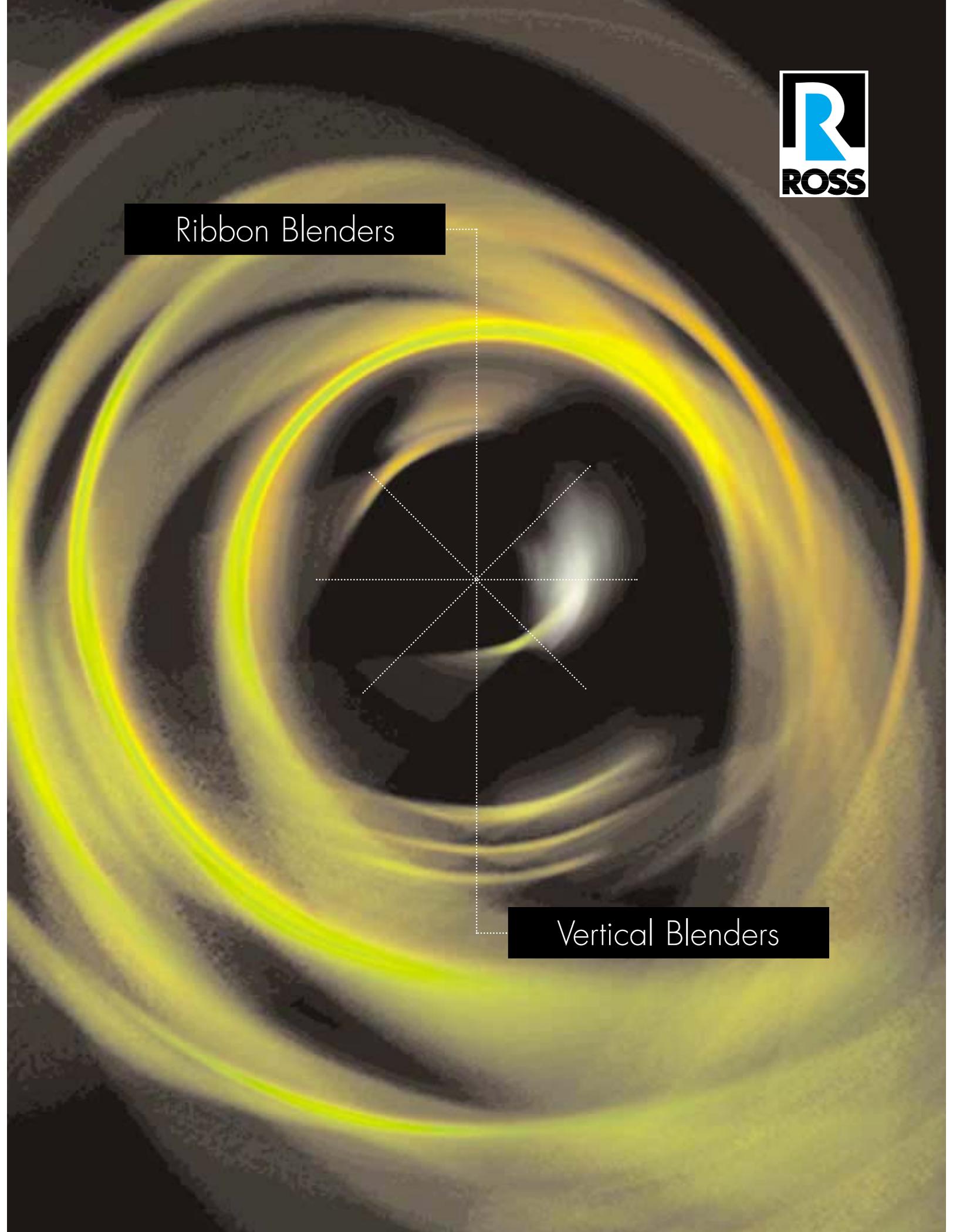




Ribbon Blenders

Vertical Blenders



Ross Ribbon & Vertical Blenders

WORLD CLASS MANUFACTURING – AND WORLD CLASS VALUE

Ross has been building the most advanced mixing and blending equipment for more than 150 years. Our Ribbon Blenders, Paddle Blenders, Vertical Blenders and Vacuum Dryers are used today in all the process industries, and in virtually every industrialized nation.

