

# SUPERVISORY COCK VALVES, ELECTRIC INTERLOCKING FUEL GAS AND FUEL OIL COCKS - FIGURE 1051

The Jamesbury Figure 1051 Supervisory Cocks are FM (Factory Mutual) approved to provide shutoff and position indication for proper fuel light-off of either fuel oil or gas burners. Developed for use with semi-automatic or manual safety interlock burner management systems, these electric interlocking cocks indicate the burner cock is closed before the light-off sequence can begin.

Figure 1051 Supervisory Cocks allow fast actuation, have low turning torque, and feature reliable, tight sealing for critical fuel control applications. Should the valve be accidentally moved out of the full closed position, the "not closed" condition is signalled to the safety interlock system. Closing the valve requires only a quick quarter turn of the handle. For added protection, the position of the valve handle gives visual "at a glance" indication of open or closed position.

Limit switches on these cocks are contained in a compact die cast aluminum housing – all moving parts are enclosed to protect the switches from moisture and corrosion, tampering or accidental change. Limit switch/housing assemblies are also CSA approved, filling NEMA 4, 4x, 6, and 7 Class I Group C and D Div. 1 & 2 and 9 Class II Group E, F and G Div. 1 & 2 specifications for combined watertight and hazardous location design.

Figure 1051 Supervisory Cocks are available with either screwed or socket weld ends in sizes 1/2" through 2" (DN 15 – 50). Materials include carbon steel, or 316 stainless steel. ANSI Class 150 & 300 flanged design Supervisory Cocks are available in



sizes 1/2" through 6" (DN 15 – 150) in carbon steel or 316 stainless steel. All valves have low coefficient of friction seats that assure consistently low operating torque. Flexible-lip valve seats are self-compensating for wear and provide tight shutoff. No injection of lubricants or sealants is ever necessary.

Valve assemblies are available with several different limit switch arrangements, using either single pole double throw (SPDT) or double pole double throw (DPDT) switches, rated as follows:

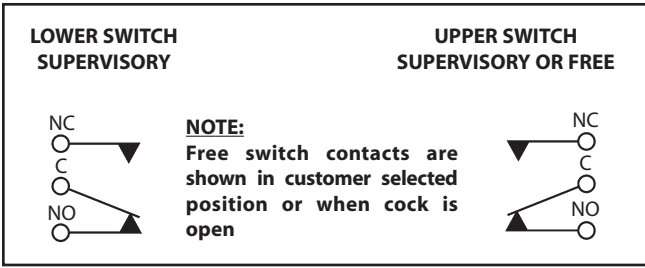
Switch Ratings in Amperes			
Voltage	QZM2VB1DSS (SPDT)	QZM14B1DSS (DPDT)	QZP2HB1DSS (Hermetically sealed SPDT)
125V AC	10	10	.30
250V AC	10	10	–
125V DC	.50*	.50*	–

\* Not recommended for electrical circuits operating at less than 20mA @ 24 VDC

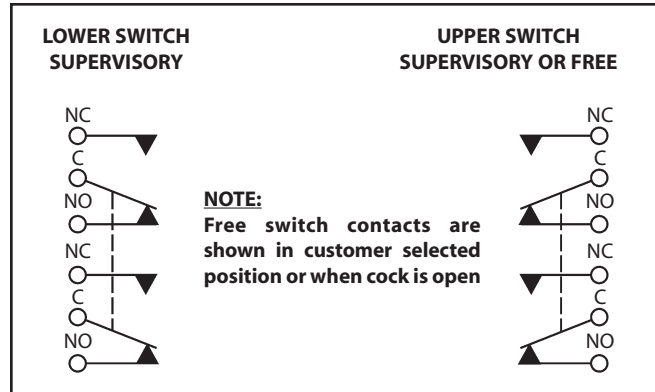
## SWITCH ARRANGEMENTS

Contacts of each switch are in position shown when valve is closed

### SPDT Switch Contact Schematic



### DPDT Switch Contact Schematic



Available switch combinations are shown in the “How to Order” table. Switches designated as “supervisory” are set so that they are actuated only when the valve is in the fully closed position. They are then secured to avoid accidental relocation and marked to show any attempts at tampering. Switches indicated as “free” for use with indicator lights or other control or sequencing purposes, are normally set to close when the valve is fully open, and may be adjusted to

operate at any valve position (DPDT switches can be adjusted only for the end of travel, i.e., valve full open or valve full closed).

