



PANAGON
systems

HYDRAULIC PUMP MANUFACTURING

PVE PISTON PUMP MODELS **BUILT BY US**

PVE 12
PVE 19/21



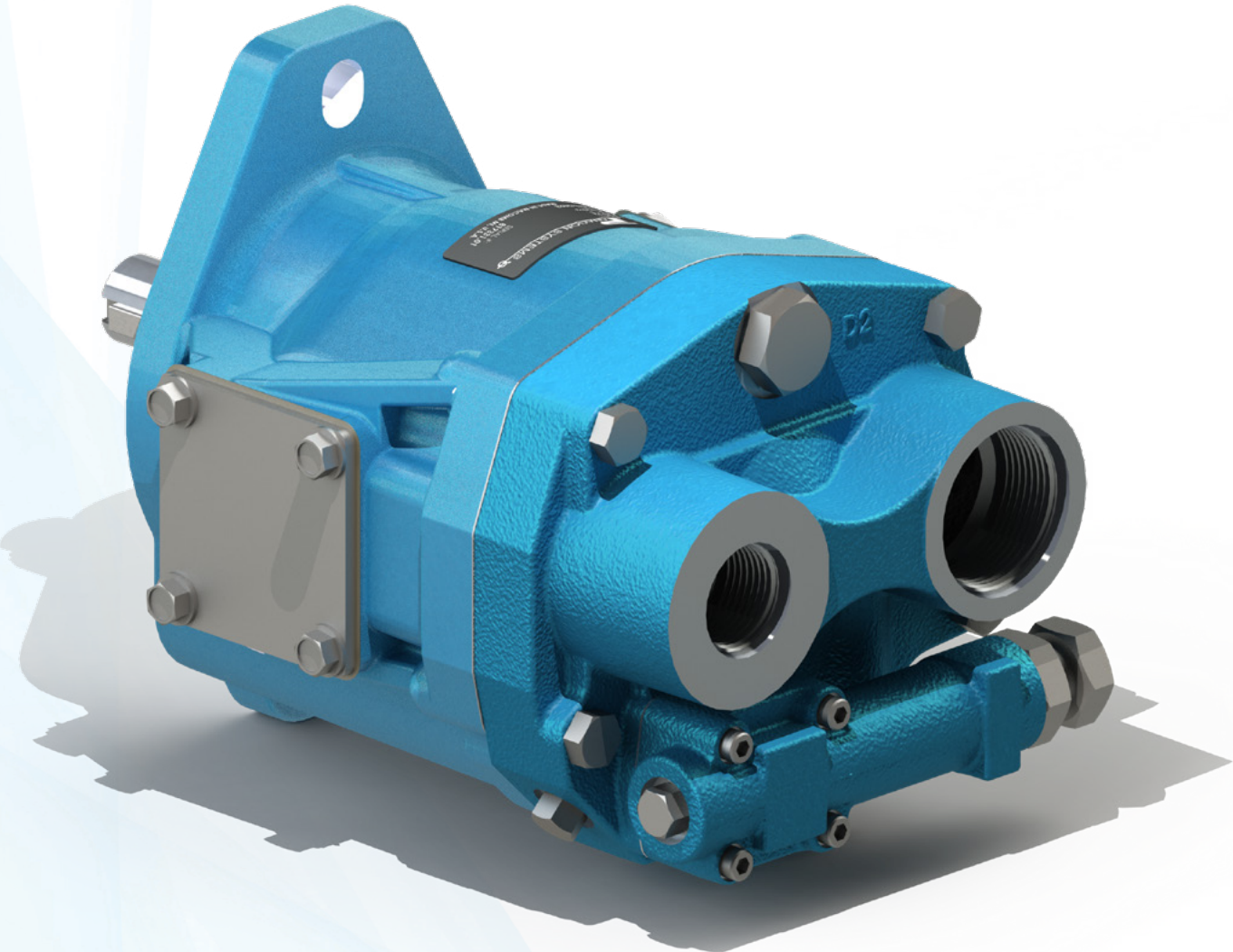
PARTS INFORMATION GUIDE

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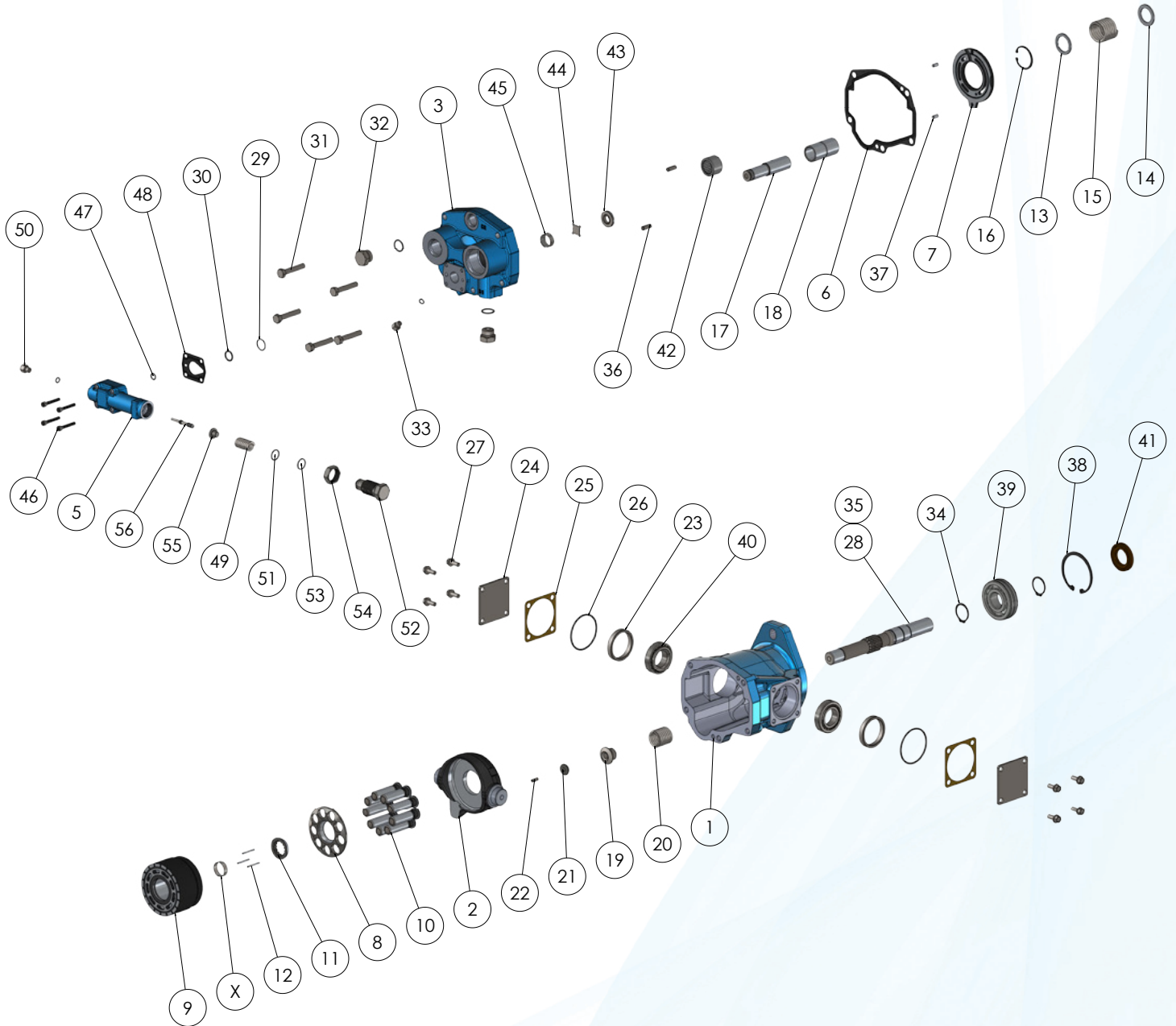


