



**THE
GAYLORD VENTILATOR
TECHNICAL MANUAL**

**FOR GRAND “GX” SERIES
NON WATER-WASH VENTILATORS
WITH
MODEL C-250 START/STOP SWITCH**

GAYLORD INDUSTRIES, INC.

An Illinois Tool Works Company

10900 S.W. AVERY STREET • P.O. BOX 1149 • TUALATIN, OREGON 97062-1149 U.S.A.
1-800-547-9696 • 503-691-2010 • FAX: 503-692-6048 • email: info@gaylordusa.com



*"Undisputed World Leader in
Engineered Systems for
Commercial Kitchens"*_{TM}

GAYLORD INDUSTRIES, INC.

World Headquarters: P.O. Box 1149 • Tualatin, Oregon 97062-1149 U.S.A.

To Our Customers. . .

Congratulations on your recent purchase of a Gaylord kitchen exhaust hood system. We are proud to be able to provide you with a quality product that incorporates the latest engineering concepts and is a result of over 50 years of experience in the foodservice kitchen exhaust industry.

If you have other Gaylord equipment such as a Gaylord Utility Distribution System, Quencher Fire Protection System, or Roof Top Air Handling Equipment, etc., please refer to the corresponding supplementary equipment manuals.

If you have further questions, please call us toll free at 1-800-547-9696. We are more than happy to help.

Sincerely,

Gaylord Industries, Inc.

STREET ADDRESS: 10900 S.W. Avery Street, Tualatin, Oregon 97062-8549 U.S.A.

PHONE: 503-691-2010 • 800-547-9696 • **FAX:** 503-692-6048 • **email:** gaylord@gaylordusa.com • www.gaylordusa.com

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PATENT NUMBERS

U.S.A.:	4,266,529
	4,281,635
	4,356,870
CANADA:	1,139,151
	1,155,366
GERMANY:	8,034,240

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OPERATION

The Gaylord "GX" Series Non Water-Wash Ventilator offers simplicity, economy and performance that no other ventilator can offer. The unique "extractor insert" gives a grease extraction efficiency far superior to that of a typical mesh or extractor filter. The Gaylord "GX" Series Ventilators are UL Listed and meet all the requirements of NFPA #96.

FAN OPERATION

To operate the exhaust fan, push the "start" or "stop" button on the Gaylord exhaust fan switch.

GREASE EXTRACTION

The Gaylord "GX" Series Ventilator extracts 90% of the grease, dust, and lint particles from the airstream passing through it. Grease extraction is accomplished by a unique, removable stainless steel "extractor insert" which incorporates a series of horizontal baffles. As the air moves through the ventilator at high speed, it is forced to make a series of turns around these baffles, forcing the heavier-than-air particles of grease, dust, and lint to be thrown out of the airstream by centrifugal force. The liquefied grease then drains off into a grease cup. The extractor inserts are available in two sizes: 15 $\frac{1}{2}$ " (5 $\frac{3}{4}$ lbs.) and 19 $\frac{1}{2}$ " (6 $\frac{3}{4}$ lbs.).

IMPORTANT NOTE: Never operated ventilator without extractor inserts in place.

CLEANING

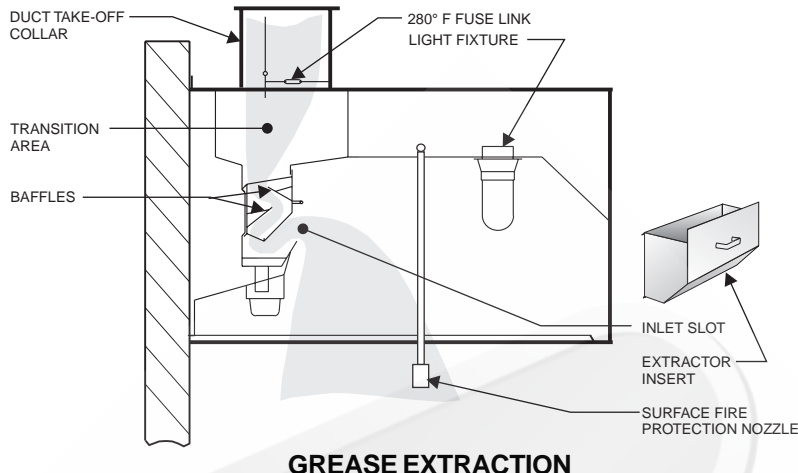
At the end of the cooking day, or at periodic intervals, the inserts are removed and can be washed either in a dishwasher or soaked and rinsed off. To ease in the removal of the extractor inserts, an "Extractor Removal Tool" is available which eliminates the need for kitchen personnel to climb up on the cooking equipment.

FIRE PROTECTION

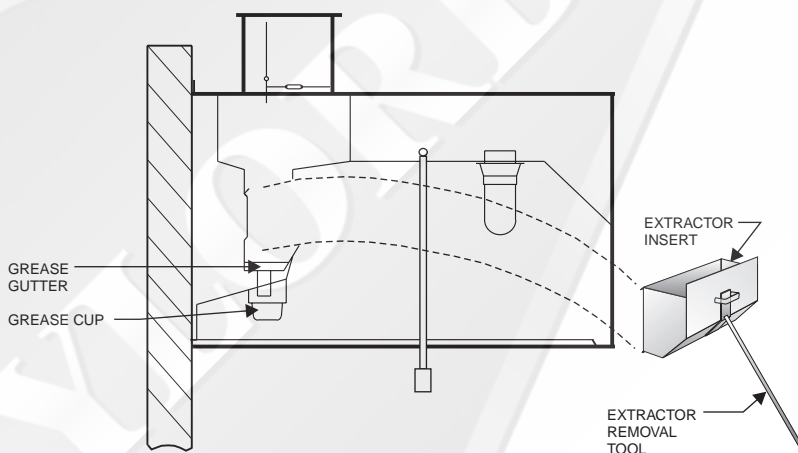
NFPA #96 requires the use of surface, duct and plenum protection on all non water-wash hoods. It is these systems that are the first line of defense against equipment fires. If the surface system fails to extinguish the fire, the ventilator's internal fire protection system then acts as a back-up.

