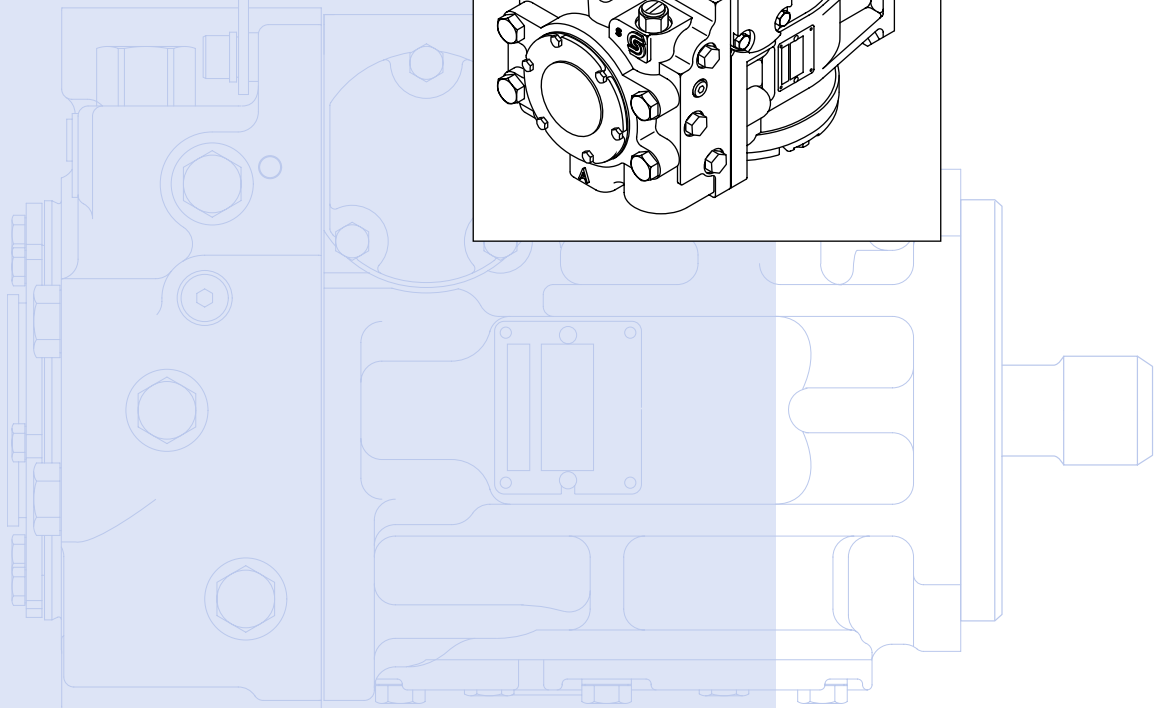
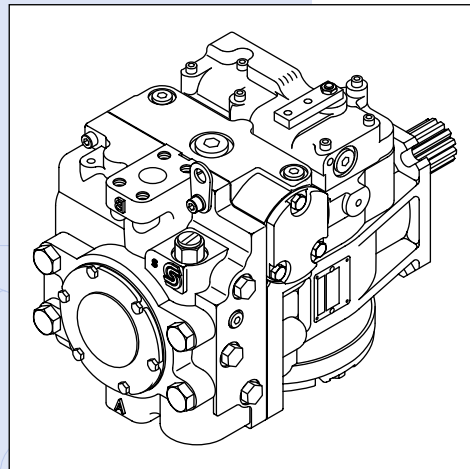
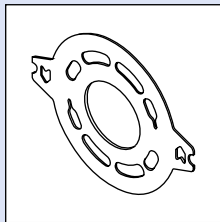
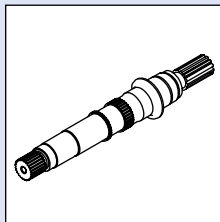
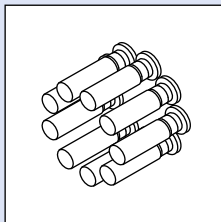


Series 90
130 cc Axial Piston
Pump

Parts Manual





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DISPLACEMENT PUMP**

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



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SB-1997-018 (swashplate leveler spring and spring seats).....	120
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SB-1999-065 (HDC gasket change).....	123-124
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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, 130 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, 130 cc pump.

NAMEPLATE

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

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.

Model Code

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

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 E10

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	E10	92-19		746107	Side cover	1
	E10	89-41	92-18	340133	Side cover (SB-1992-003)	1

All units using this order code with a date code of 89-41 and up to and including 92-18, must use part number "340133". All units with a date code of 92-19 and newer must use part number "746107".

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 90L130 EA 1 NN 80 L 3 F1 H 03 GBA 35 35 24. Use the following procedures to determine the part number of the drive shaft used on this pump.

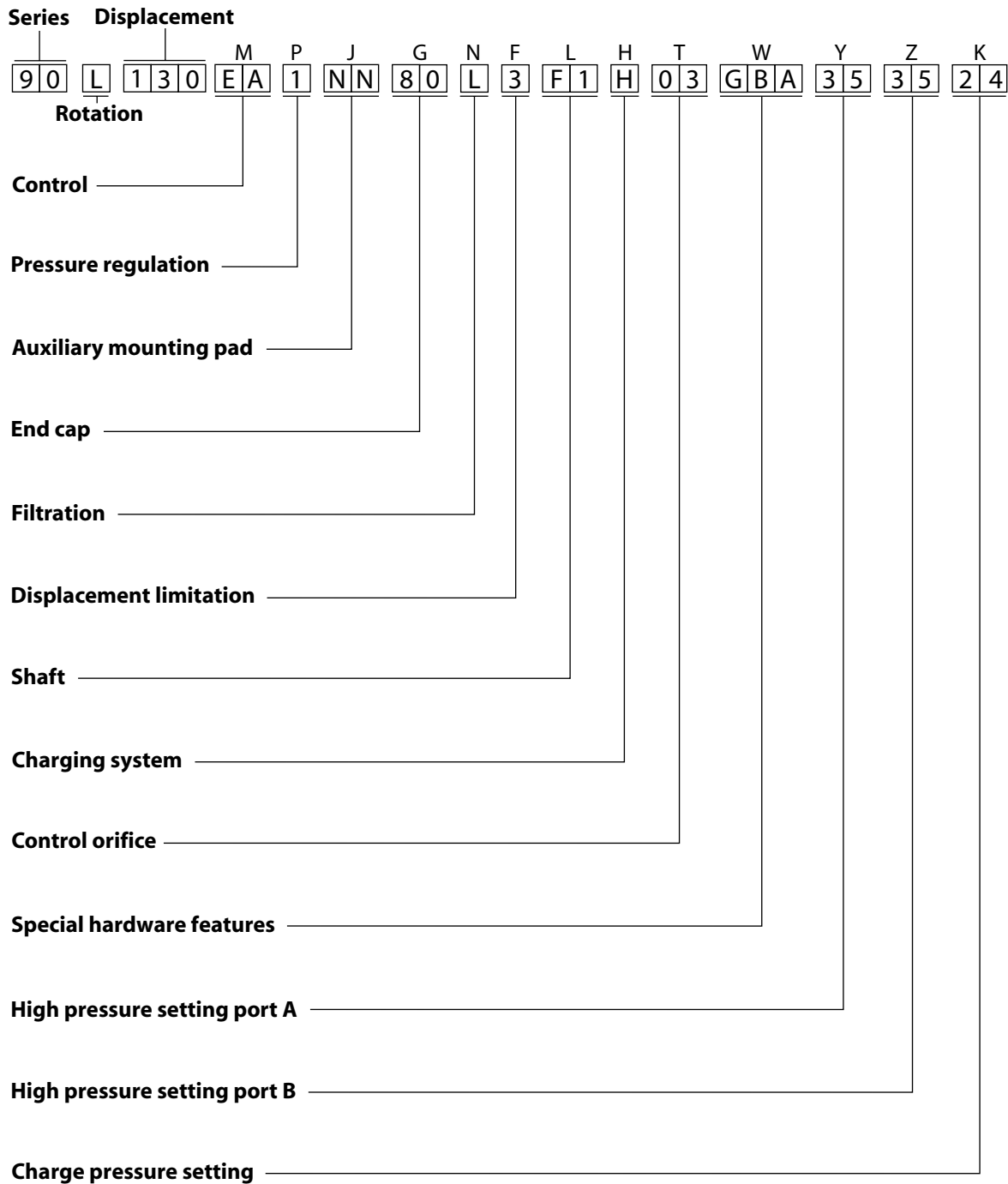
1) Referring to the input shaft module in the Order Code (see page 7), the input shaft option for this pump is identified by the code "F1". (90L130 EA 1 NN 80 L 3 **F1** H 03 GBA 35 35 24)

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 335695.

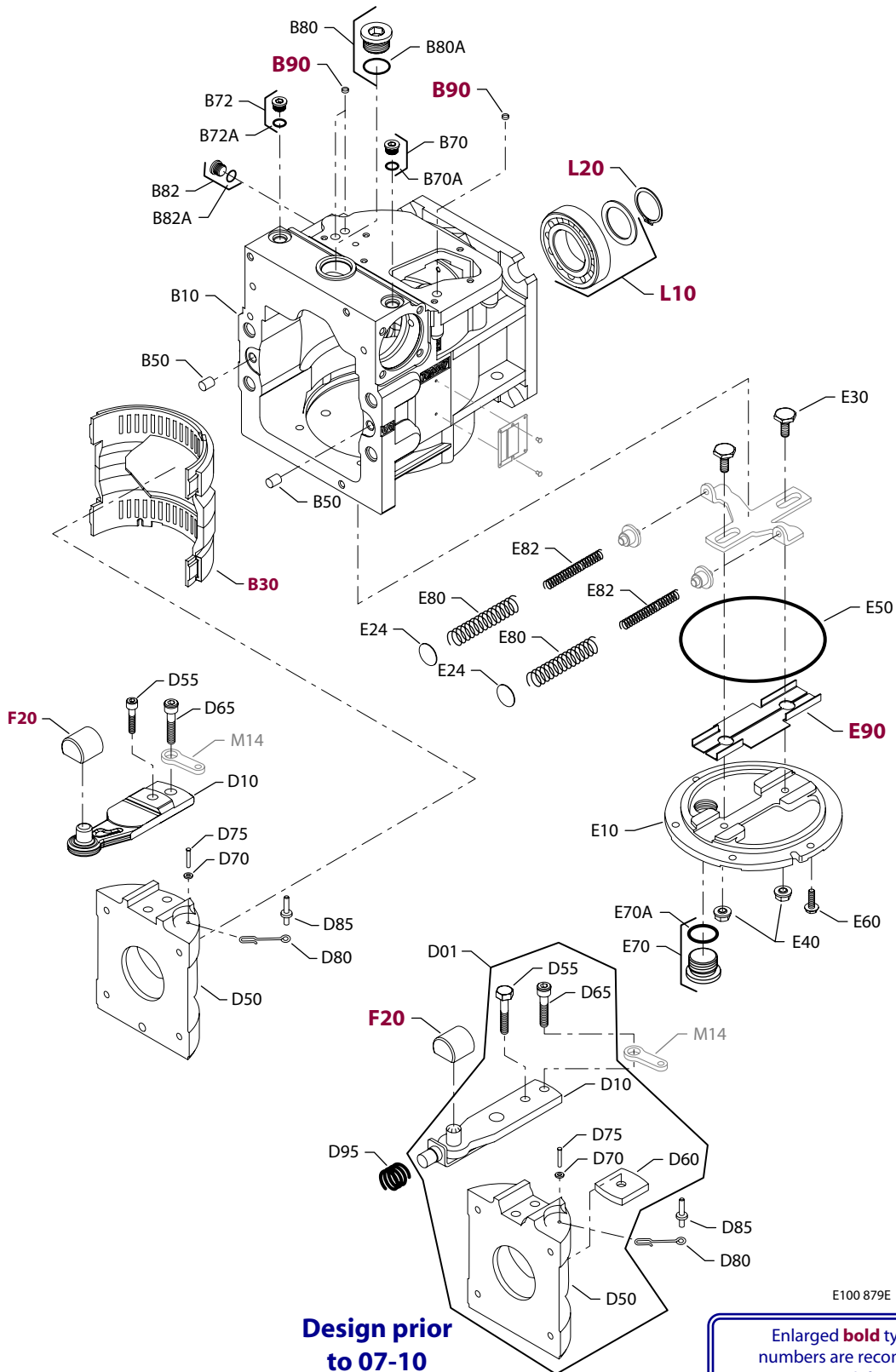


Series 90 130 cc Axial Piston Pump
Parts Manual
Notes



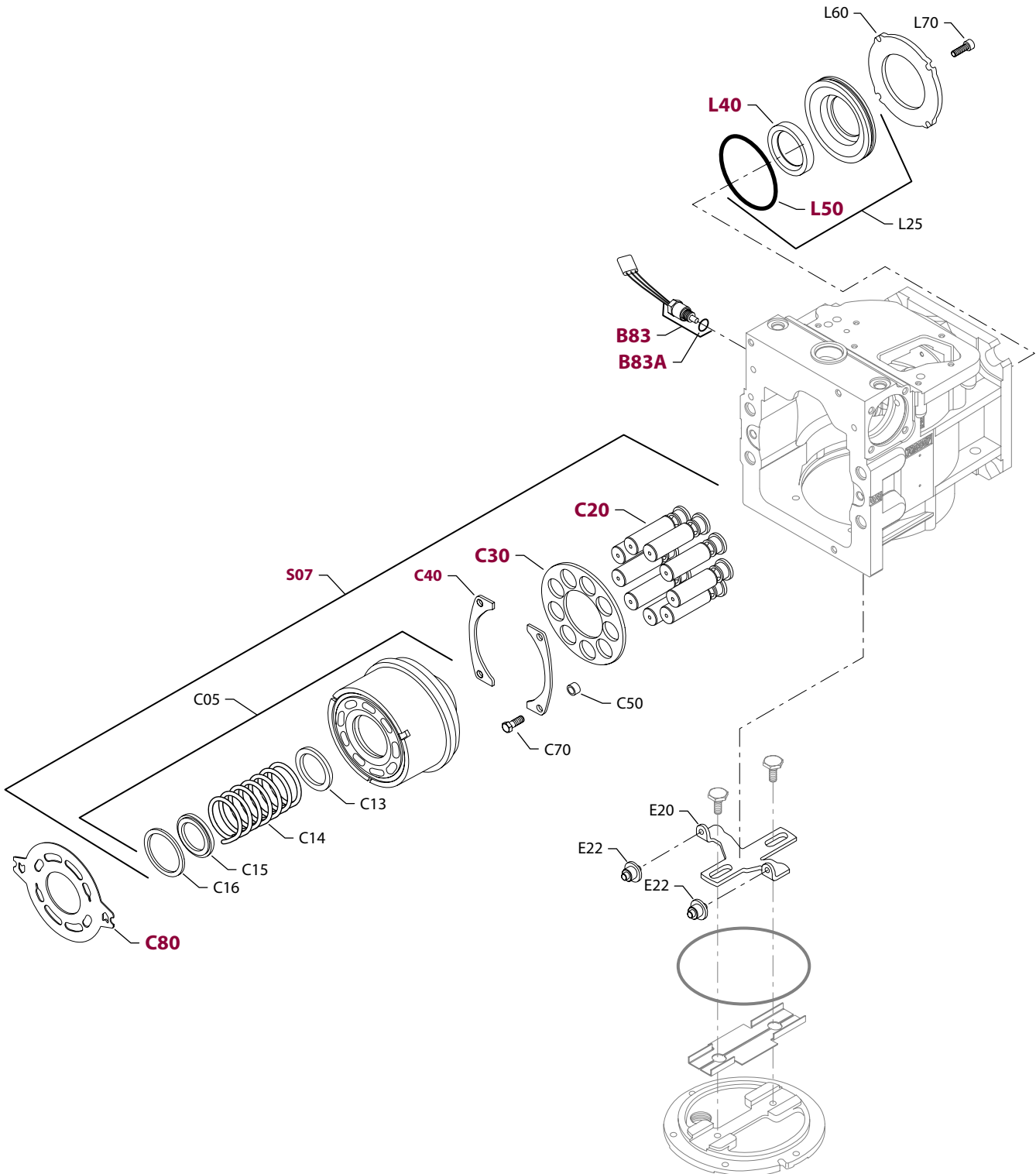


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COMMON PARTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B10	07-10		11026913	Housing assembly (SB-2007-008)	1
	B10	92-19	07-09	8510060	Housing assembly (SB-1992-003)	1
	B30	07-10		11000866	Cradle bearing assembly (SB-2007-008)	1
	B30	89-41	07-09	324657	Cradle bearing assembly	1
	B50	89-41		9004800-3708	Pin	2
	B70	89-41		140644	Plug assembly	1
	B70A	89-41		085043 (9004201-3700)	O-ring	1
	B72	89-41		140644	Plug assembly	1
	B72A	89-41		085043 (9004201-3700)	O-ring	1
	B80	89-41		320002 (9005110-9200)	Plug assembly	1
	B80A	89-41		001172 (9004201-9000)	O-ring	1
	B82	92-19		140644	Plug assembly (SB-1992-003)	1
	B82A	92-19		085043 (9004201-3700)	O-ring	1
	B90	89-41		9803390	Control filter screen	3
	D01	88-16	07-09	731026	Swashplate assembly (SB-2007-008)	1
	D10	07-10		11000397	Servo arm (SB-2007-008)	1
	D10	05-49	07-09	303214	Servo arm assembly	1
	D50	07-10		11001678	Swashplate (SB-2007-008)	1
	D50	88-16	07-09	516204	Swashplate	1
	D55	07-10		519150	Screw (SB-2007-008)	1
	D55	89-41	07-09	536649 (9007276-0111)	Screw	1
	D60	89-41	07-09	766022	Swashplate guide (SB-2007-008)	1
	D65	89-41		504493	Screw	1
	D70	89-41		127464	Washer	1
	D75	89-41		333369	Spiral head pin	1
	D80	89-41		700948	Cage locator link	1
	D85	89-41		11003805	Pin (SB-2007-008)	1
	D95	89-41	07-09	303420	Spring (SB-2007-008)	1
	E10	07-10		11001326	Side cover (SB-2007-008)	1
	E10	96-02	07-09	11027814	Side cover assembly (SB-1992-003 & SB-1996-004)	1
	E24	92-19		359067	Shim	2
	E30	96-03		8300012	Guide post (Sb-1996-004)	2
	E30	92-19	96-02	503205	Guide post (SB-1992-003)	2
	E40	89-41		042432	Seal nut	2
	E50	89-41		517379	O-ring	1
	E60	89-41		517230	Screw (SB-2002-014)	6
	E70	89-41		320002 (9005110-9200)	Plug assembly	1
	E70A	89-41		001172 (9004201-9000)	O-ring	1
	E80	89-41		517160	Spring (SB-1997-018)	2
	E82	89-41		517161	Spring (SB-1997-018)	2
	E90	96-03		513890	Insert assembly (SB-1996-004 & SB-1999-041)	1
	F20	88-16		11000317	Slider block	1
	L10	89-41		304857	Roller bearing	1
	L15	89-41		376319	Shim	1
	L20	89-41		392209	Retaining ring	1



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

COMMON PARTS

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C13	89-41		700922	Spring seat	1
	C14	89-41		302828	Cylinder block spring	1
	C15	89-41		700930	Spring retainer	1
	C16	89-41		302836	Retaining ring	1
	C20	89-41		727750	Piston assembly, welded	9
	C30	89-41		735506	Slipper guide	1
	C40	88-22		700963	Slipper guide bearing	2
	C50	88-22		509015	Spacer	4
	C70	88-22		308643	Screw	4
	L25	92-19		519732	Seal carrier assembly (SB-2007-008)	1
	L40	07-10		519021	Lip seal (SB-2007-008)	1
	L40	89-41	07-09	9008000-0114	Lip seal	1
	L50	89-41		509353	O-ring	1
	L60	89-41		516769	Retainer plate	1
	L70	89-41		009159	Screw	4

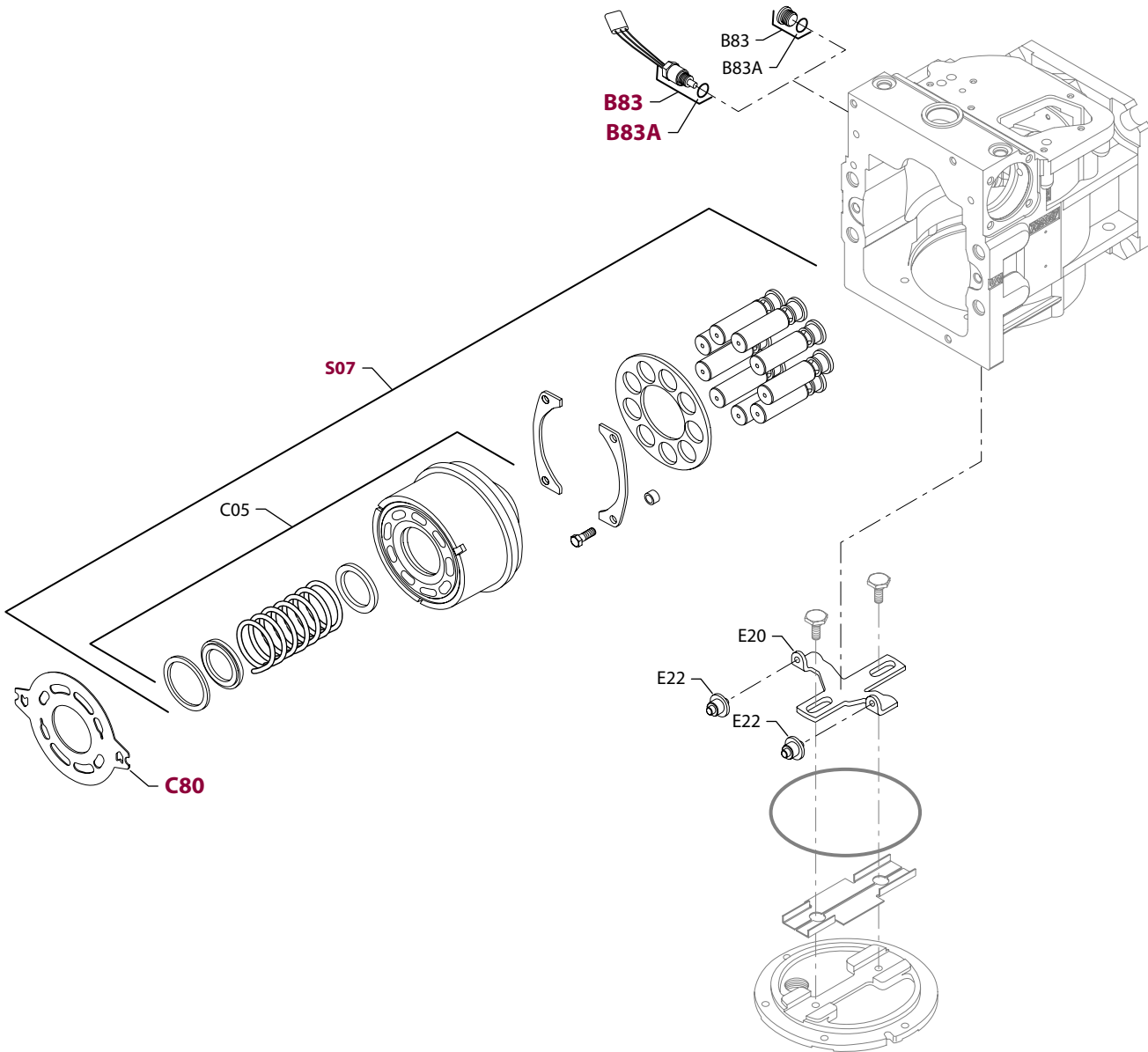
SPECIAL HARDWARE

EAT	B83	99-50		KPPG15824	Speed sensor	1
	B83A	99-50		085043 (9004201-3700)	O-ring	1
	C05	99-50		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
	C80	99-50		518807	Valve plate	1
	E20	99-50		511052	Leveler (SB-1999-010 & SB-2007-008)	1
	E22	99-50		8300011	Spring seat (SB-2007-008)	2
	S07	99-50		519275	Cylinder block kit, with speed ring (SB-2003-002)	1

EBA	B83	92-19		KPPG13408	Speed sensor	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
	C80	92-19		518807	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat	2
	S07	92-19		519275	Cylinder block kit, with speed ring (SB-2003-002)	1

EDB	B83	92-19		KPPG13408	Speed sensor	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
	C80	92-19		518807	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat	2
	S07	92-19		519275	Cylinder block kit, with speed ring (SB-2003-002)	1

EDD	B83	92-19		KPPG13408	Speed sensor	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
	C80	92-19		518808	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat	2
	S07	92-19		519275	Cylinder block kit, with speed ring (SB-2003-002)	1

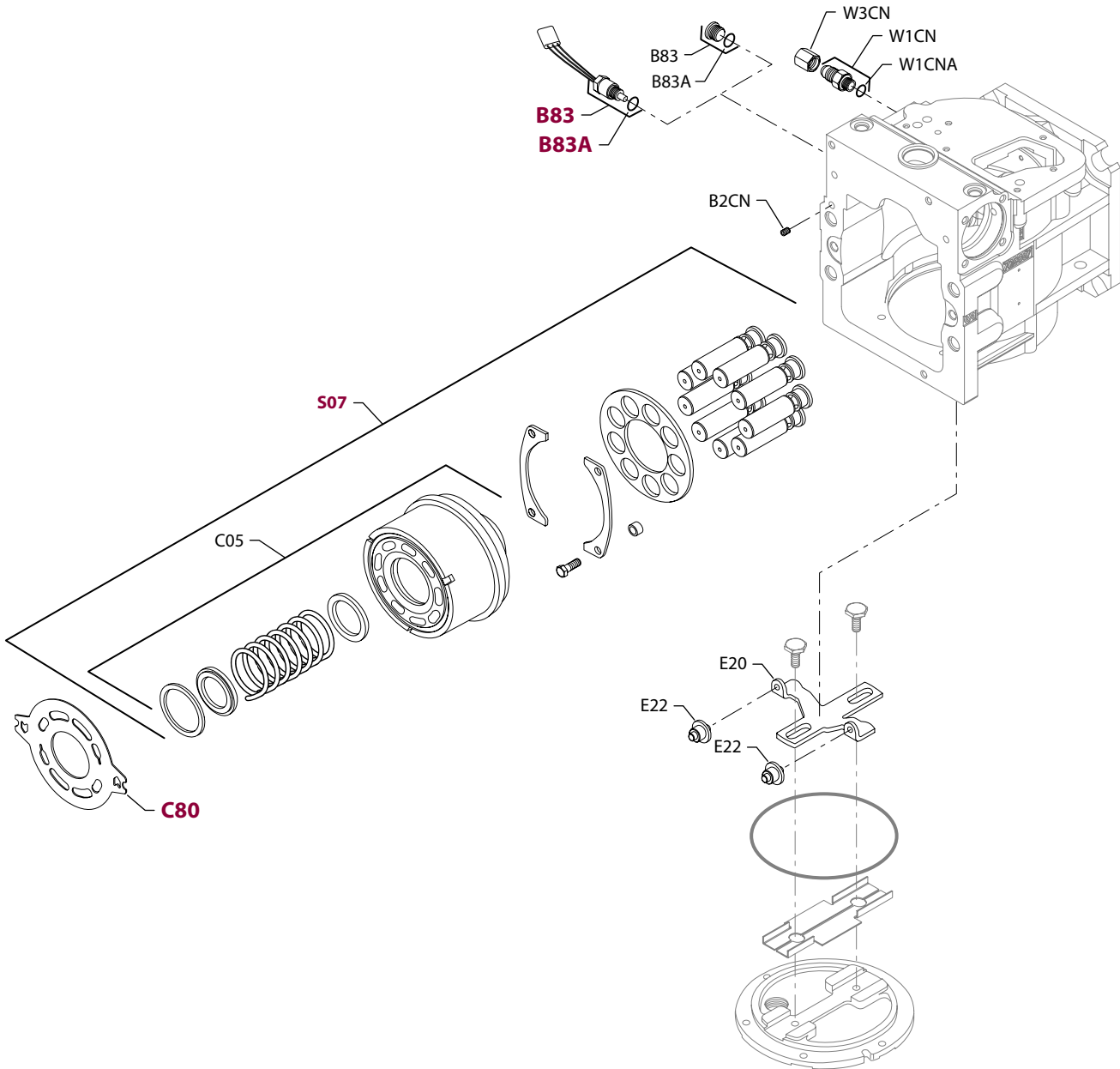


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
EEB	B83	92-19		140644	Plug assembly	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
	C80	92-19		518807	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat	2
	S07	92-19		519275	Cylinder block kit, with speed ring (SB-2003-002)	1
	EEG	B83	00-13		140644	Plug assembly
B83A		00-13		085043 (9004201-3700)	O-ring	1
C05		00-13		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
C80		00-13		518937	Valve plate, CW, lapped	1
C80		00-13		518938	Valve plate, CCW, lapped	1
E20		00-13		511052	Leveler	1
E22		00-13		8300011	Spring seat	2
S07		00-13		519275	Cylinder block kit, with speed ring (SB-2003-002)	1
EFC	B83	92-19		KPPG156	Speed sensor	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
	C80	92-19		518807	Valve plate	1
	E20	92-19		511052	Leveler	1
	E22	92-19		8300011	Spring seat	2
	S07	92-19		519275	Cylinder block kit, with speed ring (SB-2003-002)	1
	EFI	B83	98-12		KPPG156	Speed sensor
B83A		98-12		085043 (9004201-3700)	O-ring	1
C05		98-12		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
C80		00-13		518937	Valve plate, CW, lapped	1
C80		00-13		518938	Valve plate, CCW, lapped	1
E20		98-12		511052	Leveler	1
E22		98-12		8300011	Spring seat	2
S07		98-12		519275	Cylinder block kit, with speed ring (SB-2003-002)	1
EFM	B83	98-31		KPPG156	Speed sensor	1
	B83A	98-31		085043 (9004201-3700)	O-ring	1
	C05	98-31		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
	C80	98-31		518808	Valve plate	1
	E20	98-31		511052	Leveler (SB-1999-010)	1
	E22	98-31		8300011	Spring seat	2
	S07	98-31		519275	Cylinder block kit, with speed ring (SB-2003-002)	1
	EGA	B83	98-49		KPPG15824	Speed sensor
B83A		98-49		085043 (9004201-3700)	O-ring	1
C05		98-49		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
C80		98-49		518807	Valve plate	1
E20		98-49		511052	Leveler (SB-1999-010)	1
E22		98-49		8300011	Spring seat	2
S07		98-49		519275	Cylinder block kit, with speed ring (SB-2003-002)	1

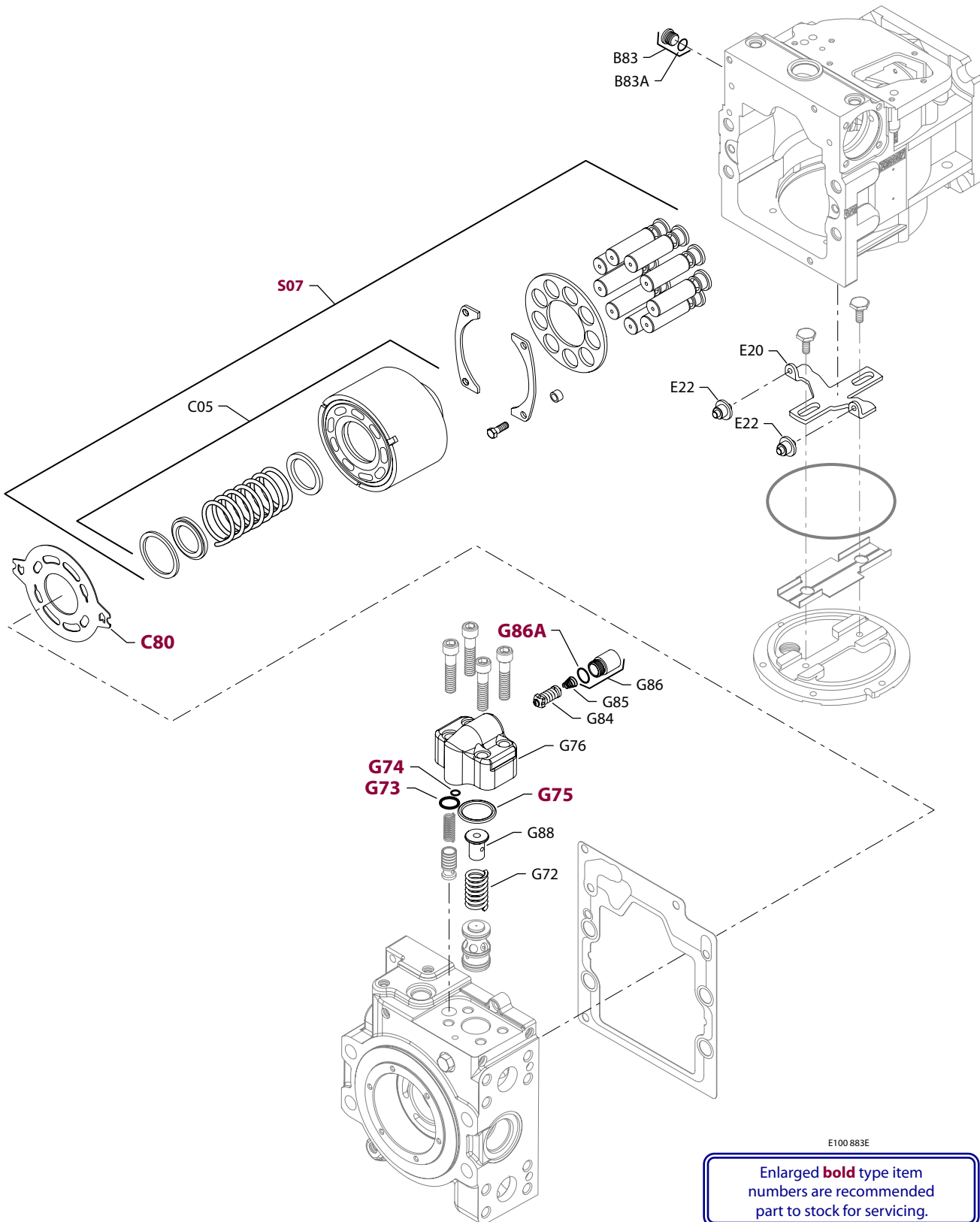


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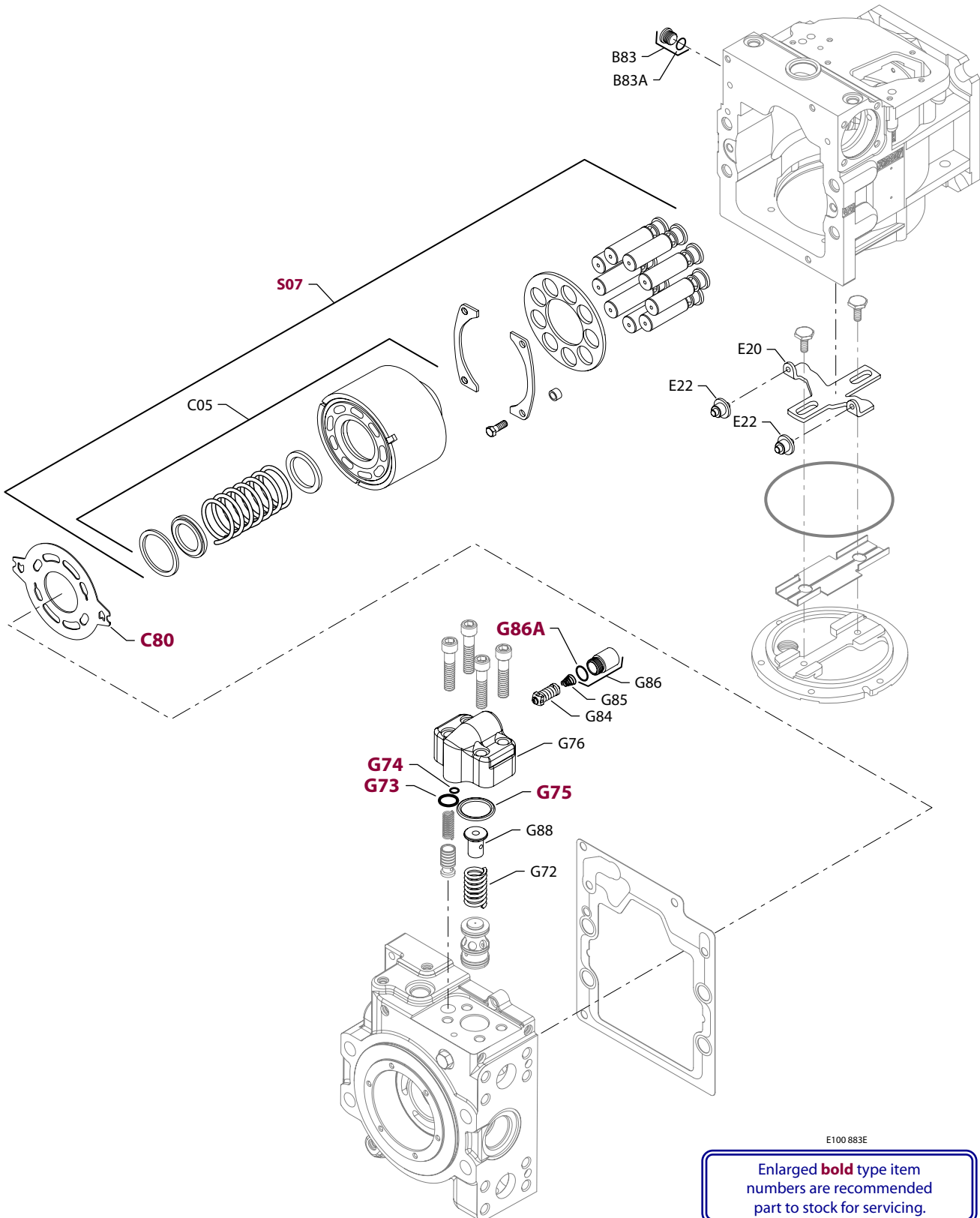
SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
EHA	B83	00-44		KPPG16408	Speed sensor	1
	B83A	00-44		085043 (9004201-3700)	O-ring	1
	C05	00-44		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
	C80	00-44		518807	Valve plate	1
	E20	00-44		511052	Leveler (SB-1999-010)	1
	E22	00-44		8300011	Spring seat	2
	S07	00-44		519275	Cylinder block kit, with speed ring (SB-2003-002)	1
	EHB	B83	02-47		KPPG16408	Speed sensor
B83A		02-47		085043 (9004201-3700)	O-ring	1
C05		02-47		519259	Cylinder block assy., with speed ring (SB-2003-002)	1
C80		02-47		518808	Valve plate	1
E20		02-47		511052	Leveler (SB-1999-010)	1
E22		02-47		8300011	Spring seat	2
S07		02-47		519275	Cylinder block kit, with speed ring (SB-2003-002)	1
FAD		B83	92-19		140644	Speed sensor
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519258	Cylinder block assy., without speed ring (SB-2003-002)	1
	C80	92-19		518807	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat	2
	S07	92-19		519274	Cylinder block kit, without speed ring (SB-2003-002)	1
	GAA	B83	92-19		140644	Speed sensor
B83A		92-19		085043 (9004201-3700)	O-ring	1
C05		92-19		519258	Cylinder block assy., without speed ring (SB-2003-002)	1
C80		92-19		518934	Valve plate	1
E20		92-19		511052	Leveler (SB-1999-010)	1
E22		92-19		8300011	Spring seat	2
S07		92-19		519274	Cylinder block kit, without speed ring (SB-2003-002)	1
GAB		B2CN	92-19		775312	Set screw
	B83	92-19		140644	Plug assembly	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519258	Cylinder block assy., without speed ring (SB-2003-002)	1
	C80	92-19		518934	Valve plate	1
	E20	92-19		511052 (SB-1999-010)	Leveler	1
	E22	92-19		8300011	Spring seat	2
	S07	92-19		519274	Cylinder block kit, without speed ring (SB-2003-002)	1
	W1CN	92-19		723726	Connector	1
	W1CNA	92-19		085043 (9004201-3700)	O-ring	1
	W3CN	92-19		574095	Cap	1



