

STIR-Rx Series

User Manual

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Contents

1. Introduction 4

2. Assembling and operating the STIR-Rx 5
2.1 Equipment Overview 5
2.2 Base Structure Components 6
2.2.1 Assembly Procedure 6
2.3 Mixing Blade Attachment 6

3. Control and Display 7
3.1 STIR-Rx ONE 7
3.1.1 Connectivity 8
3.2 STIR-Rx PRO 9
3.2.1 Operations and Settings STIR-Rx PRO 10
3.2.2 Interface and Output 11
3.3 Overload Protection 11

4. Stirring Blades Compatibility and Flow Profiles 12

5. Maintenance and Cleaning 14

6. Safety Instructions 14
6.1 General Safety Guidelines 14

7. Technical Parameters and Specs 15
7.1 Technical Parameters 15

8. Troubleshooting STIR-Rx Series 16

9. Service 17

10. Warranty 17

11. Listing of Items 17

12. CE Declaration of Conformity 18

Dear FagronLab™ user and compounding professional,

Thank you for choosing the **STIR-Rx** Series. By selecting this equipment, you have acquired a high-quality system specifically designed for advanced pharmaceutical compounding. Therefore, please read this user manual carefully to ensure optimal performance and safety.

Furthermore, for additional information and formulation recommendations, we invite you to visit our official websites at www.fagronlab.com and www.fagron.com. Should you require further support regarding operational handling or have any other technical inquiries about the equipment, please feel free to contact your local Fagron representative or authorized dealer. We wish you continued success in the precise and quality-assured production of compounded medications.

Sincerely,
Your FagronLab™ compounding support team

1. Introduction

In the daily routine of a compounding pharmacy, achieving uniform and pharmaceutically elegant liquid and semisolid preparations is a constant challenge. Professionals frequently deal with complex formulations that present poor solubility, foaming, high viscosity, sensitivity to shear, polymer underhydration, powder agglomeration, emulsion instability, wall buildup and inconsistent batches due to declining shear and uneven flow fields as viscosity increases; challenges that cannot be resolved by generic laboratory stirrers. These factors make solubilization, powder dispersion, and complete mixing difficult, and a manual stirring often cannot deliver the consistent particle distribution required for suspensions, the controlled shear needed for emulsions, or the steady torque demanded by viscous gels and concentrated liquids. Therefore, relying on manual stirring or generic laboratory equipment often compromises the reproducibility and stability of these delicate systems.

Recognizing these exact needs, Fagron developed the **STIR-Rx series** as a high-performance, digital overhead stirrer specifically engineered to meet these pharmaceutical demands. This equipment goes beyond basic agitation; rather, it provides controlled speed, stable torque, and optimized mixing geometry. Consequently, it empowers the compounding pharmacist to overcome formulation obstacles efficiently, safely, and with total precision, translating directly into reliable, high-quality treatments for the patient.

The **STIR-Rx** guarantees exceptional uniformity by maintaining stable torque even as viscosity increases. For instance, suspensions and dense mineral powders require high initial shear for proper wetting, followed by gentle circulation to maintain stability. Similarly, emulsions depend on precise shear control to achieve optimal droplet size, while gels and modified-release systems demand uniform agitation to prevent undissolved polymer lumps without degrading polymer chains. Conversely, high-viscosity dermatological bases require low-speed, high-torque wall sweeping to ensure complete, full-mass drug dispersion. The **STIR-Rx** is engineered to meet these rigorous demands by maintaining stable torque even as viscosity increases, ensuring reliable batch-to-batch consistency. In addition to delivering reproducible shear, the system robustly supports GMP (Good Manufacturing Practices) standards through automated data logging for complete traceability.

Specifically, torque stability paired with digital setpoints ensures process reproducibility, preventing formulation failures. Furthermore, the system guarantees pharmaceutical-grade control, utilizing connectivity for automated data logging and rigorous GMP compliance. Prioritizing a safe, ergonomic environment, it features controlled acceleration to minimize splashing and intelligent overload protection to prevent motor damage. Ultimately, the seamless integration of these automated features with our exceptional, high-performance mixing blades eliminates the strain of manual scraping and drastically shortens mixing times. Consequently, this reduces rework and empowers pharmacies to safely boost daily productivity and complete more prescriptions. To maximize these results, the **STIR-Rx** offers a curated portfolio of specialized mixing blades, ensuring the precise flow profile required to master any complex pharmaceutical formulation.

