

# Directional, Shuttle Cartridges

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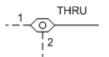
## Cavity Information

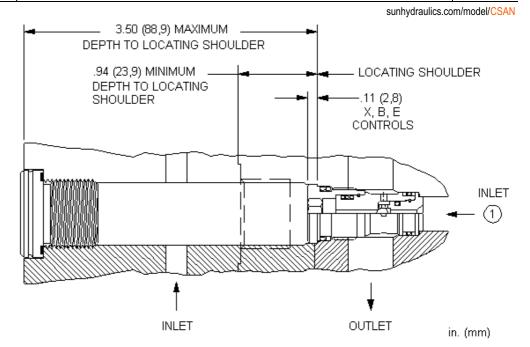
Series	Ports	Cavities
Series Z Cartridges	3-Port	T-382A
3/8-24 UNF Cartridge Thread		
5 mm Valve Hex Size		
11 - 14 Nm Valve Installation Torque		
Series P Cartridges	2-Port	T-8A
M16 Cartridge Thread	2-Port (Deep)	T-8DP
22.2 mm Valve Hex Size	3-Port	T-9A
27 - 33 Nm Valve Installation Torque		
Sorios A Cortridgos	2-Port	T-162A
Series 0 Cartridges	2-Port (Deep)	T-162DP
M16 Cartridge Thread	3-Port	T-150A
19,1 mm Valve Hex Size	3-Port	T-163A
25,4 mm Valve Hex Size 27 - 33 Nm Valve Installation Torque	4-Port	T-30A
Soulog 1 Contridence	2-Port	T-10A
Series 1 Cartridges	2-Port	T-13A
M20 Cartridge Thread	3-Port	T-11A
22,2 mm Valve Hex Size	4-Port	T-21A
41 - 47 Nm Valve Installation Torque	4-Port	T-31A
	6-Port	T-61A
Series 2 Cartridges	2-Port	T-3A
1"-14 UNS Cartridge Thread	2-Port	T-5A
28,6 mm Valve Hex Size	3-Port	T-2A
61 - 68 Nm Valve Installation Torque	4-Port	T-22A
•	4-Port	T-32A
	4-Port (Dual path) 6-Port	T-52AD T-52A
	6-Port	T-62A
Sorios 3 Cartridgos	2-Port	T-16A
Series 3 Cartridges	3-Port	T-17A
M36 Cartridge Thread	4-Port	T-23A
31,8 mm Valve Hex Size 203 - 217 Nm Valve Installation Torque	4-Port	T-33A
217 MIII Valve IIIstaliation Torque	4-Port (Dual path)	T-53AD
	6-Port	T-53A
	6-Port	T-63A
Series 4 Cartridges	2-Port	T-18A
M48 Cartridge Thread	2-Port (Undercut)	T-18AU
41,3 mm Valve Hex Size	3-Port	T-19A
474 - 508 Nm Valve Installation Torque	3-Port (Undercut)	T-19AU
·	4-Port 4-Port (Undercut)	T-24A T-24AU
	4-Port (Ondercut)	T-34A
	4-Port (Dual path)	T-54AD
	6-Port	T-54A
	6-Port	T-64A

Insert style, single ball shuttle valve with signal at port 2

CAPACITY: 4,7 L/min. / CAVITY: T-162DP







The single ball shuttle connects the higher of two work ports to the signal or common port. The signal is sensed at port 2.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Valve Internal Hex Size 8 mm	
Seal kit - Cartridge	Buna: 990162007
Seal kit - Cartridge	Polyurethane: 990162002
Seal kit - Cartridge	Viton: 990162006

#### **CONFIGURATION OPTIONS**

Model Code Example: CSANXXN

CONTROL	(X) ADJUSTMENT RANGE	(X) SEAL MATERIAL	(N)
X Not Adjustable	X -	N Buna-N	
	·	<b>V</b> Viton	

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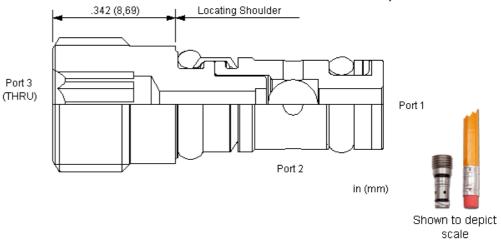


## Insert style, single ball shuttle valve with signal at port 2 SERIES Z / CAPACITY: 4 L/min. / CAVITY: T-382A



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The single ball shuttle connects the higher of two work ports to the signal or common port. The signal is sensed at port 2.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure 350 bar	
Maximum Valve Leakage at 110 SUS (24 cSt) 0,3 cc/min.	
Valve Internal Hex Size	4 mm
Seal kit - Cartridge	Buna: 990382007
Seal kit - Cartridge	Viton: 990382006

#### **CONFIGURATION OPTIONS**

Model Code Example: CSZNXXN

CONTROL	(X) ADJUSTMENT RANGE	(X) SEAL MATERIAL	(N)
X Not Adjustable	Х -	N Buna-N	
		V Viton	

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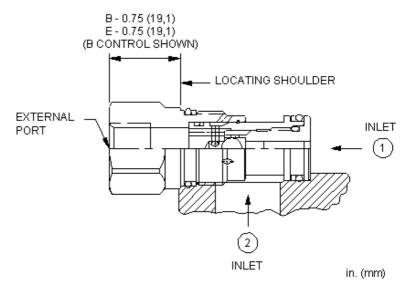
Single ball shuttle valve with signal external

SERIES 1 / CAPACITY: 10 L/min. / CAVITY: T-13A



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The single ball shuttle connects the higher of two work ports to the signal or common port. The signal is sensed at an external port located in the hex-end of the cartridge.

