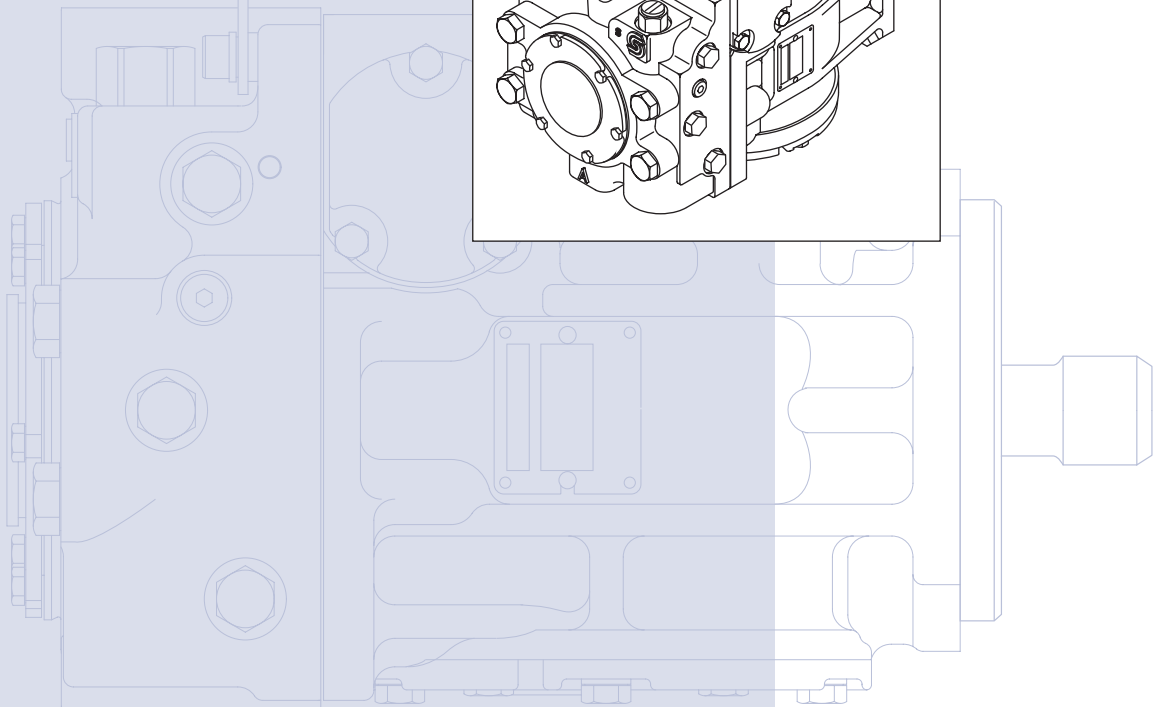
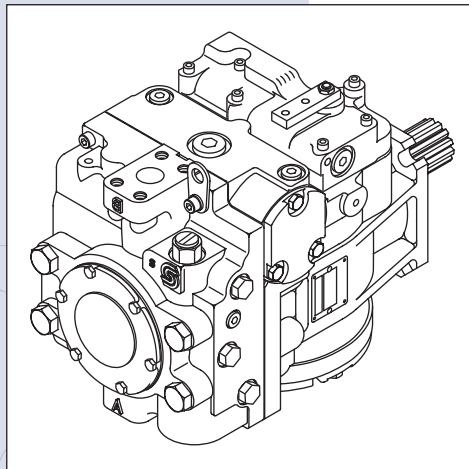
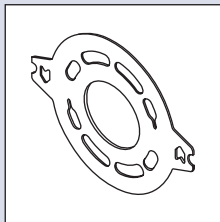
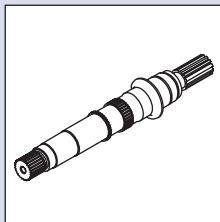
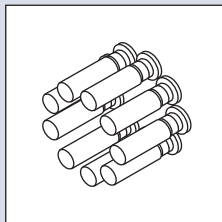


Series 90
55 cc Axial Piston
Pump

Parts Manual





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Front cover illustrations: P100 609, P100 681, P100 680, P100 679



SERVICE BULLETIN

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SB-1988-009 (servo arm/swashplate change).....	82
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**SERVICE PARTS
IDENTIFICATION**

The following information and procedure is used to identify the module group, item number, manufacture date, part number, and part name of the parts included in the Series 90, 55 cc variable displacement pumps.

The parts listed include all parts which may be used when performing either "Minor Repairs," "Major Repairs" or "Conversions" on the Series 90, 55 cc pump.

NAMEPLATE

Each unit will have a nameplate affixed to the housing. The nameplate will include the following information.

Model Code

The Sauer-Danfoss model code completely defines the specific unit and must be used when ordering parts to service this product.

Model Number

The Sauer-Danfoss model number is used by the factory in manufacturing. On repeat orders, a complete unit can be ordered by the model number.

Serial Number

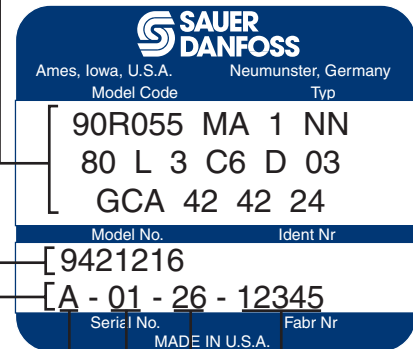
The Sauer-Danfoss serial number is used to identify the manufacture date and the unit sequence in the build. The serial number is also used to identify the units warranty time period.

The letter code indicates the location of original manufacture (assembly). "A" indicates the unit was originally assembled in Ames, Iowa, USA. "N" indicates the unit was originally assembled in Neumunster, Germany.

The first number (2 digits) indicates the year of manufacture. ("01" would indicate the unit was manufactured in 2001)

The second number (2 digits) indicates the calendar week of manufacture.

The third number (5 digits) is a sequential number used to identify a specific unit.



DATE CODE

The date code is defined as the year and week of manufacture. The same item number may list more than one part number. This indicates that there is more than one configuration for that item number. You will see that there are different date codes for the different part numbers. Find the date code of your unit from the nameplate to determine which service part number you need to order.

EXAMPLE: The service part desired is Item G30

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
80	G30	89-17		8000243	End cap gasket	1
	G30	87-02	89-16	8000151	End cap gasket (SB-1995-006)	1

All units using this order code with a date code of 87-02 and up to and including 89-16, must use part number "8000151". All units with a date code of 89-17 and newer must use part number "8000243".

SERVICE BULLETINS

A Service Bulletin Number (SB-____ - ____) may follow the "Part Name" of the part you desire. You must read that Service Bulletin prior to ordering that part. The information contained in these Service Bulletins, as of the print date of this bulletin, are included at the end of this manual. Service Bulletins contain more detailed information such as interchangeability, what additional parts are involved, etc. It is suggested that you add additional Service Bulletins to this manual as you receive them.

PROCEDURE TO IDENTIFY A PART

General

The modular design of Series 90 units results in a simplified service parts list and part number identification procedure.

The same item numbers are used for same part names on all units within a product type. (Example: The lip seal - Item L40 has the same item number on all pumps.)

A part number that has another number following it in parentheses is done to make this a world wide manual. The first number is sold in Germany. The number in parentheses is sold in the United States. (Example: 314583 (9008000-0118), customers would order 9008000-0118 if ordering the part in the United States.)

Example of a Part Identification

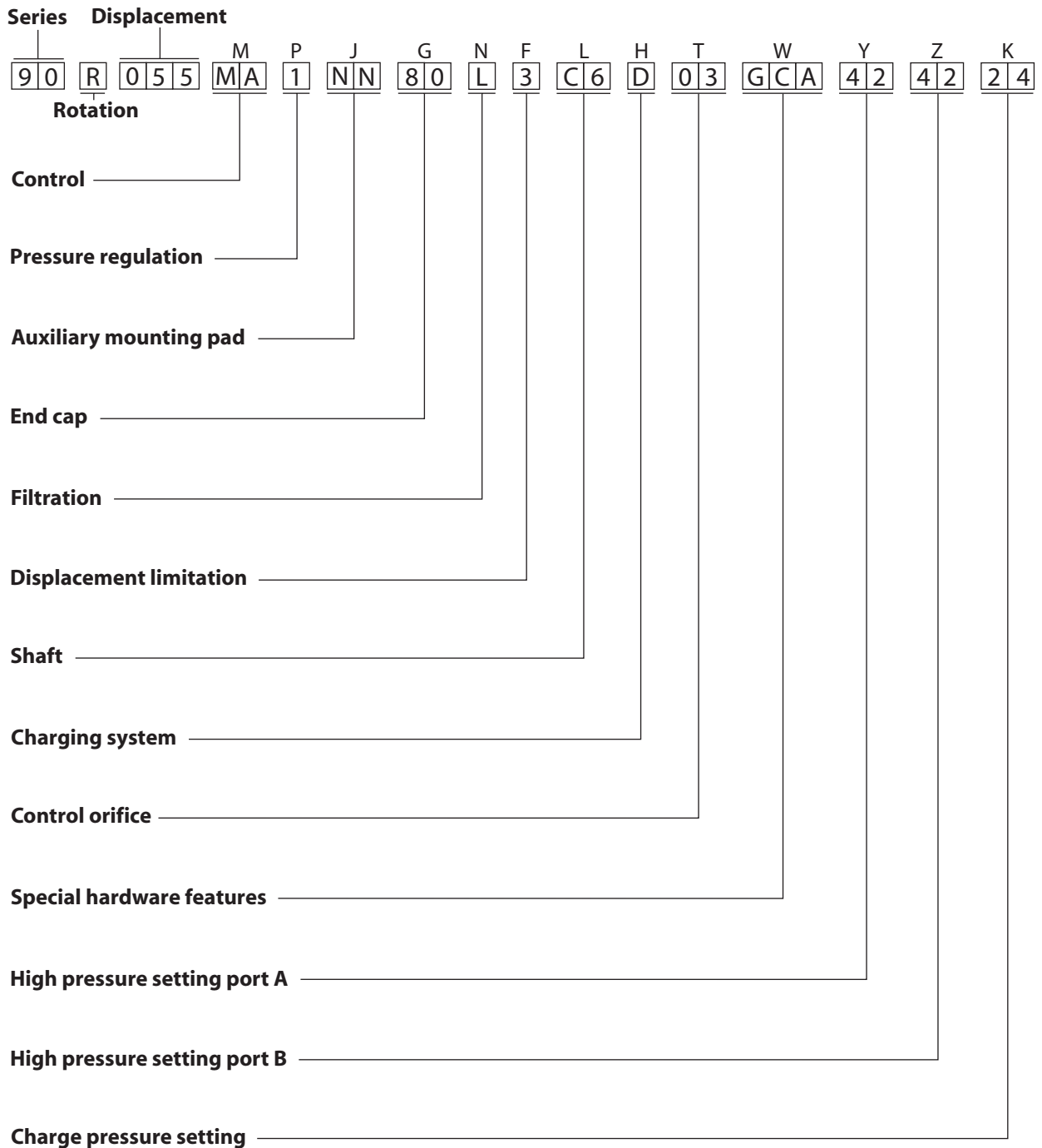
The nameplate on a Series 90 pump has an Order Code of 90R055 MA 1 NN 80 L 3 C6 D 03 GCA 42 42 24. Use the following procedures to determine the part number of the drive shaft used on this pump.

- 1) Referring to the input shaft module in the Order Code (see page 7), the input shaft option for this pump is identified by the code "C6". (90R055 MA 1 NN 80 L 3 **C6** D 03 GCA 42 42 24)
- 2) Referring to the Service Parts List, find the shaft group. Next find the order code that relates to this unit, which is "C6". The shaft is found to be item L100 and part number 8000079.

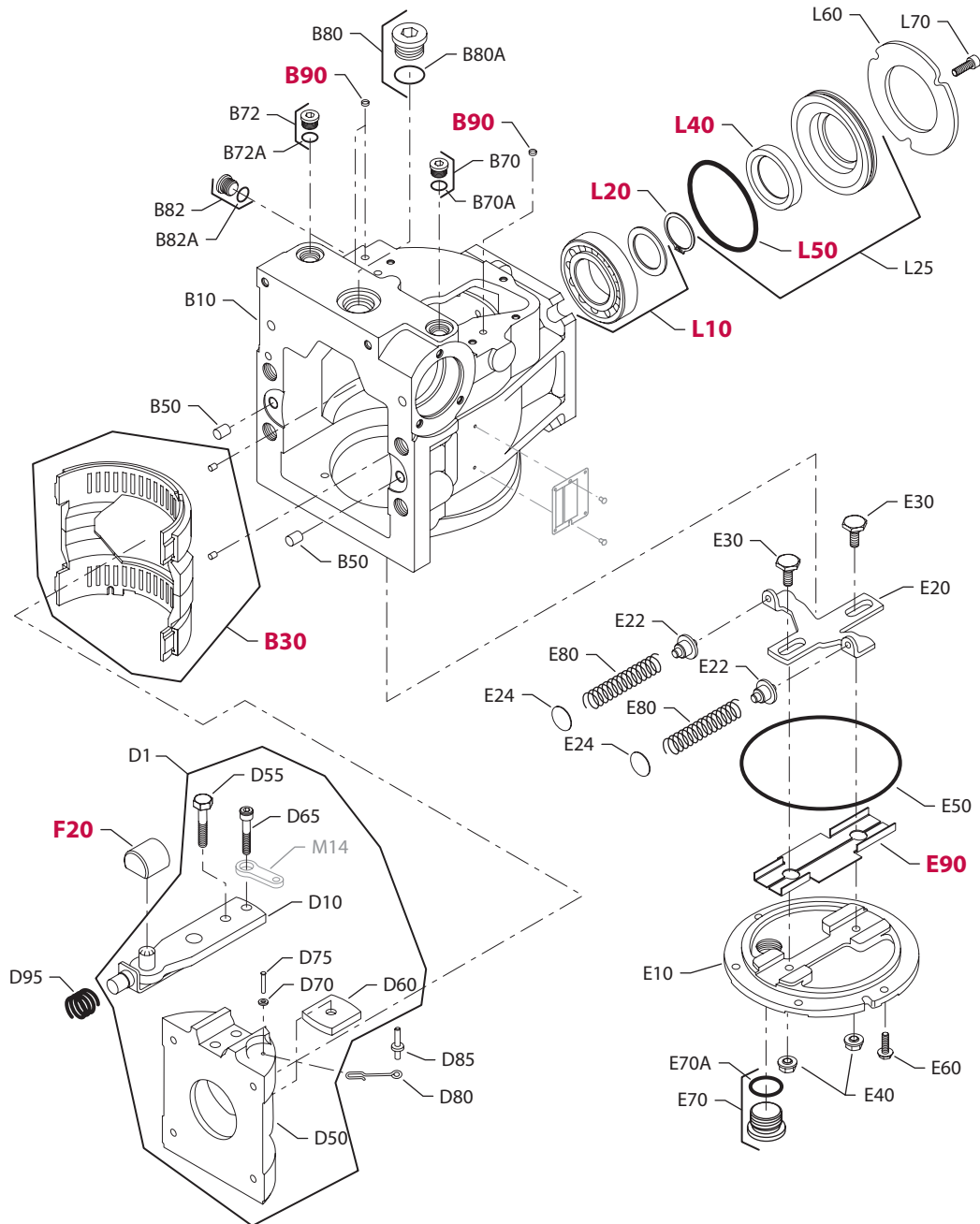


Series 90 55 cc Axial Piston Pump
Parts Manual
Notes





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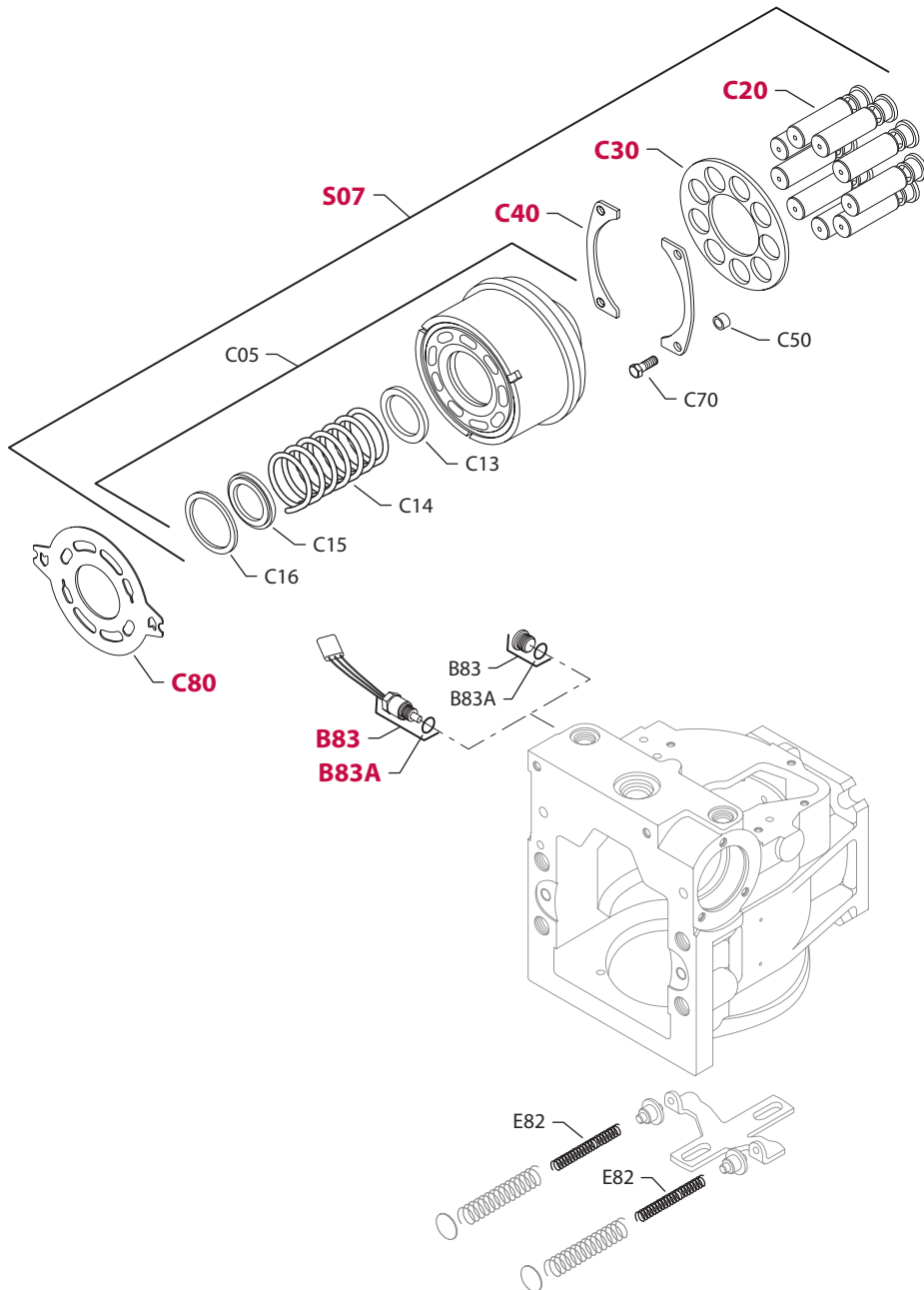


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

COMMON PARTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B10	95-06		8000387	Housing (SB-1992-003)	1
	B30	87-02		8000131	Bearing/pin assembly	1
	B50	87-02		9004800-3708	Pin	2
	B70	87-02		327007 (9005110-4400)	Plug assembly	1
	B70A	87-02		001123 (9004201-2500)	O-ring	1
	B72	87-02		327007 (9005110-4400)	Plug assembly	1
	B72A	87-02		001123 (9004201-2500)	O-ring	1
	B80	87-02		664524 (9005110-9000)	Plug assembly	1
	B80A	87-02		001156 (9004201-7500)	O-ring	1
	B82	87-02		515965 (9005110-5600)	Plug assembly (SB-1992-003)	1
	B82A	87-02		085043 (9004201-3700)	O-ring	1
	B90	87-02		9803390	Control filter screen	3
	D01	88-14		8000200	Swashplate assembly (SB-1988-009)	1
	D01	87-02	88-14	8000201	Swashplate assembly	1
	D10	88-14		8000318	Servo arm assembly (SB-1993-015)	1
	D50	88-14		8000188	Swashplate (SB-1988-009)	1
	D55	87-02		666032 (9007276-0107)	Screw	1
	D60	87-02		8800669	Swashplate guide	1
	D65	87-02		9007375-0044	Screw (SB-1992-011)	1
	D70	87-02		9009625-0146	Washer	1
	D75	87-02		9004875-0098	Spiral head pin	1
	D80	87-02		8100506	Cage locator link (SB-1994-017)	1
	D85	04-43		8801235	Pin (SB-2004-012)	1
	D85	87-02	04-42	8801135	Pin (SB-1998-018)	1
	D95	87-02		8100035	Spring	1
	E10	95-50		8000400	Side cover (SB-1995-025)	1
	E20	87-02		8000094	Leveler (SB-1989-003)	1
	E22	87-02		358838	Spring seat (SB-1989-003)	2
	E24	92-06		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	95-50		8000510	Guide post	2
	E30	87-02	95-49	8100353	Guide post (SB-1995-025)	2
	E40	87-02		9003509-0008	Seal nut	2
	E50	87-02		056739 (9004104-1580)	O-ring	1
	E60	87-02		5000206	Screw (SB-1994-018)	6
	E70	87-02		664524 (9005110-9000)	Plug assembly	1
	E70A	87-02		001156 (9004201-7500)	O-ring	1
	E80	87-02		8000186	Spring	2
	E90	95-50		513886	Insert assembly (SB-1995-025 & SB-1999-041)	1
	F20	88-14		8800750	Slider block (SB-1988-009)	1
	L10	87-02		5000504	Roller bearing	1
	L20	87-02		9006300-0137	Retaining ring	1
	L25	87-02		8000390	Seal carrier assembly	1
	L40	87-02		9008000-0118	Lip seal	1
	L50	87-02		071845 (9004104-1510)	O-ring	1
	L60	87-02		516766	Retainer plate	1
	L70	87-02		672493 (9007314-0605)	Screw	3



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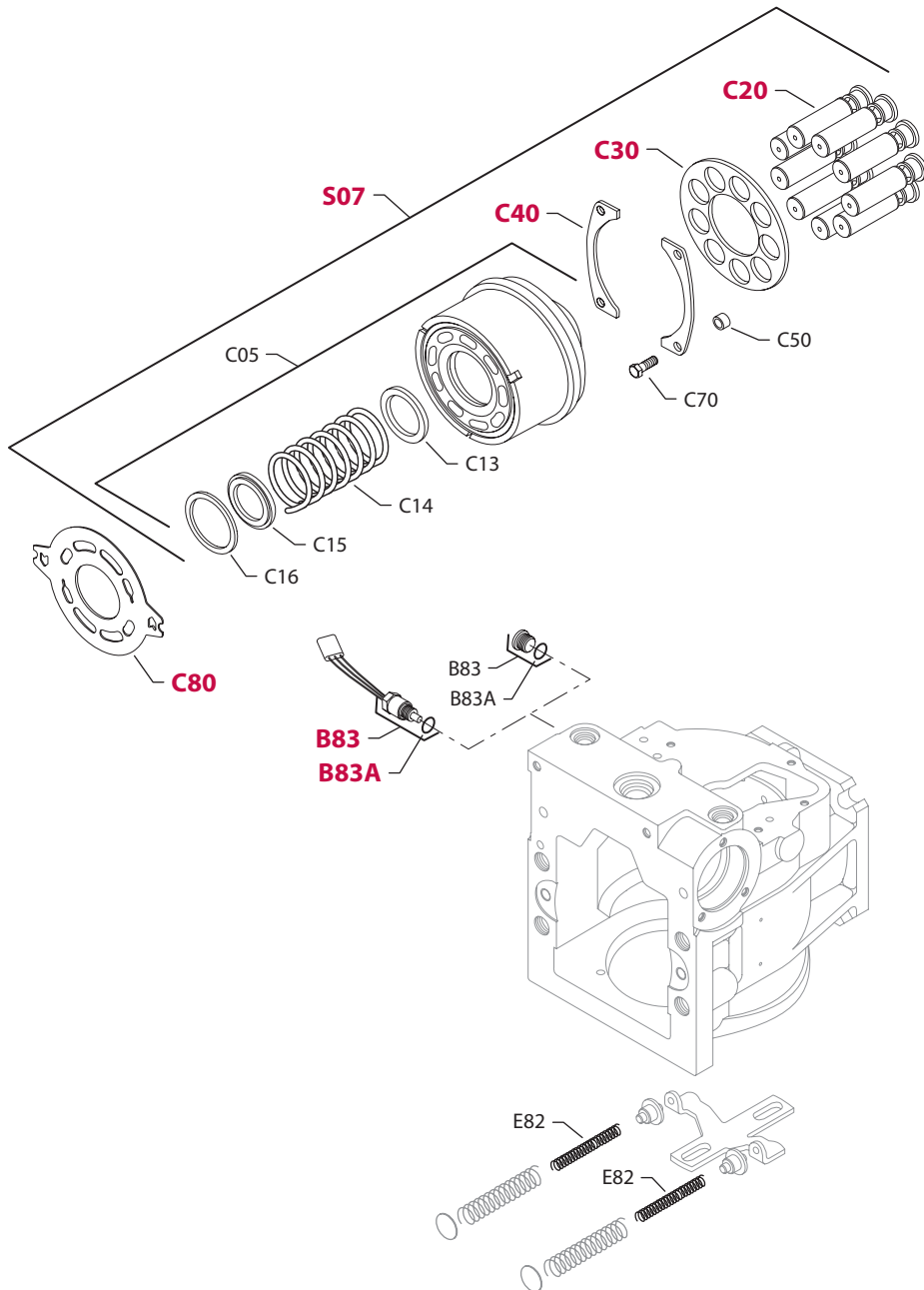
Enlarged **bold** type item numbers are recommended part to stock for servicing.

COMMON PARTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B83A	92-06		085043 (9004201-3700)	O-ring	1
	C13	87-02		314898 (8000014)	Spring seat	1
	C14	87-02		314864 (8000015)	Cylinder block spring	1
	C15	87-02		8000091	Spring retainer	1
	C16	87-02		314880 (9006275-0029)	Retaining ring	1
	C20	87-02		367672	Piston assembly (SB-1988-023)	9
	C30	87-02		8000007	Slipper guide	1
	C40	88-43		8000137	Slipper guide bearing (SB-1988-016)	2
	C50	88-43		8000619	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-43	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-43		648477	Screw (SB-1988-016 & SB-1998-041)	4

SPECIAL HARDWARE

EAB & NMS & NWN	B83	92-06		512659 (KPPG12508)	Speed sensor	1
	C05	92-06		8000808	Cylinder block assembly, with speed ring	1
	C80	92-06		508126	Valve plate	1
	E82	92-06		8000203	Spring	2
	S07	92-06		8510362	Cylinder block kit, with speed ring	1
EBC	B83	96-06		KPPG13408	Speed sensor	1
	C05	96-06		8000808	Cylinder block assembly, with speed ring	1
	C80	96-06		508125	Valve plate (SB-1997-003)	1
	S07	96-06		8510362	Cylinder block kit, with speed ring	1
	EDC	B83	96-39		512984 (KPPG13403)	Speed sensor
C05		96-39		8000808	Cylinder block assembly, with speed ring	1
C80		96-39		503885	Valve plate	1
E82		96-39		8000203	Spring	2
S07		96-39		8510362	Cylinder block kit, with speed ring	1
EEB	B83	96-06		515965 (9005110-5600)	Plug	1
	C05	96-06		8000808	Cylinder block assembly, with speed ring	1
	C80	96-06		508125	Valve plate (SB-1997-003)	1
	S07	96-06		8510362	Cylinder block kit, with speed ring	1
	EEC	B83	94-51		515965 (9005110-5600)	Plug
C05		94-51		8000808	Cylinder block assembly, with speed ring	1
C80		94-51		503885	Valve plate	1
E82		94-51		8000203	Spring	2
S07		94-51		8510362	Cylinder block kit, with speed ring	1
EEG	B83	00-06		515965 (9005110-5600)	Plug	1
	C05	00-06		8000808	Cylinder block assembly, with speed ring	1
	C80	00-06		503885	Valve plate	1
	S07	00-06		8510362	Cylinder block kit, with speed ring	1



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Enlarged **bold** type item numbers are recommended part to stock for servicing.

COMMON PARTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B83A	92-06		085043 (9004201-3700)	O-ring	1
	C13	87-02		314898 (8000014)	Spring seat	1
	C14	87-02		314864 (8000015)	Cylinder block spring	1
	C15	87-02		8000091	Spring retainer	1
	C16	87-02		314880 (9006275-0029)	Retaining ring	1
	C20	87-02		367672	Piston assembly (SB-1988-023)	9
	C30	87-02		8000007	Slipper guide	1
	C40	88-43		8000137	Slipper guide bearing (SB-1988-016)	2
	C50	88-43		8000619	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-43	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-43		648477	Screw (SB-1988-016 & SB-1998-041)	4

SPECIAL HARDWARE

EFI	B83	98-23		512666 (KPPG156)	Speed sensor	1
	C05	98-23		8000808	Cylinder block assembly, with speed ring	1
	C80	98-23		503885	Valve plate	1
	S07	98-23		8510362	Cylinder block kit, with speed ring	1

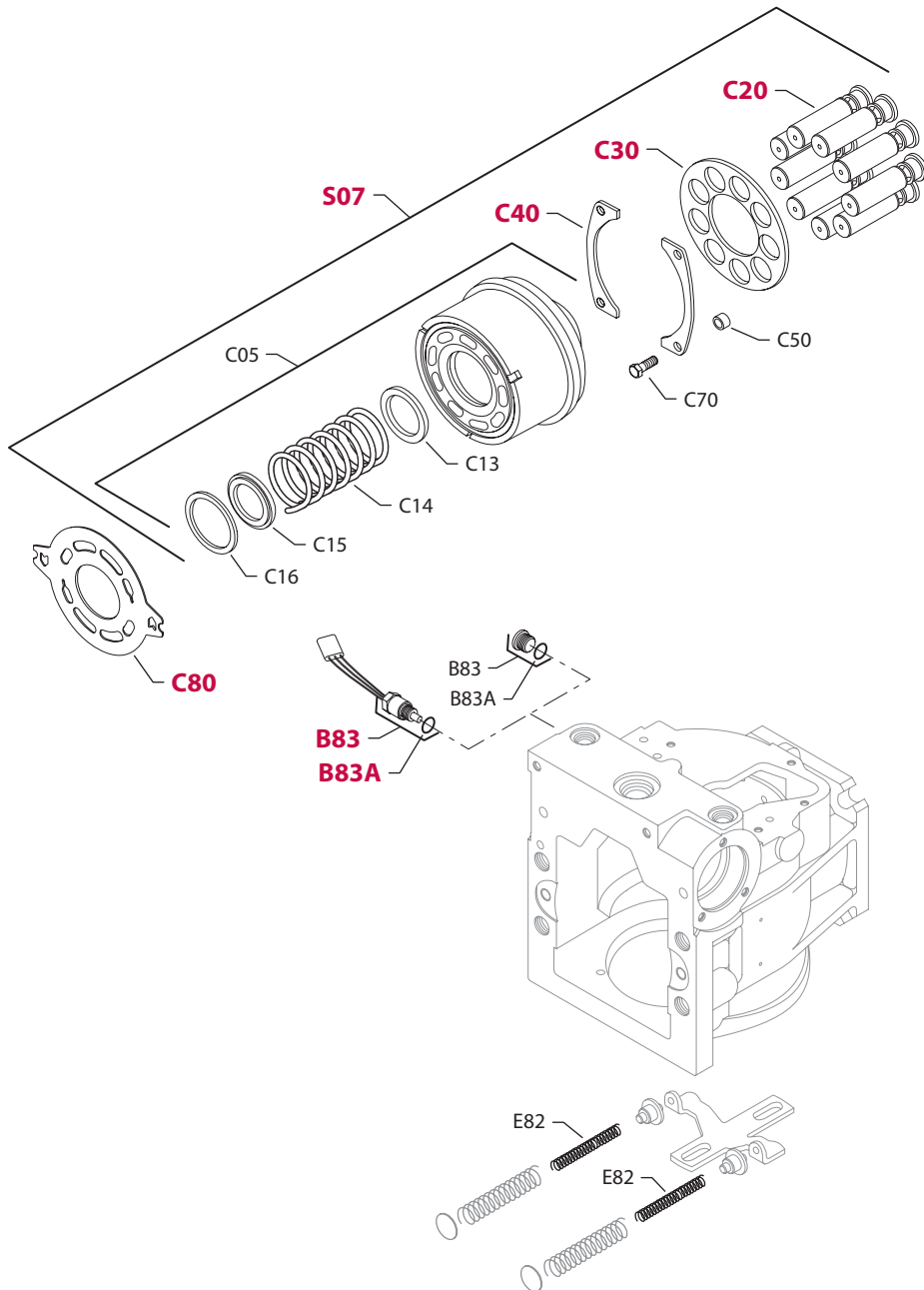
EHA	B83	99-14		KPPG16408	Speed sensor	1
	C05	99-14		8000808	Cylinder block assembly, with speed ring	1
	C80	99-14		508125	Valve plate	1
	S07	99-14		8510362	Cylinder block kit, with speed ring	1

FAA & NDN	B83	92-06		515965 (9005110-5600)	Plug	1
	C05	91-04		8000804	Cylinder block assembly, without speed ring	1
	C80	91-04		314427	Valve plate	1
	E82	91-04		8000203	Spring	2
	S07	91-04		8510363	Cylinder block kit, without speed ring	1

FAB & NBN	B83	92-06		515965 (9005110-5600)	Plug	1
	C05	91-46		8000804	Cylinder block assembly, without speed ring	1
	C80	91-46		363713	Valve plate	1
	E82	91-46		8000203	Spring	2
	S07	91-46		8510363	Cylinder block kit, without speed ring	1

FAC	B83	94-23		515965 (9005110-5600)	Plug	1
	C05	94-23		8000804	Cylinder block assembly, without speed ring	1
	C80	94-23		508126	Valve plate	1
	E82	94-23		8000203	Spring	2
	S07	94-23		8510363	Cylinder block kit, without speed ring	1

FAD & NSN	B83	94-23		515965 (9005110-5600)	Plug	1
	C05	94-23		8000804	Cylinder block assembly, without speed ring	1
	C80	94-23		508125	Valve plate (SB-1997-003)	1
	E82	94-23		8000203	Spring	2
	S07	94-23		8510363	Cylinder block kit, without speed ring	1



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Enlarged **bold** type item numbers are recommended part to stock for servicing.

