

Magnet 3208 - 3708

Quench heater failure on repaired magnet from BNN-Noell

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Magnet 3208 - 3708

After cold test at CERN, Magnet 3208 was dismantled due to poor quench performance

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1 st run	8.19	8.14	8.24	8.36	8.42	8.47	8.55	8.6
Pos.	D1L	D1U	D1L	D1U	D1L	D2L	D1U	D1L
2 nd run	7.76	7.82	7.95	8.05	8.15	8.3	8.36	
Pos.	D1L	D1U	D1L	D1U	D1L	D1L	D1U	

After dismantling at manufacturer premises, inner layer D1 was found damaged (1st ULTEM chip with evident crack). The complete dipole set was changed (D1).

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Some dates:

Arrival at CERN CM 3208	14.09.2004
Cold test	08.10.2004
Sent back to BNN-Noell	05.04.2005
Back to CERN (as 3708)	19.10.2005

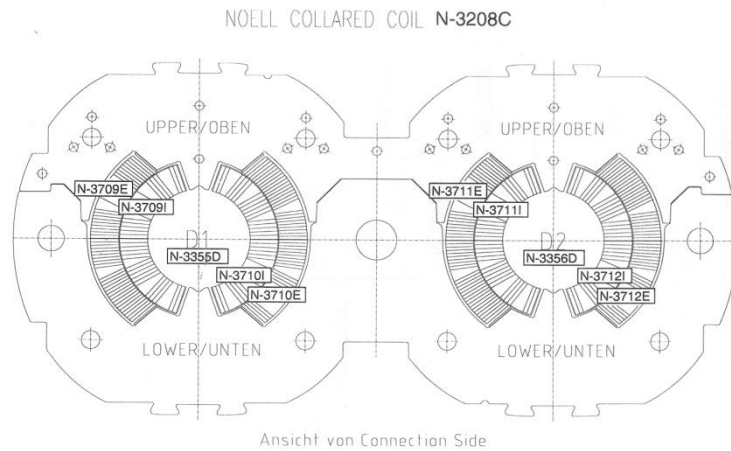
Arrival at CERN CM 3708	19.10.2005
Cold test	25.10.2005
Installation	12.10.2006

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Magnet 3208

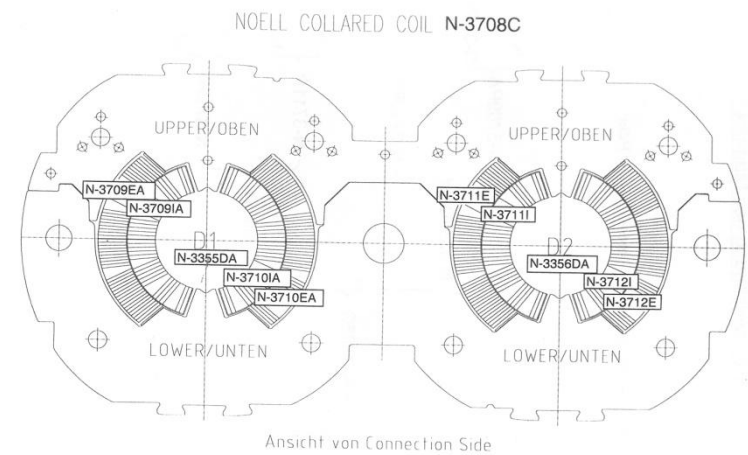
Change D1

Magnet 3708



CF0132_0_N-3208C

Formblatt CF0132_0



CF0132_0_N-3708C.xls

Formblatt CF0132_0

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Manufacturer NCR with list of the changed components