#### **TECHNICAL DATA**

(E) ADJUSTMENT RANGE

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

(N) MATERIAL/COATING

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge Buna: 990010007	
Seal kit - Cartridge	Polyurethane: 990010002
Seal kit - Cartridge	Viton: 990010006

#### **CONFIGURATION OPTIONS**

CONTROL

Model Code Example: CSAAEXN

(X) SEAL MATERIAL

	(-) 1120001111211102	<u> </u>	(1)	
E External 4-SAE Port	X -	N Buna-N	Standard Material/Coating	
B External 1/4 BSPP Port		<b>V</b> Viton	/AP Stainless Steel, Passivated	
			/LH Mild Steel. Zinc-Nickel	

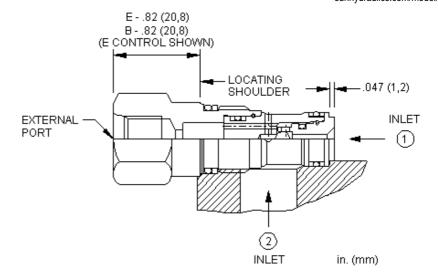
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The single ball shuttle connects the higher of two work ports to the signal or common port. The signal is sensed at an external port located in the hex-end of the cartridge.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge Buna: 990162007	
Seal kit - Cartridge	Polyurethane: 990162002
Seal kit - Cartridge	Viton: 990162006

#### **CONFIGURATION OPTIONS**

Model Code Example: CSAWBXN

CONTROL (B)	ADJUSTMENT RANGE (X)	SEAL MATERIAL (N)	MATERIAL/COATING
B External 1/4 BSPP Port	X -	N Buna-N	Standard Material/Coating
E External 4-SAE Port		<b>V</b> Viton	/AP Stainless Steel, Passivated

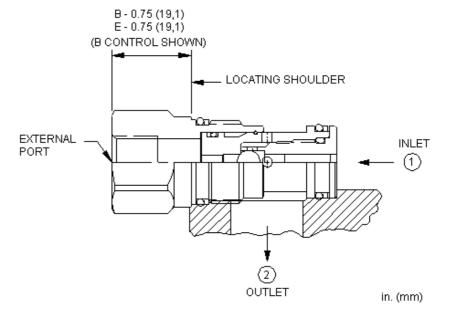
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SERIES 1 / CAPACITY: 10 L/min. / CAVITY: T-13A



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The single ball shuttle connects the higher of two work ports to the signal or common port. It features an external load port located in the hex-end of the cartridge and the signal is sensed at port 2.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge	Buna: 990010007
Seal kit - Cartridge	Polyurethane: 990010002
Seal kit - Cartridge	Viton: 990010006

#### **CONFIGURATION OPTIONS**

**Model Code Example: CSACBXN** 

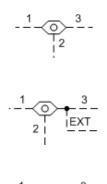
CONTROL	(B)	ADJUSTMENT RANGE	(X)	SEAL MATERIAL (N)	MATERIAL/COATING
B External 1/4 BSPP Port		X -		N Buna-N	Standard Material/Coating
E External 4-SAE Port				<b>V</b> Viton	/AP Stainless Steel, Passivated

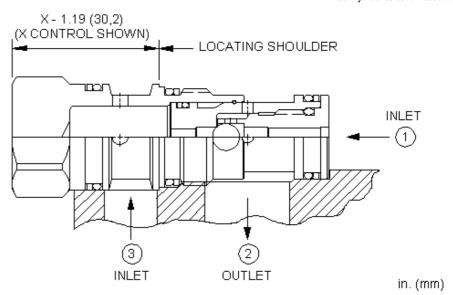
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SERIES 1 / CAPACITY: 10 L/min. / CAVITY: T-11A



sunhydraulics.com/model/CSAD





The single ball shuttle connects the higher of two work ports to the signal or common port. The signal is sensed at port 2.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge	Buna: 990011007
Seal kit - Cartridge	EPDM: 990011014
Seal kit - Cartridge	Polyurethane: 990011002
Seal kit - Cartridge	Viton: 990011006

#### **CONFIGURATION OPTIONS**

#### Model Code Example: CSADXXN

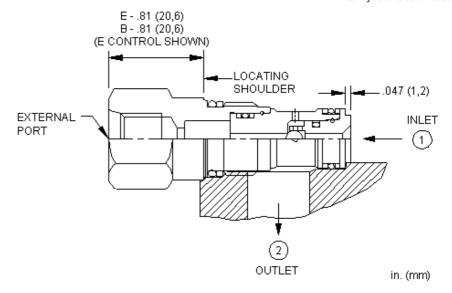
CONTROL	X) ADJUSTMENT RANGE	(X) SEAL MATERIAL (N)	MATERIAL/COATING
X Not Adjustable	X -	N Buna-N	Standard Material/Coating
A Auxiliary External -4 SAE Port		E EPDM	/AP Stainless Steel, Passivated
B Auxiliary External 1/4 BSPP Port		<b>V</b> Viton	/LH Mild Steel, Zinc-Nickel

