

TECHNOLOGIES, INC.

STILL The Benchmark in Positive Displacement Pumps





Axiflow, The Company

Axiflow Technologies, Inc., in partnership with Jung Process Systems, brings to the sanitary market a revolutionary pumping technology that sets a New Benchmark for a wide range of pumping applications. The Axiflow / Jung relationship combines German Precision Engineering with American Innovation & Process Experience. We offer viable solutions to many difficult process problems often experienced with positive displacement pumps. The Axiflow Solution far exceeds current industry standards and expectations.

Axiflow/Jung maintains 3A and EHEDG certifications for all pumps in our offering. Axiflow Pumps and Components are manufactured in Kummerfeld, Germany, and assembled in the United States. A complete inventory of pumps, assemblies and spare parts are located at various Axiflow facilities throughout North America. Demo and Trial pumps are available for testing at customer facilities. Whether your needs call for timing product through a high pressure drop pasteurizer, stuffing a homogenizer with a high viscosity liquid, or simply transferring a shear sensitive slurry or emulsion, give Axiflow a try.

Twin Screw Pumping Technology

Twin Screw Pumping Technology was created over 100 years ago for the oil & gas industry, providing a means for pumping high viscosity products under high pressure. The high suction capability of the pump eliminated the problems associated with low NPSH availability. This design was later proven to be a viable alternative for transferring multiphase products and designed to be capable of running at much higher speeds than conventional positive displacement pumps.

In their development of the twin screw pump for the Sanitary & Hygienic Markets, Jung Process Systems has created a NEW BENCHMARK in Positive Displacement Pumps. The Axiflow pump offers a wide range of benefits over all other PD pumps. Pumps such as rotary lobe, circumferential piston, progressive cavity, peristaltic, reciprocating plunger and air-operated diaphragm pumps prove to be far more limited in capability in comparison to the Axiflow.

As others have tried to create their own sanitary, twin screw design, Axiflow is far and away the market leader in every pump metric:
Sanitary Design &

Performance, Lowest Total Cost of Ownership,
Widest Range of Speeds, Highest Operating
Pressures, Widest Temperature Ranges and
the Ability to pass the Largest Soft Solids.
Additionally, Axiflow's unique ability for
complete system integration and
turn-key systems built around the
twin-screw technology make it
far superior to other twin screw
pump companies that only
offer pumps.



Featured Benefits

- Ability to Handle Viscosities from <1 to 2,500,000 cps
- Flow rates from 0.1 GPM to 2,500 GPM
- Differential pressures of up to 725 PSI
- High Suction Capabilities & Low NPSH Requirements - An ideal fit for long suction lines and vessels that are difficult to completely empty.
- Ability to run at temperatures in excess of 425°F
- 3A and EHEDG Certified
- Virtually Pulse-free, Repeatable Flow – Ideal for Product Timing and Metering
- Speed ranges from 10 RPM to 4,000 RPM
- At the high speeds, this Unique Twin Screw Design is fully CIP-able AND capable of performing system CIP functions by providing required pipe line velocities and meeting tank cleaning requirements.
- All Stainless Steel Bearing Housing NO PAINTING REQUIRED!
- All Stainless Components are Machined

- out of 316L Billet Stainless No Cast Parts!
- Low Shear Product Handling Capable of Delicately Pumping Soft Solids up to 2.5" in diameter without degradation.
- Excellent wear resistance on abrasive materials - Hardened wear surfaces available.
- Wide Range of Mounting Options which include Direct Coupled C-Face Motors for Reduced Footprint
- Ability to Run Dry Indefinitely without damaging Pump or Seals (certain seal arrangements required)—Ideal for removing ingredients from Drums, Totes and Bag in a Box
- Ability to pump products with up to 60% entrained air – eliminates "air-locking"!
- Ability to Reverse Flow Uses include Product Recovery resulting in reduced yield loss.
- Able to run completely empty at full speed without shaft deflection/contact between the housing and the screws.

THE AXIFLOW PD PUMP HAS THE LOWEST TOTAL COST OF OWNERSHIP OF ANY POSITIVE DISPLACEMENT PUMP ON THE MARKET TODAY!