This is accomplished by a spring loaded fire damper which is activated by a 280° F fusible link or thermostat located at the duct collar. In the event of a fire, should the detection device reach 280° F, the damper would close preventing the flames from entering the duckwork and spreading to other parts of the building. The fire is contained in the kitchen area where it can be properly fought.

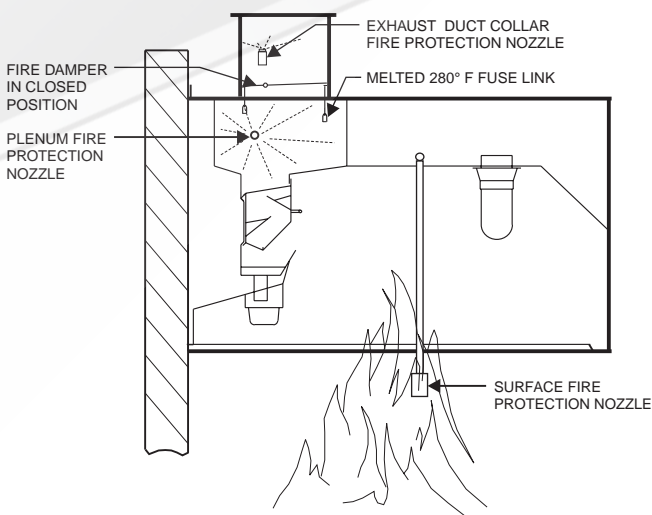
Surface, duct collar and plenum fire protection utilizing The Gaylord Quencher System or other fire protection systems currently on the market can be factory installed as an option.



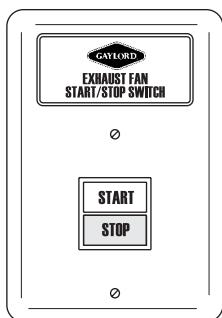
GREASE EXTRACTION



CLEANING



FIRE PROTECTION



EXHAUST FAN
START/STOP SWITCH
Model C-250

FIGURE 1

STANDARD MODELS

MODEL "GX-AB"

APPLICATION - Backshelf style for all types of counter height equipment.

MODEL "GX-CE"

APPLICATION - Pass-over style for all types of counter height equipment.

MODEL "GX-BDL"

APPLICATION - Wall mounted canopy style for all types of equipment.

MODEL "GX-BDL-O"

APPLICATION - Eyebrow canopy style for direct mounting to all types of ovens such as roast, bake, and reel types.

MODEL "GX-BDL-DS-CL"

APPLICATION - Used for cafeteria lines or any other single line island arrangement.

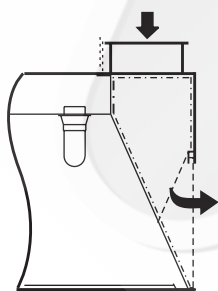
MODEL "GX-BDL-DS"

APPLICATION - Used for typical island style cooking arrangement.

FIGURE 2

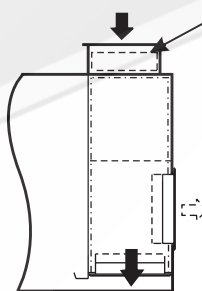
STANDARD MAKE-UP AIR OPTIONS

The make-up air options shown below are available on all BDL Series Ventilators.



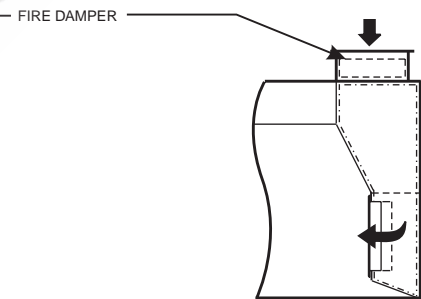
MODEL "MAW" SERIES
FRONT FACE DISCHARGE

This method of introducing make-up air into the kitchen is flexible and has many advantages. Make-up air is discharged through stainless steel perforated panels as illustrated (MAW Series) or optional registers. Typical supply volume is 80% of the exhaust or more, depending on air balance desired. Supply air temperatures should range from 60 to 65°F (16 to 18°C), but may be as low as 50°F (10°C) depending on air volume, distribution, and internal heat load.



MODEL "MAP" SERIES
DOWN DISCHARGE

This method of introducing air into the kitchen area is typically used when "spot cooling" of the kitchen staff is desired to help relieve the effects of severe radiant heat generated from equipment such as charbroilers. Discharge velocities must be carefully engineered to avoid air turbulence at the cooking surface, discomfort to personnel and the cooling of foods. The amount of supply air introduced may be up to 80% of exhaust depending upon the type of cooking equipment involved, and the air temperature should be 65° F (18°C) or higher.



