THE WORLDWIDE STANDARD FOR QUALITY, RELIABILITY AND INNOVATION

Ross has been the leading manufacturer of planetary mixers around the world since we introduced the original Double Planetary Mixer more than 50 years ago.

Today, Ross operates five plants in the USA, along with Ross-owned and licensed plants in Europe, Asia, the Indian Sub-Continent and Africa. The Ross family of planetary mixers includes sizes from 1/2-pint to 500 gallons – and a multitude of options to meet the needs of any industrial application.

THE WORLD’S LARGEST INVENTORY OF MIXERS IN STOCK FOR FAST DELIVERY

Our multi-million dollar inventory of mixers and blenders is your ultimate assurance that you can have the equipment you need, when you need it.

Test on your own process line – After you have tested a Ross planetary mixer in our laboratory, a Ross trial unit allows you to evaluate our mixer in your own plant before you buy it.
The original Pony Mixer – early 1900s.

The new DPM Double Planetary Mixer – designed for ultra-high viscosity materials.

The Ross record of innovation
Since Ross introduced the change-can Pony Mixer nearly 100 years ago, Ross innovations have delivered enormous increases in production capacity and flexibility. No other manufacturer can match Ross’s experience in building systems for vacuum mixing and drying, solvent recovery, hands-free discharge, and integrated process control.

Ross has led the evolution of planetary mixer design for more than 50 years. Today, our leadership continues with breakthrough designs in planetary stirrers and next-generation systems for digital control and data management.

Pioneering design in planetary mixing
The world’s first change-can mixing system
The original Double Planetary Mixer
Vacuum mixing technology and techniques
Integrated discharge systems
Orbital temperature probes
PowerMix* planetary/disperser mixers
HV Planetary Blades*

*Patented
POWER AND PROCESS FLEXIBILITY

Ideal for mixing and kneading viscous pastes or putty-like materials, the Ross Double Planetary can be engineered for operation in many industries, from hot melt adhesives to microelectronics manufacturing. Configurations are available to apply the precise combination of power and shear rates you require, and Ross technical experts are available in our laboratory to help optimize your mixing process.

The new DPM Double Planetary Mixer can handle many ultra-high viscosity materials that have generally required a double-arm kneader. The Double Planetary Mixer provides an alternative that is much less expensive, and requires less maintenance. Unlike the double-arm kneader, the standard Double Planetary Mixer has no packing glands or bearings submerged in the product zone. Sizes range from 1/2-pint to more than 500 gallons.

Now you can see an online demonstration of the Ross Double Planetary Mixer in action! Point your web browser to our homepage, and click on “Animations.”

www.mixers.com

Precise machining for superior vacuum capabilities – Vacuum hoods and interchangeable vessels are precisely machined for a perfect fit. The result – you can sustain an extremely high level of vacuum (29" Hg).

New HV Blades for ultra-high viscosities – The helical curve and graduated down-thrust cross-section of the new HV Blades prevent heavy materials from “climbing” up into the vacuum hood and charging ports. A smooth mixing action eliminates torque spikes during the mixing process and significantly increases the operating range of the Double Planetary Mixer.

Seal selection to match your performance requirements – Numerous options are available for sealing the drive shaft, stirrer shafts and the vacuum hood. Seal designs include such choices as Teflon chevron v-rings, dry-running mechanical seals, elastomeric o-rings, and lip seals in materials such as Nitrile, Viton, silicon and Kalrez.
THE MOST VERSATILE PLANETARY MIXER EVER CREATED

The patented Ross PowerMix offers remarkable versatility, which makes it ideal for applications in which a series of mixing stages require several types of mixing action.

In one continuous mix cycle, for example, the PowerMix can apply high shear and quickly disperse a paste in a low-viscosity liquid. As the material thins, the PowerMix can continue the mixing process even after the product has reached a high viscosity, non-flowing state.

With the versatility, the PowerMix can often combine the mixing action of two mixers—allowing you to retire two pieces of equipment—and cut the shop floor by 50% or more.

