

Introduction 9.2

Comparison Chart 9.2

Stirrers 9.4

Compact, Round Edge 9.4

Standard 9.5

Large Capacity 9.6

2-speed 9.6

Auto-reverse 9.7

2-speed with Tachometer 9.7

Auto-reverse with Tachometer ... 9.8

Timer Controlled 9.8

Speedsafe™



Magnetic Stirrers

Compact and Lightweight Stirrers

The HI 190M, HI 190MB and HI 200M are compact and lightweight, so that lack of laboratory bench space is no longer a concern.

HI 190M and HI 190MB come supplied with an ABS cover that resists the harmful effects of chemicals that are accidentally spilled.

HI 200M is supplied with an AISI 316 stainless steel cover. This model is ideal for applications that create exothermic reactions.

Compact round edge mini-stirrers are ideal where space is a concern.

Common stirrers are manufactured with steel and aluminum components. These units are often too large and heavy to fit in the limited space of a laboratory. The HI 180 series is compact, lightweight, inexpensive and designed in a special round shape without any sharp corners.

Speedsafe™



Comparison Chart

GUIDE	Maximum Stirring Capacity (Liters)	Low Speed (rpm)	High Speed (rpm)	Auto-Feedback	Auto-Reverse	Tachometer	Timer	ABS Plastic Cover	AISI 316 S.S. Cover	110/115 or 220/240 VAC	12 VCD	Page
Magnetic Stirrers												
HI 180	1	100	1000					•		•	•*	9.4
HI 190M	1	100	1000					•		•		9.5
HI 190M-0	1	100	1000					•			•	9.5
HI 200M	1	100	1000						•	•		9.5
HI 300N	2.5	100	800-1000						•	•		9.6
HI 310N	5	100	800-1000	•					•	•		9.6
HI 301N	2.5	100-500	800-1000						•	•		9.6
HI 311N	5	100-500	800-1000	•					•	•		9.6
HI 302N	2.5	100	800-1000		•				•	•		9.7
HI 312N	5	100	800-1000	•	•				•	•		9.7
HI 303N	2.5	100-500	1000			•			•	•		9.7
HI 304N	2.5	100	800-1000		•	•			•	•		9.8
HI 322N	5	100	800-1000	•			•		•	•		9.8
HI 324N	5	100	800-1000	•		•	•		•	•		9.8

* HI 180/MB only

Magnetic Stirrers



Speedsafe™ from HANNA

There are two types of magnetic stirrers; mechanical and electronic. Most manufacturers of magnetic stirrers use the mechanical approach. They use steel and aluminum for the structural material and outdated methods of speed control. These units are not only very heavy, but also very inaccurate. The use of these materials and methods appear to make the units rugged and strong, but they are instead cumbersome and obsolete.

Something as simple as completely dissolving salts in a medium, is in reality, a science. Often this cannot be achieved with simple mechanical processes. The only choice that the user has with mechanical products is to increase the stirring time or the temperature. With electronics, you can do more... the HANNA approach is electronic.

Speed sensor and limiter: Each HANNA stirrer is equipped with a speed sensing device (opto-sensor) coupled with an FVC (frequency voltage converter), which monitors the speed. As the speed reaches a preset maximum level, the speed limiter shuts down the VCO to slow down the motor speed. This ensures that when the load is suddenly removed from the stirrer, the motor will not accelerate to such a high speed that will be hazardous to both the user and the stirrer; a feature not commonly found in conventional stirrers.

Accuracy: Adjusting the stirring speed with a mechanical stirrer is inaccurate. Similar to the "ZOOM" function of a microscope, you can have access to two separate ranges of speed by using electronics. This assures maximum repeatability in experiments and processing.

A proper stirring speed plays an important role to minimize air contamination when mixing solutions. Too high a speed can create a deep vortex which may contaminate mixtures.

Auto-feedback: In addition, with the HANNA auto-feedback stirrer, any change in viscosity or volume of the solution is automatically compensated for, to keep the speed constant.

Sophisticated Engineering

Parts are engineered and manufactured to strict specifications to ensure absolute reliability. All components are mounted into a molded casing covered with a stainless steel plate, which are splash proof and chemically resistant. Minimal vibration and a well balanced rotating arm provide years of trouble free operation.

