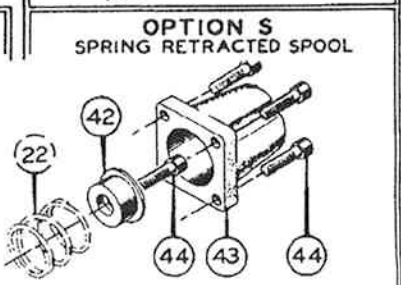
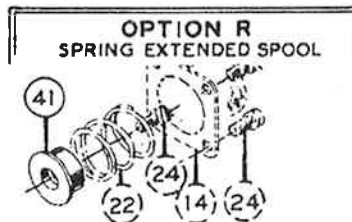
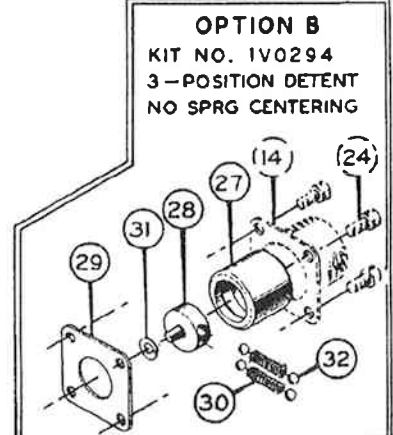
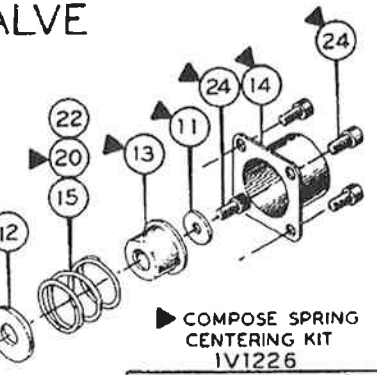
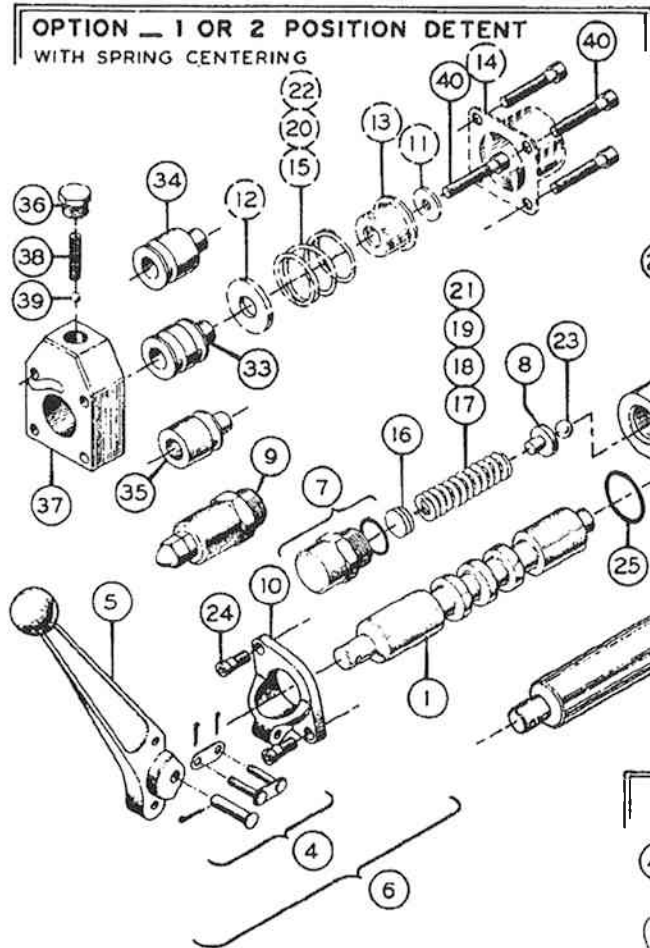