Founded nearly 35 years ago, Panagon Systems has remained a trusted company producing hydraulic parts on demand for a number of shops, manufacturers and industries. The company, located in Macomb, Michigan, is a hydraulic piston pumps and parts manufacturer, providing a vast variety of current and obsolete components. With a variety of CNC machines, Panagon produces finished product from raw materials. Which are then assembled, tested, painted and shipped from our facility. Panagon Systems attempts to fill the void OEM's create by manufacturing the phased out, expensive, unavailable pumps, motors and transmissions.

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Identification of Model Code 12



Model PVE 12



Model PVE 12

ITEM	PART NUMBER		QTY	NOTE	DESCRIPTION
	Panagon	OEM			
1	PS8093	682988	1		Housing
2	PS577321	682369	1		Yoke
3	PS8111	877220	1	C	Valve Block
4	PS1459	164432	1	C	Instruction Plate
5	PS139313	934147	1	B/D	Compensator Body
5	PS1624	412890	1	B/D	Compensator Body (Not Shown)
5	PS117265	932965	1	B/D	Compensator Body (Not Shown)
6	PS7748	682936	1	A	Gasket
7	PS8104	686759	1	E	Control Plate
8	PS1931	684150	1	E	Shoe Plate
9	PS3273	684154	1	E	Cylinder Block
10	PS1935	882953	9	E	Piston/Shoe S/A
11	PS1922	682905	1	E	Spherical Washer
12	PS1929	248787	3	E	Pin
13	PS1926	682915	1	E	Lift Limiter
14	PS1924	682914	1	E	Thrust Washer
15	PS1918	683604	1	E	Spring
16	PS1914	683414	1	E	Retaining Ring
17	PS8086	682909	1	B	Control Rod
18	PS8085	682910	1	B	Control Piston
19	PS8095	409999	1	B	Seat
20	PS8094	686753	1	B	Inner Spring
21	PS8096	409998	1	B	Seat Button
22	PS8097	162160	1		Roll Pin
23	PS8099	682918	2		Pintle Spacer
24	PS7568	416637	2		Pintle Cover
25	PS1997	923938	2		Pintle Gasket
26	PS135297	174140	2		O-Ring
27	PS8100	427172	8		Washer Hex Head Screw
28	PS1897	689402	1		Drive Shaft
29	PS1617	185638	1	C	Retaining Ring
30	PS135122	427682	1	A	O-Ring
31	PS8125	470819	5		Hex Head Cap Screw
32	PS198	186580	2		O-Ring Plug
33	PS8123	398071	1		O-Ring Plug
34	PS1913	683416	2		Retaining Ring
35	PS1456	058303	1		Key
36	PS8112	683402	2		Roll Pin
37	PS8120	683422	2		Pin
38	PS19	120428	1		Retaining Ring
39	PS1900	049758	1		Bearing
40	PS1337	417381	2		Bearing
41	PS7747	682702	1	A	Shaft Seal
42	PS1901	683412	1	C	Bearing
43	PS8119	682912	1		Poppet Seat
44	PS8117	682911	1		Poppet Valve
45	PS8114	683605	1		Poppet Spring

ITEM	PART NUMBER		QTY	NOTE	DESCRIPTION
	Panagon	OEM			
46	PS1485	010358	4	D	Screw
47	PS5813533	104166-011	1	D	O-Ring
48	PS90309	913451	1	A/D/H	Gasket
49	PS37	239371	1	D	Spring
49	PS8088	417649	1	D	Spring
50	PS8123	398071	1	D	O-Ring Plug
51	PS5811361	173792	1	A/D	O-Ring
52	PS83428	392175	1	D/K	Adjusting Plug
53	PS5811360	8770-015	1	D	Back-Up Ring
54	PS91024	937039	1	D	Jam Nut
55	PS36	234204	1	D	Seat
56	PS138123	241717	1	D	Spool
56	PS1626	296234	1	D	Spool
56	PS3268	278711	1	D	Spool

- A Included in PS7731 / 882955 Seal Kit
- B Used with Compensator Control Only
- C Included in Valve Block S/A
- D Included in Pressure Compensator Kit
- E Included in Rotating Group PS1175 / 882954

Model PVE 12 - Long Code

P V E 0 1 2 R 0 0 1 A U B 0 B 3 3 2 4 0 0 A 1 0 0 1 0 0 C D 0 A
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

1 2 3 Pump Series

PVE Open circuit piston pump

4 5 6 Displacement

25.2 cm³/rev (1.54 in³/rev)

