

➤ **Waukesha Cherry-Burrell®**

# UNIVERSAL 3 SERIES

**Rotary Positive Displacement Pumps**  
Front Loading Seal Design



**SPXFLOW®**

# A NEW LEVEL OF SANITARY PERFORMANCE.



**THE UNIVERSAL 3 SERIES** of pumps is the latest expression of decades of continuing product improvements. They combine 3-way mounting versatility introduced by the Universal 1 with new features that extend pump life and improve sanitary performance.

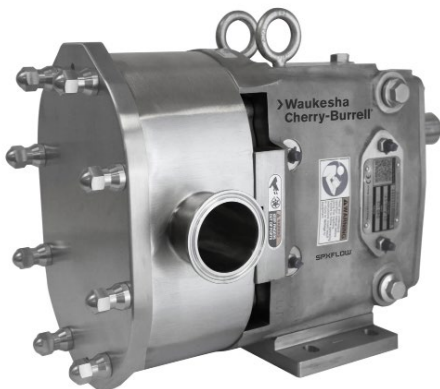


## Product features and benefits

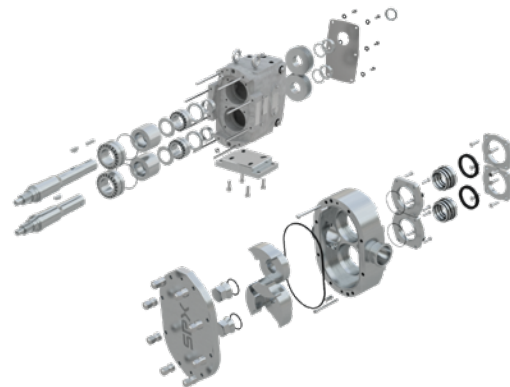
### Sanitary Features

- Front loading seal design
- CIP capable standard. Pump rotor has internal flats and will free drain with vertical ports.
- Cover is free draining in horizontal or vertical port positions.
- Rotor/shaft connection is completely sealed from product zone and reduces the risk of corrosion.
- Single mechanical seals standard. Optional double mechanical seals and o-ring seals also available. Ability to switch seal types without additional machining.
- Cover seal is a profile design to improve cleanability and resist particulates from being “pinched” and trapped.
- Stainless steel gear case standard.
- Aseptic and rectangular flange options available.
- Seal flush and steam-in-place optional.

**Shown with standard stainless steel gearcase**



**Shown with standard flat body profile**



# LONG-LIFE ENGINEERED FEATURES.

## TYPICAL APPLICATIONS



### NUTRITION & HEALTH

Soups, Stews, Tomato Paste  
Vegetables, Dressings  
Chocolate, Fats & Oils  
Batters, Cream Fillings  
Brewery, Wort  
Soft/Fruit Drinks



### DAIRY PROCESSING

Cream, Milk  
Cheese Curd & Whey  
Cottage Cheese  
Yogurt



### PHARMACEUTICAL/COSMETICS

Pill Pastes  
Syrups, Extracts, Slurries  
Face Creams & Lotions  
Hair Styling Gels & Liquids  
Dyes & Alcohols



### CHEMICAL/INDUSTRIAL

Solvents, Paints  
Fuels  
Resins, Polymers & Sludges  
Oil & Lubricants  
Soaps

## Long-life Features

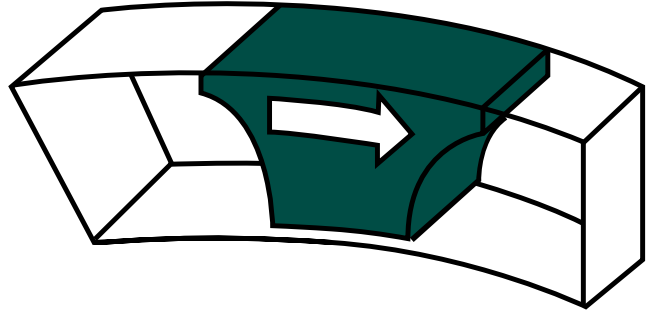
- Up to 500 psi (34.5 bar) pressure capability.
- Pumps rated to 300°F (149°C) as standard.
- Special rotor nut designed for extended service without loosening.
- No bearings in the product zone.
- New 17-4 shafts are shorter and are larger diameter than previous models.
- No bearings in the product zone.
  - Reduces overhung load which improves shaft alignment and decreases seal and bearing wear for extended seal life.
  - Improves shaft strength and stiffness helping to eliminate vibration
- Heavy duty stainless steel bearing frame standard.
- Double tapered roller bearings.
- Greased lubed bearings for positive lubrication to all bearings over entire speed, temperature and pressure range.
- Body retaining screws for maintaining mechanical seal contact during inspection.
- Extended outer seal life. A wave spring, instead of an o-ring, mechanically loads the seal.
- Unique mechanical seal design utilizes 2 pin stationary seal and special design shaft for rotary seal.