MODEL CA DIRECTIONAL CONTROL VALVE

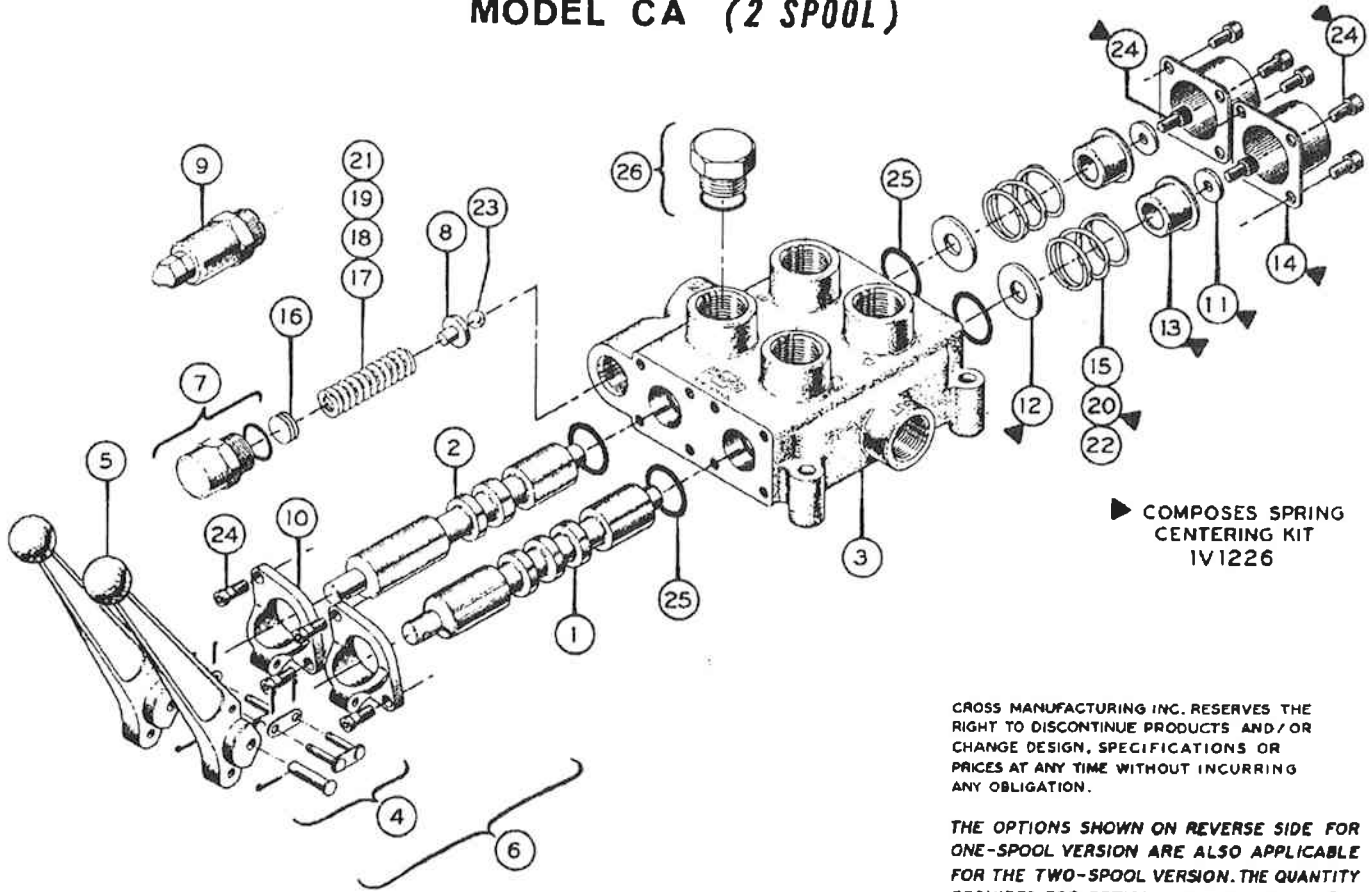


PARTS LIST

PART NO.	DESCRIPTION	QTY PER VALVE
1 1V0003 *	4 WAY SPOOL-OPEN CENTER (STANDARD)	1
2 1V0006 *	3 WAY SPOOL-OPEN CENTER (OPTIONAL)	1
— 1V0007 *	4 WAY SPOOL-CLOSED CENTER (OPTIONAL)	1
— 1V0013 *	3 WAY SPOOL-CLOSED CENTER (OPTIONAL)	1
3 1V0341 *	VALVE HOUSING WITH RELIEF	1
4 1V1702	PIN KIT	1
5 1V1703	HANDLE	1
6 1V1705	HANDLE & BRACKET ASSEMBLY (REF.)	—
7 1V1790	RELIEF PLUG ASSEMBLY, NONADJUST (STD)	1
8 1R0014	RELIEF SPRING GUIDE	1
9 1R0045	RELIEF PLUG ASSEMBLY, ADJUST. (OPT.)	1
10 4Z4308	HANDLE BRACKET	1
11▶ 1A0290	CENTERING SPRING WASHER	1
12▶ 1A0291	STOP WASHER	1
13▶ 1A0292	STOP COLLAR	1
14▶ 1A0294	END CAP	1
15 1A0332	LIGHT CENTERING SPRING	1
16 1A0682	SHIM	AS REQD
17 1A0683	RELIEF SPRING 750-1250 PSI	1
18 1A0684	RELIEF SPRING 1250-1750 PSI	1
19 1A0685	RELIEF SPRING 1750-2250 PSI	1
20▶ 1A0744	MEDIUM CENTERING SPRING (STD)	1
21 1A9000	RELIEF SPRING 250-750 PSI	1
22 1A9008	HEAVY CENTERING SPRING	1
23 2A0017-14	STEEL BALL (7/16")	1
24▶ 2A0079-404	MACHINE SCREW	7
25 2A0283-7214	SPOOL SEAL	2
— 2A0349-8	1/2 NPTF, 3 WAY PORT PLUG (REF.)	—
— 2A0349-12	3/4 NPTF PLUG (REF.)	—
26 2A0354-112	3/4-16 SAE PORT PLUG	1

PART NO.	DESCRIPTION	QTY PER VALVE
OPTIONAL MOTORING SPOOLS		
— 1V0005 *	4 WAY OPEN CENTER	1
— 1V0025 *	4 WAY CLOSED CENTER	1
— 1V0046 *	3 WAY OPEN CENTER	1
— 1V0047 *	3 WAY CLOSED CENTER	1
SPECIAL PARTS FOR OPTION "B"		
— 1V0294	DETENT CONVERSION KIT	—
27 1V0289	DETENT SLEEVE	1
28 1V0272	DETENT RETAINER	1
29 1A0710	RETAINER, O-RING PLATE	1
30 1A0739	DETENT SPRING	2
31 2A0736-104P	LOCKWASHER	1
32 2A0017-B	STEEL BALL (1/4")	4
SPECIAL PARTS FOR DETENT WITH SPRING CENTERING		
33 1V0067	DETENT SLEEVE, 2 POS. (KIT NO. 1V0560)	OPT.
34 1V0070	DET. SLEEVE, 1 POS. "IN" (KIT NO. 1V0561)	OPT.
35 1V0071	DET. SLEEVE, 1 POS. "OUT" (KIT NO. 1V0562)	OPT.
36 1V0217	DETENT PLUG	1
37 1V0263	DETENT HOUSING ASSEMBLY	1
38 1A0610	DETENT SPRING	1
39 2A0017-8	STEEL BALL (1/4")	1
40 2A0079-414	MACHINE SCREW	5
SPECIAL PARTS FOR OPTION "R"		
41 1V0082	STOP COLLAR	1
SPECIAL PARTS FOR OPTION "S"		
42 1V 20 20	SPOOL SPACER	1
43 1V 20 21	SPECIAL END CAP	1
44 2A0079-406	MACHINE SCREW	5
*THE SELECT-FIT HONING PROCESS AT FACTORY, WHICH FITS A SPOOL TO AN INDIVIDUAL VALVE BODY, ELIMINATES THE POSSIBILITY OF ORDERING THE VALVE BODY OR SPOOL AS SEPARATE ITEMS.		

MODEL CA (2 SPOOL)

