Swirl diffuser

DAL 358

MADE IN CANADA

Maintenance and installation guide

KEEP THIS GUIDE

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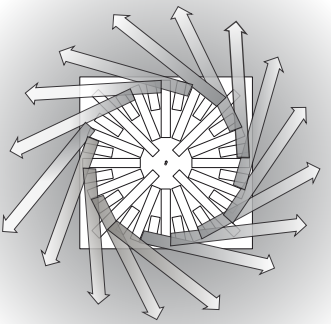
FLOW AND DIRECTION OF AIR

DN 600 - Helical flow 360˚

ST = Standard helical flow (21)
HL= Flow high-rise >5 m
(exterior 21 and center CD)
VF = Vertical flow (CD)



Correction factor : f

V_{MAX}	1.0
ΔP_t	1.0
L_{WA}[dB]	1.0

Configuration

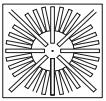

R-800/800


R-603/603


R-500/502


R-400/400


R-300/400


Q-800/800


Q-600/603


Q-500/603


Q-400/603


Q-300/603

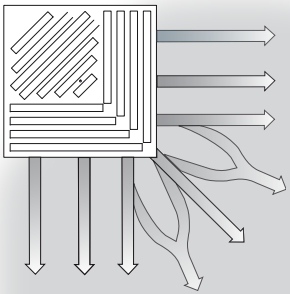

Q-500/502


Q-400/400


Q-300/400

DN 600 - 2 way 90˚

2C = Flow 90° (corner) (21)



Correction factor: f

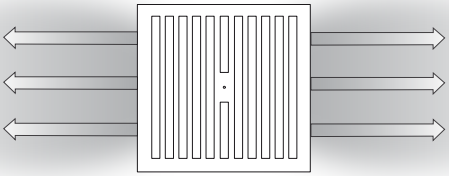
V_{MAX}	1.4
ΔP_t	1.0
L_{WA}[dB]	1.0

Configuration


800 600 500 300 400

DN 600 - 2 opposite ways

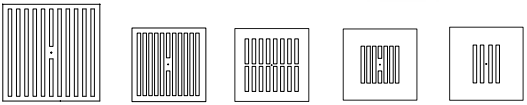
2W = Flow on 2 opposite sides (21 - 56)



Correction factor: f

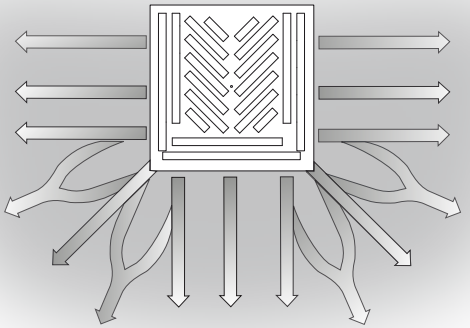
V_{MAX}	1.7
ΔP_t	1.0
L_{WA}[dB]	1.0

Configuration


800 600 500 400 300

DN 600 - 3-way helical 180°

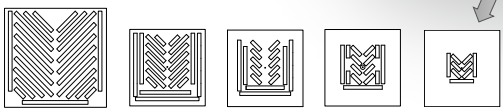
3W = Flow 180° (wall) (21 - 34)



Correction factor: f

V_{MAX}	1.2
ΔP_t	1.3
L_{WA}[dB]	1.1

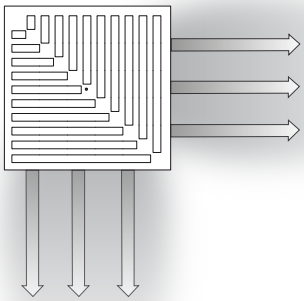
Configuration



800 600 500 400 300

DN 600 - 2-ways corner

2L = Flow on both side by L
(2 corridors) (21)



Correction factor: f

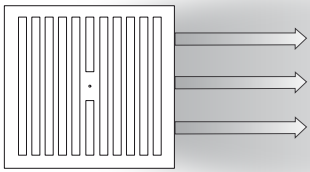
V_{MAX}	1.7
ΔP_t	1.0
L_{WA}[dB]	1.0

Configuration

800 600 500 400 300

DN 600 - 1 way

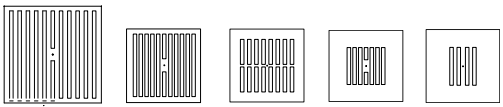
1W = Flow on one side (21)



Correction factor: f

V_{MAX}	2.0
ΔP_t	1.0
L_{WA}[dB]	1.0

Configuration



800 600 500 400 300

INSTALLATION IN A GYPSUM CEILING
DAL 358 Q

A) Opening in the gypsum

Choose one of the three (3) options instalation shown at right.

