

General Description

Series D111VW valves are piloted by a D1VW valve. The valves can be ordered with position control.

The minimum pilot pressure must be ensured for all operating conditions of the directional valve.

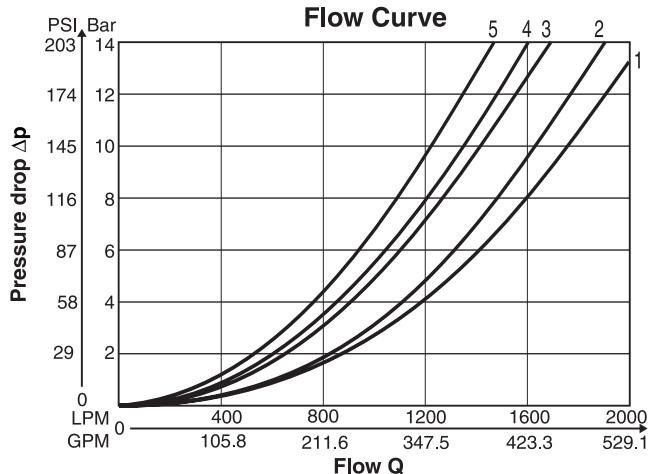
Additionally spools with a P to T connection in the de-energized position need an external pressure supply (external inlet).

Features

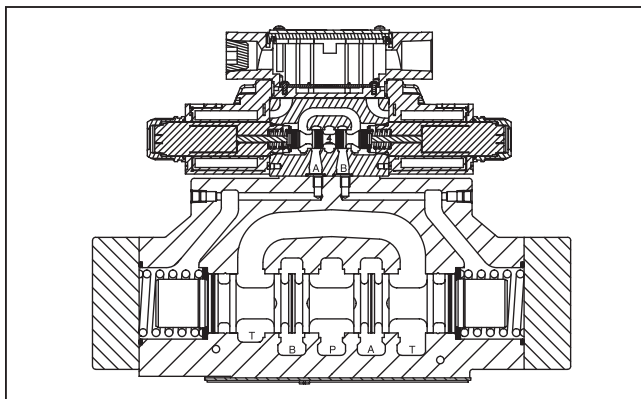
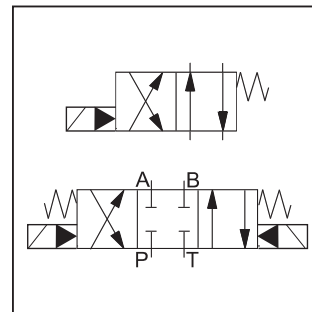
- Low pressure drop design.
- Hardened spools provide long life.
- Wide variety of voltages and electrical connection options.
- Explosion proof availability.
- No tools required for coil removal.

Performance Curves

The flow curve diagram shows the flow versus pressure drop curves for all spool types. The relevant curve number for each spool type, operating position and flow direction is given in the table below.



All characteristic curves measured with HLP46 at 50°C.

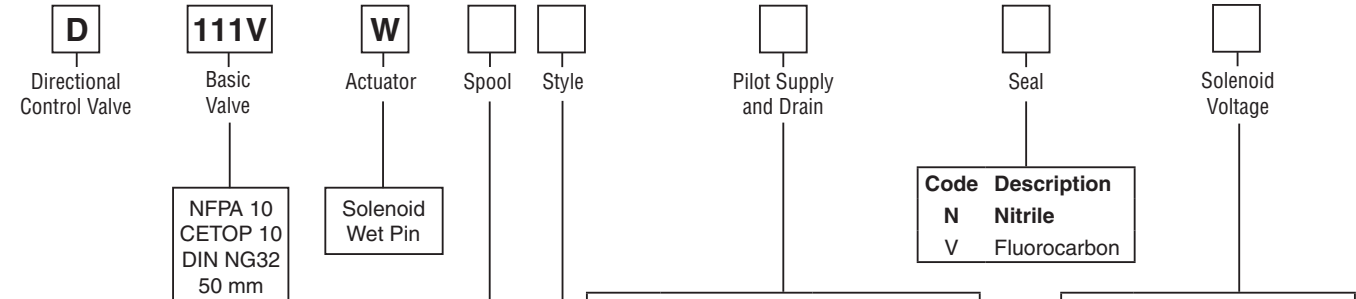


Spool Code	Curve Number				
	P-A	P-B	P-T	A-T	B-T
001	5	5	—	4	1
002	5	5	5	4	1
004	5	5	-	4	1
009	3	3	2	3	1
020	5	5	—	3	1
030	5	5	—	4	1
054	5	5	—	4	1

WARNING: This product can expose you to chemicals including Lead, Nickel (Metallic), or 1,3-Butadiene which are known to the State of California to cause cancer, and Lead or 1,3-Butadiene which is known to the State of California to cause birth defects and other reproductive harm. For more information go to www.P65Warnings.ca.gov.



A



Code	Description
N	Nitrile
V	Fluorocarbon

Code	Description
1	Internal Pilot External Drain
2	External Pilot External Drain
4*	Internal Pilot Internal Drain
5	External Pilot Internal Drain

* Not for spools 002, 009 & 030.

Code	Description
D††#	120 VDC
E**	24 VAC/60 Hz
J	24 VDC
K	12 VDC
Q†#	100/60 VAC
QD†#	100 VAC/60 Hz - 100 VAC/50 Hz
T	240/60 - 220/50 VAC
U*#	98 VDC
Y	120/60 - 110/50 VAC

High Watt only.
 † DIN only. Not available with CSA.
 †† DIN & Leadwire only. Not available with CSA.
 * DIN & Plug-In only.
 ** Leadwire, Low Watt only.

3-Position Spools	
Code	Spool Type
	a 0 b
001	
002	
004	
009**	
054	
081	
082	

3-Position Spools		
Code	All 3-Position Spools	
C		3 positions. Spring offset in position "0". Operated in position "a" or "b".
	Standard	Spool Type 009*
E		2 positions. Spring offset in position "0".
	Operated in position "a".	Operated in position "b".
F		2 positions. Operated in position "0".
	Spring offset in position "b".	Spring offset in position "a".
K		2 positions. Spring offset in position "0".
	Operated in position "b".	Operated in position "a".
M		2 positions. Operated in position "0".
	Spring offset in position "a".	Spring offset in position "b".

2-Position Spools	
Code	Spool Type
	a b
020*	
030*	

* 020 spool has open crossover.
 **009 & 030 spools have closed crossovers.

2-Position Spools	
Code	Spool Position
B*	 Spring offset in position "b". Operated in position "a".
H*	 Spring offset in position "a". Operated in position "b".

