



Universal 1 Series

ROTARY POSITIVE DISPLACEMENT PUMPS



> Waukesha Cherry-Burrell®

For more than half a century, Waukesha Cherry-Burrell has been a leader in the design, manufacturing and application of external circumferential piston (ECP) style, rotary positive displacement pumps. Waukesha Cherry-Burrell PD pumps are in service around the world in food, dairy, canning, bakery, beverage and pharmaceutical processing, as well as difficult chemical and industrial applications.

Users of Waukesha Cherry-Burrell PD pumps benefit from decades of continuing product improvement. Steady advances in design, metallurgy and fabrication techniques have yielded progressively higher levels of performance and service life.

Based in Charlotte, North Carolina, SPX Corporation (NYSE: SPW) is a global Fortune 500 multi-industry manufacturing leader with over \$5 billion in annual revenue, operations in more than 35 countries and over 15,000 employees. The company's highly-specialized, engineered products and technologies are concentrated in Flow Technology and energy infrastructure. Many of SPX's innovative solutions are playing a role in helping to meet rising global demand for electricity and processed foods and beverages, particularly in emerging markets. The company's products include food processing systems for the food and beverage industry, power transformers for utility companies, and cooling systems for power plants. For more information, please visit www.spx.com.

Setting the standard of performance for the sanitary industry for over 50 years.

PRODUCT FEATURES AND BENEFITS

Sanitation features

- 316L stainless steel body, cover, and shaft
- Easy disassembly for COP cleaning
- Elastomers that comply with FDA requirements
- Aseptic models available
- Meets 3A sanitary standards

Long-life features

- Up to 200 (13.8 bar) psi pressure capability*
- No bearings in product zone
- Heavy duty bearing frame with large diameter shafts
- Grease lubed bearings for positive lubrication of all bearing over entire speed, temperature and pressure range
- Non-galling Waukesha "88" alloy rotors standard; permits running at tighter clearances and pumping a wide range of viscosities
- Remanufacturing and Inspect and Advise programs to extend life and reduce costs

Available options

*High strength 17-4 PH shafts and hex cover nuts for higher pressure applications

- Stainless steel gear case
- Stainless steel bearing retainers
- Bearing isolators protect bearings from contamination
- Body retaining screws
- Steel-It paint
- Single wing rotors for minimum damage of particulates.
- Jacketed or vented covers
- Rectangular flange inlet for high viscosity products
- Tru-Fit™ close coupled pump design

Installation Features

- Bidirectional flow. Rotors, locked with double jam nuts, rotate securely in either direction.
- No flow direction/shaft position specifications
- Versatile 3-Way mounting of gear case, including vertical alignment of ports
- Upper or lower shaft position
- Easy to install or convert single O-ring to mechanical seals
- Interchangeable installation dimensions with Universal II and Universal Lobe PD pumps



Shown with optional stainless steel gearcase



Typical product applications

Bakery

Batters
Flavorings
Frostings
Fruit Fillings
Fats & Oils
Sweeteners
Yeast Slurry



Beverage

Beer, Wort, Yeast
Soft Drinks
Juice
Fruit Concentrates
Fruit Drinks
Wine
High Fructose Corn Syrups (HFCS)



Canning

Baby Foods, Soups, Stews
Tomato Paste/Sauces
Fruit Puree
Vegetables, Diced, Slurries
Puddings, Jams, Jellies
Salad Dressings, Mayonnaise



Confectionery

Syrups
Cream Fillings
Chocolate



Cosmetics

Face Creams & Lotions
Hair Styling Gels & Liquids
Essential Oils
Dyes & Alcohols
Shampoos



Dairy

Cream, Milk, Butter
Cheese Curd & Whey
Cottage Cheese
Yogurt



Meat Packing

Meat-Emulsions
Ground Meats
Pet Foods
Ruffle & Caul Fat
Mechanically Deboned Meat (MDM)



Pharmaceutical/Health Care

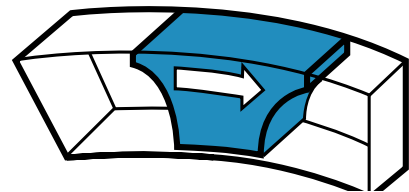
Pill Pastes
Syrups
Extracts
Emulsions
Slurries
Tooth Paste



Time-tested Waukesha Cherry-Burrell rotary pump; external circumferential piston (ECP) operating principle.

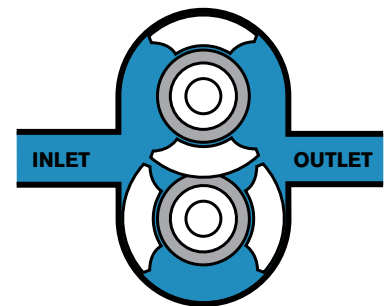
THEORY OF OPERATION

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.



