

Powerful Stirring



Leading Safety Standards

Superior Ease of Use

Reduced Cost of Ownership



Do you require an all-purpose stirrer that provides the best mixing results even for very challenging applications?

Powerful Stirring

The powerful RZR Series stirrer can accomplish the most demanding tasks while providing the highest safety and increased performance life!

Leading **Safety Standards**

- Important for continuous operation: the motor will be switched off if a high thermal load situation occurs to increase safety in your lab and to **prevent accidents**
- Additional safety is provided by non-sparking motors which **reduce incidents** in a **volatile environment**
- The electronic stirrers feature a smooth start operation which **prevents spills and splashing media**. The speed will ramp up slowly until your set rpm has been reached
- An optional shaft guard **prevents any accidents** involving contact with the impeller shaft running at high speeds
- Use an optional remote control via cable to **start and stop** your electronic stirrer **from outside closed fume hoods**





Superior **Ease of Use**

- A through-shaft design allows for adjusting the impeller position to make **height adjustment more convenient** for you
- **Reduce your work time** and achieve excellent mixing results in challenging high-viscosity media
- Due to the **light-weight design** all set-ups in your lab are easy and fast
- **A single grip** allows you to re-adjust the height of your stirrer on the optional telescope stand
- The clear and **self-explanatory front panel** layout is for your ease of operation
- Use your lab space efficiently: the slim and space-saving design nicely allows to **fit into any glassware set-up**
- Even **high viscosity samples with up to 350,000 mPa s** can be mixed easily with the RZR 2102 control Z
- All electronic stirrers maintain **exact speed under changing loads** and even accept **200% peak overload** for a limited period of time without interrupting the process
- A 2-gear stage design guarantees the **highest power** over the entire speed range for **continuous operation** even in polymer research

Reduced Cost of Ownership

- Reduce your maintenance costs: the sealed housing protects your stirrer from aggressive fumes, liquids and vapors to prevent internal corrosion. This results in an **increased lifespan of 10 years** on average while **reducing maintenance and repair cost**
- The high torque accounts for better mixing results in less time that **reduces your process time** and your working hours significantly
- Maintenance-free motors **reduce repairs and down times** significantly to ensure years of continuous operation
- The unique impeller technology for demanding applications that mix gels and other similar media in shorter times which **reduces process cost and working hours**

➤ Powerful stirring

Do you require an all-purpose stirrer that provides the best mixing results even for very challenging applications?

The powerful RZR stirrers accomplish the most demanding tasks while providing the highest safety and increased performance life!



➤ Impellers

Have you been searching for an impeller for both standard applications and extremely challenging media?

You will be surprised to learn how easily this unique impeller line evenly mixes high-viscosity media such as gels or tooth paste!

YOUR ADVANTAGES

- An overtemperature sensor preventively shuts off the unit in a dangerous heat-up situation – particularly valuable for you in case of unattended continuous operation
- The 2-gear stage design guarantees the highest power over the entire speed range
- All units are designed for continuous 24-hour operation – including difficult high viscosity applications or polymer research
- These stirrers come with the highest torque in its class, yielding first-class results
- The durable design of the RZR Series promotes longevity in an aggressive environment: The sealed housing protects against corrosion and ensures years of maintenance-free operation

YOUR ADVANTAGES

- Stirrer guides for applications under vacuum or pressure, flex couplings and flex shafts increase your available options
- Through thick and thin: large selection of impellers for every flow and viscosity
- Choose from high-quality stainless steel, plastics or PTFE-coated impellers – we have the right one for your specific needs
- Reduce your process times by utilizing unique technology which creates turbulent flows and a new dynamic motion that stirs gels with ease

Powerful Stirring



Leading Safety Standards

Superior Ease of Use

Reduced Cost of Ownership

The average operational **lifespan of 10 years** is backed by a **3 year warranty** and makes your purchase a worthwhile investment.



Sealed housing guarantees longevity and maintenance-free **24-hour operation** in an aggressive environment

Even high viscosity samples with up to 350,000 mPa s can be mixed easily with the RZR 2102 control Z

A through-shaft design allows for adjusting the impeller position to make **height adjustment more convenient**

Reduce process times by utilizing unique VISCO JET® impellers for **mixing gels** and other challenging media **with ease**

➤ Mechanical Stirrers

These stirrers are ideal for standard stirring tasks. They are designed to mix and disperse media that require non-reproducible results of high-viscosity applications under high speeds



A through-shaft design allows for easy adjustment of the impeller position most convenient for you

