

ETOH

BEARING HEATER

Induction Heater for Shrink Fit Process of Metal Ring



*Wonderful Heating Ability
with apparent power control*

*Superior Safety
with fault tolerance and safety compliance standards*

*Excellent operability
with Digital Control*

**Inverter Built-in
New Generation
Heater**

*Wide Adaptability
to various source voltage*

*Easy Mountability
of Bearing
with Slide type
Bearing Installation Table*



B E A R I N G H E A T E R

Side Direction Structure

Induction Heater for shrink fit process of metal ring further evolved into new generation

ETOH's Bearing Heater provides a proper method of shrink fitting process to extend the life expectancy of bearing and to be harmless to human health and safety. Traditional and Conventional methods of fitting bearing into shaft are Force fitting and Thermal expansion by heating using ovens or oil baths. Force Fit method of bearing with a hammer or a press has high likelihood of causing flaws and scars on bearings. This shortens bearing life expectancy. Heating methods such as ovens, oil bath or blow torch cause smoke, fumes or oil waste. These are harmful to human health and impose burdens on the environment.

ETOH's Bearing Heater provides a best solution to these problems by utilizing an electromagnetic method of expanding thermally bearings for clean and flawless fitting and contributes to the efficiency and ergonomics of the shrink fit process of bearings. The design is also Eco-friendly.

Even Heating without damage to bearing



Use of direct flame or blow torch to heat up bearing is risky, hazardous and causes uneven thermal expansion and/or material alteration. ETOH's Bearing Heater adopts electromagnetic principle to inducing uniform current distribution inside bearing to be heated evenly for equal thermal expansion without damage to bearing(s). This even bore diameter extension eliminates any shrink fit process troubles at mounting bearing(s) into a shaft and increases the work efficiency.

Quick and Efficient Heating without Fire



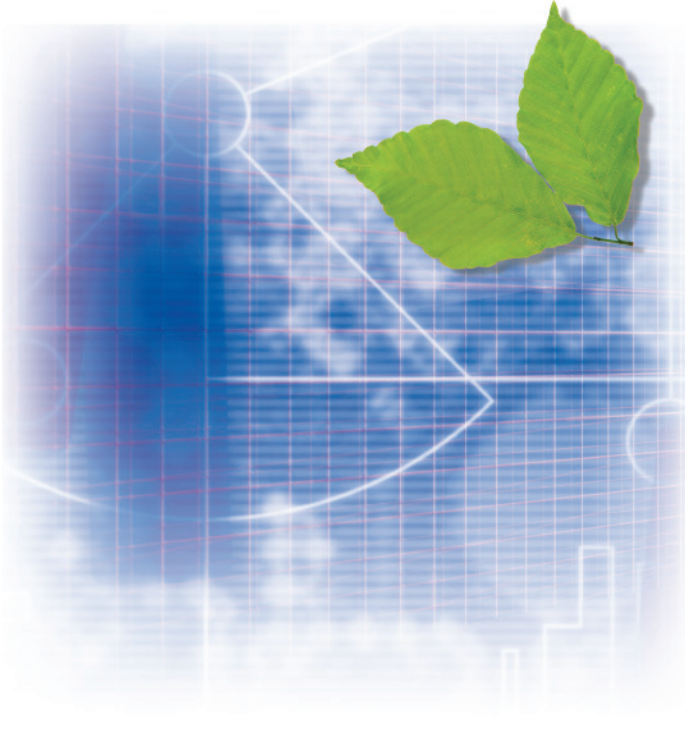
ETOH's Bearing Heater is based on the simple model of transformer with exciting coils embedded into a core as primary windings and bearing recognizable as the secondary windings. AC current flowing the coils induces a secondary current along the inner ring of bearing to generate heat necessary for its expansion due to bearing's own electrical resistance. This simplicity realizes rapid and economic heating of bearing solely and little waste of energy without necessity of media material like oil. Etoh's Bearing Heater of non-use of fire and oil accomplishes High Safety, Reliability and Efficiency for drastic reduction of the total time and cost necessary for Shrink Fit Process in comparison with the other methods.

