

Pulsar® Stackable Valves

Product Ordering Quick Reference
Pulsar HY14-0108

Effective: January 1, 2008

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climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



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SAFETY GUIDE

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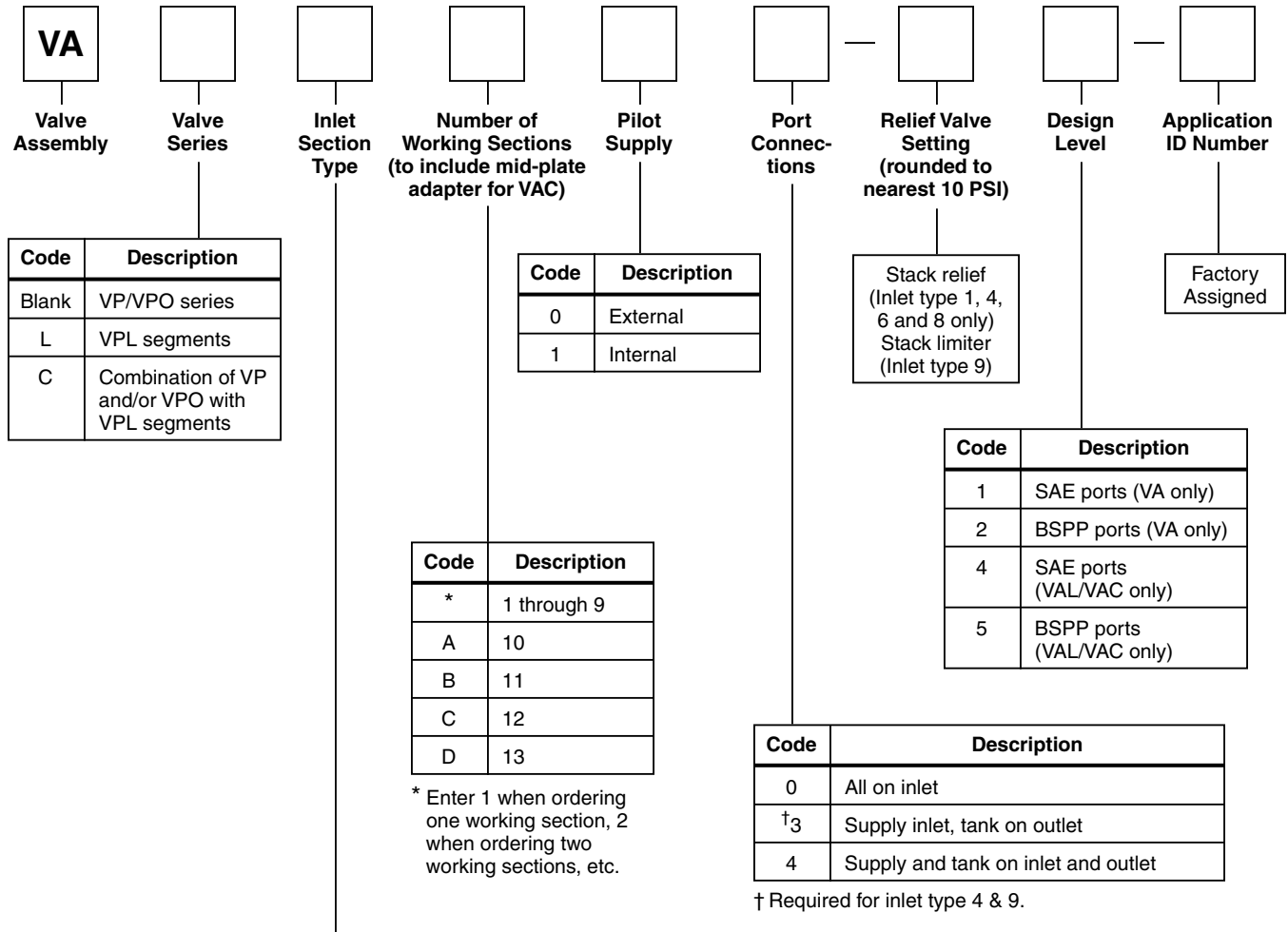
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Pulsar® Stackable Valves

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Valve Assemblies for VP/VPO/VPL Series Valve Stack



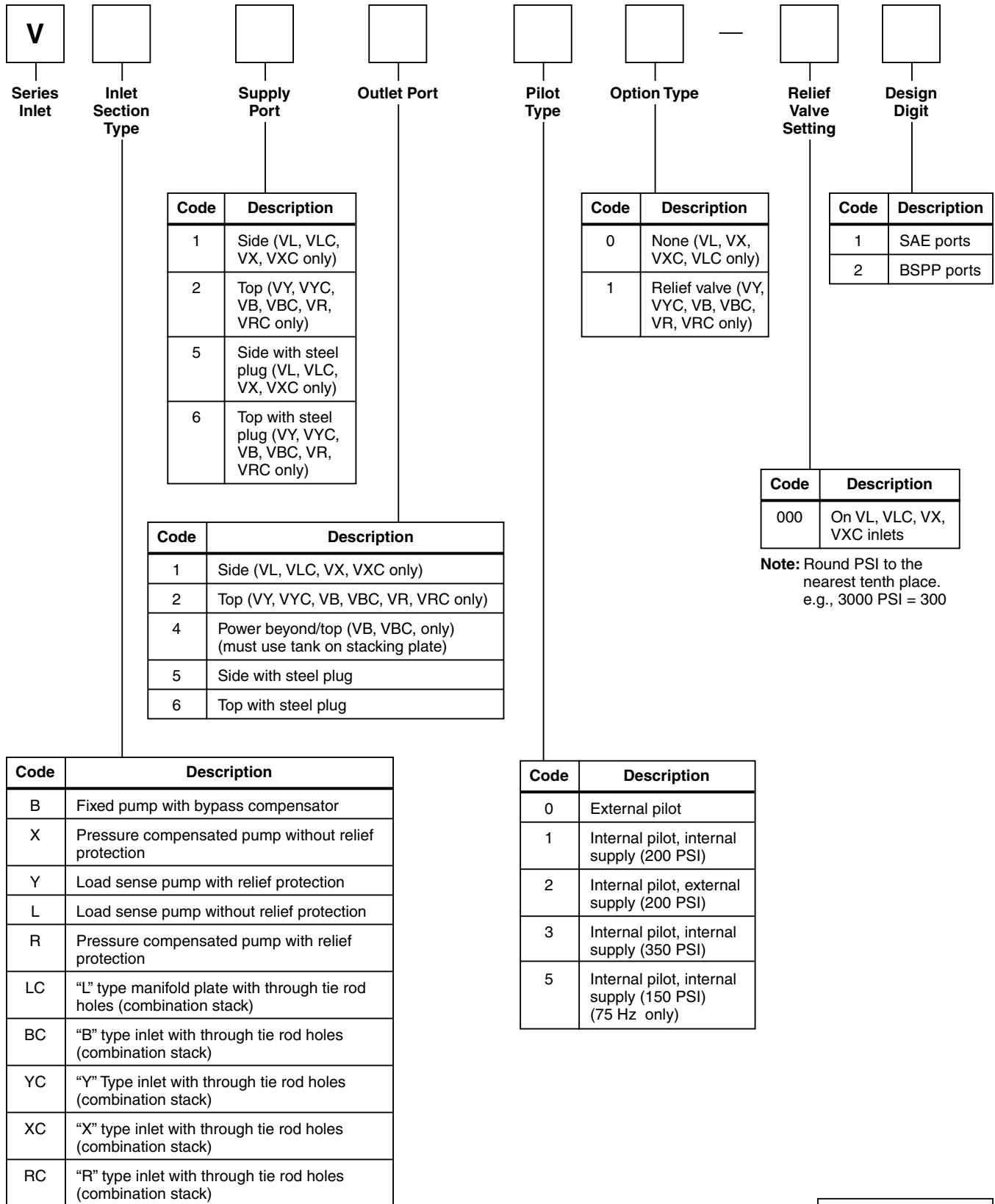
Code	Description
1	Fixed pump with bypass compensator (VB, VBL, VBC)
3	Load sense pump without relief (VL, VLL, VLC)
4	Fixed pump with power beyond port (VB, VBL, VBC)
†5	Pressure compensated pump without relief (VX, VXL, VXC)
6	Load sense pump with relief (VY, VYL, VYC)
†8	Pressure compensated pump with relief (VR, VRL, VRC)
†9	Pressure compensated pump with inlet regulator, only for non-compensated segments (VEL)

† If any segments in the stack are non-compensated, then do not use a "5" or "8" type inlet. Either choose all compensated segments or use "9" type inlet with non-compensated segments.

Ordering Example:
VAL 1410-2504-203

Pulsar® Stackable Valves

VP/VPO Series Inlet



Ordering Example:
VB2211-3001

Pulsar® Stackable Valves**VP/VPO Inlet****Service Parts**

Part No.	Description
VAPPK1	Pilot Reducing Adjustment Screw and Lock Nut Kit
VBCPK3001	Compensator Adjustment Kit (Standard)
VBIFK1	Inlet Pilot Filter Kit - Bypassing (VB, VY, VBC, VYC, VR, VRC)
VBIFK2	Inlet Pilot Filter Kit with External Supply
VBISK1	Bypass Inlet Spool Kit
VBPRK1	Pilot Reducing Kit, 200 PSI
VBPRK2	Pilot Reducing Kit, 350 PSI
VBSK1	Compensator O-ring Kit (VB, VBC, VY, VYC, VR, VRC)
VLPFK1	Inlet Pilot Filter - Load Sensing (VL, VLC, VX, VXC)
VPBPK1	Power Beyond Plug Kit
VPOMK1	VPO Mounting Kit
VYISK1	Relief Inlet Spool Kit (VY)

