

Ansaldo Superconduttori

Cold Mass Nr. 2072

Step Nr. 1

Volume / Volume to be tested CM -> Vacuum

Heat Exch -> Vacuum 4

CM -> Heat Exch. 3

Fuga calibrata / Calibrated leak parameter

Calibrated leak N°	4011007195	4011007225	4011007195
Data calibr. / calibration date	08/10/02	08/10/02	08/10/02
Temp. calibrazione fuga / Calibration Temp.	23,0 °C	23,0 °C	23,0 °C
Valore nom. fuga calibrata / Calibrated leak nom. value	3,00E-08 mbar l s-1	3,30E-08 mbar l s-1	3,00E-08 mbar l s-1

Calibrazione del sistema / System calibration

Conc. He nelle linee di test (100%) / Volumetric fraction of tracer gas in the injection envelope

T ambiente / Test temp.

Fuga calibrata con correz. T ed età / Size of calib. leak after corr. for ageing and T)

Segnale residuo prima delle misure di SFR / Residual signal prior SFR meas.

Segnale del LD / Signal given by the calibrated leak

Min. dev. segnale (-2x amp. segn. residuo) / Smallest read. signal dev. (= 2 x ampl. of RFR noise)

Tempo di attesa stabilizz. segnale / Time to achieve stabilised leak signal

C	1	1	1	C	1
T	22,0 °C	22,0 °C	22,0 °C	T	22,0 °C
qFR	2,90E-08 mbar l s-1	3,18E-08 mbar l s-1	1,50E-07 mbar l s-1	qFR	2,90E-08 mbar l s-1
RFR	7,09E-09 mbar l s-1	3,43E-10 mbar l s-1	7,03E-10 mbar l s-1	RFR	7,09E-09 mbar l s-1
SFR	4,64E-08 mbar l s-1	3,05E-08 mbar l s-1	1,22E-07 mbar l s-1	SFR	4,64E-08 mbar l s-1
Sm	2,00E-11 mbar l s-1	2,00E-12 mbar l s-1	2,00E-12 mbar l s-1	Sm	2,00E-11 mbar l s-1
3t	700 sec	700 sec	1000 sec	3t	700 sec
qEm	1,47E-11 mbar l s-1	2,11E-12 mbar l s-1	2,47E-12 mbar l s-1	qEm	1,47E-11 mbar l s-1

Condizioni del test / Leak test conditions

Pressione del sistema / System pressure

Segnale residuo del cercatighe ad inizio test / Residual signal prior to SF measurement

Segnale del LD a fine test / Signal given by the leak after 30 min. (>3t)

CALCOLO DELLA FUGA / Leak evaluation

$$m = \frac{q_{FR} (S_{FR} - R_{FR})}{S_{FR} - R_{FR}}$$

P	7,90E-05 mbar	7,90E-05 mbar	7,70E-05 mbar
Rf	7,29E-09 mbar l s-1	3,44E-10 mbar l s-1	7,21E-09 mbar l s-1
Sf	7,27E-09 mbar l s-1	3,85E-10 mbar l s-1	6,93E-09 mbar l s-1
qG	<1,0E-09 mbar l s-1	2,22E-11 mbar l s-1	<1,0E-09 mbar l s-1
VALORE DI RIFERIMENTO / REF. VALUE (MAX)	1,0E-09 mbar l s-1 at 26 bar	1,0E-10 mbar l s-1 at 26 bar	1,0E-09 mbar l s-1 at 5 bar

CONFORMANCE YES YES YES YES YES YES

Doc. di riferimento / Ref. documents

CERN contract number: F302/LHC/LHC

CERN technical spec.: LHC MMS-98-198 rev.2

Leak test procedure (Ref. N° / Revision): 760RM09442 rev.0

Strumentazione / Test equipment

Helium Mass Spectrometer type:

Pressure gauge type:

Pumping group:

on vessel	PFEIFFER HLT 260 full range compact PFEIFFER PKR 251 turbo pump LEYBOLD PT 360 l/s rotary vane pump PFEIFFER DUO 65 m3/h
on heat exchanger line	PFEIFFER HLT 260 rotary vane pump PFEIFFER DUO 20 m3/h
on c.b.t. lines	PFEIFFER HLT 260 rotary vane pump PFEIFFER DUO 20 m3/h