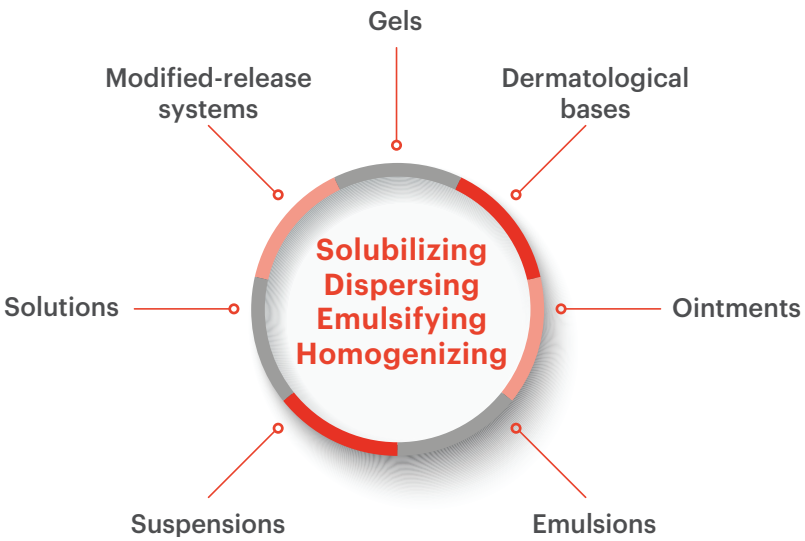


Figure 1. Main pharmaceutical applications of the STIR-Rx Series, covering the core mixing functions of solubilizing, dispersing, emulsifying, and homogenizing.

2. Assembling and operating the STIR-Rx

2.1 Equipment Overview



Figure 2. Overview of the main components of the STIR-Rx Series, showing the structural and functional elements of both the STIR-Rx ONE (left) and STIR-Rx PRO (right) models.

Before assembly, take a moment to familiarize yourself with the main components of the **STIR-Rx**. Understanding each part will ensure a safe and correct installation. The **STIR-Rx** is a digital overhead stirrer composed of the following main elements:

1. **Main Unit (Motor Head):** the core of the equipment, containing the brushless motor, the digital control panel, and the LCD display used to set and monitor speed and torque.
2. **Drill Chuck:** located at the lower end of the main unit, it is the component that holds and secures the mixing blade shaft.
3. **Mixing Blades:** interchangeable stirring elements, each designed to generate a specific flow profile according to the formulation type (see Section 4).
4. **Stand Assembly:** the structural support of the system, consisting of a stable base plate and a vertical support rod onto which the main unit is mounted.
5. **Locking Handle and Anti-Drop Guard:** safety components located along the support rod.

Once familiar with these parts, proceed to the installation steps described below.

Note
*For illustrative purposes, the Locking Handle is highlighted on the **STIR-Rx ONE** model in Figure 2. Both safety components are present in both models and operate identically.*

To ensure safe and optimal performance, always use accessories recommended by the manufacturer and follow the operating instructions.

Carefully unpack the device and verify that all components are intact. If you notice any damage that may have occurred during transportation, contact the manufacturer or supplier immediately for assistance.

If the unit shows any visible damage, **do not connect** it to a power source.

2.2 Base Structure Components

Before starting the assembly, ensure the following parts are organized on the work surface:

- Side support legs (with rubber feet)
- Central structural block
- Top mounting plate
- Set of screws
- Allen wrench
- Support rod

2.2.1 Assembly Procedure

1. **Central block alignment**: Position the central structural block on a stable, level, and non-slip surface. Subsequently, align the connection fins on both ends of the block.
2. **Top plate positioning**: Overlay the metal mounting plate onto the central block. During this step, it is crucial to ensure that all connection holes are perfectly aligned.
3. **Central structure fixation**: Insert the screws into the holes of the top plate. Using the Allen wrench, firmly and evenly tighten the six attachment points, thereby ensuring the integrity and rigidity of the base core.
4. **Side legs connection**: Position the side support legs at the ends of the previously assembled central block, forming the main support structure.
5. **Lateral locking**: Insert four screws into each joint between the central block and the side legs. Consequently, tighten them with the Allen wrench until the base presents complete stability. Firmly locking all connecting parts is essential to maintain operational stability and prevent hazardous shifts during equipment use.
6. **Support rod insertion**: Finally, install the vertical support rod into the assembled structure. Thus, the base will be properly prepared for the secure attachment of the main unit (Motor Head).

2.3 Mixing Blade Attachment

The mixing blade should be inserted directly into the drill chuck. Once the depth of the blade within the vessel has been adjusted, hold the spindle with one hand to ensure it remains perfectly vertical and aligned. Finally, manually rotate the chuck sleeve with the other hand to tighten and secure the blade in place.