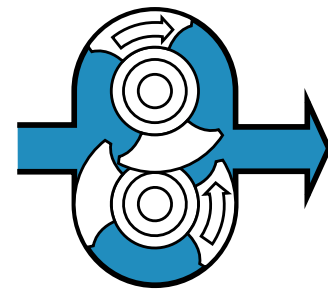
FOR LOW VISCOSITY FLUIDS

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 volumetric efficiency, good priming ability, metering capability and good flow control.



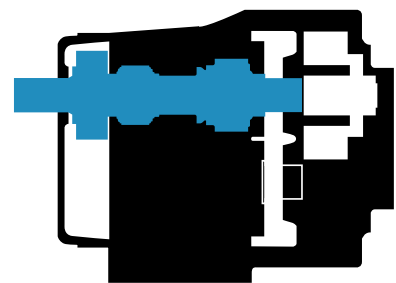
FOR HIGH VISCOSITY FLUIDS

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 unique Waukesha Cherry-Burrell design has no bearings 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

UNIVERSAL I MODELS

| MODEL | DISPLACEMENT PER REVOLUTION | NOMINAL CAPACITY* TO | INLET/OUTLET | OPTIONAL INLET/OUTLET | PRESSURE RANGE UP TO** | MAXIMUM RPM | TEMP RANGE** |
|--------|-----------------------------|------------------------------------|--------------|-----------------------|------------------------|-------------|---|
| 006-U1 | .0082 GAL. (.031 Liter) | 6 GPM (1.3 m ³ /hr.) | 1" | 1 1/2" | 200 PSI (13.8 bar) | 800 | (-)40 °F /(-)40 °C to 300 °F (149 °C) |
| 015-u1 | .0142 gal. (.054 liter) | 9 GPM (2.0 m ³ /hr.) | 1 1/2" | -- | 200 PSI (13.8 bar) | 700 | |
| 018-u1 | .029 gal. (.110 liter) | 17 GPM (3.8 m ³ /hr.) | 1 1/2" | 2" | 200 PSI (13.8 bar) | 600 | |
| 030-u1 | .060 gal. (.227 liter) | 36 GPM (8.2 m ³ /hr.) | 1 1/2" | 2" | 200 PSI (13.8 bar) | 600 | |
| 040-u1 | .076 gal. (.288 liter) | 45 GPM (10.2 m ³ /hr.) | 2" | 2 1/2" | 150 PSI (10.3 bar) | 600 | |
| 060-u1 | .153 gal. (.579 liter) | 90 GPM (20.4 m ³ /hr.) | 2 1/2" | 3" | 200 PSI (13.8 bar) | 600 | |
| 130-u1 | .254 gal. (.961 liter) | 150 GPM (34.1 m ³ /hr.) | 3" | -- | 200 PSI (13.8 bar) | 600 | |
| 220-u1 | .522 gal. (1.976 liter) | 310 GPM (70.4 m ³ /hr.) | 4" | -- | 200 PSI (13.8 bar) | 600 | |
| 320-u1 | .754 gal. (2.854 liter) | 450 GPM 102 m ³ /hr.) | 6" | -- | 200 PSI (13.8 bar) | 600 | |

RECTANGULAR FLANGE MODELS

| MODEL | DISPLACEMENT PER REVOLUTION | NOMINAL CAPACITY* TO | INLET W X L INCHES | OUTLET | PRESSURE RANGE UP TO** | MAXIMUM RPM | TEMP RANGE** |
|--------|-----------------------------|------------------------------------|--------------------|-------------|------------------------|-------------|---|
| 014-U1 | .0142 GAL. (.054 LITER) | 5 GPM (1.1 m ³ /hr.) | 1.5 X 4.75 | 1 1/2" | 200 PSI (13.8 bar) | 400 | (-)40 °F /(-)40 °C to 300 °F (149 °C) |
| 024-U1 | .029 GAL. (.110 LITER) | 11 gpm (2.5 m ³ /hr.) | 1.31 X 4.93 | 1 1/2" (2") | 200 PSI (13.8 bar) | 400 | |
| 034-u1 | .060 GAL. (.227 LITER) | 24 gpm (5.4 m ³ /hr.) | 1.75 X 6.75 | 2" | 200 PSI (13.8 bar) | 400 | |
| 064-U1 | .153 GAL. (.579 LITER) | 60 gpm (13.6 m ³ /hr.) | 2.24 x 8.82 | 2 1/2" (3") | 200 PSI (13.8 bar) | 400 | |
| 134-U1 | .254 GAL. (.961 LITER) | 100 gpm (22.7 m ³ /hr.) | 2.97 x 9.25 | 3" | 150 psi (10.3 bar) | 400 | |
| 224-U1 | .522 GAL. (1.976 LITER) | 200 gpm (45.4 m ³ /hr.) | 3.87 x 11 | 4" | 200 PSI (13.8 bar) | 400 | |
| 324-U1 | .754 GAL. (2.854 LITER) | 300 gpm (68.1 m ³ /hr.) | 5 x 17.38 | 6" | 200 PSI (13.8 bar) | 400 | |