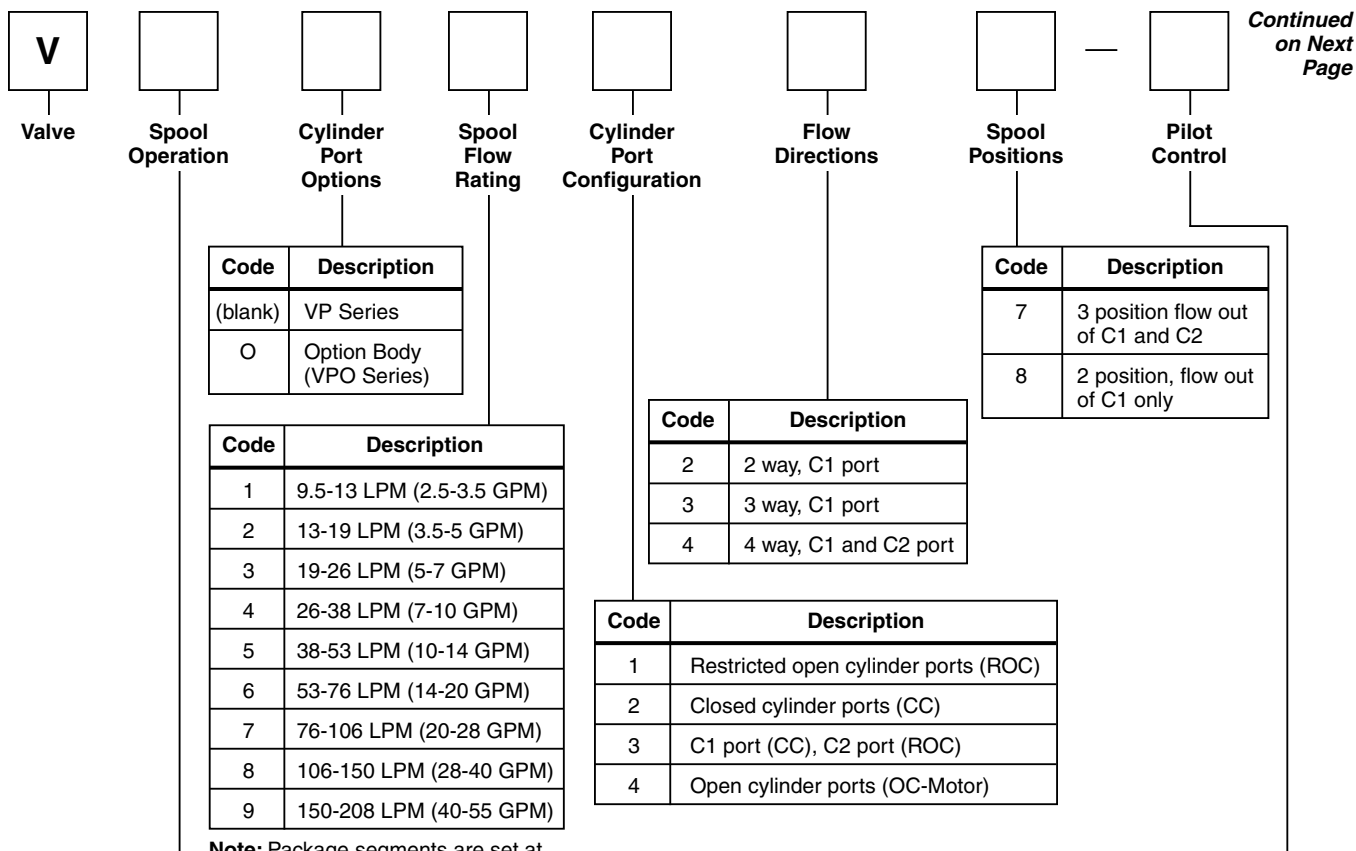
VP/VPO Inlet (Cont.)**Inlet Seal Kit (VB, VY, VBC, VYC, VR, VRC)**

Part No.	Description
VBSK2	SAE Nitrile
VBSK2V	SAE Fluorocarbon
VBSK3	BSPP Nitrile
VBSK3V	BSPP Fluorocarbon
VBSK4	JIS Nitrile
VBSK4V	JIS Fluorocarbon

Inlet Seal Kit (VL, VLC, VX, VXC)

Part No.	Description
VLSK1	SAE Nitrile
VLSK1V	SAE Fluorocarbon
VLSK2	BSPP Nitrile
VLSK2V	BSPP Fluorocarbon
VLSK3	JIS Nitrile
VLSK3V	JIS Fluorocarbon

VP/VPO Series Working Segment



Note: Package segments are set at low side of compensator settings. i.e., code 6 = 53 LPM (14 GPM) For different C1 and C2 flows (dual flows), consult Factory.

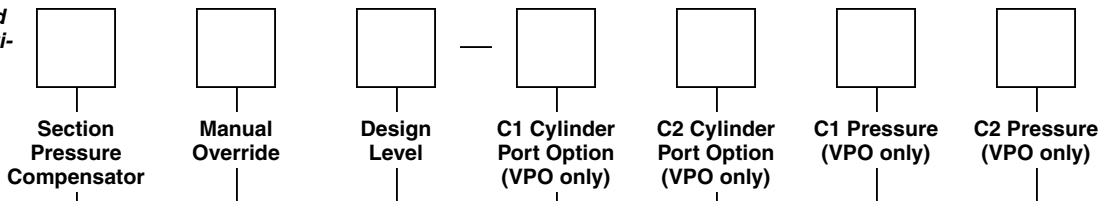
Code	Description
H	Electrohydraulic proportional (High Response)
K	Hydraulic remote (200 psi pilot)
N	Manual control
P	Electrohydraulic proportional
Q	Electrohydraulic on-off
W	Hydraulic remote (350 psi pilot)
Z	Custom section

Code	Description
0	None
1	12V Pulsar with 12" flying leads
2	12V 75 Hz Pulsar with 12" flying leads
3	12V Pulsar with Weather Pack connector, 12" leads
4	12V 75 Hz Pulsar with Weather Pack connector, 12" leads
5	24V Pulsar with 12" flying leads
6	24V 75 Hz Pulsar with 12" flying leads
7	24V Pulsar with Weather Pack connector, 12" leads
8	24V 75 Hz Pulsar with Weather Pack connector, 12" leads
C	12V ATEX Pulsar with 100" leads
D	24V ATEX Pulsar with 100" leads
E	12V 75 Hz Pulsar with Deutsch connector, 12" leads
F	24V 75 Hz Pulsar with Deutsch connector, 12" leads
N	12V Pulsar with 36" leads
Q	24V Pulsar with 36" leads
S	11.2V, Intrinsically Safe with male ELECTRO connector
T	11.2V, Intrinsically Safe with Weather Pack connector
P	12V Pulsar with 36" leads with Weather Pack connector
R	24V Pulsar with 36" leads with Weather Pack connector
X	12V Explosion Proof (MSHA 30 CFR, Part 18) Pulsar with male ELECTRO connector
Y	24V Explosion Proof (MSHA 30 CFR, Part 18) Pulsar with male ELECTRO connector

Ordering Example:
VPO8247-3241-22JJ

Pulsar® Stackable Valves

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Code	Description
1	SAE ports
2	BSPP ports

Code	Description
3	Manual operator shaft only
4	Manual adapter & 6-inch handle rod VP Series VPO Series
5	Manual adapter only VP Series VPO Series
8	Manual adapter and 9" handle rod VP Series VPO Series

Code	Pressure Setting
A	50 Bar (750 PSI)
B	63 Bar (950 PSI)
C	80 Bar 1150 PSI)
D	100 Bar (1450 PSI)
F	125 Bar (1850 PSI)
G	140 Bar (2050 PSI)
H	160 Bar (2350 PSI)
J	175 Bar (2550 PSI)
K	190 Bar (2750 PSI)
L	210 Bar (3050 PSI)
M	230 Bar (3350 PSI)
N	250 Bar (3650 PSI)
P	280 Bar (4050 PSI)
R	300 Bar (4350 PSI)
S	320 Bar (4650 PSI)
T	350 Bar (5050 PSI)
O	N/A

Code	Description
†1	Non-compensated (for desired flow, select 2 sizes smaller spool min. rating)
2	Individual segment compensator (ISC) shim adjust, low profile design
††3	ISC with external adjust pressure limiter low profile, single segment
††4	ISC with external adjust pressure limiter low profile, multi-segment, first position
††5	ISC with external adjust pressure limiter low profile, multi-segment, intermediate position
††6	ISC with external adjust pressure limiter low profile, multi-segment, final position
A	Externally adjustable ISC, high profile design
E	Individual compensator with ported L.S. plug

† Without compensation, max flow can only be adjusted with flow limiters.

†† For package segments, pressure limiters are set at 1500 PSI.

Code	Description
1	Relief
2	Relief, with anticavitation check
3	Anticavitation check
4	Float, 12 VDC
5	Float, 24 VDC
6	Defeat plug

Code	Description
1	Relief
2	Relief, with anticavitation check
3	Anticavitation check
4	Float, 12 VDC
5	Float, 24 VDC
6	Defeat plug

Pulsar® Stackable Valves**VP/VPO Series Working Segment****Service Parts**

Part No.	Description
VORLSK1	Refurbished Load Sense Kit
VPCSK1	Individual Compensator Shim Kit (100 each 0.025, 0.008, 0.003)
VPEPK1	End Plug Kit
VPSAK1	Flow Symmetry Adjustment Kit
VPFHAK1	Fixed Operator Adapter Kit (VP)
VPFLK1	Flow Limiter Kit
VPFS1K2	Compensator Field Service Kit (Dual springs) (Low Profile)
VPHRK1	High Response Service Kit
VPLFHA3	Fixed Operator Adapter Kit (VPO)
VPLH6K2	Manual Operator (6 inch) Handle Kit (hex shaft design) (Standard)
VPMOK2	Manual Operator Kit (Multiple Position) (hex shaft design) (Std) (VP Series)
VPOMOK2	Manual Operator Kit (Multiple Position) (hex shaft design) (Std) (VPO Series)
VPPCK2	Pressure Compensator Kit (Externally Adjust)
VPPCK3	Pressure Compensator Kit (Standard) (Low Profile) (Dual Springs) (Supersedes VPPCK1)
VPPCPK1	Ported Compensator Plug Kit SAE #4
VPPCPK2	Ported Compensator Plug Kit BSPP G-1/4
VPPLX1K1501	Low Profile Pressure Limiter Kit, Single Segment
VPPLX2K1501	Low Profile Pressure Limiter Kit, Multi-Segment, First Position
VPPLX3K1501	Low Profile Pressure Limiter Kit, Multi-Segment, Intermediate Position
VPPLX4K1501	Low Profile Pressure Limiter Kit, Multi-Segment, Final Position

VP/VPO Series Working Segment (Cont.)**Service Parts (cont.)**

Part No.	Description
VPPLX1K1502	High Profile Pressure Limiter Kit, Single Segment
VPPLX2K1502	High Profile Pressure Limiter Kit, Multi-Segment, First Position
VPPLX3K1502	High Profile Pressure Limiter Kit, Multi-Segment, Intermediate Position
VPPLX4K1502	High Profile Pressure Limiter Kit, Multi-Segment, Final Position
VPWSSK1	Working Segment Seal Kit (All Segment Seals) SAE, Nitrile
VPWSSK2	Working Segment Seal Kit (All Segment Seals) BSPP, Nitrile
VPWSSK3	Working Segment Seal Kit (All Segment Seals) JIS, Nitrile
VPWSSK1V	Working Segment Seal Kit (All Segment Seals) SAE, Fluorocarbon
VPWSSK2V	Working Segment Seal Kit (All Segment Seals) BSPP, Fluorocarbon
VPWSSK3V	Working Segment Seal Kit (All Segment Seals) JIS, Fluorocarbon

Workport Option Cartridges (VPO Only)

Part No.	Description
VPOAV1K1	Anticavitation Check
VPOFV1K1	Electric Float Valve (2P-2W, N.C.), 12 volt
VPOFV2K1	Electric Float Valve (2P-2W, N.C.), 24 volt
VPORA1K1*	Relief w/Anticavitation Check (3000 PSI)
VPORV1K1*	Standard Relief Valve (3000 PSI)
VPORVSK1	Port Option Seal Kit
VPOSP1K1	Defeat Plug Kit

* Relief valves are adjustable.

