



Bulletin HY14-2102-M2/US
Service Parts Bulletin

Series VP/VPO

Proportional Valves

Effective: September 1, 2002
Supersedes: Cat. No. PMF 1031 dated 3/98

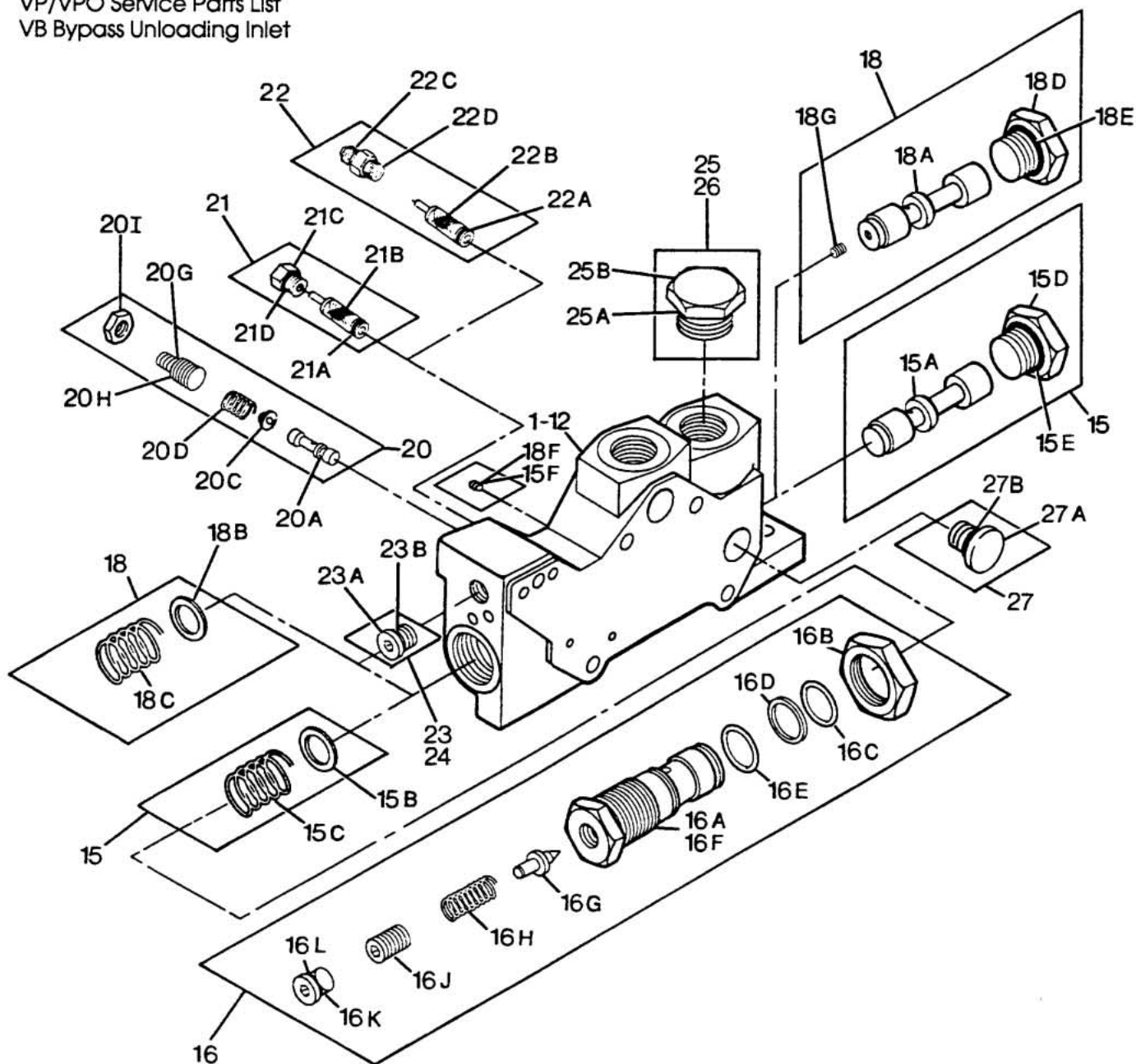


Pulsar™

Stackable Valves



VP/VPO Service Parts List
VB Bypass Unloading Inlet



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bul2102-m2.p65, bl



VP/VPO Service Parts List
Inlet

Item	Description	Quantity	Part Number
1	Bypass Inlet External Pilot (SAE)	1	VB2201-....1P
2	Bypass Inlet Internal Pilot (SAE)	1	VB2211-....1P
3	Bypass Inlet External Pilot (BSPP)	1	VB2201-....2P
4	Bypass Inlet Internal Pilot (BSPP)	1	VB2211-....2P
5	Bypass Inlet w/Power Beyond External Pilot (SAE)	1	VB2401-....1P
6	Bypass Inlet w/Power Beyond Internal Pilot (SAE)	1	VB2411-....1P
7	Bypass Inlet w/Power Beyond External Pilot (BSPP)	1	VB2401-....2P
8	Bypass Inlet w/Power Beyond Internal Pilot (BSPP)	1	VB2411-....2P
11	Rel/Inlet F/Flow Comp Pump (SAE)	1	VY2211-....1P
12	Rel/Inlet F/Flow Comp Pump (BSPP)	1	VY2211-....2P
15	Bypass Inlet Spool Kit	1	VBISK1
	Consists of:		
15A	Bypass Spool	1	N/A
15B	Washer	2	N/A
15C	Spring	1	N/A
15D	Socket Plug	1	N/A
15E	O-Ring (-912)	1	N/A
15F	Orifice Screw	1	N/A
16	Unloading Adjustment Kit (3000 PSI (206 Bar) Std. Setting)	1	VBCPK3001
	Consists of:		
16A	Adjustment Plug	1	N/A
16B	Lock Nut	1	N/A
16C	O-Ring (-023)	1	N/A
16D	Back-Up Ring	1	N/A
16E	O-Ring (-022)	1	N/A
16F	Seat	1	N/A
16G	Poppet Cone	1	N/A
16H	Spring	1	N/A
16J	Set Screw	1	N/A
16K	Socket Plug	1	N/A
16L	O-Ring (-904)	1	N/A

N/A - Not Available As A Loose Part

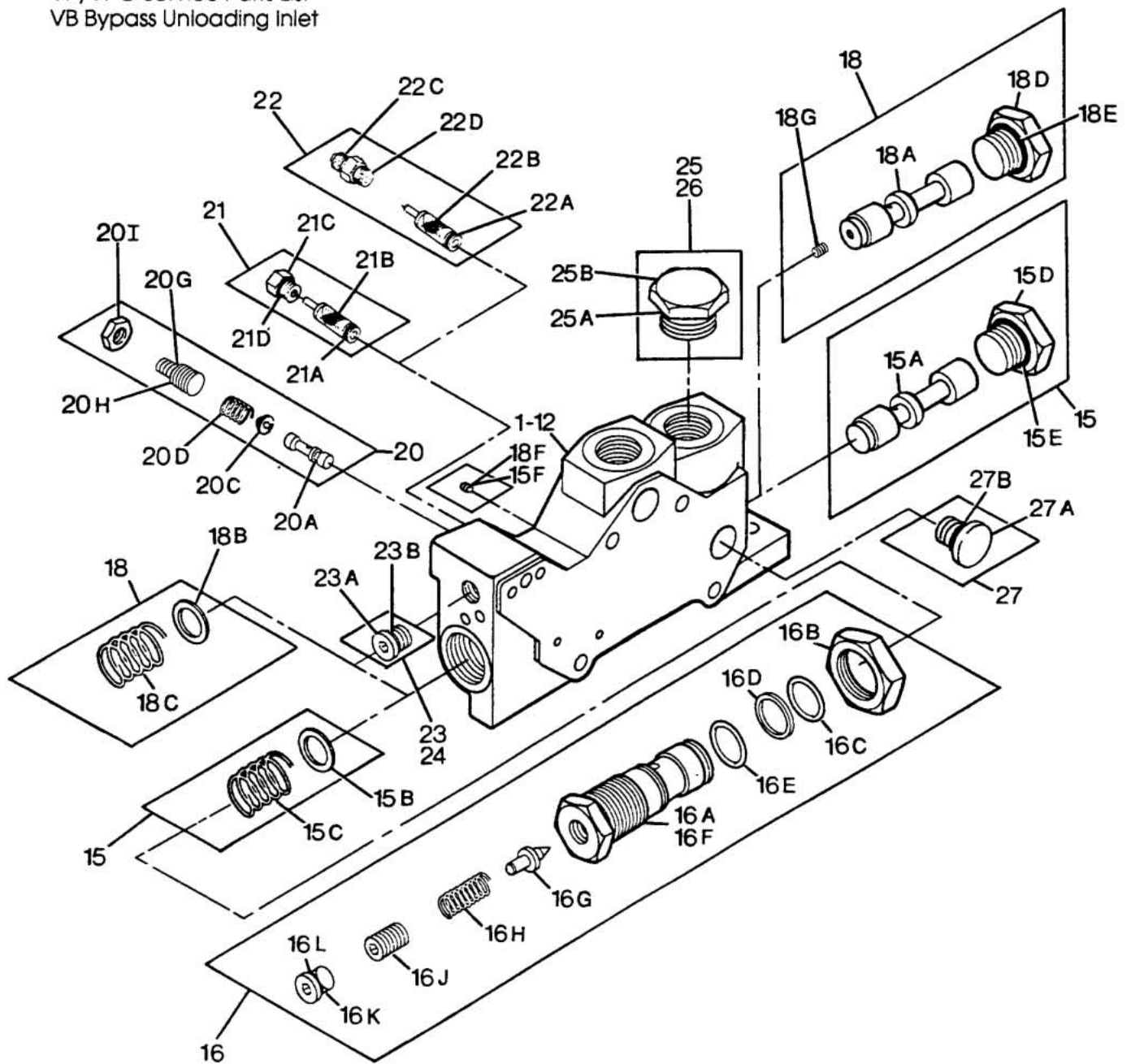
For Inlet Relief Pressure Setting:

***=Pressure Setting in PSI x 0.1

***=Pressure Setting in BAR x 1.45

NOTE: Effective 9/1/97, VB and VY Inlets have the ability to be converted from one to another.
Items 15F and 18F are affected. (Read Product Advisory No. 9801-001 for details.)

