

The Atlas Copco logo, featuring the company name in a blue, italicized serif font, centered between two horizontal blue bars. The entire logo is contained within a white square.

Atlas Copco

StraightFlo™ Compressor Valves





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All valve performance statements are based on documented case studies.

Engineering extraordinary

+ Increase

Production, Reliability, Run time,
Revenue, ROI

+ Lower

Costs of Maintenance, Inventory,
Fuel, Power Consumption

+ Reduce

Flaring, Noise, Vibrations,
Environmental Impact



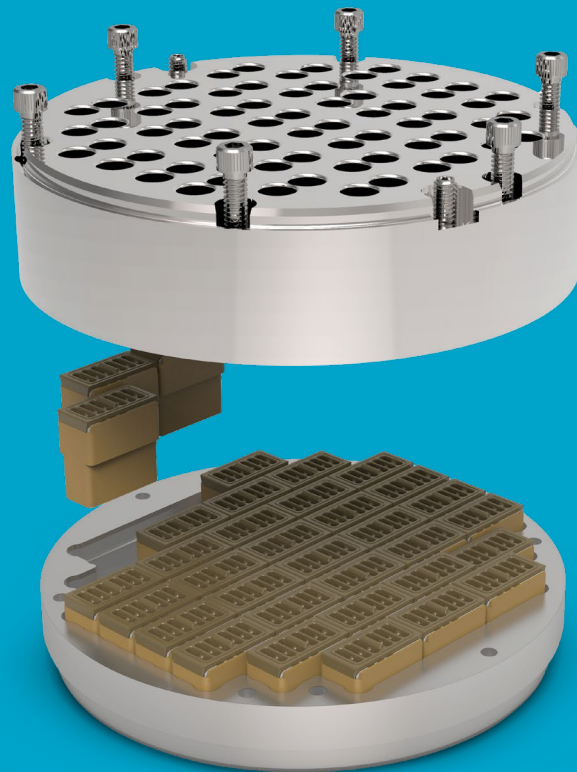
Meet the StraightFlo™ valve

The StraightFlo™ Valve is a drop-in replacement valve for industrial reciprocating compressors for speeds from 200 to 3600+ rpm, pressure differential across a valve to 4,350 psi (300 bar), service temperatures from -40° to 500°F (-40° to 260°C), and for all gases including sweet and sour natural gas, acid gas, CO2, hydrogen, nitrogen, CNG, LNG, ethylene, air, ammonia, HCl, helium, etc.

This revolutionary technology is patented around the world and offers significant improvements over conventional valves.

“The main benefit is an increase in Mean Time Between Failure on all of the compressors. We used to average 0.5 to 2 years, now we’re confident we’ll be able to get 5+ years or more. Our longest current run time is 3.5 years, and the valves still look great.”

-StraightFlo™ Valves Customer



Potential life cycle savings



Up to 15%
throughput
improvement



Reduces power
consumption as
much as 15%



Reduces inventory
costs by as much
as 80%



Increases incremental
revenue by hundreds of
thousands to millions
of dollars



Reduces service costs,
all but eliminates
unscheduled
compressor downtime



Reduces number of
emission events and
fugitive emissions
intensity

Typical improvement

5X to 25X
Mean Time Between Failure

up to 15%
Throughput increase

Superior performance Minimize failures

Easiest service

Whether you're doing equipment service callouts yourself or managing those who do, StraightFlo™ valves make your life a lot easier. Compared to conventional options, our revolutionary StraightFlo™ valves for reciprocating compressors perform substantially better by reducing operating costs and improving production by significantly increasing runtime between service while reducing power consumption and/or increasing throughput.

Unmatched reliability

10 - year
Limited warranty
on valve housing

Unlike our competitors, we don't profit when our products fail—so instead of short run times, our valves can operate for years in the field. More tolerant of liquid and debris, they turn problem compressors into producers. And they're so dependable, we back them with one of the best warranties in the business.