Safety

An ON/OFF switch on the face of the instruments and a fuse located at the rear panel allows users to easily disconnect power. The circuitry is grounded to the case for additional protection.



HI 180

Compact Magnetic Mini-Stirrers

Speedsafe™

- **Round edge**
- **Dynamic design**
Easy to handle, these lightweight and compact stirrers need little room and are quickly recognizable on busy benches
- **Built to last**
Glass-free chemical resistant housing resists damage by accidental falls

Common stirrers are manufactured with steel and aluminum components. These units are often too large and heavy to fit in the limited space of a laboratory. HANNA HI 180 series is compact, lightweight, inexpensive and designed in a special round shape without any sharp corners.

Often, in the lab, a sample is removed from a typical stirrer before reducing the speed. Normally, this would cause the motor to accelerate until it is destroyed. Not so with HANNA stirrers. HANNA stirrers incorporate electronic controls that allow the user to regulate the speed with greater precision. In addition to speed control, a Speedsafe™ mechanism will assure that the maximum speed will never be exceeded.

HI 180 mini-stirrers are available in nine colors. Several HI 180 stirrers can be placed on a laboratory bench with their colors helping to identify the different samples.

ORDERING INFORMATION

All models are supplied with micro stir bar and instructions

HI 180A-1	Light yellow mini-stirrer (115V)
HI 180A-2	Light yellow mini-stirrer (230V)
HI 180B-1	Light sea-green mini-stirrer (115V)
HI 180B-2	Light sea-green mini-stirrer (230V)
HI 180B-3	Light sea-green mini-stirrer (AUS plug)
HI 180C-1	Light blue mini-stirrer (115V)
HI 180C-2	Light blue mini-stirrer (230V)
HI 180C-3	Light blue mini-stirrer (AUS plug)
HI 180D-1	Yellow mini-stirrer (115V)
HI 180D-2	Yellow mini-stirrer (230V)
HI 180E-1	Green mini-stirrer (115V)
HI 180E-2	Green mini-stirrer (230V)
HI 180F-1	Blue mini-stirrer (115V)
HI 180F-2	Blue mini-stirrer (230V)
HI 180F-3	Blue mini-stirrer (AUS plug)
HI 180G-1	Red mini-stirrer (115V)
HI 180G-2	Red mini-stirrer (230V)
HI 180H-1	Grey mini-stirrer (115V)
HI 180H-2	Grey mini-stirrer (230V)
HI 180H-3	Grey mini-stirrer (AUS plug)
HI 180I-1	Ivory mini-stirrer(115V)
HI 180I-2	Ivory mini-stirrer (230V)
HI 180I-3	Ivory mini-stirrer (AUS plug)
HI 180I/MB	Ivory mini-stirrer (12 VDC)

ACCESSORIES

HI 731319 Magnetic stir bar (10)



9 colors to choose from



SPECIFICATIONS		HI 180
Maximum Stirring Capacity		1 liter (0.26 gallons)
Speed Range	Min.	100 rpm
	Max.	1000 rpm
Power Supply		110/115 VAC or 220/240 VAC, 50/60 Hz
Installation Category		II
Cover Material		ABS plastic
Environment		0 to 50°C (32 to 122°F) ; RH max 95%
Dimensions		137 mm (dia) x 51 mm (h)
Weight		640 g (1.4 lbs.)

Our Most Popular Magnetic Mini-Stirrers

Speedsafe™

9

MAGNETIC STIRRERS

• Compact size

The compact size of these stirrers allow users to maximize bench space for efficiency and safety.

• Safety

Speedsafe™ limits the maximum speed to 1000 rpm even if a load is suddenly removed.

• Built to last

The ABS housing of HI 190M and HI 190M-0 resists most harmful chemicals in the lab.

The HI 190M, HI 190M-0 and HI 200M are compact and lightweight, so that lack of laboratory bench space is no longer a concern.

These stirrers incorporate electronic controls that allow the user to regulate the speed with greater precision. Often, in the lab, a sample is removed from the stirrer before reducing the speed. This would cause the motor of conventional equipment to accelerate until it is destroyed. This does not pose a problem with HANNA mini-stirrers. In fact, the internal Speedsafe™ mechanism will ensure that the maximum speed is never exceeded.