Now, with sophisticated manufacturing facilities on four continents, Ross can deliver a combination of economy, productivity and fast delivery that no other company can match.



THE ROSS DIFFERENCE – INNOVATIVE DESIGN

Take a close look at a Ross Ribbon Blender or Vertical Blender. You will see that all blenders are not alike.

Ross design innovations – like the absence of a lower support bearing in our Vertical Blender – give Ross customers a terrific advantage. All Ross Vertical blenders are built with an “unsupported screw,” because our sophisticated engineering and fabrication facilities are uniquely equipped to handle the job (even in very large sizes).

THE ROSS DIFFERENCE – SUPERIOR FABRICATION

Clean design and a meticulous finish can produce faster blending cycles, more thorough discharge, and easier clean-up. With fabrication facilities that dwarf those of our competitors, we can build virtually any blender in-house, from start to finish. This is the best assurance you can have of consistent quality and low prices. We can engineer a Ross Blender to meet any requirements you may have – from vacuum/pressure or sanitary operation to fabrication with advanced alloys to meet your process requirements. We can also build blenders to meet virtually any industry-specific regulations.

THE ROSS DIFFERENCE – IMMEDIATE DELIVERY

Ross maintains the world’s largest inventory of mixers and blenders in stock, so you can have the blender you need when you need it – now.

If we have a Ribbon Blender in stock that meets your specifications, we will ship it within 48 hours.

If you need a custom design, or a blender with features we do not normally stock, we can provide a great alternative – a trial/rental blender that will give you an immediate increase in capacity while your new blender is being built. A trial/rental also gives you an opportunity to confirm your blender selection on your own process line before you buy it.



THE BLENDER THAT FITS YOUR APPLICATION PERFECTLY

The space available on a plant floor is often a key factor in selecting the blender that will deliver the right combination of performance and space-efficiency. When floor space is tight, a Vertical Blender can provide excellent blending performance in a very small footprint. When overhead space is limited, a Horizontal Ribbon Blender offers easy charging, gentle blending and thorough discharge – without having to raise the roof. To make sure you are selecting the right blender, you should consider both alternatives.

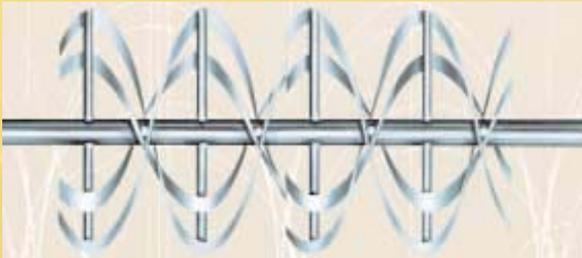
Since Ross manufactures a complete line of both horizontal Ribbon Blenders and Vertical Blenders, we can guarantee that you will find a Ross blender that solves your blending requirements.

Ribbon Blenders

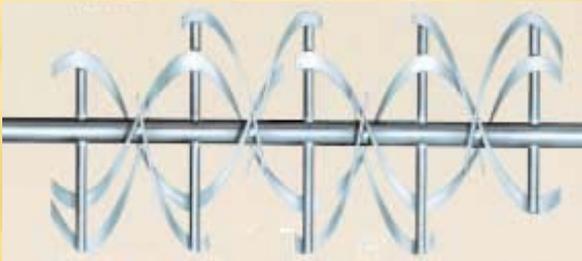
Ross Ribbon Blenders meet the toughest standards for quality and long-term performance – ours. Our attention to detail is meticulous, because every detail in design and fabrication translates to an increase in production.

