

Custom Shaft Seals



It's so simple!

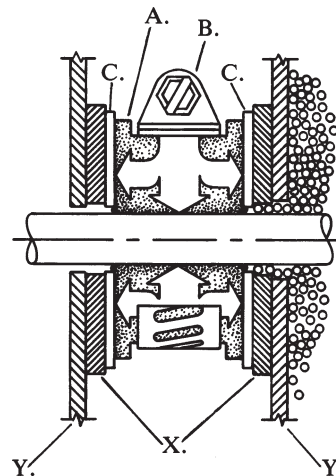
The Original
Elastomer-driven
Powder Seal



Since first brought on the market in 1977, MECO/systems® mechanical shaft seals have proven themselves effective in the containment of powders, abrasives, liquids and toxic vapors where conventional seals have failed.

The patented MECO/systems® concept is based on the use of a self compensating driving elastomer instead of internal springs... Available in unsplit and fully split versions, the seals will retrofit most process equipment with only minimal machine modification. Ribbon blenders and other horizontal-shaft mixers, as well as screw conveyors, live bottom bins, reactors, dryers and other process or containment equipment are accommodated by MECO/systems® seals. These simple, robust and tolerant seals are best suited for applications that prove troublesome due to shaft run-out and/or shaft misalignment. MECO seals will generally tolerate up to 1/4" TIR. Where necessary, greater run-out can be accommodated.

When the driving elastomer (A) is placed in compression by the clamp (B), it is extruded simultaneously against the shaft and the inboard faces of the rotating seal members (C). When properly adjusted, the elastomer will grip the shaft, blocking any material flow along the shaft. Because of its coefficient of friction, the elastomer will be driven by the shaft and at the same time drive the rotating seal faces against the mating stator plates (X). For material to escape it must now migrate between the rotating seal faces (C) and the plates (X).



ROTATING MEMBERS

- A. Driving Elastomer
- B. Driving Elastomer Clamp
- C. Rotors

STATIONARY MEMBERS

- X. Stator Plates
- Y. Stainless Housing

CONVEYOR SHAFT SEALS

H and HE SERIES

"H"-Series seals are the original elastomer-driven conveyor seal. All units are contained in a two part housing fabricated from 304 stainless steel. Immediately inside the housing are two stator plates made of Teflon or polyethylene. Inside the stator plates are two stainless steel sealing rotors which mate with the stators to form the seal interfaces.

"H"-seals are recommended for installation on horizontal conveyors, handling non-abrasive to mildly-abrasive materials. Moderately inclined conveyors and horizontal conveyors handling hazardous vapors or abrasive materials should be fitted with "HT", "MD", or "EA"-series seals.

The "HE" versions of the seal are built with a body block which is machined to contain the pressure of a purging medium. The air purged (HEA) seal is designed to be pressurized with compressed air or inert gas.

"H"-Series seals are available for all six CEMA standard conveyor shafts, from 1" to 3⁷/₁₆".



ACS

Adjustable Caliper Seal



In situations where axial space is limited and/or the standard waste pack housing must be used, the Adjustable Caliper seal is recommended. Most often installed on conveyors and feeders where shaft misalignment and end float are negligible, they deliver excellent performance on the drive end of most conveyors and can be directly installed on many packaged drive units. Generally, they are not suitable for tail end use.

SEMI-CUSTOM SEALS

MDU/MDS MODULAR HEAVY-DUTY SEALS



MDS-series split seals

The MECO MD product line is specifically designed for easy installation and rough service in retrofit situations. Available unsplit (MDU) or fully split (MDS) in six standard housings ranging from 5" to 10" square, these seals will fit shafts from 1/2" to 6 15/16". The seal housings are slotted at the corners, to permit mounting on a continuous range of four-bolt patterns, depending on the flange bearing for the shaft being sealed. Custom HDU and HDS versions of these seals are available for tight-fitting installations, or applications with non-conforming mounting bolt patterns.

If 4" of clearance exists along the shaft from the installation surface to the nearest obstruction, the unsplit MDU can be rebuilt without bearing or drive removal, using a fully-split rebuilt kit. Assembled MDU series seals typically require a minimum 1.75" clearance along the shaft from the installation surface.

The MDS is a fully-split version of the MDU which permits original installation without removal of the bearing or drive. The seal is generally required when the clearance from the face of the machine to the bearing is less than 4", making it difficult to rebuild the seal without removing the bearing or drive.

MD-series seals can be purged to extend service life with air or inert gas, depending on the application.



MDU seals for flange bearing (l) pillow block bearing (r) mount

CUSTOM SEALS

EXTERNALLY ADJUSTABLE SEALS

EA/EAS

Many processes prohibit the occasional shutdown of equipment for seal adjustment. Externally Adjustable Seals are ideal for such applications. All adjustments are made with adjusting fasteners located on the outside of the seal housing. The seal is adjusted in the same manner as a packing gland in that the outer portion of the seal housing is tightened to effect a seal. The seals incorporate separate inboard and outboard stator housings, which are drawn together to compress two seal stators against two rotors and a central driving elastomer. The elastomer provides both positive pressure to the sealing faces and a firm grip around the circumference of the shaft. As the driving elastomer rotates on the shaft, the two seal rotors turn with it.