Input Rotation

- 7** R Clockwise (right hand)
- L Counterclockwise (left hand)

Front Mounting and Input Shaft

- 8 9** 01 SAE B 2 bolt, keyed
- 05 SAE B 2 bolt, Splined 13t 16/32DP
- 09 SAE B 2 bolt, Splined 26t 32/64DP

Main Port Location and Size

- 10 11** AU End ports, SAE o-ring; #20 suction, #12 pressure
- AV End ports, ISO 6149; M42 suction, M27 pressure

Drain Port Size

- 12** 06 M18 metric O-ring port – top (D1)
- 07 M18 metric O-ring port – bottom (D2)
- B #8 SAE O-ring port – top (D1)
- C #8 SAE O-ring port – bottom (D2)

Diagnostic Pressure Port

- 13** 0 No diagnostic pressure port

Controller Type

- 14** A Pressure Compensator
- B Pressure and flow compensator
- C Electric dual range pressure Compensator with directional control valve
- D Hydraulic remote control pressure compensator
- E Unloading valve (accumulator Circuits)
- F Electric dual range pressure compensator without directional control valve

15 16 Pressure Comp./Unloading Valve Setting

- 00 No pressure compensator setting
- 33 207-214 bar (3000-3100 psi)

17 18 Flow Comp. Setting or Unload Valve

- 00 No pressure compensator setting
- 11 9.65-12.41 bar (140-180 psi)
- 24 22.75-25.51 bar (330-370 psi)

19 20 Secondary Compensator Setting

- 00 As Given in Code Title

21 Control Special Features

- 0 No Special Features
- A Bleed down orifice, LS only
- B External load-sensing adjustment
- G High rate spring for low pressure setting
- J Bleed down orifice and high rate spring for low pressure setting

22 Maximum Displacement Option

- 1 Standard adjustment
- 2 Adjustable maximum displacement (set at maximum)

23 24 Auxiliary Mounting and Output Shaft

- 00 No auxiliary mounting or output shaft

25 Shaft Seals

- 0 No shaft seal
- 1 Standard shaft seal (nitrile)

26 27 Special Features

- 00 No special features

28 29 Paint

- 00 No paint
- CD Blue primer

30 Customer and unit identification

- 0 STD – mark assembly Number, full model code and build data Code on plate

31 Design Code

- A First

Model PVE 012 - Short Code

P V E 1 2 R - (Q) * * - * * - 1 0 - C * * V P C * * - B - 1 2
 1 2 3 4 5 6 7 8 9 10 11 12 13 14

1 Pump

2 Variable Displacement

Inlet Piston Type

3 E-Series

4 Flow Rating

12 USgpm @ 1800 rpm
 (45.4 I/min @ 1800 rpm)

5 Shaft Rotation

(Viewed from shaft end)
 R Clockwise rotation
 L Counterclockwise rotation

6 Noise Level Rating

Blank - Standard unit
 Q-Industrial quieter 1800 rpm
 @207 bar (3000 psi)

7 Mounting Flange

B SAE B 2 bolt

8 Input Shaft Type

1 SAE B Straight keyed
 2 SAE B Splined

9 Port Configuration

E End ported, SAE O-ring
 M End ported, Metric O-ring (Per ISO 6149)

10 Shaft Seal

S Standard shaft seal
 N No shaft seal

11 Design

12 Control Options

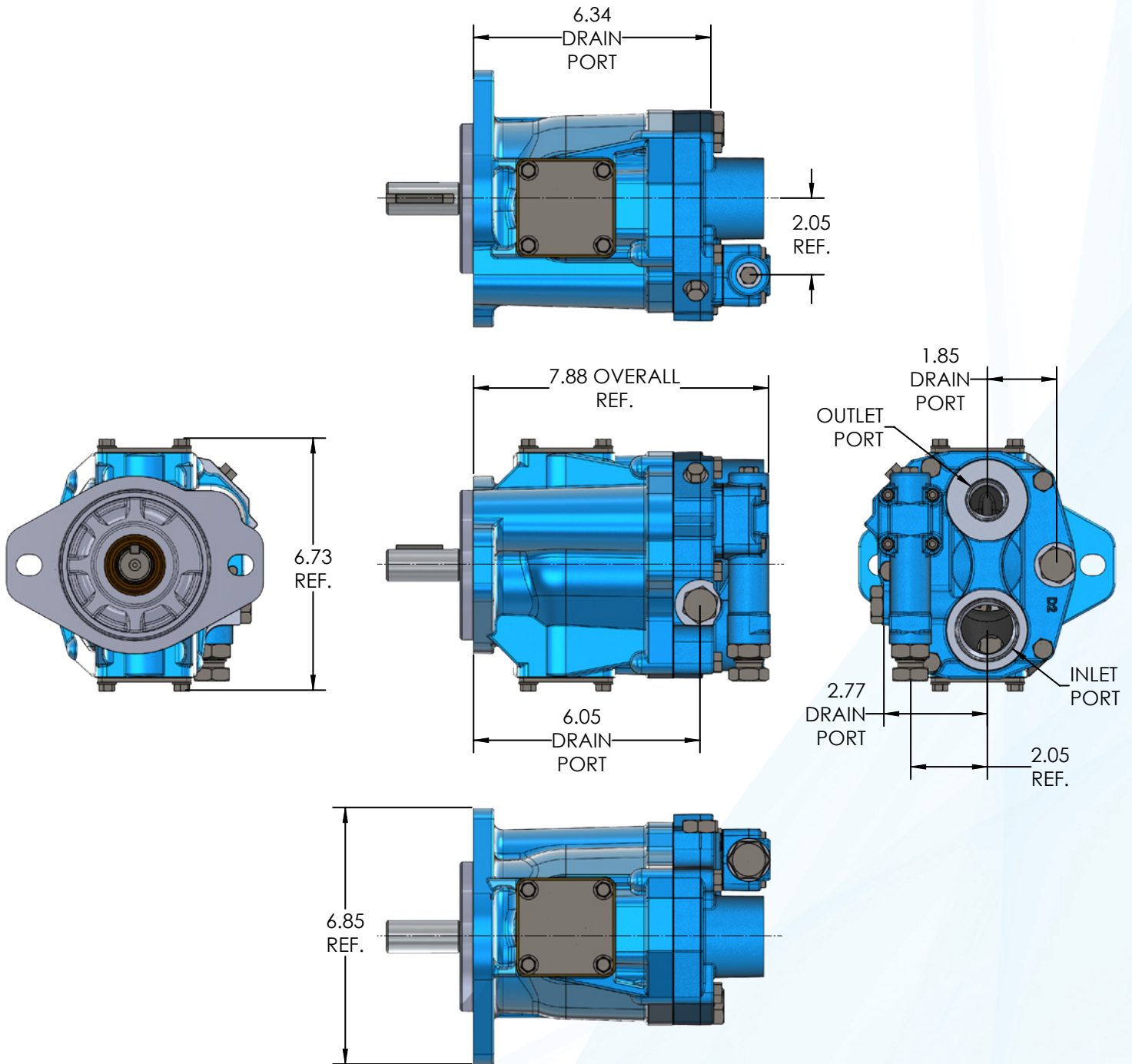
C** Press compensator
 Standard setting 21 bar (3000 psi)
 Max setting 207 bar (3000 psi)
 Range 02-21 bar (290-3000 psi)
 CV** Load Sensing
 STD setting 11 bar (160 psi)
 Range 10-17 bar (150-250 psi)
 C**VP** Press & Load sensing
 Press Comp. (see C**)
 Load sensing (see CV**)
 C***VPC** Press. & Load sensing
 Press Comp. (see C**)
 Load setting 24 bar (350 psi)
 Range 17-31 bar (251-450 psi)
 C**VPD** Press. & Load sensing
 Press Comp. (see C**)
 Load setting 41 bar (600 psi)
 Range 32-45 bar (451-650 psi)
 CC** Same as C** except with Max. Adj. Stop
 CG** Press Comp. with remote
 control (see C**)
 CD Electric dual range comp.
 CCD Same as CD except with Max. Adj. Stop

