

ENTRY NO. CM11 Date
 Machine Name BC2010N
 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 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: _{min} 1.51 T _{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 ±2x10⁻⁵
 Trim Coils 30 Amps Stability ±1x10⁻⁴
 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 1x10⁻³

VACUUM SYSTEM
 OPERATING PRESSURE: 1x10⁻⁶ Torr
 PUMPS: (No. and type) 2 diffusion pumps

ION SOURCE(S)
 Type Intensity @ ε_n = βγε 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. μA)
 Accelerated Ions E/A (MeV/u) Internal External
 (a) H⁺ 20 100 100
 (b) D⁺ 10 50 50

EXTRACTED BEAM PROPERTIES:
 For 50 μA of 20 MeV/u H⁺ ions
 ΔE/E 1 % Δφ °rf
 ε_n = βγε 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 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 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: _{min} 1.60 T _{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 ±2x10⁻⁵
 Trim Coils 50 Amps Stability ±1x10⁻⁴
 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 1x10⁻³

VACUUM SYSTEM
 OPERATING PRESSURE: 1x10⁻⁶ Torr
 PUMPS: (No. and type) 1 diffusion pump

ION SOURCE(S)
 Type Intensity @ ε_n = βγε 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. μA)
 Accelerated Ions E/A (MeV/u) Internal External
 (a) H⁺ 22 150 70
 (b) D⁺ 11 150 70

EXTRACTED BEAM PROPERTIES:
 For 50 μA of 22 MeV/u H⁺ ions
 ΔE/E 1 % Δφ °rf
 ε_n = βγε x 30 π mm mrad z 10 π mm mrad

REFERENCES/NOTES
 (a)
 (b)