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VEVOR NDJ-5S

VEVOR NDJ-5S Digital Rotary Viscometer User Manual

Model: NDJ-5S

1. Introduction

This manual provides detailed instructions for the safe and effective operation, setup, and maintenance of the VEVOR NDJ-5S Digital Rotary Viscometer. This instrument is designed for precise measurement of fluid viscosity in various laboratory and industrial applications. Please read this manual thoroughly before operating the device to ensure optimal performance and safety.



Image: The VEVOR Digital Rotary Viscometer provides accurate and reliable viscosity measurements, featuring a range of 10-100,000 cP and ±2% accuracy.

2. Safety Instructions

Adherence to the following safety guidelines is crucial for preventing injury and damage to the instrument:

- Always operate the viscometer on a stable, level surface to prevent tipping.
- Ensure the power supply matches the instrument's requirements (AC100-240V, 50/60Hz).
- Do not immerse the main unit in water or other liquids.
- Handle spindles with care to avoid bending or damage, which can affect measurement accuracy.

- Keep the instrument away from strong electromagnetic fields.
- Disconnect power before cleaning or performing any maintenance.
- Wear appropriate personal protective equipment (PPE) such as lab coats and safety glasses when handling samples.

3. Product Overview and Components

The VEVOR NDJ-5S Digital Rotary Viscometer consists of a main unit, a lifting rod, a base, and various accessories. Understanding each component is essential for proper assembly and operation.

3.1 Main Components

- **Main Unit:** Contains the motor, control panel (LCD display, keypad), and internal electronics.
- **Lifting Rod:** Solid 304 stainless steel rod for adjusting the height of the main unit.
- **Base:** Zinc alloy base providing stability for the viscometer.
- **Spindles:** Four included spindles (#1, #2, #3, #4) for different viscosity ranges.
- **Temperature Probe:** For real-time temperature monitoring of the sample.
- **Power Adapter:** For connecting the unit to an electrical outlet.
- **RS232 Cable:** For data transfer to a computer.

3.2 Structure Overview



Image: Detailed diagram illustrating the various parts of the viscometer, including the display screen, keypad, leveling bubble, universal joint, rotor protection frame, base, leveling feet, temperature probe interface, computer interface, printer interface, power connector, power switch, and connecting rod damping knob.

4. Setup

Follow these steps to assemble and prepare your viscometer for operation:

1. **Unpacking:** Carefully remove all components from the packaging. Verify that all items listed in the 'What's in the Box' section are present.
2. **Base Assembly:** Place the zinc alloy base on a stable, level workbench.
3. **Lifting Rod Installation:** Insert the lifting rod into the designated slot on the base and secure it firmly.

4. **Main Unit Attachment:** Mount the main viscometer unit onto the lifting rod. Adjust its height using the connecting rod damping knob.
5. **Leveling:** Use the front balance adjustment and the leveling bubble on the main unit to ensure the viscometer is perfectly level. Adjust the leveling feet on the base as needed. This upgraded front balance adjustment allows for easier observation and fine-tuning while seated.



Image: The viscometer features an easier front balance adjustment, allowing users to observe and fine-tune the leveling bubble while seated, improving operational convenience compared to top adjustments.

6. **Power Connection:** Connect the power adapter to the viscometer and then to a suitable electrical outlet.
7. **Spindle Installation:** Select the appropriate spindle for your sample's expected viscosity range. Carefully screw the chosen spindle onto the coupling nut at the bottom of the main unit. Ensure it is securely fastened but do not overtighten.
8. **Temperature Probe:** If temperature monitoring is required, insert the temperature probe into the sample and connect it to the designated port on the viscometer.

5. Operating Instructions

Follow these steps to perform a viscosity measurement:

1. **Prepare Sample:** Pour the sample into a suitable beaker or container. Ensure the sample volume is sufficient to fully immerse the spindle up to its mark.
2. **Position Spindle:** Lower the main unit using the lifting rod until the spindle is immersed in the sample up to the immersion mark. Ensure the spindle is centered and not touching the bottom or sides of the container.
3. **Power On:** Turn on the viscometer using the power switch. The LCD display will illuminate.
4. **Select Spindle and Speed:** Use the keypad to select the installed spindle number (S) and the desired rotation speed (RPM). Refer to the Viscosity Range Chart in the Specifications section for guidance on appropriate spindle/speed combinations. The device also supports two convenient modes: **Scan Mode** for automatic spindle and speed selection, and **Timer Mode** to set a specific test duration (30 seconds to 60 minutes).



Image: The LCD display offers 'Scan Mode' for automatic spindle and speed selection and 'Timer Mode' for setting test durations, simplifying the testing process.

5. **Start Measurement:** Press the 'START' button to begin the measurement. The spindle will start rotating.
6. **Read Display:** The LCD screen will display the spindle number, rotation speed, viscosity value (in cP or mPa.s), torque percentage, and temperature. Allow the reading to stabilize before recording the result.

