ENTRY NO. CM9 Date

Machine Name BC168

Manufacturer The Japan Steel Works,LTD.

Address 4 Chatsu-machi Muroran, Hokkaido, Japan

Tel (0143)22-9211 Telex 0987601

Fax (0143)23-8161 E-MAIL

In Charge: Y.Toda Reported by: Y.Toda

HISTORY AND STATUS

DATES: Design 1981-1982 First Machine 1982

SALES: No. Sold/Operational 4 / 4 Currently Available yes

COST: Accelerator Facility

MAGNET

POLE PARAMETERS:

Diameter 91 cm $R_{extract}$ 38 cm R_{inject} cm

HILL PARAMETERS: Gap (min) 7 cm B_{max} T

(@ 1.2X10^5 AT) Gap (max) 7 cm B_{min} T

VALLEY PARAMETERS: Gap (min) 13 cm B_{max} T

(@ 1.2X10^5 AT) Gap (max) 13 cm B_{min} T

AVERAGE FIELD: $<B>_{min}$ 1.54 T $<B>_{max}$ 1.54 T

NUMBER OF SECTORS: compact/separated 4 /

sector angle 45 deg. spiral (max) none deg.

FIELD TRIMMING: Trim Coils 2

Harmonic Coils 2

Other

CURRENT: Main Coils 310 Amps Stability $\pm 2X10^{-5}$

Trim Coils 50 Amps Stability $\pm 1X10^{-4}$

Stored Energy (cryogenic) MJ

WEIGHT: Iron 20 ton Conductor 1 ton

ION ENERGY: Bending Limit E/A = q^2/A^2 MeV/u

Focusing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: 2 sets of pie/4 shape dee with lambda/4 stems

No. of Gaps/turn 4 dE/dn(max) 0.16 MeV/q

Voltage (max) 0.04 MV Harmonic f_{rf}/f_{ion} 2 , 4

Freq 47 MHz Power in(max) 0.02 MW

Stability: Phase 1° Voltage 1X10^{-3}

VACUUM SYSTEM

OPERATING PRESSURE: 1X10^{-6} Torr

PUMPS: (No. and type) 1 diffusion pump

ION SOURCE(S)

	Type	Intensity (mA)	@ $\varepsilon_n = \beta\gamma\varepsilon$ (π mm mrad)	Ion Species
(a)	Hot Cathode PIG	1		H^+
(b)	Hot Cathode PIG	1		D^+

INJECTION SYSTEM

Efficiency %

EXTRACTION SYSTEM

Electrostatic deflector Efficiency 80 %

CHARACTERISTIC BEAMS

	Accelerated Ions	E/A (MeV/u)	Current (part. μA) Internal	External
(a)	H^+	16	150	70
(b)	D^+	8	150	70

EXTRACTED BEAM PROPERTIES:

For 50 μA of 16 MeV/u H^+ ions

$\Delta E/E$ 1 % $\Delta\phi$ °rf

$\varepsilon_n = \beta\gamma\varepsilon$ x 30 π mm mrad z 10 π mm mrad

REFERENCES/NOTES

(a)

(b)

ENTRY NO. CM10 Date

Machine Name BC1710

Manufacturer The Japan Steel Works,LTD.

Address 4 Chatsu-machi Muroran, Hokkaido, Japan

Tel (0143)22-9211 Telex 0987601

Fax (0143)23-8161 E-MAIL

In Charge: Y.Toda Reported by: Y.Toda

HISTORY AND STATUS

DATES: Design 1980-1981 First Machine 1981

SALES: No. Sold/Operational 8 / 8 Currently Available yes

COST: Accelerator Facility

MAGNET

POLE PARAMETERS:

Diameter 101 cm $R_{extract}$ 42 cm R_{inject} cm

HILL PARAMETERS: Gap (min) 7 cm B_{max} T

(@ 1.2X10^5 AT) Gap (max) 7 cm B_{min} T

VALLEY PARAMETERS: Gap (min) 13 cm B_{max} T

(@ 1.2X10^5 AT) Gap (max) 13 cm B_{min} T

AVERAGE FIELD: $<B>_{min}$ 1.43 T $<B>_{max}$ 1.54 T

NUMBER OF SECTORS: compact/separated 4 /

sector angle 45 deg. spiral (max) none deg.

FIELD TRIMMING: Trim Coils 3

Harmonic Coils 2

Other

CURRENT: Main Coils 380 Amps Stability $\pm 2X10^{-5}$

Trim Coils 50 Amps Stability $\pm 1X10^{-4}$

Stored Energy (cryogenic) MJ

WEIGHT: Iron 30 ton Conductor 1 ton

ION ENERGY: Bending Limit E/A = q^2/A^2 MeV/u

Focusing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: 2 sets of pie/4 shape dee with lambda/4 stems

No. of Gaps/turn 4 dE/dn(max) 0.16 MeV/q

Voltage (max) 0.04 MV Harmonic f_{rf}/f_{ion} 2 , 4

Freq 43.5, 47 MHz Power in(max) 0.02 MW

Stability: Phase 1° Voltage 1X10^{-3}

VACUUM SYSTEM

OPERATING PRESSURE: 1X10^{-6} Torr

PUMPS: (No. and type) 1 diffusion pump

ION SOURCE(S)

	Type	Intensity (mA)	@ $\varepsilon_n = \beta\gamma\varepsilon$ (π mm mrad)	Ion Species
(a)	Hot Cathode PIG	1		H^+
(b)	Hot Cathode PIG	1		D^+

INJECTION SYSTEM

Efficiency %

EXTRACTION SYSTEM

Electrostatic deflector Efficiency 80 %

CHARACTERISTIC BEAMS

	Accelerated Ions	E/A (MeV/u)	Current (part. μA) Internal	External
(a)	H^+	17	150	70
(b)	D^+	10	150	70

EXTRACTED BEAM PROPERTIES:

For 50 μA of 17 MeV/u H^+ ions

$\Delta E/E$ 1 % $\Delta\phi$ °rf

$\varepsilon_n = \beta\gamma\varepsilon$ x 30 π mm mrad z 10 π mm mrad

REFERENCES/NOTES

(a)

(b)