Pilot Controls – See Page 19

VP/VPO Series Working Segment Spool Kits**VP/VK/VN/VQ Segments**

Flow Rating (GPM)	3-POS 3-WAY (C.C.)	3-POS 4-WAY (C.C.)	3-POS 4-WAY (R.O.C.)	3-POS 4-WAY (O.C.M.)
2.5-3.5	VP133K1	VP124K1	VP114K1	VP144K1
3.5-5.0	VP233K1	VP224K1	VP214K1	VP244K1
5.0-7.0	VP333K1	VP324K1	VP314K1	VP344K1
7.0-10.0	VP433K1	VP424K1	VP414K1	VP444K1
10.0-14.0	VP533K1	VP524K1	VP514K1	VP544K1
14.0-20.0	VP633K1	VP624K1	VP614K1	VP644K1
20.0-28.0	VP733K1	VP724K1	VP714K1	VP744K1
28.0-40.0	VP833K1	VP824K1	VP814K1	VP844K1
40.0-55.0	VP933K1	VP924K1	VP914K1	VP944K1

VPO/VKO/VNO/VQO Segments

Flow Rating (GPM)	3-POS 3-WAY (C.C.)	3-POS 4-WAY (C.C.)	3-POS 4-WAY (R.O.C.)	3-POS 4-WAY (O.C.M.)
2.5-3.5	VPO133K1	VPO124K1	VPO114K1	VPO144K1
3.5-5.0	VPO233K1	VPO224K1	VPO214K1	VPO244K1
5.0-7.0	VPO333K1	VPO324K1	VPO314K1	VPO344K1
7.0-10.0	VPO433K1	VPO424K1	VPO414K1	VPO444K1
10.0-14.0	VPO533K1	VPO524K1	VPO514K1	VPO544K1
14.0-20.0	VPO633K1	VPO624K1	VPO614K1	VPO644K1
20.0-28.0	VPO733K1	VPO724K1	VPO714K1	VPO744K1
28.0-40.0	VPO833K1	VPO824K1	VPO814K1	VPO844K1
40.0-55.0	VPO933K1	VPO924K1	VPO914K1	VPO944K1

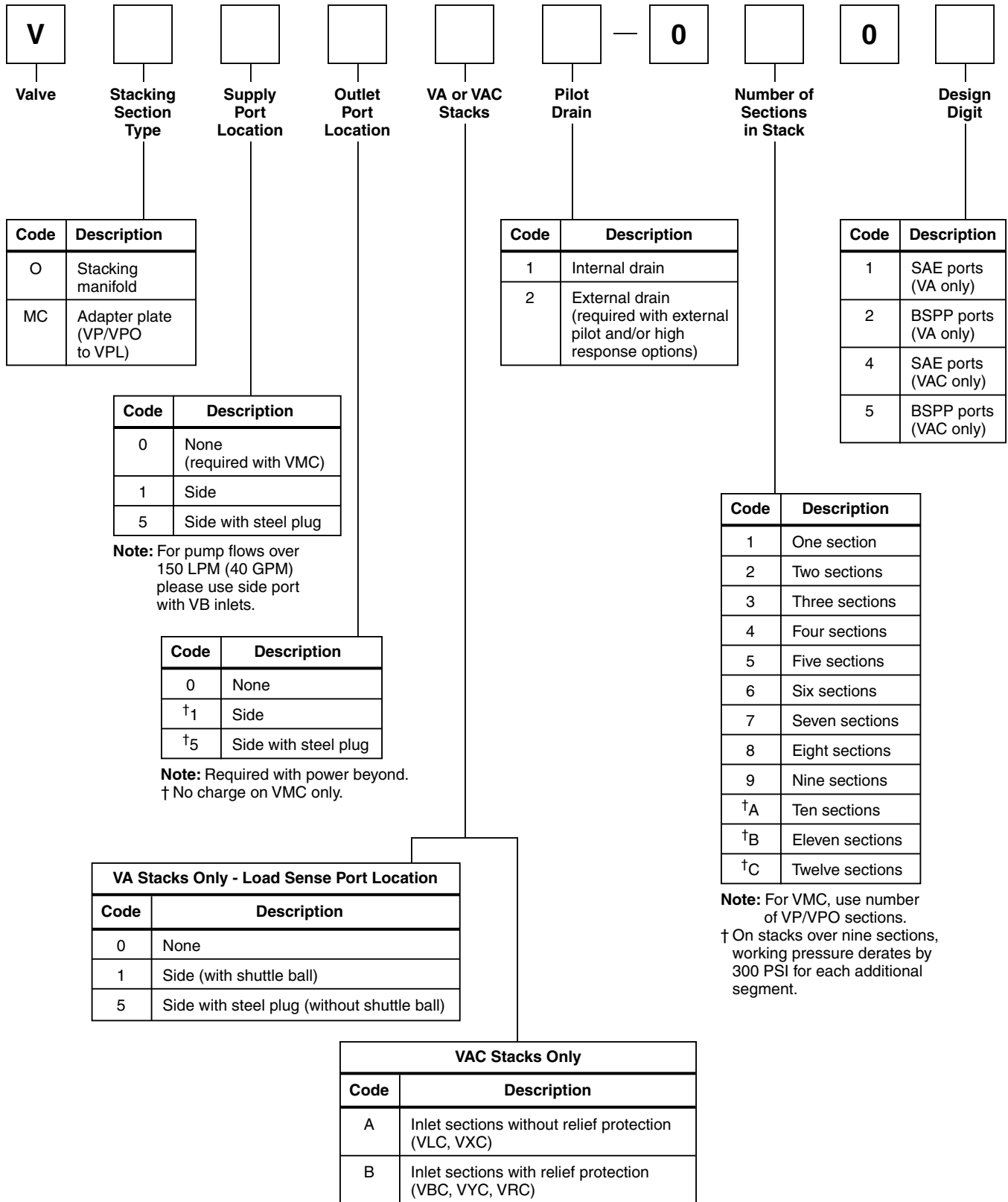
VW Segments

Flow Rating (GPM)	3-POS 3-WAY (C.C.)	3-POS 4-WAY (C.C.)	3-POS 4-WAY (R.O.C.)	3-POS 4-WAY (O.C.M.)
2.5-3.5	VW133K1	VW124K1	VW114K1	VW144K1
3.5-5.0	VW233K1	VW224K1	VW214K1	VW244K1
5.0-7.0	VW333K1	VW324K1	VW314K1	VW344K1
7.0-10.0	VW433K1	VW424K1	VW414K1	VW444K1
10.0-14.0	VW533K1	VW524K1	VW514K1	VW544K1
14.0-20.0	VW633K1	VW624K1	VW614K1	VW644K1
20.0-28.0	VW733K1	VW724K1	VW714K1	VW744K1
28.0-40.0	VW833K1	VW824K1	VW814K1	VW844K1
40.0-55.0	VW933K1	VW924K1	VW914K1	VW944K1

VWO Segments

Flow Rating (GPM)	3-POS 3-WAY (C.C.)	3-POS 4-WAY (C.C.)	3-POS 4-WAY (R.O.C.)	3-POS 4-WAY (O.C.M.)
2.5-3.5	VWO133K1	VWO124K1	VWO114K1	VWO144K1
3.5-5.0	VWO233K1	VWO224K1	VWO214K1	VWO244K1
5.0-7.0	VWO333K1	VWO324K1	VWO314K1	VWO344K1
7.0-10.0	VWO433K1	VWO424K1	VWO414K1	VWO444K1
10.0-14.0	VWO533K1	VWO524K1	VWO514K1	VWO544K1
14.0-20.0	VWO633K1	VWO624K1	VWO614K1	VWO644K1
20.0-28.0	VWO733K1	VWO724K1	VWO714K1	VWO744K1
28.0-40.0	VWO833K1	VWO824K1	VWO814K1	VWO844K1
40.0-55.0	VWO933K1	VWO924K1	VWO914K1	VWO944K1

VP/VPO Series Stacking Plate (for factory assembly only)



Ordering Example:
VO5151-0301

Pulsar® Stackable Valves**VP/VPO Series Stacking Plate (for kits only)****Service Parts**

Part No.	Description
VO0K1	Stacking Plate Kit (No Ports) SAE
VO1K1	Stacking Plate Kit (Ports) SAE
VO5K1	Stacking Plate Kit (Ports & Plugs) SAE
VO0K2	Stacking Plate Kit (No Ports) BSPP
VO1K2	Stacking Plate Kit (Ports) BSPP
VO5K2	Stacking Plate Kit (Ports & Plugs) BSPP

Mid-Adapter Plate: Joining VP/VPO to VPL Series

Part No.	Description
VMCK4	(SAE, Design 4)
VMCK5	(BSPP, Design 5)

VP/VPO Stacking Plate**Assembly Kits
(Tie Rods, Seal Plates, O-Rings, Shuttle Balls)**

Part No.	Description
VA1K1	1 Section
VA2K1	2 Section
VA3K1	3 Section
VA4K1	4 Section
VA5K1	5 Section
VA6K1	6 Section
VA7K1	7 Section
VA8K1	8 Section
VA9K1	9 Section
VAAK1	10 Section
VABK1	11 Section
VACK1	12 Section

Assembly Kits — Combination Stacks VPL Side

Part No.	Description
VALMC2K1	2 Section
VALMC3K1	3 Section
VALMC4K1	4 Section
VALMC5K1	5 Section
VALMC6K1	6 Section
VALMC7K1	7 Section
VALMC8K1	8 Section
VALMC9K1	9 Section
VALMCAK1	10 Section

