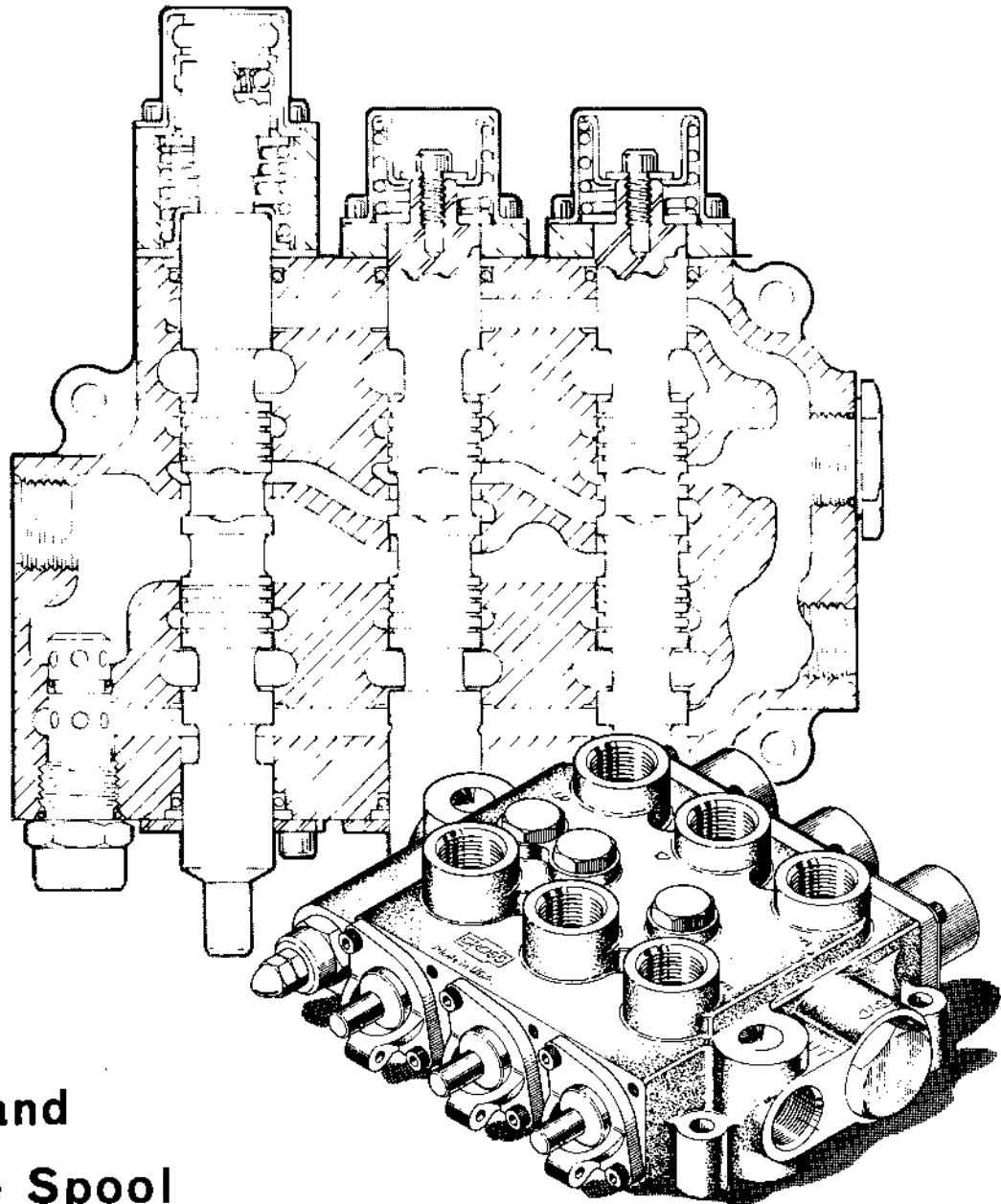


MODEL BA

DIRECTIONAL CONTROL VALVE



One
Two and
Three Spool

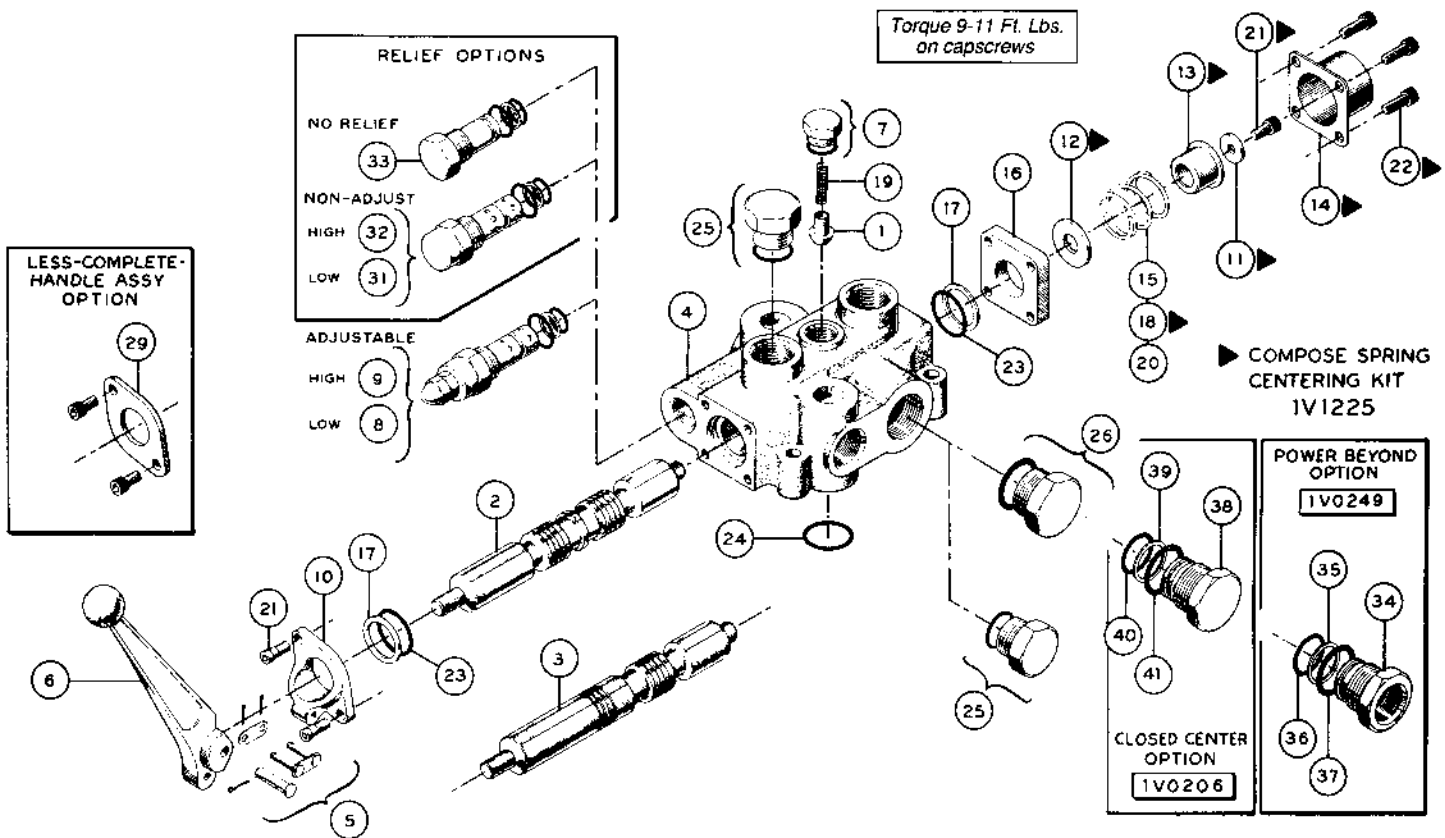


MANUFACTURING, INC.

LEWIS, KANSAS 67552

316-324-5525

MODEL BA - one spool



PARTS LIST

QTY	PART NUMBER	DESCRIPTION	REQD
1	1V0081	LOAD CHECK POPPET	1
2	* 1V0090	4-WAY SPOOL	1
3	* 1V0096	3-WAY SPOOL (OPTIONAL)	1
4	* 1V0101	VALVE HOUSING	1
5	1V1701	PIN KIT	1
6	1V1703	HANDLE	1
7	1V1725	LOAD CHECK PLUG	1
8	1R0016	RELIEF ASSY (500-1500) STD	1
9	1R0017	RELIEF ASSY (1500-3000) (OPT.)	1
10	4Z4306	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 (OPT.)	1