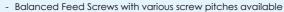
AXIFLOW TECHNOLOGIES INC

Operating Features

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Pump Type	Hygenic	Suction Capability	Pressure	Running Capability	Handling of Soft Solids	Maintenance	Shear Rate	CIP*** Capability
Axiflow Twin Screw	+++	+++	+++	++	++	+++	++	+++
Twin Lobe	+-	++ Low Speed	+++	+	+-	+-	+	+-
Circumferential Piston	+-	++ Low Speed	+++	+	+-	+-	+	+-
Tri Lobe	+-	+	+	+	-	-	-	+-
Sinusoidal	-	+	+	-	++	-	+	-
Progressive Cavity	-	+++	+++	-	++	-	++	+
Eccentric Disc	+	++	-	-	+-	-	+++	-
	+++ Excellent	++ Good	+ Fair	- Poor				

***CIP Capability relates not only to the cleaning of the pump, but also using the pump to clean the system.

Axiflow STS Series



- Wide Speed Range of <5 120 Hz for performing Process & CIP Conditions with just one pump
- Excellent suction capabilities and Low NPSHr requirements
- Smooth and non pulsating Axial movement of product
- Pumps soft solids up to 1-5/8" maintaining product integrity
- Capable of dry running & pumping air entrained product without air-locking

Due to standardization, all pumps can use a single mechanical seal, double mechanical seal or various Teflon lip seal configurations by only changing the seal components

 Complete sealing by Form Rings protects against having dead spaces

- FDA/3A Approved elastomers

Quick disassembly/ assembly of pump wet end for ease of manual cleaning

End Suction/Top
 Discharge is standard,
 however the pump
 is bi-directional so
 reversible pumping
 is possible

- Tri-Clamp (S-Line)
Connections are
standard, but any
other connections
are available

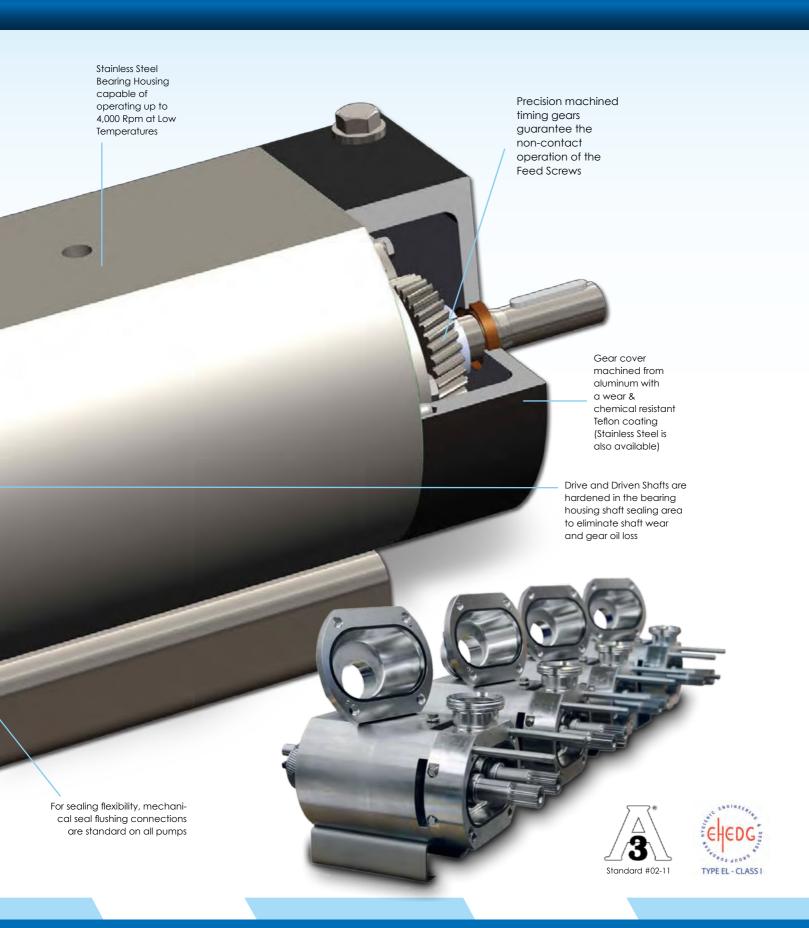
- Top Suction/End Discharge ensures complete drainability of the pump