## SPECIFICATIONS

### Maximum Operating Pressure Ratings

Figure 1051 Supervisory Cocks are rated for service based on FM approval tests as shown to the right. Approval is for use where the fluid temperature does not exceed 250°F

(121°C) and the ambient temperature does not exceed 125°F (51.7°C).

MAXIMUM OPERATING PRESSURE – psi							
Valves Size - in	Style A Screwed End Valves	Series 2000 Screwed End Valves	Series 4000 Screwed End Valves and Socket Weld Valves			Series 5150 ANSI Class 150 Series 5300 & 530S ANSI Class 300 Flanged Valves	Series 7150 ANSI Class 150 Series 7300 & 730S ANSI Class 300 Flanged Valves
			Filled PTFE Seats	Delrin® Seats	XTREME™ Seats		
1/2	350	400	1100	2250	1200	285	–
3/4	350	400	1100	2250	1200	285	–
1	300	400	1100	2250	1200	285	–
1-1/4	300	400	1100	2250	1200	–	–
1-1/2	300	400	1100	2250	1200	285	–
2	300	400	1100	2250	1200	285	–
3	–	–	–	–	–	–	285
4	–	–	–	–	–	–	285
6	–	–	–	–	–	–	285†

MAXIMUM OPERATING PRESSURE – bar							
Valves Size - DN	Style A Screwed End Valves	Series 2000 Screwed End Valves	Series 4000 Screwed End Valves and Socket Weld Valves			Series 5150 ANSI Class 150 Series 5300 & 530S ANSI Class 300 Flanged Valves	Series 7150 ANSI Class 150 Series 7300 & 730S ANSI Class 300 Flanged Valves
			Filled PTFE Seats	Delrin® Seats	XTREME™ Seats		
15	24	28	76	155	83	20	–
20	24	28	76	155	83	20	–
25	21	28	76	155	83	20	–
30	21	28	76	155	83	–	–
40	21	28	76	155	83	20	–
50	21	28	76	155	83	20	–
80	–	–	–	–	–	–	20
100	–	–	–	–	–	–	20
150	–	–	–	–	–	–	20†

† ANSI Class 150 Only

**Flow Data**

The table below provides flow coefficients of the Supervisory Cocks covered in the bulletin. The Cv values represent the flow of water at +60°F through the valve in U.S. gallons per minute at a pressure drop of 1psi. The metric

equivalent, Kv, is the flow of water at 16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm<sup>2</sup>. To convert Cv to Kv multiply by 0.8569.

Style A Valves			Series 2000 Valves			Series 4000 Valves				Series 5000/7000* Flanged Valves		
Valve Size inches	Cv	Length of Equivalent Pipe (feet)	Valve Size inches	Cv	Length of Equivalent Pipe (feet)	Valve Size inches	Standard Port		Full Port	Valve Size inches	Cv	Length of Equivalent Pipe (feet)
							Cv	Equivalent Pipe (feet)				
1/2	8.3	3.7	1/2	16	1.0	1/2	13	.13	.13	1/2	9	3.5
3/4	14	6.0	3/4	37	0.9	3/4	33	1.0	.19	3/4	19	4.6
1	35	3.3	1	49	1.7	1	44	2.0	.24	1	45	2.0
1-1/4	55	5.9	1-1/4	49	7.4	1-1/4	46	7.7	.27	1-1/2	125	2.6
1-1/2	94	4.6	1-1/2	100	4.0	1-1/2	95	9.2	.31	2	165	5.4
2	115	11.0	2	115	11.0	2	111	11.3	-	3	350	9.0
-	-	-	-	-	-	-	-	-	-	4	550	14.0
-	-	-	-	-	-	-	-	-	-	6	765	61.0

