



ENDURA™ Series Loading Arms

Advanced Loading Arm Technology

Improving the Safety and Efficiency
in Plants Around the World Since 1892:

OPW Engineered Systems provides expert solutions
for the safe handling, monitoring, measuring and
transferring of hazardous bulk products worldwide.



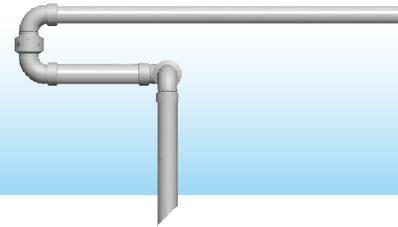
OPW Engineered Systems is the preferred loading system of choice worldwide...here's why:

- **Unparalleled Product Reliability** – Product and process excellence is an integral part of our commitment to customers which is why OPW products have the highest reliability rating and the most trusted loading system in the world.
- **Unbeatable Customer Care** – Our sales, technical, and customer-service support specialists focus on making sure every customer experience is the best it can be. With more than 200 years of combined experience among our internal sales and support team, our knowledge and experience in helping customers is beyond compare.
- **Unrivaled Resources & Capabilities** – Most extensive sales, distribution, and global presence in the industry – we're where you are and can support your needs unlike any other; part of Dover Corporation – an \$8 billion-dollar global industrial leader focused on delivering highly valued solutions to customers worldwide.
- **Made in America**



Fixed-Style

Scissor-Style



Premium Counter-Balance Technology

- 790 Series EZ-Adjust Torsion Spring-Balance Units
- Infinite, Easy, and Precise Spring-Balance Adjustment
- Provides Wide Range of Motion
- Turn-Of-The-Wrench Adjustment Eliminates Labor-Intensive Steps
- Integral Spring Containment Safety Feature



Termination Connections



Kamlok®

- Highest quality alloys and gasket materials endure the harshest environments
- Twin-Kam™ arms with special detent secure arms in position to prevent accidental uncoupling
- Finger rings do not get trapped under the coupling arms



Autolok®

- Provides extra protection against accidental release or uncoupling
- Arms lock automatically with a positive click
- If our exclusive Twin-Kam™ arms ever break, they are replaced FREE



Kamvalok®

- Economical cam & groove dry disconnect coupler
- Prevents spillage at point of connection/disconnection
- Lever action closes flow at both ends of connection



Drylok™

- Driest disconnect in the industry (less than 1cc from 3" fitting)
- Ideal for high-pressure applications
- 360° orientation ensures seating and alignment



Supported Boom-Type

Unsupported Bottom Loader-Type

A-Frame Bottom Loader-Type

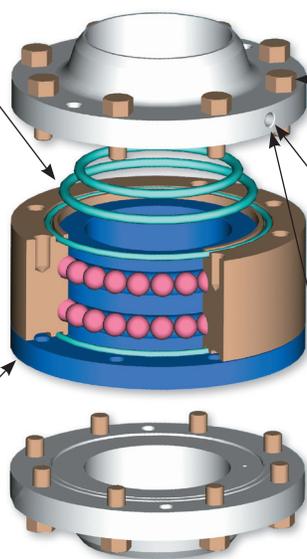
Endura™ Swivels

Redundant Sealing

- Incorporates a main seal, backup seal, static product seal, and environmental seal
- If main product seal ever leaks due to normal wear, the backup seal contains the fluid
- Main seal leakage channels to leak detection port
- Environmental seal provides a third layer of protection

Bearing Module

- Deep-groove replaceable dual and single race ball bearing technology
- Easy replacement or rebuild options
- Ball removal not required to access main seals
- Endura 8800-8900 series feature ALL stainless-steel construction



Easy Maintenance

- Simply unbolt sealing flanges to access seals
- No ball bearings to remove

Leak Detection Port

- In the event of main seal leakage, fluid channels to leak detection port
- Quick and easy way to monitor performance so that maintenance can be performed

Purge Port

- For critical applications, an inert gas can be injected at leak detection/purge port
- Inert gas pressure higher than product pressure virtually eliminates risk of fugitive emission
- Recommended for extreme applications!