Electro-polished surfaces for optimum cleaning (Standard Ra < 0.8, for the Pharmaceutical Industry, smoother surfaces are available)

Due to precision machining, components are easily disassembled

and assembled

Wear resistant JUNG-Chromcarbide coating is standard on all pump housings (Advanced hardening options of the pump casing are available)



Axiflow STS Series Pumps

Standard Sizes Available:

STSC 50 (C-Face)

Suction/Discharge Connections - 1 ½" to 3"

STS 70

Suction/Discharge Connections - 2" to 3"

STSC 70 (C-Face) (Not Shown) Suction/Discharge Connections - 2" to 3"

STS 90

Suction/Discharge Connections - 2 ½" to 4"

STSC 90 (C-Face)

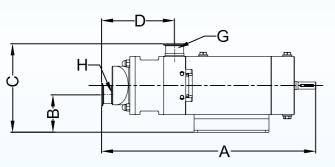
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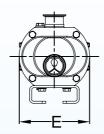
Suction/Discharge Connections - 2 ½" to 4"

STS 125

Suction/Discharge Connections -3" to 8"

***STSCA 70, STSA 70, STSCA 90 & STSA 90 Aseptic Version Pumps are also available. Standard Connections are Tri-Clamp. Other Connection Types such as I-Line, Q-Line, ANSI Flange, Bevel Seat are Available Upon Request.

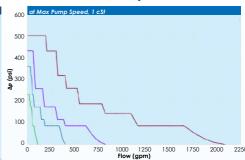


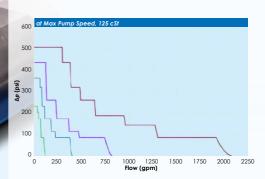


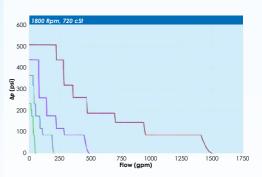
Standard Coupling Mount Pumps

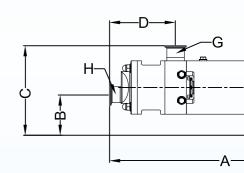
Pump Model	Nominal Capacity (Gpm)	Maximum Soft Solid Size (In)		Nomina	l Dimens	sions (In)	Top Connection Size	Endcover Connection Size	Weight (Lbs)
	(Орин)	5117 5120 (1117	Α	В	С	D	E	G	н	
STS 70	0.4 - 250	3/4"	24.21	4.88	9.92	8.62	7.83	2" - 2 1/2"	2" - 3"	145
STS 90	4.4 - 550	1 1/8"	28.46	5.75	13.46	10.83	10.20	2 1/2" - 4"	2 1/2" - 4"	285
STS 125	30 - 1,440	1 5/8"	39.53	8.35	19.33	11.02	13.74	4" - 8"	4" - 8"	825

Standard Pump Curves







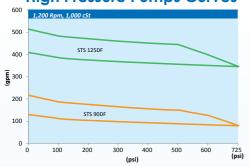


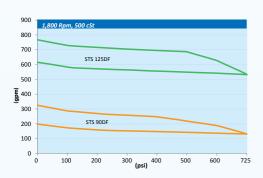
C-Face Mount Pumps

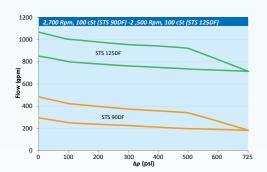
Pump Model	Nominal Capacity (Gpm)	Maximum Soft Solid Size (In)		Nominal
	(Орш)	oize (iii)	A	В
STSC 50	0.1 - 88	5/8"	19.49	4.25
STSC 70	0.4 - 250	3/4"	25.59	7.87
STSC 90	4.4 - 550	1 1/8"	30.91	5.83

