

2.6

Rotor assembled



Protokoll Materialnachweis
Record of material identification
Proès verbal d'identification du matériau

Nr.: **RR 001064**

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Page 1 of 3 Pages

014
014

FAUF-Nr. Fabr.Order No. No.de com.de fabr.	3071810	Mat. Nr. Mat. No. No. de mat.	10102645
Bezeichnung Item Part.	Rotor komp.	Zchg. Nr./Index Drg. No./Index No. du dessin/Index	837 017 052 / 201
Proj. Nr. Proj. No. No. de proj.	N. 7100175.15.R	Werkstoff Material Matériau	1.6582 + QT
Kennwort Plant Installation	Kosair 2004	Kd-Auftrag Nr. Cust. Order No. No. d'ordre d. client	-----

Spezifikation
Specification
Spécification **Gemäss Zeichnung**

Gegenstand / Object / Objet						WP Nr. Ident No. Charge No.	Zchg. Nr. Drg. No. No. du dessin
Rotor						48874	837 017 052 / 201
Welle / Shaft / Arbre							
Ausgleichskolben / Dummy piston / Piston d'équilibrage							
Kupplung / Coupling / Accouplement ES							
Kupplung / Coupling / Accouplement AS							
Rad / Stufe Wheel / Stage Roue / Etage	gefräst milled fraisée	genietet riveted rivetée	geschweisst welded soudée	gelötet brazed brasée			
1	☐	☐	☒	☐	N	48859	837 016 347 / 001
					D	48860	
2	☐	☐	☒	☐	N	48861	837 016 348 „ B „
					D	48862	
3	☐	☐	☒	☐	N	48863	837 016 349 „ A „
					D	48864	
4	☐	☐	☒	☐	N	48858	837 016 350 „ A „
					D	48857	
5	☐	☐	☐	☐	N		
					D		
6	☐	☐	☐	☐	N		
					D		
7	☐	☐	☐	☐	N		
					D		
8	☐	☐	☐	☐	N		
					D		
9	☐	☐	☐	☐	N		
					D		
10	☐	☐	☐	☐	N		
					D		

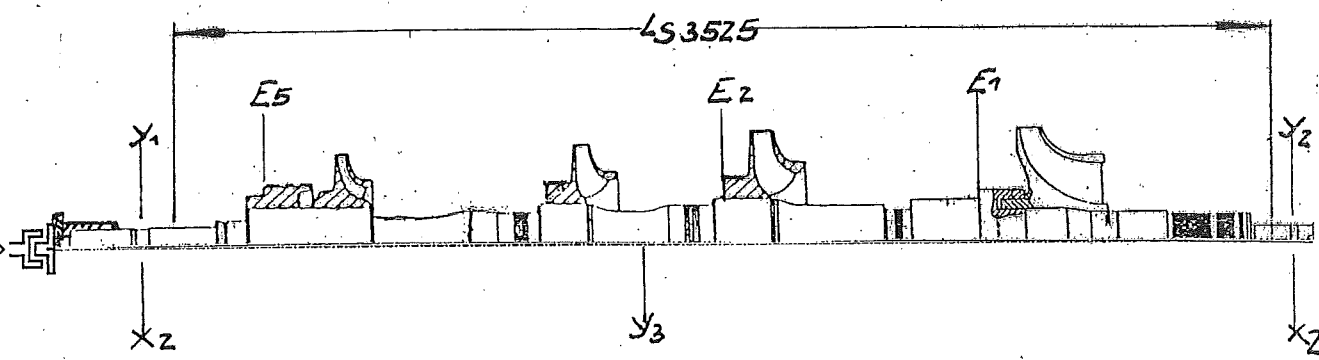
ES: Eintrittsseite / Inlet side / Côté d'entrée

AS: Austrittsseite / Discharge side / Côté de refoulement

N: Nabenscheibe / Hub disc / Disque moyen

D: Deckscheibe / Cover disc / Disque de couverture

Prüfstelle / Inspection	Abnahme durch / Authorized inspection	MAN Turbomaschinen AG Schweiz QS / QA / AQ
Ko. St./Sect.No. B-353	Gesellschaft/Agency/Société	Ko.St. / Sect. 014
Name/Nom Th. Morger	Unterschrift/Signature	Name/Nom H. Morger
Datum/Date 27. April 2005	Datum/Date	Datum/Date 29. 04. 2005

Ver- teiler			Protokoll hochtouriges Auswuchten Record of high speed balancing Procès verbal d'équilibrage à haute vitesse		Nr.: 142691			
014 Or					Seite 1. von 17 Page of/de 17 Pages			
014 355 733 Client 1x	FAUF Nr. Order No. No. D'ordre		3071810		Mat. Nr. Mat. No. No. de mat.		10102645	
	Bezeichnung Item Part.		Rotor, Type: RIK 80-4		Zchg. Nr./Index Drg. No./Index No. du dessin/Index		0-837017052	
	Proj. Nr. Proj. No. No. De proj.		N.7100175.15.R		Kd-Auftrag Nr. Cust. Order No. No. d'ordre d. client		/	
	Kennwort Plant Installation		Kosair 2005		Rotor No.		48'874	
	Annahmestandard Acceptance criteria Acceptance standard		Rotor Data Sheet No. 837 019 979					
Auswuchtmaschine Balancing machine Equilibreuse								
			CARL SCHENCK AG		Type DH 4 / DH 50			
Auswucht-Lagerbock Balancing-bearing pedestal Support paliers à l'équilibreuse			Steifigkeit Stiffness Rigidité		☐ DH 4	I	C = 870	N/ μ m
					☒ DH 50	II	C = 1800	
Auswucht-Lager Balancing-bearing Paliers à l'équilibreuse			☒ Original / Job / Originale ☐ Wuchtmaschine / Balancing mach. / Equilibreuse			$\Psi_{eff} \%$	H' ① 1,80 ② 1,82 V 1,79 1,84	
Messstellen / Measuring points / Points de mesure (Skizze / Sketch / Croquis)								
M1 M2 								
Prüfstelle Inspection / Examination			Abnahme durch / Authorized inspection / Contrôle par			MAN Turbomaschinen AG Schweiz QS / QA / AQ		
Ko. St./Sect.No. B355			Gesellschaft/Agency/Société AIB-UNICOR INTERNATIONAL			Ko. St. / Sect. 014		
Name/Nom Emil Chodet			Unterschrift/Signature			Name/Nom H. Prokin		
Datum/Date 25. April 05			Datum/Date 25.04.2005			Datum/Date 25.04.2005		



Protokoll hochtouriges Auswuchten
Record of high speed balancing
Procès verbal d'équilibrage à haute vitesse

Nr.: 142 691

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Messwerte / Measured values / Valeurs mesuré

Drehzahl/Speed/Vitesse		$n_{k1 \text{ eff}}$		$n_{k2 \text{ eff}}$		n_B		$n_{\min}$		n_{100}		$n_{\max}$		n_T		$N_R *$	
min ⁻¹		16 50								7264						7990	
Steifigkeit/Stiffness/Rigidité		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II
Schwingungen / Vibration level / Vibrations 	Lagerbock Brg. Ped. Supp. pal.	V _{eff} [mm/s]	M1	0,04						0,03						0,53	
			M2	0,05						0,10						0,67	
				2.8						1.8						*	
	Welle beim Lager Shaft at bearing Arbre au palier	A [μm]	X ₁							7						10	
			Y ₁							8						10	
			X ₂							7						18	
			Y ₂							6						17	
										25.4						*	
	Midspan		Y ₃	40													
				50.8													

Niedertourige Restunwucht / Low speed residual unbalance / Balourd résiduel basse vitesse

Drehzahl / Speed / Vitesse [min ⁻¹]		800		800		800	
Unwucht / Unbalance / Balourd		G (M1)	gmm (M1)	G (M2)	gmm (M2)	G _{tot}	gmm _{tot}
Werte / Values	gemessen/measured/mesuré	0,35	1070	0,56	1700	0,91	2770
Valeurs							



= Zulässige Werte / Permissible values / Valeurs permmissibles

*

= Werte vor dem Wuchten / Values before balancing / Valeurs avant l'équilibrage

Befund - Conclusion



Werte entsprechen dem Annahmestandard / Values according to acceptance criteria / Valeurs suivant le standard



Prüfstelle Inspection / Examination		Abnahme durch / Authorized Inspection / Contrôle par		MAN Turbomaschinen AG Schweiz QS / QA / AQ	
Ko. St./Sect.No.	B355	Gesellschaft/Agency/Société	AO INTERN.	Ko. St. / Sect.	014
Name/Nom	Ernst Wöhr	Unterschrift/Signature		Name/Nom	H. Probst
Datum/Date	25.04.2005	Datum/Date	25.04.2005	Datum/Date	25.04.2005



Protokoll hochtouriges Auswuchten
Record of high speed balancing
Procès verbal d'équilibrage à haute vitesse

Nr.: 142691

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Page of/de 17 Pages

Korrektur / Correction

Von Antriebsseite gesehen!
Siehe Skizze 1. Seite!