POWERMIX OPERATION

The PowerMix is unique because it combines a planetary blade and a high speed disperser with the characteristic versatility of a Double Planetary Mixer. Both agitators are in constant motion. The planetary blade continuously sweeps the vessel wall and feeds material directly into the high shear zone—a setting that accelerates the mixing process.

The Ross PowerMix can be equipped with your choice of high speed dispersers, high speed choppers, a high speed chopper and a high speed disperser, or a high speed chopper and a rotor/stator. A high speed disperser blade can also be supplied, with these products adjustable on a single shaft.

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OTHER HIGH PERFORMANCE OPTIONS

Ross design and application engineers are the best in the business. They can recommend a package of options that will ensure that your new planetary mixer will deliver superior performance for many years.

- Internal pressure
- Complete vacuum and solvent-recovery systems
- Explosion-proof designs
- Bottom and side-wall scrapers
- Jackets for heating and cooling the batch
- Sanitary design
- Complete vacuum and solvent-recovery systems
- Speciality coatings
- PDC control systems
- Solenoid operated valves for hydraulic lift and discharge valve—for remote/automated control
- Devices to measure and monitor torque
- Drum mixers
- Reverse lift designs

MATERIALS OF CONSTRUCTION

Ross is uniquely equipped to provide a Ross PowerMix or Double Planetary mixer built to handle your application reliably. With world-class fabrication facilities, we can work with practically any material—and guarantee that the job is done right.

- Hastelloy
- Stainless
- Titanium
- Carbon or stainless steel, including: ASTM A36
- SA216 Grade 70 for pressure vessels
- SA240 Type 304
- SA240 Type 316
- B626 special alloy hardened steel for shafts—Other specialty grades

SPECIALTY COATINGS

To provide an extra measure of protection against wear, Ross offers a variety of coatings for all its planetary mixers. These may be applied to the vessel wall, the agitators, or to all interior surfaces contacting the product.

- Kynar
- PTFE
- Teflon
- Hastelloy

DRIVE OPTIONS

A variety of drive systems are available for both the Ross Double Planetary and the Ross PowerMix. Electric drives are standard. Electronic variable speed control is a popular option, because it enables you to start the mixer under heavy load and fine-tune the mixing process. Ross can also provide hydraulic drives for planetary mixers in any size.

- Oil-lubricated
- Halar
- Nylon
- Teflon
Auxiliary systems that make your planetary mixing system even more efficient.

**VACUUM MIXING**
Ross is a world leader in vacuum mixing and drying. Applied to any Ross mixer or blender, vacuum can accelerate the mix/blend cycle, improve end-product quality, and help recover solvents that would otherwise escape into the plant atmosphere. Vacuum is also an effective tool for adding lightweight powders to a liquid batch — eliminating “dusting” in the plant and washing out solids quickly.

**INTEGRATED TURNTABLE MIXING/DISCHARGE SYSTEM**
An automated turntable mixing system can make your planetary mixing process significantly more productive. As the turntable indexes, the blades continuously advance along the periphery of the vessel, removing material from the vessel wall and transporting it to the interior. This positive mixing action serves several purposes:

**Complete mixing** — In only a few minutes, the blades pass through every point in the vessel and promote fast and thorough mixing.

**Efficient heat transfer** — By preventing a layer of material from accumulating on the vessel wall, the mixer ensures efficient heat transfer and even distribution of heat throughout the batch — critically important concerns for heat-sensitive materials.

**New, Ultra-high viscosity capacity with HV Blades** — The mixer can handle materials of extremely high viscosity. With conventional blades, the Double Planetary Mixer can operate up to approximately 300,000 centipoise.* With Ross HV Blades, specially designed for heavy materials, the operating limit is much higher — approximately 6 million centipoise.

* At very high levels, the measure of viscosity is an extremely subjective parameter. To provide a more meaningful benchmark, Ross offers the following formula for estimating the operating limits of any mixer. Contact Ross to discuss the key parameters that must be considered in your application.

**DOUBL**

**E PLANETARY MIXER OPERATION**
In a Ross Double Planetary Mixer, two planetary blad

**S Double Planetary Mixer Applications**

**With heavy duty construction and exceptional reliability, the \(") Double Planetary Mixer is ideal for scaling-up small-scale production leading to academia. The change can design is essential for couples and small-scale operations who want to simplify handling and mixing requirements.