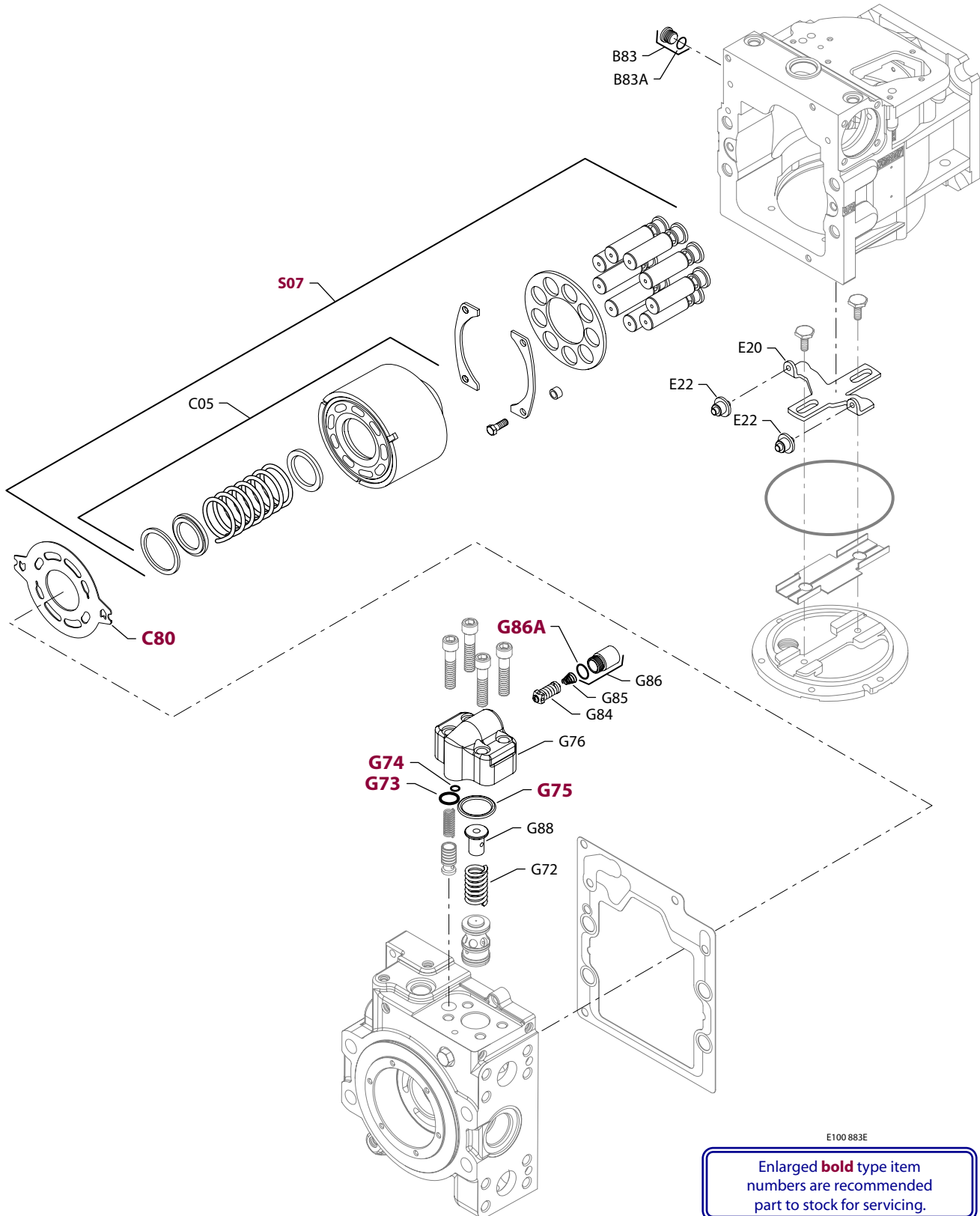
SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GB2	B83	02-30		140644	Plug assembly	1
	B83A	02-30		085043 (9004201-3700)	O-ring	1
	C05	02-30		519258	Cylinder block assy., without speed ring (SB-2003-002)	1
	C80	02-30		518807	Valve plate	1
	E20	02-30		511052 (SB-1999-010)	Leveler	1
	E22	02-30		8300011	Spring seat	2
	G72	02-30		517831	Spring	1
	G73	02-30		519873	Seal	1
	G74	02-30		144725 (9004105-0110)	O-ring	1
	G75	02-30		518329	O-ring	1
	G76	02-30		517828	Valve housing	1
	G84	02-30		3103375-0250	SCR valve, 250 bar [3625 psi]	1
	G85	02-30		4800780	Conial spring	1
	G86	02-30		3104295	Plug assembly	1
	G86A	02-30		001131 (9004201-5000)	O-ring	1
	G88	02-30		517829	Spring guide	1
	S07	02-30		519274	Cylinder block kit, without speed ring (SB-2003-002)	1
GB3	B83	02-30		140644	Plug assembly	1
	B83A	02-30		085043 (9004201-3700)	O-ring	1
	C05	02-30		519258	Cylinder block assy., without speed ring (SB-2003-002)	1
	C80	02-30		518807	Valve plate	1
	E20	02-30		511052 (SB-1999-010)	Leveler	1
	E22	02-30		8300011	Spring seat	2
	G72	02-30		517831	Spring	1
	G73	02-30		519873	Seal	1
	G74	02-30		144725 (9004105-0110)	O-ring	1
	G75	02-30		518329	O-ring	1
	G76	02-30		517828	Valve housing	1
	G84	02-30		3103375-0175	SCR valve, 175 bar [2538 psi]	1
	G85	02-30		4800780	Conial spring	1
	G86	02-30		3104295	Plug assembly	1
	G86A	02-30		001131 (9004201-5000)	O-ring	1
	G88	02-30		517829	Spring guide	1
	S07	02-30		519274	Cylinder block kit, without speed ring (SB-2003-002)	1



SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GB4	B83	92-19		140644	Plug assembly	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519258	Cylinder block assy., without speed ring (SB-2003-002)	1
	C80	92-19		518807	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat	2
	G72	92-19		517831	Spring	1
	G73	92-19		519873	Seal	1
	G74	92-19		144725 (9004105-0110)	O-ring	1
	G75	92-19		518329	O-ring	1
	G76	92-19		517828	Valve housing	1
	G84	92-19		3103375-0140	SCR valve, 140 bar [2030 psi]	1
	G85	92-19		4800780	Conial spring	1
	G86	92-19		3104295	Plug assembly	1
	G86A	92-19		001131 (9004201-5000)	O-ring	1
	G88	92-19		517829	Spring guide	1
	S07	92-19		519274	Cylinder block kit, without speed ring (SB-2003-002)	1
GB7	B83	05-34		140644	Plug assembly	1
	B83A	05-34		085043 (9004201-3700)	O-ring	1
	C05	05-34		519258	Cylinder block assy., without speed ring (SB-2003-002)	1
	C80	05-34		518938	Valve plate	1
	E20	05-34		511052	Leveler (SB-1999-010)	1
	E22	05-34		8300011	Spring seat	2
	G72	05-34		517831	Spring	1
	G73	05-34		519873	Seal	1
	G74	05-34		144725 (9004105-0110)	O-ring	1
	G75	05-34		518329	O-ring	1
	G76	05-34		517828	Valve housing	1
	G84	05-34		3103375-0175	SCR valve, 175 bar [2538 psi]	1
	G85	05-34		4800780	Conial spring	1
	G86	05-34		3104295	Plug assembly	1
	G86A	05-34		001131 (9004201-5000)	O-ring	1
	G88	05-34		517829	Spring guide	1
	S07	05-34		519274	Cylinder block kit, without speed ring (SB-2003-002)	1

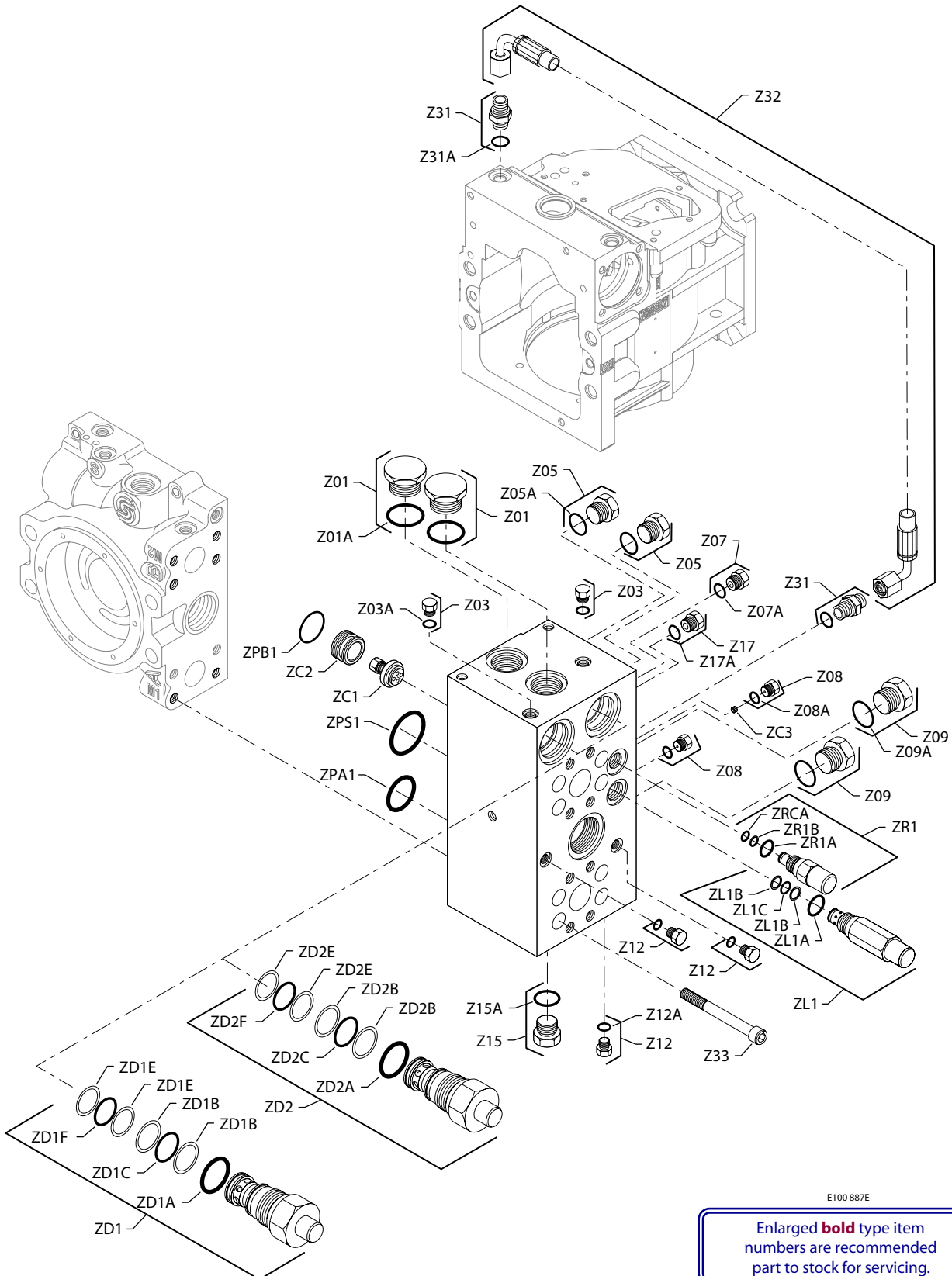


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

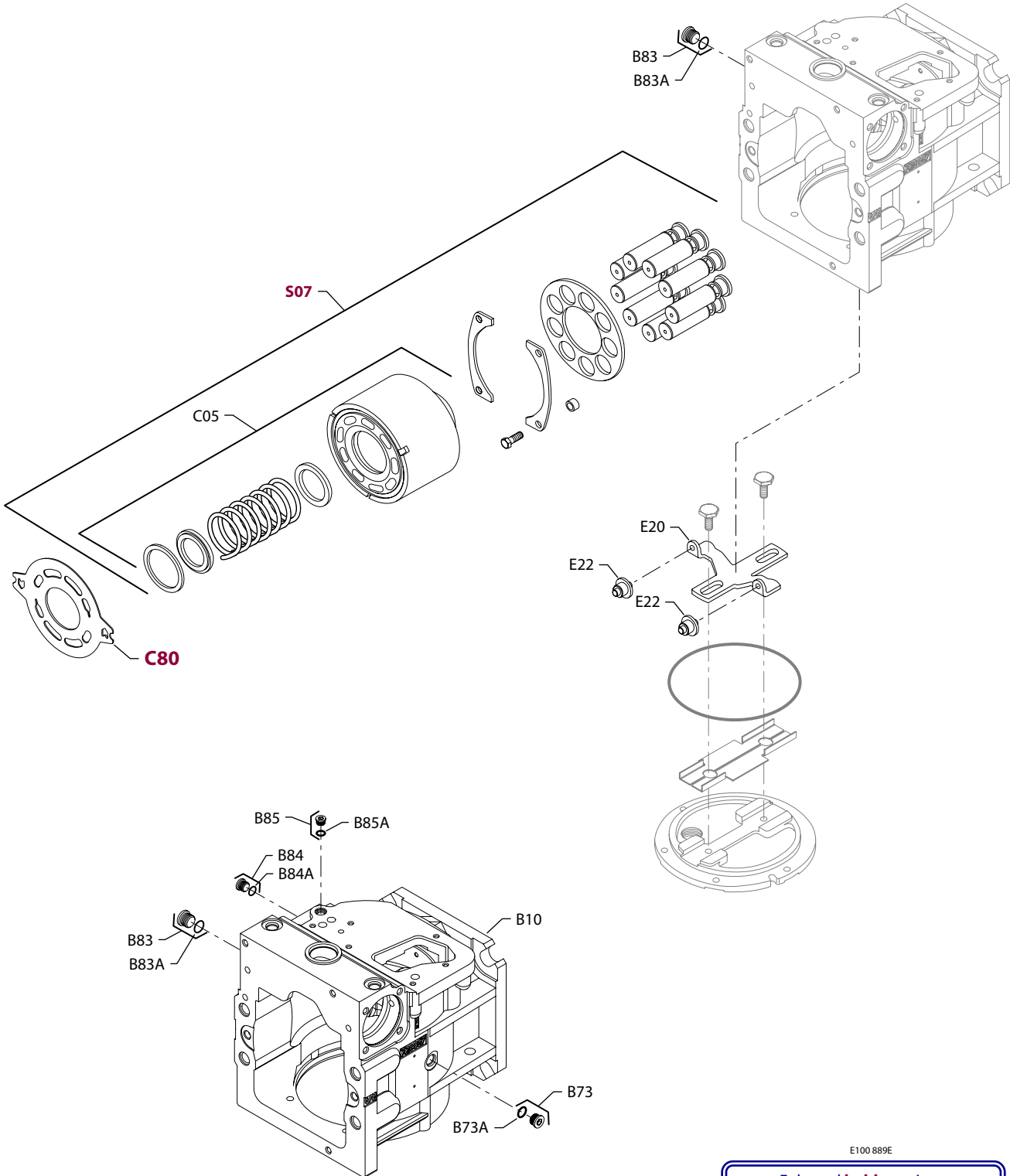
SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GB9	B83	06-34		140644	Plug assembly	1
	B83A	06-34		085043 (9004201-3700)	O-ring	1
	C05	06-34		519258	Cylinder block assy., without speed ring	1
	C80	06-34		518807	Valve plate	1
	E20	06-34		511052	Leveler	1
	E22	06-34		8300011	Spring seat	2
	G72	06-34		517831	Spring	1
	G73	06-34		519873	Seal	1
	G74	06-34		144725 (9004105-0110)	O-ring	1
	G75	06-34		518329	O-ring	1
	G76	06-34		517828	Valve housing	1
	G84	06-34		3103375-0140	SCR valve, 140 bar [2030 psi]	1
	G85	06-34		4800780	Conial spring	1
	G86	06-34		3104295	Plug assembly	1
	G86A	06-34		001131 (9004201-5000)	O-ring	1
	G88	06-34		517829	Spring guide	1
S07	06-34		519274	Cylinder block kit, without speed ring	1	
GBA	B83	06-34		140644	Plug assembly	1
	B83A	06-34		085043 (9004201-3700)	O-ring	1
	C05	89-41		519258	Cylinder block assembly, without speed ring	1
	C80	89-41		518807	Valve plate	1
	E20	89-41		511052	Leveler (SB-1999-010)	1
	E22	89-41		8300011	Spring seat (SB-1997-018)	2
	S07	89-41		519274	Cylinder block kit, without speed ring, welded piston	1
	GBE	B83	92-19		140644	Plug assembly
B83A		92-19		085043 (9004201-3700)	O-ring	1
C05		89-41		519258	Cylinder block assembly, without speed ring	1
C80		89-41		518807	Valve plate	1
E20		89-41		511052	Leveler (SB-1999-010)	1
E22		89-41		8300011	Spring seat (SB-1997-018)	2
S07		89-41		519274	Cylinder block kit, without speed ring, welded piston	1
GBK		B83	92-19		140644	Plug assembly
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519258	Cylinder block assembly, without speed ring	1
	C80	92-19		518807	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat (SB-1997-018)	2
	S07	92-19		519274	Cylinder block kit, without speed ring, welded piston	1
	GBL	B83	00-25		140644	Plug assembly
B83A		00-25		085043 (9004201-3700)	O-ring	1
C05		00-25		519258	Cylinder block assembly, without speed ring	1
C80		00-25		518807	Valve plate	1
E20		00-25		511052	Leveler (SB-1999-010)	1
E22		00-25		8300011	Spring seat (SB-1997-018)	2
S07		00-25		519274	Cylinder block kit, without speed ring, welded piston	1



SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GBL	Z01	00-25		516748	Plug assembly	2
(continued)	Z01A	00-25		516741	O-ring	2
	Z03	00-25		516742	Plug assembly	2
	Z03A	00-25		516743	O-ring	2
	Z05	00-25		516744	Plug assembly	2
	Z05A	00-25		516730	O-ring	2
	Z07	00-25		516745	Plug assembly	1
	Z07A	00-25		516746	O-ring	1
	Z08	00-25		516742	Plug assembly	2
	Z08A	00-25		516743	O-ring	2
	Z09	00-25		516748	Plug assembly	2
	Z09A	00-25		516749	O-ring	2
	Z12	00-25		516750	Plug assembly	3
	Z12A	00-25		516751	O-ring	3
	Z15	00-25		516744	Plug assembly	1
	Z15A	00-25		516730	O-ring	1
	Z17	00-25		516745	Plug assembly	1
	Z17A	00-25		516746	O-ring	1
	Z31	00-25		516137	Connector	2
	Z31A	00-25		085043 (9004201-3700)	O-ring	2
	Z32	00-25		516134	Hydraulic hose	1
	Z33	00-25		019471	Screw	8
	ZC1	00-25		516720	Check valve	1
	ZC2	00-25		516721	Retainer	1
	ZC3	00-25		516747	Headless screw	1
	ZD1	00-25		516754	Pressure regulator	1
	ZD1A	00-25		516723	O-ring	1
	ZD1B	00-25		516725	Backup ring	2
	ZD1C	00-25		516726	O-ring	1
	ZD1E	00-25		516727	Backup ring	2
	ZD1F	00-25		516728	O-ring	1
	ZD2	00-25		516754	Pressure regulator	1
	ZD2A	00-25		516723	O-ring	1
	ZD2B	00-25		516725	Backup ring	2
	ZD2C	00-25		516726	O-ring	1
	ZD2E	00-25		516727	Backup ring	2
	ZD2F	00-25		516728	O-ring	1
	ZL1	00-25		516729	Relief valve	1
	ZL1A	00-25		516730	O-ring	1
	ZL1B	00-25		516731	Backup ring	2
	ZL1C	00-25		516793	O-ring	1
	ZPA1	00-25		516737	O-ring	1
	ZPB1	00-25		516737	O-ring	1
	ZPS1	00-25		516738	O-ring	1
	ZR1	00-25		516733	Relief valve	1
	ZR1A	00-25		516734	O-ring	1
	ZR1B	00-25		516735	Backup ring	1
	ZR1C	00-25		516736	O-ring	1
		00-25		516702	Brake valve seal kit	1

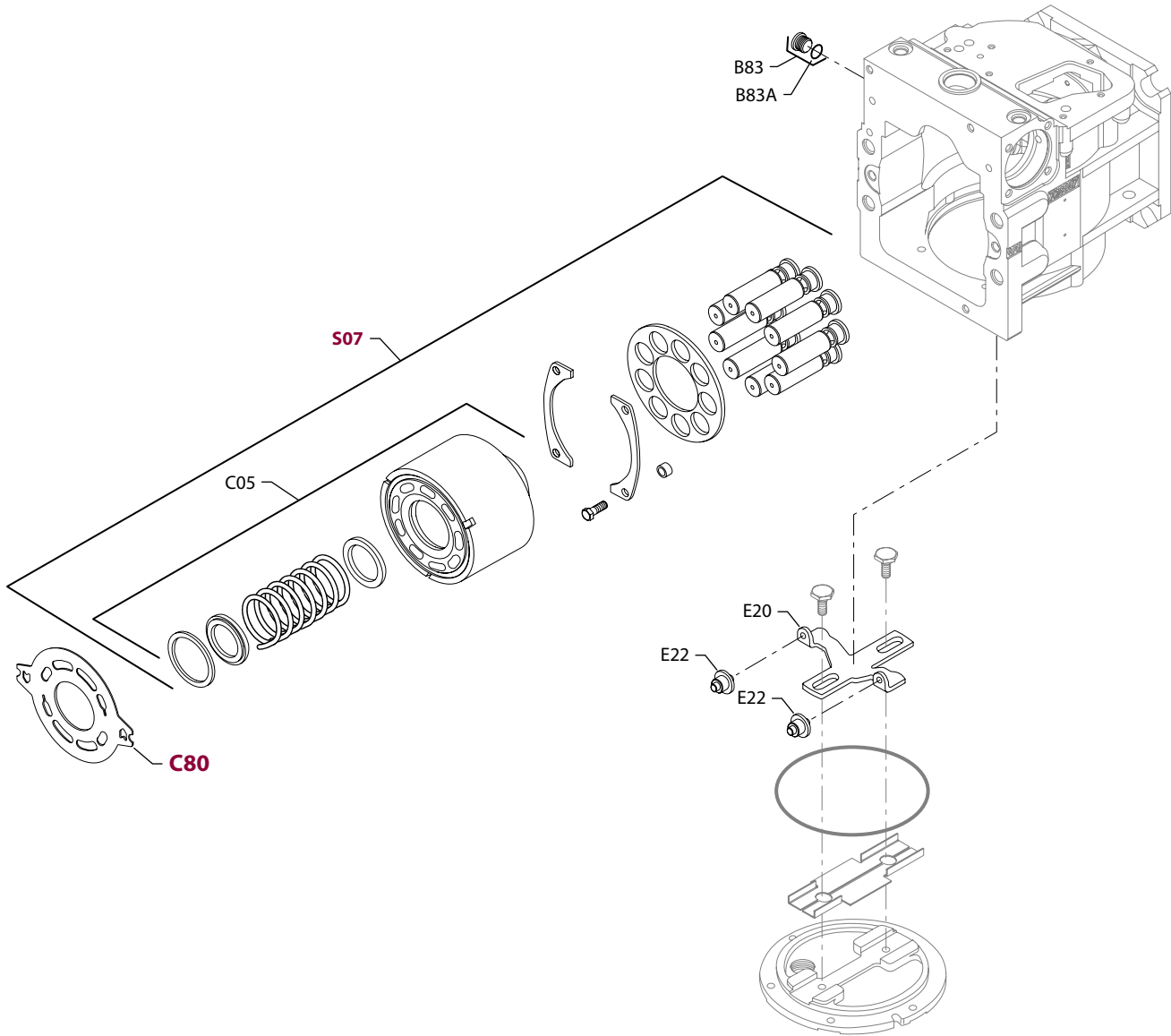


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
GBP	B83	06-17		140644	Plug assembly	1	
	B83A	06-17		085043 (9004201-3700)	O-ring	1	
	C05	06-17		519258	Cylinder block assembly, without speed ring	1	
	C80	06-17		518807	Valve plate	1	
	E20	06-17		511052	Leveler	1	
	E22	06-17		8300011	Spring seat	2	
	S07	06-17		519274	Cylinder block kit, without speed ring, welded piston	1	
	GBS	B83	92-19		140644	Plug assembly	1
B83A		92-19		085043 (9004201-3700)	O-ring	1	
C05		92-19		519258	Cylinder block assembly, without speed ring	1	
C80		92-19		518807	Valve plate	1	
E20		92-19		511052	Leveler (SB-1999-010)	1	
E22		92-19		8300011	Spring seat (SB-1997-018)	2	
S07		92-19		519274	Cylinder block kit, without speed ring, welded piston	1	
GBT		B10	92-19		515350	Housing	1
	B73	92-19		140644	Plug assembly	1	
	B73A	92-19		085043 (9004201-3700)	O-ring	1	
	B83	92-19		140644	Plug assembly	1	
	B83A	92-19		085043 (9004201-3700)	O-ring	1	
	B84	92-19		509603	Plug assembly, M10 x 1	1	
	B84A	92-19		526533	O-ring	1	
	B85	92-19		509603	Plug assembly, M10 x 1	1	
	B85A	92-19		526533	O-ring	1	
	C05	92-19		519258	Cylinder block assembly, without speed ring	1	
	C80	92-19		518807	Valve plate	1	
	E20	92-19		511052	Leveler (SB-1999-010)	1	
	E22	92-19		8300011	Spring seat (SB-1997-018)	2	
	S07	92-19		519274	Cylinder block kit, without speed ring, welded piston	1	
	GBV	B83	00-05		140644	Plug assembly	1
		B83A	00-05		085043 (9004201-3700)	O-ring	1
		C05	00-05		519258	Cylinder block assembly, without speed ring	1
C80		00-05		518807	Valve plate	1	
E20		00-05		511052	Leveler	1	
E22		00-05		8300011	Spring seat	2	
S07		00-05		519274	Cylinder block kit, without speed ring, welded piston	1	
GBW		B83	99-50		140644	Plug assembly	1
	B83A	99-50		085043 (9004201-3700)	O-ring	1	
	C05	99-50		519258	Cylinder block assembly, without speed ring	1	
	C80	99-50		518807	Valve plate	1	
	E20	99-50		511052	Leveler (SB-2007-008)	1	
	E22	99-50		8300011	Spring seat (SB-2007-008)	2	
	S07	99-50		519274	Cylinder block kit, without speed ring, welded piston	1	



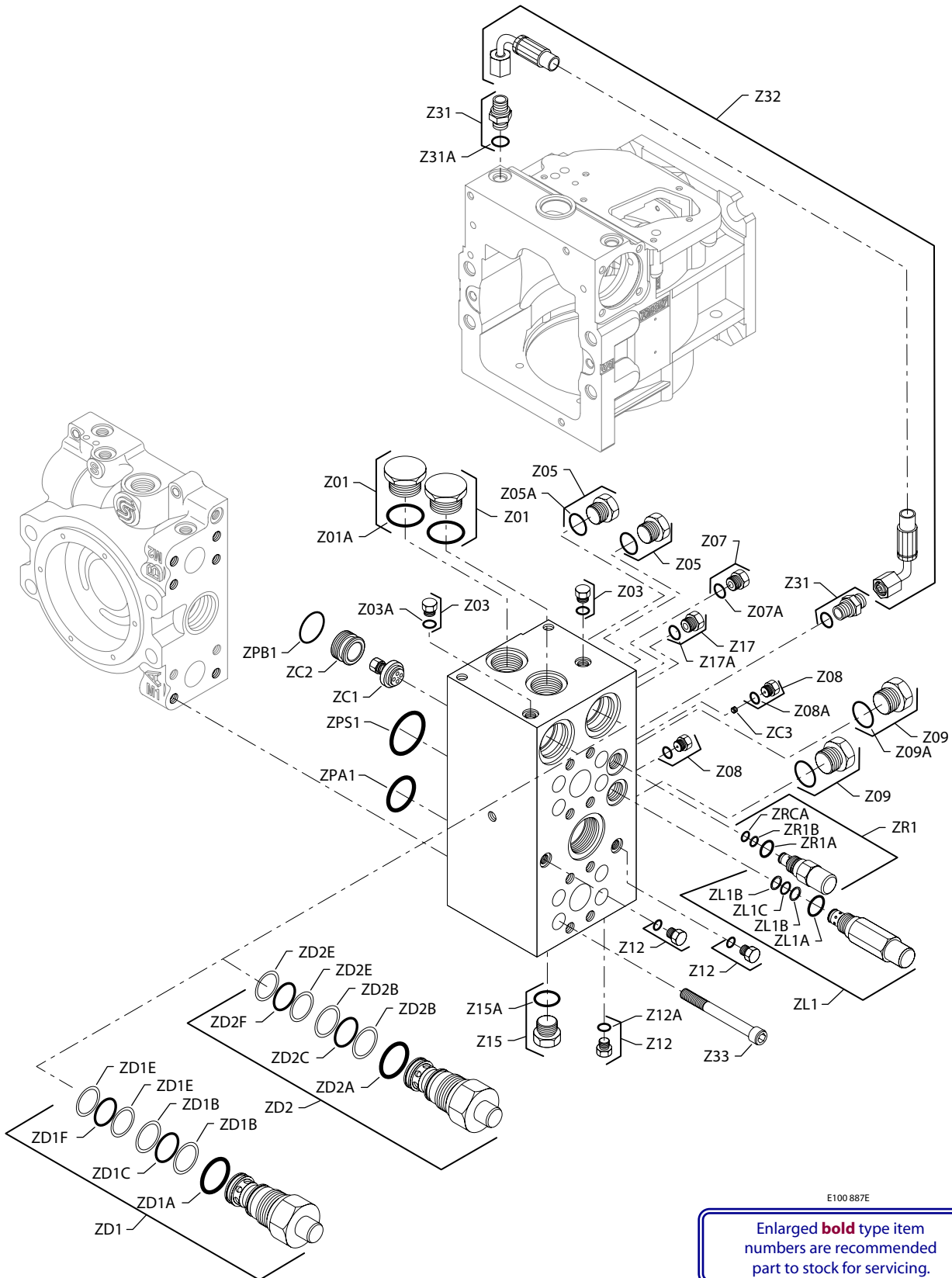
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SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GBY	B83	99-52		140644	Plug assembly	1
	B83A	99-52		085043 (9004201-3700)	O-ring	1
	C05	99-52		519258	Cylinder block assembly, without speed ring	1
	C80	99-52		518934	Valve plate	1
	E20	99-52		511052	Leveler (SB-1999-010)	1
	E22	99-52		8300011	Spring seat (SB-1997-018)	2
	S07	99-52		519274	Cylinder block kit, without speed ring, welded piston	1
	GBZ	B83	99-52		140644	Plug assembly
B83A		99-52		085043 (9004201-3700)	O-ring	1
C05		99-52		519258	Cylinder block assembly, without speed ring	1
C80		99-52		518807	Valve plate	1
E20		99-52		511052	Leveler (SB-1999-010)	1
E22		99-52		8300011	Spring seat (SB-1997-018)	2
S07		99-52		519274	Cylinder block kit, without speed ring, welded piston	1

see next page for brake valve

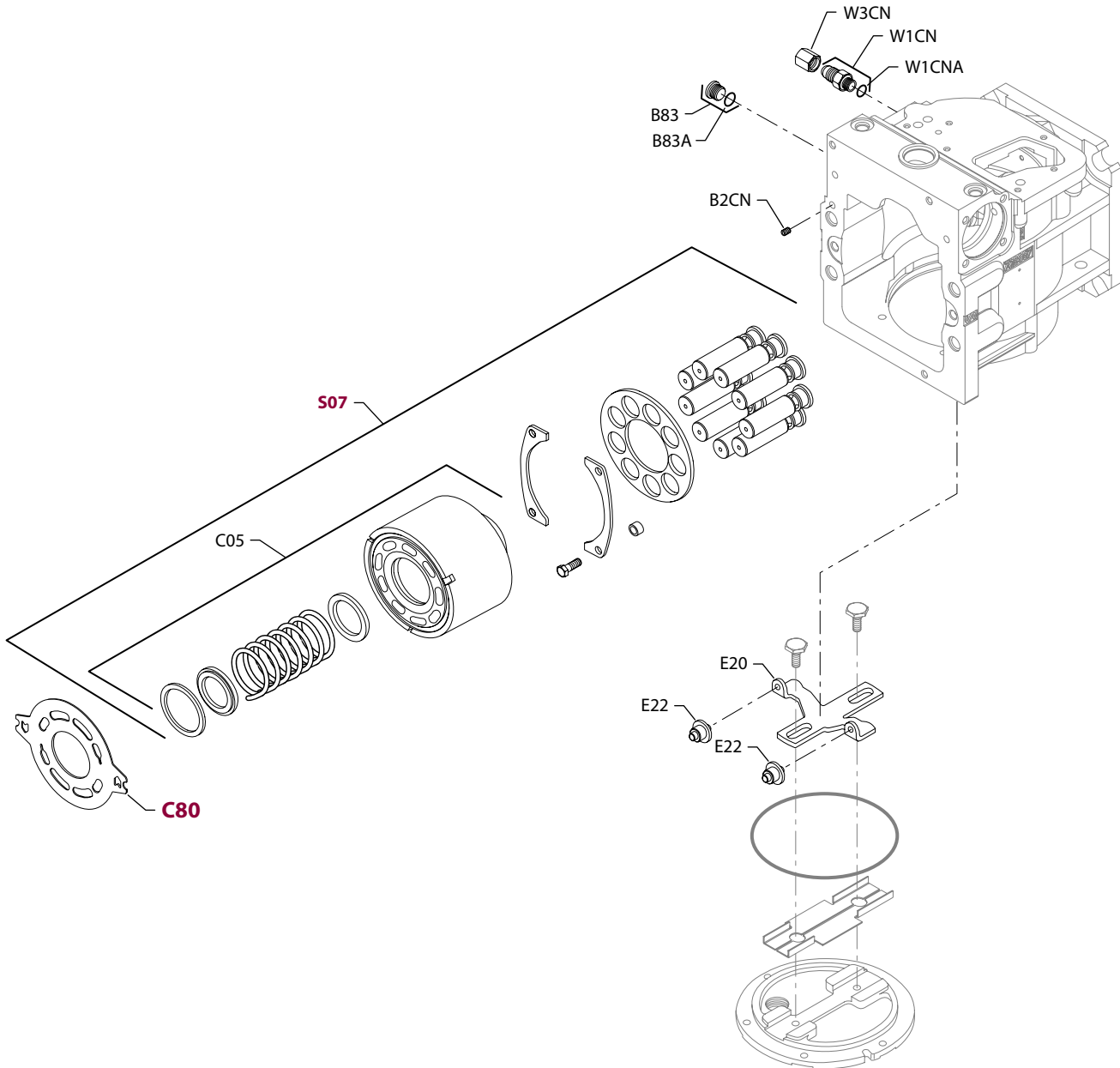


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GBZ	Z01	99-52		516748	Plug assembly	2
(continued)	Z01A	99-52		516741	O-ring	2
	Z03	99-52		516742	Plug assembly	2
	Z03A	99-52		516743	O-ring	2
	Z05	99-52		516744	Plug assembly	2
	Z05A	99-52		516730	O-ring	2
	Z07	99-52		516745	Plug assembly	1
	Z07A	99-52		516746	O-ring	1
	Z08	99-52		516742	Plug assembly	2
	Z08A	99-52		516743	O-ring	2
	Z09	99-52		516748	Plug assembly	2
	Z09A	99-52		516749	O-ring	2
	Z12	99-52		516750	Plug assembly	3
	Z12A	99-52		516751	O-ring	3
	Z15	99-52		516744	Plug assembly	1
	Z15A	99-52		516730	O-ring	1
	Z17	99-52		516745	Plug assembly	1
	Z17A	99-52		516746	O-ring	1
	Z31	99-52		516137	Connector	2
	Z31A	99-52		085043 (9004201-3700)	O-ring	2
	Z32	99-52		516134	Hydraulic hose	1
	Z33	99-52		019471	Screw	8
	ZC1	99-52		516720	Check valve	1
	ZC2	99-52		516721	Retainer	1
	ZC3	99-52		516747	Headless screw	1
	ZD1	99-52		516722	Pressure regulator	1
	ZD1A	99-52		516723	O-ring	1
	ZD1B	99-52		516725	Backup ring	2
	ZD1C	99-52		516726	O-ring	1
	ZD1E	99-52		516727	Backup ring	2
	ZD1F	99-52		516728	O-ring	1
	ZD2	99-52		516722	Pressure regulator	1
	ZD2A	99-52		516723	O-ring	1
	ZD2B	99-52		516725	Backup ring	2
	ZD2C	99-52		516726	O-ring	1
	ZD2E	99-52		516727	Backup ring	2
	ZD2F	99-52		516728	O-ring	1
	ZL1	99-52		516729	Relief valve	1
	ZL1A	99-52		516730	O-ring	1
	ZL1B	99-52		516731	Backup ring	2
	ZL1C	99-52		516793	O-ring	1
	ZPA1	99-52		516737	O-ring	1
	ZPB1	99-52		516737	O-ring	1
	ZPS1	99-52		516738	O-ring	1
	ZR1	99-52		516733	Relief valve	1
	ZR1A	99-52		516734	O-ring	1
	ZR1B	99-52		516735	Backup ring	1
	ZR1C	99-52		516736	O-ring	1
		99-52		516702	Brake valve seal kit	1