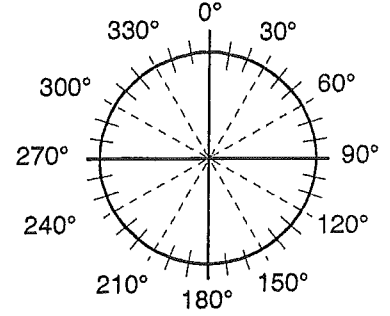
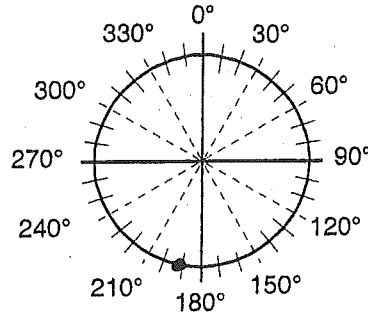
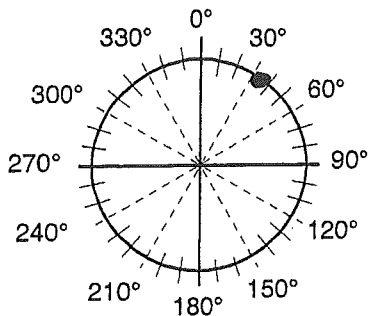
View from drive end!
See sketch 1st. page!

Vue du coté de l'entraînement!
Voyez croquis 1 e. page!

*E 1 = Impeller 1

E 2 = Impeller 2

E 3 = Impeller 3



Radius
Radius
Rayon
188,5 mm

Radius
Radius
Rayon
170 mm

Radius
Radius
Rayon
166 mm

Gewicht
Weight
Poids
28.72g/36°

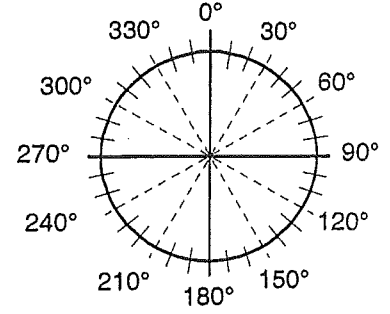
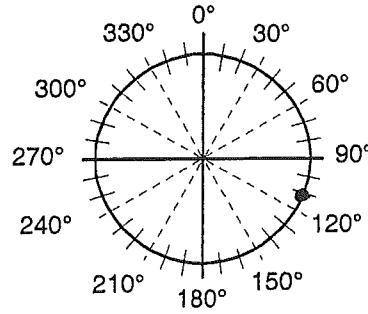
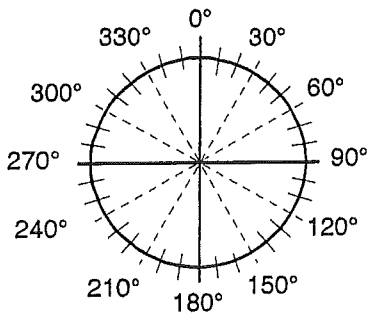
Gewicht
Weight
Poids
15.27g/192°

Gewicht
Weight
Poids
/

E 4 =

E 5 = Piston

E 6 =



Radius
Radius
Rayon
mm

Radius
Radius
Rayon
188,5 mm

Radius
Radius
Rayon
mm

Gewicht
Weight
Poids

Gewicht
Weight
Poids
12,01g/112°

Gewicht
Weight
Poids

Bemerkungen
Remarks
Remarques

* E 1 = Wuchtebene / Balancing plane / Plan d'équilibrage

Prüfstelle
Inspection / Examination

Abnahme durch / Authorized inspection / Contrôle par

MAN Turbomaschinen AG Schweiz
QS / QA / AQ

Ko. St./Sect.No. B 355

Gesellschaft/Agency/Société AU. INTERN.

Ko. St. / Sect. 0140

Name/Nom Enis Ullrich

Unterschrift/Signature

Name/Nom H. Thöni

Datum/Date 25.04.2005

Datum/Date

Datum/Date 25.04.2005



Protokoll hohtouriges Auswuchten
Record of high speed balancing
Procès verbal d'équilibrage à haute vitesse

Nr.: 142 691

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Rechner Ergebnisse / Computer results / Résultats d'ordinateur



Auswucht Protokoll

Schenck RoTec GmbH

25.04.05

CABFLEX++

10:54:58

Maschine:
Rotordatenfile:

DH50 ab 500
142691

Mess - Ergebnisse

Messlauf: Final run to Relaxation speed 7990 rpm

Messzeit: 2005-04-25 10:40

Signalwerte

		DH50/1 Ständer 1		DH50/2 Ständer 2		F1 Stän der 1	F2 Stän der 2
Drehzah l [1/min]	Zeit [s]	Betrag [mm/s rms]	Winke l [°]	Betrag [mm/s rms]	Winke l [°]	Betrag [µm]	Betrag [µm]
1500	86.0	0.003116	246	0.005221	213	0.10	0.10
1700	138.0	0.04013	293	0.04187	292	0.40	0.40
4500	318.0	0.03718	356	0.04094	245	0.20	0.20
5000	401.0	0.05238	29	0.09919	252	0.20	0.30
5500	477.0	0.08843	181	0.1580	333	0.40	0.41
6500	569.0	0.01718	280	0.06213	267	0.10	0.20
7000	636.1	0.01818	276	0.08861	254	0.20	0.30
7264	709.1	0.03080	259	0.1053	251	0.76	0.40
7990	830.0	0.3730	233	0.3823	224	1.18	0.89

Prüfstelle
Inspection / Examination

Abnahme durch / Authorized inspection / Contrôle par

MAN Turbomaschinen AG Schweiz
QS / QA / AQ

Ko. St./Sect.No. 3355

Gesellschaft/Agency/Société

AN INTERN.

Ko.St. / Sect.

Name/Nom *Emi Wör*

Unterschrift/Signature

Name/Nom

Datum/Date 25.04.2005

Datum/Date

Datum/Date

H. Thokun Ro
25.04.2005



Protokoll hochtouriges Auswuchten
Record of high speed balancing
Procès verbal d'équilibrage à haute vitesse

Nr.: 142 691

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Page of/de 17 Seiten Pages

Rechner Ergebnisse / Computer results / Résultats d'ordinateur



Auswucht Protokoll

Schenck RoTec GmbH

25.04.05

CABFLEX++

11:15:30

Maschine:
Rotordatenfile:

DH50 ab 500
142691

Mess - Ergebnisse

Messlauf: Final run with inspector
Messzeit: 2005-04-25 11:04

Signalwerte

		DH50/1 Ständer 1		DH50/2 Ständer 2		F1 Stän der 1	F2 Stän der 2
Drehzah l [1/min]	Zeit [s]	Betrag [mm/s rms]	Winke l [°]	Betrag [mm/s rms]	Winke l [°]	Betrag [µm]	Betrag [µm]
1500	75.9	0.002847	1	0.005521	90	0.10	0.10
1700	123.1	0.04334	221	0.05328	216	0.40	0.50
4500	307.5	0.03140	358	0.05140	251	0.20	0.20
5000	374.7	0.05095	64	0.1218	267	0.20	0.38
5500	435.2	0.1236	203	0.1652	357	0.40	0.48
6500	519.8	0.02936	299	0.04716	256	0.10	0.20
7000	579.8	0.02016	315	0.07788	246	0.10	0.20
7264	635.0	0.02690	302	0.09817	244	0.50	0.35

Prüfstelle
Inspection / Examination

Abnahme durch / Authorized inspection / Contrôle par

MAN Turbomaschinen AG Schweiz
QS / QA / AQ

Ko. St./Sect.No. B355

Name/Nom E. Unger

Datum/Date 25.04.2005

Gesellschaft/Agency/Société

Unterschrift/Signature

Datum/Date

Ko. St. / Sect.

Name/Nom

Datum/Date



Rechner Ergebnisse / Computer results / Résultats d'ordinateur



Auswucht Protokoll

Schenck RoTec GmbH

25.04.05

CABFLEX++

12:07:41

Maschine:
Rotordatenfile:

DH50 ab 500
142691

Mess - Ergebnisse

Angesetzte Gewichte			
Ebene	Betrag	Winkel	Radius
Rad 2	47.98 g	270.0 °	170.000 mm

Messlauf: Sensitivity test 8157 gmm at impeller 2
Messzeit: 2005-04-25 11:57

Signalwerte

		DH50/1 Ständer 1		DH50/2 Ständer 2		F1 Stän der 1	F2 Stän der 2
Drehzah l [1/min]	Zeit [s]	Betrag [mm/s rms]	Winke l [°]	Betrag [mm/s rms]	Winke l [°]	Betrag [µm]	Betrag [µm]
1500	23.0	0.02910	101	0.03824	104	0.40	0.40
1700	64.0	0.2309	233	0.2760	232	2.07	2.38
4500	241.0	0.06268	300	0.1244	279	0.30	0.40
5000	329.7	0.02570	250	0.2397	292	0.10	0.70
5500	399.0	0.2940	248	0.2353	9	0.80	0.65
6500	493.0	0.2669	292	0.1750	276	0.60	0.47
7000	552.1	0.3235	292	0.2578	275	0.70	0.60
7264	594.9	0.3687	292	0.3066	275	1.32	0.70

Prüfstelle
Inspection / Examination

Abnahme durch / Authorized inspection / Contrôle par

MAN Turbomaschinen AG Schweiz
QS / QA / AQ

Ko. St./Sect.No.