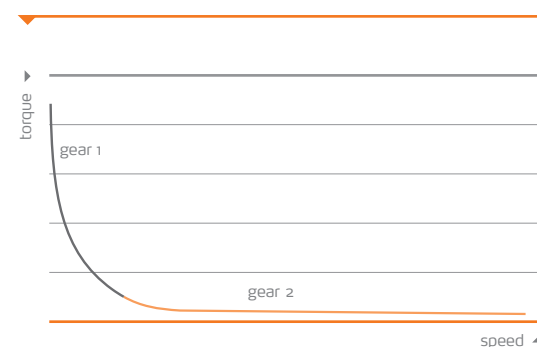
A 2-gear stage design guarantees the highest power over the entire speed range

The speed is adjustable over a large scale from 40 – 2,000 rpm

An optional shaft guard prevents any accidents involving contact with the impeller shaft running at high speeds

Shipment includes a 10-mm chuck as standard

Mechanical stirrers
High torque at low speed



➤ RZR 2020 and RZR 2021

For standard applications

Both the RZR 2020 and 2021 are outstanding choices for all medium to high-viscosity mixing tasks with a maximum viscosity of 60,000 mPa s. Stirrer line includes leading safety standards and features for superior ease of use and reduced cost of ownership, plus:

- The RZR 2021 features a bright digital display for accurate speed settings. The RZR 2020 comes without a display and is designed for applications that do not require accurate settings
- A 2-gear stage design guarantees the highest power over the entire speed range of 40 – 2,000 rpm
- A maintenance-free and non-sparking motor ensures 27 W output power and performs stirring torque peaks up to 400 Ncm

RZR 2021
P/N 501-20210-00

RZR 2020 (not shown)
P/N 501-20200-00



➤ RZR 2041

For high viscosity

The RZR 2041 is an excellent choice for any high-viscosity mixing with a maximum viscosity up to 100,000 mPa s. Stirrer line includes leading safety standards and features for superior ease of use and reduced cost of ownership, plus:

- The RZR 2041 features a bright digital display for accurate speed settings
- A 2-gear stage design guarantees the highest power over the entire speed range of 40 – 2,000 rpm
- A maintenance-free and non-sparking motor ensures 37 W output power and performs stirring torque peaks up to 520 Ncm

RZR 2041
P/N 501-20410-00

➤ Electronic Stirrers

These stirrers are ideal for any demanding stirring task in which the viscosity varies during the entire process either through reaction or due to mixing. Electronic stirrers maintain exact speed under changing load. The displayed torque gives information relating to the actual viscosity and all results are reproducible



All electronic stirrers accept 200 % peak overload for a limited period of time. Your process therefore will not be interrupted in short-term overload and similar conditions

Calibrate your torque at the beginning or even during your process to monitor viscosity changes. Reproducible results made easy

Set your speed of choice on the self-explanatory panel or via digital interface from 30 – 2,000 rpm

Enhanced bright digital display for torque and speed

Constant speed under changing loads over the entire span of every gear setting

Shipment includes a 10-mm chuck as standard

Electronic stirrers
Constant torque over entire speed range within each gear stage



➤ RZR 2051 control and RZR 2052 control

For standard applications

Both RZR 2051 control and RZR 2052 control are 1-gear stage stirrers which hold speed constant under changing loads. Stirrer line includes leading safety standards and features for superior ease of use and reduced cost of ownership, plus:

RZR 2051 control:

- Accepts torque of 40 Ncm in an overload situation and 20 Ncm for continuous operation at speeds from 50 – 2,000 rpm
- Viscosity range up to 10,000 mPa s

RZR 2052 control:

- Accepts torque of 180 Ncm in an overload situation and 90 Ncm for continuous operation at speeds from 30 – 1,000 rpm.
- Viscosity range up to 40,000 mPa s
- Speed control uses rheostat or interface
- Enhanced bright digital display for torque and speed

RZR 2051 control
P/N 501-20511-00

RZR 2052 control
(not shown)
P/N 501-20521-00



➤ RZR 2102 control and RZR 2102 control Z

For high viscosity

Both the RZR 2102 control and RZR 2102 control Z are 2-gear stage stirrers which hold speed constant under significant load changes such as sticky media like polymers. Stirrer line includes leading safety standards and features for superior ease of use and reduced cost of ownership, plus:

- Choose between 2 options for gear setting and experience the power of the 100-W output motor which allows for torque of 400 Ncm in an overload situation and 200 Ncm for continuous operation at speeds from 12 – 2,000 rpm
- Viscosity range up to 100,000 mPa s
- Calibrate your torque at the beginning or even during your process to monitor viscosity changes over time
- Speed control uses rheostat or interface

