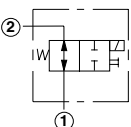
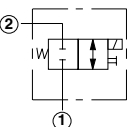
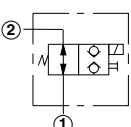
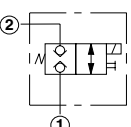
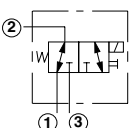
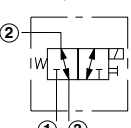
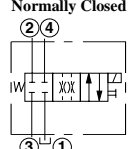
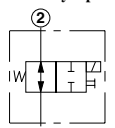
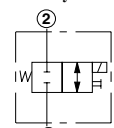
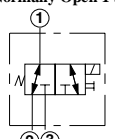
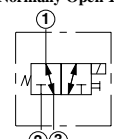
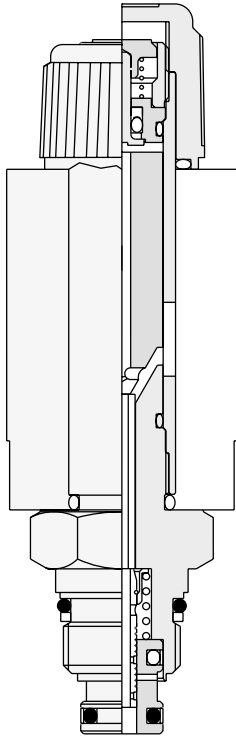


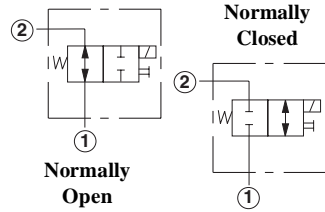
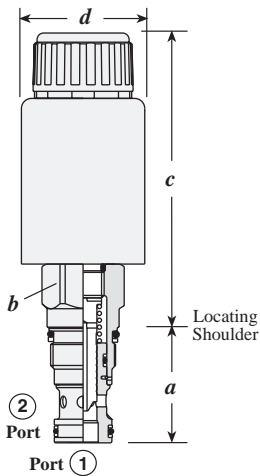
Solenoid Operated Cartridge Valves

		<i>Cartridge Type</i>	<i>Page</i>
Normally Open 	Normally Closed 	2-position, 2-way Spool Directional Valve	114
Normally Open 	Normally Closed 	Direct Acting, 2-position, 2-way Poppet Directional Valve	115
Normally Open 	Normally Closed 	2-position, 3-way Spool Directional Valve	116
Normally Closed 		2-position, 4-way Spool Directional Valve	117
Normally Open 	Normally Closed 	2-position, 2-way Spool Directional Valve – Pilot Capacity	118
Normally Open 1-3 	Normally Open 1-2 	2-position, 3-way Spool Directional Valve – Pilot Capacity	119



Solenoid Operated Cartridge Valves

2-POSITION, 2-WAY SPOOL DIRECTIONAL VALVE

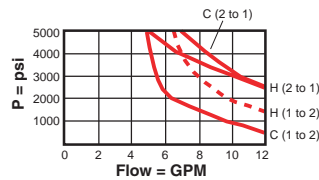


Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (lb. ft.)
			a	b	c	d	
10 GPM	DLDA - MHN	T - 13A	1.38	7/8"	3.51	1.47	30/35

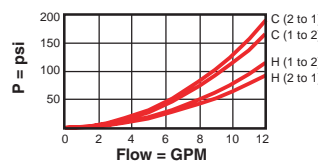
Performance Curves

DLDA-M**

Valve Performance Limits at 10% Undervoltage and Stabilized Coil Temp.



Typical Performance Pressure Differential vs. Flow



- Maximum operating pressure = 5000 psi**
- Maximum Leakage at 150 SUS = 5 in³/min. at 3000 psi
- Switching frequency = 15000 cycles/hr
- Proper installation of solenoid valves requires an extra deep socket to clear the solenoid tube. Sockets are available from Snap On tools (P/N SIML280) or Sun Hydraulics (P/N 998-100-006). See www.sunhydraulics.com for details.

**For valves produced before January 1, 2004 (date code A041), the maximum operating pressure is 5000 psi at port 2 and 3600 psi at port 1.
NOTE: While the valve will operate reliably with pressures up to 5000 psi at Port 1, solenoid tube fatigue life is reduced.