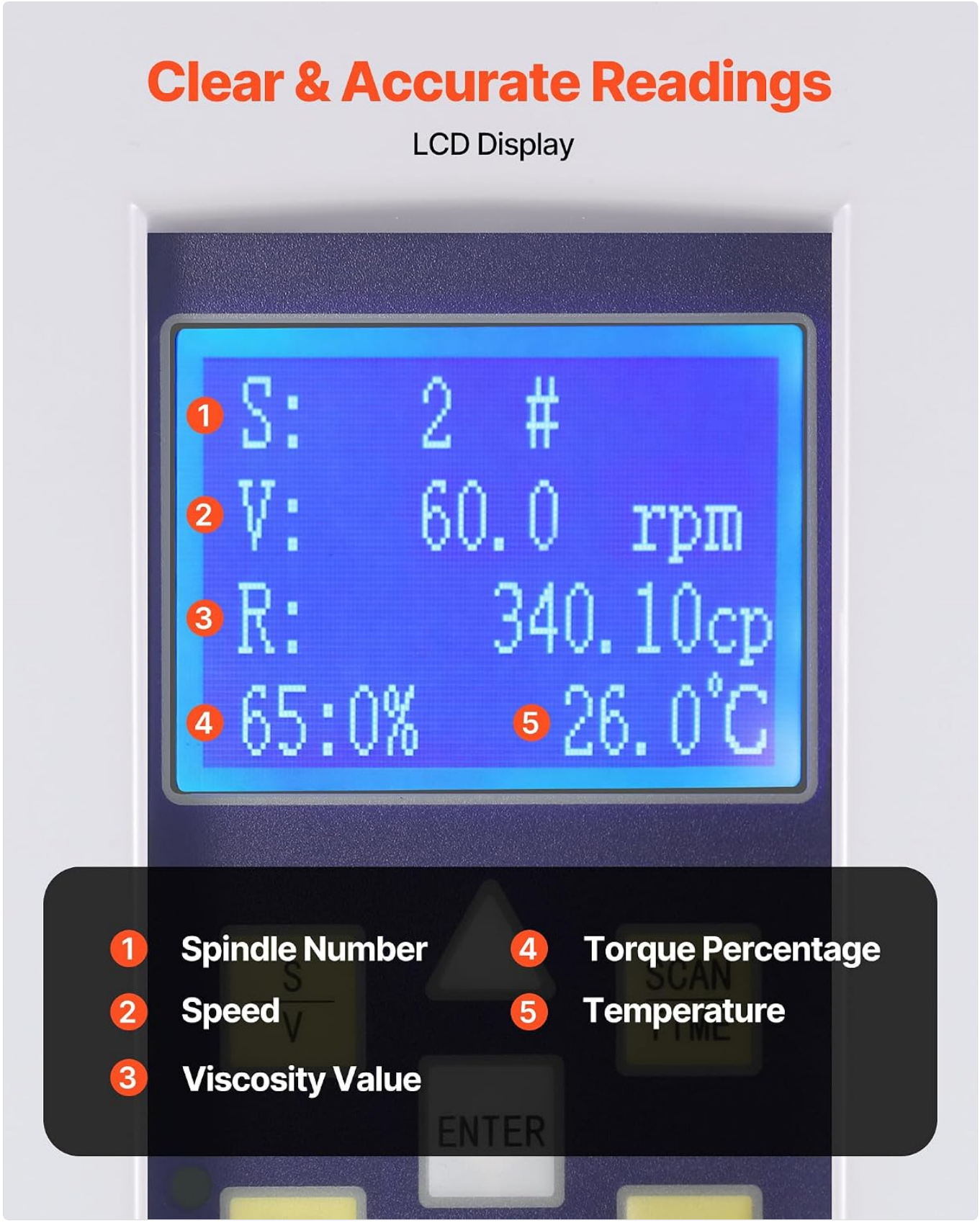


Image: The clear LCD display provides real-time readings of the spindle number, rotation speed, viscosity value, torque percentage, and sample temperature, ensuring all critical data is easily visible.