RZR 2102 control
P/N 501-21021-00

RZR 2102 control Z
P/N 501-21024-00



Planet gear (4:1 ratio) of the RZR 2102 control Z

RZR 2102 control Z features identical technical specifications as the RZR 2102 control except for:

- Speed: 4 – 540 rpm
- Torque: 800 Ncm in an overload situation and 700 Ncm at continuous operation
- Additional flanged planet gear for extreme viscosities up to 350,000 mPa s

The RZR 2102 control Z does not feature the through-shaft design for impeller adjustment



➤ Impellers

Selection parameters

Precise working with an overhead stirrer depends on the right choice of the stirrer tool. When choosing a stirrer tool you have to consider its different characteristics and their effects. For example, the flow which the tool causes in the medium, the tool's adequate field of application depending on the speed range, and the execution of the tool according to the viscosity it is destined for

Application examples:

- Gassing of liquids < 500 mPa s: Radial Flow Impeller
- Homogenizing and suspending in liquids < 500 mPa s: Propeller-Type or Blade Impeller
- Medium with a viscosity > 500 mPa s: Anchor-Type Impeller, Blade Impeller BR 13, VISCO JET®
- Stirring of gel: VISCO JET®

Please ensure that for radial flow, blade, half-moon and VISCO JET® impellers the beaker size and position of your impeller complies with the shown guideline to achieve superior mixing results

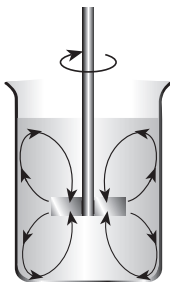
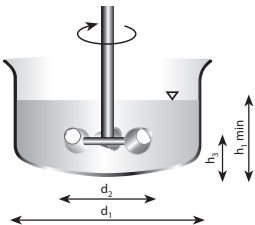
Operational guidelines

Position of the stirring tool

- In center
- Distance to the bottom (h_3/d_2): 0.3
- Diameter vessel (h_1/d_1): 1
- VISCO JET® diameter ratio (d_2/d_1): 0.4 - 0.6




Circumferential speed

- 3 - 15 m/sec: Radial Flow Impeller
- 2 - 5 m/sec: VISCO JET®, Blade and Anchor-Type Impeller



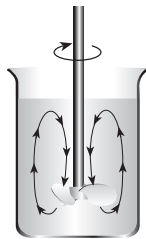
Blade and Half-Moon Impeller




- These impellers are recommended for applications which require average speed
- Models BR 12, BR 14 and HR 18 come with collapsible blade for narrow neck vessels
- For mixing tasks with little or average viscosity

	Type	Blade size [mm]	Material	Length [mm]	Shaft dia. [mm]	P/N
	BR 10 Cross-Blade Impeller	50 x 12	stainless steel AISI 304	400	8	509-10000-00
	BR 11 Straight-Blade Impeller	50 x 12	stainless steel AISI 304	400	8	509-11000-00
	BR 12 Pivoting-Blade Impeller	60 x 15	stainless steel AISI 304	400	8	509-12000-00
	BR 13 Square-Blade Impeller	70 x 70	stainless steel AISI 304	450	8	509-13000-00
	BR 14 Collapsible-Blade Impeller	90 x 10	stainless steel AISI 304	400	8	509-14000-00
	HR 18 Half-Moon Impeller	65 x 18 x 3	PTFE	350	8	509-18000-00

Propeller-Type Impeller

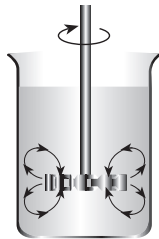
- These impellers are recommended for applications which require average or high speed
- Excellent mixing properties for homogenization and suspensions
- For mixing tasks with medium or high viscosity
- These models create an axial flow




	Type	Prop. dia. [mm]	Material	Length [mm]	Shaft dia. [mm]	P/N
	PR 39 Pitched-Blade Impeller	75	PTFE	350	8	509-39000-00
	PR 30 Pitched-Blade Impeller	58	stainless steel AISI 304	400	8	509-30000-00
	PR 31 Ringed Propeller	33	stainless steel	400	8	509-31000-00
	PR 32 Ringed Propeller	45	stainless steel	400	8	509-32000-00
	PR 33 Ringed Propeller	66	AISI 304	400	8	509-33000-00

Radial-Flow Impeller

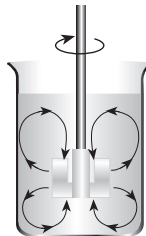
- These impellers are recommended for applications which require average speed
- Ideal for gassing of liquids
- For mixing tasks with little or average viscosity up to < 500 mPa s
- These impellers create a radial flow




