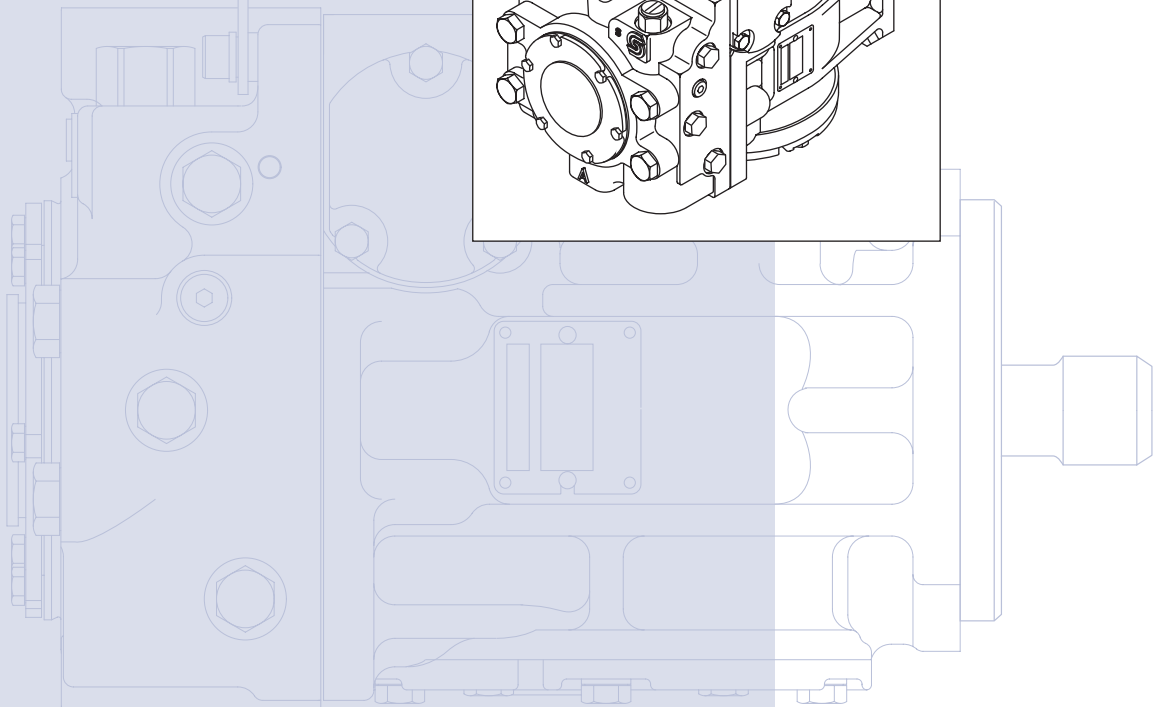
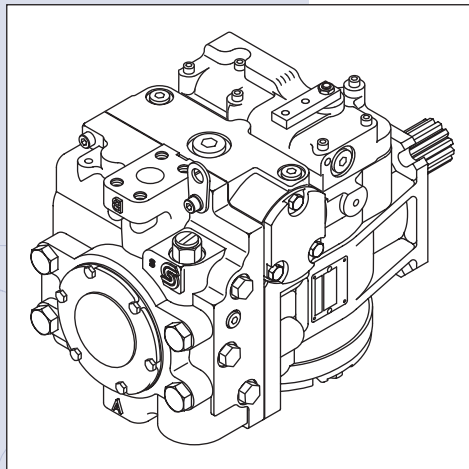
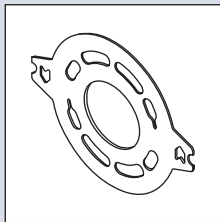
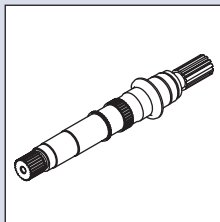
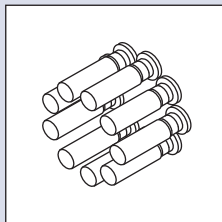


Series 90
100 cc Axial Piston
Pump

Parts Manual





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



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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, 100 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, 100 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

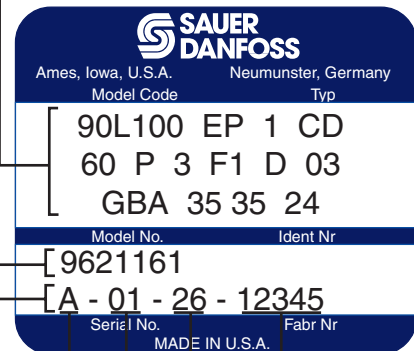
The Sauer-Danfoss serial number is used to identify the manufacture date and the unit sequence in the build. The serial number is also used to identify the units warranty time period.

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
60	G30	89-46		8200212	End cap gasket	1
	G30	87-02	89-45	8200043	End cap gasket (SB-1992-003)	1

All units using this order code with a date code of 87-02 and up to and including 89-45, must use part number "8200043". All units with a date code of 89-46 and newer must use part number "8200212".

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: 001149 (9004201-6200), customers would order 9004201-6200 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 90L075 EP 1 CD 60 P 3 F1 D 03 GBA 35 35 24. Use the following procedures to determine the part number of the drive shaft used on this pump.

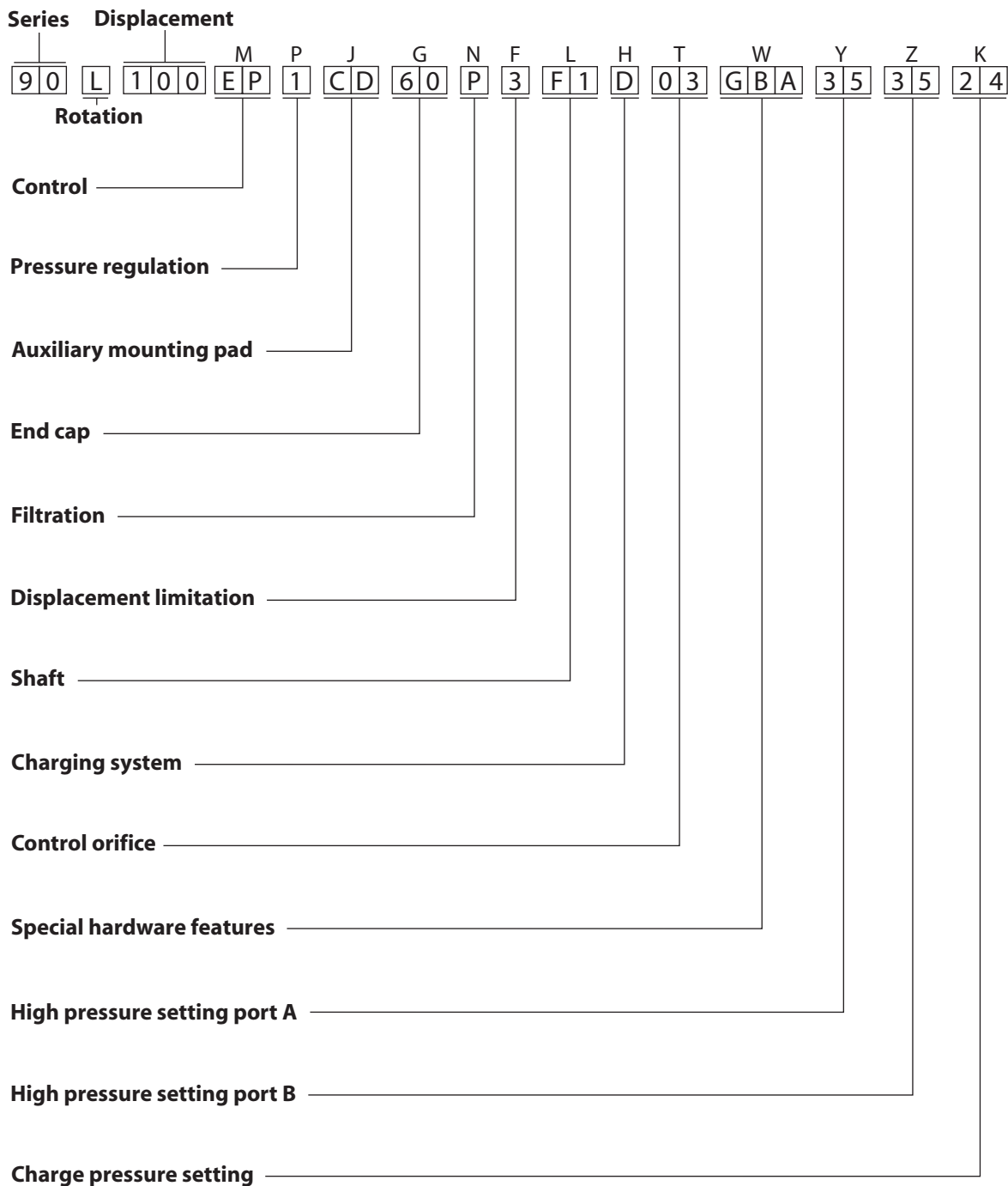
1) Referring to the input shaft module in the Order Code (see page 7), the input shaft option for this pump is identified by the code "F1". (90L075 EP 1 CD 60 P 3 **F1** D 03 GBA 35 35 24)

2) Referring to the Service Parts List, find the shaft group. Next find the order code that relates to this unit, which is "F1". The shaft is found to be item L100 and part number 8200170.

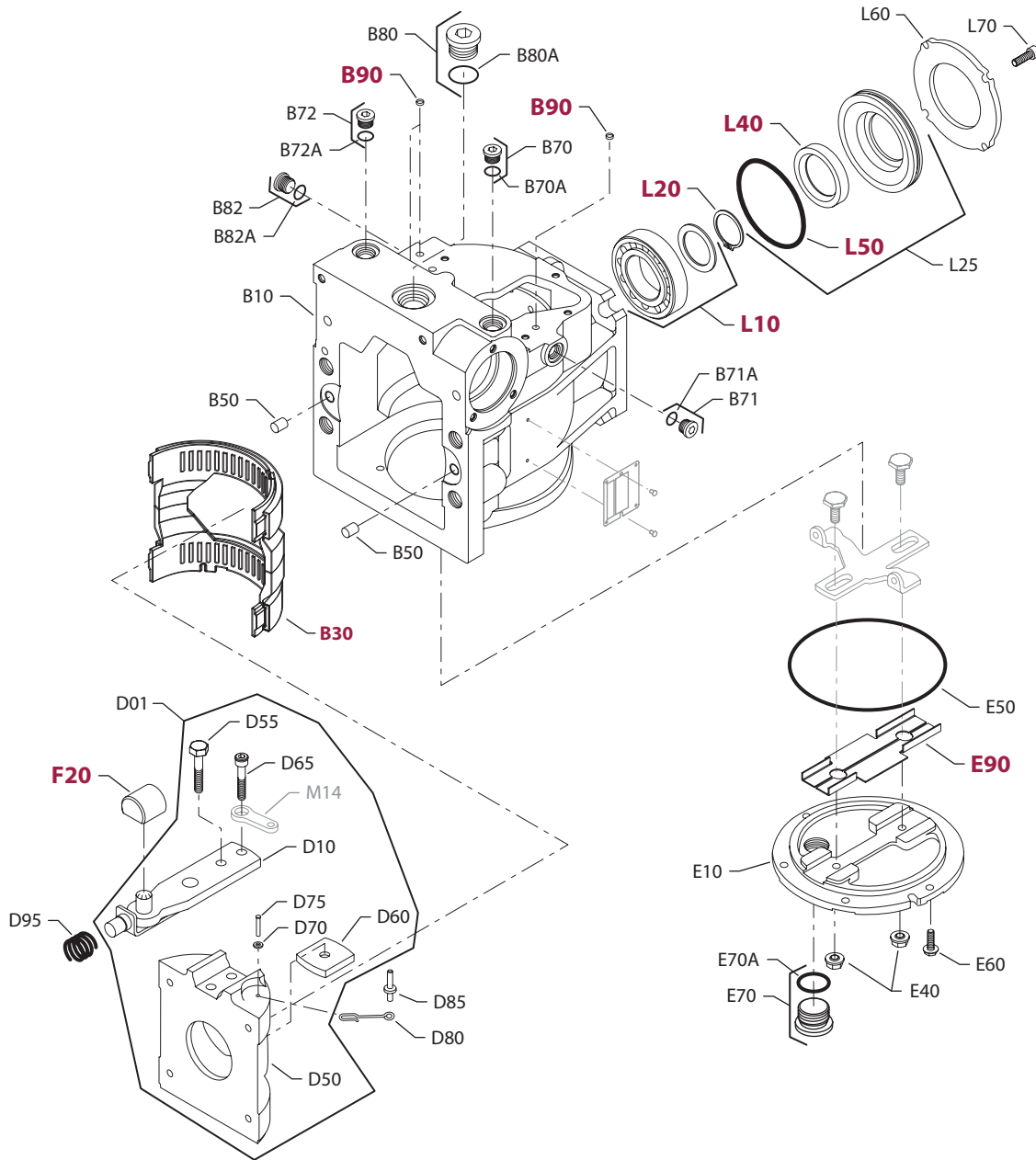


Series 90 100 cc Axial Piston Pump
Parts Manual
Notes





P100 710E

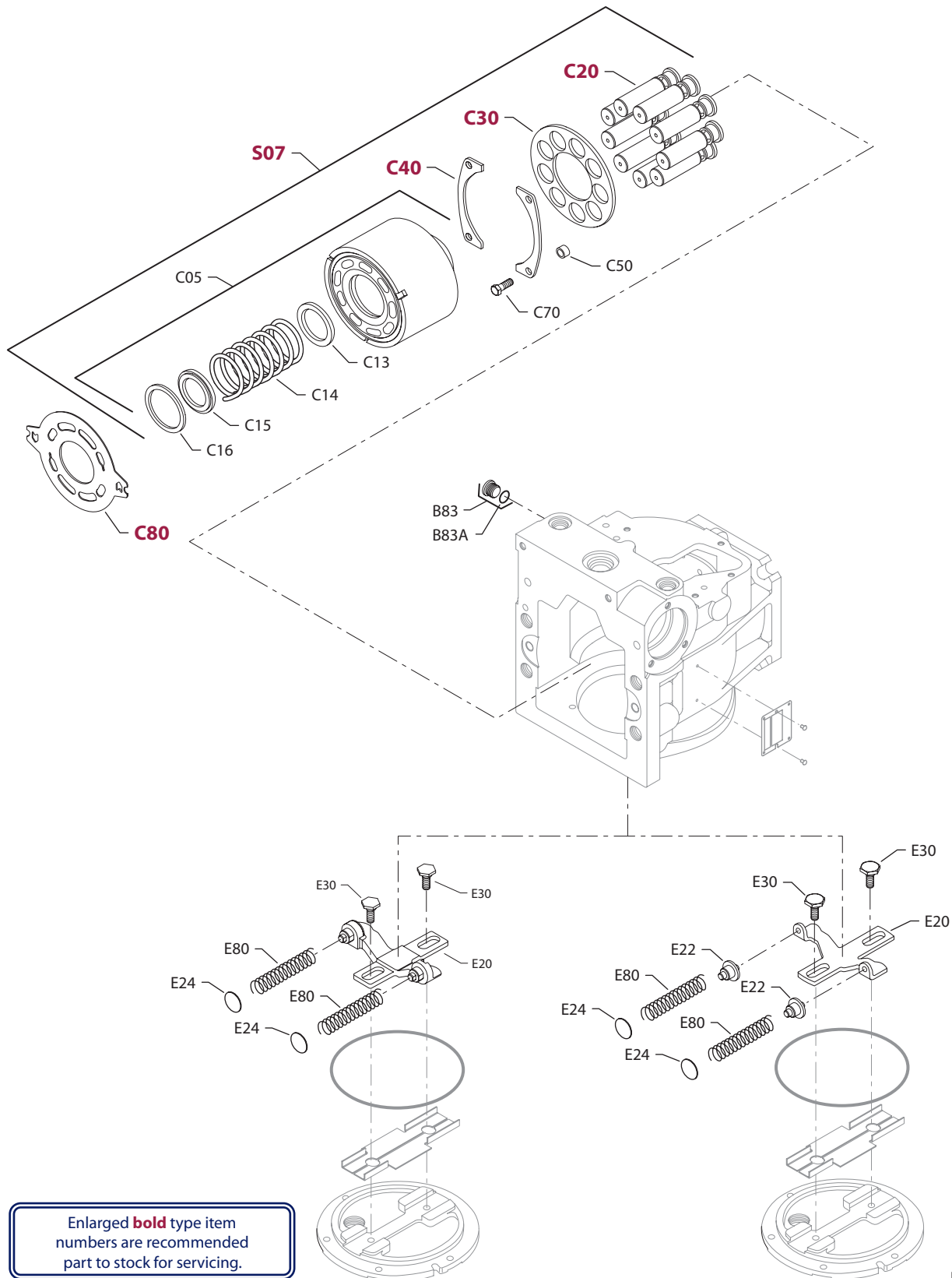


E100 841E

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	92-12		8200332	Housing (SB-1994-035)	1
	B30	87-02		305839 (8200053)	Cradle bearing assembly	1
	B50	87-02		9004800-3708	Pin	2
	B70	87-02		515965 (9005110-5600)	Plug assembly	1
	B70A	87-02		085043 (9004201-3700)	O-ring	1
	B71	87-02		327007 (9005110-4400)	Plug assembly	1
	B71A	87-02		001123 (9004201-2500)	O-ring	1
	B72	87-02		515965 (9005110-5600)	Plug assembly	1
	B72A	87-02		085043 (9004201-3700)	O-ring	1
	B80	87-02		664524 (9005110-9000)	Plug assembly	1
	B80A	87-02		001156 (9004201-7500)	O-ring	1
	B82	92-19		515965 (9005110-5600)	Plug assembly (SB-1992-003)	1
	B82A	92-19		085043 (9004201-3700)	O-ring	1
	B90	87-02		9803390	Control filter screen	3
	D01	88-16		346155 (8200192)	Swashplate assembly (SB-1988-009)	1
	D10	05-49		8200268	Servo arm assembly (SB-1993-015)	1
	D50	88-16		8200232	Swashplate (SB-1988-009)	1
	D55	87-02		536649 (9007276-0111)	Screw	1
	D60	87-02		8800669	Swashplate guide	1
	D65	87-02		9007375-0032	Screw (SB-1992-011)	1
	D70	87-02		9009625-0146	Washer	1
	D75	87-02		9004875-0098	Spiral head pin	1
	D80	87-02		673038 (8200273)	Cage locator link (SB-1994-017)	1
	D85	87-02		8801235	Pin (SB-1998-018 & SB-1999-057)	1
	D95	87-02		673145 (8200058)	Spring	1
	E10	95-50		501574	Side cover	1
	E10	92-12	95-49	8510204	Side cover (SB-1995-025, SB-1997-048, SB-1998-070)	1
	E10	87-02	92-11	8510132	Side cover (SB-1992-003)	1
	E40	87-02		505412 (9003509-0008)	Seal nut	2
	E50	87-02		056739 (9004104-1620)	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
	E90	95-50		513889	Insert assembly (SB-1995-025 & SB-1999-041)	1
	F20	88-16		756197 (8200225)	Slider block (SB-1988-009)	1
	L10	87-02		5000506	Roller bearing	1
	L20	87-02		9006300-0175	Retaining ring	1
	L25	87-02		8200309	Seal carrier assembly (SB-2005-007)	1
	L40	87-02		9008000-0114	Lip seal (SB-2005-007)	1
	L50	87-02		327627 (9004104-1540)	O-ring	1
	L60	87-02		516768	Retainer plate	1
	L70	87-02		041160 (9007314-0605)	Screw	4



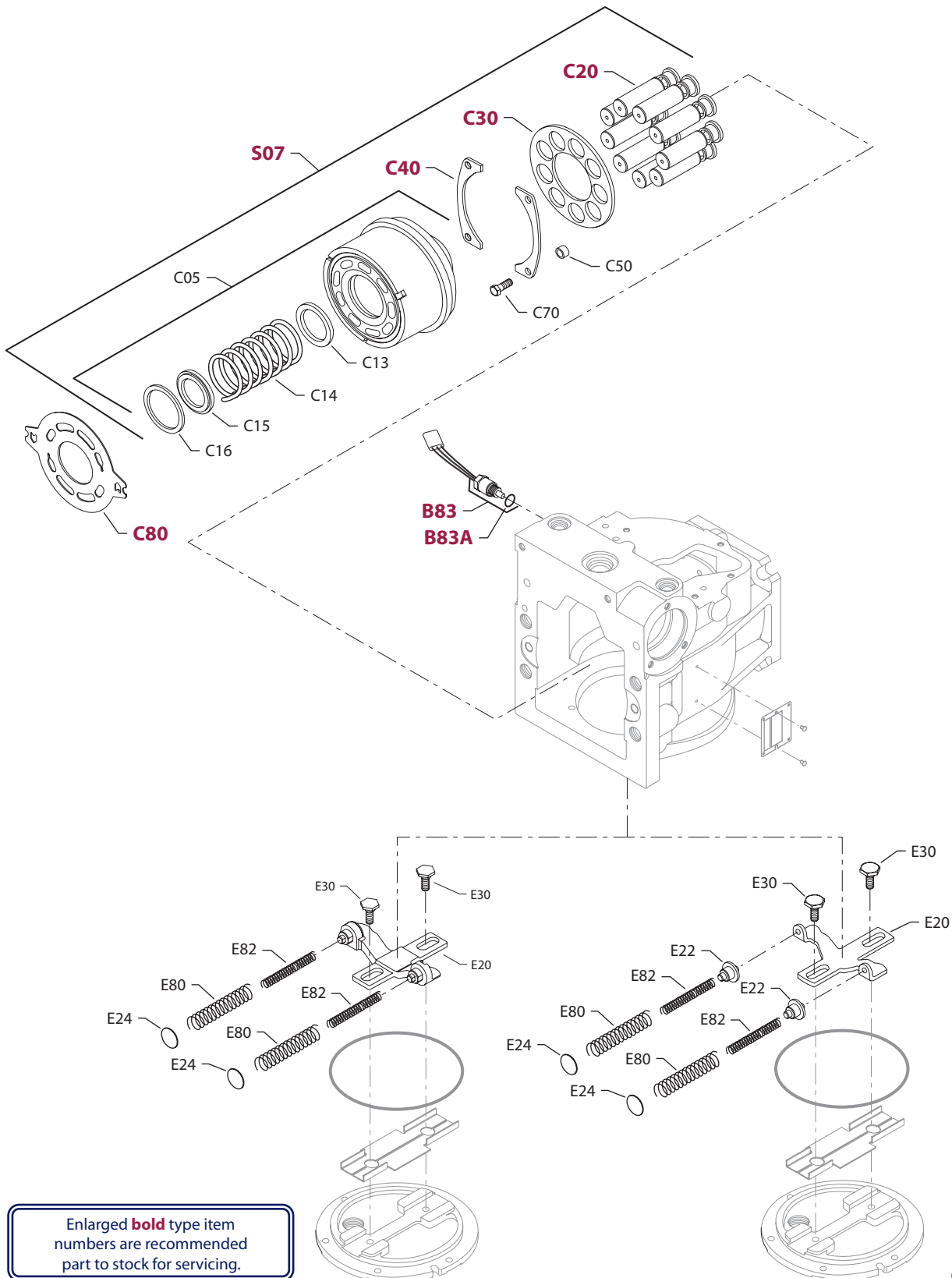
COMMON PARTS

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		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

CAA & HNP	B83	87-02		515965 (9005110-5600)	Plug assembly	1
	C05	87-02		8200124	Cylinder block assembly, without speed ring	1
	C20	87-02		8200031	Piston assembly, hollow (SB-1988-023)	9
	C80	87-02		518994	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	92-12	95-49	8510204	Leveler (SB-1998-070)	1
	E20	87-02	92-11	8510132	Leveler (SB-1989-003 & SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	92-12	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	E22	87-02	92-11	8510132	Spring seat replacement kit (SB-1998-070)	2
	S07	87-02		8510368	Cylinder block kit, without speed ring, hollow piston	1

CAB	B83	95-50		515965 (9005110-5600)	Plug assembly	1
	C05	95-50		8200124	Cylinder block assembly, without speed ring	1
	C20	95-50		8200031	Piston assembly, hollow (SB-1988-023)	9
	C80	95-50		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	S07	95-50		8510368	Cylinder block kit, without speed ring, hollow piston	1



E100 844E

COMMON PARTS

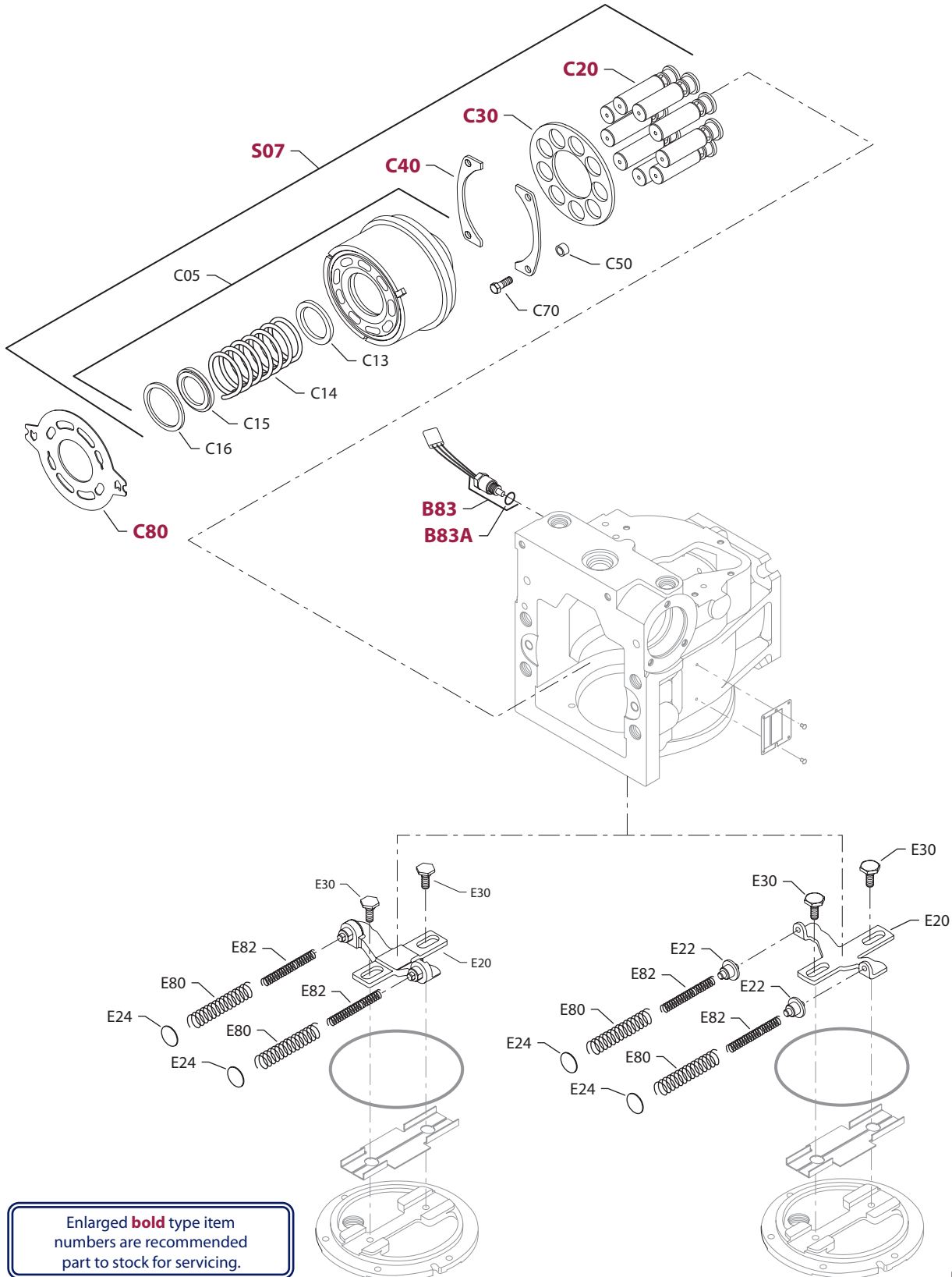
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B83A	92-06		085043 (9004201-3700)	O-ring	1
	C13	87-02		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

EBA	B83	94-14		KPPG13408	Speed sensor	1
	C05	94-14		8200574	Cylinder block assembly, with speed ring	1
	C20	94-14		364000	Piston assembly, welded (SB-1988-023)	9
	C80	94-14		518994	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	94-14	95-49	8510204	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	94-14	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	S07	94-14		8510371	Cylinder block kit, with speed ring	1

EBC	B83	06-05		KPPG13408	Speed sensor	1
	C05	06-05		8200574	Cylinder block assembly, with speed ring	1
	C20	06-05		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-05		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-05	06-26	8200393	Leveler	1
	E22	06-27		517936	Spring seat	2
	E22	06-05	06-26	none	Spring seat	0
	S07	06-05		8510371	Cylinder block kit, with speed ring	1

EBD	B83	06-09		KPPG14408	Speed sensor	1
	C05	06-09		8200574	Cylinder block assembly, with speed ring	1
	C20	06-09		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-09		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-09	06-26	8200393	Leveler	1
	E22	06-27		517936	Spring seat	2
	E22	06-09	06-26	none	Spring seat	0
	E82	06-09		356576	Spring	2
	S07	06-09		8510371	Cylinder block kit, with speed ring	1



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

COMMON PARTS

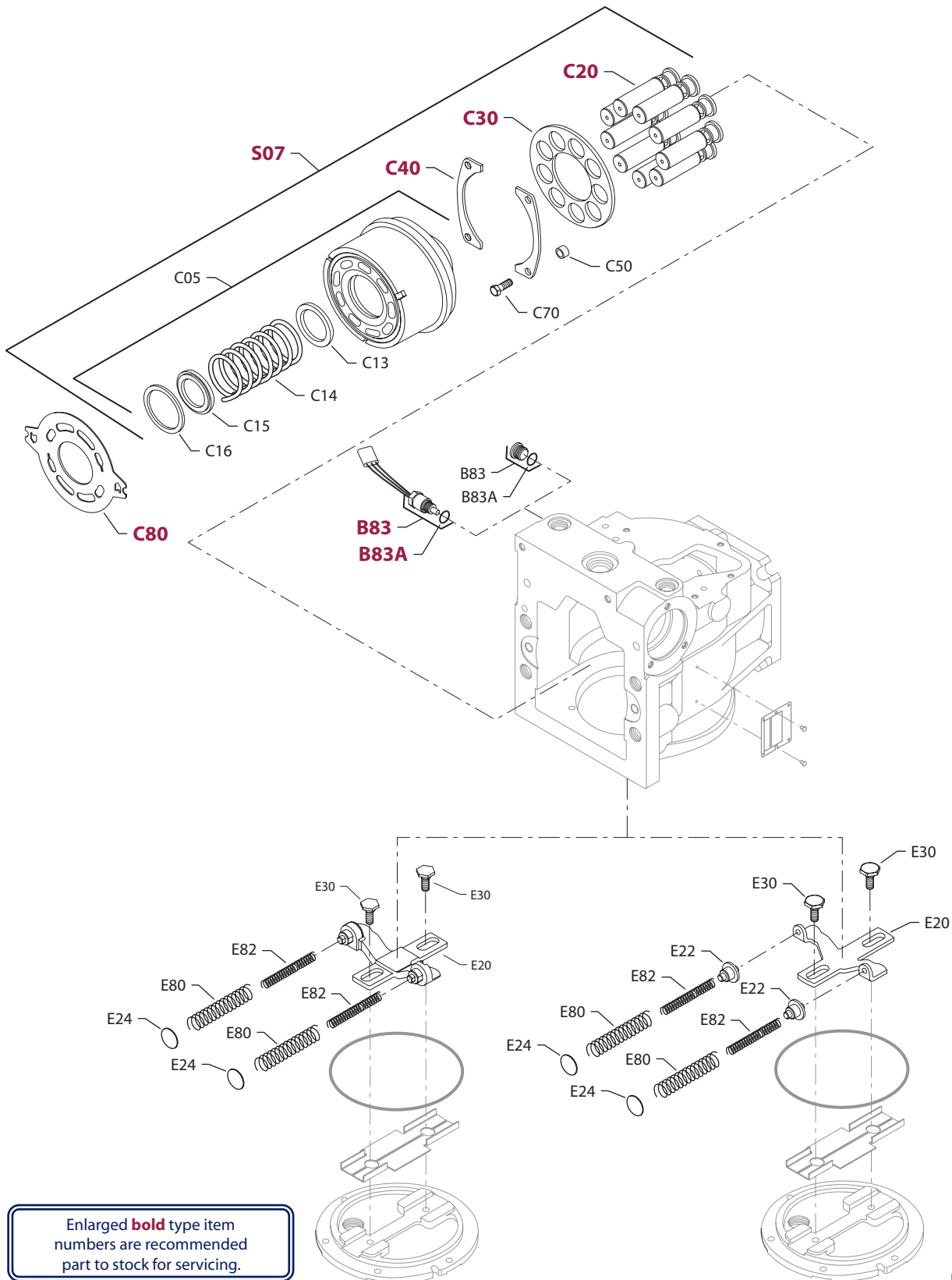
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B83A	92-06		085043 (9004201-3700)	O-ring	1
	C13	87-02		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

EBE	B83	96-05		KPPG15408	Speed sensor	1
	C05	96-05		8200574	Cylinder block assembly, with speed ring	1
	C20	96-05		364000	Piston assembly, welded (SB-1988-023)	9
	C80	96-05		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	96-05	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	96-05	06-26	none	Spring seat	0
	E82	96-05		356576	Spring	2
	S07	96-05		8510371	Cylinder block kit, with speed ring	1

EBN	B83	06-35		KPPG13408	Speed sensor	1
	C05	06-35		8200574	Cylinder block assembly, with speed ring	1
	C20	06-35		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-35		518806	Valve plate	1
	E20	06-35		517363	Leveler	1
	E22	06-35		517936	Spring seat	2
	S07	06-35		8510371	Cylinder block kit, with speed ring	1

EDD	B83	98-15		KPPG12408	Speed sensor	1
	C05	98-15		8200574	Cylinder block assembly, with speed ring	1
	C20	98-15		364000	Piston assembly, welded (SB-1988-023)	9
	C80	98-15		518929	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	98-15	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	98-15	06-26	none	Spring seat	0
	S07	98-15		8510371	Cylinder block kit, with speed ring	1



COMMON PARTS

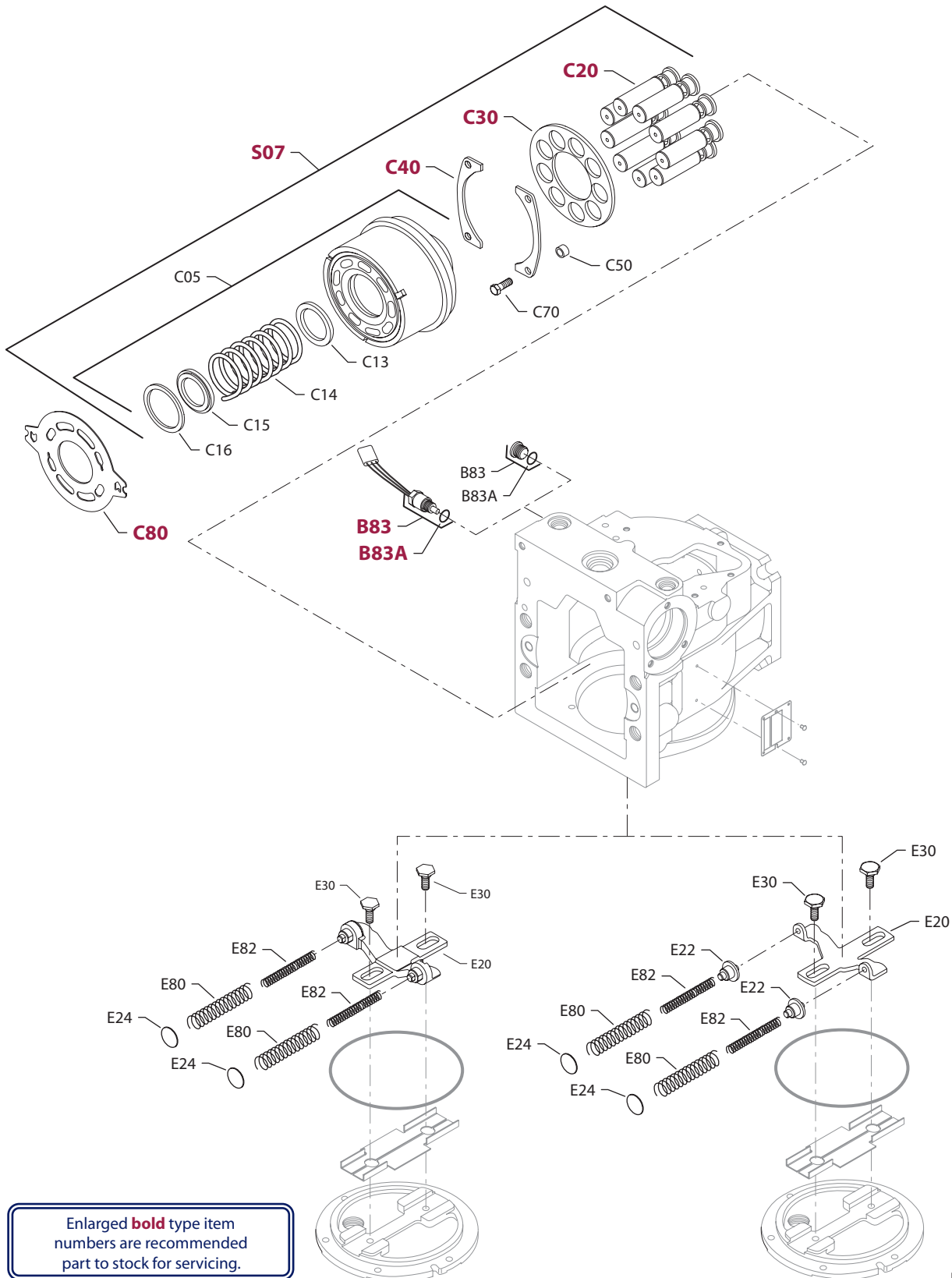
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B83A	92-06		085043 (9004201-3700)	O-ring	1
	C13	87-02		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

EEB	B83	06-05		515965 (9005110-5600)	Plug assembly	1
	C05	06-05		8200574	Cylinder block assembly, with speed ring	1
	C20	06-05		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-05		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-05	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	06-05	06-26	none	Spring seat	0
	E82	06-05		356576	Spring	2
	S07	06-05		8510371	Cylinder block kit, with speed ring	1

EGA	B83	98-50		KPPG15824	Speed sensor	1
	C05	98-50		8200574	Cylinder block assembly, with speed ring	1
	C20	98-50		364000	Piston assembly, welded (SB-1988-023)	9
	C80	98-50		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	98-50	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	98-50	06-26	none	Spring seat	0
	E82	98-50		356576	Spring	2
	S07	98-50		8510371	Cylinder block kit, with speed ring	1