**NEW BLADE DESIGNS**
Ross offers many lift options to accommodate an array of difficult materials. When using a Double Planetary Mixer, the lift option can be programmed through the control system to ensure your application. In this example, a 2-gal Double Planetary Mixer can handle a wide range of materials, from thick film pastes to soft pastes.

**Auxiliary systems that make your planetary mixing system even more efficient.**

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INTEGRATED TURNABOUT MIXING/DISCHARGE SYSTEM
An automated turnabout mixing system can make your planetary mixing process significantly more productive. As the turntable indexes, the change oils cycle through a sequence of charging, mixing and discharging. With a complete control system and material handling package, operator intervention can be virtually eliminated. Compact and platform-mounted, the system can cut labor costs while virtually eliminating operator intervention. Operators can now push a button instead of manually scooping the product out of the mix vessel. This reduces their exposure to the product and reduces the risk of injury while discharging heavy products by hand.

DOUBLE PLANETARY MIXER OPERATION
In a Ross Double Planetary mixer, two planetary blades rotate on their own axes, while they orbit the mix vessel on a common axis. The blades continuously advance along the periphery of the vessel, removing material from the vessel wall and transporting it to the interior. This positive mixing action serves several purposes:

Complete mixing – In only a few minutes, the blades pass through every point in the vessel and promote fast and thorough mixing.

Efficient heat transfer – By preventing a layer of material from accumulating on the vessel wall, the mixer ensures efficient heat transfer and even distribution of heat throughout the batch – critically important concerns for heat-sensitive materials.

Now, ultra-high viscosity capacity with HV Blades – The mixer can handle materials of extremely high viscosity. With conventional blades, the Double Planetary Mixer can operate up to approximately 1.5 million centipoise. With Ross HV Blades, specially designed for heavy materials, the operating limit is much higher – approximately 6 million centipoise.

* At very high loads, the viscosity of a mixture is an extremely sensitive parameter to the vessel shape, volume, and processing conditions, influencing the operating limits of any motor. Contact Ross to allow the best performance to be calculated in your application.

SELECT THE RIGHT BLADE DESIGN
Select the right blade design, and the right flow pattern, to optimize the mixing process in your application.

Blade Motion During Mixing
- Finger blades – often preferred for special applications that require the mixing of delicate solids and fibers. These blades can also be custom fabricated to meet special handling requirements. (Blades are designed to turn back toward face, and must meet the specific requirements of your application)

- Rectangular blades – often preferred for special applications that require the mixing of delicate solids and fibers. These blades can also be custom fabricated to meet special handling requirements. (Blades are designed to turn back toward face, and must meet the specific requirements of your application)

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Double Planetary Mixer Applications
- Abrasives – Grinding wheels
- Adhesives – Stovens, adhesives, cauls
- Batteries – Conventional and advanced fuel cells
- Dental Compounds – Plastics, gels
- Electronics – Dense metallic slurries and acid blue pastes
- Paints – Drying and blending
- Plastics – Synthesis, plastisols
- Waste Treatment – Solidification for disposal

Ross provides many designs specialized to meet the needs of various applications. Design characteristics, such as major customers, can be tailored to specific requirements in order to ensure the very best performance and efficiency.
The Ross PowerMix

THE MOST VERSATILE PLANETARY MIXER EVER CREATED

The patented Ross PowerMix offers remarkable versatility, which makes it ideal for applications in which a series of mixing stages require several types of mixing action.

In one continuous mix cycle, for example, the PowerMix can apply high shear and quickly disperse a powder in a low-viscosity liquid. As the material thins, the PowerMix can continue the mixing process even after the product has reached a high viscosity, non-flowing state.

With this versatility, the PowerMix can often combine the mixing action of two mixers – allowing you to retire two pieces of equipment – and cut the cycle time by 50% or more.

POWERMIX OPERATION

The PowerMix is unique because it combines a planetary blade and a high speed disperser with the characteristic planetary motion of a Double Planetary Mixer. Both agitators are in constant planetary motion. The planetary blade continues to sweep the vessel wall and feeds material directly into the high shear zone – accelerating the mixing process.

