

SPX Flow Technology

Products Serving the
Marine and Shipbuilding Industries



SPX[®]
WHERE IDEAS MEET INDUSTRY



SPX Products and Brands Serving the Marine and Shipbuilding Industries:

Filtration • Heat Exchangers • Pumps

Whether you're looking to upgrade an existing vessel or specifying equipment for a new ship - SPX Flow Technology has the right solution for you.

We manufacture equipment for marine and shipbuilding applications including ship bunkering, bilge and ballast, sea water intake, main engine cooling and many more. When you specify our equipment, you get more than a product - you get a partner. Our dedicated team of experienced engineers utilizes in-depth processes, plus application and design skills to provide quality solutions to meet your needs.

We listen to your goals and requirements in order to design the best solution - based on our decades of experience in the marine industry - to help you achieve them.

Your partnership with us doesn't end at the sale. Our supportive aftermarket services include training, consulting, remote diagnostics, genuine spare parts, repair and much more. Our experienced engineers are available to fit replacement parts to ensure that your equipment will continue to run smoothly. Please contact our aftermarket department for specific details on services available in your area.

Explore the endless solutions that SPX Flow Technology has to offer. You're sure to find answers that can reduce costs, improve equipment efficiency, and enhance performance.



www.spxft.com

Filtration

KNOWLEDGE:

The SPX Airpel Filtration brand has been supplying filters to the marine industry for over 50 years and has extensive experience in the naval, commercial and oil/gas sectors in filtration solutions.

SPX's Airpel range of filtration products offers high quality, light weight and compact solutions for an industry where space is known to be at a premium. Standard features such as quick release covers, up to 50% more filtration area and low pressure differential are offered. Airpel delivers confidence with Lean/Kan Ban manufacturing processes and an established ISO 9001:2008 quality system.

- Applications:

- Sea water
- Cooling water
- Bilge water
- HFO fuel
- Chemicals

TECHNOLOGY:

A wide range of products is offered from single and dual basket strainers to self-cleaning filters with scraper blade and back flushing capabilities - all solutions to protect equipment in process fluid quality applications.

Having a wide range of standard sizes and materials to select from ensures that you will find the right filtration product to fit your delivery schedule and budget. We can also provide special materials and fabricated units to meet your specific requirements. The basket strainer range (OV & OW, single and multi-basket configurations available) collects unwanted waste in the basket of the filter. An operator is required to empty the baskets regularly so smooth operation can be maintained.

The self-cleaning filter range is designed to minimize or eliminate operator involvement to achieve continuous and controlled processes.

OV Single & OW Dual Basket Strainers

OV Single Basket Strainers

- Used for filtering liquids when flow can be interrupted for cleaning
- Line sizes from 3/4" to 10" NB and available with screwed and flange connections
- Available in a wide range of materials to suit the application



OW Dual Basket Strainers

- Used for filtering liquids when flow cannot be interrupted for cleaning
- Handle selects between operating chamber, allows safe removal of basket from isolated chamber while filter is still in operation
- Optional 100% shutoff facility to eliminate any leakage between chambers
- OV & OW multi-basket designs available, filtration levels from 10mm down to 10 micron
- Standard range designed for a maximum rating of 22 Barg (material dependent); high pressure options (50 Barg) available



Backflush Strainers and Self-Cleaning Filters

Backflush Strainers

- Used where an automatic cleaning strainer is required
- Ensures process continuity without manual labor
- Provides a high level of cleaning efficiency with minimal product loss
- Straining element is manufactured from stainless steel 316
- Fine mesh lined baskets provide capabilities for particle removal down to 50 micron



Self-Cleaning Filters

- Positive scraping action efficiently cleans element while independent debris removal minimizes fluid loss without process interruption
- Stainless steel wedge-wire or perforated elements provide filtration from 3mm down to 25 micron
- Used where an automatic cleaning strainer is required even with low pressures
- Ensures process continuity without manual labor or contact with hazardous materials



Filters

KNOWLEDGE:

Plenty Filters from SPX supplies a wide range of standard cast filters to numerous industries worldwide. With the emphasis on product quality, customer service, on time delivery and cost performance, the Plenty Filters brand has built its reputation on extensive knowledge and resources in fluid handling equipment.

