CADDY CORPORATION

Food Service Equipment Air Systems

Caddy Air Systems
SH-C Series

Operation and Maintenance Manual

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Introduction To The
Simplex Dry Cartridge SH-C Series

Using the latest technology in non water-wash high velocity, low volume, centrifugal grease extractors, the “SH-C” Series provides unequaled performance in grease extraction efficiency, fire safety and ease of maintenance. The “SH-C” Series ventilator offers many of the features of the top-of-the-line “SH” Series, but since it does not have water-wash self cleaning, it has the advantage of lower cost.

- Low air volume energy savings, high velocity design
- 95% centrifugal grease extraction efficiency
- Cartridges easily removed with specially designed cartridge removal tool for periodic cleaning.
- Standard 24" high construction or custom fabricated to suit conditions using 18 gauge or heavier Type 304 stainless steel.
- Available as exhaust only “Save-Air” type or various modes of make-up air, including front face and perimeter discharge designs.
- Pre-wired, U.L. Listed fluorescent, LED, or incandescent lights.
- U.L. Listed with or without exhaust fire damper, listed by NSF, meets the requirements of NFPA #96, BOCA, ICBO, and SBCC.1

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Operation

Fan Operation

To operate the exhaust fan, execute one of the following.

- Toggle wall/hood mounted fan switch to the on/off position
- Press the green start button on the Caddy Smart Hood System
- Press the fan button on the 3rd party demand control system

Grease Extraction

The Caddy AirSystems Ventilator extracts 90% of the grease, dust and lint particles from the air stream 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 air stream by centrifugal force. The liquefied grease then drains off into a grease cup. The extractor inserts come in two sizes: 15 3/8 and 19 3/8".

Cleaning

At periodic intervals, the extractors are removed and are soaked and rinsed off. These intervals are determined by site specific cooking loads.

Suggested extractor cleaning schedule:

- Light Duty – every 3 months
- Medium Duty – every month
- Heavy Duty – every week
- Solid Fuel – every day

Fire Protection

NFPA #96 requires the use of surface, duct and plenum protection on Type II ventilators. It is these systems that are the first line of defense against equipment fire. 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 fire damper which is activated by a 360 degree Fahrenheit fusible link located at the duct collar. In the event of a fire, should the detection device reach 360 degrees Fahrenheit, the damper would close preventing the flames from entering the ductwork 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 system can be factory installed, as an option.

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Maintenance And Cleaning Instructions

At the end of each day, the exposed interior surfaces of the ventilator should be wiped down and the grease cup should be checked and 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 fryer be covered prior to removing extractor. To remove, lift up slightly on Extractor Insert and pull straight out.

2. Extractor Insert may be cleaned either by using a dishwasher or by washing in a sink using hot water and a degreasing detergent.

3. With Extractor Inserts removed, wipe and clean the back wall and 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” and point “B” are properly engaged into ventilator body as illustrated below.

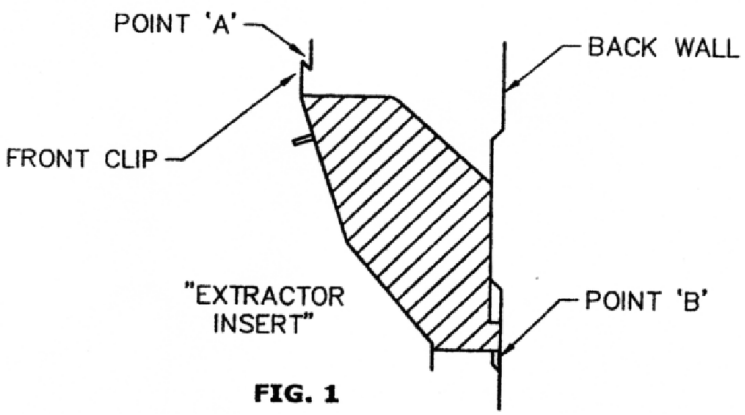

FIG. 1

If the ventilators are equipped with electrically operated fire dampers, semi-annually trip the damper control handle to check for proper damper closure. Reset damper when the test is completed.

