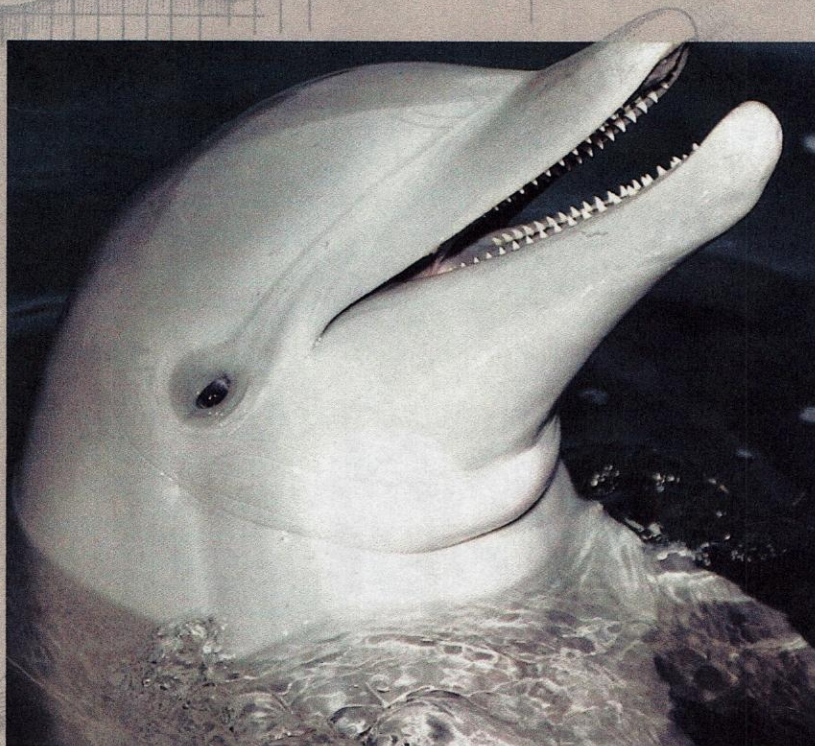


Evolutionary Engineering



To the bottlenose dolphin the world of light is a pale reflection of the resonant color he paints with sound in the darkness of the deep sea. Contour, texture, depth and motion to him are more than just dimensions reported with simple echos. He visualizes an underworld seascape we could never imagine...

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VERSAMIX



The dolphin's three-dimensional horizon is alive with color and emotion conceivable only by a brain that is a mirror image of our own.

The similarities between the bottlenose dolphin's brain and our own is eerie. The brain weight of the adolescent dolphin is nearly the same as ours. As he grows he learns to speak with other dolphins – not with the repetitive speech patterns of smaller-brained creatures like frogs, fish, monkeys and bats, but with a fast-growing vocabulary. Even more startling, he learns to *learn*, then communicate what he has discovered to other dolphins nearby.

The dolphin's brain is a computer with tremendous computational power and memory, and his ability to hear is at least 10 times more acute than ours. He broadcasts layers of sonic signals, each with varying wavelength, frequency and volume, lacing them together in a complex weave. With sound traveling underwater 4 1/2 times faster than in air, a flood of data pours back into his brain and turns the darkness of deep ocean to light. His shrill whistles and clicks translate to speech, identification, depth perception and navigational fixes.

Our struggle to achieve inter-species communication with the bottlenose dolphin symbolizes our dream of similar communication with others beyond the earth who may be as intelligent as we are. The grammar and syntax of the dolphin is still mysterious, but the intelligence of his communication is unmistakable. Descended from mammals who gave up the land for the sea 60 million years ago, today he is still among the most intuitive and intelligent creatures on earth.

Discovering true intelligence in engineering is rare. Beyond simple imitation, intelligent design requires sharp intuition and a desire to grow. At Ross, products like the VersaMix demonstrate why Ross has remained the leader in the custom mixing business for 150 years.

VERSAMIX

The Ross VersaMix is a proven multi-agitator mixer designed to meet the rapidly changing requirements of today's major process industries.

VersaMix units are tailored to suit the individual process demands of customers manufacturing products that range from low to high viscosity consistencies. This is possible by selecting the best combination of the three agitation systems offered with this unit.