EHA	B83	00-42		KPPG16804	Speed sensor	1
	C05	00-42		8200574	Cylinder block assembly, with speed ring	1
	C20	00-42		364000	Piston assembly, welded (SB-1988-023)	9
	C80	00-42		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	00-42	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	00-42	06-26	none	Spring seat	0
	S07	00-42		8510371	Cylinder block kit, with speed ring	1



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

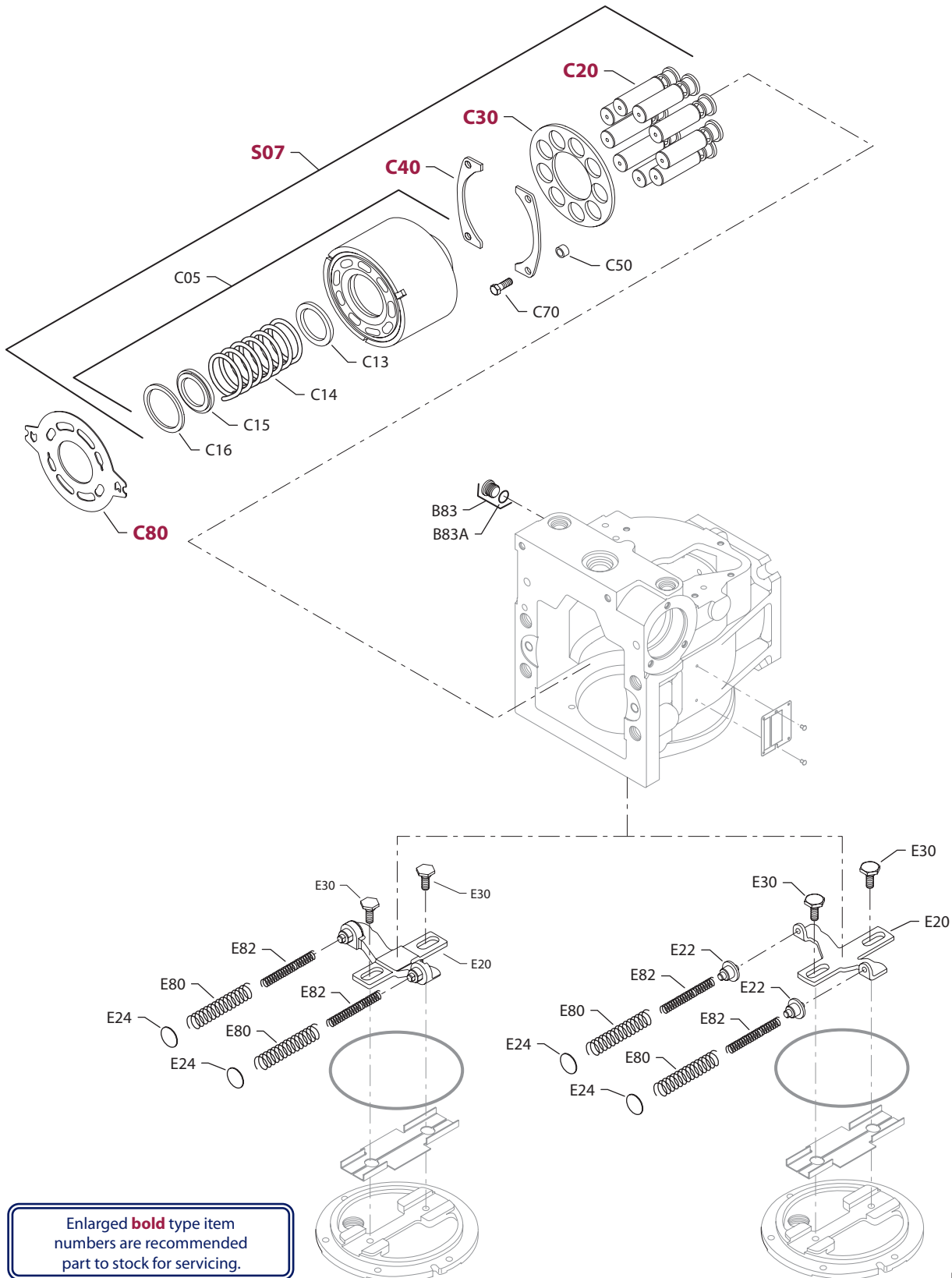
COMMON PARTS

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		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

EKA	B83	99-31		KPPG16719	Speed sensor	1
	C05	99-31		8200574	Cylinder block assembly, with speed ring	1
	C20	99-31		364000	Piston assembly, welded (SB-1988-023)	9
	C80	99-31		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	99-31	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	99-31	06-26	none	Spring seat	0
	S07	99-31		8510371	Cylinder block kit, with speed ring	1

FAA & NDN	B83	87-02		515965 (9005110-5600)	Plug assembly	1
	C05	87-02		8200570	Cylinder block assembly, without speed ring	1
	C20	87-02		364000	Piston assembly, welded (SB-1988-023)	9
	C80	87-02		518994	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	92-12	95-49	8510204	Leveler (SB-1998-070)	1
	E20	87-02	92-11	8510132	Leveler (SB-1989-003 & SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	92-12	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	E22	87-02	92-11	8510132	Spring seat replacement kit (SB-1998-070)	2
	E82	87-02		356576	Spring	2
	S07	87-02		8510372	Cylinder block kit, without speed ring	1



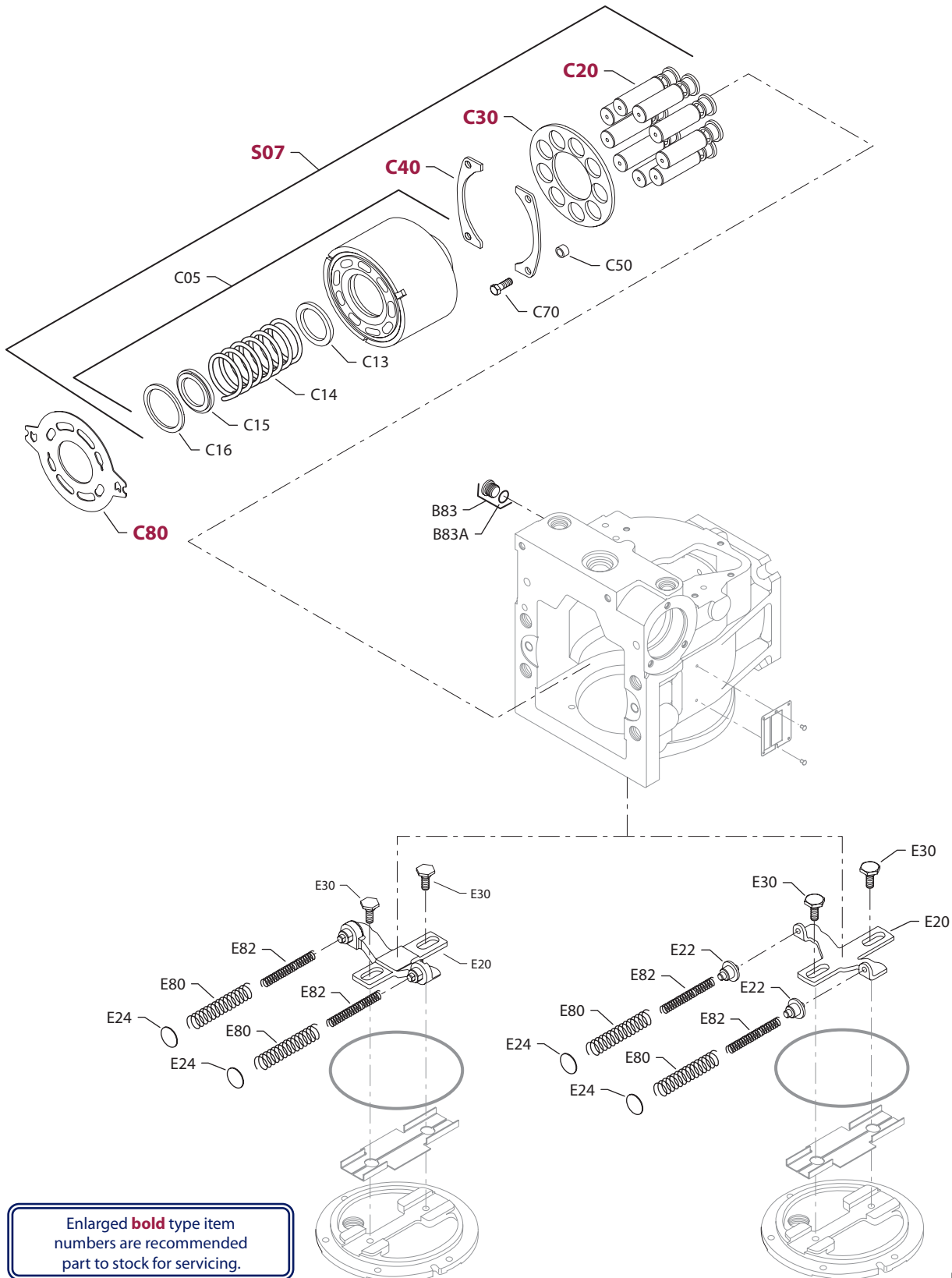
COMMON PARTS

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		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

FAB & NBN	B83	87-02		515965 (9005110-5600)	Plug assembly	1
	C05	87-02		8200570	Cylinder block assembly, without speed ring	1
	C20	87-02		364000	Piston assembly, welded (SB-1988-023)	9
	C80	87-02		518927	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	92-12	95-49	8510204	Leveler (SB-1998-070)	1
	E20	87-02	92-11	8510132	Leveler (SB-1989-003 & SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	92-12	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	E22	87-02	92-11	8510132	Spring seat replacement kit (SB-1998-070)	2
	E82	87-02		356576	Spring	2
	S07	87-02		8510372	Cylinder block kit, without speed ring	1

FAC & NMN	B83	87-02		515965 (9005110-5600)	Plug assembly	1
	C05	87-02		8200570	Cylinder block assembly, without speed ring	1
	C20	87-02		364000	Piston assembly, welded (SB-1988-023)	9
	C80	87-02		518929	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	92-12	95-49	8510204	Leveler (SB-1998-070)	1
	E20	87-02	92-11	8510132	Leveler (SB-1989-003 & SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	92-12	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	E22	87-02	92-11	8510132	Spring seat replacement kit (SB-1998-070)	2
	E82	87-02		356576	Spring	2
	S07	87-02		8510372	Cylinder block kit, without speed ring	1



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

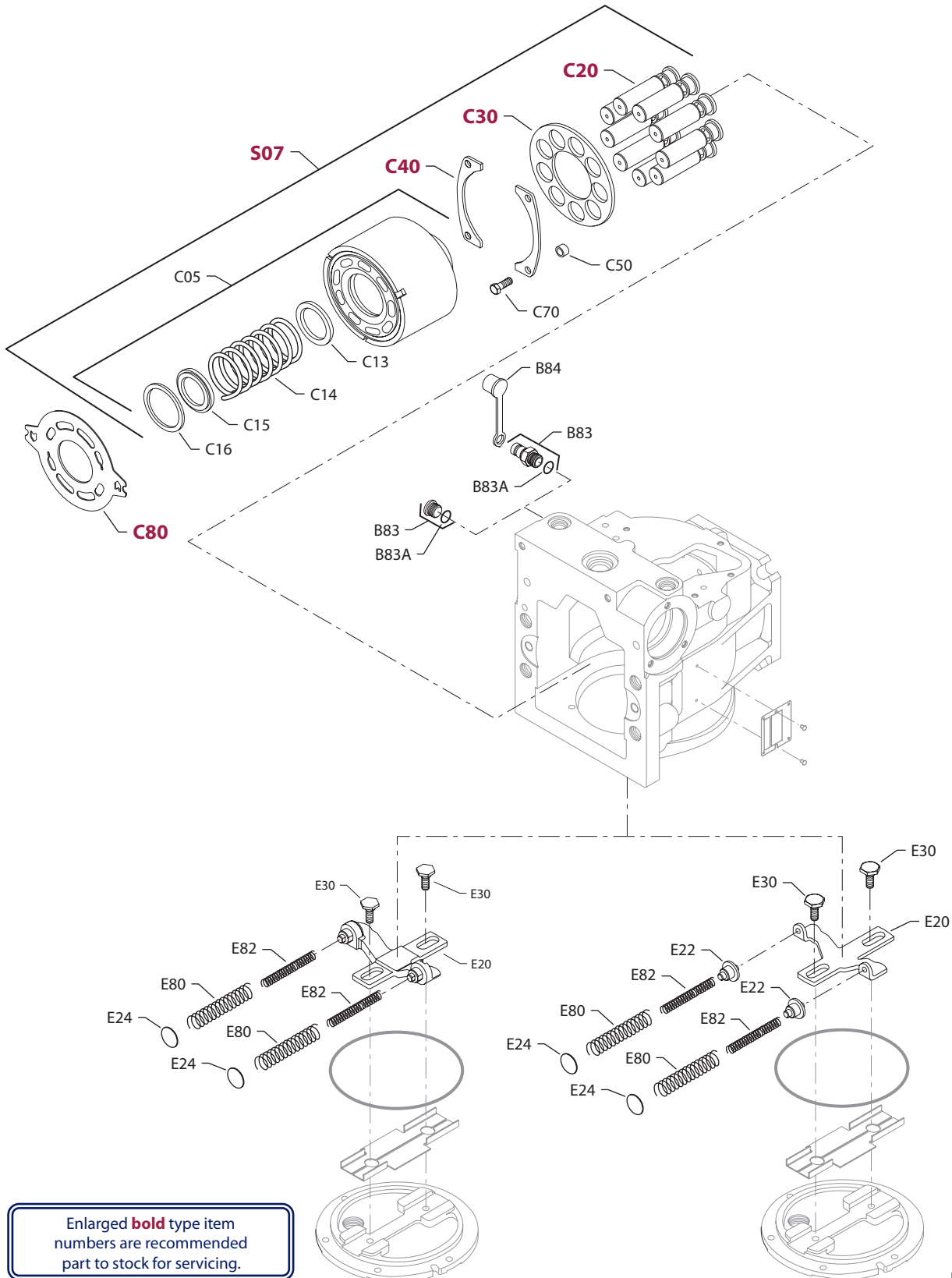
COMMON PARTS

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		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

FAD & NSN	B83	87-02		515965 (9005110-5600)	Plug assembly	1
	C05	87-02		8200570	Cylinder block assembly, without speed ring	1
	C20	87-02		364000	Piston assembly, welded (SB-1988-023)	9
	C80	98-14		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	92-12	95-49	8510204	Leveler (SB-1998-070)	1
	E20	87-02	92-11	8510132	Leveler (SB-1989-003 & SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	92-12	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	E22	87-02	92-11	8510132	Spring seat replacement kit (SB-1998-070)	2
	E82	87-02		356576	Spring	2
	S07	87-02		8510372	Cylinder block kit, without speed ring	1

FAP	B83	06-03		515965 (9005110-5600)	Plug assembly	1
	C05	06-03		8200570	Cylinder block assembly, without speed ring	1
	C20	06-03		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-03		518931	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-03	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	06-03	06-26	none	Spring seat	0
	E82	06-03		356576	Spring	2
	S07	06-03		8510372	Cylinder block kit, without speed ring	1



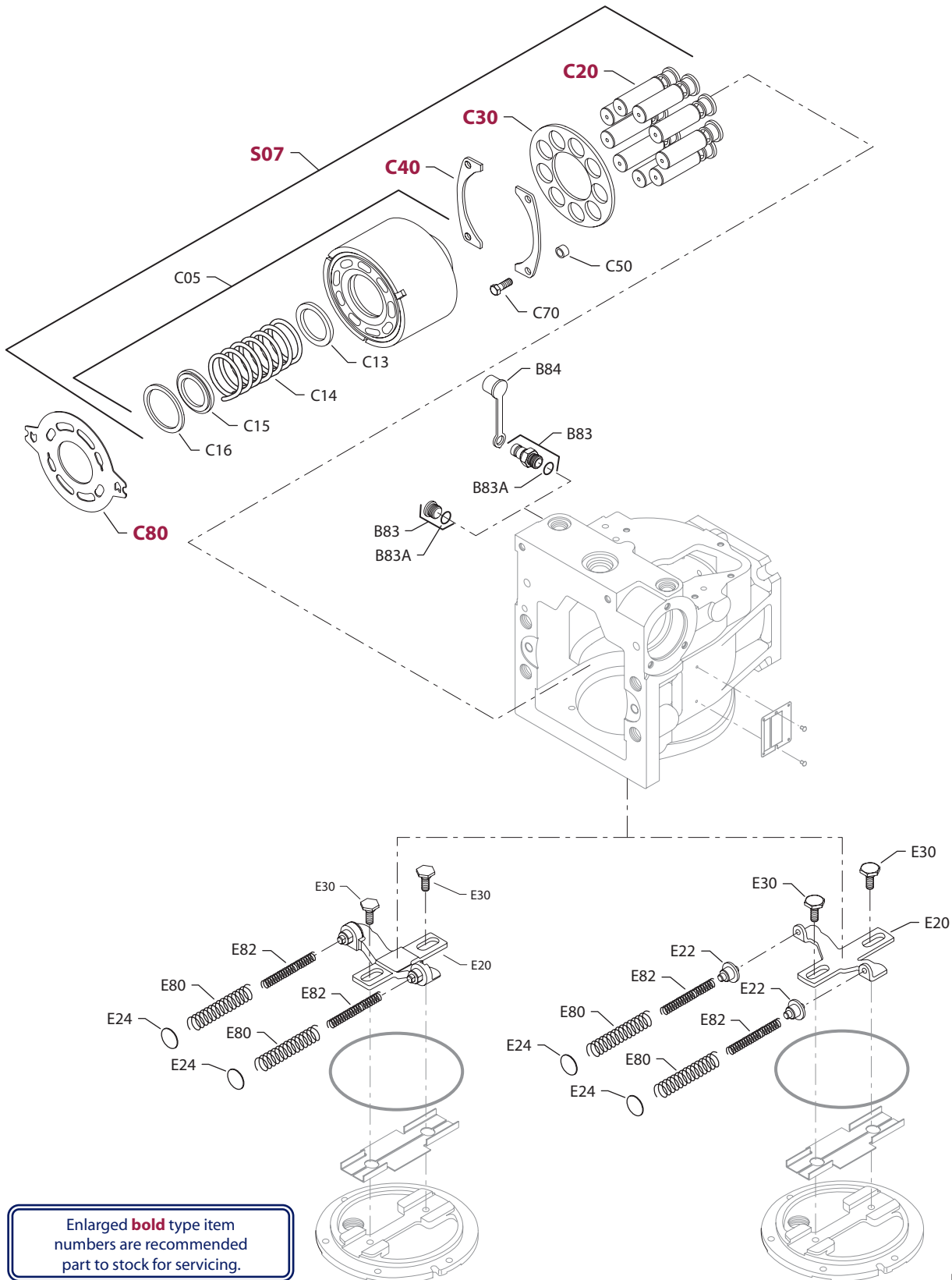
COMMON PARTS

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		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

FAV	B83	99-23		8700127	Diagnostic receptical	1
	B84	99-23		8700128	Dust cover	1
	C05	99-23		8200570	Cylinder block assembly, without speed ring	1
	C20	99-23		364000	Piston assembly, welded (SB-1988-023)	9
	C80	99-23		518929	Valve plate	1
	E20	06-26		517363	Leveler	1
	E20	99-23	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	99-23	06-26	none	Spring seat	0
	E82	99-23		356576	Spring	2
S07	99-23		8510372	Cylinder block kit, without speed ring	1	

FBA	B83	06-12		515965 (9005110-5600)	Plug assembly	1
	C05	06-12		8200570	Cylinder block assembly, without speed ring	1
	C20	06-12		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-12		518929	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-12	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	06-12	06-26	none	Spring seat	0
	E82	06-12		356576	Spring	2
	S07	06-12		8510372	Cylinder block kit, without speed ring	1



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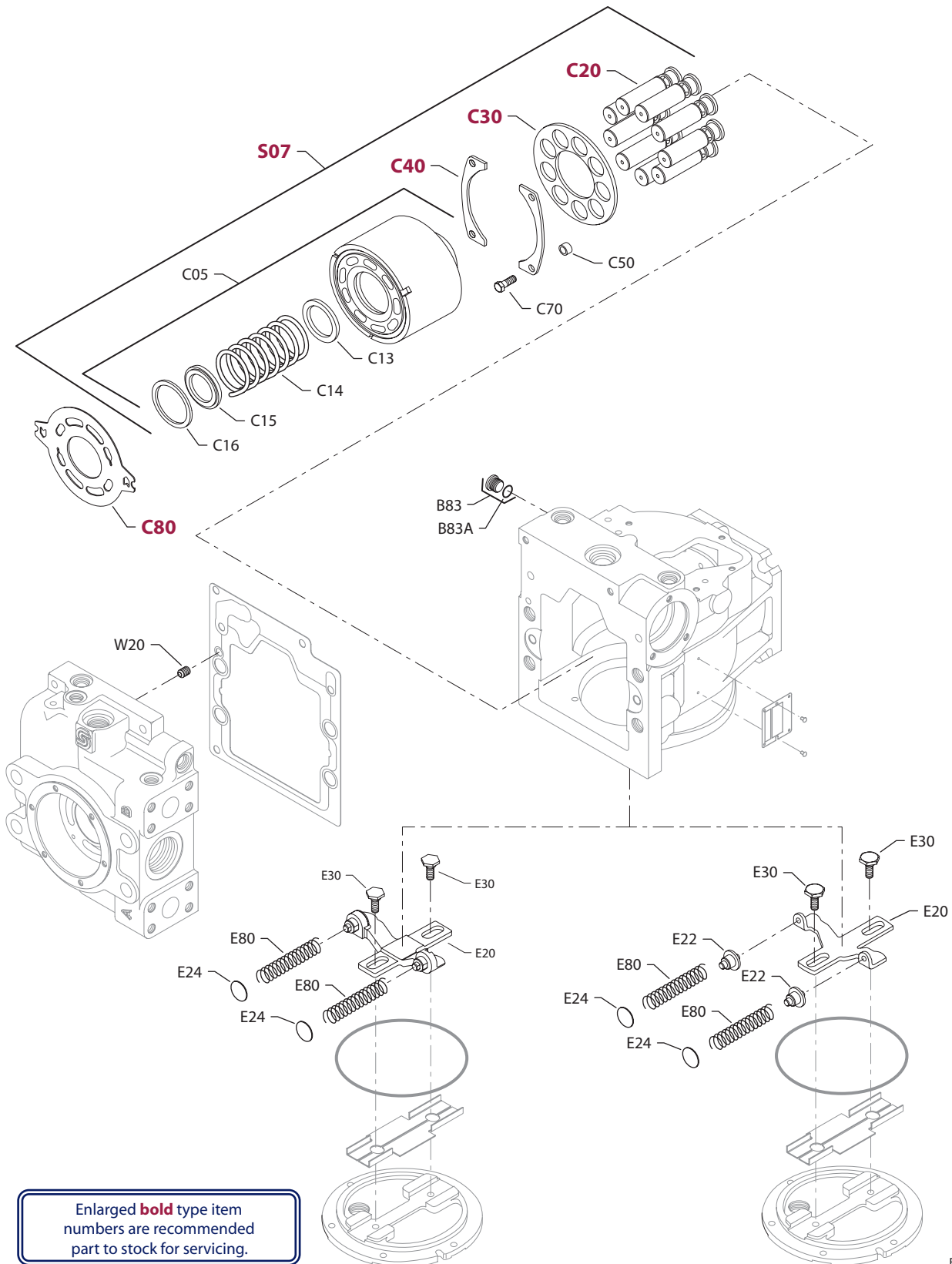
COMMON PARTS

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		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

FBC	B83	06-12		515965 (9005110-5600)	Plug assembly	1
	C05	06-12		8200570	Cylinder block assembly, without speed ring	1
	C20	06-12		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-12		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-12	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	06-12	06-26	none	Spring seat	0
	E82	06-12		356576	Spring	2
	S07	06-12		8510372	Cylinder block kit, without speed ring	1

FBF	B83	06-12		8700127	Diagnostic receptical	1
	B84	06-12		8700128	Dust cover	1
	C05	06-12		8200570	Cylinder block assembly, without speed ring	1
	C20	06-12		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-12		518929	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-12	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	06-12	06-26	none	Spring seat	0
	E82	06-12		356576	Spring	2
	S07	06-12		8510372	Cylinder block kit, without speed ring	1



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

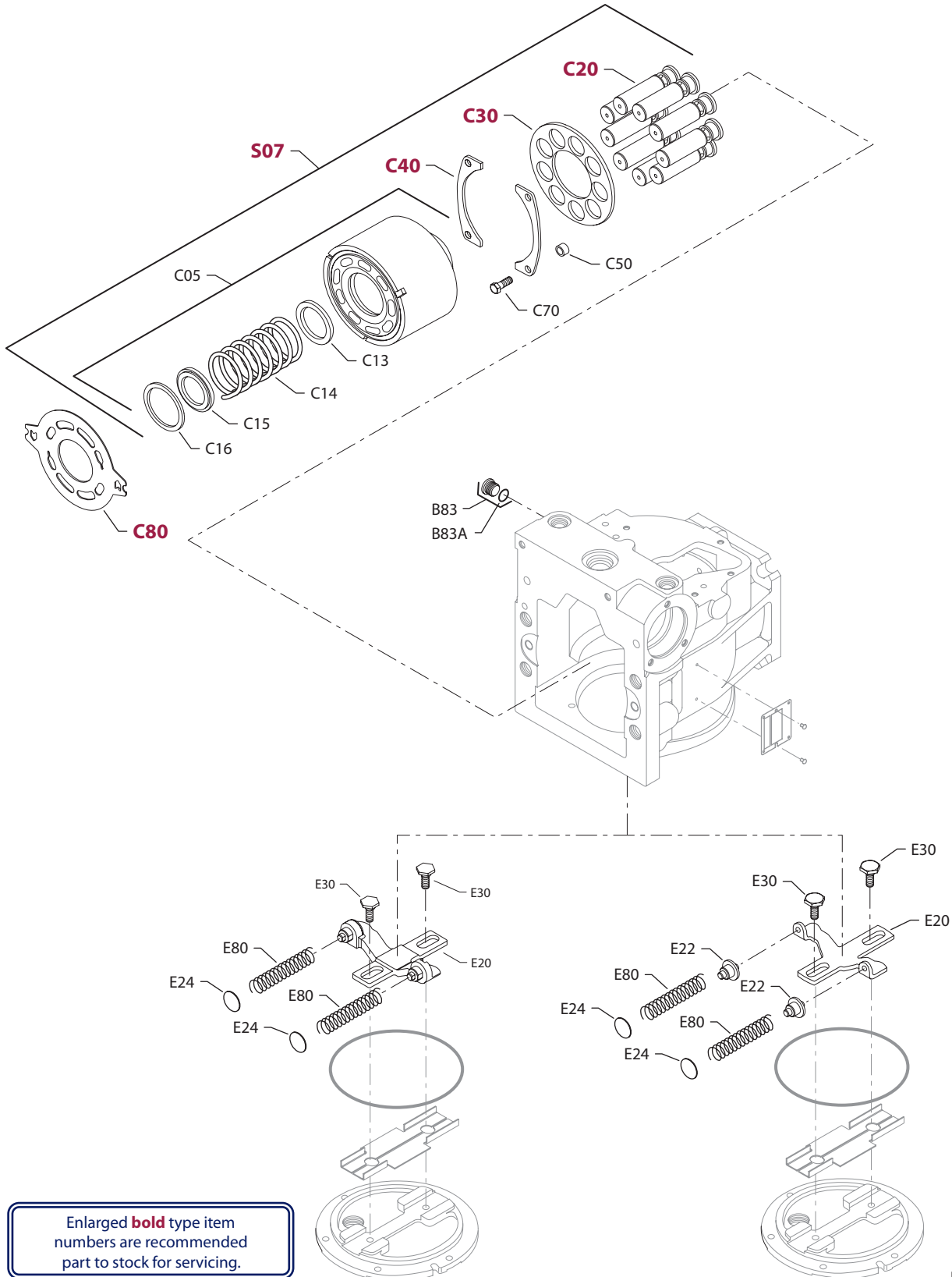
COMMON PARTS

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		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

GBA & NNN	B83	87-02		515965 (9005110-5600)	Plug assembly	1
	C05	87-02		8200570	Cylinder block assembly, without speed ring	1
	C20	87-02		364000	Piston assembly, welded (SB-1988-023)	9
	C80	87-02		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	92-12	95-49	8510204	Leveler (SB-1998-070)	1
	E20	87-02	92-11	8510132	Leveler (SB-1989-003 & SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	92-12	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	E22	87-02	92-11	8510132	Spring seat replacement kit (SB-1998-070)	2
	S07	87-02		8510372	Cylinder block kit, without speed ring	1

GBG	B83	95-16		515965 (9005110-5600)	Plug assembly	1
	C05	95-16		8200570	Cylinder block assembly, without speed ring	1
	C20	95-16		364000	Piston assembly, welded (SB-1988-023)	9
	C80	95-16		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	95-16	95-49	8510204	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	95-16	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	S07	95-16		8510372	Cylinder block kit, without speed ring	1
	W20	95-16		042457	Set screw	1



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

COMMON PARTS

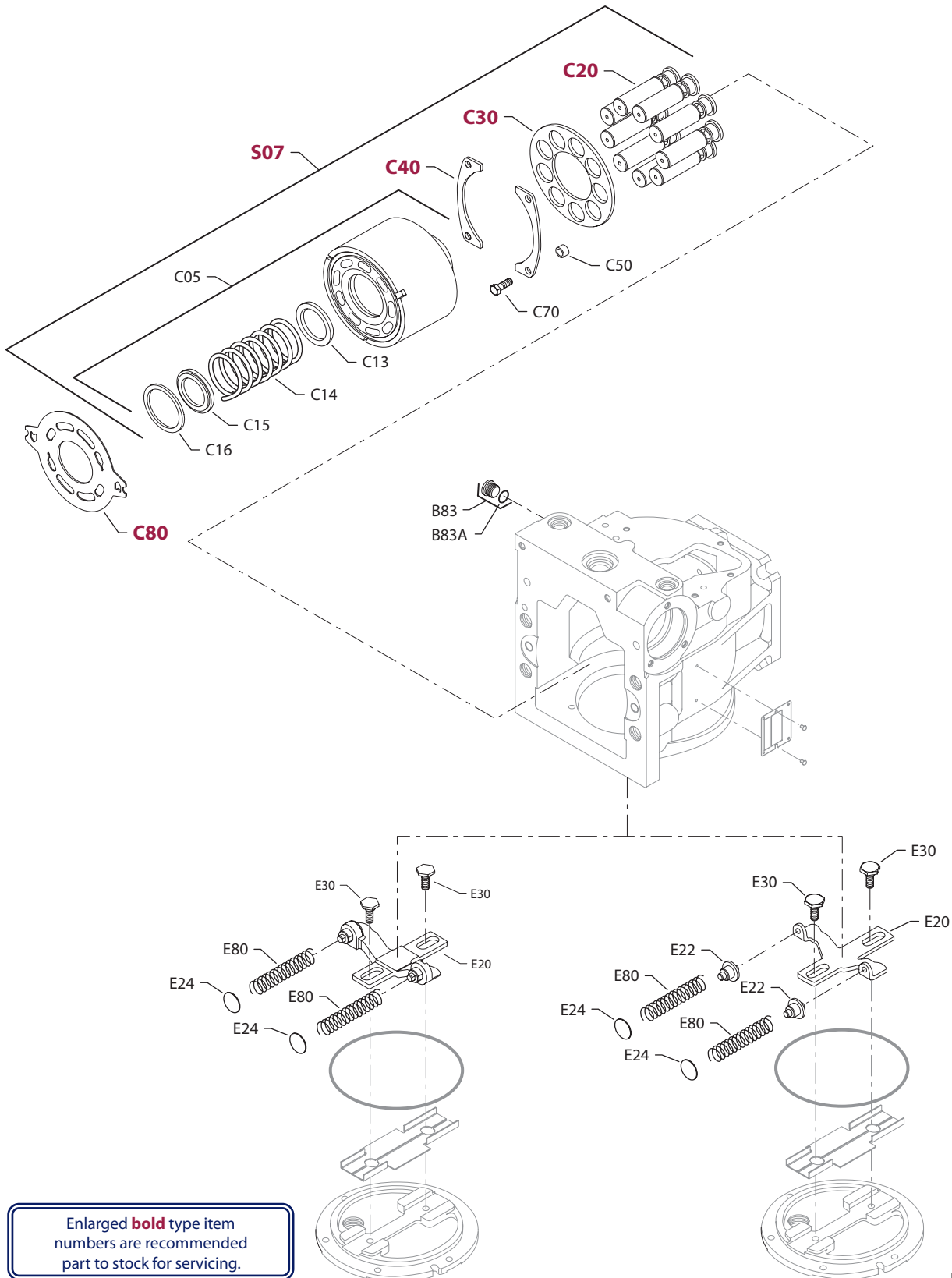
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B83A	92-06		085043 (9004201-3700)	O-ring	1
	C13	87-02		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

GCA	B83	98-14		515965 (9005110-5600)	Plug assembly	1
	C05	98-14		8200570	Cylinder block assembly, without speed ring	1
	C20	98-14		364000	Piston assembly, welded (SB-1988-023)	9
	C80	98-14		518929	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	98-14	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	98-14	06-26	none	Spring seat	0
	S07	98-14		8510372	Cylinder block kit, without speed ring	1

GFD	B83	06-12		515965 (9005110-5600)	Plug assembly	1
	C05	06-12		8200570	Cylinder block assembly, without speed ring	1
	C20	06-12		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-12		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-12	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	06-12	06-26	none	Spring seat	0
	S07	06-12		8510372	Cylinder block kit, without speed ring	1

GFH	B83	06-12		515965 (9005110-5600)	Plug assembly	1
	C05	06-12		8200570	Cylinder block assembly, without speed ring	1
	C20	06-12		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-12		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-12	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	06-12	06-26	none	Spring seat	0
	S07	06-12		8510372	Cylinder block kit, without speed ring	1



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

COMMON PARTS

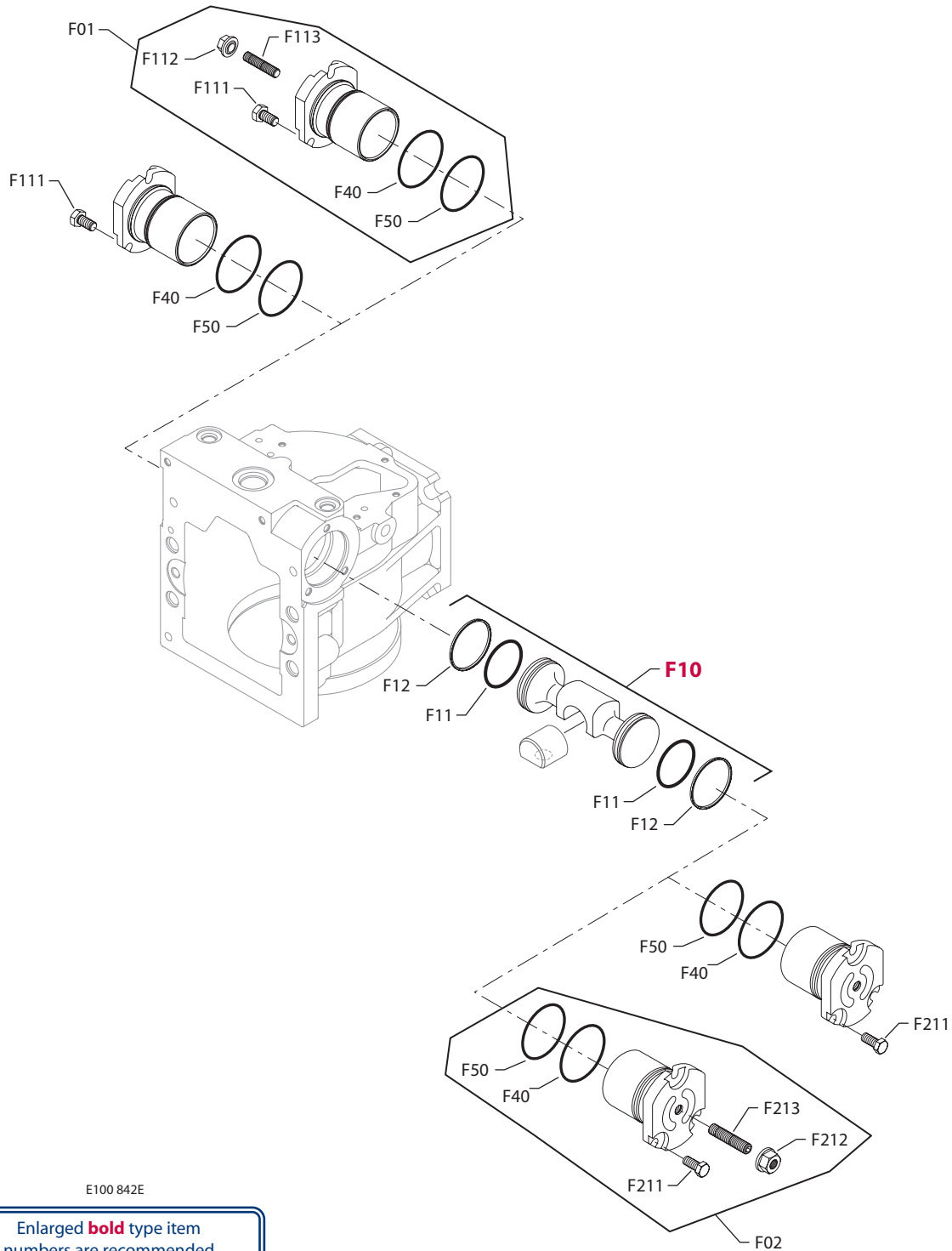
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B83A	92-06		085043 (9004201-3700)	O-ring	1
	C13	87-02		8200027	Spring seat	1
	C14	87-02		8200210	Cylinder block spring	1
	C15	87-02		8200028	Spring retainer	1
	C16	87-02		9006275-0026	Retaining ring	1
	C30	87-02		735498	Slipper guide	1
	C40	88-22		8200144	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		8200422	Spacer (SB-1988-016 & SB-1998-041)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	97-47		8000575	Guide post SB-1998-070)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E80	87-02		334979	Spring	2

SPECIAL HARDWARE

GFJ	B83	06-13		515965 (9005110-5600)	Plug assembly	1
	C05	06-13		8200570	Cylinder block assembly, without speed ring	1
	C20	06-13		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-13		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-13	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	06-13	06-26	none	Spring seat	0
	S07	06-13		8510372	Cylinder block kit, without speed ring	1

