

 *Chemineer*  *Kenics*  *Greerco*

Mixing &

Heat Transfer

Solutions

- Biotechnology
- Pharmaceutical
- Food Processing
- Cosmetics



Meeting the Challenges of Aseptic Processes

Successful aseptic processes involve performance on many levels—from the design process through construction, validation and onto process operation—Chemineer is poised to consistently provide validation-based products and services.

Documentation

Accelerating validation is our goal, period. Our commissioning/validation documentation provides all the necessary documents as standard, not as options that must be requested throughout a project life cycle. Product descriptions, assembly & dimensional drawings/data, equipment tag numbers, surface finish data, material certifications, QA procedures, inspection & test reports, operation & maintenance manuals, electrical data and parts lists are among the items included.

Products

Effective solutions for your mechanical and process specifications are provided through a flexible range of products: Chemineer top, bottom and side entry mixers; Greerco® pipeline mixers & colloid mills and Kenics® static mixers and heat exchangers.

Order Processing and Manufacturing

Procedures, specifically designed for aseptic products, exist to ensure timely execution of your project. Quotations, engineering, the approval process, material handling, manufacturing, inspection and packaging have all been configured to meet your expectations.

Local Support

50+ years of fluid mixing experience means that qualified commissioning and engineering personnel are always available to assist you during various phases of your project.



SC-3



HE-3



JP-3 Marine Propeller



Maxflo W



BT-6 Gas Dispersion Impeller



Dispersion Blade

Impeller Process Technology

Chemineer's impeller process technology is effectively applied across your spectrum of applications ensuring successful, repeatable results from lab scale to full scale operations.

Chemineer's mixing expertise includes low shear liquid-liquid/solids blending, gas dispersion, high shear blending and viscous mixing. Whether you are in the R&D or production phase, from API reactors to media/buffer prep, we have the expertise to solve the latest biopharma mixing challenges.

An effective combination of application experience and dedicated in-house mixing facilities help produce the results. Sophisticated process and mechanical design software with instant customer drawings, Computational Fluid Mixing and Laser Doppler Anemometry all merge to consistently address process demands.

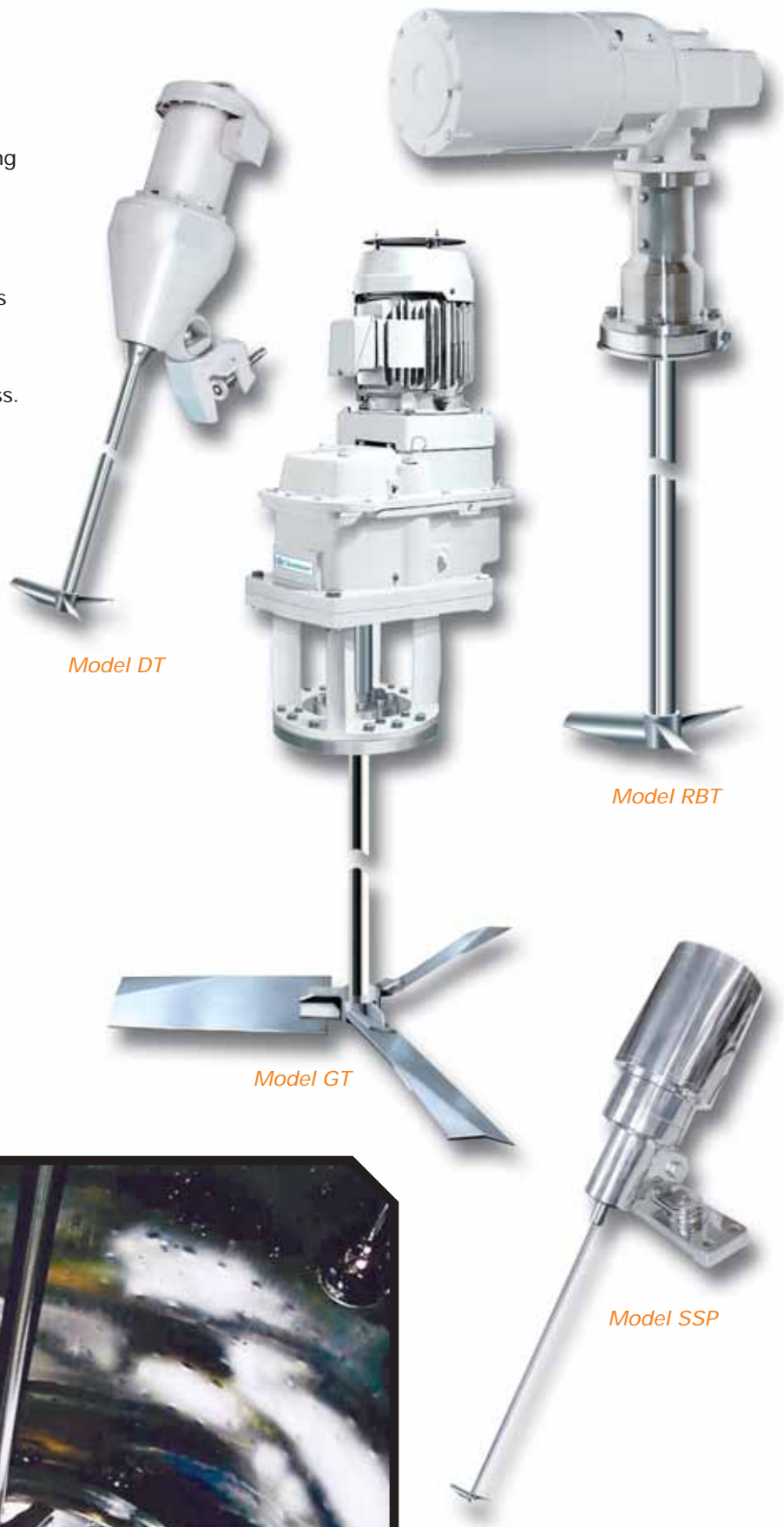
An impeller brochure, B710, is available with additional information.