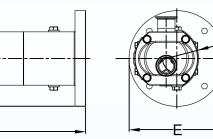
Axiflow DF High Pressure Series Pumps

High Pressure Pumps Curves







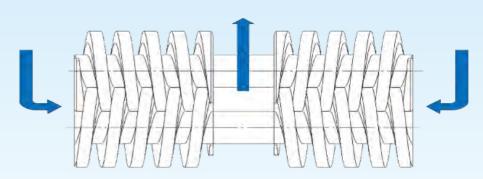


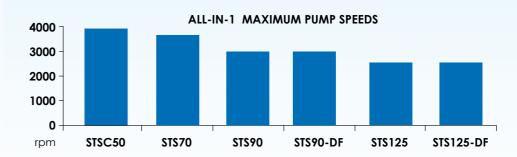
Dimensions (In)					Top Connection Size	Endcover Connection Size	Weight (Lbs)
	С	D	E	F	G	Н	
	8.82	6.14	9.84	5.87	1 1/2" - 2"	1 1/2" - 3"	82
	11.61	8.62	13.78	7.83	2" - 2 1/2"	2" - 3"	150
	13.15	10.83	13.78	10.20	2 1/2" - 4"	2 1/2" - 4"	335

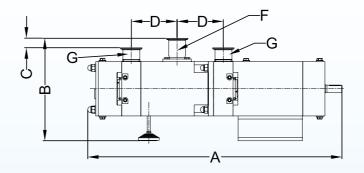
High Pressure Sizes Available

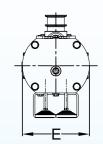


Capable of 725 PSI Differential Pressure









High Pressure Pumps

	Pump Model	Nominal Capacity (Gpm)	Maximum Soft Solid Size (In)	Nominal Dimensions (In)					Inlet (2x)	Outlet	Weight (Lbs)
		(0))	512C (117)	Α	В						
ST	S 90DF	4.4 - 500	3/4"	38.58	16.38	2.24	7.01	10.20	2" - 2 1/2"	2" - 3"	685
STS	125DF	50 - 1,030	7/8"	46.71	23.50	3.00	10.73	13.74	3" - 4"	3" - 4"	1,500

The Axiflow HopperPump™/Constant Innovation

Axiflow Technologies is the Leader in Sanitary Twin-Screw Pumping Technology and the Axiflow HopperPump™ is just another example of our constant innovation for the Food, Beverage, Personal Care & Pharmaceutical Industries.

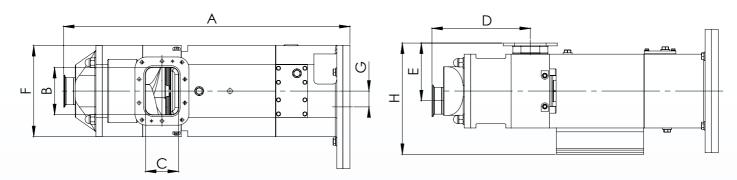
There are many situations where both very thin and very thick products can bridge in a closed system. This can cause pumping difficulties for most other type of positive displacement technologies.

When using the top port for suction on a standard Axiflow pump, the product is drawn into the cavity just behind the screws. With the hopper design, the shafts and screws are longer and the intermediate flange is twice as wide. This allows the product to drop directly into the screws without de-watering the product and keeping the lurry homogeneous.





Most importantly, Axiflow pumps do not have shaft deflection when running completely dry or partially full---even at FULL SPEED! This is why Axiflow pumps are ideal for stripping out tanks where the product does not flow evenly to the pump. Inconsistent delivery of product to the pump does not have any negative effects on any Axiflow pump!



Hopper Pumps

Pump Model	Pump Model Nominal Dimensions (in)								
	Α	В	С	D	Е	F	G	Н	
STSC 70H	24.13	3.86	2.44	8.31	4.92	7.83	1.38	10.71	150
STSC 90H	32.05	5.28	3.66	10.94	6.46	10.20	1.77	12.48	335
STS 125H	41.73	7.17	4.80	15.51	7.99	13.74	2.46	16.50	825

The Axi-Mix™/Constant Innovation

The Axi-MixTM Powder & Liquid Induction System is just another example of our constant innovation for the Food, Beverage, Personal Care & Pharmaceutical Industries.