Style A Valves			Series 2000 Valves			Series 4000 Valves				Series 5000/7000* Flanged Valves		
Valve Size DN	Kv	Length of Equivalent Pipe (m)	Valve Size DN	Kv	Length of Equivalent Pipe (m)	Valve Size DN	Standard Port		Full Port	Valve Size DN	Kv	Length of Equivalent Pipe (m)
							Kv	Equivalent Pipe (m)				
15	7.1	1.13	15	14	0.30	15	11	0.04	0.04	15	8	1.07
20	12	1.83	20	32	0.27	20	28	0.30	0.06	20	16	1.40
25	30	1.01	25	42	0.52	25	38	0.61	0.07	25	39	0.61
30	47	1.80	30	42	2.26	30	39	2.35	0.08	40	107	0.79
40	81	1.40	40	86	1.22	40	81	2.80	0.09	50	141	1.65
50	99	3.35	50	99	3.35	50	95	3.44	-	80	300	2.74
-	-	-	-	-	-	-	-	-	-	100	471	4.27
-	-	-	-	-	-	-	-	-	-	150	656	18.59

\* 1/2" – 2" (DN 15 – 50) flanged valves are Series 5000; 3" – 6" (DN 80 – 150) flanged valves are Series 7000.

**DIMENSIONS**

**1/2" – 2" (DN 15 – 50) Clincher®  
Screwed End Series 2000 Valves**

**VALVE SHOWN IN OPEN POSITION**

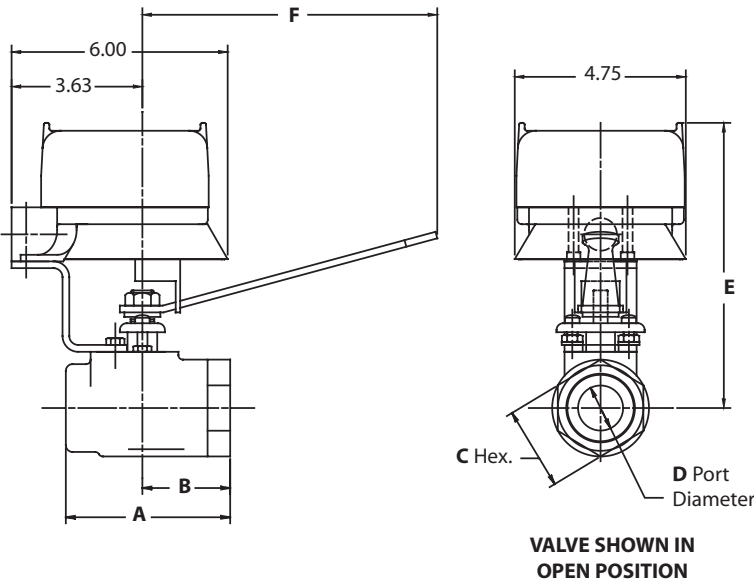
Screwed End Series 2000 – inches					
Valve Size inches	A	B	C	D	E
1/2	2.50	1.25	4.00	.50	6.14
3/4	2.81	1.43	4.00	.68	6.23
1	3.43	1.75	5.00	.87	6.53
1-1/4	3.75	1.87	5.00	1.00	6.62
1-1/2	4.06	2.06	6.00	1.25	7.15
2	4.38	2.18	6.00	1.50	7.33

Screwed End Series 2000 – mm					
Valve Size DN	A	B	C	D	E
15	63	32	100	13	154
20	71	37	100	17	156
25	86	44	125	22	164
30	94	47	125	25	166
40	102	52	150	32	179
50	110	55	150	38	184

**DIMENSIONS**

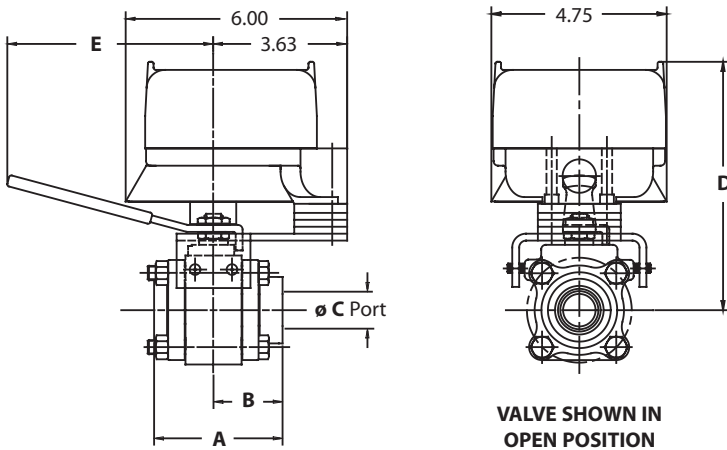
**1/2" – 2" (DN 15 – 50)  
Screwed End Style "A" Valves**