ASEPTIC MODELS

| MODEL | DISPLACEMENT PER REVOLUTION | NOMINAL CAPACITY* TO | INLET/OUTLET | PRESSURE RANGE UP TO** | MAXIMUM RPM | TEMP RANGE** |
|-------|-----------------------------|------------------------------------|--------------|------------------------|-------------|--|
| 033A | .051 GAL. (.193 LITER) | 30 GPM (6.8 m ³ /hr.) | 1 1/2" | 225 PSI (15.5 bar) | 600 | (-)40 °F (-)40 °C to 300 °F (149 °C) |
| 133A | .205 GAL. (.776 LITER) | 120 gpm (27.3 m ³ /hr.) | 3" | 225 PSI (15.5 bar) | 600 | |
| 223A | .440 GAL. (1.666 LITER) | 260 gpm (59.1 m ³ /hr.) | 4" | 225 PSI (15.5 bar) | 600 | |
| 323A | .616 GAL. (2.332 LITER) | 360 gpm (81.8 m ³ /hr.) | 6" | 225 PSI (15.5 bar) | 600 | |

*For capacities above 450 to 935 GPM, see bulletin FH-1725 on 420/520 UHC (ECP Rotors) and FH-1733 on 420/520 UHCL (Lobe Rotors).

**Contact application engineering for higher pressure or higher temperature applications.

Note: Universal II (Bulletin FH-1723) and Universal Lobe (Bulletin FH-1733) models are available for CIP installations, applications up to 500 psi, and extended run services not needing frequent tear down for cleaning.

Time-Tested Waukesha Cherry-Burrell Rotary Pump.

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

High pressure capability; up to 200 psi/13.8 bar*.

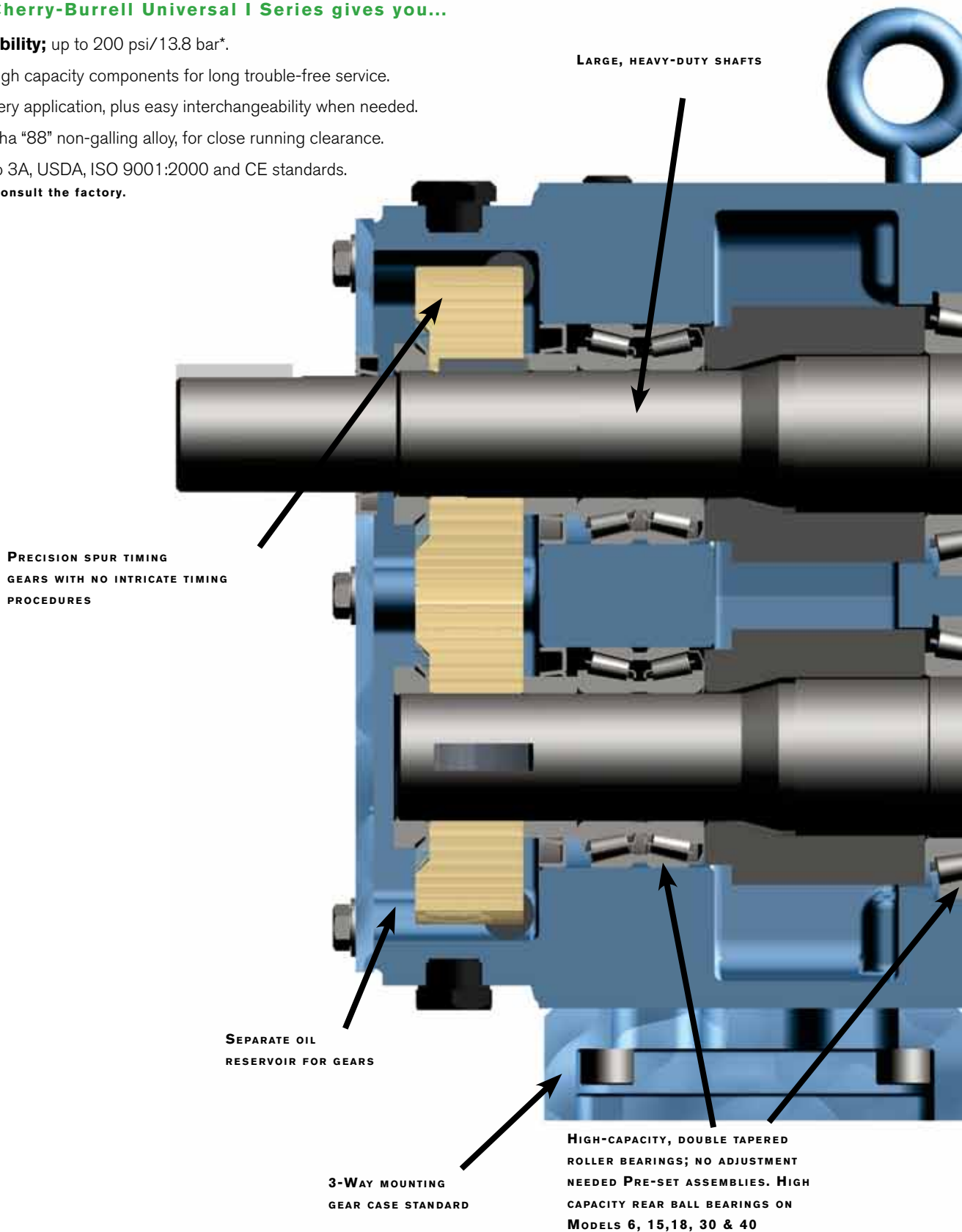
Long service life: High capacity components for long trouble-free service.