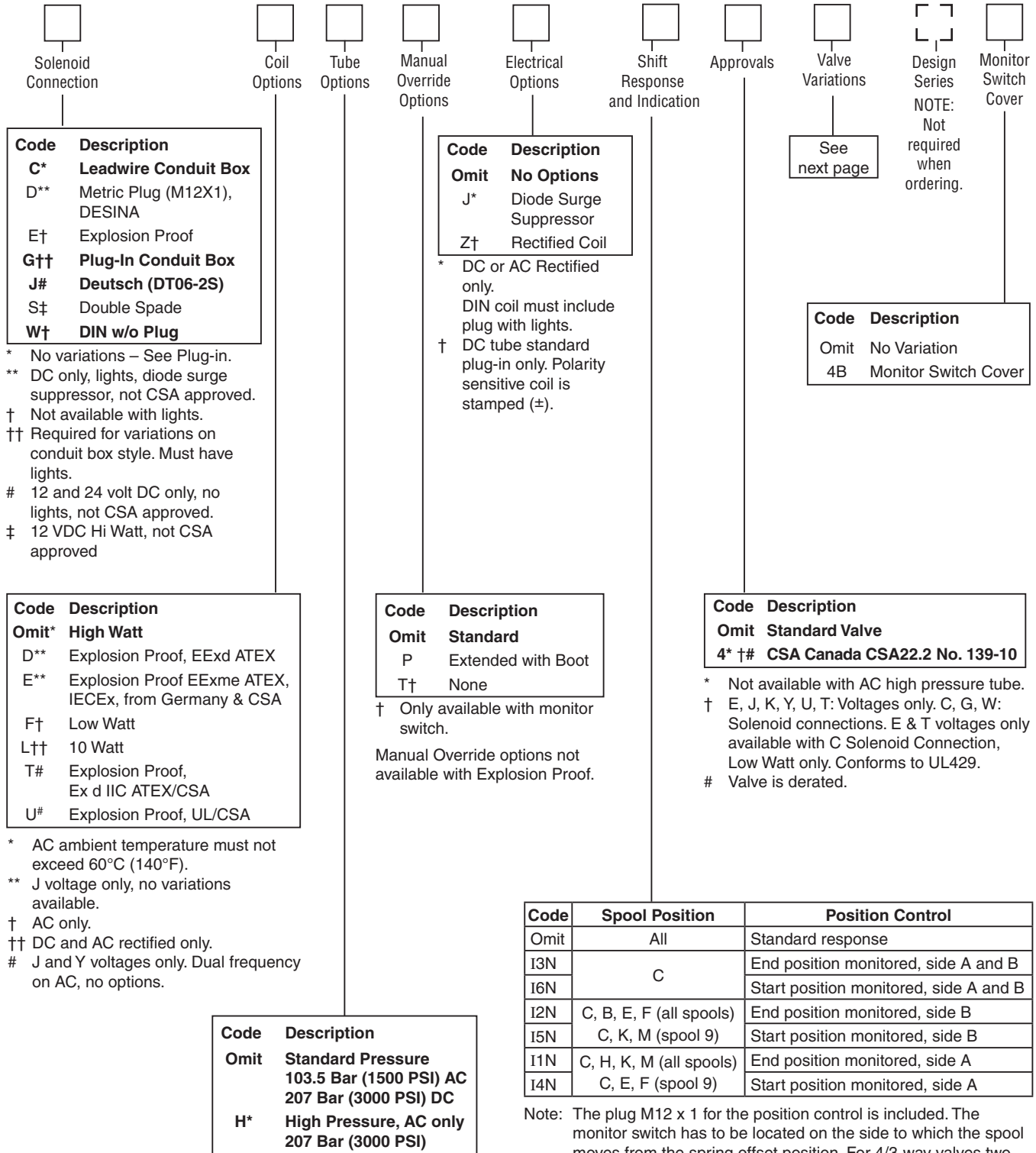
* 020 & 030 spools only.

Weight:
 Single Solenoid: 67.4 kg (148.6 lbs.)
 Double Solenoid: 68.0 kg (149.9 lbs.)

Bold: Designates Tier I products and options.

Non-Bold: Designates Tier II products and options. These products will have longer lead times.





Code	Description
C*	Leadwire Conduit Box
D**	Metric Plug (M12X1), DESINA
E†	Explosion Proof
G††	Plug-In Conduit Box
J#	Deutsch (DT06-2S)
S‡	Double Spade
W†	DIN w/o Plug

* No variations – See Plug-in.
 ** DC only, lights, diode surge suppressor, not CSA approved.
 † Not available with lights.
 †† Required for variations on conduit box style. Must have lights.
 # 12 and 24 volt DC only, no lights, not CSA approved.
 ‡ 12 VDC Hi Watt, not CSA approved

Code	Description
Omit	No Options
J*	Diode Surge Suppressor
Z†	Rectified Coil

* DC or AC Rectified only. DIN coil must include plug with lights.
 † DC tube standard plug-in only. Polarity sensitive coil is stamped (±).

See next page

Design Series
 NOTE: Not required when ordering.

Code	Description
Omit	No Variation
4B	Monitor Switch Cover

Code	Description
Omit*	High Watt
D**	Explosion Proof, EExd ATEX
E**	Explosion Proof EExme ATEX, IECEX, from Germany & CSA
F†	Low Watt
L††	10 Watt
T#	Explosion Proof, Ex d IIC ATEX/CSA
U#	Explosion Proof, UL/CSA

* AC ambient temperature must not exceed 60°C (140°F).
 ** J voltage only, no variations available.
 † AC only.
 †† DC and AC rectified only.
 # J and Y voltages only. Dual frequency on AC, no options.

Code	Description
Omit	Standard
P	Extended with Boot
T†	None

† Only available with monitor switch.
 Manual Override options not available with Explosion Proof.

Code	Description
Omit	Standard Valve
4* †#	CSA Canada CSA22.2 No. 139-10

* Not available with AC high pressure tube.
 † E, J, K, Y, U, T: Voltages only. C, G, W: Solenoid connections. E & T voltages only available with C Solenoid Connection, Low Watt only. Conforms to UL429.
 # Valve is derated.

Code	Description
Omit	Standard Pressure 103.5 Bar (1500 PSI) AC 207 Bar (3000 PSI) DC
H*	High Pressure, AC only 207 Bar (3000 PSI)

* Not available with CSA or Explosion Proof.

Code	Spool Position	Position Control
Omit	All	Standard response
I3N	C	End position monitored, side A and B
I6N		Start position monitored, side A and B
I2N	C, B, E, F (all spools)	End position monitored, side B
I5N	C, K, M (spool 9)	Start position monitored, side B
I1N	C, H, K, M (all spools)	End position monitored, side A
I4N	C, E, F (spool 9)	Start position monitored, side A

Note: The plug M12 x 1 for the position control is included. The monitor switch has to be located on the side to which the spool moves from the spring offset position. For 4/3-way valves two switches are required.
 Not CSA approved.
 Not available with 'F' or 'M' styles.
DC Coils only.

Bold: Designates Tier I products and options.

Non-Bold: Designates Tier II products and options. These products will have longer lead times.

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Valve Variations

Code	Description
5*	Signal Lights – Standard Signal Lights – Hirsch. (DIN with Plug)
7B**	Manaplug – Brad Harrison (12x1) Micro with Lights
56**	Manaplug (Mini) with Lights
1C**	Manaplug (Mini) Single Sol. 5-pin, with Lights
1D**	Manaplug (Micro) Single Sol. 5-pin, with Lights
1M**	Manaplug Opposite Normal
1R	Stroke Adjust 'A' & 'B' End with Pilot Choke Meter In
3A	Pilot Choke Meter Out
3B	Pilot Choke Meter In
3C	Pilot Pressure Reducer
3D	Stroke Adjust 'B' End
3E	Stroke Adjust 'A' End
3F	Stroke Adjust 'A' & 'B' End
3G*	Pilot Choke Meter Out with Lights
3H*	Pilot Choke Meter In with Lights
3J*	Pilot Pressure Reducer with Lights
3K	Pilot Choke Meter Out with Stroke Adjust 'A' & 'B' End
3L**	Pilot Choke Meter Out, Stroke Adjust 'A' & 'B' End with Lights and Manaplug — Brad Harrison Mini
3M	Pilot Choke Meter Out, Pilot Pressure Reducer, Stroke Adjust 'A' & 'B' End
3R	Pilot Choke Meter Out & Pilot Pressure Reducer
3S**	Lights, Mini Manaplug, Pilot Choke Meter Out
7Y**	M12x1 Manaplug (4-pin), Special Wiring, and Lights
XB990†	CE Marking

* DESINA, plug-in conduit box, and DIN with plug styles only.

