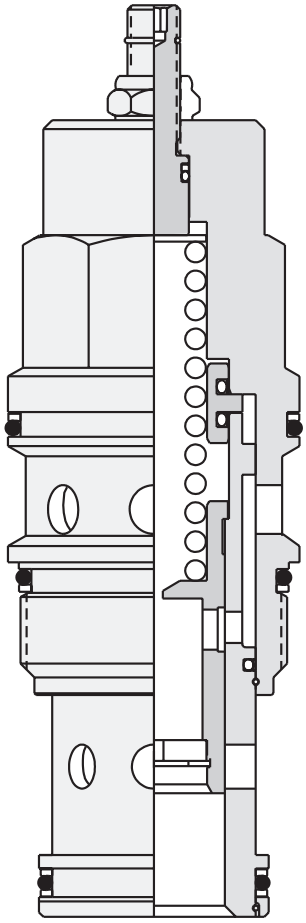
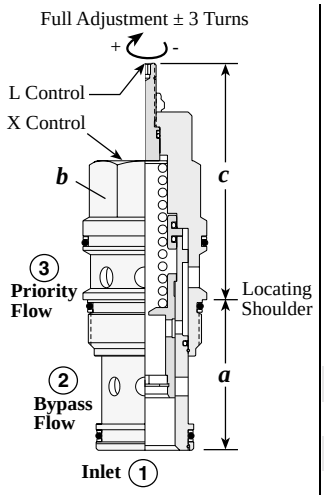
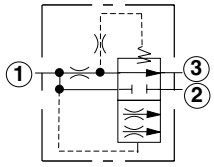
Priority Flow Control Cartridge Valves



BYPASS / RESTRICTIVE, FIXED ORIFICE



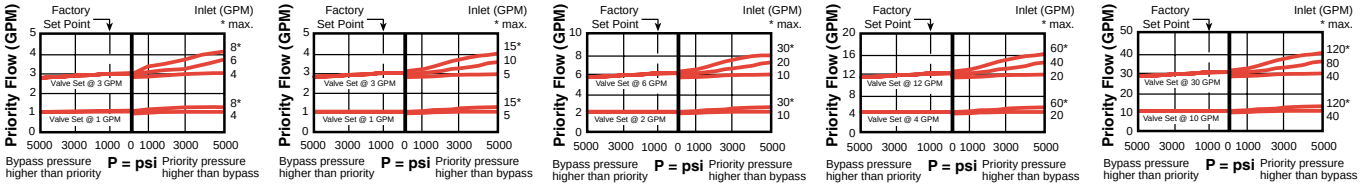


Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions a	b	c X	c L	c K	Installation Torque (lb. ft.)
.1-3 GPM	**FRBA – XAN**	T - 163A	1.22	3/4”	1.25	2.55	2.77	25/30
.1-6.0 GPM	**FRCA – XAN**	T - 11A	1.38	7/8”	1.19	2.50	2.75	30/35
.1-12.0 GPM	**FRDA – XAN**	T - 2A	1.38	1 1/8”	1.38	2.81	3.06	45/50
.2-25 GPM	**FREA – XAN**	T - 17A	1.81	1 1/4”	1.81	3.28	3.53	150/160
.2-50 GPM	**FRFA – XAN**	T - 19A	2.50	1 5/8”	2.75	3.94	4.19	350/375

Performance Curves

FRBA **FRCA** **FRDA** **FREA** **FRFA**

Typical Performance



- Maximum operating pressure = 5000 psi
- Customer must specify a flow rating. Factory set flow ratings are within +/- 10% of the requested setting.
- Pressure at the bypass port (port 2) may exceed pressure at the priority port (port 3).
- Maximum pressure at port 3 should be limited to 3000 psi.
- Both priority and bypass flow are usable up to the system operating pressure.
- Bypass flow is not available until priority flow requirements are satisfied.
- Blocking priority flow will also block bypass flow.

OPTION ORDERING INFORMATION **Model Codes printed in Red are Preferred Versions and most readily available**

FR ✶ A – ✶ A ✶

Nominal Capacity

B .1-3 GPM
C .1-6.0 GPM
D .1-12.0 GPM
E .2-25 GPM
F .2-50 GPM

*Control***

X Non-adjustable Factory set at customer specified flow
L Tuning Adjustment ±25% of customer specified flow
K Handknob for **L** control

Adjustment Range

A Fixed Orifice
Customer must specify flow

Seal

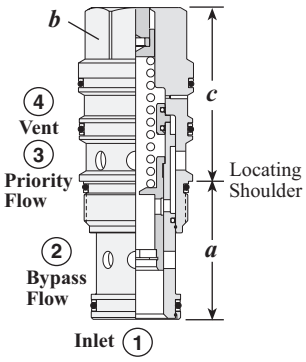
N Buna-N
V Viton

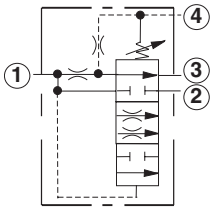
Maximum Inlet Flow:
FRBA: 7.5 GPM
FRCA: 15 GPM
FRDA: 30 GPM
FREA: 60 GPM
FRFA: 120 GPM