Name/Nom

Datum/Date

3355

Emil Moor

25.04.2005

Gesellschaft/Agency/Société

Unterschrift/Signature

Datum/Date

AV. INTERN.

25/04/2005

Ko.St. / Sect.

Name/Nom

Datum/Date

014

H. Hecker

25.04.2005



Rechner Ergebnisse / Computer results / Résultats d'ordinateur



Auswucht Protokoll

Schenck RoTec GmbH

25.04.05

CABFLEX++

13:34:58

Maschine:
Rotordatenfile:

DH50 ab 500
142691

Mess - Ergebnisse

Angesetzte Gewichte

Ebene	Betrag	Winkel	Radius
Kolben	21.58 g	10.0 °	188.500 mm
Rad 1	21.57 g	190.0 °	188.500 mm

Messlauf: Sensitivity test 2 x 4067 gmm at piston and
impeller 1 180° opposite
Messzeit: 2005-04-25 13:21

Signalwerte

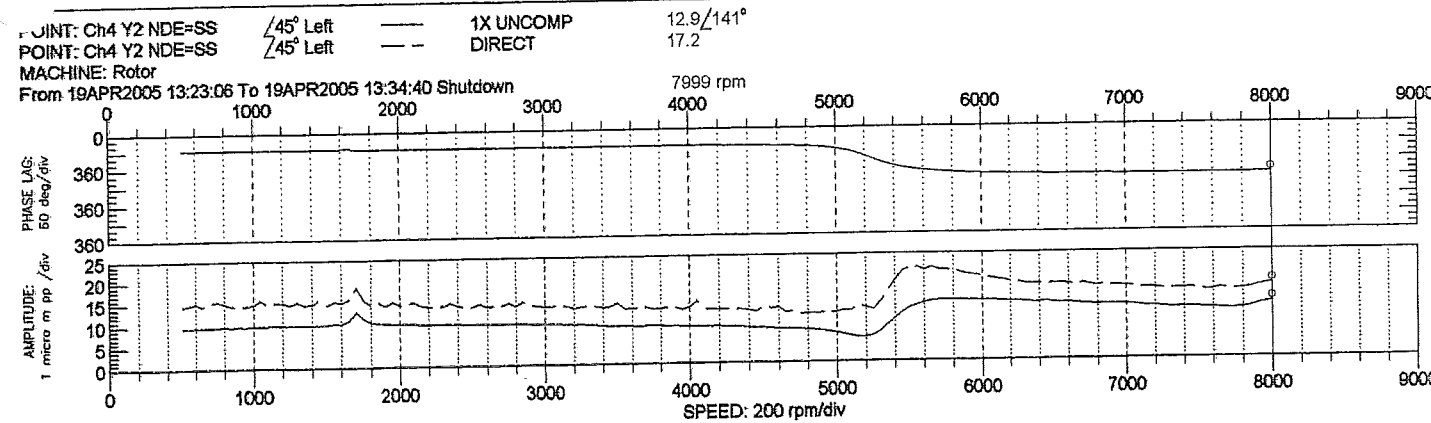
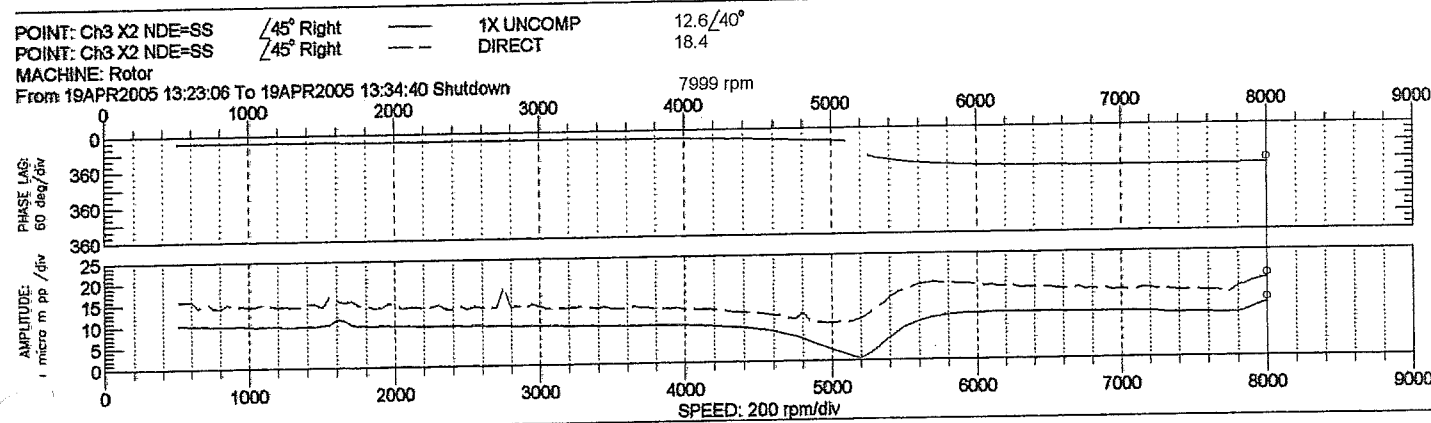
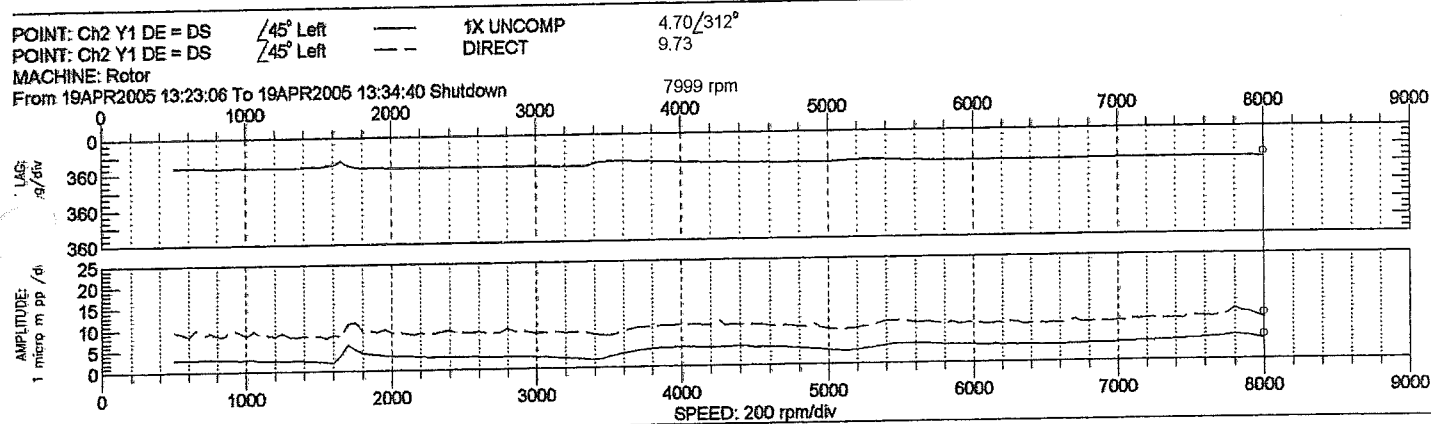
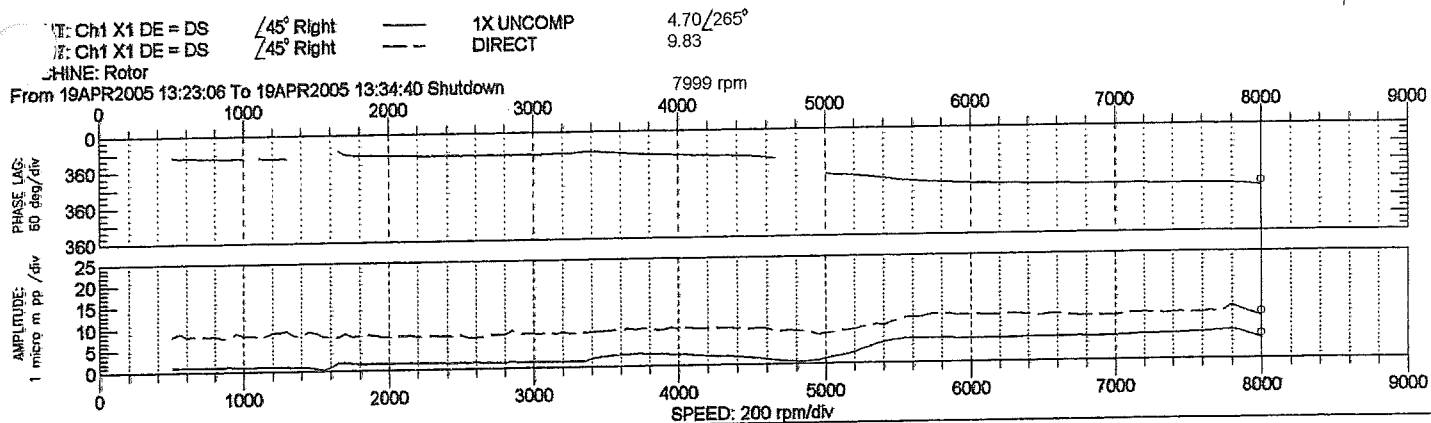
		DH50/1 Ständer 1		DH50/2 Ständer 2		F1 Stän der 1	F2 Stän der 2
Drehzah 1 [1/min]	Zeit [s]	Betrag [mm/s rms]	Winke 1 [°]	Betrag [mm/s rms]	Winke 1 [°]	Betrag [µm]	Betrag [µm]
1500	82.0	0.005763	272	0.007808	339	0.10	0.10
1700	127.0	0.01788	139	0.02380	108	0.28	0.30
4500	320.0	0.2682	216	0.1868	26	0.90	0.60
5000	404.7	0.6667	230	0.6455	52	2.00	1.90
5500	478.0	1.088	310	1.454	145	3.24	3.89
6500	576.0	0.1272	327	0.6344	206	0.40	1.40
7000	678.0	0.1219	256	0.6217	211	0.30	1.30
7264	727.1	0.1832	236	0.6450	212	1.03	1.40

