

APV Pump & Valve Guide



Centrifugal Pumps

The centrifugal pump lines manufactured by APV meet 3-A requirements, FDA, USDA and more. Major lines include the W+ Series, the most advanced, high performance and highly sanitary pump for the demands of high quality products; and the V², APV's economical solution to a wide range of pumping needs.

W+

W+ pumps are designed for demanding applications where high efficiency, cleanability and serviceability are most important.

Main Features

- A wide range of sizes to ensure optimum pump selection for maximum economy
- 316 ss product contact areas to meet 3-A and FDA sanitary requirements
- Circular casing that improves cleanability and air handling capability
- Easily serviced, balanced mechanical seal for dependability
- Advanced impeller design for high efficiency
- Patented volute-in-backplate design for better cleanability and efficiency
- Split sleeve mounting of impeller shaft for reliability
- Tapered shaft to ensure concentricity and positive drive
- To 2400 U.S. gpm, 620 ft. head, 100 hp
- CIP capability



W+

Options

- Double mechanical seal with flush
- Special seal materials
- Electropolishing for pharma industry

Typical Applications

- Milk, liquid eggs, whey
- Beer, water, fruit drink, orange juice
- Liquid sugars, edible oils, vinegar
- CIP solutions, brine, caustic, calcium slurry
- Deaerators, evaporators
- Membrane systems
- Wet corn milling

WI+ Universal Inducer

The WI+ is designed to lower NPSHR and improve pumping of viscous products.

Main Features

- Patented inducer provides 50-70% lower NPSH required
- Greater air handling capability
- Improved pumping of viscous products
- W+ to WI+ field conversion kits available
- Thirteen sizes — to 1673 U.S. gpm, 515 ft.head, 100 hp*

Applications

- Evaporators
- Crystallizers
- Deaerators
- Liquids near boiling point



WI+ Universal Inducer

Wa+ Aseptic

The special Wa+ Series pump is designed for use in systems requiring bacteria-free operation.

Main Features

- Double mechanical seal with media barrier
- Double O-ring seal at clamp ring
- Choice of finishes and connections
- CIP/SIP capability
- Twelve sizes — to 650 U.S. gpm, 450 ft. head, 75 hp*

Applications

- UHT systems for food and dairy
- Sterile water
- Pharmaceutical and biotech products



Wa+

WHP+ High Pressure

These special W+ Series pumps are designed for use in systems with high operating pressures.

Main Features

- Close coupled, compact design
- CIP capability
- 870 psig system operation
- Smooth, non-pulsing flow
- Three sizes — to 850 U.S. gpm, 340 ft. head, 75 hp*

Applications

- Booster pump on membrane systems
- For whey concentration, fruit juice clarification and enzyme recovery



WHP+ High Pressure

Ws+ Pump

Primarily for use in CIP systems, the Ws+ is designed to handle fluids mixed with air or foam significantly better and with greater efficiency than standard self-priming pumps typically used in sanitary applications.

The Ws+ pump is a new exciting addition to APV's range of self-priming pumps. It replaces the well-known ZMS series, which has proven successful for many years.

Main Features

- Higher efficiency — the efficiency of the pump is increased by up to 90%, compared to other self-priming pumps
- Lower noise level
- 3A approved
- Interchangeable with W+ Centrifugal Pump parts
- Extended hydraulic range — the Ws+ is available in three sizes, with capacities up to 490 USgpm, and pressures up to 310 feet



Ws+

Applications

- Dairies ▪ Butter plants ▪ Cheese factories ▪ Egg plants
- Breweries ▪ Wineries
- Enzymes production ▪ Colorings
- Bio-pharma industry ▪ Fishing industry

* For capacities beyond this range, please contact APV.

V²

The V² is a simple, maintenance-friendly centrifugal pump design for sanitary and industrial applications.