## Installation Features

- Bidirectional flow. Rotors, locked with torqued nuts, rotate securely in either direction. No more flow direction/shaft position specifications.
- Versatile 3-Way mounting of gear case, including vertical alignment of ports.
- Upper or lower shaft position.
- Non-galling Waukesha "88" alloy rotors standard; permits running at tighter clearances and pumping a wide range of viscosities. Stainless steel rotors also available.
- 316L stainless steel pump body and cover.
- Electro-polish of product contact surfaces, optional.

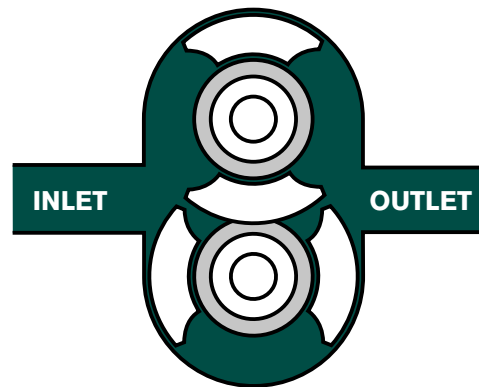
## TIME-TESTED ROTARY PUMP; CIRCUMFERENTIAL-PISTON OPERATING PRINCIPLE

In the Waukesha Cherry-Burrell design, arc-shaped “pistons” (rotor wings) travel in annular-shaped cylinders machined in the pump body; the resulting long sealing path reduces slippage and produces a smooth flow of product without destructive pulses or pressure peaks and without valves or complex parts.



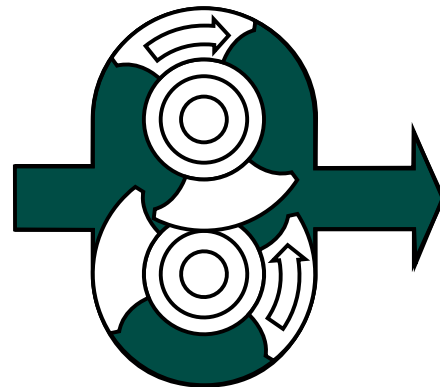
### FOR LOW VISCOSITY FLUIDS

Rotors, made of Waukesha “88” alloy, can be run with close clearance to the 316L stainless steel fluid head, without galling or seizing should inadvertent pressure surges cause contact. The close clearances combined with the rotor geometry, which gives a long sealing path between the pump inlet and outlet, means low slip operation. As a result, you achieve: high efficiency, good priming ability, metering capability and good flow control.



### FOR HIGH VISCOSITY FLUIDS

The large fluid cavities of the rotors, plus the large easy entry anti-cavitation ports, allow efficient pumping of high viscosity fluids, slurries or even liquids with large chunks or particles.



### FOR NON-LUBRICATING AND ABRASIVE FLUIDS

The Waukesha Cherry-Burrell design has no bearing in the fluid being pumped, no sliding or rolling contact and no rotor-to-rotor contact. This produces **MAXIMUM SERVICE LIFE** even under severe operating conditions.