Screwed End "A" Style – inches						
Valve Size inches	A	B	C	D	E	F
	1/2	3.43	2.06	1.06	.43	7.26
3/4	3.87	2.25	1.25	.56	7.32	4.13
1	4.50	2.53	1.62	.81	7.51	6.13
1-1/4	4.43	2.31	2.00	1.00	7.70	6.13
1-1/2	4.56	2.43	2.38	1.25	8.20	8.19
2	5.00	2.62	2.75	1.50	8.20	8.19

Screwed End - "A" Style – mm						
Valve Size DN	A	B	C	D	E	F
	15	86	52	27	11	182
20	97	57	32	14	183	104
25	113	64	41	21	188	154
30	111	58	50	25	193	154
40	114	61	60	32	205	205
50	125	66	69	38	205	205

**1/2" – 2" (DN 15 – 50)  
Screwed End and Socket Weld  
Series 4000 Valves**

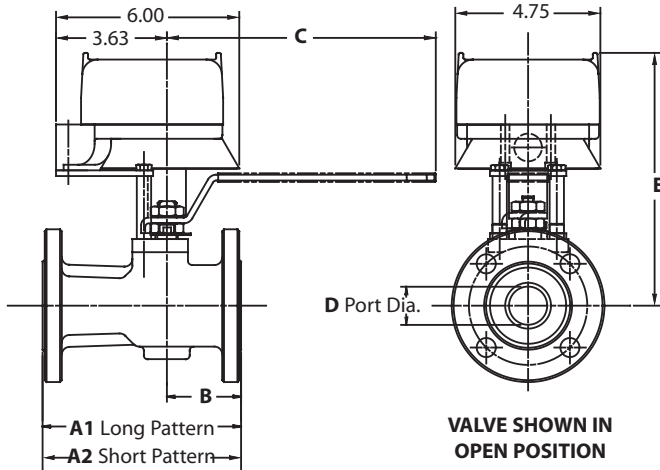


Screwed End Series 4000 – inches							
Valve Size inches	Screwed End Valve		Socket Weld Valve		All		
	A	B	A	B	C	D	E
<b>REDUCED PORT</b>							
1/2	2.58	1.29	2.31	1.16	.50	6.55	5.00
3/4	2.97	1.49	2.75	1.38	.69	6.70	5.00
1	3.69	1.85	3.25	1.63	.88	6.88	5.50
1-1/4	4.18	2.09	4.18	2.09	1.00	7.00	5.50
1-1/2	4.53	2.27	4.12	2.06	1.25	6.24	8.19
2	4.97	2.49	4.50	2.25	1.50	6.43	8.19
<b>FULL PORT</b>							
1/2	2.58	1.29	2.31	1.16	.50	6.55	5.00
3/4	3.41	1.70	3.41	1.70	.88	6.88	5.50
1	4.19	2.09	4.19	2.09	1.00	7.00	5.50
1-1/4	4.59	2.30	4.59	2.30	1.25	6.24	8.19
1-1/2	5.13	2.56	5.13	2.56	1.50	6.43	8.19

Screwed End Series 4000 – mm							
Valve Size DN	Screwed End Valve		Socket Weld Valve		All		
	A	B	A	B	C	D	E
<b>REDUCED PORT</b>							
15	65	33	58	29	13	164	125
20	75	38	69	35	18	168	125
25	93	47	82	41	22	172	138
30	105	53	105	53	25	175	138
40	114	57	103	52	32	156	205
50	125	63	113	57	38	161	205
<b>FULL PORT</b>							
15	65	33	58	29	13	164	125
20	86	43	86	43	22	172	138
25	105	53	105	53	25	175	138
30	115	58	115	58	32	156	205
40	129	64	129	64	38	161	205

