

NQ500

Operations Manual



Specifications

Height	78"
Width	26"
Depth	13"
Weight	184 lbs.
Electrical	115V - 60 Hz 3.6 AMPS - normal speed (speed 3) 4.0 AMPS- boost speed (speed 4) used for negative pressure applications
Air flow	510 CFM
Pressure gauge	0-2"
dBA	54 high
Hour meter	Non-reset able (99,999 hours)

CONSUMABLES

Type	Efficiency	Size	Order number	Change frequency
<u>2" Pre-filter</u>	MERV 6	12" x 24" x 2"	NQ12242-30	3 months
<u>4" Pre-filter</u>	MERV 6	12" x 24" x 4"	NQ12244-30	6 months
<u>HEPA (HCX)</u>	99.99% (Super High Capacity)	12" x 24" x 12"	NQ122412-99	18 months
<u>UVGI Lamps</u>	58,100 mwsec/cm ²	915	NQ7UVQ	9,000 Hours

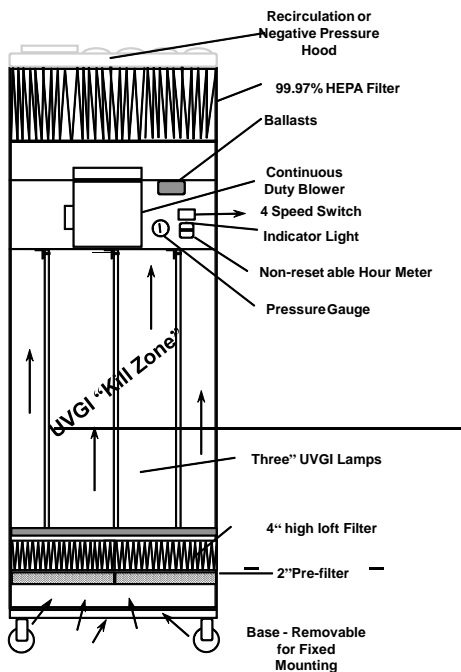
NOTE:
Above listed frequency changes are Factory Recommendations for Filter Cycle
However, always follow standard Hospital SOP for Filter Servicing.

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N Q 5 0 0 S T A N D A R D

(Recirculation and/or Neg. Pressure, Fixed or Mobile, UV)
Q F - 3 0 R e v . C 0 5 / 1 8 / 1 0
R e t a i n F o r L i f e o f P a r t / M a t e r i a l

How it works



Hour Meter.

The non-resetable hour meter records actual running time of unit and establishes the maintenance periods for replacement filters and lamps.

Indicator Light.

The green indicator light mounted in the hour meter shows the status of the UVGI lamps. Should a light go off – or start to flicker, this would indicate a problem with the UVGI lamps or the ballast. Consult trouble shooting section.

Pressure Gauge.

The minihelic pressure gauge measures the pressure differential across the filters. **Record start pressure on filter maintenance schedule when filters are clean.** Pre-filter should be changed after 3 months **or** if the pressure drops **0.2"** below the original reading. If after changing the pre-filter, pressure has not returned to original start pressure then the 4" pre-filter should be changed (this is usually 6 months). A reading **0.2" above** the original reading (with clean prefilters) indicates that the HEPA filter is ready to be changed.

Installing the NQ500

The NQ500 is a very flexible unit. It may be used as a portable air purification unit, or it may be static mounted. With it's optional negative pressure top, it is an economical alternative for creating negative pressure rooms complying with CDC guidelines.

Portable Operation

The NQ500 is extremely easy to use as a portable air purification unit. Just wheel it into the room, plug it in, and benefit from clean, purified air immediately. The unit is designed to set up the correct air patterns, and is often most effective placed against a wall opposite the area needing protection. The clean, purified air will be exhausted across the ceiling, and dropped down over the contaminated area, pushing any droplet nuclei toward the floor and back into the NQ500.