Plenty Filters has developed a range of filter products specifically designed for the marine industry that offer a compact and lightweight solution to the many filtration requirements of modern vessels.

The Plenty Filters brand continues to maintain and develop the quality standards traditionally demanded by the Marine Industry and today is a UK Ministry of Defense, (M.O.D). approved and ISO 9001:2008 manufacturer.

Plenty Filters are currently supplied to many sectors of the marine industry including:

- **Naval** - extensively used on all types of surface ships such as minesweepers, frigates, destroyers, aircraft carriers, as well as conventional and nuclear submarines.
- **Oil & gas exploration and production/ FPSO's** - used frequently on the latest generation floating production storage & offloading vessels (FPSO's) for pipe laying (and testing) ships as well as offshore platforms.
- **Cruise ships and ferries** - compact and lightweight design features that have made Plenty Filters a first choice on many naval designs are especially beneficial for the latest generation of fast ferries.
- **Bulk liquid carriers/shore facilities** - Plenty Filters have been used for many years with applications in bunkering including pump and meter protection as well as product transfer. Support vessels such as auxiliary oilers, landing platform docks as well as dock gates have all incorporated Plenty Filters in their designs.

Simplex Single Basket Strainer

Simplex, single basket strainers are constructed from a simple and robust cast with inline connections, designed for general applications where the process flow is intermittent and can be stopped for element cleaning.

- Quick release covers eliminate the need for maintenance tools
- Designed for pressure ratings up to ASME class 300 (51 BARG)
- Flow is from inside to outside the basket to trap and retain debris
- High basket area to pipe line C.S.A. ratio of over 10:1
- With coarse perforated baskets (2mm as standard) or fine ss mesh inserts to give particle removal down to 50 microns
- Disposable depth type cartridges are available for filtration to 5-10 microns



Duplex Dual Basket Strainer

Duplex strainers are used for pipelines operating continuously by incorporating twin chambers, each rated for 100% capacity. They are designed to complement the Simplex filters but an integral flow changeover valve permits basket removal and cleaning without interrupting flow.

- Designed with pressure ratings up to ASME class 300 (51 BARG)
- Flow is from inside the basket area to pipeline CSA ratio of over 12:1
- Supplied with coarse perforated baskets (2mm as standard) or fine ss inserts to give particle retention down to 45 microns





- Applications:

- Sea water intake
- Cooling water
- Fire fighting water
- Hydraulic oil filtration
- Fuel oil filtration
- Product transfer systems

TECHNOLOGY:

SPX's Plenty Filters are used in virtually any piping system which carry liquids. They protect the piping infrastructure from harmful foreign particles and extend the efficient operating life of valuable process equipment. In addition to the standard cast range, special cast products and fabricated filters are also available.

Features include quick release covers and unique basket construction.

As the filter collects debris in the basket, it is necessary to empty it on a regular basis. The quick release cover opens in seconds without the use of tools, simplifying the basket emptying step.

Basket filter construction causes headloss on the product flow. When the basket is clean, headloss is recommended to be no more than 0.1 barg. If the fluid is highly viscous, the filter size will increase, reducing headloss.

The basket is the heart of the strainer since it traps unwanted material. Strainer baskets are made of perforated sheet metal and a wide range of opening sizes are available. The size of the basket perforation should be slightly smaller than the minimum particle size to be removed. Using a smaller perforation opening than necessary will cause the basket to fill and clog more quickly, requiring frequent cleaning.

Filmet

Similar to the Simplex design but with a larger element to give low pressure loss and/or handle high flows.