HI 190M and HI 190M-0 come supplied with an ABS cover that will resist the harmful effects of chemicals that are accidentally spilled. The ABS-covered mini-stirrer is available in two versions: HI 190M operating at 110 or 220 VAC and HI 190M-0 at 12 VDC. This provides you with the flexibility to choose between field and lab models, as well as being able to use the HI 190M-0 for applications where a low input voltage is a must.

HI 200M has an AISI 316 stainless steel cover. This model is ideal for applications that create exothermic reactions.

ORDERING INFORMATION

HI 190M, HI 190M-0 and HI 200M mini-stirrers are supplied with micro stir bar and instructions.

HI 190M-1	ABS cover (115V)
HI 190M-2	ABS cover (230V)
HI 190M-0	ABS cover (12 VDC)
HI 200M-1	Stainless steel cover (115V)
HI 200M-2	Stainless steel cover (230V)
HI 200M-3	Stainless steel cover (AUS plug)

ACCESSORIES

HI 731319	Magnetic stir bar (10)
-----------	------------------------



AISI 316 Stainless Steel

ABS Plastic

SPECIFICATIONS	HI 190M	HI 190M-0	HI 200M
Maximum Stirring Capacity	1 liter (0.26 gallons)		
Speed Range	Min.	100 rpm	
	Max.	1000 rpm	
Power Supply	110/115 VAC or 220/240 VAC, 50/60Hz	12 VDC	110/115 VAC or 230/240 VAC, 50/60Hz
Installation Category	II		
Cover Material	ABS plastic	ABS plastic	AISI 316 stainless steel
Environment	0 to 50°C (32 to 122°F); RH max 95%		
Dimensions	120 x 120 x 45 mm (4.8 x 4.8 x 1.8")		
Weight	640 g (1.4 lbs.)	610 g (1.3 lbs.)	710 g (1.6 lbs.)

HI 300N • HI 310N

Heavy-duty Magnetic Stirrers

Speedsafe™

Stainless
steel cover

HI 300N and HI 310N are heavy-duty stirrers. HI 300N can stir up to 2.5 liters (0.66 gallons) of liquid and the HI 310N can stir up to 5.0 liters (1.3 gallons). This makes them perfect for laboratory use as well as use in production. Electronic controls are incorporated into these stirrers that allow the user to regulate the speed with greater precision. With HANNA's Speedsafe™, a limiter will assure that the maximum speed will never be exceeded.

HI 310N also has an automatic feedback feature. The motor is electronically controlled to maintain the chosen speed as the load changes. If the viscosity or the level (fluid weight) increases or decreases, the circuitry will adjust the output power to keep the speed constant.

SPECIFICATIONS		HI 300N	HI 310N
Maximum Stirring Capacity		2.5 liters (0.66 gallons)	5 liters (1.3 gallons)
Speed Range	Min.	100 rpm	
	Max.	800 to 1000 rpm	
Auto-Feedback		-	standard
Power Supply		110/115 VAC or 230/240 VAC, 50/60 Hz	
Installation Category		II	
Cover Material		AISI 316 stainless steel	
Environment		0 to 50°C (32 to 122°F); RH max 95%	
Dimensions		180 x 180 x 70 mm (7.1 x 7.1 x 2.8")	
Weight		1.4 kg (3.1 lbs.)	

ORDERING INFORMATION

HI 300N-1 (115V), HI 300N-2 (230V), HI 310N-1 (115V), HI 310N-2 (230V), and HI 310N-3 (AUS plug) are supplied with micro stir bar and instructions.

ACCESSORIES

HI 731320 Magnetic stir bar (10)

HI 301N • HI 311N

2-speed Magnetic Stirrers

Speedsafe™

Stainless
steel cover

HI 301N and HI 311N are heavy-duty stirrers that offer dual range precision. HI 301N can stir up to 2.5 liters (0.66 gallons) of liquid and HI 311N can stir up to 5.0 liters (1.3 gallons).

Similar to the "ZOOM" function of a microscope, these stirrers allow access to two separate stirring ranges. In each range, the speed can be fine tuned for exacting accuracy. This assures maximum repeatability in experiments and processing for laboratory, as well as production use.

