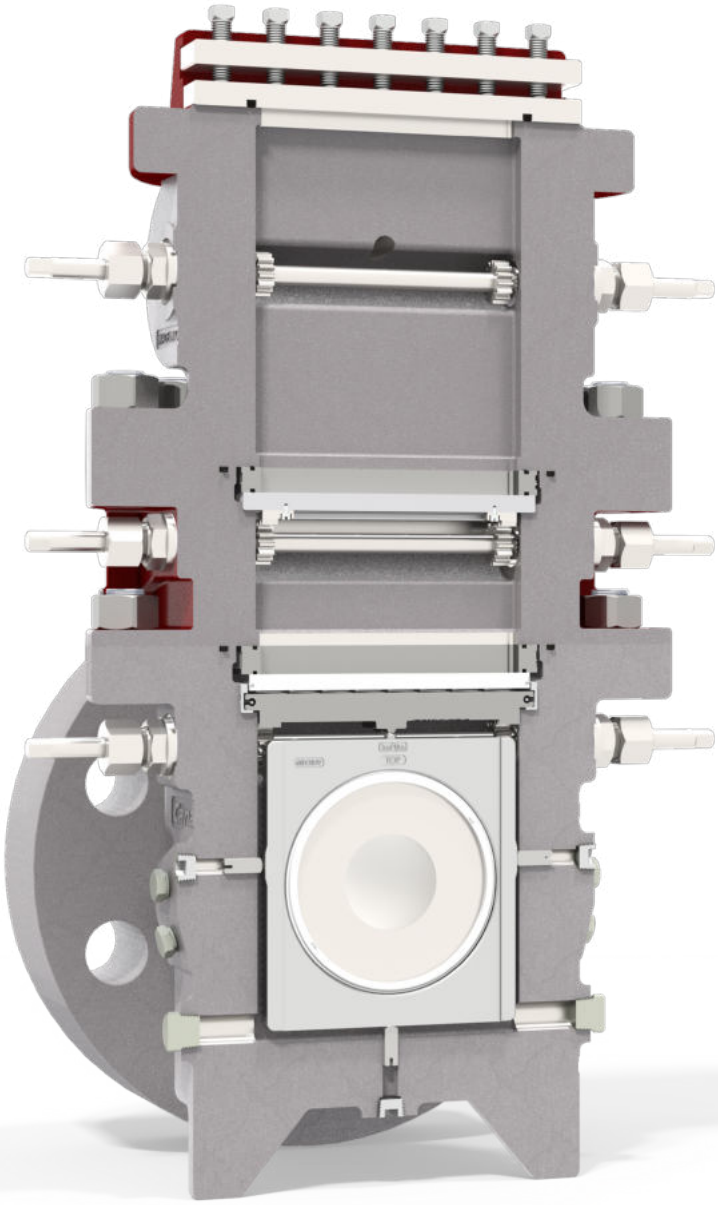
The ***CANALTA DBB ORIFICE FITTING*** brings the unmatched safety of double block and bleed functionality to the already exceptional quality and performance of the Canalta lineup of orifice fittings.

TWO VALVES SEPARATE THE OPERATOR FROM THE FLOW LINE - no need to block in the meter run with multiple ball valves. With separate equalization and venting for the upper and middle chambers, toxic or high pressure emissions through the top, putting personnel in danger, are virtually impossible in the event of lower valve failure.

- ***PROTECTION FROM HIGH PRESSURE & TOXIC FLOW MEDIA***
- ***ACCURATE FLOW MEASUREMENT***
- ***HIGHEST QUALITY MANUFACTURING***

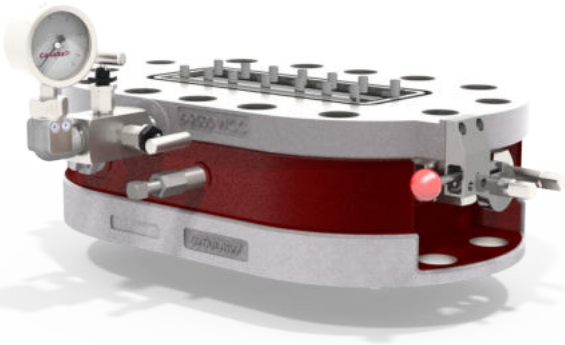


** Patent Pending*

Designed after HSE HSG 253 Cat 2 Isolation, and built to meet or exceed ASME and ANSI specifications, as well as to comply with the latest editions of AGA-3 / API 14.3 or ISO 5167, the Canalta DBB Orifice Fitting provides accurate flow metering over a long service life and superior protection from high pressures and toxic flow media. Available as fitting only, retrofit or complete AGA-3 or ISO 5167 compliant meter run.

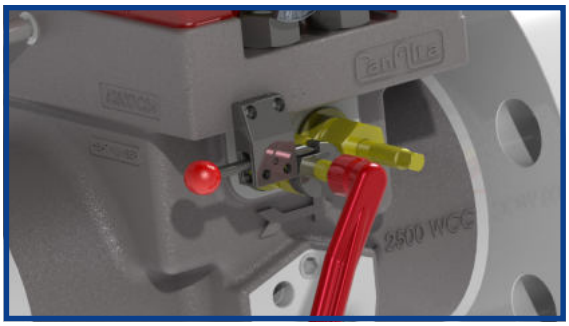
Retrofitting Orifice Meter Installations

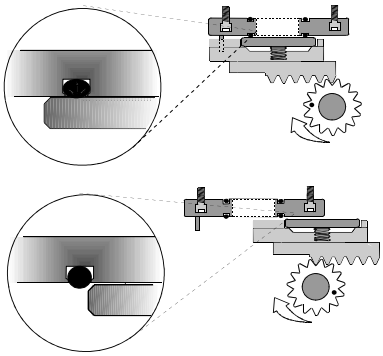
provides added safety without the added cost of full equipment replacement. The DBB's middle section can be installed on any existing Canalta Dual Chamber Orifice Fitting, or custom fabricated for any Daniel® Senior® Orifice fitting, bringing double block and bleed functionality to orifice meters already in place.



Pressure Gauges on the upper and middle chambers help the operator assess equipment status. Local pressure readout can indicate valve failure, vent blockages and other dangerous system malfunctions. For added protection, Canalta Gauge Pro blowout preventers are installed between each of the gauges and the fitting body.

Automatic Valve Latches can be fitted to one or both of the valve operating shafts. Requiring a manual reset before the valve may be opened, this security accessory provides an added opportunity for safety assessment and operator awareness. The ability to padlock the latch also brings additional security to fiscal flow measurement applications.





The ***Soft Seat Valve Seal*** is available for all DBB Orifice Fitting models. Effective in all scenarios, this unique design enables a bubble-tight seal between the three chambers without the need for frequent valve lubrication. The specially machined seal channel helps prevent O-ring dislocation, and the O-ring seals incorporated are available in a wide variety of compositions. The DBB Orifice Fitting is also effective with standard grease seals.

HNBR O-ring Seals on the body sections and seal bar come standard with all Canalta DBB Orifice Fittings. This feature eliminates nuisance gasket maintenance and clamping bar screw breakage, while providing superior sealing capability. The O-rings incorporated are standard shelf sizes and can be supplied in a wide variety of compositions. Gaskets are also available and can be used when preferred or required.

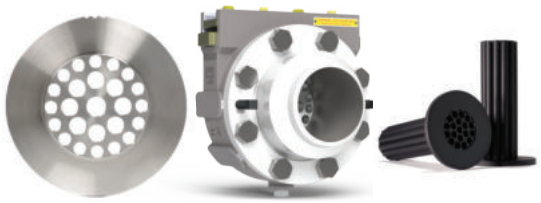
Each unit features ***Fully Accessible, Field Adjustable Eccentricity*** of the orifice plate from the exterior of the fitting. Tamper-proof sealing is done on request.

METER RUNS

All Canalta DBB Orifice Fittings can be supplied with complete custom-designed ***Meter Runs*** and ***Flow Conditioning Solutions*** that meet your exact specification or performance needs.

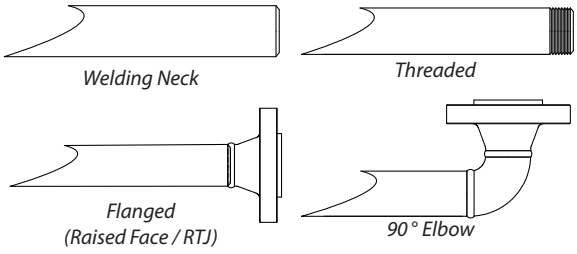
1 FLOW CONDITIONING ACCESSORIES

The goal of meter run design is to account for swirl and turbulence. Suitable for a wide range of flow measurement methods and equipment, Canalta's Contour™ lineup of Flow Conditioners, Flow Conditioner Housings and Straightening Vanes will help you develop the flow profile you need to achieve maximum performance and accuracy in the field.



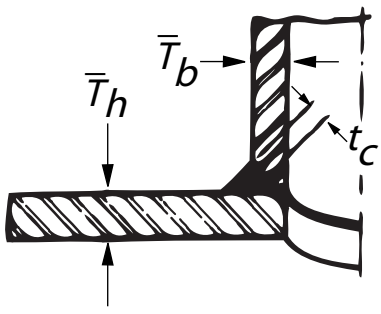
2 END CONNECTION OPTIONS

Canalta Meter Runs can be fabricated with a variety of standard tube ends. All inner surface welds are precision ground and inspected to meet exacting I.D. surface and roundness tolerances. Per your requirements, two and three-piece meter runs can have dissimilar end types up and downstream of the orifice fitting.



3 WELDING SPECIFICATION

Each Canalta Meter Run is professionally fabricated by our team of certified "B" Pressure Welders and experienced pipe finishers to meet and exceed the stringent specifications of AGA / API / ISO. Our welding procedures are registered with the Alberta Boiler and Safety Association (ABSA) and are in accordance with the applicable ASME Boiler and Pressure Vessel Codes. In addition, Canalta will ensure that all of your NDT and stress relieving requirements are met with full documentation.



ORIFICE PLATE SEAL OPTIONS & CARRIER ASSEMBLIES

Type "K" Standard 2000 Edition Seal Assembly

This is the standard seal assembly supplied with all orifice fittings from sizes 2" through 8". This unit is used with a .562" seal gap for fittings sized 2" through 6", and with a .688" seal gap for 8" fittings. The single downstream seal function offers superior sealing capability while reducing seal damage during insertion. Plate seal bypass tested down to 1" water column.

The seal assembly is comprised of an elastomer seal and one stainless steel retainer ring. Exacting and repeatable concentricity is maintained with the metal to metal contact throughout the entire 360° circumference of the orifice plate to the plate carrier mechanism.

Dual Ring Seal

Canalta's Dual Ring Orifice Plate Seal is an innovative response to ultra-harsh process environments, performance challenges and the need for operating cost improvements. Two rugged 316 SS retaining rings encapsulate the orifice plate, providing bypass protection with two standard sized O-rings. Operators can easily source additional rings for replacement or to match changing service conditions. The unique seal structure provides excellent eccentricity and plate deflection performance.

Available as standard with 80 duro HNBR sealing components, with exotics available by special order. Retaining rings also available in Teflon.

Teflon Snap Seal

The Teflon Snap Seal provides positive plate sealing in the harshest of process environments. The two-piece design snaps over the orifice plate without the use of metal clips or retainers. A specially designed recess absorbs the insertion pressures, minimizing permanent compression and distortion.

The raised section adjacent to the recess creates a positive seal against the orifice plate, preventing bypass leakage. These two unique design features enhance seal performance while extending the life expectancy of the seal assembly.

Bonded Seal

This is the standard seal supplied with all Canalta Orifice Fitting model sizes 10" and larger. Designed with a unique "hollow core" recess, this seal has impressive expansion and contraction capabilities when compared to traditional solid rubber seals. The recess allows the seal to absorb insertion pressures, minimizing tearing, distortion and permanent compression. The 80 duro HNBR seal is adhesively bonded to the orifice plate, creating total and permanent contact between the plate and seal and preventing bypass leakage.

TECHNICAL SPECIFICATIONS

Design ..... Orifice fittings supplied in Canada are built in accordance with the ABSA Quality Control Program. Industry Canada Approval Number AF-0014. In compliance with ASME 16.34 and ASME 16.5, ASTM specifications, AGA-3 Latest Edition and ISO-5167.

Body Materials ..... A216 WCB, A216 WCC, A352 LCC, A358 CF8M, A995 Gr4A, A995 Gr6A, Custom

Internal Parts ..... AISI 4130 Carbon Steel, 316 or A351 CF8M Stainless Steel

Sizes and ANSI Class ..... 2" through 12" 150 through 2500 ANSI raised face flange
14" through 16", 150 through 1500 ANSI raised face flange
18" through 30", 150 through 600 ANSI raised face flange
600, 900, 1500 and 2500 flanges also available in RTJ face flange

U/S D/S Connections ..... Flangeneck design (weldneck U/S, flange D/S)
Flange x flange
Weldneck both ends

Internal Bore Sizes ..... 40, 60, 80, 100, 120, 160 and custom sizes

Sealing Compounds ..... Seal bar - HNBR O-ring standard, gasket optional
Shafts - Teflon packing standard, HNBR O-ring optional
Inner valves - Grease seal standard, HNBR O-ring optional
Orifice plate - Type "K" 2000 Edition formed HNBR seal on a 316 SS retainer ring
Dual Ring HNBR O-rings standard on a 316 SS retainer ring assembly
Teflon Snap Seal two-piece virgin Teflon assembly

Line Bore I.D. Tolerance ..... In conformance with AGA-3 and ISO-5167 Latest Editions

Eccentricity Repeatability ..... In conformance with AGA-3 and ISO-5167 Latest Editions

Tap Connections ..... Two 1/2" NPT per side standard, two 1/2" NPT additional per side optional (TT)
2" and 3" fitting sizes center bored to .375" inside diameter
4" and larger sizes center bored to .500" inside diameter
Tolerance +/- 1/64"

Orifice Plate Seal Gap ..... 2" through 6" = 0.562", 8" through 14" = 0.688", 16" through 20" = 0.813", 24" through 30" = 0.875"

Operating Shaft Location ..... Dual operation standard

Operating Temperature ..... Standard at -20° to 100° F, optional -40° to 1200° F

Operating Position ..... Vertical or horizontal

Conformance

All fittings come standard with a documentation package including hydro-test, function test, inner valve seal test, quality control inspection and material test reports. Traceability is maintained in accordance with the ISO-9001 Quality Control Program. The fittings are manufactured within the guidelines of ASME 16.34 and ASME 16.5. When required, radiography, stress relief, ultra-sonic and liquid dye penetration tests can be performed with the relevant report submitted.

Reporting

An AGA 2000 inspection report is included with the purchase of every fitting. The documented tests include:

- I.D. Bore Tolerance
- Tap Communication
- Orifice Eccentricity
- Instrument Tap Diameter
- Plate Seal Test
- Bore Inside Diameter
- Instrument Tap Location
- Seal Protrusion
- Bore Roughness

MAINTENANCE & STORAGE REQUIREMENTS

PREVENTIVE MAINTENANCE

The Canalta DBB Orifice Fitting has a number of moving parts that benefit from a regular preventive maintenance program. The following procedures are recommended:

- Remove and inspect the orifice plate and seal monthly. Replace as required. Visually inspect the interior of the fitting through the opening and regularly monitor for excessive corrosion or wear.
- Lubricate grease-type slide valves as per operating instructions, or monthly. If the greasing procedure is not performed for 90 days or more, disassemble the unit and re-apply grease to the grease tracks by hand. *Do not apply valve seal grease to soft seat units via grease gun*;
- Disassemble the orifice fitting every two years or earlier if deemed necessary. Inspect the inner working parts for corrosion and wear. Replace the working parts as required and replace all seals prior to reassembly.

PRESERVATION & STORAGE

The following measures should be taken to preserve and store all orifice fittings and meter runs that are not currently in service:

- Store in dry conditions, preferably indoors to prevent rust and corrosion;
- The end caps shipped with the meter run or fitting should be left in place during storage;
- Apply rust inhibitor every 3-6 months inside the bore to prevent rust and corrosion;
- Ensure orifice plate and seals are removed from the seal gap, and soft seat slide valves remain in the "open" position during storage. Soft seat units require no additional maintenance during storage. *Do not apply valve seal grease to soft seat units via grease gun*;
- For grease-type units, apply valve seal grease via grease gun every 90 days to prevent hardening of the sealant medium. Ensure grease-type valves remain in the "closed" position during storage;
- Hydrostatic testing is required before entering service if stored for more than 1 year; replace / re-lubricate seals as required.