16	1A0709	END SPACER	1
17	1A0711	O-RING SPOOL WASHER	2
18	▶ 1A0744	CENTERING SPRING (STD)	1
19	1A0757	LOAD CHECK SPRING	1
20	1A9008	HEAVY CENTERING SPRING (OPT.)	1
21	▶ 2A0079-404	CAPSCREW	3
22	▶ 2A0079-406	CAPSCREW	4
23	2A0283-7214	SPOOL SEAL	2
24	2A0283-7214	RUBBER GROMMET (BOTTOM OUTLET)	1
25	2A0354-117	SAE PLUG (TOP INLET OR OUTLET ONLY)	2
26	2A0354-121	CONVERSION PLUG ASSEMBLY	1
	2V0008	SEAL KIT	0

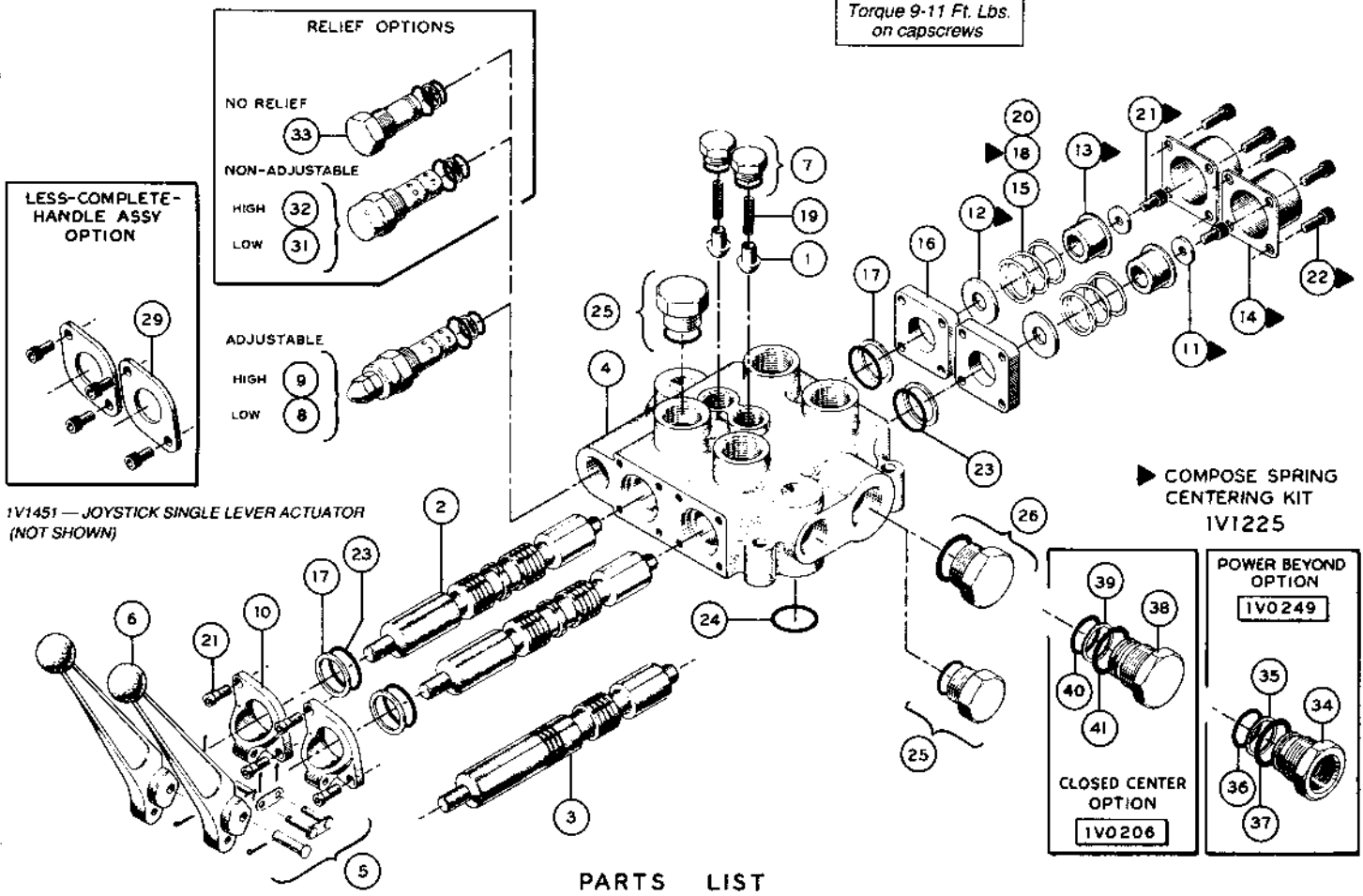
* THE SELECT-FIT HONING PROCESS AT FACTORY, WHICH FITS A SPOOL TO AN INDIVIDUAL VALVE BODY, ELIMINATES THE POSSIBILITY OF ORDERING THE VALVE BODY OR SPOOL AS SEPARATE ITEMS.

