

# AUTOMATIC CENTRIFUGE (ACF)

PRODUCT BULLETIN



## CLARIFICATION OF LIQUIDS BY CENTRIFUGAL SEPARATION

In various clarification processes involving viscous liquids such as drawing and rolling oils, the solids generated can cause excessive wear on tooling and adversely affect product quality.

To provide efficient liquid-solid separation, Filtertech offers three sizes of the Model ACF, Automatic Self-Cleaning Centrifuges. The Model ACF Centrifuge utilizes centrifugal force, one of the most basic methods to separate solids from liquids based on their difference in specific gravity. The Model ACF magnifies this force up to 1,750 times gravity through centrifugal action.

## EQUIPMENT FEATURES

- Housing constructed of heavy-duty monocoque steel and powder coated finish with belt guard.
- Standard forklift pockets for easy lifting and movement.
- Swing-style discharge chute cover.
- Cast ductile steel bearing housing and stainless steel bowl hub with labyrinth seal.
- Alloy steel spindle with sealed bearings.
- Nu-Tride® surface treated/hardened plow blade assembly with efficiency ring for long life and optimum separation.
- Bottom feed bowl design with UHMW feed impeller, integrated into plow shaft assembly for efficient separation.
- Rugged gear-driven plow assembly with patented "Centra-Lock" keyless plow clutch-hub system.
- High reliability 24-Volt electric actuator-operated plow gear and sludge chute cover.
- Patented load sensitive dump (LSD) technology automatically stopping and cleaning the centrifuge when full.
- Programmable motor control with VFD resistor braking system.
- Heavy-duty optional support stand with vibration isolators to elevate the centrifuge over a 55 gallon drum or receptacle.
- Electrical control panel with PLC and HMI display.
- Prewired junction box with plug-in receptacle wiring harness which plugs directly into the control panel.
- 100% designed and manufactured in the United States with American-made components.

### Optional Features:

- 304 or 316 stainless steel bowl and frame construction.
- Support stand constructed of structural steel.
- NEMA 12 or 4X SST enclosure with free-standing leg kit.



◀ Patented Ring and Pinion Gear Bowl Cleaning Mechanism



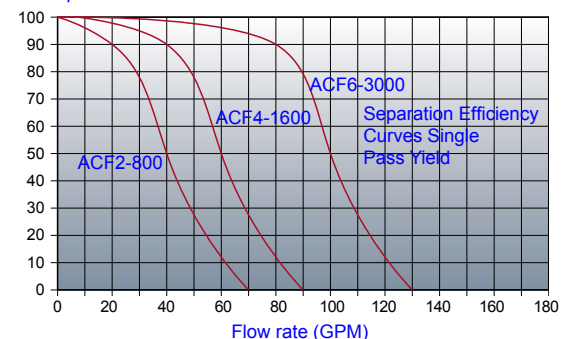
◀ Model ACF4-1600 Automatic Centrifuge with Control Panel and Support Stand

## TYPICAL APPLICATIONS

- Aluminum Wire Drawing
- Honing oils
- Industrial waste streams
- Metal grinding lubricants
- Phosphate baths
- Quenchants
- Rolling oils
- Vibratory finishing liquids
- Waste oil clarification
- Water wash paint booths

Separation Efficiency in Percent †

FIGURE 1



† Efficiency curves indicate separation of particles down to 5 micron in size with a specific weight of 1.7 being separated from water-based coolant at ambient tempera-

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## MODE OF OPERATION

### Processing Cycle

1) Process liquid continuously flows into the bottom feed tube. 2) The impeller accelerates and distributes the liquid into the spinning bowl. 3) Liquid flows up the rotating bowl as the solids separate and compact at the perimeter of the bowl. 4) The clarified liquid passes around the efficiency ring and discharges through the bowl hub discharge ports and into the frame collection chamber. 5) The clarified liquid flows down the drain tubes and into the lower frame where it exits at the discharge connection.

### Cleaning Cycle

6) Once the bowl fills to maximum capacity with waste solids, the load sensitive dump (LSD) automatic cleaning cycle is activated to remove the solids. The clean cycle frequency can also be controlled by an adjustable PLC process timer. 7) When the cleaning cycle is activated, the centrifuge shuts off the liquid feed and quickly brakes to a complete stop. 8) After the "free" liquid drains, the sludge chute cover is electrically opened. 9) A second electric actuator engages the plow mechanism's gear assembly into the ring gears. The lower gear then turns, rotating the plow blades while the upper gear rotates the bowl assembly in the opposite direction. 10) The plowing action discharges the compacted solids from the tapered section of the centrifuge bowl. The sludge drops through a chute into a waste receptacle below the machine. Upon completion of the cleaning cycle, the sludge chute cover closes, the plow gear retracts, the process timer resets, and the machine resumes its process cycle. A normal cleaning cycle takes less than 5 minutes.

