DG3V-7, 20 Series, Pilot Operated
DG5V-7, 40 Series, Solenoid Controlled, Pilot Operated
ISO 4401 Size 07

Typical Section
DG5V-7-2C Spring-Centered Valve Example

General Description
DG*V-7 valves are used primarily for controlling the starting, stopping and direction of fluid flow.

Two series of valves, DG5V solenoid controlled, pilot operated and DG3V pilot operated models are available with a choice of 18 different spools. These include meter-in and meter-out spools and a regeneration type that can obviate extra valves essential in traditional circuit arrangements. All spools have been designed to provide good low shock, fast response characteristics which can be enhanced by optional stroke and/or pilot choke adjustments.

Models include spring offset, spring centered, pressure centered and detented versions. All are available with the option of an integral P-port pilot pressure generator. DG5V valves can be arranged for internal or external pilot pressure and/or drain connections.

Features and Benefits
- High pressure and flow capability for maximum cost-effectiveness.
- Low headloss to minimize power wastage.
- Low shock characteristics to maximize machine life.
- Facility to change solenoid coils without disturbing the hydraulic envelope.
- The many optional features, particularly for DG5V valves, permit matching to virtually every application within the valve’s power capacity.
Functional Symbols

DG3V-7 Pilot Operated Models
Comprehensive and simplified symbols.

Spring Offset, End-to-End, DG3V-7-*A
Spool types: 0, 2, 6, 9, 52, 521, X2▲, Y2▲

Spring Centered, DG3V-7-*C
Spool types: All▲

Pressure Centered, DG3V-7-*D
Spool types: All▲

Spring Offset, End-to-End, Opposite Hand, DG3V-7-*AL
Spool types: 0, 2, 6, 9, 52, 521, X2▲, Y2▲

DG3V-7 Options
The following are shown in a DG3V-7-*C example:
1. Pilot choke module
2. Minimum pilot pressure generator
3. Stroke adjusters at either or at both ends (shown at both ends in example)

One or more options can be built into any DG3 series valve.

DG5V-7, Solenoid Controlled, Pilot Operated Models
Comprehensive and simplified symbols, shown configured for external pilot supply and internal drain.

Spring Offset, End-to-End, DG5V-7-*A
Spool types: 0, 2, 6, 9, 52, 521, X2▲, Y2▲

Spring Offset, End-to-End, Opposite Hand, DG5V-7-*AL
Spool types: 0, 2, 6, 9, 52, 521, X2▲, Y2▲

• “a” and “b” interchanged for spool types 4 and 8.
• “X” and “Y” spools require a stroke adjuster at one or both ends, dependent on the application, to limit stroke towards “a” and/or “b”.

A.2
Spring Offset, End-to-Center
Models Spool types
DG5V-7-*B 0, 2, 52, 521, X2▲, Y2▲
DG5V-7-*BL 4, 8

Spring Offset, End-to-Center, Opposite Hand
Models Spool types
DG5V-7-*B 4, 8
DG5V-7-*BL 0, 2, 52, 521, X2▲, Y2▲

Spring Centered, DG5V-7-*C
Spool types: All

Pressure Centered, DG5V-7-*D
Spool types: All

Detented, DG5V-7-*N
Spool types: 0, 2, 6, 9, 52, 521, X2▲, Y2▲

DG5V-7 Options
The following are shown in a DG5V-7-*C example:
1. Pilot choke module
2. Minimum pilot pressure generator
3. Stroke adjusters, at either or at both ends (shown at both ends in example)
4. External pilot connection
5. Internal drain

One or more options can be built into any DG5 series valve, the only exception being that the internal drain option is not available with DG5V-7-*D (pressure centered) valves.