BALANCED RIBBON DESIGN

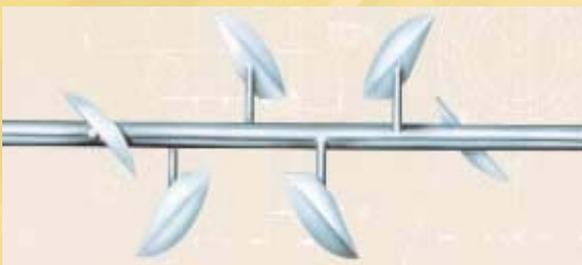
Precisely designed and fabricated ribbons and troughs ensure that blending cycles are fast, with well-balanced lateral and radial transfer of your ingredients. All Ross Ribbon Blenders include inner and outer ribbons to accelerate the blending cycle.



This continuous ribbon, designed for center discharge, is the preferred choice for most blends. It provides vigorous lateral and axial movement of your bulk material.



An interrupted ribbon draws less power than a continuous ribbon.



Running at about 2/3 the speed of a comparable Ribbon Blender, the Ross Paddle Blender provides gentler blending with less heat development. It also offers lower risk of binding material between the agitators and the trough.



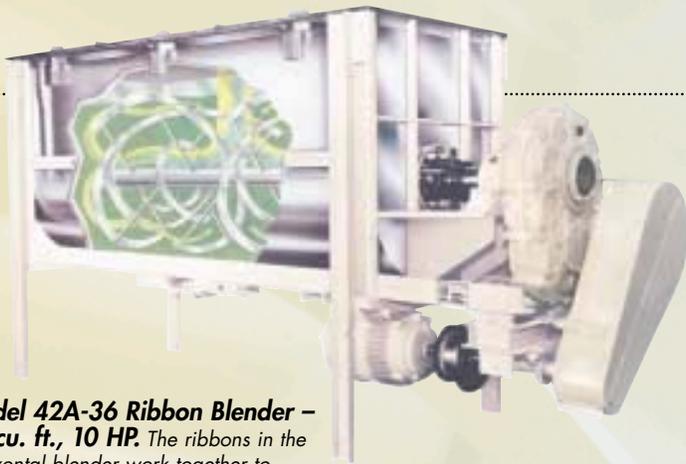
- All interior corners have a radius to prevent material from collecting in corners and creating problems during the discharge/cleaning cycle.
- Clearances are meticulously controlled.
- All internal welds are ground smooth.
- A manually-actuated Slide Paddle Valve or Slide Knife Gate Valve is generally the first choice for a Ross Ribbon Blender. For applications including vacuum or pressure operation, a Spherical Disk Valve, Knife Gate Valve or Ball Valve provides a positive seal. If no dead space can be tolerated, a Flush Plug should be considered.

DRIVES FOR SLOW START-UP AND VARIABLE-SPEED BLENDING

By equipping your blender for slow start-up, you eliminate the need for an oversized motor and shaft – which would otherwise be necessary for a dead-load start. Optional electronic soft start controllers can be programmed to allow a slow start under full load and protect the system against a spike in start-up torque and amperage.

Variable-speed blending can be advantageous in many applications – especially for R&D or in any situation where numerous products are blended and changeover is frequent. By adjusting the speed of the ribbon, you can “tune” the blender to reach the greatest possible efficiency for each product. Variable frequency drives provide an excellent choice, especially for materials of low to medium density. These drives allow both a slow-speed start and infinitely adjustable speed control during the blending cycle.

Constant torque mechanical variable-speed drives are available to provide speed control for blending materials of higher density.



Model 42A-36 Ribbon Blender – 36 cu. ft., 10 HP. The ribbons in the horizontal blender work together to move the bulk in both axial and transverse directions.

DESIGN OPTIONS

Ross offers a broad selection of options, including:

- High speed choppers to quickly break apart agglomerates.
- Special ribbon/paddle designs to accommodate virtually any application
- Spray nozzles to uniformly add liquids
- Special-alloy wear plates and coatings to protect against premature wear when blending abrasive materials
- Many choices for valves, seals and stuffing boxes (see page 9 for details)

Model 42N-25 Ribbon Blender – 25 cu. ft., 10 HP. This Ribbon Blender, built in stainless steel and designed for center discharge, is equipped with a control panel designed and built by Ross Systems & Controls.



