

Quick Rotation technology

of Pneumatic actuator

STL3



ATEX



Introduction

In the petrochemical industry, many pneumatic valves need the emergency shut down (ESD) function, and how to quick rotation of the pneumatic actuator is the core technology to realize the emergency shut down (ESD).

Rack and pinion pneumatic actuator is one of the faster action actuators, but the pneumatic actuator (more than 160mm cylinder diameter) needs more than 3 seconds to open or close the valve, and the pneumatic actuator (400mm cylinder diameter) needs 30 seconds to open or close the valve respectively.

In order to shorten the travel time of the pneumatic actuator, the control valve experts designed a complex gas path, which assembled multiple solenoid valves, quick exhaust valves and the actuator, and realized the quick rotation of the pneumatic actuator by increasing the inlet and exhaust volume of the actuator.

This traditional quick rotation solution has complex design, many pneumatic components, high cost and difficult assembly. The pneumatic actuator quick rotation solution designed by our engineers only uses one two-body solenoid valve directly installed on the NAMUR interface of the pneumatic actuator, which can double the inlet and exhaust air volume of the pneumatic actuator and realize the quick rotation of the pneumatic actuator which is simple design, easy to install, and low cost.

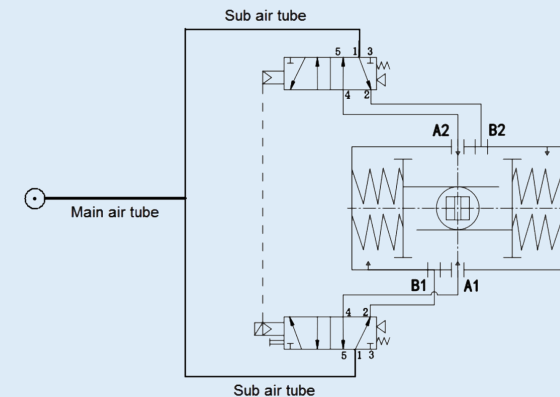
Test result of Operation Time (S)

Model of Actuator	C-190DA		C190SR6		C190SR8		C190SR10		C190SR12	
	Open	Close	Open	Close	Open	Close	Open	Close	Open	Close
90° Travel	(Air)	(Air)	(Air)	(A+S)	(Air)	(A+S)	(Air)	(A+S)	(Air)	(A+S)
Two-body solenoid valve solution	1.4	1.3	1.9	1.1	2.1	1.0	2.4	0.9	2.7	0.8
One-body solenoid valve solution	5.0	5.2	5.3	7.0	6.5	7.0	8.2	6.3	9.2	5.6
Reduced by	72%	75%	64%	84%	68%	86%	71%	86%	71%	86%
Testing conditions	Without load and with silences at 5 bar; Air tube to solenoid valve is 8 mm, main air tube is 12 mm.									

Conclusion

On average, after the use of the two body solenoid valve solution, the time for the pneumatic actuator (C-190) to open or close the valve was reduced by 76.6%, and the effect is very obvious.

Working schematic diagram



Two-body solenoid valve and actuator

