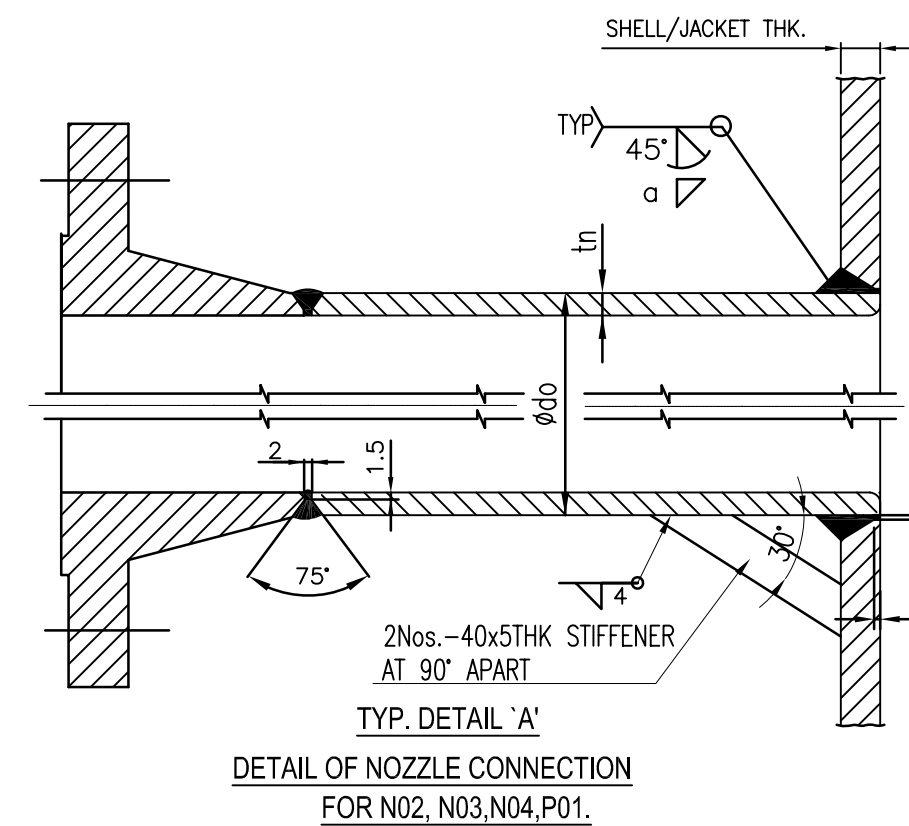
**KOPF Apparatebau-
und Schweißtechnik GmbH**
Ein Unternehmen der KOPF-Gruppe

Pos-Nr.:	Description:	Heat-No.:	Restamp-No.:	Manufacturer:	Number of Certificate-Pages:
24	Nozzle Pipe	54446	5136	Butting GmbH & Co. KG	2
25, 36	Nozzle Pipe	37733	5134	Schoeller-Bleckmann GmbH	5
26	Nozzle Flange	WA070019		Jiangyin Hengyou Hardware Machinfry Co., Ltd	2
29	Nozzle Flange	2156		Zapp Flanschenfabrik GmbH	1
30	Lifting Lug	705166		Ugine & Alz Belgium NV	2
33, 34	Nozzle Pipe	670036	5133	Schoeller-Bleckmann GmbH	9



Documentation Part A

2. General Drawing

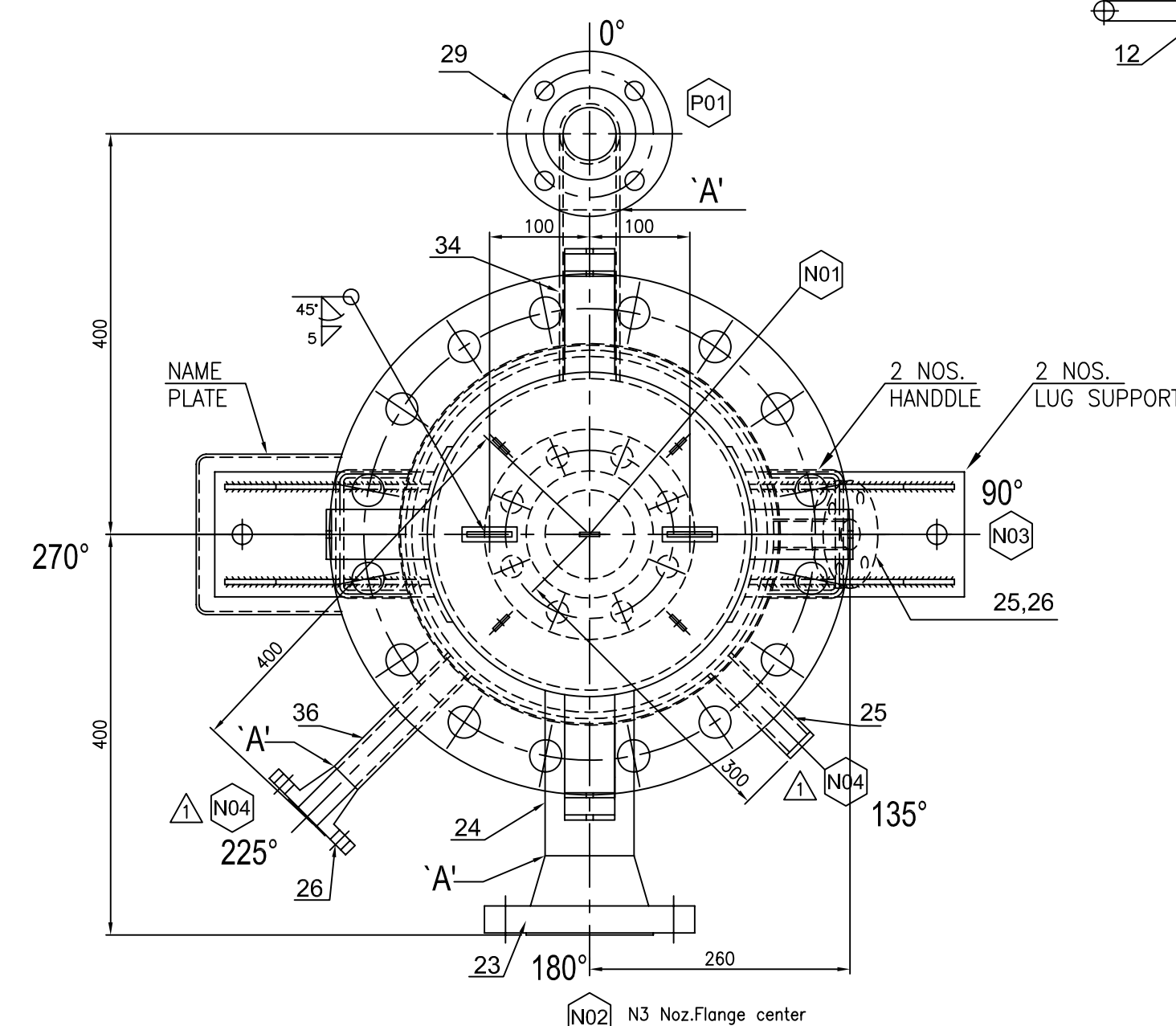


NOZZLE LOADS :-

SIZE INCH (mm)	1 (25)	2 (50)	3 (80)
F (N)	300	700	2000
T (N)	300	700	2000
M (Nm)	150	250	500

GENERAL NOTES:-

- 1) ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE NOTED.
- 2) ALL FLANGE BOLT HOLES SHALL STRADDLE NORTH & SOUTH CENTER LINE OR NATURAL HORIZONTAL & VERTICAL CENTER LINE OF VESSEL.
- 3) NOZZLE PROJECTIONS ARE FROM CENTER LINE OF VESSEL TO EXTREME FACE OF FLANGES.
- 4) GASKET CONTACT SURFACE OF FLANGE: 125-250 IN AARH
- 5) ALL NOZZLES SHALL BE RADIOUS WITH THE CONTOUR OF THE SHELL AND HEAD INNER WALL
- 6) ALL INTERNAL WELDS SHALL BE GROUND SMOOTH.
- 7) RF PADS SHALL BE PNEUMATICALLY TESTED AS PER CODE.
- 8) VESSELS WPS/PQR SHOULD BE SUBMITTED BY VESSEL MANUFACTURER & GET APPROVED.



VIEW FROM 'Y'- KEY PLAN

DESIGN DATA:-

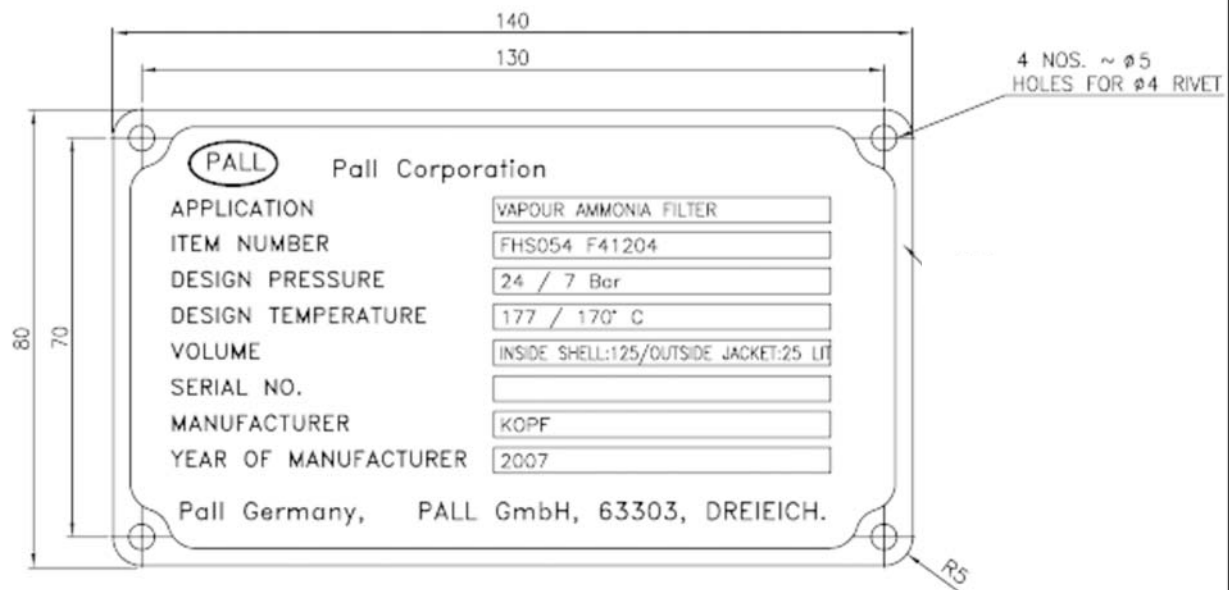
DESIGN CODE :- ASME SECTION VIII DIV.1, EDITION 2004, ADDENDA 2005	
FLUID :- VAPOUR AMMONIA	
DENSITY OF FLUID kg/m ³	7.56 
ASME CODE STAMP (not U stamp)	NO.
INSULATION m.m.	TYPE HE1 :- 100 mm THK.
FIRE PROOFING	NO
OPERATING PRESSURE BAR (a) / JACKET	13 / 4.5 
DESIGN PRESSURE BAR (a) / JACKET	24 / 7
OPERATING TEMPERATURE °C / JACKET	121 / 148 
DESIGN TEMPERATURE °C / JACKET	177 / 170
DIFF. PRESSURE TUBE SHEET	5 BAR.
VOLUME HOUSING / JACKET LITERS	INSIDE SHELL:125 / OUTSIDE JACKET:25
JOINT EFFICIENCY (S/H) %.	85 / 100
CORROSION ALLOWANCE m.m.	NIL
HYDRO TEST PRESS. BAR (g)	30
MDMT °C	-29
EMPTY / HYDRO WEIGHT (Kg)	375 / 600 
IMPACT TEST	NA
WIND LOAD DESIGN CODE	ASCE7-95, IMP FACTOR 1.0
WIND SPEED km/hr	130
EARTHQUAKE LOAD DESIGN CODE	UBC 1997, ZONE 2B
EXTERNAL LOADING ON EQUIPMENT / NOZZLE	REFER NOZZLE LOAD TABLE
INSPECTION	PALL / CLIENT / Notif. Body
QUANTITY	1 NO.

NOZZLE CONNECTIONS :-

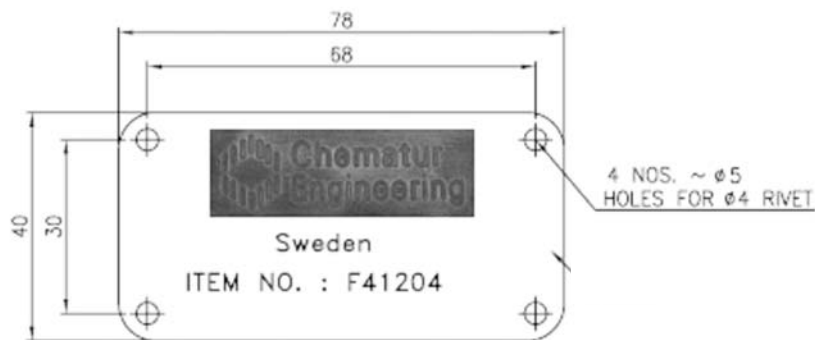
NOZ. NO	SERVICE	SIZE NB (INCH)	NOZ. SCH.	QTY.	FLANGE	
					FACE	TYPE
N01	GAS INLET	80NB (3")	40S	1	WNRF	ANSI B16.5, #300
N02	GAS OUTLET	80NB (3")	40S	1	WNRF	ANSI B16.5, #300
N03	JACKET INLET	25NB (1")	40S	1	WNRF	ANSI B16.5, #150
N04	JACKET OUTLET	25NB (1")	40S	2 	WNRF	ANSI B16.5, #150
P01	PRESSURE GAUGE	50NB (2")	40S	1	WNRF	ANSI B16.5, #300

	36.	NOZZLE PIPE N04	25 NB x 40S x 160 LG.	1	SA 312 TP 316L	-
▲	35.	ELBOW 90°-P01	50 NBx40S x ASMEB16.9	1	SA 403 WP 316L	-
▲	34.	NOZZLE PIPE-P01	50 NB x 40S x 172 LG.	1	SA 312 TP 316L	-
▲	33.	NOZZLE PIPE-P01	50 NB x 40S x 54 LG.	1	SA 312 TP 316L	-
	32.	INSULATION CLIPSE	PLATE 50 x 100 x 5 THK.	5	SA 240 - 304	-
	31.	LIFTING LUG PAD	100 x 30 x 5 THK.	2	SA 240 - 304	-
	30.	LIFTING LUG	150 x 80 x 10 THK.	2	SA 240 - 304	-
	29.	NOZZLE FLANGE-P01	50 NBx40S x ANSI B16.5, 300# ¹ ,WNRF	1	SA 182 F316L	-
▲	28.	DELETED	-	-	-	-
	27.	GUSSET PLATE	45 x 10 x 3 THK.	12	SA 240 - 304	-
▲	26.	NOZZLE FLANGE-N03/N04	25 NBx40S x ANSI B16.5, 150# ¹ ,WNRF	2	SA 182 F316L	-
▲	25.	NOZZLE PIPE N03/N04	25 NB x 40S x 95 LG.	2	SA 312 TP 316L	-
	24.	NOZZLE PIPE-N02	80 NB x 40S x 165 LG.	1	SA 312 TP 316L	-
▲	23.	NOZZLE FLANGE-N01/N02	80NBx40SxANSI B16.5, 300# ¹ ,WNRF.	2	SA 182 F316L	-
	22.	CLIENT NAME PLATE	REFER DETAIL DRG.(SH. 2 OF 2)	1	SA 240 - 304	CUSTOMER SPEC.
	21.	PAIL NAME PLATE	REFER DETAIL DRG. (SH. 2 OF 2)	1	SA 240 - 304	-
	20.	NAME PLATE BRKT.	PLATE 430 x 150 x 3 THK.	1	SA 240 - 304	-
	19.	FILTER ELEMENT	AEROLUTH #70/40x1000 LG.CYLINDER	5	CERAMIC	-
	18.	INSULATION CLIPSE	PLATE 50 x 160 x 5 THK.	12	SA 240 - 316L	-
	17.	STUD	M18 x 100 LG. ▲	2	SA 193 Gr. B7, SA 194 Gr. 2H	-
	16.	SUPPORT BRACKET	PLATE 220 x 125 x 10 THK.	2	SA 240 - 304	-
	15.	SUPPORT BRACKET	PLATE 200 x 154 x 5 THK.	4	SA 240 - 304	-
	14.	SUPPORT BRKT. PAD	PLATE 185 x 200 x 5 THK.	2	SA 240 - 316L	-
	13.	STUD	M8 x 35 LG.	4	SA 193 Gr. B7, SA 194 Gr. 2H	-
	12.	HANDEL	ROD #8 x 265 LG.	2	SS 316	-
	11.	TUBE SHEET	PLATE #381 x 30 THK.	1	SA 240 - 316L	-
	10.	RETAINING PLATE	PLATE #307 x 10 THK.	1	SA 240 - 316L	-
	9.	DISH END TOP	DN300 x 5 THK.	1	SA 240 - 316L	-
	8.	SHELL PIPE TOP	OD.323.9 x 6.35 THK x 269 LG.	1	SA 312 TP 316L	-
▲	7.	STUD+2 HEX. NUT+SPARE	M30 x 200 LG.	16+2 2+2	SA 193 Gr. B7, SA 194 Gr. 2H	-
	6A.	GASKET	OD. 381 x ID. 324 x 4.5 THK.	2	SS 316 SPIN WOUND GRAPHITE FILLER	-
	6.	SHELL FLANGE	DN300x ANSI B16.5, 300# ¹ , SORF.	2	SA 182 F316L	-
	5.	JACKET COVER	OD.388 x I.D. 324 x 5 THK.	1	SA 240 - 316L	-
	4.	JACKET CONE	ø366 x ø154 x 5 THK x 150 LG.	1	SA 240 - 316L	-
	3.	JACKET PIPE	OD.368 x 5 THK. x 1050 LG.	1	SA 240 - 316L	-
	2.	SHELL CONE	ø321.5 x ø88.9 x 5 THK x 200 LG.	1	SA 240 - 316L	-
	1.	SHELL PIPE BOTTOM	OD.323.9 x 6.35 THK x 1130 LG.	1	SA 312 TP 316L	-
	P.No.	DESCRIPTION	SIZE	QTY.	MATL. SPECN.	REMARK

2	10.12.07	AS BUILT DRAWING (DIMENSIONS MARKED AS { })	Universal	S.V.W.	MAN
1	16.08.07	P01 ARRANGEMENT CHANGED AS PER MAN COMMENTS	S.P.Ent.	SW	HO
REVISION	DATE	DESCRIPTION	DRAWN	CHECK	APPRD.
Product			Customer	MAN PROJECT.	
Title	DETAIL OF VAPOUR ARMAMIONA FILTER ITEM NO. F41204 HOUSING PART NO. FHS054 F41204		Drawn By	S.P.ENT.	11.06.07
			Checked By	Sanjoy W.	12.06.07
			Approved By		Scale 1:5
			Drawing Number	PU-FC-F41204 (SH. 1 OF 2)	
 Pall Corporation Pall Advanced Separation Systems Engineering Group, PALL India, Pune			 Third Angle Projection A1 Rev. 2		



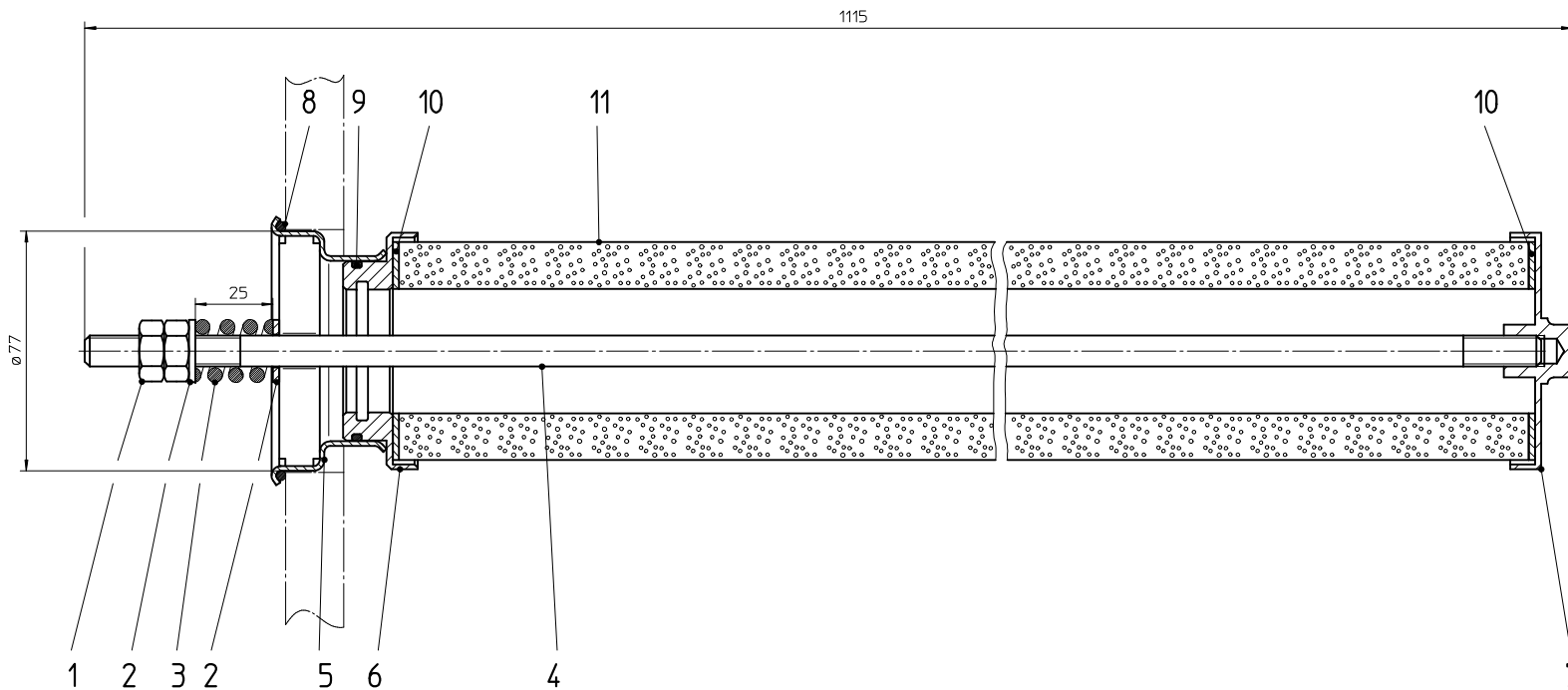
PALL NAME PLATE



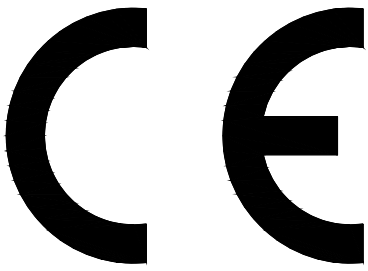
CLIENT NAME PLATE

(BY CUSTOMER)

FIGURE 3



11	Filter cylinder 70/40x100		1	AE 10		8003200
10	Gasket 70/40 x 2		2	RIVATHERM		5321200
9	O-Ring 52,07 x 2,62	3771	1	AFLAS		5566500
8	O-Ring 75,79 x 3,53	3771	1	AFLAS		5566600
7	upper centuring piece		1	1.4571		2210800
6	lower centuring piece		1	1.4571		2210700
5	arming head		1	1.4571		2216400
4	tie rod M10x1105		1	1.4571		2246900
3	spring 4.7x15.5x32	2098	1			5042000
2	washer A 10.5	125	2	A4		5061300
1	hex. nut M10		2	A4		5049600
Teil Part	Benennung Nomenclature	DIN Nr. DIN No.	Stück pcs	Werkstoff Material No.	Werkstoff nach DIN Standard No. AD-Bezeichnung AD Standard	Bemerkung Remark
CAD Zeichnung Drawing Änderungen nur bei gleichzeitiger Berichtigung im CAD-System zulässig. Correction allowed only by immediate implantation in CAD - System.						
PALL Pall Corporation Pall Filtersysteme GmbH D-74564 Crailsheim		Maßstab Scale 1:1	Projekt Project	Benennung Title Tie-rod System D70/40 x 1000 with expansion compensation Filter element AEROLITH 10		
Bearbeiter/Drawing by Geprüft/Checked by Freigegeben/Approved by		Tag Date 13.03.08 Name luuk	Auftrag-Nr. Project-No. Zeichnungs-Nr. Drawing No. Sk_10007_0			
Index	Revision	Datum Date	Name			
Copyright 2005 Pall Corporation This document may contain confidential technical data, including trade secrets proprietary to Pall Corporation. The drawing, design rights and all other disclosures in this document are the property of Pall Corporation. Unauthorized use, copying, distribution to third parties, manufacture, or reproduction in whole or in part is prohibited.						



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**DNV**

DET NORSKE VERITAS

INSPECTION CERTIFICATE

ESN-02-5925/21.3

Project No.: 8010014-3	Purchase Order / Chg. O. No.: NPC / Karoon-100-1 / 231	Client: Karoon Petrochemical Company No. 318; 2nd Floor; Vahid Dastjerdy Street; Africa Freeway; Tehran	Item No.: S36617
----------------------------------	--	--	----------------------------

This is to advise that the following item / material:

1 pc. ODCB Separator
Manufacturer's Order No. K-01894/03

Intended for: **Isocyanate Project (Phase I) TDI Plant**
Letter of credit No. 020503IM024

Manufactured / supplied by: HETA Verfahrenstechnik GmbH, Gottlieb-Daimler-Str. 7, 35423 Lich

on the (date) **24.06.2003** was accepted by the undersigned Surveyor to Det Norske Veritas to meet the requirements given
by drawings / Classification Rules / Specification / Statutory Regulations as follows ¹⁾:

Specifications of Technical Appendices Ref. 15.063-01 Jan 16, 2003 Rev. C/Apr. 24, 2003

Final acceptance pending until complete documentation is made available and found in order.

Non-conformances:**NO**Suggested corrective actions:Completion date:Sign:

Continue on separate enclosure:

Y=Yes
N=No**Checklist**

(All non-applicable checks are lined out)

(Abbr.: A = Acceptance checks are lined out)

☒ Material Certificates	☒ Liquid Penetrant and MPI Records	☒ Identification
☒ Welding Procedures Qualification	☒ Ultrasonic Testing Records	☒ Painting Coat Thickness Records
☒ Welder's Qualification	☒ Heat Treatment Records	
☒ Visual Inspection	☒ Pressure Test	
☒ Dimensional Checks (Spot)	☐ Performance Test (Spot)	
☒ Radiographic Films and Records	☒ Marking	

Orig: **Chematur Engineering AB**Place: **Schondra**Copy: **Chematur Engineering AB**Date: **2003-06-17**Copy: **Chematur Engineering AB**Office: **Essen**Copy: **DNV**

Sign:



1) Delete what is not applicable

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



INSPECTION CERTIFICATE

ESN-02-5925/21.1

DESCRIPTION OF GOODS

PAYMENT FOR 95 PERCENT OF THE TOTAL PRICE OF PROPRIETARY EQUIPMENT FOR ISOCYANATE PROJECT AT BANDAR IMAM AS PER AMENDMENT NO. 1 DATED 26TH DECEMBER 2001 TO EARLY AGREEMENT NO. 2 BETWEEN NATIONAL PETROCHEMICAL COMPANY (NPC), KARIM KHAN ZAND BLVD., TEHRAN, IRAN AND CHEMATUR ENGINEERING AB, BOX NO. 430, S-69127 KARLSKOGA, SWEDEN AND AS PER P.C.C (UK) LTD'S P/O REF: NPC/KAROON-100-1/231

9. Partial Shipment

GOODS ACCORDING PACKINGLIST NO. 10.831-216
PACKINGLIST NO: 10.831-216A

Item No. S36617



INSPECTION CERTIFICATE 3.1.C

Page 1 of 1

Project: --

Client: HETA Verfahrenstechnik GmbH
35423 Lich

Office: Siegen

Clients Order Number: K-01894/03

Date: 29 July 2003

Order Status: incomplete

Inspection Dates

First: 09 April 2003

Final: 26 June 2003

This certificate is issued to

HETA Verfahrenstechnik GmbH, 35423 Lich to certify that at their request the undersigned Surveyor(s) did attend at the works of Tank + Stahlbau Abersfelder GmbH & Co. KG, 97795 Schondra-Schildeck, their Order No.: A 4265 for the purpose of testing and inspecting the items(s) listed below on the dates shown above and inbetween.

ONE (-1-) PC. - PRESSURE VESSEL

Type	:	S36617, ODCB Separator
Code or Standard	:	ASME VIII Div. 1 Ed. 2001 Add. 2001 with the exception that no code stamp was applied
Serial No.	:	F3557
Drawing No.	:	EGD-S36617-01
Capacity	:	Shell: 1000 ltr. / Jacket: 500 ltr.
Design Pressure/Temp.	:	Shell: 13 bar absolute / -17 / +100 °C Jacket: 7,0/0,5 absolute / -17 / +100 °C
Medium	:	Shell: HCLG / Jacket: RFS/RFR
Material used	:	SA 516 Gr. 70 for shell and heads
Non-destructive-exam.	:	radiographic tested - full - satisfactory
Test Pressure / Time	:	Shell: 15,6 bar gauge / 1 hour Jacket: 7,8 bar gauge / 1 hour
Medium	:	water
Date of Pressure Test	:	26 June 2003

All design data are marked on a fixed nameplate.

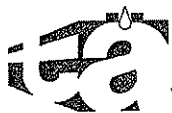
Inspectors stamp on nameplate: UK


.....
U. Köhn
Surveyor to Lloyd's Register EMEA

Local/HSK

Remark: Reviewed Works Documentation will be attached by the manufacturer.

Lloyd's Register EMEA is a member of the Lloyd's Register Group



Tank + Stahlbau
Abersfelder GmbH & Co. KG

Industriestraße 6
97795 Schondra-Schildeck

Tel. 09747/79-0
Fax. 09747/79-22

WERKSCHESCHENIGUNG ÜBER DIE ERSTMALIGE PRÜFUNG EINES DRUCKBEHÄLTERS

Bauprüfung und Druckprüfung

3 Objektart: **Druckbehälter / PRESSURE VESSEL S36617**
4 Verwendungszweck: **ODCB Separator**
5 Prüfgrundlage: **ASME SEC. VIII, 1 Edition 2001 ADD 2001**
6 Kennzeichnung: **auf Fabrikschild**
7 Hersteller: **Tank+Stahlbau** **Herstell-Nr.: F3557**
8 **Abersfelder GmbH & Co.KG** **Baujahr: 2003**
Industriestr. 6
9 Herstellort: **97795 Schondra-Schildeck** **Herstellerzeichen: TSA**

Raum	Shell	Jacket	
zulässiger Betriebsüberdruck bar	13	7,0 / 0,5	
zulässige Betriebstemperatur °C	- 17 / + 100	- 17 / 100	
Rauminhalt Liter	1 000	500	
Inhalt (Medium)	HCLG	RFS / RFR	

BAUPRÜFUNG

Datum: 26.06.2003

Die Ausführung entspricht in den wesentlichen Teilen der vorgeprüften Zeichnung.

Verwendete Werkstoffe: (siehe auch Anlage)

DRUCKPRÜFUNG

Datum: 26.06.2003

Raum	Shell	Jacket	
Prüfüberdruck bar	15,6	7,8	
Druckmedium	Wasser	Wasser	

Die Druckprüfung ergab keine Beanstandung.

ANDERE PRÜFUNGEN:

Radiographiy

BEMERKUNGEN:

Die Ausrüstung wurde nicht geprüft. Die Abnahmeprüfung vor Inbetriebnahme ist daher noch durchzuführen. Die in der beigefügten Werkstoffnachweisliste(n) aufgeführten Werkstoffnachweise haben zur Prüfung vorgelegen und werden beim Behälterhersteller aufbewahrt. Die Auskleidung wurde nicht geprüft

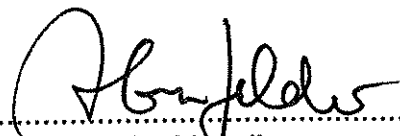
Zum Zeichen der bestandenen Prüfung wurde wie folgt gestempelt: Mit dem Stempel das Fabrikschildniet sowie der Mantelkörper im Bereich der Fabrikschildbrücke.

