

Induction Heating Systems

Issued August 2003 • Index No. IN/8.0

Induction Heating System 

5, 20, 25 kW Preheat and Post Weld Heat Treatment

Quick Specs	Applications	5 kW	20 kW	25 kW
	Power Piping Petrochemical Shipbuilding Maintenance Construction	Input Power (3-Phase) Rated Output Input Amps Pipe Size* Dimensions** (shipping) Weight**	230 or 460 VAC, 50/60 Hz 5 kW at 100% Duty Cycle 24 A at 230 V, 15 A at 460 V 2.5–12 in H: 47-1/2 in (1206 mm) W: 27 in (688 mm) L: 44-1/2 in (1130 mm) Net: 241 lb (109.3 kg) Ship: 275 lb (124.7 kg)	400 VAC, 50/60 Hz 20 kW at 100% DC 41 A 2.5–30 in H: 47 in (1194 mm) W: 27 in (688 mm) L: 44-1/2 in (1130 mm) Net: 355 lb (161.4 kg) Ship: 390 lb (177.3 kg)
	Process			
	Induction Heating			

The Power of Blue.®

*Contact factory for other sizes.

**Power source, coolant system and cart.

Time to temperature performance is faster than conventional processes due to the method of applying the heat, reducing heat treat cycle time.

The **portable** induction system weighs less than 400 pounds and has a small footprint. The unit can be easily moved.

Easy installation of the induction process requires the wrapping of insulation over the pipe and thermocouples, followed by wrapping of the heating cable. This results in significantly less setup time and operator training.

The induction power source is **power efficient (more than 90%)**, reducing operating costs. Also, less heat is transferred to the outside air, improving the work environment.

Induction heating provides **uniform heating around the pipe and through thickness**. The surface of the pipe is not marred by localized conducted heat at higher than specified temperatures.

The induction system uses a **simple to operate control** with graphic guide to facilitate programming. Systems can be provided with or without recorder.

Low input power, requires less amperage.



25 kW System

The induction system is equipped with **ground fault protection** which automatically turns the power source off when ground current is detected. Induction heating produces less radiant heat and does not require hot conductors improving the work environment.

Durable induction coils reduce replacement and repair costs. The **insulation is reusable** and may be used 50 times or more, reducing cost of disposal.

The **reliable systems** are tested to the same requirements as Miller welding equipment. In addition, the process is not subject to multiple heating units, where one unit could fail aborting the heat treat cycle.

Flexibility is provided by induction coils that can be easily moved or adjusted.



MADE IN USA
APPLETON, WI



Miller Electric Mfg. Co.
An Illinois Tool Works Company
1635 West Spencer Street
Appleton, WI 54914 USA

International Headquarters
Phone: 920-735-4505
USA FAX: 920-735-4134
Canadian FAX: 920-735-4169
International FAX: 920-735-4125

Web Site
www.MillerWelds.com



System Components

5 kW System

IHTS Temperature Recorder and Controller

IHPS™ 5kW Power Source
See Lit. Index No. IN/2.0

Coolant System
See Lit. Index No. AY/7.2



20/25 kW System

IHTS Temperature Recorder and Controller

Intellifire™ 204 Power Source
See Lit. Index No. IN/6.0

Intellifire™ 250 Power Source
See Lit. Index No. IN/1.0

Coolant System
See Lit. Index No. AY/7.2



The Intellifire 20 and 25 kW Systems can be equipped with an optional lifting eye for moving the system at a construction site.

IHPS™ II 5KW Power Source

This inverter-based, solid-state, high-frequency induction heating power source provides infinite output power control over a range of 0 to 5 kW. It combines flexibility, precision and reliability into a compact lightweight package that provides all the features required for consistent and efficient induction heating. The 5 kW, 100%-duty-cycle, air-cooled unit is perfect for heating operations—especially on medium-sized parts and less critical time-to-temperature applications.

Coolant System

The cooler is a compact, horizontal-design coolant system and is equipped with a power switch to turn the unit on and off at the front panel.

- 14,000 BTU/hour cooling capacity
- 3 gal (11.4 L) coolant tank
- Rustproof, polyethylene molding serves as the coolant tank, fan shroud, filler spout and lifting handles
- Coolant filler spout and coolant filter are easy-to-access at the front panel
- Efficient fin and tube heat exchanger
- “Paddle wheel” flow indicator
- Panel-mounted on/off switch

Intellifire™ 204 (20 kW)/250 (25 kW) Power Sources

The Miller Intellifire™ units are inverter-based, solid-state, high-frequency induction heating power sources that provide infinite output power control over a range of 0 to 25 kW (0 to 20 kW for Intellifire 204). They combine flexibility, precision and reliability into compact lightweight packages that provide all the features required for reliable, consistent and efficient heating using the induction process. The 100%-duty-cycle, air-cooled units are perfect for heating operations—especially large diameter pipe, heavy wall steel plate and critical time-to-temperature applications.

Coolant System and Portable Cart

The coolant system conveniently mounts under the power source.