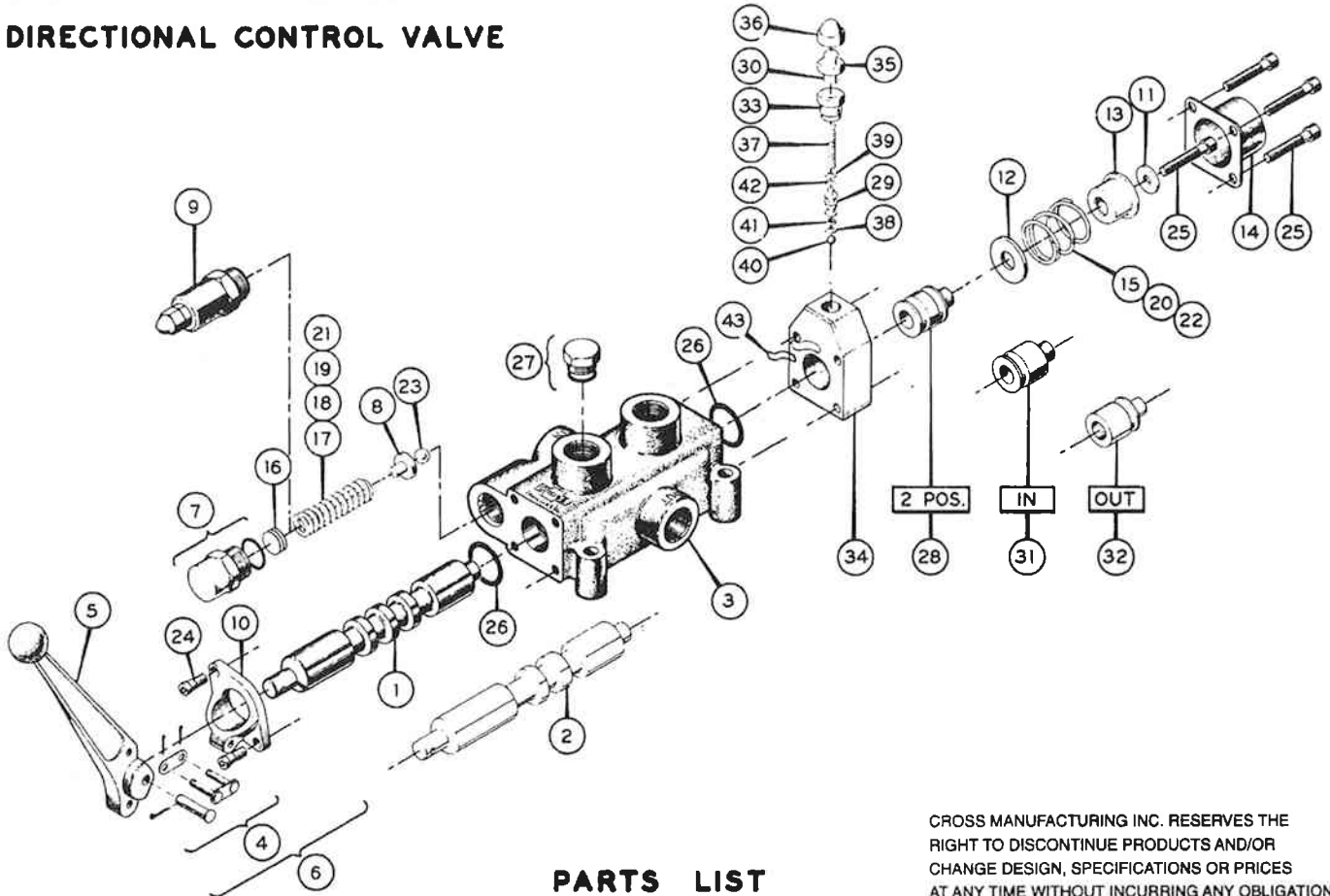


PARTS LIST

PART NO.	DESCRIPTION	QTY PER VALVE	PART NO.	DESCRIPTION	QTY PER VALVE
1 1V0003 *	4 WAY SPOOL-OPEN CENTER (STANDARD)	2	13 ▶ 1A0292	STOP COLLAR	2
2 1V0006 *	3 WAY SPOOL-OPEN CENTER (OPTIONAL)	AS REQD	14 ▶ 1A0294	END CAP	2
- 1V0007 *	4 WAY SPOOL-CLOSED CENTER (OPTIONAL)	AS REQD	15 1A0332	LIGHT CENTERING SPRING	2
- 1V0013 *	3 WAY SPOOL-CLOSED CENTER (OPTIONAL)	AS REQD	16 1A0682	SHIM	AS REQD
3 1V0078 *	VALVE HOUSING WITH RELIEF	1	17 1A0683	RELIEF SPRING 750-1250 PSI	1
4 1V1702	PIN KIT	2	18 1A0684	RELIEF SPRING 1250-1750 PSI	1
5 1V1703	HANDLE	2	19 1A0685	RELIEF SPRING 1750-2250 PSI	1
6 1V1705	HANDLE & BRACKET ASSEMBLY (REF.)	-	20 ▶ 1A0744	MEDIUM CENTERING SPRING (STD)	2
7 1V1790	RELIEF PLUG ASSEMBLY, NONADJUST (STD)	1	21 1A9000	RELIEF SPRING 250-750 PSI (OPT.)	1
8 1R0014	RELIEF SPRING GUIDE	1	22 1A9008	HEAVY CENTERING SPRING (OPT.)	2
9 1R0045	RELIEF PLUG ASSEMBLY, ADJUST (OPT.)	1	23 2A0017-14	STEEL BALL (7/16")	1
10 4Z4306	HANDLE BRACKET	2	24 ▶ 2A0079-404	MACHINE SCREW	14
11 ▶ 1A0290	CENTERING SPRING WASHER	2	25 2A0283-7214	SPOOL SEAL	4
12 ▶ 1A0291	STOP WASHER	2	- 2A0349-8	1/2 NPTF 3 WAY PORT PLUG (REF.)	-
* THE SELECT-FIT HONING PROCESS AT FACTORY, WHICH FITS A SPOOL TO AN INDIVIDUAL VALVE BODY, ELIMINATES THE POSSIBILITY OF ORDERING THE VALVE BODY OR SPOOL AS SEPARATE ITEMS.			- 2A0349-12	3/4 NPTF PLUG (REF.)	-
			26 2A0354-112	3/4-18 SAE PORT PLUG	1

SEE FM VCA1 FOR DIMENSIONAL DATA AND ORDERING INFORMATION.