	Type	Ø Turbine size [mm]	Material	Length [mm]	Shaft dia. [mm]	P/N
	TR 20 Radial-Flow Impeller	29	stainless steel AISI 304	400	8	509-20000-00
	TR 21 Radial-Flow Impeller	50	stainless steel AISI 304	400	8	509-21000-00

Anchor-Type Impeller

- These impellers are recommended for applications which require a low speed
- For mixing tasks with medium or high viscosity



	Type	Blade size [mm]	Material	Length [mm]	Shaft dia. [mm]	P/N
	AR 19 Anchor-Type Impeller	60 x 40 x 5	PTFE	350	8	509-19000-00

➤ **VISCO JET® Impellers**

The all-rounder for thick and thin

- **Reduce your process times** significantly while performing the best mixing results ever
- **One system for literally all mixing tasks** for low to high-viscosity media
- **The turbulent flow** which is created by a special cone principle even at low speeds is **unique to the VISCO JET®**
- Even with high-viscosity media and gels which naturally do not mix when common impellers are used you will observe an immediate flow through the entire beaker
- This technology allows for **de-gassing of gels** while preventing air intake and foaming



Type	Ø [mm]	Material	Length [mm]	Shaft dia. [mm]	Speed range [rpm]	For vessel dia. [mm]	P/N
VISCO JET® - 60*	60	stainless steel AISI 316Ti	500	10	200 – 800	80 – 150	509-16060-00
VISCO JET® - 80*	80	stainless steel AISI 316Ti	500	10	200 – 700	115 – 200	509-16080-00
VISCO JET® - 80*	80	impeller: plastic (POM) hub: brass shaft: polyamide-coated	500	10	200 – 700	115 – 200	509-16081-00
VISCO JET® - 120*	120	stainless steel AISI 316Ti	500	10	120 – 500	170 – 300	509-16120-00
VISCO JET® - 120*	120	impeller: plastic (POM) hub: brass shaft: polyamide-coated	500	10	120 – 500	170 – 300	509-16121-00

* A shaft is included as a standard

VISCO JET® - 60 mm
stainless steel



VISCO JET® - 80 mm
plastic (POM)



VISCO JET® - 120 mm
stainless steel



Application examples

The **only impeller world wide** capable of completely mixing larger quantities of high-viscosity liquids and gels

Fields of use:
Beverage production, dairy products, food, sugar & candy production, chemistry/petro chemistry, ceramics, water treatment, cosmetics, colorant/paint production and paper manufacture, etc.

Principle of functionality

The VISCO JET® Mixing System from VISCO JET Rührsysteme GmbH is the result of the so-called cone principle.

Turbulent flows are created at the taper end by acceleration, displacement and retardation. These flows advance through the stirred medium and result in the new dynamic mixing motion

➤ **Accessories**



Universal stand S2

- Stand tube Ø: 25 mm
- Length: 700 mm
- Weight: 5.8 kg
- P/N 570-12000-00



Stand S2 XXL

- Stand tube Ø: 25 mm
- Length: 1,000 mm
- Weight: 6.0 kg
- (Recommended for RZR 2102 control Z)
- P/N 570-12200-00



Telescope stand

- Stand tube Ø: 32 mm
- Adjustable length: 725 - 1,025 mm
- Weight: 7.7 kg
- P/N 570-12100-00



Clamp

- For stand S2, S2 XXL and telescope stand
- Ø 13-32 mm
- P/N 570-22000-00



Chuck 8 mm

- For RZR 1
- P/N 509-01000-00



Chuck 10 mm

- For RZR 2020 – 2102
- P/N 509-02000-00
- For RZR 2102 control Z
- P/N 11-001-001-56



Stirrer guide (NS 29/32)

- PTFE with adjustable seal
- Accepts Ø 8 mm shafts
- P/N 509-09000-00



Flex-coupling

- Includes clamping stud for stirrer shaft
- Accepts Ø 10 mm shafts
- P/N 509-03000-00



Shaft guard

- Material: PMMA
- Adjusts between 187 mm and 312 mm
- Not for RZR 2102 control Z
- P/N 509-08000-00



Flexible shaft

- Comes with chuck
- Not for RZR 2102 control Z
- P/N 509-07000-00



Remote control

- With start/stop function
- P/N 591-40000-00

➤ RZR Plug & Play Packages



RZR Plug & Play 2052 control

This package includes:
 1 x RZR 2052 control stirrer
 1 x PR 30 impeller incl. shaft
 1 x Stand S2 and a clamp

P/N 501-20529-00



Clamp



PR 30 impeller



Stand S2

RZR Plug & Play 2020

This package includes:
 1 x RZR 2020 stirrer
 1 x PR 30 impeller incl. shaft
 1 x Stand S2 and a clamp