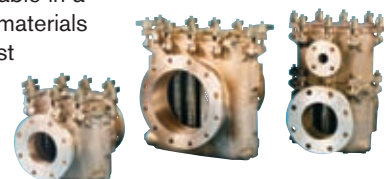
- Available in pipe sizes from 20mm (3/4") to 85mm (2 1/2")
- Materials of construction include:
 - Cast iron
 - Cast steel
 - Stainless steel
 - Gunmetal/aluminium bronze
 - Specialized metals on request
 - Can be supplied with elements for filtration to 45 micron
- Suitable for medium pressure systems
- Gunmetal or aluminium bronze suitable for shock and non-magnetic service



Seaguard

Seaguard filters are suitable for low or medium pressure applications such as sea water cooling, fire fighting applications, hydraulic and fuel oils and product transfer.

- Compact lightweight design
- Easy opening cover does not require any tools
- Very low pressure loss, suited to high flow rates
- Available in a wide range of pipe sizes 50mm (2") to 500mm (20")
- Normally supplied in gunmetal or aluminium bronze with a cupro-nickel screen
- Suitable for shock and non-magnetic service
- Fabricated versions also available in a range of materials on request



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Filtration Technology

KNOWLEDGE:

Marine applications use filtration to optimize performance of critical systems used for mass transport and distribution of goods and services around the world. Filtration plays an important role in this effort. End users can operate at peak performance through the strategic placement of filtration products developed with advanced filtration technologies.

Dollinger's knowledge in filtration and purification equipment combined with our worldwide experience enables us to offer the complete filtration package for marine applications. Typical air intake systems require removing solid and mist contaminants from the air flow. If left untreated, the contaminants could increase the risk of corrosion to critical components and reduce operational life, consequently leading to a decrease in efficiency.

Our specialized filters are ideal for marine applications. We offer the types of media you need to ensure compatibility with the fluids being filtered and the contaminants being removed.

- Applications:

- Total system protection – removing contaminants from system and components
- Removing tough contaminants due to heavy loading from engine air intake
- Corrosion prevention due to sturdy construction

TECHNOLOGY:

SPX maintains mission-critical operations all around the world with innovative technology engineered to handle the most aggressive contaminants. We will work with you to find the right solutions for the challenges that your marine system presents.

StayNew Spin Filtration Systems

Dollinger StayNew Filter Systems are designed to beat tough contaminants like flyash, soot, dust, sand, grit, rain and snow while operating continuously. They provide clean, smooth air flow in a wide variety of hostile environments and conditions – even sandstorms and volcanic fallout.

Their self-cleaning feature has been proven to be successful in marine applications, where heavy contaminant loading is a problem for locations such as Engine Room air intake filtration.

Their strong, corrosion-resistant construction means that you can install them in locations where conventional filtration systems are not suitable.

The StayNew Spin Module which is at the heart of the StayNew Filter System, is a compact mechanical separator which can be used independently or in combination with secondary filter elements in a variety of air filtration systems.

In addition, it is unaffected by wide ambient temperature variations – maintaining stability and operational integrity from -40°C to +93°C.

The StayNew Filter System removes 98% of solid particles 15 micron and larger from the air stream and 99.4% of moisture, whether in the form of liquid, mist or even snow.



Dehydration

KNOWLEDGE:

SPX offers JEMACO compressed air dryers and filters that remove oil, water, dirt, rust and pipe scale. Although compressed air system purification is often overlooked, it is an important process that can improve work efficiency and reduce maintenance. Removing contaminants that can adversely affect all components of an air distribution system – including causing the pneumatic controls to fail - protects the system.

- Applications:

- Air Control

TECHNOLOGY:

Modern marine vessels employ pneumatic control systems requiring less manpower yet providing maximum safety, superb efficiency and excellent reliability.

The system air supplied by a compressor naturally contains unwanted impurities like condensed water and oil particles, which may eventually cause malfunctions and break downs of precision instruments and other machineries. Hence, an air dryer to remove such impurities becomes an essential choice for the system.

Management of such impurities in the system air is often dealt with at low priority, which, in fact, may lead to major problems. Unfortunately, unlike the cases of purchasing expensive machinery and tools, ship builders and owners usually have the least interest in air dryers which means their ships are often exposed to high risk of serious accidents. The selection of air dryers should be given greater priority for these projects.