Main Features

- 316 ss components
- Full open, non-clogging impeller
- Efficient volute casing
- Heavy duty backplate
- Compact C-flange motor adapter
- Meets 3-A, USDA, FDA and BISSC requirements
- Eight sizes — to 500 U.S. gpm, 300 ft. head, 40 hp



V²

Applications

- Dairy products
- Fruit juices, soft drinks
- Sauces, catsup, vinegar
- Yeast slurry, starch
- CIP solutions
- Pharmaceuticals

Positive Displacement Pumps

The DW rotary lobe pump is APV's newest, most versatile and fastest rotary pump. It is ultra-hygienic and so fast that it can often be both product and CIP pump. The DW is EHEDG-certified for CIP capability and offers the most technologically advanced design on the market. The APV R Series rotary pump lines are known all over the world for their rugged, long-lasting design and efficient performance. The introduction of the R Series, with the latest technological advances, has made pumping and maintenance even simpler.

DW Rotary

APV's DW is a complete rethinking of the positive displacement pump. It has been designed to outperform all others, handle more applications superbly, yet be a simpler machine to own and service.

Main Features

- Passes stringent EHEDG Clean-In-Place test requirements and designed to meet 3-A, FDA and USDA requirements
- Widest speed range for maximum process flexibility
- Choice of piston or bi-lobe rotors to suit application
- Unique, patented piston rotor design can provide pulse-free operation
- Patented rotor design practically eliminates hydraulic noise and the helical gears minimize gearbox noise
- Rotor designs ensure maximum product integrity, are suitable for both high and low viscosities, will handle cheese curds, soft fruit or meat without "special rotors"
- Easy-to-access front loaded mechanical seals reduce maintenance time drastically; timing the rotors, if required, is uncomplicated
- So efficient in medium viscosity applications that a smaller pump size than usual can often be used
- Highly improved suction capabilities, considerably reduced NPSH required, in combination with pulse-free performance, makes the DW ideal for applications such as ultrafiltration

Options

- Thermal jacket to provide a constant temperature in the pump during operation
- Pressure relief valve cover
- 230° F circumferential piston or bi-lobe rotors, 356° F bi-lobe rotors



DW Rotary

- Non-galling-alloy rotors available
- Single mechanical seal, flushed single mechanical seal, double mechanical seal, triple lip confectionery seal, single rubber lipseal, or packed gland

Typical Applications

- Yogurt, cream, curds, whey, butter
- Fruit juice, yeast, liquid sugar, glucose, cider, wine
- Fruit preserves, baby food, soup, sauces, chocolate
- Antibiotics, cough mixture, toothpaste, shampoo
- Paint resins, photographic film coatings, oil additives

R Resilient Rotor

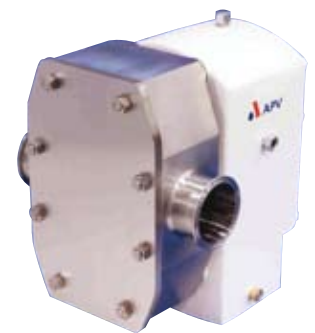
The R Series of sanitary rotary pumps is a highly flexible group covering the requirements of products that are viscous, shear-sensitive, particulate or have high foam characteristics.

Main Features

- Time proven, resilient rotor design
- Sanitary, stainless steel construction
- Complete parts interchangeability
- Easy disassembly and cleanup, low maintenance
- Mounting flexibility
- To 260 U.S. gpm, 58 gal/100 rev, 150 psig, 1,000,000 cps, 900 rpm

Typical Applications

- Fruit cocktail, pie fillings, purees
- HTST, processed cheese, yogurt, cottage cheese
- Alcoholic beverages, juice concentrates, syrups, HFCS
- Meat emulsions, blended meats, gravies, animal fats
- Yeast slurry, doughs, batters, breadings
- Caramel, chocolate, icing, marshmallow base
- Lotions, shampoo, hand cream, bleach



R Resilient Rotor

Rectangular Inlet

The Rectangular Inlet's simple, tough and highly versatile design has made it the standard for viscous products pumping.

