Cylinders are changing.

High power cylinders that promise higher profits at production sites.

This high power cylinder is an ultra energy saving cylinder developed for applications where high power is required at the stroke end. Compared to conventional types, this cylinder is far superior in terms of operation costs, space and environmental friendliness, making it well suited for the next generation factory lines and equipment.

■ Ultra energy saving realized

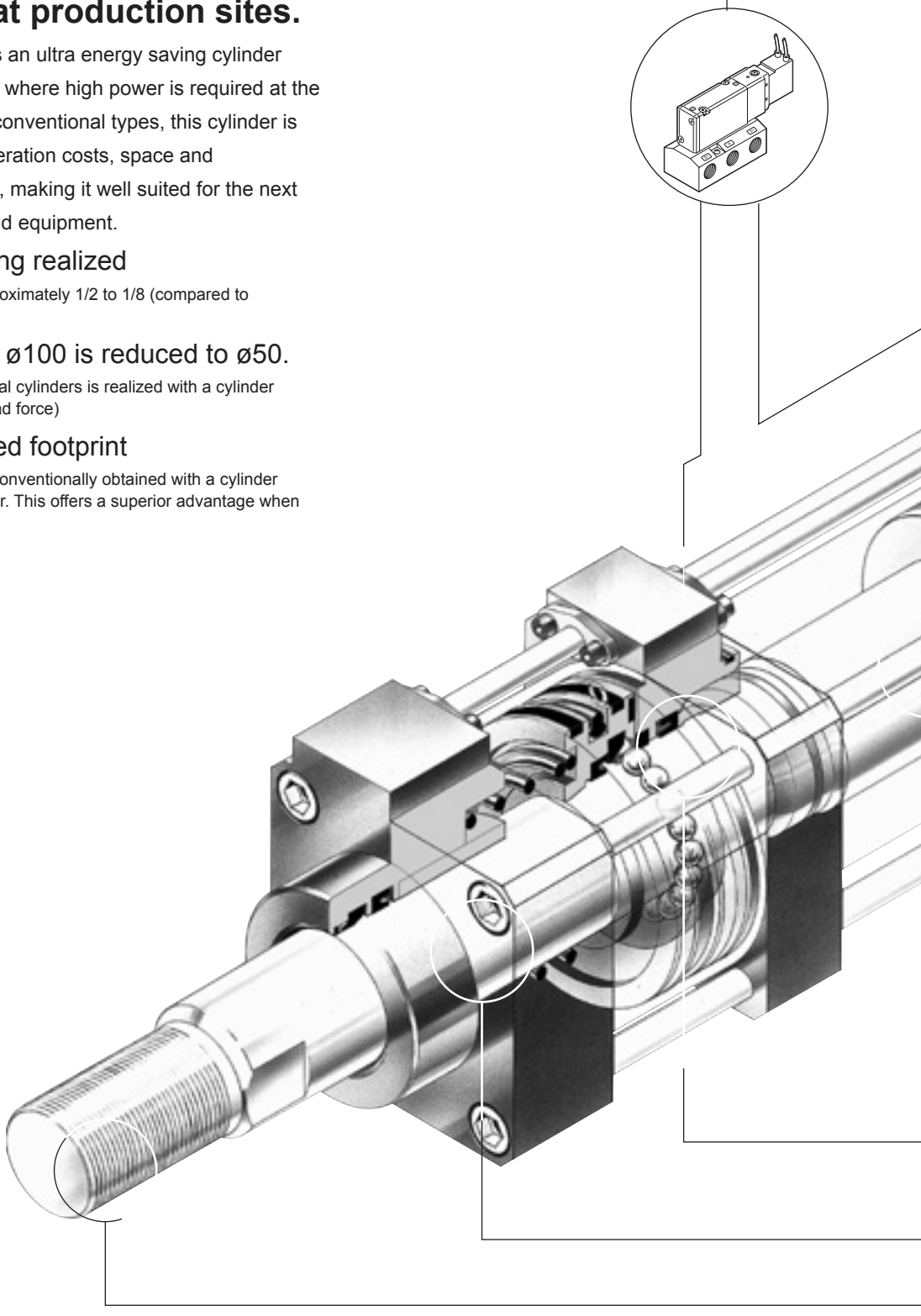
Air consumption volume is approximately 1/2 to 1/8 (compared to conventional).

■ The conventional ø100 is reduced to ø50.