Option 1

- Measure the diffuser's dimensions
- **REMOVE** 13 mm or (1/2 inch)
- Cut a square in the gypsum corresponding to these measures (dimension of diffuser - 13 mm)
- Around this hole, insert a plaster frame and fix it

Option 2 and 3

- Measure the diffuser's dimensions
- **ADD** 13 mm (1/2") to the width and 13 mm (1/2") to the length
- Cut a square in the gypsum corresponding to these measures (dimension of diffuser + 13 mm)
- Around this hole, insert a plaster frame and fix it

B) Install the plenum box

The plenum will be suspended with metal wire through suspension's holes (4) predrilled for this purpose.

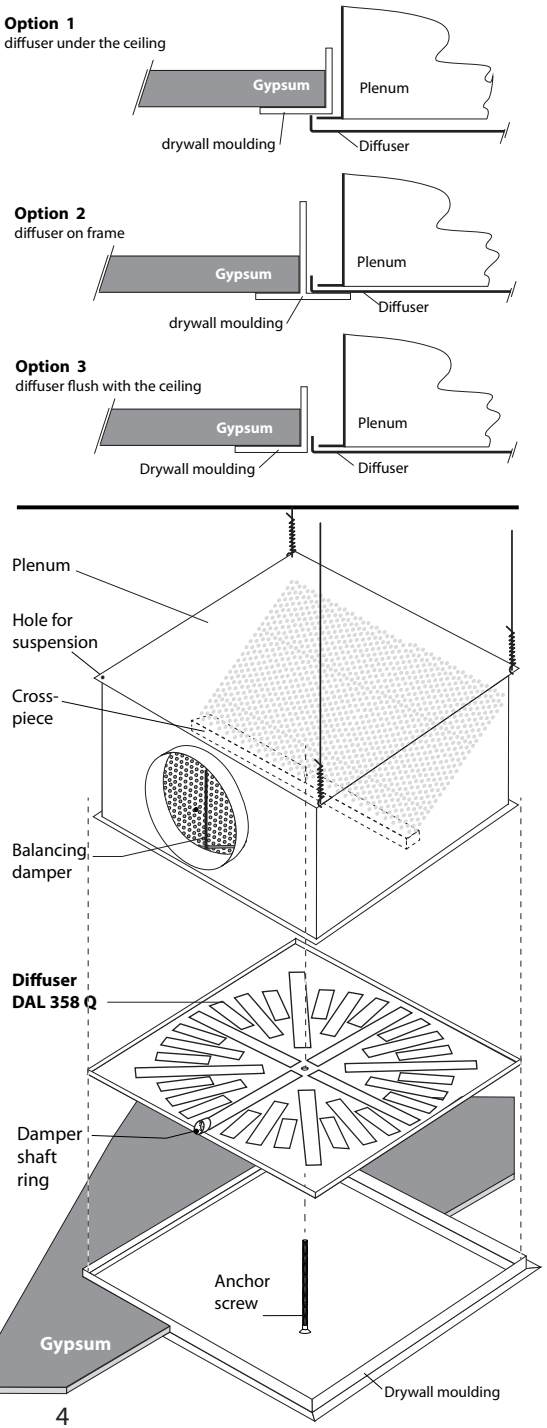
As shown in the drawing on the right, install the plenum by adjusting its height. According to option 1 and 2, the base of the plenum should be 1/8" into the hole or, with option 3, the base of the plenum will press outside the gypsum 's hole.

C) Install the diffuser

Fix the diffuser using the anchor screw provided for this purpose, ithrough the center of the cross-piece in the plenum.

NOTE: You will find the 140 mm (5 1/2")anchor screw clipped on the back of the diffuser.

Note:
For the diffuser DN 800,
4 additional screws in corners
of the front plate ensures its fixing.



INSTALLATION IN A GYPSUM CEILING
DAL 358 R

A) Opening in the gypsum

Choose one of the two (2) instalsation options shown on the right.

Option 1

- Measure the diffuser's diameter (ØD).
- **REMOVE** 13 mm (1/2 inch)
- Cut a circle in the gypsum equivalent to this new measure (ØD - 13 mm (1/2 inch)).
- Around this hole, place the gypsum guide and fix it.