Standard sizes are available from a two gallon laboratory size through a large 4,000 gallon production model. A wide selection of drives for the various component mixers and many optional features are offered for each machine.

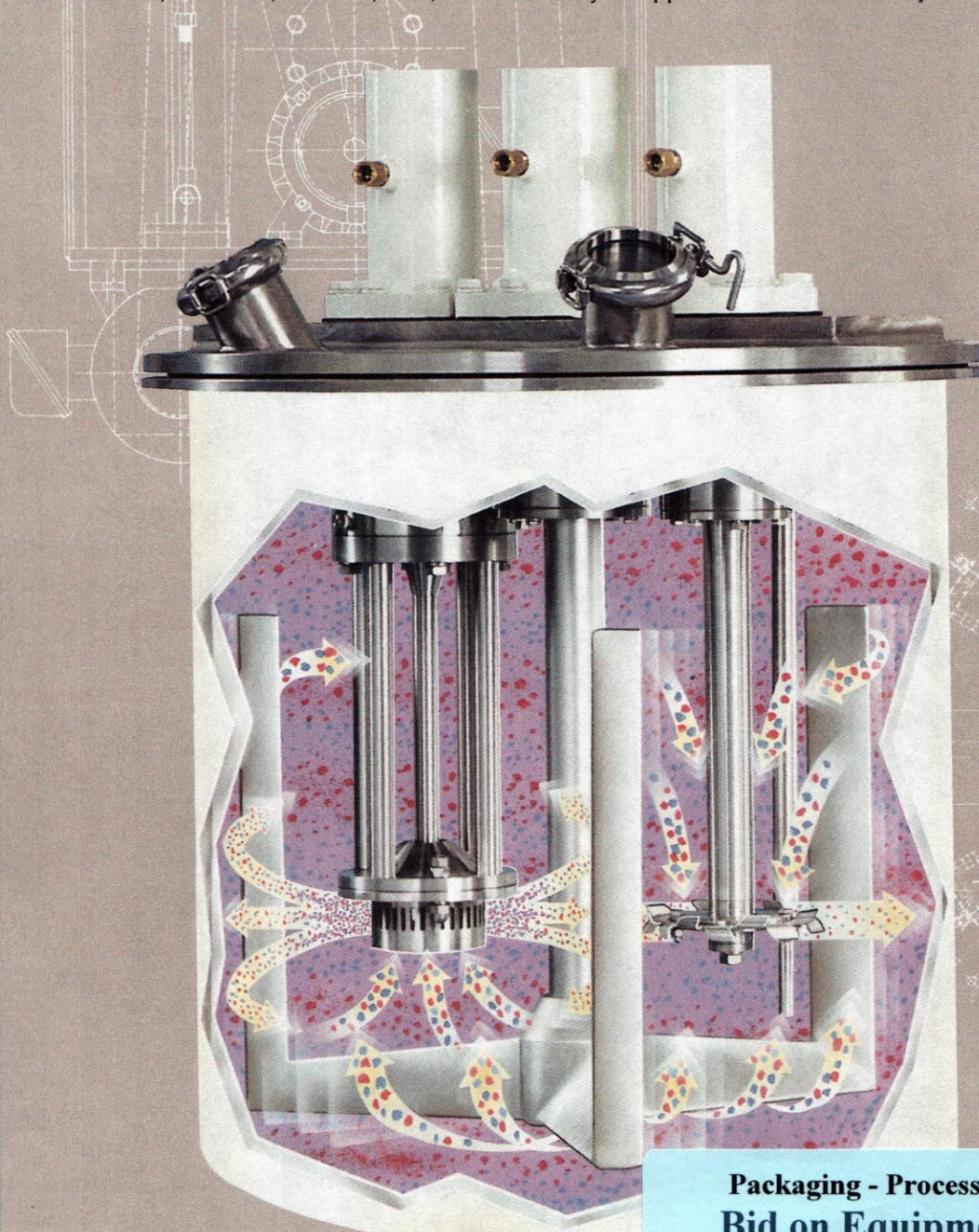
Applications are extensive in the adhesives, cosmetics, chemical, food,

pharmaceutical and plastics industries.

The Ross change can design also multiplies productivity, by allowing you to simply roll a second vessel into position for mixing while the first vessel is being discharged. Equipment utilization and production throughput both go up dramatically.