VP/VPO Service Parts List
VB Bypass Unloading Inlet

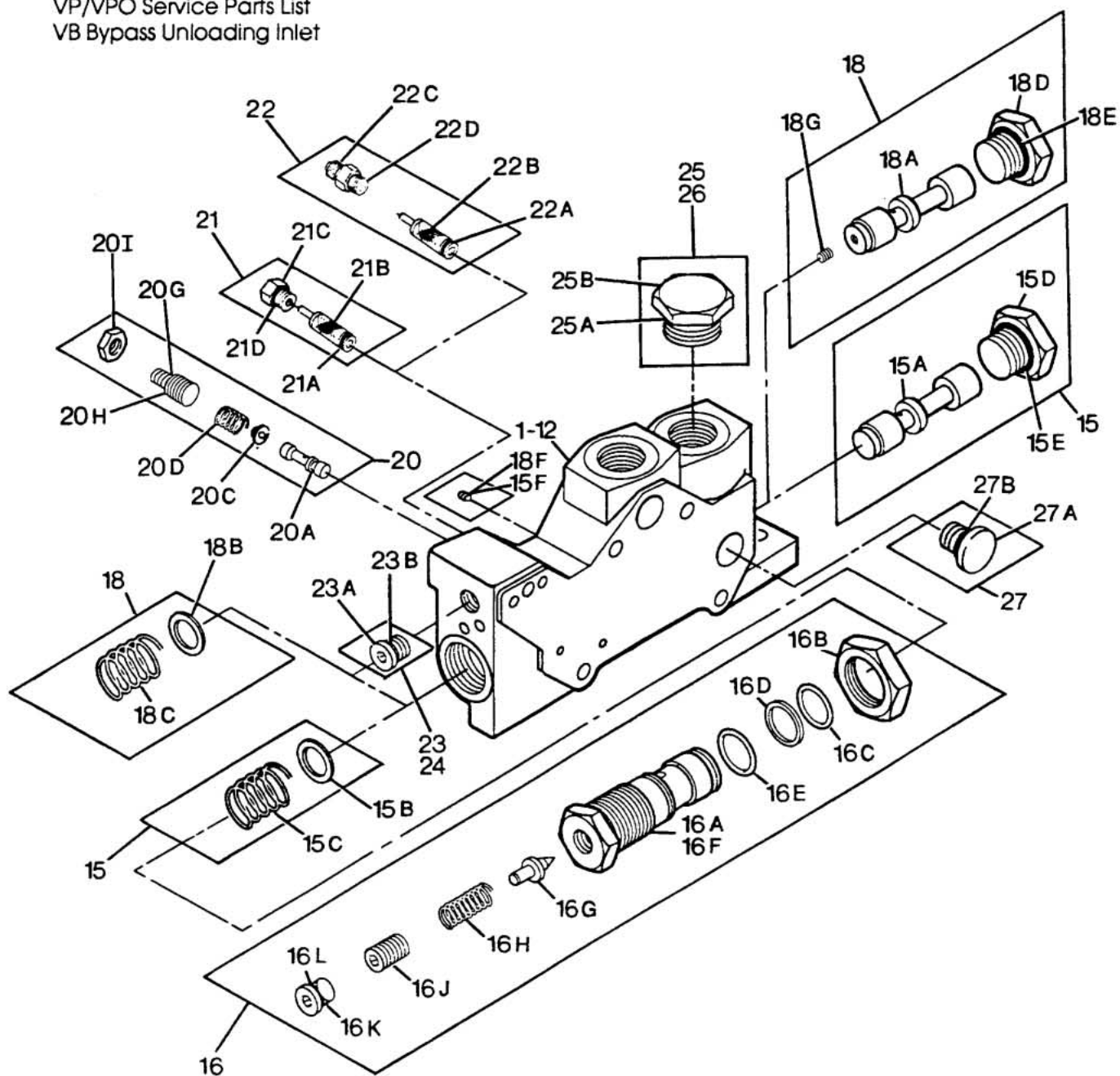


VP/VPO Service Parts List
Inlet

Item	Description	Quantity	Part Number
18	VY Inlet Spool Kit	1	VYISK1
	Consists of:		
18A	Load Sense Spool	1	N/A
18B	Washer	1	N/A
18C	Spring	1	N/A
18D	Socket Plug	1	N/A
18E	O-Ring (-912)	1	N/A
18F	Set Screw	1	N/A
18G	Orifice Screw	1	N/A
20	Pilot Reducing Kit (200 PSI PILOT)	1	VBPRK1
	(350 PSI PILOT)	1	VBPRK2
	Consists of:		
20A	Pilot Reducing Spool	1	N/A
20C	Spring Guide	1	N/A
20D	Spring	1	N/A
20G	Adjustment Screw	1	N/A
20H	O-Ring (-904)	1	N/A
20I	Lock Nut	1	N/A

N/A - Not Available As A Loose Part

VP/VPO Service Parts List
VB Bypass Unloading Inlet

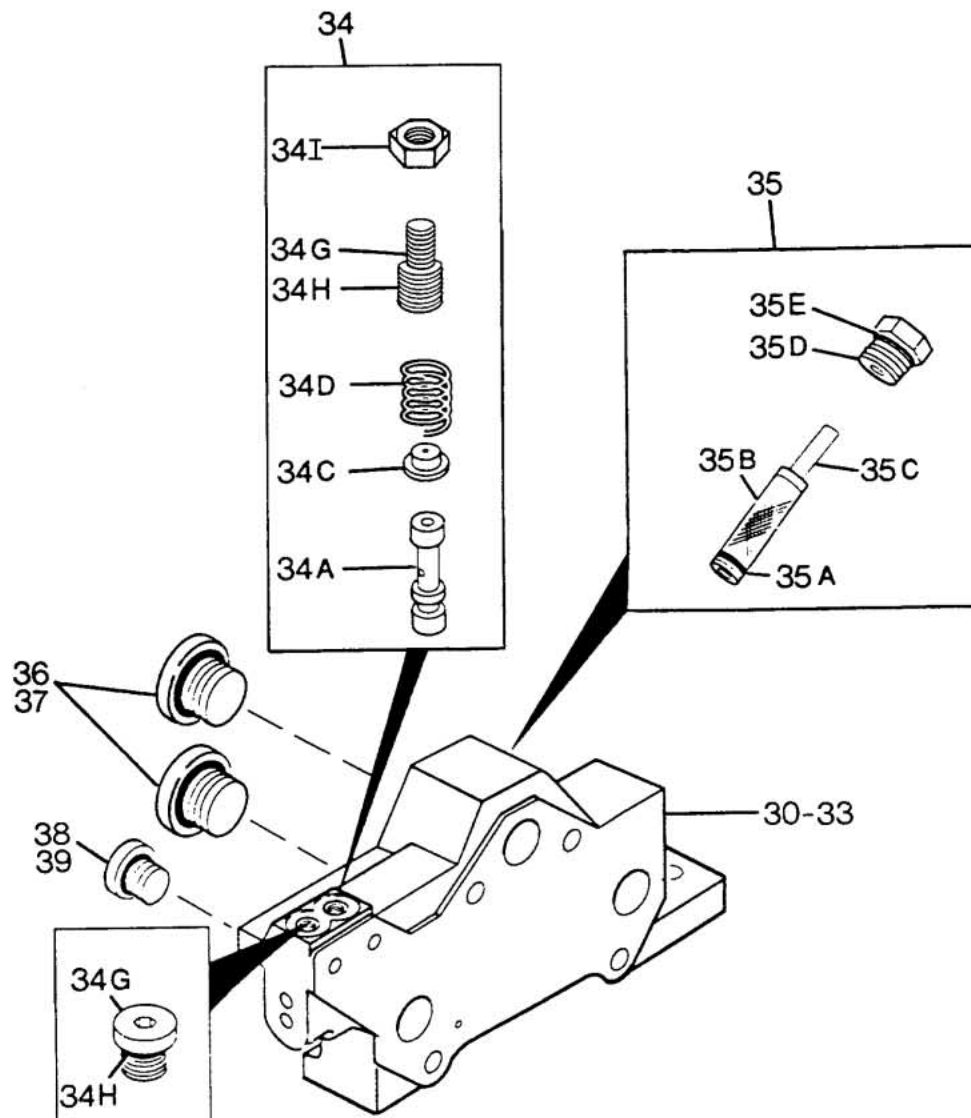


VP/VPO Service Parts List
Inlet

Item	Description	Quantity	Part Number
21	Inlet Filter Kit Consists of:	1	VBIFK1
21A	O-Ring (-008)	1	N/A
21B	Filter	1	N/A
21C	Socket Plug	1	N/A
21D	O-Ring (-904)	1	N/A
22	Inlet Filter Kit w/External Supply Consists of:	1	VBIFK2
22A	O-Ring (-008)	1	N/A
22B	Filter	1	N/A
22C	SAE Fitting	1	N/A
22D	O-Ring (-904)	1	N/A
23	SAE Port Plug Consists of:	1	B1003.006
23A	Plug	1	N/A
23B	O-Ring (-904)	1	N/A
24	BSPP Port Plug	1	DB1491.006
25	SAE Port Plug Consists of:	2	B1010.006
25A	Plug	2	N/A
25B	O-Ring (-916)	2	N/A
26	BSPP Port Plug	1	DB1495.006
27	Power Beyond Plug Kit Consists of:	1	VPBPK1
27A	Power Beyond Plug	1	N/A
27B	O-Ring (-016 90 Duro)	1	N/A
28	Inlet Seal Kit (VB/VY) Consists of:	1	VBSK2
15F	Orifice Screw	1	N/A
16C	O-Ring (-023)	1	N/A
16D	Back-Up Ring	1	N/A
16E	O-Ring (-022)	1	N/A
17B	O-Ring (-023)	1	N/A
17H	Back-Up Ring	1	N/A
18F	Set Screw	1	N/A
18G	Orifice Screw	1	N/A
19C	O-Ring (-023)	1	N/A
19D	Back-Up Ring	1	N/A
19E	O-Ring (-022)	1	N/A
20H	O-Ring (-904)	1	N/A
21A	O-Ring (-008)	1	N/A
21B	Filter	1	N/A
21D	O-Ring (-904)	1	N/A
22A	O-Ring (-008)	1	N/A
22D	O-Ring (-904)	1	N/A
23B	O-Ring (-904)	1	N/A
25B	O-Ring (-916)	2	N/A
27B	O-Ring (-016 90 Duro)	1	N/A