DLDA - * * * - * * *

<p>Nominal Capacity</p> <p>D 10 GPM</p>	<p>Control</p> <p>M Manual Override</p> <p>X No Manual Override</p>	<p>Spool Configuration</p> <p>H Normally Open</p> <p>C Normally Closed</p> <p>Seal</p> <p>N Buna-N</p> <p>V Viton</p>	<p>Coil Configuration*</p> <p>ISO/DIN</p> <p>212 12 VDC</p> <p>224 24 VDC</p> <p>211 115 VAC</p> <p>223 230 VAC</p> <p>AMP® Junior Timer</p> <p>612 12 VDC</p> <p>624 24 VDC</p> <p>Twin Lead</p> <p>712 12 VDC</p> <p>724 24 VDC</p> <p>Deutsch</p> <p>912 12 VDC</p> <p>924 24 VDC</p> <p>948 48 VDC</p> <p>Metri-Pack</p> <p>812 12 VDC</p> <p>824 24 VDC</p> <p>Twin Spade</p> <p>524 24 VDC</p>
---	--	---	---

Maximum Leakage (in.³/min. at 3000 psi with 150 SUS oil) = 5
Power (Watts) = 22
Operating Voltage Tolerance = ± 10%
Typical response Time (ms) = 50

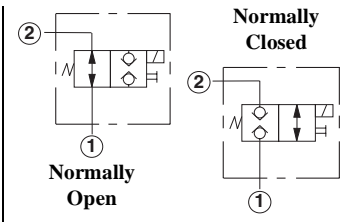
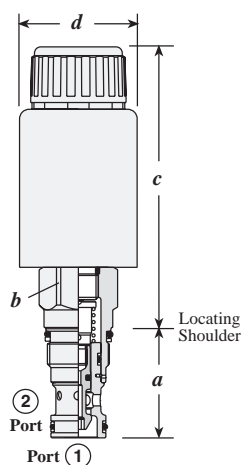
* See page 167 for Solenoid Connector Options

Visit www.sunhydraulics.com for detailed and complete technical information on our full line of products.



Solenoid Operated Cartridge Valves

DIRECT ACTING, 2-POSITION, 2-WAY POPPET DIRECTIONAL VALVE

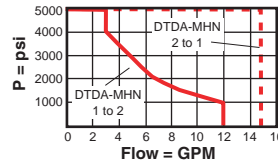
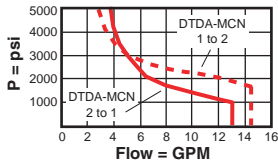


Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (lb. ft.)
			a	b	c	d	
10 GPM	DTDA - MHN	T - 13A	1.38	7/8"	3.51	1.47	30/35

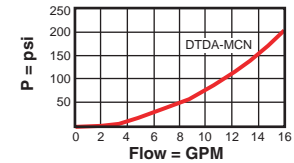
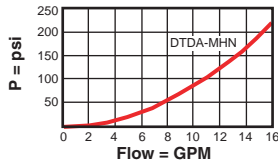
Performance Curves

DTDA-M*N

Valve Performance Limits at 10% Undervoltage and Stabilized Coil Temperature



Typical Performance Pressure Differential vs. Flow



- Maximum operating pressure = 5000 psi**
- Maximum Leakage at 150 SUS = 10 drops/min.
- Switching frequency = 15000 cycles/hr.
- Proper installation of solenoid valves requires an extra deep socket to clear the solenoid tube. Sockets are available from Snap On tools (P/N SIML280) or Sun Hydraulics (P/N 998-100-006). See www.sunhydraulics.com for details.

**For valves produced before January 1, 2004 (date code A041), the maximum operating pressure is 5000 psi at port 2 and 3600 psi at port 1. NOTE: While the valve will operate reliably with pressures up to 5000 psi at Port 1, solenoid tube fatigue life is reduced.