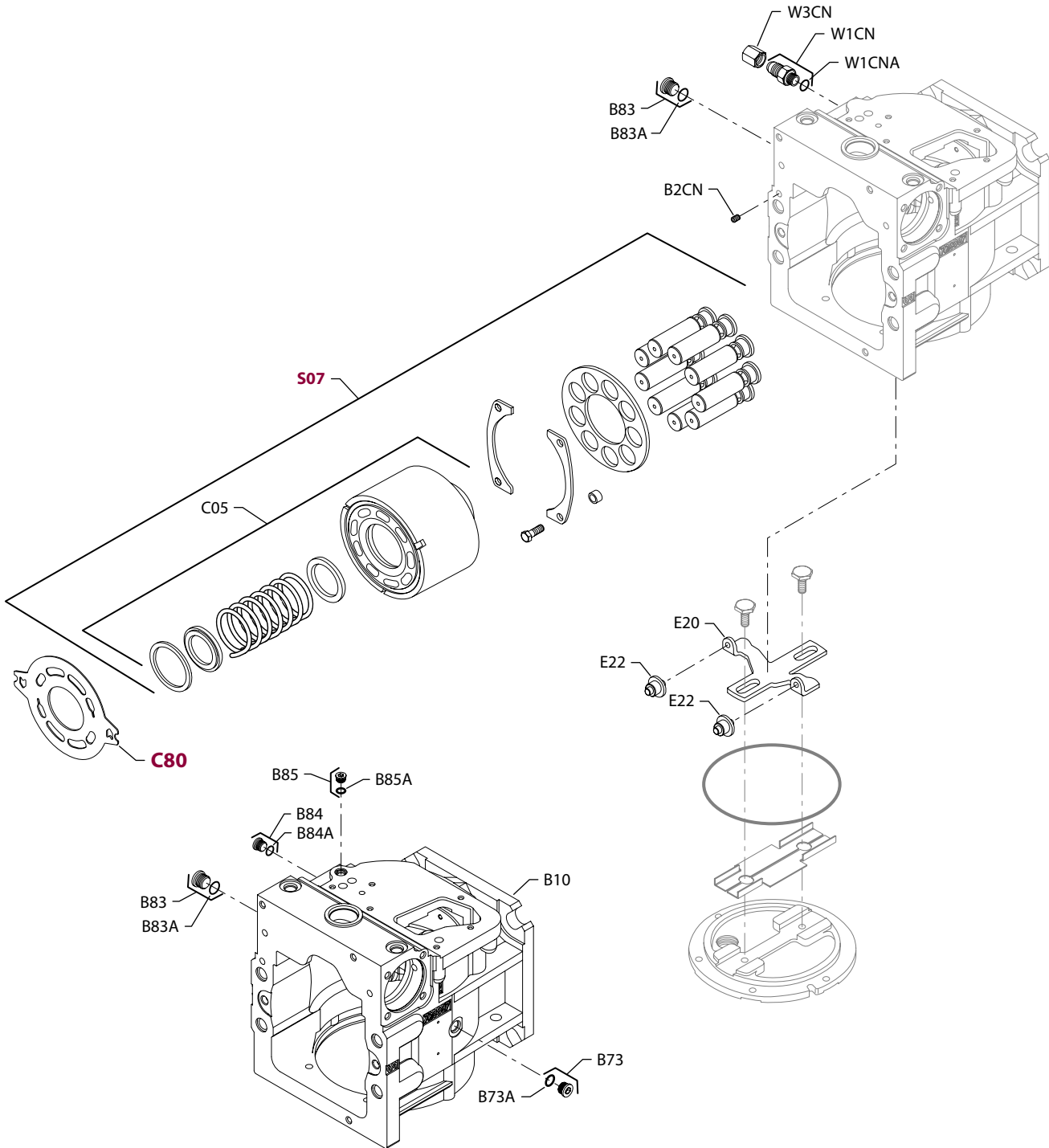


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SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
GCA	B83	92-19		140644	Plug assembly	1	
	B83A	92-19		085043 (9004201-3700)	O-ring	1	
	C05	92-19		519258	Cylinder block assembly, without speed ring	1	
	C80	92-19		518808	Valve plate	1	
	E20	92-19		511052	Leveler (SB-1999-010)	1	
	E22	92-19		8300011	Spring seat (SB-1997-018)	2	
	S07	92-19		519274	Cylinder block kit, without speed ring, welded piston	1	
	GCB	B83	92-19		140644	Plug assembly	1
B83A		92-19		085043 (9004201-3700)	O-ring	1	
C05		92-19		519258	Cylinder block assembly, without speed ring	1	
C80		92-19		518808	Valve plate	1	
E20		92-19		511052	Leveler (SB-1999-010)	1	
E22		92-19		8300011	Spring seat (SB-1997-018)	2	
S07		92-19		519274	Cylinder block kit, without speed ring, welded piston	1	
GCG		B2CN	92-19		775312	Set screw, M8 x 8	1
	B83	92-19		140644	Plug assembly	1	
	B83A	92-19		085043 (9004201-3700)	O-ring	1	
	C05	92-19		519258	Cylinder block assembly, without speed ring	1	
	C80	92-19		518808	Valve plate	1	
	E20	92-19		511052	Leveler (SB-1999-010)	1	
	E22	92-19		8300011	Spring seat (SB-1997-018)	2	
	S07	92-19		519274	Cylinder block kit, without speed ring, welded piston	1	
	W1CN	92-19		723726	Connector	1	
	W1CNA	92-19		085043 (9004201-3700)	O-ring	1	
	W3CN	92-19		574095	Cap	1	
	GCP	B83	92-19		140644	Plug assembly	1
		B83A	92-19		085043 (9004201-3700)	O-ring	1
C05		92-19		519258	Cylinder block assembly, without speed ring	1	
C80		92-19		518808	Valve plate	1	
E20		92-19		511052	Leveler (SB-1999-010)	1	
E22		92-19		8300011	Spring seat (SB-1997-018)	2	
S07		92-19		519274	Cylinder block kit, without speed ring, welded piston	1	
GCS		B83	98-06		140644	Plug assembly	1
	B83A	98-06		085043 (9004201-3700)	O-ring	1	
	C05	98-06		519258	Cylinder block assembly, without speed ring	1	
	C80	98-06		518808	Valve plate	1	
	E20	98-06		511052	Leveler (SB-1999-010)	1	
	E22	98-06		8300011	Spring seat (SB-1997-018)	2	
	S07	98-06		519274	Cylinder block kit, without speed ring, welded piston	1	

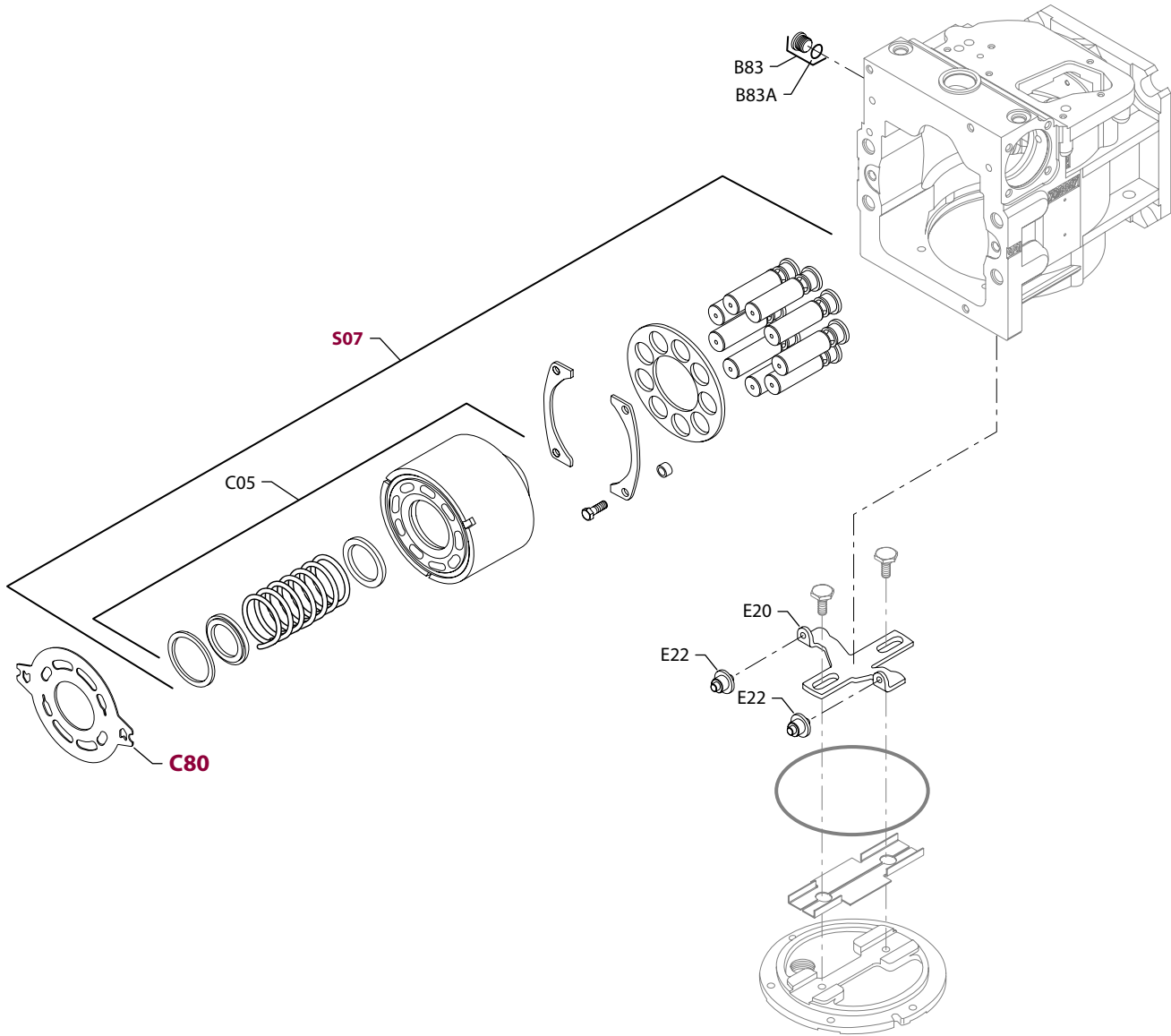


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Enlarged **bold** type item numbers are recommended part to stock for servicing.

SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GDA	B83	92-19		140644	Plug assembly	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519258	Cylinder block assembly, without speed ring	1
	C80	92-19		518932	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat (SB-1997-018)	2
	S07	92-19		519274	Cylinder block kit, without speed ring, welded piston	1
GDB	B2CN	92-19		775312	Set screw, M8 x 8	1
	B83	92-19		140644	Plug assembly	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519258	Cylinder block assembly, without speed ring	1
	C80	92-19		518808	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat (SB-1997-018)	2
	S07	92-19		519274	Cylinder block kit, without speed ring, welded piston	1
	W1CN	92-19		723726	Connector	1
	W1CNA	92-19		085043 (9004201-3700)	O-ring	1
	W3CN	92-19		574095	Cap	1
	GLA	B83	98-25		140644	Plug assembly
B83A		98-25		085043 (9004201-3700)	O-ring	1
C05		98-25		519258	Cylinder block assembly, without speed ring	1
C80		00-13		518937	Valve plate, CW, lapped	1
C80		00-13		518938	Valve plate, CCW, lapped	1
E20		98-25		511052	Leveler (SB-1999-010)	1
E22		98-25		8300011	Spring seat (SB-1997-018)	2
S07		98-25		519274	Cylinder block kit, without speed ring, welded piston	1
GLP		B10	98-02		515350	Housing
	B73	98-02		140644	Plug assembly	1
	B73A	98-02		085043 (9004201-3700)	O-ring	1
	B83	98-02		140644	Plug assembly	1
	B83A	98-02		085043 (9004201-3700)	O-ring	1
	B84	98-02		509603	Plug assembly, M10 x 1	1
	B84A	98-02		526533	O-ring	1
	B85	98-02		509603	Plug assembly, M10 x 1	1
	B85A	98-02		526533	O-ring	1
	C05	98-02		519258	Cylinder block assembly, without speed ring	1
	C80	00-13		518937	Valve plate, CW, lapped	1
	C80	00-13		518938	Valve plate, CCW, lapped	1
	E20	98-02		511052	Leveler (SB-1999-010)	1
	E22	98-02		8300011	Spring seat (SB-1997-018)	2
	S07	98-02		519274	Cylinder block kit, without speed ring, welded piston	1

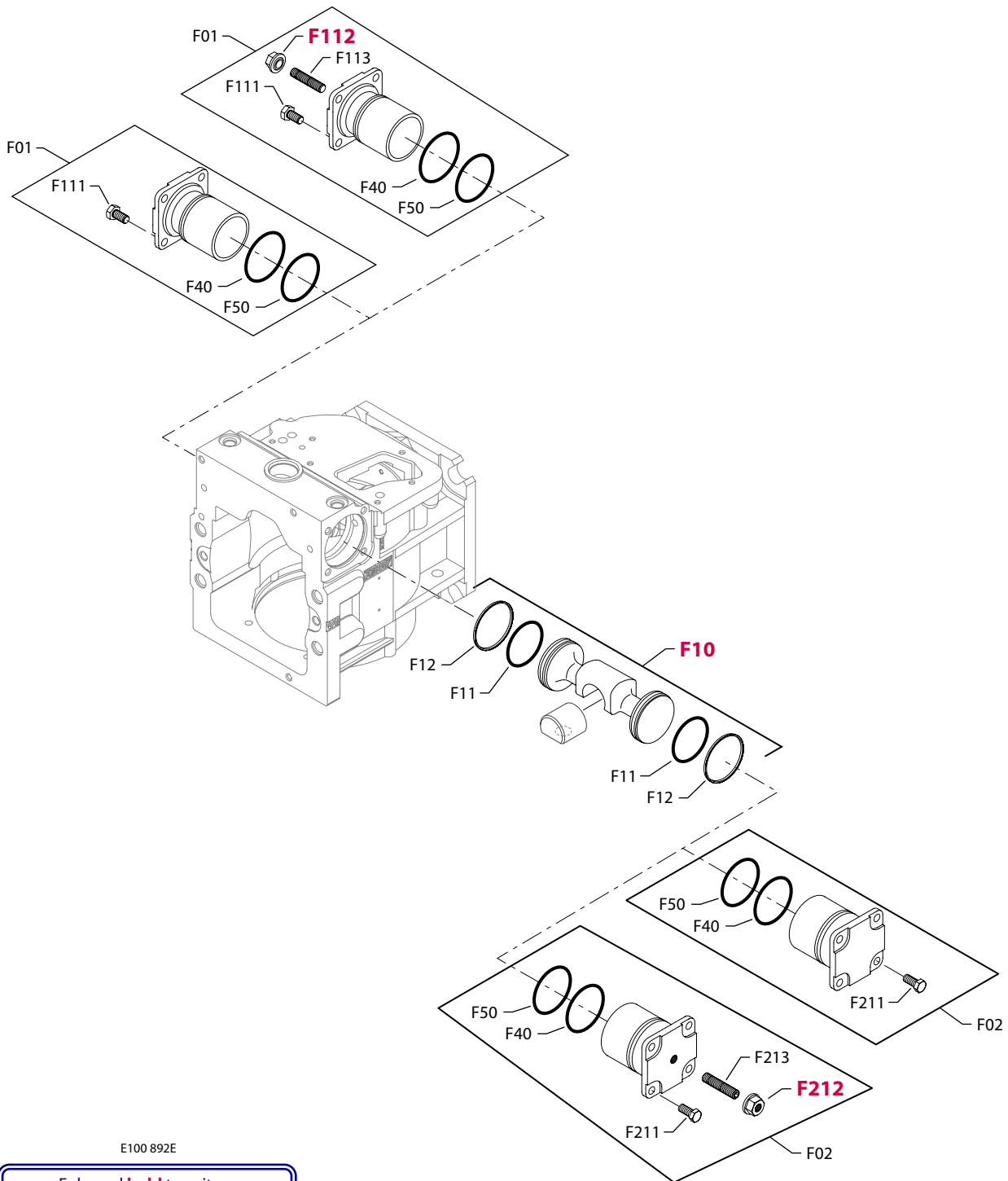


E100887E

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

SPECIAL HARDWARE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GLS	B83	98-18		140644	Plug assembly	1
	B83A	98-18		085043 (9004201-3700)	O-ring	1
	C05	98-18		519258	Cylinder block assembly, without speed ring	1
	C80	00-13		518937	Valve plate, CW, lapped	1
	C80	00-13		518938	Valve plate, CCW, lapped	1
	E20	98-18		511052	Leveler (SB-1999-010)	1
	E22	98-18		8300011	Spring seat (SB-1997-018)	2
	S07	98-18		519274	Cylinder block kit, without speed ring, welded piston	1
HBA	B2CN	94-14		775312	Set screw, M8 x 8	1
	B83	94-14		140644	Plug assembly	1
	B83A	94-14		085043 (9004201-3700)	O-ring	1
	C05	94-14		519258	Cylinder block assembly, without speed ring	1
	C80	94-14		518933	Valve plate	1
	E20	94-14		511052	Leveler (SB-1999-010)	1
	E22	94-14		8300011	Spring seat (SB-1997-018)	2
	S07	94-14		519274	Cylinder block kit, without speed ring, welded piston	1
	W1CN	94-14		723726	Connector	1
	W3CN	94-14		574095	Cap	1
HCA	B83	92-19		140644	Plug assembly	1
	B83A	92-19		085043 (9004201-3700)	O-ring	1
	C05	92-19		519258	Cylinder block assembly, without speed ring	1
	C80	92-19		518933	Valve plate	1
	E20	92-19		511052	Leveler (SB-1999-010)	1
	E22	92-19		8300011	Spring seat (SB-1997-018)	2
	S07	92-19		519274	Cylinder block kit, without speed ring, welded piston	1
	HDA	B83	00-22		140644	Plug assembly
B83A		00-22		085043 (9004201-3700)	O-ring	1
C05		00-22		519258	Cylinder block assembly, without speed ring	1
C80		00-22		518807	Valve plate	1
E20		00-22		511052	Leveler (SB-1999-010)	1
E22		00-22		8300011	Spring seat (SB-1997-018)	2
S07		00-22		519274	Cylinder block kit, without speed ring, welded piston	1

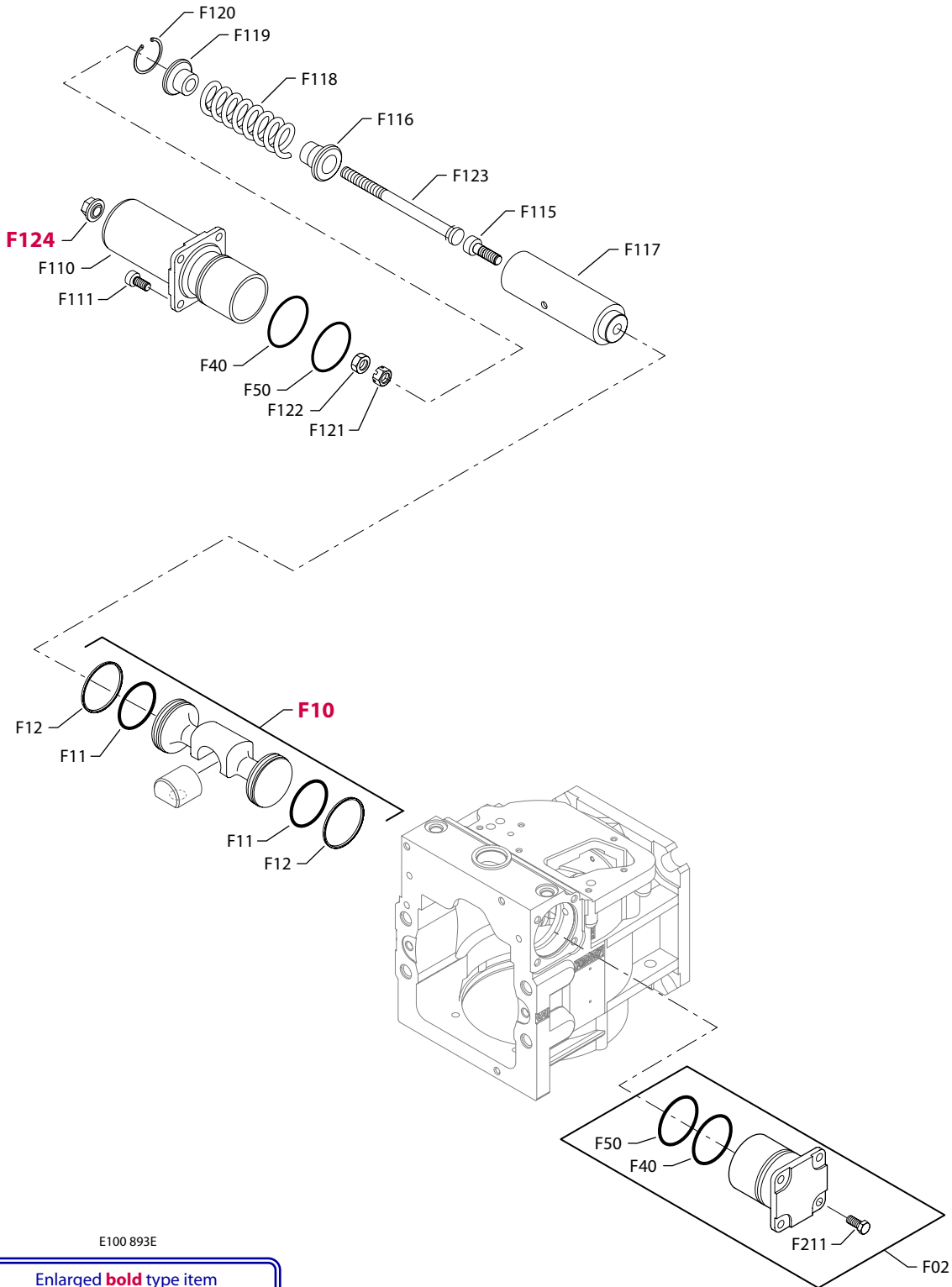


E100 892E

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

DISPLACEMENT LIMITATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
1	F01	03-21		8302F004-A	Displacement limiter kit, adjustable	1	
	F02	03-21		8202F003-A	Displacement limiter kit, non-adjustable	1	
	F10	03-21		516685	Servo piston assembly (SB-2000-022)	1	
	F11	03-21		628396	O-ring	2	
	F12	03-21		507800	Piston ring	2	
	F40	03-21		354316	O-ring	2	
	F50	03-21		552224 (9004104-0360)	O-ring	2	
	F111	03-21		378083 (9007210-0804)	Screw	4	
	F112	03-21		042432	Seal nut, M10	1	
	F113	03-21		572180	Set screw, M10 x50 (SB-2000-022)	1	
	F211	03-21		378083 (9007210-0804)	Screw	4	
	3	F01	89-41		8302F003-A	Displacement limiter kit, non-adjustable	1
F02		89-41		8302F003-A	Displacement limiter kit, non-adjustable	1	
F10		89-41		516685	Servo piston assembly (SB-2000-022)	1	
F11		89-41		628396	O-ring	2	
F12		89-41		507800	Piston ring	2	
F40		89-41		354316	O-ring	2	
F50		98-14		552224 (9004104-0360)	O-ring	2	
F111		89-41		378083 (9007210-0804)	Screw	4	
F211		89-41		378083 (9007210-0804)	Screw	4	
4		F01	89-41		8302F004-A	Displacement limiter kit, adjustable	1
		F02	89-41		8302F004-A	Displacement limiter kit, adjustable	1
		F10	89-41		516685	Servo piston assembly (SB-2000-022)	1
	F11	89-41		628396	O-ring	2	
	F12	89-41		507800	Piston ring	2	
	F40	89-41		354316	O-ring	2	
	F50	98-14		552224 (9004104-0360)	O-ring	2	
	F111	89-41		378083 (9007210-0804)	Screw	4	
	F112	00-02		042432	Seal nut, M10	1	
	F113	00-02		572180	Set screw M10 x50 (SB-2000-022)	1	
	F211	89-41		378083 (9007210-0804)	Screw	4	
	F212	00-02		042432	Seal nut, M10	1	
	F213	00-02		572180	Set screw M10 x50 (SB-2000-022)	1	

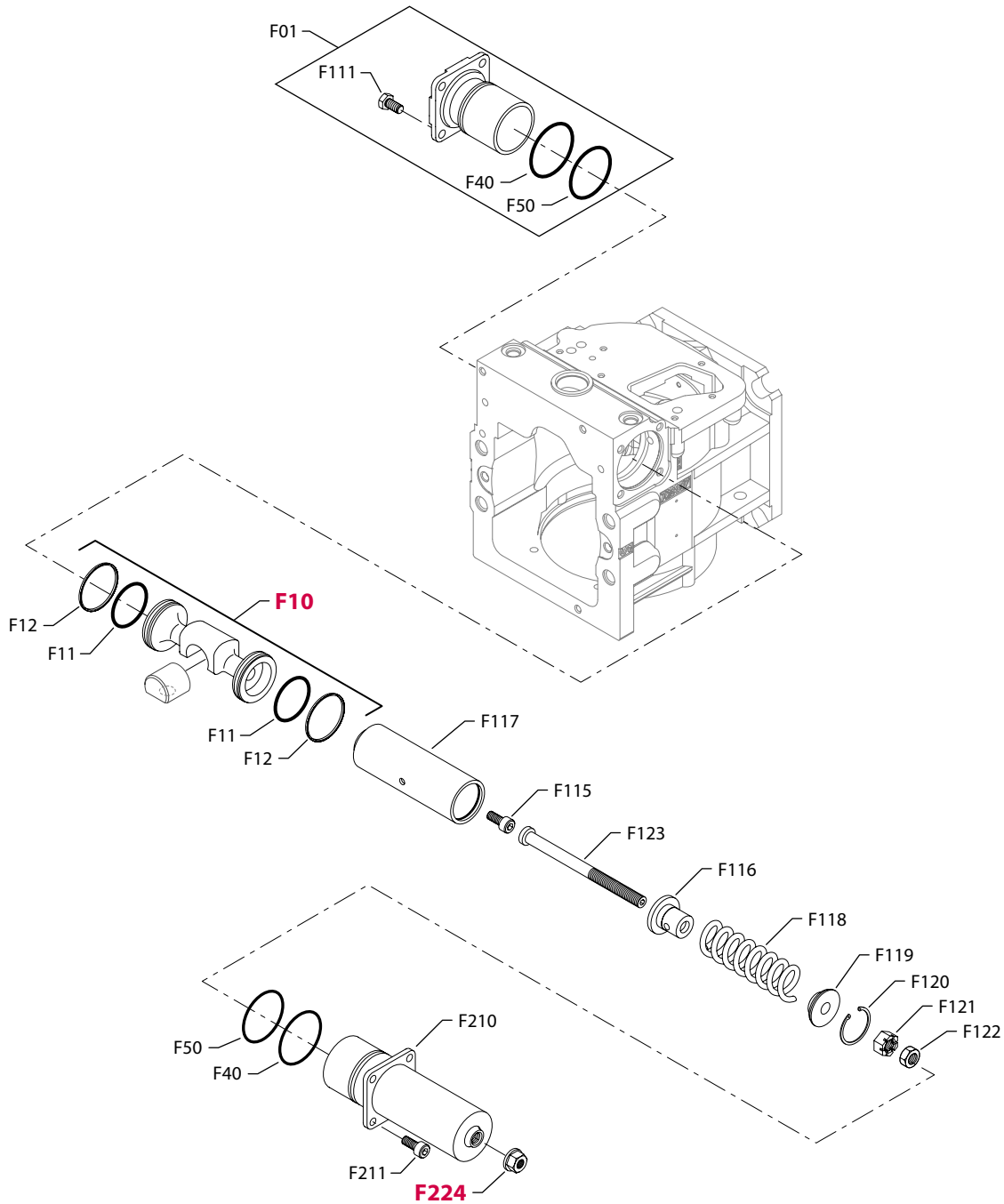


E100 893E

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		8302F003-A	Servo cylinder	1
	F10	98-14		510498	Servo piston assembly	1
	F11	98-14		628396	O-ring	2
	F12	98-14		507800	Piston ring	2
	F40	98-14		354316	O-ring	2
	F50	98-14		552224 (9004104-0360)	O-ring	2
	F110	98-14		503014	Servo cylinder	1
	F111	98-14		746651	Screw	4
	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, M12	1
	F211	89-41		378083 (9007210-0804)	Screw	4

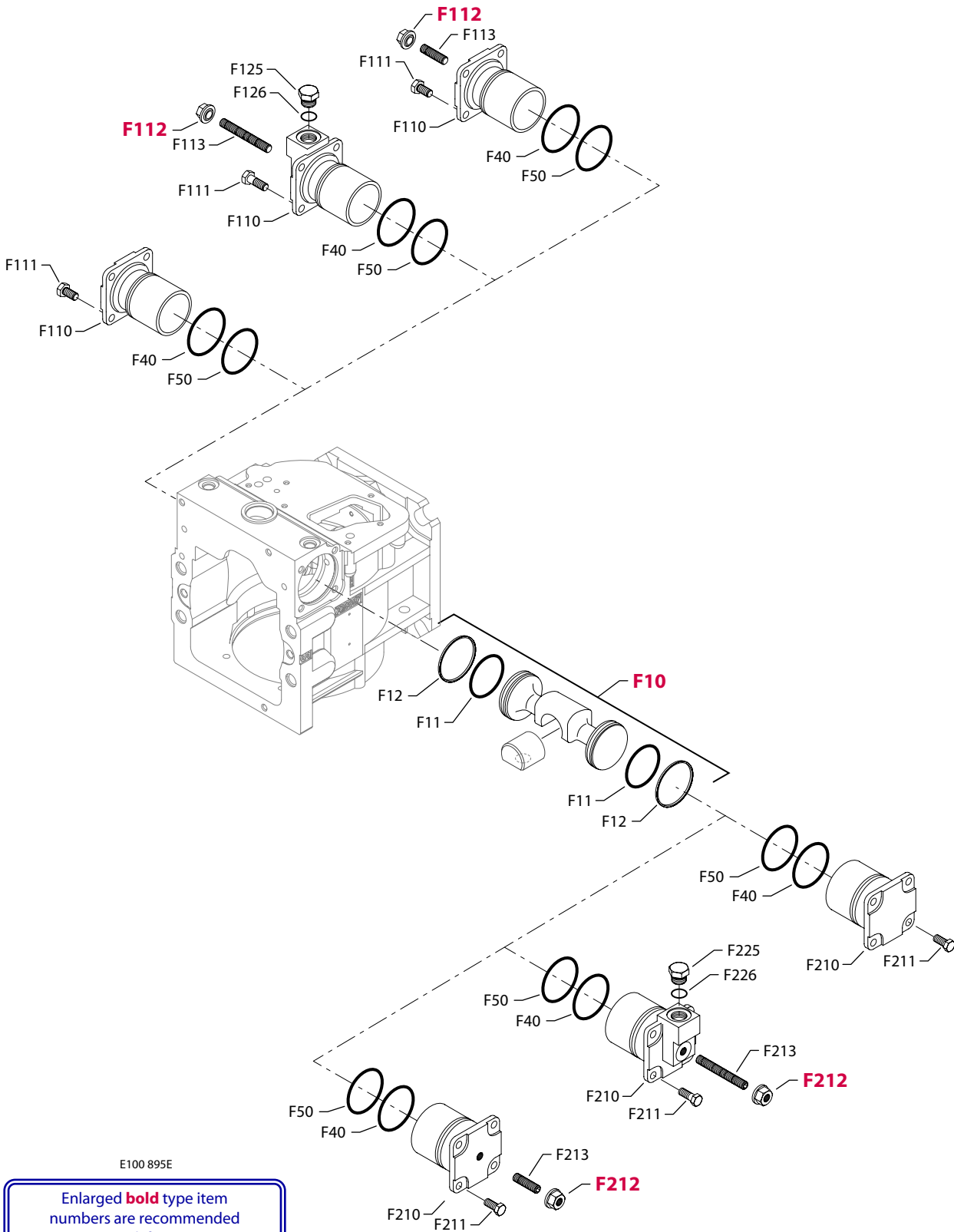


E100 894E

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

DISPLACEMENT LIMITATION

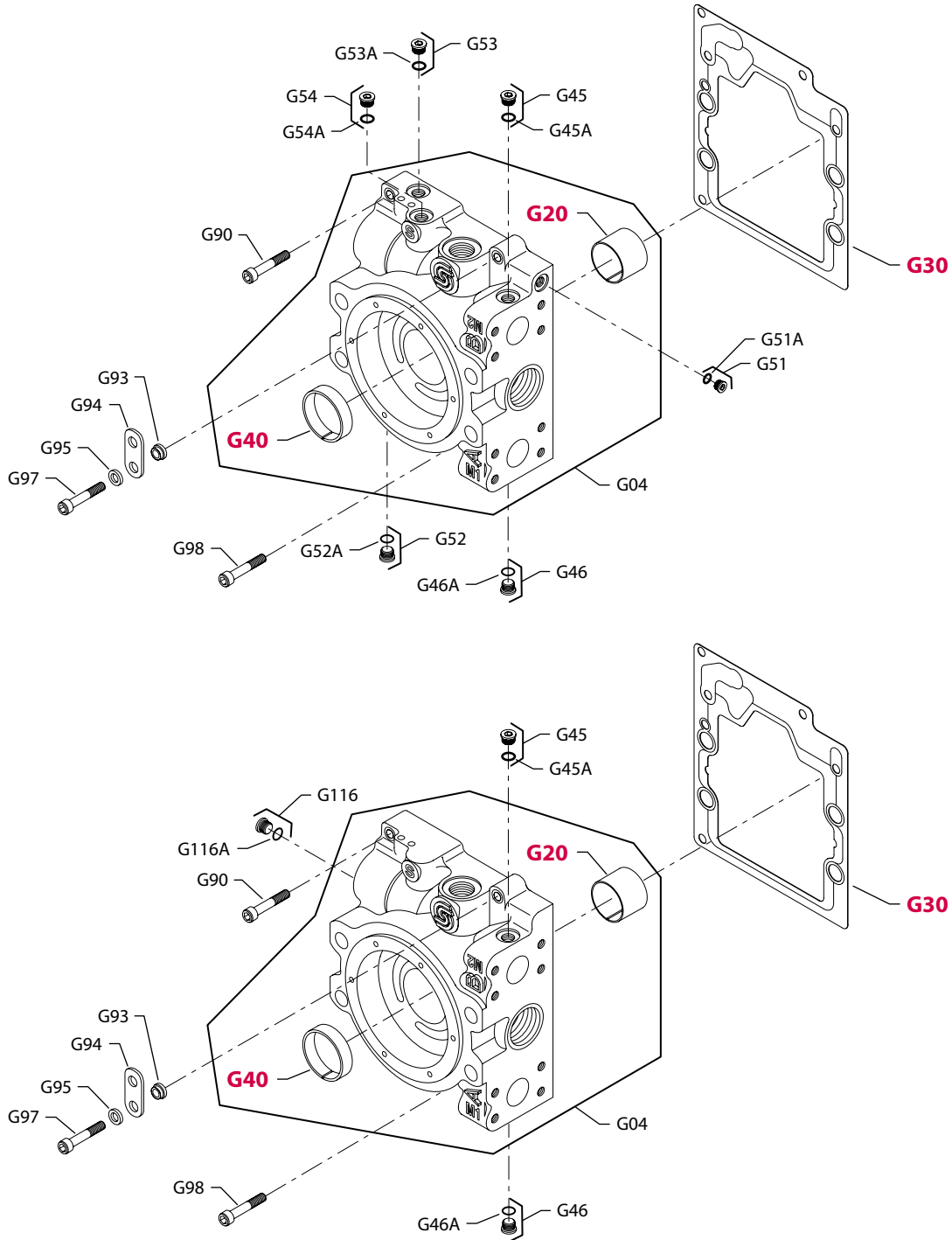
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B	F01	98-14		8202F003-A	Servo cylinder	1
	F10	98-14		510498	Servo piston assembly	1
	F11	98-14		628396	O-ring	2
	F12	98-14		507800	Piston ring	2
	F40	98-14		354316	O-ring	2
	F50	98-14		552224 (9004104-0360)	O-ring	2
	F111	98-14		378083 (9007210-0804)	Screw	4
	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		503014	Servo cylinder	1
	F211	98-14		746651	Screw	4
	F224	98-14		066159	Seal nut, M12	1



E100 895E

DISPLACEMENT LIMITATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
E	F10	91-30		509287	Servo piston assembly	1
	F11	91-30		754150	O-ring	2
	F12	91-30		754168	Piston ring	2
	F40	91-30		354316	O-ring	2
	F50	91-30		552224 (9004104-0360)	O-ring	2
	F110	91-30		751982	Servo cylinder, adjustable with gauge port	1
	F111	91-30		676189	Screw	4
	F112	91-30		076042 (9003509-0012)	Seal nut, M12	1
	F113	91-30		350090	Set screw, M12 x 70	1
	F125	91-30		394312	Plug	1
	F126	91-30		084640	Sealing ring	1
	F210	91-30		751982	Servo cylinder, adjustable with gauge port	1
	F211	91-30		676189	Screw	4
	F212	91-30		076042 (9003509-0012)	Seal nut, M12	1
	F213	91-30		350090	Set screw, M12 x 70	1
	F225	91-30		394312	Plug assembly	1
	F226	91-30		084640	Sealing ring	1
R	F10	91-30		516685	Servo piston assembly (SB-2000-022)	1
	F11	91-30		628396	O-ring	2
	F12	91-30		507800	Piston ring	2
	F40	91-30		354316	O-ring	2
	F50	91-30		552224 (9004104-0360)	O-ring	2
	F110	91-30		516238	Servo cylinder, 110cc displacement	1
	F111	91-30		378083 (9007210-0804)	Screw	4
	F210	91-30		516238	Servo cylinder, 110cc displacement	1
	F211	91-30		378083 (9007210-0804)	Screw	4
S	F10	05-37		516685	Servo piston assembly	1
	F11	05-37		628396	O-ring	2
	F12	05-37		507800	Piston ring	2
	F40	05-37		354316	O-ring	2
	F50	05-37		552224 (9004104-0360)	O-ring	2
	F110	05-37		501661	Servo cylinder, adjustable	1
	F111	05-37		378083 (9007210-0804)	Screw	4
	F112	05-37		042432	Seal nut, M10	1
	F113	05-37		11002555	Set screw, M10 x 30	1
	F210	05-37		501661	Servo cylinder, adjustable	1
	F211	05-37		378083 (9007210-0804)	Screw	4
	F212	05-37		042432	Seal nut, M10	1
	F213	05-37		11002555	Set screw, M10 x 30	1