Prüfstelle Inspection / Examination	Abnahme durch / Authorized inspection / Contrôle par	MAN Turbomaschinen AG Schweiz QS / QA / AQ
Ko. St./Sect.No. B 355 Name/Nom E. Weber Datum/Date 25.04.2005	Gesellschaft/Agency/Société W. INTERN. Unterschrift/Signature [Signature] Datum/Date 25.04.2005	Ko.St. / Sect. 014 Name/Nom H. Mohr Datum/Date 25.04.2005

BODE PLOT
 COMPANY: MAN TURBO AG
 MACHINE TRAIN: RIK 80 - 4 CCW

PLOT NO. _____
 PLANT: Highspeed Balancing
 JOB REFERENCE: Kosair 2004

8/17



COMMENTS

Kosair 2004
 Rotor RIK 80 - 4 No. 48/874
 Relaxation run
 Erich Moser + Alfred Kull
 QIN: Helmut Skotnitzka

MAN 10

25.04.2005
 BENTLY
 NEVADA

TREND PLOT
COMPANY: MAN TURBO AG
MACHINE TRAIN: RIK 80 - 4 CCW

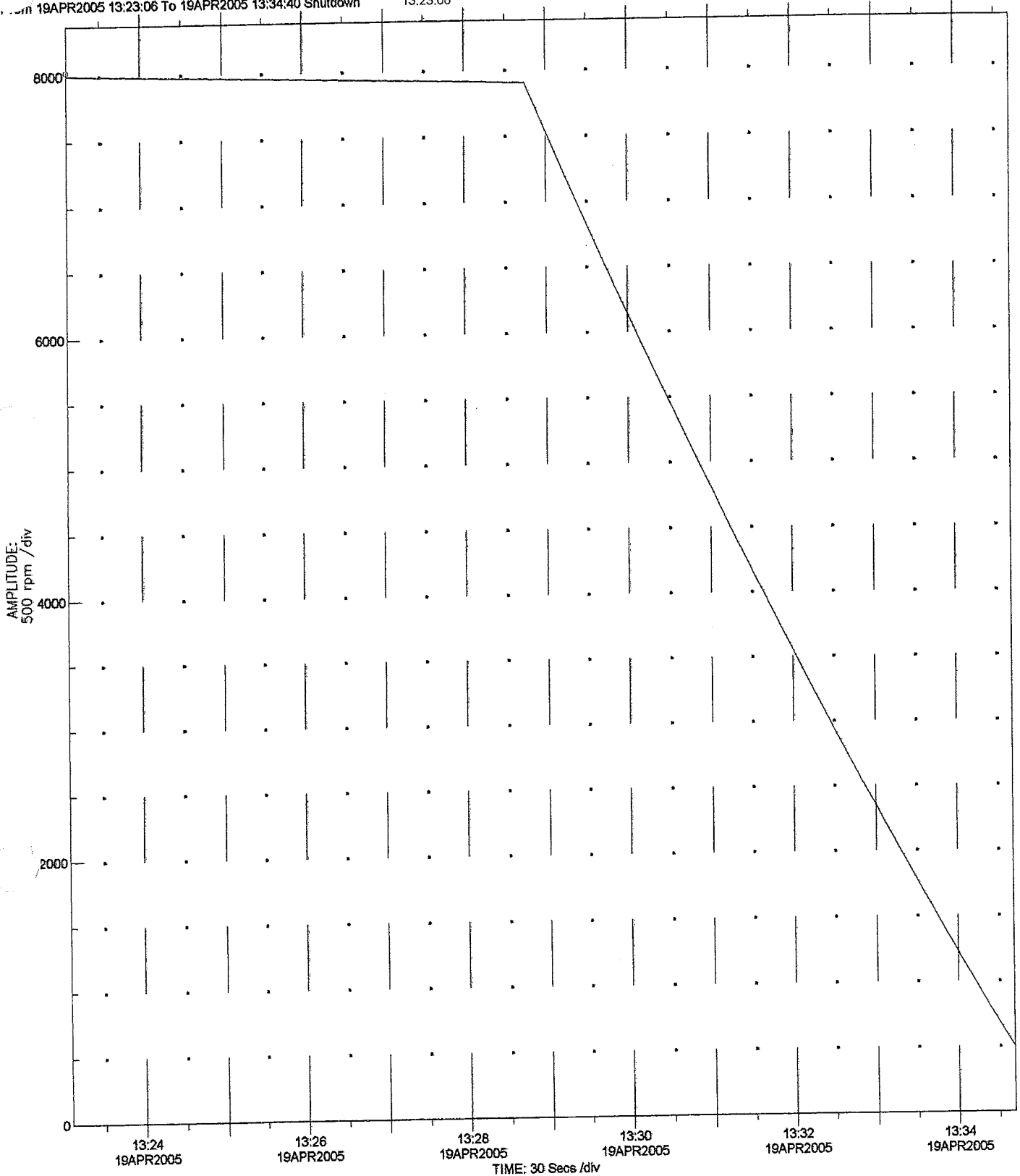


PLOT NO. _____
PLANT: Highspeed Balancing
JOB REFERENCE: Kosair 2004

9/17

T: Ch1 X1 DE = DS /45° Right RPM
LINE: Rotor
Run 19APR2005 13:23:06 To 19APR2005 13:34:40 Shutdown

7999 rpm
19APR2005
13:23:06



COMMENTS

Kosair 2004
Rotor RIK 80 - 4 No. 48'874
Relaxation run
Erich Moser + Alfred Kull
QIN: Hellmut Skotnitzka

