

# Paragon Furnaces for the Knifemaker and Heat Treater



Shown is the KM-24D. The KM-14D, KM-36D, and KM-45D furnaces look the same from the front. The chief difference between these models is length.

**The soul of the blade is born in the crucible of the furnace.**

## KM-Series Furnaces for Knife Makers

### The spirit of a great knife

Great knives helped carve out the wilderness, fight wars, save lives. Explorers have carried them to distant lands. Knives have earned their place in history.

Great knives are more than steel and ornament. They contain a spirit that makes them feel as an extension of the user's hand. Touch a great knife, and it feels alive. As the knife ages, its spirit remains as vibrant as the day the maker gave the knife to the world. The spirit in their knives lives on long after the master craftsmen who made them.

Wherever humans have withstood severe tests—whether in the steaming jungles of the South Pacific, the burning desert of Africa, or the cold, blowing wastelands of Korea—they have depended upon great knives. Wherever explorers have gone, they have taken great knives with them—over the prairies and mountains of the American

west, across the desolate plains of the North Pole, through the silence of deep space.

Upon their return home, these explorers and soldiers and medics and astronauts have numbered among their most priceless possessions their knives. When the owner touches his knife, memories awaken. Once again he hears the stories around the campfire; he smells the pine needles in the wilderness. He remembers the lean-tos he fashioned; the kindling he made for a fire in a blowing snow-storm. His heart quickens its pace a few beats as he sees scenes he shared with the knife.

Some of these knives find their places on mantles and in display cases. Others are passed on to sons and daughters to continue their faithful service.

Not all great knives face extreme tests. Some are carried into combat and rarely used. Others see no more action than a camping trip. Yet each bears the imprint of its maker. Each contains a spirit that makes it feel alive to the touch. Each extends a secure feeling that comes from wearing a knife you can depend on. The maker, immersed in the dust and sweat of his work, sends a part of himself with each knife that

leaves his shop. He lives on in his knives.

Knife making is an adventure all its own. It begins when the future owner shares the dream of a special knife with the maker. They talk excitedly over the first rough sketches. Then the maker retires to his shop and loses himself in the creation of the knife. Time disappears; the hours tick by as he grinds, heat treats, polishes.

### Test exotic heat treating formulas

When your Paragon KM- or HT-series furnace arrives, you will begin to live the adventure more fully. Now you can join that elite corps of knife makers who witness the birth of the knife. In the bright red heat of the furnace, the soul of the knife is born.

Many furnace owners revel in testing. They put blades through tests more severe than any knife owner would dare. They test for Rockwell hardness, but they don't stop there. They count the number of cuts a knife makes on hemp rope. They measure the foot pounds of torque required to bend the blade to 45° or even 90°. Then they straighten the blade, slap on a handle and test it in the real world.

The knife maker with a Paragon furnace can try exotic heat treating methods at his leisure. Does quenching in dry ice improve blade performance? What happens when 52100 steel is triple-quenched with a one-day wait between each quench? After this treatment, will a 52100 blade bend to 90° without chipping? What if you freeze the steel between quenches?

With a Paragon furnace in your shop, all questions about heat treating formulas are settled. You find out for yourself what works and what doesn't. Testing and heat treating is at the heart of the knife making adventure. Here is where your confidence as a knife maker takes root.

### A bond of trust

The knife maker's credo is simple: to create a knife that represents the knife maker himself. Quality of work is not just a fad for him. It is a passion. Any-



### PKM-9D

8 1/2" wide, 4 1/2" high,  
9" deep firing chamber

thing less than one's best is unthinkable.

The buyer of a custom knife appreciates fine detail. He or she marvels at the lines and curves the maker coaxed from the steel with such patience. There is a bond of trust between the owner of a fine knife and its maker. This is why the knife maker sleeps better when he controls every step in creating a knife.

The knife maker derives joy from working with his hands. He makes knives that are not merely prized, but treasured. When the knife owner wipes a rag across such a knife, he is caressing it as much as cleaning it. Part of this spirit of knife making is lost when you send the blade out for heat treating and await its return.

Every time you, the maker, release one of your knives to the world, your reputation goes with it. This is why makers feel compelled to control every step in the blade's journey from initial design through final polishing.

### No more waiting

A Paragon furnace sets the knife maker free. No more wrapping blades and shipping them to your heat treater. No more waiting until you have a dozen blades to get the best price on heat treating. No more turning away orders for last-minute gifts.