N/A - Not Available As A Loose Part

VP/VPO Service Parts List
VL Series Load Sensing Inlet

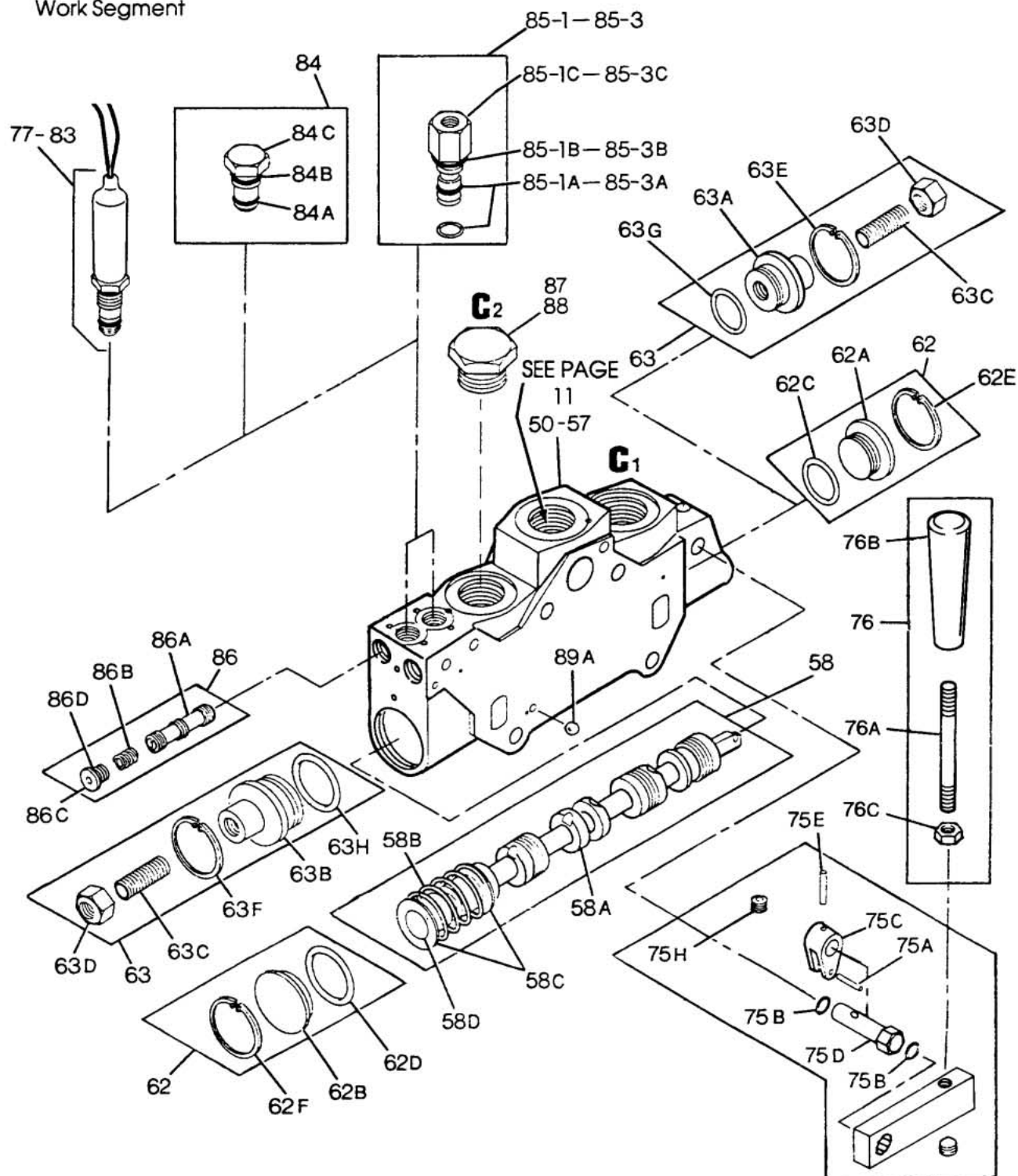


VP/VPO Service Parts List
Inlet

Item	Description	Quantity	Part Number
30	Load Sense Inlet (SAE)	1	VL1110-0001P
31	Load Sense Inlet (BSPP)	1	VL1110-0002P
32	Inlet Manifold (SAE)	1	VX1110-0001P
33	Inlet Manifold (BSPP)	1	VX1110-0002P
34	Pilot Reducing Kit (200 PSI PILOT) (350 PSI PILOT)	1 1	VBPRK1 VBPRK2
	Consists of:		
34A	Pilot Reducing Spool	1	N/A
34C	Spring Guide	1	N/A
34D	Spring	1	N/A
34G	Adjustment Screw	1	N/A
34H	O-Ring (-904)	2	N/A
34I	Lock Nut	1	N/A
35	Inlet Filter Kit For VL/VX Series	1	VLPFK1
	Consists of:		
35A	O-Ring (-008)	1	N/A
35B	Filter	1	N/A
35C	Filter Extension Tube	1	N/A
35D	Socket Plug	1	N/A
35E	O-Ring (-904)	1	N/A
36	SAE Port Plug	2	B1010.006
	Consists of:		
36A	Plug	2	N/A
36B	O-Ring (-916)	2	N/A
37	BSPP Port Plug	2	DB1495.006
38	SAE Port Plug (VX Only)	1	B1003.006
	Consists of:		
38A	Plug	1	N/A
38B	O-Ring (-904)	1	N/A
39	BSPP Port Plug (VX Only)	1	DB1491.006
40	Inlet Seal Kit (VL/VX)	1	VLSK1
	Consists of:		
34H	O-Ring (-904)	2	N/A
35A	O-Ring (-008)	1	N/A
35B	Filter	1	N/A
35E	O-Ring (-904)	1	N/A
36B	O-Ring (-916)	2	N/A
38B	O-Ring (-904)	1	N/A

N/A - Not Available As A Loose Part

VP/VPO Service Parts List
Work Segment



VP/VPO Service Parts List
Work Segment

Item	Description	Quantity	Part Number
50	Electrohydraulic Proportional Control (SAE)		VP.....1P
51	Electrohydraulic Proportional Control (BSPP)		VP.....2P
52	Electrohydraulic On/Off Control (SAE)		VQ.....1P
53	Electrohydraulic On/Off Control (BSPP)		VQ.....2P
54	Hydraulic Remote Control (SAE)		VW.....1P
55	Hydraulic Remote Control (BSPP)		VW.....2P
56	Manual Control (SAE)		VN.....1P
57	Manual Control (BSPP)		VN.....2P

Proportional Working Section Coding*

Flow Rating GPM (L/min)	3-pos. 3-way Closed	3-pos. 4-way Closed	3-pos. 4-way Restricted Open	3-pos. 4-way Open Motor
2.5 (9.5)	VP1337-3231P	VP1247-3231P	VP1147-3231P	VP1447-3231P
3.5 (13)	VP2337-3231P	VP2247-3231P	VP2147-3231P	VP2447-3231P
5.0 (19)	VP3337-3231P	VP3247-3231P	VP3147-3231P	VP3447-3231P
7.0 (26)	VP4337-3231P	VP4247-3231P	VP4147-3231P	VP4447-3231P
10.0 (38)	VP5337-3231P	VP5247-3231P	VP5147-3231P	VP5447-3231P
14.0 (53)	VP6337-3231P	VP6247-3231P	VP6147-3231P	VP6447-3231P
20.0 (76)	VP7337-3231P	VP7247-3231P	VP7147-3231P	VP7447-3231P
28.0 (106)	VP8337-3231P	VP8247-3231P	VP8147-3231P	VP8447-3231P
40.0 (150)	VP9337-3231P	VP9247-3231P	VP9147-3231P	VP9447-3231P

*With individual pressure compensation and manual override without handle.