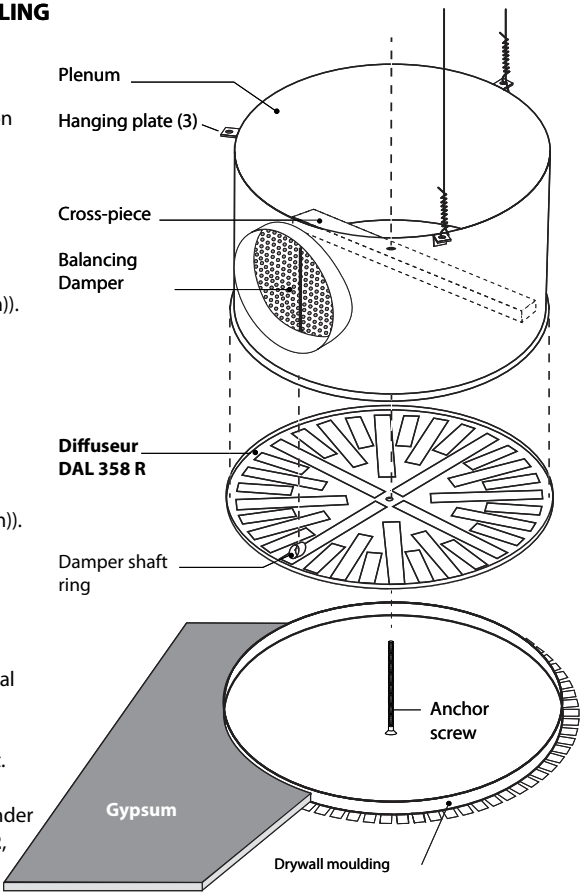
Option 2

- Measure the diffuser's diameter (ØD).
- **ADD** 13 mm (1/2 inch)
- Cut a circle in the gypsum equivalent to this new measure (ØD + 13 mm (1/2 inch)).
- Around this hole, place the drywall moulding and fix it.

B) Install the plenum

The plenum shall be hanged by the paraseismic hanging plate (3) with metal wire.

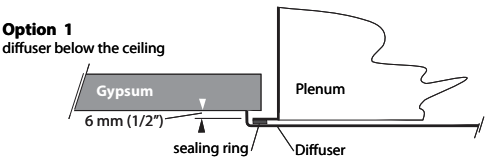
As shown in the drawing on the right, install the plenum and adjust its height. According to **option 1**, the lip of the plenum will be installed 6 mm (1/4") under the gypsum. **Or**, according to **option 2**, the base of the plenum must enter 3 mm (1/8") into the hole.

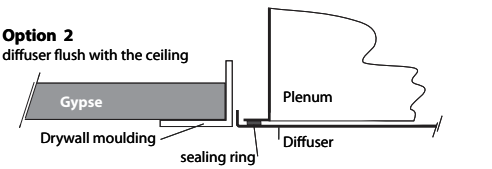


C) Install the diffuser

Install the diffuser making sure that the ring is perfectly aligned on the damper shaft ring.

Fix the diffuser using the 140 mm anchor screw provided for this purpose, in the center of the cross-piece in the plenum.





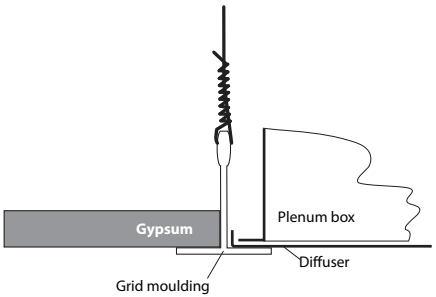
Note: For the ndiffuser DN 800, 4 additional screws in corners of the front plate ensures its fixing.

INSTALLATION IN SUSPENDING CEILING

DAL 358 Q

A) Grid moulding

Make sure that the grid moldings of the suspended ceiling match the diffuser's face dimensions.
Also, make sure that the moldings of the ceiling are firmly anchored.



