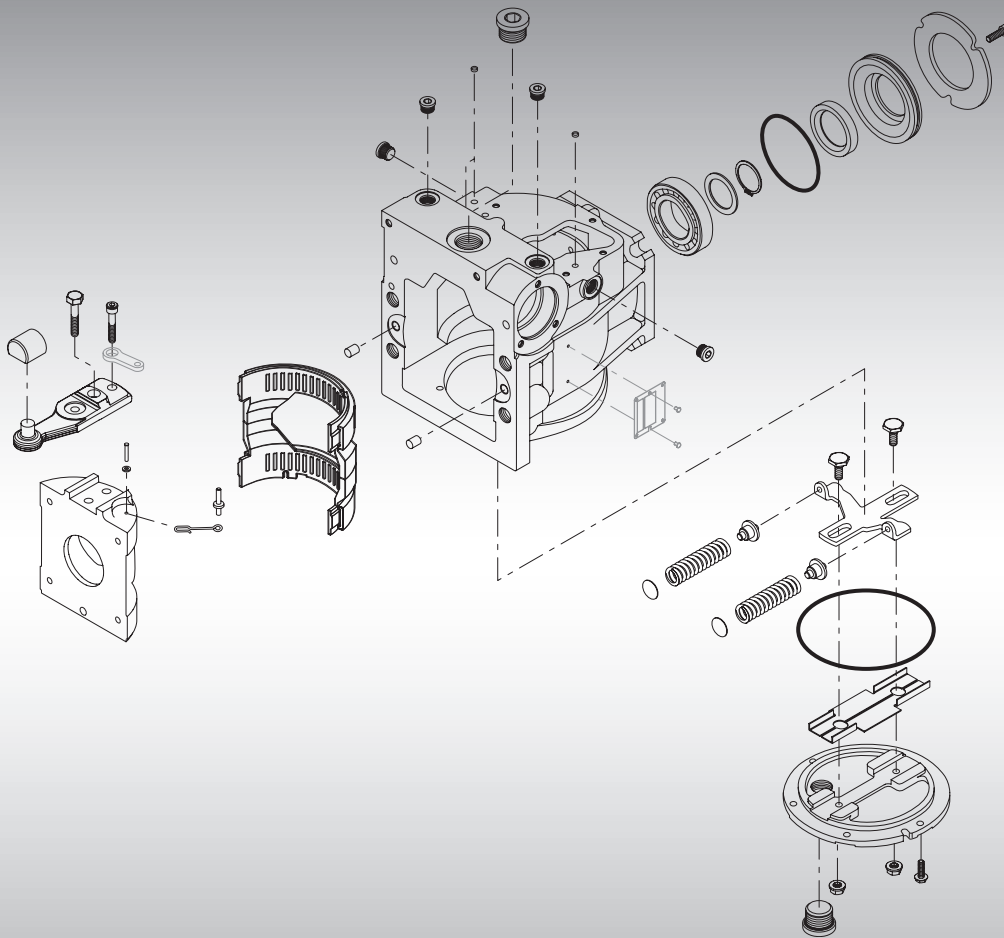




Parts Manual

Series 90

100cc Axial Piston Pump





Contents

General information	Service parts identification.....	4
	Nameplate	4
	Date code	5
	Service bulletins	5
	Procedure to identify a part	5
	Order code.....	7
Variable displacement pump	Common parts	8-11
	Special hardware	12-35
	Displacement limitation	36-48
	End cap	50-65
	Charging system.....	66-69
	Auxiliary mounting.....	70-89
	Charge pressure setting.....	90-91
	Shaft.....	90-93
	Control	94-155
	Filtration	156-161
	High pressure protection	162-169
	Orifice	170-181
Overhaul seal kit.....	182	



Contents

Service bulletin	BLN-10107 (charge pump design change)	183-184
	SB-1988-009 (servo arm/swashplate change)	185
	SB-1988-016 (slipper holddown clearance).....	186
	SB-1988-023 (piston improvement)	187
	SB-1989-002 (incorporation of adjustable charge relief valve)	188
	SB-1989-003 (leveler/servo pressure check valves)	189
	SB-1989-006 (charge pump redesign).....	190-191
	SB-1989-023 (overall length reduction).....	192-193
	SB-1992-003 (pump redesign).....	194
	SB-1992-011 (feedback link retention)	195
	SB-1993-001 (charge pump redesign).....	196-197
	SB-1993-015 (servo arm/speed ring interference).....	198
	SB-1994-017 (swashplate cage locator)	199
	SB-1994-018 (side cover washer elimination).....	200
	SB-1994-035 (elinmination of housing/end cap screw).....	201
	SB-1994-036 (integral filtration manifold)	202
	SB-1995-003 (MDC w/electric solenoid override manifold change)	203
	SB-1995-025 (side cover design change)	204
	SB-1996-009 (feedback link change).....	205
	SB-1997-048 (swashplate leveler assembly design change)	208
	SB-1998-018 (cage locator pin)	207
	SB-1998-041 (piston holddown redesign)	208-209
	SB-1998-066 (charge pump shaft)	210-211
	SB-1998-070 (swashplate leveler design change).....	212-213
	SB-1999-019 (feedback link change).....	214
	SB-1999-041 (side cover insert material change)	215
	SB-1999-057 (cage locator pin)	216
	SB-1999-065 (HDC gasket change).....	217-218
	SB-2000-022 (displacement limiter screw)	219-220
	SB-2000-041 (leveler spring shim)	221
	SB-2001-013 (31cc charge pump improvements)	222
	SB-2002-050 (auxiliary mounting pad)	223
	SB-2005-011 (auxiliary flange change pump cover change)	224
	SB-2007-018 (block point change)	225-226
	SB-2007-027 (SAE A auxiliary mounting flange).....	227-228
	SB-2007-051 (SAE C auxiliary mounting flange)	229-230
	SB-2007-055 (SAE B auxiliary mounting flange)	231-232
	SB-2009-035 (servo piston).....	233
	SB-2009-038 (slipper hold down spacer).....	234
	SB-2009-049 (slider block)	235
	SB-2009-073 (guide post).....	236
	SB-2013-011 (control feedback link)	237
	SB-2015-015 (slider block)	238



General information

Service parts identification

The following information and procedure is used to identify the module group, item number, manufacture date, part number, and part name of the parts included in the Series 90 100 cc variable displacement pumps.

The parts listed include all parts which may be used when performing either “Minor Repairs”, “Major Repairs” or “Conversions” on the Series 90 100 cc pump.

Nameplate

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

Model Code

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

Model Number

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

Serial Number

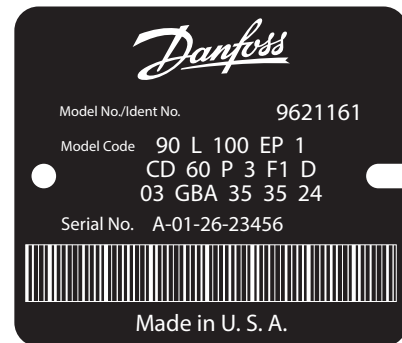
The Danfoss serial number is used to identify the manufacture date and the unit sequence in the build. The serial number is also used to identify the units warranty time period.

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 Neumuenster, 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.





General information

Date code

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

EXAMPLE: The service part desired is Item G30

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

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

Service bulletins

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

Procedure to identify a part

General

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

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

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

Example of a Part Identification

The nameplate on a Series 90 pump has an Order Code of 90L100 EP 1 CD 60 P 3 F1 D 03 GBA 35 35 24. Use the following procedures to determine the part number of the drive shaft used on this pump.

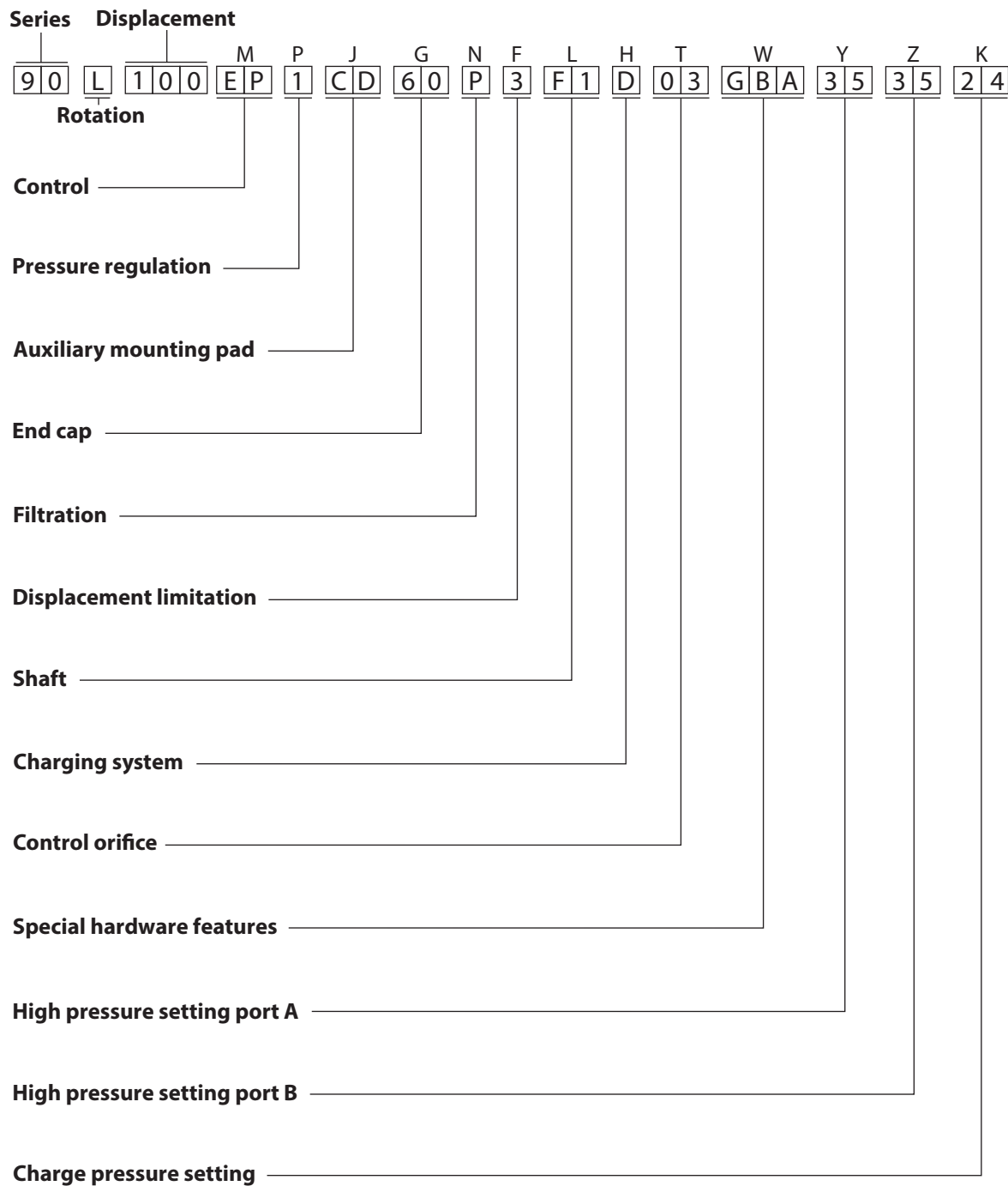
- 1) Referring to the input shaft module in the Order Code (see page 7), the input shaft option for this pump is identified by the code "S1. (90L100 EP 1 CD 60 P 3 **F1** D 03 GBA 35 35 24)
- 2) Referring to the Service Parts List, find the shaft group. Next find the order code that relates to this unit, which is "F1". The shaft is found to be item L100 and part number 8200170.



Notes



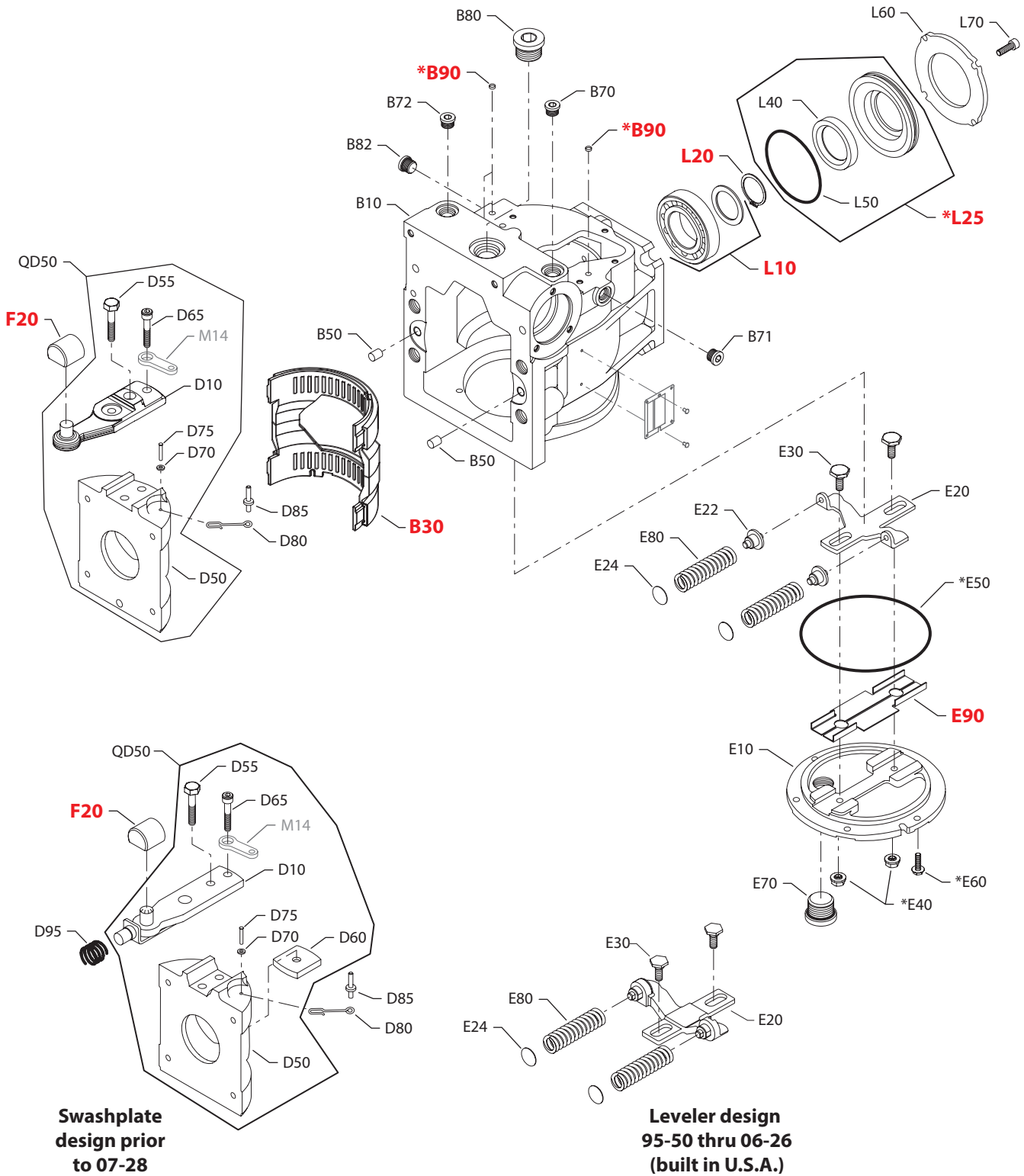
Order code



P100 710E



Variable displacement pump



Swashplate design prior to 07-28

Leveler design 95-50 thru 06-26 (built in U.S.A.)

* = included in base pump seal kit Q210

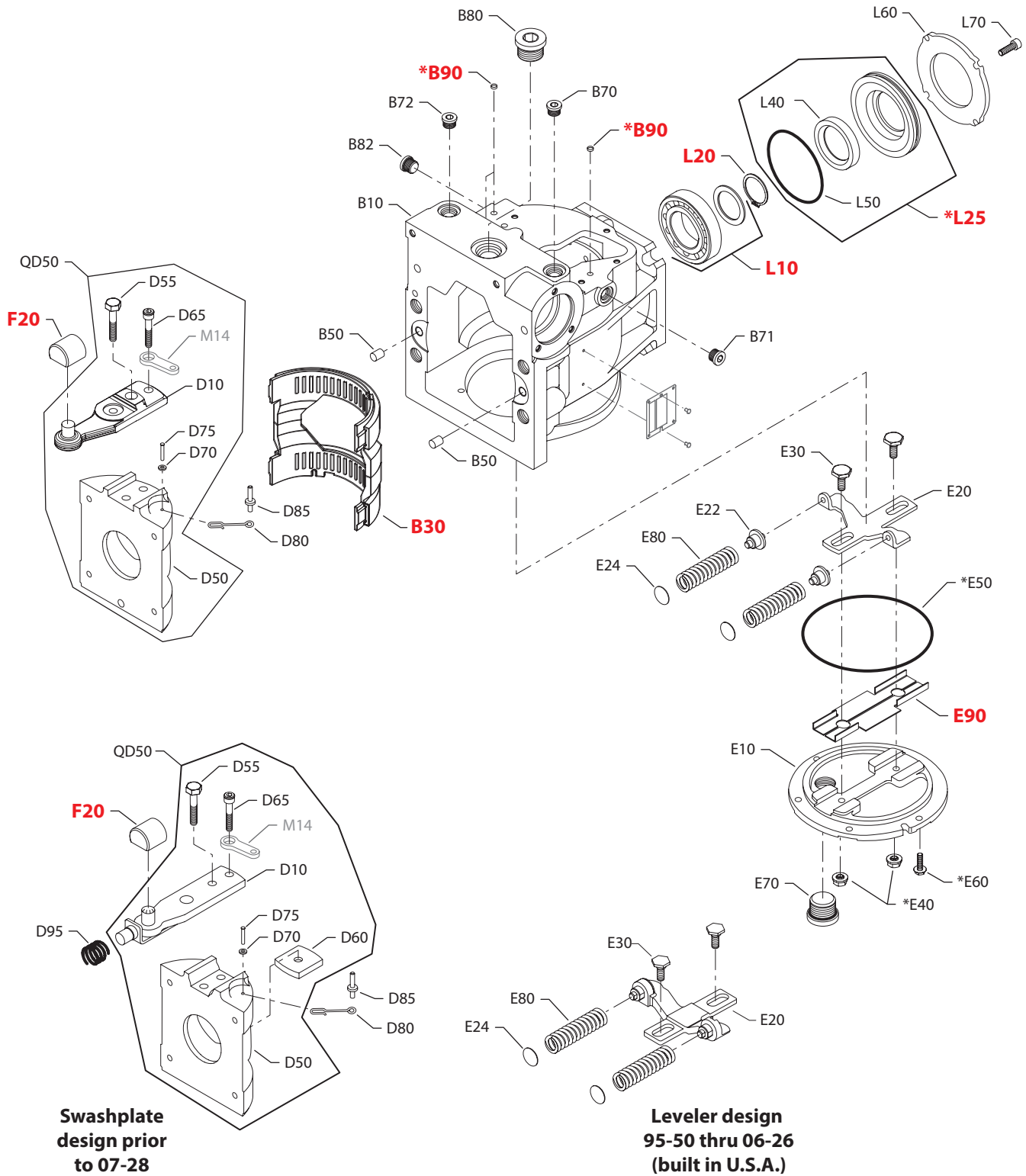
E100 841E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	B10	07-28		11002463	Housing (SB-1994-035 & SB-2007-018)	1
	B30	07-29		521614	Cradle bearing assembly (SB-2007-018)	1
	B30	87-02	07-28	305839 (8200053)	Cradle bearing assembly	1
	B50	87-02		9004800-3708	Pin	2
	B70	87-02		140644 (9005110-5600)	Plug assembly	1
	B71	87-02		327007 (9005110-4400)	Plug assembly	1
	B72	87-02		140644 (9005110-5600)	Plug assembly	1
	B80	87-02		664524 (9005110-9000)	Plug assembly	1
	B82	92-19		140644 (9005110-5600)	Plug assembly (SB-1992-003)	1
	B90	87-02		9803390	Control filter screen	3
	D10	07-29		521607	Servo arm assembly (SB-2007-018)	1
	D10	87-02	07-28	8200268	Servo arm assembly (SB-1993-015)	1
	D50	07-29		11002493	Swashplate (SB-2007-018)	1
	D50	88-16	07-28	8200232	Swashplate (SB-1988-009)	1
	D55	07-29		519150	Screw (SB-2007-018)	1
	D55	87-02	07-28	536649 (9007276-0111)	Screw	1
	D60	87-02	07-28	8800669	Swashplate guide (SB-2007-018)	1
	D65	07-29		9007375-0044	Screw (SB-2007-018)	1
	D65	87-02	07-28	9007375-0032	Screw (SB-1992-011)	1
	D70	87-02		9009625-0146	Washer	1
	D75	87-02		9004875-0098	Spiral head pin	1
	D80	87-02		673038 (8200273)	Cage locator link (SB-1994-017)	1
	D85	87-02		8801235	Pin (SB-1998-018 & SB-1999-057)	1
	D95	87-02	07-28	673145 (8200058)	Spring (SB-2007-018)	1
	E10	07-29		11000790	Side cover (SB-2007-018)	1
	E10	95-50	07-28	501574	Side cover	1
	E10	92-12	95-49	8510204	Side cover (SB-1995-025, SB-1997-048, SB-1998-070)	1
	E10	87-02	92-11	8510132	Side cover (SB-1992-003)	1
	E20	06-27		11042019	Leveler	1
	E20	95-50	06-26	8200393	Leveler (SB-1998-070)	1
	E20	92-12	95-49	8510204	Leveler (SB-1998-070)	1
	E20	87-02	92-11	8510132	Leveler (SB-1989-003 & SB-1998-070)	1
	E22	06-27		517936	Spring seat	2
	E22	95-50	06-26	none	Spring seat	0
	E22	92-12	95-49	8510204	Spring seat replacement kit (SB-1998-070)	2
	E22	87-02	92-11	8510132	Spring seat replacement kit (SB-1998-070)	2
	E24	87-02		8801225	Shim (SB-1989-003 & SB-2000-041)	2
	E30	09-52		11056531	Guide post SB-1998-070 & SB-2009-073)	2
	E30	92-12	97-46	8510204	Guide post replacement kit (SB-1997-048)	2
	E30	87-02	92-11	8510132	Guide post replacement kit (SB-1998-070)	2
	E40	87-02		505412 (9003509-0008)	Seal nut	2
	E50	87-02		517378 (9004104-1620)	O-ring	1
	E60	87-02		517228 (5000206)	Screw (SB-1994-018)	6
	E70	87-02		664524 (9005110-9000)	Plug assembly	1
	E80	87-02		334979 (11062690)	Spring	2
	E90	95-50		513889	Insert assembly (SB-1995-025 & SB-1999-041)	1
	F20	88-16		11116312	Slider block (SB-1988-009, SB-2009-049 & SB-2015-005)	1



Variable displacement pump



Swashplate design prior to 07-28

Leveler design 95-50 thru 06-26 (built in U.S.A.)

* = included in base pump seal kit Q210

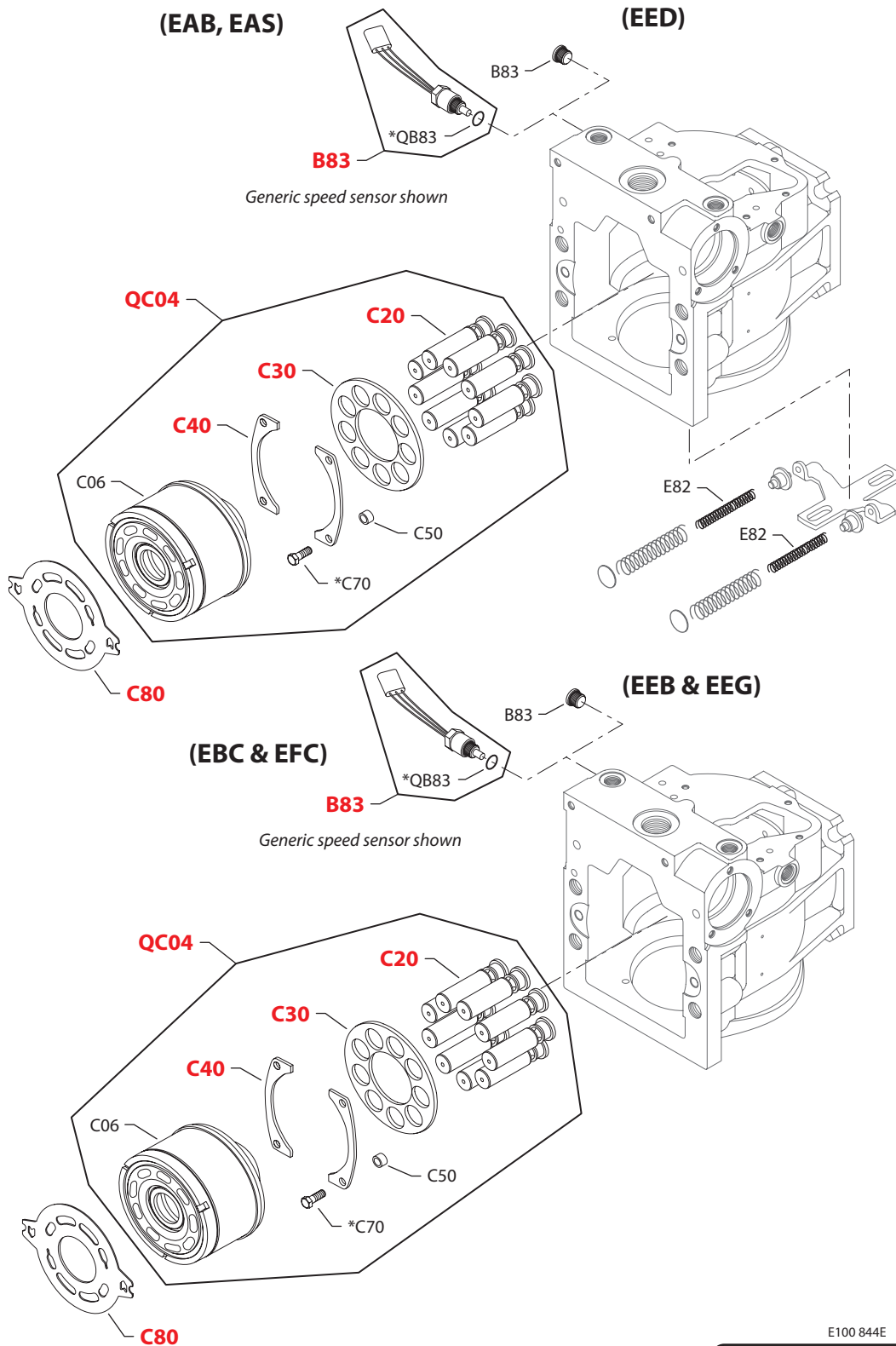
E100 841E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts - continued

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	L10	87-02		5000506	Roller bearing	1
	L20	87-02		9006300-0175	Retaining ring	1
	L25	87-02		521722	Seal carrier assembly (SB-2007-018)	1
	L40	07-29		519021	Lip seal (SB-2007-018)	1
	L50	87-02		327627 (9004104-1540)	O-ring	1
	L60	87-02		516768	Retainer plate	1
	L70	87-02		041160 (9007314-0605)	Screw	4
	QD50	07-29		8200618	Swashplate assembly (SB-2007-018)	1
	QD50	88-16	07-28	346155 (8200192)	Swashplate assembly (SB-1988-009)	1



Variable displacement pump



Generic speed sensor shown

Generic speed sensor shown

E100 844E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4
	QB83	98-14		085043 (9004201-3700)	O-ring	1

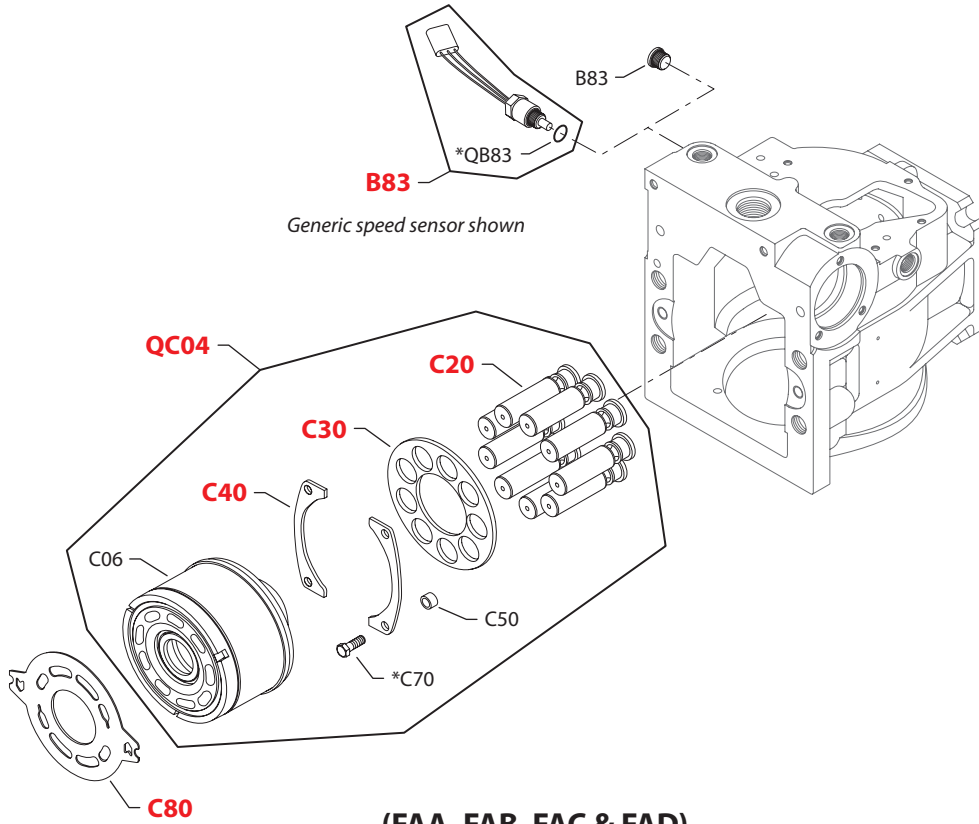
Special hardware

EAB	B83	94-14		KPPG12508	Speed sensor	1
	C06	94-14		11093925 (11012435)	Cylinder block assembly, with speed ring	1
	C80	94-14		518929	Valve plate	1
	E82	94-14		356576 (11062702)	Spring	2
	QC04	94-14		8510371	Cylinder block kit, with speed ring	1
EAS	B83	98-14		KPPG12508	Speed sensor	1
	C06	98-14		11093925 (11012435)	Cylinder block assembly, with speed ring	1
	C80	98-14		518929	Valve plate	1
	E82	98-14		356576 (11062702)	Spring	2
	QC04	98-14		8510371	Cylinder block kit, with speed ring	1
EBC	B83	98-14		KPPG13408	Speed sensor	1
	C06	94-14		11093925 (11012435)	Cylinder block assembly, with speed ring	1
	C80	94-14		518806	Valve plate	1
	QC04	94-14		8510371	Cylinder block kit, with speed ring	1
EEB	B83	06-05		140644 (9005110-5600)	Plug assembly	1
	C06	06-05		11093925 (11012435)	Cylinder block assembly, with speed ring	1
	C80	06-05		518806	Valve plate	1
	QC04	06-05		8510371	Cylinder block kit, with speed ring	1
EED	B83	99-17		140644 (9005110-5600)	Plug assembly	1
	C06	99-17		11093925 (11012435)	Cylinder block assembly, with speed ring	1
	C80	99-17		518929	Valve plate	1
	E82	99-17		356576 (11062702)	Spring	2
	QC04	99-17		8510371	Cylinder block kit, with speed ring	1
EEG	B83	00-13		140644 (9005110-5600)	Plug assembly	1
	C06	00-13		11093925 (11012435)	Cylinder block assembly, with speed ring	1
	C80	00-13		518931	Valve plate, CCW	1
	C80	00-13		518930	Valve plate, CW	1
	E82	00-13		356576 (11062702)	Spring	2
	QC04	00-13		8510371	Cylinder block kit, with speed ring	1
EFC	B83	03-43		KPPG156	Speed sensor	1
	C06	03-43		11093925 (11012435)	Cylinder block assembly, with speed ring	1
	C80	03-43		518806	Valve plate	1
	QC04	03-43		8510371	Cylinder block kit, with speed ring	1

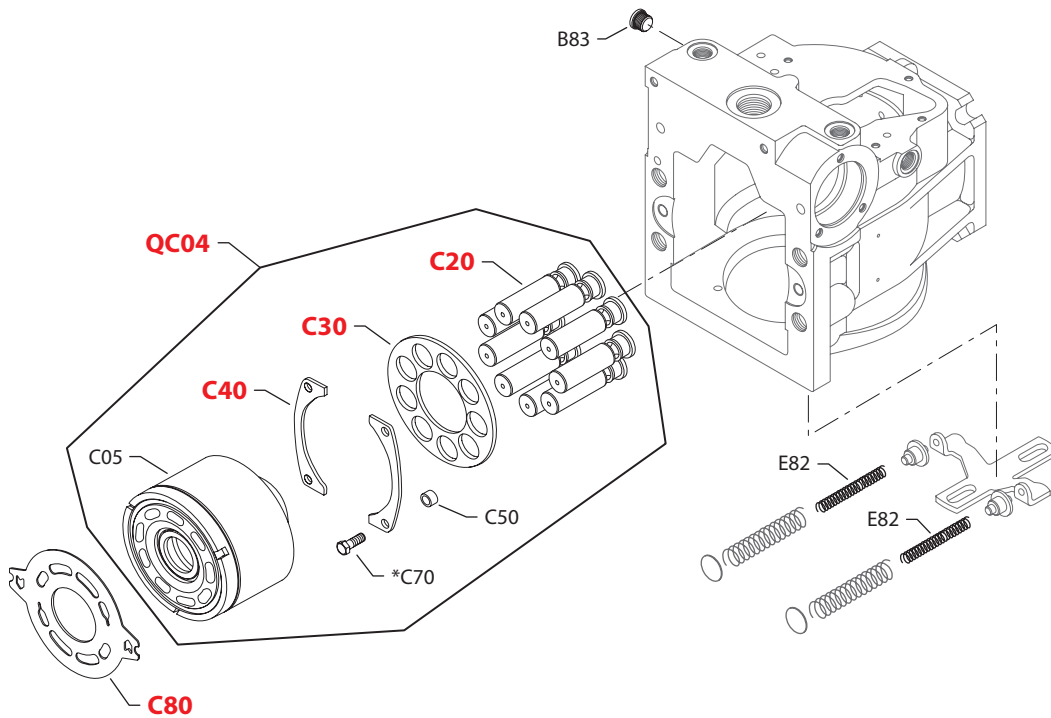


Variable displacement pump

(EFI, EHA & EKA)



(FAA, FAB, FAC & FAD)



E100 845E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

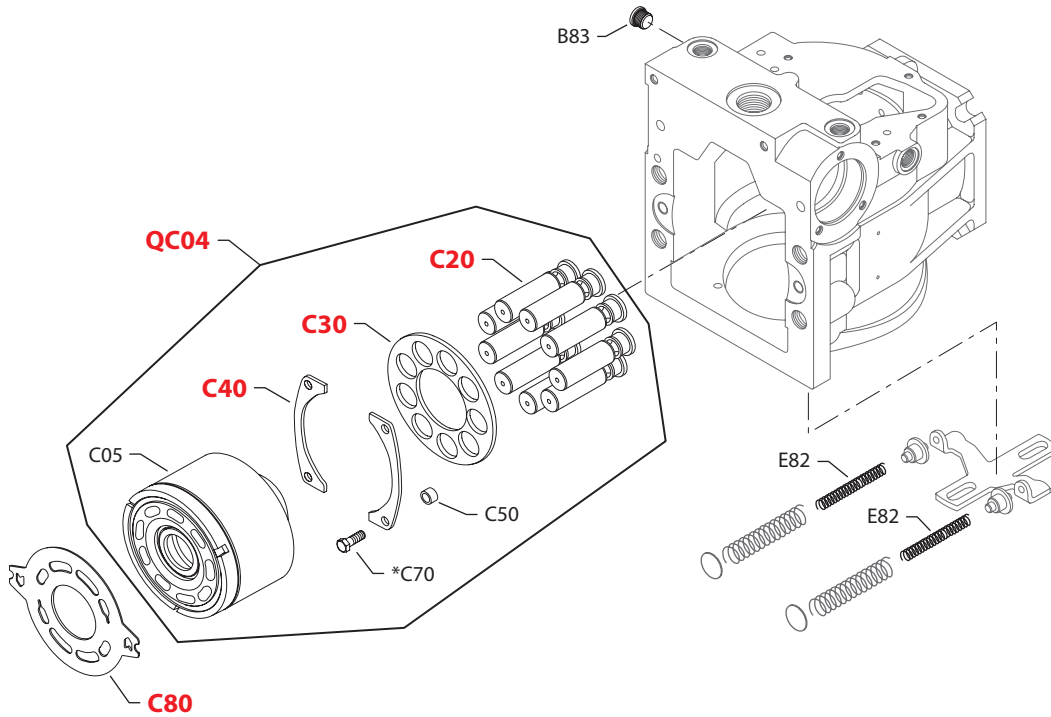
Special hardware

EFI	B83	98-12		KPPG156	Speed sensor	1
	C06	98-12		11093925 (11012435)	Cylinder block assembly, with speed ring	1
	C80	98-12		518931	Valve plate, CCW	1
	C80	98-12		518930	Valve plate, CW	1
	QC04	98-12		8510371	Cylinder block kit, with speed ring	1
EHA	B83	00-42		KPPG16408	Speed sensor	1
	C06	00-42		11093925 (11012435)	Cylinder block assembly, with speed ring	1
	C80	00-42		518806	Valve plate	1
	QC04	00-42		8510371	Cylinder block kit, with speed ring	1
	EKA	B83	99-31		KPPG16719	Speed sensor
C06		99-31		11093925 (11012435)	Cylinder block assembly, with speed ring	1
C80		99-31		518806	Valve plate	1
QC04		99-31		8510371	Cylinder block kit, with speed ring	1
FAA		B83	87-02		140644 (9005110-5600)	Plug assembly
	C05	87-02		519257 (11012434)	Cylinder block assembly	1
	C80	87-02		518994	Valve plate	1
	E82	87-02		356576 (11062702)	Spring	2
	QC04	87-02		8510372	Cylinder block kit	1
	FAB	B83	87-02		140644 (9005110-5600)	Plug assembly
C05		87-02		519257 (11012434)	Cylinder block assembly	1
C80		87-02		518927	Valve plate	1
E82		87-02		356576 (11062702)	Spring	2
QC04		87-02		8510372	Cylinder block kit	1
FAC		B83	87-02		140644 (9005110-5600)	Plug assembly
	C05	87-02		519257 (11012434)	Cylinder block assembly	1
	C80	87-02		518929	Valve plate	1
	E82	87-02		356576 (11062702)	Spring	2
	QC04	87-02		8510372	Cylinder block kit	1
	FAD	B83	87-02		140644 (9005110-5600)	Plug assembly
C05		87-02		519257 (11012434)	Cylinder block assembly	1
C80		87-02		518806	Valve plate	1
E82		87-02		356576 (11062702)	Spring	2
QC04		87-02		8510372	Cylinder block kit	1



Variable displacement pump

(FAL, FAN, FAP, FAQ,
FAR, FAS & FAU)



* = included in base pump seal kit Q210

E103 103E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

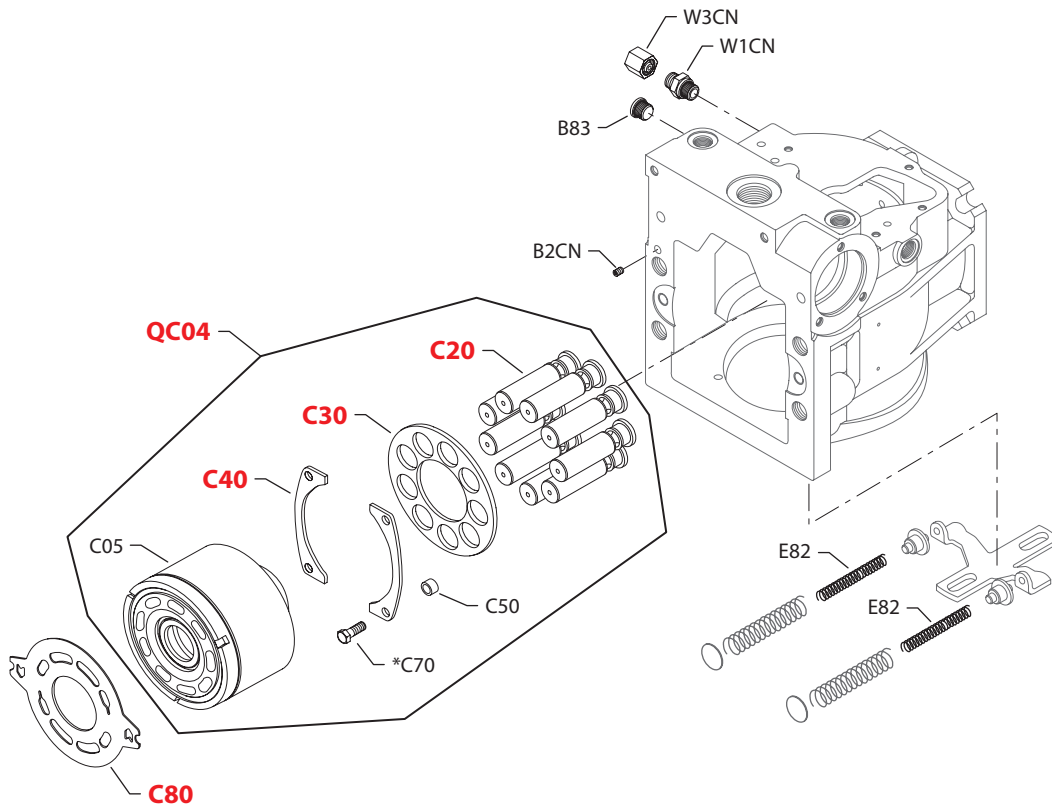
Special hardware

FAL	B83	95-04		140644 (9005110-5600)	Plug assembly	1
	C05	95-04		519257 (11012434)	Cylinder block assembly	1
	C80	95-04		518927	Valve plate	1
	E82	95-04		356576 (11062702)	Spring	2
	QC04	95-04		8510372	Cylinder block kit	1
FAN	B83	13-41		140644 (9005110-5600)	Plug assembly	1
	C05	13-41		519257 (11012434)	Cylinder block assembly	1
	C80	13-41		518927	Valve plate	1
	E82	13-41		356576 (11062702)	Spring	2
	QC04	13-41		8510372	Cylinder block kit	1
FAP	B83	06-03		140644 (9005110-5600)	Plug assembly	1
	C05	06-03		519257 (11012434)	Cylinder block assembly	1
	C80	06-03		518931	Valve plate, CCW	1
	C80	06-03		518930	Valve plate, CW	1
	E82	06-03		356576 (11062702)	Spring	2
	QC04	06-03		8510372	Cylinder block kit	1
FAQ	B83	12-36		140644 (9005110-5600)	Plug assembly	1
	C05	12-36		519257 (11012434)	Cylinder block assembly	1
	C80	12-36		518930	Valve plate	1
	E82	12-36		356576 (11062702)	Spring	2
	QC04	12-36		8510372	Cylinder block kit	1
FAR	B83	95-39		140644 (9005110-5600)	Plug assembly	1
	C05	95-39		519257 (11012434)	Cylinder block assembly	1
	C80	95-39		510720	Valve plate	1
	E82	95-39		356576 (11062702)	Spring	2
	QC04	95-39		8510372	Cylinder block kit	1
FAS	B83	97-03		140644 (9005110-5600)	Plug assembly	1
	C05	97-03		519257 (11012434)	Cylinder block assembly	1
	C80	97-03		518929	Valve plate	1
	E82	97-03		356576 (11062702)	Spring	2
	QC04	97-03		8510372	Cylinder block kit	1
FAU	B83	98-38		140644 (9005110-5600)	Plug assembly	1
	C05	98-38		519257 (11012434)	Cylinder block assembly	1
	C80	98-38		518806	Valve plate	1
	E82	98-38		356576 (11062702)	Spring	2
	QC04	98-38		8510372	Cylinder block kit	1

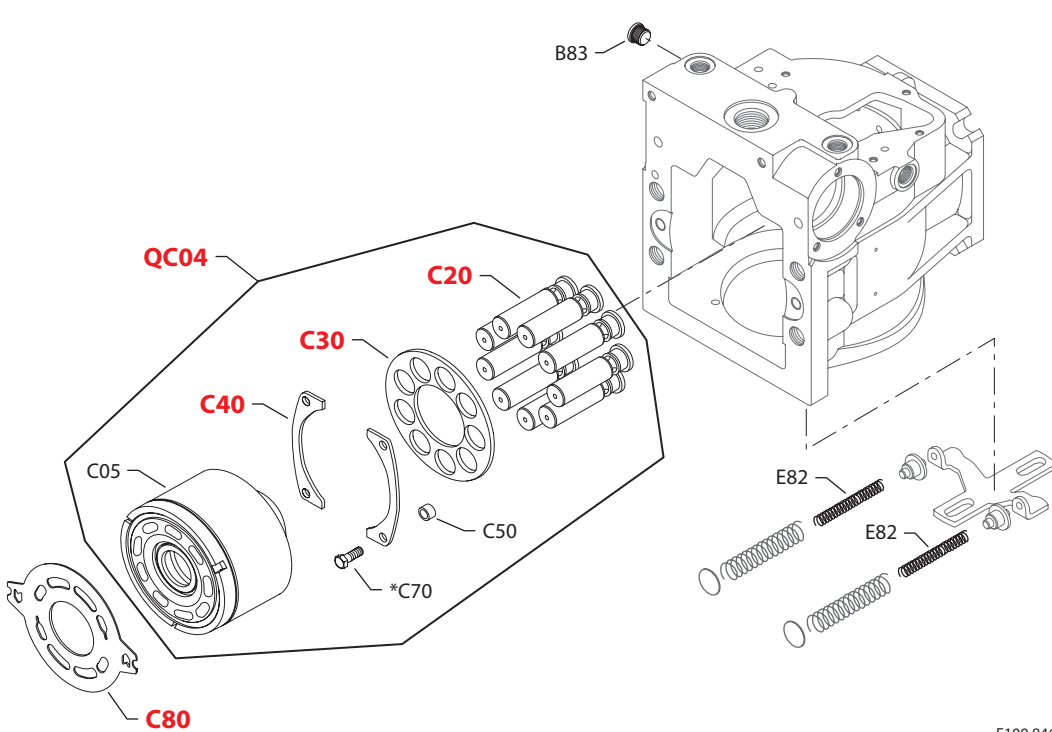


Variable displacement pump

(FAW & FAZ)



(FAX)



E100 846E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

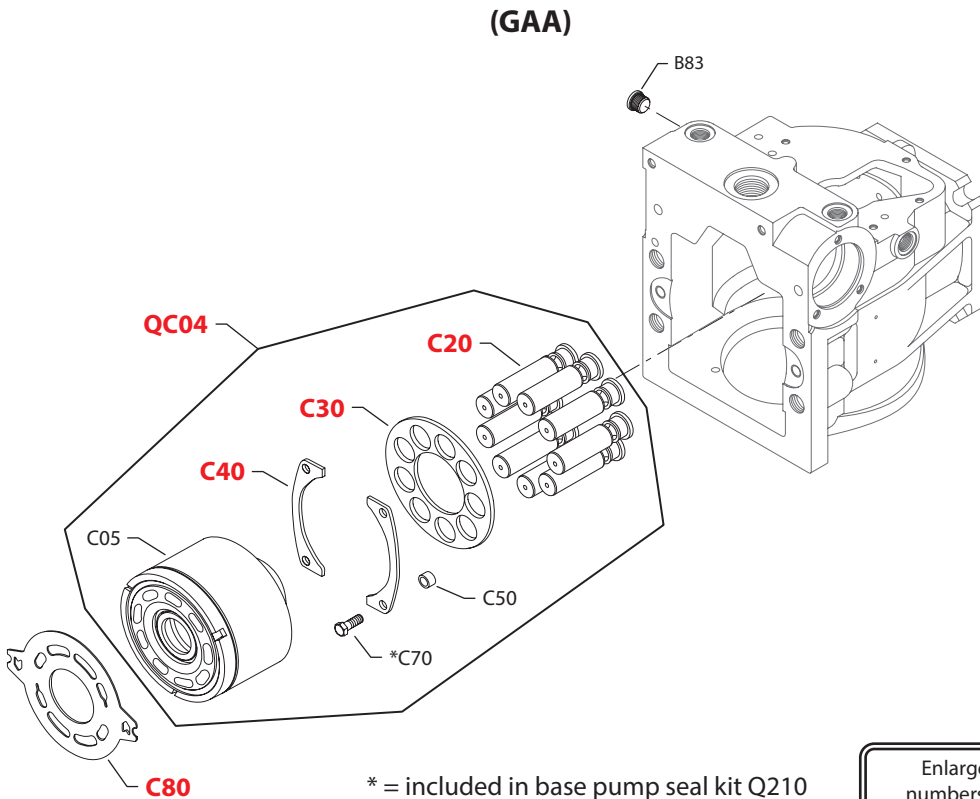
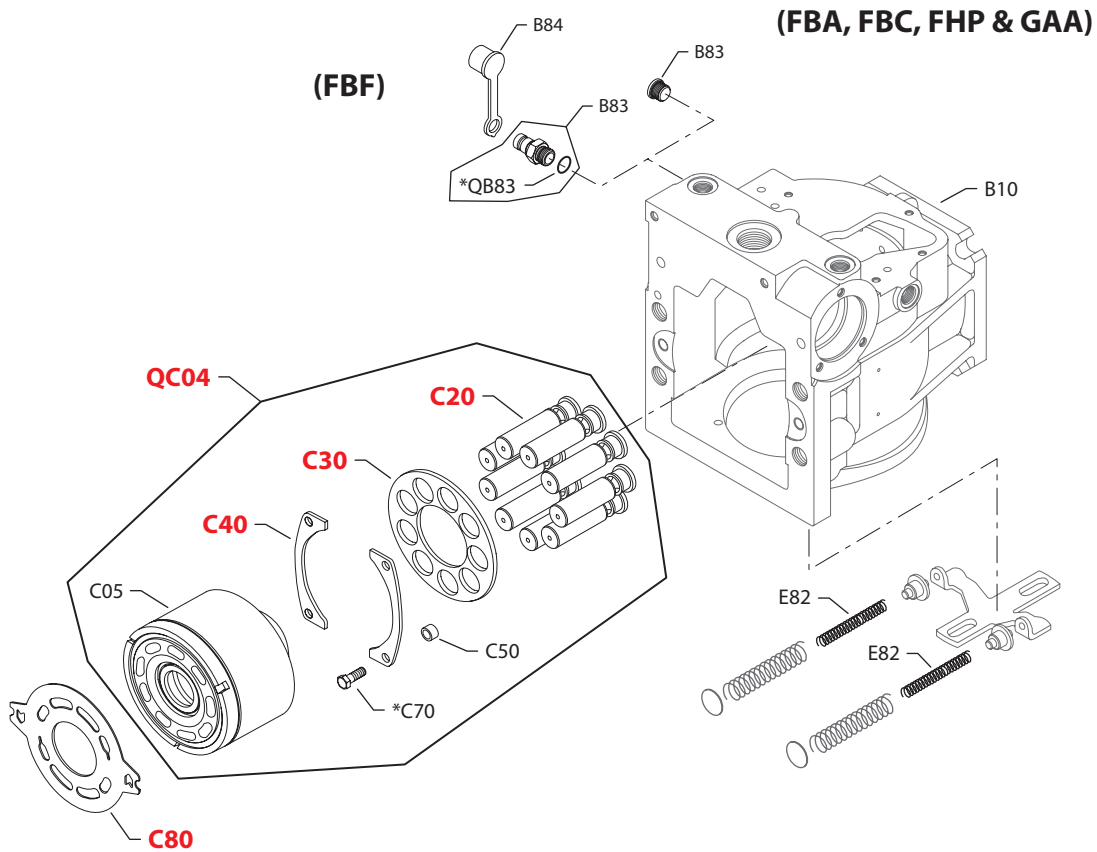
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

Special hardware

FAW	B2CN	99-19		775312	Set screw	1
	B83	99-19		140644 (9005110-5600)	Plug assembly	1
	C05	99-19		519257 (11012434)	Cylinder block assembly	1
	C80	99-19		510720	Valve plate	1
	E82	99-19		356576 (11062702)	Spring	2
	QC04	99-19		8510372	Cylinder block kit	1
	W1CN	99-19		723726	Connector	1
	W3CN	99-19		574095	Cap	1
FAX	B83	01-07		140644 (9005110-5600)	Plug assembly	1
	C05	01-07		519257 (11012434)	Cylinder block assembly	1
	C80	01-07		510720	Valve plate	1
	E82	01-07		356576 (11062702)	Spring	2
	QC04	01-07		8510372	Cylinder block kit	1
FAZ	B2CN	05-14		775312	Set screw	1
	B83	05-14		140644 (9005110-5600)	Plug assembly	1
	C05	05-14		519257 (11012434)	Cylinder block assembly	1
	C80	05-14		518929	Valve plate	1
	E82	05-14		356576 (11062702)	Spring	2
	QC04	05-14		8510372	Cylinder block kit	1
	W1CN	05-14		723726	Connector	1
	W3CN	05-14		574095	Cap	1



Variable displacement pump



* = included in base pump seal kit Q210

E103 100E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

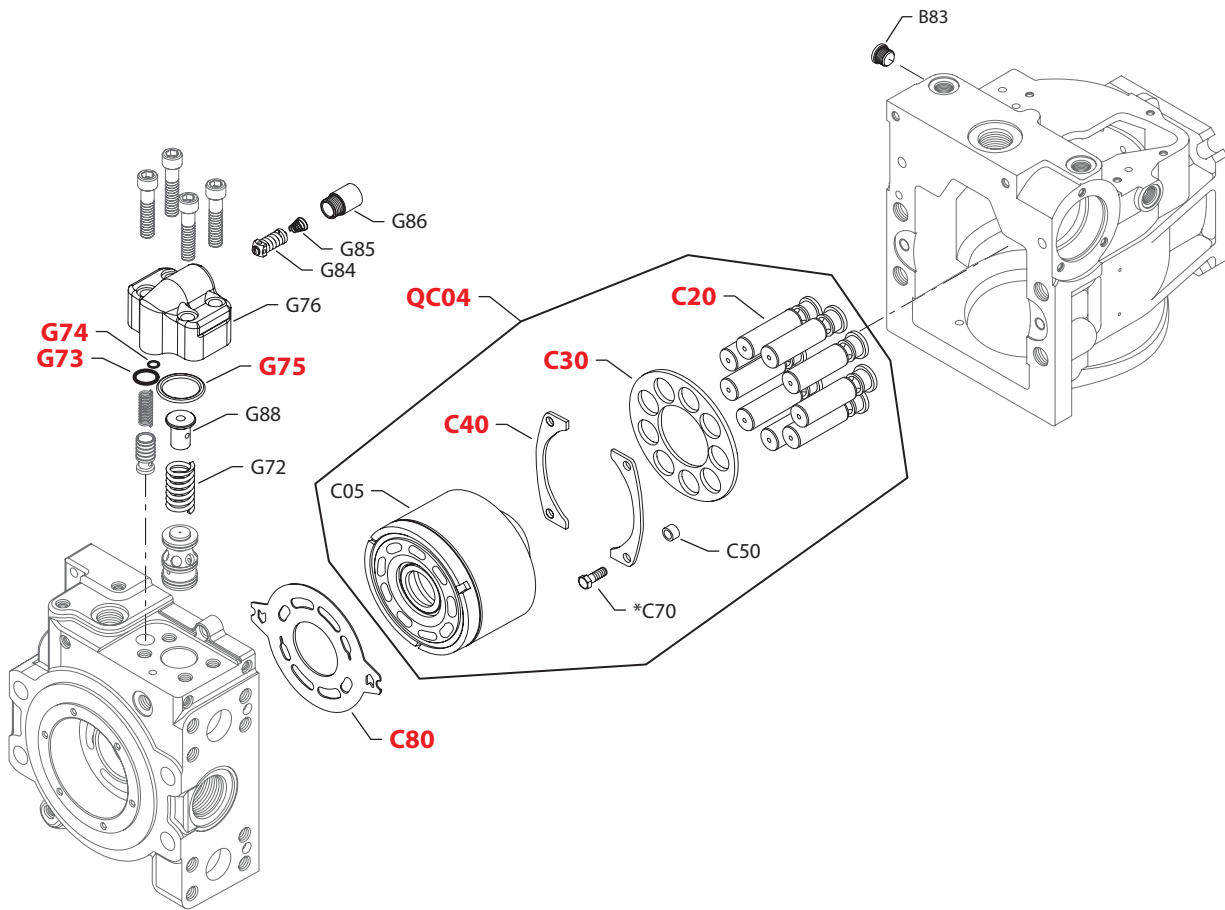
Special hardware

FBA	B83	06-12		140644 (9005110-5600)	Plug assembly	1
	C05	06-12		519257 (11012434)	Cylinder block assembly	1
	C80	06-12		518929	Valve plate	1
	E82	06-12		356576 (11062702)	Spring	2
	QC04	06-12		8510372	Cylinder block kit	1
FBC	B83	06-12		140644 (9005110-5600)	Plug assembly	1
	C05	06-12		519257 (11012434)	Cylinder block assembly	1
	C80	06-12		518806	Valve plate	1
	E82	06-12		356576 (11062702)	Spring	2
	QC04	06-12		8510372	Cylinder block kit	1
FBF	B83	06-12		8700127	Diagnostic recepticle	1
	B84	06-12		8700128	Dust cover	1
	C05	06-12		519257 (11012434)	Cylinder block assembly	1
	C80	06-12		518929	Valve plate	1
	E82	06-12		356576 (11062702)	Spring	2
	QC04	06-12		8510372	Cylinder block kit	1
FHP	B10	12-39		11117130	Housing, special	1
	B83	12-39		140644 (9005110-5600)	Plug assembly	1
	C05	12-39		519257 (11012434)	Cylinder block assembly	1
	C80	12-39		518806	Valve plate	1
	E82	12-39		356576 (11062702)	Spring	2
	QC04	12-39		8510372	Cylinder block kit	1
GAA	B83	94-03		140644 (9005110-5600)	Plug assembly	1
	C05	94-03		519257 (11012434)	Cylinder block assembly	1
	C80	94-03		349266	Valve plate	1
	QC04	94-03		8510372	Cylinder block kit	1



Variable displacement pump

(GB1, GB4 & GB8)



* = included in base pump seal kit Q210

E103 101E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

Special hardware

GB1	B83	02-30		140644 (9005110-5600)	Plug assembly	1
	C05	02-30		11033868 (11012434)	Cylinder block assembly	1
	C80	02-30		518806	Valve plate	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	Spring	1
	G86	02-30		11126727	Plug assembly	1
	G88	02-30		517829	Spring seat	1
	G89	02-30		517831	Spring	1
	QC04	02-30		8510372	Cylinder block kit	1

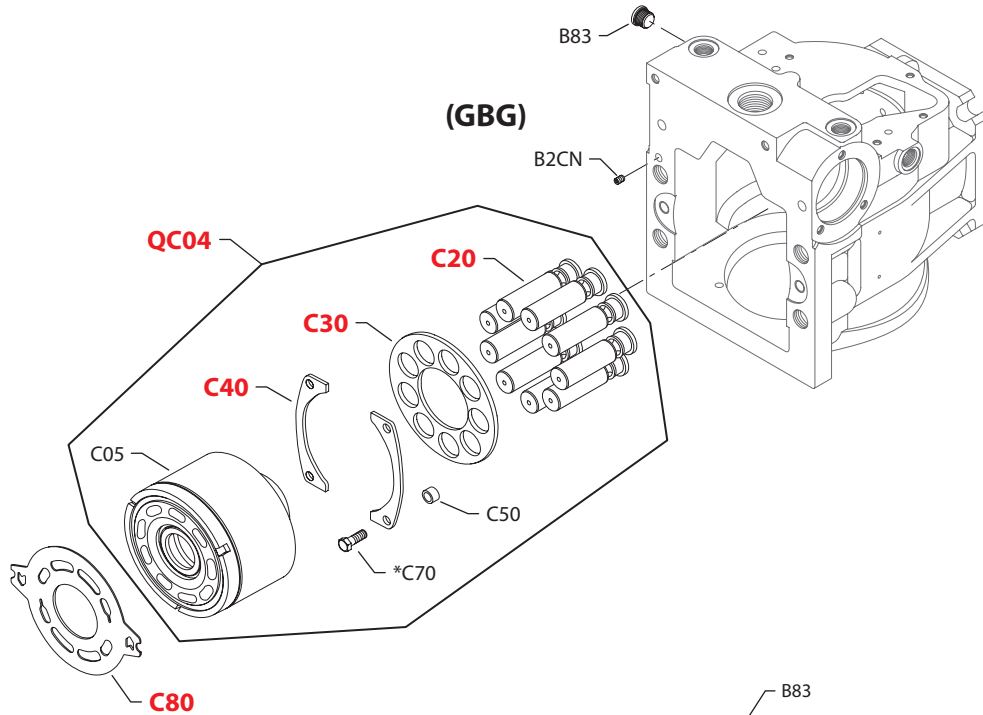
GB4	B83	02-30		140644 (9005110-5600)	Plug assembly	1
	C05	02-30		11012434	Cylinder block assembly	1
	C80	02-30		518806	Valve plate	1
	G73	02-30		519873	Seal	1
	G74	02-30		144725 (9004105-0110)	O-ring	1
	G75	02-30		518329	O-ring	1
	G76	02-30		517828	Valve housing	1
	G84	02-30		3103375-0140	SCR valve, 140 bar [2030 psi]	1
	G85	02-30		4800780	Spring	1
	G86	02-30		11126727	Plug assembly	1
	G88	02-30		517829	Spring seat	1
	G89	02-30		517831	Spring	1
	QC04	02-30		8510372	Cylinder block kit	1

GB8	B83	02-30		140644 (9005110-5600)	Plug assembly	1
	C05	02-30		11033868 (11012434)	Cylinder block assembly	1
	C80	02-30		518806	Valve plate	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		3103375-0230	SCR valve, 230 bar [3335 psi]	1
	G85	02-30		4800780	Spring	1
	G86	02-30		11126727	Plug assembly	1
	G88	02-30		517829	Spring seat	1
	G89	02-30		517831	Spring	1
	QC04	02-30		8510372	Cylinder block kit	1

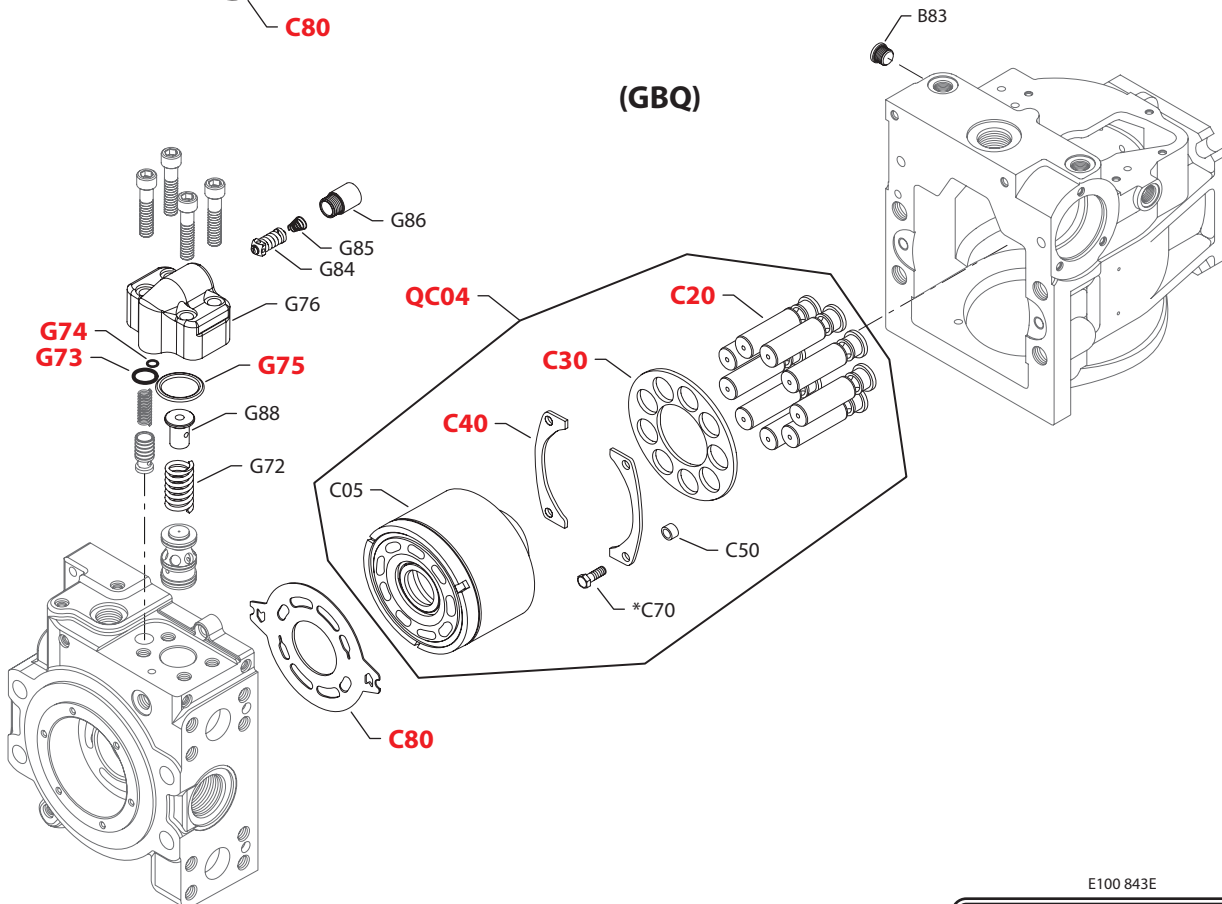


Variable displacement pump

(GBA, GBE, GBK, GBP,
GBS & GBT)



(GBQ)



E100 843E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

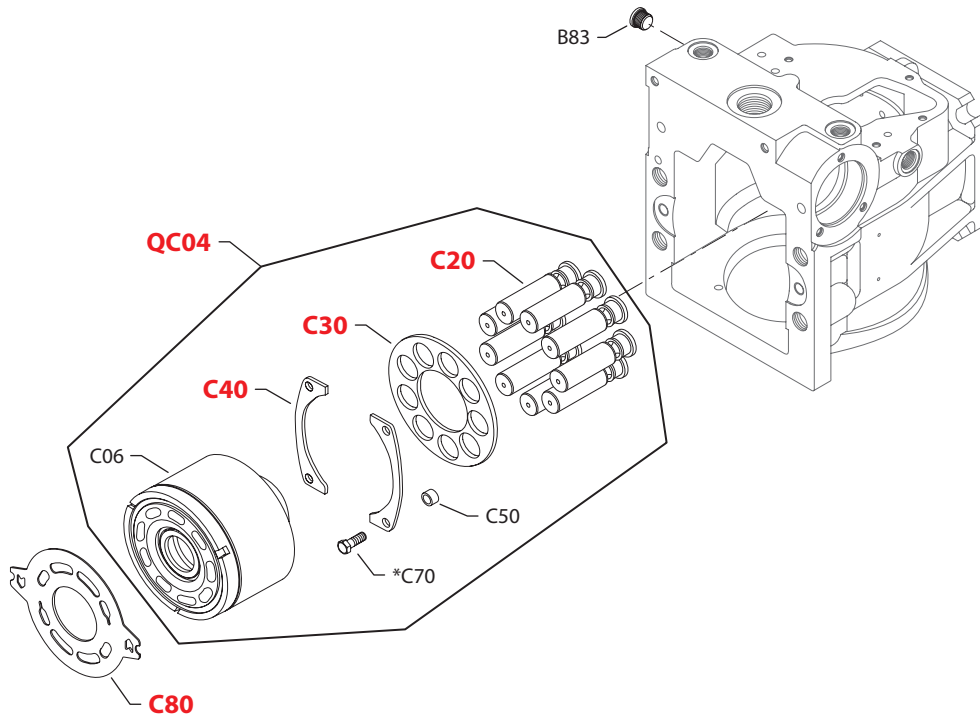
Special hardware

GBA	B83	87-02		140644 (9005110-5600)	Plug assembly	1
	C05	87-02		519257 (11012434)	Cylinder block assembly	1
	C80	87-02		518806	Valve plate	1
	QC04	87-02		8510372	Cylinder block kit	1
GBE	B83	06-20		140644 (9005110-5600)	Plug assembly	1
	C05	06-20		519257 (11012434)	Cylinder block assembly	1
	C80	06-20		518806	Valve plate	1
	QC04	06-20		8510372	Cylinder block kit	1
GBG	B2CN	95-16		042457	Set screw	1
	B83	95-16		140644 (9005110-5600)	Plug assembly	1
	C05	95-16		519257 (11012434)	Cylinder block assembly	1
	C80	95-16		518806	Valve plate	1
	QC04	95-16		8510372	Cylinder block kit	1
GBK	B83	95-16		140644 (9005110-5600)	Plug assembly	1
	C05	95-16		519257 (11012434)	Cylinder block assembly	1
	C80	95-16		518806	Valve plate	1
	QC04	95-16		8510372	Cylinder block kit	1
GBP	B83	06-17		140644 (9005110-5600)	Plug assembly	1
	C05	06-17		519257 (11012434)	Cylinder block assembly	1
	C80	06-17		518806	Valve plate	1
	QC04	06-17		8510372	Cylinder block kit	1
GBQ	B83	95-16		140644 (9005110-5600)	Plug assembly	1
	C05	95-16		519257 (11012434)	Cylinder block assembly	1
	C80	95-16		518806	Valve plate	1
	QC04	95-16		8510372	Cylinder block kit	1
GBS	B83	97-05		140644 (9005110-5600)	Plug assembly	1
	C05	97-05		519257 (11012434)	Cylinder block assembly	1
	C80	97-05		518806	Valve plate	1
	QC04	97-05		8510372	Cylinder block kit	1
GBT	B83	04-50		140644 (9005110-5600)	Plug assembly	1
	C05	04-50		519257 (11012434)	Cylinder block assembly	1
	C80	04-50		518806	Valve plate	1
	QC04	04-50		8510372	Cylinder block kit	1



Variable displacement pump

(GCA, GCP, GCR, GCS,
GDE, GFD, GFH, & GFJ)