## Product Specifications

STANDARD U3 MODELS								
	DISPLACEMENT PER REVOLUTION	NOMINAL CAPACITY TO	INLET/ OUTLET	OPTIONAL INLET/ OUTLET	PRESSURE RANGE UP TO*	MAXIMUM RPM	APPROX SHIP WT.	TEMP RANGE
<b>006-U3</b>	.0082 GAL. (.031 LITER)	8 GPM (1.8 m3/hr.)	1"	1½"	300 PSI (20.7 BAR)	1000	56lb (25KG)	<b>Std Rotors:</b> -40°F (-40°C) to 300°F (149°C)
<b>015-U3</b>	.0142 GAL. (.054 LITER)	11 GPM (2.5 m3/hr.)	1½"	-	250 PSI (17.2 BAR)	800	56lb(25KG)	
<b>018-U3</b>	.029 GAL. (.110 LITER)	20 GPM (4.5 m3/hr.)	1½"	2"	200 PSI (13.8 BAR)	700	65LB (30KG)	
<b>030-U3</b>	.060 GAL. (.227 LITER)	36 GPM (8.2 m3/hr.)	1½"	2"	250 PSI (17.2 BAR)	600	130LB (59KG)	
<b>040-U3</b>	.076 GAL. (.288 LITER)	46 GPM (10.4 m3/hr.)	2"	-	150 PSI (10.5 BAR)	600	140LB (64KG)	
<b>045-U3</b>	.098 GAL. (.371 LITER)	58 GPM (13.2 m3/hr.)	2"	-	450 PSI (31.0 BAR)	600	295LB (134KG)	
<b>060-U3</b>	.153 GAL. (.579 LITER)	90 GPM (20.4 m3/hr.)	2½"	3"	300 PSI (20.7 BAR)	600	285lb (129KG)	
<b>130-U3</b>	.253 GAL. (.958 LITER)	150 GPM (34.1 m3/hr.)	3"	-	200 PSI (13.8 BAR)	600	305lb (138KG)	
<b>180-U3</b>	.380 GAL. (1.438 LITER)	230 GPM (52.2 m3/hr.)	3"	-	450 PSI (31.0 BAR)	600	520LB (236KG)	
<b>210-U3</b>	.502 GAL. (1.900 LITER)	300 GPM (68.1 m3/hr.)	4"	-	500 PSI (34.5 BAR)	600	915LB (415KG)	
<b>220-U3</b>	.521 GAL. (1.972 LITER)	310 GPM (70.4 m3/hr.)	4"	-	300 PSI (20.7 BAR)	600	590LB (268KG)	
<b>320-U3</b>	.752 GAL. (2.847 LITER)	450 GPM (102 m3/hr.)	6"	-	300 PSI (20.7 BAR)	600	895LB (406KG)	

RECTANGULAR FLANGE U3 MODELS								
	DISPLACEMENT PER REVOLUTION	NOMINAL CAPACITY TO	INLET/ W X L (INCHES)	OUTLET	PRESSURE RANGE UP TO*	MAXIMUM RPM	APPROX SHIP WT.	TEMP RANGE
<b>014-U3</b>	.0142 GAL. (.054 LITER)	5.68 GPM (1.3 m3/hr.)	1.44 X 4.94	1½"	250 PSI (17.2 BAR)	400	62LB (28KG)	<b>Std Rotors:</b> -40°F (-40°C) to 300°F (149°C)
<b>034-U3</b>	.060 GAL. (.227 LITER)	24 GPM (5.5 m3/hr.)	1.81 X 6.84	2"	250 PSI (17.2 BAR)	400	116LB (53KG)	
<b>064-U3</b>	.153 GAL. (.579 LITER)	61 GPM (13.9 m3/hr.)	2.44 X 9.0	2½"	300 PSI (20.7 BAR)	400	292LB (132KG)	
<b>134-U3</b>	.253 GAL. (.958 LITER)	101 GPM (22.9 m3/hr.)	3.19 X 9.38	3"	200 PSI (13.8 BAR)	400	312LB (142KG)	
<b>184-U3</b>	.380 GAL. (1.483 LITER)	152 GPM (34.5 m3/hr.)	3.28 X 11.25	3"	450 PSI (31.0 BAR)	400	518LB (235KG)	
<b>214-U3</b>	.502 GAL. (1.90 LITER)	200 GPM (45.4 m3/hr.)	3.45 X 12.70	4"	500 PSI (34.5 BAR)	400	754LB (342KG)	
<b>224-U3</b>	.521 GAL. (1.972 LITER)	208 GPM (47.2 m3/hr.)	4.06 X 11.25	4"	300 PSI (20.7 BAR)	400	559LB (254KG)	
<b>324-U3</b>	.752 GAL. (2.847 LITER)	300 GPM (68.1 m3/hr.)	4.25 X 12.70	6"	300 PSI (20.7 BAR)	400	833LB (378KG)	

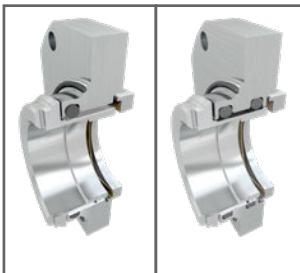
# PERFORMANCE AND LONG LIFE THROUGH DESIGN EXCELLENCE AND QUALITY CONSTRUCTION



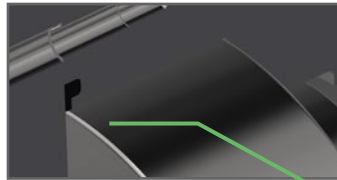
**Single Mechanical Seal\***  
Standard seal configuration: silicon carbide rotary seal face and carbon stationary seal face. Alternate materials available for abrasive service.