Ort: Schondra-Schildeck

Datum: 26.06.2003

Anlagen

- ☒ Zeichnung(en) und Werkstoffnachweisliste
☒ andere Dokumente: Radiographic Report


Sachkundiger

verified



26. JUNI 2003



de

1 BESCHEINIGUNG ÜBER DIE ERSTMALIGE PRÜFUNG EINES DRUCKBEHÄLTERS

- Bauprüfung und Druckprüfung
- 2 Werksauftrag-Nr.:
Prüf-Nr.:
- 3 Objektart:
- 4 Verwendungszweck:
- 5 Prüfgrundlage:
- 6 KENNZEICHNUNG AUF FABRIKSCHILD
- 7 Hersteller:
Herstell-Nr.:
- 8 Herstelljahr:
- 9 Herstellort:
- Herstellereichen:
- 10 Raum
- 11 zulässiger Betriebsüberdruck
- 12 zulässige Betriebstemperatur
- 13 Rauminhalt
- 14 Inhalt (Medium)
- 15 VORPRÜFUNG der Zeichnung durch
Datum:
- 16 Zeichnungs-Nr.:
- 18 BAUPRÜFUNG
Datum:
- 19 Die Ausführung des Objektes
entspricht in den wesentlichen
Teilen der vorgeprüften Zeichnung
- 20 Werkstoffzeugnisse: siehe Anlage
- 21 DRUCKPRÜFUNG
Datum:
- 22 Raum
- 23 Prüfüberdruck
- 24 Druckmedium
- 25 Die Druckprüfung verlief ohne
Beanstandung
- 26 ANDERE PRÜFUNGEN
(z.B. Durchstrahlungsprüfung)
- 27 BEMERKUNGEN
- 28 Die Ausrüstung wurde nicht geprüft,
die Abnahmeprüfung vor Inbetrieb-
nahme ist daher noch erforderlich.
- 30 Zum Zeichen der bestandenen Prüfung
wurde das Fabrikschild wie folgt
gestempelt:
- 31 Ort
Datum
Name und Unterschrift
- 32 Anlagen:
Zeichnungen
Werkstoffliste
Andere Dokumente

it

- 1 CERTIFICATO DI VERIFICA INIZIALE
DI APPARECCHIO A PRESSIONE
Verifica di costruzione e prima
prova a pressione
- 2 N. Commessa-Ordine:
N. Collaudo:
- 3 Tipo di apparecchio:
- 4 Condizioni d'uso:
- 5 Norma di controllo:
- 6 DATI RIPORTATI SULLA TARGA DEL
COSTRUTTORE
- 7 Costruttore:
N. di fabbrica:
- 8 Anno di costruzione:
- 9 Località...:
Marchio del fabbricante:
- 10 Camera
- 11 Pressione di esercizio ammissibile
- 12 Temperatura di esercizio ammissibile
- 13 Capacità
- 14 Fluido contenuto
- 15 APPROVAZIONE DEL PROGETTO
Data:
- 16 Disegno N.:
- 18 VERIFICA DI COSTRUZIONE
Data:
- 19 La costruzione dell'apparecchio
e conforme ai disegni approvati.
- 20 Certificati dei materiali: vedere allegati
- 21 PROVA DI PRESSIONE
Data:
- 22 Camera
- 23 Pressione di prova
- 24 Fluido utilizzato
- 25 Esito della prova soddisfacente.
- 26 ALTRE PROVE
(per esempio radiografia)
- 27 OSSERVAZIONI
- 28 Gli accessori di controllo e sicurezza
non sono stati verificati, l'apparecchio
dovrà essere comunque verificato
sul luogo dell'impianto.
- 30 Visto l'esito soddisfacente delle prove e
verifiche sono state apposte sulla targa
del costruttore le punzonature come segue
- 31 Luogo
Data
Nome e firma
- 32 Allegati
Disegni
Lista dei materiali
Altri documenti

en

1 CERTIFICATE OF CONSTRUCTION INSPECTION & FIRST PRESSURE TEST

- for pressure vessel
- 2 Works-Order N°:
Inspection N°:
- 3 Vessel Type:
- 4 Vessel Duty:
- 5 Test Code:
- 6 NAME PLATE MARKING
- 7 Manufacturer:
Manufacturing N°:
- 8 Year of construction:
- 9 Location:
Manufacturer's brandmark:
- 10 Chamber
- 11 Permissible working pressure
- 12 Permissible working temperature
- 13 Capacity
- 14 Contents (medium)
- 15 DESIGN APPROVAL by
Date:
- 16 Drawing N°:
- 18 CONSTRUCTION INSPECTION
Date:
- 19 The main parts of the object have
been manufactured in accordance
with the approved drawings.
- 20 Material certificates: see annex
- 21 PRESSURE TEST
Date:
- 22 Chamber
- 23 Test pressure
- 24 Pressuring fluid
- 25 The pressure test was satisfactory
- 26 OTHER TESTS
- 27 Remarks (e.g. radiography)
- 28 The fittings were not tested, it is
therefore necessary to carry out
acceptance test before
commissioning
- 30 To indicate the satisfactory
examination the nameplate was
stamped as follows:
- 31 Location
Date
Name and signature
- 32 Enclosures:
Drawings
List of materials
Other documents

es

- 1 CERTIFICADO DE VERIFICACION INICIAL
DE APARATO A PRESION
Control de construccion y primera prueba
de presion
- 2 Referencia de fabrica:
Certificado No:
- 3 Tipo de aparato:
- 4 Condiciones de utilizacion:
- 5 Codigo de inspeccion
- 6 DATOS SOBRE LA PLACA DEL
CONSTRUCTOR
- 7 Constructor:
No de fabricacion:
- 8 Año de construccion:
- 9 Lugar de fabricacion:
Marca del fabricante:
- 10 Recinto
- 11 Presion de trabajo admisible
- 12 Temperatura de trabajo admisible
- 13 Capacidad
- 14 Fluido contenido
- 15 APROBACION DE DISEÑO
Fecha:
- 16 Planos No
- 18 VERIFICACION DE CONSTRUCCION
Fecha:
- 19 La construccion del aparato, en sus partes
principales, esta conforme con lo planos
aprobados previamente.
- 20 Certificado de materiales: ver anexo
- 21 PRUEBA DE PRESION
Fecha:
- 22 Recinto
- 23 Presion de prueba
- 24 Fluido utilizado
- 25 La prueba de presion ha sido satisfactori
- 26 OTROS ENSAYOS
(por ejemplo radiografiado)
- 27 OBSERVACIONES
- 28 Los accesorios de control y seguridad no
han sido probados, el aparato debera
someterse a nueva inspeccion antes
de su puesta en servicio
- 30 Habiendo sido satisfacciones los controles
y ensayos efectuados se ha grabado la
placa del constructor de la manera siguiente
- 31 Lugar
Fecha
Nombre y firma
- 32 Anexos:
Planos
Lista de materiales
Otro documentacion

fr

- 1 CERTIFICAT DE VERIFICATION INITIALE
D'UN APPAREIL A PRESSION
Surveillance de construction et essai
sous pression
- 2 Réf. affaire usine:
N° de dossier:
- 3 Désignation:
- 4 Conditions D'utilisation:
- 5 Code de contrôle:
- 6 INDICATIONS PORTEES SUR LA PLAQUE
DU CONSTRUCTEUR
- 7 Constructeur:
N° de fabrication:
- 8 Année de fabrication:
- 9 Lieu de fabrication:
Marque du fabricant:
- 10 Enceinte
- 11 Pression de service admissible
- 12 Température de service admissible
- 13 Capacité
- 14 contenu (fluide)
- 15 APPROBATION DE LA CONCEPTION
Date:
- 16 Plan N°:
- 18 SURVEILLANCE DE LA CONSTRUCTION
Date:
- 19 La construction de l'appareil, dans ses
parties principales, est conforme
aux plans approuvés préalablement.
- 20 Certificat des matériaux: voir annexes
- 21 ESSAI SOUS PRESSION
Date:
- 22 Enceinte
- 23 Pression d'essai
- 24 fluide utilisé
- 25 L'essai sous pression a été satisfaisant.
- 26 AUTRES EXAMENS
(par exemple, radiographie)
- 27 OBSERVATIONS
- 28 Les organes de robinetterie et de sécurité
n'ayant pas été contrôlés, l'appareil devra
être soumis à un nouveau contrôle
avant sa mise en service.
- 30 Les contrôles et essais ayant été
satisfaisants, la plaque du constructeur
a été poinçonnée comme suit:
- 31 Lieu
Date
Nom et signature
- 32 Annexes
Plans
Liste des matériaux
Autres documents

pt

- 1 CERTIFICADO DE APROVACAO DE
CONSTRUCAO DE RECIPIENTES
SOB PRESSAO
Inspeccao de construccao
e ensaio sob pressao
- 2 Certificado No:
Referencia No:
- 3 Tipo de RSP:
- 4 Condicoes de utilizacao:
- 5 Codigo de construccao:
- 6 DADOS CONSTANTES NA PLACA DE
IDENTIFICACAO DO CONSTRUTOR
- 7 CONSTRUTOR:
No Construtor:
- 8 Ano de construccao:
- 9 Local de construccao:
Marca do construtor:
- 10 Camara
- 11 Pressao admissivel de funcionamento
- 12 Temperatura admissivel de funcionamento
- 13 Capacidade
- 14 Conteudo (fluido)
- 15 APROVACAO DO PROJECTO
Data:
- 16 Desenhos No:
- 18 INSPECCAO DE CONSTRUCAO
Data:
- 19 A construccao do referido aparelho foi
feita, nas suas partes fundamentais,
de acordo com os desenhos
- 20 Certificados de material: ver anexo
- 21 ENSAIO SOB PRESSAO
Data:
- 22 Camara
- 23 Pressao de Ensaio
- 24 Fluido utilizado
- 25 O ensaio sob pressao foi
satisfatorio
- 26 OUTROS ENSAIOS
(p. ex: radiografia)
- 27 OBSERVACOES
- 28 Os accessorios nao foram testados.
O aparelho deve ser submetido a novo
controlo antes da entrada em servico
- 30 Face aos resultados satisfactorios da
inspeccao a placa de identificacao do
aparelho foi puncoada como segue:
- 31 Local
Data:
Nome e assinatura
- 32 Anexos:
Desenhos
Lista dos materiais

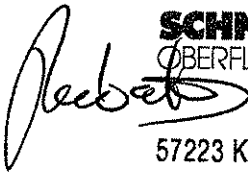
SCHNEIDER+CO OBERFLÄCHENTECHNIK Bescheinigung	Glühbescheinigung heat treatment certificate	Besteller/customer: Abersfelder GmbH&Co.KG, 97795 Schondra-Schildeck Bestell.-Nr./order-no.: 275 - MAN Auftrags-Nr.: 03/1474																		
Daten der Lieferung / dates on material delivered 73557																				
Pos.-Nr. item-no.	Anzahl units	Objekt/Form type/form	Abmessung dimensions	Werkstoff material																
1		Behälter ø 850 mm, L = 3.500 mm, ~2.000 mm		SA 516 Gr. 70 (WstE 355)																
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Datum: Date</td> <td style="width: 60%;">21.06.2003</td> </tr> <tr> <td>Aufheizrate: heating Rate:</td> <td>50 - 100 °C/h</td> </tr> <tr> <td>Haltetemperatur: holding temperature</td> <td>593°C</td> </tr> <tr> <td>Haltezeit: holding time</td> <td>60 Min.</td> </tr> <tr> <td>Abkühlung: quenching medium</td> <td>an ruhender Luft</td> </tr> <tr> <td>Anlaßtemperatur: tempering temperature</td> <td>-</td> </tr> <tr> <td>Haltezeit: holding time</td> <td>-</td> </tr> <tr> <td>Abkühlung: quenching medium</td> <td>-</td> </tr> </table>					Datum: Date	21.06.2003	Aufheizrate: heating Rate:	50 - 100 °C/h	Haltetemperatur: holding temperature	593°C	Haltezeit: holding time	60 Min.	Abkühlung: quenching medium	an ruhender Luft	Anlaßtemperatur: tempering temperature	-	Haltezeit: holding time	-	Abkühlung: quenching medium	-
Datum: Date	21.06.2003																			
Aufheizrate: heating Rate:	50 - 100 °C/h																			
Haltetemperatur: holding temperature	593°C																			
Haltezeit: holding time	60 Min.																			
Abkühlung: quenching medium	an ruhender Luft																			
Anlaßtemperatur: tempering temperature	-																			
Haltezeit: holding time	-																			
Abkühlung: quenching medium	-																			
Beurteilung der Wärmebehandlungseinrichtung durch den RWTÜV unter der G.-Nr. 2.1.1-78/98																				
57223 Kreuztal, 25.06.2003 Ru/MB SCHNEIDER+CO GmbH		Unterschrift:  SCHNEIDER+CO OBERFLÄCHENTECHNIK  57223 Kreuztal-Buschütten																		

Chart-No. B 9565 AW

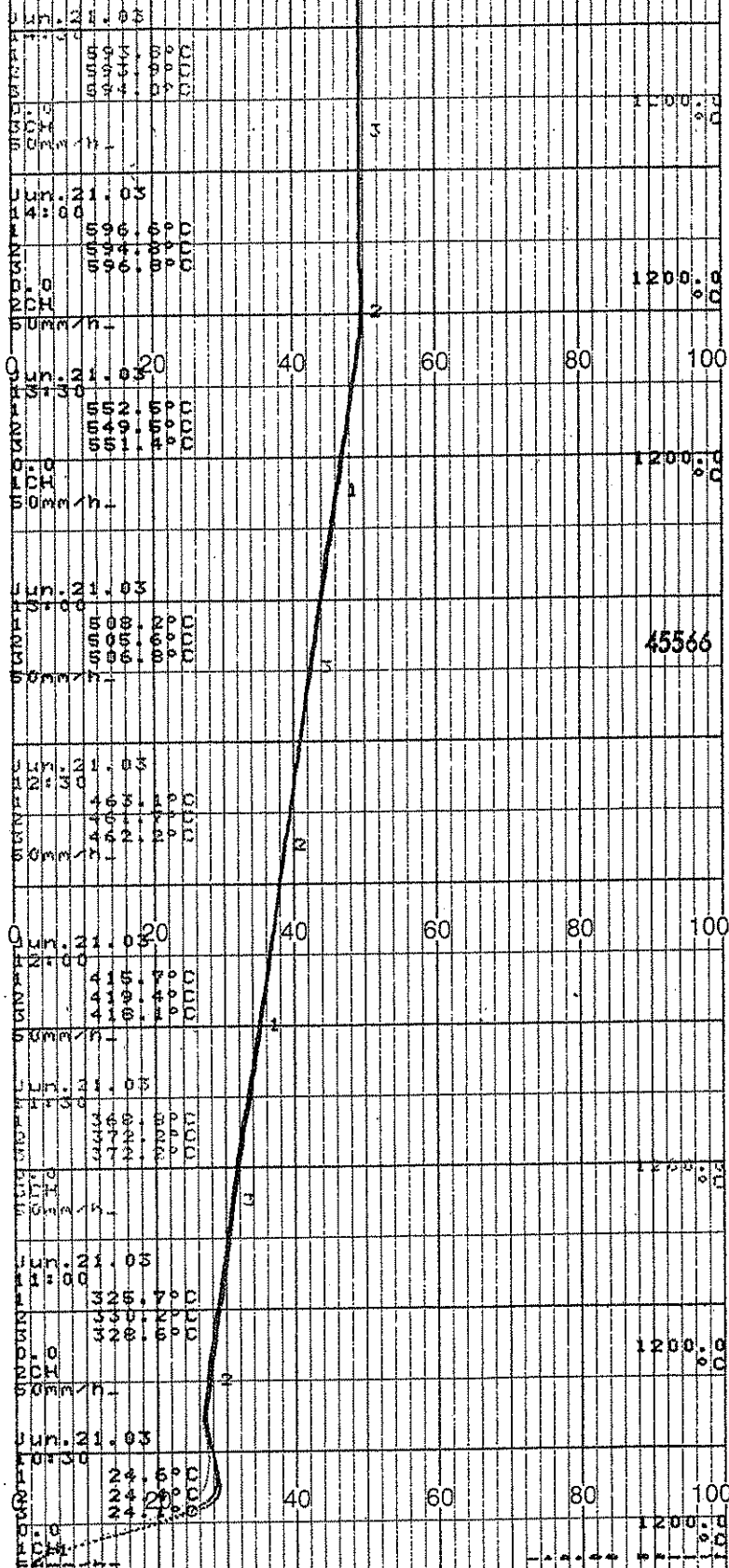


Chart-No. B 9565 AW

1563 Absfelden - 1. Bel.
BDG - 5. Forderung

7. Bel.

16.07.2003

A4265 / K-01894/03

An den Apparaten werden gemäß ASME nur
Röntgenprüfungen und keine Ultraschallprüfungen
durchgeführt.

The pressure vessels are non destructive tested according
to ASME by x-ray. Ultrasonic tests were not necessary.

Tank + Stahlbau Abersfelder
GmbH & Co. KG
Schondra-Schildeck den 16.07.2003

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zwp - werkstoffprüfung peters gmbh + co. kg

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fax.(02065) 997499

mausegatt 12

d-47228 duisburg

DURCHSTRAHLUNGS-PRÜFPROTOKOLL										PROTOKOLL-NR.:																						
radiographic examination record										record-no.:																						
Besteller: Tankbau Abersfelder GmbH & Co KG										BLATT																						
customer: 97795 Schondra - Schildeck										sheet 1 von 2																						
AUFTRAG NR.: A 42 65										POSITION: S 366 17 I																						
PROJEKT: Behälter										position: S 366 17 A																						
order no.:																																
Prüfung nach ASME SECTION V / VIII Procedure RT 1										ZEICHNUNGS-NR.: EGD - S 366 17 - 01																						
examination acc. To ASME Section										drawing no.:																						
WERKSTOFF: SA 516 GR. 70										SCHWEISSVERFAHREN: UP / SAW																						
material:										welders process:																						
PRÜFUNG NACH / VOR DER WÄRMEBEHANDLUNG ohne without										PRÜFFLÄCHENZUSTAND: unbearbeitet / unfinished																						
examination after / before heat treatment										condition of exam surface:																						
STRAHLENQUELLE: Eresco 200MF Iridium 192										GROSSE: BRENNFLECK: 1,5x1,5 mm																						
radiation source x-ray:										size focal spot 1,8 x 2,0																						
AKTIVITÄT: 37 Ci 1369 GBq										ROHRENSPANNUNG: 200 kV																						
activity:										plate voltage:																						
BPK-Loch-Nr. IQI - type 15										ROHRENSTROM: 4,5 mA																						
IQI Hole No.										plate current:																						
Draht-Set ASTM B										FOLIEN: 0,027 / 0,027 VF / HF																						
Wire-Set										screens: L / b.																						
DURCHSTRAHLUNGSANORDNUNG NACH: RT 1 A; B; E										single-wall																						
exposure arrangements acc. To Procedure																																
ABSTAND DER STRAHLENQUELLE ZUM FILM: 365, 800, 950 mm										PRÜFUMFANG: 100 % CS %																						
source to film distance:										exam. extent: 100 % LS																						
DURCHSTRAHLUNGSBEFUND/result of radiographic examination: Sections VIII / V																																
Die Prüfergebnisse beziehen sich ausschließlich auf die oben genannten Prüfgegenstände																																
Anzeigen / Imperfection n.																																
Befund / Result																																
FILMBEZ. film-identification		Abstand zum Objekt mm source to object distance	Belichtungszeit min exposure time	SCHWEISER NR.: welder's no	ABMESSUNG a Ø x s WERKSTOFF mm dimension / weld-thickness	ent. BZ Image quality	D = Schwärzung D = Density										Anzahl Filme number of films 26	Bewertung / Evaluation														
NAHT - NR. ODER PRÜFBER. weld no. or exam. area	FILM-NR. film-no.																															
							ist	2011	2016	3012	3014	401	4013	101	102	5012	5013	511	3041	FF	section	P	K	T								
CS 1 I	0 - 230	359	3,0		730 x 16	6	2,7	X								X						a										
CS 2 I	0 - 230	359	3,0		730 x 16	6	2,7	X								X						a										
LS 1 I	0 - 40	784	1,5		d = 16 mm	6	2,8									X						a										
	40 - 80					6	2,8									X						a										
	80 - 120					6	2,8	X								X						a										
	120 - 160					6	2,8	X								X						a										
Bewertung: a = erfüllt / accept na = nicht erfüllt / not accept																																
Aa - 2011 - Poren / Porosity							D - 4013 - Wurzelfehler / Lo rootfusion							F - 511 - DL - Unterwölbung /																		
Ab - 2016 - Schlauchpore / Worm hole							Ea - 101 - Längsriß / Long. Crack							Incombl. filled groove																		
Ba - 3012 - Schlacke / Slag							Eb - 102 - Querriß / Transversal crack							H - 3041 - Metalleinschluß /																		
Bb - 3014 - Schlackezellen / Slag cluster							F - 5012 - Einbrandkerbe / Undercut							Met. incl.																		
C - 401 - Bindefehler / Lack of fusion							F - 5013 - Wurzelkerbe / Undercut ins.							FF - Filmfehler / Film damage																		
BEMERKUNG:																																
DATUM 23.05.2003											DATUM 23.05.2003											DATUM										
date											date											date										
ORT/place Schondra / Schildeck											ORT/place Schondra / Schildeck											ORT/place										
PRÜFER: G.Staude											PRÜFAUFSICHT: G.Staude											PRÜFVERMERK: SACHVERST.										
examiner											examination super visor											approvalnote: authorized inspection agency										

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DURCHSTRAHLUNGS-PRÜFPROTOKOLL										PROTOKOLL-NR.:														
radiographic examination record										record-no.: DS 23/05/03- 2														
Besteller: Tankbau Abersfelder GmbH & Co KG										BLATT 2 von 2														
customer: 97795 Schondra - Schildeck										sheet 2 of 2														
AUFTRAG NR.: A 42 65					PROJEKT: Behälter					POSITION: S 366 17 I														
order no.:					project: Container MAN Sweden					position: S 366 17 A														
FILMBEZ. film-identification		Abstand zsm Objekt mm source to object distance mm	Belichtungs-zeit min exposuretime min	SCHWEISER NR.: welder's no	ABMESSUNG a Ø x s WERKSTOFF mm dimensions a, dia x s material	Die Prüfergebnisse beziehen sich ausschließlich auf die oben genannten Prüfgegenstände Anzeigen / Imperfection n.																		
ORDER PRÜFBER. weld no. or exam. Area	FILM-NR. film-no.					Befund / Result																		
						err. BZ	D = Schwärzung D = Density										Anzahl Filme number of films 26				Bewertung / Evaluation			
						Image quality	D	2011	2016	3012	3014	401	4013	101	102	5012	5013	511	3041	FF	bereich section	P	K	T
LS 1 I	160 - 200	784	1,5		d = 16 mm	6	2,8	X								X						a		
	200 - 240					6	2,8	X								X						a		
	240 - 270					6	2,8	X								X						a		
CS 3 A	0 - 28	784	2,0		d = 8 mm	6	2,6									X						a		
	28 - 56					6	2,6									X						a		
	56 - 84					6	2,6									X						a		
	84 - 112					6	2,6									X						a		
	112 - 140					6	2,6	X								X						a		
	140 - 168					6	2,6									X						a		
	168 - 196					6	2,6	X	X			X				X					180-190	na		
	196 - 224					6	2,6					X				X					205-210	na		
	224 - 252					6	2,6									X						a		
	252 - 0					6	2,6									X						a		
LS 2 A	0 - 40	784	0,7		d = 8 mm	3	2,8									X						a		
	40 - 80					3	2,8	X								X						a		
	80 - 120					3	2,8									X						a		
	120 - 160					3	2,8									X						a		
	160 - 200					3	2,8									X						a		
	200 - 240					3	2,8									X						a		
	240 - 270					3	2,8	X								X						a		
Bewertung: a = erfüllt / accept na = nicht erfüllt / not accept																								
BEMERKUNG:																								
DATUM 23.05.2003																								
date																								
ORT/place Schondra / Schildeck																								
PRÜFER: G.Staude																								
examiner																								
DATUM 23.05.2003																								
date																								
ORT/place Schondra / Schildeck																								
PRÜFAUFSICHT: G.Staude																								
examination super visor																								
DATUM																								
date																								
ORT/place																								
PRÜFVERMERK: SACHVERST.																								
approvalnote: authorized inspection agency																								



Durch das DAP Deutsches
Akkreditierungssystem
akkreditiertes Prüflaboratorium



DAP - P -02.372.00-92-20

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DURCHSTRAHLUNGS-PRÜFPROTOKOLL

radiographic examination record

PROTOKOLL-NR.:

record-no.: DS 16/06/03- 3

Besteller: Tankbau Abersfelder GmbH & Co KG

BLATT 1 von 2

customer: 97795 Schondra - Schildeck

sheet of 2

AUFTRAG NR.: A 42 65

PROJEKT: Behälter
project: Container MAN Sweden

POSITION: S 366 17 A

position: S 366 17 I

Prüfung nach ASME SECTION

V / VIII

Procedure RT 1

ZEICHNUNGS-NR.:

EGD - S 366 17 - 01

WERKSTOFF:

SA 516 GR. 70

SCHWEISSVERFAHREN:

UP / SAW

material:

welders process:

PRÜFUNG NACH / VOR DER WÄRMEBEHANDLUNG

ohne
without

PRÜFFLÄCHENZUSTAND:

unbearbeitet / unfinished

examination after / before heat treatment

condition of exam surface:

STRAHLENQUELLE:

Iridium 192

Gammastrahl

X

GROSSE:

BRENNFLECK:

mm

radiation source x-ray:

size

focal spot

1,8 x 2,0

AKTIVITÄT:

29

Ci

ROHRENSPANNUNG:

kV

ROHRENSTROM:

mA

activity:

1073

GBq

plate voltage:

plate current:

BPK-Loch-Nr. IQI - type

15

FILMTYP:

AGFA D5

FOLIEN:

0,027 / 0,027

VF / HF

IQI Hole No.

Film type:

screens:

1/ b.

Draht-Set

ASTM B

DURCHSTRAHLUNGSANORDNUNG NACH:

RT 1

A; E

Wire-Set

exposure arrangements acc. To Procedure

single-wall

ABSTAND DER STRAHLENQUELLE ZUM FILM:

365, 800

mm

PRÜFUMFANG:

100 % Rep.

%

source to film distance:

exam. extent:

DURCHSTRAHLUNGSBEFUND/result of radiographic examination:

Sections VIII / V

FILMBEZ. film-identification						Die Prüfergebnisse beziehen sich ausschließlich auf die oben genannten Prüfgegenstände																							
NAHT - NR: ODER PRÜFBER.		FILM-NR.	Abstand zum Objekt	Belichtungszeit	SCHWEISER NR.:	ABMESSUNG & Ø x s WERKSTOFF mm	Anzeigen / Imperfection n.																						
weld no. or exam. area		film-no.	source to object distance	exposuretime	welder's no	dimension / weld-thickness	Befund / Result																						
			mm	min		mm	err. BZ	D = Schwärzung D = Density										Anzahl Filme number of films						7			Bewertung / Evaluation		
			mm	min		mm		D	ist	2011	2016	3012	3014	401	4013	101	102	5012	5013	511	3041	FF	bereich						
							Image quality																		P	K	T		
CS 3 R .		170 - 215	359	2,8		730x16	6	3,2									X							a					
CS 4 / N 03		0 - 18	170	0,8		168x11	6	3,0	X															a					
		18 - 36					6	3,0																a					
		36 - 0					6	3,0																a					

	QW-484 FOR MANUAL AND SEMIAUTOMATIC WELDING Für hand- und halbautomatisches Schweißen	This format covers: SMAW, SAW, GMAW, and GTAW
WELDERS - PERFORMANCE - QUALIFICATION Schweißer - Zeugnis		WPQ 88
GOTOSZ Name	Krystof First Name(s)	115 Stamp No.
		WPS 04 WPS used
		0 Rev.

QW	Essential Variables	Actual Values from Coupon or Production Weld	Qualified Ranges
352-356	Process(s)	1: GMAW (SC) 2: n.a.	1: GMAW 2: n.a.
Info. onl.	Base Material(s) T	SA 516 Gr. 70 T 15 mm	to SA 516 Gr. 70 T 15 mm
403.18	P-No. to P-No.	1 to 1	1-11, 34, 41-47
403.16	Pipe outside dia <73 or >73mm	plate	F > 72mm V > 610 mm
405.1	Position	1: 3G 2: n.a.	1: F,V Fillet: F,V,H
405.3	Vertical up or down	1: up 2: n.a.	1: up 2: n.a.
402.4	Backing	1: ☐ YES ☒ NO 2: ☐ YES ☐ NO	1: optional 2: n.a.
404.30	t: Weld metal disposit	1: 15 2: n.a.	1: 30mm 2: Filet max. all
404.32	t: Limit (GMAW Short Circ.)	a) T<1/2":n.a. : 1.1XT b) T>1/2":n.a. : 2T-8"	30mm max.
409.2	Tranf. Mode Spray Puls. Clobular Short Circ.	n.a.	1: n.a. 2:
409.4	AC - DC (GTAW) only	n.a.	n.a.
404.15	Chge F-No. SMAW except F4 = F1 - F4	6	6
404.28	Chge F-No. GMAW GTAW within QW 432	1: n.a. 2:	1: n.a. 2:
404.22	± Insert (GTAW only)	☐ with ☐ without	n.a.
404.11	F-No. Nickel (any qualifies all)	1: n.a. 2:	1: n.a. 2:
404.16	F-No. Aluminium (any qualifies all)	1: n.a. 2:	1: n.a. 2:
408.8	(-) Inert backing	1: without 2:	1: without 2:
404.14	± Filler (GTAW)	1: n.a. 2:	1: n.a. 2:
404.23	Filler metal product form	n.a.	n.a.

QW-161	GUIDED BEND TEST
Type QW-462.3 (a) (b)	Results: Type QW-462.2 Results:
n.a. (Face Bend)	n.a. (Side Bend) accep.
n.a. (Root Bend)	n.a. (Side Bend) accep.

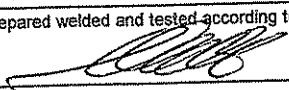
QW-304	RADIOGRAPHIC TEST
RT-Personnel (Name):n.a.	Level: n.a.
Results: n.a.	Signature:

QW-181.2	FILLET WELD TEST
Location of track or tear:	Results:n.a.
Length: n.a. %	

QW-184	MACRO EXAMINATION
Length of indication: n.a.	Concavity:n.a. Convexity: n.a.
Fillet leg size: n.a.	Results:n.a.

OTHER
Visual examination results (QW-302.4): acceptable
Welding test conducted by: Tank- und Stahlbau Abersfelder
Mechanical / radiographic tests conducted by: Tank- und Stahlbau Abersfelder
Laboratoy test no.: n.a.

We certify that the statements in this record are correct and that welds were prepared welded and tested according to Section IX ASME Code.

Tank- und Stahlbau Abersfelder Organization / Manufacturer	 Signature	01 10 2002 Day Month Year
--	--	--

	QW-484 FOR MANUAL AND SEMIAUTOMATIC WELDING Für hand- und halbautomatisches Schweißen	This format covers: SMAW, SAW, GMAW, and GTAW
WELDERS - PERFORMANCE - QUALIFICATION Schweißer - Zeugnis		WPQ 83
GORSKI Name	Artur First Name(s)	113 Stamp No.
		WPS 03 WPS used
		0 Rev.