DTDA - * * * - * * *

<p>Nominal Capacity</p> <p>D 10 GPM</p>	<p>Control</p> <p>M Manual Override</p> <p>X No Manual Override</p>	<p>Spool Configuration</p> <p>H Normally Open</p> <p>C Normally Closed</p> <p>Seal</p> <p>N Buna-N</p> <p>V Viton</p>	<p>Coil Configuration*</p> <p>ISO/DIN</p> <p>212 12 VDC</p> <p>224 24 VDC</p> <p>211 115 VAC</p> <p>223 230 VAC</p> <p>AMP® Junior Timer</p> <p>612 12 VDC</p> <p>624 24 VDC</p> <p>Twin Lead</p> <p>712 12 VDC</p> <p>724 24 VDC</p> <p>Deutsch</p> <p>912 12 VDC</p> <p>924 24 VDC</p> <p>948 48 VDC</p> <p>Metri-Pack</p> <p>812 12 VDC</p> <p>824 24 VDC</p> <p>Twin Spade</p> <p>524 24 VDC</p>
---	--	--	--

Power (Watts) = 22
 Operating Voltage Tolerance = ± 10%
 Typical response Time (ms) = 50

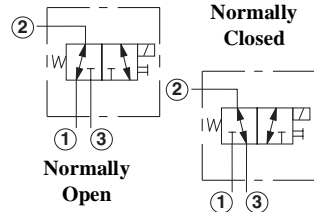
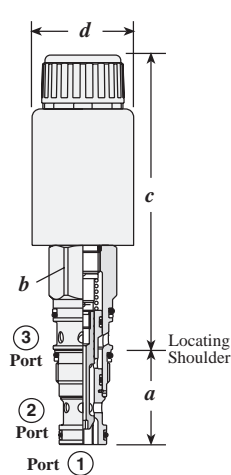
* See page 167 for Solenoid Connector Options

Visit www.sunhydraulics.com for detailed and complete technical information on our full line of products.



Solenoid Operated Cartridge Valves

2-POSITION, 3-WAY SPOOL DIRECTIONAL VALVE

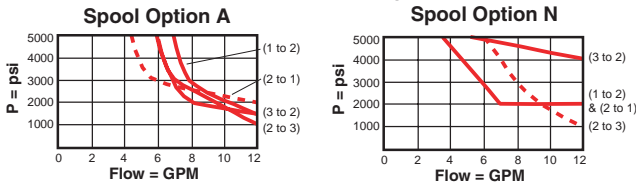


Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (lb. ft.)
			a	b	c	d	
10 GPM	DMDA - MNN	T - 11A	1.38	7/8"	4.26	1.47	30/35

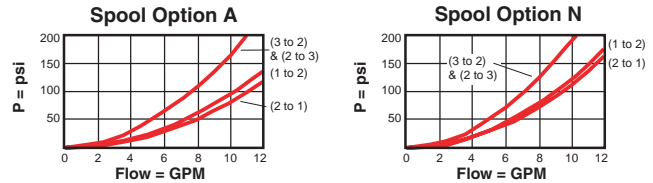
Performance Curves

DMDA-MNN

Valve Performance Limits at 10% Undervoltage and Stabilized Coil Temperature



Typical Performance Pressure Differential vs. Flow



- Maximum operating pressure = 5000 psi**
- Maximum Leakage at 150 SUS = 5 in³/min. at 3000 psi
- Switching frequency = 15000 cycles/hr.
- Proper installation of solenoid valves requires an extra deep socket to clear the solenoid tube. Sockets are available from Snap On tools (P/N SIML280) or Sun Hydraulics (P/N 998-100-006). See www.sunhydraulics.com for details.

** For valves produced before January 1, 2004 (date code A041), the maximum operating pressure is 5000 psi at ports 2 and 3 and 3600 psi at port 1.
NOTE: While the valve will operate reliably with pressures up to 5000 psi at Port 1, solenoid tube fatigue life is reduced.

D M D A - * * * - * * *

<p>Nominal Capacity</p> <p>D 10 GPM</p>	<p>Control</p> <p>M Manual Override</p> <p>X No manual Override</p>	<p>Spool Configuration</p> <p>A Normally Open Ports 2 to 1</p> <p>N Normally Open Ports 2 to 3</p> <p>Seal</p> <p>N Buna-N</p> <p>V Viton</p>	<p>Coil Configuration*</p> <p>ISO/DIN</p> <p>212 12 VDC</p> <p>224 24 VDC</p> <p>211 115 VAC</p> <p>223 230 VAC</p> <p>AMP® Junior Timer</p> <p>612 12 VDC</p> <p>624 24 VDC</p> <p>Twin Lead</p> <p>712 12 VDC</p> <p>724 24 VDC</p> <p>Deutsch</p> <p>912 12 VDC</p> <p>924 24 VDC</p> <p>948 48 VDC</p> <p>Metri-Pack</p> <p>812 12 VDC</p> <p>824 24 VDC</p> <p>Twin Spade</p> <p>524 24 VDC</p>
---	--	---	---

