



NOR-LAKE[®] SCIENTIFIC

-86°C SELECT[™] ULTRA-LOW UPRIGHT FREEZERS



Designed to meet the demanding requirements for scientific and laboratory research. Advanced engineered design incorporates the latest in cabinet, refrigeration, temperature control and monitoring features. Provides energy efficient, convenient, safe and reliable performance for optimal storage temperature environments necessary for a wide range of life science, pharmacy, biological, medical, clinical, and industrial applications.

NORLAKE SCIENTIFIC



Committed to our environment



Nor-Lake® Scientific -86°C Select™ Ultra-Low Upright Freezers

CONSTRUCTION

CFC free polyurethane cabinet and door foam insulation.

High-impact, smooth scratch and corrosion resistant painted exterior and smooth white painted interior, provides attractive appearance and easy to clean surfaces.

Interior and exterior of the freezer cabinet are white painted galvanized steel.

Combination cabinet mounted multi-bulb and door perimeter gaskets provide multiple points of door sealing. Ensures reliable frost resistant performance and enhances energy efficient cold performance for long term sample security and storage.

Interior doors (5) independent hinged steel inner doors are constructed of insulated panels with magnetic catch and easy pull handles. Reduces cold loss during door openings and sample retrieval.

Five internal storage compartments with four heavy duty reinforced stainless steel shelves. Shelves are adjustable in 1 inch increments. Compatible with optional stainless steel storage racks, fiberboard boxes and dividers for multiple storage needs.

Multi-feed patent pending cold wall evaporator design provides superior refrigerant flow and maximizes cooling power by ensuring that the evaporator is always 100% in contact with the freezer wall, maximizing cold transfer into the freezer and heat removal from the chamber.

Easy open integrated outer door latch and handle allows one-handed opening and closing.

Door latch and handle key lock for added security and protected access to freezer contents.

Three adjustable heavy-duty door hinges ensure outer door fit and positive seal.

Exclusive chamber vacuum relief system allows convenient and fast re-entry to cabinet upon outer door closing.

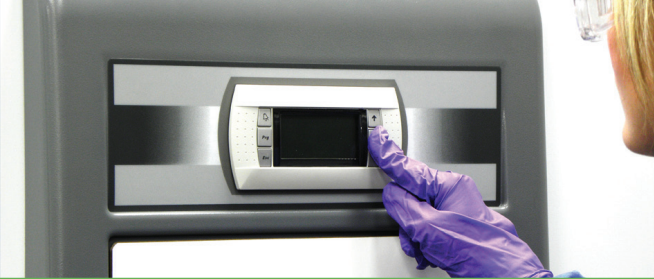
Door activated electro-magnetic switch for use with door ajar alarm, optional CO₂/LN₂ backup systems and vacuum relief system.

1 inch diameter sensor access ports (2), located in top and bottom of back wall of cabinet for use with monitoring sensor probes.

Heavy duty swivel locking casters and two front adjustable leveling feet allow for easy mobility of freezer and stability upon final placement of freezer.

Low profile external cabinet height.





SELECT™ CONTROL SYSTEM

Advanced PLC (programmable logic) microprocessor controller (door mounted eye level display and interface) includes real time clock, event logging alarm history, advanced alarms, alarm-test, and memory functions.

Password protection (2 levels, setpoints and parameters) security for power, temperature and alarm settings.

Key pad, multifunction, menu driven, LCD display for trouble free access on monitoring of all control features.

Temperature adjustable in 0.1°C increments.
Temperature display to 0.1°C increments.

Control probe located in rear wall bottom left corner for optimal and accurate temperature measurement and control.

Power on/off switch located in protected area on back of cabinet.

Power failure alarm (audible and visual). Time selectable.

Door ajar indicator (audible and visual).

Remote alarm contact connections located on back of cabinet for easy installation and access.

Compressor protection monitors compressor performance and automatically adjusts to internal and external conditions.