GFK	B83	06-12		515965 (9005110-5600)	Plug assembly	1
	C05	06-12		8200570	Cylinder block assembly, without speed ring	1
	C20	06-12		364000	Piston assembly, welded (SB-1988-023)	9
	C80	06-12		518806	Valve plate	1
	E20	06-27		517363	Leveler	1
	E20	06-12	06-26	8200393	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	06-12	06-26	none	Spring seat	0
	S07	06-12		8510372	Cylinder block kit, without speed ring	1

KCA	B83	94-29		515965 (9005110-5600)	Plug assembly	1
	C05	94-29		8200570	Cylinder block assembly, without speed ring	1
	C20	94-29		364000	Piston assembly, welded (SB-1988-023)	9
	C80	94-29		518994	Valve plate	1
	E20	94-29		517363	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	94-29	95-49	8510204	Leveler (SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	94-29	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	S07	94-29		8510372	Cylinder block kit, without speed ring	1

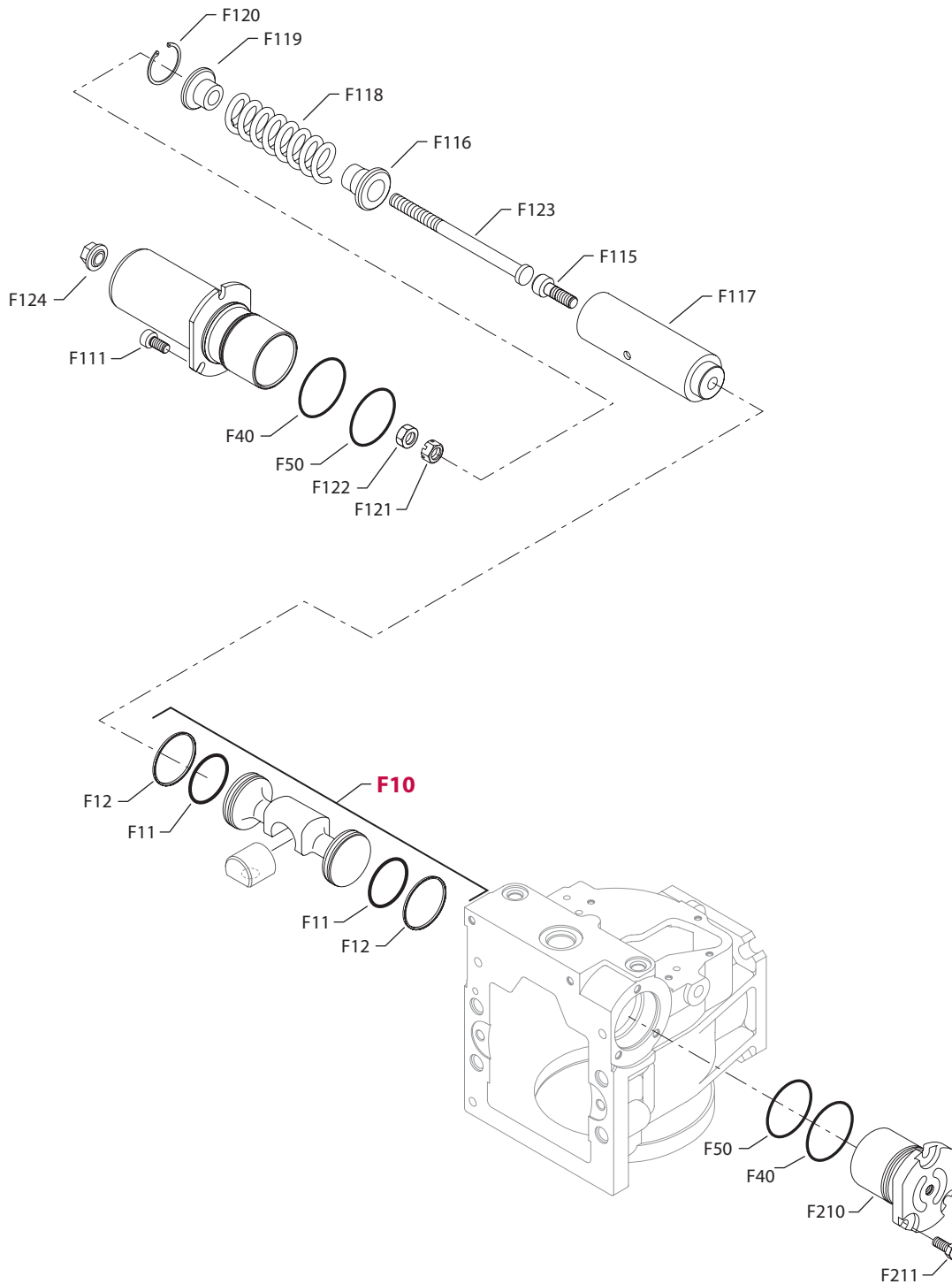


E100 842E

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	
2	F01	00-02		8202F003-A	Displacement limiter kit, adjustable	1	
	F02	00-02		8202F004-A	Displacement limiter kit, adjustable	1	
	F10	00-02		516684	Servo piston assembly (SB-2000-022)	1	
	F11	00-02		673236 (9004100-1310)	O-ring	2	
	F12	00-02		507799 (8700067)	Piston ring	2	
	F40	00-02		9004104-0350	O-ring	2	
	F50	00-02		305458 (9004104-0340)	O-ring	2	
	F111	00-02		378083 (9007210-0804)	Screw	3	
	F211	00-02		378083 (9007210-0804)	Screw	3	
	F212	00-02		505412 (9003509-0008)	Seal nut	1	
	F213	00-02		516677	Set screw (SB-2000-022)	1	
	3	F01	87-02		8202F003-A	Displacement limiter kit, non-adjustable	1
		F02	87-02		8202F003-A	Displacement limiter kit, non-adjustable	1
F10		87-02		516684	Servo piston assembly (SB-2000-022)	1	
F11		87-02		673236 (9004100-1310)	O-ring	2	
F12		87-02		507799 (8700067)	Piston ring	2	
F40		87-02		9004104-0350	O-ring	2	
F50		87-02		305458 (9004104-0340)	O-ring	2	
F111		87-02		378083 (9007210-0804)	Screw	3	
F211		87-02		378083 (9007210-0804)	Screw	3	
4	F01	87-02		8202F004-A	Displacement limiter kit, adjustable	1	
	F02	87-02		8202F004-A	Displacement limiter kit, adjustable	1	
	F10	87-02		516684	Servo piston assembly (SB-2000-022)	1	
	F11	87-02		673236 (9004100-1310)	O-ring	2	
	F12	87-02		507799 (8700067)	Piston ring	2	
	F40	87-02		9004104-0350	O-ring	2	
	F50	87-02		305458 (9004104-0340)	O-ring	2	
	F111	87-02		378083 (9007210-0804)	Screw	3	
	F112	00-02		505412 (9003509-0008)	Seal nut	1	
	F113	00-02		516677	Set screw (SB-2000-022)	1	
	F211	87-02		378083 (9007210-0804)	Screw	3	
	F212	00-02		505412 (9003509-0008)	Seal nut	1	
	F213	00-02		516677	Set screw (SB-2000-022)	1	

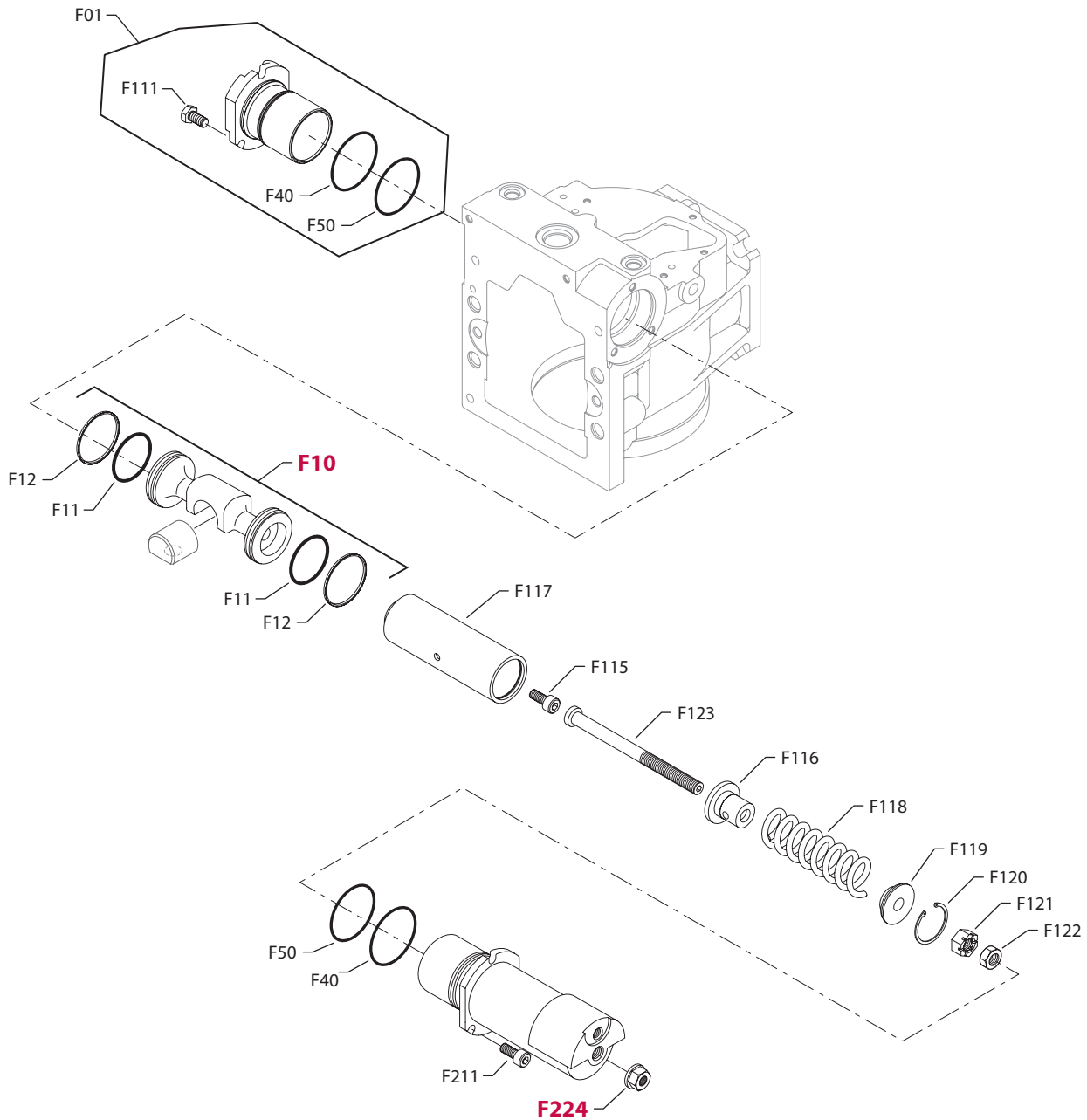


E100 848E

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	F02	98-14		8202F003-A	Servo cylinder	1
	F10	98-14		509283	Servo piston assembly	1
	F11	98-14		673236 (9004100-1310)	O-ring	2
	F12	98-14		507799 (8700067)	Piston ring	2
	F40	98-14		9004104-0350	O-ring	2
	F50	98-14		305458 (9004104-0340)	O-ring	2
	F110	98-14		502993	Servo cylinder	1
	F111	98-14		393595	Screw	3
	F115	98-14		346031	Screw	1
	F116	98-14		507096	Spring guide	1
	F117	98-14		345967	Spring housing	1
	F118	98-14		351742	Spring	1
	F119	98-14		507094	Spring guide	1
	F120	98-14		505826	Retaining ring	1
	F121	98-14		507045	Castle nut	1
	F122	98-14		346015	Hex nut	1
	F123	98-14		346023	Adjust screw	1
	F124	98-14		066159	Seal nut	1
	F211	87-02		378083 (9007210-0804)	Screw	3

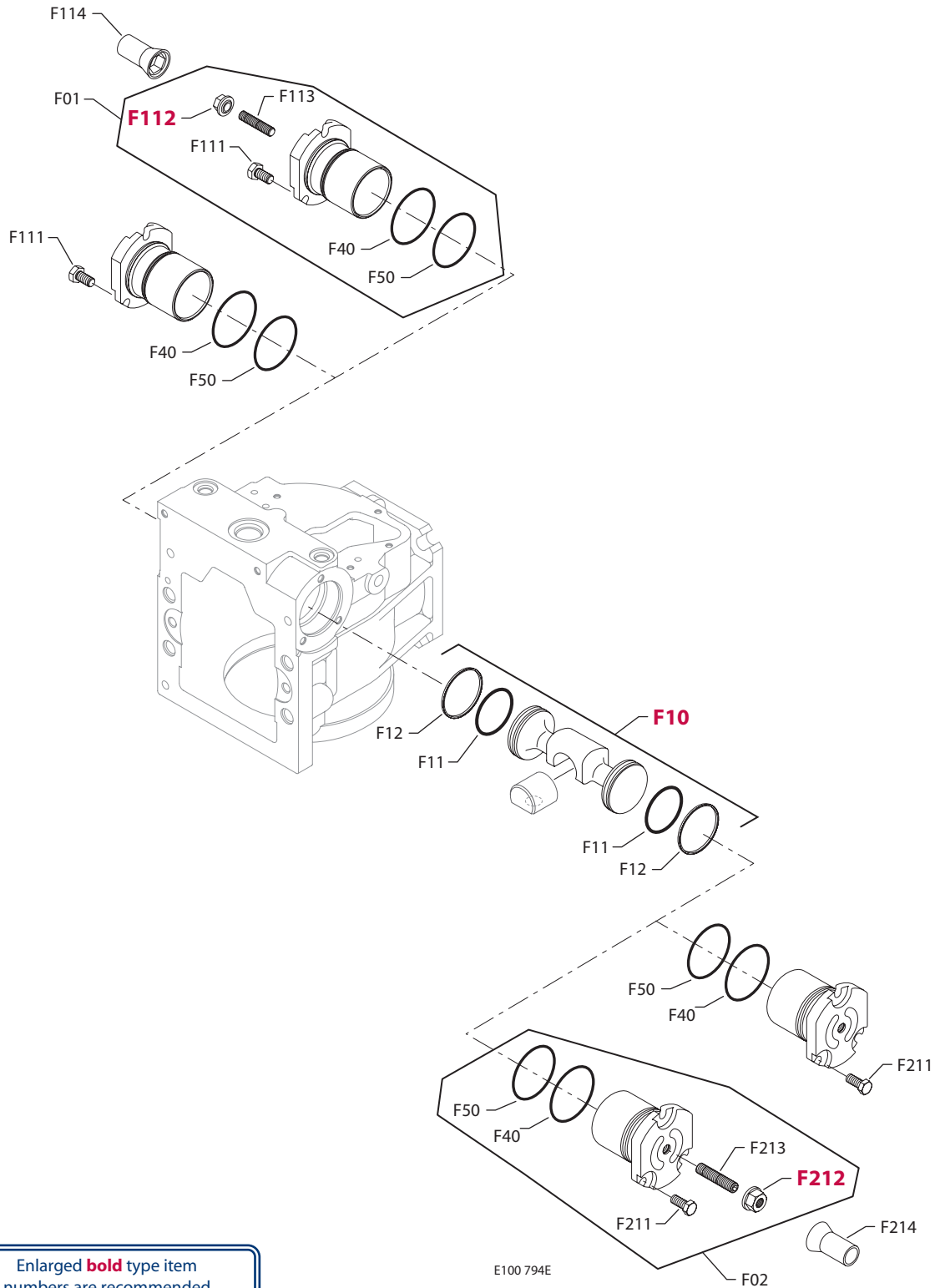


E100 849E

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

DISPLACEMENT LIMITATION

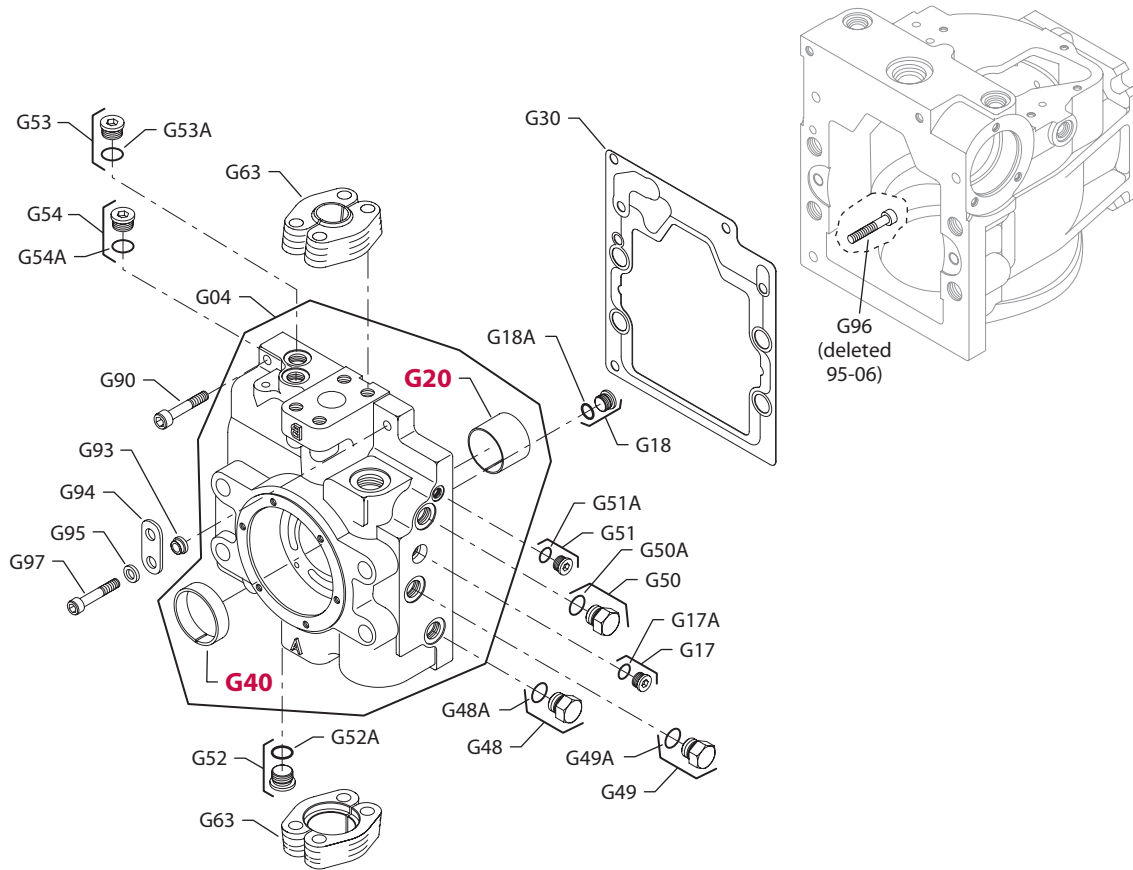
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B	F01	98-14		8202F003-A	Servo cylinder	1
	F10	98-14		509283	Servo piston assembly	1
	F11	98-14		673236 (9004100-1310)	O-ring	2
	F12	98-14		507799 (8700067)	Piston ring	2
	F40	98-14		9004104-0350	O-ring	2
	F50	98-14		305458 (9004104-0340)	O-ring	2
	F111	87-02		378083 (9007210-0804)	Screw	3
	F115	98-14		346031	Screw	1
	F116	98-14		507096	Spring guide	1
	F117	98-14		345967	Spring housing	1
	F118	98-14		351742	Spring	1
	F119	98-14		507094	Spring guide	1
	F120	98-14		505826	Retaining ring	1
	F121	98-14		507045	Castle nut	1
	F122	98-14		346015	Hex nut	1
	F123	98-14		346023	Adjust screw	1
	F210	98-14		502993	Servo cylinder	1
	F211	98-14		393595	Screw	3
	F224	98-14		066159	Seal nut	1



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
F	F01	91-30		8510124	Servo cylinder	1
	F02	91-30		8510124	Servo cylinder	1
	F10	91-30		516684	Servo piston assembly (SB-2000-022)	1
	F11	91-30		673236 (9004100-1310)	O-ring	2
	F12	91-30		507799 (8700067)	Piston ring	2
	F40	91-30		9004104-0350	O-ring	2
	F50	91-30		305458 (9004104-0340)	O-ring	2
	F111	91-30		378083 (9007210-0804)	Screw	3
	F211	91-30		378083 (9007210-0804)	Screw	3
	J	F01	01-16		8202F004-A	Displacement limiter kit, adjustable
F02		01-16		8202F004-A	Displacement limiter kit, adjustable	1
F10		01-16		516684	Servo piston assembly	1
F11		01-16		673236 (9004100-1310)	O-ring	2
F12		01-16		507799 (8700067)	Piston ring	2
F40		01-16		9004104-0350	O-ring	2
F50		01-16		305458 (9004104-0340)	O-ring	2
F111		01-16		378083 (9007210-0804)	Screw	3
F112		01-16		505412 (9003509-0008)	Seal nut	1
F113		01-16		516677	Set screw	1
F114		01-16		8700116	Plastic cover	1
F211		01-16		378083 (9007210-0804)	Screw	3
F212		01-16		505412 (9003509-0008)	Seal nut	1
F213		01-16		516677	Set screw	1
F214	01-16		8700116	Plastic cover	1	

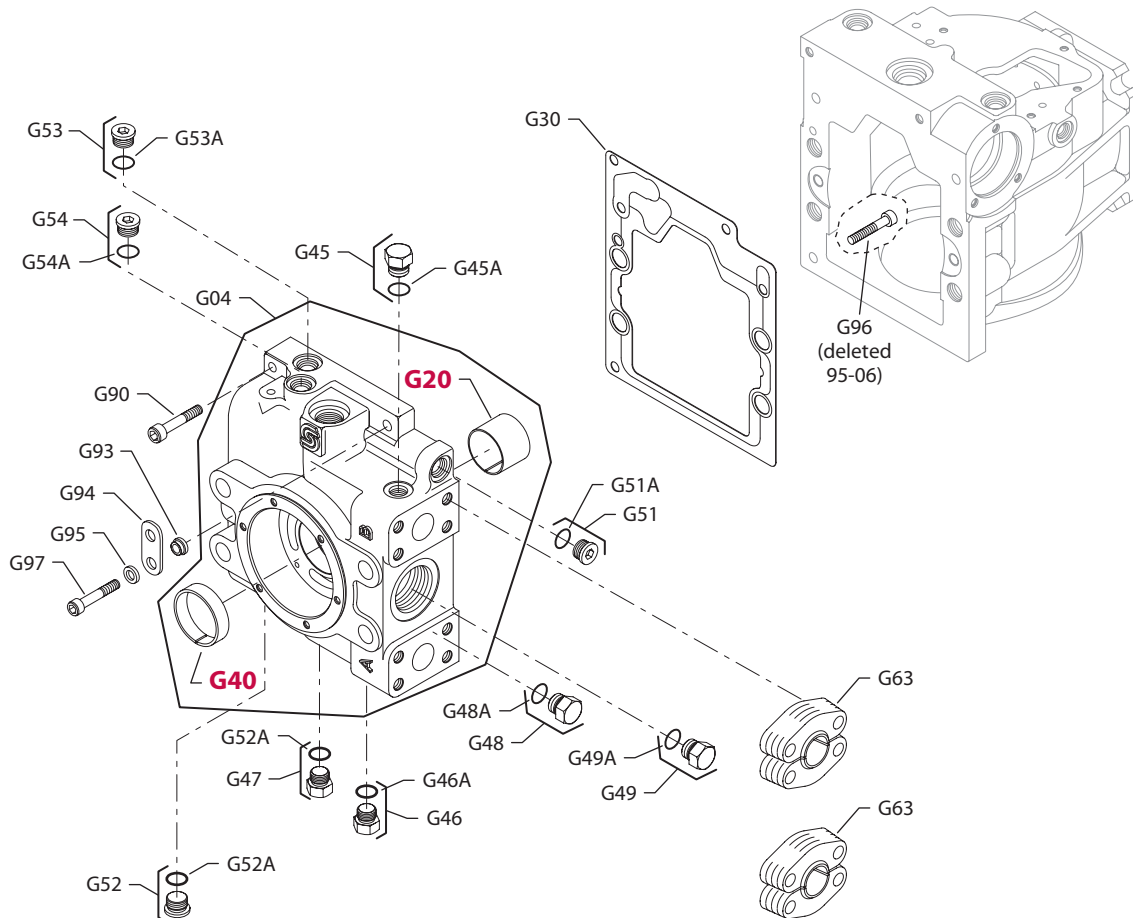


E100 850E

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

END CAP, SIDE PORTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G17	92-12		327007 (9005110-4400)	Plug (SB-1992-0003)	1
	G17A	92-12		001123 (9004201-2500)	O-ring	1
	G18	92-12		327007 (9005110-4400)	Plug (SB-1992-0003)	1
	G18A	92-12		001123 (9004201-2500)	O-ring	1
	G20	87-02		673319 (8700030)	Journal bearing	1
	G30	89-46		8200212	End cap gasket (SB-1992-003)	1
	G30	87-02	89-45	8200043	End cap gasket (SB-1989-023)	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
	G51	87-02		515965 (9005110-5600)	Plug assembly	1
	G51A	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
	G53	87-02		515965 (9005110-5600)	Plug assembly	1
	G53A	87-02		085043 (9004201-3700)	O-ring	1
	G54	87-02		515965 (9005110-5600)	Plug assembly	1
	G54A	87-02		085043 (9004201-3700)	O-ring	1
	G90	92-12		746644 (9007314-0810)	Screw	1
	G90	89-46	92-11	694356 (9007314-0608)	Screw (SB-1992-003)	1
	G90	87-02	89-45	331447 (9007314-0607)	Screw	1
	G93	92-12		713800 (8800564)	Spacer	1
	G93	87-02	92-11	307678 (8800404)	Spacer	1
	G94	92-12		8800565	Lifting bracket	1
	G94	87-02	92-11	8800522	Lifting bracket	1
	G95	92-12		002311 (9009610-3459)	Washer	1
	G95	87-02	92-11	002295 (9009610-2850)	Washer	1
	G96	92-12	95-06	9007314-0808	Screw (SB-1994-035)	1
	G96	87-02	92-11	331447 (9007314-0607)	Screw (SB-1992-003)	1
	G97	92-12		746644 (9007314-0810)	Screw	1
	G97	87-02	92-11	694356 (9007314-0608)	Screw (SB-1992-003)	1
6 & 60	G04	92-12		8200236	End cap assembly, side ports (SB-1992-003)	1
2 & 61	G04	92-12		8200236	End cap assembly, side ports (SB-1992-003)	1
	G63	87-02		8700074	Split clamp	4
H & 62	G04	94-29		8200294	End cap assembly, metric threads at side ports	1
65	G04	97-01		8200284	End cap assembly, metric threads at side ports, special	1
6P	G04	98-13		8200388	End cap assembly, metric threads at side ports, CW	1

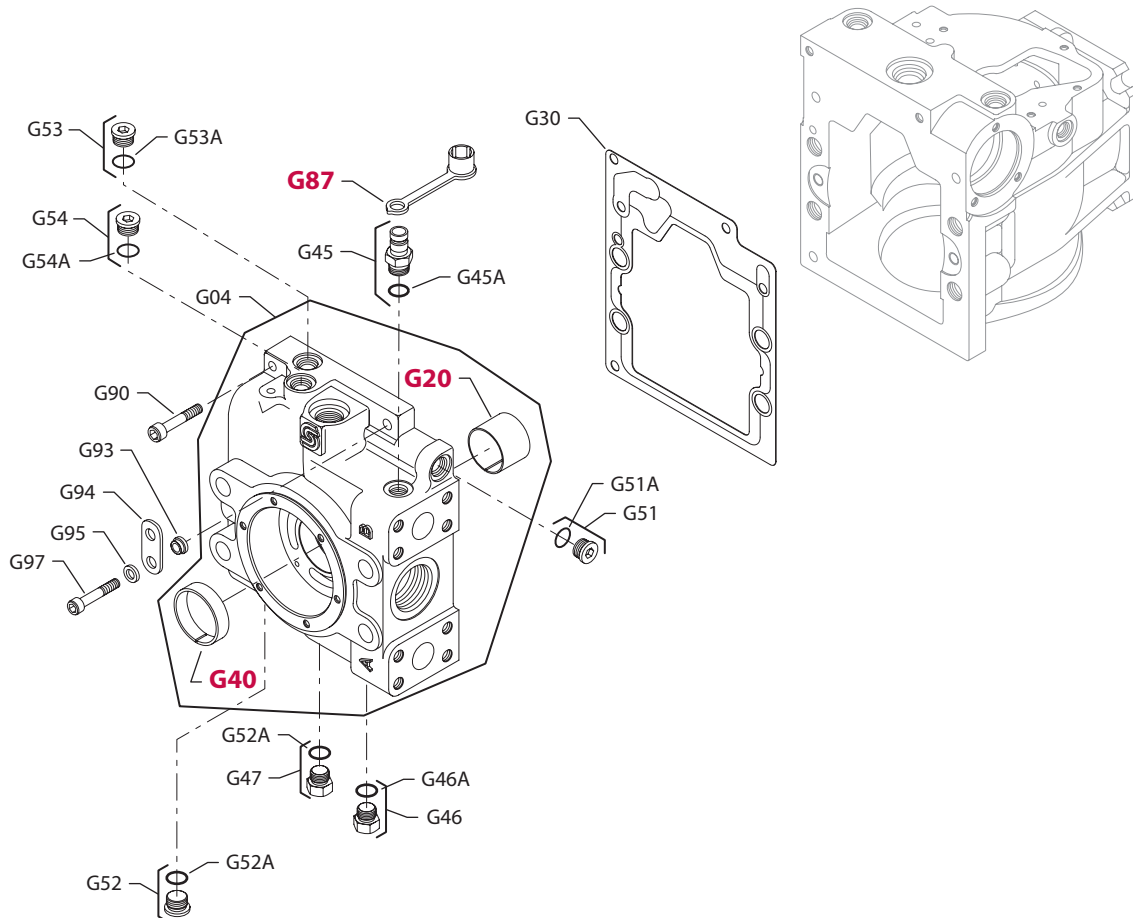


E100 851E

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

END CAP, TWIN PORTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G20	87-02		673319 (8700030)	Journal bearing	1
	G30	87-02		8200212	End cap gasket (SB-1992-003)	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
	G51	87-02		515965 (9005110-5600)	Plug assembly	1
	G51A	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
	G53	87-02		515965 (9005110-5600)	Plug assembly	1
	G53A	87-02		085043 (9004201-3700)	O-ring	1
	G54	87-02		515965 (9005110-5600)	Plug assembly	1
	G54A	87-02		085043 (9004201-3700)	O-ring	1
	G90	92-12		746644 (9007314-0810)	Screw	1
	G90	89-46	92-11	694356 (9007314-0608)	Screw (SB-1992-003)	1
	G90	87-02	89-45	331447 (9007314-0607)	Screw	1
	G93	92-12		713800 (8800564)	Spacer	1
	G93	87-02	92-11	307678 (8800404)	Spacer	1
	G94	92-12		8800565	Lifting bracket	1
	G94	87-02	92-11	8800522	Lifting bracket	1
	G95	92-12		002311 (9009610-3459)	Washer	1
	G95	87-02	92-11	002295 (9009610-2850)	Washer	1
	G96	92-12	95-06	9007314-0808	Screw (SB-1994-035)	1
	G96	87-02	92-11	331447 (9007314-0607)	Screw (SB-1992-003)	1
	G97	92-12		746644 (9007314-0810)	Screw	1
	G97	87-02	92-11	694356 (9007314-0608)	Screw (SB-1992-003)	1
8 & 80	G04	92-12		8200235	End cap assembly, twin ports (SB-1992-003)	1
1 & 81	G04	92-12		8200235	End cap assembly, twin ports (SB-1992-003)	1
	G63	87-02		8700074	Split clamp	4
M & 82	G04	94-15		8200430	End cap assembly, metric threads at twin ports	1
9 & 89	G04	92-12		8200231	End cap assembly, twin ports, special	1
P & 8G	G04	96-31		8200346	End cap assembly, twin ports, special	1



E100 852E

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

END CAP, TWIN PORTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G20	87-02		673319 (8700030)	Jounal bearing	1
	G30	87-02		8200212	End cap gasket	1
	G40	87-02		8700008	Bushing	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
	G51	87-02		515965 (9005110-5600)	Plug assembly	1
	G51A	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
	G53	87-02		515965 (9005110-5600)	Plug assembly	1
	G53A	87-02		085043 (9004201-3700)	O-ring	1
	G54	87-02		515965 (9005110-5600)	Plug assembly	1
	G54A	87-02		085043 (9004201-3700)	O-ring	1
	G90	92-12		746644 (9007314-0810)	Screw	1
	G93	97-26		713800 (8800564)	Spacer	1
	G94	97-26		8800565	Lifting bracket	1
	G95	97-26		002311 (9009610-3459)	Washer	1
	G97	97-26		746644 (9007314-0810)	Screw	1
8M	G04	97-26		8200235	End cap assembly, twin ports, with diagnostic recepticle	1
	G45	97-26		8700127	Diagnostic recepticle	1
	G45A	97-26		085043 (9004201-3700)	O-ring	1
8W	G04	03-36		8200541	End cap assembly, twin ports	1
	G45	03-36		046151 (9005100-5600)	Plug assembly	1
	G45A	03-36		085043 (9004201-3700)	O-ring	1

CHARGING SYSTEM

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
D	H05	93-15		8200238	Charge pump set, 17 cc (SB-1993-001*)	1
	H40	87-02		9004800-1224	Pin	1
	H50	93-15		8801178	Charge pump shaft (SB-1993-001* & SB-1998-066)	1
	H50	87-02	89-16	8100142	Charge pump shaft (SB-1989-006)	1
	H60	87-02		9003310-1208	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 93-14, refer to BLN-10107 in the appendix.

E	H05	93-15		8200239	Charge pump set, 20 cc (SB-1993-001*)	1
	H40	87-02		9004800-1224	Pin	1
	H50	93-15		8801178	Charge pump shaft (SB-1993-001 & SB-1998-066)	1
	H50	87-02	89-16	8100142	Charge pump shaft (SB-1989-006)	1
	H60	87-02		9003310-1208	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 93-14, refer to BLN-10107 in the appendix.

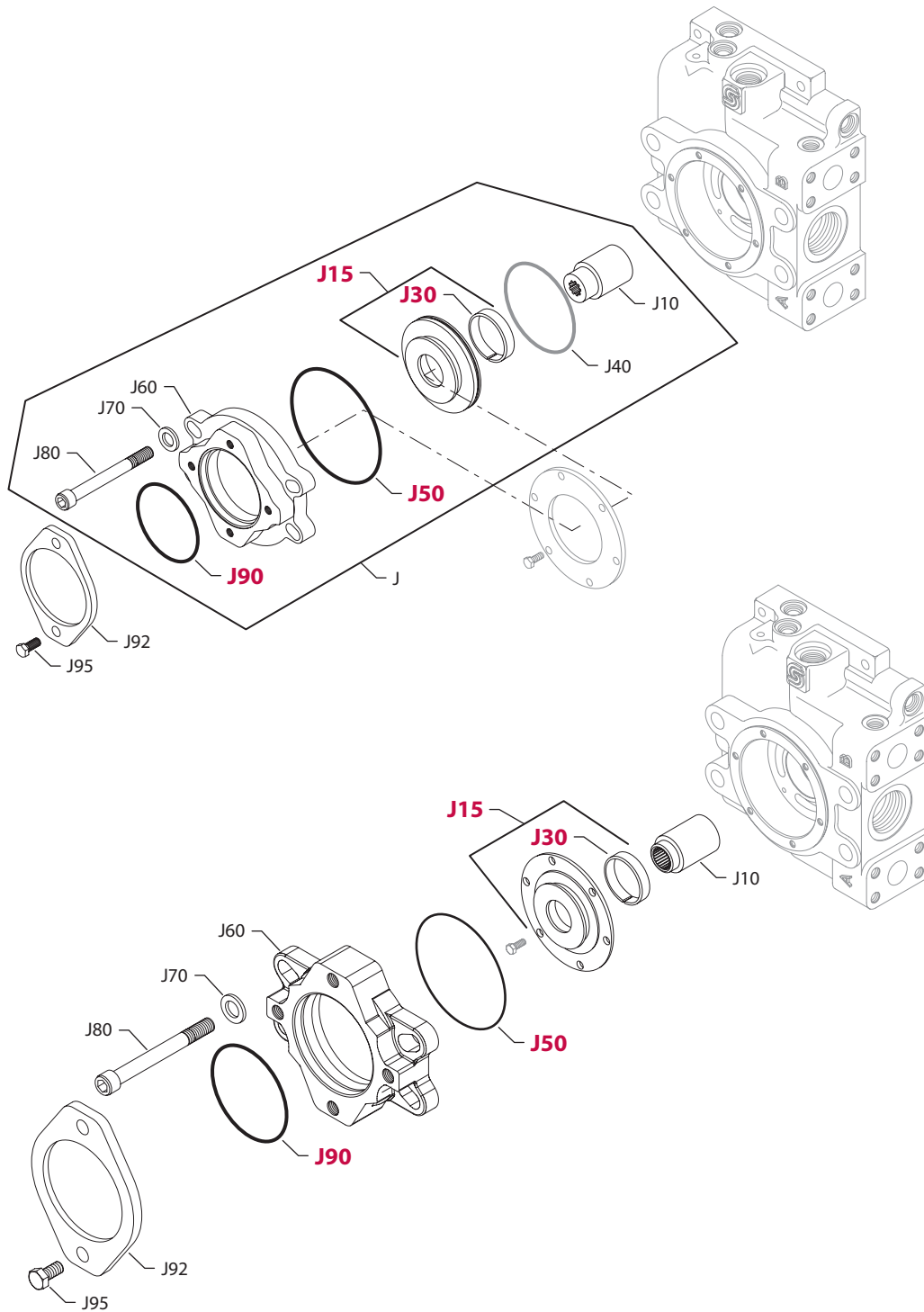
F	H05	93-15		8200240	Charge pump set, 26 cc (SB-1993-001*)	1
	H40	87-02		9004800-1224	Pin	1
	H50	93-15		8801178	Charge pump shaft (SB-1993-001 & SB-1998-066)	1
	H50	87-02	89-16	8100142	Charge pump shaft (SB-1989-006)	1
	H60	87-02		9003310-1208	Key	1
	H70	87-02		516761	Retaining plate	1
	H80	87-02		672493 (9007210-0604)	Screw	6

* For information regarding replacement parts for units built from 89-17 to 93-14, refer to BLN-10107 in the appendix.