Refrigerated Air Dryers

- Stainless steel brazed plate heat exchanger, no rust water and corrosion
- Integral structure, air to air heat exchanger, evaporator and moisture separator
- Optimal dew point performance under all conditions
- Low pressure drop reduces operating costs
- User friendly controller
- Reliable timed electric drain



Desiccant Air Dryers and Engineered Products

- Stable dew point performance and low dust creation
- High quality process switching valves deliver consistent repeatability to ensure system integrity and long component life cycles
- Precision timing circuits control process valve sequencing protocols to deliver optimum dew point stability and energy efficiency
- Basic design: AME, IEC, DNV



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Fuel and Lubricating Oil Filtration Systems

KNOWLEDGE:

Merchant and naval marine applications use filtration and separation technology to remove all accumulated contaminants from systems and system components. The challenge in marine applications is to increase output generated by existing industrial systems in order to improve transportation and distribution of services and goods all over the world. Filtration plays an important role in a broad range of marine applications. Strategic placement of filtration products developed with advanced filtration and separation technologies can optimize system performance.

With over 75 years of worldwide experience and knowledge in filtration and purification equipment, Vokes is able to offer comprehensive filtration packages for critical equipment utilized in marine applications, including diesel engines, gas turbines, gearboxes, steam turbines, pumps and compressors.

Vokes range of filters is ideal for fuel and gas treatment. Our premium range of filter cartridges are designed for fine filtration ensuring compatibility with the fluids being

filtered, the contaminants being removed and the process operating conditions.

Vokes is committed to supplying high quality products on time that meet your specific needs. Our dedicated service team is capable of providing technical support, laboratory services, and customized research and development

- Applications:

- Removing particulate contaminants from oil for continuous operating systems
- Protecting system components from corrosion by eliminating contamination
- Eliminating oil mist from crankcases and oil reservoirs to ensure environmental safety and clean air for optimal performance
- Maintaining system pressure for fluctuating loads in engine operation with the removal of harmful oil mist
- Removing all system contamination through high dirt holding capacities and fine filtration capabilities
- Meeting specific and specialty requirements for users in any facet of the marine industry

Fuel & Lubricating Oil Filters

Designed for use with Vokes Microfelt and Microfine disposable cartridges, Vokes filters will remove particulate contaminants from oils of diverse specifications. Vokes filters are manufactured in a variety of configurations including drop sump and top servicing designs. They are available as simplex or duplex filters, with a transflow changeover valve, suitable for applications where continuous operation is necessary.



Fuel & Lubricating Oil Coalescers

Vokes filter coalescers are based on a specifically developed multi-stage filter cartridge, which comprises a particulate pre-filter and two coalescing stages manufactured from an inorganic fiber media. Removing water from fuel and lubricating oil helps to protect machinery by eliminating contamination resulting from corrosion and microbiological growth. When used on gas turbine fuel systems, coalescers minimize the risk of turbine blade corrosion.

Designed to remove free water from oil, they will typically remove water down to 10ppm for fuel oil and 300ppm for lubricating oil. Vokes filter coalescers can be supplied as individual units or as modules with heaters and pumps.





TECHNOLOGY:

Vokes maintains mission-critical operations all around the world with innovative technology engineered to handle the most aggressive contaminants. We will work with you to find the right solutions for the challenges your marine system presents.

- Fuel and lubricating oil filters
- Fuel and lubricating oil coalescers
- Fan assisted oil mist eliminators
- APB oil mist eliminators
- Disposable filter cartridges
- Customized filtration systems

Disposable Filter Cartridges

Vokes filtration systems are designed around high efficiency, high integrity disposable filter cartridges to ensure all collected contaminants are removed from the system when a new cartridge is fitted, avoiding the risk of clean side contamination.

Microfelt and Microfine Cartridges

Vokes' Microfelt cartridges are designed for the fine filtration of fuel and lubricating oils, along with other fluids including hydraulic oils and glycol. Microfelt cartridges have excellent depth filtration characteristics and a high dirt holding capacity.