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The single ball shuttle connects the higher of two work ports to the signal or common port. It features an external load port located in the hex-end of the cartridge and the signal is sensed at port 2.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge	Buna: 990162007
Seal kit - Cartridge	Polyurethane: 990162002
Seal kit - Cartridge	Viton: 990162006

#### **CONFIGURATION OPTIONS**

Model Code Example: CSAYBXN

CONTROL	(B)	ADJUSTMENT RANGE	(X)	SEAL MATERIAL	(N)	MATERIAL/COATING	_
B External 1/4 BSPP Port		Χ -		N Buna-N		Standard Material/Coating	
E External 4-SAE Port				<b>V</b> Viton		/AP Stainless Steel, Passivated	_

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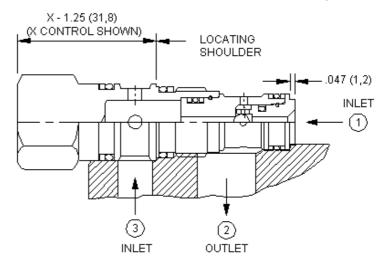




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in. (mm)

The single ball shuttle connects the higher of two work ports to the signal or common port. The signal is sensed at port 2.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge	Buna: 990163007
Seal kit - Cartridge	Polyurethane: 990163002
Seal kit - Cartridge	Viton: 990163006

#### **CONFIGURATION OPTIONS**

Model Code Example: CSAZXXN

CONTROL	(X) ADJUSTMENT RANGE	(X) SEAL MATERIAL	N) MATERIAL/COATING
X Not Adjustable	X -	N Buna-N	Standard Material/Coating

V Viton Standard Waterian/Coaung
/AP Stainless Steel, Passivated
/LH Mild Steel, Zinc-Nickel

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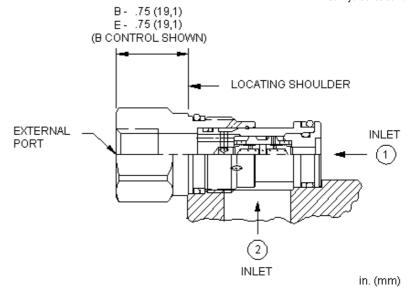


## Back-to-back check/shuttle valve with signal external SERIES 1 / CAPACITY: 10 L/min. / CAVITY: T-13A



sunhydraulics.com/model/CDAA





The back-to-back check valve combines two simple check valves into a single cartridge. It connects the higher of two work ports to the signal or common port. The signal is sensed at an external port located in the hex-end of the cartridge.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge	Buna: 990010007
Seal kit - Cartridge	Polyurethane: 990010002
Seal kit - Cartridge	Viton: 990010006

#### **CONFIGURATION OPTIONS**

Model Code Example: CDAABBN

CONTROL	(B)	CRACKING PRESSURE	(B)	SEAL MATERIAL	(N)	MATERIAL/COATING	
B External 1/4 BSPP Port		<b>B</b> 15 psi (1 bar)		N Buna-N		Standard Material/Coating	
E External 4-SAE Port			<u>.</u>	<b>V</b> Viton		/AP Stainless Steel, Passivated	

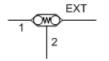
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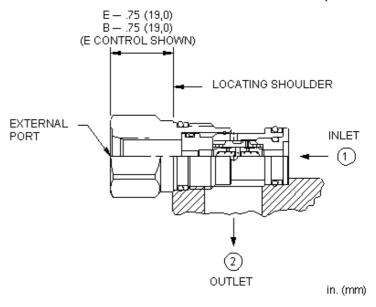


## Back-to-back check/shuttle valve with signal at port 2 SERIES 1 / CAPACITY: 10 L/min. / CAVITY: T-13A



sunhydraulics.com/model/CDAC





The back-to-back check valve combines two simple check valves into a single cartridge. It connects the higher of two work ports to the signal or common port. It features an external load port located in the hex-end of the cartridge and the signal is sensed at port 2.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge	Buna: 990010007
Seal kit - Cartridge	Polyurethane: 990010002
Seal kit - Cartridge	Viton: 990010006

#### **CONFIGURATION OPTIONS**

Model Code Example: CDACBBN

CONTROL	(B) CRACKING PRESSURE	(B) SEAL MATERIAL	(N) MATERIAL/COATING
B External 1/4 BSPP Port	<b>B</b> 15 psi (1 bar)	N Buna-N	Standard Material/Coating
E External 4-SAE Port		<b>V</b> Viton	/AP Stainless Steel, Passivated

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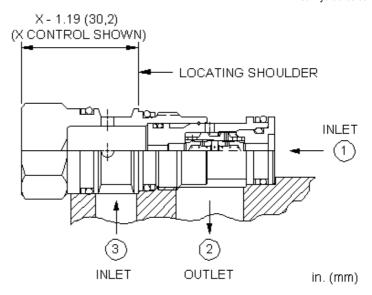


