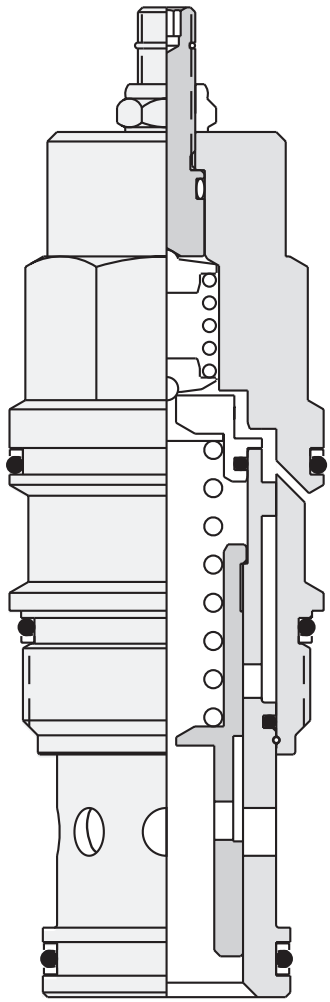
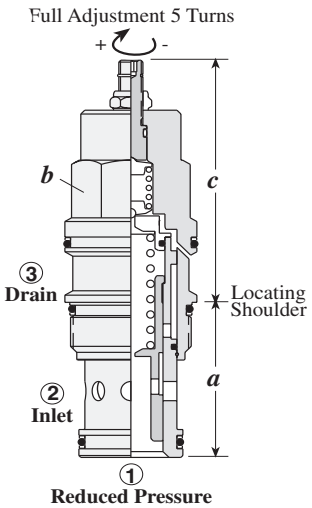
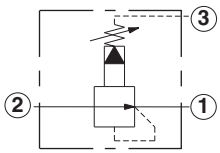
Reducing and Reducing/Relieving Cartridge Valves



PILOT OPERATED

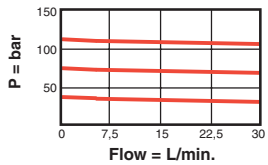




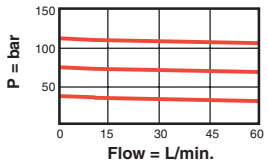
Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions a	b	c L	c C	c K	Installation Torque (Nm)
20 L/min.	**PBBB – LAN**	T - 163A	31,0	19,1	65,0	67,0	70,0	35 - 40
40 L/min.	**PBDB – LAN**	T - 11A	35,0	22,2	63,5	67,3	70,0	45 - 50
80 L/min.	**PBFB – LAN**	T - 2A	35,0	28,6	71,4	73,2	77,7	60 - 70
160 L/min.	**PBHB – LAN**	T - 17A	46,0	31,8	83,3	84,1	90,0	200 - 215
320 L/min.	**PBJB – LAN**	T - 19A	63,8	41,3	100,1	103,9	106,4	465 - 500

Performance Curves

PBBB

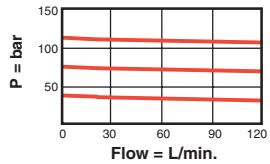


PBDB

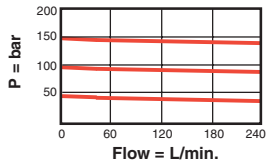


PBFB

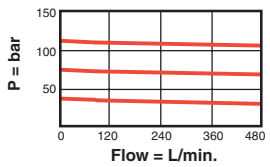
Regulated Pressure



PBHB



PBJB



- Maximum operating pressure = 350 bar.
- Control pilot flow = PBBB, PBDB: 0,11 to 0,16 L/min.; PBFB: 0,16 to 0,25 L/min.; PBHB, PBJB: 0,25 to 0,33 L/min.
- Factory pressure setting established at blocked control port (deadhead).
- Pressure at port 3 is directly additive to the valve setting at a 1:1 ratio and should not exceed 350 bar.

OPTION ORDERING INFORMATION

PB ✱ B – ✱ ✱ ✱

Nominal Capacity

- **B** 20 L/min.
- **D** 40 L/min.
- **F** 80 L/min.
- **H** 160 L/min.
- **J** 320 L/min.

Control**

- **L** Standard Screw Adjustment
- **C*** Tamper Resistant Factory Set
- **K** Handknob with Lock Knob

* ***Special setting required. Specify at time of order.***

** ***See page 178 for information on Control Options***

Customer specified special setting stamped on hex.

Adjustment Range

PBBB only:
- **A** 5 - 210 bar Max. Pressure Differential 210 bar
- **B** 5 - 105 bar Max. Pressure Differential 210 bar
- **N** 5 - 55 bar Max. Pressure Differential 210 bar
- **Q** 5 - 25 bar Max. Pressure Differential 140 bar
- **W** 5 - 315 bar Max. Inlet Pressure 350 bar

PBDB, PBFB, PBHB, PBJB only:
- **A** 7 - 210 bar Max. Pressure Differential 210 bar
- **B** 3,5 - 105 bar Max. Pressure Differential 210 bar
- **N** 4 - 55 bar Max. Pressure Differential 140 bar
- **Q** 4 - 25 bar Max. Pressure Differential 140 bar
- **W** 10,5 - 315 bar Max. Inlet Pressure 350 bar

Adjustment Ranges are all standard set at 14 bar.