MODEL CD - 1 SPOOL DIRECTIONAL CONTROL VALVE



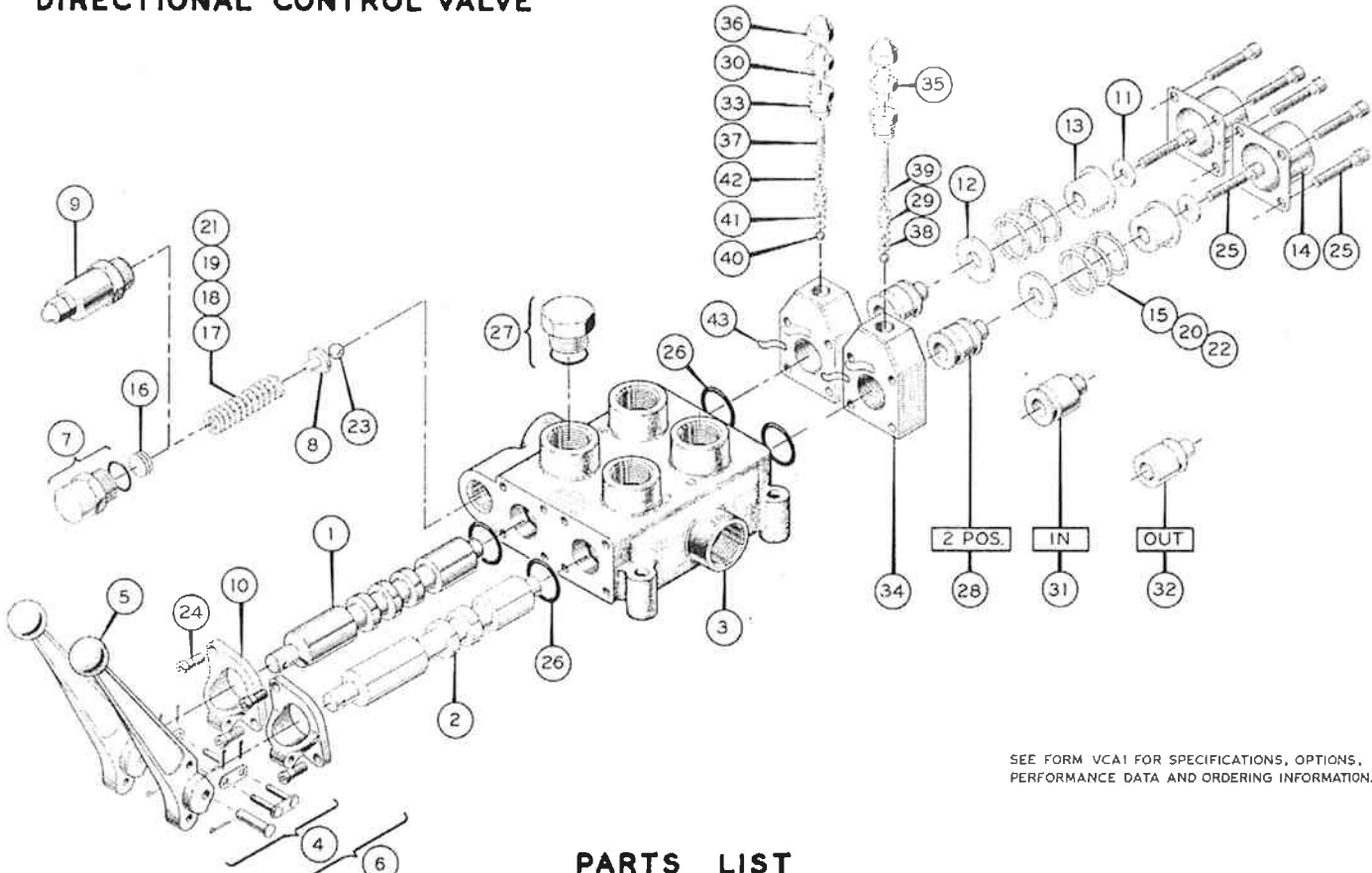
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PARTS LIST

○	PART NUMBER	DESCRIPTION	QTY
1	1V0003 *	4 WAY SPOOL - OPEN CENTER (STANDARD)	1
2	1V0006 *	3 WAY SPOOL - OPEN CENTER (OPTIONAL)	1
-	1V0007 *	4 WAY SPOOL - CLOSED CENTER (OPTIONAL)	1
-	1V0013 *	3 WAY SPOOL - CLOSED CENTER (OPTIONAL)	1
3	1V0312 *	VALVE HOUSING	1
4	1V1702	PIN KIT	1
5	1V1703	HANDLE	1
6	1V1705	HANDLE & BRACKET ASSEMBLY (REF.)	-
7	1V1790	RELIEF PLUG ASSEMBLY	1
8	1R0014	RELIEF SPRING GUIDE	1
9	1R0045	RELIEF PLUG ASSEMBLY (ADJUSTABLE OPTION)	1
10	4Z4306	HANDLE BRACKET	1
11	1A0290	CENTERING SPRING WASHER	1
12	1A0291	STOP WASHER	1
13	1A0292	STOP COLLAR	1
14	1A0294P	END CAP	1
15	1A0332	LIGHT CENTERING SPRING (OPT.)	1
16	1A0682	SHIM	AS REQD
17	1A0683	RELIEF SPRING, 750-1250 PSI	1
18	1A0684	RELIEF SPRING, 1250-1750 PSI	1
19	1A0685	RELIEF SPRING, 1750-2250 PSI	1
20	1A0744	MEDIUM CENTERING SPRING (STANDARD)	1
21	1A9000	RELIEF SPRING, 250-750 PSI (OPT.)	1
22	1A9008	HEAVY CENTERING SPRING (OPT.)	1
23	2A0017-14	STEEL BALL (7/16")	1
24	2A0079-404	MACHINE SCREW	2
25	2A0079-414	MACHINE SCREW	5
26	2A0283-7214	SPOOL SEAL	2
-	2A0349-8	1/2 NPTF, 3 WAY PORT PLUG (REF.)	-
-	2A0349-12	3/4 NPTF PORT PLUG (REF.)	-
27	2A0354-112	3/4-16 SAE PORT PLUG ASSEMBLY	1
-	2V0003	SEAL KIT	0

○	PART NUMBER	DESCRIPTION	QTY
OPTIONAL MOTORING SPOOLS			
-	1V0005 *	4 WAY OPEN CENTER	1
-	1V0025 *	4 WAY CLOSED CENTER	1
-	1V0046 *	3 WAY OPEN CENTER	1
-	1V0047 *	3 WAY CLOSED CENTER	1
DETENT DETAILS			
28	1V0067	SLEEVE, 2-POSITION	1
29	1V0068 ▶	PRESSURE DETENT PISTON	1
30	1V0069 ▶	ADJUSTMENT SCREW	1
31	1V0070	SLEEVE, 1-POSITION "IN" (OPT.)	1
32	1V0071	SLEEVE, 1-POSITION "OUT" (OPT.)	1
33	1V0072 ▶	PISTON STOP	1
34	1V0263 ▶	DETENT HOUSING ASSEMBLY	1
35	1A0569 ▶	LOCK NUT	1
36	1A0570 ▶	ACORN NUT	1
37	1A0610 ▶	DETENT SPRING	1
38	2A0012-007 ▶	LOWER PISTON BACK-UP	1
39	2A0012-008 ▶	UPPER PISTON BACK-UP	1
40	2A0017-8 ▶	STEEL BALL (1/4")	1
41	2A0283-7007 ▶	LOWER PISTON O-RING	1
42	2A0283-7008 ▶	UPPER PISTON O-RING	1
43	2A0283-9017 ▶	HOUSING O-RING	1
<p>* THE SELECT-FIT HONING PROCESS AT FACTORY, WHICH FITS A SPOOL TO AN INDIVIDUAL VALVE BODY, ELIMINATES THE POSSIBILITY OF ORDERING THE VALVE BODY OR SPOOL AS SEPARATE ITEMS.</p> <p>▶ THESE PARTS ARE CONTAINED IN KIT NUMBER 1V00640. SLEEVE MUST BE ORDERED SEPARATELY.</p>			

MODEL CD-2 SPOOL DIRECTIONAL CONTROL VALVE



SEE FORM VCA1 FOR SPECIFICATIONS, OPTIONS,
PERFORMANCE DATA AND ORDERING INFORMATION.