* = included in base pump seal kit Q210

E100 791E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

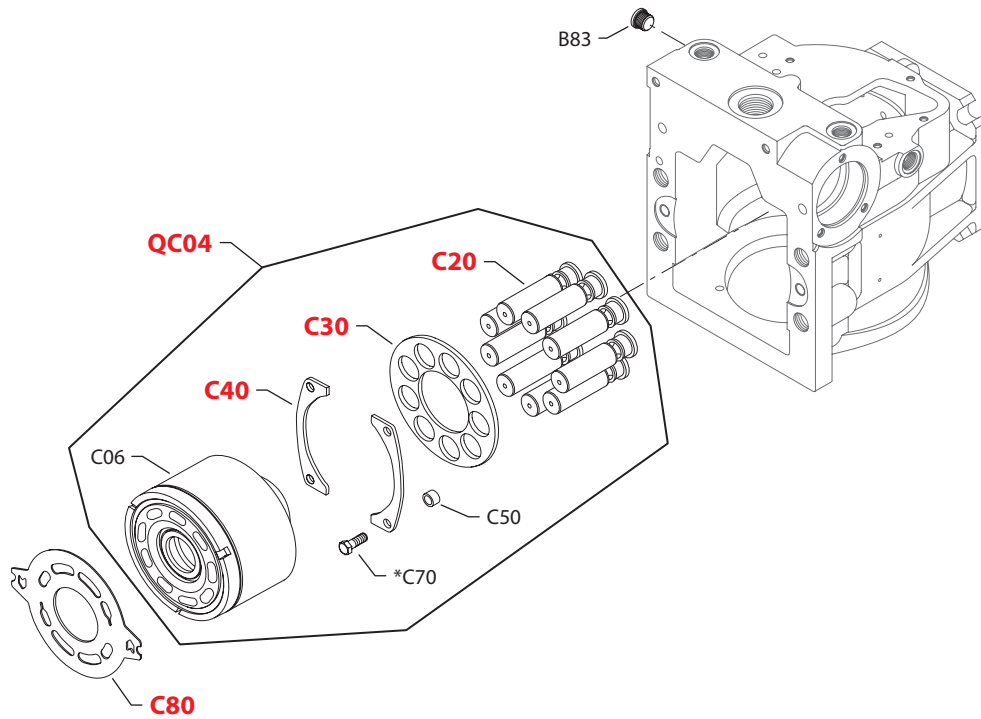
Special hardware

GCA	B83	98-14		140644 (9005110-5600)	Plug assembly	1
	C05	98-14		519257 (11012434)	Cylinder block assembly	1
	C80	98-14		518929	Valve plate	1
	QC04	98-14		8510372	Cylinder block kit	1
GCP	B83	94-50		140644 (9005110-5600)	Plug assembly	1
	C05	94-50		519257 (11012434)	Cylinder block assembly	1
	C80	94-50		518929	Valve plate	1
	QC04	94-50		8510372	Cylinder block kit	1
GCR	B83	11-23		140644 (9005110-5600)	Plug assembly	1
	C05	11-23		519257 (11012434)	Cylinder block assembly	1
	C80	11-23		518806	Valve plate	1
	QC04	11-23		8510372	Cylinder block kit	1
GCS	B83	98-49		140644 (9005110-5600)	Plug assembly	1
	C05	98-49		519257 (11012434)	Cylinder block assembly	1
	C80	98-49		518929	Valve plate	1
	QC04	98-49		8510372	Cylinder block kit	1
GDE	B83	98-49		140644 (9005110-5600)	Plug assembly	1
	C05	98-49		519257 (11012434)	Cylinder block assembly	1
	C80	98-49		518806	Valve plate	1
	QC04	98-49		8510372	Cylinder block kit	1
GFD	B83	06-12		140644 (9005110-5600)	Plug assembly	1
	C05	06-12		519257 (11012434)	Cylinder block assembly	1
	C80	06-12		518806	Valve plate	1
	QC04	06-12		8510372	Cylinder block kit	1
GFH	B83	06-12		140644 (9005110-5600)	Plug assembly	1
	C05	06-12		519257 (11012434)	Cylinder block assembly	1
	C80	06-12		518806	Valve plate	1
	QC04	06-12		8510372	Cylinder block kit	1
GFJ	B83	06-14		140644 (9005110-5600)	Plug assembly	1
	C05	06-14		519257 (11012434)	Cylinder block assembly	1
	C80	06-14		518806	Valve plate	1
	QC04	06-14		8510372	Cylinder block kit	1

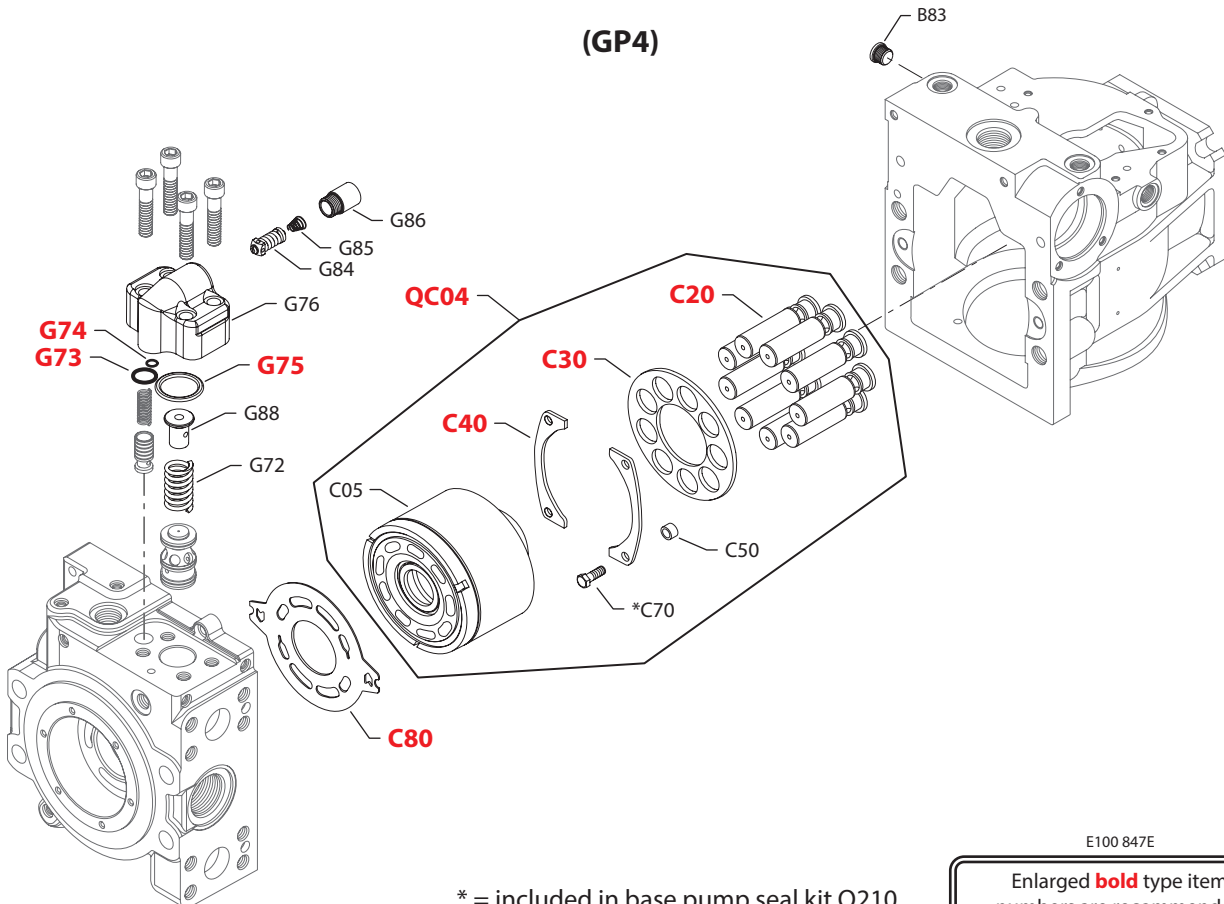


Variable displacement pump

(GFK, GHT, GLA & GTA)



(GP4)



* = included in base pump seal kit Q210

E100 847E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

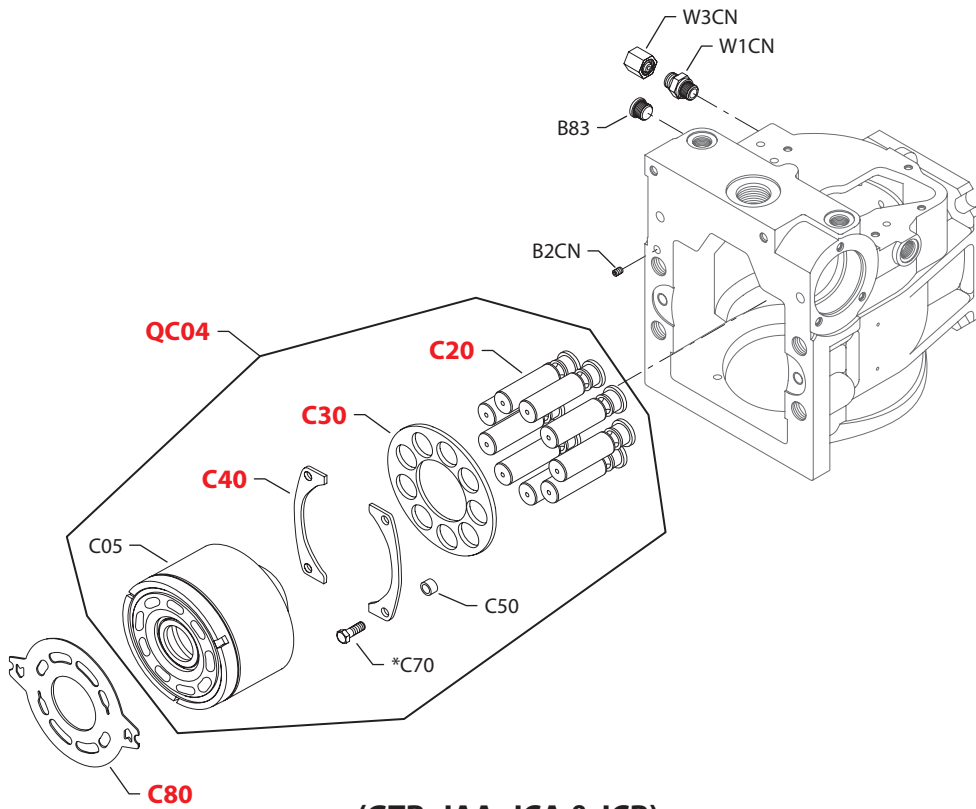
Special hardware

GFK	B83	06-12		140644 (9005110-5600)	Plug assembly	1
	C05	06-12		519257 (11012434)	Cylinder block assembly	1
	C80	06-12		518806	Valve plate	1
	QC04	06-12		8510372	Cylinder block kit	1
GHT	B10	12-39		11117130	Housing, special	1
	B83	12-39		140644 (9005110-5600)	Plug assembly	1
	C05	12-39		519257 (11012434)	Cylinder block assembly	1
	C80	12-39		518929	Valve plate	1
	QC04	12-39		8510372	Cylinder block kit	1
GLA	B83	07-49		140644 (9005110-5600)	Plug assembly	1
	C05	07-49		519257 (11012434)	Cylinder block assembly	1
	C80	07-49		518931	Valve plate, CCW	1
	C80	07-49		518930	Valve plate, CW	1
	QC04	07-49		8510372	Cylinder block kit	1
GLS	B83	07-49		140644 (9005110-5600)	Plug assembly	1
	C05	07-49		519257 (11012434)	Cylinder block assembly	1
	C80	07-49		518931	Valve plate, CCW	1
	C80	07-49		518930	Valve plate, CW	1
	QC04	07-49		8510372	Cylinder block kit	1
GP4	B83	09-30		140644 (9005110-5600)	Plug assembly	1
	C05	09-30		11012434	Cylinder block assembly	1
	C80	09-30		518930	Valve plate	1
	G73	09-30		519873	Seal	1
	G74	09-30		144725 (9004105-0110)	O-ring	1
	G75	09-30		518329	O-ring	1
	G76	09-30		517828	Valve housing	1
	G84	09-30		3103375-0140	SCR valve, 140 bar [2030 psi]	1
	G85	09-30		4800780	Spring	1
	G86	09-30		11126727	Plug assembly	1
	G88	09-30		517829	Spring seat	1
	G89	09-30		517831	Spring	1
	QC04	09-30		8510372	Cylinder block kit	1
GTA	B83	14-02		140644 (9005110-5600)	Plug assembly	1
	C05	14-02		519257 (11012434)	Cylinder block assembly	1
	C80	14-02		518806	Valve plate	1
	QC04	14-02		8510372	Cylinder block kit	1

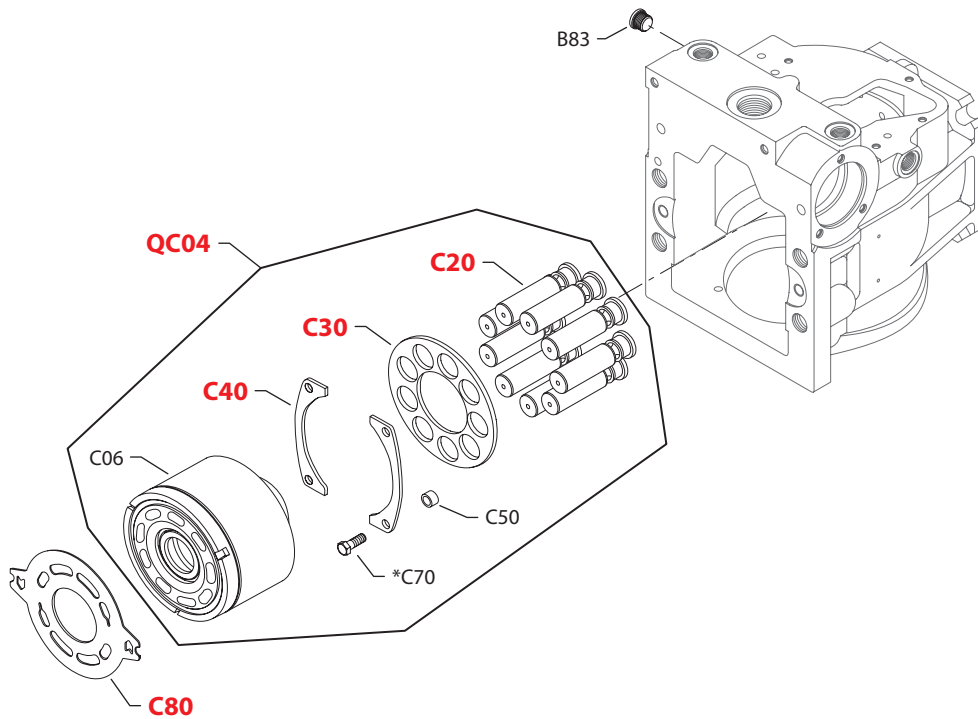


Variable displacement pump

(HBA)



(GTB, JAA, JCA & JCB)



* = included in base pump seal kit Q210

E103 102E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

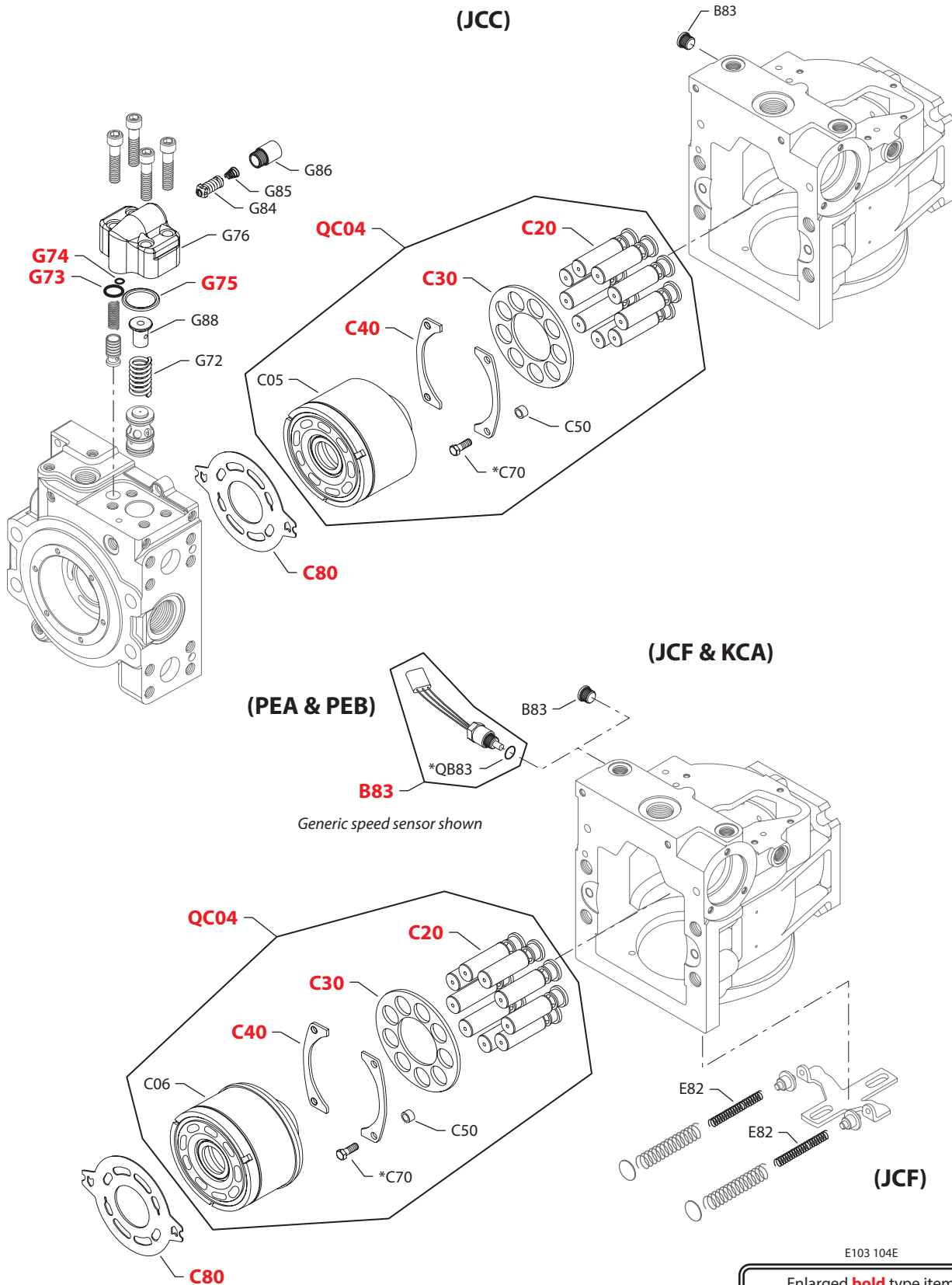
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

Special hardware

GTB	B83	15-41		140644 (9005110-5600)	Plug assembly	1
	C05	15-41		519257 (11012434)	Cylinder block assembly	1
	C80	15-41		518806	Valve plate	1
	QC04	15-41		8510372	Cylinder block kit	1
HBA	B2CN	94-14		775312	Set screw	1
	B83	94-14		140644	Plug assembly	1
	C05	94-14		519257 (11012434)	Cylinder block assembly	1
	C80	94-14		518994	Valve plate	1
	QC04	94-14		8510372	Cylinder block kit	1
	W1CN	94-14		723726	Connector	1
	W3CN	94-14		574095	Cap	1
JAA	B83	94-13		140644 (9005110-5600)	Plug assembly	1
	C05	94-13		519257 (11012434)	Cylinder block assembly	1
	C80	94-13		518994	Valve plate	1
	QC04	94-13		8510372	Cylinder block kit	1
JCA	B83	08-12		140644 (9005110-5600)	Plug assembly	1
	C05	08-12		519257 (11012434)	Cylinder block assembly	1
	C80	08-12		518806	Valve plate	1
	QC04	08-12		8510372	Cylinder block kit	1
JCB	B83	09-13		140644 (9005110-5600)	Plug assembly	1
	C05	09-13		519257 (11012434)	Cylinder block assembly	1
	C80	09-13		518806	Valve plate	1
	QC04	09-13		8510372	Cylinder block kit	1



Variable displacement pump



* = included in base pump seal kit Q210

E103 104E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

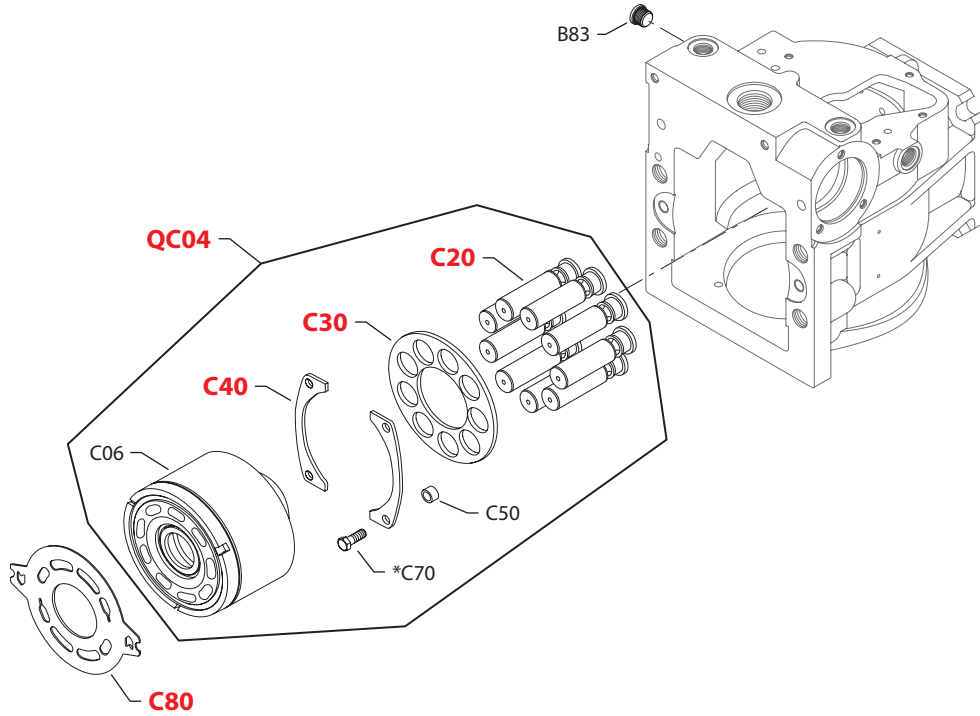
Special hardware

JCC	B83	09-13		140644 (9005110-5600)	Plug assembly	1
	C05	09-13		11033868	Cylinder block assembly	1
	C80	09-13		518806	Valve plate	1
	G73	09-13		519873	Seal	1
	G74	09-13		144725 (9004105-0110)	O-ring	1
	G75	09-13		518329	O-ring	1
	G76	09-13		517828	Valve housing	1
	G84	09-13		3103375-0175	SCR valve, 175 bar [2538 psi]	1
	G85	09-13		4800780	Spring	1
	G86	09-13		11126727	Plug assembly	1
	G88	09-13		517829	Spring seat	1
	G89	09-13		517831	Spring	1
	QC04	09-13		8510372	Cylinder block kit	1
JCF	B83	10-15		140644 (9005110-5600)	Plug assembly	1
	C05	10-15		519257 (11012434)	Cylinder block assembly	1
	C80	10-15		518929	Valve plate	1
	E82	10-15		356576 (11062702)	Spring	2
	QC04	10-15		8510372	Cylinder block kit	1
KCA	B83	94-29		140644 (9005110-5600)	Plug assembly	1
	C05	94-29		519257 (11012434)	Cylinder block assembly	1
	C80	94-29		518994	Valve plate	1
	QC04	94-29		8510372	Cylinder block kit	1
PEA	B83	07-04		KPPG156	Speed sensor	1
	C06	07-04		11093925	Cylinder block assembly, with speed ring	1
	C80	07-04		518806	Valve plate	1
	QB83	07-04		085043 (9004201-3700)	O-ring	1
	QC04	07-04		8510371	Cylinder block kit, with speed ring	1
PEB	B83	08-32		KPPG156	Speed sensor	1
	C05	08-32		11093925	Cylinder block assembly, with speed ring	1
	C80	08-32		518931	Valve plate	1
	QB83	07-04		085043 (9004201-3700)	O-ring	1
	QC04	08-32		8510371	Cylinder block kit, with speed ring	1



Variable displacement pump

(PGA & PGB)



(JCF)

E100 791E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Common parts

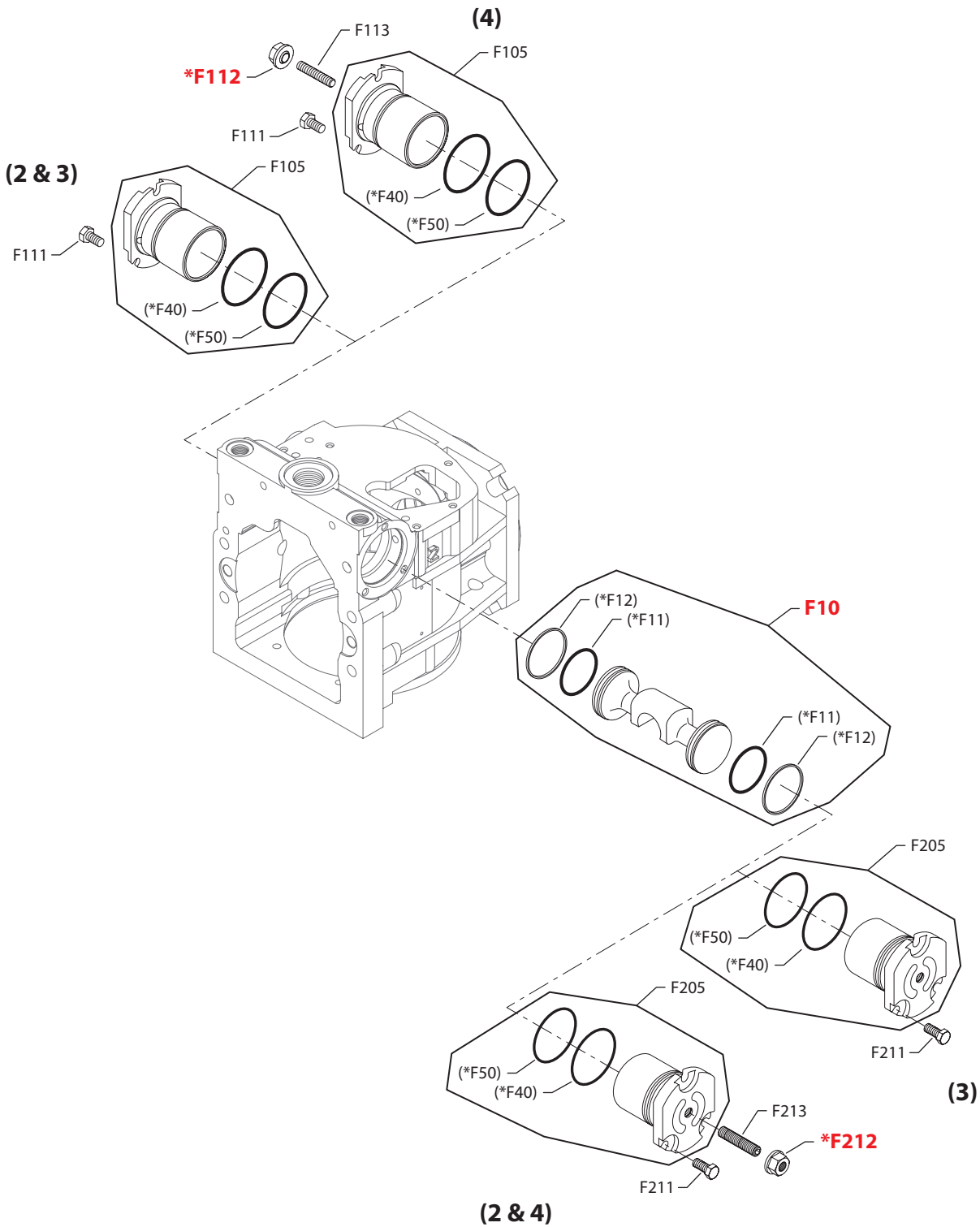
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	C20	87-02		364000	Piston assembly (SB-1988-023)	9
	C30	87-02		11067351	Slipper guide	1
	C40	88-22		334409 (8200144)	Slipper guide bearing (SB-1988-016)	2
	C50	88-22		334383 (11065866)	Spacer (SB-1988-016, SB-1998-041 & SB-2009-038)	4
	C65	88-22	98-47	Obsolete	Washer (SB1988-016 & SB-1998-041)	4
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4

Special hardware

PGA	B83	08-32		140644 (9005110-5600)	Plug assembly	1
	C05	08-32		519257 (11012434)	Cylinder block assembly	1
	C80	08-32		518806	Valve plate	1
	QC04	08-32		8510372	Cylinder block kit	1
PGB	B83	08-32		140644 (9005110-5600)	Plug assembly	1
	C05	08-32		519257 (11012434)	Cylinder block assembly	1
	C80	08-32		518931	Valve plate, CCW	1
	QC04	08-32		8510372	Cylinder block kit	1



Variable displacement pump



* = included in overhaul seal kit Q210
 () = not available individually

E100 688E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

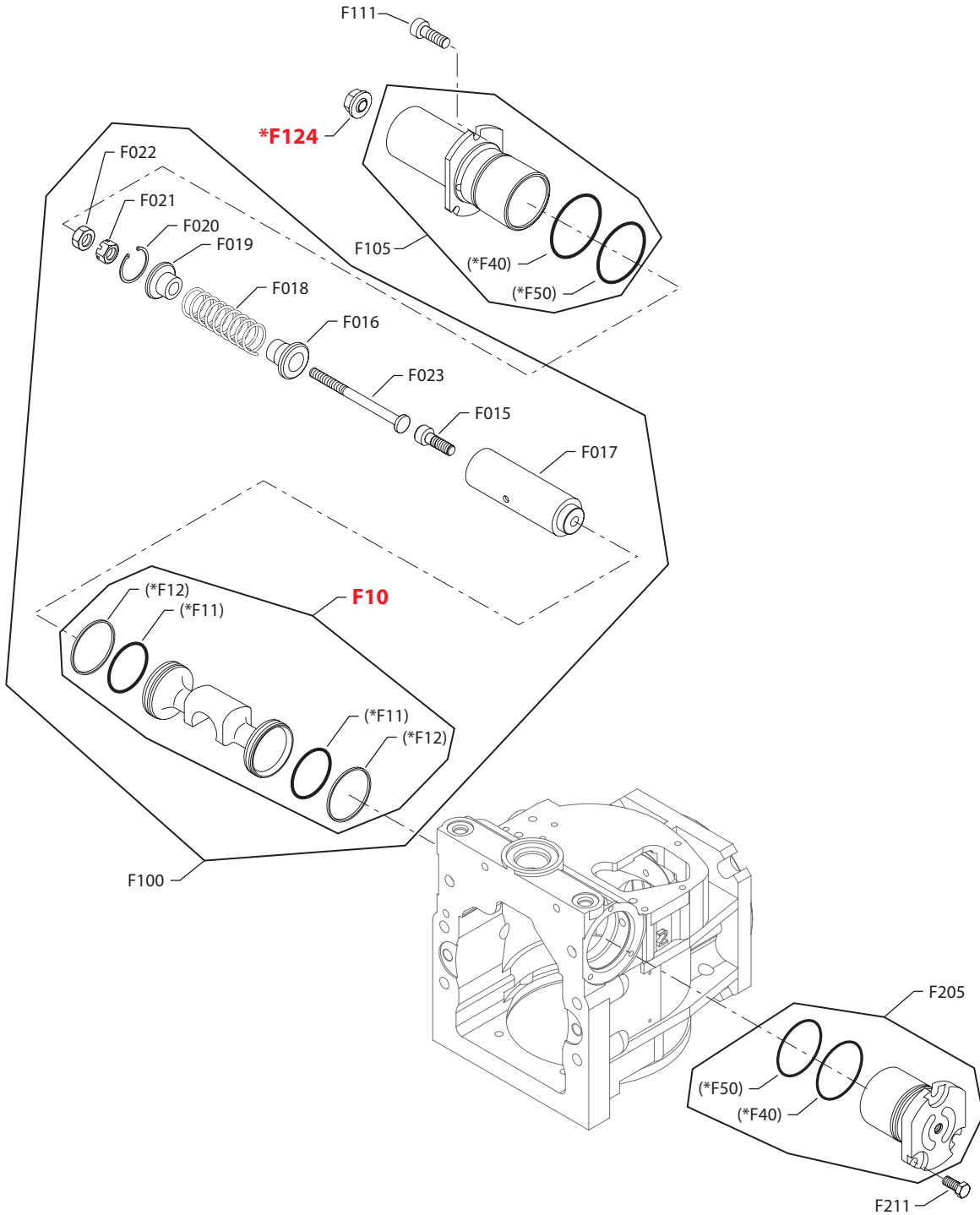

Variable displacement pump
Displacement limitation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
2	F10	00-02		11044943	Servo piston assembly (SB-2000-022 & SB-2009-035)	1
	F105	00-02		11060703 (11055769)	Servo cylinder assembly	1
	F111	00-02		378083 (9007210-0804)	Screw	3
	F205	00-02		11060704 (11055771)	Servo cylinder assembly	1
	F211	00-02		378083 (9007210-0804)	Screw	3
	F212	00-02		505412 (9003509-0008)	Seal nut	1
	F213	00-02		5000747	Set screw (SB-2000-022)	1
	3	F10	87-02		11044943	Servo piston assembly (SB-2000-022 & SB-2009-035)
F105		87-02		11060703 (11055769)	Servo cylinder assembly	1
F111		87-02		378083 (9007210-0804)	Screw	3
F205		87-02		11060703 (11055769)	Servo cylinder assembly	1
F211		87-02		378083 (9007210-0804)	Screw	3
4		F10	87-02		11044943	Servo piston assembly (SB-2000-022 & SB-2009-035)
	F105	87-02		11060704 (11055771)	Servo cylinder assembly	1
	F111	87-02		378083 (9007210-0804)	Screw	3
	F112	87-02		505412 (9003509-0008)	Seal nut	1
	F113	87-02		5000747	Set screw (SB-2000-022)	1
	F205	87-02		11060704 (11055771)	Servo cylinder assembly	1
	F211	87-02		378083 (9007210-0804)	Screw	3
	F212	87-02		505412 (9003509-0008)	Seal nut	1
	F213	87-02		5000747	Set screw (SB-2000-022)	1



Variable displacement pump

(7)



* = included in overhaul seal kit Q210
 () = not available individually

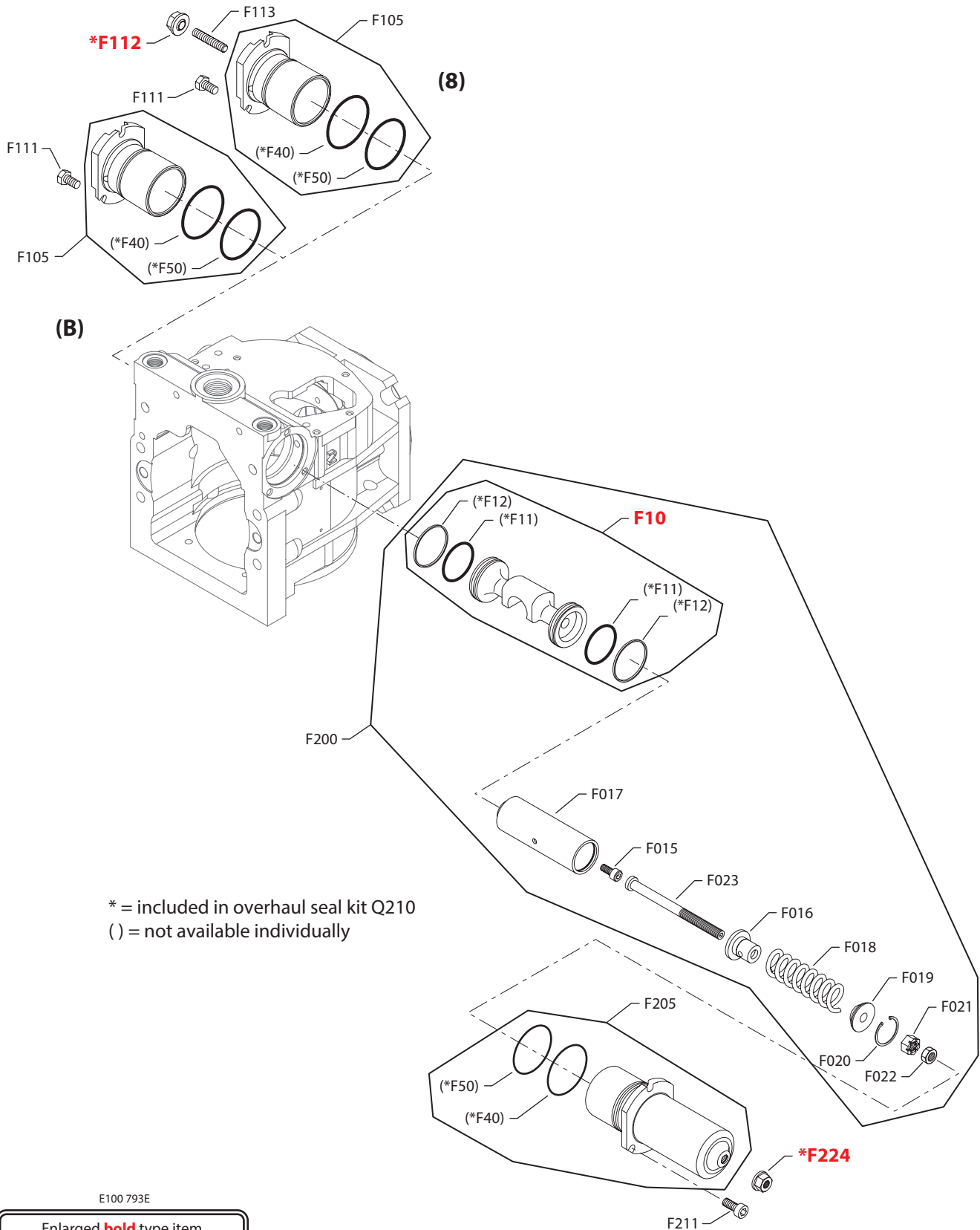
E100 705E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Displacement limitation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
7	F10	98-14		11044946	Servo piston assembly	1
	F015	98-14		346031	Screw	1
	F016	98-14		507096	Spring guide	1
	F017	98-14		345967	Servo spring housing	1
	F018	98-14		351742	Spring	1
	F019	98-14		507094	Spring guide	1
	F020	98-14		505826	Retaining ring	1
	F021	98-14		507045	Castle nut	1
	F022	98-14		346015	Nut	1
	F023	98-14		11140221	Adjusting screw	1
	F100	98-14		515327 (8200532)	Servo assembly	1
	F105	98-14		11059762 (11055776)	Servo cylinder assembly, automotive control	1
	F111	98-14		746651 (393595)	Screw	3
	F124	98-14		066159	Seal nut	1
	F205	98-14		11060703 (11055769)	Servo cylinder assembly	1
	F211	98-14		378083 (9007210-0804)	Screw	3



Variable displacement pump



E100 793E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

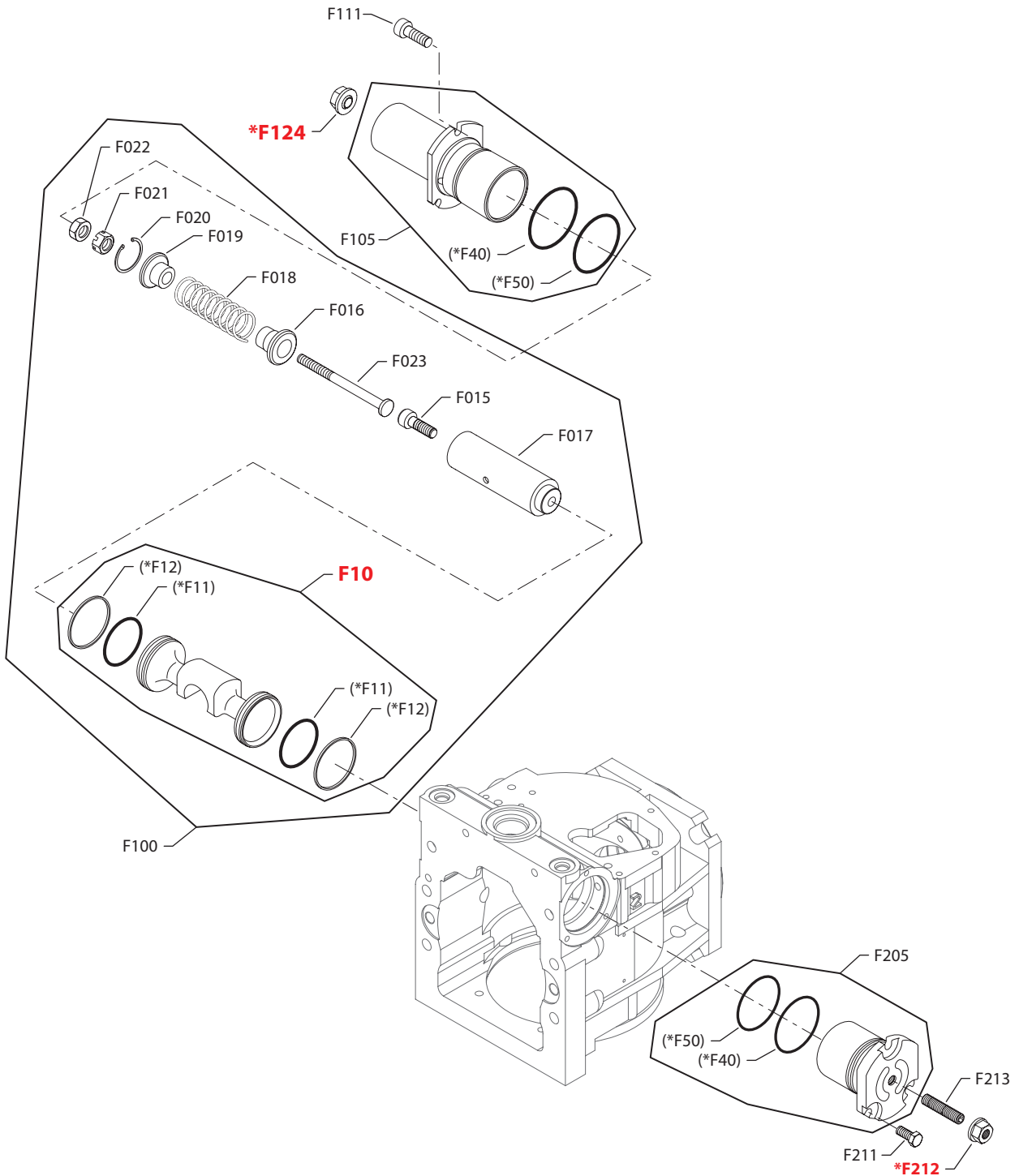

Variable displacement pump
Displacement limitation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
8	F10	90-07	15-03	11044946	Servo piston assembly	1	
	F015	90-07	15-03	346031	Screw	1	
	F016	90-07	15-03	507096	Spring guide	1	
	F017	90-07	15-03	345967	Servo spring housing	1	
	F018	90-07	15-03	351742	Spring	1	
	F019	90-07	15-03	507094	Spring guide	1	
	F020	90-07	15-03	505826	Retaining ring	1	
	F021	90-07	15-03	507045	Castle nut	1	
	F022	90-07	15-03	346015	Nut	1	
	F023	90-07	15-03	11140221	Adjusting screw	1	
	F105	90-07	15-03	11060704 (11055771)	Servo cylinder assembly	1	
	F111	90-07	15-03	378083 (9007210-0804)	Screw	3	
	F112	90-07	15-03	505412 (9003509-0008)	Seal nut	1	
	F113	90-07	15-03	5000747	Set screw, M8 x 45mm, (SB-2000-022)	1	
	F200	90-07	15-03	515327 (8200532)	Servo assembly	1	
	F205	90-07	15-03	11059762 (11055776)	Servo cylinder assembly	1	
	F211	90-07	15-03	746651 (393595)	Screw	3	
	F224	90-07	15-03	066159	Seal nut	1	
	B	F10	98-14		11044946	Servo piston assembly	1
		F015	98-14		346031	Screw	1
F016		98-14		507096	Spring guide	1	
F017		98-14		345967	Servo spring housing	1	
F018		98-14		351742	Spring	1	
F019		98-14		507094	Spring guide	1	
F020		98-14		505826	Retaining ring	1	
F021		98-14		507045	Castle nut	1	
F022		98-14		346015	Nut	1	
F023		98-14		11140221	Adjusting screw	1	
F105		98-14		11060703 (11055769)	Servo cylinder assembly	1	
F111		98-14		378083 (9007210-0804)	Screw	3	
F200		98-14		515327 (8200532)	Servo assembly	1	
F205		98-14		11059762 (11055776)	Servo cylinder assembly	1	
F211		98-14		746651 (393595)	Screw	3	
F224		98-14		066159	Seal nut	1	



Variable displacement pump

(D)



* = included in overhaul seal kit Q210
 () = not available individually

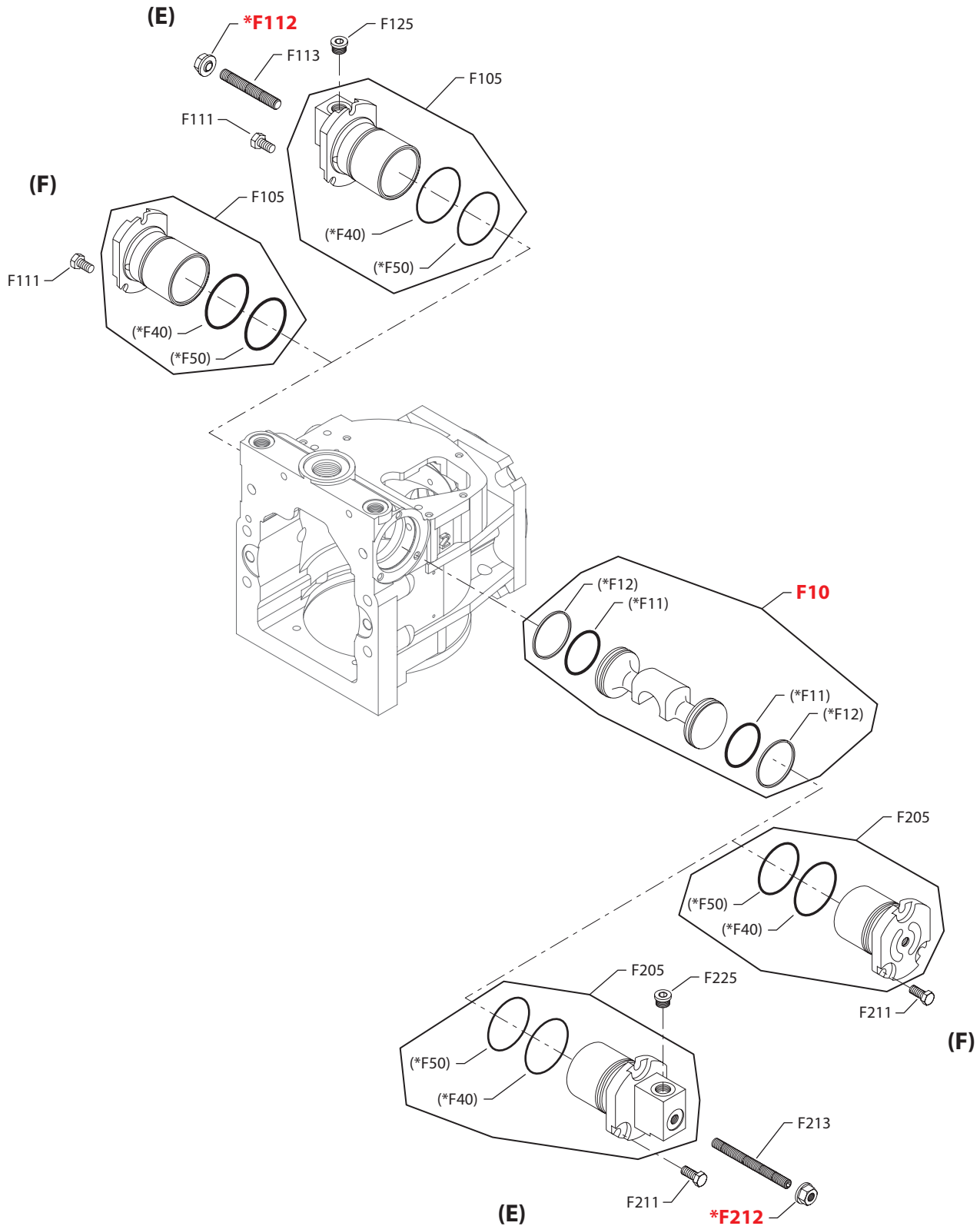
E100 792E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Displacement limitation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
D	F10	98-18		11044946	Servo piston assembly	1
	F015	98-18		346031	Screw	1
	F016	98-18		507096	Spring guide	1
	F017	98-18		345967	Servo spring housing	1
	F018	98-18		351742	Spring	1
	F019	98-18		507094	Spring guide	1
	F020	98-18		505826	Retaining ring	1
	F021	98-18		507045	Castle nut	1
	F022	98-18		346015	Nut	1
	F023	98-18		11140221	Adjusting screw	1
	F100	98-18		515327 (8200532)	Servo assembly	1
	F105	98-18		11059762	Servo cylinder assembly, automotive control	1
	F111	98-18		378083	Screw	3
	F124	98-18		066159	Seal nut	1
	F205	98-18		11060704	Servo cylinder assembly	1
	F211	98-18		746651	Screw	3
	F212	98-18		505412 (9003509-0008)	Seal nut	1
	F213	98-18		5000747	Set screw (SB-2000-022)	1



Variable displacement pump



E100 794E

* = included in overhaul seal kit Q210
 () = not available individually

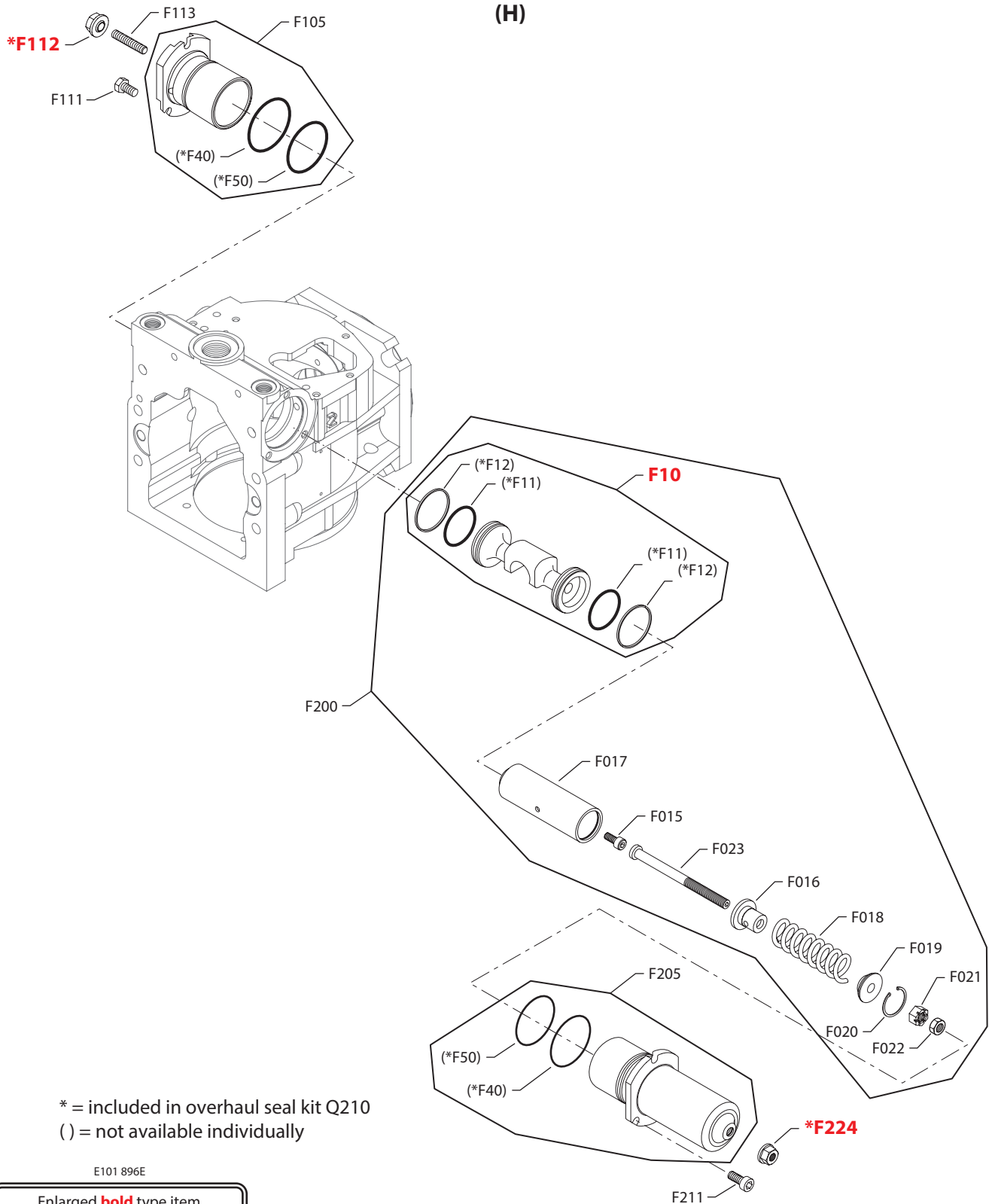
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Displacement limitation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
E	F10	97-44		511613	Servo piston assembly (SB-2000-022)	1
	F105	97-44		11059761	Servo cylinder assembly	1
	F111	97-44		746651	Screw	3
	F112	97-44		336826 (9003508-0010)	Seal nut	1
	F113	97-44		733691	Set screw	1
	F125	97-44		091033	Plug assembly	1
	F205	97-44		11059761	Servo cylinder assembly	1
	F211	97-44		746651 (9007210-0804)	Screw	3
	F212	97-44		336826 (9003508-0010)	Seal nut	1
	F213	97-44		733691	Set screw	1
	F225	97-44		091033	Plug assembly	1
	F	F10	91-30		11044943	Servo piston assembly (SB-2000-022)
F105		91-30		11055773	Servo cylinder assembly	1
F111		91-30		378083 (9007210-0804)	Screw	3
F205		91-30		11055773	Servo cylinder assembly	1
F211		91-30		378083 (9007210-0804)	Screw	3



Variable displacement pump



E101 896E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

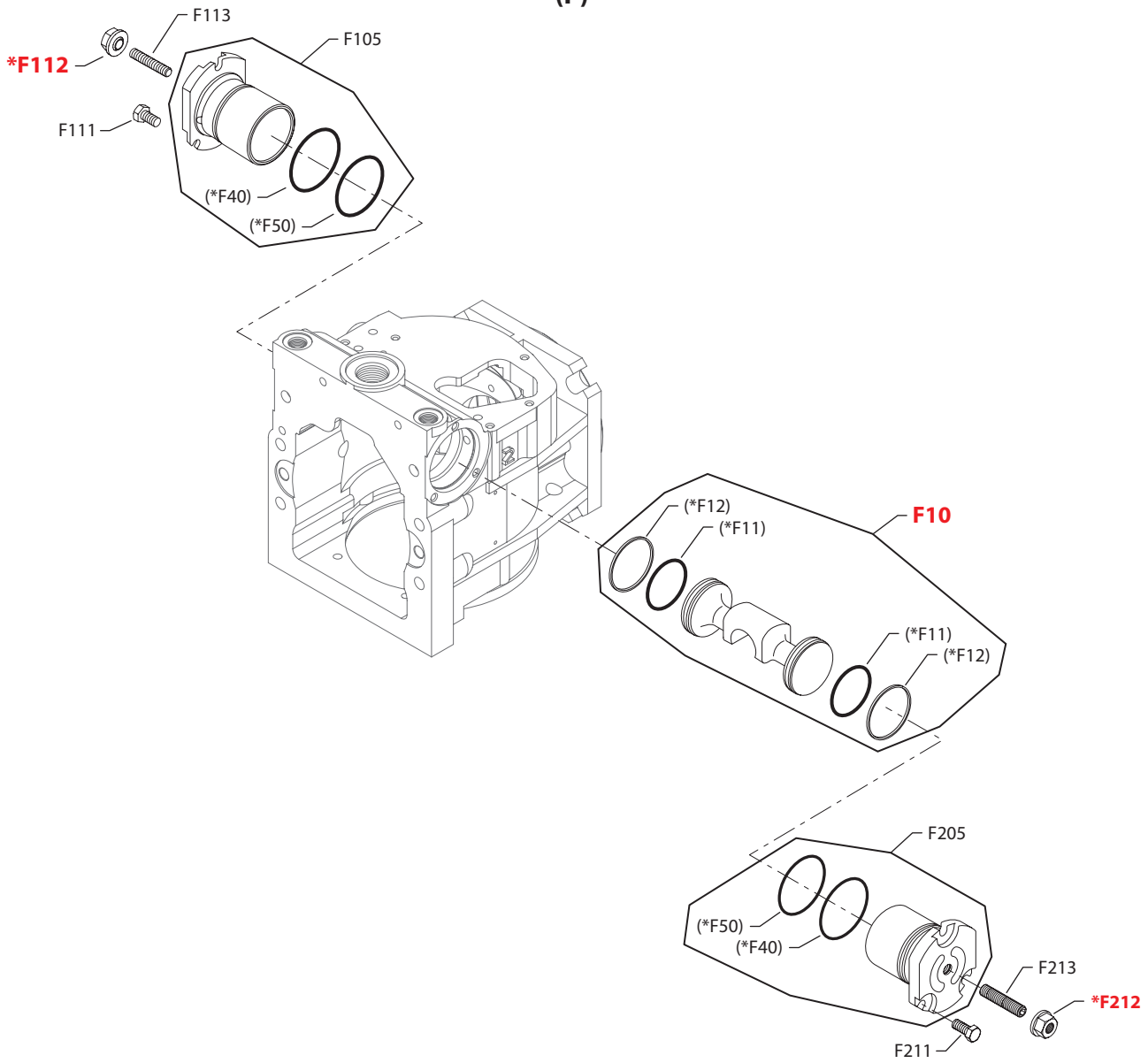

Variable displacement pump
Displacement limitation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
H	F10	98-18		11044946	Servo piston assembly	1
	F015	98-18		346031	Screw	1
	F016	98-18		507096	Spring guide	1
	F017	98-18		345967	Servo spring housing	1
	F018	98-18		351742	Spring	1
	F019	98-18		507094	Spring guide	1
	F020	98-18		505826	Retaining ring	1
	F021	98-18		507045	Castle nut	1
	F022	98-18		346015	Nut	1
	F023	98-18		11140221	Adjusting screw	1
	F105	98-18		11060704 (11055771)	Servo cylinder assembly	1
	F111	98-18		746651	Screw	3
	F112	98-18		505412 (9003509-0008)	Seal nut	1
	F113	98-18		5000747	Set screw, M8 x 45mm, (SB-2000-022)	1
	F200	98-18		515327 (8200532)	Servo assembly	1
	F205	98-18		11059762 (11055776)	Servo cylinder assembly	1
	F211	98-18		378083 (9007210-0804)	Screw	3
	F224	98-18		066159	Seal nut	1



Variable displacement pump

(P)



* = included in overhaul seal kit Q210
 () = not available individually

E101 898E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing



Variable displacement pump

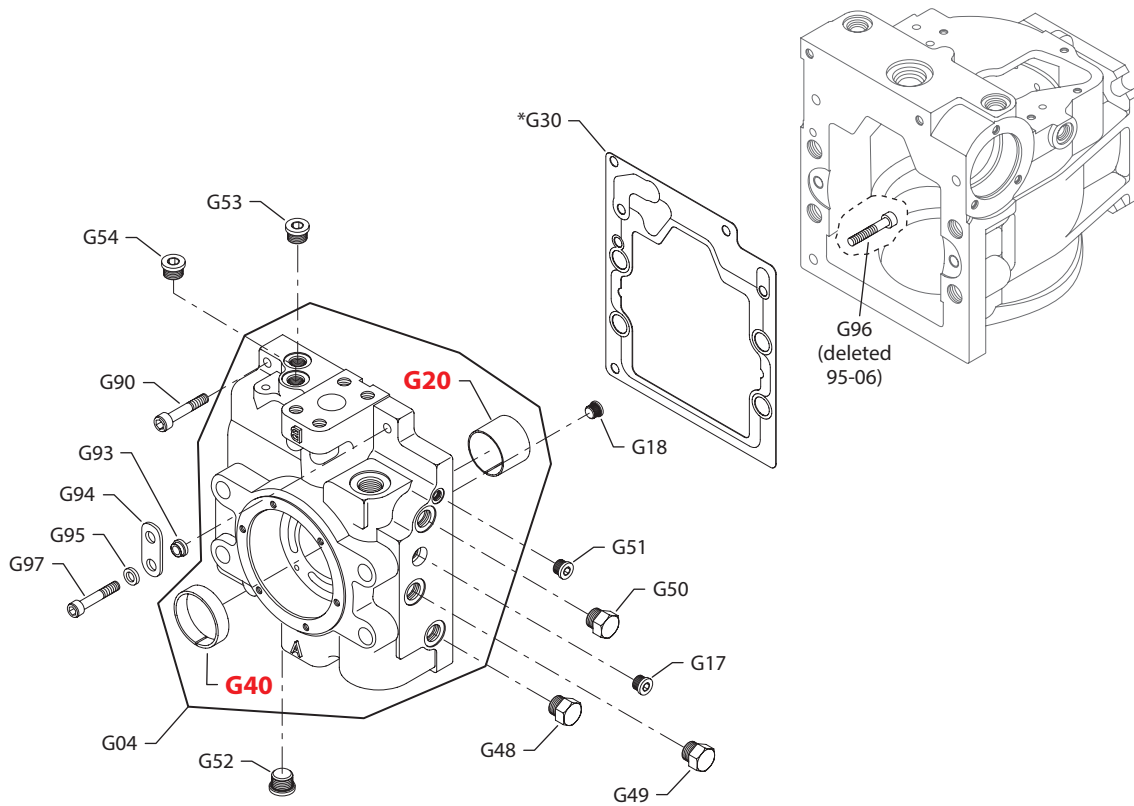
Displacement limitation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
P	F10	03-16		11044943	Servo piston assembly (SB-2009-035)	1
	F105	03-16		11060704 (11055771)	Servo cylinder assembly	1
	F111	03-16		378083 (9007210-0804)	Screw	3
	F112	03-16		505412 (9003509-0008)	Seal nut	1
	F113	03-16		11001516	Set screw	1
	F205	03-16		11060704 (11055771)	Servo cylinder assembly	1
	F211	03-16		378083 (9007210-0804)	Screw	3
	F212	03-16		505412 (9003509-0008)	Seal nut	1
	F213	03-16		11001516	Set screw	1



Variable displacement pump

(H, 2, 6, 60,
61, 62 & 65)



* = included in base pump seal kit Q210

E100 850E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

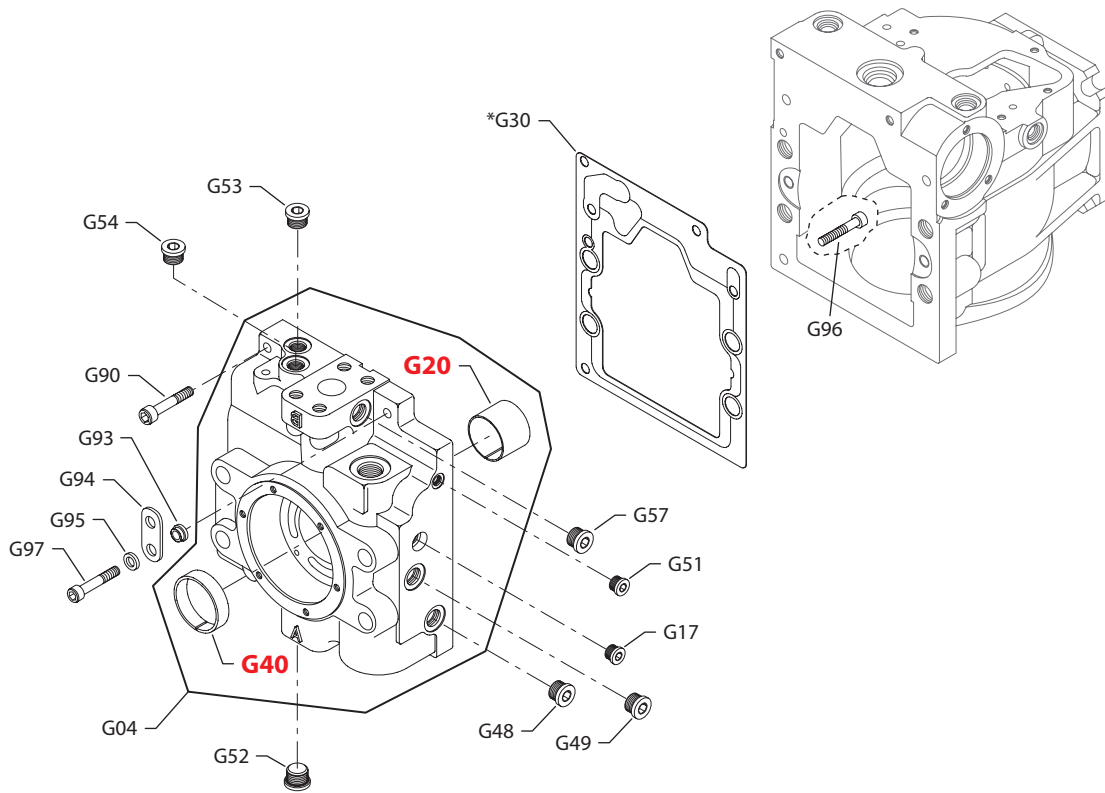

Variable displacement pump
End cap, side ports (built in U.S.A.)

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G17	92-12		327007 (9005110-4400)	Plug (SB-1992-0003)	1
	G18	92-12		327007 (9005110-4400)	Plug (SB-1992-0003)	1
	G20	87-02		673319 (8700030)	Journal bearing	1
	G30	89-46		8200212	End cap gasket (SB-1992-003)	1
	G30	87-02	89-45	8200043	End cap gasket (SB-1989-023)	1
	G40	87-02		8700008	Bushing	1
	G48	87-02		046151 (9005100-5600)	Plug assembly	1
	G49	87-02		046151 (9005100-5600)	Plug assembly	1
	G50	87-02		046151 (9005100-5600)	Plug assembly	1
	G51	87-02		140644 (9005110-5600)	Plug assembly	1
	G52	87-02		140644 (9005110-5600)	Plug assembly	1
	G53	87-02		140644 (9005110-5600)	Plug assembly	1
	G54	87-02		140644 (9005110-5600)	Plug assembly	1
	G90	92-12		746644 (9007314-0810)	Screw	1
	G90	89-46	92-11	694356 (9007314-0608)	Screw (SB-1992-003)	1
	G90	87-02	89-45	331447 (9007314-0607)	Screw	1
	G93	92-12		713800 (8800564)	Spacer	1
	G93	87-02	92-11	307678 (8800404)	Spacer	1
	G94	92-12		8800565	Lifting bracket	1
	G94	87-02	92-11	8800522	Lifting bracket	1
	G95	92-12		002311 (9009610-3459)	Washer	1
	G95	87-02	92-11	002295 (9009610-2850)	Washer	1
	G96	92-12	95-06	9007314-0808	Screw (SB-1994-035)	1
	G96	87-02	92-11	331447 (9007314-0607)	Screw (SB-1992-003)	1
	G97	92-12		746644 (9007314-0810)	Screw	1
	G97	87-02	92-11	694356 (9007314-0608)	Screw (SB-1992-003)	1
2, 6, 60, 61	G04	92-12		8200236	End cap assembly, side ports (SB-1992-003)	1
H & 62	G04	94-29		8200294	End cap assembly, metric side ports	1
65	G04	98-11		8200284	End cap assembly, metric side ports	1
6P	G04	98-13		8200388	End cap assembly, side ports, CW	1



Variable displacement pump

(60, 62 & 67)



* = included in base pump seal kit Q210

E100 850E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

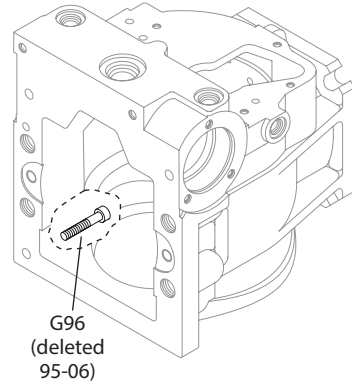
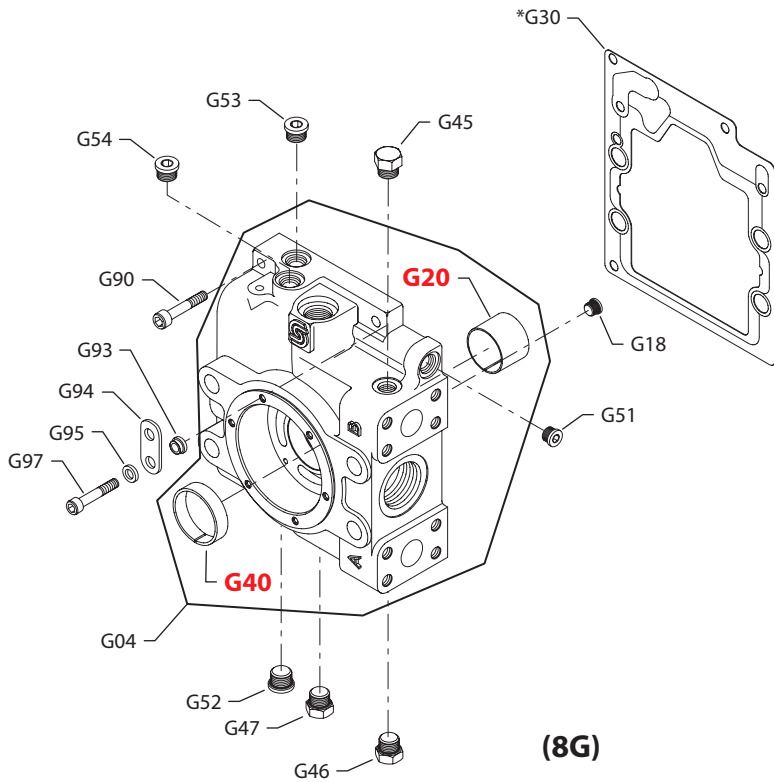

Variable displacement pump
End cap, side ports (built in Germany)

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G17	94-24		140644	Plug assembly	1
	G20	94-24		673319 (8700030)	Journal bearing	1
	G30	94-24		8200212	End cap gasket	1
	G40	94-24		664771	Bushing	1
	G48	94-24		140644	Plug assembly	1
	G49	94-24		140644	Plug assembly	1
	G51	94-24		327007 (9005110-4400)	Plug assembly	1
	G52	94-24		140644	Plug assembly	1
	G53	94-24		140644	Plug assembly	1
	G54	94-24		140644	Plug assembly	1
	G57	94-24		140644	Plug assembly	1
	G90	94-24		746644 (9007314-0810)	Screw	1
	G93	94-24		713800 (8800564)	Spacer	1
	G94	94-24		8800565	Lifting bracket	1
	G95	94-24		002311 (9009610-3459)	Washer	1
	G96	94-24		746594 (9007314-0807)	Screw	1
	G97	94-24		746644 (9007314-0810)	Screw	1
60	G04	94-24		505048	End cap assembly, side ports	1
62	G04	99-12		506442	End cap assembly, metric side ports	1
67	G04	96-03		505052/P	End cap assembly, metric side ports	1

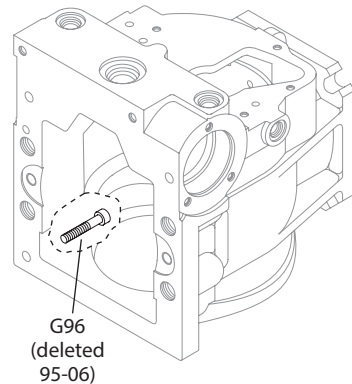
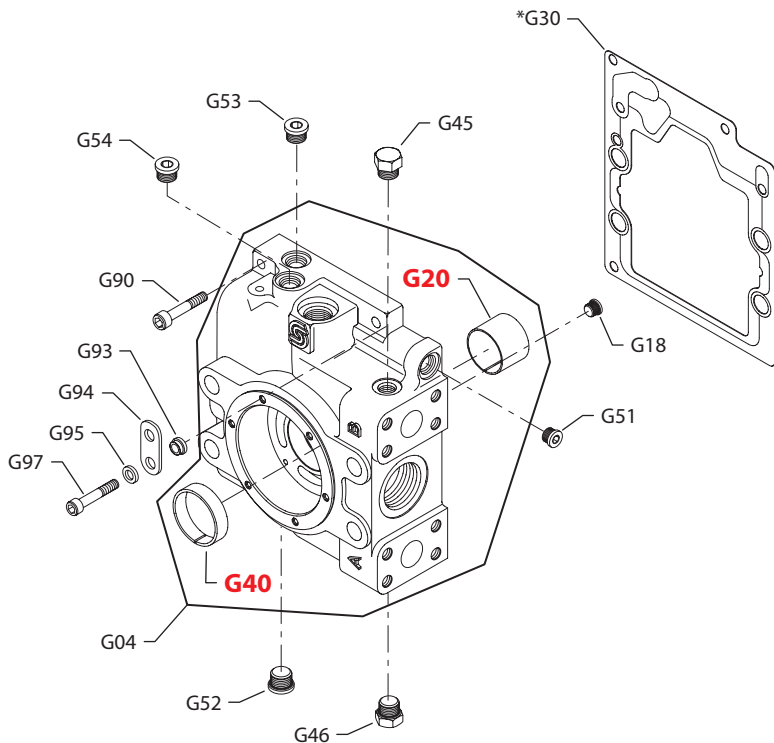


Variable displacement pump

(1, 8, M, 80,
81 & 82)



(8G)



* = included in base pump seal kit Q210

E100 851E

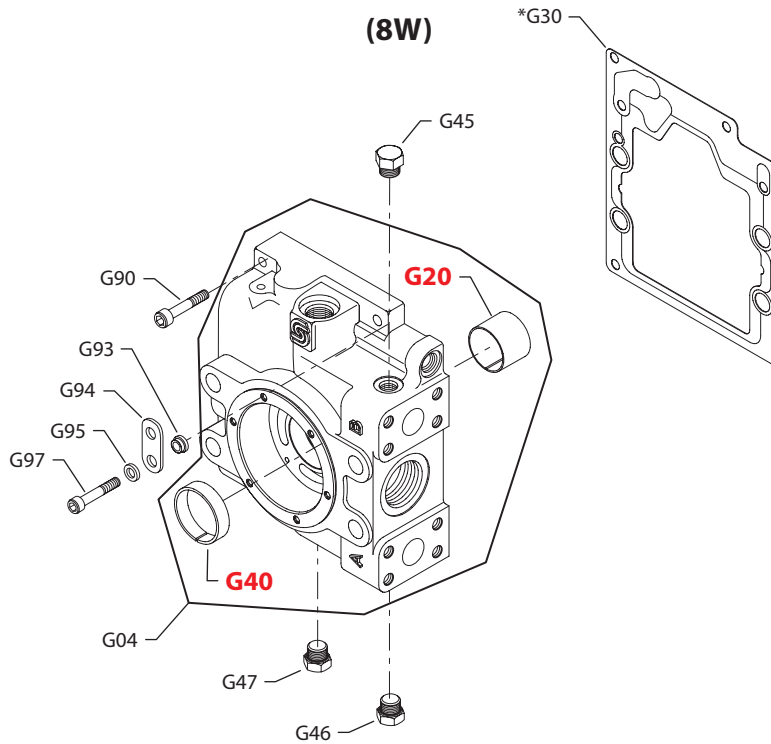
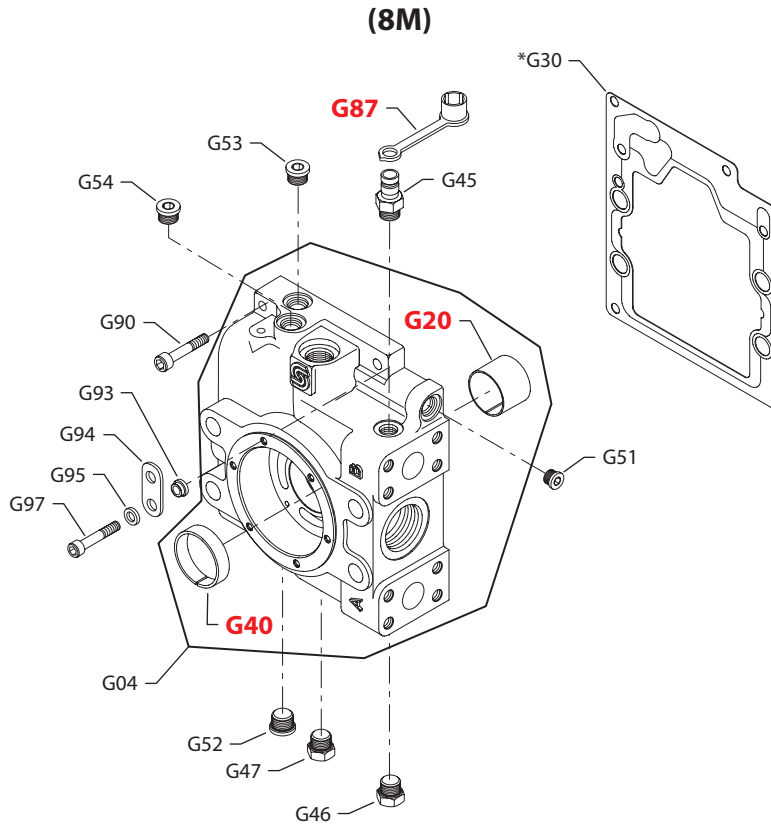
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
End cap, twin ports (built in U.S.A.)