The NQ500 is intended to be operated continuously when placed in potentially infectious areas. A safety interlock switch is located at the top of the access door. This switch will de-activate the unit when unlocking and opening the door. In addition, the unit has been equipped with a battery operated anti-tamper device. When the unit is unplugged, or the power is disabled, an alarm is activated. To deactivate the alarm, plug the unit back into an 115V outlet. For storage, there is a miniature toggle switch mounted inside the unit to deactivate the alarm thereby saving the battery. Open the door and you will find the switch at the front of the right filter rail. For normal operation, you should keep the alarm activated.

Fixed Mounting

For "fixed" or "static" applications, the NQ500 should be ordered with a fixed base. The back panel of the NQ500 extends one inch above the top of the unit. The unit is secured to the wall by screwing through this plate into the wall.

Installation is Simple:

Place the unit against the wall where desired, mark wall with outline of the top plate. Locate secure mounting positions on the wall. Drill through top plate from the back of the unit. (Care should be taken to prevent metal filings from falling into HEPA filter). Then screw through top mounting plate into the wall using suitable lag bolts or screws (screws or wall fasteners should be flush type not to impede with serviceability of the HEPA filter). If wall is wood or steel frame construction, ensure that screws go directly into studs. Use suitable anchor shields with masonry construction.(see page 7)

Negative Pressure Rooms

The NQ500 has an optional negative pressure top that may be supplied in place of the recirculation top. This option should be installed only with the consultation and aid of your engineering department or a HVAC contractor who is familiar with CDC guidelines for negative pressure rooms.

Setting up Negative Pressure: The return vent for the HVAC should be blocked off. The supply air should be measured to establish the incoming CFM (cubic feet per minute). CDC requires the exhaust airflows differential to be >150 CFM **greater** than the supply to create negative pressure. For example a room with a supply of 120 CFM will require 270 CFM to be exhausted. The remaining air from the NQ500 can be recirculated within the room.

A 10-inch round exhaust duct should be connected to the flange on the top of the unit, and vented to the exterior of the building through window, wall or dedicated sanitary air duct. A slide damper is located behind/under the re-circulation louvers at the top of the unit, and should be adjusted by loosening the four screws, and sliding the screws to balance the amount of air to be recirculated while achieving adequate negative pressure.

Depending on the exact configuration of the exhaust duct, the 10" exhaust will handle approximately 500 CFM.

After installation of the exhaust duct the NQ500 should be turned on and the negative pressure checked. Various monitoring devices are available to confirm negative pressure, however a simple method is to use a smoke test kit under the doorway to the room. With the door closed the smoke should be drawn into the room. Adjust the damper on the louvers to suit.

Ensuring Effective Air Circulation

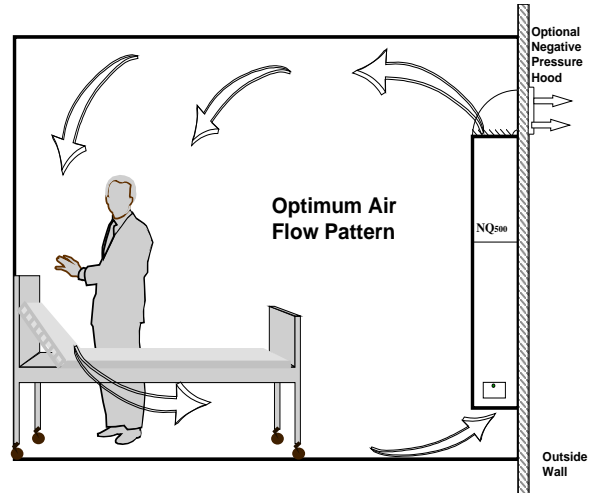
The NQ500 is effective wherever it is placed within the room. However, we recommend placing the unit at the wall by the foot of the bed. This then sets up airflow across the ceiling and downwards over the health care worker and the patient. (See illustration below)

Room Size And Air Changes Per Hour

CDC guidelines require at least 12 air changes per hour (ACH) for adequate airborne infection control. In California CALOSHA has increased that requirement to 14 - 20 ACH for certain areas.