Genuine Part Replacement

Leading diesel engine and turbine manufacturers specify that only genuine Vokes filter cartridges are fitted during servicing for original equipment to maintain the specified performance. A full range of replacement cartridges are available worldwide.



APB Oil Mist Eliminators

Vokes' introduction of APB (Automatic Pressure Balancing) Technology provides an additional benefit for shipowners. Unlike constant speed power generation applications, oil mist eliminators on ships have to allow for different engine speeds and loads. This can be problematic with constant speed oil mist eliminators because variations can result in significant pressure differences.

APB Technology was developed specifically for use on turbines and variable speed diesel engines. Continuously sensing crankcase or vent pressure, APB Technology controls the oil mist eliminator keeping the system at exactly the correct pressure for optimum operation. This provides a truly 'fit and forget' solution for oil mist control.



Fan Assisted Oil Mist Eliminators

For owners of ferries and cruise ships, discharging hundreds of liters of oil mist produced by rotating machinery can create serious safety and environmental issues. Large volumes of lubricating oil are vital to cool and protect the internal surfaces of engines, gearboxes and turbines. However, this forms oil mist in crankcases and reservoirs that must be safely vented to the atmosphere.

The solution to the problem is the Vokes Oil Mist Eliminator.

The Fan Assisted Oil Mist Eliminator removes oil mist from air flows and removes the risk of oil pollution from diesel engine crankcase breathers, turbine tanks, gland vents and vacuum pumps. Featuring specially developed disposable cartridges, Vokes oil mist eliminators are capable of efficiencies better than 99% and are available for air flows up to 3000 nm³/h.



Heat Exchangers

KNOWLEDGE:

Drawing on 100 years of successful history, SPX's APV brand is a major supplier of high-performance plate heat exchanger solutions for cooling, heating and water desalination to the marine and shipbuilding industries all over the world.

Our product portfolio includes a comprehensive range of plate heat exchanger technologies and solutions ranging from standard units to custom designs, from high capacity heavy-duty models to those that are small and compact.

Our mission is to make a critical and effective contribution to the efficiency, performance and reliability of our customers' cooling, heating and desalination processes. We are committed to achieving this by combining proven and new heat exchanger technologies with design expertise, application knowledge, and project experience.

Gasketed Plate Heat Exchangers

A wide range of gasketed plate heat exchangers suited for main engine cooling and other cooling, heating and desalination processes onboard ships. Optimized plate design maximizes heat recovery for efficient energy use and cost effectiveness. Engine cooling capacity from 200 kW to more than 100.000 kW

- Transmission area/ duty: up to 3.200 m² (34,445 sq.ft)
- Special plate designs for maximum thermal efficiency
- Easy operation and maintenance - easy gasket mounting and plate alignment systems reduce service downtime and spares costs
- In-line filters prevents blocking – easy to remove for cleaning and reduced service time
- Service partner network and critical spare parts service available worldwide.

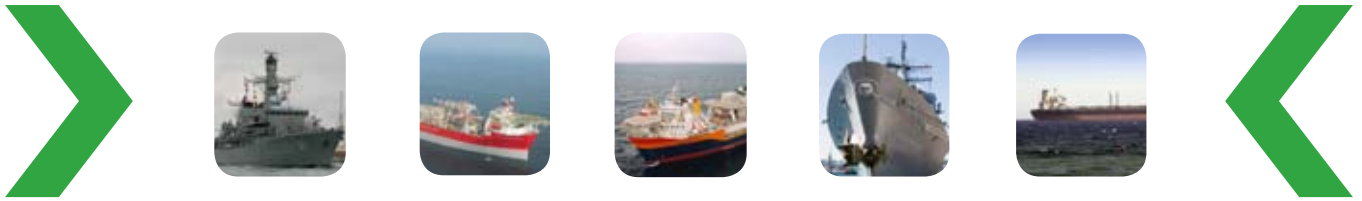


Water Desalination Unit

Single-stage, plate-type, evaporator and condenser, separated by stainless steel demister for fresh water generation.

