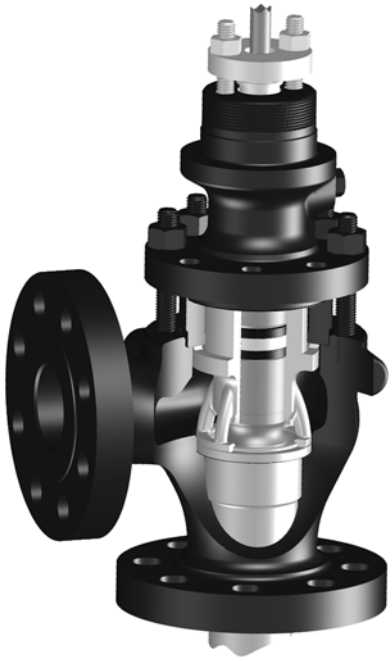
Fisher™ CCV-N Fuel Gas Control Valve

Fisher CCV-N fuel gas control valves are used in gas turbines which meter the fuel gas to the combustion chamber of the turbine and provide linear flow with the ability to choke very quickly at a low pressure drop. CCV-N valve provides precise control of fuel and efficient downstream static pressure recovery with reliable shutoff.

CCV-N valves are single port, angle-style, unbalanced and balanced valves with metal seat, seat ring retainer guide and push-down-to-close valve plug action.

Materials for CCV-N valve body and trim components are in compliance with NACE MR0103.

The CCV-N valves offers reliable shutoff with process temperature limited up to 316ºC (600ºF) by using PEEK (PolyEtherEtherKetone) anti-extrusion rings in combination with a spring-loaded PTFE seal. The PEEK anti-extrusion rings expand to help close off the clearance gaps on the plug outside diameter and the seat ring retainer inside diameter where the PTFE seal may extrude at high temperatures and pressures. Unbalanced and balanced bore-seal designs are also available for process temperature above 316ºC (600ºF).



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FISHER NPS 3 CCV-N CHOKE CONTROL VALVE - SECTION VIEW

Features

- Valve Plug Stability— Rugged seat ring retainer guiding the plug provides increased valve plug stability, which reduces vibration and mechanical noise.
- Sour Service Trims— Standard trims are in compliance with NACE MR0103 which yields long lasting, erosion and corrosion resistant parts.
- Stringent Valve Capacity Tolerance— Teardrop shape seat ring retainer is used to minimize flow restriction in order to attain the required pressure recovery ratio and achieve the Cg (specified in table 3).
- Linear Characteristics— The pointed cone shaped plug and seat ring design helps to achieve the linear characteristic for the specified travel.
- Reliable Shutoff— Metal-to-metal seat and PEEK anti-extrusion seal ring construction meets bi-directional Class IV shutoff per ANSI/FCI 70-2 and IEC 60534-4 for temperatures up to 316ºC (600ºF). Metal-to-metal seat and unbalanced or bore-seal trim construction meets bi-directional Class IV shutoff per ANSI/FCI 70-2 and IEC 60534-4 for temperatures above 316ºC (600ºF).
- Efficient Pressure Recovery— This valve provides efficient pressure recovery and achieves critical flow conditions with low pressure drops.

Specifications

Available Configuration and Valve Sizes

Single port, angle-style valve with balanced or unbalanced valve trim and push-down-to-close valve plug action

Standard sizes are NPS ■ 2, ■ 3, and ■ 4

End Connection Style

Raised-face (RF) flanges

Maximum Inlet Pressure and Temperature

Consistent with CL300 or CL600 pressure-temperature ratings per ASME B16.34

Maximum Pressure Drop

Consistent with pressure-temperature ratings per ASME B16.34

Shutoff Classification

Bi-directional Class IV shutoff per ANSI/FCI 70-2 and IEC 60534-4

Construction Materials

CF8M valve body and stainless steel trims

Refer table 2

Material Temperature Capability

See table 2

Flow Direction

Flow down

Flow Characteristic

Linear from 10% to 100% travel

Flow Coefficient

See table 3

Port Diameter/ Plug Travel and Stem Diameter

See table 1

Bonnet/ Yoke Boss

Plain bonnet and 2 13/16 inch yoke boss

Packing

Double PTFE, Graphite Leak-off and other ENVIRO-SEAL™ and HIGH-SEAL packing options.

See Fisher Bulletin 59.1:062, Packing Selection Guidelines for Fisher Sliding-Stem Valves (D101986X012). Fisher Bulletin 59.1:061, ENVIRO-SEAL and HIGH-SEAL Packing Systems for Sliding-Stem Valves (D101633X012)

Approx. Weights

NPS 2 CL300 or CL600: 31 kg (68 lb)

NPS 3 CL300 or CL600:51 kg (112 lb)

NPS 4 CL300: 77 kg (168 lb)

NPS 4 CL600: 86 kg (190 lb)

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Table 1. Port Diameter and Valve Plug Travel

VALVE SIZE, NPS	PORT DIAMETER		TRAVEL		YOKE BOSS SIZE		STEM DIAMETER	
	mm	Inch	mm	Inch	mm	Inch	mm	Inch
2	25.4	1.00	19.05	0.750	71.4	2.81	13	0.5
	38.1	1.60	19.05	0.750	71.4	2.81	13	0.5
3	57.1	2.25	28.58	1.125	71.4	2.81	13	0.5
4	78.7	3.10	38.10	1.500	71.4	2.81	13	0.5