VP/VPO Stacking Plate (Cont.)**Assembly Kits — Combination Stacks VP Side With VBC, VYC & VRC Inlet**

Part No.	Description
VAMCB1K1	1 Section
VAMCB2K1	2 Section
VAMCB3K1	3 Section
VAMCB4K1	4 Section
VAMCB5K1	5 Section
VAMCB6K1	6 Section
VAMCB7K1	7 Section
VAMCB8K1	8 Section
VAMCB9K1	9 Section

Assembly Kits — Combination Stacks VP Side With VLC & VXC Inlet

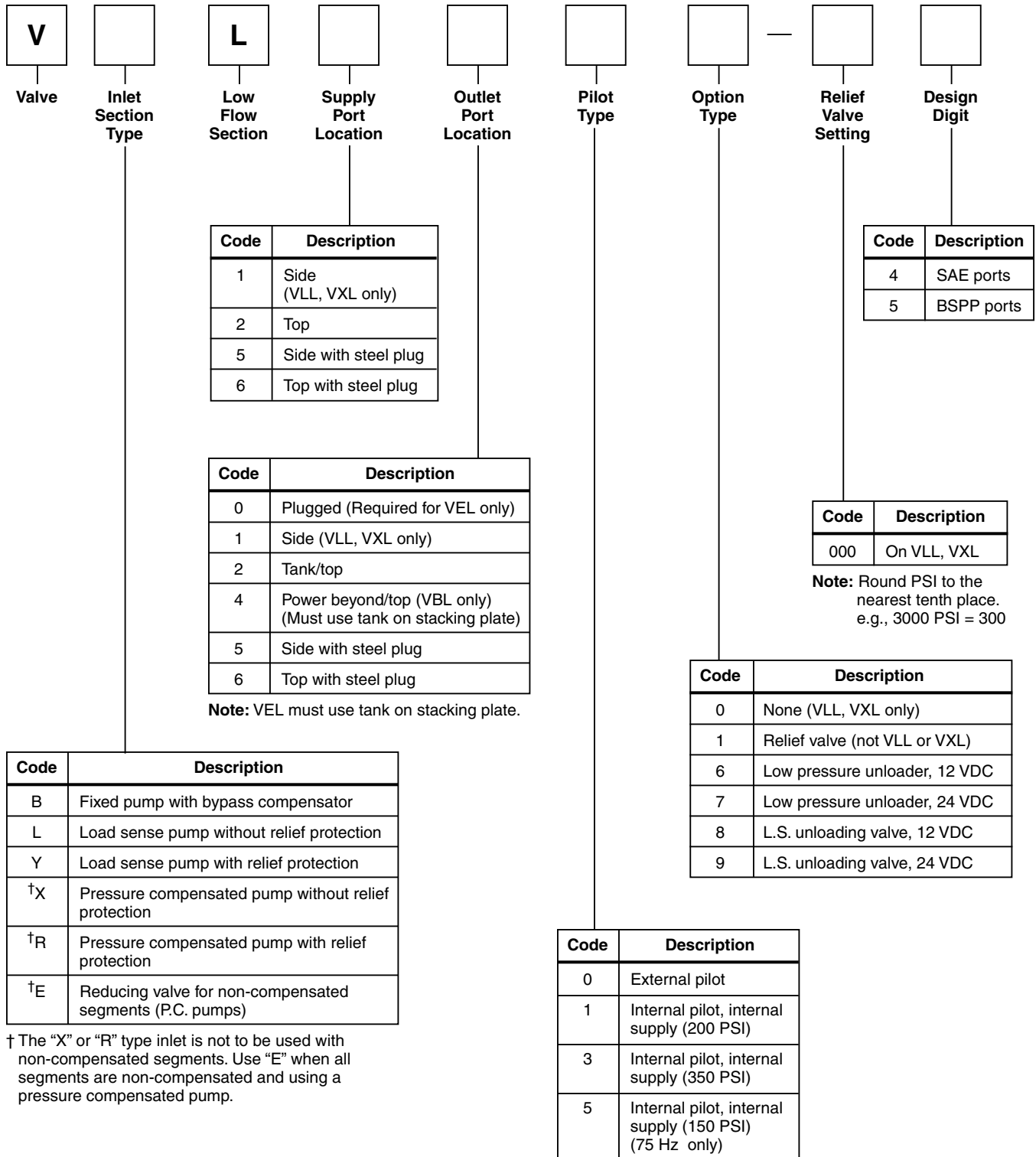
Part No.	Description
VAMCA1K1	1 Section
VAMCA2K1	2 Section
VAMCA3K1	3 Section
VAMCA4K1	4 Section
VAMCA5K1	5 Section
VAMCA6K1	6 Section
VAMCA7K1	7 Section
VAMCA8K1	8 Section
VAMCA9K1	9 Section

Service Parts

Part No.	Description
VOSPK2	Seal Plate with loose O-rings and shuttle ball
VOOSK2	Stacking Plate Seal Kit (O-rings only)
VPOMK1	VPO Mounting Kit
VTAGK1	Name Tag Labels (50 Pcs)
B1005016	3/16" Shuttle Ball

Pulsar® Stackable Valves

VPL Series Inlet



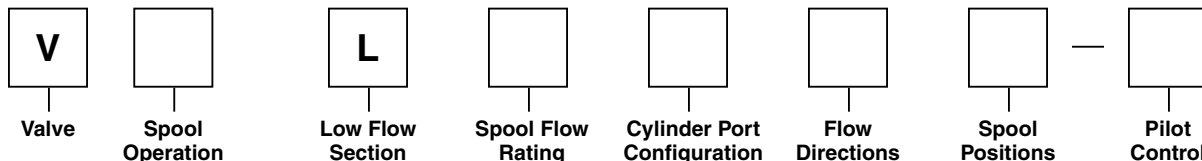
Ordering Example:
VBL2211-3004

VPL Inlet

Service Parts

Part No.	Description
VALPCK1	Pilot Reducing Cartridge (200 PSI)
VALPCK2	Pilot Reducing Cartridge (350 PSI)
VALPCK3	Pilot Reducing Cartridge (150 PSI)
VALPPK1	Pilot Defeat Plug Kit for Non-Electric
VALPPK2	Pilot Defeat Plug Kit for Electric Operation
VAPPK1	Pilot Reducing Adjustment Screw and Lock Nut
VBLSBK1	Bypass Inlet Spool Kit
VBLSK2	Inlet Seal Kit (Nitrile)
VBLSK2V	Inlet Seal Kit (Fluorocarbon)
VPLRVK1	Relief Valve Cartridge
VYLSRK1	Relief Inlet Spool Kit
VBLFSSK1	Spool Stop and Spring for Power Beyond Inlet

VPL Series Working Segment (Compensated)



Continued on Next Page

Code	Description
A	3-5 LPM (0.7-1.3 GPM)
1	5-10 LPM (1.3-2.5 GPM)
2	10-15 LPM (2.5-4 GPM)
3	15-27 LPM (4-7 GPM)
4	27-42 LPM (7-11 GPM)
5	42-64 LPM (11-17 GPM)
6	64-91 LPM (17-24 GPM)
7	91-114 LPM (24-30 GPM)

Note: For different C1 and C2 flows Consult Factory.

Code	Description
2	2 way, C1 port
3	3 way, C1 port
4	4 way, C1 & C2 port

Code	Description
1	2 pos., H.D. flow adj. on C1
2*	2 pos., no adj., flow out C1 only
3	3 pos., no adj., flow out C1 & C2
4	3 pos., H.D. flow adj. on C1 & C2
5	3 pos., H.D. flow adj. on C1 only
6	3 pos., H.D. flow adj. on C2 only
7	3 pos., S.D. flow adj. on C1 and C2
8*	2 pos., S.D. flow adj. on C1
A	3 pos., Detented C1, C2 & Center (Manual control only) (No adj.)
B	3 pos., Infinite pos. friction lock w/ctr detent (Manual control only) (S.D.)

Note: S.D. (Standard Duty) adjustment screws are defeated when H.D. (Heavy Duty) adjustment screws are used.

Code	Description
2	Closed cylinder ports (CC)
3	C1 port (CC), C2 port (VOC)
4	Open cylinder ports (OC-Motor)
5	Special closed cylinder port (low leak) **
6	Special 3-way closed cylinder ports (low leak) **
7	Vented open cylinder ports (VOC)

** Leakage: 7-17 cc/min @ 1000 PSI with 150 SUS oil @ 100°F.

Code	Description
0	None (VNL, VWL, VKL only)
1	12V Pulsar with 12" flying leads
2	12V 75 Hz Pulsar with 12" flying leads
3	12V Pulsar with Weather Pack connector, 12" leads
4	12V 75 Hz Pulsar with Weather Pack connector, 12" leads
5	24V Pulsar with 12" flying leads
6	24V 75 Hz Pulsar with 12" flying leads
7	24V Pulsar with Weather Pack connector, 12" leads
8	24V 75 Hz Pulsar with Weather Pack connector, 12" leads
C	12V ATEX Pulsar with 100" leads
D	24V ATEX Pulsar with 100" leads
E	12V 75 Hz Pulsar with Deutsch connector, 12" leads
F	24V 75 Hz Pulsar with Deutsch connector, 12" leads
N	12V Pulsar with 36" leads
P	12V Pulsar with 36" leads, Weather Pack connector
Q	24V Pulsar with 36" leads
R	24V Pulsar with 36" leads, Weather Pack connector
S	11.2V, Intrinsically safe with male ELECTRO connector
T	11.2V, Intrinsically safe with Weather Pack connector
X	12V Explosion Proof (MSHA 30 CFR, Part 18) Pulsar with male ELECTRO connector
Y	24V Explosion Proof (MSHA 30 CFR, Part 18) Pulsar with male ELECTRO connector

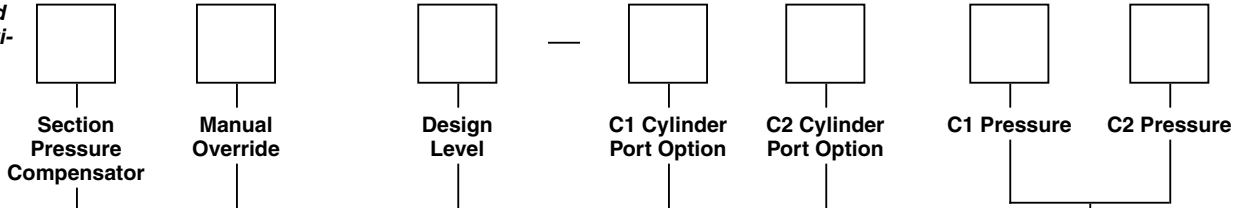
Note: Consult factory regarding Hirshmann Connectors.

