

# Magnetic Stirrers

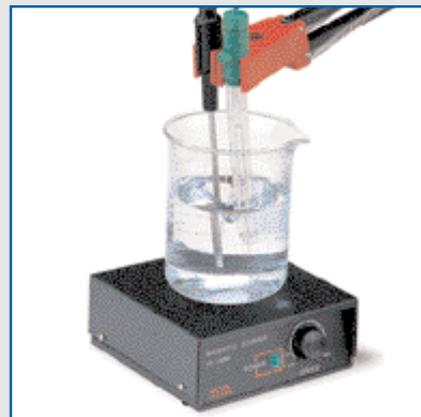


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## Comparison Chart

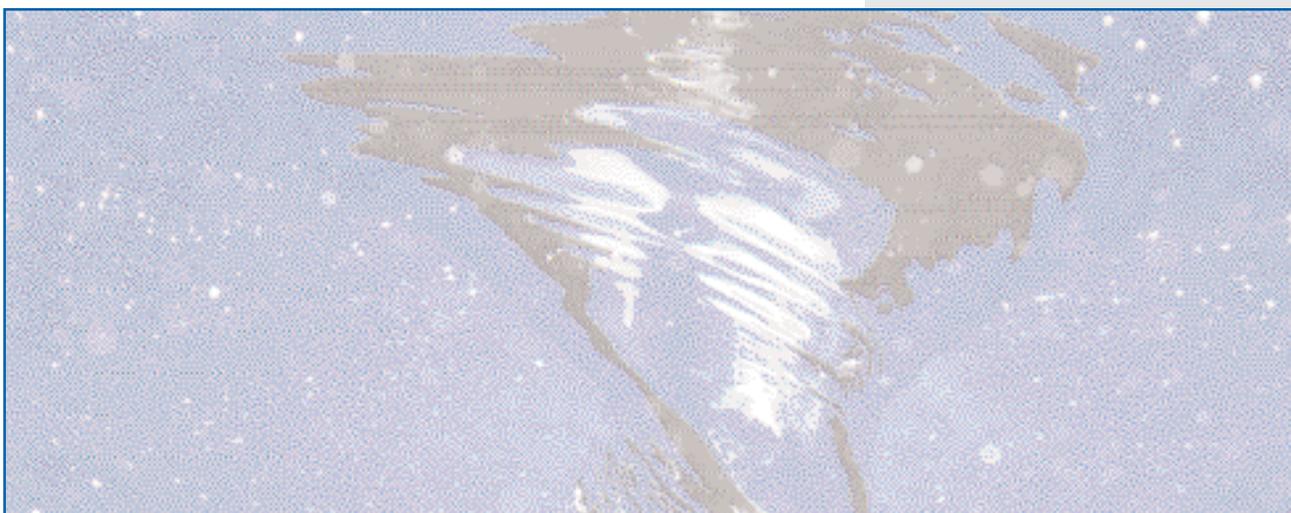
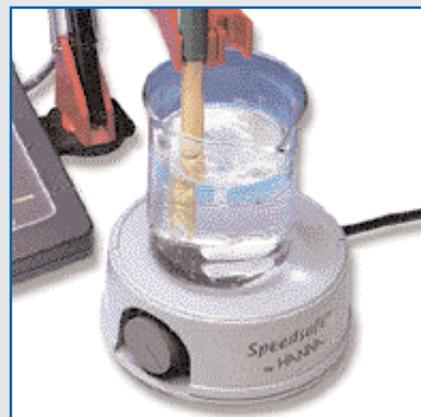
### Magnetic Stirrers

Specifications	HI 180	HI 190M	HI 200M	HI 300N	HI 310N	HI 301N	HI 311N
1 Liter Stirring Capacity	•	•	•				
2.5 Liter Stirring Capacity				•		•	
5 Liter Stirring Capacity					•		•
Min. 100/Max. 800-1000 rpm	•	•	•	•	•	•	•
Dual Range						•	•
Auto-Reverse							
Tachometer							
Timer							
Auto-Feedback					•		•
Speedsafe Max. Speed Control	•	•	•	•	•	•	•
AISI 316 Cover Material			•	•	•	•	•
ABS Plastic Cover Material	•	•	•	•	•	•	•
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### Magnetic Stirrers

Specifications	HI 302N	HI 312N	HI 303N	HI 304N	HI 322N	HI 324N
1 Liter Stirring Capacity						
2.5 Liter Stirring Capacity	•		•	•	•	
5 Liter Stirring Capacity		•				•
Min. 100/Max. 800-1000 rpm	•	•	•	•	•	•
Dual Range			•			
Auto-Reverse	•	•		•		
Tachometer			•	•		•
Timer					•	•
Auto-Feedback		•			•	•
Speedsafe Max. Speed Control	•	•	•	•	•	•
AISI 316 Cover Material	•	•	•	•	•	•
ABS Plastic Cover Material						
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## Magnetic Stirrers

### Speedsafe from HANNA instruments®

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 They use steel and aluminum for the structural material, and outdated methods of speed control.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 But, they are instead, cumbersome and outdated.

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 instruments® approach is electronic.

**Safety & Speedsafe:** Electronic controls allow the stirrer to control the speed with greater accuracy. By using electronic devices, the speed of the motor can be governed not to exceed a preset RPM, with or without a load. This also has the added advantage that the motor can be running at the maximum operating speed with a load, and if the load is suddenly removed, the circuitry will not allow the motor to increase in speed which would damage the unit.

**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 by using electronics. This assures maximum repeatability in experiments and processing.

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



## High Quality Stirrers from HANNA instruments®

- Stirring Capacity up to 5 Liters
- AISI 316 Cover Material and ABS Plastic Cover Material
- Adjusting Speed Between 100 and 1000 RPM
- High/Low Dual Speed Range for Best RPM Settings
- *Speedsafe* Technology Stops Acceleration When Load is Removed

### Sophisticated Engineering

Creative design, employing sophisticated electronic technology, offers the best performance. Parts are engineered and manufactured to rigid specifications to ensure absolute reliability. All components are solidly mounted into a molded casing covered with a stainless steel plate, which is splash proof and chemically resistant. Minimal vibration and a well balanced rotating arm gives years of trouble free operation.

### 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.

### Safety

An ON/OFF switch and a fuse located at the rear panel provides easy access to shut off power, in the event of a short circuit. The circuitry is grounded to the case for additional protection.