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

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Trouble Shooting

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. The proper air velocity at the inlet slot of the ventilator should be in accordance with air velocity chart below.

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.

Make-Up Air

Smoke loss may be experienced if there is inadequate 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 the registers at ceiling height, and distributed throughout the kitchen area. A general “rule of thumb” is the 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% to flow into the kitchen from adjacent areas.

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 and disconnect switch normally located next to the fan.

4. Check 120V control power and 3 phase blower power at circuit breaker panel.

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Fuse Link Operated Damper

A spring loaded fire damper is standard equipment for all "SH-C" Series Ventilators. The damper is located at the duct collar and is activated by a 360 degree Fahrenheit fuse link. In the event of a fire and if the fuse link reaches 360 degrees Fahrenheit, the link will separate and the damper will close.

To resume normal operation, the fuse link must be replaced. Most codes require fuse links to be inspected semi-annually 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 U.L. Listed and rated for 360 degrees Fahrenheit.

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 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 charts below.

Air Velocity Charts For "SH-C" Series Ventilators

For All "SH-C" Series Except SH-C-II"			
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)
250	1000	150	600
300	1200	180	720
400	1200	240	725
450	1360	270	820
500	1500	300	900

For "SH-C-II"				
Designed CFM per Lineal Ft.			Required Average Inlet Slot Velocity (FPM)	
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

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Grease Extraction

The Caddy AirSystems "SH-C" Series Ventilator extracts up to 90% of the grease, dust and lint particles from the air stream 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 below.

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 the 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 air 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 2A, B or C, or Figure 3. Positioning the sensing head incorrectly will give velocity readings that cannot be compared in the "Air Velocity Chart". The Sensing Heads shown in Figures 2 are of the design typically used on anemometer type instruments.