Table 2. Construction Materials and Temperature Limits

PART			MATERIAL	TEMPERATURE CAPABILITES	
				°C	°F
Valve Plug, Balanced or Unbalanced			S17400 Double H1150	-29 to 427	-20 to 800
Seat Ring					
Valve Plug Stem			S20910	Not a limit factor	
Groove Pin			Stainless Steel		
Spring-loaded valve plug seal	Backup Ring Bi-Direction		S17400 Double H1150	-29 to 427	-20 to 800
	Backup Ring				
	Retaining Ring		N07750	Not a limit factor	
	Seal Ring		PTFE with R30003 Spring	-29 to 316	-20 to 600
	Anti-extrusion rings		PEEK (PolyEtherEtherKeton)		
Bore-seal valve plug seal set	Bore-seal		N07750	Not a limit factor	
	Piston Ring		Carbon Graphite		
	Plug Retainer		S17400 Double H1150	-29 to 427	-20 to 800
Cage gasket			N06600/Graphite	Not a limit factor	
Seat ring gasket			Graphite/SST		
CF8M Stainless Steel Valve Body and Bonnet	Non-exposed body-to-bonnet bolting	Studs	SA193-B7	-29 to 316	-20 to 600
		Nuts	SA194-2H		
	NACE MR0103 exposed body-to-bonnet bolting	Studs	SA479 S20910	-29 to 427	-20 to 800
		Nuts			
Seat Ring Retainer			S17400 Double H1150 Chromium Plating	-29 to 316	-20 to 600
			S17400 Double H1150 Chromium Coating	Not a limit factor	
Packing			Double PTFE	-46 to 232(1)	-50 to 450(1)
			ENVIRO-SEAL Graphite ULF for 100 PPM Service	-7 to 315(1)	20 to 600(1)
			ENVIRO-SEAL Graphite ULF for Non-Environmental Service	-198 to 371(1)	-325 to 700(1)
			Graphite Leak-off	Not a limit factor	
Packing follower, spring, or lantern ring			S31600 Stainless Steel	Not a limit factor	
Packing box ring					
Packing flange, studs, or nuts	Packing Flange		S31600 Stainless Steel		
	Studs		Steel SA193-B8M		
	Nuts		S31600 Stainless Steel		

1. Consult the Fisher Packing Selection Guidelines Bulletin (D101986X012) for additional information or contact your Emerson sales office.

Table 3. Flow Coefficient Values

DESIGN	PRESSURE RATING	VALVE SIZE NPS	PORT DIAMETER		TRAVEL		Cg - VALVE OPENING - PERCENTAGE OF TOTAL TRAVEL									
			mm	Inch	mm	Inch	10	20	30	40	50	60	70	80	90	100
Below 316°C (600°F)	CL300	2	38.1	1.60	19.05	0.750	78.7	145	256	370	489	610	730	845	973	1080
		3	57.1	2.25	28.58	1.125	146	345	568	793	1020	1260	1490	1730	1970	2210
			57.1	2.25	28.58	1.125	160	377	634	889	1160	1420	1700	1930	2220	2480
		4	78.7	3.10	38.10	1.500	251	567	1010	1470	1930	2390	2850	3300	3690	4120
Above 316°C (600°F)	CL600	2	25.4	1.00	19.05	0.750	65.5	136	197	261	324	390	459	526	597	670
			38.1	1.60	19.05	0.750	77.4	142	255	372	489	609	731	851	973	1086
		3	57.1	2.25	28.58	1.125	124	362	613	871	1131	1392	1671	1950	2226	2499
		4	78.7	3.10	38.10	1.500	240	552	988	1437	1893	2336	2789	3246	3672	4022

Figure 1. CCV-N Valve Dimensions

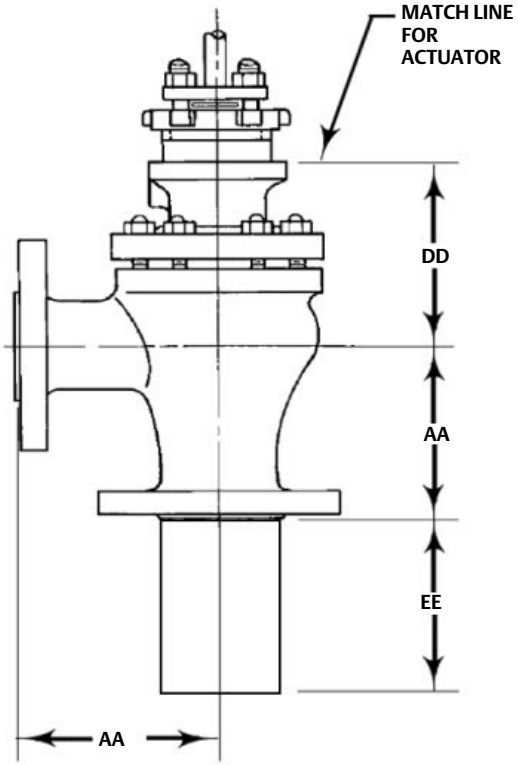

Table 4. Valve Dimensions, Plain Bonnet

PRESSURE RATING	VALVE SIZE, NPS	AA	DD	EE
		mm		
CL300	2	133.4	120.7	177.8
	3	158.8	149.4	81.3
		158.8	149.4	233.7
	4	184.2	139.7	393.7
		Inch		
	2	5.25	4.75	7.00
	3	6.25	5.88	3.20
		6.25	5.88	9.20
	4	7.25	5.50	15.50
CL600	VALVE SIZE, NPS	AA	DD	EE
		mm		
	2	142.7	150.9	241.3
		142.7	150.9	177.8
	3	168.81	149.4	233.7
	4	196.9	159.5	393.7
		Inch		
	2	5.62	5.94	9.5
		5.62	5.94	7
	3	6.62	5.88	9.2
	4	7.75	6.28	15.50

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