QTY	PART NUMBER	DESCRIPTION	REQD
OPTIONS			
OPTIONAL VALVE SPOOLS			
	1V0092	4-WAY MOTORING SPOOL	1
	1V0093	3-WAY MOTORING SPOOL	1
SPECIAL PARTS FOR LESS-COMplete-HANDLE ASSY			
	29	5V4006-003 O-RING RETAINER PLATE	1
SPECIAL PARTS FOR NON-ADJUSTABLE RELIEF			
	31	1R0021 RELIEF ASSY (500-1500)	1
	32	1R0037 RELIEF ASSY (1500-3000)	1
SPECIAL PARTS FOR NO RELIEF (USE WITH CLOSED CENTER ★ OPTION)			
	33	1R0035 RELIEF PLUG ASSY	1
▶ SPECIAL PARTS FOR POWER BEYOND 1V0249			
	34	1V0089 POWER BEYOND SLEEVE (1 1/16-12, SAE 12)	1
	35	2A0007-022 O-RING BACK-UP	1
	36	2A0283-9022 O-RING	1
	37	2A0283-9916 PLUG O-RING	1
★ SPECIAL PARTS FOR CLOSED CENTER 1V0206			
	38	1V0076 CLOSED CENTER PLUG	1
	39	2A0007-022 O-RING BACK-UP	1
	40	2A0283-9022 O-RING	1
	41	2A0283-9916 PLUG O-RING	1

★ SEE PAGE 7 FOR INSTALLATION OF CONVERSION & CLOSED CENTER PLUGS.
▶ SEE PAGE 8 FOR INSTALLATION & OPTIONAL INTERNAL THREAD SIZES.

MODEL BA - two spool

Torque 9-11 Ft. Lbs.
on capscrews



1V1451 — JOYSTICK SINGLE LEVER ACTUATOR (NOT SHOWN)

PARTS LIST

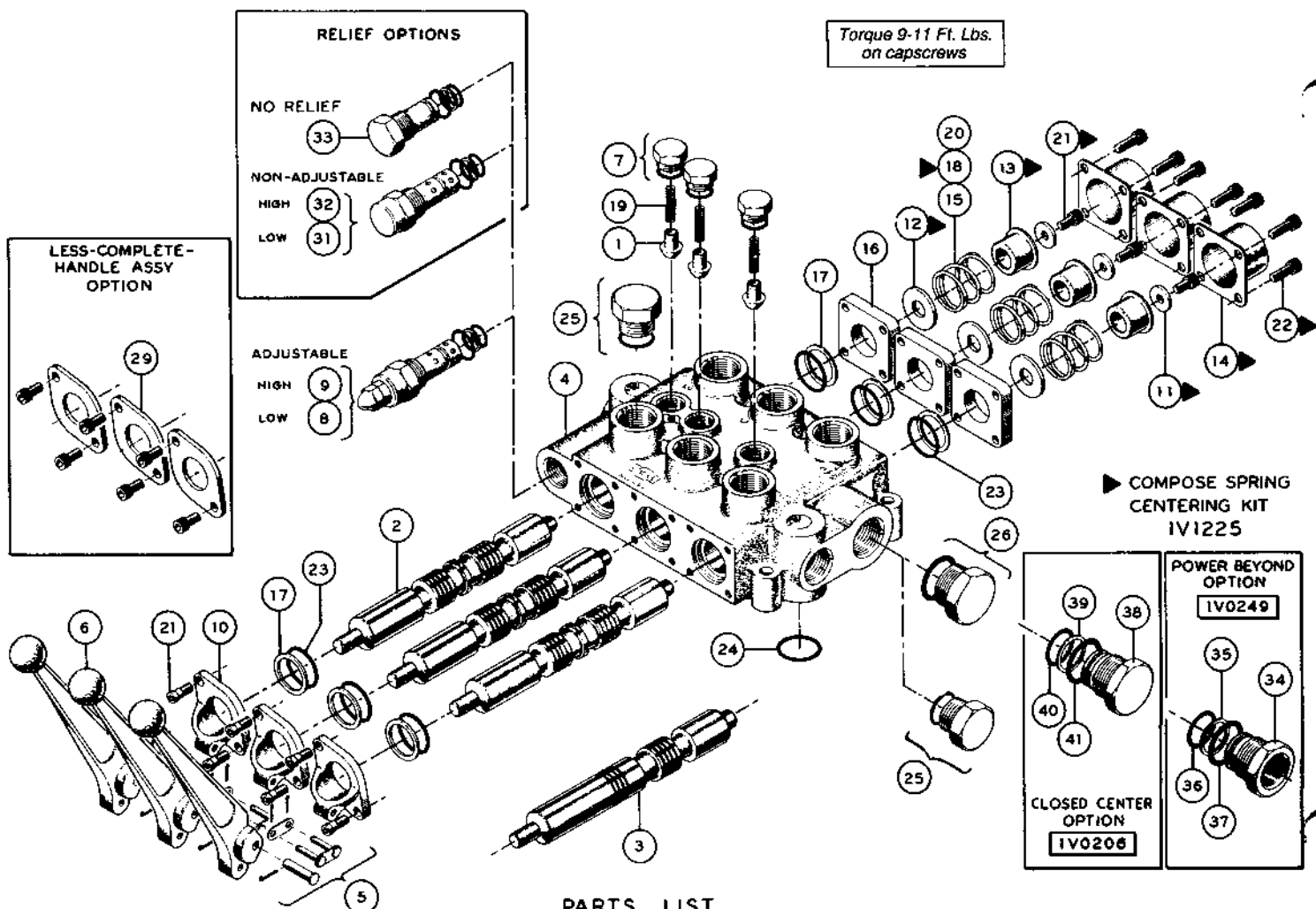
PART NUMBER	DESCRIPTION	QTY REQD	
1	1V0081	LOAD CHECK POPPET	2
2	*1V0090	4-WAY SPOOL	2
3	*1V0096	3-WAY SPOOL (OPTIONAL)	2
4	*1V0126	VALVE HOUSING	1
5	1V1701	PIN KIT	2
6	1V1703	HANDLE	2
7	1V1725	LOAD CHECK PLUG	2
8	1R0016	RELIEF ASSY (500-1500) (STD)	1
9	1R0017	RELIEF ASSY (1500-3000)(OPT.)	1
10	4Z4306	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	1A0709	END SPACER	2
17	1A0711	O-RING SPOOL WASHER	4
18	▶ 1A0744	CENTERING SPRING (STD)	2
19	1A0757	LOAD CHECK SPRING	2
20	1A9008	HEAVY CENTERING SPRING (OPT.)	2
21	▶ 2A0079-404	CAPSCREW	6
22	▶ 2A0079-406	CAPSCREW	8
23	2A0283-7214	SPOOL SEAL	4
24	2A0283-7214	RUBBER GROMMET (BOTTOM OUTLET)	1
25	2A0354-117	SAE PLUG (TOP INLET OR OUTLET ONLY)	2
26	★ 2A0354-121	CONVERSION PLUG ASSEMBLY	1
	2V0009	SEAL KIT	0