The right seal for every application, plus easy interchangeability when needed.

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

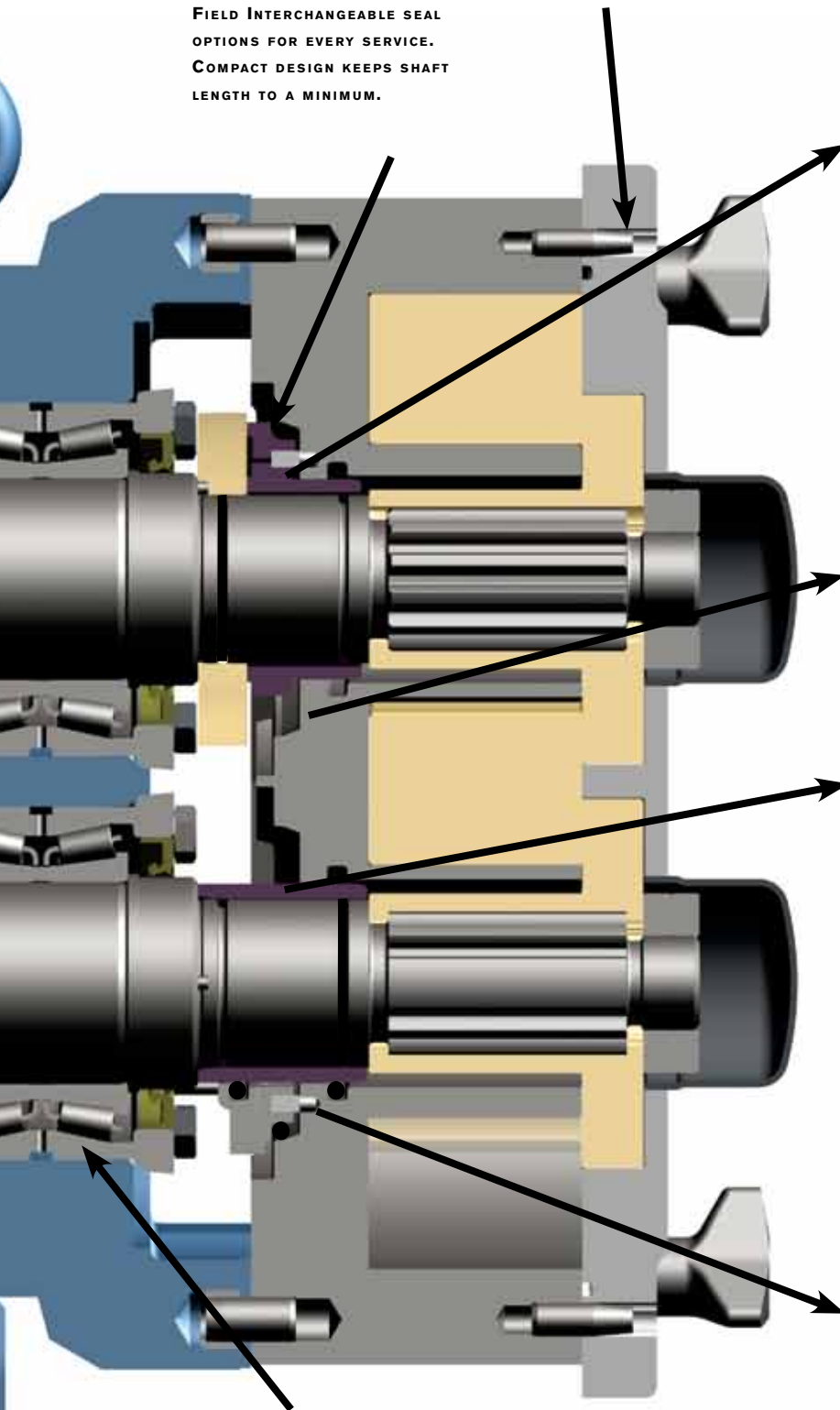
Design conforms, to 3A, USDA, ISO 9001:2000 and CE standards.