MODEL "MAI" SERIES
INTERNAL DISCHARGE

This method of introducing air into the hood is typically referred to as the "short circuit" method. This design has very limited applications and the amount of supply air able to be introduced varies considerably with the type of cooking equipment. This air may be untempered air in most areas depending upon climatic conditions and the type of cooking equipment. The difference between the quantity of air being introduced and the amount of air being exhausted must be supplied through a traditional make-up air system.

MAINTENANCE AND CLEANING INSTRUCTIONS

CLEANING

At the end of each cooking day, the exposed interior surfaces of the ventilator should be wiped down and the grease cup emptied. During the course of operation, grease particles are gradually collecting inside the extractor inserts. Daily, or at periodic intervals, depending on the type of cooking, the extractor inserts must be removed and cleaned. To clean, proceed as follows:

1. Remove extractor inserts by hand or by using the extractor removal tool. **CAUTION:** Care should be taken when removing extractors, especially over fryers. It is recommended that the cooking equipment be cooled down and the fryers be covered prior to removing extractors. To remove, lift up slightly on extractor insert and pull straight out.
2. Extractor inserts may be cleaned either by using a dishwasher or by washing in a sink using hot water and a degreasing detergent. Formula G-510 is highly recommended for this application. For information contact:
20/10 Products Inc.
P.O. Box 7609
Salem, Oregon 97303
Phone: 800-286-2010
Fax: 503-363-4296
email: twentyten@juno.com
3. With extractor inserts removed, wipe and clean the back wall and the grease gutter with hot detergent water. **NOTE:** If a steam or hot water pressure washer is used for periodic cleaning of the interior, connect a hose to the gutter drain and lead it to a floor sink or large bucket to drain off water.
4. To replace the extractor inserts, care must be taken to insure that point "A" rests in the rear clip as illustrated at right.
5. If the ventilator(s) has a fuse link operated supply duct fire damper NFPA-96 requires inspection of the fuse link every 6 months and replacement annually.

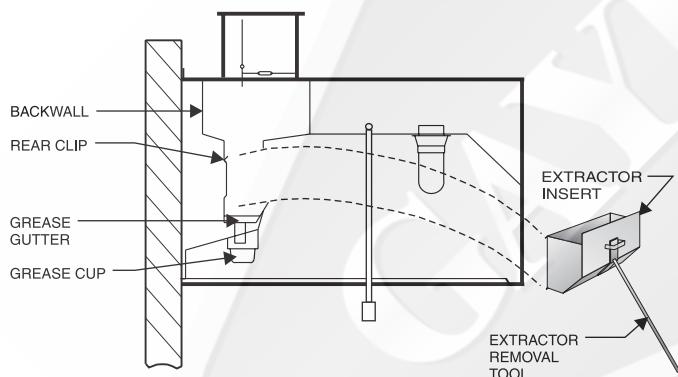


FIGURE 3

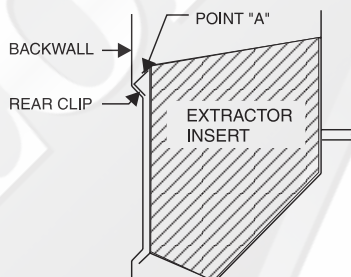
INSPECTION AND CLEANING REQUIREMENTS

The 1998 edition of NFPA-96 (Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations) require that hoods, ducts and exhaust fans be inspected by a properly trained, qualified and certified company or person(s) in accordance with the following table.

Upon inspection, if found to be contaminated with deposits from grease-laden vapors, the entire exhaust system shall be cleaned by a properly trained, qualified, and certified company or person(s) acceptable to the authority having jurisdiction in accordance.

When a vent cleaning service is used, a certificate showing date of inspection or cleaning shall be maintained on the premises. After cleaning is completed, the vent cleaning contractor shall place or display within the kitchen area a label indicating the date cleaned and the name of the servicing company. It shall also indicate areas not cleaned.

EXHAUST SYSTEM INSPECTION SCHEDULE	
Systems serving solid fuel cooking operations	Monthly
Systems serving high-volume cooking operations such as 24-hour cooking, charbroiling or wok cooking	Quarterly
Systems serving moderate-volume cooking operations	Semiannually
Systems serving low-volume cooking operations, such as churches, day camps, seasonal businesses, or senior centers	Annually



NOTE: NEVER OPERATE THE VENTILATOR IF THE EXTRACTOR INSERTS ARE NOT IN PLACE.

FIGURE 4

CAUTION: Care should be taken when removing extractors, especially over fryers. It is recommended that the cooking equipment be cooled down and the fryers be covered prior to removing extractors.

TROUBLESHOOTING

POOR SMOKE CAPTURE

If the ventilator is not exhausting properly and smoke is escaping, first check the extractor inserts to make sure they are in place properly. If they are, the probable cause of smoke loss is a malfunctioning fan. The fan can be checked by taking air readings at the inlet slot. Refer to page 5 for proper method of taking air readings.

If the air velocity is low, check the following:

1. Broken or slipping fan belt.
2. Duct access panels left open.
3. Closed fire damper.
4. Proper exhaust fan size (exhaust fan must be capable of delivering specified CFM and static pressure).
5. Proper rotation of fan wheel.