Back-to-back check/shuttle valve with signal at port 2 SERIES 1 / CAPACITY: 10 L/min. / CAVITY: T-11A



sunhydraulics.com/model/CDAD





The back-to-back check valve combines two simple check valves into a single cartridge. It connects the work port with the higher pressure to the signal or common port. The signal is sensed at port 2.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge	Buna: 990011007
Seal kit - Cartridge	Polyurethane: 990011002
Seal kit - Cartridge	Viton: 990011006

#### **CONFIGURATION OPTIONS**

**Model Code Example: CDADXBN** 

CONTROL	(X) CRACKING PRESSURE	(B) SEAL MATERIAL	(N) MATERIAL/COATING
X Not Adjustable	<b>B</b> 15 psi (1 bar)	N Buna-N	Standard Material/Coating
\ <u></u>		<b>V</b> Viton	/AP Stainless Steel, Passivated

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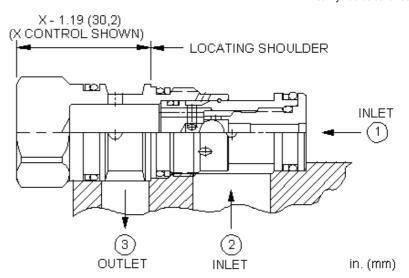


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The single ball shuttle connects the higher of two work ports to the signal or common port. The signal is sensed at port 3.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge Buna: 990011007	
Seal kit - Cartridge EPDM: 990011014	
Seal kit - Cartridge Polyurethane: 990011002	
Seal kit - Cartridge	Viton: 990011006

#### **CONFIGURATION OPTIONS**

#### Model Code Example: CSABXXN

CONTROL	(X) ADJUSTMENT RANGE	(X) SEAL MATERIAL	(N) MATERIAL/COATING
X Not Adjustable	Χ -	N Buna-N	Standard Material/Coating
A Auxiliary External -4 SAE Port		<b>E</b> EPDM	/AP Stainless Steel, Passivated
B Auxiliary External 1/4 BSPP Port		<b>V</b> Viton	/LH Mild Steel, Zinc-Nickel

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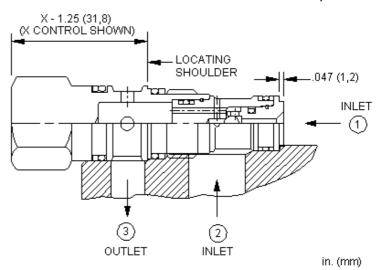


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The single ball shuttle connects the higher of two work ports to the signal or common port. The signal is sensed at port 3.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge	Buna: 990163007
Seal kit - Cartridge	Polyurethane: 990163002
Seal kit - Cartridge	Viton: 990163006

#### **CONFIGURATION OPTIONS**

Model Code Example: CSAXXXN

CONTROL (X) ADJUSTMENT RANGE (X) SEAL MATERIAL (N) MATERIAL/COATING

X Not Adjustable X - N Buna-N Standard Material/Coating
V Viton /AP Stainless Steel, Passivated /LH Mild Steel, Zinc-Nickel

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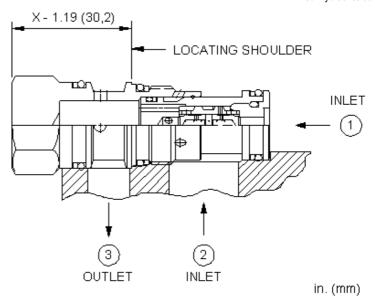


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The back-to-back check valve combines two simple check valves into a single cartridge. It connects the work port with the higher pressure to the signal or common port. The signal is sensed at port 3.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	0,3 cc/min.
Seal kit - Cartridge	Buna: 990011007
Seal kit - Cartridge	Polyurethane: 990011002
Seal kit - Cartridge	Viton: 990011006

#### **CONFIGURATION OPTIONS**

#### Model Code Example: CDABXBN

CONTROL (X) CRACKING PRESSURE (B) SEAL MATERIAL (N) MATERIAL/COATING

X Not Adjustable **B** 15 psi (1 bar) N Buna-N Standard Material/Coating

A Auxiliary External -4 SAE Port V Viton /AP Stainless Steel, Passivated B Auxiliary External 1/4 BSPP Port /LH Mild Steel, Zinc-Nickel

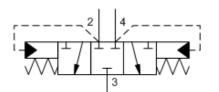
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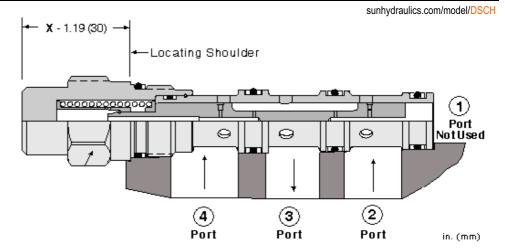


#### Low side, 3-position, hot oil shuttle valve

#### SERIES 1 / CAPACITY: 40 L/min. / CAVITY: T-31A







Low-side (hot oil) shuttle cartridges allow hot oil to be diverted from the low pressure side of a closed loop system. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure the opposite work port is connected to the common port (port 3).

