### Basic Characteristics

- **Max. pressure** ........ up to 350 bar (5000 psi)
- **Max. flow rate** ........ up to 700 L/min (190 USgpm)

Mounting interfaces to ISO 4401:
- KDG3V-5 ............... Size 05
- KDG3V-7 ............... Size 07
- KDG3V-8 ............... Size 08

*With additional pilot ports X and Y.

### Typical Sectional Arrangement

**KDG3V-7**

Specially profiled metering notches on the spool give smooth, progressive opening/closing of the flow paths.

Vickers KDG3V valves offer ideal solutions for applications with repetitive load conditions, or where the load is under direct control of the machine operator.

### General Description

The remote control facility of these high flow capacity valves allows them to be installed in optimum locations relative to minimizing power transmission losses, close to actuators and distant from machine operators. Remote control can then be achieved using any suitable variable pressure control such as Vickers HRC type hydraulic remote controls which are available with a number of joystick and footpedal options and electrical switch features.

In KDG3V valves, the spool is centered by a spring when the differential of pilot pressures applied to the valve end chambers is less than approx. 6 bar (87 psi). As the pilot pressure differential is increased the spool is moved from its centered position, and at approx. 12 bar (174 psi) differential the fluid flow path through the valve begins to open. The flow path opening then progressively increases, as the pressure is increased up to a level of approx. 30 bar (435 psi) differential, when the spool reaches the end of its travel. Further increase in pilot pressure (up to the maximum permissible) has no further effect on the output characteristics.

Good symmetrical characteristics for each direction of spool travel are achieved by using the same spring for each direction of spool travel.

### Functional Symbols

Transient flow conditions shown by dotted lines

Spool type 2C

Spool type 33C

Spool type 133C, with typical regenerative circuit

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May 1994
Spool Types and Flow Ratings
Flow ratings for flow through P-A-B-T at Δp = 5 bar (72 psi) per flow path, e.g. P-A or B-T. For other pressure drops see “Flow Gain” curves.

Symmetric Spools

<table>
<thead>
<tr>
<th>Spool code</th>
<th>Symbol</th>
<th>Flow rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>For KDG3V-5 valves:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2C90N</td>
<td>2C</td>
<td>85 L/min (22 USgpm)</td>
</tr>
<tr>
<td>33C80N</td>
<td>33C</td>
<td>75 L/min (20 USgpm)</td>
</tr>
<tr>
<td>For KDG3V-7 valves:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2C180N</td>
<td>2C</td>
<td>180 L/min (48 USgpm)</td>
</tr>
<tr>
<td>33C170N</td>
<td>33C</td>
<td>170 L/min (45 USgpm)</td>
</tr>
<tr>
<td>For KDG3V-8 valves:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2C280N</td>
<td>2C</td>
<td>280 L/min (74 USgpm)</td>
</tr>
<tr>
<td>33C270N</td>
<td>33C</td>
<td>270 L/min (71 USgpm)</td>
</tr>
</tbody>
</table>

Asymmetric Spools
Figure preceding metering type designator, “N” (e.g. 2C***N) is “A” port flow rating, i.e. P-A, or A-T; figure after “N” (N**) is “B” port flow rating, i.e. P-B or B-T.

<table>
<thead>
<tr>
<th>Spool code</th>
<th>Symbol</th>
<th>Flow rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>For KDG3V-5 valves:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2C70N45</td>
<td>2C</td>
<td>70 L/min (18.5 USgpm), “A” port flow</td>
</tr>
<tr>
<td>2C180N100</td>
<td>2C</td>
<td>180 L/min (48 USgpm), “A” port flow</td>
</tr>
<tr>
<td>33C250N170</td>
<td>33C</td>
<td>250 L/min (66 USgpm), “A” port flow</td>
</tr>
</tbody>
</table>

Design number, 1* series
Subject to change. Installation dimensions unaltered for design numbers 10 to 19 respectively.
Data is typical with fluid at 36 cSt (168 SUS) and 50°C (122°F)

<table>
<thead>
<tr>
<th>Max pressures, all ports:</th>
<th>315 bar (4500 psi)</th>
<th>350 bar (5000 psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For KDG3V-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For KDG3V-7/8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pilot pressure for control

Flow rating

Flow gain

Power capacity envelopes

Mass:

KDG3V-5  8.2 (18)
KDG3V-7  10.2 (22.5)
KDG3V-8  18.9 (41.6)

Power Capacity Envelopes

KDG3V-5/7/8 valves are not recommended for applications where flow/pressure drop is outside of these envelopes

Hydraulic Fluids

Materials and seals used in these valves are compatible with antiwear hydraulic oils, water-glycols, water-in-oil emulsions and non-alkyl-based phosphate esters. The extreme operating range is 500 to 13 cSt (2270 to 70 SUS) but the recommended running range is 54 to 13 cSt (245 to 70 SUS).

Filtration Requirements

Recommendations on filtration methods and the selection of products to control fluid condition are included in Vickers publication 561 or 9132.

For products in this catalog the recommended fluid cleanliness levels are:

Up to 138 bar (2000 psi)  17/15/12
Above 138 bar (2000 psi)  15/13/11

Fluid Temperatures

For petroleum oil:

Min.  −20°C (−4°F)
Max.*  +70°C (+158°F)

* To obtain optimum service life from both fluid and hydraulic system, 65°C (150°F) normally is the maximum temperature.

For other fluids where limits are outside those of petroleum oil, consult fluid manufacturer or Vickers representative. Whatever the actual temperature range, ensure that viscosities stay within those specified under “Hydraulic Fluids”.

Pilot Pressure for Control

Spool type 2C: ——
Spool types 33C and 133C: ——
Flow Gain Curves

KDG3V-5-2C90N

KDG3V-5-33C80N

KDG3V-7-2C180N

KDG3V-7-33C170N

KDG3V-8-2C280N

KDG3V-8-33C270N
Installation Dimensions in mm (inches)

KDG3V-5
Mounting Bolt Kits
Metric, M6 ............... BKDG01633M
Inch, 1/4"-20 UNC ........ BKDG01633

Torque Data
Up to 210 bar (3000 psi) ................. 14 Nm (10.3 lbf ft)
Up to 315 bar (4500 psi) ................. 20 Nm (14.75 lbf ft)

KDG3V-7
Mounting Bolt Kits
Metric, 4 x M10 plus 2 x M6 ............... BKDG7858918
Inch, 4 x 3/8"-16 UNC plus 2 x 1/4"-20 UNC ............... BKDG01633

Torque Data
M10; 3/8"-16 UNC ........ 49-59 Nm (36-43 lbf ft)
M6; 1/4"-20 UNC ........ 9-14 Nm (6.6-10.3 lbf ft)

KDG3V-8
Mounting Bolt Kits
Metric, M12 ............... BKDG06635M
Inch, 1/2"-13 UNC ............... BKDG06635

Torque Data
M12; 1/2"-13 UNC ........ 103-127 Nm (76-93 lbf ft)

4 holes for mounting bolts:
7,02 (0.27) dia., c'bored to 11,0 (0.43) dia.

6 holes for mounting bolts:
4 x 11,0 (0.43) dia., c'bored 17,5 (0.68) dia.
2 x 6,4 (0.25) dia., c'bored 11,0 (0.43) dia.

6 holes for mounting bolts:
13,5 (0.53) dia., spotfaced to 20,0 (0.78) dia.