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G20	87-02		673319 (8700030)	Journal bearing	1
	G30	87-02		8200212	End cap gasket	1
	G40	87-02		664771 (8700008)	Bushing	1
	G46	87-02		046151 (9005100-5600)	Plug assembly	1
	G90	87-02		746644 (9007314-0810)	Screw	1
	G93	87-02		713800 (8800564)	Spacer	1
	G94	87-02		8800565	Lifting bracket	1
	G95	87-02		002311 (9009610-3459)	Washer	1
	G97	87-02		746644 (9007314-0810)	Screw	1
1, 8, 80 & 81	G04	92-12		8200235	End cap assembly (SB-1995-012)	1
	G45	87-02		046151 (9005100-5600)	Plug assembly	1
	G47	87-02		046151 (9005100-5600)	Plug assembly	1
	G51	87-02		140644 (9005110-5600)	Plug assembly	1
	G52	87-02		140644 (9005110-5600)	Plug assembly	1
	G53	87-02		140644 (9005110-5600)	Plug assembly	1
	G54	87-02		140644 (9005110-5600)	Plug assembly	1
M & 82	G04	94-15		8200430	End cap assembly, metric ports	1
	G45	87-02		046151 (9005100-5600)	Plug assembly	1
	G47	87-02		046151 (9005100-5600)	Plug assembly	1
	G51	87-02		140644 (9005110-5600)	Plug assembly	1
	G52	87-02		140644 (9005110-5600)	Plug assembly	1
	G53	87-02		140644 (9005110-5600)	Plug assembly	1
	G54	87-02		140644 (9005110-5600)	Plug assembly	1
8G	G04	94-15		8200346	End cap assembly, no charge pump	1
	G45	87-02		046151 (9005100-5600)	Plug assembly	1
	G51	87-02		140644 (9005110-5600)	Plug assembly	1
	G52	87-02		140644 (9005110-5600)	Plug assembly	1
	G53	87-02		140644 (9005110-5600)	Plug assembly	1
	G54	87-02		140644 (9005110-5600)	Plug assembly	1



Variable displacement pump



E100 852E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

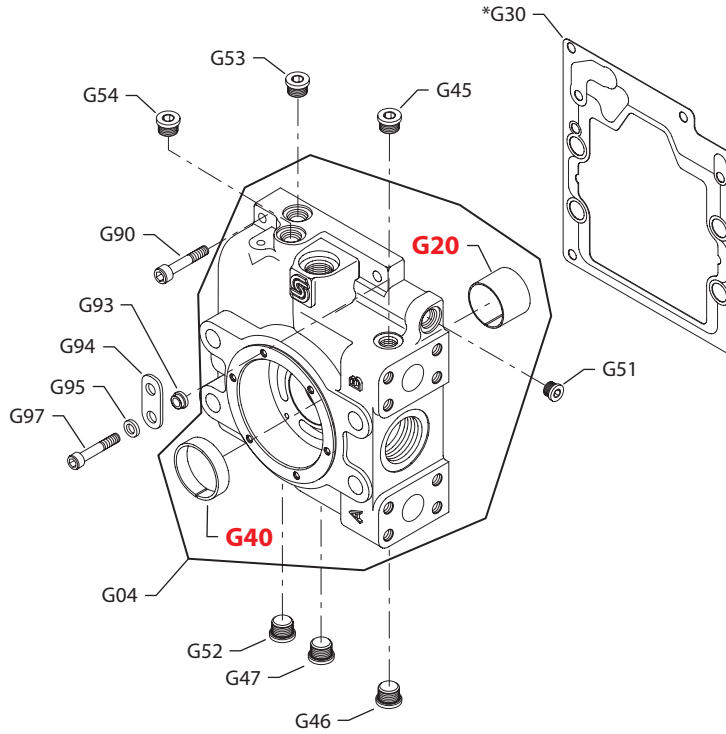

Variable displacement pump
End cap, twin ports (built in U.S.A.)

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
8M	G04	97-26		8200235	End cap assembly	1	
	G20	97-26		673319 (8700030)	Journal bearing	1	
	G30	97-26		8200212	End cap gasket	1	
	G40	97-26		664771 (8700008)	Bushing	1	
	G45	97-26		8700127	Diagnostic recepticle	1	
	G46	97-26		046151 (9005100-5600)	Plug assembly	1	
	G47	97-26		046151 (9005100-5600)	Plug assembly	1	
	G51	97-26		140644 (9005110-5600)	Plug assembly	1	
	G52	97-26		140644 (9005110-5600)	Plug assembly	1	
	G53	97-26		140644 (9005110-5600)	Plug assembly	1	
	G54	97-26		140644 (9005110-5600)	Plug assembly	1	
	G87	97-26		8700128	Dust cover	1	
	G90	97-26		746644 (9007314-0810)	Screw	1	
	G93	97-26		713800 (8800564)	Spacer	1	
	G94	97-26		8800565	Lifting bracket	1	
	G95	97-26		002311 (9009610-3459)	Washer	1	
	G97	97-26		746644 (9007314-0810)	Screw	1	
	8W	G04	03-35		8200541	End cap assembly, CW	1
		G20	03-35		673319 (8700030)	Journal bearing	1
G30		03-35		8200212	End cap gasket	1	
G40		03-35		664771 (8700008)	Bushing	1	
G45		03-35		046151 (9005100-5600)	Plug assembly	1	
G46		03-35		046151 (9005100-5600)	Plug assembly	1	
G47		03-35		046151 (9005100-5600)	Plug assembly	1	
G90		03-35		746644 (9007314-0810)	Screw	1	
G93		03-35		713800 (8800564)	Spacer	1	
G94		03-35		8800565	Lifting bracket	1	
G95		03-35		002311 (9009610-3459)	Washer	1	
G97		03-35		746644 (9007314-0810)	Screw	1	

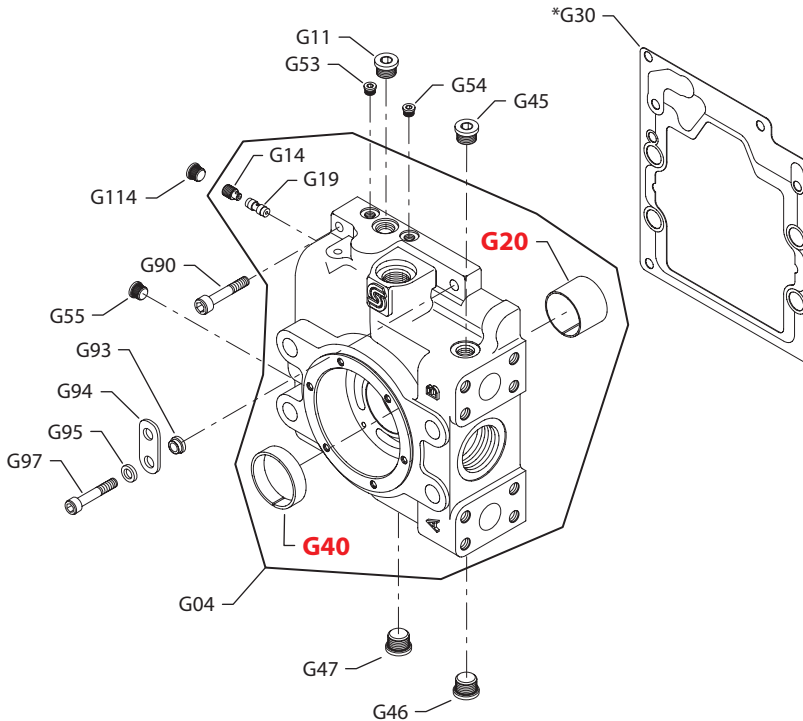


Variable displacement pump

(80)



(8C)



E103 105E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
End cap, twin ports (built in Germany)

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G20	87-02		673319 (8700030)	Journal bearing	1
	G30	87-02		8200212	End cap gasket	1
	G40	87-02		664771 (8700008)	Bushing	1
	G90	87-02		746644 (9007314-0810)	Screw	1
	G93	87-02		713800 (8800564)	Spacer	1
	G94	87-02		8800565	Lifting bracket	1
	G95	87-02		002311 (9009610-3459)	Washer	1
	G97	87-02		746644 (9007314-0810)	Screw	1
80	G04	92-12		777490	End cap assembly (SB-1995-012)	1
	G45	87-02		140644	Plug assembly	1
	G46	87-02		140644	Plug assembly	1
	G47	87-02		140644	Plug assembly	1
	G51	87-02		140644	Plug assembly	1
	G52	87-02		140644	Plug assembly	1
	G53	87-02		140644	Plug assembly	1
	G54	87-02		140644	Plug assembly	1
8C	G04	94-15	14-41	508814	End cap assembly	1
	G11	87-02	14-41	140644	Plug assembly	1
	G45	87-02	14-41	140644	Plug assembly	1
	G46	87-02	14-41	140644	Plug assembly	1
	G47	87-02	14-41	140644	Plug assembly	1
	G53	87-02	14-41	327007 (9005110-4400)	Plug assembly	1
	G54	87-02	14-41	327007 (9005110-4400)	Plug assembly	1
	G55	87-02	14-41	327007 (9005110-4400)	Plug assembly	1
	G114	87-02	14-41	327007 (9005110-4400)	Plug assembly	1



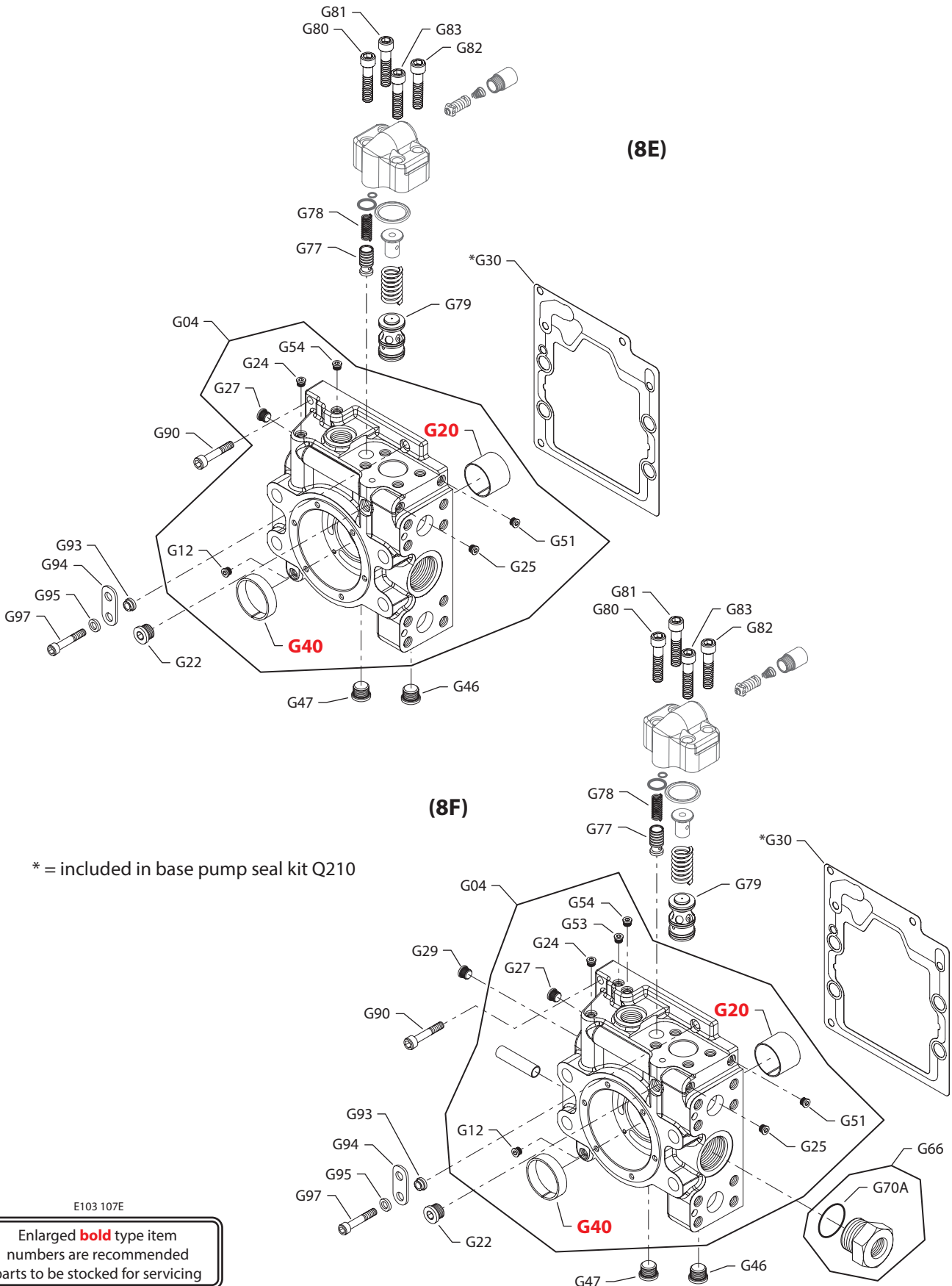
Variable displacement pump

End cap, twin ports, IBF (built in U.S.A.)

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G20	08-09		673319 (8700030)	Journal bearing	1
	G30	08-09		8200212	End cap gasket	1
	G40	08-09		664771 (8700008)	Bushing	1
	G93	08-09		713800 (8800564)	Spacer	1
	G94	08-09		8800565	Lifting bracket	1
	G95	08-09		002311 (9009610-3459)	Washer	1
8P	G04	08-09		11034378	End cap assembly, CCW	1
	G12	08-09		11040532	Plug assembly	1
	G22	08-09		046151 (9005100-5600)	Plug assembly	1
	G24	08-09		11040532	Plug assembly	1
	G25	08-09		11040532	Plug assembly	1
	G27	08-09		11040532	Plug assembly	1
	G46	08-09		046151 (9005100-5600)	Plug assembly	1
	G47	08-09		046151 (9005100-5600)	Plug assembly	1
	G51	08-09		11040532	Plug assembly	1
	G54	08-09		11040532	Plug assembly	1
	G77	08-09		517830	Valve spool	1
	G78	08-09		517832	Spring	1
	G79	08-09		11034287	Valve spool	1
	G80	08-09		504681	Screw	1
	G81	08-09		504681	Screw	1
	G82	08-09		504681	Screw	1
	G83	08-09		504681	Screw	1
	G90	08-09		9007314-0812	Screw	1
	G97	08-09		506969	Screw	1
8S	G04	09-30		11068445	End cap assembly, CW	1
	G12	09-30		11040532	Plug assembly	1
	G22	09-30		046151 (9005100-5600)	Plug assembly	1
	G24	09-30		11040532	Plug assembly	1
	G25	09-30		11040532	Plug assembly	1
	G27	09-30		11040532	Plug assembly	1
	G29	09-30		327007 (9005110-4400)	Plug assembly	1
	G46	09-30		046151 (9005100-5600)	Plug assembly	1
	G47	09-30		046151 (9005100-5600)	Plug assembly	1
	G51	09-30		11040532	Plug assembly	1
	G53	09-30		11040532	Plug assembly	1
	G54	09-30		11040532	Plug assembly	1
	G77	09-30		517830	Valve spool	1
	G78	09-30		517832	Spring	1
	G79	09-30		11068446	Valve spool	1
	G80	09-30		504681	Screw	1
	G81	09-30		504681	Screw	1
	G82	09-30		504681	Screw	1
	G83	09-30		504681	Screw	1
	G90	09-30		9007314-0812	Screw	1
	G97	09-30		506969	Screw	1



Variable displacement pump



E103 107E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

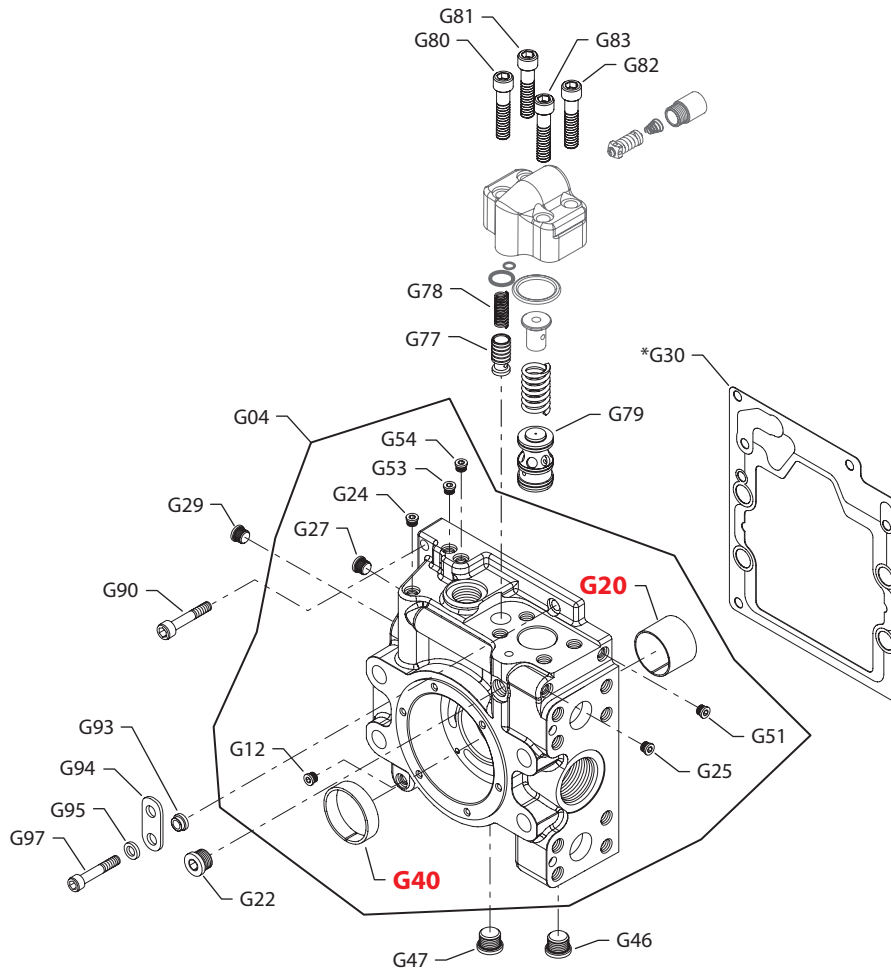

Variable displacement pump
End cap, twin ports, IBF (built in Germany)

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G20	02-30		673319 (8700030)	Journal bearing	1
	G30	02-30		8200212	End cap gasket	1
	G40	02-30		664771 (8700008)	Bushing	1
	G93	02-30		713800 (8800564)	Spacer	1
	G94	02-30		8800565	Lifting bracket	1
	G95	02-30		002311 (9009610-3459)	Washer	1
8E	G04	02-30		11093581	End cap assembly, CCW	1
	G12	02-30		11040532	Plug assembly	1
	G22	02-30		140644	Plug assembly	1
	G24	02-30		11040532	Plug assembly	1
	G25	02-30		11040532	Plug assembly	1
	G27	02-30		11040532	Plug assembly	1
	G46	02-30		140644	Plug assembly	1
	G47	02-30		140644	Plug assembly	1
	G51	02-30		11040532	Plug assembly	1
	G54	02-30		11040532	Plug assembly	1
	G77	02-30		517830	Valve spool	1
	G78	02-30		517832	Spring	1
	G79	02-30		517827	Valve spool	1
	G80	02-30		504681	Screw	1
	G81	02-30		504681	Screw	1
	G82	02-30		504681	Screw	1
	G83	02-30		504681	Screw	1
	G90	02-30		713768	Screw	1
	G97	02-30		506969	Screw	1
8F	G04	02-30		11093577	End cap assembly, CW	1
	G12	02-30		11040532	Plug assembly	1
	G22	02-30		140644	Plug assembly	1
	G24	02-30		11040532	Plug assembly	1
	G25	02-30		11040532	Plug assembly	1
	G27	02-30		11040532	Plug assembly	1
	G29	02-30		327007 (9005110-4400)	Plug assembly	1
	G46	02-30		140644	Plug assembly	1
	G47	02-30		140644	Plug assembly	1
	G51	02-30		11040532	Plug assembly	1
	G53	02-30		11040532	Plug assembly	1
	G54	02-30		11040532	Plug assembly	1
	G66	02-30		521318	Reducer assembly	1
	G70A	02-30		093823	O-ring	1
	G77	02-30		517830	Valve spool	1
	G78	02-30		517832	Spring	1
	G79	02-30		517827	Valve spool	1
	G80	02-30		504681	Screw	1
	G81	02-30		504681	Screw	1
	G82	02-30		504681	Screw	1
	G83	02-30		504681	Screw	1
	G90	02-30		713768	Screw	1
	G97	02-30		506969	Screw	1



Variable displacement pump

(8K & 8N)



E103 108E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing



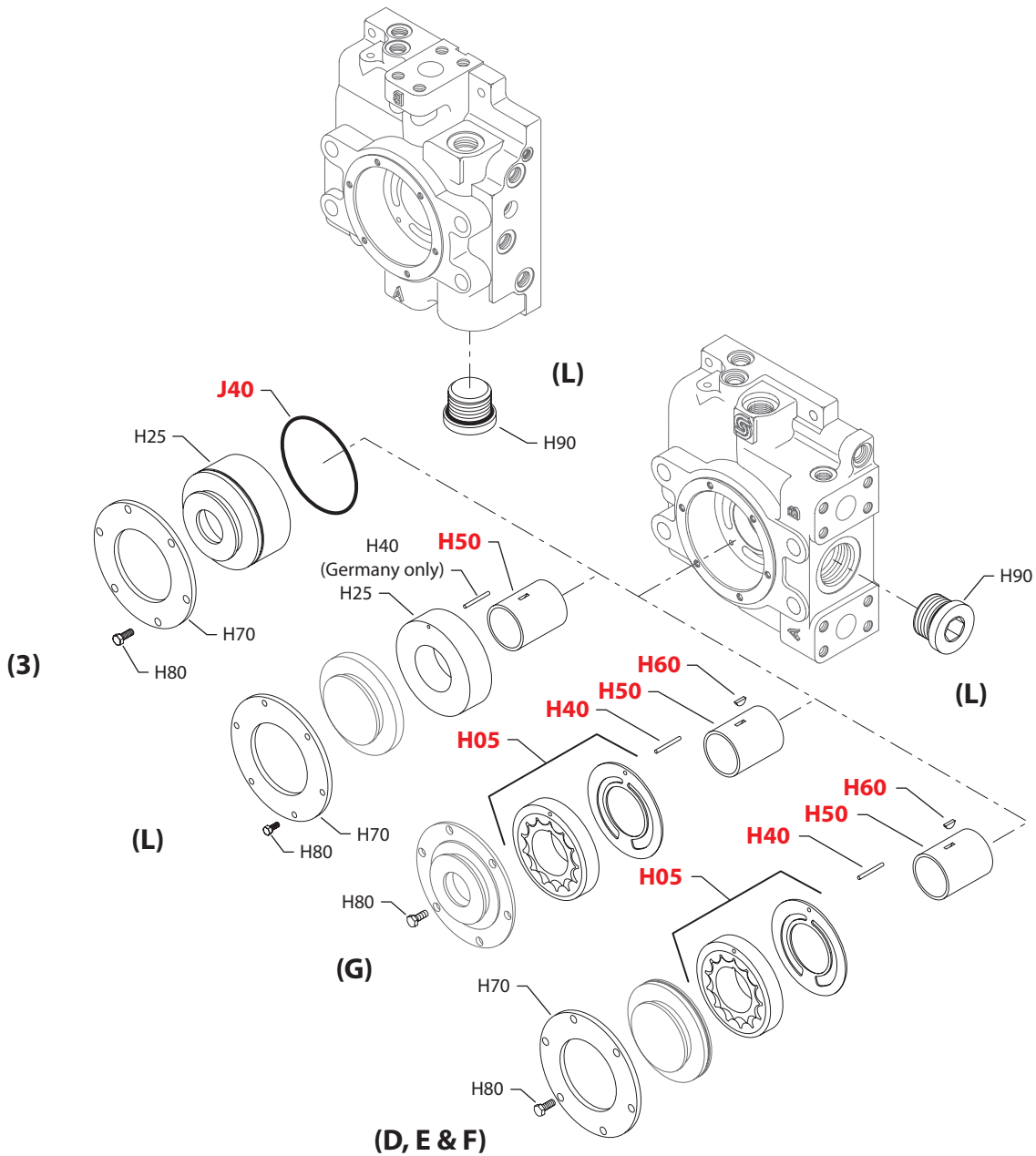
Variable displacement pump

End cap, twin ports, IBF (built in Germany)

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	G20	07-45		673319 (8700030)	Journal bearing	1
	G30	07-45		8200212	End cap gasket	1
	G40	07-45		664771 (8700008)	Bushing	1
	G93	07-45		713800 (8800564)	Spacer	1
	G94	07-45		8800565	Lifting bracket	1
	G95	07-45		002311 (9009610-3459)	Washer	1
8K	G04	07-45		11093211	End cap assembly, CCW	1
	G12	07-45		11040532	Plug assembly	1
	G22	07-45		140644	Plug assembly	1
	G24	07-45		11040532	Plug assembly	1
	G25	07-45		11040532	Plug assembly	1
	G27	07-45		11040532	Plug assembly	1
	G29	07-45		327007 (9005110-4400)	Plug assembly	1
	G46	07-45		140644	Plug assembly	1
	G47	07-45		140644	Plug assembly	1
	G51	07-45		11040532	Plug assembly	1
	G53	07-45		11040532	Plug assembly	1
	G54	07-45		11040532	Plug assembly	1
	G77	07-45		517830	Valve spool	1
	G78	07-45		517832	Spring	1
	G79	07-45		517827	Valve spool	1
	G80	07-45		504681	Screw	1
	G81	07-45		504681	Screw	1
	G82	07-45		504681	Screw	1
	G83	07-45		504681	Screw	1
	G90	07-45		713768	Screw	1
	G97	07-45		506969	Screw	1
8N	G04	10-40		11093574	End cap assembly, CW	1
	G12	10-40		11040532	Plug assembly	1
	G22	10-40		140644	Plug assembly	1
	G24	10-40		11040532	Plug assembly	1
	G25	10-40		11040532	Plug assembly	1
	G27	10-40		11040532	Plug assembly	1
	G29	10-40		327007 (9005110-4400)	Plug assembly	1
	G46	10-40		140644	Plug assembly	1
	G47	10-40		140644	Plug assembly	1
	G51	10-40		11040532	Plug assembly	1
	G53	10-40		11040532	Plug assembly	1
	G54	10-40		11040532	Plug assembly	1
	G77	10-40		517830	Valve spool	1
	G78	10-40		517832	Spring	1
	G79	10-40		517827	Valve spool	1
	G80	10-40		504681	Screw	1
	G81	10-40		504681	Screw	1
	G82	10-40		504681	Screw	1
	G83	10-40		504681	Screw	1
	G90	10-40		713768	Screw	1
	G97	10-40		506969	Screw	1



Variable displacement pump



E100 853E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Charging system

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
3	H25	01-29		517683	Spacer	1
	H70	01-29		516761	Retaining plate	1
	H80	01-29		648451	Screw	6
	H90	01-29		676734 (9005110-9500)	Plug assembly	1
	J40	01-29		680892	O-ring	1

D	H05	93-15		8200238	Charge pump set, 17 cc (SB-1993-001*)	1
	H40	87-02		9004800-1224	Pin	1
	H50	93-15		8801178	Charge pump shaft (SB-1993-001* & SB-1998-066)	1
	H50	87-02	89-16	8100142	Charge pump shaft (SB-1989-006)	1
	H60	87-02		9003310-1208	Key	1
	H70	87-02		516761	Retaining plate	1
	H80	87-02		648451 (9007210-0604)	Screw	6

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

E	H05	93-15		8200239	Charge pump set, 20 cc (SB-1993-001*)	1
	H40	87-02		9004800-1224	Pin	1
	H50	93-15		8801178	Charge pump shaft (SB-1993-001 & SB-1998-066)	1
	H50	87-02	89-16	8100142	Charge pump shaft (SB-1989-006)	1
	H60	87-02		9003310-1208	Key	1
	H70	87-02		516761	Retaining plate	1
	H80	87-02		648451 (9007210-0604)	Screw	6

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

F	H05	93-15		8200240	Charge pump set, 26 cc (SB-1993-001*)	1
	H40	87-02		9004800-1224	Pin	1
	H50	93-15		8801178	Charge pump shaft (SB-1993-001 & SB-1998-066)	1
	H50	87-02	89-16	8100142	Charge pump shaft (SB-1989-006)	1
	H60	87-02		9003310-1208	Key	1
	H70	87-02		516761	Retaining plate	1
	H80	87-02		648451 (9007210-0604)	Screw	6

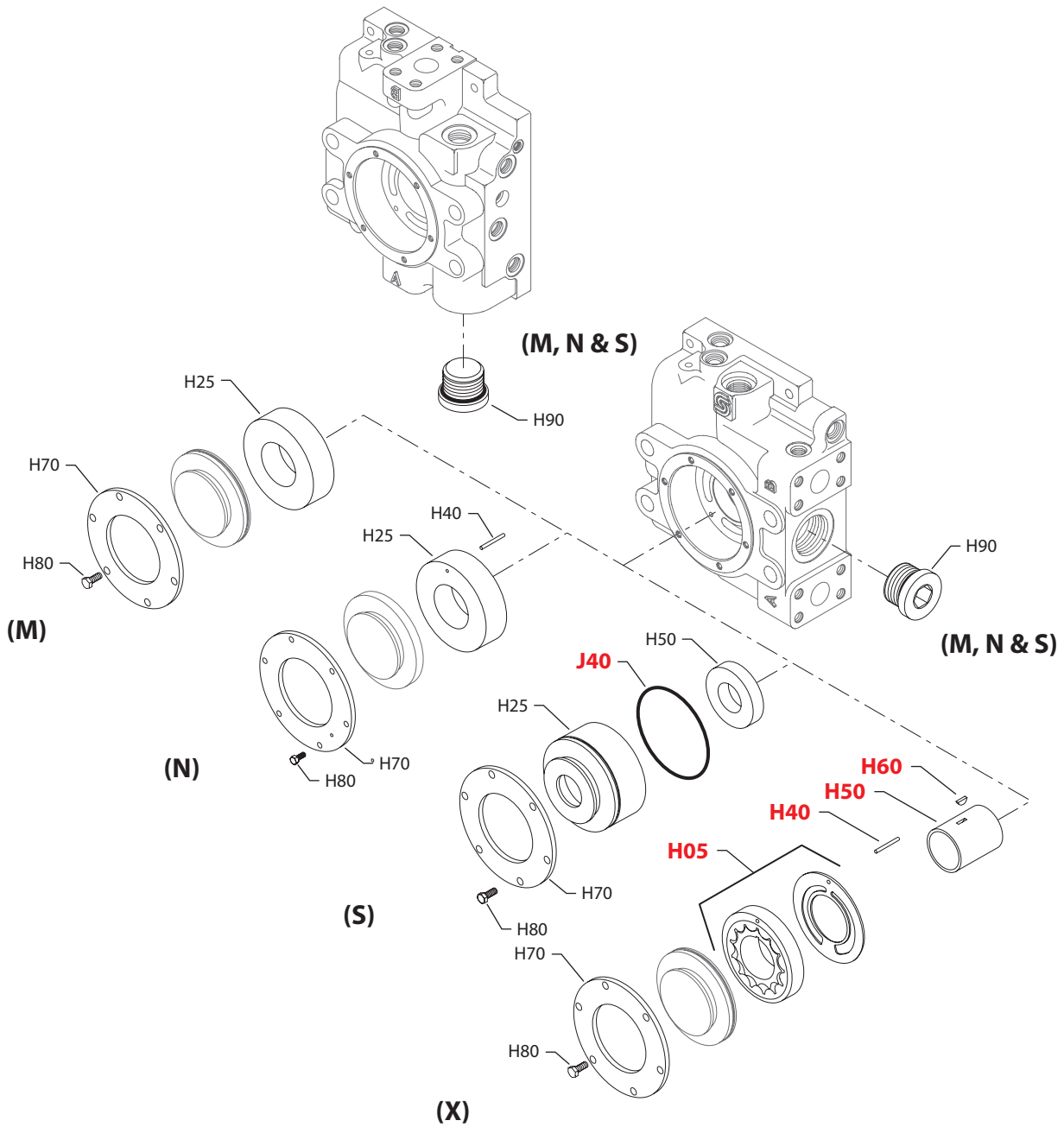
* For information regarding replacement parts for units built from 89-17 to 93-14, refer to BLN-10107 in the appendix.

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

L	H25	87-02		326538 (8800466-0100)	Charge pump spacer	1
	H40	87-02		9004800-1224	Pin (Germany only)	1
	H50	93-15		8801178	Charge pump shaft (SB-1993-001 & SB-1998-066)	1
	H50	87-02	89-16	8100142	Charge pump shaft (SB-1989-006)	1
	H70	87-02		516761	Retaining plate	1
	H80	87-02		672493 (9007210-0604)	Screw	6
	H90	87-02		676734 (9005110-9500)	Plug assembly	1



Variable displacement pump



E103 109E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

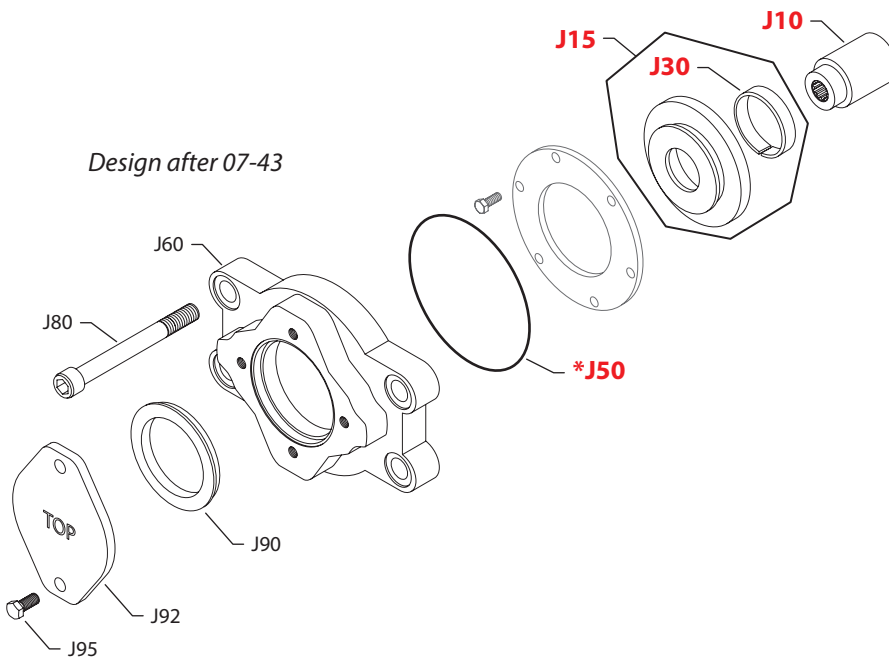
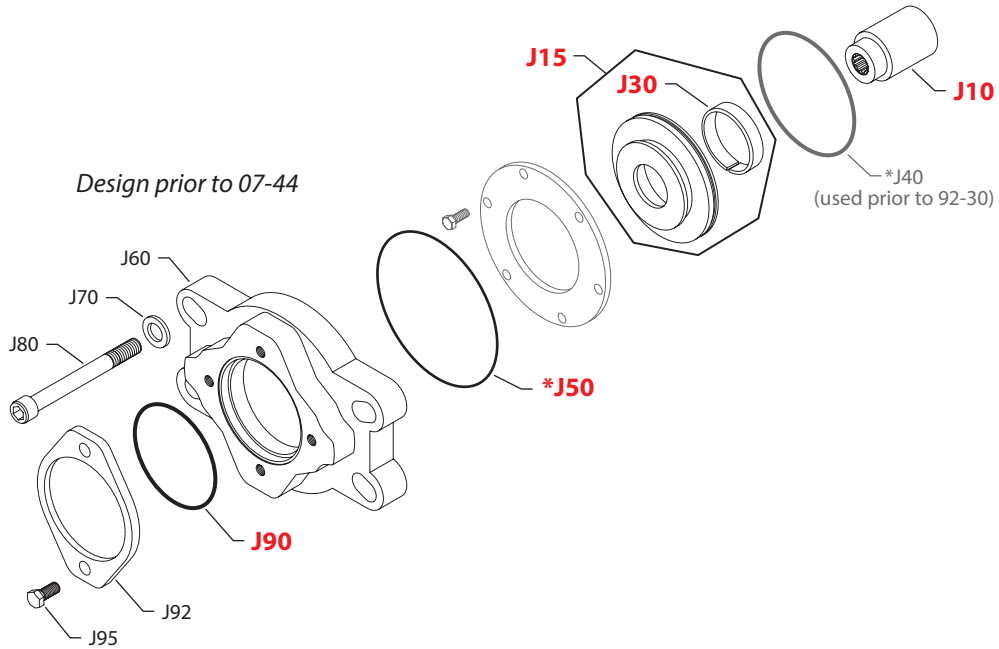

Variable displacement pump
Charging system

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M	H25	96-05		8800973	Charge pump spacer	1
	H70	96-05		516761	Retaining plate	1
	H80	96-05		672493 (9007210-0604)	Screw	6
	H90	96-05		676734 (9005110-9500)	Plug assembly	1
N	H25	01-29		11077718	Spacer	1
	H40	01-29		9004800-1224	Pin	1
	H70	01-29		516761	Retaining plate	1
	H80	01-29		648451	Screw	6
	H90	01-29		676734 (9005110-9500)	Plug assembly	1
S	H25	96-24		509242	Charge pump spacer	1
	H50	96-24		509221	Spacer	1
	H70	96-24		516761	Retaining plate	1
	H80	96-24		648451	Screw	6
	H90	96-24		676734 (9005110-9500)	Plug assembly	1
	J40	96-24		680892 (9004104-0440)	O-ring	1
X	H05	04-42		8200239	Charge pump set, 20 cc	1
	H40	04-42		9004800-1224	Pin	1
	H50	04-42		8801178	Charge pump shaft	1
	H60	04-42		9003310-1208	Key	1
	H70	04-42		516761	Retaining plate	1
	H80	04-42		648451	Screw	6



Variable displacement pump

(AB & AC)



* = included in base pump seal kit Q210

E100 713E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Auxiliary mounting

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
AB & A	J10	87-02		8100147	Coupling, 9 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011))	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		664771 (8700008)	Bushing	1
	J40	87-02	92-29	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8200467	Flange adaptor, SAE A (SB-2007-027)	1
	J70	87-02	07-43	664920 (9009625-0132)	Washer (SB-2007-027)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	87-02	98-43	9007314-1624	Screw, M16 x 130 (SB-1989-023)	4
	J90	07-44		4800482	A pad seal (SB-2007-027)	1
	J90	87-02	07-43	545434 (9004100-0420)	O-ring	1
	J92	07-44		4460586	Cover plate (SB-2007-027)	1
	J92	87-02	07-43	9802336	Cover plate	1
	J95	87-02		9007200-3714	Screw	2

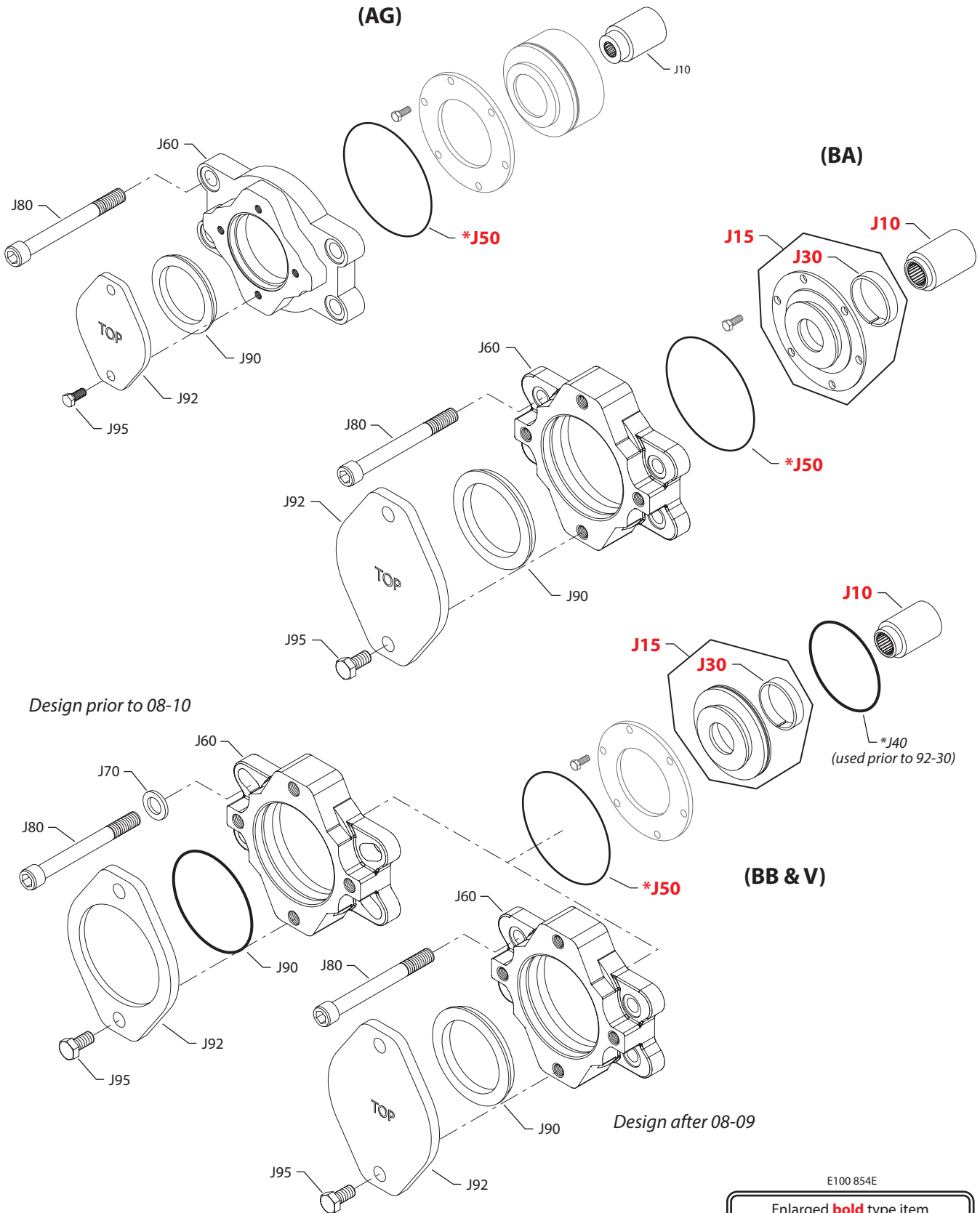
* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix. New style covers may be used with either charge pump design.

AC & T	J10	87-02		8100297	Coupling, 11 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		664771 (8700008)	Bushing	1
	J40	87-02	92-29	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8200467	Flange adaptor, SAE A (SB-2007-027)	1
	J70	87-02	07-43	664920 (9009625-0132)	Washer (SB-2007-027)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	87-02	98-43	9007314-1624	Screw M16 x 130 (SB-1998-073)	4
	J90	07-44		4800482	A pad seal (SB-2007-027)	1
	J90	87-02	07-43	545434 (9004100-0420)	O-ring	1
	J92	07-44		4460586	Cover plate (SB-2007-027)	1
	J92	87-02	07-43	9802336	Cover plate	1
	J95	87-02		9007200-3714	Screw	2

* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix. New style covers may be used with either charge pump design.



Variable displacement pump



* = included in base pump seal kit Q210

E100 854E
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Auxiliary mounting

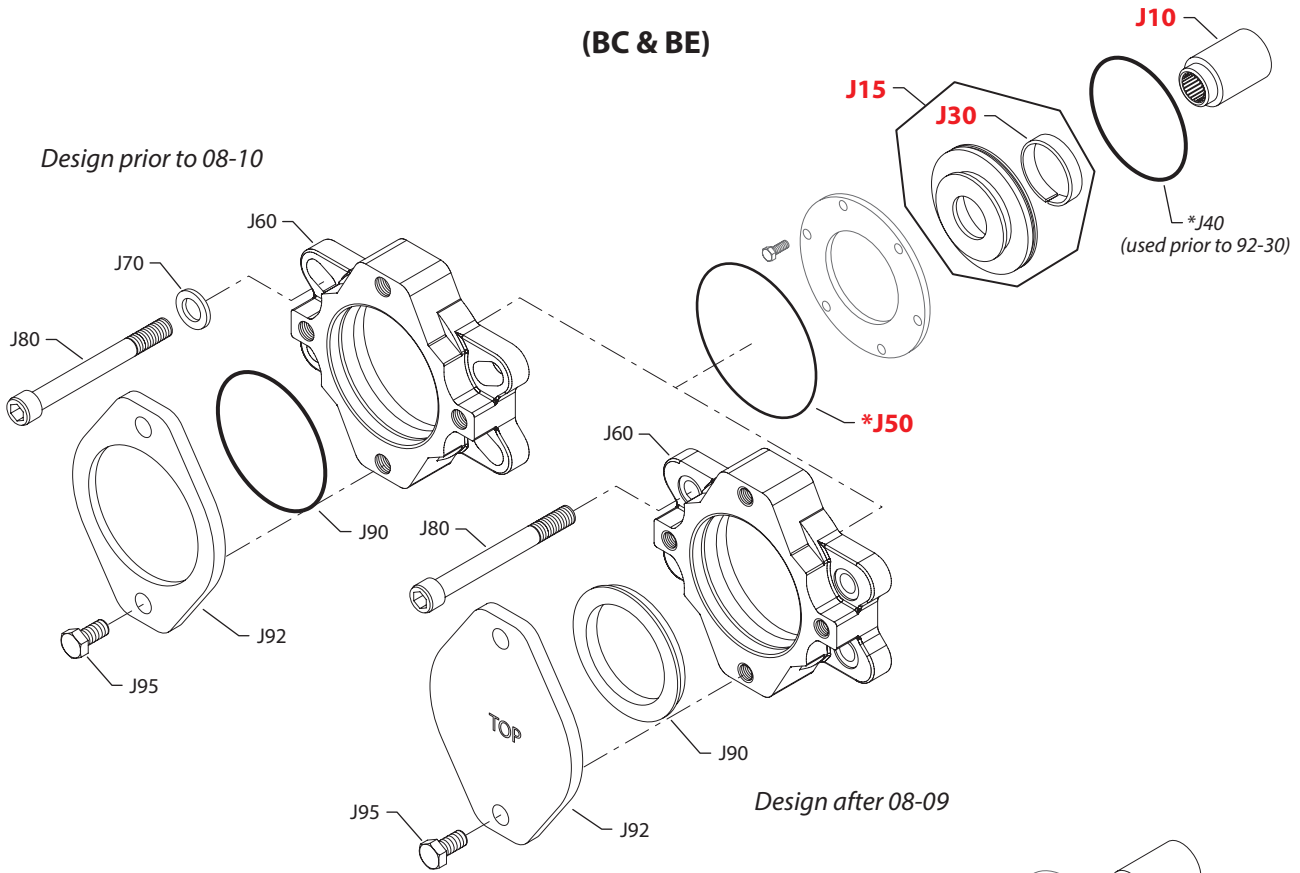
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
AG	J10	09-29		8100147	Coupling, 9 tooth	1
	J50	09-29		056739 (9004104-1580)	O-ring	1
	J60	09-29		8200467	Flange adaptor, SAE A	1
	J80	09-29		518721	Screw, M16 x 140	4
	J90	09-29		4800482	A pad seal	1
	J92	09-29		4460586	Cover plate	1
	J95	09-29		9007200-3714	Screw	2
	BA	J10	05-14		8100273	Coupling, 15 tooth
J15		05-14		8801248	Cover assembly, CW	1
J15		05-14		8801352	Cover assembly, CCW	1
J30		05-14		664771 (8700008)	Bushing	1
J50		05-14		056739 (9004104-1580)	O-ring	1
J60		05-14		8200468	Flange adaptor, SAE B	1
J80		05-14		518721	Screw, M16 x 140	4
J90		05-14		8801061	B pad seal	1
J92		05-14		8801059	Cover plate	1
J95		05-14		9007200-5021	Screw	2
BB & V		J10	87-02		8100273	Coupling, 15 tooth
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		664771 (8700008)	Bushing	1
	J40	87-02	92-15	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8200468	Flange adaptor, SAE B (SB-2007-055)	1
	J70	87-02	08-09	9009625-0132	Washer (SB-2007-055)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	87-02	98-43	9007314-1624	Screw M16 x 130 (SB-1989-023)	4
	J90	08-10		8801061	B pad seal (SB-2007-055)	1
	J90	87-02	08-09	726935 (9004104-0450)	O-ring	1
	J92	08-10		8801059	Cover plate (SB-2007-055)	1
	J92	87-02	08-09	4460370	Cover plate	1
	J95	87-02		9007200-5021	Screw	2

* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix. New style covers may be used with either charge pump design.

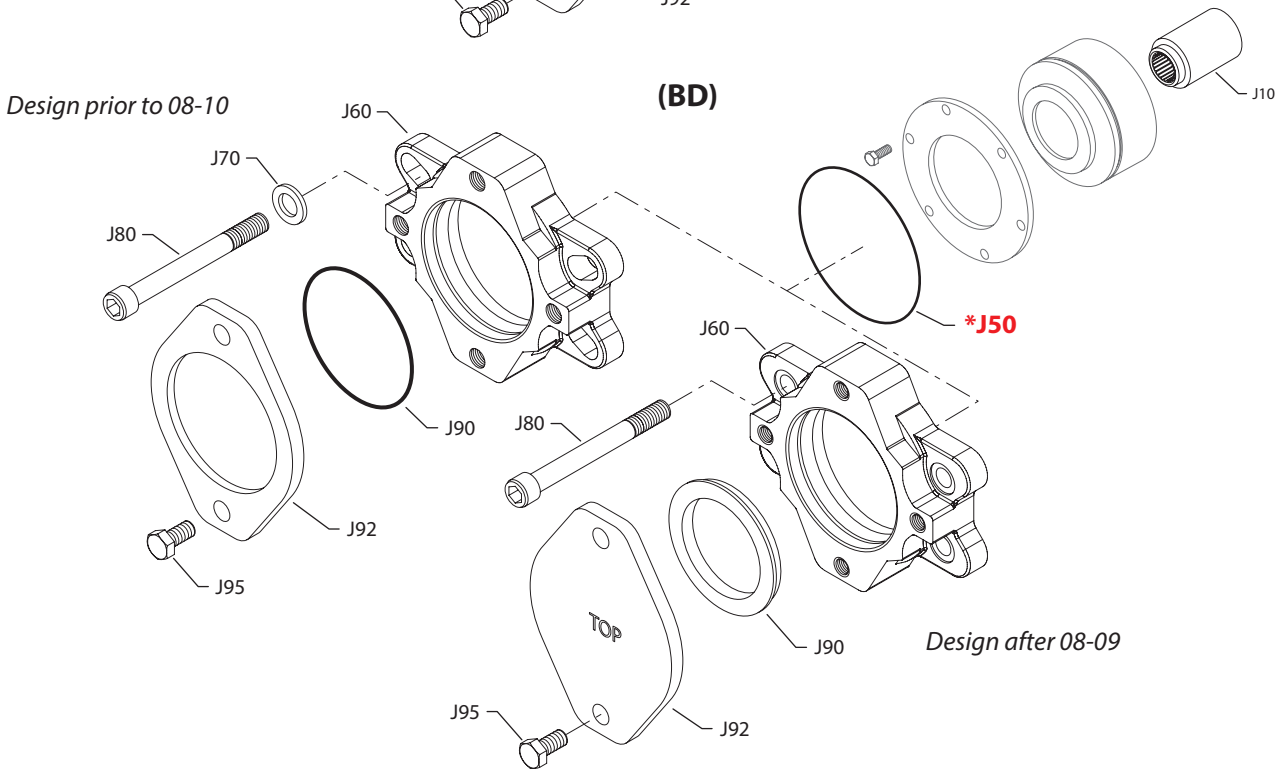


Variable displacement pump

(BC & BE)



(BD)



* = included in base pump seal kit Q210

E100 799E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Auxiliary mounting

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
BC & B	J10	87-02		8100148	Coupling, 13 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		664771 (8700008)	Bushing	1
	J40	87-02	92-15	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8200468	Flange adaptor, SAE B (SB-2007-055)	1
	J70	87-02	08-09	9009625-0132	Washer (SB-2007-055)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	87-02	98-43	9007314-1624	Screw M16 x 130 (SB-1989-023)	4
	J90	08-10		8801061	B pad seal (SB-2007-055)	1
	J90	87-02	08-09	726935 (9004104-0450)	O-ring	1
	J92	08-10		8801059	Cover plate (SB-2007-055)	1
	J92	87-02	08-09	4460370	Cover plate	1
	J95	87-02		9007200-5021	Screw	2

* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix. New style covers may be used with either charge pump design.

BD	J10	99-17		8100148	Coupling, 13 tooth	1
	J50	99-17		056739 (9004104-1580)	O-ring	1
	J60	99-17		8200540	Flange adaptor, SAE B (SB-2007-055)	1
	J70	99-17	08-09	664920 (9009625-0132)	Washer (SB-2007-055)	4
	J80	99-17		518721	Screw, M16 x 140	4
	J90	08-10		8801061	B pad seal (SB-2007-055)	1
	J90	99-17	08-09	726935 (9004104-0450)	O-ring	1
	J92	08-10		8801059	Cover plate (SB-2007-055)	1
	J92	99-17	08-09	4460370	Cover plate	1
	J95	99-17		370320	Screw	2

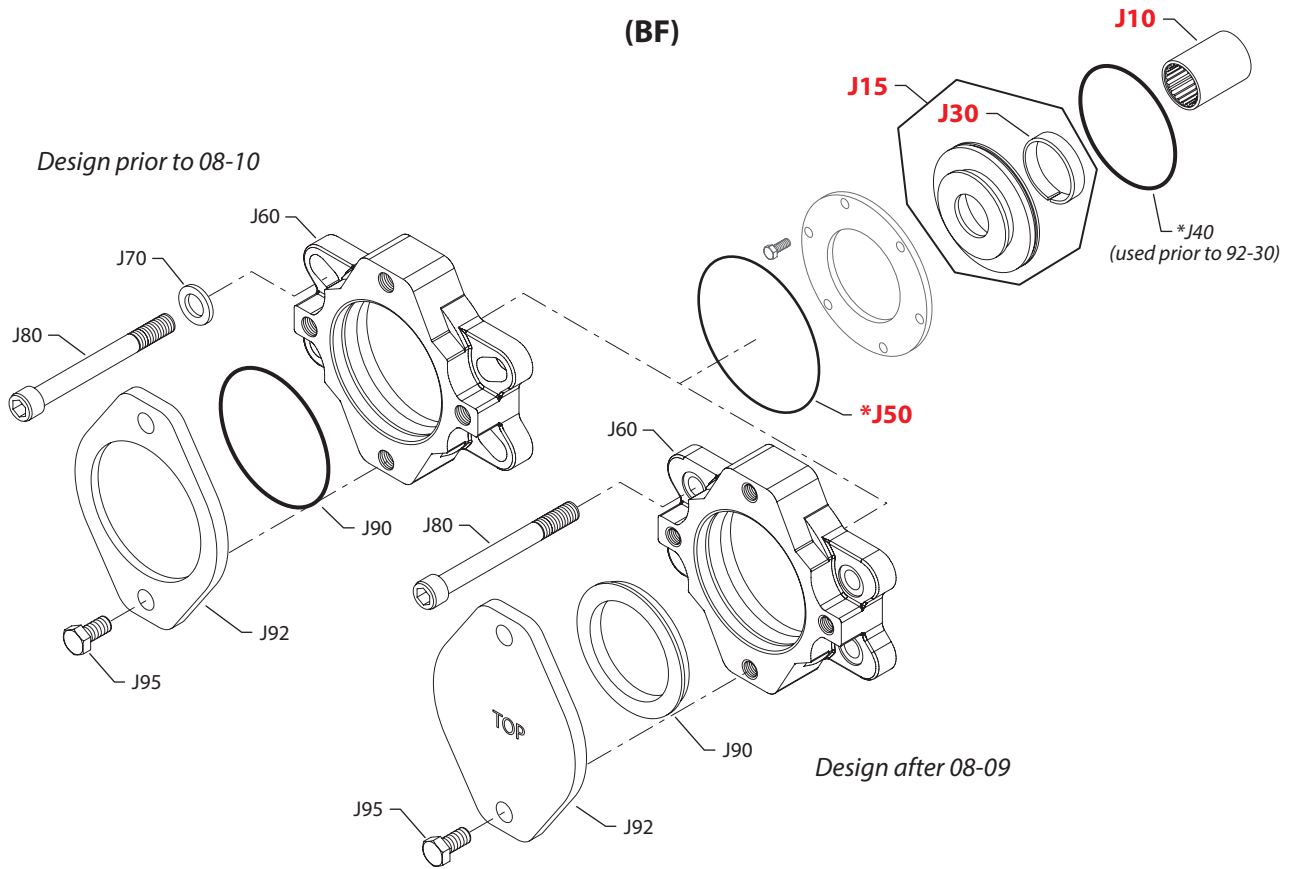
BE & P	J10	87-02		8100148	Coupling, 13 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		664771 (8700008)	Bushing	1
	J40	87-02	92-15	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8200540	Flange adaptor, SAE B (SB-2007-055)	1
	J70	87-02	08-09	9009625-0132	Washer (SB-2007-055)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	87-02	98-43	9007314-1624	Screw M16 x 130 (SB-1989-023)	4
	J90	08-10		8801061	B pad seal (SB-2007-055)	1
	J90	87-02	08-09	726935 (9004104-0450)	O-ring	1
	J92	08-10		8801059	Cover plate (SB-2007-055)	1
	J92	87-02	08-09	4460370	Cover plate	1
	J95	87-02		370320 (9007314-1207)	Screw	2

* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix. New style covers may be used with either charge pump design.

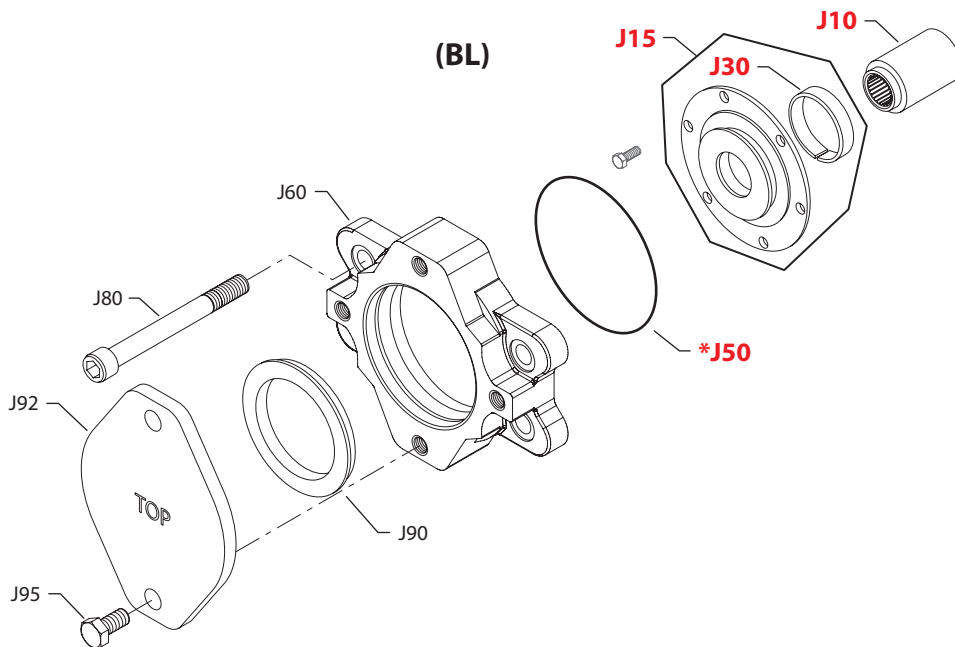


Variable displacement pump

(BF)



(BL)



E100 856E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Auxiliary mounting

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
BF & U	J10	87-02		11053342	Coupling, 19 tooth	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		664771 (8700008)	Bushing	1
	J40	87-02	92-15	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8200468	Flange adaptor, SAE B (SB-2007-055)	1
	J70	87-02	08-09	9009625-0132	Washer (SB-2007-055)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	87-02	98-43	9007314-1624	Screw M16 x 130 (SB-1989-023)	4
	J90	08-10		8801061	B pad seal (SB-2007-055)	1
	J90	87-02	08-09	726935 (9004104-0450)	O-ring	1
	J92	08-10		8801059	Cover plate (SB-2007-055)	1
	J92	87-02	08-09	4460370	Cover plate	1
	J95	87-02		9007200-5021	Screw	2

* For information regarding replacement parts for units built from 89-17 to 93-09, refer to BLN-10107 in the appendix. New style covers may be used with either charge pump design.