Mechanical technology must be combined with process aspects for a truly complete design. Chemineer's thorough understanding of fluid mixing dynamics is combined with current ASME-BPE concepts resulting in cleanable, robust designs.

Cleanability at the forefront: Mixing surfaces that promote the free draining of liquids, during S.A.T. through to production operations, are vital to the success of your process. We apply this concept to all components in the mixing system including polish, welds, mounting flanges, shafts, in-tank couplings and impellers.

Mechanical considerations:

- Mixing volumes from 10–40,000+ liters including bioreactors
- CIP/SIP construction
- FDA or USP Class VI elastomers
- Mobile vessels: Right angle drives offer both low head room (14") for doorways and low centers of gravity for tip-hazard avoidance
- Small footprint: In-line drive systems for minimum interference with nozzles and process piping
- We will engineer custom-size mixers to suit your requirements



- Bottom entering designs for applications such as bioreactors
- White epoxy or all-stainless motors and gear drives—lab to full scale
- Direct drive or gear drive designs available
- Operating speed flexibility: Ask for designs below the first critical speed as they eliminate the need for programming speed avoidance ranges
- Wash down duty gear reducers: If the motor is washdown duty, make sure gear drive is as well
- Optional shaft drop collar to facilitate seal removal
- Aseptic mechanical seals
 - Dry or wet running
 - Single, double or gas lift-off designs
 - Others available upon request
- Lip seals and stuffing boxes
- Seal maintenance: Gear drive swings clear for easy access on GT's
- Sanitary in-tank couplings: Threaded or flanged connections
- Mounting flanges: ANSI, ferrule (tri-clamp), DIN, special



Sanitary, single mechanical seal assembly



Single integral steam port in solid stainless steel mounting flange



Gear-Reduced DT Mixer

- 1 Industry standard, off-the-shelf, NEMA electric or air motor
- 2 Advanced, heat-treated gearing
- 3 Gear drive is permanently lubricated with high-performance FDA approved grease
- 4 Sealed gear drive prevents both product and lubricant contamination
- 5 Helical, AGMA quality gears provide smooth, quiet operation
- 6 Elastomeric lip seal
- 7 Heavy-duty, permanently lubricated and sealed-for-life bearings
- 8 Chuck coupling with dual set-screws or bolted flange coupling (also available), allow for shaft removal without disassembling the unit