G	H05	01-20		8200479	Charge pump set	1
	H05	94-27	01-19	8200245	Charge pump set, 31 cc (SB-2001-013)	1
	H40	94-27		5000358	Pin	1
	H50	01-20		8801210	Charge pump shaft	1
	H50	94-27	01-19	8801179	Charge pump shaft (SB-1998-066 & SB-2001-013)	1
	H60	94-27		9003310-1208	Key	1
	H80	01-20		041160 (9007314-0605)	Screw	6
	H80	94-27	01-19	672493 (9007210-0604)	Screw (SB-2001-013)	6

L	H25	87-02		326538 (8800466-0100)	Charge pump spacer	1
	H50	93-15		8801178	Charge pump shaft (SB-1993-001 & SB-1998-066)	1
	H50	87-02	89-16	8100142	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

M	H25	96-05		8800973	Charge pump spacer	1
	H70	96-05		516761	Retaining plate	1
	H80	96-05		672493 (9007210-0604)	Screw	6
	H90	96-05		320002 (9005110-9200)	Plug assembly	1
	H90A	96-05		001156 (9004201-7500)	O-ring	1



E100 854E

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

AUXILIARY MOUNTING

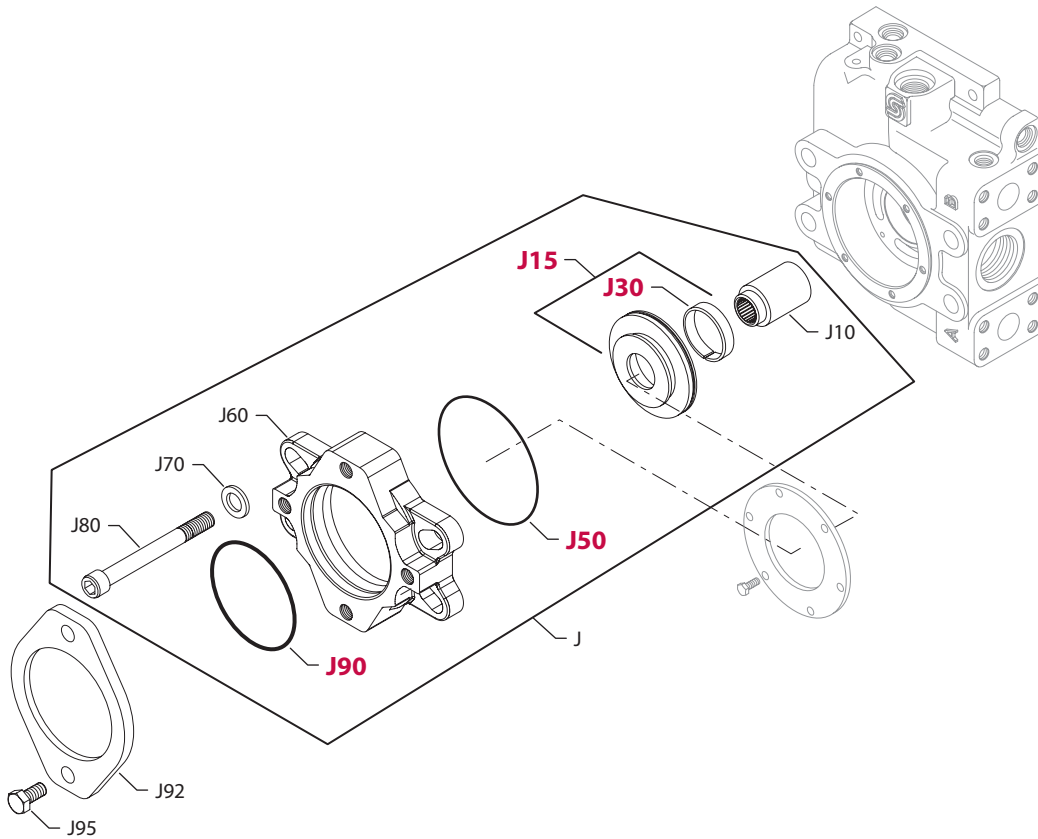
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
AB & A	J	87-02		8202J00A-A	Aux. mounting kit, A flange, 9 tooth	1
	J10	87-02		8100147	Coupling, 9 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011))	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & 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		673384 (8800172)	Flange adaptor, SAE A	1
	J70	87-02		664920 (9009625-0132)	Washer	4
	J80	89-46		518721	Screw, M16 x 140	4
	J80	87-02	89-45	9007314-1624	Screw, M16 x 150 (SB-1989-023)	4
	J90	87-02		545434 (9004100-0420)	O-ring	1
	J92	87-02		9802336	Cover plate	1
	J95	87-02		9007200-3714	Screw	2

* New style covers are interchangeable with either charge pump design

AC & T	J	87-02		8202J00T-A	Aux. mounting kit, A flange, 11 tooth	1
	J10	87-02		8100297	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		673384 (8800172)	Flange adaptor, SAE A	1
	J70	87-02		664920 (9009625-0132)	Washer	4
	J80	89-46		518721	Screw, M16 x 140	4
	J80	87-02	89-45	9007314-1624	Screw, M16 x 150 (SB-1989-023)	4
	J90	87-02		545434 (9004100-0420)	O-ring	1
	J92	87-02		9802336	Cover plate	1
	J95	87-02		9007200-3714	Screw	2

* New style covers are interchangeable with either charge pump design

BA	J10	05-14		8100273	Coupling, 15 tooth	1
	J15	05-14		8801248	Cover assembly, CW	1
	J15	05-14		8801352	Cover assembly, CCW	1
	J30	05-14		664771 (8700008)	Bushing	1
	J50	05-14		056739 (9004104-1580)	O-ring	1
	J60	05-14		8200468	Flange adaptor, SAE B	1
	J80	05-14		518721	Screw, M16 x 140	4
	J90	05-14		8801061	B pad seal	1
	J92	05-14		8801059	Cover plate	1
	J95	05-14		9007200-5021	Screw	2



E100 855E

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

AUXILIARY MOUNTING

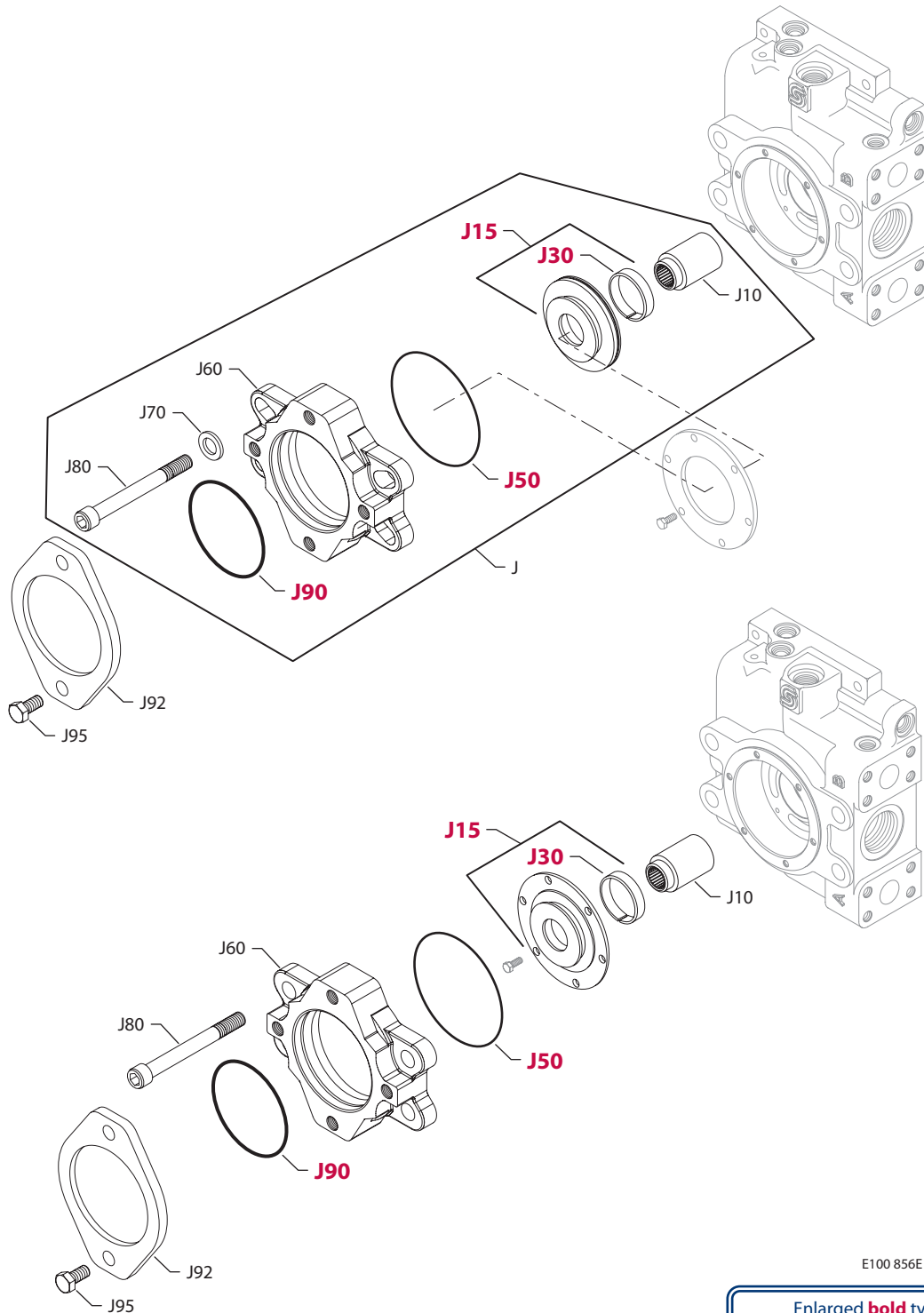
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
BB & V	J	87-02		8202J00V-A	Aux. mounting kit, B-B flange, 15 tooth	1
	J10	87-02		8100273	Coupling, 15 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & 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		8800173	Flange adaptor, SAE B	1
	J70	87-02		9009625-0132	Washer	4
	J80	89-46		518721	Screw, M16 x 140	4
	J80	87-02	89-45	9007314-1624	Screw, M16 x 150 (SB-1989-023)	4
	J90	87-02		726935 (9004104-0450)	O-ring	1
	J92	87-02		4460370	Cover plate	1
	J95	87-02		9007200-5021	Screw	2

* New style covers are interchangeable with either charge pump design

BC & B	J	87-02		8202J00B-A	Aux. mounting kit, B flange, 13 tooth	1
	J10	87-02		8100148	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		8800173	Flange adaptor, SAE B	1
	J70	87-02		9009625-0132	Washer	4
	J80	89-46		518721	Screw, M16 x 140	4
	J80	87-02	89-45	9007314-1624	Screw, M16 x 150 (SB-1989-023)	4
	J90	87-02		726935 (9004104-0450)	O-ring	1
	J92	87-02		4460370	Cover plate	1
	J95	87-02		9007200-5021	Screw	2

* New style covers are interchangeable with either charge pump design

BE & P	J	94-30		8510123	Aux. mounting kit, B flange, 13 tooth, M12 threads	1
	J10	94-30		8100148	Coupling, 13 tooth	1
	J15	94-30		8800832	Cover assembly, CW (SB-2005-011)	1
	J15	94-30		8800833	Cover assembly, CCW (SB-2005-011)	1
	J30	94-30		8700008	Bushing	1
	J50	94-30		056739 (9004104-1580)	O-ring	1
	J60	94-30		8800983	Flange adaptor, SAE B, M12 threads	1
	J70	94-30		9009625-0132	Washer	4
	J80	94-30		518721	Screw, M16 x 140	4
	J90	94-30		726935 (9004104-0450)	O-ring	1
	J92	94-30		4460370	Cover plate	1
	J95	94-30		9007200-5021	Screw	2



E100 856E

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

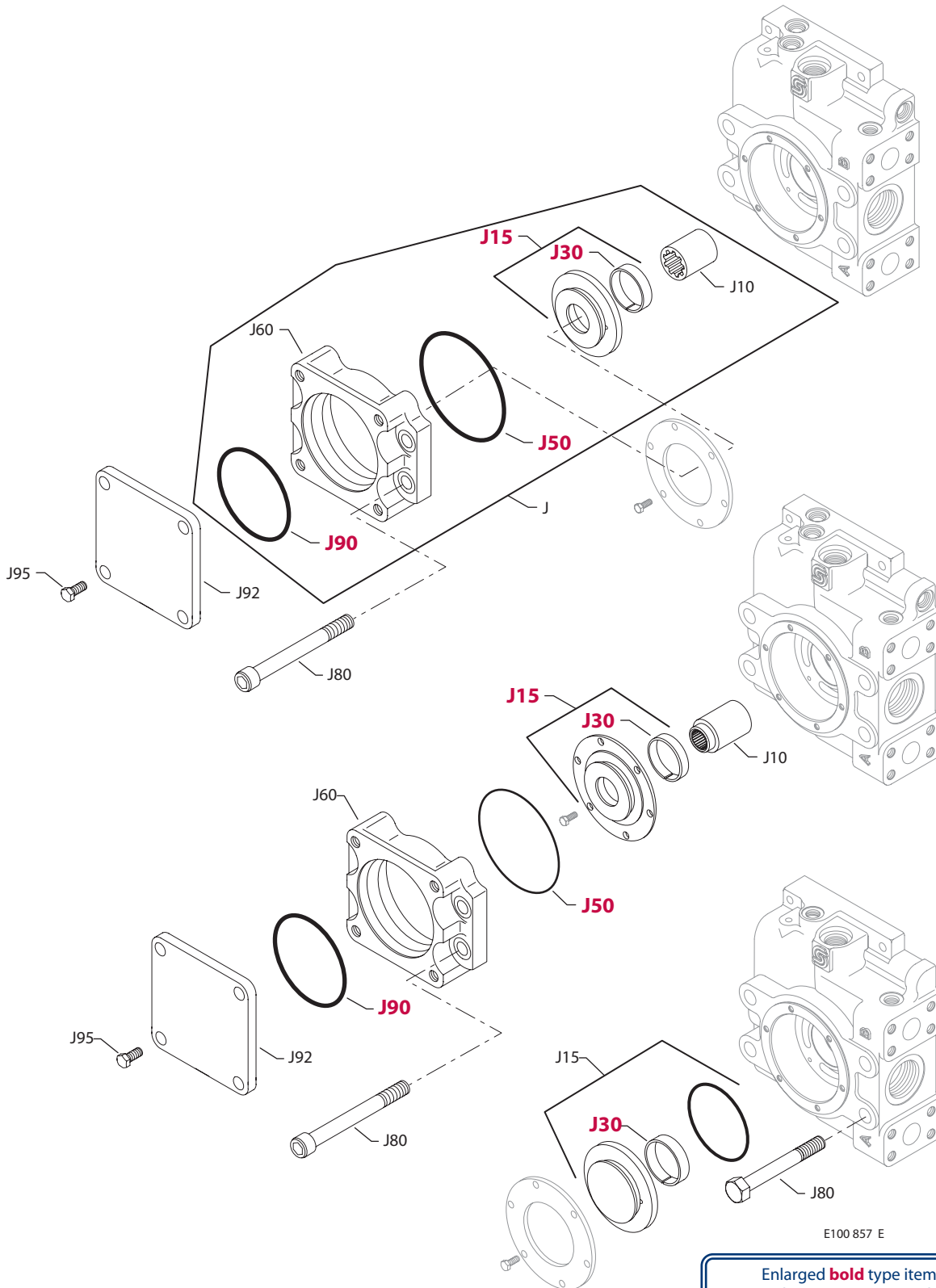
AUXILIARY MOUNTING

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
BF & U	J10	91-06		8100407	Coupling, 19 tooth	1
	J15	91-06		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	91-06		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	91-06		664771 (8700008)	Bushing	1
	J40	91-06	92-15	680892 (9004104-0440)	O-ring	1
	J50	91-06		056739 (9004104-1580)	O-ring	1
	J60	91-06		8800173	Flange adaptor, SAE B	1
	J70	91-06		9009625-0132	Washer	4
	J80	91-06		518721	Screw, M16 x 140	4
	J90	91-06		726935 (9004104-0450)	O-ring	1
	J92	91-06		4460370	Cover plate	1
	J95	91-06		9007200-5021	Screw	2

* New style covers are interchangeable with either charge pump design

BL	J10	05-14		8100148	Coupling, 13 tooth	1
	J15	05-14		8801248	Cover assembly, CW	1
	J15	05-14		8801352	Cover assembly, CCW	1
	J30	05-14		664771 (8700008)	Bushing	1
	J50	05-14		056739 (9004104-1580)	O-ring	1
	J60	05-14		8200468	Flange adaptor, SAE B	1
	J80	05-14		518721	Screw, M16 x 140	4
	J90	05-14		8801061	B pad seal	1
	J92	05-14		8801059	Cover plate	1
	J95	05-14		9007200-5021	Screw	2

BM & 7	J10	94-16		8100273	Coupling, 15 tooth	1
	J15	94-16		8800832	Cover assembly, CW (SB-2005-011)	1
	J15	94-16		8800833	Cover assembly, CCW (SB-2005-011)	1
	J30	94-16		664771 (8700008)	Bushing	1
	J50	94-16		056739 (9004104-1580)	O-ring	1
	J60	94-16		8800983	Flange adaptor, SAE B, metric threads	1
	J70	94-16		9009625-0132	Washer	4
	J80	98-44		518721	Screw, M16 x 140	4
	J90	94-16		726935 (9004104-0450)	O-ring	1
	J92	94-16		4460370	Cover plate	1
	J95	94-16		737866 (9007314-1207)	Screw	2



E100 857 E

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
CD & C	J	87-02		8202J00C-A	Aux. mounting kit, C flange, 14 tooth	1
	J10	87-02		8801196	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		664771 (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		8100848	Flange adaptor, SAE C (SB-2002-050)	1
	J70	87-02	03-10	5000602	Washer (SB-2002-050)	4
	J80	89-46		518721	Screw, M16 x 140	4
	J80	87-02	89-45	9007314-1624	Screw, M16 x 150 (SB-1989-023)	4
	J90	87-02		719179 (9004100-0480)	O-ring	1
	J92	87-02		8800406	Cover plate	1
	J95	87-02		9007200-5021	Screw	2

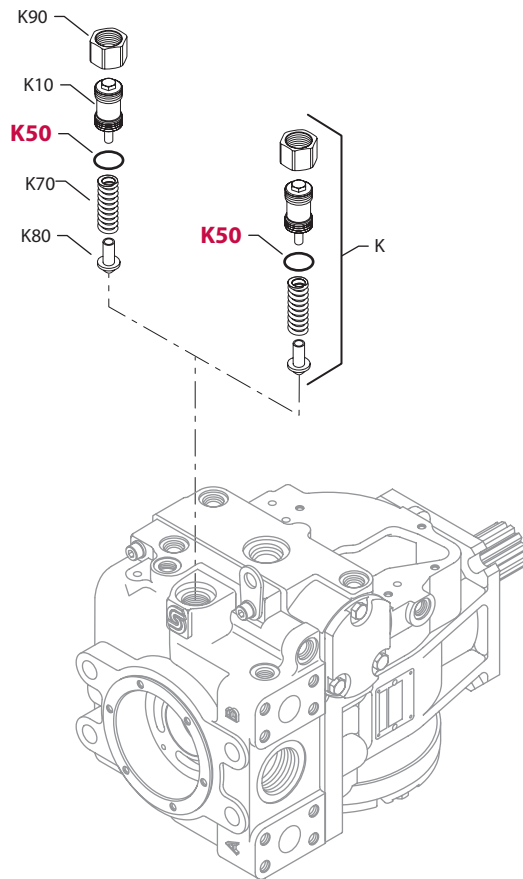
* New style covers are interchangeable with either charge pump design

CE	J10	05-16		8801196	Coupling, 14 tooth	1
	J15	05-16		8801248	Cover assembly, CW	1
	J15	05-16		8801352	Cover assembly, CCW	1
	J30	05-16		664771 (8700008)	Bushing	1
	J50	05-16		056739 (9004104-1580)	O-ring	1
	J60	05-16		8200515	Flange adaptor, SAE C	1
	J80	05-16		518721	Screw, M16 x 140	4
	J90	05-16		8801062	C pad seal	1
	J92	05-16		8801060	Cover plate	1
	J95	05-16		9007200-5021	Screw	2

CT	J10	02-08		8100407	Coupling, 19 tooth	1
	J15	02-08		8800832	Cover assembly, CW (SB-2005-011)	1
	J15	02-08		8800833	Cover assembly, CCW (SB-2005-011)	1
	J30	02-08		664771 (8700008)	Bushing	1
	J50	02-08		056739 (9004104-1580)	O-ring	1
	J60	02-08		8200469	Flange adaptor, SAE C (SB-2002-050)	1
	J70	02-08	03-10	5000602	Washer (SB-2002-050)	4
	J80	02-08		518721	Screw, M16 x 140	4
	J90	02-08		719179 (9004100-0480)	O-ring	1
	J92	02-08		8800406	Cover plate	1
	J95	02-08		9007200-5021	Screw	2

NN & N	J15	87-02		8800834	Cover assembly, (SB-1993-001*)	1
	J30	87-02		664771 (8700008)	Bushing	1
	J40	87-02		680892 (9004104-0440)	O-ring	1
	J80	98-44		9007210-1621	Screw, M12 x 120	4
	J80	87-02	98-43	9007210-1622	Screw, M12 x 130 (SB-1989-023)	4

* New style covers are interchangeable with either charge pump design

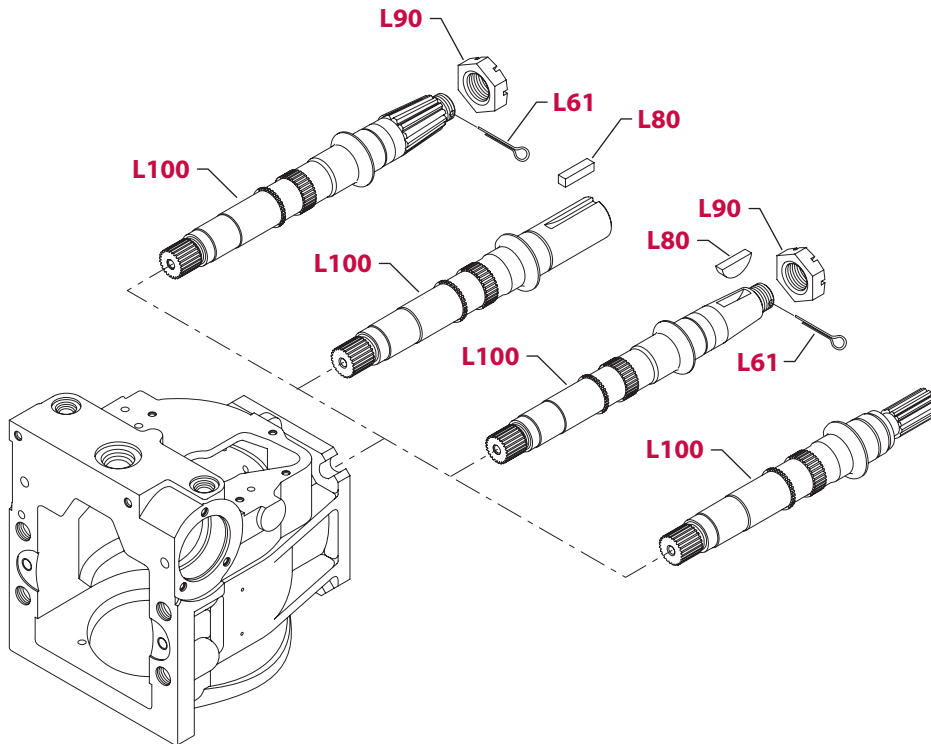


E100 858E

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

CHARGE PRESSURE SETTING

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
08	K10	96-23		502300	Adjuster	1
	K50	96-23		012559 (9004202-6200)	O-ring	1
	K70	96-23		8800946	Spring	1
	K80	96-23		342428 (8800449)	Poppet	1
	K90	96-23		342709 (9003575-0101)	Nut	1
10-30	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
32-40	K	94-13		8510269	Charge relief valve kit, 30-42 bar	1
	K50	94-13		001149 (9004201-6200)	O-ring	1
JD				none		
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

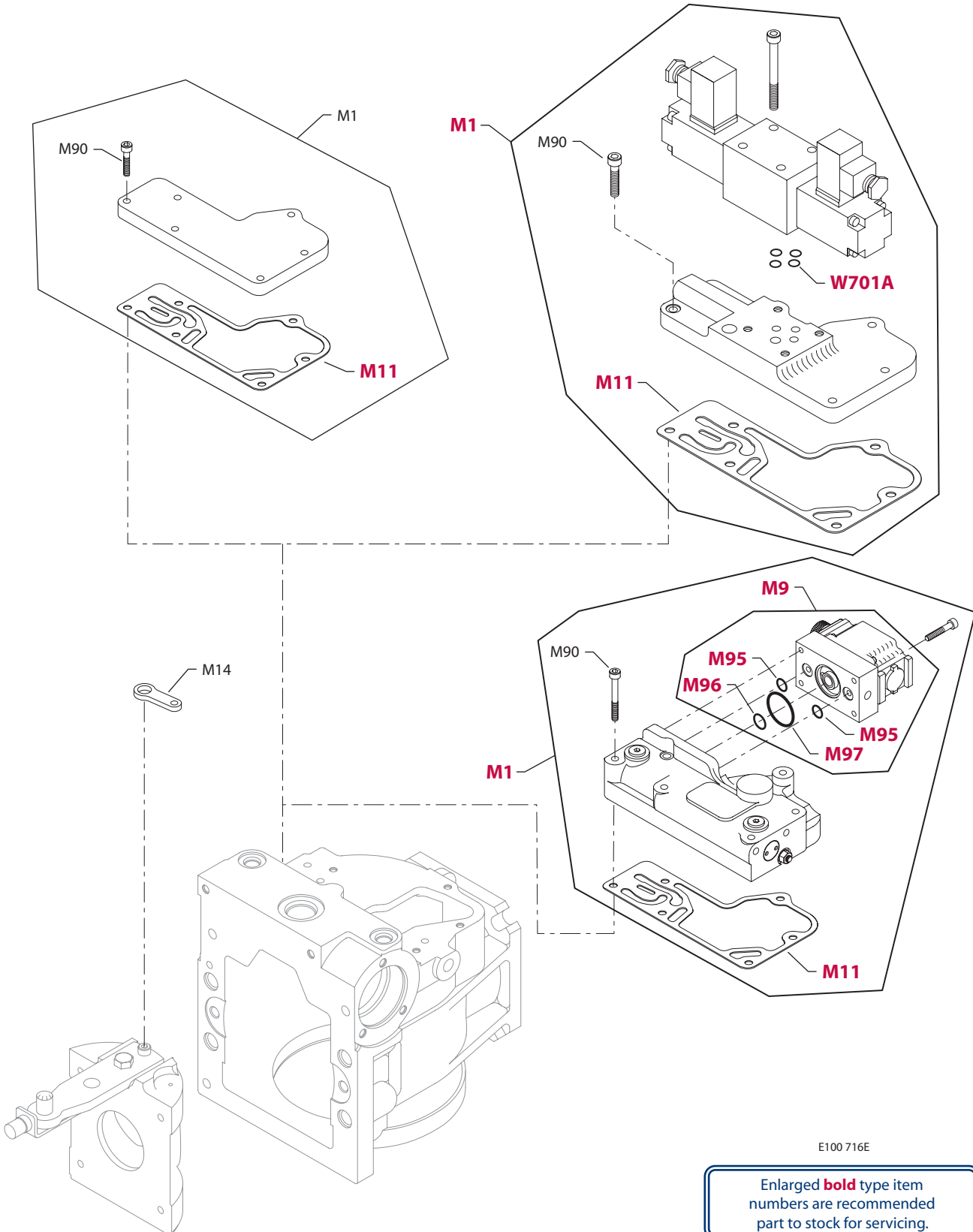


E100 859E

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

SHAFT

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
C6	L100	98-38		509239	Shaft, 21 tooth spline	1
C7	L100	89-46		341958 (8200169)	Shaft, 23 tooth spline	1
	L100	87-02	89-45	320911 (8200119)	Shaft, 23 tooth spline (SB-1989-023)	1
F1	L100	89-46		341974 (8200170)	Shaft, 13 tooth spline	1
	L100	87-02	89-45	306688 (8200118)	Shaft, 13 tooth spline (SB-1989-023)	1
F3	L100	96-45		8200330	Shaft, 13 tooth spline with retaining ring groove	1
J2	L100	92-16		8200330	Shaft, 23 tooth spline with no relief	1
J3	L100	92-16		8200234	Shaft, 14 tooth spline with no relief	1
K3	L80	87-02		9003261-3724	Key	1
	L100	89-46		8200176	Shaft, straight key, 1.75" diameter	1
	L100	87-02	89-45	8200164	Shaft, straight key, 1.75" diameter (SB-1989-023)	1
S1	L100	89-46		341982 (8200171)	Shaft, 14 tooth spline	1
	L100	87-02	89-45	312835 (8200143)	Shaft, 14 tooth spline (SB-1989-023)	1
S3	L100	89-46		8200172	Shaft, 16 tooth spline	1
	L100	87-02	89-45	8200120	Shaft, 14 tooth spline (SB-1989-023)	1
T2	L61	87-02		716779 (9004600-1230)	Cotter pin	1
	L80	87-02		9003310-3724	Key	1
	L90	87-02		5000606	Slotted nut	1
	L100	89-46		342006 (8200173)	Shaft, 1.5" tapered	1
	L100	87-02	89-45	8200133	Shaft, 1.5" tapered (SB-1989-023)	1
TF	L61	87-02		716779 (9004600-1230)	Cotter pin	1
	L90	87-02		9700897	Slotted nut	1
	L100	89-46		342006 (8200179)	Shaft, 1.5" tapered spline	1
	L100	87-02	89-45	8200132	Shaft, 1.5" tapered spline (SB-1989-023)	1

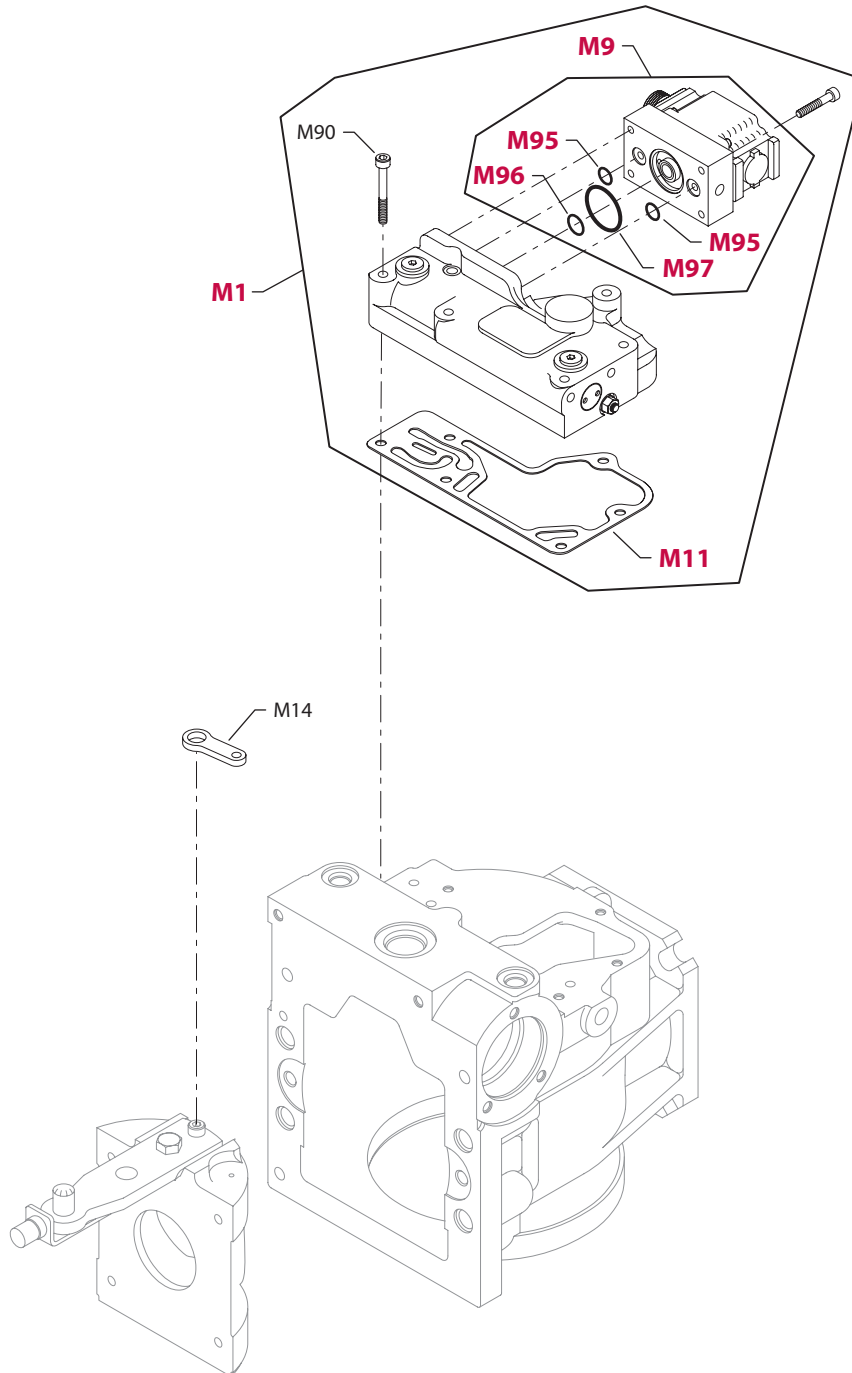


E100 716E

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
CA	M1	87-02		8102M0CA-A	Control cover plate kit	1
	M11	87-02		8800923	Control gasket	1
	M90	87-02		693341 (9007314-0606)	Screw	6
CB	M1	87-02		8102M0CA-A	Control cover plate kit	1
	M11	87-02		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M90	87-02		693341 (9007314-0606)	Screw	6
DC	M1	87-02		8102M0DC-A	3-position control kit, 12 volt	1
	M11	87-02		8800923	Control gasket	1
	M90	87-02		693341 (9007314-0606)	Screw	6
	W701A	87-02		048413	O-ring	4
DD	M1	87-02		8102M0DD-A	3-position control kit, 24 volt	1
	M11	87-02		8800923	Control gasket	1
	M90	87-02		693341 (9007314-0606)	Screw	6
	W701A	87-02		048413	O-ring	4
EA	M1	91-16		8202M0EA-B	EDC kit, MS connector	1
	M9	91-16		MCV110A1017	PCP, MS connector	1
	M11	91-16		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	91-16	96-39	8200344	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
EG	M1	98-44		8510234	EDC kit, MS connector	1
	M9	98-44		MCV110A1018	PCP, MS connector	1
	M11	98-44		8800923	Control gasket	1
	M14	98-44		8200413	Feedback link	1
	M90	98-44		692889 (9007314-0611)	Screw	6
	M95	98-44		318337 (9004104-0120)	O-ring	2
	M96	98-44		011304 (9004104-0140)	O-ring	1
	M97	98-44		318345 (9004104-0240)	O-ring	1
	EH	M1	99-05		11013636	EDC kit, S90 100cc
M9		99-05		MCV110A1058	PCP, Packard connector	1
M11		99-05		8800923	Control gasket	1
M14		99-05		8200413	Feedback link	1
M90		99-05		692889 (9007314-0611)	Screw	6
M95		99-05		318337 (9004104-0120)	O-ring	2
M96		99-05		011304 (9004104-0140)	O-ring	1
M97		99-05		318345 (9004104-0240)	O-ring	1

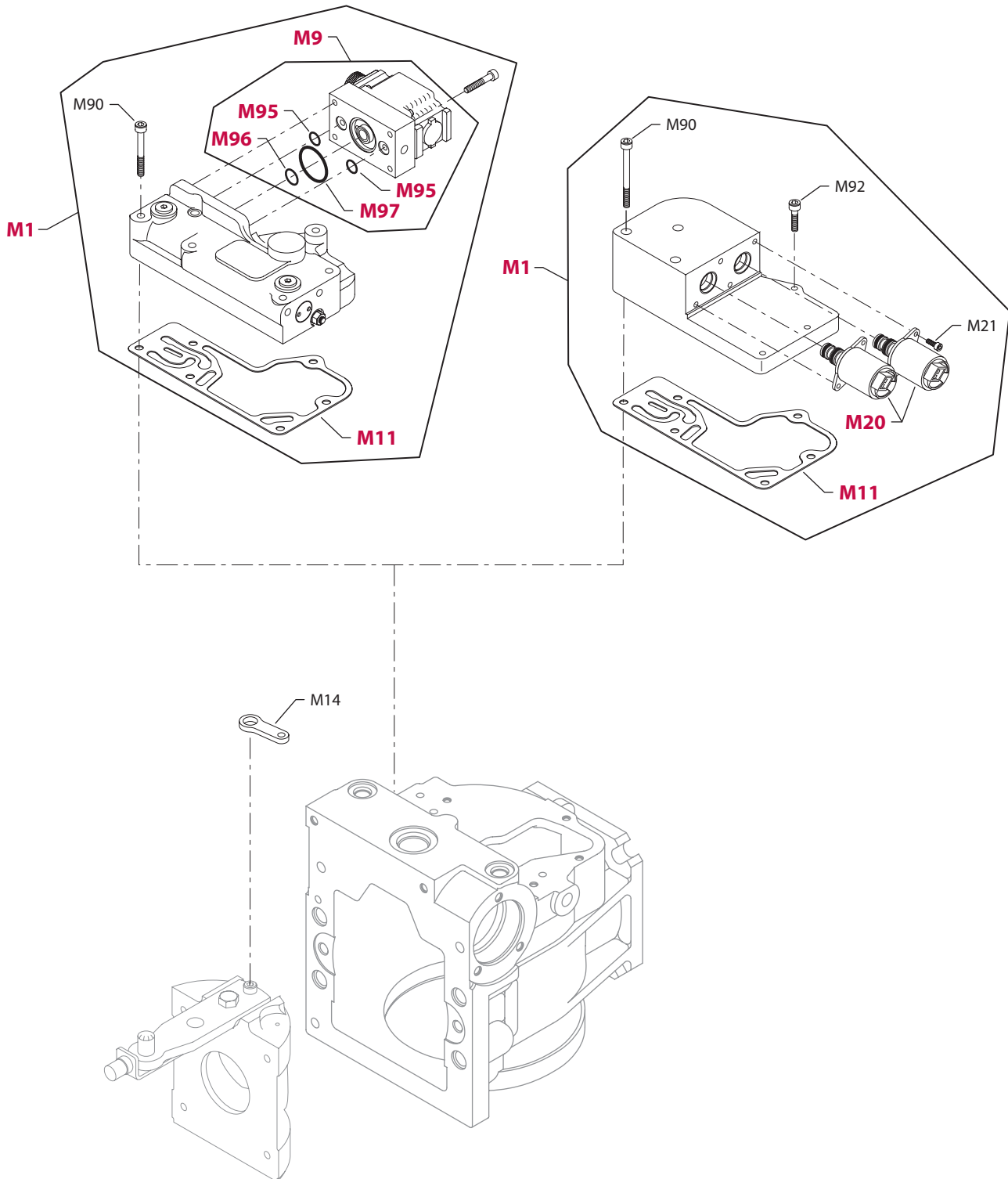


E100 860E

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
EK	M1	99-15		11018282	EDC kit, Deutsch connector	1
	M9	99-15		MCV110A1014	PCP, Deutsch connector	1
	M11	99-15		8800923	Control gasket	1
	M14	99-15		8200413	Feedback link	1
	M90	99-15		692889 (9007314-0611)	Screw	6
	M95	99-15		318337 (9004104-0120)	O-ring	2
	M96	99-15		011304 (9004104-0140)	O-ring	1
	M97	99-15		318345 (9004104-0240)	O-ring	1
EP	M1	91-07		8202M0EP-B	EDC kit, Packard connector	1
	M9	91-07		MCV110A1058	PCP, Packard connector	1
	M11	91-07		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	91-07	96-39	8200344	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
EV	M1	97-24		11013636	EDC kit, Packard connector	1
	M9	97-24		MCV110A1058	PCP, Packard connector	1
	M11	97-24		8800923	Control gasket	1
	M14	97-24		8200413	Feedback link (SB-1999-019)	1
	M90	97-24		692889 (9007314-0611)	Screw	6
	M95	97-24		318337 (9004104-0120)	O-ring	2
	M96	97-24		011304 (9004104-0140)	O-ring	1
	M97	97-24		318345 (9004104-0240)	O-ring	1
EX	M1	93-16		8202M0EX-B	EDC kit, Metri-pack connector	1
	M9	93-16		MCV110A1090	PCP, Metri-pack connector	1
	M11	93-16		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	93-16	96-39	8200344	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	