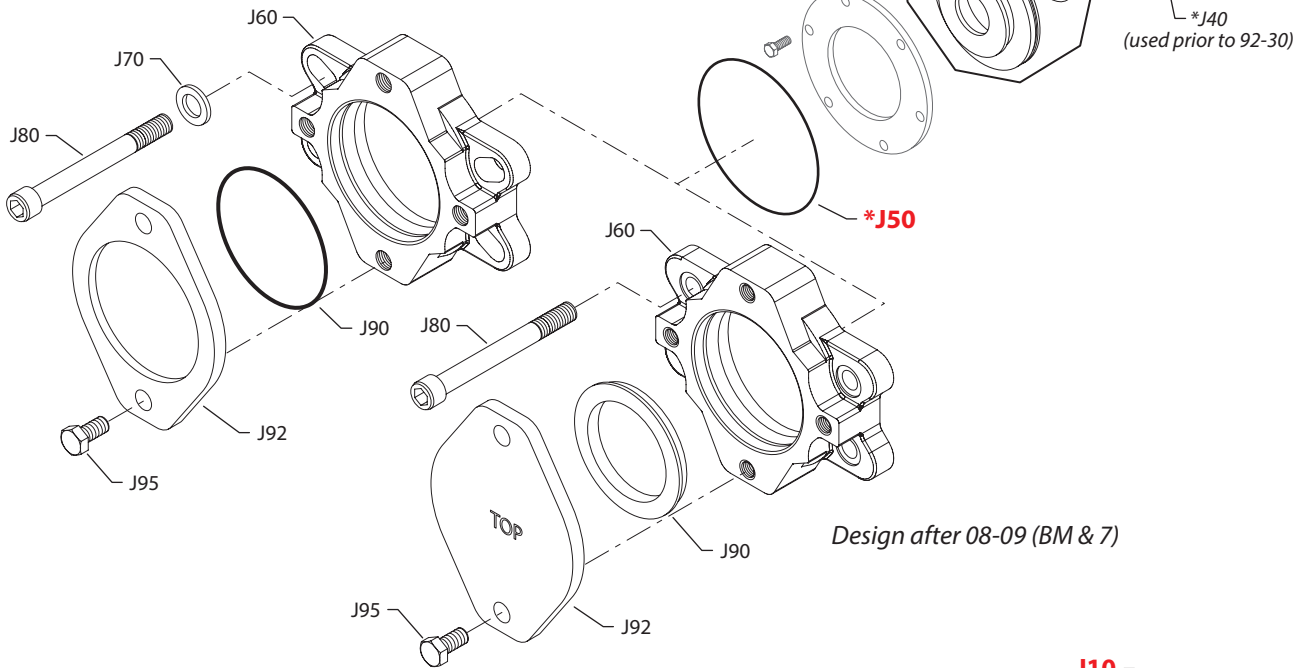
BL	J10	06-01		8100148	Coupling, 13 tooth	1
	J15	06-01		8801248	Cover assembly, CW	1
	J15	06-01		8801352	Cover assembly, CCW	1
	J30	06-01		664771 (8700008)	Bushing	1
	J50	06-01		056739 (9004104-1580)	O-ring	1
	J60	06-01		8200468	Flange adaptor, SAE B (SB-2007-055)	1
	J80	06-01		518721	Screw, M16 x 140	4
	J90	06-01		8801061	B pad seal (SB-2007-055)	1
	J92	06-01		8801059	Cover plate (SB-2007-055)	1
	J95	06-01		9007200-5021	Screw	2



Variable displacement pump

(BM, BU & 7)

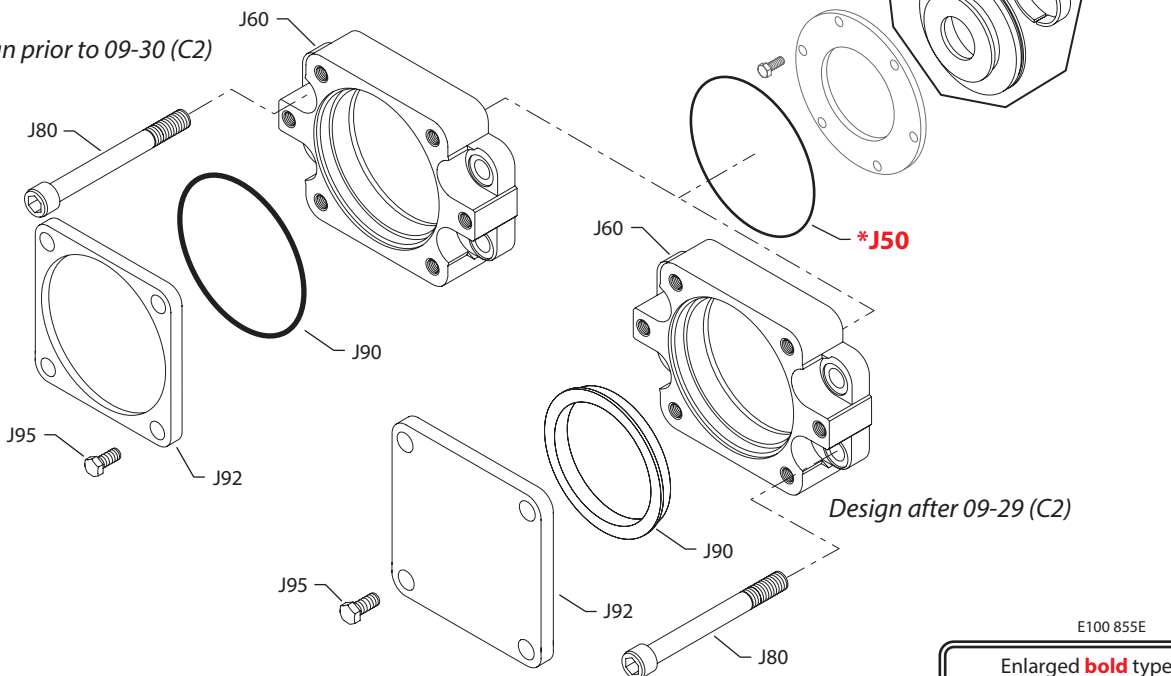
Design prior to 08-10 (BM & 7)



Design after 08-09 (BM & 7)

(C2 & CA)

Design prior to 09-30 (C2)



Design after 09-29 (C2)

* = included in base pump seal kit Q210

E100 855E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

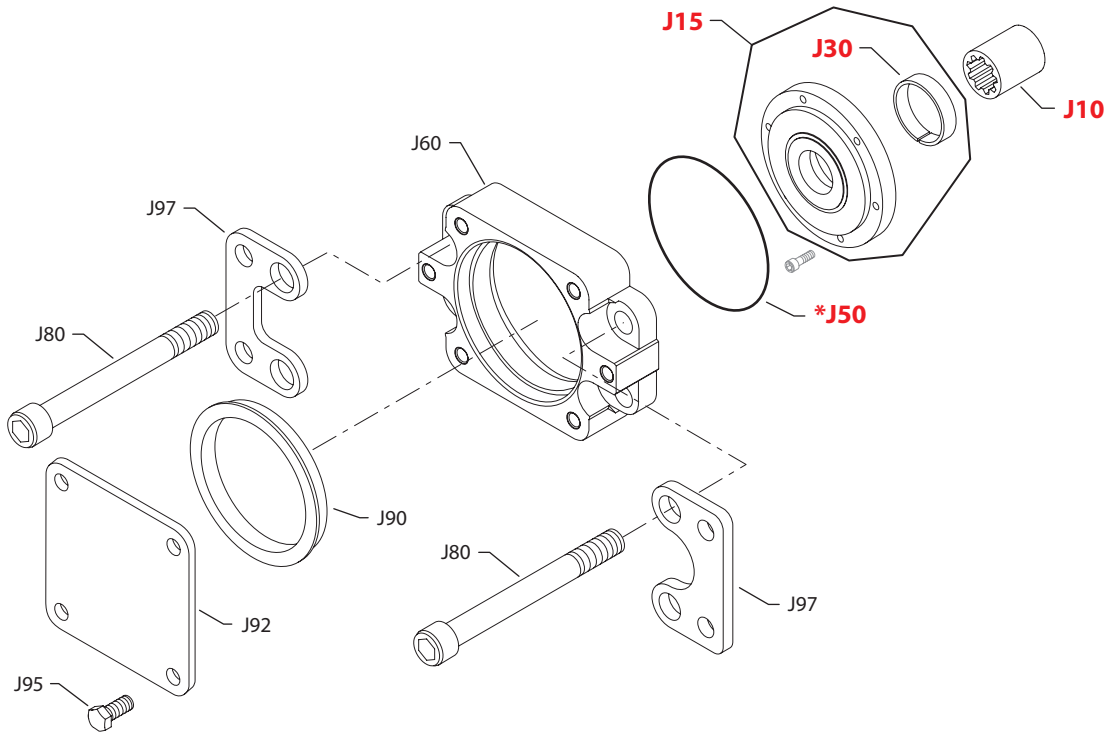

Variable displacement pump
Auxiliary mounting

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
BM & 7	J10	94-16		8100273	Coupling, 15 tooth	1
	J15	94-16		8800832	Cover assembly, CW (SB-2005-011)	1
	J15	94-16		8800833	Cover assembly, CCW (SB-2005-011)	1
	J30	94-16		664771 (8700008)	Bushing	1
	J50	94-16		056739 (9004104-1580)	O-ring	1
	J60	94-16		8200540	Flange adaptor, SAE B, metric threads (SB-2007-055)	1
	J70	94-16	08-09	9009625-0132	Washer (SB-2007-055)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	94-16	98-43	9007314-1624	Screw M16 x 130 (SB-1989-023)	4
	J90	08-10		8801061	B pad seal (SB-2007-055)	1
	J90	06-13	08-09	726935 (9004104-0450)	O-ring	1
	J92	08-10		8801059	Cover plate (SB-2007-055)	1
	J92	94-16	08-09	4460370	Cover plate	1
	J95	94-16		737866 (9007314-1207)	Screw	2
	BU	J10	07-10		8100297	Coupling, 15 tooth
J15		07-10		8800833	Cover assembly, CCW	1
J30		07-10		664771 (8700008)	Bushing	1
J50		07-10		056739 (9004104-1580)	O-ring	1
J60		07-10		8200540	Flange adaptor, SAE B	1
J80		07-10		518721	Screw, M16 x 140	4
J90		07-10		8801061	B pad seal	1
J92		07-10		8801059	Cover plate	1
J95		07-10		9007314-1207	Screw	2
C2		J10	06-43		11017038	Coupling, 25 tooth, high strength
	J15	06-43		8800832	Cover assembly, CW	1
	J30	06-43		664771 (8700008)	Bushing	1
	J50	06-43		056739 (9004104-1580)	O-ring	1
	J60	06-43		8200515	Flange adaptor, SAE C (SB-2007-051)	1
	J80	06-43		518721	Screw, M16 x 140	4
	J90	09-30		11081805	C pad seal (SB-2007-051)	1
	J90	06-43	09-29	726943 (9004104-0490)	O-ring	1
	J92	09-30		8801060	Cover plate (SB-2007-051)	1
	J92	06-43	09-29	8800406	Cover plate	1
	J95	06-43		9007200-5021	Screw	4
	CA	J10	06-01		11053346	Coupling, 14 tooth, high strength
J15		06-01		8800832	Cover assembly, CW (SB-2005-011)	1
J30		06-01		664771 (8700008)	Bushing	1
J50		06-01		056739 (9004104-1580)	O-ring	1
J60		06-01		8200515	Flange adaptor, SAE C	1
J80		06-01		518721	Screw, M16 x 140	4
J90		06-01		11081805	C pad seal	1
J92		06-01		8801060	Cover plate	1
J95		06-01		9007200-5021	Screw	4



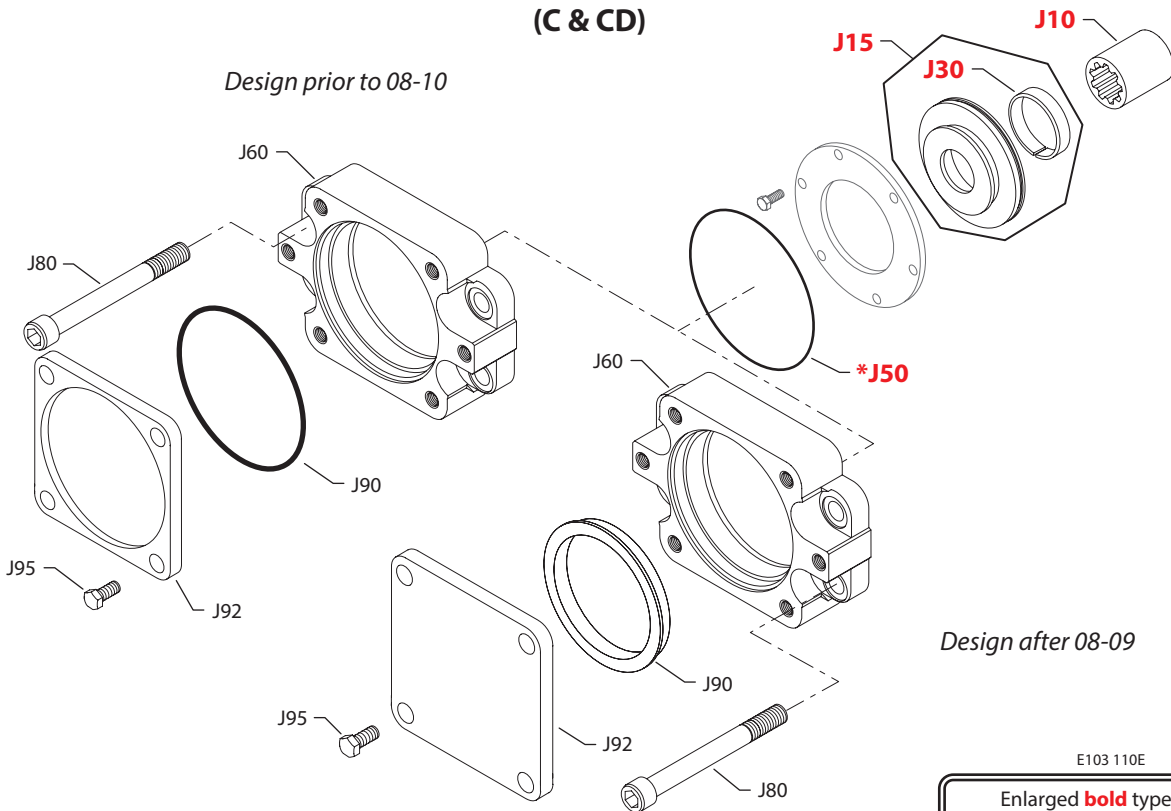
Variable displacement pump

(CB & CC)



(C & CD)

Design prior to 08-10



Design after 08-09

* = included in base pump seal kit Q210

E103 110E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

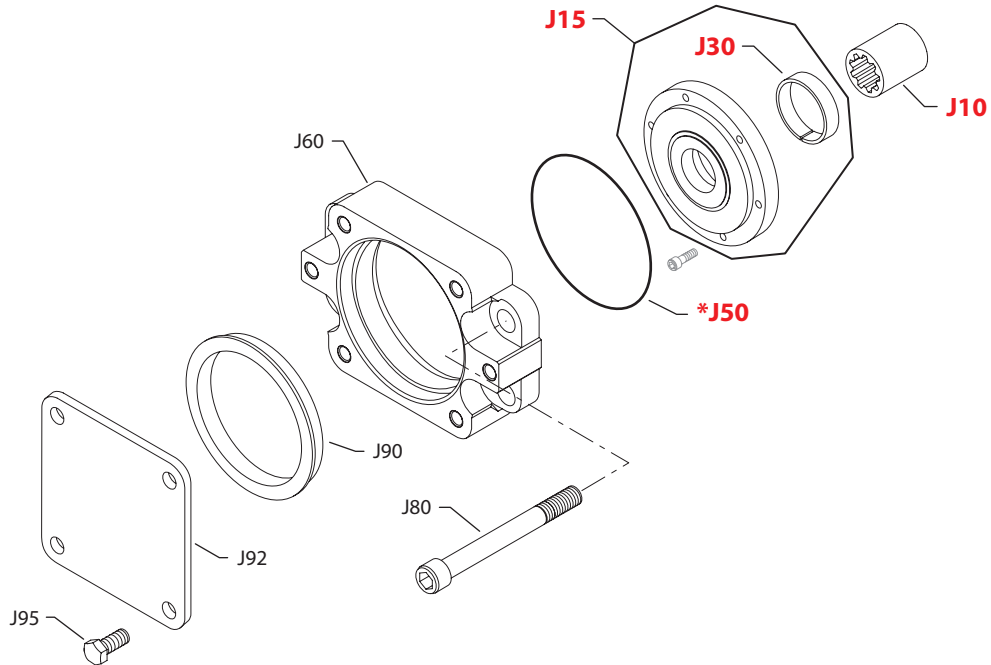

Variable displacement pump
Auxiliary mounting

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CB	J10	03-35		11053346	Coupling, 14 tooth, high strength	1
	J15	03-35		8801248	Cover assembly, CW (SB-2005-011)	1
	J30	03-35		664771 (8700008)	Bushing	1
	J50	03-35		056739 (9004104-1580)	O-ring	1
	J60	03-35		8200550	Flange adaptor, SAE C	1
	J80	03-35		518721	Screw, M16 x 140	4
	J90	03-35		11081805	C pad seal	1
	J92	03-35		8801060	Cover plate	1
	J95	03-35		9007200-5021	Screw	4
	J97	03-35		8200549	Mounting bracket	1
CC	J10	13-07		11053346	Coupling, 14 tooth, high strength	1
	J15	13-07		8800832	Cover assembly, CW	1
	J30	13-07		664771 (8700008)	Bushing	1
	J50	13-07		056739 (9004104-1580)	O-ring	1
	J60	13-07		8200550	Flange adaptor, SAE C	1
	J80	13-07		518721	Screw, M16 x 140	4
	J90	13-07		11081805	C pad seal	1
	J92	13-07		8801060	Cover plate	1
	J95	13-07		9007200-5021	Screw	4
	J97	13-07		8200549	Mounting bracket	1
C & CD	J10	87-02		11053346	Coupling, 14 tooth, high strength	1
	J15	87-02		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	87-02		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	87-02		664771 (8700008)	Bushing	1
	J40	87-02	92-15	680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	J60	87-02		8200515	Flange adaptor, SAE C (SB-2007-051)	1
	J70	87-02	03-10	5000602	Washer (SB-2002-050)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	87-02	98-43	9007314-1624	Screw M16 x 130 (SB-1989-023)	4
	J90	08-10		11081805	C pad seal (SB-2007-051)	1
	J90	87-02	08-09	726943 (9004104-0490)	O-ring	1
	J92	08-10		8801060	Cover plate (SB-2007-051)	1
	J92	87-02	08-09	8800406	Cover plate	1
	J95	87-02		9007200-5021	Screw	4



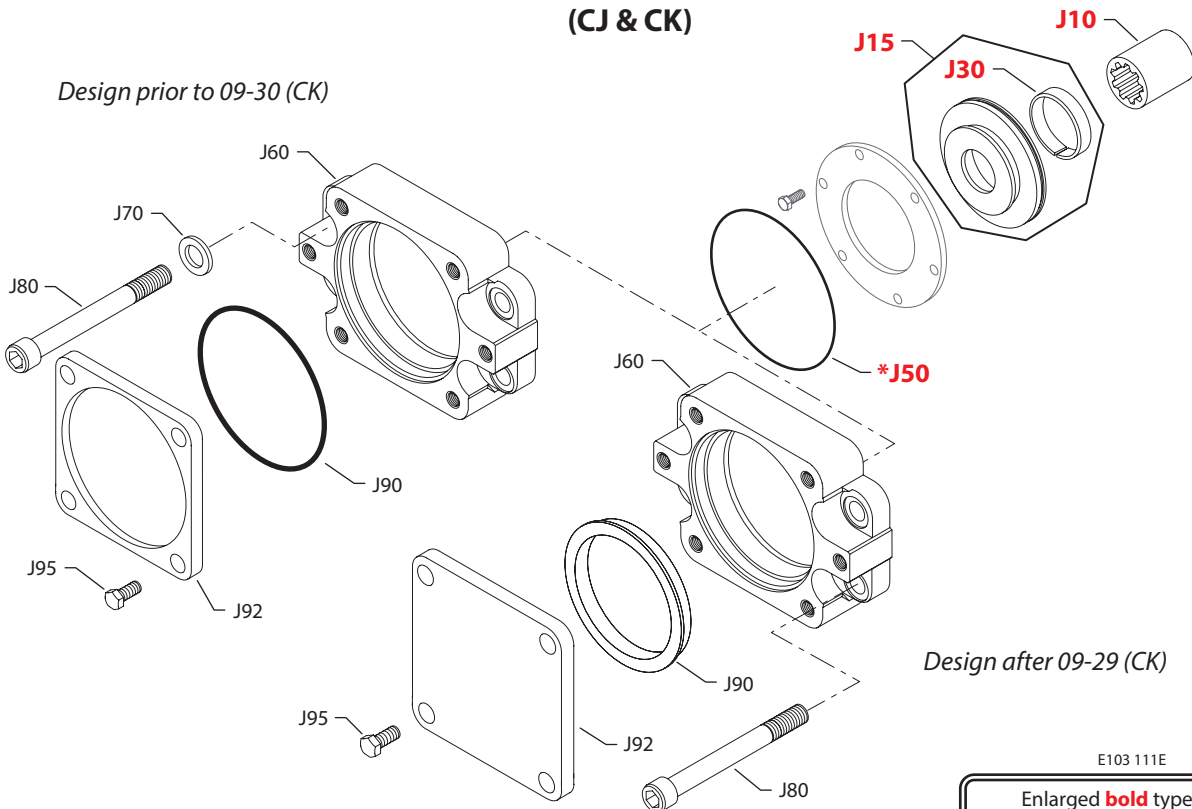
Variable displacement pump

(CE)



(CJ & CK)

Design prior to 09-30 (CK)



Design after 09-29 (CK)

* = included in base pump seal kit Q210

E103 111E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Auxiliary mounting

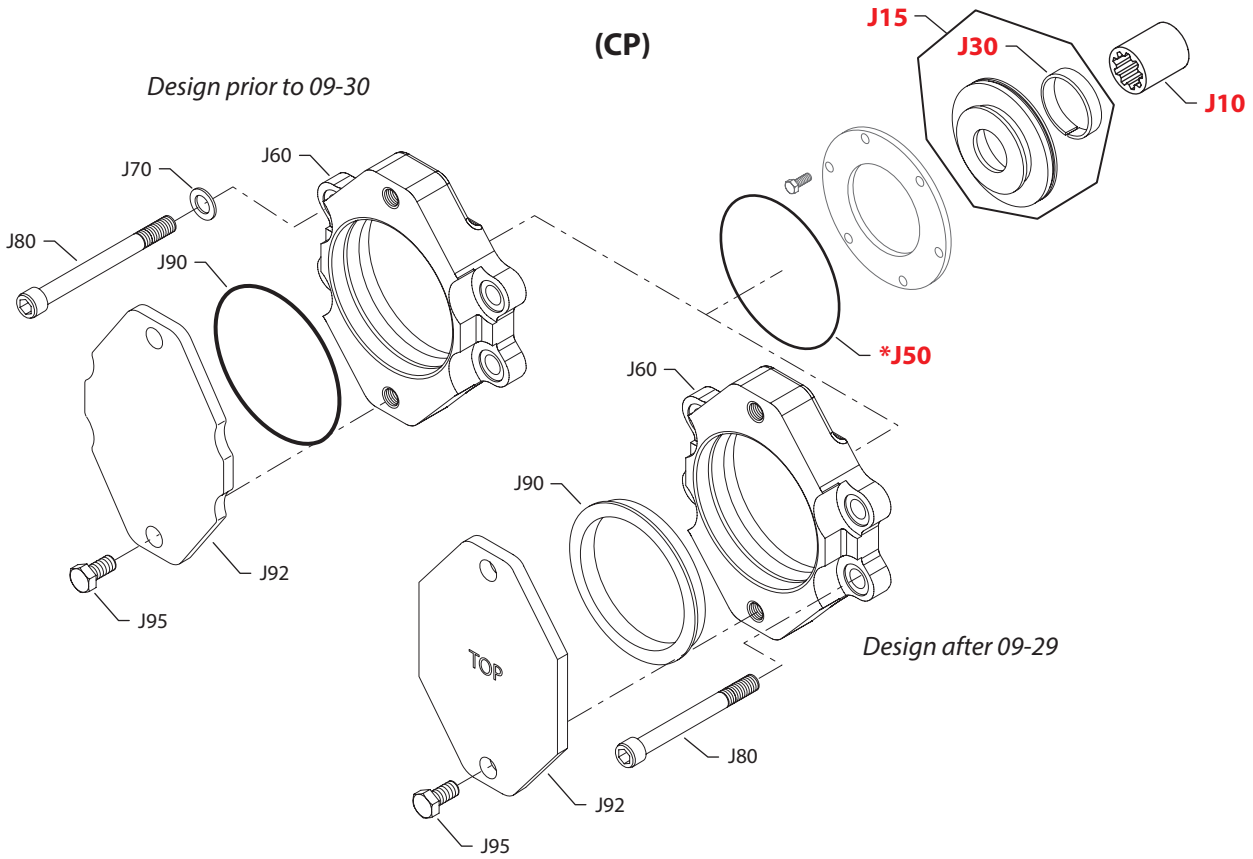
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CE	J10	02-08		11053346	Coupling, 14 tooth, high strength	1
	J15	02-08		8801248	Cover assembly, CW (SB-2005-011)	1
	J30	02-08		664771 (8700008)	Bushing	1
	J50	02-08		056739 (9004104-1580)	O-ring	1
	J60	02-08		8200515	Flange adaptor, SAE C	1
	J80	02-08		518721	Screw, M16 x 140	4
	J90	02-08		11081805	C pad seal	1
	J92	02-08		8801060	Cover plate	1
	J95	02-08		9007200-5021	Screw	4
	CJ	J10	02-08		11053346	Coupling, 14 tooth, high strength
J15		02-08		8800832	Cover assembly, CW	1
J30		02-08		664771 (8700008)	Bushing	1
J50		02-08		056739 (9004104-1580)	O-ring	1
J60		02-08		8200516	Flange adaptor, SAE C	1
J80		02-08		518721	Screw, M16 x 140	4
J90		02-08		11081805	C pad seal	1
J92		02-08		8801060	Cover plate	1
J95		02-08		9007200-5021	Screw	4
CK		J10	94-18		11053278	Coupling, 25 tooth, high strength
	J15	94-18		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	94-18		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	94-18		664771 (8700008)	Bushing	1
	J50	94-18		056739 (9004104-1580)	O-ring	1
	J60	94-18		8200515	Flange adaptor, SAE C (SB-2007-051)	1
	J70	94-18	09-29	5000602	Washer (SB-2002-050)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	94-18	98-43	9007314-1624	Screw M16 x 130 (SB-1989-023)	4
	J90	09-30		11081805	C pad seal (SB-2007-051)	1
	J90	94-18	09-29	726943 (9004104-0490)	O-ring	1
	J92	09-30		8801060	Cover plate (SB-2007-051)	1
	J92	94-18	09-29	8800406	Cover plate	1
	J95	94-18		9007200-5021	Screw	4



Variable displacement pump

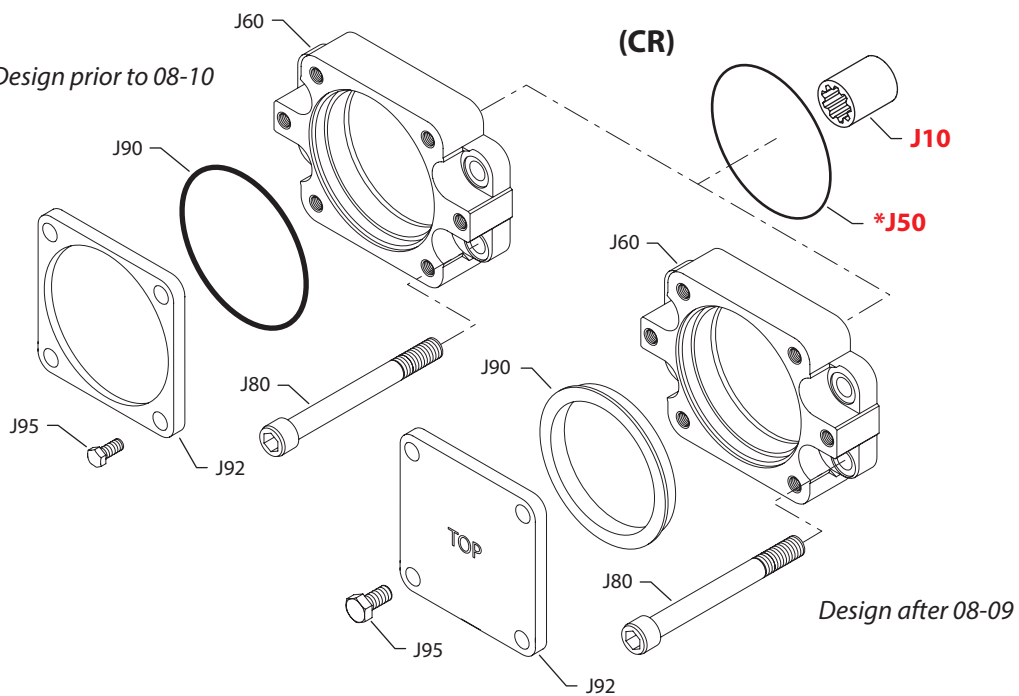
(CP)

Design prior to 09-30



(CR)

Design prior to 08-10



* = included in base pump seal kit Q210

E103 035E

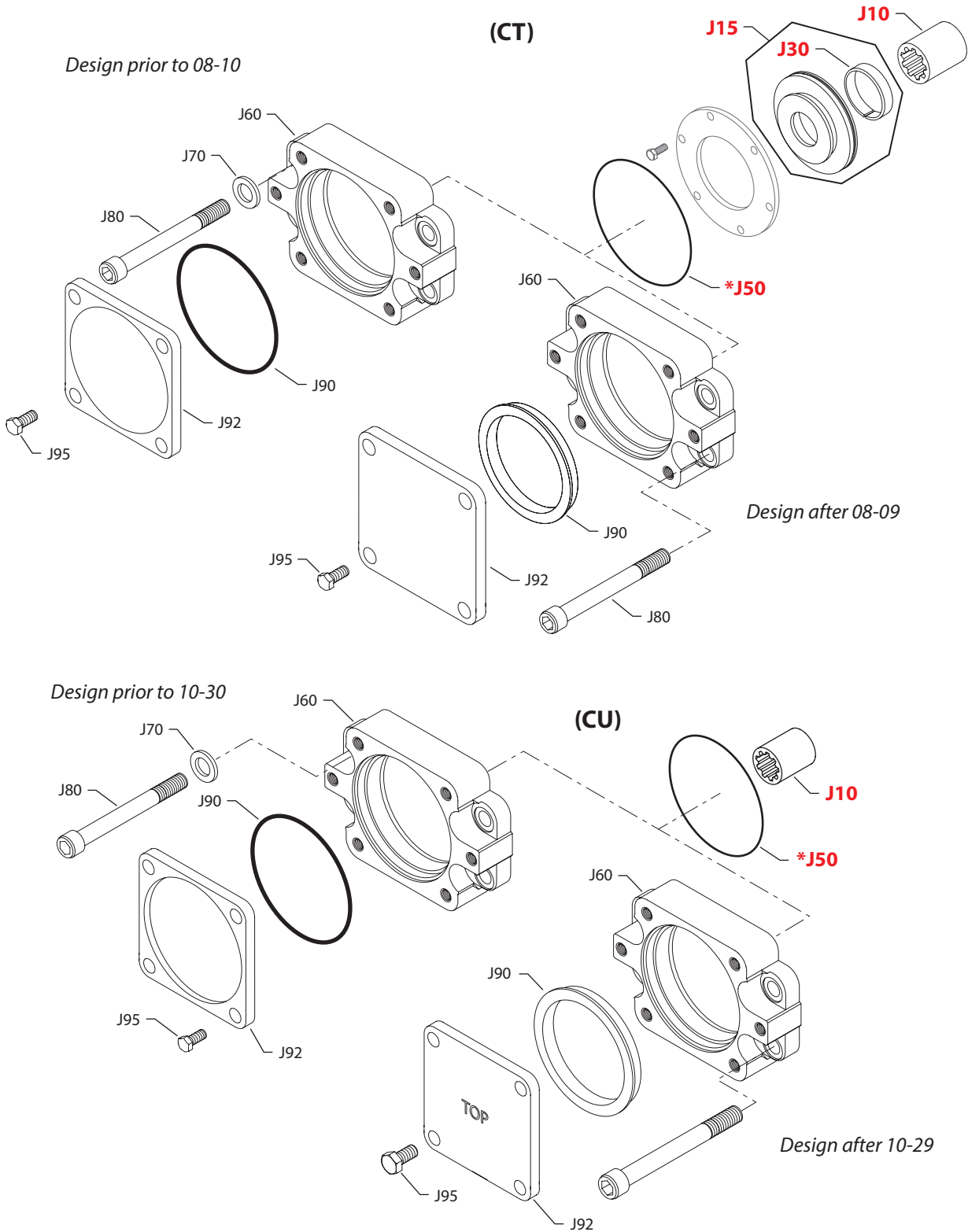
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Auxiliary mounting

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CP	J10	94-18		11053346	Coupling, 14 tooth, high strength	1
	J15	94-18		8800832	Cover assembly, CW (SB-1993-001* & SB-2005-011)	1
	J15	94-18		8800833	Cover assembly, CCW (SB-1993-001* & SB-2005-011)	1
	J30	94-18		664771 (8700008)	Bushing	1
	J50	94-18		056739 (9004104-1580)	O-ring	1
	J60	94-18		8200551	Flange adaptor, SAE C (SB-2007-051)	1
	J70	94-18	09-29	664920	Washer	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	94-18	98-43	9007314-1624	Screw M16 x 130 (SB-1989-023)	4
	J90	09-30		11081805	C pad seal (SB-2007-051)	1
	J90	94-18	09-29	726943 (9004104-0490)	O-ring	1
	J92	09-30		11048554	Cover plate (SB-2007-051)	1
	J92	94-18	09-29	8800406	Cover plate	1
	J95	94-18		9007200-6222	Screw	2
	CR	J10	03-14		11053346	Coupling, 14 tooth, high strength
J50		03-14		056739 (9004104-1580)	O-ring	1
J60		03-14		8200538	Flange adaptor, SAE C (SB-2007-051)	1
J80		03-14		518721	Screw, M16 x 140	4
J90		08-10		11081805	C pad seal (SB-2007-051)	1
J90		03-14	08-09	726943 (9004104-0490)	O-ring	1
J92		08-10		8801060	Cover plate (SB-2007-051)	1
J92		03-14	08-09	8800406	Cover plate	1
J95		03-14		370320	Screw	4



Variable displacement pump



* = included in base pump seal kit Q210

E103 036E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

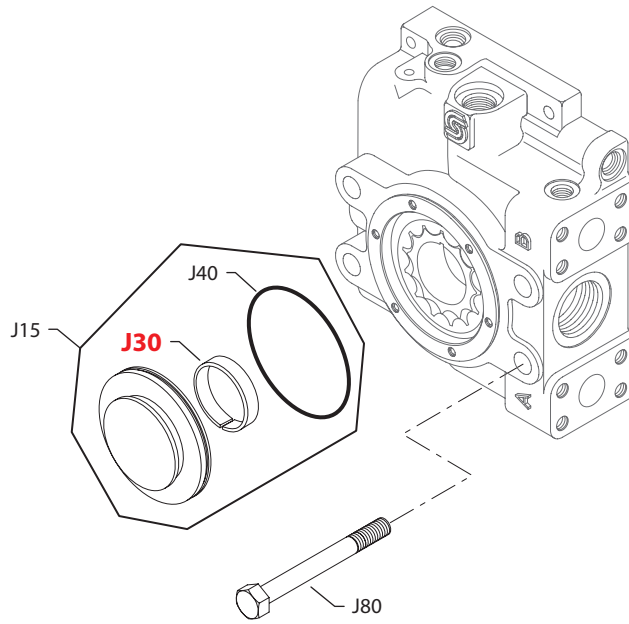

Variable displacement pump
Auxiliary mounting

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CT	J10	98-42		11053342	Coupling, 19 tooth	1
	J15	98-42		8800832	Cover assembly, CW (SB-2005-011)	1
	J15	98-42		8800833	Cover assembly, CCW (SB-2005-011)	1
	J30	98-42		664771 (8700008)	Bushing	1
	J50	98-42		056739 (9004104-1580)	O-ring	1
	J60	98-42		8200515	Flange adaptor, SAE C (SB-2002-050 & SB-2007-051)	1
	J70	98-42	03-10	5000602	Washer (SB-2002-050)	4
	J80	98-44		518721	Screw, M16 x 140	4
	J80	98-42	98-43	9007314-1622	Screw M16 x 130 (SB-1989-023)	4
	J90	08-10		11081805	C pad seal	1
	J90	98-42	08-09	719179 (9004100-0480)	O-ring	1
	J92	08-10		8801060	Cover plate	1
	J92	98-42	08-09	8800406	Cover plate	1
	J95	98-42		9007200-5021	Screw	4
	CU	J10	99-04		11053346	Coupling, 14 tooth, high strength
J50		99-04		056739 (9004104-1580)	O-ring	1
J60		99-04		8200515	Flange adaptor, SAE C (SB-2007-051)	1
J70		99-04	04-02	5000602	Washer (SB-2002-050)	4
J80		99-04		518721	Screw, M16 x 140	4
J90		10-30		11081805	C pad seal (SB-2007-051)	1
J90		99-04	10-29	726943 (9004104-0490)	O-ring	1
J92		10-30		8801060	Cover plate (SB-2007-051)	1
J92		99-04	10-29	8800406	Cover plate	1
J95		99-04		9007200-5021	Screw	4

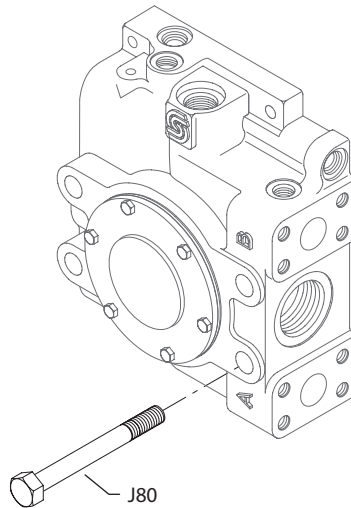


Variable displacement pump

(NN)



(NU)



E100 857E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing



Variable displacement pump

Auxiliary mounting

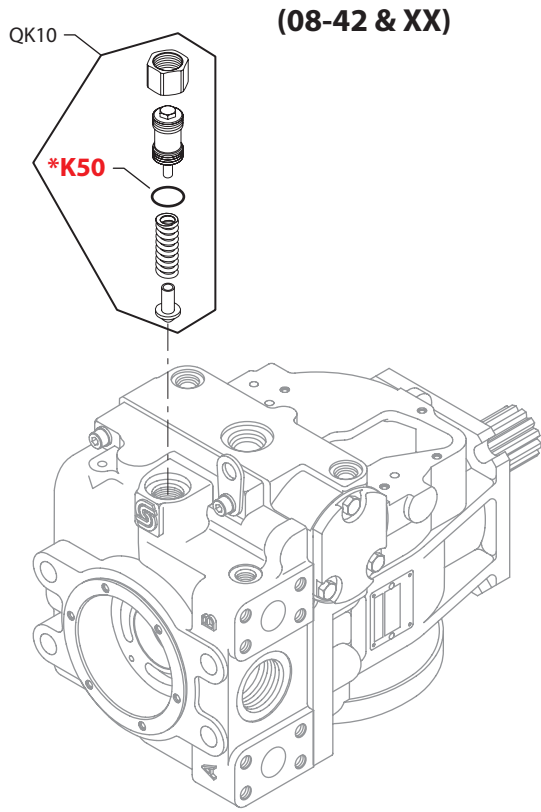
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
NN & N	J15	87-02		8800834	Cover assembly, (SB-1993-001*)	1
	J30	87-02		664771 (8700008)	Bushing	1
	J40	87-02		680892 (9004104-0440)	O-ring	1
	J80	98-44		9007210-1621	Screw, M16 x 120	4
	J80	87-02	98-43	9007210-1620	Screw, M16 x 100 (SB-1998-073)	4

* For additional information regarding replacement parts for units built prior to 93-10, refer to BLN-10107 in the appendix

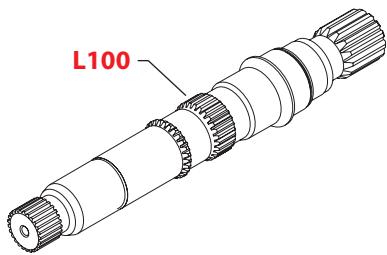
NU	J80	98-47		9007210-1621	Screw, M16 x 120	4
----	-----	-------	--	--------------	------------------	---



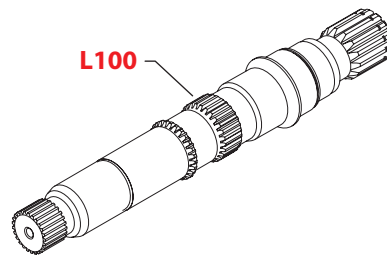
Variable displacement pump



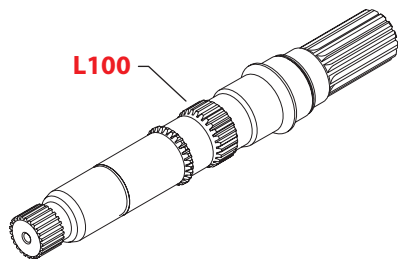
(C6, C7, D7, F1, F5,
F7, G1, S1 & S3)



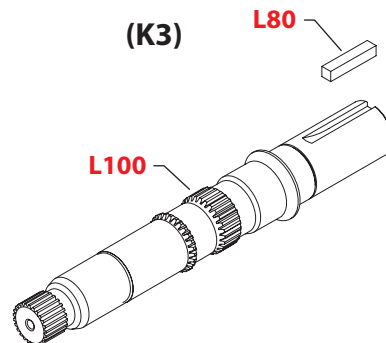
(F3)



(J2 & J3)



(K3)



* = included in base pump seal kit Q210

E100 858E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Charge pressure setting

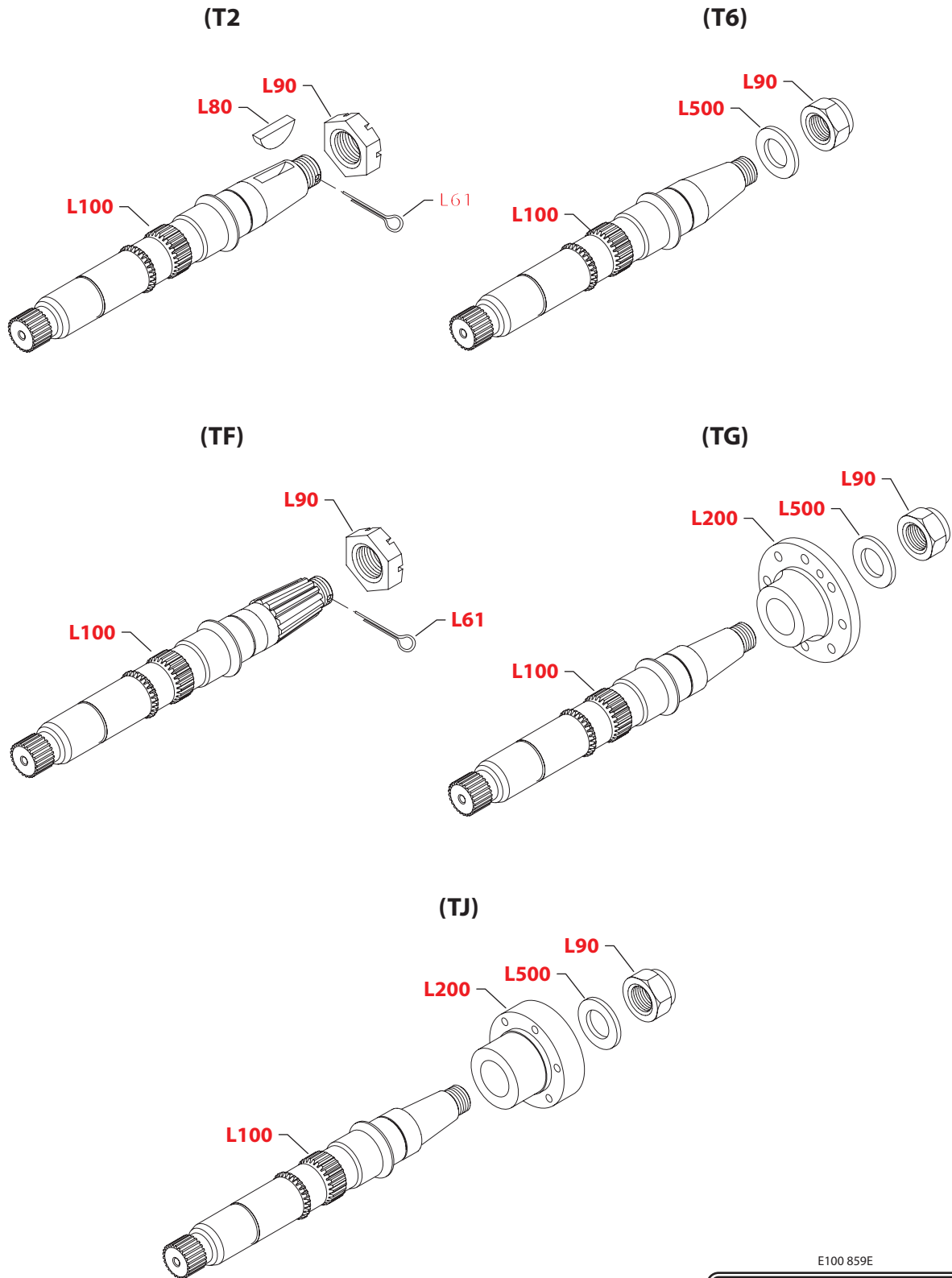
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
08-30	K50	87-42		001149 (9004201-6200)	O-ring (SB-1989-002)	1
	QK10	87-42		8002K000-A	Charge relief valve kit, 8-30 bar (SB-1989-002)	1
32-42	K50	94-13		001149 (9004201-6200)	O-ring	1
	QK10	94-13		8510269	Charge relief valve kit, 30-42 bar	1
JD				none		
XX	K50	94-13		012559 (9004202-6200)	O-ring, viton	1
	QK10	94-13		11086335	Charge relief valve kit, viton	1

Shaft

C6	L100	98-38		509239	Shaft, 21 tooth spline	1
C7	L100	89-46		341958 (8200169)	Shaft, 23 tooth spline	1
	L100	87-02	89-45	320911 (8200119)	Shaft, 23 tooth spline (SB-1989-023)	1
D7	L100	94-14		504307	Shaft, 23 tooth spline, M10 threaded tapped hole	1
F1	L100	89-46		341974 (8200170)	Shaft, 13 tooth spline	1
	L100	87-02	89-45	306688 (8200118)	Shaft, 13 tooth spline (SB-1989-023)	1
F3	L100	96-45		8200330	Shaft, 13 tooth spline with retaining ring grooves	1
F5	L100	13-49		11137386	Shaft, 13 tooth spline, 5/8-11 threaded tapped hole	1
F7	L100	07-46		11030912	Shaft, 23 tooth spline	1
G1	L100	94-17		504352	Shaft, 25 tooth spline	1
J2	L100	92-16		8200389	Shaft, 23 tooth spline with no relief	1
J3	L100	92-16		8200234	Shaft, 14 tooth spline with no relief	1
K3	L80	87-02		9003261-3724	Key	1
	L100	89-46		8200176	Shaft, straight key, 1.75" diameter	1
	L100	87-02	89-45	8200164	Shaft, straight key, 1.75" diameter (SB-1989-023)	1
S1	L100	89-46		341982 (8200171)	Shaft, 14 tooth spline	1
	L100	87-02	89-45	312835 (8200143)	Shaft, 14 tooth spline (SB-1989-023)	1
S3	L100	89-46		8200172	Shaft, 16 tooth spline	1
	L100	87-02	89-45	8200120	Shaft, 16 tooth spline (SB-1989-023)	1



Variable displacement pump



E100 859E

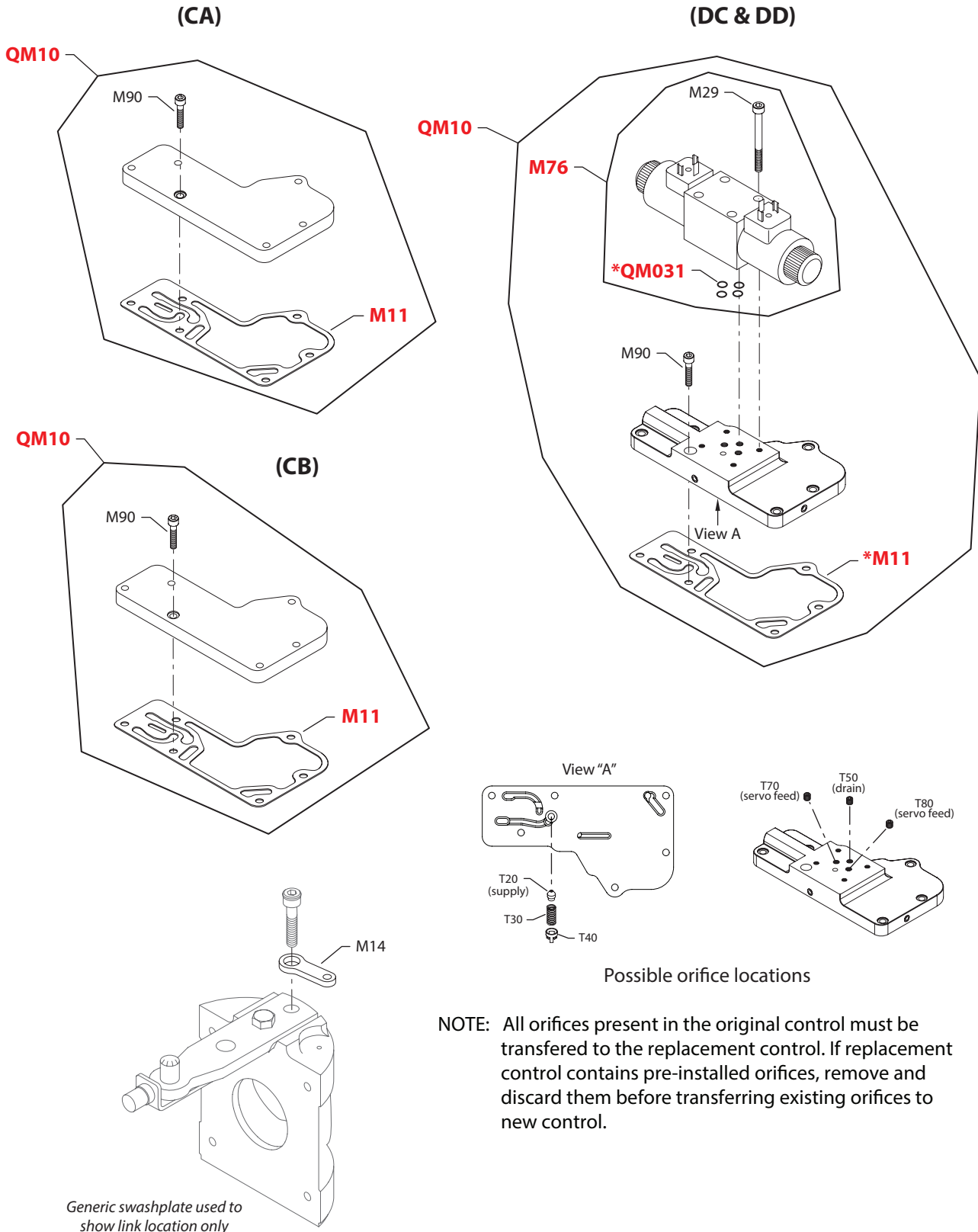
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Shaft

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T2	L61	87-02		716779 (9004600-1230)	Cotter pin	1
	L80	87-02		9003310-3724	Key	1
	L90	87-02		5000606	Slotted nut	1
	L100	89-46		342006 (11111525)	Shaft, 1.5" tapered	1
	L100	87-02	89-45	8200133	Shaft, 1.5" tapered (SB-1989-023)	1
T6	L90	97-42		504060	Slotted nut	1
	L100	97-42		511617	Shaft, 1.5" tapered	1
	L500	97-42		511627	Washer	1
TF	L61	87-02		716779 (9004600-1230)	Cotter pin	1
	L90	87-02		9700189	Slotted nut	1
	L100	89-46		342006 (8200179)	Shaft, 1.5" tapered spline	1
	L100	87-02	89-45	8200132	Shaft, 1.5" tapered spline (SB-1989-023)	1
TG	L90	97-42		504060	Lock nut, M24	1
	L100	97-42		511617	Shaft, 1.5" tapered spline	1
	L200	97-42		504061	Flange	1
	L500	97-42		511627	Washer	1
TJ	L90	97-42		504060	Lock nut, M24	1
	L100	97-42		511617	Shaft, 1.5" tapered spline	1
	L200	97-42		511462	Flange	1
	L500	97-42		511627	Washer	1



Variable displacement pump



NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E100 716E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

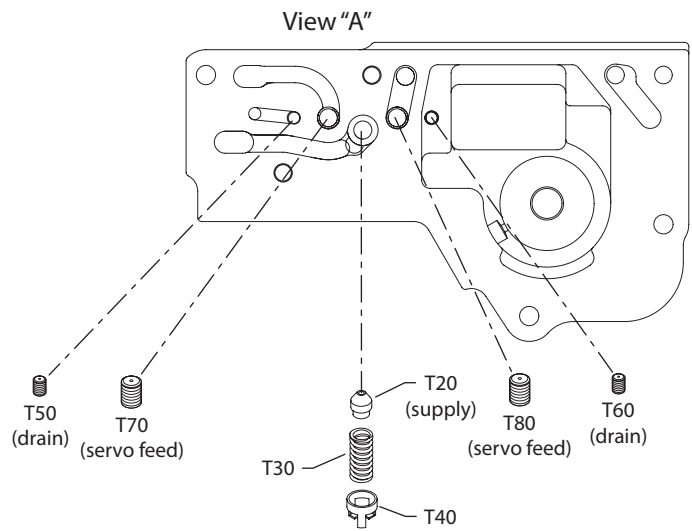
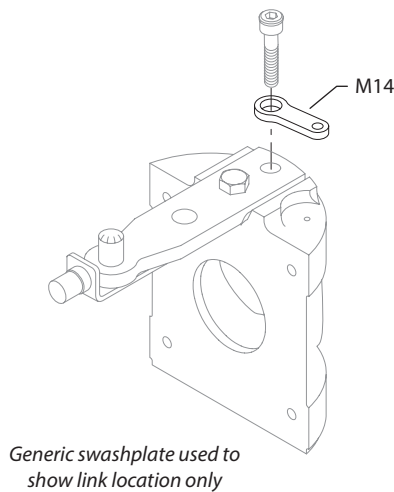
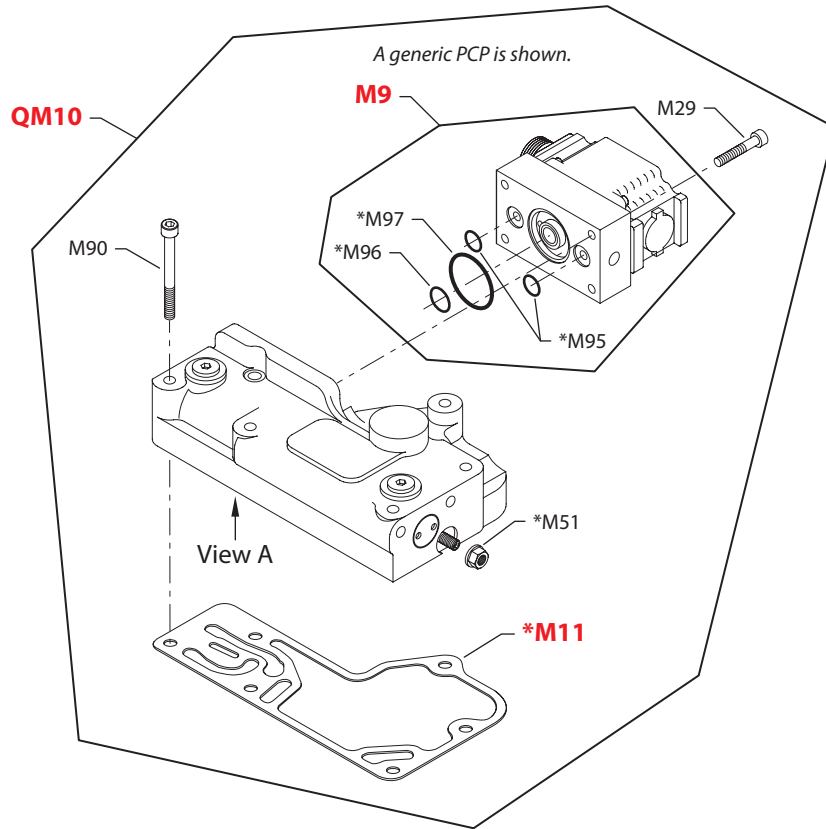

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CA	M11	87-02		8800923	Control gasket	1
	M90	87-02		693341 (9007314-0606)	Screw	6
	QM10	87-02		8102M0CA-A	Control cover plate kit	1
CB	M11	87-02		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M90	87-02		693341 (9007314-0606)	Screw	6
	QM10	87-02		8102M0CA-A	Control cover plate kit	1
DC	M11	87-02		8800923	Control gasket	1
	M29	87-02		035592	Screw	4
	M76	87-02		687103	Solenoid valve, 12v	1
	M90	87-02		693341 (9007314-0606)	Screw	6
	QM10	87-02		8102M0DC-A	Control kit, 12v	1
	QM031	87-02		11099647	O-ring kit	1
	QM210	87-02		11096172	Control seal kit	1
DD	M11	87-02		8800923	Control gasket	1
	M29	87-02		035592	Screw	4
	M76	87-02		549907	Solenoid valve, 24v	1
	M90	87-02		693341 (9007314-0606)	Screw	6
	QM10	87-02		8102M0DD-A	Control kit, 24v	1
	QM031	87-02		11099647	O-ring kit	1
	QM210	87-02		11096172	Control seal kit	1



Variable displacement pump

(EA, EH, EK & EP)



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E100 717E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

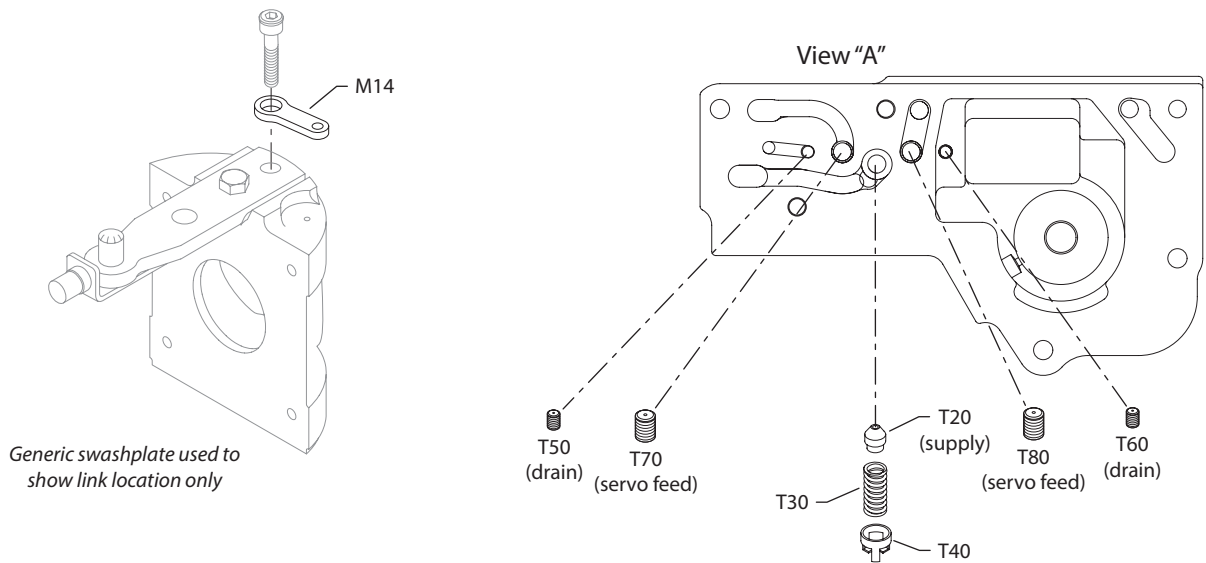
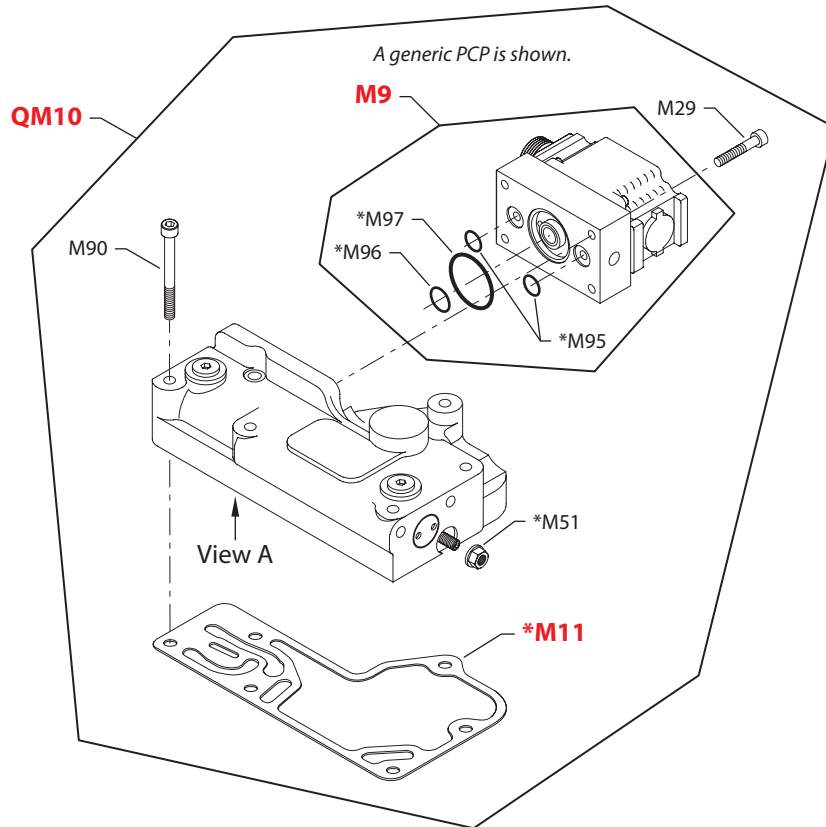

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
EA	M9	91-16		MCV110A1017	PCP, MS connector	1	
	M11	91-16		8800923	Control gasket	1	
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
	M14	91-16	96-39	8200344	Feedback link (SB-1996-009)	1	
	M29	91-16		K07067	Screw	4	
	M51	91-16		9003509-0008	Seal nut	1	
	M90	91-16		692889 (9007314-0611)	Screw	6	
	M95	91-16		318337 (9004104-0120)	O-ring	2	
	M96	91-16		011304 (9004104-0140)	O-ring	1	
	M97	91-16		318345 (9004104-0240)	O-ring	1	
	QM10	91-16		8202M0EA-B	EDC kit, MS connector	1	
	QM210	91-16		11096174	Control seal kit	1	
	EH	M9	99-05		MCV110A1058	PCP, MS connector	1
M11		99-05		8800923	Control gasket	1	
M14		96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
M29		99-05		K07067	Screw	4	
M51		99-05		9003509-0008	Seal nut	1	
M90		99-05		692889 (9007314-0611)	Screw	6	
M95		99-05		318337 (9004104-0120)	O-ring	2	
M96		99-05		011304 (9004104-0140)	O-ring	1	
M97		99-05		318345 (9004104-0240)	O-ring	1	
QM10		99-05		11013636	EDC kit, MS connector	1	
QM210		99-05		11096174	Control seal kit	1	
EK		M9	99-15		MCV110A1014	PCP, Deutsch connector	1
		M11	99-15		8800923	Control gasket	1
	M14	99-15		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
	M29	99-15		K07067	Screw	4	
	M51	99-15		9003509-0008	Seal nut	1	
	M90	99-15		692889 (9007314-0611)	Screw	6	
	M95	99-15		318337 (9004104-0120)	O-ring	2	
	M96	99-15		011304 (9004104-0140)	O-ring	1	
	M97	99-15		318345 (9004104-0240)	O-ring	1	
	QM10	99-15		11018282	EDC kit, Deutsch connector	1	
	QM210	99-15		11096174	Control seal kit	1	
	EP	M9	91-07		MCV110A1058	PCP, Packard connector	1
		M11	91-07		8800923	Control gasket	1
M14		96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
M14		91-07	96-39	8200344	Feedback link (SB-1996-009)	1	
M29		91-07		K07067	Screw	4	
M51		91-07		9003509-0008	Seal nut	1	
M90		91-07		692889 (9007314-0611)	Screw	6	
M95		91-07		318337 (9004104-0120)	O-ring	2	
M96		91-07		011304 (9004104-0140)	O-ring	1	
M97		91-07		318345 (9004104-0240)	O-ring	1	
QM10		91-07		8202M0EP-B	EDC kit, Packard connector	1	
QM210		91-07		11096174	Control seal kit	1	



Variable displacement pump

(EV, EX & EZ)



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E100 717E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

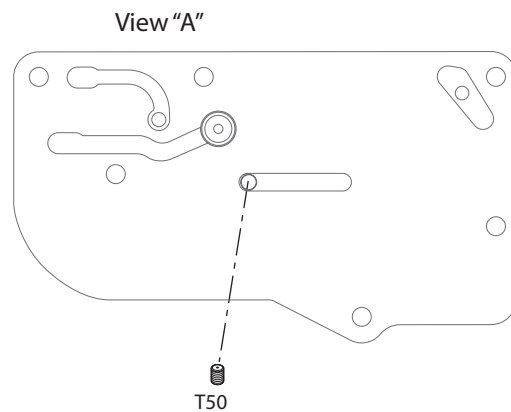
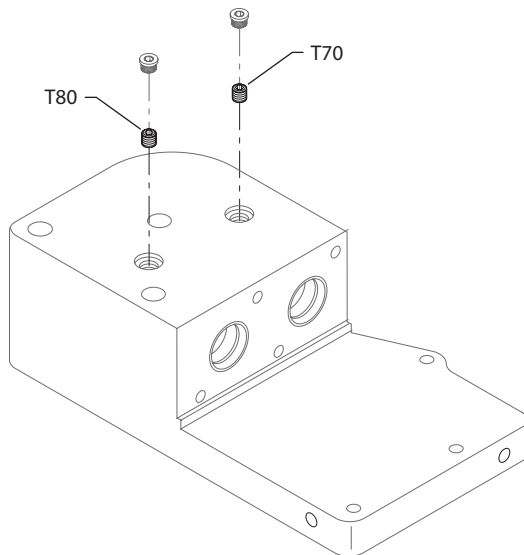
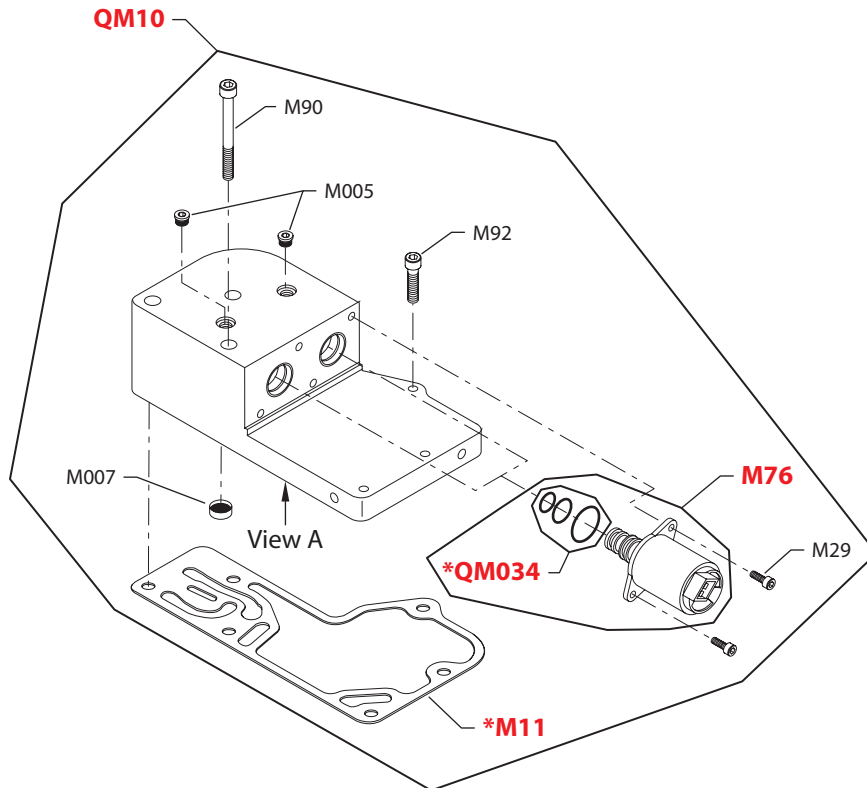

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
EV	M9	97-24		MCV110A1058	PCP, Packard connector	1	
	M11	97-24		8800923	Control gasket	1	
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
	M14	97-24	96-39	8200344	Feedback link (SB-1996-009)	1	
	M29	97-24		K07067	Screw	4	
	M51	97-24		9003509-0008	Seal nut	1	
	M90	97-24		692889 (9007314-0611)	Screw	6	
	M95	97-24		318337 (9004104-0120)	O-ring	2	
	M96	97-24		011304 (9004104-0140)	O-ring	1	
	M97	97-24		318345 (9004104-0240)	O-ring	1	
	QM10	97-24		11013636	EDC kit, Packard connector	1	
	QM210	97-24		11096174	Control seal kit	1	
	EX	M9	99-05		MCV110A1090	PCP, Metripack connector	1
M11		99-05		8800923	Control gasket	1	
M14		96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
M29		99-05		K07067	Screw	4	
M51		99-05		9003509-0008	Seal nut	1	
M90		99-05		692889 (9007314-0611)	Screw	6	
M95		99-05		318337 (9004104-0120)	O-ring	2	
M96		99-05		011304 (9004104-0140)	O-ring	1	
M97		99-05		318345 (9004104-0240)	O-ring	1	
QM10		99-05		11099895	EDC kit, Metripack connector	1	
QM210		99-05		11096174	Control seal kit	1	
EZ		M9	94-29		MCV110A1017	PCP, MS connector	1
		M11	94-29		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
	M14	97-24	96-39	8200344	Feedback link (SB-1996-009)	1	
	M29	94-29		K07067	Screw	4	
	M51	94-29		9003509-0008	Seal nut	1	
	M90	94-29		692889 (9007314-0611)	Screw	6	
	M95	94-29		318337 (9004104-0120)	O-ring	2	
	M96	94-29		011304 (9004104-0140)	O-ring	1	
	M97	94-29		318345 (9004104-0240)	O-ring	1	
	QM10	94-29		11099896	EDC kit, MS connector	1	
	QM210	94-29		11096174	Control seal kit	1	



Variable displacement pump

(FA, FB, FC & FD)



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E101 873E

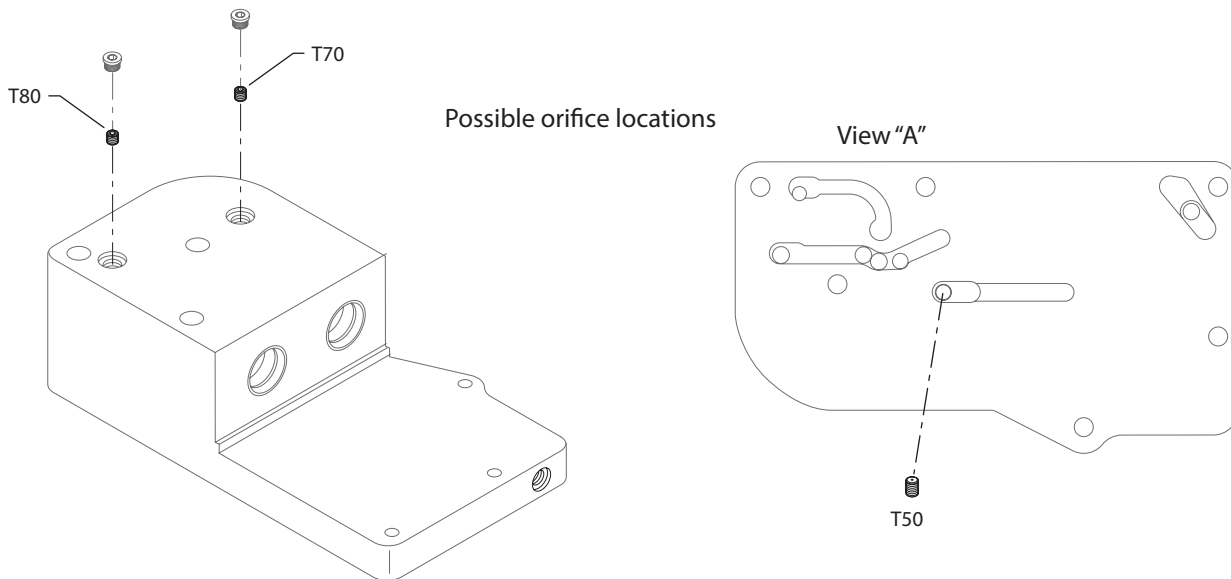
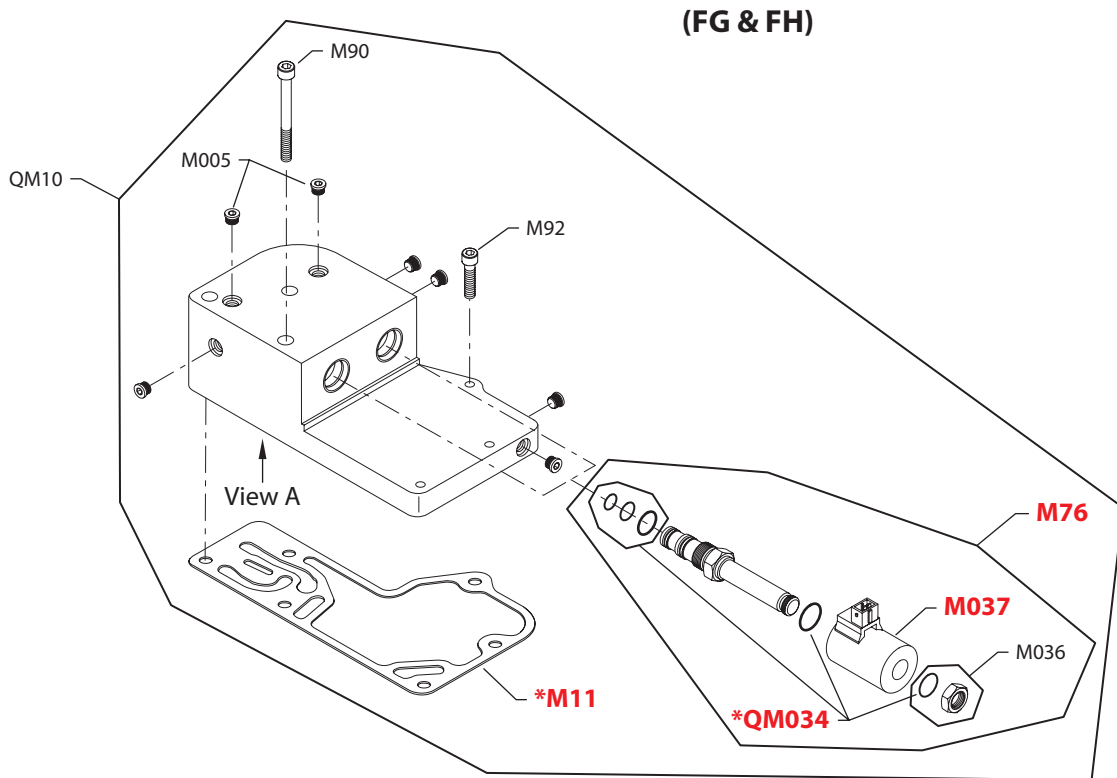
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
FA	M11	98-14		8800923	Control gasket	1
	M29	98-14		067694	Screw	4
	M76	98-14		518080	Solenoid valve, 12 volt, 25 bar	2
	M90	98-14		9007314-0614	Screw	3
	M92	98-14		693341 (9007314-0606)	Screw	3
	M007	98-14		K00775	Filter screen	1
	QM10	98-14		11015079	NFPE control kit, 12 volt, 25 bar	1
	QM034	98-14		11099849	Solenoid valve seal kit	2
	QM210	98-14		11100028	Control seal kit	1
	FB	M11	98-14		8800923	Control gasket
M29		98-14		067694	Screw	4
M76		98-14		518081	Solenoid valve, 24 volt, 25 bar	2
M90		98-14		9007314-0614	Screw	3
M92		98-14		693341 (9007314-0606)	Screw	3
M007		98-14		K00775	Filter screen	1
QM10		98-14		11015080	NFPE control kit, 24 volt, 25 bar	1
QM034		98-14		11099849	Solenoid valve seal kit	2
QM210		98-14		11100028	Control seal kit	1
FC		M11	98-14		8800923	Control gasket
	M29	98-14		067694	Screw	4
	M76	98-14		521709	Solenoid valve, 12 volt, 32 bar	2
	M90	98-14		9007314-0614	Screw	3
	M92	98-14		693341 (9007314-0606)	Screw	3
	M007	98-14		K00775	Filter screen	1
	QM10	98-14		8510230	NFPE control kit, 12 volt, 32 bar	1
	QM034	98-14		11099849	Solenoid valve seal kit	2
	QM210	98-14		11100028	Control seal kit	1
	FD	M11	98-14		8800923	Control gasket
M29		98-14		067694	Screw	4
M76		98-14		517214	Solenoid valve, 24 volt, 32 bar	2
M90		98-14		9007314-0614	Screw	3
M92		98-14		693341 (9007314-0606)	Screw	3
M007		98-14		K00775	Filter screen	1
QM10		98-14		11015081	NFPE control kit, 24 volt, 32 bar	1
QM034		98-14		11099849	Solenoid valve seal kit	2
QM210		98-14		11100028	Control seal kit	1