Clean Heating without impurities intruded



The use of oil bath for the shrink fit process has demerits such as wipe-off required after hot oil bathing, troublesome management and storage of oil, and complicated and costly control and maintenance of oil bath equipment. In addition, the method cannot heat pre-greased bearing(s) without loss of the grease and loses pre-lubrication inside bearing(s). Etoh's Bearing Heater, due to its inherently clean and simple nature of non-use of oil, has no demerit as such and requires no extra management and maintenance task and no contamination to environment, leading to total improvement of Workshop Environment.

Inverter Driven Bearing Heater



Temperature Control and Timer Control



Possible to set up to 250°C as standard in Temperature Control Mode.
 Interchangeable Temperature indication between Celsius and Fahrenheit.
 Possible to set up to 99min59sec in Timer Control Mode.

Versatile and Wide Range Use



Applicable for bushing, gear, pulleys, couplings and other ring shaped metal object as well as bearing(s) as a main application.

Built-in Demagnetization Function



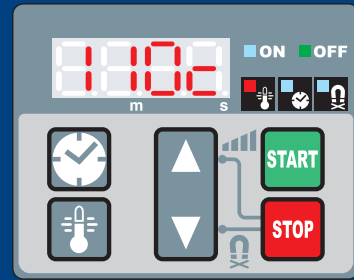
Automatic demagnetization after heating.
 Possible to demagnetize bearing manually whenever necessary.



Operation Panel

common to all types

With a design that enables instinctive operation. Our innovative design is a result of our continual research into user convenience.



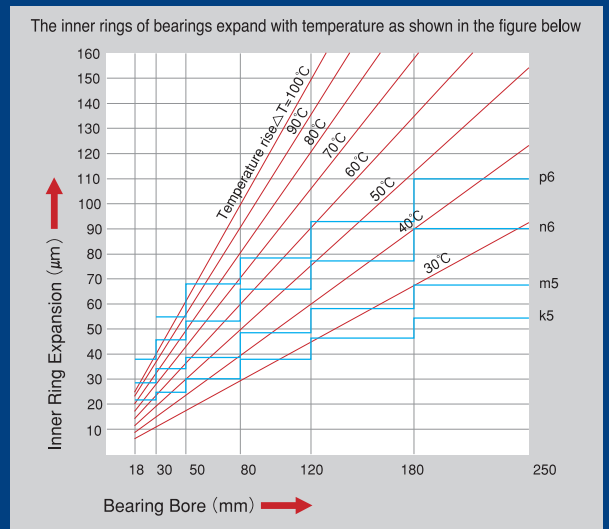
	Timer Mode Selection Set Time Display Time Required for Heating Display		Heating Start
	Temperature Mode Selection Display Current Temperature Display Display Set Temperature Display Temps. Rise Ratio Display		Heating Stop (Reset)
	Set Value Increase/Decrease	+	Output adjustment
		+	Manual Demagnetization

Reference data

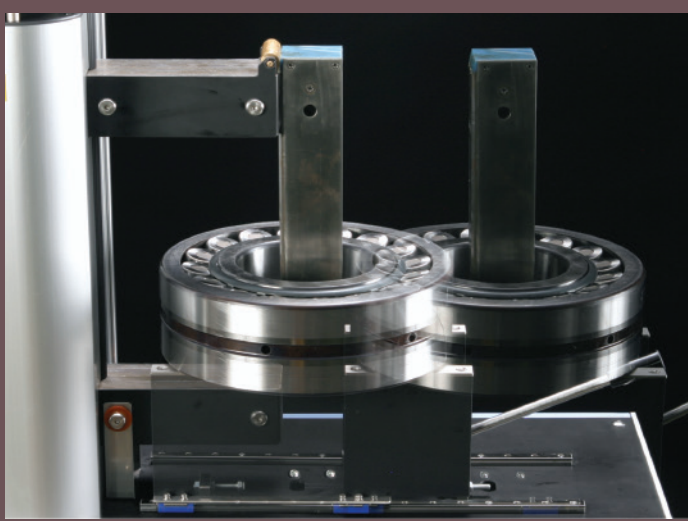
Comparison with the Oil Bath(conventional) method