The NQ500 will change 30,000 cubic feet per hour (CFH) at high speed.

To calculate the number of air changes per hour for a given room, you divide the cubic capacity of the room into the amount of air passing through the NQ500 in a one-hour period.



EXAMPLE:

Room Size: 14' wide x 18' long x 8' high = 2,016 cubic feet.
 In one hour NQ500 produces 500 CFM x 60 (minutes) = 30,000 CFH.

Number of air changes per hour $\frac{30,600}{2,016} = 15.1$ ACH

(Note: other additional air sources within the room may be added to NQ system CFM to figure the total ACH in the room.)

Blower replacement

If for any reason the blower needs to be removed for service or replacement, the blower is removed via the front door (remove the UVGI Lamps first). The middle lamp clip must be removed first by loosening the screw and then sliding the clip sideways towards the side of the unit. The wires to the clip are left in place. Move the lamp clip above the 1" shelf and then remove the two blower nuts and washers. Then the blower can be dropped, rotated slightly toward the back of the unit and lowered from the top cabinet.

This will now allow complete removal of the blower.

Sketch the location, color, and orientation of the wires that run to the blower so that replacement will be easier. Strap or fasten the new wiring into place after the blower work is completed.

MAINTAINING THE NQ500

SAFETY NOTE: Before you attempt any maintenance, always **UNPLUG THE UNIT.**

DO NOT attempt to engage the interlock switch on the unit without replacing the access door first; this will result in exposure to intense UVGI (**Ultra Violet Germicidal Irradiation Will Burn Eyes and Skin.**)

Every maintenance period:

- **Turn the unit off by unplugging it from the 115V wall socket.** Open the front access door with the key(s) provided. **RECORD THE HOUR READING AND PRESSURE DROP ON YOUR MAINTENANCE SCHEDULE CARD(S).** Additionally, note the maintenance procedures performed at this hour reading on your card.
- **DO NOT** touch the glass of the lamps with your bare hands, as the oils on your skin will degrade the performance of the lamps. At every maintenance period or filter change, wipe down the lamps and the reflectors with a clean damp cloth or gauze pad.

Frequency of Filter changes will depend on location of the NQ500. Patient, Purification and Operating Rooms are cleaner than Public Areas such as ER Waiting Rooms and require less frequent changes.

Change Frequency

<u>Type</u>	<u>Efficiency / Dosage</u>	<u>Size</u>	<u>Order number</u>	<u>Change frequency</u>
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<u>4" Pre-filter</u>	MERV 6	12" x 24" x 4"	NQ12244-30	6 months
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NOTE:

Above listed frequency changes are:
Factory Recommendations for Filter Cycle
However, always **follow standard Hospital SOP for Filter Servicing.**

UNPLUG UNIT

When changing Pre-Filters: UNPLUG UNIT: We strongly recommend the use of gloves and mask. Used pre-filters should be placed in plastic bags, sealed and disposed of in same manner as your other HVAC filters per facility S.O.P. Unplug the unit, unlock and open the door, gently remove the filters from the filter tracks and place them in the plastic bag. Seal the bag, then slide new filters into the empty tracks. Close and lock the door before plugging the unit back into the wall outlet.

To change HEPA Filter: UNPLUG UNIT: Remove the four screws from the top panel/grille, remove top and lift out the used HEPA filter taking precautions as stated above for pre-filters. Inspect the new HEPA filter for any damage from shipping. **Be careful not to touch the HEPA media, it is very fragile and tears easily.** Slide the new filter **GASKET SIDE DOWN** back into the top of the unit and make sure the filter is level and seated properly. Replace the 4 screws **DO NOT OVERTIGHTEN** this will cause the HEPA filter to leak.