Variable displacement pump



NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E100 805E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

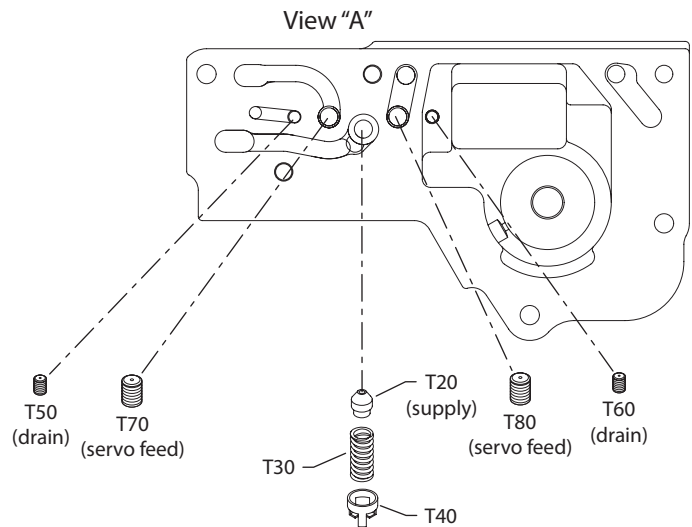
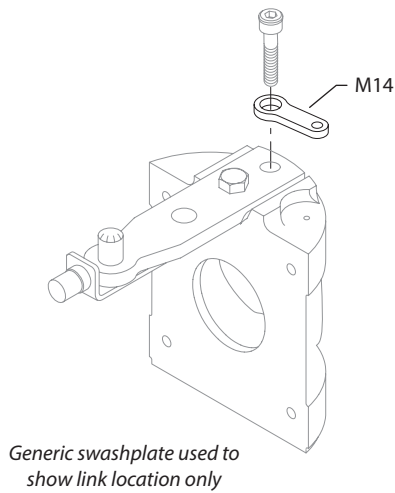
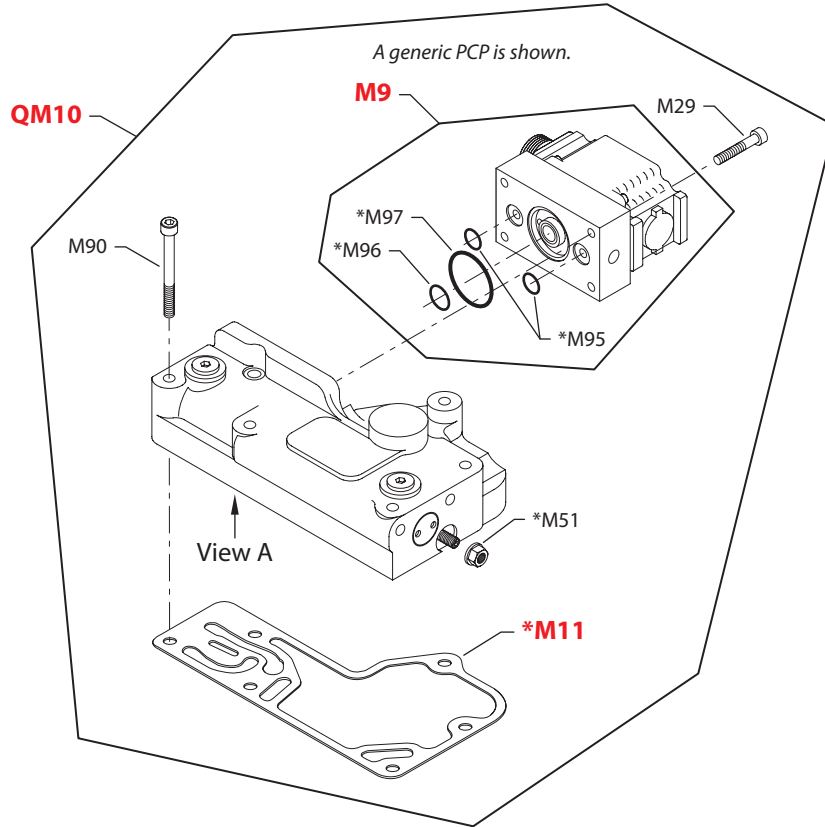

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
FG	M11	00-30		8800923	Control gasket	1
	M76	00-30		516006	Solenoid valve, 12 volt, 32 bar	2
	M90	00-30		9007314-0614	Screw	3
	M92	00-30		693341 (9007314-0606)	Screw	3
	M005	00-30		11040532	Plug assembly	2
	QM10	00-30		11026563	NFPE control kit, 12 volt, 32 bar	1
	QM034	00-30		11100185	Solenoid valve seal kit	2
	QM036	00-30		518088	Coil nut kit	2
	QM037	00-30		516003	Coil, 12v Jet connector	2
	QM210	00-30		11100001	Control seal kit	1
	FH	M11	00-30		8800923	Control gasket
M76		00-30		515617	Solenoid valve, 24 volt, 32 bar	2
M90		00-30		9007314-0614	Screw	3
M92		00-30		693341 (9007314-0606)	Screw	3
M005		00-30		11040532	Plug assembly	2
QM10		00-30		11026569	NFPE control kit, 24 volt, 32 bar	1
QM034		00-30		11100185	Solenoid valve seal kit	2
QM036		00-30		518088	Coil nut kit	2
QM037		00-30		516004	Coil, 24v Jet connector	2
QM210		00-30		11100001	Control seal kit	1



Variable displacement pump

(GA)



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E100 717E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing



Variable displacement pump

Control

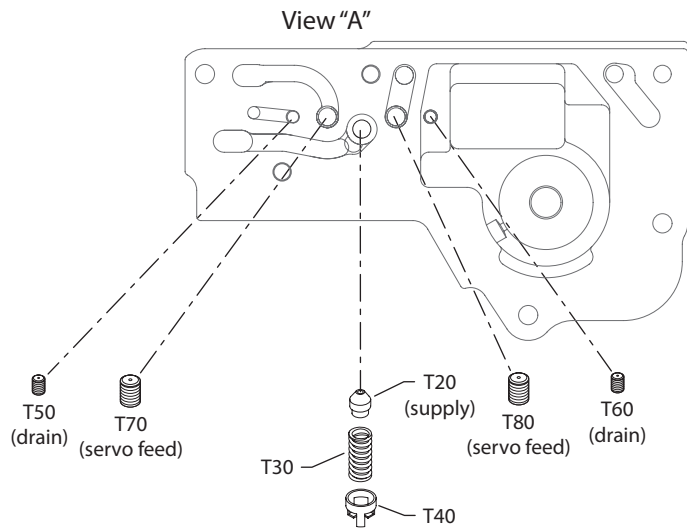
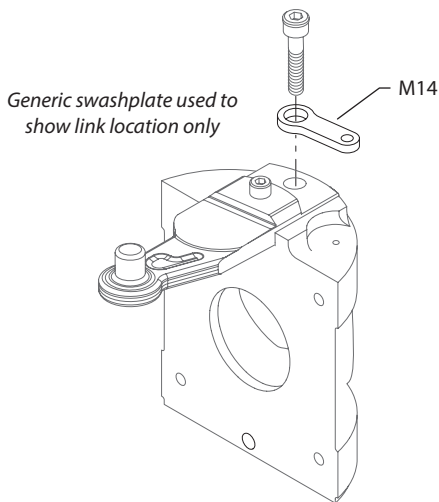
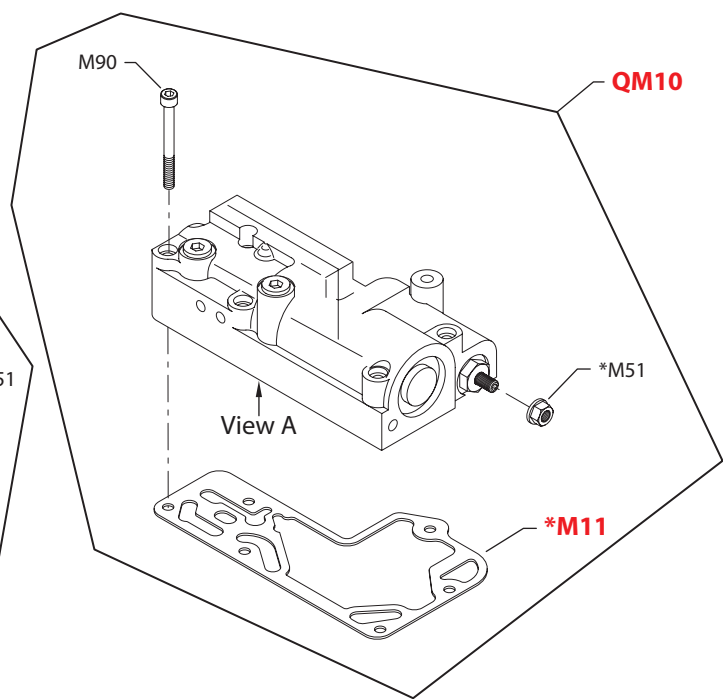
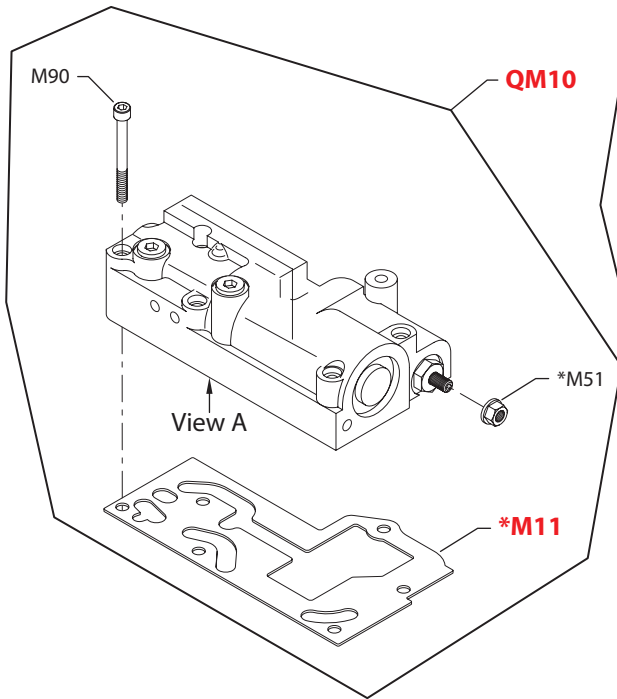
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GA	M9	01-28		MCV110A1059	PCP, Packard connector	1
	M11	01-28		8800923	Control gasket	1
	M14	01-28		11070306	Feedback link (SB-2013-011)	1
	M29	01-28		K07067	Screw	4
	M51	01-28		9003509-0008	Seal nut	1
	M90	01-28		692889 (9007314-0611)	Screw	6
	M95	01-28		318337 (9004104-0120)	O-ring	2
	M96	01-28		011304 (9004104-0140)	O-ring	1
	M97	01-28		318345 (9004104-0240)	O-ring	1
	QM10	01-28		8510302	EDC kit, Packard connector	1
	QM210	01-28		11096174	Control seal kit	1



Variable displacement pump

(HD)

(HE, HF, HK, HM & HS)



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 112E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

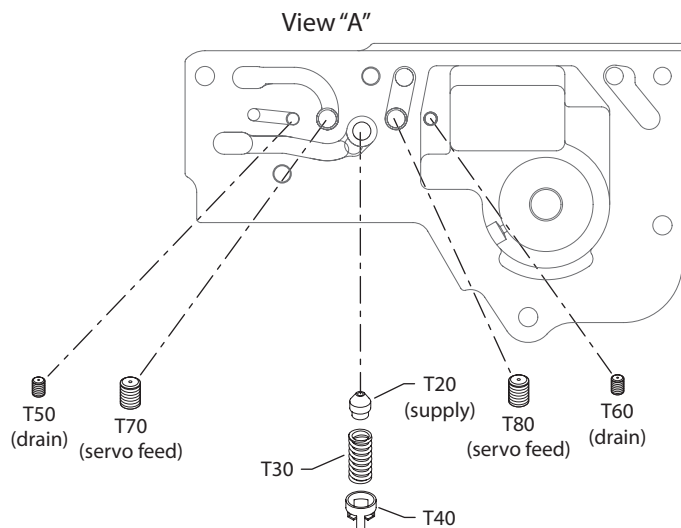
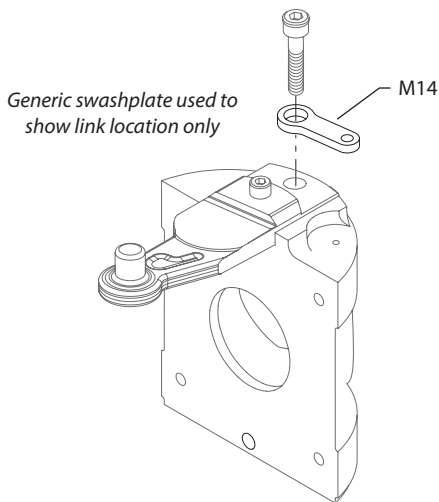
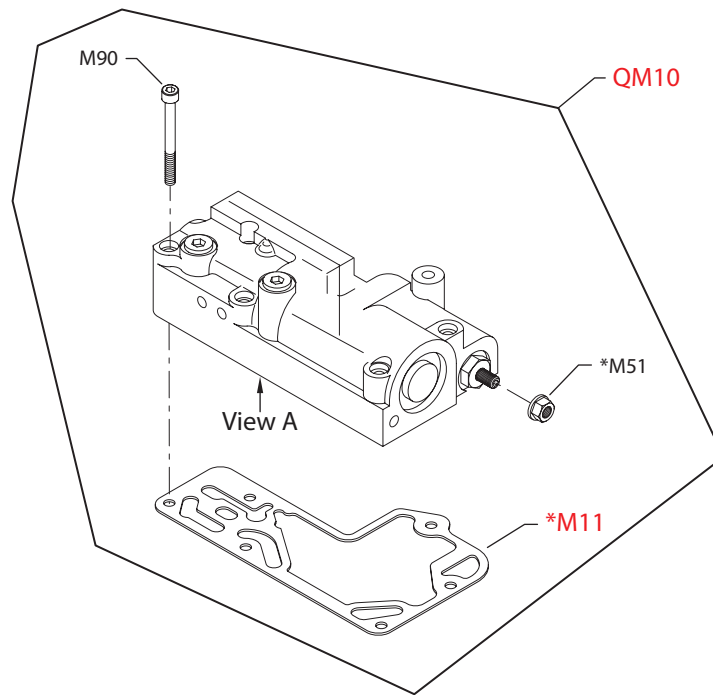

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
HD	M11	97-44		508880	Control gasket	1
	M14	97-44		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M51	97-44		505412 (9003509-0008)	Seal nut	1
	M90	97-44		692889 (9007314-0611)	Screw	6
	QM10	97-44		11087556	HDC kit, 6-18 bar	1
	QM210	97-44		11096264	Control seal kit	1
	HE	M11	97-06		8801241	Control gasket (SB-1999-065)
M14		97-06		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
M51		97-06		505412 (9003509-0008)	Seal nut	1
M90		97-06		692889 (9007314-0611)	Screw	6
QM10		97-06		8510277	HDC kit, 8-16.5 bar	1
QM210		97-06		11096266	Control seal kit	1
HF		M11	92-15		8801241	Control gasket (SB-1999-065)
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	92-15	96-39	8200344	Feedback link (SB-1996-009)	1
	M51	92-15		505412 (9003509-0008)	Seal nut	1
	M90	92-15		692889 (9007314-0611)	Screw	6
	QM10	92-15		8202M0HF-A	HDC kit, 3-11 bar	1
	QM210	92-15		11096266	Control seal kit	1
	HK	M11	92-15		8801241	Control gasket (SB-1999-065)
M14		96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
M14		92-15	96-39	8200344	Feedback link (SB-1996-009)	1
M51		92-15		505412 (9003509-0008)	Seal nut	1
M90		92-15		692889 (9007314-0611)	Screw	6
QM10		92-15		8202M0HK-A	HDC kit, 1-11 bar	1
QM210		92-15		11096266	Control seal kit	1
HM		M11	92-15		8801241	Control gasket (SB-1999-065)
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	92-15	96-39	8200344	Feedback link (SB-1996-009)	1
	M51	92-15		505412 (9003509-0008)	Seal nut	1
	M90	92-15		692889 (9007314-0611)	Screw	6
	QM10	92-15		8202M0HM-A	HDC kit, 1.1 -6.7 bar	1
	QM210	92-15		11096266	Control seal kit	1
	HS	M11	94-19		8801241	Control gasket (SB-1999-065)
M14		96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
M14		94-19	96-39	8200344	Feedback link (SB-1996-009)	1
M51		94-19		505412 (9003509-0008)	Seal nut	1
M90		94-19		692889 (9007314-0611)	Screw	6
QM10		94-19		8202M0HS-A	HDC kit, 6-18 bar	1
QM210		94-19		11096266	Control seal kit	1



Variable displacement pump

(HT, HV, HW, HX, JA & JC)



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E100 806E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

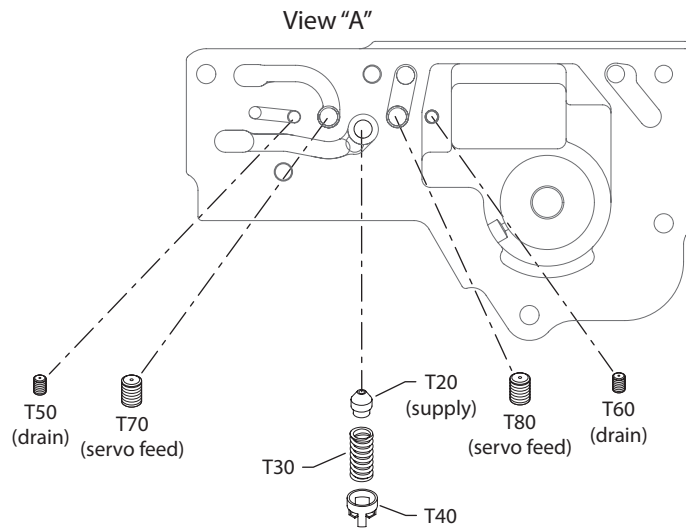
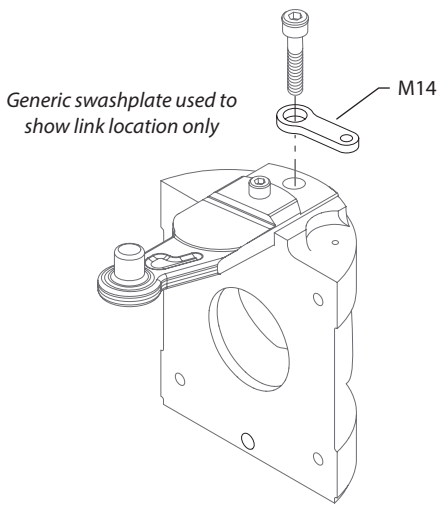
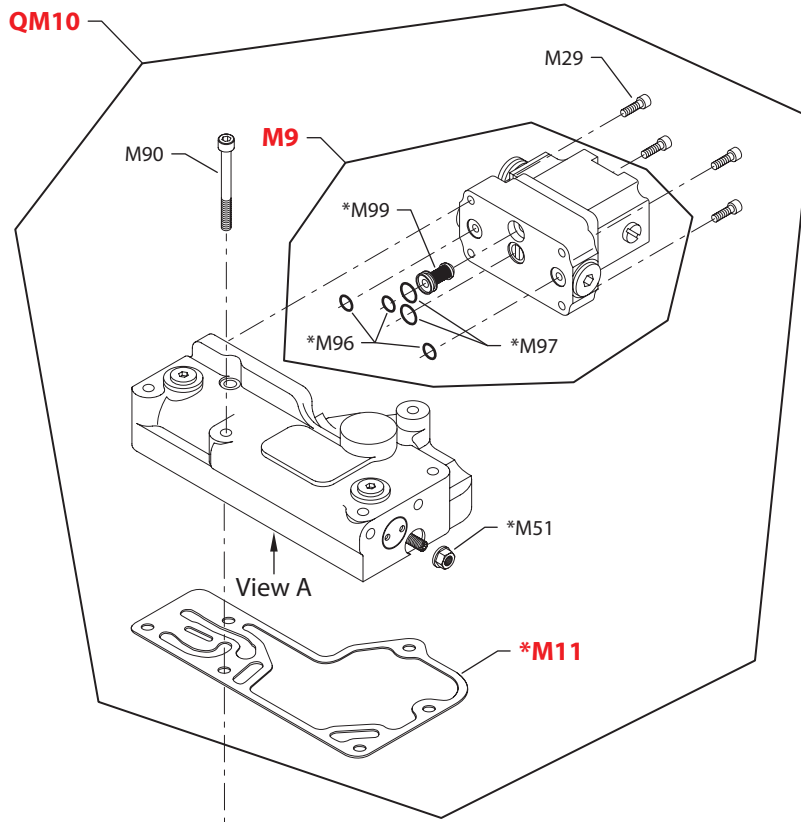
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
HT	M11	94-36		8801241	Control gasket (SB-1999-065)	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	94-36	96-39	8200344	Feedback link (SB-1996-009)	1
	M51	94-36		505412 (9003509-0008)	Seal nut	1
	M90	94-36		692889 (9007314-0611)	Screw	6
	QM10	94-36		11020564	HDC kit, high accuracy	1
	QM210	94-36		11096266	Control seal kit	1
	HV	M11	94-36		8801241	Control gasket (SB-1999-065)
M14		96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
M14		94-36	96-39	8200344	Feedback link (SB-1996-009)	1
M51		94-36		505412 (9003509-0008)	Seal nut	1
M90		94-36		692889 (9007314-0611)	Screw	6
QM10		94-36		11013639	HDC kit, 4-39 bar	1
QM210		94-36		11096266	Control seal kit	1
HW		M11	98-13		8801241	Control gasket (SB-1999-065)
	M14	98-13		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M51	98-13		505412 (9003509-0008)	Seal nut	1
	M90	98-13		692889 (9007314-0611)	Screw	6
	QM10	98-13		11013639	HDC kit, 4-14 bar	1
	QM210	98-13		11096266	Control seal kit	1
	HX	M11	00-19		8801241	Control gasket
M14		00-19		11070306	Feedback link (SB-2013-011)	1
M51		00-19		505412 (9003509-0008)	Seal nut	1
M90		00-19		692889 (9007314-0611)	Screw	6
QM10		00-19		11019662	HDC kit, 3-11 bar	1
QM210		00-19		11096266	Control seal kit	1
JA		M11	00-24		8801241	Control gasket (SB-1999-065)
	M14	00-24		11070306	Feedback link (SB-2013-011)	1
	M51	00-24		505412 (9003509-0008)	Seal nut	1
	M90	00-24		692889 (9007314-0611)	Screw	6
	QM10	00-24		8202M0HS-A	HDC kit, 6-18 bar	1
	QM210	00-24		11096266	Control seal kit	1
	JC	M11	03-06		8801241	Control gasket
M14		03-06		11070306	Feedback link	1
M51		03-06		505412 (9003509-0008)	Seal nut	1
M90		03-06		692889 (9007314-0611)	Screw	6
QM10		03-06		11099898	HDC kit, 6-18 bar, steel barrel	1
QM210		03-06		11096266	Control seal kit	1



Variable displacement pump

(K1, K7, K8 & K9)

A generic PCP is shown.



Possible orifice locations

E100 807E

* = included in control seal kit QM210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

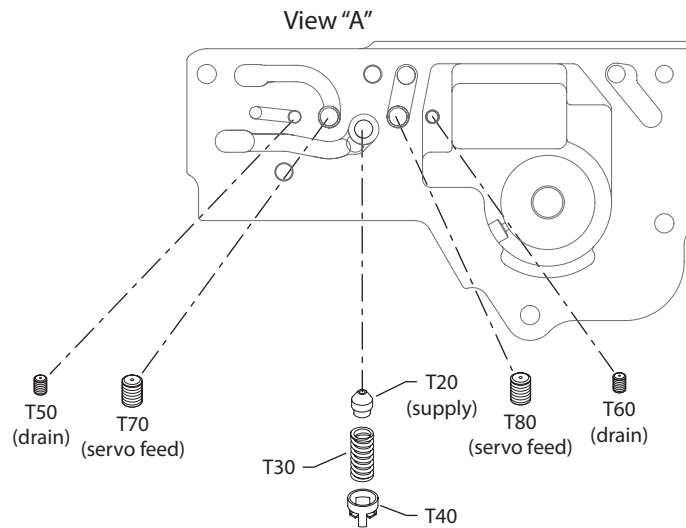
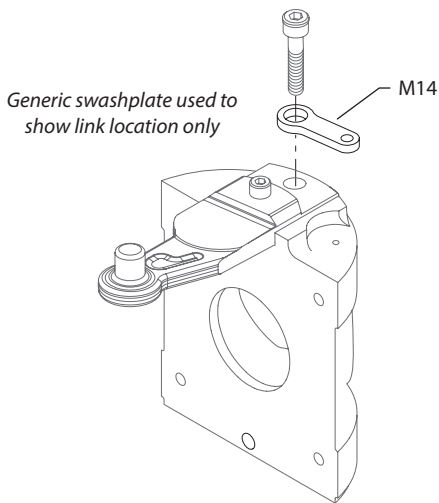
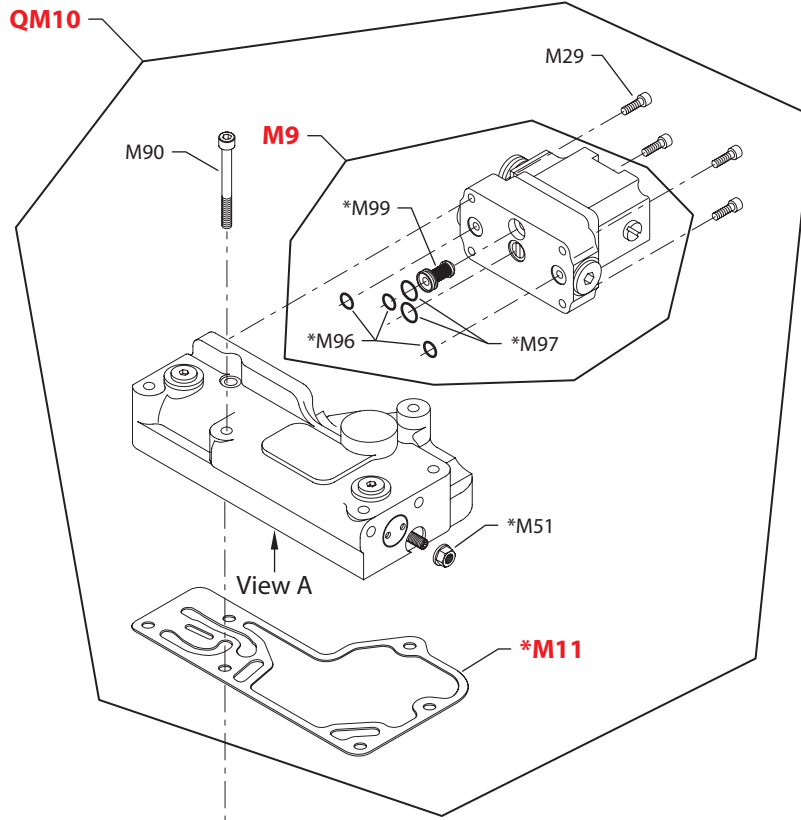
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
K1	M9	12-36	14-37	MCV116C3201	PCP, Deutsch connector, dual coil	1
	M11	12-36	14-37	8800923	Control gasket	1
	M14	12-36	14-37	11070306	Feedback link (SB-2013-011)	1
	M29	12-36	14-37	K07067	Screw	4
	M51	12-36	14-37	505412 (9003509-0008)	Seal nut	1
	M90	12-36	14-37	692889 (9007314-0611)	Screw	6
	M96	12-36	14-37	011296 (9004105-0120)	O-ring	3
	M97	12-36	14-37	9004105-0130	O-ring	2
	M99	12-36	14-37	K08572	Filter assembly	1
	QM10	12-36	14-37	11121536	EDC3 kit, Deutsch connector, dual coil	1
	QM210	12-36	14-37	11095724	Control seal kit	1
K7	M9	13-36		11101116	PCP, MS connector	1
	M11	13-36		8800923	Control gasket	1
	M14	13-36		11070306	Feedback link	1
	M29	13-36		K07067	Screw	4
	M51	13-36		505412 (9003509-0008)	Seal nut	1
	M90	13-36		692889 (9007314-0611)	Screw	6
	M96	13-36		011296 (9004105-0120)	O-ring	3
	M97	13-36		9004105-0130	O-ring	2
	M99	13-36		K08572	Filter assembly	1
	QM10	13-36		11139994	EDC3 kit, MS connector	1
	QM210	13-36		11095724	Control seal kit	1
K8	M9	14-15		11101106	PCP, MS connector	1
	M11	14-15		8800923	Control gasket	1
	M14	14-15		11070306	Feedback link	1
	M29	14-15		K07067	Screw	4
	M51	14-15		505412 (9003509-0008)	Seal nut	1
	M90	14-15		692889 (9007314-0611)	Screw	6
	M96	14-15		011296 (9004105-0120)	O-ring	3
	M97	14-15		9004105-0130	O-ring	2
	M99	14-15		K08572	Filter assembly	1
	QM10	14-15		11140004	EDC3 kit, MS connector	1
	QM210	14-15		11095724	Control seal kit	1
K9	M9	14-36		11101118	PCP, MS connector	1
	M11	14-36		8800923	Control gasket	1
	M14	14-36		11070306	Feedback link	1
	M29	14-36		K07067	Screw	4
	M51	14-36		505412 (9003509-0008)	Seal nut	1
	M90	14-36		692889 (9007314-0611)	Screw	6
	M96	14-36		011296 (9004105-0120)	O-ring	3
	M97	14-36		9004105-0130	O-ring	2
	M99	14-36		K08572	Filter assembly	1
	QM10	14-36		11140000	EDC3 kit, MS connector	1
	QM210	14-36		11095724	Control seal kit	1



Variable displacement pump

(KA, KB, KE & KF)

A generic PCP is shown.



Possible orifice locations

E100 807E

* = included in control seal kit QM210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

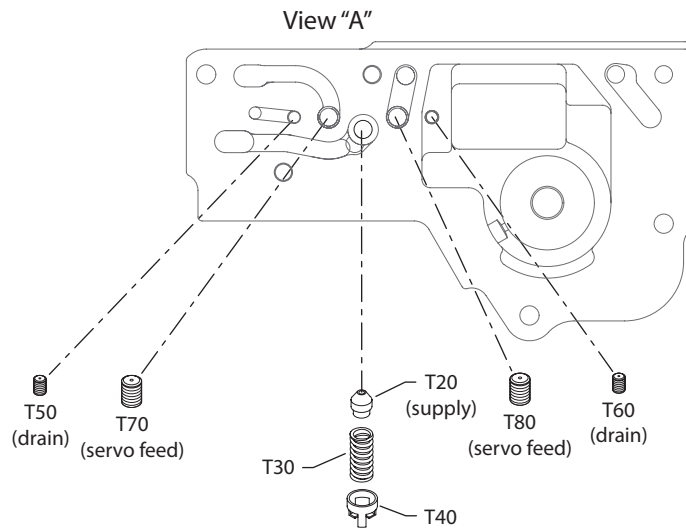
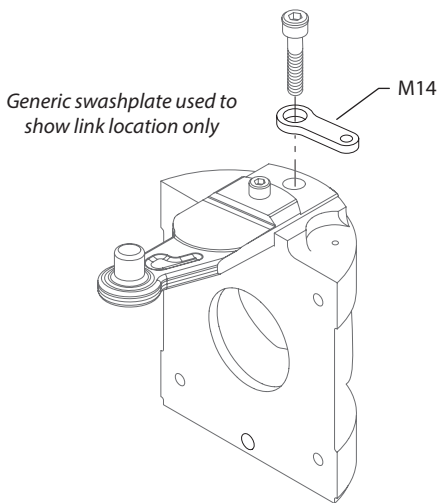
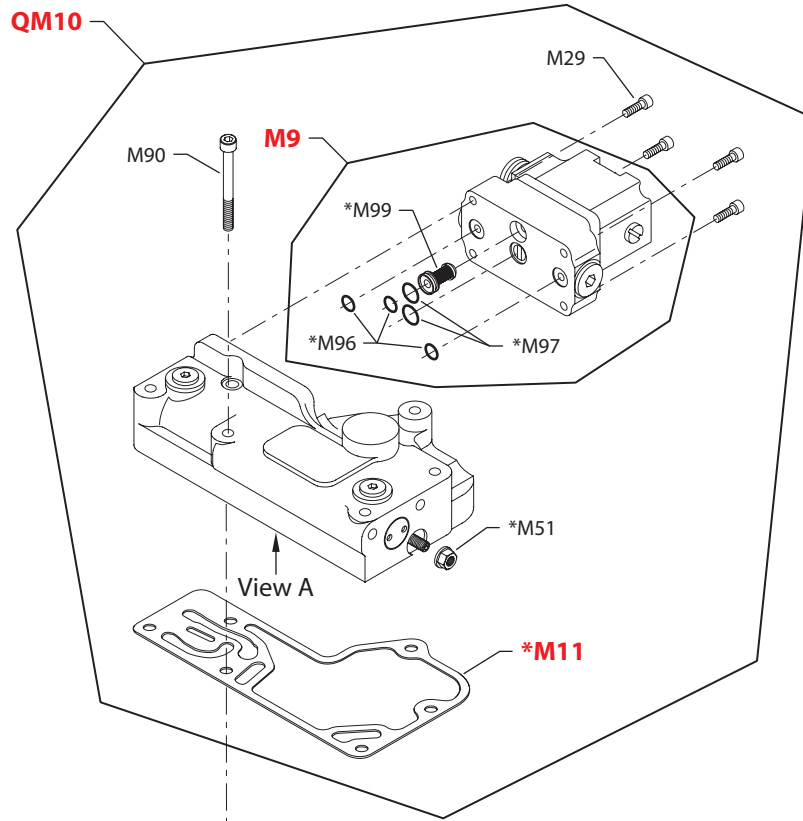
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
KA	M9	95-17		MCV116G4201	PCP, MS connector, dual coil	1	
	M11	95-17		8800923	Control gasket	1	
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
	M14	95-17	96-39	8200344	Feedback link (SB-1996-009)	1	
	M29	95-17		K07067	Screw	4	
	M51	95-17		505412 (9003509-0008)	Seal nut	1	
	M90	95-17		692889 (9007314-0611)	Screw	6	
	M96	95-17		011296 (9004105-0120)	O-ring	3	
	M97	95-17		9004105-0130	O-ring	2	
	M99	95-17		K08572	Filter assembly	1	
	QM10	95-17		8510117	EDC3 kit, MS connector, dual coil	1	
	QM210	95-17		11095724	Control seal kit	1	
	KB	M9	15-18		11164284	PCP, dual coil	1
M11		15-18		8800923	Control gasket	1	
M14		15-18		11070306	Feedback link	1	
M29		15-18		K07067	Screw	4	
M51		15-18		505412 (9003509-0008)	Seal nut	1	
M90		15-18		692889 (9007314-0611)	Screw	6	
M96		15-18		011296 (9004105-0120)	O-ring	3	
M97		15-18		9004105-0130	O-ring	2	
M99		15-18		K08572	Filter assembly	1	
QM10		15-18		11165456	EDC3 kit, MS connector, dual coil	1	
QM210		15-18		11095724	Control seal kit	1	
KE		M9	03-27		MCV116F3118	PCP, Deutsch connector	1
		M11	03-27		8800923	Control gasket	1
	M14	03-27		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
	M29	03-27		K07067	Screw	4	
	M51	03-27		505412 (9003509-0008)	Seal nut	1	
	M90	03-27		692889 (9007314-0611)	Screw	6	
	M96	03-27		011296 (9004105-0120)	O-ring	3	
	M97	03-27		9004105-0130	O-ring	1	
	M99	02-22		K08572	Filter assembly	1	
	QM10	03-27		8510323	EDC3 kit, Deutsch connector	1	
	QM210	03-27		11095724	Control seal kit	1	
	KF	M9	10-38		MCV116F3118	PCP, Deutsch connector	1
		M11	10-38		8800923	Control gasket	1
M14		10-38		11070306	Feedback link	1	
M29		10-38		K07067	Screw	4	
M51		10-38		505412 (9003509-0008)	Seal nut	1	
M90		10-38		692889 (9007314-0611)	Screw	6	
M96		10-38		011296 (9004105-0120)	O-ring	3	
M97		10-38		9004105-0130	O-ring	1	
M99		10-38		K08572	Filter assembly	1	
QM10		10-38		11106690	EDC3 kit, Deutsch connector	1	
QM210		10-38		11095724	Control seal kit	1	



Variable displacement pump

(KK, KM, KN & KP)

A generic PCP is shown.



Possible orifice locations

* = included in control seal kit QM210

E100 807E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

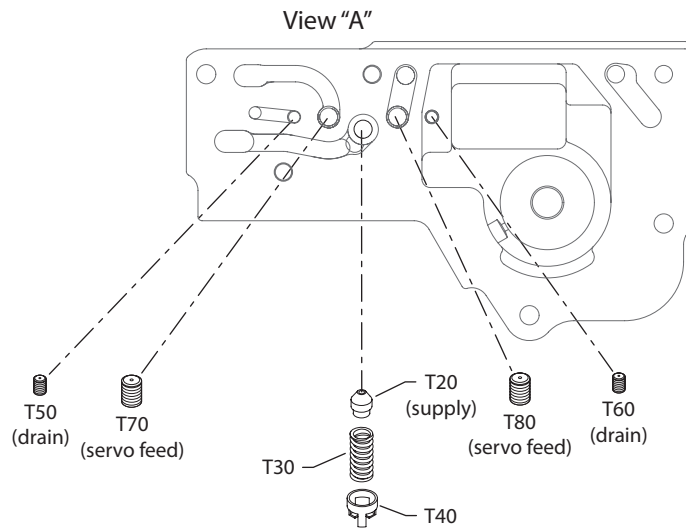
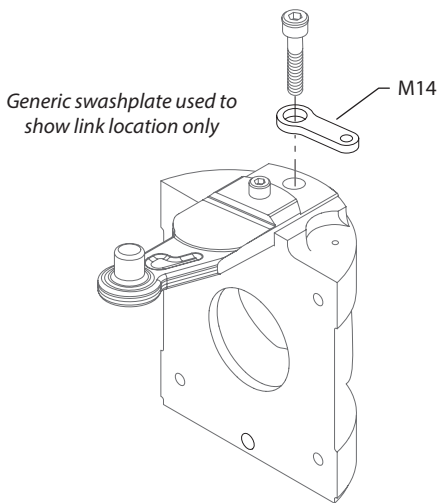
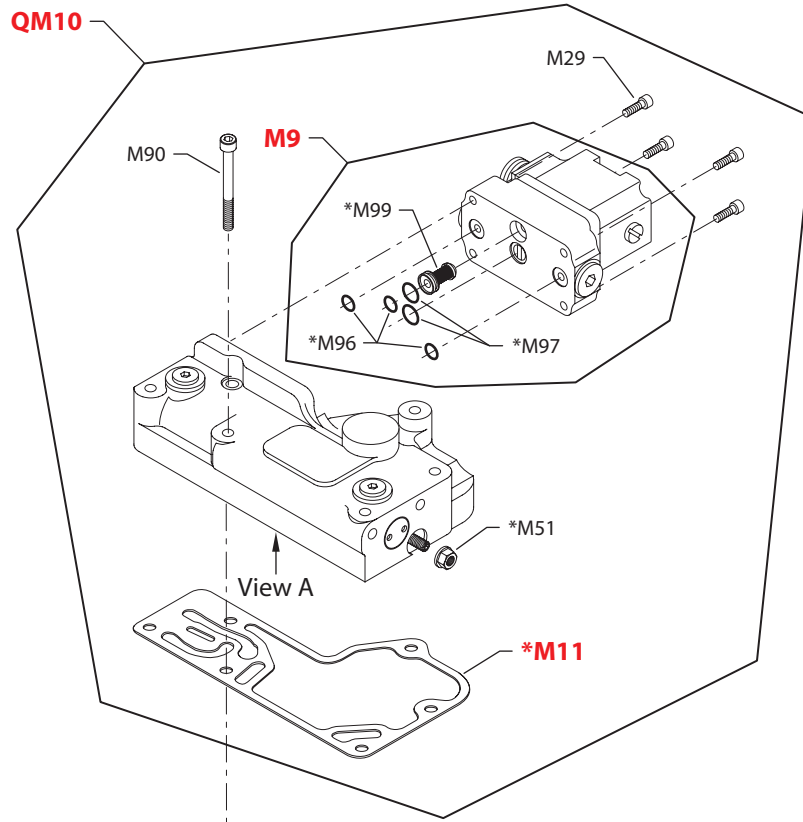
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
KK	M9	98-37		MCV116G4211	PCP, Packard connector	1
	M11	98-37		8800923	Control gasket	1
	M14	98-37		11070306	Feedback link (SB-2013-011)	1
	M29	98-37		K07067	Screw	4
	M51	98-37		505412 (9003509-0008)	Seal nut	1
	M90	98-37		692889 (9007314-0611)	Screw	6
	M96	98-37		011296 (9004105-0120)	O-ring	3
	M97	98-37		9004105-0130	O-ring	2
	M99	98-37		K08572	Filter assembly	1
	QM10	98-37		11013633	EDC3 kit, Packard connector	1
	QM210	98-37		11095724	Control seal kit	1
	KM	M9	98-49		MCV116G4213	PCP, Metripak connector
M11		98-49		8800923	Control gasket	1
M14		98-49		11070306	Feedback link (SB-2013-011)	1
M29		98-49		K07067	Screw	4
M51		98-49		505412 (9003509-0008)	Seal nut	1
M90		98-49		692889 (9007314-0611)	Screw	6
M96		98-49		011296 (9004105-0120)	O-ring	3
M97		98-49		9004105-0130	O-ring	2
M99		98-49		K08572	Filter assembly	1
QM10		98-49		8510241	EDC kit, Metripak connector	1
QM210		98-49		11095724	Control seal kit	1
KN		M9	95-51		MCV116A3501	PCP, MS connector, single coil
	M11	95-51		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	95-51	96-39	8200344	Feedback link (SB-1996-009)	1
	M29	95-51		K07067	Screw	4
	M51	95-51		505412 (9003509-0008)	Seal nut	1
	M90	95-51		692889 (9007314-0611)	Screw	6
	M96	95-51		011296 (9004105-0120)	O-ring	3
	M97	95-51		9004105-0130	O-ring	2
	M99	95-51		K08572	Filter assembly	1
	QM10	95-51		8510209	EDC3 kit, MS connector, single coil	1
	QM210	95-51		11095724	Control seal kit	1
KP	M9	95-26		MCV116G4204	PCP, Weather-pack connector, dual coil	1
	M11	95-26		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	95-26	96-39	8200344	Feedback link (SB-1996-009)	1
	M29	95-26		K07067	Screw	4
	M51	95-26		505412 (9003509-0008)	Seal nut	1
	M90	95-26		692889 (9007314-0611)	Screw	6
	M96	95-26		011296 (9004105-0120)	O-ring	3
	M97	95-26		9004105-0130	O-ring	2
	M99	95-26		K08572	Filter assembly	1
	QM10	95-26		8510118	EDC3 kit, Weather-pack connector, dual coil	1
	QM210	95-26		11095724	Control seal kit	1



Variable displacement pump

(KT, KU & KW)

A generic PCP is shown.



Possible orifice locations

E100 807E

* = included in control seal kit QM210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

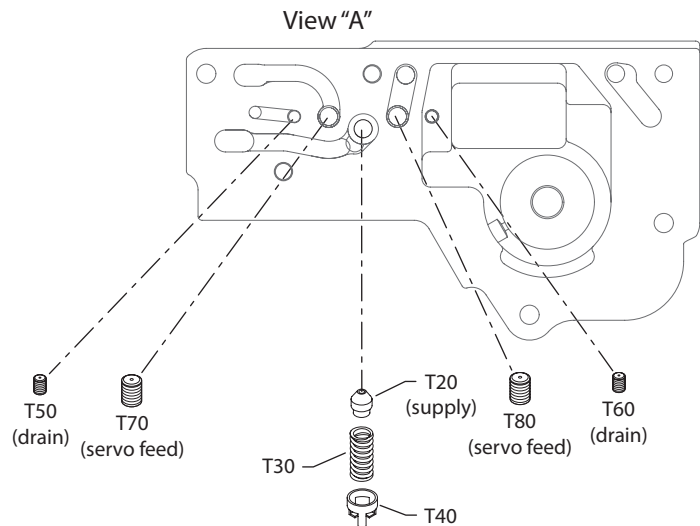
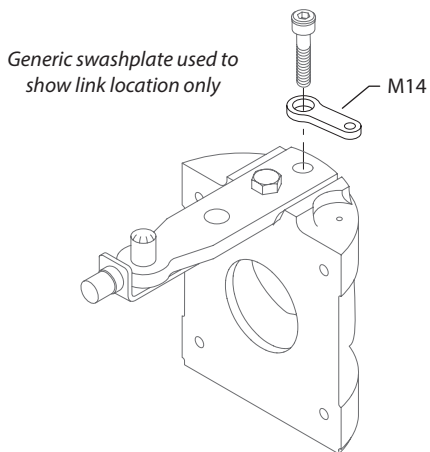
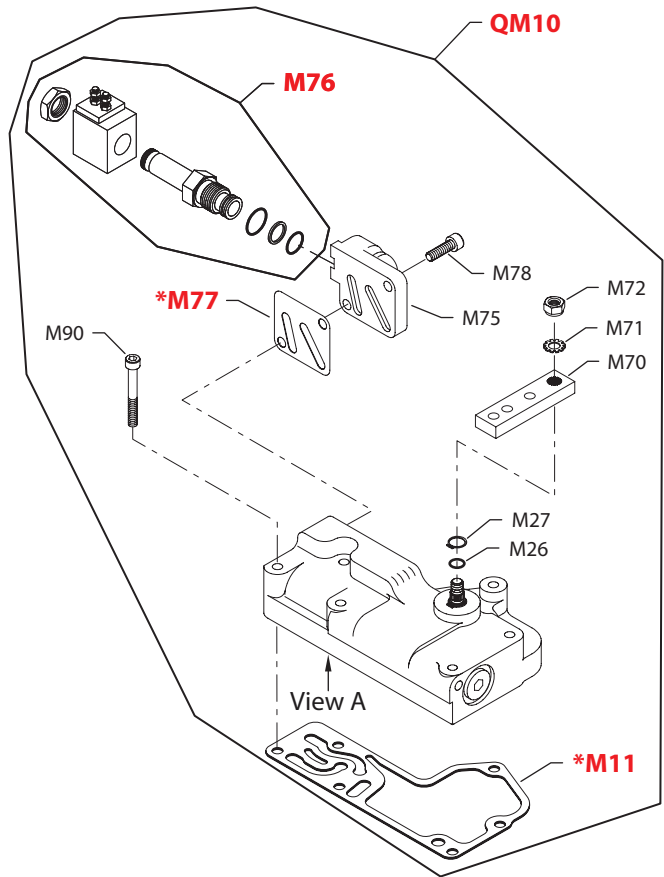
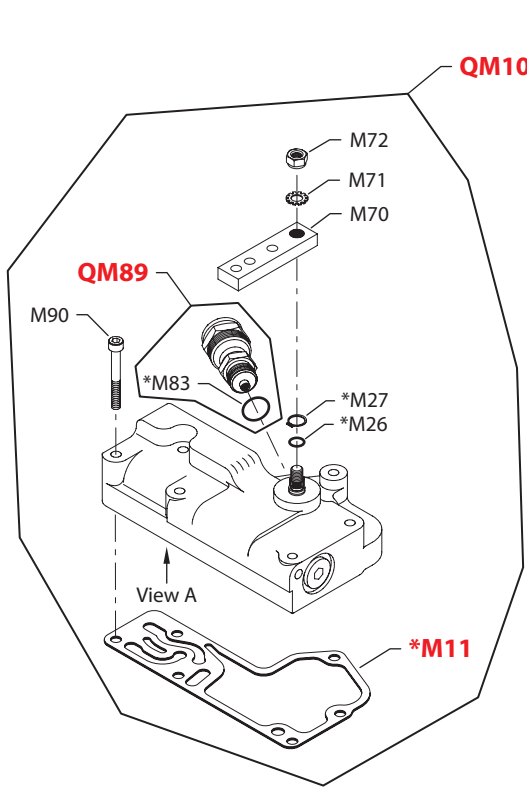
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
KT	M9	99-49		MCV116G4214	PCP, Duetsch connector	1
	M11	99-49		8800923	Control gasket	1
	M14	99-49		11070306	Feedback link	1
	M29	99-49		K07067	Screw	4
	M51	99-49		505412 (9003509-0008)	Seal nut	1
	M90	99-49		692889 (9007314-0611)	Screw	6
	M96	99-49		011296 (9004105-0120)	O-ring	3
	M97	99-49		9004105-0130	O-ring	2
	M99	99-49		K08572	Filter assembly	1
	QM10	99-49		8510321	EDC3 kit, Deutsch connector	1
	QM210	99-49		11095724	Control seal kit	1
	KU	M9	97-50		MCV116G4204	PCP, dual, Weather-Pac connector
M11		97-50		8800923	Control gasket	1
M14		97-50		11070306	Feedback link (SB-2013-011)	1
M29		97-50		K07067	Screw	4
M51		97-50		505412 (9003509-0008)	Seal nut	1
M90		97-50		692889 (9007314-0611)	Screw	6
M96		97-50		011296 (9004105-0120)	O-ring	3
M97		97-50		9004105-0130	O-ring	2
M99		97-50		K08572	Filter assembly	1
QM10		97-50		11020566	EDC3 kit, dual, Weather-Pac connector	1
QM210		97-50		11095724	Control seal kit	1
KW		M9	97-50		MCV116G4201	PCP, MS connector
	M11	97-50		8800923	Control gasket	1
	M14	97-50		11070306	Feedback link (SB-2013-011)	1
	M29	97-50		K07067	Screw	4
	M51	97-50		505412 (9003509-0008)	Seal nut	1
	M90	97-50		692889 (9007314-0611)	Screw	6
	M96	97-50		011296 (9004105-0120)	O-ring	3
	M97	97-50		9004105-0130	O-ring	2
	M99	97-50		K08572	Filter assembly	1
	QM10	97-50		11099899	EDC3 kit, MS connector	1
	QM210	97-50		11095724	Control seal kit	1



Variable displacement pump

(LE)

(LG)



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E100 862E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

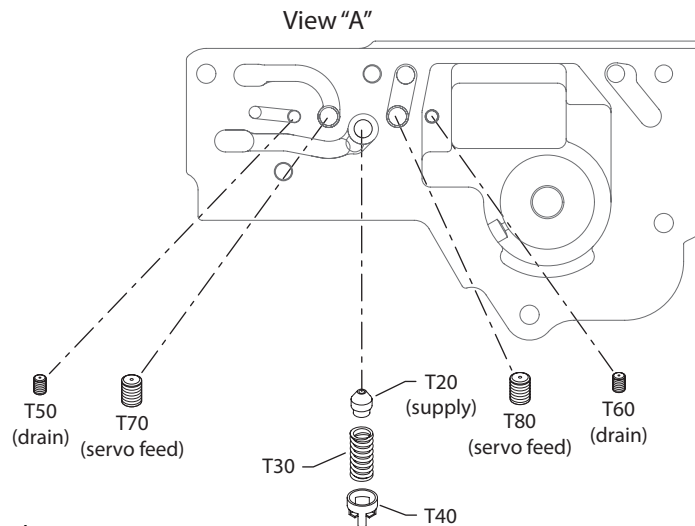
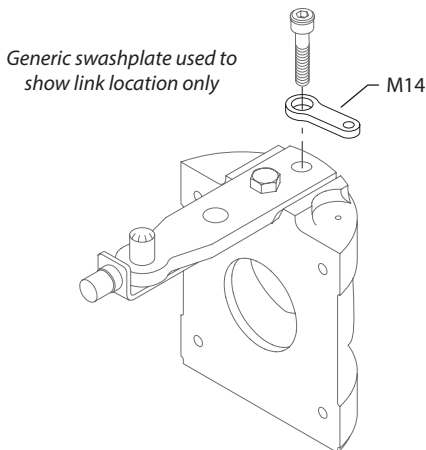
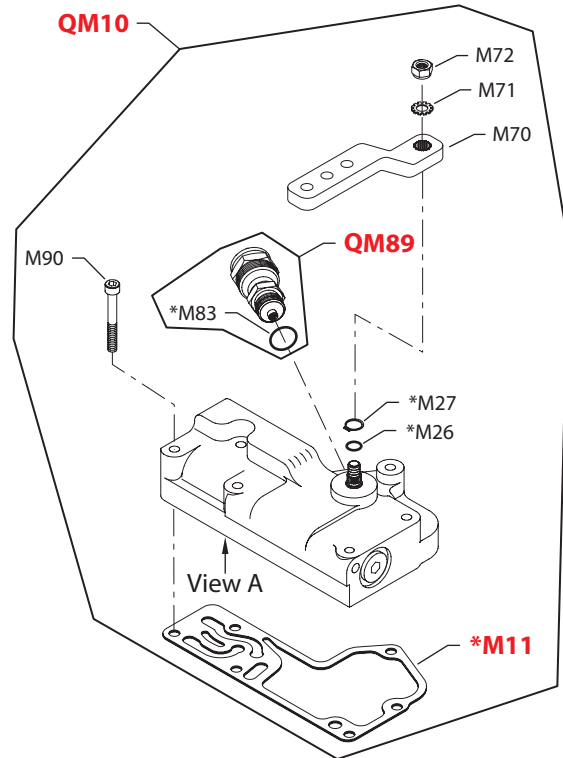
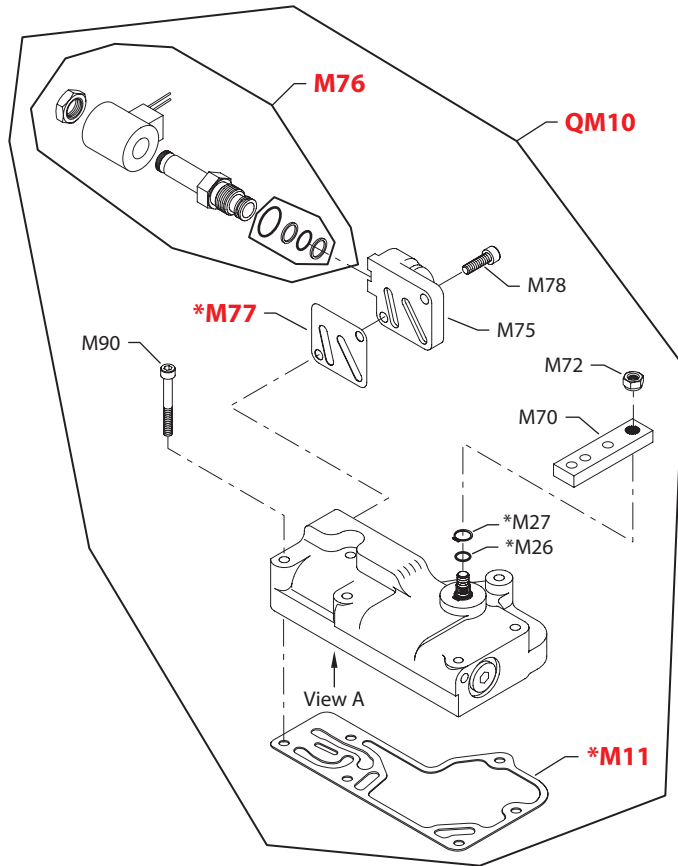
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
LE	M11	01-07		8800923	Control gasket	1
	M14	01-07		11070306	Feedback link	1
	M26	01-07		144725 (9004105-0110)	O-ring	1
	M27	01-07		042507 (9006300-0044)	Retaining ring	1
	M70	01-07		9800916	Control handle	1
	M71	01-07		689018 (9009660-3100)	Toothlock washer	1
	M72	01-07		040642 (9003513-0800)	Nut	1
	M83	01-07		001131 (9004201-5000)	O-ring	1
	M90	01-07		692889 (9007314-0611)	Screw	6
	QM10	01-07		8510291	MDC kit, high force neutral start switch	1
	QM89	01-07		8510316	Neutral start switch kit, high force	1
	QM210	01-07		11100031	Control seal kit	1
	LG	M11	98-42		8800923	Control gasket
M14		98-42		11070306	Feedback link	1
M26		98-42		144725 (9004105-0110)	O-ring	1
M27		98-42		042507 (9006300-0044)	Retaining ring	1
M70		98-42		9800916	Control handle	1
M71		98-42		689018 (9009660-3100)	Toothlock washer	1
M72		98-42		040642 (9003513-0800)	Nut	1
M75		98-42		505022	Control manifold	1
M76		98-42		11127986	Solenoid valve assembly, 2-pole, 12 volt	1
M77		98-42		8800882	Manifold gasket	1
M78		98-42		693341 (9007314-0606)	Screw	2
M90		98-42		692889 (9007314-0611)	Screw	6
QM10		98-42		11015108	MDC kit, 2-pole, 12 volt	1
QM210		98-42		11100031	Control seal kit	1



Variable displacement pump

(LR)

(LS)



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 113E

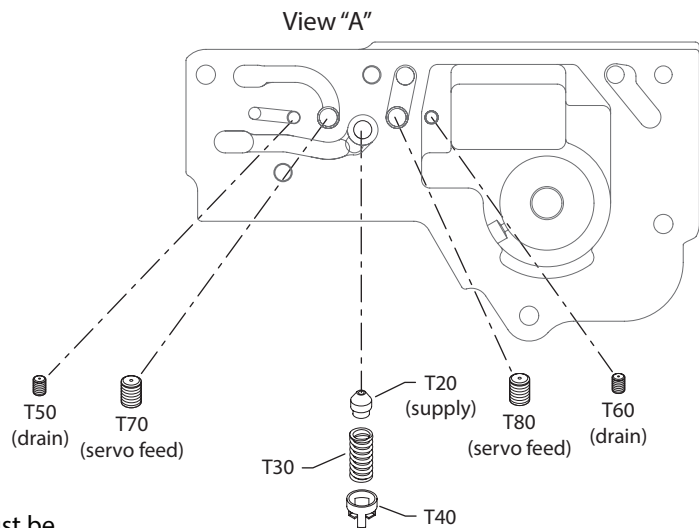
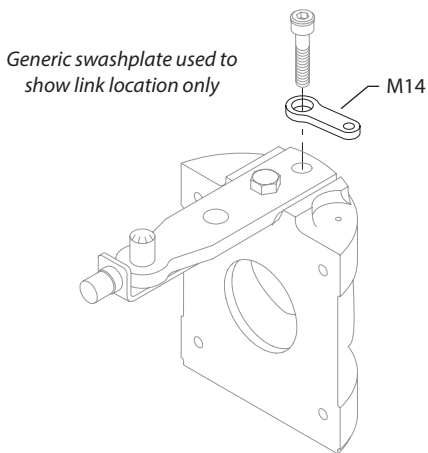
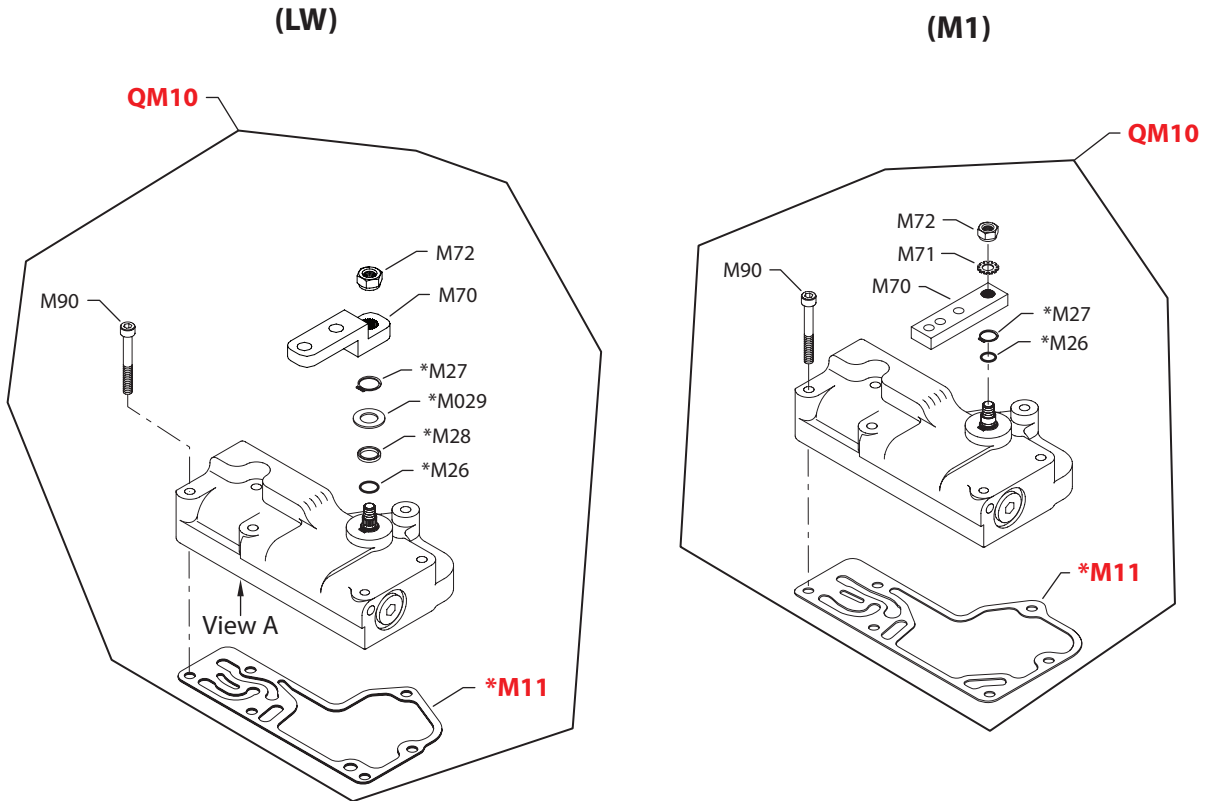
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
LR	M11	04-50		8800923	Control gasket	1
	M14	04-50		11070306	Feedback link	1
	M26	04-50		144725 (9004105-0110)	O-ring	1
	M27	04-50		042507 (9006300-0044)	Retaining ring	1
	M70	04-50		9800916	Control handle	1
	M72	04-50		040642 (9003513-0800)	Nut	1
	M75	04-50		505022	Control manifold	1
	M76	04-50		521242	Solenoid valve, 12 volt, 2-pole	1
	M77	04-50		8800882	Manifold gasket	1
	M78	04-50		693341 (9007314-0606)	Screw	2
	M90	04-50		692889 (9007314-0611)	Screw	6
	QM10	04-50		8510376	MDC kit, w/2-pole 12v solenoid	1
	QM210	04-50		11099998	Control seal kit	1
	LS	M11	04-46		8800923	Control gasket
M14		04-46		11070306	Feedback link	1
M26		04-46		144725 (9004105-0110)	O-ring	1
M27		04-46		042507 (9006300-0044)	Retaining ring	1
M70		04-46		8801339	Control handle, offset	1
M71		04-46		689018 (9009660-3100)	Toothlock washer	1
M72		04-46		040642 (9003513-0800)	Nut	1
M83		04-46		001131 (9004201-5000)	O-ring	1
M90		04-46		692889 (9007314-0611)	Screw	6
QM10		04-46		8510360	MDC kit, with high force neutral start switch	1
QM89		04-46		8510316	Neutral start switch kit, high force, Weather-pack	1
QM210		04-46		11096274	Control seal kit	1



Variable displacement pump



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

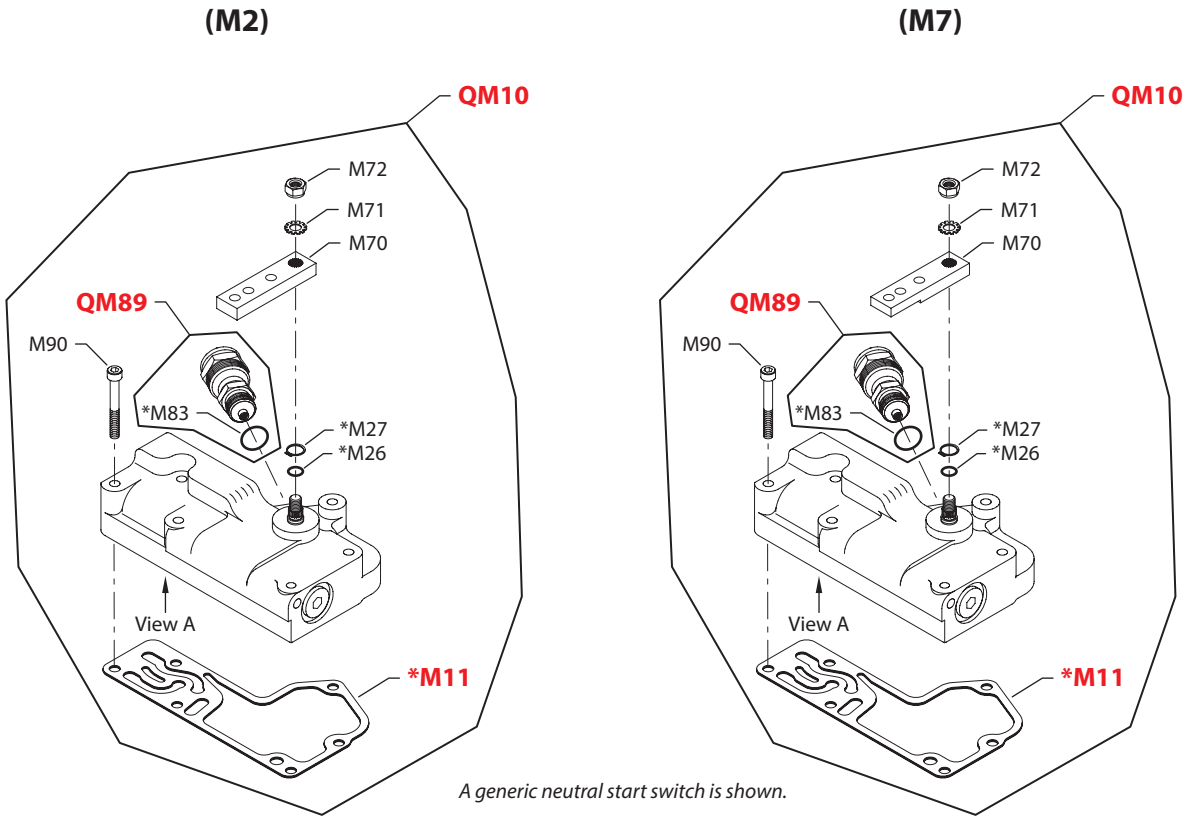
E103 113E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

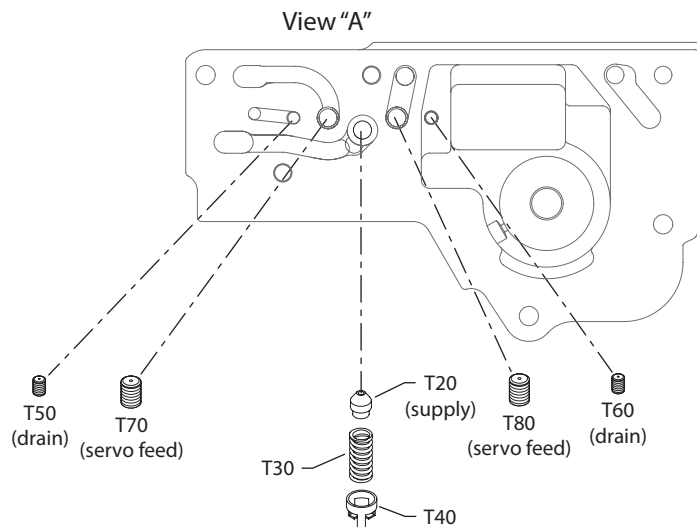
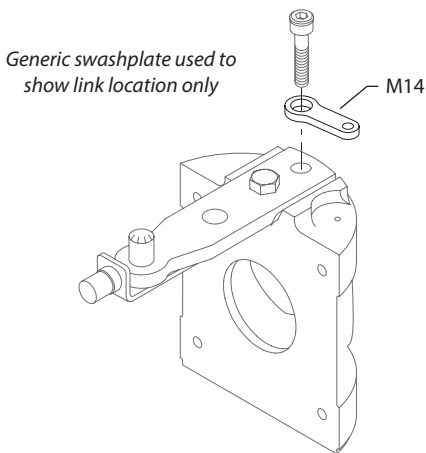
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
LW	M11	12-03		8800923	Control gasket	1
	M14	12-03		11070306	Feedback link (SB-2013-011)	1
	M26	12-03		144725 (9004105-0110)	O-ring	1
	M27	12-03		042507	Retaining ring	1
	M28	12-03		510690	Seal	1
	M029	12-03		512047	Washer	1
	M70	12-03		9800916	Control handle	1
	M72	12-03		040642 (9003513-0800)	Nut	1
	M90	12-03		692889 (9007314-0611)	Screw	6
	QM10	12-03		11107925	MDC kit, 2-position solenoid valve, 24v	1
	QM210	12-03		11110668	Control seal kit	1
M1	M11	95-37		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	95-37	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	95-37		144725 (9004105-0110)	O-ring	1
	M27	95-37		042507 (9006300-0044)	Retaining ring	1
	M70	95-37		9800916	Control handle	1
	M71	95-37		689018 (9009660-3100)	Toothlock washer	1
	M72	95-37		040642 (9003513-0800)	Nut	1
	M90	95-37		692889 (9007314-0611)	Screw	6
	QM10	95-37		11014378	MDC kit, brass sleeve	1
	QM210	95-37		11096274	Control seal kit	1



Variable displacement pump



A generic neutral start switch is shown.



