

Manually Actuated Control Valves

DG2/17/21V-2 10 Series

General description and application benefits

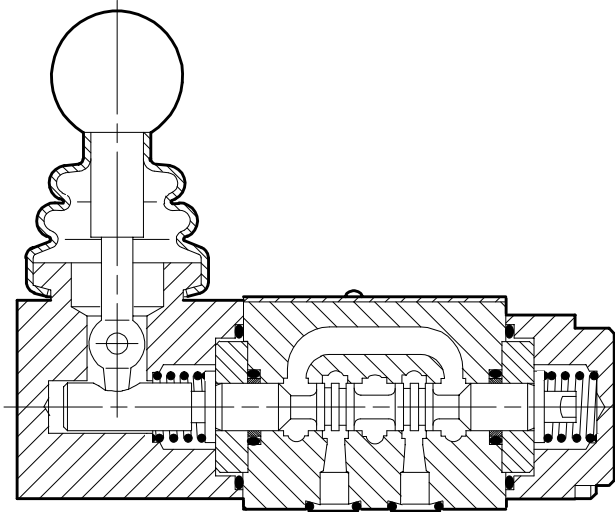
Vickers directional valves offer versatility of application for the many directional control requirements of hydraulic machinery. Ruggedness of design, manufacturing quality, and worldwide parts and service availability maximize uptime.

These valves are available in an ISO/DIS 4401-02-02 interface. Lever operated, roller cam and plunger operated models offer the following application benefits:

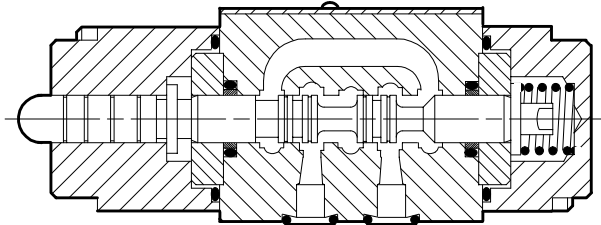
- Efficient control of high hydraulic powers, ideal for such applications as gate valves.
- Low internal leakage reduces power losses, increases system efficiency - the result of improved manufacturing techniques for spools and bores.
- Viton® seals with multi-fluid capability without need to change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

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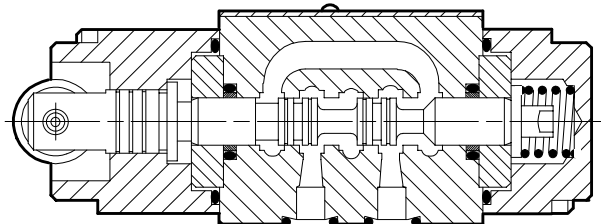
DG17V-2-N-10**
Lever operator



DG21V-2-24A-10
Plunger operator



DG2V-2-24A-5-10
Cam operator



General Information

General Description

Three types of valve are available with different controls primarily for controlling starting, stopping and direction of fluid flow in a system.

Basically, the valves are developed from the well-known series of DG4V-2-10 series solenoid operated valves. These manual valves are available with a choice of mechanically operated spool types, depending on valve configuration. All spools have been designed to provide good low-shock characteristics. External regulation of the control input by lever, cam or plunger operation allows matching to virtually any requirement where electrical control is not appropriate.

Models include no-spring, spring offset, spring centered and detented versions.

DG**V-2-*-10 Lever/Cam/Plunger Operated

Operating Information

The DG21V-2 plunger operator valves are internally drained to port T. They may be used only when surges or back pressure in the tank line cannot overcome the force applied to depress the plunger.

DG2/17/21 models must be released from the actuated position, without restriction to ensure proper spring return.