While your furnace is hardening and tempering blades, you can busy yourself grinding more knives or fitting handles. After you've used your Paragon



### KM-14D

5 1/2" wide, 4 1/4" high,  
14 1/2" deep firing chamber

### KM-24D

5 1/2" wide, 4 1/4" high,  
24" deep firing chamber

### KM-45D

5 1/2" wide, 4 1/4" high,  
45" deep firing chamber

### KM-36D

5 1/2" wide, 4 1/4" high,  
36" deep firing chamber

furnace awhile, you will wonder how you ever got along without it.

When asked to make a knife on short notice—whether for a Marine Corps awards presentation or an archaeologist on his way to Africa—you will be ready. When a custom knife is needed as a going away gift, and the recipient is leaving in three days, you will be ready. Your furnace might even pay for itself on rush orders you would otherwise have missed.

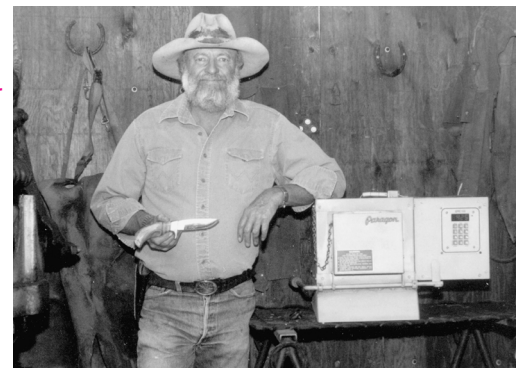
Own a furnace and you alone decide when you will complete a knife. If you stay up one Friday grinding a knife, you can heat treat it that evening and deliver it Saturday morning—just in time for a grateful wife to present to her husband on his birthday.

Finishing a knife whenever you want will excite you. You

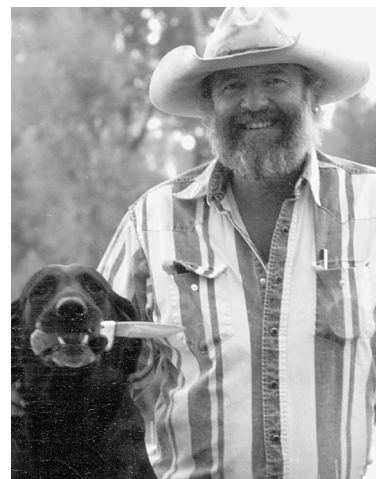


### HT-10D

8 1/2" wide, 8 3/4" high,  
9" deep firing chamber



Ed Fowler with his Paragon KM-14D.



"I recommend Paragon furnaces because they make an excellent product."  
—Ed Fowler

will find yourself working into the night to complete a new design. When you send the blade out for heat treating, the excitement of making it is forgotten. By the time the blade returns, you hardly remember it.

### Ed Fowler and his Paragon KM-14D

Ed Fowler has been making knives off and on since the sixth grade. Ed believes heat treating is a crucial step in making knives. The soul of the knife is born in the fur-

## Specifications of Paragon Furnaces

Kiln Model	Max. Temp. F.	Firing Chamber Opening	Depth	Cubic Feet	App. Shp. Wt.	Outside Dimensions W. x D. x H.	Volts	Amps	Watts	Circuit Fuse	NEMA Config.
PKM-9D	2000	8 1/2" W x 4 1/2" H	9"D	.2	57	25"W x 14"D x 13 1/2"H	120	15	1800	20	5-15R
KM-14D	2000	5 1/2" W x 4 1/4" H	14 1/2"D	.19	100	23"W x 21"D x 14 1/2"H	120	10	1200	15	5-15R
KM-24D	2000	5 1/2" W x 4 1/4" H	24"D	.32	139	23"W x 30 1/2"D x 14 1/2"H	240	7.5	1800	20	6-20R
KM-36D	2000	5 1/2" W x 4 1/4" H	36"D	.48	190	23"W x 43"D x 14 1/2"H	240	11	2700	20	6-20R
KM-45D	2000	5 1/2" W x 4 1/4" H	45"D	.60	240	23"W x 50"D x 14 1/2"H	240	19	4560	20	6-20R
HT-10D	2000	8 1/2" W x 8 3/4" H	9"D	.38	99	26 1/2"W x 14 1/2"D x 18"H	120	14	1692	20	5-15R
HT-14D	2000	13"W x 8 3/4" H	13 1/2"D	.88	140	31"W x 18 1/4"D x 18 1/2"H	240	13	3120	20	6-20R
HT-22D	2000	21"W x 13 1/4" H	21"D	3.4	290	37 1/2" x 30"D x 23"H	240	30	7200	50	6-50R

Specifications are subject to change without notice.