QW	Essential Variables	Actual Values from Coupon or Production Weld	Qualified Ranges
352-356	Process(s)	1: GMAW 2: n.a.	1: GMAW 2: n.a.
Info. onl.	Base Material(s) T	SA 516 Gr. 70 T 15 mm	to SA 516 Gr. 70 T 15 mm
403.18	P-No. to P-No.	1 to 1	1-11, 34, 41-47
403.16	Pipe outside dia <73 or >73mm	plate	F,H > 72mm
405.1	Position	1: 2G 2: n.a.	1: F,H Fillet: F,H
405.3	Vertical up or down	1: n.a. 2: n.a.	1: n.a. 2: n.a.
402.4	Backing	1: ☐ YES ☒ NO 2: ☐ YES ☐ NO	1: optional 2: n.a.
404.30	t: Weld metal disposit	1: 15 2: n.a.	1: max. to be welded 2: Fillet max. all
404.32	t: Limit (GMAW Short Circ.)	a) T<1/2": n.a. 1.1XT b) T>1/2": n.a. 2T-8"	n.a. max.
409.2	Tranf. Mode Spray Puls. Clobular Short Circ.	globular	1: without short circ. 2:
409.4	AC - DC (GTAW) only	n.a.	n.a.
404.15	Chge F-No. SMAW except F4 = F1 - F4	6	6
404.28	Chge F-No. GMAW GTAW within QW 432	1: n.a. 2:	1: n.a. 2:
404.22	± Insert (GTAW only)	☐ with ☐ without	n.a.
404.11	F-No. Nickel (any qualifies all)	1: n.a. 2:	1: n.a. 2:
404.16	F-No. Aluminium (any qualifies all)	1: n.a. 2:	1: n.a. 2:
408.8	(-) Inert backing	1: n.a. 2:	1: n.a. 2:
404.14	± Filler (GTAW)	1: n.a. 2:	1: n.a. 2:
404.23	Filler metal product form	n.a.	n.a.

QW-161	GUIDED BEND TEST	
Type QW-462.3 (a) (b)	Results:	Type QW-462.2
n.a. (Face Bend)	n.a.	n.a. (Side Bend)
n.a. (Root Bend)	n.a.	n.a. (Side Bend)

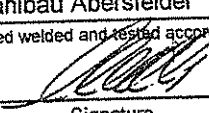
QW-304	RADIOGRAPHIC TEST	
RT-Personnel (Name): n.a.	Level: n.a.	
Results: n.a.	Signature:	

QW-181.2	FILLET WELD TEST	
Location of track or tear:	Results: n.a.	
Length: n.a. %	QW-462.4 (b) or (c)	

QW-184	MACRO EXAMINATION	
Length of indication: n.a.	Convexity: n.a.	
Fillet leg size: n.a.	Results: n.a.	

OTHER	
Visual examination results (QW-302.4): acceptable	
Welding test conducted by: Tank- und Stahlbau Abersfelder	
Mechanical / radiographic tests conducted by: Tank- und Stahlbau Abersfelder	Laboratoy test no.: n.a.

We certify that the statements in this record are correct and that welds were prepared welded and tested according to Section IX ASME Code.

Tank- und Stahlbau Abersfelder Organization / Manufacturer	 Signature	01 10 2002 Day Month Year
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	QW-484 FOR MANUAL AND SEMIAUTOMATIC WELDING Für hand- und halbautomatisches Schweißen		This format covers: SMAW, SAW, GMAW, and GTAW		
	WELDERS - PERFORMANCE - QUALIFICATION Schweißer - Zeugnis			WPQ 82	
GORSKI Name		Artur First Name(s)		113 Stamp No.	
				WPS 04 WPS used	0 Rev.

QW	Essential Variables	Actual Values from Coupon or Production Weld	Qualified Ranges
352-356	Process(s)	1: GMAW (SC) 2: n.a.	1: GMAW 2: n.a.
Info. onl.	Base Material(s) T	SA 516 Gr. 70 T 15 mm	to SA 516 Gr. 70 T 15 mm
403.18	P-No. to P-No.	1 to 1	1-11, 34, 41-47
403.16	Pipe outside dia <73 or >73mm	plate	F > 72mm V > 610 mm
405.1	Position	1: 3G 2: n.a.	1: F,V Fillet: F,V,H
405.3	Vertical up or down	1: up 2: n.a.	1: up 2: n.a.
402.4	Backing	1: ☐ YES ☒ NO 2: ☐ YES ☐ NO	1: optional 2: n.a.
404.30	t: Weld metal disposit	1: 15 2: n.a.	1: 30mm 2: Filet max. all
404.32	t: Limit (GMAW Short Circ.) a) T<1/2":n.a. b) T>1/2":n.a.	1.1XT 2T-8"	30mm max.
409.2	Transf. Mode Spray Puls. Globular Short Circ.	n.a.	1: n.a. 2:
409.4	AC - DC (GTAW) only	n.a.	n.a.
404.15	Chge F-No. SMAW except F4 = F1 - F4	6	6
404.28	Chge F-No. GMAW GTAW within QW 432	1: n.a. 2:	1: n.a. 2:
404.22	± Insert (GTAW only)	☐ with ☐ without	n.a.
404.11	F-No. Nickel (any qualifies all)	1: n.a. 2:	1: n.a. 2:
404.16	F-No. Aluminium (any qualifies all)	1: n.a. 2:	1: n.a. 2:
408.8	(-) Inert backing	1: without 2:	1: without 2:
404.14	± Filler (GTAW)	1: n.a. 2:	1: n.a. 2:
404.23	Filler metal product form	n.a.	n.a.

QW-161		GUIDED BEND TEST		
Type QW-462.3 (a) (b)	Results:	Type QW-462.2		Results:
n.a. (Face Bend)	n.a.		n.a. (Side Bend)	accep.
n.a. (Root Bend)	n.a.		n.a. (Side Bend)	accep.

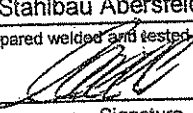
QW-304		RADIOGRAPHIC TEST	
RT-Personnel (Name): n.a.		Level: n.a.	
Results: n.a.		Signature:	

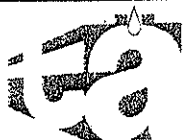
QW-181.2		FILLET WELD TEST		
Location of track or tear:				Results: n.a.
Length: n.a. %				

QW-184		MACRO EXAMINATION		
Length of indication: n.a.		Concavity: n.a.		QW-462.4 (b)
Fillet leg size: n.a.		Results: n.a.		Convexity: n.a.

OTHER	
Visual examination results (QW-302.4): acceptable	
Welding test conducted by: Tank- und Stahlbau Abersfelder	
Mechanical / radiographic tests conducted by: Tank- und Stahlbau Abersfelder	
Laboratoy test no.: n.a.	

We certify that the statements in this record are correct and that welds were prepared welded and tested according to Section IX ASME Code.

Tank- und Stahlbau Abersfelder Organization / Manufacturer	 Signature	01 10 2002 Day Month Year
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QW-360

AUTOMATIC AND MACHINE - WELDING
Für Automaten- und Maschinen-SchweißenWELDING OPERATOR - PERFORMANCE - QUALIFICATION
Maschinen - Schweißer - Zeugnis

WPQ 34

Kosmider

Wlodzimierz

90

WPS

0

05

WPS
used

Rev.

Name

First Name(s)

Stamp No.

QW

Welding Variables

Actual Values from Coupon
or Production Weld

Qualified Ranges

GENERAL VARIABLES

Info. onl.	Pipe or Plate	plate	
Info. onl.	Base Material(s) / T	SA 516 Gr 70 T 20	to SA 516 Gr 70 T 20
Info. onl.	P-No to P-No	1 to 1	1

AUTOMATIC - WELDING

361.1(a)	Process(s)	n.a.	n.a.
361.1(b)	Change from Autom. to Mach.	n.a.	n.a.

MACHINE - WELDING

361.2 (a)	Process(s)	SAW	SAW
361.2 (b)	Direct Vis $\leftrightarrow$ Remote Control	☐ Direct ☒ Remote	Remote
361.2 (c)	Autom. Volt. Control (GTAW)	n.a.	n.a.
361.2 (d)	Autom. Joint Tracking	☐ yes ☒ no	optional
361.2 (e)	Welding Position	1G	F
361.2 (f)	Consumable Inserts	☐ yes ☒ no	optional
361.2 (g)	Backing	☒ yes ☐ no	with backing
361.2 (h)	Single Pass Multiple Pass	☐ sgl. ☒ multpl.	optional

QW-161

GUIDED BEND TEST

Type QW-462.3 (a) (b)	Results:	Type QW-462.2	Results:
n.a. (Face Bend)	n.a.	n.a. (Side Bend)	n.a.
n.a. (Root Bend)	n.a.	n.a. (Side Bend)	n.a.

QW-304

RADIOGRAPHIC TEST

RT-Personnel (Name): Rickard	Level: III
Results: accepted	Signature: Date: 11.09.02
QW-181.2	FILLET WELD TEST QW-462.4 (b) or (c)
Location of track or tear: n.a.	
Length: n.a. % n.a.	Results: n.a.
QW-184	MACRO EXAMINATION QW-462.4 (b)
Length of indication: n.a.	Concavity: n.a. Convexity: n.a.
Fillet leg size: n.a.	Results: n.a.

OTHER

Visual examination results (QW 302.4): acceptable

Welding test conducted by: Tank- u. Stahlbau Abersfelder

Mechanical / radiographic tests conducted by: Ingenieurbüro Braun

Laboratory test no.: 26067/1-02

We certify that the statements in this record are correct and that welds were prepared welded and tested according to Section IX ASME Code.

Tank- u. Stahlbau Abersfelder

Organization / Manufacturer

Signature

19

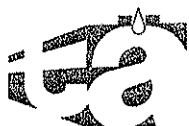
Day

09

Month

2002

Year



QUALITY MANAGEMENT

Coating report

Customer:	HETA	Date:	2003-06-30
Drawing Nr.	EGD S36617-01	Signature, inspector:	
TA No.:	A4265	Testing instrument:	QuaNix 1500
Tank No.:	F355 7 Separator	Location where carried out:	Schildeck
Dimensions:		Paint manufacturer:	International

1. Inner coating:

a) Sandblasting in accordance with standard degree of purity ___ to DIN 55928, Part 4

b) Structure (coating material, colour shade, measured values, number of measurements)

G: prime coating, Z: intermediate coating, D: cover coating, RAL SHADE

1st layer:

2nd layer:

c) Coating thickness measurement:

Measuring have to be carried out at least 20 different points on the vessel.

Number of measuring:

min: ___ µm

max: ___ µm

desired: min ___ µm

2. Outer coating:

a) Sandblasting in accordance with standard degree of purity Sa2,5 to DIN 55928, Part 4

b) Structure (coating material, colour shade, measured values, number of measurements)

G: prime coating, Z: intermediate coating, D: cover coating, RAL SHADE

1st layer: Duasolid 50

2nd layer: Duasolid 50 RAL 7038

c) Coating thickness measurement:

Measuring have to be carried out at least 20 different points on the vessel.

Number of measuring:

min: 153 µm

max: 412 µm

desired: min 120 µm

3. Remarks: (complaints/re-working)



**Tank- und Stahlbau
Abersfelder GmbH & Co. KG**

Page/Seite: 1 of/von 1
Revision: 0
Date/Datum: 26.03.01

D-97795 Schondra-Schildeck

Protokollnummer/Report No.:

F3557

Angaben zum Prüfgegenstand/test object data		Angaben zur Prüftechnik/test standart				
Prüfgegenstand/test object: Separator		Prüfung nach/test standart: ASME V, QAW 11.02				
Fabriknummer/manufactures serial number: F3557		Beurteilung nach/assessment: ASME VIII App. 8, QAW 11.02				
Werkstoff/material: SA 516 Gr 70		Prüfumfang/scope of testing: 100% fillet welds				
Oberflächenzustand/surface condition: unmachined		Eindringzeit/Entwicklungszeit/penetration time/developing time: 10min / 5min				
Angaben zum Prüfsystem/penatrant materials						
Vor-, Endreiniger/precleaner, final cleaner: (manufacturer, typ): MR Chemie MR 79						
Eindringmittel/penetrant: (manufacturer, typ): MR Chemie MR 68 NF						
Zwischenreiniger/intermediale cleaner: (manufacturer, typ): Water						
Entwickler/ developer: (manufacturer, typ): MR Chemie MR 70						
Skizze zum Prüfgegenstand / sketch of test object		Beurteilung des Befundes / assessment of indication				
See drawing EGD-S366617-01		Anzeigen- Nr. 1) / indication no. 1)	Anzeigen- typ 2) / indication shape 2)	Größe in mm / indication dimension	Bewertung / assessment e ne	
		1) Nummerierung gemäß Skizze number acc. to sketch			e accept ne not accept	
		2) längliche oder rundliche Anzeige longish or rounded indication				
		Gesamtbeurteilung/weitere Maßnahmen: Measures required:				
		No remarkable indications				
Ort/place: Schildeck	Datum/date: 30.06.03	Name/name: Peter GERHARD		Unterschrift/signature: 		

WORKING MATERIAL EVIDENCE LIST

Manufacturer: TANK+ STAHLBAU ABERSFELDER GMBH & CO KG, Industriestr. 6, 97795 SCHONDRA-SCHILDECK, TEL.09747/79-0, FAX 09747/79-22

Product ODCB Sep. S36617 Capacity: litre Customer: HETA Verfahrenstechnik GmbH, Gottlieb-Daimler-Str. 7, 35423 Lich (Hessen)

Factory-No. F3557 Working pressure: 7 / 13 bar Commission: , ,

A-No.: A4265 Temp. 100 °C

Item	Part designation	Material	Mat.thickn.	Manufacted	Melt	Specimen	Evid. by	Cert. No.	Register No.
1	SHELL PLATE 2680 MM	SA516-GR.70	16,0	DILLINGER	28441	84745-02	3.1 B	249441-003	A4265
2	ELIPSOIDAL HEAD 700 MM	SA516-GR.70	12,0	KÖNIG+CO	00227	524188-1	3.1 B	3 / 11527	A4265
3	SHELL PLATE 2315 MM	SA516-GR.70	8,0	INDUSTEEL	19733	861412.5001	3.1 B	80854	A4265
4	ELLIPSOIDAL HEAD 832 MM	SA516-GR.70	8,0	KÖNIG+CO	65387	354660	3.1 B	3 / 11527	A4265
5	FLANGE D: 860/700 MM	A105	-	KIEL	E54175	-	3.1 B	126 805	A4265
7	BLINDFLANGE D: 860 MM	A105	55,0	KIEL	E54473	-	3.1 B	126805	A4265
11	PLATE 848/735 MM	SA516-GR.70	16,0	DILLINGER	28441	84745-02	3.1 B	249441-003	A4265
N01	WN-FLANGE DN 6" 300 LB	A105	-	GREIFENBERG	31148E	2183	3.1 B	102158	A4265
N01	TUBE D: 168,3 MM	SA106	11,0	BUHLMANN	346208	-	3.1 B	73714	A4265
N01	REINFORCING PLATE	SA516-GR.70	22,0	ILSENBURGER	25370	633495 1	3.1 B	219623	A4265
N02	WN-FLANGE DN 1" 150 LB	A105	-	MGI	71260	-	3.1 B	12048	A4265

We hereby confirm that the above-listed certificates on working material tests are to be kept on file for at least 10 years and will be provided on request in copy form for a free.

Material confirmation for small parts: (declaration of manufacturer)

It is hereby certified that the materials given in the drawing or parts list, respectively, have been used for the small parts including the closures not listed in the above-mentioned list.

The working tests necessary in accordance with the AD Memorandum Sheet HP 5/2 have been carried out.

The non-destructive tests necessary in accordance with the AD Memorandum Sheet HP 5/3 have been carried out.

Anlage zur Prüfbescheinigung für

Abersfelder GmbH u. Co. KG
Industriestr. 6
Tel. 0 97 47 / 79-0

97795 Schondra-Schildeck,

(Germany)

Fabr. Nr. 3 5 5 7

.....97795 Schondra-Schildeck
..... official

WORKING MATERIAL EVIDENCE LIST

Manufacturer: TANK+ STAHLBAU ABERSFELDER GMBH & CO KG, Industriestr. 6, 97795 SCHONDRA-SCHILDECK, TEL.09747/79-0, FAX 09747/79-22

Product ODCB Sep. S36617 Capacity: litre Customer: HETA Verfahrenstechnik GmbH, Gottlieb-Daimler-Str. 7, 35423 Lich (Hessen)

Factory-No. F3557 Working pressure: 7 / 13 bar

A-No.: A4265 Temp. 100 °C

Commission: , ,

Item	Part designation	Material	Mat.thickn.	Manufacted	Melt	Specimen	Evid. by	Cert. No.	Register No.
N02	TUBE D: 33,4 MM	A106	9,09	BUHLMANN	10662	-	3.1 B	45-02-150004	A4265
N03	WN-FLANGE DN 6" 300 LB	A105	-	GREIFENBERG	31148E	2183	3.1 B	102158	A4265
N03	TUBE D: 168,3 MM	SA106	11,0	BUHLMANN	346208	-	3.1 B	73714	A4265
N03	REINFORCING PLATE	SA516-GR.70	16,0	DILLINGER	28441	84745-02	3.1 B	249441-003	A4265
N04	WN-FLANGE DN 1" 300 LB	A105	-	GREIFENBERG	91037 E	2635	3.1 B	102158	A4265
N04	TUBE D: 33,4 MM	A106	9,09	BUHLMANN	10662	-	3.1 B	45-02-150004	A4265
N04	TUBE D: 88,9 MM	A106	11,13	ISCOR	38B5298	-	3.1 B	100022052	A4265
N05	WN-FLANGE DN 1" 150 LB	A105	-	MGI	71260	-	3.1 B	12048	A4265
N05	TUBE D: 33,4 MM	A106	9,09	BUHLMANN	10662	-	3.1 B	45-02-150004	A4265
0	REINFORCING PLATE BRACKET	SA516-GR.70	8,0	INDUSTEEL	19733	861412.5001	3.1 B	80854	A4265

We hereby confirm that the above-listed certificates on working material tests are to be kept on file for at least 10 years and will be provided on request in copy form for a free.

Material confirmation for small parts: (declaration of manufacturer)

It is hereby certified that the materials given in the drawing or parts list, respectively, have been used for the small parts including the closures not listed in the above-mentioned list.

The working tests necessary in accordance with the AD-Memorandum Sheet HP 5/2 have been carried out.
The non-destructive tests necessary in accordance with the AD-Memorandum Sheet HP 5/2 have been carried out.

TANK+ STAHLBAU ABERSFELDER GMBH & CO KG
Industriestr. 6 / Tel. 097 47 / 79-0

Fabr.Nr. 3 5 5 7

97795 Schondra- Schilddeck,
(Germany)

officer

official

WORKING MATERIAL EVIDENCE LIST

Manufacturer: TANK+ STAHLBAU ABERSFELDER GMBH & CO KG, Industriestr. 6, 97795 SCHONDRA-SCHILDECK, TEL.09747/79-0, FAX 09747/79-22

Customer: HETA Verfahrenstechnik GmbH, Gottlieb-Daimler-Str. 7, 35423 Lich (Hessen)

Product ODCB Sep. S36617

Capacity: litre

Factory-No. F3557

Working pressure: 7 / 13 bar

A-No.: A4265

Temp. 100 °C

Commission: , ,

Register No.

Cert. No.

Evid. by

Specimen

Melt

Manufactured

Mat.thickn.

Material

Part designation

Item	Part designation	Material	Mat.thickn.	Manufactured	Melt	Specimen	Evid. by	Cert. No.	Register No.
1	SHELL PLATE 2680 MM	SA516-GR.70	16,0	DILLINGER	28441	84745-02	3.1 B	249441-003	A4265
2	ELIPSOIDAL HEAD 700 MM	SA516-GR.70	12,0	KÖNIG+CO	00227	524188-1	3.1 B	3 / 11527	A4265
3	SHELL PLATE 2315 MM	SA516-GR.70	8,0	INDUSTEEL	19733	861412.5001	3.1 B	80854	A4265
4	ELLIPSOIDAL HEAD 832 MM	SA516-GR.70	8,0	KÖNIG+CO	65387	354660	3.1 B	3 / 11527	A4265
5	FLANGE D: 860/700 MM	A105	-	KIEL	E54175	-	3.1 B	126 805	A4265
7	BLINDFLANGE D: 860 MM	A105	55,0	KIEL	E54473	-	3.1 B	126805	A4265
11	PLATE 848/735 MM	SA516-GR.70	16,0	DILLINGER	28441	84745-02	3.1 B	249441-003	A4265
N01	WN-FLANGE DN 6" 300 LB	A105	-	GREIFENBERG	31148E	2183	3.1 B	102158	A4265
N01	TUBE D: 168,3 MM	SA106	11,0	BUHLMANN	346208	-	3.1 B	73714	A4265
N01	REINFORCING PLATE	SA516-GR.70	22,0	ILSENBURGER	25370	633495 1	3.1 B	219623	A4265
N02	WN-FLANGE DN 1" 150 LB	A105	-	MGI	71260	-	3.1 B	12048	A4265

We hereby confirm that the above-listed certificates on working material tests are to be kept on file for at least 10 years and will be provided on request in copy form for a free.

Material confirmation for small parts: (declaration of manufacturer)

It is hereby certified that the materials given in the drawing or parts list, respectively, have been used for the small parts including the closures not listed in the above-mentioned list.

The working tests necessary in accordance with the AD Memorandum Sheet HP 5/2 have been carried out.

The non-destructive tests necessary in accordance with the AD Memorandum Sheet HP 5/2 have been carried out.

Anlage zur Prüfbescheinigung für

Abersfelder GmbH u. Co. KG

Industriestr. 6, Tel. 0 97 47 179-0

97795 Schondra-Schildeck

Fabr.Nr. 3 5 5 7

97795 Schondra-Schildeck,

(Germany)

officer

official

./2

WORKING MATERIAL EVIDENCE LIST

Manufacturer: TANK+ STAHLBAU ABERSFELDER GMBH & CO KG, Industriestr. 6, 97795 SCHONDRA-SCHILDECK, TEL.09747/79-0, FAX 09747/79-22

Product ODCB Sep. S36617 Capacity: litre Customer: HETA Verfahrenstechnik GmbH, Gottlieb-Daimler-Str. 7, 35423
 Factory-No. F3557 Working pressure: 7 / 13 bar Licht (Hessen)
 A-No.: A4265 Temp. 100 °C Commission: ,

Item	Part designation	Material	Mat.thickn.	Manufacted	Melt	Specimen	Evid. by	Cert. No.	Register No.
N02	TUBE D: 33,4 MM	A106	9,09	BUHLMANN	10662	-	3.1 B	45-02-150004	A4265
N03	WN-FLANGE DN 6" 300 LB	A105	-	GREIFENBERG	31148E	2183	3.1 B	102158	A4265
N03	TUBE D: 168,3 MM	SA106	11,0	BUHLMANN	346208	-	3.1 B	73714	A4265
N03	REINFORCING PLATE	SA516-GR.70	16,0	DILLINGER	28441	84745-02	3.1 B	249441-003	A4265
N04	WN-FLANGE DN 1" 300 LB	A105	-	GREIFENBERG	91037 E	2635	3.1 B	102158	A4265
N04	TUBE D: 33,4 MM	A106	9,09	BUHLMANN	10662	-	3.1 B	45-02-150004	A4265
N04	TUBE D: 88,9 MM	A106	11,13	ISCOR	38B5298	-	3.1 B	100022052	A4265
N05	WN-FLANGE DN 1" 150 LB	A105	-	MGI	71260	-	3.1 B	12048	A4265
N05	TUBE D: 33,4 MM	A106	9,09	BUHLMANN	10662	-	3.1 B	45-02-150004	A4265
0	REINFORCING PLATE BRACKET	SA516-GR.70	8,0	INDUSTEEL	19733	861412.5001	3.1 B	80854	A4265

We hereby confirm that the above-listed certificates on working material tests are to be kept on file for at least 10 years and will be provided on request in copy form for a free.

Material confirmation for small parts: (declaration of manufacturer)

It is hereby certified that the materials given in the drawing or parts list, respectively, have been used for the small parts including the closures not listed in the above-mentioned list.

The working tests necessary in accordance with the AD Memorandum Sheet HP 5/2 have been carried out.
 The non-destructive tests necessary in accordance with the AD Memorandum Sheet HP 5/3 have been carried out.

Anlage zur Prüfbescheinigung für

Fabr. Nr. 3 5 5 7

97795 Schondra- Schildeck,
 (Germany)

TANK+ STAHLBAU
 ABERSFELDER GMBH u. Co. KG
 Industriest. 6 - Tel. 097 47 / 79-0
 97795 Schondra-Schildeck
 official



DILLINGER HÜTTE

Erläuterungen siehe Rückseite/Explications voir au verso/See reverse for explanations

A02 ABNAHMEPRUEFZEUGNIS CERTIFICAT DE RECEPTION INSPECTION CERTIFICATE		3.1.B DIN EN 10204 - EN 10204 - DIN 50049 3.1.B NF EN 10204 3.1.B BS EN 10204 - ISO 10474 MATERIAL TEST REPORT	A09 Advice of dispatch No./ Date of dispatch 62379-25.03.02	A08/ Manufacturer's order/ A03 Certificate No. 249441-003	Sheet 1/...
A05 Established inspecting body A06 Purchaser TUEV UNIVERSAL, NEUSS Final receiver UNIVERSAL, NEUSS		A07.1 No. S-02-006110/324/I A07.2 No.			

B02/ Steel grade SA516-70
B03 Specifications- ASME-2A:01+SA20-S5

B01-B99 PRODUCT DESCRIPTION						
B09 Item No.	B10 Quant	B11 Thick- ness	B12 Width	B13 Length	B14 Mass theoret. KG	B16 Customer reference
04	1	16,00	x 2500	x 10000	3140	84745-01 LILA/SCHWARZ
04	1	16,00	x 2500	x 10000	3140	84745-02 LILA/SCHWARZ
04	1	16,00	x 2500	x 10000	3140	84745-03 LILA/SCHWARZ
04	1	16,00	x 2500	x 10000	3140	84745-04 LILA/SCHWARZ
**	4				12560	
10	1	30,00	x 2000	x 12000	5652	84580-01 LILA/SCHWARZ
10	1	30,00	x 2000	x 12000	5652	84580-02 LILA/SCHWARZ
10	1	30,00	x 2000	x 12000	5652	84580-03 LILA/SCHWARZ
10	1	30,00	x 2000	x 12000	5652	84580-04 LILA/SCHWARZ
**	4				22608	
***	8				35168	

----- B04 DELIVERY CONDITION / HEAT TREATMENT OF PLATES -----
ITEM NO.: 04,09-10
N: HT: 890 GR.C +15 -15 GR.C
SOAKING TIME TO ATTAIN THE TARGET TEMPERATURE OVER THE WHOLE SECTION: 1-1,5 MIN/MM (25-38 MIN/INCH)
COOLING IN STILL AIR

----- B06 MARKING -----
ITEM NO.: 04,09-10
STEEL GRADE
HEAT NO. / TRADEMARK / ROLLED PLATE NO./TEST NO. / INSPECTOR'S STAMP

A04	201/202 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order.	AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department
	OM-System: Certification as per ISO 9001 since 14 March 1990	
Trademark	B. MUELLER Der Werkseschwerverständige	Inspector's stamp Date 27.03.02 ML 1

ND3
17
180



DILLINGER HÜTTE

Erläuterungen siehe Rückseite/Explications voir au verso/See reverse for explanations

A02 ABNAHMEPRUEFZEUGNIS CERTIFICAT DE RECEPTION INSPECTION CERTIFICATE		3.1.B DIN EN 10204 - EN 10204 - DIN 50049 3.1.B NF EN 10204 3.1.B BS EN 10204 - ISO 10474 MATERIAL TEST REPORT		A09 Advice of dispatch No./ Date of dispatch 62379-25.03.02	A03 Manufacturer's order/ A03 Certificate No. 249441-003	Sheet 2/...												
A05 Established inspecting body/ TUEV		A06 Purchaser Final receiver UNIVERSAL, NEUSS UNIVERSAL, NEUSS		B01 Product HOT ROLLED PLATES														
B02/ Steel grade SA516-70																		
B03 Specification ASME-2A:01+SA20-S5																		
C10-C29 TENSILE TEST																		
B09 B08 Item Heat No. Rol. plate/ Test No.	B05 Reference condition	C01 C02/ C03 C01 Temp. RE	C11 RM	C12 AZ	C13 LO=	C14 C15												
04 28441 84745		GR.C RP02	REH	5D	8IN													
09 28441 83845 *		K4 Q RT 379 ✓	395 ✓	34,3	28,0													
10 28615 84580		K4 Q 400 217																
		K4 Q 400 231																
		K4 Q RT 363 ✓	380 ✓	32,8	31,9													
C40-C49 IMPACT TEST																		
B09 B08 Item Heat No. Rol. plate/ Test No.	B05 Reference condition	C01 C02/ C03 C01 Temp. GR.C	C41 Width	C44 Type of specimen	C45/C42 Individual values AV-J	C43 Average value												
04 28441 84745		K4 LV -46		CHP-V	AV 167	175												
		K4 Q -50		CHP-V	AV 179	161												
10 28615 84580		K4 LV -40		CHP-V	AV 295	262												
		K4 Q -50		CHP-V	AV 195	189												
C70-C99 CHEMICAL COMPOSITION Z - HEAT ANALYSIS																		
B08 Heat No.	C70	C	SI	MN	P	S	N	AL	CU	MO	NI	CR	V	NB	TI			
28441	Y	FO-55 0,166 0,26	FO-78 0,377 0,04	FO-52 1,18 0,02	FO-54 0,012 0,15	0,0012 0,0006	0,007 0,005	0,045 0,032	0,11 0,16	0,007 0,005	0,11 0,22	0,028 0,17	0,000 0,001	0,017 0,014	0,002 0,002			
28615	Y	0,158 0,56	0,351 0,18	1,17 0,02	0,010 0,34													
A04							A01											
D/H							AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department							Date 27.03.02		ML 1		
Trademark							B. MUELLER Der Werksachverständige							Inspector's stamp		Date 27.03.02		ML 1
date 19.03.03 sign.							P. S. 111											



DILLINGER HÜTTE

Erläuterungen siehe Rückseite/Explications voir au verso/See reverse for explanations

A02 ABNAHMEPRUEFZEUGNIS CERTIFICAT DE RECEPTION INSPECTION CERTIFICATE		3.1.B DIN EN 10204 - EN 10204 - DIN 50049 3.1.B NF EN 10204 3.1.B BS EN 10204 - ISO 10474 MATERIAL TEST REPORT	A09 Advice of dispatch No./ Date of dispatch 62379-25.03.02	A08/ Manufacturer's order/ A03 Certificate No. 249441-003	Sheet 3
A05 Established inspecting body TUEV		A06 Purchaser Final receiver UNIVERSAL, NEUSS UNIVERSAL, NEUSS	B01 Product HOT ROLLED PLATES		

B02/ Steel grade SA516-70
B03 Specifica- ASME-2A:01+SA20-S5

----- C94 CARBON EQUIVALENT FORMULA / ALLOYING RESTRICTIONS -----	
FO-55 = CU+MO+NI+CR	
FO-78 = CR+MO	
FO-52 = V +NB+Ti	
FO-54 = CU+MO+CR	

----- D01 CHECKING OF MARKING, SURFACE, SHAPE AND DIMENSIONS -----	
ITEM NO.: 04,09-10	
RESULT OF MARKING, SURFACE, SHAPE AND DIMENSIONS: NO REMARKS	
SURFACE AS PER EN-10163-B2	
THICKNESS AS PER EN-10029-B:91	
LENGTH AND WIDTH AS PER EN-10029:91	
FLATNESS AS PER EN-10029-T4L:91	

A04		Z01/Z02 We hereby certify, that the above mentioned materials have been delivered in accordance with the terms of order. QM-System: Certification as per ISO 9001 since 14 March 1990	AG der Dillinger Hüttenwerke Postfach 1580, D-66748 Dillingen/Saar Inspection department
B. MUELLER Der Werksachverständige		Inspector's stamp Date 27.03.02	ML 1

KÖNIG + CO. GMBH



Bödenpresswerke - Netphen und Hockenheim-Baden

Hauptwerk: 57236 Netphen, Postfach 1261

Telefon (02738) 601-0

Telefax (02738) 601-161

Telex 872784

Werksbescheinigung

Work test certificate / Certificat d'usine
über/about/attestant

Warmformgebung/hot forming/façonnage à chaud

Besteller / Customer / Commettant:

TANK + STAHLBAU ABERSFELDER GMBH & CO. KG, Schondra-Schildeck

Bestell-Nr. / Order-No. / Numéro de Commande: **v. 20.2.2003**

Werks-Nr. / Works-No. / Numéro d'usine: **3 / 11527**

Lieferung vom / Date of delivery / Livraison du: **20.03.03**

Abnahmeprüfzeugnis 3.1 B nach EN 10204
Inspection / test certificate 3.1 B according to EN 10204
Certificat de réception d'usine suivant 3.1 B - EN 10204

Prüfungsgrundlage: ASME VIII Div. 1 Edition 2001

Inspection based on
se d'essai:

für warmgepreßte Böden, Konen, Verschlüsse, Verschlusssteile.
for hot formed heads, cones, doors, door-parts.
pour fonds emboutis à chaud, cônes, fermetures, parties de fermetures.