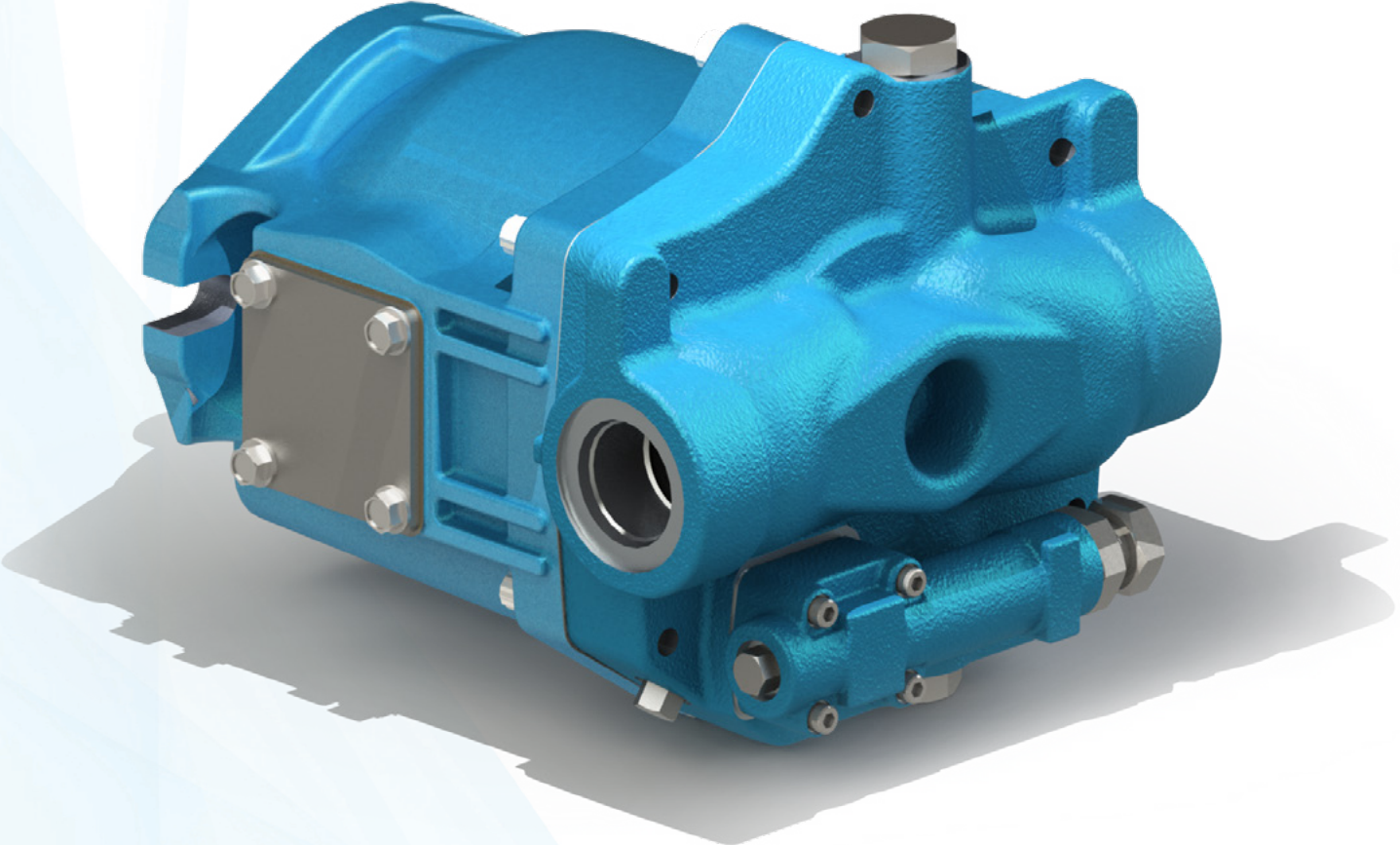
13 Control Bleed Down

Blank - C, CV, CC, CG, CD, CCD
 B Bleed down orifice CVP, CVPC
 P Plug (No orifice) CVP, CVPC