**DIMENSIONS**

**1/2" – 2" (DN 15 – 50)  
ANSI Class 150 Flanged  
Series 5150, 530S & 5300 Valves**



ANSI CLASS 150, FLANGED – inches					
Valve Size inches	A	B	C	D	E
1/2	4.25	1.81	5.06	.50	7.62
3/4	4.62	2.00	5.06	.68	7.75
1	5.00	2.18	6.68	.87	7.62
1-1/2	6.50	2.43	8.81	1.25	8.55
2	7.00	2.43	8.81	1.50	8.74

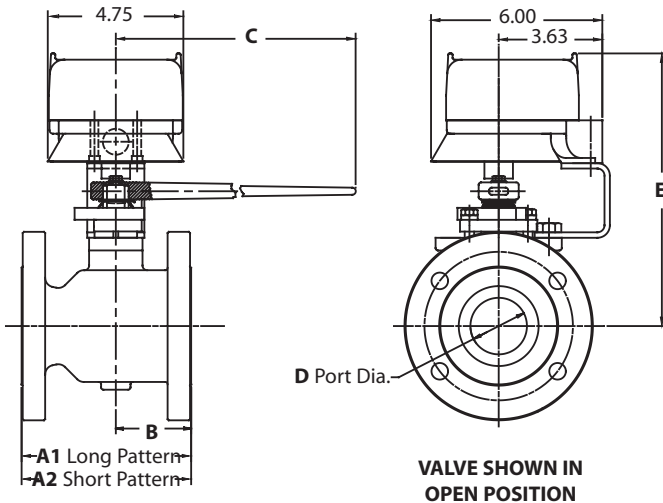
  

ANSI CLASS 300, FLANGED – inches						
Valve Size inches	A1	A2	B	C	D	E
1/2	5.50	4.25	1.81	5.06	.50	7.62
3/4	6.00	4.62	2.00	5.06	.68	7.75
1	6.50	5.00	2.18	6.68	.87	7.62
1-1/2	7.50	6.50	2.43	8.81	1.25	8.55
2	8.50	7.00	2.43	8.81	1.50	8.74

ANSI CLASS 150, FLANGED – mm					
Valve Size DN	A	B	C	D	E
15	107	46	127	13	191
20	116	50	127	17	194
25	125	55	167	22	191
40	163	61	221	32	214
50	175	61	221	38	219

ANSI CLASS 300, FLANGED – mm						
Valve Size DN	A1	A2	B	C	D	E
15	138	107	46	127	13	191
20	150	116	50	127	17	194
25	163	125	55	167	22	191
40	188	163	61	221	32	214
50	213	175	61	221	38	219

**3", 4" and 6" (DN 80, 100 and 150)  
ANSI Class 150 Flanged  
Series 7150, 730S & 7300 Valves**



ANSI CLASS 150, FLANGED – inches					
Valve Size inches	A	B	C	D	E
3	8.00	3.75	14.0	2.31	10.05
4	9.00	4.00	14.0	3.00	10.54
6	10.50	6.75	19.9	4.00	12.50

ANSI CLASS 300, FLANGED – inches						
Valve Size inches	A1	A2	B	C	D	E
3	11.12	8.00	3.75	14.0	2.31	10.05
4	12.00	9.00	4.00	14.0	3.00	11.68

ANSI CLASS 150, FLANGED – mm					
Valve Size DN	A	B	C	D	E
80	200	94	350	58	252
100	225	100	350	75	264
150	263	169	498	100	313

ANSI CLASS 300, FLANGED – mm						
Valve Size DN	A1	A2	B	C	D	E
80	278	200	94	350	58	252
100	300	225	100	350	75	292

## HOW TO ORDER Jamesbury SUPERVISORY COCKS

The Supervisory Cock figure designation is made up of numbers and letters that describe all features of the available variations of the cock. Coding is as follows:

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
5	7	E	3	X	1

**Note:** When ordering 1/2" (DN 15) Series 4000 valves always use the style codes shown above for standard port types even though this size is Full Port design.

**Example:** A 1-1/2" (DN 40) Supervisory Cock in Series 4000 standard port screwed end design in carbon steel with 316 stainless steel trim, with two supervisory double pole double throw limit switches, XTREME™ seats and ANSI rating has the designation Figure 1051-57E3X1.

