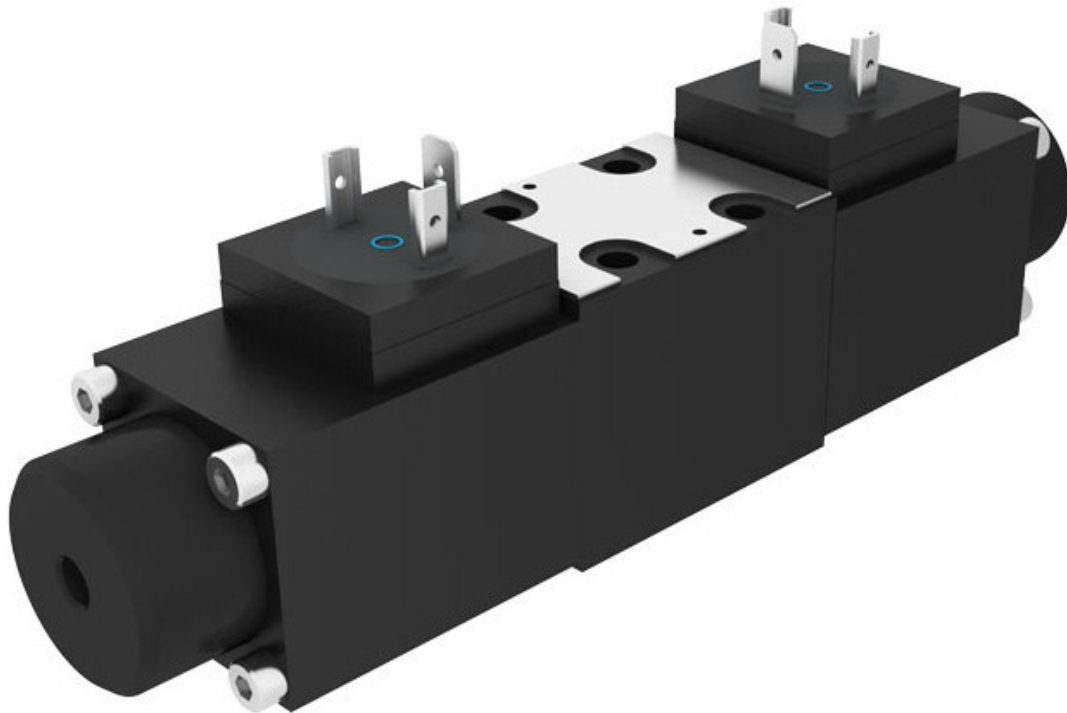


ISO4401 Size D02; ANSI/B93. 7M-D02  
DG4V2  
Solenoid operated directional valves



# DG4V2

## Solenoid operated directional valves

### I-A

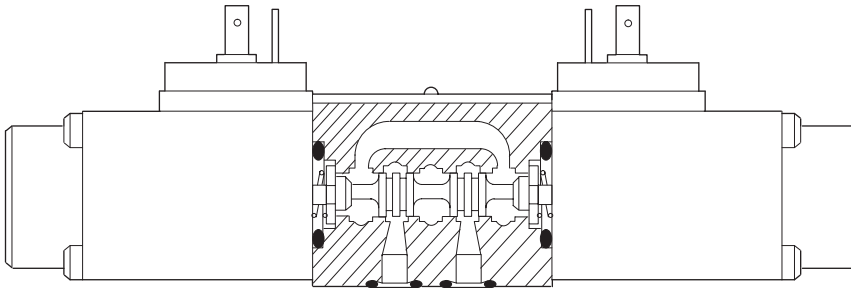
## General description and application benefits

These solenoid operated directional control valves are for directing and stopping flow at any point in a hydraulic system. The features being released with this range are based on Eaton experience with size 3 valves.

- Efficient control of high hydraulic powers with low solenoid power consumption.
- Low internal leakage reduces power losses, increases system efficiency - the result of improved manufacturing techniques for spools and bores.
- Viton® seals with multifluid capability without need to change seals.
- High sustained machine productivity and higher uptime because of proven fatigue and endurance life-tested over 10 million cycles.
- Compact and costeffective system design when used with Eaton SystemStak™ valves and multi-station subplates.