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The Ross PowerMix can be supplied with your choice of high speed dispersers. Here, a high speed disperser (B) is used, while a high speed disperser (B) and a high speed disperser (B) revolve on their own axes, while they both orbit the vessel on a common orbiting high speed disperser – accelerating the mixing process.

OTHER HIGH PERFORMANCE OPTIONS

Ross design and application engineers are the best in the business. They can recommend a package of options that will ensure that your new planetary mixer will deliver superior performance for many years.

- Internal pressure
- Complete vacuum and solvent-recovery systems
- Explosion-proof designs
- Jackets for heating and cooling the batch
- Bottom and side-wall scrapers
- PLC control systems
- Solenoid operated valves for hydraulic lift and discharge valves – for remote/automated control
- Devices to measure and monitor torque
- Drum mixers
- Reverse lift designs

SPECIALTY COATINGS

To provide an extra measure of protection against wear, Ross offers a variety of coatings for all its planetary mixers. These may be applied to the vessel wall, the agitators, or to all interior surfaces contacting the product.

- Kynar
- Teflon
- Tungsten carbide
- Nylon
- Hastelloy
- Halar
- Titanium
- Kynar
- 8620 special alloy hardened steel for shafts
- Other specialty grades

MATERIALS OF CONSTRUCTION

Ross is uniquely equipped to provide a Ross Double Planetary or PowerMix or Double Planetary mixer built to handle your application reliably. With world-class fabrication facilities, we can work with virtually any material – and guarantee that the job is done right.

- Carbon or stainless steel, including: ASTM A36 SA216 Grade 70 for pressure vessels SA240 Type 304 SA240 Type 316
- 8620 special alloy hardened steel for shafts
- Other specialty grades

DRIVE OPTIONS

A variety of drive systems are available for both the Ross Double Planetary and the Ross PowerMix. Electric drives are standard. Electronic variable speed control is a popular option, because it enables you to start the mixer under heavy load and fine-tune the mixing process. Ross can also provide hydraulic drives for planetary mixers in any size.

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POWERMIX OPERATION

The PowerMix is unique because it combines a planetary blade and a high speed disperser with the centrifugal planetary motion of a Double Planetary Mixer. Both motions are in constant rotation. The planetary blade continuously sweeps the vessel wall and feeds material directly into the high shear zone of the orbiting high speed disperser – accelerating the mixing process.

OBTAINING THE MOST VERSATILE PLANETARY MIXER

Many PowerMix units, with a stainless steel jacket and a thermocouple for monitoring batch temperature during the mix cycle. For applications involving heat-sensitive materials – in which thermal control is critical throughout the mix cycle – Ross engineers have developed a sensor that orbits the vessel and travels through the batch material. Readings are extremely accurate.

.servlet://www.mixers.com/ Animations.html

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• Internal pressure
• Complete vacuum and solvent recovery systems
• Explosion-proof designs
• Jackets for heating and cooling the batch
• Rotor and sidewall scrapers
• Discharge systems for bulk discharge and cartridge filling
• Variable speed
• PLC control systems
• Solenoid operated valves for hydraulic lift and discharge valve – for remote/automated control
• Devices to measure and monitor torque
• Drum mixers
• Reverse lift designs

MATERIALS OF CONSTRUCTION

Ross is uniquely equipped to provide a PowerMix or Double Planetary mixer built to handle your application reliably. With world class fabrication facilities, we can work with virtually any material – and guarantee that the job is done right.

• Hosefab
• Aluminum
• Stainless
• Carbon or stainless steel, including:
  • ASTM A36
  • SA240 Type 304
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  • 8620 special alloy hardened steel for shafts
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Auxiliary systems that make your planetary mixing system even more efficient.

**VACUUM MIXING**
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**INTEGRATED TURNTABLE MIXING/DISCHARGE SYSTEM**
An automated turntable mixing system can make your planetary mixing process significantly more productive. As the turntable indexes, the change cans cycle through a sequence of charging, mixing, discharging, and cleaning. With a complete control system and material handling package, operator intervention can be virtually eliminated. Compact and platform-mounted, the system can cut labor costs while it improves end-product consistency and increases production.