Main Features

- Large rectangular inlet for efficient pumping of a wide range of viscous and particulate products
- Simple pumping design uses two moving parts with interchangeable components within model sizes
- Quick assembly/disassembly with simple tools
- Sanitary design using stainless steel and food grade approved materials
- Front cover discharge reduces inlet height for use under hoppers

Typical Applications

- Applesauce, fruit cocktail or puree
- Beef stew, chili, chop suey
- Processed cheese, cream cheese
- Face cream, glue
- Ham pieces, wiener/bologna emulsion
- Molasses, pickle relish, potato salad



Rectangular Inlet

Single Seat Valves

APV offers a new full range of sanitary single seat valves for the process industries ranging from the highly advanced and EHEDG-compliant SW4, to the MS4/MSP4 for aseptic service, and our modular butterfly valves. For improved control and system automation, APV's advanced single seat valves are available with a control unit that allows you to connect them into an integrated control system. See Valve-Net® on the back cover of this brochure for more information.

SW4

The hygienic, 3-A SW4 is the most versatile, dependable, cleanable and cost-efficient single seat valve on the market.

Main Features

- Meets all 3-A requirements and passed stringent EHEDG Clean-In-Place test
- Modular design allows for total flexibility
- Single clamp closure system for fast, easy installation and maintenance
- Extra strength valve housing resists stress, extends life
- Controlled compression of valve seat for positive shut-off and longer seal life
- Wear resistant shaft seals
- Ball shaped housing free of pockets for increased CIP efficiency and higher C_v
- Size range: 1"-4" tube, DN 25-100

Options

- APV's innovative range of CU control units for utmost versatility and performance
- Valve orientation for either NC or NO, easily reversible
- Variety of housing configurations including tangential port and tank outlets
- Broad selection of seal materials



SW4

MS4/MSP4 Aseptic

These sanitary valves are designed for long, dependable, problem-free performance in aseptic applications.

Main Features

- Flat membrane design ensures tight sealing for microbiological impermeability
- No retightening of housing closures needed, even after many SIP cycles
- Long duty life for sterile barrier due to material flexibility and low stress mechanical design
- Unlike conventional bellows designs, smooth membrane surface and shaft provide excellent cleanability with fan supporting the membrane to maximize membrane life.
- Efficient sterilization due to elimination of dead areas or air pockets
- Size range: 1"-4" tube, DN 25-100

Options

- MS4 has fan supported flat TFM membrane
- MSP4's TFM membrane, shaft and cone all in one piece, especially suitable for applications where additional elastomer seals are not allowed (e.g. pure water and cosmetics)
- Both valves available in shut-off or change-over design as well as for manifold or tank outlet applications



MS4/MSP4 Aseptic

Delta AP1

APV's Delta AP1 Aseptic Diaphragm Valve series combines the APV tradition of valve perfection along with a sharp focus on reducing spare parts requirements and maintenance costs. A unique fan support system is used to maintain the integrity of the PTFE diaphragm continuously during opening and closing. This protects against overstress caused by pressure spikes, ensuring extended life of the diaphragm. - APV offers two versions of this valve: Techno Line and Econo Line.

Main Features:

- Diaphragm fan support relieves process pressure on the diaphragm to extend diaphragm lifetime
- Flat, PTFE diaphragm ensures a smooth product flow and reduces pressure drops; can be used for high-fiber products ; Minimizes product wetted surfaces and reduces cleaning time and CIP-agent consumption
- 3.1 certification ensures traceability and optimum quality
- Globular valve body avoids dead ends and contamination. Reduces CIP times; Ensures gentle product flow
- Multiple valve body configurations ensures the right body for any installation and eliminates the need for extra valves because of inappropriate body configurations



Delta AP1
Econo Line

SWmini4

The latest addition to the SW4 single seat valve line is the SWmini4 valve. The valve is available in 1/2" and 3/4" sizes.