COMMON PARTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B83A	92-06		085043 (9004201-3700)	O-ring	1
	C13	87-02		314898 (8000014)	Spring seat	1
	C14	87-02		314864 (8000015)	Cylinder block spring	1
	C15	87-02		8000091	Spring retainer	1
	C16	87-02		314880 (9006275-0029)	Retaining ring	1
	C20	87-02		367672	Piston assembly (SB-1988-023)	9
	C30	87-02		8000007	Slipper guide	1
	C40	88-43		8000137	Slipper guide bearing (SB-1988-016)	2
	C50	88-43		8000619	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-43	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-43		648477	Screw (SB-1988-016 & SB-1998-041)	4

SPECIAL HARDWARE

FAK	B83	99-45		515965 (9005110-5600)	Plug	1
	C05	99-45		8000804	Cylinder block assembly, without speed ring	1
	C80	99-45		508125	Valve plate	1
	E82	99-45		8000203	Spring	2
	S07	99-45		8510363	Cylinder block kit, without speed ring	1

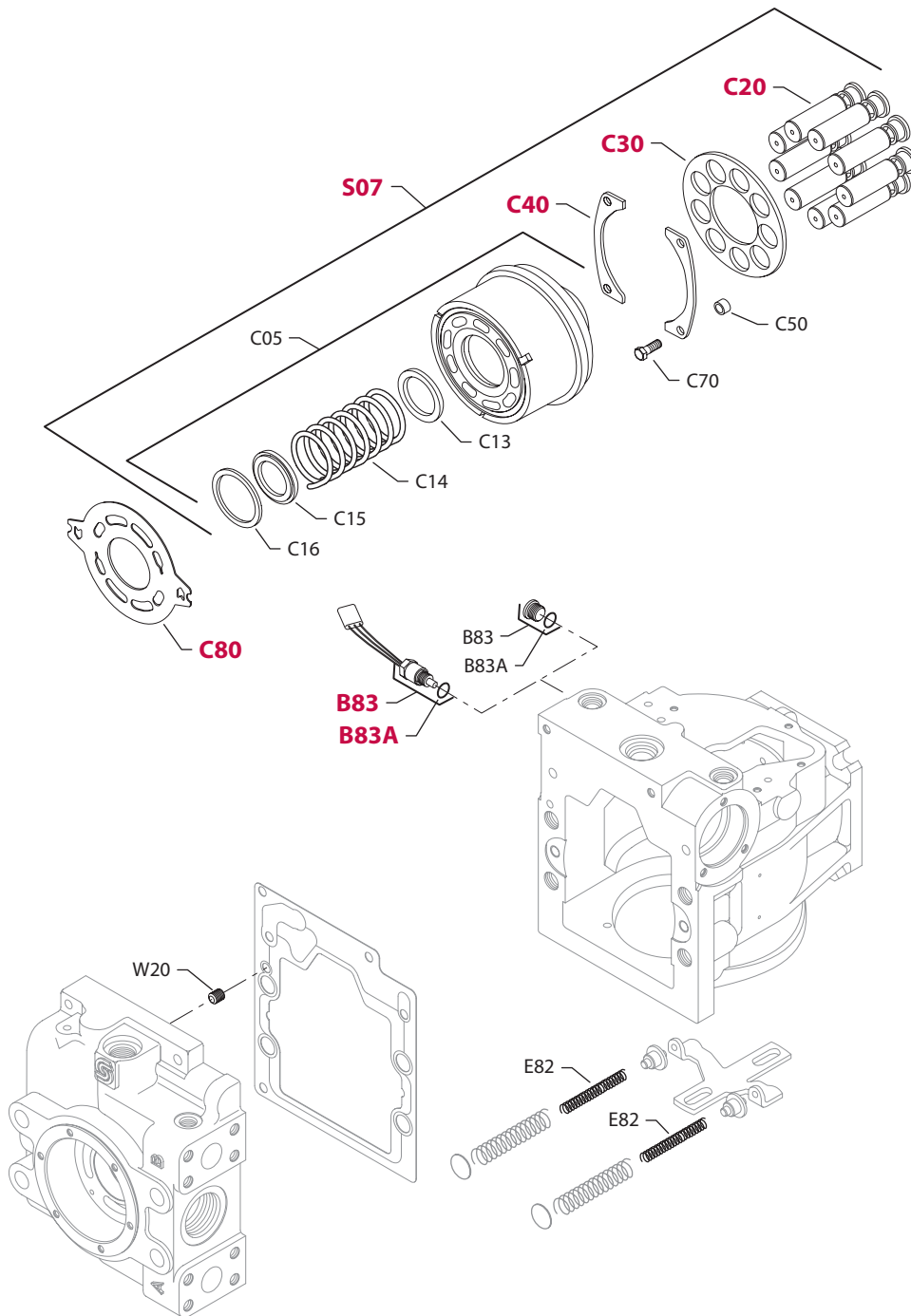
FAP	B83	96-08		515965 (9005110-5600)	Plug	1
	C05	96-08		8000804	Cylinder block assembly, without speed ring	1
	C80	96-08		503885	Valve plate	1
	E82	96-08		8000203	Spring	2
	S07	96-08		8510363	Cylinder block kit, without speed ring	1

FAR	B83	99-11		515965 (9005110-5600)	Plug	1
	C05	99-11		8000804	Cylinder block assembly, without speed ring	1
	C80	99-11		508125	Valve plate	1
	E82	99-11		8000203	Spring	2
	S07	99-11		8510363	Cylinder block kit, without speed ring	1

FAU	B83	99-11		515965 (9005110-5600)	Plug	1
	C05	99-11		8000804	Cylinder block assembly, without speed ring	1
	C80	99-11		503885	Valve plate	1
	E82	99-11		8000203	Spring	2
	S07	99-11		8510363	Cylinder block kit, without speed ring	1

GAA & NCN	B83	91-07		515965 (9005110-5600)	Plug	1
	C05	91-07		8000804	Cylinder block assembly, without speed ring	1
	C80	91-07		348029	Valve plate	1
	S07	91-07		8510363	Cylinder block kit, without speed ring	1

GBA, NNN & NWN	B83	92-06		515965 (9005110-5600)	Plug	1
	C05	87-02		8000804	Cylinder block assembly, without speed ring	1
	C80	87-02		508125	Valve plate (SB-1995-026, SB-1997-003)	1
	S07	87-02		8510363	Cylinder block kit, without speed ring	1



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Enlarged **bold** type item numbers are recommended part to stock for servicing.

COMMON PARTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B83A	92-06		085043 (9004201-3700)	O-ring	1
	C13	87-02		314898 (8000014)	Spring seat	1
	C14	87-02		314864 (8000015)	Cylinder block spring	1
	C15	87-02		8000091	Spring retainer	1
	C16	87-02		314880 (9006275-0029)	Retaining ring	1
	C20	87-02		367672	Piston assembly (SB-1988-023)	9
	C30	87-02		8000007	Slipper guide	1
	C40	88-43		8000137	Slipper guide bearing (SB-1988-016)	2
	C50	88-43		8000619	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-43	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-43		648477	Screw (SB-1988-016 & SB-1998-041)	4

SPECIAL HARDWARE

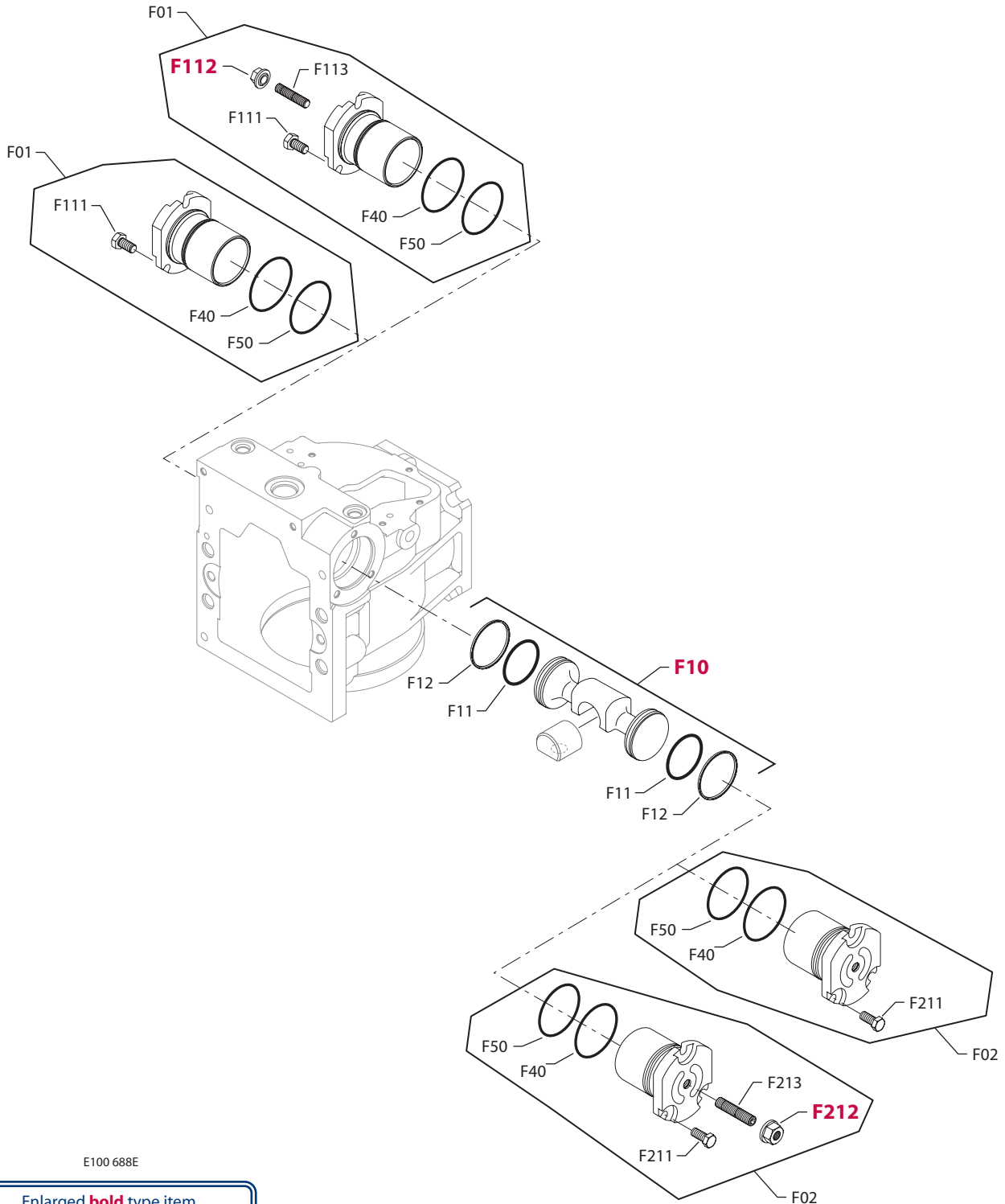
GBG	B83	99-45		515965 (9005110-5600)	Plug	1
	C05	99-45		8000804	Cylinder block assembly, without speed ring	1
	C80	99-45		508125	Valve plate	1
	S07	99-45		8510363	Cylinder block kit, without speed ring	1
	W20	99-45		42457	Set screw	1

GCA	B83	94-27		515965 (9005110-5600)	Plug	1
	C05	94-27		8000804	Cylinder block assembly, without speed ring	1
	C80	94-27		508126	Valve plate	1
	S07	94-27		8510363	Cylinder block kit, without speed ring	1

GEA & SLN	B83	92-06		515965 (9005110-5600)	Plug	1
	C05	90-07		8000804	Cylinder block assembly, without speed ring	1
	C80	90-07		8000213	Valve plate	1
	S07	90-07		8510363	Cylinder block kit, without speed ring	1

GLA	B83	98-14		515965 (9005110-5600)	Plug	1
	C05	98-14		8000804	Cylinder block assembly, without speed ring	1
	C80	98-14		503885	Valve plate	1
	S07	98-14		8510363	Cylinder block kit, without speed ring	1

GLC	B83	04-38		515965 (9005110-5600)	Plug	1
	C05	04-38		8000804	Cylinder block assembly, without speed ring	1
	C80	04-38		503885	Valve plate	1
	S07	04-38		8510363	Cylinder block kit, without speed ring	1
	W20	04-38		42457	Set screw	1

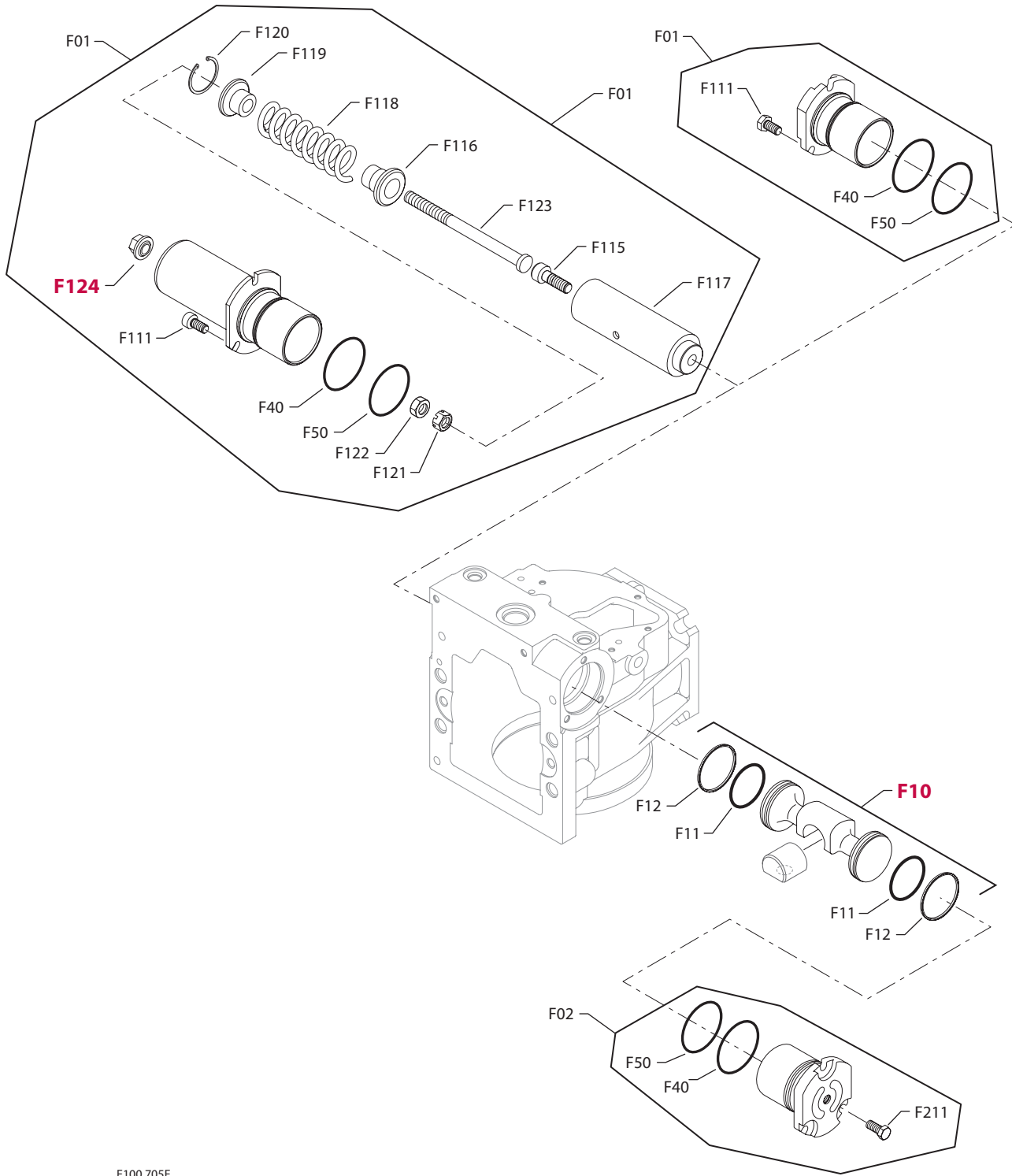


E100 688E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

DISPLACEMENT LIMITATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
1	F01	91-07		8002F004-A	Displacement limiter kit, adjustable	1
	F02	91-07		8002F003-A	Displacement limiter kit, non-adjustable	1
	F10	91-07		509279	Servo piston assembly	1
	F11	91-07		314500 (9004100-1250)	O-ring	2
	F12	91-07		8700065	Piston ring	2
	F40	91-07		353953 (9004104-1330)	O-ring	2
	F50	91-07		314534 (9004104-0310)	O-ring	2
	F111	91-07		672493 (9007210-0604)	Screw	3
	F112	91-07		9003509-0008	Seal nut	1
	F113	91-07		304352 (9007712-0814)	Set screw	1
	F211	91-07		672493 (9007210-0604)	Screw	3
3	F01	87-02		8002F003-A	Displacement limiter kit, non-adjustable	1
	F02	87-02		8002F003-A	Displacement limiter kit, non-adjustable	1
	F10	87-02		509279	Servo piston assembly	1
	F11	87-02		314500 (9004100-1250)	O-ring	2
	F12	87-02		8700065	Piston ring	2
	F40	88-43		353953 (9004104-1330)	O-ring	2
	F40	87-02	88-42	680876 (9004104-0320)	O-ring	2
	F50	87-02		314534 (9004104-0310)	O-ring	2
	F111	87-02		672493 (9007210-0604)	Screw	3
	F211	87-02		672493 (9007210-0604)	Screw	3
	4	F01	87-02		8002F004-A	Displacement limiter kit, adjustable
F02		87-02		8002F004-A	Displacement limiter kit, adjustable	1
F10		87-02		509279	Servo piston assembly	1
F11		87-02		314500 (9004100-1250)	O-ring	2
F12		87-02		8700065	Piston ring	2
F40		88-43		353953 (9004104-1330)	O-ring	2
F40		87-02	88-42	680876 (9004104-0320)	O-ring	2
F50		87-02		314534 (9004104-0310)	O-ring	2
F111		87-02		672493 (9007210-0604)	Screw	3
F112		87-02		9003509-0008	Seal nut	1
F113		87-02		304352 (9007712-0814)	Set screw	1
F211		87-02		672493 (9007210-0604)	Screw	3
F212		87-02		9003509-0008	Seal nut	1
F213		87-02		304352 (9007712-0814)	Set screw	1

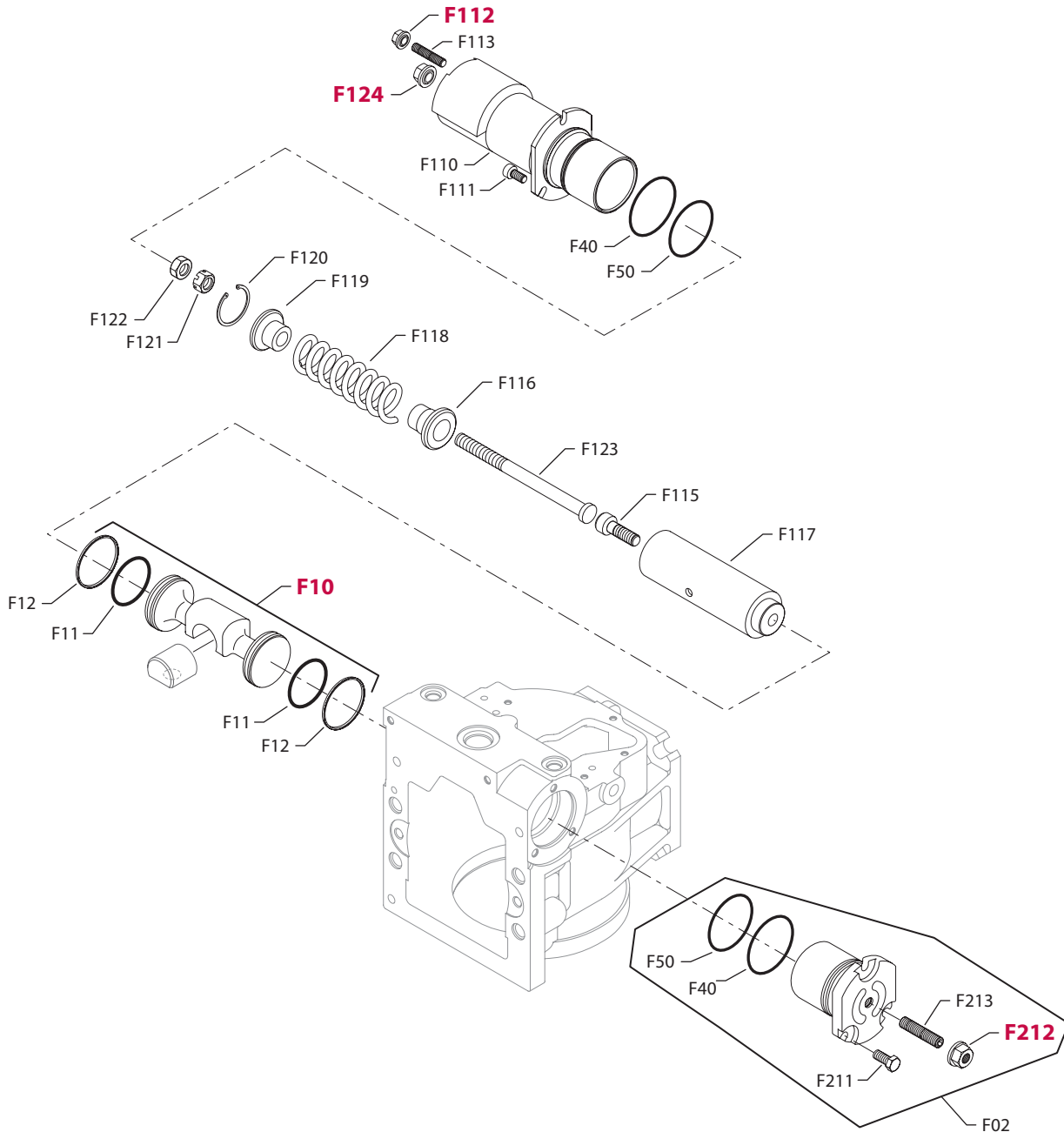


E100 705E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

DISPLACEMENT LIMITATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
7	F01	95-31		8510221	Displacement limiter kit, automotive control	1
	F02	95-31		8002F003-A	Displacement limiter kit, non-adjustable	1
	F10	95-31		509278	Servo piston assembly	1
	F11	95-31		314500 (9004100-1250)	O-ring	2
	F12	95-31		8700065	Piston ring	2
	F40	95-31		353953 (9004104-1330)	O-ring	2
	F50	95-31		314534 (9004104-0310)	O-ring	2
	F111	95-31		704395 (9007314-0604)	Screw	3
	F115	95-31		346395	Screw	1
	F116	95-31		507092	Spring guide	1
	F117	95-31		346320	Servo spring housing	1
	F118	95-31		346254	Spring	1
	F119	95-31		507093	Spring guide	1
	F120	95-31		346379	Retaining ring	1
	F121	95-31		787887	Castle nut	1
	F122	95-31		336800	Nut	1
	F123	95-31		346387	Adjusting screw	1
F124	95-31		336826	Seal nut	1	
F211	95-31		672493 (9007210-0604)	Screw	3	
F	F01	99-30		8510303	Displacement limiter kit, non-adjustable, no orifice	1
	F02	99-30		8510303	Displacement limiter kit, non-adjustable, no orifice	1
	F10	99-30		509279	Servo piston assembly	1
	F11	99-30		314500 (9004100-1250)	O-ring	2
	F12	99-30		8700065	Piston ring	2
	F40	99-30		353953 (9004104-1330)	O-ring	2
	F50	99-30		314534 (9004104-0310)	O-ring	2
	F111	99-30		672493 (9007210-0604)	Screw	3
	F211	99-30		672493 (9007210-0604)	Screw	3
	K	F01	99-30		8002F003-A	Displacement limiter kit, non-adjustable
F02		99-30		8002F003-A	Displacement limiter kit, non-adjustable	1
F10		99-30		509278	Servo piston assembly	1
F11		99-30		314500 (9004100-1250)	O-ring	2
F12		99-30		8700065	Piston ring	2
F40		99-30		353953 (9004104-1330)	O-ring	2
F50		99-30		314534 (9004104-0310)	O-ring	2
F111		99-30		672493 (9007210-0604)	Screw	3
F211		99-30		672493 (9007210-0604)	Screw	3

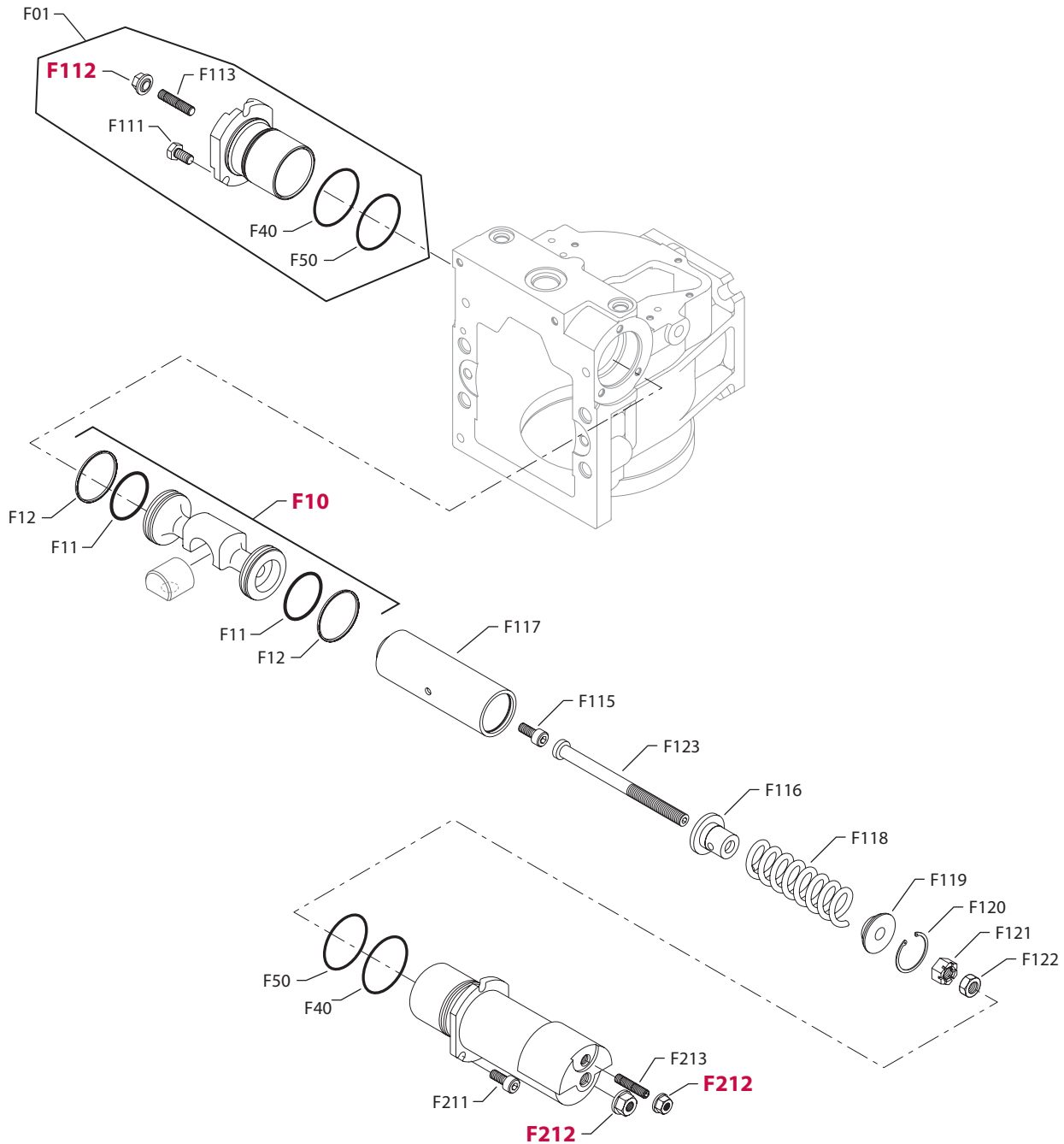


E100 706E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

DISPLACEMENT LIMITATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
L	F02	98-14		8002F004-A	Displacement limiter kit, adjustable	1
	F10	98-14		509278	Servo piston assembly	1
	F11	98-14		314500 (9004100-1250)	O-ring	2
	F12	98-14		8700065	Piston ring	2
	F40	98-14		353953 (9004104-1330)	O-ring	2
	F50	98-14		314534 (9004104-0310)	O-ring	2
	F110	98-14		507948	Servo cylinder	1
	F111	98-14		704395 (9007314-0604)	Screw	3
	F112	98-40		9003509-0008	Seal nut	1
	F113	98-40		304352 (9007712-0814)	Set screw	1
	F115	98-14		346395	Screw	1
	F116	98-14		507092	Spring guide	1
	F117	98-14		346320	Servo spring housing	1
	F118	98-14		346254	Spring	1
	F119	98-14		507093	Spring guide	1
	F120	98-14		346379	Retaining ring	1
	F121	98-14		787887	Castle nut	1
	F122	98-14		336800	Nut	1
	F123	98-14		346387	Adjusting screw	1
	F124	98-14		336826	Seal nut	1
	F211	98-14		672493 (9007210-0604)	Screw	3
	F212	98-14		9003509-0008	Seal nut	1
	F213	98-14		304352 (9007712-0814)	Set screw	1

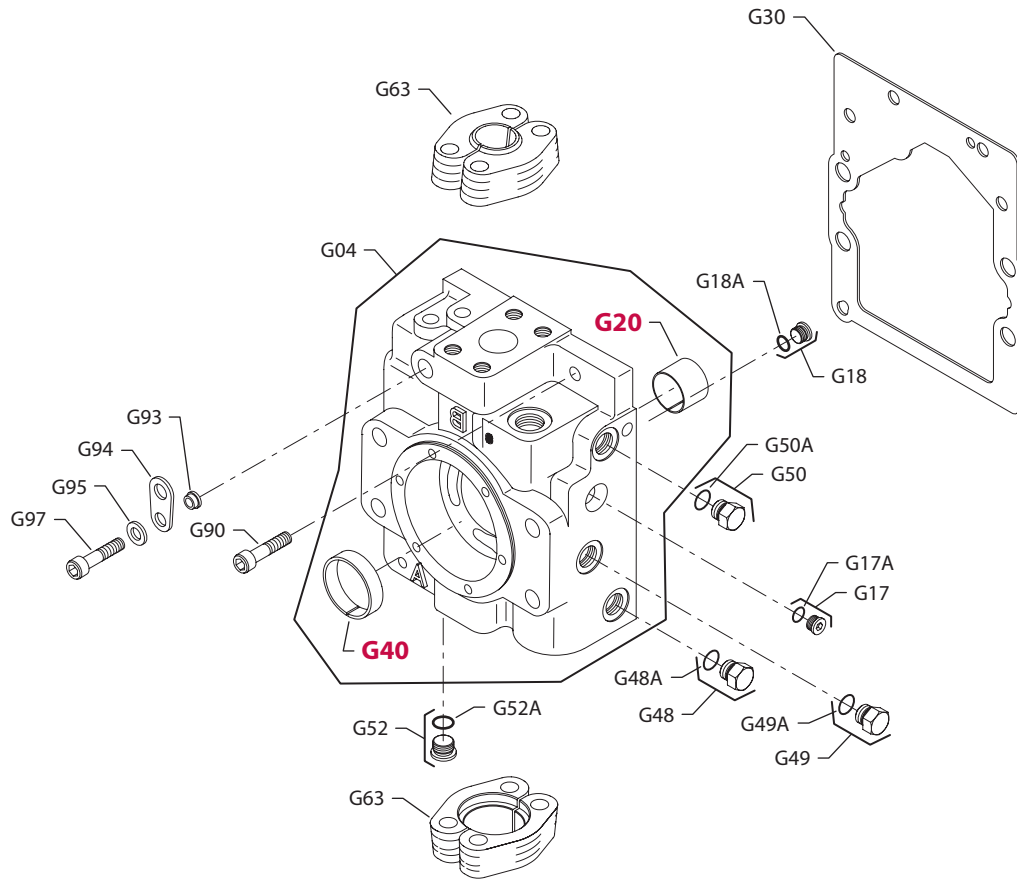


E100 707E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

DISPLACEMENT LIMITATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
N	F01	98-40		8002F004-A	Displacement limiter kit, adjustable	1
	F10	98-40		509278	Servo piston assembly	1
	F11	98-40		314500 (9004100-1250)	O-ring	2
	F12	98-40		8700065	Piston ring	2
	F40	98-40		353953 (9004104-1330)	O-ring	2
	F50	98-40		314534 (9004104-0310)	O-ring	2
	F111	98-40		672493 (9007210-0604)	Screw	3
	F112	98-40		9003509-0008	Seal nut	1
	F113	98-40		304352 (9007712-0814)	Set screw	1
	F115	98-40		346395	Screw	1
	F116	98-40		507092	Spring guide	1
	F117	98-40		346320	Servo spring housing	1
	F118	98-40		346254	Spring	1
	F119	98-40		507093	Spring guide	1
	F120	98-40		346379	Retaining ring	1
	F121	98-40		787887	Castle nut	1
	F122	98-40		336800	Nut	1
	F123	98-40		346387	Adjusting screw	1
	F210	98-40		507948	Servo cylinder	1
	F211	98-40		704395 (9007314-0604)	Screw	3
	F212	98-14		9003509-0008	Seal nut	1
	F213	98-14		304352 (9007712-0814)	Set screw	1
	F224	98-40		336826	Seal nut	1

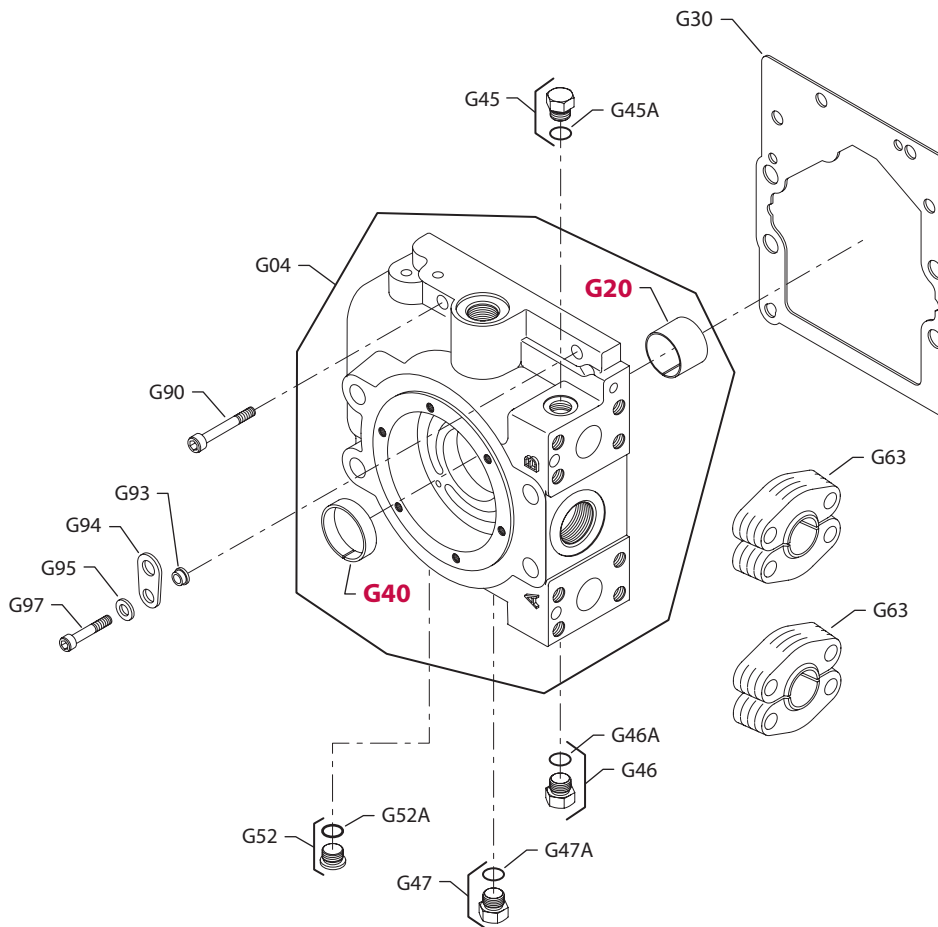


E100 709E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G17	92-06		327007 (9005110-4400)	Plug (SB-1992-0003)	1
	G17A	92-06		001123 (9004201-2500)	O-ring	1
	G18	92-06		327007 (9005110-4400)	Plug (SB-1992-0003)	1
	G18A	92-06		001123 (9004201-2500)	O-ring	1
	G20	87-02		8700018	Journal bearing	1
	G30	89-17		8000243	End cap gasket (SB-1989-037 & SB-1992-003)	1
	G30	87-02	89-16	8000107	End cap gasket (SB-1989-009)	1
	G40	87-02		8700008	Bushing	1
	G48	87-02		046151 (9005100-5600)	Plug assembly	1
	G48A	87-02		085043 (9004201-3700)	O-ring	1
	G49	87-02		046151 (9005100-5600)	Plug assembly	1
	G49A	87-02		085043 (9004201-3700)	O-ring	1
	G50	87-02		046151 (9005100-5600)	Plug assembly	1
	G50A	87-02		085043 (9004201-3700)	O-ring	1
	G52	87-02		515965 (9005110-5600)	Plug assembly	1
	G52A	87-02		085043 (9004201-3700)	O-ring	1
	G90	89-47		713768 (9007314-0812)	Screw (SB-1989-037)	1
	G93	89-47		713800 (8800564)	Spacer	1
	G93	87-02	89-46	307678 (8800404)	Spacer	1
	G94	89-47		8800565	Lifting bracket	1
	G94	87-02	89-46	351643 (8800522)	Lifting bracket	1
	G95	89-47		002311 (9009610-3459)	Washer	1
	G95	87-02	89-46	002295 (9009610-2850)	Washer	1
	G97	89-47		746644 (9007314-0810)	Screw (SB-1989-037)	1
	G97	87-02	89-46	694356 (9007314-0608)	Screw	1
6 & 60	G04	92-06		8000259	End cap assembly, side ports (SB-1992-003)	1
2 & 61	G04	92-06		8000259	End cap assembly, side ports (SB-1992-003)	1
	G63	87-02		8700074	Split clamp	4
H & 62	G04	94-33		8000353	End cap assembly, metric side ports	1
4 & 64	G04	95-03		771410	End cap assembly, side ports, FBA	1
6L	G04	97-24		8000543	End cap assembly, metric side ports, lapped	1