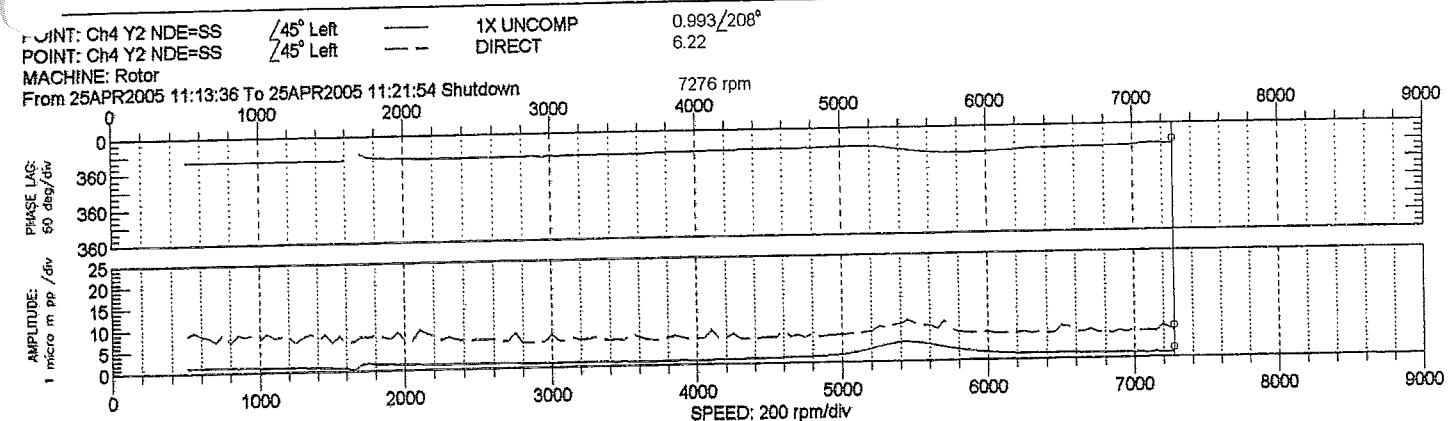
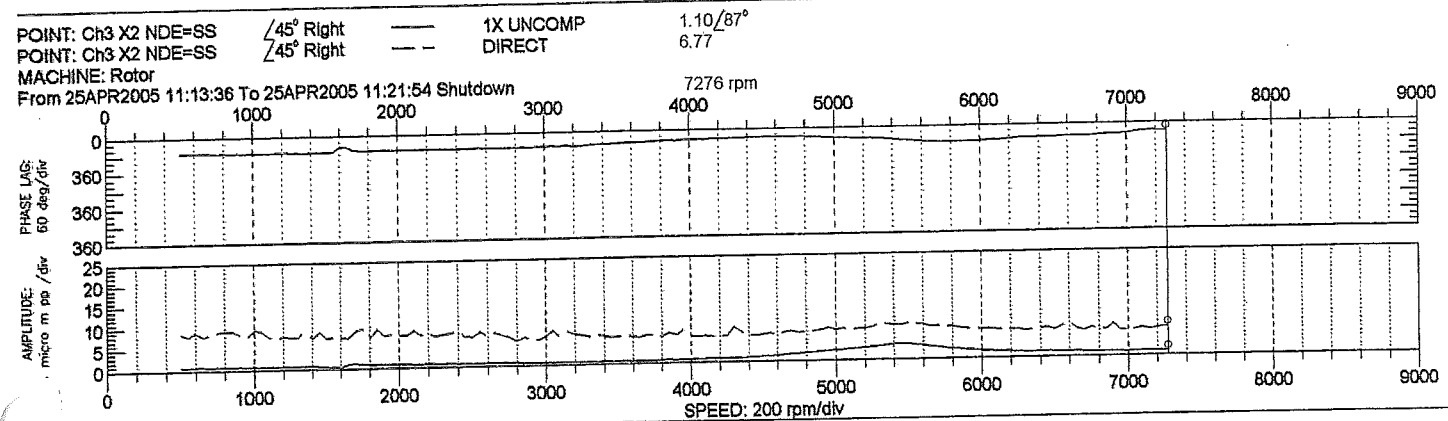
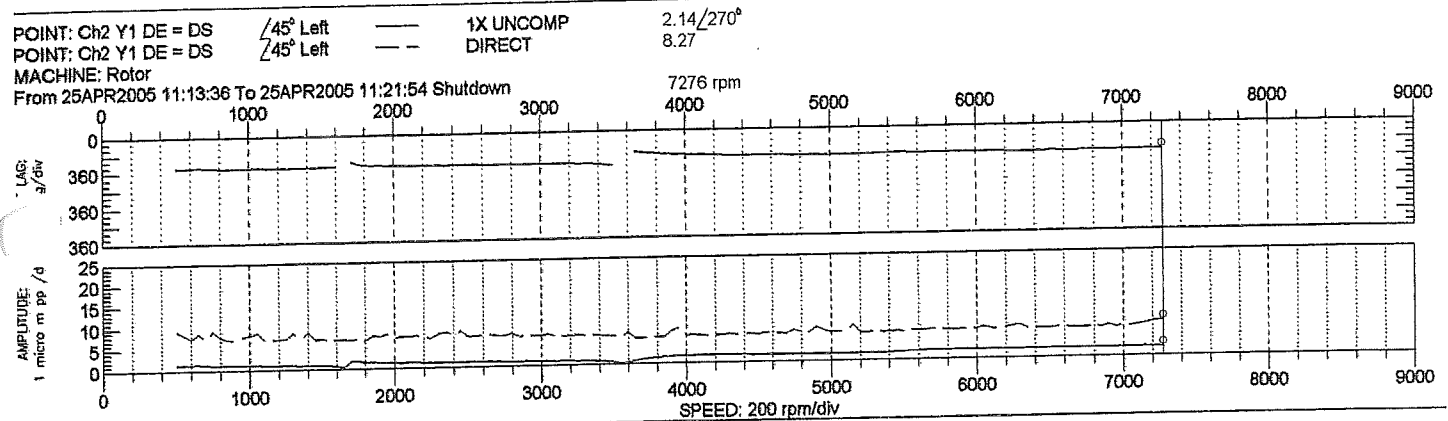
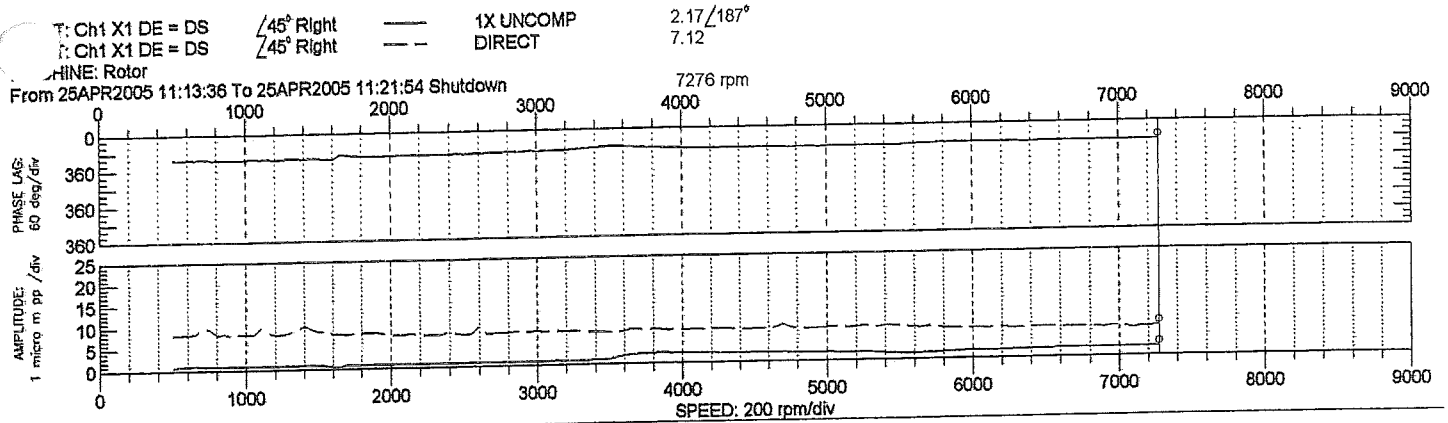
25.04.2005
MAN 10
BENTLY NEVADA

BODE PLOT
 COMPANY: MAN TURBO AG
 MACHINE TRAIN: RIK 80 - 4 CCW



PLOT NO. _____
 PLANT: Highspeed Balancing
 JOB REFERENCE: Kosair 2004

10/17



COMMENTS

Kosair 2004
 Rotor RIK 80 - 4 No. 48'874
 Final run with Mr. Debroux
 Erich Moser + Guido Knab
 QIN: Hellmut Skotnitza

[Handwritten signature]

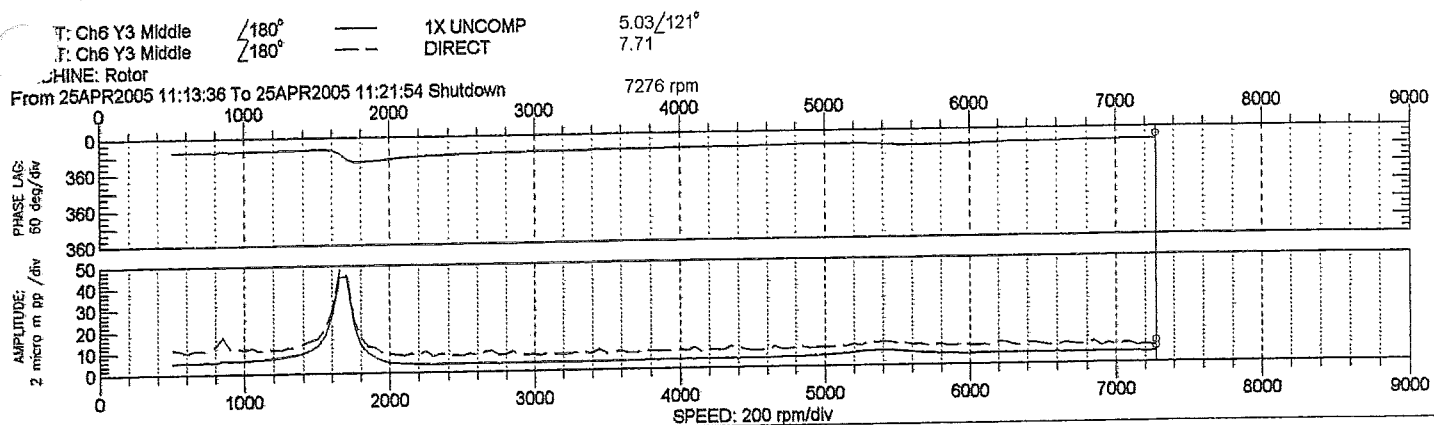
25.04.2005
 MAN 10
 BENTLY®
 NEVADA

BODE PLOT
 COMPANY: MAN TURBO AG
 MACHINE TRAIN: RIK 80 - 4 CCW



PLOT NO. _____
 PLANT: Highspeed Balancing
 JOB REFERENCE: Kosair 2004

11/17



COMMENTS

Kosair 2004
 Rotor RIK 80 - 4 No. 48'874
 Final run with Mr. Debroux
 Erich Moser + Guido Knab
 QIN: Hellmut Skotnitzka