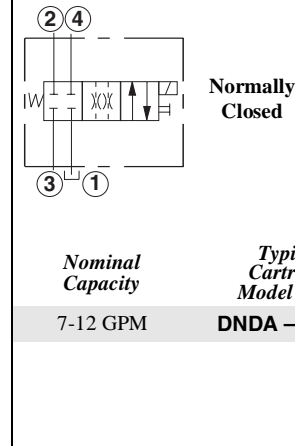
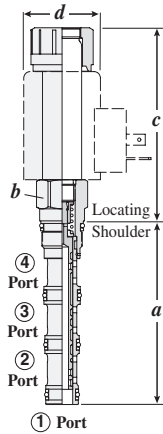
Maximum Leakage (in.³/min. at 3000 psi with 150 SUS oil) = 5
Power (Watts) = 22
Operating Voltage Tolerance = ± 10%
Typical response Time (ms) = 30-50

* See page 167 for Solenoid Connector Options

Visit www.sunhydraulics.com for detailed and complete technical information on our full line of products.

Solenoid Operated Cartridge Valves

2-POSITION, 4-WAY SPOOL DIRECTIONAL VALVE

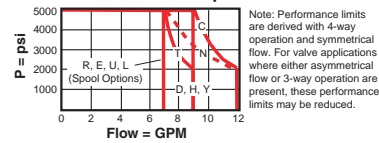


Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (lb. ft.)
			a	b	c	d	
7-12 GPM	DNDA – MCN	T - 31A	3.34	7/8"	3.52	1.47	30/35

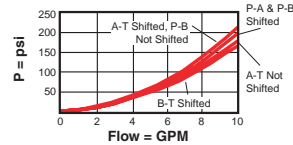
Performance Curves

DNDA-MCN

Valve Performance Limits at 10% Undervoltage and Stabilized Coil Temperature



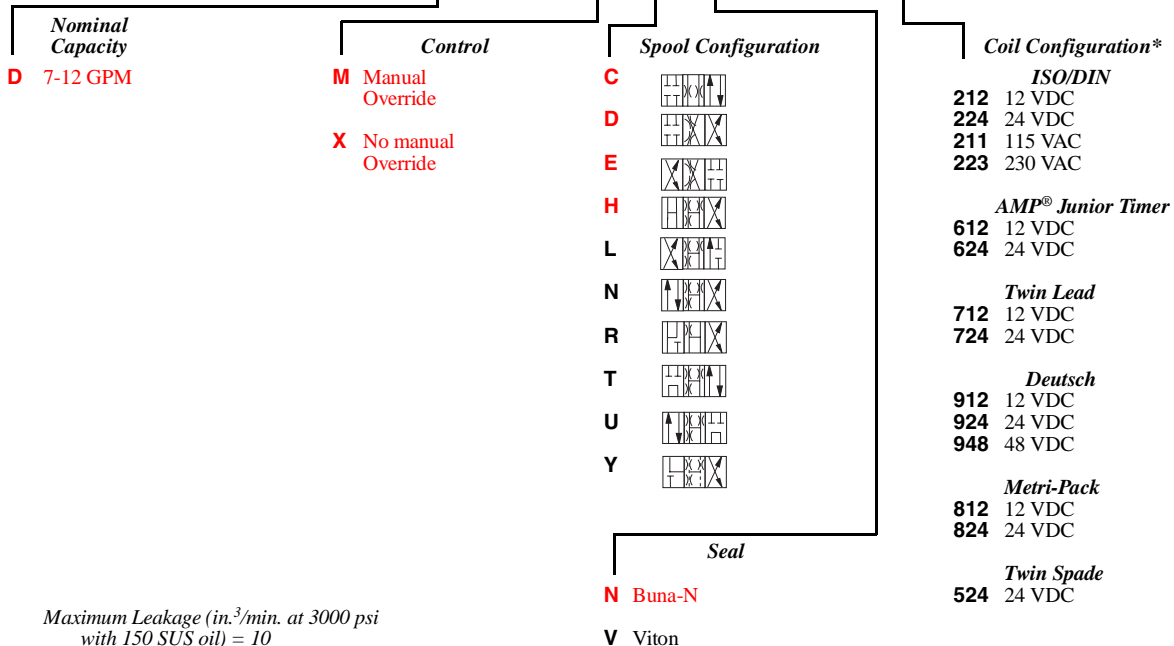
Typical Performance Pressure Differential vs. Flow