When changing UV Lamps: UNPLUG UNIT: The lamps should be first removed from the bottom clips. This is a two-handed operation: unscrew the **brass-knurled** nut with one hand, and remove the lamp with the other. The lamp is then pulled straight down until it clears the connector pins in the four-pin socket mounted in the top front of the chamber. Install the new lamps by reversing the removal process. Note: pins only fit in one way. **When installing UV Lamps DO NOT touch the glass tubes with bare hands, as skin oils block UVGI, making the lamps less effective and will also damage the bulbs.** Do not over tighten the bottom, knurled nut.

Minihelic Pressure Gauge - The minihelic pressure gauge measures the pressure differential across the filters. **Record Start Pressure when filters are clean.** There is a **Maintenance Sticker** on the right side of the unit explaining this procedure, and the initial clean reading is recorded for each unit and written on the label at the factory. The **2" Pre-Filter** should be changed at 3 months **or** if the pressure drops **0.2" below** the original reading. If after changing the pre-filter, the pressure has not returned to the original start pressure, then the **4" Pre-Filter** should be changed (this is usually at 6 months). A reading with clean prefilters **0.2" above** the original reading indicates that the **HEPA filter** is ready to be changed.

To restart unit: Close the door and close the top 2 locks. Plug the unit into the 115 V wall service, the unit will automatically restart once the door makes contact with the switch. Make sure the green indicator light is lit on the elapsed time meter. If the green light is not lit, recheck the lamp installation procedure and repeat the lamp changing exercise.

NQ500 Unit Seismic Anchoring

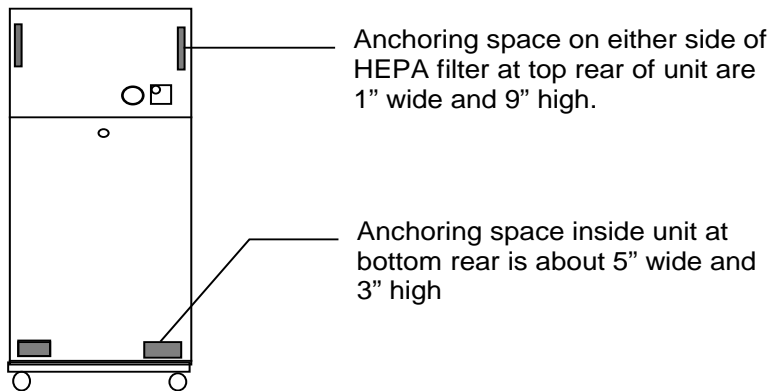
In some areas seismic anchoring is required or advisable. The following specifications may be used to correctly anchor the NQ500 to a building.

Required formula calculation in accord with building code, indicates a Fp of 444 pounds total force being restrained for the unit over 5' in height, if flexibly supported, i.e. cables.

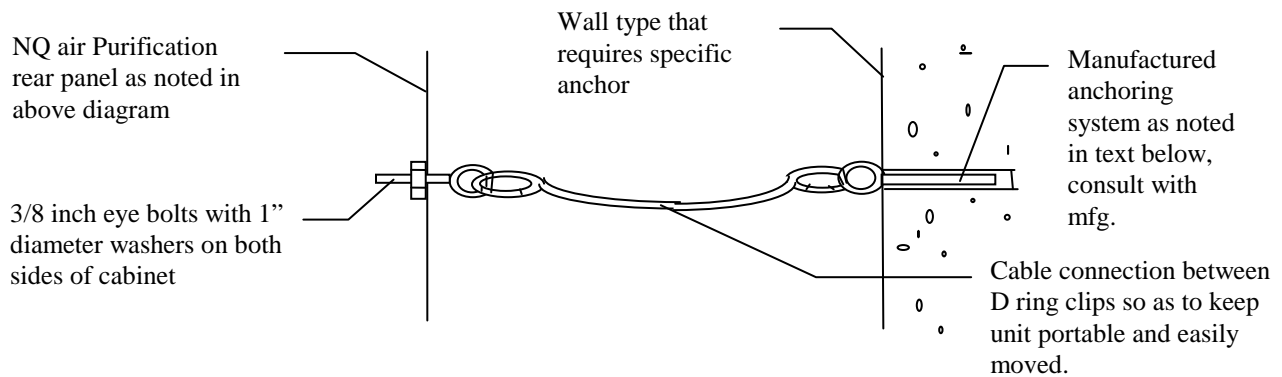
Restraints shall be located at the top and bottom and on each side, for a total of four. This anchoring system requires 111 pounds per restraint to satisfy the code. This amount should be doubled for design loads, depending on the manufacturers table designations.