Seal Material

- **N** Buna-N
- **V** Viton

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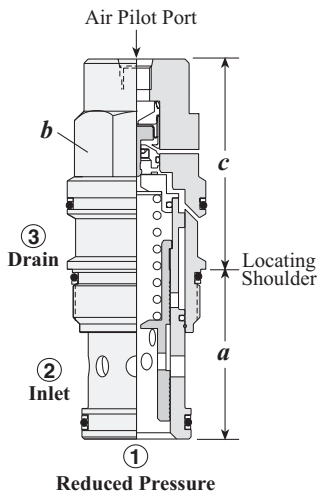
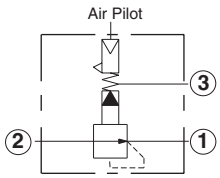
PILOT OPERATED, AIR CONTROLLED



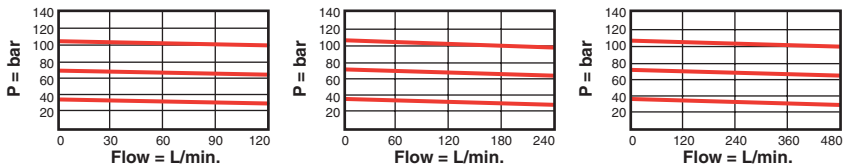


Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions* *a*	*b*	*c* A	*c* B	*Installation Torque (Nm)*
80 L/min.	**PBFC – ABN**	T - 2A	35,0	28,6	51,1	-	60 - 70
160 L/min.	**PBHC – BBN**	T - 17A	46,0	31,8	-	63,0	200 - 215
320 L/min.	**PBJC – BBN**	T - 19A	63,8	41,3	-	79,0	465 - 500

Performance Curves

PBFC **PBHC** **PBJC**

Regulated Pressure



- Pilot ratio, air to hydraulic = 20:1.
- Maximum operating pressure 140 bar.
- Maximum air pressure = 10,5 bar.
- Control pilot flow = PBFC: 0,16 to 0,25 L/min.; PBHC, PBJC: 0,25 to 0,33 L/min.
- Maximum pressure differential, inlet to outlet should not exceed 210 bar.
- The pressure at port 3 determines the minimum valve setting and should not exceed 70 bar.

OPTION ORDERING INFORMATION

PB ✱ C – ✱ ✱ ✱

Nominal Capacity

F 80 L/min.

H 160 L/min.

J 320 L/min.

Control

Available in PBFC only:

A External 1/4" NPTF Pilot Port at end of Cartridge

PBHC, PBJC only:

B External SAE-4 Pilot Port at end of Cartridge

Adjustment Range

B 3,5 - 105 bar

Seal Material

N Buna-N

V Viton

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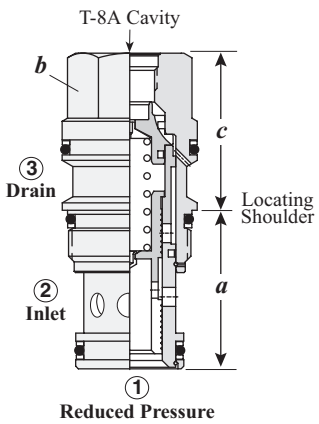
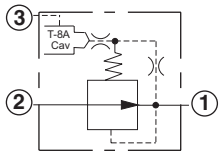
PILOT OPERATED, MAIN STAGE WITH INTEGRAL T-8A CONTROL CAVITY





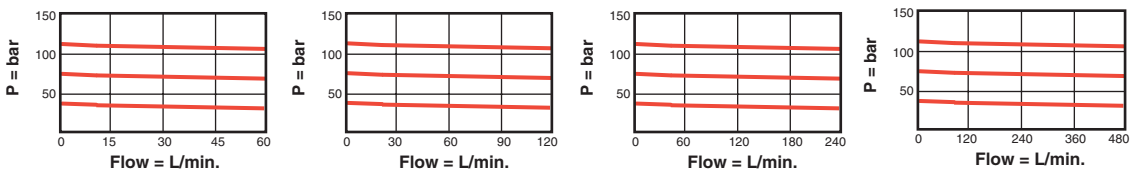
The -8 control option allows a pilot control valve to be incorporated directly into the end of the modulating element via the T-8A cavity. These pilot control cartridges are sold separately and include electro-proportional, solenoid, air pilot, and hydraulic pilot operation. See Pilot Control Cartridges on page 141.

Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions*			*Installation Torque (Nm)*
			a	*b*	*c*	
40 L/min.	**PBDB – 8WN**	T - 11A	35,1	22,2	30,2	45 - 50
80 L/min.	**PBFB – 8WN**	T - 2A	35,1	28,6	35,1	60 - 70
160 L/min.	**PBHB – 8WN**	T - 17A	46,0	31,8	46,0	200 - 215
320 L/min.	**PBJB – 8WN**	T - 19A	63,5	41,3	58,7	465 - 500

Performance Curves

PBDB-8 **PBFB-8** **PBHB-8** **PBJB-8**

Regulated Pressure with T-8A Pilot Stage Installed



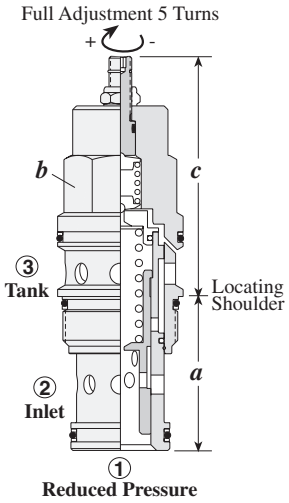
- Maximum operating pressure = 350 bar.
- Control pilot flow = PBDB-8: 0,11 to 0,16 L/min.; PBFB-8: 0,16 to 0,25 L/min.; PBHB-8, PBJB-8: 0,25 to 0,33 L/min.
- Pilot operated valves exhibit very low dead band transition between reducing and relieving modes.
- Pressure at port 3 is directly additive to the valve setting at a 1:1 ratio and should not exceed 350 bar.
- With the -8 control option, the main stage valve should first be installed to the correct torque value. The T-8A pilot control valve should then be installed into the main stage valve to its required torque value.