** Must have plug-in style conduit box.

† Above 50 VAC or 75 VDC must have "4" CSA approved coils.



Solenoid Ratings

Insulation System	Class F
Allowable Deviation from rated voltage	-15% to +10% for DC and AC rectified coils -5% to +5% for AC Coils
Armature	Wet pin type
CSA File Number	LR60407
Environmental Capability	DC Solenoids meet NEMA 4 and IP67 when properly wired and installed. Contact HVD for AC coil applications.

Explosion Proof Solenoid Ratings*

U.L. & CSA (EU)	Class I, Div 1 & 2, Groups C & D; Class II, Div 1 & 2, Groups E, F & G As defined by the N.E.C.
ATEX (ED)	Complies with ATEX requirements for: Ex d IIB Gb; EN60079-0:2012, EN60079-1:2007
ATEX, IECEX & CSA/US (ET) (Tri-rated)	Complies with IEC 60079-0:2011, IEC 60079-1:2007, IEC 60079-31:2013; Ex d IIC Gb; Ex tb IIIC Db IP66; IECEX BAS 14.0164X ATEX: EN60079-0, EN60079-1, EN60079-31; CE 1180 Ex II 2G BASEEFA08ATEX0041X CSA 22.2 No. 60079-0:07, 60079-1:07 and UL 60079-0:05, UL 60079-1:05; CSA listed to US and Canada Safety Standards. File 08-CSA-1932102 CSA Ex d IIC, AEx d IIC for Class I Zone 1; Class I Div 1 Grp. C & D; Class II Div 1 Grp. E, F & G

* Allowable Voltage Deviation ±10%.
 Note that Explosion Proof AC coils are single frequency only.

Code		Voltage	In Rush Amps Amperage	In Rush VA	Holding Amps @ 3MM	Watts	Resistance
Voltage Code	Power Code						
D	L	120 VDC	N/A	N/A	0.09 Amps	10 W	1584.00 ohms
D	Omit	120 VDC	N/A	N/A	0.26 Amps	30 W	528.00 ohms
J	L	24 VDC	N/A	N/A	0.44 Amps	10 W	51.89 ohms
J	Omit	24 VDC	N/A	N/A	1.32 Amps	30 W	17.27 ohms
K	L	12 VDC	N/A	N/A	0.88 Amps	10 W	12.97 ohms
K	Omit	12 VDC	N/A	N/A	2.64 Amps	30 W	4.32 ohms
Q	Omit	100 VAC / 60 Hz	2.05 Amps	170 VA	0.77 Amps	30 W	19.24 ohms
QD	F	100 VAC / 60 Hz	1.35 Amps	135 VA	0.41 Amps	18 W	31.20 ohms
QD	F	100 VAC / 50 Hz	1.50 Amps	150 VA	0.57 Amps	24 W	31.20 ohms
T	Omit	240/60 VAC	0.83 Amps	199 VA	0.30 Amps	30 W	120.40 ohms
T	Omit	220/50 VAC	0.87 Amps	191 VA	0.34 Amps	30 W	120.40 ohms
T	F	240/60 VAC, Low Watt	0.70 Amps	168 VA	0.22 Amps	21 W	145.00 ohms
T	F	220/50 VAC, Low Watt	0.75 Amps	165 VA	0.26 Amps	23 W	145.00 ohms
U	L	98 VDC	N/A	N/A	0.10 Amps	10 W	960.00 ohms
U	Omit	98 VDC	N/A	N/A	0.31 Amps	30W	288.00 ohms
Y	Omit	120/60 VAC	1.7 Amps	204 VA	0.60 Amps	30 W	28.20 ohms
Y	Omit	110/50 VAC	1.7 Amps	187 VA	0.68 Amps	30 W	28.20 ohms
Y	F	120/60 VAC, Low Watt	1.40 Amps	168 VA	0.42 Amps	21 W	36.50 ohms
Y	F	110/50 VAC, Low Watt	1.50 Amps	165 VA	0.50 Amps	23 W	36.50 ohms
Z	L	250 VDC	N/A	N/A	0.04 Amps	10 W	6875.00 ohms
Z	Omit	250 VDC	N/A	N/A	0.13 Amps	30 W	1889.64 ohms
Explosion Proof Solenoids							
T		240/60 VAC	0.76 Amps	183 VA	0.29 Amps	27 W	1.34 ohms
Y		120/60 VAC	1.60 Amps	192 VA	0.58 Amps	27 W	33.50 ohms
P		110/50 VAC	1.47 Amps	162 VA	0.57 Amps	27 W	34.70 ohms
K		12 VDC	N/A	N/A	2.75 Amps	33 W	4.36 ohms
J		24 VDC	N/A	N/A	1.38 Amps	33 W	17.33 ohms
"ET" Explosion Proof Solenoids							
K		12 VDC	N/A	N/A	1.00 Amps	12 W	12.00 ohms
J		24 VDC	N/A	N/A	1.00 Amps	13 W	44.30 ohms
Y		120/60-50 VAC	N/A	N/A	0.16 Amps	17 W	667.00 ohms

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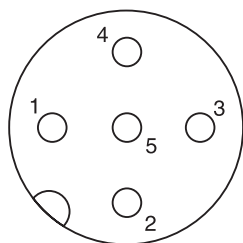
General		
Design	Directional Spool Valve	
Actuation	Solenoid	
Size	NG32	
Mounting Interface	DIN 24340 A32 / ISO 4401 / NFPA D10 / CETOP RP 121-H	
Mounting Position	Unrestricted, preferably horizontal	
Ambient Temperature	[°C]	-25...+50; (-13°F...+122°F) (without inductive position control)
	[°C]	0...+50; (+32°F...+122°F) (with inductive position control)
MTTF _D Value	[years]	75
Hydraulic		
Maximum Operating Pressure	Pilot drain internal: P, A, B, X 350 Bar (5075 PSI) T, Y 102 Bar (1500 PSI) AC only, 207 Bar (3000 PSI) DC/AC optional Pilot drain external: P, A, B, T, X 350 Bar (5075 PSI) Y 102 Bar (1500 PSI) AC only, 207 Bar (3000 PSI) DC/AC optional	
Fluid	Hydraulic oil in accordance with DIN 51524 / 51525	
Fluid Temperature	[°C]	-25 ... +70; (-13°F...+158°F)
Viscosity Permitted	[cSt]/[mm ² /s]	2.8...400 (13...1854 SSU)
Recommended	[cSt]/[mm ² /s]	30...80 (139...371 SSU)
Filtration	ISO 4406 (1999); 18/16/13 (meet NAS 1638: 7)	
Flow Maximum	2000 LPM (529.1 GPM)	
Leakage at 350 Bar (per flow path)	[ml/min]	up to 5000 (1.32 GPM) depending on spool
Minimum Pilot Supply Pressure	5 Bar (73 PSI)	
Static / Dynamic		
Step Response at 95%		Energized De-energized
DC Solenoids	Pilot Pressure	
	50 Bar [ms]	470 390
	100 Bar [ms]	320 390
	250 Bar [ms]	210 390
	350 Bar [ms]	200 390
AC Solenoids	Pilot Pressure [ms]	
	50 Bar [ms]	450 375
	100 Bar [ms]	300 375
	250 Bar [ms]	190 375
	350 Bar [ms]	180 375