Many anchoring systems and attachment types are available.

NQ Industries has provided space under the filter near the base of the unit in the rear, as well as space near the top of the unit in the rear, for these four anchors. (The top flange is also available.)



These spaces will accept any fastening required .

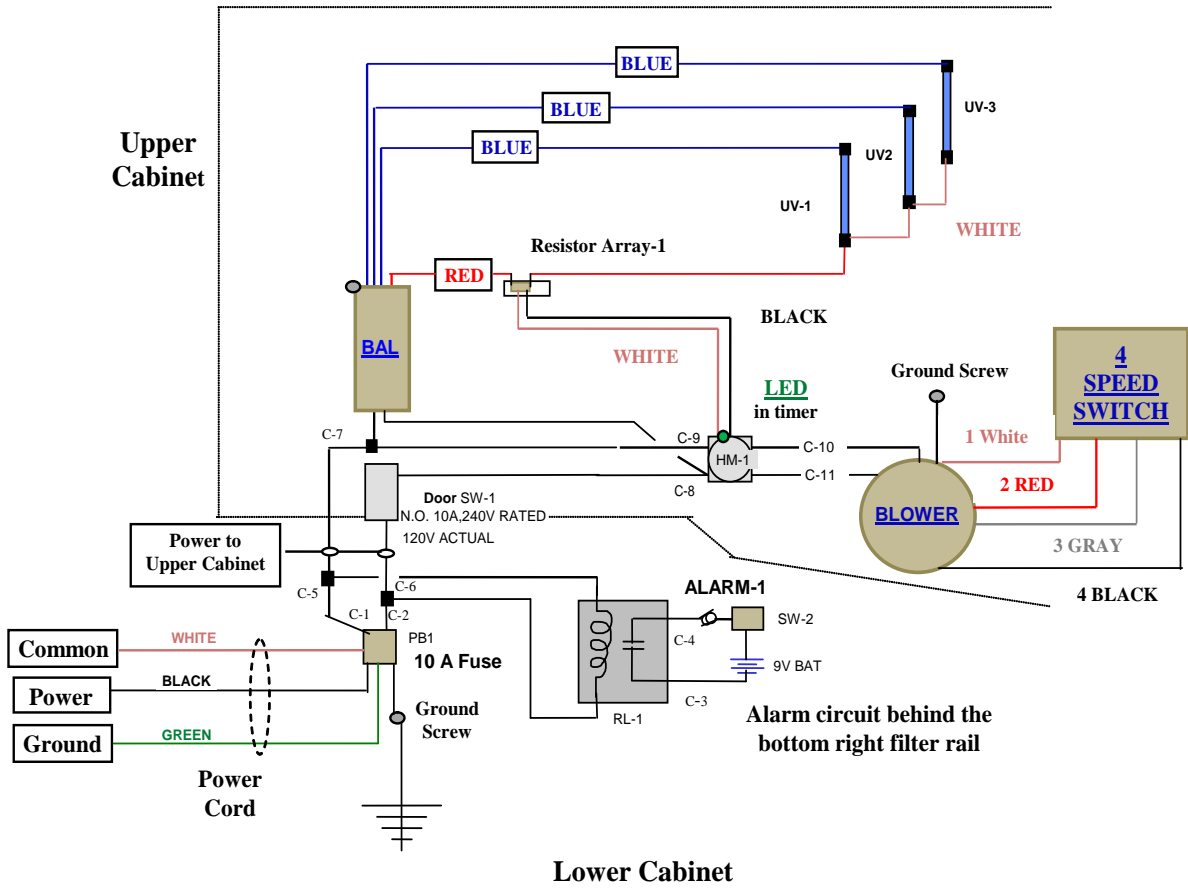


Allowable Wall Anchors Available

Ramset Tapcon	>	1/4" Φ 1 1/4" imbed into concrete or block
Ramset Dynabolt		1/4" Φ 1 1/8" imbed tie wire type
Hilti Metal Mit Anchors		1/4" Φ concrete hollow block or red clay brick
Hilti Toggler Bolt		1/4" Φ hollow block
Hilti Hit C-20 injecting adhesive		3/8" Φ block brick with holes, hollow clay tile, or light weight concrete block

Note: Consult Ramset or Hilti for site specific variations if required.

NQ500 Wiring Diagram



WARNING

To Reduce The Risk Of Electric Shock,
DO NOT Expose To Rain Or Water.

READ AND SAVE THESE INSTRUCTIONS

Before Servicing the NQ500
UNPLUG the Unit

TROUBLE SHOOTING CHART

<u>POTENTIAL PROBLEM</u>	<u>ACTION</u>
No operation:	<p>Check wall receptacle for power.</p> <p>Check cord set is inserted fully into the NQ500 unit, and into wall receptacle.</p> <p>Check 10 AMP fuse in the bottom face of the power inlet module.</p> <p>Check the access door to make sure it is fully closed and locked on both sides. You will hear a slight "click" as you push the door shut.</p> <p>If the above steps are not successful, call a qualified service technician.</p>
Blower runs but indicator light on the front panel is out	<p>Replace UVGI lamps in cabinet. Ballast circuitry will require a reset period of 60 seconds before any lamp lights. One lamp may be out but all lamps should be replaced at the same time. Factory recommendations are if one lamp is blown, change them all. This will ensure peak efficacy of the UVGI lamps.</p> <p>If above does not work, call a technician for more complex diagnosis.</p>

Any questions - please call: NQ Industries, Inc. at 1-800-837-8650

Express Limited Warranty and Disclaimer