P/N 501-20209-00



Clamp



PR 30 impeller



Stand S2



RZR Plug & Play 2102 control

This package includes:
 1 x RZR 2102 control stirrer
 1 x VISCO JET® impeller 80 mm (AISI 316Ti) incl. shaft
 1 x Stand S2 and clamp

P/N 501-21029-00



Clamp



VISCO JET® impeller 80 mm (AISI 316Ti)



Stand S2



➤ RZR 1

For simple mixing tasks

For media up to 40,000 mPa s and volumes up to 20 liters



RZR 1
P/N 501-11000-00

The RZR 1 is suitable for torque up to 100 Ncm at a power of 18 W

Slim design fits nicely into your research environment

A manual scale for speed adjustments from 35 - 2,200 rpm

A 2-gear stage design allows for high torque at various speeds and provides excellent mixing in short times

➤ Technical Specifications - Overhead Stirrers

Model	RZR 1	RZR 2020	RZR 2021	RZR 2041	RZR 2051 control	RZR 2052 control	RZR 2102 control	RZR 2102 control Z
P/N (230 V)	501-11000-00	501-20200-00	501-20210-00	501-20410-00	501-20511-00	501-20521-00	501-21021-00	501-21024-00
Power rating, motor input/output (W)	77/18	50/27	50/27	70/37	80/50	140/100	140/100	140/100
Number of speed gears	2	2	2	2	1	1	2	2
Speed range (rpm)	35 – 250 280 – 2,200	40 – 400 200 – 2,000	40 – 400 200 – 2,000	40 – 400 200 – 2,000	50 – 2,000	30 – 1,000	12 – 400 60 – 2,000	4 – 108 17 – 540
Speed indicator	scale	scale	digital	digital	digital	digital	digital	digital
Speed control	mechanic	mechanic	mechanic	mechanic	electronic	electronic	electronic	electronic
Torque, maximum (Ncm) - overload mode	100	400	400	520	20 40	90 180	200 400	700 800
Power reserve under overload (%)	–	–	–	–	200	200	200	200
Torque indicator (Ncm)	–	–	–	–	digital	digital	digital	digital
Overheat protection	automatic cut-out	automatic cut-out	automatic cut-out	automatic cut-out	automatic cut-out features LED	automatic cut-out features LED	automatic cut-out features LED	automatic cut-out features LED
Motor protection	overheat protection reset by power switch	overheat protection reset by power switch	overheat protection reset by power switch	overheat protection reset by power switch	overheat protection reset by power switch	overheat protection reset by power switch	overheat protection reset by power switch	overheat protection reset by power switch
Viscosity, max. (mPa s)	40,000	60,000	60,000	100,000	10,000	40,000	100,000	350,000
Stirring cap. (H ₂ O), max. (l)	20	25	25	40	40	100	100	100
Analog / digital interface	–	–	–	–	yes	yes	yes	yes
Shaft diameter, max. (mm)	8	10	10	10	10	10	10	10
Ambient temp. range (°C)	0 – 40	0 – 40	0 – 40	0 – 40	0 – 40	0 – 40	0 – 40	0 – 40
Max. relative humidity (%)	95, no condensation	95, no condensation	95, no condensation	95, no condensation	95, no condensation	95, no condensation	95, no condensation	95, no condensation
Dimensions (wxhxd) (mm)	71 x 250 x 172	82 x 206 x 176	82 x 206 x 176	82 x 211 x 176	72 x 206 x 176	82 x 211 x 176	82 x 211 x 176	82 x 292 x 176
Stay bar size (dia. x l) (mm)	13 x 300	13 x 160	13 x 160	13 x 160	13 x 160	13 x 160	13 x 160	13 x 160
Weight (kg)	2.7	3.0	3.0	3.3	2.8	3.7	3.7	4.7
Protection class (DIN EN 60529)	IP 20	IP 40	IP 40	IP 40	IP 40	IP 40	IP 40	IP 40

Standard supply voltage: 230 V - other voltages upon request, please specify for order



Certificate

To confirm the ability for
continuous operation
of the RZR Series Overhead Stirrers

The RZR Series Overhead Stirrers feature overtemperature safety circuits according to DIN EN 61010-1:2001 and DIN EN 61010-2-010:2003 and therefore are designed for continuous operation.

This statement is made under the precondition that all units are operated in accordance with the operation manual and in accordance with good practice standards for safety in laboratories, rules for accident preventions, and compliance with directions on hazardous materials.

Schwabach, January 2013

Jan Welzien

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