Oil Bath Method	ETOH Bearing Heater Method
<ul style="list-style-type: none"> ● Troublesome Operation of Oil Bath using Fire and Oil. ● Large loss of time and energy by using amounts of oil. ● Necessity of cleaning bearing after bathing(heating) even if new oil is used. ● Unsuitable for pre-greased bearings. Immersion in hot oil would render pre-greased bearings useless. ● Necessity of Maintenance of Oil bath and Storage of Oil. 	<ul style="list-style-type: none"> ● Simple and Safe Operation without Fire. ● Effectiveness and Efficiency due to heating bearing only (no need to heat other material). ● Versatile and wide applications of ring shaped metal object such as gears and bearing including pre-greased bearing. ● No consumable materials are used. ● Easy Maintenance of the heater without consumption material like oil.

Heating Temperature and Inner Ring Expansion



Features



1 Slide type Bearing Installation Table

(for all types except for IHE0110 and IHE0120)

- Side Direction Structure with its ergonomically Simple lever Operation enables bearings to be mounted and dismounted easily.
- Side Direction Structure will not damage Work (Bearing).
There is little risk of damaging internal circumference of Work(Bearing) during mounting and dismounting due to the design features of the structure.

2 Wonderful Heating Ability

- Reducing heating time by 30%.
(compared with the previous SR series)
- Heating constantly controlled at optimum by sensing and controlling the coil current at maximum which changing frequency, which otherwise would vary with electric properties of work (bearing) and I-type core.
- Designed to have Power Reduction Function by setting the reduction rate 50%-100% by 10% increment for a delicate work (bearing) required to be heated amply and slowly.
- Accommodating a broad range of work (bearing) size by selecting the I-type core suitable for the work inner ring diameter.

3 Wide Range of Input Voltage

- Compatible with a wide range of various voltage and frequencies of power supplies around the world.
- No other three phase input model in this business (except for single phase input models IHE0110 and IHE0120).

4 Superior Safety

- Extensive and reliable protection functions such as Temperature Sensor Abnormal, OverCurrent, OverLoad, and Heat Coil Abnormal Temperature.
- Small and sensitive temperature sensor continuously monitors Bearing Temperature to ensure precise detection of bearing (work) temperature even at high temperature rising rate as well as when the sensor is set in a confined small area.
- Automatic stop for safety even in the case of unintentioned heating without installing the temperature sensor on the work (bearing) and in any other abnormal incident that should happen. In this manner, for Safe Operation of Bearing Heater, all possible safety measures have been taken.

5 Excellent Operability

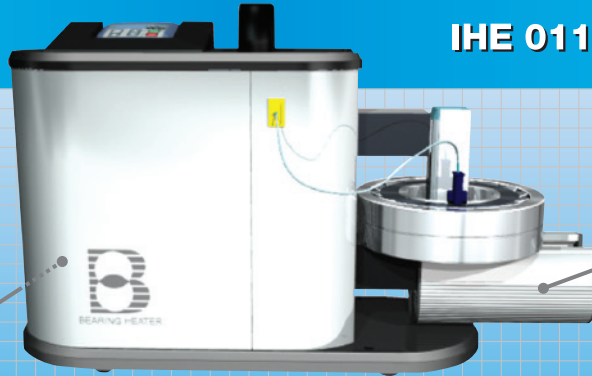
- All commands and monitors only controlled by Operation Panel.
- External control signal inputs and outputs equipped as standard can be used for custom applications.