To match any application, Ross production units generally range from 10 to 4000 gallon capacity – with larger sizes available in special applications. Single speed, two speed and variable speed drives (electric or hydraulic) are available.

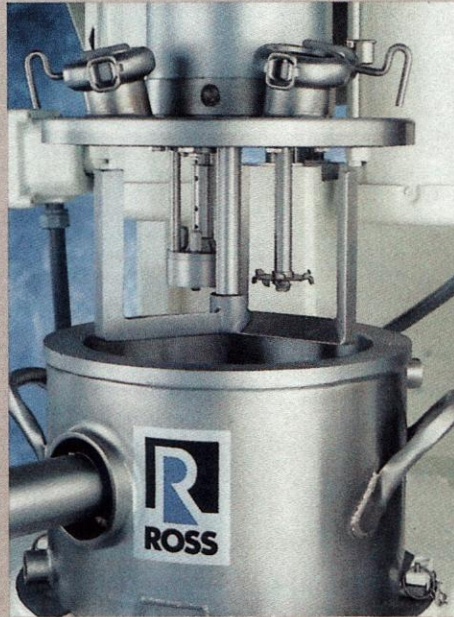
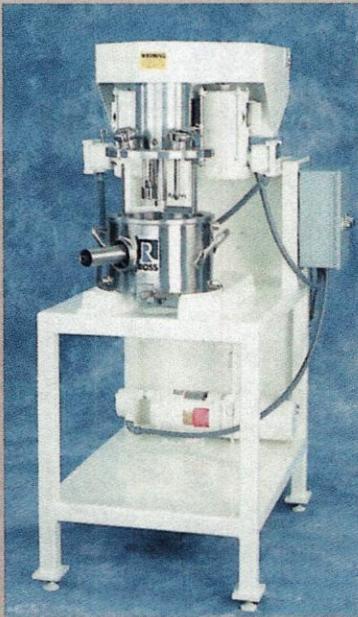
High quality products can be produced and achieved in less time at lower cost. We can prove the superiority of the VersaMix for your application in our laboratory.



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LABORATORY ▲

Research and development results are readily scaled up to pilot plant and production equipment. The 2 gallon laboratory model allows users to develop new products with the knowledge that their work can be duplicated on larger production equipment. This machine includes stainless steel wetted parts, a jacketed mix bowl, vacuum design, Three-Wing Anchor, Mixer Emulsifier with three interchangeable heads and a conventional High Speed Disperser. All agitators include electronically controlled variable speed drives.