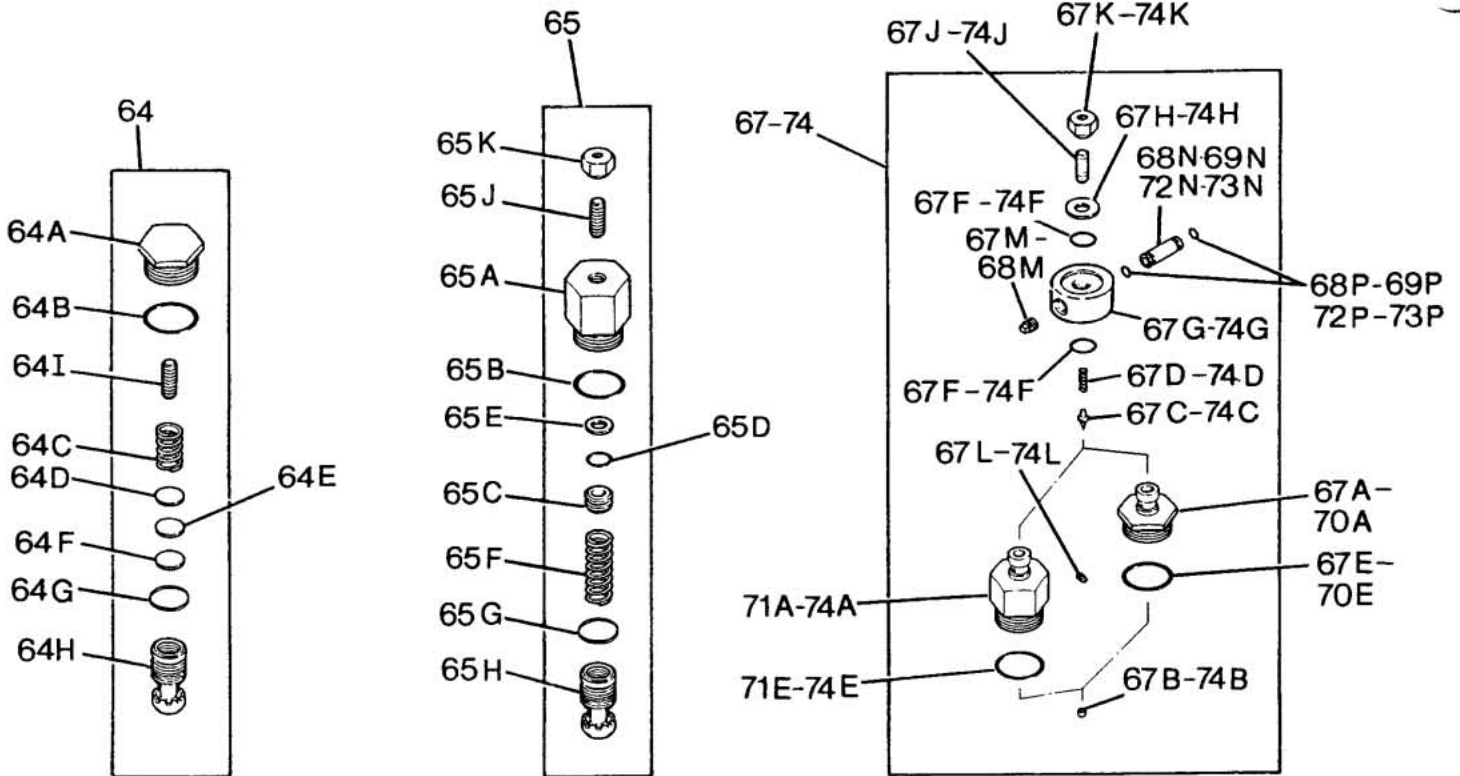
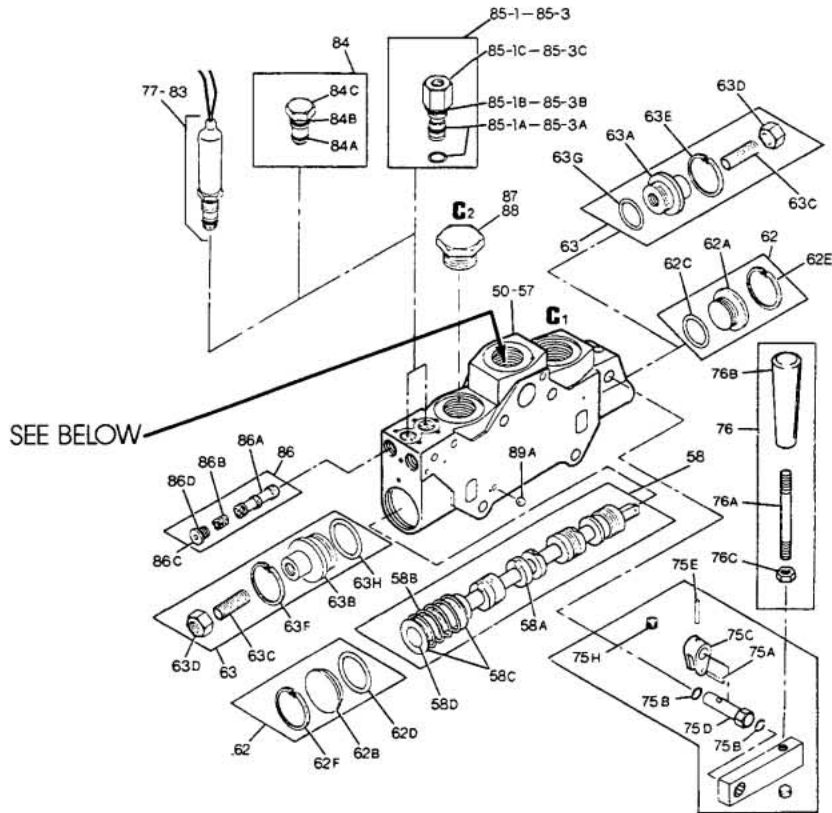
58	VPO Main Spool Kit	1	Shown in Chart
	Consists of:		
58A	Main Spool	1	N/A
58B	Centering Spring	1	N/A
58C	Spring Guide	2	N/A
58D	Retaining Ring	1	N/A

Spool Kits

Flow Rating GPM (L/min)	3-pos. 3-way Closed	3-pos. 4-way Closed	3-pos. 4-way Restricted Open	3-pos. 4-way Open Motor
2.5 (9.5)	VP133K1	VP124K1	VP114K1	VP144K1
3.5 (13)	VP233K1	VP224K1	VP214K1	VP244K1
5.0 (19)	VP333K1	VP324K1	VP314K1	VP344K1
7.0 (26)	VP433K1	VP424K1	VP414K1	VP444K1
10.0 (38)	VP533K1	VP524K1	VP514K1	VP544K1
14.0 (53)	VP633K1	VP624K1	VP614K1	VP644K1
20.0 (76)	VP733K1	VP724K1	VP714K1	VP744K1
28.0 (106)	VP833K1	VP824K1	VP814K1	VP844K1
40.0 (150)	VP933K1	VP924K1	VP914K1	VP944K1

N/A - Not Available As A Loose Part

VP/VPO Service Parts List
Work Segment



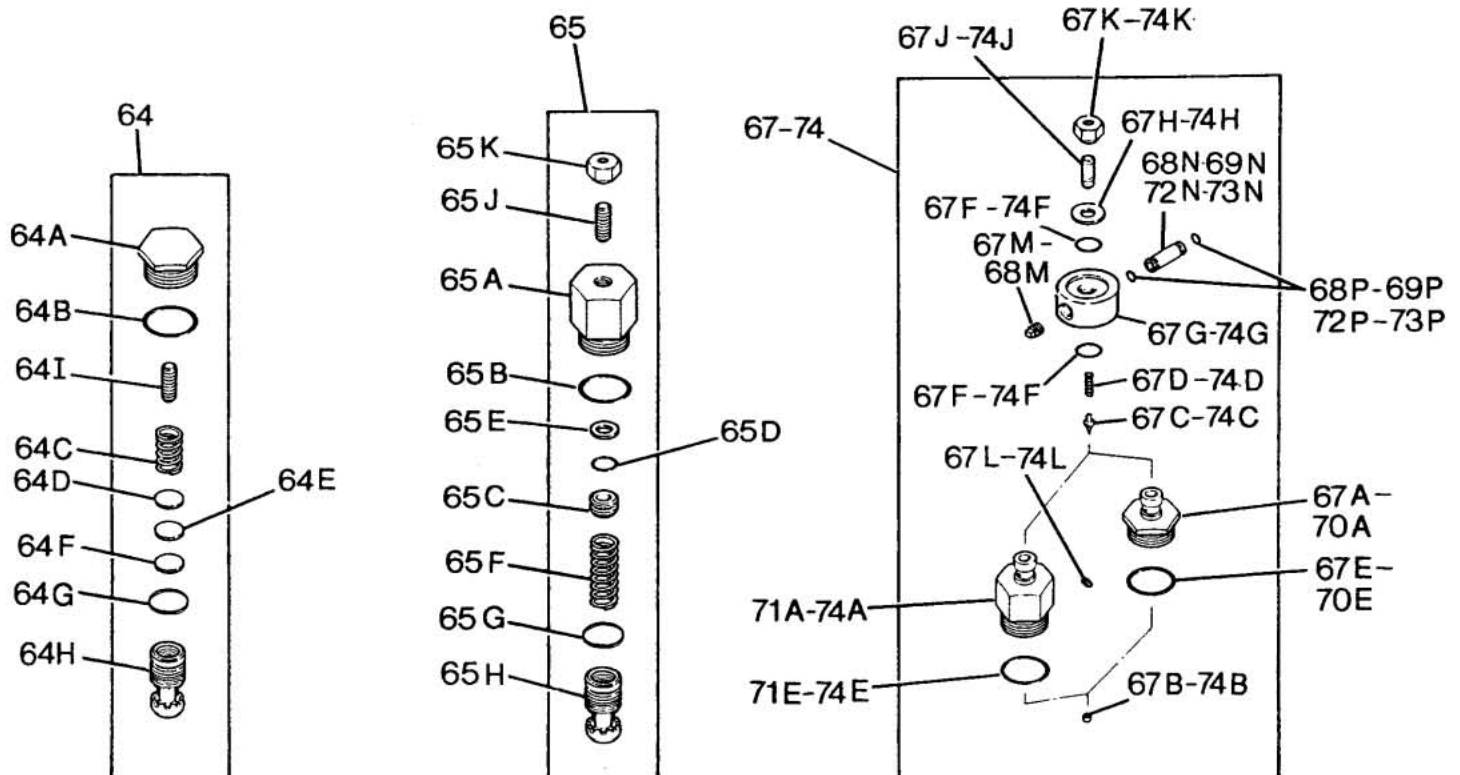
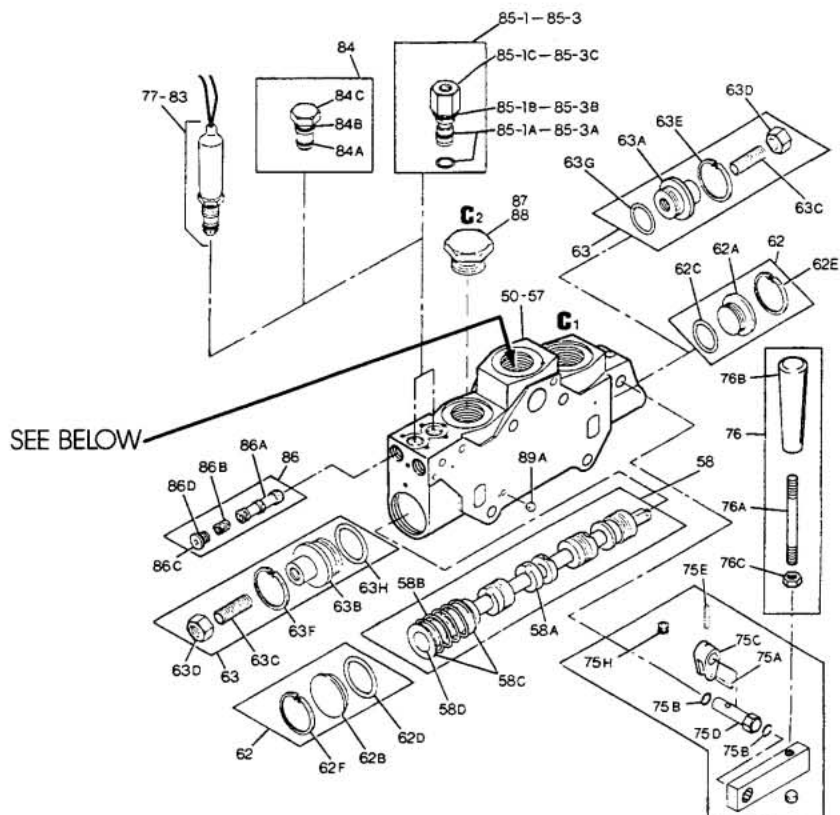
VP/VPO Service Parts List
Work Segment