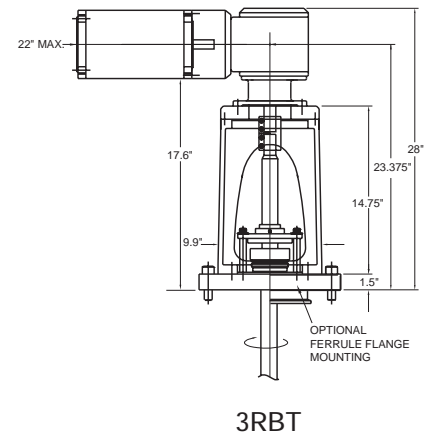
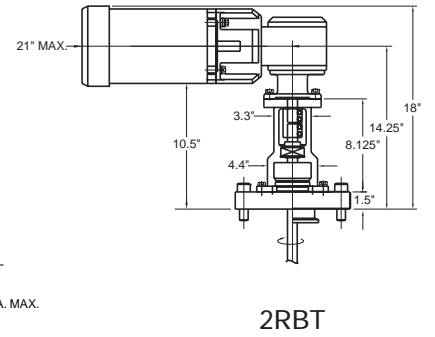
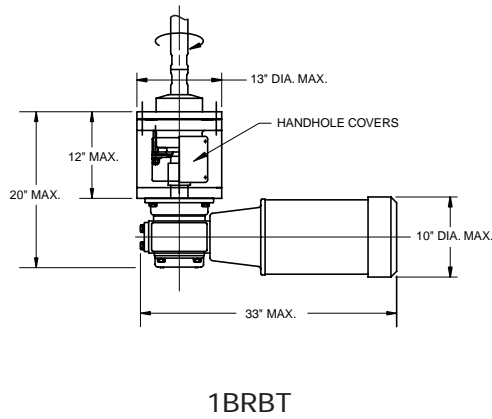
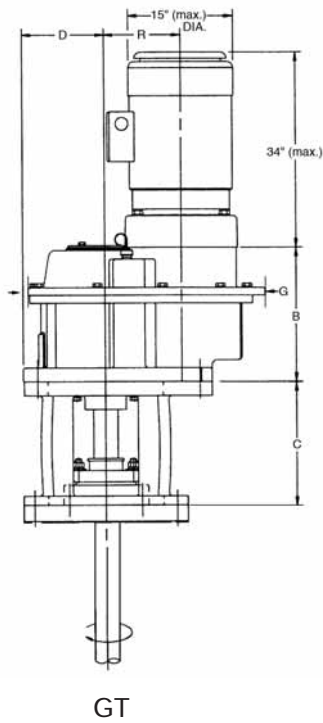
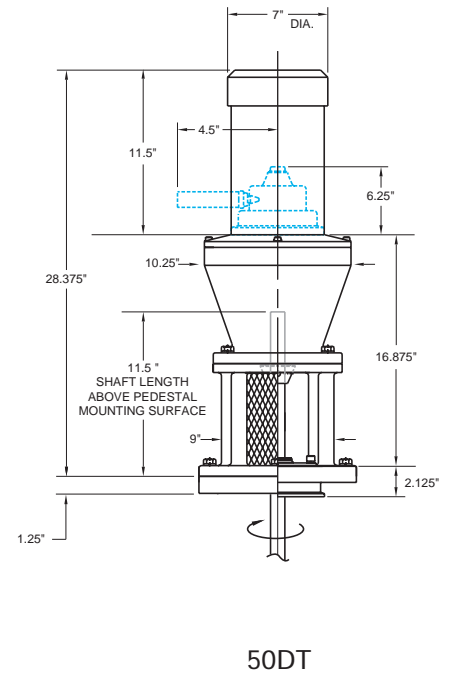
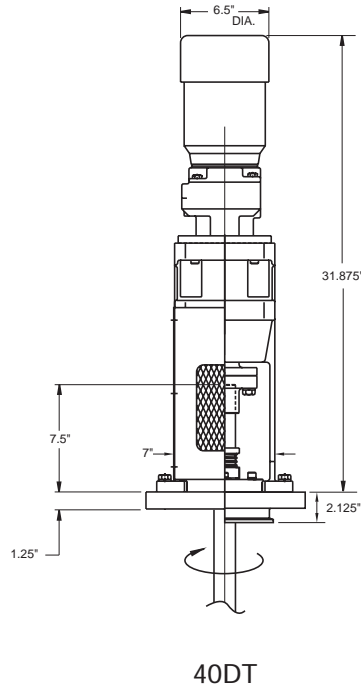
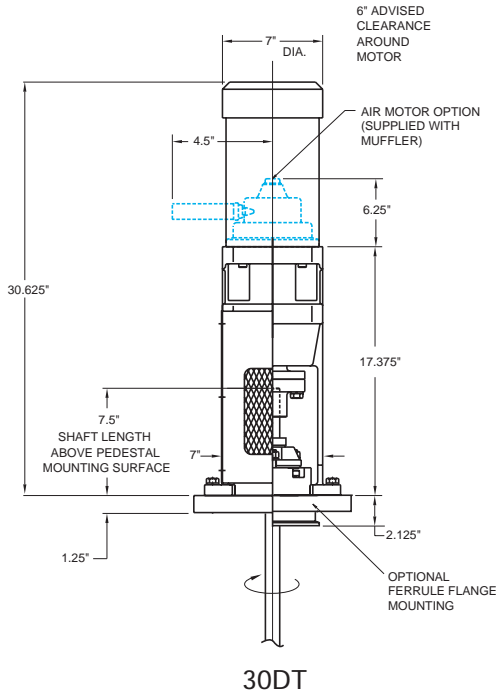


Model SSN



Model DTN/NS

Dimensions



Model GT Dimensions Chart

CASE SIZE	B	C	D	G	R
1 & 2	10.875"	10"	6.75"	19.875"	6.833"
3 & 4	13.125"	12.5"	8.5"	24.5"	7.875"

Greerco products provide flexible, cost efficient in-line and batch processing for sanitary, high-shear applications. This technology is utilized for a wide range of deagglomeration, dispersion, emulsification and rapid mixing operations. Due to the unique and proprietary nature of the typical high shear application, this equipment is available on a rental basis for lab or full scale trials allowing customers to determine how our technology can be applied to their specific processing needs prior to purchase.