Code	Description
K	Hydraulic remote (200 psi pilot)
N	Manual control
P	Electrohydraulic proportional
Q	Electrohydraulic on-off
W	Hydraulic remote (350 psi pilot)
Z	Custom section

Ordering Example:
VPL5247-3244-22MN

Pulsar® Stackable Valves

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Section Pressure Compensator

Manual Override

Design Level

C1 Cylinder Port Option

C2 Cylinder Port Option

C1 Pressure

C2 Pressure

Code	Description
4	SAE #8 ports
5	BSPP G-1/2 ports
7 *	SAE #10 ports

* Hard LS seats included

Code	Description
3	Manual operator shaft only
4	Manual adapter and 6-inch handle rod
5	Manual adapter only
6	Marine handle adapter
7	Marine handle adapter with 6-inch handle
8	Manual adapter and 9-inch handle rod

Code	Pressure Setting
A	50 Bar (750 PSI)
B	63 Bar (950 PSI)
C	80 Bar (1150 PSI)
D	100 Bar (1450 PSI)
F	125 Bar (1850 PSI)
G	140 Bar (2050 PSI)
H	160 Bar (2350 PSI)
J	175 Bar (2550 PSI)
K	190 Bar (2750 PSI)
L	210 Bar (3050 PSI)
M	230 Bar (3350 PSI)
N	250 Bar (3650 PSI)
P	280 Bar (4050 PSI)
R	300 Bar (4350 PSI)
S	320 Bar (4650 PSI)
T	350 Bar (5050 PSI)
O	N/A

Code	Description
2	Individual spool compensator
3	Individual spool compensator with common pressure limiter
4	Individual spool compensator with individual port pressure limiters C1 and C2
5	Individual spool compensator with pressure limiter C1 only
6	Load drop check (non-compensated)
A	External adj. individual spool compensator
B	External adj. spool compensator with common pressure limiter
C	External adj. individual spool compensator with individual port limiters, C1 and C2
D	External adj. individual spool compensator with pressure limiter C1 only
E	Individual compensator w/ported L.S. plug
F	Individual compensator with common P.L. and L.S. port in bottom of casting
G	Individual compensator with individual P.L. and L.S. port in bottom of casting
H	Individual compensator with C1 P.L. only and L.S. port in bottom of casting
*	Two Stage Compensator

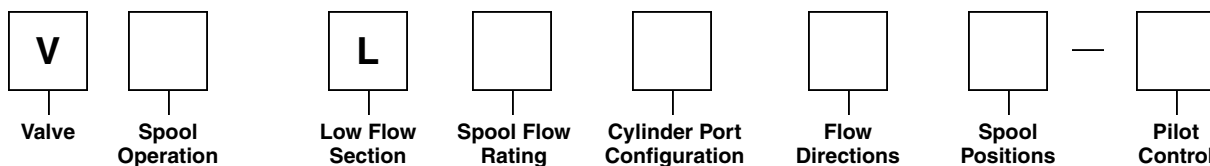
Code	Description
0	No port cavity
2	Relief, with anticavitation check
3	Anticavitation check
4	Float, 12 VDC
5	Float, 24 VDC
6	Defeat plug (Relief Option)

Code	Description
0	No port cavity
2	Relief, with anticavitation check
3	Anticavitation check
4	Float, 12 VDC
5	Float, 24 VDC
6	Defeat plug (Relief Option)

Note: For package segments, pressure limiters are set at 1500 PSI.



VPL Series Working Segment (Non-compensated)



Continued on Next Page

Code	Description
A	5.6 LPM (1.5 GPM)
1	9.5 LPM (2.5 GPM)
2	17.0 LPM (4.5 GPM)
3	34.0 LPM (9.0 GPM)
4	53.0 LPM (14.0 GPM)
5	98.5 LPM (26.0 GPM)

Note: For different flows Consult Factory.

Code	Description
2	Closed cylinder ports (CC)
3	C1 port (CC), C2 port (VOC)
4	Open cylinder ports (OC-Motor)
7	Vented open cylinder ports (VOC)

Code	Description
2	2 way, C1 port
3	3 way, C1 port
4	4 way, C1 & C2 port

Code	Description
1	2 pos., H.D. flow adj. on C1
2*	2 pos., no adj., flow out C1 only
3	3 pos., no adj., flow out C1 & C2
4	3 pos., H.D. flow adj. on C1 & C2
5	3 pos., H.D. flow adj. on C1 only
6	3 pos., H.D. flow adj. on C2 only
A	3 pos., Detented C1, C2 & Center (Manual control only) (No adj.)
B	3 pos., Infinite pos. friction lock w/ctr detent (Manual control only) (S.D.)

Note: S.D. (Standard Duty) adjustment screws are defeated when H.D. (Heavy Duty) adjustment screws are used.

Code	Description
Q	Electrohydraulic on-off
P	Electrohydraulic proportional
K	Hydraulic remote (200 PSI pilot)
W	Hydraulic remote (350 PSI pilot)

Code	Description
0	None (VNL, VWL, VKL only)
1	12V Pulsar with 12" flying leads
2	12V 75 Hz Pulsar with 12" flying leads
3	12V Pulsar with Weather Pack connector, 12" leads
4	12V 75 Hz Pulsar with Weather Pack connector, 12" leads
5	24V Pulsar with 12" flying leads
6	24V 75 Hz Pulsar with 12" flying leads
7	24V Pulsar with Weather Pack connector, 12" leads
8	24V 75 Hz Pulsar with Weather Pack connector, 12" leads
C	12V ATEX Pulsar with 100" leads
D	24V ATEX Pulsar with 100" leads
E	12V 75 Hz Pulsar with Deutsch connector, 12" leads
F	24V 75 Hz Pulsar with Deutsch connector, 12" leads
N	12V Pulsar with 36" leads
P	12V Pulsar with 36" leads, Weather Pack connector
Q	24V Pulsar with 36" leads
R	24V Pulsar with 36" leads, Weather Pack connector
S	11.2V, Intrinsically safe with male ELECTRO connector
T	11.2V, Intrinsically safe with Weather Pack connector
X	12V Explosion Proof (MSHA 30 CFR, Part 18) Pulsar with male ELECTRO connector
Y	24V Explosion Proof (MSHA 30 CFR, Part 18) Pulsar with male ELECTRO connector

Note: Consult factory regarding Hirschmann Connectors.

Ordering Example:
VQL5444-3035-26JO

Pulsar® Stackable Valves

Continued from Previous Page



Section Pressure Compensator

Code	Description
0	Non-compensated



Manual Override

Code	Description
3	Manual operator shaft only
4	Manual operator with adapter and 6-inch handle
5	Manual adapter only
6	Marine handle adapter
7	Marine handle adapter with 6-inch handle
8	Manual adapter and 9-inch handle rod



Design Level

Code	Description
4	SAE #8 ports
5	BSPP G-1/2 ports
7 *	SAE #10 ports

* Hard LS seats included



C1 Cylinder Port Option

Code	Description
0	No port cavity
2	Relief, with anticavitation check
3	Anticavitation check
4	Float, 12 VDC
5	Float, 24 VDC
6	Defeat plug (Relief Option)



C2 Cylinder Port Option

Code	Description
0	No port cavity
2	Relief, with anticavitation check
3	Anticavitation check
4	Float, 12 VDC
5	Float, 24 VDC
6	Defeat plug (Relief Option)



C1 Pressure

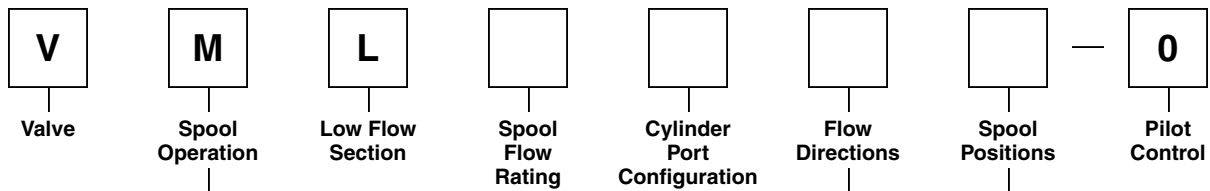


C2 Pressure

Code	Pressure Setting
A	50 Bar (750 PSI)
B	63 Bar (950 PSI)
C	80 Bar 1150 PSI)
D	100 Bar (1450 PSI)
F	125 Bar (1850 PSI)
G	140 Bar (2050 PSI)
H	160 Bar (2350 PSI)
J	175 Bar (2550 PSI)
K	190 Bar (2750 PSI)
L	210 Bar (3050 PSI)
M	230 Bar (3350 PSI)
N	250 Bar (3650 PSI)
P	280 Bar (4050 PSI)
R	300 Bar (4350 PSI)
S	320 Bar (4650 PSI)
T	350 Bar (5050 PSI)
O	N/A

VML Series Manual Working Segment (Non-compensated)

*Continued
on Next
Page*



Code	Description
M	Manual Control

Code	Description
A	5.6 LPM (1.5 GPM)
1	9.5 LPM (2.5 GPM)
2	17.0 LPM (4.5 GPM)
3	34.0 LPM (9.0 GPM)
4	53.0 LPM (14.0 GPM)
5	98.5 LPM (26.0 GPM)

Note: For different flows Consult Factory.

Code	Description
2	2 way, C1 port
3	3 way, C1 port
4	4 way, C1 and C2 port

Code	Description
2	Closed cylinder ports (CC)
3	C1 port (CC), C2 port (VOC)
4	Open cylinder ports (OC-Motor)
7	Vented open cylinder ports (VOC)

Code	Description
1	2 pos., H.D. flow adj. on C1
2	2 pos., no adj., flow out C1 only
3	3 pos., no adj., flow out C1 & C2
4	3 pos., H.D. flow adj. on C1 & C2
5	3 pos., H.D. flow adj. on C1 only
6	3 pos., H.D. flow adj. on C2 only
A	3 pos., Detented C1, C2 & Center (Manual control only) (No adj.)
B	3 pos., Infinite pos. friction lock w/ctr detent (Manual control only) (S.D.)

Note 1: S.D. (Standard Duty) adjustment screws are defeated when H.D. (Heavy Duty) adjustment screws are used.

Note 2: Detent not available with flow adjustment option.