PART NUMBER	DESCRIPTION	QTY REQD	
OPTIONS			
OPTIONAL VALVE SPOOLS			
1V0092	4-WAY MOTORING SPOOL	2	
1V0093	3-WAY MOTORING SPOOL	2	
SPECIAL PARTS FOR LESS-COMplete-HANDLE ASSY			
29	6V4006-003	O-RING RETAINER PLATE	2
SPECIAL PARTS FOR NON-ADJUSTABLE RELIEF			
31	1R0021	RELIEF ASSY (500-1500)	1
32	1R0037	RELIEF ASSY (1500-3000)	1
SPECIAL PARTS FOR NO RELIEF (USE WITH CLOSED CENTER ★ OPTION)			
33	1R0035	RELIEF PLUG ASSEMBLY	1
▶ SPECIAL PARTS FOR POWER BEYOND 1V0249			
34	1V0089	POWER BEYOND SLEEVE (1 1/16-12, SAE 12)	1
35	2A0007-022	O-RING BACK-UP	1
36	2A0283-9022	O-RING	1
37	2A0283-9916	PLUG O-RING	1
★ SPECIAL PARTS FOR CLOSED CENTER 1V0206			
38	1V0076	CLOSED CENTER PLUG	1
39	2A0007-022	O-RING BACK-UP	1
40	2A0283-9022	O-RING	1
41	2A0283-9916	PLUG O-RING	1

* 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.

★ SEE PAGE 7 FOR INSTALLATION OF CONVERSION & CLOSED CENTER PLUGS.
▶ SEE PAGE 8 FOR INSTALLATION & OPTIONAL INTERNAL THREAD SIZES.

MODEL BA — three spool



Torque 9-11 Ft. Lbs.
on capscrews

RELIEF OPTIONS

NO RELIEF 33

NON-ADJUSTABLE
HIGH 32
LOW 31

ADJUSTABLE
HIGH 9
LOW 8

LESS-COMplete-HANDLE ASSY OPTION

29

COMPOSE SPRING CENTERING KIT 1V1225

POWER BEYOND OPTION 1V0249

CLOSED CENTER OPTION 1V0206

PARTS LIST

PART NUMBER	DESCRIPTION	QTY REQD
1	1V0081 LOAD CHECK POPPET	3
2	* 1V0090 4-WAY SPOOL	3
3	* 1V0096 3-WAY SPOOL (OPTIONAL)	3
4	* 1V0351 VALVE HOUSING	1
5	1V1701 PIN KIT	3
6	1V1703 HANDLE	3
7	1V1725 LOAD CHECK PLUG	3
8	1R0016 RELIEF ASSY (500-1500)(STD)	1
9	1R0017 RELIEF ASSY (1500-3000)(OPT.)	1
10	4Z4306 HANDLE BRACKET	3
11	▶ 1A0290 CENTERING SPRING WASHER	3
12	▶ 1A0291 STOP WASHER	3
13	▶ 1A0292 STOP COLLAR	3
14	▶ 1A0294 END CAP	3
15	1A0332 LIGHT CENTERING SPRING (OPT.)	3
16	1A0709 END SPACER	3
17	1A0711 O-RING SPOOL WASHER	6
18	▶ 1A0744 CENTERING SPRING (OPT.)	3
19	1A0757 LOAD CHECK SPRING	3
20	1A9008 HEAVY CENTERING SPRING (STD.)	3
21	▶ 2A0079-404 CAPSCREW	9
22	▶ 2A0079-406 CAPSCREW	12
23	2A0283-7214 SPOOL SEAL	6
24	2A0283-7214 RUBBER GROMMET (BOTTOM OUTLET)	1
25	2A0354-117 SAE PLUG (TOP INLET OR OUTLET ONLY)	2
26	★ 2A0354-121 CONVERSION PLUG ASSEMBLY	1
	2V0010 SEAL KIT	0