Cam operated directional control valve installation recommendations:

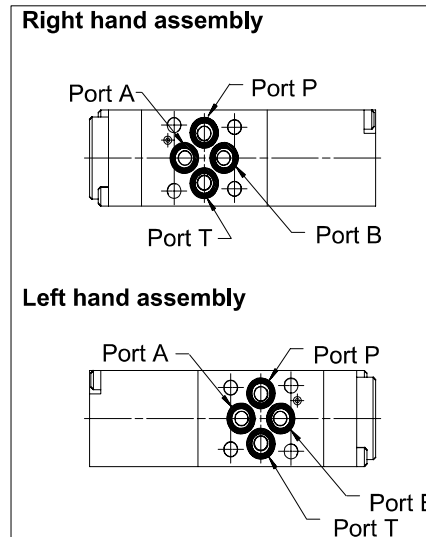
- Maximum cam angle 15°
- Cam should not drive roller at its vertical centerline to avoid any side loading on roller lever mechanism.

Actuation Force

Under rated conditions*, the approximate actuation force will be as shown in the chart below:

Valve type	Force N (lbf.)*
DG17V-2-*C(L)	25-40N (6 -9)
DG17V-2-*A(L)	25-40N (6 -9)
DG17V-2-*N(L)	10-17N (2-4)
DG2V-2	125-160N (28-36)
DG21V-2	125-160N (28-36)

* Tank return must be designed so that transient tank line pressure peaks do not exceed 6,9 bar (100 psi). For tank return line pressure in excess of 6,9 bar (100 psi) lever movement must be assisted.



NOTE

In a right hand assembly, operator "A" is adjacent to port "B". In a left hand assembly, operator "B" is adjacent to port "A". **Please note that European designations are the opposite.** See diagram on the nameplate of the valve for operator (port) identification.

Shifting Action

Surges of oil in a common tank line serving these and other valves can be of sufficient magnitude to cause inadvertent shifting of these valves. This is particularly critical in the no-spring and no-spring detented type valves. Separate tank lines or a vented manifold with a continuous downward path to tank is preferred.

Any sliding spool, if held shifted under pressure for long periods of time, may stick and not spring return due to fluid residue formation (silting) and therefore, should be cycled periodically to prevent this from happening.

If this valve is used for purposes other than a 4-way valve or as shown in the graphical symbol on the valve, consult your distributor or sales engineer.

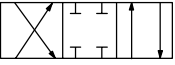
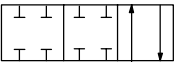
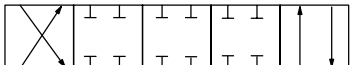
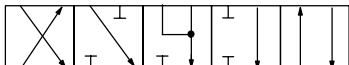
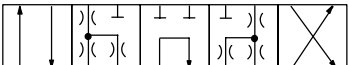


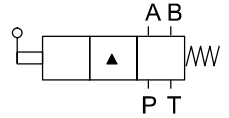
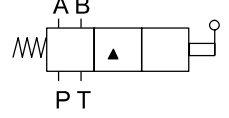
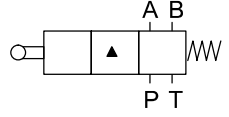
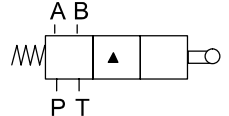
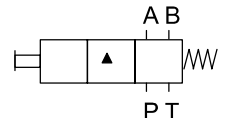
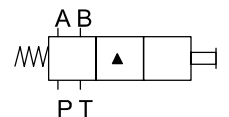
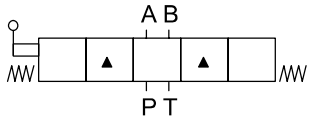
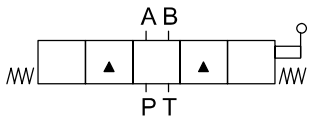
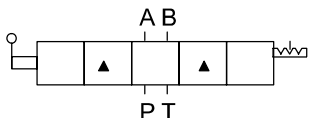
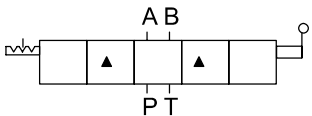
Mounting Position

There is no restriction on mounting of spring centered or spring offset models. Detented models must be mounted with the spool bore horizontal to reduce the possibility of accidental spool shift due to shock and/or vibration.