Poor smoke capture may also be caused by inadequately and/or improperly introduced make-up air. Make-up air must be supplied for replacement of air exhausted through all kitchen exhaust systems. Make-up air should be delivered through registers at ceiling height, and distributed throughout the kitchen area. A general "rule of thumb" is that 75% to 80% of the replacement air should be fresh, conditioned (heated or cooled) air brought into the kitchen area, with the remaining 20% to 25% allowed to flow into the kitchen from adjacent areas. Smoke loss may also be caused by too much make-up air or make-up air being blown directly at the ventilator. Make-up air should not exceed 90% of exhaust air and should be introduced into the kitchen evenly and away from the ventilator.

TROUBLE SHOOTING

EXHAUST FAN WILL NOT COME ON

If the exhaust fan does not come on when the fan switch is flipped or start button is pushed, check the following:

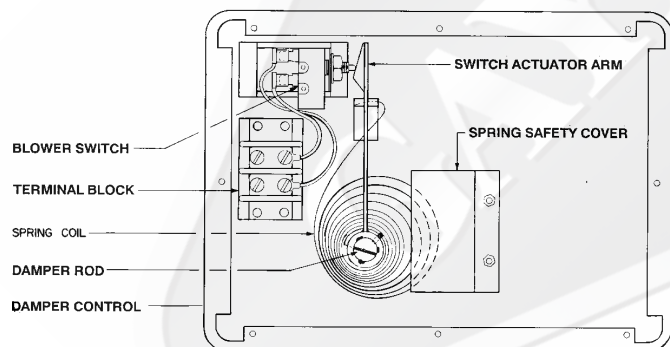
1. Magnetic starter for exhaust fan - It is possible that the overload protectors within the magnetic starter switch may have actuated and stopped the fan. Push the "reset" button on the magnetic starter, and then restart the exhaust fan.
2. In the event that an H.O.A. (Hands Off/Automatic) type magnetic starter switch is used, check the selector switch to make sure it is in the automatic position.
3. Check exhaust fan motor circuit breaker and check fuses in disconnect switch normally located next to the fan.
4. Check 120 volt control power and 3 phase blower power at circuit breaker panel.

GREASE EXTRACTION

The Gaylord "GX" Series Ventilator extracts up to 90% of the grease, dust, and lint particles from the airstream passing through it, when operated and maintained in accordance with design specifications. If it appears that the ventilator is not extracting properly, check the inlet slot velocity as described on Page 5.

FUSE LINK OPERATED DAMPER

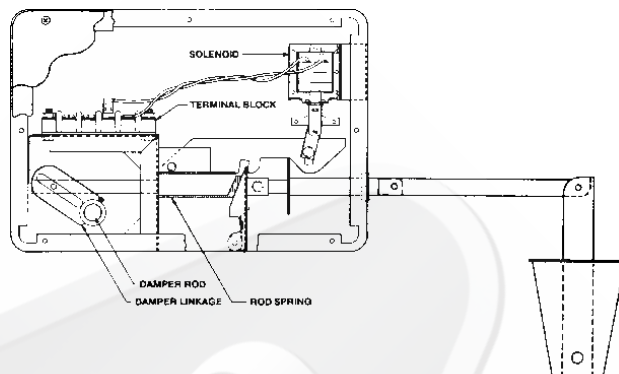
A spring loaded fire damper is standard equipment for all "GX" Series Ventilators. The damper is located at the duct collar and is activated by a 280°F (137°C) fuse link. The damper control switch, which contains the spring, is mounted at the side of the duct collar. In the event of a fire, and if the fuse link reaches 280°F (137°C), the link will separate, the damper will close, and the exhaust fan will shut off. To resume normal operation, the fuse link must be replaced. Most codes require fuse links to be inspected semiannually and replaced annually. It is recommended that a professional service organization be contracted to perform this service. Normally this could be the same company that services the fire protection system. **IMPORTANT NOTE:** All replacement fuse links must be UL Listed and rated for 280°F (137°C).



**DAMPER CONTROL SWITCH
MODEL C-61/GXB
FIG. 5**

ELECTRICALLY OPERATED FIRE DAMPER

An electrically operated damper is optional equipment. Ventilators equipped with this option are easily recognizable in that they have a reset handle with a red knob.



**DAMPER CONTROL SWITCH
MODEL C-61 /GXSH
FIG. 6**

The electric damper is controlled by a 280°F (137°C) thermostat mounted at the duct collar. In the event of a fire and if the thermostat reaches 280 °F (137°C), the fire damper will automatically close and the exhaust fan will shut off. To resume normal operation, the red knob must be reset until the damper latches open.

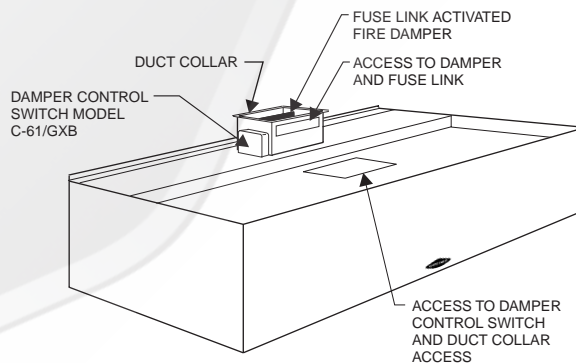


FIG. 7

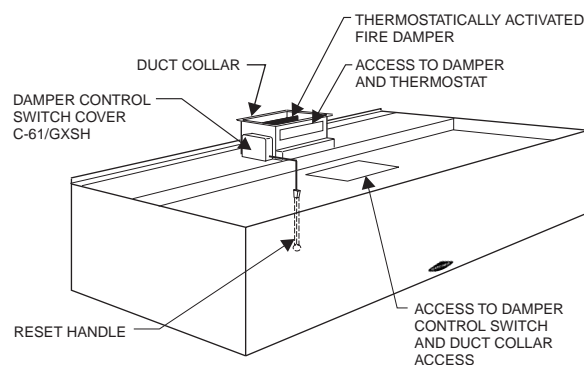


FIG. 8

MEASURING INLET SLOT VELOCITY

MEASURING INLET SLOT VELOCITY

Smoke capture and grease extraction efficiency are dependent upon the proper air velocity at the inlet slot of the ventilator.