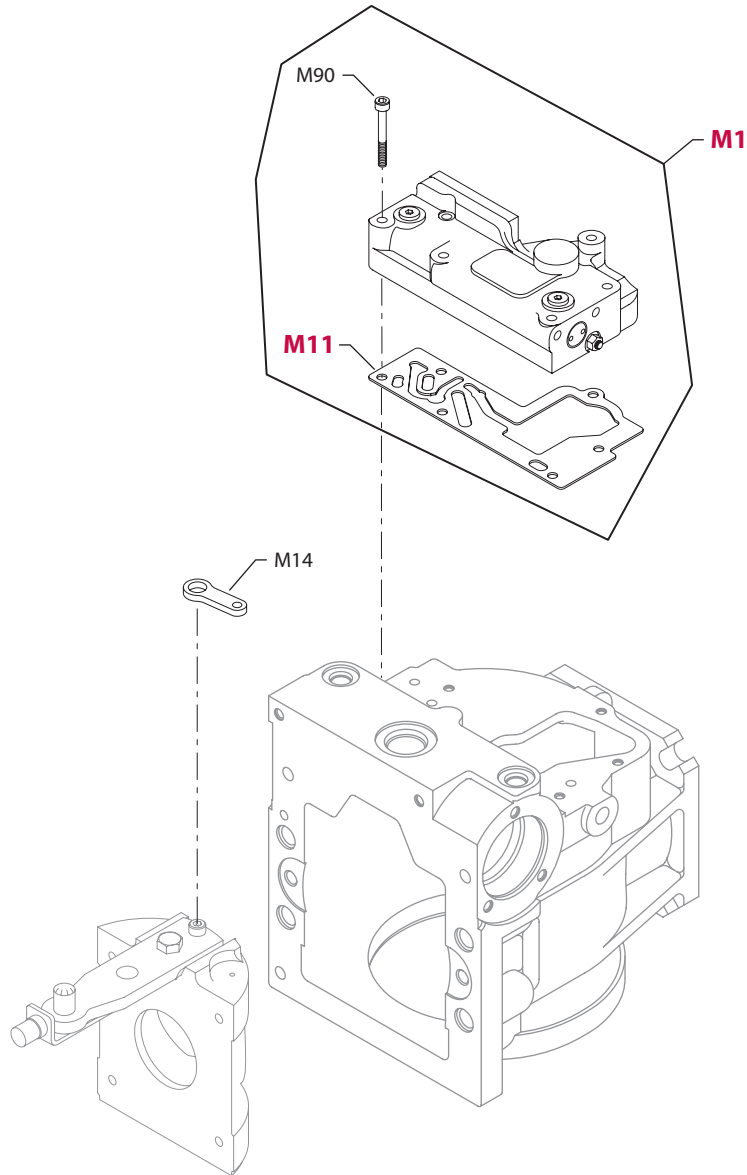


E100 805E

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
FA	M1	98-14		11015079	NFPE control kit, 12 volt, 25 bar	1
	M11	98-14		8800923	Control gasket	1
	M20	98-14		518080	Solenoid valve, 12 volt, 25 bar	2
	M21	98-14		067694	Screw	4
	M90	98-14		348847	Screw	3
	M92	98-14		9007314-0606	Screw	3
	FB	M1	98-14		11015080	NFPE control kit, 24 volt, 25 bar
M11		98-14		8800923	Control gasket	1
M20		98-14		518081	Solenoid valve, 24 volt, 25 bar	2
M21		98-14		067694	Screw	4
M90		98-14		348847	Screw	3
M92		98-14		9007314-0606	Screw	3
FC		M1	98-14		8510230	NFPE control kit, 12 volt, 32 bar
	M11	98-14		8800923	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		9007314-0606	Screw	3
	FD	M1	98-14		11015081	NFPE control kit, 24 volt, 32 bar
M11		98-14		8800923	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		9007314-0606	Screw	3
GA		M1	01-28		8510302	EDC kit, Packard connector
	M9	01-28		MCV110A1059	PCP, Packard connector	1
	M11	01-28		8800923	Control gasket	1
	M14	01-28		8200413	Feedback link	1
	M90	01-28		692889 (9007314-0611)	Screw	6
	M95	01-28		318337 (9004104-0120)	O-ring	2
	M96	01-28		011304 (9004104-0140)	O-ring	1
	M97	01-28		318345 (9004104-0240)	O-ring	1

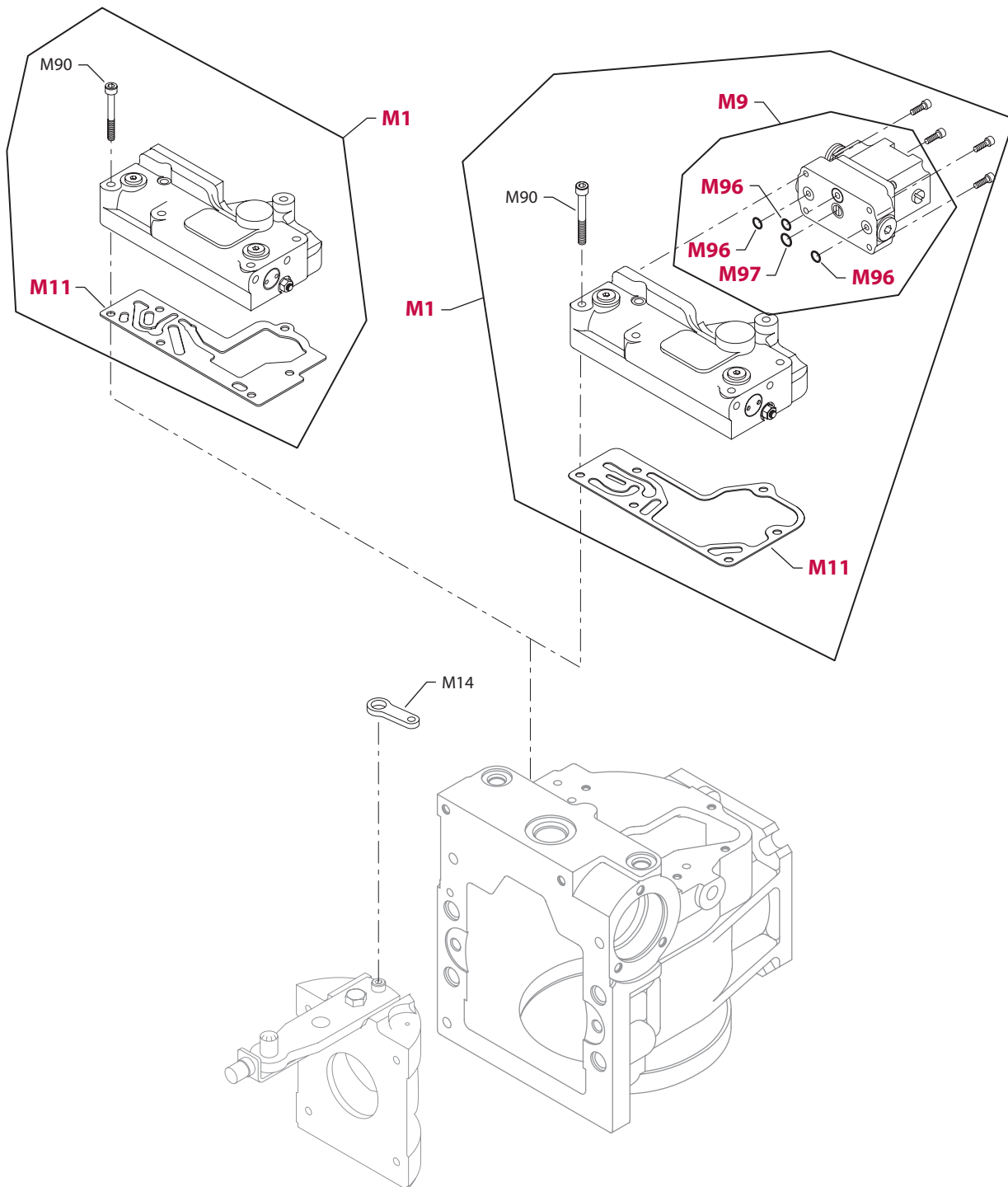


E100 806E

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
HE	M1	97-06		8510277	HDC kit, 8-16.5 bar	1
	M11	97-06		8801241	Control gasket (SB-1999-065)	1
	M14	97-06		8200413	Feedback link (SB-1999-019)	1
	M90	97-06		692889 (9007314-0611)	Screw	6
HF	M1	92-15		8202M0HF-A	HDC kit, 3-11 bar	1
	M11	92-15		8801241	Control gasket (SB-1999-065)	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	92-15	96-39	8200344	Feedback link (SB-1996-009)	1
	M90	92-15		692889 (9007314-0611)	Screw	6
HK	M1	92-15		8202M0HK-A	HDC kit, 1-11 bar	1
	M11	92-15		8801241	Control gasket (SB-1999-065)	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	92-15	96-39	8200344	Feedback link (SB-1996-009)	1
	M90	92-15		692889 (9007314-0611)	Screw	6
HM	M1	92-15		8202M0HM-A	HDC kit, 1.1 -6.7 bar	1
	M11	92-15		8801241	Control gasket (SB-1999-065)	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	92-15	96-39	8200344	Feedback link (SB-1996-009)	1
	M90	92-15		692889 (9007314-0611)	Screw	6
HS	M1	94-19		8202M0HS-A	HDC kit, 6-18 bar, high accuracy	1
	M11	94-19		8801241	Control gasket (SB-1999-065)	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	94-19	96-39	8200344	Feedback link (SB-1996-009)	1
	M90	94-19		692889 (9007314-0611)	Screw	6
HT	M1	94-36		8510279	HDC kit, 4.39 bar	1
	M11	94-36		8801241	Control gasket (SB-1999-065)	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	94-36	96-39	8200344	Feedback link (SB-1996-009)	1
	M90	94-36		692889 (9007314-0611)	Screw	6
HV	M1	97-20		11013639	HDC kit, 4.39 bar	1
	M11	97-20		8801241	Control gasket (SB-1999-065)	1
	M14	97-20		8200413	Feedback link (SB-1999-019)	1
	M90	97-20		692889 (9007314-0611)	Screw	6
HW	M1	98-13		11013639	HDC kit, 4.39 bar	1
	M11	98-13		8801241	Control gasket (SB-1999-065)	1
	M14	98-13		8200413	Feedback link (SB-1999-019)	1
	M90	98-13		692889 (9007314-0611)	Screw	6
HX	M1	00-19		11019662	HDC kit, 3-11 bar	1
	M11	00-19		8801241	Control gasket	1
	M14	00-19		8200413	Feedback link	1
	M90	00-19		692889 (9007314-0611)	Screw	6

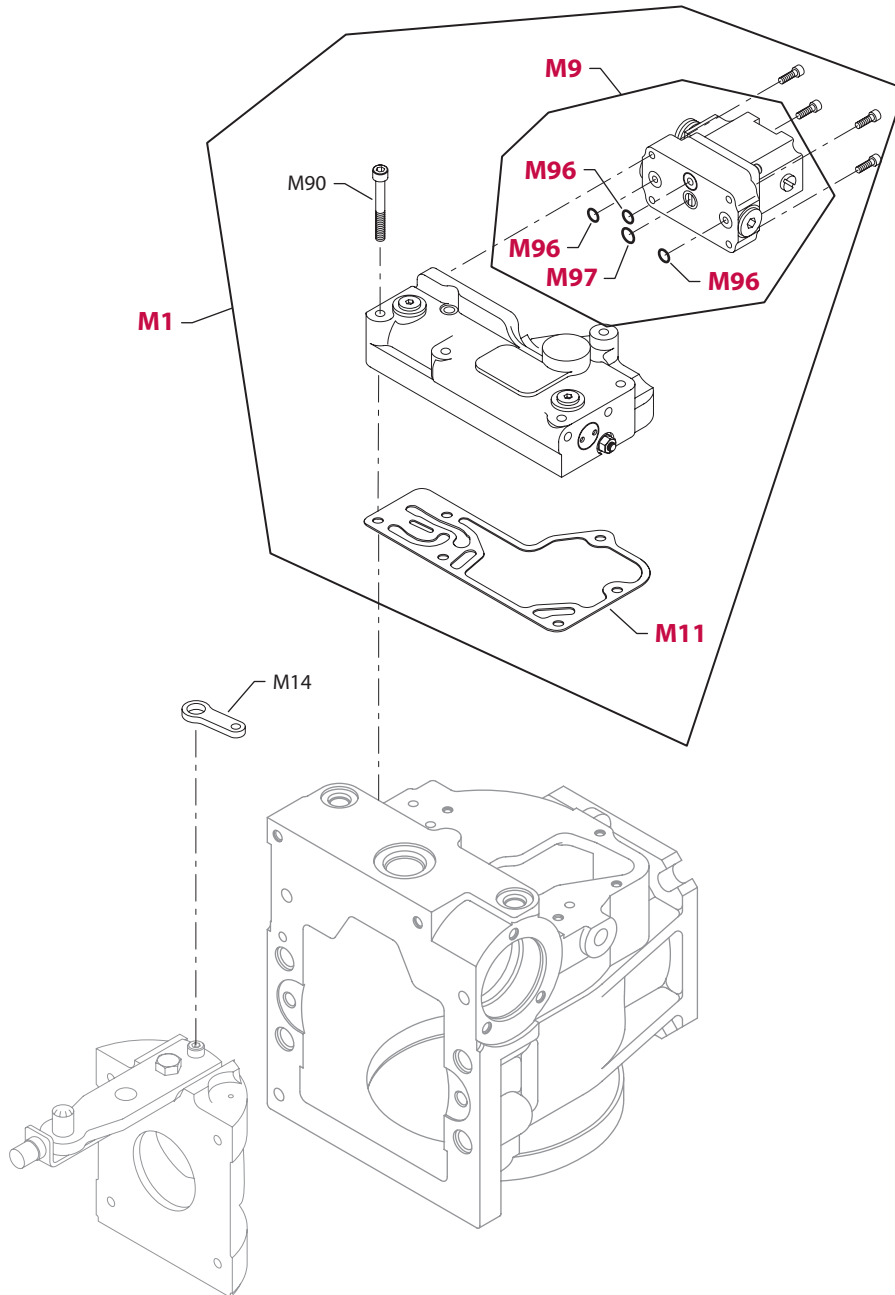


E100 861E

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
JA	M1	00-24		8202M0HS-A	HDC kit, 6-18 bar, high accuracy	1
	M11	00-24		8801241	Control gasket	1
	M14	00-24		8200413	Feedback link	1
	M90	00-24		692889 (9007314-0611)	Screw	6
KA	M1	95-17		8510117	EDC3 kit, MS connector, dual coil	1
	M9	95-17		MCV116G4201	PCP, MS connector, dual coil	1
	M11	95-17		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	95-17	96-39	8200344	Feedback link (SB-1996-009)	1
	M90	95-17		692889 (9007314-0611)	Screw	6
	M96	95-17		011296 (9004105-0120)	O-ring	3
	M97	95-17		9004105-0130	O-ring	1
KC	M1	02-22		11018292	EDC kit, MS connector	1
	M9	02-22		MCV116C1401	PCP, MS connector	1
	M11	02-22		8800923	Control gasket	1
	M14	02-22		8200413	Feedback link	1
	M90	02-22		692889 (9007314-0611)	Screw	6
	M96	02-22		011296 (9004105-0120)	O-ring	3
	M97	02-22		9004105-0130	O-ring	1
KE	M1	03-27		8510323	EDC kit, Deutsch connector	1
	M9	03-27		MCV116F3118	PCP, Deutsch connector	1
	M11	03-27		8800923	Control gasket	1
	M14	03-27		8200413	Feedback link	1
	M90	03-27		692889 (9007314-0611)	Screw	6
	M96	03-27		011296 (9004105-0120)	O-ring	3
	M97	03-27		9004105-0130	O-ring	1
KK	M1	98-37		11013633	EDC kit	1
	M9	98-37		MCV116G4211	PCP	1
	M11	98-37		8800923	Control gasket	1
	M14	98-37		8200413	Feedback link (SB-1999-019)	1
	M90	98-37		692889 (9007314-0611)	Screw	6
	M96	98-37		011296 (9004105-0120)	O-ring	3
	M97	98-37		9004105-0130	O-ring	1
KM	M1	98-49		8510241	EDC kit	1
	M9	98-49		MCV116G4213	PCP	1
	M11	98-49		8800923	Control gasket	1
	M14	98-49		8200413	Feedback link (SB-1999-019)	1
	M90	98-49		692889 (9007314-0611)	Screw	6
	M96	98-49		011296 (9004105-0120)	O-ring	3
	M97	98-49		9004105-0130	O-ring	1

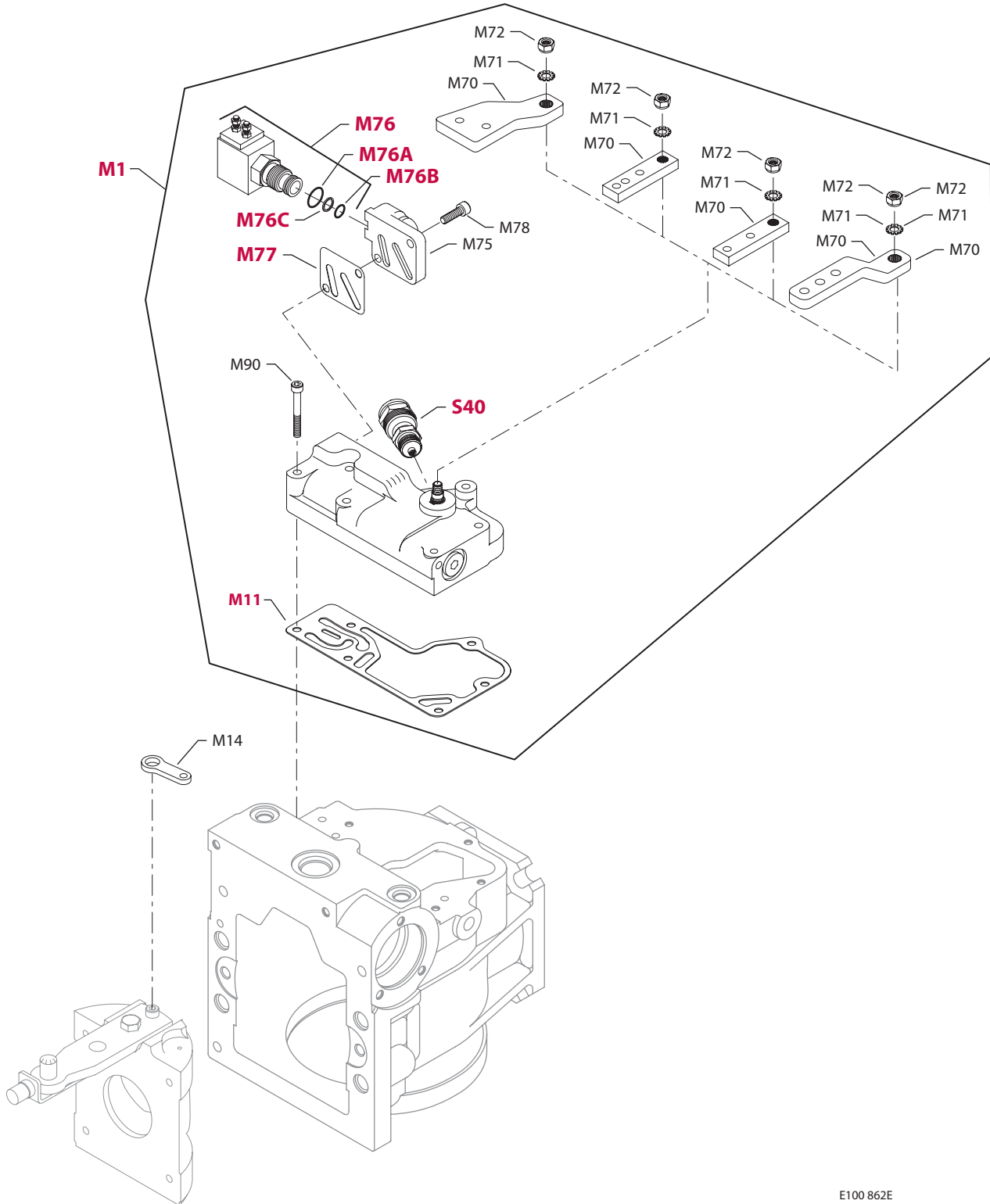


E100 807E

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	
KN	M1	95-49		8510209	EDC kit, MS connector, single coil	1	
	M9	95-49		MCV116A3501	PCP, MS connector, single coil	1	
	M11	95-49		8800923	Control gasket	1	
	M14	96-40		8200413	Feedback link (SB-1999-019)	1	
	M14	95-49	96-39	8200344	Feedback link (SB-1996-009)	1	
	M90	95-49		692889 (9007314-0611)	Screw	6	
	M96	95-49		011296 (9004105-0120)	O-ring	3	
	M97	95-49		9004105-0130	O-ring	1	
	KP	M1	95-17		8510118	EDC3 kit, Weather-pack connector, dual coil	1
M9		95-17		MCV116G4204	PCP, Weather-pack connector, dual coil	1	
M11		96-44		8800923	Control gasket	1	
M14		96-40		8200413	Feedback link (SB-1999-019)	1	
M14		95-17	96-39	8200344	Feedback link (SB-1996-009)	1	
M90		95-17		692889 (9007314-0611)	Screw	6	
M96		95-17		011296 (9004105-0120)	O-ring	3	
M97		95-17		9004105-0130	O-ring	1	
KT		M1	99-34		8510321	EDC3 kit, Deutsch connector	1
	M9	99-34		MCV116G4214	PCP, Duetsch connector	1	
	M11	99-34		8800923	Control gasket	1	
	M14	99-34		8200413	Feedback link	1	
	M90	99-34		692889 (9007314-0611)	Screw	6	
	M96	99-34		011296 (9004105-0120)	O-ring	3	
	M97	99-34		9004105-0130	O-ring	1	
	KU	M1	97-50		11020566	EDC3 kit, Weather-pack connector	1
		M9	97-50		MCV116G4204	PCP, Weather-pack connector	1
M11		97-50		8800923	Control gasket	1	
M14		97-50		8200413	Feedback link (SB-1999-019)	1	
M90		97-50		692889 (9007314-0611)	Screw	6	
M96		97-50		011296 (9004105-0120)	O-ring	3	
M97		97-50		9004105-0130	O-ring	1	

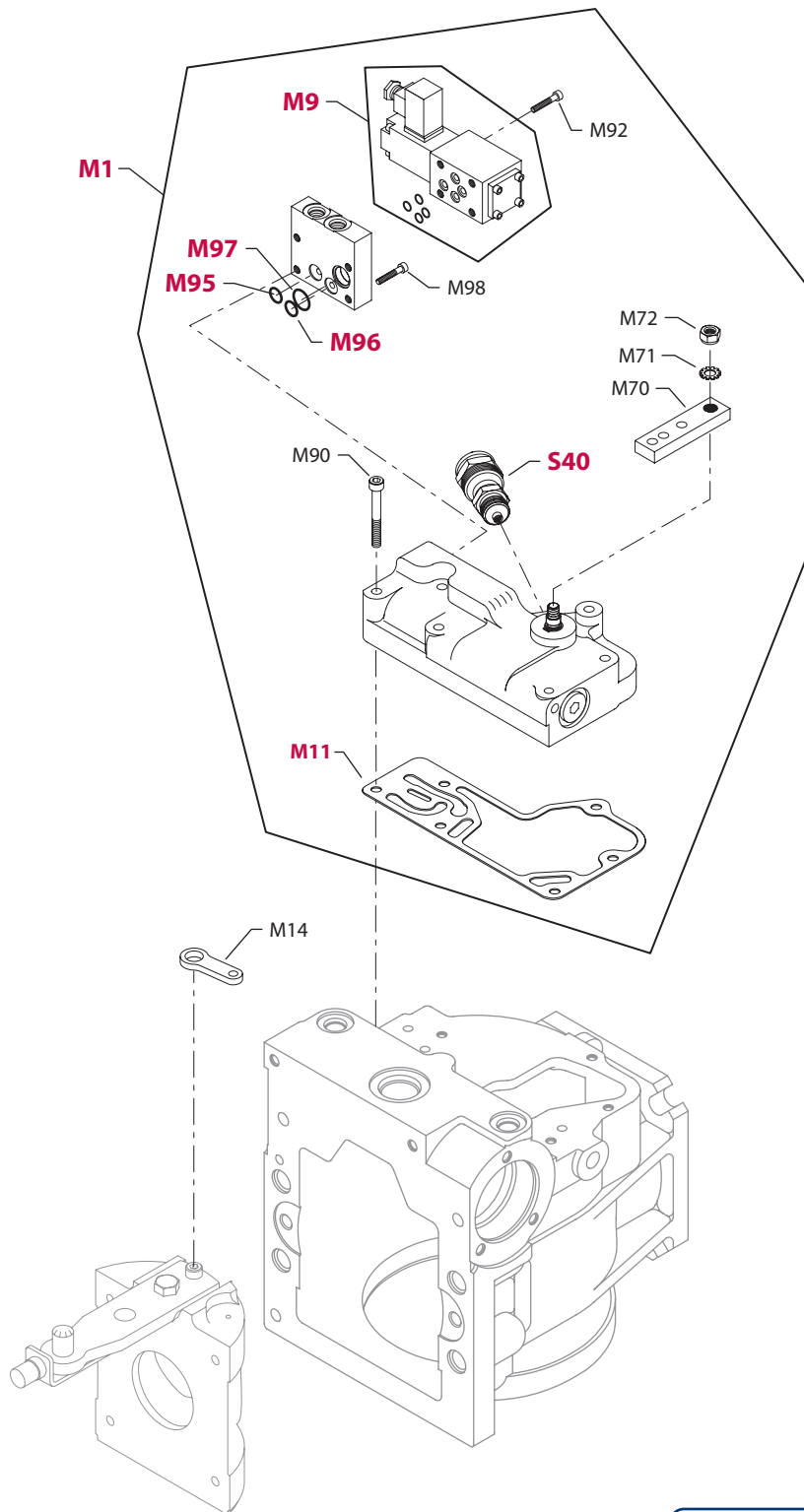


E100 862E

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
LD	M1	97-26		11019663	MDC kit, w/neutral start switch, 2-pole 12v solenoid	1
	M11	97-26		8800923	Control gasket	1
	M14	97-26		8200413	Feedback link (SB-1999-019)	1
	M70	97-26		8801121	Control handle, offset	1
	M71	97-26		689018 (9009660-3100)	Toothlock washer	1
	M72	97-26		040642 (9003513-0800)	Nut	1
	M75	97-26		505022	Control manifold	1
	M76	97-26		326108 (9700886)	Solenoid valve, 12 volt, 2-pole	1
	M76A	97-26		001131 (9004201-5000)	O-ring	1
	M76B	97-26		9006150-0140	Back up ring	1
	M76C	97-26		000810 (9004100-0140)	O-ring	1
	M77	97-26		8800882	Manifold gasket	1
	M78	97-26		693341 (9007314-0606)	Screw	2
	M90	97-26		692889 (9007314-0611)	Screw	6
	S40	97-26		8510027	Neutral start switch kit	1
	LE	M1	01-07		8510291	MDC kit, high force neutral start switch
M11		01-07		8800923	Control gasket	1
M14		01-07		8200413	Feedback link	1
M70		01-07		9800916	Control handle	1
M71		01-07		689018 (9009660-3100)	Toothlock washer	1
M72		01-07		040642 (9003513-0800)	Nut	1
M90		01-07		692889 (9007314-0611)	Screw	6
S40		01-07		8510174	Neutral start switch kit, high force, Weather-pack	1
LG		M1	98-42		11015108	MDC kit, w/2-pole 12v solenoid
	M11	98-42		8800923	Control gasket	1
	M14	98-42		8200413	Feedback link (SB-1999-019)	1
	M70	98-42		9801201	Control handle	1
	M71	98-42		689018 (9009660-3100)	Toothlock washer	1
	M72	98-42		040642 (9003513-0800)	Nut	1
	M75	98-42		505022	Control manifold	1
	M76	98-42		326108 (9700886)	Solenoid valve, 12 volt, 2-pole	1
	M76A	98-42		001131 (9004201-5000)	O-ring	1
	M76B	98-42		9006150-0140	Back up ring	1
	M76C	98-42		000810 (9004100-0140)	O-ring	1
	M77	98-42		8800882	Manifold gasket	1
	M78	98-42		693341 (9007314-0606)	Screw	2
	M90	98-42		692889 (9007314-0611)	Screw	6
	LS	M1	04-48		8510360	MDC kit, high force neutral start switch
M11		04-48		8800923	Control gasket	1
M14		04-48		8200413	Feedback link	1
M70		04-48		8801339	Control handle, offset	1
M71		04-48		689018 (9009660-3100)	Toothlock washer	1
M72		04-48		040642 (9003513-0800)	Nut	1
M90		04-48		692889 (9007314-0611)	Screw	6
S40		04-48		8510316	Neutral start switch kit, high force, Weather-pack	1

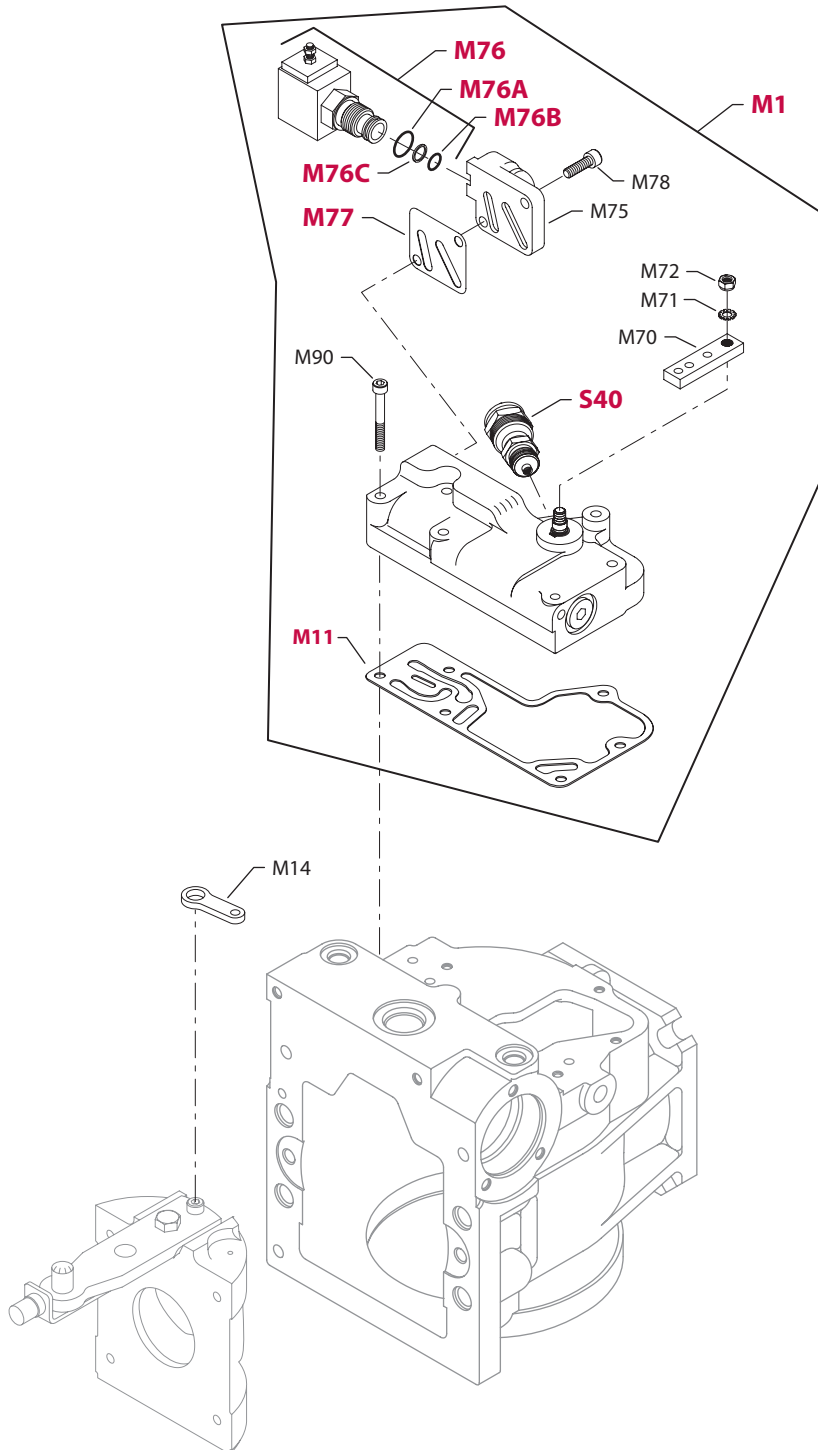


E100 863E

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
M1	M1	95-37		11014378	MDC kit, brass sleeve	1
	M11	95-37		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	95-37	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	95-37		9800916	Control handle	1
	M71	95-37		689018 (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		8510112	MDC kit, with neutral start switch, brass sleeve
M11		95-37		354209 (8800520)	Control gasket	1
M14		96-40		8200413	Feedback link (SB-1999-019)	1
M14		95-37	96-39	8200344	Feedback link (SB-1996-009)	1
M70		95-37		9800916	Control handle	1
M71		95-37		689018 (9009660-3100)	Toothlock washer	1
M72		95-37		040642 (9003513-0800)	Nut	1
M90		95-37		692889 (9007314-0611)	Screw	6
S40		95-37		709014 (80020S40)	Neutral start switch kit	1
M8	M1	04-38		11015110	MDC kit, w/2-position solenoid valve	1
	M9	04-38		508009	Solenoid valve	1
	M11	04-38		354209 (8800520)	Control gasket	1
	M14	04-38		8200413	Feedback link	1
	M60	04-38		347716	Manifold	1
	M70	04-38		9800916	Control handle	1
	M71	04-38		689018 (9009660-3100)	Toothlock washer	1
	M72	04-38		040642 (9003513-0800)	Nut	1
	M90	04-38		692889 (9007314-0611)	Screw	6
	M92	04-38		9007315-0507	Screw	4
	M95	04-38		9004105-0140	O-ring	1
	M96	04-38		9004105-0140	O-ring	1
	M97	04-38		9004105-0190	O-ring	1
	M98	04-38		9007315-0505	Screw	4
M9	M1	91-06		8510288	MDC kit, special linkage	1
	M11	91-06		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	91-06	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	91-06		9800916	Control handle	1
	M71	91-06		689018 (9009660-3100)	Toothlock washer	1
	M72	91-06		040642 (9003513-0800)	Nut	1
	M90	91-06		692889 (9007314-0611)	Screw	6

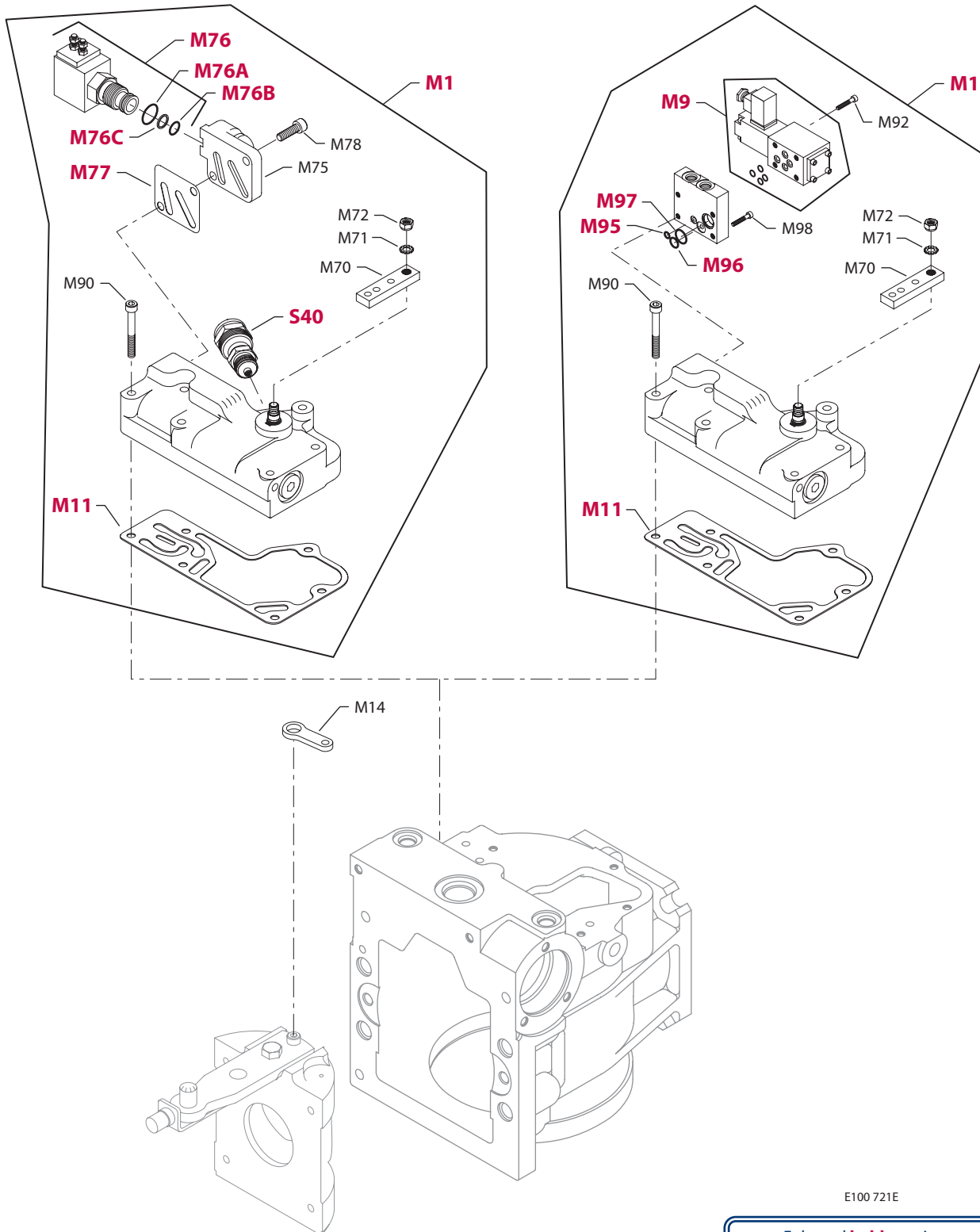


E100 720E

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
MA	M1	87-02		8102M0MA-A	MDC kit	1
	M11	87-02		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		689018 (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		8102M0MB-A	MDC kit, with neutral start switch
M11		87-02		8800923	Control gasket	1
M14		96-40		8200413	Feedback link (SB-1999-019)	1
M14		87-02	96-39	8200344	Feedback link (SB-1996-009)	1
M70		87-02		9800916	Control handle	1
M71		87-02		689018 (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		8102M0MC-A	MDC kit w/12 volt solenoid, single pole	1
	M11	87-02		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		689018 (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