Power equivalent to conventional cylinders is realized with a cylinder bore size of less than half. (Quad force)

■ Drastically reduced footprint

The same amount of power is conventionally obtained with a cylinder bore size one to two sizes larger. This offers a superior advantage when installing in a narrow space.

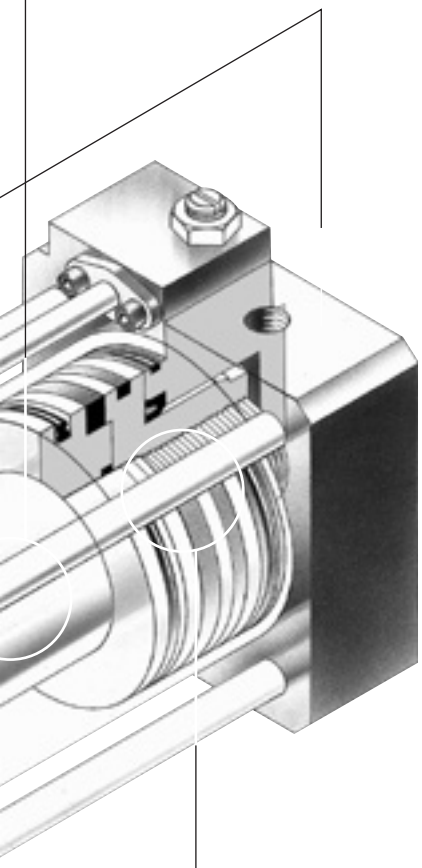


● Piping is the same as conventional

The piping is the same as the conventional cylinder driven by a 4-way valve. Direct replacement of the current cylinder is possible.
For general use, the piping is the same as the conventional cylinder as the air is supplied to the booster cylinder by pass-pipe.

● Air consumption is significantly reduced

As most of the cylinder stroke has a small-bore cylinder mechanism with low thrust, air consumption can be greatly reduced.



● Easy switch mounting

Position detecting switch can be easily attached.
(Option)

● Saves space significantly

Compared to conventional products, the double force cylinder diameter is reduced to 60% of the original and the quad force volume is reduced to 25%, realizing dramatic space savings.

● Wide range of mounting

Extensive mounting types are available, such as foot and flange.

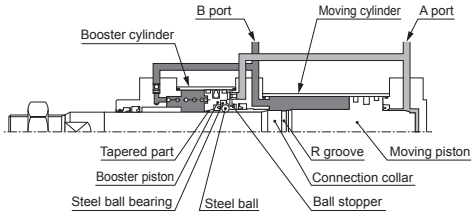
● Available in ø40 to ø100 to cover the maximum end power of ø200 or equivalent

Double and quad force are available

The stroke end has twice as much thrust as the conventional cylinder due to the booster mechanism. For example, the ø63 double is comparable to the conventional ø100 unit and the ø63 quad is comparable to the conventional ø125.
(After the booster retreats, the thrust will be about 70% of the theoretical thrust.)

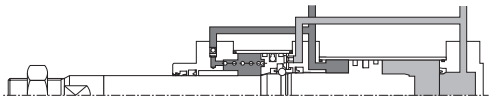
● Operational explanation

● At PUSH



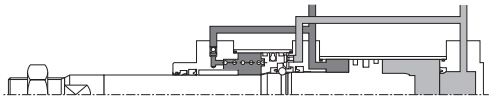
1) The piston rod moves the same way as the normal cylinder, with air supplied from port A and exhausted from port B.

● When linked



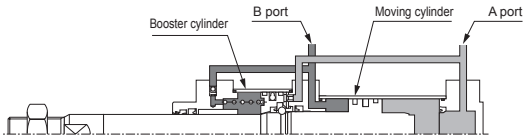
2) When the piston rod moves, the linking collar enters the booster piston. When it reaches the booster piston taper, the booster piston moves, causing the steel ball to fit into the R groove due to the elasticity of the steel ball bearing. This causes the booster piston and connecting collar to connect and form a booster cylinder.

● When boosting



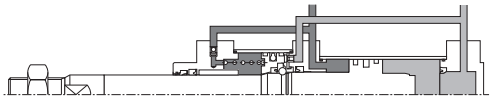
3) By connecting, the united pressure receiving area of the moving piston and booster piston transmits the thrust to the piston rod.

● During PULL Booster backward



4) When the piston rod is retracted by the air supplied from port A and exhausted from B port, the booster cylinder transmits thrust in the united pressure receiving area of the moving piston and booster piston.