Port Connections

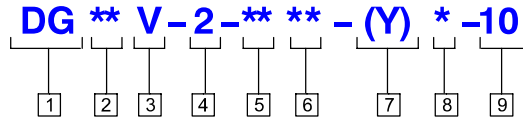
Port connections are made by mounting the valve on a manifold or subplate having mounting dimensions which conform to ISO/DIS 4401-02-02.

DG2/17/20V-2-* -10 Functional Symbols

Spool Options	Model	Basic Valve Symbol	Usable Spool Options
<p>Spool types shown represent the highest anticipated portion of market requirements, based on Vickers experience with size 3 valves. For other spool functions that may be required, consult your Vickers representative.</p> <p>DG17/2/21V-2-*A</p> <p>"2"</p>  <p>"24"</p>  <p>DG17V2-*C/N</p> <p>"2"</p>  <p>"6"</p>  <p>"8"</p>  <p>  Full flow  Restricted flow </p>	DG17V-2-**A		2, 24
	DG17V-2-**AL		2, 24
	DG2V-2-**A		2, 24
	DG2V-2-**AL		2, 24
	DG21V-2-**A		2, 24
	DG21V-2-**AL		2, 24
	DG17V-2-**C		2, 6, 8
	DG17V-2-**CL		2, 6, 8
	DG17V-2-**N		2, 6, 8
	DG17V-2-**NL		2, 6, 8

▲ Transient condition only

Model Code



1 Model Series

D – Directional valve
G – Subplate/manifold mounted

2 Operator type

2 – Roller/cam operated
17 – Lever operated
21 – Plunger operated

3 Pressure rating

V – 250 bar (3600 psi)

4 Interface

2 – ISO/DIS 4401-02-02

5 Spool type

2 – Closed center (all ports)
6 – Closed center (P only)
8 – Tandem center (P to T)
24 – Closed center (all ports)

6 Spool spring arrangement

A – Spring offset, end-to-end
AL – Same as “A” but left hand build
C – Spring centered
CL – Same as “C” but left hand build
N – No-spring detented
NL – Same as “N” but left hand build

7 Roller orientation (DG2V)

Y – Horizontal (omit for vertical)

8 Tank pressure rating

5 – 100 bar (1438 psi)

9 Design

Subject to change. Installation dimensions same for designs 10 thru 19.

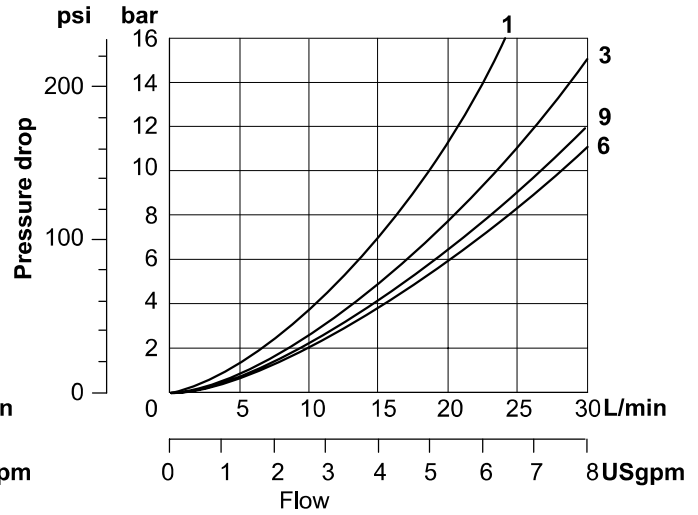
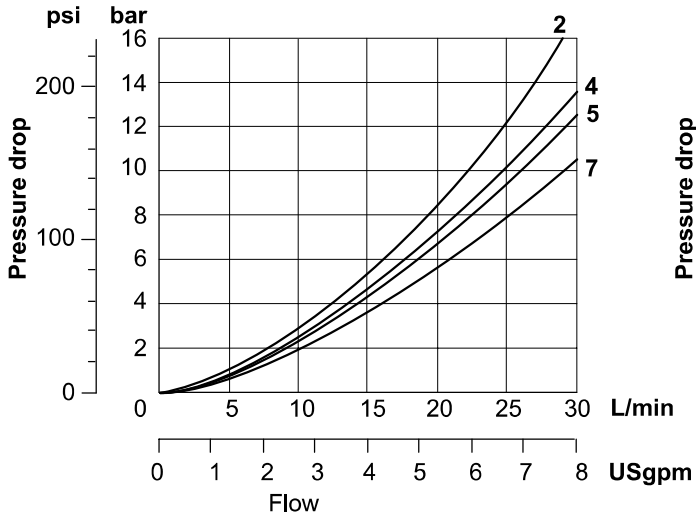
Operating Data

