US Centrifuge Duramatic Model A420 and A440 automatic self-cleaning centrifuges are designed for a wide variety of tough processes and demanding liquid / solid separation / filtration applications. The Duramatic Model A420 and A440 represent US Centrifuge’s newest advancement and innovation in automatic self-cleaning centrifuge design technology. These automatic self-cleaning machines feature fully automated operation and require minimal operator attention.

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<tbody>
<tr>
<td>Duramatic A420</td>
<td>5.0-HP</td>
<td>20.0 liter</td>
<td>2,000</td>
<td>5 to 20-gpm</td>
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<tr>
<td>Duramatic A440</td>
<td>7.5-HP</td>
<td>40.0 liter</td>
<td>2,500</td>
<td>5 to 40-gpm</td>
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The Duramatic model A420 and A440 provide the customer with the unique ability to purchase a more affordable 20-gpm unit and when process requirements increase the A420 unit can be upgraded to a larger 40-gpm unit by exchanging rotating assemblies which both fit in the common Duramatic monocoque machine chassis.
The Duramatic Model A420 and A440 feature a common monocoque plate steel frame construction with powder coat finish. Machines with all wetted surfaces constructed from stainless steel are also available. Standard integrated lift rings pockets makes lifting the unit onto the machine stand for installation and / or off the machine stand for maintenance an easy and simple process. The simple bottom feed bowl design combined with feed impeller integrated into the plow-shaft assembly distribute and accelerate the incoming feed liquid to the centrifuge-bowl. The Patented “Centri-lock” plow clutch-hub system maximizes the machine’s separating efficiency by maintaining a 1:1 rotation ratio between the plow-blade assembly and the bowl assembly, which minimizes internal liquid turbulence and increases separating performance. The highly dependable ring and pinion gear driven plowing system is coupled to an SEW gearbox. This separately driven plow system provides hi-toque plowing to discharge even the toughest solids cake from the centrifuge-bowl. The standard Nu-Tride surface treated / hardened plow-blade assembly is manufactured with multiple blades / impellers and an efficiency ring for added separating efficiency and processing maximum performance. The plow blades are laser-cut from 1/4” thick steel plate. Because all the major rotating assembly components are computer balanced, the centrifuge runs smoothly and quiet @ full RPM. The centrifuge includes a mounting platform with high quality vibration isolators. A drum or hopper is simply place under the unit to catch the solids discharged from the centrifuge bowl. The clarified liquid gravity flows back into the process tank. Customized machine stands can be designed and constructed to suit customer requirements. A major functional and operational advancement includes 24-volt electrically operated plow gear and sludge chute cover actuators. The electrically operated plow gear and sludge chute cover actuators are much more
reliable and consistent than pneumatic actuated systems and completely eliminate the problems and issues associated with dirty and/or wet plant compressed air supplies. US Centrifuge’s Patented Load Sensitive Dump “LSD” control technology, which automatically stops the machine when the unit has reached its maximum solids holding capacity and activates the clean-out cycle as required. To minimize installation time and costs the centrifuge includes a machine-mounted auxiliary wiring box with a pre-wired flexible conduit wiring-harness and plug connectors that simply and quickly plug into the control panel. The only wiring required is connecting power to the control panel disconnect.

**US Centrifuge offers three levels of centrifuge controls panels to maintain competitive machine prices:**

1. An economically priced functionally reliable basic control panel including PLC based functions, simple multiple line operator interface, and VFD drive-motor control all housed in a NEMA 12 enclosure with free-standing leg kit.

2. A more expensive technically advanced deluxe control panel including an Allen Bradley Micrologics 1500 PLC, 256 color touch screen operator interface, and VFD drive-motor control unit with resistor braking prepared exclusively for US Centrifuge by Eurotherm. This package is capable of accelerating the centrifuge to full speed in less than 40 seconds and stopping the unit smoothly in less than 60 seconds, which maximizes up-time processing by decreasing the clean cycle time. The panel also includes a VFD motor control unit for the plow-motor. The PLC and HMI include US Centrifuge’s exclusive “MESI 6.04” operating/display program that features complete operator instructions, help screens, self-diagnostics, and cycle history.

3. The third option includes completely custom engineered and programmed control panels built to suit specific customer application and/or facility requirements.
How the Duramatic Model A420 & A440 work: The liquid continuously feeds up through the stationary feed pipe and into the throat of an abrasion resistant feed impeller, which distributes the liquid into the spinning centrifuge-bowl at an equivalent rpm due to the plow-clutch. The liquid enters the bowl at the bottom of the liquid pool surface and flows upward under increasing centrifugal force as it flows under the efficiency ring. The liquid then moves back toward the center of rotation and exits the bowl-hub discharge holes. As the liquid travels this path the separated solids deposit on the internal wall of the bowl shell forming a relatively moisture free solids cake, which is intermittently removed during the cleaning process. The liquid exiting the bowl-hub is captured the upper frame chamber and drains out the discharge fitting.

The length of a process cycle is application specific depending on the flow rate and percent solids in the incoming liquid.