Item	Description	Quantity	Part Number
62	End Plug Kit	1	VPEPK1
	Consists of:		
62A	Plug	1	N/A
62B	Plug	1	N/A
62C	O-Ring (-018)	1	N/A
62D	O-Ring (-023)	1	N/A
62E	Retaining Ring	1	N/A
62F	Retaining Ring	1	N/A
63	Optional Flow Limiter Kit	1	VPFLK1
	Consists of:		
63A	Adjustment Plug	1	N/A
63B	Adjustment Plug	1	N/A
63C	Set Screw	2	N/A
63D	Seal Nut	2	N/A
63E	Retaining Ring	1	N/A
63F	Retaining Ring	1	N/A
63G	O-Ring (-018)	1	N/A
63H	O-Ring (-023)	1	N/A
64	Pressure Compensator Kit (Standard)(Dual Springs)	1	VPPCK3
	Consists of:		
64A	Compensator Plug	1	N/A
64B	O-Ring (-916)	1	N/A
64C	Compensator Spring (Outer)	1	N/A
64D	Shim	4	N/A
64E	Shim	2	N/A
64F	Shim	2	N/A
64G	Retaining Ring	1	N/A
64H	Compensator Spool	1	N/A
64I	Compensator Spring (Inner)	1	N/A
65	Pressure Comp. Kit GPM (Ext.Adjustable)	1	VPPCK2
	Consists of:		
65A	Compensator Plug	1	N/A
65B	O-Ring (-916)	1	N/A
65C	Piston	1	N/A
65D	O-Ring (-015)	1	N/A
65E	Back-Up Ring	1	N/A
65F	Compensator Spring	1	N/A
65G	Retaining Ring	1	N/A
65H	Compensator Spool	1	N/A
65J	Set Screw	1	N/A
65K	Seal Nut	1	N/A

N/A - Not Available As A Loose Part

VP/VPO Service Parts List

Work Segment



VP/VPO Service Parts List
VPO Work Segment

Item	Description	Quantity	Part Number
67	Pressure Limiter Kit (1500 PSI (103 Bar) Std. Setting) (Single Segment Use)	1	VPPLX1K1501
	Consists of:		
67A	Pressure Limiter Housing (Low Profile)(Non-adjustable)	1	N/A
67B	Seat	1	N/A
67C	Poppet Cone	1	N/A
67D	Spring	1	N/A
67E	O-Ring (-916)	1	N/A
67F	O-Ring (-017)	2	N/A
67G	Manifold	1	N/A
67H	Plate	1	N/A
67J	Set Screw	1	N/A
67K	Seal Nut	1	N/A
67L	Orifice Screw	1	N/A
67M	Pipe Plug	1	N/A
68	Pressure Limiter Kit (1500 PSI (103 Bar) Std. Setting) (First Position)	1	VPPLX2K1501
	Consists of:		
68A	Pressure Limiter Housing (Low Profile)(Non-adjustable)	1	N/A
68B	Seat	1	N/A
68C	Poppet Cone	1	N/A
68D	Spring	1	N/A
68E	O-Ring (-916)	1	N/A
68F	O-Ring (-017)	2	N/A
68G	Manifold	1	N/A
68H	Plate	1	N/A
68J	Set Screw	1	N/A
68K	Seal Nut	1	N/A
68L	Orifice Screw	1	N/A
68M	Pipe Plug	1	N/A
68N	Tube	1	N/A
68P	Seal	2	N/A
69	Pressure Limiter Kit (1500 PSI (103 Bar) Std. Setting) (Intermediate Position)	1	VPPLX3K1501
	Consists of:		
69A	Pressure Limiter Housing (Low Profile)(Non-adjustable)	1	N/A
69B	Seat	1	N/A
69C	Poppet Cone	1	N/A
69D	Spring	1	N/A
69E	O-Ring (-916)	1	N/A
69F	O-Ring (-017)	2	N/A
69G	Manifold	1	N/A
69H	Plate	1	N/A
69J	Set Screw	1	N/A
69K	Seal Nut	1	N/A
69L	Orifice Screw	1	N/A
69N	Tube	1	N/A
69P	Seal	2	N/A
70	Pressure Limiter Kit (1500 PSI (103 Bar) Std. Setting) (Final Position)	1	VPPLX4K1501
	Consists of:		
70A	Pressure Limiter Housing (Low Profile)(Non-adjustable)	1	N/A
70B	Seat	1	N/A
70C	Poppet Cone	1	N/A
70D	Spring	1	N/A