Cross Section Of Typical Ventilator Slot

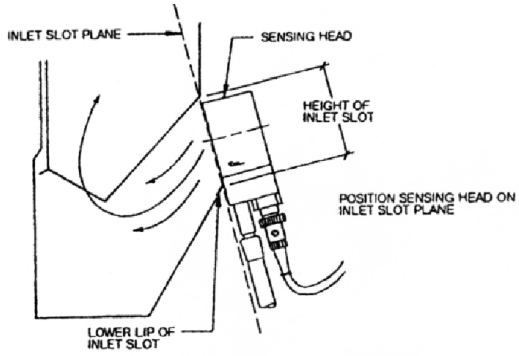

FIG. 2A

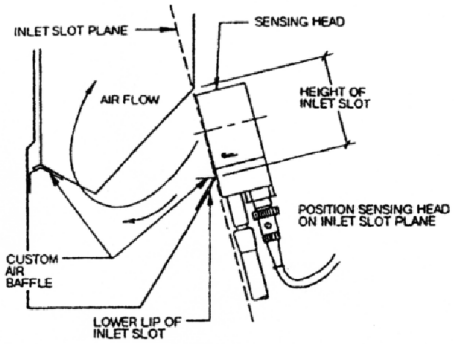

FIG. 2B

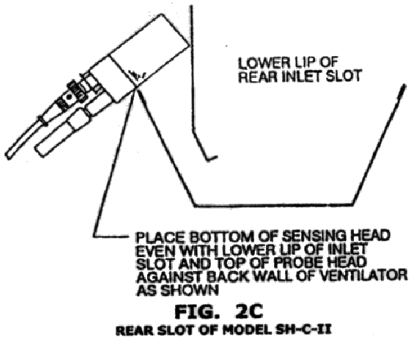

FIG. 2C
REAR SLOT OF MODEL SH-C-II

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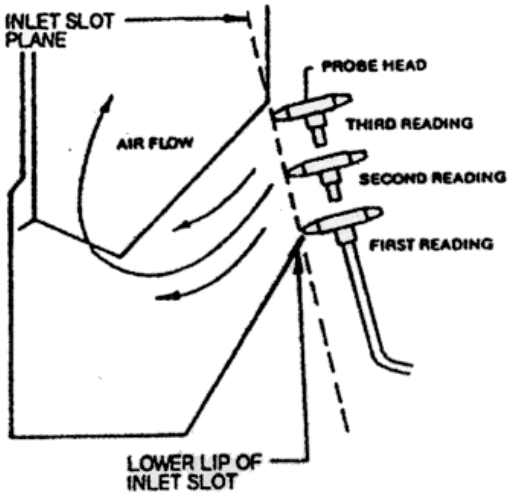
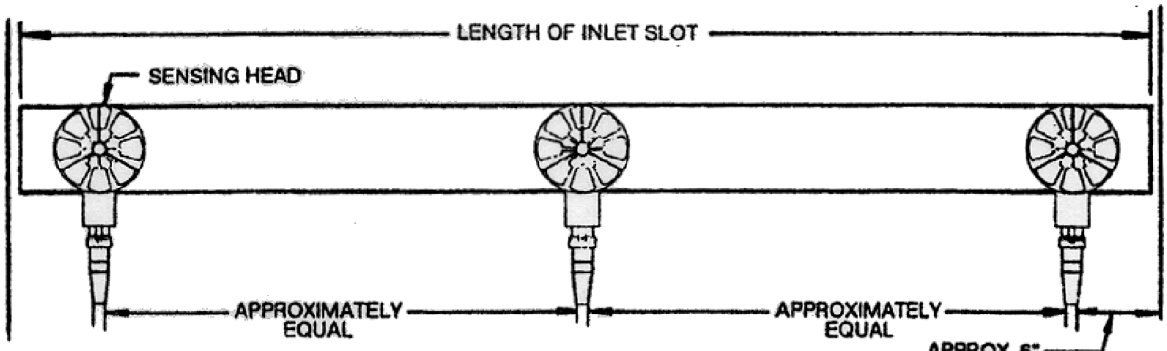


NOTE: IF A VELOMETER TYPE INSTRUMENT WITH PROBE HEAD IS USED, AS ILLUSTRATED AT LEFT, A MINIMUM OF THREE (3) READINGS MUST BE TAKEN ACROSS THE INLET SLOT PLANE, AS SHOWN, AND THEN AVERAGED.

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.



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.

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Care and Cleaning of Stainless Steel Equipment

Contrary to popular belief, stainless steels ARE susceptible to rusting and pitting.

Corrosion on metals is everywhere. It is recognized quickly on iron and steel as unsightly yellow/orange rust. Such metals are called “active” because they actively corrode when their atoms combine with oxygen to form rust.

Stainless steels are passive metals because they contain other metals, like chromium, nickel and manganese that stabilize the atoms.

Chromium provides an invisible passive film that covers the steel’s surface acting as a shield against corrosion. As long as the film is intact and not broken or contaminated, the metal is passive and stainless. If the passive film of stainless steel has been broken, equipment starts to corrode. At its end, it rusts.

The Enemies of Stainless Steel

There are three basic things which can break down stainless steel’s passivity layer and allow corrosion to occur.

1. **Mechanical Abrasion** - Steel pads, wire brushes and scrapers are prime examples of things that will scratch a steel surface.
2. **Water and Deposits** - Water has varying degrees of hardness. Depending on the area you live in, you may have hard or soft water. Hard water may leave spots, and when heated, leave deposits that will break down the passive layer and rust stainless steel. Other deposits from food preparation and service must be properly removed.
3. **Chlorides** - Chlorides are found nearly everywhere. They are in water, food and table salt. Some of the worst chloride perpetrators come from household and industrial cleaners.

Here are a few steps that can help prevent stainless steel rust and pitting.

1. **Use the proper tools.**

   When cleaning stainless steel products, use non-abrasive tools. Soft cloths and plastic scouring pads will not harm steel’s passive layer. Stainless steel pads also can be used but the scrubbing motion *must* be in the direction of the manufacturers’ polishing marks.