**Double Concentric Mechanical Seal\***  
Used with flushing fluid to cool, lubricate, flush away residue. Best arrangement for severe service.



**Single and Double O-ring Seal**  
Traditional general purpose seal. Low cost and easy to service. Suitable for low pressure applications. 100 psi, 7 bar



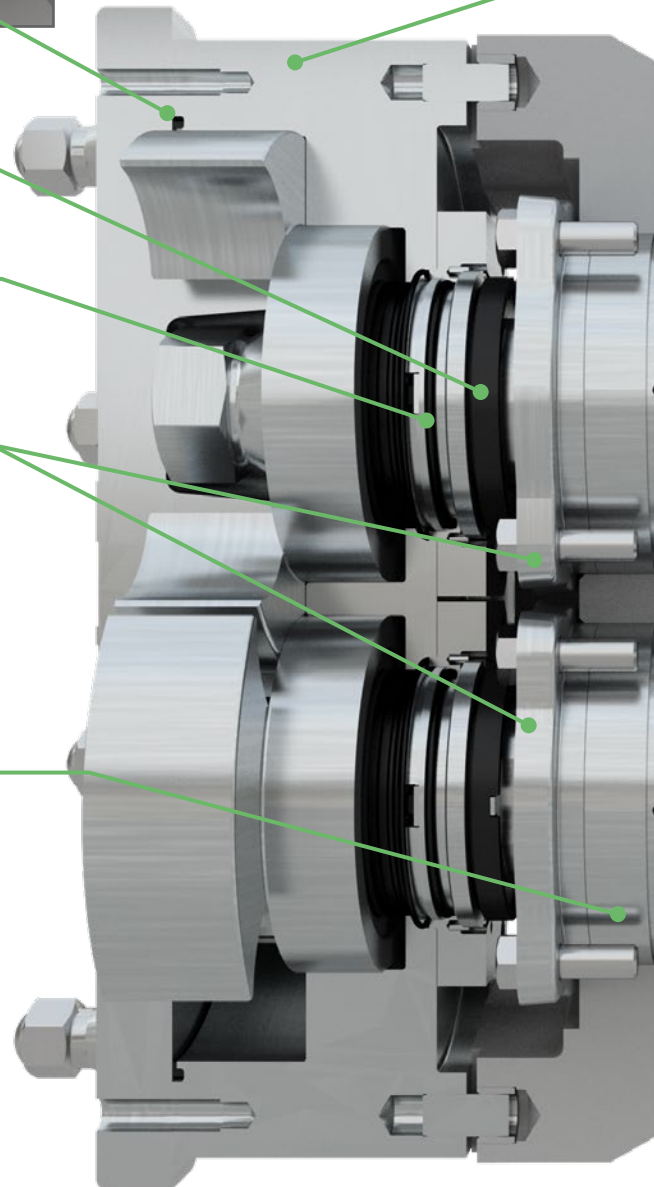
Designed with an L-Shaped cover gasket which is easy to clean and prevents particulates from lodging under the gasket.

## Field interchangeable seal options

- Seals located within the pump rotor and body

Standard stainless steel bearing retainers

Front bearing fixed; rear bearing floating. Better control of thermal expansion when handling hot products



Elastomer choices for o-rings: Fluoroelastomer (FKM), EPDM, Perfluoroelastomer (FFKM)

\*Mechanical seal material options: Carbon, Silicon Carbide, Tungsten Carbide

The Waukesha Cherry-Burrell Universal 3 Series gives you...