** *See page 162 for information on Control Options*

Priority Flow ranges:
FRBA: .1 - 3 GPM
FRCA:.1 - 6.0 GPM
FRDA:.1 - 12.0 GPM
FREA: .2 - 25 GPM
FRFA: .2 - 50 GPM

VENTABLE, BYPASS / RESTRICTIVE, FIXED ORIFICE



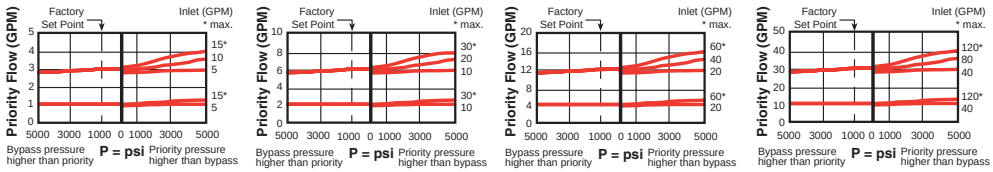


Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions* *a*	*b*	*c* X	*c* L	*c* K	*Installation Torque (lb. ft.)*
.1-6.0 GPM	**FVCA – XAN**	T - 21A	1.38	7/8”	1.78	3.09	3.34	30/35
.1-12.0 GPM	**FVDA – XAN**	T - 22A	1.38	1 1/8”	2.00	3.44	3.69	45/50
.2-25 GPM	**FVEA – XAN**	T - 23A	1.81	1 1/4”	2.50	3.94	4.19	150/160
.2-50 GPM	**FVFA – XAN**	T - 24A	2.50	1 5/8”	3.16	4.76	5.01	350/375

Performance Curves

FVCA **FVDA** **FVEA** **FVFA**

Typical Performance



- Maximum operating pressure = 5000 psi
- Nominal vent flow = 46 in³/min.
- Pressure at the bypass port (port 2) may exceed pressure at the priority port (port 3).
- Maximum pressure at port 3 should be limited to 3000 psi.
- Both priority and bypass flow are usable up to the system operating pressure.
- Bypass flow is not available until priority flow requirements are satisfied, except when the valve is vented. When port 4 (vent) is open, all flow diverts to port 2 if pressure at port 1 (inlet) is 150 psi or higher.
- Using a pressure control on port 4 will limit the pressure at the priority port (port 3). If pressure on the bypass port (port 2) exceeds the setting of the pressure control, priority flow will be shut off and all the flow will go out the bypass port.
- Blocking priority flow will also block bypass flow.

OPTION ORDERING INFORMATION

Model Codes printed in Red are Preferred Versions and most readily available

FV ✶ A – ✶ A ✶

Nominal Capacity		*Control***		*Adjustment Range*		*Seal*	
C	.1-6.0 GPM	**X**	Non-adjustable factory set at customer specified flow	**A**	Fixed Orifice	**N**	Buna-N
D	.1-12.0 GPM	**L**	Tuning Adjustment ±25% of customer specified flow		**Customer must specify flow**	**V**	Viton
E	.2-25 GPM						
F	.2-50 GPM	**K**	Handknob (includes L controls)				

Maximum Inlet Flow:
FVCA: 15 GPM
FVDA: 30 GPM
FVEA: 60 GPM
FVFA: 120 GPM

***See page 162 for information on Control Options*

Priority Flow ranges:
FVCA: .1 - 6.0 GPM
FVDA: .1 - 12.0 GPM
FVEA: .2 - 25 GPM
FVFA: .2 - 50 GPM

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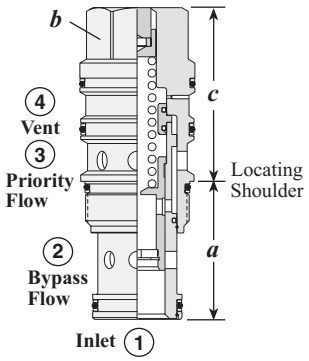
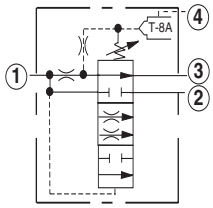
VENTABLE, BYPASS / RESTRICTIVE, FIXED ORIFICE WITH INTEGRAL PILOT CONTROL CAVITY





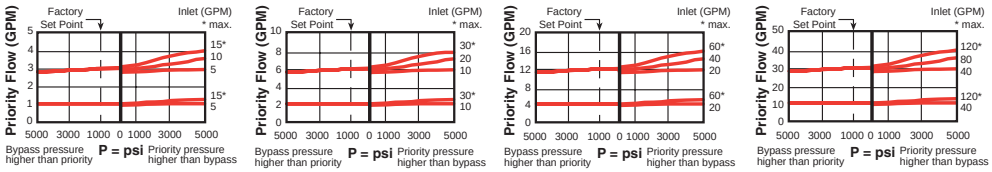
The -8 control option allows the pilot control valve to be incorporated directly into the end of the priority flow control cartridge via the T-8A cavity. These pilot control cartridges are sold separately and include electro-proportional, solenoid, air pilot, and hydraulic pilot operation. See Pilot Control Cartridges on page 121.

Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions*			*Installation Torque (lb. ft.)*
			a	*b*	*c* **8**	
.1-6.0 GPM	**FVCA – 8AN**	T - 21A	1.38	7/8”	1.78	30/35
.1-12.0 GPM	**FVDA – 8AN**	T - 22A	1.38	1 1/8”	1.78	45/50
.2-25.0 GPM	**FVEA – 8AN**	T - 23A	1.81	1 1/4”	1.78	150/160
2-50.0 GPM	**FVFA – 8AN**	T - 24A	2.50	1 5/8”	1.78	350/375

Performance Curves

FVCA-8 **FVDA-8** **FVEA-8** **FVFA-8**

Typical Performance



- Maximum operating pressure = 5000 psi
- Nominal vent flow = 46 in³/min.
- Pressure at the bypass port (port 2) may exceed pressure at the priority port (port 3).
- Maximum pressure at port 3 should be limited to 3000 psi.
- Both priority and bypass flow are usable up to the system operating pressure.
- Bypass flow is not available until priority flow requirements are satisfied, except when the valve is vented. When port 4 (vent) is open, all flow diverts to port 2 if pressure at port 1 (inlet) is 150 psi or higher.
- Using a pressure control on port 4 will limit the pressure at the priority port (port 3). If pressure on the bypass port (port 2) exceeds the setting of the pressure control, priority flow will be shut off and all the flow will go out the bypass port.
- Blocking priority flow will also block bypass flow.
- The main stage valve should first be installed to the correct torque value followed by the T-8A pilot control section into the main stage valve to its required torque value.

OPTION ORDERING INFORMATION **Model Codes printed in Red are Preferred Versions and most readily available**

FV ✶ A – 8 A ✶

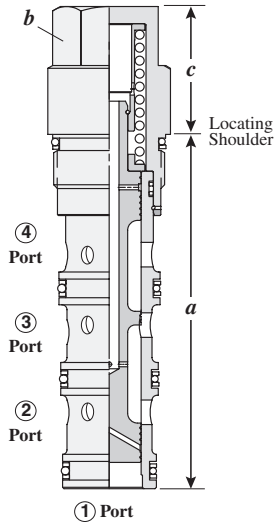
Nominal Capacity	*Control***	*Adjustment Range*	*Seal*
C .1-6.0 GPM	**8** T-8A cavity in hex body for pilot operation (Pilot valve to be ordered separately)	**A** Fixed Orifice	**N** Buna-N
D .1-12.0 GPM		**Customer must specify flow**	**V** Viton
E .2-25 GPM			
F .2-50 GPM			

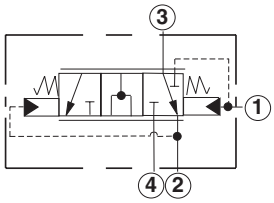
Maximum Inlet Flow:
FVCA: 15 GPM
FVDA: 30 GPM
FVEA: 60 GPM
FVFA: 120 GPM

***See page 162 for information on Control Options*

Priority Flow ranges:
FVCA: .1 - 6.0 GPM
FVDA: .1 - 12.0 GPM
FVEA: .2 - 25 GPM
FVFA: .2 - 50 GPM

BYPASS / RESTRICTIVE MODULATING ELEMENT





Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions a	b	c X	Installation Torque (lb. ft.)
15 GPM	**LHDA – XFN**	T - 31A	3.34	7/8”	1.18	30/35
30 GPM	**LHFA – XFN**	T - 32A	3.63	1 1/8”	1.31	45/50
60 GPM	**LHHA – XFN**	T - 33A	4.50	1 1/4”	1.63	150/160
120 GPM	**LHJA – XFN**	T - 34A	5.50	1 5/8”	2.00	350/375

- Maximum operating pressure = 5000 psi
- Bypass flow is not available until priority flow requirements are satisfied.
- Bypass pressure at port 4 can be higher than pressure at control port 2.
- Priority flow can be turned on or off with a pilot sized solenoid valve on port 1.

OPTION ORDERING INFORMATION

Model Codes printed in Red are Preferred Versions and most readily available

LH ✶ A – X ✶ ✶

Maximum Inlet Flow	*Control***	*Adjustment Range*	*Seal*
D 15 GPM	**X** Non-adjustable	**E** 75 - 100 psi	**N** Buna-N
F 30 GPM		**F** 100 - 140 psi	**V** Viton
H 60 GPM			
J 120 GPM			

*** See page 162 for information on Control Options*

NOTES