B E A R I N G H E A T E R

IHE 0110A, IHE 0120G

Storage Space for I-type Cores and Accessories (Rear Side)

Foldable Core Cover



**IHE 0320G, IHE 0340G
IHE 0620G, IHE 0640G**

Slide type Bearing Installation Table

Storage Space for I-type Cores and Accessories



**IHE 1120G, IHE 1140G
IHE 2320G, IHE 2340G**

Storage Box for Accessories

Slide type Bearing Installation Table

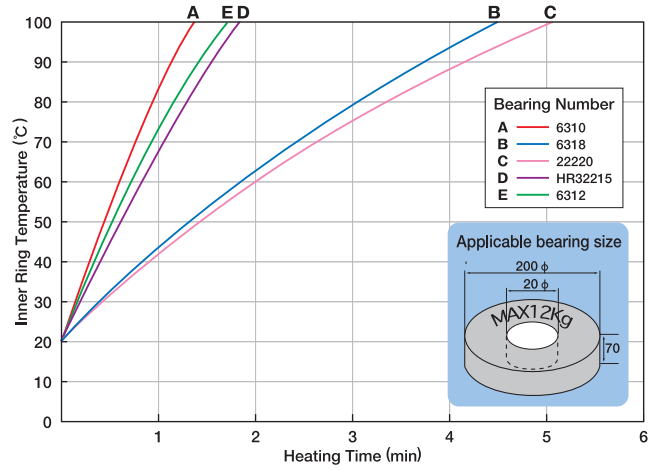
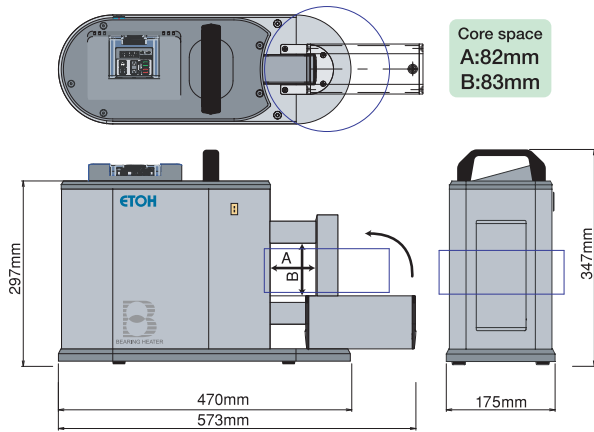
Storage Space for I-type Cores



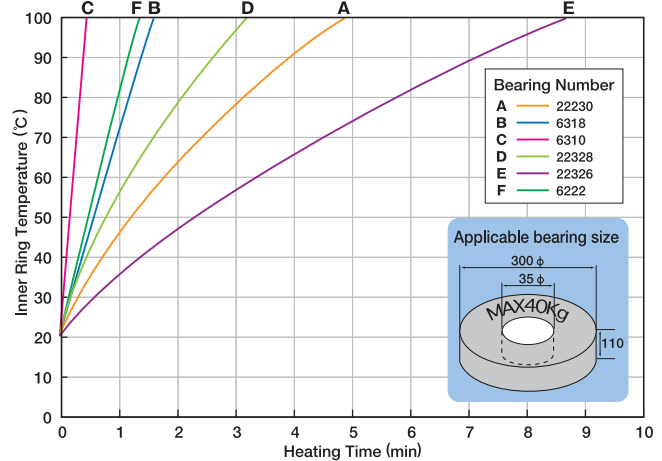
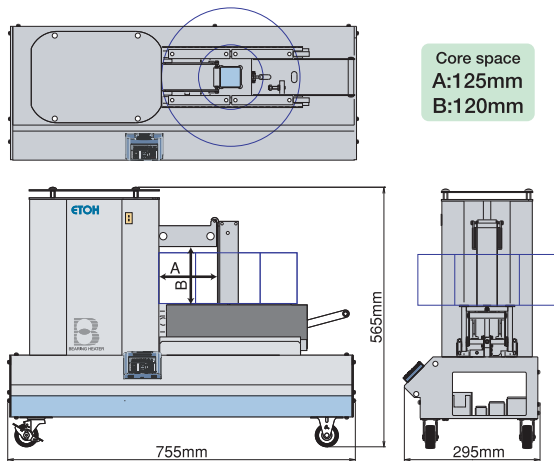
Schematics and Heating Performance Characteristics(Curves)

Ask our agent ,representative, or service office about heating other than bearings.

