



LHC - Cold masses: HELIUM MASS SPECTROMETER LEAK TEST REPORT

ITP Nr.
23
24

Cold Mass Nr. 2011

Step Nr. 1 CM -> Vacuum

Volume / Volume to be tested 2 CM -> cold bore tubes

Heat Exch -> Vacuum 4

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. 18.5 °C

Fuga calibrata con correz. T ed età / Size of calib. leak after corr. for ageing and T) 2.53E-08 mbar l s-1

Segnale residuo prima delle misure di SFR / Residual signal prior SFR meas. 7.74E-09 mbar l s-1

Segnale del LD / Signal given by the calibrated leak 3.93E-08 mbar l s-1

Min. dev. segnale (=2x amp. segn. residuo) / Smallest read. signal dev. (= 2 x ampl. of RFR noise) 2.00E-11 mbar l s-1

Tempo di attesa stabilizz. segnale / Time to achieve stabilised leak signal 1000 sec

SENSIBILITA' DEL TEST / Sensitivity of the leak test

$$= \frac{q_{FR}}{S_{FR} - R_{FR}} \cdot \frac{1}{C}$$

Condizioni del test / Leak test conditions

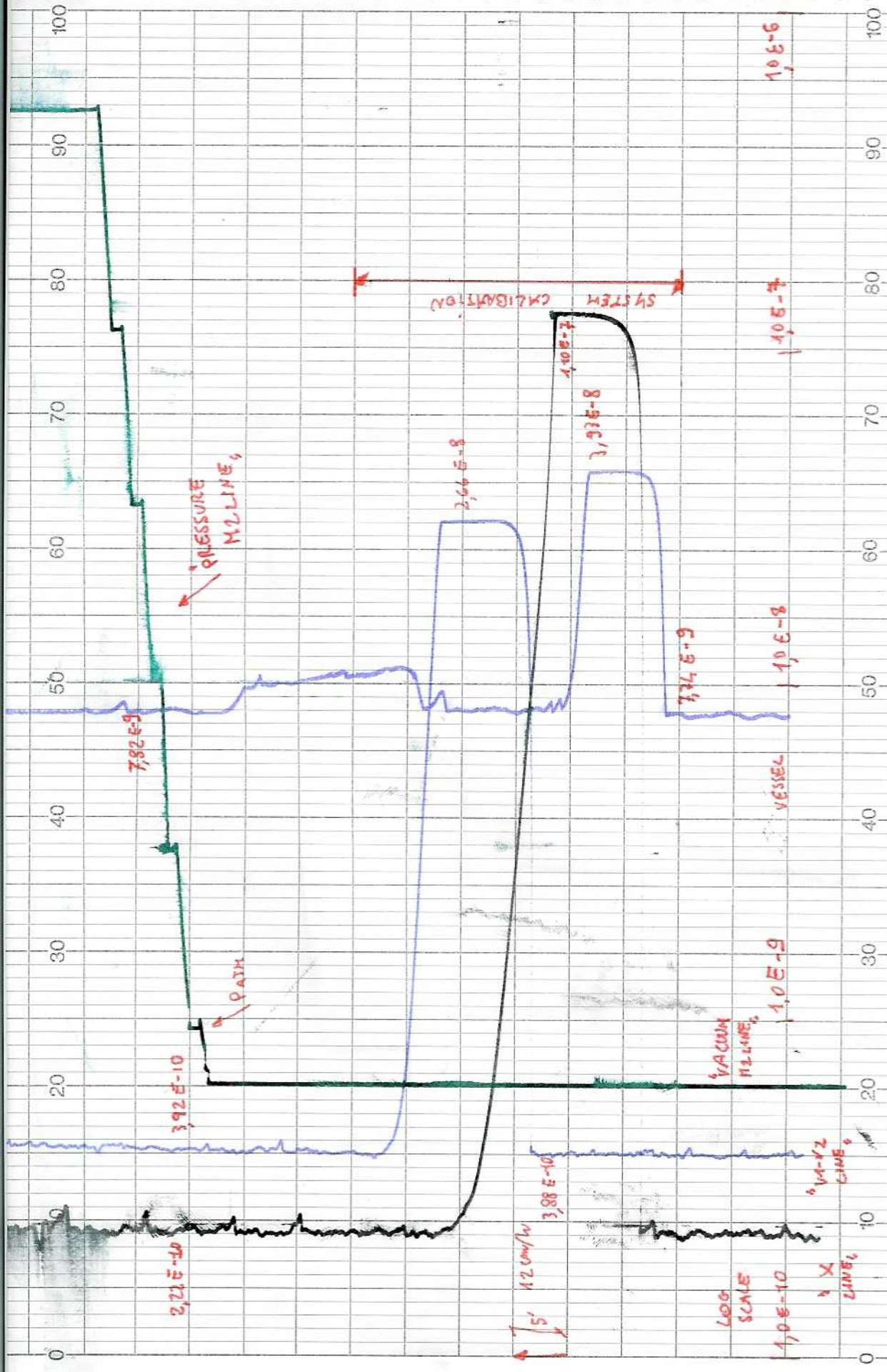
Pressione del sistema / System pressure	<u>8.80E-05 mbar</u>	<u>8.50E-05 mbar</u>
Segnale residuo del cercatughe ad inizio test / Residual signal prior to SF measurement	<u>7.82E-09 mbar l s-1</u>	<u>7.77E-09 mbar l s-1</u>
Segnale del LD a fine test / Signal given by the leak after 30 min. (>3t)	<u>7.64E-08 mbar l s-1</u>	<u>7.71E-08 mbar l s-1</u>
CALCOLO DELLA FUGA / Leak evaluation	$= \frac{q_{FR} (S_{FR} - R_{FR})}{S_{FR} - R_{FR}} \cdot \frac{1}{C}$	<u><1.0E-09 mbar l s-1</u>
VALORE DI RIFERIMENTO / REF. VALUE (MAX)	<u>1.0E-09 mbar l s-1 at 26 bar</u>	<u>1.0E-09 mbar l s-1 at 5 bar</u>

CONFORMANCE **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): 780RM09442 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	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 c.b.t. lines		PFEIFFER HLT 260		on heat exchanger line	
PFEIFFER HLT 260 full range compact PFEIFFER PKR 251 turbo pump LEYBOLD PT 360 l/s rotary vane pump PFEIFFER DUO 65 m3/h		PFEIFFER HLT 260 rotary vane pump PFEIFFER DUO 20 m3/h		rotary vane pump PFEIFFER DUO 20 m3/h	
Note / Remarks Test performed after welding of flange (Ø100) the capillary tube cold head, installed on the cold mass					
Prepared by: Name / Date		PIU S. - Caseiza B. 16/12/2003 <i>K. P.</i>			
Approved by: Name / Date		Terzi - 16/12/2003			
Checked at CERN by / Signature / Date		P. Gagliardi - 16/12/2003			



LEAK TEST WOLA MASS 2011 (16-12-03) C. P. P.

