

# MECHANICAL CODE DISCUSSION

## Installing Exhaust Systems

Chapter 5 of the International Mechanical Code addresses the requirements for installing exhaust systems. Exhaust systems listed include hazardous vapors and fumes, dryers, domestic kitchen, commercial kitchen, dust, stock, refuse conveying, sub-slab soil, smoke control and energy recovery ventilation systems. The exhaust system discussed this month and continuing next month is commercial kitchens. A few definitions will be helpful in understanding the requirements in the Code.

### Commercial Cooking Appliances

Appliances used in a commercial food service establishment for heating or cooking food and which produce grease vapors, steam, fumes, smoke or odors that are required to be removed through a local exhaust ventilation system. Such appliances include deep fat fryers; upright broilers; griddles; broilers; steam-jacketed kettles; hot-top ranges; under-fired broilers (char-broilers); ovens; barbecues; rotisseries; and similar appliances. For the purpose of this definition, a food service establishment shall include any building or a portion thereof used for the preparation and serving of food.

### Extra Heavy-Duty Cooking Appliances

Extra-heavy-duty cooking appliances include appliances utilizing solid fuel such as wood, charcoal, briquettes, and mesquite to provide all or part of the heat source for cooking.

### Heavy-Duty Cooking Appliances

Heavy-duty cooking appliances include electric under-fired broilers, electric



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chain (conveyor) broilers, gas under-fired broilers, gas chain (conveyor) broilers, gas open-burner

ranges (with or without oven), electric and gas wok ranges, and electric and gas over-fired (upright) broilers and salamanders.

### Medium-Duty Cooking Appliances

Medium-duty cooking appliances include electric discrete element ranges (with or without oven), electric and gas hot-top ranges, electric and gas griddles, electric and gas double-sided griddles, electric and gas fryers (including open deep fat fryers, donut fryers, kettle fryers and pressure fryers), electric and gas conveyor pizza ovens, electric and gas tilting skillets (braising pans) and electric and gas rotisseries.

### Light-Duty Cooking Appliances

Light-duty cooking appliances include gas and electric ovens (including standard, bake, roasting, revolving, retherm, convection, combination convection/steamer, countertop conveyORIZED baking/finishing, deck and pastry), electric and gas steam-jacketed kettles, electric and gas pasta cookers, electric and gas compartment steamers (both pressure and atmospheric) and electric and gas cheese-melters.

Now that we've defined the various commercial cooking appliances, let's consider the different Types of hoods that need to be installed over these appliances and other appliances.

### Type I hoods shall be constructed:

- of steel having a minimum thickness

of 0.0466 inch (1.181 mm) (No. 18 gage) or stainless steel not less than 0.0335 inch [0.8525 mm (No. 20 MSG)] in thickness

- with external hood joints, seams and penetrations made with a continuous external liquid-tight weld or braze to the lowest outermost perimeter of the hood
- internal hood joints, seams, penetrations, filter support frames and other appendages attached inside the hood shall not be required to be welded or brazed but shall be otherwise sealed to be grease tight

### Type II hoods shall be constructed:

- having a minimum thickness of 0.0296 inch (0.7534 mm) (No. 22 gage) or stainless steel not less than 0.0220 inch (0.5550 mm) (No. 24 gage) in thickness, copper sheets weighing not less than 24 ounces per square foot (7.3 kg/m<sup>2</sup>) or of other approved material and gage
- with joints, seams and penetrations as set forth in IMC Chapter 6- Duct Systems
- to be sealed on the interior of the hood and shall provide a smooth surface that is readily cleanable and water tight

### IMC 507.2.1

#### Type I hoods shall be installed:

- where cooking appliances produce grease or smoke
- over medium-duty, heavy-duty and extra-heavy-duty cooking appliances
- over light-duty cooking appliances that produce grease or smoke
- to operate automatically by heat or other approved methods

