DATA SHEET
500 MHz, 5-Cell Cavity

DESY-MHFe, Vers. 2.0 January 2010

Type: HERA
Manufacturer: **ACCEL Instruments GmbH**

Technical Data:

	Unit	Min.	Nom.	Max.	Remarks
π-mode frequency @ 32°C	MHz		499.67		Plunger pos. s=+2.5mm
Tuning range	MHz			500.5	Plunger pos. s=+40mm
Tuning range	MHz	499.3			Plunger pos. s=-20mm
Unloaded quality factor	-		29500		
R/(Q*l)	Ω/m		370		+/- 5%
Shunt impedance	MΩ		15		
Coupling factor	-			2.0 *)	*) Coupler @ 03:00h
Bandwidth	kHz		51		Coupling factor 2.0
Beam tube cut-off frequency	GHz		1.46		H11
Field flatness	%		+/-5		Cooling flow optimized
coupling between cells	%		0.85		$k = \frac{1}{2}\frac{\omega_I^2 - \omega_N^2}{2\omega_N^2 - \omega_I^2 \cdot (1 - \cos\left(\frac{\pi}{N}\right))}$

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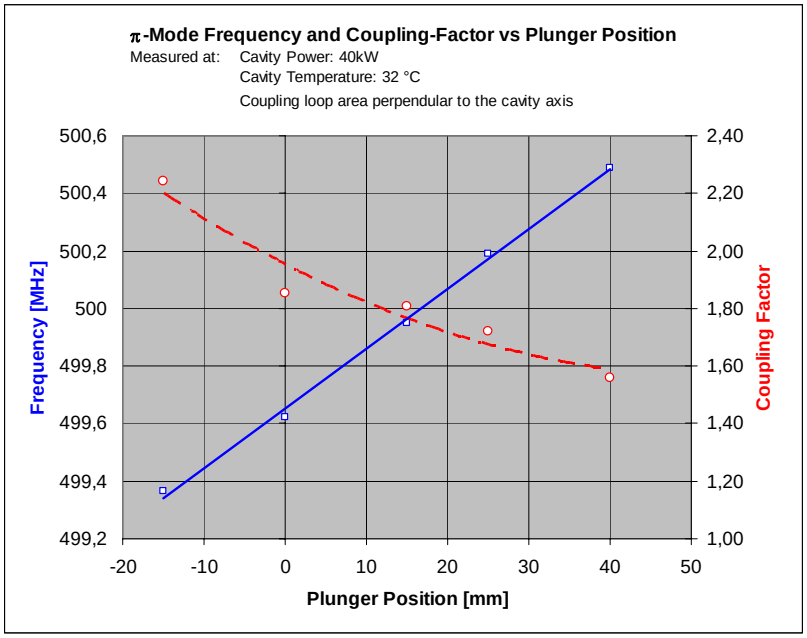
	Unit	Min.	Nom.	Max.	Remarks
Detuning due to temperature	kHz/°C		8,5		
Detuning due to plunger pos.	kHz/mm	10	20		Both plungers moved
Accelerating voltage	MV		1.09	1.73	
Accelerating gradient	MV/m		0.73	1.15	
Dissipated cavity power	kW		40	100	Tested up to 140 kW
Water flow rate (total)	m³/h		6		Sum of all discs & cells, optimised for maximum field flatness
Test pressure	bar		16		PN16
Pressure drop	bar			4	Cooling circuits in parallel and flow rates adjusted by orifice plates
Total length	mm		1800		(Flange to flange)
Cell length	mm		5*300		
Outside diameter	mm		445		Without water install.
Beam tube aperture	mm		120		
Weight	kg		504		Accessories and blind flanges excluded
Exhausting temperature	°C		150	180	

Cooling water flow for max. field flatness

Cooling circuit	Q [l/h]
end discs 1 & 6	250
cells 1 - 5	500
discs 2 - 5	750
Sum	**6000**