Note
*1. **STIR-Rx** is a high-velocity rotational device, all components must be firmly secured during each stage of assembly. This ensures that the unintended movement of either the main unit or the mixing blades does not result in physical injury or damage to peripheral laboratory instruments.*

2. The stand serves as the primary support structure, its connecting parts must be tightly locked to maintain operational stability and prevent hazardous shifts. When positioning the main unit or adjusting the anti-drop guard, operators must exercise extreme caution to avoid entrapment or crushing injuries to the fingers.

Prior to initial operation, it is imperative to verify that the operating voltage specified on the equipment's nameplate strictly matches the local mains voltage, and that the electrical outlet is reliably grounded. Once these safety checks are complete, connect the power cable and activate the main power switch to initiate the system's automated self-diagnostic test. To operate the unit, rotate the speed adjustment knob to select the desired rotational speed, and subsequently press the knob to engage the mixing function. Pressing the same knob a second time will halt the stirring process. If the equipment responds accurately to these sequential commands, it is fully operational and ready for official compounding procedures. However, if any irregularities occur, it may indicate an active safety lock or potential hardware damage, necessitating technical support.

3. Control and display

3.1 STIR-Rx ONE

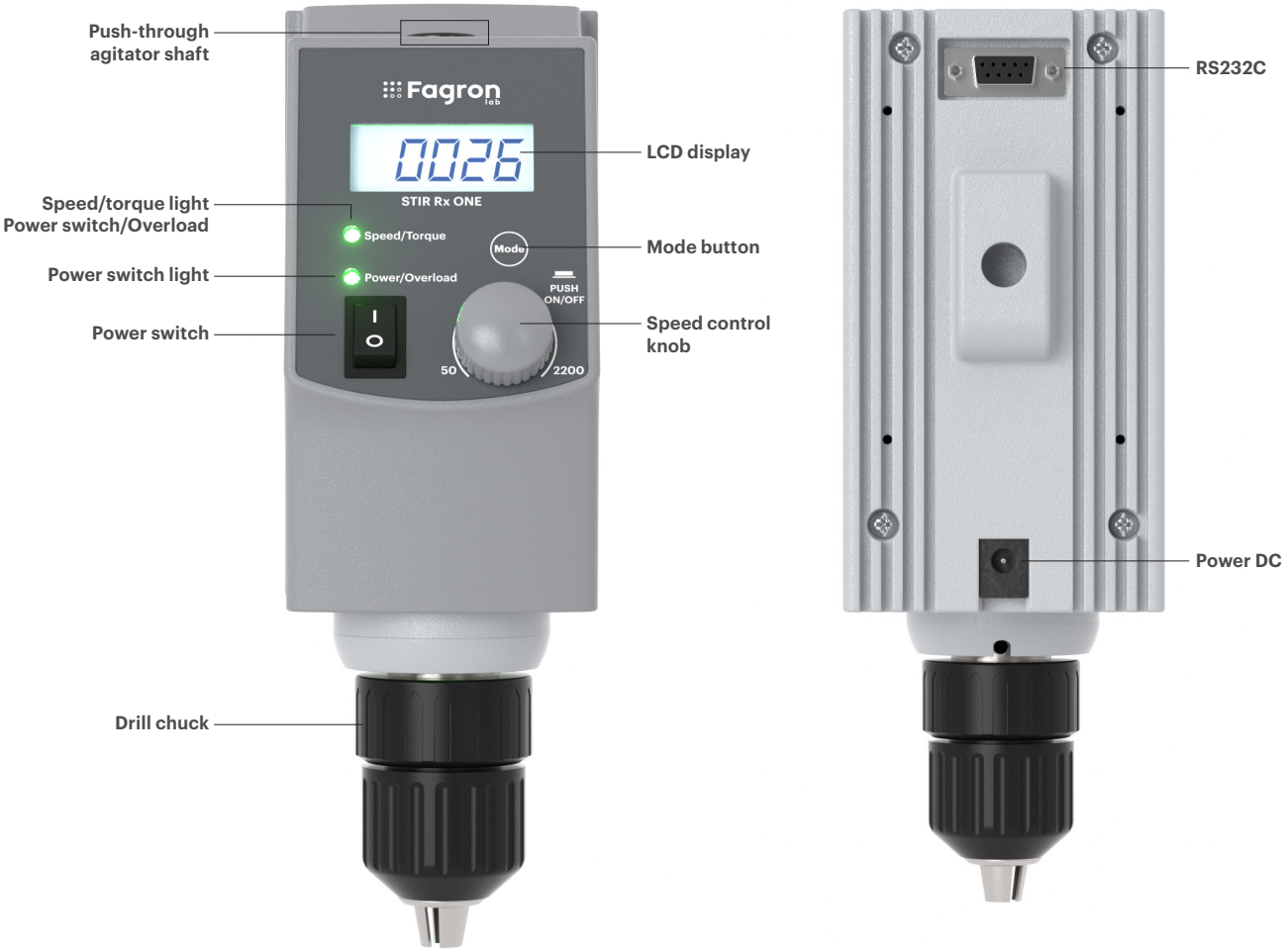


Figure 3. Digital interface and control elements, including the LCD display, parameter adjustment knob, and operational buttons.

	Items	Default settings
STIR-Rx ONE	**Speed control button Speed**	Set stirring speed, press the button to start/stop stirring function.
	Mode switch knob Mode	Toggles between the speed and torque displays. The LCD shows the current speed upon initial startup. Press the knob to display the current torque value.
	LCD display	LCD displays the real working state and all setting values.
	Speed/torque light RPM/Torque	Yellow/Green LED indicator. The color indicates the value currently shown on the LCD screen: yellow indicates speed, while green indicates torque.
	Power switch /Overload protection light Power/ Overload	Green/Red LED indicator. The LED glows green when the device is powered on and turns red when overload protection is activated. If the torque limit is reached, the system stops operating and the overload protection light flashes.
	Drill chuck	Holds the mixing blade securely during operation.