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Pilot Flow	0,38 L/min.
Seal kit - Cartridge	Buna: 990031007
Seal kit - Cartridge	Polyurethane: 990031002
Seal kit - Cartridge	Viton: 990031006

#### **CONFIGURATION OPTIONS**

**Model Code Example: DSCHXHN** 

CONTROL	(X) SHIFTING PRESSURE	(H) SEAL MATERIAL	(N)
X Not Adjustable	<b>H</b> 200 psi (14 bar)	N Buna-N	
	<b>G</b> 150 psi (10,5 bar)	<b>V</b> Viton	

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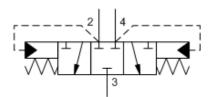


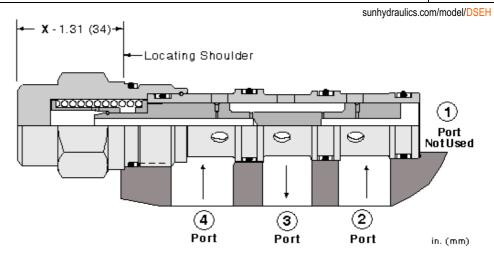


Low side, 3-position, hot oil shuttle valve

SERIES 2 / CAPACITY: 80 L/min. / CAVITY: T-32A







Low-side (hot oil) shuttle cartridges allow hot oil to be diverted from the low pressure side of a closed loop system. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure the opposite work port is connected to the common port (port 3).

#### **TECHNICAL DATA**

(X) SHIFTING PRESSURE

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

(N) MATERIAL/COATING

Maximum Operating Pressure	350 bar
Pilot Flow	0,38 L/min.
Seal kit - Cartridge	Buna: 990032007
Seal kit - Cartridge	Polyurethane: 990032002
Seal kit - Cartridge	Viton: 990032006

#### **CONFIGURATION OPTIONS**

CONTROL

#### Model Code Example: DSEHXHN

(H) SEAL MATERIAL

-			<u> </u>
X Not Adjustable	<b>H</b> 200 psi (14 bar)	<b>N</b> Buna-N	Standard Material/Coating
	<b>G</b> 150 psi (10,5 bar)	<b>V</b> Viton	/AP Stainless Steel, Passivated
			/LH Mild Steel, Zinc-Nickel

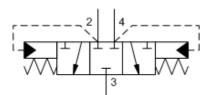
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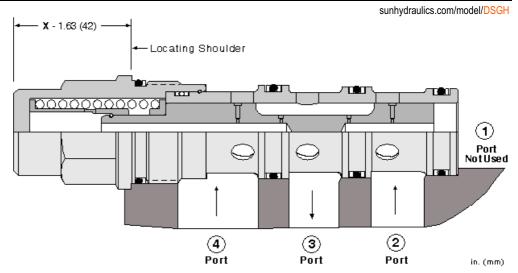


MODEL DSGH Low side, 3-position, hot oil shuttle valve

SERIES 3 / CAPACITY: 160 L/min. / CAVITY: T-33A







Low-side (hot oil) shuttle cartridges allow hot oil to be diverted from the low pressure side of a closed loop system. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure the opposite work port is connected to the common port (port 3).

#### **TECHNICAL DATA**

(X) SHIFTING PRESSURE

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

(N) MATERIAL/COATING

Maximum Operating Pressure	350 bar
Pilot Flow	0,75 L/min.
Seal kit - Cartridge	Buna: 990033007
Seal kit - Cartridge	Polyurethane: 990033002
Seal kit - Cartridge	Viton: 990033006

#### **CONFIGURATION OPTIONS**

CONTROL

**Model Code Example: DSGHXHN** 

(H) SEAL MATERIAL

X Not Adjustable	H 200 psi (14 bar)	N Buna-N	Standard Material/Coating
	<b>G</b> 150 psi (10,5 bar)	<b>V</b> Viton	/LH Mild Steel, Zinc-Nickel

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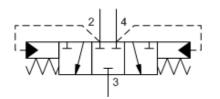


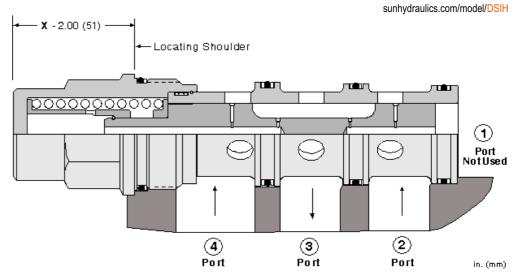


Low side, 3-position, hot oil shuttle valve

SERIES 4 / CAPACITY: 320 L/min. / CAVITY: T-34A







Low-side (hot oil) shuttle cartridges allow hot oil to be diverted from the low pressure side of a closed loop system. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure the opposite work port is connected to the common port (port 3).

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Pilot Flow	0,75 L/min.
Seal kit - Cartridge	Buna: 990034007
Seal kit - Cartridge	Polyurethane: 990034002
Seal kit - Cartridge	Viton: 990034006

#### **CONFIGURATION OPTIONS**

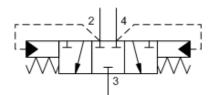
Model Code Example: DSIHXHN

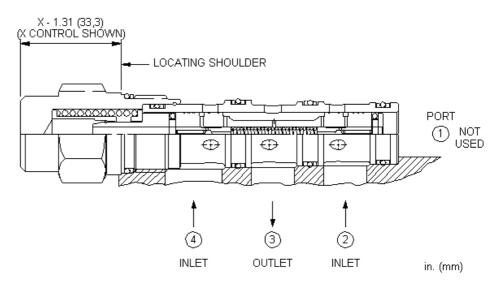
CONTROL	(X)	SHIFTING PRESSURE (H)	)	SEAL MATERIAL (N	MATERIAL/COATING
X Not Adjustable		<b>H</b> 200 psi (14 bar)		N Buna-N	Standard Material/Coating
		<b>G</b> 150 psi (10,5 bar)		<b>V</b> Viton	/LH Mild Steel, Zinc-Nickel