- Maximum operating pressure = 5000 psi**
- Maximum Leakage at 150 SUS = 10 in³/min. at 3000 psi
- Switching frequency = 15000 cycles/hr
- Proper installation of solenoid valves requires an extra deep socket to clear the solenoid tube. Sockets are available from Snap On tools (P/N SIML280) or Sun Hydraulics (P/N 998-100-006). See www.sunhydraulics.com for details.

** For valves produced before January 1, 2004 (date code A041), the maximum operating pressure is 5000 psi at ports 2, 3 and 4 and 3600 psi at port 1. NOTE: While the valve will operate reliably with pressures up to 5000 psi at Port 1, solenoid tube fatigue life is reduced.

DNDA - * * * - * * *



Maximum Leakage (in.³/min. at 3000 psi with 150 SUS oil) = 10
 Power (Watts) = 22
 Operating Voltage Tolerance = ± 10%
 Typical response Time (ms) = 30-50

N Buna-N
V Viton

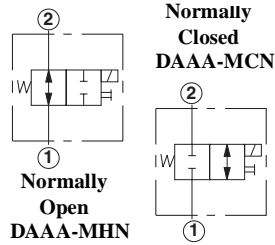
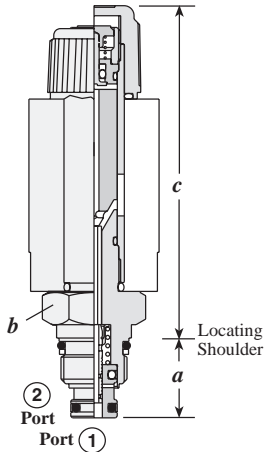
Seal

* See page 167 for Solenoid Connector Options

Visit www.sunhydraulics.com for detailed and complete technical information on our full line of products.

Solenoid Operated Cartridge Valves

2-POSITION, 2-WAY SPOOL DIRECTIONAL VALVE – PILOT CAPACITY

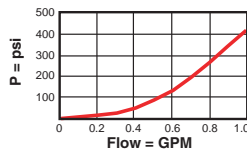


Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (lb. ft.)		
			a	b	c		d			
.25 GPM	DAAA – MCN	T - 8A	.75	7/8"	M	C	2.94	3.13	1.22	25/30
.25 GPM	DAAA – MHN	T - 8A	.75	7/8"	M	C	2.94	3.13	1.22	25/30
.25 GPM	DAAC – MCN	T - 8A	.75	7/8"	M	C	2.94	3.13	1.22	25/30
.25 GPM	DAAC – MHN	T - 8A	.75	7/8"	M	C	2.94	3.13	1.22	25/30

Performance Curves

DAA*-M*N

Pressure vs. Flow



- Maximum operating pressure = 5000 psi
- Maximum Leakage at 150 SUS = 10 drops/min.
- Switching frequency = 15000 cycles/hr.
- Cartridge can be installed directly into a cavity in some Sun pilot operated and ventable cartridges to provide electrically operated pilot control functions.
- Proper installation of solenoid valves requires an extra deep socket to clear the solenoid tube. Sockets are available from Snap On tools (P/N SIML280) or Sun Hydraulics (P/N 998-100-006). See www.sunhydraulics.com for details.

