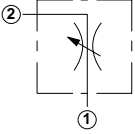
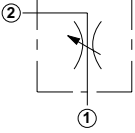
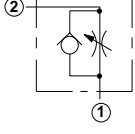
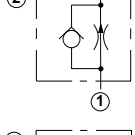
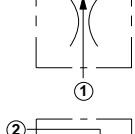
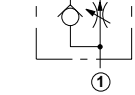
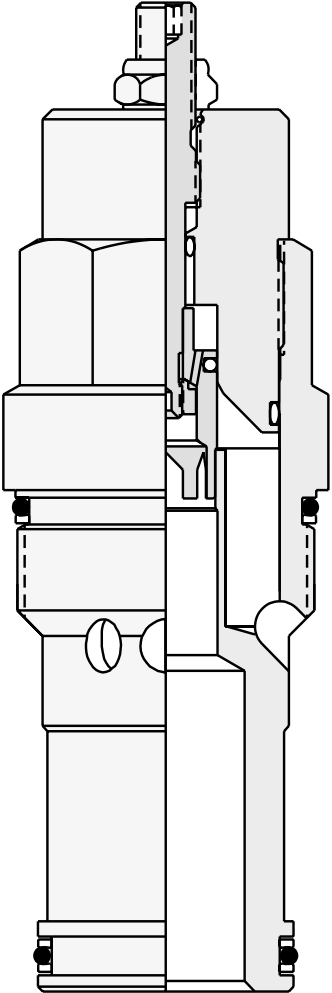
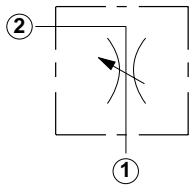


# Flow Control Cartridge Valves

	<i>Cartridge Type</i>	<i>Page</i>
	Fully Adjustable Needle	40
	Fully Adjustable High Capacity Needle	40
	Fully Adjustable Needle with Reverse Free Flow Check	41
	Fixed Orifice, Pressure Compensated with Free Flow Check	42
	Fixed Orifice, Pressure Compensated	42
	Fully Adjustable Pressure Compensated with Free Flow Check	43

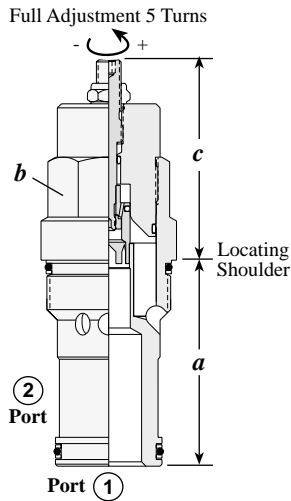


**FULLY ADJUSTABLE NEEDLE**



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (lb. ft.)
			a	b	c			
					L	H	K	
.16" dia.	NFBC – LCN	T - 162A	1.22	3/4"	1.59	-	1.73	25/30
.19" dia.	NFCC – LCN	T - 13A	1.38	7/8"	2.27	2.49	2.50	30/35
.25" dia.	NFDC – LAN	T - 5A	1.62	1 1/8"	2.35	2.82	2.73	45/50
.38" dia.	NFEC – LEN	T - 16A	2.44	1 1/4"	2.66	3.06	2.91	150/160
.56" dia.	NFFC – LGN	T - 18A	3.13	1 5/8"	3.31	3.50	3.47	350/375

**OPTION ORDERING INFORMATION**

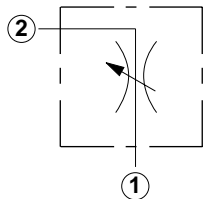


**NF \* C - \* \* \***

Nominal Capacity	Control**	Maximum Diameter Orifice	Seal
<b>B</b> .16" dia.	<b>L</b> Standard Screw	<b>NFBC</b> .16"	<b>N</b> Buna-N
<b>C</b> .19" dia.	<b>H</b> Calibrated Handknob with Detent Lock	<b>NFCC</b> .19"	<b>V</b> Viton
<b>D</b> .25" dia.	<b>K</b> Handknob	<b>NFDC</b> .25"	
<b>E</b> .38" dia.		<b>NFEC</b> .38"	
<b>F</b> .56" dia.		<b>NFFC</b> .56"	
		<b>NFDC</b> .13"	
		<b>NFEC</b> .28"	
		<b>NFFC</b> .38"	