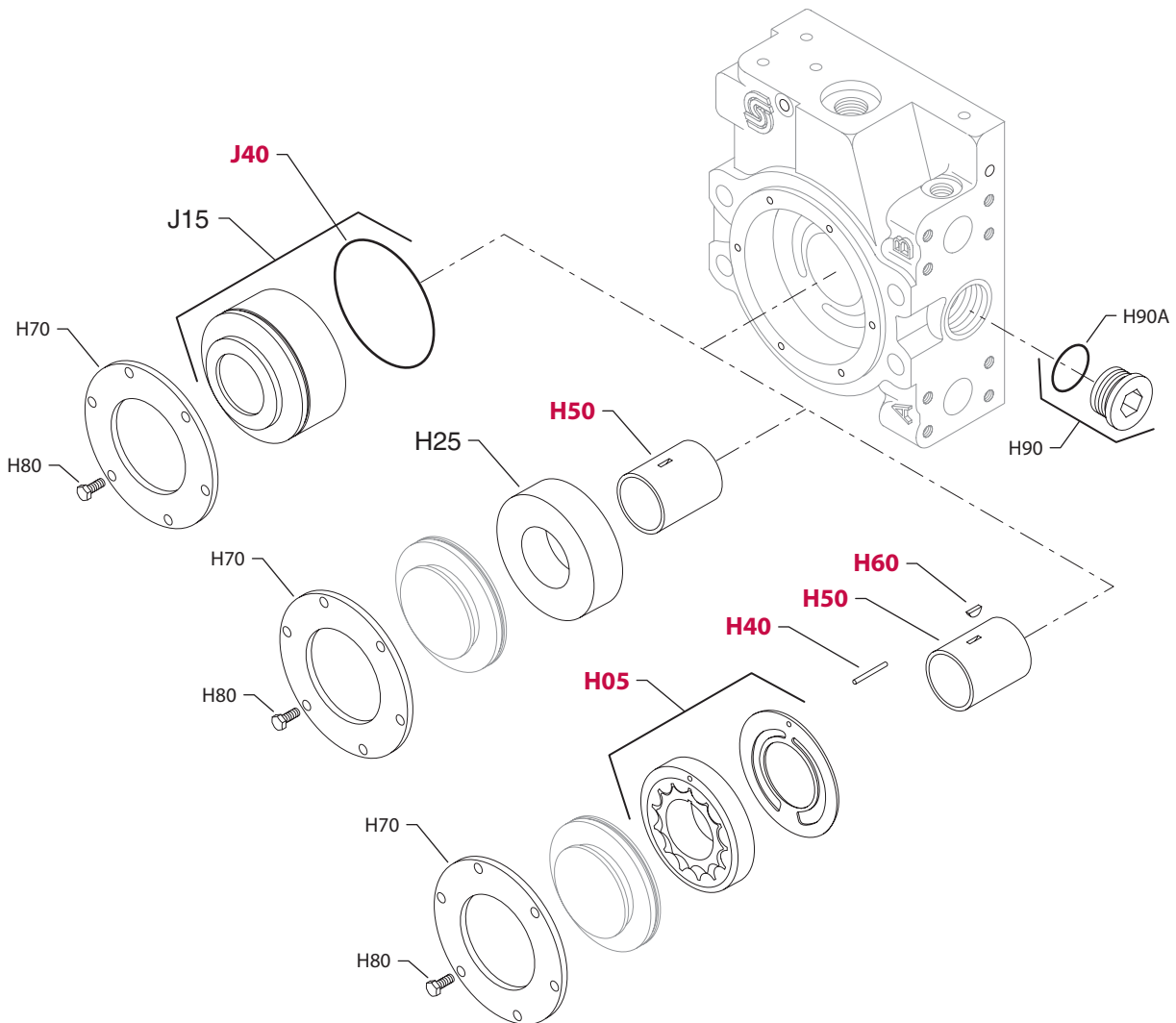


E100 710E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G20	87-02		8700018	Journal bearing	1
	G30	89-17		8000243	End cap gasket (SB-1989-037 & SB-1992-003)	1
	G30	87-02	89-16	8000107	End cap gasket (SB-1989-009)	1
	G40	87-02		8700008	Bushing	1
	G45	87-02		046151 (9005100-5600)	Plug assembly	1
	G45A	87-02		085043 (9004201-3700)	O-ring	1
	G46	87-02		046151 (9005100-5600)	Plug assembly	1
	G46A	87-02		085043 (9004201-3700)	O-ring	1
	G47	87-02		046151 (9005100-5600)	Plug assembly	1
	G47A	87-02		085043 (9004201-3700)	O-ring	1
	G52	87-02		515965 (9005110-5600)	Plug assembly	1
	G52A	87-02		085043 (9004201-3700)	O-ring	1
	G90	89-47		713768 (9007314-0812)	Screw (SB-1989-037)	1
	G93	89-47		713800 (8800564)	Spacer	1
	G93	87-02	89-46	307678 (8800404)	Spacer	1
	G94	89-47		8800565	Lifting bracket	1
	G94	87-02	89-46	351643 (8800522)	Lifting bracket	1
	G95	89-47		002311 (9009610-3459)	Washer	1
	G95	87-02	89-46	002295 (9009610-2850)	Washer	1
	G97	89-47		746644 (9007314-0810)	Screw (SB-1989-037)	1
	G97	87-02	89-46	694356 (9007314-0608)	Screw	1
8 & 80	G04	92-06		8000260	End cap assembly, twin ports (SB-1992-003)	1
1 & 81	G04	92-06		8000260	End cap assembly, twin ports (SB-1992-003)	1
	G63	87-02		8700074	Split clamp	4
82	G04	97-01		8000414	End cap assembly, metric twin ports	1
8L	G04	97-24		8000540	End cap assembly, metric twin ports, lapped	1

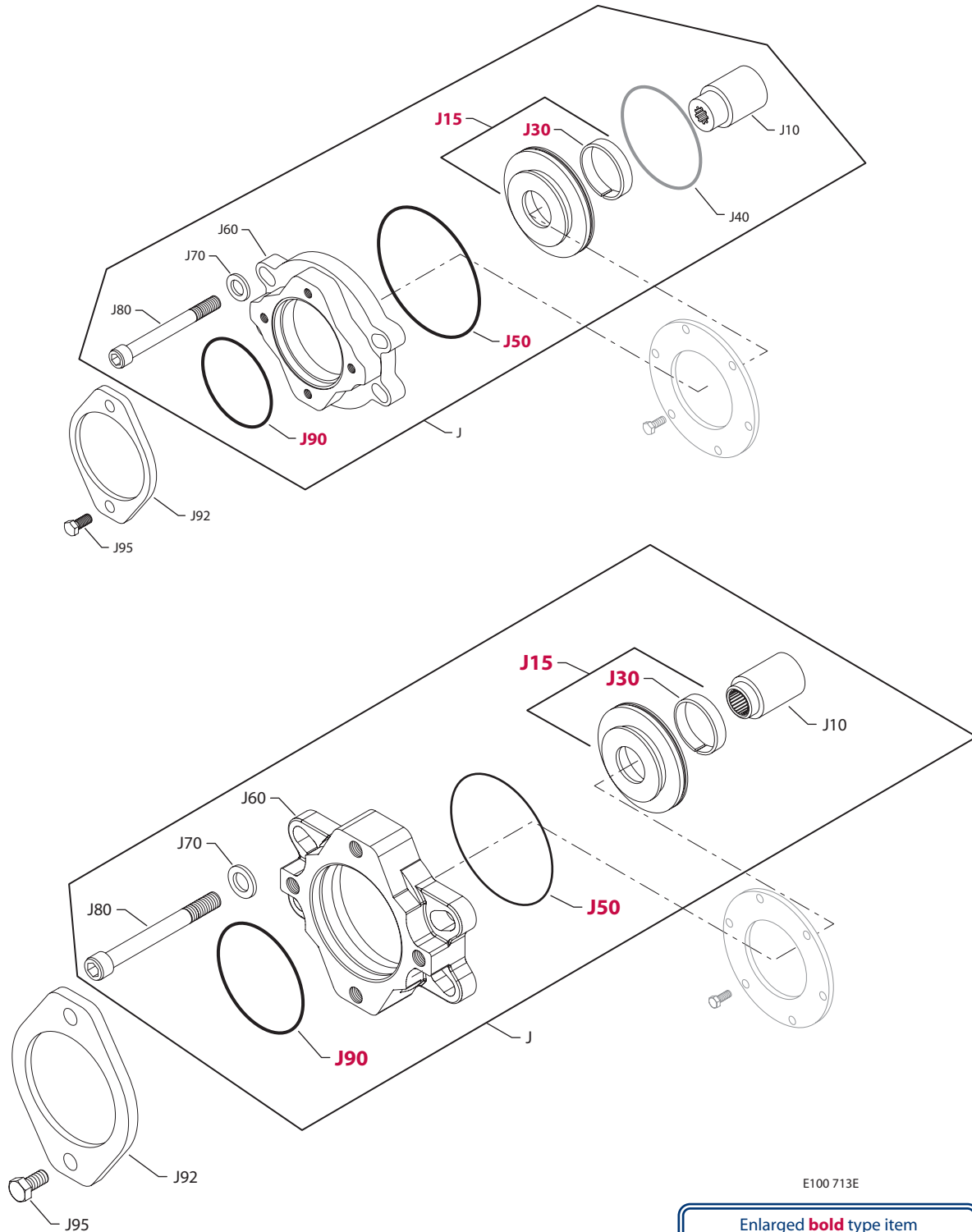


E100 712E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

CHARGING SYSTEM

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
1	H90	92-22		320002 (9005110-9200)	Plug assembly	1
	H90A	92-22		001172 (9004201-9000)	O-ring	1
2	H90	95-02		None		
B	H05	93-10		8000268	Charge pump set, 11 cc (SB-1993-001*)	1
	H40	87-02		9004800-1221	Pin	1
	H50	93-10		8801177	Charge pump shaft (SB-1993-001* & SB-1998-066)	1
	H50	87-02	89-16	8000078	Charge pump shaft (SB-1989-006)	1
	H60	87-02		9003310-1206	Key	1
	H70	87-02		516761	Retaining plate	1
	H80	87-02		672493 (9007210-0604)	Screw	6
* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix.						
C	H05	93-10		8000269	Charge pump set, 14 cc (SB-1993-001*)	1
	H40	87-02		9004800-1221	Pin	1
	H50	93-10		8801177	Charge pump shaft (SB-1993-001* & SB-1998-066)	1
	H50	87-02	89-16	8000078	Charge pump shaft (SB-1989-006)	1
	H60	87-02		9003310-1206	Key	1
	H70	87-02		516761	Retaining plate	1
	H80	87-02		672493 (9007210-0604)	Screw	6
* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix.						
D	H05	93-10		8000270	Charge pump set, 17 cc (SB-1993-001*)	1
	H40	87-02		9004800-1221	Pin	1
	H50	93-10		8801177	Charge pump shaft (SB-1993-001* & SB-1998-066)	1
	H50	87-02	89-16	8000078	Charge pump shaft (SB-1989-006)	1
	H60	87-02		9003310-1206	Key	1
	H70	87-02		516761	Retaining plate	1
	H80	87-02		672493 (9007210-0604)	Screw	6
* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix.						
L	H25	87-02		342543 (8800466-0055)	Charge pump spacer	1
	H50	93-10		8801177	Charge pump shaft (SB-1993-001* & SB-1998-066)	1
	H50	87-02	89-16	8000078	Charge pump shaft (SB-1989-006)	1
	H70	87-02		516761	Retaining plate	1
	H80	87-02		672493 (9007210-0604)	Screw	6
	H90	87-02		320002 (9005110-9200)	Plug assembly	1
	H90A	87-02		001156 (9004201-7500)	O-ring	1
* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix.						
T	H70	99-11		516761	Retaining plate	1
	H80	99-11		672493 (9007210-0604)	Screw	6
	J15	99-11		8000704	Spacer assembly	1
	J40	99-11		680892 (9004104-0440)	O-ring	1



E100 713E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

AUXILIARY MOUNTING

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
AB & AD	J	87-02		8002J003-A	Aux. mounting kit, A flange, 9 tooth	1
	J10	87-02		8000075	Coupling, 9 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		8700008	Bushing	1
	J40	87-02	92-29	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8000262	Flange adaptor	1
	J70	87-02		5000601	Washer	4
	J80	87-02		324152 (9007314-1221)	Screw, M12 x 120	4
	J90	87-02		726950 (9004104-0420)	O-ring	1
	J92	87-02		9802336	Cover plate	1
	J95	87-02		9007200-3714	Screw	2

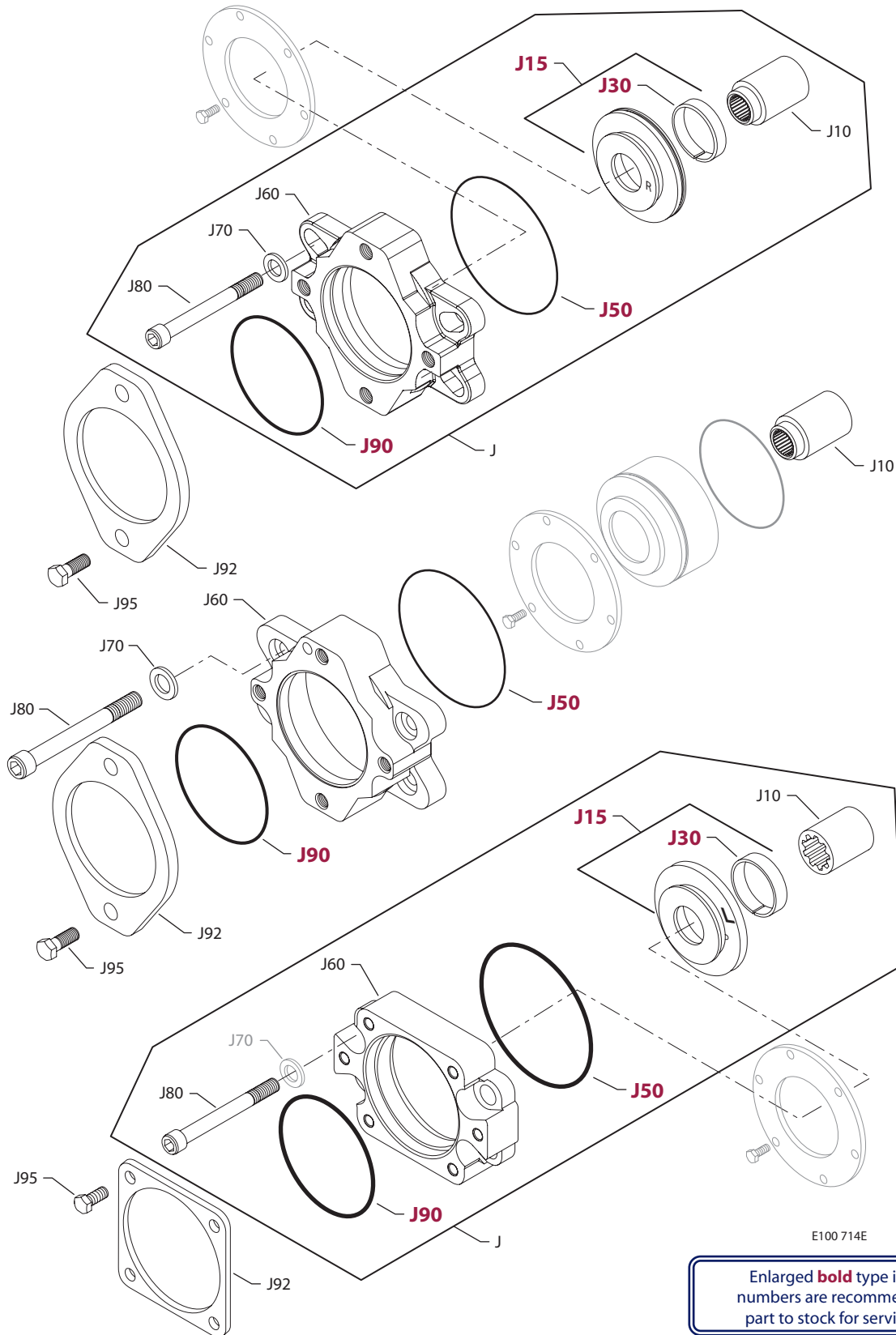
* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix.

AC & AF	J	87-02		8002J005-A	Aux. mounting kit, A flange, 11 tooth	1
	J10	87-02		8000142	Coupling, 11 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		8700008	Bushing	1
	J40	87-02	92-29	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8000262	Flange adaptor	1
	J70	87-02		5000601	Washer	4
	J80	87-02		324152 (9007314-1221)	Screw, M12 x 120	4
	J90	87-02		726950 (9004104-0420)	O-ring	1
	J92	87-02		9802336	Cover plate	1
	J95	87-02		9007200-3714	Screw	2

* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix.

BB & BK	J	87-02		8002J006-A	Aux. mounting kit, B-B flange, 15 tooth	1
	J10	87-02		8000130	Coupling, 15 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		8700008	Bushing	1
	J40	87-02	92-15	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8000263	Flange adaptor	1
	J70	87-02		5000601	Washer	4
	J80	87-02		324152 (9007314-1221)	Screw, M12 x 120	4
	J90	87-02		726935 (9004104-0450)	O-ring	1
	J92	87-02		4460370	Cover plate	1
	J95	87-02		647248 (9007200-5021)	Screw	2

* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix.



E100 714E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

AUXILIARY MOUNTING

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
BC & BG	J	87-02		8002J004-A	Aux. mounting kit, B flange, 13 tooth	1
	J10	87-02		8000076	Coupling, 13 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		8700008	Bushing	1
	J40	87-02	92-15	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8000263	Flange adaptor	1
	J70	87-02		5000601	Washer	4
	J80	87-02		324152 (9007314-1221)	Screw, M12 x 120	4
	J90	87-02		726935 (9004104-0450)	O-ring	1
	J92	87-02		4460370	Cover plate	1
	J95	87-02		647248 (9007200-5021)	Screw	2

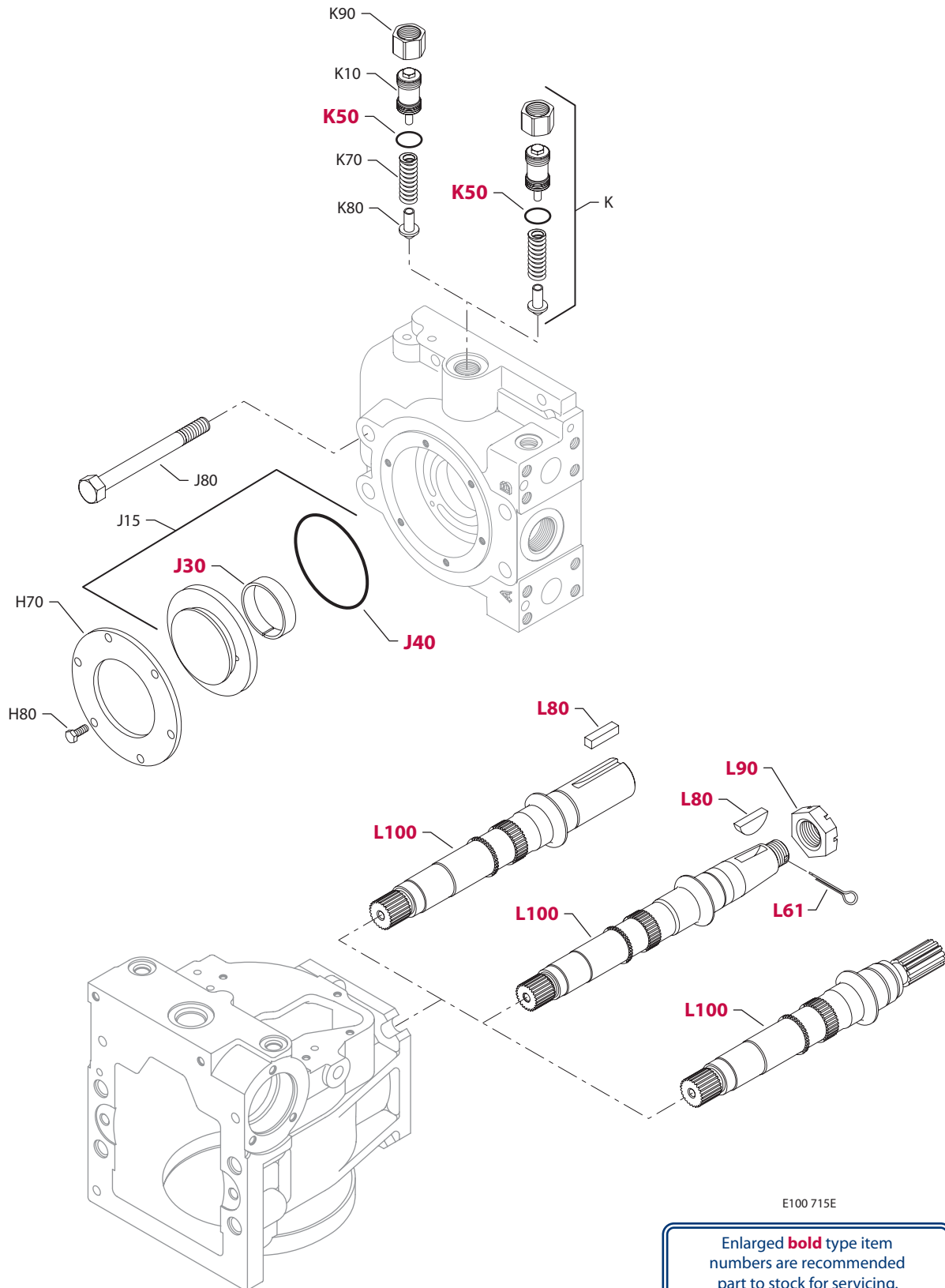
* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix.

BN	J10	98-24		8000076	Coupling, 13 tooth	1
	J50	98-24		056739 (9004104-1580)	O-ring	1
	J60	98-24		509258	Flange adaptor	1
	J70	98-24		506753	Washer	4
	J80	98-24		507585	Screw, M12 x 110	4
	J90	98-24		726935 (9004104-0450)	O-ring	1
	J92	98-24		4460370	Cover plate	1
	J95	98-24		370320	Screw	2

CD	J	87-02		8002J00C-A	Aux. mounting kit, C flange, 14 tooth	1
	J10	87-02		331710 (8000077)	Coupling, 14 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		8700008	Bushing	1
	J40	87-02	92-15	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8000643	Flange adaptor (SB-2002-050)	1
	J70	87-02	03-10	5000602	Washer (SB-2002-050)	4
	J80	87-02		324152 (9007314-1221)	Screw, M12 x 120	4
	J90	87-02		719179 (9004100-0480)	O-ring	1
	J92	87-02		8800406	Cover plate	1
	J95	87-02		647248 (9007200-5021)	Screw	2

* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix.

CG	J10	04-44		8000130	Coupling, 15 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-2005-011)	1
	J30	87-02		8700008	Bushing	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8000643	Flange adaptor	1
	J80	87-02		324152 (9007314-1221)	Screw, M12 x 120	4
	J90	87-02		719179 (9004100-0480)	O-ring	1
	J92	87-02		8800406	Cover plate	1
	J95	87-02		647248 (9007200-5021)	Screw	2



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AUXILIARY MOUNTING

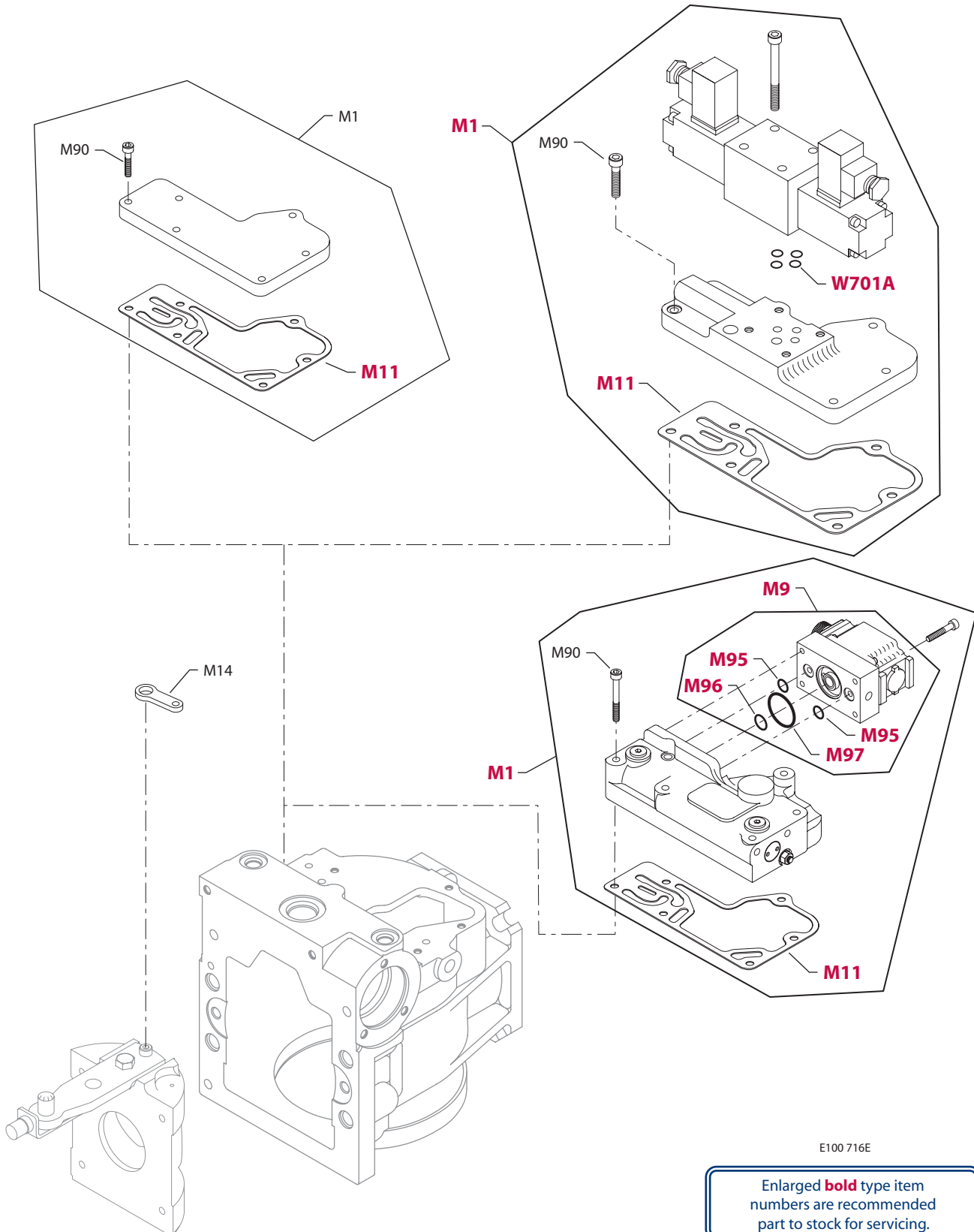
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
NN	J15	87-02		8800834	Cover assembly, (SB-1993-001)	1
	J30	87-02		8700008	Bushing	1
	J40	87-02		680892 (9004104-0440)	O-ring	1
	J80	87-02		324202 (9007210-1219)	Screw, M12 x 100	4

CHARGE PRESSURE SETTING

00-30	K	87-42		8002K000-A	Charge relief valve kit, 10-30 bar (SB-1989-002)	1
	K50	87-42		001149 (9004201-6200)	O-ring (SB-1989-002)	1
32-42	K	94-13		8510269	Charge relief valve kit, 30-42 bar	1
	K50	94-13		001149 (9004201-6200)	O-ring	1
XX	K10	96-23		502300	Adjuster	1
	K50	96-23		012559 (9004202-6200)	O-ring	1
	K70	96-23		344127	Spring	1
	K80	96-23		342428 (8800449)	Poppet	1
	K90	96-23		342709 (9003575-0101)	Nut	1

SHAFT

C6	L100	87-02		328286 (8000079)	Shaft, 21 tooth spline	1
C9	L100	96-10		503396	Shaft, 21 tooth spline	1
D9	L100	96-40		500069	Shaft, 21 tooth spline, M10 threaded tapped hole	1
K1	L80	87-36		9003261-3124	Key	1
	L100	87-36		8000175	Shaft, straight key, 1.375" diameter	1
S1	L100	87-02		8000112	Shaft, 14 tooth spline	1
T1	L61	87-34		716779 (9004600-1230)	Cotter pin	1
	L80	87-34	91-39	9003310-3724	Key	1
	L90	87-34		5000606	Slotted nut	1
	L100	87-34		8000166	Shaft, tapered	1

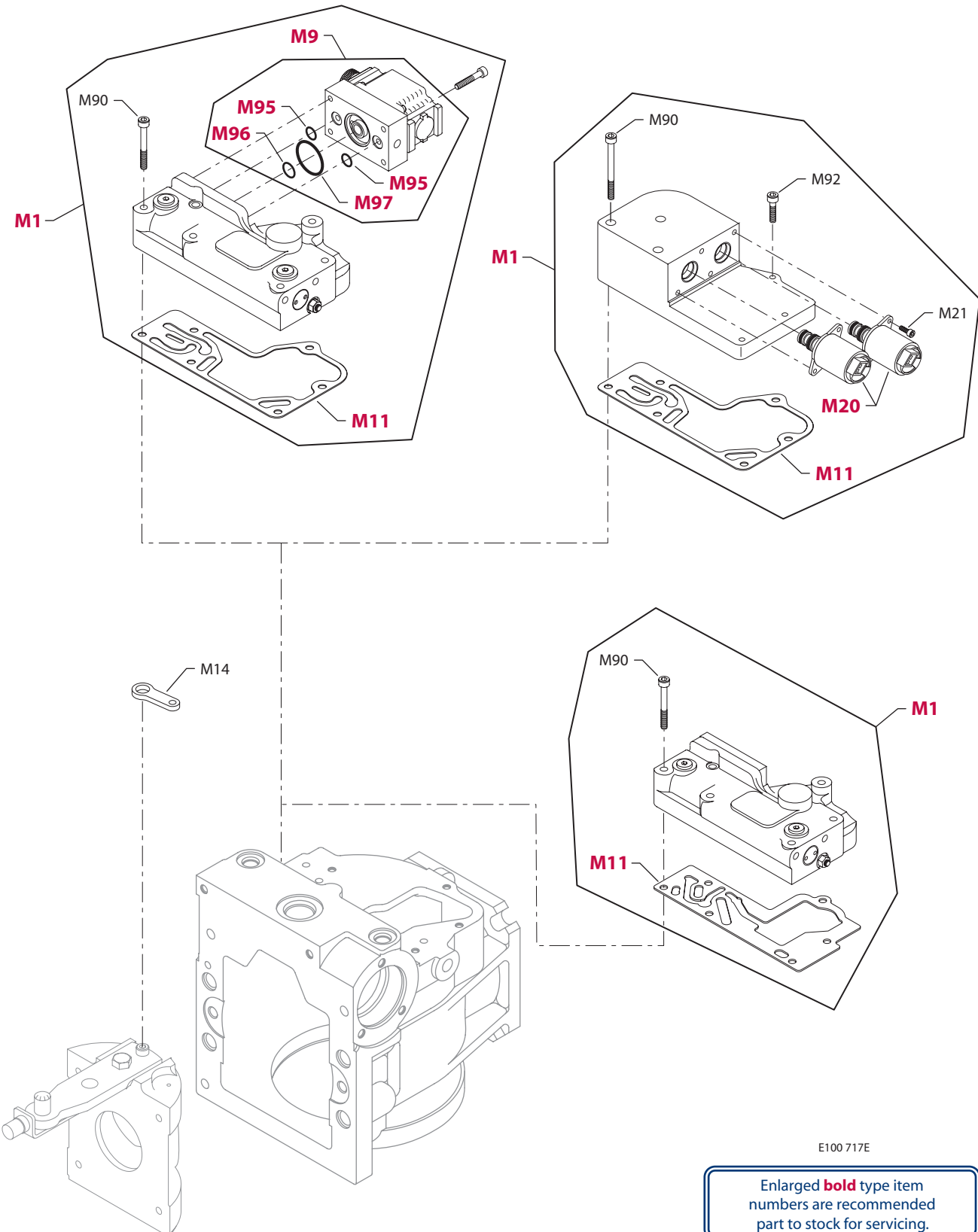


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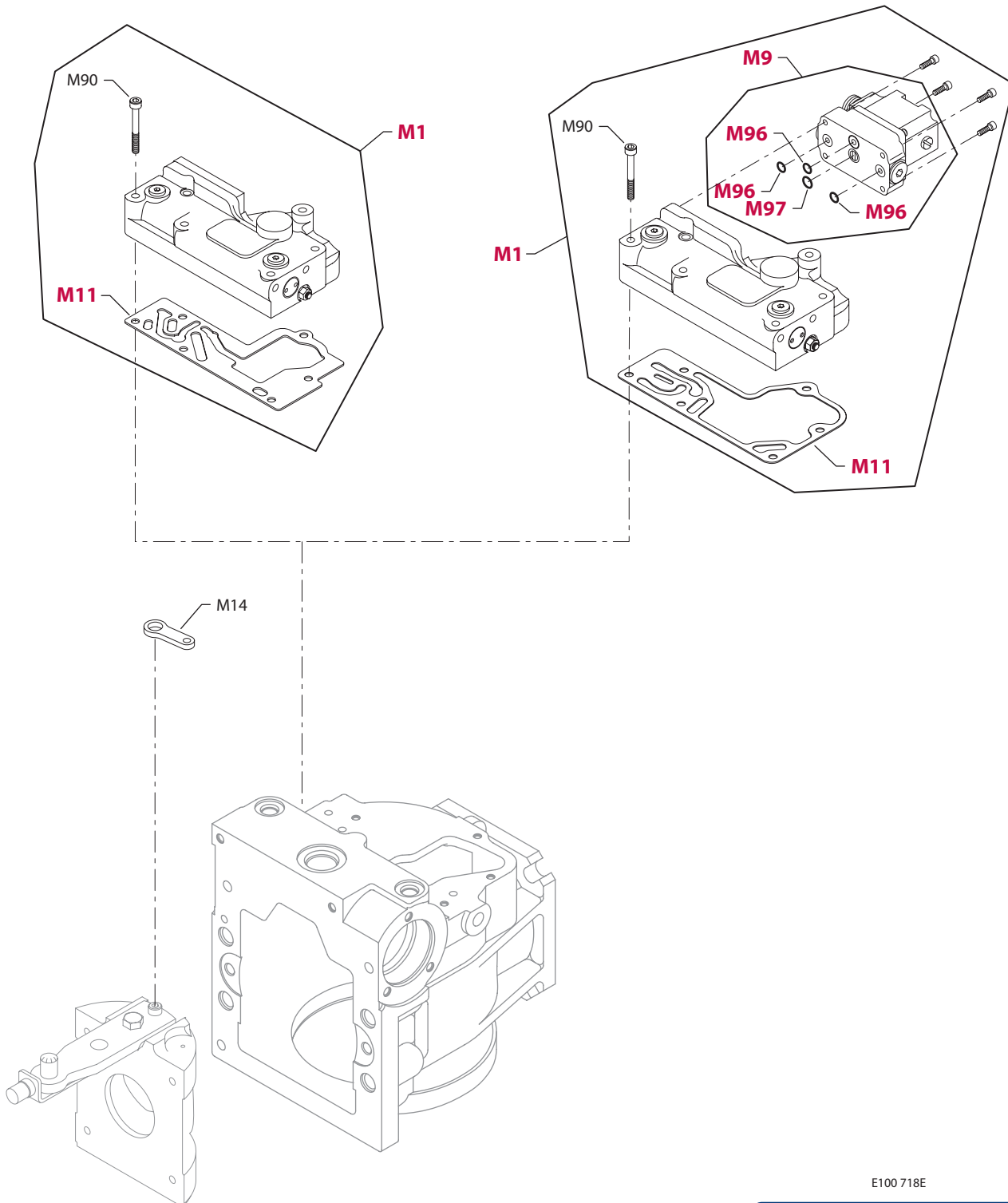
CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CA	M1	87-02		8002M0CA-A	Control cover plate kit	1
	M11	87-02		8800520	Control gasket	1
	M90	87-02		693341 (9007314-0606)	Screw	6
CB	M1	87-02		8002M0CA-A	Control cover plate kit	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	87-02		693341 (9007314-0606)	Screw	6
DC	M1	87-02		8002M0DC-A	3-position control kit, 12 volt	1
	M11	87-02		8800520	Control gasket	1
	M90	87-02		693341 (9007314-0606)	Screw	6
	W701A	87-02		048413	O-ring	4
DD	M1	87-02		8510314	3-position control kit, 24 volt	1
	M11	87-02		8800520	Control gasket	1
	M90	87-02		693341 (9007314-0606)	Screw	6
	W701A	87-02		048413	O-ring	4
EA	M1	91-16		8002M0EA-B	EDC kit, MS connector	1
	M9	91-16		MCV110A1017	PCP, MS connector	1
	M11	91-16		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	91-16	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	91-16		692889 (9007314-0611)	Screw	6
	M95	91-16		318337 (9004104-0120)	O-ring	2
	M96	91-16		011304 (9004104-0140)	O-ring	1
	M97	91-16		318345 (9004104-0240)	O-ring	1
EK	M1	99-16		8510379	EDC kit, Deutsch connector	1
	M9	99-16		MCV110A1014	PCP, Deutsch connector	1
	M11	99-16		8800520	Control gasket	1
	M14	99-16		8000602	Feedback link	1
	M90	99-16		692889 (9007314-0611)	Screw	6
	M95	99-16		318337 (9004104-0120)	O-ring	2
	M96	99-16		011304 (9004104-0140)	O-ring	1
	M97	99-16		318345 (9004104-0240)	O-ring	1
	EP	M1	91-07		8002M0EP-B	EDC kit, Packard connector
M9		91-07		MCV110A1058	PCP, Packard connector	1
M11		91-07		8800520	Control gasket	1
M14		96-40		8000602	Feedback link (SB-1999-019)	1
M14		91-07	96-39	8000481	Feedback link (SB-1996-009)	1
M90		91-07		692889 (9007314-0611)	Screw	6
M95		91-07		318337 (9004104-0120)	O-ring	2
M96		91-07		011304 (9004104-0140)	O-ring	1
M97		91-07		318345 (9004104-0240)	O-ring	1



CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
EX	M1	93-16		8002M0EX-B	EDC kit, Metri-pack connector	1
	M9	93-16		MCV110A1090	PCP, Metri-pack connector	1
	M11	93-16		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	93-16	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	93-16		692889 (9007314-0611)	Screw	6
	M95	93-16		318337 (9004104-0120)	O-ring	2
	M96	93-16		011304 (9004104-0140)	O-ring	1
	M97	93-16		318345 (9004104-0240)	O-ring	1
FC	M1	98-14		8510220	NFPE control, 12 volt, 32 bar	1
	M11	98-14		8800520	Control gasket	1
	M20	98-14		518079	Solenoid valve, 12 volt, 32 bar	2
	M21	98-14		067694	Screw	4
	M90	98-14		348847	Screw	3
	M92	98-14		041160 (9007314-0605)	Screw	3
FD	M1	98-14		8510380	NFPE control, 24 volt, 32 bar	1
	M11	98-14		8800520	Control gasket	1
	M20	98-14		517214	Solenoid valve, 24 volt, 32 bar	2
	M21	98-14		067694	Screw	4
	M90	98-14		348847	Screw	3
	M92	98-14		041160 (9007314-0605)	Screw	3
HF	M1	92-15		8002M0HF-A	HDC kit, 3-11 bar	1
	M11	92-15		K11419	Control gasket (SB-1993-002)	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	92-15	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	92-15		692889 (9007314-0611)	Screw	6
HK	M1	92-15		8002M0HK-A	HDC kit, 1-11 bar	1
	M11	92-15		K11419	Control gasket (SB-1993-002)	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	92-15	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	92-15		692889 (9007314-0611)	Screw	6
HM	M1	92-15		8002M0HM-A	HDC kit, 1.1 -6.7 bar	1
	M11	92-15		K11419	Control gasket (SB-1993-002)	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	92-15	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	92-15		692889 (9007314-0611)	Screw	6
HP	M1	94-05		8002M0HP-A	HDC kit, 4-19 bar	1
	M11	94-05		K11419	Control gasket (SB-1993-002)	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	92-15	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	92-15		692889 (9007314-0611)	Screw	6

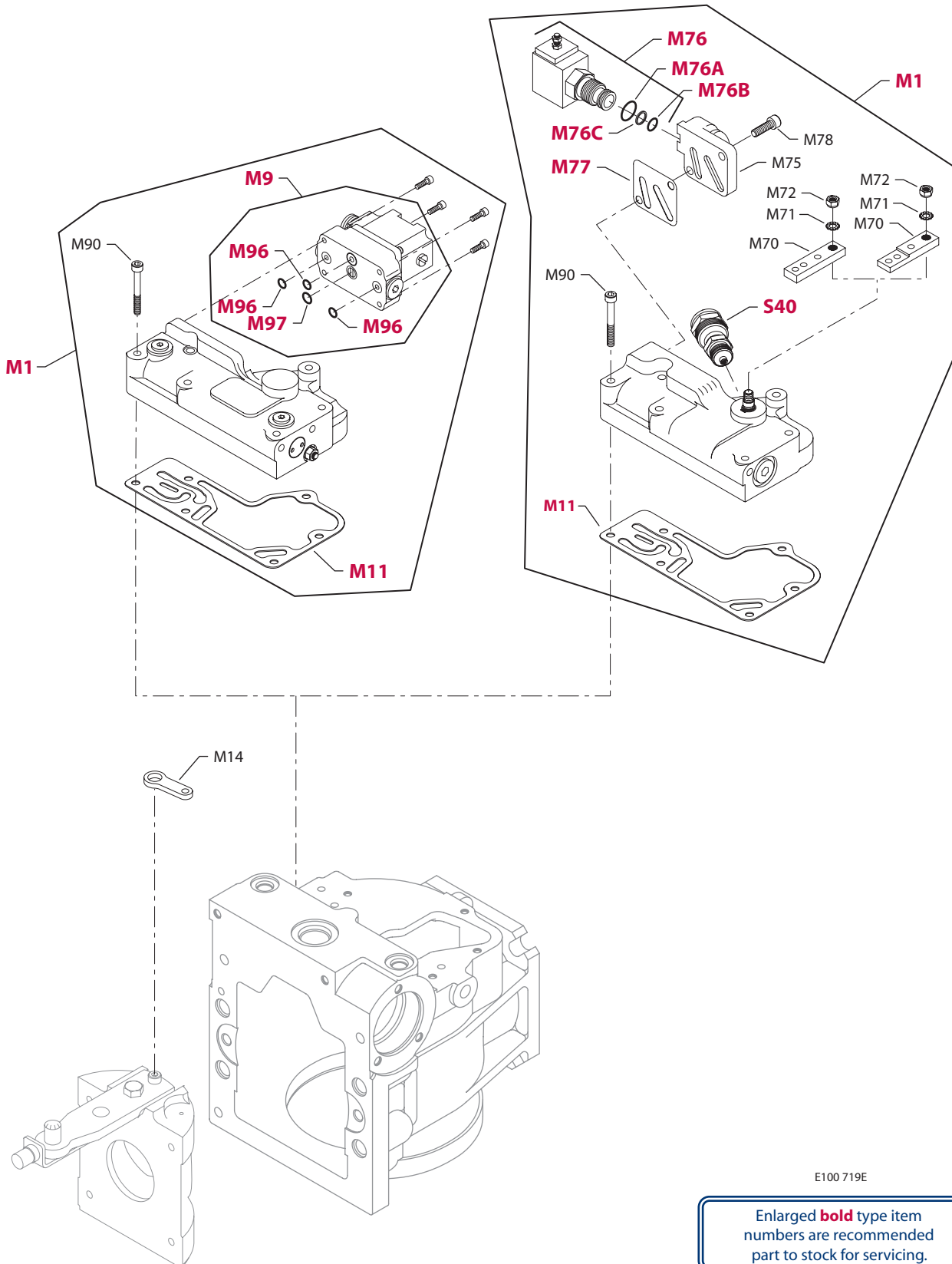


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CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
HS	M1	94-19		8002M0HS-A	HDC kit, 6-18 bar	1
	M11	94-19		K11419	Control gasket (SB-1993-002)	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	94-19	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	94-19		692889 (9007314-0611)	Screw	6
JB	M1	02-22		8510305	HDC kit, 5-15 bar	1
	M11	02-22		K11419	Control gasket	1
	M14	02-22		8000602	Feedback link	1
	M90	02-22		692889 (9007314-0611)	Screw	6
KA	M1	95-26		8510113	EDC3 kit, MS connector, dual coil	1
	M9	95-26		MCV116G4201	PCP, MS connector, dual coil	1
	M11	95-26		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	95-26	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	95-26		692889 (9007314-0611)	Screw	6
	M96	95-26		011296 (9004105-0120)	O-ring	3
	M97	95-26		9004105-0130	O-ring	1
KN	M1	95-51		8510381	EDC3 kit, MS connector, single coil	1
	M9	95-51		MCV116A3501	PCP, MS connector, single coil	1
	M11	95-51		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	95-51	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	95-51		692889 (9007314-0611)	Screw	6
	M96	95-51		011296 (9004105-0120)	O-ring	3
	M97	95-51		9004105-0130	O-ring	1
KP	M1	95-26		8510114	EDC3 kit, Weather-pack connector, dual coil	1
	M9	95-26		MCV116G4204	PCP, Weather-pack connector, dual coil	1
	M11	95-26		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	95-51	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	95-26		692889 (9007314-0611)	Screw	6
	M96	95-26		011296 (9004105-0120)	O-ring	3
	M97	95-26		9004105-0130	O-ring	1
KS	M1	97-30		8510177	EDC3 kit, MS connector, dual coil	1
	M9	97-30		MCV116G4201	PCP, MS connector, dual coil	1
	M11	97-30		8800520	Control gasket	1
	M14	97-30		8000602	Feedback link	1
	M90	97-30		692889 (9007314-0611)	Screw	6
	M96	97-30		011296 (9004105-0120)	O-ring	3
	M97	97-30		9004105-0130	O-ring	1

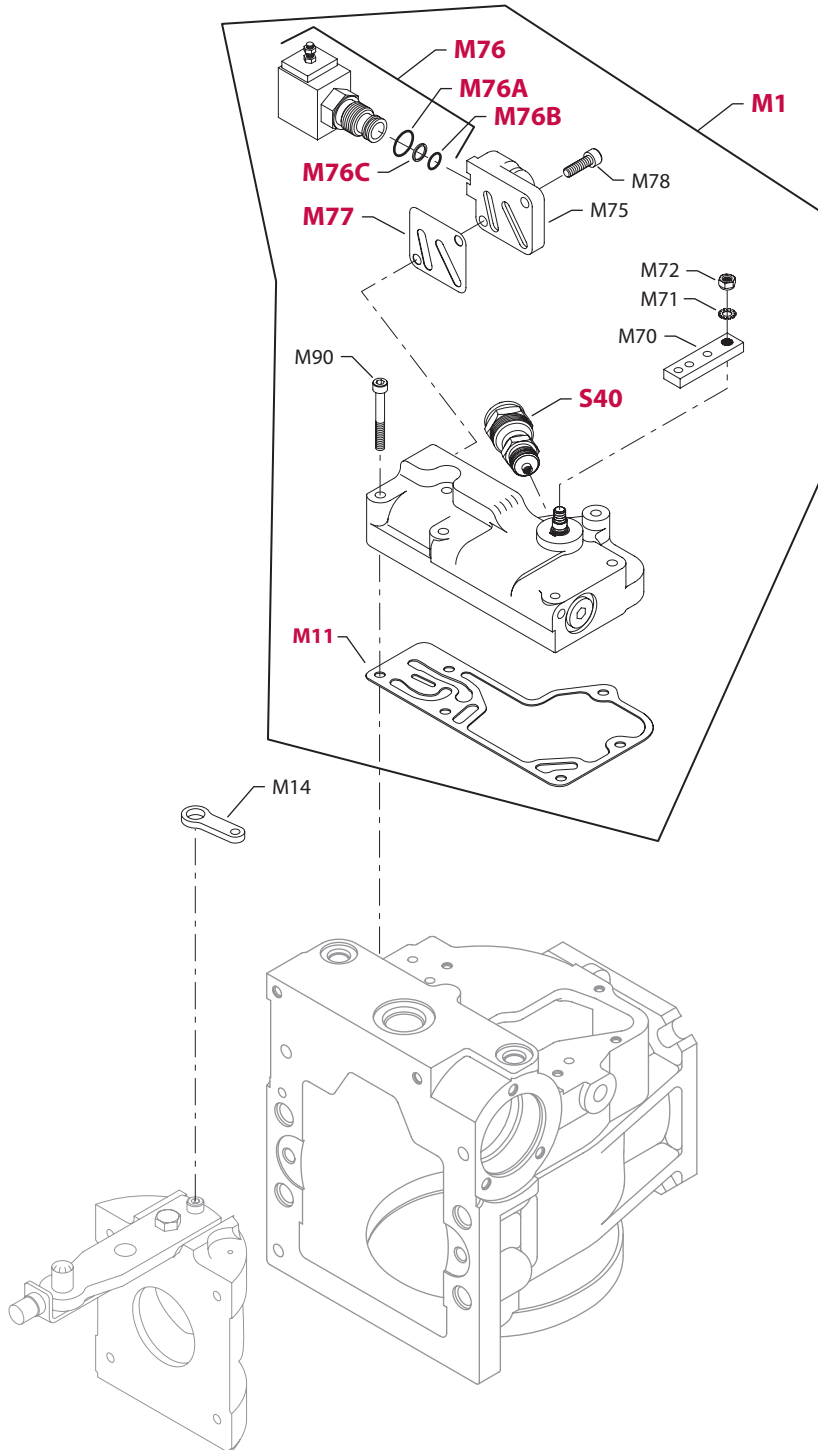


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CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
KT	M1	03-10		8510317	EDC3 kit, Deutsch connector, dual coil	1	
	M9	03-10		MCV116G4214	PCP, Deutsch connector, dual coil	1	
	M11	03-10		8800520	Control gasket	1	
	M14	03-10		8000602	Feedback link	1	
	M90	03-10		692889 (9007314-0611)	Screw	6	
	M96	03-10		011296 (9004105-0120)	O-ring	3	
	M97	03-10		9004105-0130	O-ring	1	
	KZ	M1	98-10		8510355	EDC3 kit, Weather-pack connector, dual coil	1
M9		98-10		MCV116G4204	PCP, Weather-pack connector	1	
M11		98-10		8800520	Control gasket	1	
M14		98-10		8000602	Feedback link	1	
M90		98-10		692889 (9007314-0611)	Screw	6	
M96		98-10		011296 (9004105-0120)	O-ring	3	
M97		98-10		9004105-0130	O-ring	1	
LE		M1	01-27		8510301	MDC kit, high force neutral start switch	1
	M11	01-27		8800520	Control gasket	1	
	M14	01-27		8000602	Feedback link	1	
	M70	01-27		9800916	Control handle	1	
	M71	01-27		9009660-3100	Toothlock washer	1	
	M72	01-27		040642 (9003513-0800)	Nut	1	
	M90	01-27		692889 (9007314-0611)	Screw	6	
	S40	01-27		8510316	Neutral start switch kit, high force, Weather-pack	1	
	LL	M1	00-07		8510373	MDC kit w/12 volt solenoid, high force nss	1
M11		00-07		8800520	Control gasket	1	
M14		00-07		8000602	Feedback link	1	
M70		00-07		9800916	Control handle	1	
M71		00-07		9009660-3100	Toothlock washer	1	
M72		00-07		040642 (9003513-0800)	Nut	1	
M75		00-07		505022	Control manifold	1	
M76		00-07		326108 (8700119)	Solenoid valve, 12 volt, single pole	1	
M76A		00-07		001131 (9004201-5000)	O-ring	1	
M76B		00-07		9006150-0140	Back up ring	1	
M76C		00-07		000810 (9004100-0140)	O-ring	1	
M77		00-07		8800882	Manifold gasket	1	
M78		00-07		693341 (9007314-0606)	Screw	2	
M90		00-07		692889 (9007314-0611)	Screw	6	
S40		00-07		8510316	Neutral start switch kit, high force	1	
LM		M1	01-27		8510382	MDC kit, high force neutral start switch	1
		M11	01-27		8800520	Control gasket	1
	M14	01-27		8000602	Feedback link	1	
	M70	01-27		8801260	Control handle	1	
	M71	01-27		9009660-3100	Toothlock washer	1	
	M72	01-27		040642 (9003513-0800)	Nut	1	
	M90	01-27		692889 (9007314-0611)	Screw	6	
	S40	01-27		8510027	Neutral start switch kit, high force	1	

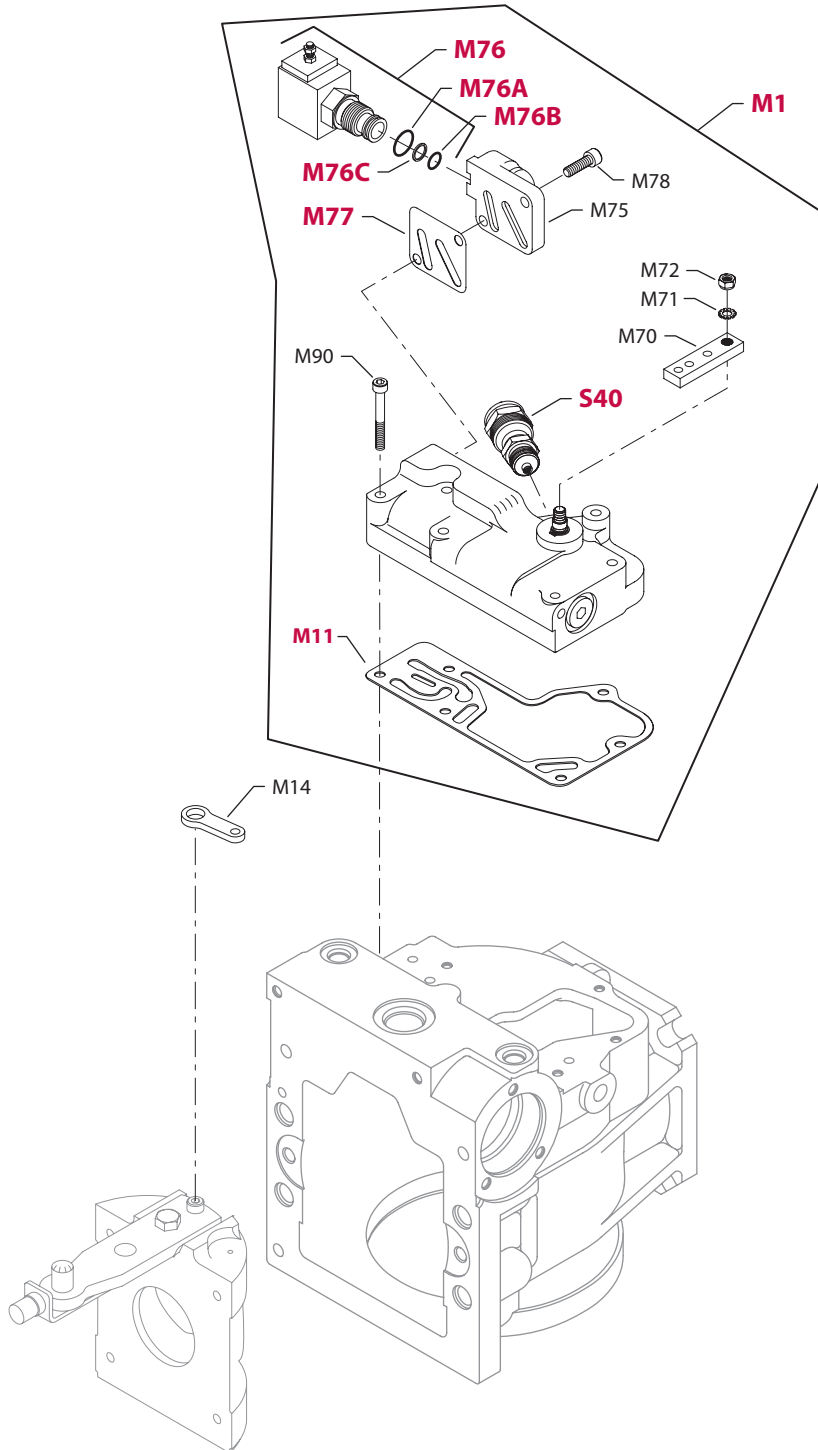


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CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M1	M1	95-37		8510109	MDC kit, brass sleeve	1
	M11	95-37		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	95-37	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	95-37		9800916	Control handle	1
	M71	95-37		9009660-3100	Toothlock washer	1
	M72	95-37		040642 (9003513-0800)	Nut	1
	M90	95-37		692889 (9007314-0611)	Screw	6
	M2	M1	95-37		8510110	MDC kit, with neutral start switch, brass sleeve
M11		95-37		8800520	Control gasket	1
M14		96-40		8000602	Feedback link (SB-1999-019)	1
M14		95-37	96-39	8000481	Feedback link (SB-1996-009)	1
M70		95-37		9800916	Control handle	1
M71		95-37		9009660-3100	Toothlock washer	1
M72		95-37		040642 (9003513-0800)	Nut	1
M90		95-37		692889 (9007314-0611)	Screw	6
S40		95-37		80020540	Neutral start switch kit	1
M4	M1	96-22		8510264	MDC kit,	1
	M11	96-22		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	96-22	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	96-22		9800916	Control handle	1
	M71	96-22		9009660-3100	Toothlock washer	1
	M72	96-22		040642 (9003513-0800)	Nut	1
	M90	96-22		692889 (9007314-0611)	Screw	6
	M5	M1	96-22		8510168	MDC kit w/12 v.olt solenoid, neutral start switch
M11		96-22		8800520	Control gasket	1
M14		96-40		8000602	Feedback link (SB-1999-019)	1
M14		95-37	96-39	8000481	Feedback link (SB-1996-009)	1
M70		96-22		9800916	Control handle	1
M71		96-22		9009660-3100	Toothlock washer	1
M72		96-22		040642 (9003513-0800)	Nut	1
M75		96-22		505022	Control manifold	1
M76		96-22		326108 (8700119)	Solenoid valve, 12 volt, single pole	1
M76A		96-22		001131 (9004201-5000)	O-ring	1
M76B		96-22		9006150-0140	Back up ring	1
M76C		96-22		000810 (9004100-0140)	O-ring	1
M77		96-22		8800882	Manifold gasket	1
M78		96-22		693341 (9007314-0606)	Screw	2
M90		96-22		692889 (9007314-0611)	Screw	6
S40		96-22		8510170	Neutral start switch kit, Weather-pack	1

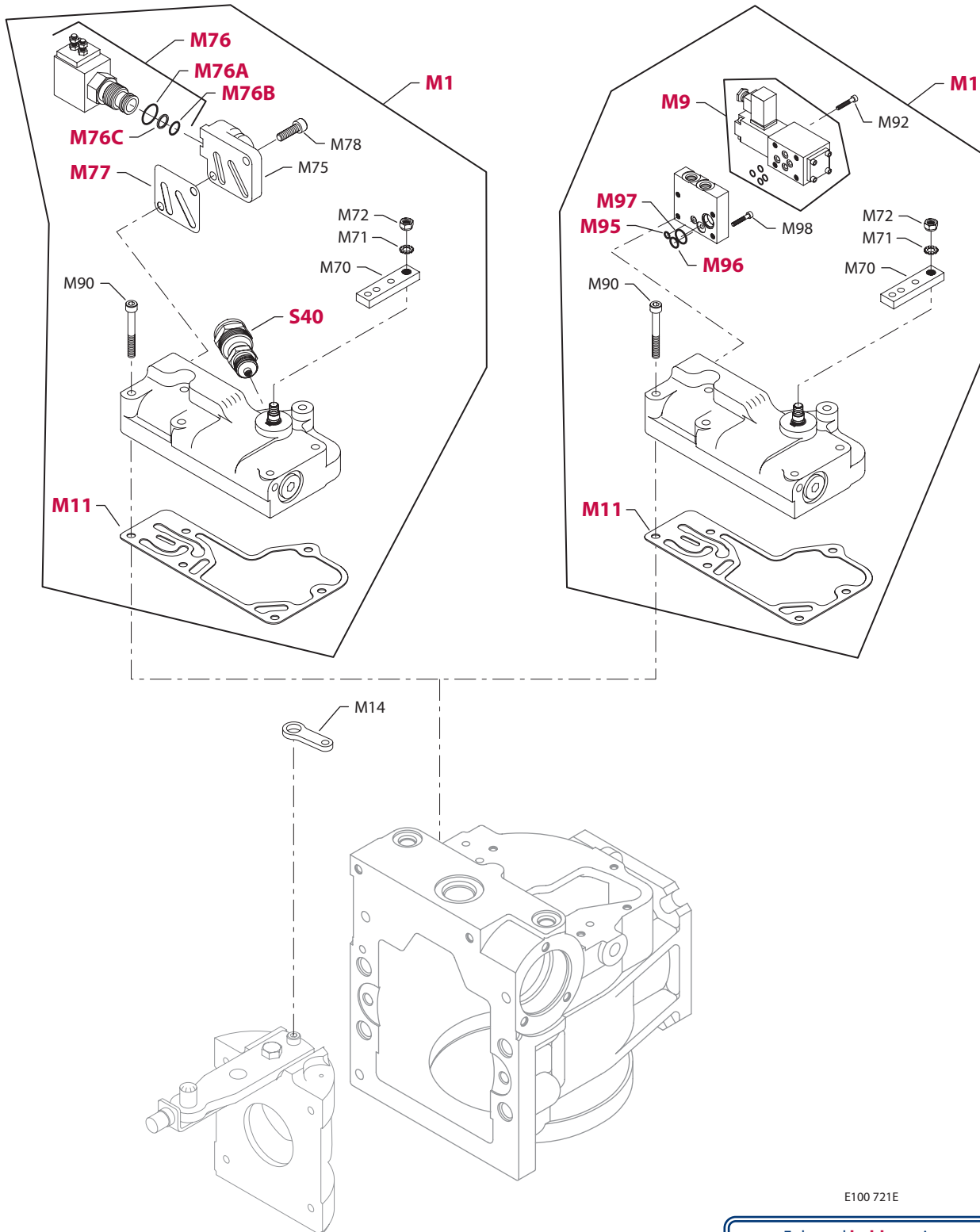


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CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M6	M1	96-22		8510183	MDC kit w/12 volt single pole solenoid,	1
	M11	96-22		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	96-22	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	96-22		9800916	Control handle	1
	M71	96-22		9009660-3100	Toothlock washer	1
	M72	96-22		040642 (9003513-0800)	Nut	1
	M75	96-22		505022	Control manifold	1
	M76	96-22		326108 (8700119)	Solenoid valve, 12 volt, single pole	1
	M76A	96-22		001131 (9004201-5000)	O-ring	1
	M76B	96-22		9006150-0140	Back up ring	1
	M76C	96-22		000810 (9004100-0140)	O-ring	1
	M77	96-22		8800882	Manifold gasket	1
	M78	96-22		693341 (9007314-0606)	Screw	2
	M90	96-22		692889 (9007314-0611)	Screw	6
MA	M1	87-02		8002M0MA-A	MDC kit	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M90	87-02		692889 (9007314-0611)	Screw	6
	MB	M1	87-02		8002M0MB-A	MDC kit, with neutral start switch
M11		87-02		8800520	Control gasket	1
M14		96-40		8000602	Feedback link (SB-1999-019)	1
M14		87-02	96-39	8000481	Feedback link (SB-1996-009)	1
M70		87-02		9800916	Control handle	1
M71		87-02		9009660-3100	Toothlock washer	1
M72		87-02		040642 (9003513-0800)	Nut	1
M90		87-02		692889 (9007314-0611)	Screw	6
S40		87-02		80020S40	Neutral start switch kit	1
MC		M1	87-02		8002M0MC-A	MDC kit w/12 volt solenoid, single pole
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M75	87-02		505022	Control manifold (SB-1995-003)	1
	M76	87-02		9700803	Solenoid valve, 12 volt, single pole	1
	M77	87-02		8800882	Manifold gasket	1
	M78	95-10		693341 (9007314-0606)	Screw (SB-1995-003)	2
	M78	87-02	95-09	041160 (9007314-0605)	Screw	2
	M90	87-02		692889 (9007314-0611)	Screw	6

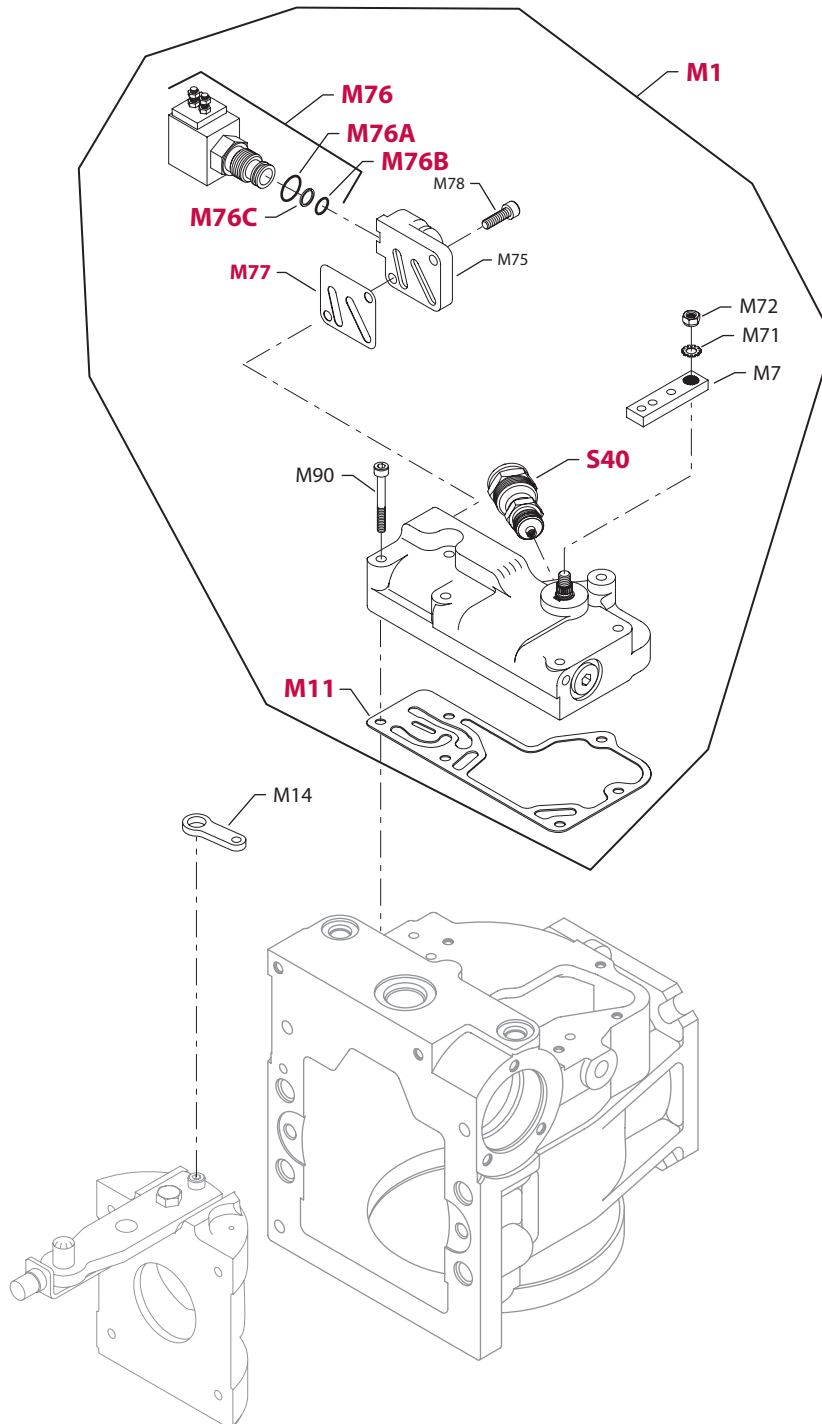


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
MD	M1	87-02		8002M0MD-A	MDC kit w/12 volt double pole solenoid, high force nss	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M75	87-02		505022	Control manifold (SB-1995-003)	1
	M76	87-02		326108 (9700886)	Solenoid valve, 12 volt, double pole	1
	M76A	87-02		001131 (9004201-5000)	O-ring	1
	M76B	87-02		9006150-0140	Back up ring	1
	M76C	87-02		000810 (9004100-0140)	O-ring	1
	M77	87-02		8800882	Manifold gasket	1
	M78	95-10		693341 (9007314-0606)	Screw (SB-1995-003)	2
	M78	87-02	95-09	041160 (9007314-0605)	Screw	2
	M90	87-02		692889 (9007314-0611)	Screw	6
	S40	87-02		709014 (8510027)	Neutral start switch kit, high force	1
ME	M1	87-02		8002M0ME-A	MDC kit w/2-position solenoid valve, 12 volt	1
	M9	87-02		519357	Solenoid valve, 2-position, 12 volt	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M90	87-02		692889 (9007314-0611)	Screw	6
	M92	87-02		9007315-0510	Screw	4
	M95	87-02		144725 (9004105-0110)	O-ring	1
	M96	87-02		056770 (9004105-0150)	O-ring	1
	M97	87-02		544742 (9004105-0190)	O-ring	1
	M98	87-02		9007315-0505	Screw	4
MF	M1	87-02		8002M0MF-A	MDC kit w/24 volt solenoid, double pole	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M75	87-02		505022	Control manifold (SB-1995-003)	1
	M76	87-02		711028 (8700087)	Solenoid valve, 24 volt, double pole	1
	M76A	87-02		001131 (9004201-5000)	O-ring	1
	M76B	87-02		9006150-0140	Back up ring	1
	M76C	87-02		000810 (9004100-0140)	O-ring	1
	M77	87-02		8800882	Manifold gasket	1
	M78	95-10		693341 (9007314-0606)	Screw (SB-1995-003)	2
	M78	87-02	95-09	041160 (9007314-0605)	Screw	2
	M90	87-02		692889 (9007314-0611)	Screw	6