**507.2.2**

**Type II hoods shall be installed:**

- above dishwashers and light-duty appliances that produce heat or moisture and do not produce grease or smoke

*Exception: where the heat and moisture loads from such appliances are incorporated into the HVAC system*



*design or into the design of a separate removal system*

- above all light-duty appliances that produce products of combustion (gas appliances) and do not produce grease or smoke

**507.2.3 Domestic cooking appliances used for commercial purposes:**

- domestic cooking appliances utilized for commercial purposes shall be

provided with Type I or Type II hoods as required for the type of appliances and processes in accordance with Sections 507.2, 507.2.1 and 507.2.2

- the appliance type is not the governing factor- smoke and grease is

*Part 2, next issue will include grease ducts, clearances, shafts make-up air and fire suppression.*

*As always, your comments, suggestions and questions are always welcome.*

*Enjoy your summer vacations!—Brent*

# Meet and Get to Know: RICK CARMAN

What is your position within your company?

“Senior VP (chief cook and bottle washer), and when I was younger, I wanted to be either a musician or work with my Grandfather and Dad at Carman Refrigeration, who started the company in 1946, so I have been around the trade my whole life.”

When you were a child, what did you want to be when you grew up?

“I started working summers when I was 12 years old. One of my first jobs was breaking down 125 lb. tanks of refrigerant into 30 lb tanks for the guys to use, I also packed many a 125 cylinder upstairs to compressor rooms in downtown Salt Lake buildings.”

What is the most unusual HVACR project you’ve performed?

“Carman Refrigeration is currently involved with the most unusual project to date; we are designing and installing a Digester gas dehumidifier and reheat refrigeration system in the Weber waste water treatment facility.”

What are your favorite aspects of your job?

“The constant challenge of each job and the satisfaction of a job when all goes according to plan.”

If you weren’t a HVACR contractor, who do you think you would be?

“I would probably be a music teacher or a studio musician.”

What is a motto that you live by?

“I bow hunt therefore I am.”

What is the most high-tech thing in your house?

“I recently won a new bow from Hoyt it is the most High tech one on the

market. It is made from carbon fibers with no metal it just came out, you can park a truck on it and not hurt it and it only weighs 3.8 pounds, and shoots 320 fps out of the box. That’s fast for a production bow.”

If you could travel anywhere in the world, where would you go?

Perhaps in the future, I can take (the bow) to Africa, which would be a fascinating place to visit, not only from a hunting stand point but a cultural and scenic place of wonder.”

What three items are always in your fridge?

“Diet Coke with Lime, Diet Pepsi (my wife’s favorite) and Miracle Whip.”

Where is your favorite place to shop?

“My wife commented that Sportsman Warehouse and Cabela’s are the only two places I will shop.”

What’s your favorite movie?

“I think To Kill a Mockingbird is one movie that sticks with you forever. I first saw it in Jr. High; it was required reading and viewing. However, I really enjoy a good Sci-fi or action movie too: Star Trek, all of them, Zulu, Kelly’s Heroes, Down Periscope....”

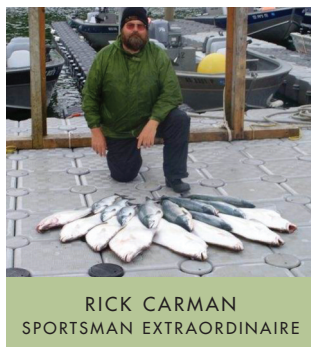
If you could invite any three people to dinner (dead or alive), whom would you invite?

“My grandparents from both sides. It’s been a long time since I have seen them and they were some of the most influential people in my life.”

People would be surprised to know...

“I belong to a great archery club (Beehive Wasatch Bowhunters) which I am currently the President (again) and I am on the board of the best State archery organization in Utah: The Utah Bowmen’s Association.”

*Rick Carman is the Senior VP of Carman Refrigeration and is currently a Director on the Board of RMGA.*



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