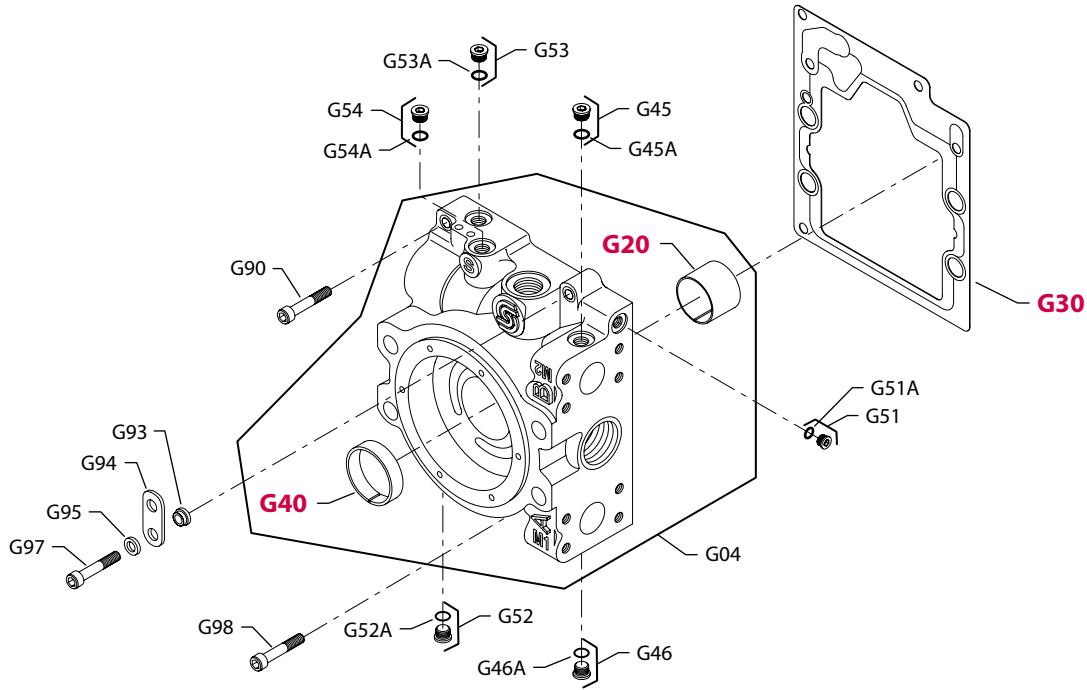


E100 896 E

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

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
80	G04	01-48		516600	End cap assembly, twin ports	1
	G20	89-41		303693	Journal bearing	1
	G30	89-41		730895	End cap gasket (SB-1992-003)	1
	G40	89-41		303651	Bushing	1
	G45	89-41		140644	Plug assembly	1
	G45A	89-41		085043 (9004201-3700)	O-ring	1
	G46	89-41		140644	Plug assembly	1
	G46A	89-41		085043 (9004201-3700)	O-ring	1
	G51	89-41		327007 (9005110-4400)	Plug assembly	1
	G51A	89-41		001123 (9004201-2500)	O-ring	1
	G52	89-41		140644	Plug assembly	1
	G52A	89-41		085043 (9004201-3700)	O-ring	1
	G53	89-41		140644	Plug assembly	1
	G53A	89-41		085043 (9004201-3700)	O-ring	1
	G54	89-41		140644	Plug assembly	1
	G54A	89-41		085043 (9004201-3700)	O-ring	1
	G90	01-48		713768 (9007314-0812)	Screw, M8 x 55	1
	G90	89-41	01-47	746644 (9007314-0810)	Screw, M8 x 45	1
	G93	89-41		713800 (8800564)	Spacer	1
	G94	89-41		8800565	Lifting bracket	1
	G95	89-41		502195	Washer	1
	G97	01-48		713768 (9007314-0812)	Screw, M8 x 55	1
	G97	89-41	01-47	748954 (9007314-0811)	Screw, M8 x 50	1
	G98	01-48		713768 (9007314-0812)	Screw, M8 x 55	1
	G98	89-41	01-47	746644 (9007314-0810)	Screw, M8 x 45	1
84	G04	02-03		516603	End cap assembly, twin ports	1
	G20	94-48		303693	Journal bearing	1
	G30	94-48		730895	End cap gasket	1
	G40	94-48		303651	Bushing	1
	G45	94-48		140644	Plug assembly	1
	G45A	94-48		085043 (9004201-3700)	O-ring	1
	G46	94-48		140644	Plug assembly	1
	G46A	94-48		085043 (9004201-3700)	O-ring	1
	G90	02-03		713768 (9007314-0812)	Screw, M8 x 55	1
	G90	89-41	02-03	746644 (9007314-0810)	Screw, M8 x 45	1
	G93	94-48		713800 (8800564)	Spacer	1
	G94	94-48		8800565	Lifting bracket	1
	G95	94-48		502195	Washer	1
	G97	02-03		713768 (9007314-0812)	Screw, M8 x 55	1
	G97	89-41	02-03	748954 (9007314-0811)	Screw, M8 x 50	1
	G98	02-03		713768 (9007314-0812)	Screw, M8 x 55	1
	G98	89-41	02-03	746644 (9007314-0810)	Screw, M8 x 45	1
	G116	94-48		140644	Plug assembly	1
	G116A	94-48		085043 (9004201-3700)	O-ring	1

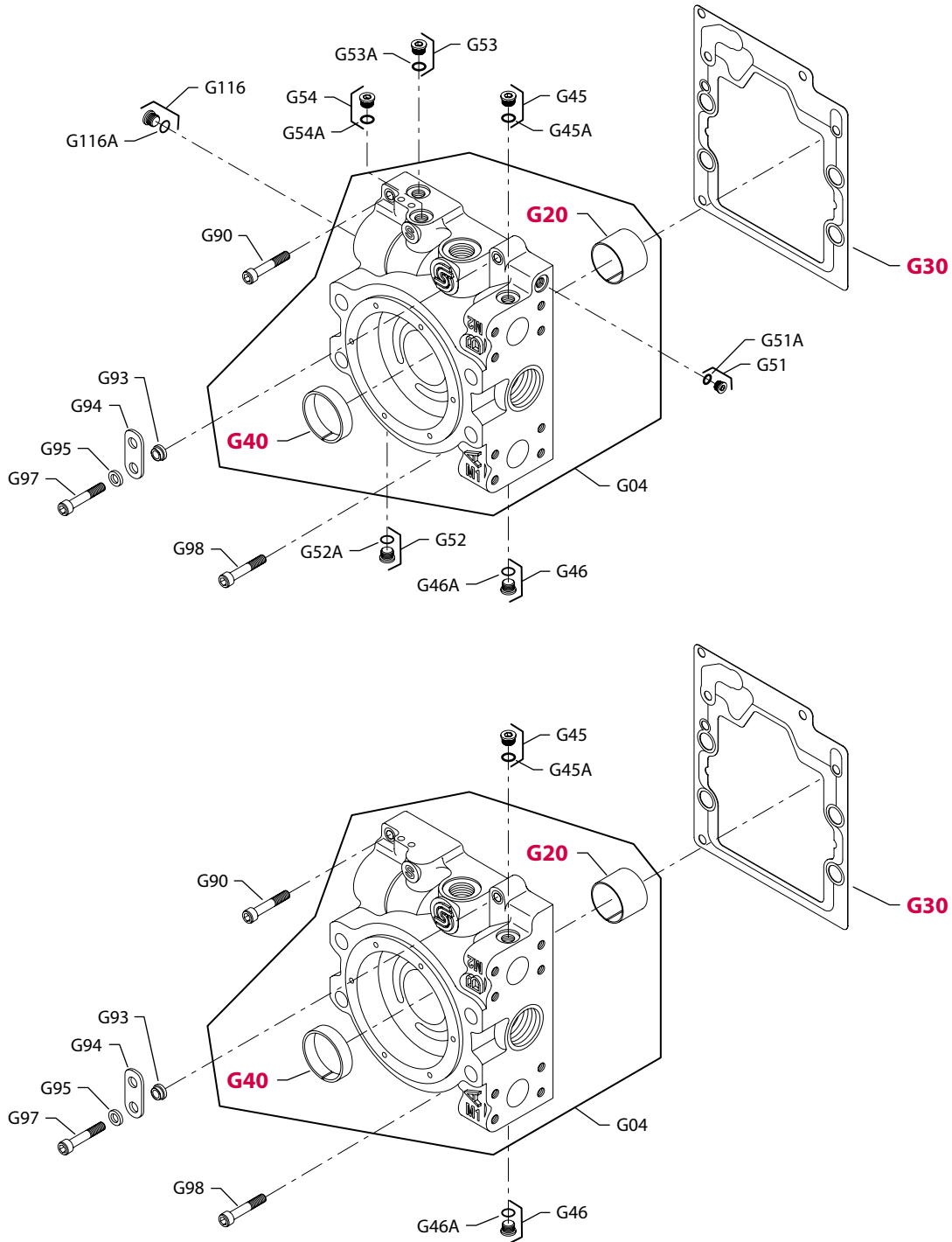


E100 897 E

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

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
85	G04	01-38		517973	End cap assembly, twin ports	1
	G20	01-38		303693	Journal bearing	1
	G30	01-38		730895	End cap gasket	1
	G40	01-38		303651	Bushing	1
	G45	01-38		140644	Plug assembly	1
	G45A	01-38		085043 (9004201-3700)	O-ring	1
	G46	01-38		140644	Plug assembly	1
	G46A	01-38		085043 (9004201-3700)	O-ring	1
	G51	01-38		327007 (9005110-4400)	Plug assembly	1
	G51A	01-38		001123 (9004201-2500)	O-ring	1
	G52	01-38		140644	Plug assembly	1
	G52A	01-38		085043 (9004201-3700)	O-ring	1
	G53	01-38		140644	Plug assembly	1
	G53A	01-38		085043 (9004201-3700)	O-ring	1
	G54	01-38		140644	Plug assembly	1
	G54A	01-38		085043 (9004201-3700)	O-ring	1
	G90	01-38		713768 (9007314-0812)	Screw, M8 x 55	1
	G93	01-38		713800 (8800564)	Spacer	1
	G94	01-38		8800565	Lifting bracket	1
	G95	01-38		502195	Washer	1
	G97	01-38		713768 (9007314-0812)	Screw, M8 x 55	1
	G98	01-38		713768 (9007314-0812)	Screw, M8 x 55	1
86	G04	02-03		517973	End cap assembly, twin ports	1
	G20	93-35		303693	Journal bearing	1
	G30	93-35		730895	End cap gasket	1
	G40	93-35		303651	Bushing	1
	G45	93-35		140644	Plug assembly	1
	G45A	93-35		085043 (9004201-3700)	O-ring	1
	G46	93-35		140644	Plug assembly	1
	G46A	93-35		085043 (9004201-3700)	O-ring	1
	G51	93-35		327007 (9005110-4400)	Plug assembly	1
	G51A	93-35		001123 (9004201-2500)	O-ring	1
	G52	93-35		140644	Plug assembly	1
	G52A	93-35		085043 (9004201-3700)	O-ring	1
	G53	93-35		140644	Plug assembly	1
	G53A	93-35		085043 (9004201-3700)	O-ring	1
	G54	93-35		140644	Plug assembly	1
	G54A	93-35		085043 (9004201-3700)	O-ring	1
	G90	02-03		713768 (9007314-0812)	Screw, M8 x 55	1
	G90	93-35	02-02	746644 (9007314-0810)	Screw, M8 x 45	1
	G93	93-35		713800 (8800564)	Spacer	1
	G94	93-35		8800565	Lifting bracket	1
	G95	93-35		502195	Washer	1
	G97	02-03		713768 (9007314-0812)	Screw, M8 x 55	1
	G97	93-35	02-02	748954 (9007314-0811)	Screw, M8 x 50	1
	G98	02-03		713768 (9007314-0812)	Screw, M8 x 55	1
	G98	93-35	02-02	746644 (9007314-0810)	Screw, M8 x 45	1

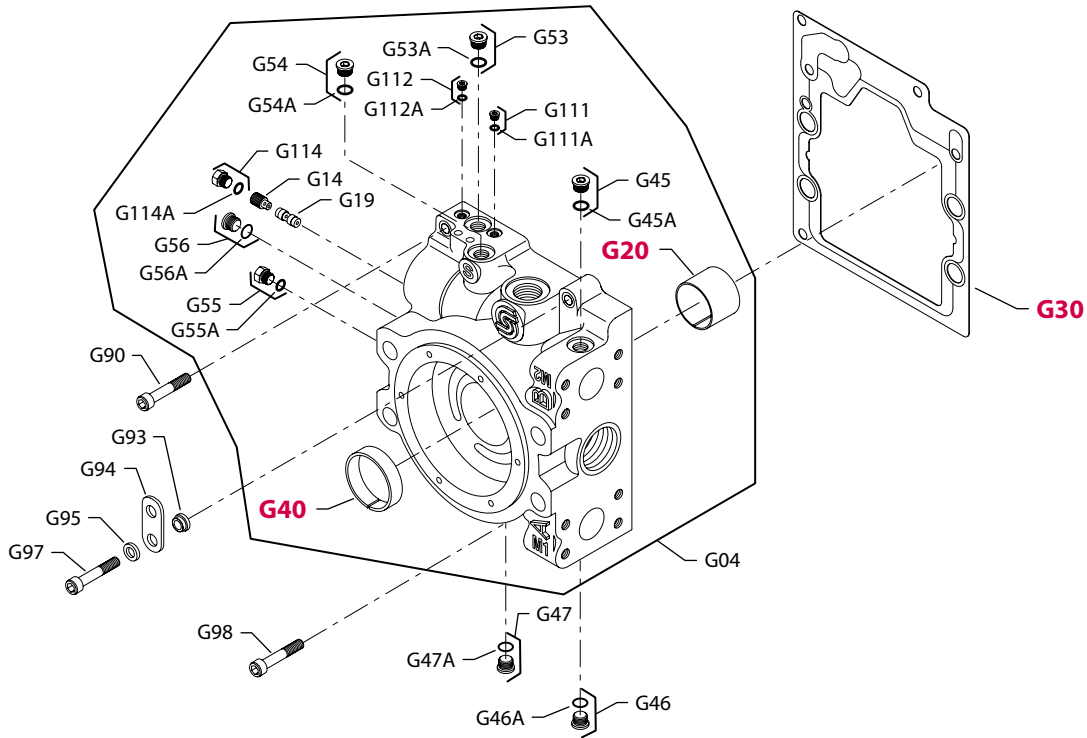


E100 898 E

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

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
87	G04	01-47		516604	End cap assembly, twin ports	1
	G20	92-51		303693	Journal bearing	1
	G30	92-51		730895	End cap gasket	1
	G40	92-51		303651	Bushing	1
	G45	92-51		140644	Plug assembly	1
	G45A	92-51		085043 (9004201-3700)	O-ring	1
	G46	92-51		140644	Plug assembly	1
	G46A	92-51		085043 (9004201-3700)	O-ring	1
	G51	92-51		327007 (9005110-4400)	Plug assembly	1
	G51A	92-51		001123 (9004201-2500)	O-ring	1
	G52	92-51		140644	Plug assembly	1
	G52A	92-51		085043 (9004201-3700)	O-ring	1
	G53	92-51		140644	Plug assembly	1
	G53A	92-51		085043 (9004201-3700)	O-ring	1
	G54	92-51		140644	Plug assembly	1
	G54A	92-51		085043 (9004201-3700)	O-ring	1
	G90	01-47		713768 (9007314-0812)	Screw, M8 x 55	1
	G90	92-51	01-46	746644 (9007314-0810)	Screw, M8 x 45	1
	G93	92-51		713800 (8800564)	Spacer	1
	G94	92-51		8800565	Lifting bracket	1
	G95	92-51		502195	Washer	1
	G97	01-47		713768 (9007314-0812)	Screw, M8 x 55	1
	G97	92-51	01-46	748954 (9007314-0811)	Screw, M8 x 50	1
	G98	01-47		713768 (9007314-0812)	Screw, M8 x 55	1
	G98	92-51	01-46	746644 (9007314-0810)	Screw, M8 x 45	1
	G116	92-51		140644	Plug assembly	1
	G116A	92-51		085043 (9004201-3700)	O-ring	1
89	G04	02-07		516605	End cap assembly, twin ports	1
	G20	91-06		303693	Journal bearing	1
	G30	91-06		730895	End cap gasket	1
	G40	91-06		303651	Bushing	1
	G45	91-06		140644	Plug assembly	1
	G45A	91-06		085043 (9004201-3700)	O-ring	1
	G46	91-06		140644	Plug assembly	1
	G46A	91-06		085043 (9004201-3700)	O-ring	1
	G90	02-07		713768 (9007314-0812)	Screw, M8 x 55	1
	G90	91-06	02-06	746644 (9007314-0810)	Screw, M8 x 45	1
	G93	91-06		713800 (8800564)	Spacer	1
	G94	91-06		8800565	Lifting bracket	1
	G95	91-06		502195	Washer	1
	G97	02-07		713768 (9007314-0812)	Screw, M8 x 55	1
	G97	91-06	02-06	748954 (9007314-0811)	Screw, M8 x 50	1
	G98	02-07		713768 (9007314-0812)	Screw, M8 x 55	1
	G98	91-06	02-06	746644 (9007314-0810)	Screw, M8 x 45	1

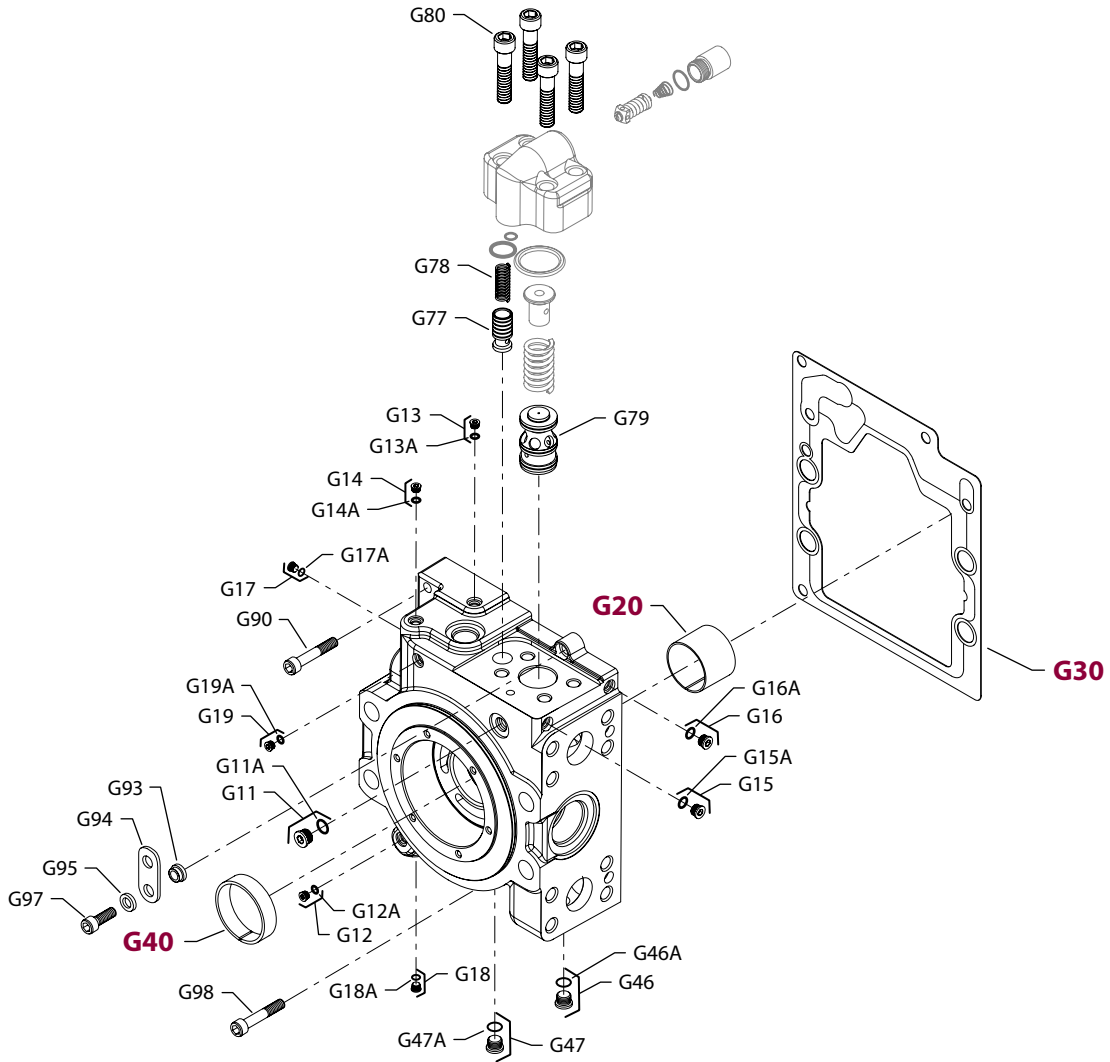


E100 899 E

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

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
8C	G04	01-50		516601	End cap assembly, twin ports	1
	G14	91-26		765750	Orifice	1
	G19	91-26		759415	Spool	1
	G20	91-26		303693	Journal bearing	1
	G30	91-26		730895	End cap gasket	1
	G40	91-26		303651	Journal bearing	1
	G45	91-26		140644	Plug assembly	1
	G45A	91-26		085043 (9004201-3700)	O-ring	1
	G46	91-26		140644	Plug assembly	1
	G46A	91-26		085043 (9004201-3700)	O-ring	1
	G47	91-26		140644	Plug assembly	1
	G47A	91-26		085043 (9004201-3700)	O-ring	1
	G53	91-26		140644	Plug assembly	1
	G53A	91-26		085043 (9004201-3700)	O-ring	1
	G54	91-26		140644	Plug assembly	1
	G54A	91-26		085043 (9004201-3700)	O-ring	1
	G55	91-26		9005100-3700	Plug assembly	1
	G55A	91-26		9004201-1900	O-ring	1
	G56	91-26		327007 (9005110-4400)	Plug assembly	1
	G56A	91-26		001123 (9004201-2500)	O-ring	1
	G90	01-50		713768 (9007314-0812)	Screw, M8 x 55	1
	G90	91-26	01-49	746644 (9007314-0810)	Screw, M8 x 45	1
	G93	91-26		713800 (8800564)	Spacer	1
	G94	91-26		8800565	Lifting bracket	1
	G95	91-26		502195	Washer	1
	G97	01-50		713768 (9007314-0812)	Screw, M8 x 55	1
	G97	92-51	01-49	748954 (9007314-0811)	Screw, M8 x 50	1
	G98	01-50		713768 (9007314-0812)	Screw, M8 x 55	1
	G98	91-26	01-49	746644 (9007314-0810)	Screw, M8 x 45	1
	G111	91-26		504519	Plug assembly	1
	G111A	91-26		039297 (9004201-1200)	O-ring	1
	G112	91-26		504519	Plug assembly	1
	G112A	91-26		039297 (9004201-1200)	O-ring	1
	G114	91-26		9005100-3700	Plug assembly	1
	G114A	91-26		9004201-1900	O-ring	1

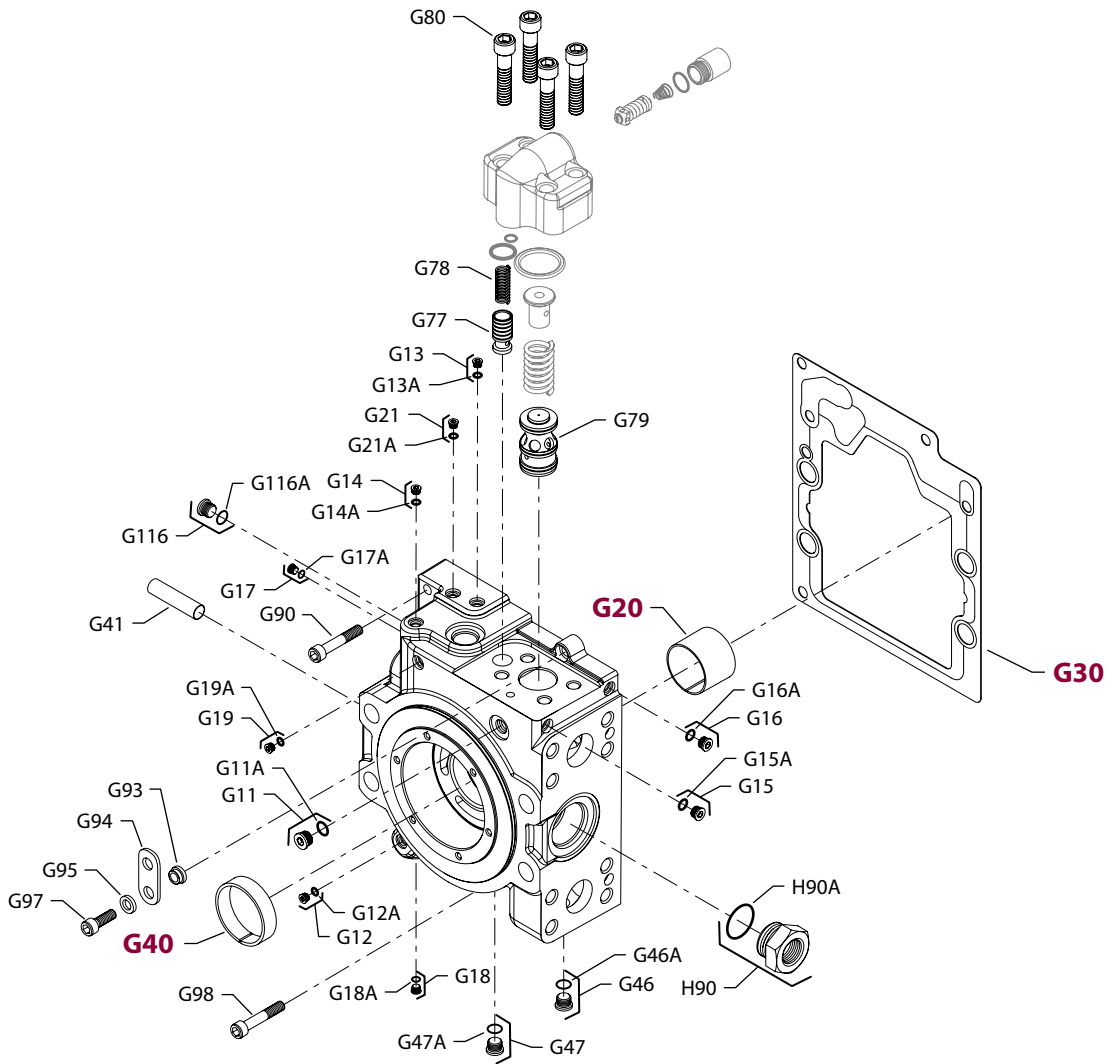


E100 900 E

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

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
8E	G11	02-15		140644	Plug assembly	1
	G11A	02-15		085043 (9004201-3700)	O-ring	1
	G12	02-15		504519	Plug assembly	1
	G12A	02-15		039297 (9004201-1200)	O-ring	1
	G13	02-15		504519	Plug assembly	1
	G13A	02-15		039297 (9004201-1200)	O-ring	1
	G14	02-15		504519	Plug assembly	1
	G14A	02-15		039297 (9004201-1200)	O-ring	1
	G15	02-15		504519	Plug assembly	1
	G15A	02-15		039297 (9004201-1200)	O-ring	1
	G16	02-15		504519	Plug assembly	1
	G16A	02-15		039297 (9004201-1200)	O-ring	1
	G17	02-15		504519	Plug assembly	1
	G17A	02-15		039297 (9004201-1200)	O-ring	1
	G18	02-15		504519	Plug assembly	1
	G18A	02-15		039297 (9004201-1200)	O-ring	1
	G19	02-15		504519	Plug assembly	1
	G19A	02-15		039297 (9004201-1200)	O-ring	1
	G20	02-15		303693	Journal bearing	1
	G30	02-15		730895	End cap gasket	1
	G40	02-15		303651	Bushing	1
	G46	02-15		140644	Plug assembly	1
	G46A	02-15		085043 (9004201-3700)	O-ring	1
	G47	02-15		140644	Plug assembly	1
	G47A	02-15		085043 (9004201-3700)	O-ring	1
	G77	02-15		517830	Piston	1
	G78	02-15		517832	Spring	1
	G79	02-15		517827	Piston	1
	G80	02-15		504681	Screw, M12 x 55	4
	G90	02-15		713768 (9007314-0812)	Screw, M8 x 55	1
	G93	02-15		713800 (8800564)	Spacer	1
	G94	02-15		8800565	Lifting bracket	1
	G95	02-15		502195	Washer	1
	G97	02-15		506969	Screw, M8 x 25	1
	G98	02-15		713768 (9007314-0812)	Screw, M8 x 55	1

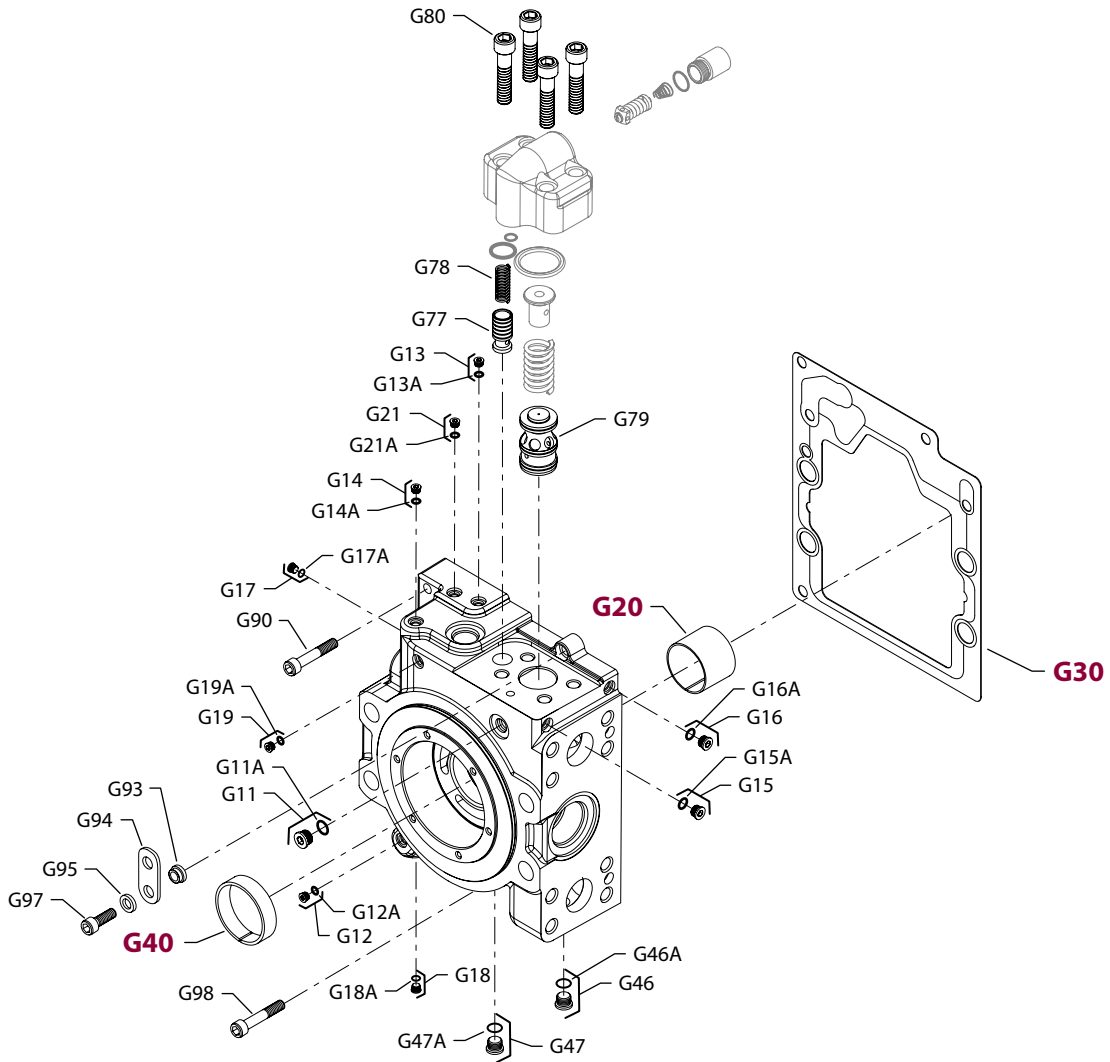


E100 901 E

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

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
8F	G11	02-15		140644	Plug assembly	1
	G11A	02-15		085043 (9004201-3700)	O-ring	1
	G12	02-15		504519	Plug assembly	1
	G12A	02-15		039297 (9004201-1200)	O-ring	1
	G13	02-15		504519	Plug assembly	1
	G13A	02-15		039297 (9004201-1200)	O-ring	1
	G14	02-15		504519	Plug assembly	1
	G14A	02-15		039297 (9004201-1200)	O-ring	1
	G15	02-15		504519	Plug assembly	1
	G15A	02-15		039297 (9004201-1200)	O-ring	1
	G16	02-15		504519	Plug assembly	1
	G16A	02-15		039297 (9004201-1200)	O-ring	1
	G17	02-15		504519	Plug assembly	1
	G17A	02-15		039297 (9004201-1200)	O-ring	1
	G18	02-15		504519	Plug assembly	1
	G18A	02-15		039297 (9004201-1200)	O-ring	1
	G19	02-15		504519	Plug assembly	1
	G19A	02-15		039297 (9004201-1200)	O-ring	1
	G20	02-15		303693	Journal bearing	1
	G21	02-15		504519	Plug assembly	1
	G21A	02-15		039297 (9004201-1200)	O-ring	1
	G30	02-15		730895	End cap gasket	1
	G40	02-15		303651	Bushing	1
	G41	02-15		500880	Tube	1
	G46	02-15		140644	Plug assembly	1
	G46A	02-15		085043 (9004201-3700)	O-ring	1
	G47	02-15		140644	Plug assembly	1
	G47A	02-15		085043 (9004201-3700)	O-ring	1
	G77	02-15		517830	Piston	1
	G78	02-15		517832	Spring	1
	G79	02-15		517827	Piston	1
	G80	02-15		504681	Screw, M12 x 55	4
	G90	02-15		713768 (9007314-0812)	Screw, M8 x 55	1
	G93	02-15		713800 (8800564)	Spacer	1
	G94	02-15		8800565	Lifting bracket	1
	G95	02-15		502195	Washer	1
	G97	02-15		506969	Screw, M8 x 25	1
	G98	02-15		713768 (9007314-0812)	Screw, M8 x 55	1
	G116	02-15		140644	Plug assembly	1
	G116A	02-15		085043 (9004201-3700)	O-ring	1
	H90	04-41		521318	Reducer, 1 5/8-12/M27	1
	H90	02-15	04-40	516584	Reducer, 1 5/8-12/M22	1
	H90A	02-15		093823 (9004201-9200)	O-ring	1

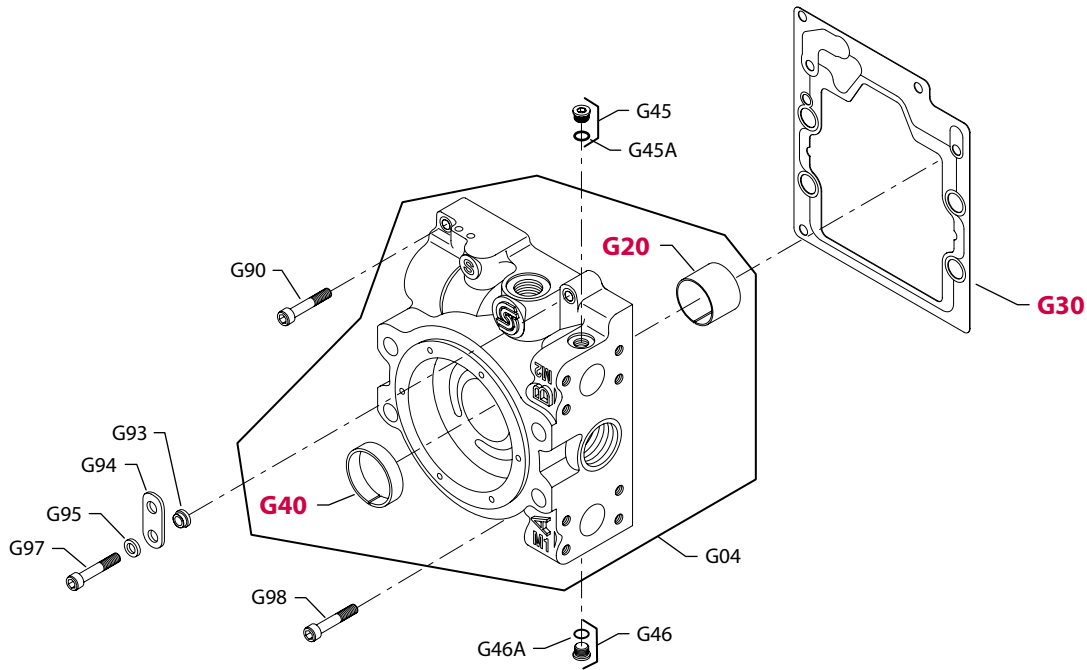


E100 902 E

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

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
8J	G11	06-28		140644	Plug assembly	1
	G11A	06-28		085043 (9004201-3700)	O-ring	1
	G12	06-28		504519	Plug assembly	1
	G12A	06-28		039297 (9004201-1200)	O-ring	1
	G13	06-28		504519	Plug assembly	1
	G13A	06-28		039297 (9004201-1200)	O-ring	1
	G14	06-28		504519	Plug assembly	1
	G14A	06-28		039297 (9004201-1200)	O-ring	1
	G15	06-28		504519	Plug assembly	1
	G15A	06-28		039297 (9004201-1200)	O-ring	1
	G16	06-28		504519	Plug assembly	1
	G16A	06-28		039297 (9004201-1200)	O-ring	1
	G17	06-28		504519	Plug assembly	1
	G17A	06-28		039297 (9004201-1200)	O-ring	1
	G18	06-28		504519	Plug assembly	1
	G18A	06-28		039297 (9004201-1200)	O-ring	1
	G19	06-28		504519	Plug assembly	1
	G19A	06-28		039297 (9004201-1200)	O-ring	1
	G20	06-28		303693	Journal bearing	1
	G21	06-28		504519	Plug assembly	1
	G21A	06-28		039297 (9004201-1200)	O-ring	1
	G30	06-28		730895	End cap gasket	1
	G40	06-28		303651	Bushing	1
	G46	06-28		140644	Plug assembly	1
	G46A	06-28		085043 (9004201-3700)	O-ring	1
	G47	06-28		140644	Plug assembly	1
	G47A	06-28		085043 (9004201-3700)	O-ring	1
	G77	06-28		517830	Piston	1
	G78	06-28		517832	Spring	1
	G79	06-28		517827	Piston	1
	G80	06-28		504681	Screw, M12 x 55	4
	G90	06-28		713768 (9007314-0812)	Screw, M8 x 55	1
	G93	06-28		713800 (8800564)	Spacer	1
	G94	06-28		8800565	Lifting bracket	1
	G95	06-28		502195	Washer	1
	G97	06-28		506969	Screw, M8 x 25	1
	G98	06-28		713768 (9007314-0812)	Screw, M8 x 55	1

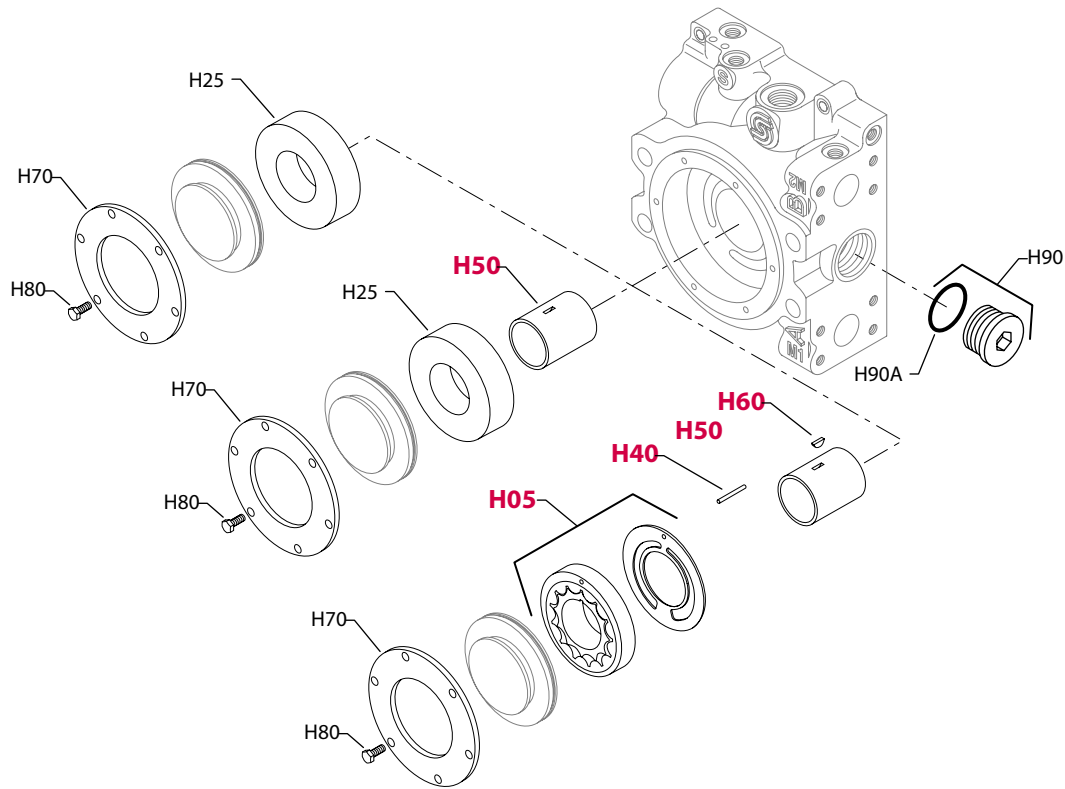


E100 903 E

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

END CAP

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
8W	G04	02-25		518631	End cap assembly, twin ports	1
	G20	02-25		303693	Journal bearing	1
	G30	02-25		730895	End cap gasket	1
	G40	02-25		303651	Bushing	1
	G45	02-25		140644	Plug assembly	1
	G45A	02-25		085043 (9004201-3700)	O-ring	1
	G46	02-25		140644	Plug assembly	1
	G46A	02-25		085043 (9004201-3700)	O-ring	1
	G90	02-25		713768 (9007314-0812)	Screw, M8 x 55	1
	G93	02-25		713800 (8800564)	Spacer	1
	G94	02-25		8800565	Lifting bracket	1
	G95	02-25		502195	Washer	1
	G97	02-25		713768 (9007314-0812)	Screw, M8 x 55	1
	G98	02-25		713768 (9007314-0812)	Screw, M8 x 55	1



E100 904E

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

CHARGING SYSTEM

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
F & Z (special*)	H05	04-49		8200240	Charge pump set, 26 cc	1
	H40	04-49		9004800-1224	Pin	1
	H50	04-49		8801178	Charge pump shaft	1
	H60	04-49		9003310-1208	Key	1
	H70	04-49		516761	Retaining plate	1
	H80	04-49		648451	Screw	6

* Used with 8E, 8F or 8J end cap option only.