Model 42A-100 Ribbon Blender – 100 cu. ft., 25 HP. Ross offers many sanitary Ribbon Blender designs to meet the specifications of virtually any industry. This sanitary Paddle Blender is equipped with an insulated and sheathed dimpled jacket for close control of interior temperatures during the blending cycle.

Model 42N-1 Ribbon Blender – 1 cu. ft., 3/4 HP, stainless steel. Ross offers a complete line of Ribbon Blenders, with sizes for laboratory development and small-scale production through high-volume production.



SIZES

Standard sizes range from 1/2 cu. ft. to 515 cu. ft.

Vertical Blenders

GENTLE AND FAST BLENDING, WITH NO HEAT BUILD-UP

Ross Vertical Blenders provide an excellent design alternative for applications when your product is shear sensitive or your process parameters are critical

Products that require low-impact blending are best handled in a Ross Vertical Blender. The blending action of the slow-turning blending screw is far more gentle than the agitators in a Ribbon Blender of the same working volume.

Slower speed blending is also advantageous for heat-sensitive products, since the blending action of a ribbon can generate more heat than that of a mixing screw.



Model V-32 Vertical Blender – 5-1 HP.

This vacuum blender is built in stainless steel and includes a jacket for heating or cooling, a high speed chopper and a spray nozzle for liquid introduction.

BATCH FLEXIBILITY

Because of the geometry of the cone, the Ross Vertical Blender can operate efficiently with batches as small as 10% of blender capacity. (A ribbon blender generally requires a minimum of 30-40% of full capacity.)

THOROUGH DISCHARGE AND EASY CLEANING

The Ross Vertical Blender is also your best choice when you need virtually 100% discharge, with a minimum of cleaning. With no lower bearing needed to steady the blending screw, the Ross “unsupported screw” design is especially efficient in discharge – and it completely eliminates a notorious maintenance headache in most Vertical Blenders. The Vertical Blender is easier to clean than a ribbon blender, since you never have to disassemble packing glands.

LOWER RISK OF CONTAMINATION

If your application requires the greatest possible protection, the right choice is a Ross Vertical Blender. With no packing gland in the product zone, and with special seal designs available to provide the ultimate protection from drive lubricants, your products are safe from the contamination problems that are common in other blender designs.

ECONOMICAL BLENDING

The Vertical Blender consumes up to 50% less power than a comparable Ribbon Blender. The efficiency of the Vertical blender can reduce operating cost, due to its low horsepower to volume ratio.

SIZES

Standard sizes range from 1 cu. ft. to over 500 cu. ft.

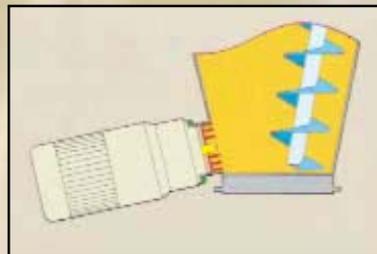
DESIGN OPTIONS

Ross offers a broad choice of options for Ribbon Blenders and Vertical Blenders.

Option	Ribbon Blender	Vertical Blender
Vacuum/pressure, with ASME stamp	✓	✓
High speed choppers	✓	✓
Special lower-cone designs for accelerated discharge in difficult applications		✓
Spray nozzles	✓	✓
Sanitary design	✓	✓
CIP/SIP capability	✓	✓
Special-alloy wear plates and coatings to protect against premature wear when blending abrasive materials	✓	✓
A variety of discharge valve designs (see page 9 for details)	✓	✓



In a Vertical Cone Screw Blender, the blending screw orbits the vessel wall while it turns and gently lifts material upward. Blending and heat transfer are extremely efficient. Discharge is fast, especially with an innovative screw design that is unsupported at the lower end.



High speed choppers are added to many Vertical Blender designs to accelerate the blending process by breaking down lumps.