Delayed startup (programmable) delays freezer restart after power interruption.

Surge protection minimizes voltages spikes; protects system electronics.

Exclusive voltage boost/buck system ensures proper operating voltage to operating system. Reduces incoming line voltage if too high and boosts line voltage if too low.

Audible and visual Hi/Lo temperature alarms are user settable via controller keypad.

On-board system and maintenance diagnostics continuously monitors system sensors to ensure optimal freezer performance.

Ambient temperature monitor and alarm indicate room temperature conditions.

24-hour back-up microprocessor battery continuously recharged. Includes low battery indicator.

2-10 VDC cabinet air temperature transmitter.

Dry erase board and pocket storage organizer for user comments, notes and documents storage. Dry eraser and markers included.

SELECT™ REFRIGERATION SYSTEM

Nor-Lake Scientific's Select™ Refrigeration system is powered by an advanced low noise high performance cascade refrigeration system using two next generation 1 HP hermetically-sealed compressors.

Exclusive engineered super capacity (tri-tube) capillary tube system (patent pending) delivers refrigerant on demand matching with advanced heat exchanger design providing optimal heat removal and superior low temperature performance.

Evaporator design enhances refrigerant flow increasing the overall efficiency, temperature uniformity and recovery performance.

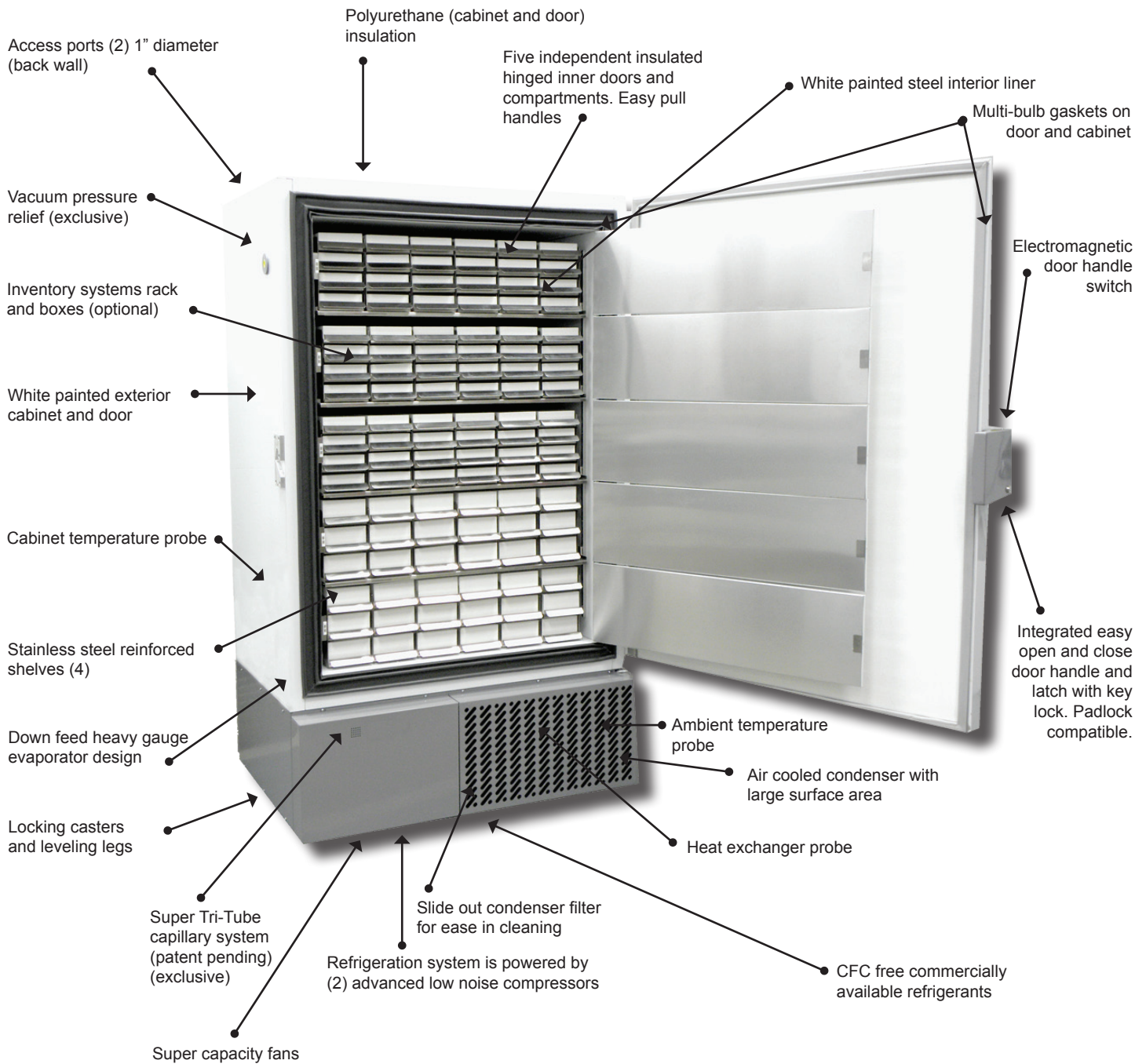
Air cooled condenser, high capacity with large surface area. Washable condenser filter maintains optimal efficiency and performance.