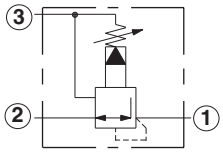
OPTION ORDERING INFORMATION

PB ✱ B – 8 ✱ ✱

Nominal Capacity	*Control*	*Minimum Control Pressure*	*Seal Material*
D 40 L/min.	**8** T-8A Cavity in hex body for pilot operation	**D** 1,7 bar Max. Pressure Differential 140 bar	**N** Buna-N
F 80 L/min.			**V** Viton
H 160 L/min.	Pilot valve to be ordered separately	**W** 7 bar Max. Inlet Pressure 350 bar	
J 320 L/min.			

PILOT OPERATED



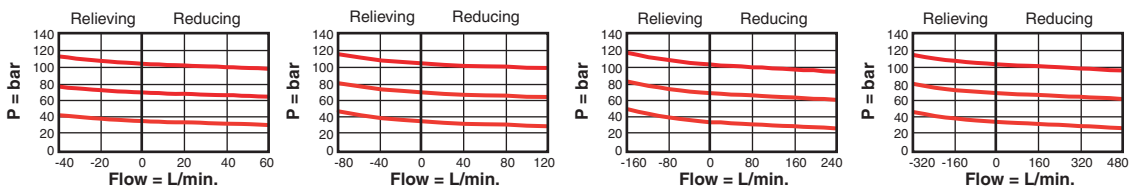


Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions a	b	c L	c C	c K	Installation Torque (Nm)
40 L/min.	**PPDB – LAN**	T - 11A	35,0	22,2	63,5	67,3	70,0	45 - 50
80 L/min.	**PPFB – LAN**	T - 2A	35,0	28,6	71,4	73,2	77,7	60 - 70
160 L/min.	**PPHB – LAN**	T - 17A	46,0	31,8	83,3	84,1	90,0	200 - 215
320 L/min.	**PPJB – LAN**	T - 19A	63,5	41,3	100,1	103,9	106,4	465 - 500

Performance Curves

PPDB **PPFB** **PPHB** **PPJB**

Regulated Pressure



- Maximum operating pressure = 350 bar.
- Control pilot flow = PPDB: 0,11 to 0,16 L/min.; PPFB: 0,16 to 0,25 L/min.; PPHB, PPJB: 0,25 to 0,33 L/min.
- Factory pressure setting established at blocked control port (deadhead).
- Pressure at port 3 is directly additive to the valve setting at a 1:1 ratio and should not exceed 210 bar.
- Maximum pressure at port 3 should be limited to 210 bar.

OPTION ORDERING INFORMATION

PP ✱ B – ✱ ✱ ✱

Nominal Capacity

- **D** 40 L/min.
- **F** 80 L/min.
- **H** 160 L/min.
- **J** 320 L/min.

Control**

- **L** Standard Screw Adjustment
- **C*** Tamper Resistant Factory Set
- **K** Handknob with Lock Knob
- * ***Special setting is required. Specify at time of order.***

** ***See page 178 for information on Control Options***

Customer specified special setting stamped on hex.

Adjustment Range

- **A** 7 - 210 bar Max. Pressure Differential 210 bar
- **B** 3,5 - 105 bar Max. Pressure Differential 210 bar
- **N** 4 - 55 bar Max. Pressure Differential 140 bar
- **Q** 4 - 25 bar Max. Pressure Differential 140 bar
- **W** 10,5 - 315 bar Max. Inlet Pressure 350 bar

Adjustment Ranges are all standard set at 14 bar.

Seal Material

- **N** Buna-N
- **V** Viton

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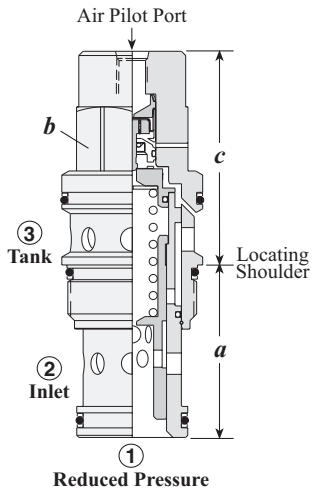
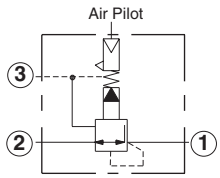
PILOT OPERATED, AIR CONTROLLED



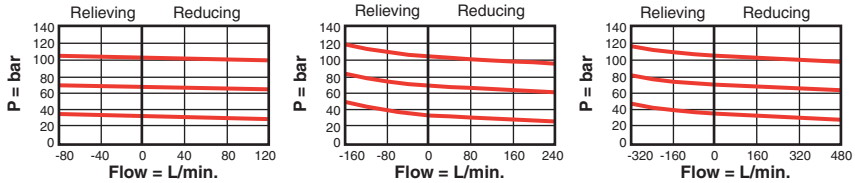


Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions*				*Installation Torque (Nm)*
			a	*b*	*c* A	*c* B	
80 L/min.	**PPFC – ABN**	T - 2A	35,0	28,6	50,8	-	60 - 70
160 L/min.	**PPHC – BBN**	T - 17A	46,0	31,8	-	63,0	200 - 215
320 L/min.	**PPJC – BBN**	T - 19A	63,8	41,3	-	79,0	465 - 500

Performance Curves

PPFC **PPHC** **PPJC**

Regulated Pressure



- Pilot ratio, air to hydraulic = 20:1.
- Maximum operating pressure = 140 bar.
- Maximum air pressure = 10,5 bar.
- Control pilot flow = PPFC: 0,16 to 0,25 L/min.; PPHC, PPJC: 0,25 to 0,33 L/min.
- Maximum pressure differential, inlet to outlet should not exceed 210 bar.
- The pressure at port 3 determines the minimum valve setting and should not exceed 70 bar.

OPTION ORDERING INFORMATION

PP ✱ C – ✱ ✱ ✱

Nominal Capacity

F 80 L/min.

