

# North Star<sup>®</sup>

## MODULAR ICE RAKE SYSTEMS

Prices and Specifications Subject to Change without Notice (Replaces 4/1/2007)

RAKE MODEL NUMBER	STORAGE CAPACITY IN U.S. TONS / (METRIC TONS)					
	FLAKE ICE (57 Cu Ft/Ton)	SHELL ICE (57 Cu Ft/Ton)	SMALL TUBE (62 Cu Ft/Ton)	MID-TUBE (64 Cu Ft/Ton)	LARGE TUBE (66 Cu Ft/Ton)	PLATE ICE (50 Cu Ft/Ton)
SMR-1200	21 (19)	21 (19)	19 (18)	19 (17)	18 (17)	24 (22)
SMR-2000	35 (32)	35 (32)	32 (29)	31 (28)	30 (28)	40 (36)
SMR-2800	N/A	49 (45)	45 (41)	43 (40)	42 (39)	56 (51)
LMR-1800	32 (29)	32 (29)	29 (26)	28 (26)	27 (25)	36 (33)
LMR-2900	50 (46)	50 (45)	47 (43)	45 (41)	44 (40)	58 (53)
LMR-4200	N/A	74 (67)	68 (62)	66 (60)	64 (58)	84 (76)
JMR-4500	79 (72)	79 (72)	72 (66)	70 (64)	68 (62)	90 (82)
JMR-6300	N/A	110 (100)	102 (92)	99 (89)	96 (87)	126 (115)
HMR-6300	110 (100)	110 (100)	102 (92)	99 (89)	96 (87)	126 (115)
HMR-8800	N/A	154 (140)	142 (129)	137 (125)	133 (121)	176 (160)
GMR-9000	158 (144)	158 (144)	145 (132)	140 (128)	136 (124)	180 (164)
GMR-12600	N/A	221 (201)	203 (185)	197 (179)	191 (174)	252 (229)
FMR-10000	175 (159)	175 (159)	161 (147)	156 (142)	151 (138)	200 (182)
FMR-14000	N/A	246 (223)	226 (205)	219 (199)	212 (193)	280 (255)

\* Rake model numbers indicate cubic feet of storage space at maximum ice depth. Specifications subject to change without notice.

### **A. Standard Equipment Notes:**

- MR systems have fixed net inside length and width dimensions. The wall heights vary in four foot or five foot increments. (See dimensions chart: 8' to 16'). The system model number designates the ice bin storage capacity in cubic feet.
- Standard systems include the following galvanized steel items: Reinforced bin wall frames (HMR, GMR & FMR only) with 24 gauge sheet metal liners and hinged side access doors, rake, wear and thrust plates, bin door with plastic liner and viewing panel, hoist with cable sheaves and lifting cables, hoist drip pan, and bin door operator (Linear actuator for SMR & LMR, 0.75HP motor for JMR & HMR, and 1HP motor for GMR & FMR). SS FRONT Bin Panels around discharge screw and bin door are now STANDARD. Likewise, SS drive shaft and guard cover are STANDARD.

Also included is an electrical control panel with programmable controller (MicroLogic 1500) with remote modem; motor starters for the discharge screw (see note 6), rake, hoist (VFD included), and bin door operator (if required); circuit breakers; power conditioner (surge protection); 1.0 kVA transformer; door mounted 30 amp fused disconnect; touch screen operator interface (4-line display), rake level display; and manual control station for rake, hoist and bin door.

- Maximum delivery rates: SMR and LMR systems - 15 U.S. tons per hour, JMR and HMR systems - 30 U.S. tons per hour, GMR and FMR systems - 30 to 40 U.S. tons per hour.
- The standard SMR and LMR systems are provided with NH-78 PLASTIC rake chain. All the larger standard systems are provided with zinc plated chain (SS chain optional). The standard SMR, LMR and JMR systems are provided with plastic rake sprockets (drive & idle). The standard HMR systems are provided with galvanized rake drive sprockets, and plastic idle sprockets. The standard GMR and FMR systems are provided with galvanized rake drive & idle end sprockets (SS sprockets optional).
- The standard SMR and LMR systems are provided with manually controlled linear actuator for bin door operator. Larger systems are provided standard with a winch-type bin door operator, which may be controlled manually or automatically. The automatic bin door operator is available as an added cost option for the SMR and LMR systems. However, automatic bin door operation for batch type ice-on-demand is only applicable to systems storing Flake or Plate ice, since shell and tube ice will not form a stable ice wall when the bin door is opened.