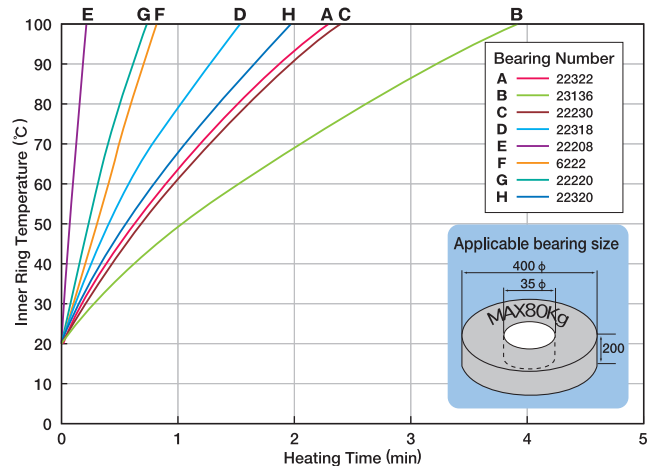
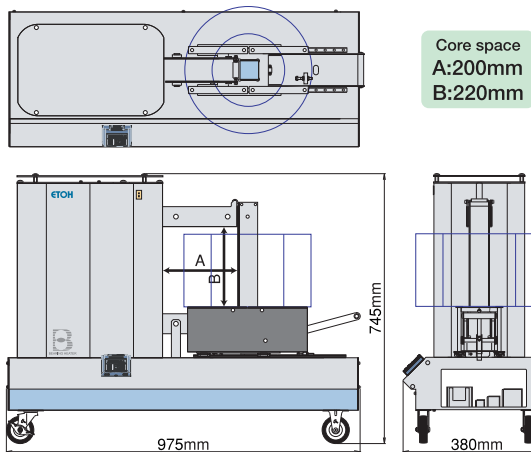
IHE0110A , IHE0120G



IHE0320G , IHE0340G

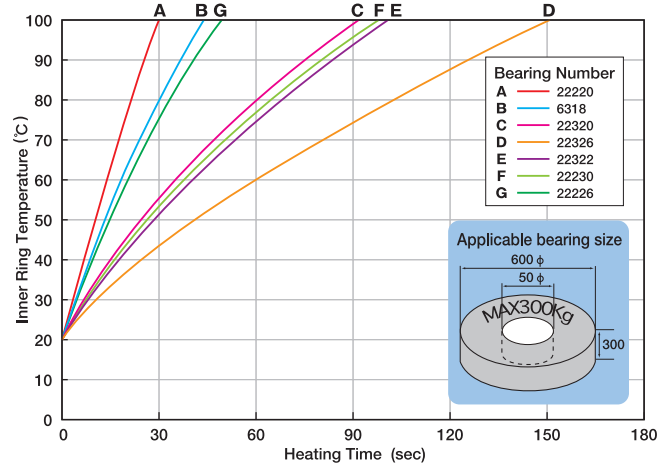
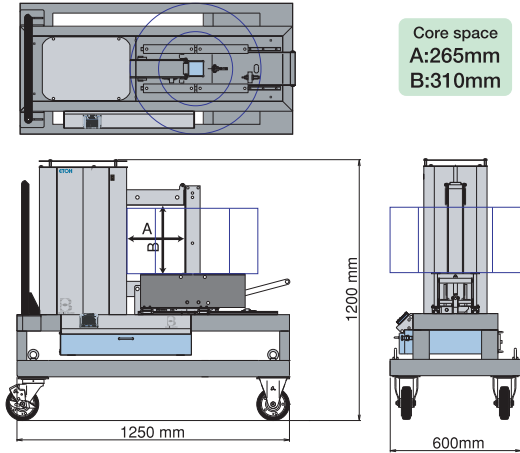