H 160 L/min.

J 320 L/min.

Control

Available in PPFC only

A External 1/4" NPTF Pilot Port at end of Cartridge

PPHC, PPJC only

B External SAE-4 Pilot Port at end of Cartridge

Adjustment Range

B 3,5 - 105 bar

Seal Material

N Buna-N

V Viton

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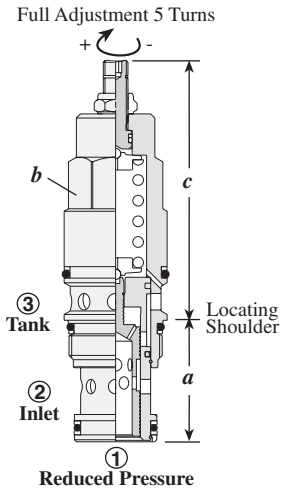
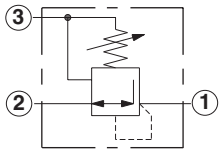
DIRECT ACTING



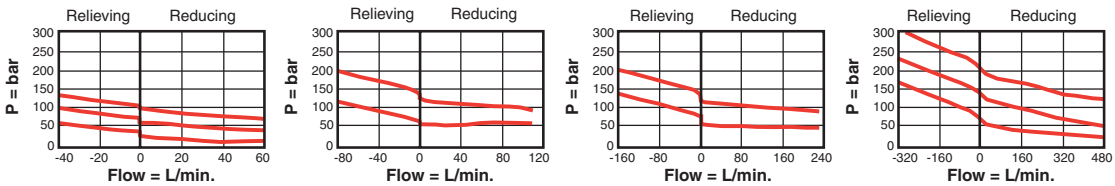


Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions a	b	c L	c C	c K	Installation Torque (Nm)
40 L/min.	**PRDB – LAN**	T - 11A	35,0	22,2	78,5	80,3	84,8	45 - 50
80 L/min.	**PRFB – LAN**	T - 2A	35,0	28,6	88,1	90,0	94,0	60 - 70
160 L/min.	**PRHB – LAN**	T - 17A	46,0	31,8	100,1	101,6	106,4	200 - 215
320 L/min.	**PRJB – LAN**	T - 19A	63,5	41,3	123,8	127,8	130,2	465 - 500

Performance Curves

PRDB **PRFB** **PRHB** **PRJB**

Regulated Pressure



- Maximum operating pressure = 350 bar.
- Maximum leakage at 24 cSt = PRDB: 30 cc/min.; PRFB: 50 cc/min.; PRHB: 65 cc/min.; PRJB: 80 cc/min. Leakage specified is out of port 3 with a supply pressure of 140 bar and the valve set at mid-range. This leakage is directly proportional to pressure differential and inversely proportional to viscosity expressed in centistokes.
- Factory pressure setting established at blocked control port (deadhead).
- Pressure at port 3 is directly additive to the valve setting at a 1:1 ratio and should not exceed 210 bar.

OPTION ORDERING INFORMATION

PR ✱ B – ✱ ✱ ✱

Nominal Capacity

- **D** 40 L/min.
- **F** 80 L/min.
- **H** 160 L/min.
- **J** 320 L/min.

Control**

- **L** Standard Screw Adjustment
- **C*** Tamper Resistant Factory Set
- **K** Handknob with Lock Knob

** Special setting required. Specify at time of order.*

*** See page 178 for information on Control Options*

Customer specified special setting stamped on hex.

Adjustment Range

PRDB only:
- **A** 35 - 210 bar, Standard set at 50 bar
- **B** 3,5 - 105 bar, Standard set at 14 bar
- **D** 1,7 - 55 bar, Standard set at 14 bar
- **E** 1,7 - 28 bar, Standard set at 14 bar
- **S** 1,7 - 14 bar, Standard set at 14 bar
- **W** 50 - 315 bar, Standard set at 70 bar

PRFB, PRHB, PRJB only:
- **A** 50 - 210 bar, Standard set at 70 bar
- **B** 20 - 105 bar, Standard set at 35 bar
- **D** 14 - 55 bar, Standard set at 28 bar
- **E** 7 - 28 bar, Standard set at 14 bar
- **S** 3,5 - 14 bar, Standard set at 7 bar

PRJB only:
- **W** 76 - 315 bar, Standard set at 76 bar

Seal Material

- **N** Buna-N
- **V** Viton

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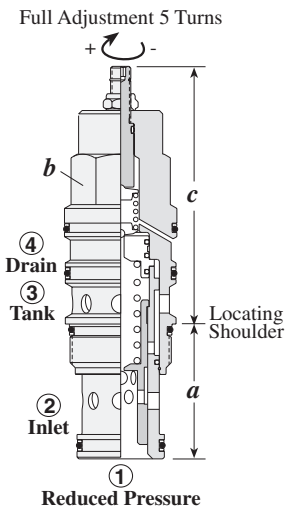
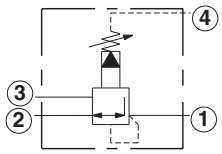
PILOT OPERATED, EXTERNALLY DRAINED TO PORT 4



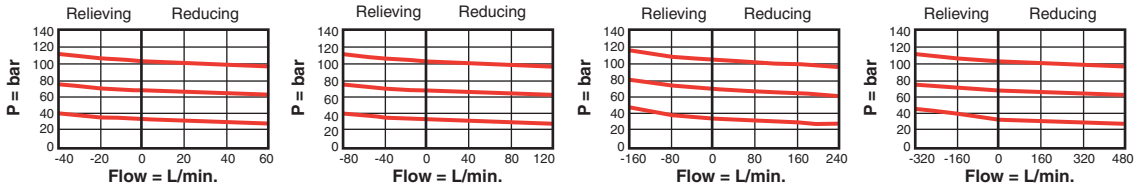


Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions a	b	c L	c C	c K	Installation Torque (Nm)
40 L/min.	**PVDA – LAN**	T - 21A	35,0	22,2	78,5	82,6	84,8	45 - 50
80 L/min.	**PVFA – LAN**	T - 22A	35,0	28,6	87,9	90,0	94,0	60 - 70
160 L/min.	**PVHA – LAN**	T - 23A	46,2	31,8	100,1	101,1	105,9	200 - 215
320 L/min.	**PVJA – LAN**	T - 24A	63,5	41,3	121,5	125,0	128,0	465 - 500