F	H05	93-34		501405	Charge pump set, 26 cc (SB-1994-025)	1
	H40	89-41		308718	Pin	1
	H50	93-34		513436	Charge pump shaft (SB-1994-025)	1
	H60	89-41		734608	Key	1
	H70	89-41		509361	Retaining plate	1
	H80	89-41		378083 (9007210-0804)	Screw	6

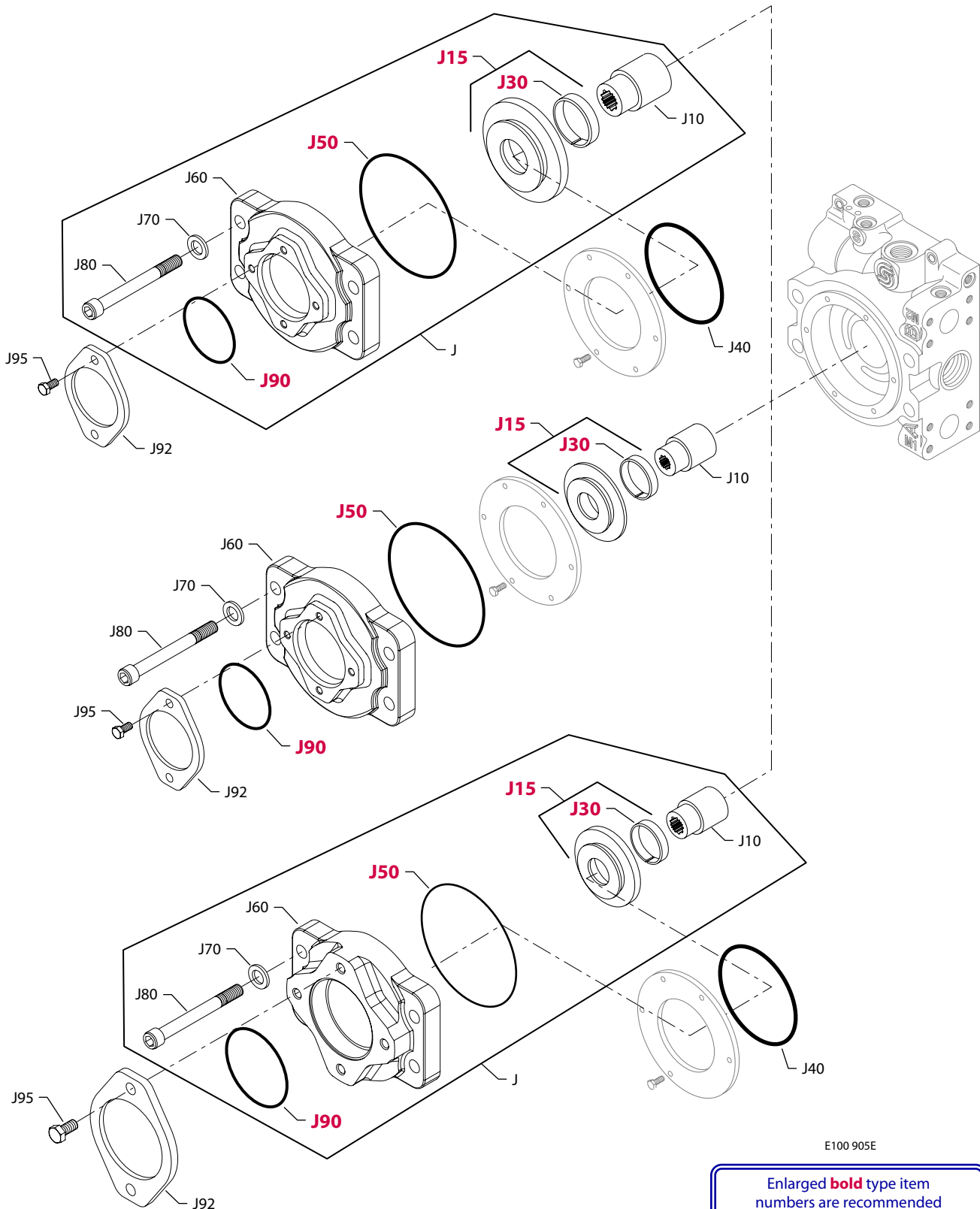
H	H05	93-34		501406	Charge pump, set 34 cc	1
	H40	89-41		308718	Pin	1
	H50	93-34		513436	Charge pump shaft (SB-1994-025)	1
	H60	89-41		734608	Key	1
	H70	89-41		509361	Retaining plate	1
	H80	89-41		378083 (9007210-0804)	Screw	6

L	H25	89-41		339762	Charge pump spacer	1
	H50	93-34		513436	Charge pump shaft	1
	H70	89-41		509361	Retaining plate	1
	H80	89-41		378083 (9007210-0804)	Screw	6
	H90	89-41		676734 (9005110-9500)	Plug assembly	1
	H90A	89-41		093823 (9004201-9200)	O-ring	1

N	H25	93-29		339762	Charge pump spacer	1
	H70	93-29		509361	Retaining plate	1
	H80	93-29		378083 (9007210-0804)	Screw	6
	H90	93-29		676734 (9005110-9500)	Plug assembly	1
	H90A	93-29		093823 (9004201-9200)	O-ring	1

R	H05	95-03		503758	Charge pump, set 41 cc	1
	H40	95-03		504558	Pin	1
	H50	95-03		513435	Charge pump shaft	1
	H60	95-03		734608	Key	1
	H70	95-03		509361	Retaining plate	1
	H80	95-03		378083 (9007210-0804)	Screw	6

U	H05	96-02		509579	Charge pump, set 30 cc	1
	H40	96-02		308718	Pin	1
	H50	96-02		513436	Charge pump shaft	1
	H60	96-02		734608	Key	1
	H70	96-02		509361	Retaining plate	1
	H80	96-02		378083 (9007210-0804)	Screw	6



E100 905E

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

AUXILIARY MOUNTING

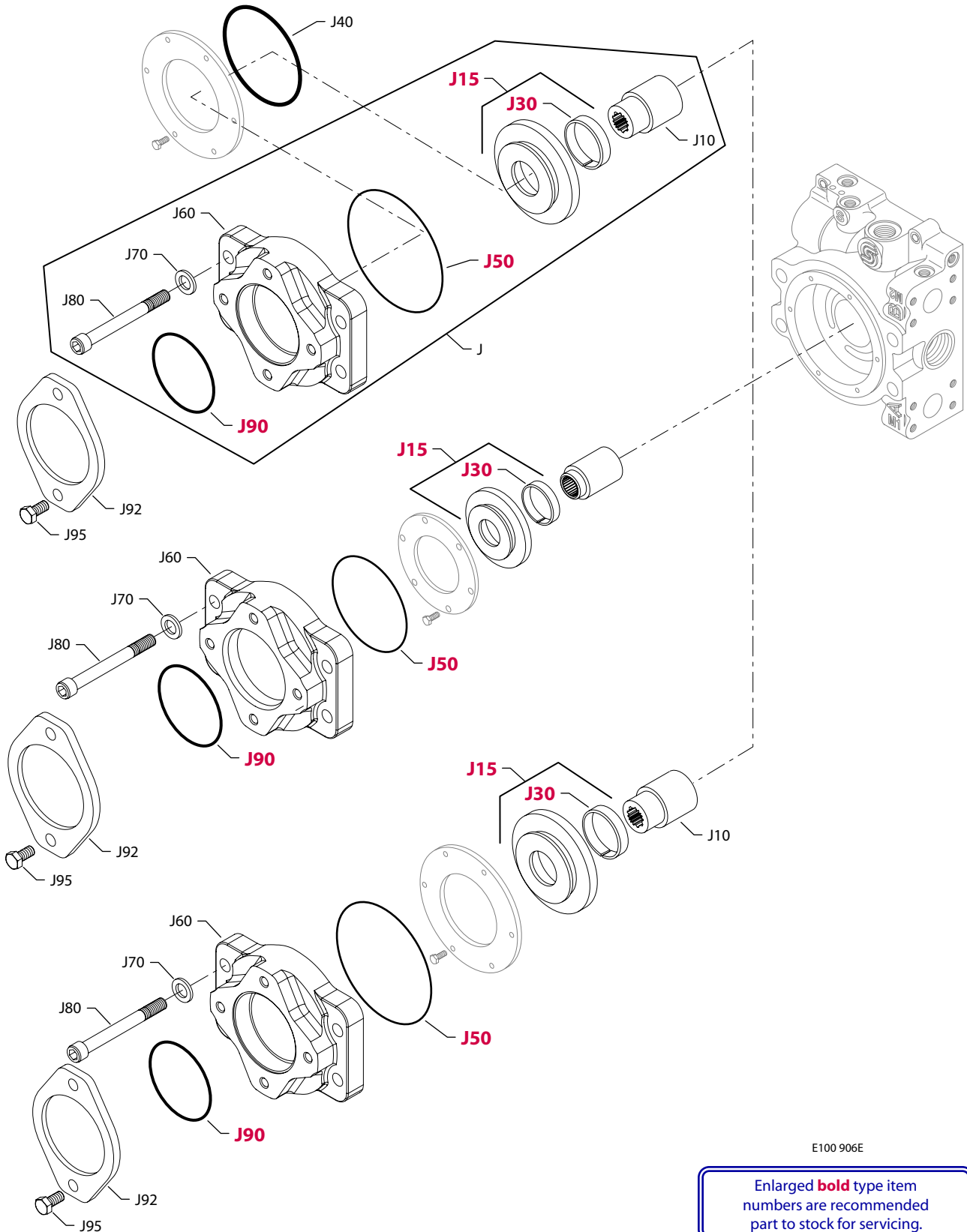
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
AB & A	J	89-41		8302J00A-A	Aux. mounting kit, A flange, 9 tooth	1
	J10	89-41		310466	Coupling, 9 tooth	1
	J15	89-41		501402	Cover assembly, CW (SB-1994-025*)	1
	J15	89-41		501401	Cover assembly, CCW (SB-1994-025*)	1
	J30	89-41		303651	Bushing	1
	J40	89-41	92-29	354324	O-ring	1
	J50	89-41		505068	O-ring	1
	J60	89-41		505113	Flange adaptor, SAE A	1
	J70	89-41		664920 (9009625-0132)	Washer	4
	J80	89-41		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	89-41		726950 (9004104-0420)	O-ring	1
	J92	89-41		9802336	Cover plate	1
	J95	89-41		9007200-3714	Screw	2

* New style covers are interchangeable with either charge pump design

AN	J10	03-07		8100147	Coupling, 9 tooth	1
	J15	03-07		8800832	Cover assembly, CW	1
	J30	03-07		664771 (8700008)	Bushing	1
	J50	03-07		505068	O-ring	1
	J60	03-07		505113	Flange adaptor, SAE A	1
	J70	03-07		664920 (9009625-0132)	Washer	4
	J80	03-07		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	03-07		726950 (9004104-0420)	O-ring	1
	J92	03-07		9802336	Cover plate	1
	J95	03-07		9007200-3714	Screw	2

BB & V	J	89-41		8302J00V-A	Aux. mounting kit, B-B flange, 15 tooth	1
	J10	89-41		310482	Coupling, 15 tooth	1
	J15	89-41		501402	Cover assembly, CW (SB-1994-025*)	1
	J15	89-41		501401	Cover assembly, CCW (SB-1994-025*)	1
	J30	89-41		303651	Bushing	1
	J40	89-41	92-29	354324	O-ring	1
	J50	89-41		056068	O-ring	1
	J60	89-41		503230	Flange adaptor, SAE B	1
	J70	89-41		664920 (9009625-0132)	Washer	4
	J80	89-41		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	89-41		726935 (9004104-0450)	O-ring	1
	J92	89-41		4460370	Cover plate	1
	J95	89-41		9007200-5021	Screw	2

* New style covers are interchangeable with either charge pump design



E100 906E

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

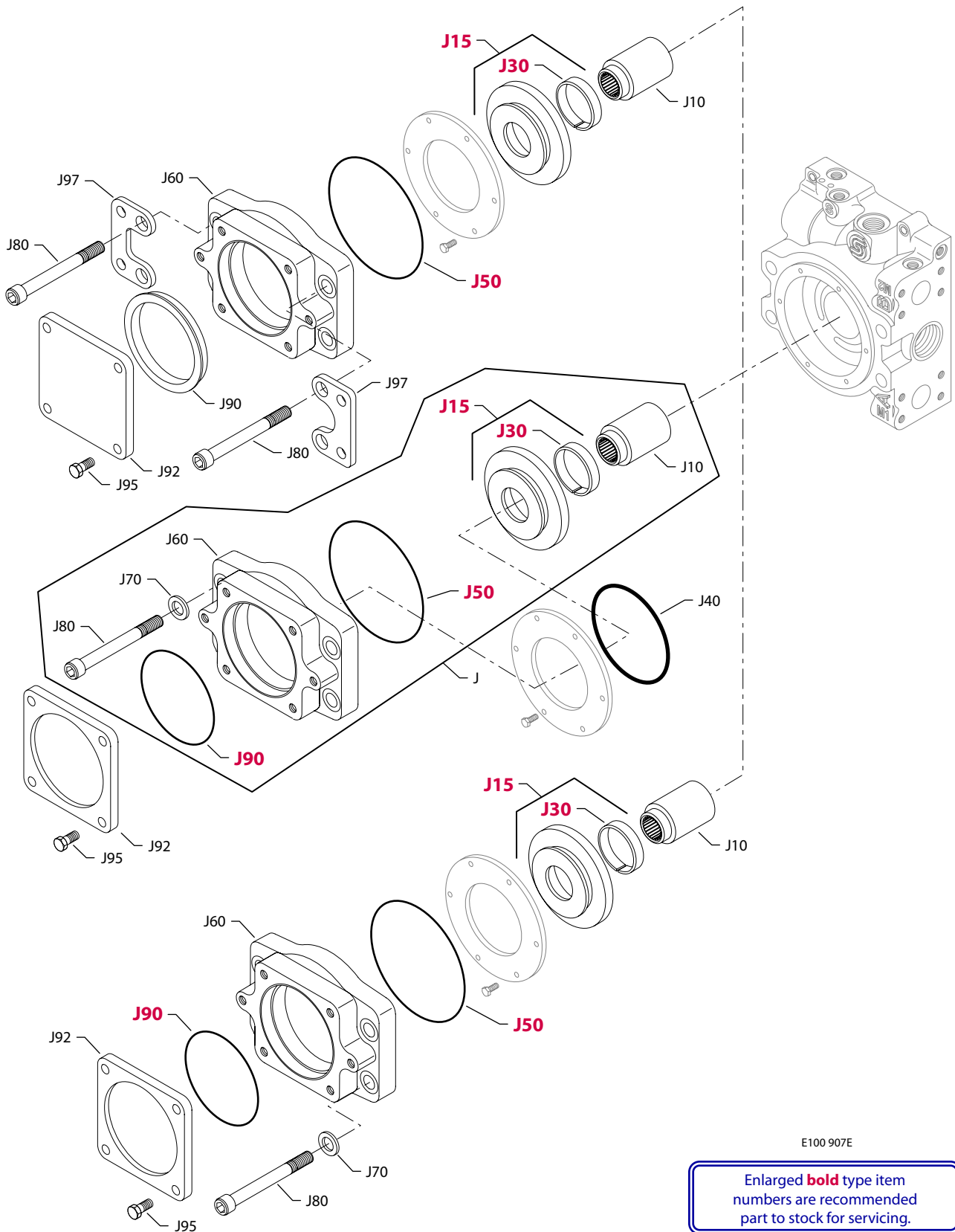
AUXILIARY MOUNTING

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
BC & B	J	89-41		8302J00B-A	Aux. mounting kit, B flange, 13 tooth	1
	J10	89-41		310474	Coupling, 13 tooth	1
	J15	89-41		501402	Cover assembly, CW (SB-1994-025*)	1
	J15	89-41		501401	Cover assembly, CCW (SB-1994-025*)	1
	J30	89-41		303651	Bushing	1
	J40	89-41	92-29	354324	O-ring	1
	J50	89-41		056068	O-ring	1
	J60	89-41		503230	Flange adaptor, SAE B	1
	J70	89-41		664920 (9009625-0132)	Washer	4
	J80	89-41		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	89-41		726935 (9004104-0450)	O-ring	1
	J92	89-41		4460370	Cover plate	1
	J95	89-41		9007200-5021	Screw	2

* New style covers are interchangeable with either charge pump design

BJ	J10	89-41		8100148	Coupling, 13 tooth	1
	J15	89-41		8800833	Cover assembly, CCW	1
	J30	89-41		664771	Bushing	1
	J50	89-41		056068	O-ring	1
	J60	89-41		11000255	Flange adaptor, SAE B	1
	J70	89-41		664920 (9009625-0132)	Washer	4
	J80	89-41		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	89-41		726935 (9004104-0450)	O-ring	1
	J92	89-41		4460370	Cover plate	1
	J95	89-41		544478 (9007200-5016)	Screw	2

BS	J10	06-13		310474	Coupling, 13 tooth	1
	J15	06-13		11002217	Cover assembly, CCW	1
	J30	06-13		303651	Bushing	1
	J50	06-13		056068	O-ring	1
	J60	06-13		503230	Flange adaptor, SAE B	1
	J70	06-13		664920 (9009625-0132)	Washer	4
	J80	06-13		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	06-13		726935 (9004104-0450)	O-ring	1
	J92	06-13		4460370	Cover plate	1
	J95	06-13		9007200-5021	Screw	2



E100 907E

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

AUXILIARY MOUNTING

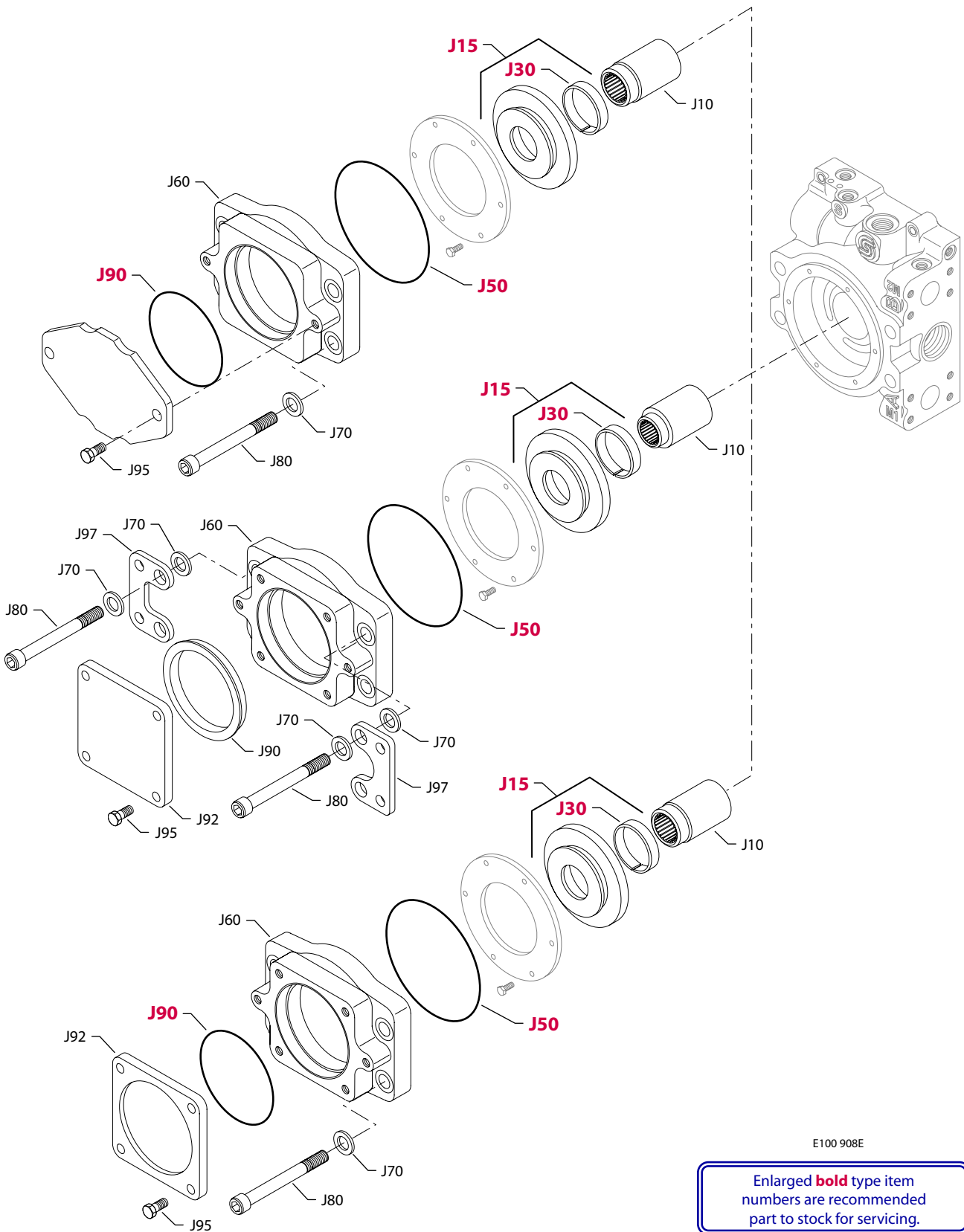
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CB	J10	03-38		310508	Coupling, 14 tooth	1
	J15	03-38		513832	Cover assembly, CW	1
	J30	03-38		303651	Bushing	1
	J50	03-38		056068	O-ring	1
	J60	03-38		513617	Flange adaptor, SAE C	1
	J80	03-38		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	03-38		8801062	C pad seal	1
	J92	03-38		8801060	Cover plate	1
	J95	03-38		9007200-5021	Screw	4
	J97	03-38		519663	Auxiliary mounting bracket	1

CD & C	J	89-41		8302J00C-A	Aux. mounting kit, C flange, 14 tooth	1
	J10	89-41		310508	Coupling, 14 tooth	1
	J15	89-41		501402	Cover assembly, CW (SB-1994-025*)	1
	J15	89-41		501401	Cover assembly, CCW (SB-1994-025*)	1
	J30	89-41		303651	Bushing	1
	J40	89-41	92-29	354324	O-ring	1
	J50	89-41		056068	O-ring	1
	J60	89-41		505116	Flange adaptor, SAE C	1
	J70	89-41		664920 (9009625-0132)	Washer	4
	J80	89-41		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	89-41		726943 (9004104-0490)	O-ring	1
	J92	89-41		8800406	Cover plate	1
	J95	89-41		9007200-5021	Screw	4

* New style covers are interchangeable with either charge pump design

CF	J10	96-18		705954	Coupling, 21 tooth	1
	J15	96-18		501402	Cover assembly, CW	1
	J15	96-18		501401	Cover assembly, CCW	1
	J30	96-18		303651	Bushing	1
	J50	96-18		056068	O-ring	1
	J60	96-18		505116	Flange adaptor, SAE C	1
	J70	96-18		664920 (9009625-0132)	Washer	4
	J80	96-18		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	96-18		726943 (9004104-0490)	O-ring	1
	J92	96-18		8800406	Cover plate	1
	J95	96-18		9007200-5021	Screw	4

CK	J10	96-18		504517	Coupling, 25 tooth	1
	J15	96-18		501402	Cover assembly, CW	1
	J15	96-18		501401	Cover assembly, CCW	1
	J30	96-18		303651	Bushing	1
	J50	96-18		056068	O-ring	1
	J60	96-18		505116	Flange adaptor, SAE C	1
	J70	96-18		664920 (9009625-0132)	Washer	4
	J80	96-18		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	96-18		726943 (9004104-0490)	O-ring	1
	J92	96-18		8800406	Cover plate	1
	J95	96-18		9007200-5021	Screw	4

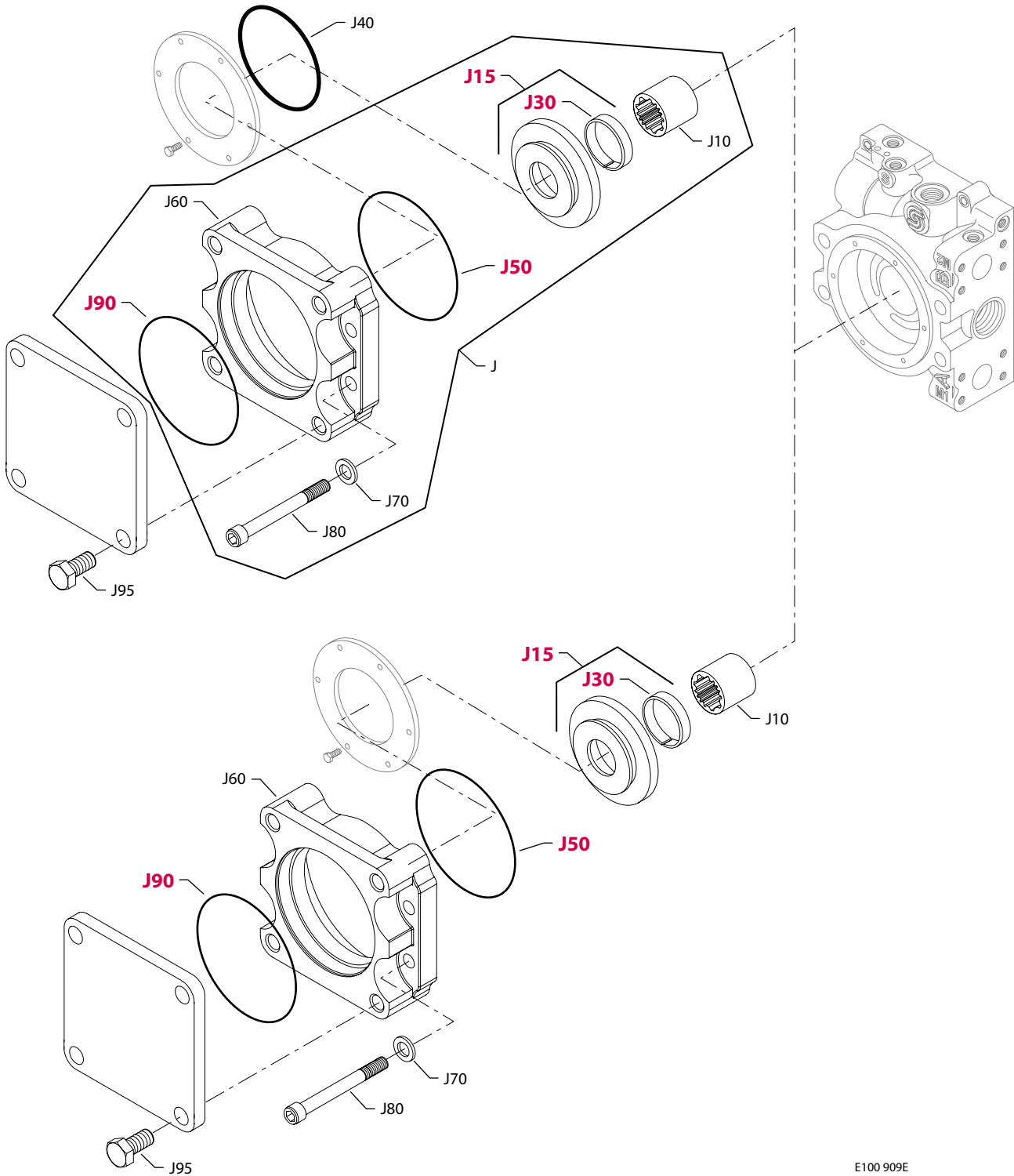


E100 908E

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	
CL	J10	96-18		501386	Coupling, 17 tooth	1	
	J15	96-18		503399	Cover assembly, CW	1	
	J15	96-18		503397	Cover assembly, CCW	1	
	J30	96-18		303651	Bushing	1	
	J50	96-18		056068	O-ring	1	
	J60	96-18		508407	Flange adaptor, SAE C	1	
	J70	96-18		664920 (9009625-0132)	Washer	4	
	J80	96-18		338798 (9007314-1625)	Screw, M16 x 160	4	
	J90	96-18		726943 (9004104-0490)	O-ring	1	
	J92	96-18		350678	Cover plate	1	
	J95	96-18		9007200-6222	Screw	2	
	CM	J10	03-38		705954	Coupling, 21 tooth	1
		J15	03-38		513832	Cover assembly, CW	1
J30		03-38		303651	Bushing	1	
J50		03-38		056068	O-ring	1	
J60		03-38		513617	Flange adaptor, SAE C	1	
J70		06-13		664920	Washer	8	
J80		03-38		506389	Screw, M16 x 160	4	
J90		03-38		8801062	C pad seal	1	
J92		03-38		8801060	Cover plate	1	
J95		03-38		9007200-5021	Screw	4	
J97		03-38		506297	Auxiliary mounting bracket	1	
CS		J10	96-18		501386	Coupling, 17 tooth	1
		J15	96-18		503399	Cover assembly, CW	1
	J15	96-18		503397	Cover assembly, CCW	1	
	J30	96-18		303651	Bushing	1	
	J50	96-18		056068	O-ring	1	
	J60	96-18		505116	Flange adaptor, SAE C	1	
	J70	96-18		664920 (9009625-0132)	Washer	4	
	J80	96-18		338798 (9007314-1625)	Screw, M16 x 160	4	
	J90	96-18		726943 (9004104-0490)	O-ring	1	
	J92	96-18		8800406	Cover plate	1	
	J95	96-18		9007200-5021	Screw	4	
	CY	J10	96-18		501386	Coupling, 17 tooth	1
		J15	96-18		11002215	Cover assembly, CCW	1
J30		96-18		303651	Bushing	1	
J50		96-18		056068	O-ring	1	
J60		96-18		513617	Flange adaptor, SAE C	1	
J70		96-18		664920 (9009625-0132)	Washer	4	
J80		96-18		338798 (9007314-1625)	Screw, M16 x 160	4	
J90		96-18		8801062	C pad seal	1	
J92		96-18		8801060	Cover plate	1	
J95		96-18		9007200-5021	Screw	4	

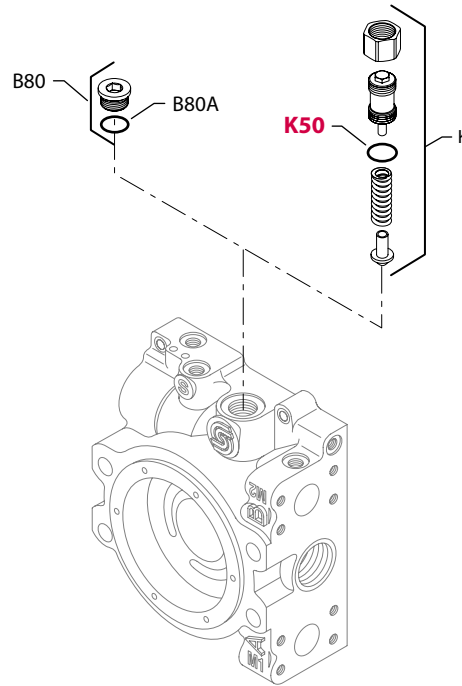
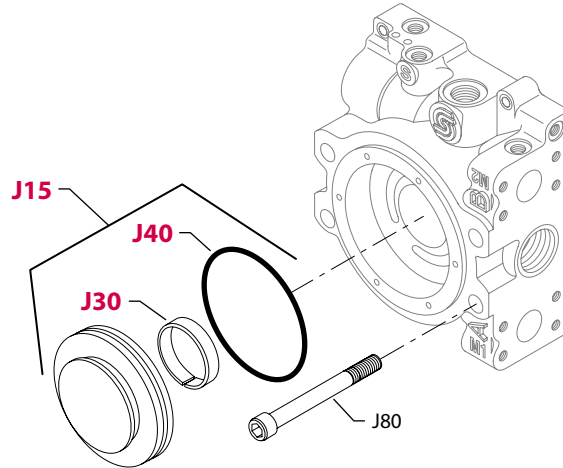


E100 909E

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
DE & D	J	89-41		8302J00D-A	Aux. mounting kit, D flange, 13 tooth	
	J10	89-41		310490	Coupling, 13 tooth	1
	J15	89-41		501402	Cover assembly, CW	1
	J15	89-41		501401	Cover assembly, CCW	1
	J30	89-41		303651	Bushing	1
	J40	89-41	92-29	354324	O-ring	1
	J50	89-41		056068	O-ring	1
	J60	89-41		505118	Flange adaptor, SAE D	1
	J70	89-41		664920 (9009625-0132)	Washer	4
	J80	89-41		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	89-41		726927	O-ring	1
	J92	89-41		338400	Cover plate	1
	J95	89-41		9007200-7524	Screw	4
DF	J10	96-18		310490	Coupling, 13 tooth	1
	J15	96-18		513832	Cover assembly, CW	1
	J30	96-18		303651	Bushing	1
	J50	96-18		056068	O-ring	1
	J60	96-18		505118	Flange adaptor, SAE D	1
	J70	96-18		664920 (9009625-0132)	Washer	4
	J80	96-18		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	96-18		726927	O-ring	1
	J92	96-18		338400	Cover plate	1
	J95	96-18		9007200-7524	Screw	4
DG	J10	96-18		505444	Coupling, 27 tooth	1
	J15	96-18		501402	Cover assembly, CW	1
	J15	96-18		501401	Cover assembly, CCW	1
	J30	96-18		303651	Bushing	1
	J50	96-18		056068	O-ring	1
	J60	96-18		505118	Flange adaptor, SAE D	1
	J70	96-18		664920 (9009625-0132)	Washer	4
	J80	96-18		338798 (9007314-1625)	Screw, M16 x 160	4
	J90	96-18		726927	O-ring	1
	J92	96-18		338400	Cover plate	1
	J95	96-18		9007200-7524	Screw	4



E100 910E

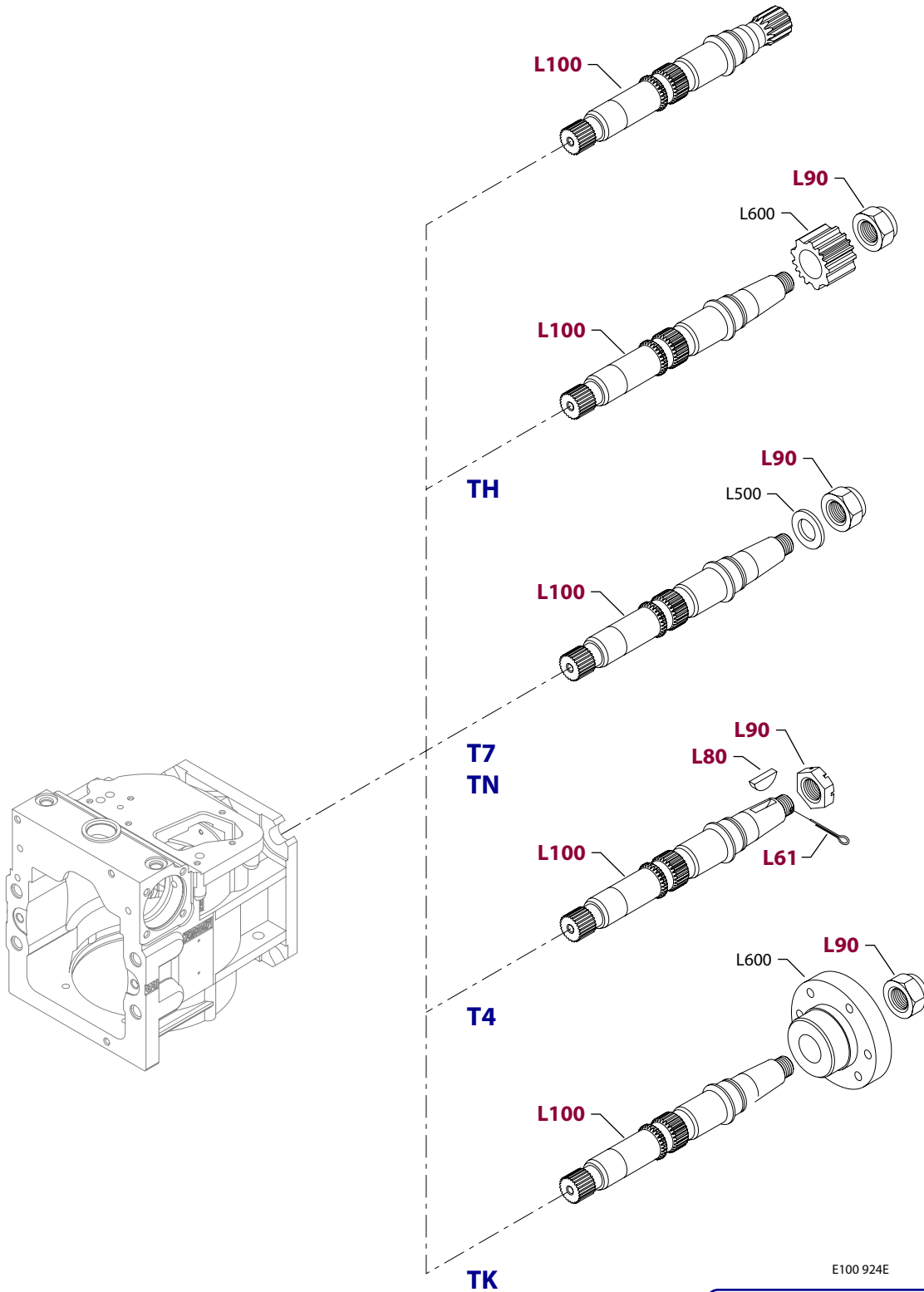
Enlarged **bold** type item numbers are recommended part to stock for servicing.