Performance data is typical with fluid at 36 cSt (168 SUS) and 50° C (122° F)

Pressure limits:	P, A, B T	250 bar (3600 psi) 100 bar (1500 psi)
Flow rating, max	30 l/min (7.9 USgpm)	
Actuation forces	DG17V-2-*C(L) DG17V-2-*A(L) DG17V-2-*N(L) DG2V-2 DG21V-2	25-40N (6-9 lbf.) 25-40N (6-9 lbf.) 10-17N (2-4 lbf.) 125-160N (28-36 lbf.) 125-160N (28-36 lbf.)
Mass:	DG17V-2 DG2V-2 DG21V-2	1.02 kg (2.25 lb.) 1.00 kg (2.20 lb.) 1.00 kg (2.20 lb.)
Installation data: Mounting attitude	No restrictions except for no-spring detented model DG17V-2-*N(L). It should be mounted with the spool axis horizontal.	

Performance Data

Pressure Drops



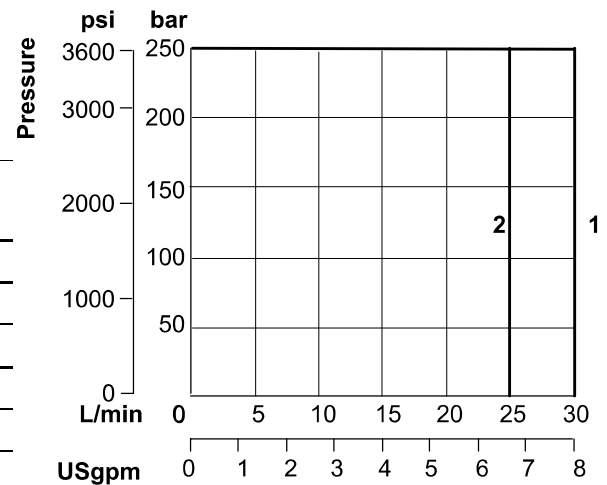
Refer to appendix for other viscosities

Pressure drops in offset positions
except where otherwise indicated

Pressure Drop Curve Number

Spool/spring code	Spool offset		Spool centred	
	P → A/B	A/B → T	A/B → T	P → T
DG2V-2 & DG21V-2				
2A(L) & 24A(L)	3	4	–	–
DG17V-2				
2A	3	4	–	–
2C	5	7	–	–
2N(L)	5	6	–	–
6C	4	6	5	–
6N	3	6	9	–
8C(L)	1	1	–	2
8N(L)	1	1	–	2

