

**ROTATING JOINTS AND SIPHON SYSTEMS
FOR THE PAPER INDUSTRY**



Deublin is the world's largest manufacturer of rotating unions. These precision engineered products are used in an almost endless variety of applications. They are capable of handling a range of fluids, viscosities and temperatures often at very high pressures and speeds.

The same energy and dedication that goes into engineering and manufacturing rotating unions are channeled into the steam/hot oil joints, siphon systems, turbulence bars and other related ancillary equipment for the paper industry. Deublin product engineers have worked closely with many of the world's largest paper manufacturers and machine builders. In the process, Deublin has revolutionized the industry with the introduction of stationary siphon systems and its FS-Series for today's high-speed paper machines. Deublin's ability to match a system to a machine's productive capabilities is proving invaluable to paper companies seeking to maximize their production.

Since no single system is universally effective, Deublin has developed a number of different joints and siphon systems to assure maximum performance under different operating conditions.

With its global network of subsidiaries and distributors, Deublin can offer products and technical services to its customers worldwide. The following pages feature the wide range of Deublin innovative products available for the paper industry.

DRYER AUDIT SERVICES

Deublin offers comprehensive dryer audit services that enable mill engineers to find solutions for improving paper quality, increasing productivity and efficiency, optimizing runnability and reducing down time, maintenance time and costs. These assessments include:

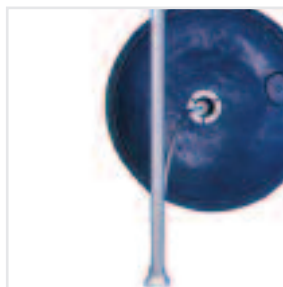
- Drying rate
- Efficiency
- Pressure differential
- Moisture profile
- Dryer surface temperature
- Difference between dryer surface and steam temperatures
- Operating speed/production capacity
- Steam and condensate systems as they relate to dryer drainage



DELTASINT



DELTASINT SL



ROTOSINT STD



ROTOSINT TRISTAR



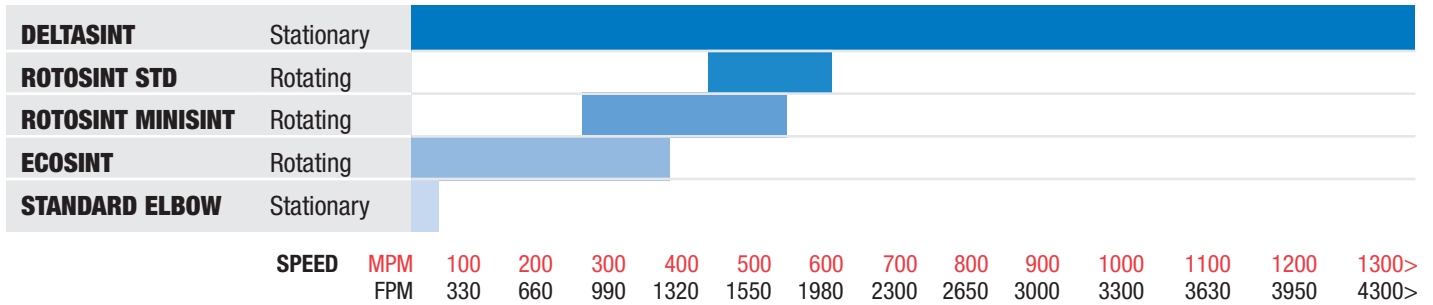
ECOSINT



ELBOW

SIPHON SELECTION CHART

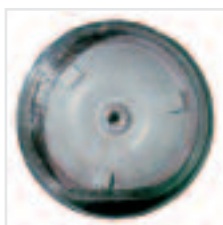
The selection chart below is for reference only. Consult Deublin Engineering for assistance in the actual selection of a siphon system.



SIPHONS & JOINTS INDEX

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	Paper machines, up to 400 MPM (1300 FPM)	7	ECOSINT & DELTASINT SL SIPHONS	Rotating siphons
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	Press Rolls	15	F SERIES COOLING SYSTEM & F SERIES JOINTS	Self-supported (ball bearings); balanced mechanical seal
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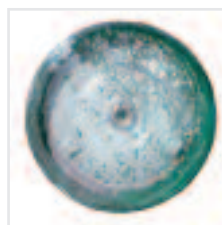
CONDENSATE BEHAVIOR AT VARIOUS SPEEDS



PUDDLING



LIGHT CASCADING



CASCADING



RIMMING

DELTASINT STATIONARY SIPHONS

WITH FS SERIES STEAM JOINT FOR ANY SPEED

The introduction of the revolutionary Deltasint Stationary Siphon has established Deublin as the innovative leader in siphon and joint design for the paper industry. Designed specifically to handle the rigorous requirements of high-speed paper machines, it is also particularly suitable for felt driven dryers.

Stationary siphons are more energy efficient than rotating siphons on high-speed machines. The Deltasint Stationary Siphon and FS Series Steam Joint provides a combination that is rigidly supported by the machine frame. This system does not require any internal support or bushing inside the dryer to support the siphon, thereby eliminating the need for routine siphon inspections.

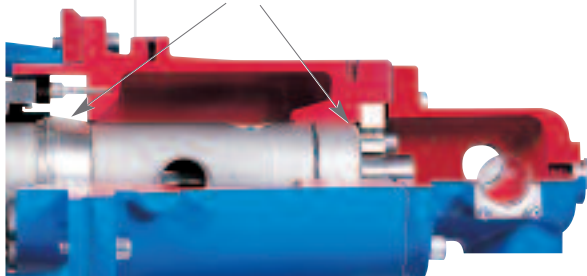
The Deltasint Stationary Siphon is supported in the housing of the FS Series Steam Joint at two points. The outward support is cylindrical while the inboard support is conical. The two widely spaced supports reduce vibration and deflection of the horizontal pipe. This enables the siphon to be positioned with the pick-up shoe at closer clearance from the surface of the dryer shell than traditional or previous designs. This attribute reduces the thickness of the condensate layer that, in turn, increases the heat transferred to the surface of the dryer.

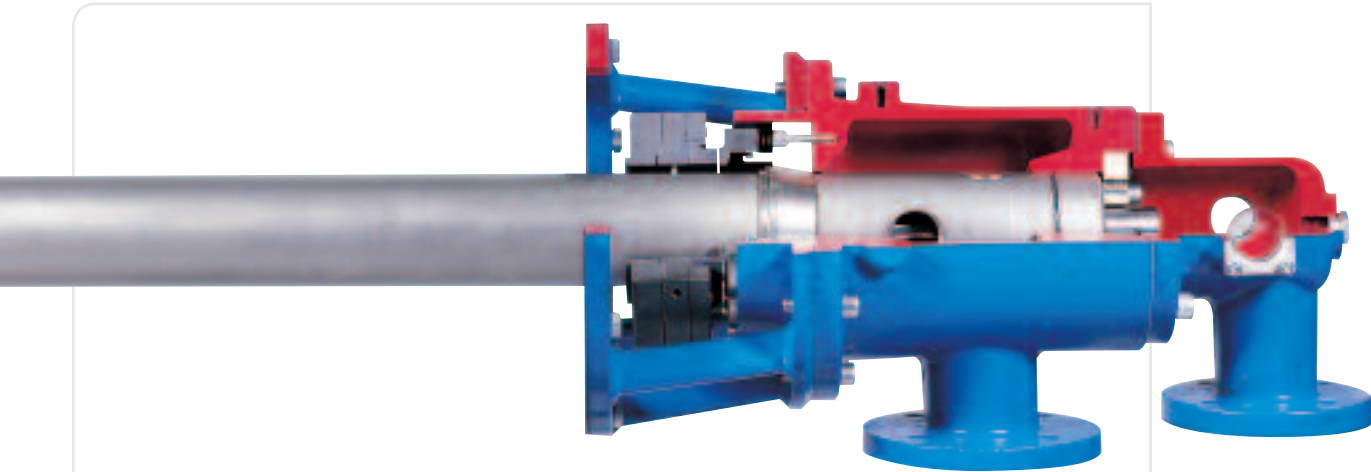
Due to an absence of centrifugal force in the column of the stationary siphon, the differential pressure required to evacuate the condensate is significantly reduced, as compared to rotating siphons. Consequently the volume of blow-through steam is reduced. In turn, the evacuation of condensate is performed with more efficiency. The primary advantages of the Deltasint Stationary Siphon are improved efficiency and improved mechanical reliability due to:

- Reduction of differential pressure requirement
- Reduction of blow-through steam
- Elimination of dryer flooding
- No moving parts
- Rigid mechanical mounting
- Hydro-planing Siphon Pick-up Shoe design

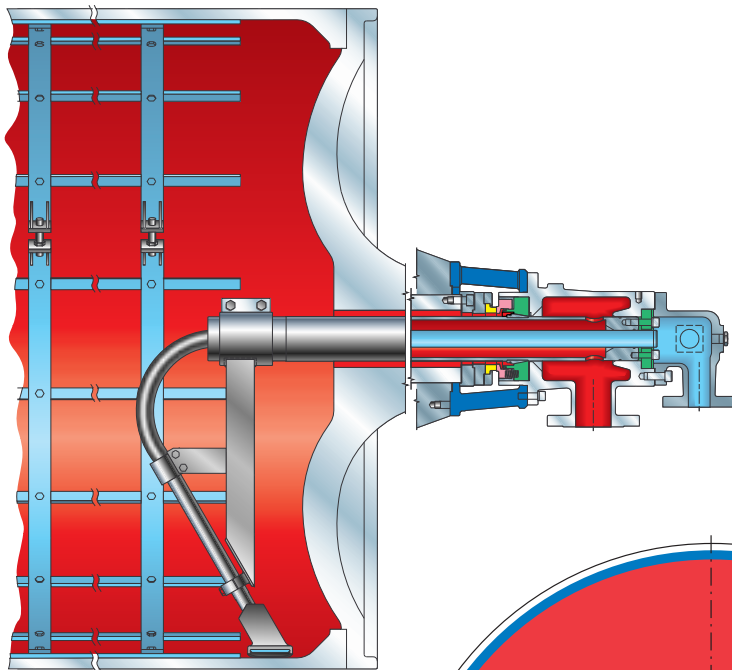
(For more information on FS Series joints, please see page 10)

Two widely spaced supports of the central pipe provide rigid support to the cantilevered stationary siphon.

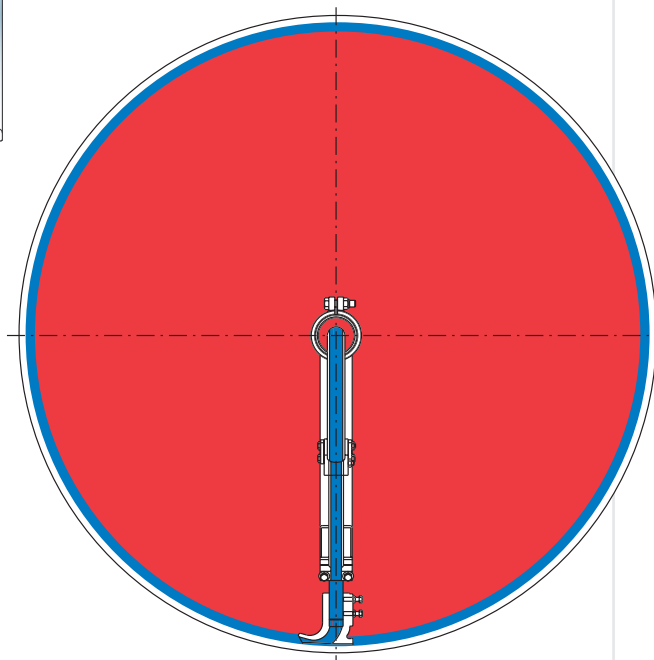




Cutaway of the FS Series Steam Joint shows the extra large surfaces supporting the horizontal siphon pipe. This Deublin engineered rigid construction, for the first time, has made it practical to use stationary siphons in high-speed applications.



Typical installation showing Deltasint Stationary Siphon with FS Series. The blue indicates condensate in a full rimming condition and path of condensate as it is evacuated. The dotted circle highlights the area shown in the cutaway photograph. For more information on turbulence bars, see page 18.



ROTOSINT STANDARD ROTATING SIPHONS

FOR SPEEDS FROM 430 TO 610 MPM (1400 TO 2000 FPM)



The Rotosint Standard represents the most widely used Deublin Rotating Siphon. The close clearance of the shoe provides efficient condensate evacuation around its entire circumference. As illustrated, this system also uses a spider support bolted to the head of the dryer.

MINISINT ROTATING SIPHONS

FOR SPEEDS FROM 250 TO 550 MPM (820 TO 1800 FPM)



The design of the Minisint pick-up shoe provides effective condensate evacuation over a range of speeds where the condensate behaves between cascading and rimming conditions. The frontal opening of the pick-up shoe maximizes condensate removal while minimizing the volume of blow-through steam. The Minisint Rotating Siphon assembly can be used with the Deublin H Series self-supported Steam Joint or the DMS Series externally supported Steam Joint.

TRISTAR ROTATING SIPHONS

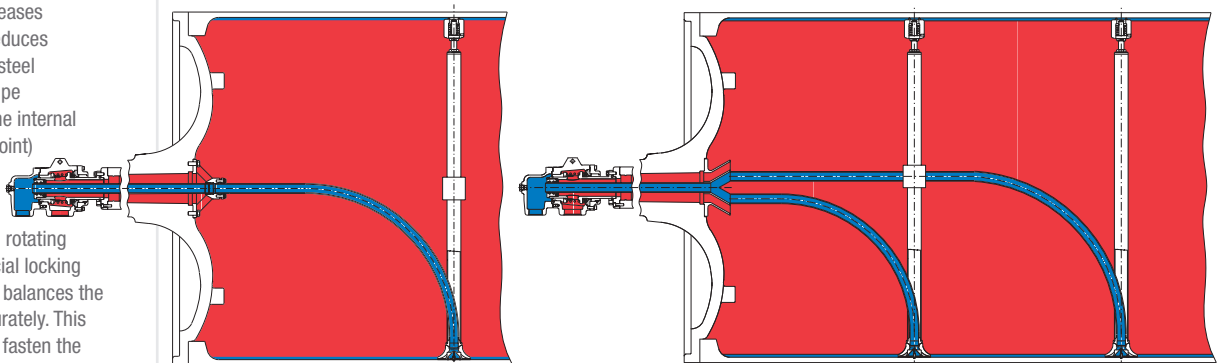


The Tristar is designed as a heavy-duty support for all Deublin Rotating Siphons and provides extra stability under difficult conditions. The system can be used on large diameter dryers as well as Pope reels and Press rolls.

All rotating siphon assemblies feature stainless steel discharge pipes. The curved pipe is designed with a large radius to reduce flow disruption, which decreases pressure losses and reduces erosion. The stainless steel horizontal discharge pipe (connected between the internal spider and the steam joint) compensates for thermal expansion.

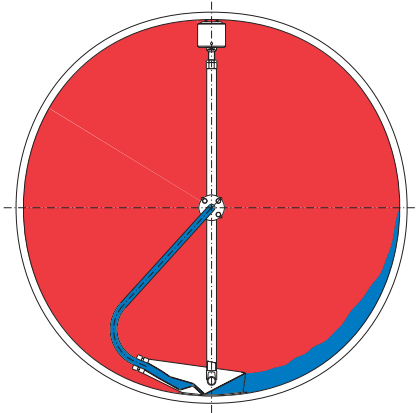
Support columns of all rotating siphons feature a special locking head that secures and balances the siphon easily and accurately. This eliminates the need to fasten the pick-up shoes directly to the dryer shell.

In wide cylinders, multiple siphons are recommended to assure a more balanced condensate removal. A specially designed manifold must be installed so the condensate is discharged at the same pressure differential and the temperature profile remains the same over the entire width of the cylinder.



ECOSINT ROTATING SIPHONS FOR SPEEDS TO 400 MPM (1300 FPM)

The Ecosint pick-up shoe is similar to the traditional scoop type siphon which was typically cast into the dryer head. It is a large scoop designed for machines operating at speeds where the condensate behaves between puddling and initial rimming conditions. Under these circumstances, since the condensate ramps over a narrow dryer circumference, the wide frontal opening of the pick-up shoe will maximize condensate evacuation during the relatively short time it rotates through the condensate layer.



Typical Ecosint application with standard discharge pipe and cascading condensate.



For lower speed ranges (cascading condensate) a special 180° discharge pipe is available and acts as a trap to reduce the amount of blow-through as the pick-up shoe rotates outside the condensate puddle.

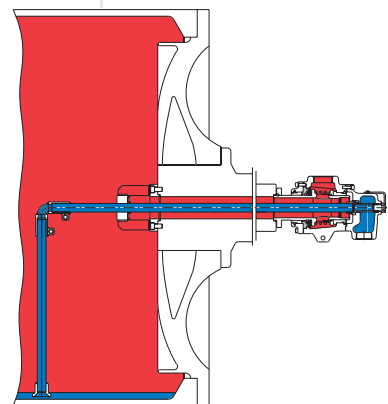
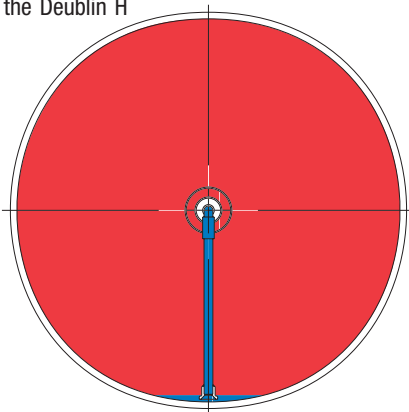
DELTASINT SL STATIONARY SIPHONS FOR LOW SPEEDS UP TO 250 MPM (820 FPM)

The Deltasint SL is designed for low-speed open gear machine applications where the condensate is puddling or in light cascading condition. The system is supported inside the dryer using a spider mounted to the head. Therefore, installation requires a manhole in the dryer cylinder. The spider is designed with an internal bushing to support the horizontal siphon pipe. The vertical pipe is joined by means of a heavy-duty reinforced 90° elbow providing a very rigid installation.

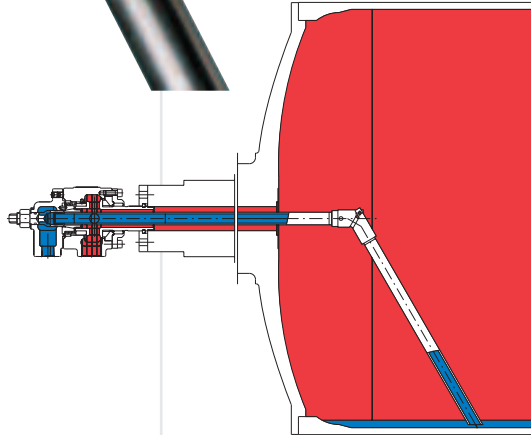
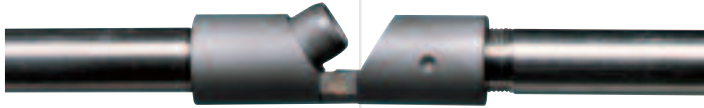
The special pick-up shoe has a PTFE sole to prevent damage to the dryer in the unlikely event of contact with the dryer shell. The rigid mounting and protective PTFE sole makes it practical to position the shoe closer to the shell of the dryer. The system effectively evacuates condensate with minimal differential pressure and blow-through. The Deltasint SL Stationary Siphon is recommended for use in open gear machines with the Deublin H Series self-supported Steam Joint.



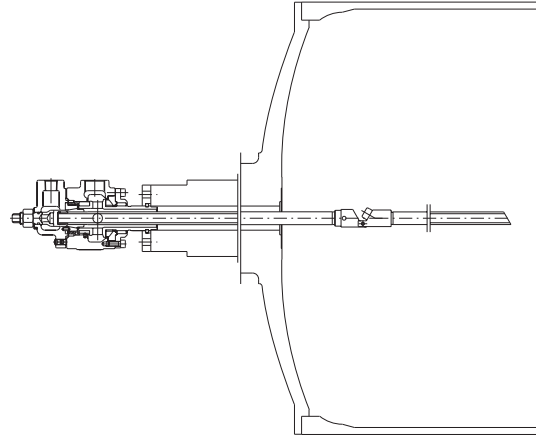
Typical installation of Deltasint SL stationary siphon.



ELBOW STATIONARY SIPHONS FOR SPEEDS NOT OVER 50 MPM (160 FPM)



The Elbow Stationary Siphon is designed for dryers without manholes for maximum operating speeds of 50 MPM (160 FPM). This siphon is installed in the dryer from the outside and does not require any adjustments or positioning from the inside of the dryer. The knuckle forming the elbow is constructed from stainless steel joined by a pin. Its uniform internal diameter eliminates flow restriction. These siphons can be used with Deublin H or HS Series steam joints with S type inner bushing.

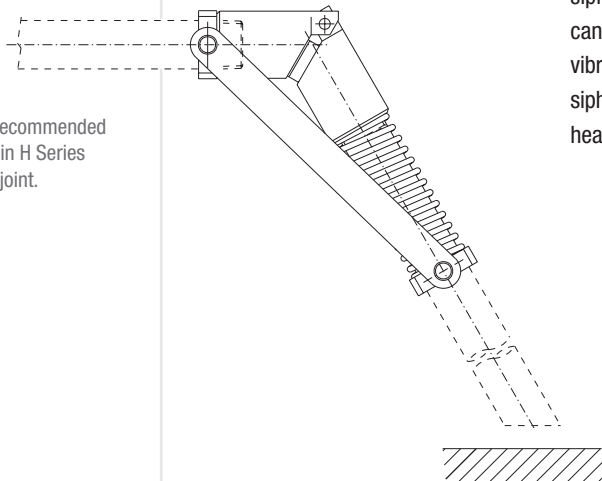


SPRING LOADED ELBOW STATIONARY SIPHONS WITH INTERNAL SUPPORT FOR SPEEDS UP TO 150 MPM (500 FPM)



This system is an extension of the simple Elbow Stationary Siphon. It is designed for similar applications, but for machines operating at higher speeds. Reinforcing braces on the outside of the elbow plus a spring loaded vertical pipe serve to reduce the load applied by the condensate on the pin, which joins the knuckle. The spring resists turbulence of the condensate from opening the knuckle and improves condensate evacuation.

For higher speed machines operating up to 150 MPM (500 FPM), the spring reinforced Elbow siphon can be furnished with a support to the horizontal pipe inside the dryer. This support and siphon is fitted into the dryer from the outside. This reduces the cantilevered length of the horizontal pipe, which reduces siphon vibration and increases Siphon and Steam Joint life. In addition, the siphon can be positioned closer to the dryer shell, thereby improving heat transfer.

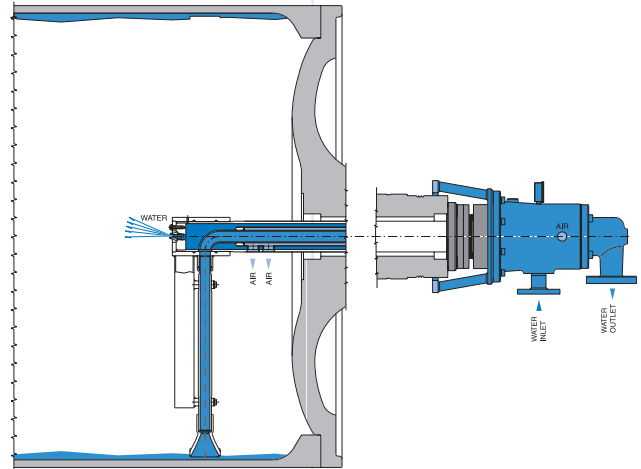


This Elbow siphon is recommended for use with the Deublin H Series self-supported steam joint.

SIPHONS FOR COOLING SYSTEMS

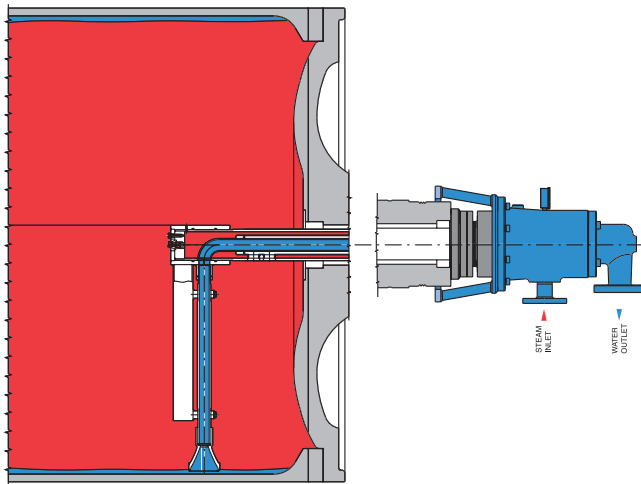
Equally important to consistent heat transfer in the dryer section is uniform heat reduction in the cooling section. The cooling cylinder must reduce the sheet temperature to a specific degree uniformly across the web. An effective cooling system introduces cold water and evacuates the warmer water so that the surface temperature of the cylinder remains constant. The warm water behaves similar to condensate in relation to the cylinder's speed, and like condensate, it puddles, cascades and rims. It is necessary to introduce a mixture of water and air to provide the required pressure differential to evacuate the cylinder.

For these reasons, most of the same siphon systems are equally effective in both heating and cooling applications. Deublin also offers systems designed specially for Pope reels and Press rolls.

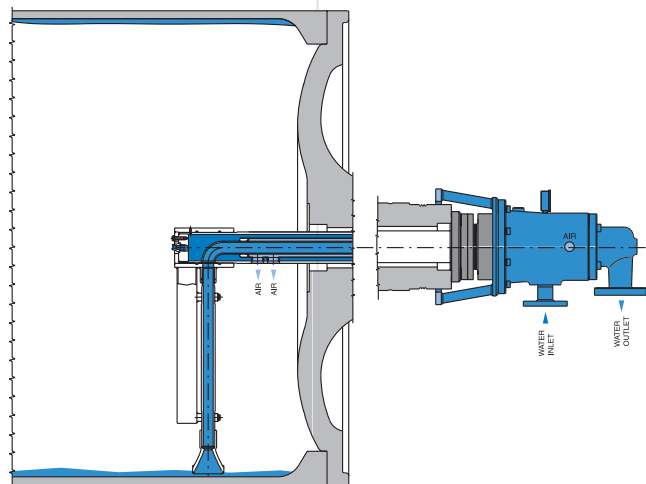


SIPHONS FOR SWING CYLINDERS

Modern paper machines often have dual-purpose (cooling or drying) cylinders, depending on production needs. These versatile "swing" cylinders have special requirements to enable them to perform effectively in either mode. Deublin has the expertise to furnish a complete system to fit these requirements. Systems are available with stationary or rotating siphons.

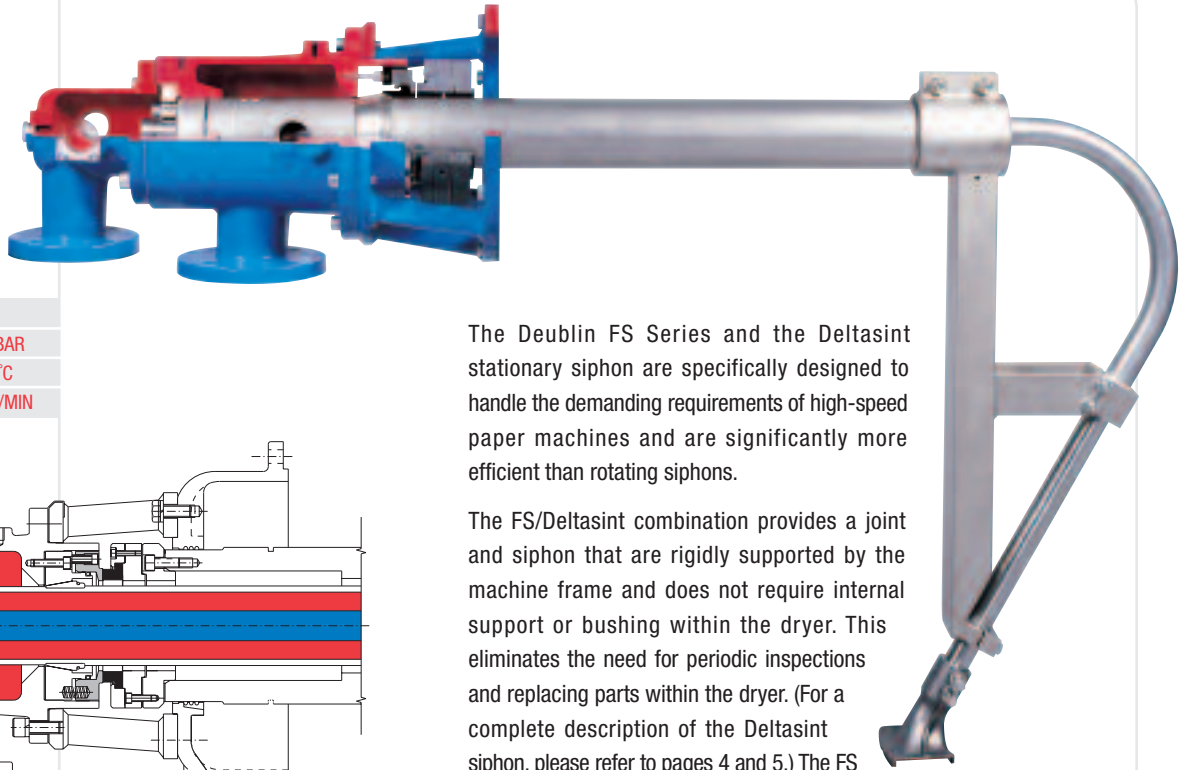


DRYING MODE



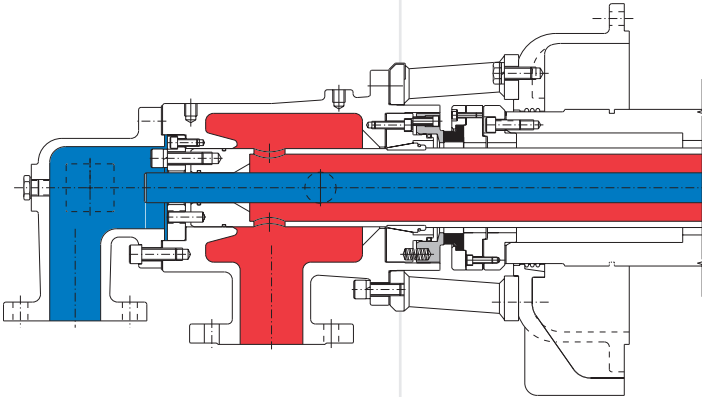
COOLING MODE

FS SERIES JOINTS



OPERATING DATA

MAX PRESSURE	150 PSI	10 BAR
MAX TEMPERATURE	365°F	185°C
MAX SPEED	400 RPM	400/MIN



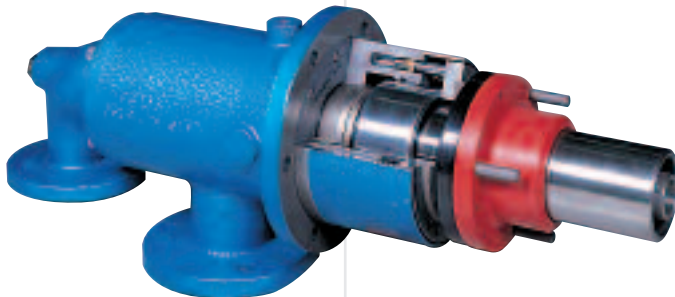
The Deublin FS Series and the Deltasint stationary siphon are specifically designed to handle the demanding requirements of high-speed paper machines and are significantly more efficient than rotating siphons.

The FS/Deltasint combination provides a joint and siphon that are rigidly supported by the machine frame and does not require internal support or bushing within the dryer. This eliminates the need for periodic inspections and replacing parts within the dryer. (For a complete description of the Deltasint siphon, please refer to pages 4 and 5.) The FS Series Joint is available in various sizes and designs. For information on specific applications, contact our Engineering Department.

The FS Series joint design incorporates a balanced end face mechanical seal instead of the conventional pressure type joint commonly found on paper machines. The balanced mechanical seal operates with significantly reduced surface friction and wear which results in extending the life of the sealing mechanism. The design also permits the use of the joint with super heated steam.

The FS Series joint is available in monoflow (steam supply or condensate return) and duoflow (steam supply and condensate return) configurations. When ordering, please specify bell housing or bracket mounting.

FSC SERIES JOINTS

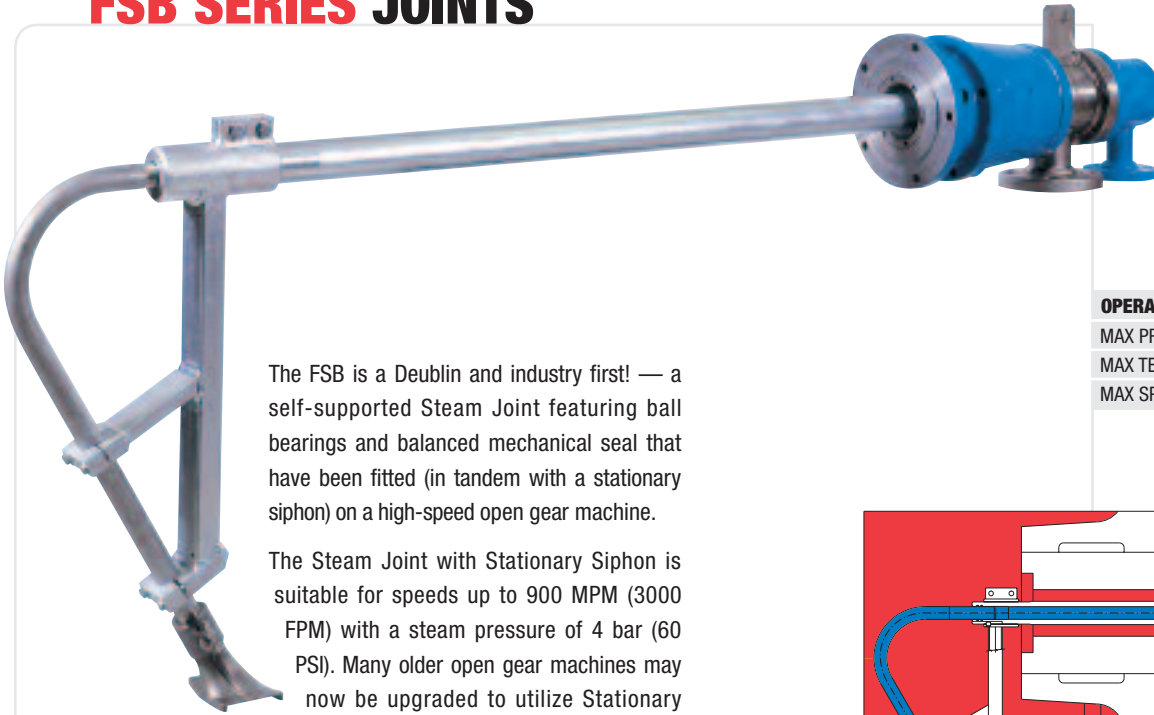


CARB* (compact angular roller bearing) bearings allow axial thermal expansion of the supported journal, thereby eliminating the need for rocker supported bearing brackets.

The FSC is designed for dryers fitted with CARB* bearings. This unique joint provides 25 mm (1") of axial thermal expansion accomplished by designed flexibility in the "stroke" of the floating seal.

* SKF Trademark

FSB SERIES JOINTS



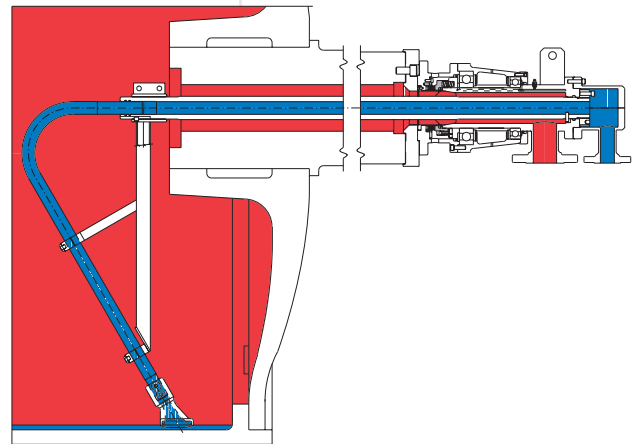
The FSB is a Deublin and industry first! — a self-supported Steam Joint featuring ball bearings and balanced mechanical seal that have been fitted (in tandem with a stationary siphon) on a high-speed open gear machine.

The Steam Joint with Stationary Siphon is suitable for speeds up to 900 MPM (3000 FPM) with a steam pressure of 4 bar (60 PSI). Many older open gear machines may

now be upgraded to utilize Stationary Siphons that offer the benefits of reduced differential pressure requirements, and, consequentially, reduced blow-through.

The FSB Series Steam Joint with Stationary Siphon offers mills an opportunity to increase production on dryer limited machines while reducing downtime and maintenance costs. The balanced mechanical seal delivers improved seal life—as much as 2 - 4 times over conventional pressure type seals (depending upon steam pressure and speed.)

OPERATING DATA		
MAX PRESSURE	45 PSI	3 BAR
MAX TEMPERATURE	250°F	120°C
MAX SPEED	200 RPM	200/MIN

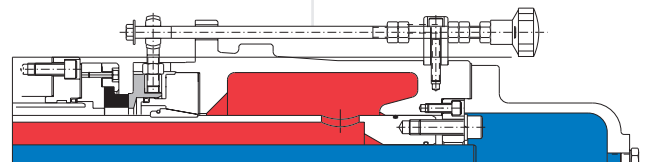


UNLOADING MECHANISM

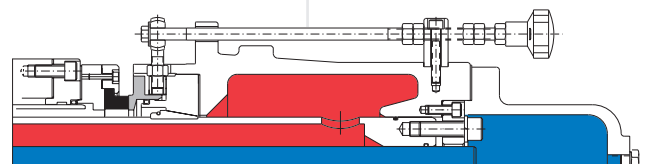
Depending on the paper grade, the drying capacity of the paper machine may require adjustment. This may be accomplished by shutting off the steam flow to certain dryers. However, since steam serves as a lubricant for the seal faces, shutting off steam flow amounts to running the seal faces dry, which will lead to premature wear and failure of the seals.

The Unloading Mechanism unloads the springs of the mechanical seal, reducing seal face contact pressure, thereby minimizing seal wear during intermittent “dry run” conditions. The Unloading Mechanism is available either as a manual and mechanical actuation with threaded rods or with pneumatic cylinder actuation.

This feature is available on all FS Series Steam Joints.



LOADED POSITION

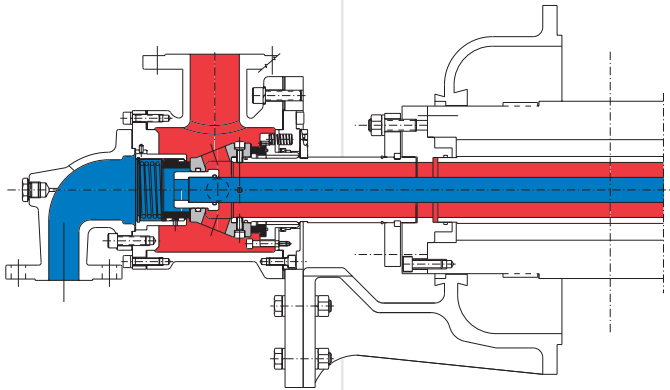


UNLOADED POSITION

DMS SERIES JOINTS

OPERATING DATA

MAX PRESSURE	150 PSI	10 BAR
MAX TEMPERATURE	365°F	185°C
MAX SPEED	400 RPM	400/MIN

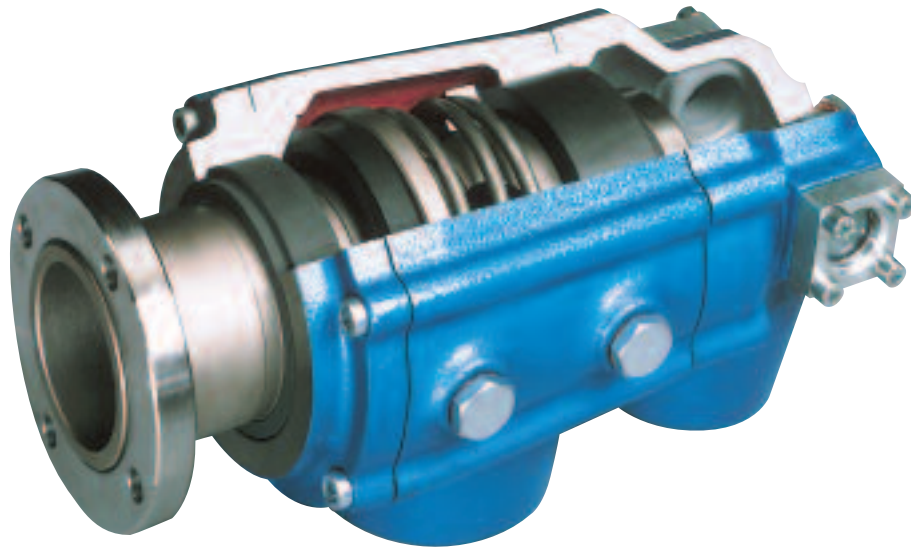


The DMS Series rotating joint has dual seal assemblies where the seal ring is attached to the rotor, which is bolted to the rotating journal. The seal ring contacts the counter seal attached to the stationary joint body. The joint body is rigidly secured to the machine frame by an external support.

While pressure-type joints use operating pressure for sealing, the DMS has two balanced mechanical seals that apply reduced hydraulic forces to the seal rings and counter faces. This lowers seal contact pressure reducing wear and extending seal life. Seal wear is fully compensated automatically through designed axial movement of internal seal components. The joint body remains fixed throughout the life of the seal. Duoflow DMS Series Joints handle entering and exiting media through a single joint.

The DMS Series steam joint is suitable for enclosed gear, moderate speed paper machines with rotating siphons.

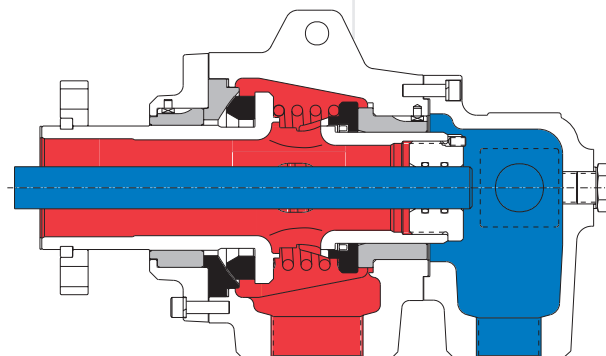
H SERIES JOINTS



The H Series is Deublin's most popular self-supported rotating pressure joint. It is engineered specifically for steam and hot oil applications common in the paper, plastic and textile industries.

The self-supported design is accomplished with two widely spaced carbon graphite bearings. The use of two bearings provides better alignment and distributes the load more evenly, reducing wear and providing longer seal life. The self-supported design is ideal especially on open gear machines where external mounting surfaces are not available. The design features a self-aligning spherical carbon graphite versus Ni-Resist seals. The high nickel and chromium content of the Ni-Resist provides an excellent sealing surface and resistance to wear due to corrosion and abrasion. The sealing surfaces can be easily reconditioned with an Emery Cloth.

The sealing mechanism is designed such that the carbon graphite is under compression. Carbon graphite under compression is four times stronger than in tension, so it can better withstand pressure surges and water hammering. Two threaded plugs (optional) in the housing located over the carbon graphite seals allow for monitoring of seal face wear. The end cap of the duo-flow version for steam service with a rotating siphon is available with dual sight glasses to monitor condensate flow.



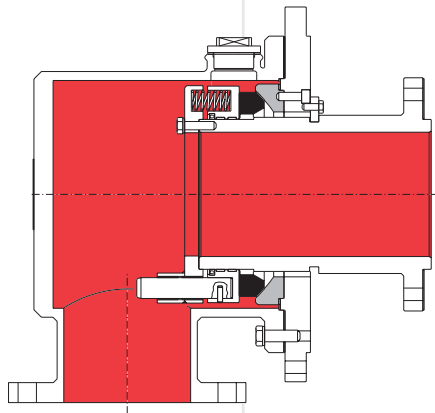
OPERATING DATA

MAX SAT. STEAM PRESSURE	150 PSI	10 BAR
MAX SAT. STEAM TEMP.	365°F	185°C
MAX SPEED SAT. STEAM SERVICE	180 RPM	180/MIN
MAX HOT OIL PRESSURE	90 PSI	6 BAR
MAX HOT OIL TEMP.	650°F	340°C
MAX SPEED HOT OIL SERVICE	350 RPM	350/MIN

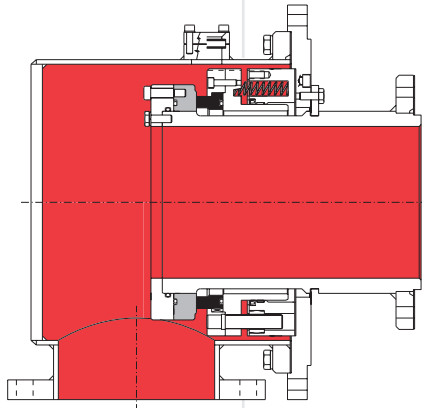
GS & FG SERIES JOINTS

OPERATING DATA

MAX PRESSURE	150 PSI	10 BAR
MAX TEMPERATURE	365°F	185°C
MAX SPEED	400 RPM	400/MIN



GS SERIES



FG SERIES

The FG and GS Series are externally supported joints. The seal ring assembly is attached to the rotating cylinder journal, while the counter seal is attached to the stationary joint body. The joint body is rigidly secured to the machine frame by a bell, bracket, or rod support.

While pressure-type joints use operating pressure to maintain sealing, the FG and GS use mechanical seals which lower seal contact pressure reducing wear and extending seal life. The GS utilizes spherical seal faces which compensate for the eccentricity inherent in large diameter rotating seals. Seal wear is fully compensated through designed axial movement of internal seal components. The joint body remains fixed throughout the life of the seal. Typically, one GS Series Monoflow Joint is used for steam supply and a second GS Monoflow Joint is used for condensate removal.

The FG Series Joint is a variation of the GS Series Joint designed specifically for Yankee Dryers. The primary feature of the FG is the balanced mechanical seal that increases service life and reduces wear under higher pressure conditions.

The FG series will also accommodate dryers fitted with CARB* bearings.

* SKF Trademark

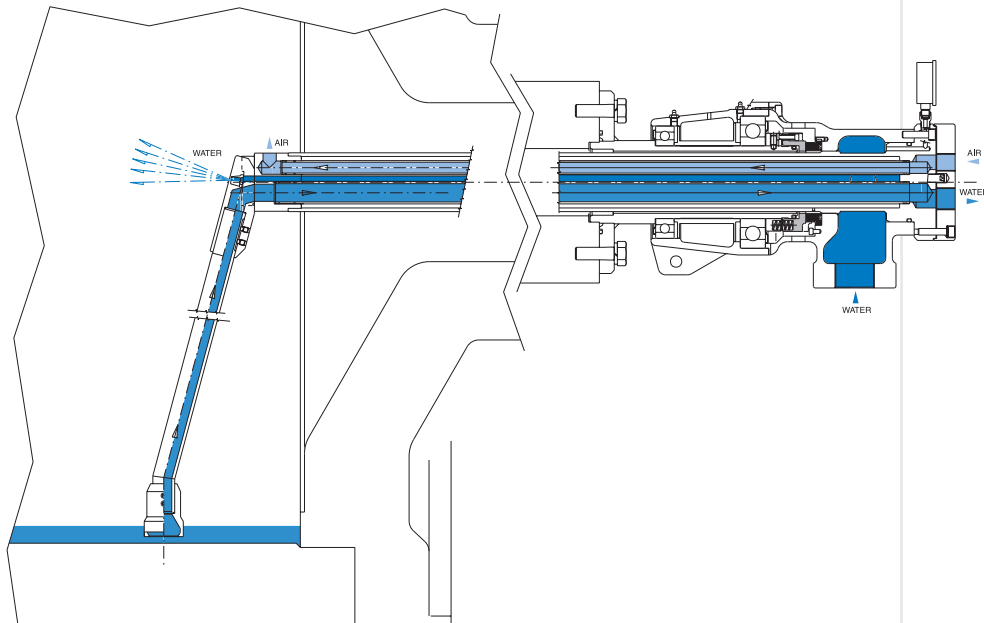
F SERIES COOLING SYSTEM JOINTS

OPERATING DATA		
MAX PRESSURE	200 PSI	14 BAR
MAX TEMPERATURE	250° F	120° C
MAX SPEED	200 RPM	200/MIN



The F Series joints feature a self-supported design. Its rotor is attached by a flange to the rotating cylinder journal, while the joint body is attached to stationary inlet and outlet piping. Two ball bearings support the rotor and allow it to rotate within the joint body.

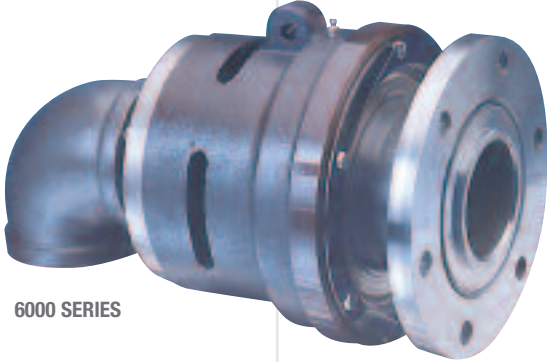
A bell supported version is also available.



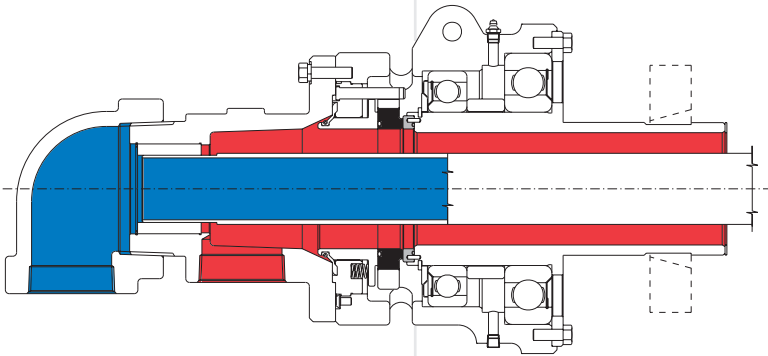
6000 & F SERIES JOINTS

OPERATING DATA

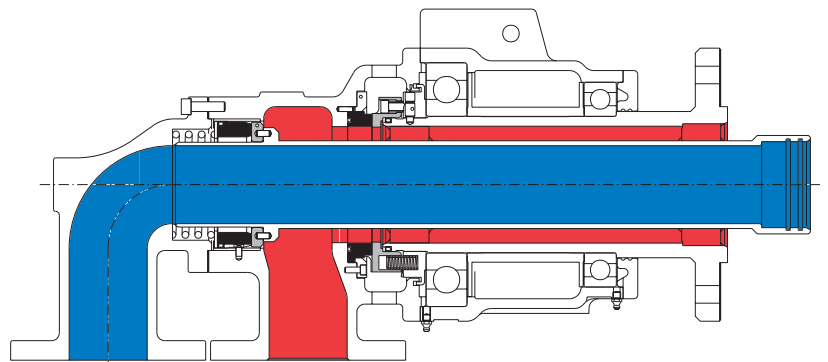
MAX WATER PRESSURE	150 PSI	10 BAR
MAX TEMPERATURE	250°F	120°C
MAX SPEED FLANGED	750 RPM	750/MIN



6000 SERIES



F SERIES



The 6000 Series Joint is a self-supported design with the rotor attached to the rotating cylinder while the joint body is attached to stationary inlet and outlet piping. Dual ball bearings support the housing and allow the rotor to rotate within the joint body. Sealing is provided by a mechanical seal which uses a flat-faced carbon seal ring that mates against a Tungsten carbide seal ring face.

The 6000 uses a balanced mechanical seal that hydraulically limits contact pressure on both sealing surfaces. This reduces seal wear for longer life. Seal wear is fully compensated automatically through designed axial movement of internal seal components. The joint body remains fixed throughout the life of the seal.

Monoflow 6000 Series joints allow media flow in one direction (into or out of the cylinder). Duoflow 6000 Series Joints handle entering and exiting media through the same joint.

The F Series extends the size of water unions to 300 mm (12 inches). It features a balanced mechanical seal with Ni-resist-to-Carbon Graphite seal faces. A spring reinforced TFE U-cup is used as a secondary seal between the floating seal and the rotor.

Two widely spaced ball bearings offer rigid support of the housing relative to the rotor. A special labyrinth between the bearing and the floating seal prevents media from entering the bearing cavity. Both the housing and the rotor are nickel-plated to resist corrosion.

Like the 6000, the F Series is also available in Monoflow and Duoflow configurations.

Both unions mount securely by means of a heavy-duty flange and, for convenience, feature on-machine seal replacement.

CK & RB SERIES JOINTS

The CK Series Joint is a self-supported, high temperature design. Its rotor is attached to the rotating cylinder, while the joint body is attached to stationary inlet and outlet piping. An inboard roller bearing and an outboard ball bearing support the housing and allow the rotor to rotate within the joint body. Sealing is provided by dual mechanical seals, which use flat-faced seal rings that mate against counter faces.