STANDARD ►

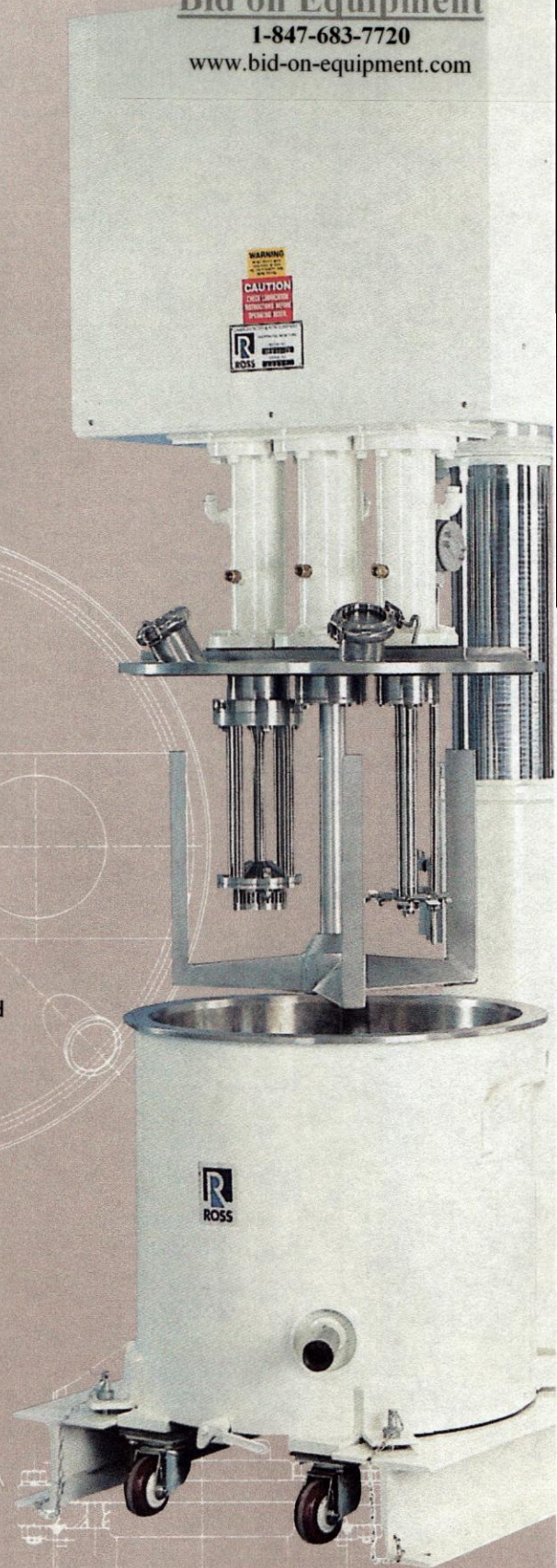
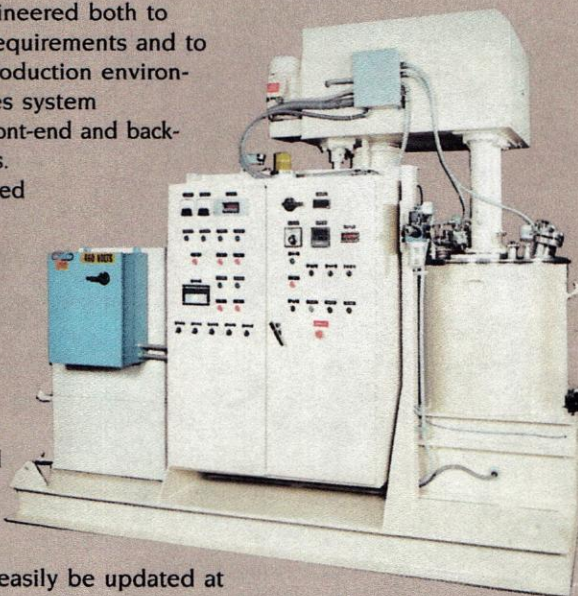
Standard units include stainless steel wetted surfaces. All exterior surfaces are cleaned and painted with a high quality two-component epoxy coating. The drives are mounted in a manner to make them easily accessible for routine maintenance procedures. Bearings, shaft seals and sealing gaskets are selected so they can be replaced in a minimum of time.

Agitator shafts are supported to minimize possible shaft deflection and potential mechanical failures. The rugged construction of the VersaMix lends itself to long term trouble-free operation.

INTEGRATED PRODUCTION SYSTEMS ▼

All Ross mixers are engineered both to meet your production requirements and to fit properly into your production environment. Often this requires system additions at both the front-end and back-end of the mixing process.

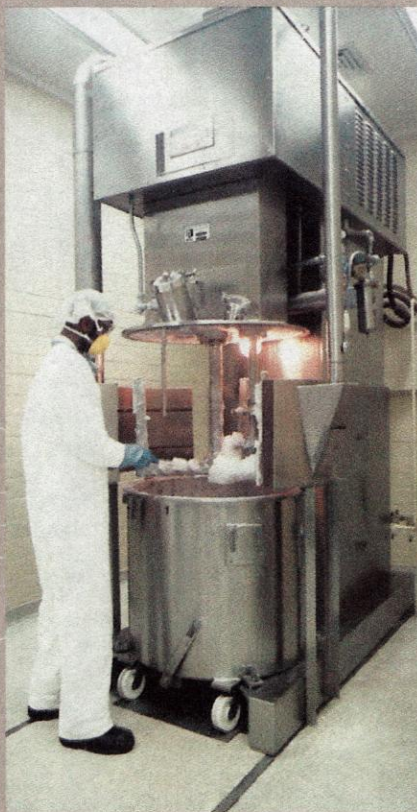
Complete, computerized control systems automate the mixing process and ensure both consistency and flexibility. All mixing parameters – from individual agitator control to vacuum drying and programmed thermal control at key mixing stages – can be pre-set for a variety of mix recipes. These can easily be updated at any time, as production evolves.