**AUTOMATIC DISCHARGE SYSTEMS**
A follow-up plate discharge system, actuated hydraulically or pneumatically, can dramatically improve your production while it improves safety in your plant.
With a mix vessel precisely machined in our own fabrication plant, discharge is fast and complete — even for many highly viscous materials. The batch material is often discharged directly into bulk packaging, retail packaging, or conveying equipment.

By automating the discharge process, the system also reduces the risk of injury. Operators can now push a button instead of manually scooping the product out of the mix vessel. This reduces their exposure to the product and reduces the risk of injury while discharging heavy products by hand.

**DOUBLE PLANETARY MIXER OPERATION**
In a Ross Double Planetary Mixer, two planetary bladest rotate on their own axes, while they orbit the mix vessel on a common axis. The blades continuously advance along the periphery of the vessel, removing material from the vessel wall and transporting it to the interior. This positive mixing action serves several purposes.

**Complete mixing** — In only a few minutes, the blades pass through every point in the vessel and promote fast and thorough mixing.

**Efficient heat transfer** — By preventing a layer of material from accumulating on the vessel wall, the mixer ensures efficient heat transfer and even distribution of heat throughout the batch — virtually important concerns for heat-sensitive materials.

Now, ultra-high viscosity capacity with HV Blades — The mixer can handle materials of extremely high viscosity. With conventional blades, the Double Planetary Mixer can operate up to approximately 1.5 million centipoise.* HV Ross HV Blades, specially designed for heavy materials, the operating limit is much higher — approximately 6 million centipoise.

* At very high levels, the measure of viscosity is an extremely subjective characteristic. Some materials, for example, are capable of all sorts of waxy and oily behavior. In such cases, special testers may be required for meaningful results. For example, the Brookfield viscometer tests practical materials and provides a consistent method of comparison.

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* At very high levels, the measure of viscosity is an extremely subjective characteristic. Some materials, for example, are capable of all sorts of waxy and oily behavior. In such cases, special testers may be required for meaningful results. For example, the Brookfield viscometer tests practical materials and provides a consistent method of comparison.
Ross offers a complete line of control systems that are pre-programmed/pre-wired for turn-key start-up and long-term flexibility. With many options available, Ross can build multi-agitator and PLC/PC-based control systems with all the functionality you need for efficient data acquisition and process control.

Our new streamlined, built-in designs reduce cabling while they simplify maintenance. Routine operation is also simplified. Intelligent menus reduce the risk of error while they help improve process consistency.

Ross control options include turn-key automation, datalogging, trend analysis, and a simple interface with your PLC and production management system.
LONG TERM QUALITY ASSURANCE – IN OUR TEST AND DEVELOPMENT CENTER

Before you buy any mixer or blender, Ross strongly recommends a test in a well-equipped analytical laboratory. In the Ross Test and Development Center, you will have an opportunity to test using your own ingredients and a variety of equipment. A close simulation of actual conditions on your process line is essential to accurately predict machine performance.

Once you’ve identified the right mixer for your application, our mixing experts will help you fine-tune your process. Sophisticated analytical instruments enable us to document each test sequence and proceed methodically.

To learn more about our extensive test facilities, visit our website: www.mixers.com.

SUPPORT YOU WON’T FIND ANYWHERE ELSE

Ross planetary mixers are engineered to outlast all others. They can provide many decades of service.

Throughout the life of your mixer, Ross stands beside you with a complete package of support.

• **World class experts on call** – Experts with years of experience maintaining planetary mixers.

• **Chances are we have your parts in stock** – We maintain the world’s largest inventory of spare parts – so you don’t have to. Even if you suddenly need a gearbox for a 30 year old Ross Double Planetary Mixer, chances are we have one ready to ship immediately. We ship most orders for spare parts in less than 48 hours.
Contact Ross today for detailed information on any of the products and services we offer, or to schedule a test in the Ross Test & Development Center, call 1-800-243-ROSS in the USA, or 631-234-0500. Fax: 631-234-0691. E-mail: sales@mixers.com. Or visit Ross on the web: www.mixers.com