*For higher pressures, consult the factory.



316L STAINLESS STEEL BODY AND COVER; DESIGN CONFORMS TO USDA STANDARDS

FIELD INTERCHANGEABLE SEAL OPTIONS FOR EVERY SERVICE. COMPACT DESIGN KEEPS SHAFT LENGTH TO A MINIMUM.

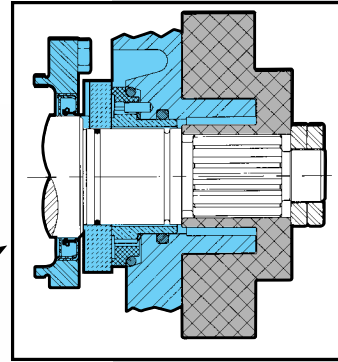


FRONT BEARING FIXED; REAR BEARING FLOATING. BETTER CONTROL OF THERMAL EXPANSION WHEN HANDLING HOT PRODUCTS

Seal Options

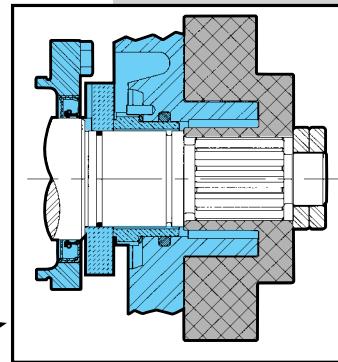
Double Concentric Mechanical Seal†

Used with flushing fluid to cool, lubricate, flush away residue. Best arrangement for severe service.



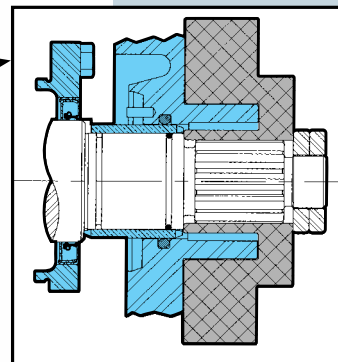
Single Mechanical Seal†

Longer life, wider pressure-temperature, and speed range than O-ring seal. Alternate materials available for abrasive service.



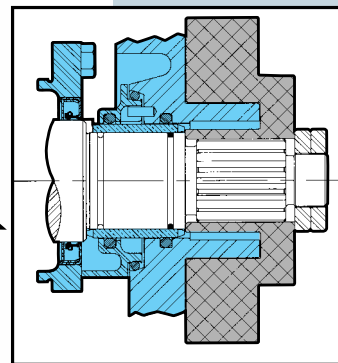
“O” Ring Seal*

Waukesha Cherry Burrell's traditional general purpose seal. Low cost and easy to service.



Double “O” Ring Seal*

The double, flushed version of the “O” ring seal. Used with flushing fluid to cool, lubricate, flush away residue.



Elastomer choices for “O” rings:

- Buna-N
- Fluoroelastomer (FKM)
- EPDM
- Silicone
- Perfluoroelastomer (FFKM)
- PTFE Encapsulated

*Not available for model 320

- † Mechanical seal material options:
- Carbon
 - Ceramic
 - Silicon Carbide
 - Tungsten Carbide

Standard & Options

Body

316L SS standard

Optional:

- Flush taps for future double seals
- Body retaining screws

Ports

S-Line standard

Optional:

- Bevel Seat, I-Line, Q-Line; European DIN, SMS or RJT
- Male NPT, 150 lb. & 300 lb. Flanges. (150 lb. standard on Model 320)
- Rectangular Flange Inlet or Aseptic ports
- Extended ports
- Optional port sizes on 6, 18, 30 and 60 Models

Covers

316L SS plain cover with 3-Wing cover nuts standard

Optional:

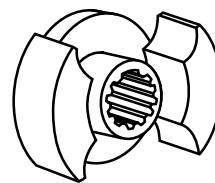
- Vent or drain connections
- Aseptic, jacketed or vented
- Hex cover nuts

Rotors

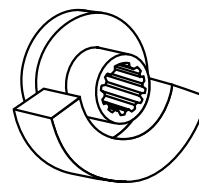
Alloy 88 Twin Wing standard. Standard clearance for up to 200° F (93° C)