Daten der Lieferung / dates on material delivered / données sur notre envoi
Norm(en) / Standard(s) / Norme(s):

Pos.-Nr. Item-No. Pos.-No.	Stückzahl Units No. des pièces	Art / Form Type / form Type / forme	Abmessung Dimensions Dimensions	Werkstoff Material Matériau	Schmelze / Probe / TÜV-Nr. Charge / sample Coulée / échantillon
1	1	ellipsoidal head 2 : 1	Di/Id = 700 mm s = 12 mm MW	SA 516 Gr. 70 MT	00227-524188-1 ✓
4	2	ellipsoidal head 2 : 1	Di/Id = 1200 mm s = 10 mm MW	SA 516 Gr. 70 MT	33548-60581-02 ✓

Die verwendeten Bleche wurden, soweit erforderlich, umgestempelt und mit dem Herstellerzeichen versehen:
The used plates were restamped if necessary, and equipped with the maker's brand:
Les tôles utilisées ont été ré poinçonnées si nécessaire et marquées par la griffe du fabricant:

KC

Herstellerzeichen
maker's brand
griffe du fabricant

Wir bestätigen, daß die Warmformgebung gem. Mat.spezif. ASME II part A + ASME Code Sect.VIII Div.1 UG 79 / UCS 79 durchgeführt wurde.
We certify that the hot forming has been carried out according to Mat.spezif. ASME II part A + ASME Code Sect.VIII Div.1 UG 79 / UCS 79.
Nous certifions que l'emboutissage a été terminé selon Mat.spezif. ASME II part A + ASME Code Sect.VIII Div.1 UG 79 / UCS 79.

Weiterbehandlung nach dem Preßvorgang: warmgepreßt bei 920°C, gegläht bei 920°C, Haltezeit: 15 Min., Luftabkühlung,
further treatment after pressing procedure: hot formed at 920°C, annealed at approx. 920°C, Holding time: 15 Min., air-cooling,
Traitement ultérieur: chaud presser à 920°C, recuit à environ 920°C, temps d'arrêt: 15 Min., refroidissement à l'air,

Oberflächenbehandlung / Surface treatment / Usinage des surfaces: keine / none / néant

Zulassungen für die Herstellung von Druckbehälterteilen durch den Rheinisch-Westfäl. TÜV e.V. entspre. TRD 100, AD-W0, HP0, HP7/1 bis HP7/4.
Approvals by R-W TÜV e.V. for the manufacture of pressure-vessel components acc. to TRD 100, AD-W0, HP0, HP 7/1-HP 7/4.
Autorisation par le R-W TÜV e.V. pour la construction des éléments de réservoirs sous pression selon TRD 100, AD-W0, HP0, HP 7/1-HP 7/4.

Zulassung für die Herstellung von Druckbehälterteilen durch LRQA Reg.-Nr. 0525, in Übereinstimmung mit den Anforderungen der DGRL 97/23/EG einschl. Anhg. I, 3.1 und 4.3.
Approvals by LRQA Reg.-Nr. 0525, for the manuf. of pressure-vessel components in conformity with the requirements of the PED 97/23/EG incl. app. I, 3.1 and 4.3.
Autorisation par LRQA Reg.-Nr. 0525, pour la constr. des éléments de réservoirs sous pression selon de la directive d'appareils de pression 97/23/EG, app. I, 3.1 et 4.3.

Verwendet wurden: Bleche gemäß beiliegender Bescheinigung

We used plates as per attached certificate
Tôles utilisées: voir certificat ci-joint

nach EN 10204 3.1 B Attest/Certificate lisenburg vom/dtd. 20.7.01 + Dillingen vom/dtd. 9.9.2002
acc. to EN 10204
d'après EN 10204

Prüfung der fertigen Teile:
inspection after forming:
Réception des pièces façonnées:

gem. Spezifikation:
according to:
selon spécification:

Besichtigung und Ausmessung ohne Beanstandung.
Visual and dimensional check without objection.
Inspection et vérification des dimensions sans objection.

Netphen, den 25.03.03 PST
the
le

König + Co. GmbH
Der Werksachverständige
Inspecting/engineer of manufacturer
L'expert de l'atelier


**ILSEBURGER
GROBBLECH**

Ein Unternehmen der SalzGitter Gruppe

5.6490

Abnahmeprüfzeugnis 3.1.B Inspection certificate 3.1.B Certificat de réception 3.1.B DIN EN 10204 - ISO 10474		Nr./No. 184745 Seite/Page 1/3 Datum/Date 20.07.2001
Nr./No. 33/45008264/1101 Hersteller SalzGitter Stahlhand Purchaser Acheteur	21.05.2001 Empfänger Customer Destinataire	
Erzeugnis Grobblech Produkt Heavy plate Produit Tôle forte		Werkstätt-Nr. 00492967/13 Werks order No. N° de commande Lieferchein-Nr. 21710148 Dispatch order No. Avis d'expédition N° Abnahme WS Reception
Werkstoff und Lieferbedingung Grade 70 MT LTV Steel grade and terms of delivery ASTM A 516 - 90, A 20 - 00 Nuance et conditions de livraison ASME Code Sect. II Part A ed. 98 add. 00 DIN EN 10029 B 10/91		
Kennzeichnung des Materials / Marking of the product / Marquage du produit Herstellerzeichen / Stahlsorte / Schmelzennr. / Erzeugn.-Nr. Trademark / Steelgrade / Heat No. / Product-No. Sigle de l'usine / Nuance de l'acier / N° coulée / N° produit		

Materialdaten / Material data / Données des matériaux

Pos. Item Poste	Anzahl Quantity Quantité	Erzeugnis-Nr. Product No. N° produit	Schmelzennr. Heat No. N° Coulee	Lieferzustand Cond. of delivery Etat du Marché	Dicke x Breite x Länge Thickness x Width x Length Epaisseur x Largeur x Longueur	mm x mm x mm
08	1	526408 1	24094	N	12,00 x 2500,0 x 12000	
08	1	526408 2	24094	N	12,00 x 2500,0 x 12000	
08	1	526409 1	43464	N	12,00 x 2500,0 x 12000	
08	1	526409 2	43464	N	12,00 x 2500,0 x 12000	
08	1	526410 1	43464	N	12,00 x 2500,0 x 12000	
13	1	524188 1	00227	N	15,01 x 2500,0 x 12000	
08	5	Gewicht 14.130	kg	N: normalisiert / normalized / normalisé		
13	1	Wegit 3.535	kg			
Σ	6	Poids 17.665	kg			

Maßprüfung und Sichtkontrolle auf äußere Beschaffenheit: ohne Beanstandung
 Dimensional check and visual examination of the surface condition:
 without objection
 Contrôle dimensionnel et examen visuel de l'état de surface: satisfaisants

Es wird bestätigt, daß die Lieferung den Anforderungen der Maßprüfung entspricht.
 We hereby certify that the delivered material complies with the terms of the order.
 Nous certifions que la livraison répond aux conditions de livraison.
 cert-Sigman Certification no. par ISO 9001 since 20 February 1999


 Hans-Joachim
Trappmann
Sigle du producteur

 Ilseburger Grobblech Stahl
Vockersdorf Weg 10
D-38671 Ilseburg

 Sachverständigenamt
Inspector's Stamp
Poignon de l'expert

 Qualitätsmanager
Abnahme
Werkzeugzeugzeugzeug
Works Inspector
L'expert de l'usine

Diese durch ein computerisiertes Datenverarbeitungssystem erstellte Bescheinigung ist gemäß EN 10204, Abschnitt 2, ohne Unterschrift gültig.
 This certificate was prepared by a suitable data processing system and is valid without signature according to EN 10204, section 2.
 Ce certificat a été établi par un système automatisé de traitement de données, il est valable sans signature selon EN 10204, section 2.

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Abnahmeprüfzeugnis 3.1.3 Inspection certificate 3.1.3 Certificat de réception 3.1.3 DIN EN 10204 - ISO 10474		Nr./No. 104765 Seite/Page 2/3 Datum/Date 20.07.2001
Nr./No. 33/45008264/1101 Hersteller Purchaser Achseur	21.05.2001 Nr./No. N° Empfänger Destinataire	
Bezugslos Grobblech Produkt Heavy plate Produkt Tôle forte		Werkauftrags-Nr. 00492967/13 Werksunter-Nr. N° de commande Lieferchein-Nr. 21710168 Dispatch note No. 20.07.2001 Avis d'expédition N° Abnahme Inspection Reception
Werkstoff und Lieferbedingungen Grade 70 MT LTV Steel grade and terms of delivery ASTM A 516 - 90, A 20 - 00 Numéro et conditions de livraison ASME Code Sect. II Part A ed. 98 add. 00 DIN EN 10029 B 10/91		

Schmelzenanalyse / Ladle analysis / Analyse de coulée

Herstellernachweis / Manufacturer's analysis / Analyse du fabricant

Schmelze-Nr. Heat No. N° Coulée	C %	Si % 0,15-0,40	Mn % 0,05-1,20	P % ≤0,035	S % ≤0,035	N %	Al %	Cu % ≤0,40	Cr % ≤0,20	Ni % ≤0,40
X00227	0,18	0,34	1,15	0,013	0,004	0,003	0,033	0,21	0,05	0,16
24094	0,18	0,34	1,13	0,015	0,003	0,003	0,030	0,23	0,06	0,18
43464	0,17	0,33	1,14	0,012	0,002	0,004	0,045	0,22	0,03	0,19
Schmelze-Nr. Heat No. N° Coulée	Mo %	V % ≤0,02	Nb % ≤0,02	Ti %	Cr+Mo %	EV1 1) %	EV2 2) %	EV3 3) %	C+Mn/6 %	
X00227	0,01	0,00	0,02	0,00	0,06	0,43	0,02	0,41	0,37	
24094	0,01	0,00	0,01	0,00	0,07	0,48	0,01	0,41	0,37	
43464	0,00	0,00	0,02	0,00	0,03	0,44	0,02	0,39	0,36	

1) EV1: C+Cu+Mo+Ni
2) EV2: V+Nb+Ti

3) EV3: C+Cu+Mo+Ni+V+Nb+Ti+Cr+P+S+Mn

Erschmelzungsverfahren: Sauerstoffaufblasverfahren
 Steelmaking process: Basic oxygen process
 Mode d'élaboration: Procédé de conversion à l'oxygène

Zugversuch / Tensile test / Essai de traction

Prüfer-Nr. Specimen No. N° éprouvette	Schmelze-Nr. Heat No. N° Coulée	Ort Location Lieu	Wicht. Weight Poids	Zustand Cond. État	Form Type Forme	Dehngrenze Yield strength Limite d'élasticité Rp0,2 N/mm² ≥ 350	Zugfestigkeit Tensile strength Résistance Rm N/mm² 420-520	Bruchdehnung Elongation Allongement B ₁₀ %
X524168	00227	K6G	Q	N	P	378	538	22
526408	24094	K6G	Q	N	P	379	542	20
526409	43464	K6G	Q	N	P	369	520	24
526410	43464	K6G	Q	N	P	373	523	22

1) K: Kopf/Top/Tube

2) G: 1/2 Brüche / 1/2 Width / 1/2 Largeur

3) G: Grenzflächen / Thickness of product / Epaisseur du produit

4) Q: quer/transversal/transversal

5) N: normallieft/normallied/normallied

6) P: prismatisch/prismatic/prismatique

Es wird bestätigt, daß die Lieferung den Anforderungen der Zeichnung entspricht.
 We hereby certify that the delivered material complies with the terms of the order.

Nous certifions que la livraison répond aux conditions de livraison.

002 - System Certification en par 100 000 pièces 28 February 1999

Herstellerzeichen
 Trademark
 Signe du producteur

ILSENBURGER GROBBLECH GmbH
 Vertriebsstelle (Weg 1)
 D-33871 Harenberg

Sachverständigenstempel
 Inspector's Stamp
 Poignon de l'expert

Unterzeichner
 Abnehmer
 Werkstatteinhaber
 Works Inspector
 L'expert de l'usine

Dieses durch ein elektronisches Datenverarbeitungssystem nach der Beschleunigung der EN 10 204, Abschnitt 5, ohne Unterschrift gelöst.
 This certificate was prepared by a software data processing system and is valid without signature according to EN 10 204, section 5.
 Ce certificat a été établi par un système informatique de traitement de données, il est valide sans signature selon EN 10 204, section 5.

Cyron

Reviewed and accepted
 Section II-A, SA 5166170
 Ed. 07, Add. 02


**ILSENBURGER
GROBBLECH**

Ein Unternehmen der Salzgitter Gruppe

Abnahmeprüfzeugnis 3.1.B Inspection certificate 3.1.B Certificat de reception 3.1.B DIN EN 10204 - ISO 10474		Nr./No. 184745 Seite/Page 3/3 Datum/Date 20.07.2001
Nr./No. 33/45008264/1101 Bestellnr. Purchaser Adresse	21.05.2001 Empfänger Destinatär	
Erzeuger: Grobblech Produkt: Heavy plate Profil: Tôle forte		Werkst.-Nr. 00492967/13 Wertsender-Nr. N° de commande Lieferchein-Nr. 21710148 Dispatch note No. 20.07.2001 Avis d'expédition N° Abnahme WS Inspection Reception
Werkstoff und Lieferbedingung: Grade 70 MT LTV Steel grade and terms of delivery: ASTM A 516 - 90, A 20 - 00 Matière et conditions de livraison: ASME Code Sect. II Part A ed. 98 add. 00 DIN EN 10029 B 10/91		

Kerbschlagbiegeversuch / Impact test / Essai de résilience

Proben-Nr. Specimen No. N° épreuve	Schmelze-Nr. Heat No. N° Couée	Ort Location Lieu	Richt. Direct. Orient.	Zustand Cond. Etat	Probenform Type of specimen Type d'éprouvette	Temperatur Temperature Température	Schlagarbeit Impact energy Energie de rupture	MW (J)			
						°C	1 J ≥ 18	2	3	4	5
X 524188	00227	K60	L	N	Charpy V-notch	-046	41	46	46	44	
526408	24094	K60	L	N	Charpy V-notch	-046	88	102	69	86	
526409	43464	K60	L	N	Charpy V-notch	-046	121	97	130	116	
526410	43464	K60	L	N	Charpy V-notch	-046	78	133	124	112	

- 1) K: Kopf / Top / Tête
 2) L: 1/8 Breite / 1/8 Width / 1/8 Largeur
 3) D: oberflächennah / near surface / près de la peau

- 4) L: Länge / longitudinal / longitudinal
 5) N: normal / normal / normal
 6) MW: Mittelwert / average / Moyenne

Probenabmessungen:

5,0 x 10 x 55 mm (von 5,00 mm bis 8,99 mm Blechdicke)
 7,5 x 10 x 55 mm (von 9,00 mm bis 11,99 mm Blechdicke)
 10 x 10 x 55 mm (ab 12,00 mm Blechdicke)

Specimen size:

5,0 x 10 x 55 mm (from 5,00 mm up to 8,99 mm plate thickness)
 7,5 x 10 x 55 mm (from 9,00 mm to 11,99 mm plate thickness)
 10 x 10 x 55 mm (from 12,00 mm plate thickness)

Dimension de l'éprouvette:

5,0 x 10 x 55 mm (par 5,00 depuis 8,99 mm épaisseur)
 7,5 x 10 x 55 mm (par 9,00 depuis 11,99 mm épaisseur)
 10 x 10 x 55 mm (de 12,00 mm épaisseur)

Wärmebehandlung: Temperatur: 910 +/- 10°C
 Haltezeit: 30 min/inch
 Abkühlung an ruhender Luft

Heat treatment: Temperature: 910 +/- 10°C
 Soaking time: 30 min/inch
 Cooling in still air

Traitement thermique: Température: 910 +/- 10°C
 Temps de maintien: 30 min/inch
 Refroidissement par air

Es wird bestätigt, daß die Lieferung den Anforderungen der Lieferbedingung entspricht.
 We hereby certify that the delivery complies with the terms of the order.
 Nous certifions que la livraison répond aux conditions de livraison.
 GKS-System: Certificationssperre per EN 10204 Absatz 2a Februar 1998

Herstellerzeichen
 Trademark
 Signe du producteur

Ilsenburger Grobblech GmbH
 Völkenswälder Weg 10
 D-38871 Ronnenburg

Sachverständigenstempel
 Inspector's Stamp
 Poinçon de l'expert

Abnehmer
 Werkstoffprüfstelle
 Material Inspector
 L'expert de l'usine

Dieses ist ein produktionsbegleitendes Prüfzeugnis und ist gemäß EN 10204, Absatz 2, ohne Unterschrift gültig.
 This certificate was prepared by a suitable data processing system and is valid without signature according to EN 10204, section 2.
 Ce certificat a été établi par un système adéquat de traitement de données, il est valable sans signature selon EN 10204, section 2.

Cytron



INDUSTEEL
Groupe Arcelor

Tél.: 05 3271/44.16.84
Fax: 18.26
INDUSTEEL Belgium
B.P. 1739 - B-6030 CHARLEROI

L'ORGANISATION D'UNION INDUSTRIEL EST CERTIFIÉE ISO 9002/AQAP120
UNION INDUSTRIEL'S ORGANIZATION IS CERTIFIED ISO 9002/AQAP120

TOLES LAMINEES A CHAUD
HOT ROLLED PLATES
WARMGEWALZTE BLECHE
LAMIERE LAMINATE A CALDO

Certificat de contrôle des produits par l'usine :
Mill test certificate : EN 10204
Prüfzeugnis : ISO 10474
Certificato di controllo interno dei prodotti : 3.1.B

80854
Page: 1

CLIENT / CUSTOMER / BESTELLER / CLIENTE

UNIVERSAL EISEN UND STAHL GMBH
DUISBURGER STR. 26
41460 NEUSS

COMMANDE USINE NR / ORDER NR / WERKS NR / ORDINE NR

2055801

CCPU - CERTIFICATE - PRÜFZEUGNIS - CERTIFICATO

251251

BORDEREAU / DELIVERY / VERSANDANZEIGE / BORDERO

223231 223360

ORGANISME DE CONTRÔLE / INSPECTION AUTHORITY / ÜBERWACHUNG ORGANISMO DI COLLAUDO

Org. de receipt: TUV SAARLAND

REFERENCE / PURCHASER ORDER / BESTELL NR / REFERENZA

1/0477/2 S-02-007341/324/IV

PRODUIT - ARTICLE - PRÜFGEGENSTAND - PRODOTTO :

TOLES - PLATES - BLECHE - LAMIERE

MATIERE / MATERIAL / WERKSTOFF / MATERIALE

SUIVANT / ACCORDING TO / ENTSPRECHEND / SECONDO

Grade 70 + S5 / K02700

ASME SA 516 EA.2001

Accto S5/SA 20
Accto VdTW 354/1 06.99

STAT DE LIVRAISON / STATE OF DELIVERY /
FERZUSTAND / STATO DI FORNITURA

Normalis - Normalized - Normalgeglacht - Normalizzato

PROCEDE D'ELABORATION / MELTING PROCESS /
ERSCHMELZUNGSART / PROCEDIMENTO DI ELABORAZIONE

E

MARQUAGE / MARKING / KENNZEICHNUNG / IDENTIFICAZIONE

- VG (SIGLE PRODUCTEUR) - NUANCE - NR. COULEE - NR. TOLE -
POINÇON DE L'EXPERT

- VG (TRADE MARK) - GRADE - HEAT NR - PLATE NR - INSPECTOR'S STAMP

- VG (HERSTELLERZEICHEN) - MARKENBEZEICHNUNG - SCHMELZE NR -
BLECH NR - STEMPEL DES SACHVERSTÄNDIGEN

- VG (SIGLA PRODUTTORE) - TIPO - NR. COLATA - NR. LAMIERA -
PUNZONE DEL COLLAUDATORE

MARQUE DU FABRICANT / BRAND OF THE MANUFACTURER
HERSTELLERZEICHEN / MARCA DEL PRODUTTORE

VG or VG

- POINÇON DE L'EXPERT / INSPECTOR'S STAMP
STEMPEL DES SACHVERSTÄNDIGEN - PUNZONE DEL COLLAUDATORE

RF or RF

Liste descriptive - Extent of material delivery - Umfang der Lieferung - Descrizione del materiale

Marque Markings Zeichen Marca	Nombre Number Stückzahl Quantità	Désignation du produit Article Gegenstand Tipo di prodotto	N° de tôles Plates N° Bleche Nr Lamiera N°	N° coulée Heat N° Schmelze Nr N° colata	N° épreuve Test N° Probe Nr Provetta N°	Kg Theor.
1-	2	8000 x 2500 x 8.00	861410/1->2	19733	861410.1001 861412.5001	2512
1-	2	8000 x 2500 x 8.00	861411/1->2	19733	861411.1001 861412.5001	2512
1-	3	8000 x 2500 x 8.00	861413/1->3	19733	861412.5001 861413.1001	3768
1-	3	8000 x 2500 x 8.00	861414/1->3	19733	861412.5001 861414.1001	3768
1-	3	8000 x 2500 x 8.00	861415/1->3	19733	861412.5001 861415.1001	3768
	13					16328

Nous certifions que les produits énumérés ci-dessus sont conformes aux prescriptions de la commande.
We hereby certify that the above mentioned products are consistent with the order prescriptions.
Wir bestätigen hiermit daß die obengenannten Erzeugnisse den Bestellvorgeschritten entsprechen.
Certifichiamo che i prodotti enumerati qui sopra sono conformi alle prescrizioni dell'ordine.

Date - Datum - Data
9-JAN-2003

Q. C. Manager
PELLICHERO FREDDY

Mill Inspector
BODART JOEL

INDUSTEEL
Belgium


INDUSTEEL
 Groupe Arcelor

 Tél.: 00 32/71/44.16.64
 Fax: 16.28
 INDUSTRIEL Belgium
 B.P. 1739 - B-6030 CHARLEROI

CCPU - CERTIFICATE - PRÜFZEUGNIS - CERTIFICATO No

251251

COMMANDE USINE NR / ORDER NR / WERKS NR / ORDINE NR

2055801

 L'ORGANISATION D'USINE INDUSTRIEL EST CERTIFIÉE ISO 9002/AQAP123
 USINE INDUSTRIEL'S ORGANISATION IS CERTIFIED ISO 9002/AQAP123

 ESSAIS MECANQUES
 MECHANICAL TESTS
 PRÜFUNGEN
 PROVE MECCANICHE

 - ANALYSES CHIMIQUES
 - CHEMICAL ANALYSIS
 - CHEMISCHE ZUSAMMENSETZUNG
 - ANALISI CHIMICHE

PROVE MECCANICHE					ANALISI CHIMICHE			
Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T° (C)	ETAT *	Traction transversale Transverse tensile test			
					ReH/YS N/mm2 ✓	Rm/UTS N/mm2 ✓	A 5 % ✓	
8.00	19733	861410.1001	20	0	406	545	32	
8.00	19733	861411.1001	20	0	386	535	37	
8.00	19733	861413.1001	20	0	395	536	31	
8.00	19733	861414.1001	20	0	402	536	36	
8.00	19733	861415.1001	20	0	392	537	33	
Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T° (C)	ETAT *	Traction transversale Transverse tensile test			
					Rp0.2% N/mm2 ✓	Rm/UTS N/mm2 ✓	A1200 % ✓	
8.00	19733	861410.1001	20	0	397	536	25	
8.00	19733	861411.1001	20	0	379	528	27	
8.00	19733	861413.1001	20	0	387	530	24	
8.00	19733	861414.1001	20	0	394	527	26	
8.00	19733	861415.1001	20	0	384	526	25	
Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T° (C)	ETAT *	Resilience charpy V transversale, 10 x 7.5 mm Transverse charpy V notch impact test, 10 x 7.5 mm			
					INDIV. J	INDIV. J	INDIV. J	MOY/AV J
8.00	19733	861410.1001	-020	0	110	104	111	108
8.00	19733	861411.1001	-020	0	114	120	110	115
8.00	19733	861413.1001	-020	0	163	105	108	125
8.00	19733	861414.1001	-020	0	153	120	156	143
8.00	19733	861415.1001	-020	0	100	152	117	123
					INDIV. J	INDIV. J	INDIV. J	MOY/AV J
8.00	19733	861410.1001	-050	0	90	74	95	86
8.00	19733	861411.1001	-050	0	104	118	75	99
8.00	19733	861413.1001	-050	0	60	83	119	87
8.00	19733	861414.1001	-050	0	100	96	102	99
8.00	19733	861415.1001	-050	0	117	107	90	105
Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T° (C)	ETAT *	Resilience charpy V transversale, 10x7.5 ASTM/ASME Transverse charpy V notch test, 10x7.5mm ASTM/ASME			
					INDIV. J	INDIV. J	INDIV. J	MOY/AV J
8.00	19733	861410.1001	-046	0	96	76	87	86
8.00	19733	861411.1001	-046	0	92	93	102	96
8.00	19733	861413.1001	-046	0	114	104	101	106
8.00	19733	861414.1001	-046	0	98	77	110	95

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 Résultats de l'inspection et du contrôle de dimensions : SANS REMARQUE.
 Results of surface examination and dimensions controls : NO REMARK.
 Ergebnis der Bezeichnung und Maßkontrollen : OHNE BEANSTANDUNG.
 Risultati delle ispezioni e del controllo di dimensioni : SENZA OSSERVAZIONI.

Date - Datum - Data

9-JAN-2003

Q. C. Manager
PELLICHERO FREDDYMill Inspector
BODART JOELINDUSTEEL
Belgium



Tél.: 00 32/71/44.16.64
Fax: 16.28
INDUSTEEL Belgium
B.P. 1739 - B-6030 CHARLEROI

CCPU - CERTIFICATE - PRÜFZEUGNIS - CERTIFICATO No

251251

COMMANDE USINE NR / ORDER NR / WERKS NR / ORDINE NR

2055801

L'ORGANISATION D'USINE INDUSTEEL EST CERTIFIÉE ISO 9002/AQAP120
USINE INDUSTEEL'S ORGANISATION IS CERTIFIED ISO 9002/AQAP120

ESSAIS MECANQUES
MECHANICAL TESTS
PRÜFUNGEN
PROVE MECCANICHE

- ANALYSES CHIMIQUES
- CHEMICAL ANALYSIS
- CHEMISCHE ZUSAMMENSETZUNG
- ANALISI CHIMICHE

Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T° (C)	ETAT *	Resilience charpy V transversale, 10x7.5 ASTM/ASME Transverse charpy V notch test, 10x7.5mm ASTM/ASME
					INDIV. INDIV. INDIV. MOY/AV J J J J
8.00	19733	861415.1001	-046	0	82 78 92 84
Ep(mm)	COULEE HEAT	ESSAIS SAMPLES	T° (C)	ETAT *	Traction transversale a chaud Hot transverse tensile test
					Rp0.2% N/mm2
8.00	19733	861412.5001	300	0	306
					Rp0.2% N/mm2
8.00	19733	861412.5001	400	0	274

COULEE HEAT	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Al	Nb	V
19733	0.148	1.196	0.007	0.0010	0.319	0.084	0.060	0.051	0.011	0.046	0.014	0.001
COULEE HEAT	Ti	N	104	105	107	Cr+Mo						
19733	0.002	0.0043	0.206	0.146	0.017	0.062						

* ETAT :

0

-> ETAT DE LIVRAISON
AS DELIVERY

* ELEMENT :

104

-> Cu + Ni + Cr + Mo

105

-> Cu + Cr + Mo

107

-> Nb + V + Ti

T/O
S

Ce certificat comporte 3 feuilles
et 2 page(s) d'annexe(s)
This certificate includes 3 sheets
and 2 page(s) annex(es)

Reviewed and accepted
Section II-A, SA 516 Gr. 70
Ed. 01, Add. 02

date 18.05.03 sign.

Résultats de l'inspection et du contrôle de dimensions : SANS REMARQUE.
Results of surface examination and dimensions controls : NO REMARK.
Ergebnis der Besichtigung und Maßkontrollen : OHNE BEANSTANDUNG.
Risultati delle ispezioni e dei controlli di dimensioni : SENZA OSSERVAZIONE.

Date - Datum - Data

9-JAN-2003

Q. C. Manager
PELLICHERO FREDDYINDUSTEEL
BelgiumMill Inspector
BODART JOEL



Tél.: 00 32/71/44.16.64
Fax: 16.28
INDUSTEEL Belgium
B.P. 1739 - B-6030 CHARLEROI

L'ORGANISATION D'USINER INDUSTRIEL EST CERTIFIÉE ISO 9002/AQAP120
USINER INDUSTRIEL'S ORGANISATION IS CERTIFIED ISO 9002/AQAP120

CCPU - CERTIFICATE - PRÜFZEUGNIS - CERTIFICATO No

251251

COMMANDE USINE NR / ORDER NR / WERKS NR / ORDINE NR

2055801

ATTESTATION DE TRAITEMENT THERMIQUE DE NORMALISATION
NORMALIZING HEAT TREATMENT REPORT
NORMALGLUEHUNGSBESCHEINIGUNG
ATTESTAZIONE DI TRATTAMENTO TERMICO DI NORMALIZZAZIONE

NOTRE REFERENCE-OUR ORDER-USNRE NR-NOSTRA REFERENZA : 2055801
VOTRE REFERENCE-YOUR ORDER-IHRE NR-VOSTRA ORDINE : 1/0477/2 S-02-007341/324/IV

NOTRE CERTIFICAT-OUR CERTIFICATE-USNER PRUEFZEUGNIS-NOSTRO CERTIFICATO
251251 - Grade 70 + S5 / K02700 - ASME SA 516 Ed.2001

Nous certifions que les toles de la commande reprise en reference
ci-dessus, ont subi un traitement thermique de normalisation suivant:
We hereby certify that the plates of the order mentioned hereabove
have been normalized according to :
Wir bescheinigen, dass eine Normalgluehungswaermebehandlung durchgefuehrt
wird auf die obengenannte Bleche nach:
Certifiamo che le lamiere dell' ordine ripresa in referencia qui sopra
hanno subito un trattamento termico di normalizzazione seguente :

Temperature de normalisation :
Normalizing temperature : 920 deg.C
Normalgluehungstemperatur :
Temperatura di normalizzazione :

Temps de maintien :
Holding time : 1 Min/mm
Haltezeit :
Tempo di mantenimento :

Refroidissement : air calme
Cooling : still air
Abkuehlung : luft
Raffreddamento : aria calma

Résultats de l'inspection et du contrôle de dimensions : SANS REMARQUE.
Results of surface examination and dimensions controls : NO REMARK.
Ergebnis der Besichtigung und Maßkontrollen : OHNE BEANSTANDUNG.
Risultati delle ispezioni e del controllo di dimensioni : SENZA OSSERVAZIONE.