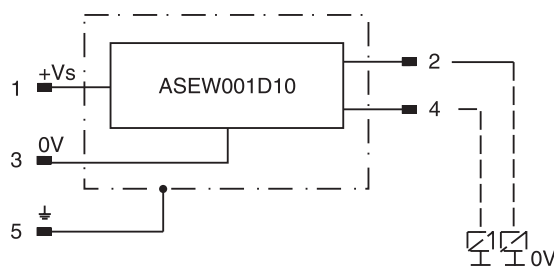
Position Control M12x1

Protection Class		IP 65 in accordance with EN 60529 (plugged and mounted)
Ambient Temperature	[°C]	0...+50; (+32°F...122°F)
Supply Voltage / Ripple	[V]	18...42 ±10%
Current Consumption without Load	[mA]	≤ 30
Max. Output Current per Channel, Ohmic	[mA]	400
Min. Output Load per Channel, Ohmic [kOhm]		100
Max. Output Drop at 0.2A	[V]	≤ 1.1
Max. Output Drop at 0.4A	[V]	≤ 1.6
EMC		EN50081-1 / EN50082-2
Max. Tolerance Ambient Field Strength	[A/m]	<1200
Min. Distance to Next AC Solenoid	[m]	>0.1
Interface		M12x1 per IEC 61076-2-101
Wiring Minimum	[mm²]	5 x 0.25 brad shield recommended
Wiring Length Maximum	[m]	50 (164 ft.) recommended

M12 Pin Assignment



- 1 + Supply 18...42V
- 2 Out B: normally closed
- 3 0V
- 4 Out A: normally open
- 5 Earth ground



Definitions

Start position monitored:

The valve is de-energized. The inductive switch gives a signal at the moment (below 15% spool stroke) when the spool leaves the spring offset position.

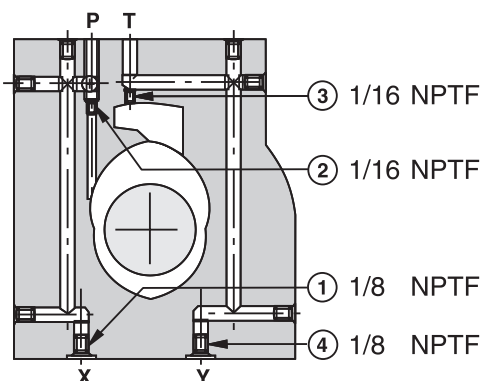
End position monitored:

The inductive switch gives a signal before the end position is reached. (above 85% spool stroke).

Delivery includes plug M12 x 1 (part no. 5004109).

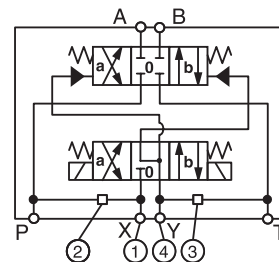
Pilot Oil Inlet (Supply) and Outlet (Drain)

A



○ open, ● closed

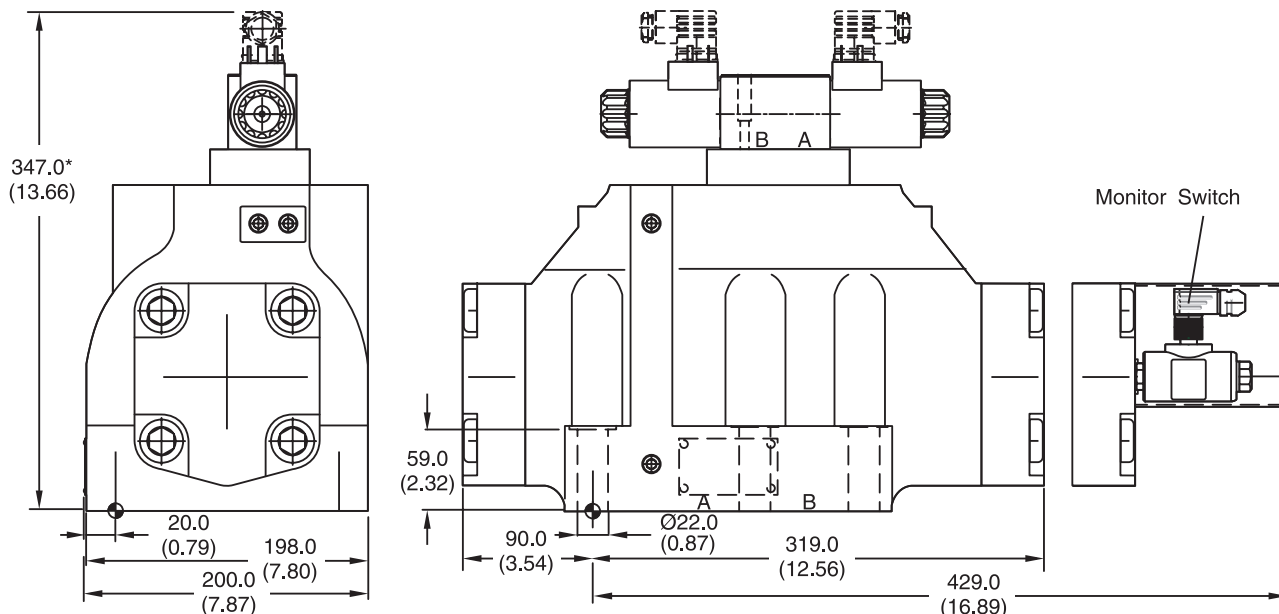
Pilot Oil		1	2	3	4
Inlet	Outlet				
internal	external	●	Orifice Ø1.5	●	○
external	external	Orifice Ø1.5	●	●	○
internal	internal	●	Orifice Ø1.5	○	●
external	internal	Orifice Ø1.5	●	○	●



All orifice sizes for standard valves

Dimensions

Inch equivalents for millimeter dimensions are shown in (**)



* Please add for each sandwich plate +40mm (1.58") (pressure reducing valve, pilot choke meter-in/-out).

Surface Finish	Kit	Kit	Kit	Seal Kit
	BK386	6x M20x90 DIN 912 12.9	517 Nm (381.3 lb.-ft.)	Nitrile: SK-D111VW-N-91 Fluorocarbon: SK-D111VW-V-91

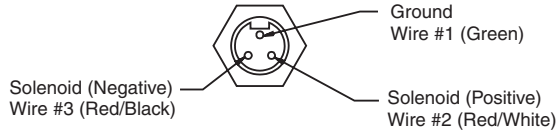
The space necessary to remove the plug per DIN 43650, design type AF is at least 15 mm (0.59 in.).

The torque for the screw M3 of the plug has to be 0.5 Nm (3.7 lb.-ft.) to 0.6 Nm (4.4 lb.-ft.).