Optional:

- Hot clearance to 300° F (148° C) Clearance above 300° F (148° C) on application
- Special & front face clearances and slotted rotor hub for special applications
- Single wing for 30, 60, 130 and 220 models for minimal particulate damage



Twin Wing



Single Wing

O-Rings

Buna-N Standard

Optional: **Fluoroelastomer (FKM), EPDM, Silicone, Perfluoroelastomer (FFKM), FEP Encapsulates**

Seals

Single Buna-N O-Rings with Zirconia sleeve is standard

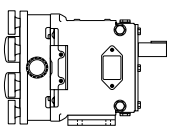
Optional:

- 316L SS sleeve
- Double O-Ring Seal with Flush Connection
- Single Mechanical Seal with Carbon (One Piece) vs. Ceramic Seal Faces
- Double Mechanical Seal with outer Carbon Seal Face & Flush Connections
- Chrome Oxide, Silicon Carbide, & Tungsten Carbide Seal Faces
- Two piece carbon inner seal

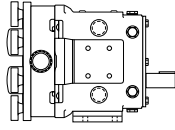
Cast iron powder coated, 316L SS shafts, top shaft position is Standard.

Options:

- Stainless Steel gearcase
- Steel-It paint
- 17-4 PH shafts
- Lower shaft position
- Bearing Isolators
- Stainless Steel bearing retainers
- Pedestal shims for side mounted pumps. **Left hand shaft position standard**
- Right hand shaft position on side mounted gearcase



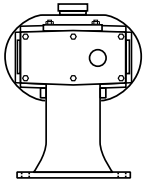
Top Shaft Position Standard



Lower Shaft Position Optional

Standard left hand shaft position shown (right hand optional)

Note: Pedestal foot is optional on Standard and Rectangular Flange models. Various standard heights are available and must be specified on order.



Optional Side Mount Gear Case for vertical fluid entry

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

Options:

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

WCB ISR Integral Speed Reducer Sizes 49, 79 and 239.

Direct connected gear motors.

Mechanical and Electronic Variable Speed Drives.

Hydraulic Motor Drives.

Close coupled Tru-Fit™ pump mounted on Epoxy-painted open base.

Features:

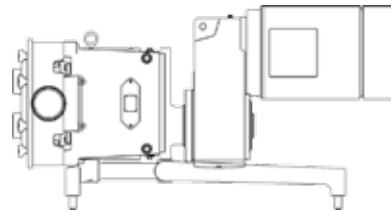
- No shaft alignment necessary. No coupling guard required
- Special base design enhances cleanability
- Reduces overall length of complete unit by an average of 20-25%
- Average of 20-25 gear ratios available per horsepower
- Separate oil sump for gear reducer and timing gears

Options:

- 304 SS unpolished plate base
- 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