Serviced on site in minutes

While many conventional valves must be swapped and sent out for machining, StraightFlo™ valves can be refurbished on site without any machining, special tools or skilled labor. They're as easy to service offshore as on dry land. And you can reduce inventory by more than 80% because you only need to stock a small number of interchangeable modules – not scores of spare valve assemblies and unique repair kits.

 **StraightFlo™ valves generate both compelling investment returns and social and environmental impacts for our customers**

Responsible investment is increasingly central to financial strategies. When a fund manager's research turns up a positive ESG profile, that business is better positioned to win investments, and its share price will rise.

 Increase production & throughput revenue

 Lower cost of maintenance, inventory & fuel

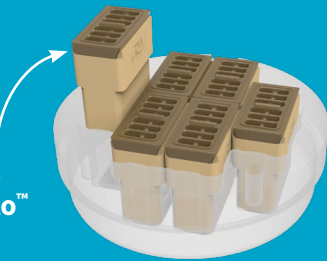
 Reduce or eliminate flaring

 Achieve lower impact rating on road to net-zero

How it works

Our modular design features interchangeable modules held stationary between the valve seat and carrier. The StraightFlo™ modules are configured to optimize material, reed lift, and stiffness to cover all reciprocating compressor applications and provide the best performance and reliability.

**StraightFlo™
Modules**



Reed valve modules with a straight-through flow path

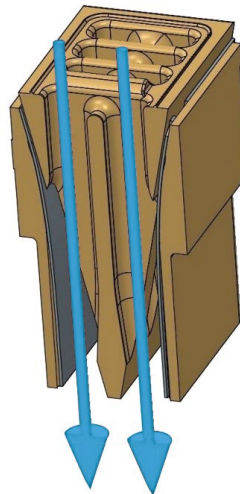
Each StraightFlo™ module is an enhanced reed valve, designed with a straight-through flow path. Since the gas doesn't have to traverse the usual tortuous, high-loss path, our valves have the highest effective area for a given diameter.

What's more, the module's components don't move or impact the metal housings. Not only is wear-and-tear completely contained inside the modules, but when compared to the larger moving mass of conventional plates, poppets, and concentric rings, the lighter metallic reeds generate a tiny fraction of impact forces and therefore typically operate at 1/10th the vibration levels of conventional valves.

With StraightFlo™ valves, noise can be reduced by more than 7dB.

StraightFlo™ Dynamic Valve Sizing Program:

We use our proprietary Dynamic Valve Sizing Program to determine the optimum module for every valve in your compressor. This program simulates the valves in the cylinder for the given application, using NIST real gas properties to calculate the reed displacement, velocity and forces as a function of crank angle to determine the various compressor parameters, including flow and power. It takes into consideration the cylinder and frame geometry, gas composition and operating conditions to determine exactly when the reeds open, the flow of gas through the valves and the pressure drop across the valves as a result of this flow.



Modular Reed Technology:

Since the reeds act as both the sealing element and the spring element, the lowest natural frequency of our modules is 250Hz, well above any excitation force from an engine or motor. This high separation from excitation forces practically eliminates failure due to resonances. It also makes our valves suited to much higher speeds than are currently common in the field. Compare this to a maximum of 30Hz for poppet valves and about 80Hz for plate/ring valves where a mass (e.g., poppet/plate/ring) has helical coil springs supporting it.

Easy to service, no need for spare assemblies

Its modular design means the StraightFlo™ valve can be easily serviced in minutes. Just undo the fasteners holding the valve assembly together, slide out the old modules with your fingers, slide in the new, and reattach the valve seat to the carrier. There's no need to ship valves offsite for machining. Plus, inventory can be minimized by over 80% compared to conventional valves. Stock 4 to 6 module types and your entire fleet of compressors is covered—no matter the brand, cylinder size, application, or operating condition—so you can repair any valve in the field without having to return to a warehouse to get the precise valve assembly or repair kit needed.