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 114E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

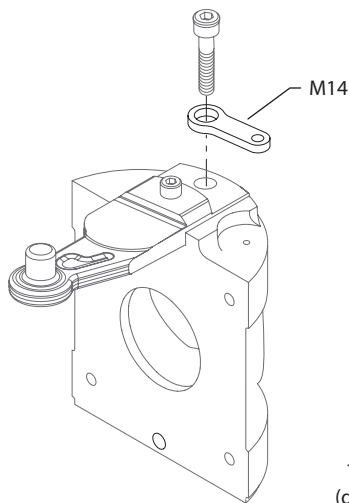
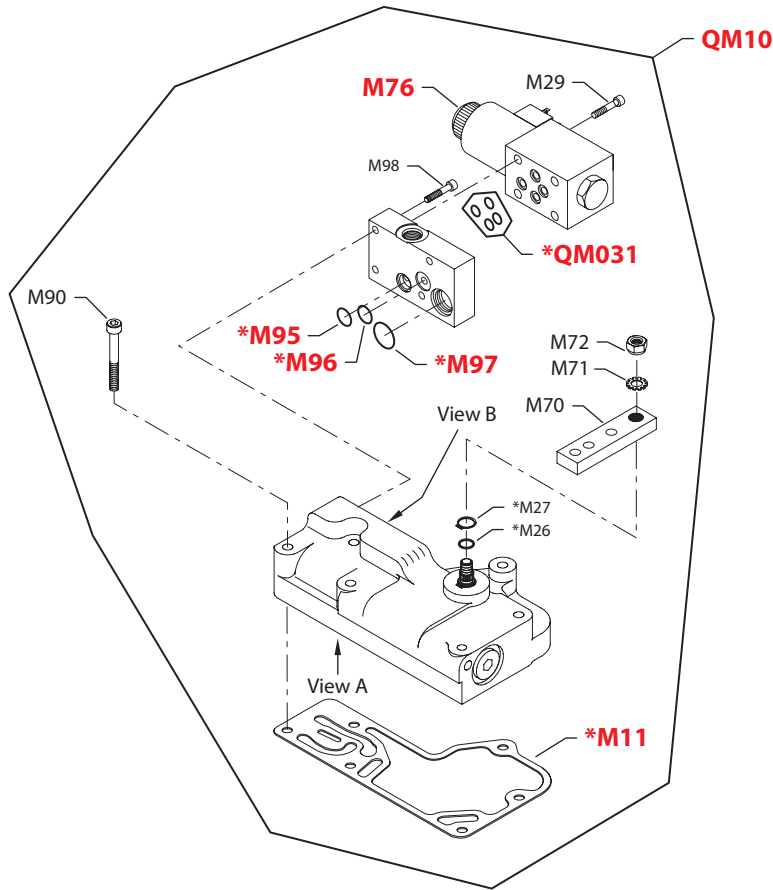

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M2	M11	95-37		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	95-37	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	95-37		144725 (9004105-0110)	O-ring	1
	M27	95-37		042507 (9006300-0044)	Retaining ring	1
	M70	95-37		9800916	Control handle	1
	M71	95-37		689018 (9009660-3100)	Toothlock washer	1
	M72	95-37		040642 (9003513-0800)	Nut	1
	M83	95-37		001131 (9004201-5000)	O-ring	1
	M90	95-37		692889 (9007314-0611)	Screw	6
	QM10	95-37		8510112	MDC kit, with neutral start switch, brass sleeve	1
	QM89	95-37		80020540	Neutral start switch kit	1
	QM210	95-37		11096274	Control seal kit	1
	M7	M11	11-04		8800923	Control gasket
M14		11-04		11070306	Feedback link (SB-2013-011)	1
M26		11-04		144725 (9004105-0110)	O-ring	1
M27		11-04		042507 (9006300-0044)	Retaining ring	1
M70		11-04		8801260	Control handle	1
M71		11-04		689018 (9009660-3100)	Toothlock washer	1
M72		11-04		040642 (9003513-0800)	Nut	1
M83		11-04		001131 (9004201-5000)	O-ring	1
M90		11-04		692889 (9007314-0611)	Screw	6
QM10		11-04		11099070	MDC kit, with neutral start switch	1
QM89		11-04		709014 (8510170)	Neutral start switch kit	1
QM210		11-04		11096274	Control seal kit	1



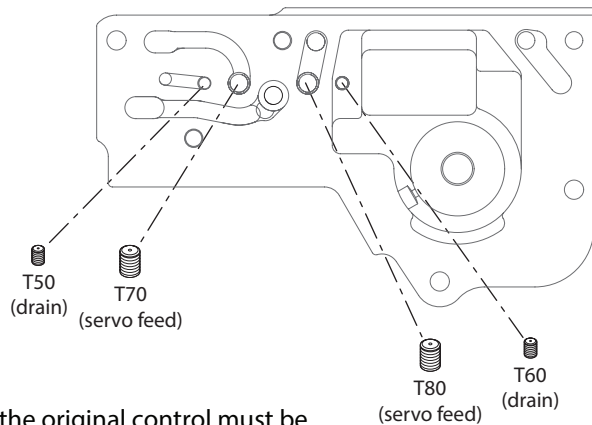
Variable displacement pump

(M8)

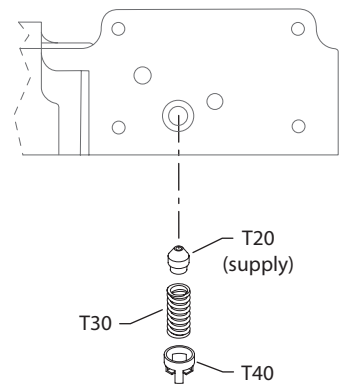


Generic swashplate used to show link location only

View "A"



View "B"



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 080E

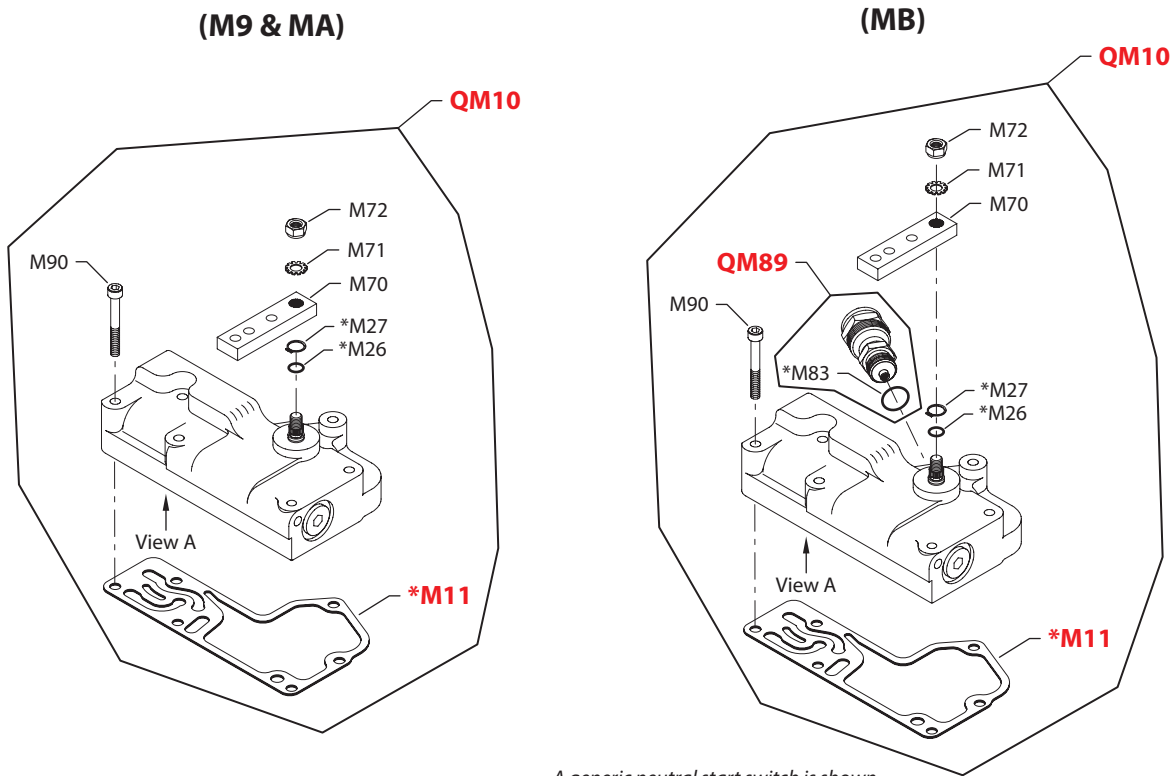
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

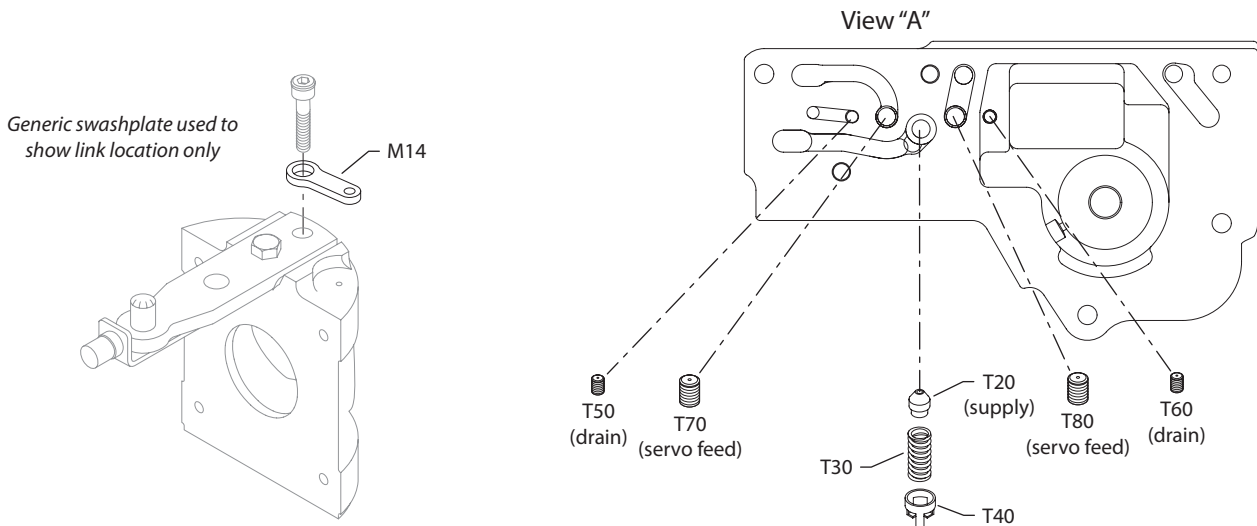
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M8	M11	04-38		8800923	Control gasket	1
	M14	04-38		11070306	Feedback link	1
	M26	04-38		144725 (9004105-0110)	O-ring	1
	M27	04-38		042507 (9006300-0044)	Retaining ring	1
	M29	04-38		9007315-0507	Screw	4
	M70	04-38		9800916	Control handle	1
	M71	04-38		689018 (9009660-3100)	Toothlock washer	1
	M72	04-38		040642 (9003513-0800)	Nut	1
	M76	04-38		508009	Solenoid valve	1
	M90	04-38		692889 (9007314-0611)	Screw	6
	M95	04-38		9004105-0140	O-ring	1
	M96	04-38		9004105-0140	O-ring	1
	M97	04-38		9004105-0190	O-ring	1
	M98	04-38		9007315-0505	Screw	4
	QM10	04-38		11015110	MDC kit, w/2-position solenoid valve	1
	QM031	04-38		11099647	Solenoid seal kit	1
	QM210	04-38		11099978	Control seal kit	1



Variable displacement pump



A generic neutral start switch is shown.



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 081E

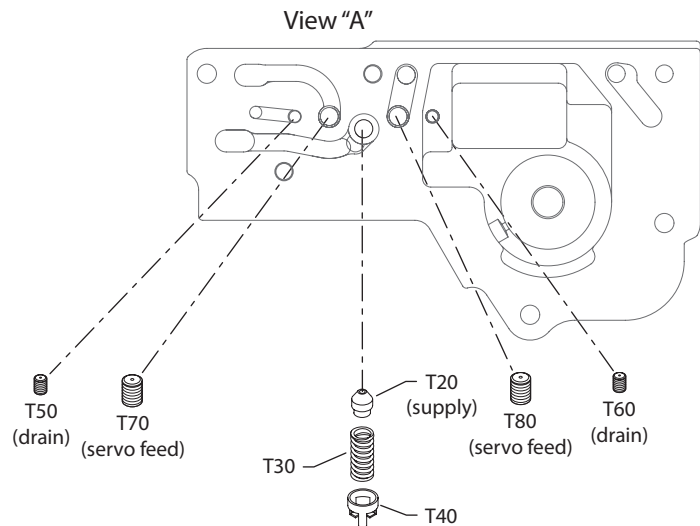
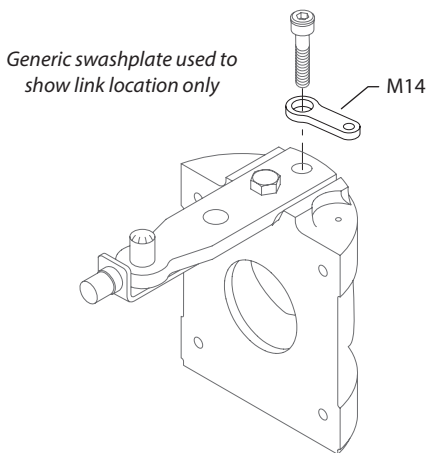
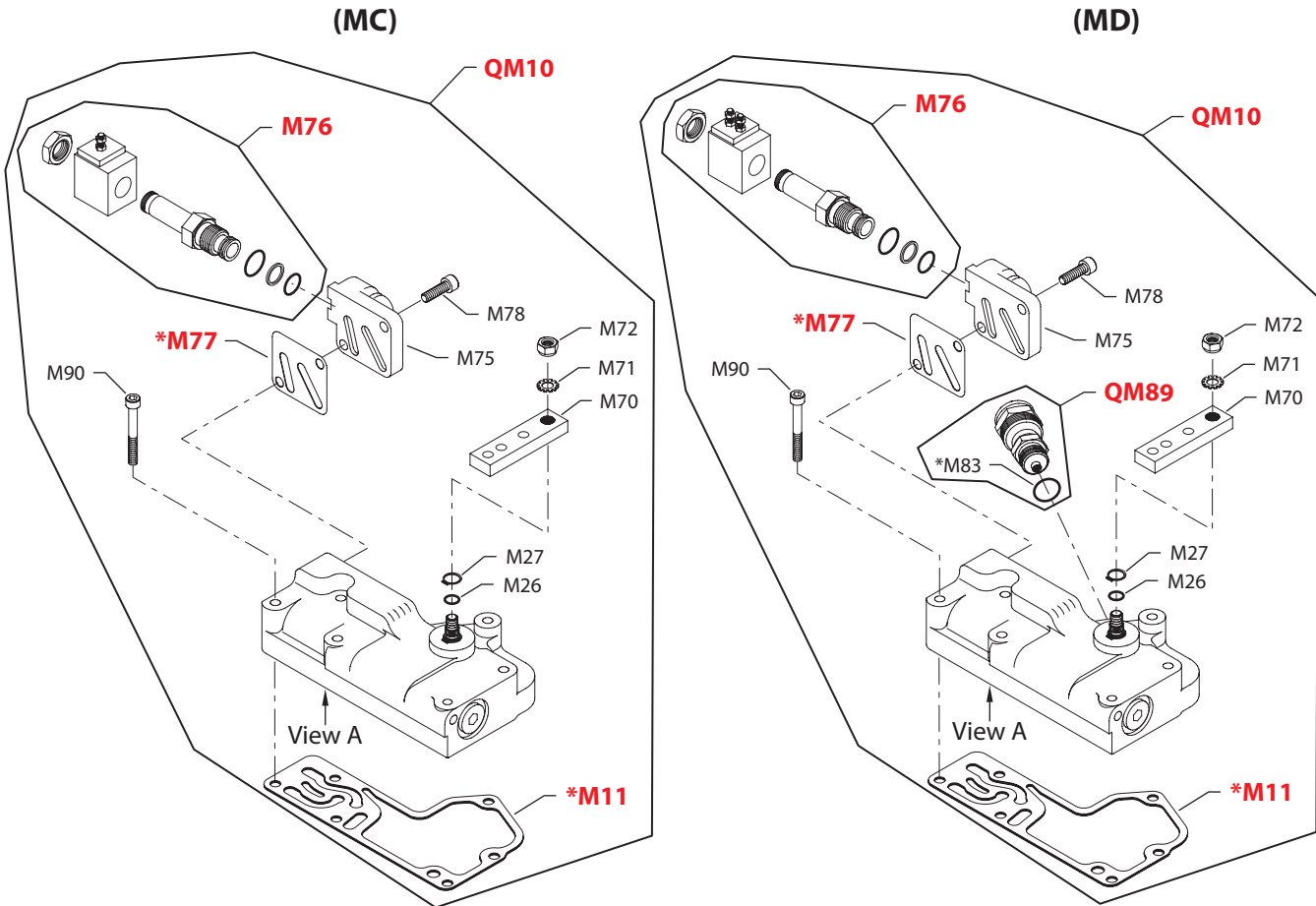
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M9	M11	91-07		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	91-07	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	91-07		144725 (9004105-0110)	O-ring	1
	M27	91-07		042507 (9006300-0044)	Retaining ring	1
	M70	91-07		9800916	Control handle	1
	M71	91-07		689018 (9009660-3100)	Toothlock washer	1
	M72	91-07		040642 (9003513-0800)	Nut	1
	M90	91-07		692889 (9007314-0611)	Screw	6
	QM10	91-07		8510288	MDC kit	1
	QM210	91-07		11096274	Control seal kit	1
MA	M11	87-02		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	87-02		144725 (9004105-0110)	O-ring	1
	M27	87-02		042507 (9006300-0044)	Retaining ring	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		689018 (9009660-3100)	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M90	87-02		692889 (9007314-0611)	Screw	6
	QM10	87-02		8102M0MA-A	MDC kit	1
	QM210	87-02		11096274	Control seal kit	1
MB	M11	87-02		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	87-02		144725 (9004105-0110)	O-ring	1
	M27	87-02		042507 (9006300-0044)	Retaining ring	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		689018 (9009660-3100)	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M83	87-02		001131 (9004201-5000)	O-ring	1
	M90	87-02		692889 (9007314-0611)	Screw	6
	QM10	87-02		8102M0MB-A	MDC kit with neutral start switch	1
	QM89	87-02		80020540	Neutral start switch kit	1
	QM210	87-02		11096274	Control seal kit	1



Variable displacement pump



NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

Possible orifice locations

* = included in control seal kit QM210

E103 082E

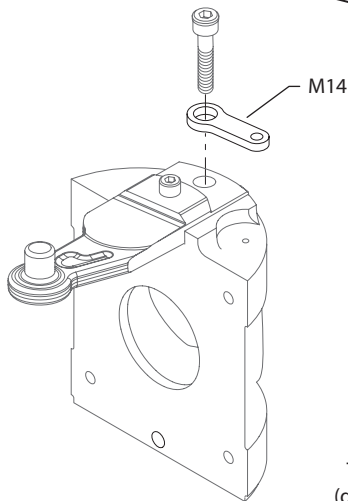
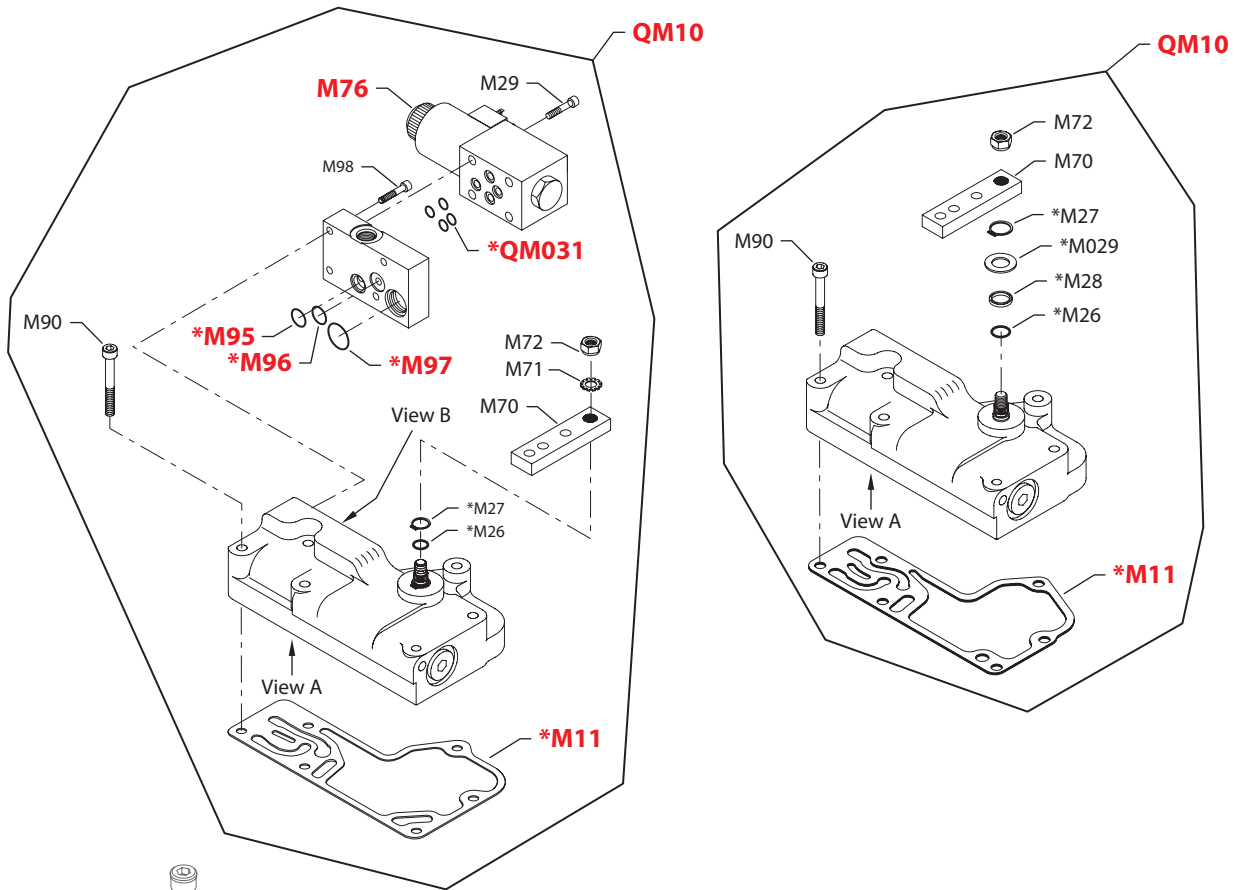
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

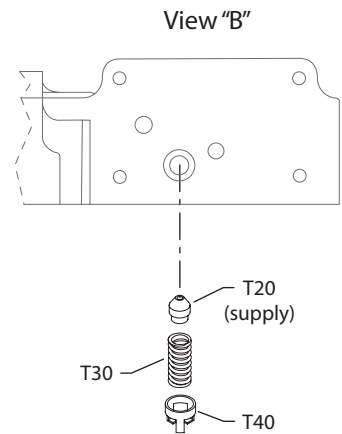
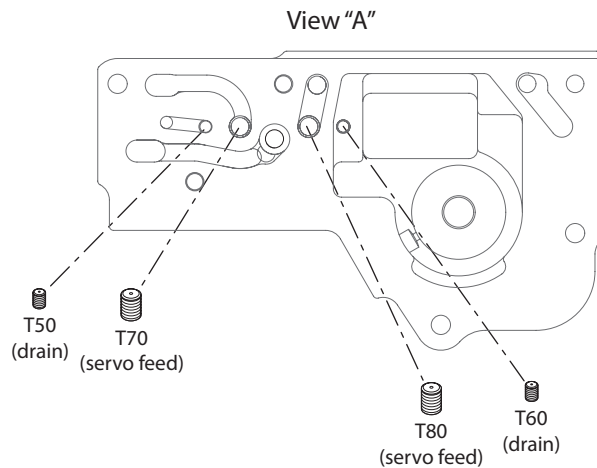
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
MC	M11	87-02		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	87-02		144725 (9004105-0110)	O-ring	1
	M27	87-02		042507 (9006300-0044)	Retaining ring	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		689018 (9009660-3100)	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M75	87-02		505022	Control manifold (SB-1995-003)	1
	M76	87-02		11127987	Solenoid valve, 12 volt, single pole	1
	M77	87-02		8800882	Manifold gasket	1
	M78	95-10		693341 (9007314-0606)	Screw (SB-1995-003)	2
	M78	87-02	95-09	041160 (9007314-0605)	Screw	2
	M90	87-02		692889 (9007314-0611)	Screw	6
	QM10	87-02		8102M0MC-A	MDC kit w/12 volt solenoid, single pole	1
	QM210	87-02		11100031	Control seal kit	1
	MD	M11	02-16		8800923	Control gasket
M14		02-16		11070306	Feedback link	1
M26		02-16		144725 (9004105-0110)	O-ring	1
M27		02-16		042507 (9006300-0044)	Retaining ring	1
M70		02-16		9800916	Control handle	1
M71		02-16		689018 (9009660-3100)	Toothlock washer	1
M72		02-16		040642 (9003513-0800)	Nut	1
M75		02-16		505022	Control manifold	1
M76		02-16		11127986	Solenoid valve, 12v, double pole	1
M77		02-16		8800882	Manifold gasket	1
M78		02-16		693341 (9007314-0606)	Screw	2
M83		02-16		001131 (9004201-5000)	O-ring	1
M90		02-16		692889 (9007314-0611)	Screw	6
QM10		02-16		8102M0MD-A	MDC kit, w/double pole 12v solenoid	1
QM89		02-16		8510027	Neutral start switch kit, high force, Weather-pack	1
QM210		02-16		11100031	Control seal kit	1



Variable displacement pump



Generic swashplate used to show link location only



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 115E

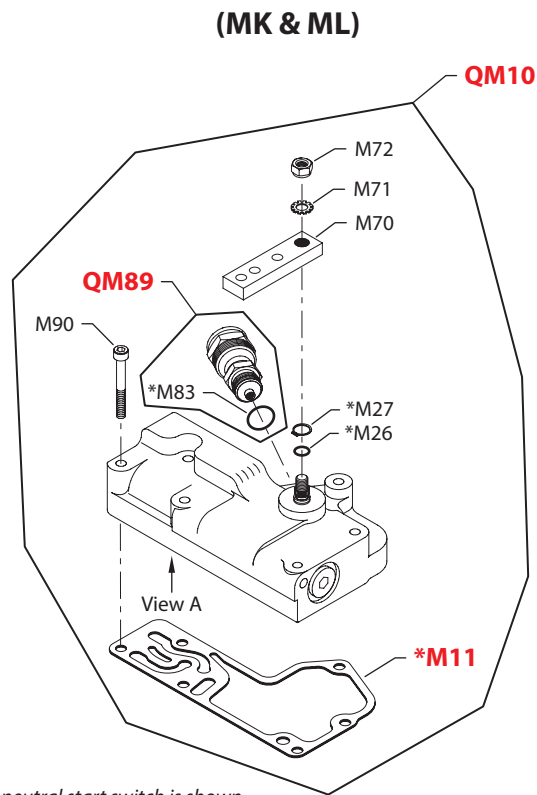
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

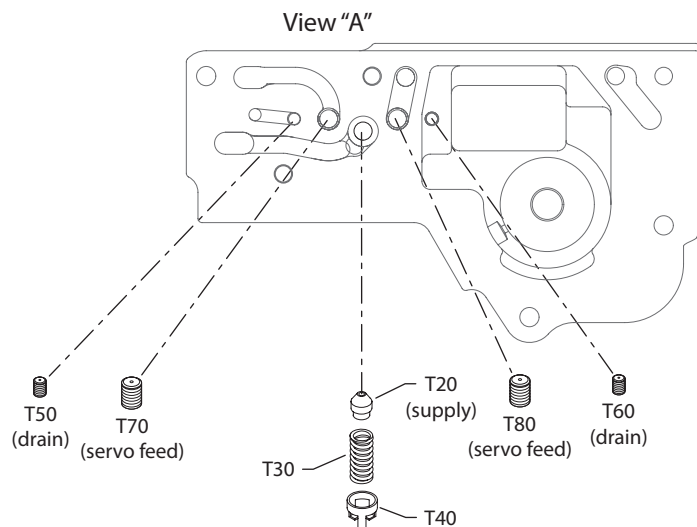
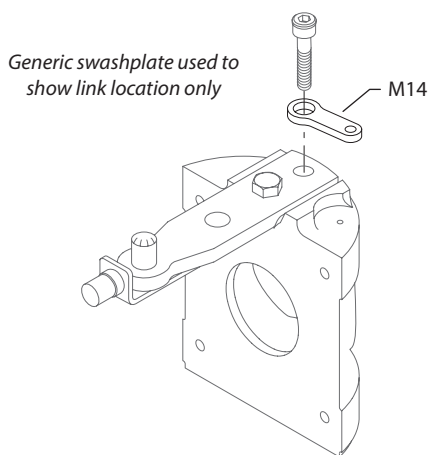
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
ME	M11	87-02		8800923	Control gasket	1	
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1	
	M26	87-02		144725 (9004105-0110)	O-ring	1	
	M27	87-02		042507 (9006300-0044)	Retaining ring	1	
	M29	87-02		9007315-0510	Screw	4	
	M70	87-02		9800916	Control handle	1	
	M71	87-02		689018 (9009660-3100)	Toothlock washer	1	
	M72	87-02		040642 (9003513-0800)	Nut	1	
	M76	87-02		519357	Solenoid valve, 12 volt	1	
	M90	87-02		692889 (9007314-0611)	Screw	6	
	M95	87-02		056713 (9004105-0140)	O-ring	1	
	M96	87-02		056713 (9004105-0140)	O-ring	1	
	M97	87-02		544742 (9004105-0190)	O-ring	1	
	M98	87-02		9007315-0505	Screw	4	
	QM10	87-02		8102M0ME-A	MDC kit w/2-position solenoid valve, 12 volt	1	
	QM031	87-02		11099647	Solenoid seal kit	1	
	QM210	87-02		11099978	Control seal kit	1	
	MH	M11	87-02		8800923	Control gasket	1
		M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
M14		87-02	96-39	8200344	Feedback link (SB-1996-009)	1	
M26		87-02		144725 (9004105-0110)	O-ring	1	
M27		87-02		042507	Retaining ring	1	
M28		87-02		510690	Shaft seal	1	
M029		87-02		512047	Washer	1	
M70		87-02		9800916	Control handle	1	
M72		87-02		040642 (9003513-0800)	Nut	1	
M90		87-02		692889 (9007314-0611)	Screw	6	
QM10		87-02		8510282	MDC kit	1	
QM210		87-02		11096274	Control seal kit	1	



Variable displacement pump



A generic neutral start switch is shown.



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 079E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

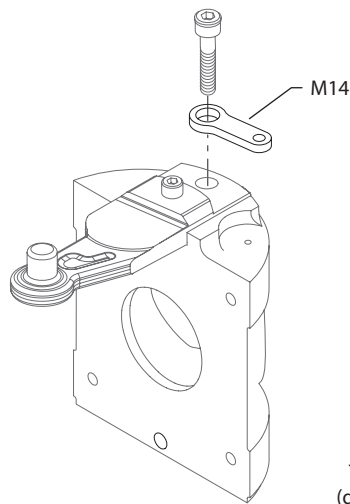
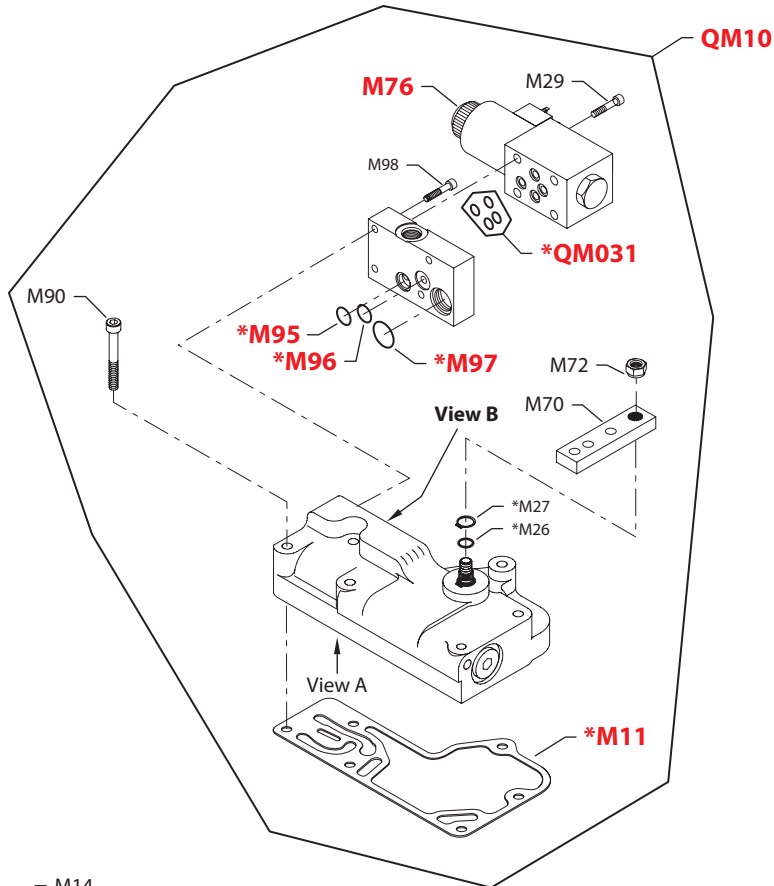

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
MK	M11	87-02		8800923	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	87-02	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	87-02		144725 (9004105-0110)	O-ring	1
	M27	87-02		042507 (9006300-0044)	Retaining ring	1
	M70	87-02		9800916	Control handle	1
	M71	87-02		689018 (9009660-3100)	Toothlock washer	1
	M72	87-02		040642 (9003513-0800)	Nut	1
	M83	87-02		001131 (9004201-5000)	O-ring	1
	M90	87-02		692889 (9007314-0611)	Screw	6
	QM10	87-02		8102M0MK-A	MDC kit w/wide deadband, nss	1
	QM89	87-02		80020540	Neutral start switch kit	1
	QM210	87-02		11096274	Control seal kit	1
	ML	M11	87-02		8800923	Control gasket
M14		96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
M14		87-02	96-39	8200344	Feedback link (SB-1996-009)	1
M26		87-02		144725 (9004105-0110)	O-ring	1
M27		87-02		042507 (9006300-0044)	Retaining ring	1
M70		87-02		9800916	Control handle	1
M71		87-02		689018 (9009660-3100)	Toothlock washer	1
M72		87-02		040642 (9003513-0800)	Nut	1
M83		87-02		001131 (9004201-5000)	O-ring	1
M90		87-02		692889 (9007314-0611)	Screw	6
QM10		87-02		11015112	MDC kit w/wide deadband, high force nss	1
QM89		87-02		8510027	Neutral start switch kit, high force	1
QM210		87-02		11096274	Control seal kit	1



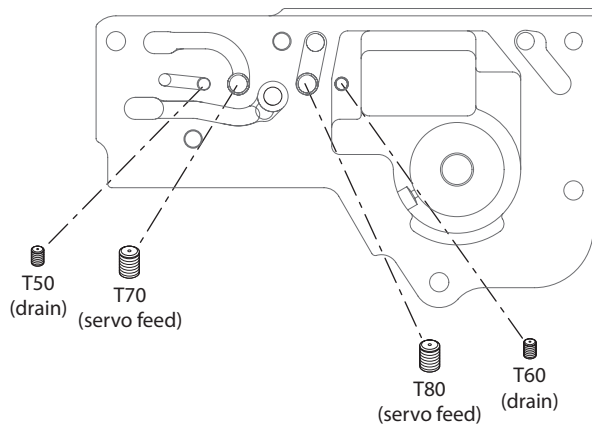
Variable displacement pump

(MN)

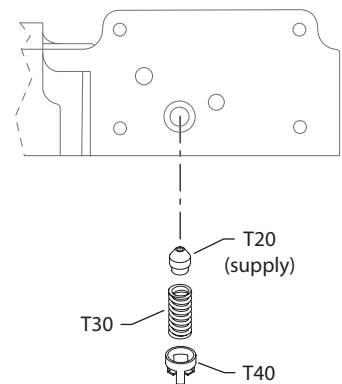


Generic swashplate used to show link location only

View "A"



View "B"



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 084E

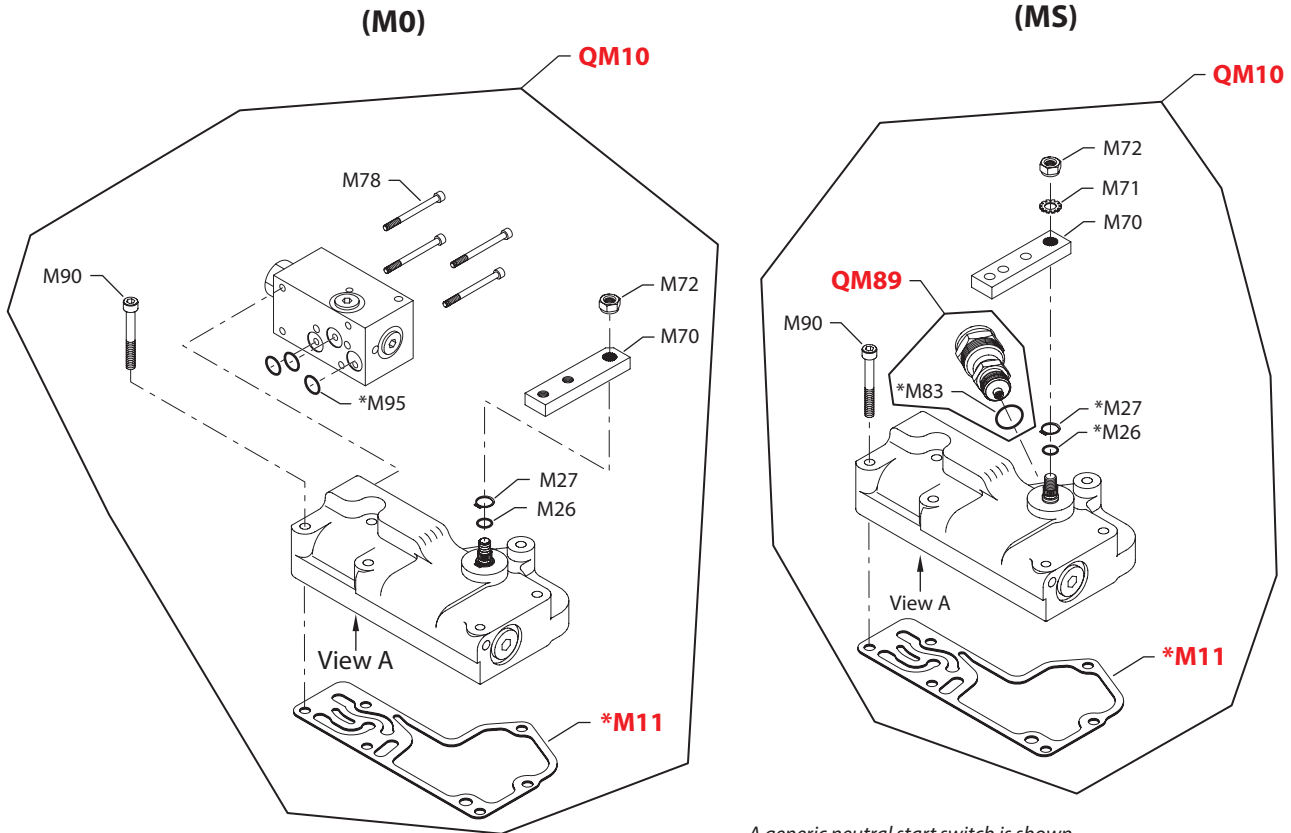
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

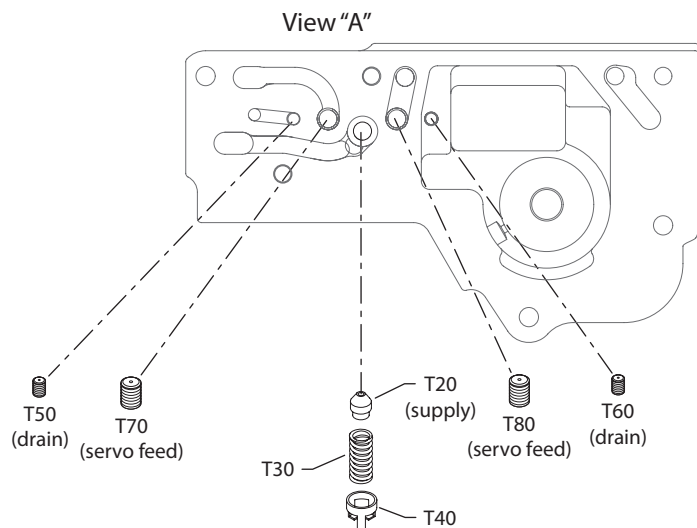
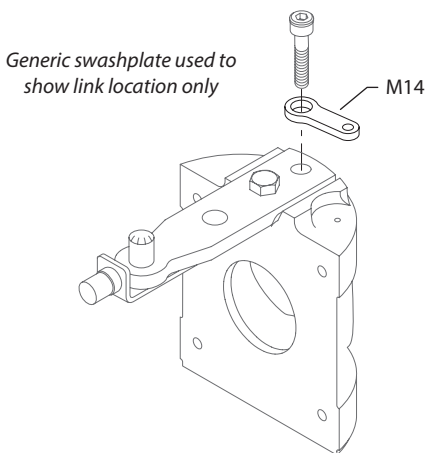
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
MN	M11	94-02		8800923	Control gasket	1
	M14	94-02		11070306	Feedback link	1
	M26	94-02		144725 (9004105-0110)	O-ring	1
	M27	94-02		042507 (9006300-0044)	Retaining ring	1
	M29	94-02		035592	Screw, M5 x 45	4
	M70	94-02		9800916	Control handle	1
	M72	94-02		040642 (9003513-0800)	Nut	1
	M76	94-02		519357	Solenoid valve, 12 volt	1
	M90	94-02		692889 (9007314-0611)	Screw	6
	M95	94-02		056713	O-ring	1
	M96	94-02		056713	O-ring	1
	M97	94-02		544742	O-ring	1
	M98	94-02		067686	Screw, M5 x 20	4
	QM10	94-02		11087557	MDC kit w/2-position solenoid	1
	QM031	94-02		11099647	Solenoid valve seal kit	1
	QM210	94-02		11099978	Control seal kit	1



Variable displacement pump



A generic neutral start switch is shown.



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 077E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

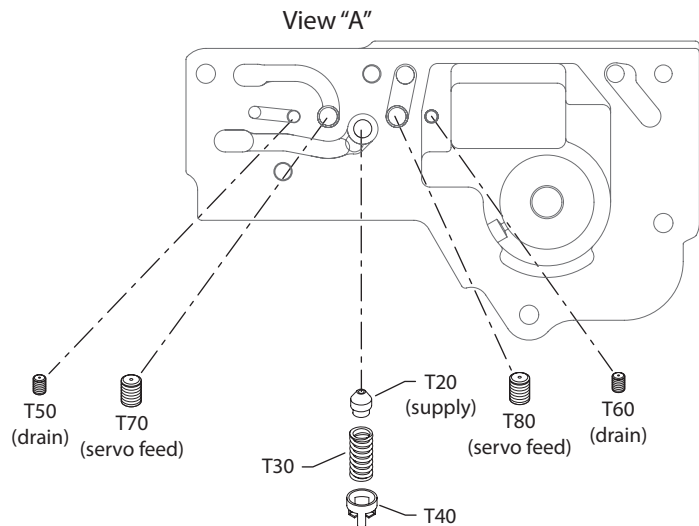
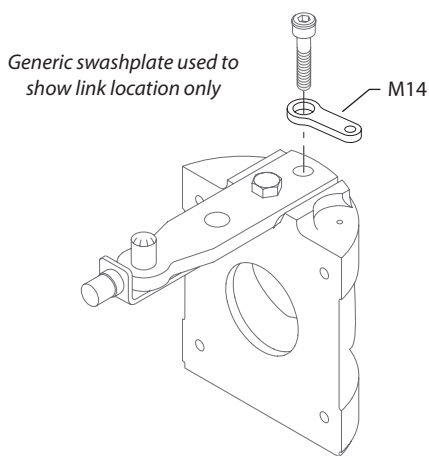
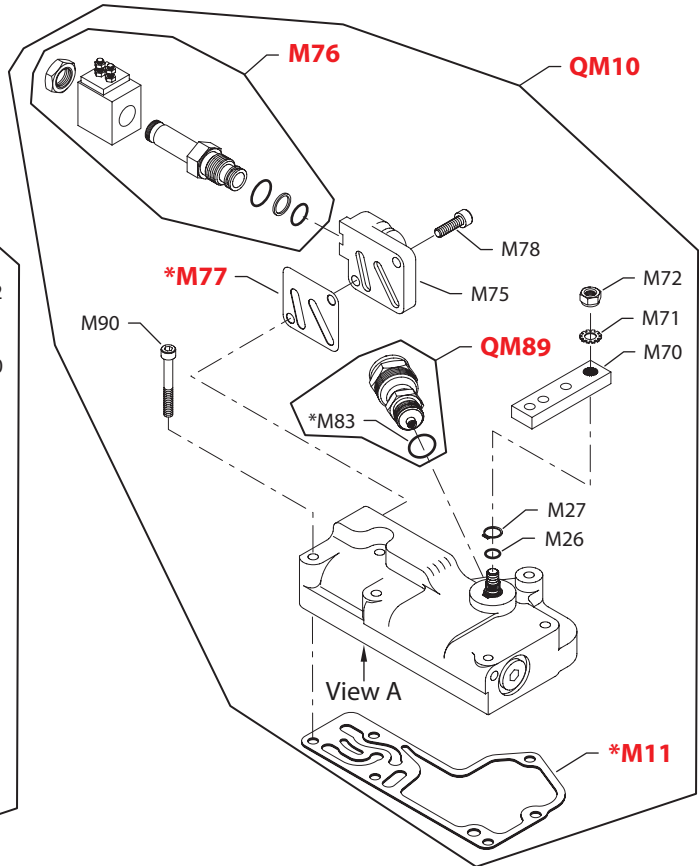
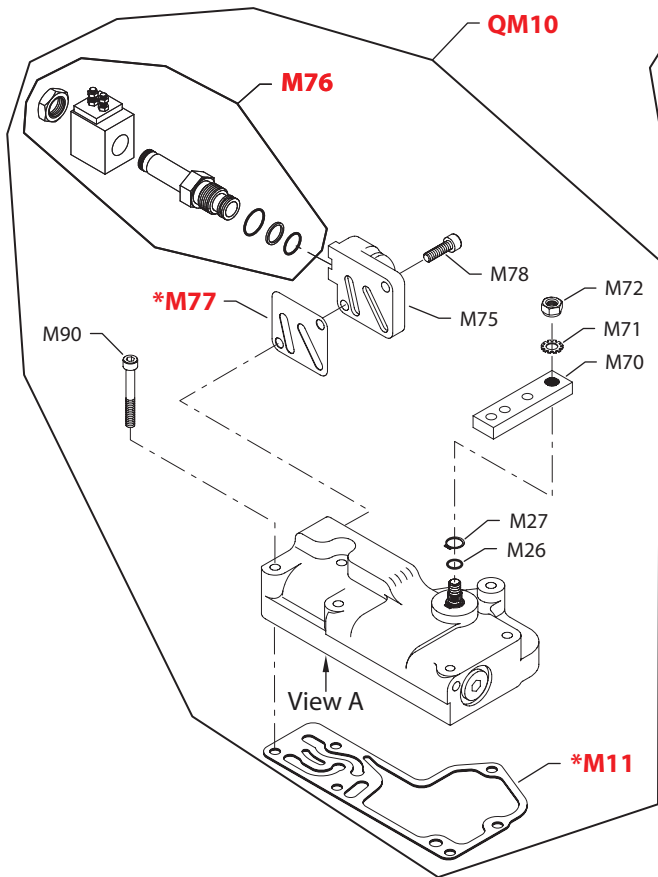
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M0	M11	96-24		8800923	Control gasket	1
	M14	96-24		11070306	Feedback link	1
	M26	96-24		144725 (9004105-0110)	O-ring	1
	M27	96-24		042507 (9006300-0044)	Retaining ring	1
	M70	96-24		9800916	Control handle	1
	M71	96-24		689018 (9009660-3100)	Toothlock washer	1
	M72	96-24		040642 (9003513-0800)	Nut	1
	M78	96-24		090159	Screw	4
	M90	96-24		692889 (9007314-0611)	Screw	6
	M95	96-24		011304 (9004104-0140)	O-ring	3
	QM10	96-24		11087558	MDC kit, reduce valve	1
	QM210	96-24		11099981	Control seal kit	1
MS	M11	01-07		8800923	Control gasket	1
	M14	01-07		11070306	Feedback link	1
	M26	01-07		144725 (9004105-0110)	O-ring	1
	M27	01-07		042507 (9006300-0044)	Retaining ring	1
	M70	01-07		9800916	Control handle	1
	M71	01-07		689018 (9009660-3100)	Toothlock washer	1
	M72	01-07		040642 (9003513-0800)	Nut	1
	M83	01-07		001131 (9004201-5000)	O-ring	1
	M90	01-07		692889 (9007314-0611)	Screw	6
	QM10	01-07		8510287	MDC kit, high force neutral start switch	1
	QM89	01-07		8510027	Neutral start switch kit, high force	1
	QM210	01-07		11096274	Control seal kit	1



Variable displacement pump

(MT)

(MU)



NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

Possible orifice locations

* = included in control seal kit QM210

E100 864E

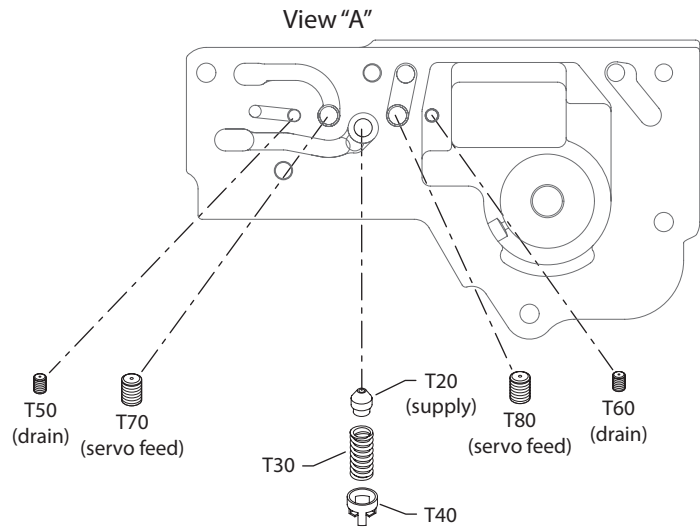
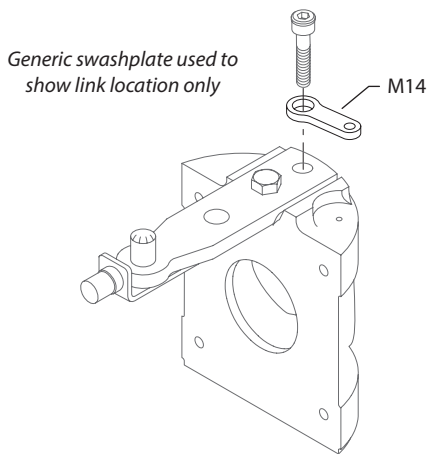
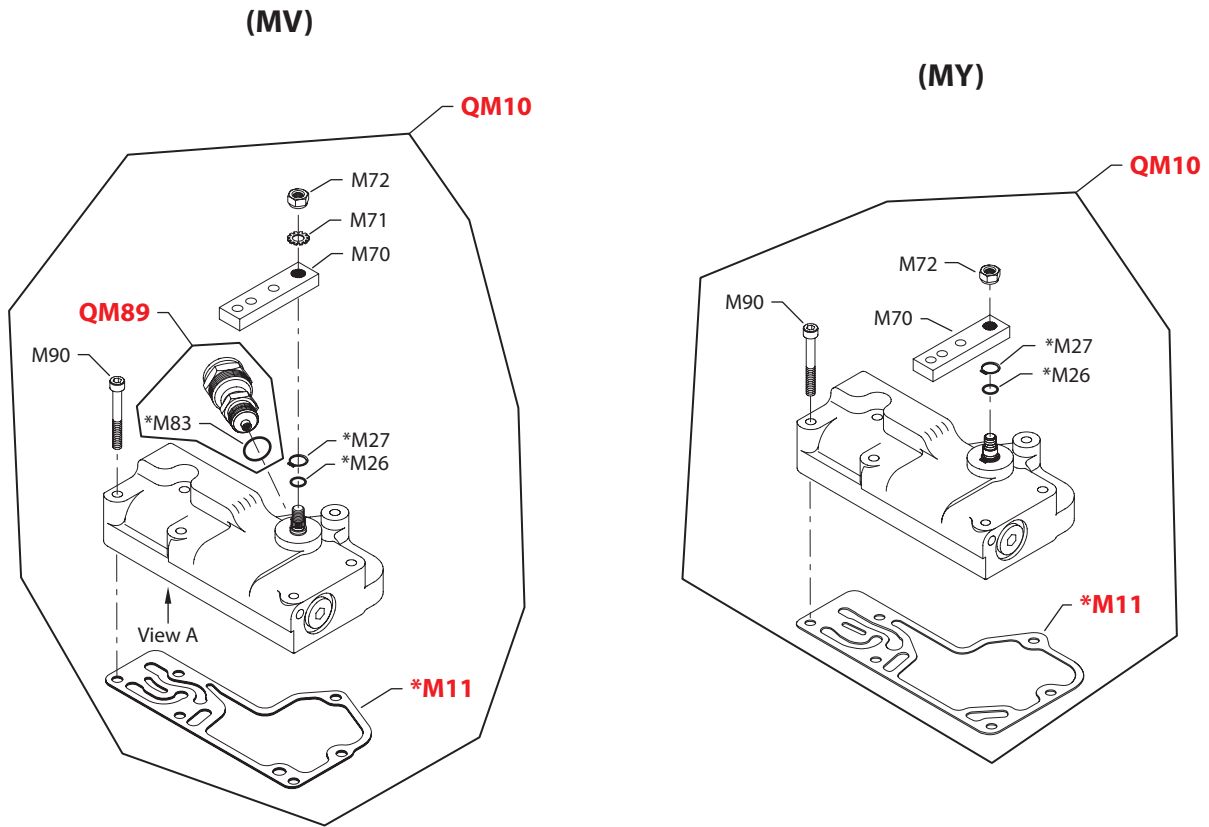
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
MT	M11	01-01		8800923	Control gasket	1
	M14	01-01		11070306	Feedback link	1
	M26	01-01		144725 (9004105-0110)	O-ring	1
	M27	01-01		042507 (9006300-0044)	Retaining ring	1
	M70	01-01		9800916	Control handle	1
	M71	01-01		689018 (9009660-3100)	Toothlock washer	1
	M72	01-01		040642 (9003513-0800)	Nut	1
	M75	01-01		505022	Control manifold	1
	M76	01-01		11127986	Solenoid valve, 12 volt, 2-pole	1
	M77	01-01		8800882	Manifold gasket	1
	M78	01-01		693341 (9007314-0606)	Screw	2
	M90	01-01		692889 (9007314-0611)	Screw	6
	QM10	01-01		8510320	MDC kit, w/2-pole 12v solenoid	1
	QM210	01-01		11100031	Control seal kit	1
MU	M11	94-05	14-33	8800923	Control gasket	1
	M14	96-40	14-33	11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	94-05	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	94-05	14-33	144725 (9004105-0110)	O-ring	1
	M27	94-05	14-33	042507 (9006300-0044)	Retaining ring	1
	M70	94-05	14-33	9800916	Control handle	1
	M71	94-05	14-33	689018 (9009660-3100)	Toothlock washer	1
	M72	94-05	14-33	040642 (9003513-0800)	Nut	1
	M75	94-05	14-33	505022	Control manifold	1
	M76	94-05	14-33	11127986	Solenoid valve, 12v, double pole	1
	M77	94-05	14-33	8800882	Manifold gasket	1
	M78	94-05	14-33	693341 (9007314-0606)	Screw	2
	M83	94-05	14-33	001131 (9004201-5000)	O-ring	1
	M90	94-05	14-33	692889 (9007314-0611)	Screw	6
	QM10	94-05	14-33	11019664	MDC kit, w/double pole 12v solenoid	1
	QM89	94-05	14-33	8510170	Neutral start switch kit	1
	QM210	94-05	14-33	11100031	Control seal kit	1



Variable displacement pump



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E100 861E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

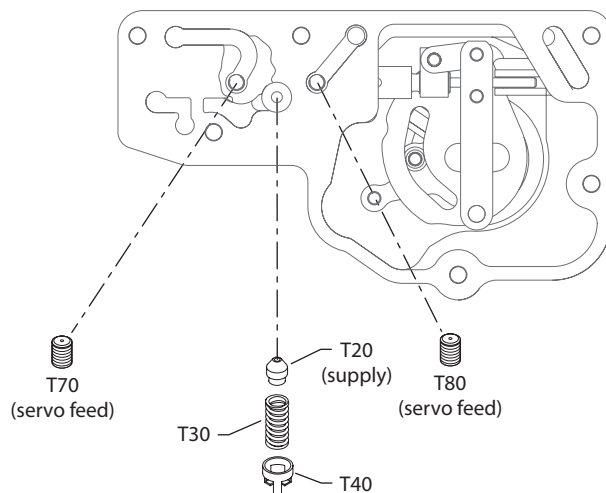
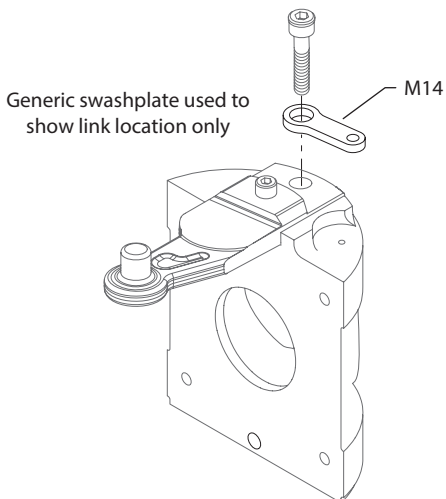
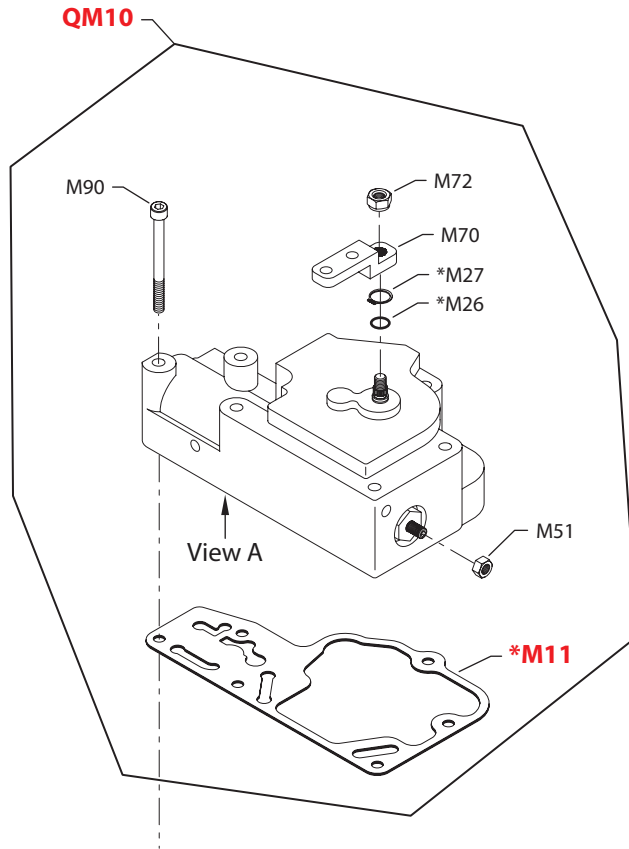

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
MV	M11	94-30		8800923	Control gasket	1	
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1	
	M14	94-30	96-39	8200344	Feedback link (SB-1996-009)	1	
	M70	94-30		9800916	Control handle	1	
	M71	94-30		689018 (9009660-3100)	Toothlock washer	1	
	M72	94-30		040642 (9003513-0800)	Nut	1	
	M83	94-30		001131 (9004201-5000)	O-ring	1	
	M90	94-30		692889 (9007314-0611)	Screw	6	
	QM10	94-30		8510342	MDC kit, nss w/weatherpack connector, 2-way	1	
	QM89	94-30		8510170	Neutral start switch kit, weather pack connector, 2-way	1	
	QM210	94-30		11096274	Control seal kit	1	
	MY	M11	96-07		8800923	Control gasket	1
		M14	96-07		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
M14		87-02	96-39	8200344	Feedback link (SB-1996-009)	1	
M26		96-07		144725 (9004105-0110)	O-ring	1	
M27		96-07		042507 (9006300-0044)	Retaining ring	1	
M70		96-07		9800916	Control handle	1	
M72		96-07		040642 (9003513-0800)	Nut	1	
M90		96-07		692889 (9007314-0611)	Screw	6	
QM10		96-07		11087559	MDC kit	1	
QM210		96-07		11096274	Control seal kit	1	



Variable displacement pump

(NA)



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E100 865E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

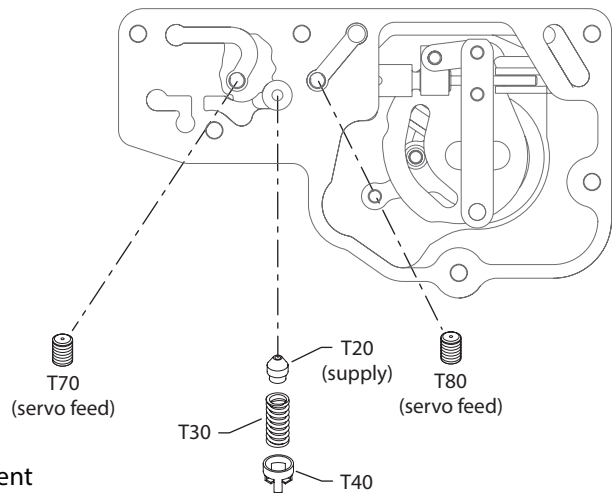
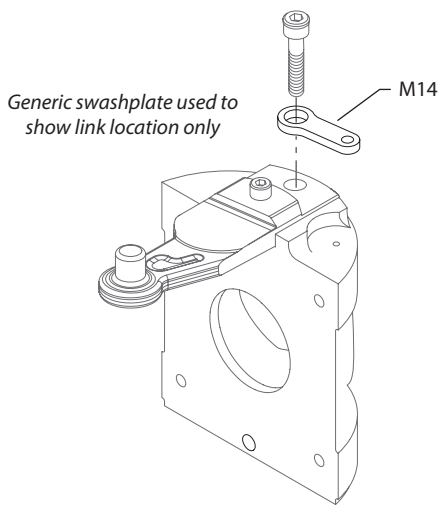
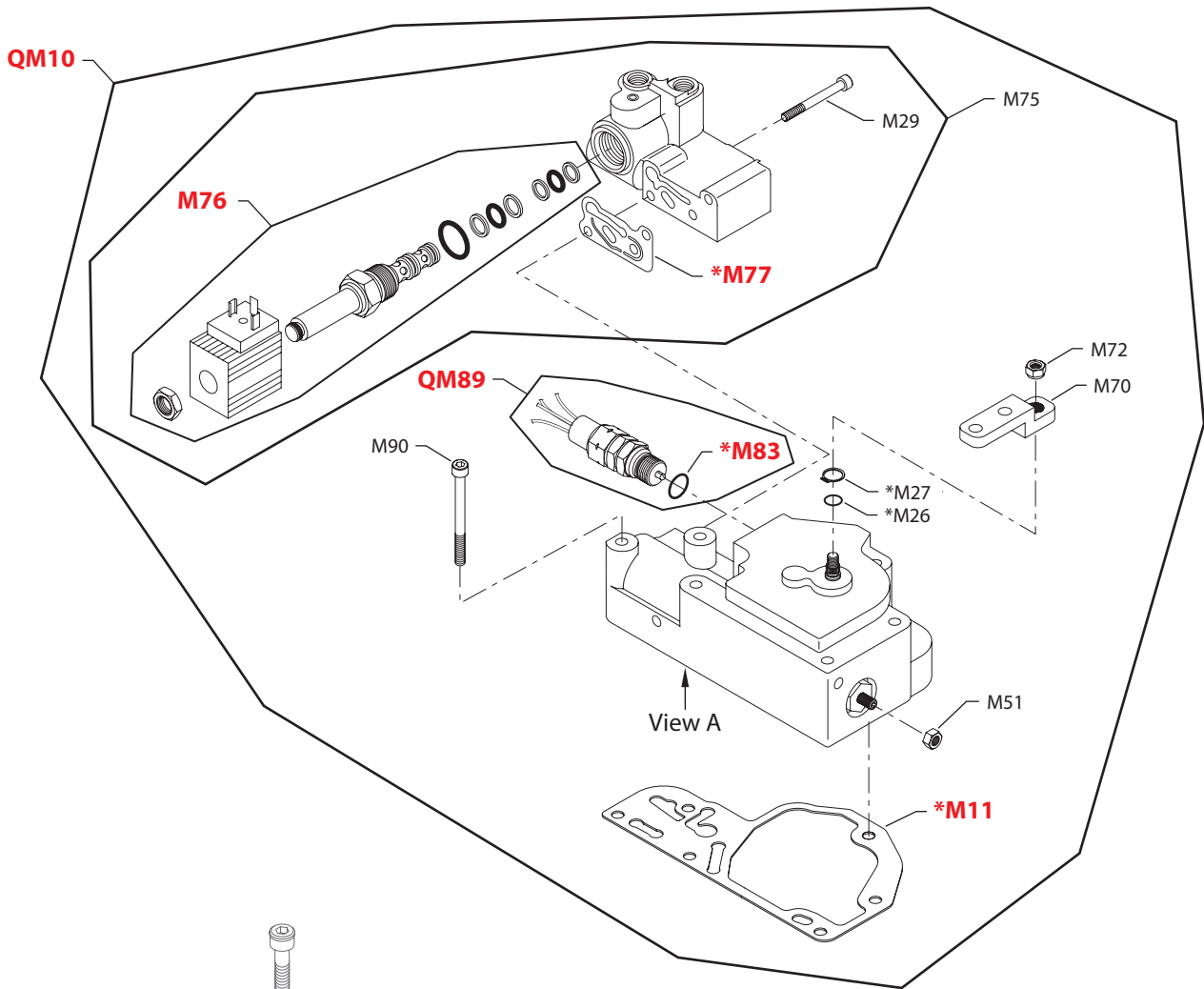

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
NA	M11	94-30		504733	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	94-30	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	94-30		144725 (9004105-0110)	O-ring	1
	M27	94-30		9006300-0044	Retaining ring	1
	M51	94-30		345462	Nut	1
	M70	94-30		769075	Control handle, sharp bend	1
	M71	94-30		689018 (9009660-3100)	Toothlock washer	1
	M72	94-30		040642 (9003513-0800)	Nut	1
	M90	94-30		9007314-0614	Screw	6
	QM10	94-30		8102M0NA-A	MDC kit, NL	1
	QM210	94-30		11096273	Control seal kit	1



Variable displacement pump

(NU)



NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

E103 086 E

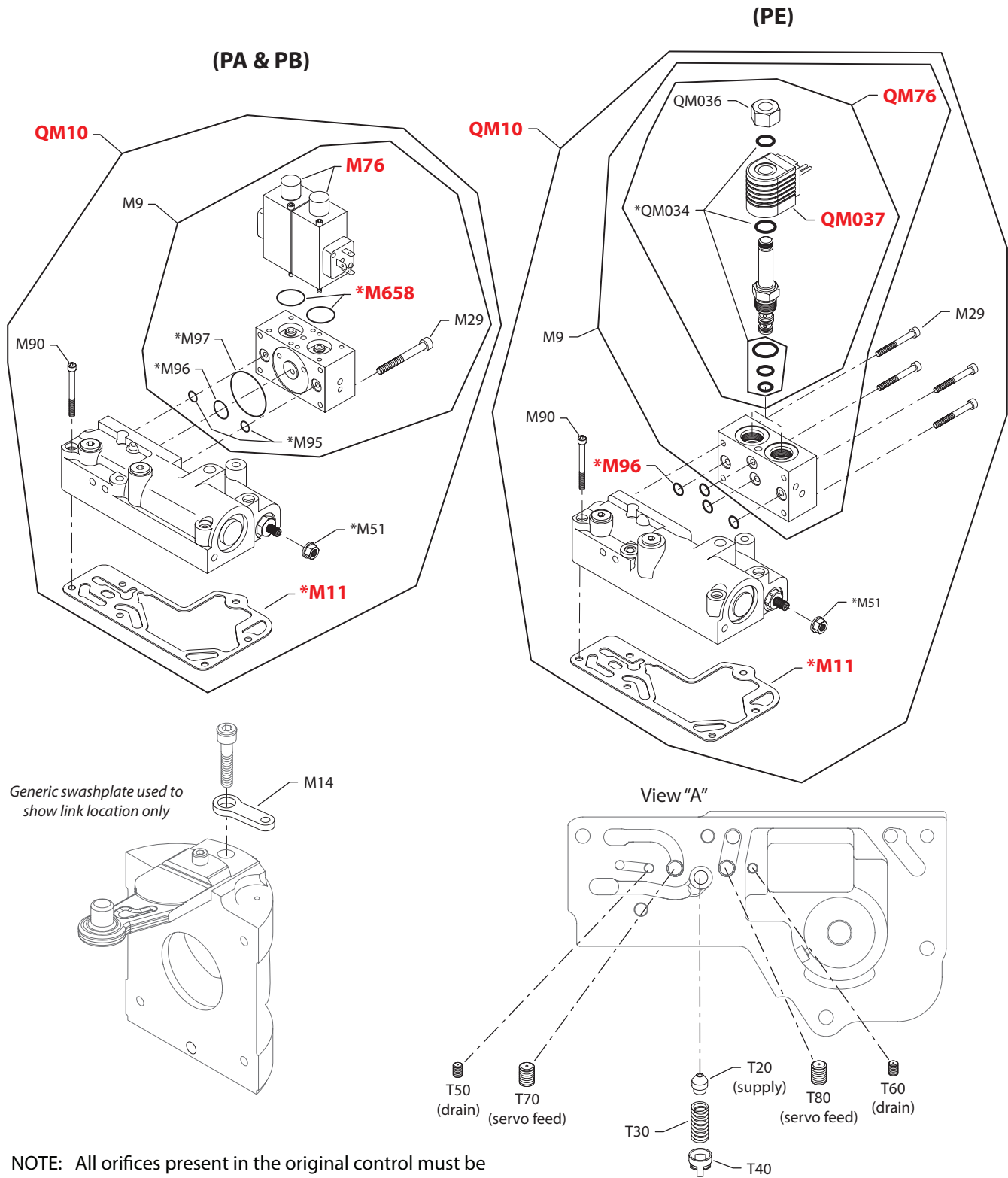
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
NU	M11	94-05		504733	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	94-05	96-39	8200344	Feedback link (SB-1996-009)	1
	M26	94-05		144725 (9004105-0110)	O-ring	1
	M27	94-05		042507 (9006300-0044)	Retaining ring	1
	M29	94-05		692889 (9007314-0611)	Screw	2
	M51	94-05		345462	Nut	1
	M70	94-05		769075	Control handle, sharp bend	1
	M72	94-05		040642 (9003513-0800)	Nut	1
	M75	94-05		500147	Control manifold assembly	1
	M76	94-05		8700100	Solenoid valve	1
	M77	94-05		500260	Manifold gasket	1
	M83	94-05		784686 (9004104-0130)	O-ring	1
	M90	94-05		9007314-0614	Screw	6
	QM10	94-05		11015114	MDC kit, NL w/nss	1
	QM89	94-05		11087773	Back-up alarm switch kit	1
	QM210	94-05		11100415	Control seal kit	1