D A A * - * * * - * * *

Nominal Capacity	Control	Spool Configuration	Coil Configuration*
A .25 GPM	M Manual Override	H Normally Open	ISO/DIN
	C Concealed Override	C Normally Closed	206 6 VDC
	Version	Seal	212 12 VDC
	A Standard	N Buna-N	224 24 VDC
	C Canadian Standards Association Certified 3500 psi max.	V Viton	211 115 VAC
			223 230 VAC
			SAE J858
			506 6 VDC
			512 12 VDC
			524 24 VDC
			Twin Lead
			706 6 VDC
			712 12 VDC
			724 24 VDC

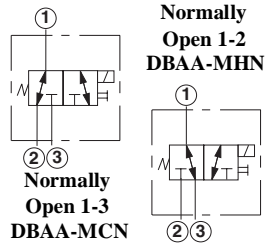
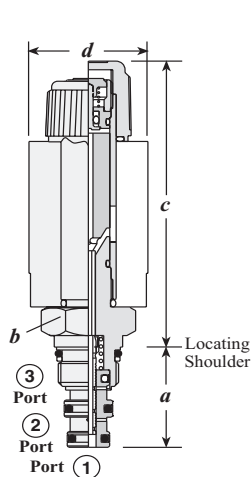
Diameter Effective Orifice (inches) = .045
 Operating Voltage Tolerance = ± 10%
 Power (Watts) = 12
 Typical response Time (ms) = 30

* See page 167 for Solenoid Connector Options

Visit www.sunhydraulics.com for detailed and complete technical information on our full line of products.

Solenoid Operated Cartridge Valves

2-POSITION, 3-WAY SPOOL DIRECTIONAL VALVE – PILOT CAPACITY

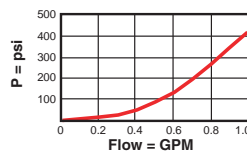


Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (lb. ft.)
			a	b	c	d	
.25 GPM	DBAA – MCN	T - 9A	1.09	7/8"	2.94	3.13	25/30
.25 GPM	DBAA – MHN	T - 9A	1.09	7/8"	2.94	3.13	25/30
.25 GPM	DBAC – MCN	T - 9A	1.09	7/8"	2.94	3.13	25/30
.25 GPM	DBAC – MHN	T - 9A	1.09	7/8"	2.94	3.13	25/30

Performance Curves

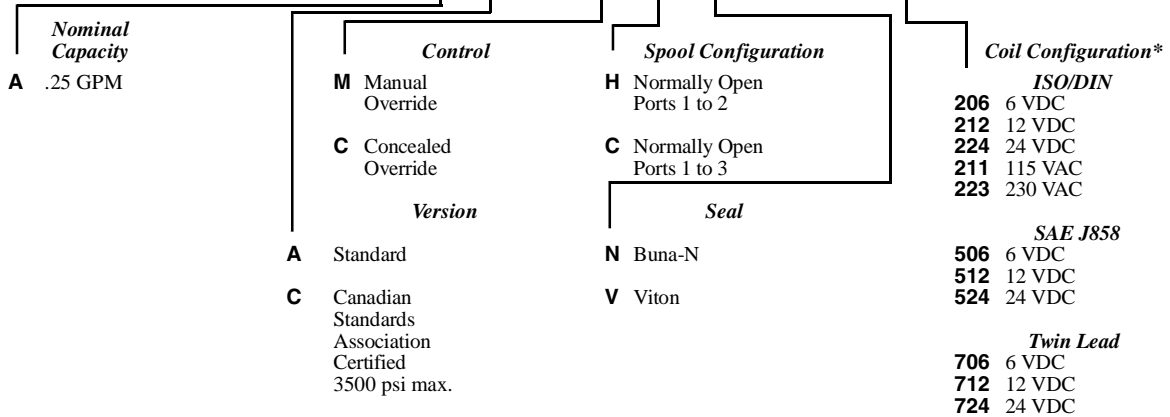
DBA*-M*N

Pressure vs. Flow



- Maximum operating pressure = 5000 psi
- Maximum Leakage at 150 SUS = 10 drops/min.
- Switching frequency = 15000 cycles/hr.
- Proper installation of solenoid valves requires an extra deep socket to clear the solenoid tube. Sockets are available from Snap On tools (P/N SIML280) or Sun Hydraulics (P/N 998-100-006). See www.sunhydraulics.com for details.

DBA* - * * * - * * *



Diameter Effective Orifice (inches) = .045
 Operating Voltage Tolerance = ± 10%
 Power (Watts) = 12
 Typical response Time (ms) = 30

* See page 167 for Solenoid Connector Options

Visit www.sunhydraulics.com for detailed and complete technical information on our full line of products.



NOTES