SANITARY ▼

Sanitary change can models are offered in the same wide range of sizes as are the standard models. They are constructed in either type 304 or 316 stainless steel. Corners are rounded and wetted stainless surfaces are polished to a 140 grit finish to facilitate cleaning between batches.

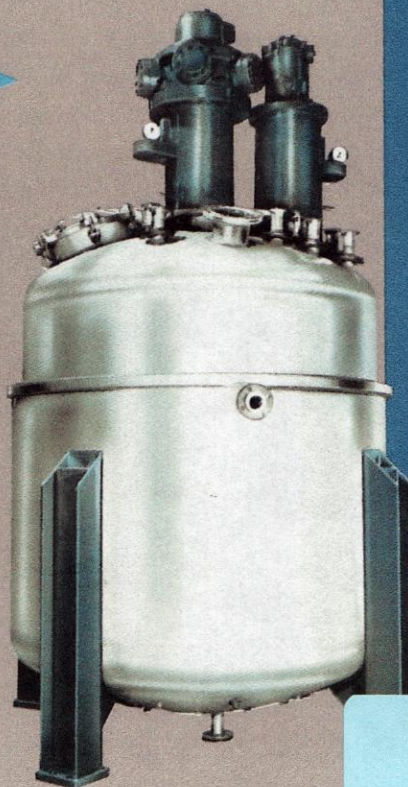
The stainless steel panels covering the drives and hydraulic lifting mechanism are all easily removed permitting access as required.



FIXED TANK DESIGN ►

The rugged fixed tank configuration is manufactured in sizes thru 4,000 gallons capacity. The fixed tank design allows a great deal of design latitude and permits user selection of bottom shape, a wide range of drive options, internal pressure, vacuum and jackets, etc.

Tank mixers have the capacity to mix the same range of viscosities as the change can models. They are somewhat limited however by the flow properties of the final mixture. The mixture must be of a nature to discharge either by gravity or with a modest amount of internal pressure.



TYPICAL APPLICATIONS

FOODS

Salad Dressings
Flavorings
Food Colors
Chocolate Coatings
Fillings
Syrup

PLASTICS

DOP Dispersions
Plastisols
Organasols
Polyester Dispersions
Resin Cutting

ADHESIVES

Rubber Solutions
Polysulfides
Epoxies
Polyurethanes
Silicones
Hot Melts

PHARMACEUTICALS

Blood Reagents
Creams
Lotions
Ointments

COSMETICS

Shampoo
Lotions
Creams
Toothpaste
Wax Emulsions
Hair Dyes

COATINGS

Inks
Paints
Magnetic Tapes
Asphalts

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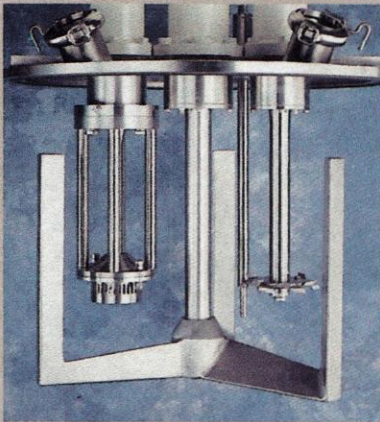
MIXER-EMULSIFIER

The high speed close-tolerance rotor and stator of this unique mixer provide a high degree of shear to all materials being passed through the rotor/stator gap. This intensive shearing action is used for reducing the particle size of solids, dissolution, homogenization, and emulsification. By itself it is best applied for materials that have a maximum viscosity of approximately 10,000 cps. In conjunction with the anchor its useful range can be extended to over 100,000cps.



HIGH SPEED DISPERSER

The conventional shear disc dispersion blade is used to disperse solids into viscous liquid vehicles that are beyond the viscosity range of the mixer-emulsifier and anchor combination. This mixer is best applied by itself in a viscosity range to 50,000 cps, and in conjunction with the anchor to several hundred thousand centipoise.