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sunhydraulics.com/model/DSDD





Low-side (hot oil) shuttle cartridges allow hot oil to be diverted from the low pressure side of a closed loop system. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure the opposite work port is connected to the common port (port 3). The delay shift shuttle prevents flow transients downstream of the hot oil circuit.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Pilot Flow	0,38 L/min.
Seal kit - Cartridge	Buna: 990032007
Seal kit - Cartridge	Polyurethane: 990032002
Seal kit - Cartridge	Viton: 990032006

#### **CONFIGURATION OPTIONS**

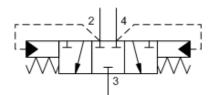
**Model Code Example: DSDDXEN** 

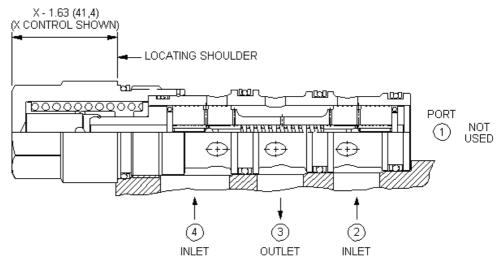
CONTROL	(X) MINIMUM CONTROL PRESSURE	(E) SEAL MATERIAL	(N) MATERIAL/COATING
X Not Adjustable	E 75 psi (5 bar)	N Buna-N	Standard Material/Coating
		<b>V</b> Viton	/AP Stainless Steel, Passivated

© 2019 Sun Hydraulics 19 of 29 Low side, 3-position, hot oil shuttle valve with delayed shift SERIES 3 / CAPACITY: 160 L/min. / CAVITY: T-33A



sunhydraulics.com/model/DSFD





in. (mm)

Low-side (hot oil) shuttle cartridges allow hot oil to be diverted from the low pressure side of a closed loop system. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure the opposite work port is connected to the common port (port 3). The delay shift shuttle prevents flow transients downstream of the hot oil circuit.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

/LH Mild Steel, Zinc-Nickel

Maximum Operating Pressure	350 bar
Pilot Flow	0,38 L/min.
Seal kit - Cartridge	Buna: 990033007
Seal kit - Cartridge	Polyurethane: 990033002
Seal kit - Cartridge	Viton: 990033006

#### **CONFIGURATION OPTIONS**

**Model Code Example: DSFDXEN** 

CONTROL	(X) SHIFTING PRESSURE	(E) SEAL MATERIAL	(N) MATERIAL/COATING
X Not Adjustable	<b>E</b> 75 psi (5 bar)	<b>N</b> Buna-N	Standard Material/Coating

V Viton

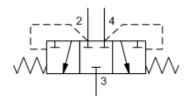
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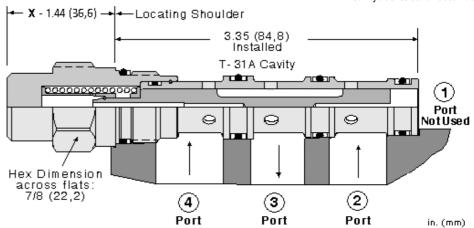


#### Direct-acting, low side, 3-position, shuttle valve SERIES 1 / CAPACITY: 60 L/min. / CAVITY: T-31A



sunhydraulics.com/model/DS





Low-side (hot oil) shuttle cartridges allow hot oil to be diverted from the low pressure side of a closed loop system. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure the opposite work port is connected to the common port (port 3).

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	15 cc/min.@70 bar
Seal kit - Cartridge	Buna: 990031007
Seal kit - Cartridge	Polyurethane: 990031002
Seal kit - Cartridge	Viton: 990031006

#### **CONFIGURATION OPTIONS**

#### Model Code Example: DSCLXGN

CONTROL ()		(G) SEAL MATERIAL	(N) MATERIAL/COATING
X Not Adjustable	<b>G</b> 150 psi (10,5 bar)	N Buna-N	Standard Material/Coating

C 30 psi (2 bar)

**E** 75 psi (5 bar)

F 100 psi (7 bar)

N Buna-N V Viton

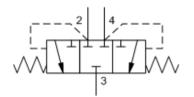
/LH Mild Steel, Zinc-Nickel

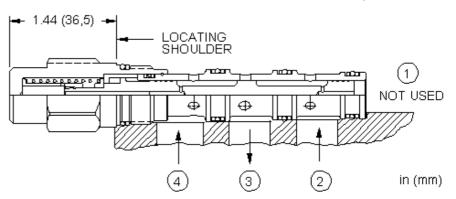
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SERIES 1 / CAPACITY: 60 L/min. / CAVITY: T-31A



sunhydraulics.com/model/DSCS





High-side shuttle cartridges are most often used in full-time regeneration circuits. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure it is connected to the common port (port 3).