Prepared by: Name / Date

PIU S. - Caserza B. 12/02/2004

Approved by: Name / Date

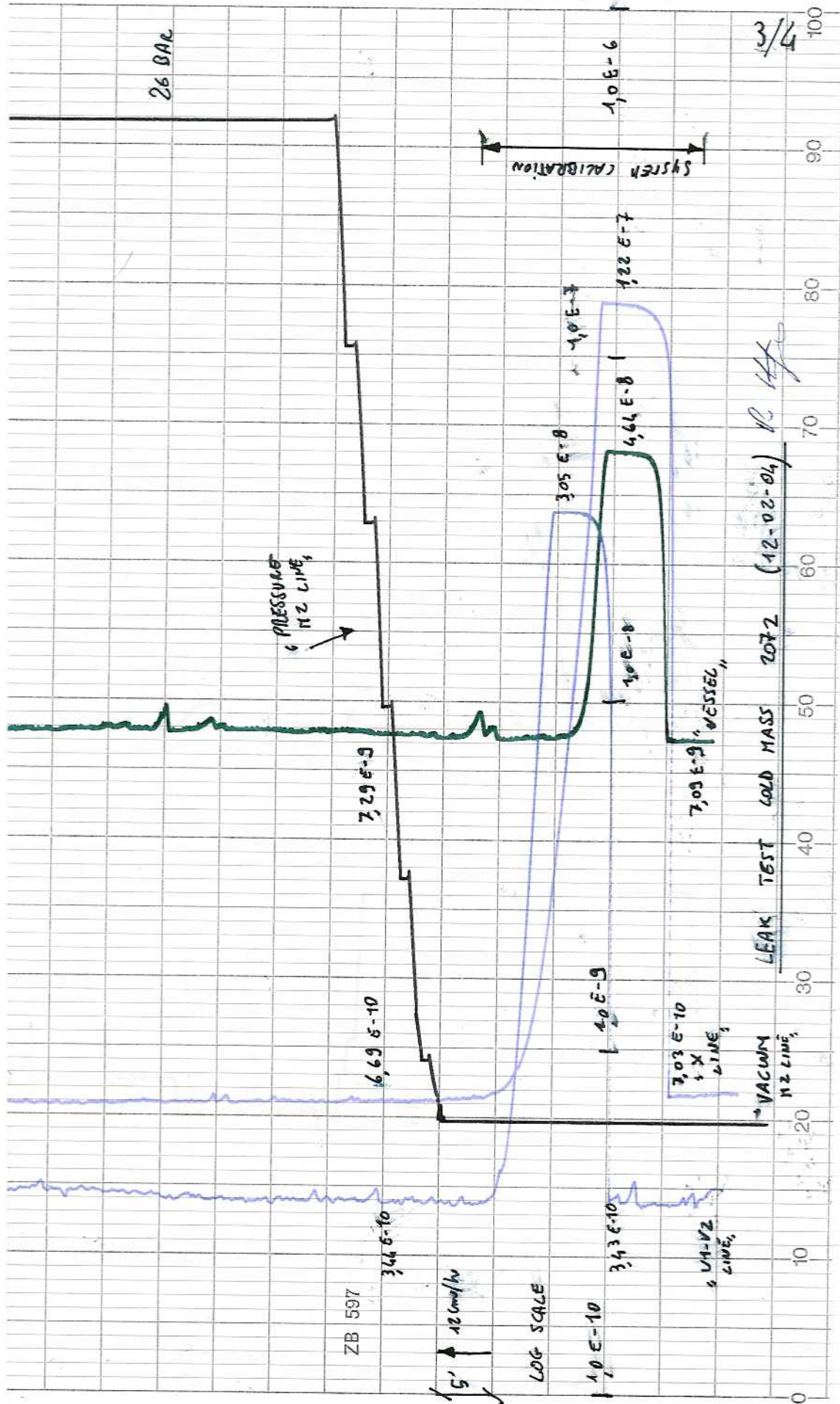
Terzi - 12/02/2004

Checked at CERN by / Signature / Date

P. Gagliardi - 12/02/2004

NOTE / Remarks

Test performed after welding of flange (Ø100) of the capillary tube cold head, installed on the cold mass



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