Main Features

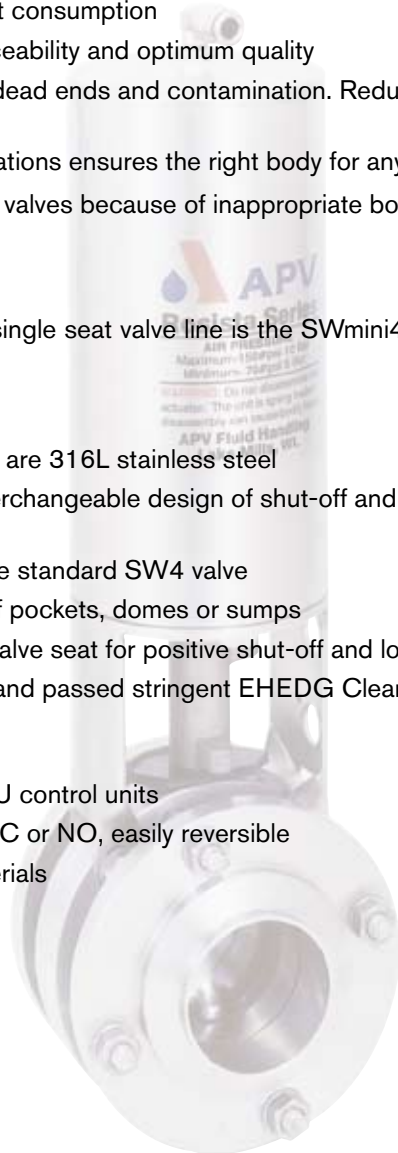
- All product contact surfaces are 316L stainless steel
- Machined housings with interchangeable design of shut-off and change-over housing/ stem combinations
- Design/features similar to the standard SW4 valve
- Ball shaped housings free of pockets, domes or sumps
- Controlled compression of valve seat for positive shut-off and longer seal life
- Meets all 3-A requirements and passed stringent EHEDG Clean-In-Place test criteria

Options

- APV's innovative range of CU control units
- Valve orientation for either NC or NO, easily reversible
- Broad selection of seal materials



SWmini4



B10/BF11 Butterfly (SV/SVS)

APV butterfly valves provide a robust and reliable shut-off element with a long service life. B10 is a simple two-piece design, while the BF11 includes integral mating flanges for ease of service.

Main Features

- Modular design for flexibility and spare parts stock savings
- Compact design saves space
- Completely welded actuator is maintenance free
- BF11 is easily installed into pipelines
- Friction bearings on disc pivots enhance reliability
- Size range: 1"-10" tube, 1"-4" IPS Schedule 5 pipe

Options

- A multitude of end connections (butt weld standard for B10)
- Choice of seal materials
- Choice of valve finish
- Air actuated and manually operated versions
- Feedback position indication
- CU control units available



B10/B11 Butterfly

Double Seat Valves

APV's D Series double seat valves provide safe isolation of product and CIP solutions for the sanitary process industries. They allow a totally enclosed, hardpiped and automated system by eliminating swing panels and hose connections. The variety of valves in this series includes the highly advanced DA3+ for 100% cleanability and the economical, user-friendly DE3. Both meet EHEDG cleanability requirements. APV's Valve-Net (see back cover) makes intelligently distributed control of your double seat valves possible.

DA3+

This fully balanced, double seat, mix-proof valve with integrated lifting for the flushing of seat and shaft is the state-of-the-art for ultra-clean applications.

Main Features

- EHEDG certified
- Safe separation of fluids
- Low leakage operation
- Integrated seat lift capability
- Comprehensive cleanability of all product-wetted parts, including shaft seals
- Electropolished inner surfaces for shorter cleaning time
- Housing free of pockets or crevices
- Safe against pressure hammers
- Compact design, low construction height and weight
- No risk of injury, all moving parts covered
- Easily maintained, just 7 seals in product chamber
- Size range: 1.5"- 6" tube, 1.5"- 6" IPS Schedule 5 pipe, DN 40-150



DA3+

DE3

The DE3 valve is an economical choice that combines all the advantages of the modern mix-proof valve, without a seat lifting device.

Main Features

- EHEDG certified, without the need for seat lifting
- Safe separation of media
- Hygienic valve design
- Water hammer safe
- Low leakage design
- 100% cleaning of leakage chamber
- Housing free of pockets or crevices
- Compact and ergonomic design
- Reduces and simplifies maintenance requirements
- Only 5 seals in the product chamber
- Only 2 part numbers make up the seal kit and kits serve the entire line
- Easily integrated with control systems
- Size range: 1.5"-6" tube, 1.5"-6" IPS Schedule 5 pipe, DN 40-150



DE3

DKR

DKR valves were specially developed for use in gas collection, process utility interfaces, CIP systems and pigging systems — ideal where a full, unobstructed flow port is required.