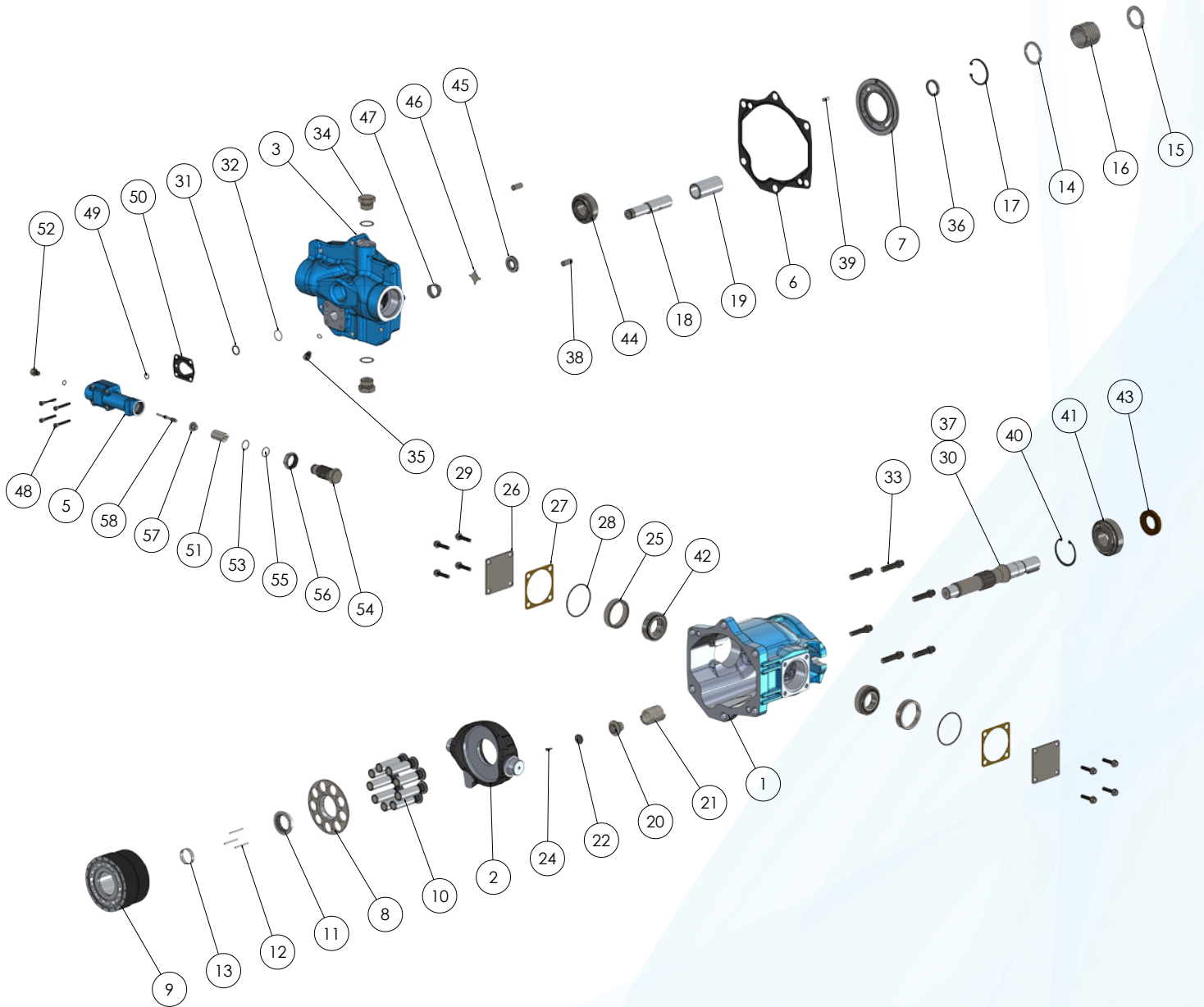
14 Control Design

(** = Pressure setting in tens of bar)





Model PVE 19/21



Model PVE 19/21

ITEM	PART NUMBER		QTY	NOTE	DESCRIPTION
	Panagon	OEM			
1	See Table 4		1		Housing
2	See Table 4		1		Yoke
3	See Table 1		1	D	Valve Block
4	PS1459	164432	1	D	Instruction Plate
5	See Table 5		1	C/E	Compensator Body
6	PS1417	423617	1	A	Gasket
7	See Table 3		1	F	Control Plate
8	PS1301	402650	1	F/G	Shoe Plate
9	See Table 2		1	F	Cylinder Block
10	See Table 2		9	F	Piston/Shoe S/A
11	PS1300	402580	1	F/G	Spherical Washer
12	PS1930	248810	3	F/G	Pin
13	PS1928	410050	1	F/G	Pin Retainer
14	PS1925	423368	1	F/G	Lift Limiter
15	PS1923	404932	1	F/G	Thrust Washer
16	See Table 2		1	F/G	Spring
17	PS7146	087541	1	F/G	Retaining Ring
18	PS2278	404957	1	C	Control Rod
18	PS86776	594353	1	C/H/I	Control Rod
19	PS577572	404958	1	C	Control Piston
19	PS137627	594354	1	C/H/I	Control Piston
19	PS577572	404958	1	C/H/I	Control Piston
20	See Table 4		1	C	Seat
21	See Table 4		1	C	Inner Spring
22	PS8096	409998	1	C	Seat Button
23	See Table 4			H/I	Yoke Stop
24	PS8097	162160	1	C	Roll Pin
25	PS10082	410053	2		Pintle Spacer
26	PS7568	416637	2		Pintle Cover
27	PS1997	923938	2		Pintle Gasket
28	PS135297	174140	2		O-Ring
29	PS8100	427172	8		Washer Hex Head Screw
30	PS1880	428883	1		Drive Shaft
31	PS135122	427682	1	A	O-Ring
32	PS1617	185638	1	C/D	Retaining Ring
33	PS2454	427171	6		Torx Head Screw
34	PS6042	181792	2		O-Ring Plug
35	PS8123	398071	1		O-Ring Plug
36	PS1996	942401	1		Shaft Spacer
37	PS1456	058303	1		Key
38	PS10080	429325	2		Roll Pin
39	PS10079	248910	1		Pin
40	PS1299	085560	1		Retaining Ring
41	PS1335	419627	1		Bearing
42	PS1337	417381	2		Bearing
43	PS136810	471965	1	B	Shaft Seal
44	PS1834	473914	1	D	Bearing
45	PS5569	402643	1		Poppet Seat