[Handwritten signature]

25.04.2005 *[Handwritten initials]*

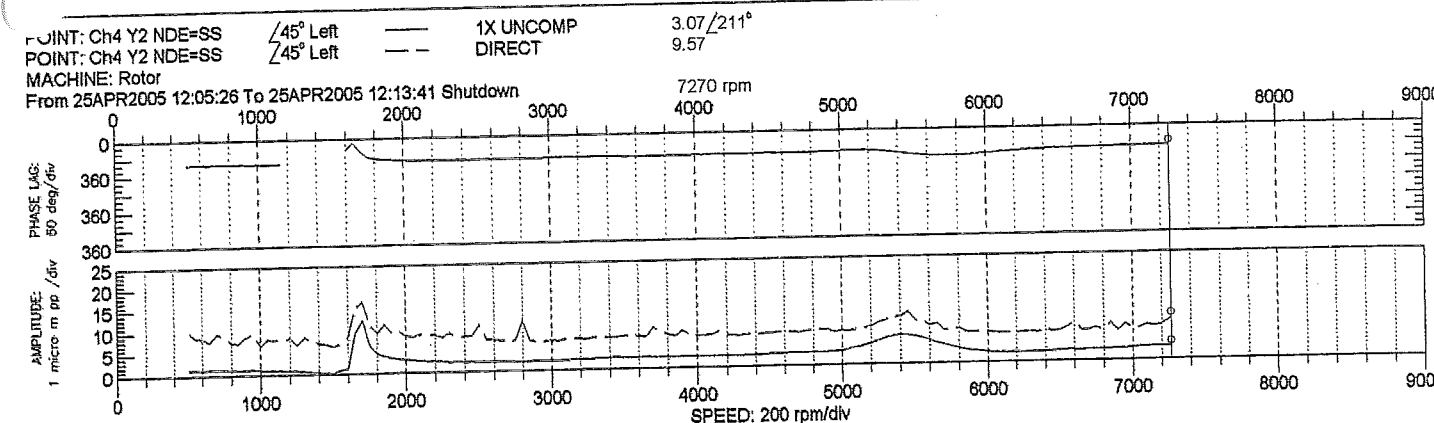
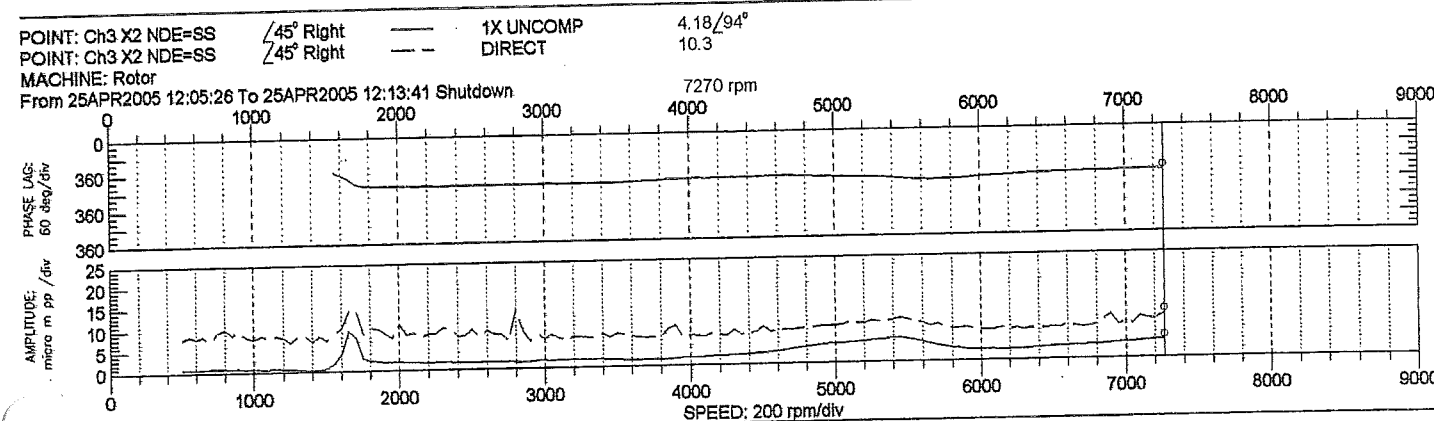
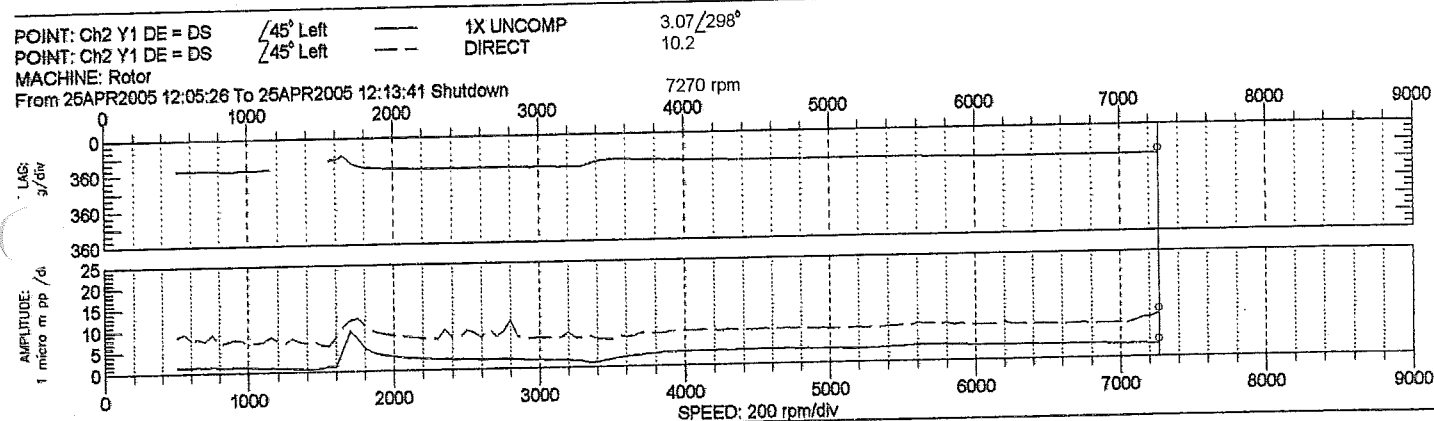
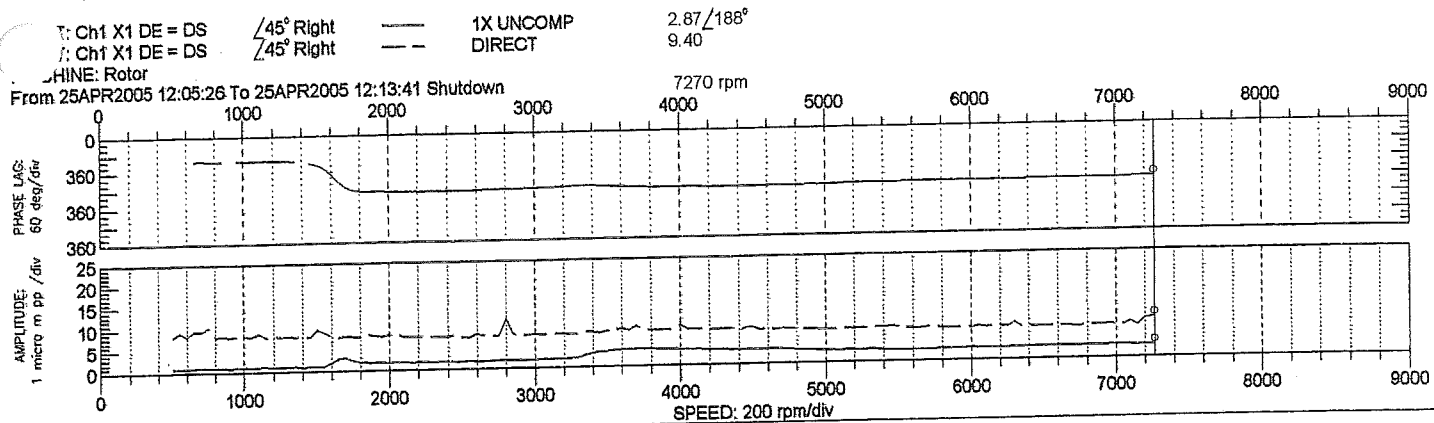