INSTALLATION RECOMMENDATIONS

The DBB Orifice Fitting is typically installed in conjunction with upstream and downstream meter run sections (tubes). This is essential to meet the recommendations of both AGA Report 3 and ISO 5167. To obtain the best measurement results, follow the recommended piping configurations and installation requirements of either of these two standards, as well as the recommendations below.

- Always ensure that operating staff are competent and properly trained to operate this and all other pressurized equipment.
- Ensure that the system is designed to send clean fluids to the orifice plate. In some cases, a filter installed upstream of the flow meter and in accordance with the flow profile specifications of the AGA or ISO standard may be required.
- Ensure that the system is designed to provide the following (wherever required): protection against excessive pressure; fire suppression; protection from degrading or otherwise unstable fluids; access limitation while under pressure or vacuum.
- Attention to clearances is essential. Consult the available dimensional drawings and tables for details. Ensure there is operating clearance at the sides of the fitting for pinion gear rotation and operating wrench removal. Ensure, too, that there is clearance above the top of the fitting for removal of the orifice plate carrier.
- When installing the fitting or meter run, check that the flow arrow corresponds to the direction of flow in the line.
- The unit can be installed either in a vertical or horizontal flow orientation. When mounting horizontally, the top housing should be located in the upper position for ease of operation as well as to avoid liquid and debris from accumulating in the upper chamber.
- When used to measure wet gas, the vertical mount is recommended to prevent dam formation against the orifice plate.
- Instrument tap lines should be installed sloping upward to the differential pressure measurement instrument. Where this cannot be accomplished, use seal pots to chemically seal the sensing lines in order to eliminate hydrostatic head errors.
- After the orifice fitting has been piped in, install the bleeder valve, grease gun and indicator plate on the slide valve pinion gear.
- With the two drive screws provided, install the valve position pointer. Ensure that the position on the valve indicator plate corresponds with the position of the slide valve.
- It is recommended that the bleeder valve vent be piped away from the fitting to a safe venting area. It is the responsibility of the end user to ensure the piping system is designed to avoid all harmful effects, such as water hammer, vacuum collapse, corrosion and uncontrolled chemical reactions.
- To avoid damage to the orifice plate, ensure the orifice plate and plate carrier are removed from the fitting prior to pressure testing the system.
- Before inserting the orifice plate and plate carrier into the fitting, always ensure that the lower cavity of the fitting is free of debris. If debris has accumulated, remove the lower drain plugs and rod-clean the lower section.
- DBB Orifice Fittings equipped with the grease style slide valves were lubricated at the factory prior to shipment. If the unit has been sitting out of service for more than 90 days, remove the top housing and reapply grease to the valve seat grease track by hand.
- To avoid over range damage to the differential measurement instruments and orifice plate during initial pressurization, ensure the orifice plate is rolled up out of the flow stream and that the instrument manifold equalization valves are open.

ADDITIONAL PRODUCT LINES

Canalta also offers a complete lineup of products to fulfill your orifice metering requirements. Visit us on the web at **www.canaltaflow.com**, or contact us to request details.

The Canalta Flow Conditioner Housing

Bringing easy plate inspection and replacement capabilities to the flow conditioner, this patented design helps you ensure that your flow profile has not been degraded by damage, blockage or residue accumulation by easily accessing the flow conditioner without breaking apart the flow line.

Available in single chamber, dual chamber or DBB configurations with a variety of plate geometries and material specifications for any application.

US Pat. 7,806,145

Parts, Accessories & Repair Kits

Parts and repair kits available for all Canalta orifice fittings, meter runs and flow conditioning solutions.

Our parts and accessories offerings are interchangeable with the current industry standard orifice fitting brand, making Canalta Orifice Fitting internals suitable for re-builds and re-works of our competitors' product lines at substantial cost savings.

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A Canalta Controls Company

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