ITEM	PART NUMBER		QTY	NOTE	DESCRIPTION
	Panagon	OEM			
46	PS5570	402644	1		Poppet Valve
47	PS11852	410054	1		Poppet Spring
48	PS1485	010358	4	E	Screw
49	PS5813533	104166-011	1	E	O-Ring
50	PS90309	913451	1	A/E/I	Gasket
51	See Table 5		1	E	Spring
52	PS8123	398071	1	E	O-Ring Plug
53	PS5811361	173792	1	A/E	O-Ring
54	PS83428	392175	1	E	Adjusting Plug
55	PS5811360	8770-015	1	E	Back-Up Ring
56	PS91024	937039	1	E	Jam Nut
57	PS36	234204	1	E	Seat
58	See Table 5		1	E	Spool

- A Included in PS1420 / 923989 Seal Kit
- A Included in PS90467 / 920248 Seal Kit
- C Used with Compensator Control Only
- D Included in Valve Block S/A
- E Included in Pressure Compensator Kit
- F Included in Rotating Group PS1180 / 923948
- G Included in Rotating Group PS1181 / 923947
- H Part not shown in exploded view
- I Used in MVE only

Model PVE 19/21

Table 1 - Valve Block S/A		
Model Code	Panagon	OEM
PVE 19-R (20 des)	PS2378	423337
PVE 19-L (20 des)	PS2376	423329
PVE 21-R (20 des)	PS137867	429729
PVE 21-L (20 des)	PS5800532	933016
PVE 19-R (30 des)	PS2378	423337
PVE 19-L (30 des)	PS2376	423329
PVE 21-R (30 des)	PS137867	429729
PVE 21-L (30 des)	PS5800532	435281
MVE19*-30-**-10	PS86774	594346
MVE19*-30-**-10-030	PS87517	680780

Table 2 - Rotating Group								
Model Code	Panagon	OEM	Panagon	OEM	Panagon	OEM	Panagon	OEM
Model	Cyl Block		Piston S/A		Spring		Rotating Group	
PVE 19	PS1863	426454	PS576444	923939	PS1919	402579	PS1180	923948
MVE 19	PS1866	426836			PS2421	594799	PS2420	938092
MVE 19					PS2419	418271	PS2418	923941

Table 3 - Control Plate		
Model Code	Panagon	OEM
Model	Control Plate	
PVE 19-R	PS3283	425412
PVE 19-L	PS2457	425415
PVE 21-R	PS3284	425413
PVE 21-L	PS3285	425416
MVE 19	PS3286	627147
MVE 19	PS2461	435282

Table 4 - Housing and Yoke										
Model Code	Panagon	OEM	Panagon	OEM	Panagon	OEM	Panagon	OEM	Panagon	OEM
Model	Yoke		Housing		Yoke Spring		Spring Seat		Yoke Stop	
PVE**C***1*	PS577320	409997	PS11315	422308	PS11854	410061	PS8095	409999	--	--
MVE19*-30-M*-10	PS86773	594341			PS2421	594799	PS86777	594355	--	--
MVE19*-30-P7*-10	PS577320	409997			PS2419	418271	PS86437	581053	PS86438	581054
MVE19*-30-P9*-10							PS84566	500572		
MVE19**0-30	PS1203	416636	PS9486	422309	--	--	--	--	PS84018	427364
MVE19**7-30									PS83762	416670
MVE19**9-30									PS84034	428863
MVE19**11-30									PS83822	420935
MVE19**13-30									PS83875	422227
MVE19**15-30									PS84033	428858

Table 5 - Pressure Compensator										
Model Code	Panagon	OEM	Panagon	OEM	Panagon	OEM	Panagon	OEM	Panagon	OEM
Model	Comp. S/A		Spring		Spool		Gasket		Plug	
"C"-10	PS576322	02-348245	PS37	239371	PS138123	241717	PS90309	913451	PS2265	241621
"CG"-10	PS137530	02-348243			PS1626	296234			PS1623	412940
"CV"-10	PS8083	942441	PS8088	417649	PS3268	278711				
MVE	PS86775	594348	--	--	--	--	PS3266	436330	--	--

Table 6 - Shaft and Key						
Model Code	Panagon	OEM	Panagon	OEM	Panagon	OEM
Model	Drive Shaft		Key		Retaining Ring	
PVE**-1	PS1880	428883	PS1456	058303	PS1914	683414
PVE**-2	PS1879	423415	--	--	--	--
PVE**-9	PS1881	424544	--	--	--	--

Model PVE 19/21 - Long Code

P V E 1 9 A R 0 1 A A 1 0 B 3 3 2 4 0 0 A 1 A A 1 A F C D 0 A
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

1 2 3 **Pump Series**

PVE Open circuit piston pump

4 5 6 **Displacement**

41.0cm³/r (2.50 in³/r)

7 **Input Rotation**

R Clockwise (right hand)
 L Counterclockwise (left hand)

8 9 **Front Mounting and Input Shaft**

01 SAE B 2 bolt, Keyed
 02 SAE B-B 2 bolt, Keyed
 04 SAE B 2 bolt, tapered
 05 SAE B 2 bolt, splined
 13t 16/32DP long shaft
 08 SAE B-B 2 bolt, splined 15t 16/32DP
 09 SAE B 2 bolt, splined 26t 32/64DP

10 11 **Main Port Location and Size**

AA Side ports, SAE o-ring; #24 suction, #14 pressure
 AB End ports, SAE o-ring; #24 suction, #14 pressure
 AC Side ports, SAE 4 bolt flange, Code 61; 1 1/2" suction, 1" pressure
 AD End ports, SAE 4 bolt flange, Code 61; 1 1/2" suction, 1" pressure
 AE Side ports, ISO 6149- 1; M48 suction, M33 pressure
 AF End ports, ISO 6149- 1; M48 suction, M33 pressure
 AS End ports ISO 6162 4 bolt flange; 1 1/2" suction, 1" pressure

12 **Drain Port Size**

01 #10 SAE O-ring port – top (D1)
 02 #10 SAE O-ring port – bottom (D2)
 06 M18 metric O-ring port – top (D1)
 07 M18 metric O-ring port – bottom (D2)