AUXILIARY MOUNTING

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
NN	J15	89-41		501400	Cover assembly	1
	J30	89-41		303651	Bushing	1
	J40	89-41		916940	O-ring	1
	J80	89-41		518721	Screw	4
NT	J15	96-18		517450	Cover assembly	1
	J30	96-18		303651	Bushing	1
	J40	96-18		916940	O-ring	1
	J80	96-18		518721	Screw	4
NV	J15	06-13		501400	Cover assembly	1
	J30	06-13		303651	Bushing	1
	J40	06-13		680892 (9004104-0440)	O-ring	1
	J80	06-13		518721	Screw	4

CHARGE PRESSURE RELIEF

14-30	K	89-41		8510272	Charge relief valve kit, 18-30 bar	1
	K50	89-41		001156 (9004201-7500)	O-ring	1
32-42	K	96-13		8510390	Charge relief valve kit, 30-42 bar	1
	K50	96-13		001156 (9004201-7500)	O-ring	1
JD	K10	96-13		664524 (9005110-9000)	Plug assembly	1
	K10A	96-13		001156 (9004201-7500)	O-ring	1
XX	K	89-41		8510272	Charge relief valve kit, 18-30 bar	1
	K50	89-41		001156 (9004201-7500)	O-ring	1



E100 924E

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
C4	L100	03-08		518467	Shaft, 27 tooth spline, 16/32, special*	1

* Used with 8E, 8F or 8J end cap option only.

C8	L100	89-46		303495	Shaft, 27 tooth spline, 16/32	1
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D8	L100	89-46		503443	Shaft, 27 tooth spline, 16/32, M10 tapped thread	1
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F1	L100	89-46		335695	Shaft, 13 tooth spline, 8/16	1
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F4	L100	96-45		518465	Shaft, 13 tooth spline, 8/16, special*	1
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* Used with 8E, 8F or 8J end cap option only.

F5	L100	89-46		518828	Shaft, 13 tooth spline, 8/16, 5/8-11 tapped thread	1
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F6	L100	89-46		11002449	Shaft, 13 tooth spline, 8/16, special length	1
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J5	L100	92-16		506911	Shaft, 13 tooth spline, 8/16, no relief	1
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T4	L61	89-46		551424	Cotter pin	1
	L80	89-46		9003326-0005	Key	1
	L90	89-46		9700189	Slotted nut, 1.25-18	1
	L100	89-46		346601	Shaft, 1.75" tapered	1

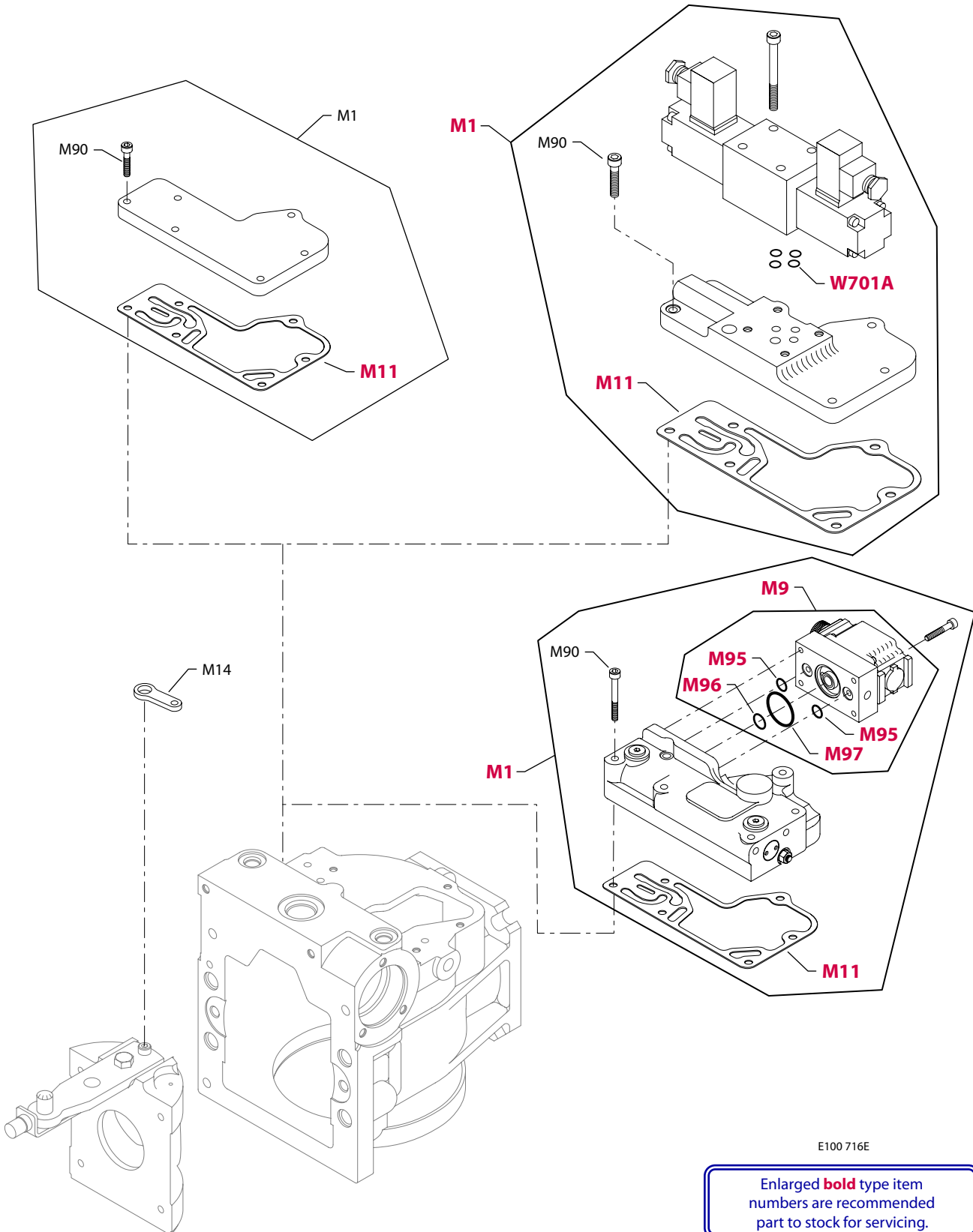
T7	L90	98-19		508784	Self locking nut, M30	1
	L100	98-19		511619	Shaft, 1.75" tapered, no keyway	1
	L500	98-19		511628	Washer	1

TH	L90	89-46		508784	Self locking nut, M30	1
	L100	89-46		508592	Shaft, 1.75 tapered, no keyway	1
	L600			510969	Coupling	1

TK	L90	06-13		508784	Self locking nut, M30	1
	L100	06-13		511619	Shaft, 1.75 tapered, no keyway	1
	L200	06-13		511463	Tapered flange	1
	L500	06-13		511628	Washer	1

TN	L90	06-29		508784	Self locking nut, M30	1
	L100	06-29		508784	Shaft, 1.75 tapered, no keyway, special*	1
	L500	06-29		511628	Washer	1

* Used with 8E, 8F or 8J end cap option only.

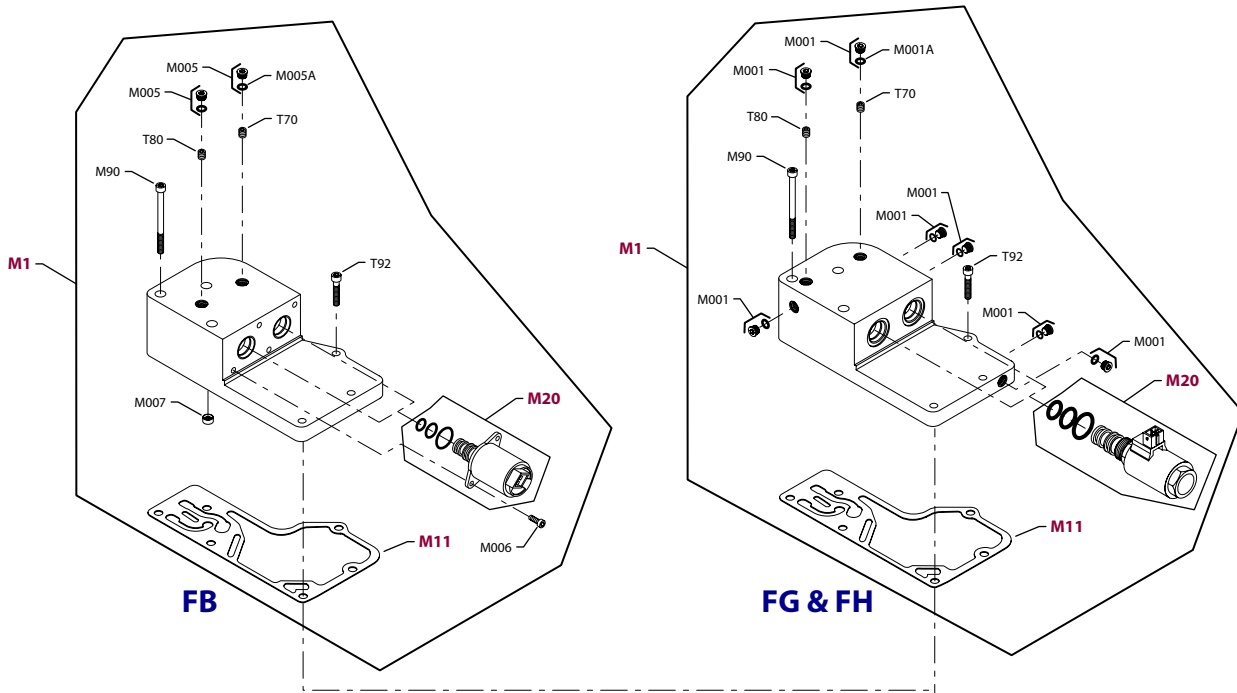


E100 716E

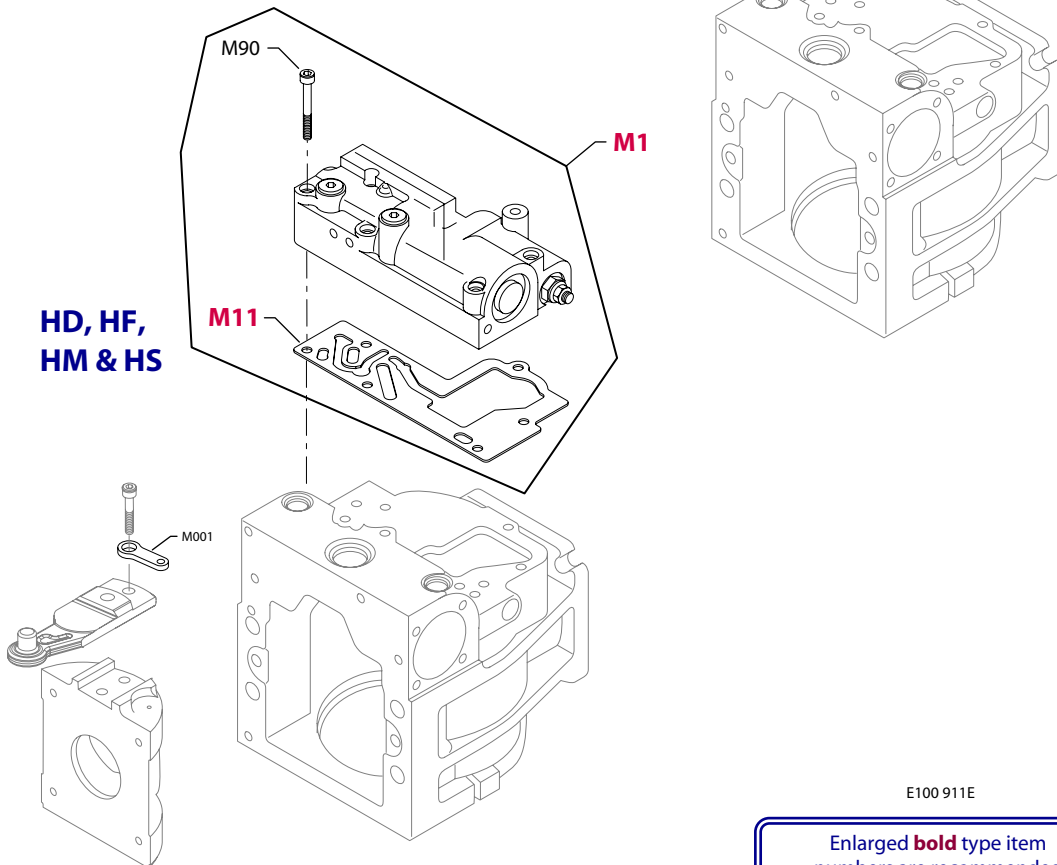
Enlarged **bold** type item numbers are recommended part to stock for servicing.

CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CA	M1	89-41		8102M0CA-A	Control cover plate kit	1
	M11	89-41		8800923	Control gasket	1
	M90	89-41		693341 (9007314-0606)	Screw	6
CB	M1	89-41		8102M0CA-A	Control cover plate kit	1
	M11	89-41		8800923	Control gasket	1
	M14	96-40		340091	Feedback link	1
	M90	89-41		693341 (9007314-0606)	Screw	6
DC	M1	89-41		8102M0DC-A	3-position control kit, 12 volt	1
	M11	89-41		8800923	Control gasket	1
	M90	89-41		693341 (9007314-0606)	Screw	6
	W701A	89-41		048413	O-ring	4
DD	M1	89-41		8102M0DD-A	3-position control kit, 24 volt	1
	M11	89-41		8800923	Control gasket	1
	M90	89-41		693341 (9007314-0606)	Screw	6
	W701A	89-41		048413	O-ring	4
EA	M1	92-19		8302M0EA-B	EDC kit, MS connector	1
	M9	92-19		MCV110A1017	PCP, MS connector	1
	M11	92-19		8800923	Control gasket	1
	M14	92-19		340091	Feedback link	1
	M90	92-19		692889 (9007314-0611)	Screw	6
	M95	92-19		318337 (9004104-0120)	O-ring	2
	M96	92-19		011304 (9004104-0140)	O-ring	1
	M97	92-19		318345 (9004104-0240)	O-ring	1



**HD, HF,
HM & HS**

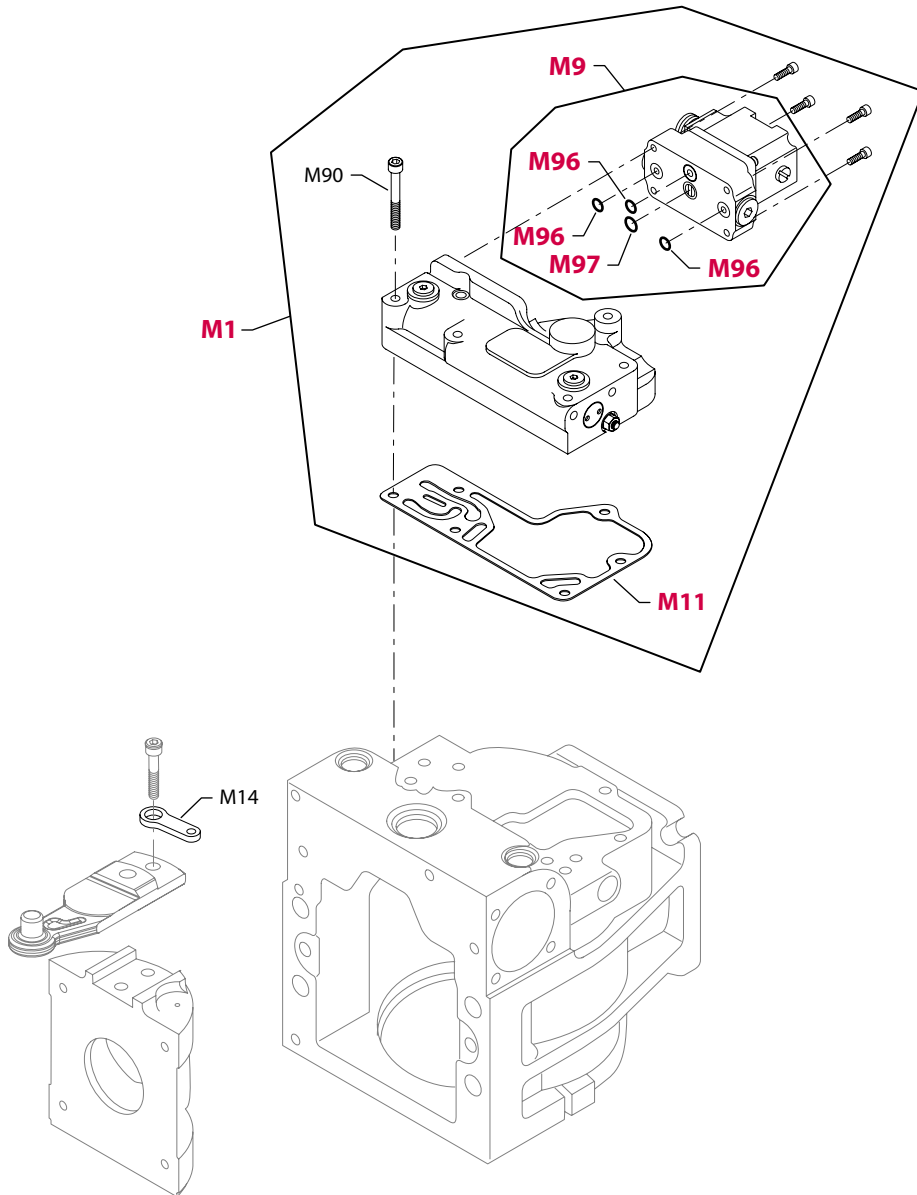


E100 911E

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
FB	M1	96-41		11015080	NFPE control kit, 24 volt, 25 bar	1
	M11	96-41		8800923	Control gasket	1
	M20	96-41		518081	Solenoid valve, 24 volt, 25 bar	2
	M21	96-41		067694	Screw	4
	M90	96-41		348847	Screw	3
	M92	96-41		693341 (9007314-0606)	Screw	3
FG	M1	00-30		11026563	NFPE control kit, 12 volt, 32 bar	1
	M11	00-30		8800923	Control gasket	1
	M20	00-30		516006	Solenoid valve, 12 volt, 32 bar	2
	M90	00-30		348847	Screw	3
	M92	00-30		693341 (9007314-0606)	Screw	3
	FH	M1	01-06		11026569	NFPE control kit, 24 volt, 32 bar
M11		01-06		8800923	Control gasket	1
M20		01-06		515617	Solenoid valve, 24 volt, 32 bar	2
M21		01-06		067694	Screw	4
M90		01-06		348847	Screw	3
M92		01-06		693341 (9007314-0606)	Screw	3
HD	M1	96-17		8510164	HDC kit, 8-16.5 bar	1
	M11	96-17		501665	Control gasket	1
	M14	96-17		340091	Feedback link	1
	M90	96-17		692889 (9007314-0611)	Screw	6
	HF	M1	96-17		8302M0HF-A	HDC kit, 3-11 bar
M11		96-17		8801241	Control gasket (SB-1999-065)	1
M14		96-17		340091	Feedback link	1
M90		96-17		692889 (9007314-0611)	Screw	6
HM		M1	98-27		8302M0HM-A	HDC kit, 1.1 -6.7 bar
	M11	98-27		8801241	Control gasket (SB-1999-065)	1
	M14	98-27		340091	Feedback link	1
	M90	98-27		692889 (9007314-0611)	Screw	6
	HS	M1	99-09		11013640	HDC kit, 6-18 bar, high accuracy
M11		99-09		8801241	Control gasket (SB-1999-065)	1
M14		99-09		340091	Feedback link	1
M90		99-09		692889 (9007314-0611)	Screw	6

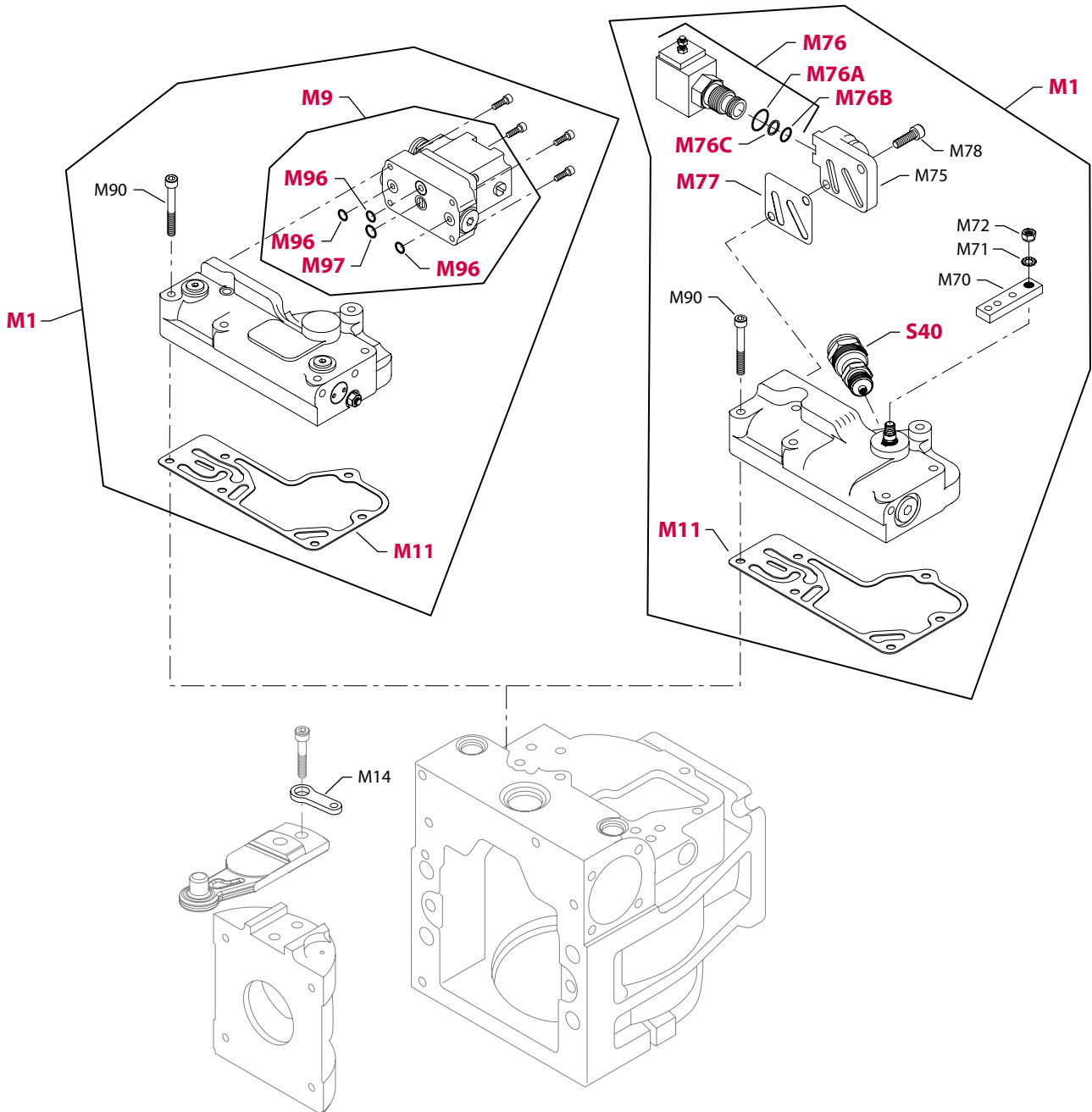


E100 926E

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
KA	M1	95-26		8510119	EDC3 kit, MS connector, dual coil	1
	M9	95-26		MCV116G4201	PCP, MS connector, dual coil	1
	M11	95-26		8800923	Control gasket	1
	M14	95-26		340091	Feedback link	1
	M90	95-26		692889 (9007314-0611)	Screw	6
	M96	95-26		011296 (9004105-0120)	O-ring	3
	M97	95-26		784686 (9004105-0130)	O-ring	1
	KC	M1	00-44		11018293	EDC kit, MS connector
M9		00-44		MCV116C1401	PCP, MS connector	1
M11		00-44		8800923	Control gasket	1
M14		00-44		340091	Feedback link	1
M90		00-44		692889 (9007314-0611)	Screw	6
M96		00-44		011296 (9004105-0120)	O-ring	3
M97		00-44		784686 (9004105-0130)	O-ring	1
KE		M1	03-27		8510324	EDC kit, Deutsch connector
	M9	03-27		MCV116F3118	PCP, Deutsch connector	1
	M11	03-27		8800923	Control gasket	1
	M14	03-27		340091	Feedback link	1
	M90	03-27		692889 (9007314-0611)	Screw	6
	M96	03-27		011296 (9004105-0120)	O-ring	3
	M97	03-27		784686 (9004105-0130)	O-ring	1
	KM	M1	98-42		8510242	EDC kit, 4-wire Metripak connector
M9		98-42		MCV116G4213	PCP, 4-wire Metripak connector	1
M11		98-42		8800923	Control gasket	1
M14		98-42		340091	Feedback link	1
M90		98-42		692889 (9007314-0611)	Screw	6
M96		98-42		011296 (9004105-0120)	O-ring	3
M97		98-42		784686 (9004105-0130)	O-ring	1
KN		M1	06-13		11013631	EDC kit, MS connector
	M9	06-13		MCV116A3501	PCP, MS connector	1
	M11	06-13		8800923	Control gasket	1
	M14	06-13		340091	Feedback link	1
	M90	06-13		692889 (9007314-0611)	Screw	6
	M96	06-13		011296 (9004105-0120)	O-ring	3
	M97	06-13		784686 (9004105-0130)	O-ring	1
	KP	M1	95-26		8510120	EDC kit, Weather-pak connector
M9		95-26		MCV116G4204	PCP, Weather-pak connector	1
M11		95-26		8800923	Control gasket	1
M14		95-26		340091	Feedback link	1
M90		95-26		692889 (9007314-0611)	Screw	6
M96		95-26		011296 (9004105-0120)	O-ring	3
M97		95-26		784686 (9004105-0130)	O-ring	1

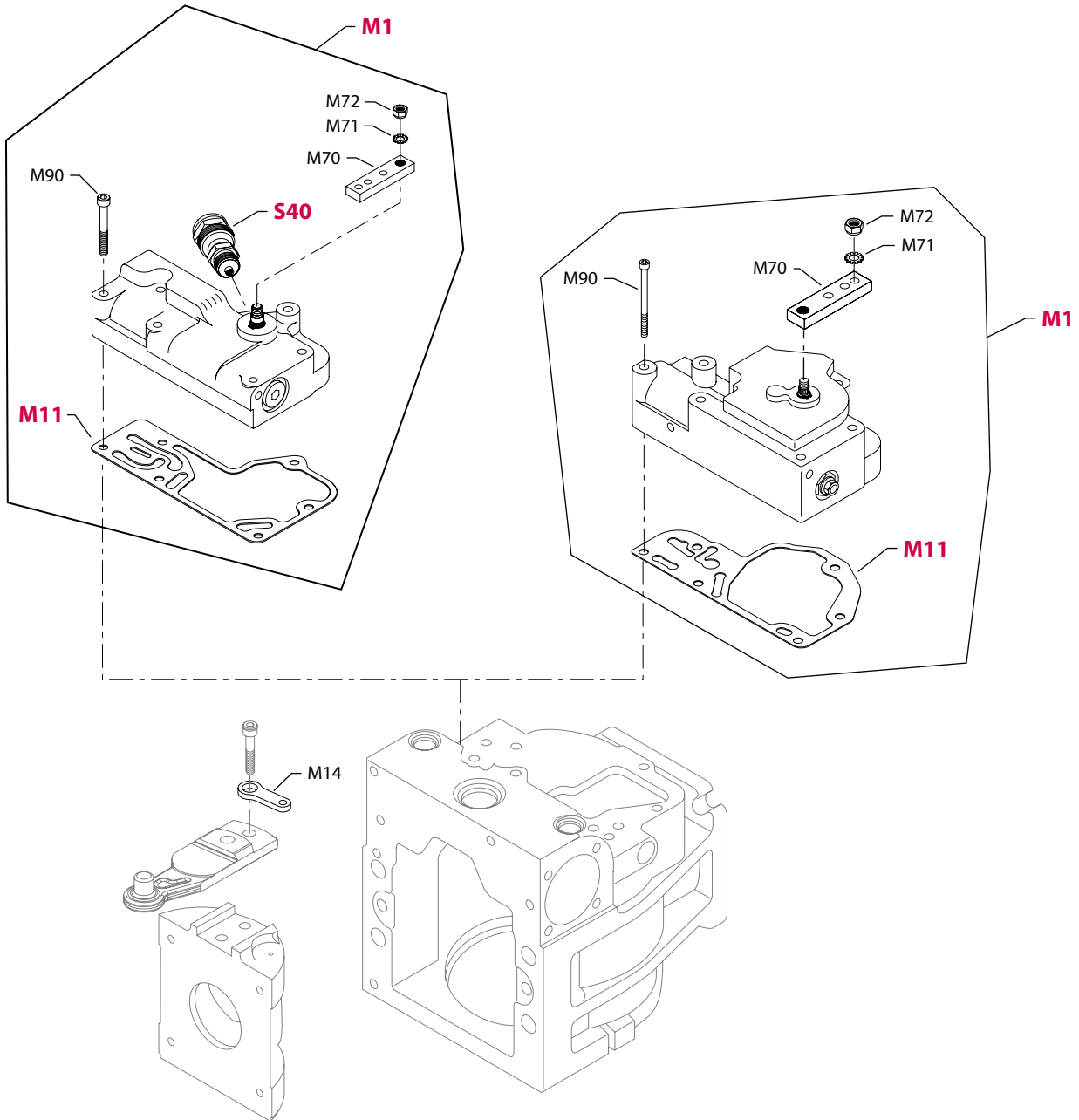


E100 927E

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CONTROL

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
KT	M1	06-19		kit #(KVEBB1409)	EDC3 kit, Deutsch connector	1	
	M9	06-19		MCV116G4214	PCP, Duetsch connector	1	
	M11	06-19		8800923	Control gasket	1	
	M14	06-19		340091	Feedback link	1	
	M90	06-19		692889 (9007314-0611)	Screw	6	
	M96	06-19		011296 (9004105-0120)	O-ring	3	
	M97	06-19		784686 (9004105-0130)	O-ring	1	
	LD	M1	98-40		8510289	MDC kit, w/neutral start switch, 2-pole 12v solenoid	1
M11		98-40		8800923	Control gasket	1	
M14		98-40		340091	Feedback link	1	
M70		98-40		9800916	Control handle	1	
M71		98-40		689018 (9009660-3100)	Toothlock washer	1	
M72		98-40		040642 (9003513-0800)	Nut	1	
M75		98-40		505022	Control manifold	1	
M76		98-40		326108 (9700886)	Solenoid valve, 12 volt, 2-pole	1	
M76A		98-40		001131 (9004201-5000)	O-ring	1	
M76B		98-40		9006150-0140	Back up ring	1	
M76C		98-40		000810 (9004100-0140)	O-ring	1	
M77		98-40		8800882	Manifold gasket	1	
M78		98-40		693341 (9007314-0606)	Screw	2	
M90		98-40		692889 (9007314-0611)	Screw	6	
S40		98-40		709014 (8510027)	Neutral start switch kit	1	
LP		M1	04-25		8510375	MDC kit, w/neutral start switch, 2-pole 12v solenoid	1
		M11	98-40		8800923	Control gasket	1
	M14	98-40		340091	Feedback link	1	
	M70	98-40		9800916	Control handle	1	
	M71	98-40		689018 (9009660-3100)	Toothlock washer	1	
	M72	98-40		040642 (9003513-0800)	Nut	1	
	M75	98-40		505022	Control manifold	1	
	M76	98-40		521242	Solenoid valve, 12 volt, 2-pole	1	
	M76A	98-40		001131 (9004201-5000)	O-ring	1	
	M76B	98-40		9006150-0140	Back up ring	1	
	M76C	98-40		000810 (9004100-0140)	O-ring	1	
	M77	98-40		8800882	Manifold gasket	1	
	M78	98-40		693341 (9007314-0606)	Screw	2	
	M90	98-40		692889 (9007314-0611)	Screw	6	
	S40	98-40		8510316	Neutral start switch kit, high force	1	

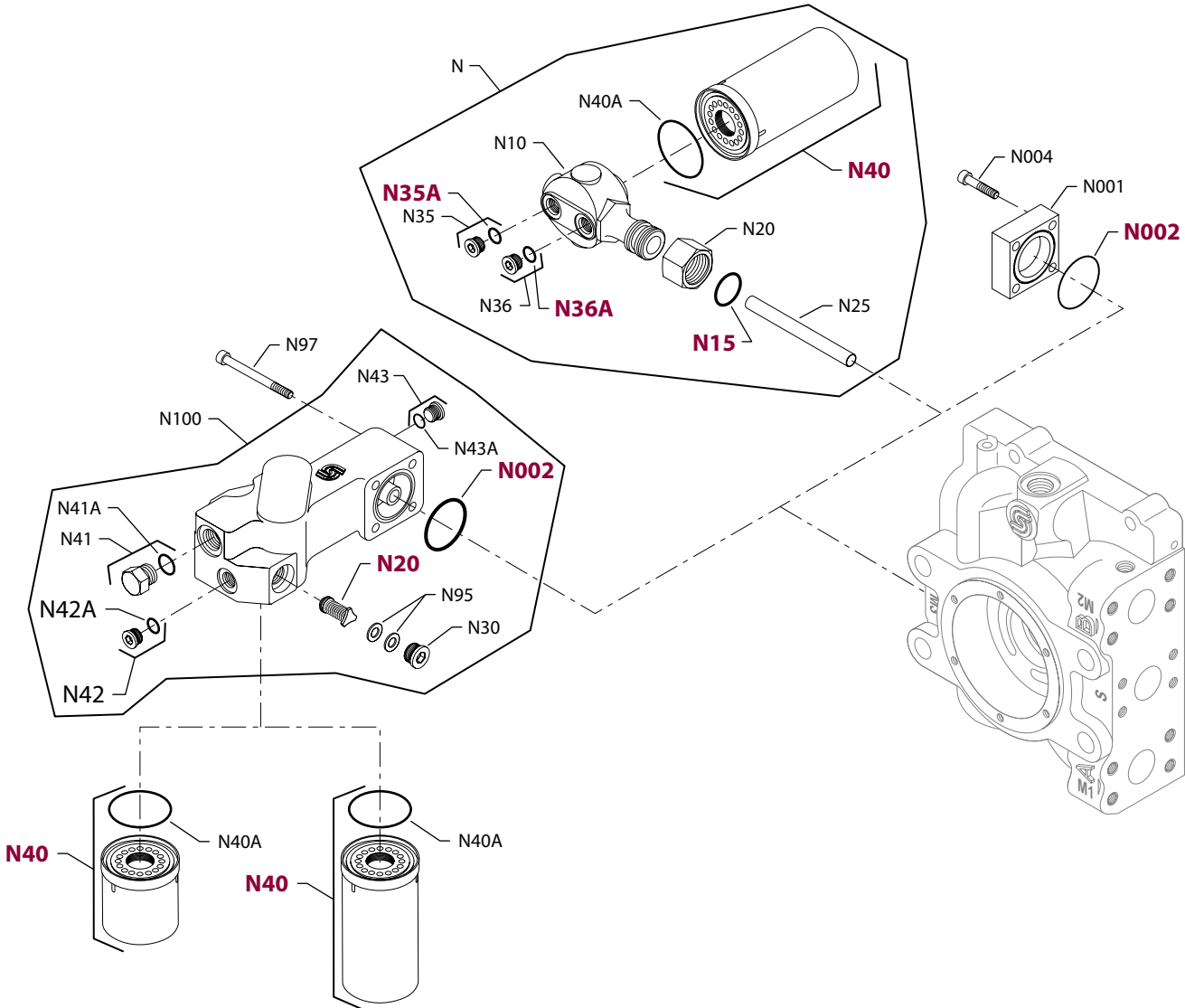


E100 928E

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	92-19		8302M0MA-A	MDC kit	1
	M11	92-19		8800923	Control gasket	1
	M14	92-19		340091	Feedback link	1
	M70	92-19		9800916	Control handle	1
	M71	92-19		689018 (9009660-3100)	Toothlock washer	1
	M72	92-19		040642 (9003513-0800)	Nut	1
	M90	92-19		692889 (9007314-0611)	Screw	6
	MB	M1	92-19		8302M0MB-A	MDC kit, with neutral start switch
MB	M11	92-19		8800923	Control gasket	1
	M14	92-19		340091	Feedback link	1
	M70	92-19		9800916	Control handle	1
	M71	92-19		689018 (9009660-3100)	Toothlock washer	1
	M72	92-19		040642 (9003513-0800)	Nut	1
	M90	92-19		692889 (9007314-0611)	Screw	6
	S40	92-19		80020S40	Neutral start switch kit	1
	MV	M1	94-24		8510267	MDC kit, with neutral start switch
MV	M11	94-24		8800923	Control gasket	1
	M14	94-24		340091	Feedback link	1
	M70	94-24		9800916	Control handle	1
	M71	94-24		689018 (9009660-3100)	Toothlock washer	1
	M72	94-24		040642 (9003513-0800)	Nut	1
	M90	94-24		692889 (9007314-0611)	Screw	6
	S40	94-24		505035 (8510170)	Neutral start switch kit	1
	NA	M1	92-19		8302M0NA-A	MDC kit
NA	M11	92-19		504733	Control gasket	1
	M14	92-19		340091	Feedback link	1
	M70	92-19		769075 (8800691)	Control handle	1
	M71	92-19		689018 (9009660-3100)	Toothlock washer	1
	M72	92-19		040642 (9003513-0800)	Nut	1
	M90	92-19		348847 (9007314-0614)	Screw	6

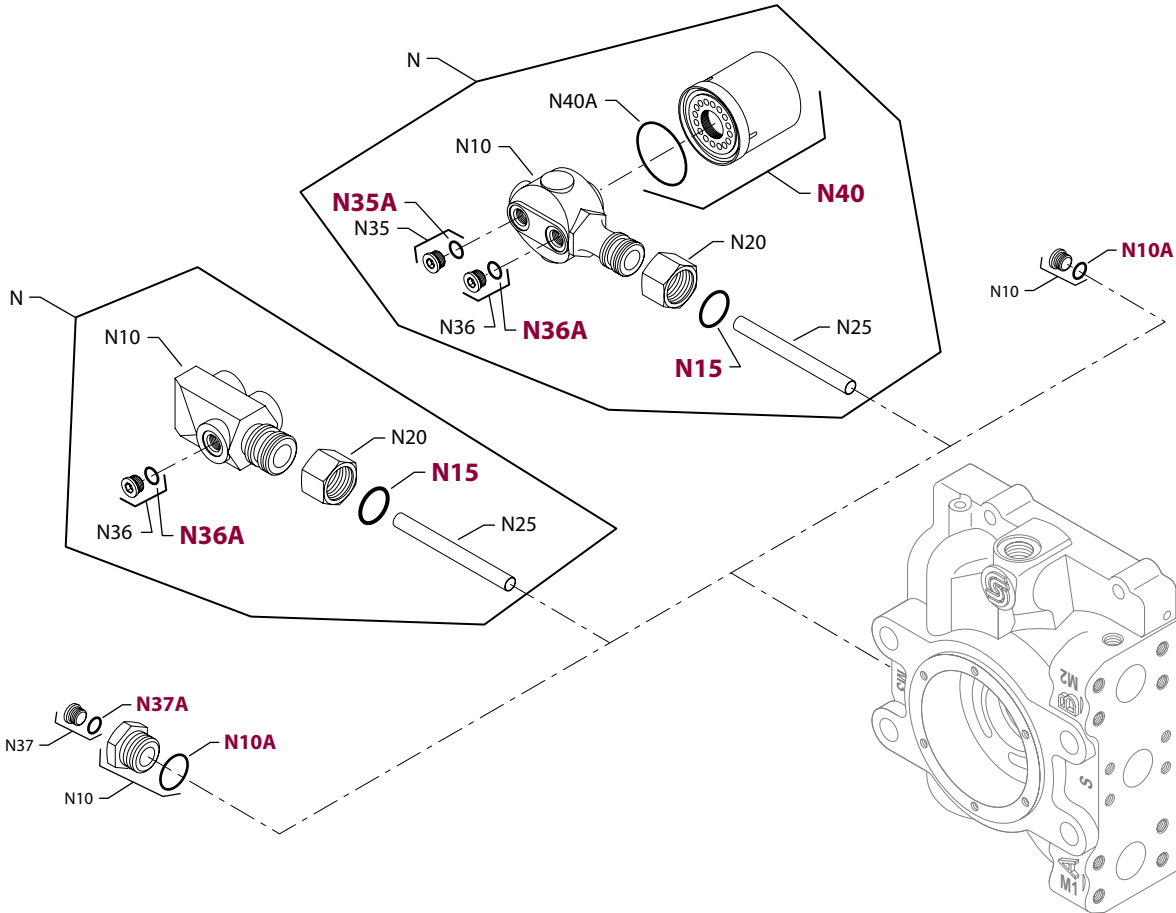


E100 929E

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
5	N001	99-18		515972	Cover plate	1
	N002	99-18		9004104-0320	O-ring	1
	N004	99-18		746594	Screw	4
7	N002	02-03		9004104-0320	O-ring	1
	N20	02-03		360768	Check valve	1
	N30	02-03		365965	Plug	1
	N40	02-03		519507/P	Filter assembly, long	1
	N40A	02-03		000943 (9004100-2300)	O-ring	1
	N41	02-03		001537 (9005100-8700)	Plug assembly	1
	N41A	02-03		001149 (9004201-6200)	O-ring	1
	N42	02-03		140644	Plug assembly	1
	N42A	02-03		085043 (9004201-3700)	O-ring	1
	N43	02-03		140644	Plug assembly	1
	N43A	02-03		085043 (9004201-3700)	O-ring	1
	N95	02-03		500115	Washer	2
	N97	02-03		376269	Screw	4
	N100	02-03		501831	Filter manifold assembly	1
	8 & D				None	
G	N100	03-18		501831	Filter manifold assembly	1
	N20	00-01		360768	Check valve	1
	N30	00-01		365965	Plug	1
	N40	00-01		519506/P	Filter assembly, short	1
	N40A	02-03		000943 (9004100-2300)	O-ring	1
	N41	00-01		001537 (9005100-8700)	Plug assembly	1
	N41A	00-01		001149 (9004201-6200)	O-ring	1
	N42	00-01		140644	Plug assembly	1
	N42A	00-01		085043 (9004201-3700)	O-ring	1
	N43	00-01		140644	Plug assembly	1
	N43A	00-01		085043 (9004201-3700)	O-ring	1
	N95	00-01		500115	Washer	2
	N97	00-01		376269	Screw	4
	N98	00-01		9004104-0320	O-ring	1
	L	N	89-41		317891	Filter manifold kit, with long filter assembly
N10		95-18		516639	Filter manifold (SB-1994-036)	1
N15		89-41		001172 (9004201-9000)	O-ring	1
N20		95-18		700492	Nut (SB-1994-036)	1
N25		89-41		700302	Tube (SB-1995-018)	1
N35		89-41		140644	Plug assembly	1
N35A		89-41		085043 (9004201-3700)	O-ring	1
N36		89-41		140644	Plug assembly	1
N36A		89-41		085043 (9004201-3700)	O-ring	1
N40		89-41		519507/P	Filter assembly, long	1
N40A		89-41		000943 (9004100-2300)	O-ring	1

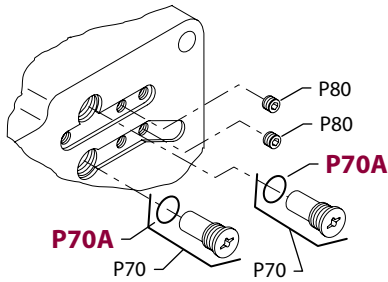


E100 930E

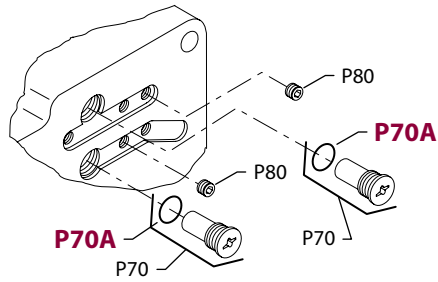
Enlarged **bold** type item numbers are recommended part to stock for servicing.