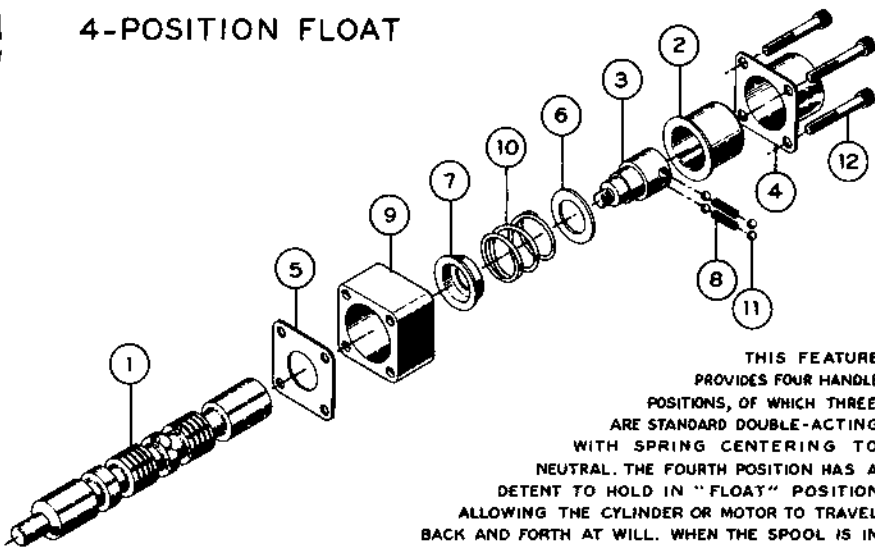
PART NUMBER	DESCRIPTION	QTY REQD
OPTIONS		
OPTIONAL VALVE SPOOLS		
1V0092	4-WAY MOTORING SPOOL	3
1V0093	3-WAY MOTORING SPOOL	3
SPECIAL PARTS FOR LESS-COMplete-HANDLE ASSY		
29	6V4006-003 O-RING RETAINER PLATE	3
SPECIAL PARTS FOR NON-ADJUSTABLE RELIEF		
31	1R0021 RELIEF ASSY (500-1500)	1
32	1R0037 RELIEF ASSY (1500-3000)	1
SPECIAL PARTS FOR NO RELIEF (USE WITH CLOSED CENTER ★ OPTION)		
33	1R0035 RELIEF PLUG ASSEMBLY	1
▶ SPECIAL PARTS FOR POWER BEYOND 1V0249		
34	1V0089 POWER BEYOND SLEEVE (1/16-12, SAE 12)	1
35	2A0007-022 O-RING BACK-UP	1
36	2A0283-9022 O-RING	1
37	2A0283-9916 PLUG O-RING	1
★ SPECIAL PARTS FOR CLOSED CENTER 1V0206		
38	1V0076 CLOSED CENTER PLUG	1
39	2A0007-022 O-RING BACK-UP	1
40	2A0283-9022 O-RING	1
41	2A0283-9916 PLUG O-RING	1

* 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.

★ SEE PAGE 7 FOR INSTALLATION OF CONVERSION & CLOSED CENTER PLUGS.
▶ SEE PAGE 8 FOR INSTALLATION & OPTIONAL INTERNAL THREAD SIZES.

SPOOL ACTION OPTIONS FOR "BA"

4-POSITION FLOAT



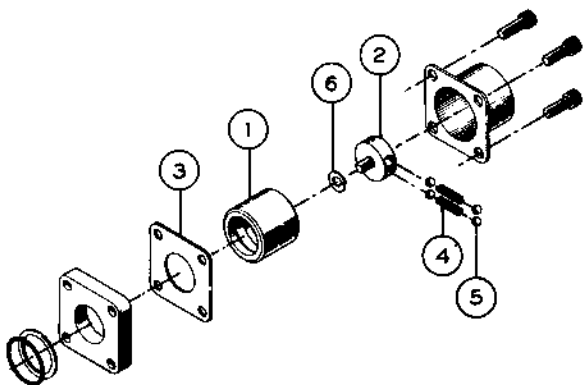
THIS FEATURE PROVIDES FOUR HANDLE POSITIONS, OF WHICH THREE ARE STANDARD DOUBLE-ACTING WITH SPRING CENTERING TO NEUTRAL. THE FOURTH POSITION HAS A DETENT TO HOLD IN "FLOAT" POSITION ALLOWING THE CYLINDER OR MOTOR TO TRAVEL BACK AND FORTH AT WILL. WHEN THE SPOOL IS IN THIS "FLOAT" POSITION, BOTH CYLINDER PORTS AND PUMP PORTS ARE OPEN TO TANK.

KIT NO. 1V1600
(SPOOL NOT INCLUDED)

SPECIAL PARTS

PART NO.	DESCRIPTION	QTY REQD
1 1V0094	FLOAT SPOOL	1
2 1V0205	FLOAT DETENT SLEEVE	1
3 1V0260	FLOAT DETENT RETAINER	1
4 1A0294	END CAP	1
5 1A0710	RETAINER PLATE	1
6 1A0737	FLOAT STOP WASHER	1
7 1A0738	FLOAT STOP COLLAR	1
8 1A0739	DETENT SPRING	2
9 1A0764	FLOAT SPACER	1
10 1A8231	FLOAT CENTERING SPRING	1
11 2A0017-8	BALL (1/4 STEEL)	4
12 2A0079-416	CAPSCREW	4

3-POSITION DETENT



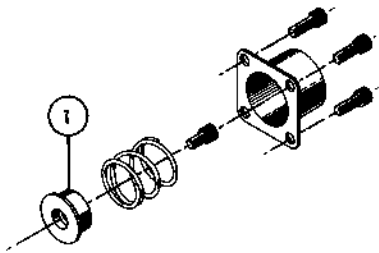
NOTE:
PARTS NOT LISTED ARE
STANDARD. SEE PAGE 4.