Date - Datum - Data

9-JAN-2003

Q. C. Manager
PELLICHERO FREDDY

INDUSTEEL
Belgium

Mill Inspector
BODART JOEL



INDUSTEEL
Groupe Arcelor

Tél.: 00 32/71/44.16.04
Fax: 18.28
INDUSTEEL Belgium
B.P. 1739 - B-6030 CHARLEROI

CCPU - CERTIFICATE - PRÜFZEUGNIS - CERTIFICATO No

251251

COMMANDE USINE NR / ORDER NR / WERKS NR / ORDINE NR

2055801

L'ORGANISATION USINOR INDUSTRIEL EST CERTIFIÉE ISO 9002/AQAP120
USINOR INDUSTRIEL'S ORGANISATION IS CERTIFIED ISO 9002/AQAP120



Résultats de l'inspection et du contrôle de dimensions : SANS REMARQUE.
Results of surface examination and dimensions controls : NO REMARK.
Ergebnis der Bezeichnung und Maßkontrollen : OHNE BEANSTANDUNG.
Risultati delle ispezioni e del controllo di dimensioni : SENZA OSSERVAZIONE.

Date - Datum - Data

9-JAN-2003

Q. C. Manager
PELLICHERO FREDDY

INDUSTEEL
Belgium

Mill Inspector
BODART JOEL

Pos
3

KÖNIG + CO. GMBH



Bödenpresswerke - Netphen und Hockenheim-Baden

Hauptwerk: 57236 Netphen, Postfach 1261

Telefon (02738) 601-0

Telefax (02738) 601-161

Telex 872784

Werksbescheinigung

Work test certificate / Certificat d'usine
über/about/attestant

Warmformgebung/hot forming/façonnage à chaud

Besteller / Customer / Commettant:

TANK + STAHLBAU ABERSFELDER GMBH & CO. KG, Schondra-Schildeck

Bestell-Nr. / Order-No. / Numéro de Commande: **v. 20.2.2003**

Werks-Nr. / Works-No. / Numéro d'usine: **3 / 11527**

Lieferung vom / Date of delivery / Livraison du: **20.03.2003**

Abnahmeprüfzeugnis 3.1 B nach EN 10204
Inspection / test certificate 3.1 B according to EN 10204
Certificat de réception d'usine suivant 3.1 B - EN 10204

Prüfungsgrundlage: ASME VIII Div. 1 Edition 2001

Inspection based on
base d'essai:

für warmgepresste Böden, Konen, Verschlüsse, Verschlusssteile.
for hot formed heads, cones, doors, door-parts.
pour fonds emboutis à chaud, cônes, fermetures, parties de fermetures.

Daten der Lieferung / dates on material delivered / données sur notre envoi
Norm(en) / Standard(s) / Norme(s):

Pos.-Nr. Item-No. Pos.-No.	Stückzahl Units No. des pièces	Art / Form Type / form Type / forme	Abmessung Dimensions Dimensions	Werkstoff Material Matériau	Schmelze / Probe / TÜV-Nr. Charge / sample Coulée / échantillon
2	1	ellipsoidal head 2 : 1	Di/id = 832 mm s = 8 mm MW	SA 516 Gr. 70 MT	65387-354660 ✓
3	4	ellipsoidal head 2 : 1	Di/id = 1200 mm s = 8 mm MW	SA 516 Gr. 70 MT	31357-27824-01 ✓

Die verwendeten Bleche wurden, soweit erforderlich, umgestempelt und mit dem Herstellerzeichen versehen:
The used plates were restamped if necessary, and equipped with the maker's brand:
Les tôles utilisées ont été ré poinçonnées si nécessaire et marquées par la griffe du fabricant:

 Herstellerzeichen
maker's brand
griffe du fabricant

Wir bestätigen, daß die Warmformgebung gem. Mat.spezif. ASME II part A + ASME Code Sect.VIII Div.1 UG 79 / UCS 79 durchgeführt wurde.
We certify that the hot forming has been carried out according to Mat.spezif. ASME II part A + ASME Code Sect.VIII Div.1 UG 79 / UCS 79.
Nous certifions que l' emboutissage a été terminé selon Mat.spezif. ASME II part A + ASME Code Sect.VIII Div.1 UG 79 / UCS 79.

Weiterbehandlung nach dem Pressvorgang: warmgepresst bei 920°C, gegläht bei 920°C, Haltezeit: 10 Min., Luftabkühlung,
further treatment after pressing procedure: hot formed at 920°C, annealed at approx. 920°C, Holding time: 10 Min., air-cooling,
Traitement ultérieur: chaud presser à 920°C, recuit à environ 920°C, temps d'arrêt: 10 Min., refroidissement à l'air,

Oberflächenbehandlung / Surface treatment / Usinage des surfaces: keine / none / néant

Zulassungen für die Herstellung von Druckbehälterteilen durch den Rheinisch-Westfäl. TÜV e.V. entspre. TRD 100, AD-W0, HP0, HP7/1 bis HP7/4.
Approvals by R-W TÜV e.V. for the manufacture of pressure-vessel components acc. to TRD 100, AD-W0, HP0, HP 7/1-HP 7/4.
Autorisation par le R-W TÜV e.V. pour la construction des éléments de réservoirs sous pression selon TRD 100, AD-W0, HP0, HP 7/1-HP 7/4.

Zulassung für die Herstellung von Druckbehälterteilen durch LRQA Reg.-Nr. 0525, in Übereinstimmung mit den Anforderungen der DGRL 97/23/EG einschl. Anhg. I, 3.1 und 4.3.
Approvals by LRQA Reg.-Nr. 0525, for the manuf. of pressure-vessel components in conformity with the requirements of the PED 97/23/EG incl. app. I, 3.1 and 4.3.
Autorisation par LRQA Reg.-Nr. 0525, pour la constr. des éléments de réservoirs sous pression selon la directive d'appareils de pression 97/23/EG, app. I, 3.1 et 4.3.

Verwendet wurden: Bleche gemäß beiliegender Bescheinigung
We used plates as per attached certificate
Tôles utilisées: voir certificat ci-joint

nach EN 10204 3.1 B Attest/Certificat Salzgitter vom/dtd. 23.2.00 + Dillingen vom/dtd. 2.7.02
acc. to EN 10204
d' après EN 10204

Prüfung der fertigen Teile:
inspection after forming:
Réception des pièces façonnées:

gem. Spezifikation:
according to:
selon spécification:

Besichtigung und Ausmessung ohne Beanstandung.
Visual and dimensional check without objection.
Inspection et vérification des dimensions sans objection.

Netphen, den 25.03.03 PST
the
le

König + Co. GmbH
Der Werkssachverständige
Inspecting engineer of manufacturer
L'expert de l'atelier

058202



Abnahmeprüfzeugnis 3.1.B
Inspection certificate 3.1.B
DIN 50 049 - DIN EN 10 204

Nr./No. 129508
 Seite / Page 1/3
 Datum / Date 23.02.2000

Nr./No. S-99-006856/324/IV
 Besteller Universal
 Purchaser Eisen und Stahl GmbH
 41415 Neuss

04.11.1999

Nr./No.
 Empfänger Universal
 Customer Eisen und Stahl GmbH
 41415 Neuss

Erzeugnis Grobblech
 Product Heavy plate

Werkauftrags-Nr. 00414790/13
 Works order No.
 Lieferchein-Nr. 21348326
 Dispatch note No. 23.02.2000
 Abnahme WS
 Inspection

Werkstoff und Lieferbedingung Grade 70 MT LTV
 Steel grade and terms of delivery ASME SA 516 , SA 20
 ASME SECT. II Part A/1998 ad. 1999

Kennzeichnung des Materials / Marking of the product
 Herstellerzeich./Stahlsorte/Schmelzennr./Erzeugn.Nr.
 Trademark/Steelgrade/Heat-No/Product-No

Erschmelzungsverfahren: Sauerstoffaufblasverfahren
 Steelmaking process: Basic oxygen process

Materialdaten / Material data

Pos. Item	Anzahl Quantity	Erzeugnis-Nr. Product No.	Schmelzen-Nr. Heat No.	Lieferzustand Cond. of delivery	Dicke x Breite x Länge Thickness x Width x Length	mm x mm x mm
01	7	341081	14846	N	10,00 x 3000,0 x	1500
01	7	354660	65387	N	10,00 x 3000,0 x	1500
Σ	14	Gewicht Weight	4.946 kg kgs	N: normallisiert / normalized		

Maßprüfung und Sichtkontrolle auf äußere Beschaffenheit: ohne Beanstandung
 Dimensional check and visual examination of the surface condition:
 without objection

Wärmebehandlung: Temperatur: 910 +/-10°C
 Haltezeit: 30 min/inch
 Abkuehlung an ruhender Luft

Heat treatment: Temperature: 910 +/-10°C
 Soaking time: 30 min/inch
 Cooling in still air

Es wird bestätigt, daß die Lieferung den Anforderungen der Lieferbedingung entspricht.
 We hereby certify that the delivered material complies with the terms of the order.
 DIN-System: Certification as per ISO 9001 since 28 February 1999



Herstellerzeichen
 Trademark

Salzgitter AG
 Werk Harenburg
 D-38871 Harenburg



Sachverständigenstempel
 Inspector's Stamp

Gezeichnet von
 Attestant

Werkssachverständiger
 Works Inspector

Jost

Abnahmeprüfzeugnis 3.1.B				Nr./No. 129508	
Inspection certificate 3.1.B				Seite / Page 2/3	
DIN 50 049 - DIN EN 10 204				Datum/ Date 23.02.2000	
Nr./No. S-99-006856/324/IV		04.11.1999		Nr./No. Empfänger Universal	
Besteller Eisen und Stahl GmbH				Customer Eisen und Stahl GmbH	
Purchaser 41415 Neuss				41415 Neuss	
Erzeugnis Grobblech				Werkauftrags-Nr. 00414790/13	
Product Heavy plate				Works order No. 21348326	
Werkstoff und Lieferbedingung Grade 70 MT LTV				Lieferschein-Nr. 23.02.2000	
Steel grade and terms of delivery ASME SA 516, SA 20				Dispatch note No. WS	
ASME SECT. II Part A/1998 ad. 1999				Abnahme Inspection	

Schmelzenanalyse / Ladle analysis

Schmelzen-Nr. Heat No.	C %	Si %	Mn %	P %	S %	N %	Al %	Cu %	Cr %	Ni %
	≤ 0,27 ✓	0,15 - 0,40 ✓	0,85 - 1,20 ✓	≤ 0,035 ✓	≤ 0,035 ✓			≤ 0,40	≤ 0,30	≤ 0,40
14846 X 65387	0,18 0,18	0,34 0,34	1,15 1,15	0,015 0,011	0,003 0,003	0,004 0,006	0,037 0,040	0,23 0,22	0,03 0,04	0,18 0,19
Schmelzen-Nr. Heat No.	Mo %	V %	Nb %	Ti %	Cr+Mo %	EV1 1) %	EV2 2) %	EV3 3) %		
		≤ 0,03	≤ 0,02	≥ 0,0003						
14846 X 65387	0,00 0,01	0,00 0,00	0,02 0,01	0,0040 0,0040	0,03 0,05	0,44 0,46	0,02 0,01	0,41 0,41		

1) EV1: Cr+Cu+Mo+Ni
2) EV2: V+Nb+Ti
3) EV3: CEV=C+Mn/5+Mo/5+Ni/15+Cr/5+V/5+Cu/15

Zugversuch / Tensile test

Proben-Nr. Specimen No.	Schmelzen-Nr. Heat No.	Ort Location	Richt. Direct	Zustand Cond.	Form Type	Dehngrenze Yield strength Rp0,2 N/mm ²	Zugfestigkeit Tensile strength Rm N/mm ²	Bruchdehnung Elongation 8 in %		
		1) 2) 3)	4)	5)	6)	≥ 260 ✓	455 - 620 ✓	≥ 17 ✓		
341081 X 354660	14846 65387	K6G K6G	Q Q	N N	P P	381 398	525 544	20 19		

1) K: Kopf / Top
2) 6: 1/8 Breite / 1/8 Width
3) 6: Erzeugnisdicke / Thickness of product
4) Q: quer / transversal
5) N: normalisiert / normalized
6) P: prismatisch / prismatic

Reviewed and accepted
 Section II-A, SA 516 Gr 70
 Ed. 07, Add. 02

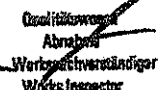
date 19.05.03 sign. 

Es wird bestätigt, daß die Lieferung den Anforderungen der Lieferbedingung entspricht.
 We hereby certify that the delivered material complies with the terms of the order.
 DIN System: Certification as per ISO 9001 since 28 February 1999

 Herstellerzeichen
 Trademark

Salzgitter AG
 Werk Hamburg
 D-33631 Hamburg

 Sachverständigenstempel
 Inspector's Stamp

 Qualifizierung
 Abnahme
 Werkstoffschwieriger
 Works Inspector

Jost



Kiel-Flanschen GmbH · Postfach 21 04 28 · 57028 Siegen

Tank + Stahlbau
Abersfelder GmbH & Co. KG
Industriestraße 6

Reviewed and accepted
Section II-A, SA 105
Ed. 01, Add. 02

date 19.05.03 sign. [Signature]

97795 Schondra-Schildeck

Datum: 08. Mai 2003

Abnahmeprüfzeugnis (Abschrift) nach EN 10204 / 3.1B (Original kann vom TÜV eingesehen werden)

Inspection certificate (copy) as per / Certificat de réception (copie conforme) selon

Pos
5

Unsere Kom.-Nr.: Our order No. / Notre commande N°	Ihre Bestellung: Your order No. / Votre commande N°	Lieferung vom: Delivery dd. / Livraison du	Rechnungs-Nr.: Invoice No. / N° de facture
126 805	A4265, Com. 275-MAN v. 27.02.03	16.04.03	65.029

Pos. Item	Werkstoff Quality / Qualité	Gegenstand Object / Objet	Charge Nr. Heat No. / N° de coulée
1	A 105, ASME A 105 Sect. II, Part. A, Ed.2001, Ad.2002	Flansch nahtlos gewalzt, alleits gedreht und gebohrt. 1 St. 700/860/74/815/24 x 22 Ø	E 54175

Analyse chemical composition / composition chimique

Pos. Item	Schmelze-Nr. Heat No. N° de coulée	Probe-Nr. sample No. N° d'échant.	% C	% Si	% Mn	% P	% S	% Cr	% Mo	% Ni	% V	% AL	% Nb	% Cu	% N	% Ti
1	E 54175	313 T	,17 ✓	,33 ✓	1,20 ✓	,012 ✓	,002 ✓	,15 ✓	,060 ✓	,15 ✓	,003 ✓		,002 ✓	,10 ✓		

Prüfungsergebnisse Test results / Résultats d'essai

Pos. Item	Schmelze-Nr. Heat No. N° de coulée	Probe-Nr. sample No. N° d'échant.	ReH/Rp (N/mm) 0,2 % 1 %	Rm (N/mm)	A %	Z %	Av J	Härte HB	Temp. °C
1	Soll :		250	485	22	30		30	RT
	E 54175	313 T	376 ✓	514 ✓	29 ✓	68 ✓		164 ✓	RT

Erschmelzungsart: (steelmaking process / procédé d'élaboration)	E
Besichtigung/Ausmessung: (surface/dimensional inspection / inspection matériel/dimensions)	ohne Beanstandung
Wärmebehandlung: (heat treatment / traitement de chaleur)	normalgeglüht
Anforderungen: (requirements / exigences)	

KIEL - Flanschen GmbH

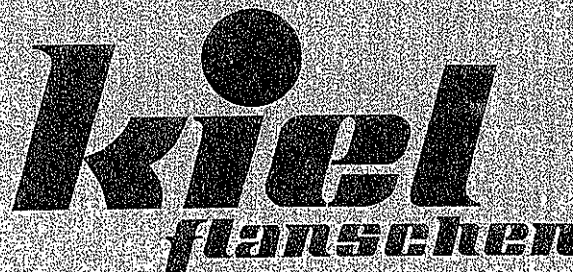
Der Werkssachverständige



Weidenauer Straße 35 · 57076 Siegen-Weidenau
Telefon: 02 71/7 72 93-0 · Telefax: 02 71/7 72 93-33
e-mail: info@kiel-flanschen.de · Internet: www.kiel-flanschen.de

Vorschweißflanschen · Sonderflanschen · Profilringe
Blindflanschen · mech. Bearbeitung bis 5.000 mm Ø
AD-2000-Merkblatt, TRD 201, Richtlinie 97/23 EG, R-Nr.04 702 6473 RWTÜV

EINGEGANGEN 10. Mai 2003



Kiel-Flanschen GmbH · Postfach 21 04 28 · 57028 Siegen

Tank + Stahlbau
Abersfelder GmbH & Co. KG
Industriestraße 6

Reviewed and accepted
Section II-A, SA 105
Ed. 01, Add. 02

date 19.05.03 sign. [Signature]

97795 Schondra-Schildeck

Datum:

08. Mai 2003

Abnahmeprüfzeugnis (Abschrift) nach EN 10204 / 3.1B (Original kann vom TÜV eingesehen werden)

Inspection certificate (copy) as per / Certificat de réception (copie conforme) selon

Unsere Kom.-Nr.: Our order No. / Notre commande N°	Ihre Bestellung Your order No. / Votre commande N°	Lieferung vom: Delivery dd. / Livraison au	Rechnungs-Nr.: Invoice No. / N° de facture
126 805	A4265, Com. 275-MAN v. 27.02.03	06.05.03	65.109

Pos
7

Pos. Item	Werkstoff Quality / Qualité	Gegenstand Object / Objet	Charge Nr. Heat No. / N° de coulée
2	A 105, ASME A 105 Sect. II, Part. A, Ed.2001, Ad.2002	Blindflansch geschmiedet, allseits gedreht und gebohrt 1 St. 0/860/55/815/24 x 22 Ø	E 54473

Analyse chemical composition / composition chimique

Pos. Item	Schmelze-Nr. Heat No. / N° de coulée	Probe-Nr. sample No. / N° d'échant.	% C	% Si	% Mn	% P	% S	% Cr	% Mo	% Ni	% V	% Al	% Nb	% Cu	% N	% Ne	% Ti
2	E 54473	359 T	,18 ✓	,34 ✓	,93 ✓	,008 ✓	,001 ✓	,110 ✓	,030 ✓	,120 ✓	,005 ✓		,005 ✓	,00			

Prüfungsergebnisse Test results / Résultats d'essai

Pos. Item	Schmelze-Nr. Heat No. / N° de coulée	Probe-Nr. sample No. / N° d'échant.	ReH/Rp (N/mm)	Rm (N/mm)	A %	Z %	Av J	Härte HB	Temp. °C
	Soll :		250	485	22	30		30	RT
2	E 54473	359 T	364 ✓	510 ✓	31 ✓	69 ✓		151 ✓	RT

Erschmelzungsart: (melting process / procédé d'élaboration)	E
Besichtigung/Ausmessung: (surface/dimensional inspection / inspection matériel/dimensions)	ohne Beanstandung
Wärmebehandlung: (heat treatment / traitement de chaleur)	normalgeglüht
Anforderungen: (requirements / exigences)	

KIEL - Flanschen GmbH

Der Werkssachverständige

[Signature]



Weidenauer Straße 35 · 57076 Siegen-Weidenau
Telefon: 02 71/7 72 93-0 · Telefax: 02 71/7 72 93-33
e-mail: info@kiel-flanschen.de · Internet: www.kiel-flanschen.de
Kiel-Flanschen GmbH · Postfach 21 04 28 · 57028 Siegen

Vorschweißflanschen · Sonderflanschen · Profilringe
Blindflanschen · mech. Bearbeitung bis 5.000 mm Ø
AD-2000-Merkblatt, TRD 201, Richtlinie 97/23 EG, R-Nr.04 702 6473 RWTÜV

Flaschen und Bunde nach DIN und Sonderanfertigung
Besteller/Purchaser/Acheteur TANK + STAHLBAU

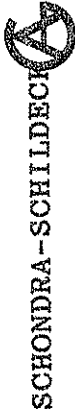
Kunden-Bestell-Nr./Client order no./No. de commande du client

A4265 COM.272-MAN

Kennzeichnung: Firmenzeichen, Werkstoff, Schmelze, DN, PN
marking/marque

Anforderungen: A 105
Requirements/Valeur demandés ASTM-STD. 2001 / ASME B16.5

97795



Stempel des Herstellers/Stamp of the manufacturer/
Sigle du fournisseur

Abnahmeprüfzeugnis nach
Inspection certificate acc. to EN 10204 -
Certificat de réception selon

3.1

Unsere Auftrags-Nr./Our works no./Notre no. de commande

LS: 2305346 Auftrag: 102158

Seite: 3

Datum/Date: 11.04.2003

Probentag/Position of sample/Position de l'échantillon

TANG

Probenlage/Position or sample/Position de répartition														Erschmelzungsart und Analysen nach Angaben des Herstellers Process and chemical composition in conformity with certificate of manufacturer. Procès et composition chimique en conformité avec certificat du producteur.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Position Item Position	Anzahl Quantity Quantité	Artikel-Bezeichnung/Article/Article		Kerbfom Notch Entaille	Prüftemp. Test temp. Temp. d'ess. °C	Av Av	J J	Z R. o. A. %	A Elon- gation %	R _m U _T N/mm ²	R _{0.2} R _{0.2} Y _P N/mm ²	R _m U _T N/mm ²	A Elon- gation %	Z R. o. A. %	Av Av	J J	Prüftemp. Test temp. Temp. d'ess. °C	Kerbfom Notch Entaille	Erschmelzungsart und Analysen nach Angaben des Herstellers Process and chemical composition in conformity with certificate of manufacturer. Procès et composition chimique en conformité avec certificat du producteur.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Probe Nr. Sample No. No. d'essai	Schmelze + Heat Charge Mode de fusion Nr./No.																C	SI	MN	P	S	CR	AL	Ceq	V	Cu	Ti	Ni	Mo	0,010	0,021	0,130	0,015	0,090	0,010	0,185	0,240	1,100	0,006	0,010																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
006	3		HB 145-150																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

Für/for/pour EN 10 204-3.1.B:

Es wird bestätigt, daß die Lieferung geprüft wurde und den
Vereinbarungen bei der Bestellannahme entspricht.

We hereby certify, that the material described above has been tested
and complies with the terms of the order contract.

Nous certifions que la livraison était vérifiée et est conforme aux
spécifications de l'acceptation de la commande

Besichtigung und Ausmessung ohne Beanstandung
Visual inspection and dimensions satisfactory. Aucun défaut au point de vue aspect et de dimension.

Zertifiziert für Werkstoffhersteller nach Richtlinie 97/23/EG

Certified as material manufacturer to PED 97/23/EG

Certifications par la matière fabriquée DEP 97/23/EG

Anhang I, 4.3/Annex I, 4.3/Annexe I, 4.3
TUV-CERT: Nr./No. N° 0044

Verwaltung, Fertiglager und Versand:

Office, Warehouse and Trafficdepartment:

Office, Magasin et Expédition:

45525 Hattingen
Telefon: 0 23 24/50 08-00
Telefax: 0 23 24/24 57

Betrieb/Plant/Usine: D Bochum-Linden,

Deimketal 24, Industriegebiet

E-Mail: info@albert-greifenberg.de
http://www.albert-greifenberg.de/

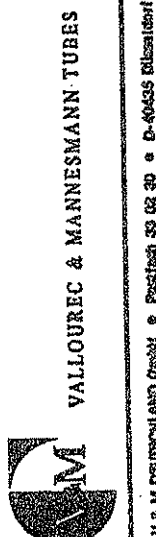
Der Werkssachverständige
Works inspector
L'expert d'usine

ALBERT GREIFENBERG

GmbH & Co. KG

Pos
N01
N03





VALLOUREC & MANNESMANN TUBES

V & M DEUTSCHLAND GmbH • Postfach 30 02 20 • D-40435 Düsseldorf

(A06)

BUHLMANN ROHR-FITTINGS-
STAHLHANDEL GMBH & CO.
POSTFACH 260

40702 HILDEN

(A01)
Lieferant:
Supply plant:
Usine expéditrice:
MUELHEIM

(B01 - B04)



HOT FINISHED SEAMLESS STEEL TUBES &

ASME SA 106, EDITION 1998 &
ASTM A 106 - 99 / ASTM A 53 - 99 B / ASME SA 53, EDITION 98/
ASTM A 530 M - 99 / ASME SA 530 M, EDITION 1998 /
ASME B 36.10 - 96 / ASTM A 520 - 97 /
NACE STANDARD MR 0175-00, PARA 3.2 /
BUHLMANN SPECIFICATION BR 4000-C/REV. 0 V+M &
ASME BOILER AND PRESSURE VESSEL CODE, SECTION II, PART A,
EDITION 1998 & GRADE B / GRADE C & IN RANDOM MILL LENGTH
10000 - 11800 MM &
ENDS BEVELLED ACC. TO ASME B 16.25, FIGURE 2 A,
NO MACHINING REQUIRED AT THE PIPE INSIDE,
BEVEL ANGLE 37.5 DEGREES (TOLERANCE +/- 2.5 DEGREES),
ROOT FACE 1.6 +/- 0.8 MM & INSIDE WITHOUT RUST PROTECTION &
OUTSIDE DRY VARNISH

(B11 - B13)

(B09)

Item	Deliv.	Dimension / Item text	Quantity/pcs	kg/lbs	Total length m/ft
8	Bal.	OUT.DIAM. W.THICKN. 168,3 X 11 IN BUNDLES OF MAX. 2,5 T	52	23.518 51.849	550,08 1.804,72

Pos
N01
N03



VALLOUREC & MANNESMANN TUBES

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V&M-Nr./No	877/2355 0	No./No	73714	Blatt/ Page	2 / 4
Kunden-Nr./Purchaser no./client no	88/3958/0				

Results of ladle analysis (SI) / check analysis (K) %

(1808)	(C70)	(C71 - C92)	SI	MN	P	S	AL	CU	CR	NI	MO
HEAT NO	STEELMAK.PROCESS	C	0,100	0,29							
MINIMUM		0,200	0,240	0,98	0,012	0,0030	0,022	0,020	0,400	0,400	0,150
MAXIMUM		0,200	0,240	0,98	0,012	0,0030	0,022	0,020	0,400	0,400	0,150
346208	S	0,196	0,230	0,97	0,010	0,0023	0,021	0,015	0,042	0,038	0,004
	K	0,197	0,235	0,98	0,011	0,0028	0,022	0,016	0,041	0,039	0,004
	K										

HEAT NO	STEELMAK.PROCESS	V	N	CAE1	EF1
MINIMUM		0,080		0,43	1,0
MAXIMUM		<0,004	0,0078	0,38	0,1
346208	S	0,003	0,0089	0,37	0,1
	K	0,003	0,0095	0,37	0,1
	K				

CAE1 = C + MN CR+MO+V NI+CU EF1 = CR + MO + NI + CU + V

THE REQUIREMENTS OF THE FOLLOWING FORMULA HAVE BEEN SATISFIED BY ALL HEATS:

MN >= 3 X C

Tensile test results

(C00)	(B08)	(C10)	(C02)	(C01)	(C03)	(C11)	(C12)	(C13)	V/T	Z
Sample no	Heat no	Test piece dimension	Test piece type	Test piece direction	Test piece loc. orient.	Yield/proof strength Rp0,2 %	Tensile strength Rm	Elongation AL 2"	Ratio	
MINIMUM						275	485	23,0		
454	346208	25,34 10,92	23 longit		RT	318	530	39,0	0,60	
455	346208	25,38 11,23	23 longit		RT	321	528	41,0	0,61	

Code references to the tensile test

TYPE OF TEST PIECE : 23 TUBE STRIP TEST SPECIMEN

Other test results (B01 - B99)

-HEAT TREATMENT: NORMALIZED FINISH-ROLLED >850 DEGREES C/AIR

-HYDROSTATIC TEST, 193 BAR (1BAR=100KPA): SATISFACTORY

-FLATTENING TEST: SATISFACTORY (C50)

Identification of the products (B06 - B07)

DIE STAMPED ON ONE SIDE

V&M04

B / C

Reviewed and accepted
Section II-A, SA *[Signature]*
Ed. *02*, Add. *02*date *19.05.03* sign. *[Signature]*Pos
V01
V03



VALLUREC & MANNESMANN TUBES

171

V&M-Nr./No	Nr./No	Sheet/ Page
Kunden-Nr./Purchaser no./client No	73714	3 / 4
877/2355 0		
88/3958/0		

-VISUAL AND DIMENSIONAL INSPECTION SATISFACTORY (D01)
-PIPE PRODUCTION METHOD: SEAMLESS, HOT-ROLLED
-HARDNESS TEST: HRC MAX. 22 IN ACC. TO NACE MR 01-75

HEAT-NO.
168,3 X 11
TUBE-NO.
WA
CONTINUOUSLY PAINT STENCILED
V&M04
TERMS OF DELIVERY SA106/A106/A53/SA53/A520
B / C
PROCESS OF MANUFACTURE S
XS
HEAT-NO.
TEST PRESSURE BAR 193
168,3 X 11
TUBE/PIPE LENGTH M
TUBE/PIPE WEIGHT KG
WA
SHIPPING LABELS
PIECE PER BUNDLE
168,3 X 11
METER PER BUNDLE
WEIGHT PER BUNDLE
B / C
HEAT-NO.
VALLOUREC & MANNESMANN

Pos
N01
N03



VALLOUREC & MANNESMANN TUBES

172

VAB-Nr./No	877/2355 0	Nr./No	73714	Seite/ Pages	4/ 4
Kunden-Nr./Purchase no./client No	88/3958/0				

INDICATIONS IN PARENTHESES CORRESPOND TO THE IDENTIFICATION ACC. TO EN 168-86.
SYMBOL OF THE MANUFACTURER'S MARK (A05) RECEIVING AGENT'S STAMP (Z02)

THE PRODUCTS HAVE BEEN TESTED IN ACCORDANCE WITH THE PURCHASE SPECIFICATION AND ARE FOUND TO BE SATISFACTORY.

(A05) V & M DEUTSCHLAND GMBH, WERK MULHEIM, ABNAHME
D-45422 MULHEIM AN DER RUHR, POSTFACH 10 22 61

A. G. P.

This testimonial and certification respectively may neither be modified nor used for other products. Offences are regarded as falsification of documents and will be subject to criminal jurisdiction.