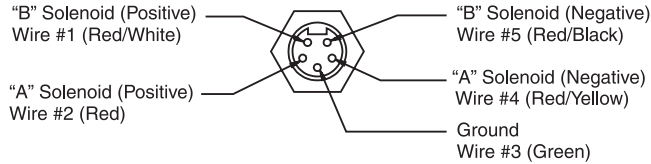
Manaplug (Options 56 & 1C)

- Interface – Brad Harrison Plug
- 3-Pin for Single Solenoid
- 5-Pin for Double Solenoid



3-Pin Manaplug (Mini) with Lights

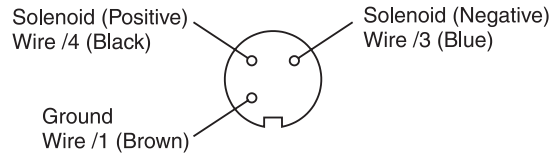
Single Solenoid Valves – Installed Opposite Side of Solenoid



5-Pin Manaplug (Mini) with Lights

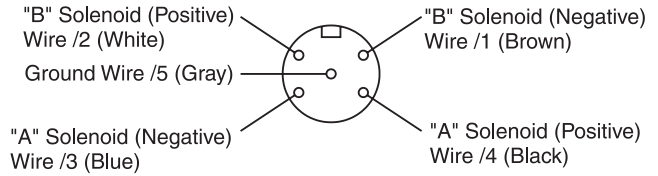
Single Solenoid Valves – Installed Opposite Side of Solenoid
Double Solenoid Valves – Installed Over "A" Solenoid
("A" and "B" Solenoids Reversed for #8 and #9 Spools)

Micro Connector Options (7B & 1D)



3-Pin Manaplug (Micro) with Lights

Single Solenoid Valves – Installed Opposite Side of Solenoid



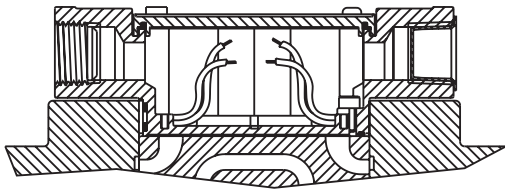
5-Pin Manaplug (Micro) with Lights

Single Solenoid Valves – Installed Opposite Side of Solenoid
Double Solenoid Valves – Installed Over "A" Solenoid
("A" and "B" Solenoids Reversed for #8 and #9 Spools)

Pins are as seen on valve (male pin connectors)

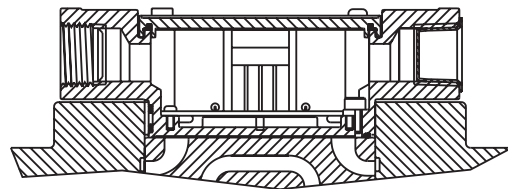
Conduit Box Option C

- No Wiring Options Available

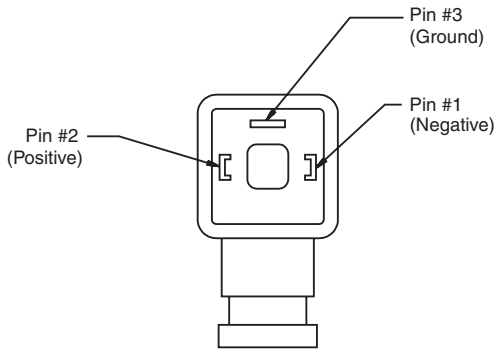


Signal Lights (Option 5) — Plug-in Only

- LED Interface
- Meets Nema 4/IP67



**Hirschmann Plug with Lights (Option P5)
ISO 4400/DIN 43650 Form "A"**

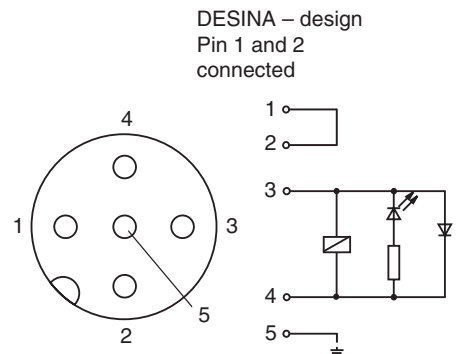


Face View of Plug

Pins are as seen on valve (male pin connectors)

**DESINA Connector (Option D)
M12 pin assignment
Standard**

- 1 = Not used
- 2 = Not used
- 3 = 0V
- 4 = Signal (24 V)
- 5 = Earth Ground



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FOR MAXIMUM VALVE RELIABILITY, ADHERE TO THE FOLLOWING INSTALLATION INFORMATION.

The following is important installation information which applies to all directional control valves described in this catalog.

Mounting Position

Detent – Horizontal
Spring Offset – Unrestricted
Spring Centered – Unrestricted

Fluid Recommendations

Premium quality hydraulic oil with a viscosity range between 32-54 cSt (150-250 SSU) At 38°C (100°F) is recommended. The absolute operating viscosity range is from 16-220 cSt (80-1000 SSU). Oil should have maximum anti-wear properties and rust and oxidation treatment.

Fluids and Seals

Valves using synthetic, fire-resistant fluids require special seals. When phosphate esters or its blends are used, FLUOROCARBON seals are required. Water-glycol, water-in-oil emulsions and petroleum oil may be used with STANDARD seals.

Filtration

For maximum valve and system component life, the system should be protected from contamination at a level not to exceed 125 particles greater than 10 microns per milliliter of fluid (SAE class 4/ISO 16/13).

Silting

Silting can cause any sliding spool valve to stick and not spring return if held under pressure for long periods of time. The valve should be cycled periodically to prevent sticking.

Special Installations

Consult your Parker representative for any application requiring the following:

- Pressure above rating.
- Fluid other than those specified.
- Oil temperature above 71.1°C (160°F).
- Flow path other than normal.

Mounting Patterns

Series	NFPA	Size
D111V*, D10P	D10	1-1/4"

Torque Specifications

The recommended torque values for the bolts which mount the valve to the manifold or subplate are as follows: 406.8 Nm (300 ft-lbs).

Tank and Drain Line Surges

If several valves are piped with a common tank or drain line, flow surges in the line may cause an unexpected spool shift. Detent style valves are most susceptible to this. Separate tank and drain lines should be piped in installations where line surges are expected.

Electrical Characteristics (Detented Spool)

Only a momentary energizing of the solenoid is necessary to shift and hold a detented spool. Minimum duration of the signal is 0.1 seconds for DC voltages. For AC voltages the response time is 0.06 seconds. Spool position will be held provided the spool centerline is in a horizontal plane, and not shock or vibration is present to displace the spool.

Electrical Failure or Loss of Pilot Pressure

Should electric power fail or loss of pilot pressure occur, spring offset and spring centered valves will shift to the spring held position. Detented valves will stay in the last position held before power failure. If main flow does not fail or stop at the same time power fails, machine actuators may continue to function in an undesirable manner or sequence.

Pilot/Drain Characteristics

Pilot Pressure: 5 to 345 Bar (73 to 5000 PSI)

External: An oil source sufficient to maintain minimum pilot pressure must be connected to the "X" port of the main body. When using the external pilot variation, a 1/16" pipe plug must be present in the main body pilot passage. (For details see Technical pages.) This plug will be furnished in valves ordered with pilot code 2 or 5.

Internal: Flow is internally ported from the pressure port of the main valve body to the "P" port of the pilot valve. The pressure developed at the "P" port of the pilot valve must be 5 Bar (73 PSI) minimum at all times.

Pilot Valve Drain: Maximum pressure 102 Bar (1500 PSI) AC standard, 207 Bar (3000 PSI) AC optional/DC standard.