Mode frequencies
(plunger positions s=-20mm)

Mode	Frequency [MHz]	Unloaded quality
π	499,3	29500
3/4 π	500,2	30800
π/2	502,5	32000
π/4	504,6	34500
0	506,9	37800



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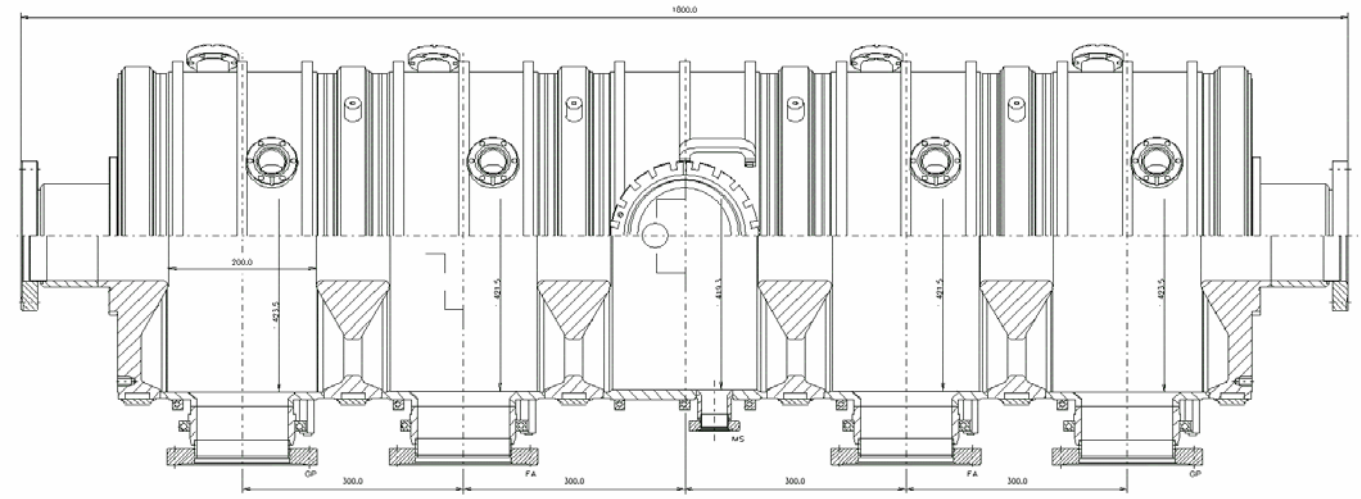
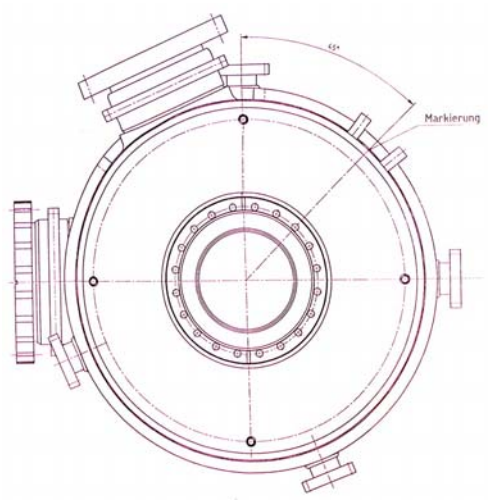
Disc #:	1	2	3	4	5	6
Cell #:	1	2	3	4	5	



Flange neck diameters:	2x DN35, 1x DN125	2x DN35, 1x DN125	2x DN35, 1x DN144	2x DN35, 1x DN125	2x DN35, 1x DN125
Flange types:	2x DN35 CF 1x DN150 CA	2x DN35 CF 1x DN150 CA	2x DN35 CF 1x DN150 SF	2x DN35 CF 1x DN150 CA	2x DN35 CF 1x DN150 CA

Disk #1



Flange neck diameters:
DN120

Flange types:
DN150 CA

Disk #2