BENTLY
 NEVADA

BODE PLOT
COMPANY: MAN TURBO AG
MACHINE TRAIN: RIK 80 - 4 CCW

PLOT NO. _____
PLANT: Highspeed Balancing
JOB REFERENCE: Kosair 2004

12/17



COMMENTS

Kosair 2004
Rotor RIK 80 - 4 No. 48'874
Sensitivity test, 8157 gmm at impeller2,
with Mr. Debroux.
Erich Moser + Guido Knab
QIN: Hellmut Skotnilitza

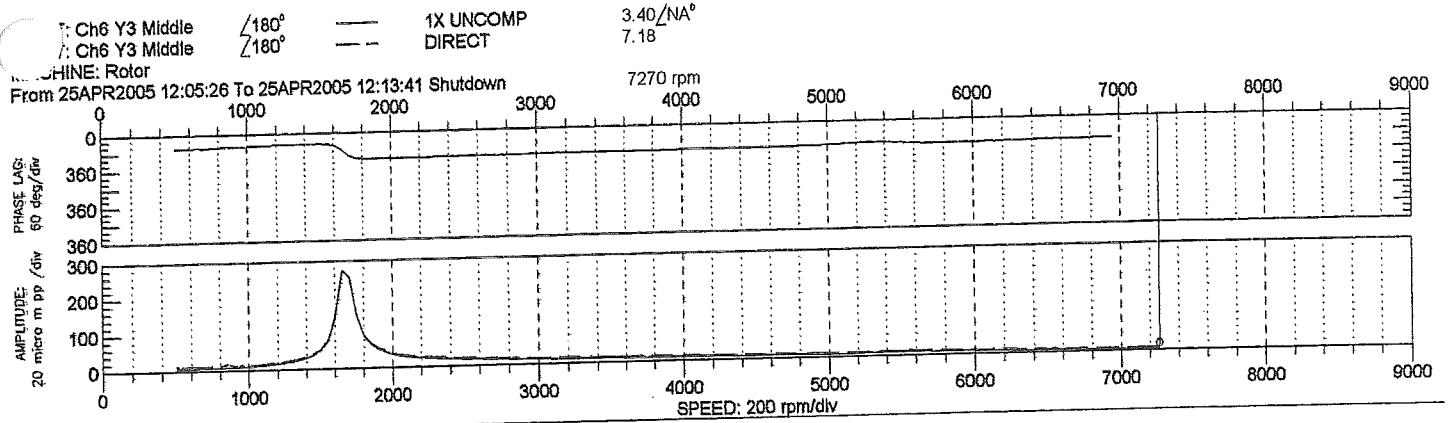
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25.04.2005
MAN 10
BENTLY
NEVADA

BODE PLOT
 COMPANY: MAN TURBO AG
 MACHINE TRAIN: RIK 80 - 4 CCW

PLOT NO. _____
 PLANT: Highspeed Balancing
 JOB REFERENCE: Kosair 2004

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COMMENTS

Kosair 2004
 Rotor RIK 80 - 4 No. 48'874
 Sensitivity test, 8157 gmm at impeller2,
 with Mr. Debroux.
 Erich Moser + Guido Knab
 QIN: Hellmut Skotnitz

[Signature]

25.04.2005 *[Signature]*
 BENTLY®
 NEVADA

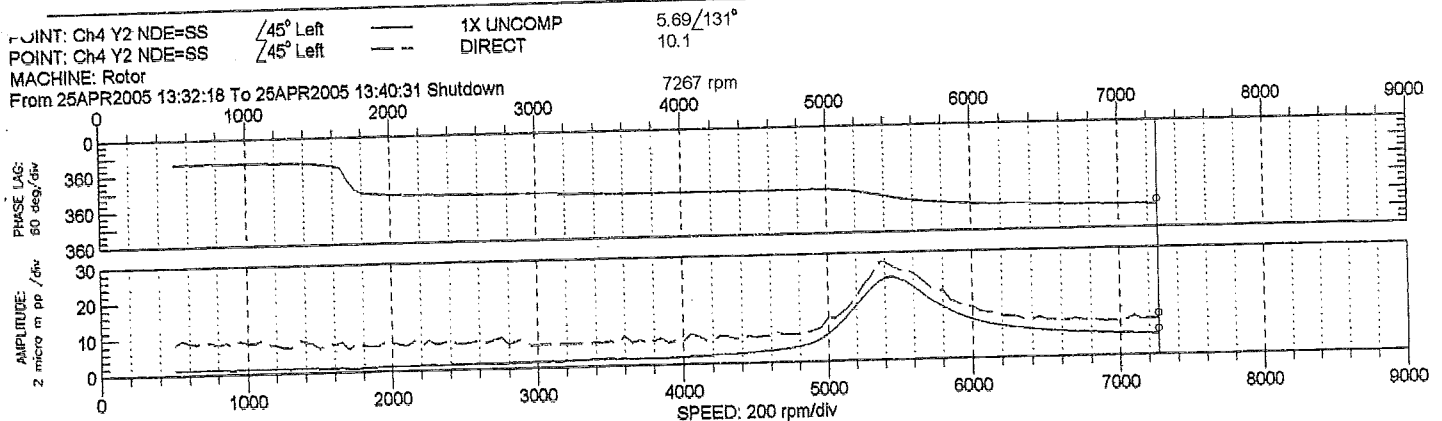
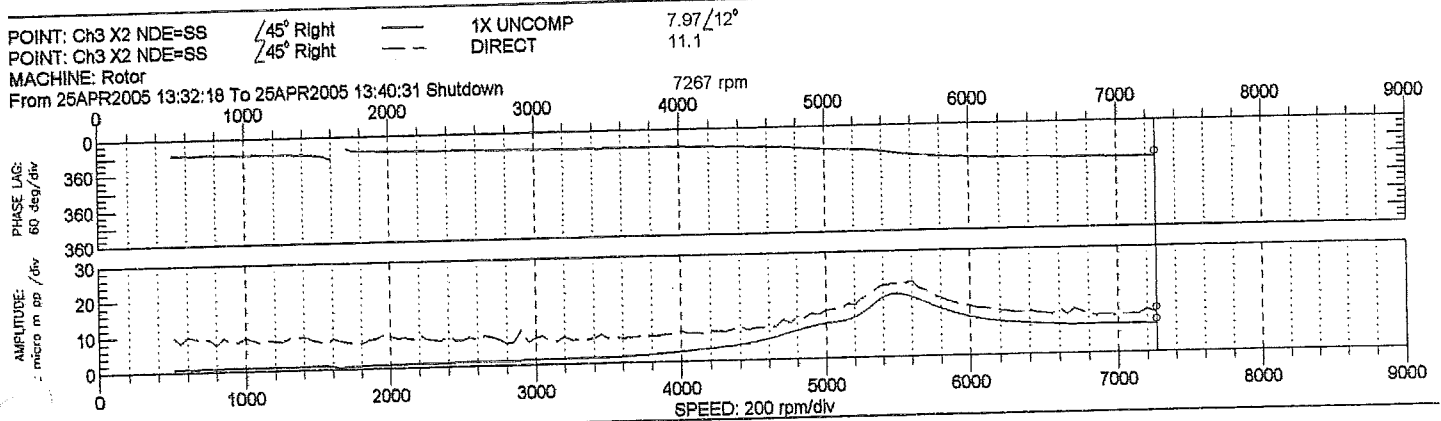
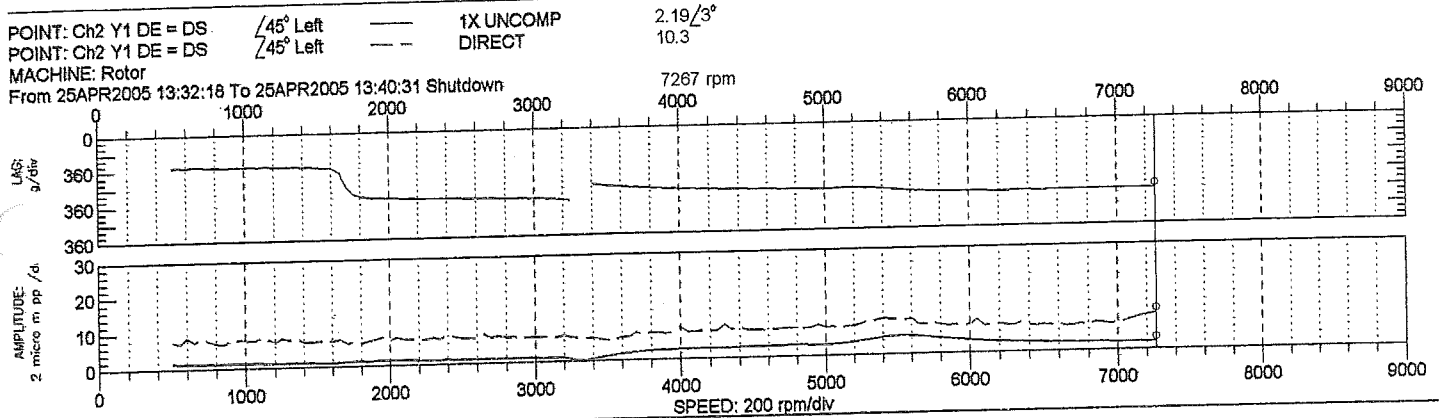
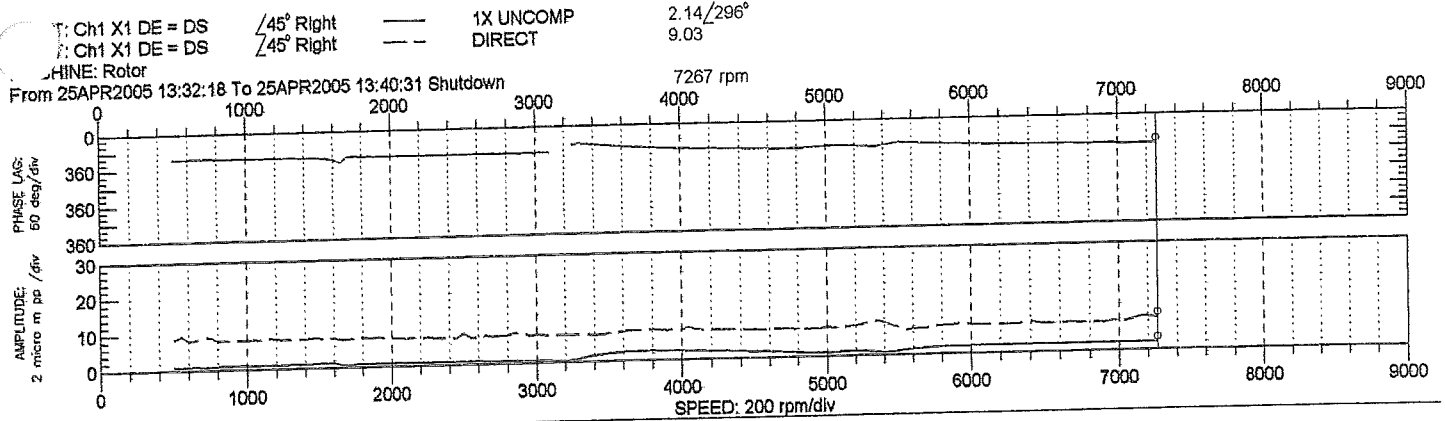
BODE PLOT
COMPANY: MAN TURBO AG
MACHINE TRAIN: RIK 80 - 4