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	30 cc/min.@70 bar
Seal kit - Cartridge	Buna: 990031007
Seal kit - Cartridge	Polyurethane: 990031002
Seal kit - Cartridge	Viton: 990031006

#### **CONFIGURATION OPTIONS**

#### Model Code Example: DSCSXGN

(X) SHIFTING PRESSURE (G) SEAL MATERIAL CONTROL (N)

X Not Adjustable

**G** 150 psi (10,5 bar) C 30 psi (2 bar)

E 75 psi (5 bar)

F 100 psi (7 bar)

N Buna-N

V Viton

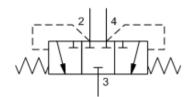
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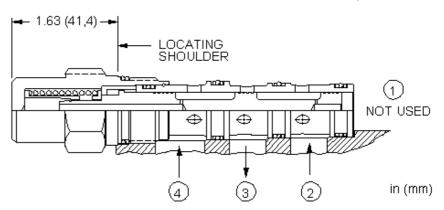


SERIES 2 / CAPACITY: 120 L/min. / CAVITY: T-32A



sunhydraulics.com/model/DSI





High-side shuttle cartridges are most often used in full-time regeneration circuits. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure it is connected to the common port (port 3).

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	50 cc/min.@70 bar
Seal kit - Cartridge	Buna: 990032007
Seal kit - Cartridge	Polyurethane: 990032002
Seal kit - Cartridge	Viton: 990032006

#### **CONFIGURATION OPTIONS**

X Not Adjustable

Model Code Example: DSESXGN

CONTROL (X) SHIFTING PRESSURE (G) SEAL MATERIAL (N)

> **G** 150 psi (10,5 bar) C 30 psi (2 bar)

**E** 75 psi (5 bar)

F 100 psi (7 bar)

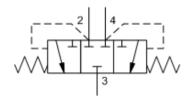
N Buna-N **V** Viton

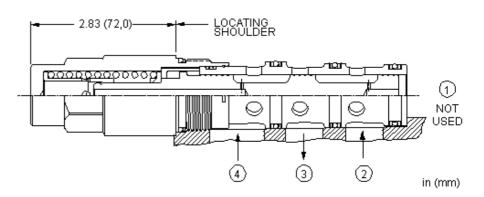
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SERIES 3 / CAPACITY: 240 L/min. / CAVITY: T-33A



sunhydraulics.com/model/DSGS





High-side shuttle cartridges are most often used in full-time regeneration circuits. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure it is connected to the common port (port 3).

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	65 cc/min.@70 bar
Seal kit - Cartridge	Buna: 990033007
Seal kit - Cartridge	EPDM: 990033014
Seal kit - Cartridge	Polyurethane: 990033002
Seal kit - Cartridge	Viton: 990033006

#### **CONFIGURATION OPTIONS**

#### **Model Code Example: DSGSXGN**

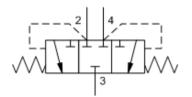
CONTROL	(X) SHIFTING PRESSURE	(G) SEAL MATERIAL	(N)
X Not Adjustable	<b>G</b> 150 psi (10,5 bar)	N Buna-N	
	<b>C</b> 30 psi (2 bar)	<b>E</b> EPDM	
	<b>E</b> 75 psi (5 bar)	<b>V</b> Viton	
	<b>F</b> 100 psi (7 bar)		

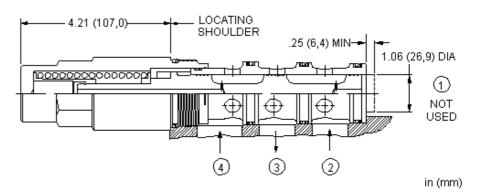
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SERIES 4 / CAPACITY: 480 L/min. / CAVITY: T-34A



sunhydraulics.com/model/DSIS





High-side shuttle cartridges are most often used in full-time regeneration circuits. When both work ports (ports 2 and 4) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port 2 or 4) sees a higher pressure it is connected to the common port (port 3).

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	80 cc/min.@70 bar
Seal kit - Cartridge	Buna: 990034007
Seal kit - Cartridge	Polyurethane: 990034002
Seal kit - Cartridge	Viton: 990034006

#### **CONFIGURATION OPTIONS**

#### Model Code Example: DSISXGN

CONTROL	(X)	SHIFTING PRESSURE	(G)	SEAL MATERIAL	(N)
X Not Adjustable		<b>G</b> 150 psi (10,5 bar)		N Buna-N	
		C 30 psi (2 bar)		<b>V</b> Viton	
		E 75 psi (5 bar)			
		<b>F</b> 100 psi (7 bar)			

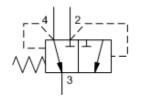
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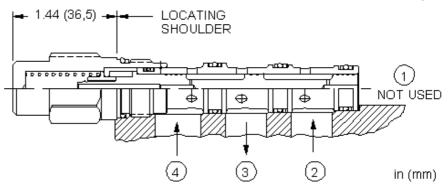


## Spring offset, 2-position, high side shuttle valve SERIES 1 / CAPACITY: 60 L/min. / CAVITY: T-31A



snhy.com/DSCO





Spring-offset, high-side shuttle cartridges are 2-position valves that have a normal (offset) position that connects the common port (port 3) to work port 4, with work port 2 blocked. When the pressure at port 2 rises above the pressure at port 4, the cartridge shifts to connect the common port to port 2 with port 4 then blocked.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Maximum Valve Leakage at 110 SUS (24 cSt)	15 cc/min.@70 bar
Seal kit - Cartridge	Buna: 990031007
Seal kit - Cartridge	Polyurethane: 990031002
Seal kit - Cartridge	Viton: 990031006