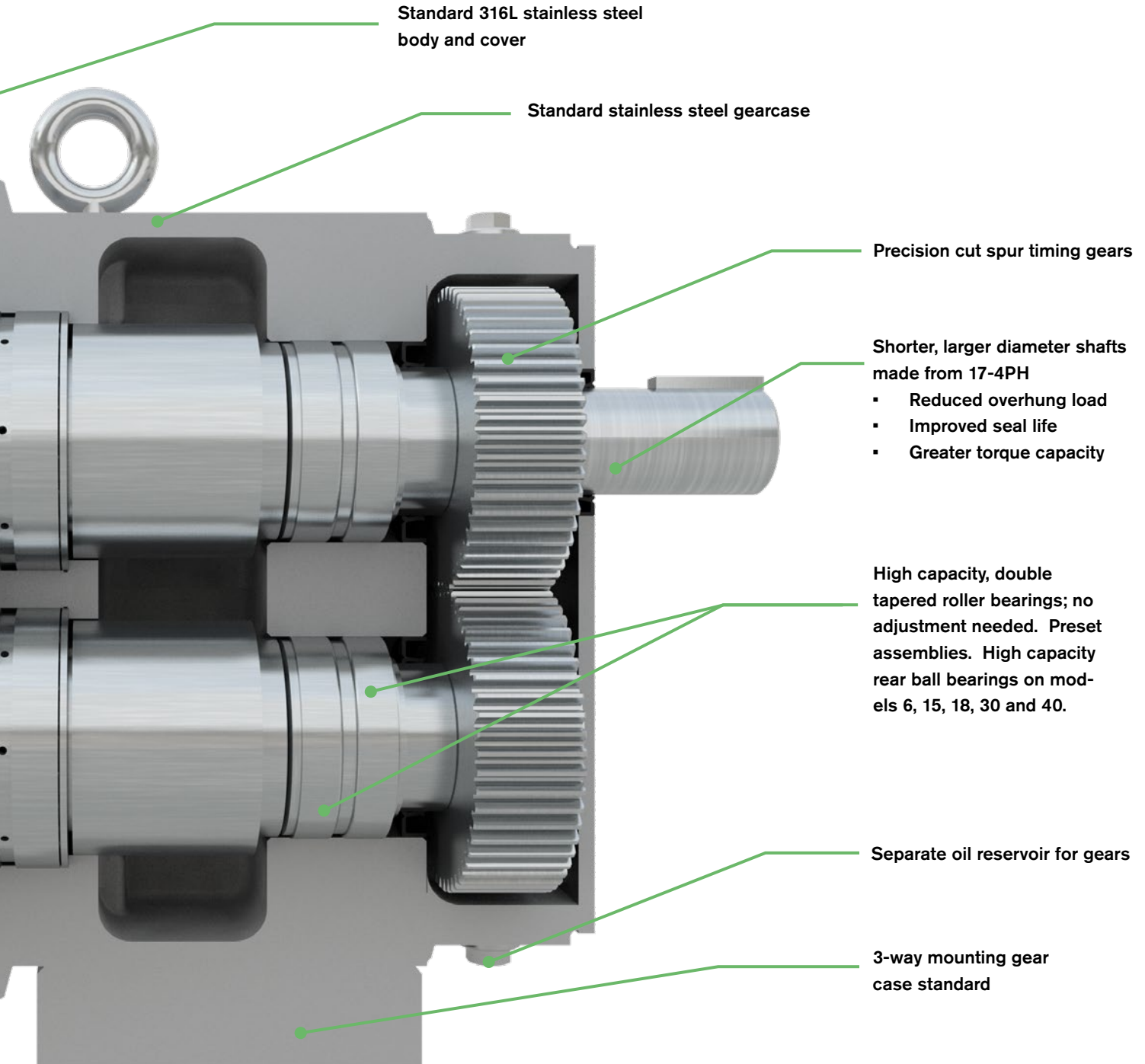
High pressure capability, up to 500 psi/34.5 bar, for more demanding jobs.

Longer service life, resulting from a fresh engineering approach and durable high quality components.

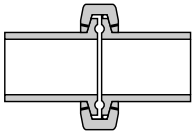
The right seal, for countless applications, plus interchangeability when needed

Metal rotor: Waukesha "88" non-galling alloy, for close running clearance.