### **B. Optional Equipment as Adder Items:**

- Reinforced wall systems for tube, shell or "wet" ice applications on SMR or LMR, discharge screw across end of bin and other collection or delivery conveyors, Stainless Steel items for several ice contact components such as bin liners, rake flights, rake chain, drive and/or idle end sprockets, wear & thrust plates, and any screw conveyors. NH-78 plastic chain on JMR rake requires special approval by North Star Engineering. Also available are control panel upgrades, which include ADDITIONAL motor starters for equipment supplied by others, VFD drives, larger door disconnects and processor upgrade with modem connection for double rake systems, enhanced operator interface with status and fault message display for double rake systems, (enhanced trouble shooting and system programming changes). Contact North Star for special or custom designed requirements and additional pricing.

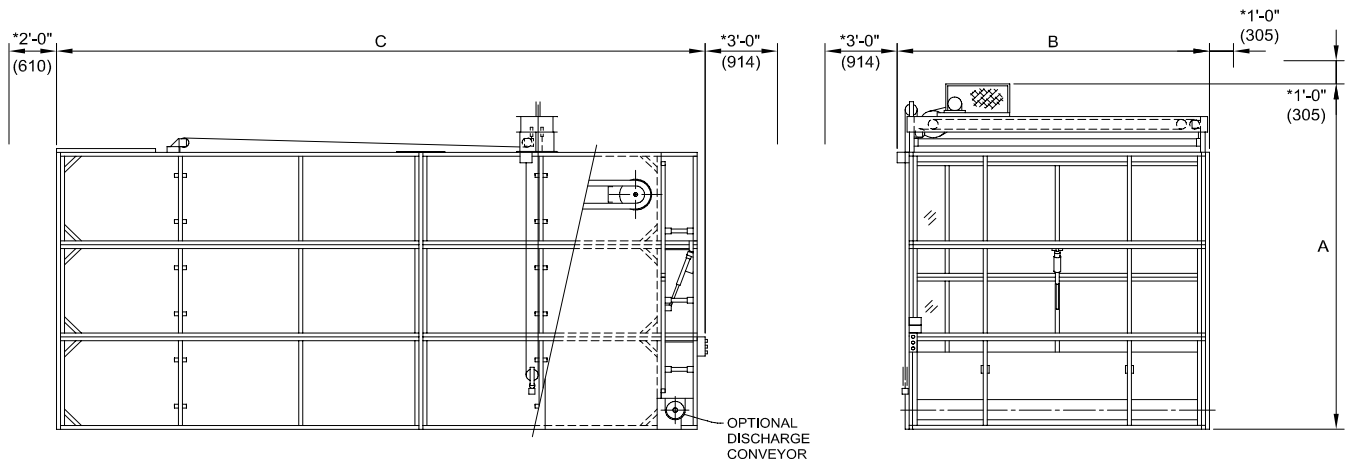
### **C. Other:**

- Recommended MR room temperature is +10°F to +20°F (-12°C to -7°C). Non-refrigerated rooms above 32°F (0°C), called "wet" bins, require added cost optional reinforced wall systems. Galvanized components in wet bin environment will experience accelerated corrosion.

Rev. 6/15/09

# North Star®

## Modular Ice Rake Dimensions



**ELEVATION VIEW**

**END VIEW**

(+) INDICATES MINIMUM ACCESS CLEARANCE REQUIRED AROUND EQUIPMENT.

Dimensions in parentheses are in millimeters. Weights in parentheses are in kilograms.