FILTRATION

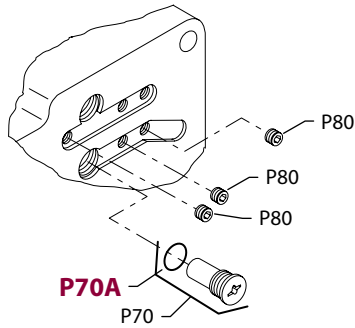
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
M	N10	94-16		140644	Plug assembly	1	
	N10A	94-16		085043 (9004201-3700)	O-ring	1	
P	N	89-41		359497	Filter manifold kit, with short filter assembly	1	
	N10	95-18		516639	Filter manifold (SB-1994-036)	1	
	N15	89-41		001172 (9004201-9000)	O-ring	1	
	N20	95-18		700492	Nut (SB-1994-036)	1	
	N25	89-41		508451	Tube (SB-1995-018)	1	
	N35	89-41		140644	Plug assembly	1	
	N35A	89-41		085043 (9004201-3700)	O-ring	1	
	N36	89-41		140644	Plug assembly	1	
	N36A	89-41		085043 (9004201-3700)	O-ring	1	
	N40	89-41		519506/P	Filter assembly, short	1	
	N40A	89-41		000943 (9004100-2300)	O-ring	1	
	R	N	89-41		359562 (8302N00R-A)	Filter manifold kit, remote	1
		N10	89-41		350777	Filter manifold	1
N15		89-41		001172 (9004201-9000)	O-ring	1	
N20		89-41		700492 (9002863-1600)	Nut	1	
N25		89-41		508450	Tube (SB-1995-018)	1	
N36		89-41		140644	Plug assembly	1	
N36A		89-41		085043 (9004201-3700)	O-ring	1	
S	N10	89-41		707554	Reducer assembly	1	
	N10A	89-41		001172 (9004201-9000)	O-ring	1	
	N37	89-41		140644	Plug assembly	1	
	N37A	89-41		085043 (9004201-3700)	O-ring	1	



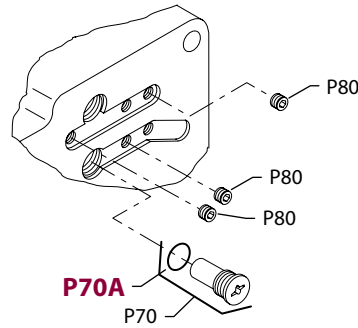
View "A" with
pressure limiters,
left hand rotation,
Options 1, 5, & 6



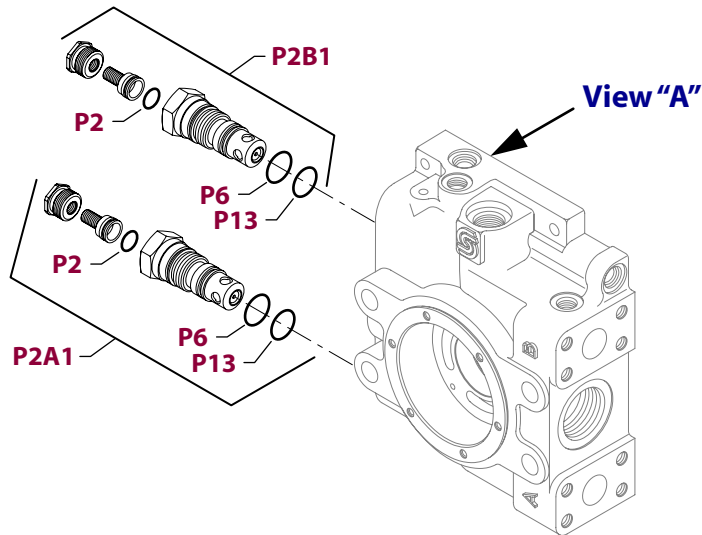
View "A" with
pressure limiters,
right hand rotation,
Options 1, 5, & 6



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



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

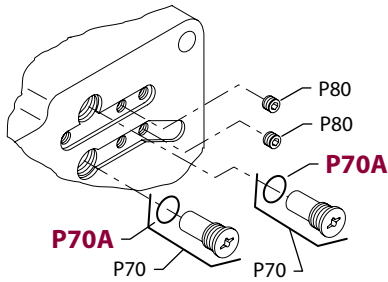


E100 931E

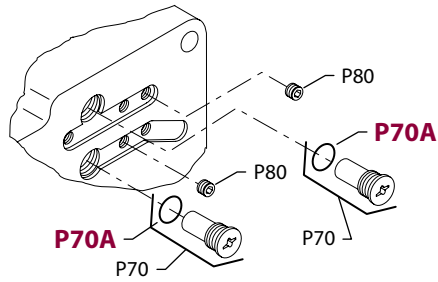
Enlarged **bold** type item numbers are recommended part to stock for servicing.

HIGH PRESSURE REGULATION

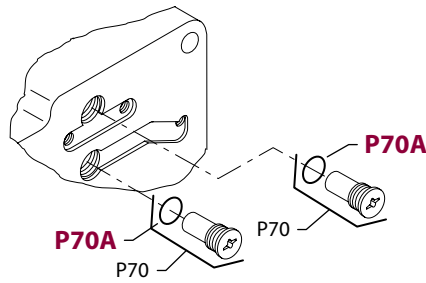
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	P2	89-41		775080	O-ring	2
	P6	89-41		360784 (9004105-0290)	O-ring	2
	P13	89-41		775155	O-ring	2
1	P2A1	89-41		8510023-1	Multi-function valve kit (SB-1991-014)	1
	P2B1	89-41		8510023-1	Multi-function valve kit (SB-1991-014)	1
	P70	89-41		8800188	Check valve	2
	P70A	89-41		001123 (9004201-2500)	O-ring	2
	P80	89-41		9005475-0004	Special plug	2
2	P2A1	89-41		8510023-2	Multi-function valve kit (SB-1991-014)	1
	P2B1	89-41		8510023-2	Multi-function valve kit (SB-1991-014)	1
	P70	89-41		327007 (9005110-4400)	Plug (SB-1989-003)	1
	P70A	89-41		001123 (9004201-2500)	O-ring	1
	P80	89-41		9005475-0004	Special plug	3
4	P2A1	03-28		8510023-7	Multi-function valve kit (SB-1991-014)	1
	P2B1	03-28		8510023-7	Multi-function valve kit (SB-1991-014)	1
5	P2A1	98-02		8510274	Multi-function valve kit (SB-1991-014)	1
	P2B1	98-02		8510274	Multi-function valve kit (SB-1991-014)	1
	P70	98-02		8800188	Check valve	2
	P70A	98-02		001123 (9004201-2500)	O-ring	2
	P80	98-02		9005475-0004	Special plug	2
6	P2A1	93-26		8510023-6	Multi-function valve kit (SB-1991-014)	1
	P2B1	93-26		8510023-6	Multi-function valve kit (SB-1991-014)	1
	P70	93-26		8800188	Check valve	2
	P70A	93-26		001123 (9004201-2500)	O-ring	2
	P80	93-26		9005475-0004	Special plug	2
7	P2A1	89-41		8510022-7	Multi-function valve kit (SB-1991-014)	1
	P2B1	89-41		8510022-7	Multi-function valve kit (SB-1991-014)	1
	P70	89-41		327007 (9005110-4400)	Plug (SB-1989-003)	1
	P70A	89-41		001123 (9004201-2500)	O-ring	1
	P80	89-41		9005475-0004	Special plug	3
A	P2A1	89-41		8510359	Multi-function valve kit (SB-1991-014)	1
	P2B1	89-41		8510359	Multi-function valve kit (SB-1991-014)	1
B	P2A1	99-09		8510023-1	Multi-function valve kit (SB-1991-014)	1
	P2B1	99-09		8510023-7	Multi-function valve kit (SB-1991-014)	1
	P70	99-09		8800188	Check valve	1
	P70A	99-09		001123 (9004201-2500)	O-ring	1
	P80	99-09		9005475-0004	Special plug	3



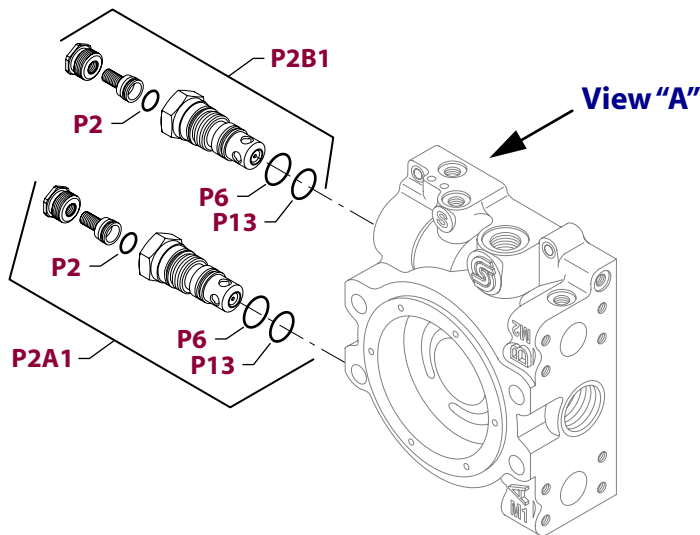
View "A" with
pressure limiters,
left hand rotation,
Options F, G, and P



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



View "A" with
pressure limiters,
special applications only,
Options V and Z



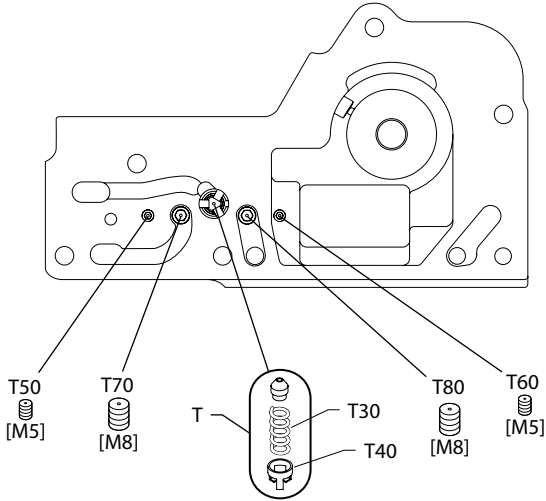
E100 932E

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

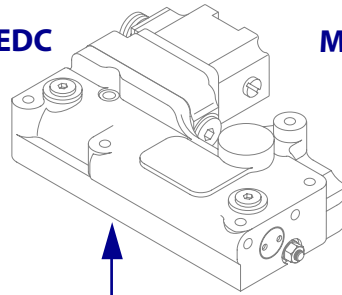
HIGH PRESSURE REGULATION

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	P2	89-41		141564 (9004100-0170)	O-ring	2
	P6	89-41		000836 (9004100-0200)	O-ring	2
	P13	89-41		544742 (9004105-0190)	O-ring	2
D	P2A1	97-40		8510187	Multi-function valve kit (SB-1991-014)	1
	P2B1	97-40		8510187	Multi-function valve kit (SB-1991-014)	1
F	P2A1	94-39		8510023-2	Multi-function valve kit (SB-1991-014)	1
	P2B1	94-39		8510023-2	Multi-function valve kit (SB-1991-014)	1
	P70	94-39		8800188	Check valve	2
	P70A	94-39		001123 (9004201-2500)	O-ring	2
	P80	94-39		9005475-0004	Special plug	2
G	P2A1	99-06		8510239	Multi-function valve kit (SB-1991-014)	1
	P2B1	99-06		8510239	Multi-function valve kit (SB-1991-014)	1
	P70	99-06		8800188	Check valve	2
	P70A	99-06		001123 (9004201-2500)	O-ring	2
	P80	99-06		9005475-0004	Special plug	2
P	P2A1	99-10		513827	Multi-function valve	1
	P2B1	99-10		513827	Multi-function valve	1
	P70	99-10		8800188	Check valve	2
	P70A	99-10		001123 (9004201-2500)	O-ring	2
	P80	99-10		9005475-0004	Special plug	2
V	P2A1	02-30		8510240	Multi-function valve kit	1
	P2B1	02-30		8510240	Multi-function valve kit	1
	P70	02-30		8800188	Check valve	2
	P70A	02-30		001123 (9004201-2500)	O-ring	2
Z	P2A1	04-12		8510022-1	Multi-function valve kit	1
	P2B1	04-12		8510022-1	Multi-function valve kit	1
	P70	04-12		8800188	Check valve	2
	P70A	04-12		001123 (9004201-2500)	O-ring	2

View "A"

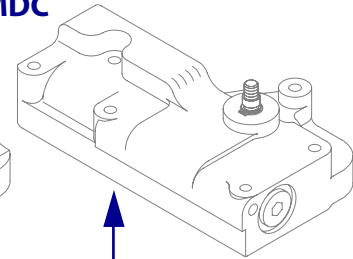


EDC



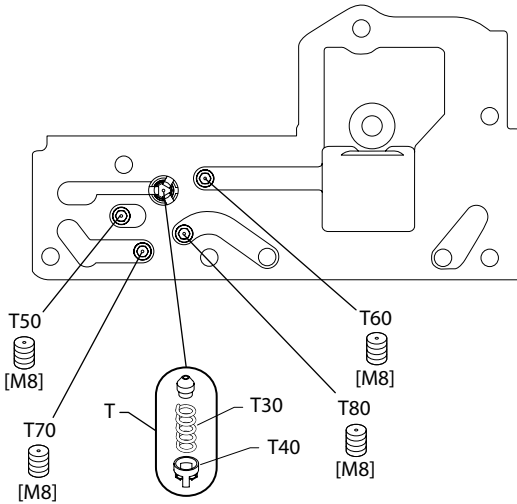
View "A"

MDC

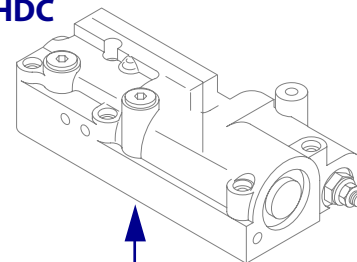


View "A"

View "A"

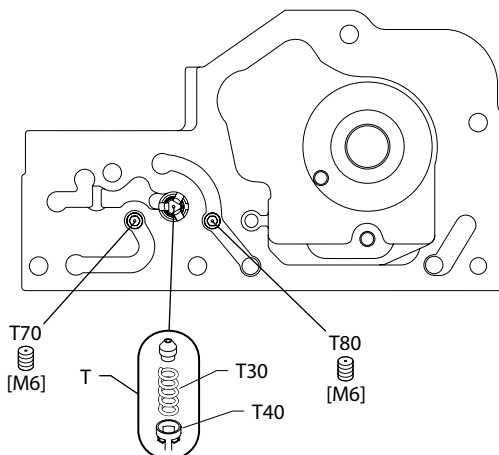


HDC

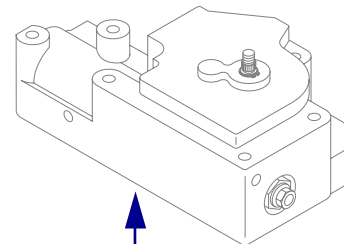


View "A"

View "A"



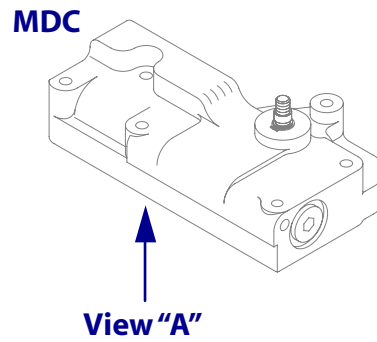
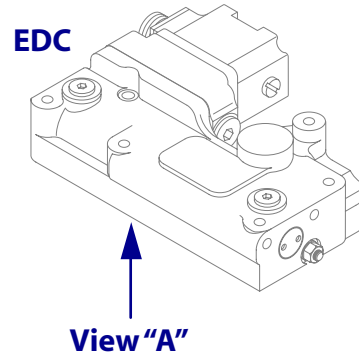
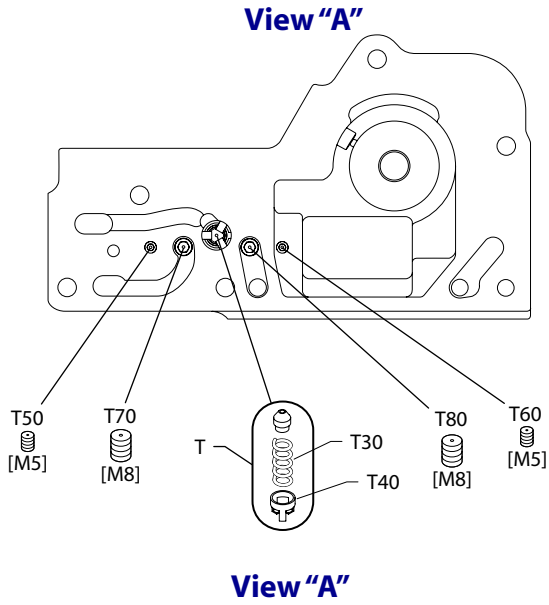
**Roller
Control**



View "A"

ORIFICE

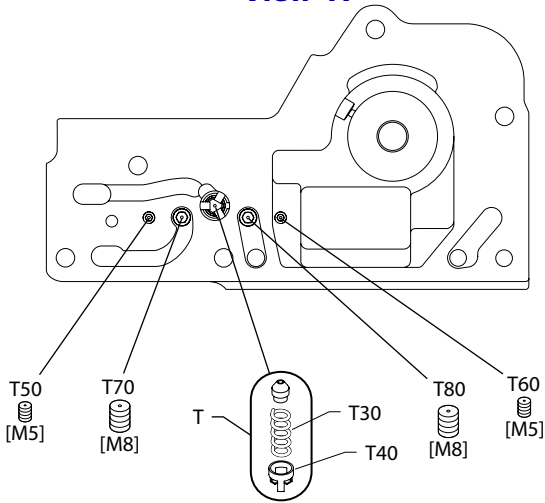
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
00				None		
01	T	89-41		8002T001-A	Control orifice kit, .018"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
02	T	89-41		8002T002-A	Control orifice kit, .026"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
03	T	89-41		8002T003-A	Control orifice kit, .032"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
04	T	89-41		8002T004-A	Control orifice kit, .040"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
05	T	89-41		8002T005-A	Control orifice kit, .054"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
06	T	89-41		8002T006-A	Control orifice kit, .062"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
09	T	89-41		8002T009-A	Control orifice kit, .092"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
21	T	89-41		8002T004-A	Control orifice kit, .040"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T70	89-41		714477	Orifice plug, 0.8mm, M8 x 8	1
	T80	89-41		714477	Orifice plug, 0.8mm, M8 x 8	1
22	T	89-41		8002T022-A	Control orifice kit, .022"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
23	T	89-41		8002T003-A	Control orifice kit, .032"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		639153	Orifice plug, 1.3mm, M5 x 6	1
	T60	89-41		639153	Orifice plug, 1.3mm, M5 x 6	1



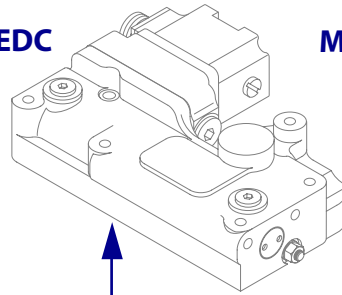
ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
25	T	89-41		8002T002-A	Control orifice kit, .026"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		606657	Orifice plug, 0.5mm, M5 x 6	1
	T60	89-41		606657	Orifice plug, 0.5mm, M5 x 6	1
	T70	89-41		716837	Orifice plug, 0.6mm, M8 x 8	1
	T80	89-41		716837	Orifice plug, 0.6mm, M8 x 8	1
	26	T	89-41		8002T003-A	Control orifice kit, .032"
T30		89-41		679506 (8700007)	Spring	1
T40		89-41		8801303	Spring retainer	1
T50		89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
T60		89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
27		T	89-41		8002T004-A	Control orifice kit, .040"
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
	T60	89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
	28	T	89-41		8002T002-A	Control orifice kit, .026"
T30		89-41		679506 (8700007)	Spring	1
T40		89-41		8801303	Spring retainer	1
T50		89-41		639104	Orifice plug, 0.7mm, M5 x 6	1
T60		89-41		639104	Orifice plug, 0.7mm, M5 x 6	1
T70		89-41		704650	Orifice plug, 0.7mm, M8 x 8	1
T80		89-41		704650	Orifice plug, 0.7mm, M8 x 8	1
29		T	89-41		8002T003-A	Control orifice kit, .032"
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		639104	Orifice plug, 0.7mm, M5 x 6	1
	T60	89-41		639104	Orifice plug, 0.7mm, M5 x 6	1
	30	T	89-41		8002T002-A	Control orifice kit, .026"
T30		89-41		679506 (8700007)	Spring	1
T40		89-41		8801303	Spring retainer	1
T50		89-41		639153	Orifice plug, 1.3mm, M5 x 6	1
T60		89-41		639153	Orifice plug, 1.3mm, M5 x 6	1
T70		89-41		704650	Orifice plug, 0.7mm, M8 x 8	1
T80		89-41		704650	Orifice plug, 0.7mm, M8 x 8	1
32		T50	89-41		639120	Orifice plug, 1.0mm, M5 x 6
	T60	89-41		639153	Orifice plug, 1.3mm, M5 x 6	1
33	T50	89-41		639153	Orifice plug, 1.3mm, M5 x 6	1
	T60	89-41		639153	Orifice plug, 1.3mm, M5 x 6	1

View "A"

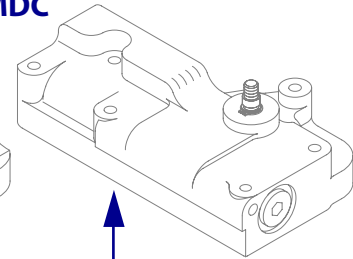


EDC



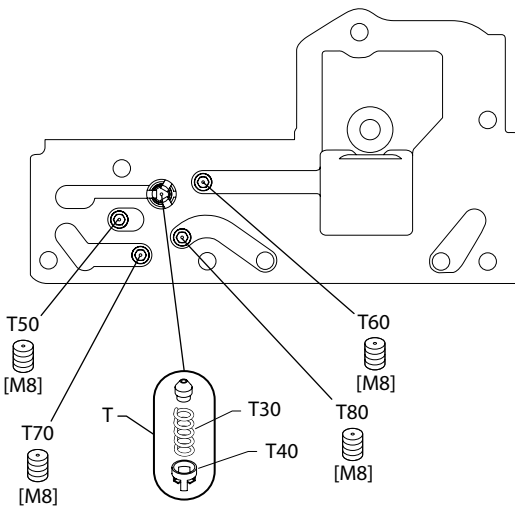
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MDC

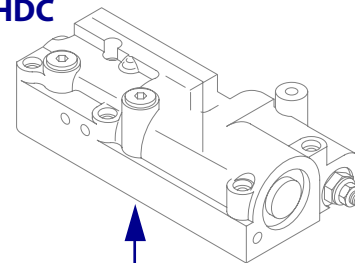


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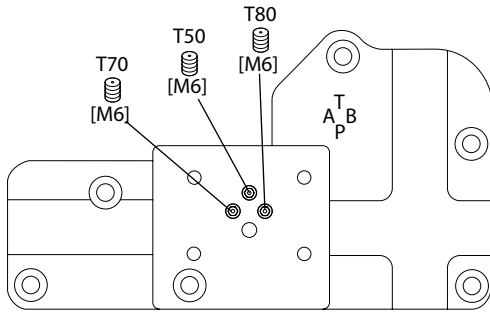
HDC



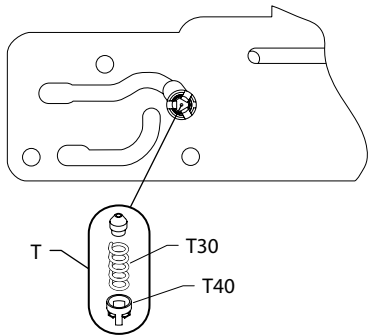
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ORIFICE

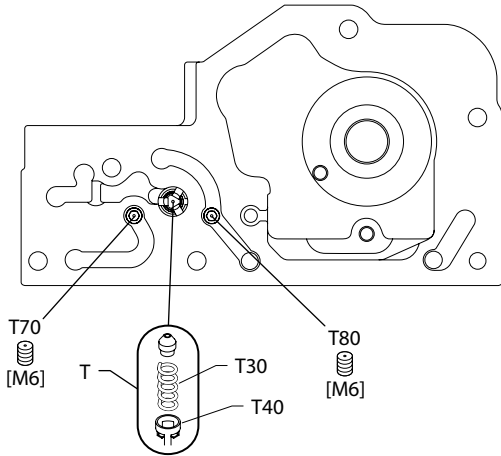
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
34	T70	89-41		755793	Orifice plug, 1.0mm, M8 x 8	1
	T80	89-41		755793	Orifice plug, 1.0mm, M8 x 8	1
37	T	89-41		8002T005-A	Control orifice kit, .054"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		639120	Orifice plug, 1.0mm, M5 x 6	1
	T60	89-41		639120	Orifice plug, 1.0mm, M5 x 6	1
38	T	89-41		8002T002-A	Control orifice kit, .026"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T70	89-41		716837	Orifice plug, 0.6mm, M8 x 8	1
	T80	89-41		716837	Orifice plug, 0.6mm, M8 x 8	1
44	T	89-41		8002T005-A	Control orifice kit, .054"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
	T60	89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
45	T	89-41		8002T003-A	Control orifice kit, .032"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		639153	Orifice plug, 1.3mm, M5 x 6	1
	T60	89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
46	T	89-41		8002T002-A	Control orifice kit, .026"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
	T60	89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
48	T	89-41		8002T003-A	Control orifice kit, .032"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
	T60	89-41		598292	Orifice plug, 0.8mm, M5 x 6	1
	T70	89-41		714477	Orifice plug, 0.8mm, M8 x 8	1
	T80	89-41		714477	Orifice plug, 0.8mm, M8 x 8	1
49	T	89-41		8002T003-A	Control orifice kit, .032"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		639120	Orifice plug, 1.0mm, M5 x 6	1
	T60	89-41		639120	Orifice plug, 1.0mm, M5 x 6	1



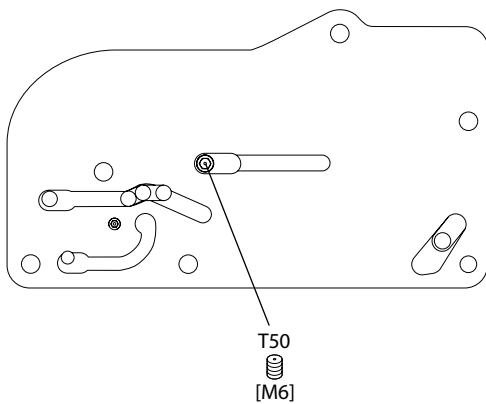
**FNR
Control**



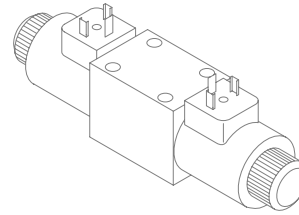
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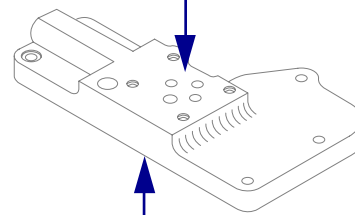
**Roller
Control**



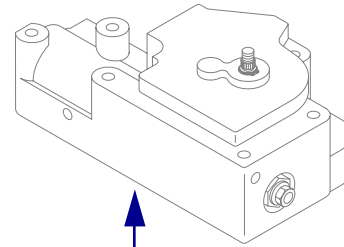
**NFPE
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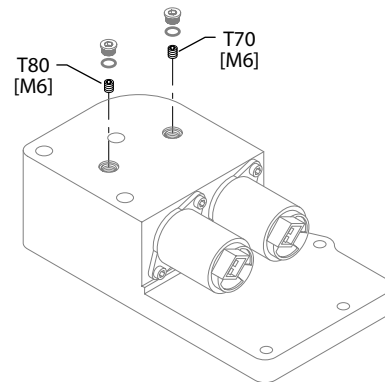
View "B"



View "A"



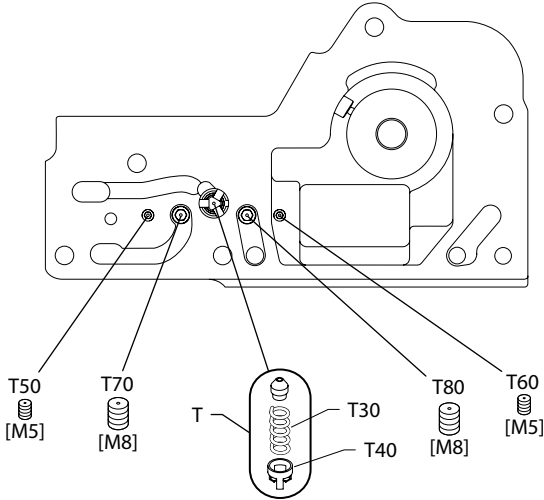
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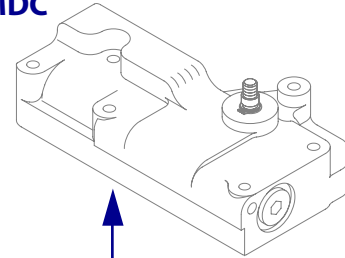
ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
50	T	89-41		8002T002-A	Control orifice kit, .026"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
	T70	89-41		517571	Orifice plug, 0.9mm, M6 x 6	1
	T80	89-41		517571	Orifice plug, 0.9mm, M6 x 6	1
	82	T50	89-41		310771	Orifice plug, 1.2mm, M6 x 6
T70		89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
T80		89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
84	T70	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
	T80	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
A5	T	89-41		8002T004-A	Control orifice kit, .040"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T70	89-41		578542	Orifice plug, 0.8mm, M6 x 8	1
	T80	89-41		578542	Orifice plug, 0.8mm, M6 x 8	1
A8	T	89-41		8002T004-A	Control orifice kit, .040"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T70	89-41		508014	Orifice plug, 1.0mm, M6 x 8	1
	T80	89-41		508014	Orifice plug, 1.0mm, M6 x 8	1
B1	T50	89-41		507042	Orifice plug, 1.5mm, M6 x 8	1
B2	T70	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
	T80	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
B7	T50	89-41		578542	Orifice plug, 0.8mm, M6 x 8	1
B8	T50	89-41		508014	Orifice plug, 1.0mm, M6 x 8	1
B9	T50	89-41		516598	Orifice plug, 1.2mm, M6 x 8	1
BA	T50	89-41		516598	Orifice plug, 1.2mm, M6 x 8	1
	T70	89-41		507042	Orifice plug, 1.5mm, M6 x 8	1
	T80	89-41		507042	Orifice plug, 1.5mm, M6 x 8	1

View "A"

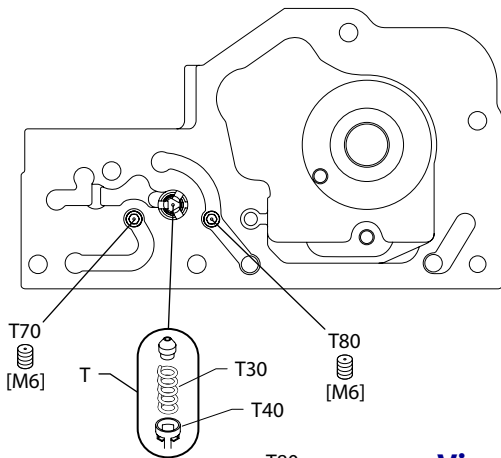


MDC

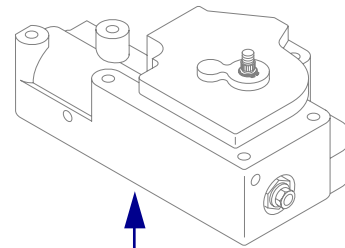


View "A"

View "A"

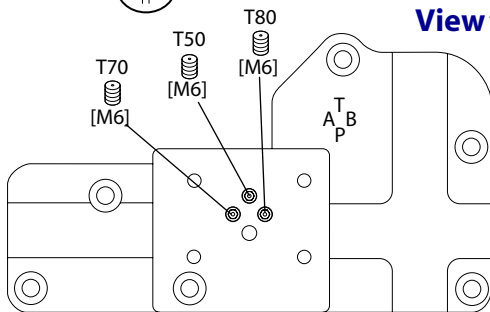


Roller Control

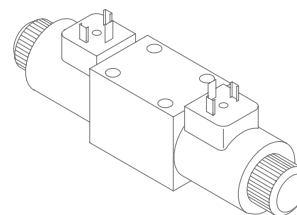


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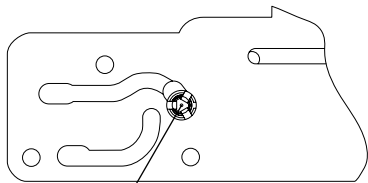
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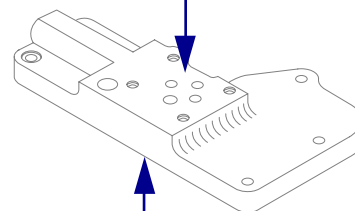
FNR Control



View "B"



View "A"

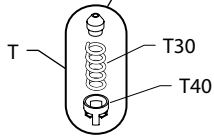
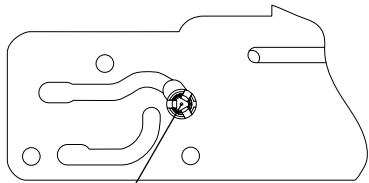
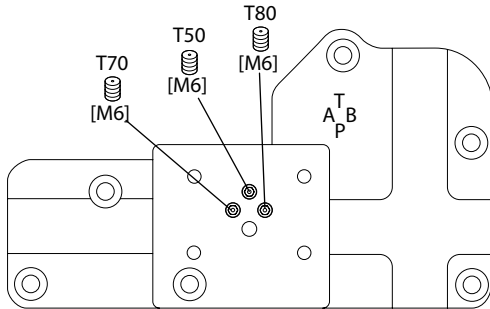