N/A - Not Available As A Loose Part

VP/VPO Service Parts List

Work Segment

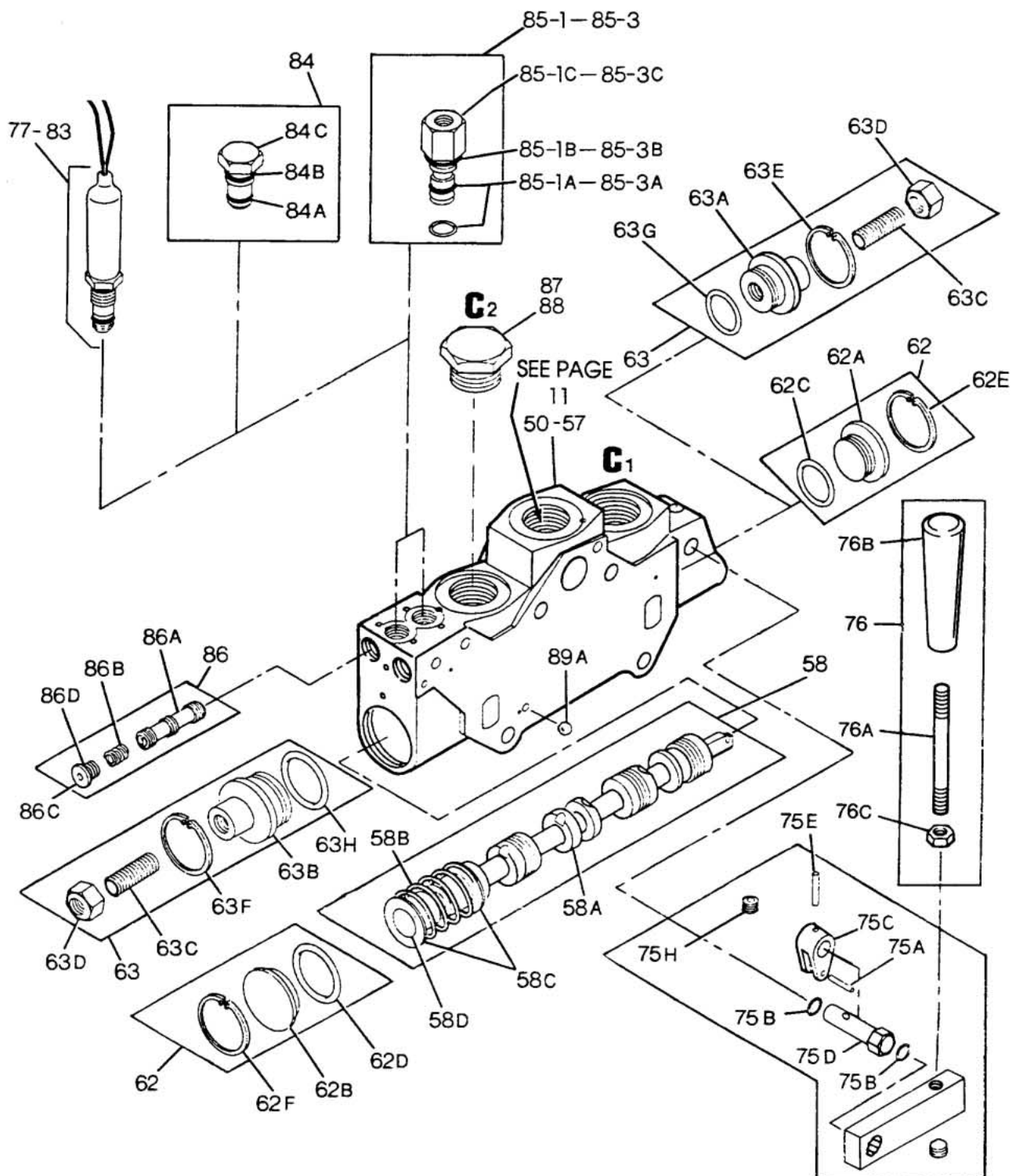


VP/VPO Service Parts List
Work Segment

Item	Description	Quantity	Part Number
70E	O-Ring (-916)	1	N/A
70F	O-Ring (-017)	2	N/A
70G	Manifold	1	N/A
70H	Plate	1	N/A
70J	Set Screw	1	N/A
70K	Seal Nut	1	N/A
70L	Orifice Screw	1	N/A
71	Pressure Limiter Kit (1500 PSI (103 Bar) Std. Setting) (Single Segment Use)	1	VPPLX1K1502
	Consists of:		
71A	Pressure Limiter Housing (High Profile)(Adjustable)	1	N/A
71B	Seat	1	N/A
71C	Poppet Cone	1	N/A
71D	Spring	1	N/A
71E	O-Ring (-916)	1	N/A
71F	O-Ring (-017)	2	N/A
71G	Manifold	1	N/A
71H	Plate	1	N/A
71J	Set Screw	1	N/A
71K	Seal Nut	1	N/A
71L	Orifice Screw	1	N/A
71M	Pipe Plug	1	N/A
72	Pressure Limiter Kit (1500 PSI (103 Bar) Std. Setting) (First Position)	1	VPPLX2K1502
	Consists of:		
72A	Pressure Limiter Housing (High Profile)(Adjustable)	1	N/A
72B	Seat	1	N/A
72C	Poppet Cone	1	N/A
72D	Spring	1	N/A
72E	O-Ring (-916)	1	N/A
72F	O-Ring (-017)	2	N/A
72G	Manifold	1	N/A
72H	Plate	1	N/A
72J	Set Screw	1	N/A
72K	Seal Nut	1	N/A
72L	Orifice Screw	1	N/A
72M	Pipe Plug	1	N/A
72N	Tube	1	N/A
72P	Seal	2	N/A
73	Pressure Limiter Kit (1500 PSI (103 Bar) Std. Setting) (Intermediate Position)	1	VPPLX3K1502
	Consists of:		
73A	Pressure Limiter Housing (High Profile)(Adjustable)	1	N/A
73B	Seat	1	N/A
73C	Poppet Cone	1	N/A
73D	Spring	1	N/A
73E	O-Ring (-916)	1	N/A
73F	O-Ring (-017)	2	N/A
73G	Manifold	1	N/A
73H	Plate	1	N/A
73J	Set Screw	1	N/A
73K	Seal Nut	1	N/A
73L	Orifice Screw	1	N/A
73N	Tube	1	N/A
73P	Seal	2	N/A

N/A - Not Available As A Loose Part

VP/VPO Service Parts List
Work Segment

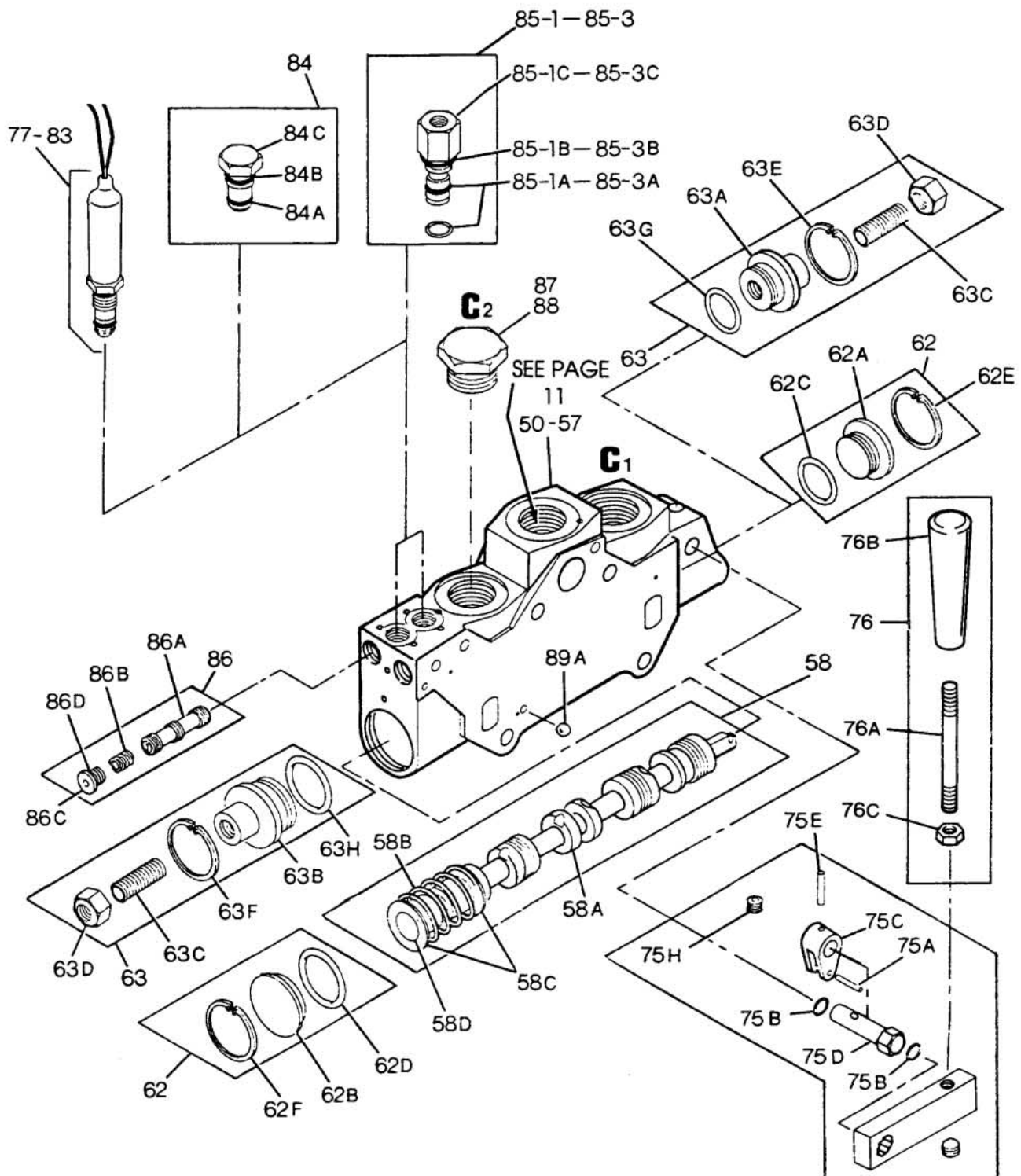


VP/VPO Service Parts List
Work Segment

Item	Description	Quantity	Part Number
74	Pressure Limiter Kit (1500 PSI (103 Bar) Std. Setting) (Final Position)	1	VPPLX4K1502
	Consists of:		
74A	Pressure Limiter Housing (High Profile)(Adjustable)	1	N/A
74B	Seat	1	N/A
74C	Poppet Cone	1	N/A
74D	Spring	1	N/A
74E	O-Ring (-916)	1	N/A
74F	O-Ring (-017)	2	N/A
74G	Manifold	1	N/A
74H	Plate	1	N/A
74J	Set Screw	1	N/A
74K	Seal Nut	1	N/A
74L	Orifice Screw	1	N/A
75	Manual Operator Kit	1	VPMOK2 (VP Only) VPOMOK2 (VPO Only)
	Consists of:		
75A	Dowel Pin	1	N/A
75B	O-Ring (-012)	2	N/A
75C	Clevis w/.189 inch Pin Hole	1	N/A
75D	Shaft w/.189 inch Pin Hole	1	N/A
75E	Straight Pin	1	N/A
75F	Set Screw	1	N/A
75G	Handle Adaptor	1	N/A
75H	Plug	1	N/A
76	Manual Operator Handle Kit	1	VPLH6K2
	Consists of:		
76A	Handle Rod	1	N/A
76B	Handle	1	N/A
76C	Jam Nut	1	N/A
	Pulsar™ Solenoid Kits		
	Consists of:		
77	12 Volt Pulsar™	1	VS1320-0001P
78	12 Volt Pulsar™ w/Weatherpack	1	VS1320-0011P
79	24 Volt Pulsar™	1	VS1320-0051P
80	24 Volt Pulsar™ w/Weatherpack	1	VS1320-0061P
81	12 Volt Marine Pulsar™	1	VS1320-0001-001P
82	24 Volt Marine Pulsar™	1	VS1320-0051-001P
83	12 Volt Intrinsically Approved Pulsar™	1	VS1320-0012-003P
84	Solenoid Plug Kit	1	VNPK1
	Consists of:		
84A	O-Ring (-011)	2	N/A
84B	O-Ring (-906)	2	N/A
84C	Solenoid Plug	2	N/A
85-1	Hydraulic Pilot Fitting Kit (SAE #4)	1	VWFK4
	Consists of:		
85-1A	O-Ring (-011)	4	N/A
85-1B	O-Ring (-906)	2	N/A
85-1C	Adaptor Fitting	2	N/A
85-2	Hydraulic Pilot Fitting Kit (BSPP G-1/4)	1	VWFK5
	Consists of:		
85-2A	O-Ring (-011)	4	N/A
85-2B	O-Ring (-906)	2	N/A