PARTS LIST

PART NUMBER	DESCRIPTION	QTY
1 1V0003 *	4 WAY SPOOL—OPEN CENTER (STANDARD)	2
2 1V0006 *	3 WAY SPOOL—OPEN CENTER (OPTIONAL)	AS REQD
— 1V0007 *	4 WAY SPOOL—CLOSED CENTER (OPTIONAL)	
— 1V0013 *	3 WAY SPOOL—CLOSED CENTER (OPTIONAL)	
3 1V0840 *	VALVE HOUSING	1
4 1V1702	PIN KIT	2
5 1V1703	HANDLE	2
6 1V1705	HANDLE & BRACKET ASSEMBLY (REF.)	—
7 1V1790	RELIEF PLUG ASSEMBLY	1
8 1R0014	RELIEF SPRING GUIDE	1
9 1R0045	RELIEF PLUG ASSEMBLY (ADJUSTABLE OPTION)	1
10 4Z4306	HANDLE BRACKET	2
11 1A0290	CENTERING SPRING WASHER	2
12 1A0291	STOP WASHER	2
13 1A0292	STOP COLLAR	2
14 1A0294	END CAP	2
15 1A0332	LIGHT CENTERING SPRING (OPT.)	2
16 1A0682	SHIM	AS REQD
17 1A0683	RELIEF SPRING, 750—1250 PSI	1
18 1A0684	RELIEF SPRING, 1250—1750 PSI	1
19 1A0685	RELIEF SPRING, 1750—2250 PSI	1
20 1A0744	MEDIUM CENTERING SPRING (STANDARD)	2
21 1A9000	RELIEF SPRING, 250—750 PSI (OPT.)	1
22 1A9008	HEAVY CENTERING SPRING	2
23 2A0017-14	STEEL BALL (7/16")	1
24 2A0079-404	MACHINE SCREW	4
25 2A0079-414	MACHINE SCREW	10
26 2A0283-7214	SPOOL SEAL	4
— 2A0349-8	1/2 NPTF, 3 WAY PORT PLUG (REF.)	—
— 2A0349-12	3/4 NPTF PORT PLUG (REF.)	—
27 2A0354-112	3/4-16 SAE PORT PLUG ASSEMBLY	1
— 2V0004	SEAL KIT	0

PART NUMBER	DESCRIPTION	QTY
OPTIONAL MOTORING SPOOLS		
— 1V0005 *	4 WAY OPEN CENTER	AS REQD
— 1V0025 *	4 WAY CLOSED CENTER	
— 1V0046 *	3 WAY OPEN CENTER	
— 1V0047 *	3 WAY CLOSED CENTER	
DETENT DETAILS		
28 1V0067	SLEEVE, 2-POSITION	2
29 1V0068 ▶	PRESSURE DETENT PISTON	2
30 1V0069 ▶	ADJUSTMENT SCREW	2
31 1V0070	SLEEVE, 1-POSITION "IN" (OPT.)	2
32 1V0071	SLEEVE, 1-POSITION "OUT" (OPT.)	2
33 1V0072 ▶	PISTON STOP	2
34 1V0263 ▶	DETENT HOUSING ASSEMBLY	2
35 1A0569 ▶	LOCK NUT	2
36 1A0570 ▶	ACORN NUT	2
37 1A0610 ▶	DETENT SPRING	2
38 2A0012-007 ▶	LOWER PISTON BACK-UP	2
39 2A0012-008 ▶	UPPER PISTON BACK-UP	2
40 2A0017-8 ▶	STEEL BALL (1/4")	2
41 2A0283-7007 ▶	LOWER PISTON O-RING	2
42 2A0283-7008 ▶	UPPER PISTON O-RING	2
43 2A0283-9017 ▶	HOUSING O-RING	2
<p>* THE SELECT-FIT HONING PROCESS AT FACTORY, WHICH FITS A SPOOL TO AN INDIVIDUAL VALVE BODY, ELIMINATES THE POSSIBILITY OF ORDERING THE VALVE BODY OR SPOOL AS SEPARATE ITEMS.</p> <p>▶ THESE PARTS ARE CONTAINED IN KIT NUMBER 1V0640. SLEEVE MUST BE ORDERED SEPARATELY.</p>		



CROSS MANUFACTURING, INC.
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FM 106
Rev 5/02