## HT-14D

13" wide, 8 3/4" high,  
13 1/2" deep firing chamber

nace. To entrust heat treating to someone else would be unthinkable to Ed Fowler.

Knife making is an adventure. "Knives are my life," says Ed. Owning a Paragon furnace adds magic to the adventure, because the knives come alive inside the furnace.

With a Paragon furnace, the knife maker can deepen his knowledge of working knives. Experimenting with heat treating teaches the knife maker more about the steels he cherishes than any book or teacher could. With his own furnace, he can alter the heat treating formula to exactly fit his own knives, just like Ed Fowler does.

"I couldn't achieve the control I now enjoy had I not had a Paragon furnace," Ed Fowler says. "Owning a Paragon is extremely beneficial to blade smithing." Ed found his furnace helpful in discovering some of the ideas in his informative books, *Ed Fowler's Knife Talk: The Art and Science of Knifemaking* and *Ed Fowler's Knife Talk II: The High Performance Blade*.

"Paragon offered me no financial rewards or free equipment for this endorsement," Ed said. "I recommend Paragon furnaces because they make an excellent, reliable product."

## The KM-14D, KM-24D and KM-36D

The KM-series furnace comes in four sizes: the 120 volt KM-14D, 14 1/2" deep, 5 1/2" wide, and 4 1/4" high inside; the 240 volt KM-24D, 24" deep, 5 1/2" wide, and 4 1/4" high; the KM-36D, 36" deep, 5 1/2" wide, and 4 1/4" high; and the KM-45D: 45" deep, 5 1/2" wide, and 4 1/4" high.

Even if most of your knives would fit inside the KM-14D, you may ultimately be happier with the KM-24D. Too much capacity may be better than too little. After all, it doesn't hurt to heat



## HT-22D

21" wide, 13 1/4" high,  
21" deep firing chamber

shorter blades in the longer KM-24D; electrical consumption is minimal. The KM-24D is priced only slightly higher than the KM-14D. Just knowing you could make a larger blade when you wanted may be worth the extra cost of the KM-24D.

## PKM- and HT-series Heat Treating Furnaces

The KM-series furnaces are long and narrow, ideal for knives. The PKM- and HT-series are sized for general heat treating. (We also design custom furnaces.)

Machine shops save time with a furnace at their disposal in their own shop. You will no longer send a die out for heat treating, wait for its return and then send it out again for additional heat treating.

The PKM-9D, our smallest standard-order furnace, measures 8 1/2" wide, 4 1/2" high and 9" deep inside. The PKM-9D is small, but powerful. It will reach 1850° F. within 45 minutes. The HT-10D and PKM-9D fire on a 120 volt, 20 amp circuit. The PKM-9D can be shipped by UPS.

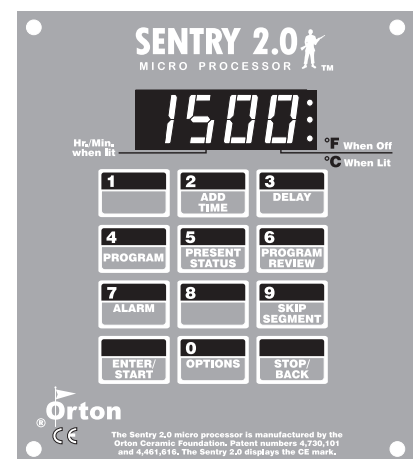
The HT-10D interior measures 8 1/2" wide, 8 3/4" high, and 9" deep, a good size for most small parts. The HT-14D is made for large objects and higher volume users. The firing chamber is a generous 13" wide, 8 3/4" high and 13 1/2" deep. The HT-14D operates on a 240 volt, 20 amp. Circuit.

The HT-22D offers capacity that is hard to believe for the price. Costing only slightly more than our smaller furnaces, the HT-22D measures a massive 21" wide, 13 1/4" high and 21" deep inside.

## Features

### Electronic temperature controller

Paragon KM-, PKM-, and HT-series furnaces are equipped with the Sentry 12-key electronic temperature controller. It is simple to master and a pleasure to use. Display messages guide you through each step in entering heat treating parameters. The Sentry operates in "segments." A segment will heat to a given temperature, at a given rate, and will hold that temperature for



as long as you want. You can enter as many as 18 segments. The Sentry can control both heating and cooling. You will marvel at its accuracy and repeatability.

The Sentry stores up to four programs in memory even if the furnace is

unplugged. Store a different program for each type of steel you heat treat.