Highly tolerant design

The straight-through flow path makes our valves self-cleaning and highly tolerant of liquids and solids. When the reeds are wide open, liquids and solids go right through the module without any impact on the critical sealing faces. With conventional valves, liquids and solids strike the sealing element head on, often causing it to break or for the solid particles to become embedded. Embedded solids can affect the sealing surfaces to the point that the valve seat cannot be repaired and must be replaced. With StraightFlo™ valves, that doesn't happen.

No Machining Required - Why It's Better

No machining means the valve seat pressure rating never drops below that of the new valve. It also eliminates the chance of machining errors that result in tolerance stack up mistakes and prevents valves from being installed incorrectly after reconditioning.

Interchangeable, easy to re-rate

StraightFlo™ modules are interchangeable between valves: whether they're 1.5" in diameter or greater than 14," whether they're suction or discharge valves, whether the valve goes into a cylinder made by Manufacturer X or Manufacturer Y.

And if your operating conditions have changed, they're also easy to re-rate for the new application—just change out the present modules with modules re-designed for the new application. As long as the valve seat is pressure rated for the new application, you now have a valve for a brand-new application at very little cost.

Performance across industries



Hydrogen Production



Refineries



Industrial Gases



Oil and Gas



Natural Gas Industry



Offshore applications



LNG



CNG Industry



Chemicals

Polymerization
(Compressor had to be shut down and valve replaced every 3-4 weeks.)



StraightFlo™ valve during operation
(has been running continuously for 7 years without any need for service.)



StraightFlo™ Products



StraightFlo™ SS
(Severe Service)



StraightFlo™ SE
(Standard Edition)



Integral cage valve
with cover

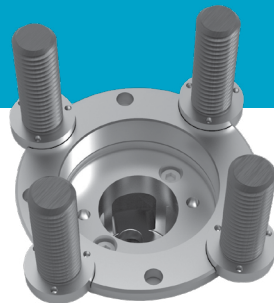


Concentric with integral
pipe and flange



Stacked

Eliminate fugitive emissions and valves coming loose by converting legacy valve covers with center jackbolts to a modern solid valve cover with a radial O-ring seal.



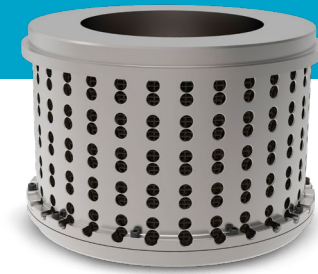
Jack Bolt Eliminator

Reduce or eliminate damage that can occur from liquids or solids in the gas stream



Valve Protection Mesh (VPM)

Optimal flow for transmission and pipeline applications



Radial Valve

The StraightFlo™ unloader valve

Features the same modular design as all StraightFlo™ valves and delivers the same improved performance, serviceability and *reliability*. An *optimal drop-in* replacement for both finger-type and plug-type unloaders.



Plug unloader



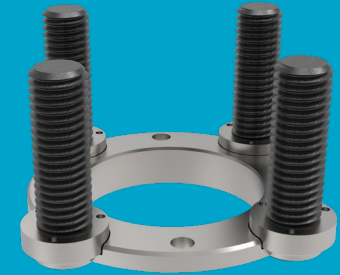
Suction valve with unloader

Simplifies serviceability and improves safety



Integral cage

Jackbolt Eliminator



How much difference can a valve actually make?

The difference between profit and loss. Between a smooth operation and a frantic one. Between a safer workplace and unnecessary risk. The difference is in the details, but the effect is enormous.




Power consumption	Dramatically reduce your power needs	
Improved uptime	We've significantly reduced unplanned downtime.	
Throughput	Not just cost-savings, we're talking large sums of real incremental dollars.	
Reduce inventory spare parts and the costs that go with them.	Shrink your inventory and the associated costs practically overnight.	
Risk mitigation	Fewer maintenance events reduces exposure to injuries and minimizes chances of secondary damage to cylinders.	