The required average slot velocities are shown on the “Air Velocity Chart” below. If the slot velocity is below the required average, the exhaust fan must be adjusted accordingly.

NOTE: The height of the inlet slot can vary depending upon the design of the ventilator. It is, therefore, important to first measure the inlet slot and compare it to the chart below to determine the required average inlet slot velocity. The designed CFM per lineal foot is related to the velocity as shown on the chart below. The total CFM for the ventilator can be found on the ventilator nameplate. (See Figure 12).

AIR VELOCITY CHARTS

FOR ALL “GX” SERIES EXCEPT “GX-DS”

Nominal Height of Inlet Slot	Without Custom Air Baffles		With Custom Air Baffles	
	Designed CFM per Lineal Ft.	Required Average Inlet Slot Velocity (FPM)	Designed CFM per Lineal Ft.	Required Average Inlet Slot Velocity (FPM)
3"	250	1000	150	600
	270	1080	160	N/A
	285	1140	170	N/A
	300	1200	180	720
4"	400	1200	240	725
	450	1350	270	820
	470	1425	280	848
	500	1500	300	900

FOR “GX-DS” SERIES VENTILATORS

Designed CFM per Lineal Ft.			Required Average Inlet Slot Velocity	
Total Both Slots	Front Slot	Rear Slot	Front Slot	Rear Slot
300	150	150	600	680
400	250	150	1000	680
500	310	190	1200	860

Air velocity readings less than what is specified on the “Air Velocity Chart” may allow smoke and grease to escape the confines of the ventilator and/or reduce grease extraction efficiency. This can result in grease deposits which lead to sanitation problems or fire hazards if left uncorrected. If air velocity readings are higher than those specified, it will require more energy to operate the exhaust fan and excessive noise levels will result.

Higher or lower velocities than the required average will normally put the entire heating and ventilating system out of balance.

When measuring the air velocity it is very important to take an average reading across the inlet slot plane as illustrated in Figures 9A, B, or C, or Figure 10. Positioning the sensing head incorrectly will give velocity readings that cannot be compared to the “Air Velocity Chart”. The sensing heads shown in Figure 9 are of the design typically used on anemometer type instruments.