In addition to speed control, a limiter will assure that the maximum speed will never be exceeded (Speedsafe™). HANNA stirrers incorporate a VCO device that will stop the motor from accelerating as soon as the load is removed.

HI 311N also has an automatic feedback feature. The motor is electronically controlled to maintain the chosen speed as the load changes. If the viscosity or the level (fluid weight) increases or decreases, the circuitry will adjust the output power.

SPECIFICATIONS		HI 301N	HI 311N
Maximum Stirring Capacity		2.5 liters (0.66 gallons)	5 liters (1.3 gallons)
Speed Range	Low	100 to 500 rpm	
	High	100 to 800/1000 rpm	
Auto-Feedback		-	standard
Power Supply		110/115 VAC or 230/240 VAC, 50/60 Hz	
Installation Category		II	
Cover Material		AISI 316 stainless steel	
Environment		0 to 50°C (32 to 122°F); RH max 95%	
Dimensions		180 x 180 x 70 mm (7.1 x 7.1 x 2.8")	
Weight		1.4 kg (3.1 lbs.)	

ORDERING INFORMATION

HI 301N-1 (115V), HI 301N-2 (230V), HI 311N-1 (115V), and HI 311N-2 (230V) are supplied with magnetic stir bar and instructions

ACCESSORIES

HI 731320 Magnetic stir bar (10)

HI 302N • HI 312N

Auto-reverse Magnetic Stirrers

Speedsafe™

Stainless
steel cover

HI 312N is a powerful stirrer that stirs up to 5.0 liters (1.3 gallons). The HI 302N model can stir up to 2.5 liters (0.66 gallons). It is often desirable to stir your samples in two directions. This will achieve maximum homogeneity and solubility. An advanced circuit allows HI 302N and HI 312N to reverse the direction of the stirring at a user selected interval. The interval can be adjusted from 30 seconds up to 3 minutes. In addition to precision speed control, a limiter will also assure that the maximum speed will never be exceeded.

HANNA stirrers incorporate a VCO device that stops the motor from accelerating as soon as a load is removed (Speedsafe™). In addition to this feature, HI 312N also has an automatic feedback feature. The motor is electronically controlled to maintain the chosen speed as the load changes. If the viscosity or the level (fluid weight) increases or decreases, the circuitry will adjust the output power.

SPECIFICATIONS		HI 302N	HI 312N
Maximum Stirring Capacity		2.5 liters (0.66 gallons)	5 liters (1.3 gallons)
Speed Range	Low	100 rpm	
	High	800 to 1000 rpm	
Auto-Feedback		-	standard
Reverse Interval		from 30 seconds to 3 minutes	
Power Supply		110/115 VAC or 220/240V, 50/60 Hz	
Installation Category		II	
Cover Material		AISI 316 stainless steel	
Environment		0 to 50°C (32 to 122°F); RH max 95%	
Dimensions		180 x 180 x 70 mm (7.1 x 7.1 x 2.8")	
Weight		1.4 kg (3.1 lb.)	

ORDERING INFORMATION

HI 302N-1 (115V), HI 302N-2 (230V), HI 312N-1 (115V), and HI 312N-2 (230V) are supplied with magnetic stir bar and instructions.

ACCESSORIES

HI 731320 Magnetic stir bar (10)

HI 303N

2-speed Magnetic Stirrers with Tachometer

Speedsafe™

Stainless
steel cover

QC stations and labs must be able to repeat tests and processes. In order to do this, the specifications must be clear at all times. When stirring a solution, the RPMs are a very crucial factor. Without a tachometer, there is no way of knowing the exact RPMs and therefore no way of repeating the process. The HI 303N solves this problem by incorporating an LCD tachometer. These stirrers also allow precise stirring repeatability by using two separate ranges. In each range, the speed can be fine tuned for exacting accuracy. This assures maximum repeatability in experiments and processing for laboratory as well as production use.

In addition to speed control, a limiter will assure that the maximum speed will never be exceeded (Speedsafe™). HANNA stirrers incorporate VCO device that will stop the motor from accelerating as soon as the load is removed.