(Z02) SCHLAYER, INSPECTION REPRESENTATIVE
MULHEIM, 29.09.2001, TELEPHONE: (0208) 810-4650
TELEFAX: (0208) 810-5659

Pos:
N01
N03


**ILSEBURGER
GROBBLECH**

Ein Unternehmen der Satzgitter Gruppe

Abnahmeprüfzeugnis 3.1.B
Inspection certificate 3.1.B
Certificat de reception 3.1.B
DIN 50 049 - DIN EN 10 204

Nr./No./N° 219623
Seite/Page/Page 1/3
Datum/Data/Data 17.06.2002

Nr./No./N° S-02-006331/324/II
Besteller Universal
Purchaser Eisen und Stahl GmbH
Acheteur 41415 Neuss

08.04.2002

Nr./No./N° Universal
Emplänger Eisen und Stahl GmbH
Customer Eisen und Stahl GmbH
Destinataire 41415 Neuss

Erzeugnis Grobblech
Product Heavy plate
Produit Tôle forte

Werksauftrags-Nr. 00462060/13

Works order No.
N° de commande
Lieferschein-Nr. 21976543
Dispatch note No. 17.06.2002
Avis d'expédition N°
Abnahme WS
Inspection
Reception

Werkstoff und Lieferbedingung Grade 70 MT LTV
Steel grade and terms of delivery ASME SA 516, SA 20
Nuance et conditions de livraison ASME SECT. II Part A ed. 2001

Kennzeichnung des Materials / Marking of the product / Marquage du produit
Herstellerzeich./Stahlsorte/Schmelzennr./Erzeugn.Nr
Trademark/Steelgrade/Heat-No/Product-No
Sigle de l'usine/Nuance de l'acier/N° coulée/
N° produit

Materialdaten / Material data / Données des matériaux

Pos. Item Poste	Anzahl Quantity Nombre	Erzeugnis-Nr. Product No. N° produit	Schmelzen-Nr. Heat No. N° Coulée	Lieferzustand Cond. of delivery Etat de livraison	Dicke x Breite x Länge Thickness x Width x Length Epaisseur x Largeur x Longueur	mm x mm x mm
01	1	633495 1	25370	N	22,00 x 2000,0 x 10500	
01	1	633495 2	25370	N	22,00 x 2000,0 x 10500	
Σ	2	Gewicht Weight Poids	7.254 kg kgs kgs	N: normalisiert/normalized/normalisé		

Maßprüfung und Sichtkontrolle auf äußere Beschaffenheit: ohne Beanstandung
Dimensional check and visual examination of the surface condition:
without objection
Contrôle dimensionnel et examen visuel de l'état de surface: satisfaisants

Wärmebehandlung: Temperatur: 910 +/- 10°C
Haltezeit: 30 min/inch
Abkühlung an ruhender Luft

Heat treatment: Temperature: 910 +/- 10°C
Soaking time: 30 min/inch
Cooling in still air

Traitement thermique: Température: 910 +/- 10°C
Temps de maintien: 30 min/inch
Refroidissement par air

Es wird bestätigt, daß die Lieferung den Anforderungen der Lieferbedingung entspricht.
We hereby certify that the delivered material complies with the terms of the order.
Nous certifions que la fourniture répond aux conditions de livraison.
DIN-System: Certification as per ISO 9001 since 28 February 1993



Herstellerzeichen
Trademark
Sigle du producteur

Ilseburger Grobblech GmbH
Veckenstedter Weg 10
D-39871 Ilseburg



Sachverständigenstempel
Inspector's Stamp
Poinçon de l'expert

Qualitätswesen
Abnahme
Werkssachverständiger
Works Inspector
L'expert de l'usine

Cyron



ILSENBURGER
GROBBLECH

Ein Unternehmen der Salzglitter Gruppe

Abnahmeprüfzeugnis 3.1.B
Inspection certificate 3.1.B
Certificat de reception 3.1.B
DIN 50 049 - DIN EN 10 204

Nr./No./N° 219623
Seite/Page/Page 2/3
Datum/Date/Date 17.06.2002

Nr./No./N° S-02-006331/324/II
Besteller Universal
Purchaser Eisen und Stahl GmbH
Acheteur 41415 Neuss

08.04.2002

Nr./No./N° Universal
Empfänger Eisen und Stahl GmbH
Customer Eisen und Stahl GmbH
Destinataire 41415 Neuss

Erzeugnis Grobblech
Product Heavy plate
Produit Tôle forte

Werkauftrags-Nr. 00462060/13

Works order No.
N° de commande
Lieferschein-Nr. 21976543
Dispatch note No. 17.06.2002

Werkstoff und Lieferbedingung Grade 70 MT LTV
Steel grade and terms of delivery ASME SA 516 SA 20
Nuance et conditions de livraison ASME SECT. II Part A ed. 2001

Abnahme WS
Inspection
Reception

Schmelzenanalyse / Ladle analysis / Analyse de coulée

Herstellerangaben / Manufacturer standard / Données du fabricant

Schmelzen-Nr. Heat No. N° Coulée	C %	Si %	Mn %	P %	S %	N %	Al %	Cu %	Cr %	Ni %
	≤0,28	0,15 - 0,40	0,85 - 1,20	≤0,035	≤0,035			≤0,40	≤0,30	≤0,40
25370	0,18	0,34	1,14	0,015	0,003	0,003	0,034	0,22	0,03	0,17
Schmelzen-Nr. Heat No. N° Coulée	Mo %	V %	Nb %	Ti %	Cr+Mo %	EV1 1) %	EV2 2) %	EV3 3) %	C+Mn/6 %	
		≤0,03	≤0,02	≥0,0000				≤0,43		
25370	0,00	0,00	0,02	0,003	0,03	0,42	0,02	0,40	0,37	

1) EV1: Cr+Cu+Mo+Ni
2) EV2: V+Nb+Ti

3) EV3: CEV=C+Mn/6+Mo/5+Ni/15+Cr/5+V/5+Cu/15

Erschmelzungsverfahren: Sauerstoffaufblasverfahren
Steelmaking process: Basic oxygen process
Mode d'élaboration: Procédé de conversion à l'oxygène

Zugversuch / Tensile test / Essai de traction

Proben-Nr. Specimen No. N° éprouvette	Schmelzen-Nr. Heat No. N° Coulée	Ort Location Lieu	Richt. Direct. Orient.	Zustand Cond.	Form Type	Dehngrenze Yield strength Limite d'élasticité Rp0,2 N/mm2 ≥ 260	Zugfestigkeit Tensile strength Résistance Rm N/mm2 485 - 620	Bruchdehnung Elongation Allongement 8in %		
		1) 2) 3)	4)	5)	6)					
633495	25370	K6G	Q	N	P	387	540	24		

1) K: Kopf/Top/Tête
2) S: 1/6 Breite / 1/6 Width / 1/6 Largeur
3) G: Erzeugnisdicke / Thickness of product / Epaisseur du produit

4) Q: quer / transversal / transversal
5) N: normalisiert / normalized / normalisé
6) P: prismatisch / prismatic / prismatique

Reviewed and accepted
Section II-A, SA 516 G, 70
Ed. 01, Add. 02

date 19.05.02 sign.

Es wird bestätigt, daß die Lieferung den Anforderungen der Lieferbedingung entspricht.
We hereby certify that the delivered material complies with the terms of the order.
Nous certifions que la fourniture répond aux conditions de livraison.
DIN-System: Certification as per ISO 9001 since 28 February 1990



Herstellerzeichen
Trademark
Sigle du producteur

Ilsenburger Grobblech GmbH
Veckenstedter Weg 10
D-38871 Ilsenburg



Sachverständigenstempel
Inspector's Stamp
Poinçon de l'expert

Qualitätswesen
Abnahme
Werkssachverständiger
Works Inspector
L'expert de l'usine

Cyron



**ILSENBURGER
GROBBLECH**

Ein Unternehmen der Salzgitter Gruppe

Abnahmeprüfzeugnis 3.1.B
Inspection certificate 3.1.B
Certificat de reception 3.1.B
DIN 50 049 - DIN EN 10 204

Nr./No./N° 219623
Seite/Page/Page 3/3
Datum/Data/Data 17.06.2002

Nr./No./N° S-02-006331/324/II
Besteller Universal
Purchaser Eisen und Stahl GmbH
Acheteur 41415 Neuss

08.04.2002

Nr./No./N° Universal
Empfänger Universal
Customer Eisen und Stahl GmbH
Destinataire 41415 Neuss

Erzeugnis Grobblech
Product Heavy plate
Produit Tôle forte

Werksauftrags-Nr. 00462060/13
Works order No.
N° de commande
Lieferschein-Nr. 21976543
Dispatch note No. 17.06.2002
Avis d'expédition N°
Abnahme WS
Inspection
Reception

Werkstoff und Lieferbedingung Grade 70 MT LTV
Steel grade and terms of delivery ASME SA 516, SA 20
Nuance et conditions de livraison ASME SECT. II Part A ed. 2001

Kerbschlagbiegeversuch / Impact test / Essai de résilience

Proben-Nr. Specimen No. N° éprouvette	Schmelzen-Nr. Heat No. N° Coulée	Ort Location Lieu	Richt. Direct. Orient.	Zustand Cond. Cond.	Probenform Type of specimen Type d'éprouvette	Temperatur Temperature Température	Schlagarbeit Impact energy Energie de rupture				
						°C	1 J ≥ 15	2	3	MW 6) J ≥ 20	
633495	25370	K60	L	N	Charpy V-notch	-046	167	130	145		147

1) K: Kopf / Top / Tête
2) 6: 1/6 Breite / 1/6 Width / 1/6 Largeur
3) 0: oberflächennah / near surface / près de la peau

4) L: längs / longitudinal / longitudinal
5) N: normalisiert / normalized / normalisé
6) MW: Mittelwert / Average / Moyenne

Probenabmessungen:

5,0 x 10 x 55 mm (von 5,00 mm bis 8,99 mm Blechdicke)
7,5 x 10 x 55 mm (von 9,00 mm bis 11,99 mm Blechdicke)
10 x 10 x 55 mm (ab 12,00 mm Blechdicke)

Specimen size:

5,0 x 10 x 55 mm (from 5,00 mm up to 8,99 mm plate thickness)
7,5 x 10 x 55 mm (from 9,00 mm to 11,99 mm plate thickness)
10 x 10 x 55 mm (from 12,00 mm plate thickness)

Dimension de l'éprouvette:

5,0 x 10 x 55 mm (par 5,00 depuis 8,99 mm épaisseur)
7,5 x 10 x 55 mm (par 9,00 depuis 11,99 mm épaisseur)
10 x 10 x 55 mm (de 12,00 mm épaisseur)

Es wird bestätigt, daß die Lieferung den Anforderungen der Lieferbedingung entspricht.

We hereby certify that the delivered material complies with the terms of the order.

Nous certifions que la fourniture répond aux conditions de livraison.

QMS-System: Certification as per ISO 9001 since 28 February 1990



Herstellerzeichen
Trademark
Sigle du producteur

Ilseburger Grobblech GmbH
Vackendörfer Weg 10
D-38871 Ilseburg



Sachverständigenstempel
Inspector's Stamp
Poinçon de l'expert

Qualitätswesen
Abnahme
Werksachverständiger
Works Inspector
L'expert de l'usine

Cyron

LS 03030801
272-MAN A4265

N° DU DOCUMENT
Document N° 224535
Numéro des Documents
CERT. 01.0

WILHELM GELDBACH INDUSTRIE AG
ZIEGLERSTRASSE 17
45886 GELSENKIRCHEN
ALLEMAGNE

CLIENT
Customer
Kunde

CERTIFICAT DE RÉCEPTION PAR L'USINE 3.1B EN 10204
INSPECTION CERTIFICATE
ABNAHMEPRÜFZEUGNIS

Poinçon d'usine - Manufacturer stamp - Herstellerzeichen (MGI)

Ligne Item	N° Ordre Fabric. Batch N° Hersteller N°	DÉSIGNATION - Description - Gegenstand	N° de Commande Client Customer's order N° Bestell N°	N° de Commande Usine Plant order number Werkbestellnummer	Quantité Totale Total quantity Gesamtmenge	Nom et adresse du producteur Product manufacturer Produktionsbetriebs-Spezifikation
3	00	1 " WN 150 RF XXS ASME B16.5	1570	12048	1.06	ASTM A105-98 / ASME SA105 SECT. II PART A 98 C ≤ 0.25 ⇒ Mn ≤ 1.35
3						N° et origine des cotations sollicitées Number and origin of quotes used Anforderungsnr. und Herkunft für veranschaulichten Exemplare
		MARQUAGE Marking Kennzeichnung			Masse en kg Mass Masse	71260 TANARU

ANALYSE SUR COULÉE EN % SELON LES DONNÉES DU FABRICANT - Ladie analysis according to the manufacturer's requirements - Schmelzanalyse nach Angaben des Herstellers

C	Si %	Mn %	S %	P %	Cr %	Mo %	Ni %	Cu %	V %	Nb %	%	%	%	%	%
IMPOSES Requirements Anforderungen	MINI	0.1000	0.6000	0.0400	0.3000	0.1200	0.4000	0.4000	0.0500	0.0200	0.0300				
OT = Quenched TR = Abgeschreckt	MAXI	0.3500	1.3500												
OBTENUS Obtained - Ergebnisse		0.1700	0.2200	0.0120	0.0700	0.0300	0.0500	0.1400	0.0020	0.0010					

TRACTION - Tensile test - Zugversuch (1)

F = FORGÉ 1230 °C N = NORMALISÉ 920 °C
AF = As Forged N = Normalized
F = Warmgeschmiedet N = Normalgeglüht

TR = TREMPÉ °C + REVENU °C
QT = Quenched Tempered
TR = Abgeschreckt Angelassen

VALEURS GARANTIES - Guaranteed values - Gewährleistete Werte

POINÇON Stamp	R _m Tensile strength Zugfestigkeit	R _{0.2} Yield strength 0.2% Streckgrenze	R _{p0.01} Yield strength 1% Streckgrenze	ALLONGEMENT Elongation Bruchdehnung	STRICTION Reduction of Area Einschnürung	DURETÉ Hardness Härte	HB	PORTION LAGE	TYPE FORME	T°C	UNITÉ Joules MIN.	MOY
L	485	250	250	22.00	30.00	137	187					
L	517	313	313	30.00	66.90	145	149					

$$CE FL = C + (Mn/6) + ((Cr+Mo+V)/5) + ((Ni+Cu)/15) \dots \leq 0.47$$

MATERIAL IN ACCORDANCE WITH NACE MR. 01.75 (1998)

SPMSST

EXPERT DE L'USINE Qualified Inspector Werkstattsprüfer	E. GOMET
NOM ET QUALITÉ Name and qualification Name und Eigenschaft	Contrôle Qualité
DATE	25.01.00

Les contrôles dimensionnels et d'aspect et les essais sont conformes à la commande et aux normes spécifiées.
(1) Les résultats des essais mécaniques ont été obtenus dans notre laboratoire ou dans un laboratoire agréé.
Dimensional and visual inspection and test are conform to the purchase order and to the standards.
(1) Mechanical test results have been obtained in our laboratory or in approved laboratory.
Die dimensionskontrollen und die Proben stimmen mit der Bestellung und den angegebenen Normen ein.
(1) Die Ergebnisse der mechanischen Proben wurden in unserem Labor oder in einem genehmigten Labor erhalten.

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2
105
N02
N05

 vallourec précision étriage	Vallourec Précision Etrirage 14001 BP 77 ZI VITRY MAROLLES 51303 Vitry-le-François France tel: 03.26.41.23.00 fax: 03.26.41.23.10	INSPECTION CERTIFICATE CERTIFICAT DE RECEPTION ABNAHMEPRÜFZEUGNIS	
	EN 10204 3.1.B	(ANSI) Ref.: 45-02-150004 2 / 3 (ANSI) N° VLR.: 206979/01	

(C10-C02-C03)

FULL SECTION LONGITUDINAL TENSILE TEST AT ROOM TEMPERATURE / TRACTION TUBE ENTIER LONG TEMPERATURE AMBIANTE (PESEE) / GESAMTQUERSCHNITT LÄNGSZUGVERSUCH BEI RAUMTEMPERATUR

(C00)	(B08)	(C11)	(C12)	(C13)
Test	Heat	Y.S.	T.S.	Elong. 2"
Essai	coulée	lim. élast.	résistance	Allong. 2"
Prüf.	Schmelze	Streckgrenze	Zugfestigk.	Dehnung 2"
MIN.		275	485	30
MAX.		MPa	MPa	%
01	10662	374	518	38

(C30)HRB

ROCKWELL B HARDNESS / DURETE ROCKWELL B / ROCKWELL B HÄRTE

(C00)	(B08)	(C31)	(C31)
Test	Heat	hardness 1	hardness 2
Essai	coulée	dureté 1	dureté 2
Prüf.	Schmelze	Härte 1	Härte 2
		HRB	HRB
01	10662	78	80

Reviewed and accepted

Section II-A, SA 5766 106 G. B

Ed. 02, Add. 02

date 19.05.03 sign. [Signature]

(D01-D99)

NON DESTRUCTIVE TESTS / CONTROLES NON DESTRUCTIFS / ZERSTÖRUNGSFREIE PRÜFUNGEN

test nature d'essai Probe	test rate contrôle Prüfumfang	specification spécification Spezifikation	result résultat Ergebnis
APPEARANCE & DIMENSIONS ASPECT & DIMENSIONS AUSSEHEN-ABMESSUNG	100% LOT		OK BON O.B.
EDDY CURRENT TEST COURANTS DE FOUCAULT WIRBELSTROMPRÜFUNG	100% LOT	SEP 1925	OK BON O.B.
SPECTRO GRADE CHECK IDENTIFICATION NUANCE SPECTRO- GÜTENBESTIMMUNG DURCH SPEK- TROGRAPHIE	100% LOT		OK BON O.B.

Pos
N02
N04
N05

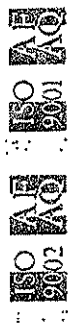


vallourec
précision
étriage

Vallourec Précision Etriage
(AM)BP77 ZJ VITRY MAROLLES
51303 Vitry-le-François France
tél: 03.26.41.23.00
fax: 03.26.41.23.10

INSPECTION CERTIFICATE
CERTIFICAT DE RECEPTION
ABNAHMEPRÜFZEUGNIS

EN 10204 3.1.B



(AM)Ref.: 45-02-150004 3 / 3
(A05)N°VLR-206979/01

MANDREL BENDING TEST / ESSAI DE CINTRAGE / BIEGERVERSUCH

result
résultat
Ergebnis
OK
BON
O.B.

(Z01)30/05/2002

(Z02) Original computer copy - Authenticity is guaranteed by the Vallourec logo. Document original informatique authentifié par le logo bleu Vallourec. Mit Computer uasgestelltes Originaldokument durch blaues Vallourec Zeichen gekennzeichnet. All the pipes/tubes conform to the requirements of the order and standard regarding the grade, quality and heat treatment throughout their whole length. Tous les tubes sont conformes en nuance, qualité et traitement thermique sur toute leur longueur aux stipulations de la commande et norme. Alle Rohre entsprechen über ihre ganze Länge den in der Bestellung und der Norm festgelegten Bestimmungen hinsichtlich der Stahlsorte, Gütestufe und Wärmebehandlung.	(A05) The authorized expert in Quality Control Section L'expert agréé du Service Qualité Der anerkannte Sachverständige der Qualitätsstelle MME SICARD V.
--	---

P05
N02
N04
N05

**Stempel des Herstellers/Stamp of the manufacturer/
Sceau du fournisseur**

**Abnahmeprüfzeugnis nach
Inspection certificate acc. to
Certificat de reception selon**

3

97795

SCHONDRA-SCHILDECK

Besteller/Purchaser/Acheteur TANK + STAHLBAU
Kunden-Bestell-Nr./Client order no./No. de commande du client

A4265 COM. 272-MAN

Kennzeichnung: Firmenzeichen, Werkstoff, Schmelze, DN, PN
marking/marque



Anforderungen:
Requirements/Valeur demandés

Unsere Auftrags-Nr./Our works no./Notre no. de commande
LS: 2305346 Auftrag: 102158

Seize: 1

Datum/Date: 11.04.2003

TANG

Position tem Position	Anzahl Quantity Quantité	Artikel-Bezeichnung/Article/Article		R _m , R _{p0.2} Y _P ^{0.2} N/mm ²	R _m , R _p N/mm ²	A Elon- gation %	Z R _i o.A. %	Av Av	J J	Prüftemp. Test temp. Temp.d'ess. °C	Kerbforn Notch Entaille	Erschmelzungsart und Analysen nach Angaben des Herstellers Process and chemical composition in conformity with certificate of manufacturer. Proces et composition chimique en conformité avec certificat du producteur.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
		Probe Nr. Sample No. No. d'essai	Schmelze + E-Art Heat Melting furnace Charge Mode de fusion Nr./No.									C ✓	SI ✓	MN ✓	P ✓	S ✓	CR ✓	AL ✓	Ceq ✓	V ✓	Cu ✓	Nb ✓	Ni ✓	Mo ✓	O,002 ✓	0,009 ✓	0,200 ✓																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
001	2	2635	X5 WN 300LB LG 1" A105 91037 E	✓ 326	500	26	54	114	126	132	20	ISO-V	0,180 ✓	0,220 ✓	0,900 ✓	0,008 ✓	0,009 ✓	0,200 ✓																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				</

FÜR/FOR/POUR EN 10 204-3.1.B:

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht.

We hereby certify, that the material described above has been tested and complies with the terms of the order contract.

Nous certifions que la livraison était vérifiée et est conforme aux stipulations de l'acceptation de la commande

Besichtigung und Ausmessung ohne Beanstandung
Visual inspection and dimensions satisfactory. Aucun défaut au p

Zertifiziert für Werkstoffhersteller nach Richtlinie 97/23/EG

Certified as material manufacturer to PED 97/23/EG
Certifications par la matière fabriquer DEP 97/23/EG

Anhang I. 4.3/Annex I. 4.3/Annexe I. 4.3
TÜV-CERT, Nr./No. N° 0044

100

Verwaltung, Fertierteilager und Versand:

Office, Warehouse and Traffic
Office, Magasin et Expédition:

**Gottwaldstraße 17
45525 Hattingen**

Telefon: 023 24/50 08-00
Telefax: 023 24/2 4757

Betrieb:/Plant:/Usine: D Bochum-Linden.

Deimketal 24, Industriegelände

E-Mail: info@albert-greifenberg.de
<http://www.albert-greifenberg.de/>

ALBERT GREEN CONSTRUCTION

GmbH & Co. KG

Der Werkssachverständige

Works inspector

L'expert d'usine

Pos
Vol

Customer:

SUBULMAN

Customer Order/Contract No: SDES/2891

Order No:

44-149386

THIRD

STORY

Material No:

Certificate

040909323182

3855298

Cast/Batch No:

Zeugnis-Nr.:

FULLY KILLED HOT FINISHED CARBON STEEL SEAMLESS TUBES

103

Product:

Page: 11
Date: 11/11/2011

Specification:

ASTM A106 00 C-B/C A53 00R ASME SA106.99 GrB/C SA53.99B API 5L.00 PSL1 B

Product Marking:

IST 5L-0319 Monogram 06-02 ASTM A106 GRC/B ASME SA106 GRC/B ASTM A53 GRB ASME SA53 GRB API 5L GRB 88,900 (3,500) 11.130 (0.438) 6.900 (19,700) S TESTED 20.7MPa (3000psi) CAST NO: 38B5298 PROD/Q NO: T1340038015 NDE/JEXP

General Information

Information General

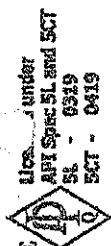
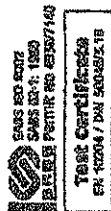
Quantity Quantité Menge	Mass Poids Gewicht	Tube OD Diamètre Durchschnitt	Dimensions Dimensions / Maße Thickness Épaisseur Stärke	Length Longueur Länge	Total Length Longueur Länge	Steel making process Processé de fabrication de l'acier Stahlerzeugungsverfahren	Final Rolling Operation Fin de laminage / Walzende
104	13,319.280(kg) 29,363.685(lb)	88.900(mm) 3.500(")	11.130(mm) 0.438(")	6.000(m) 19.700 (ft)	624.000(m) 2,048.800(ft)	Electric Arc	Final hot rolling operation finished above 860°C and cooled in still air.

Chemical Composition

Analyze for code
Schneitzencamp

Element(%)	C	Si	Mn	S	P	Cr	Ni	Mo	Cu	V	Al	Ti	Sn	N	B	Nb	CE
Minimum	-	0.10	0.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maximum	0.200	-	1.06	0.020	0.025	0.40	0.40	0.150	0.499	0.080	-	-	-	-	-	-	0.41
Heat	0.167	0.30	0.79	0.004	0.011	0.13	0.19	0.051	0.140	0.004	0.037	0.001	0.009	0.0103	0.0003	0.0010	0.36
Product	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓							

Pos
Noy



WT CERTIFICATE - SEAMLESS STEEL
CERTIFICATE DE RECEPTION - TUBES D'ACIER SANS SOUDURE
ANNAHMEPRÜFZEUGNIS - NAHTLOSE STAHLRÖHREN

Iscor Long Steel Products MATERIAL TESTS
Vereeniging Works
General Hertzig Road
P O Box 48 Peacetaven, Vereeniging 1930
South Africa
Tel: +27
Fax: +27

Customer:	Customer Order/Contract No:
Client:	No de commande client
Kunde:	Kundenauftrag-Nr
Order No:	Material No:
No. de commande	No de mat'.
Best.-Auftrag-Nr:	Werkstoff-Nr.
Certificate Reference No:	Cast/Batch No:
No de certificat:	Coulee No.
Zertifikat-Nr:	Schmelzen-Nr.
Product:	Page Number:
Produit:	Page:
Produkt:	Blatt:
Specification:	
Specification	
Angabe	
Product Marking:	
Lequage de produit	
Produktkennzeichnung	

Mechanical Properties

**Prophylaxis Methoden
Merkmal: Eigenes**

Specification Specification Angebe	UTS Rm Force de tension Zugfestigkeit	Elong Along Dehnung
Limits Limites Grenze	MPa	%
Minimum	489	30.0
Maximum	-	-
Sample (1)	523 ✓	35.0
Sample (2)		
Sample (3)		
Sample (4)		
Sample (5)		
Sample (6)		
Sample (7)		
Sample (8)		
Sample (9)		
Sample (10)		
Orientation of tensile piece Orientation de la poutrelle de tension Richtung der Zugprobe		Longitudinal

TECHNOLOGICAL TESTS

ÉPREUVES TECHNOLOGIQUES
TECHNISCHE PRÜFUNGEN

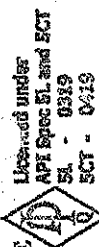
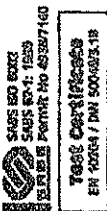
Flattening test Essai d'aplatissement Ringelversuch	Passed	Hardness (HV 30kg) Dureté Härte	152.0 154.0 153.0
Flaring test Essai de rébertement de collerette Brödelversuch	Passed		
Hydrostatic Hydrostatique Hydrostatisch	20700 KPa (3000 psi) - 5 sec		
Electromagnetic Insp Inspection électromagnétique Elektromagnetische Prüfung	PASS - ASTM E570 - 12.5% NOTCH		
Ultrasonic inspection Inspection ultrasoniq Ultraschallprüfung	UT not required		
Orientation of impact test piece Orientation de la' poutrette Richtung des Probestücks			

Reviewed and accepted
Section II-A, SA NO GIB
Ed. 01, Add. 02

17.05.02 5¹⁵ *Be*

205

NOL



91 CERTIFICATE - SEAMLESS STEEL.
CERTIFICATE DE RECEPTION • TUBES D'ACIER SANS Soudure
ABNAHMENPRÜFZEUGNIS • NAHTLOSE STAHLROHRE

**Isacor Long Steel Products Material
Wereniging Works**

General Hertzog Road
P O Box 48 Peacehaven, Vereeniging 1930
South Africa Fax

Telephone +27 (0)16 450 4911
+27 (0)16 423 4906

Customer:

PUFFMAN

Order No:

08261600057

No. de commande leof:
leof-Auftrags-Nr:

Certificate

04090323182

**Não de certificar:
Zeevnia-Mr:**

Product:

TULLY KILLED HOT FINISHED CARBON STEEL SEAMLESS TUBES

Produkt:

Specification:

ASTM A106.99 GrB/C A53.99B ASME SA106.99 GrB/C SA53.99B API 5L.00 PSL1 B

Specification
Answer

[illegible]

Product Marking:

IST 5L-0319 Monogram 06-02 ASTM A106 GRC/B ASME SA106 GRC/B ASTM A53 GRB ASME (19 70M) S TESTED 20.7MPa (3000psi) CAST NO: 38H5238 PROD/O NO: T1340938015 NDE/EXP

**L'usage de produit
Produit d'entretien**

Remarks:

2000

Hardness in accordance with NACE MR0175-2001. Dimensions to ANSI B30.10

ASME Section II, Part D Table Y-1

The material will conform to the not yield strength requirements as per means, section 6.0. The material conforms to the visual inspection and dimensional tolerance requirements of the specification.

All the material conform to the highest standard and guarantee perfect quality.

leur totalité prescriptions de l'Article 15 de l'Arrêté Ministériel du 24 mars 1978 modifié.

 $C \leq 0,25\%, P \leq 0,05\%, S \leq 0,05\%, R \leq 700 \text{ N/mm}^2, E \leq 0,9 \times 10^5$

A%(Lo=5,65VSo) min.16% en long. R(A-2)>=10500

A%(Lo=5,65VSo) min.16% en transv. RxA)>=10500

This certifies conformity of the material to the requirements of PMD 97/23/EC, Appendix I, section 4.3

Quality Assurance Manager: B. Le Roux

B. Le Roux

Qualitätsicherungsmanager:
Chef des services de l'assurance de qualité:

We hereby certify that the steel grade and quality level of all products are in conformity with the order and comply fully with specification requirements.

Nous certifions que la qualité de tous les produits se conforme à la commande et est complètement conforme à la spécification.