B) Install the diffuser to the plenum box

Place the diffuser in the plenum and, using the screw anchors provided for this purpose, fix of the diffuser of cross-piece in the plenum

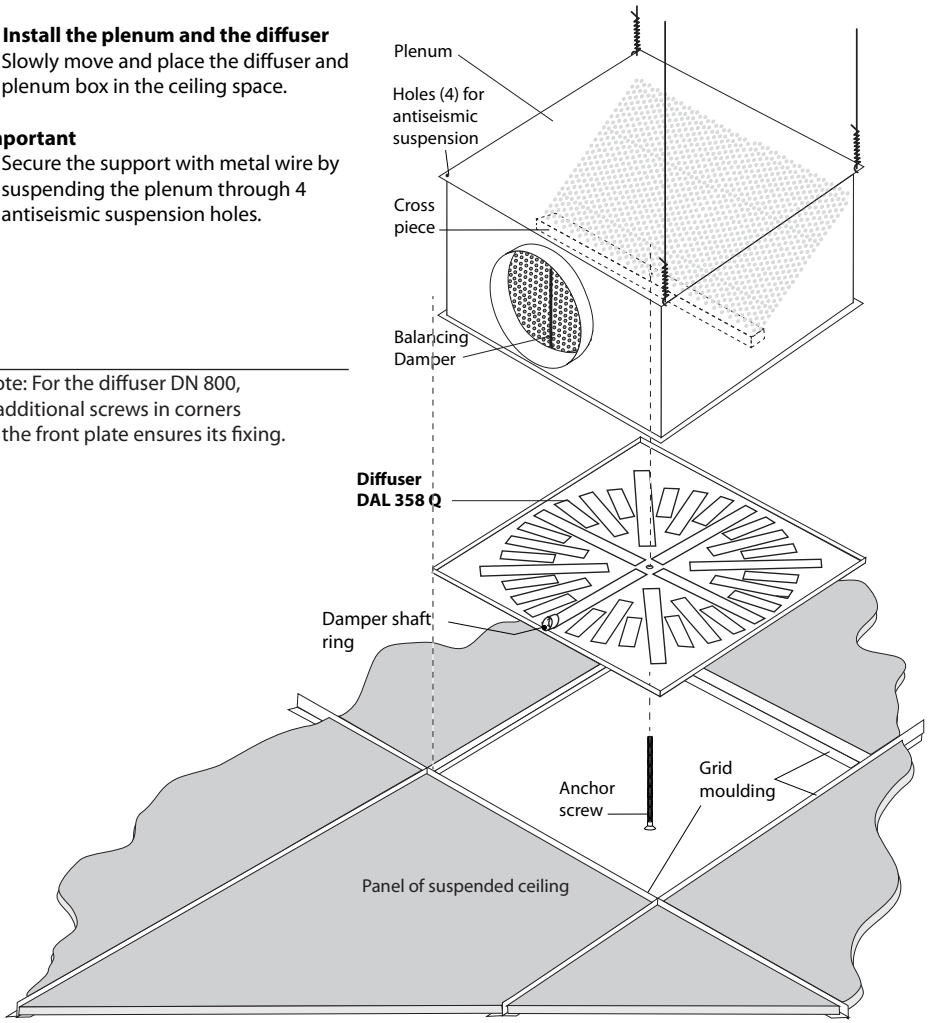
C) Install the plenum and the diffuser

Slowly move and place the diffuser and plenum box in the ceiling space.

Important

Secure the support with metal wire by suspending the plenum through 4 antiseismic suspension holes.

Note: For the diffuser DN 800,
4 additional screws in corners
of the front plate ensures its fixing.



METHOD OF OPERATION

The eccentric cylinders, 100 mm in length, can pivot a full 360 degrees. In their initial position, (1A or F6), the airflow will deviate of 90° with a constant discharge blast . Turning the cylinders to positions 21 or 65, for example, will reduce the section without tapering off and the air blast will increase. **Adjustments 21 or 65 are standard for North America because of the multiple VAV applications (variable air volume).**

The eccentric cylinder, with specific slots profiles, creates a powerful channel into which is drawn. When nearing cylinder air depression takes place.

Air Flow Behaviour

The DAL 358 frontal plate has slots arranged in a characteristic star pattern. Turning the cylinders individually can produce a multitude of airstream patterns. In this manner, obstacles to efficient air flow can be avoided (lamp bases, ceiling drops, architectural columns, etc.). When installing in high ceilings (>5 m), a portion of the cylinders in the centre of the slot must be directed to produce a vertical blast (see figure 1). Use of the DAL 358 does not require a closed ceiling installation in order to produce a stable horizontal airflow. Despite the variety of air flow directions, all shapes have more or less the same sound power and pressure drop because of the eccentric cylinder's specific design.