	Push-through agitator shaft	Allows use of a push-through agitator shaft when required.
	Power switch I/O	Switches the device on or off

Table 1. Control panel functions and indicators



Figure 4. Visual guide to the on-screen metrics.

	Element	Description / Action
STIR-Rx ONE	**Set**	Displayed while the target speed is being set.
	PC	Displayed when using external probe.
	Err	Displayed when an error occurs.
	Value set/display area	When "**Set**" is displayed, this area shows the target value. When "**Set**" is not displayed, it shows the actual operating value.

Table 2. Summary of digital control elements and their respective operational actions.

STIR-Rx ONE	**Operation Step 1**	Place the overhead stirrer on a stable, level and non-slip surface.
	Operation Step 2	Confirm that the stand, vessel and mixing blade are securely positioned.
	Operation Step 3	Connect the approved power supply and switch on the instrument.
	Operation Step 4	Wait until the self-diagnostic test is complete. "**Set**" appears and the value display flashes.*
	Operation Step 5	Rotate the speed-control knob to set the target speed. Start with a low value.
	Operation Step 6	Press the knob to start stirring. "**Set**" disappears and the actual speed is displayed.
	Operation Step 7	Increase the speed gradually while monitoring the vessel and formulation.
	Operation Step 8	Press the knob again to stop stirring.

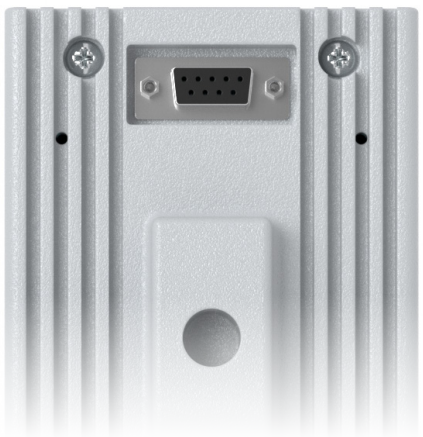
*LED displays warning code under abnormal conditions.

Table 3. Step-by-Step Operating Procedure for the STIR-Rx ONE.

3.1.1 Connectivity for STIR-Rx ONE

Furthermore, for facilities requiring advanced process traceability, the **STIR-Rx ONE** supports seamless external connectivity via a standard 9-pin RS232C interface. This system utilizes asynchronous, fully duplex transmission at a speed of 9600 bit/s to enable robust data communication with a PC. Consequently, operating parameters can be accurately logged on demand from the computer, supporting full GMP documentation.

It is crucial that the RS232C communication line is never inserted or removed while the device is switched on.



3.2 STIR-Rx PRO



Figure 5. Structural schematic of the **STIR-Rx PRO** front face, showing the primary physical control elements, such as the central display, the main RPM and time adjustment knob, the calibration button, and, finally, the lower drill chuck for securing the stirring blades.



Figure 6. Rear view of the equipment, highlighting the communication interfaces (USB Type-C, RS485, and USB Type-A), which enable process traceability, as well as the power connection and the PT1000 sensor port.