<b>1</b>	Size	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
	<b>inches</b>	1/2	3/4	1	1-1/4	1-1/2	2	3**	4**	6**
	<b>DN</b>	15	20	25	30	40	50	80	100	150

<b>2</b>	Body Style
<b>1</b>	Style A screwed end
<b>2</b>	Series 7150 ANSI class 150 flanged
<b>5</b>	Series 2000 screwed end
<b>6</b>	Type 5150 ANSI Class 150 flanged
<b>7</b>	Series 4000 std. port screwed end
<b>8</b>	Series 4000 full port screwed end
<b>9</b>	Series 4000 std. port socket weld
<b>0</b>	Series 4000 full port socket weld
<b>A</b>	Type 5305 ANSI Class 300 flanged
<b>B</b>	Type 5300 ANSI Class 300 flanged
<b>C</b>	Type 7305 ANSI Class 300 flanged
<b>D</b>	Type 7300 ANSI Class 300 flanged

<b>3</b>	Body Trim Materials
<b>A</b>	Carbon Steel
<b>C</b>	Brass (Style A and Series 2000 valves only)
<b>D</b>	316 Stainless Steel
<b>E</b>	Carbon Steel with 316 Stainless Trim

<b>4</b>	Switch Arrangement
<b>1</b>	SPDT-2 supervisory QZM2VB1DSS
<b>2</b>	SPDT-1 supervisory, 1 free, QZM2VB1DSS
<b>3</b>	DPDT-2 supervisory, QZM14B1DSS
<b>4</b>	DPDT-1 supervisory, 1 free, QZM14B1DSS
<b>5</b>	DPDT-1 supervisory, QZM14B1DSS
<b>6</b>	SPDT-1 supervisory, 1 free, hermetically sealed QZP2HB1DSS
<b>7</b>	SPDT-2 supervisory hermetically sealed QZP2HB1DSS

<b>5</b>	Seat Material
<b>M</b>	Filled PTFE †††
<b>T</b>	PTFE
<b>X</b>	XTREME †
<b>R</b>	DELFIN ††

<b>6</b>	Special Service
<b>O</b>	Standard
<b>I</b>	ANSI 4000 Series

Style	Size Range by Style	
	Valve Size	
	Inches	DN
<b>A</b>	1/2 – 2	15 – 50
<b>4000 std. port</b>	1/2 – 2	15 – 50
<b>4000 full port</b>	1/2 – 1-1/2	15 – 40
<b>2000</b>	1/2 – 2	15 – 50
<b>5150</b>	1/2 – 2	15 – 50
<b>7150</b>	3 – 6	80 – 150
<b>5300/5305</b>	1/2 – 2	15 – 50
<b>7300/7305</b>	3 – 4	80 – 150

- \* Not available in flanged design
- \*\* Available in flanged design only
- † Use only for 4000, 5000 and 7000 Series
- †† Use only for 4000 Series
- ††† Use only for A Style and 2000 Series

### Installation Instructions, Maintenance and Operation

IMO's (Installation, Maintenance, and Operating instructions) or AMI's (Assembly, Mounting, and Installation instructions) are shipped with the products. Additional copies of these instructions are available. Call your local Metso Automation Distributor, or visit our web site.

#### Metso Automation, Field Systems Division

**Europe**, Levytie 6, P.O.Box 310, 00811 Helsinki, Finland. Tel. int. +358 20 483 150. Fax int. +358 20 483 151

**Europe (UK)**, 8 Pipers Wood Industrial Park, Waterlooville, Hampshire PO7 7XU UK. Tel. int. +44 (0)23 9223 8500. Fax int. +44 (0)23 9223-8510

**North America**, 44 Bowditch Drive, P.O.Box 8044, Shrewsbury, Massachusetts, 01545-8044 USA. Tel. int. +1 508 852 0200. Fax int. +1 508 852 8172

**Latin America**, Av. Central, 181- Cháracas Reunidas, 12238-430, São Jose dos Campos. Tel. int. +55 12 335 3500. Fax int. +55 12 335 3535

**Asia Pacific**, 501 Orchard Road, #05-09 Wheelock Place, 238880 Singapore. Tel. int. +65 735 5200. Fax int. +65 735 2955

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