Performance Curves

PVDA **PVFA** **PVHA** **PVJA**

Regulated Pressure



- Maximum operating pressure = 350 bar.
- Control pilot flow = PVDA: 0,11 to 0,16 L/min.; PVFA: 0,16 to 0,25 L/min.; PVHA, PVJA: 0,25 to 0,33 L/min.
- Factory pressure settings established at blocked control port (deadhead).
- Maximum pressure at port 3 should be limited to 210 bar.
- Pilot operated valves exhibit very low dead band transition between reducing and relieving modes.
- Pressure on the drain (port 4) is directly additive to the valve setting at a 1:1 ratio and should not exceed 350 bar.

OPTION ORDERING INFORMATION

PV ✱ A – ✱ ✱ ✱

Nominal Capacity

- **D** 40 L/min.
- **F** 80 L/min.
- **H** 160 L/min.
- **J** 320 L/min.

*Control***

- **L** Standard Screw Adjustment
- **C*** Tamper Resistant Factory Set
- **K** Handknob with Lock Knob

* ***Special setting is required. Specify at time of order.***

** ***See page 178 for information on Control Options***

Customer specified special setting stamped on hex.

Adjustment Range

- **A** 7 - 210 bar Max. Pressure Differential 210 bar
- **B** 3,5 - 105 bar Max. Pressure Differential 210 bar
- **D** 1,7 - 55 bar Max. Pressure Differential 140 bar
- **E** 1,7 - 28 bar Max. Pressure Differential 140 bar
- **W** 10,5 - 315 bar Max. Inlet Pressure 350 bar

Adjustment Ranges are all standard set at 14 bar.

Seal Material

- **N** Buna-N
- **V** Viton

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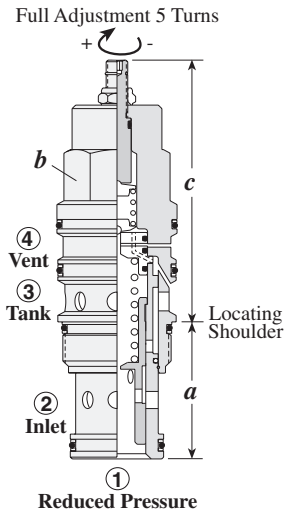
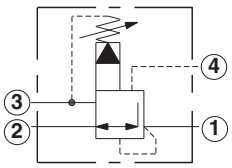
PILOT OPERATED, VENTABLE



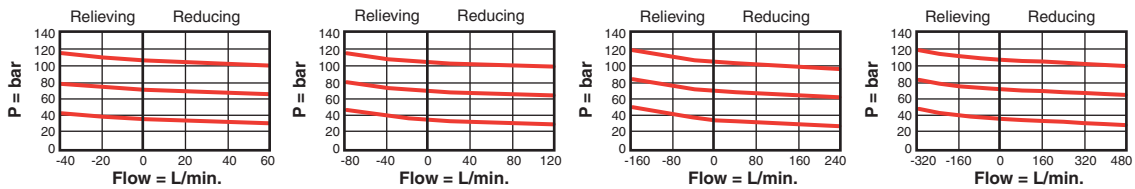


Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions* *a*	*b*	*c* L	*c* C	*c* K	*Installation Torque (Nm)*
40 L/min.	**PVDB – LAN**	T - 21A	35,0	22,2	78,5	82,6	84,8	45 - 50
80 L/min.	**PVFB – LAN**	T - 22A	35,0	28,6	87,9	90,0	94,0	60 - 70
160 L/min.	**PVHB – LAN**	T - 23A	46,2	31,8	100,0	101,1	105,9	200 - 215
320 L/min.	**PVJB – LAN**	T - 24A	63,5	41,3	121,5	125,0	128,0	465 - 500

Performance Curves

PVDB **PVFB** **PVHB** **PVJB**

Regulated Pressure



- Maximum operating pressure = 350 bar.
- Control pilot flow = PVDB: 0,11 to 0,16 L/min.; PVFB: 0,16 to 0,25 L/min.; PVHB, PVJB: 0,25 to 0,33 L/min.
- Factory pressure setting established at blocked control port (deadhead).
- Pilot operated valves exhibit very low dead band transition between reducing and relieving modes.
- Pressure at port 3 is directly additive to the valve setting at a 1:1 ratio and should not exceed 210 bar.
- By controlling the pressure at the vent (port 4), the effective setting of the valve can be controlled below the nominal valve setting.

OPTION ORDERING INFORMATION

PV ✱ B – ✱ ✱ ✱

Nominal Capacity

D 40 L/min.
F 80 L/min.
H 160 L/min.
J 320 L/min.

*Control***

L Standard Screw Adjustment
C* Tamper Resistant Factory Set
K Handknob with Lock Knob

* ***Special setting is required. Specify at time of order.***

** ***See page 178 for information on Control Options***

Customer specified special setting stamped on hex.