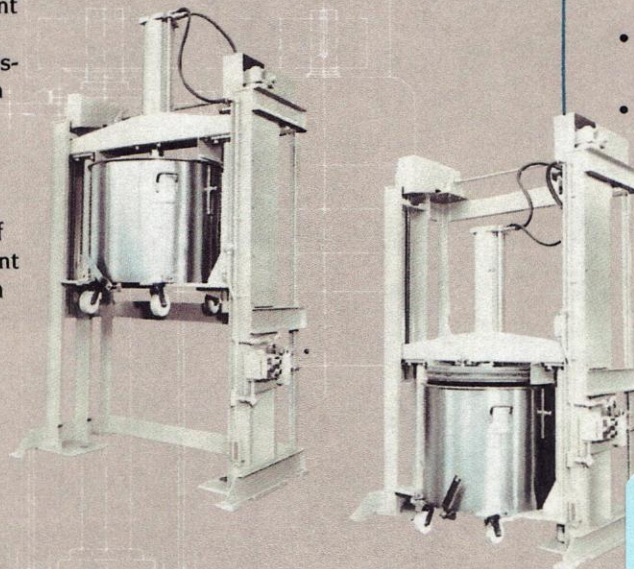


ANCHOR AGITATOR

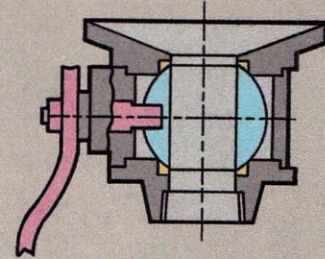
The standard three wing anchor agitator is designed to provide maximum movement of product under low shear conditions within the mix vessel. It moves materials in both a radial and axial direction to feed the materials to the high speed mixer heads and to also improve heat transfer by constantly removing material from the tank wall. The anchor is designed to permit either fixed adjustable or hinged teflon wiper attachment. Since the design is of a closed triangular shape it is easy to clean and is preferred for applications that will require regular cleaning between batches.

FOLLOWER PLATE DISCHARGE SYSTEMS

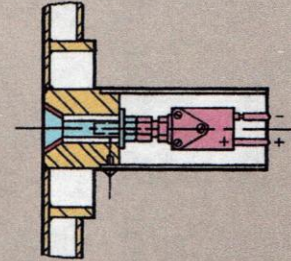
Direct discharge adds another important dimension to Ross mixing. The Ross Discharge System allows virtually hands-free transfer of the mixed material to a secondary mix vessel or directly to metering, dispensing and packaging equipment. Operator contact with the material is reduced – which enhances operator safety and reduces the risk of contamination. By eliminating redundant equipment, the Ross Discharge System can also save time and significantly reduce production cost.



OPTIONAL FEATURES



FLUSH VACUUM TYPE
BALL VALVE



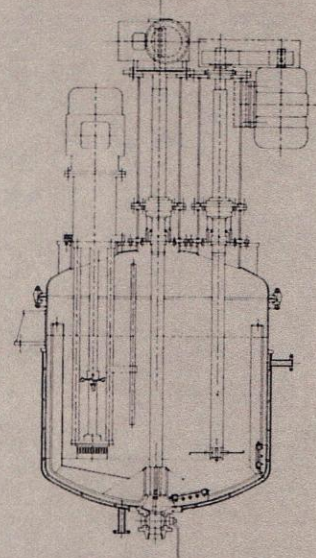
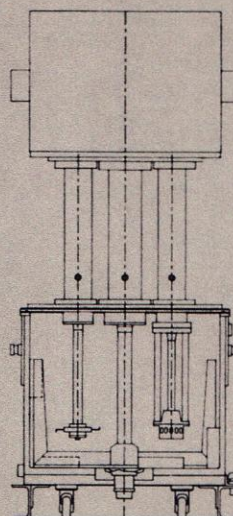
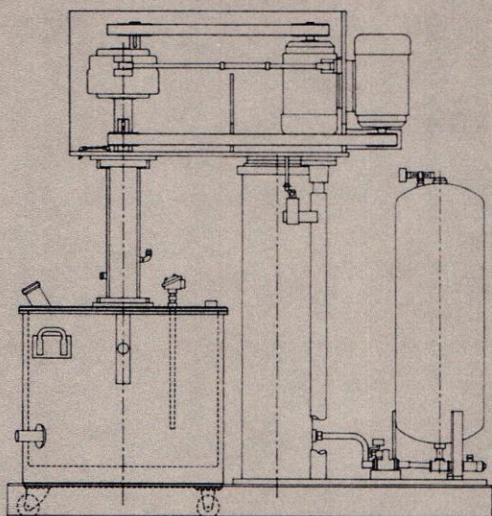
THERMOCOUPLE
FOR TEMPERATURE
READOUT