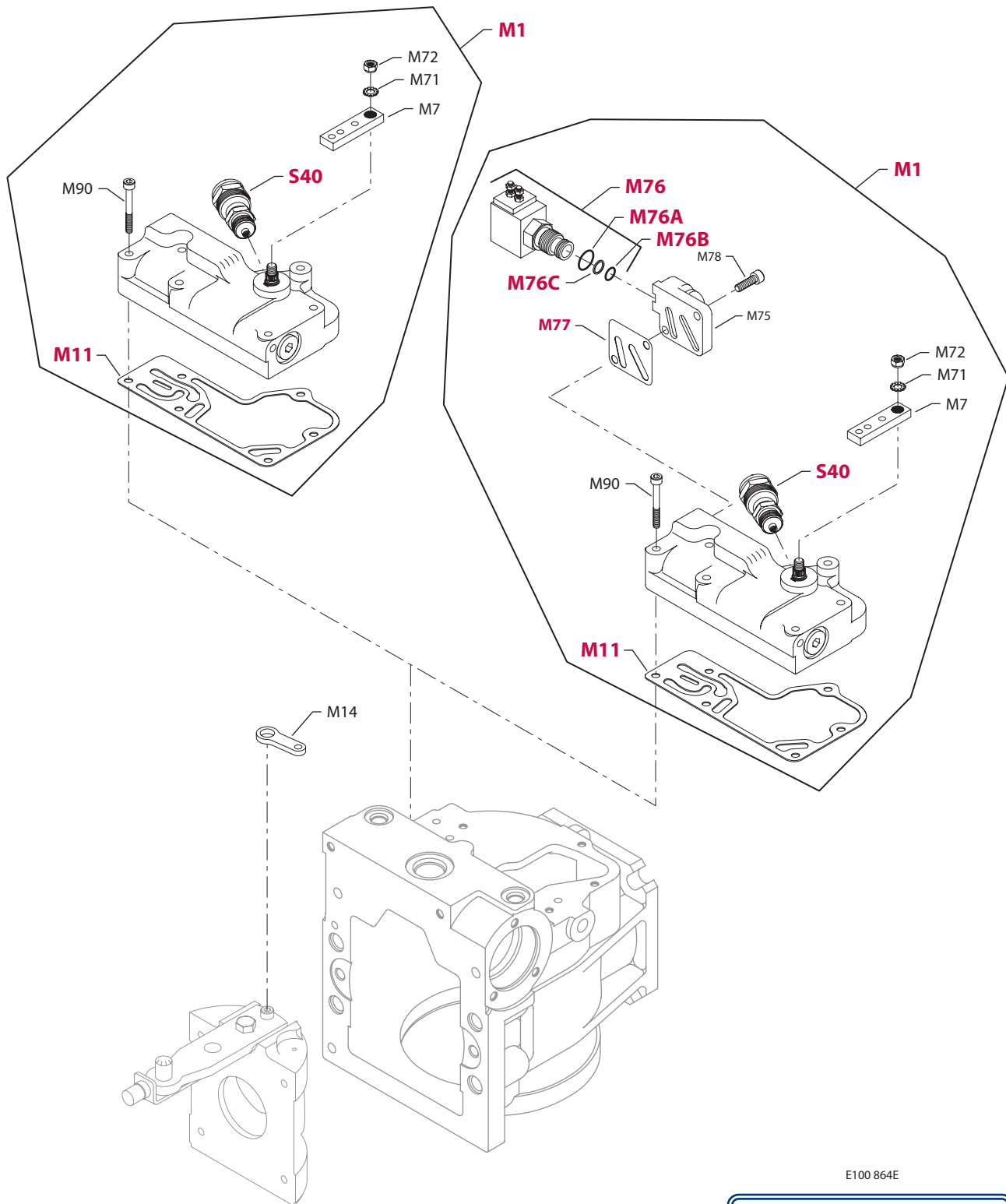


E100 721E

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		8102M0MD-A	MDC kit w/12 volt double pole solenoid, high force nss	1
	M11	87-02		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		689018 (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	92-16		8102M0ME-A	MDC kit w/2-position solenoid valve, 12 volt	1
	M9	92-16		519357	Solenoid valve, 2-position, 12 volt	1
	M11	92-16		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	92-16		9800916	Control handle	1
	M71	92-16		689018 (9009660-3100)	Toothlock washer	1
	M72	92-16		040642 (9003513-0800)	Nut	1
	M90	92-16		692889 (9007314-0611)	Screw	6
	M92	92-16		9007315-0510	Screw	4
	M95	92-16		144725 (9004105-0110)	O-ring	1
	M96	92-16		056770 (9004105-0150)	O-ring	1
	M97	92-16		544742 (9004105-0190)	O-ring	1
	M98	92-16		9007315-0505	Screw	4
MK	M1	87-02		8102M0MK-A	MDC kit w/wide deadband, nss	1
	M11	87-02		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		689018 (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

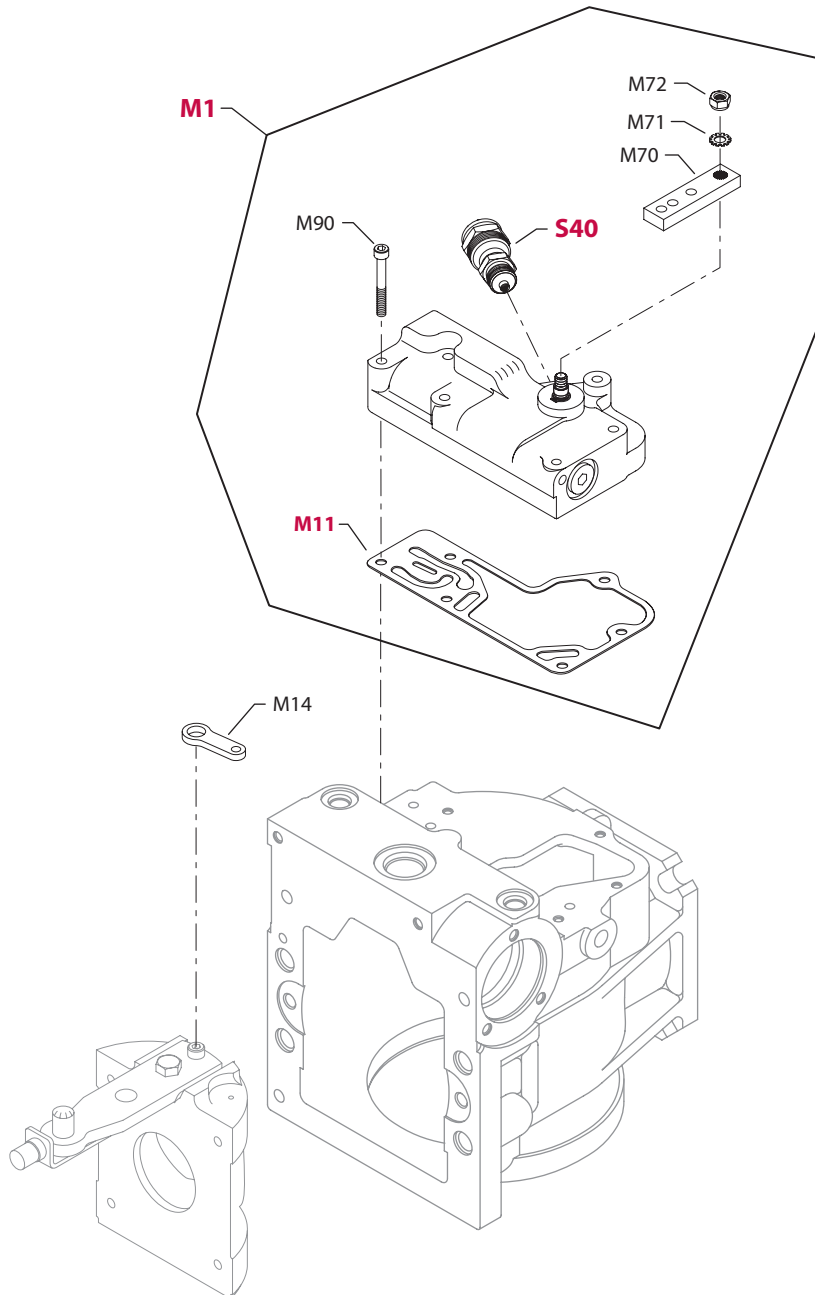


E100 864E

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
ML	M1	92-51		11015112	MDC kit w/wide deadband, high force nss	1
	M11	92-51		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	92-51	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	92-51		9800916	Control handle	1
	M71	92-51		689018 (9009660-3100)	Toothlock washer	1
	M72	92-51		040642 (9003513-0800)	Nut	1
	M90	92-51		692889 (9007314-0611)	Screw	6
	S40	92-51		709014 (8510027)	Neutral start switch kit, high force	1
	MS	M1	93-29		8510287	MDC kit, high force nss
M11		93-29		8800923	Control gasket	1
M14		96-40		8200413	Feedback link (SB-1999-019)	1
M14		92-51	96-39	8200344	Feedback link (SB-1996-009)	1
M70		93-29		9800916	Control handle	1
M71		93-29		689018 (9009660-3100)	Toothlock washer	1
M72		93-29		040642 (9003513-0800)	Nut	1
M90		93-29		692889 (9007314-0611)	Screw	6
S40		93-29		709014 (8510027)	Neutral start switch kit, high force	1
MT		M1	95-20		8510320	MDC kit w/12 volt solenoid, double pole
	M11	95-20		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	95-20	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	95-20		9800916	Control handle	1
	M71	95-20		689018 (9009660-3100)	Toothlock washer	1
	M72	95-20		040642 (9003513-0800)	Nut	1
	M75	95-20		505022	Control manifold	1
	M76	95-20		326108 (9700886)	Solenoid valve, 12 volt, double pole	1
	M76A	95-20		001131 (9004295-2000)	O-ring	1
	M76B	95-20		9006150-0140	Back up ring	1
	M76C	95-20		000810 (9004100-0140)	O-ring	1
	M77	95-20		8800882	Manifold gasket	1
	M78	95-20		693341 (9007314-0606)	Screw	2
	M90	95-20		692889 (9007314-0611)	Screw	6

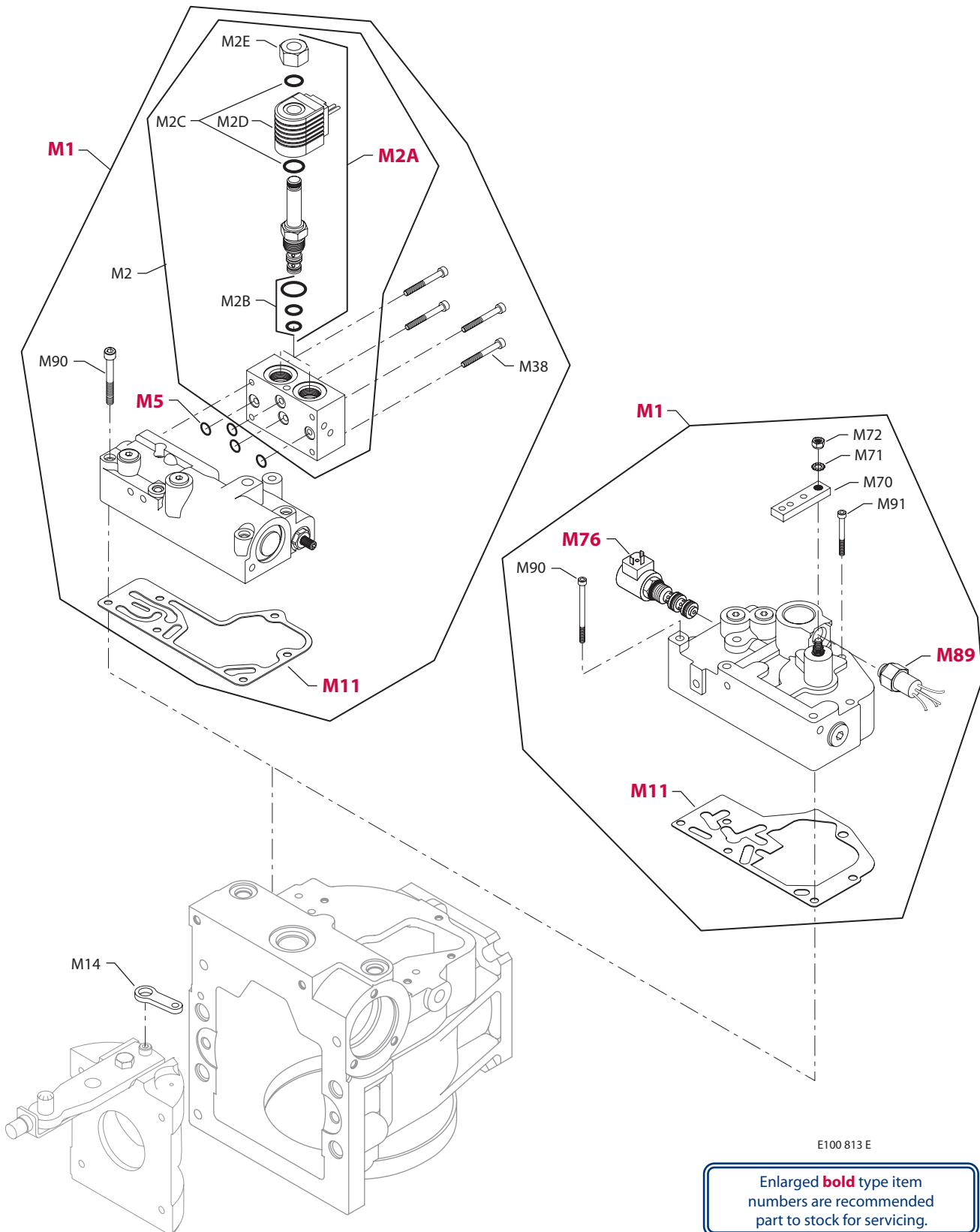


E100 865E

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	94-04		11019664	MDC kit, nss w/Packard connector	1
	M11	94-04		8800923	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	94-04	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	94-04		9800916	Control handle	1
	M71	94-04		689018 (9009660-3100)	Toothlock washer	1
	M72	94-04		040642 (9003513-0800)	Nut	1
	M90	94-04		692889 (9007314-0611)	Screw	6
	S40	94-04		8510170	Neutral start switch kit, Packard connector	1
	MV	M1	94-30		8510342	MDC kit, nss w/weatherpack connector, 2-way
M11		94-30		8800923	Control gasket	1
M14		96-40		8200413	Feedback link (SB-1999-019)	1
M14		94-30	96-39	8200344	Feedback link (SB-1996-009)	1
M70		94-30		9800916	Control handle	1
M71		94-30		689018 (9009660-3100)	Toothlock washer	1
M72		94-30		040642 (9003513-0800)	Nut	1
M90		94-30		692889 (9007314-0611)	Screw	6
S40		94-30		8510170	Neutral start switch kit, weather pack connector, 2-way	1
NA		M1	93-03		8102M0NA-A	MDC kit, NL w/o nss
	M11	93-03		504733	Control gasket	1
	M14	96-40		8200413	Feedback link (SB-1999-019)	1
	M14	93-03	96-39	8200344	Feedback link (SB-1996-009)	1
	M70	93-03		9800916	Control handle	1
	M71	93-03		689018 (9009660-3100)	Toothlock washer	1
	M72	93-03		040642 (9003513-0800)	Nut	1
	M90	93-03		9007314-0614	Screw	6

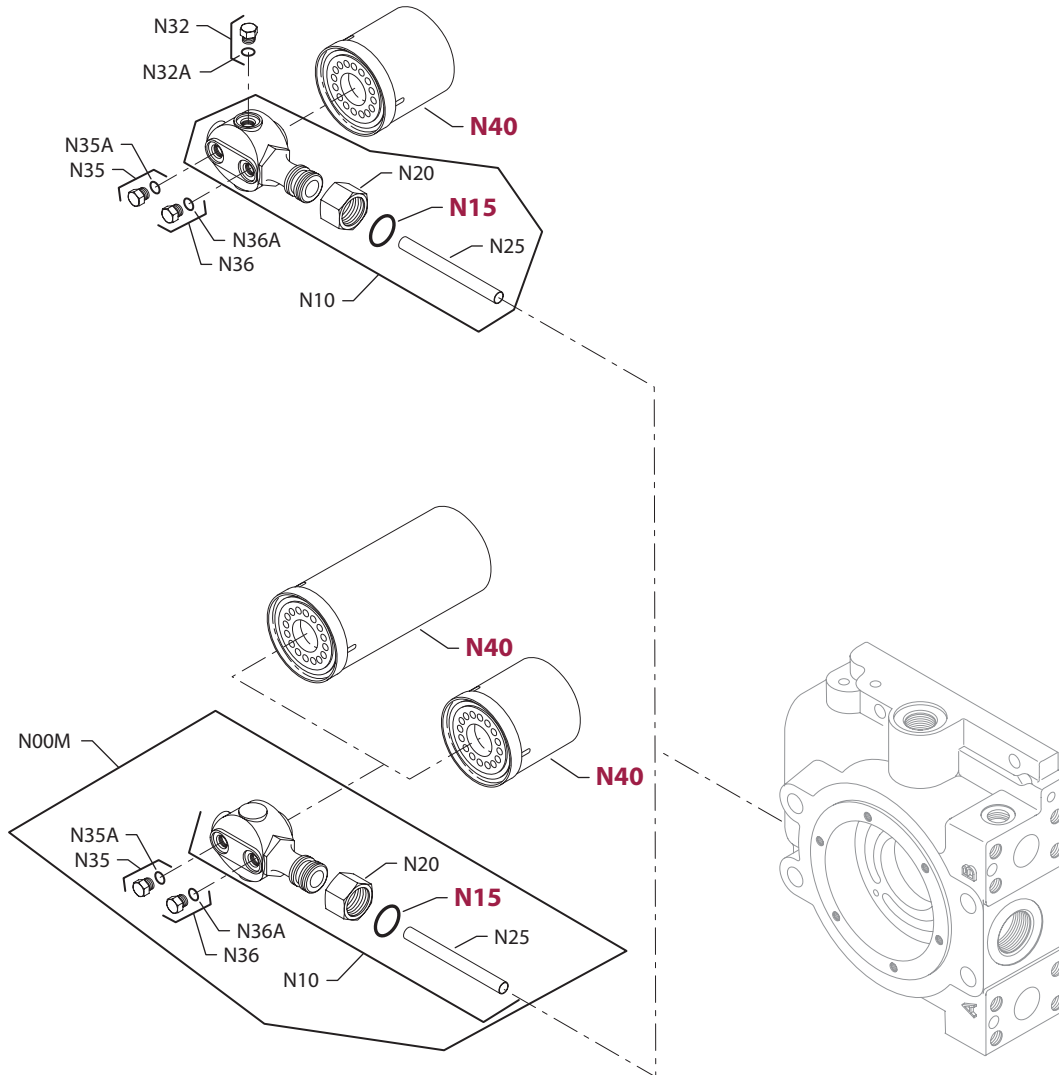


E100 813 E

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	
PE	M1	01-02		8510286	EDC, high current, 3-11 bar, 12 volt	1	
	M2	01-02		138563.01	HIC, proportional reducing manifold	1	
	M2A	01-02		138108	Solenoid, 12 volt, deutsch connector	2	
	M2B	01-02		11016794	O-ring kit	2	
	M2C	01-02		11016151	Valve seal kit	2	
	M2D	01-02		322466	Coil, 12 volt	2	
	M2E	01-02		322399	Coil nut	2	
	M5	01-02		9004105-0120	O-ring	4	
	M11	01-02		8801241	Control gasket	1	
	M14	01-02		8200413	Feedback link	1	
	M38	01-02		9007315-0510	Screw	4	
	M90	01-02		692889 (9007314-0611)	Screw	6	
	RR	M1	99-35		8510245	MDC kit, roller	1
		M11	99-35		510378	Control gasket	1
M14		99-35		8200413	Feedback link	1	
M70		99-35		9800916	Control handle	1	
M71		99-35		689018 (9009660-3100)	Toothlock washer	1	
M72		99-35		040642 (9003513-0800)	Nut	1	
M76		99-35		513582	Solenoid valve, 12 volt	1	
M89		99-35		4700025	Neutral start switch	1	
M90		99-35		354407	Screw	5	
M91		99-35		510382	Screw	1	

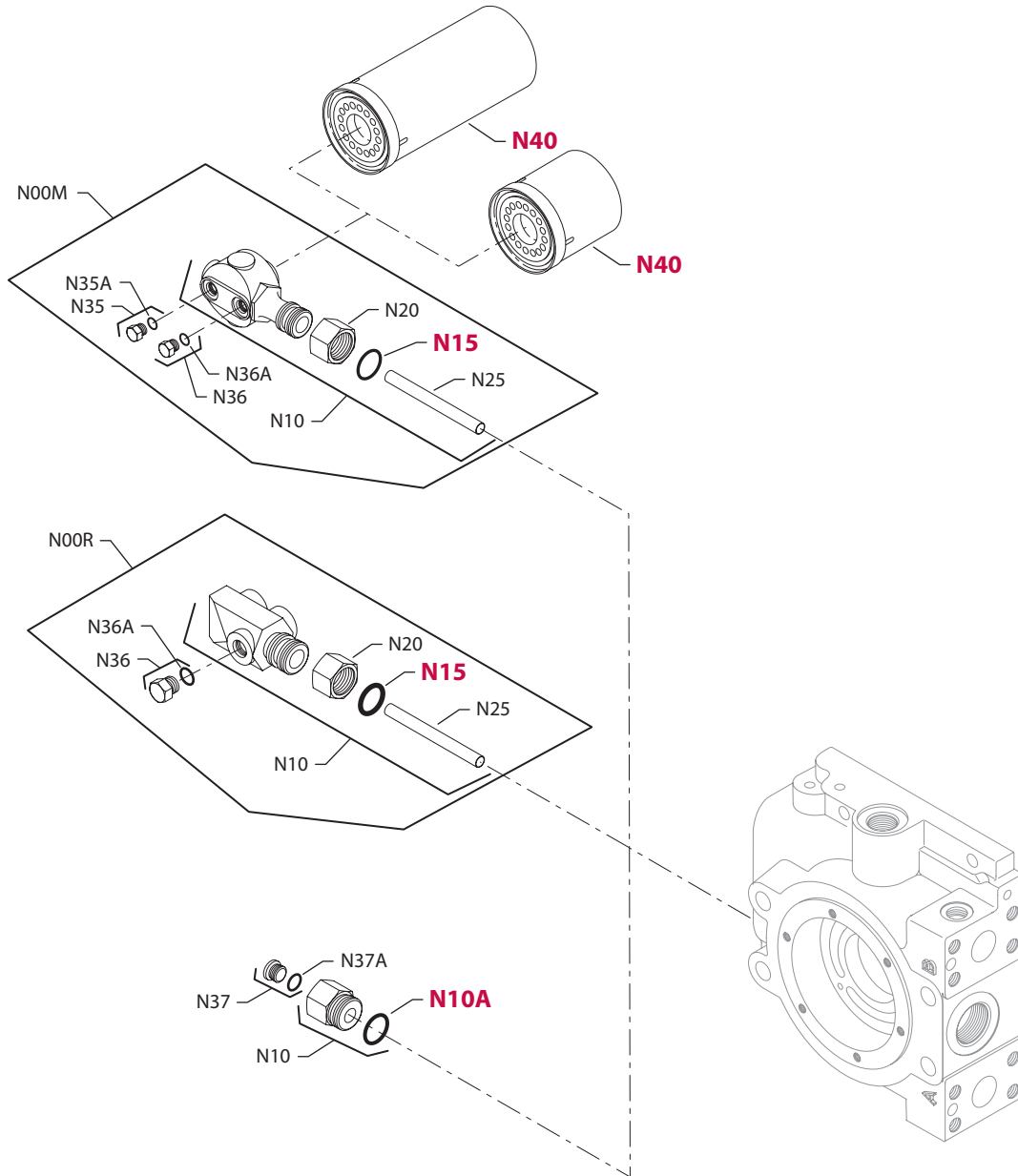


E100 814E

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

FILTRATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
3	N00M	99-18		8510199	Intergal filtration kit	1
	N10	99-18		8801072	Filter manifold assembly	1
	N15	99-18		001172 (9004201-9000)	O-ring	1
	N20	99-18		5000222	Nut	1
	N25	99-18		700302 (8800180)	Tube	1
	N35	99-18		046151 (9005100-5600)	Plug assembly	1
	N35A	99-18		085043 (9004201-3700)	O-ring	1
	N36	99-18		046151 (9005100-5600)	Plug assembly	1
	N36A	99-18		085043 (9004201-3700)	O-ring	1
	N40	99-18		317883 (8700068)	Filter, long	1
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
	N32	00-01		046151 (9005100-5600)	Plug assembly	1
	N32A	00-01		085043 (9004201-3700)	O-ring	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	
8 & D				None		
A	N00M	02-41		8510199	Intergal filtration kit	1
	N10	02-41		8801072	Filter manifold assembly	1
	N15	02-41		001172 (9004201-9000)	O-ring	1
	N20	02-41		5000222	Nut	1
	N25	02-41		700302 (8800180)	Tube	1
	N35	02-41		046151 (9005100-5600)	Plug assembly	1
	N35A	02-41		085043 (9004201-3700)	O-ring	1
	N36	02-41		046151 (9005100-5600)	Plug assembly	1
	N36A	02-41		085043 (9004201-3700)	O-ring	1
	N40	02-41		9700810	Filter, short	1
E	N00M	03-18		8510199	Intergal filtration kit	1
	N10	03-18		8801072	Filter manifold assembly	1
	N15	03-18		001172 (9004201-9000)	O-ring	1
	N20	03-18		5000222	Nut	1
	N25	03-18		700302 (8800180)	Tube	1
	N35	03-18		046151 (9005100-5600)	Plug assembly	1
	N35A	03-18		085043 (9004201-3700)	O-ring	1
	N36	03-18		046151 (9005100-5600)	Plug assembly	1
	N36A	03-18		085043 (9004201-3700)	O-ring	1
	N40	03-18		9700810	Filter, short	1

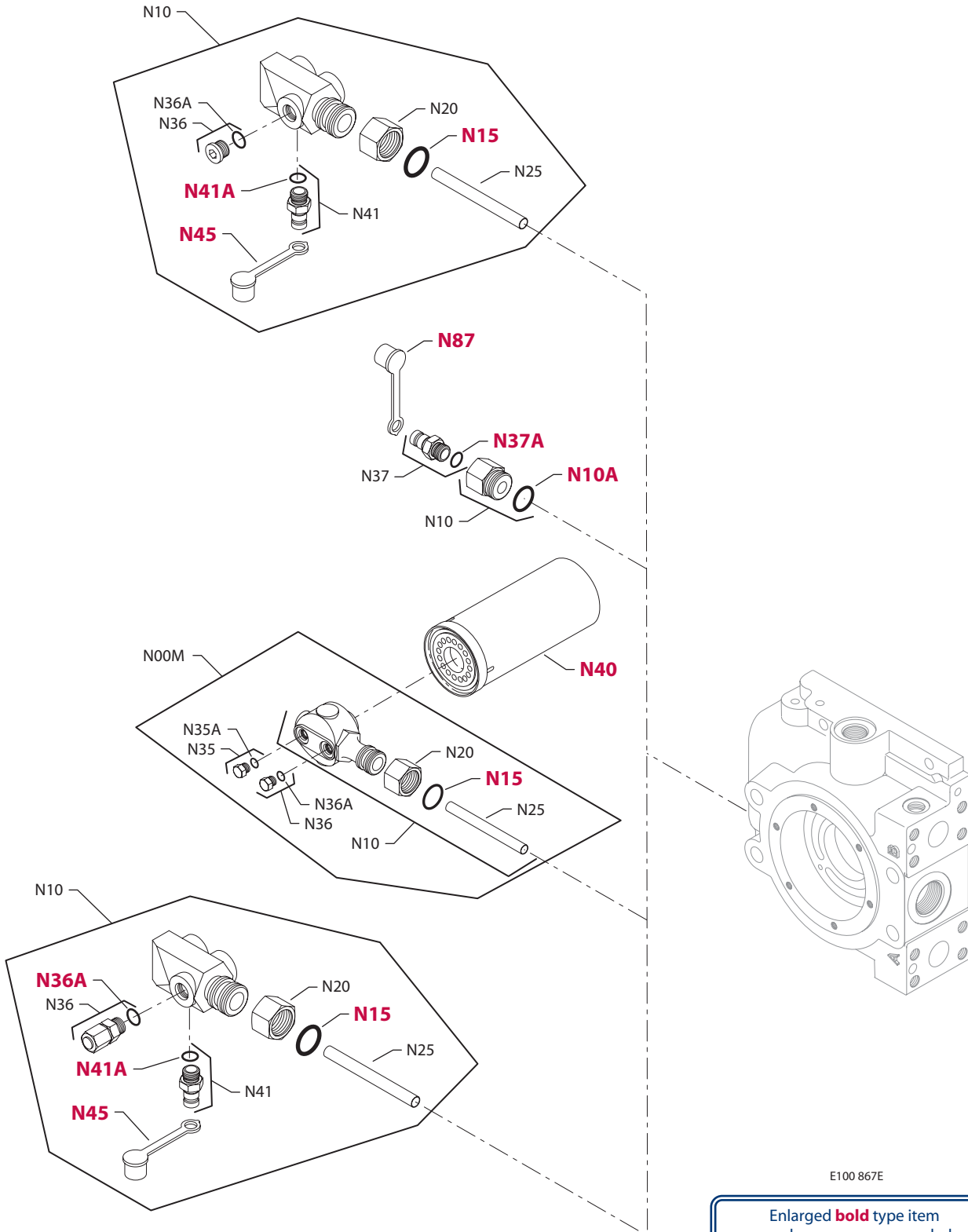


E100 866E

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

FILTRATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
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	
	M	N00M	87-02	97-28	8510199	Intergal filtration kit	1
		N10	87-02	97-28	8801072	Filter manifold assembly	1
N15		87-02	97-28	001172 (9004201-9000)	O-ring	1	
N20		95-18	97-28	5000222	Nut (SB-1994-036)	1	
N20		87-02	95-17	700492 (9002863-1600)	Nut	1	
N25		87-02	97-28	700302 (8800180)	Tube	1	
N35		87-02	97-28	046151 (9005100-5600)	Plug assembly	1	
N35A		87-02	97-28	085043 (9004201-3700)	O-ring	1	
N36		87-02	97-28	046151 (9005100-5600)	Plug assembly	1	
N36A		87-02	97-28	085043 (9004201-3700)	O-ring	1	
P		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		9700810	Filter, short	1	
	R	N00R	87-02		8002N00R-A	Remote filtration kit (SB-1988-024)	1
		N10	87-02		8801071	Filter manifold assembly	1
N15		87-02		001172 (9004201-9000)	O-ring	1	
N20		87-02		700492 (9002863-1600)	Nut	1	
N25		87-02		700310 (8800210)	Tube	1	
N36		87-02		046151 (9005100-5600)	Plug assembly	1	
N36A		87-02		085043 (9004201-3700)	O-ring	1	
S		N10	87-02		5000230	Reducer assembly	1
	N10A	87-02		001172 (9004201-9000)	O-ring	1	
	N37	87-02		515965 (9005110-5600)	Plug assembly	1	
	N37A	87-02		085043 (9004201-3700)	O-ring	1	

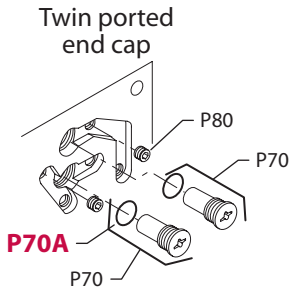


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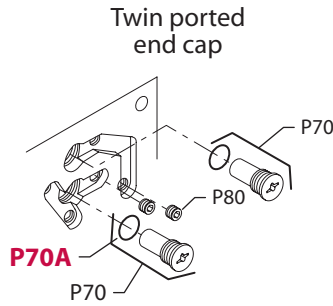
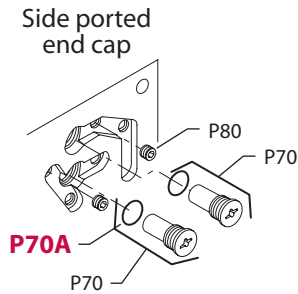
Enlarged **bold** type item numbers are recommended part to stock for servicing.