Component	Description
LCD screen	LCD display displays the current working status of the device and various Settings.
Mode switch button Mode	Press "Mode" to switch between "Set time", "Set speed", "set rotation direction" (for the top mount with maximum torque of 40) and "Set gear" (for the top mount with maximum torque of 600N.cm).
Safety lock button	Prevents accidental parameter changes
Calibrating keys	Calibrate the instrument temperature.

Table 4. Front panel control elements and their function.

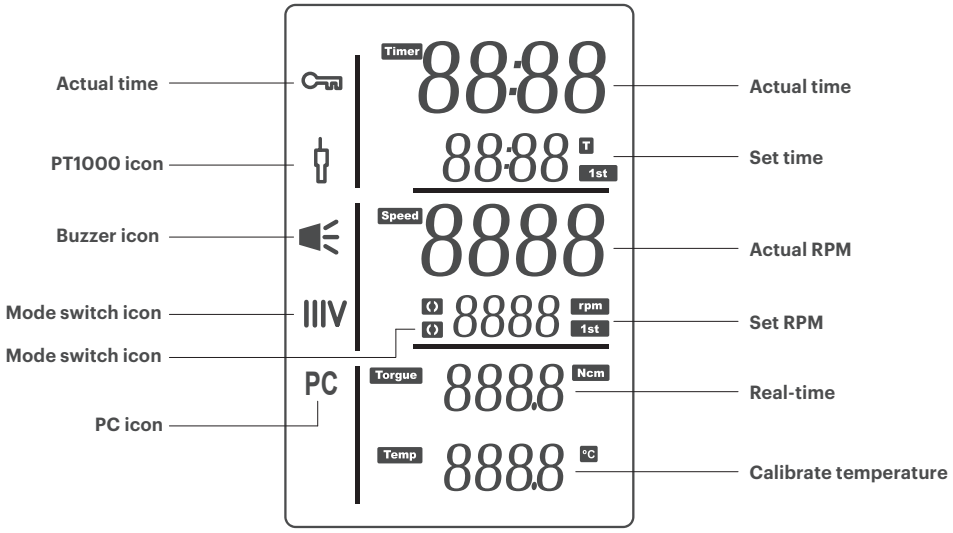


Figure 7. Detailed representation of the LCD display panel for the STIR-Rx PRO model, illustrating the system status indicators and the digital displays dedicated to the continuous monitoring of time, RPM speed, and real-time torque.

3.2.1 Operations and Settings STIR-Rx PRO

Feature / Setting	Description & Action
Mode I	Parameters are automatically saved after the operation ends or the device is powered off.
Mode II	Parameters are not saved; they will reset once the operation ends or the device is turned off.
Mode III	Parameters are retained after a restart. Furthermore, the operator can adjust these values before starting a new cycle.
Mode IV	Parameters are strictly saved and locked after a restart. Consequently, they cannot be altered, ensuring strict protocol adherence.
Time & Speed	Press "Mode" until the time display flashes, then rotate the knob to set. Press "Mode" again to enter speed settings and adjust RPM using the same knob.
Direction	Press "Mode" to access directional settings. Rotate the knob to select forward or reverse, then press the knob to initiate stirring.
Safety Lock	Press "Lock" to prevent accidental parameter changes (the lock icon will illuminate). Press it again to release the lock.

Feature / Setting	Description & Action
Calibration (Sensor Connected)	Press the calibration button. Rotate the knob to adjust the target temperature (displayed in the torque field), then press the button again to confirm. Note: Strictly single-point calibration.
Calibration (No Sensor)	Pressing the calibration button simply tares (zeros) the torque reading.
Cycle Completion	The system buzzer will emit three distinct beeps when a running cycle ends (STIR-Rx PRO).

Table 5. Summary of Features, Operating Modes, and Device Settings.

3.2.2 Interface and output for STIR-Rx PRO

To support full process traceability, the device connects to external computers via RS485, USB Type-A, or USB Type-C interfaces.

- **RS485 Connection:** Utilizes a standard 9-pin interface for bidirectional communication, using a specified EIA standard RS485 communication line (DIN 66020). It operates at 9600 bit/s (1 Start bit, 8-bit character, 1 Stop bit). Therefore, data transfer is strictly initiated on demand by the PC.
- **USB Type-A & Type-C:** These universal serial ports support hot-swapping, allowing the computer to automatically recognize the connected device and its properties during operation.