N/A - Not Available As A Loose Part

VP/VPO Service Parts List
Work Segment

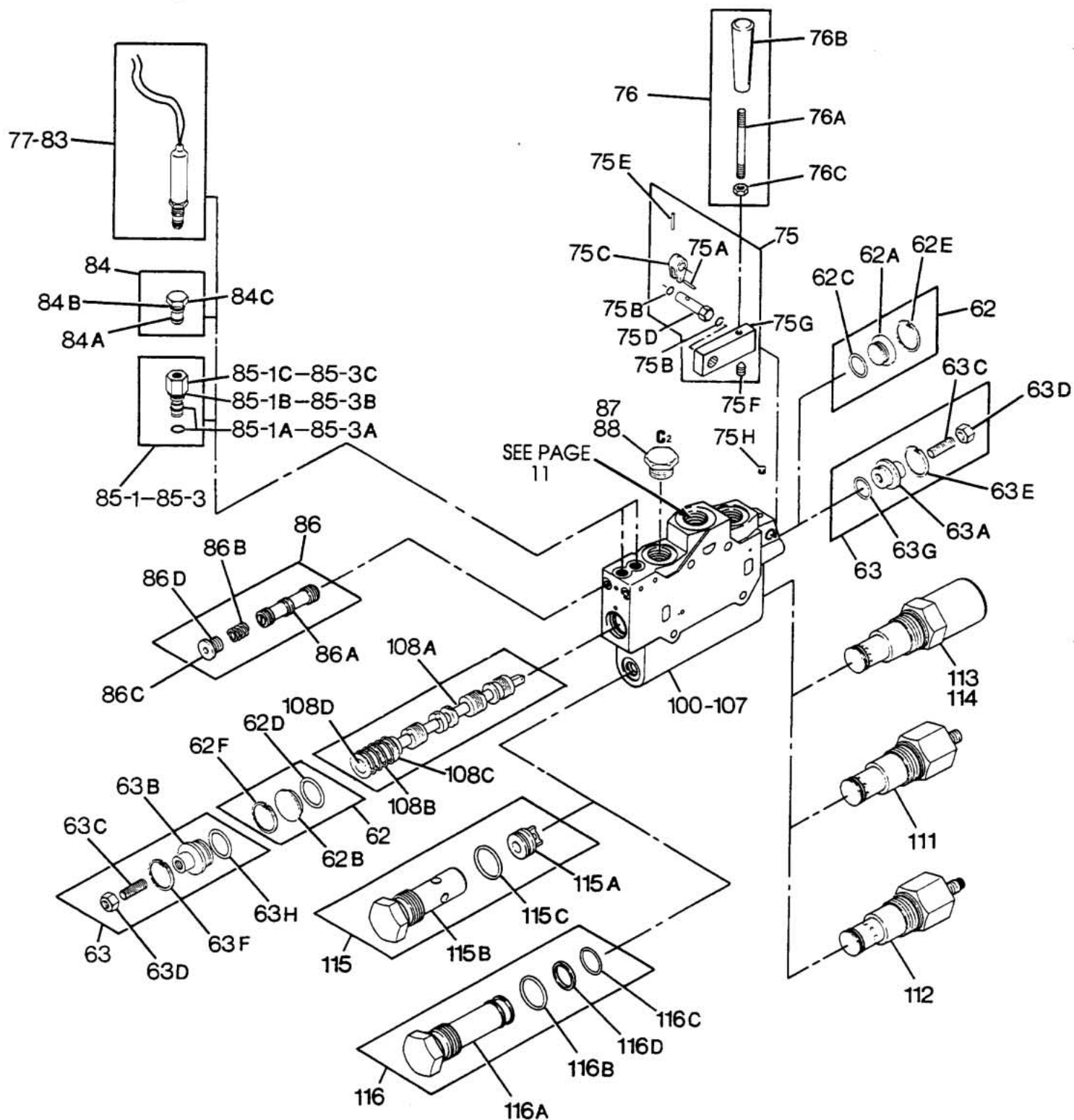


VP/VPO Service Parts List
Work Segment

Item	Description	Quantity	Part Number
85-2C	Adaptor Fitting	2	N/A
85-3	Hydraulic Pilot Fitting Kit (JIS G-1/4)	1	VWFK6
	Consists of:		
85-3A	O-Ring (-011)	4	N/A
85-3B	O-Ring (-906)	2	N/A
85-3C	Adaptor Fitting	2	N/A
86	High Response Kit	1	VPHRK1
	Consists of:		
86A	Spool	2	N/A
86B	Spring	2	N/A
86C	Socket Plug	2	N/A
86D	O-Ring (-904)	2	N/A
87	SAE Port Plug	1	B1008.006
	Consists of:		
87A	Plug	1	N/A
87B	O-Ring (-912)	1	N/A
88	BSPP Port Plug	1	DB1494.006
89	Work Segment Seal Kit	1	VPWSSK1
	Consists of:		
62C	O-Ring (-018)	1	N/A
62D	O-Ring (-023)	1	N/A
63G	O-Ring (-018)	1	N/A
63H	O-Ring (-023)	1	N/A
64B	O-Ring (-916)	1	N/A
65B	O-Ring (-916)	1	N/A
66B	O-Ring (-916)	1	N/A
66D	O-Ring (-015)	1	N/A
66E	Back-Up Ring (-015)	1	N/A
67E	O-Ring (-916)	1	N/A
67F	O-Ring (-017)	1	N/A
68E	O-Ring (-916)	1	N/A
68P	O-Ring (-010)	2	N/A
69E	O-Ring (-916)	1	N/A
69P	O-Ring (-010)	2	N/A
70E	O-Ring (-916)	1	N/A
71E	O-Ring (-916)	1	N/A
72E	O-Ring (-916)	1	N/A
72P	O-Ring (-010)	2	N/A
73E	O-Ring (-916)	1	N/A
73P	O-Ring (-010)	2	N/A
74E	O-Ring (-916)	1	N/A
74F	O-Ring (-017)	1	N/A
75B	O-Ring (-012)	2	N/A
84A	O-Ring (-011)	4	N/A
84B	O-Ring (-906)	2	N/A
85A	O-Ring (-011)	4	N/A
85B	O-Ring (-906)	2	N/A
86D	O-Ring (-904)	2	N/A
87B	O-Ring (-912)	1	N/A
89A	Ball	1	N/A

N/A - Not Available As A Loose Part

VP/VPO Service Parts List
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Work Segment

Item	Description	Quantity	Part Number
100	Electrohydraulic Proportional Control (SAE)	1	VPO.....1P
101	Electrohydraulic Proportional Control (BSPP)	1	VPO.....2P
102	Electrohydraulic On/Off Control (SAE)	1	VQO.....1P
103	Electrohydraulic On/Off Control (BSPP)	1	VQO.....2P
104	Hydraulic Remote Control (SAE)	1	VWO.....1P
105	Hydraulic Remote Control (BSPP)	1	VWO.....2P
106	Manual Control (SAE)	1	VNO.....1P
107	Manual Control (BSPP)	1	VNO.....2P

Proportional Working Section*

Flow Rating GPM (lpm)	3-pos. 3-way Closed	3-pos. 4-way Closed	3-pos. 4-way Restricted Open	3-pos. 4-way Open Motor
2.5 (9.5)	VPO1337-3231 P	VPO1247-3231 P	VPO1147-3231 P	VPO1447-3231 P
3.5 (13)	VPO2337-3231 P	VPO2247-3231 P	VPO2147-3231 P	VPO2447-3231 P
5.0 (19)	VPO3337-3231 P	VPO3247-3231 P	VPO3147-3231 P	VPO3447-3231 P
7.0 (26)	VPO4337-3231 P	VPO4247-3231 P	VPO4147-3231 P	VPO4447-3231 P
10.0 (38)	VPO5337-3231 P	VPO5247-3231 P	VPO5147-3231 P	VPO5447-3231 P
14.0 (53)	VPO6337-3231 P	VPO6247-3231 P	VPO6147-3231 P	VPO6447-3231 P
20.0 (76)	VPO7337-3231 P	VPO7247-3231 P	VPO7147-3231 P	VPO7447-3231 P
28.0 (106)	VPO8337-3231 P	VPO8247-3231 P	VPO8147-3231 P	VPO8447-3231 P
40.0 (150)	VPO9337-3231 P	VPO9247-3231 P	VPO9147-3231 P	VPO9447-3231 P

*With individual pressure compensation and manual override without handle.

108	VPO Main Spool Kit	1	Shown in Chart
	Consists of:		
108A	Main Spool	1	N/A
108B	Centering Spring	1	N/A
108C	Spring Guide	2	N/A
108D	Retaining Ring	1	N/A

