

RBV-80

DATA SHEET

Description

RBV-80 is a servo assembly complete with a valve which provides fast and precise bleeding of gas turbine compressor discharge air. This assists with:

1. Dry low emissions fuel systems
2. Improving part load compressor efficiency of single shaft gas turbines
3. Increasing part load exhaust temperatures for combined cycle power generation systems
4. Improving power turbine over-speed limitation on multi-shaft gas turbines

In operation the valve is usually connected between the gas turbine compressor discharge and the exhaust. The unit accepts a 4-20 mA process demand signal from the turbine governor and positions the butterfly valve in direct proportion to the demand. When the valve is closed, the servo system forces the butterfly against the valve seal thus providing positive shut off of the compressor discharge air thus maintaining compressor performance.

Metso type LM valves are specified with temperature and pressure ratings to exceed the conditions pertaining at the discharge of modern high pressure ratio gas turbine compressors.

To help with limitation of over-speed on load rejection on multi-shaft turbines, the unit is very responsive in operation. A multi-turn digital encoder provides precise drift free positioning of the valve.

The unit is independently certified for use in hazardous areas to ATEX standards (CSA pending).

Only 24 VDC nominal battery supply is required which makes application very convenient and safe compared to competitive high voltage systems.

Applications

- Gas turbines



Features

Fast, stable and precise control of compressor bleed air

Independently certified for hazardous area applications

Works from safe low voltage power supply

Specified for high temperature and pressure with low leakage

Technical data

Actuator and gearbox

Power supply voltage range	18 ... 32 VDC
Power supply current range	< 1 A (steady state) through 10 A positioning
Ambient temperature range	-20 ... +85 °C
Environmental rating	IP56
Hazardous area certification	Ex'd' Zone 1 (all gas groups) T6 ATEX (CSA pending)
Position demand signal	4 ... 20 mA equivalent 0 ... 90°
Position achieved feedback signal	4 ... 20 mA equivalent 0 ... 90°
Motor drive type & frequency	Four quadrant pulse width modulated 10 kHz
Maximum torque at valve shaft	40 Nm
Bandwidth	5 Hz
Slew rate (10 through 90 % rotation)	300 ms
Power	180 W
Mounting	Primarily through valve – pipe connection and steady bracket
Valve coupling	Solid coupling with keyed actuator and valve shafts
Gearbox	Planetary 2 stage
Gear ratio	20:1
Mechanical deadband	0.5 degrees
Field electrical connections	Screw terminals accessible through actuator unit end cover with 20 x 1.5 mm threaded gland entries
Application	Small frame gas turbines
Weight of assembly	21 kg
Actuator end plate material	Aluminium
Actuator and gear casing and gear material	Steel

Valve

Type	Neles type LM triple eccentric butterfly
Size	3 inch (80 mm)
Process pressure rating	48 bar
Process temperature rating	600 °C
Style	Wafer
Rotary valve span	0 ... 90°

Leakage

Body material	Stainless Steel CF8M
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Dimensions



