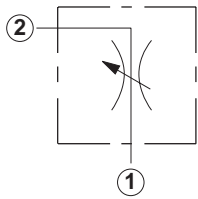


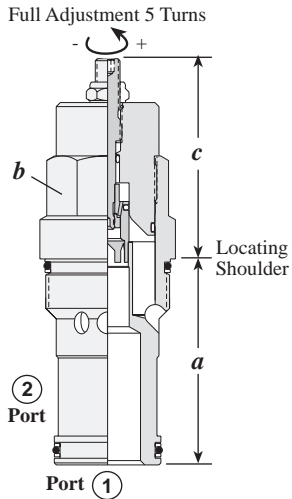
Needle Valves

FULLY ADJUSTABLE NEEDLE



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (lb. ft.)
			a	b	c			
					L	H	K	
.16 in.	NFBC – LCN	T - 162A	1.22	3/4"	1.59	-	1.73	25/30
.19 in.	NFCC – LCN	T - 13A	1.38	7/8"	2.06	2.44	2.31	30/35
.25 in.	NFDC – LAN	T - 5A	1.38	1 1/8"	2.44	2.82	2.73	45/50
.38 in.	NFEC – LEN	T - 16A	1.81	1 1/4"	2.66	3.06	2.91	150/160
.56 in.	NFFC – LGN	T - 18A	2.50	1 5/8"	3.31	3.50	3.47	350/375

OPTION ORDERING INFORMATION

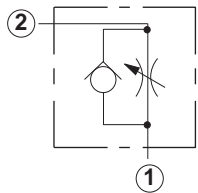


NF * C - * * *

Nominal Capacity	Control**	Maximum Diameter Orifice	Seal
B .16 in.	L Standard Screw	C .16 in. <i>NFBC</i>	N Buna-N
C .19 in.	H Calibrated Handknob with Detent Lock	C .19 in. <i>NFCC</i>	V Viton
D .25 in.		D .10 in. <i>NFDC</i>	
E .38 in.	K Handknob	A .25 in. <i>NFEC</i>	
F .56 in.		B .13 in. <i>NFEC</i>	
		E .38 in. <i>NFFC</i>	
		F .28 in. <i>NFFC</i>	
		G .56 in. <i>NFFC</i>	
		H .38 in. <i>NFFC</i>	

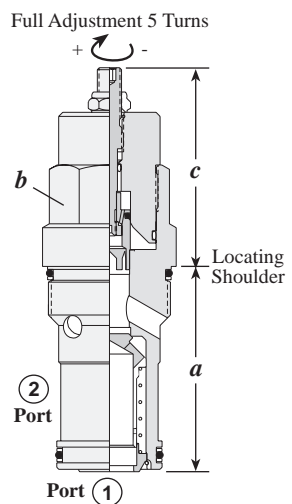
** See page 244 for information on Control Options

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	
.16	NCBB – LCN	T - 162A	1.22	3/4"	1.59	-	1.73	25/30
.19	NCCB – LCN	T - 13A	1.38	7/8"	2.06	2.44	2.31	30/35
.25	NCEB – LCN	T - 5A	1.38	1 1/8"	2.44	2.82	2.73	45/50
.38	NCFB – LCN	T - 16A	1.81	1 1/4"	2.66	3.06	2.91	150/160
.56	NCGB – LCN	T - 18A	2.50	1 5/8"	3.31	3.50	3.47	350/375

OPTION ORDERING INFORMATION



NC * B - * * *

Nominal Capacity	Control**	Cracking Pressure*	Seal
NCBB .16" dia.	L Standard Screw	A 4 psi	N Buna-N
NCCB .019" dia. NCCC .09" dia.	H Calibrated Handknob with Detent Lock	C 30 psi	V Viton
NCEB .25" dia. NCEC .13" dia.	K Handknob	E 75 psi	
NCFB .38" dia. NCFC .28" dia.			
NCGB .56" dia. NCGC .38" dia.			

** See page 244 for information on Control Options

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

TECHNICAL TIPS / PERFORMANCE CURVES

Needle Valves, Fully Adjustable

Applications

These adjustable needle valves offer accurate and precise flow control because of their balanced adjustment design. They may be used for bi-directional operation.