- Capacity: Up to 60 tons/24 h
- Compact design
- Full temperature and pressure monitoring package for continuous control and monitoring of fresh water quality and easy adjustment
- Long working life and low operation and maintenance costs
- Material: Titanium heat exchanger plates and other sea-water resistant materials
- Piping: All sea water pipes in Cu-Ni-Fer corrosion-free materials
- Adjustable pump for chemtank is standard equipment





- Applications:

- Main engine coolers (central or jacket coolers)
- Lubricating oil coolers
- Tank heaters
- Camshaft lube oil cooler & pre-heaters
- Fuel oil heaters (MDO, MGO)
- Steam dump condensers

TECHNOLOGY:

Our plate heat exchanger solutions offer cooling for engine capacity varying from 200 KW to more than 100.000 KW. Our specialized plate designs deliver maximum thermal efficiency providing effective and reliable cooling and heating in almost any conditions.

Our plate heat exchangers are easy to maintain with minimal requirements. The patented EasyClip™ gasket system effectively reduces service downtime and spare parts costs providing low running costs and long life.

The result is the highest possible performance at minimum cost in the smallest possible space.

SERVICE:

We support our customers during the entire lifetime of their equipment through a global team of highly qualified and experienced specialists with special knowledge of the needs of the Marine industry.

Our worldwide network of service partners is supported by our global service centers in Kolding, Rotterdam and Singapore – all providing genuine spare parts. Critical spare parts are distributed overnight from one of our global spare part hubs, and consultancy is always close at hand.

Centrifugal & Gear Pumps

KNOWLEDGE:

SPX's Johnson Pumps have been moving liquids for more than 75 years. Our pumps are found everywhere from ocean-going ships, swimming pools and high rise buildings to hospitals, industries and zoos. Pumps are the life of a ship. When the pumps stop working, everything on board shuts down. That's why we make the best pumps to precisely meet the specifications demanded at a competitive price with the fastest possible deliveries. Johnson Pumps provide a full range of centrifugal and positive displacement pumps to suit your needs on-board.

- Applications:

- Bilge & ballast
- Engine cooling
- Fire fighting
- General service
- HVAC
- Oil systems
- Potable water
- Sewage

TECHNOLOGY:

SPX's R&D department developed the hydraulic investigator selection program for selecting the right size of centrifugal pump. This program translates the required QH-value into the hydraulic most suitable for

the intended objective. SPX has its own approved test beds on which we can carry out tests for QHP, NPSH, vibration and noise level. These tests are conducted in accordance with various inspection agencies such as Lloyds RoS, GL, DNV, ABS, and RINA.

The Johnson Pump brand Combi system is a modular program that comprises a range of vertical and horizontal centrifugal pumps. Components can be interchanged between the various models, enabling us to provide our customers the optimal design for each specific application. We take pride in the close cooperation we have between our application engineers, R&D staff and our customers.

SERVICE:

We focus on quality and low life-cycle costs (LCC) for our products. Our pumps are serviceable without having to remove the pump from the pipework. In addition, our authorized service partners use genuine OEM parts to ensure continuation of optimum performance.

CombiPrime - Vertical & Horizontal

Vertical & Horizontal self-priming pump, hydraulics according to EN733. General service, bilge, ballast and fire fighting applications.

- | | |
|-------------------|---|
| Max. Capacity: | 500 m ³ /h(H)
800m ³ /h(V) |
| Max. Head: | 100 m |
| Max. Pressure: | 10 bar |
| Max. Temperature: | 80°C |
| Max. Speed: | 3600 rpm |
| Materials: | Cast iron, Bronze |
- Built-in vacuum pump operating on liquid ring principle
 - Large air capacity, i.e. short priming time, even for large suction lines
 - No compressed air required
 - CombiPrime V vertical, compact build
 - Variable (8) positions of suction bend (CombiPrime V)



FreFlow - Self Priming Centrifugal Pump

Self priming centrifugal pump. Corrosive and slightly contaminated liquids containing gas or air such as sea, fresh, bilge and fire-fighting water.