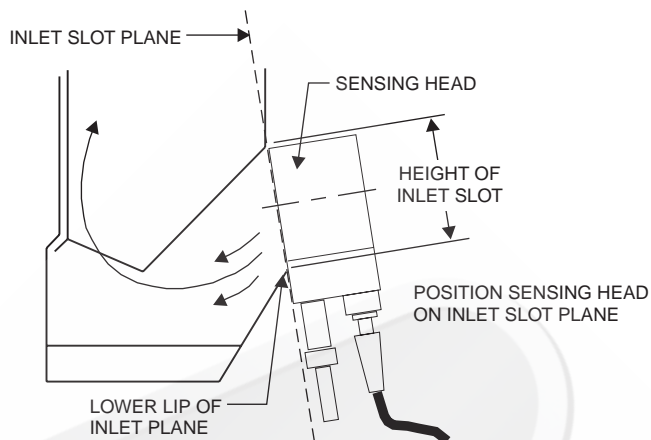


FIGURE 9A

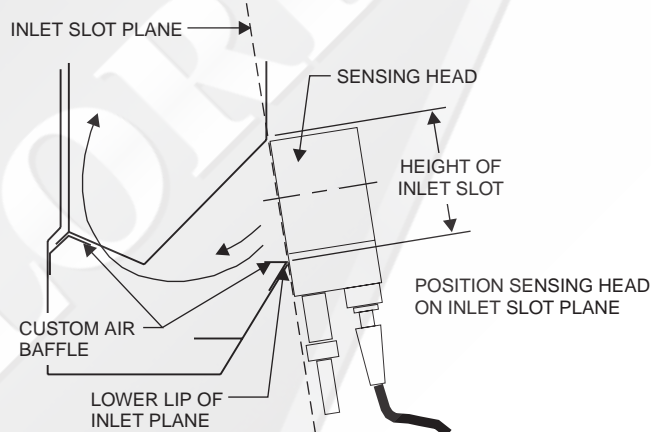


FIGURE 9B

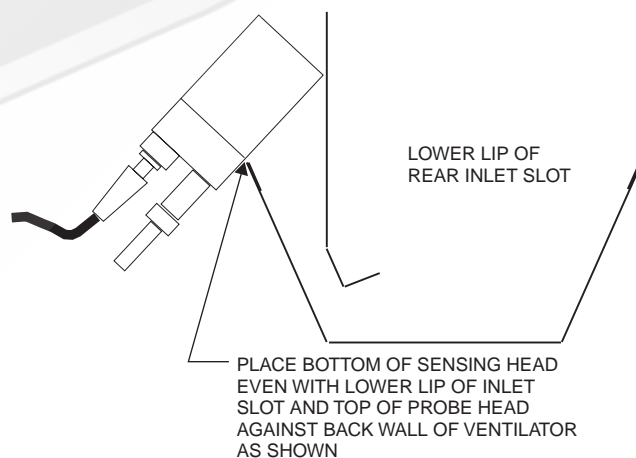
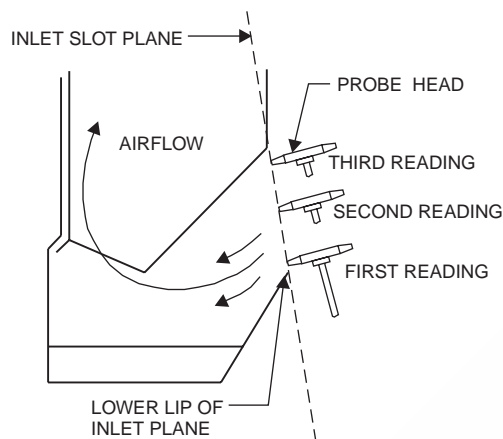


FIGURE 9C

REAR SLOT OF MODEL “BDL-DS” SERIES AND “BDL-DS-CL” SERIES

FIGURE 9A, B, & C CROSS SECTION OF TYPICAL VENTILATOR INLET SLOT

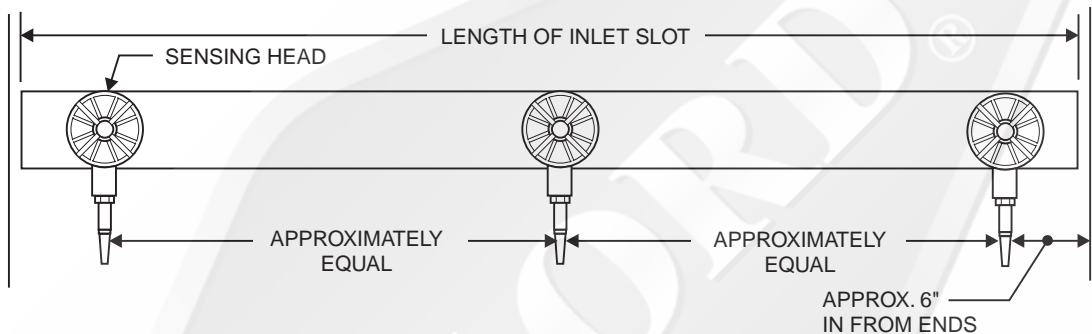
MEASURING INLET SLOT VELOCITY



NOTE: IF A VELOMETER TYPE INSTRUMENT WITH PROBE HEAD IS USED, AS ILLUSTRATED AT LEFT, A MINIMUM OF THREE (3) READINGS MUST BE TAKEN ACCROSS THE INLET SLOT PLANE, AS SHOWN, AND THEN AVERAGED.

NOTE: THE VELOMETER PROBE HEAD SHOWN IS FROM A DWYER MODEL 460. WHEN THIS MODEL IS USED IT IS IMPORTANT THAT THE METER BASE BE HELD VERTICAL.

FIGURE 10



FOR VENTILATORS UP TO 6'-0" LONG, TAKE A MINIMUM OF TWO (2) READINGS. FOR VENTILATORS LONGER THAN 6'-0", TAKE A MINIMUM OF THREE (3) VELOCITY READINGS AS ILLUSTRATED. IF DAMPER CONTROL SWITCH IS LOCATED IN THE CENTER, TAKE CENTER READING 6" TO EITHER SIDE OF THE CONTROL

FIGURE 11

EXHAUST HOOD WITH EXHAUST DAMPER

THIS EXHAUST HOOD HAS BEEN TESTED TO STANDARD UL 710 "EXHAUST HOODS FOR COMMERCIAL COOKING EQUIPMENT"

THIS EXHAUST HOOD IS LISTED UNDER UL FILE NUMBER MH11403

THIS EXHAUST HOOD MEETS ALL REQUIREMENTS OF THE LATEST EDITION OF NFPA-96

PATENT NUMBERS: USA, 3,247,776; 3,011,809; 3,788,041; 4,072,143; 4,268,529; 4,261,635; 4,356,870; Australia, 481,510; 465,037; Canada, 744,166; 759,710; 926,680; 1,136,151; 958, 569; 340,761; 1,054,155; 1,086,126; France, 7,227,217; 7,332,718; 2,351,362; Germany, 2,346,196; 1,604,173.3; 152,501(Great Britain, 1,350,857; 1,396,065; 1,558,537; Japan, 650,269; 797,637; 917, 077; 1,045,507; 726,884; 1,580, 556; New Zealand, 162,024; 167,864; Switzerland, 560,358; other U.S. and foreign patents pending.

WORLD HEADQUARTERS
GAYLORD INDUSTRIES, INC.
A SUBSIDIARY OF GAYLORD INTERNATIONAL, INC.
10900 S.W. AVERY STREET
TUALATIN, OR 97062-8549 USA

ENGINEERING DATA

1. MINIMUM TOTAL EXHAUST VOLUME FOR THIS HOOD SECTION

C.F.M.

2. MAXIMUM TOTAL SUPPLY VOLUME FOR THIS HOOD SECTION

C.F.M.

3. EXHAUST STATIC PRESSURE AT DUCT COLLAR

W.G.