Gear Cases

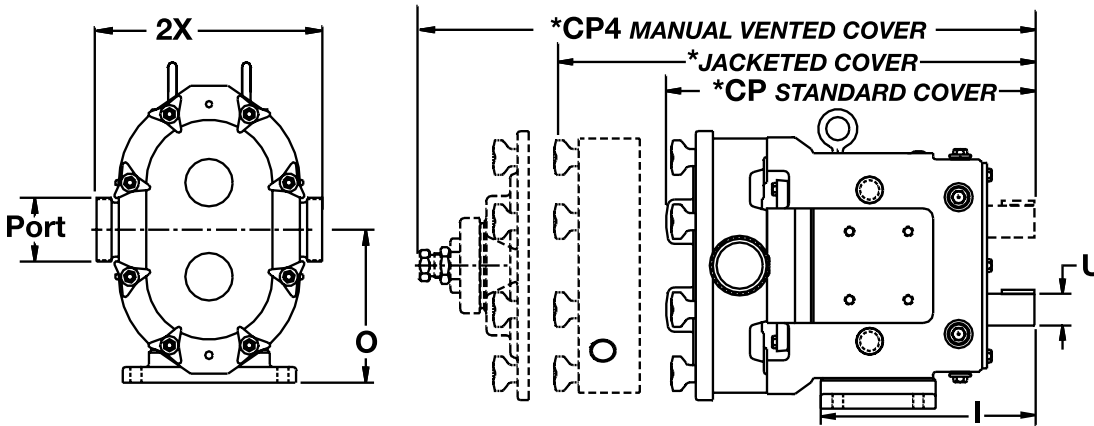
Tru-Fit™



Bases

Drives

DIMENSIONAL DATA



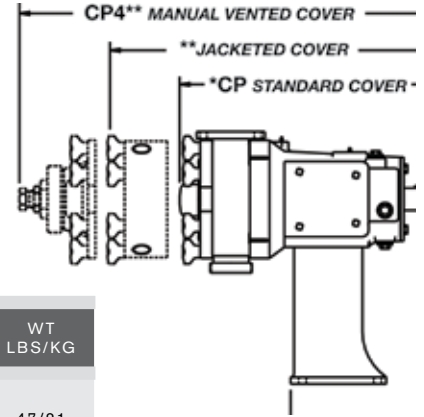
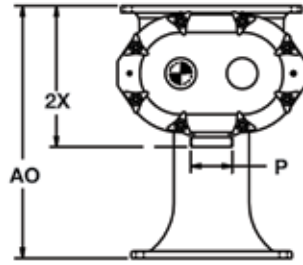
| Size Model | | CP | CP4 | I | O | PORT Size | U +.000 -.001 | 2X | WT LBS/KG |
|------------|----|-------|-------|-------|-------|-------------|---------------------|-------|--------------|
| 006-U1 | IN | 12.04 | 15.25 | 7.66 | 4.21 | 1 1/2" | .875 | 6.97 | 52 |
| | mm | 306 | 387 | 194 | 107 | --- | 22.23 | 177 | 24 |
| 015-U1 | IN | 12.04 | 15.25 | 7.66 | 4.21 | 1 1/2" | .875 | 6.97 | 52 |
| | mm | 306 | 387 | 194 | 107 | --- | 22.23 | 177 | 24 |
| 018 U1 | IN | 12.46 | 15.67 | 7.66 | 4.21 | 1 1/2" | .875 | 7.09 | 54 |
| | mm | 316 | 398 | 194 | 107 | --- | 22.23 | 180 | 24 |
| 030-U1 | IN | 14.58 | 17.67 | 8.83 | 5.21 | 1 1/2" | 1.250 | 8.50 | 100 |
| | mm | 370 | 449 | 224 | 132 | --- | 31.75 | 216 | 45 |
| 040-U1 | IN | 14.96 | 18.05 | 8.83 | 5.21 | 2" | 1.250 | 8.62 | 106 |
| | mm | 380 | 458 | 224 | 132 | --- | 31.75 | 219 | 48 |
| 060-U1 | IN | 18.91 | 22.07 | 10.99 | 7.31 | 2 1/2" | 1.625 | 10.75 | 225 |
| | mm | 480 | 561 | 279 | 186 | --- | 41.28 | 273 | 116 |
| 130-U1 | IN | 19.85 | 23.01 | 10.99 | 7.31 | 3" | 1.625 | 10.75 | 260 |
| | mm | 504 | 584 | 279 | 186 | --- | 41.28 | 273 | 118 |
| 220-U1 | IN | 23.37 | 27.87 | 14.80 | 9.38 | 4" | 2.000 | 13.25 | 450 |
| | mm | 594 | 708 | 376 | 238 | --- | 50.80 | 337 | 204 |
| 320-U1 | IN | 30.17 | --- | 17.80 | 10.38 | 6" 150# FLG | 2.375 | 16.00 | 795 |
| | mm | 766 | --- | 452 | 264 | --- | 60.45 | 406 | 361 |

NOTE: Dimension "2X" applies for Bevel Seat, "S-Clamp", "Q-Clamp", 151 and 141 fittings (except 320U1).

***NOTE:** CP4 is the maximum dimension for all vented and jacketed cover options.

Contact Application Engineering for Universal I Series Aseptic Models.