* "a" and "b" interchanged for spool types 4 and 8.
▲ "X" and "Y" spools require a stroke adjuster at one or both ends, dependent on the application, to limit stroke towards "a" and/or "b".
Symbols on Nameplates
Typical illustrations for:

DG3V-7-2D-1

1. On main stage
2. On cover plate

DG5V-7-3C-2-E-T-K

1. On main stage
3. On pilot choke module
4. On pilot stage valve

Notes:

a. For clarity pilot lines (dotted lines in illustrations) are omitted from the main-stage nameplate.
b. Where a minimum pilot pressure generator (check valve symbol) is provided the letter P is omitted from the nameplate for clarity.

Spool Types
Shown in 3-position form, plus 2 transients

Notes:

1. In the detailed and simplified symbols on this and the previous pages, the transient positions are omitted for simplicity.
2. In certain 2-position valves, the “o” position becomes an additional transient, i.e. in DG5V-7-*A(L) and DG5V-7-*N valves.

▲ The performance of the “33” and “34” spools differ only in the center position. Your Vickers representative can provide further details.
Application Notes

**Pilot Pressure**

a. Pilot pressure must always exceed tank line pressure by at least the requisite minimum pilot pressure. This also applies when combining open-center spools (0, 1, 4, 8, 9 and 11) with internal pilot pressure, but they should be used only with externally drained valves.

b. Internally drained valves may be used only when surges in the tank line cannot possibly overcome the minimum pilot pressure differential referred to above. When the possibility of pressure surges in the tank line exist, externally drained valves are recommended.

c. When DG5V-7-*N valves are de-energized the pilot and main spools remain in the last selected position, provided that pilot pressure is maintained. If pilot pressure fails, or falls below the minimum, the main spool will spring center.

*Caution: Because of this in-built feature the flow conditions of the center position must be selected with care, for the effect on both the direction of flow and the pilot pressure.*

**Minimum-Pilot-Pressure Generator Option**

Can be built into the P-port to create a minimum pilot pressure differential of 0,35 bar (5 psi) where internal pilot pressure is required with open-centered spools, i.e. 0, 1, 4, 8, 9 and 11.

**Stroke Adjustment Options**

These control the maximum opening of the main spool/body passages by adjusting the limits of spool stroke. By this means, the response time and the pressure drop across the valve for any particular flow rate can be controlled. Stroke adjusters can be fitted at either or both ends of the main-stage valve for adjusting the stroke in one or both directions. One use of stroke adjusters is for controlling the metering characteristics of “X” or “Y”-type spools. (See model code 4.)

**Pilot Choke Adjustment Options**

These provide a meter-out flow control system to the fluid in the pilot chambers of main-stage valves. It allows the velocity of the main-stage spool to be controlled, thereby reducing transient shock condition. For optimum results, a constant reduced pilot pressure is recommended.

**Control Data, General**

a. Dependent on the application and the 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 therefore need to be cycled periodically to prevent this from happening.

b. Surges of fluid in a common drain line serving two or more valves can be of sufficient magnitude to cause inadvertent shifting of the spools. It is recommended that circuit protection be used, such as separate drain lines.

c. Control by stroke adjusters, pilot chokes and minimum-pilot-pressure generator options is described on this page.
### Model Code

#### Fluid compatibility
Blank = Antiwear hydraulic oil (class L-HM), invert emulsion (class L-HFB), or water glycol (class L-HFC)
F3 = As above or phosphate ester (class L-HFD)
Note: For further information see “Hydraulic Fluids” section on page A.12.

#### Spool type
See “Functional Symbols” section on page A.2.

#### Spool spring arrangement
A = Spring offset, end-to-end (P to B when operated)
AL = As “A” but left-hand build (P to A when operated)
B = Spring offset, end-to-center (P to B when operated)
BL = As “B” but left-hand build (P to A when operated)
C = Spring centered
D = Pressure centered
N = Two-position detented

**DG5V option. Same function from DG3V-7-”C valves by alternating pilot supply to one port (X or Y) and permanently draining the other.**

#### Spool control
1 = Stroke adjustment at both ends
2 = Pilot choke adjustment both ends
3 = “1” and “2” combined
7 = Stroke adjustment, port A end only
8 = Stroke adjustment, port B end only
27 = “2” and “7” combined
28 = “2” and “8” combined
Omit if not required

**Not applicable to DG5V-7-”B(L) models.**

**Not applicable to models shown in the “Spring offset, end-to-center, opposite hand” section on page A.3.**

**Not applicable to models shown in the “Spring offset, end-to-center” section on page A.3.**

#### External pilot supply, DG5V valve option
Omit for internal pilot supply

#### Internal pilot drain, DG5V valve option
Omit for external drain, which is also mandatory for 1, 4, 8 and 9 spool-type valves

#### Minimum-pilot-pressure generator (“P” port option)
K = 0.35 bar (5 psi) cracking pressure
Omit if not required

#### Manual override option
Blank = Plain override in solenoid end(s) only
H = Water-resistant manual override on solenoid end(s)
Z = No override at either end

**No override in non-solenoid end of single-solenoid valves.**

#### Solenoid energization identity
V = Solenoid “A” is at port A end of pilot valve and/or solenoid “B” at port B end independent of main-stage valve port locations or spool type; German practice.
Omit (except as noted below) for US ANSI B93.9 standard whereby solenoid “A” is that which, when energized, connects P to A in main-stage valve, and/or solenoid “B” connects P to B.

**Note: Energization identities on valves with type 4 or 8 spools are identical under US and German practices. In such cases the “V” code is used.**

#### Solenoid type/connection(s)
U = ISO 4400 (DIN 43650) mounting
FW = 1/2” NPT thread junction box
FTW = 1/2” NPT thread junction box and terminal strip
FJ = M20 thread junction box
FTJ = M20 thread junction box and terminal strip
FPA3W = Junction box with 3-pin male connector to NFPA T3.5.29-1980 for single-solenoid valves
FPA5W = Junction box with 5-pin male connector to NFPA T3.5.29-1980 for single or double-solenoid valves

**Some female plug connector options available separately from Vickers Systems (see “Plugs for ISO 4400” on page A.16). Others available from electrical stockists.**

**Female connector to be supplied by user.**

---

For pilot operated valves:

(F3-) DG3V-7-** (-**) (-K)-2*

1  2  3  4  7  13

For solenoid controlled, pilot operated valves:

(F3-) DG5V-7-** (-**) (-E)(-T)(-K) (-*) - (V) M-***** (L) - * 5-4*

1  2  3  4  5  6  7  8  9  10  11  12  13
11 Indicator lights, option for codes FTJ, FTW, FPA3W and FPA5W in [10]
L = Lights fitted
Omit if lights not required
For U-code solenoids use plug with integral light, see page A.16.

12 Coil rating
See “Operating Data” on page A.8 for further information.
A = 110V AC 50 Hz
B = 110V AC 50 Hz/
    120V AC 60 Hz
C = 220V AC 50 Hz
D = 220V AC 50 Hz/
    240V AC 60 Hz
G = 12V DC
H = 24V DC
◆ For 60 Hz or dual frequency.

13 Design number
20 series for DG3V valves.
40 series for DG5V valves.
Subject to change. Installation dimensions unaltered for design numbers *0 to *9 inclusive.

For Mounting Subplate and Fastener Kit Options
See “Supporting products” on page A.10.

For ISO 4400 (DIN 43650) Electrical Plugs to Suit DG5V---(V)M-U Valves
See “Installation Dimensions” and “Electrical Plugs and Connectors” on page A.13.
Operating Data

Performance data typical under standard test conditions which use antiwear hydraulic oil (Class L-HM) at 21 cSt (102 SUS) and 50 °C (122 °F).

Maximum pressures:

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>P, A, T, X, Y</th>
<th>Maximum Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG3V-7 valves</td>
<td>L</td>
<td>350 bar (5000 psi)</td>
</tr>
<tr>
<td>DG5V-7-**(L)(-<em>)(-E)(-</em>) valves, (externally drained)</td>
<td>P, A, T, X</td>
<td>350 bar (5000 psi)</td>
</tr>
<tr>
<td>DG5V-7-**(L)(-<em>)(-E)-T(-</em>) valves, (internally drained)</td>
<td>P, A, T, X</td>
<td>350 bar (5000 psi)</td>
</tr>
</tbody>
</table>

Maximum flow rates, L/min (USgpm) at the minimum pilot pressures (see “Pilot Pressures” on page A.11), and with spool type:

<table>
<thead>
<tr>
<th>Spool Type</th>
<th>Flow Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>0, 2, 3, 6, 31, 33, 52 or 521</td>
<td>70 (1000) 140 (2000) 210 (3000) 280 (4060) 350 (5000)</td>
</tr>
<tr>
<td>1, 4, 9 or 11</td>
<td>300 (80) 300 (80) 300 (80) 300 (80) 300 (80)</td>
</tr>
<tr>
<td>8</td>
<td>260 (69) 220 (58) 120 (32) 100 (26) 90 (24)</td>
</tr>
</tbody>
</table>

Control (swept) volume(s), DG3V and main-stage of DG5V valves:

- Center-to-end: 4.07 cm³ (0.25 in³)
- End-to-end: 8.14 cm³ (0.50 in³)

Voltage ratings, DG5V valves:


Voltage limits, DG5V valves:

- Maximum voltage
- Minimum voltage

Power consumption, DG5V valves with AC solenoids:

<table>
<thead>
<tr>
<th>Single-frequency coils, 50 Hz types “A” and “C”</th>
<th>Initial VA rms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double-frequency coils at 50 Hz, types “B” and “D”</td>
<td>Holding VA rms</td>
</tr>
<tr>
<td>Dual-frequency coils at 60 Hz, types “B” and “D”</td>
<td>225</td>
</tr>
<tr>
<td>Power consumption, DG5V valves with DC solenoids</td>
<td>39</td>
</tr>
<tr>
<td>Power consumption, DG5V valves with DC solenoids</td>
<td>265</td>
</tr>
<tr>
<td>Power consumption, DG5V valves with DC solenoids</td>
<td>49</td>
</tr>
<tr>
<td>Power consumption, DG5V valves with DC solenoids</td>
<td>260</td>
</tr>
<tr>
<td>Power consumption, DG5V valves with DC solenoids</td>
<td>48</td>
</tr>
</tbody>
</table>

Type of protection, DG5V valves:

- ISO 4400 coils with plug fitted correctly
- Junction box
- Coil winding
- Lead wires (coil types “F****”)
- Coil encapsulation

Continued on next page
Pressure drop characteristics

See page A.11.

Response times, DG5V valves:

Typical values for a DG5V-7-2C-E spring centered, externally piloted valve under standard test conditions and operating with 150 L/min (40 USgpm) at 350 bar (5000 psi).

<table>
<thead>
<tr>
<th>Coil rating</th>
<th>Pilot pressure, bar (psi)</th>
<th>Energizing: Time, ms</th>
<th>De-energizing: Time, ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>110V 50 Hz</td>
<td>15 (218)</td>
<td>120</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>50 (730)</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>150 (2180)</td>
<td>25</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>210 (3000)</td>
<td>20</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>250 (3600)</td>
<td>18</td>
<td>55</td>
</tr>
<tr>
<td>24V DC</td>
<td>15 (218)</td>
<td>130</td>
<td>65†</td>
</tr>
<tr>
<td></td>
<td>50 (730)</td>
<td>55</td>
<td>65†</td>
</tr>
<tr>
<td></td>
<td>150 (2180)</td>
<td>35</td>
<td>65†</td>
</tr>
<tr>
<td></td>
<td>210 (3000)</td>
<td>30</td>
<td>65†</td>
</tr>
<tr>
<td></td>
<td>250 (3600)</td>
<td>28</td>
<td>65†</td>
</tr>
</tbody>
</table>

◆ From applying a signal at the solenoid until the main-stage spool completes its travel.

▲ In pure switched circuit conditions, devoid of the effects of any suppression diodes and full-wave rectifiers.

Temperature limits:

<table>
<thead>
<tr>
<th>Fluid temperature limits</th>
<th>Ambient temperature limits: Minimum ambient, all valves</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>~20°C (–4°F)</td>
</tr>
</tbody>
</table>

Maximum ambients, DG5V valves with coils listed in “Model Code” two pages back, and under conditions stated below:

Dual-frequency coils:
- at 50 Hz and 107% of rated voltage: 65°C (150°F)
- at 50 Hz and 110% of rated voltage: 65°C (150°F)
- at 60 Hz and 107% of rated voltage: 65°C (150°F)
- at 60 Hz and 110% of rated voltage: 65°C (150°F)

Single-frequency (50 Hz) coils at 50 Hz and 110% of rated voltage: 65°C (150°F)

DC coils at 110% of rated voltage: 70°C (158°F)

Installation dimensions:

<table>
<thead>
<tr>
<th>Valves</th>
<th>Mass (weight), basic models: kg (lb)approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting surface</td>
<td>DG3V-7-*A(L) 10.0 (22.0)◆</td>
</tr>
<tr>
<td></td>
<td>DG3V-7-*B(L)/C 7.3 (16.1)◆</td>
</tr>
<tr>
<td></td>
<td>DG3V-7-*D 8.4 (18.5)◆</td>
</tr>
<tr>
<td></td>
<td>DG5V-7-*A/B (AC voltages) 8.4 (18.5)◆</td>
</tr>
<tr>
<td></td>
<td>DG5V-7-*A/B (DC voltages) 8.5 (18.7)◆</td>
</tr>
<tr>
<td></td>
<td>DG5V-7-*C/N (AC voltages) 8.7 (19.2)◆</td>
</tr>
<tr>
<td></td>
<td>DG5V-7-*C/N (DC voltages) 9.1 (20.0)◆</td>
</tr>
<tr>
<td></td>
<td>DG5V-7-*D (AC voltages) 9.8 (21.6)◆</td>
</tr>
<tr>
<td></td>
<td>DG5V-7-*D (DC voltages) 10.2 (22.5)◆</td>
</tr>
</tbody>
</table>

◆ Add 1.1 kg (2.4 lb) when pilot choke adjustment is fitted.

Continued on next page
<table>
<thead>
<tr>
<th>Supporting products:</th>
<th>See catalog 2425</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subplate</td>
<td>See catalog 2314</td>
</tr>
<tr>
<td>Fastener kits</td>
<td>for available</td>
</tr>
<tr>
<td></td>
<td>metric bolt kit</td>
</tr>
<tr>
<td></td>
<td>options, i.e.</td>
</tr>
<tr>
<td></td>
<td>BKDG7-858918 and</td>
</tr>
<tr>
<td></td>
<td>BKDG7-858919.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Installation and start-up (commissioning):</th>
<th>Optional for models shown.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting attitudes, DG3V series</td>
<td>Optional for DGSV-7-*B(L)/C/D models, but horizontal</td>
</tr>
<tr>
<td>Mounting attitudes, DG5V series</td>
<td>mounting is recommended for DGSV-7-*A(L)/N models.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>After-sales service:</th>
<th>Consult your local Vickers representative.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spare-parts data for DG3 valves and main stages of DG5 valves, and pilot choke modules</td>
<td>Ask for spares leaflet I-3886-S (minimal text, in English).</td>
</tr>
<tr>
<td>Spare-parts data for DG4V-3S pilot stages of DG5 models</td>
<td></td>
</tr>
</tbody>
</table>
**Pilot Pressures**

Maximum: 350 bar (5000 psi).

Typical minimum differential pilot pressure characteristics, shown below, are based on looped flow through P to A to B to T under standard test conditions.

**Pressure Drop Characteristics**

The following typical pressure drops (ΔP) at flow rates (Q) are based on standard test conditions, using oil of 0.865 specific gravity. Except where otherwise stated, for any other flow rate (Q₁) the pressure drop (ΔP₁) will be approximately \( \Delta P_1 = \Delta P \left( \frac{Q_1}{Q} \right)^2 \).

---

**Spool types**

<table>
<thead>
<tr>
<th>Curve ref.</th>
<th>1</th>
<th>1</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>1</th>
<th>1</th>
<th>1</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>Spool type</td>
<td>Curve correction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DG3V-7-*C</td>
<td>All</td>
<td>As drawn</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DG3V-7-*D</td>
<td>All</td>
<td>Add 5 bar (73 psi)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DG5V-7-*A(L)</td>
<td>0, 2, 6, 9, 52, X2 and Y2</td>
<td>Subtract 3 bar (44 psi)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DG5V-7-*B(L)</td>
<td>0, 2, 6, 52</td>
<td>X2 and Y2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DG5V-7-*C</td>
<td>All</td>
<td>As drawn</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DG5V-7-*D</td>
<td>All</td>
<td>Add 5 bar (73 psi)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DG5V-7-*N</td>
<td>0, 2, 6, 9, 52, X2 and Y2</td>
<td>As drawn</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( \Delta \) DG5V-7-52BL models only.

---

**Applicable to:**

- Ports A and B plugged.
- Port A plugged.
- Selected P to A.
- Port B plugged.
- Selected P to B.
For valves fitted with this option, the P to A or B pressure drop derived from the graph on the previous page is increased by 3.5 bar (51 psi) at 50 L/min (13 USgpm).

At any other flow rate $Q_1$ the total pressure drop becomes:

a. For pressures in bar and flow rates in L/min:
\[ \Delta p_1 = 3.5 \left( \frac{Q_1}{50} \right)^2 \]

b. For pressures in psi and flow rates in USgpm:
\[ \Delta p_1 = 51 \left( \frac{Q_1}{13.2} \right)^2 \]

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). For further technical information about fluids see “Technical Information” leaflet B-920 or I-286S.

Contamination Control Requirements
Recommendations on contamination control methods and the selection of products to control fluid condition are included in Vickers publication 9132 or 561, “Vickers Guide to Systemic Contamination Control”. The book also includes information on the Vickers concept of “ProActive Maintenance”. The following recommendations are based on ISO cleanliness levels at 2 μm, 5 μm and 15 μm. For products in this catalog the recommended levels are:

- Up to 210 bar (3000 psi) . . . . 20/18/15
- Above 210 bar (3000 psi) . . . . 19/17/14

Fluid Temperatures
For petroleum oil:

- Min. . . . . . . . . . . . . . . $-20^\circ \text{C} (-4^\circ \text{F})$
- Max. . . . . . . . . . . . . . . $+70^\circ \text{C} (+158^\circ \text{F})$

* To obtain optimum service life from both fluid and hydraulic system, $65^\circ \text{C} (150^\circ \text{F})$ 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”. 
Installation Dimensions in mm (inches)

Solenoid Controlled Models with ISO 4400 (DIN 43650)
Electrical Connections and Pilot Choke
DG5V-7-**(L)(-2)(-E)(-T)(-K)(-*)(-V)M–U example
For dimensions A, B, C, D and E see page A.15.
For solenoid identification see page A.15.
For stroke adjusters see page A.14.

Pilot choke adjusters fitted when
Model Code \[4\] = 2, 3, 27 or 28.
To adjust, turn locknut counter-clockwise,
then turn screw clockwise to slow down rate
of spool travel, or counter-clockwise to
increase the rate. Retighten locknut to
25-30 Nm (18-22 lbf ft).

\[\text{A.13}\]
Solenoid Controlled Models with Stroke Adjusters
DG5V-7-***(L)(-2)(-E)(-T)(-K)(-*)(-V)M-U example
For solenoid identification see page A.15.

Stroke adjuster fitted both ends when Model Code \( 4 = 1 \) or \( 3 \)
Stroke adjuster fitted this end when Model Code \( 4 = 7 \) or \( 27 \)
Stroke adjuster fitted both ends when Model Code \( 4 = 8 \) or \( 28 \)

To adjust:
Turn locknut counter-clockwise, then turn screw clockwise to shorten stroke, or counter-clockwise to increase stroke. Re-tighten locknut.

Solenoid Controlled Models with Junction Box having Optional Terminal Strip and Indicator Lights
DG5V-7-***(L)(-**)(-E)(-T)(-K)(-*)-(V)MF**(L) example.
For solenoid identification see page A.15.

Available also with other options shown above and on previous page.

M20-6H × 1.5 thread for F(T)J options, or \( \frac{1}{2}^\prime \prime \) NPT for F(T)W options, at both ends. Closure plug fitted at one end.
For other options see Ref. in “Model Code”, eight pages back, and under “NFPA Connector---” and “Terminal Strip and Lights” sections, two pages on.

Ref. “Model Code”
Codes “FJ” and “FW”: 2 lead wires for each solenoid, approx. 150 (6.0) long.
M3 (#6) terminals provided for customer connection.
Codes “FTJ” and “FTW”: Valve supplied with lead wires connected into terminal strip suitable for M3 (#6) terminals provided for customer connection.

Pilot Operated Models with Optional
Pilot Choke and/or Stroke Adjusters
DG3V-7-**(-2)(-**) example
For dimensions D and E see page A.15.
### Solenoid Identification

<table>
<thead>
<tr>
<th>Model (see also page A.6)</th>
<th>Spool types</th>
<th>Solenoid identity at:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Main port “A” end</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Main port “B” end</td>
</tr>
<tr>
<td>DG5V-7-<em>A/B(-**)(-E)(-T)(-K)(-</em>)-M</td>
<td>All except “4” &amp; “8”</td>
<td>–</td>
</tr>
<tr>
<td>DG5V-7-<em>A/B(-**)(-E)(-T)(-K)(-</em>)-VM</td>
<td>All except “4” &amp; “8” “4” &amp; “8” only</td>
<td>B</td>
</tr>
<tr>
<td>DG5V-7-<em>AL/BL(-**)(-E)(-T)(-K)(-</em>)-M</td>
<td>All except “4” &amp; “8”</td>
<td>A</td>
</tr>
<tr>
<td>DG5V-7-<em>AL/BL(-**)(-E)(-T)(-K)(-</em>)-VM</td>
<td>All except “4” &amp; “8” “4” &amp; “8” only</td>
<td>B</td>
</tr>
<tr>
<td>DG5V-7-<em>C/D/N(-**)(-E)(-T)(-K)(-</em>)-M</td>
<td>All except “4” &amp; “8”</td>
<td>A</td>
</tr>
<tr>
<td>DG5V-7-<em>C/D/N(-**)(-E)(-T)(-K)(-</em>)-VM</td>
<td>All spools</td>
<td>B</td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>Basic model designation</th>
<th>AC models</th>
<th>DC models</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>DG3V-7-*C</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>DG3V-7-*A</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>DG3V-7-*A(L)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>DG3V-7-*D</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>DG5V-7-*A</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>DG5V-7-*B</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>DG5V-7-*C</td>
<td>200 (7.8)</td>
<td>–</td>
</tr>
<tr>
<td>DG5V-7-*N</td>
<td>200 (7.8)</td>
<td>–</td>
</tr>
<tr>
<td>DG5V-7-*D</td>
<td>200 (7.8)</td>
<td>–</td>
</tr>
</tbody>
</table>

### Water-Resistant Manual Override on Solenoids

DG5V-7---M-****(L)H valves

**Application:**
General use where finger operation is required (standard manual overrides can only be operated by using a small tool).