Model V-1 Vertical Blender – 1 cu. ft., 1/2-1/3 HP. Vertical Blenders are available for the laboratory through pilot plant and full-scale production.



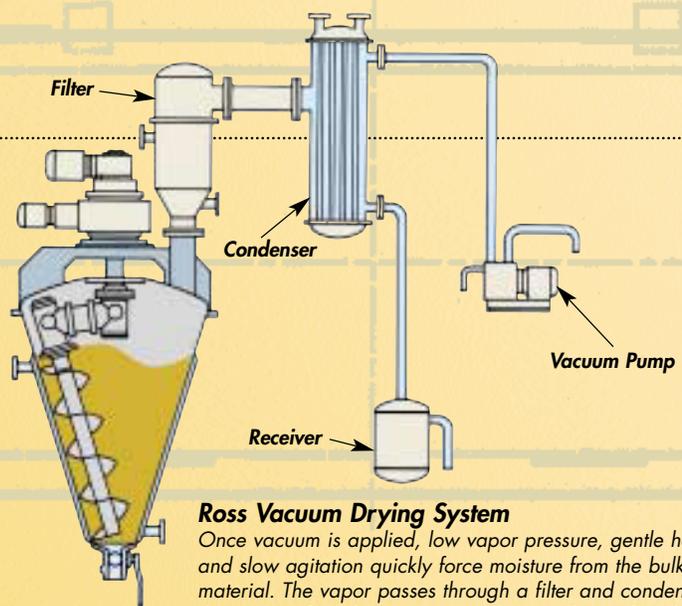
Model V-64 Vertical Blender – 64 cu. ft., 15-1 1/2 HP. A vacuum model constructed in stainless steel. The interior of this unit is polished to a 140 grit finish. The cone includes a sectionalized dimpled jacket with a removable bottom section.

Vacuum Dryers

VACUUM DRYING

Trust the experts for controlled drying and efficient solvent recovery. Requiring only gentle heat to drive off moisture or solvents, vacuum drying is an excellent method for drying heat-sensitive materials – including many foods, botanicals and pharmaceutical products – without fear of thermal degradation. Vacuum allows you to take the batch material quickly through a series of changes in physical state – from slurry to a paste, and from a paste to a dry powder.

A well-equipped vacuum drying system allows you to draw off solvents so they can be condensed and captured. This prevents them from contaminating the atmosphere (both inside and outside the plant). They are then available for re-use, or they can be safely discarded to meet environmental requirements.



Ross Vacuum Drying System

Once vacuum is applied, low vapor pressure, gentle heat and slow agitation quickly force moisture from the bulk material. The vapor passes through a filter and condenser, then is transferred to a receiver. The vessel is jacketed to control internal heat.



Model 42C-150 Ross Cylindrical Dryer – 150 cu. ft., 100 HP is extremely efficient, thanks to its cylindrical design. Products that persistently hang up on the trough of an ordinary U-shaped Ribbon Blender remain in the batch, since they are continuously removed by the outer ribbons. Heat transfer is also highly effective, since the jacket surrounds the entire cylinder.



Model 42A-90 Ribbon Blender – 90 cu. ft., 40 HP. Ross Vacuum Dryers, like this one built for a medical application, can be fabricated in a wide variety of materials. All wetted parts on this unit are Hastelloy. A space-saving drive design helps to conserve space on the plant floor.

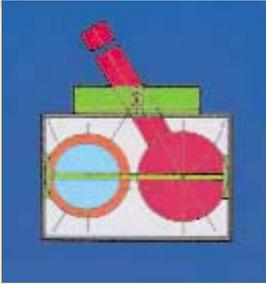


Model V-10 Vertical Blender – 3-1 HP. This stainless steel blender is designed for vacuum/pressure operation to 90 psi. It also includes a 125 psi insulated and sheathed jacket and a sampling port through the cone wall.

Optional Spherical Valve – pneumatically operated, this valve minimizes dead space and provides a large discharge opening.