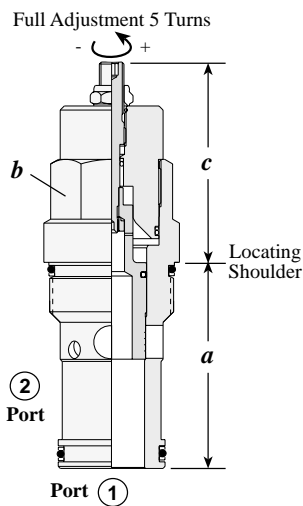
\*\* See page 92 for information on Control Options

**FULLY ADJUSTABLE HIGH CAPACITY NEEDLE**



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (lb. ft.)
			a	b	c			
					L	H	K	
.33" dia.	NFCD – LFN	T - 13A	1.38	7/8"	2.27	2.49	2.50	30/35
.50" dia.	NFDD – LGN	T - 5A	1.62	1 1/8"	2.35	2.82	2.73	45/50
.69" dia.	NFED – LHN	T - 16A	2.44	1 1/4"	2.66	3.06	2.91	150/160
.85" dia.	NFFD – LIN	T - 18A	3.13	1 5/8"	3.31	3.50	3.47	350/375

**OPTION ORDERING INFORMATION**

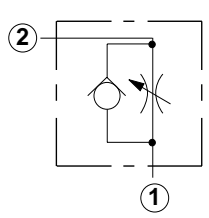
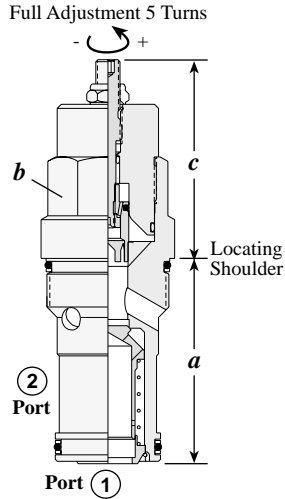


**NF \* D - \* \* \***

Nominal Capacity	Control**	Maximum Diameter Orifice	Seal
<b>C</b> .33" dia.	<b>L</b> Standard Screw	<b>NFCD</b> .33"	<b>N</b> Buna-N
<b>D</b> .50" dia.	<b>H</b> Calibrated Handknob with Detent Lock	<b>NFDD</b> .50"	<b>V</b> Viton
<b>E</b> .69" dia.	<b>K</b> Handknob	<b>NFED</b> .69"	
<b>F</b> .85" dia.		<b>NFFD</b> .85"	

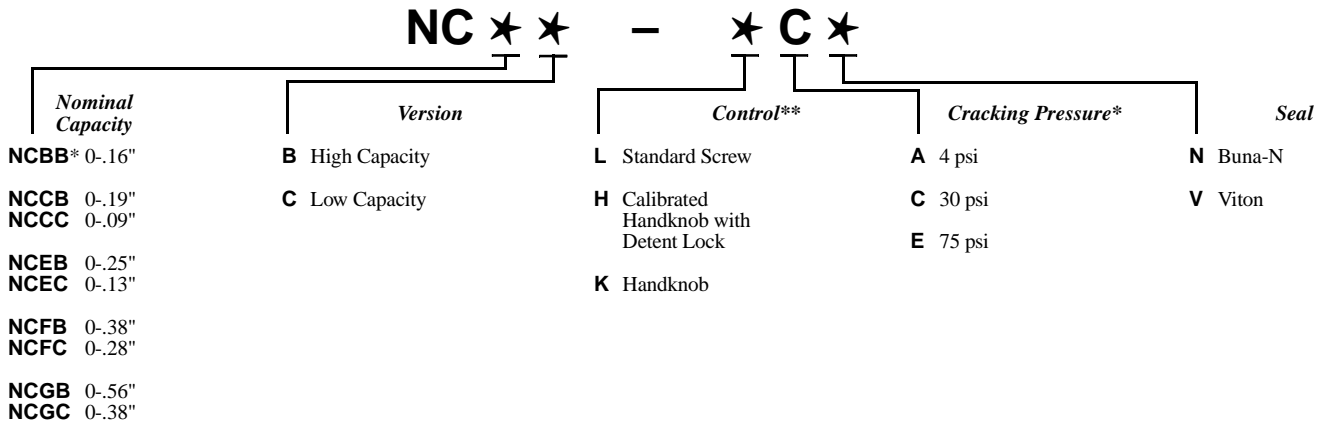
\*\* See page 92 for information on Control Options