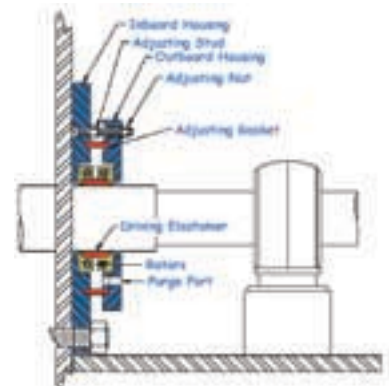
EAS seal for dry beverage blender

When used with a water flush, the seals typically require only a slight flow of water through the seal cavity — not across the seal faces. Normally no water flow escapes into the process; hence no product dilution.

While originally designed for a bottom entry paper pulper application, the EAS is now in service on a wide variety of equipment in the chemical, plastics, food and

pharmaceutical industries, as well as the original applications in the pulp and paper industry. EAS seals have been built to accommodate shafts up to 28".

EAS and EAU seals are built for dry, liquid and vapor applications, including dairy service. While there are formal 3A standards for dairy processing equipment there are no official standards for mechanical seals. To date mechanical seals have merely used FDA approved materials. MECO/systems has developed a mechanical seal approved by the USDA Dairy Grading Division, and the Wisconsin Department of Agriculture, Trade & Consumer Protection. This is the only seal available anywhere that meets the Dairy Grading Division's approval criteria, which incorporate 3A sanitary standards for design, manufacturing, materials, surface finish and cleanability.



EAS Components



USDA-approved EAU seal for wet dairy service

AH & AP-SERIES SEALS

The MECO AH-series seals represent the latest refinement of MECO's classic elastomer-driven seal design. While using the same, patented principle of the MECO EAS, the AH series is designed to eliminate the process of setting seal face pressures. For the user who must frequently sanitize seals, this means simple, trouble-free installation after cleaning.

AH series seals are used on reactors, ribbon blenders and paddle mixers, screw conveyors, bucket elevators and similar blending or conveying machinery. AHU unsplit and AHS split seals are particularly well-suited to food and pharmaceutical applications. AH and AP-series seals are also used as replacements for lip seals to contain & isolate lube oil in bearings. These designs can be used in

many cases where installation clearances are too tight to permit the use of other MECO seal types.

Despite the AH's "set and forget" design, the seal incorporates both a basic adjustment mechanism and monitoring provisions to allow operators to perform preventive maintenance before product leakage occurs.



AHS-series split seal

CUSTOM SEALS

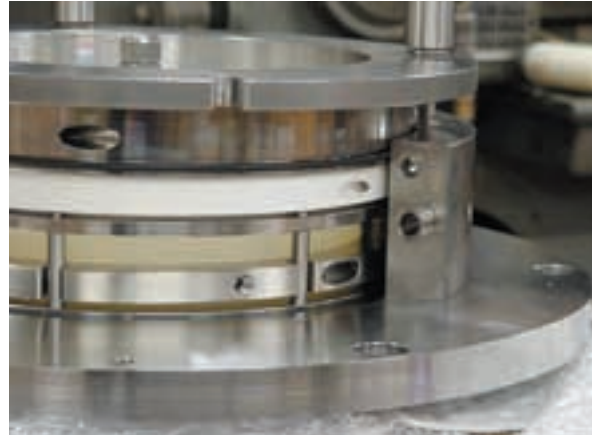
STATIC SEAL

MECO Static Seals provide a positive seal on stationary shafts, permitting maintenance or replacement of EAS and other model seals without emptying the process vessel. Primarily intended for paper mill stock chests and storage towers, this seal has also been used on large-capacity biomass tank agitators.



MECHANICAL DRIVE

This patented device uses a driving pin and collar configuration in lieu of the standard MECO elastomer drive system. Instead of using a specialized elastomer to transfer the torque and rotate the seal faces, the collar is set-screwed to the shaft and transfer is accomplished by driving pins which fit around the collar. The mechanical drive eliminates potential problems resulting from vacuum, process pressure, or elastomer incompatibility and tolerates some axial shaft motion. This design requires only seven components including: two sacrificial stators, two rotors, two compression elastomers and the driving system assembly. This system is typically used on EA/EAS, EX-PAC, MECO-PAC seals, and Moyno® pumps. The MECO-DR system can be constructed without elastomers, where chemical environments dictate.



EX-PAC

Extreme Service Seal



In a precision-machined housing, The EX-PAC contains rotating components using the original MECO elastomeric drive, or MECO-DR positive drive system. Used in reactors, dryers, extruders and other equipment where high temperatures, pressure-vacuum cycles, aggressive solvents and other chemicals are present. Can be loaded with external springs or pneumatic cylinders.

CAC/CAH

Custom Adjustable Caliper Seals



CAC and CAH style seals are capable of withstanding high product pressures and are well-suited for use in abrasive or highly-aggressive chemical environments. A mechanical drive system ensures rotation, while permitting thermal growth or shaft end float. This seal type is best used below 100 RPM.

MECO-PAC

Packing Replacement



The MECO-PAC replaces packing in installations where a seal cannot be installed outside an existing stuffing box. Useful on Airlocks and Rotary Valves, it adjusts with the existing gland follower and follower bolts. The MECO-PAC should not be retrofitted to old machinery where long-term packing use has severely worn the shaft or stuffing box bore.



It is beneficial to contact the MECO/systems technical assistance staff in selecting the proper seal for your application.

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