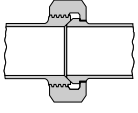
Design conforms, to 3-A, EHEDG



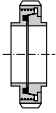
## Standard & Options



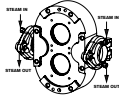
Clamp Connections



Bevel Seat



DIN, SMS, RJT

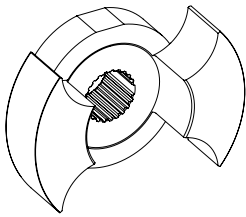


Aseptic

### Ports

**Standard:** Sanitary clamp type connections. Available in a variety of styles including S-Line, I-Line and Q-Line.

**Options:** Bevel Seat, European Types; DIN, SMS, RJT, Aseptic Ports

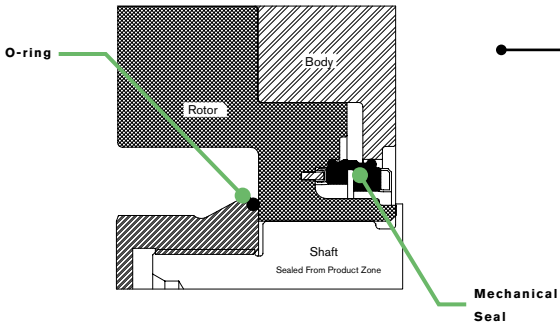


### Rotors

**Standard:** Twin Wing suitable for most applications.

#### Rotor Clearance

- Standard for most applications up to 300°F (149°C)
- Low viscosity clearance rotors optional for applications up to 200°F (93°C)
- Contact application engineering for other rotor clearance options

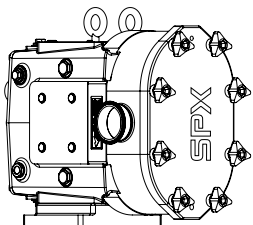


### Cover & Gearcase

**Standard:** Stainless steel 17-4 shafts, top shaft position, stainless steel bearing retainers, shaft completely sealed from product zone.

#### Options:

- Lower shaft position
- Bearing isolators
- Pedestal shims for side mounted pumps. Left hand shaft position is standard
- Right hand shaft is positioned on side mounted gearcase



Shown with optional 3-wing cover nuts

### O-rings

**Standard:** Fluoroelastomer FKM

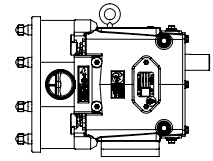
**Options:** Fluoroelastomer (FKM), EPDM, Fluoroelastomer (FFKM)



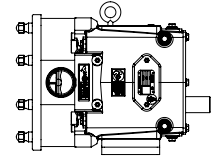
## Shaft Position

**Standard:** Top Shaft Position

**Option:** Lower Shaft Position



Top Shaft Position



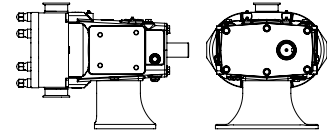
Lower Shaft Position

## Mounting

**Standard:** Flat plate, epoxy painted, with adjustable feet, SS coupling guard, and Lovejoy or Woods coupling.

### Options:

- 304 SS unpolished plate base with adjustable feet
- Portable base with rubber wheels
- SS tubular bases



Optional Side Mount Gear Case for vertical fluid entry and free draining of body

Standard left hand shaft position shown (right hand optional)

## Bases & Drives

**Standard:** Stainless steel tubular base with adjustable feet and stainless steel guard and coupling.

### Options:

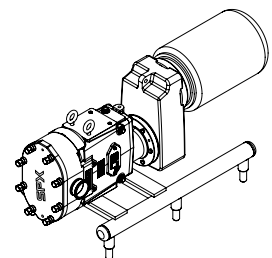
- 304 SS plate
- Flat epoxy plate
- Portable base

## Tru-Fit®

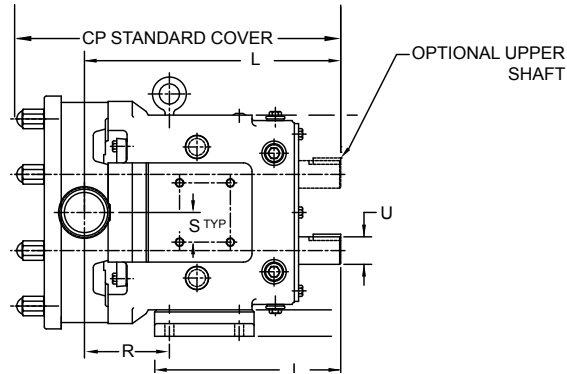
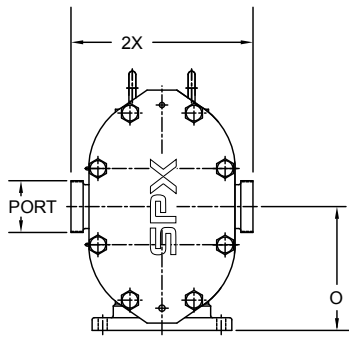
**Standard:** Close coupled Tru-Fit® pump mounted on stainless steel base with stainless steel adapters.