**FULLY ADJUSTABLE NEEDLE WITH REVERSE FREE FLOW CHECK**



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (lb. ft.)
			a	b	c (L, H, K)	
0-.16" dia.	<b>NCBB – LCN</b>	T - 162A	1.22	3/4"	L: 1.59, H: -, K: 1.73	25/30
0-.19" dia.	<b>NCCB – LCN</b>	T - 13A	1.38	7/8"	L: 2.27, H: 2.49, K: 2.50	30/35
0-.25" dia.	<b>NCEB – LCN</b>	T - 5A	1.62	1 1/8"	L: 2.35, H: 2.82, K: 2.73	45/50
0-.38" dia.	<b>NCFB – LCN</b>	T - 16A	2.44	1 1/4"	L: 2.66, H: 3.06, K: 2.91	150/160
0-.56" dia.	<b>NCGB – LCN</b>	T - 18A	3.13	1 5/8"	L: 3.31, H: 3.50, K: 3.47	350/375

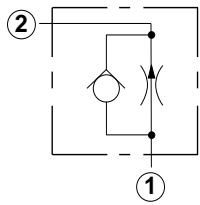
**OPTION ORDERING INFORMATION**



\*\* See page 92 for information on Control Options

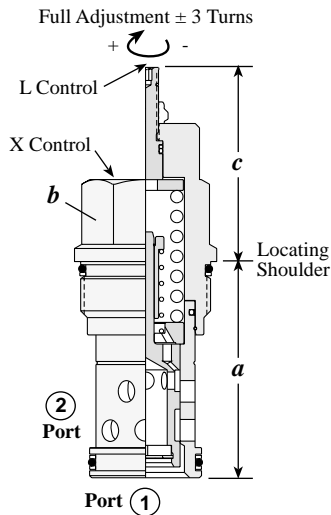
\*Cracking Pressure Ranges: A and E ranges are not available in T-162A cavity.

**FIXED ORIFICE, PRESSURE COMPENSATED WITH FREE FLOW CHECK**



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (lb. ft.)
			a	b	c			
					X	L	K	
.1-3 GPM	<b>FCBB - XAN</b>	T - 162A	1.22	3/4"	.82	2.11	2.55	25/30
.1-6.0 GPM	<b>FCCB - XAN</b>	T - 13A	1.38	7/8"	.75	2.00	2.25	30/35
.1-12.0 GPM	<b>FCDB - XAN</b>	T - 5A	1.62	1 1/8"	.69	2.12	2.38	45/50
.2-25 GPM	<b>FCEB - XAN</b>	T - 16A	2.44	1 1/4"	.97	2.44	2.69	150/160
.2-50 GPM	<b>FCFB - XAN</b>	T - 18A	3.13	1 5/8"	1.19	2.81	3.06	350/375

**OPTION ORDERING INFORMATION**



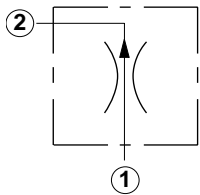
**FC \* B - \* A \***

Nominal Capacity	Control**	Adjustment Range	Seal
<b>B</b> .1-3 GPM	<b>X</b> Non-adjustable Factory set at customer specified flow	<b>A</b> Fixed Orifice	<b>N</b> Buna-N
<b>C</b> .1-6.0 GPM			<b>V</b> Viton
<b>D</b> .1-12.0 GPM	<b>L</b> Tuning Adjustment ±25% of customer specified flow	<b>A</b> Fixed Orifice	<b>V</b> Viton
<b>E</b> .2-25 GPM			
<b>F</b> .2-50 GPM			
	<b>K</b> Handknob for <b>L</b> control		

Flow Ranges:  
 FCBB: .1 - 3 GPM  
 FCCB: .1 - 6.0 GPM  
 FCDB: .1 - 12.0 GPM  
 FCEB: .2 - 25 GPM  
 FCFB: .2 - 50 GPM

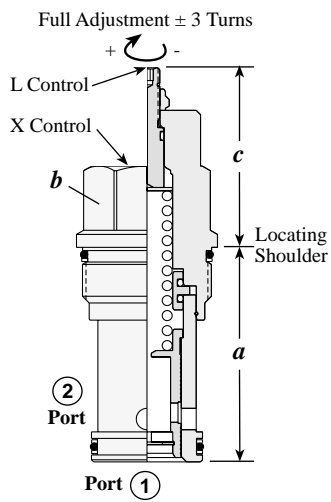
\*\* See page 92 for information on Control Options