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ORIFICE

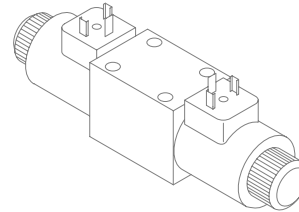
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
C4	T50	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
	T60	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
C5	T	89-41		8002T003-A	Control orifice kit, .032"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
	T60	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
C6	T	89-41		8002T004-A	Control orifice kit, .040"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
	T60	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
C7	T	89-41		8002T005-A	Control orifice kit, .054"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
	T60	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
D1	T	89-41		8002T005-A	Control orifice kit, .054"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T70	89-41		043356	Orifice plug, 0.9mm, M6 x 8	1
	T60	89-41		043356	Orifice plug, 0.9mm, M6 x 8	1
G1	T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1
G4	T	89-41		8002T001-A	Control orifice kit, .018"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1
G8	T	89-41		8002T002-A	Control orifice kit, .026"	1
	T30	89-41		679506 (8700007)	Spring	1
	T40	89-41		8801303	Spring retainer	1
	T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1
GB	T	87-42		8002T003-A	Control orifice kit, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
GD	T	87-42		8002T006-A	Control orifice kit, .062"	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

View "B"

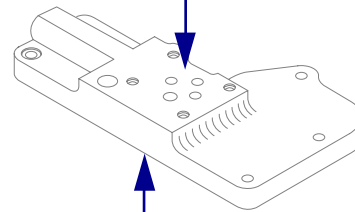


View "A"

**FNR
Control**

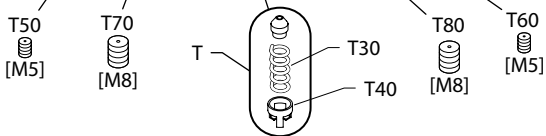
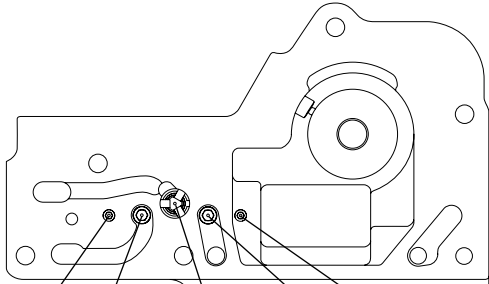


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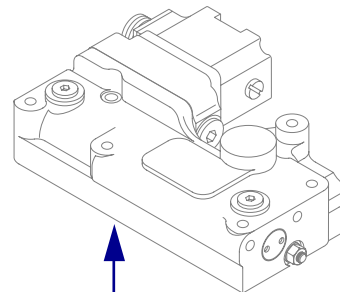


View "A"

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EDC



View "A"

ORIFICE

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GF	T	87-42		8002T004-A	Control orifice kit, .040"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
GJ	T	87-42		8002T005-A	Control orifice kit, .054"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
K1	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		639153	Orifice plug, 1.3mm, M5 x 6	1
	T60	87-42		639153	Orifice plug, 1.3mm, M5 x 6	1
K2	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
Z3	T	87-42		8002T004-A	Control orifice kit, .040"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		519659	Orifice plug, 1.0mm, M6 x 6	1
	T60	87-42		6519659	Orifice plug, 1.0mm, M6 x 6	1

OVERHAUL SEAL KIT

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
		89-41		714741	Overhaul seal kit	1
	B70A	89-41		085043 (9004201-3700)	O-ring	1
	B72A	89-41		085043 (9004201-3700)	O-ring	1
	B73A	89-41		085043 (9004201-3700)	O-ring	1
	B80A	89-41		001172 (9004201-9000)	O-ring	1
	B82A	89-41		085043 (9004201-3700)	O-ring	1
	B83A	89-41		085043 (9004201-3700)	O-ring	1
	B84A	89-41		526533	O-ring	1
	B85A	89-41		526533	O-ring	1
	C70	89-41		308643	Screw	4
	E40	89-41		042432	Seal nut	2
	E50	89-41		517379	O-ring	1
	E60	89-41		517230	Screw (SB-2002-014)	6
	E70A	89-41		001172 (9004201-9000)	O-ring	1
	F11	89-41		628396	O-ring	2
	F11	89-41		754150	O-ring	2
	F12	89-41		507800	Piston ring	2
	F12	89-41		754168	Piston ring	2
	F40	89-41		354316	O-ring	2
	F50	89-41		552224 (9004104-0360)	O-ring	2
	F112	89-41		042432	Seal nut, M10	1
	F212	89-41		042432	Seal nut, M10	1
	G11A	89-41		085043 (9004201-3700)	O-ring	1
	G12A	89-41		039297 (9004201-1200)	O-ring	1
	G13A	89-41		039297 (9004201-1200)	O-ring	1
	G14A	89-41		039297 (9004201-1200)	O-ring	1
	G15A	89-41		039297 (9004201-1200)	O-ring	1
	G16A	89-41		039297 (9004201-1200)	O-ring	1
	G17A	89-41		039297 (9004201-1200)	O-ring	1
	G18A	89-41		039297 (9004201-1200)	O-ring	1
	G19A	89-41		039297 (9004201-1200)	O-ring	1
	G30	89-41		730895	End cap gasket	1
	G45A	89-41		085043 (9004201-3700)	O-ring	1
	G46A	89-41		085043 (9004201-3700)	O-ring	1
	G47A	89-41		085043 (9004201-3700)	O-ring	1
	G51A	89-41		001123 (9004201-2500)	O-ring	1
	G53A	89-41		085043 (9004201-3700)	O-ring	1
	G54A	89-41		085043 (9004201-3700)	O-ring	1
	G55A	89-41		9004201-1900	O-ring	1
	G56A	89-41		001123 (9004201-2500)	O-ring	1
	G111A	89-41		039297 (9004201-1200)	O-ring	1
	G112A	89-41		039297 (9004201-1200)	O-ring	1
	G114A	89-41		9004201-1900	O-ring	1
	G116A	89-41		085043 (9004201-3700)	O-ring	1
	H90A	89-41		093823	o-RING	1
	J40	89-41		916940	O-ring	1
	J50	89-41		505068	O-ring	1

OVERHAUL SEAL KIT (CONTINUED)

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	J90	89-41		726950 (9004104-0420)	O-ring	1
	J90	89-41		726935 (9004104-0450)	O-ring	1
	J90	89-41		726943 (9004104-0490)	O-ring	1
	J90	89-41		726927	O-ring	1
	K50	89-41		001156 (9004201-7500)	O-ring	1
	L40	07-10		519021	Lip seal	1
	L40	89-41	07-09	9008000-0114	Lip seal (SB-2007-008)	1
	L50	89-41		509353	O-ring	1
	M11	89-41		8800923	Control gasket	1
	M11	92-15		8801241	Control gasket (SB-1999-065)	1
	M11	89-41		504733	Control gasket	1
	M77	89-41		8800882	Manifold gasket	1
	M95	89-41		318337 (9004104-0120)	O-ring	2
	M96	89-41		011304 (9004104-0140)	O-ring	1
	M96	89-41		011296 (9004105-0120)	O-ring	3
	M97	89-41		784686 (9004105-0130)	O-ring	1
	M97	89-41		318345 (9004104-0240)	O-ring	1
	N15	89-41		001172 (9004201-9000)	O-ring	1
	P2	89-41		775080	O-ring	2
	P6	89-41		360784 (9004105-0290)	O-ring	2
	P13	89-41		775155	O-ring	2
	P70A	89-41		001123 (9004201-2500)	O-ring	2
	W701	89-41		048413	O-ring	4



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 90130 cc variable pumps

SUBJECT Multi-function valve installation torque

DESCRIPTION To avoid damaging the multi-function valve cartridge used on 130cc variable pumps, the torque has been lowered from 206 lbf·ft (279 Nm) to 155 lbf·ft (210 Nm).

The series 90 service manual will be changed to show the lower installation torque at its next revision.

MODELS AFFECTED All 97-2xxx pumps

SERIAL NUMBERS All

PART NUMBERS AFFECTED All

PARTS DISPOSITION ■ Not applicable

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.

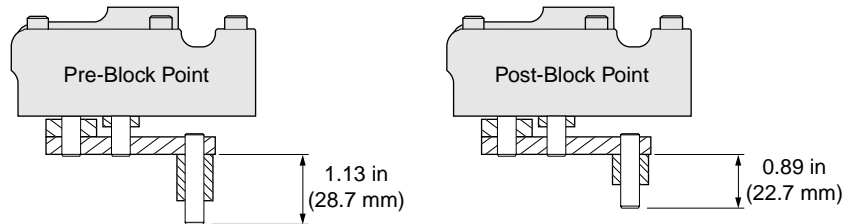
FRAME SIZE: 130 CC

Item	Description	Pre “blockpoint” Part Number	New Part Number (92-19 & Later)
Common Parts Group, 130 cc			
B10	Variable housing	700237(O)	8510060
E10	Side cover	340133	746107
E20	Leveler	701037	730143
E30	Guide post	340117	746255
E40	Screw	364489 (4)	042432 (2) Seal Nut
B82	Plug	n/a	9005110-5600
End Cap Group, 130 cc			
G308	End Cap gasket	709816(I)(O)	730895(I)
G908	Screw	376624	713719
G958	Screw	527218	9007314-0811
Special Hardware Features Group, 130 cc			
B83	Plug-Speed Pick-up	n/a	9005110-5600
Control Group, 130 cc			
All Control Types-Delete The Following Parts:			
M810	Plate	738203(O)	N/A
M820	O-ring	9004104-0440	N/A
M830	O-ring	9004100-0220	N/A
M840	O-ring	9004101-0130	N/A
M860	Screw	345496	N/A
M870	Plug	9005100-4400	N/A
M880	Washer	723981	N/A

Warning: On 130cc pumps, “pre” and “Post” blockpoint controls are not interchangeable due to different length control pins.

(I) Interchangeable
(O) Obsolete

Warning: On 130cc pumps, “pre” and “Post” blockpoint controls (MDC’s, HDC’s and EDC’s) are not interchangeable due to different length control pins. Ensure positive pin engagement. Failure to do so may result in pump output, and the vehicle may move.



Controls, 130 cc

Module		Pre “blockpoint”	New Part Number
Groups	Description	Part Number	(92-19 & Later)
MEA	EDC kit MS connector	MCV111B1302	See EC Group
MEP	EDC kit Packard	MCV111B1304	See EE Group
MEC	EDC, MS, standard	MCV114A1402	MCV114B1302
MEE	EDC, Packard, standard	MCV114A1404	MCV114B1304
MEG	EDC, MS, annular	MCV114C1402	MCV114D1302
MEH	EDC, Packard, annular	MCV114C1404	MCV114D1304
MHA	HDC, 1-11 bar	MCV112A1302	See HK Group
MHB	HDC, 1-6.7 bar	MCV112A1301	See HM Group
MHC	HDC, 3-11 bar	MCV112A1303	See HF Group
MHF	HDC, 3-11 bar, standard	MCV115A1403	MCV115A1303
MHG	HDC, .8-4.6 bar, annular	MCV115B1405	MCV115B1305
MHH	HDC, 1-11 bar, annular	MCV115B1402	MCV115B1302
MHJ	HDC, 3-11 bar, annular	MCV115B1403	MCV115B1303
MHK	HDC, 1-11 bar, standard	MCV115A1402	MCV115A1302
MHL	HDC, .8-4.6 bar, standard	MCV115A1405	MCV115A1305
MHM	HDC, 1.1-6.7 bar, standard	MCV115A1401	MCV115A1301
MHN	HDC, 1.1-6.7 bar, annular	MCV115B1401	MCV115B1301
MMA	MDC w/o nss	8302MOMA-A	8302MOMA-B
MMB	MDC w/ nss	8302MOMB-A	8302MOMB-B

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 92-19-xxxxx for 130 cc pumps

PART NUMBERS AFFECTED

Refer to text of this bulletin for specific part numbers.

Housing: (all frame sizes) Thickness adjacent to the side cover has been increased.

Side Cover: (100 cc & 130cc only) Thickness increased.

End Cap: (all frame sizes) Match housing change; small end cap screws (55 cc-100 cc) will be larger; the orientation of the charge relief valve on side port end caps has been changed from an oblique to a vertical orientation.

Controls: (130cc only) Eliminate mounting plate, three-pin link change.

Side Cover: (130cc only) Swashplate hold-down ("T-bar") mounting will be changed to commonize the design with the smaller displacement units

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

PARTS DISPOSITION

■ Non-interchangeable

PRODUCTS AFFECTED

Series 90 130 cc variable pumps

SUBJECT

Charge pump design change

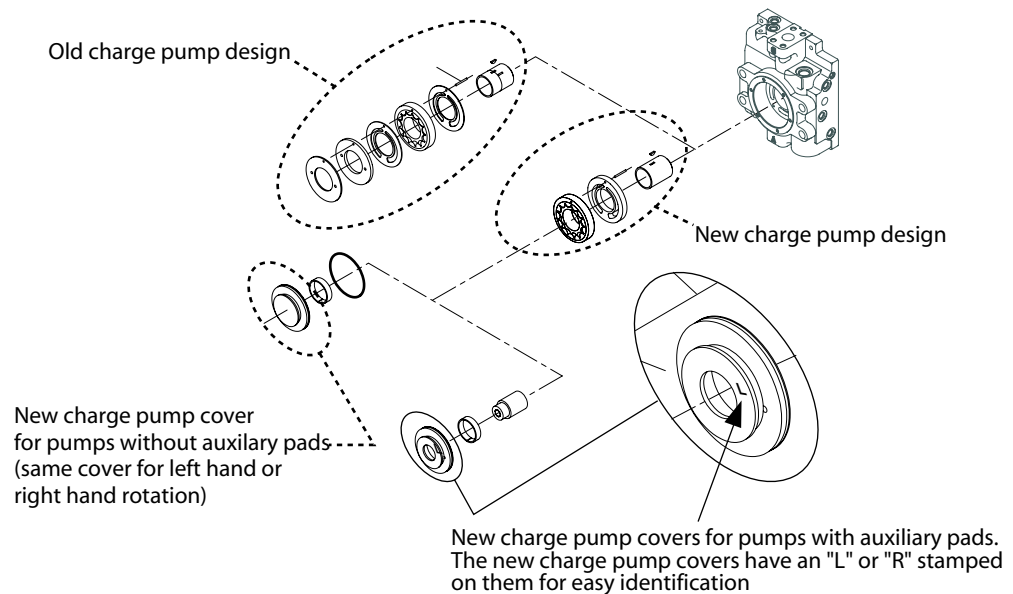
DESCRIPTION

To improve efficiency and reliability, the number of parts in the charge pump is being reduced. The charge pump on the 130 cc frame size is changing such that the outer port plate (H30) is an integral part of the charge pump cover (J15) and the 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.

However, piece parts are not interchangeable.



MODELS AFFECTED

All 97-2xxx and 972xxxx variable pumps

SERIAL NUMBERS

Change occurred at serial number N-93-34-xxxxx

PART NUMBERS AFFECTED

Obsoleted Charge Pump Parts			Chg. pump displacement	Auxiliary pad	Rotation	Replacement Kit
Gear Set	Shaft	Cover				
714444	303636	347518	20 cc	No	LH or RH	8510064
		347526		Yes	LH	8510065
		347526		Yes	RH	8510066
714451	303636	347518	26 cc	No	LH or RH	8510067
		347526		Yes	LH	8510068
		347526		Yes	RH	8510069
714469	303636	347518	34 cc	No	LH or RH	8510070
		347526		Yes	LH	8510071
		347526		Yes	RH	8510072

PARTS DISPOSITION

- Interchangeable - piece parts are not interchangeable

PRODUCTS AFFECTED

Series 90 55 thru 130 cc variable pumps

SUBJECT

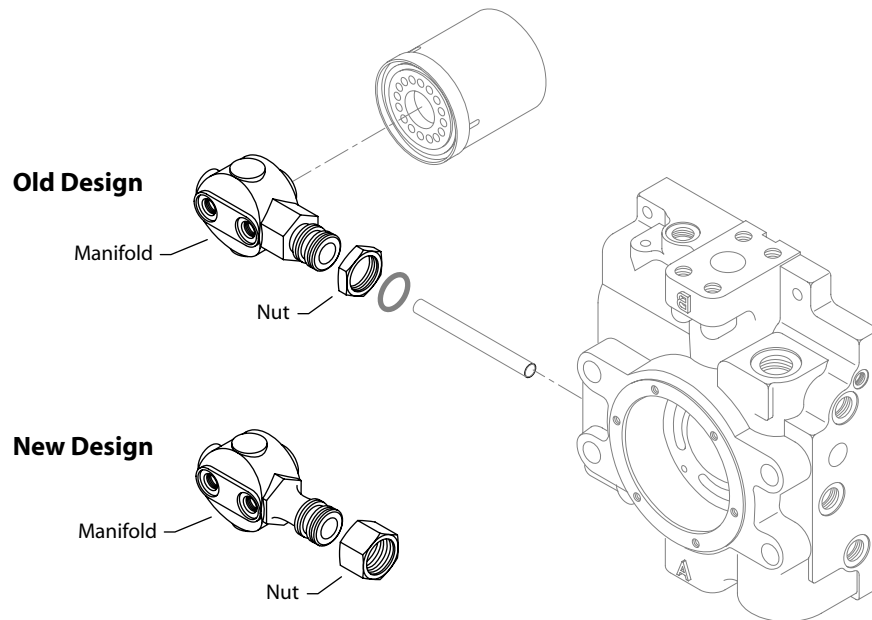
Integral filtration manifold

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

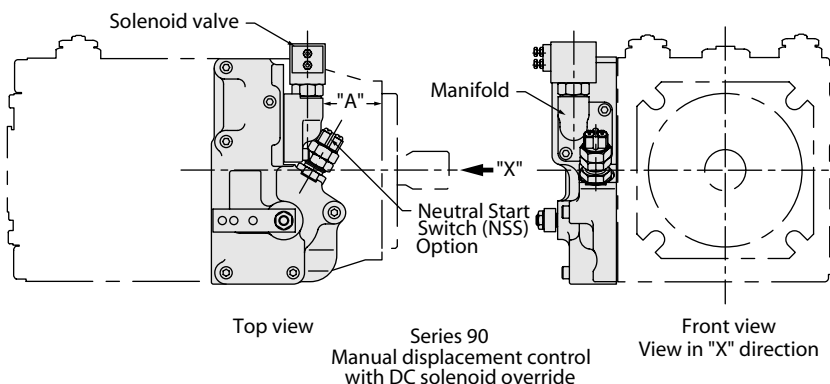
DESCRIPTION

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 90 130 cc variable pumps

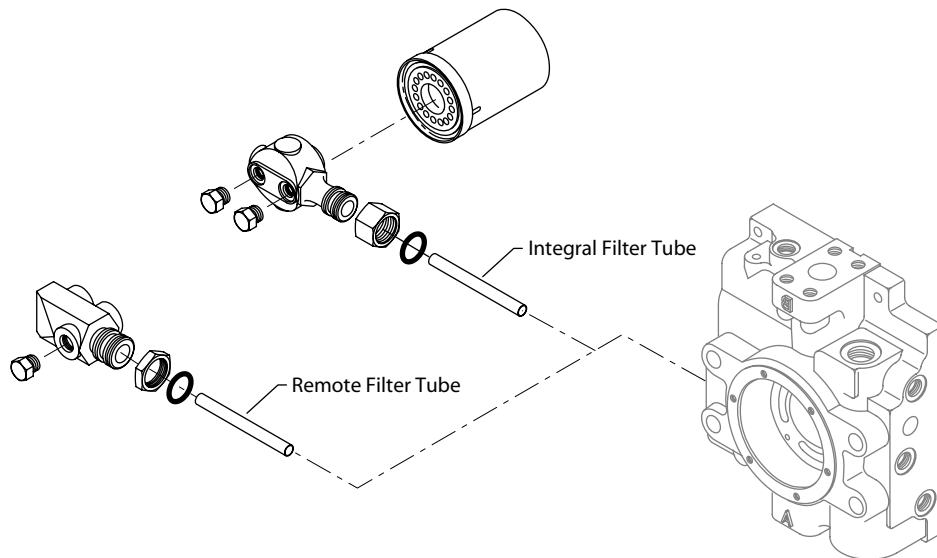
SUBJECT

Filter tube - pressure and remote filtration

DESCRIPTION

The filtration tube that is used in the manifold for remote or integral pressure filtration may be too short in length. The filtration tube should be measured for proper length and replaced if necessary at first repair for units built prior to N-95-41. The correct length of the integral filtration tube is $143.76 \pm .25\text{mm}$ [$5.66 \pm .01$ inches] and $101.09 \pm .25\text{mm}$ [$3.98 \pm .01$ inches] for the remote filtration tube.

The old filtration tubes are obsolete and no longer available as a service part.



MODELS AFFECTED

All series 90 130 cc variable pumps with integral or remote pressure filtration.

SERIAL NUMBERS

Change occurred at serial number N-95-41-xxxxx

PART NUMBERS AFFECTED

Filter option	Old part number	New part number
Remote	355206	8800938
Integral	355214	8800939

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 42, 130, 180, and 250cc variable pumps

SUBJECT

Side cover design change

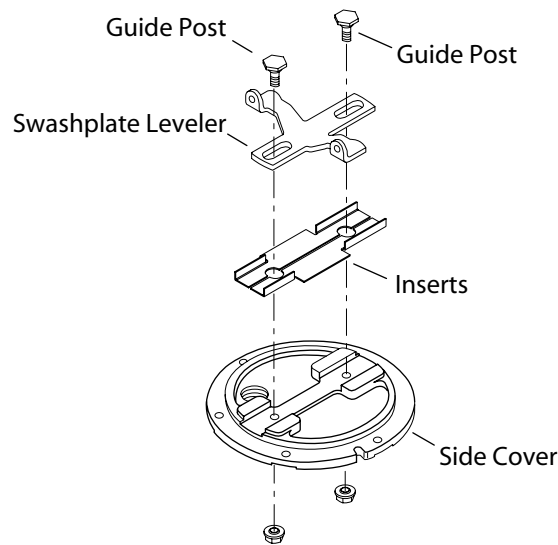
DESCRIPTION

As a product improvement, Sauer-Sundstrand 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 series 42, 130, 180, and 250cc variable pumps

SERIAL NUMBERS

Change occurred at serial number N-96-08-xxxxx.

PART NUMBERS AFFECTED

Description	Old part numbers			New part numbers	
	Guide post	Side cover	Insert assy.	Guide post	Side cover kit
42 cc	344465	751305	506916	506369	506380
130 cc	503205	746107	8300004	506368	506289
180 cc	503205	746404	506914	506368	506290
250 cc	503205	746404	506914	506368	506290

PARTS DISPOSITION

■ Interchangeable - piece parts are not interchangeable

PRODUCTS AFFECTED

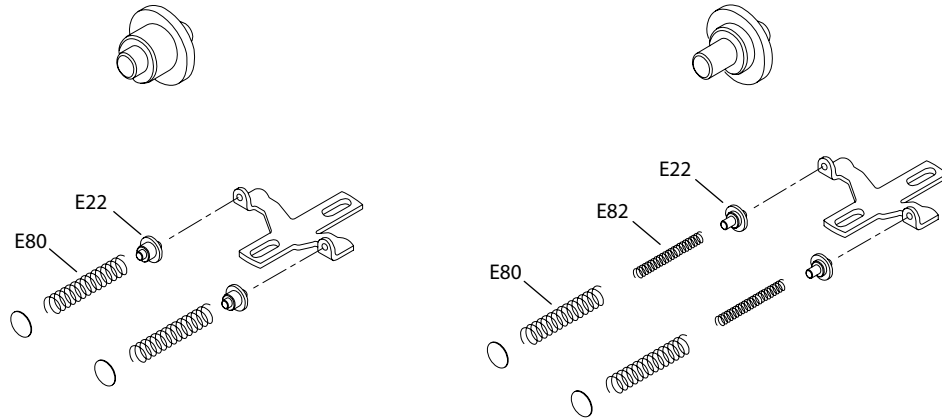
Series 90 130 cc variable pumps

SUBJECT

Washplate leveler spring and spring seat change

DESCRIPTION

As a product improvement, Sauer-Danfoss has changed the design of the springs and spring seats used on the washplate leveler from two springs to four springs. The older spring and spring seat are obsolete and no longer available as a service part.



Old Design

New Design

Spring identification	Old spring	New springs	
		E80	E82
Free length	106.44 mm [4.19 in]	111.4 mm [4.38 in]	95.25 mm [3.75 in]
O.D.	28.5 mm [1.122 in]	28.07 mm [1.11 in]	17.02 mm [.67 in]

MODELS AFFECTED

All 97-2xxx and 972xxxx variable pumps

SERIAL NUMBERS

Change occurred at serial number N-97-08-xxxxx

PART NUMBERS AFFECTED

Item no.	Description	Old p/n	Qty	New p/n	Qty
E22	Spring seat	367037	2	8300011	2
E82	Spring	-	-	8300009	2
E80	Spring	503091	2	8300010	2

PARTS DISPOSITION

■ Interchangeable - only if springs and seats are changed together

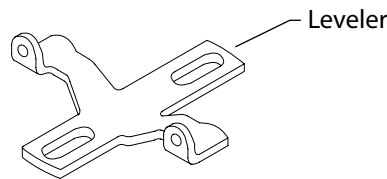
PRODUCTS AFFECTED Series 90 130 cc variable pumps

SUBJECT Swashplate leveler design change

DESCRIPTION Sauer-Danfoss has changed the design of the swashplate leveler used on Series 90 130 cc variable displacement pumps. Previously, the Series 90 130 cc pumps used two different leveler designs on a production basis. One leveler (730143) was used in pumps which were not equipped with an integral speed sensor and a second leveler (510780) was used specifically for pumps equipped with a speed sensor.

The new leveler is designed and manufactured to be compatible for use in both non speed sensor and speed sensor equipped Series 90 130 cc pumps. This change improves the initial assembly and servicing of the pumps by increasing the parts commonality.

The new leveler is completely interchangeable with both of the previous levelers. The previous two levelers have been obsoleted and are no longer available as service parts.



MODELS AFFECTED All 97-2xxx and 972xxxx variable pumps

SERIAL NUMBERS Change occurred at serial number N-98-40-xxxxx

PART NUMBERS AFFECTED

Integral speed sensor equipped	Previous to N-98-40	Current
Yes	510780	511052
No	730143	511052

PARTS DISPOSITION ■ Interchangeable - piece parts are not interchangeable

PRODUCTS AFFECTED

Series 90 variable pumps

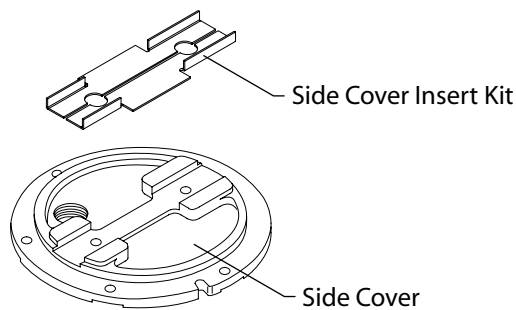
SUBJECT

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 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

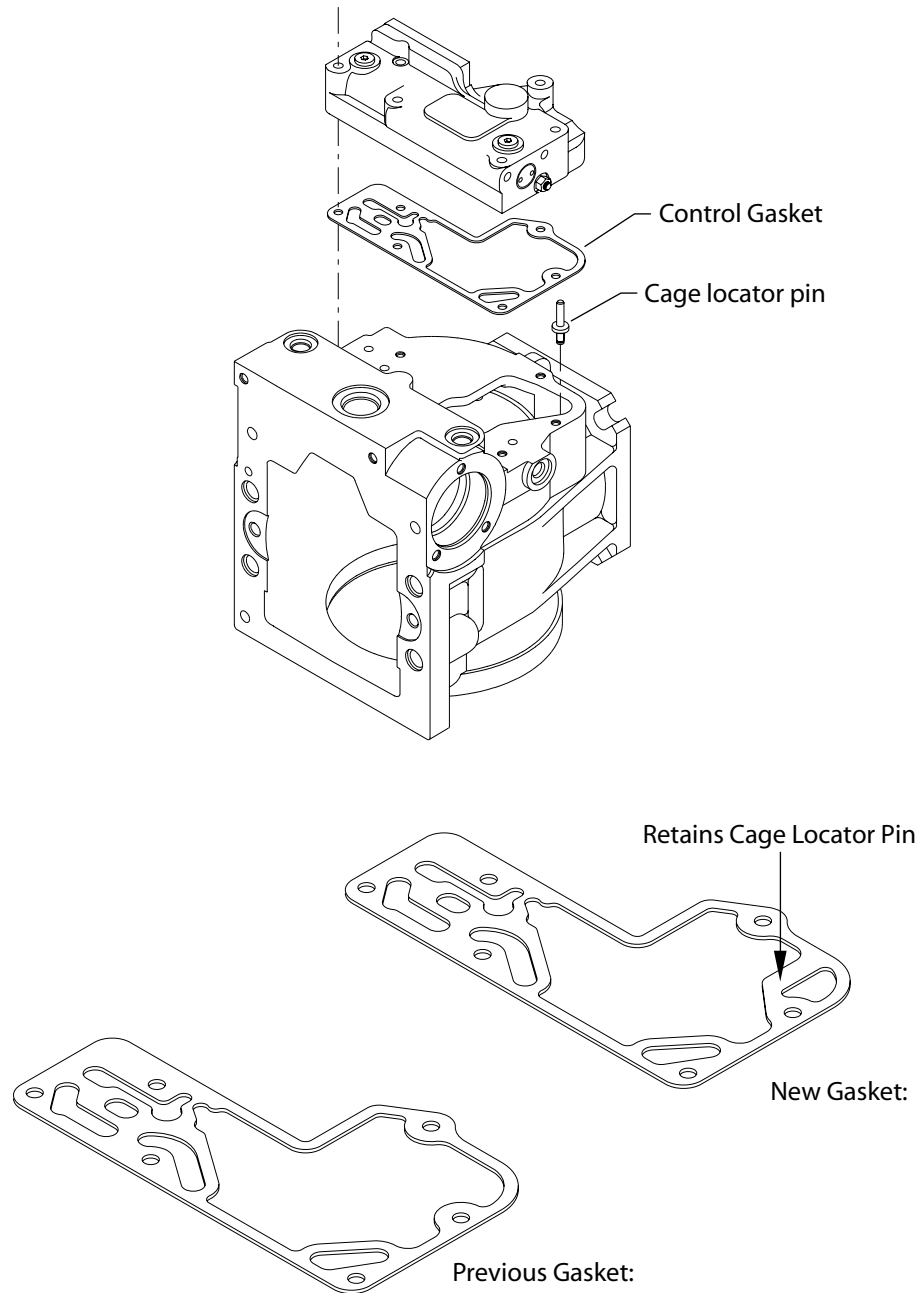
Sauer-Danfoss Ames 75cc pump production: A-99-50-xxxxx.
Sauer-Danfoss Ames 100cc pump production: A-00-25-xxxxx.
Sauer-Danfoss Neumunster production: N-00-01-xxxxx.

**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-xxxx up to and including A-00-34-xxxx.

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

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

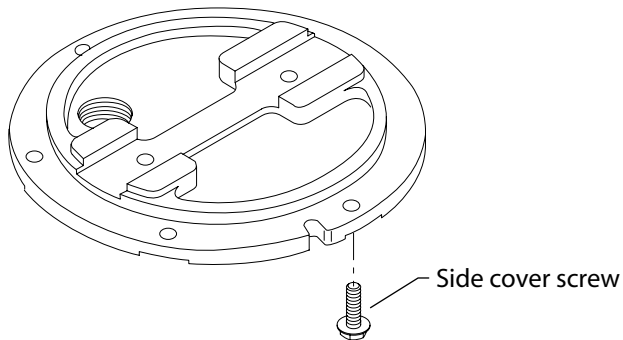
PARTS DISPOSITION

- Interchangeable

PRODUCTS AFFECTED Series 90 42, 130, 180, and 250cc variable pumps

SUBJECT Side cover screw change

DESCRIPTION Sauer-Danfoss has changed the locking compound used on the side cover screws. We have assigned new part numbers to track this change. The old screw part numbers are obsolete. They are no longer available for service.



MODELS AFFECTED All 42, 130, 180, and 250 cc variable pumps

SERIAL NUMBERS N/A

PART NUMBERS AFFECTED

Description	Previous part number	New part number
Screw-hex flange, M6 x 16	508437	517229
Screw-hex flange, M10 x 20	508439	517230
Screw-hex flange, M10 x 25	508441	517231

PARTS DISPOSITION ■ Interchangeable

PRODUCTS AFFECTED

Series 90 130, 180 and 250 cc variable pumps and motors

SUBJECT

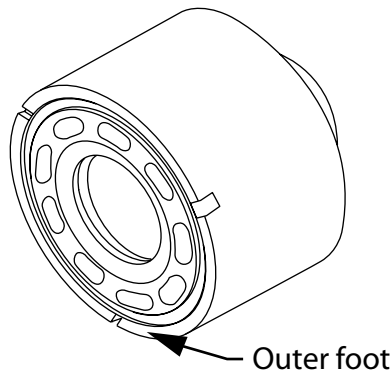
Redesign of cylinder block running face

DESCRIPTION

As a product improvement, Sauer-Danfoss is changing the outer foot of the running face on cylinder blocks used in all Series 90 variable pumps, fixed motors, and variable motors. The outer foot is now lower by .0008 to .0039in. [.02 to .1mm] than the running surface around the kidneys. The increased clearance between the outer foot and the valve plate helps optimize the unit's performance. This change will improve the torque efficiency and volumetric efficiency of the product.

A part number change tracks this change. We will replace the part numbers on previous blocks and block kits with new part numbers. The old part numbers are obsolete. They are no longer available for service parts.

This Service Bulletin revision is adding information regarding 180 and 250 cc units.



MODELS AFFECTED

Series 90 130, 180 and 250 cc variable pumps and motors

SERIAL NUMBERS

Change occurred at serial number: N-03-19-xxxxx for 130 cc
 N-03-41-xxxxx for 180 cc
 N-03-25-xxxxx for 250 cc

PART NUMBERS AFFECTED

130 cc		180 cc	
Old part number	New part number	Old part number	New part number
510330	519258	518355	519278
518056	519275	8510160	519278
518056	519274	518354	519261
518405	519277	510694	519261
518317	519276		
519054	519259	250 cc	
515351	519259	Old part number	New part number
8510087	519275	518359	519279
510307	519274	8510148	519279
503753	519259	518356	519265
302851	519258	513474	519265

PARTS DISPOSITION

■ Interchangeable

PRODUCTS AFFECTED

Series 90 130 cc variable pumps

SUBJECT

Redesign block point change

DESCRIPTION

As a global improvement, the series 90 130cc pump has the following redesigned components: servo arm, swashplate guide, pump housing, shaft seal assembly, cradle bearing, swashplate locator link pin, servo arm screw, and leveler.

All parts are non-interchangeable with the exception of the locator link pin and shaft seal assembly. Model numbers and order codes will not be changed.

Servo arm: A “one piece” servo arm is introduced. The pin that engages the servo piston is now machined as part of the servo arm instead of pressed in. The old servo arm will remain available as a service part for a period of time.

Swashplate Guide: The swashplate position is now guided by the fit between the servo arm and the pump housing. A “shelf” on the servo arm fits under a boss in the housing to provide a fixed clearance swashplate hold-down. The swashplate was previously held down with a spring and bracket, which was riveted to the servo arm. The servo arm to housing clearance now limits lateral movement of the swashplate. The swashplate guide that was bolted to the bottom of the swashplate has been removed. The separate swashplate guide will remain available as a service part for a period of time.

Housing: The housing is modified internally to provide the servo arm pivot. Also, the cradle and side cover radii are reduced. Some customers may notice cosmetic external changes. The old housing will be obsoleted and no longer available as a service part.

Shaft seal assembly: The shaft seal assembly is interchangeable, but the piece parts are not. The new lip seal has a smaller O.D. and the I.D. of the seal carrier changed accordingly. The old shaft lip seal will remain available as a service part.

Cradle bearing: The new design is cold formed with the positioning pin now integral with the bearing. The old cradle bearing will remain available as a service part for a period of time.

Locator link pin: The new locator link pin has a rubber gripping element added to help hold it in position during assembly. The new locator link pin is interchangeable with the old locator link pin. The old locator link pin is obsolete and no longer available for service.

Screw: One of the two screws that hold the servo arm to the swashplate has changed from a M10 to a M8 screw. See drawing for details.

Leveler: All 130cc pumps now use a leveler and two spring seats. The new leveler plus spring seats are interchangeable with the old leveler. The old leveler is obsolete and no longer available for service.

MODELS AFFECTED

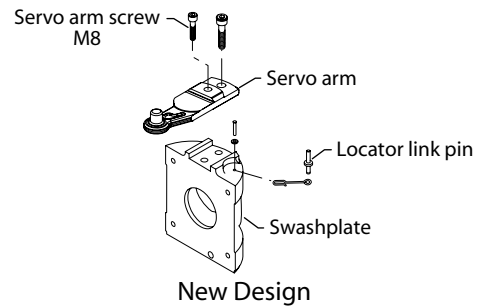
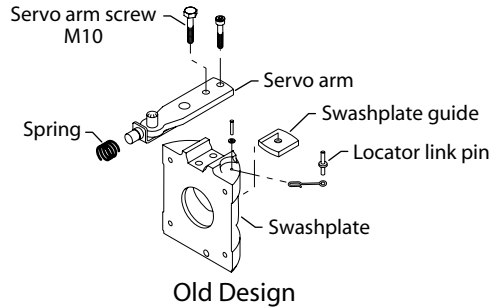
All series 90 130 cc variable pumps

SERIAL NUMBERS

Change occurred at serial number N-07-10-xxxxx

**PART NUMBERS
AFFECTED**

Description	Old part number	New part number
Servo arm	303214	11000397
Servo arm screw	536649	519150
Swashplate	516204	11001678
Pin	754606	11003805
Cradle bearing	324657	11000866
Swashplate guide	766022	Not Used
Spring	303420	Not Used
Seal carrier assembly	510018	519732
Shaft lip seal	90080000-0114	519021
Housing	503426	11000395
Housing PPU special	515350	1006984
Housing PPU	729855	110006670
Side cover	501576	11001326
Leveler	508311	511052
Spring seats	None	8300011



PARTS DISPOSITION

■ Interchangeable - piece parts are not interchangeable



Series 90 130 cc Axial Piston Pump
Parts Manual
Notes





OUR PRODUCTS

Hydrostatic transmissions
Hydraulic power steering
Electric power steering
Electrohydraulic power steering
Closed and open circuit axial piston pumps and motors
Gear pumps and motors
Bent axis motors
Orbital motors
Transit mixer drives
Planetary compact gears
Proportional valves
Directional spool valves
Cartridge valves
Hydraulic integrated circuits
Hydrostatic transaxles
Integrated systems
Fan drive systems
Electrohydraulics
Microcontrollers and software
Electric motors and inverters
Joysticks and control handles
Displays
Sensors

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