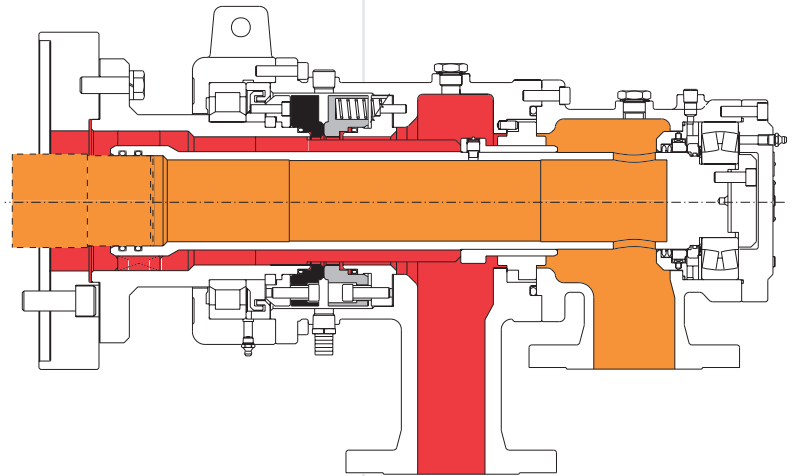
The CK Series relies on mechanical seals that limit contact pressure on both sealing surfaces. This reduces seal wear for longer seal life. Seal wear is fully compensated through designed axial movement of internal seal components. The joint body remains fixed throughout the life of the seal. All CK Series Joints are Duoflow units that handle both entering and exiting hot oil.

The RB extends the hot oil operating range to 315°C (600°F). It features a single bearing concept. Position of the bearing is such that the hot oil is not in the immediate vicinity of the bearing surface minimizing bearing temperature. The bearing operates at a lower temperature; eliminating the need for an external oil cooling system. Based on temperature and speed, a simple air-cooling system may be required.

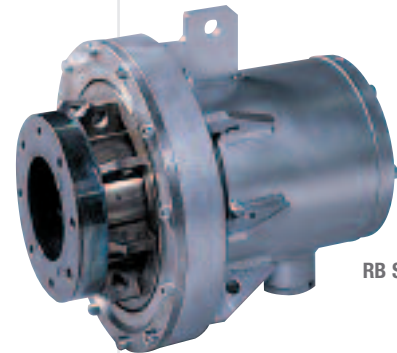
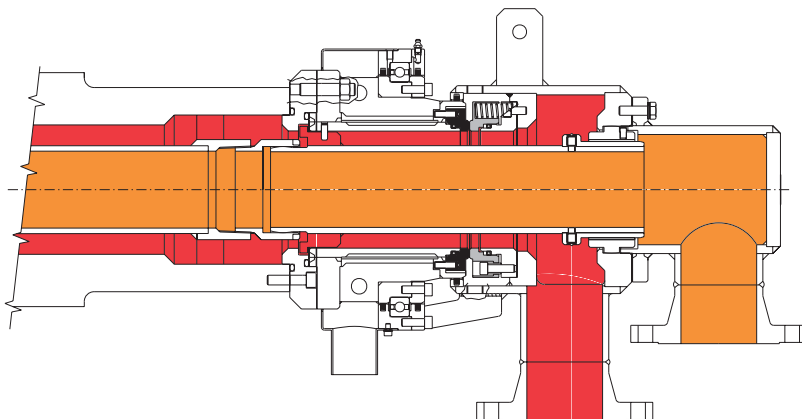
OPERATING DATA		
MAX PRESSURE	85 PSI	6 BAR
MAX TEMPERATURE	480°F	250°C
MAX SPEED	850 RPM	850/MIN



CK SERIES



OPERATING DATA		
MAX PRESSURE	85 PSI	6 BAR
MAX TEMPERATURE	600°F	315°C
MAX SPEED	850 RPM	850/MIN



RB SERIES

TURBULENCE BARS

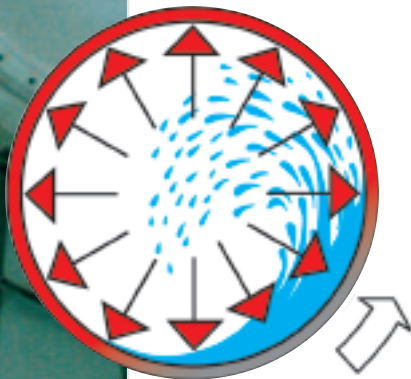
It is proven that condensate in full cascade provides for efficient heat transfer. However, as the operating speeds increase, the condensate begins to rim, which reduces heat transfer efficiency. The obvious solution is to keep the condensate from rimming, and that is precisely what Turbulence Bars are designed to do. The bars form a cage-like structure around the inside diameter of the cylinder and keep the condensate turbulent, even at high operating speeds.

While condensate normally starts to rim at about 305 MPM (1000 FPM) — Turbulence Bars can keep it turbulent, even at very high speeds. They are also instrumental in keeping the temperature profile uniform across the entire cylinder surface. They are especially effective when combined with the Deltasint stationary siphon. The configuration, spacing and bar size contribute to the degree of turbulence inside the dryer shell.

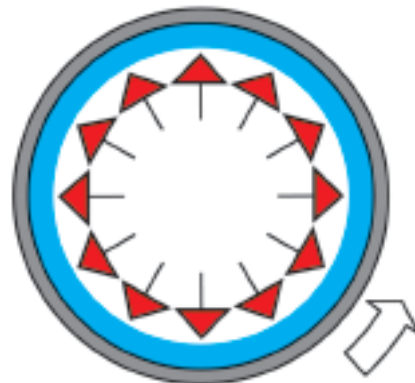
Deublin Engineering will design Turbulence Bars to fit your specific operating conditions. Turbulence Bars are simple and easy to install. They require no special machining or tooling and are available in carbon steel and stainless steel. Stainless steel is recommended for cooling and swing cylinder applications. Turbulence Bars are an effective solution to heat transfer problems and should be a major consideration in both new and retro fit applications.



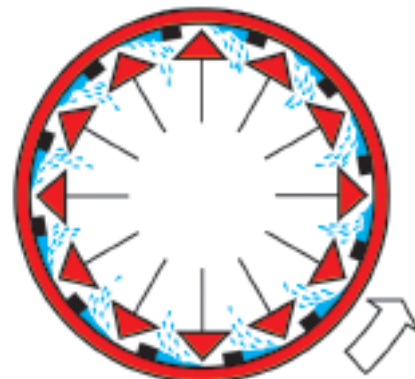
At low speed, condensate puddles in the bottom of the dryer.



As dryer speed increases, a combination of centrifugal force and gravity causes the condensate to cascade. Heat transfer is optimum.



At still higher speeds, the centrifugal force causes the condensate to rim.



Turbulence bars break down the condensate layer to improve heat transfer.

DEUBLIN CAPABILITIES

DEUBLIN DESIGN & ENGINEERING LEAD THE INDUSTRY IN PRODUCT TECHNOLOGY & INNOVATION ALONG WITH TECHNICAL DRYER OPTIMIZATION SEMINARS & SERVICES

These annual seminars offer paper professionals a unique opportunity to learn about innovations in improving and maximizing dryer efficiencies. Attendees learn from industry experts in a setting that stimulates the direct exchange of ideas and information. Every presenter is a hands-on industry expert and presentations range from paper machine fundamentals to case studies presented by mill personnel with documented data quantifying benefits. Open panel discussions focus on key questions relating to dryer optimization.

ON SITE TRAINING

- Joint installation supervision
- Paper machine start-up assistance
- Joint repair training

TECHNICAL ARTICLES & CASE STUDIES

Deublin engineers have extensive experience reporting case studies documenting before and after results at paper mills around the world. This global experience serves as the basis for the numerous articles written by Deublin engineers and published in the industry's leading trade journals.

IMPORTANT! INSTALLATION NOTES

Piping and hose installation are critical components that directly affect mechanical reliability and service life. Deublin offers comprehensive installation guides as well as the option of on-site field supervision.





Since its establishment in 1945, the DEUBLIN COMPANY has consistently adhered to a policy of producing the best product of its kind in the market. The result of this policy has been constant growth through the years. For this progress we are grateful to our many loyal customers. We cordially invite you to visit our modern manufacturing facilities in Waukegan, Illinois; Hofheim-Wallau, Germany and Bologna, Italy.

Sincerely,

Donald L. Deubler,
Chairman of the Board

DEUBLIN PRODUCTS & SERVICES ARE AVAILABLE THROUGHOUT THE WORLD

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