● When uncoupled



5) Using the ball stopper, push out the steel ball from R groove in the direction of the steel ball bearing before the booster piston is fully retracted to release the connection and retract the piston rod to the stroke end.

The difference in cost becomes clearer the more you use it.

DATA

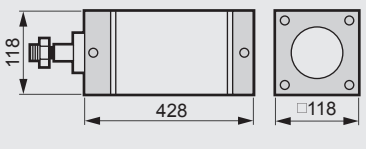
Various comparison data with the conventional cylinder

	● Conventional	**SHC** ● Double force	**SHC-K** ● Quad force
	ø100 x 300 stroke Theoretical thrust: 3927 N [0.5 MPa]	ø63 x 300 stroke Theoretical thrust: 3139 N [0.5 MPa]	ø50 x 300 stroke Theoretical thrust: 4507 N [0.5 MPa]
Weight ● Unit kg			
Air consumption (reciprocating 100 million times) ● Converted to atmospheric pressure at 0.5 MPa		Approx. 42% of conventional	Approx. 30% of conventional
Operation costs ● Calculate the cost by the compressed air cost of 8 JPY/m^2		Approx. 42% of conventional	Approx. 30% of conventional
Total cost ● Total cost at 1 million reciprocations		Approx. 57% of conventional	Approx. 44% of conventional

Space

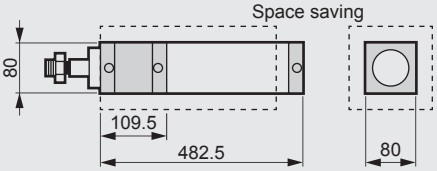
● Unit: mm

● Conventional (ø100 I.D. type)



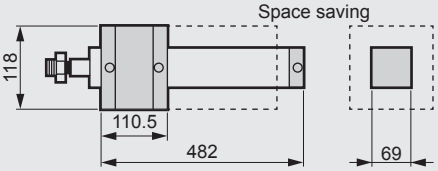
SHC

● Double force (ø63 I.D. type)



SHC-K

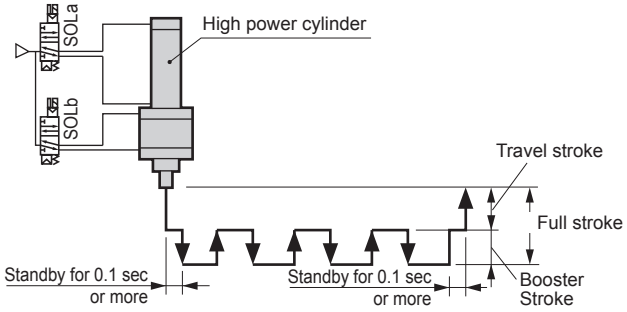
● Quad force (ø50 I.D. type)



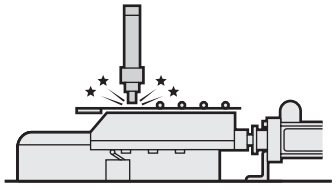
Superior functionality and various applications.

■ Booster single control of high power cylinder

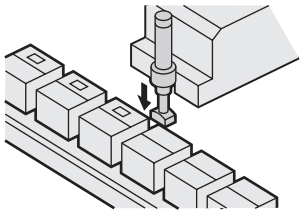
Using booster single control (option code A) realizes a high cycle that conventional cylinders could not achieve.
In most cases, for high frequency cylinder reciprocating operations such as welding gun lines, etc., the tact time is determined by the cylinder's reciprocating time. Even in this case, high-cycle use of the high power cylinder is possible as in the figure below: first reaching out with travel stroke, then stopping for 0.1 sec. and reciprocating several times with booster stroke alone. It can also significantly reduce the stroke reciprocation time, improving the productivity and energy efficiency.



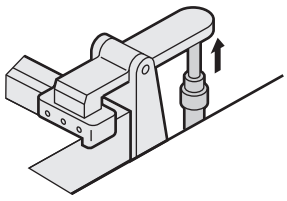
● Welding gun



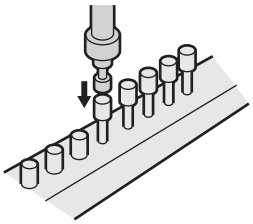
● Engraved mark



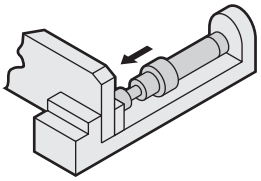
● Clamp 1



● Press-fit/insert



● Clamp 2



● Crimping