- VACUUM
- INTERNAL PRESSURE
- JACKETS FOR HEATING OR COOLING
- STAINLESS STEEL WETTED PARTS
- SANITARY CONSTRUCTION
- SPECIAL DISCHARGE VALVES
- CHOICE OF AGITATORS
- SINGLE, MULTIPLE OR VARIABLE SPEED DRIVES
- HYDRAULIC VARIABLE SPEED DRIVES
- WALL SCRAPERS

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MODEL PVM CHANGE CAN AND VM FIXED TANK SELECTION CHART

Mixer	Mixing Capacity In Gallons (liters)	Full Holding Capacity In Gallons (liters)	Weight Lbs (kg)	Horsepower Range			Tank Diameter	Tank Depth	Base Length	Base Width	Lowered Height	Raised Height
				Mixer Emulsifier	Disperser	Anchor						
PVM 2	1 1/2 (5.7)	2 (7.5)	350 (155)	1/2	1/2	1/2	9 5/8"	6 1/2"	31"	18"	21 7/8"	28 7/8"
PVM 10	10 (37.5)	15 (56)	2,000 (910)	1 1/2	2-5	1 1/2-3	18"	13 1/2"	48"	25 1/2"	62"	77"
PVM 40	40 (151)	47 (179)	3,400 (1547)	1 1/2-5	3-7 1/2	3-5	25"	22"	66 1/2"	33"	66"	89"
PVM 100	100 (378)	115 (435)	5,500 (2500)	5-15	5-10	5-10	34 1/2"	28 1/2"	88"	41"	91"	121"
PVM 150	150 (567)	184 (696)	8,000 (3640)	10-25	7 1/2-20	7 1/2-15	44"	28"	108"	47"	108"	144"
PVM 200	200 (757)	225 (851)	8,500 (3865)	10-25	7 1/2-20	7 1/2-15	44"	34"	108"	47"	108"	144"
PVM 300	300 (1135)	398 (1506)	9,500 (4320)	25-50	10-30	10-20	55 1/2"	38"	140"	54"	130"	170"
PVM 500	500 (1875)	600 (2250)	11,500 (5330)	25-75	15-60	15-30	58"	55"	122"	62"	142"	198"
VM 750	750 (2812)	912 (3420)	10,200 (4533)	50-75	20-60	20-40	60"	82"	NA	68"	NA	106"
VM 1000	1,000 (3750)	1,231 (4616)	12,000 (5333)	50-75	25-75	25-50	66"	90"	NA	76"	NA	120"
VM 1500	1,500 (5625)	1,767 (6626)	15,000 (6666)	75-100	40-100	25-50	78"	94"	NA	90"	NA	124"
VM 2000	2,000 (7500)	2,420 (9075)	18,000 (8000)	75-150	75-150	25-75	90"	98"	NA	104"	NA	134"

* All dimensions and weights are approximate as they vary with the actual horsepower and drive arrangement selected for a particular unit.
Fixed tank VersaMix units available from 10 through 4000 gal capacity.

The Ross Customer Service Lab.

The Ross Customer Service Lab is fully-equipped to simulate virtually any mixing application. Using your raw materials, our staff of experienced engineers will work with you to find precisely the right VersaMix configuration for your application.

With more than 150 years of engineering experience in the mixing business, Ross is your most valuable single resource for support in solving any mixing problem. That's why so many companies around the world attack their mixing problems by coming here first.

A Ross Rental confirms your mixer configuration.

The best place to confirm a mixing strategy is in **your** plant, on **your** process line. A Ross Rental gives you this opportunity – as well as an option to put a mixer on the line in a matter of days, when time is critical.

A rental is also an ideal tool for meeting a surge in demand which may not be permanent. During test programs, periods of high seasonal demand or when your normal process lines are operating at reduced throughput, a Ross Rental is a business tool that gives you flexibility without committing capital dollars.



CHARLES ROSS & SON COMPANY

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