NQ INDUSTRIES, INC. AIR PURIFICATION SYSTEMS LIMITED WARRANTY

NQ Industries warrants its Air Purification Systems to be free of defects in material or workmanship under normal use and operation for a period of two years from the date of purchase.

DISCLAIMERS AND LIMITATIONS

This warranty is subject to the disclaimers and limitations set forth below and is in lieu of all other warranties, express or implied, including the implied warranties of merchantability and fitness for a particular purpose.

This warranty does not cover any consumable components such as filters and lamps once they have been in operation.

This warranty does not extend to Air Purification Systems that have been improperly used, altered, or repaired by anyone other than your dealer or NQ Industries.

This warranty does not extend to any claim for incidental, consequential or special damages. Some states do not permit the exclusion or limitation of incidental, consequential, or special damages, so this exclusion may not apply to you.

Agents and representatives of NQ Industries have no authority to make representations or warranties of any kind beyond those set forth in this Limited Warranty.

This warranty gives you specific legal rights and you may also have other rights that vary from state to state.

WARRANTY REMEDY AND CLAIM PROCEDURE

NQ Air Purification Systems are precise devices that require care in handling and use. You must register your Air Purification System with NQ Industries to qualify for warranty service. If your Air Purification System is defective, contact your dealer or NQ Industries. After verification of purchase date from its warrantee records, NQ Industries will repair or replace it, at its option.

NQ contact information:

NQ Industries, Inc.
1275 Cromwell Avenue – Unit A-10
Rocky Hill, CT 06067
Toll Free (In North America) 1-800-837-8650
Phone: 860-258-3466
Fax: 860-258-3469

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NQ 500 STANDARD

(Recirculation and/or Neg. Pressure, Fixed or Mobile, UV)

QF-30 Rev. C 05/18/10

Retain For Life of Part/Material