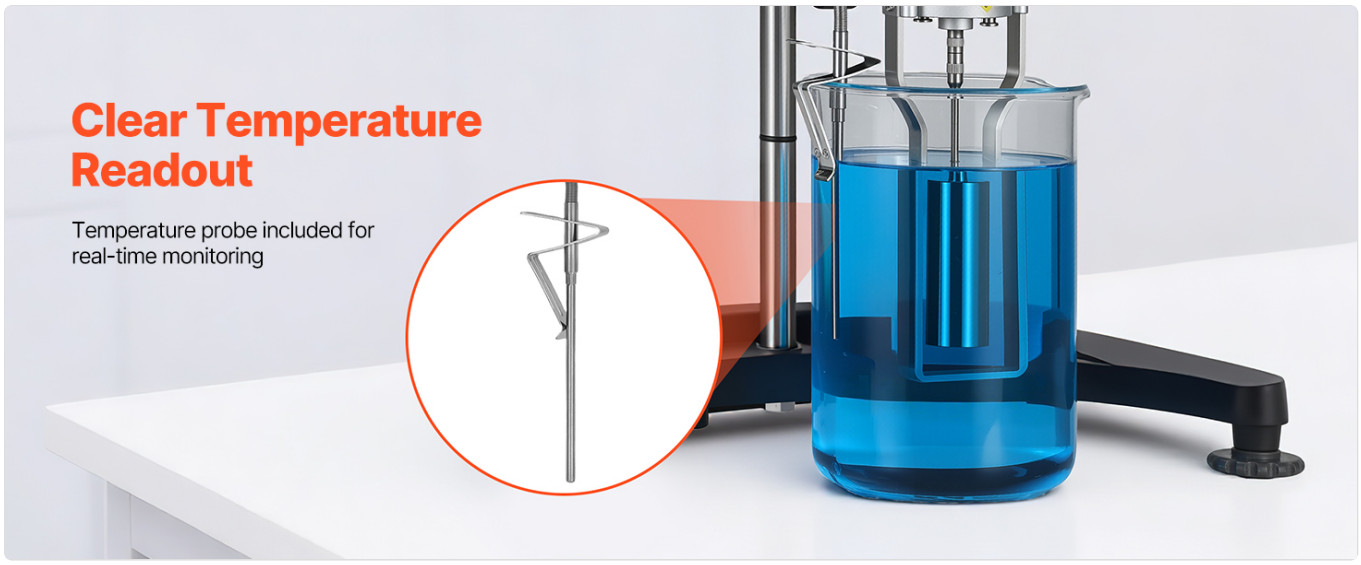


Image: The included temperature probe provides a clear and accurate real-time temperature readout, essential for precise viscosity measurements.

7. **Data Transfer and Printing:** The viscometer is equipped with an RS232 interface for connecting to a PC to transfer and store test data. It also supports printer output to avoid manual recording.



Image: The viscometer features an RS232 interface for seamless data transfer to a computer for storage and analysis, and supports direct printer connection for convenient data output, eliminating the need for manual recording.

8. **End Measurement:** Press the 'STOP' button to end the measurement.
9. **Clean Up:** Carefully raise the main unit and remove the spindle. Clean the spindle immediately after use.

6. Maintenance

Proper maintenance ensures the longevity and accuracy of your viscometer:

- **Cleaning Spindles:** Always clean spindles immediately after use with an appropriate solvent for the sample material. Dry them thoroughly before storage. Avoid scratching or bending the spindles.
- **Cleaning Main Unit:** Wipe the main unit and base with a soft, damp cloth. Do not use abrasive cleaners or solvents that could damage the plastic or painted surfaces.
- **Storage:** Store the viscometer and its accessories in a clean, dry, and dust-free environment when not in use. Keep spindles in their protective cases.
- **Calibration:** Regular calibration by qualified personnel is recommended to maintain measurement accuracy.

7. Troubleshooting

Refer to the following table for common issues and their solutions:

Problem	Possible Cause	Solution
Inaccurate readings	Viscometer not level; incorrect spindle/speed; damaged spindle; sample temperature fluctuation; air bubbles in sample.	Ensure viscometer is level; select appropriate spindle/speed; inspect and replace damaged spindles; control sample temperature; remove air bubbles.
Spindle not rotating	Power issue; spindle not properly installed; motor malfunction.	Check power connection; re-install spindle; contact VEVOR support if motor issue persists.
Display error message	System malfunction; sensor error.	Restart the instrument. If the error persists, note the error code and contact VEVOR support.
No data transfer to PC	RS232 cable not connected; incorrect software settings.	Ensure RS232 cable is securely connected; verify PC software settings and drivers.