- | | |
|-------------------|-----------------------|
| Max. Capacity: | 350 m ³ /h |
| Max. Head: | 80 m |
| Max. Pressure: | 9 bar |
| Max. Temperature: | 95°C |
| Max. Speed: | 3600 rpm |
| Materials: | Cast iron, Bronze, SS |
- Excellent suction ability up to 7 meters lift
 - Heavy-duty, dust tight, grease-lubricated bearing
 - Inspection hatch for easy maintenance (bigger types)
 - Modular design
 - Available in compact monobloc design





CombiLine

Inline close-coupled circulation pump on extended shaft motor. Circulating pump for heating and cooling systems.

Max. Capacity:	500 m ³ /h
Max. Head:	35 m
Max. Pressure:	10 bar
Max. Temperature:	140°C
Max. Speed:	1800 rpm
Materials:	Cast iron

- Specially designed suction bend
- Improved impeller design
- Ample hydraulic application range
- Excellent hydraulic performance
- In-line design
- Horizontal or vertical installation



CombiLineBloc

Inline close-coupled circulation pump. Circulating pump for HVAC - and cooling systems.

Max. Capacity:	450 m ³ /h
Max. Head:	100 m
Max. Pressure:	10 bar
Max. Temperature:	120°C
Max. Speed:	3600 rpm
Materials:	Cast iron, Bronze

- Standard mechanical shaft seal EN12756 (DIN 24960)
- In-line design
- Stub shaft for standard IEC flange motors
- Back-Pull-Out construction for easy maintenance
- Low NPSH through unique suction bend design
- Horizontal or vertical installation



Additional JP pumps used in the Marine Industry are: CombiNorm, CombiBloc, CombiChem, and Multistage. See www.johnson-pump.com for more details.

CombiFlex, -Universal, -Bloc

Vertical pump with variable position suction bend. Hydraulics according to EN733.

Max. Capacity:	1500 m ³ /h
Max Head:	140 m
Max. Pressure:	10 bar
Max. Temperature:	200°C
Max Speed:	3600 rpm
Materials:	Cast iron, Bronze

- Many mounting options (floor-, bulkhead-, wallmounting)
- 8 positions possible between suction and delivery connections
- Top-pull-out construction in combination with spacer coupling for easy maintenance
- Bearing bracket option allows range of shaft-seals
- Compact build



TopGear

Heavy duty self-priming internal gear pump range. Cargo transfer, fuel and oil transfer.

Max. Capacity:	250 m ³ /h
Max. Pressure:	16 bar
Max. Temperature:	300°C
Max. Viscosity:	80 000 mPas
Materials:	Cast iron, Nodular cast iron, SS, Cast steel

- Front and Back-Pull-Out
- High and low viscous products
- Simple design
- Easy maintenance



Screw and Rotary Vane Pumps

KNOWLEDGE:

With decades of experience in designing and manufacturing rotary positive displacement pumps, SPX's Plenty Mirrlees Pumps have built an excellent reputation for reliable pumping equipment for the marine, oil processing, petrochemical processing, power generation, defense, sugar and general industries. With Plenty Mirrless Pumps, SPX has a solution for most pumping applications with a range that includes two screw (TWINRO), three screw (TRIRO) and our 2000 series vane pumps incorporating the unique variable flow feature.

These pump designs are ideally suited for a number of applications in the marine industry.

- Applications:

- Ship bunkering
- Ship liquid cargo pumping
- Bilge and ballast pumping
- Forced lubrication
- Seal oil circulation
- Lube oil transfer
- Elevator/lift pumps
- Fuel oil firing (boilers etc.)
- Low sulphur diesel oil (LSDO)
- Heavy fuel oil pumping and heating grease
- Fuel oil booster and transfer
- Special engineered pumps to Naval specification
- Ship engine rooms
- Pipeline and process flow requirements

Twinro Pump

The Twinro utilises two contra rotating screws providing a smooth, pulse free flow. Each screw is accurately located between bearings providing a physical gap between each screw and between the screwset and casing, eliminating the need for internal lubrication from the pumped liquid.