3.3 Overload Protection

The **STIR-Rx** Series is designed for continuous operation, utilizing an electronically limited motor current to ensure high-level security through stall and overload protection. Specifically, the overload function is activated if the torque reaches its maximum limit, such as when the set speed is incompatible with the formulation's viscosity or if the motor shaft becomes physically stuck. In these instances, the system immediately stops operation, and the corresponding indicator light flashes to alert the pharmacist.



4. Stirring blades compatibility and flow profiles

The **STIR-Rx** Series features a curated portfolio of high-performance mixing blades, each specifically engineered to produce distinct flow behaviors that optimize mixing across a broad spectrum of viscosities. Consequently, depending on their structural geometry, these blades generate specific flow profiles (Figure 8): axial circulation for effective wetting and suspension, radial high shear for deagglomeration and emulsification, tangential wall-sweeping flow for uniformity in thicker bases, and laminar movement for high-viscosity or yield-stress formulations.

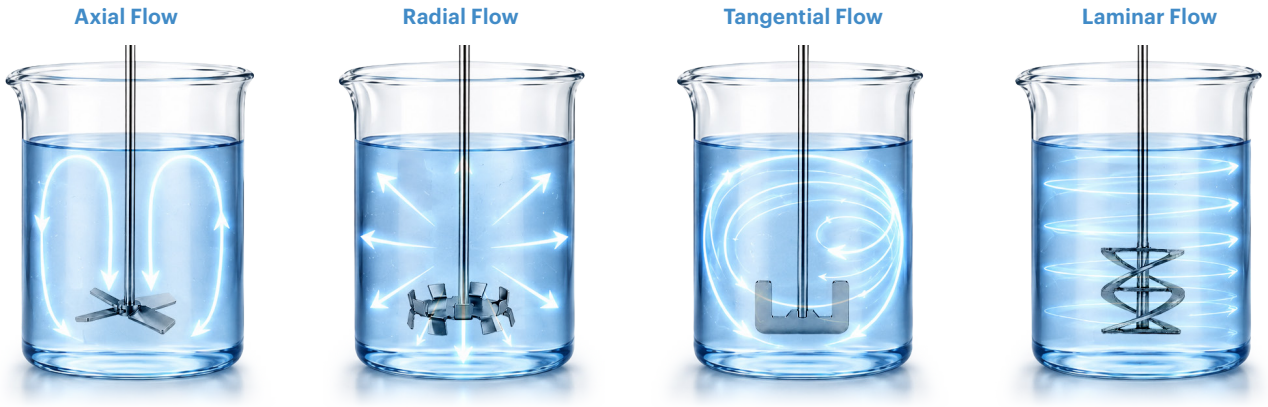


Figure 8. Schematic representation of specific flow behaviors (axial, radial, tangential and laminar) optimized for varying formulation viscosities.

Furthermore, as formulations thicken, maintaining proper circulation becomes critical to ensure consistent hydration, dispersion, droplet-size control, and heat transfer. Both **STIR-Rx** models accommodate the full blade set, performing exceptionally well in viscous applications. To assist in this selection process, Table 6 summarizes the available mixing blades, detailing their flow patterns and ideal applications to serve as a practical guide during preparation.

Ultimately, by selecting a blade that precisely matches the formulation's rheological and structural requirements, pharmacists can significantly optimize the compounding of suspensions, emulsions, and gels. Therefore, this strategic approach improves overall uniformity, minimizes dead zones, and guarantees stable, reproducible results.



Operational matrix for STIR-Rx stirring blades



	4-Blade Pitched Propeller	Radial Disc Turbine (Rushton)	Anchor Blade (U-shape)	Helical Ribbon
Flow Pattern	Predominantly axial flow (top ↔ bottom) with mild radial component	Radial flow (center → vessel wall), high localized shear	Tangential sweeping with minimal axial flow; close wall clearance	Laminar full-mass flow (axial pumping + wall scraping)
Recommended Viscosity	Low to High (1–10,000 m.Pas)	Low to High (50–10,000 m.Pas)	Medium to High (500–10,000 m.Pas)	Very High (>1,000 to >10,000 m.Pas)
Typical Applications	Solutions and suspensions; powder wetting; dissolution; light emulsions	High shear solid liquid dispersion; breaking agglomerates; emulsification; polymer dispersion	Gels, creams, ointments; semi-solids; temperature-sensitive formulations	Dense gels; cold emulsions; ointments and pastes (softened by heat) high viscous polymer systems; yield stress materials
Example Formulations	TrichoSol™, TrichoSerum™, Seraqua™; SyrSpend® (low speed)	Emulsions and gels from scratch; SyrSpend® with difficult powders	TrichoSol™, TrichoFoam™, Espumil™; SyrSpend® (low speed)	Thick dermatological bases; modified-release polymer matrices
Key Benefits	Prevents sedimentation; improves circulation; enhances heat transfer	High shear for deagglomeration; efficient droplet breakup	Prevents wall buildup; improves heat transfer; maintains uniformity	Moves entire mass; eliminates stagnant zones; ideal for heavy pastes
How It Works	Angled blades generate strong vertical pumping, ensuring turnover and minimizing the "coning area" where dense particles settle.	Flat radial blades create intense shear zones (~30,000 s^{-1}) ideal for deagglomeration and fine emulsification.	Wall scraping avoids dead zones; essential for non Newtonian, viscoelastic materials where circulation is difficult.	Continuous helical displacement ensures total turnover in extremely viscous systems where turbulence is impossible.