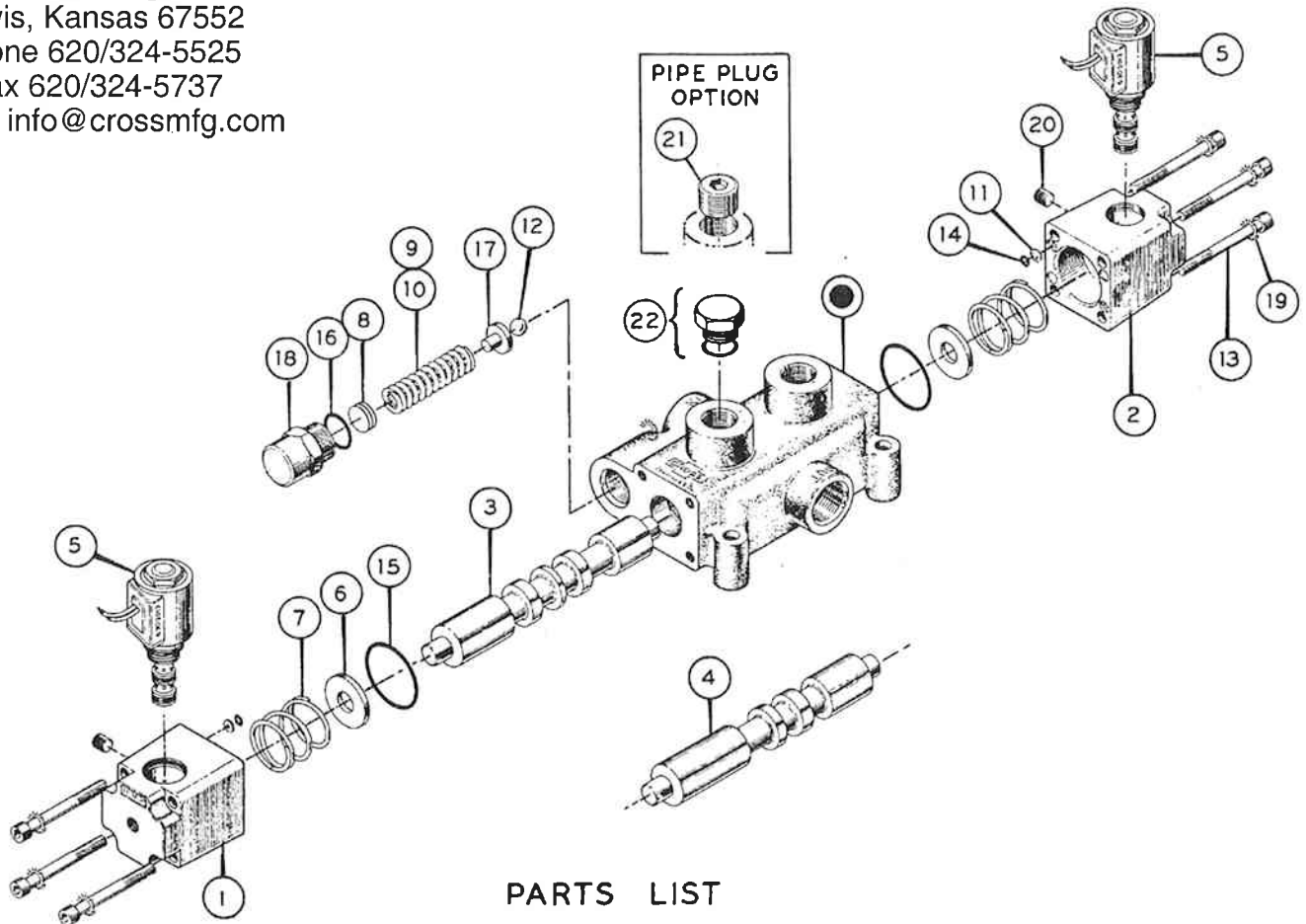


MODEL CS (ONE SPOOL) DIRECTIONAL CONTROL VALVE

Manufacturing, Inc.
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e-mail: info@crossmfg.com