Separate particles as small as 2 micron
Once the centrifuge-bowl reaches it solids holding capacity the machine must stop and plow the centrifugally separated and compacted sludge cake from the bowl. When the machine transitions from the process cycle to the clean cycle it automatically closes the feed stop valve and activates the drive motor VFD resistor braking system powering the spinning centrifuge-bowl to a complete stop in 45 to 60-seconds. Once the unit has reached a complete stop the free liquid drains from the bowl into the lower frame chamber and flows back to the source. sludge chute cover and engage the ring and pinion plow gears. The plow-motor rotates the plow blades and bowl slowly back and forth in opposite directions as the solids are scraped out and fall through the sludge chute and into a hopper or drum placed below the unit. A typical clean cycle requires 3 to 5-minutes.
DURAMATIC Model A420 Machine Specifications:

- Maximum "G" force: 2,000-x gravity
- Total bowl volume: 20.0-liters
- Separating capacity: 5 to 20-gpm
- Required inlet pressure: 10-psi @ 20-gpm
- Liquid inlet fitting: 3/4" NPT (left or right side)
- Liquid discharge fitting: 3" NPT (left or right side)
- Liquid discharge pressure: Gravity return
- Maximum temperature: 160°F
- Recommended pH: 6 to 9-pH (standard configuration)
- Recommended pH: 2 to 14-pH (optional stainless steel configuration)
- Solids holding capacity: Up to 2.0 gallons
- Maximum clean cycles: 6-cycles per hour
- Solids discharge height: 42" under unit
- Controls: PLC based Mitsubishi and / or Allen Bradley

DURAMATIC Model A440 Machine Specifications:

- Maximum "G" force: 2,250-x gravity
- Total bowl volume: 40.0-liters
- Separating capacity: 5 to 40-gpm
- Required inlet pressure: 10-psi @ 40-gpm
- Liquid inlet fitting: 3/4" NPT (left or right side)
- Liquid discharge fitting: 3" NPT (left or right side)
- Liquid discharge pressure: Gravity return
- Maximum temperature: 160°F
- Recommended pH: 6 to 9-pH (standard configuration)
- Recommended pH: 2 to 14-pH (optional stainless steel configuration)
- Solids holding capacity: Up to 3.0 gallons
- Maximum clean cycles: 6-cycles per hour
- Solids discharge height: 42" under unit
- Controls: PLC based Mitsubishi and / or Allen Bradley

The standard machine features a carbon steel powder-coated frame with an aluminum bowl-shell, stainless bowl-hub, and Nu-tride surface treated carbon steel plow-assembly. The machine is also available with all wetted surfaces constructed from 304 and / or 316L stainless steel.
The Duramatic Model A420 & A440 automatic self-cleaning centrifuge offers advantages not found on competitive units:

- Duramatic Model A420 20-gpm automatic self-cleaning centrifuge unit features the unique ability to be upgraded to the larger Model A440 40-gpm unit by swapping rotating assemblies that fit into a common monocoque machine chassis. A US Centrifuge Field Service Technician can perform the rotating assembly swap in the field.
- Rugged monocoque frame construction fabricated from plate steel and powder coated for added durability and longer working life.
- Monocoque frame construction with integrated lift rings for added convenience.
- The separating power of up to 2,250 x “G” is available by adjusting the VFD frequency to suit the unique demands of each application.
- Patented automatic “load sensitive dump” control for added process control and optimum machine performance.
- Patented “Centri-Lock” plow clutch for maximum separating efficiency.
- Simple bottom feed bowl design with feed impeller integrated into the plow shaft assembly for maximum separating efficiency.
- Durable hi-torque ring and pinion gear driven plow system to clean out the toughest cakes.
- Plow-blade assembly with multiple blades and efficiency ring for maximum separating efficiency.
- Nu-Tride surface treated plow-blade assembly for added durability.
- Advanced PLC based controls for maximum flexibility with a wide range of adjustable parameters so the machine can be tuned to suit the unique demands of each application.
- A variety of options and system accessories allow a customer to tailor a machine for their specific application and / or facility requirements.
- The A420 and A440 are competitively priced when all the standard features and processing performance advantages are compared to competing units.
The Duramatic models A420 and A440 automatic self-cleaning centrifuges are built for safe, quiet, reliable operation, and require relatively no day-to-day maintenance. The units are designed for quick and easy disassembly when routine maintenance is necessary. The entire rotating assembly can be removed in 30-minutes and either rebuilt on site or shipped back to the US Centrifuge for a factory rebuild.

Like all US Centrifuge equipment, the machines are American made and all engineering, manufacturing, service, and sales activities are located under one roof in Indianapolis for the convenience of our customers.
The Duramatic models A420 and A440 automatic self-cleaning centrifuges are ideal for fluid clarification / liquid recycling applications where other filtration methods fail. And, the Duramatic models A420 and A440 can handle tough, abrasive, and hard packing materials with minimal wear and tear on the centrifuge. A sample of successful applications include:

- Carbide cutting oils
- Cold heading machine lubrication
- Die lube
- EDM fluids
- Grinding coolants
- Machining coolants
- Ophthalmic lenses
- Parts washing fluids
- Phosphate solutions
- Quench oils
- Screw machine oil
- Thread and rolling oils
- UF pre-treatment
- Used oil clarification
- Vibratory finishing
- Water wash paint booth
- Wire drawing fluids

General application benefits include:

- Automatic operation requires minimal time and attention
- Improved product quality
- Reduced machine downtime
- Minimized waste volumes
- Extended process liquid life