- 12,000 BTU/hour cooling capacity
- 2-1/2 gallon coolant tank
- Transformer provides power for power source, coolant system and controls
- Rustproof, polyethylene molding serves as coolant tank and easy-to-fill coolant spout
- Efficient fin and tube heat exchanger
- “Paddle wheel” flow indicator
- External filter can be quickly accessed for cleaning
- On/off switch on transformer case

IHTS Controller – Recorder



Control without recorder

Dimensions

H: 10 in (254 mm)
W: 11-3/4 in (298 mm)
D: 14-1/2 in (368 mm)

Shipping Dimensions:

H: 15 in (381 mm)
W: 16-3/4 in (425 mm)
D: 20 in (508 mm)

The IHTS Controller provides for simple to advanced thermal cycle programs. The control comes programmed with a typical thermal cycle for stress relief. This includes a step in temperature from ambient to critical temperature, controlled temperature rise to the holding temperature, a soak or dwell at stress relief temperature, a controlled cooling rate to critical temperature and air cool. The programming of the unit is facilitated with a graphical presentation of the heat cycle and corresponding controller program screens. The IHTS is equipped with a large run, hold and stop button for ease of use. The control also includes the coolant flow switch. This switch insures that proper coolant flow is being provided to the liquid-cooled heating cable. A coolant fault is indicated with a light on the face of the control.



Control with digital recorder

The IHTS Control is available in two configurations to meet your application requirements.

1. The IHTS Control is available without a temperature recorder. In this way, you can use your existing recorders or purchase an alternative recorder of your choice. The unit is equipped with a blank panel, which can be modified to install a 100 mm recorder.
2. The IHTS Control is available with a digital recorder. The recorder is built into the IHTS to provide six thermocouple inputs. The recorder is equipped with a touch-screen for simple programming and use. The color display permits clear monitoring of the heat treat process and provides alarms for process control. Data is stored on a floppy disc for printing, storage, or further analysis. The operating temperature range of the IHTS Recorder is 41° F to 104° F.

Insulation



The insulation is designed for ease of use, durability, environmental friendliness and maximum temperature insulation to protect the induction heating cable.

- The insulation is designed to insulate the work for process efficiency and protect the liquid-cooled cable from high temperatures of stress relieving.
- The blankets are sized and stenciled for the pipe size to be treated.
- The insulation is sewn into a silica blanket, which provides high durability. 50 thermal cycles or more can be achieved with one blanket.
- The sewn blanket insulation does not create the dust and particulate associated with bulk insulation. This creates a friendlier environment for the heat-treaters and welders.

Liquid-Cooled Heating Cables



The liquid-cooled heating cable provides the power to the part to be heated. The silicone hose encloses a special copper conductor specifically designed for carrying high-frequency current to maximize efficiency. The hose also carries the coolant, which cools the conducting wire. The hose is reinforced for strength and durability. **Preheat cable covers** are available to protect the heating cable from slag and molten metal created during welding. The preheat covers are easy to install and can withstand temperatures up to 650° F.

Power Extension Cable



The cable is equipped with Twist-Lock quick disconnects for easy removal and attachment. Liquid-cooled extension cables are available to remote the power source up to 50 feet from the work. The cables are flexible for ease of use.

Ordering Information

Equipment and Options	Stock No.	Description	Qty.	Price
5 kW Induction Base System	#907 022	(230 or 460 VAC, 3-phase) includes power source, cooler, and cart		
20 kW Induction Base System	#907 097	(400 VAC, 3-phase) includes power source, cooler, and cart		
25 kW Induction Base System	#907 021	(460 VAC, 3-phase) includes power source, cooler, and cart		
IHTS Temperature Controller	#194 916	Includes temperature controller, parameter display and flow switch		
IHTS Temperature Controller and Digital Recorder	#194 916-01-1	Includes temperature controller, parameter display, flow switch and digital (6 channel) temperature recorder		
Lifting Eye Assembly	#204 231	For 20 kW and 25 kW systems		
<i>Note: Select a heating cable, an insulation blanket, and an extension cable from below to complete the system.</i>				
Liquid-Cooled Induction Heating Cables	#194 909	30 ft		
	#194 910	50 ft		
	#194 908	80 ft		
Preheat Covers	#204 611	30 ft		
	#204 614	50 ft		
	#204 620	80 ft		
PWHT Insulation Blankets (1 in thick)	#194 947	For 2.5 in pipe (12" x 15")		
	#194 948	For 4 in pipe (12" x 21")		
	#194 949	For 6 in pipe (12" x 33")		
	#194 950	For 8 in pipe (18" x 39")		
	#194 951	For 10 in pipe (18" x 45")		
	#194 952	For 12 in pipe (18" x 50")		
	#194 953	For 14 in pipe (18" x 54")		
	#194 954	For 16 in pipe (18" x 58")		
	#194 955	For 18 in pipe (24" x 67")		
	#194 956	For 20 in pipe (24" x 73")		
	#194 957	For 22 in pipe (24" x 79")		
	#194 958	For 24 in pipe (24" x 85")		
	#195 502	For 26 in pipe (24" x 91")		
	#194 998	For 28 in pipe (24" x 98")		
	#207 817	For 30 in pipe (24" x 105")		
Preheat Insulation and Accessories	#204 609	Preheat insulation, 1/2 in x 6 in x 89.5 in		
	#204 669	Preheat insulation, woven silica, 1/2 in x 6 in x 120 in		
	#211 474	Preheat insulation, 1/2 in x 12 in x 120 in		
	#194 965	Rope, high temperature, 1 in wide, 50 ft roll		
Extension Cables (Output Power)	#194 893	25 ft, liquid-cooled		
	#194 894	50 ft, liquid-cooled		
Accessories				
Thermocouple Attachment Unit	#194 959	Welder		
Thermocouple Cable (Type K)	#194 999	Type K thermocouple wire, 500 ft		
Thermocouple Connector (Type K)	#195 098	2-pin male, package of 10		
Thermocouple Extension (Type K)	#194 968	Cable, 6 pair, 50 ft		

Date:

Total Quoted Price:



Distributed by: