

**EATON**

**Vickers**

**Variable Displacement Vane Pumps**

Service Parts Manual

VVS0

VVS1

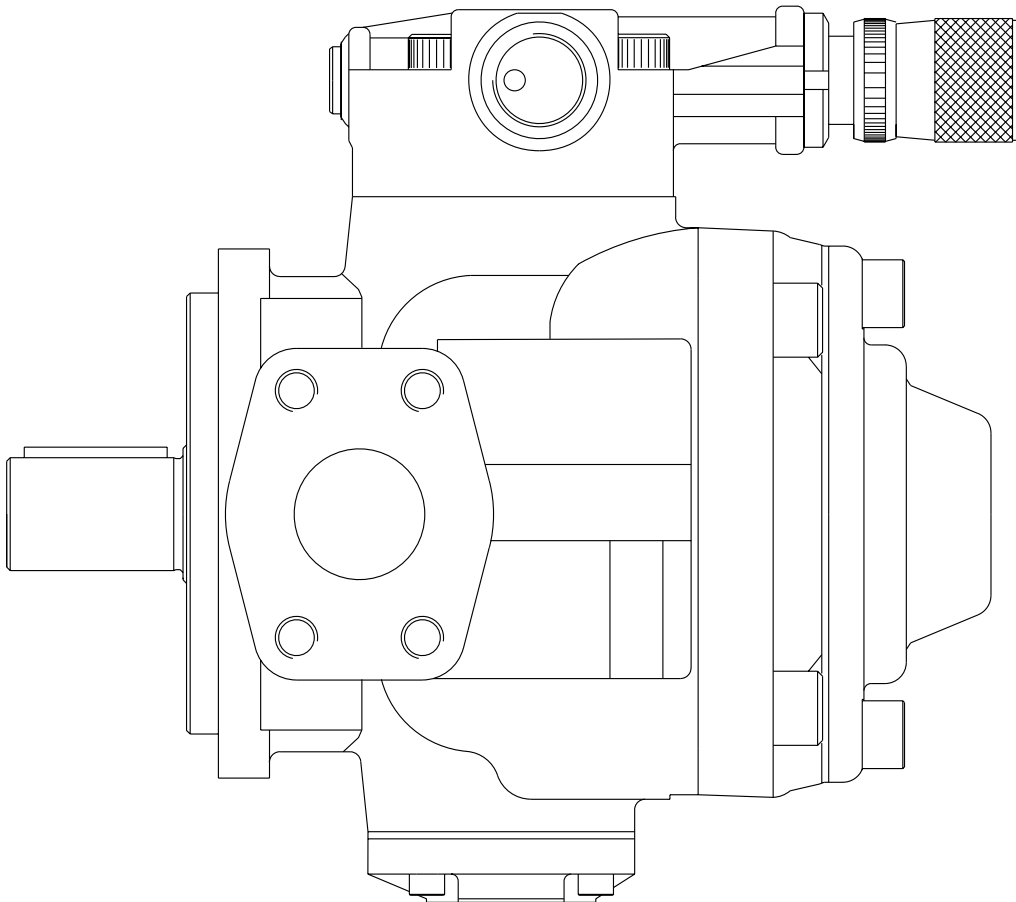
VVS2

VVS3

VVP1

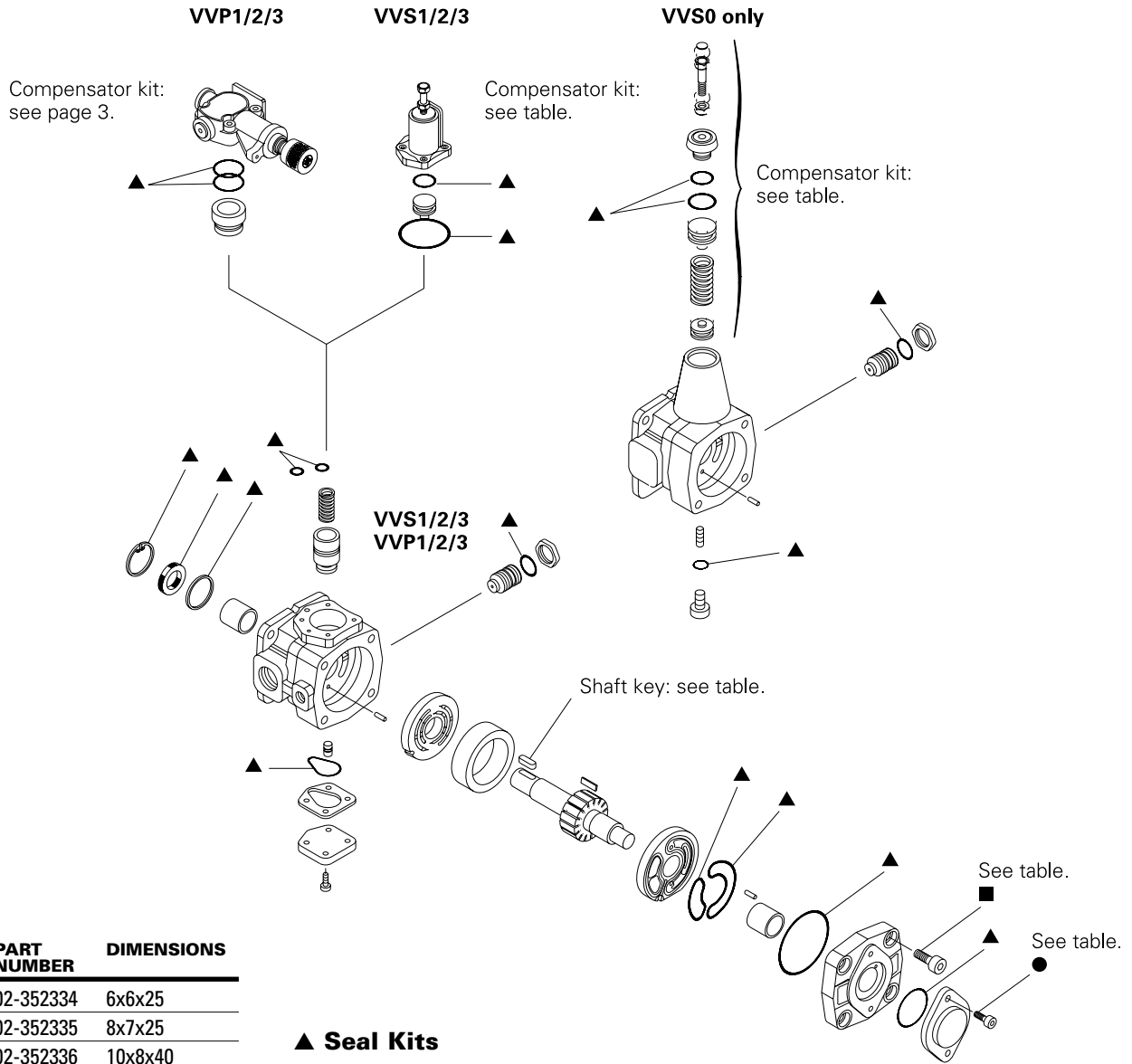
VVP2

VVP3



**VICKERS**<sup>®</sup>

# Available Spares



## Shaft Keys

PUMP	PART NUMBER	DIMENSIONS
VVS0-R	02-352334	6x6x25
VV*1-R	02-352335	8x7x25
VV*2-R, B, PX	02-352336	10x8x40
VV*3-R, PX	02-352337	12x8x45
VV*3-B	02-352338	8x7x35
VV*1-B	02-352339	5x7,5 (Woodruff)
VVS0-PS	02-352340	$\frac{3}{16} \times \frac{3}{16} \times \frac{5}{8}$ "
VV*1-PS	02-352341	$\frac{1}{4} \times \frac{1}{4} \times 1$ "
VV*2/3-PF	02-352342	$\frac{1}{4} \times \frac{1}{4} \times 1\frac{1}{2}$ "

## ▲ Seal Kits

PUMP	STANDARD	VITON
VVS0	02-352260	02-352261
VV*1	02-358835	02-352262
VV*2	02-358836	02-352263
VV*3	02-351947	02-358838
VV*2/3 SAE	02-358869	-

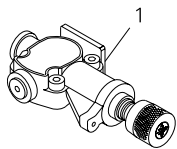
▲ Included in seal kit.

## Cover Tightening Torques

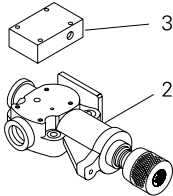
PUMP	■	TORQUE Nm	(lbf in)	●	TORQUE Nm	(lbf in)
VVS0	4 x M10	84,90	(751)	- -		
VV*1	4 x M12	144,50	(1279)	2 x M8	42,00	(372)
VV*2	4 x M14	230,67	(2042)	2 x M12	144,50	(1279)
VV*3-RF, PX	6 x M16	354,10	(3134)	2 x M12	144,50	(1279)
VV*3-PF, B	4 x M16	354,10	(3134)	2 x M12	144,50	(1279)
	+					
	3 x M8	42,00	(372)			

## VVS Compensator Kits

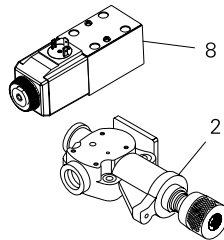
FRAME SIZE	PRESSURE RANGE	CONTROL "C"
0	A	02-352252
0	C	02-352253
0	D	02-352254
1	A	02-359787
1	C	02-352158
2	A	02-359788
2	C	02-352257
3	A	02-359788
3	B	02-352259



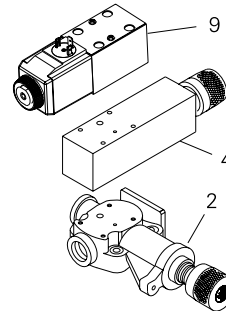
C



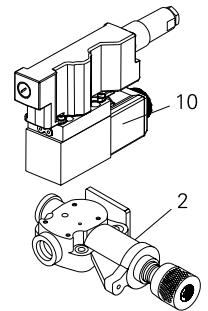
CR



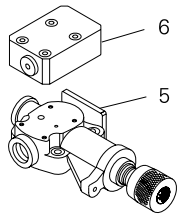
CD1



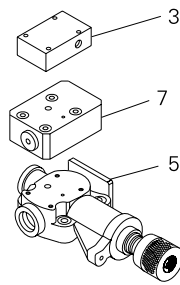
CD2



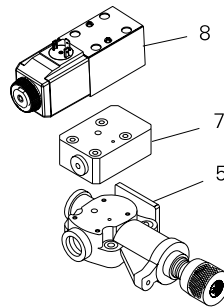
CE



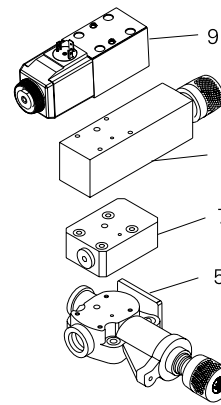
CVP



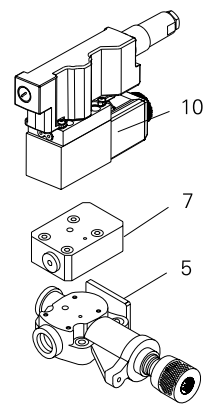
CVPR



CVPD1



CVPD2



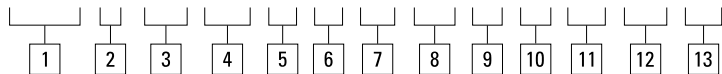
CVPCE

### VVP Compensator Kits

ITEM	DESCRIPTION	VVP1	VVP2	VVP3
1	Standard compensator	02-352242	02-352243	02-352244
2	Multi-function compensator	02-352245	02-352248	02-352248
3	Remote control block	02-352246	02-352246	02-352246
4	Relief valve for dual pressure control	02-352247	02-352247	02-352247
5	Load sensing compensator	02-352249	02-352251	02-352251
6	Load sensing block	02-352250	02-352250	02-352250
7	Load sensing block with interface	02-359835	02-359835	02-359835
8	Directional control valve	02-109041	02-109638	02-109039
9	Directional control valve	02-312228	02-109636	02-109939
10	Proportional control valve	02-146087	02-146087	02-146087

# Model Code VVS Series

**VVS 1 - 16 - (S) R R M - \*0 - C - D W - 10 - \*\***



**1 Variable vane pump**

**2 Frame size**

- 0 - 6, 10, 12 cm<sup>3</sup>/r
- 1 - 16, 20, 25 cm<sup>3</sup>/r
- 2 - 32, 40, 50 cm<sup>3</sup>/r
- 3 - 63, 80, 100 cm<sup>3</sup>/r

**3 Nominal size / geometric displacement, max. pressure**

- |                              |                                    |
|------------------------------|------------------------------------|
| 06 - 6 cm <sup>3</sup> /r    | } Maximum<br>150 bar<br>(2200 psi) |
| 10 - 10 cm <sup>3</sup> /r   |                                    |
| 12 - 12 cm <sup>3</sup> /r   |                                    |
| 16 - 16 cm <sup>3</sup> /r   | } Maximum<br>100 bar<br>(1500 psi) |
| 20 - 20 cm <sup>3</sup> /r   |                                    |
| 25 - 25 cm <sup>3</sup> /r   |                                    |
| 32 - 31,5 cm <sup>3</sup> /r |                                    |
| 40 - 40 cm <sup>3</sup> /r   | } Maximum<br>80 bar<br>(1200 psi)  |
| 50 - 50 cm <sup>3</sup> /r   |                                    |
| 63 - 63 cm <sup>3</sup> /r   |                                    |
| 80 - 80 cm <sup>3</sup> /r   |                                    |
| 100 - 100 cm <sup>3</sup> /r |                                    |

**4 Adjust. max. displacement stop**

- S - With stop  
(Omit if not required.)

**5 Mounting flange / port connections**

Code	Mounting flange	Port connections
<b>R</b>	ISO 3019/2 with straight keyed shaft (size 0 is only available as a single or secondary pump)	G (BSPF) thread. (6-25 cm <sup>3</sup> /r pumps)
<b>RF</b>	ISO 3019/2 with straight keyed shaft	SAE 4-bolt flange with metric mounting bolts (31,5-100 cm <sup>3</sup> /r pumps)
<b>PS</b>	ISO 3019/2 with straight keyed shaft (for size 0 pumps only). Size 0 is only available as a single or secondary pump. SAE B 4-bolt with straight keyed shaft (for size 1 pumps only)	SAE UNF thread. (6-25cm <sup>3</sup> /r pumps)
<b>PF</b>	SAE C 2-bolt with straight UNC mounting bolts on a primary or single pump)	SAE 4-bolt flange with keyed shaft (only available (31,5-100 cm <sup>3</sup> /r pumps)
<b>PX</b>	ISO 3019/2 with straight UNC mounting bolts only on secondary pump)	SAE 4-bolt flange with keyed shaft (available (31,5-100 cm <sup>3</sup> /r pumps)
<b>B</b>	Base plate mounting (available only as single pump)	O-ring sealed (16-100 cm <sup>3</sup> /r pumps)

**6 Rotation viewed from shaft end**

- R - Right hand (clockwise) only

**7 Fluid compatibility**

- M - Mineral oil
- E - Phosphate esters

**8 Pump design number**

- 30 - VVS1, 2, 3
  - 40 - VVS0
- Subject to change. Installation dimensions remain unaltered for designs \*0-\*9.

**9 Pressure control**

- C - Standard pressure compensator

**10 Control pressure setting**

- A - 15-50 bar (215-700 psi)
- B - 30-80 bar (430-1200 psi)  
(sizes 63-100 cm<sup>3</sup>/r)
- C - 30-100 bar (430-1500 psi)  
(sizes 6-50 cm<sup>3</sup>/r)
- D - 80-150 bar (1200-2200 psi)  
(sizes 6-12 cm<sup>3</sup>/r)

**11 Control adjustment**

- W - Screw with locknut
- KL - Screw with key lock

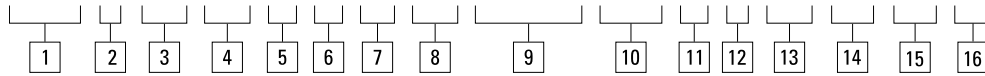
**12 Control design number**

- 10 - For all models.
- Subject to change. Installation dimensions remain unaltered for designs 10-19.

**13 Special features suffix**

# Model Code VVP Series

**VVP 1 - 20 - (S) R R - M - 30 - CVTCE (03) - B \* - 04 - 15 - 10 - \*\***



**1 Variable vane pump**

- 2 Frame size**
- 1 - 16, 20, 25 cm<sup>3</sup>/r
  - 2 - 32, 40, 50 cm<sup>3</sup>/r
  - 3 - 63, 80, 100 cm<sup>3</sup>/r

- 3 Nominal size / geometric displacement, max. pressure**
- |                              |                                    |
|------------------------------|------------------------------------|
| 16 - 16 cm <sup>3</sup> /r   | } Maximum<br>160 bar<br>(2300 psi) |
| 20 - 20 cm <sup>3</sup> /r   |                                    |
| 25 - 25 cm <sup>3</sup> /r   |                                    |
| 32 - 31,5 cm <sup>3</sup> /r |                                    |
| 40 - 40 cm <sup>3</sup> /r   | } Maximum<br>150 bar<br>(2200 psi) |
| 50 - 50 cm <sup>3</sup> /r   |                                    |
| 63 - 63 cm <sup>3</sup> /r   |                                    |
| 80 - 80 cm <sup>3</sup> /r   |                                    |
| 100 - 100 cm <sup>3</sup> /r |                                    |

- 4 Adjust. max. displacement stop**
- S - With stop  
(Omit if not required.)

**5 Mounting flange / port connections**

Code	Mounting flange	Port connections
R	ISO 3019/2 with straight keyed shaft	G (BSPF) thread. (6-25 cm <sup>3</sup> /r pumps)
RF	ISO 3019/2 with straight bolts	SAE 4-bolt flange with keyed shaft metric mounting (31,5-100 cm <sup>3</sup> /r pumps)
PS	SAE B 4-bolt with straight keyed shaft	SAE UNF thread. (6-25 cm <sup>3</sup> /r pumps)
PF	SAE C 2-bolt with straight keyed shaft (only available on a primary or single pump)	SAE 4-bolt flange with UNC mounting bolts (31,5-100 cm <sup>3</sup> /r pumps)
PX	ISO 3019/2 with straight keyed shaft (available only on secondary pump)	SAE 4-bolt flange with UNC mounting bolts (31,5-100 cm <sup>3</sup> /r pumps)
B	Base plate mounting (available only as single pump)	O-ring sealed (16-100 cm <sup>3</sup> /r pumps)

- 6 Rotation viewed from shaft end**
- R - Right hand (clockwise) only

- 7 Fluid compatibility**
- M - Mineral oil
  - E - Phosphate esters

**8 Pump design number**  
Subject to change. Installation dimensions remain unaltered for designs 30-39.

- 9 Pump controls**
- C - Standard pressure compensator
  - CR - Remote controlled pressure control
  - CD1 - Dual pressure control with non-adjustable min.pressure
  - CD2 - Dual adjustable pressure control
  - CE - Proportional pressure control
  - CVP - Load sensing compensator
  - CVPR - Remote controlled load sensing control
  - CVPD1 - Load sensing control with dual pressure with fixed minimum pressure
  - CVPD2 - Load sensing control with dual adjustable pressure control
  - CVPCE - Load sensing control with proportional pressure control
  - CVT - Torque limiter
  - CVTR - Remote controlled torque limiter
  - CVTD - Torque control with dual adjustable pressure control
  - CVTCE - Torque control with proportional pressure control

- 10 Electrical rating and wiring connection**
- For CD\*, CVPD\*, CVTD pump controls, three options below apply; for CE, CVPCE, CVTCE, only option 03 applies.
- 01 - 220V AC 50 Hz with DIN 43650 plug connection
  - 02 - 115V AC 60 Hz with 1/2" NPT conduit box
  - 03 - 24V DC with DIN 43650 plug connection
- (Omit if not required.)

- 11 Control pressure setting**
- B - 30-160 bar (430-2300 psi)  
(sizes 16-50 cm<sup>3</sup>/r)
  - C - 30-150 bar (430-2200 psi)  
(sizes 63-100 cm<sup>3</sup>/r)

- 12 Control adjustment**  
Omit for CR, CE, CVPR, CVTD, CVPCE and CVTCE pump controls.
- K - Micrometer knob (standard)
  - KL - Micrometer knob with key lock

- 13 Maximum power setting in kW**
- Applies to CVT pump control only.
- \*\* - Factory setting of power limit in kilowatt; for example 04 = 4 kW

- 14 Maximum pressure setting**
- Applies to CVT pump control only.
- \*\* - Factory setting of pressure for zero flow in 10 bar increments; for example 15 = 150 bar

- 15 Control design number**
- 10 - For all models. Subject to change. Installation dimensions remain unaltered for designs 10-19.

- 16 Special features suffix**

**Eaton**  
14615 Lone Oak Road  
Eden Prairie, MN 55344  
USA  
Tel: 952 937-9800  
Fax: 952 974-7722  
[www.hydraulics.eaton.com](http://www.hydraulics.eaton.com)

**Eaton**  
20 Rosamond Road  
Footscray  
Victoria 3011  
Australia  
Tel: (61) 3 9319 8222  
Fax: (61) 3 9318 5714

**Eaton**  
46 New Lane, Havant  
Hampshire PO9 2NB  
England  
Tel: (44) 23 92 486 451  
Fax: (44) 23 92 487 110



**Vickers**