Variable displacement pump



NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

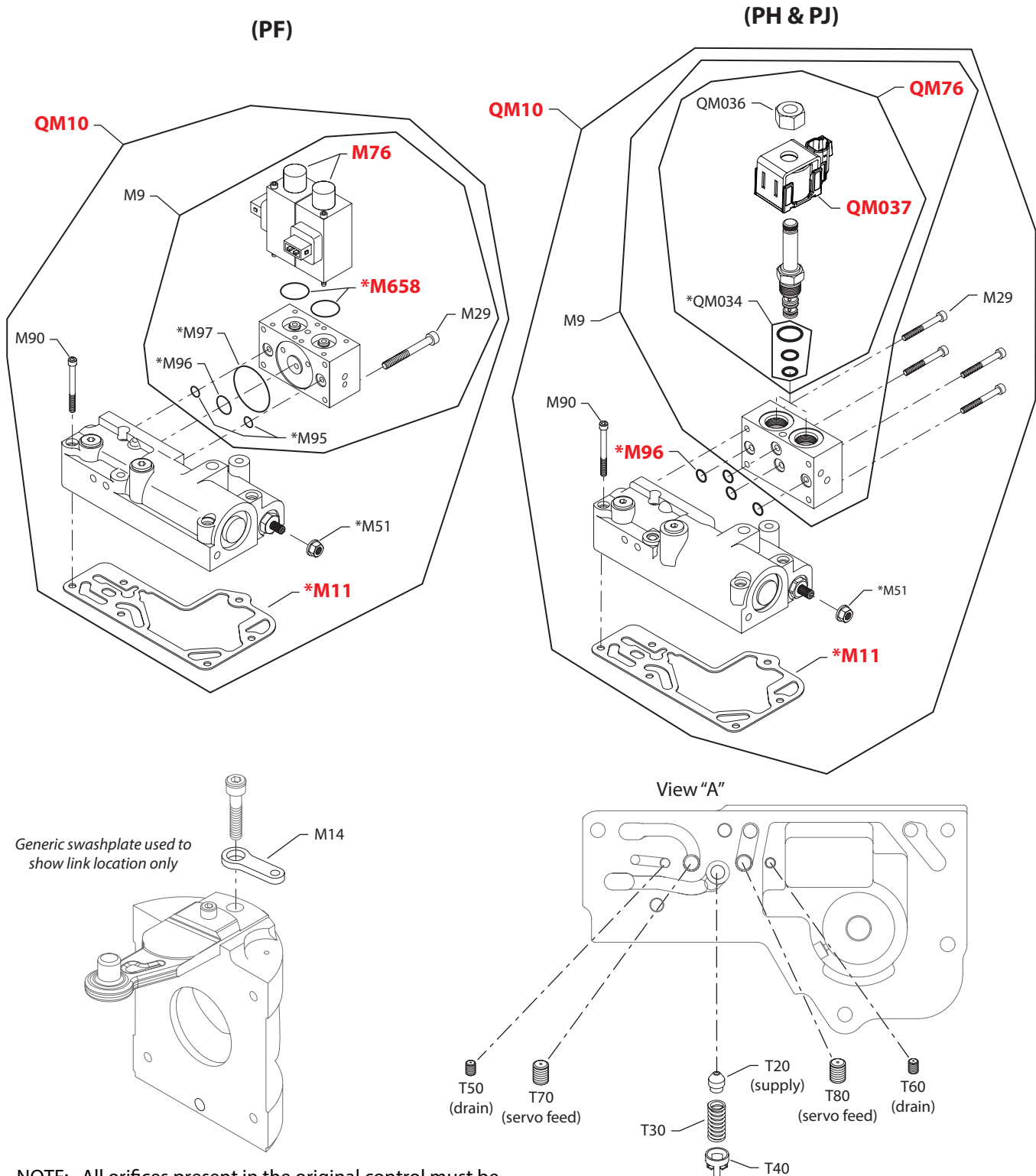
E100 813 E
 Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
PA	M9	94-07		782037	PDC, 12 volt	1
	M11	94-07		8801241	Control gasket	1
	M14	96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
	M14	94-07	96-39	8200344	Feedback link (SB-1996-009)	1
	M29	94-07		035592	Screw	4
	M51	94-07		9003509-0008	Seal nut	1
	M76	94-07		11001795	Solenoid, 12 volt, Din connector	2
	M90	94-07		692889 (9007314-0611)	Screw	6
	M95	94-07		011296 (9004105-0120)	O-ring	2
	M96	94-07		688721 (9004104-0170)	O-ring	1
	M97	94-07		314534 (9004104-0310)	O-ring	1
	M658	94-07		635938 (9004100-0210)	O-ring	2
	QM10	94-07		11087561	HDC2, w/PDC	1
	QM210	94-07		11096251	Control seal kit	1
	PB	M9	94-15		782045	PDC, 24 volt
M11		94-15		8801241	Control gasket	1
M14		96-40		11070306	Feedback link (SB-1999-019 & SB-2013-011)	1
M14		94-15	96-39	8200344	Feedback link (SB-1996-009)	1
M29		94-15		035592	Screw	4
M51		94-15		9003509-0008	Seal nut	1
M76		94-15		11001794	Solenoid, 24 volt, Din connector	2
M90		94-15		692889 (9007314-0611)	Screw	6
M95		94-15		011296 (9004105-0120)	O-ring	2
M96		94-15		688721 (9004104-0170)	O-ring	1
M97		94-15		314534 (9004104-0310)	O-ring	1
M658		94-15		635938 (9004100-0210)	O-ring	2
QM10		94-15		11034093	Electro-hydraulic control kit	1
QM210		94-15		11138468	Control seal kit	1
PE		M9	10-30		11175053	HIC, proportional reducing manifold assembly
	M11	10-30		8801241	Control gasket	1
	M14	10-30		11070306	Feedback link	1
	M29	10-30		K28807	Screw	4
	M51	10-30		9003509-0008	Seal nut	1
	M90	10-30		692889 (9007314-0611)	Screw	6
	M96	10-30		9004105-0120	O-ring	4
	QM10	10-30		8510286	EDC, high current, 3-11 bar, 12 volt	1
	QM034	10-30		11100210	Solenoid valve seal kit	2
	QM036	10-30		11175054	Coil nut	2
	QM037	10-30		11175055	Coil, 12 volt	2
	QM76	10-30		11175056	Solenoid valve, 12 volt	2
	QM210	10-30		11100211	Control seal kit	1



Variable displacement pump



Generic swashplate used to show link location only

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

* = included in control seal kit QM210

Possible orifice locations

E103 116E

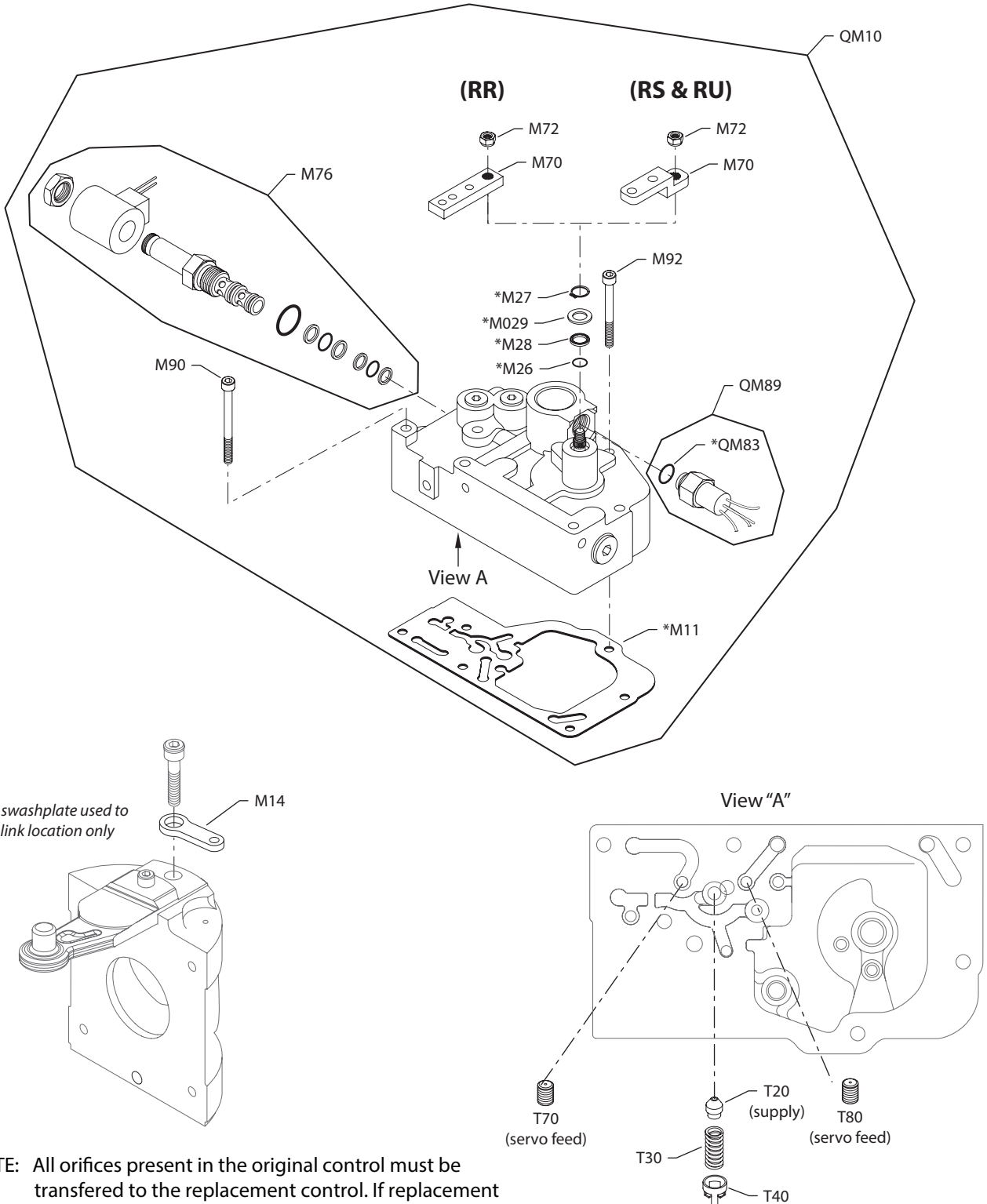
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
PF	M9	03-32		519719	PDC, 12 volt	1
	M11	03-32		8801241	Control gasket	1
	M14	03-32		11070306	Feedback link (SB-2013-011)	1
	M29	03-32		035592	Screw	4
	M51	03-32		9003509-0008	Seal nut	1
	M76	03-32		11001793	Solenoid, 12 volt, AMP connector	2
	M90	03-32		692889 (9007314-0611)	Screw	6
	M95	03-32		011296 (9004105-0120)	O-ring	2
	M96	03-32		688721 (9004104-0170)	O-ring	1
	M97	03-32		314534 (9004104-0310)	O-ring	1
	M658	03-32		635938 (9004100-0210)	O-ring	2
	QM10	03-32		11087592	EDC2, 12 volt, AMP connector	1
	QM210	03-32		11096251	Control seal kit	1
	PH	M9	12-38		11175060	Reducing manifold
M11		12-38		8801241	Control gasket	1
M14		12-38		11070306	Feedback link (SB-2013-011)	1
M29		12-38		K28807	Screw	4
M51		12-38		9003509-0008	Seal nut	1
M90		12-38		692889 (9007314-0611)	Screw	6
M96		12-38		011296 (9004105-0120)	O-ring	4
QM10		12-38		11121734	EDC2, 12 volt, AMP connector	1
QM034		12-38		11175057	Solenoid valve seal kit	2
QM036		12-38		11175058	Coil nut	2
QM037		12-38		11175059	Coil, 12 volt	2
QM76		12-38		11174842	Solenoid valve, 12 volt	2
QM210		12-38		11138468	Control seal kit	1
PJ		M9	14-15		11175061	Reducing manifold
	M11	14-15		8801241	Control gasket	1
	M14	14-15		11070306	Feedback link (SB-2013-011)	1
	M29	14-15		K28807	Screw	4
	M51	14-15		9003509-0008	Seal nut	1
	M90	14-15		692889 (9007314-0611)	Screw	6
	M96	14-15		011296 (9004105-0120)	O-ring	4
	QM10	14-15		11141118	EDC2, 24 volt	1
	QM034	14-15		11175057	Solenoid valve seal kit	2
	QM036	14-15		11175058	Coil nut	2
	QM037	14-15		11175074	Coil, 24 volt	2
	QM76	14-15		11175075	Solenoid valve, 24 volt	2
	QM210	14-15		11100211	Control seal kit	1



Variable displacement pump



NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

Possible orifice locations

E103 089E

* = included in control seal kit QM210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

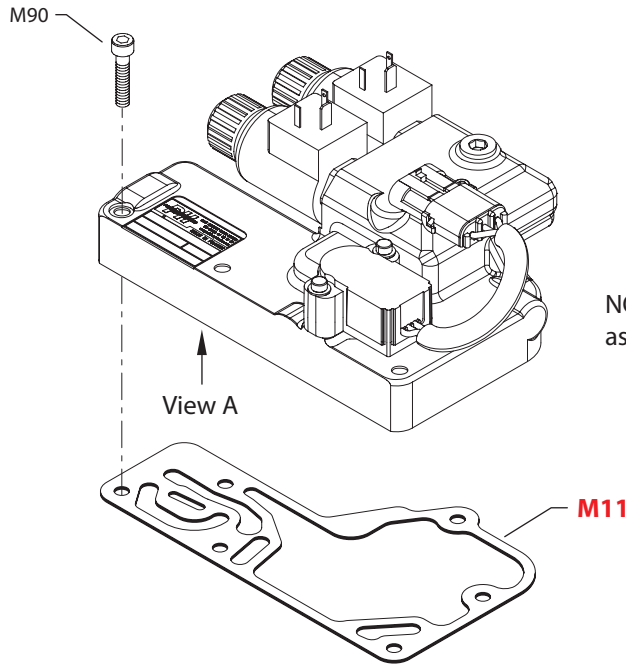

Variable displacement pump
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
RR	M11	99-06		510378	Control gasket	1
	M14	99-06		11070306	Feedback link (SB-2013-011)	1
	M26	99-06		144725 (9004105-0110)	O-ring	1
	M27	99-06		042507 (9006300-0044)	Retaining ring	1
	M28	99-06		510690	Lip seal	1
	M029	99-06		512047	Washer	1
	M70	99-06		9800916	Control handle	1
	M72	99-06		040642 (9003513-0800)	Nut	1
	M76	99-06		513582	Solenoid valve, 12 volt	1
	M90	99-06		354407	Screw	5
	M92	99-06		510382	Screw	1
	QM10	99-06		8510245	MDC kit, roller	1
	QM83	99-06		001131 (9004201-5000)	O-ring	1
	QM89	99-06		11099847	Neutral start switch, high force	1
	QM210	99-06		11100030	Control seal kit	1
	RS	M11	01-15		510378	Control gasket
M14		01-15		11070306	Feedback link (SB-2013-011)	1
M26		01-15		144725 (9004105-0110)	O-ring	1
M27		01-15		042507 (9006300-0044)	Retaining ring	1
M28		01-15		510690	Lip seal	1
M029		01-15		512047	Washer	1
M70		01-15		769075	Control handle, sharp bend	1
M72		01-15		040642 (9003513-0800)	Nut	1
M76		01-15		513018	Solenoid valve, 24 volt	1
M90		01-15		354407	Screw	5
M92		99-06		510382	Screw	1
QM10		01-15		11087610	MDC kit, roller	1
QM83		01-15		001131 (9004201-5000)	O-ring	1
QM89		01-15		11099847	Neutral start switch, high force	1
QM210		01-15		11100030	Control seal kit	1
RU		M11	97-30		510378	Control gasket
	M14	97-30		11070306	Feedback link (SB-2013-011)	1
	M26	97-30		144725 (9004105-0110)	O-ring	1
	M27	97-30		042507 (9006300-0044)	Retaining ring	1
	M28	97-30		510690	Lip seal	1
	M029	97-30		512047	Washer	1
	M70	97-30		769075	Control handle, sharp bend	1
	M72	97-30		040642 (9003513-0800)	Nut	1
	M76	97-30		513017	Solenoid valve, 12 volt	1
	M90	97-30		354407	Screw	5
	M92	99-06		510382	Screw	1
	QM10	97-30		11087609	MDC kit, roller	1
	QM83	97-30		001131 (9004201-5000)	O-ring	1
	QM89	97-30		11099847	Neutral start switch, high force	1
	QM210	97-30		11100030	Control seal kit	1

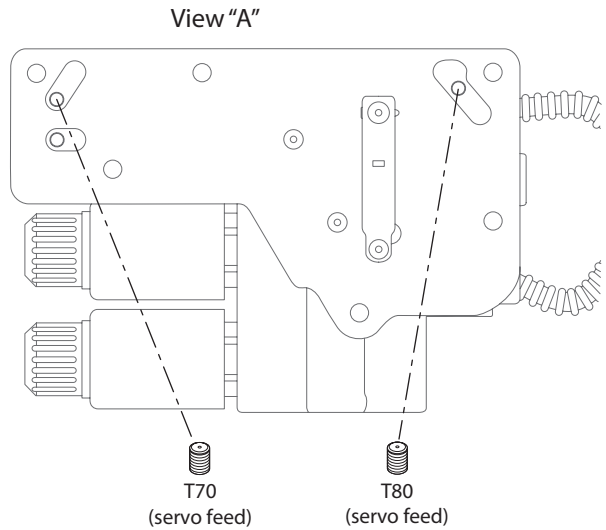
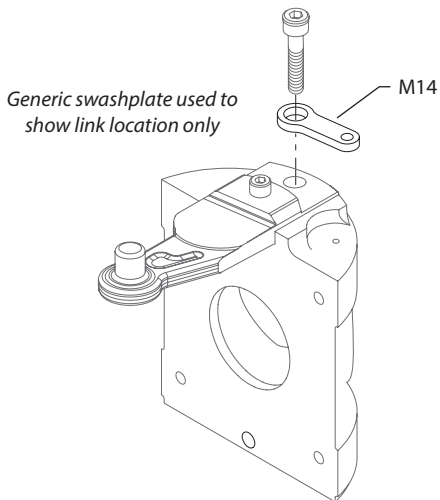


Variable displacement pump

(SA, SB, SD & SE)



NOTE: This control is not available as a service part



Possible orifice locations

NOTE: All orifices present in the original control must be transferred to the replacement control. If replacement control contains pre-installed orifices, remove and discard them before transferring existing orifices to new control.

E103 090E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing



Variable displacement pump

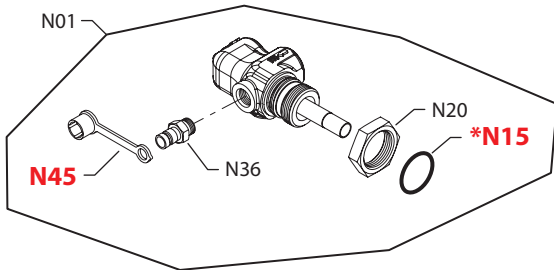
Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
SA	M11	07-23		8800923	Gasket	1
	M14	07-23		11070306	Feedback link	1
	M90	07-23		694356 (9007314-0608)	Screw	6
SB	M11	07-23		8800923	Gasket	1
	M14	07-23		11070306	Feedback link	1
	M90	07-23		694356 (9007314-0608)	Screw	6
SD	M11	10-34		8800923	Gasket	1
	M14	10-34		11070306	Feedback link	1
	M90	10-34		694356 (9007314-0608)	Screw	6
SE	M11	10-34		8800923	Gasket	1
	M14	10-34		11070306	Feedback link	1
	M90	10-34		694356 (9007314-0608)	Screw	6

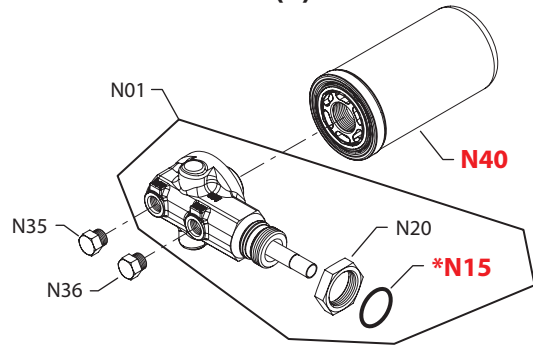


Variable displacement pump

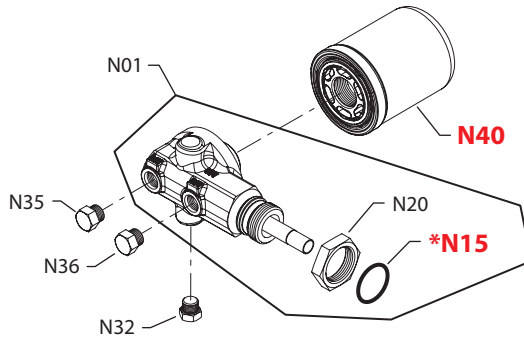
(0)



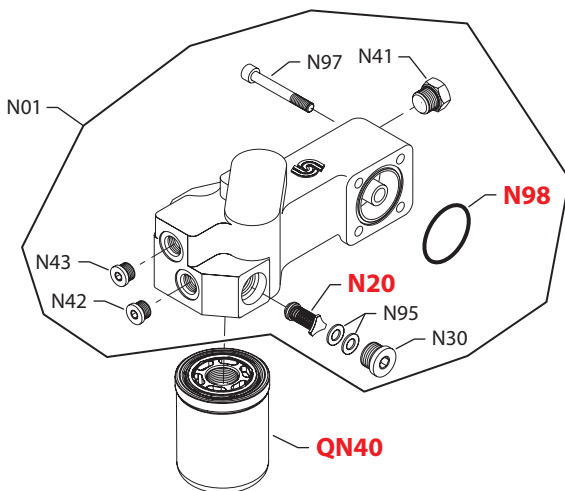
(3)



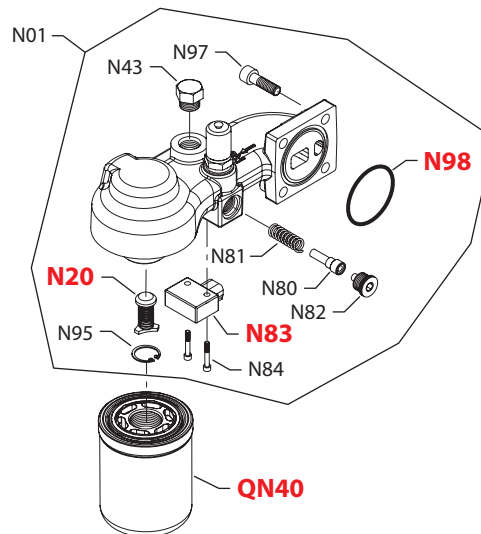
(6)



(7)



(9)



E100 866E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

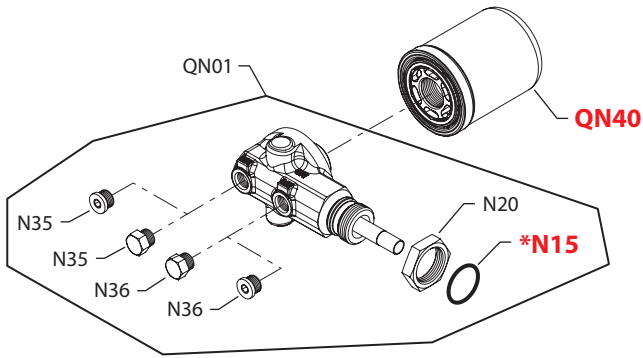

Variable displacement pump
Filtration

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
0	N01	08-01		11060431	Filter manifold assembly	1
	N15	08-01		001172 (9004201-9000)	O-ring	1
	N20	08-01		11049997	Nut	1
	N36	08-01		8700127	Diagnostic receptical	1
	N45	08-01		8700128	Dust cover	1
3	N01	99-18		11060344	Filter manifold assembly	1
	N15	99-18		001172 (9004201-9000)	O-ring	1
	N20	99-18		11049997	Nut	1
	N35	99-18		140644 (9005100-5600)	Plug assembly	1
	N36	99-18		140644 (9005100-5600)	Plug assembly	1
	QN40	99-18		11004919	Filter, long	1
6	N01	00-01		11060345	Filter manifold assembly	1
	N15	00-01		001172 (9004201-9000)	O-ring	1
	N20	00-01		11049997	Nut	1
	N32	00-01		140644 (9005100-5600)	Plug assembly	1
	N35	00-01		140644 (9005100-5600)	Plug assembly	1
	N36	00-01		140644 (9005100-5600)	Plug assembly	1
	QN40	00-01		11004917	Filter, short	1
7	N01	02-03		501831	Filter manifold assembly	1
	N20	02-03		360768	Check valve	1
	N30	02-03		365965	Plug assembly	1
	N41	02-03		001537 (9005100-8700)	Plug assembly	1
	N42	02-03		140644	Plug assembly	1
	N43	02-03		140644	Plug assembly	1
	N95	02-03		500115	Washer	2
	N97	02-03		376269	Screw	4
	N98	02-03		9004104-0320	O-ring	1
	QN40	02-03		11004919	Filter, short	1
8 & D			None			
9	N01	02-03		518202	Filter manifold assembly	1
	N20	02-03		520974	Check valve	1
	N43	02-03		508497	Plug assembly	1
	N80	02-03		518331	Magnetic piston	1
	N81	02-03		519585	Spring	1
	N82	02-03		518335	Plug assembly	1
	N83	02-03		11000357	Filtration sensor	1
	N84	02-03		519968	Screw	2
	N95	02-03		042515	Retaining ring	1
	N97	02-03		393603	Screw	4
	N98	02-03		9004104-0320	O-ring	1
	QN40	02-03		11004919	Filter, short	1

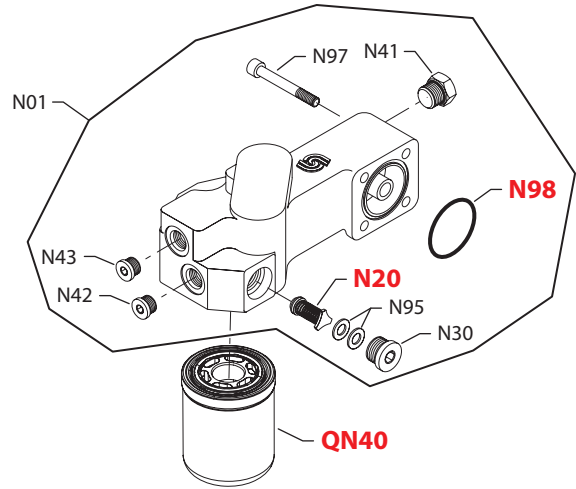


Variable displacement pump

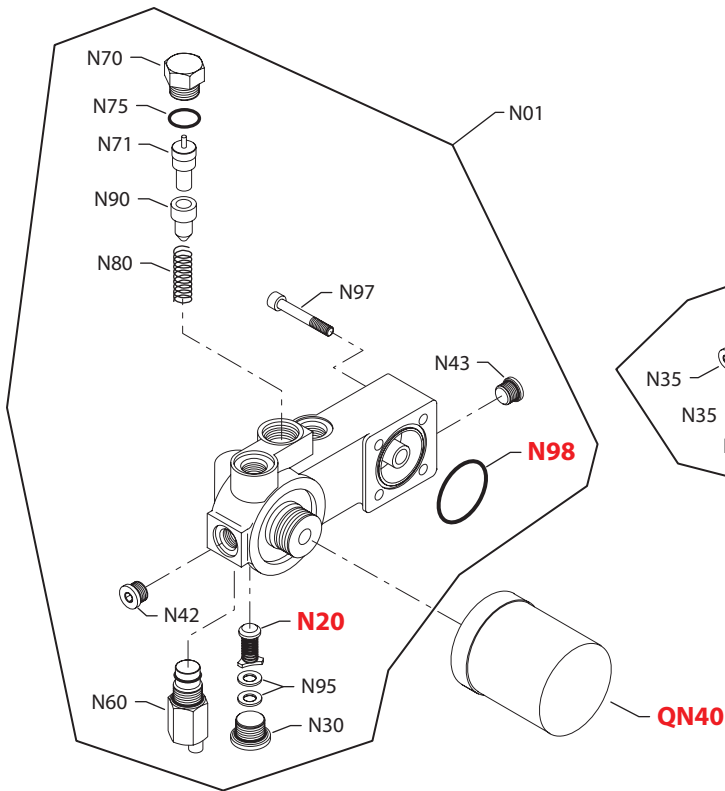
(A & E)



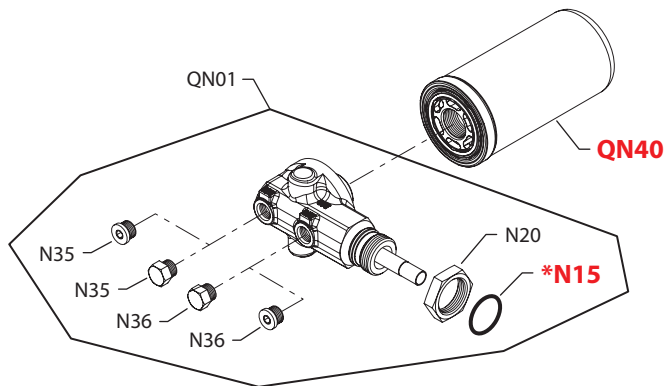
(G)



(J)



(L)



E100 867E

* = included in base pump seal kit Q210

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

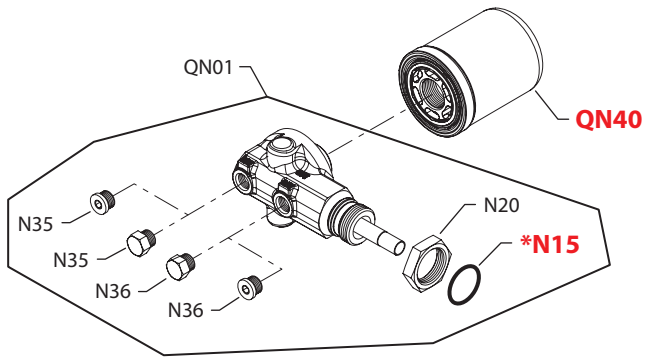

Variable displacement pump
Filtration

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit	
A	N15	02-41		001172 (9004201-9000)	O-ring	1	
	N20	02-41		11049997	Nut	1	
	N35	02-41		140644 (9005100-5600)	Plug assembly	1	
	N36	02-41		140644 (9005100-5600)	Plug assembly	1	
	QN01	02-41		11145249	Filter manifold assembly	1	
	QN40	02-41		11004917	Filter, short	1	
	E	N15	96-46		001172 (9004201-9000)	O-ring	1
N20		96-46		11049997	Nut	1	
N35		96-46		140644 (9005100-5600)	Plug assembly	1	
N36		96-46		140644 (9005100-5600)	Plug assembly	1	
QN01		96-46		11145249	Filter manifold assembly	1	
QN40		96-46		11004917	Filter, short	1	
G		N01	96-46		501831	Filter manifold assembly	1
	N20	96-46		360768	Check valve	1	
	N30	96-46		365965	Plug assembly	1	
	N41	96-46		001537	Plug assembly	1	
	N42	96-46		140644 (9005100-5600)	Plug assembly	1	
	N43	96-46		140644 (9005100-5600)	Plug assembly	1	
	N95	96-46		500115	Waher	2	
	N97	96-46		376269	Screw	4	
	N98	96-46		9004104-0320	O-ring	1	
	QN40	96-46		11004917	Filter, short	1	
	J	N01	96-46		500120	Filter manifold assembly	1
		N20	96-46		360768	Check valve	1
		N30	96-46		365965	Plug assembly	1
N42		96-46		140644 (9005100-5600)	Plug assembly	1	
N43		96-46		140644 (9005100-5600)	Plug assembly	1	
N60		96-46		500114	Dust indication	1	
N70		96-46		502184	Plug assembly	1	
N71		96-46		347419	Wax element	1	
N75		96-46		001149 (9004201-6200)	O-ring	1	
N80		96-46		502224	Spring	1	
N90		96-46		502240	Poppet	1	
N95		96-46		500115	Waher	2	
N97		96-46		376269	Screw	4	
N98		96-46		9004104-0320	O-ring	1	
QN40		96-46		11004917	Filter, short	1	
L		N15	87-02		001172 (9004201-9000)	O-ring	1
		N20	95-18		11049997	Nut (SB-1994-036)	1
		N20	87-02	95-17	700492 (9002863-1600)	Nut	1
		N35	87-02		140644 (9005100-5600)	Plug assembly	1
	N36	87-02		140644 (9005100-5600)	Plug assembly	1	
	QN01	87-02		11145249	Filter manifold assembly	1	
	QN40	87-02		11004919	Filter, long	1	

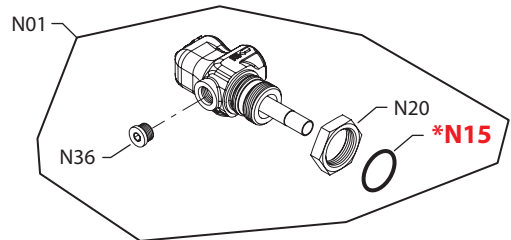


Variable displacement pump

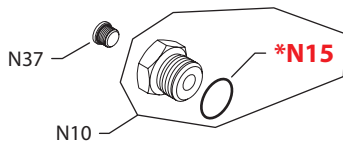
(P)



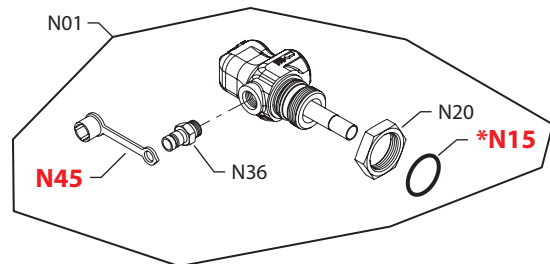
(R)



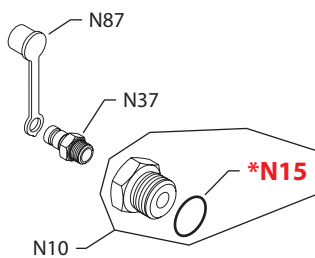
(S)



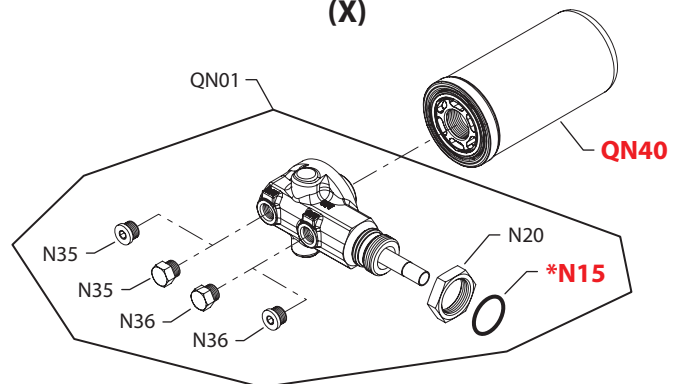
(U)



(W)



(X)



E103 117E

* = included in base pump seal kit Q210

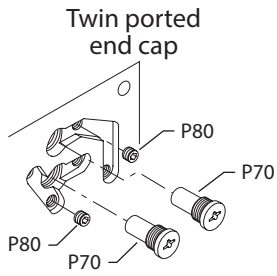
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
Filtration

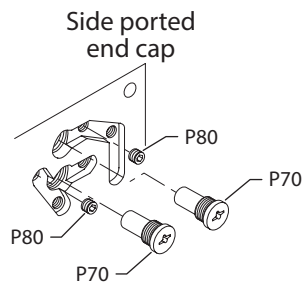
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
P	N15	87-02		001172 (9004201-9000)	O-ring	1
	N20	95-18		11049997	Nut (SB-1994-036)	1
	N20	87-02	95-17	700492 (9002863-1600)	Nut	1
	N35	87-02		140644 (9005100-5600)	Plug assembly	1
	N36	87-02		140644 (9005100-5600)	Plug assembly	1
	QN01	87-02		11145249	Filter manifold assembly	1
	QN40	87-02		11004917	Filter, short	1
	R	N01	87-02		11060427	Filter manifold assembly
N15		87-02		001172 (9004201-9000)	O-ring	1
N20		95-18		11049997	Nut (SB-1994-036)	1
N20		87-02	95-17	700492 (9002863-1600)	Nut	1
N36		87-02		140644 (9005100-5600)	Plug assembly	1
S	N10	87-02		5000230	Reducer assembly	1
	N15	87-02		001172 (9004201-9000)	O-ring	1
	N37	87-02		140644 (9005110-5600)	Plug assembly	1
U	N01	96-16		11060428	Filter manifold assembly	1
	N15	96-16		001172 (9004201-9000)	O-ring	1
	N20	96-16		11049997	Nut	1
	N36	96-16		140644	Plug assembly	1
	N41	96-16		8700127	Diagnostic receptical	1
	N45	96-16		8700128	Dust cover	1
	V				None	
W	N10	87-02		5000230	Reducer assembly	1
	N15	87-02		001172 (9004201-9000)	O-ring	1
	N37	08-01		8700127	Diagnostic receptical	1
	N87	08-01		8700128	Dust cover	1
X	N15	01-01		001172 (9004201-9000)	O-ring	1
	N20	01-01		11049997	Nut	1
	N35	01-01		9005100-5600	Plug assembly	1
	N36	01-01		9005100-5600	Plug assembly	1
	QN01	01-01		11145249	Filter manifold assembly	1
	QN40	01-01		11004919	Filter, long	1



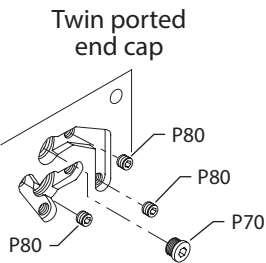
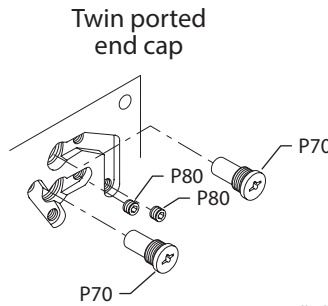
Variable displacement pump



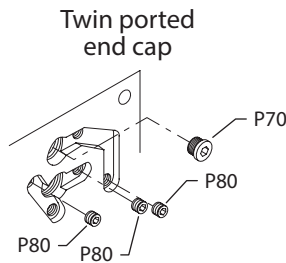
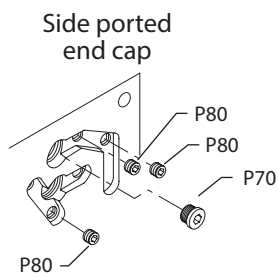
View "A" with pressure limiters, CCW rotation
Options 1, 5, 6 & F



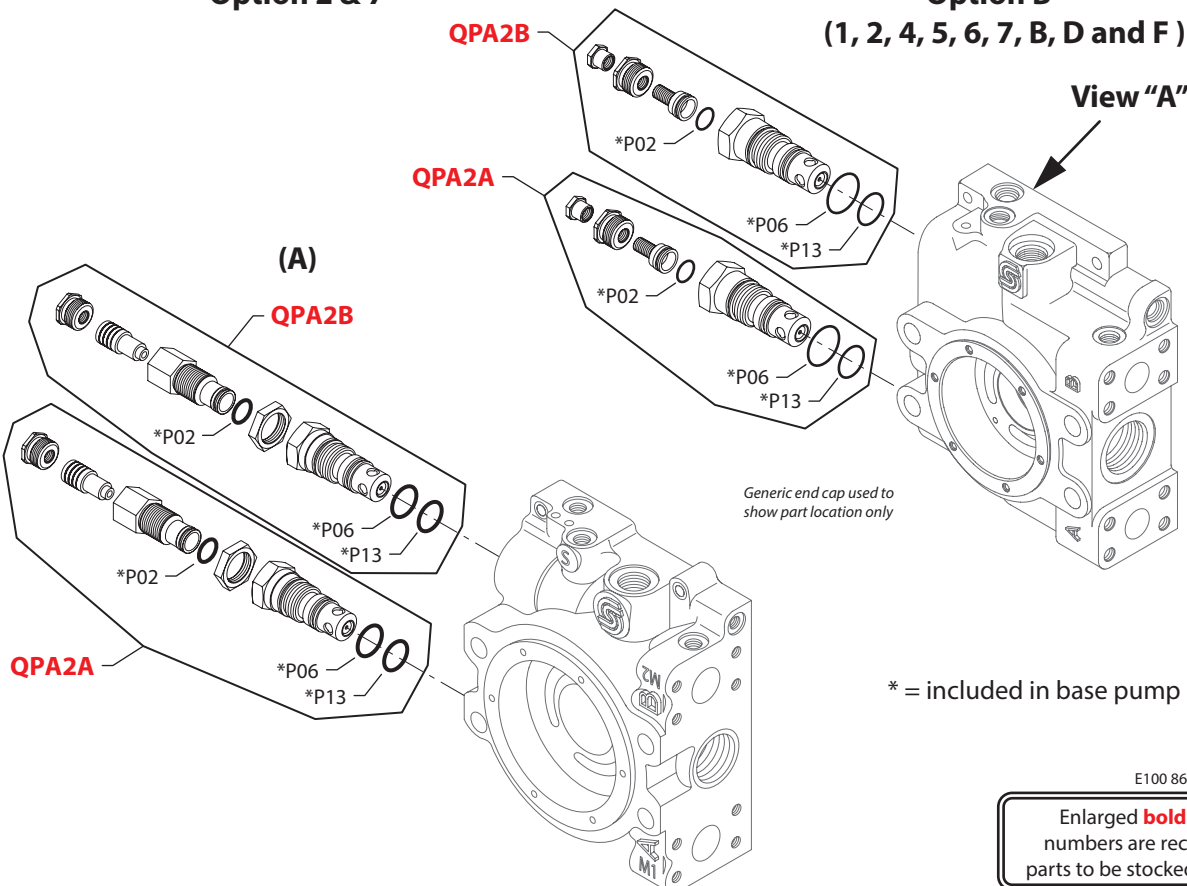
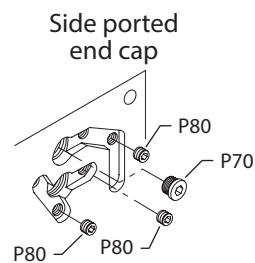
View "A" with pressure limiters, CW rotation
Options 1, 5, 6 & F



View "A" without pressure limiters, CCW/CW hand rotation
Option 2 & 7



View "A" with pressure limiter port A only, CW rotation
Option B (1, 2, 4, 5, 6, 7, B, D and F)



E100 868E

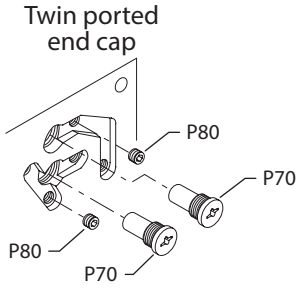
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
High pressure regulation

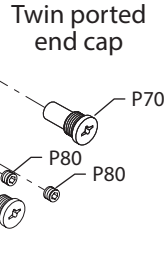
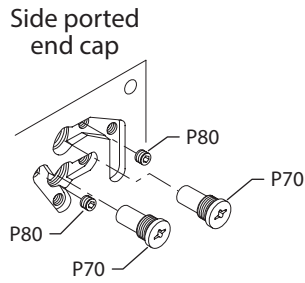
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	P02	87-02		688721 (9004104-0170)	O-ring	2
	P06	87-02		071811	O-ring	2
	P13	87-02		544742 (9004105-0190)	O-ring	2
1	P70	87-02		8800188	Check valve	2
	P80	87-02		9005475-0004	Special plug assembly	2
	QPA2A	87-02		8510022-1	Multi-function valve kit	1
	QPA2B	87-02		8510022-1	Multi-function valve kit	1
2	P70	87-02		327007 (9005110-4400)	Plug (SB-1989-003)	1
	P80	87-02		9005475-0004	Special plug assembly	3
	QPA2A	87-02		8510022-2	Multi-function valve kit	1
	QPA2B	87-02		8510022-2	Multi-function valve kit	1
4	QPA2A	87-02		8510022-7	Multi-function valve kit	1
	QPA2B	87-02		8510022-7	Multi-function valve kit	1
5	P70	87-02		8800188	Check valve	2
	P80	87-02		9005475-0004	Special plug assembly	2
	QPA2A	87-02		8510240	Multi-function valve kit	1
	QPA2B	87-02		8510240	Multi-function valve kit	1
6	P70	87-02		8800188	Check valve	2
	P80	87-02		9005475-0004	Special plug assembly	2
	QPA2A	87-02		8510022-6	Multi-function valve kit	1
	QPA2B	87-02		8510022-6	Multi-function valve kit	1
7	P70	87-02		327007 (9005110-4400)	Plug (SB-1989-003)	1
	P80	87-02		9005475-0004	Special plug assembly	3
	QPA2A	87-02		8510022-7	Multi-function valve kit	1
	QPA2B	87-02		8510022-7	Multi-function valve kit	1
A	QPA2A	87-02		8510202	Multi-function valve kit, 420 bar	1
	QPA2B	87-02		8510202	Multi-function valve kit, 420 bar	1
B	P70	95-22		8800188	Check valve	1
	P80	95-22		9005475-0004	Special plug assembly	3
	QPA2A	95-22		8510022-1	Multi-function valve kit	1
	QPA2B	95-22		8510022-7	Multi-function valve kit	1
D	QPA2A	92-39		8510388	Multi-function valve kit	1
	QPA2B	92-39		8510388	Multi-function valve kit	1
F	P70	04-36		8800188	Check valve	2
	P80	04-36		9005475-0004	Special plug assembly	2
	QPA2A	04.36		8510022-2	Multi-function valve kit	1
	QPA2B	04.36		8510022-2	Multi-function valve kit	1



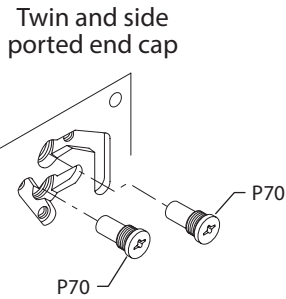
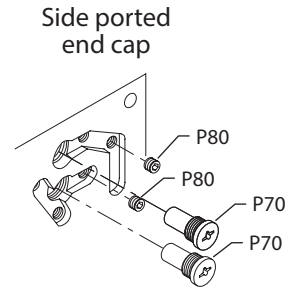
Variable displacement pump



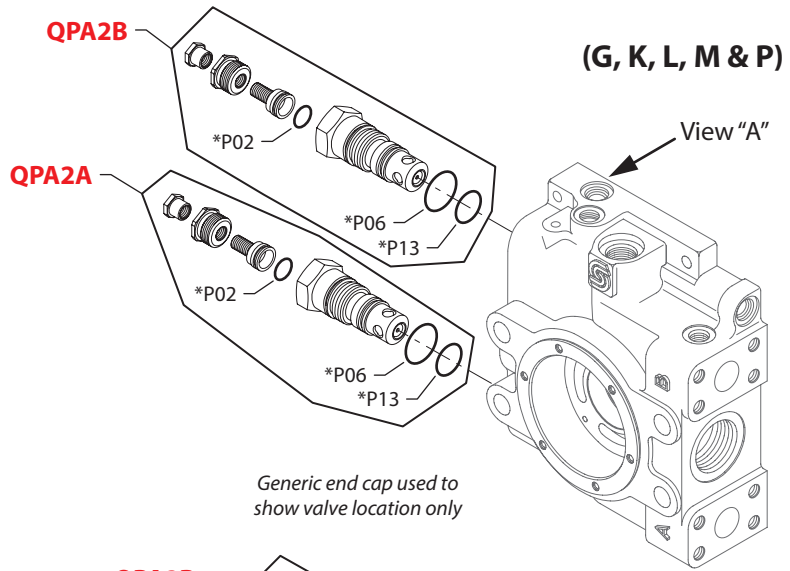
Twin ported end cap
View "A" with pressure limiters, CCW rotation,
Options G, H, K & P



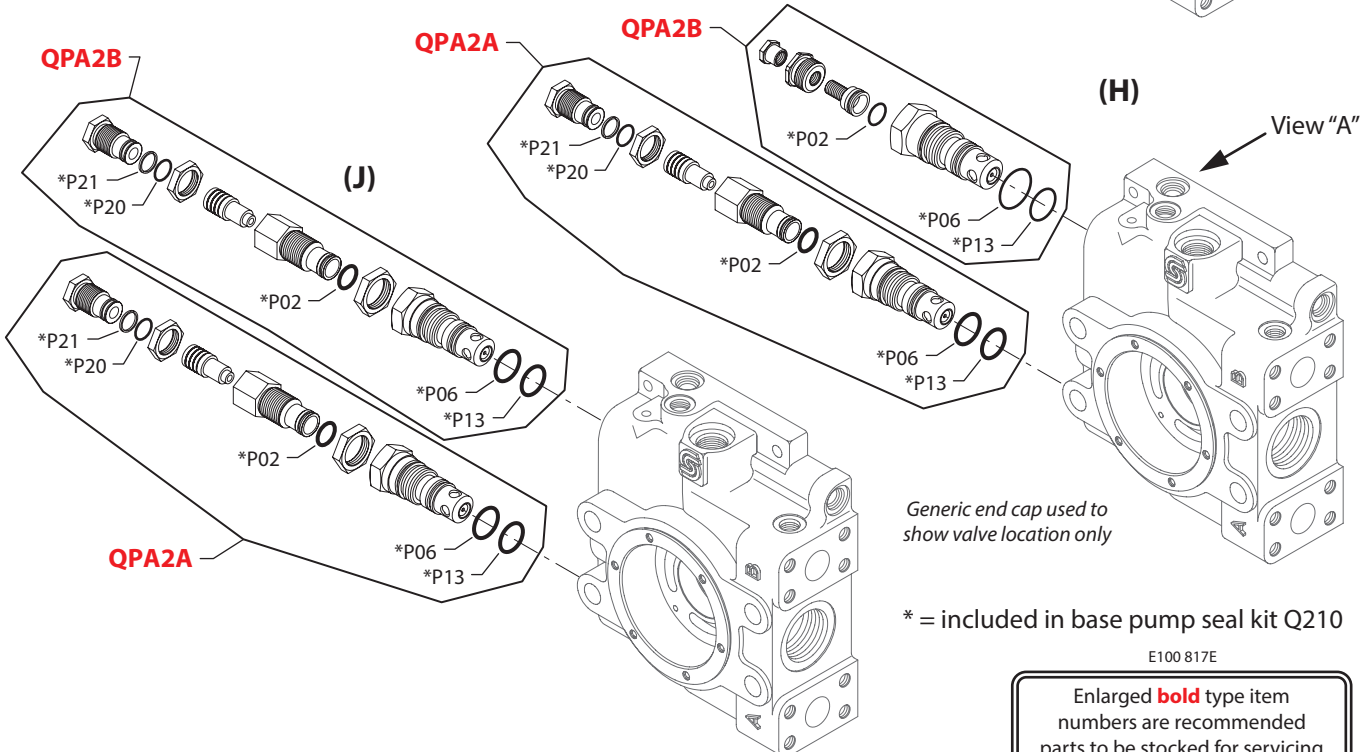
Twin ported end cap
View "A" with pressure limiters, CW rotation,
Options G, H, K & P



Twin and side ported end cap
View "A" with pressure limiters, CW rotation,
Options L & M



Generic end cap used to show valve location only



Generic end cap used to show valve location only

* = included in base pump seal kit Q210

E100 817E

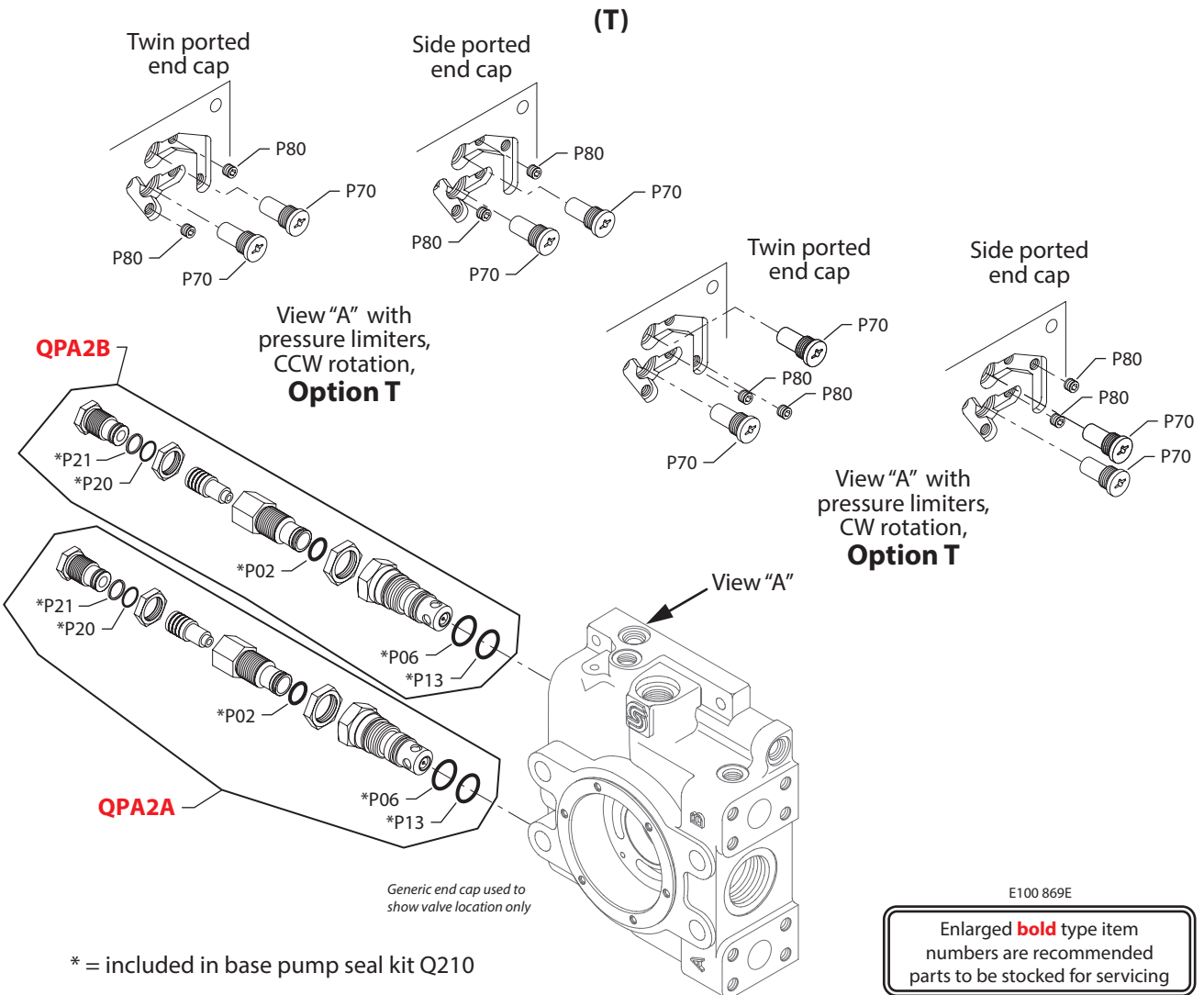
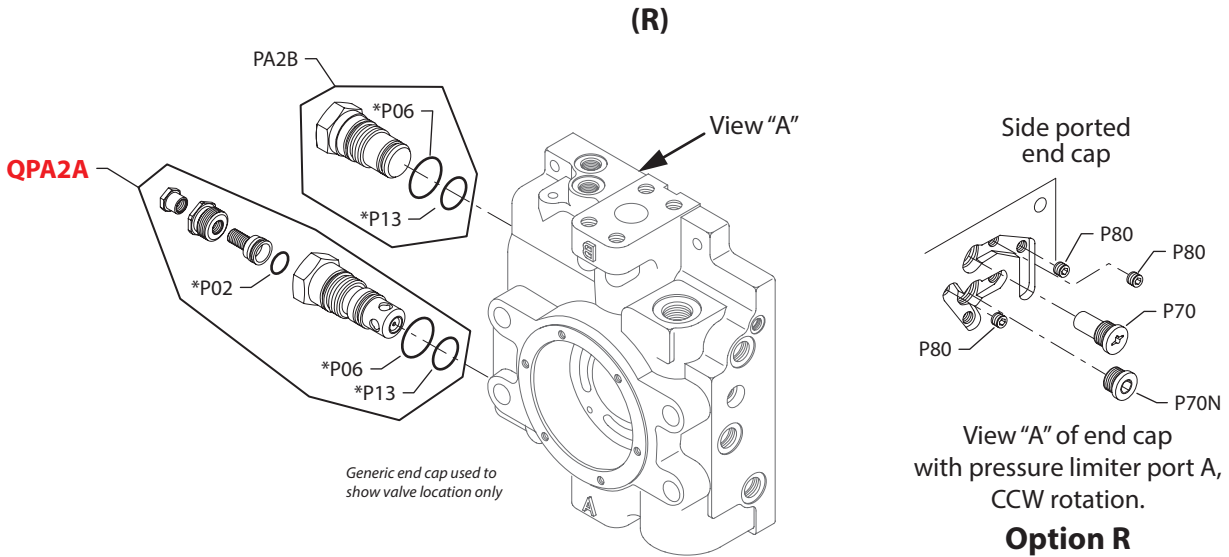
Enlarged **bold** type item numbers are recommended parts to be stocked for servicing


Variable displacement pump
High pressure regulation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	P02	87-02		688721 (9004104-0170)	O-ring	2
	P06	87-02		071811	O-ring	2
	P13	87-02		544742 (9004105-0190)	O-ring	2
G	P70	97-06		8800188	Check valve	2
	P80	97-06		9005475-0004	Special plug	2
	QPA2A	97-06		8510196	Multi-function valve kit	1
	QPA2B	97-06		8510196	Multi-function valve kit	1
H	P20	97-40		9004105-0160	O-ring	1
	P21	97-40		9006110-0160	Back up ring	1
	P70	97-40		8800188	Check valve	2
	P80	97-40		9005475-0004	Special plug	2
	QPA2A	97-40		8510275	Multi-function valve kit	1
	QPA2B	97-40		8510022-1	Multi-function valve kit	1
J	P20	97-06		9004105-0160	O-ring	2
	P21	97-06		9006110-0160	Back up ring	2
	QPA2A	97-40		8510273	Multi-function valve kit	1
	QPA2B	97-40		8510273	Multi-function valve kit	1
K	P70	97-26		8800188	Check valve	2
	P80	97-26		9005475-0004	Special plug	2
	QPA2A	97-26		11079763	Multi-function valve kit	1
	QPA2B	97-26		11079763	Multi-function valve kit	1
L	P70	97-26		8800188	Check valve	2
	QPA2A	97-26		8510022-6	Multi-function valve kit	1
	QPA2B	97-26		8510022-6	Multi-function valve kit	1
M	P70	98-11		8800188	Check valve	2
	QPA2A	98-11		8510022-1	Multi-function valve kit	1
	QPA2B	98-11		8510022-1	Multi-function valve kit	1
P	P70	04-47		8800188	Check valve	2
	P80	04-47		9005475-0004	Special plug	2
	QPA2A	04-47		8510389	Multi-function valve kit	1
	QPA2B	04-47		8510389	Multi-function valve kit	1



Variable displacement pump



E100 869E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing



Variable displacement pump

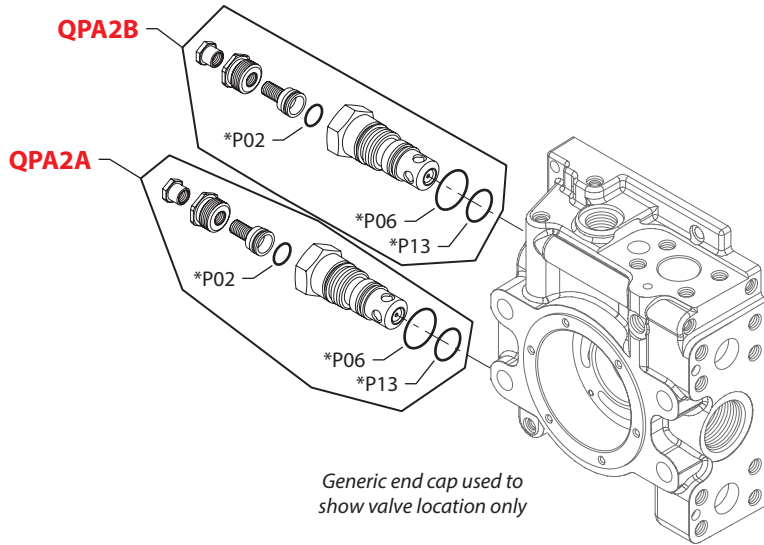
High pressure regulation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
R	P02	99-14		141564 (9004100-0170)	O-ring	1
	P06	99-14		000836 (9004100-0200)	O-ring	2
	P13	99-14		544742 (9004105-0190)	O-ring	2
	P70	99-14		8800188	Check valve	1
	P70N	99-14		327007 (9005110-4400)	Plug assembly	1
	P80	99-14		9005475-0004	Special plug	3
	PA2B	99-14		781971	Plug assembly	1
	QPA2A	99-14		8510022-1	Multi-function valve kit	1
	T	P02	00-35		141564 (9004100-0170)	O-ring
P06		00-35		000836 (9004100-0200)	O-ring	2
P13		00-35		544742 (9004105-0190)	O-ring	2
P20		00-35		9004105-0160	O-ring	2
P21		00-35		9006110-0160	Back up ring	2
P70		00-35		8800188	Check valve	2
P80		00-35		9005475-0004	Special plug	2
QPA2A		00-35		11079764	Multi-function valve kit	1
QPA2B		00-35		11079764	Multi-function valve kit	1

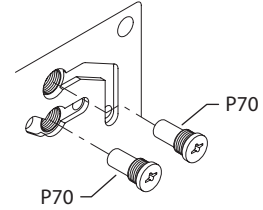


Variable displacement pump

(V)

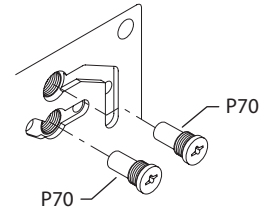


Twin ported
CCW rotation
end cap



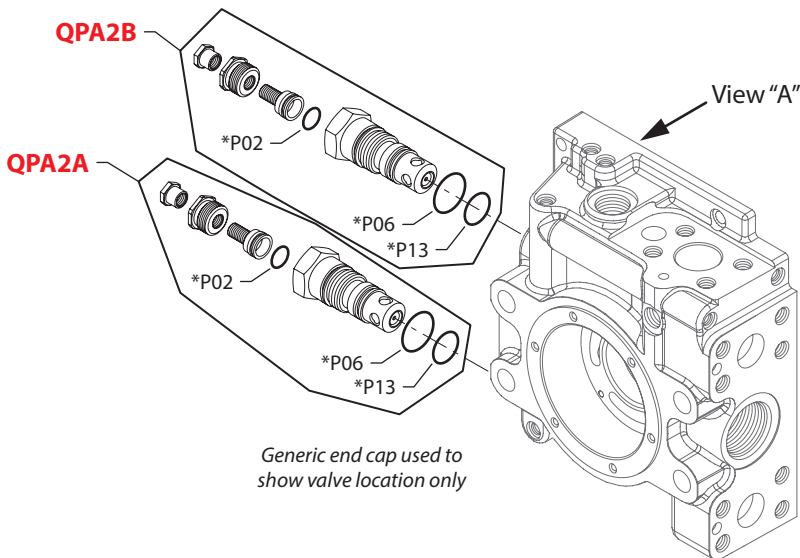
View "A" of end cap
Option V

Twin ported
CW rotation
end cap

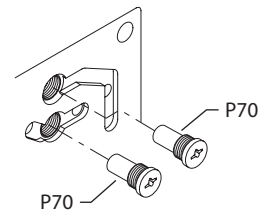


View "A" of end cap
Option V

(Z)



Twin ported
CW rotation
end cap



View "A" of end cap
Option Z

E103 093E

Enlarged **bold** type item numbers are recommended parts to be stocked for servicing

* = included in base pump seal kit Q210



Variable displacement pump

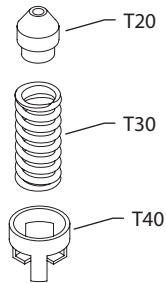
High pressure regulation

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	P02	87-02		141564 (9004100-0170)	O-ring	2
	P06	87-02		000836 (9004100-0200)	O-ring	2
	P13	87-02		544742 (9004105-0190)	O-ring	2
V	P70	08-30		8800188	Check valve	2
	QPA2A	08-30		8510240	Multi-function valve kit	1
	QPA2B	08-30		8510240	Multi-function valve kit	1
Z	P70	04-12		8800188	Check valve	2
	QPA2A	04-12		8510022-1	Multi-function valve kit	1
	QPA2B	04-12		8510022-1	Multi-function valve kit	1



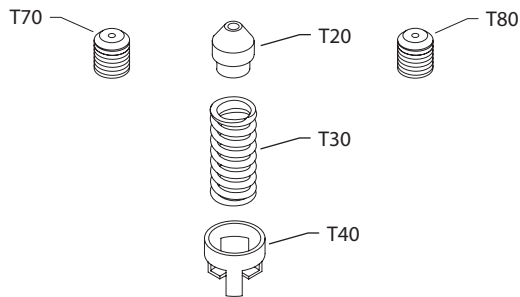
Variable displacement pump

**(01, 02, 03, 04,
05, 06, 09 & 22)**



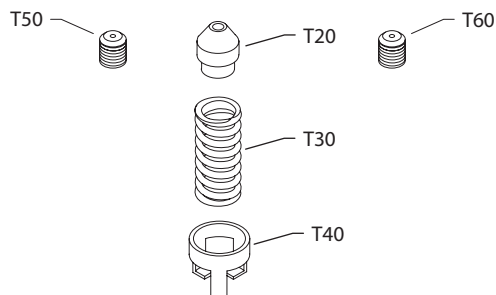
See control drawing
for orifice location

(21 & 26)



See control drawing
for orifice location

(23)



See control drawing
for orifice location



Variable displacement pump

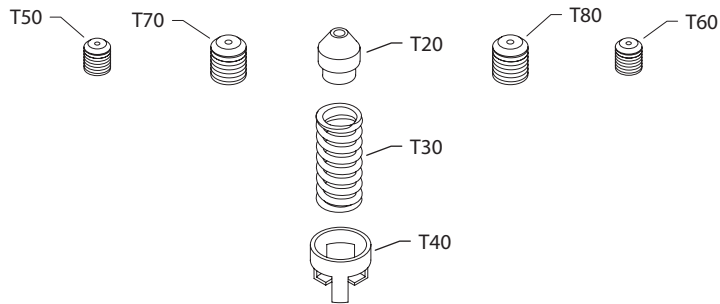
Orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
00				None		
01	T20	87-42		8801136	Orificed check valve, .018"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
02	T20	87-42		8801139	Orificed check valve, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
03	T20	87-42		11061958	Orificed check valve, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
04	T20	87-42		11061970	Orificed check valve, .040"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
05	T20	87-42		11061981	Orificed check valve, .054"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
06	T20	87-42		11061993	Orificed check valve, .062"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
09	T20	87-42		11062006	Orificed check valve, .092"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
21	T20	87-42		11061970	Orificed check valve, .040"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1
	T80	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1
22	T20	87-42		8801137	Orificed check valve, .022"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
23	T20	87-42		11061958	Orificed check valve, .032"	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
26	T20	87-42		11061958	Orificed check valve, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		598292 (11062004)	Orifice plug, 0.8mm, M5 x 6	1
	T60	87-42		598292 (11062004)	Orifice plug, 0.8mm, M5 x 6	1



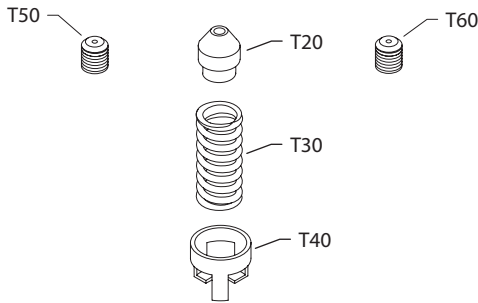
Variable displacement pump

(28 & 30)



See control drawing
for orifice location

(29 & 44)



See control drawing
for orifice location

(32)



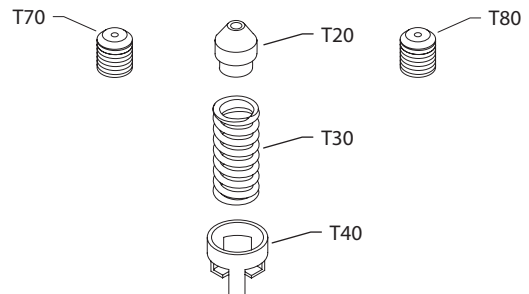
See control drawing
for orifice location

(34)



See control drawing
for orifice location

(38 & 40)



See control drawing
for orifice location

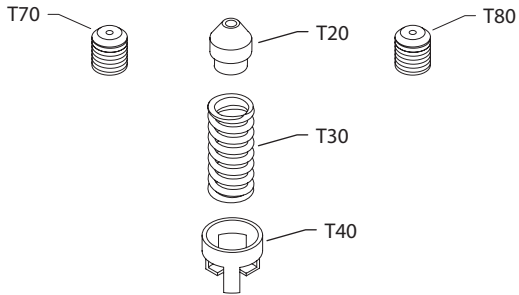

Variable displacement pump
Orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
28	T20	87-42		8801139	Orificed check valve, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		639104 (11062012)	Orifice plug, 0.7mm, M5 x 6	1
	T60	87-42		639104 (11062012)	Orifice plug, 0.7mm, M5 x 6	1
	T70	87-42		704650 (11062018)	Orifice plug, 0.7mm, M8 x 8	1
	T80	87-42		704650 (11062018)	Orifice plug, 0.7mm, M8 x 8	1
	29	T20	87-42		11061958	Orificed check valve, .032"
T30		87-42		679506 (8700007)	Spring	1
T40		87-42		8801303	Spring retainer	1
T50		87-42		639104 (11062012)	Orifice plug, 0.7mm, M5 x 6	1
T60		87-42		639104 (11062012)	Orifice plug, 0.7mm, M5 x 6	1
30		T20	87-42		8801139	Orificed check valve, .026"
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		639153	Orifice plug, 1.3mm, M5 x 6	1
	T60	87-42		639153	Orifice plug, 1.3mm, M5 x 6	1
	T70	87-42		704650 (11062018)	Orifice plug, 0.7mm, M8 x 8	1
	T80	87-42		704650 (11062018)	Orifice plug, 0.7mm, M8 x 8	1
	32	T50	87-42		639120	Orifice plug, 1.0mm, M5 x 6
T60		87-42		639120	Orifice plug, 1.0mm, M5 x 6	1
33				None		
34	T70	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1
	T80	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1
38	T20	87-42		8801139	Orificed check valve, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		716837	Orifice plug, 0.6mm, M8 x 8	1
	T80	87-42		716837	Orifice plug, 0.6mm, M8 x 8	1
	40	T20	87-42		11061970	Orificed check valve, 1.02mm
T30		87-42		679506 (8700007)	Spring	1
T40		87-42		8801303	Spring retainer	1
T70		87-42		755793	Orifice plug, 1.0mm, M8 x 8	1
T80		87-42		755793	Orifice plug, 1.0mm, M8 x 8	1
44		T20	87-42		11061981	Orificed check valve, 1.37mm
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		598292 (11062004)	Orifice plug, 0.8mm, M5 x 6	1
	T60	87-42		598292 (11062004)	Orifice plug, 0.8mm, M5 x 6	1