4. SUPPLY STATIC PRESSURE AT DUCT COLLAR

W.G.

5. THIS HOOD SECTION SUITABLE FOR APPLIANCES WITH MAXIMUM COOKING SURFACE TEMPERATURE OF:

"F" FOR LINEAL FT. OF HOOD

"F" FOR LINEAL FT. OF HOOD

6. REFER TO GAYLORD VENTILATOR TECHNICAL MANUAL FOR INLET VELOCITY REQUIREMENTS AND METHOD OF CHECKING VELOCITY

7. ELECTRICAL RATING OF LIGHT FIXTURES: 120 VOLT, 60 HZ. OR 220 VOLT, 50 HZ. OVERALL RATING - 12 AMPS OR LESS

8. ON "GX" SERIES VENTILATORS EQUIPPED WITH FUSE LINK OPERATED EXHAUST FIRE DAMPER USE ONLY 280° F (137° C), RATED 30 LBS. (13.6 kg.) MIN. UL LISTED FUSIBLE LINK FOR REPLACEMENT

9. ON "FX" AND "GX" SERIES VENTILATORS EQUIPPED WITH FUSE LINK OPERATED EXHAUST FIRE DAMPER USE ONLY 165° F (74° C), RATED 30 LBS. (13.6 kg.) MIN. UL LISTED FUSIBLE LINK FOR REPLACEMENT

10. IF HOOD IS EQUIPPED WITH INTEGRAL MAKE-UP AIR WITH FUSE LINK OPERATED FIRE DAMPER USE ONLY 165° F (74° C), RATED 30 LBS. (13.6 kg.) MIN. UL LISTED FUSIBLE LINKS FOR REPLACEMENT

11. DUCTWORK AND EXHAUST FAN

A. STATIC PRESSURE OF DUCT MUST BE ADDED TO VENTILATOR STATIC FOR TOTAL SYSTEM STATIC

B. ALL DUCTWORK MUST BE WELDED WATERTIGHT

HOOD MOUNTING REQUIREMENTS

MINIMUM DISTANCE FROM COOKING SURFACE TO FRONT LOWER EDGE OF HOOD

MAXIMUM DISTANCE FROM COOKING SURFACE TO FRONT LOWER EDGE OF HOOD

MINIMUM OVERHANG FROM FRONT OF HOOD CAVITY TO FRONT OF COOKING SURFACE

MAXIMUM SETBACK FROM FRONT OF HOOD CAVITY TO FRONT OF COOKING SURFACE

MINIMUM OVERHANG FROM SIDE OF HOOD TO EDGE OF COOKING SURFACE

SERIAL NO: GI-

MODEL NO:

MAINTENANCE INSTRUCTIONS

1. REMOVE, INSPECT AND CLEAN FILTERS ON "SG-FD" OR "CFX" SERIES OR GAYLORD EXTRACTOR INSERTS ON "GX" SERIES AS REQUIRED

2. REMOVE AND EMPTY GREASE CUP AS REQUIRED

3. CAUTION - DO NOT OPERATE VENTILATOR WITHOUT FILTERS OR EXTRACTORS IN PLACE

4. REPLACE FILTERS IN "SG" AND "FX" SERIES ONLY WITH UL CLASSIFIED GREASE FILTERS OR GAYLORD EXTRACTOR INSERTS IN "GX" SERIES

5. IF THE VENTILATOR HAS A FUSE LINK OPERATED EXHAUST OR SUPPLY DUCT FIRE DAMPER THE NATIONAL FIRE PROTECTION ASSOCIATION'S PAMPHLET NFPA-96 REQUIRES INSPECTION OF THE FUSE LINK EVERY 6 MONTHS AND REPLACED ANNUALLY. REFER TO THE GAYLORD VENTILATOR TECHNICAL MANUAL FOR DETAILS.