Sanitary Pipeline Mixers

Throughout the biopharm and food markets, the sanitary pipeline mixer (SPLM Series) may be applied to a wide range of intermediate and final processing operations. Like most high shear devices, the Greerco pipeline mixer employs a high-speed turbine running in close proximity to a fixed stator to perform its shearing operation. However, the Greerco product line offers a unique axial-in, axial-out flow configuration for processing benefits not seen in an axial-in, radial-out flow configuration. Product is processed as it passes through one (single) or two (tandem) of these shear zones that result in intense hydraulic and shear forces.

- 316 SS wetted parts, other materials available upon request
- Sanitary ferrule connections
- Mechanical cartridge seals
- Stainless steel base
- Washdown motor
- Discharge port with 270° rotation
- Customer specified seals and motor available



SPLM Series

Colloid Mills

The Greerco colloid mill (WV or WH Series) is a high-speed, high-shear mixer capable of batch or in-line processing. Although a “colloid mill” is commonly considered a particle destruction unit, it is actually a dispersion piece of equipment. This machine will blend, emulsify, de-agglomerate and produce a thorough wetting of dispersed substances resulting in a completely homogeneous product. Like the pipeline mixer, the colloid mill utilizes a high-speed rotor spinning in close proximity to a fixed stator. However instead of varying the number of rotor-stator combinations to vary shear, the Greerco colloid mill offers the user the ability to adjust the gap between the rotor and stator “on-the-fly” via an external hand wheel and visible adjustment dial.

- 316 SS wetted parts, other materials available upon request
- Sanitary ferrule connections
- Jacketed stator housing
- Standard double lip seal shaft sealing (optional mechanical seal configuration)
- Horizontal (in-line) or vertical (batch) mounting
- Explosion-proof motor
- Several discharge port locations
- Options include stainless bases and white motor paint
- Customer specified seals and motors available

Tabletop colloid mill complete with hopper and recirculation tubing available for small batch and laboratory processing.



WH Series



WV Series

Kenics products include in-line static mixers and shell-and-tube heat exchangers. As the static mixing pioneer, Kenics offers its customers over thirty years experience in the design and manufacture of static mixing products.



Sanitary Static Mixers

Kenics sanitary static mixers feature an alternating helical element string that creates flow division and a radial mixing mechanism to disperse and blend any fluid introduced to the mixer. Due to the plug flow characteristics of the design, this self-cleaning element design is ideal for sanitary operations. The process fluid is continuously and completely mixed within the pipeline, eliminating gradients in temperature, velocity or concentration without moving parts or any additional maintenance requirements.

- 316 LSS construction
- Sanitary ferrule connections
- Removable element assembly
- 3A certified design/construction
- Optional ASME-BPE compliant mixer and documentation
- Mirror finish on elements
- 32Ra housing finish (standard)
- 1/2" to 4" diameters in stock
- Optional electro-polishing available
- Custom housing finishes available

Sanitary Heat Exchangers

Kenics sanitary heat exchangers feature the Kenics helical element static mixers to improve the heat transfer in a sanitary shell-and-tube heat exchanger. The increased efficiency of the Kenics design offers maximum heat transfer to highly viscous, difficult-to-process materials. The plug flow design of the mixing elements increases the inside film coefficient by creating continuous surface renewal at the wall of the exchanger tubes. Benefits of the design include reduced fouling, uniform heat history and elimination of thermal gradients.

- Completely customized construction
- Removable element assemblies
- TEMA and ASME code construction
- 3A certified construction available
- Optional electro-polishing and passivation
- Sanitary ferrule connections



Choose Chemineer When Critical Applications Require Reliable Performance

Trust your biotechnology, pharmaceutical, cosmetic and food processing applications to Chemineer ... where experience, knowledge and technology make the difference in performance. Chemineer offers:

- Over 50 years of experience designing, manufacturing and delivering precision-engineered, reliable mixing equipment that exceeds validation expectations
- The capability to build robust, high quality mixers to your specific requirements, not around them
- The efficiency needed to minimize your costs of operation, while maintaining optimum quality and performance



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