Adjustment Range

A 7 - 210 bar Max. Pressure Differential 210 bar
B 3,5 - 105 bar Max. Pressure Differential 210 bar
D 1,7 - 55 bar Max. Pressure Differential 140 bar
E 1,7 - 28 bar Max. Pressure Differential 140 bar
W 10,5 - 315 bar Max. Inlet Pressure 350 bar

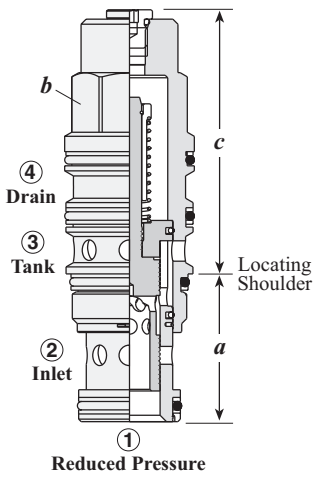
Adjustment Ranges are all standard set at 14 bar.

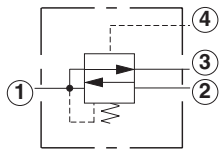
Seal Material

N Buna-N
V Viton

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.

DIRECT ACTING, MAIN STAGE, PILOTED FROM PORT 4



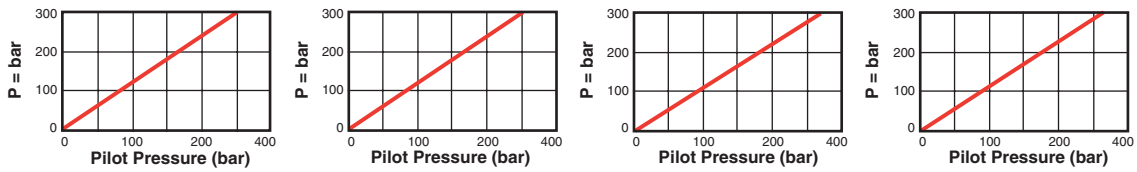


Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions*			*Installation Torque (Nm)*
			a	*b*	*c*	
40 L/min.	**PSDT – XFN**	T - 21A	35,1	22,2	60,7	45 - 50
80 L/min.	**PSFT – XFN**	T - 22A	34,8	28,6	70,3	60 - 70
160 L/min.	**PSHT – XFN**	T - 23A	46,0	31,8	82,0	200 - 215
320 L/min.	**PSJT – XFN**	T - 24A	63,5	41,0	104,0	475 - 510

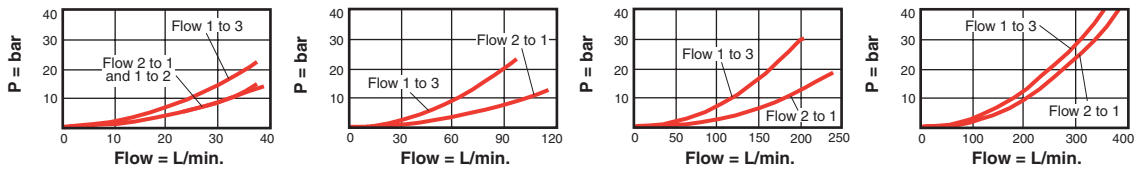
Performance Curves

PSDT **PSFT** **PSHT** **PSJT**

Reduced Pressure vs. Pilot Pressure



Pressure Differential vs. Flow



- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = PSDT: 41 cc/min. at 70 bar; PSFT: 50 cc/min. at 70 bar; PSHT: 65 cc/min. at 70 bar; PSJT: 80 cc/min. at 70 bar. Leakage specified is out of port 3 with a supply pressure of 140 bar and the valve set at mid-range. This leakage is directly proportional to pressure differential and inversely proportional to viscosity expressed in centistokes.
- The valve is biased to the relieving mode with a 7 bar spring. Pressure at port 4 is directly added to the setting of the valve once this threshold is exceeded. For example, 70 bar at port 4 will result in a setting of 63 bar at port 1.
- Maximum pressure at port 3 should be limited to 210 bar.
- Pressure on the drain (port 4) is directly additive to the valve setting at a 1:1 ratio and should not exceed 350 bar.

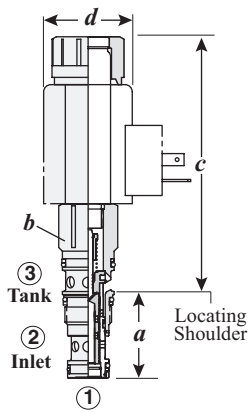
OPTION ORDERING INFORMATION

PS ✱ T – X F ✱

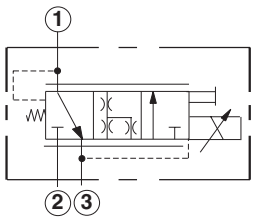
Nominal Capacity	*Control*	*Bias Pressure*	*Seal Material*
D 40 L/min.	**X** Not Adjustable	**F** 7 bar	**N** Buna-N
F 80 L/min.			**V** Viton
H 160 L/min.			
J 320 L/min.			

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.

DIRECT ACTING, OPEN TRANSITION, IMPROVED DYNAMIC RESPONSE



Reduced Pressure



Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions*				*Installation Torque (Nm)*
			a	*b*	*c***	*d*	
20 L/min.	**PRDL - MDN**	T-11A	35,1	22,2	108,2	37,3	45 - 50

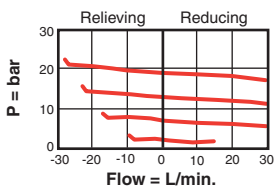
***An additional 50,8 mm clearance is needed for coil installation and removal.

Performance Curves

PRDL

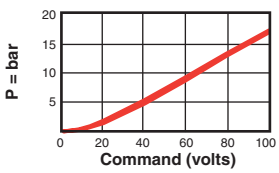
Pressure vs. Flow

E Spring Range Shown



Command vs. Secondary Pressure

E Spring Range Shown



See www.sunhydraulics.com for additional performance curves.

- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,33 cc/min.
- Hysteresis with dither = <4% and with DC input = <8%.
- Linearity with dither = <2% and repeatability with dither = <2%.
- Recommended dither frequency = 140 Hz.
- Maximum pressure at port 3 should be limited to 210 bar.
- Pressure at port 3 is directly additive to the valve setting at 1:1 ratio and should not exceed 210 bar.
- The transition from reducing to relieving is slightly open. The result is very good pressure control with oil consumption of about 0,4 L/min.
- For optimum performance, an amplifier with current sensing and adjustable dither should be used. Dither should be adjustable between 100-250 Hz.
- A wide variety of coil termination and voltage options are available. See Sun website: Products: Accessories: Coils.

OPTION ORDERING INFORMATION

P R D L – M D * – * * *

Nominal Capacity

D 20 L/min.

Control*

M Manual Override Standard

X No Manual Override

Operating Range

D 3,5 - 35 bar

E 1,7 - 18 bar

B 7 - 80 bar

S 0,7 - 7 bar

Seal Material

N Buna-N

V Viton

Coil Options*

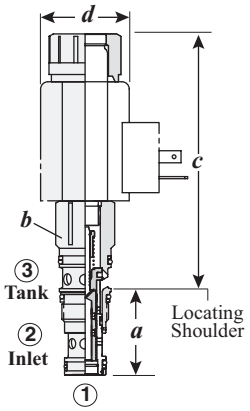
See page 188: Coil option information for Electro-Proportional Cartridges.

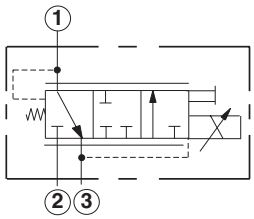
* ***See page 178 for information on Control Options***

** *Consult the Sun website for complete information on Spool Configurations, the full line of Coil Options and Embedded Amplifier Coils/Controllers.*

Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.

DIRECT ACTING, LOW LEAKAGE





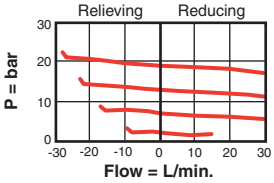
Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions a	b	c***	d	Installation Torque (Nm)
20 L/min.	**PRDP - MDN**	T-11A	35,1	22,2	108,2	37,3	45 - 50

***An additional 50,8 mm clearance is needed for coil installation and removal.

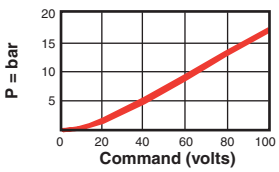
Performance Curves

PRDP

Pressure vs. Flow
E Spring Range Shown



Command vs. Secondary Pressure
E Spring Range Shown



See www.sunhydraulics.com for additional performance curves.

- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 41 cc/min. Leakage specified is out of port 3 with a supply pressure of 140 bar and the valve set at mid-range. This leakage is directly proportional to pressure differential and inversely proportional to viscosity expressed in centistokes.
- The transition from reducing to relieving is closed. The result is very low leakage. However, there is a transitional step increase in pressure between reducing and relieving modes. The step equals about 5% of the high end of the adjustment range, independent of the valve setting.
- Hysteresis with dither = <4% and with DC input = <8%.
- Linearity with dither = <2% and repeatability with dither = <2%.
- Recommended dither frequency = 140 Hz.
- Maximum pressure at port 3 should be limited to 210 bar.
- Pressure at port 3 is directly additive to the valve setting at 1:1 ratio and should not exceed 210 bar.
- There is no upper limit to the pressure setting when using the M control. The more force you exert on the manual override, the higher the resulting pressure.
- For optimum performance, an amplifier with current sensing and adjustable dither should be used. Dither should be adjustable between 100-250 Hz.
- A wide variety of coil termination and voltage options are available. See Sun website: Products: Accessories: Coils.

OPTION ORDERING INFORMATION

P R D P – M D ✱ – ✱ ✱ ✱

Nominal Capacity

D 20 L/min.

Control*

M Manual Override Standard

X No Manual Override

Operating Range

D 3,5 - 35 bar

E 1,7 - 18 bar

B 7 - 80 bar

Seal Material

N Buna-N

V Viton

Coil Options**

See page 188: Coil option information for Electro-Proportional Cartridges.

* ***See page 178 for information on Control Options***

** *Consult the Sun website for complete information on Spool Configurations, the full line of Coil Options and Embedded Amplifier Coils/Controllers.*

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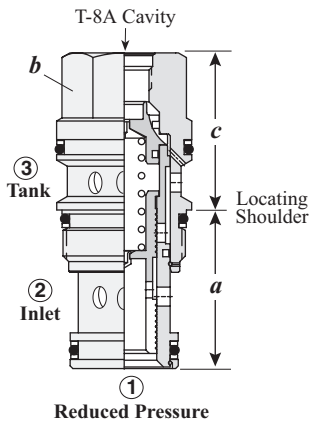
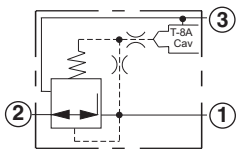
PILOT OPERATED, MAIN STAGE WITH INTEGRAL T-8A CONTROL CAVITY





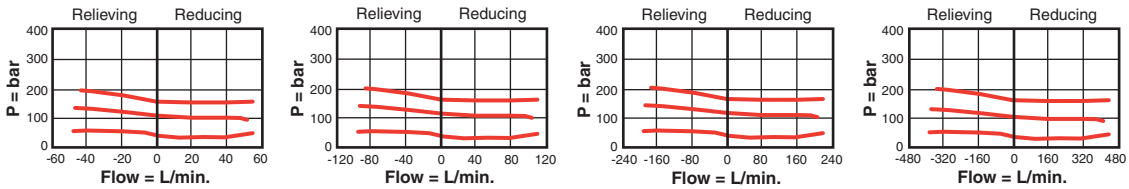
The -8 control option allows a pilot control valve to be incorporated directly into the end of the modulating element via the T-8A cavity. These pilot control cartridges are sold separately and include electro-proportional, solenoid, air pilot, and hydraulic pilot operation. See Pilot Control Cartridges on page 141.

Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions*			*Installation Torque (Nm)*
			a	*b*	*c*	
40 L/min.	**PPDB – 8WN**	T - 11A	35,1	22,2	30,2	45 - 50
80 L/min.	**PPFB – 8WN**	T - 2A	35,1	28,6	35,1	60 - 70
160 L/min.	**PPHB – 8WN**	T - 17A	46,0	31,8	46,0	200 - 215
320 L/min.	**PPJB – 8WN**	T - 19A	63,5	41,3	58,7	465 - 500

Performance Curves

PPDB-8 **PPFB-8** **PPHB-8** **PPJB-8**

Regulated Pressure with T-8A Pilot Stage Installed



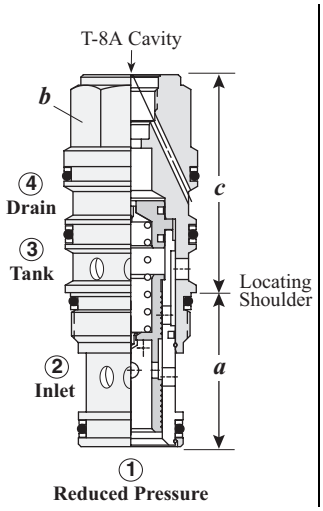
- Maximum operating pressure = 350 bar.
- Control pilot flow = PPDB-8: 0,11 to 0,16 L/min.; PPFB-8: 0,16 to 0,25 L/min.; PPHB-8, PPJB-8: 0,25 to 0,33 L/min.
- Maximum pressure at port 3 should be limited to 210 bar.
- Pressure at port 3 is directly additive to the valve setting at a 1:1 ratio and should not exceed 210 bar.
- With the -8 control option, the main stage valve should first be installed to the correct torque value. The T-8A pilot control valve should then be installed into the main stage valve to its required torque value.

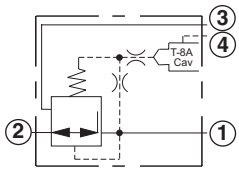
OPTION ORDERING INFORMATION

PP ✱ B – 8 ✱ ✱

Nominal Capacity	*Control*	*Minimum Control Pressure*	*Seal Material*
D 40 L/min.	**8** T-8A Cavity in hex body for pilot operation	**D** 1,7 bar Max. Pressure Differential 140 bar	**N** Buna-N
F 80 L/min.	Pilot valve to be ordered separately	**W** 7 bar Max. Inlet Pressure 350 bar	**V** Viton
H 160 L/min.			
J 320 L/min.			

PILOT OPERATED, MAIN STAGE WITH INTEGRAL T-8A CONTROL CAVITY, DRAIN TO PORT 4, EXTERNALLY DRAINED





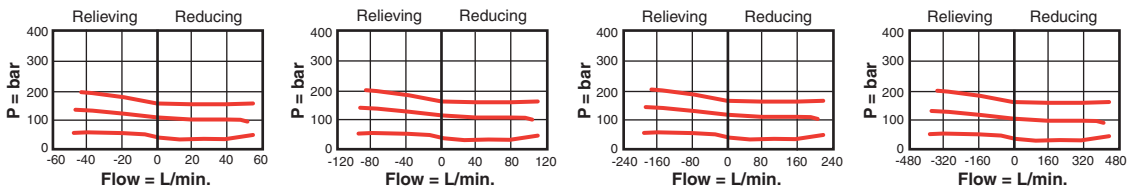
The -8 control option allows a pilot control valve to be incorporated directly into the end of the modulating element via the T-8A cavity. These pilot control cartridges are sold separately and include electro-proportional, solenoid, air pilot, and hydraulic pilot operation. See Pilot Control Cartridges on page 141.

Capacity	*Typical Cartridge Model Code*	*Cavity*	*Cartridge Dimensions*			*Installation Torque (Nm)*
			a	*b*	*c*	
40 L/min.	**PVDA – 8WN**	T - 21A	35,1	22,2	45,2	45 - 50
80 L/min.	**PVFA – 8WN**	T - 22A	35,1	28,6	50,8	60 - 70
160 L/min.	**PVHA – 8WN**	T - 23A	46,0	31,8	65,8	200 - 215
320 L/min.	**PVJA – 8WN**	T - 24A	63,5	41,3	80,3	465 - 500

Performance Curves

PVDA-8 **PVFA-8** **PVHA-8** **PVJA-8**

Regulated Pressure with T-8A Pilot Stage Installed



- Maximum operating pressure = 350 bar.
- Control pilot flow = PVDA-8: 0,11 to 0,16 L/min.; PVFA-8: 0,16 to 0,25 L/min.; PVHA-8, PVJA-8: 0,25 to 0,33 L/min.
- Maximum pressure at port 3 should be limited to 210 bar.
- Pilot operated valves exhibit very low dead band transition between reducing and relieving modes.
- Pressure on the drain (port 4) is directly additive to the valve setting at a 1:1 ratio and should not exceed 350 bar.
- With the -8 control option, the main stage valve should first be installed to the correct torque value. The T-8A pilot control valve should then be installed into the main stage valve to its required torque value.

OPTION ORDERING INFORMATION

PV ✱ A – 8 ✱ ✱

Nominal Capacity	*Control*	*Minimum Control Pressure*	*Seal Material*
D 40 L/min.	**8** T-8A Cavity in hex body for pilot operation	**D** 1,7 bar Max. Pressure Differential 140 bar	**N** Buna-N
F 80 L/min.	Pilot valve to be ordered separately	**W** 7 bar Max. Inlet Pressure 350 bar	**V** Viton
H 160 L/min.			
J 320 L/min.			