THIS FEATURE PROVIDES THREE HANDLE POSITIONS, ALL OF WHICH ARE HELD WITH A DETENT, AND HAS NO SPRING CENTERING TO NEUTRAL. THIS OPTION ALLOWS CONTROL AND DIRECTING OF FLOW TO STOP, START OR REVERSE HYDRAULIC MOTORS. IT CAN BE USED TO DIVERT FLOW TO ONE OR MORE SEPARATE CIRCUITS.

SPECIAL PARTS

PART NO.	DESCRIPTION	QTY REQD
TO CONVERT FROM SPRING CENTERING TO 3-POSITION DETENT:		
1V0294	DETENT CONVERSION KIT	1
KIT CONTAINS THESE PARTS:		
1 1V0269	DETENT SLEEVE	1
2 1V0272	DETENT RETAINER	1
3 1A0710	RETAINER PLATE	1
4 1A0739	DETENT SPRING	2
5 2A0017-8	BALL (1/4 STEEL)	4
6 2A0736-104P	LOCKWASHER	1

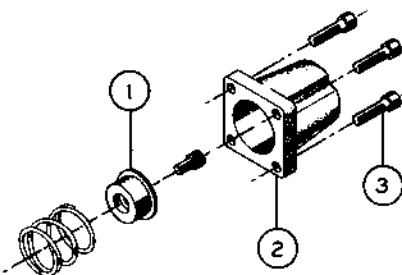
SPRING EXTENDED SPOOL



SPECIAL PARTS

PART NO.	DESCRIPTION	QTY REQD
1 1V0082	STOP COLLAR	1

SPRING RETRACTED SPOOL



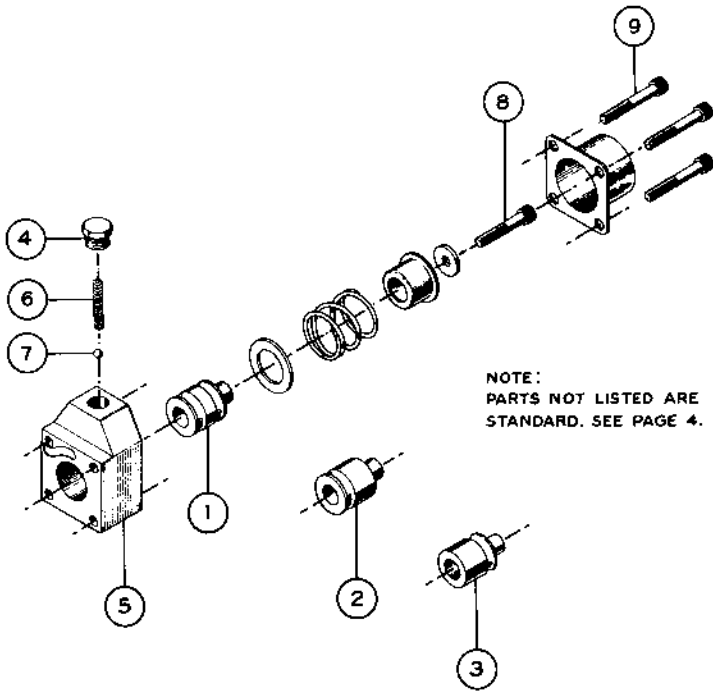
SPECIAL PARTS

PART NO.	DESCRIPTION	QTY REQD
1 1V0083	SPOOL SPACER	1
2 1V0279	SPECIAL END CAP	1
3 2A0079-410	CAPSCREW	4

SPOOL ACTION OPTIONS FOR "BA"

DETENT WITH SPRING CENTERING

THIS FEATURE ALLOWS SPRING CENTERING TO NEUTRAL WITH A DETENT FOR THE "IN", "OUT" POSITION, OR BOTH THE "IN" AND "OUT" POSITIONS. THE ONE OR TWO POSITION DETENT WITH SPRING CENTERING IS DESIRABLE FOR THE OPERATION OF HYDRAULIC CYLINDERS OR MOTORS. THE ONE POSITION DETENT PROVIDES A FLOAT POSITION FOR A THREE-WAY SPOOL IN THE "IN" OR DUMP POSITION. THIS DETENT FEATURE IS APPLICABLE WHERE QUICK RELEASE AND CENTERING IS NEEDED OR FOR GOOD METERING OF FLOW BEFORE PLACING INTO DETENT.



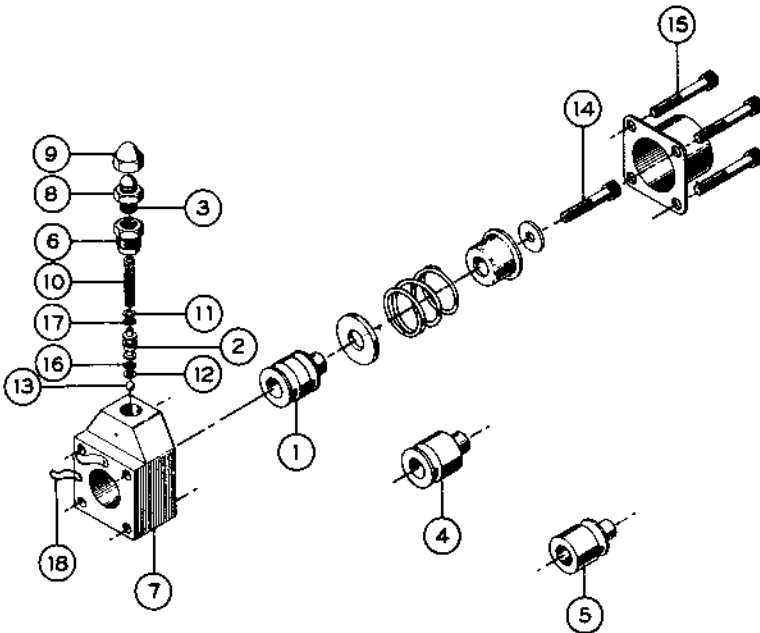
NOTE:
PARTS NOT LISTED ARE
STANDARD. SEE PAGE 4.