FILTRATION

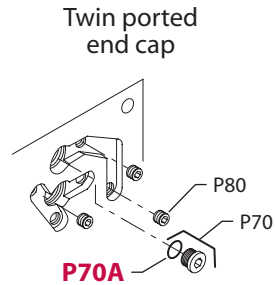
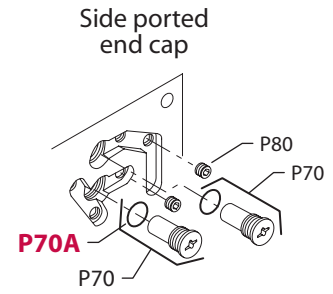
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
U	N10	98-37		8100629	Filter manifold assembly	1
	N15	98-37		001172 (9004201-9000)	O-ring	1
	N20	98-37		700492 (9002863-1600)	Nut	1
	N25	98-37		700310 (8800210)	Tube	1
	N36	98-37		046151 (9005100-5600)	Plug assembly	1
	N36A	98-37		085043 (9004201-3700)	O-ring	1
	N41	98-37		8700127	Diagnostic receptical	1
	N41A	98-37		085043 (9004201-3700)	O-ring	1
	N45	98-37		8700128	Dust cover	1
W	N10	97-45		5000230	Reducer assembly	1
	N10A	97-45		001172 (9004201-9000)	O-ring	1
	N37	97-45		8700127	Plug assembly	1
	N37A	97-45		085043 (9004201-3700)	O-ring	1
	N87	97-45		8700128	Dust cover	1
X	N00M	01-01		8510199	Intergal filtration kit	1
	N10	01-01		8801072	Filter manifold assembly	1
	N15	01-01		001172 (9004201-9000)	O-ring	1
	N20	01-01		5000222	Nut (SB-1994-036)	1
	N25	01-01		700302 (8800180)	Tube	1
	N35	01-01		046151 (9005100-5600)	Plug assembly	1
	N35A	01-01		085043 (9004201-3700)	O-ring	1
	N36	01-01		046151 (9005100-5600)	Plug assembly	1
	N36A	01-01		085043 (9004201-3700)	O-ring	1
	N40	01-01		9700810	Filter, short	1
Y	N10	99-10		8801189	Remote filtration manifold assembly	1
	N15	99-10		001172 (9004201-9000)	O-ring	1
	N20	99-10		700492 (9002863-1600)	Nut	1
	N25	99-10		700310 (8800210)	Tube	1
	N36	99-10		8700159	Plug assembly	1
	N36A	99-10		085043 (9004201-3700)	O-ring	1
	N41	99-10		8700127	Plug assembly	1
	N41A	99-10		085043 (9004201-3700)	O-ring	1
	N45	99-10		8700128	Dust cover	1



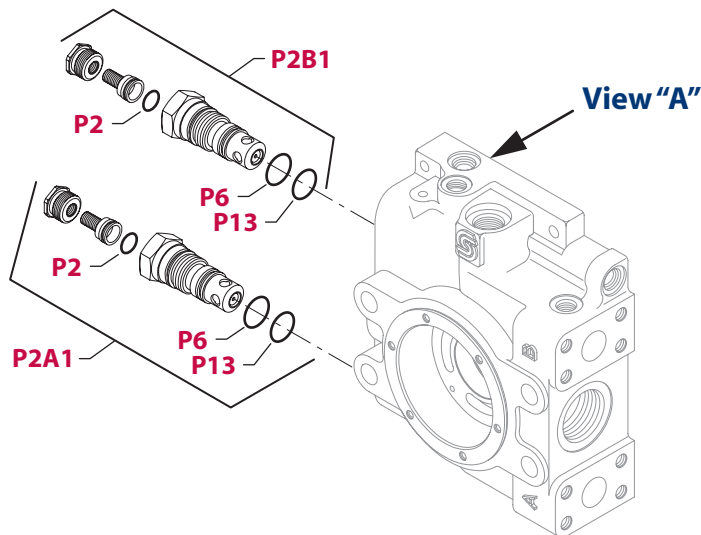
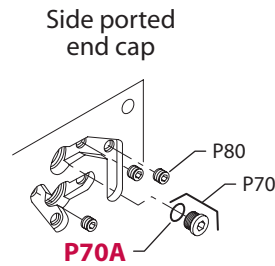
View "A" with pressure limiters, left hand rotation, Options 1, 5, & 6



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



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



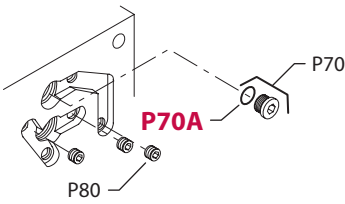
E100 868E

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HIGH PRESSURE REGULATION

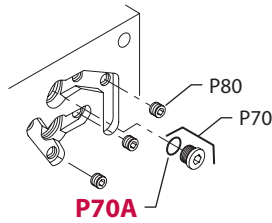
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	P2	87-02		141564 (9004100-0170)	O-ring	2
	P6	87-02		000836 (9004100-0200)	O-ring	2
	P13	87-02		544742 (9004105-0190)	O-ring	2
1	P2A1	87-02		8510022-1	Multi-function valve kit	1
	P2B1	87-02		8510022-1	Multi-function valve kit	1
	P70	87-02		8800188	Check valve	2
	P70A	87-02		001123 (9004201-2500)	O-ring	2
	P80	87-02		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		9005475-0004	Special plug	3
4	P2A1	03-34		8510022-7	Multi-function valve kit	1
	P2B1	03-34		8510022-7	Multi-function valve kit	1
5	P2A1	98-49		8510240	Multi-function valve kit	1
	P2B1	98-49		8510240	Multi-function valve kit	1
	P70	98-49		8800188	Check valve	2
	P70A	98-49		001123 (9004201-2500)	O-ring	2
	P80	98-49		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		8800188	Check valve	2
	P70A	87-02		001123 (9004201-2500)	O-ring	2
	P80	87-02		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		9005475-0004	Special plug	3
A	P2A1	87-02		? (8801145)	Multi-function valve kit	1
	P2B1	87-02		? (8801145)	Multi-function valve kit	1

Twin ported end cap

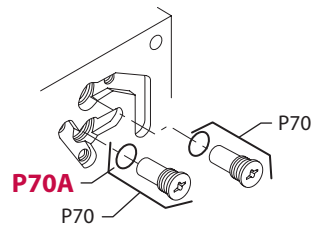


View "A" with pressure limiter port A, HPRV port B, right hand rotation Option B

Side ported end cap

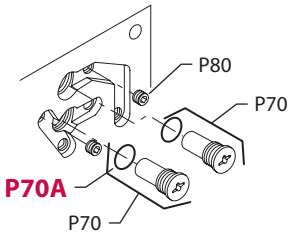


Twin and side ported end cap



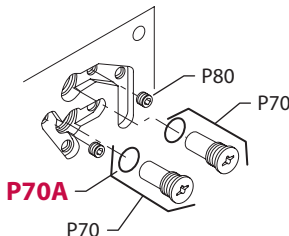
View "A" with pressure limiters, right hand rotation, Option M

Twin ported end cap

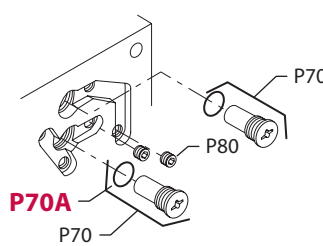


View "A" with pressure limiters, left hand rotation, Options G, H, P, & T

Side ported end cap

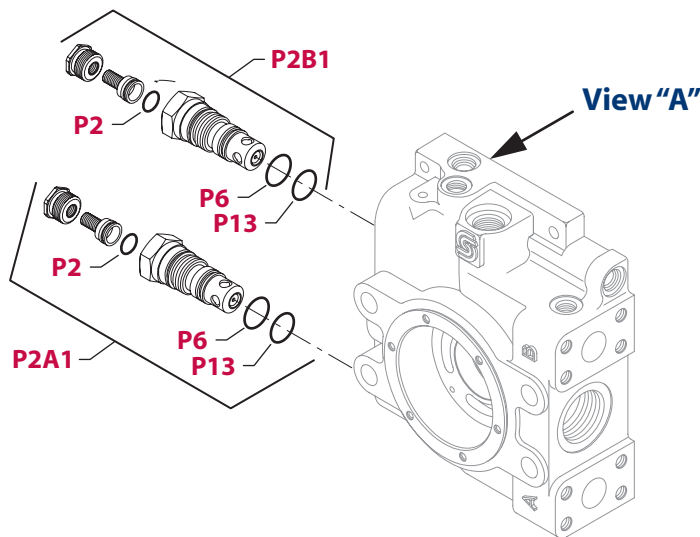
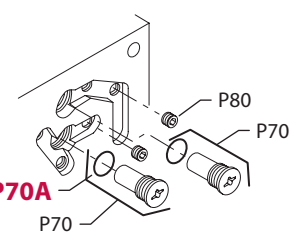


Twin ported end cap



View "A" with pressure limiters, right hand rotation, Options G, H, P, & T

Side ported end cap

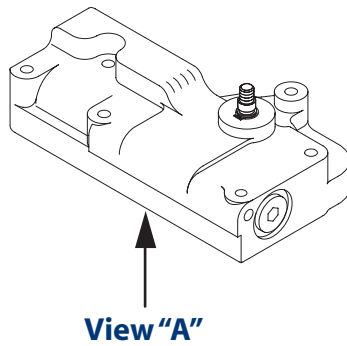
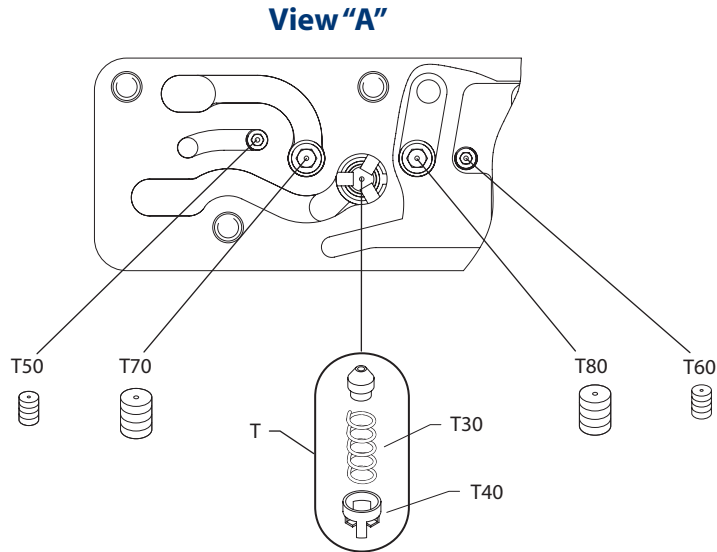


E100 869E

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
B	P2A1	97-23		8510022-1	Multi-function valve kit	1
	P2B1	97-23		8510022-7	Multi-function valve kit	1
	P70	97-23		8800188	Check valve	1
	P70A	97-23		001123 (9004201-2500)	O-ring	1
	P80	97-23		9005475-0004	Special plug	3
G	P2A1	97-06		8510196	Multi-function valve kit	1
	P2B1	97-06		8510196	Multi-function valve kit	1
	P70	97-06		8800188	Check valve	2
	P70A	97-06		001123 (9004201-2500)	O-ring	2
	P80	97-06		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		8800188	Check valve	2
	P70A	97-40		001123 (9004201-2500)	O-ring	2
	P80	97-40		9005475-0004	Special plug	2
J	P2A1	97-40		8510273	Multi-function valve kit	1
	P2B1	97-40		8510273	Multi-function valve kit	1
M	P2A1	98-11		8510022-1	Multi-function valve kit	1
	P2B1	98-11		8510022-1	Multi-function valve kit	1
	P70	98-11		8800188	Check valve	2
	P70A	98-11		001123 (9004201-2500)	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		8800188	Check valve	2
	P70A	99-26		001123 (9004201-2500)	O-ring	2
	P80	99-26		9005475-0004	Special plug	2
T	P2A1	00-35		8510296	Multi-function valve kit	1
	P2B1	00-35		8510296	Multi-function valve kit	1
	P70	00-35		8800188	Check valve	2
	P70A	00-35		001123 (9004201-2500)	O-ring	2
	P80	00-35		9005475-0004	Special plug	2



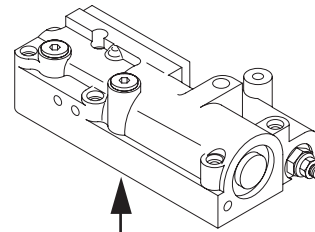
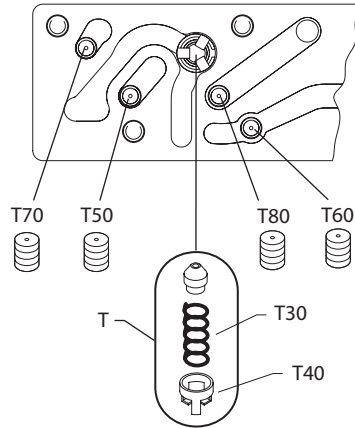
E100 699E

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

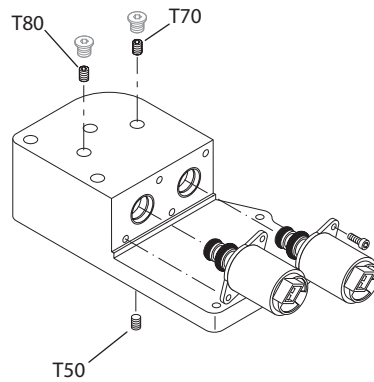
ORIFICE

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
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
29	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		639104	Orifice plug, 0.7mm, M5 x 6	1
	T60	87-42		639104	Orifice plug, 0.7mm, M5 x 6	1

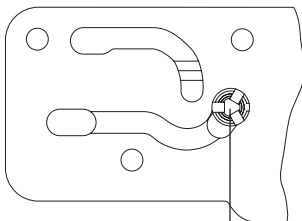
View "A"



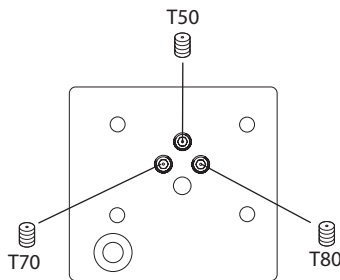
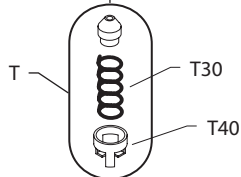
View "A"



Option 'B1 and B2'

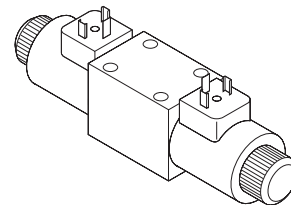


View "A"

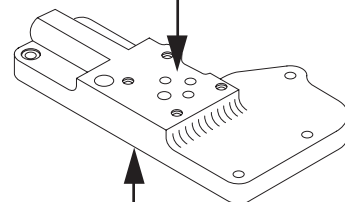


View "B"

Options 'G1, G4, and G8'



View "B"



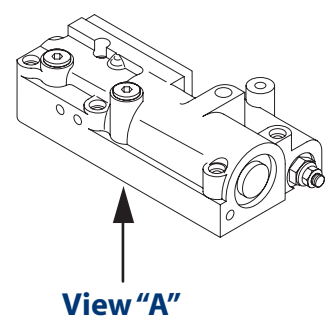
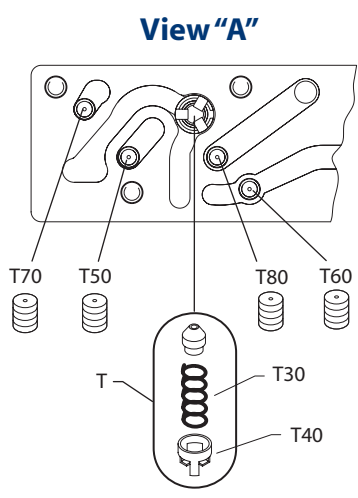
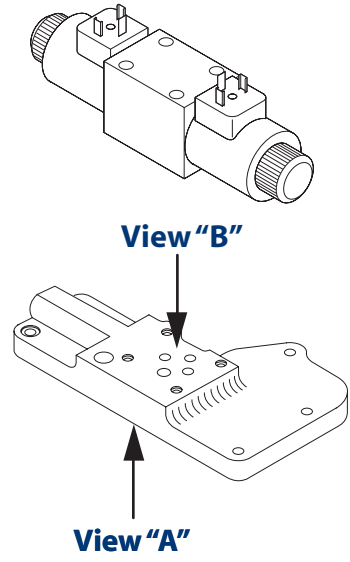
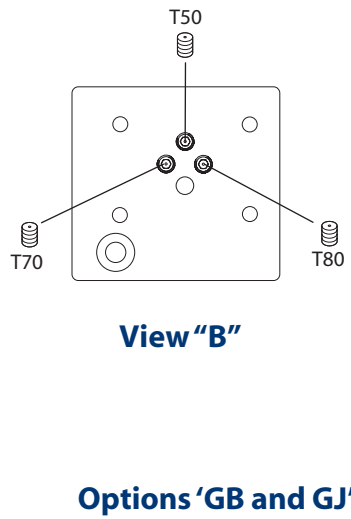
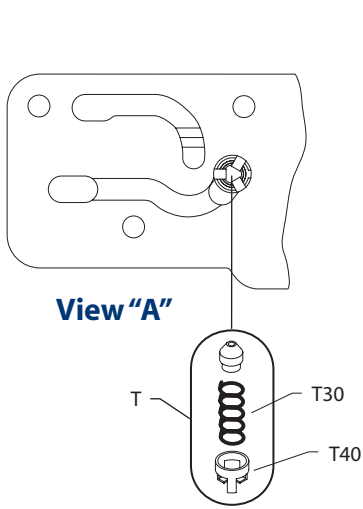
View "A"

E100 870E

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

ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
30	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		639153	Orifice plug, 1.3mm, M5 x 6	1
	T60	87-42		639153	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
64	T50	87-42		617159	Orifice plug, 1.8mm, M5 x 6	1
	T60	87-42		617159	Orifice plug, 1.8mm, M5 x 6	1
77				None		
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
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
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



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

ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
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
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
H1	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		714477	Orifice plug, 0.8mm, M8 x 8	1
	T60	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1

OVERHAUL SEAL KIT

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
		87-02		82020530	Overhaul seal kit	1
	C70	88-22		9007276-0114	Screw (SB-1988-016 & SB-1998-041)	4
	E40	87-02		505412 (9003509-0008)	Seal nut	2
	E50	87-02		056739 (9004104-1620)	O-ring	1
	E60	87-02		5000206	Screw (SB-1994-018)	6
	F11	87-02		673236 (9004100-1310)	O-ring	2
	F12	87-02		507799 (8700067)	Piston ring	2
	F40	87-02		9004104-0350	O-ring	2
	F50	87-02		305458 (9004104-0340)	O-ring	2
	G30	89-46		8200212	End cap gasket (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		9008000-0114	Lip seal (SB-2005-007)	1
	L50	87-02		327627 (9004104-1540)	O-ring	1
	M11	87-02		8800923	Control gasket	1
	M11	92-15		8801241	Control gasket (SB-1999-065)	1
	M77	87-02		8800882	Manifold gasket	1
	M95	87-02		318337 (9004104-0120)	O-ring	2
	M96	87-02		011304 (9004104-0140)	O-ring	1
	M96	87-02		011296 (9004105-0120)	O-ring	3
	M97	87-02		9004105-0130	O-ring	1
	M97	87-02		318345 (9004104-0240)	O-ring	1
	N15	87-02		001172 (9004201-9000)	O-ring	1
	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



Series 90 100 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)

Obsolete 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.

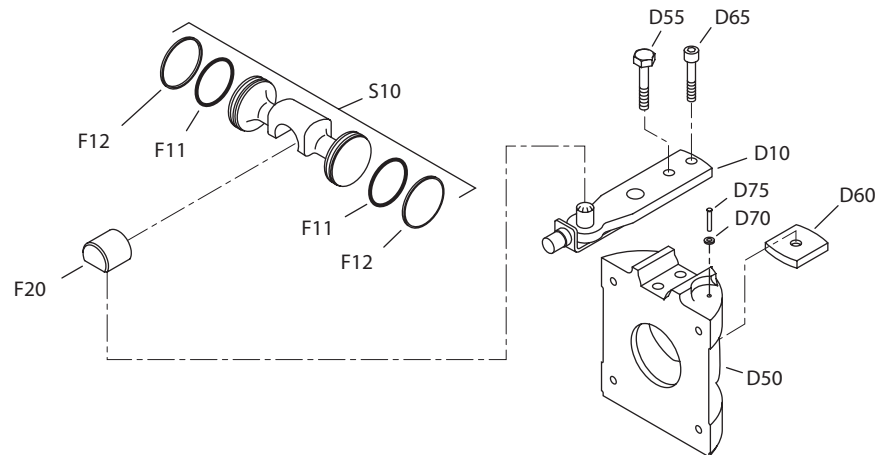
Also, the new servo arm is actually a press fit into a groove in the new swashplate. This situation requires special tooling for assembly, therefore, pre-assembled kits will be created for 55, 75, and 100 cc pumps. The kits will work in any vintage pump.

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

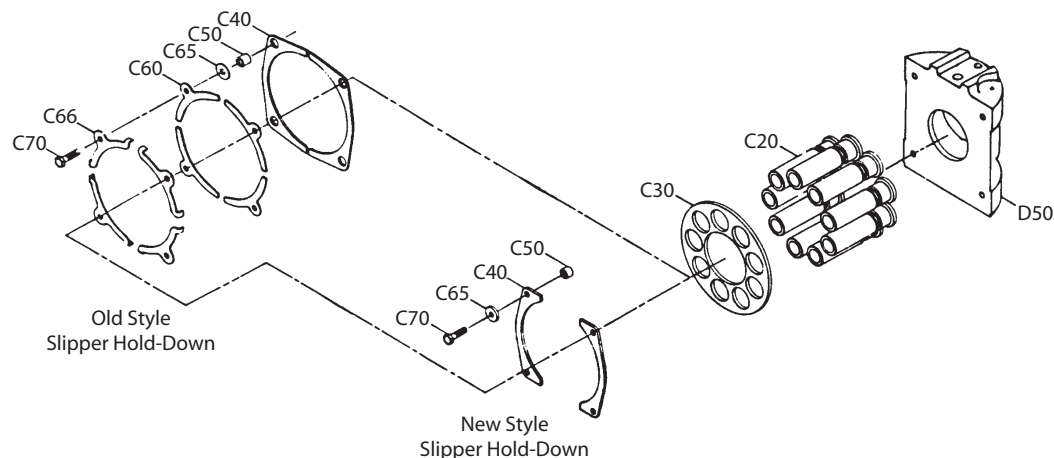
As a product improvement, Sauer-Danfoss has simplified the design of the series 90 pump slipper hold down mechanism. The hold down changes from spring loaded with a fixed maximum clearance design.

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

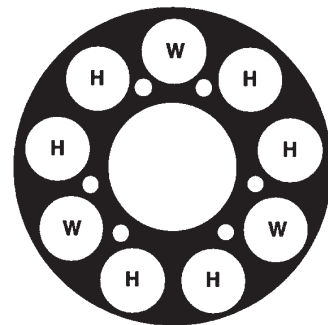
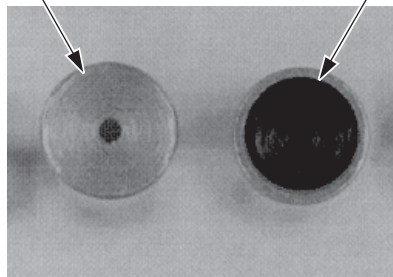
Product Information Bulletin PIB-8801 (March, 1988) announced the incorporation of fabricated (welded) piston assemblies, replacing non-fabricated (hollow) piston assemblies, in the cylinder blocks of all Series 90 pumps and motors. This change increases the overall efficiency of the Series 90 product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

Welded Piston Assembly

Hollow Piston Assembly



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

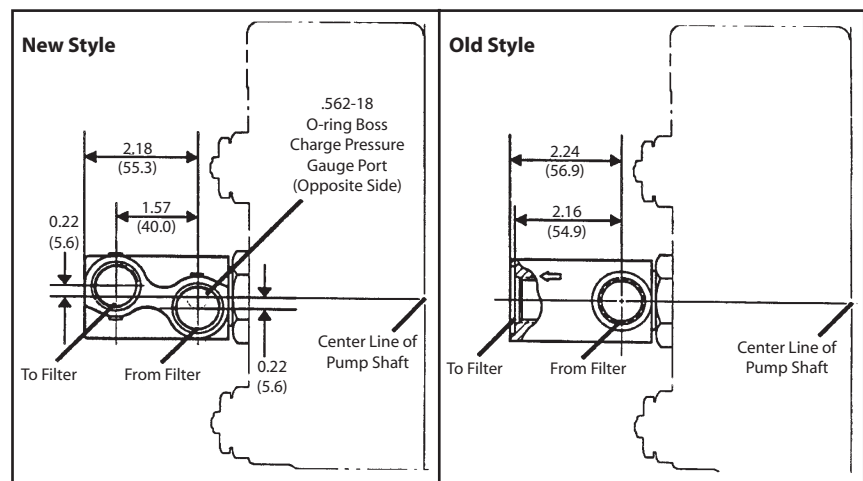
Remote pressure filtration adapter change

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

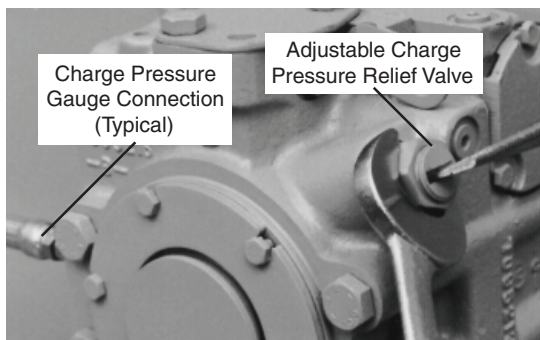
DESCRIPTION

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].

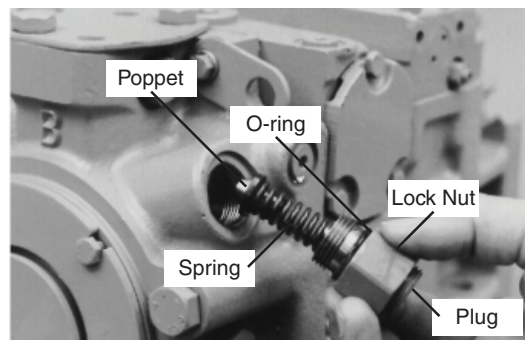
Note: This improvement changes the design of the charge relief valve poppet and plug. The new style charge relief may protrude from the pump end cap approximately 0.27 in [6.9 mm] farther than the shim adjustable r

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

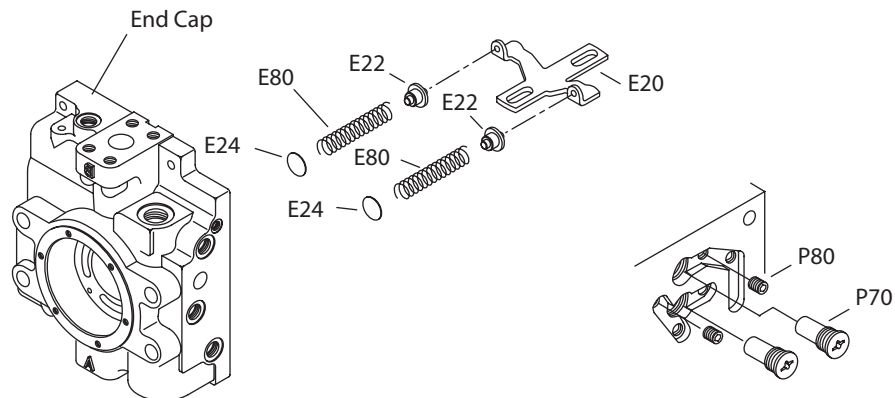
DESCRIPTION

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

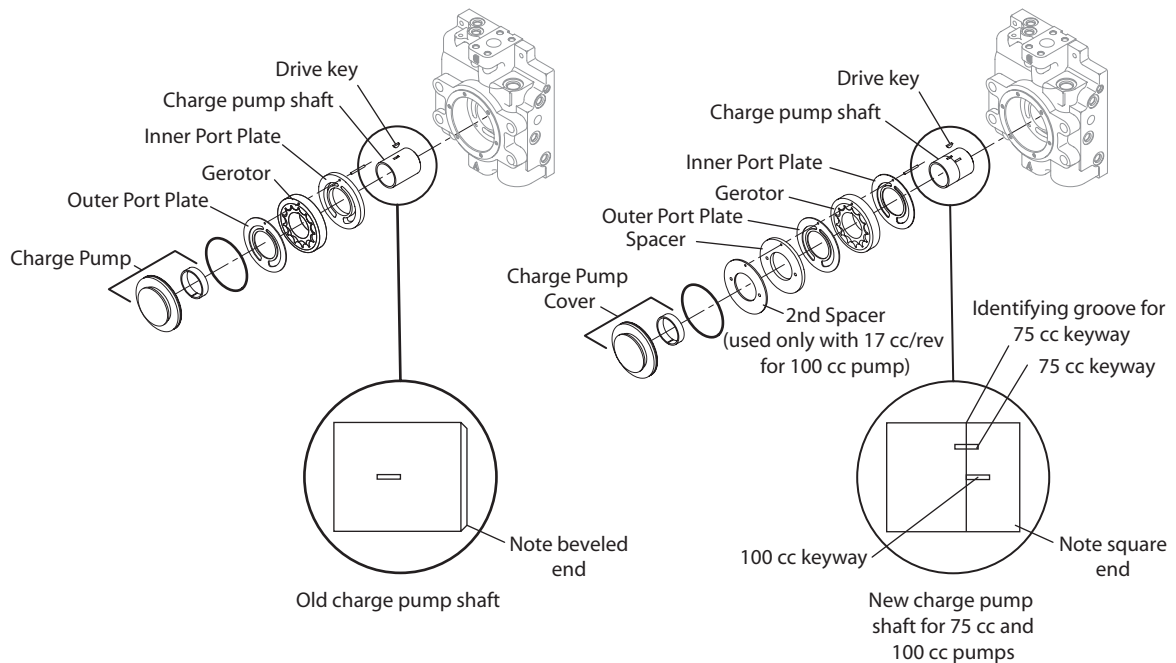
Charge pump design change

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 90 100 cc variable pumps

SUBJECT

Reduction in overall length

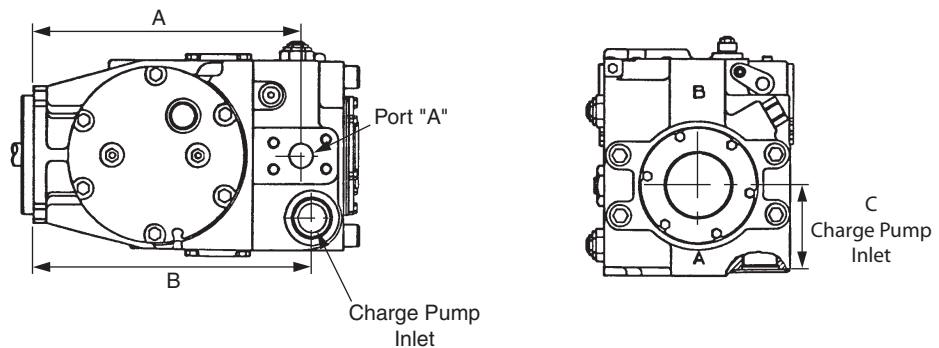
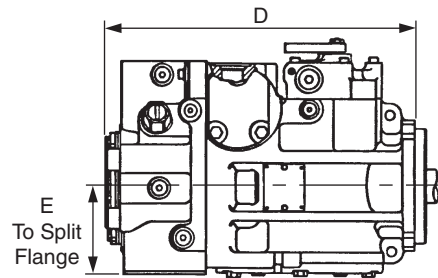
DESCRIPTION

To improve application flexibility, the overall length of series 90 100 cc pumps will be reduced by .39" [10 mm]. Some port locations will also change.

Shown below are all dimensional differences between the current and new design pumps.

Dim	Current	New
A	11.22" [285 mm]	10.94" [277.9 mm]
B	11.73" [297.9 mm]	11.34" [288 mm]
C	3.64" [92.5 mm]	3.53" [89.7 mm]
D*	13.73" [348.7 mm]	13.34" [338.8 mm]
E	3.87" [98.3 mm]	3.75" [95.3 mm]

* All dimensions from the mounting face to an auxiliary pump will also be reduced by .39" [10 mm].



MODELS AFFECTED

All 96-2xxx variable pumps

SERIAL NUMBERS

This change will take place at the serial number A-89-46-xxxxx

**PART NUMBERS
AFFECTED**

Non-interchangeability will exist with drive shafts, which become shorter with this change, end caps, end cap gaskets, and the end cap to the variable housing retaining screws. Old style end caps will no longer be available as service parts. In the rare event that a new end cap is required, a new shaft, end cap gasket and screws will also be needed. The new part numbers are as follows:

Item*	Part number	Description	Quantity
G04	8200175	End cap, side port	1
G30	8200166	Gasket	1
G90	9007210-0608	Screw	1
G95	9007210-0608	Screw	1
J80	9007314-1623	Screw	4
J80N	9007210-1621	Screw	4
L100	8200169	Shaft, 23 tooth spline	1
L100	8200170	Shaft, 13 tooth spline	1
L100	8200179	Shaft, 14 tooth spline	1
L100	8200173	Shaft, tapered	1
L100	8200176	Shaft, straight key	1

* From the series 90 Parts Manual

PARTS DISPOSITION

■ Non-interchangeable



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: 100 CC

Item	Description	Pre-block point part number	New part number 92-19 & later
Common parts group, 100 cc			
B10	Variable housing	8200117 (O)	726554
E10	Side cover	8200011	748560
F20	Slider block	8200016 (I)(O)	8200225 (I)
G93	Spacer	8800404	8800564
G94	Lifting bracket	8800401	8800565
G95	Washer	n/a	9009610-3469
B82	Plug	n/a	9005110-5600
End cap, 100 cc			
G048	End cap - twin ports	8200157 (O)	8200235
G308	End cap gasket	8200166	8200212
G908	Screw	9007210-0608	9007314-0810
G958	Screw	9007314-0608	9007314-0810
G968	Screw	9007314-0607	9007314-0808
G046	End cap - side ports	8200175 (O)	8200236
G306	End cap gasket	8200166	8200212
G906	Screw	9007314-0608	9007314-0810
G956	Screw	9007314-0608	9007314-0810
G968	Screw	9007314-0607	9007314-080
G172	Plug	n/a	9005110-4400
G182	Plug	n/a	9005110-4400
Common parts group, 100 cc			
B83	Plug	n/a	9005110-5600



MODELS AFFECTED

All series 90 94-2xxx, 95-2xxx, 96-2xxx, and 97-2xxx variable pumps

SERIAL NUMBERS

Changes will take place at the serial number 92-12-xxxxx for 100 cc pumps

**PART NUMBERS
AFFECTED**

Refer to text of this bulletin for specific part numbers

Housing: Thickness adjacent to the side cover has been increased
Side cover: Thickness 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

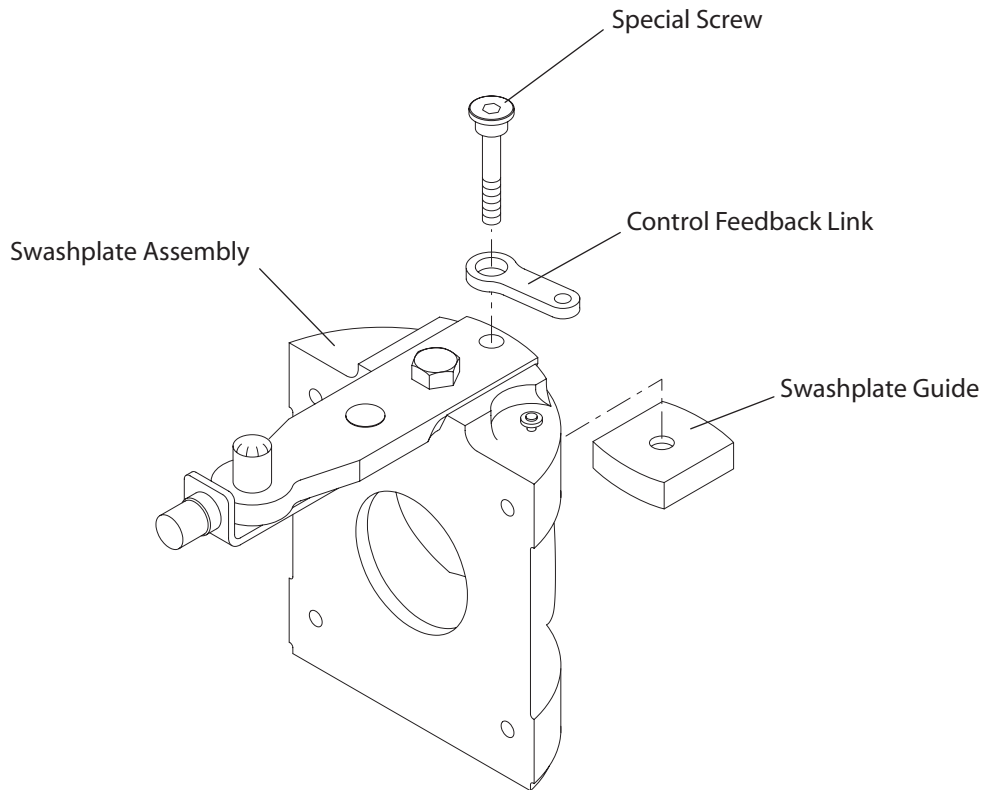
Series 90 - 055, 075, and 100 frame size pumps

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

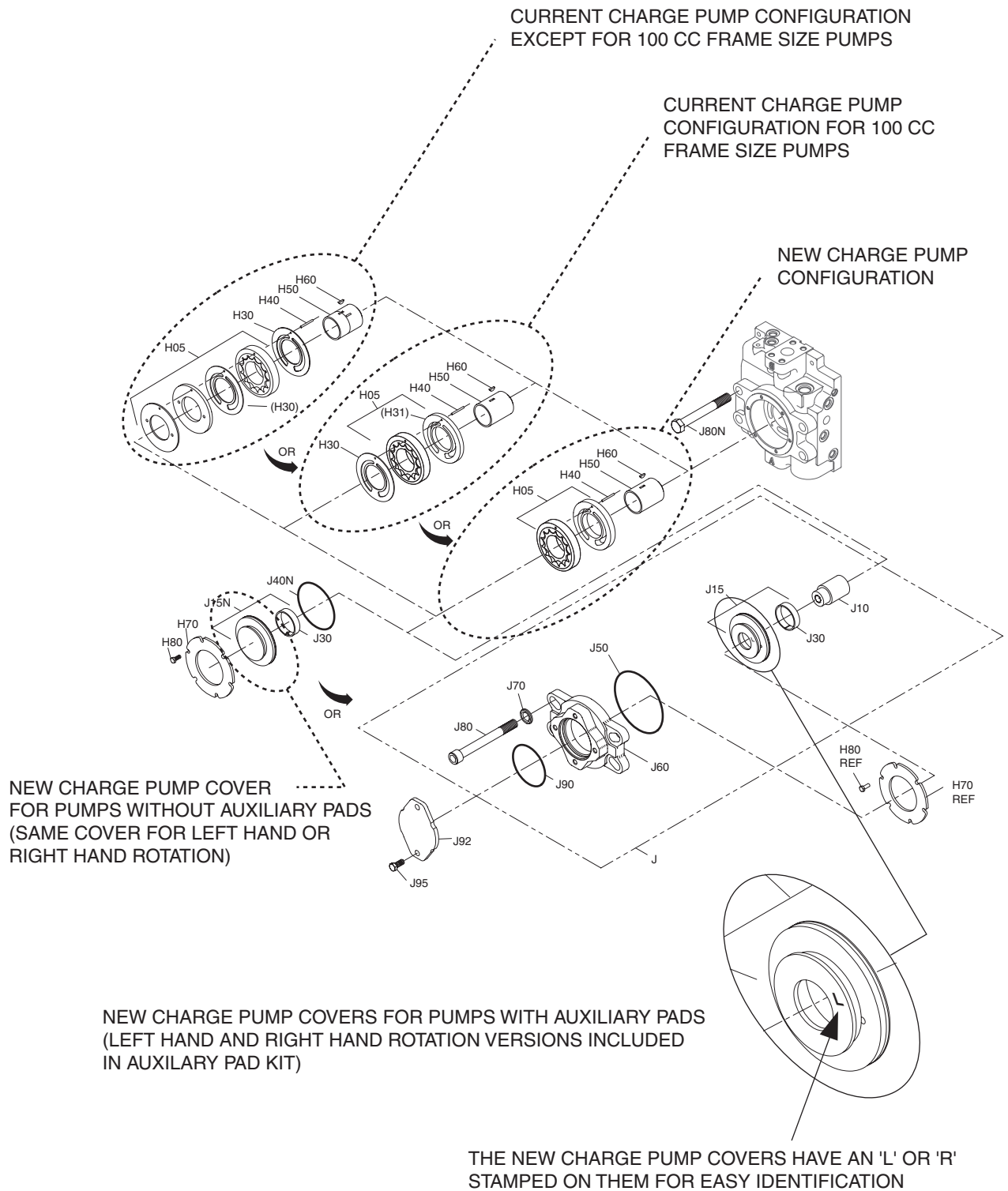
SERIAL NUMBERS
55 cc: A-93-10 & beyond
75 cc: A-93-10 & beyond
100 cc: A93-15 & beyond

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-xxxxx and beyond. Piece parts are not interchangeable.



PRODUCTS AFFECTED

Series 90 pump: All frame sizes

SUBJECT

Servo arm interference with speed sensor ring

DESCRIPTION

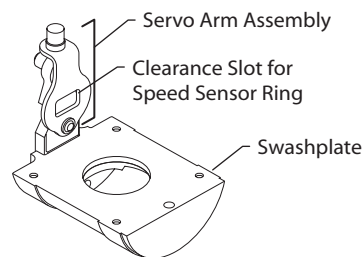
Note: This service bulletin revision adds the 42 cc frame size and the incorporation date of 55 thru 100 cc.