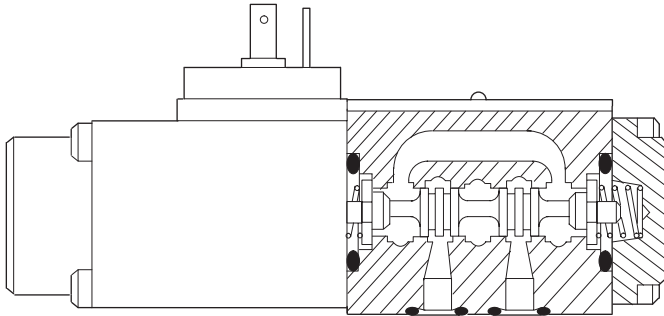
### DG4V-2-2C

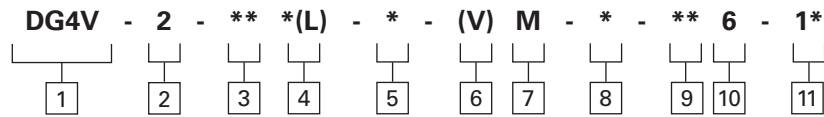
Double solenoid model



### DG4V-2-2B

Single solenoid model





<b>1</b>	<b>Model series</b>
	<b>D</b> Directional valve <b>G</b> Subplate/manifold mounted <b>4</b> Solenoid operated <b>V</b> Pressure rating 250 bar (3600 psi)

<b>2</b>	<b>Interface</b>
	<b>2</b> ISO/DIS 4401-02-02

<b>3</b>	<b>Spool type</b>
	Refer page 8 for spool type

<b>4</b>	<b>Spool spring arrangement</b>
	<b>A</b> Spring offset, end-to-end <b>AL</b> Same as "A" but left hand build <b>B</b> Spring offset, end to center <b>BL</b> Same as "B" but left hand build <b>C</b> Spring centered <b>N</b> No-spring detented

<b>5</b>	<b>Manual override.</b>
	<b>Blank</b> Plain Overrides <b>Z</b> No Overrides

<b>6</b>	<b>Solenoid energization identity</b>
	<b>Blank</b> None <b>V</b> Solenoid "A" is at port "A" end and/or solenoid "B" is at port "B" end, independent of spool type <b>NOTE</b> Type "8" spool valves conform to both U.S. and European solenoid designations. When ordering an "8" spool, designate a "V" in the model code.

<b>7</b>	<b>Flag symbol</b>
	<b>M</b> Electrical options and features

<b>8</b>	<b>Coil type</b>
	<b>U</b> ISO4400, DIN43650 connector <b>U1</b> ISO4400 with fitted DIN plug <b>KU</b> Flying leads from top of the solenoid <b>KUP4</b> Junior timer (amp) connector <b>KUP6</b> Flying lead with deutsch connector

<b>9</b>	<b>Coil rating</b>
	<b>G</b> 12V DC 38 watt <b>H</b> 24V DC 38 watt <b>HL</b> 24V DC 32 watts

<b>10</b>	<b>Tank port rating</b>
	<b>6</b> 160 bar tank pressure rating

<b>11</b>	<b>Design</b>
	Subject to change. Installation dimensions same for designs 10 thru 19.

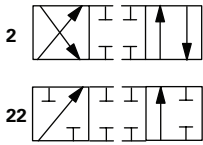
# Functional symbols

Spool options for DG4V-2

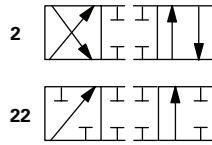
I-A

The schematics of the valve function applies to both U.S. and European valves.

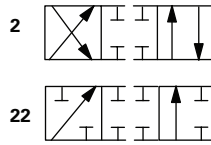
DG4V-2-\*N(V) valves



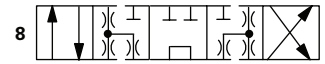
DG4V-2-\*A(V) valves



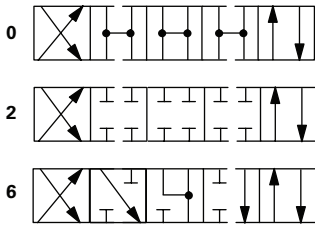
DG4V-2-\*AL(V) valves



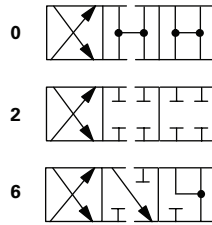
DG4V -2-8 CV valves



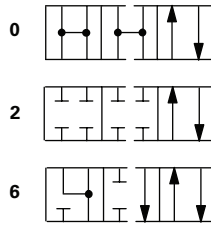
DG4V -2-\*C (V) valves



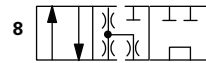
DG4V -2-\*B(V) valves



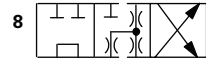
DG4V -2-\*BL(V) valves



DG4V -2-8 BLV valves



DG4 V-2-8 BV valves



## Solenoid identified to US and European standards

	U.S. Solenoid standard	European solenoid standard (specify "V" in the model code)
Double solenoid valves, two position, detented		
Double solenoid valves, spring centered		
Single solenoid valves, solenoid at port A end		
Single solenoid valves, solenoid at port B end		

▼ Transient condition only.