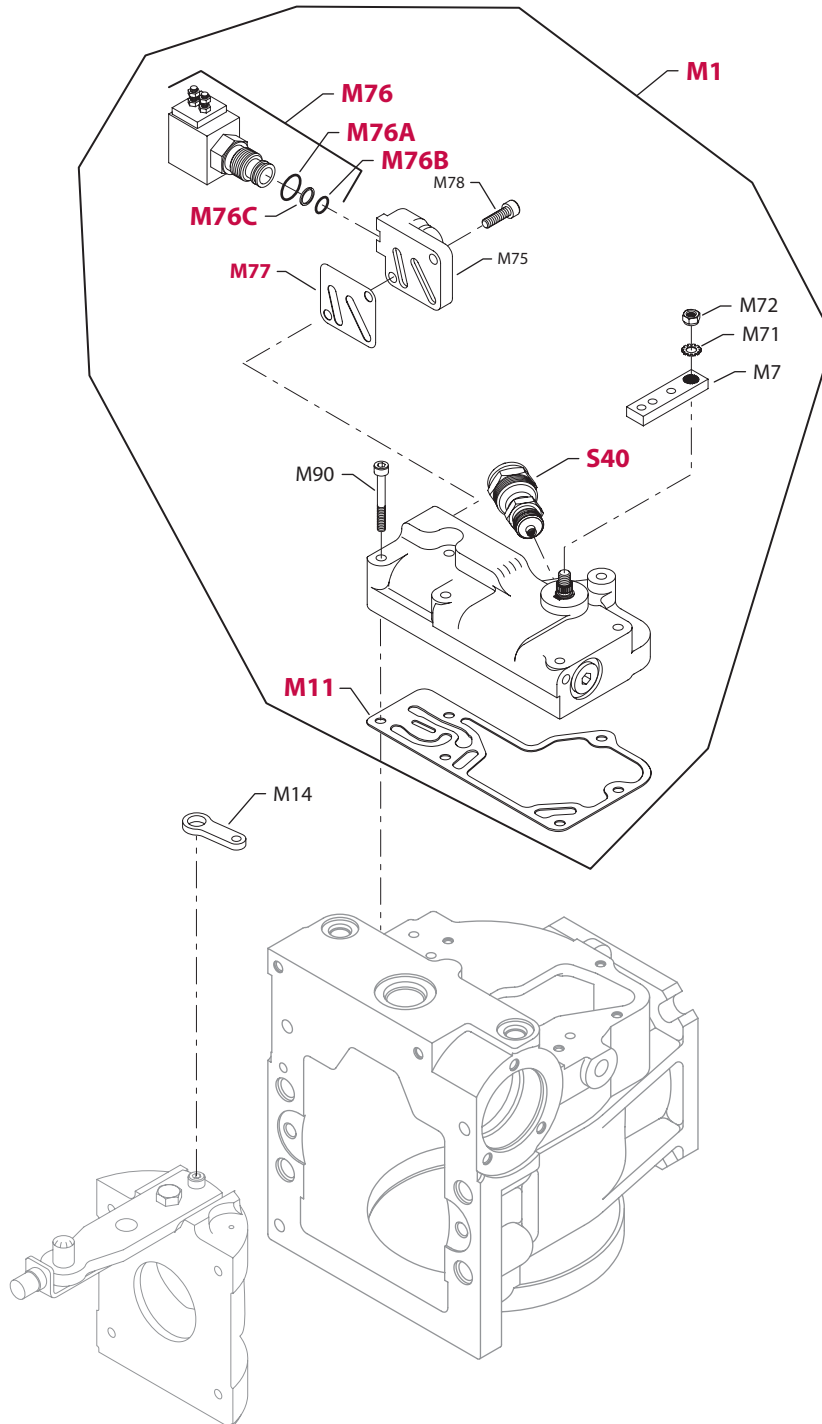


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
MG	M1	87-02		8002M0MG-A	MDC kit w/24 volt solenoid, double pole, nss	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M75	87-02		505022	Control manifold (SB-1995-003)	1
	M76	87-02		711028 (8700087)	Solenoid valve, 24 volt, double pole	1
	M76A	87-02		001131 (9004201-5000)	O-ring	1
	M76B	87-02		9006150-0140	Back up ring	1
	M76C	87-02		000810 (9004100-0140)	O-ring	1
	M77	87-02		8800882	Manifold gasket	1
	M78	95-10		693341 (9007314-0606)	Screw (SB-1995-003)	2
	M78	87-02	95-09	041160 (9007314-0605)	Screw	2
	M90	87-02		692889 (9007314-0611)	Screw	6
S40	87-02		80020S40	Neutral start switch kit	1	
MH	M1	99-12		8510383	MDC kit w/reduced deadband	1
	M11	99-12		8800520	Control gasket	1
	M14	99-12		8000602	Feedback link (SB-1999-019)	1
	M70	99-12		9800916	Control handle	1
	M71	99-12		9009660-3100	Toothlock washer	1
	M72	99-12		040642 (9003513-0800)	Nut	1
	M90	99-12		692889 (9007314-0611)	Screw	6
	MK	M1	87-02		8002M0MK-A	MDC kit w/wide deadband, nss
M11		87-02		8800520	Control gasket	1
M14		96-40		8000602	Feedback link (SB-1999-019)	1
M14		87-02	96-39	8000481	Feedback link (SB-1996-009)	1
M70		87-02		9800916	Control handle	1
M71		87-02		9009660-3100	Toothlock washer	1
M72		87-02		040642 (9003513-0800)	Nut	1
M90		87-02		692889 (9007314-0611)	Screw	6
S40		87-02		80020S40	Neutral start switch kit	1
ML		M1	87-02		8510356	MDC kit w/wide deadband, high force nss
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M90	87-02		692889 (9007314-0611)	Screw	6
	S40	87-02		709014 (8510027)	Neutral start switch kit, high force	1

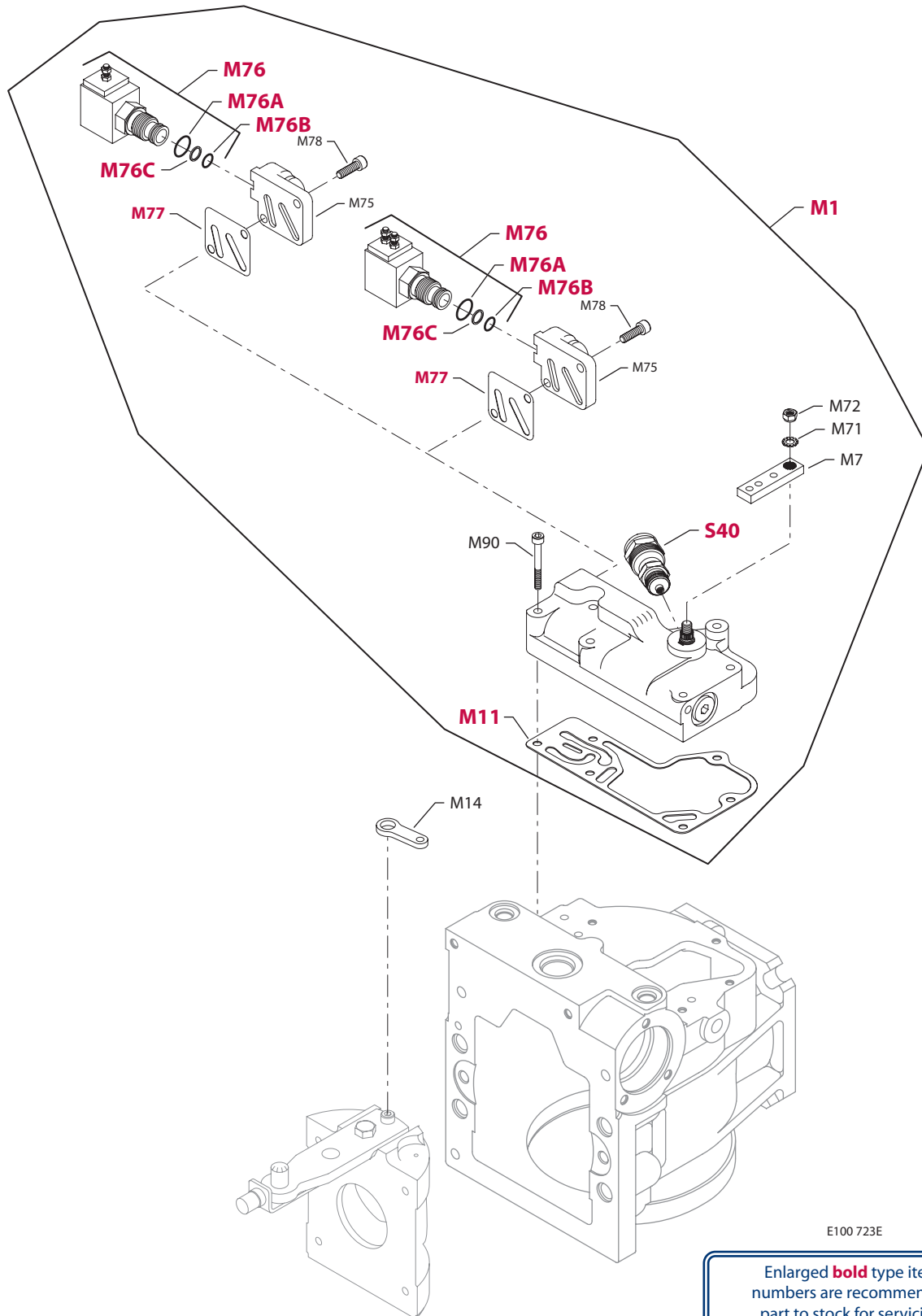


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
MR	M1	87-02		8002M0MR-A	MDC kit w/24 volt solenoid, double pole, high force nss	1	
	M11	87-02		8800520	Control gasket	1	
	M14	96-40		8000602	Feedback link (SB-1999-019)	1	
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1	
	M70	87-02		9800916	Control handle	1	
	M71	87-02		9009660-3100	Toothlock washer	1	
	M72	87-02		040642 (9003513-0800)	Nut	1	
	M75	87-02		505022	Control manifold (SB-1995-003)	1	
	M76	87-02		711028 (8700087)	Solenoid valve, 24 volt, double pole	1	
	M76A	87-02		001131 (9004201-5000)	O-ring	1	
	M76B	87-02		9006150-0140	Back up ring	1	
	M76C	87-02		000810 (9004100-0140)	O-ring	1	
	M77	87-02		8800882	Manifold gasket	1	
	M78	95-10		693341 (9007314-0606)	Screw (SB-1995-003)	2	
	M78	87-02	95-09	041160 (9007314-0605)	Screw	2	
	M90	87-02		692889 (9007314-0611)	Screw	6	
	S40	87-02		709014 (8510027)	Neutral start switch kit, high force	1	
	MS	M1	87-02		8510127	MDC kit, high force nss	1
		M11	87-02		8800520	Control gasket	1
		M14	96-40		8000602	Feedback link (SB-1999-019)	1
M14		87-02	96-39	8000481	Feedback link (SB-1996-009)	1	
M70		87-02		9800916	Control handle	1	
M71		87-02		9009660-3100	Toothlock washer	1	
M72		87-02		040642 (9003513-0800)	Nut	1	
M90		87-02		692889 (9007314-0611)	Screw	6	
S40		87-02		709014 (8510027)	Neutral start switch kit, high force	1	
MT		M1	01-50		8510319	MDC kit w/12 volt solenoid, double pole	1
	M11	01-50		8800520	Control gasket	1	
	M14	01-50		8000602	Feedback link	1	
	M70	01-50		9800916	Control handle	1	
	M71	01-50		9009660-3100	Toothlock washer	1	
	M72	01-50		040642 (9003513-0800)	Nut	1	
	M75	01-50		505022	Control manifold	1	
	M76	01-50		326108 (9700886)	Solenoid valve, 12 volt, double pole	1	
	M76A	01-50		001131 (9004201-5000)	O-ring	1	
	M76B	01-50		9006150-0140	Back up ring	1	
	M76C	01-50		000810 (9004100-0140)	O-ring	1	
	M77	01-50		8800882	Manifold gasket	1	
	M78	01-50		693341 (9007314-0606)	Screw	2	
	M90	01-50		692889 (9007314-0611)	Screw	6	

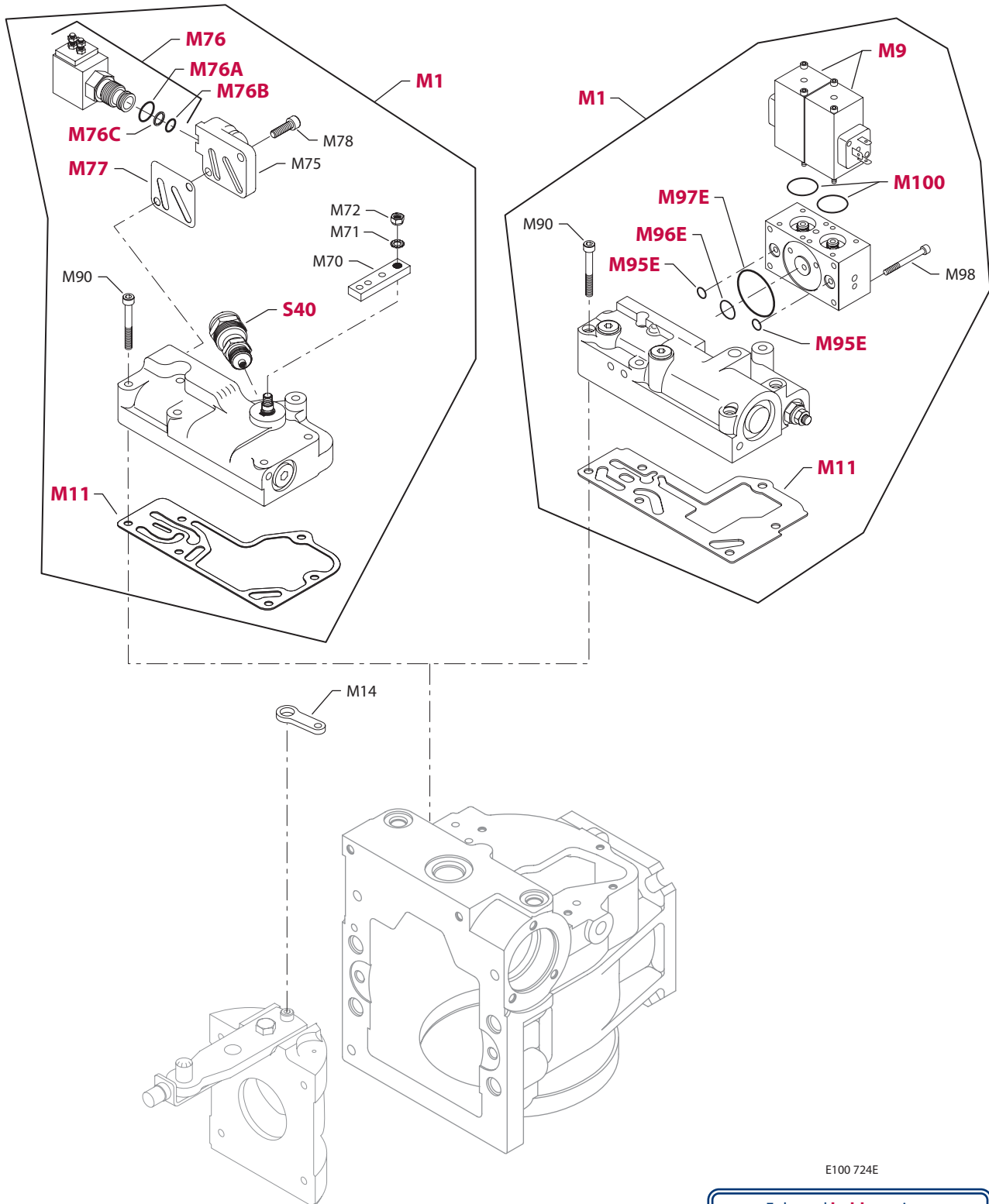


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
MU	M1	87-02		8510128	MDC kit w/12 volt solenoid, double pole, nss	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M75	87-02		505022	Control manifold (SB-1995-003)	1
	M76	87-02		326108 (9700886)	Solenoid valve, 12 volt, double pole	1
	M76A	87-02		001131 (9004201-5000)	O-ring	1
	M76B	87-02		9006150-0140	Back up ring	1
	M76C	87-02		000810 (9004100-0140)	O-ring	1
	M77	87-02		8800882	Manifold gasket	1
	M78	95-10		693341 (9007314-0606)	Screw (SB-1995-003)	2
	M78	87-02	95-09	041160 (9007314-0605)	Screw	2
	M90	87-02		692889 (9007314-0611)	Screw	6
	S40	87-02		8510170	Neutral start switch kit, weather pack connector, 2-way	1
MV	M1	87-02		8510129	MDC kit, nss w/weatherpack connector, 2-way	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M90	87-02		692889 (9007314-0611)	Screw	6
	S40	87-02		8510170	Neutral start switch kit, weather pack connector, 2-way	1
MX	M1	87-02		8510063	MDC kit w/12 volt solenoid, single pole	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M75	87-02		505022	Control manifold (SB-1995-003)	1
	M76	87-02		8700119	Solenoid valve, 12 volt, single pole	1
	M76A	87-02		001131 (9004201-5000)	O-ring	1
	M76B	87-02		9006150-0140	Back up ring	1
	M76C	87-02		000810 (9004100-0140)	O-ring	1
	M77	87-02		8800882	Manifold gasket	1
	M78	95-10		693341 (9007314-0606)	Screw (SB-1995-003)	2
	M78	87-02	95-09	041160 (9007314-0605)	Screw	2
	M90	87-02		692889 (9007314-0611)	Screw	6

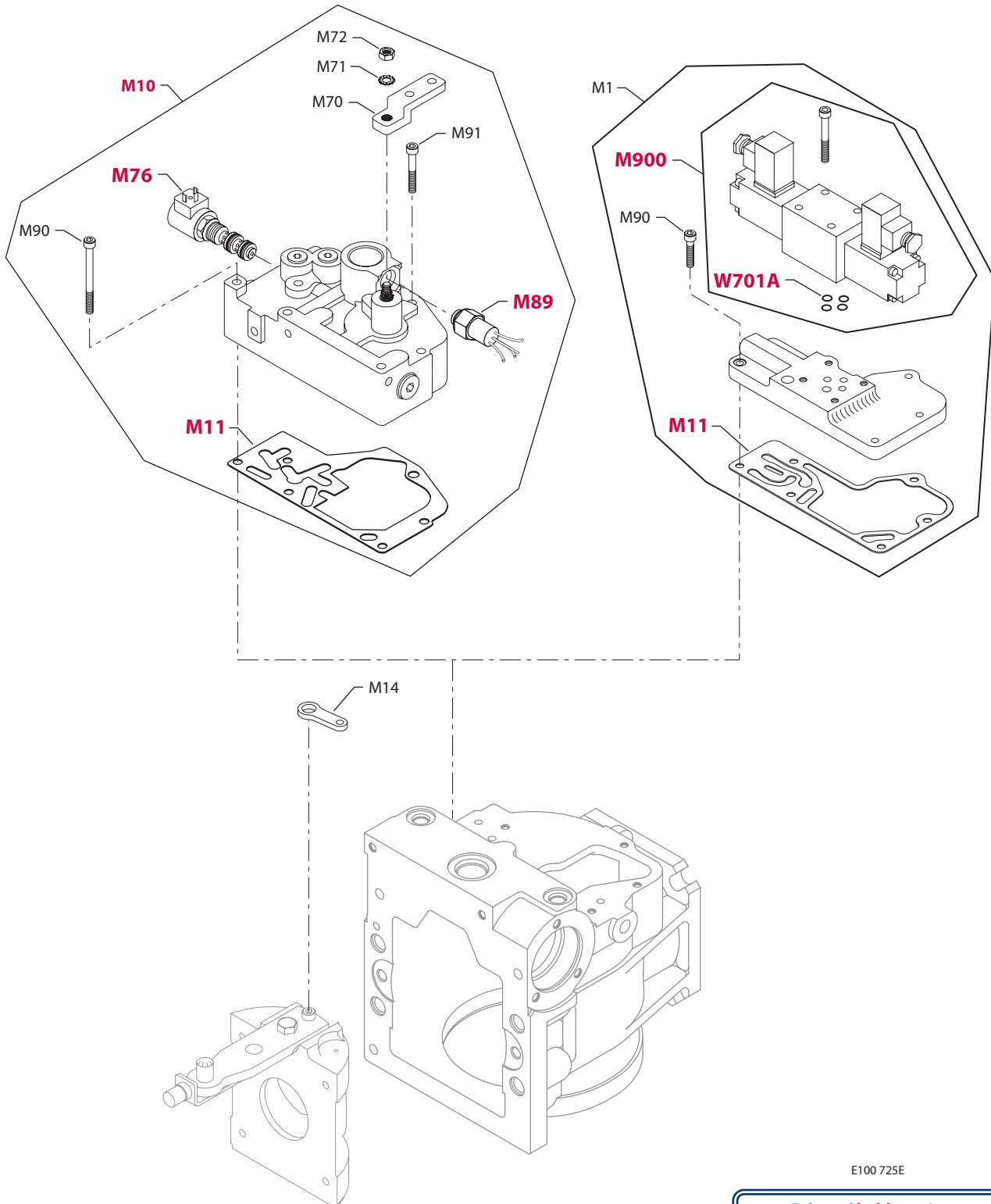


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
MZ	M1	87-02		8510108	MDC kit w/12 volt solenoid, double pole, high force nss	1
	M11	87-02		8800520	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8000481	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		9009660-3100	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M75	87-02		505022	Control manifold (SB-1995-003)	1
	M76	87-02		8700119	Solenoid valve, 12 volt, double pole	1
	M77	87-02		8800882	Manifold gasket	1
	M78	95-10		693341 (9007314-0606)	Screw (SB-1995-003)	2
	M78	87-02	95-09	041160 (9007314-0605)	Screw	2
	M90	87-02		692889 (9007314-0611)	Screw	6
	S40	87-02		8510170	Neutral start switch kit, weather pack connector, 2-way	1
PA	M1	96-33		8510165	HDC kit w/PDC	1
	M9	96-33		516645	Solenoid valve, 12 volt	2
	M11	96-33		K11419	Control gasket	1
	M14	96-40		8000602	Feedback link (SB-1999-019)	1
	M14	96-33	96-39	8000481	Feedback link (SB-1996-009)	1
	M90	96-33		692889 (9007314-0611)	Screw	6
	M95	96-33		011296 (9004105-0120)	O-ring	2
	M96	96-33		688721 (9004104-0170)	O-ring	1
	M97	96-33		314534 (9004104-0310)	O-ring	1
	M98	96-33		035592	Screw	4
	M100	96-33		635938 (9004100-0210)	O-ring	2

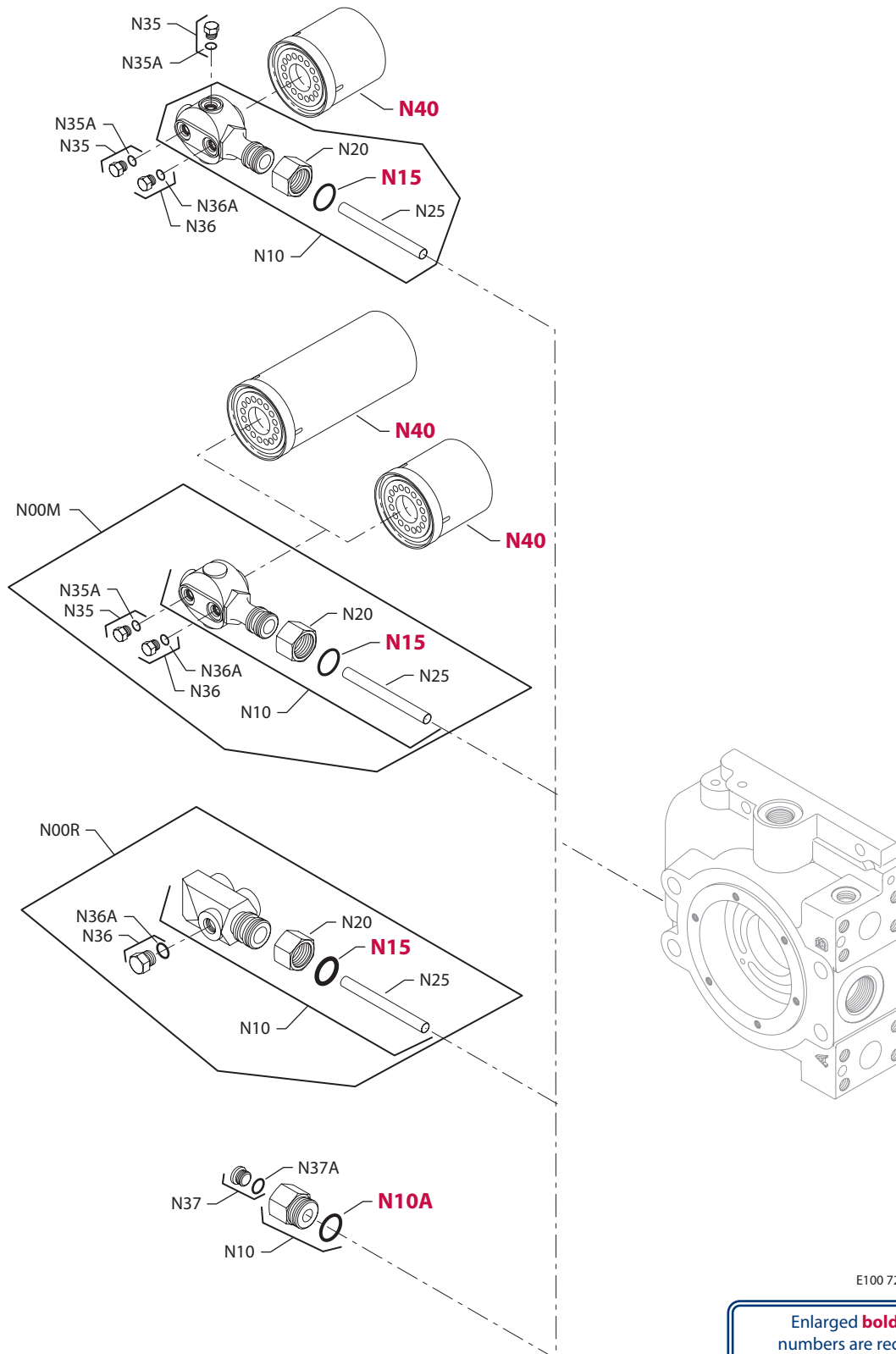


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
RU	M1	99-45		8510384	MDC kit, roller	1
	M11	99-45		510379	Control gasket	1
	M14	99-45		8000602	Feedback link	1
	M70	99-45		769075	Control handle	1
	M71	99-45		9009660-3100	Toothlock washer	1
	M72	99-45		040642 (9003513-0800)	Nut	1
	M90	99-45		354407	Screw	5
	M91	99-45		510382	Screw	1
	M76	99-45		513017	Solenoid valve	1
	M89	99-45		4700025	Neutral start switch	1
SC	M1	99-11		8510385	Control kit, 3 position, 12 volt	1
	M11	99-11		8800520	Control gasket	1
	M90	99-11		693341 (9007314-0606)	Screw	6
	M701A	99-11		048413	O-ring	4
	M900	99-11		509848	Solenoid valve, 12 volt	1



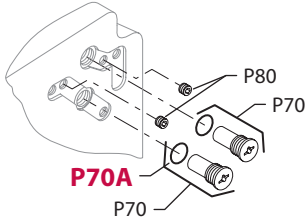
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Enlarged **bold** type item numbers are recommended part to stock for servicing.

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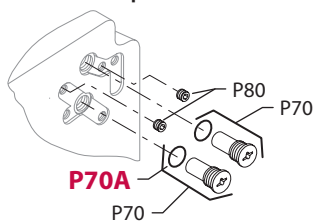
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
6	N10	00-01		8801233	Filter manifold assembly	1
	N15	00-01		001172 (9004201-9000)	O-ring	1
	N20	00-01		5000222	Nut	1
	N25	00-01		700302 (8800180)	Tube	1
	N35	00-01		046151 (9005100-5600)	Plug assembly	1
	N35A	00-01		085043 (9004201-3700)	O-ring	1
	N36	00-01		046151 (9005100-5600)	Plug assembly	1
	N36A	00-01		085043 (9004201-3700)	O-ring	1
	N40	00-01		9700810	Filter, short	1
D				None		
L	N00M	87-02		8510199	Intergal filtration kit	1
	N10	87-02		8801072	Filter manifold assembly	1
	N15	87-02		001172 (9004201-9000)	O-ring	1
	N20	95-18		5000222	Nut (SB-1994-036)	1
	N20	87-02	95-17	700492 (9002863-1600)	Nut	1
	N25	87-02		700302 (8800180)	Tube	1
	N35	87-02		046151 (9005100-5600)	Plug assembly	1
	N35A	87-02		085043 (9004201-3700)	O-ring	1
	N36	87-02		046151 (9005100-5600)	Plug assembly	1
	N36A	87-02		085043 (9004201-3700)	O-ring	1
	N40	87-02		317883 (8700068)	Filter, long	1
	P	N00M	87-02		8510199	Intergal filtration kit
N10		87-02		8801072	Filter manifold assembly	1
N15		87-02		001172 (9004201-9000)	O-ring	1
N20		95-18		5000222	Nut (SB-1994-036)	1
N20		87-02	95-17	700492 (9002863-1600)	Nut	1
N25		87-02		700302 (8800180)	Tube	1
N35		87-02		046151 (9005100-5600)	Plug assembly	1
N35A		87-02		085043 (9004201-3700)	O-ring	1
N36		87-02		046151 (9005100-5600)	Plug assembly	1
N36A		87-02		085043 (9004201-3700)	O-ring	1
N40		87-02		9700810	Filter, short	1
R		N00R	87-42		8002N00R-A	Remote filtration kit (SB-1988-024)
	N10	87-42		8801071	Filter manifold assembly	1
	N15	87-42		001172 (9004201-9000)	O-ring	1
	N20	87-42		700492 (9002863-1600)	Nut	1
	N25	87-42		700310 (8800210)	Tube	1
	N36	87-42		046151 (9005100-5600)	Plug assembly	1
	N36A	87-42		085043 (9004201-3700)	O-ring	1
	S	N10	87-42		5000230	Reducer assembly
	N10A	87-42		001172 (9004201-9000)	O-ring	1
	N37	87-42		515965 (9005110-5600)	Plug assembly	1
	N37A	87-42		085043 (9004201-3700)	O-ring	1

Twin ported
end cap

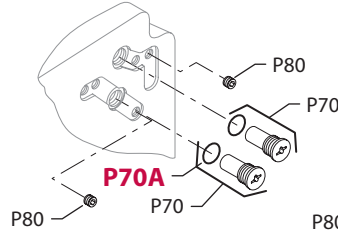


View "A" with
pressure limiters,
left hand rotation,
Options 1, 5, & 6

Side ported
end cap

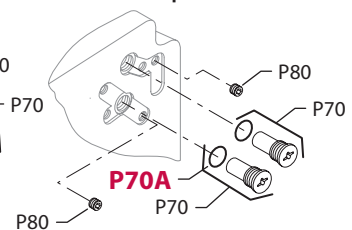


Twin ported
end cap

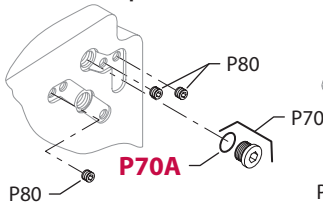


View "A" with
pressure limiters,
right hand rotation,
Options 1, 5, & 6

Side ported
end cap

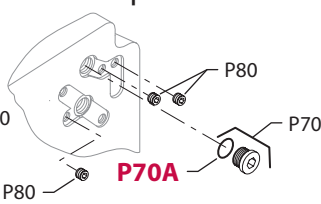


Twin ported
end cap

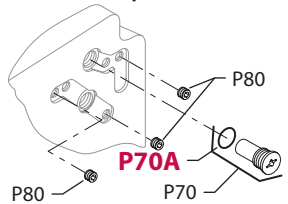


View "A" without
pressure limiters,
left/right hand rotation
Option 2 & 7

Side ported
end cap

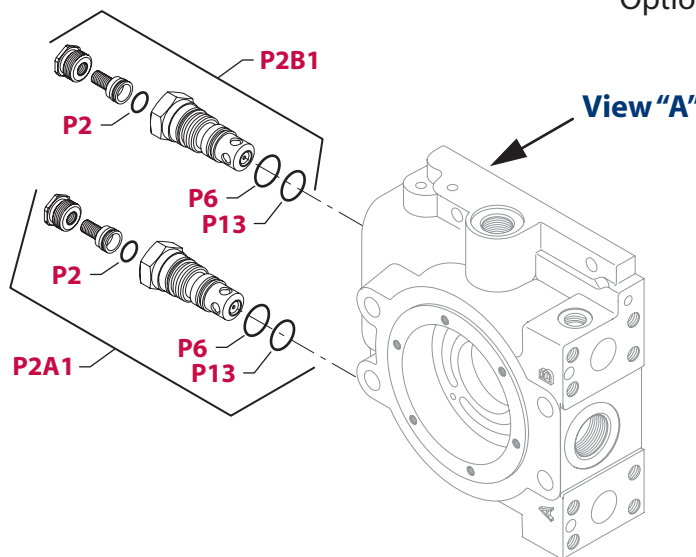
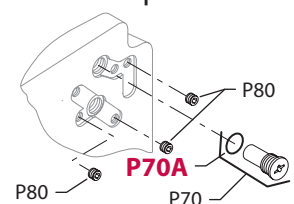


Twin ported
end cap



View "A" with
pressure limiter port A,
HPRV port B,
right hand rotation
Option B

Side ported
end cap



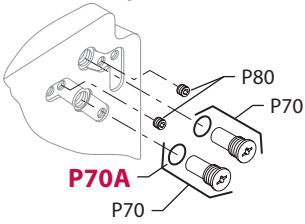
E100 727E

Enlarged **bold** type item numbers are recommended part to stock for servicing.

HIGH PRESSURE REGULATION

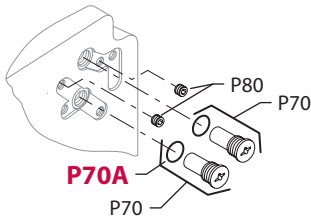
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	P2	87-02		141564 (9004100-0170)	O-ring	2
	P6	87-02		000836 (9004100-0200)	O-ring	2
	P13	87-02		544742 (9004105-0190)	O-ring	2
1	P2A1	87-02		8510022-1	Multi-function valve kit	1
	P2B1	87-02		8510022-1	Multi-function valve kit	1
	P70	87-02		681817 (8800188)	Check valve	2
	P70A	87-02		001123 (9004201-2500)	O-ring	2
	P80	87-02		508655 (9005475-0004)	Special plug	2
2	P2A1	87-02		8510022-2	Multi-function valve kit	1
	P2B1	87-02		8510022-2	Multi-function valve kit	1
	P70	87-02		327007 (9005110-4400)	Plug (SB-1989-003)	1
	P70A	87-02		001123 (9004201-2500)	O-ring	1
	P80	87-02		508655 (9005475-0004)	Special plug	3
5	P2A1	87-02		8510240	Multi-function valve kit	1
	P2B1	87-02		8510240	Multi-function valve kit	1
	P70	87-02		681817 (8800188)	Check valve	2
	P70A	87-02		001123 (9004201-2500)	O-ring	2
	P80	87-02		508655 (9005475-0004)	Special plug	2
6	P2A1	87-02		8510022-6	Multi-function valve kit	1
	P2B1	87-02		8510022-6	Multi-function valve kit	1
	P70	87-02		681817 (8800188)	Check valve	2
	P70A	87-02		001123 (9004201-2500)	O-ring	2
	P80	87-02		508655 (9005475-0004)	Special plug	2
7	P2A1	87-02		8510022-7	Multi-function valve kit	1
	P2B1	87-02		8510022-7	Multi-function valve kit	1
	P70	87-02		327007 (9005110-4400)	Plug (SB-1989-003)	1
	P70A	87-02		001123 (9004201-2500)	O-ring	1
	P80	87-02		508655 (9005475-0004)	Special plug	3
B	P2A1	95-22		8510022-1	Multi-function valve kit	1
	P2B1	95-22		8510022-7	Multi-function valve kit	1
	P70	95-22		681817 (8800188)	Check valve	1
	P70A	95-22		001123 (9004201-2500)	O-ring	1
	P80	95-22		508655 (9005475-0004)	Special plug	1

Twin ported
end cap

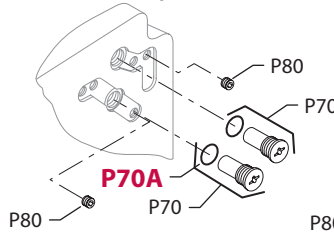


View "A" with
pressure limiters,
left hand rotation,
Options F, G, H, J, and P

Side ported
end cap

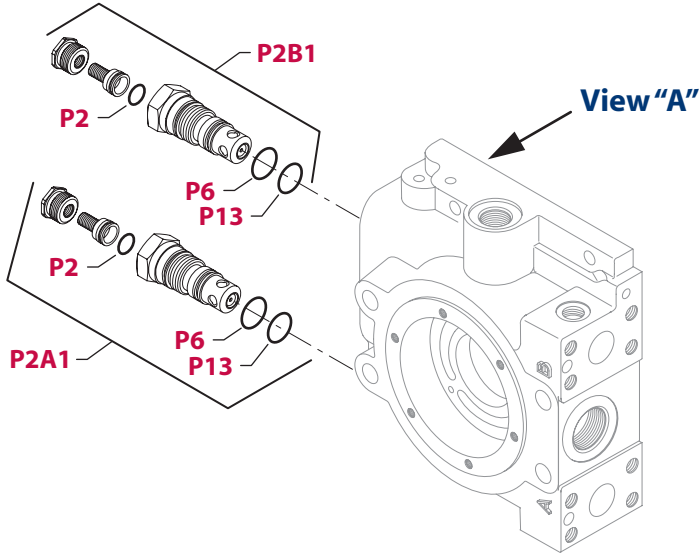
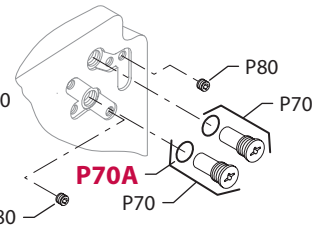


Twin ported
end cap



View "A" with
pressure limiters,
right hand rotation,
Options F, G, H, J, and P

Side ported
end cap



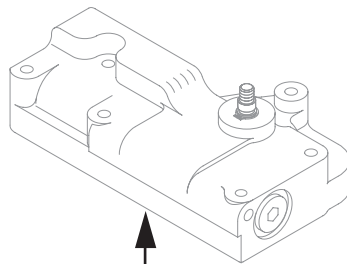
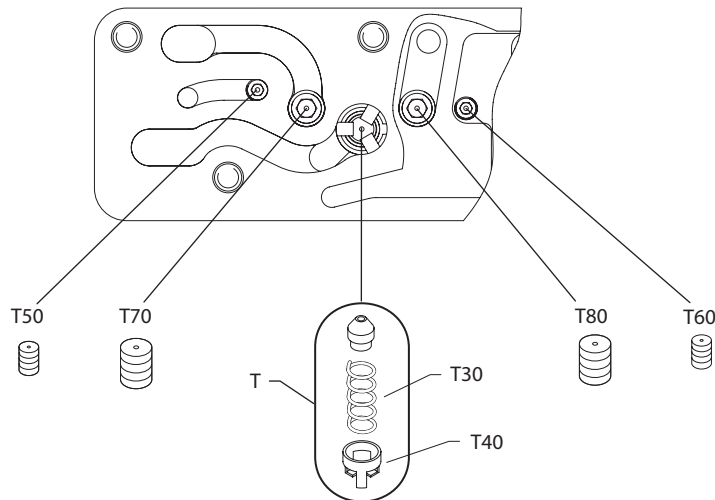
E100 728E

Enlarged **bold** type item
numbers are recommended
part to stock for servicing.