Clean filter indicator advises when to remove and clean. Easy service and maintenance.

CFC-Free, commercially available refrigerants are used: R404a in first stage; R508b in second stage.

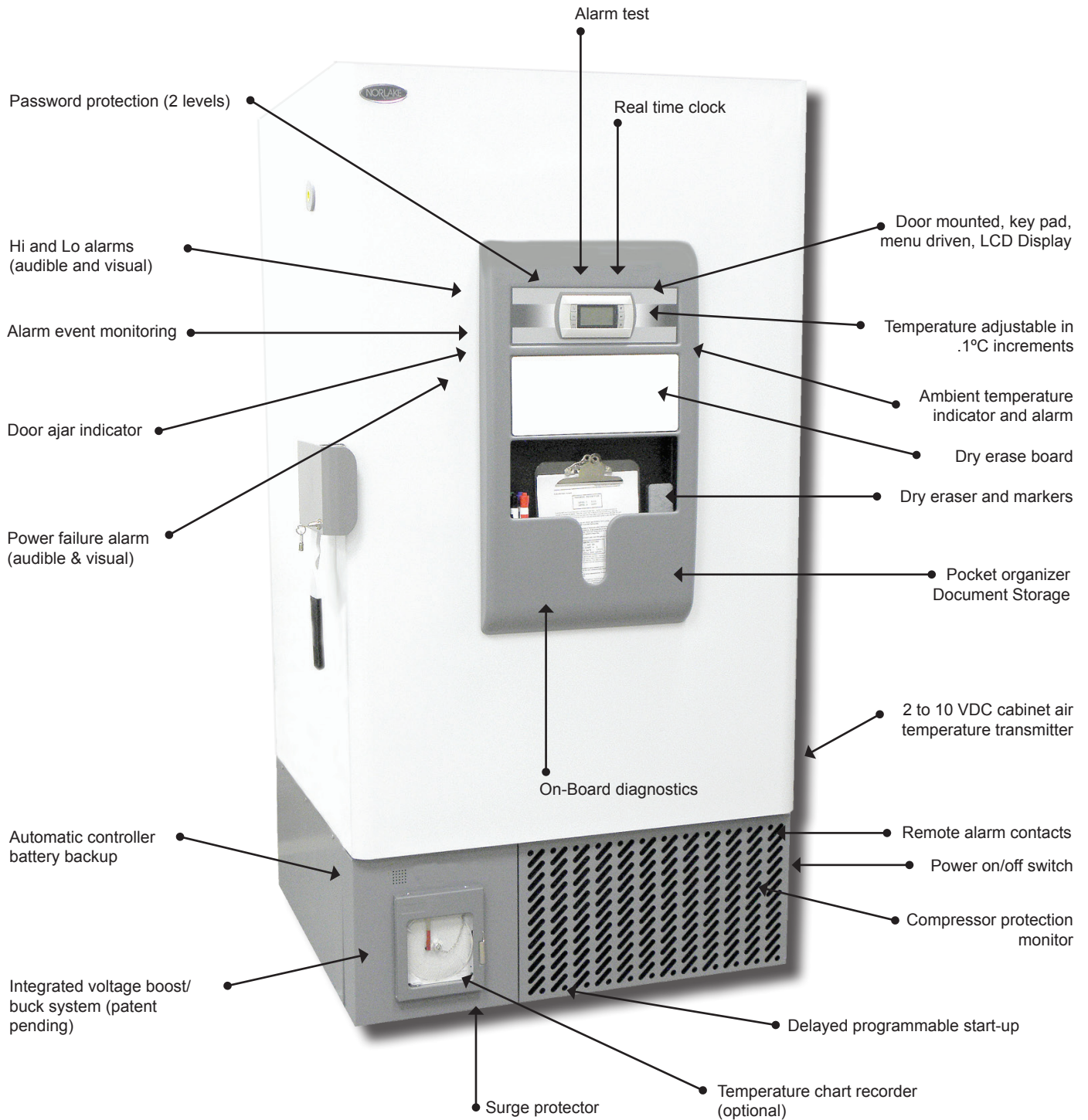


Nor-Lake® Scientific -86°C Select™ Ultra-Low Upright Freezer