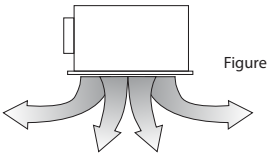
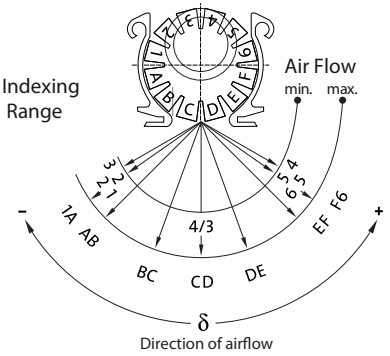
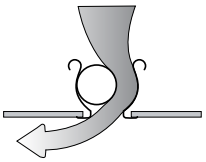


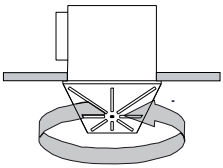
Figure 1



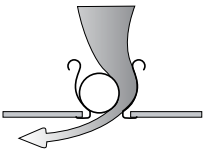
Cylinder position 1A



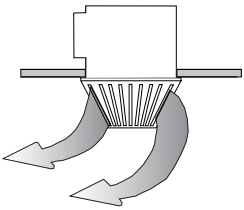
Helical (swirl) air stream
When positioning all rollers on 21, a rotating air stream is produced below the ceiling in a helical stream, creating a strong induction current (Standard setting).



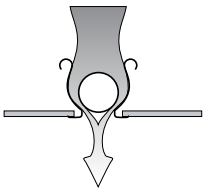
Cylinder position 21



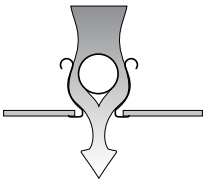
One-sided air stream
This one-sided airflow is obtained by positioning all of the rollers in position 21.



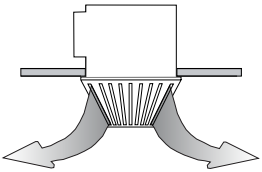
Cylinder position 43



Cylinder position CD



Two-sided air stream
This two-sided airflow is obtained by positioning half the rollers in position 21 and the other half in position 65.



Balancing the DAL 358

To ensure adequate balancing of DAL 358 type diffusers, it is recommended to use the airflow rate correction factors, which are equivalent to the resistance generated by the balometer.

These correction factors are appropriate for a ventilation system comprising of at least 3 diffusers after a VAV unit or box. For less than 3 diffusers with an automatic airflow rate setting, correction factors are lower than stated.

As indicated in the ALNOR manual, Appendix B - "Capture Hood Flow Resistance", the instrument's manufacturer recommends taking a reading at the ventilation duct and comparing it with one taken under the diffuser, with or without the balometer, in order to determine the correction factor.

To avoid having to perform this procedure, we have provided the correction factors needed for all DAL 358 diffuser models.

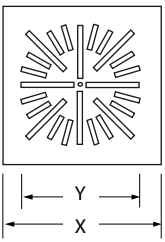
Warning!

An electronic balometer is able to generate own correction factors.

For these models of balometers, when used with a helical effect diffuser such as the DRS, a stabilizing cross must be installed inside within. Without the cross, it is possible to obtain a reading up to 40% higher than the actual rate.

Confirm with the user's guide balometer.

Identification Chart

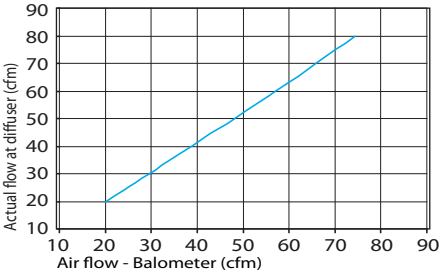


DN	X (mm)	Y (mm)
300	603	355
400	603	355
500	603	455
600	603	552
800	803	755

Airflow correction factor for reading an Alnor (model 9407) balometer

DAL 358 - DN 300

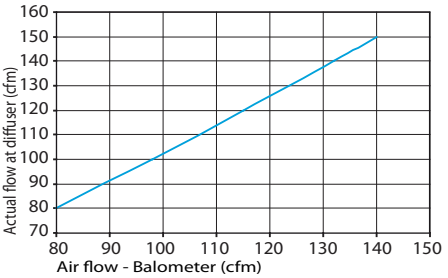
Adjustment: Helical - adjustment 21



Balometer (cfm)	20	29	57	70	74
Factor	1.00	1.01	1.05	1.06	1.07
Actual flow (cfm)	20	30	60	75	80