CCW



PLOT NO. _____
PLANT: Highspeed Balancing
JOB REFERENCE: Kosair 2004

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COMMENTS

Kosair 2004
Rotor RIK 80 - 4 No. 48'874
Sensitivity test, 2x4067 gmm, each at piston
and imp.1, 180° opposite with Mr. Debroux.
Erich Moser + Guido Knab
QIN: Hellmut Skotnitz

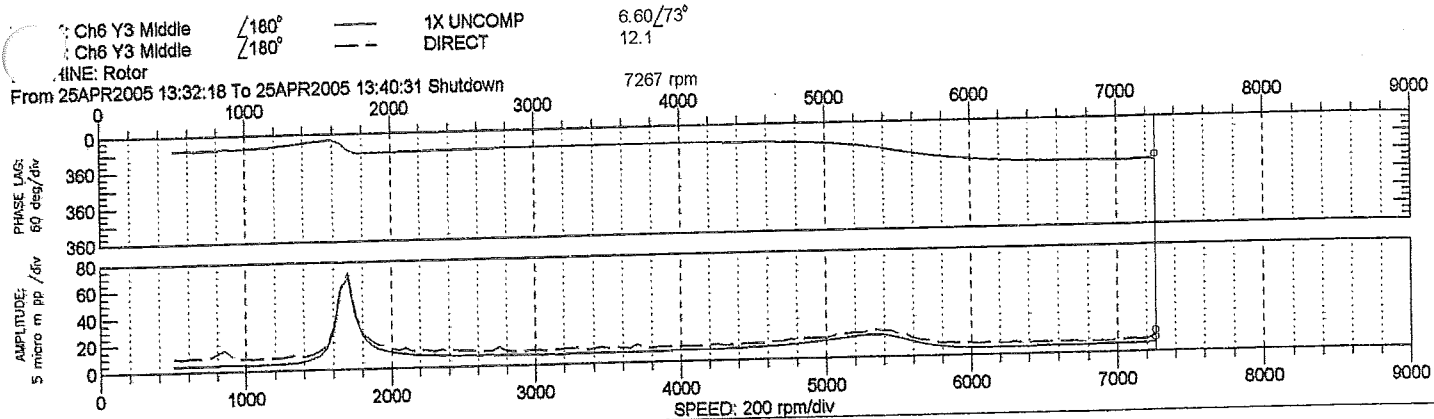
[Signature]

25.04.2005
BENTLY
NEVADA

BODE PLOT
 COMPANY: MAN TURBO AG
 MACHINE TRAIN: RIK 80 - 4 CCW

PLOT NO. _____
 PLANT: Highspeed Balancing
 JOB REFERENCE: Kosair 2004

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COMMENTS

Kosair 2004
 Rotor RIK 80 - 4 No. 48'874
 Sensitivity test, 2x4067 gmm, each at piston
 and imp. 1, 180° opposite with Mr. Debroux.
 Erich Moser + Guido Knab
 QIN: Hellmut Skotnitzka

[Signature]

25.04.2005 *[Signature]*
 BENTLY
 NEVADA

KOSAIR 2004

Data Sheet for "At Speed Balancing"

Machine Type:

RIK 80-4

Rev.	Changed	Date	Checked	Date	Change No.	Change No.	Description
Wattinger W.		06.04.2005	Wattinger W.	06.04.2005	Bercher St.		06.04.2005
Issued		Date	Checked	Date	Released		Date
Type/Size: RIK 80-4							Doc-Type: DSH
Project No: N.7100175				Doc Title: Data Sheet for "At Speed Balancing"			
Project: KOSAIR 2004				Doc No: 837019979		Rev.:	Page 1 of 2

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Rotor Data Sheet



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ROTOR TYPE: RIK 80-4			ROTOR DRAWING: 0-837 017 052		
ROTOR / BEARING DATA, OPERATIONAL DATA					
☒ CENTRIFUGAL COMPRESSOR ☐ AXIAL COMPRESSOR ☐ EXPANDER			☒ ELECTRIC MOTOR ☐ GAS TURBINE ☐ STEAM TURBINE ☐ REPAIR		
ROTOR MASS	m [kg]	2'326	MINIMUM SPEED	n_{min} [rpm]	----
OVERALL LENGTH	L_o [mm]	4'030	RATED SPEED	n_{100} [rpm] 100%	7'264
BEARING SPAN	L_s [mm]	3'525	MAX. CONTINUOUS SPEED	n_{max} [rpm]	----
BEARING TYPE	Balancing Machine Bearings R4K 125/0.8/2.4EP		TRIP SPEED	n_T [rpm]	----
BRG. CLEARANCE (DESIGN)	Ψ [‰]	1.5 - 2.0	RELAXATION SPEED (5 min)	n_R [rpm] 109.99%	7'990
MAX. ROTOR DIAMETER	D_{max} [mm]	900	ROTOR SPINTEST SP. (5 min)	n_{SR} [rpm]	----
IMPELLER SPINTEST SPEED	n_{SI} [rpm]	8'789	MAX. CIRCUMF. SPEED	u_s [m/s] at D = 900 mm	414
ACCEPTANCE CRITERIA					
SPEED	$n < n_{min}$	n_{min}	n_{100}	n_{max}	$n > n_{max}$
[rpm]		----	7'264	----	
BEARING PEDESTAL v_{RMS} [mm/s]	2.8	1.8			ISO 10816
SHAFT VIBRATION A_{ptp} [μm] AT:	midspan* 50.8	bearing** 25.4			*MAN TURBO **API 617
RESIDUAL UNBALANCE					To be recorded ISO 1940
REMARKS					
Speeds are valid for Balancing Machine in Zürich: Yes ☒ No ☐ - Balancing Quality acc. to MAN TURBO Doc. No. T 420 41 038 - Mechanical + Electrical Runout $\leq 6.4 \mu m$ - Sensitivity Test: UNDEVELOPED YES 25.04.2005 * = 1 x filtered and compensated (to be used as a guideline) ** = API 617, 7 th Edition 25.04.2005					

Project No: N.7100175	Doc Title: Data Sheet for "At Speed Balancing"		
Project: KOSAIR 2004	Doc No: 837019979	Rev.:	Page 2 of 2

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