13 **Diagnostic Pressure Port**

0 No diagnostic pressure port
 1 #4 SAE O-ring port – plugged
 2 M14 metric

14 **Controller Type**

A Pressure Compensator
 B Pressure and flow compensator
 C Electric dual range pressure Compensator with directional control valve
 D Hydraulic remote control pressure compensator
 E Unloading valve (accumulator Circuits)
 F Electric dual range pressure compensator without directional control valve

15 16 **Pressure Comp./Unloading Valve Setting**

00 No pressure compensator setting
 18 182.7-189.6 bar (2650-2750 psi)
 33 206.8-213.7 bar

17 18 **Flow Comp. Setting or Unload Valve**

00 No pressure compensator setting
 11 9.65-12.41 bar (140-180 psi)
 14 12.41-15.17 bar (180-220 psi)
 24 22.75-25.51 bar (330-370 psi)

19 20 **Secondary Compensator Setting**

00 No secondary compensator setting
 04 186.2-193.1 bar(2700-2800 psi)

21 **Control Special Features**

0 No Special Features
 A Bleed down orifice
 B External load-sensing adjustment
 G High rate spring for low pressure setting
 J Bleed down orifice and high rate spring for low pressure setting

22 **Maximum Displacement Option**

1 Standard adjustment
 2 Adjustable maximum displacement (set at maximum)

Model PVE 19/21 - Long Code Cont.

23 24 Auxiliary Mounting and Output Shaft

- 00 No auxiliary mounting or output shaft
- AA SAE A 2 bolt w/ 9T 16/32DP external splined shaft
- AB 2 Bolt A (SAE J744- 82-2) w/ 11T 16/32DP ex. splined shaft
- AC SAE B 2 bolt w/ 13T 16/32 DP internal splined coupling
- AD SAE B 2 bolt w/ 15T 16/32DP internal splined coupling
- AE SAE B 2 bolt w/ 26T 32/64DP external splined shaft
- AH SAE A 2 bolt w/ 9T 16/32DP internal splined coupling
- AJ SAE A 2 bolt w/ 11T 16/32DP internal splined coupling
- AK SAE B 2 bolt w/ 26T 32/64DP internal splined coupling

25 Shaft Seals

- 0 No shaft seal
- 1 Fluorocarbon shaft seal

26 27 Special Features

- 00 No special features
- AA Auxiliary mounting cover plate
- AF Cast iron housing

28 29 Paint

- 00 No paint
- CD Blue primer

30 Customer and unit identification

- 0 STD – mark assembly Number, full model code and build data Code on plate

31 Design Code

- A First

Model PVE 19/21 - Short Code

P V E * * (*) * - * - * * - C * * * - 1 *
1 2 3 4 5 6 7

1 Model Series

PVE Pump, Variable displacement, series inline piston unit

2 Flow Rating

@ 1800 rpm
19 19 USgpm
21 21 USgpm

3 Mounting

F - Foot mounting
Omit - For flange

4 Shaft Rotation

(Viewed from shaft end)
R Right hand (CW)
L Left hand (CCW)

5 Input Shaft

1 SAE B-B straight thread
2 SAE B-B 15 tooth spine
9 SAE B 13 tooth spline

6 Pump Design

20 Single drain port
30 Dual drain port

7 Control Type & Design

C-10 Pressure compensated
(PVE19, 250-3000 psi)
(PVE21, 250-2700 psi)
CG-10 Remote control pressure
compensator adjustable from
350-3000 psi using an
external relief valve
CV-10 Load sensing PVE19/21
CVP-12 Load sensing (160 PSID) with
pressure compensation PVE 19/21
CVPC-12 Load sensing (350 PSID) with
pressure compensation PVE 19/21

Model PVE 19/21 - Short Code

P V E 1 9 ** - Q 1 ** 0 - * - 3 0 - C ** - **
1 2 3 4 5 6 7 8 9 10

1 Pump

2 Variable displacement

3 Inline Piston Unit - "E" Series

4 Flow Rating @ 1800 rpm

19 19 USgpm

5 Shaft Rotation

(Viewed from shaft end)

R Right hand (CW)

L Left hand (CCW)

6 Ports & Thru-Shaft

W Side ports (Std)

X Side ports with thru-shaft

7 Sound Reduced Ind. Model

Q1210 Max speed 1200 rpm

Max press 1000 psi

Q1830 Max speed 1800 rpm

Max press 3000 psi

8 Input Shaft

1 SAE B-B straight thread

2 SAE B-B 15 tooth spine

9 SAE B 13 tooth spline

9 Pump Design

10 Control Type & Design

C-10 Press comp (300-3000 psi) Q1830 only

CA-12 Press comp (300-3000 psi)