BARCOCK BORSES POWER™ ENERGY		Qualitätsabweichungsbericht Nonconformance Report		BARCOCK BORSES POWER™ ENERGY	
BARCOCK MODEL NUCLEAR GEMH		BARCOCK MODEL NUCLEAR GEMH		BARCOCK MODEL NUCLEAR GEMH	
Auftrag Nr.: Order-No.:	N.911004	Kennwort/Project name:	QAB-N NCR-N		
Betr.: Ref.:	Rebuild of cold mass and collared coil because of not fulfilling the acceptance criteria NA3208M (number of old CM) NA3708M (number of rebuild CM) N-3708C (rebuild collared coil)	Kennzeichnung-Nr.: Identification-No.:	HCMBALAD01-03000208 HCMBALAD01-03000708 HCMCB_AAD1-03000708		
Lieferant: Supplier:	BNN	Zeichnungs-Nr.: Drawing-No.:	—		
Beschreibung der Abweichung / Description of nonconformance:					
und GDH/geldbereich / S NA3208M (number of old) NA3708M (number of reb N-3708A (replaced inner N-3710A (replaced inner N-3708EA (replaced outer N-3710EA (replaced outer of rebuild collared coil N-					
During the cold tests at CERN the Cold Mass 3208 did not reach 9T after 7 quenches during it in-rails of September 22nd, 2004 and of February 10 th , 2005. The quenches during the 1 st and 2 nd run were mainly localised in the nca head (or near it) in aperture D. For dismantling and investigation the cold mass was sent back to BNN in oct/15/2005. The dismantling of the cold mass is described in the dismantling report OF3028_0 The dismantling of the collared coil is described in the dismantling report OF3028_0 (for this Visit Report AT-MAS/PP-7693 EDMAS 596119 of 31/05/2005). The during dismantling of the collared coil detected noticeable problems are listed on page 2. Keywords: E1: CM; Coll; Inner layer; outer layer E2: Visual BNN Inspector: BMD / H. Weinhard Datum: 13.06.2005 Unterschrift: <i>[Signature]</i> BNN Inspector: <i>[Signature]</i>					
Entscheidung über die Vorgehensweise / Decision of disposition:					
<input type="checkbox"/> belassen use-as-is <input checked="" type="checkbox"/> reparieren repair <input type="checkbox"/> nacharbeiten rework <input type="checkbox"/>					
*) Internes Verfahren / Internal procedure					
Beschreibung und Begründung der Vorgehensweise / Description and reasons for disposition:					
See pages 2 and 3 -					
Korrekturmaßnahme / Corrective action:					
None					
Zusätzliche Prüfungen / Additional examinations:					
None					
Freigabe der Vorgehensweise/Release of disposition					
NCR Vorgang abgeschlossen / NCR work co					
Unterschrift / Signature	Datum / Date	BNN Inspector: <i>[Signature]</i>			
BME / W. Glöbner	13.06.2005	BNN Inspector: <i>[Signature]</i>			
Korrekturmaßnahme vollzogen / Corrective is					
CERN		BNN Inspector: <i>[Signature]</i>			
BNN Inspector:		Unterschrift / Signature			
Verteiler / Distribution:					
<input checked="" type="checkbox"/> CERN	<input checked="" type="checkbox"/> D. Lubow / W. Glöbner	<input checked="" type="checkbox"/> P. Weller / M. Möcklin	<input checked="" type="checkbox"/> J. März	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> W. Bächler	<input checked="" type="checkbox"/> E. Knoke	<input checked="" type="checkbox"/> M. Zehner	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> C. Barrio	<input checked="" type="checkbox"/> A. Wessner	<input checked="" type="checkbox"/> S. Sattler	<input checked="" type="checkbox"/> BKA R. Heblig	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