Axiflow does not make mixers! We design systems for inducing powders and liquids into a liquid stream of product regardless of liquid viscosity and discharge pressures.

The Axi-Mix[™] is capable of sucking powders into low viscosity liquids as well as very high viscosity liquids. As the liquid becomes more viscous, the Axiflow pump only becomes more positive. With the highest range of speeds of any positive displacement pump on the market, the Axiflow can maintain the pressure required across the eductor regardless of the viscosity. Because of the high suction and high discharge capabilities of the twin screw technology, the Axiflow pump can be used as the primary suction device. This

flexibility of the Axi-MixTM system to overcome high discharge pressures is where other powder incorporation systems come up short. All Axi-MixTM systems can be customized for precise metering and dosing capabilities to ensure extremely accurate powder to liquid ratios.



The Axiflow HopperPump™

- Spent Grain
- Fresh / Frozen Fruits & Vegetables
- Natural Salsa
- Cheese Curd
- Finished Natural Cheese
- Dips with Large Solids Content
- Pie Fillings
- Fondants & Frostings
- Soups & Sauces
- Ground Beef, Poultry & Pork
- Potato Salads
- Coleslaw
- Baked Beans

The Axi-Mix™

- Hydrating Whey Powders
- Sugar & Brine Solutions
- Citric Acid
- Dextrose
- Flavor Concentrates for Sports Drinks
- Xanthum Gum
- Hops Injection
- Carbopol / Carbomer
- Cinnamon for Flavored Applesauces
- Pectin
- Cocoa Powder for Chocolate Milk
- Guar Gum





GROUND MEAT & MEAT SLURRIES

- High suction capability for highly viscous meat slurries
- Low shear pumping capability to protect product integrity
- Ability to run dry for extended periods of time without any damage to the pump or seals
- ▶ High resistance to abrasive products
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning
- Ideal for auger feed systems because of the ability to handle inconsistent/ irregular product supply without cavitation/shaft deflection

DOUGHS & SPONGE

- The ability to pump up to 60% air enables the Axiflow pump to easily handle yeast slurries, sponge and other fermented products with entrained CO2 without causing the pump to air-lock.
- Low shear capability maintains high live yeast cell counts and delicate handling of finished doughs
- Delicate handling of gluten slurry
- High suction capability for finished dough
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning

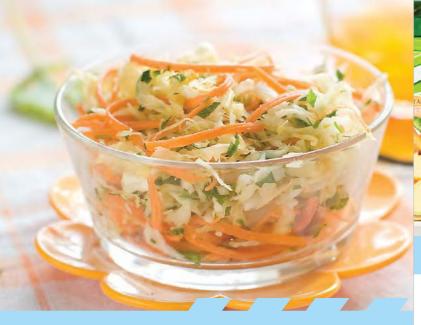
FRUIT & VEGETABLE PURÉES

- ▶ Ability to handle extreme temperature ranges from sub-zero temperatures to 450 DEG F without the need for "Hot / Cold Clearance" rotors.
- High suction capability for loading & unloading drums, totes and tankers of highly viscous purees and concentrates
- ▶ Ability to overcome vacuum in evaporators.
- The Axi-Mix is ideal for adding cinnamon to applesauce without reducing product viscosity
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning



DISTILLED SPIRITS & WINE PRODUCTION

- ► Low shear, delicate pumping of wine and distilled spirits at High flow rates in excess of 2,000 GPM
- High suction and high discharge pressure capabilities for pumping spent grain over long distances
- High resistance to abrasive foreign objects that can be introduced during harvesting of grapes
- Delicate handling of whole grapes
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning



VEGETABLE & PASTA SALADS

- Ability to maintain large soft solids up to 2.5" in diameter like potatoes, beans, pasta and vegetables
- High suction capability for highly viscous slurries
- Low shear pumping capability to protect product integrity and delicate emulsions
- Ability to run dry for extended periods of time without any damage to the pump or seals and no shaft deflection
- ▶ High resistance to abrasive products
- ▶ HopperPumpTM design allows for large "Open-Throat" suction to maintain integrity of large solids
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning





ASEPTIC PACKAGING

- Axiflow Aseptic designs are available in (3) standard pump sizes
- Coupled with a servo motor, the Aseptic Axiflow design is ideal for packaging lines
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning



PET FOOD

- High suction capability for highly viscous slurries
- High resistance to abrasive products like bone pieces and viscera
- Low shear pumping capability to protect product integrity
- Ability to run dry for extended periods of time without any damage to the pump or seals and no shaft deflection
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning



YOGURT / GREEK-STYLE YOGURT

- Unloads viscous yogurt base with high suction capability
- Fruit Injection with delicate handling of solids
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning



CHEESE

- Pumps Cultures and Curd gently without degradation
- Delicately Handles large solids/curd up to 2.5" in diameter to reduce fines and improve yields
- Pumps Molten Cheese with high suction capability
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning



SOUR CREAM

- ► Transfers Sour Cream at high pressure through smoothing disks
- Pulls viscous finished product through long suction lines with high suction
- Provides Smooth Repeatable Flow for In-Line Blending of Flavored Sour Creams
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning

BUTTER / MARGARINE

- Capable of high pressure delivery for in-line scrape surface cooling
- Provides repeatable smooth flow delivery for continuous blending
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning
- Pump with Axi-Mix system is ideal for adding dry ingredients to brine and calcium for slurry make-up
- High suction capability makes the Axiflow pump ideal for pulling out of the churn





COTTAGE CHEESE

- Protects Large Curd Cottage Cheese by low shear transfer
- High suction capability for pulling finished product from long distances
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning



ICE CREAM

- Capable of smooth, virtually pulsefree delivery of variegate through the ingredient feeder resulting in more uniform distribution of particles (caramel, chocolate, cookie dough, chocolate chips, etc.)
- Gentle Product handling while pumping soft solids
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning
- High suction capability for emptying varigates from drums & totes



PEANUT BUTTER / ALMOND BUTTER

- ▶ Provides excellent abrasive resistance
- ▶ Capable of high pressure delivery
- Provides non-pulsating repeatable flow for continuous in-line blending of honey, molasses, "crunchies" etc.
- Capable of handling large soft solids.
- Reverse flow & High Suction capability for line evacuation and product recovery

MAYONNAISE / SALAD DRESSINGS

- Gentle low shear pumping enables pumping long distances without emulsion breakdown
- Capable of pumping large soft solids such as blue cheese chunks without degradation
- Feeds the colloid mill with non-pulsating flow to ensure flooded suction reducing maintenance issues
- High suction allows evacuation of vessel of viscous product which minimizes waste
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning





TOMATO PASTE, KETCHUPS & BBQ SAUCES

- Capable of developing high suction so that removal of high viscosity ingredients such as tomato paste from drums, totes, bag on the box containers, etc.
- Capable of running dry without seal failure which is essential for priming and removal of viscous products from vessels.
- ► Feeds homogenizers with smooth non-pulsing flow when stuffing pressure is required
- High resistance to abrasiveness resulting in reduced maintenance costs
- Capable of heat exchanger timing with smooth flow at high pressures
- High pressure capable for long discharge runs
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning



BREWING

- Delicate handling of yeast cells during transfer
- Capable of high suction for long manifold suction lines, especially effective on waste yeast
- Pumps multiphase flow effectively eliminating air-locking and problems associated with CO2
- Capable of running dry without seal damage
- ▶ Fully CIPable

- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning
- High suction and high discharge pressure capabilities for pumping spent grain over long distances
- Axi-Mix is ideal for "dry-hopping"