IHE0620G , IHE0640G

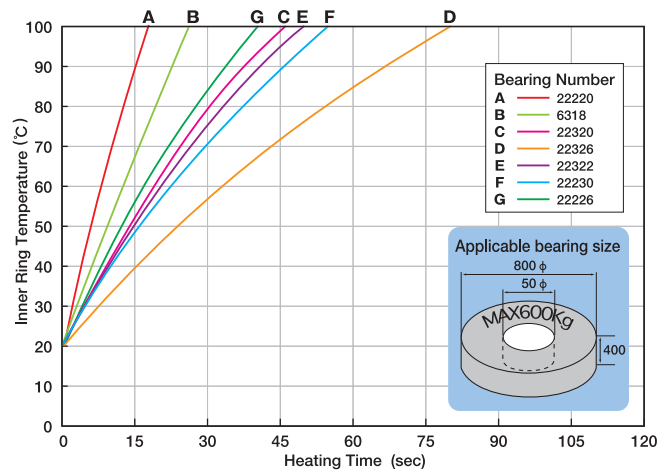
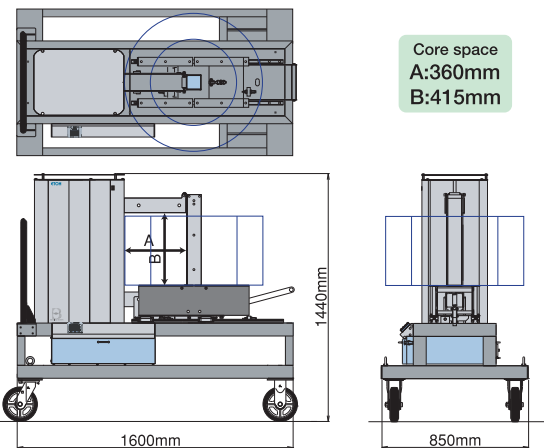


B E A R I N G H E A T E R

IHE1120G, IHE1140G



IHE2320G, IHE2340G



Custom-Specific Heaters

Special production work

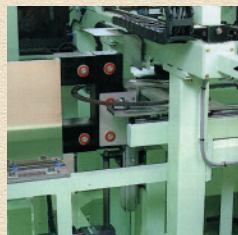
If you need or consider adopting non-standard bearing heater or custom-specific heater for your production line,

Bore Diameter Outer Diameter Thickness

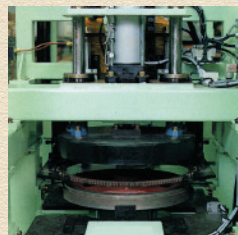
Please provide us with the information and matters as above:



Work Mounting



Work Heating



Work Fitting

On receipt of the information and/or sample(s) of Work, We will analyze and review the data and present you with the best suitable type and its specifications as well as the simulated temperature curve and/or the experimental temperature curve.