HC0310_A

Formblatt CF002_B.04

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Stand 01.2003

BARCOCK BORSES POWER™ ENERGY		Qualitätsabweichungsbericht Nonconformance Report		Blatt: 2 von 7	
BARCOCK MODEL NUCLEAR GEMH		BARCOCK MODEL NUCLEAR GEMH		BARCOCK MODEL NUCLEAR GEMH	
Beschreibung der Abweichung / Description of nonconformance:					
Detected noticeable problems:					
<ul style="list-style-type: none"> - D1 / NCS – collar plates of the last collar pack with grinded noses (see picture 1) - D1 / NCS – adjustment piece with print (see picture 2) - D1 / CS – inner layer N-3709 / G11 spacer no. 3 with a crack (see pictures 3-4) - D1 / NCS – inner layer N-3709 1st ULTEM chip with through-going crack (see pictures 5-6) - D1 / CS – inner layer N-3709 / G11 spacer no. 3 with a crack (see picture 7) - D1 / NCS – outer layer N-3709E 1st G11 spacer with a crack in the middle of the thickness (see picture 8) 					
Beschreibung und Begründung der Vorgehensweise / Description and reasons for disposition:					
Because of the mainly localised quenches in the inner layers of the poles of D1 the exchange of the inner layers N-3709 and N-3710I as well as the outer layers N-3709E and N-3710E was decided by CERN (for this see the CERN Visit Report AT-MAS/PP-7693 EDMAS 596119 of 31/05/2005).					
Decision: New numbers of the inner layers are: N-3709IA and N-3710IA New numbers of the outer layers are: N-3709EA and N-3710EA					
The collared coil and the cold mass have to be rebuild again (new collared coil number = N-3708C and the number of the rebuild CM = NA3708M).					
Collared coil: The poles of dipole 2 (N-3711BP and N-3712P) will be reassembled.					
In confirmation with the modification from September 2004 the nca pole-regions on inner and outer layers will get stripes of self-adhesive Kapton on both sides of the pole planes - thickness 50µm, length 200mm (for inner layers - starting from pole spacer item 1, for outer layers - starting from pole spacer item 2).					
Additional to the computationally determined thickness of shims for the heads of the coils, the thicknesses of the shims are increased by 50µm.					
The upper and the lower pole of dipole 1 have to be rebuilt (New no. of the upper poles of D1 = N-3709PA and N-3710PA). The Dipoles D1 and D2 have to be rebuilt (New no. of D1 = N-3355DA; new no. of D2 = N-3356DA).					
Main replacements for:					
Dipole 1:		Supplier:			
<ul style="list-style-type: none"> + SC cable ID-No. 01E00071A for the inner layer (coil N-3709I) + SC cable ID-No. 01E00071B for the inner layer (coil N-3710I) + SC cable ID-No. 01E00071A for the outer layer (coil N-3709E) + SC cable ID-No. 01E00071B for the outer layer (coil N-3710E) + Copper wedges (types 1; 2; 3 and 4) + Inter-layer spacer + Cold bore tube + Quench heaters + Groundinsulation + Coil protection sheets 		<ul style="list-style-type: none"> CERN CERN CERN CERN CERN BNN CERN BNN BNN BNN 			

BARCOCK BORSES POWER™ ENERGY		Qualitätsabweichungsbericht Nonconformance Report		Blatt: 3 von 7	
BARCOCK MODEL NUCLEAR GEMH		BARCOCK MODEL NUCLEAR GEMH		BARCOCK MODEL NUCLEAR GEMH	
Beschreibung und Begründung der Vorgehensweise / Description and reasons for disposition:					
Dipole 2:		Supplier:			
<ul style="list-style-type: none"> + Cold bore tube + Quench heaters + Groundinsulation + Coil protection sheets 		<ul style="list-style-type: none"> CERN BNN BNN BNN 			
Cold Mass:					
The following specified components were checked. The components are in a good condition, they are going to be used again.					
<ul style="list-style-type: none"> - 2 Half yokes - assembly group N-3204R (FSG0243) - Endcover CS 654-580 (MPCS0861) - Endcover NCS 655-150 (MPLS0894) - Diode type "AL" MDA 01092 - 2 endplates CS "K177" Kind NCS "K183" Kind - Insert - assembly group N-3204R (FSG0243) - Tube N Line MB N-Line 0668 - Shims between inserts and half yoke - Shim between insert and CC - Interconnection Below sets: <ul style="list-style-type: none"> M1:MA-2617 M2:MA-2619 M3:MA-2863 Side below: XS-1315 Central below: XC-0865 Flexible ligre: NH 1088 - Sextupoles MCS-MA-10020 MCS-MA-ED031 - Octupole/Decapole MCDO-MA-E0049 MCDO-MA-E0056 - Supports for Sextupoles - Supports for Decapole/Octupole - Diodebox, T-piece - Temperature sensor - Resistor Sfernice 100 Ohm - Busbar-Set 097A M1; 097A M2; 097A M3 					
Main replacements:					
<ul style="list-style-type: none"> - Busbar-MB TA Coil Outlet: 103A/C - Shrinking Cylinder (Concave, Convex) (Scrap) - all wires for Type A - Heat exchanger tube / CR04679 - Central below / XC-0507 - Supports CS 704; Middle 703; NCS 702; 		Supplier:			
		<ul style="list-style-type: none"> CERN (already built in CM NA3348M on 5-9-2005) CERN CERN CERN (CR040679 – stored as reserve) CERN (XC -0507 - stored as reserve) CERN (already built in CM NA3359M on 5-26-2005) 			