BAKED GOODS/ICINGS/ PIE FILLINGS

- Capable of pumping up to 2.5" solids making it ideal for pumping fruit fillings, toppings, slurries, etc.
- Pumps all types of viscous cake icing and is ideal for in-line mixer and mill feeds
- Delivers smooth non-pulsing flow to enable continuous in-line flavor and color injection
- Capable of running dry without seal damage
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning
- Axi-Mix is ideal for adding dry ingredient solids to make up solutions and slurries



CHOCOLATE / WHITE CHOCOLATE

- Capable of pumping delicate confectionary products with low shear
- Excellent abrasion resistance

- Jacketed pump casing fluid head available to maintain required product temperatures
- Capable of running dry without seal damage
- High suction capability for viscous chocolates
- Capable of pumping large solids up to 2.5" so that nuts, cherries and other fruits can be handled without damage



- Easily removes viscous concentrates and bases from drums, totes and dumpers with smooth flow
- Effectively removes pulp slurries from bag in the box with low shear
- Smooth flow timing of Pasteurizers and Chillers
- Pulp slurry unloading and injection with high turndown capability
- ▶ Low NPSH for viscous product feed
- Ideal for pumping concentrates long distances at high flowrates
- Reverse flow capable for yield savings
- ► Smooth flow lends itself continuous blending and flavor injection
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning
- Axi-Mix is ideal for adding dry ingredients to make upsolutions and slurries
- 4,000 RPM threshold allows the Axiflow to overcome slip with speed. This ability to switch from extremely cold to extremely hot temperatures with no loss in flow rate eliminates the need for "Hot Clearance/Cold Clearance" rotors.



FROZEN FOODS / PREPARED MEALS

- Capable of running dry without seal damage
- ▶ Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning
- Capable of pumping up to 2.5" solids so that dips, sauces, fruit, vegetables, etc. are handled without damage or degradation



PERSONAL CARE/ PHARMACEUTICAL PRODUCTS

- Provides non-pulsating delivery of product that protects against foaming
- High suction capability easily pulls viscous products such as toothpaste, shampoo, and cream based ointments from vessels
- Capable of running dry without seal damage
- Fully CIPable
- Doubles as a CIP Pump by providing required line velocities and flow for entire system cleaning
- Low shear protects against cell and culture destruction
- Provides smooth, non-pulsing delivery of product for continuous blending
- Low shear product transfer minimizes foaming and delicately protects live cells & cultures.



Constant Innovation: Surpassing the Knowledge, Experience & Capabilities of the Competition

It is our focus on Constant Innovation that keeps Axiflow Technologies as the Leader in Sanitary Twin-Screw Pumps and Systems. Compared to any twin-screw pump, there is not a single metric in which Axiflow does not exceed the competition: protection of large soft solids, highest temperatures, highest viscosities,

highest speeds, largest number of screw pitches, largest number of standard pump models and the list goes on...!

Additionally, Axiflow sets itself apart from the competition by understanding how our equipment integrates into your process. Most equipment manufacturers only understand their equipment. To truly be an asset to our customers, we believe an equipment supplier must know how all of the equipment works together.

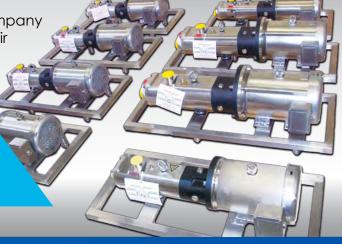
Axiflow Technologies, Inc. offers everything from pumps to complete, turn-key systems. We have customized solutions for all types of difficult applications such as Auger-feed Systems, The Axi-BlendTM Continuous Blending Systems and fully automated Axi-MixTM Powder Induction.





Our Trial Pump fleet is larger than any other pump company in the world! We allow our customers to prove out their difficult applications in their facility at NO CHARGE!

Understanding that not all manufacturers are able to do in-plant testing, we also offer pilot-plant testing at our facility. These offsite trials can be video-taped for the customer or be performed with the customer at our facility.



SERVICE & SUPPORT

All Axiflow pumps are assembled in the United States and are well supported with a large inventory of spare parts as well as a complete inventory of replacement pumps available in 24 hours!

Axiflow-The Original, Sanitary Twin Screw Pump. Don't just pump it—Axiflow it!

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