HIGH PRESSURE REGULATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	P2	87-02		141564 (9004100-0170)	O-ring	2
	P6	87-02		000836 (9004100-0200)	O-ring	2
	P13	87-02		544742 (9004105-0190)	O-ring	2
D	P2A1	92-22		8510388	Multi-function valve kit	1
	P2B1	92-22		8510388	Multi-function valve kit	1
F	P2A1	98-29		8510022-2	Multi-function valve kit	1
	P2B1	98-29		8510022-2	Multi-function valve kit	1
	P70	98-29		681817 (8800188)	Check valve	2
	P70A	98-29		001123 (9004201-2500)	O-ring	2
	P80	98-29		508655 (9005475-0004)	Special plug	2
G	P2A1	97-06		8510196	Multi-function valve kit	1
	P2B1	97-06		8510196	Multi-function valve kit	1
	P70	97-06		681817 (8800188)	Check valve	2
	P70A	97-06		001123 (9004201-2500)	O-ring	2
	P80	97-06		508655 (9005475-0004)	Special plug	2
H	P2A1	97-40		8510275	Multi-function valve kit	1
	P2B1	97-40		8510022-1	Multi-function valve kit	1
	P70	97-40		681817 (8800188)	Check valve	2
	P70A	97-40		001123 (9004201-2500)	O-ring	2
	P80	97-40		508655 (9005475-0004)	Special plug	2
J	P2A1	97-40		8510273	Multi-function valve kit	1
	P2B1	97-40		8510273	Multi-function valve kit	1
	P13	97-40		544742 (9004105-0190)	O-ring	2
P	P2A1	99-26		8510389	Multi-function valve kit	1
	P2B1	99-26		8510389	Multi-function valve kit	1
	P70	99-26		681817 (8800188)	Check valve	2
	P70A	99-26		001123 (9004201-2500)	O-ring	2
	P80	99-26		508655 (9005475-0004)	Special plug	2

View "A"

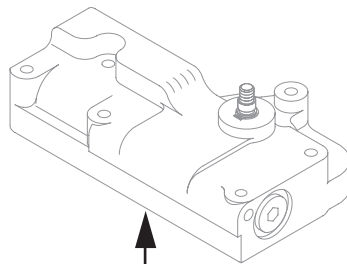
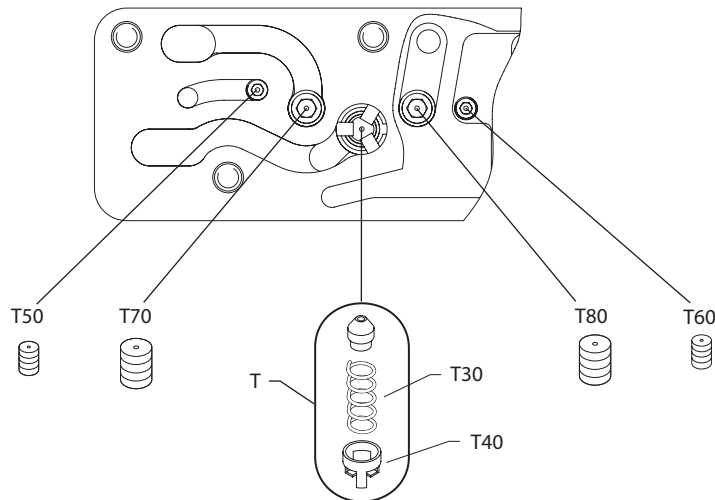


View "A"

ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
00				None		
01	T	87-42		8002T001-A	Control orifice kit, .018"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
02	T	87-42		8002T002-A	Control orifice kit, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
03	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
04	T	87-42		8002T004-A	Control orifice kit, .040"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
05	T	87-42		8002T005-A	Control orifice kit, .054"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
06	T	87-42		8002T006-A	Control orifice kit, .062"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
07	T	87-42		8002T002-A	Control orifice kit, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		310771	Orifice plug, 1.2mm, M6 x 6	1
	T80	87-42		310771	Orifice plug, 1.2mm, M6 x 6	1
09	T	87-42		8002T009-A	Control orifice kit, .092"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
22	T	87-42		8002T022-A	Control orifice kit, .022"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
26	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1
	T60	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1

View "A"

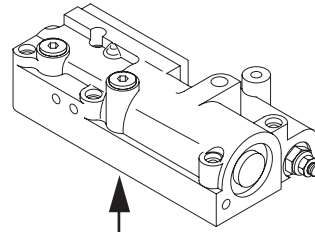
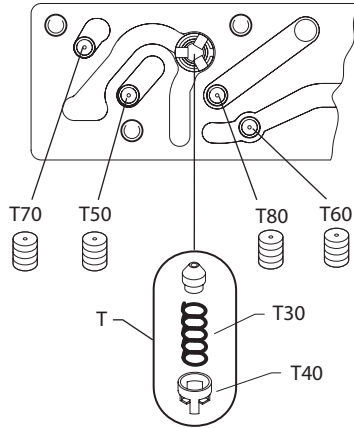


View "A"

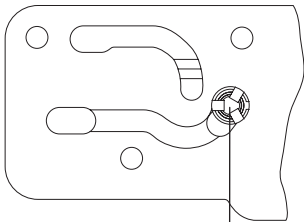
ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
28	T	87-42		8002T002-A	Control orifice kit, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		639104	Orifice plug, 0.7mm, M5 x 6	1
	T60	87-42		639104	Orifice plug, 0.7mm, M5 x 6	1
	T70	87-42		704650	Orifice plug, 0.7mm, M8 x 8	1
	T80	87-42		704650	Orifice plug, 0.7mm, M8 x 8	1
	29	T	87-42		8002T003-A	Control orifice kit, .032"
T30		87-42		679506 (8700007)	Spring	1
T40		87-42		8801303	Spring retainer	1
T50		87-42		639104	Orifice plug, 0.7mm, M5 x 6	1
T60		87-42		639104	Orifice plug, 0.7mm, M5 x 6	1
30		T	87-42		8002T002-A	Control orifice kit, .026"
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		8700079	Orifice plug, 1.3mm, M5 x 6	1
	T60	87-42		8700079	Orifice plug, 1.3mm, M5 x 6	1
	T70	87-42		704650	Orifice plug, 0.7mm, M8 x 8	1
	T80	87-42		704650	Orifice plug, 0.7mm, M8 x 8	1
	33				None	
34	T70	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1
	T80	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1
35	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1
	T60	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1
	T70	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1
	T80	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1
	36	T	87-42		8002T003-A	Control orifice kit, .032"
T30		87-42		679506 (8700007)	Spring	1
T40		87-42		8801303	Spring retainer	1
T70		87-42		704650	Orifice plug, 0.7mm, M8 x 8	1
T80		87-42		704650	Orifice plug, 0.7mm, M8 x 8	1
39		T	87-42		8002T002-A	Control orifice kit, .026"
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		639120	Orifice plug, 1.0mm, M5 x 6	1
	T60	87-42		639120	Orifice plug, 1.0mm, M5 x 6	1

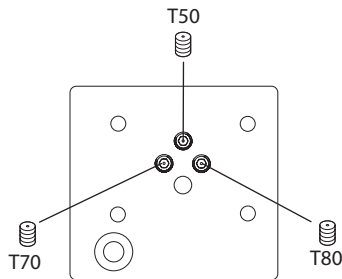
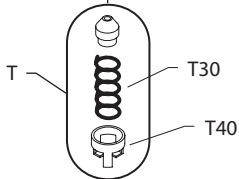
View "A"



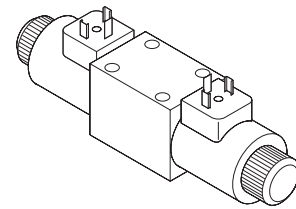
View "A"



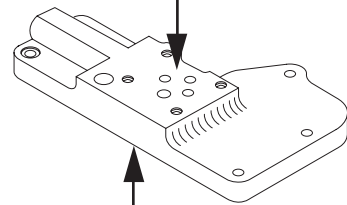
View "A"



View "B"



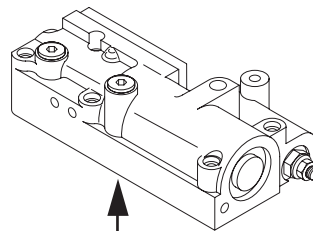
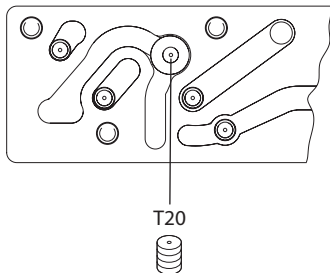
View "B"



View "A"

Options '50 and 52'

View "A"



View "A"

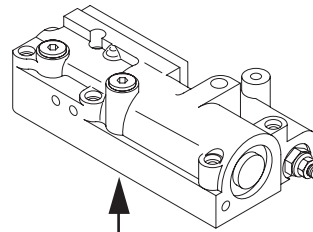
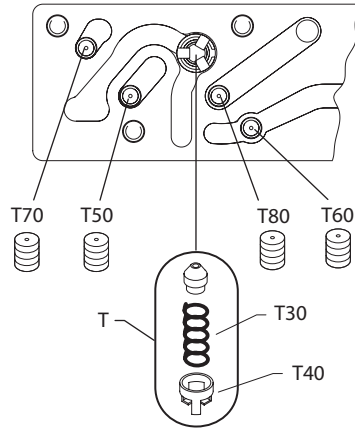
Option '70 and 71'

E100 729E

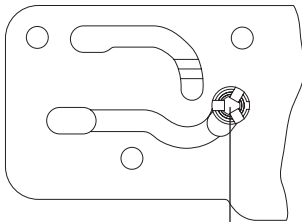
ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
40	T	87-42		8002T004-A	Control orifice kit, .040"	1	
	T30	87-42		679506 (8700007)	Spring	1	
	T40	87-42		8801303	Spring retainer	1	
	T50	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1	
	T60	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1	
	42	T	87-42		8002T003-A	Control orifice kit, .032"	1
T30		87-42		679506 (8700007)	Spring	1	
T40		87-42		8801303	Spring retainer	1	
T70		87-42		714477	Orifice plug, 0.8mm, M8 x 8	1	
T80		87-42		714477	Orifice plug, 0.8mm, M8 x 8	1	
47		T	87-42		8002T002-A	Control orifice kit, .026"	1
	T30	87-42		679506 (8700007)	Spring	1	
	T40	87-42		8801303	Spring retainer	1	
	T50	87-42		617159	Orifice plug, 1.8mm, M5 x 6	1	
	T60	87-42		617159	Orifice plug, 1.8mm, M5 x 6	1	
	48	T	87-42		8002T003-A	Control orifice kit, .032"	1
T30		87-42		679506 (8700007)	Spring	1	
T40		87-42		8801303	Spring retainer	1	
T50		87-42		598292	Orifice plug, 0.8mm, M5 x 6	1	
T60		87-42		598292	Orifice plug, 0.8mm, M5 x 6	1	
T70		87-42		714477	Orifice plug, 0.8mm, M8 x 8	1	
T80		87-42		714477	Orifice plug, 0.8mm, M8 x 8	1	
50		T	87-42		8002T002-A	Control orifice kit, .026"	1
	T30	87-42		679506 (8700007)	Spring	1	
	T40	87-42		8801303	Spring retainer	1	
	T50	87-42		310771	Orifice plug, 1.2mm, M6 x 6	1	
	T70	87-42		517571	Orifice plug, 0.9mm, M6 x 6	1	
	T80	87-42		517571	Orifice plug, 0.9mm, M6 x 6	1	
	52	T	87-42		8002T004-A	Control orifice kit, .040"	1
		T30	87-42		679506 (8700007)	Spring	1
T40		87-42		8801303	Spring retainer	1	
T50		87-42		310771	Orifice plug, 1.2mm, M6 x 6	1	
T70		87-42		739144	Orifice plug, 0.8mm, M6 x 6	1	
T80		87-42		739144	Orifice plug, 0.8mm, M6 x 6	1	
61		T	87-42		8002T001-A	Control orifice kit, .018"	1
	T30	87-42		679506 (8700007)	Spring	1	
	T40	87-42		8801303	Spring retainer	1	
	T70	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1	
	T80	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1	
	70	T20	87-42		8800242-0012	Orifice plug, 0.025, 1/8-27 NPTF	
71	T20	87-42		8800242-0004	Orifice plug, 0.031, 1/8-27 NPTF		

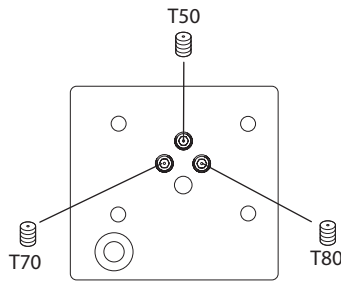
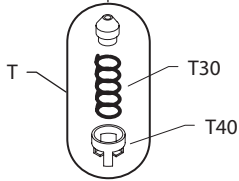
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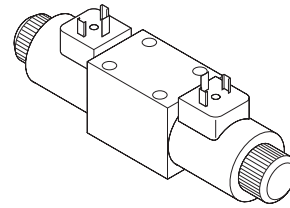
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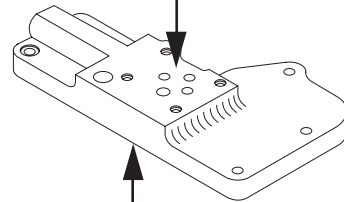
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View "B"

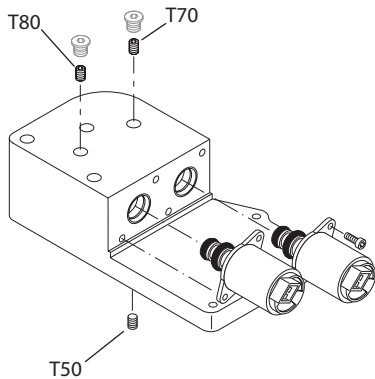


View "B"

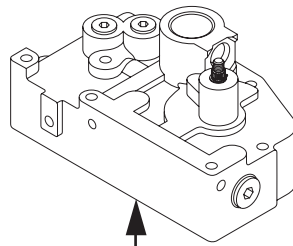


View "A"

Options '99 and G1'

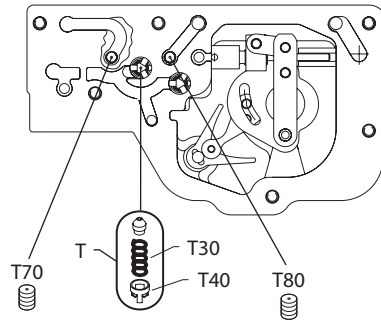


Option 'B1 and B2'



View "A"

Option 'A7'

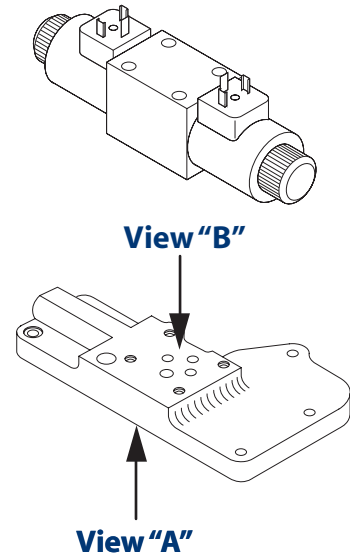
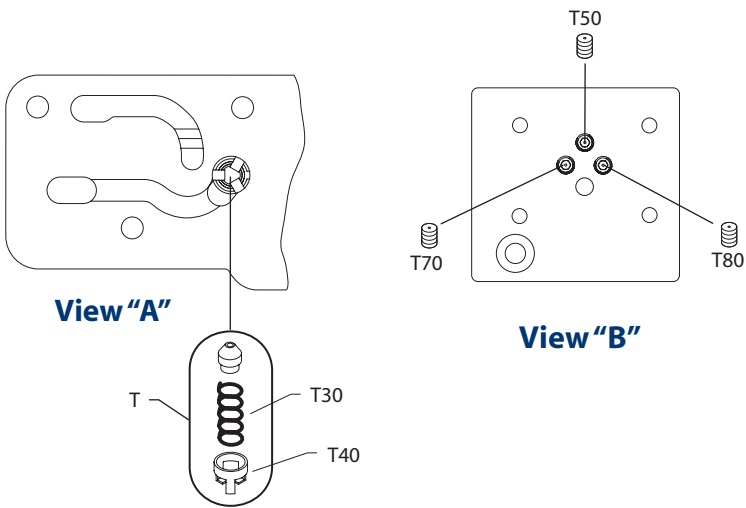


View "A"

E100 730E

ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
72	T50	87-42		617159	Orifice plug, 1.8 mm, M5x 6	1
	T60	87-42		617159	Orifice plug, 1.8 mm, M5x 6	1
75	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		639120	Orifice plug, 1.0 mm, M5 x 6	1
	T60	87-42		639120	Orifice plug, 1.0 mm, M5 x 6	1
	T70	87-42		714477	Orifice plug, 0.8 mm, M8 x 8	1
	T80	87-42		714477	Orifice plug, 0.8 mm, M8 x 8	1
99	T	87-42		8510313	Control orifice kit, .047"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		517572	Orifice plug, 1.5 mm, M6 x 6	1
	T80	87-42		517572	Orifice plug, 1.5 mm, M6 x 6	1
A3	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		739136	Orifice plug, 0.7 mm, M6 x 6	1
	T60	87-42		739136	Orifice plug, 0.7 mm, M6 x 6	1
A6	T	87-42		8002T002-A	Control orifice kit, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		763680	Orifice plug, 0.6 mm, M6 x 6	1
	T80	87-42		763680	Orifice plug, 0.6 mm, M6 x 6	1
A7	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		578542	Orifice plug, 0.8 mm, M6 x 8	1
	T80	87-42		578542	Orifice plug, 0.8 mm, M6 x 8	1
B1	T50	87-42		507042	Orifice plug, 1.5 mm, M6 x 8	1
B2	T70	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
	T80	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
C5	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		639161	Orifice plug, 1.4 mm, M5 x 6	1
	T60	87-42		639161	Orifice plug, 1.4 mm, M5 x 6	1
G1	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1



E100 731E

ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
G4	T	87-42		8002T001-A	Control orifice kit, .018"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
G8	T	87-42		8002T002-A	Control orifice kit, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
GB	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
GF	T	87-42		8002T004-A	Control orifice kit, .040"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
GJ	T	87-42		8002T005-A	Control orifice kit, .054"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
Z1	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		519659	Orifice plug, 1.0 mm, M6 x 6	1
	T70	87-42		519659	Orifice plug, 1.0 mm, M6 x 6	1
	T80	87-42		519659	Orifice plug, 1.0 mm, M6 x 6	1

OVERHAUL SEAL KIT

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
		87-42		80020530	Overhaul seal kit	1
	C70	87-42		648477	Screw	4
	E40	87-42		9003509-0008	Seal nut	2
	E50	87-42		056739 (9004104-1580)	O-ring	1
	E60	87-02		5000206	Screw (SB-1994-018)	6
	F11	90-51		350397 (9004100-1220)	O-ring	2
	F11	87-02	90-50	315242 (9004100-1210)	O-ring (SB-1991-007)	2
	F11	87-02		314500 (9004100-1250)	O-ring	2
	F12	87-02		8700065	Piston ring	2
	F40	88-43		353953 (9004104-1330)	O-ring	2
	F50	87-02		314534 (9004104-0310)	O-ring	2
	G30	89-17		8000243	End cap gasket (SB-1989-037 & SB-1992-003)	1
	J40	87-02		680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J90	87-02		726935 (9004104-0450)	O-ring	1
	J90	87-02		726950 (9004104-0420)	O-ring	1
	J90	87-02		719179 (9004100-0480)	O-ring	1
	K50	87-02		001149 (9004201-6200)	O-ring	1
	L40	87-02		314583 (9008000-0118)	Lip seal	1
	L50	87-02		071845 (9004104-1510)	O-ring	1
	M11	87-42		8800520	Control gasket	1
	M11	87-42		K11419	Control gasket (SB-1993-002)	1
	M77	87-42		8800882	Manifold gasket	1
	M95	87-42		318337 (9004104-0120)	O-ring	2
	M96	87-42		011304 (9004104-0140)	O-ring	1
	M96	95-26		011296 (9004105-0120)	O-ring	3
	M97	95-26		9004105-0130	O-ring	1
	M97	87-42		318345 (9004104-0240)	O-ring	1
	N15	87-42		001172 (9004201-9000)	O-ring	1
	P2	87-02		141564 (9004100-0170)	O-ring	2
	P6	87-42		000836 (9004100-0200)	O-ring	2
	P13	87-42		544742 (9004105-0190)	O-ring	2



Series 90 55 cc Axial Piston Pump
Parts Manual
Notes





To improve efficiency and reliability, the number of parts in series 90 pumps is being reduced. The charge pump design on 55 cc - 130 cc frame sizes is being changed so that the outer port plate is an integral part of the charge pump cover and distance plates are eliminated. The change is taking effect at the following manufacturing dates:

55 cc: 93-10 75 cc: 93-10 100 cc: 93-15 130 cc: 93-34

For auxiliary pad options, the new charge pump cover is rotation dependent. The cover will be marked as either left hand (L) or right hand (R). The non-auxiliary pad cover is not rotation dependent.

The charge pump shaft also changes and must be replaced when using the new style hardware. The complete charge pump assembly can be interchanged with corresponding hardware from 89-17 and beyond. However, piece parts are not interchangeable. For units prior to 89-17, consult Sauer-Danfoss.

The old design charge pump hardware is obsolete and is no longer available. Refer to the chart on the next page to determine the replacement kit.

The following information must be known to determine the correct charge pump replacement kit:

1. Unit size (055, 075, 100, or 130 cc)
2. Charge pump displacement (11, 14, 17, 20, 26, or 34 cc)
3. Auxiliary pad (Yes or No)
4. Rotation (LH or RH)

Obsolated Charge Pump Parts			Unit Size	Chg. pump displacement	Auxiliary pad	Rotation	Replacement Kit
Gear Set	Shaft	Cover					
8000169	8000174	8800513	055	11 cc	No	LH or RH	8510028
		8800514			Yes	LH	8510029
		8800514			Yes	RH	8510030
8000170	8000174	8800513	055	14 cc	No	LH or RH	8510031
		8800514			Yes	LH	8510032
		8800514			Yes	RH	8510033
8000171	8000174	8800513	055	17 cc	No	LH or RH	8510034
		8800514			Yes	LH	8510035
		8800514			Yes	RH	8510036
8100313	337956	8800513	075	14 cc	No	LH or RH	8510037
		8800514			Yes	LH	8510038
		8800514			Yes	RH	8510039
8100314	337956	8800513	075	17 cc	No	LH or RH	8510040
		8800514			Yes	LH	8510041
		8800514			Yes	RH	8510042
8100315	337956	8800513	075	20 cc	No	LH or RH	8510043
		8800514			Yes	LH	8510044
		8800514			Yes	RH	8510045
8200158	337956	8800513	100	17 cc	No	LH or RH	8510046
		8800514			Yes	LH	8510047
		8800514			Yes	RH	8510048
8200159	337956	8800513	100	20 cc	No	LH or RH	8510049
		8800514			Yes	LH	8510050
		8800514			Yes	RH	8510051
8200160	337956	8800513	100	26 cc	No	LH or RH	8510052
		8800514			Yes	LH	8510053
		8800514			Yes	RH	8510054
714444	303636	347518	130	20 cc	No	LH or RH	8510064
		347526			Yes	LH	8510065
		347526			Yes	RH	8510066
714451	303636	347518	130	26 cc	No	LH or RH	8510067
		347526			Yes	LH	8510068
		347526			Yes	RH	8510069
714469	303636	347518	130	34 cc	No	LH or RH	8510070
		347526			Yes	LH	8510071
		347526			Yes	RH	8510072

PRODUCTS AFFECTED

Series 90 pumps

SUBJECT

Servo arm change

DESCRIPTION

As a product improvement, Sauer-Danfoss has changed the series 90 pump servo arm and swashplate (item D10 and D50). The old style servo arm and swashplate will become obsolete. Because this change creates non-interchangeability between new and old swashplates, servo arms, and possibly servo piston (item S10) and slider block (item F20), separate servo arms and swashplates will no longer be sold as service parts.

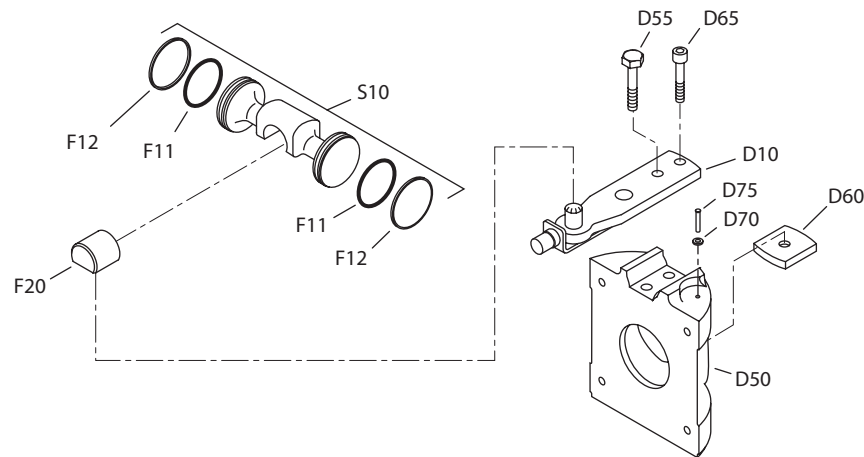
Also, the new servo arm is actually a press fit into a groove in the new swashplate. This situation requires special tooling for assembly, therefore, pre-assembled kits will be created for 55, 75, and 100 cc pumps. The kits will work in any vintage pump.

The kit for 55 cc pumps will include all the items in the figure, except item S10

The kit for 75 cc pumps will include all item in the figure.

The kit for 100 cc pumps will include all items in the figure, except items S10 and F20.

Note: The slider block (item F20) in 55 cc pumps and the slider block and the servo piston (item S10) in 75 cc pumps had to be changed slightly to allow clearance for the new servo arm. The new servo piston and slider block will work in any vintage pump.



MODELS AFFECTED

All 94-2xxx (55 cc), 95-2xxx (75 cc), and 96-2xxx (100 cc) pumps

SERIAL NUMBERS

Change goes into effect with s/n 88-14-xxxxx on 55 cc pumps and with s/n 88-16-xxxxx for 75 cc and 100 cc pumps.

PART NUMBERS AFFECTED

New 55 cc slider block is p/n 8000189
 New 75 cc slider block is p/n 8100368
 New 100 cc slider block is p/n 8100369
 New 55 cc servo arm/swashplate kit is p/n 8000201
 .New 75 cc servo arm/swashplate kit is p/n 8100377
 New 100 cc servo arm/swashplate kit is p/n 8200192

PARTS DISPOSITION

■ Non-interchangeable

PRODUCTS AFFECTED

Series 90 pumps

SUBJECT

Change to fixed clearance slipper hold down

DESCRIPTION

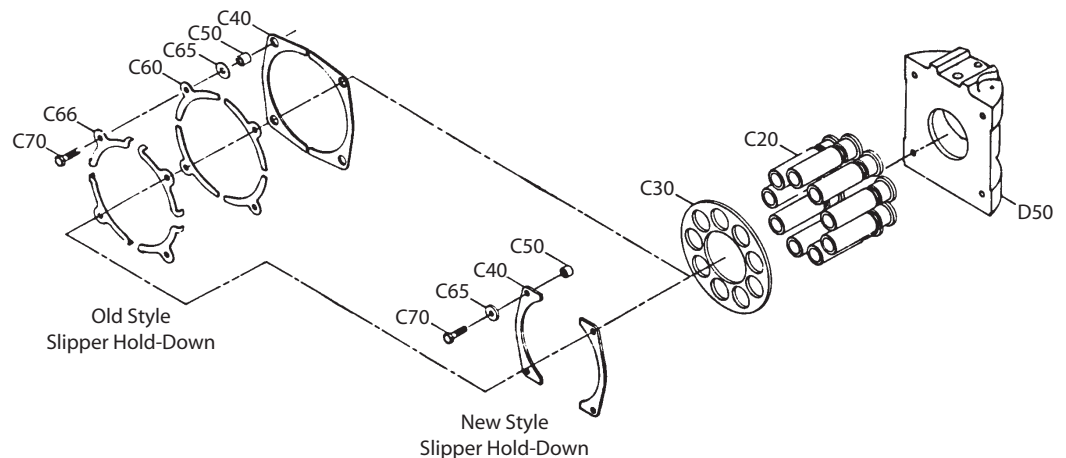
As a product improvement, Sauer-Danfoss has simplified the design of the series 90 pump slipper hold down mechanism. The hold down changes from spring loaded with a fixed maximum clearance design.

The leaf spring (item C60) and spring aligner (item C66) will be eliminated and will not be available as service parts.

The spacer (item C50), bearing (item C40), and washer (item C65) will change and the old part numbers will not be available as service parts.

The swashplate (item D50), pistons (item C20), slipper retainer (item C30), and screws (item C70) will remain the same.

If any of the affected parts (item C66, C60, C65, C50, or C40) require replacement during repair of older style pumps, discard these parts and rebuild using new style parts (items C40, C50, and C65). As before, the screws (item C70) which are coated with locking compound **MUST** always be replaced after removal.



MODELS AFFECTED

All 94-2xxx (55 cc), 95-2xxx (75 cc), and 96-2xxx (100 cc) pumps

SERIAL NUMBERS

55 cc pumps, 94-2xxx, changed at s/n 88-43-xxxxx
 75 cc pumps, 95-2xxx, changed at s/n 88-22-xxxxx
 100 cc pumps, 96-2xxx, changed at s/n 88-20-xxxxx

PART NUMBERS AFFECTED

Item	Qty/pump	55 cc	75 cc	100 cc
C40	2	8000137	8100294	8200144
C50	4	8000138	8100295	8200145
C65	4	9009625-0159	9009625-0159	9009625-0159
C70	4	9007276-0114	9007276-0099	9007276-0099

PARTS DISPOSITION

■ Non-interchangeable as individual parts, but new style C40, C50, and C65 can be used in any vintage pump, if all three are changed.

PRODUCTS AFFECTED

Series 90 pumps and motors

SUBJECT

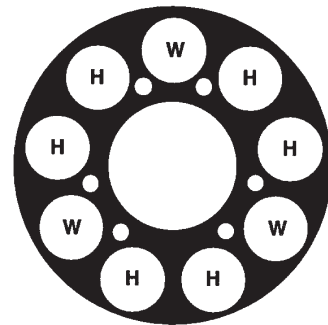
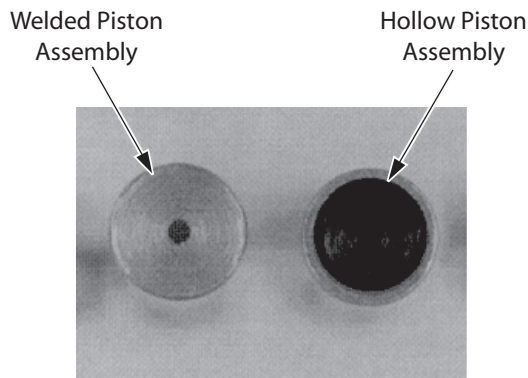
Piston improvement

DESCRIPTION

Product Information Bulletin PIB-8801 (March, 1988) announced the incorporation of fabricated (welded) piston assemblies, replacing non-fabricated (hollow) piston assemblies, in the cylinder blocks of all Series 90 pumps and motors. This change increases the overall efficiency of the Series 90 product line.

To simplify service parts inventory for all Series 90 units, only individual welded piston assemblies will be available as spare parts. The hollow pistons will be obsolete. Part numbers for individual welded piston assemblies are listed in this bulletin.

Since all Series 90 pumps and motors have nine (9) pistons, welded pistons being used to replace hollow pistons during repair **MUST** be install in the cylinder block symmetrically, in multiples of three (3).



When replacing hollow pistons with welded pistons, it is mandatory that the welded pistons be incorporated symmetrically in multiples of three.

MODELS AFFECTED

All series 90 pumps and motors: 93-xxxx, 94-xxxx, 95-xxxx, and 96-xxxx pumps

SERIAL NUMBERS

Welded pistons will be incorporated into all series 90 pumps and motors by the end of the first quarter of 1998.

PART NUMBERS AFFECTED

Part number	Description
706101	Piston assembly, welded - 42 cc
367672	Piston assembly, welded - 55 cc
708230	Piston assembly, welded - 75 cc
364000	Piston assembly, welded - 100 cc

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 pumps

SUBJECT

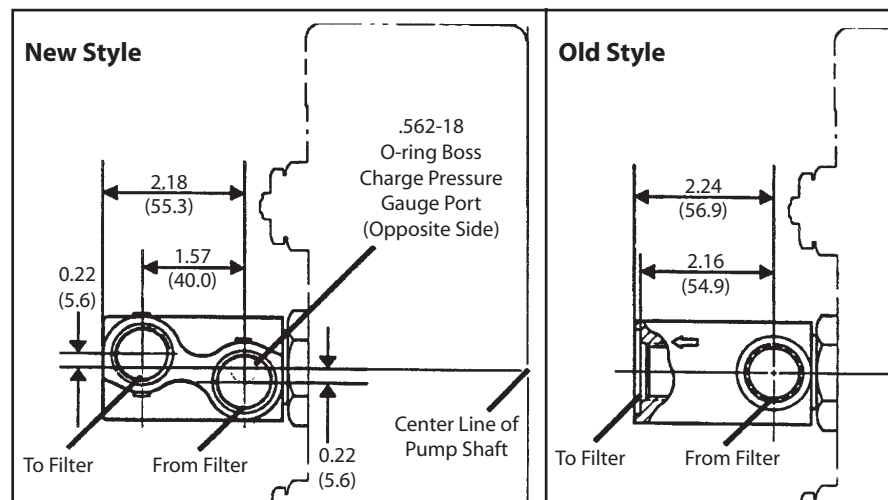
Remote pressure filtration adapter change

DESCRIPTION

The configuration of the remote pressure filtration adapter, available as an option on Sauer-Danfoss series 90 variable pumps (55, 75, and 100 cc) is changing. This improved design adapter incorporates a charge pressure test port. In addition, the remote filter connections have been relocated to improve the customer interface and the routing for filter plumbing on most applications. Port sizes did not change. (A version of the improved design adapter is already being used on Series 90 42 cc variable pumps.)

This change does not affect the pump end cap, and either design filtration adapter can be used on any vintage pump. Only the new style adapter will be available as service parts or on new production pumps.

The outline dimensional differences between the new and old adapters are shown below.



MODELS AFFECTED

All series 90 pumps (93-2xxx, 94-2xxx, 95-2xxx, and 96-2xxx) with remote pressure filtration. (option R)

SERIAL NUMBERS

Remote pressure filtration equipped pumps shipped after April 24, 1989, or with serial number x-89-17-xxxx and up will include the new adapter.

PART NUMBERS AFFECTED

Part number	Description
8002N00R-A	Remote filtration kit (new style)

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 pumps

SUBJECT

Incorporation of adjustable charge relief valve

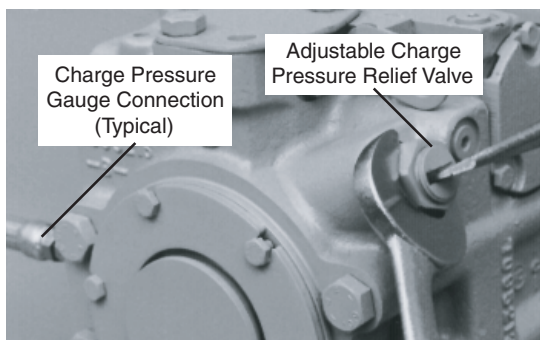
DESCRIPTION

As a product improvement Sauer-Danfoss is incorporating an adjustable charge relief valve on all series 90 variable displacement pumps. This design replaces the previous shim adjustable charge relief valve. The new design valve provides a range of pressure adjustment which covers the available charge pressure options of 290, 348, and 406 psi [20, 24, and 28 bar].