Table 6. Summary of mixing blade geometries, their rheological behaviors, and key benefits for specific pharmaceutical bases.

5. Maintenance and Cleaning

Proper maintenance ensures optimal performance and can extend the instrument's lifespan.
Therefore, please pay attention to the following guidelines:

- Always disconnect the power cord before initiating any cleaning procedures.
- Never spray cleaning agents directly onto or into the device to prevent internal liquid damage.
- Only use the Aqueous surfactant solution or isopropyl alcohol as cleansers.

Before employing alternative cleaning or decontamination methods, you must consult the manufacturer to ensure they will not damage the equipment. Additionally, always wear appropriate protective gloves during the cleaning process.

Electronic Safety: Do not apply liquid cleansers directly to the display, electronic interfaces, or internal components. Use only a lightly dampened cloth for the exterior housing

Service Preparation: If maintenance or repair service is required, the device must be thoroughly decontaminated beforehand to prevent hazardous exposure to service personnel. Furthermore, it must be returned in its original packaging.

Storage: If the device will not be used for an extended period, switch it off, unplug it, and store it in a clean, dry, and stable environment at room temperature.

6. Safety Instructions

Read the User Manual carefully before use.
Ensure that only trained personnel operate the instrument.

Protective Ground Contact: Ensure that the electrical socket is properly grounded before use.

6.1 General Safety Guidelines

- **Personal Protection:** Wear appropriate Personal Protective Equipment (PPE) to mitigate risks from chemical splashes and glass breakage. Ensure strict compliance with standard laboratory biosafety and accident prevention protocols.
- **Operating Environment:** Install the device on a spacious, stable, non-slip, dry, and fire-resistant surface. Do not operate in explosive atmospheres, submerged environments, or with incompatible hazardous substances. Isolate the equipment from high-intensity magnetic fields.
- **Operational Safety:** Do not touch moving components during operation to prevent severe injury. Monitor the vessel during speed adjustments to avoid sample projection. If instability or excessive vibration occurs, reduce the motor speed immediately.
- **Assembly and Accessories:** Secure all vessels and attachments firmly to prevent mechanical failure and spills. Use exclusively the manufacturer-approved accessories listed in this manual. Furthermore, never cover the device while in use, ensuring proper thermal dissipation and preventing mechanical interference.
- **Sample Hazards:** Agitation can induce flammability hazards depending on the physicochemical properties of the formulation. Consequently, only process materials that remain stable under applied shear stress.
- **Electrical and Maintenance Safety:** Ensure the local mains voltage matches the specifications on the equipment's nameplate. Always power off and disconnect the device from the electrical grid prior to assembly, cleaning, or inspection. Finally, the housing must only be accessed by certified technical personnel.

Do not touch the stirring blade during operation.

7. Technical parameters and specs

7.1 Technical parameters





Specifications		
Items	**STIR-Rx ONE**	**STIR-Rx PRO**
Max. stirring quantity (H_2O) [L]	20	30
Motor rating input [W]	60	60
Motor rating output [W]	50	50
Voltage [VAC]	100-240	100-240
Frequency [Hz]	50/60	50/60
Power [W]	70	70
Speed range [rpm]	50-2,200	50-2,200
Speed display accuracy [rpm]	±3	±3
Speed display	LCD	LCD
Max. torque [N·cm]	40	40
Max. viscosity [mPa·s]	10,000	10,000
Overload protection	LED light flash, auto stop	LED light flash, auto stop
Motor protection	LED light flash, auto stop	LED light flash, auto stop
Chuck range diameter [mm]	0.5-10	0.5-10
Dimension[W x H x D] [mm]	83 x 220 x 186	83 x 220 x 186
Weight [kg]	2.8	3.5
Protection class acc. To DIN/EN 60529	IP21	IP42
Temperature [°C]	5-40	5-40
Permission relative humidity [%]	80	80
RS232 interface	Yes	RS-485, USB Type-A & USB Type-C
Motor	Brushless DC	Brushless DC
Timer	–	0–99 h 59 min

Table 7. Comparative Technical Specifications and Operational Limits of the STIR-Rx models.