Advanced Cabinet & Construction Features





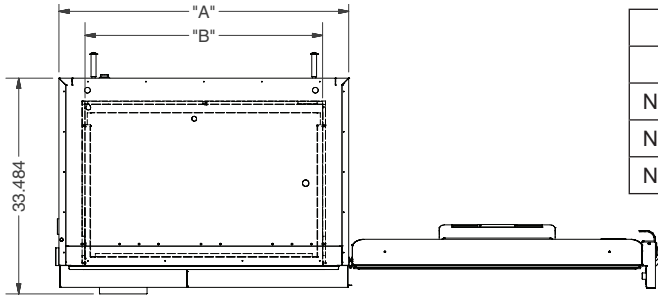
Nor-Lake® Scientific -86°C Select™ Ultra-Low Upright Freezer Advanced Controller & Monitor Features





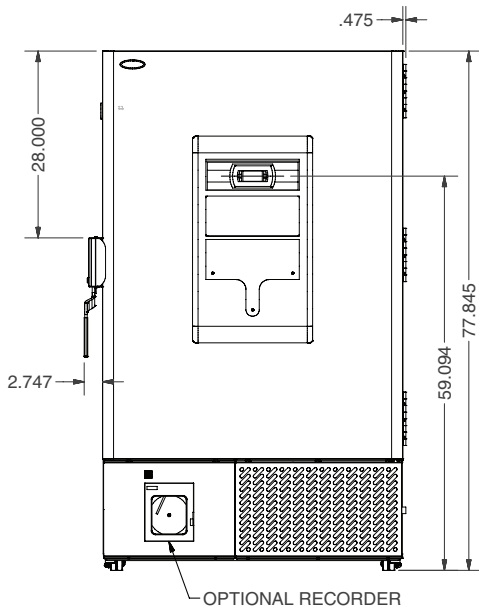
Nor-Lake® Scientific -86°C Select™ Ultra-Low Upright Freezers