**FIXED ORIFICE, PRESSURE COMPENSATED**



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (lb. ft.)
			a	b	c			
					X	L	K	
.1-3 GPM	<b>FXBA - XAN</b>	T - 162A	1.22	3/4"	.82	2.11	2.55	25/30
.1-6.0 GPM	<b>FXCA - XAN</b>	T - 13A	1.38	7/8"	.75	2.00	2.25	30/35
.1-12.0 GPM	<b>FXDA - XAN</b>	T - 5A	1.62	1 1/8"	.69	2.12	2.38	45/50
.2-25 GPM	<b>FXEA - XAN</b>	T - 16A	2.44	1 1/4"	.97	2.44	2.69	150/160
.2-50 GPM	<b>FXFA - XAN</b>	T - 18A	3.13	1 5/8"	1.19	2.81	3.06	350/375

**OPTION ORDERING INFORMATION**



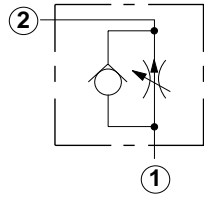
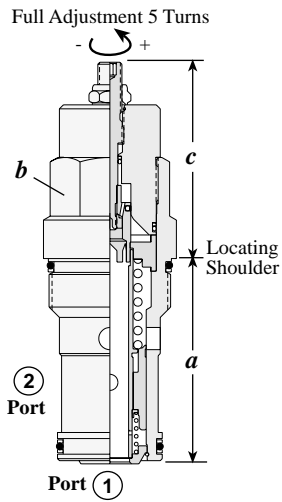
**FX \* A - \* A \***

Nominal Capacity	Control**	Adjustment Range	Seal
<b>B</b> .1-3 GPM	<b>X</b> Non-adjustable Factory set at customer specified flow	<b>A</b> Fixed Orifice	<b>N</b> Buna-N
<b>C</b> .1-6.0 GPM			<b>V</b> Viton
<b>D</b> .1-12.0 GPM	<b>L</b> Tuning Adjustment ±25% of customer specified flow	<b>A</b> Fixed Orifice	<b>V</b> Viton
<b>E</b> .2-25 GPM			
<b>F</b> .2-50 GPM			
	<b>K</b> Handknob for <b>L</b> control		

Flow Ranges:  
 FXBA: .1 - 3 GPM  
 FXCA: .1 - 6.0 GPM  
 FXDA: .1 - 12.0 GPM  
 FXEA: .2 - 25 GPM  
 FXFA: .2 - 50 GPM

\*\* See page 92 for information on Control Options

**FULLY ADJUSTABLE PRESSURE COMPENSATED WITH FREE FLOW CHECK**



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (lb. ft.)	
			a	b	L	H		K
.1-6.0 GPM	<b>FDBA - LAN</b>	T - 13A	1.38	7/8"	2.27	2.44	2.31	30/35
.1-12.0 GPM	<b>FDCB - LAN</b>	T - 5A	1.62	1 1/8"	2.35	2.82	2.73	45/50
.2-25 GPM	<b>FDEA - LAN</b>	T - 16A	2.44	1 1/4"	2.66	3.06	2.91	150/160
.2-50 GPM	<b>FDFA - LAN</b>	T - 18A	3.13	1 5/8"	3.31	3.50	3.47	350/375

**OPTION ORDERING INFORMATION**

**FD\*\* - A\***

Nominal Capacity	Control**	Adjustment Range	Seal
<b>BA</b> .1-6.0 GPM	<b>L</b> Standard Screw	<b>FDBA</b> <b>A</b> .1 - 6.0 GPM	<b>N</b> Buna-N
<b>CB</b> .1-12.0 GPM	<b>H</b> Calibrated Handknob with Detent Lock	<b>FDCB</b> <b>A</b> .1 - 12.0 GPM	<b>V</b> Viton
<b>EA</b> .2-25 GPM	<b>K</b> Handknob	<b>FDEA</b> <b>A</b> .1 - 25 GPM	
<b>FA</b> .2-50 GPM		<b>FDFA</b> <b>A</b> .1 - 50 GPM	

\*\* See page 92 for information on Control Options

**NOTES**