Specifications

Type	IHE0110A	IHE0120G	IHE0320G	IHE0340G	IHE0620G	IHE0640G	IHE1120G	IHE1140G	IHE2320G	IHE2340G		
Heating Capacity	1kVA		3.3kVA		6.6kVA		11.8kVA		23kVA			
Applicable Bearing Size	Minimal bore diameter (mm φ)		20		35		50		50			
	Maximum outside diameter (mm φ)		200		300		400		800			
	Maximum thickness (mm)		70		110		200		400			
	Maximum Weight (kg)		12		40		80		300			
Heated Bearing type	Possibility to heat pre-greased bearing				Yes							
	Possibility to heat sealed bearing				Yes							
Power Supply Characteristics	Phase				Single		Three					
	Voltage (V)		100-120V	200-240V	200-240V	380-480V	200-230V	380-480V	200-230V	380-480V	200-220V/50Hz 200-230V/60Hz	380-440V/50Hz 380-480V/60Hz
	Frequency		50-60Hz									
	Rated Current (A)		10A	5A	10A	5A	10A	5A	20A	10A	40A	20A
Dimensions of body	Height (mm)		347		565		745		1200		1440	
	Width (mm)		175		295		380		600		850	
	Length (mm)		470		755		975		1250		1600	
	Main Body Weight (kg)		13.6	13.2	43		81		200		335	
	Accessories Weight (kg)		2.4		6.6		12.5		33.7		54.2	
Control Specifications	Temperature Control Mode	Range		33-250°C								
		Temp. sensor type		Type K								
	Time Control Mode	Accuracy		1°C								
		Range		0-99min59sec								
	Power Reduction	Accuracy		1s								
		By 10%		50-100%								
Demagnetization		≤ 300μT (3G)										
Heating Core Specifications	Maximum Flux (T)		1.5T									
Operation Spec.	Operation				Operator							
	Sequence Operation				Yes							
Temp. Display	Celsius/Fahrenheit Changeover				Yes							
Environment Specifications	Application site	Application site		Indoor (No corrosive gas, bust, direct sunlight, condensation)								
		Over-voltage Category		2	2	3	3	3	3	3	3	
		Pollution Degree		2	2	2	2	2	2	2	2	
	Ambient Operating Temp		-10°C-35°C									
	Altitude		2000m max									
	Ambient Operating Humidity		85% RH max									

Accessories

Slide type Bearing Installation Table							
I-type core	(Bore Dia. 12-20mm)	★N-CI-1808					
	(Bore Dia. 20-35mm)	N-CI-1815					
	(Bore Dia. 35-50mm)	N-CI-1825					
	(Bore Dia. 50mm above)	N-CI-1835					
	(Bore Dia. 20-35mm)		★N-CI-2515				
	(Bore Dia. 35-50mm)		N-CI-2525				
	(Bore Dia. 50-70mm)		N-CI-2535				
	(Bore Dia. 70mm above)		N-CI-2545				
	(Bore Dia. 20-35mm)			★N-CI-3715			
	(Bore Dia. 35-50mm)			N-CI-3725			
	(Bore Dia. 50-80mm)			N-CI-3735			
	(Bore Dia. 80mm above)			N-CI-3755			
	(Bore Dia. 35-50mm)				★N-CI-5225		
	(Bore Dia. 50-80mm)				N-CI-5235		
	(Bore Dia. 80-100mm)				N-CI-5255		
	(Bore Dia. 100mm above)				N-CI-5270		
I-type core guide	(Bore Dia. 35-50mm)						★N-CI-6725
	(Bore Dia. 50-80mm)						N-CI-6735
	(Bore Dia. 80-130mm)						N-CI-6755
	(Bore Dia. 130mm above)						N-CI-6785
	for N-CI-2515		★N-CS-2515				
	for N-CI-2525		N-CS-2525				
	for N-CI-2535		N-CS-2535				
	for N-CI-3715			★N-CI-3715			
	for N-CI-3725			N-CI-3725			
	for N-CI-3735			N-CI-3735			
for N-CI-5225				★N-CS-5225			
for N-CI-5235				N-CS-5235			
for N-CI-5255				N-CS-5255			
for N-CI-6725						★N-CS-6725	
for N-CI-6735						N-CS-6735	
for N-CI-6755						N-CS-6755	
I-type core lift-up tool					N-CL-578	N-CL-578	
Temperature sensor	Lead Length 300mm	N-CTC-300					
	Lead Length 500mm		N-CTC-500	N-CTC-500			
	Lead Length 1000mm				N-CTC-1000	N-CTC-1000	

* This catalogue contents such as the appearance and the specifications are subject to change without notice in advance for improvement.

Black··Standard ★Red··Option

* In exporting these products, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may be applied. Especially, in the case that the end user of these products is to be military-related or the application of these products is found the one of military or dual-use, special attention is required.

Etoh Inc.

www.eto-inc.com

■Factory/Operation Office

2-2-7 Maeda YahataHigashi-ku Kitakyushu City,Fukuoka, Japan 805-0069

TEL:+81-93-681-5338 FAX:+81-93-671-3221 info@eto-inc.com

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