Temperature Range: -50°C to -86°C

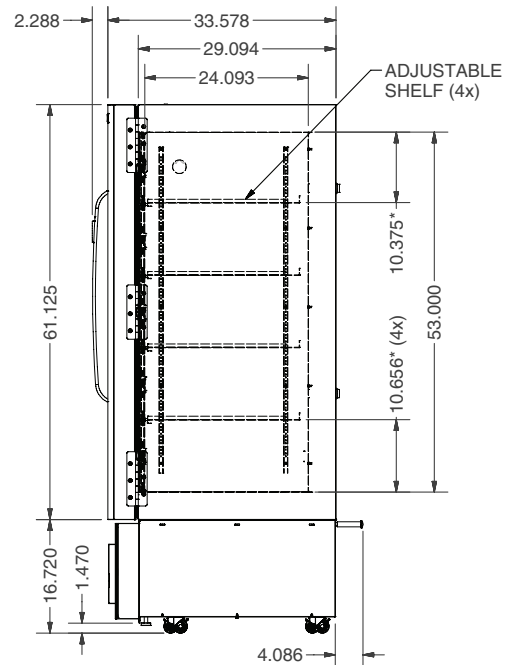


Top View

NSSUF UPRIGHT FREEZER MODELS				
MODEL	"A"	"B"	SHELF SIZE	INTERIOR VOL. (FT ³)
NSSUF281	45"	36.8"	22.3" X 35.1"	27.5
NSSUF241	39.1"	31"	22.3" X 29.3"	23.2
NSSUF191	33.3"	25.2"	22.3" X 23.5"	18.9



Front View



Side View

Voltage Model Suffix Code	Voltage Description	NEMA Plug	NEMA Receptacle	Amps	Breaker
/0	115V, 1PH, 60HZ	5-20P	5-20R	16	20
/4	208/230V, 1PH, 60HZ	6-15P	6-15R	12	15
/5	220V, 1PH, 50HZ	Power Inlet IEC 60320 Module	Cord Supplied Locally	12	15

/0 and /4 units are UL and C-UL listed.



SPECIFICATIONS

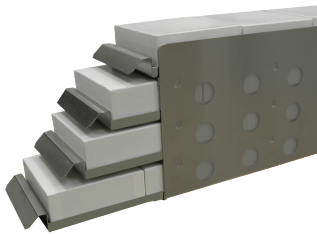


NSSUF28/WWW/0
w/ Optional Racks & Boxes

Models	NSSUF191WWW/0	NSSUF241WWW/0	NSSUF281WWW/0
	NSSUF191WWW/4	NSSUF241WWW/4	NSSUF281WWW/4
	NSSUF191WWW/5	NSSUF241WWW/5	NSSUF281WWW/5
Interior Height (in) (cm)	53" (134)	53" (134)	53" (134)
Interior Width (in) (cm)	25.2" (64)	31.1" (78)	36.8" (93)
Interior Depth (in) (cm)	24.3" (61)	24.3" (61)	24.3" (61)
Exterior Height (in) (cm)	77.8" (197)	77.8" (197)	77.8" (197)
Exterior Width (in) (cm)	36.5" (92)	42.3" (107)	48.2" (122)
Exterior Depth (in) (cm)	36.1" (91)	36.1" (91)	36.1" (91)
Capacity (ft.3) (liters)	18.9 (539)	23.2 (659)	27.5 (781)
Weight (lbs) (kg)	685 (316)	715 (325)	745 (338)
Crated Height (in) (cm)	83" (211)	83" (211)	83" (211)
Crated Width (in) (cm)	39.4" (100)	45.2" (115)	51" (130)
Crated Depth (in) (cm)	43" (109)	43" (109)	43" (109)

Exterior dimensions include allowances for hinges, door handle and control panel.