Ordering Example:
VML4244-0044-22HJ

Pulsar® Stackable Valves

Continued from Previous Page



Section Pressure Compensator

Code	Description
0	Non-compensated



Manual Override

Code	Description
†4	Manual operator with adapter and 6-inch handle
5	Manual operator with adapter only
6	Marine handle adapter
7	Marine handle adapter with 6-inch handle
8	Manual operator with adapter and 9-inch handle

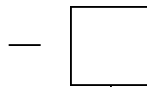
† Flow adjustments may be used to override main spool.



Design Level

Code	Description
4	SAE #8 ports
5	BSPP G-1/2 ports
7 *	SAE #10 ports

* Hard LS seats included



C1 Cylinder Port Option

Code	Description
0	No port cavity
2	Relief, with anticavitation check
3	Anticavitation check
6	Defeat plug (Relief Option)



C2 Cylinder Port Option

Code	Description
0	No port cavity
2	Relief, with anticavitation check
3	Anticavitation check
6	Defeat plug (Relief Option)



C1 Pressure



C2 Pressure

Code	Pressure Setting
A	50 Bar (750 PSI)
B	63 Bar (950 PSI)
C	80 Bar 1150 PSI)
D	100 Bar (1450 PSI)
F	125 Bar (1850 PSI)
G	140 Bar (2050 PSI)
H	160 Bar (2350 PSI)
J	175 Bar (2550 PSI)
K	190 Bar (2750 PSI)
L	210 Bar (3050 PSI)
M	230 Bar (3350 PSI)
N	250 Bar (3650 PSI)
P	280 Bar (4050 PSI)
R	300 Bar (4350 PSI)
S	320 Bar (4650 PSI)
T	350 Bar (5050 PSI)
O	N/A

Pulsar® Stackable Valves**VPL Series Working Segment****Service Parts**

Part No.	Description
DB1545021	Seal Nut for Flow Limiter
DB1659147	Manual Operator Handle Knob
DB1851268	Shim Insertion Kit
DB1905950	Symmetry Adjustment Kit
DB5319027	Set Screw for Flow Limiter
DB5341734	Float Coil, 12V
DB5342734	Float Coil, 24V
DB5343950	Float Cartridge Kit, 12V
DB5344950	Float Cartridge Kit, 24V
VNLDK1	3 Position Detent Kit (w/o Spool)
VNLFLK1	Friction Lock Kit (w/o spool)
VPLAV1K1	Anticavitation Valve Kit for option ports
VPLCPK1	Compensator Plug Kit, Shim Adjustable
VPLCPK2	Compensator Plug Kit, Externally Adjustable
VPLCSK1	Individual Compensator Shim Kit (100 each 0.025, 0.008, 0.003)
VPLFHA2	Fixed Operator Linkage Kit (handle adapter and cap screw) (Y design)
VPLFHA3	Fixed Operator Linkage Kit (handle adapter and set screw) (4, 5, 6 design)
VPLFHM1	Fixed Operator Linkage Kit (Marine) (Handle adapter and set screw) (4, 5, 6 Design)
VPLFLK1	Flow Adjustment Kit (Replacement end plugs on spool cavity)
VPLH6K2	Manual Operator (6 inch) Handle Kit (hex shaft design)
VPLH9K1	Manual Operator (9 inch) Handle Kit
VPLHOC1K1	Hydraulic Override Kit (Return C2 side to Neutral) (C1 Chamber) (SAE)

VPL Series Working Segment (Cont.)**Service Parts**

Part No.	Description
VPLHOC1K2	Hydraulic Override Kit (Return C2 side to Neutral) (C1 Chamber) (BSPP)
VPLHOC2K1	Hydraulic Override Kit (Return C1 side to Neutral) (C2 Chamber) (SAE)
VPLHOC2K2	Hydraulic Override Kit (Return C1 side to Neutral) (C2 Chamber) (BSPP)
VPLHWK2	Manual Operator (6 inch) Weighted
VPLLDCK1	Load Drop Check Kit
VPLMHK2	Handle Shaft Kit (no adapter)
VPLOPK2	Work Port Option Plug Kit
VPLPCPK1	Ported Compensator Plug Kit (#4 SAE)
VPLPCPK2	Ported Compensator Plug Kit (BSPP G-1/4)
VPLRA*K1	Relief w/Anticavitation Valve Kit (See table on Page 17 for pressure setting)
VPLRVK1	Compensator Plug Kit, Shim Adjustable w/C1 Pressure Limiter or Common Press Limiter
VPLRVK2	C2 Pressure Limiter Kit
VPLRVK3	Compensator Plug Kit, Externally Adjustable with C1 Pressure Limiter
VPLSCK2	Segment Compensator Spool Kit
VPLSK2	Working Segment O-ring Kit, Nitrile (complete)
VPLSK2V	Working Segment O-ring Kit, Fluorocarbon (complete)
VPLSP1K1	Defeat Plug Kit for option ports
VPLTSCK*	Two Stage Compensator (Consult Factory for complete P/N)
VPLWSK2	Individual Segment O-ring Kit (Face Seals)

Pilot Controls – See Page 19

Pulsar® Stackable Valves**Pulsar® Pilot Controls****Service Parts**

Part No.	Description
VNPK1	Solenoid Plug Kit (2)
VS1320-0001-001	Solenoid Cartridge, Marine 12V (Old Nemko Approved)
VS1320-0003-001	Solenoid Cartridge, (CSA Approved), 12 V, 100" leads
VS1320-0005-001A	Solenoid Cartridge, 12V, 12" leads ATEX Certified
VS1320-0005-001C	Solenoid Cartridge, 12V, 100" leads ATEX Certified
VS1320-0011	Solenoid Cartridge, 12V, Proportional with Weather Pack Connector
VS1320-0012-003	Solenoid Cartridge, 11.2V Intrinsic with Weather Pack Connector (proportional)
VS1320-0022-003	Solenoid Cartridge, 11.2V Intrinsic w/ELECTRO Male Connector (submersible) (proportional)
VS1320-0024-002	Solenoid Cartridge, 12V Proportional XP with ELECTRO Male Connector
VS1320-0024-006	Solenoid Cartridge, 24V Proportional XP with ELECTRO Male Connector
VS1320-0051-001	Solenoid Cartridge, Marine 24V (Old Nemko Approved)
VS1320-0055-001A	Solenoid Cartridge, 24V, 12" leads ATEX Certified
VS1320-0055-001C	Solenoid Cartridge, 24V, 100" leads ATEX Certified
VS1320-0061	Solenoid Cartridge, 24V, Proportional with Weather Pack Connector
VS1320-0111	Solenoid Cartridge, 12V ON/OFF with Weather Pack Connector
VS1320-0161	Solenoid Cartridge, 24V ON/OFF with Weather Pack Connector
VS1320-00J1	Solenoid Cartridge, 12V w/Large Hirschmann Connector (DIN 43) GDM Series
VS1320-00K1	Solenoid Cartridge 24V w/Large Hirschmann Connector (DIN 43) GDM Series
VS1320-00L1	Solenoid Cartridge, 12V w/Small Hirschmann Connector G Series
VS1320-00M1	Solenoid Cartridge, 24V w/Small Hirschmann Connector G Series

Pulsar® Pilot Controls (Cont.)**Service Parts**

Part No.	Description
VS1320-00N1	Solenoid Cartridge, 12V, Proportional with 36" flying leads
VS1320-00P1	Solenoid Cartridge, 12V, Proportional with 36" Weather Pack Connector
VS1320-00Q1	Solenoid Cartridge, 24V, Proportional with 36" flying leads
VS1320-00R1	Solenoid Cartridge, 24V, Proportional with 36" Weather Pack Connector
VS1515-0001	Solenoid Cartridge, 12V, 75Hz with 12" flying leads (High Response), Silver
VS1515-0011	Solenoid Cartridge, 12V, 75Hz with Weather Pack Connector (High Response), Silver
VS1515-0041	Solenoid Cartridge, 12V, 75Hz with Deutsch Connector (High Response), Silver
VS1515-0051	Solenoid Cartridge, 24V, 75Hz with 12" flying leads, (High Response), Silver
VS1515-0061	Solenoid Cartridge, 24V, 75Hz with Weather Pack Connector (High Response), Silver
VS1515-0091	Solenoid Cartridge, 24V, 75Hz with Deutsch Connector (High Response), Silver
VS1515-3001	Solenoid Cartridge, 12V, 75 Hz with 12" flying leads
VS1515-3011	Solenoid Cartridge, 12V, 75 Hz with Weather Pack Connector
VS1515-3041	Solenoid Cartridge, 12V, 75Hz with Deutsch Connector
VS1515-3051	Solenoid Cartridge, 24V, 75Hz with 12" flying leads
VS1515-3061	Solenoid Cartridge, 24V 75Hz with Weather Pack Connector
VS1515-3091	Solenoid Cartridge, 24V, 75Hz with Deutsch Connector
VWFK4	Pilot Oil Fitting Kit (2) (#4 SAE)
VWFK5	Pilot Oil Fitting Kit (2) (BSPP G-1/4)
VWFK6	Pilot Oil Fitting Kit (2) (JIS G-1/4)

Pulsar® Stackable Valves**VPL Series Working Segment Spool Kits****SPOOL KITS**

Part No.	Description
See Table	VPL, VWL, VQL, VML
VNL***AK2	Three Position Detent
VNL***BK2	Infinite Position Friction Lock

VPL/VKL/VNL/VQL Segments (Compensated)

Flow Rating (GPM)	3-POS. 3-WAY (C.C.)	3-POS. 4-WAY (C.C.)	3-POS. 4-WAY (C ₁ =CC, C ₂ =VOC)	3-POS. 4-WAY (O.C.M.)	3-POS. 4-WAY (V.O.C.)
0.7-1.3	VPLA33K2	VPLA24K2	VPLA34K2	VPLA44K2	VPLA74K2
1.3-2.5	VPL133K2	VPL124K2	VPL134K2	VPL144K2	VPL174K2
2.5-4.0	VPL233K2	VPL224K2	VPL234K2	VPL244K2	VPL274K2
4.0-7.0	VPL333K2	VPL324K2	VPL334K2	VPL344K2	VPL374K2
7.0-11.0	VPL433K2	VPL424K2	VPL434K2	VPL444K2	VPL474K2
11.0-17.0	VPL533K2	VPL524K2	VPL534K2	VPL544K2	VPL574K2
17.0-24.0	VPL633K2	VPL624K2	VPL634K2	VPL644K2	VPL674K2
24.0-30.0	VPL733K2	VPL724K2	VPL734K2	VPL744K2	VPL774K2

VWL Segments (Compensated)