SPECIAL PARTS

PART NO.	DESCRIPTION	QTY REQD
1 1V0067	2-POSITION DETENT SLEEVE	1
2 1V0070	1-POSITION DETENT SLEEVE, "IN" (OPT.)	1
3 1V0071	1-POSITION DETENT SLEEVE, "OUT" (OPT.)	1
4 1V0217	DETENT PLUG	1
5 1V0264	DETENT HOUSING ASSEMBLY	1
6 1A0610	DETENT SPRING	1
7 2A0017-8	BALL (1/4 STEEL)	1
8 2A0079-414	CAPSCREW	1
9 2A0079-416	CAPSCREW	4
<i>NOTE: ORDER BY KIT NUMBER</i>		
1V0557	DETENT KIT (2 POSITION)	1
1V0558	DETENT KIT (1 POSITION "IN")	1
1V0559	DETENT KIT (1 POSITION "OUT")	1

PRESSURE DETENT KIT NO. 1V0642

"BA" VALVES WITH THREE-POSITION SPOOLS CAN BE PROVIDED WITH THIS OPTION ON ANY OR ALL SPOOLS. A PRESSURE DETENT HOLDS THE SPOOL IN THE "IN" POSITION, "OUT" POSITION OR BOTH "IN" AND "OUT" POSITIONS. THE DETENT IS HELD UNTIL THE CYLINDER OR MOTOR REACHES A PRE-SET PRESSURE, RELEASING THE DETENT, ALLOWING THE SPOOL TO SPRING RETURN TO NEUTRAL. FIELD INSTALLATION CAN BE MADE ONLY IF VALVE ALREADY HAS THIS OPTION.

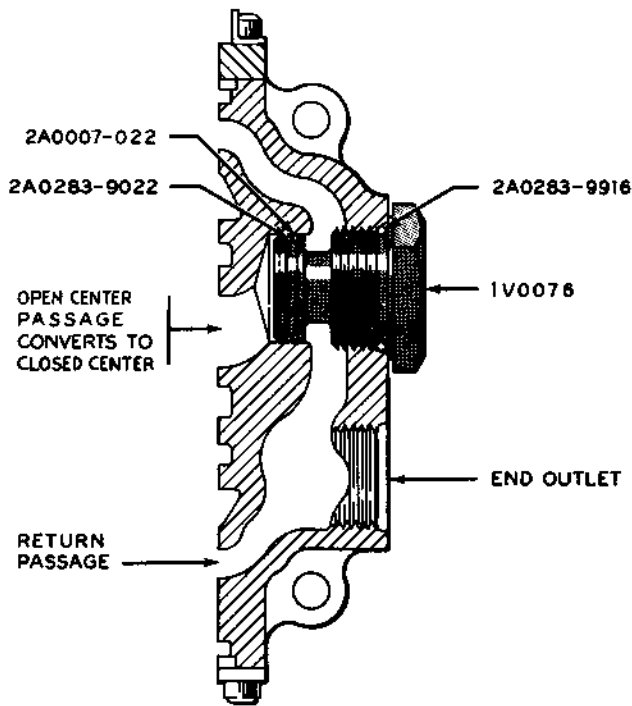


* CONTAINED IN KIT NO. 1V0642. DETENT SLEEVE (1) (4) OR (5) & CAPSCREWS (14) & (15) MUST BE ORDERED SEPARATELY.

SPECIAL PARTS

PART NO.	DESCRIPTION	QTY REQD
1 1V0067	2-POSITION DETENT SLEEVE	1
* 2 1V0068	PRESSURE DETENT PISTON	1
* 3 1V0069	ADJUSTMENT SCREW	1
4 1V0070	1-POSITION DETENT SLEEVE "IN" (OPT.)	1
5 1V0071	1-POSITION DETENT SLEEVE "OUT" (OPT.)	1
* 6 1V0072	PISTON STOP	1
* 7 1V0264	DETENT HOUSING ASSEMBLY	1
* 8 1A0569	NUT	1
* 9 1A0570	ACORN NUT	1
* 10 1A0610	DETENT SPRING	1
* 11 2A0012-008	UPPER O-RING BACK-UP	1
* 12 2A0012-007	LOWER O-RING BACK-UP	1
* 13 2A0017-8	BALL (1/4 STEEL)	1
14 2A0079-414	CAPSCREW	1
15 2A0079-416	CAPSCREW	4
* 16 2A0283-7007	LOWER PISTON O-RING	1
* 17 2A0283-7008	UPPER PISTON O-RING	1
* 18 2A0283-9017	HOUSING O-RING	1

CLOSED CENTER OPTION - ASSEMBLY 1V0206

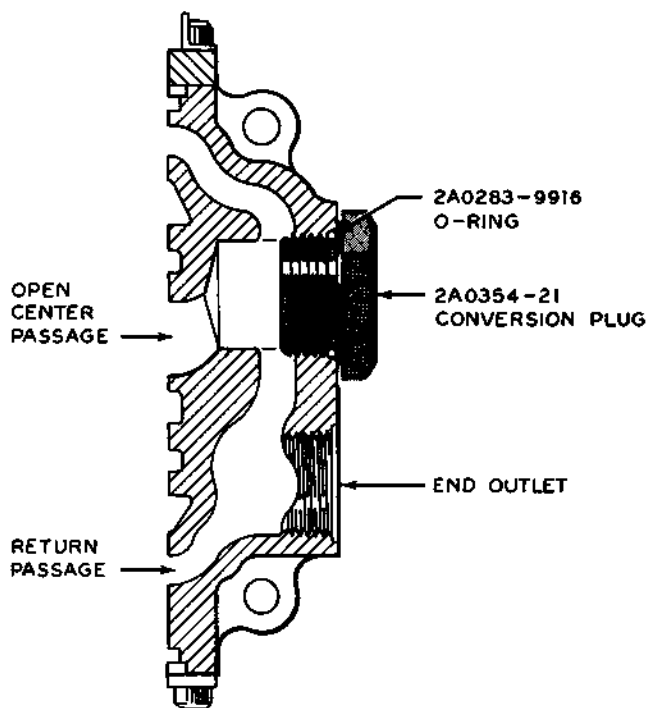


THIS OPTION PROVIDES FOR A CLOSED CENTER SYSTEM BY PLUGGING THE OPEN CENTER FLOW PASSAGE. IF DESIRED AT SOME FUTURE DATE, THE VALVE MAY BE CONVERTED TO OPEN CENTER OR POWER BEYOND OPERATION. AS SHOWN AN ADDITIONAL OUTLET IS PROVIDED TO DUMP THE OIL FROM THE RETURN PASSAGE ONLY.