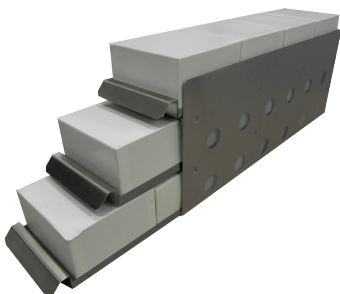
RACK & BOX CAPACITIES FOR 2" FIBERBOARD BOXES



NSR244 W/ NBOX2

Models	NSSUF191WWW/0	NSSUF241WWW/0	NSSUF281WWW/0
	NSSUF191WWW/4	NSSUF241WWW/4	NSSUF281WWW/4
	NSSUF191WWW/5	NSSUF241WWW/5	NSSUF281WWW/5
Internal Chamber (ft.3) (liters)	18.9 (539)	23.2 (659)	27.5 (781)
Number of Outer Doors	1	1	1
Number of Inner Doors	5	5	5
Number of Shelves/Compartments	4/5	4/5	4/5
Total Quantity of Racks with 2" Boxes (Full Capacity)	20	25	30
Quantity of 2" Boxes per Rack (Full Capacity)	16	16	16
Total Quantity of 2" Boxes per Cabinet (Full Capacity)	320	400	480

RACK & BOX CAPACITIES FOR 3" FIBERBOARD BOXES



NSR334 W/ NBOX3

Models	NSSUF191WWW/0	NSSUF241WWW/0	NSSUF281WWW/0
	NSSUF191WWW/4	NSSUF241WWW/4	NSSUF281WWW/4
	NSSUF191WWW/5	NSSUF241WWW/5	NSSUF281WWW/5
Internal Chamber (ft.3) (liters)	18.9 (539)	23.2 (659)	27.5 (781)
Number of Outer Doors	1	1	1
Number of Inner Doors	5	5	5
Number of Shelves/Compartments	4/5	4/5	4/5
Total Quantity of Racks with 3" Boxes (Full Capacity)	20	25	30
Quantity of 3" Boxes per Rack (Full Capacity)	12	12	12
Total Quantity of 3" Boxes per Cabinet (Full Capacity)	240	300	360



Options & Accessories

# NSR244	Inventory Rack, Stainless Steel for Boxes Holds (16) 2 inch boxes
# NSR334	Inventory Rack, Stainless Steel for Boxes Holds (12) 3 inch boxes
# ND49	Cell Divider 7x7 Grid
# ND64	Cell Divider 8x8 Grid
# ND81	Cell Divider 9x9 Grid
# ND100	Cell Divider 10x10 Grid
# NBOX2	2" Fiber board storage box
# NBOX3	3" Fiber board storage box
# MA420ULT	4-20 MA Output
# RS485ULT	RS485 Communications
# PHONEDIALER	Phone Dialer
# NORSOFTULT	Ethernet 10 baseT (HTTP) control monitoring web card (factory installed)
# SECUREGUARDULT	Secure Guard Door Lock /Access ProxKey
# SECURESOFTULT	Secure Guard Lock Software
# LN2ULT	LN2 Backup System (Factory Installed)
# CO2ULT	CO2 Backup System (Factory Installed)
# RECORDULT	Chart Recorder w/paper (Factory Installed)
# CABMOUNTULT	Seismic Mounting Kit
# EXPCRATEULT	Export Crating
# SHELF281	Shelf with 2 clips for ULT 281 models
# SHELF241	Shelf with 2 clips for ULT 241 models
# SHELF191	Shelf with 2 clips for ULT 191 models
# TLCORD520P	Twist lock cord and plug set for 115V 20A, 60HZ ULT model
# TLCORD615P	Twist lock cord and plug set for 208/230V 20A, 60HZ ULT models

ULT Freezer Storage Applications

antibiotics
 autopsy material
 blood
 body fluids
 cells
 chemicals
 chemistry materials
 conditioning
 cultures
 DNA/RNA
 drugs
 electronics
 environmental samples
 enzymes
 epoxy
 fungi
 glycerin stocks
 insect artifacts
 plant samples
 plasma
 proteins
 reagents
 serum
 tissues
 urine
 vaccines
 virus
 yeast



NBOX2 w/divider

NBOX3 w/divider



Chart Recorder



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NORLAKE SCIENTIFIC

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WARRANTY

DOMESTIC - 18 months parts and labor (total 5 year compressor) warranty parts
 INTERNATIONAL - 18 months parts warranty