External: When using an external drain, a 10 x 24 x 0.31 long set screw must be present in the main body drain passage. (For details see Technical pages.) This plug will be furnished in valves ordered with drain code 1 or 2.

Drain flow from the pilot valve is at the "Y" port of the main body and must be piped directly to tank. Maximum drain line pressure is 102 Bar (1500 PSI) AC standard, 207 Bar (3000 PSI) AC optional/DC standard. Any drain line back pressure is additive to the pilot pressure requirement.

Internal: Drain flow from the pilot valve is internally connected to the main valve tank port. Tank and drain pressure are then identical so tank line pressure should not exceed 102 Bar (1500 PSI) AC standard, 207 Bar (3000 PSI) DC standard/AC optional. Any tank line back pressure is also additive to the pilot pressure requirement. If flow surges (a cause of pressure surges) are anticipated in the tank line, an external drain variation is recommended. The "Y" port in the subplate must be plugged when using an internal drain.

Style Code	Description	No Solenoid/Operator Energized	Solenoid/Operator A Energized	Solenoid/Operator B Energized
B	Spring Offset	P→A and B→T	–	P→B and A→T
C	Spring Centered	Centered	P→A and B→T	P→B and A→T
D	Detented	Last Position Held	P→A and B→T	P→B and A→T
E	Spring Centered	Centered	–	P→B and A→T
F	Spring Offset, Shift to Center	P→A and B→T	–	Centered
H	Spring Offset	P→B and A→T	P→A and B→T	–
K	Spring Centered	Centered	P→A and B→T	–
M	Spring Offset, Shift to Center	P→B and A→T	Centered	–

Subplate Mounting



NFPA D10, CETOP 10 & NG 32

Recommended Mounting Surface

Surface must be flat within .102 mm (0.0004 inch) T.I.R and smooth within 812.8 micro-meters (32 micro-inch). Torque bolts to 406.8 Nm (300 ft-lbs).

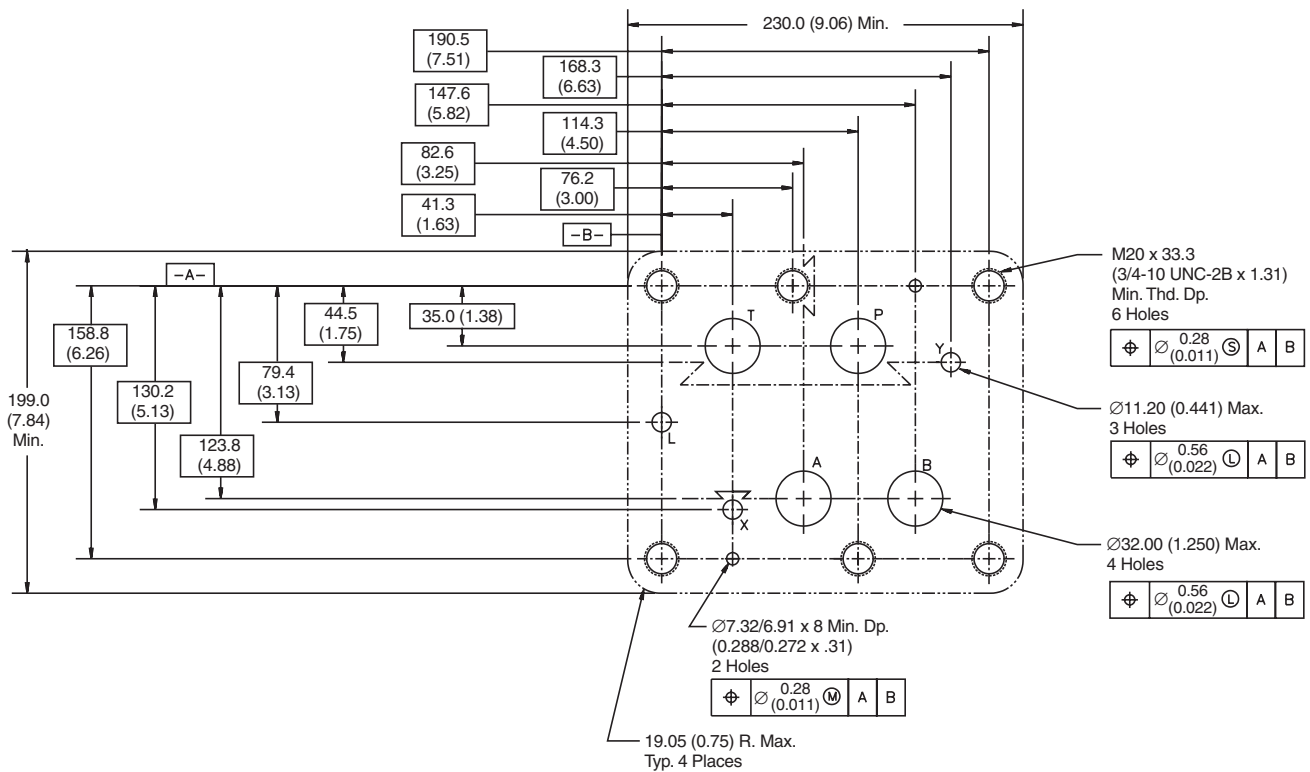
For maximum valve reliability, adhere to the following installation information.

Mounting Position

Valve Type	Mounting Position
Detent (Solenoid)	Horizontal
Spring Offset	Unrestricted
Spring Centered	Unrestricted

Mounting Pattern — NFPA D10, CETOP 10 & NG32

Inch equivalents for millimeter dimensions are shown in (**)



A

General Description

Series D111VWR and D111VWZ are regenerative and hybrid directional control valves (NG32).

The innovative integrated regenerative function in the A-line (optional) allows new energy saving circuits with differential cylinders. The hybrid version can switch between regenerative mode and standard mode at any time.

Features

- Energy saving A-regeneration optionally integrated.
- Switchable hybrid version.

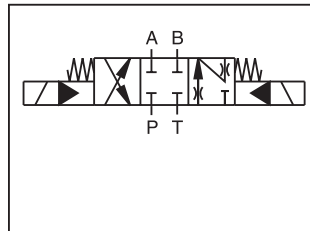
Further literature about the opportunities of energy savings and more functional details of the integrated regeneration is available on request.



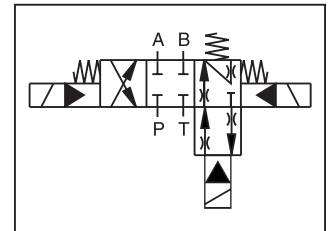
D41VWR (shown)



D41VWZ (shown)