Date of Issue: 2002-08-26

ॐ नमो भगवते वासुदेवाय
 श्रीकृष्णाय नमः

17-00000-22

एकलिंगी-प्राथमिक

Pos
NOL



EN 45004 (A)

**KONSTRUKTIONSKONTROLLINTYG 1-4, 5**
DESIGN REVIEW CERTIFICATE

Ant bilagor/Enclosures

DNV handläggare/DNV ref Leo Odijk		DNV uppdragsnr/DNV comm No 02-147574-36	DNV uppdragsgivare/DNV customer Chematur Engineering AB	
Effekt/Effect -	Föreskrift, anvisning/Regulation, code ASME VIII div.1		Box 430 691 27 Karlskoga Sweden	
Objektnamn/Object Isocyanate Project, Phase 1 Dept.366 CDC Recovery Item S36617, ODCB Separator			Uppdragsgivarens handläggare/Customers ref K. Pettersson	Beställningsnr/Order No 4500165/08

Konstruktionsuppgifter/Design data

Rum 1/Chamber 1

Rum 2/Chamber 2

Beräkningstryck/Design pressure 13 bar (e)	Beräkningstemperatur/Design temperature -17 / 100 °C	Beräkningstryck/Design pressure 7 bar (e)	Beräkningstemperatur/Design temperature -17 / 100 °C
Innehåll/Contents HCLG	Volym/Volume 1.0 m ³	Innehåll/Contents RFS / RFR	Volym/Volume 0.5 m ³
Material mantel/Material shell SA 516 Gr.70	Material gaviar/Material heads SA 516 Gr.70	Material SA 516 Gr.70	Material SA 516 Gr.70

Dokumentförteckning/List of documents

Antal ex/ No of copies	Dokument nr/Document No	Revision	Antal ex/ No of copies	Dokument nr/Document No	Revision
1	EGD-S36617-01	2			
1	EDD-S36617-02	2			
1	EDD-S36617-03	2			
1	EDD-S36617-04	2			

Kommentarer/Comments**Omfattning/Scope**

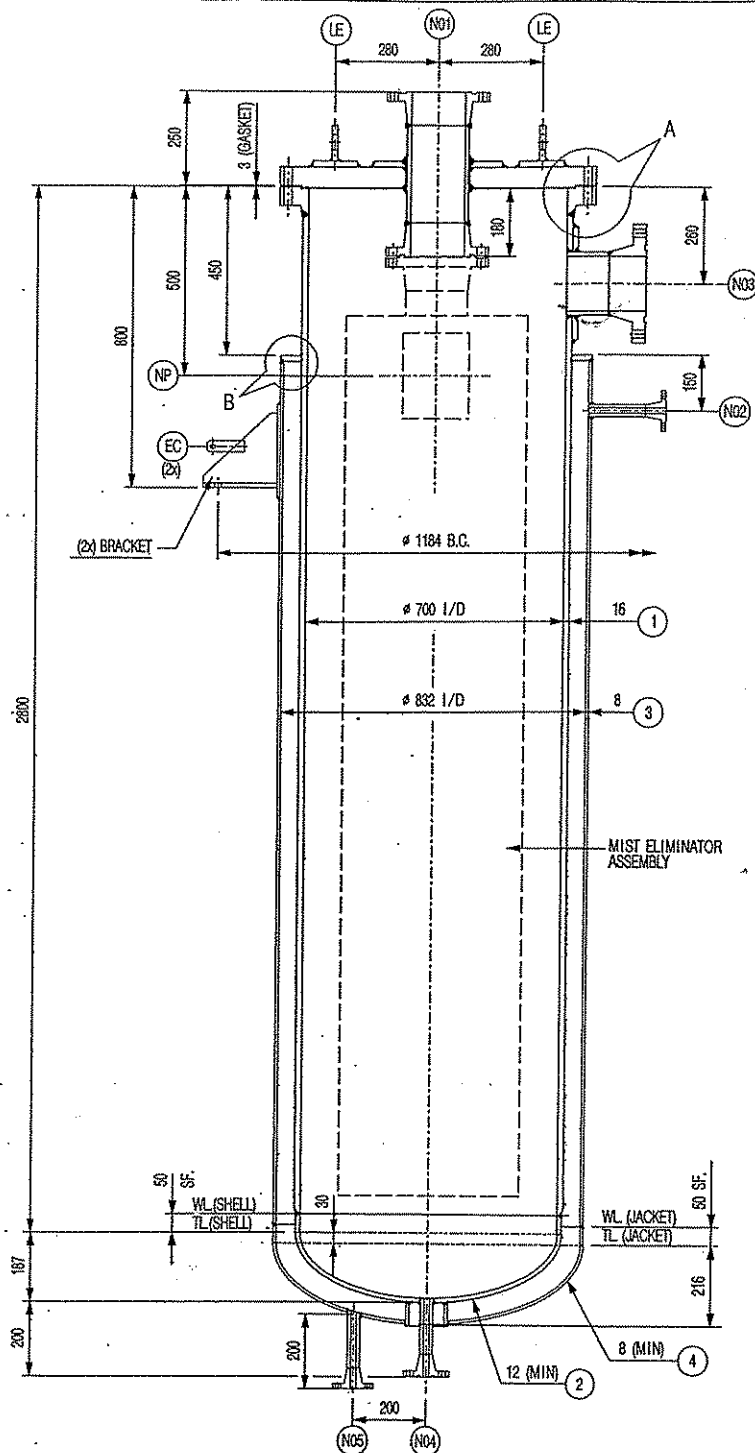
Ja/Yes Nej/No

Konstruktionen är granskad med avseende på: The design has been reviewed regarding: Detta intyg är giltigt för tillverkning tills gällande regler ändras, dock max 10 år. This certificate is valid for manufacturing until existing regulations are changed, however, not more than 10 years. Kopior av detta intyg ska medfölja ritningar till tillverkare och brukare. Copies of this certificate are to be enclosed with drawings and sent to manufacturer and user. En komplett sats stämplade ritningar och detta intyg ska finnas tillgängligt vid DNVs tillverkningskontroll. A complete set of stamped drawings and this certificate shall be available at time for shop inspection.	Konstruktiv utformning/Constructive design:	☒	
	Svetsning/Welding:	☒	
	Hållfasthet/Strength:	☒	
	Inre tryck/Internal pressure	☒	
	Yttre tryck/External pressure	☒	
	Expansion av rörledning/ Piping expansion		☒
	Utmattning/Fatigue		☒
	Externa laster/External loads	☒	
	Beräkningstemperatur överstiger gränstemperatur. Design temperature within creep range.		☒

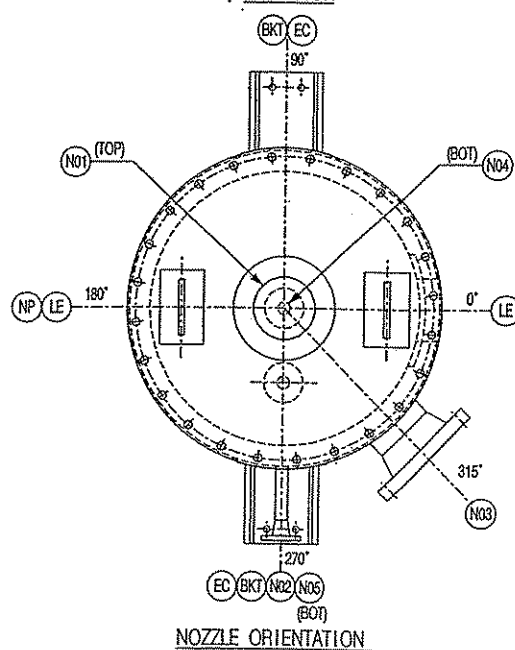
DNV Inspection - BEDÖMNING/ASSESSMENT

☒ Uppfyller ställda krav/ In compliance with the requirements	☐ Uppfyller ej ställda krav/ Not in compliance with the requirements
Ort/Place Stockholm	Datum/Date 2003-04-23
Kopia till/cc	Namn/Name Leo Odijk
	Sign <i>Leo Odijk</i>

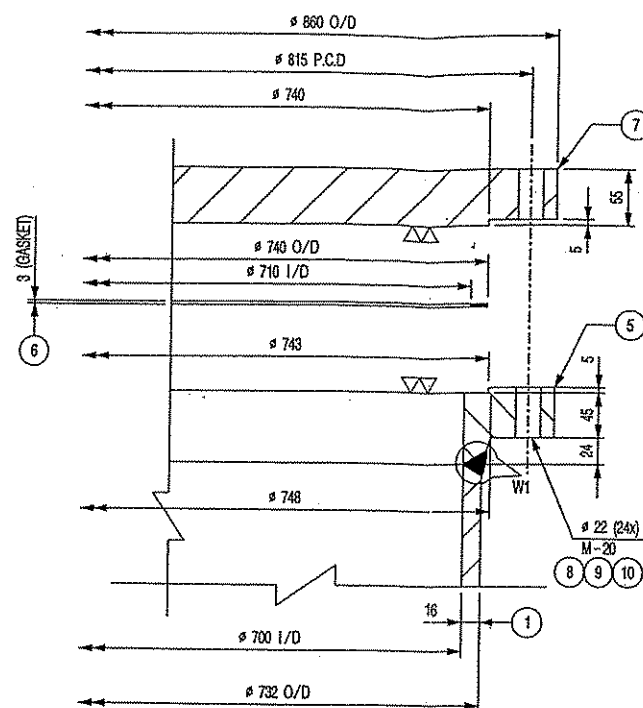
DNV108 (EB) 2000-04-25



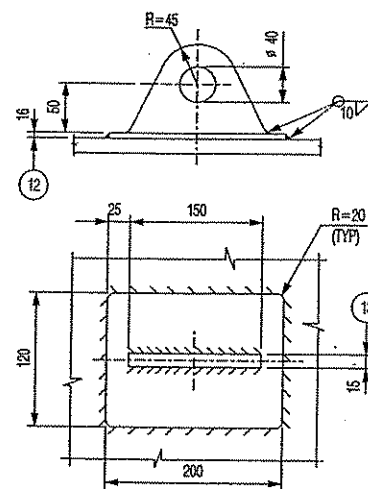
ELEVATION



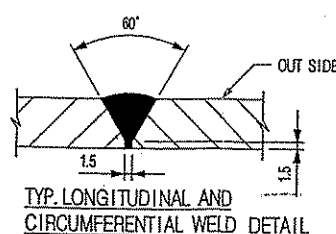
NOZZLE ORIENTATION



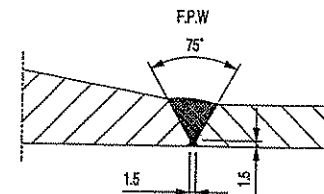
DETAIL - A



DETAIL OF LIFT EYE (LE)

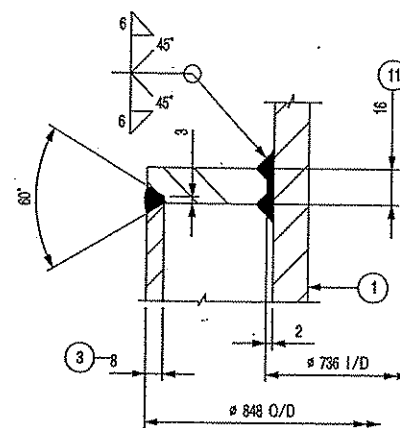


TYP. LONGITUDINAL AND CIRCUMFERENTIAL WELD DETAIL



DETAIL - W1

NOZZLE DATA LIST									
Mark	NO	Inch	Sch./Thk	Qty	Flange	Face	Rating	Service	Remarks
N01	6	Sch.80	1	WN	LG	300		INLET HCLG	
N02	1	Sch.80	1	WN	RF	150		OUTLET RFR	
N03	6	Sch.80	1	WN	LG	300		OUTLET HCLG	
N04	1	Sch.80	1	WN	LG	300		OUTLET	
N05	1	Sch.80	1	WN	RF	150		INLET RFS	
BKT	-	-	2	-	-	-	-	BRACKET SUPPORT	
LE	-	-	2	-	-	-	-	LIFT EYE	
NP	-	-	1	-	-	-	-	NAME PLATE	
EC	-	-	2	-	-	-	-	EARTHING CONN.	



DETAIL - B

DESIGN DATA		
DESIGN CODE	ASME SEC. VIII DIV. 1 EDITION 2001 ADD 2001	
CODE STAMP REQUIRED	NO	
	Shell	Jacket
Volume m3	1.0	0.5
Fluid	HCLG	RFS/RFR
Density kg/m3	11.5	1049
Design Pressure bara (Int. / Ext.)	13.0 / 0.0	7.0 / 0.5
Design Temperature °C	-17/100	-17 TO +100
Operating Pressure bara	6.6	4.0
Operating Temperature °C In / Out	-10	-14
Hydrostatic Test Pressure bar g	15.6	7.8
Corrosion Allowance mm	3	3
Joint Efficiency (Shell / Dish End)	1.0	1.0
Radiography (Shell / Dish End)	FULL	FULL
Insulation Type / Thk (mm)	CE1 / 50	CE1/50
Impact Test	NIL	
P.W.H.T	YES	
M.D.M.T. °C	-17	
Wind Load	max. 36 m/s (Wind speed 15 m above ground level)	
Seismic Zone	2B acc. to UBC	
Painting	SEE NOTE NO.9	
Surface Preparation	AS PER SPEC.4.6.2, ALT.2 & 3	
Lethal Service	YES	
Empty Weight Kg	2000	
Operating weight Kg	4300	
Hydrotest Weight Kg	7000	
Location	OUTDOOR	
Inspection		

GENERAL NOTES :-

- 1) ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
- 2) ALL BOLT HOLES SHALL STRADDLE PRINCIPAL CENTRE LINE OF THE EQUIPMENT.
- 3) ALL SHARP CORNERS ARE TO BE ROUNDED OFF.
- 4) ALL SHELL AND NOZZLE ATTACHMENT WELD SHALL BE LEFT PROUD AFTER WELDING.
- 5) ALL WELD ACCESSIBLE FROM SECOND SIDE SHALL BE CHIPPED BACK TO SOUND METAL BEFORE WELDING FROM SECOND SIDE WHEREVER BACK CHIPPING IS NOT POSSIBLE ROOT RUN TO BE CARRIED OUT BY TIG.
- 6) ALL RF PADS SHALL BE PNEUMATICALLY TESTED WITH AIR AT 1Kg/Cm2 g AND CHECKED WITH SOAP SOLUTION FOR LEAKAGE.
- 7) ALL NOZZLE FLANGES SHALL BE AS PER ANSI B16.5
- 8) ALL FILLET WELDS SHALL BE LP/D.P. TESTED.
- 9) PAINTING :- ALL EXTERNAL C.S. SURFACE SHALL BE PAINTED AS PER SPEC.4.6.1 ALT.1
- 10) ALL PLATES ABOVE 20 MM THK & FORGINGS ABOVE 50 MM THK SHALL BE UT TESTED.
- 11) ALL TELL-TALE HOLE SHOULD BE FILLED BY HEAVY GREASE AFTER WELDING
- 12) ALL WELDING SHALL BE FULL PENETRATION WELDS & SHALL BE RADIOGRAPHED AS PER UN2201(1)(c).

REF. DRAWING NO.

SR. NO.	TITLE	DWG. NO.
1	DETAIL OF NOZZLES	EDD - S36617-02
2	DETAIL OF SUPPORT BRACKET (WITH EARTHING CONN.)	EDD - S36617-03
3	DETAIL OF NAME PLATE & NAME PLATE BRACKET	EDD - S36617-04

WORKING ISSUE - MARCH 27, 2003

Item No.	Qty.	Title	Material	Size	Remarks
13	2	LIFT EYE	A285 Gr C	150 x 95 x 15	
12	2	PAD PLATE	A516 Gr 70	200 x 120 x 16	
11	1	PLATE	A516 Gr 70	484 O/D x 735 I/D x 16	
10	48+4	WASHER	SS.304	48 O/D x 21 I/D x 3	
9	48+4	HEX HD NUT	A194 Gr 2H	3/4" UNC	HOT DIP GAL.
8	24+4	STUD	A193 Gr B7	3/4" UNC x 160 Lg.	HOT DIP GAL.
7	1	COVER FLANGE	A105	480 x 55	
6	1+3	GASKET	GYLON STYLE 3501	474 O/D x 470 I/D x 3	
5	1	FLANGE	A105	480 O/D x 470 I/D x 50	
4	1	DISHED END	A516 Gr 70	21 ELLIPSOIDAL x 8 (MIN.)	
3	1	PLATE	A516 Gr 70	2840 x 2315 x 8	
2	1	DISHED END	A516 Gr 70	21 ELLIPSOIDAL x 12 (MIN.)	
1	1	PLATE	A516 Gr 70	2250 x 2680 x 16	

Contractor		Chematur Engineering AB, Sweden	
Project		Isocyanate Project, Phase 1 IDI Plant	
Title		Dept.366 CDC Recovery, Item S36617, ODCB Separator, V=2.0 m3	
Contractor Project No		8010014-3	
Scale		1:10	
Doc. Type		4.4 General Drawings	
Dwg. No.		EGD - S36617-01	
Issue		2	

2	Nov 20, 2002	First Issue Preliminary	KRV	42	Rec
Issue	Date	Description	Revised by	Check	Appr

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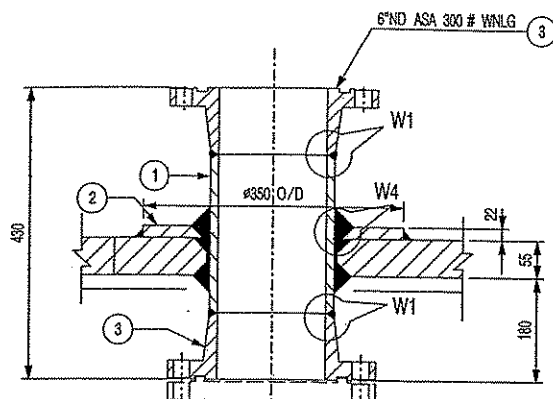
NOTICE

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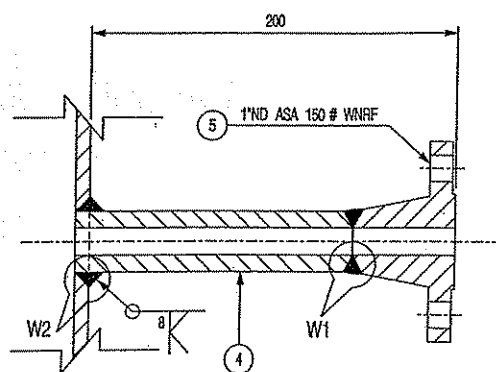
APPROVED FOR CONSTRUCTION

Sign: *[Signature]*

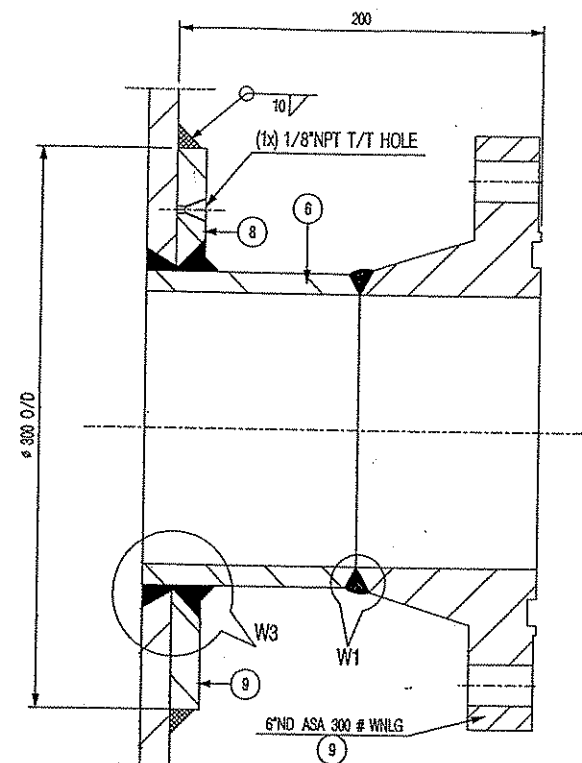
Date: 03.03.01



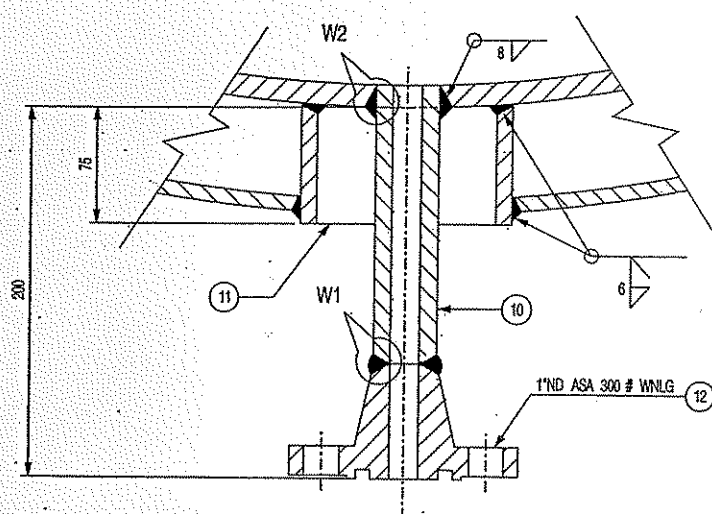
DETAIL OF NOZZLE MARK N01 (6"ND)



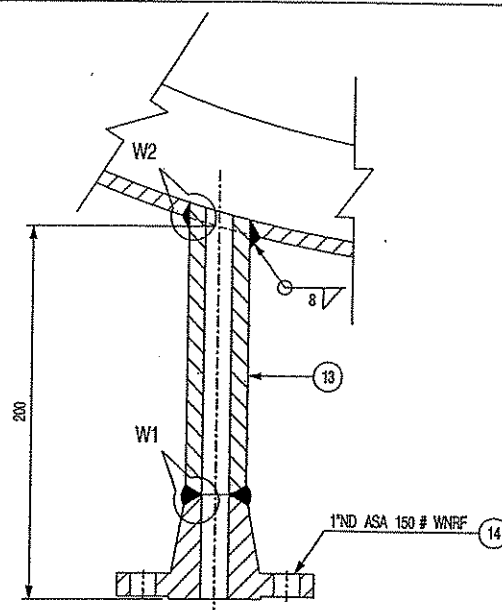
DETAIL OF NOZZLE MARK N02 (1"ND)



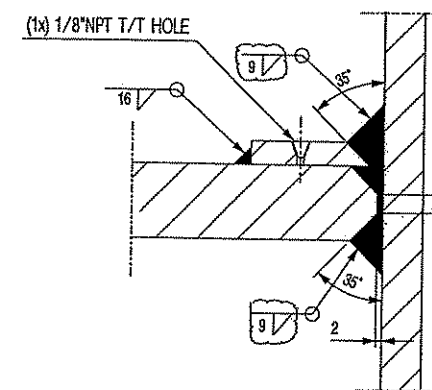
DETAIL OF NOZZLE MARK N03 (6"ND)



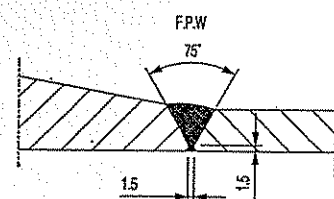
DETAIL OF NOZZLE MARK N04 (1"ND)



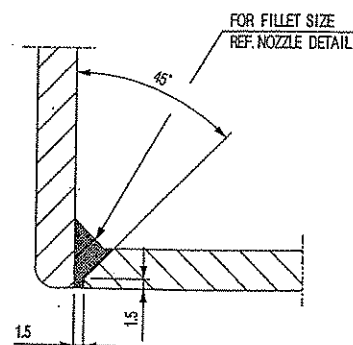
DETAIL OF NOZZLE MARK N05 (1"ND)



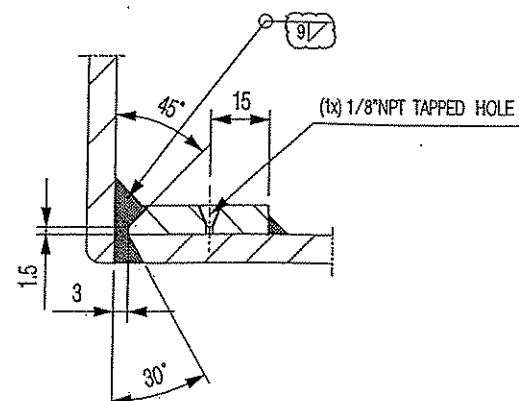
DETAIL - W4



DETAIL - W1



DETAIL - W2



DETAIL - W3

DNV
02-147574-36

NOTES :-

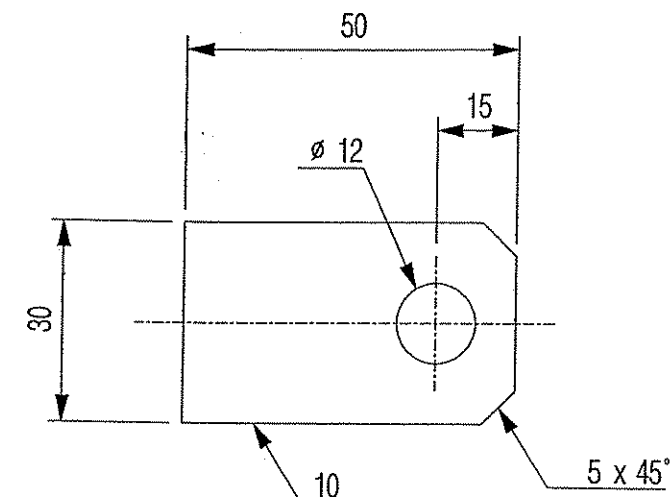
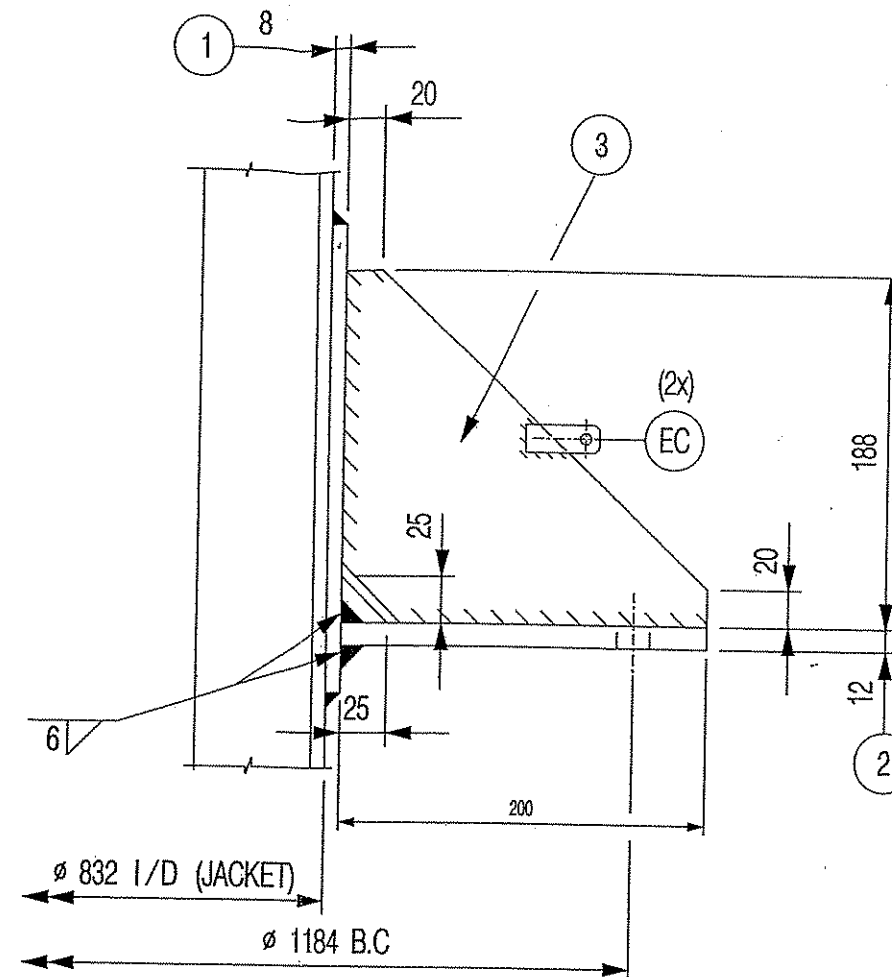
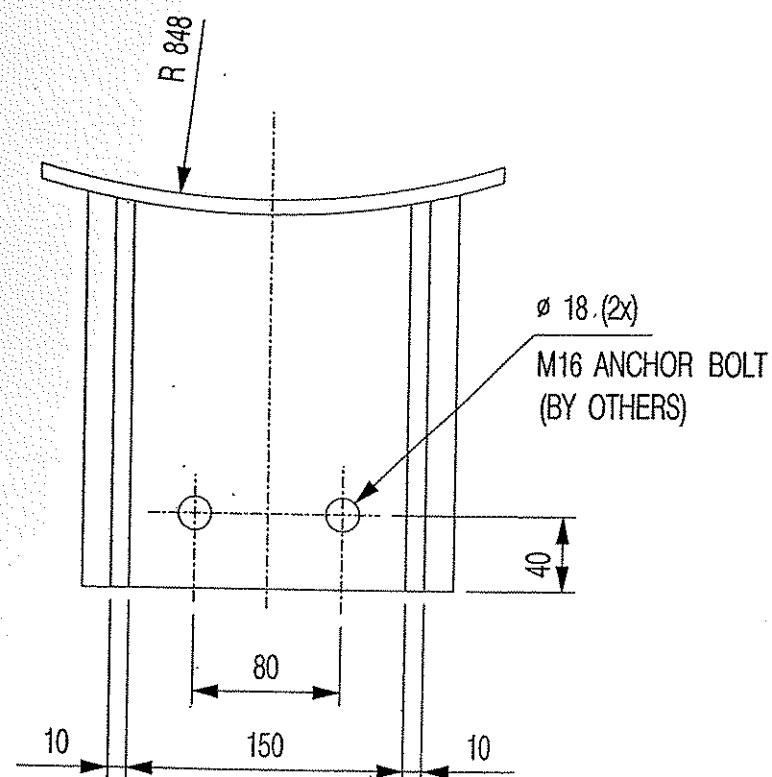
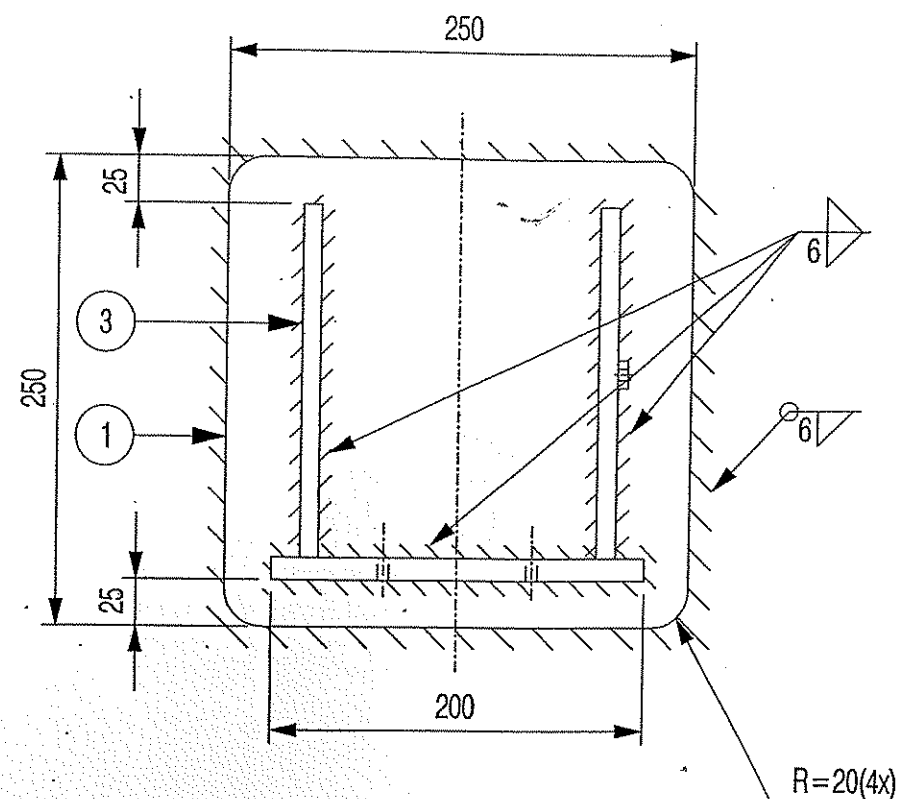
- 1) ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE STATED.
- 2) FOR GA REF. DRG. NO - EGD-S36617-01

WORKING ISSUE - MARCH 27, 2003

Item No.	Qty.	Title	Material	Size	Remarks
14	1	FLANGE	A105	1"ND ASA 150 # WNRF	Sch.XOS
13	1	PIPE	A106 Gr.B	1"ND x Sch.XOS x 145 LG.	-
12	1	FLANGE	A105	1"ND ASA 300 # WNLF	Sch.XOS
11	1	PIPE	A106 Gr.B	3"ND x Sch.80 x 75 LG.	-
10	1	PIPE	A106 Gr.B	1"ND x Sch.XOS x 140 LG.	-
9	1	FLANGE	A105	6"ND ASA 300 # WNLF	Sch.80
8	1	PLATE (PAD)	A516 Gr.70	300 O/D x 203 I/D X 16	-
7					
6	1	PIPE	A106 Gr.B	6"ND x Sch.80 x 105 LG.	-
5	1	FLANGE	A105	1"ND ASA 150 # WNRF	Sch.XOS
4	1	PIPE	A106 Gr.B	1"ND x Sch.XOS x 145 LG.	-
3	2	FLANGE	A105	6"ND ASA 300 # WNLF	Sch.80
2	1	PLATE (PAD)	A516 Gr.70	350 O/D x 171 I/D X 22	-
1	1	PIPE	A106 Gr.B	6"ND x Sch.80 x 255 LG.	-

Contractor	Chematur Engineering AB, Sweden
Project	Isocyanate Project, Phase 1 TDI Plant
Title	Dept.366 CDC Recovery, Item S36617, Detail of Nozzles
Contractor Project No	8010914-3
Scale	1:10
Doc. Type	4.4 Detail Drawings
Dwg. No.	EDD-S36617-02
Issue	2

Issue	2	Date	Nov 20, 2002	Description	First Issue Preliminary	Revised by	KRV	Check	Abi	Appr	Per
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DNV

02-147574-36

DETAIL OF EARTH CONN. (4)

NOTES :-

- 1) ALL DIMENSIONS ARE IN M.M. UNLESS OTHERWISE STATED.
- 2) FOR GA REF. DRG. NO - EGD-S36617-01

WORKING ISSUE - MARCH 27, 2003

Item No.	Qty.	Title	Material	Size	Remarks
4	2	PLATE	SS 304	50 x 30 x 10	-
3	4	PLATE (GUSSET)	A285 Gr. C	200 x 190 x 10	-
2	2	PLATE	A285 Gr. C	210 x 200 X 12	-
1	2	PLATE (PAD)	A516 Gr 70	250 x 250 x 8	-



National Petrochemical Company

Chematur
Engineering

Contractor	Chematur Engineering AB, Sweden				
Project	Isocyanate Project, Phase 1 TDI Plant				
Title	Dept.366 CDC Recovery, Item S36617, Detail of Support Bracket with Earthing Conn.				
Scale	1:8			Dwg.No.	Issue
Doc. Type	4.4 Detail Drawings			EDD - S36617 - 03	2