2. **Clean with the polish lines**

   Some stainless steel comes with visible polishing lines or “grain”. When visible lines are present, always scrub in a motion parallel to the lines. When the grain cannot be seen, play it safe and use a soft cloth or plastic scouring pad.

3. **Use alkaline, alkaline chlorinated or non-chloride containing cleaners.**

   While many traditional cleaners are loaded with chlorides, the industry is providing an ever-increasing choice of non-chloride cleaners. If you are not sure of chloride content in the cleaner used, contact your cleaner supplier. If your present cleaner contains chlorides, ask your supplier if they have an alternative. Avoid cleaners containing quaternary salts; they can attack stainless steel and cause pitting and rusting.

4. **Treat your water.**

   Though this is not always practical, softening hard water can do much to reduce deposits. There are certain filters that can be installed to remove distasteful and corrosive elements. To insure proper water treatment, call a treatment specialist.

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5. **Keep your food equipment clean.**

   Use alkaline, alkaline chlorinated or non-chloride cleaners at recommended strength. Clean frequently to avoid build-up of hard, stubborn stains. If you boil water in stainless steel equipment, remember the single most likely cause of damage is chlorides in the water. Heating cleaners that contain chlorides have a similar effect.

6. **Rinse, rinse, rinse.**

   If chlorinated cleaners are used, rinse and wipe equipment and supplies dry immediately. The sooner you wipe off standing water, especially when it contains cleaning agents, the better. After wiping equipment down, allow it to air dry; oxygen helps maintain the stainless steel's passivity film.

7. **Never use hydrochloric acid (muriatic acid) on stainless steel.**

Review

- Stainless steels rust when passivity (film-shield) breaks down as a result of scrapes, scratches, deposits and chlorides.
- Stainless steel rust starts with pits and cracks.
- Use the proper tools. Do not use steel pads, wire brushes or scrapers to clean stainless steel.
- Use non-chlorinated cleaners at recommended concentrations. Use only chloride-free cleaners.
- Soften your water. Use filters and softeners whenever possible.
- Wipe off cleaning agents and standing water as soon as possible. Prolonged contact eventually causes problems.

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Product Warranty

Products manufactured by Caddy Corporation are warranted to the original purchaser as follows:

Mechanical components are warranted to be free from defects in material and workmanship under normal use, storage and service for a period of one year from the date of installation or eighteen months from factory shipment, whichever occurs first.

Electrical components are warranted to the original purchaser to be free from defects in material and workmanship under normal use, storage and service for a period of ninety days from the date of shipment.

Caddy Corporation shall repair or replace, at our discretion, any part or product which we determine to be defective during the warranty period.

Under no circumstances will Caddy Corporation honor any repair or back charges by any party regardless of whether such equipment is within the warranty period, unless the Service Department of Caddy Corporation has authorized such work in writing.

If the equipment is repaired or altered in any way whatsoever by any person without prior written consent by Caddy Corporation, this warranty shall not apply.

The following are ***NOT*** covered under this warranty:
- Normal wear on parts, such as bulbs, gaskets, etc.
- Defects or damages resulting from accidents, alterations, abuse or misuse of equipment and/or any of its components.
- Damage of electrical components resulting from connecting the equipment to any power supply other than specified on the nameplate, or resulting from unauthorized altering of the equipment.
- Damage from water conditions causing malfunction of electric components and/or control equipment.

There is no other express warranty.

Any and all implied warranties are excluded to the extent permitted by law. Implied warranties, when included by law, including those merchantability and fitness for a particular purpose, are limited to one year from the date of shipment.

Liability for consequential damages under any and all warranties is excluded. This warranty is the buyer's exclusive remedy.

It is Caddy's policy to constantly improve the design and manufacture of our products. Accordingly, all equipment is subject to change consistent with such policy without prior notice and some items may be discontinued without obligation.

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