DISCHARGE VALVES

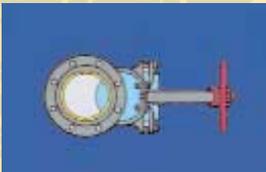


Standard Slide Paddle Valve (A) or Slide Knife Gate Valve (B) – available for manual or pneumatic operation.

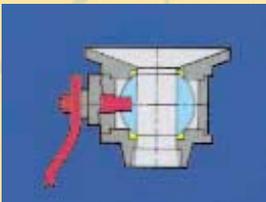
(A)



(B)



Optional Knife Gate Valve – ideal for dust-tight, liquid-tight, or vacuum-tight operation.

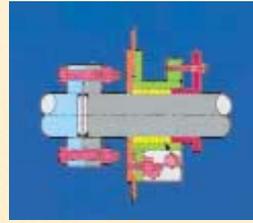


Optional Ball Valve – For vacuum/pressure blending or liquid/solid blending.

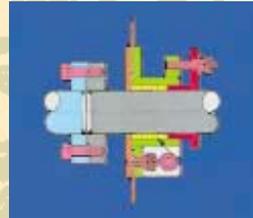


Optional Flush Plug Valve – equipped for manual or pneumatic operation, the Flush Plug Valve eliminates dead spots in the Ribbon Blender trough.

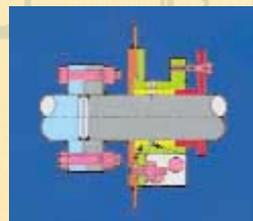
STUFFING BOXES AND SEALS



Standard Stuffing Box – a split housing is easily disassembled for cleaning and re-packing. A Teflon-impregnated, braided packing is standard.



Optional Sanitary Stuffing Box – Easily disassembled with hand tools, this stuffing box includes special molded Chevron-Teflon packing rings.



Optional Air Or Liquid Seal – Air or liquid enters the seal through a Lantern Ring and provides positive pressure to prevent the intrusion of contaminants that might threaten the shaft and seal integrity.

STANDARD DESIGNS AND OPTIONS

Ross Ribbon Blenders, Vertical Blenders, and Vacuum Dryers are available with plenty of flexibility in standard designs, and many options.

MATERIALS OF CONSTRUCTION

Type 304 Stainless Steel is standard. Optional materials include Carbon Steel, Hastelloy, abrasion-resistant steels, and other specialty stainless, carbon and alloy steels.

JACKETING FOR HEATING/COOLING

Standard double-wall baffled or dimpled jackets are available, along with thermocouples and all other system components to ensure close thermal control during the blending cycle. ASME Code stamp is also available.

COVER OPENINGS AND MANWAYS

Ross fabricates its Ribbon Blenders and Vertical Blenders from start to finish in our own fabrication plant, so you have complete control over your vessel and cover designs. Special cover openings are available, along with manways and such safety features as grates for oversized charging ports.

Test Center & Support



THE ROSS DIFFERENCE – SEE IT FOR YOURSELF

The Ross Test and Development Center gives you 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 blender for your application, our engineers 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.dryblenders.com.

CONTROL SYSTEMS FOR BLENDING AND DRYING

Ross can provide a control system ideally configured for any blending application – atmospheric blending, vacuum blending or vacuum drying. The control can be equipped to regulate all process variables and maintain optimal levels of shear, vacuum and heat transfer. Changing parameters can easily be programmed into the control to accommodate a variety of product formulations and to ensure consistency from batch to batch.

With many options available, Ross can build multi-agitator and PLC/PC-based control systems with all the functionality you need for efficient process control and data acquisition.

SUPPORT YOU WON'T FIND ANYWHERE ELSE

Ross Ribbon Blenders and Vertical Cone Screw Blenders are engineered to provide many *decades* of service. Throughout the life of your blender, Ross stands beside you with a complete package of support. With the world's largest inventory of spare parts, we ship most orders 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.ribbonblenders.com

www.verticalblenders.com

www.mixers.com





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