SPECIFICATIONS		HI 303N
Maximum Stirring Capacity		2.5 liters (0.66 gallons)
Speed Range	Low	100 to 500 rpm
	High	100 to 1000 rpm
Tachometer		4-digit LCD
Power Supply		110/115 VAC or 220/240 VAC, 50/60 Hz
Installation Category		II
Cover Material		AISI 316 stainless steel
Environment		0 to 50°C (32 to 122°F); RH max 95%
Dimensions		180 x 180 x 70 mm (7.1 x 7.1 x 2.8")
Weight		1.4 kg (3.1 lbs.)

ORDERING INFORMATION

HI 303N-1 (115V) and HI 303N-2 (230V) are supplied with magnetic stir bar and instructions.

ACCESSORIES

HI 731320 Magnetic stir bar (10)

HI 304N

Auto-reverse Magnetic Stirrers with Tachometer



Stainless steel cover

When stirring a solution, to work with a constant speed is an important factor in ensuring that the best repeatability in tests and processes is achieved. Without a tachometer, there is no way of knowing the RPMs.

HI 304N is a heavy-duty stirrer with a built-in tachometer. It is often desirable to stir in two directions in order to achieve maximum homogeneity. An advanced circuit allows HI 304N to reverse the direction of the stir at a user selected interval. The interval can be adjusted from 30 seconds up to 3 minutes. In addition to precision speed control, a limiter will also assure that the maximum speed will never be exceeded (Speedsafe™). Often, a sample is removed from the stirrer before the user reduces the speed with ordinary stirrers. This can cause the motor to accelerate until it is destroyed. HANNA stirrers incorporate a VCO device that will stop the motor from accelerating as soon as the load is removed.

SPECIFICATIONS		HI 304N
Maximum Stirring Capacity		2.5 liters (0.66 gallons)
Speed Range	Low	100 rpm
	High	800 to 1000 rpm
Tachometer		four-digit LCD
Reverse Interval		from 30 seconds to 3 minutes
Power Supply		110/115 VAC or 220/240 VAC, 50/60 Hz
Installation Category		II
Cover Material		AISI 316 stainless steel
Environment		0 to 50°C (32 to 122°F); RH max 95%
Dimensions / Weight		180 x 180 x 70 mm (7.1 x 7.1 x 2.8") / 1.4 kg (3.1 lbs.)

ORDERING INFORMATION

HI 304N-1 (115V) and HI 304N-2 (230V) is supplied with magnetic stir bar and instructions

ACCESSORIES

HI 731320 Magnetic stir bar (10)

HI 322N • HI 324N

Timer Controlled Magnetic Stirrers



Stainless steel cover

HI 322N and HI 324N are heavy duty stirrers that incorporate a timer control that will turn the motor off after a selected amount of time. The time is adjustable from 5 minutes to 2 hours. This feature allows the user to carry out other tasks without worrying about over or under stirring. HI 322N and HI 324N can stir up to 5.0 liters (1.3 gallons), making them ideal for laboratory and production use.

These stirrers allow regulated speed control. A limiter will assure the maximum speed is never exceeded (Speedsafe™), and a VCO device stops motor acceleration as soon as a load is removed.

HI 322N and HI 324N have an automatic feedback feature with the HI 324N also incorporating an LCD tachometer. The motor is electronically controlled to maintain the chosen speed as the load changes. If the viscosity or the level increases or decreases, the circuitry will adjust the output power. The HI 324N's RPM display guarantees repeatability in QC tests and research by constantly displaying the RPMs.

SPECIFICATIONS		HI 322N	HI 324N
Maximum Stirring Capacity		5 liters (1.3 gallons)	
Speed Range	Low	100 rpm	
	High	800 to 1000 rpm	
Auto-Feedback		standard	
Timer Range		from 5 minutes to 2 hours	
Tachometer		-	four-digit LCD
Power Supply		110/115 VAC or 220/240 VAC, 50/60 Hz	
Installation Category		II	
Cover Material		AISI 316 stainless steel	
Environment		0 to 50°C (32 to 122°F); RH max 95%	
Dimensions		1.4 kg (3.1 lb.)	
Weight		180 x 180 x 70 mm (7.1 x 7.1 x 2.8")	

ORDERING INFORMATION

HI 322N-1 (115V), HI 322N-2 (230V), HI 324N-1 (115V) and HI 324N-2 (230V) are supplied with magnetic stir bar and instructions

ACCESSORIES

HI 731320 Magnetic stir bar (10)