DAL 358 - DN 400

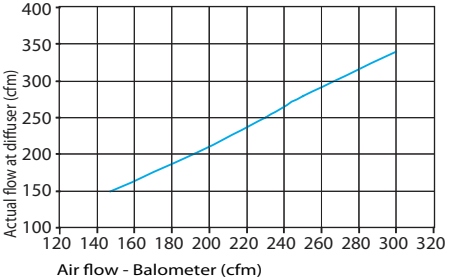
Adjustment: Helical - adjustment 21



Balometer (cfm)	80	98	115	132	140
Factor	1.00	1.02	1.04	1.06	1.07
Actual flow (cfm)	80	100	120	140	150

DAL 358 - DN 500

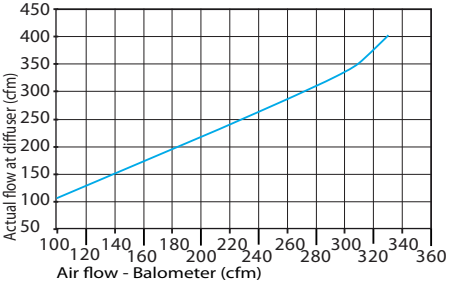
Adjustment: Helical - adjustment 21



Balometer (cfm)	147	192	230	250	300
Factor	1.02	1.04	1.08	1.12	1.13
Actual flow (cfm)	150	200	250	280	340

DAL 358 - DN 600

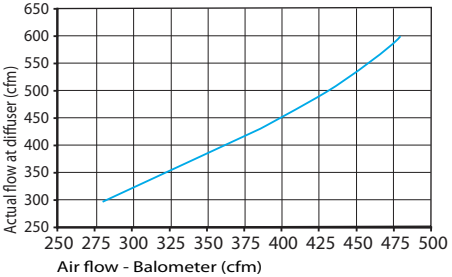
Adjustment: Helical - adjustment 21



Balometer (cfm)	94	185	270	310	330
Factor	1.06	1.08	1.11	1.16	1.21
Actual flow (cfm)	100	200	300	350	400

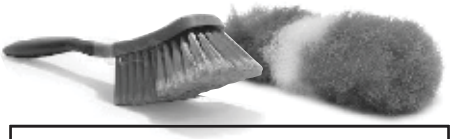
DAL 358 - DN 800

Adjustment: Helical - adjustment 21



Balometer (cfm)	360	392	415	446	480
Factor	1.11	1.14	1.20	1.23	1.25
Actual flow (cfm)	400	450	500	550	600

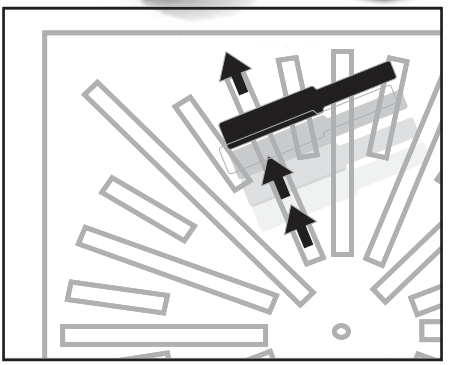
MAINTENANCE



The diffuser DAL 358 from NAD Klima requires no special maintenance other than periodic cleaning.

We recommend cleaning the diffuser with a multi-filament brush or duster microfiber that you will pass softly on the diffuser. It has thermo-lacquered finish for an easy cleaning, as dust does not stick to it.

When cleaning, gently move the brush or duster in the direction of the rollers, so as not to change their adjustment.



Quality NAD Klima®

NAD Klima diffusers are the result of a manufacturing process in which our experts successfully meet your requirements and particular challenges.

Our range of equipment comprises the latest technological innovations. Our passion for work well done and digital precision ensure that the resulting product will guarantee the highest standards.

Manufactured in Sherbrooke, Quebec, (Canada) and distributed all across North America, our products raise the bar in terms of standards of quality, efficiency and energy savings.

A leader in air diffusers for LEED projects, NAD Klima is always striving to provide better comfort to consumers.

NAD Klima all products are the pride of an inventive, innovative and devoted team.

Our goal is not only to supply diffusers, but to create outstanding results.

We are NAD Klima.

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MADE IN CANADA