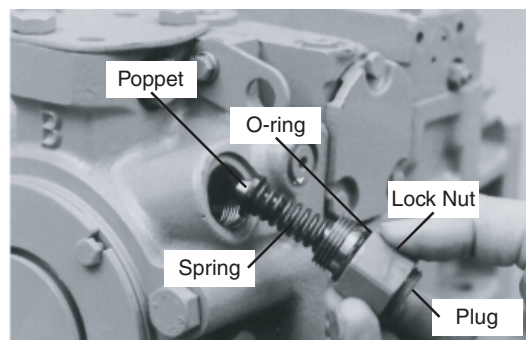
Note: This improvement changes the design of the charge relief valve poppet and plug. The new style charge relief may protrude from the pump end cap approximately 0.27 in [6.9 mm] farther than the shim adjustable r

To adjust the new design valve, first install a gauge to measure charge pressure as described in the series 90 service manual. Loosen the adjustment lock nut with a 1-1/16 in hex wrench. Operate the pump at an input speed of 1700 to 2000 rpm and turn the adjustment plug with a large screwdriver while observing the charge pressure. Clockwise rotation of the plug increases the setting, while counterclockwise rotation decreases the setting at a rate of approximately 50 psi [3.4 bar] per turn. Once the desired setting is achieved, torque the lock nut to 34-41 lbf-ft [46-55 Nm], and remove the charge pressure gauge.

Sauer-Danfoss will offer an adjustable charge relief valve kit for sale as a service part. This kit can be used to service any vintage series 90 variable pump. Since the new and old style charge relief valves are interchangeable as an assembly, the old style parts will no longer be available as service parts.



Adjusting Charge Relief Valve



Charge Relief Valve Assembly

MODELS AFFECTED

All 93-2xxx, 94-2xxx, 95-2xxx, and 96-2xxx pumps

SERIAL NUMBERS

Due to the interchangeability of the charge relief valve assemblies, this is a running change. It will be incorporated into all series 90 variable pumps by March of 1989.

PART NUMBERS AFFECTED

Part number	Description
8002K000-A	Adjustable charge relief valve kit - new style (includes poppet, spring, plug, O-ring, and nut)

PARTS DISPOSITION

■ Interchangeable (as an assembly)

PRODUCTS AFFECTED

Series 90 pumps

SUBJECT

Swashplate leveler spring seat change and servo pressure relief valve deletion

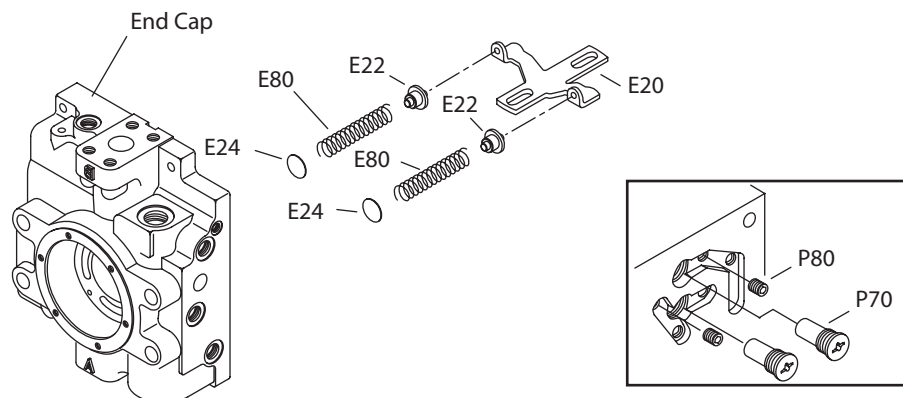
DESCRIPTION

As a product improvement, Sauer-Danfoss is adding hardened shims between the swashplate leveler springs and the end cap in series 90 variable pumps. In addition, the leveler spring seats have been hardened, and are now separate pieces from the leveler. Previously, the seats were peened to the leveler.

These improvements require some minor changes in the repair procedures for the series 90 pumps. When installing the lever springs (E80), take care that the spring seats (E22) are in position on the swashplate leveler (E20). Before installing the end cap, assemble the hardened shims (E24) into their pockets in the end cap and retain with petroleum jelly.

In an unrelated change, the servo pressure check relief valves installed in the pump end cap (or rotation valve housing) are no longer required. These valves (P70) will be replaced by standard socket head, straight thread O-ring plugs.

The swashplate leveler, plus the separate spring seats, are directly interchangeable with the old design part. When performing major repairs on any series 90 pump, the hardened shims should be installed between the leveler springs and the end cap. The plugs are also interchangeable with the servo pressure check relief valves.



MODELS AFFECTED

All 93-2xxx (42 cc), 94-2xxx (55 cc), 95-2xxx (75 cc), and 96-2xxx (100 cc) pumps

SERIAL NUMBERS

The hardened swashplate leveler spring seats and hardened shims incorporated at serial number 89-09-xxxxx. Due to the interchangeability of the straight thread plugs with the servo pressure check relief valves, this change will be incorporated during the 1st quarter of 1989.

PART NUMBERS AFFECTED

Item	Description	Qty	42 cc	55 cc	75 cc	100 cc
E20	Leveler	1	673897	8000094	8100130	8200007
E22	Spring seat	2	358820	358838	358523	358846
E24	Shim	2	359034	359042	359042	359059
P70	Plug	2	9005110-4400	9005110-4400	9005110-4400	9005110-4400

PARTS DISPOSITION

■ Non-interchangeable

PRODUCTS AFFECTED

Series 90 pumps

SUBJECT

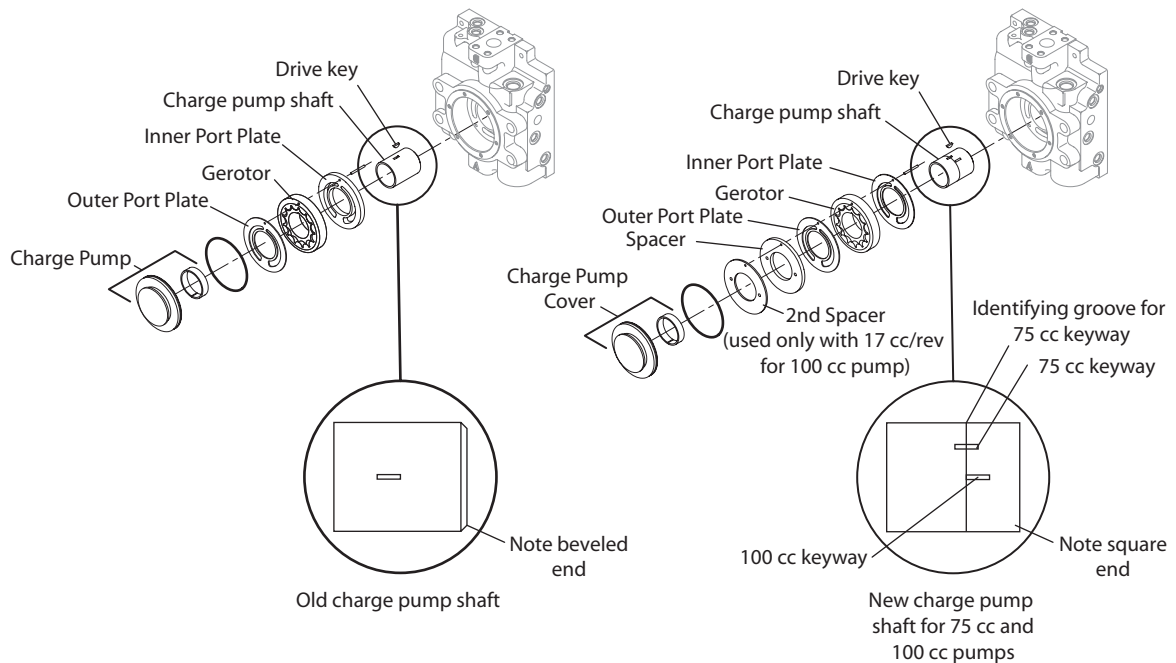
Charge pump design change

DESCRIPTION

The original series 90 charge pump design included two (2) port plates, one (1) on each side of the gerotor. If the charge pump displacement was less than the maximum available for the pump's frame size, the inside port plate was thicker than the 0.050 in. (1.27 mm) outside port plate.

The new design charge pump will always have two (2) 0.050 in (1.27 mm) thickness port plates, one (1) on each side of the gerotor. Additionally, if the charge pump displacement is less than the maximum available for the pump's frame size, one (1) or two (2) spacers were install between the outside port plate and the charge pump cover.

In addition, the location of the keyway in the charge pump shaft has been changed to ensure full engagement of the drive key in the gerotor. The new charge pump shaft used in 75 and 100 cc pumps has two (2) keyways. The rear keyway (farthest from the end cap and splined end of the shaft) is used for 75 cc pumps, while the front keyway is used for 100 cc pumps. The new style charge pump shafts for 55, 75, and 100 cc pumps also changed from having a beveled end to a square end on the end closest to the pump end cap.



MODELS AFFECTED

All 94-2xxx (55 cc), 95-2xxx (75 cc), and 96-2xxx (100 cc) pumps

SERIAL NUMBERS

A-89-17-xxxxx for all pumps manufactured in Ames, Iowa.

N-89-07-xxxxx for all 95-2xxx (75 cc) pumps manufacture in Neumunster, West Germany.

N-88-48-xxxxx for all 96-2xxx (100 cc) pumps manufacture in Neumunster, West Germany.

PART NUMBERS AFFECTED

Proper part number versus pump serial number information can be found in the series 90 Parts Manuals.

The thicker inside port plates (thicker than 0.050 in (1.27 mm) will be obsoleted and no longer available as service parts. If these parts require replacement, use the 0.050 in. 1.27 mm) port plate and appropriate spacer(s) as service parts. On 100 cc pumps only, the new charge pump shaft must be used if the new style spacer is used,

On 55 and 75 cc pumps, the charge pump shaft clearance pocket in the end cap changed from a beveled to a straight corner to correspond with the change in the charge pump shaft. Old style charge pump shafts will remain available as service parts and must be used in the 55 and 75 cc beveled pocket end caps.

Old style (beveled pocket) end caps will be obsoleted and no longer available as service parts. If an old style end cap needs replacement, new style end caps can be used with any vintage charge pump hardware and charge pump shaft.

PARTS DISPOSITION

- Non-interchangeable - must use correct charge pump shaft per serial number of pump

PRODUCTS AFFECTED

Series 90 55 cc pumps

SUBJECT

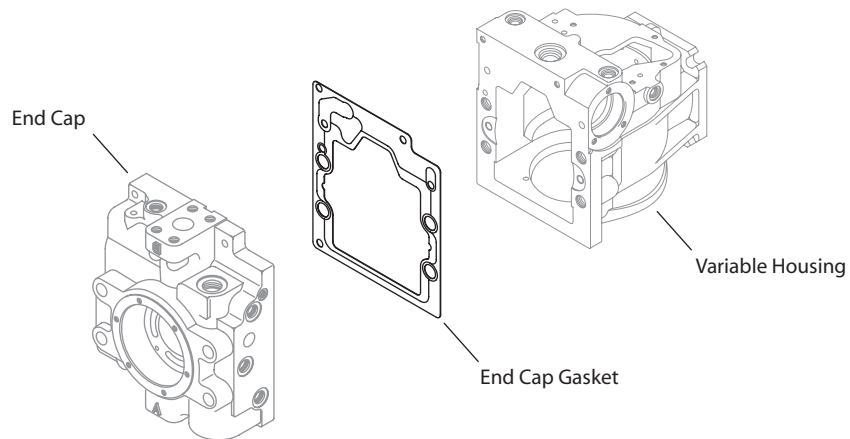
End cap gasket consolidation

DESCRIPTION

Sauer-Danfoss is changing the design of 55 cc pump end caps to allow a single part number gasket to be used for both the twin port and axial port end cap options.

Both old style end caps will be obsoleted and will not be available as service parts. The new end caps can be used on any vintage pump. The new end cap gasket **MUST** be used with new end caps.

The old style end cap gaskets will be available as service parts to repair earlier vintage pumps.



MODELS AFFECTED

All 94-2xxx (55 cc) pumps

SERIAL NUMBERS

Change takes place at serial number A-89-17-xxxxx.

PART NUMBERS AFFECTED

End cap type	Gasket p/n prior to 89-17	Gasket p/n 98-17 and beyond	End cap p/n prior to 89-17	End cap p/n 98-17 and beyond
Axial port	8000107	8000180	8000117*	8000183
Twin port	8000151	8000180	8000149*	8000184

PARTS DISPOSITION

■ Non-interchangeable

PRODUCTS AFFECTED

Series 90 55 cc pumps

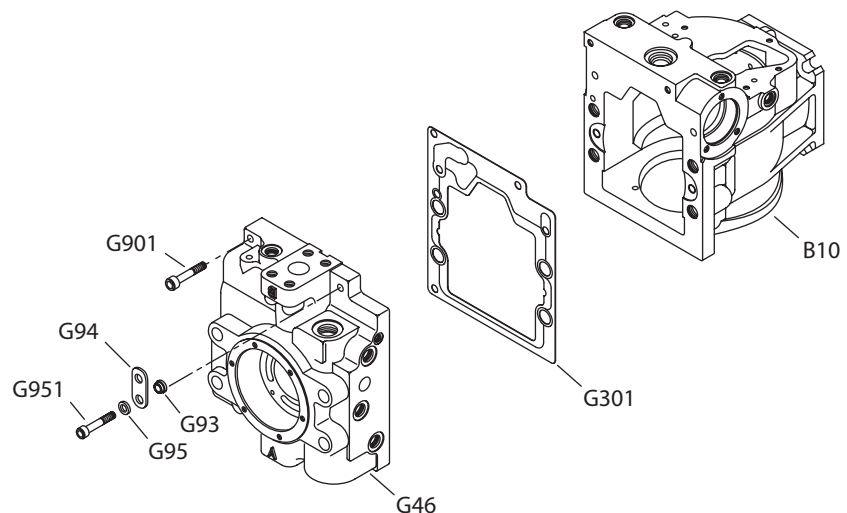
SUBJECT

End cap and housing change

DESCRIPTION

A product improvement has taken place on series 90 55 cc pumps, adding one end cap screw and increasing the size of another. Part number of the housing, end caps, screws, bracket, washer, and gasket changed, as indicated on the following page.

The new end cap gasket is interchangeable with the previous design used since A-89-17-xxxxx (see SB-1989-009). The new and previous design housings and end caps are not interchangeable, however, both of these parts are rarely sold as service parts.



MODELS AFFECTED

All 94-2xxx (55 cc) pumps

SERIAL NUMBERS

Change takes place at serial number A-89-47-xxxxx.

PART NUMBERS AFFECTED

Item	Description	Part number for old design	Part number for new design
B10	Housing	8000105	8000217
G93	Spacer	8800404	8800564
G94	Lifting bracket	8800522	8800565
G95	Washer	9009610-2850	9009610-3459
G46	Twin port end cap	8000184	8000220
G46	Axial port end cap	8000183	8000219
G951	Screw	9007314-0608	9007314-0810
G901	Screw	N/A	9007314-0812
G301	Gasket - twin & axial port	8000214	8000218

PARTS DISPOSITION

- Interchangeable - gasket
- Non-interchangeable - housing and end cap



PRODUCTS AFFECTED

Series 90: 55, 75, 100, 130 cc pumps

SUBJECT

Block point change: components redesign

DESCRIPTION

As part of our overall series 90 product improvement program, numerous components are being redesigned. This redesign is referred to as a "block point" change. The objective of the block point change is to minimize the number of times we change the units while we convert to high volume tooling at various plant sites. These design improvements will provide increased reliability and more application flexibility. The nature of these changes makes customer requalification unnecessary. Old style (pre-block point) variable housings and end caps will no longer be available as spare parts.

FRAME SIZE: 055 CC

Item	Description	Pre-block point part number	New part number 92-06 & later
Common parts group, 55 cc			
B10	Variable housing	8000217 (O)	729848
B82	Plug	n/a	9005110-5600
End cap, 55 cc			
G048	End cap - twin ports	8000220 (O)	8000260
G308	End cap gasket	8000218 (I) (O)	8000243 (I)
G968	Screw	9007314-0606	n/a
G046	End cap - side ports	8000219 (O)	8000259
G306	End cap gasket	8000218 (I) (O)	8000243 (I)
G968	Screw	9007314-0606	n/a
G172	Plug	n/a	9005110-4400
G182	Plug	n/a	9005110-4400
Common parts group, 55 cc			
B83	Plug	n/a	9005110-5600

MODELS AFFECTED

All series 90 94-2xxx variable pumps

SERIAL NUMBERS

Changes will take place at the serial number 92-06-xxxxx

PART NUMBERS AFFECTED

Refer to text of this bulletin for specific part numbers

- Housing: Thickness adjacent to the side cover has been increased
- End cap: Match housing change; small end cap screws will be larger, orientation of charge relief valve on side port end caps has been changed from oblique to vertical.

Note: Reference PIB-9102 for design changes and outline dimensions.

PARTS DISPOSITION

■ Non-interchangeable

PRODUCTS AFFECTED

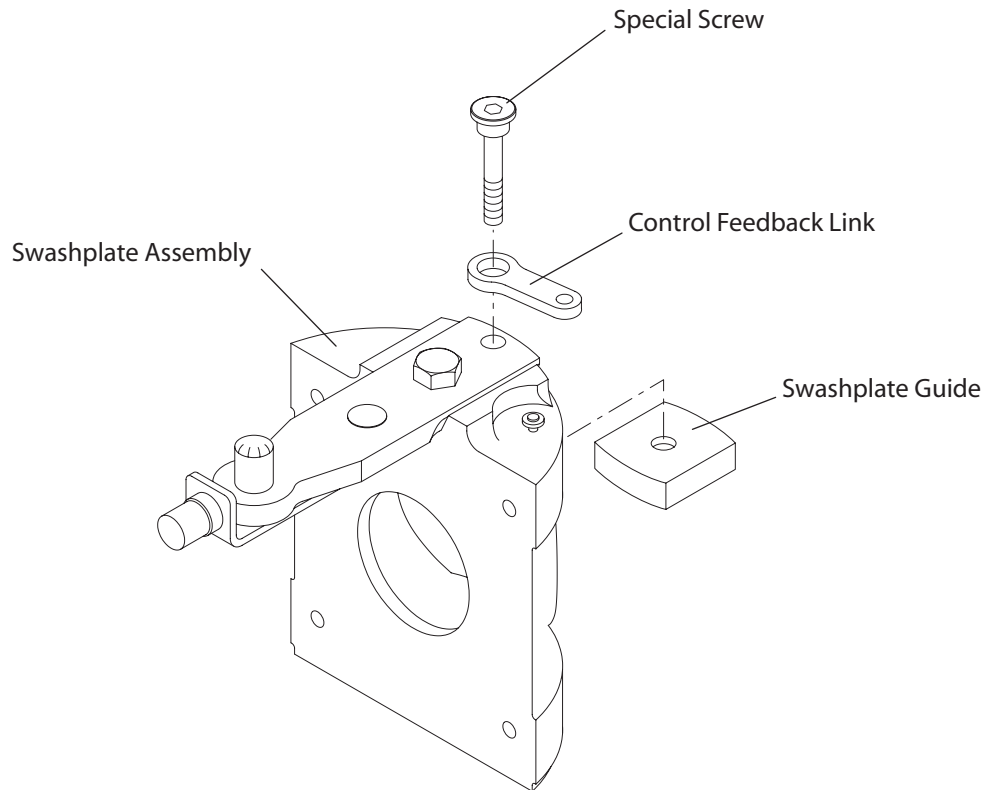
Series 90 - 055, 075, and 100 frame size pumps

SUBJECT

Feedback link retention

DESCRIPTION

Effective in September of 1992, the feedback link in series 90 pumps will be mechanically retained to the swashplate. In the past, the link slipped over a specially ground socket head screw and could fall off the screw during assembly. The screw has changed to include a head to retain the link. The feedback link does not change.



MODELS AFFECTED

All 94-2xxx (55 cc), 95-2xxx (75 cc), and 96-2xxx (100 cc) pumps

SERIAL NUMBERS

Pumps with serial number A-92-38-xxxx and beyond include the new feature.

PART NUMBERS AFFECTED

Frame size	Old screw	New "headed screw
55 & 75 cc	9007276-0109	9007375-0044
100 cc	9007375-0030	9007375-0032

PARTS DISPOSITION

- Interchangeable



PRODUCTS AFFECTED Series 90 - 55, 75, and 100 cc pumps

SUBJECT Charge pump design change

DESCRIPTION **The serial numbers mentioned apply only to Ames production units. Neumunster will incorporate the change in July or August of this year.**

To improve efficiency and reliability, the number of parts in series 90 charge pumps is being reduced. The charge pump design on 55 cc thru 100 cc frame sizes is being changed such that the outer port plate (H30) is an integral part of the charge pump cover (J15) and distance plates are eliminated.

For auxiliary pad options, the new charge pump cover is rotation dependent. The cover will be marked either left hand (L) or right hand (R). The non-auxiliary pad cover is not rotation dependent.

The charge pump shaft also changes and must be replaced when using the new style hardware. The complete charge pump assembly can be interchanged with corresponding hardware from 89-17 and beyond. **However, piece parts are not interchangeable.** For units prior to 89-17, consult Sauer-Danfoss.

MODELS AFFECTED All 94-2xxx, 95-2xxx, and 96-2xxx pumps

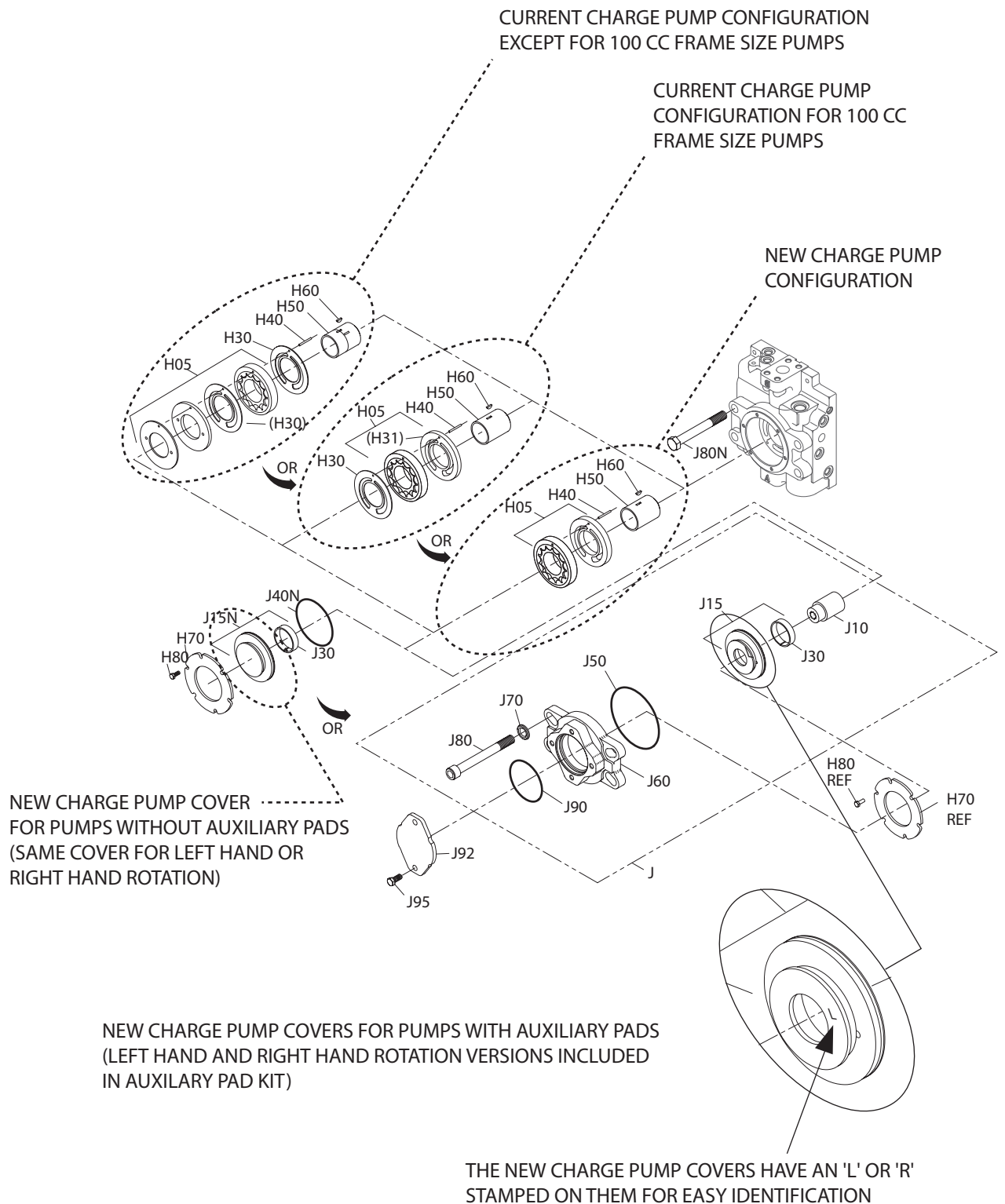
SERIAL NUMBERS
55 cc: A-93-10 & beyond
75 cc: A-93-10 & beyond
100 cc: A93-15 & beyond

PART NUMBERS AFFECTED

55 cc		75 cc		100 cc		Item number	Description
Before 93-10	After 93-10	Before 93-10	After 93-10	Before 93-15	After 93-15		
8000169	8000268	N/A	N/A	N/A	N/A	H05	11 cc charge pump set
8000170	8000269	8100313	8100479	N/A	N/A	H05	14 cc charge pump set
8000171	8000270	8100314	8100480	8200158	8200238	H05	17 cc charge pump set
N/A	N/A	8100315	8100481	8200159	8200239	H05	20 cc charge pump set
N/A	N/A	N/A	N/A	8200160	8200240	H05	26 cc charge pump set
8800314	N/A	8800314	N/A	8800314	N/A	H30	Port plate
N/A	Incl. in H05	N/A	Incl. in H05	8800315	Incl. in H05	H31	Port plate
8000174	8000267	337956	8100476	337956	8100476	H50	Charge pump shaft
8800513	8800834	8800513	8800834	8800513	8800834	J15N	Charge pump cover assy.
8800514	See J15L/R	8800514	See J15L/R	8800514	See J15L/R	J15	Aux. charge pump cover
N/A	8800833	N/A	8800833	N/A	8800833	J15L	Aux. L.H. cover assy.
N/A	8800832	N/A	8800832	N/A	8800832	J15R	Aux. R.H. cover assy.

Note: Piece parts are not interchangeable

PARTS DISPOSITION ■ Interchangeable for s/n 89-17-xxxx and beyond. Piece parts are not interchangeable.



PRODUCTS AFFECTED

Series 90 pump: All frame sizes

SUBJECT


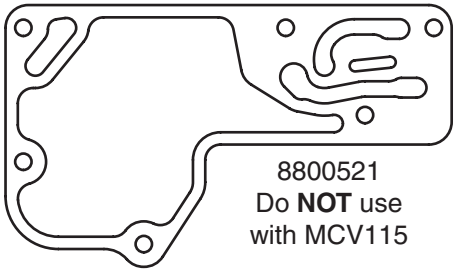
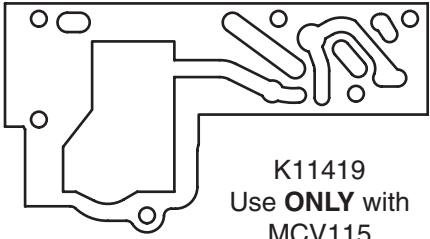
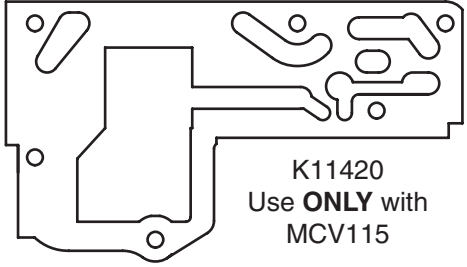
Control gasket changes for MCV115 hydraulic displacement control

DESCRIPTION

In October of 1992, Sauer-Danfoss began offering a new style hydraulic displacement control (MCV115) that is a direct replacement for the MCV112,

The control gasket also changed, and the new style gasket must be used with the MCV115 control. The old style gasket is to be used with the MCV112 control, all manual displacement controls, and MCV111 electric displacement controls.

WARNING
Failure to use the appropriate gasket may result in uncontrolled pump displacement

30cc/42cc/55cc	75cc/100cc/130cc
 8800520 Do NOT use with MCV115	 8800521 Do NOT use with MCV115
 K11419 Use ONLY with MCV115	 K11420 Use ONLY with MCV115

MODELS AFFECTED

All 93-2xxx, 94-2xxx, 95-2xxx, 96-2xxx, and 97-2xxx pumps

SERIAL NUMBERS

October 1992 and beyond

PART NUMBERS AFFECTED

Frame size	Control gasket for EDC (MCV111)	Control gasket for HDC (MCV112)	Control gasket for HDC (MCV115)	Control gasket for MDC (8x02M0Mx)
30/42/55 cc	8800520	8800520	K11419	8800520
75/100/130 cc	8800521	8800521	K11420	8800521

PARTS DISPOSITION

■ Non-interchangeable

PRODUCTS AFFECTED

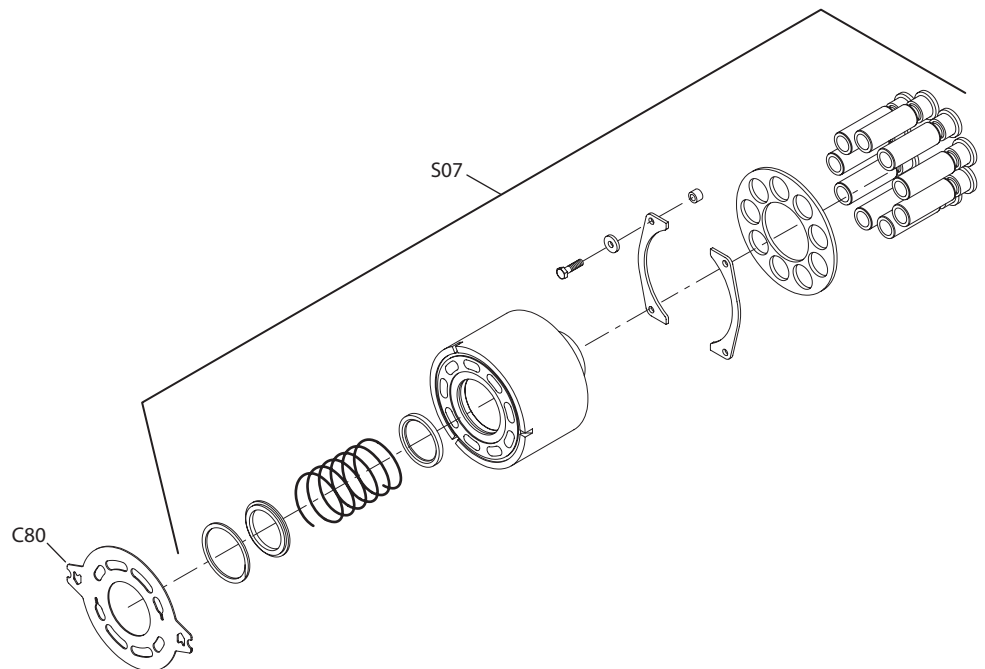
All Series 90 pumps

SUBJECT

Removal of valve plate from cylinder block kit

DESCRIPTION

Due to the increasing number of valve plate options, the valve plate (item C80) will be no longer included in the cylinder block kit (item S07) on all series 90 variable pumps. Valve plates must be ordered separately for service parts. See special hardware features group in your Parts Manual for the appropriate valve plate number.



MODELS AFFECTED

All 93-2xxx, 94-2xxx, 95-2xxx, 96-2xxx, 97-2xxx variable pumps

SERIAL NUMBERS

Not applicable

PART NUMBERS AFFECTED

Frame size	Cylinder block kit
42 cc	80520S07
55 cc	80020S07
75 cc	81020S07
100 cc	82020S07
130 cc	83020S07

PARTS DISPOSITION

■ Not Applicable

PRODUCTS AFFECTED

Series 90 pump: All frame sizes

SUBJECT

Servo arm interference with speed sensor ring

DESCRIPTION

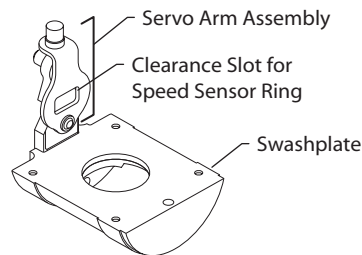
Note: This service bulletin revision adds the 42 cc frame size and the incorporation date of 55 thru 1000 cc.

A potential interference problem has been identified in series 90 42, 55, 75, and 100 cc frame size pumps built since early 1992. Interference may occur between the swashplate hold down bracket on the servo arm and the speed sensor ring, which may be installed on the cylinder block as an option.

A new hold down bracket has been designed to provide clearance for the speed sensor ring.

If a cylinder block with speed ring must be installed in one of the subject pumps, a servo arm assembly with the new hold down will also be required.

Sometime during the first quarter of 1994, all 55, 75, and 100 cc pumps will be equipped with the new design hold down bracket. The 42 cc pumps will implement the new design hold down bracket in the second quarter of 1994.



MODELS AFFECTED

All 93-2xxx, 94-2xxx, 95-2xxx, and 96-2xxx variable pumps

SERIAL NUMBERS

42 cc at serial number 92-16-xxxxx
 55 cc at serial number 92-06-xxxxx
 75 cc at serial number 92-17-xxxxx
 1000 cc at serial number 92-12-xxxxx

All 55, 75 and 100 cc pumps built in Ames beginning with s/n A-94-11-xxxxx will have the new servo arm assembly installed. 100 cc pumps built in Neumunster will also incorporate on this date. The 75 cc pumps built in Neumunster will incorporate on N-94-14-xxxxx 42 cc pumps will incorporate on N-94-36-xxxxx.

PART NUMBERS AFFECTED

Frame size	Old servo arm (no slot in bracket)	New servo arm (with slot in bracket)
42 cc	354282	502976
55 cc	8000191	8000318
75 cc	8100366	8100499
100 cc	8200182	8200268

PARTS DISPOSITION

■ Non-interchangeable - Pumps with speed sensor ring must use the new servo arm.

PRODUCTS AFFECTED

Series 90 55-100 cc variable pumps

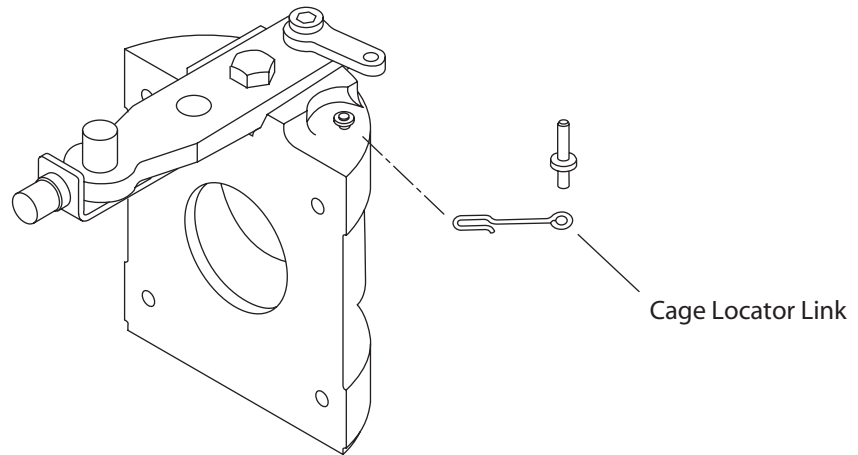
SUBJECT

Swashplate cage locator

DESCRIPTION

As a product improvement, Sauer-Danfoss has made a design change to the cage locator link used on the 55 thru 100 cc variable pumps.

The new link is made from square wire. In the past, the link was made from round wire, This is an interchangeable change.