**DG4V-2**
**Pressure limits:**
**P, A and B ports:**

Using 25W solenoid coils	250 bar (3600 psi)
Using 12W solenoid coil type HL	165 bar (2400 psi)
T port	160 bar (2300 psi)

**Flow rating:**

Full power (25W) coil	30 l/min (7.9 USgpm)
Low power (12W) coil, type HL	20 l/min (5.3 USgpm)
Relative duty factor	Continuous; ED = 100%

**Type of protection**

Coils with ISO 4400 connector fitted correctly IEC 947 class IP65	IEC 947 class IP65
Coil winding Class H	Class H
Coil encapsulation Class F	Class F

**Permissible voltage fluctuation:**

Maximum	110% rated
Minimum	90% rated

**Typical response times at 100% rated volts measured from application/removal of voltage at conditions:**

Flow rate P-A, B-T	30 l/min (7.9 USgpm)
Pressure	125 bar (1800 psi)

**Spool type 2C full stroke:**

Energizing	45 ms
De-energizing, no suppression	30 ms
De-energizing, diode suppression	110 ms

**Spool type 2C to flow opening/closing point:**

Energizing	25 ms
De-energizing, no suppression	25 ms
De-energizing, diode suppression	100 ms

**Power consumption, DC solenoids at rated voltage and 20°C (68°F):**

Type G, 12V	25W
Type H, 24V	25W
Type HL, 24V, low power	12W

**Hydraulic fluids**

Filtration requirements	Refer to appendix
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**Temperature limits**
**Mass, approximate**

Single solenoid valve	0,93 kg (2.1 lb.)
Double solenoid valve	1,3 kg (2.9 lb.)

**Installation data:**

Mounting attitude	No restrictions except for no-spring detented model DG4V-2-*N. It should be mounted with the spool axis horizontal. This model type may be affected by severe vibration or shock, especially if a solenoid is not held energized.
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**Operating considerations**

- a. Dependent on the application and system filtration, any sliding spool valve if held shifted under pressure for long periods of time, may stick and not move readily due to fluid residue formation. It may need to be cycled periodically to prevent this from happening.
- b. Surges of fluid in a common tank line serving two or more valves can be of sufficient magnitude to cause inadvertent shifting of these valves. This is particularly critical in no-spring detented models. Separate drain lines are recommended.

# Performance data

DG4V-2

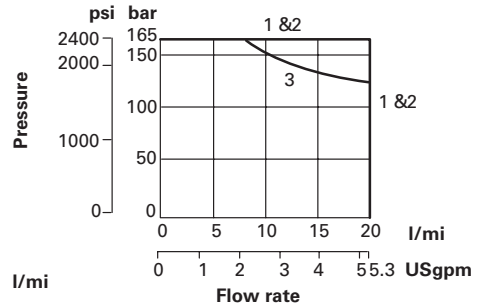
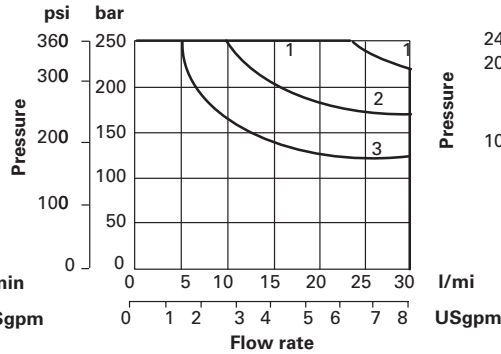
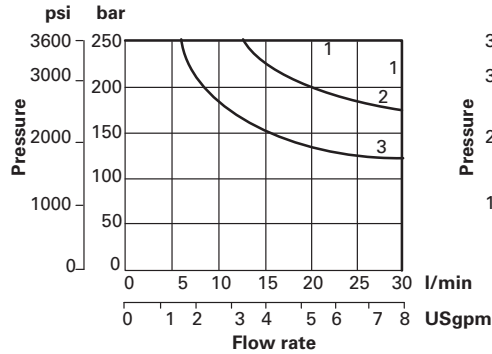
I-A

Typical with mineral oil at 36 cSt (168 SUS) and a specific gravity of 0.87.