Flow Rating (GPM)	3-POS. 3-WAY (C.C.)	3-POS. 4-WAY (C.C.)	3-POS. 4-WAY (C ₁ =CC, C ₂ =VOC)	3-POS. 4-WAY (O.C.M.)	3-POS. 4-WAY (V.O.C.)
0.7-1.3	VWLA33K2	VWLA24K2	VWLA34K2	VWLA44K2	VWLA74K2
1.3-2.5	VWL133K2	VWL124K2	VWL134K2	VWL144K2	VWL174K2V
2.5-4.0	VWL233K2	VWL224K2	VWL234K2	VWL244K2	VWL274K2
4.0-7.0	VWL333K2	VWL324K2	VWL334K2	VWL344K2	VWL374K2
7.0-11.0	VWL433K2	VWL424K2	VWL434K2	VWL444K2	VWL474K2
11.0-17.0	VWL533K2	VWL524K2	VWL534K2	VWL544K2	VWL574K2
17.0-24.0	VWL633K2	VWL624K2	VWL634K2	VWL644K2	VWL674K2
24.0-30.0	VWL733K2	VWL724K2	VWL734K2	VWL744K2	VWL774K2

VML/VQL Segments (Non-Compensated)

Flow Rating (GPM)	3-POS. 3-WAY (C.C.)	3-POS. 4-WAY (C.C.)	3-POS. 4-WAY (C ₁ =CC, C ₂ =VOC)	3-POS. 4-WAY (O.C.M.)	3-POS. 4-WAY (V.O.C.)
1.5	VMLA33K3	VMLA24K3	VMLA34K3	VMLA44K3	VMLA74K3
2.5	VML133K3	VML124K3	VML134K3	VML144K3	VML174K3
4.5	VML233K3	VML224K3	VML234K3	VML244K3	VML274K3
9.0	VML333K3	VML324K3	VML334K3	VML344K3	VML374K3
14.0	VML433K3	VML424K3	VML434K3	VML444K3	VML474K3
26.0	VML533K3	VML524K3	VML534K3	VML544K3	VML574K3

VPL/VKL Segments (Non-Compensated)

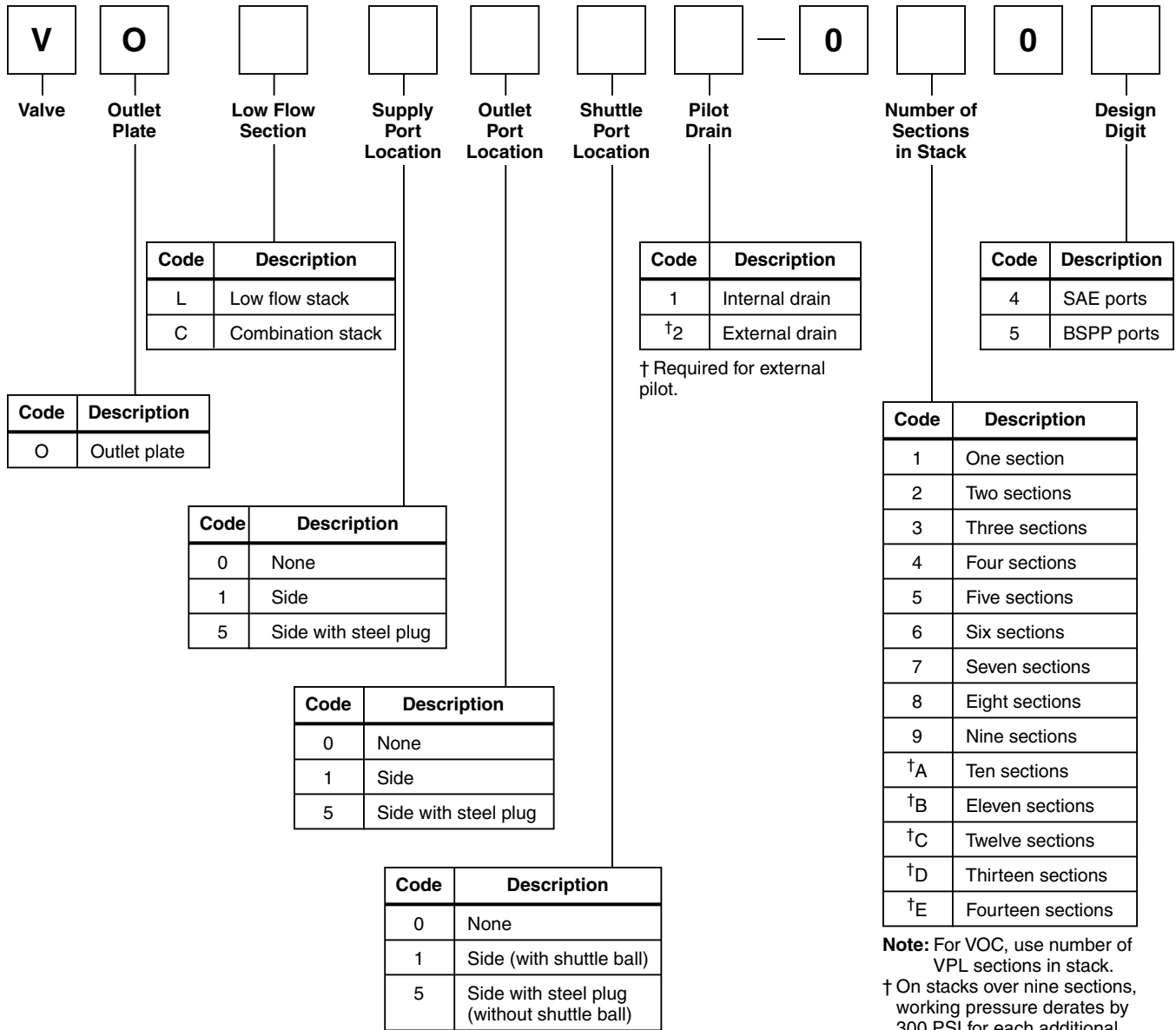
Flow Rating (GPM)	3-POS. 3-WAY (C.C.)	3-POS. 4-WAY (C.C.)	3-POS. 4-WAY (C ₁ =CC, C ₂ =VOC)	3-POS. 4-WAY (O.C.M.)	3-POS. 4-WAY (V.O.C.)
1.5	VPLA33K3	VPLA24K3	VPLA34K3	VPLA44K3	VPLA74K3
2.5	VPL133K3	VPL124K3	VPL134K3	VPL144K3	VPL174K3
4.5	VPL233K3	VPL224K3	VPL234K3	VPL244K3	VPL274K3
9.0	VPL333K3	VPL324K3	VPL334K3	VPL344K3	VPL374K3
14.0	VPL433K3	VPL424K3	VPL434K3	VPL444K3	VPL474K3
26.0	VPL533K3	VPL524K3	VPL534K3	VPL544K3	VPL574K3

VWL Segments (Non-Compensated)

Flow Rating (GPM)	3-POS. 3-WAY (C.C.)	3-POS. 4-WAY (C.C.)	3-POS. 4-WAY (C ₁ =CC, C ₂ =VOC)	3-POS. 4-WAY (O.C.M.)	3-POS. 4-WAY (V.O.C.)
1.5	VWLA33K3	VWLA24K3	VWLA34K3	VWLA44K3	VWLA74K3
2.5	VWL133K3	VWL124K3	VWL134K3	VWL144K3	VWL174K3
4.5	VWL233K3	VWL224K3	VWL234K3	VWL244K3	VWL274K3
9.0	VWL333K3	VWL324K3	VWL334K3	VWL344K3	VWL374K3
14.0	VWL433K3	VWL424K3	VWL434K3	VWL444K3	VWL474K3
26.0	VWL533K3	VWL524K3	VWL534K3	VWL544K3	VWL574K3

Note: Centering spring is different between compensated and non-compensated valves. DO NOT INTERMIX.

VPL Series Stacking Plate (for factory assemblies only)



Note: For VOC, use number of VPL sections in stack.

† On stacks over nine sections, working pressure derates by 300 PSI for each additional segment.

Ordering Example:
VOL1151-0304

Pulsar® Stackable Valves**VPL, Series Stacking Plate (for kits only)****Service Parts**

Part No.	Description
VOL0K4	Stacking Plate (No Ports) SAE
VOL0K5	Stacking Plate (No Ports) BSPP
VOL1K4	Stacking Plate (Ports) SAE
VOL1K5	Stacking Plate (Ports) BSPP
VOL5K4	Stacking Plate (Ports & Plugs) SAE
VOL5K5	Stacking Plate (Ports & Plugs) BSPP

Assembly Kits (Tie Rods and Mountings)

Part No.	Description
VAL1K1	1 Section
VAL2K1	2 Section
VAL3K1	3 Section
VAL4K1	4 Section
VAL5K1	5 Section
VAL6K1	6 Section
VAL7K1	7 Section
VAL8K1	8 Section
VAL9K1	9 Section
VALAK1	10 Section
VALBK1	11 Section
VALCK1	12 Section
VALDK1	13 Section
VALEK1	14 Section