Main Features

- Safe separation of media via two special seals
- Leakage detection in the event of wear or seal failure
- Easy seal replacement
- Water hammer safe design
- High pressure version available, rated to 1500 psig
- Tank outlet version available
- Hygienic design ensures no product residues
- CIP cleaning connections to flush leakage chamber
- Ball valve design allows full pipeline diameter, fully "piggable"
- Economical alternative to higher priced, conventional double seat valves
- Size range: 1"-4" tube



DKR

Specialty Valves

Special circumstances call for modulating, regulating, pressure relief, vacuum relief, check or sampling valves. APV has the right valve for each of these distinct situations.

RG4 Hygienic Modulating Valve

RG4 modulating valves are especially suitable for the exact regulation of flows in production processes.



RG4

RGE4 Regulating Valve

The RGE4 was developed as a cost-optimized variant of the RG4 valve for precise flow and pressure control in all hygienic production processes, at a lower cost.



RGE4

K And KK Pressure Relief Valves (UF/UFR)

The K and KK valves were specifically developed to maintain pressure and protect installations against excess pressure. If the set pressure is exceeded, the valve opens; if the pressure drops below the set value (up to 20%), it closes.



K & KK

CPV Constant Pressure Valve

The new CPV is a hygienic, air loaded, constant pressure valve designed to be fully CIP/SIP cleanable.



CPV

VRA And VRAH Vacuum Relief Valves

APV's VRA and VRAH valves are the reliable solution anywhere there needs to be vessel or tank protection against vacuum.



VRA & VRAH

RUF3 Check Valve

Because of their high operational safety, compact size and low maintenance design, RUF3 check valves are chosen to avoid a back flow of product in pipelines.



RUF3

PR Sampling Valve

PR sampling valves permit bacteriologically safe samples to be taken directly from the pipeline.



PR

Assemblies and Systems

TPM+ Multi-Purpose Powder Mixer

The TPM+ is designed for thorough mixing of powder into a liquid to create a smooth and uniform product.

Two Models

- Mixing capacity 331 lbs/min and 496 lbs/min
- Total flow-thru 660 and 13,200 gph

Main Features

- High speed
- Broad product range
- No froth, no lumps
- Easy to clean and CIP
- Easy to operate
- Sanitary design

Applications

- Powdered dairy products
- Lactose, sugar
- Stabilizers
- Vitamins, minerals
- Deodorants
- Shampoos
- Nutrient broths, media

Valve Manifolds And Skid Systems

Valve manifolds and skid systems by APV save processors time and money, and reduce lead times. The manifolds and systems are completely engineered and built by APV, and are factory-tested before shipment. Solenoid panels can be included in pre-wired manifolds.



TPM+



TPM+2



APV Brings the Latest Advances in Automation to Your Valves with Valve-Net[®]

Valve-Net is APV's new generation of control unit for valves, which makes intelligently distributed control possible via connection to a field-bus. It's based on an open system, compatible with all major PLC brands and other devices. So, whether you're beginning wide scale valve control, extending what you have now or rearranging your network—Valve-Net will work for you.

Cut Cabling Costs

Valve-Net makes it possible to connect a group of valves through one shared cable, which reduces installation costs, saves cable and cable trays, and greatly simplifies electrical engineering and documentation.

Cut Programming Costs

Valve-Net modules have 48K on board memory to include routine level program and sub-routines, diagnostics and historical data.

Minimize Down Time

Valve-Net provides the information you need to control, monitor and maintain valves better than ever — before valve problems cause production delays. Four light diode indicators, visible through the cover of the control unit, display valve status for diagnosis at a glance. In addition to distributed control of valve activation and indication of actual position, Valve-Net introduces a new dimension of intelligent functions, e.g. registration of solenoid valve power consumption, bus voltage monitor, number of activations and installation time.

Maintain Reliability

The Valve-Net electronic unit is designed to match the tough conditions of the process industry. It is impervious to moisture, vibrations and electronic noise to give you dependable performance and keep your data secure. The data is stored in a flash module that does not require an external power supply or internal battery.



Valve-Net

SPX[®]
WHERE IDEAS MEET INDUSTRY

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