### Options:

- 304 SS polished plate base
- NEMA or IEC frames available. Right angle reducer also available for additional space savings
- 1/2 through 60 horsepower drive options available
- Horizontal or vertical porting



## Dimensional Data



### STANDARD U3 MODELS

		CP	I	L	O	PORT SIZE	U +0.000 -0.001	2X	R*		
									U3	U1/U2	DIFF. BETWEEN U3 AND U1/U2 "R" DIM.
006-U3	IN	12.42	7.61	10.04	4.21	1	0.88	6.97	3.23	2.79	0.4
	MM	315	193	255	107	--	22	177	82	71	11
015-U3	IN	12.69	7.61	10.04	4.21	1.5	0.88	6.97	3.23	2.79	0.4
	MM	322	193	255	107	--	22	177	82	71	11
018-U3	IN	13.35	7.61	10.28	4.21	1.5	0.88	7.09	3.47	3.02	0.5
	MM	339	193	261	107	--	22	180	88	77	11.1
030-U3	IN	15.16	8.8	12.05	5.21	1.5	1.25	8.5	4.26	3.84	0.4
	MM	385	224	306	132	--	32	216	108	98	10.2
040-U3	IN	15.54	8.8	12.21	5.21	2	1.25	8.64	4.43	4	0.4
	MM	395	224	310	132	--	32	219	113	102	10.5
045-U3	IN	19.11	11	14.84	7.31	2"	1.63	10.75	4.72	4.73	SAME
	MM	485	279	377	186	--	41	273	120	120	SAME
060-U3	IN	19.66	11	15.13	7.31	2.5	1.63	10.75	5.01	5.01	SAME
	MM	499	279	384	186	--	41	273	127	127	SAME
130-U3	IN	20.68	11	15.76	7.31	3	1.63	10.75	5.64	5.65	SAME
	MM	525	279	400	186	--	41	273	143	144	SAME
180-U3	IN	23.48	14.8	19.03	9.38	3	2	13.06	4.21	4.2	SAME
	MM	596	376	483	238	--	51	332	107	107	SAME
210-U3	IN	27.07	17.72	21.85	10.38	4	2.38	14.73	5.64	4.7	0.9
	MM	688	450	555	264	--	60	374	143	119	24.3
220-U3	IN	24.22	14.8	18.49	9.38	4	2	13.25	4.45	4.44	SAME
	MM	615	376	470	238	--	51	337	113	113	SAME
320-U3	IN	27.66	17.72	22.34	10.38	6.00 150# FLG	2.38	16	6.02	5.09	0.9
	MM	703	450	567	264		60	406	153	129	23.9

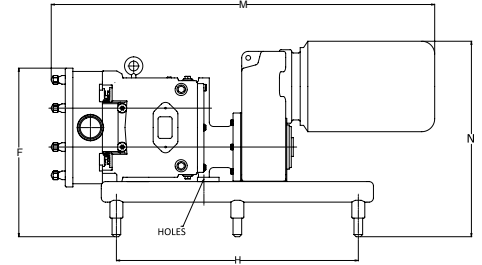
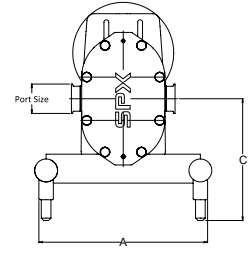
\*"R" dimension shown for customers converting from a U1/U2 pump to a U3 pump. All other dimensions are the same between U1/U2/U3.

NOTE: Dimension "2X" applies for Bevel Seat, "S"-Clamp, "Q"-Clamp, 15l and 14l fittings (except 320-U3).

NOTE: Dimensions are for guidance purposes only. Contact your SPX FLOW Representative if more detailed measurements are needed.