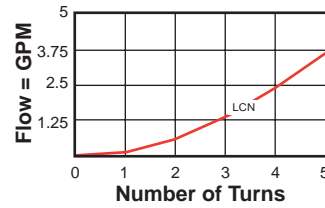
Design Concepts and Features

- Sharp-edge orifice minimizes flow variation with viscosity changes.
- Optional needle orifice ranges. See page 110.
- Positive shut-off of flow when closed.

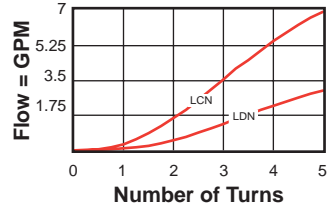
Performance Curves

Adjustment Sensitivity at 100 psi Differential

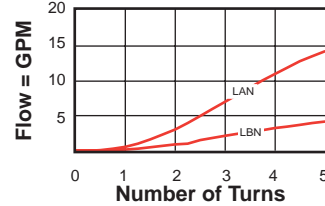
NFBC-L*N



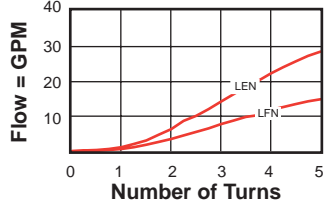
NFCC-L*N



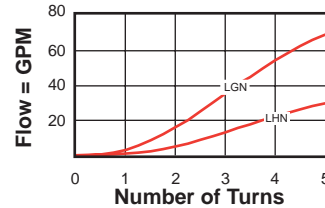
NFDC-L*N



NFEC-L*N



NFFC-L*N



Needle Valves, Fully Adjustable with Reverse Free Flow Check

Applications

These adjustable needle valves with integral reverse free flow check fit the same cavity as the needle valve without check.

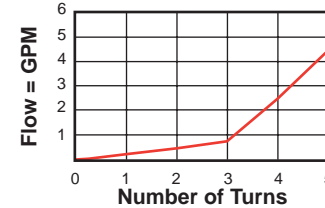
Design Concepts and Features

- Performance parameters of the adjustable needle cartridge with check are similar to the NF*C. However, the leakage rate when closed is approximately 5 drops / min. or less.

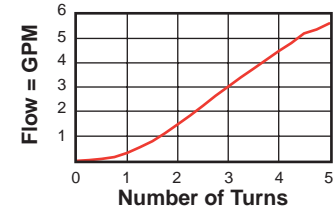
Performance Curves

Adjustment Sensitivity at 100 psi Differential

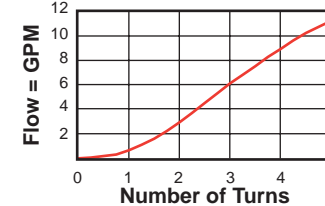
NCBB-L*N



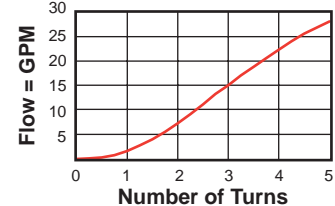
NCCB-L*N



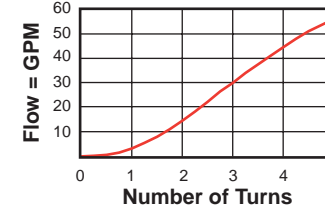
NCEB-L*N



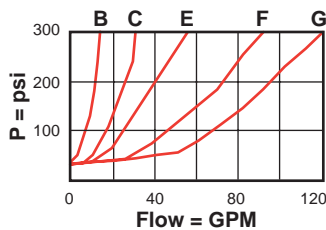
NCFB-L*N



NCGB-L*N



Reverse Flow Pressure Drop with Needle Closed



General Application Requirements

- Operating Temperature Range: Buna-N seals -50° F to 200° F, Viton seals 0° F to 250° F.
- Viscosity Range: 60-3000 SUS.
- Fluid Contamination Level: ISO 4406 18/15 or better; Recommend $\beta_{10} \geq 75$ to achieve ISO 18/15 or better in most systems.
- Factory Pressure Setting for cartridge is established at a 4 GPM flow rate.