The Sentry alarm sounds when a programmed temperature is reached. A large, bright display shows temperature throughout heating and cooling. Use the delay feature to turn the furnace on after a specified period.

Paragon furnaces measure temperature with a new, advanced Type-K thermocouple. A protective metal sheath gives it longer life and greater accuracy.

### **Solid construction**

The door on each furnace swings open with one-handed operation. A counter-weight handle holds the door securely closed. The door of models PKM-9D, HT-10D, and HT-14D has a vent hole, so you can see inside the furnace during firing. A metal cover seals the vent hole when not in use. (Always wear Paragon firing safety glasses when looking into a hot furnace.) These Paragon furnaces are insulated with refractory firebrick. The elements are mounted in dropped, recessed grooves machined into the firebrick. Paragon invented this type of groove in 1952. This groove protects the element for long life and low maintenance. Elements are simple to replace because they're exposed rather than embedded. You can thread new elements into place following clear instructions in the manual.

The firing chamber is protected by a steel case painted in high temperature blue. A built-in stand lifts the firing chamber safely off your work table, so no extra stand is needed. The door of each Paragon heat treating furnace is mounted with a heavy duty hinge for smooth opening. A micro-switch shuts off the power to the elements when the door is opened.

We use high temperature wire in the switch box for long life. A heat shield, mounted between the switch box and furnace, helps keep the switch box components cool even during extended operation. To further dissipate heat, the switch box is extra large and generously louvered. Each furnace comes with a cord and plug for immediate installation and a one year warranty.

### **Complete instructions**

Your furnace includes a wiring diagram, programming instructions, and heat treating manual. The manual gives you basic heat treating instructions for D2, 440C, ATS 34 and 154 CM. The manual is written in plain English for the beginner.

### **In business since 1948**

Paragon Industries, L.P. is one of the oldest and most widely recognized kiln and furnace manufacturers in the world. Paragon was founded in 1948 and is a leader in ceramic kilns. In designing heat treating furnaces, we use ideas that have been proven in Paragon kilns and furnaces since 1948. Many of the Paragon kilns manufactured twenty and thirty years ago are still firing.

## **Accessories**

### **Knifemaker's Heat Treating Kit**

Contains 1 pair hot gloves, 24" x 24" heat treating foil, 1 heat treating fork, 4 knifeholders, and 8 firebrick supports.



### **Hot Gloves**

For intermittent handling of hot objects up to 400° F. Sold in pairs. Not intended for handling hot blades.

### **Heat Treating Foil**

This high temperature stainless steel foil protects knifeblades and other tools from fire-scaling during heat treating. Include a small chip of wood inside the foil packet. The wood burns up the oxygen inside the foil wrap. The foil cuts with scissors and may be used only once.

### **Heat Treating Fork**

Easily removes knifeholders and blades from the hot furnace. A sliding wooden handle allows you the most comfortable position for holding the fork. 31" long.

### **Firebrick Supports**

Position firebrick supports under the knifeholders inside the furnace. The firebrick supports raise the knifeholders so you can slide the fork under holders.

### **Knifeholder**

High temperature removable pins fit into holes pressed into a ceramic base. The pins hold the foil-wrapped blades on edge so heat can circulate around each blade.

### **Kiln Coating and Repair Cement**

A permanent, high temperature refractory cement for all types of kilns and furnaces. Mix with water to repair firebricks. Instructions included.

### **Firing Safety Glasses**

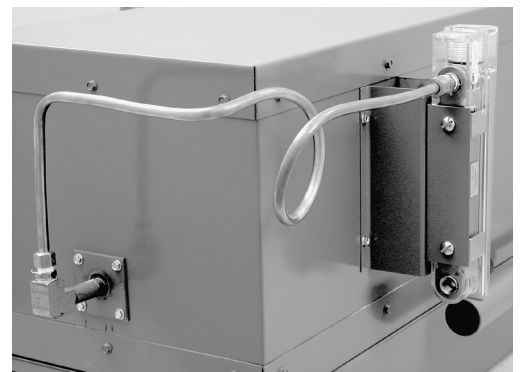


Whenever looking into the firing chamber of a hot furnace, protect your eyes with firing glasses. They are coated to filter infra-red and ultra-violet light. They also protect your eyes from heat and reduce glare.

### **Gas Injection Flow Meter**

Oxygen in the furnace forms a scale on the surface of knifeblades and other parts during heat treating. To avoid surface scale, wrap the parts in heat treating foil or inject an inert gas into the furnace. The gas displaces the oxygen.

The solenoid kit enables you to turn the gas on or off for each segment in the firing.



The gas injection flow meter.

  
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