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Manufacturer Check list for Quench Heaters

MB 3208

Warenausgangsbeleg

Formblatt-Nr. N-3355D4

Quenchheizler 60047755 + 60047757

CF0106_D_

CATS Stundenerfassung auf 211000__ 00__
 Material ausbuchen auf 210000__ 0055
 Losgröße(CN25) 12
 Entnahmemenge der Stückliste(CN25) 1

Bemerkungen

SAP Pos.	SAP-Nr.	Benennung	Stück/ME	Warenausgabe erfolgt am:	Rückverfolgbarkeit	unter. Pol	ober. Pol
	790126	Quenchheizler Überstieg	2 ST	02.08.05	X	CICO 001498 9.45 low left 9.83	CICO 001500 9.66 up right 9.65
	790126	Quenchheizler	2 ST	02.08.05	X	CICO 001499 9.53 low right 9.85	CICO 001501 9.89 up left 9.53
	790128	Lötlöse	8 ST	"	"		
	790128	Lötlöse	8 ST	"	"		
	60051662	QH-Kabel green HH2619-LH	13 M	"	"		
	60051662	QH-Kabel green HH2619-LH	13 M	"	"		
	60051663	QH-Kabel yellow HH2619-LH	13 M	"	"		
	60051663	QH-Kabel yellow HH2619-LH	13 M	"	"		

Dipolmontage

Nach Entnahme dieser Liste müssen die Quenchheizler SAP 60047755 (2 Stück) und 60047757 (2 Stück) eingebucht werden.

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NEW Q.H.
 CICO 001498
 CICO 001500
 CICO 001499
 CICO 001501

MB 3208

Warenausgangsbeleg

Formblatt-Nr. N-3355D

Quenchheizler 60047755 + 60047757

CF0106_A_

CATS Stundenerfassung auf 21100 301 00 09
 Material ausbuchen auf 210000 00 0055
 Losgröße(CN25) 12
 Entnahmemenge der Stückliste(CN25) 1

Bemerkungen

SAP Pos.	SAP-Nr.	Benennung	Stück/ME	Warenausgabe erfolgt am:	Rückverfolgbarkeit	unter. Pol	ober. Pol
	790126	Quenchheizler Überstieg	2 ST	07.06.04	X	CICO 001137 9.84 / 9.78 low left	CICO 001142 9.94 / 9.93 up right
	790126	Quenchheizler	2 ST	07.06.04	X	CICO 001136 9.97 / 9.95 low right	CICO 001141 9.95 / 9.94 up left
	790128	Lötlöse	8 ST	"	"		
	790128	Lötlöse	8 ST	"	"		
	60051662	QH-Kabel green HH2619-LH	13 M	"	"		
	60051662	QH-Kabel green HH2619-LH	13 M	"	"		
	60051663	QH-Kabel yellow HH2619-LH	13 M	"	"		
	60051663	QH-Kabel yellow HH2619-LH	13 M	"	"		

Dipolmontage

Nach Entnahme dieser Liste müssen die Quenchheizler SAP 60047755 (2 Stück) und 60047757 (2 Stück) eingebucht werden.

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OLD Q.H.
 CICO 001137
 CICO 001142
 CICO 001136
 CICO 001141