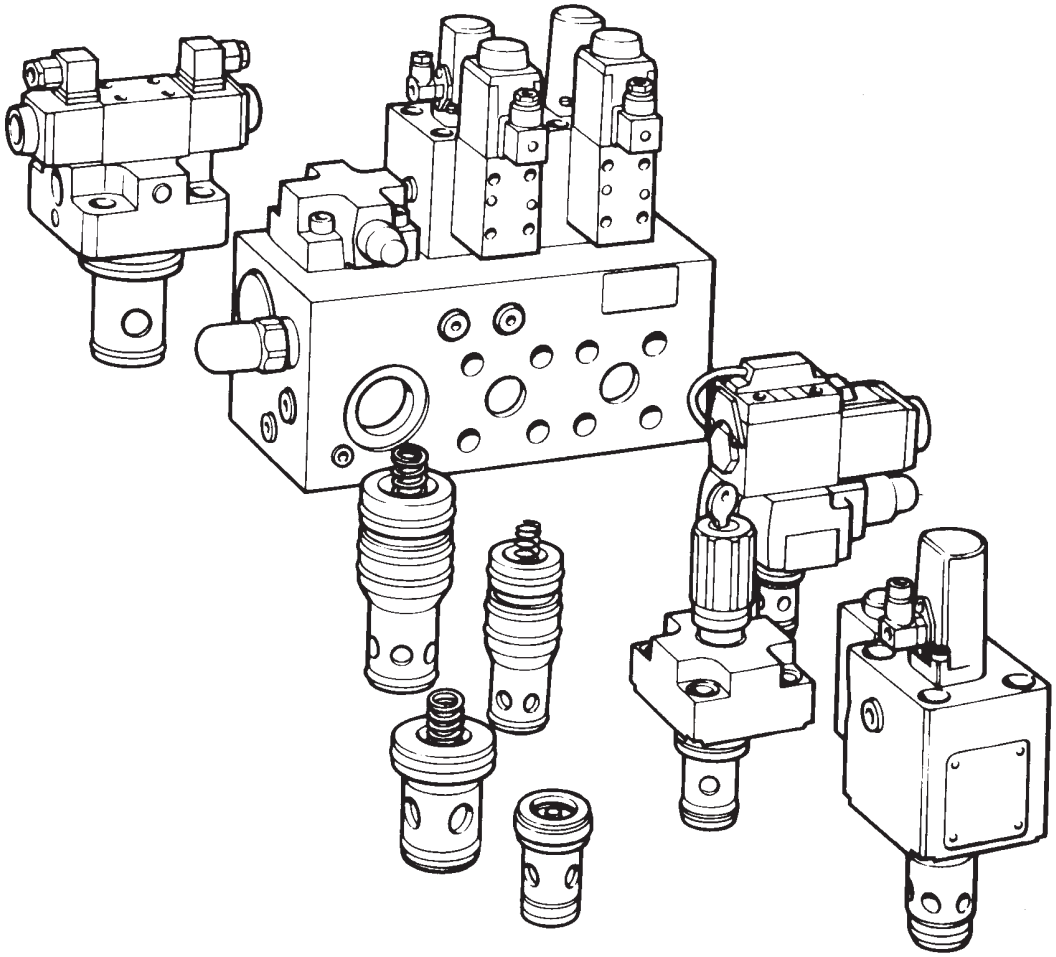
Vickers®

Cartridge Valves

Slip-in Cartridge Valves

to ISO 7368 (DIN 24342)



VICKERS

5043.00/EN/0499/A

Electrohydraulic Proportional Throttles

CVU-**-EFP1-3* Series

Basic Characteristics

Valves

Nominal sizes:	ISO 7368	DIN 24342
	06	NG16
	08	NG25
	09	NG32
	10	NG40

Max. operating pressure . . . . . 315 bar (4500 psi)
Flow ratings . . . . . up to 900 L/min (238 USgpm)

Amplifier

Vickers model EEA-PAM-571-A, to be ordered separately. Power input 20-34V DC, 24V DC nominal.

General Description

Proportional throttle (restrictor) valves for use where one or more of the following requirements exist.

- Remote control of machine actuator speed, linear or rotary.
- Speed control in accordance with machine operating cycles or programs.
- Meter-in, meter-out or bleed-off application of the throttle valve itself.
- Pressure compensated flow control with the aid of a pressure hydrostat module, in any of the same three application modes.
- Smooth control of machine acceleration and/or deceleration.
- For industrial and mobile applications.

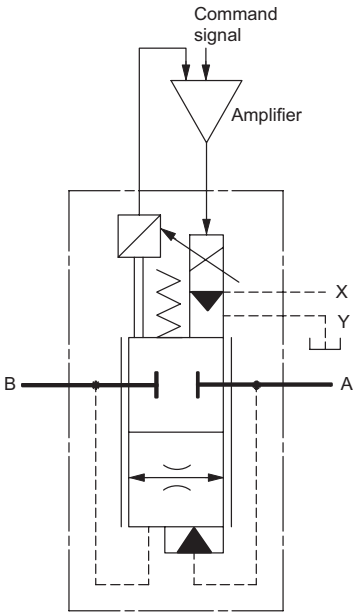
Note: *Correct performance of valves can only be obtained using Vickers amplifier EEA-PAM-571-A.*

Features and Benefits

- New 09 (NG32) size.
- Valves suitable for unidirectional and bidirectional control of flow.
- 4 valve sizes offer choice of flow capacities
  06 (NG16): 190 L/min (50 USgpm)
  08 (NG25): 450 L/min (119 USgpm)
  09 (NG32): 700 L/min (185 USgpm)
  10 (NG40): 900 L/min (238 USgpm)
  at 10 bar (145 psi) Δp.
- Designed for zero leakage when closed.
- Common amplifier for any valve size minimizes inventory.
- 24V DC nominal supply to amplifier to suit state-of-art control systems.
- Choice of command signals.
- Acceleration and deceleration requirements can be adjusted on-site by “ramp” potentiometer.
- Facility for on-site adjustment of “deadband” compensation and “gain”.
- Setting-up and fault diagnosis eased by panel display and signal monitoring points.

Functional Symbol

CVU-**-EFP1



Model Codes Electrohydraulic Proportional Throttles

(F3-) CVU - ** - EFP1 - B 2 9 - ** - 3*

1 2 3 4 5 6 7 8 9

1 Special seals for phosphate ester fluids

Omit for standard seals; see “Hydraulic fluids” section.

2 Model

CVU - Cartridge valve unit

3 Nominal size to ISO 7368 (DIN 24342)

16 - 06 (NG16)
25 - 08 (NG25)
32 - 09 (NG32)
40 - 10 (NG40)

4 Type

EFP1 - Electronic feedback, proportional 2–stage

5 Threads on fitted plugs

B - G (BSPF) threads to ISO 228/1

6 Seals

2 - Seals to ISO 3601

7 Mounting Bolts

9 - Metric mounting bolts supplied

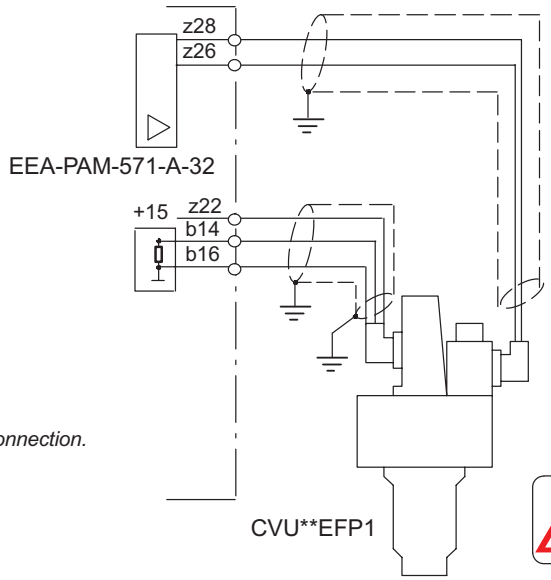
8 Rated flow at 10 bar (145 psi) Δp

19 - 190 L/min (50 USgpm) size 06 (NG16) only
45 - 450 L/min (119 USgpm) size 08 (NG25) only
70 - 700 L/min (185 USgpm) size 09 (NG32) only
90 - 900 L/min (238 USgpm) size 10 (NG40) only

9 Design number, 3* series

Subject to change. Installation dimensions unaltered for design numbers 31 to 39 inclusive.

Wiring Connections



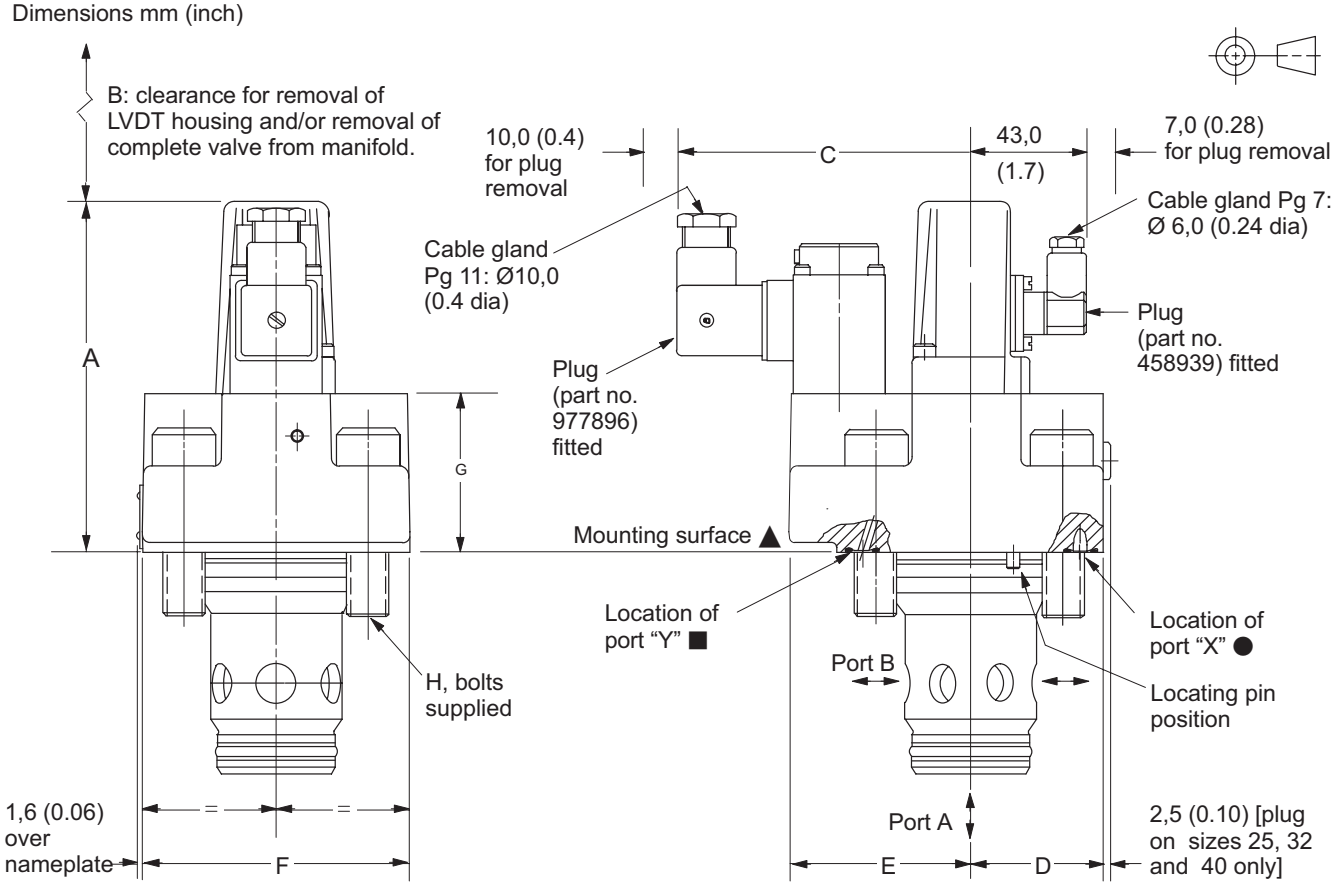
Customer’s protective ground connection.

WARNING
All power must be switched off before connecting or disconnecting any plugs.

WARNING: *Electromagnetic Compatibility (EMC)*
It is necessary to ensure that the unit is wired up in accordance with the connection arrangements shown. For effective protection the user’s electrical cabinet, the valve subplate or manifold and the cable screens should be connected to efficient ground points. In all cases both valve and cable should be kept as far away as possible from any sources of electromagnetic radiation such as cables carrying heavy current, relays and certain kinds of portable radio transmitters, etc. Difficult environments could mean that extra screening may be necessary to avoid the interference.

Electrohydraulic Proportional Throttles

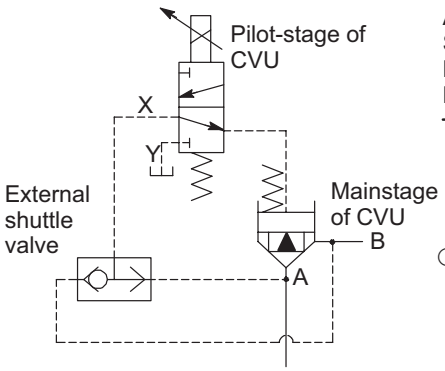
Dimensions mm (inch)



Connections to Port X

For **unidirectional** control of flow (ie A to B **or** B to A) port X must be connected to upstream port pressure.

For **bidirectional** control of flow (ie flow A to B **and** B to A at different times during an operating cycle) port X must be connected to **both** A and B via a shuttle valve (see diagram).



Dimension	CVU-16	CVU-25	CVU-32	CVU-40
A	135,5 (5.33)	133,5 (5.25)	138,5 (5.45)	138,5 (5.45)
B	74,0 (2.91)	77,0 (3.03)	90,5 (3.56)	109,5 (4.31)
C	109,5 (4.31)	105,5 (4.15)	113,5 (4.47)	105,5 (4.15)
D	32,5 (1.28)	42,5 (1.67)	51,0 (2.01)	63,0 (2.48)
E	70,0 (2.76)	65,5 (2.58)	69,0 (2.72)	63,0 (2.48)
F	66,6 (2.62)	85,0 (3.35)	102,0 (4.02)	126,0 (4.96)
G	57,0 (2.24)	55,0 (2.16)	60,0 (2.36)	60,0 (2.36)
H bolts	4 x M8 x 35	4 x M12 x 45	4 x M16 x 55	4 x M20 x 70
Bolt torque	35 Nm	110 Nm	285 Nm	500 Nm
Alternative UNC bolts (not supplied with CVU-**-EFP1)				
Size	$^{5}/_{16}$″-18 x 1$^{1}/_{2}$″	$^{1}/_{2}$″-13 x 1$^{1}/_{2}$″	$^{5}/_{8}$″-11 x 2″	$^{3}/_{4}$″-10 x 2$^{3}/_{4}$″
Bolt kit	BKDNG16700	BKPNG25704	BKNG32713	BKCG825613
Bolt torque	26 lbf ft	81 lbf ft	210 lbf ft	370 lbf ft

○ *Installation dimensions below mounting surface, including location of ports "X" and "Y" and size/length of bolts "H", conform to requirements of ISO 7368---**A** (see page 131).*

■ *Connect to drain: pressure must not exceed 2 bar (29 psi).*

● *See "Connections to Port X", this page.*

Model Codes

(F3-) CVU - ** - (Z) SWD (3) - B 2 9 - * - 1*

1 2 3 4 5 6 7 8 9 10 11

1 Special Seals for phosphate ester fluids

Omit if not required

2 Model

CVU - Cartridge valve unit

3 Nominal size to ISO 7368 (DIN 24342)

16 - 06 (NG16)
25 - 08 (NG25)
32 - 09 (NG32)
40 - 10 (NG40)
50 - 11 (NG50)
63 - 12 (NG63)

4 Dynamic model

Sizes 16 to 40 only
Z - Pilot operation of main spool opening and closing, via size 3 pilot valve interface. Note: "3" must also be specified at position 6.
Omit if not required

5 Type

SWD - Spool position sensor, series D

6 Function

Sizes 16, 25, 32 and 40 only:
Blank - Spring return of main spool to closed postion plus facility to hold spool closed by hydraulic pressure from a remote source.
Sizes 16 to 63 - SWD3
Sizes 16 to 40 - ZSWD3
3 - As above but with machined mounting pad, with M5 mounting bolt tappings, for size 3 pilot valve to provide for local hydraulic operation (e.g. solenoid operated directional valve, shuttle valve, pilot operated check valve, etc. according to circuit requirements)
Note: The pilot valve and its mounting bolts must be separately specified and ordered.

7 Threads on fitted plugs

B - G (BSPF) thread to ISO 228/1

8 Seals

2 - Seals to ISO 3601

9 Mounting bolts

9 - Metric bolts supplied with valve

10 Main spool opening/cracking nominal pressure

(Ports A and B)
L - 0,5 bar (7 psi)
M - 2,5 bar (36 psi)
H - 5,0 bar (72 psi)

11 Design number, 1* series

Subject to change. Installation dimensions unaltered for design numbers 10 to 19 inclusive.

Typical Model Selection

For applications requiring a valve for a flow rate of 400 L/min (105 USgpm) with remote pilot, main spool cracking pressure of 2,5 bar (36.3 psi) and metric bolts, select:
CVU-25-SWD-B29-M-10

For applications requiring electrical indication of spool position for a flow rate of 1600 L/min (420 USgpm) with integral pilot operation, main spool cracking pressure of 5,0 bar (72.5 psi) and UNC bolts, select:
CVU-50-SWD3-B29-H-10
bolt kit BKDNG50708

For applications requiring electrical indication of spool position with hydraulic pilot operation for opening and closing, a flow rate of 600 L/min (158 USgpm), main spool cracking pressure of 0,5 bar (7.3 psi) and metric bolts, select:
CVU-32-ZSWD3-B29-L-10

Operating Data

Maximum Pressures

All ports: 315 bar (4500 psi)

Actual allowable pressure for some or all ports may be limited by the pressure rating of the selected pilot valve to be used on SWD3 models.

Flow rates

Flow direction A to B, or B to A, with main spool piloted open and at 10 bar (145 psi) pressure drop between A and B.

CVU-16 . . . . . 210 L/min (55 USgpm)
CVU-25 . . . . . 400 L/min (105 USgpm)
CVU-32 . . . . . 600 L/min (158 USgpm)
CVU-40 . . . . . 900 L/min (236 USgpm)
CVU-50 . . . . . 1600 L/min (420 USgpm)
CVU-63 . . . . . 2500 L/min (660 USgpm)

See pressure drop graphs for further data.

Area Ratios

CVU-**-SWD	CVU-**-SWD3
	$A_A : A_B : A_P$
	1 : 1 : 2