Manual actuation must be applied within this diameter: approximately 20 (0.8). Spacer prevents actuation by larger device.

**Note:** “H” feature is not field convertible from other models; specify with order.

---

**Note:** Dimension “A”, “B” or “C” (see page A.13)
**Electrical Plugs and Connectors**

**Plugs for ISO 4400 (DIN 43650) Type Coil Connection**

For valves with type "U" coils

The cable entry on these plugs can be repositioned at 90° intervals by reassembly of the contact holder relative to the plug housing.

The cable entry is Pg.11, for cable Ø 6-10 mm (0.24 to 0.39” dia).

Order separately by part number.

---

**NFPA Connector T3.5.29-1980**

DG5V-7-***---FP3W(L) and DG5V-7-***---FP5W(L) models

The receptacle is a standard three or five-pole connector with shortened leads and terminals added. The five-pole plug has four leads 101,6 mm (4.0”) long and one of 177,8 mm (7.0”) length. All wires have US Underwriters Laboratory-recognized non-solder insulated eyelet terminals. The green wire is used for the ground (earth) connection (No. 8-size screw furnished). Valves are supplied prewired.

---

**Connection details and model type/model code references**

**Warning tag:**

"Electrical power must be disconnected before removing or replacing electrical plug"

---

**Plugs without indicator lights**

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Color</th>
<th>Use on solenoid coil</th>
</tr>
</thead>
<tbody>
<tr>
<td>710775</td>
<td>Black</td>
<td>Sol. B</td>
</tr>
<tr>
<td>710776</td>
<td>Gray</td>
<td>Sol. A</td>
</tr>
</tbody>
</table>

**Plugs with indicator lights**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Part no.</th>
<th>Color</th>
<th>Use on solenoid coil</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-24V</td>
<td>977467</td>
<td>Black</td>
<td>Sol. B</td>
</tr>
<tr>
<td>100-125V</td>
<td>977469</td>
<td>Gray</td>
<td>Sol. A</td>
</tr>
<tr>
<td>200-240V</td>
<td>977471</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**3-pin connector**

When fitted in single-solenoid valves, e.g.:

DG5V-7-"A(U)(**)-(V)M-FP3W(L)
DG5V-7-"B(U)(**)-(V)M-FP3W(L)

---

**5-pin connector**

When fitted in double-solenoid valves, e.g.:

DG5V-7-"U(U)(**)-(V)M-FP5W(L)
DG5V-7-"D(U)(**)-(V)M-FP5W(L)
DG5V-7-"N(U)(**)-(V)M-FP5W(L)

---

**5-pin connector**

When fitted in single-solenoid valves, e.g.:

DG5V-7-"A(U)(**)-(V)M-FP5W(L)
DG5V-7-"B(U)(**)-(V)M-FP5W(L)
Terminal Strip and Light Options
When fitted in solenoid controlled valves DG5V-7-**(L)--F****(L).

DG5V-7-**(L)--F****.*

- Terminal strip (part number 890345) clips to cover and can be field-fitted
- M3 x 0.5-6H screws (part number 186006) 2 each end
- Connections to solenoid A (or B, according to model type)
- Connections to solenoid B (or A, according to model type)
- Rubber gasket
- Anti-rotation tab ensures correct orientation of cover to junction box

DG5V-7-**(L)--F****L.*

- Conduit box cover and nameplate complete with sealing gasket and 4 screws
- 4 terminal screws M3 x 0.5-6H (part number 02-113355)
- Lights
- 2 lenses in cover

1. For DC coils the +ve lead(s) must be connected to the terminal(s) marked +. When using 3-wire incoming leads to double solenoid valves (i.e. common neutral) the inner pair of terminals must be linked.

2. For correct light indication of energized solenoid ensure that solenoid leads are correctly connected: light terminals are common with each outer pair of solenoid terminals according to the side with + mark.