

SAMSON AXIAL Flow Valve for HIPPS

Qualification test overview



For a Royal Dutch Shell exploration & production company in the Middle East, SAMSON RINGO AXIAL flow valves have successfully undergone qualification tests according to the SHELL MESC SPE 77/300, MESC SPE 77/300A (*Procedure and Technical Specification for Type Acceptance Test of Industrial Valves – Version 2013*), ISO 5208 - 2015 and customer approved internal test procedures.

APPLICATION

Mechanical & Electrical HIPPS (High Integrity Pressure Protection System). In the HIPPS system, final elements (Valve) have the function of isolating the downstream part of the installation from the overpressure. The valve is designed to provide a very fast operation time (less than 2 seconds).

SOLUTION

High capacity valve, balanced plug for smooth operation and torque reduction.

Drive mechanism (Figure 1) to provide smooth, accurate and fast operation with smaller actuator.

Trim design to handle dirty fluids and high-pressure drop applications.

Fire safe design.

Low emission sealing, due to rotary shaft.

Systematic Safety Integrity SIL3 (Route 1S).

SCOPE OF AXIAL VALVES

Size: 30" - 900#,

Body: A352 LCB, Trim: F316L + Stellite™

Size: 18" - 900#,

Body: A352 LCB, Trim: F316L + Stellite™

Size: 10" - 900#

Body: A995 Gr 4A, Trim: Duplex + Stellite™

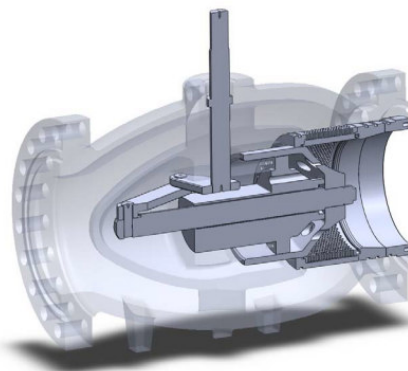


Figure 1: SAMSON RINGO Axial Flow Valve with unique rotary to linear drive mechanism design, simplifies actuator requirements.

QUALIFICATION TEST DESCRIPTION

Performed Tests (at ambient and high temperature)

- Cycle tests
- Body test with 97%He
- Seat tests (both sides) with N₂
- Fugitive Emission with 97% He



Figure 2: Axial Flow undergoing High temperature test.

Type Acceptance Test Sequence

- Test at ambient temperature
- Test at high temperature (150°C)
- Intermediate body test, seat tests & fugitive emission tests at ambient and high temperatures / high pressure.
- Posttest valve examination



Figure 3: Axial Flow undergoing Shell Test

Factory Acceptance Test (FAT)

After the TAT, full scope of valves passed the Factory Acceptance Test according to customer approved test procedure (FAT) for on-off axial valves, which included specifications such as DEP 32.36.01.18, MESC SPE 77/130 etc.

One of the challenges of these valves was to fulfill the emergency closing time according to specifications i.e. less than 2 seconds.

During final FAT, the 30" 900# Axial Flow Valve successfully recorded the maximum operation time of 1.62 seconds.



Figure 4: Axial Flow Valve assembly