MODELS AFFECTED

All , 94-2xxx + 942xxx, 95-2xxx, + 952xxx and 96-2xxx + 962xxx variable pumps

SERIAL NUMBERS

55 and 75 cc pumps serial number 94-18-xxxxx
 100 cc pumps will begin 4th quarter 1994

PART NUMBERS AFFECTED

	Old link	New link
55 cc	8100241	8100506
75 cc	8100241	8100506
100 cc	8200108	8200273

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 variable pumps

SUBJECT

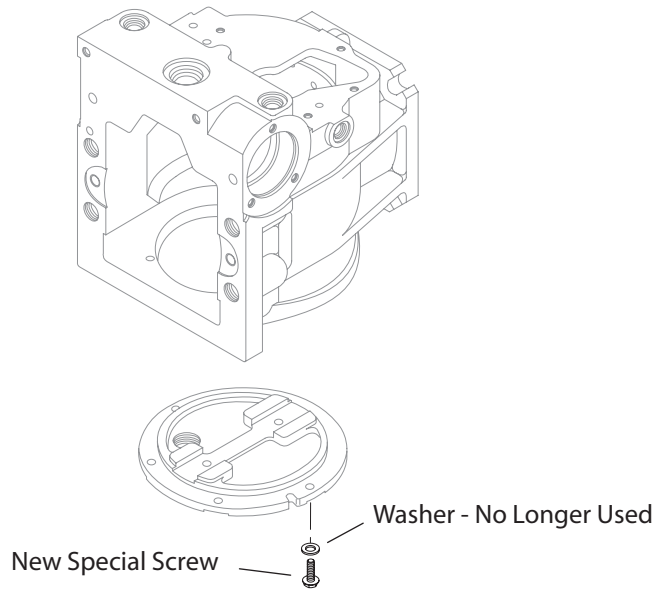
Side cover washer elimination

DESCRIPTION

The washers located under the side cover screws have been removed on all series 90 42 thru 130 cc variable pumps.

As before, the side cover screws must be replaced if they are removed for any reason. The special coating, which seals and retains the screws, wears off when the screws are removed.

The screw length changed on 55 thru 100 cc pumps, so it is important that the washers are discarded during repair. The proper screw is included in the overhaul seal kits.



MODELS AFFECTED

All 93-2xxx, 94-2xxx, 95-2xxx, 96-2xxx, and 97-2xxx variable pumps

SERIAL NUMBERS

Change took place during the 2nd and 3rd quarter of 1994

PART NUMBERS AFFECTED

Pump size	Old screw	New screw
42 cc	648477	Same part number
55-100 cc	9007276-0115	5000206
130 cc	308700	Same part number

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 55 thru 130 cc variable pumps

SUBJECT

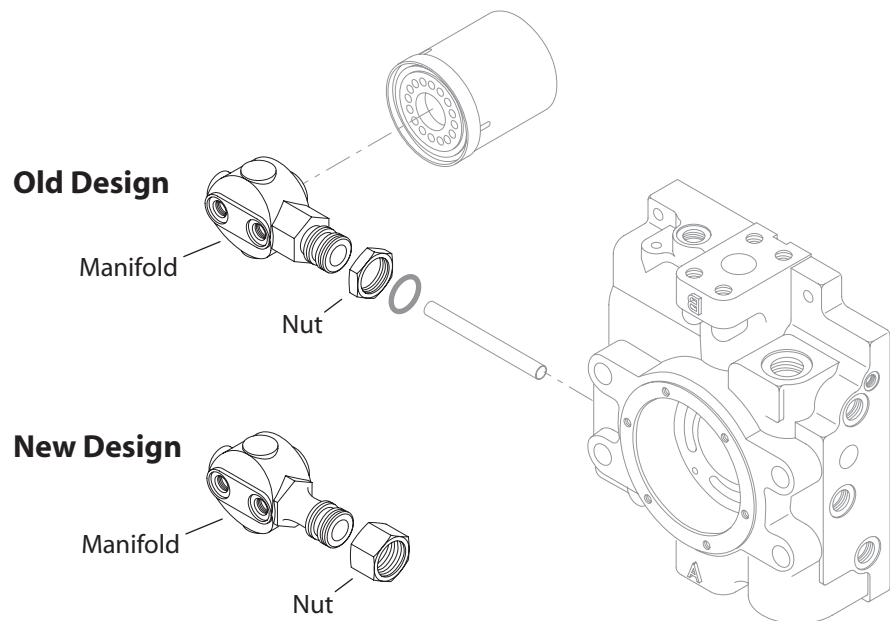
Integral filtration manifold

DESCRIPTION

As a product improvement, Sauer-Danfoss is changing the integral filter manifold and bulkhead nut to make it more easily indexed.

The old bulkhead nut may be used with either the old or new filter manifold. The new bulkhead nut can only be used with the new filter manifold.

The old bulkhead nut will remain available as a service part. The old filter manifold will be obsolete and no longer available as a service part.



MODELS AFFECTED

All series 90 55 thru 130 cc variable pumps with "L," "M," or "P" filtration option code

SERIAL NUMBERS

Change occurred at serial number 95-18-xxxxx

PART NUMBERS AFFECTED

<u>Description</u>	<u>Part number (prior to 95-18)</u>	<u>Part number (95-18 & beyond)</u>
Filter manifold	8800200	8800896
Bulkhead nut	9002863-1600	5000222

PARTS DISPOSITION

■ Interchangeable - new bulkhead nut can only be used with new filter manifold

PRODUCTS AFFECTED

Series 90 variable pumps - all frame sizes

SUBJECT

Manual displacement control (MDC) with DC electric solenoid override

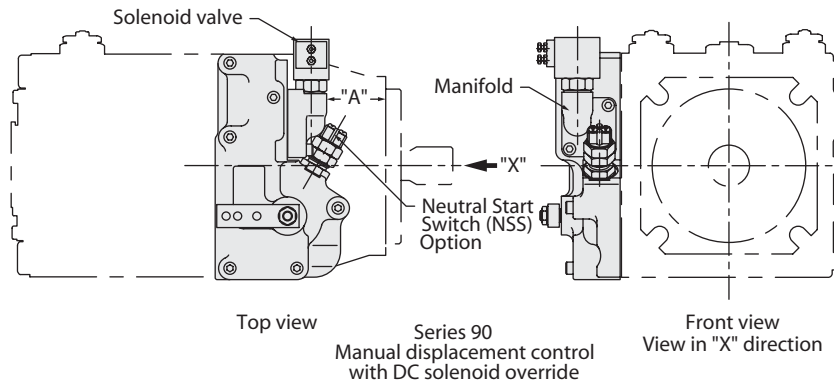
DESCRIPTION

In order to accommodate our European customers, the manifold which attaches to the front of the manual displacement control (MDC) housing is being changed.

The European solenoid valve requires a thicker manifold to provide clearance between the solenoid and the front of the MDC housing. The revised manifold will protrude closer to the mounting flange of the pump, reducing dimension "A" shown in the accompanying drawing by approximately 5 mm [0.2 in]. Please see chart below for specific clearances.

The thicker manifold requires longer screws and may be used with either the U.S. or European sourced solenoid.

This change will become effective during March of 1995. The old manifold will be obsolete and no longer available as a service part.



Frame size		42	55	75	100	130
Dimension "A"	Current	39.9 [1.57]	55.9 [2.20]	54.1 [2.13]	60.2 [2.37]	74.4 [2.93]
	Future mm [in]	34.9 [1.37]	50.9 [2.0]	49.1 [1.93]	55.2 [2.17]	69.4 [2.73]

MODELS AFFECTED

All series 90 variable pumps using MDC with DC electric solenoid override.

SERIAL NUMBERS

Change will take place in March 1995.

PART NUMBERS AFFECTED

Description	Current part number	New part number	Quantity
Manifold	8800365	505022	1
Screw	9007314-0605	9007314-0606	2

PARTS DISPOSITION

■ Interchangeable (new manifold requires longer screws)

PRODUCTS AFFECTED

Series 90 55, 75, and 100 cc variable pumps

SUBJECT

Side cover design change

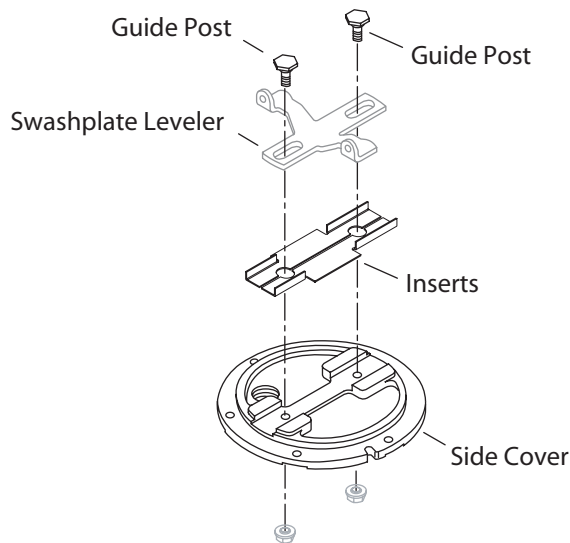
DESCRIPTION

As a product improvement, Sauer-Danfoss is changing the side cover and swashplate leveler ("T-bar") guide post design.

The new design side cover will have two hardened inserts in the machined slot, which serves as a guide for the swashplate leveler, and modified guide posts. The swashplate leveler does not change.

Old guide posts will remain available for service requirements of pumps with the old design side cover.

The old style side cover will be obsoleted and no longer available as a service part. A service kit has been created for replacing the old design side cover. The kit includes the new side cover, guide posts, and inserts. **Piece parts are not interchangeable.**



MODELS AFFECTED

All 55, 75, & 100 cc variable pumps

SERIAL NUMBERS

This change became effective at serial number A-95-50-xxxxx.

PART NUMBERS AFFECTED

Description	Old part numbers		New part numbers		
	Guide post	Side cover	Insert assy.	Guide post	Side cover kit
55 cc	8100353	8000157	8000406	8000379	8510097
75 cc	8100353	8100226	8100562	8000379	8510098
100 cc	8100353	746560	8200321	8000379	8510099*

PARTS DISPOSITION

■ Interchangeable as a kit. Piece parts are not interchangeable.



PRODUCTS AFFECTED

Series 90 42 cc - 130 cc variable pumps

SUBJECT

Standard valve plate part number change

DESCRIPTION

As a product improvement, Sauer-Danfoss is changing the standard valve plate used in series 90 42 thru 130 cc variable pumps. (refer to PIB-9507)

The purpose of this bulletin is notification of part number changes for the order codes affected. During unit repair, do not replace the new style valve plate with an old style valve plate. However, the old style may be replaced with a new style valve plate.

The old style valve plates will be obsoleted and no longer available as a service part.

MODELS AFFECTED

All 932xxx, 942xxx, 952xxx, 962xxx, and 972xxx variable pumps

SERIAL NUMBERS

This change became effective at serial number N-95-48-xxxxx

PART NUMBERS AFFECTED

Unit	Old order code	Old valve plate part number	New order code	New valve plate part number
42 cc	NNN	500337	GBA	758383
55 cc	NNN	8000071	GBA	8000431
75 cc	NNN	8100145	GBA	501332
100 cc	NNN	8200041	GBA	501327
130 cc	NNN	700203	GBA	758425

PARTS DISPOSITION

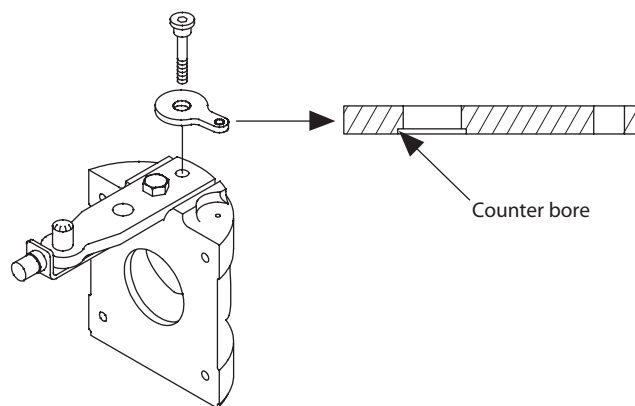
■ Interchangeable - do NOT substitute the old valve plate for the new valve plate

PRODUCTS AFFECTED Series 90 55, 75, and 100 cc variable pumps

SUBJECT Change swashplate feedback link

DESCRIPTION As a product improvement, Sauer-Danfoss is changing the design of the swashplate feedback link used on the 55, 75, and 100 cc variable pumps.

The new swashplate link has a counter bore that allows for clearance between the feedback link and the servo arm screw. The counter bore side of the link must be installed such that the counter bore is facing the surface of the servo arm.



MODELS AFFECTED All 942xxx, 952xxxx, and 962xxx variable pumps

SERIAL NUMBERS For 55 and 75 cc pumps, the change became effective at serial number A-96-22-xxxxx. For 100 cc pumps, the change became effective at serial number A-96-12-xxxxx

PART NUMBERS AFFECTED	<u>Frame size</u>	<u>Old part number</u>	<u>New part number</u>
	55 cc	8000096	8000481
	75 cc	8000096	8000481
	100 cc	8200106	8200344

PARTS DISPOSITION ■ Interchangeable



PRODUCTS AFFECTED

Series 90 55 cc variable pumps

SUBJECT

Valve plate part number change

DESCRIPTION

Sauer-Danfoss has changed the valve plate part number due to a change in the supplier of the valve plate that is used in series 90 55 cc variable pumps.

This change will affect the GBA, FAD, EBC, and the EEB ordering codes.

The old and new valve plates are interchangeable. The old valve plate part number is obsolete.

MODELS AFFECTED

All 94-2xxx and 942xxx variable pumps

SERIAL NUMBERS

This change became effective at serial number 97-07-xxxxx

PART NUMBERS AFFECTED

	<u>Old part number</u>	<u>New part number</u>
Valve plate	8000431	508125

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 55, 75, and 100 cc variable pumps

SUBJECT

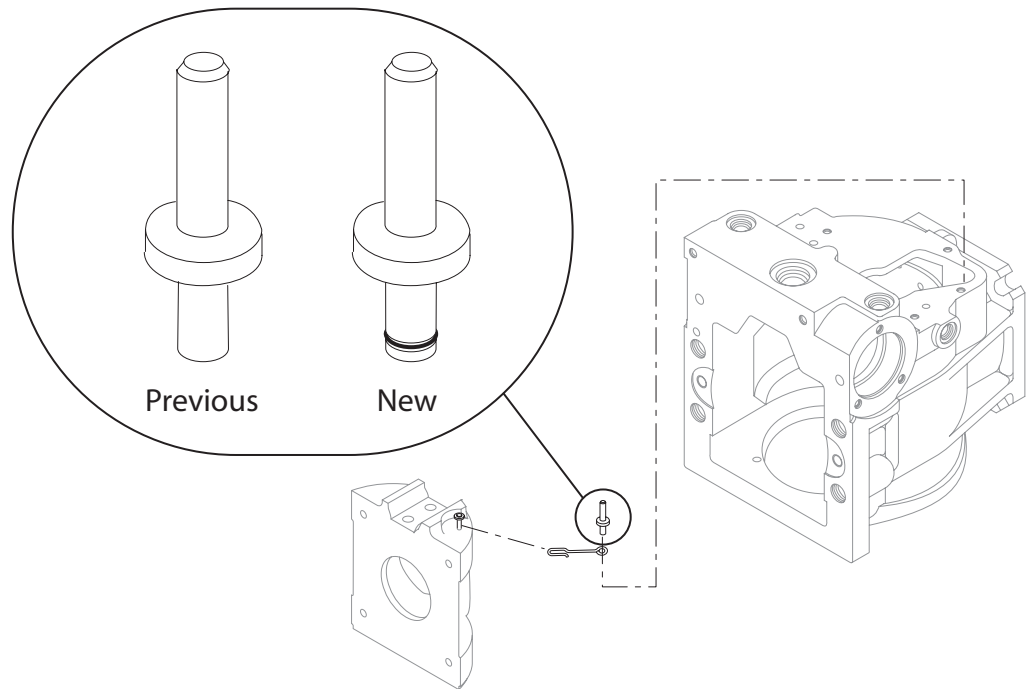
Swashplate bearing cage locator pin

DESCRIPTION

Sauer-Danfoss has modified the design of the swashplate bearing cage locator pin used in the series 90 55, 75, and 100 cc variable displacement pumps.

The improved design includes a rubber gripping element on the portion of the pin that is in the main pump housing. The rubber element aids in retaining the pin in the housing during normal pump assembly and servicing procedures, by increasing the interference fit between the pin and the pilot hole in the pump housing.

To aid in identifying this change, Sauer-Danfoss has released a new part number for the updated pin design. The new pin is completely interchangeable with the previous pin part number. The previous pin has been obsoleted.



MODELS AFFECTED

All 94-2xxx, 942xxx, 95-2xxx, 952xxx, 96-2xxx and 962xxx variable pumps

SERIAL NUMBERS

This change became effective at serial number 98-24-xxxxx

PART NUMBERS AFFECTED

	<u>Prior ot 98-24</u>	<u>98-24 and beyond</u>
Pin part number	8100235	8801135

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 55, 75, and 100 cc variable pumps
Series 90 55 and 75 cc variable motors

SUBJECT

Piston hold down mechanism design change

DESCRIPTION

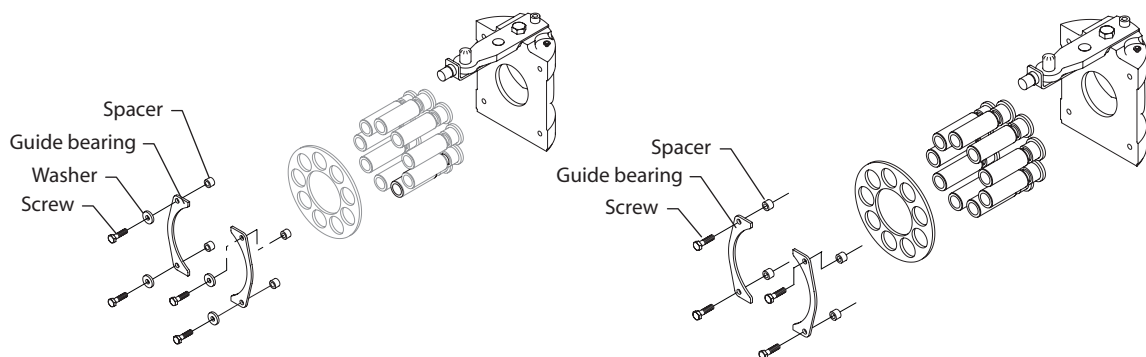
Sauer-Danfoss has initiated a change to the piston hold down mechanism used on series 90 55, 75, and 100 cc variable displacement pump and the series 90 55 and 75 cc variable displacement motors.

Previously, the hold down assembly consisted of a spacer, slipper guide bearing, washer, and screw. The spacer provides a fixed amount of operational clearance for the slipper and slipper retainer. The guide bearing provides a wear surface for the slipper retainer, while the hold down screws and washers retain the assembly.

The change involved with the current design update is the removal of the washer from the assembly. This design was initially introduced on the series 90 42 and 130 cc pumps in 1994, and with this change a uniform product family is achieved.

With the removal of the washer, the required length of the assembly screw is reduced. The change in the assembly screw also affects the dimensions of the spacer. Therefore, with this change, the part numbers associated with the assembly screw and spacer have been changed. Some of the assembly screws are parts already maintained in the parts system.

Although the new spacer and assembly screw are directly interchangeable with the previous swashplate assembly components, we recommend that the components be serviced in combination. Since the new spacer may be serviced as a stand alone item, the previous spacer has been obsoleted and will no longer be available as a service part.



MODELS AFFECTED

94-2xxx, 942xxxx, 95-2xxx, 952xxxx, 96-2xxx, and 962xxxx variable pumps
 94-2xxx, 942xxxx, 95-2xxx, and 952xxxx variable motors

SERIAL NUMBERS

Sauer-Danfoss Ames production - effective at serial number A-98-48-xxxxx

PART NUMBERS AFFECTED

Component	Displacement	Prior to 98-48	Current
Hold down screw	55 cc	9007276-0114	648477
Spacer	55 cc	8000266	8000619
Washer - pumps	55 cc	9009625-0159	N/A
Washer - motors	55 cc	9009625-0129	N/A
Hold down screw	75 cc	9007276-0099	9007276-0114
Spacer	75 cc	8100450	8100777
Washer - pumps	75 cc	9009625-0159	N/A
Washer - motors	75 cc	9009625-0129	N/A
Hold down screw	100 cc	9007276-0099	9007276-0114
Spacer	100 cc	8200216	8200422
Washer - pumps	100 cc	9009625-0159	N/A

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 55, 75, and 100 cc variable pumps

SUBJECT

Charge pump shaft part number change

DESCRIPTION

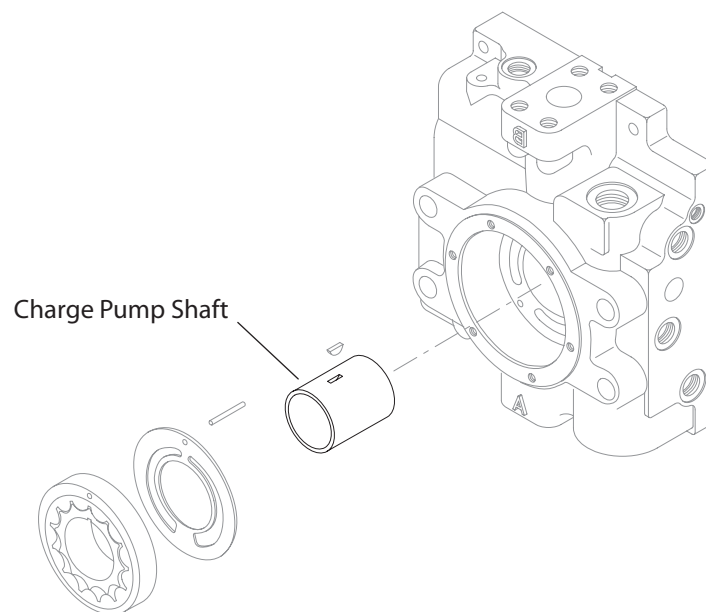
As a product improvement, Sauer-Danfoss has modified the design of the charge pump shaft used in series 90 55, 75 and 100 cc pumps. This change affects all charge pump sizes (11, 14, 17, 20, 26, and 31 cc) available in the series 90 displacement range.

The series 90 55 cc variable displacement pump uses the same charge pump shaft, regardless of charge pump size (11, 14, or 17 cc). The series 90 75 and 100 cc variable displacement pumps, utilize a common charge pump shaft for the standard size charge pumps (75 cc standard equals 14, 17, and 20 cc and 100 cc standard equals 17, 20, and 26 cc).

A unique charge pump shaft is utilized by series 90 75 cc variable displacement pumps equipped with the 26 cc size charge pump, while the same unique shaft is used by series 90 100 cc variable displacement pumps equipped with 31 cc size charge pumps.

The design modification includes a surface finish change to the charge pump shaft which improves the wear characteristics between the charge pump shaft and the journal bearings in the charge pump cover and end cap.

To assist in identifying this change, Sauer-Danfoss has released new charge pump shaft part numbers. The new shafts are completely interchangeable with the previous shafts. The new shaft has replaced the previous shaft in new pump assemblies and charge pump service kits. The previous shafts have been obsoleted and are no longer available as a service part. The chart on the next page will assist you in determining the part number changes.



MODELS AFFECTED

94-2xxx, 942xxxx, 95-2xxx, 952xxxx, 96-2xxx, and 962xxxx variable pumps

NOTE: Pump models 9621723 and 9622117 were released with a special charge pump option (code W - 26 cc charge pump with special shaft). With this product modification, the charge pump option code for these two models has been changed from W to the standard option (code F - 266 cc charge pump). The special shaft part number 8801176 has been obsoleted and replaced with shaft part number 8801178.

SERIAL NUMBERS

Sauer-Danfoss Ames production - effective at serial number A-99-40-xxxxx

Sauer-Danfoss Neumunster production - effective at serial number N-99-39-xxxxx

PART NUMBERS AFFECTED

Series 90 Size	Charge pump	Previous shaft	New shaft	Charge kit		
				No aux. pad	LH w/aux.	RH w/aux.
55	11	8000267	8801177	8510028	8510029	8510030
55	14	8000267	8801177	8510031	8510032	8510033
55	17	8000267	8801177	8510034	8510035	8510036
75	14	8100476	8801178	8510037	8510038	8510039
75	17	8100476	8801178	8510040	8510041	8510042
75	20	8100476	8801178	8510043	8510044	8510045
75	26*	8100478	8801179	N/A	N/A	N/A
100	17	8100476	8801178	8510046	8510047	8510048
100	20	8100476	8801178	8510049	8510050	8510051
100	26	8100476	8801178	8510052	8510053	8510054
100	31*	8100478	8801179	N/A	N/A	N/A

* Special charge pump shaft option using unique charge pump shaft

PARTS DISPOSITION

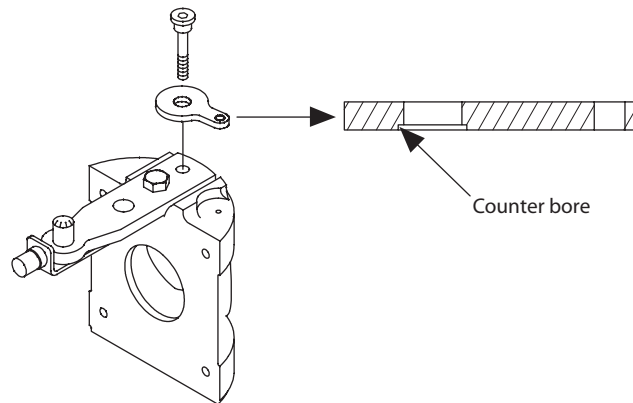
■ Interchangeable

PRODUCTS AFFECTED Series 90 55, 75, and 100 cc variable pumps

SUBJECT Feedback link change

DESCRIPTION As a product improvement, Sauer-Danfoss is changing the design of the swashplate feedback link used on the 55, 75, and 100 cc variable pumps.

In 1996, a counter bore was added to the design of our swashplate link to allow for a higher clamping load when assembled to the servo arm. This change was described in SB-1996-009. The counter bore is no longer required on most units due to a design change to the servo arm. Sauer-Danfoss recommends the old feedback link be used when servicing pumps with dates codes prior to 96-40-xxxx. The old feedback link will remain available as a service part.



MODELS AFFECTED All series 90 55, 75, and 100 cc variable pumps

SERIAL NUMBERS This change became effective at serial number A-96-40-xxxx.

PART NUMBERS AFFECTED

	100 cc	55 & 75 cc
Old part number	8200344	8000481
New part number	8200413	8000602

PARTS DISPOSITION ■ Non-interchangeable

PRODUCTS AFFECTED

Series 90 variable pumps

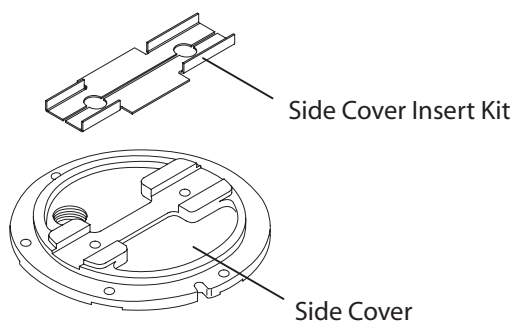
SUBJECT

Change to side cover insert material

DESCRIPTION

As a continuous product improvement, Sauer-Danfoss has changed the side cover insert material to improve wear characteristics. The new material is more wear resistant than the previous material.

In order to track this change, new part numbers have been created and the old part numbers will be obsolete.



MODELS AFFECTED

93-2xxx, 94-2xxxx, 95-2xxx, 96-2xxxx, 97-2xxx, 98-2xxx, and 99-2xxx

SERIAL NUMBERS

Frame size	NMS effectivity date	Ames effectivity date
42 cc	N-99-36-xxxxx	N/A
55 cc	N-00-18-xxxxx	A-00-18-xxxxx
75 cc	N-99-26-xxxxx	A-00-38-xxxxx
100 cc	N-99-31-xxxxx	A-00-38-xxxxx
130 cc	N-99-33-xxxxx	N/A
180 cc	N-99-36-xxxxx	N/A
250 cc	N-99-36-xxxxx	N/A

PART NUMBERS AFFECTED

Frame size	Old part number	New part number
42 cc	506916	513885
55 cc	8000406	513886
75 cc	8000562	513888
100 cc	8200321	513889
130 cc	8300004	513890
180 cc	506914	513891
250 cc	506914	513891

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 55, 75, 1nd 100 cc variable displacement pumps

SUBJECT

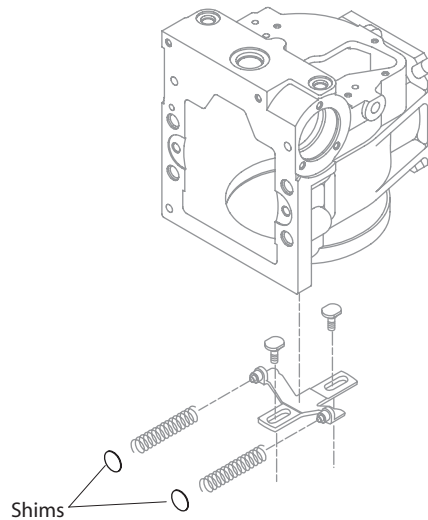
Common leveler spring shim.

DESCRIPTION

The date code for the series 90 55 cc should have been for a date code of A-92-06-xxxxx not A-02-06-xxxxx.

Sauer-Danfoss has standardized the leveler spring shim used on all 55, 75, and 100 cc variable displacement pumps. Two different shims were used in the past. One size was for 55 and 75 cc pumps, and the other for the 100 cc pumps. The new shim can be used in all three frame sizes.

Sauer-Danfoss has issued a new part number for the new shim. The new shim is interchangeable for 55 cc pumps built after A-92-06-xxxxx, 75 cc pumps built after A-96-19-xxxxx, and 100 cc pumps. For pumps manufactured prior to these dates, you will need to reuse the old shims, as the new shim outer diameter is larger, and this will cause the new shim to not seat correctly in the bottom of the pocket in the end cap. The old shim part numbers are obsolete.



MODELS AFFECTED

All 94-2xxx, 942xxxx, 95-2xxx, 952xxxx, 96-2xxx, and 962xxxx variable pumps.

SERIAL NUMBERS

Sauer-Danfoss Ames, Iowa production change was effective at serial number A-00-40-xxxxx

Sauer-Danfoss Neumunster, Germany production change was effective at serial number N-01-27-xxxxx

PART NUMBERS AFFECTED

Frame size	Old part number	New part number
55 cc	359042	8801225*
75 cc	359042	8801225**
100 cc	359059	8801225

* can only be used in pumps manufacture after A-92-06-xxxxx

** can only be used in pumps manufactured after A-96-19-xxxxx

PARTS DISPOSITION

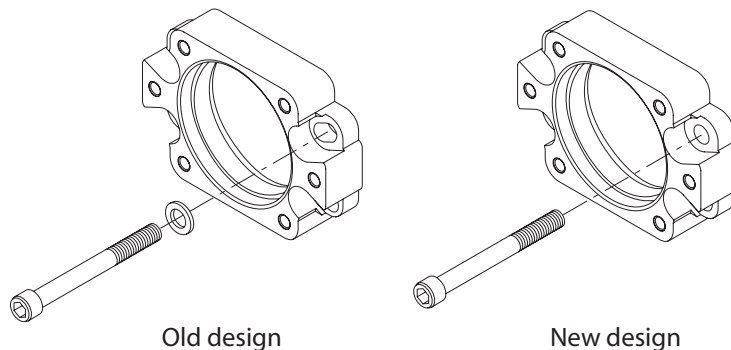
■ Interchangeable

PRODUCTS AFFECTED Series 90 55, 75, and 100 cc pumps

SUBJECT Auxiliary mounting pad

DESCRIPTION As a product improvement, Sauer-Danfoss has changed the design of the SAE C auxiliary mounting pad to increase strength and reduce corrosion. The old auxiliary mounting pad and new auxiliary mounting pad are interchangeable. The new auxiliary mounting pads are frame size dependent, because they do not have slotted mounting holes. The auxiliary mounting pad screws remain the same, but they do not require washers.

The old auxiliary mounting pad is obsolete and no longer available as a service part. The washers will remain available.



MODELS AFFECTED Series 90 55, 75, and 100 cc pumps with SAE C auxiliary mounting.

SERIAL NUMBERS This change became effective at serial number A-03-10-xxxxx

PART NUMBERS AFFECTED

Frame size	Old auxiliary pad part number	New auxiliary pad part number	Old washer part number
55 cc	723205	8000643	5000602
75 cc	723205	8100848	9009625-0132
100 cc	723205	8200469	9009625-0132

The new auxiliary mounting pads are frame size dependent and do not use washers.

PARTS DISPOSITION ■ Interchangeable

PRODUCTS AFFECTED

Series 90 55 and 75 cc pumps

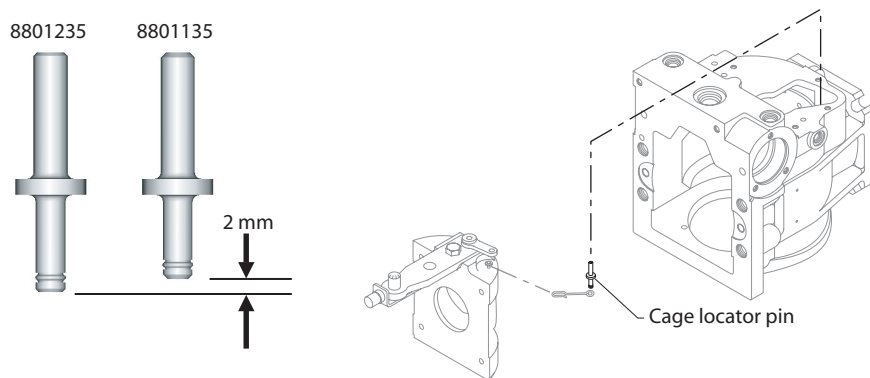
SUBJECT

Cage locator pin

DESCRIPTION

As a product improvement, Sauer-Danfoss is standardizing the cage locator pin for all series 90 55, 75, and 100 cc pumps. All 55 and 75 cc pumps will now use the same locator pin used in 100 cc pumps. The new locator pin extends 2 mm further into the housing than the old pin. The housings have been machined to accept the longer pin.

The old cage locator pin must be used in pumps that have not had the housings modified. The old pin can be used in any vintage pump and will remain available as a service part.



MODELS AFFECTED

Series 90 55 and 75 cc pumps.

SERIAL NUMBERS AND PART NUMBERS AFFECTED

Frame size	Old pin part number	New pin part number	Housing modification date*
			A-04-43-xxxxx
55 cc	8801135	8801235	N-04-43-xxxxx
			S- not determined
			A-01-26-xxxxx
75 cc	723205	8100848	N-00-01-xxxxx
			S- not determined
100 cc	8801235	8801235	No change

* A = Ames, Iowa N = Neumunster, Germany
 S = Shanghai, China (a revision will be made when modification date has been determined).

PARTS DISPOSITION

■ Non-interchangeable

PRODUCTS AFFECTED

Series 90 42 thru 100 cc pumps

SUBJECT

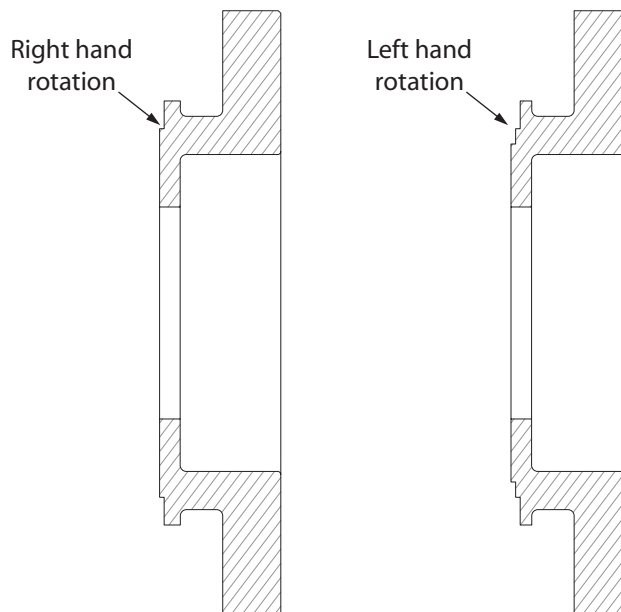
Auxiliary flange charge pump cover

DESCRIPTION

Sauer-Danfoss will no longer mark auxiliary flange charge pump cover with an "R" for right hand rotation or an "L" for left hand rotation.

The pilot surface has changed on the covers. The right hand rotation charge pump cover will have 1 step and the left hand rotation charge pump cover will have 2 steps. Refer to the drawings below for example.

The part numbers of the charge pump covers will not change.

**MODELS AFFECTED**

Series 90 42 thru 100 cc pumps with auxiliary pad options.

SERIAL NUMBERS

This change became effective at serial number A-05-17-xxxxx

**PART NUMBERS
AFFECTED**

None

PARTS DISPOSITION

■ Interchangeable



Series 90 55 cc Axial Piston Pump
Parts Manual
Notes





Series 90 55 cc Axial Piston Pump
Parts Manual
Notes





OUR PRODUCTS

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