Innovative, efficient & green

With each passing year, there's growing concern about the environment, and legislation has become increasingly stringent. At Atlas Copco, we are committed to improving energy efficiency, reducing the carbon footprint, and protecting the planet as we benefit our customers. One of our primary goals is to help you achieve as close to net-zero as possible.




Reduce environmental impact

Replacing conventional valves with StraightFlo™ valves improves compressor performance and efficiency, making the collection, transfer, and distribution of energy resources more eco-friendly. By keeping compressors running longer, there's far less gas to blowdown or flare during maintenance events.

	Highly efficient valves mean less fuel consumption for the same work. Up to 10% less in a typical 1000 rpm high-speed pipeline application.
	Less frequent servicing reduces emissions from the compressor due to venting, purging, flaring and blowdown by a factor of 5X to 25X. Lower power consumption reduces engine emissions by 3- 15%
	Since StraightFlo™ valves don't need machining or the replacement of valve seats or guards, they create less waste.

Reduce noise

With no plates, poppets or rings impacting against a valve seat or guard, the StraightFlo™ valve generates substantially lower vibration and noise levels than conventional valves.

	10X lower vibration levels		6-8 decibels less noise		Reduces amount of sound dampening insulation needed
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Lowest life cycle cost compressor valve

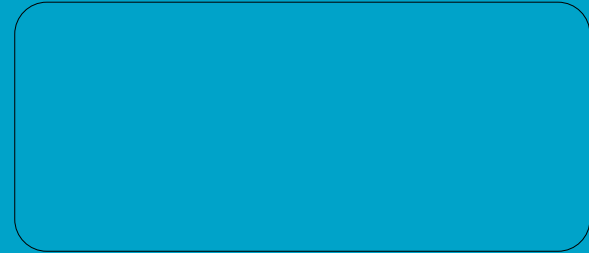
	StraightFlo™ Valves	Conventional Valves
Initial Purchase:	\$ Buy 1 set of valves Why buy 2 when you only need 1?	\$\$ Buy 2 sets of valves 2X initial purchase cost
Operation:	\$ Improved efficiency (lower CO2e emissions) \$ Potential for increased throughput	\$\$ Lower efficiency (higher CO2e emissions) \$\$ Flow constrained
Maintenance:	\$ Improved MTBF – Fewer maintenance events \$ Replace modules in the field	\$\$ Current failure rates and unplanned shutdowns \$\$ Swap out spare valve sets
Safety:	⚠ Fewer maintenance events for personnel	⚠⚠ Higher number of maintenance events
Environmental:	☁ Fewer blowdowns or flaring events	☁☁ Higher number of blowdowns or flaring events
Valve Repair:	∅ N/A ∅ 10 year warranty on valve housings	\$\$ Send out valves to machine shop \$\$ If at end of life, purchase more replacement valve assemblies Why buy 2+(X?) more when you only need 1?
Spares Inventory:	\$ Typically, 4-6 Interchangeable modules service an entire facility	\$\$\$ Large inventory of spare valve assemblies and unique valve repair kits
Total Life Cycle Cost:	\$\$\$\$\$\$ + ⚠ + ☁	\$ + ⚠⚠ + ☁☁

The difference is clear!

About us

In 2010, the disruptive and unique StraightFlo™ compressor valve was commercially introduced to the reciprocating compressor market as a drop-in replacement for conventional compressor valves. Since that time, the StraightFlo™ valve, with its patented Modular Reed Valve (MRV) technology, has provided superior performance, reliability, cost savings, and emissions reduction in a broad range of applications.

In 2024, Atlas Copco Group acquired the StraightFlo™ valve and associated products, greatly expanding the global reach, resources, and research and development capabilities for this groundbreaking solution. Atlas Copco is committed to continuing its legacy as an innovator in the global compressor market.



www.atlascopco.com/en-us