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

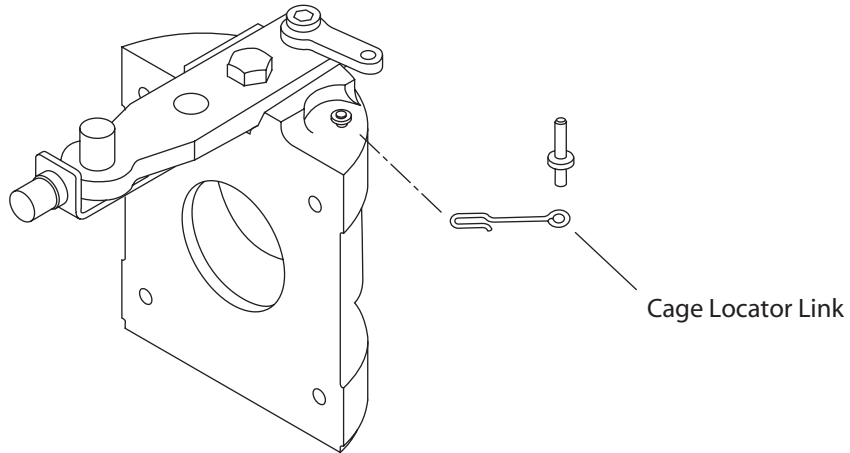
SUBJECT

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

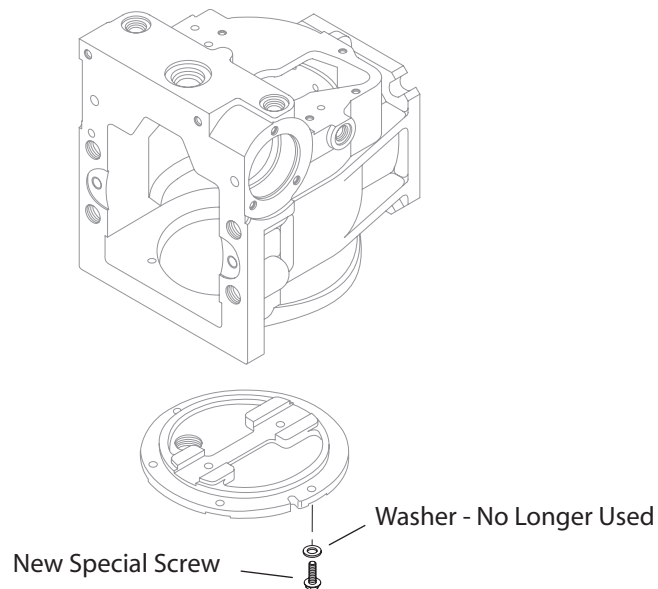
Side cover washer elimination

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 90 100 cc variable pumps

SUBJECT

Elimination of housing/end cap screw

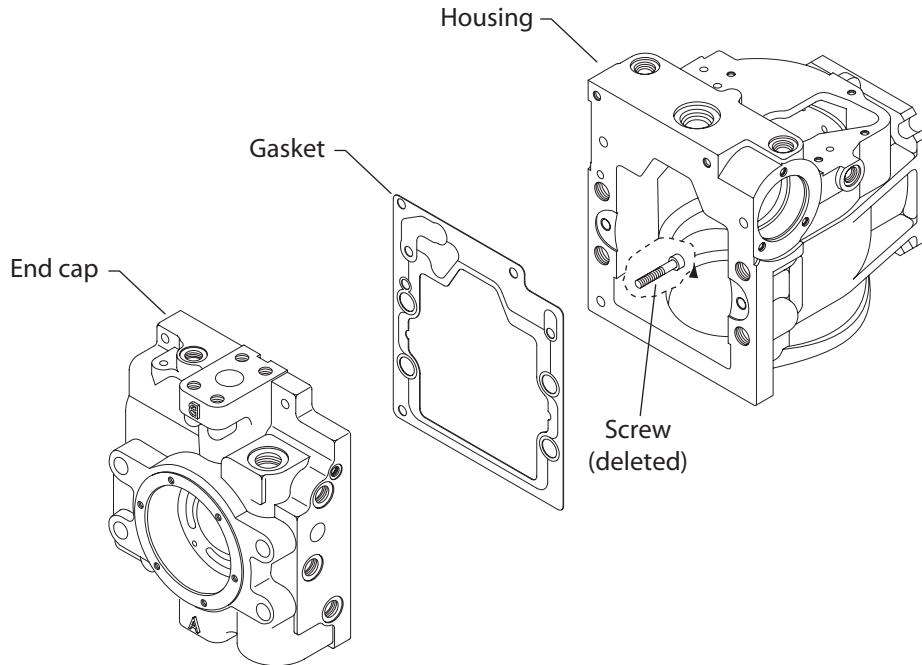
DESCRIPTION

As a product improvement, Sauer-Danfoss reinforced the 100 cc pump housing, eliminating the need for the screw shown below.

The hole was not removed from the end cap gasket so it can be used with any housing/end cap combination.

The hole was removed from the end cap, but the part number did not change. The new end cap can be used with either housing.

The old housing was obsoleted and is no longer available as a service part.



MODELS AFFECTED

All series 90 100 cc variable pumps

SERIAL NUMBERS

Change occurred at serial number 95-07-xxxxx

PART NUMBERS AFFECTED

Description	Part number (prior to 95-07)	Part number (95-07 & beyond)
Housing	726554	8200305
Screw	9007314-0808	no longer required

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 55 thru 130 cc variable pumps

SUBJECT

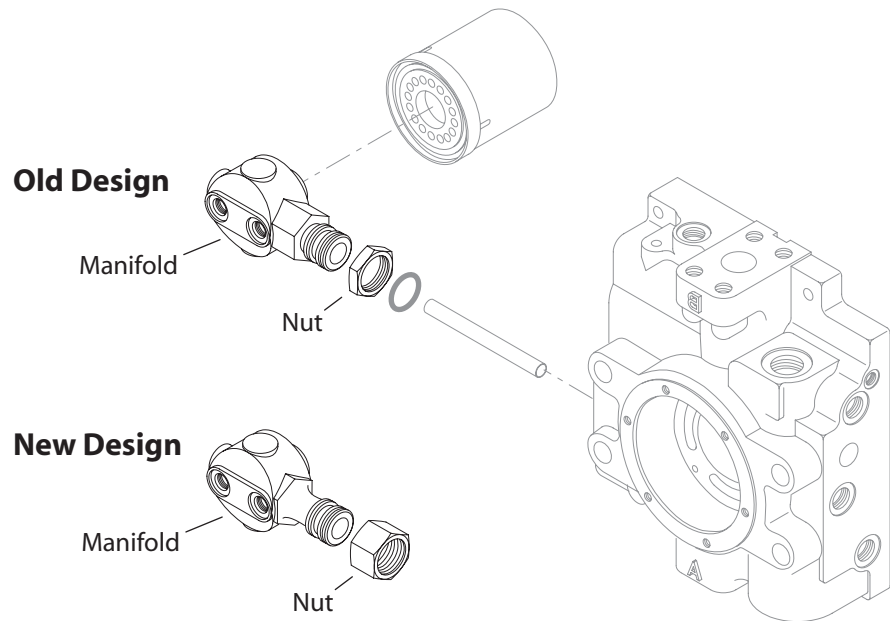
Integral filtration manifold

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 obsoleted 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

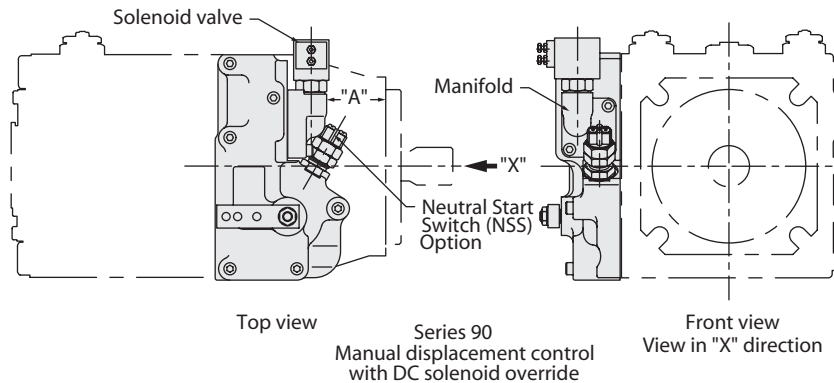
DESCRIPTION

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

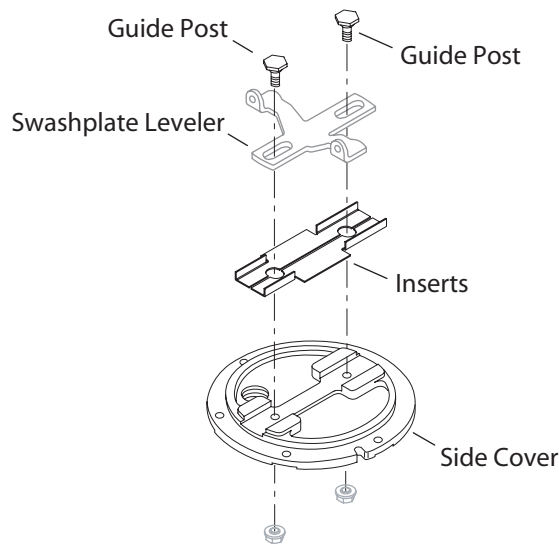
DESCRIPTION

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

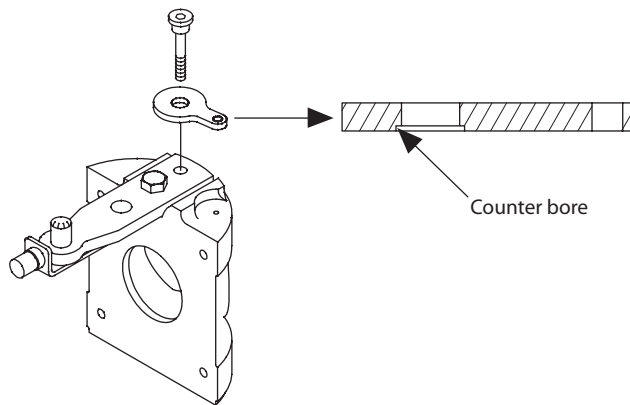
■ Interchangeable as a kit. Piece parts are not interchangeable.

PRODUCTS AFFECTED Series 90 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	Frame size	Old part number	New part number
	55 cc	8000096	8000481
	75 cc	8000096	8000481
	100 cc	8200106	8200344

PARTS DISPOSITION ■ Interchangeable

PRODUCTS AFFECTED

Series 90 100 cc variable pumps

SUBJECT

Swashplate leveler assembly design change

DESCRIPTION

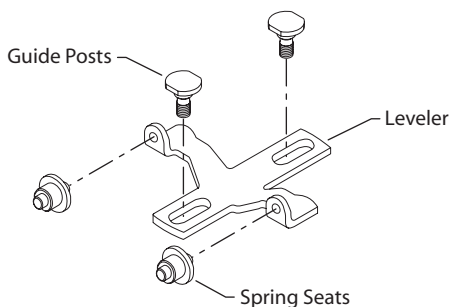
Sauer-Danfoss has changed the design of the swashplate leveler, guide post, and spring seat assembly used on series 90 100 cc pumps. This change improves the serviceability of the pump by eliminating the potential for interference between the hall effect speed sensor and the swashplate leveling springs. The swashplate leveler, guide post, and spring seat designs have been optimized to produce predictable and uniform spring deflection during the assembly and operation of the pump. This change became effective on new production pumps in November of 1997.

The design optimization requires that all three parts (swashplate leveler, guide post, and spring seat) be utilized as an assembly. Sauer-Danfoss recommends that all three parts be replaced when servicing any one of the parts individually. As an additional convenience Sauer-Danfoss has created service kit 8510204 comprised of the side cover assembly, swashplate leveler, guide posts, and spring seats.

The previous spring seat has been obsoleted and is no longer available, therefore all three components or the service kit must be utilized when the servicing of a pump, with a serial date code prior to A-97-46-xxxxx, requires a new spring seat.

The previous leveler will remain available as a service item for a period of time, however Sauer-Danfoss recommends that when servicing of the leveler is required, on pumps with a serial date code prior to A-97-46-xxxxx, all three components or the service kit be utilized.

The previous guide post will remain available as a service item indefinitely, due to usage within other series 90 products. Sauer-Danfoss recommends that when servicing of the guide post is required, on pumps with a serial date code prior to A-97-46-xxxxx, all three components or the service kit be utilized.



MODELS AFFECTED

All 96-2xxx and 962xxx variable pumps

SERIAL NUMBERS

This change became effective at serial number 97-46-xxxxx

PART NUMBERS AFFECTED

Description	Prior to 97-46	Service kit	Current production
Spring seat	358846	8510204	8200392
Swashplate leveler	8200007	8510204	8200395
Guide post	8000510	8510204	8000575
Side cover kit	8510099*	8510204	-

PARTS DISPOSITION

■ Non-interchangeable

PRODUCTS AFFECTED

Series 90 55, 75, and 100 cc variable pumps

SUBJECT

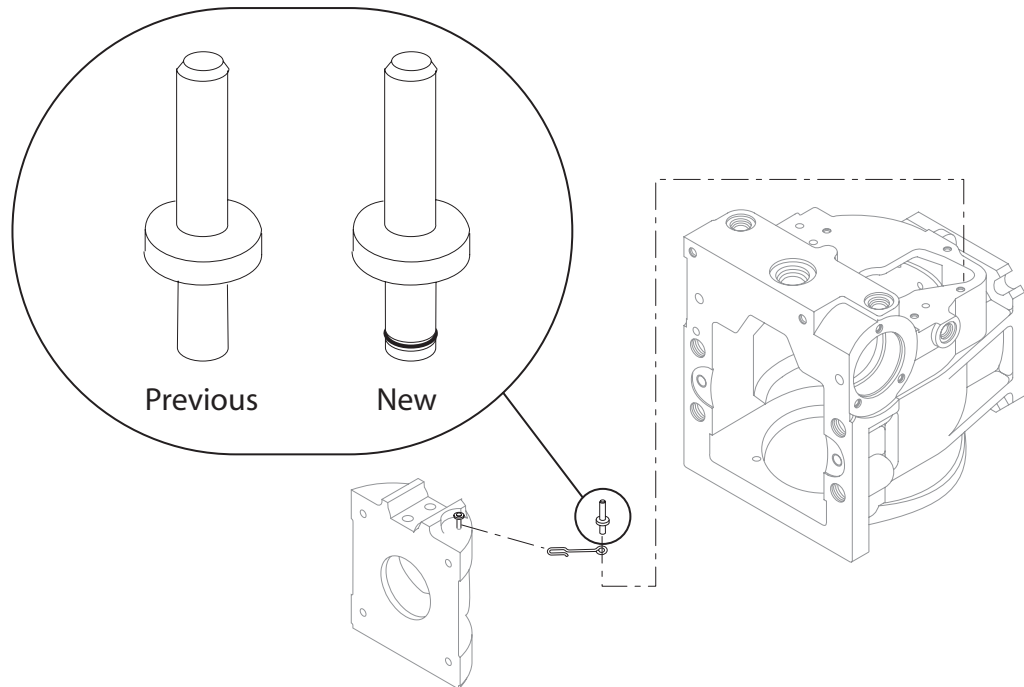
Swashplate bearing cage locator pin

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-xxxx

PART NUMBERS AFFECTED

	<u>Prior of 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

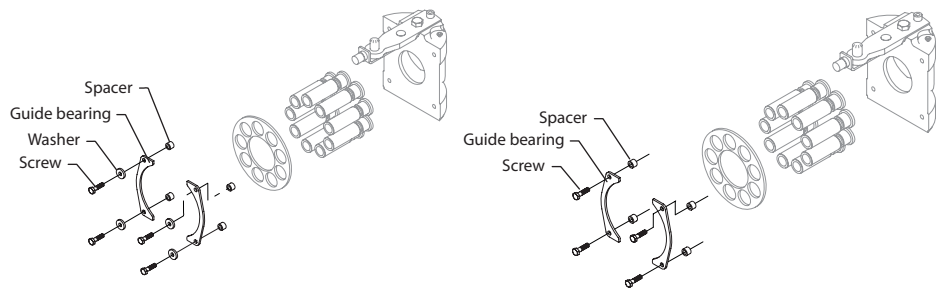
Sauer-Danfoss has initiated a change to the piston hold down mechanism used on series 90 55, 75, and 100 cc variable displacement pump and the series 90 55 and 75 cc variable displacement motors.

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.



Previous hold down design

New hold down design



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

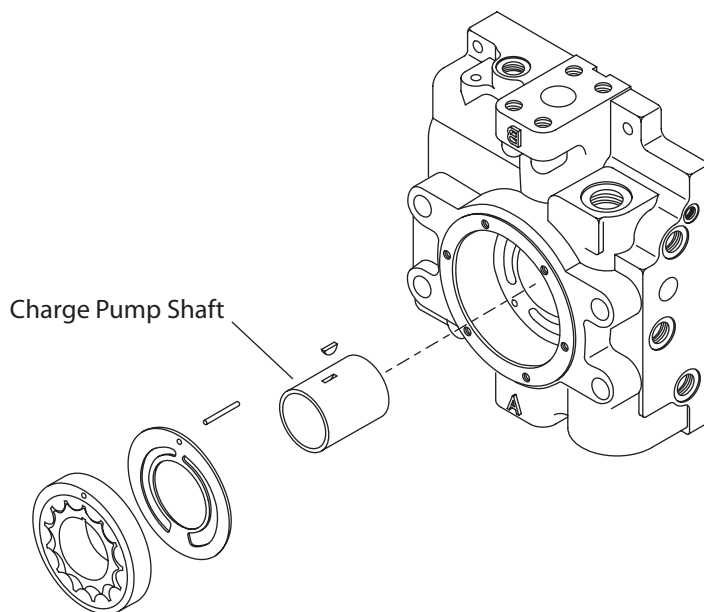
As a product improvement, Sauer-Danfoss has modified the design of the charge pump shaft used in series 90 55, 75 and 100 cc pumps. This change affects all charge pump sizes (11, 14, 17, 20, 26, and 31 cc) available in the series 90 displacement range.

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 - 26 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 100cc variable pumps

SUBJECT

Swashplate leveler design change

DESCRIPTION

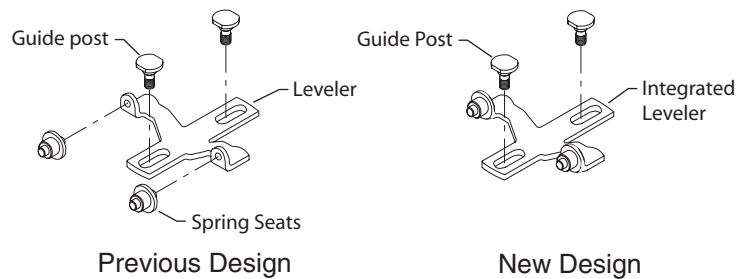
Sauer-Danfoss has modified the design of the swashplate leveler and spring seat assembly used on Series 90 100 cc pumps. The assembly and serviceability of the pump has been improved by integrating the spring seat directly into the swashplate leveler.

The new design still provides the same predictable and uniform spring deflection during the operation of the pump, but eliminates the potential for the spring seats to separate from the leveler during assembly and servicing. Side cover service kit 8510204 has been updated to include the new integrated leveler, while maintaining the latest side cover assembly and guide posts.

As communicated previously in Service Bulletin 9748, Sauer-Sundstrand recommends that the leveler, spring seat, and guide post parts be serviced as a group on Series 90 100cc pumps with serial dates between 92-12-xxxxx to 97-46-xxxxx. With the integrated leveler, this is represented as follows;

Swashplate levelers 8200007 and 8200395 and spring seat 8200392 have been obsoleted and will no longer be available as a service part. Guide post part number 8000575 will remain unchanged.

When servicing of the leveler is required on pumps with serial dates after A-97-46-xxxxx, the new integrated swashplate leveler/spring seat (8200393) can be used. When servicing pumps with serial dates between A-95-50-xxxxx and A-97-46-xxxxx, the new integrated swashplate leveler/spring seat (8200393) and guide post (8000575) or the side cover service kit must be utilized. When servicing pumps with serial date between A-92-12-xxxxx and A-95-49-xxxxx, the side cover service kit must be used. When servicing pumps with serial dates between A-87-02-xxxxx and A-92-11-xxxxx, the side cover service kit must be used.



MODELS AFFECTED

All 96-2xxx and 962xxx variable displacement pumps

SERIAL NUMBERS

Sauer-Danfoss Ames production: A-99-01-xxxxx.
Sauer-Danfoss Neumunster production: N-99-22-xxxxx.

PART NUMBERS AFFECTED

See table on next page.

PARTS DISPOSITION

■ Interchangeable - recommend replacement as a group

Description	87-02 to 92-11	Replacement Parts
Spring Seat	358846	Order Kit# 8510132
Swashplate Leveler	8200007	Order Kit# 8510132
Guide Post	8100353	Order Kit# 8510132
Side Cover	8200011	Order Kit# 8510132
Inserts	Not Applicable	Not Applicable
Side Cover Kit	Not Available	8510132

Description	92-13 to 95-49	Replacement Parts
Spring Seat	358846	Order Kit# 8510204
Swashplate Leveler	8200007	Order Kit# 8510204
Guide Post	8100353	Order Kit# 8510204
Side Cover	746560	Order Kit# 8510204
Inserts	Not Applicable	Order Kit# 8510204
Side Cover Kit	Not Available	8510204

Description	95-50 to 97-46	Replacement Parts
Spring Seat	358846	None**
Swashplate Leveler	8200007	8200393*
Guide Post	8000510	8000575*
Side Cover	501574	501574
Inserts	8200321	513889
Side Cover Kit	8510204	8510204

Description	97-47 to 98-52	Replacement Parts
Spring Seat	8200392	None**
Swashplate Leveler	8200395	8200393
Guide Post	8000575	8000575
Side Cover	501574	501574
Inserts	8200321	513889
Side Cover Kit	8510204	8510204

Description	99-01 to Current	Replacement Parts
Spring Seat	None	None
Swashplate Leveler	8200393	8200393
Guide Post	8000575	8000575
Side Cover	501574	501574
Inserts	8200321	513889
Side Cover Kit	8510204	8510204

* Both must be replaced together

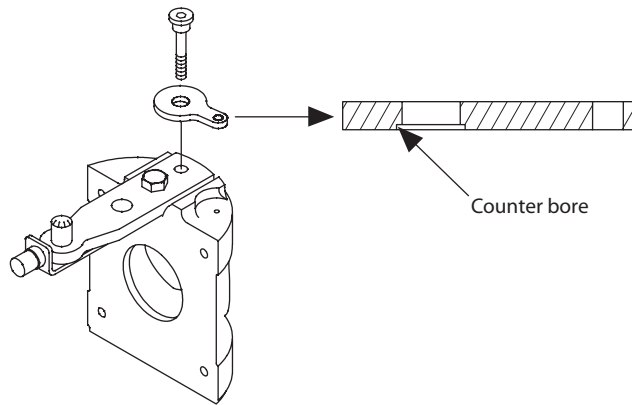
** Use 8200393 leveler and 8000575 guide posts

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-xxxxx. 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-xxxxx.

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

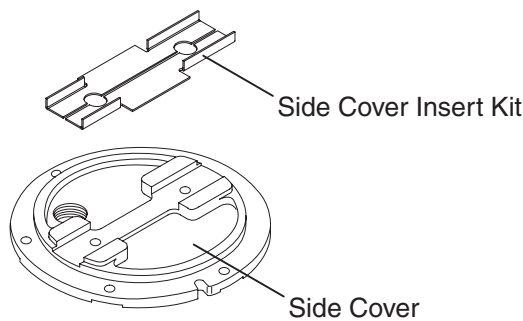
SUBJECT

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

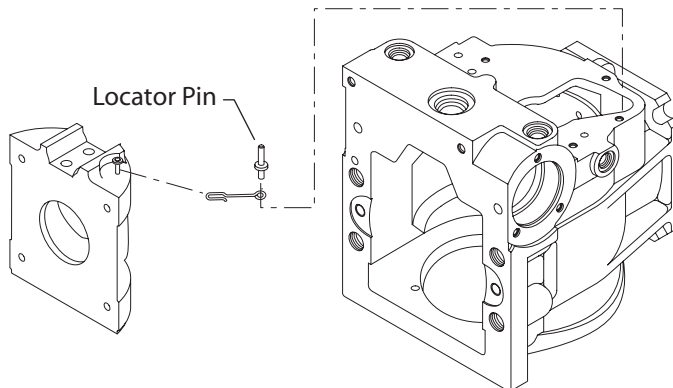
PRODUCTS AFFECTED Series 90 100 cc variable pumps

SUBJECT Cage pin change

DESCRIPTION Sauer-Danfoss has discovered the possibility of a tolerance stack up issue with the bearing locator pin. The purpose of this pin is to keep the alignment of the bearing to the swashplate. If the pin were to come out of its position you may experience erratic pump control and/or loss of performance.

To address this issue we have lengthened the bearing locator pin by 2 mm to increase the minimum amount of engagement.

The new pin is interchangeable with the old pin. Sauer-Danfoss recommends that the pin be replaced when servicing series 90 - 100 cc pumps. The old pin part number will remain available since it is still being used for the 55 cc and 75 cc pumps. .



MODELS AFFECTED All series 90 100 cc variable pumps

SERIAL NUMBERS This change became effective at serial number A-99-47-xxxxx and N-99-50-xxxxx.

PART NUMBERS AFFECTED

Old part number	New part number
8801135	8801235

PARTS DISPOSITION ■ Interchangeable



PRODUCTS AFFECTED

Series 90 75, 100, 130, 180, and 250cc variable displacement pumps

SUBJECT

Hydraulic displacement control gasket and swashplate bearing locator pin retention

DESCRIPTION

The Series 90 75cc, 100cc, 130cc, 180cc, and 250cc variable displacement pumps utilize a common gasket to seal the joint between the displacement control housing and main pump housing.

In November 1998, Sauer-Danfoss introduced a new gasket design for Hydraulic Displacement Controls (HDC - all options), version 2 Electrical Displacement Controls (EDC2 - options EE and EN), and two amp current control (options PA and PB) equipped pumps (see SB-1998-038). The purpose of this gasket is primarily to seal the joint and aid in the retention of the bearing cage locator pin in the main pump housing. Sauer-Danfoss has identified that the new gasket may not adequately aid in the retention of this pin in 75cc pump sizes due to casting and machining tolerances. Installations which are particularly sensitive to pin retention include those oriented with the control on the side or on the bottom when the pump is installed. In these types of installations, it is possible for the pin to come out of its position in the pump housing. This will result in a loss of alignment between the swashplate and swashplate bearing assembly and the potential for erratic pump control and/or system performance.

To address this situation, Sauer-Danfoss has introduced a design modification to the control gasket. The modification will insure that the cage locator pin is retained in 75cc pumps in all circumstances, while still maintaining the desired gasket clamp load to avoid leaks.

The new gasket is completely interchangeable with the previous gasket. Sauer-Danfoss recommends that the previous control gasket be replaced immediately on 75cc pump assemblies, with controls noted above, in which the control is on the side or on the bottom of the pump. The pump serial numbers involved are A-98-41-xxxxx through A-99-49-xxxxx. It is not required to replace the gasket in pumps with the control in the up position, until the initial servicing of the pump assembly.

The 100cc, 130cc, 180cc, and 250cc pumps are not dependent upon the gasket to maintain retention of the bearing cage locator pin and are not affected by the information above.

The new gasket has replaced the previous gasket in all new pump assemblies with Hydraulic Displacement Control (HDC), version 2 Electrical Displacement Control (EDC2 - EE and EN), and two amp current (PA and PB) controls. The new gasket has also been placed in all appropriate control kits and overhaul seal kits. Page 3 of this bulletin will assist you in identifying the new gasket from the previous gasket.

MODELS AFFECTED

95-2xxx, 952xxxx, 96-2xxx, 962xxxx, 97-2xxx, 972xxxx, 98-2xxx, 982xxxx, 99-2xxx, and 992xxxx variable displacement pumps equipped with hydraulic displacement controls and specific option electronic displacement control. (EE, EN, PA, PB)

SERIAL NUMBERS

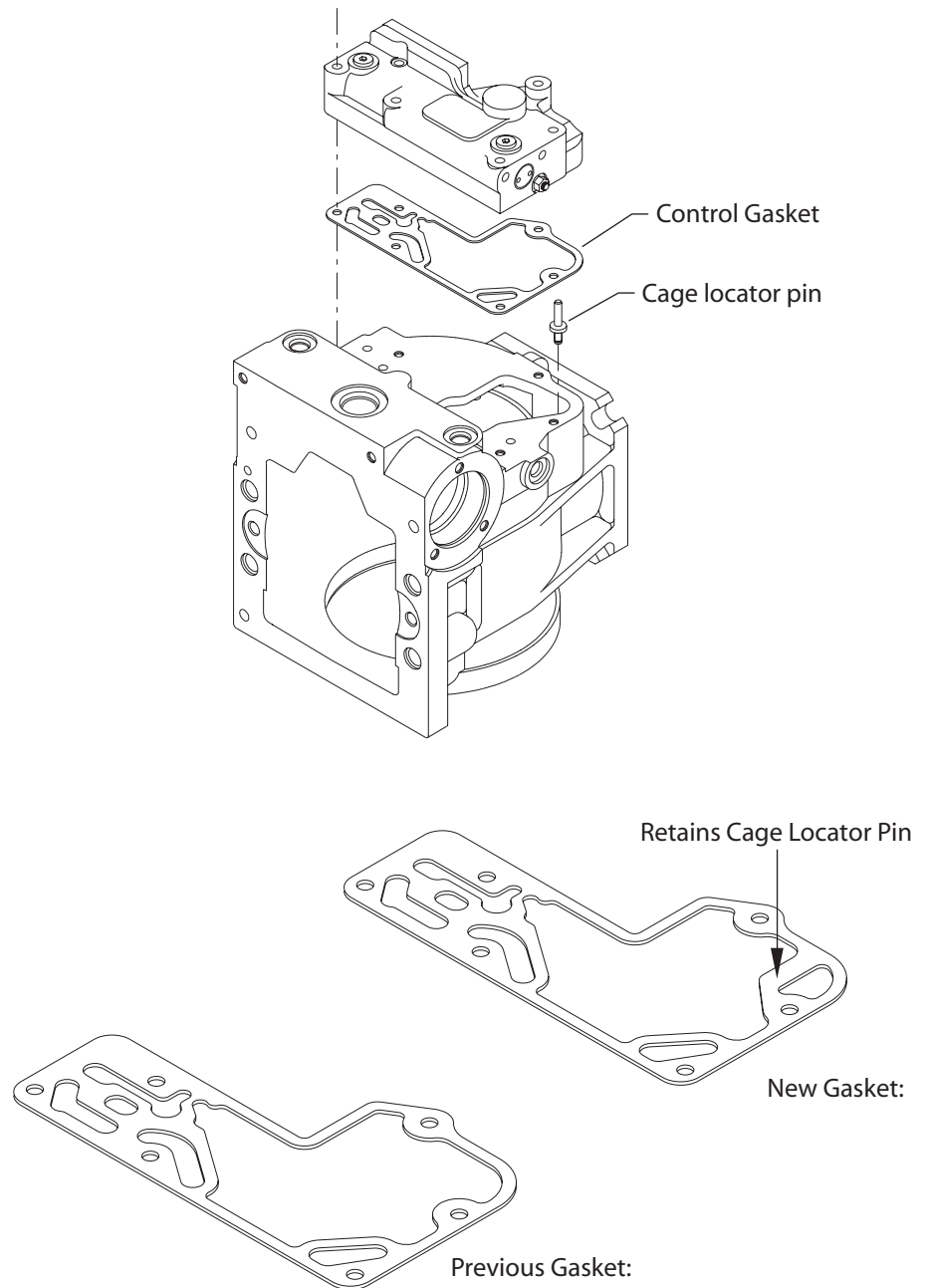
Sauer-Danfoss Ames 75cc pump production: A-99-50-xxxxx.
Sauer-Danfoss Ames 100cc pump production: A-00-25-xxxxx.
Sauer-Danfoss Neumunster production: N-00-01-xxxxx.

**PART NUMBERS
AFFECTED**

Previous gasket	New gasket
511608	8801241

PARTS DISPOSITION

■ Interchangeable



**PRODUCTS AFFECTED**

Series 90 75, 100, and 130 cc variable displacement pumps

SUBJECT

Displacement limiter screw and servo piston change

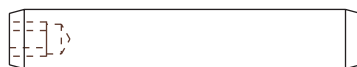
DESCRIPTION

Sauer-Danfoss has identified a product issue affecting a limited number of Series 90 100cc variable displacement pumps built at the Ames, Iowa, USA facility in the time frame of June 2000 through August 2000 (serial date range A-00-23-xxxxx up to and including A-00-34-xxxxx). This same issue also affects a limited number of Series 90 75cc, 100cc, and 130cc variable displacement pumps built at the Neumunster, Germany facility in the time frame of June 2000 through September 2000 (serial date range N-00-23-xxxxx up to and including A-00-39-xxxxx).

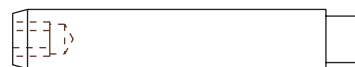
These pumps, equipped with displacement limiters, may have a servo piston with large center drills. These large center drills may allow the displacement limiter screw to thread into the servo piston while turning the screw in against the servo piston while adjusting the pump's displacement. If this occurs, the pump will be mechanically held in stroke by the displacement limiter screw. This situation can only happen during adjustment; it will not occur during normal operation.

Sauer-Danfoss has introduced a change to the servo piston and the displacement limiter screw to prevent the reoccurrence of this issue. We have made a change to the servo piston to limit the size of the center drill. We have also changed the design of the service displacement limiter screw from a "flat" point to a "dog nose" point. When servicing a pump that meets the above criteria, you must verify that the displacement limiter screw of the new "dog nose" version. If it is not, you must replace the displacement limiter screw with the new version. If the pump is not inside the date code ranges and displacements mentioned, you do not need to verify the version of the displacement limiter screws.

To assist in tracking this change, we have issued new part numbers for the servo pistons and displacement limiter screws. Even though this issue did not affect the 42cc or 55cc pumps, the service displacement limiter screw part number will change also to keep one common service part. We do this as the same displacement limiter screw is used on 42cc, 55cc, 75cc, and 100cc pumps.



Old
"flat point"
displacement limiter screw



New
"dog nose"
displacement limiter screw

MODELS AFFECTED

All 95-2xxx, 952xxxx, 96-2xxx, 962xxxx, 97-2xxx, and 972xxxx variable displacement pumps. with 1, 2, 4, or P displacement limitation option.

SERIAL NUMBERS

Sauer-Danfoss Ames 100cc production with serial number A-00-23-xxxxx up to and including A-00-34-xxxxx.

Sauer-Danfoss Neumunster, Germany production with serial number N-00-23-xxxxx up to and including A-00-39-xxxxx.

PART NUMBERS AFFECTED

Frame size	Old servo piston	New servo piston	Old screw	New screw
42 & 55cc	N/A	N/A	9007712-0814	516677
75 cc	509282	516683	9007712-0814	516677
100 cc	509284	516684	9007712-0814	516677
130 cc	510496	516685	572180	516678

PARTS DISPOSITION

- Interchangeable

PRODUCTS AFFECTED

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

SUBJECT

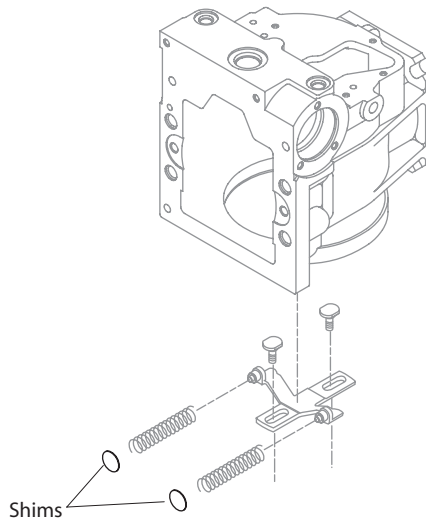
Common leveler spring shim.

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 90 100 cc variable pumps

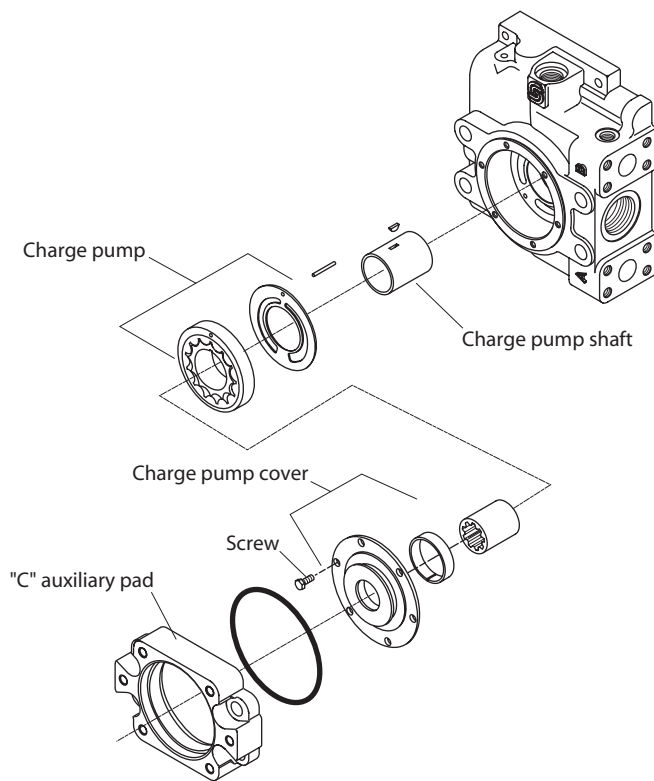
SUBJECT

31cc charge pump improvements

DESCRIPTION

To improve efficiency, the 31cc charge pump assembly has been redesigned.

This is interchangeable for pumps manufactured after the date code of A-00-10-xxxx if all affected components are replaced. For pumps manufactured before this date, with the CE auxiliary pad option, the auxiliary pad must also be replaced with part number 8200472. The old charge pump components will remain available as service parts..



MODELS AFFECTED

96-2xxx, and 962xxxx variable displacement pumps with the 'G' charge pump displacement option.

SERIAL NUMBERS

Change was effective at serial number A-01-20-xxxxx

PART NUMBERS AFFECTED

Part description	Previous part number	New part number
Charge pump shaft	8801179	8801210
Charge pump set	8200245	8200479
Charge pump cover	8800868	8801248
Screw	9007210-0604	9007314-0605

PARTS DISPOSITION

■ Interchangeable - see text in DESCRIPTION

PRODUCTS AFFECTED

Series 90 55, 75, and 100 cc pumps

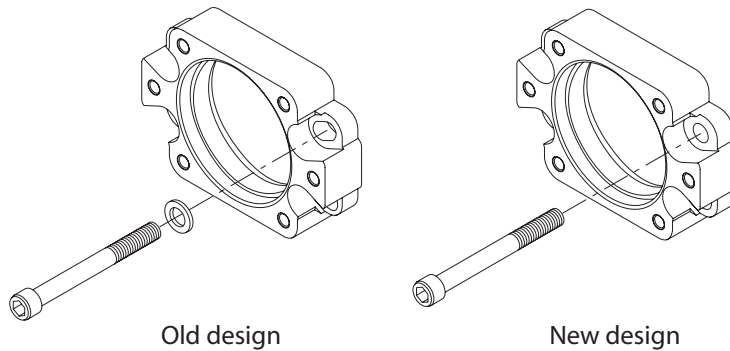
SUBJECT

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 42 thru 100 cc pumps

SUBJECT

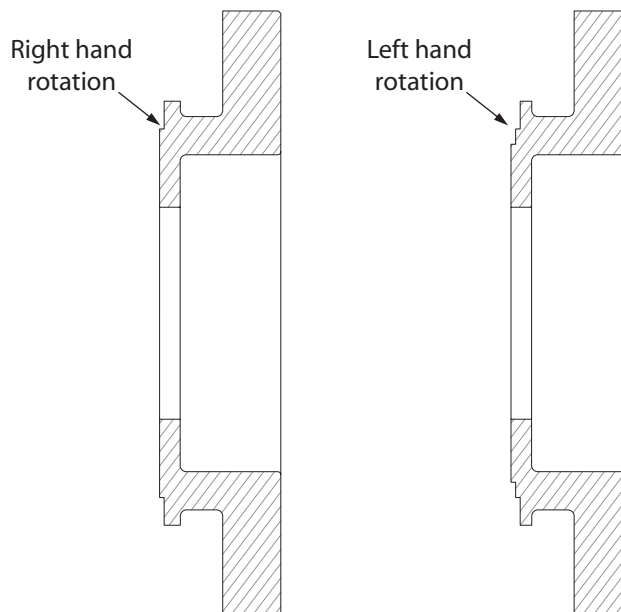
Auxiliary flange charge pump cover

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 90 100 cc Axial Piston Pump
Parts Manual
Notes





Series 90 100 cc Axial Piston Pump
Parts Manual
Notes





OUR PRODUCTS

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