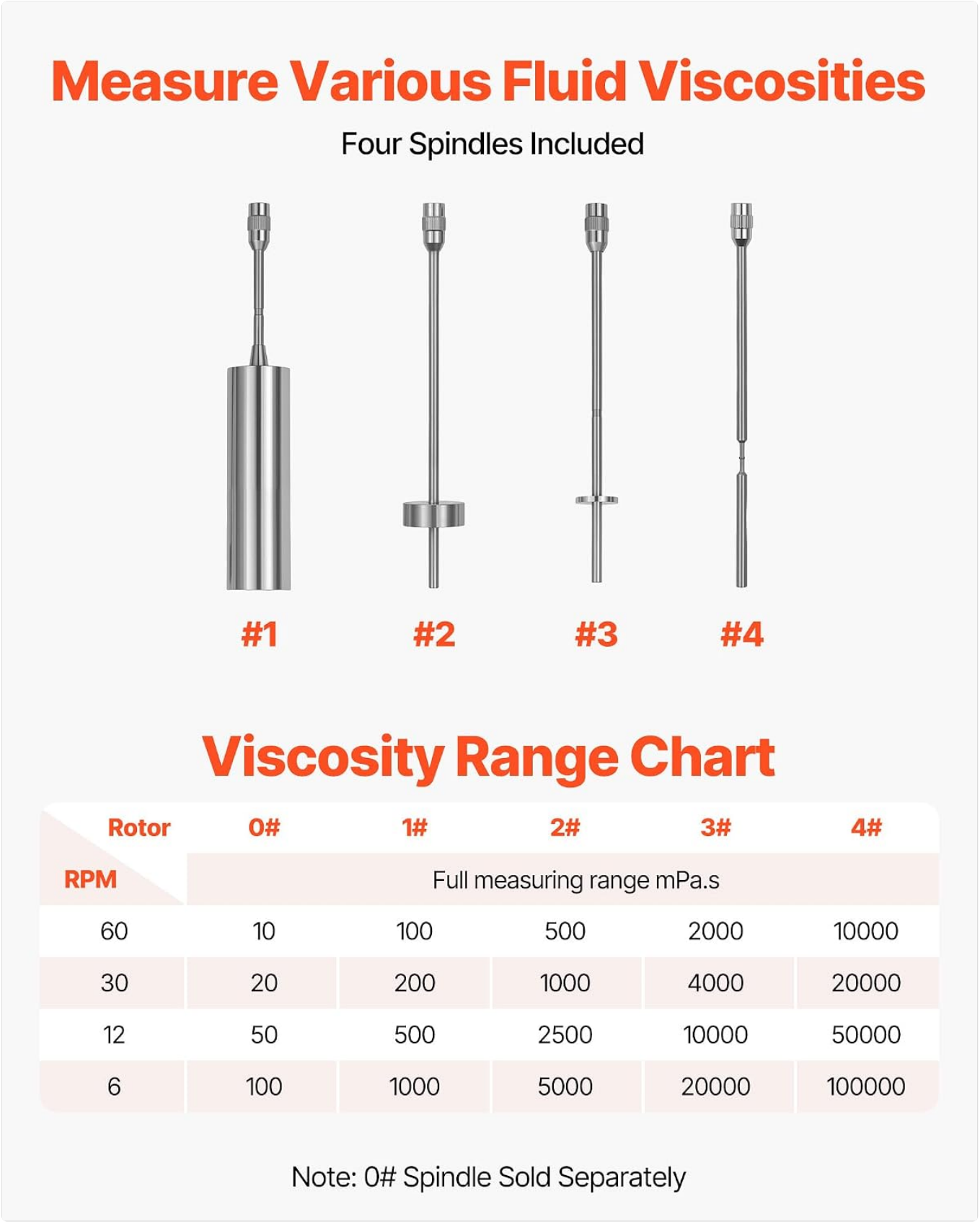
8. Specifications

Detailed technical specifications for the VEVOR NDJ-5S Digital Rotary Viscometer:

- **Item Model Number:** NDJ-5S
- **Power Supply:** AC100-240 V 50/60 Hz
- **Power:** 10 W
- **Display & Operation:** LCD Display (Non-Touchscreen)
- **Measurement Range:** 10-100,000 cP (mPa.s)
- **Measurement Accuracy:** ±2% (Newtonian fluid)
- **Spindle Type:** #1, #2, #3, #4 (0# Spindle Sold Separately)
- **Spindle Material:** 304 Stainless Steel
- **Spindle Speed:** 6/12/30/60 rpm
- **RS232 Interface:** Yes
- **Main Materials:** Steel, Stainless Steel & ABS

- **Net Weight:** 15.65 lbs / 7.10 kg (US/EU)
- **Product Dimensions:** 13.78 x 14.17 x 21.65 inches (350 x 360 x 550 mm)

8.1 Viscosity Range Chart



Rotor / RPM	0#	1#	2#	3#	4#
	Full measuring range mPa.s				
60	10	100	500	2000	10000
30	20	200	1000	4000	20000
12	50	500	2500	10000	50000
6	100	1000	5000	20000	100000

Image: This chart details the full measuring range in mPa.s for each spindle (#0, #1, #2, #3, #4) at various rotation speeds (60, 30, 12, 6 RPM). Note that the 0# spindle is sold separately.

9. Warranty and Support

VEVOR products are designed for durability and performance. For warranty information, technical support, or service inquiries, please refer to the warranty card included with your product or visit the official VEVOR website. Please have your model number (NDJ-5S) and purchase date available when contacting support.

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