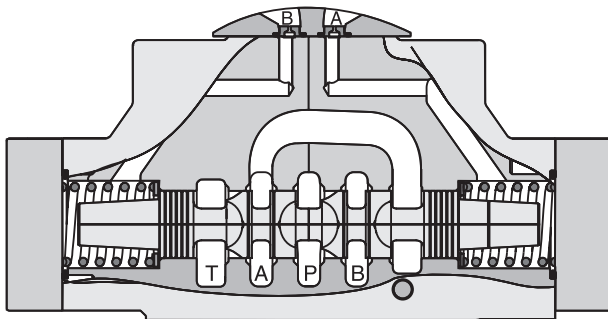


Regenerative D111VWR

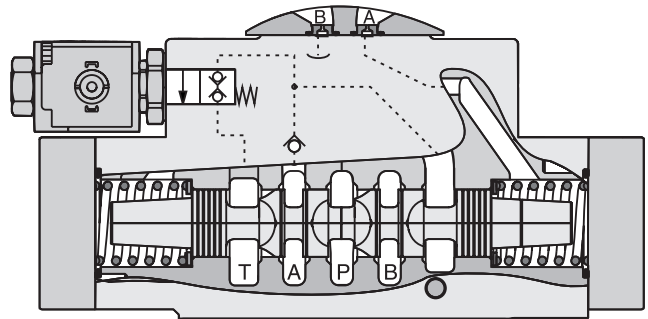


Hybrid D111VWZ

Regenerative Valve D111VWR

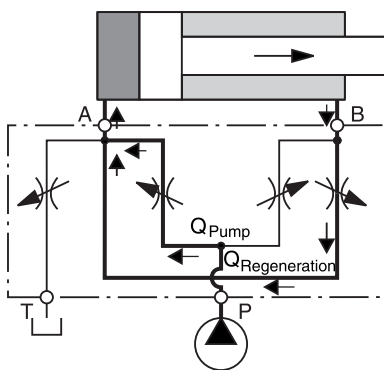


Hybrid Valve D111VWZ



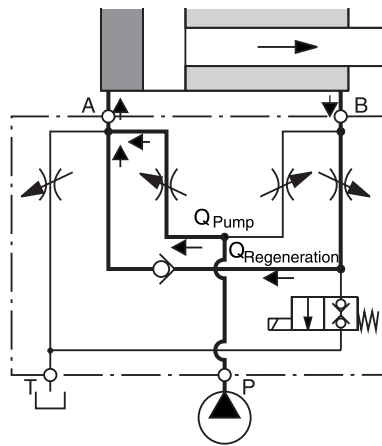
D111VWR Regenerative Valve

Cylinder Extending

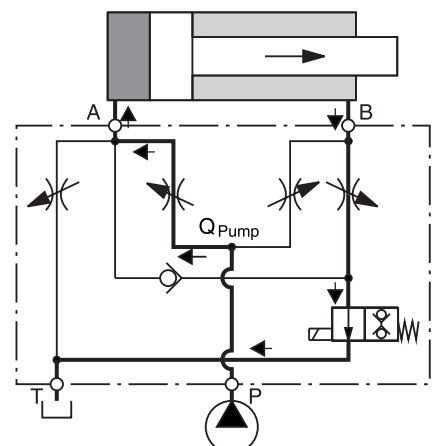


D111VWZ Hybrid Valve

Cylinder Extending
 Regenerative Mode
 (High Speed)



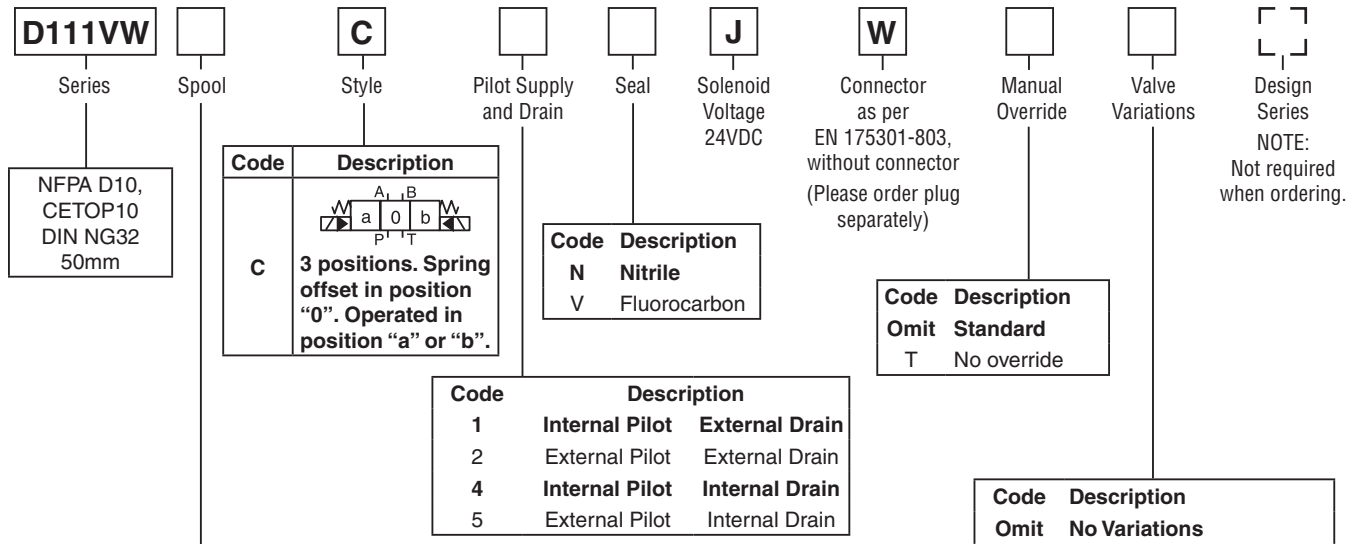
Cylinder Extending
 Standard Mode
 (High Force)



WARNING: This product can expose you to chemicals including Lead, Nickel (Metallic), or 1,3-Butadiene which are known to the State of California to cause cancer, and Lead or 1,3-Butadiene which is known to the State of California to cause birth defects and other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ordering Information

A



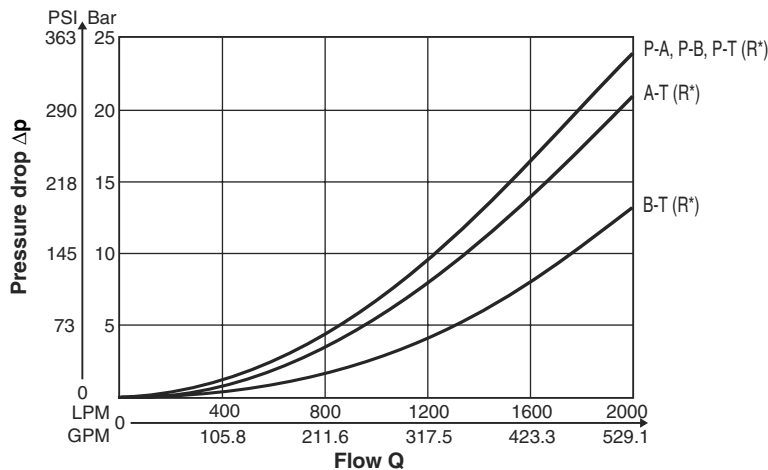
Regenerative Function			Hybrid Function		
Code	Spool Type		Code	Spool Type	
	a	b 0		a	b 0
R01			Z01		
R04			Z04		
R81			Z81		
R82			Z82		

Weight:
 D111VWR, D111DWZ 68.0 kg (149.9 lbs.)

Bold: Designates Tier I products and options.

Non-Bold: Designates Tier II products and options. These products will have longer lead times.