#### **CONFIGURATION OPTIONS**

#### **Model Code Example: DSCOXEN**

CONTROL	(X)	MINIMUM CONTROL PRESSURE	(E)	SEAL MATERIAL	(N)	MATERIAL/COATING	
X Not Adjustable		E 75 psi (5 bar)		N Buna-N		Standard Material/Coating	
	_	C 30 psi (2 bar)		<b>V</b> Viton		/AP Stainless Steel, Passivated	
						/LH Mild Steel, Zinc-Nickel	

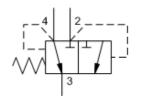
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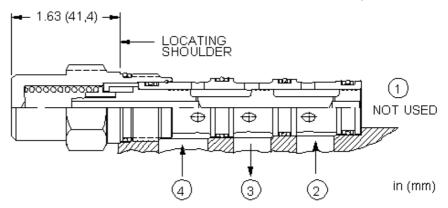


Spring offset, 2-position, high side shuttle valve SERIES 2 / CAPACITY: 120 L/min. / CAVITY: T-32A



sunhydraulics.com/model/DSEO





Spring-offset, high-side shuttle cartridges are 2-position valves that have a normal (offset) position that connects the common port (port 3) to work port 4, with work port 2 blocked. When the pressure at port 2 rises above the pressure at port 4, the cartridge shifts to connect the common port to port 2 with port 4 then blocked.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Seal kit - Cartridge	Buna: 990032007
Seal kit - Cartridge	Polyurethane: 990032002
Seal kit - Cartridge	Viton: 990032006

#### **CONFIGURATION OPTIONS**

Model Code Example: DSEOXEN

CONTROL	(X)	MINIMUM CONTROL PRESSURE	(E)	SEAL MATERIAL	(N)	MATERIAL/COATING	
X Not Adjustable		E 75 psi (5 bar)		N Buna-N		Standard Material/Coating	
		<b>C</b> 30 psi (2 bar)		<b>V</b> Viton		/AP Stainless Steel, Passivated	

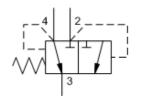
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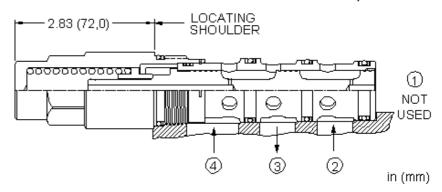


Spring offset, 2-position, high side shuttle valve SERIES 3 / CAPACITY: 240 L/min. / CAVITY: T-33A



sunhydraulics.com/model/DSGO





Spring-offset, high-side shuttle cartridges are 2-position valves that have a normal (offset) position that connects the common port (port 3) to work port 4, with work port 2 blocked. When the pressure at port 2 rises above the pressure at port 4, the cartridge shifts to connect the common port to port 2 with port 4 then blocked.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Seal kit - Cartridge	Buna: 990033007
Seal kit - Cartridge	Polyurethane: 990033002
Seal kit - Cartridge	Viton: 990033006

#### **CONFIGURATION OPTIONS**

#### **Model Code Example: DSGOXEN**

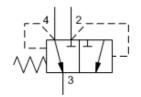
CONTROL	(X) MINIMUM CONTROL PRESS	URE (E) SEAL MATERIAL	(N) MATERIAL/COATING	
X Not Adjustable	<b>E</b> 75 psi (5 bar)	N Buna-N	Standard Material/C	oating
	<b>C</b> 30 psi (2 bar)	<b>V</b> Viton	/LH Mild Steel. Zinc-Nick	œl

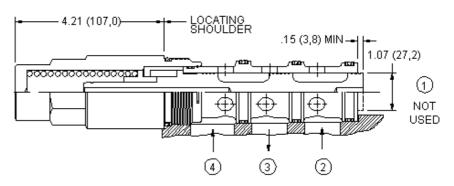
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Spring offset, 2-position, high side shuttle valve SERIES 4 / CAPACITY: 480 L/min. / CAVITY: T-34A



sunhydraulics.com/model/DSIO





Spring-offset, high-side shuttle cartridges are 2-position valves that have a normal (offset) position that connects the common port (port 3) to work port 4, with work port 2 blocked. When the pressure at port 2 rises above the pressure at port 4, the cartridge shifts to connect the common port to port 2 with port 4 then blocked.

#### **TECHNICAL DATA**

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Maximum Operating Pressure	350 bar
Seal kit - Cartridge	Buna: 990034007
Seal kit - Cartridge	Polyurethane: 990034002
Seal kit - Cartridge	Viton: 990034006

#### **CONFIGURATION OPTIONS**

#### **Model Code Example: DSIOXEN**

CONTROL	(X) MINIMUM CONTROL PRESSURE	(E)	SEAL MATERIAL	(N)
X Not Adjustable	<b>E</b> 75 psi (5 bar)		N Buna-N	
	<b>C</b> 30 psi (2 bar)		<b>V</b> Viton	

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