Looped Flow Malfunction



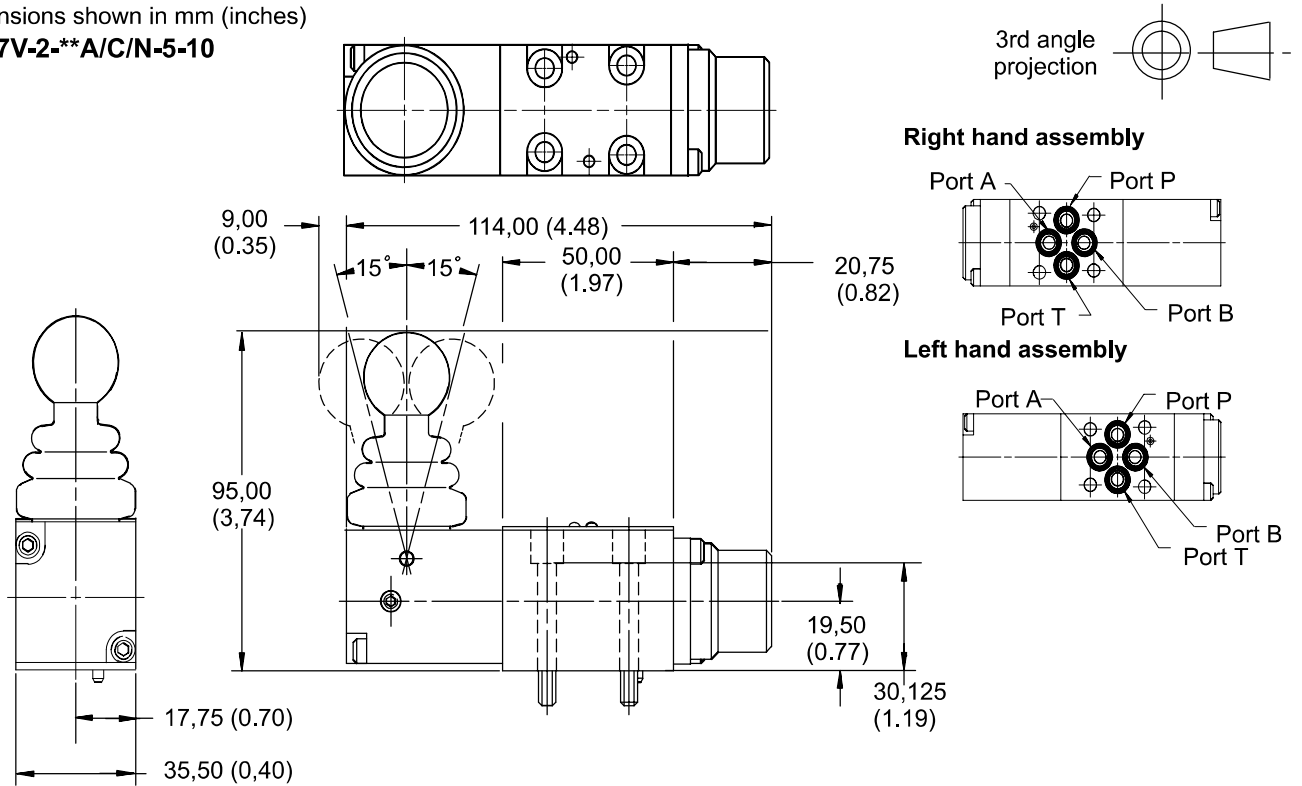
Spool/spring Code Curve Number

2N, 6N, & 8N	1
2A, 24A, 2C, 6C & 8C	2

Installation Dimensions

Dimensions shown in mm (inches)

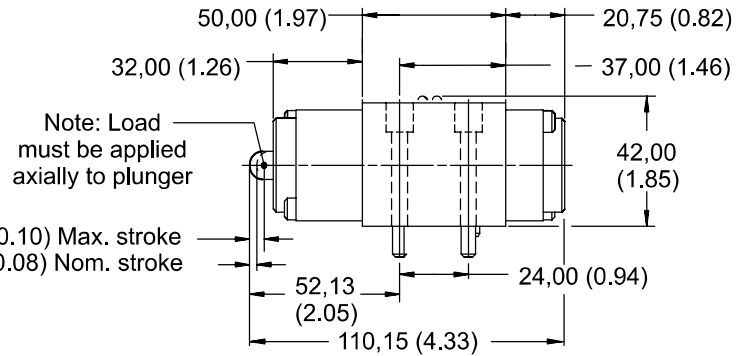
DG17V-2-**A/C/N-5-10



DG21V-2-**A-5-10

Plunger operated

(Dimensions not shown are same as DG17V-2, above)



DG2V-2-**A-(Y)-5-10

Cam operated

(Dimensions not shown are same as DG17V-2, above)