CG-10 Remote adj comp

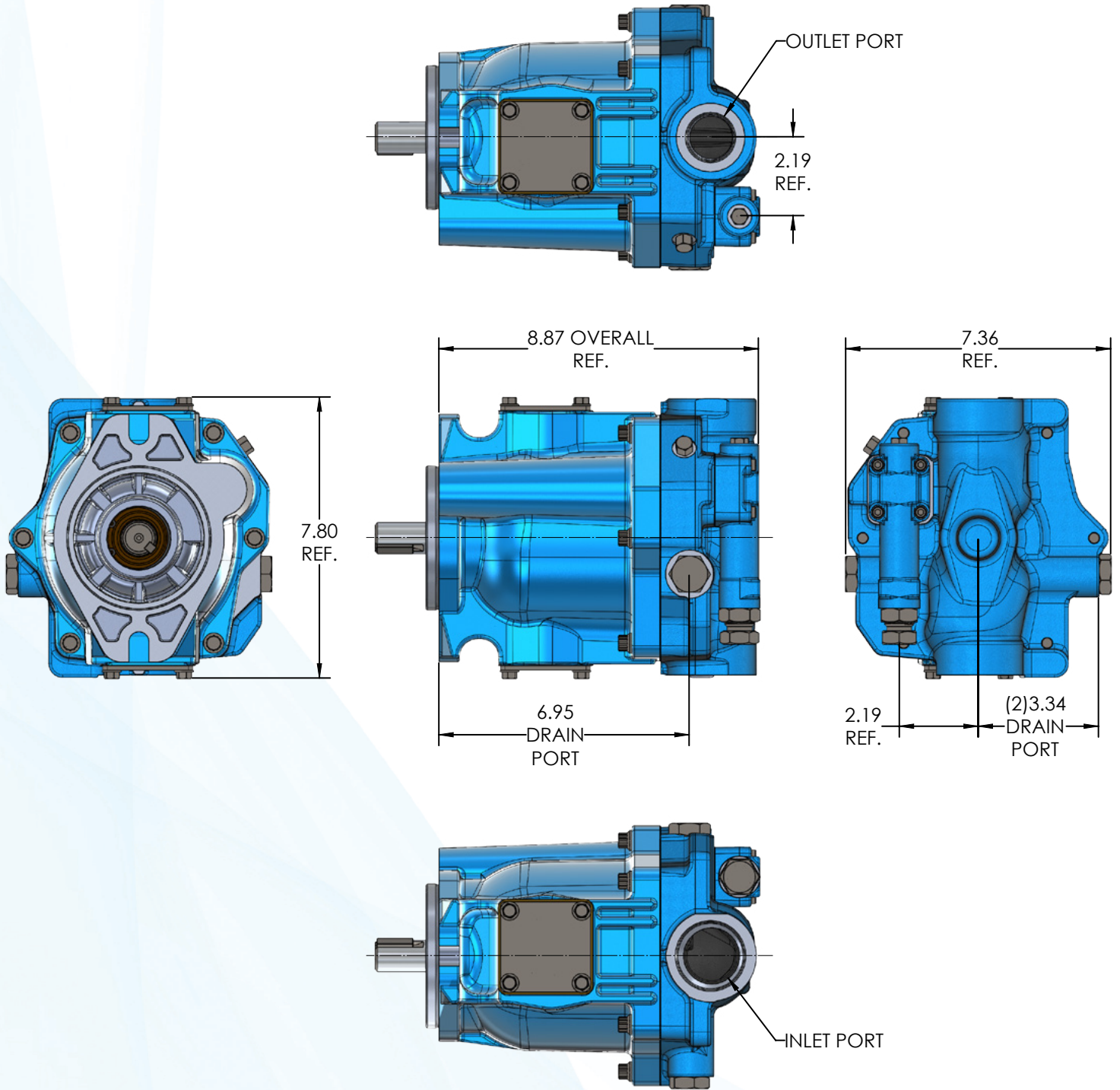
CC11 Adj max stop (W models only)

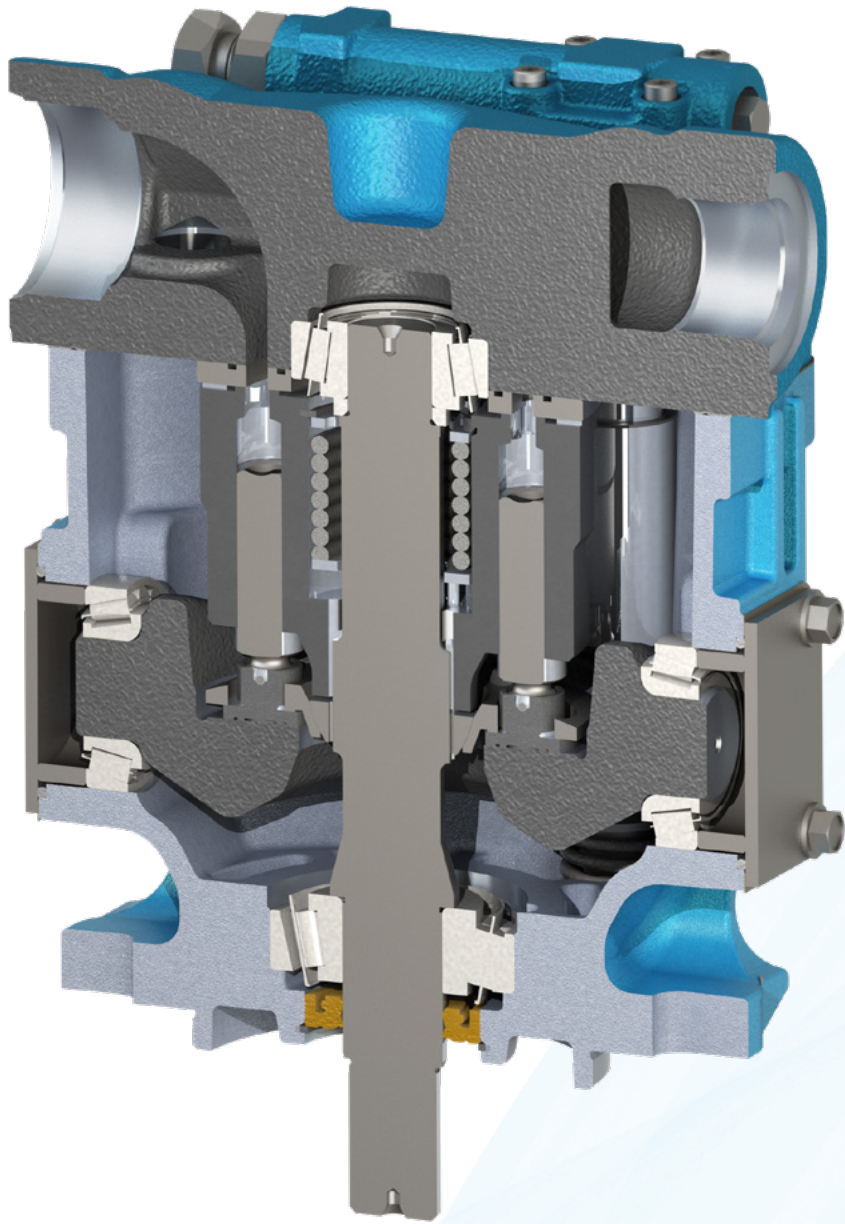
CD-20 Elect dual range comp (W models only)

CVP-12 Load sensing with press limiter

CCD-20 Elect dual range comp w/adj max stop
(W models only)

CAC-11 Adj max stop with CA comp
(W models only)







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