Performance Curves



Flow curves measured with Spool R01, R04.
 Spool Z* on request

General		
Design	Directional Spool Valve	
Actuation	Solenoid	
Size	NG32 / CETOP10 / D10	
Mounting Interface	DIN 24340 A32 / ISO 4401 / NFPA D10 / CETOP RP 121-H	
Mounting Position	Unrestricted, preferably horizontal	
Ambient Temperature	[°C]	-25...+50; (-13°F...+122°F)
MTTFD Value	[years]	75
Hydraulic		
Maximum Operating Pressure	Pilot drain internal: P, A, B, X 350 Bar (5075 PSI); T, Y 105 Bar (1523 PSI) Pilot drain external: P, A, B, T, X 350 Bar (5075 PSI); Y 105 Bar (1523 PSI)	
Fluid	Hydraulic oil in accordance with DIN 51524 / 51525	
Fluid Temperature	[°C]	-25 ... +70 (-13°F...+158°F)
Viscosity Permitted		2.8...400 (13...1854 SSU)
[cSt]	/[mm ² /s]	30...80 (139...371 SSU)
Recommended	/[mm ² /s]	
[cSt]		
Filtration	ISO 4406 (1999); 18/16/13 (meet NAS 1638: 7)	
Flow Maximum	2000 LPM (529.1 GPM)	
Leakage at 350 Bar (5075 PSI) (per flow path)	[ml/min]	up to 5000 (1.32 GPM) (depending on spool)
Minimum Pilot Supply Pressure	5 Bar (73 PSI)	
Static / Dynamic		
Step Response at 95%		
DC Solenoids		Energized
Pilot Pressure		De-energized
50 Bar (725 PSI)	[ms]	470
100 Bar (1450 PSI)	[ms]	320
250 Bar (3625 PSI)	[ms]	210
350 Bar (5075 PSI)	[ms]	200
390		
390		
390		
390		
Electrical		
Duty Ratio	100% ED; CAUTION: coil temperature up to 150°C (302°F) possible	
Protection Class	IP 65 in accordance with EN 60529 (plugged and mounted)	
Supply Voltage / Ripple	[V]	24
Tolerance Supply Voltage	[%]	±10
Current Consumption Hold	[A]	1.29
Current Consumption In Rush	[A]	1.29
Power Consumption Hold	[W]	31
Power Consumption In Rush	[W]	31
Solenoid Connection	Connector as per EN 175301-803, Solenoid identification as per ISO 9461	
Wiring Minimum	[mm ²]	3 x 1.5 recommended
Wiring Length Minimum	[m]	50 (164 ft.) recommended

With electrical connections the protective conductor (PE ≡) must be connected according to the relevant regulations.

Electrical Specifications Hybrid Option

Duty Ratio	100%	
Protection Class	IP 65 in accordance with EN 60529 (plugged and mounted)	
Supply Voltage	[V]	24
Tolerance Supply Voltage	[%]	±10
Current Consumption	[A]	1.29
Power Consumption	[W]	31
Solenoid Connection	[A/m]	Connector as per EN 175301-803
Wiring Minimum	[mm ²]	3 x 1.5 recommended
Wiring Length Maximum	[m]	50 (164 ft.) recommended

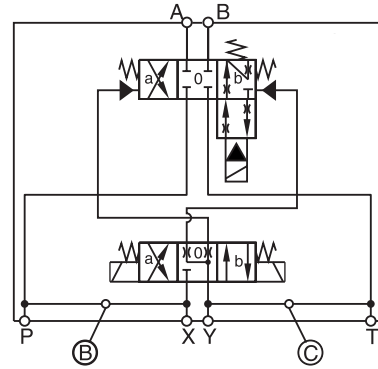
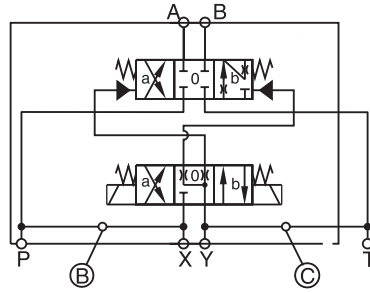
With electrical connections the protective conductor (PE ≡) must be connected according to the relevant regulations.

Pilot Flow

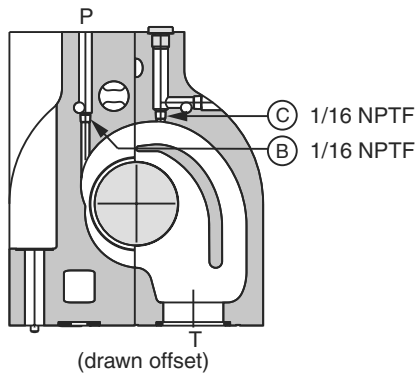
Pilot Oil Inlet (Supply) and Outlet (Drain)

○ open, ● closed

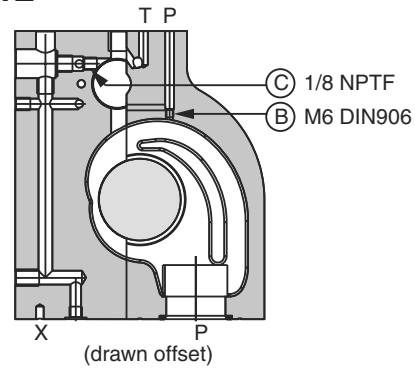
Pilot Oil Inlet	Pilot Oil Outlet	B	C
internal	external	○	●
external	external	●	●
internal	internal	○	○
external	internal	●	○



D111VWR

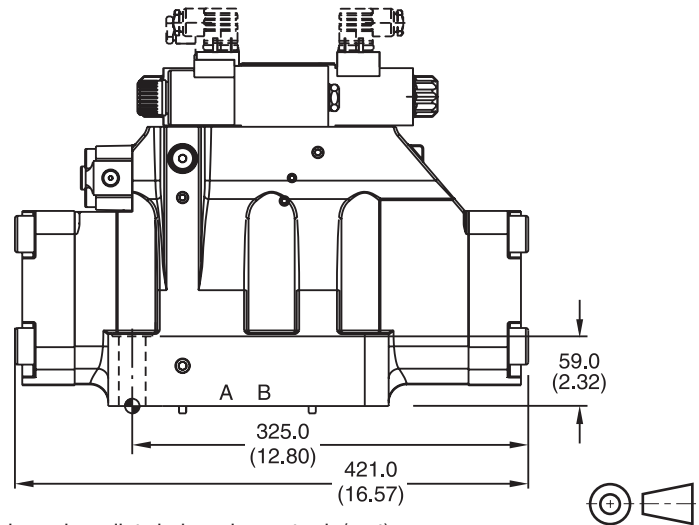
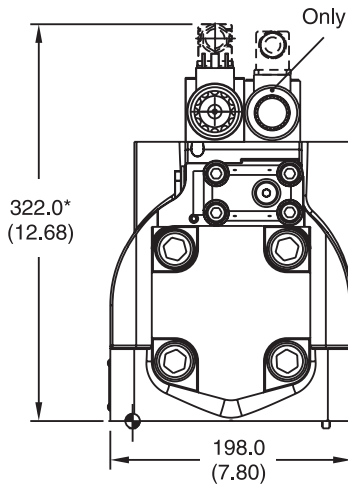


D111VWZ



Dimensions

Inch equivalents for millimeter dimensions are shown in (**)



* Please add for each sandwich plate +40mm (1.58") (pressure reducing valve, pilot choke valve meter-in/-out).

Surface Finish	Kit	Kit	Kit	Seal Kit
	BK386	6x M20x90 DIN 912 12.9	517 Nm (381.3 lb.-ft.) ±15%	Nitrile: SK-D111VW-N-91 Fluorocarbon: SK-D111VW-V-91

The space necessary to remove the plug per DIN 43650, design type AF is at least 15mm (0.59").
 The torque for the screw M3 of the plug has to be 0.5 Nm (0.37 lb.-ft.) to 0.6 Nm (0.44 lb.-ft.).