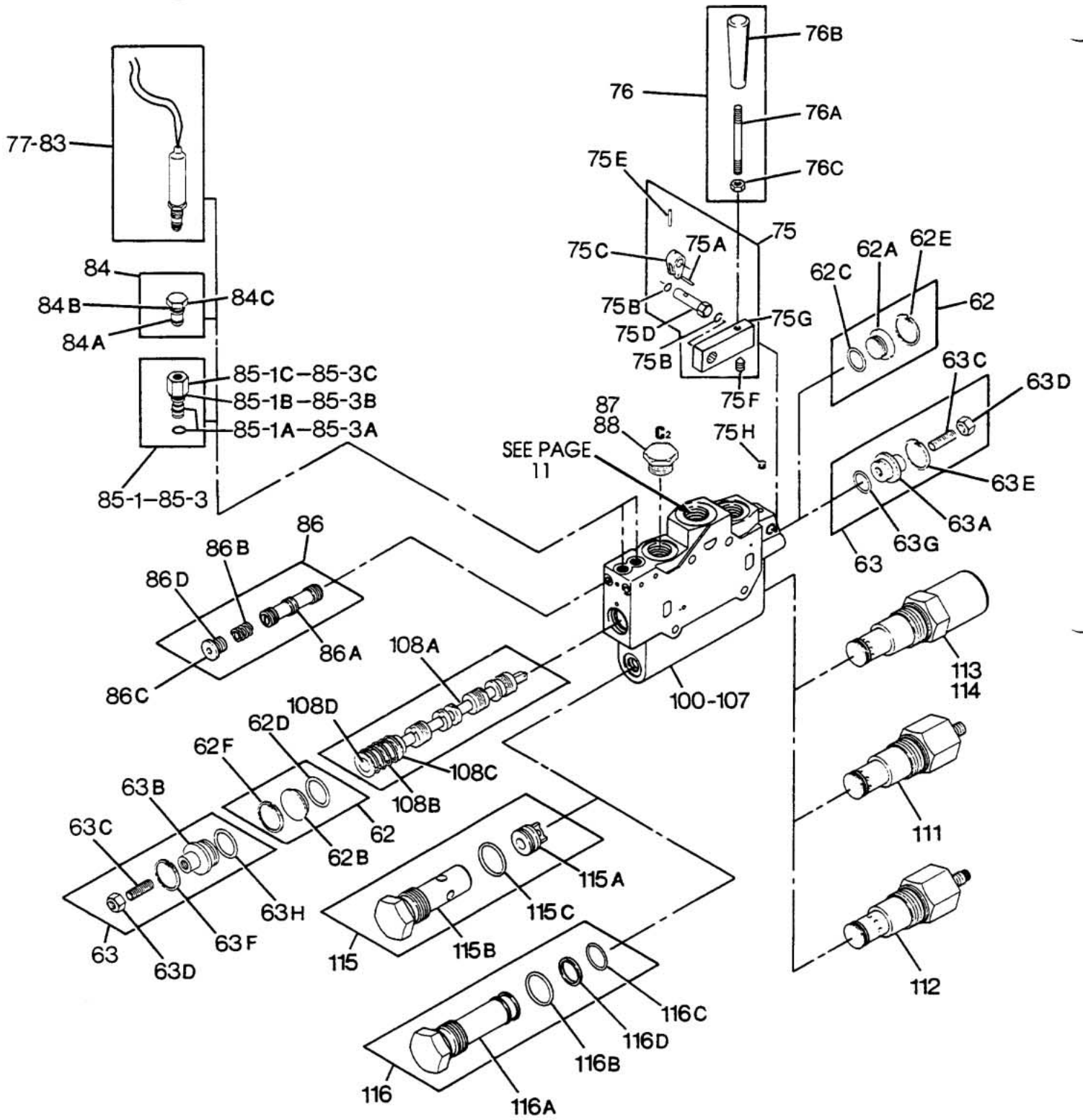
Spool Kits

Flow Rating GPM (lpm)	3-pos. 3-way Closed	3-pos. 4-way Closed	3-pos. 4-way Restricted Open	3-pos. 4-way Open Motor
2.5 (9.5)	VPO133K1	VPO124K1	VPO114K1	VPO144K1
3.5 (13)	VPO233K1	VPO224K1	VPO214K1	VPO244K1
5.0 (19)	VPO333K1	VPO324K1	VPO314K1	VPO344K1
7.0 (26)	VPO433K1	VPO424K1	VPO414K1	VPO444K1
10.0 (38)	VPO533K1	VPO524K1	VPO514K1	VPO544K1
14.0 (53)	VPO633K1	VPO624K1	VPO614K1	VPO644K1
20.0 (76)	VPO733K1	VPO724K1	VPO714K1	VPO744K1
28.0 (106)	VPO833K1	VPO824K1	VPO814K1	VPO844K1
40.0 (150)	VPO933K1	VPO924K1	VPO914K1	VPO944K1

N/A - Not Available As A Loose Part

VP/VPO Service Parts List

Work Segment

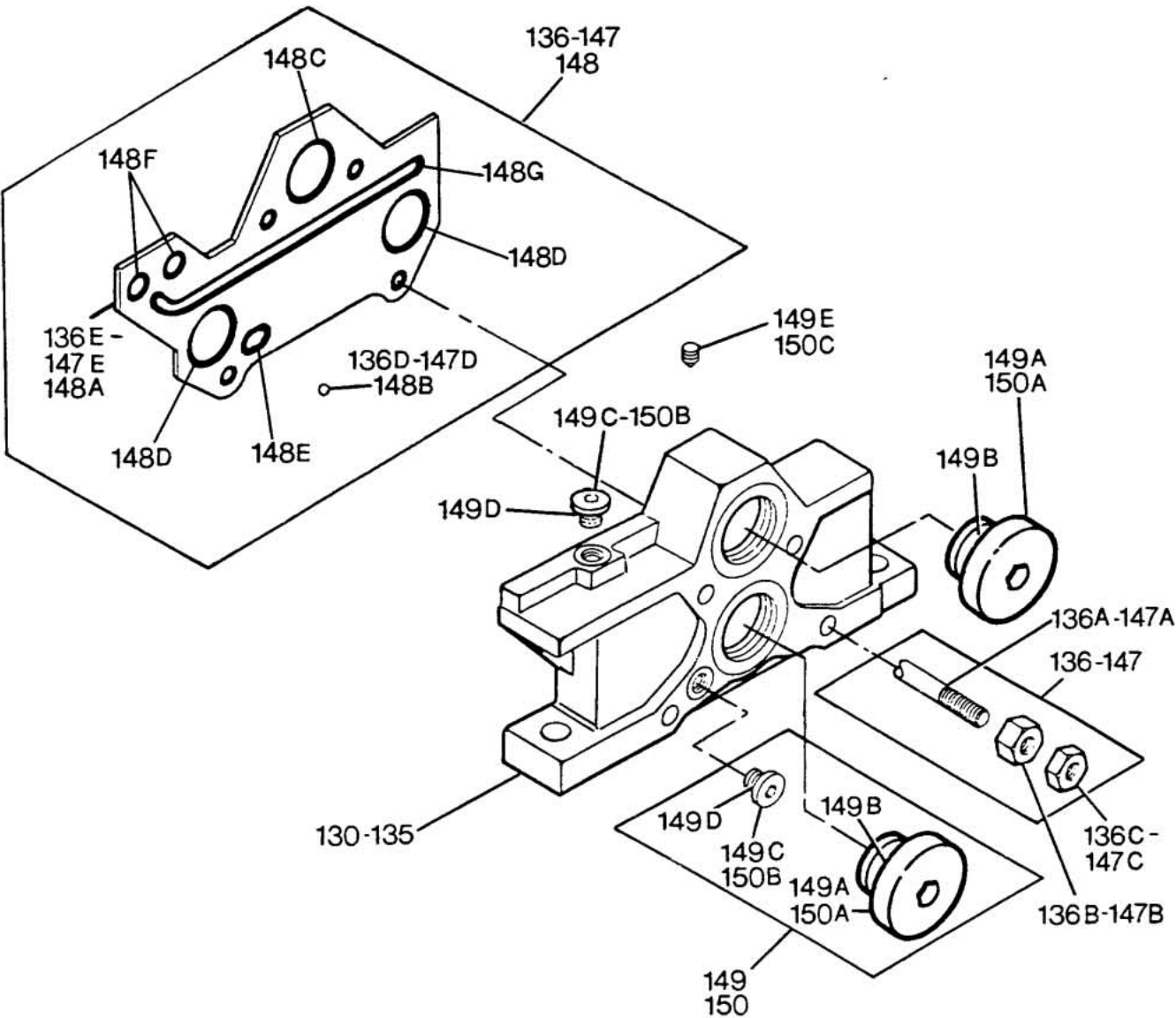


VP/VPO Service Parts List
Work Segment

Item	Description	Quantity	Part Number
111	Std. Relief Cartridge	1	VPORV1K...1
112	Relief w/Anti-Cavitation Cartridge	1	VPORA1K...1
113	2W-2P N.C. Solenoid Valve (12V)	1	VPOFV1K1
114	2W-2P N.C. Solenoid Valve (24V)	1	VPOFV2K1
115	Check Cartridge Plug Kit	1	VPOAV1K1
	Consists of:		
115A	Plug	1	N/A
115B	Check Valve Cartridge	1	N/A
115C	O-Ring (-211) 90 Duro	1	N/A
116	Defeat Plug Kit	1	VPOSP1K1
	Consists of:		
116A	Plug	1	N/A
116B	O-Ring (-211) 90 Duro	1	N/A
116C	O-Ring (-113) 90 Duro	1	N/A
116D	Back-Up Ring	1	N/A
117	V-O Cartridge Seal Kit	1	VPOSK1
	Consists of:		
117A	O-Ring (-211) 90 Duro	1	N/A
117B	O-Ring (-113) 90 Duro	1	N/A
117C	Back-Up Ring	1	N/A
117D	O-Ring (-016) 90 Duro	1	N/A
117E	Back-Up Ring	1	N/A

N/A - Not Available As A Loose Part

VP/VPO Service Parts List
Stacking Plate



VP/VPO Service Parts List
Stacking Plate

Item	Description	Quantity	Part Number
130	Stacking Plate-No Ports-SAE	1	VO0K1
131	Stacking Plate-SAE w/P, T & Shuttle Ports	1	VO1K1
132	Stacking Plate-SAE w/P, T & Shuttle Ports Plugged	1	VO5K1
133	Stacking Plate-BSPP w/P, T & Shuttle Ports	1	VO1K2
134	Stacking Plate-BSPP w/P, T & Shuttle Ports Plugged	1	VO5K2
135	Stacking Plate-No Ports-BSPP	1	VO0K2
136	Assembly Kit - 1 Segment	1	VA1K1
137	Assembly Kit - 2 Segments	1	VA2K1
138	Assembly Kit - 3 Segments	1	VA3K1
139	Assembly Kit - 4 Segments	1	VA4K1
140	Assembly Kit - 5 Segments	1	VA5K1
141	Assembly Kit - 6 Segments	1	VA6K1
142	Assembly Kit - 7 Segments	1	VA7K1
143	Assembly Kit - 8 Segments	1	VA8K1
144	Assembly Kit - 9 Segments	1	VA9K1
145	Assembly Kit - 10 Segments	1	VA10K1
146	Assembly Kit - 11 Segments	1	VA11K1
147	Assembly Kit - 12 Segments	1	VA12K1
	Consists of:		
136A-147A	Tie Rod	4	N/A
136B-147B	Hex Nut	4	N/A
136C-147C	Jam Nut	4	N/A
136D-147D	Ball	No. of Segments	N/A
136E-147E	Seal Plate	No. of Segments + 1	N/A
148	Seal Plate Kit (Prior to 8/97, seal plate was molded as one unit)	1	VOSPK2
	Consists of:		
148A	Seal Plate	1	N/A
148B	Ball	1	N/A
148C	O-Ring (-118)	1	N/A
148D	O-Ring (-119)	2	N/A
148E	O-Ring (-112)	1	N/A
148F	O-Ring (-109)	2	N/A
148G	Form Seal	1	N/A
149	Port Plug Kit (SAE)	1	VOPPK1
	Consists of:		
149A	Socket Plug (SAE)	2	N/A
149B	O-ring (-916)	2	N/A
149C	Socket Plug (SAE)	2	N/A
149D	O-ring (-904)	2	N/A
149E	Set Screw	1	N/A
150	Port Plug Kit (BSPP)	1	VOPPK2
	Consists of:		
150A	Socket Plug (BSPP)	2	N/A
150B	Socket Plug (BSPP)	2	N/A
150C	Set Screw	1	N/A

N/A - Not Available As A Loose Part



Parker Hannifin Corporation
Hydraulic Valve Division
520 Ternes Avenue
Elyria, Ohio, USA 44035
Tel: (440) 366-5200
Fax: (440) 366-5253
www.parker.com/hydraulicvalve

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