## Maximum flow rates

Performance conditions:

Looped flow P-A plus B-T (or P-B plus A-T). Solenoid coil warm and operating at 90% rated voltage.



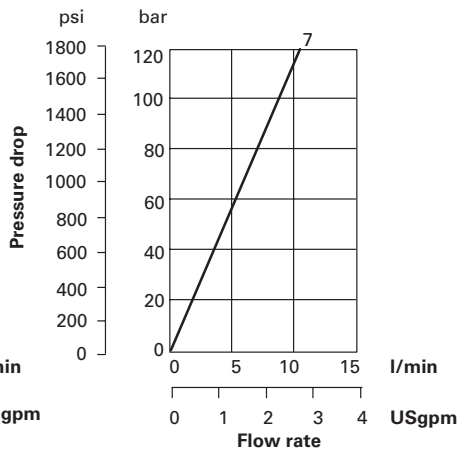
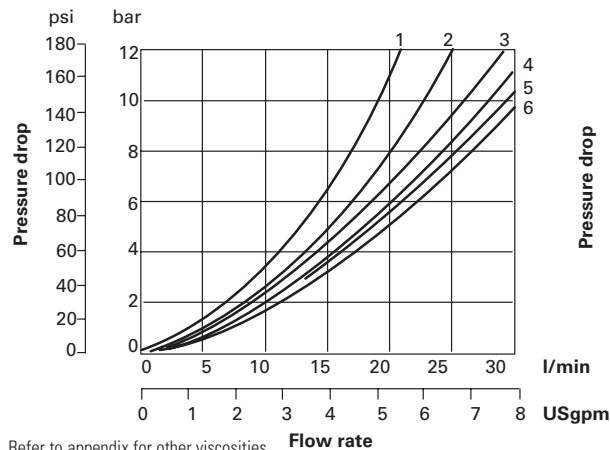
Spool type	Curve number
0, 2	1
7, 8	2
33, 6	3

## Asymmetrical flow rates

Consult Eaton with applications details if either of the following usages are required:

- c) Single flow path, i.e. P-A, P-B, A-T or B-T.
- d) When flow rates between P-A, B-T (or P-B, A-T) are significantly different, e.g. A and B connected to a cylinder having a large differential area.

## Pressure drops



Refer to appendix for other viscosities

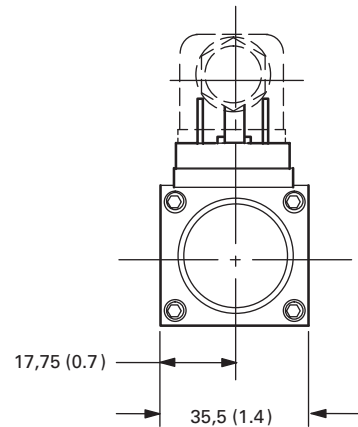
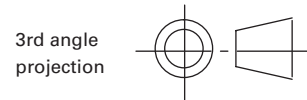
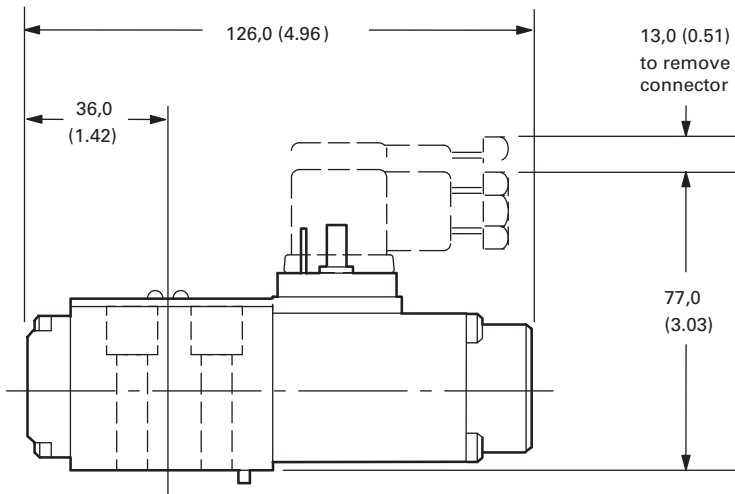
## Pressure drops in offset positions except where otherwise indicated