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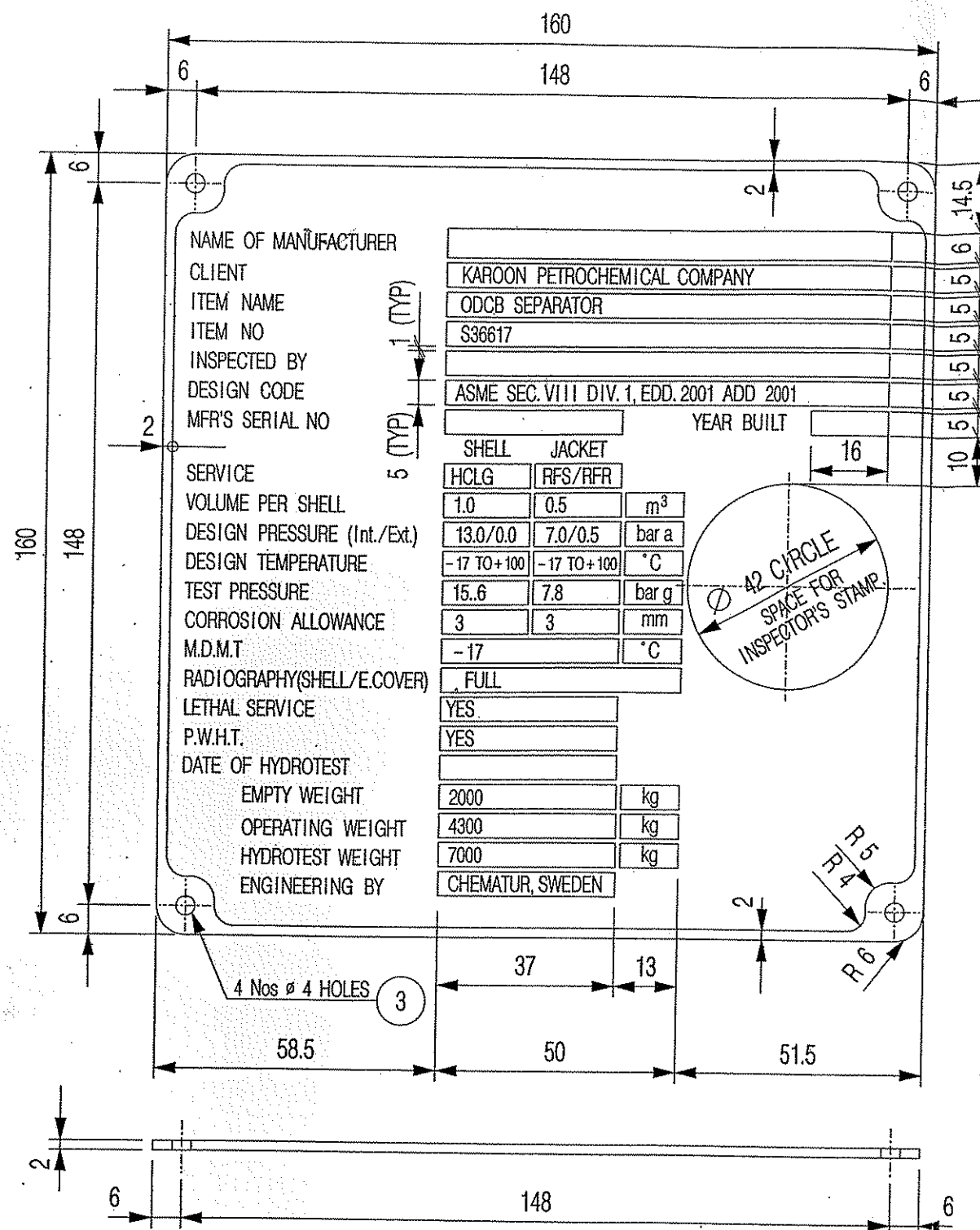
NOTICE

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APPROVED FOR CONSTRUCTION

Sign: AK
Date: 03.03.01

2	Nov 20, 2002	First Issue Preliminary	KRV	AK	Tek
Issue	Date	Description	Revised by	Check	Appr



NOTES :-

- 1) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
- 2) ALL DATA BLOCKS & LETTERS TO BE EMBOSSED ON 0.5 ON BLACK BACKGROUND.
- 3) ALL LETTERS & NUMBERS TO BE WRITTEN ON DATA BLOCKS MAY BE STAMPED
- 4) NAME PLATE & BRACKET WELDED TO SHELL, TO BE SUPPLIED BY VESSEL FABRICATOR.
- 5) FOR REF. GA. DWG. NO - EGD - S36617 - 01

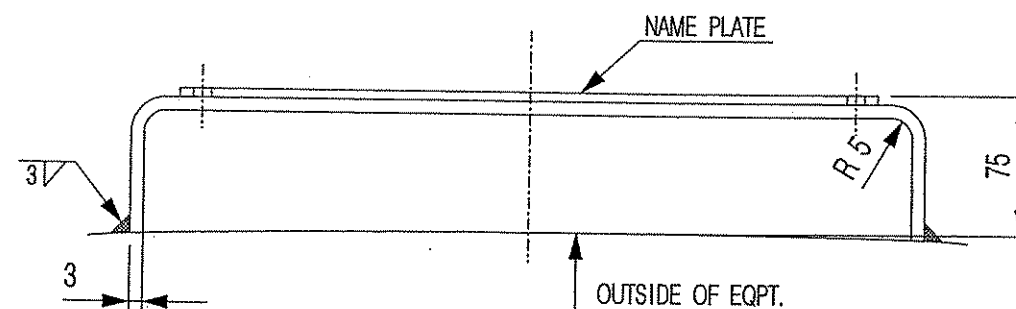
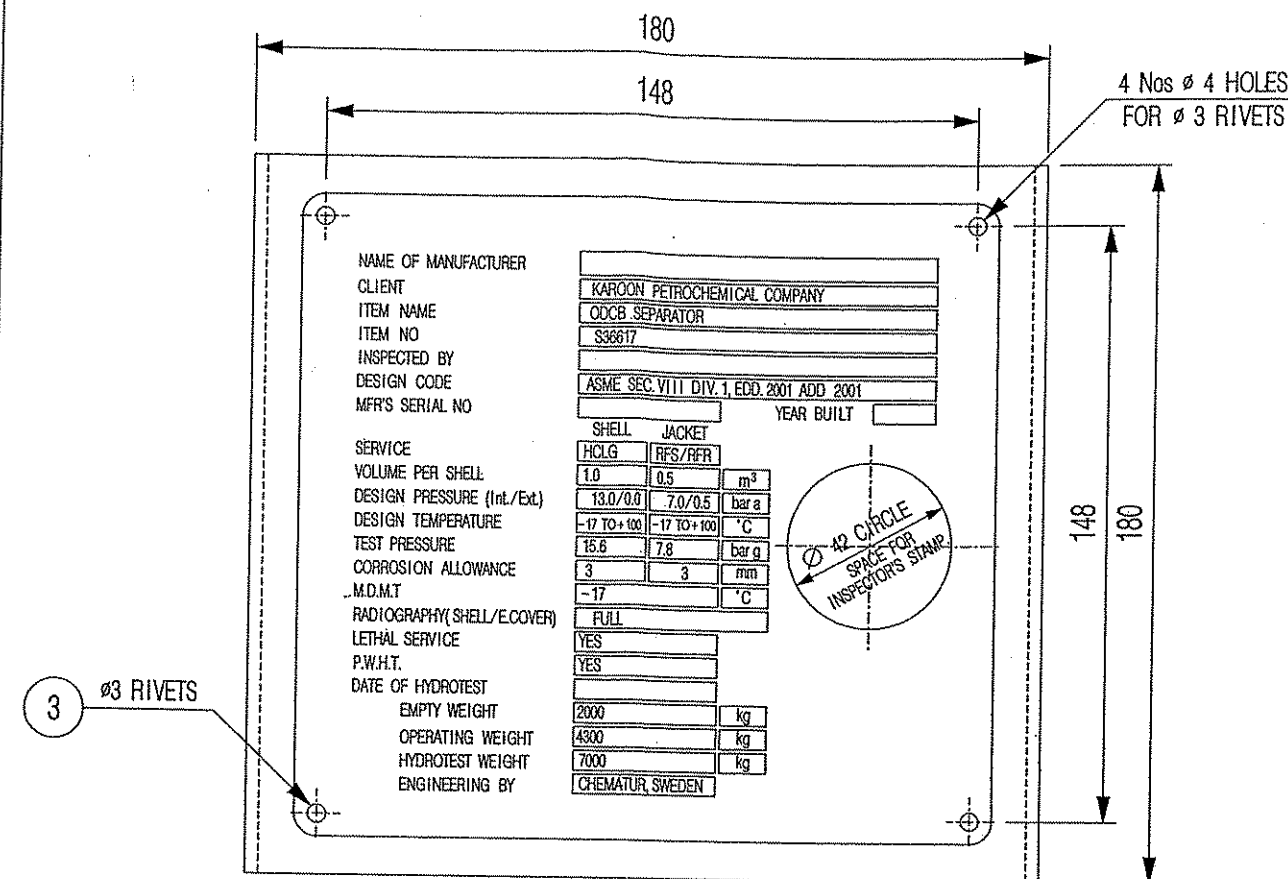
NOTICE

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APPROVED FOR CONSTRUCTION

Sign: Li
Date: 030331

Issue	Date	Description	Revised by	Check	Appr
2	Nov. 20, 2002	First Issue Preliminary	KRV	<u>Li</u>	<u>Pek</u>



DNV

NAME PLATE BRACKET (2)

02-147574-36

WORKING ISSUE - MARCH 27, 2003

Item No.	Qty.	Title	Material	Size	Remarks
3	4	RIVETS	ALUMINIUM	Ø 3 x 10 LG.	-
2	1	NAME PLATE BRACKET	A285 Gr.C	330 x 180 x 3	-
1	1	NAME PLATE	SS 304	160 x 160 x 2	-



National Petrochemical Company

Chematur Engineering



Contractor	Chematur Engineering AB, Sweden				
Project	Isocyanate Project, Phase 1 TDI Plant				
Title	Dept.366 CDC Recovery, Item S36617, Detail of Name Plate & bracket				
Scale	Contractor Project No 8010014-3				
1:1	Doc. Type 4.4 Detail Drawings				
Dwg.No.	EDD - S36617 - 04				Issue
					2

Monsanto Ghent

M O N S A N T O E N V I R O - C H E M

M I S T E L I M I N A T O R S

INSTALLATION AND MAINTENANCE INSTRUCTIONS

Compressed Gas Elements (Inverted Reverse Flow)

01.9.008

CUSTOMER P.O. : 331-01-10.831-025.

M.C.-B. : 02/BB/mme/00224A.

R. VAN EFFELTERRE

Ghent, December 1988

C O M P A N Y

C O N F I D E N T I A L

Description

Please refer to drawing details of the Monsanto element and tank housing.

The Monsanto element consists of a cylindrical fiber packed unit with a top inlet pipe having a mounting flange or a threaded end.

The process gas enters through this pipe and passes down and outward through the fiber bed. Entrained liquid is collected on the fibers and passes to the bottom of the element and drains into the tank sump. The cleaned gas, exiting the elements outer screen, flow to the exit nozzle.

The element is made in a repackable and a non-repackable model. See "Repacking and/or Replacement" for further details.

Installation

Proper installation of the element into the tank cover is important. The threaded end style should be wrapped with Teflon tape and carefully threaded into the tank cover so that it does not cross-thread. The flanged end style is drawn down snugly against the gasket using studs or caps screws as specified on the drawing for your installation. Either style required a gas tight seal because gas leakage at the inlet pipe will materially reduce the overall collection efficiency.

Before starting the plant, be sure that all dust and debris has been removed from the equipment and duct work.

Operation

Upon starting, the pressure drop across the Mist Eliminator should be checked. For some time the pressure drop will be lower than normal, i.e., until normal liquid holdup is reached in the fiber bed. The time required depends on the amount of mist present in the gas.

Operation of the Monsanto Mist Eliminator is simple and straightforward. Once the unit is "on line", it should be observed from time to time to see that performance is satisfactory. Pressure drop across the unit should be recorded periodically with gas throughput rates.

MONSANTO EUROPE NV
ENVIRO-CHEM SYSTEMS

Issue date : December 1988
Draw.nr. : 01.9.008
Page nr. : 1.4

INSTALLATION AND MAINTENANCE
INSTRUCTIONS FOR COMPRESSED GAS
ELEMENTS (INVERTED REVERSE FLOW)

If, during continuous operation, the pressure drop falls off appreciably, it may be due to leaks past the gasket surfaces, erosion of the fiber bed in one or more elements, or some factor outside the equipment itself.

On the other hand, if the pressure drop increases during operation, it is a sign that the fibers are becoming blinded. Such a condition can result from entrainment in the gas of solids, tars or any foreign material which is not being removed from the elements by natural irrigation. The maximum allowable pressure drop is 3 psi.

If the problem is an excessive reduction in pressure drop, check whether leakage of gases past the fiber beds is occurring. If so, the unit must be shut down for inspection and possible repair.

If the pressure drop increases, without leveling out at an acceptable value, the unit should probably be cleaned. This decision can be made only after inspection.

Maintenance

If a blinded element is suspected, it may be possible to clean the element in place by filling the tank with a solvent and then draining the solvent. Repeat this several times.

IN NO CASE SHOULD THE ELEMENT BE WASHED WITH A HIGH VELOCITY STREAM FROM A HOSE.

An alternate method is to lay the element in a trough. After thorough dilution of materials left in the element with the solvent, it should be rocked gently for a period to dislodge any solid particles adhering to the element surface. If water is used, a neutral detergent may be added. Care should be taken, if a flammable solvent is used, to prevent fire or explosion.

If an organic solvent is used which contains tars or a precipitable material such as tetraethyllead, this solvent should be subsequently washed out with sudsy water, using a neutral detergent.

If damage to the element is suspected, the element should be pulled out of the tank for internal inspection. The wet element weight will be much higher, of course, than the weight when installed dry.

MONSANTO EUROPE NV
ENVIRO-CHEM SYSTEMS

Issue date :	December 1988	INSTALLATION AND MAINTENANCE
Draw.nr. :	01.9.008	INSTRUCTIONS FOR COMPRESSED GAS
Page nr. :	2.4	ELEMENTS (INVERTED REVERSE FLOW)

After cleaning, the element should be drained for several hours before putting back into service.

Be sure when reinstalling the element to use a new gasket of the proper material or freshly applied Teflon tape on clean threads as appropriate.

Repacking and/or Replacement

Monsanto Mist Eliminator elements should be repacked, altered or changed by Enviro-Chem only. Return repackable elements in separate crates (similar to original) with freight prepaid and fiber removed, to our closest packing facility. Fiber is removed from the element at the end with retainer plate. This plate is removed by either rotating until the slots are in line with the lugs or by removing cap screws. The fiber can be removed more easily in three inch long donuts or increments.

Elements and purchase orders are sent to different locations. Return elements to the closest packing facility in the left-hand column below. Send correspondence and purchase orders for repacking or replacement elements to the address on the right and include our MC-B number.

M O N S A N T O E U R O P E N V ENVIRO-CHEM SYSTEMS
--

Issue date : December 1988	INSTALLATION AND MAINTENANCE
Draw.nr. : 01.9.008	INSTRUCTIONS FOR COMPRESSED GAS
Page nr. : 3.4	ELEMENTS (INVERTED REVERSE FLOW)



PROJECT 8010014-3
TDI PLANT
KAROON

TECHNICAL
DOCUMENTATION

Equipment Engineering

Section 4.4
Equipment Documentation

Mechanical Catalogues

File No 21.

Proprietary Equipment (PE)

Lot No 4.

S 09 (C37109, S36617,
X36617)
S 10 (C33101)
S 14 (C37201)

1	ITEM C33101, DEHYDRATION COLUMN
2	ITEM C37109, CDC VENT ABSORBER
3	ITEM S36617, ODCB SEPARATOR
4	ITEM X36617, ODCB SEPARATOR INTERNALS
5	ITEM C37201, TAR CONCENTRATOR
6	
7	NOTE! ITEM X33101, DEHYDR. COLUMN INTERNALS and ITEM X37109, CDC VENT ABSORBER INTERNALS See File 24.
8	
9	
10	
11	
12	

  	Isocyanate Project, Phase 1 TDI Plant Project No. 8010014-3. Equipment Engineering Documentation 4.4 Equipment Documentation	Ref 4.4 Explan.	Page No 1 (1)
		Date Jun 04, 2003	Created/Rev by Annn <i>[Signature]</i>
EXPLANATIONS TO EQUIPMENT DOCUMENTATION		Revision	Check <i>[Signature]</i> Appr <i>[Signature]</i>

Missing information

Missing information in enclosed "4.3.1 Equipment Specification Sheet": see other documentation included in file "4.4 Equipment Documentation".

Contradictory information

In case of contradictory information given in "4.3.1 Equipment Specification Sheet" and other documentation included in file "4.4 Equipment Documentation", other documentation included in file "4.4 Equipment Documentation" is valid.



**Chematur
Engineering**



Isocyanate Project, Phase 1 TDI Plant

PROJECT 8010014-3 TDI PLANT
Equipment Engineering Document
4.3.1 Equipment Specification

Ref
X 36617

Date
Oct 2, 2003

Revision

Page No
1(1)

Created/Rev by
Annn

Check

Appr

Acg

Peg

EQ. SPEC. - GENERAL

Item Name : **ODCB SEPARATOR INTERNALS**

Item No : **X36617**

Qty: **1**

Type : **Mist eliminator**

PID : **3-66-03**

Supplier :

Manufacturer : **Monsanto**

PFS :

PE

Manufacturing No : **--**

P.O. No : **4500892**

Building No:

340

Weight: Empty: kg Operating: kg Maximum: kg Weights are: ☐ Preliminary ☐ Final

Type: MME HE 15 x 84 I RF ASA FL6" 150#

Material: SS316 / Glass fibre

MISCELLANEOUS DATA

INSULATION ☐ Yes ☐ No

ANCHOR BOLT ☐ Yes ☐ No

Type: Thickness: mm

Type: Dimension:

Support included: ☐ Yes ☐ No

Quantity: Material:

ENCLOSURE

☐ ☐ ☐ Word Document

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Remarks

- Nitrogen is an inert in the CDC and TDI processes and leaves in the gaseous HCl.
- Hydrogen forms HCl in the CDC reactors, which is detrimental to reaction yield.
- Methane probably reacts with chlorine to form HCl and carbon tetrachloride and other chlorinated methanes.
- Water along with the chlorine and small amounts of HCl in the system results in accelerated corrosion.
- Sum of H_2 and equivalent H_2 from methane results in heat generation. Total equivalent H_2 shall be less than 0.6 % vol.
- If Argon is present in the carbon monoxide, the amount has to be specified.

Pressure & temperature

The carbon monoxide shall be delivered at battery limit with a pressure of 12 bar a min.

Temperature shall be ambient.

2.4 ORTHO DI CHLOR BENZENE (ODCB)

o-DCB	Min. 98 % wt.
Appearance	Clear water-white liquid
Colour	Max. 25 on APHA scale
Moisture	Max. 0.015 % wt.
Hydrolyzable chlorine	Max. equivalent to 0.75 ml of 0.1 normal silvernitrate solution per 100 ml of sample.
m-DCB + p-DCB	Max. 2 % wt.
Trichlorobenzene	Max. 0.1 % wt.

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FREE FLOAT[®] STEAM TRAP

MODEL JH8R-X/JH8R-B

FREE FLOAT STEAM TRAP WITH THERMOSTATIC AIR VENTING

Benefits

A reliable and durable cast steel steam trap for use on large-size process equipment. JH8R-B is also suitable for high-pressure process equipment.

1. Self-modulating free float provides continuous, smooth, low-velocity condensate discharge as process loads vary.
2. Constant water seal design ensures a steam-tight seal, even under low-load conditions.
3. Only one moving part, the free float, eliminates concentrated valve wear and provides long maintenance-free service life.
4. Rugged float construction with up to 1500 or 1600 psig* hydraulic shock rating ensures excellent resistance of the float to water hammer.
5. **JH8R-X:** Thermostatic capsule (X-element) with "fail open" feature vents air automatically at close-to-steam temperature.
6. **JH8R-B:** Thermostatic bimetal air vent valve vents air automatically for rapid startup.
7. Built-in screen with large surface area ensures extended trouble-free operation.

* Depending on orifice No.



Specifications

Model		JH8R-X	JH8R-B
Connection		Flanged	Flanged
Size (in)		2, 3	2, 3
Orifice No.		2, 5, 10, 14, 22, 32	40, 46
Maximum Operating Pressure (psig)	PMO	30, 75, 150, 200, 315, 450	600, 650
Maximum Differential Pressure (psi)	ΔPMX	30, 75, 150, 200, 315, 450	600, 650
Minimum Operating Pressure (psig)		Vacuum	1.5
Maximum Operating Temperature (°F)	TMO	464	800
Maximum Allowable Pressure (psig)	PMA	650	650
Maximum Allowable Temperature (°F)	TMA	800	800
Type of Air Vent		X-element (11 °F subcooling)	Bimetal (vents air up to approx. 212 °F)

Connections and sizes in bold are standard

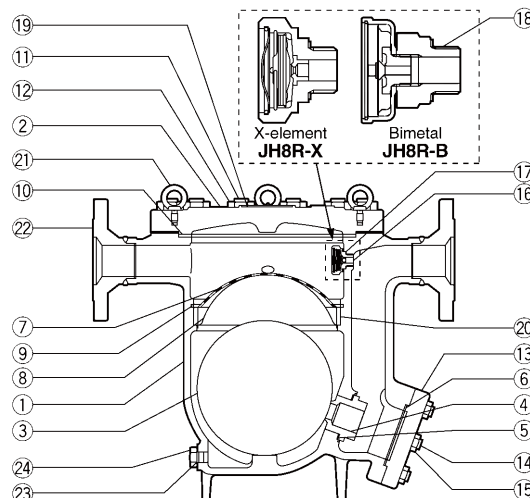
No.	Description		Material	ASTM/AISI*	JIS
①	Body		Cast Steel	A216 Gr.WCB	—
②	Cover		Carbon Steel	A105	—
③ ^F	Float		Stainless Steel	AISI316L	SUS316L
④ ^R	Orifice		—	—	—
⑤ ^{MR}	Orifice Gasket		Soft Iron	AISI1010	SUYP
⑥ ^{MR}	Outlet Cover Gasket		Graphite/Stainless Steel	— /AISI304	— /SUS304
⑦ ^R	Screen		Stainless Steel	AISI430	SUS430
⑧	Screen Holder		Stainless Steel	AISI304	SUS304
⑨	Snap Ring		Stainless Steel	AISI304	SUS304
⑩ ^{MR}	Cover Gasket		Graphite/Stainless Steel	— /AISI304	— /SUS304
⑪	Cover Bolt		Alloy Steel	A193 Gr.B16	SNB16
⑫	Cover Nut		Carbon Steel	AISI1045	S45C
⑬	Outlet Cover		Stainless Steel	AISI420	SUS420J2
⑭	Outlet Cover Bolt		Alloy Steel	A193 Gr.B16	SNB16
⑮	Outlet Cover Nut		Carbon Steel	AISI1045	S45C
⑯ ^X	X-element Air Vent Unit	JH8R-X	—	—	—
⑯ ^R	Bimetal Air Vent Unit	JH8R-B	—	—	—
⑰ ^{MRX}	Air Vent Unit Gasket		Soft Iron	AISI1010	SUYP
⑱ ^R	Air Vent Guide	JH8R-B	Stainless Steel	AISI303	SUS303
⑲	Nameplate		Stainless Steel	AISI304	SUS304
⑳	Screen Holder Retainer		Stainless Steel	AISI304	SUS304
㉑	Eye Bolt		Stainless Steel	A6	SS400
㉒	Flange		Cast Steel	A216 Gr.WCB	—
㉓ ^{MR}	Drain Plug Gasket		Soft Iron	AISI1010	SUYP
㉔	Drain Plug		Carbon Steel	AISI1025	S25C

* Equivalent

Replacement kits available: (M) maintenance parts, (R) repair parts, (F) float, (X) X-element unit

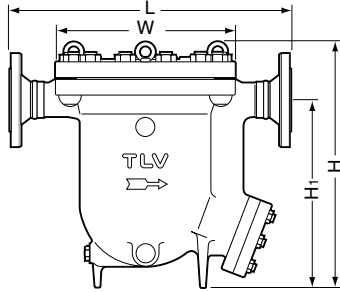


To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.



Dimensions

● JH8R-X/JH8R-B Flanged



JH8R-X/JH8R-B Flanged (in)

Size	L			H	H ₁	ϕW	Weight* (lb)
	Connects to ASME Class						
	150RF	300RF	600RF				
2	23 ¼	23 ½	24 ¼	20 ⅝	15 ¾	14 ¾	265
3	23 ⅙	23 ⅝	24 ⅝				287

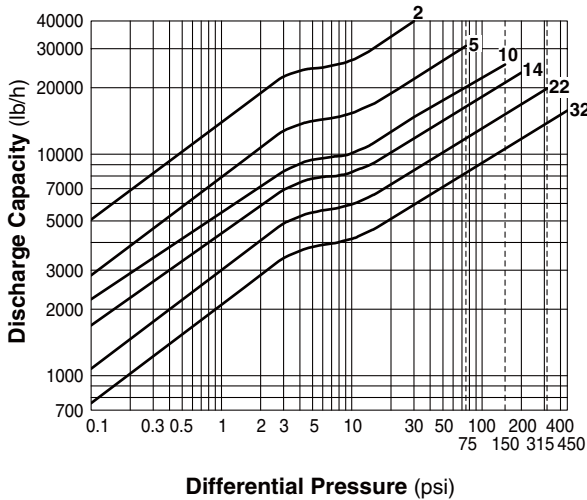
Other standards available, but length and weight may vary

* Weight is for Class 600 RF

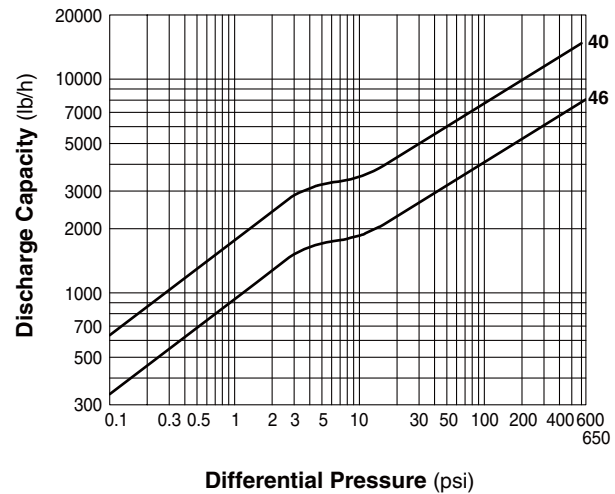
Flange classes in bold are standard

Discharge Capacity

● JH8R-X



● JH8R-B



1. Line numbers within the graph are orifice numbers.
2. Differential pressure is the difference between the inlet and outlet pressure of the trap.
3. Capacities are based on continuous discharge of condensate 11°F below saturated temperature.
4. Recommended safety factor: at least 1.5.



CAUTION

DO NOT use this product under conditions that exceed maximum differential pressure, as condensate backup will occur!



CAUTION

DO NOT DISASSEMBLE OR REMOVE THIS PRODUCT WHILE IT IS UNDER PRESSURE. Allow internal pressure of this product to equal atmospheric pressure and its surface to cool to room temperature before disassembling or removing. Failure to do so could cause burns or other injury. READ INSTRUCTION MANUAL CAREFULLY.

TLV CORPORATION

13901 South Lakes Drive, Charlotte, NC 28273-6790

Tel: 704-597-9070 Fax: 704-583-1610

E-mail: tlv@tlvengineering.com <https://www.tlv.com>

For Technical Service 1-800 "TLV TRAP"



Manufacturer

TLV CO., LTD.

Kakogawa, Japan

is approved by LRQA Ltd. to ISO 9001/14001

ISO 9001
ISO 14001



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Supply temperature amb.

2.7 **BUTYLHYDROXITOLUENE (BHT)**

Physical state Solid

~~2,6-di-tert-butyl-4-hydroxytoluene~~ Min. 97 wt%

Melting point 69-70°C

Moisture content 0.5% max

Ash content 0.1% max

2.8 **CATALYST**

Physical state unknown

Purity Min. 97 wt%

Water Max. 3 wt%

Oil Max. 5 wt ppm

Supply pressure atm

Supply temperature amb.

2.9 **CATALYST DE-ACTIVATOR**

Physical state unknown

Purity Min. 97 wt%

Water Max. 3 wt%

Oil Max. 5 wt ppm

Supply pressure atm

Supply temperature amb.

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Electronically checked, Approved

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2.5 **ANTIOXIDANT (TPP)**

Colour	Max. 50 on APHA scale
Free phenol	Max. 0.5 % wt.
Hydrolyzable chlorine	Max. 0.010 % wt.
Neutralisation number (mg KOH/g)	Max. 0.08

2.6 **SODIUM HYDROXIDE**

NaOH	Min. 48.5 % wt.
Na ₂ CO ₃	Max. 4000 ppm wt.
NaCl	Max. 15 ppm wt.
Fe	Max. 2 ppm wt.
Hg	Max. 0.05 ppm wt.
Water	Balance

2.7 **ACTIVATED CARBON (CDC PLANT)**

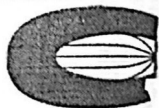
Activated coconut-shell carbon

Size	4x8 mesh preferred
	8x14 mesh acceptable
	6x16 mesh acceptable

Size is measured on the U.S Sieves Scale.

Moisture	Max. 1.0 % wt
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TECHNICAL DATA SHEET

Ammonium Persulfate

Product Description

C.A.S.	7727-54-0
Molecular formula	$(\text{NH}_4)_2\text{S}_2\text{O}_8$
Molecular weight, g/mol	228.18

Item, Unit	Typical
------------	---------

Purity, %	≥ 98.5
Heavy Metal, %	≤ 0.0005
Iron, %	≤ 0.0005
Manganese, %	≤ 0.00005
Residue after ignition, %	≤ 0.02
Free Acid, %	≤ 0.10
Active Oxygen, %	≥ 6.9
Moisture, %	≤ 0.10



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2.8 ACTIVATED CARBON (HCL PURIFICATION)

Granular coconut shell based activated carbon, AquaSorb™HS

Size	20 x 50 US Sieve Scale
CTC (Carbon tetrachloride) activity	60 %
Butane activity	23 %
Surface area	1 150 m ² /g (BETN ₂)
Iodine number	1 100 mg/g
Total pore volume	0.68 cm ³ /g
Apparent density	480 kg/m ³
Density- backwashed and drained	420 kg/m ³
Moisture	Max. 6 %
Ash content	Max. 0.5 %
Ball- pen hardness number	99 %
pH aqueous extract	6
Water soluble matter	0.05 %

2.9 POLYMERIC ADSORBENT (HCL PURIFICATION)

Bonopore® 1120

Dowex Optipore V493

Dowex Optipore V323

or equivalent

Appearance: light yellow to orange - brown beads

Average bead size: 0.3 - 0.8 mm

Bulk density: 300 - 400 kg/m

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Technical Data Sheet

SODIUM HYDROSULFITE

Chemical Composition	: $\text{Na}_2\text{S}_2\text{O}_4$
CAS Regn. No.	: 7775-14-6
Appearance	: White, Crystalline Powder
Specifications	
Sodium Dithionite $\text{Na}_2\text{S}_2\text{O}_4$	: 88 Minimum
Sodium Thiosulfate $\text{Na}_2\text{S}_2\text{O}_3$	: 1.2 % Max
Sodium Bisulfite $\text{Na}_2\text{S}_2\text{O}_5$	: 4 – 6 %
Bulk Density	: 750 – 900 g/L
pH-Value (23° C. 250 g/l in des. Water)	: 5.5 to 8.5
Solubility (20° C. 250 g/l in des. Water)	: Clear
Packaging	: 220 Lb. Drum 110 Lb. Drum 4000 Lb. Totes
Handling & Safety	: Please refer to the MSDS before using this material. Sodium Hydrosulfite is intended for industrial use only.
Common Uses	: Reducing Agent for various applications

The information contained in this technical data sheet is for informational purposes only and does not constitute a contract. The user assumes all responsibility for the proper use of the product. The manufacturer shall not be liable for any damages or losses arising from the use of the product, whether or not such damages or losses could have been reasonably foreseen. The manufacturer's sole remedy and Seller's sole liability shall be the replacement of the product or a refund of the purchase price.

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2.4 SURFACTANT(TTN)

Trade mark: Triton X-100

Cloud point of 1 % aqueous solution 65 °C

Hydroxyl number 90.0 ± 4.0

pH 6.5 ± 1.5

Ash Max. 0.10 %

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