LEFT
HAND

RIGHT
HAND



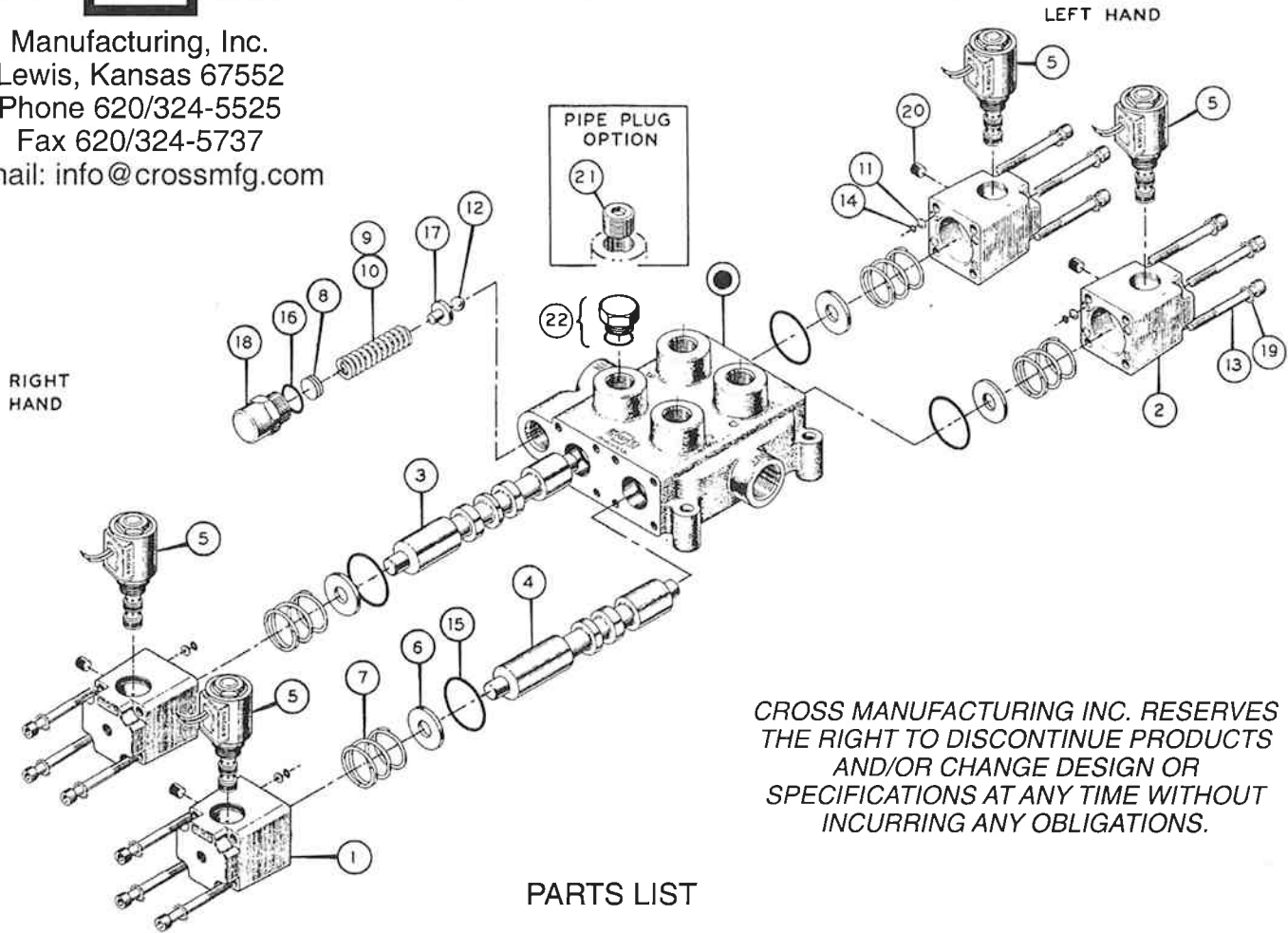
PARTS LIST

PART NO.	DESCRIPTION	QTY. RECD.	PART NO.	DESCRIPTION	QTY. RECD.
1	1V2062 SOLENOID HOUSING(R.H./O.C.)	1	SMALL PARTS		
2	1V2063 SOLENOID HOUSING(L.H./O.C.)	1	6	1A0291 STOP WASHER	2
	1V2064 SOLENOID HOUSING(R.H./C.C.)	OPT.	7	1A0663 CENTERING SPRING	2
	1V2065 SOLENOID HOUSING(L.H./C.C.)	OPT.	8	1A0682 SHIM	AS REQD
SPOOLS			9	1A9000 RELIEF SPRING(250-750)	OPT.
3	1V0220 4-WAY(OPEN CENTER)	1	10	1A0683 RELIEF SPRING(750-1250)	OPT.
4	1V0222 3-WAY(OPEN CENTER)	OPT.		1A0684 RELIEF SPRING(1250-1750)	1
SOLENOID ASSEMBLIES				1A0685 RELIEF SPRING(1750-2250)	OPT.
5	1A9330 12 VOLT	2	11	1A0706 O-RING RETAINER*	2
	1A9331 24 VOLT	OPT.	12	2A0017-14 STEEL BALL 7/16	1
	1A9332 120 VOLT	OPT.	13	2A0079-424 MACHINE SCREW	8
	1A9333 240 VOLT	OPT.	14	2A0283-7007 O-RING*	2
<p> THE SELECT-FIT HONING PROCESS AT FACTORY WHICH FITS A SPOOL TO AN INDIVIDUAL VALVE BODY, ELIMINATES THE POSSIBILITY OF ORDERING THE VALVE BODY OR SPOOL AS A SEPARATE PART.</p>			15	2A0283-9027 SOLENOID HOUSING O-RING	2
			16	2A0283-9910 RELIEF PLUG O-RING	1
<p>* OPEN CENTER COMPONENTS ILLUSTRATED: FOR CLOSED CENTER VALVE THE QUANTITY DOUBLES.</p>			17	1R0014 RELIEF SPRING GUIDE	1
			18	1R0028 RELIEF PLUG	1
			19	2A0736-304 LOCK WASHER	8
			PORT PLUGS		
			20	2A0349-1 1/16 NPTF*	2
			21	2A0349-8 1/2 NPTF 3-WAY	OPT.
				2A0349-12 3/4 NPTF 3-WAY	OPT.
			22	2A0354-112 SAE PLUG ASS'Y 3-WAY 3/4-16	OPT.
				2A0354-117 SAE PLUG ASS'Y 3-WAY 1 1/16-12	OPT.



MODEL CS (TWO SPOOL) DIRECTIONAL CONTROL VALVE

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CROSS MANUFACTURING INC. RESERVES
THE RIGHT TO DISCONTINUE PRODUCTS
AND/OR CHANGE DESIGN OR
SPECIFICATIONS AT ANY TIME WITHOUT
INCURRING ANY OBLIGATIONS.

PARTS LIST

PART NO.	DESCRIPTION	QTY. REQD.	PART NO.	DESCRIPTION	QTY. REQD.
1	1V2062 SOLENOID HOUSING(R.H./O.C.)	2	SMALL PARTS		
2	1V2063 SOLENOID HOUSING(L.H./O.C.)	2	6	1A0291 STOP WASHER	4
	1V2064 SOLENOID HOUSING(R.H./C.C.)	OPT.	7	1A0663 CENTERING SPRING	4
	1V2065 SOLENOID HOUSING(L.H./C.C.)	OPT.	8	1A0682 SHIM	AS REQD
	SPOOLS		9	1A9000 RELIEF SPRING(250-750)	OPT.
3	1V0220 4-WAY(OPEN CENTER)	2	10	1A0683 RELIEF SPRING(750-1250)	OPT.
4	1V0222 3-WAY(OPEN CENTER)	OPT.		1A0684 RELIEF SPRING(1250-1750)	1
	SOLENOID ASSEMBLIES			1A0685 RELIEF SPRING(1750-2250)	OPT.
5	1A9330 12 VOLT	4	11	1A0706 O-RING RETAINER*	4
	1A9331 24 VOLT	OPT.	12	2A0017-14 STEEL BALL 7/16	1
	1A9332 120 VOLT	OPT.	13	2A0079-424 MACHINE SCREW	16
	1A9333 240 VOLT	OPT.	14	2A0283-7007 O-RING*	4
			15	2A0283-9027 SOLENOID HOUSING O-RING	4
			16	2A0283-9910 RELIEF PLUG O-RING	1
			17	1R0014 RELIEF SPRING GUIDE	1
			18	1R0028 RELIEF PLUG	1
			19	2A0736-304 LOCK WASHER	16
				PORT PLUGS	
			20	2A0349-1 1/16 NPTF*	4
			21	2A0349-8 1/2 NPTF 3-WAY	OPT.
				2A0349-12 3/4 NPTF 3-WAY	OPT.
			22	2A0354-112 SAE PLUG ASS'Y 3-WAY 3/4-16	OPT.
				2A0354-117 SAE PLUG ASS'Y 3-WAY 1 1/16-12	OPT.