Spool/spring arrangement	Spool positions covered	P to A	P to B	A to T	B to T	P to T	B to A or A to B
0A(L)	Both	6	6	3	3	—	—
0B(L) & 0C	De-energized	—	—	—	—	6	—
	Energized	6	6	3	3	—	—
2A(L)	Both	3	3	4	4	—	—
2B(L) & 2C	Energized	4	4	5	5	—	—
2N	Both	4	4	5	5	—	—
6B(L) & 6C	De-energized	—	—	4	4	—	—
	Energized	3	3	5	5	—	—
8B(L) & 8C	All	1	1	1	1	2	—

Dimensions shown in mm (inches)

## Single solenoid models

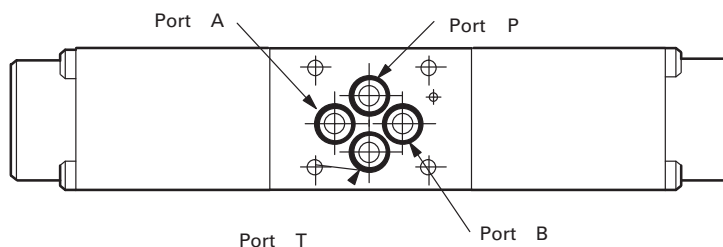
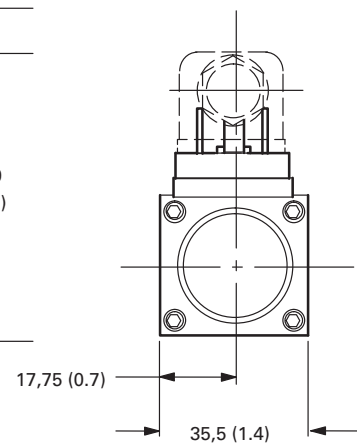
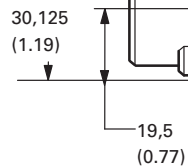
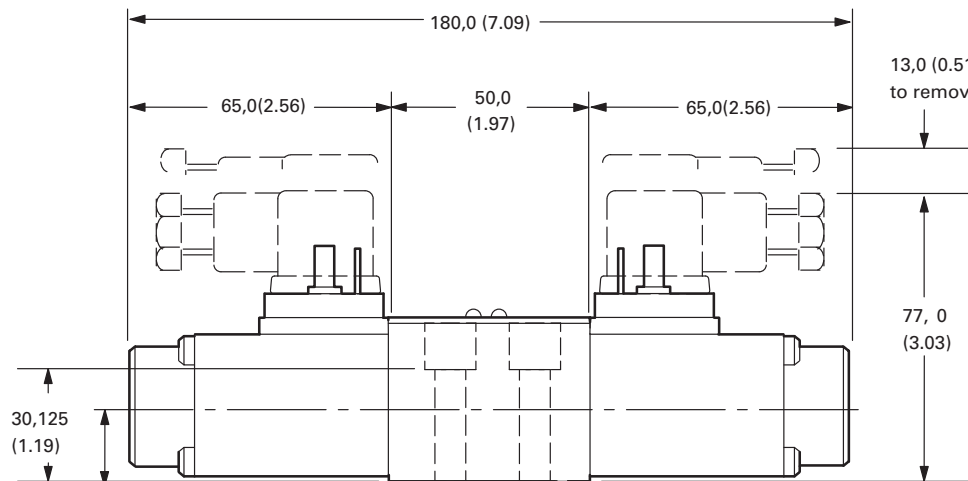
**DG4V-2-A(L)** Spring offset  
**DG4V-2-B(L)**



Dimensions are shown for standard connectors. For connectors with rectifiers and/ or LED this dimension varies up to 84,0 (3.31) maximum. Refer to double solenoid models below for port designations.

## Double solenoid models

**DG4V-2-C** Spring centered  
**DG4V-2-N** No-spring detented



# Electrical plugs and connectors

ISO 4400 (DIN 43650)

## I-A

Order separately by part number. A flying lead connector and an Amp Jr Timer connector are also available. Contact your Eaton representative for details.

The cable entry on these plugs can be repositioned to 90° intervals by reassembly of the contact holder relative to the plug housing. The cable entry is PG 11 for cable 6-10 mm (0.24" to 0.39" dia).

### Connectors w/o indicator lights

Part No.	Color	Used on solenoid coil
710775	Black	Solenoid B
710776	Gray	Solenoid A

### Connectors with LED

Voltage	Part Number Gray (sol. A)	Black (sol. B)
12-24V	977467	977466