RAKE MODEL NO.	ICE DEPTH	WALL HEIGHT	INSIDE WIDTH	INSIDE LENGTH	"A" OVERALL HEIGHT	"B" OVERALL WIDTH	"C" OVERALL LENGTH	SHIPPING WEIGHT
SMR-1200 - 2 HP Mtz BDO optional	6'-0" (1829)	8'-0" (2438)	10'-0" (3048)	20'-0" (6096)	11'-0" (3353)	10'-9" (3277)	22'-2" (6756)	7,000 lbs (3175 kgs)
SMR-2000 - 2 HP Mtz BDO optional	10'-0" (3048)	12'-0" (3658)	10'-0" (3048)	20'-0" (6096)	15'-0" (4572)	10'-9" (3277)	22'-2" (6756)	8,200 lbs (3719 kgs)
SMR-2800 - 2 HP Mtz BDO optional	14'-0" (4267)	16'-0" (4877)	10'-0" (3048)	20'-0" (6096)	19'-0" (5791)	10'-9" (3277)	22'-2" (6756)	9,500 lbs (4309 kgs)
LMR-1800 - 2 HP Mtz BDO optional	6'-0" (1829)	8'-0" (2438)	12'-0" (3658)	25'-0" (7620)	11'-0" (3353)	12'-11" (3937)	27'-2" (8280)	9,000 lbs (4082 kgs)
LMR-2900 - 2 HP Mtz BDO optional	9'-8" (2946)	12'-0" (3658)	12'-0" (3658)	25'-0" (7620)	15'-0" (4572)	12'-11" (3937)	27'-2" (8280)	10,300 lbs (4672 kgs)
LMR-4200 - 2 HP Mtz BDO optional	14'-0" (4267)	16'-0" (4877)	12'-0" (3658)	25'-0" (7620)	19'-0" (5791)	12'-11" (3937)	27'-2" (8280)	12,000 lbs (5443 kgs)
JMR-4500 - 5 HP 0.75 HP BDO	10'-0" (3048)	12'-0" (3658)	15'-0" (4572)	30'-0" (9144)	15'-0" (4572)	16'-1" (4902)	32'-9" (9982)	12,500 lbs (5670 kgs)
JMR-6300 - 5 HP 0.75 HP BDO	14'-0" (4267)	16'-0" (4877)	15'-0" (4572)	30'-0" (9144)	19'-0" (5791)	16'-1" (4902)	32'-9" (9982)	14,500 lbs (6577 kgs)
HMR-6300 - 5 HP 0.75 HP BDO	10'-0" (3048)	12'-0" (3658)	18'-0" (5486)	35'-0" (10668)	15'-0" (4572)	19'-4" (5893)	37'-9" (11506)	16,300 lbs (7394 kgs)
HMR-8800 - 5 HP 0.75 HP BDO	14'-0" (4267)	16'-0" (4877)	18'-0" (5486)	35'-0" (10668)	19'-0" (5791)	19'-4" (5893)	37'-9" (11506)	19,000 lbs (8618 kgs)
GMR-9000 - 5 HP 1 HP BDO	10'-0" (3048)	12'-0" (3658)	20'-0" (6096)	45'-0" (13716)	15'-0" (4572)	21'-4" (6502)	47'-10" (14580)	19,600 lbs (8890 kgs)
GMR-12600 - 5 HP 1 HP BDO	14'-0" (4267)	16'-0" (4877)	20'-0" (6096)	45'-0" (13716)	19'-0" (5791)	21'-4" (6502)	47'-10" (14580)	22,800 lbs 10342 (kgs)
FMR-10000 - 5 HP 1 HP BDO	10'-0" (3048)	12'-0" (3658)	20'-0" (6096)	50'-0" (15240)	15'-0" (4572)	21'-4" (6502)	52'-10" (16104)	20,700 lbs (9389 kgs)
FMR-14000 - 5 HP 1 HP BDO	14'-0" (4267)	16'-0" (4877)	20'-0" (6096)	50'-0" (15240)	19'-0" (5791)	21'-4" (6502)	52'-10" (16104)	24,100 lbs (10932 kgs)