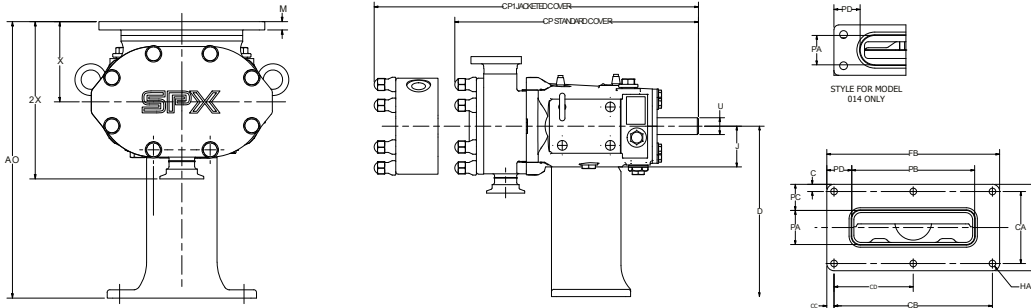
# TRU-FIT U3 MODELS

		A	C	F	H	M <sup>1</sup>	PORT SIZE	N <sup>1</sup>
<b>006-U3</b>	IN	14.38	9.81	13.9	18	28.02	1	16.22
	MM	365	249	353	457	712	--	412
<b>015-U3</b>	IN	14.38	9.81	13.9	18	28.29	1	16.22
	MM	365	249	353	457	719	--	412
<b>018-U3</b>	IN	14.38	9.81	13.9	18	28.29	1.5	16.22
	MM	365	249	353	457	719	--	412
<b>030-U3</b>	IN	14.38	11.03	16.1	20	34.24	1.5	19.68
	MM	365	280	409	508	870	--	500
<b>040-U3</b>	IN	14.38	11.03	16.1	20	34.61	2	19.68
	MM	365	280	409	508	879	--	500
<b>045-U3</b>	IN	18.38	12.63	19.51	28	44.24	2	22.65
	MM	467	321	496	711	1124	--	575
<b>060-U3</b>	IN	18.38	12.63	19.51	28	44.52	2.5	22.65
	MM	467	321	496	711	1131	--	575
<b>130-U3</b>	IN	18.38	12.63	19.51	28	45.54	3	22.65
	MM	467	321	496	711	1157	--	575
<b>180-U3</b>	IN	20.38	14.66	23.41	36	50.24	3	26.07
	MM	518	372	595	914	1276	--	662
<b>220-U3</b>	IN	20.38	14.66	23.41	36	50.98	4	26.07
	MM	518	372	595	914	1295	--	662



<sup>1</sup> Dimensions affected by motor frame size

NOTE: Dimensions are for guidance purposes only. Contact your SPX FLOW Representative if more detailed measurements are needed.



# RECTANGULAR FLANGE U3 MODELS

		AO	C	CA	CB	CC	CD	CP1	FA	FB	HA	M	PA	PB	PC	PD	X	2X
<b>014-U3</b>	IN	12.50	0.50	1.63	0.50	6.50	NA	14.51	2.63	7.50	0.41	0.38	1.53	4.77	0.55	1.37	3.63	7.11
	MM	318	13	41	13	165	NA	369	67	191	10	10	39	121	14	35	92	181
<b>034-U3</b>	IN	12.75	0.56	1.88	0.63	10.75	NA	17.41	3.00	12.00	0.53	0.50	1.87	6.90	0.56	2.55	3.88	8.13
	MM	324	14	48	16	273	NA	442	76	305	13	13	48	175	14	65	98	206
<b>064-U3</b>	IN	13.94	0.50	4.00	0.52	12.20	NA	21.91	5.00	13.23	0.53	0.48	2.53	9.09	1.24	2.07	4.94	10.31
	MM	354	13	102	13	310	NA	557	127	336	13	12	64	231	31	53	125	262
<b>134-U3</b>	IN	13.94	0.78	3.00	0.63	14.00	NA	22.93	4.55	15.25	0.53	0.48	3.27	9.52	0.64	2.86	4.94	10.31
	MM	354	20	76	16	356	NA	582	116	387	13	12	83	242	16	73	125	262
<b>184-U3</b>	IN	20.75	0.63	5.75	0.63	16.75	8.38	26.48	7.00	18.00	0.53	0.61	3.36	11.33	1.82	3.34	7.25	13.78
	MM	527	16	146	16	425	213	673	178	457	13	15	85	288	46	85	184	350
<b>214-U3</b>	IN	35.94	0.75	7.50	0.75	16.50	8.25	29.06	9.00	18.00	0.69	1.00	3.55	12.80	2.73	2.60	8.81	17.46
	MM	913	19	191	19	419	210	738	229	457	18	25	90	325	69	66	224	443
<b>224-U3</b>	IN	23.75	0.63	4.38	0.63	16.75	NA	27.22	5.63	18.00	0.53	0.50	4.17	11.36	0.73	3.32	6.25	12.88
	MM	603	16	111	16	425	NA	691	143	457	13	13	106	289	18	84	159	327
<b>324-U3</b>	IN	35.94	1.06	7.50	0.75	16.50	8.25	29.66	9.63	18.00	0.69	1.00	4.37	12.82	2.63	2.59	8.81	17.75
	MM	913	27	191	19	419	210	753	244	457	18	25	111	326	67	66	224	451

# **Waukesha Cherry-Burrell®**

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