Endurance

Heavy-duty construction and unique design features result in long-life, hassle-free operation.

Improves Uptime Performance

Endura DSF swivel technology combined with the most user-friendly counterbalance solutions results in **LESS DOWNTIME – LESS LABOR – LESS COST!**

Lowest Overall Cost of Ownership

Optimized performance, downtime prevention, and reduced maintenance time and costs make this the best overall loading arm solution in the industry.



Epsilon™

- High-flow dry disconnect
- Simple-to-use lever action
- Premium performance



Hatch Cover Vapor Plate

- Steel, stainless-steel, or aluminum construction
- Locking mechanisms/hold-down clamps
- Accommodates liquid-sensing or overflow devices



Tapered Hatch Cone

- Steel, stainless-steel, or aluminum construction
- Economical – available in a variety of sizes
- Eliminates need for compressed air or gas line at loading point



Steam Jacketed

Endura Loading Arms are ideal for transfer of high melting point products such as molten sulfur, asphalt, resins, and paraffins. DSF design minimizes need for steam jumpers, while maximizing heat transfer.

- Top and bottom loaders – fully or partially jacketed or traced
- Customize to specifications
- Durable for many years of service life

Ground Verification

- CIVACON™ model 8030 Ground Verification Monitor
- Compatible with today's transport ground-systems



- 5 ampere, 240-volt relay output for control of terminal automation systems (TAS) or pump control devices when used as a stand-alone system
- Equipped to provide a permissive signal to allow load rack operation and, if ground is lost, to indicate a non-permissive signal and shut down the loading operation



Automatic Shutdown

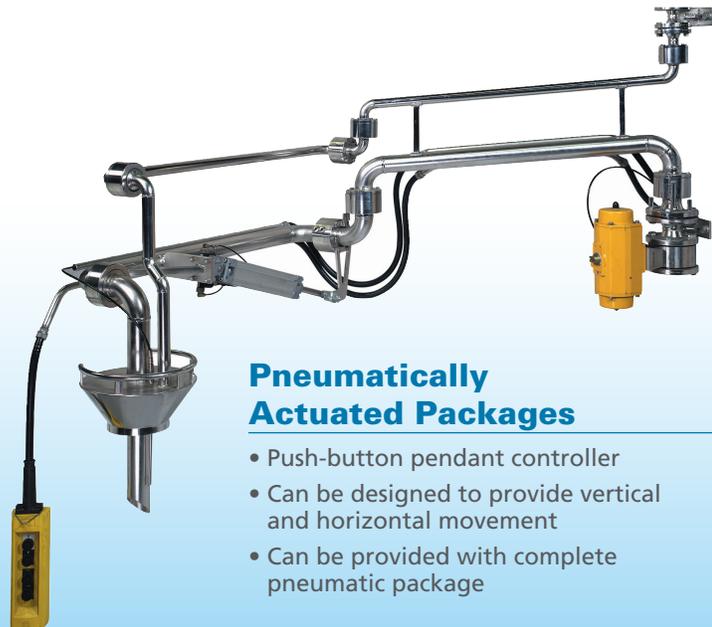
Endura loaders can be equipped with an automatic shut-off feature to help prevent spillage and overfills.

- Electric and pneumatic systems available
- Adjustable to stop flow at predetermined levels
- Can be configured to activate valves or alarms



Loading Valves

- Designed to shut off flow without causing damaging shock in the pipeline
- Assures fast, shock-less closing by use of adjustable needle valve and dashpot
- Available in several styles to fill almost any liquid transfer requirement:
 - Vacuum Breakers
 - Specialty valves can also be provided



Pneumatically Actuated Packages

- Push-button pendant controller
- Can be designed to provide vertical and horizontal movement
- Can be provided with complete pneumatic package