FIGURE 2

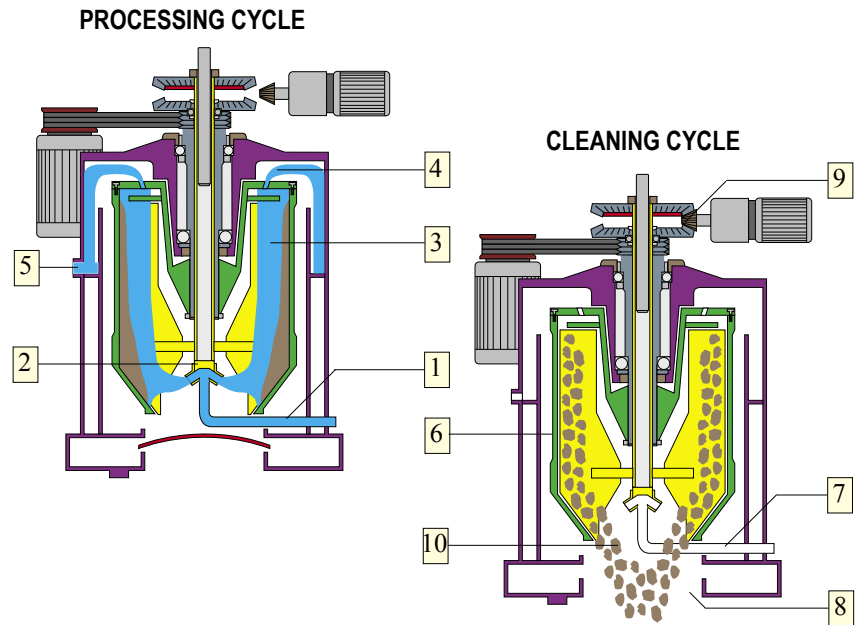
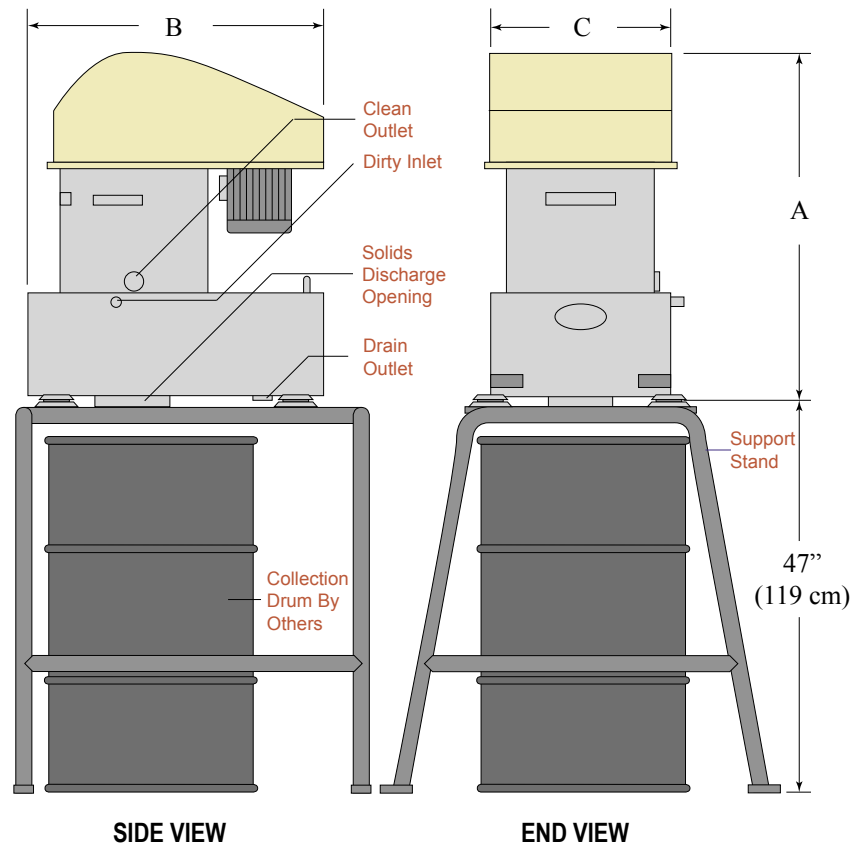


FIGURE 3



## SPECIFICATIONS

Model†	Flow rate* gpm (lpm)	Dimensions (cm)			Dirty Inlet in (cm)	Clean Outlet in (cm)	Power‡ Requirements	Bowl Volume gals (liters)	Max Rotor Speed rpm	Solids Capacity gals (liters)	Est. Weight lbs (kgs)
		A	B	C							
ACF2-800	20 (76)	47" (120)	51" (130)	31" (79)	¾" (1.9)	3" (7.6)	480 V, 3Ø, 5 KW	5.3 (20)	3,600	2.0 (7.6)	3,150 (1,430)
ACF4-1600	40 (151)	47" (120)	51" (130)	31" (79)	¾" (1.9)	3" (7.6)	480 V, 3Ø, 7½ KW	10.6 (40)	3,600	3.0 (11.4)	3,500 (1,590)
ACF6-3000	75 (284)	54" (137)	56" (142)	42" (107)	1" (2.5)	4" (10)	480 V, 3Ø, 12 KW	15.9 (60)	2,500	6.0 (23)	5,500 (2,500)

† Feed rate is based on the density difference between the liquid and suspended solids. Capacity may vary depending upon model, liquid, solids and application. Consult factory for proper sizing of equipment.

‡ Other voltages available to meet your specific requirements.

\* Nominal flow rate for non-viscous fluid applications.

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