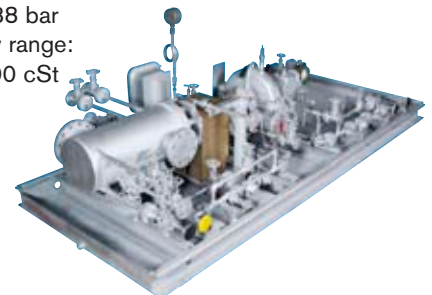
- Flow range: 10 to 1250 m³/hr.
- Temperature range: -40 to + 200° C
- Operating pressure: Up to 14 bar (higher pressures on application)
- Viscosity range: 1 to 7000 cSt
- Flow range: 0.1 to 750 m³/hr.



TRIRO Pump

The TRIRO pump is a positive displacement axial flow screw type pump design with only three moving parts - a power rotor and two idler rotors. These three rotors have accurately machined, precisely intermeshing threads which enclose the liquid being pumped and act as seals in relation to each other and to the pump body or sleeve in which they rotate. Designed to pump oils, the pump has an axial, pulse free flow and silent operation for sensitive forced lubrication, seal oil circulation and oil firing systems.

- Flow range: 0.1 to 750 m³/hr.
- Temperature range: -20 to + 200° C
- Operating pressure: Up to 138 bar
- Viscosity range: 2 to 5000 cSt





TECHNOLOGY:

TWINRO screw pumps provide an axial flow and are used in all bulk transfer duties where large volumes of liquid are required to be moved. They have features designed for emptying tanks, good suction conditions, excellent cargo stripping capabilities and are available in both horizontal and space saving, vertical configurations.

Screw pumps provide a smooth, pulse-free flow and are designed to pump oils. The pump has an axial, pulse-free flow and silent operation for sensitive forced lubrication, seal oil circulation and oil firing systems.

Vane pumps are rotary pumps with a unique construction of eight blades with flat tips sliding in a precision machined rotor which provides low-shear, low-pulse flow with high volumetric and mechanical efficiency. The design enables low or highly viscous liquids to be pumped. The robust construction ensures very low vibration, quiet running and a long service life. They are designed to operate at low speeds, offering high resistance to wear.

SERVICE:

Our trained and experienced staff are able to offer technical pre- and post-sales advice on all pumps and systems, training throughout all stages of pump assembly, and support through to on-site installation and commissioning.

Our network of technicians provide planned and comprehensive on-site service, repair and refurbishment programs for most types of pumps. Whether servicing takes place in the field or at our service center, the same standards of excellence apply, ensuring that our customers' pumps are back in the field quickly and operating at maximum efficiency.

Our Service Center maintains a stock inventory of the most common wearing components. Parts required for emergency breakdown situations can be manufactured upon request quickly and accurately at our manufacturing facilities.

Vane Pumps

The "U" (Universal) 2000 offers infinitely variable flow from zero to 100% by varying the eccentricity of the shaft-to-rotor mechanism within the pump. The eccentricity can be varied in three ways: manually at the pump by a handwheel situated on top of the pump; remotely from a control center with a pneumatic or electric stroke actuator on top of the pump or automatically by C.P.C. (Constant Pressure Control) where pump flow is automatically adjusted.

- Flow range: up to 500 m³/hr.
- Temperature range: -30 to + 260° C
- Operating pressure: 14 bar (standard) up to 25 bar (special construction)
- Viscosity range: 2 to 75,000 cSt (standard)



Large Flow Terminal Transfer Twinro Pump

- Specifically developed for the bulk transfer of liquids
- For ship-to-shore, shore-to-ship transfer
- For fuel oils – both heavy and light, chemicals, additives etc.



**From the quality of our components to the dedication of our technical support staff,
SPX has a solution for your on-board marine applications.
Visit our website at www.spxft.com.**

Serving the Food & Beverage, Power & Energy and Industrial Markets Worldwide



SPX[®]
WHERE IDEAS MEET INDUSTRY

For more information about our worldwide locations, approvals, certifications, and local representatives, please visit www.spxft.com.

SPX Corporation reserves the right to incorporate our latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing.

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