Service Parts

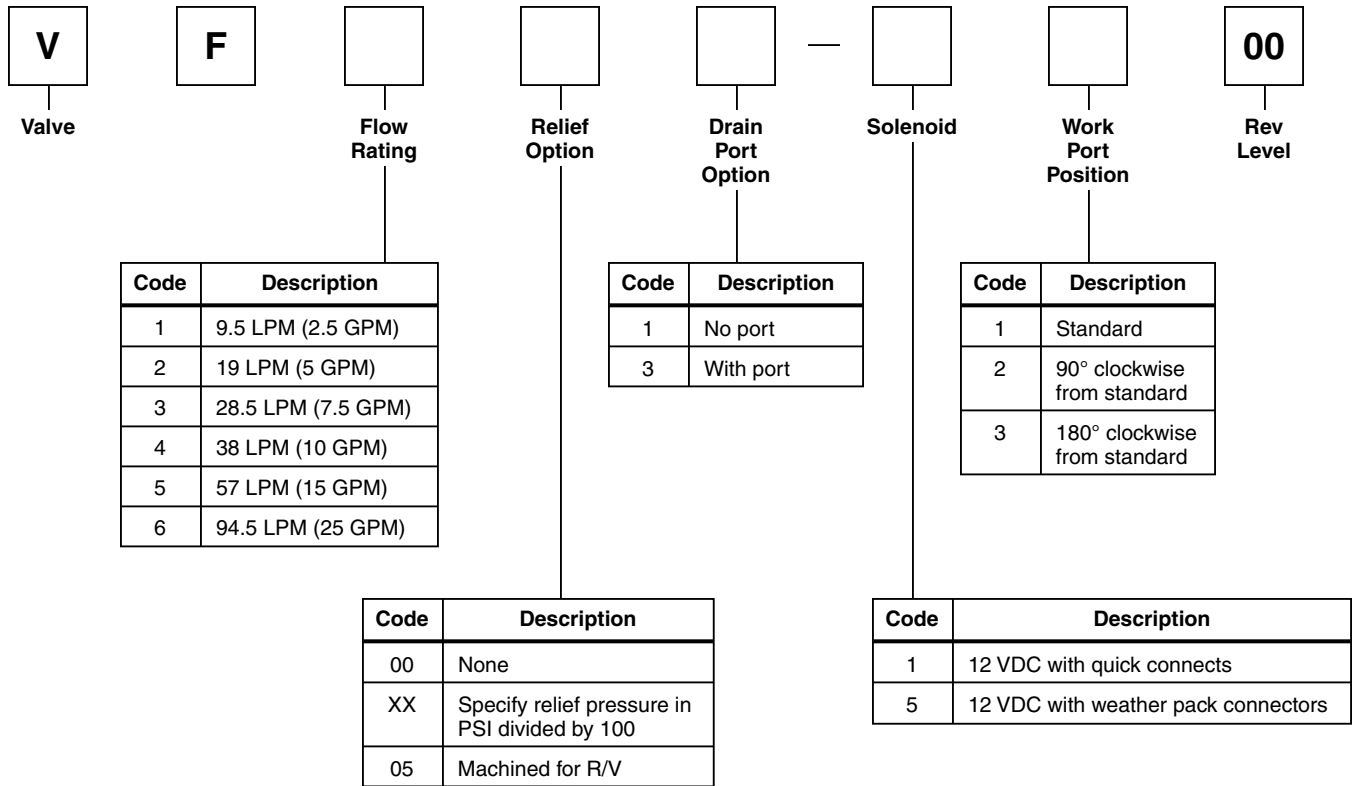
Part No.	Description
VTAGK1	Name Tag Labels (50 pcs)

Notes:

1. Stacking plate is convertible between internal and external drain.
2. When ordering kits for combination stacks, order a VOL series stacking plate, but be sure to order the correct VALMC*K1 assembly kit (page 9).

Pulsar® Stackable Valves

VF Series Flow Control Valve



Ordering Example:
VF5001-5100

VF Series Service Parts

Service Parts

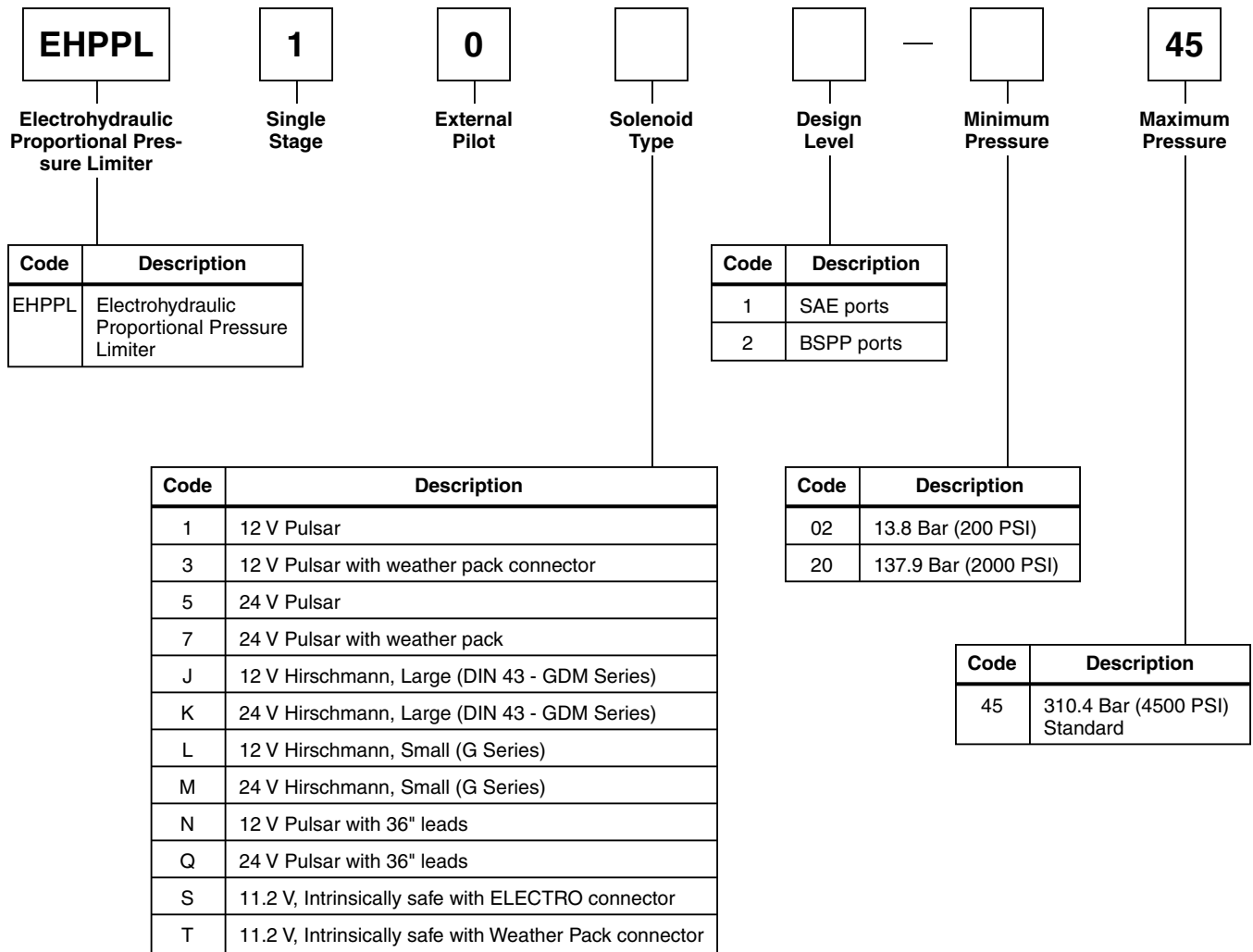
Part No.	Description
DA1004950	12 VDC Solenoid w/Weather Pack
P1080-1	12 VDC Solenoid w/Quick Connects
FA1039-23P	Relief Valve Cartridge
DP1025000	Port Plug (#10 SAE)
VFSK1	Seal Kit

VF Series Service Parts (Cont.)

Spool Kits

Part No.	Description
VF025SK1	2.5 GPM
VF050SK1	5.0 GPM
VF075SK1	7.5 GPM
VF100SK1	10.0 GPM
VF150SK1	15.0 GPM
VF250SK1	25.0 GPM

Electrohydraulic Proportional Pressure Limiter



Ordering Example:
EHPPL1011-0245

Terms of Sale with Warranty Limitations

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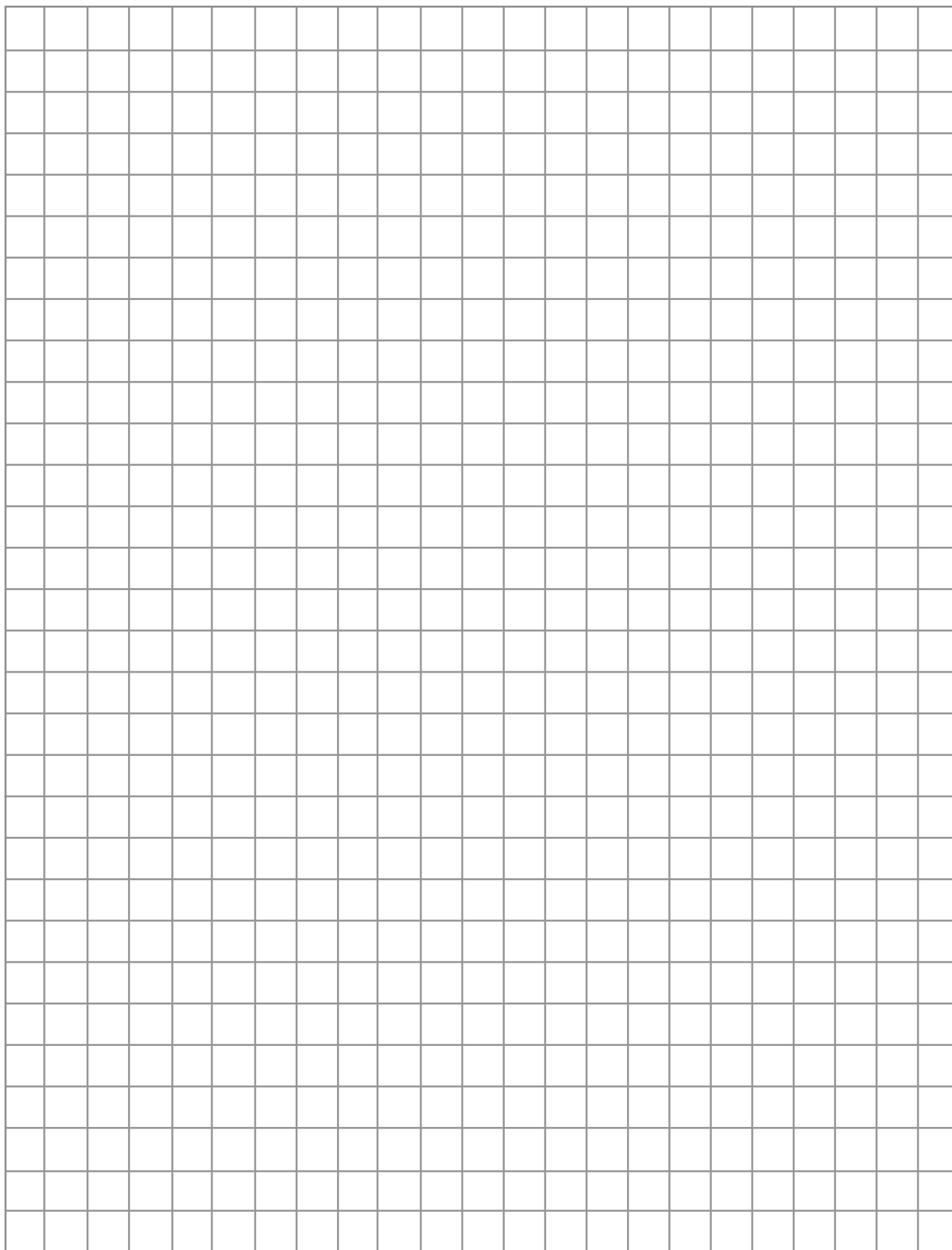
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12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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