

ENTRY NO. CM11 Date
Machine Name BC2010N
Manufacturer The Japan Steel Works, LTD.
Address 4 Chatsuy-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 1992-1994 First Machine 1995
SALES: No. Sold/Operational 1 / 1 Currently Available yes
COST: Accelerator Facility

MAGNET
POLE PARAMETERS:
Diameter 101 cm R_{extract} 42 cm R_{inject} cm
HILL PARAMETERS: Gap (min) 6 cm B_{max} T
(@ 1.2x10⁵ AT) Gap (max) 6 cm B_{min} T
VALLEY PARAMETERS: Gap (min) 14 cm B_{max} T
(@ 1.2x10⁵ AT) Gap (max) 14 cm B_{min} T
AVERAGE FIELD: $\langle B \rangle_{\text{min}}$ 1.51 T $\langle B \rangle_{\text{max}}$ 1.51 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 350 Amps Stability $\pm 2 \times 10^{-5}$
Trim Coils 30 Amps Stability $\pm 1 \times 10^{-4}$
Stored Energy (cryogenic) MJ
WEIGHT: Iron 26 ton Conductor 1 ton
ION ENERGY: Bending Limit E/A = q²/A² 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_H/f_{ion} 2, 4
Freq 46 MHz Power in(max) 0.02 MW
Stability: Phase 1 Voltage 1×10^{-3}

VACUUM SYSTEM
OPERATING PRESSURE: 1×10^{-6} Torr
PUMPS: (No. and type) 2 diffusion pumps

ION SOURCE(S)
Type Intensity @ $\epsilon_n = \beta \gamma \epsilon$ Ion Species
(mA) (π mm mrad)
(a) PIG 1 H⁺
(b) PIG 1 D⁺

INJECTION SYSTEM
Efficiency %

EXTRACTION SYSTEM
Stripping Efficiency 100 %

CHARACTERISTIC BEAMS
Current (part. μ A)
Accelerated Ions E/A (MeV/u) Internal External
(a) H⁺ 20 100 100
(b) D⁺ 10 50 50
EXTRACTED BEAM PROPERTIES:
For 50 μ A of 20 MeV/u H⁺ ions
 $\Delta E/E$ 1 % $\Delta \phi$ °rf
 $\epsilon_n = \beta \gamma \epsilon$ x 30 π mm mrad z 10 π mm mrad

REFERENCES/NOTES
(a)
(b)

ENTRY NO. CM12 Date
Machine Name BC2211
Manufacturer The Japan Steel Works, LTD.
Address 4 Chatsuy-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 1988-1989 First Machine 1989
SALES: No. Sold/Operational 1 / 1 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
(@ 1.3x10⁵ AT) Gap (max) 7 cm B_{min} T
VALLEY PARAMETERS: Gap (min) 13 cm B_{max} T
(@ 1.3x10⁵ AT) Gap (max) 13 cm B_{min} T
AVERAGE FIELD: $\langle B \rangle_{\text{min}}$ 1.60 T $\langle B \rangle_{\text{max}}$ 1.60 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 400 Amps Stability $\pm 2 \times 10^{-5}$
Trim Coils 50 Amps Stability $\pm 1 \times 10^{-4}$
Stored Energy (cryogenic) MJ
WEIGHT: Iron 30 ton Conductor 1 ton
ION ENERGY: Bending Limit E/A = q²/A² 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_H/f_{ion} 2, 4
Freq 49 MHz Power in(max) 0.02 MW
Stability: Phase 1 Voltage 1×10^{-3}

VACUUM SYSTEM
OPERATING PRESSURE: 1×10^{-6} Torr
PUMPS: (No. and type) 1 diffusion pump

ION SOURCE(S)
Type Intensity @ $\epsilon_n = \beta \gamma \epsilon$ Ion Species
(mA) (π mm mrad)
(a) Hot Cathode PIG 1 H⁺
(b) Hot Cathode PIG 1 D⁺

INJECTION SYSTEM
Efficiency %

EXTRACTION SYSTEM
Electrostatic deflector Efficiency 80 %

CHARACTERISTIC BEAMS
Current (part. μ A)
Accelerated Ions E/A (MeV/u) Internal External
(a) H⁺ 22 150 70
(b) D⁺ 11 150 70
EXTRACTED BEAM PROPERTIES:
For 50 μ A of 22 MeV/u H⁺ ions
 $\Delta E/E$ 1 % $\Delta \phi$ °rf
 $\epsilon_n = \beta \gamma \epsilon$ x 30 π mm mrad z 10 π mm mrad

REFERENCES/NOTES
(a)
(b)