UNIVERSAL 1 MODELS - RECTANGULAR FLANGE



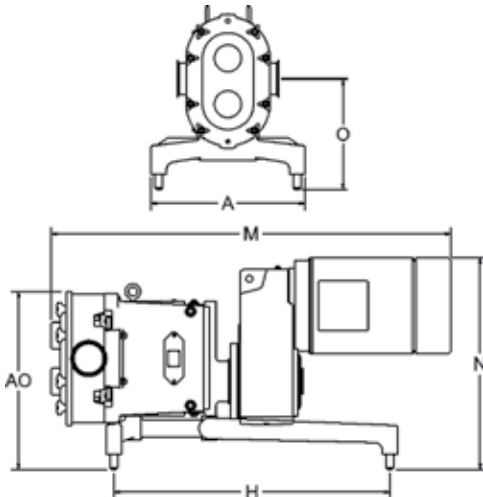
| Size Model | | AO* | CP | CP4 | I | PORT Size | U + .000 - .001 | 2X | WT LBS/KG |
|------------|----|-------|-------|-------|-------|-------------|-----------------------|-------|--------------|
| 014-U1 | IN | 12.50 | 12.04 | 15.25 | 7.66 | 1 1/2" | .875 | 7.11 | 47/21 |
| | mm | 318 | 306 | 387 | 195 | --- | 22.23 | 181 | |
| 024-U1 | IN | 12.50 | 12.46 | 15.67 | 7.66 | 1 1/2" | .875 | 7.11 | 49/22 |
| | mm | 318 | 316 | 398 | 195 | --- | 22.23 | 181 | |
| 034-U1 | IN | 14.25 | 14.58 | 17.67 | 8.49 | 2" | 1.250 | 8.12 | 100/45 |
| | mm | 362 | 370 | 449 | 216 | --- | 31.75 | 206 | |
| 064-U1 | IN | 19.18 | 18.91 | 22.07 | 10.77 | 2 1/2" | 1.625 | 10.31 | 255/116 |
| | mm | 487 | 480 | 561 | 274 | --- | 41.28 | 262 | |
| 134-U1 | IN | 19.18 | 19.85 | 23.01 | 10.77 | 3" | 1.625 | 10.31 | 280/127 |
| | mm | 487 | 504 | 584 | 274 | --- | 41.28 | 262 | |
| 224-U1 | IN | 23.75 | 23.37 | 27.87 | 13.74 | 4" | 2.000 | 12.87 | 505/229 |
| | mm | 603 | 594 | 708 | 349 | --- | 50.80 | 327 | |
| 324-U1 | IN | 36.00 | 30.17 | --- | 16.86 | 6" 150# FLG | 2.375 | 17.88 | 775/352 |
| | mm | 914 | 766 | --- | 428 | --- | 60.33 | 454 | |



*NOTE: Dimension AO is with tallest pedestal. Optional heights are available.

**NOTE: CP4 is the maximum dimension for all vented and jacketed cover options.

UNIVERSAL 1 MODELS - TRU-FIT™



| Size Model | | A | AO | H | M | PORT Size | N | O |
|------------|----|-----|-------|-----|-------|-----------|-------|-------|
| 006-U1 | IN | 12 | 13.25 | 18 | 27.60 | 1 1/2" | 15.56 | 9.15 |
| | mm | 305 | 37 | 457 | 701 | --- | 395 | 232 |
| 015-U1 | IN | 12 | 13.25 | 18 | 27.60 | 1 1/2" | 15.56 | 9.15 |
| | mm | 305 | 37 | 457 | 701 | --- | 395 | 232 |
| 018-U1 | IN | 12 | 13.25 | 18 | 28.02 | 1 1/2" | 15.56 | 9.15 |
| | mm | 305 | 37 | 457 | 712 | --- | 395 | 232 |
| 030-U1 | IN | 14 | 15.11 | 20 | 33.67 | 1 1/2" | 18.65 | 10.02 |
| | mm | 356 | 384 | 508 | 855 | --- | 474 | 255 |
| 040-U1 | IN | 14 | 15.11 | 20 | 34.04 | 2" | 18.65 | 10.02 |
| | mm | 356 | 384 | 508 | 865 | --- | 474 | 255 |
| 060-U1 | IN | 18 | 20.00 | 28 | 43.77 | 2 1/2" | 22.02 | 12.00 |
| | mm | 457 | 508 | 711 | 1112 | --- | 559 | 305 |
| 130-U1 | IN | 18 | 20.00 | 28 | 44.71 | 3" | 22.02 | 12.00 |
| | mm | 457 | 508 | 711 | 1136 | --- | 559 | 305 |
| 220-U1 | IN | 20 | 23.25 | 36 | 52.25 | 4" | 27.68 | 14.50 |
| | mm | 508 | 591 | 914 | 1327 | --- | 703 | 368 |



When it is time to repair ...

SPX offers the following options – you pick the one that meets your needs.

Factory Remanufacturing Program

- No need to return your pump until you receive your new replacement pump.
- Substantial savings over new pump.
- All remanufactured pumps must pass a 25 point inspection process and undergo performance testing.
- Only OEM genuine parts are used in the remanufacturing process and you receive a guaranteed warranty and quality certificate with each pump.
- New pumps eligible for Remanufacturing Program twice.

Factory Inspect and Advise Program

- Return your pump for complete factory inspection.
- Cost effective options to match your performance/budget needs.
- Your pump body may be remachined up to 6 times.
- Replacement rotors and parts available.
- Factory warranty.

SPX Certified Pump Repair Centers

- Local distributors with factory trained and certified service technicians.
- Quick local response.
- Genuine WCB parts.
- Flexible repair programs to meet your needs.
- Local warranty.

Based in Charlotte, North Carolina, SPX Corporation (NYSE: SPW) is a global Fortune 500 multi-industry manufacturing leader. For more information, please visit www.spx.com

SPX FLOW TECHNOLOGY

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