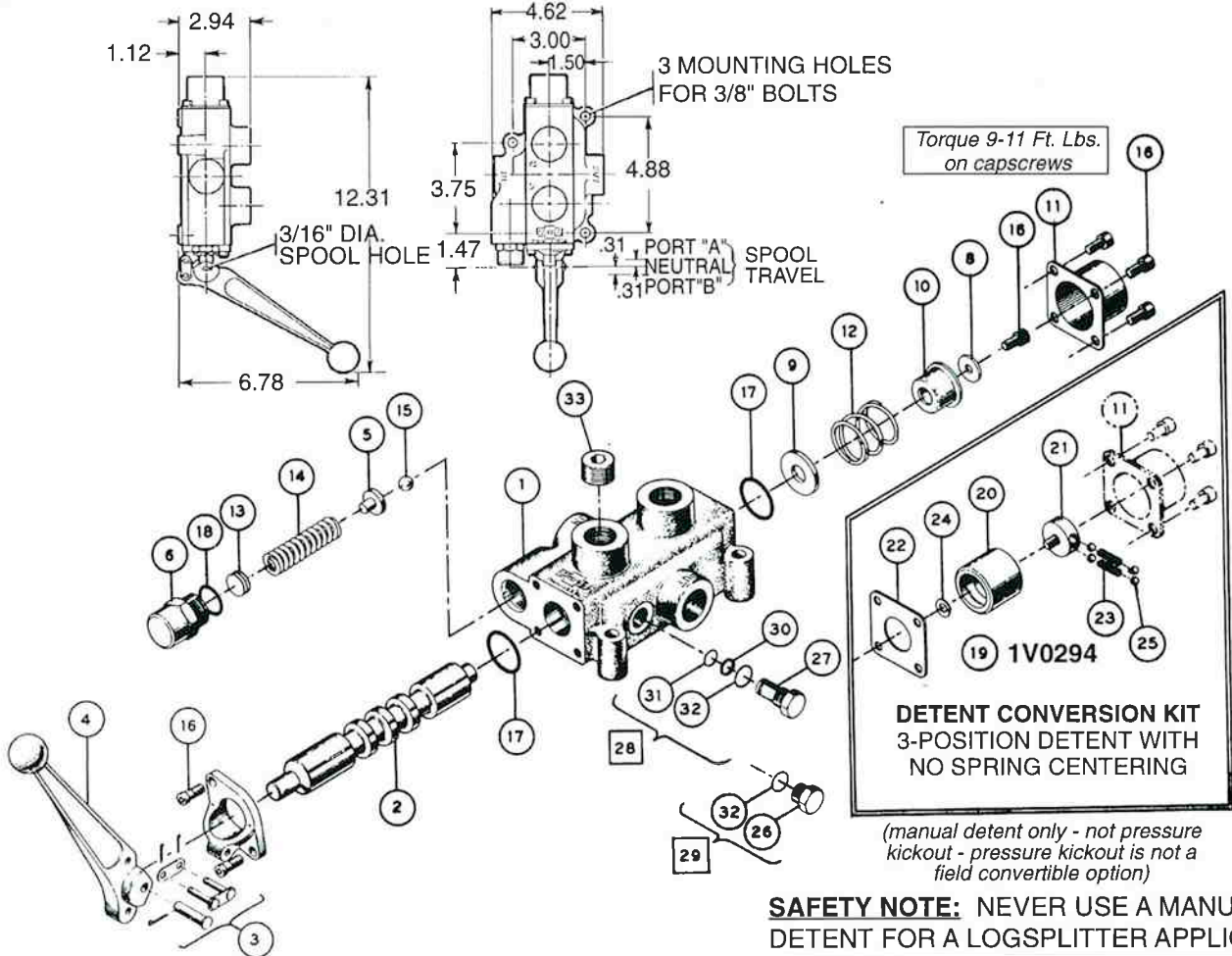
THE SELECT-FIT HONING PROCESS AT FACTORY WHICH FITS A SPOOL TO AN INDIVIDUAL VALVE BODY, ELIMINATES THE POSSIBILITY OF ORDERING THE VALVE BODY OR SPOOL AS A SEPARATE PART.

* OPEN CENTER COMPONENTS ILLUSTRATED: FOR CLOSED CENTER VALVE THE QUANTITY DOUBLES.

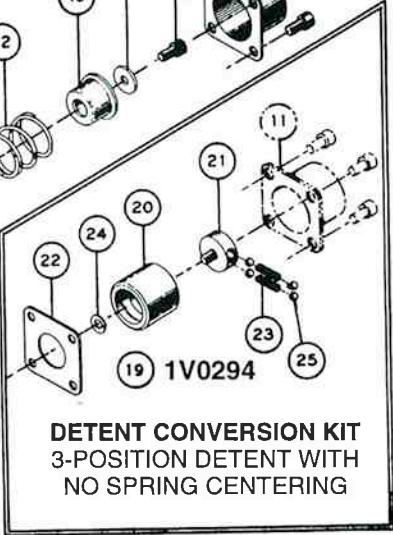
SEE VCS911/80 FOR PLUMBING & BACK PRESSURE CHECK REQUIREMENTS



DIMENSIONAL DATA:



Torque 9-11 Ft. Lbs.
on capscrews



DETENT CONVERSION KIT
3-POSITION DETENT WITH
NO SPRING CENTERING

*(manual detent only - not pressure
kickout - pressure kickout is not a
field convertible option)*

**SAFETY NOTE: NEVER USE A MANUAL
DETENT FOR A LOGSPLITTER APPLICATION**

Part Number	Description	QTY.
1	1V0278 * VALVE HOUSING	1
2	1V0003 * SPOOL	1
3	1V1702 PIN KIT	1
4	1V1703 HANDLE	1
5	1R0014 RELIEF SPRING GUIDE	1
6	1R0028 RELIEF PLUG	1
7	4Z4306 HANDLE BRACKET	1
8	1A0290 CENTERING SPRING WASHER	1
9	1A0291 STOP WASHER	1
10	1A0292 STOP COLLAR	1
11	1A0294P END CAP	1
12	1A0744 CENTERING SPRING	1
13	1A0682 SHIM	AS REQU'D
14	1A0685 RELIEF SPRING (2250-1750)	1
15	2A0017-14 BALL (7/16 STEEL)	1
16	2A0079-404N MACHINE SCREW	7
17	2A0283-7214 SPOOL O-RING	2
18	2A0283-9910 RELIEF PLUG O-RING	1

Part Number	Description	QTY.
SPECIAL PARTS FOR 3-POSITION DETENT		
NO SPRING CENTERING OPTION		
19	1V0294 DETENT CONV. KIT	AS REQU'D
20	1V0269 DETENT SLEEVE	1
21	1V0272 DETENT RETAINER	1
22	1A0710 RETAINER PLATE	1
23	1A0739 DETENT SPRING	2
24	2A0736-104P LOCKWASHER	1
25	2A0017-8 BALL (1/4 STEEL)	4
CONVERSION PARTS		
26	2A0354-8 3-WAY CONV. PLUG	1
27	1V0276 4-WAY CONV. PLUG	1
28	1V0277 4-WAY CONV. PLUG ASS'Y.	1
29	2A0354-108 3-WAY CONV. PLUG ASS'Y.	1
30	2A0012-010 BACK-UP SEAL	1
31	2A0283-7010 O-RING	1
32	2A0283-9905 O-RING	2
33	2A0349-8 3-WAY PORT PLUG, 1/2"NPTF	1
2V0001	REPLACEMENT SEAL KIT	

* The factory select-fit honing process, which fits a spool to an individual valve body, eliminates the possibility of ordering the valve body or spool as separate items.



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