The **STIR-Rx** system utilizes a brushless motor to maintain constant torque during viscosity shifts. Its digital interface ensures precise parameter settings, while overload protection safeguards sensitive formulations. As detailed in Table 7, RS232 connectivity facilitates data logging, offering a quiet solution for modern laboratories.

8. Troubleshooting

1. Failure to power on

How it appears	Corrective actions
• The instrument does not activate.	• Verify that the power cable is securely connected to the electrical supply

2. Target speed not reached

How it appears	Corrective actions
• The equipment fails to achieve the defined RPM.	• This discrepancy generally occurs when the selected speed is incompatible with the formulation's current viscosity. Therefore, reduce the speed setting and restart the procedure.

3. Sudden Stop (Error "Er 03" - Overload Protection)

How it appears	Corrective actions
• The operation halts unexpectedly, the LED indicator turns red, and the display shows "**Er 03**".	• This error indicates a system overload, which is primarily caused by an excessive speed setting for a highly viscous medium. Consequently, you must first press the control button to stop the equipment. Afterward, lower the target speed and restart the stirring. Furthermore, if the protection mechanism triggers again, repeat this process by gradually decreasing the RPM until operational stability is achieved.

4. Sudden Stop (Error "Er 04" - Motor Protection)

How it appears	Corrective actions
• The operation halts unexpectedly, the LED indicator turns red, and the display shows "Er 04".	• This code signifies that the motor protection mechanism has been activated, typically resulting from a physically jammed or obstructed output shaft. Therefore, immediately turn off the device and carefully remove any blocking material from the mixing vessel. Subsequently, you may reset the original speed parameters and resume the stirring function.

If these faults are not resolved, please contact your FagronLab representative.

9. Service

In case of any problem, you can always contact the Service Department for technical support.
Please provide the customer care representative with the following information:

- Model and serial number.
- Description of problem.
- Methods and procedures adopted to resolve the problems.
- Your contact information.

10. Warranty

This device is under warranty and free from defects in materials under regular use and service for 24 months from the invoice date (excluding consumable accessories). The warranty is extended only to the original purchaser. The warranty is not valid on a device damaged by improper installation, connections, misuse, accident, or abnormal operating conditions. If the warranty has expired, manufacturer will still be responsible for repair with relative charges. For claims under warranty, please contact your local supplier.

11. Listing of Items

Item	QTY
Main Unit	1
Power Cable	1
Blades	4

Declaration of Conformity

Gako Deutschland GmbH
Is certified according
DIN EN ISO 9001:2015 &
DIN EN ISO 50001:2018

CE

Product:	Laboratory mixing Device
Product type:	FagronLab™ STIR-Rx ONE FagronLab™ STIR-Rx PRO
Manufacturer:	Gako Deutschland GmbH Am Steinernen Kreuz 24 96110 Scheßlitz, Germany

The manufacturer declares the conformity of the designated product with the following European directives:

Directive 2014/35/EU of the European Parliament and of the Council
26th February 2014

on the harmonisation of the laws of the Member States relating to the making available of electrical equipment designed for use within certain voltage limits on the market

Directive 2014/30/EU of the European Parliament and of the Council of 26th February 2014

on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

The conformity of the designated product has been demonstrated by full compliance with the following harmonised standards:

Safety (Low Voltage Directive 2014/35/EU): EN 61010-1 — Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements
EN 61010-2-010 — Particular requirements for laboratory equipment for the heating of materials

Electromagnetic Compatibility (EMC Directive 2014/30/EU): EN 61326-1 — Electrical equipment for measurement, control and laboratory use – EMC requirements

EMC Certificate Registration No.: AE 50675498 0001 & AE 50638445 0001
LVD Certificate Registration No.: AN 50677980 0001 & AN 50536998 0001
Issued by: TÜV Rheinland LGA Products GmbH

For the intended use the designated product meets the requirements of
European, US, British and Japanese Pharmacopoeia and
ROHS directive 2011/65/EU and (EU) 2015/863 regulations.

This declaration is issued under the sole responsibility of the manufacturer.

gako

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Karamperis Aris

Product manager, Gako

09.03.2026

Together
we create the future
of personalizing medicine.



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