SEE (38) (39) (40) (41) ON PAGES 2, 3 AND 4.

NOTE: 1R0035 NO RELIEF PLUG SHOULD BE USED WITH THIS OPTION. SEE (33) ON PAGES 2, 3 AND 4.

CONVERSION PLUG ASSEMBLY - 2A0354-121



THIS COMPONENT PROVIDES FOR CONVERSION FROM POWER BEYOND TO CLOSED CENTER USAGE TO OPEN CENTER USAGE OR VICE VERSA. WHEN ORDERING, THE CONVERSION PLUG MAY BE INSTALLED IN LIEU OF THE POWER BEYOND OR CLOSED CENTER PLUGS. THE OPTIONAL OUTLET NECESSITATED BY THESE OPTIONS WOULD REMAIN PLUMBED TO TANK. IF AT SOME FUTURE DATE THE VALVE NEEDS TO BE CONVERTED TO POWER BEYOND OR CLOSED CENTER, IT WOULD ONLY BE NECESSARY TO REMOVE THE CONVERSION PLUG AND INSTALL THE DESIRED OPTION.

SEE (26) ON PAGES 2, 3 AND 4.

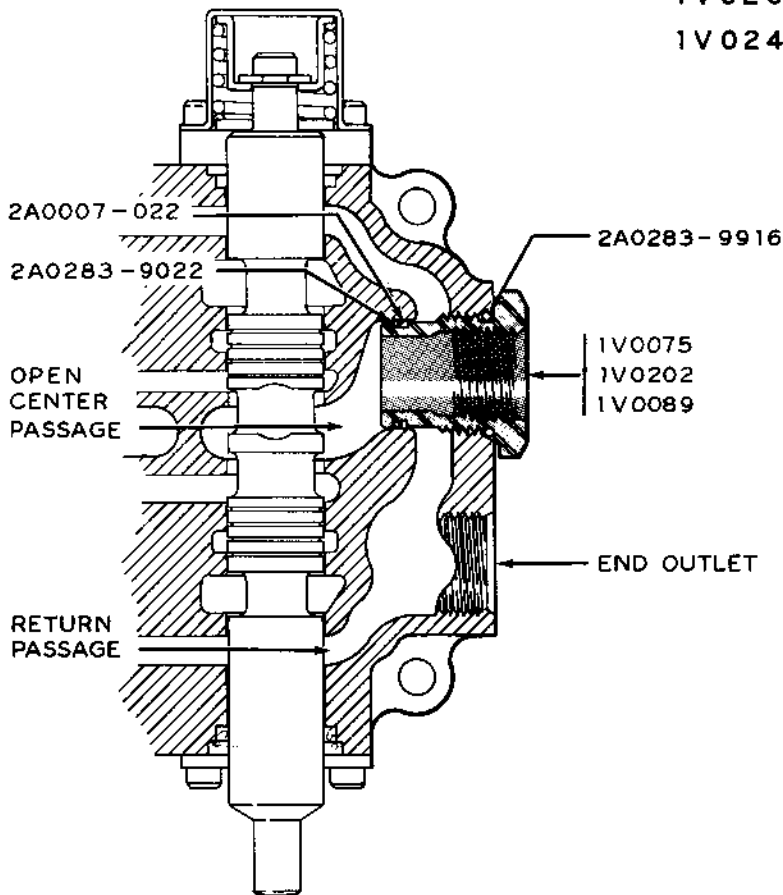
POWER BEYOND OPTION

SLEEVE ASSEMBLY —

1V0208 — 3/4 NPTF

1V0209 — SAE 10

1V0249 — SAE 12



THIS OPTION PROVIDES FOR PROPER HOOKUP OF AN ADDITIONAL VALVE DOWNSTREAM FROM ANOTHER VALVE. THE POWER BEYOND SLEEVE PREVENTS SUBJECTING THE EXHAUST OR RETURN PASSAGES AND SPOOL SEALS OF THE CONTROL VALVE TO BACK PRESSURE.

NOTE: SINCE THE RETURN PASSAGE IS BLOCKED FROM NORMAL OUTLET, IT IS NECESSARY TO PROVIDE AN ADDITIONAL OUTLET WHICH IS TO BE HOOKED UP TO TANK OR RESERVOIR.

— CAUTION —

TO CONVERT TO OPEN CENTER FROM POWER BEYOND USAGE, DO NOT PLUG THE POWER BEYOND SLEEVE, AS THIS WOULD CONVERT THE VALVE TO A CLOSED CENTER VALVE. LUBRICATE ALL SEALS BEFORE INSTALLATION.

SEE (34)(35)(36)(37) ON PAGES 2, 3 AND 4.

PARTS LIST

ASSEMBLY	PART NUMBER	DESCRIPTION	QTY REQD
1V0208	1V0075	POWER BEYOND SLEEVE 3/4 NPTF	1
1V0209	1V0202	POWER BEYOND SLEEVE SAE 10	1
1V0249	1V0089	POWER BEYOND SLEEVE SAE 12	1
	2A0007 - 022	O-RING BACK-UP	1
	2A0283 - 9022	O-RING	1
	2A0283 - 9916	PLUG O-RING	1