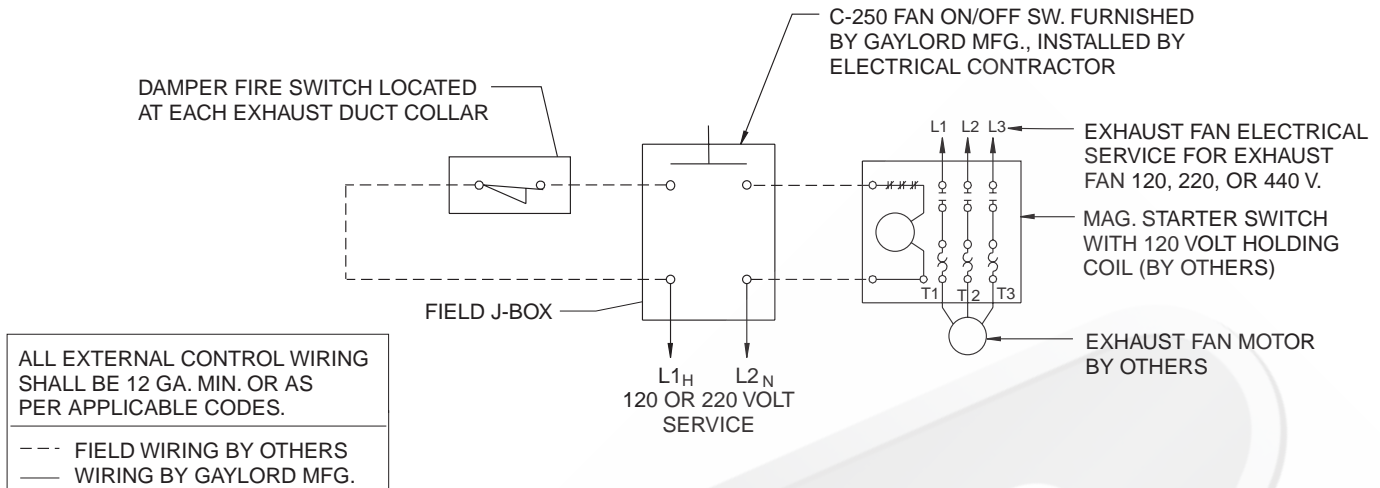
TOTAL CFM HERE

FIGURE 12

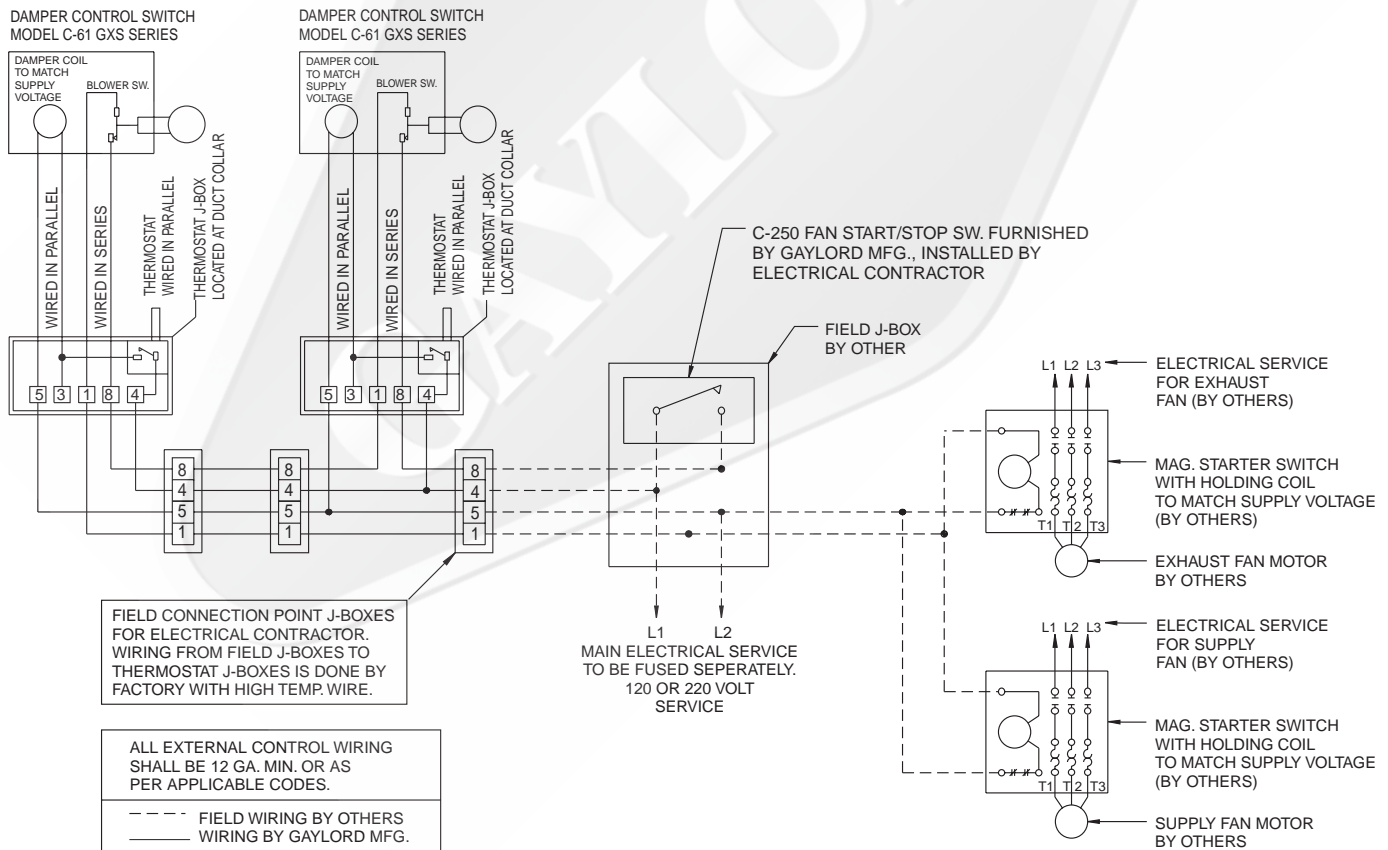
The total required exhaust volume can be found stamped on the UL nameplate located on each hood section.

6

WIRING DIAGRAMS



**STANDARD WIRING DIAGRAM
FOR “GX” SERIES VENTILATORS
WITH FUSE LINK ACTIVATED FIRE DAMPER**



**STANDARD WIRING DIAGRAM
FOR “GX” SERIES VENTILATORS
WITH THERMOSTATICALLY ACTIVATED DAMPER
WHEN C-250 START/STOP SWITCH IS USED**

The logo for GAKLOORD® is a stylized, elongated diamond shape with rounded corners. It has a dark grey outer border and a lighter grey inner fill. The word "GAKLOORD" is written in a bold, white, sans-serif font, slanted upwards from left to right. A registered trademark symbol (®) is located at the end of the word. The logo is centered on a light grey background.

GAKLOORD®