Variable displacement pump

(38 & 42)

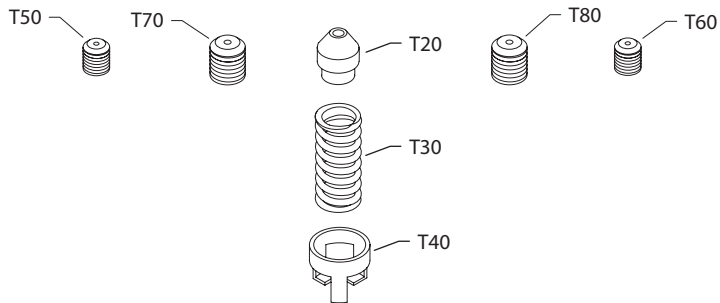


See control drawing
for orifice location

(41)

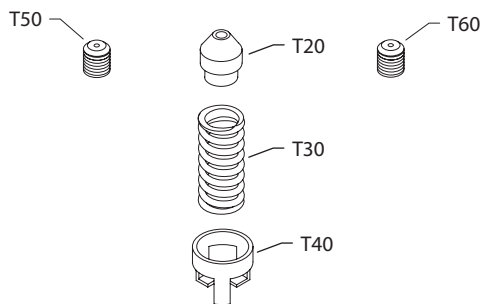


(43)



See control drawing
for orifice location

(45, 46 & 49)



See control drawing
for orifice location

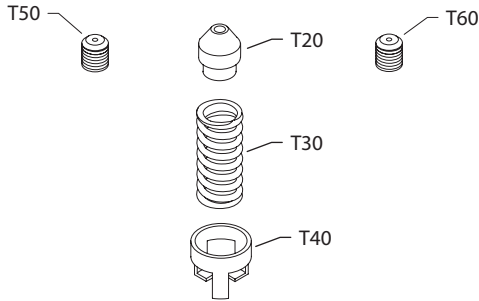

Variable displacement pump
Orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
45	T20	87-42		11061958	Orificed check valve, .032"	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		598292 (11062004)	Orifice plug, 0.8mm, M5 x 6	1
	46	T20	87-42		8801139	Orificed check valve, .026"
T30		87-42		679506 (8700007)	Spring	1
T40		87-42		8801303	Spring retainer	1
T50		87-42		598292 (11062004)	Orifice plug, 0.8mm, M5 x 6	1
T60		87-42		598292 (11062004)	Orifice plug, 0.8mm, M5 x 6	1
49		T20	87-42		11061958	Orificed check valve, .032"
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		598292 (11062004)	Orifice plug, 0.8mm, M5 x 6	1
	T60	87-42		598292 (11062004)	Orifice plug, 0.8mm, M5 x 6	1
	50	T20	87-42		8801139	Orificed check valve, .026"
T30		87-42		679506 (8700007)	Spring	1
T40		87-42		8801303	Spring retainer	1
T50		87-42		310771	Orifice plug, 1.2mm, M5 x 6	1
T70		87-42		517571	Orifice plug, 0.9mm, M8 x 8	1
T80		87-42		517571	Orifice plug, 0.9mm, M8 x 8	1
64		T50	87-42		617159	Orifice plug, 1.8mm, M5 x 6
	T60	87-42		617159	Orifice plug, 1.8mm, M5 x 6	1
76	T20	87-42		8801139	Orificed check valve, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		578542	Orifice plug, 0.8mm, M6 x 8	1
	T80	87-42		578542	Orifice plug, 0.9mm, M6 x 8	1
	77				None	
82	T50	87-42		310771	Orifice plug, 1.2mm, M6 x 6	1
	T70	87-42		310771	Orifice plug, 1.2mm, M6 x 6	1
	T80	87-42		310771	Orifice plug, 1.2mm, M6 x 6	1
84	T70	87-42		310771	Orifice plug, 1.2mm, M6 x 6	1
	T80	87-42		310771	Orifice plug, 1.2mm, M6 x 6	1
99	T20	87-42		8801301	Orificed check valve, .047"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		517572	Orifice plug, 1.5mm, M6 x 6	1
	T80	87-42		517572	Orifice plug, 1.5mm, M6 x 6	1



Variable displacement pump

(A3)



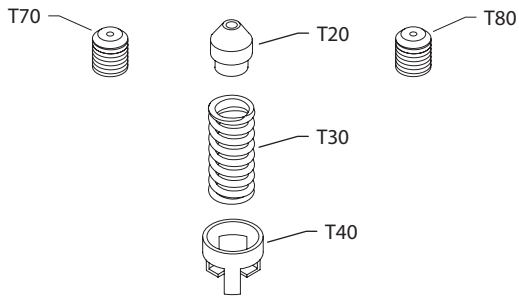
See control drawing
for orifice location

(A4)



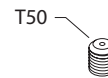
See control drawing
for orifice location

(A5, A8 & C1)



See control drawing
for orifice location

(B1, B7, B8 & B9)



See control drawing
for orifice location

(B3 & BB)



See control drawing
for orifice location

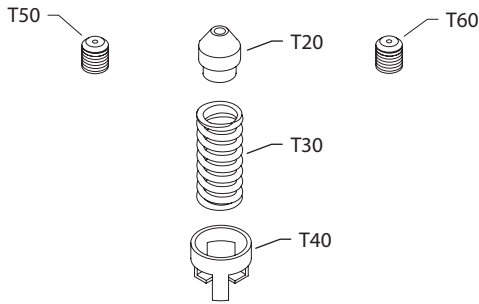

Variable displacement pump
Orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
A3	T20	87-42		11061958	Orificed check valve, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		704650 (11062018)	Orifice plug, 0.7mm, M8 x 8	1
	T60	87-42		704650 (11062018)	Orifice plug, 0.7mm, M8 x 8	1
A4	T70	87-42		578542	Orifice plug, 0.8mm, M6 x 8	1
	T80	87-42		578542	Orifice plug, 0.8mm, M6 x 8	1
A5	T20	87-42		11061970	Orificed check valve, 0.40"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		578542	Orifice plug, 0.8mm, M6 x 8	1
	T80	87-42		578542	Orifice plug, 0.9mm, M6 x 8	1
A8	T20	87-42		11061970	Orificed check valve, 0.40"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		508014	Orifice plug, 1.0mm, M6 x 8	1
	T80	87-42		508014	Orifice plug, 1.0mm, M6 x 8	1
B1	T50	87-42		507042	Orifice plug, 1.5 mm, M6 x 8	1
B2	T70	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
	T80	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
B3	T50	87-42		507042	Orifice plug, 1.5mm, M6 x 8	1
	T70	87-42		739144	Orifice plug, 0.8mm, M6 x 6	1
	T80	87-42		739144	Orifice plug, 0.8mm, M6 x 6	1
B7	T50	87-42		578542	Orifice plug, 0.8mm, M6 x 8	1
B8	T50	87-42		508014	Orifice plug, 1.0mm, M6 x 8	1
B9	T50	87-42		516598	Orifice plug, 1.2mm, M6 x 8	1
BB	T50	87-42		507042	Orifice plug, 1.5mm, M6 x 8	1
	T70	87-42		507042	Orifice plug, 1.5 mm, M6 x 8	1
	T80	87-42		507042	Orifice plug, 1.5 mm, M6 x 8	1
C1	T20	87-42		8801139	Orificed check valve, 0.26"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1
	T80	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1



Variable displacement pump

(C3, C5, C6 & C7)



See control drawing
for orifice location

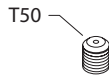
(C4)



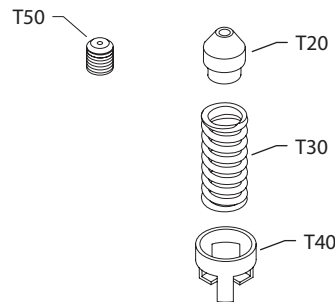
See control drawing
for orifice location

(G4, G8, GB & GD)

(G1)



See control drawing
for orifice location



See control drawing
for orifice location

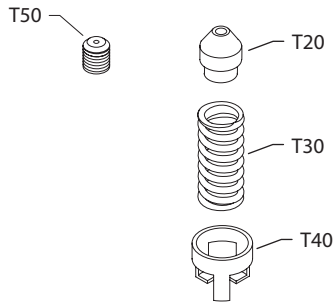

Variable displacement pump
Orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
C3	T20	87-42		8801139	Orificed check valve, 0.26"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		11061989	Orifice plug, 1.3mm, M5 x 6	1
	T60	87-42		11061989	Orifice plug, 1.3mm, M5 x 6	1
C4	T50	87-42		639161	Orifice plug, 1.4mm, M5 x 6	1
	T60	87-42		639161	Orifice plug, 1.4mm, M5 x 6	1
C5	T20	87-42		11061958	Orificed check valve, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		639161	Orifice plug, 1.4 mm, M5 x 6	1
	T60	87-42		639161	Orifice plug, 1.4 mm, M5 x 6	1
C6	T20	87-42		11061970	Orificed check valve, 0.40"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		639161	Orifice plug, 1.4 mm, M5 x 6	1
	T60	87-42		639161	Orifice plug, 1.4 mm, M5 x 6	1
C7	T20	87-42		11061981	Orificed check valve, 1.37 mm	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		639161	Orifice plug, 1.4 mm, M5 x 6	1
	T60	87-42		639161	Orifice plug, 1.4 mm, M5 x 6	1
G1	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
G4	T20	87-42		8801136	Orificed check valve, .018"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
G8	T20	87-42		8801139	Orificed check valve, .026"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
GB	T20	87-42		11061958	Orificed check valve, .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	T20	87-42		11061993	Control orifice kit, 1.57 mm	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



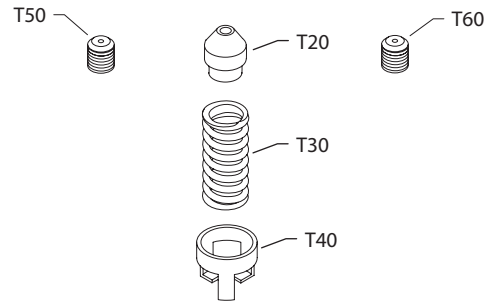
Variable displacement pump

(GF & GJ)



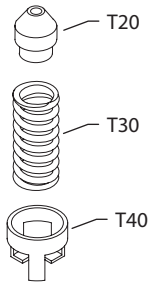
See control drawing
for orifice location

(H1 & K2)



See control drawing
for orifice location

(K1)



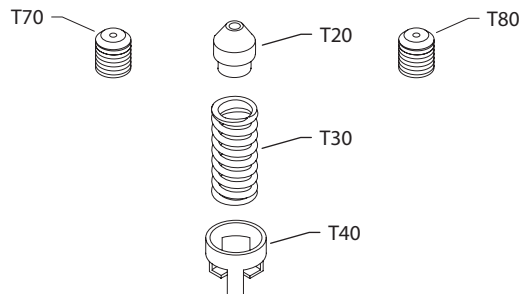
See control drawing
for orifice location

(P1)



See control drawing
for orifice location

(Z3)



See control drawing
for orifice location

E103 120E


Variable displacement pump
Orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GF	T20	87-42		11061970	Control orifice kit, 0.040"	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	T20	87-42		11061981	Control orifice kit, 1.37 mm	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		310771	Orifice plug, 1.2 mm, M6 x 6	1
H1	T20	87-42		11061958	Orificed check valve, .032"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T50	87-42		714477	Orifice plug, 0.8 mm, M8 x 8	1
	T60	87-42		714477	Orifice plug, 0.8 mm, M8 x 8	1
K1	T20	87-42		11061981	Orificed check valve, 1.37 mm	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
K2	T20	87-42		11061958	Orificed check valve, .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
P1	T70	87-42		508014	Orifice plug, 1.0 mm, M6 x 8	1
	T80	87-42		508014	Orifice plug, 1.0 mm, M6 x 8	1
Z3	T20	87-42		11061970	Orificed check valve, .040"	1
	T30	87-42		679506 (8700007)	Spring	1
	T40	87-42		8801303	Spring retainer	1
	T70	87-42		519659	Orifice plug, 1.0 mm, M6 x 6	1
	T80	87-42		519659	Orifice plug, 1.0 mm, M6 x 6	1


Variable displacement pump
Overhaul seal kit

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	Q210	87-42		11095649	Overhaul seal kit	1
	B90	87-42		9803390	Control screen	3
	C70	88-22		314419 (9007276-0114)	Screw (SB-1988-016 & SB-1998-041)	4
	E40	87-02		505412 (9003509-0008)	Seal nut	2
	E50	87-02		517378 (9004104-1620)	O-ring	1
	E60	87-02		517228 (5000206)	Screw (SB-1994-018)	6
	F11	87-02		314500 (9004100-1310)	O-ring	2
	F12	87-02		507799 (8700067)	Piston ring	2
	F40	87-02		363754 (9004104-0350)	O-ring	2
	F50	89-41		9004104-0340	O-ring	2
	F112	87-02		505412 (9003509-0008)	Seal nut	1
	F124	87-02		066159	Seal nut	1
	F212	87-02		505412 (9003509-0008)	Seal nut	1
	F224	87-02		066159	Seal nut	1
	G30	89-46		8200212	End cap gasket (SB-1992-003)	1
	J40	87-02		680892 (9004104-0440)	O-ring	1
	J50	87-02		056739 (9004104-1580)	O-ring	1
	K50	87-02		001149 (9004201-6200)	O-ring	1
	L25	87-02		521722	Seal carrier assembly (SB-2007-018)	1
	N15	87-02		001172 (9004201-9000)	O-ring	1
	N98	87-02		9004104-0320	O-ring	1
	P02	87-02		688721 (9004104-0170)	O-ring	2
	P06	87-02		071811	O-ring	2
	P13	87-02		544742 (9004105-0190)	O-ring	2
	P20	87-02		9004105-0160	O-ring	2
	P21	87-02		9006110-0160	O-ring	2

**BLN-10107**

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.


BLN-10107

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)

Obsoleted 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



Service Bulletin: SB-1988-009

Products affected Series 90 pumps

Subject Servo arm change

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

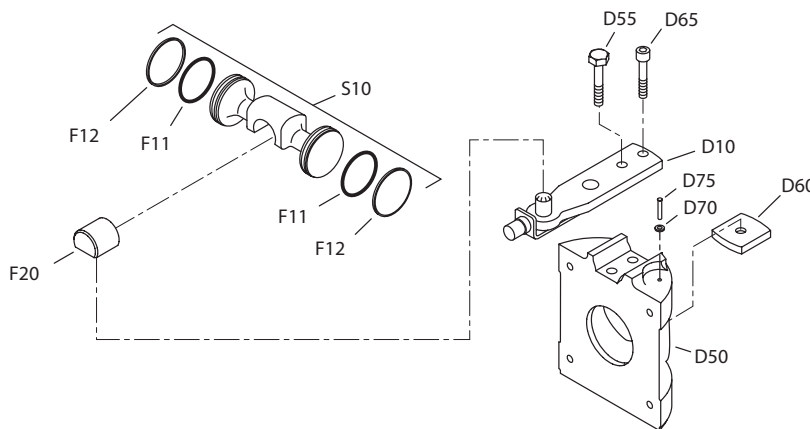
Also, the new servo arm is actually a press fit into a groove in the new swashplate. This situation requires special tooling for assembly, therefore, pre-assembled kits will be created for 55, 75, and 100 cc pumps. The kits will work in any vintage pump.

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

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

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

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



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

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

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

Parts disposition ■ Non-interchangeable



Service Bulletin: SB-1988-016

Products affected

Series 90 pumps

Subject

Change to fixed clearance slipper hold down

Description

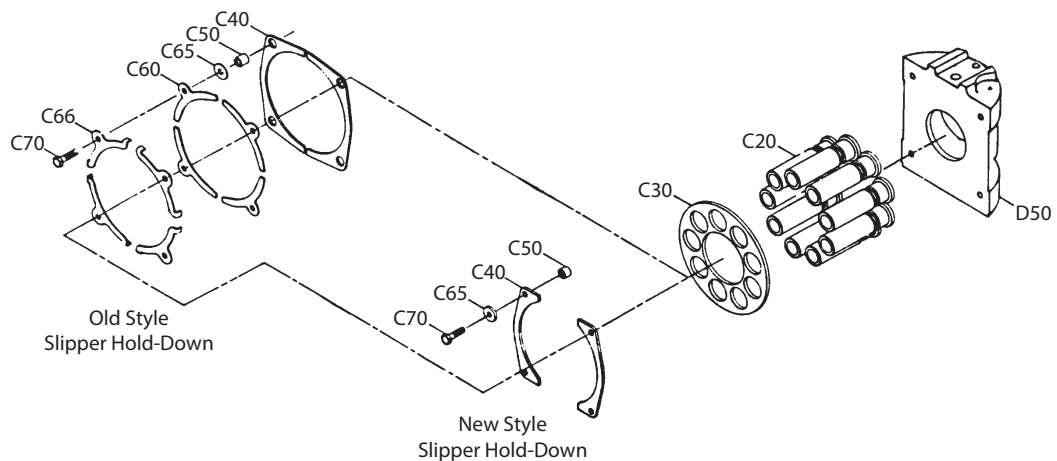
As a product improvement, Sauer-Danfoss has simplified the design of the series 90 pump slipper hold down mechanism. The hold down changes from spring loaded with a fixed maximum clearance design.

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

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

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

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



Models affected

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

Serial numbers

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

Part numbers affected

Item	Qty/pump	55 cc	75 cc	100 cc
C40	2	8000137	8100294	8200144
C50	4	8000138	8100295	8200145
C65	4	9009625-0159	9009625-0159	9009625-0159
C70	4	314419 (9007276-0114)	9007276-0099	9007276-0099

Parts disposition

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



Service Bulletin: SB-1988-023

Products affected Series 90 pumps and motors

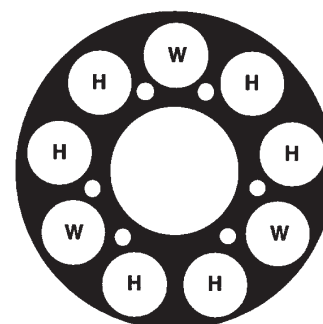
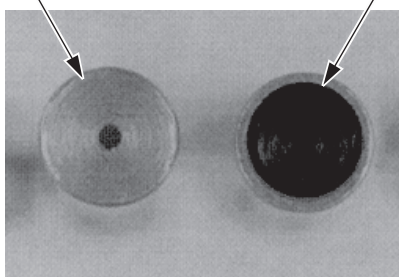
Subject Piston improvement

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

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

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

Welded Piston Assembly Hollow Piston Assembly



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

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

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

Part numbers affected

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

Parts disposition ■ Interchangeable



Service Bulletin: SB-1989-002

Products affected

Series 90 pumps

Subject

Incorporation of adjustable charge relief valve

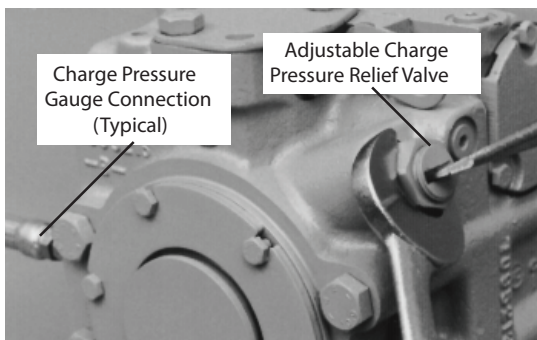
Description

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

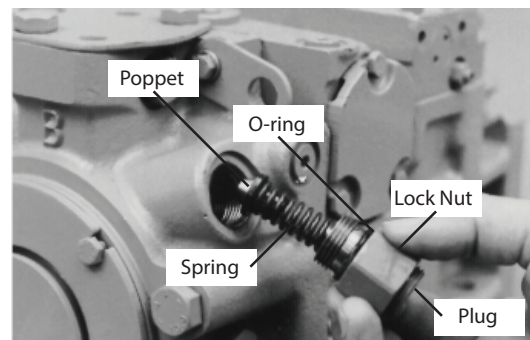
Note: This improvement changes the design of the charge relief valve poppet and plug. The new style charge relief may protrude from the pump end cap approximately 0.27 in [6.9 mm] farther than the shim adjustable r

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

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



Adjusting Charge Relief Valve



Charge Relief Valve Assembly

Models affected

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

Serial numbers

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

Part numbers affected

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

Parts disposition

■ Interchangeable (as an assembly)



Service Bulletin: SB-1989-003

Products affected

Series 90 pumps

Subject

Swashplate leveler spring seat change and servo pressure relief valve deletion

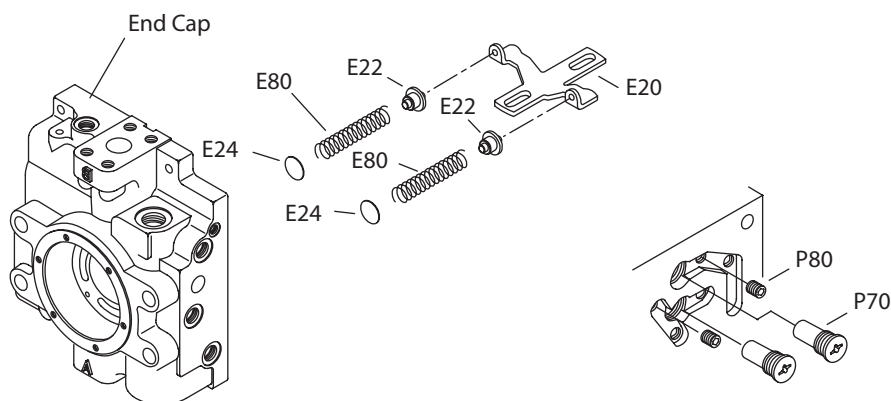
Description

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

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

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

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



Models affected

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

Serial numbers

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

Part numbers affected

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

Parts disposition

■ Non-interchangeable



Service Bulletin: SB-1989-006

Products affected

Series 90 pumps

Subject

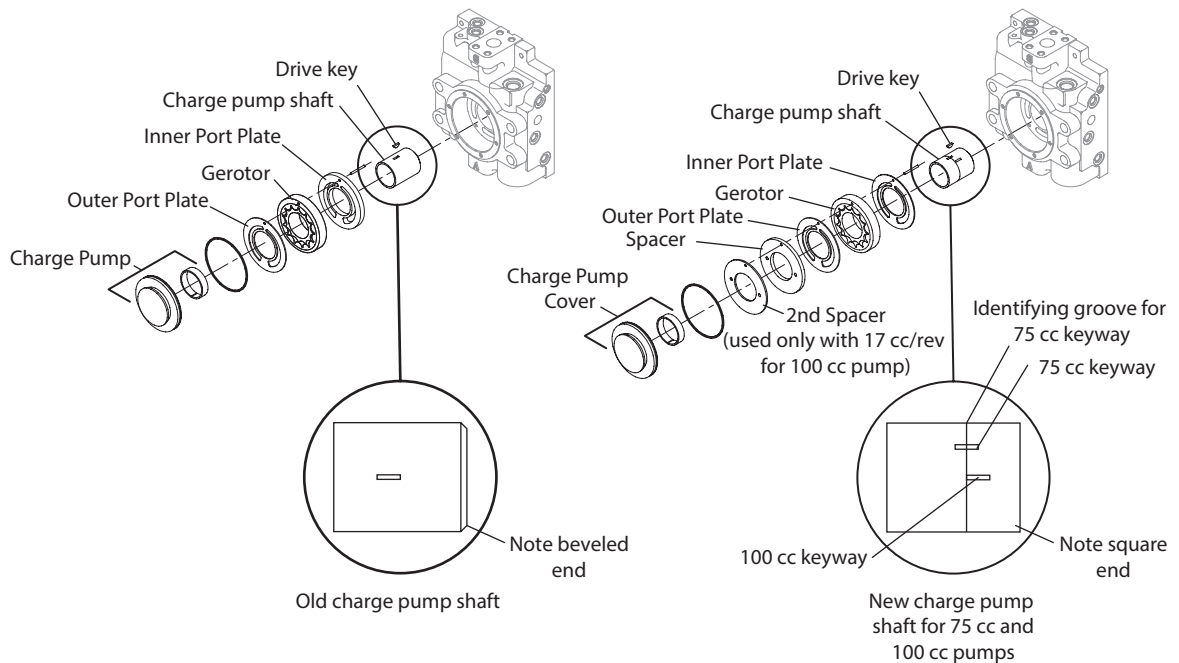
Charge pump design change

Description

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

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

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



**Service Bulletin: SB-1989-006**

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

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

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

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

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

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

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

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

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



Service Bulletin: SB-1989-023A

Products affected Series 90 100 cc variable pumps

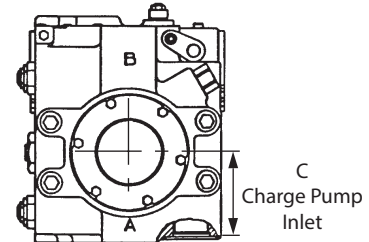
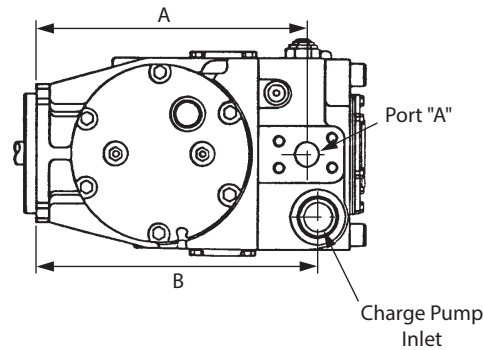
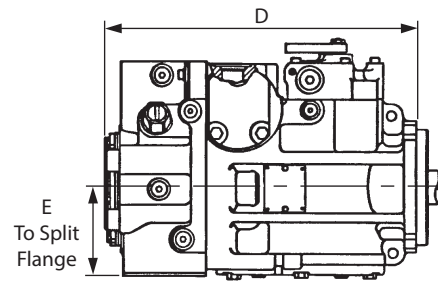
Subject Reduction in overall length

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

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

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

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



Models affected All 96-2xxx variable pumps

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



Service Bulletin: SB-1989-023A

Part numbers affected

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

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

* From the series 90 Parts Manual

Parts disposition

■ Non-interchangeable


Service Bulletin: SB-1992-003A

Products affected Series 90: 55, 75, 100.130 cc pumps

Subject Block point change: components redesign

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

Frame size: 100 cc

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

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

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

Part numbers affected Refer to text of this bulletin for specific part numbers

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

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

Parts disposition ■ Non-interchangeable

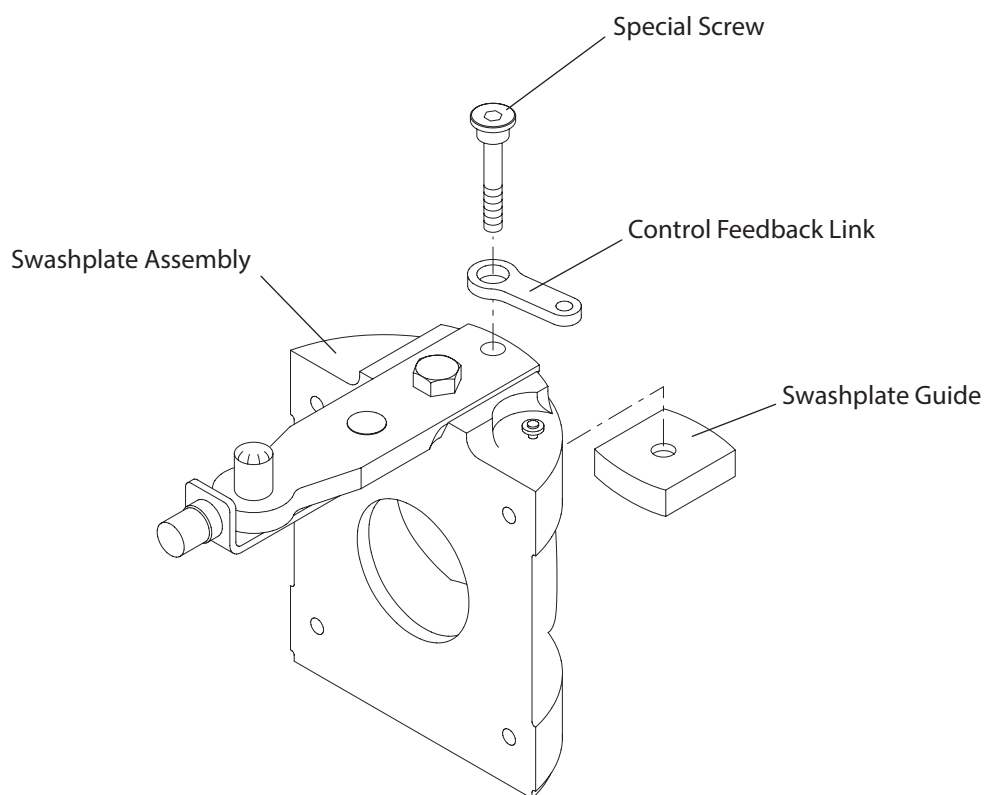


Service Bulletin: SB-1992-011

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

Subject Feedback link retention

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



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

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

Part numbers affected

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

Parts disposition ■ Interchangeable


Service Bulletin: SB-1993-001A

Products affected Series 90 - 55, 75, and 100 cc pumps

Subject Charge pump design change

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

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

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

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

Models affected All 94-2xxx, 95-2xxx, and 96-2xxx pumps

Serial numbers
 55 cc: A-93-10 & beyond
 75 cc: A-93-10 & beyond
 100 cc: A93-15 & beyond

Part numbers affected

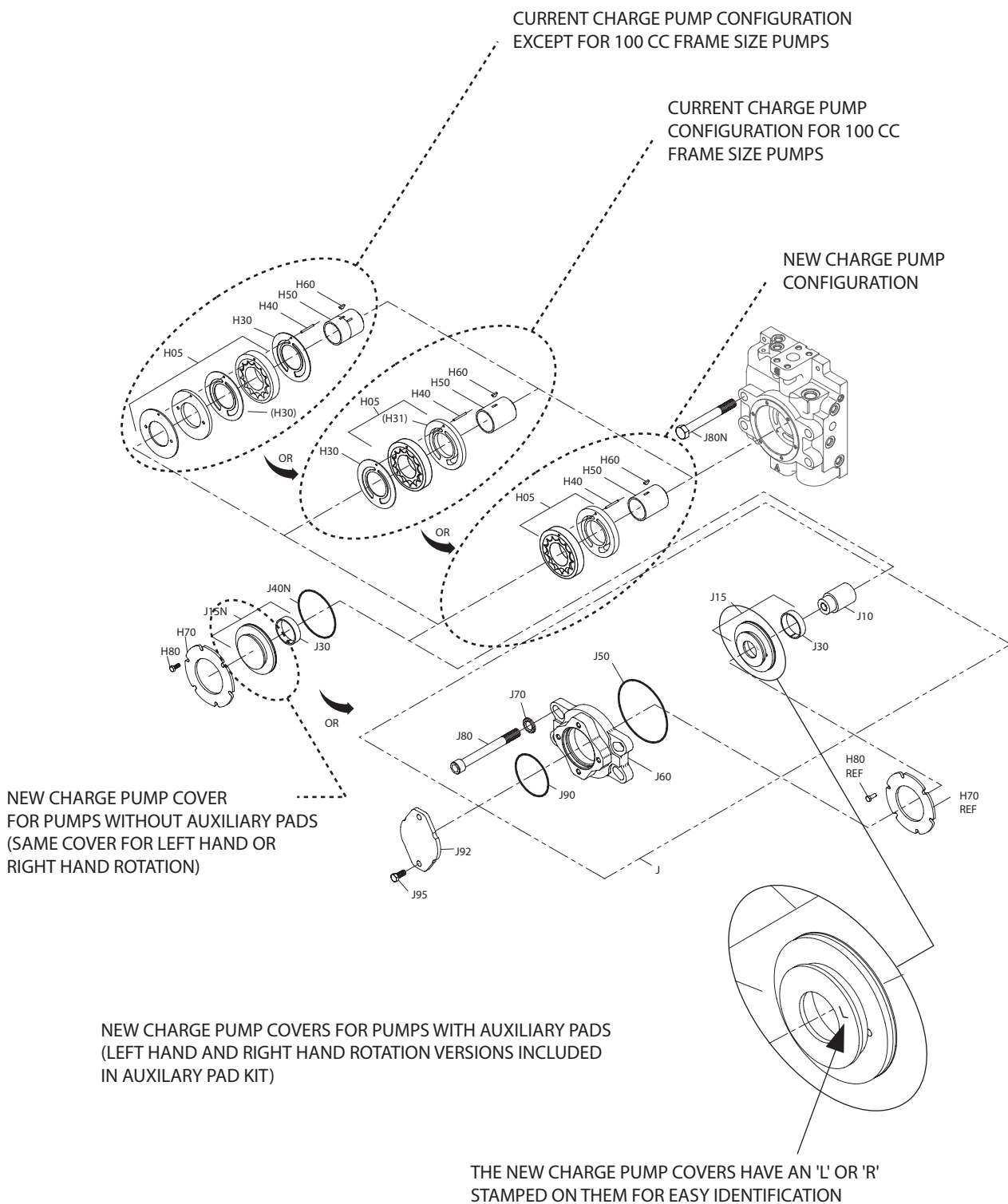
55 cc		75 cc		100 cc		Item number	Description
Before 93-10	After 93-10	Before 93-10	After 93-10	Before 93-15	After 93-15		
8000169	8000268	N/A	N/A	N/A	N/A	H05	11 cc charge pump set
8000170	8000269	8100313	8100479	N/A	N/A	H05	14 cc charge pump set
8000171	8000270	8100314	8100480	8200158	8200238	H05	17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

Note: Piece parts are not interchangeable

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



Service Bulletin: SB-1993-001A





Service Bulletin: SB-1993-015A

Products affected Series 90 pump: All frame sizes

Subject Servo arm interference with speed sensor ring

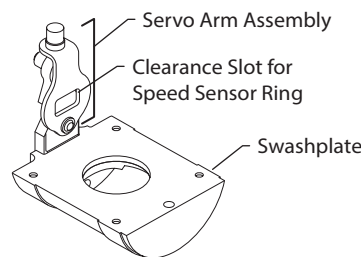
Description **Note: This service bulletin revision adds the 42 cc frame size and the incorporation date of 55 thru 100 cc.**

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

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

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

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



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

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

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

Part numbers affected

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

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



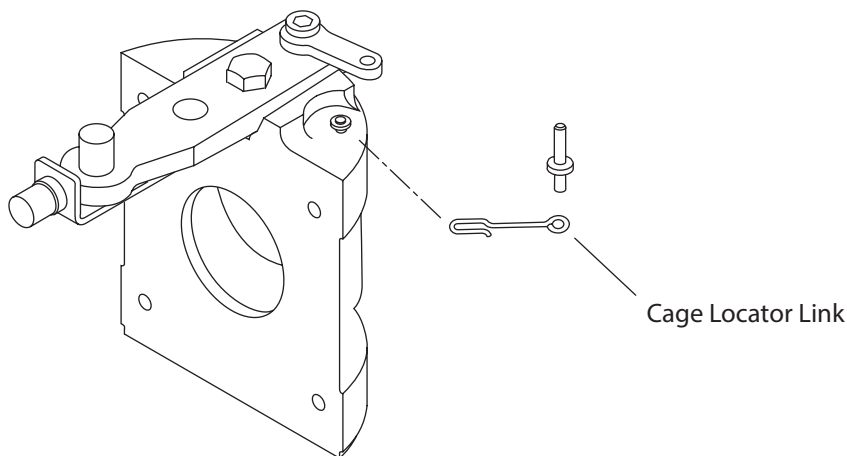
Service Bulletin: SB-1994-017

Products affected Series 90 55-100 cc variable pumps

Subject Swashplate cage locator

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

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



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

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

Part numbers affected	Old link	New link
55 cc	8100241	8100506
75 cc	8100241	8100506
100 cc	8200108	8200273

Parts disposition ■ Interchangeable



Service Bulletin: SB-1994-018

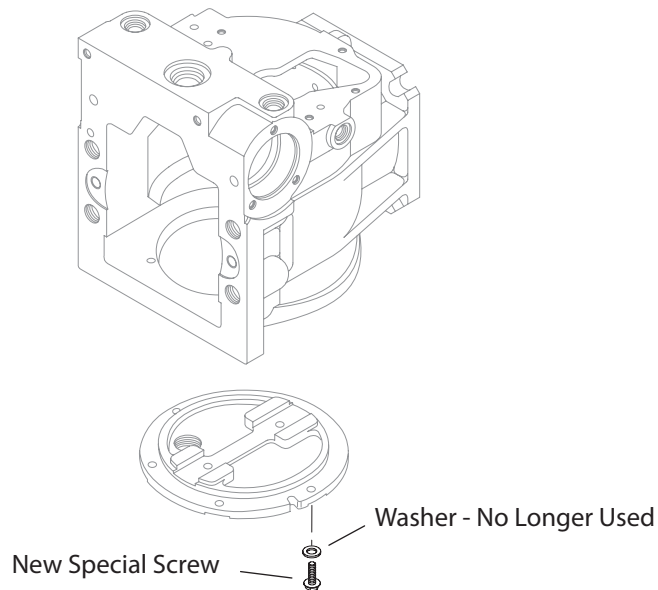
Products affected Series 90 variable pumps

Subject Side cover washer elimination

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

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

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



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

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

Part numbers affected

Pump size	Old screw	New screw
42 cc	648477	Same part number
55-100 cc	9007276-0115	517228 (5000206)
130 cc	308700	Same part number

Parts disposition ■ Interchangeable



Service Bulletin: SB-1994-035

Products affected Series 90 100 cc variable pumps

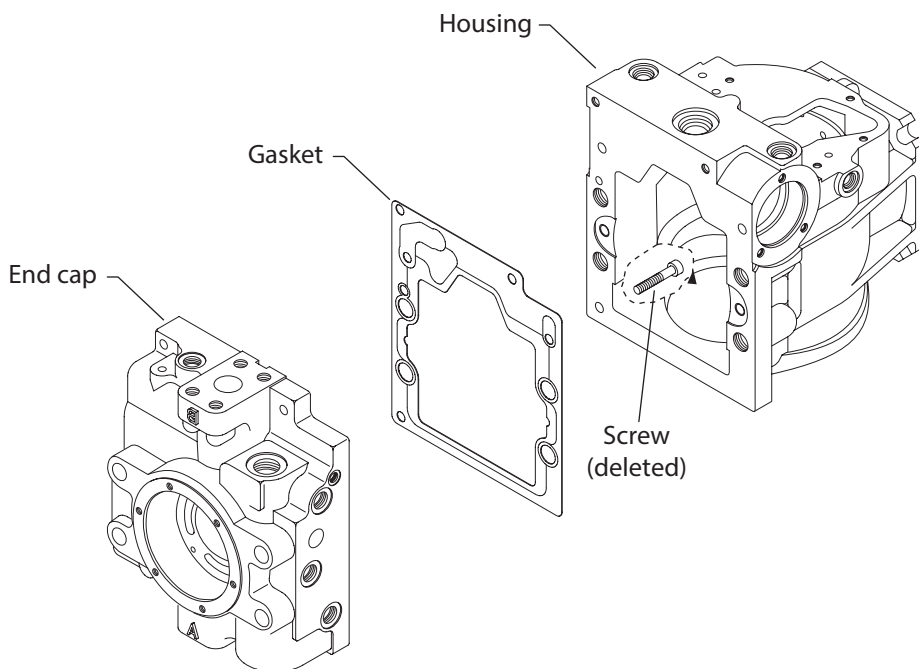
Subject Elimination of housing/end cap screw

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

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

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

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



Models affected All series 90 100 cc variable pumps

Serial numbers Change occurred at serial number 95-07-xxxxx

Part numbers affected

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

Parts disposition ■ Interchangeable



Service Bulletin: SB-1994-036

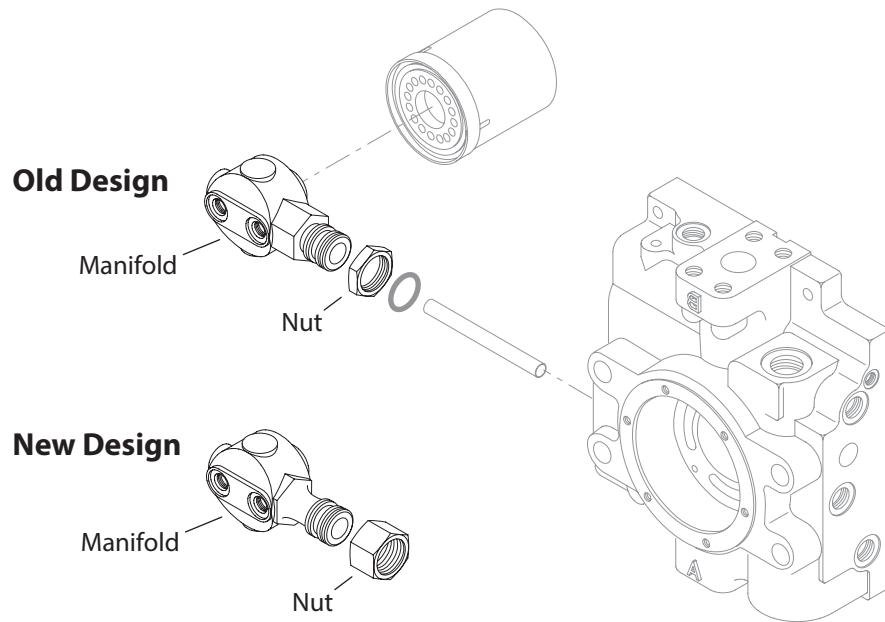
Products affected Series 90 55 thru 130 cc variable pumps

Subject Integral filtration manifold

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

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

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



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

Serial numbers Change occurred at serial number 95-18-xxxxx

Part numbers affected

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

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



Service Bulletin: SB-1995-003

Products affected Series 90 variable pumps - all frame sizes

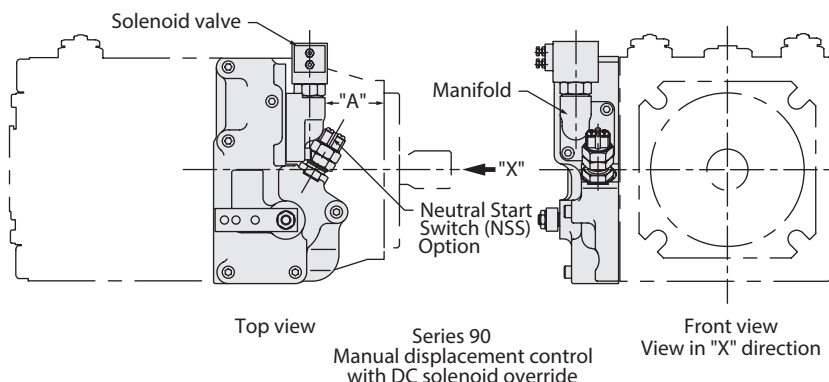
Subject Manual displacement control (MDC) with DC electric solenoid override

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 obsoleted 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	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)



Service Bulletin: SB-1995-025

Products affected

Series 90 55, 75, and 100 cc variable pumps

Subject

Side cover design change

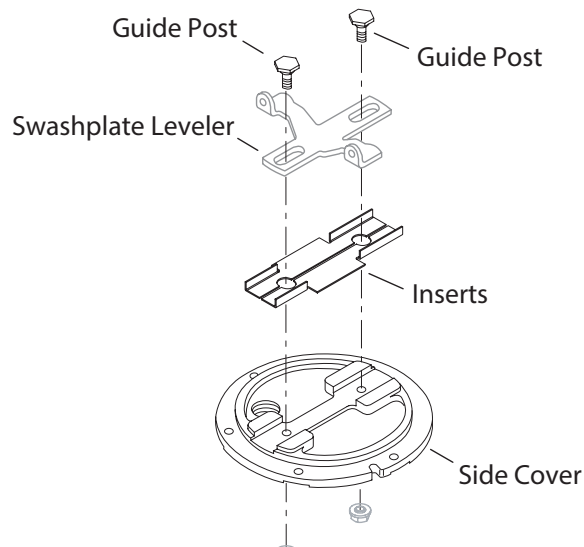
Description

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

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

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

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



Models affected

All 55,75, & 100 cc variable pumps

Serial numbers

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

Part numbers affected

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

Parts disposition

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



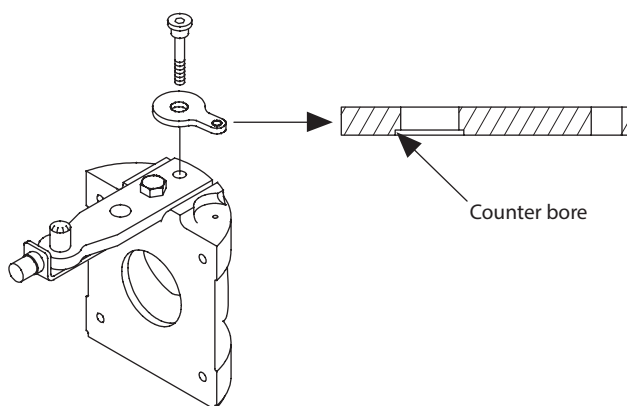
Service Bulletin: SB-1996-009

Products affected Series 90 55, 75, and 100 cc variable pumps

Subject Change swashplate feedback link

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

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



Models affected All 942xxx, 952xxxx, and 962xxx variable pumps

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

Part numbers affected	Frame size	Old part number	New part number
	55 cc	8000096	8000481
	75 cc	8000096	8000481
	100 cc	8200106	8200344

Parts disposition ■ Interchangeable



Service Bulletin: SB-1997-048

Products affected

Series 90 100 cc variable pumps

Subject

Swashplate leveler assembly design change

Description

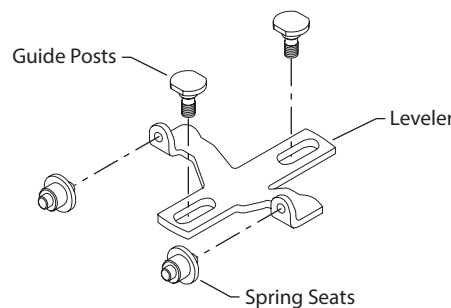
Sauer-Danfoss has changed the design of the swashplate leveler, guide post, and spring seat assembly used on series 90 100 cc pumps. This change improves the serviceability of the pump by eliminating the potential for interference between the hall effect speed sensor and the swashplate leveling springs.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

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

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

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

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



Models affected

All 96-2xxx and 962xxx variable pumps

Serial numbers

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

Part numbers affected

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

Parts disposition

■ Non-interchangeable



Service Bulletin: SB-1998-018

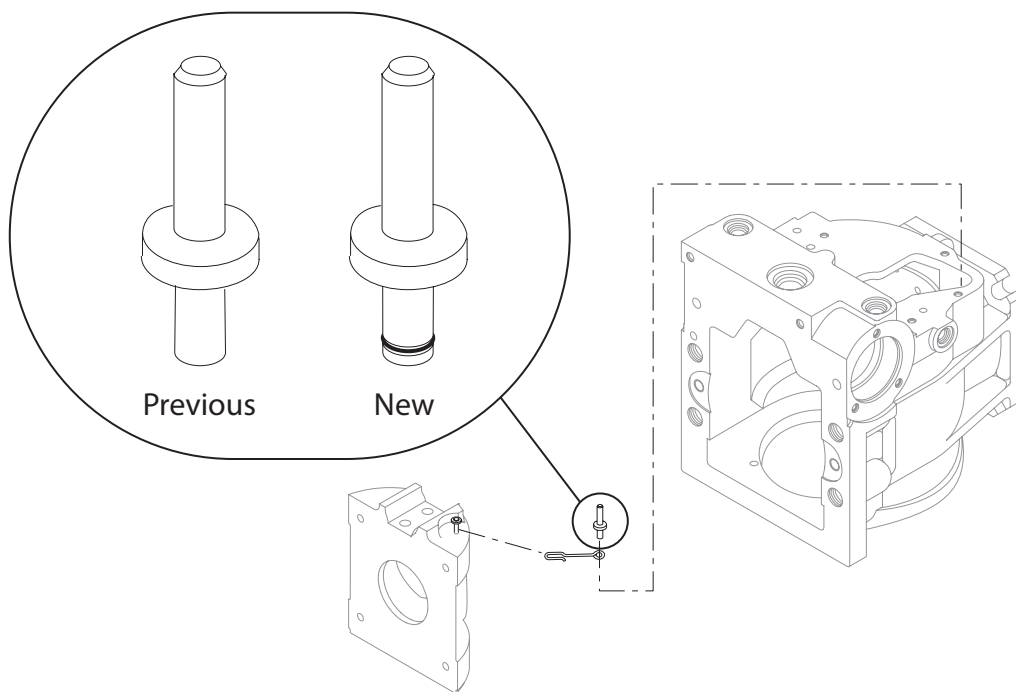
Products affected Series 90 55, 75, and 100 cc variable pumps

Subject Swashplate bearing cage locator pin

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

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

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



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

Serial numbers This change became effective at serial number 98-24-xxxx

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

Parts disposition ■ Interchangeable



Service Bulletin: SB-1998-041

Products affected

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

Subject

Piston hold down mechanism design change

Description

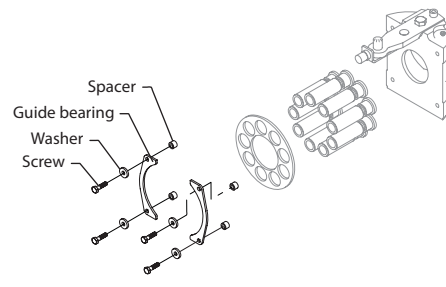
Sauer-Danfoss has initiated a change to the piston hold down mechanism used on series 90 55, 75, and 100 cc variable displacement pump and the series 90 55 and 75 cc variable displacement motors.

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

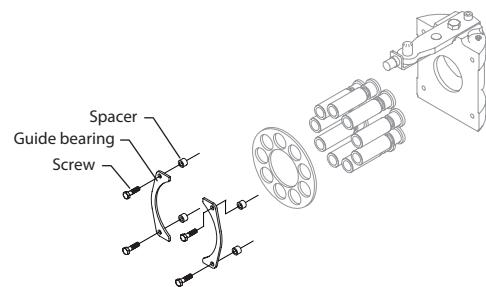
The change involved with the current design update is the removal of the washer from the assembly. This design was initially introduced on the series 90 42 and 130 cc pumps in 1994, and with this change a uniform product family is achieved.

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

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



Previous hold down design



New hold down design



Service Bulletin: SB-1998-041

Models affected

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

Serial numbers

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

Part numbers affected

Component	Displacement	Prior to 98-48	Current
Hold down screw	55 cc	314419 (9007276-0114)	648477
Spacer	55 cc	8000266	8000619
Washer - pumps	55 cc	9009625-0159	N/A
Washer - motors	55 cc	9009625-0129	N/A
Hold down screw	75 cc	9007276-0099	9007276-0114
Spacer	75 cc	8100450	8100777
Washer - pumps	75 cc	9009625-0159	N/A
Washer - motors	75 cc	9009625-0129	N/A
Hold down screw	100 cc	9007276-0099	9007276-0114
Spacer	100 cc	8200216	8200422
Washer - pumps	100 cc	9009625-0159	N/A

Parts disposition

■ Interchangeable



Service Bulletin: SB-1998-066

Products affected

Series 90 55, 75, and 100 cc variable pumps

Subject

Charge pump shaft part number change

Description

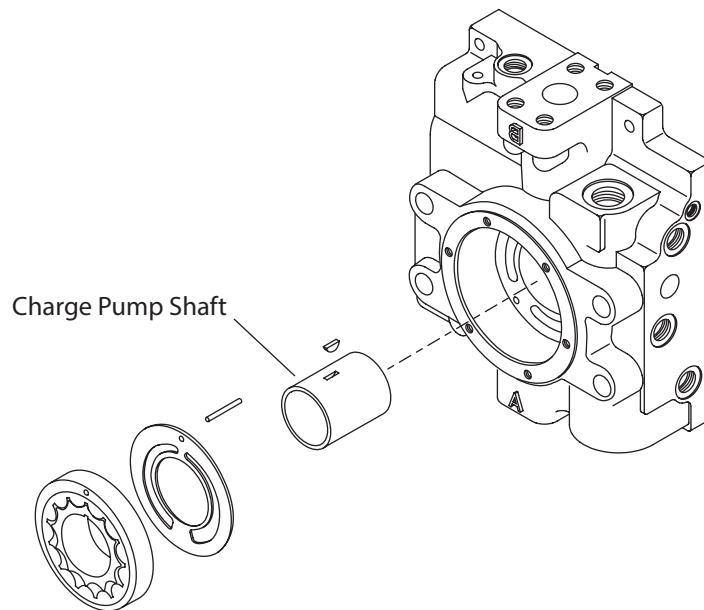
As a product improvement, Sauer-Danfoss has modified the design of the charge pump shaft used in series 90 55, 75 and 100 cc pumps. This change affects all charge pump sizes (11, 14, 17, 20, 26, and 31 cc) available in the series 90 displacement range.

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

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

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

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




Service Bulletin: SB-1998-066
Models affected

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

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

Serial numbers

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

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

Part numbers affected

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

* Special charge pump shaft option using unique charge pump shaft

Parts disposition

■ Interchangeable



Service Bulletin: SB-1998-070A

Products affected Series 90 100cc variable pumps

Subject Swashplate leveler design change

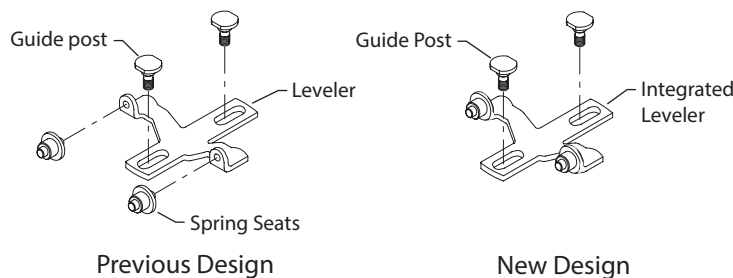
Description Sauer-Danfoss has modified the design of the swashplate leveler and spring seat assembly used on Series 90 100 cc pumps. The assembly and serviceability of the pump has been improved by integrating the spring seat directly into the swashplate leveler.

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

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

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

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



Models affected All 96-2xxx and 962xxx variable displacement pumps

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

Part numbers affected See table on next page.

Parts disposition ■ Interchangeable - recommend replacement as a group


Service Bulletin: SB-1998-070A

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

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

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

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

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

* Both must be replaced together

** Use 8200393 leveler and 8000575 guide posts



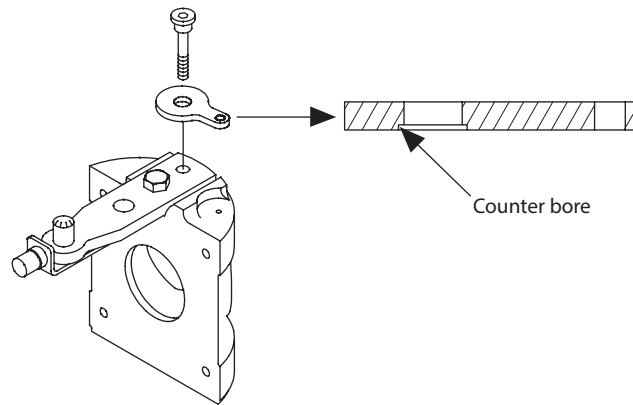
Service Bulletin: SB-1999-019

Products affected Series 90 55, 75, and 100 cc variable pumps

Subject Feedback link change

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

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



Models affected All series 90 55, 75, and 100 cc variable pumps

Serial numbers This change became effective at serial number A-96-40-xxxxx.

Part numbers affected

	100 cc	55 & 75 cc
Old part number	8200344	8000481
New part number	8200413	11070305

Parts disposition ■ Non-interchangeable



Service Bulletin: SB-1999-041A

Products affected

Series 90 variable pumps

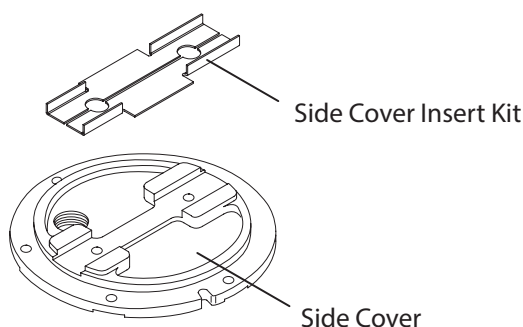
Subject

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



Service Bulletin: SB-1999-057

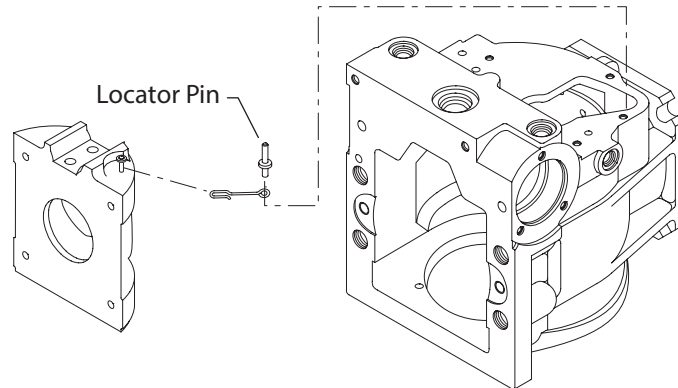
Products affected Series 90 100 cc variable pumps

Subject Cage pin change

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

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

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



Models affected All series 90 100 cc variable pumps

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

Part numbers affected

Old part number	New part number
8801135	8801235

Parts disposition ■ Interchangeable

**Service Bulletin: SB-1999-065A**

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	<p>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.</p> <p>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.</p> <p>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.</p> <p>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-xxxx through A-99-49-xxxx. 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.</p> <p>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.</p> <p>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.</p>
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-xxxx. Sauer-Danfoss Ames 100cc pump production: A-00-25-xxxx. Sauer-Danfoss Neumunster production: N-00-01-xxxx.



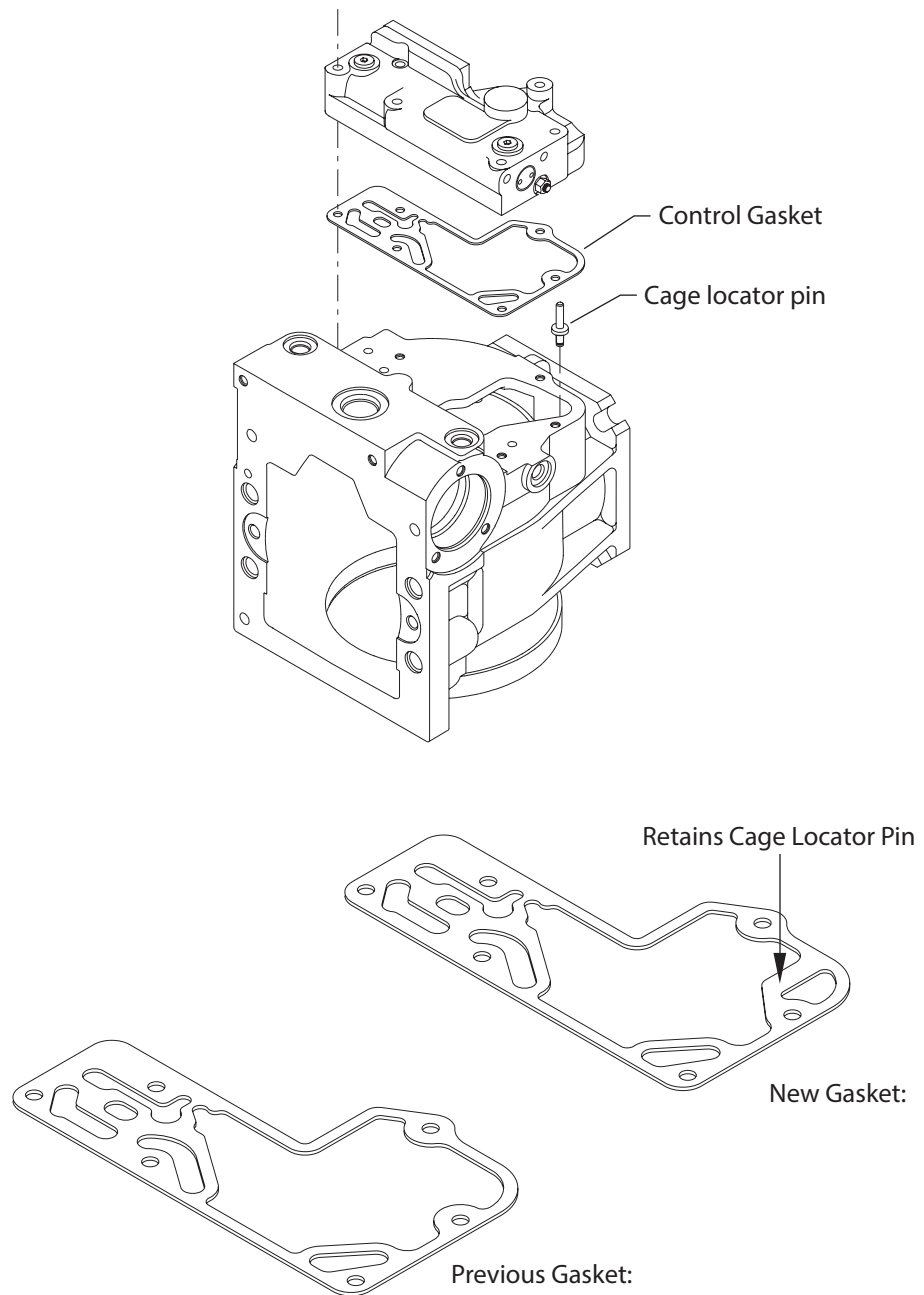
Service Bulletin: SB-1999-065A

Part numbers affected

Previous gasket	New gasket
511608	8801241

Parts disposition

■ Interchangeable





Service Bulletin: SB-2000-022

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


Service Bulletin: SB-2000-022
Models affected

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

Serial numbers

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

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

Part numbers affected

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

Parts disposition

■ Interchangeable



Service Bulletin: SB-2000-041A

Products affected

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

Subject

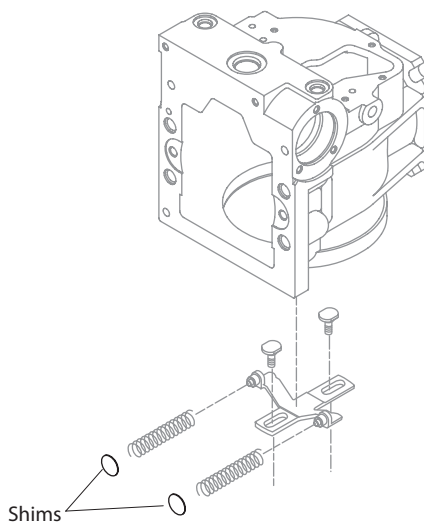
Common leveler spring shim.

Description

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

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

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



Models affected

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

Serial numbers

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

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

Part numbers affected

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

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

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

Parts disposition

■ Interchangeable



Service Bulletin: SB-2001-013

Products affected

Series 90 100 cc variable pumps

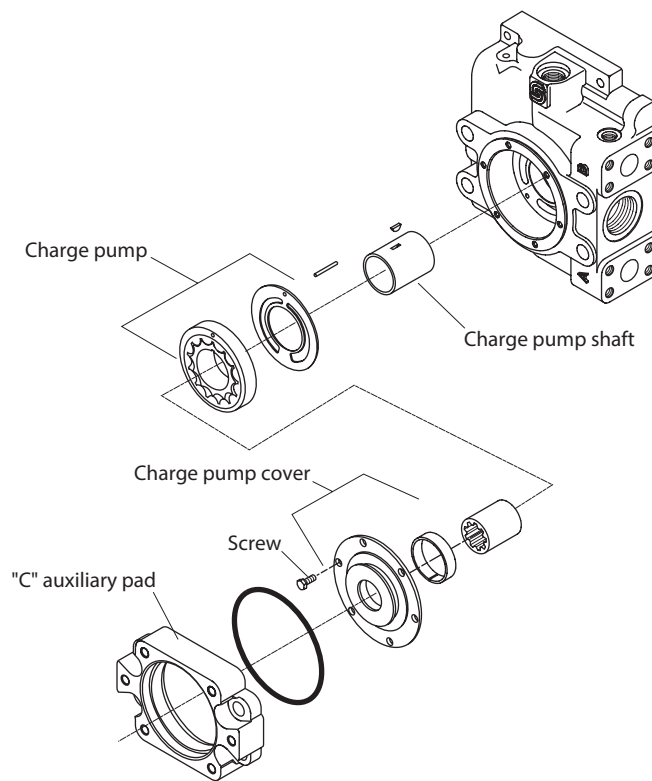
Subject

31cc charge pump improvements

Description

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

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



Models affected

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

Serial numbers

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

Part numbers affected

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

Parts disposition

■ Interchangeable - see text in DESCRIPTION



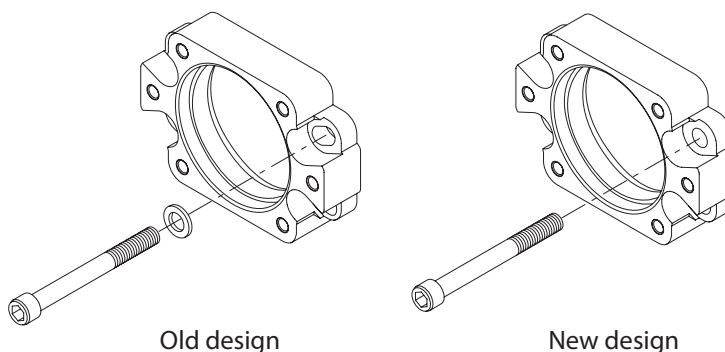
Service Bulletin: SB-2002-050

Products affected Series 90 55, 75, and 100 cc pumps

Subject Auxiliary mounting pad

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

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



Models affected Series 90 55, 75, and 100 cc pumps with SAE C auxiliary mounting.

Serial numbers This change became effective at serial number A-03-10-xxxxx

Part numbers affected

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

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

Parts disposition ■ Interchangeable



Service Bulletin: SB-2005-011

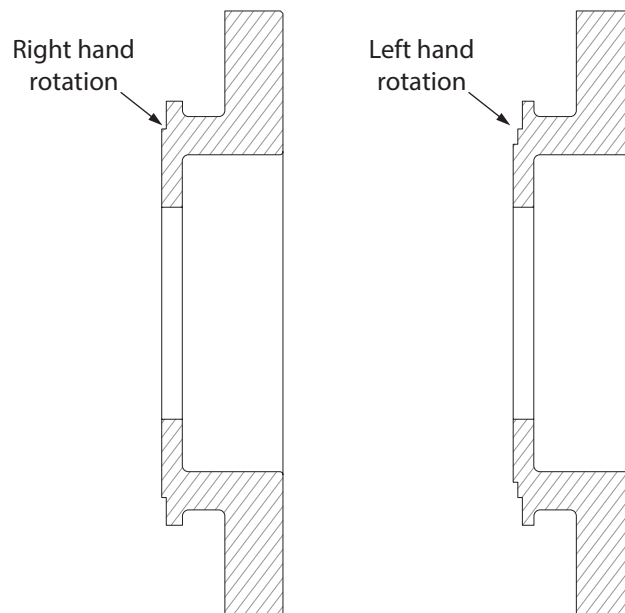
Products affected Series 90 42 thru 100 cc pumps

Subject Auxiliary flange charge pump cover

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

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

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



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

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

Part numbers affected None

Parts disposition ■ Interchangeable



Service Bulletin: SB-2007-018C

Products affected Series 90 100 cc pumps

Subject Pump redesign

Description As a global improvement, the series 90 100cc pump has redesigned the following components: servo arm, swashplate guide, pump housing, shaft seal assembly, cradle bearing, and servo arm screw.

All parts are non-interchangeable with the exception of the 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.

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.

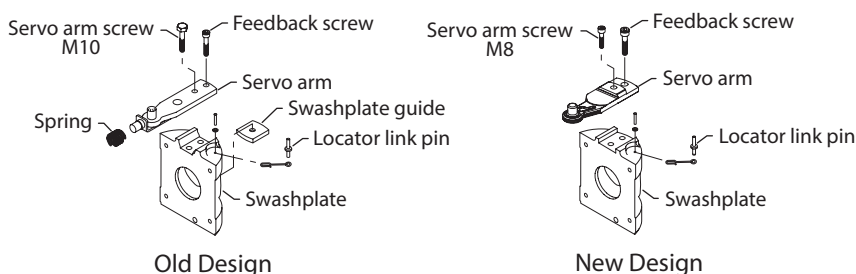
Housing: The housing is modified internally to provide the servo arm pivot. Also, the cradle and side cover radii are reduced. Some customers may notice cosmetic external changes. The old housing is obsolete and no longer available as a service part.

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.

Overhaul seal kit: A new overhaul seal kit has been created that will service both old and new design pumps. The new seal kit also has additional O-rings and seal nuts required for a more complete repair. The old seal kit is obsolete and no longer available for service.

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.

Screws: The screw that holds the servo arm to the swashplate has changed from a M10 to a M8 screw. The other screw is a feedback link screw which changed from 50mm long to 45mm long. See drawing for details.




Service Bulletin: SB-2007-018C

Models affected Series 90 100cc pumps

Serial numbers This change became effective at serial number A-07-28-xxxxx.

Part numbers affected	Description	Old part number	New part number
	Servo arm	518629, 8200268	521607
	Servo arm screw	536649, 9007276-0111	519150
	Seal carrier assembly	510017, 8200309	521722
	Cradle bearing	305839/P, 8200053	521614
	Swashplate guide	8800669	No replacement needed
	Compression spring	673145, 8200058	No replacement needed
	Shaft seal	9008000-0114	519021
	Feedback screw	9007375-0032	9007375-0044
	Standard housing	503424	521605
	PPU housing	726554, 8200332	11002463
	Side cover	501574	11000790
	Seal carrier assembly	510017, 8200309	521722
	Swashplate assembly	8200192	8200618
	Swashplate	8200232	11002493
	Overhaul seal kit	82020S30	11035669

Parts disposition ■ Non-interchangeable



Service Bulletin: SB-2007-027

Products affected Series 90; 55, 75 , and 100 cc pumps

Subject SAE A auxiliary mounting flange

Description Sauer-Danfoss is pleased to announce a design improvement on the SAE A auxiliary mounting flange adapter on all its series 90 pumps. All manufacturing locations producing these pumps will be changed to this configuration.

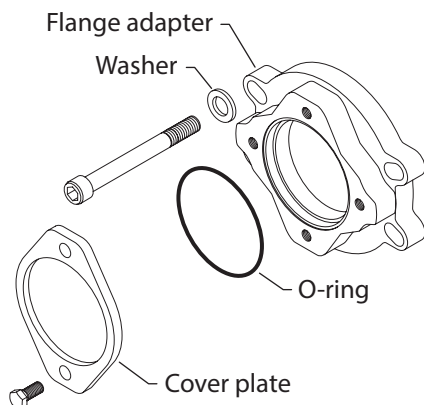
The improvement comes in the form of a more robust sealing geometry with a larger cross-section O-ring. The O-ring groove in the flange will now be sized to mate with a 2.62mm [0.103] cross section O-ring rather than the old 1.78mm [0.070] cross-section O-ring. The Sauer-Danfoss part number for the new O-ring is 9004104-1520 (2.62mm [0.103]. x 82.22mm [3.237]). The larger cross-section sealing geometry allows for the use of a donut style A pad seal and a new flat cover for improved assembly. This new configuration is qualified as a running cover. When installing an auxiliary pump, the donut style A pad seal must be discarded and the part number 9004104-1520 O-ring used.

Also, the flanges will no longer have a slotted interface with a washer for the end cap screws. The flanges will now have round through holes for the end cap screws and will use no washers. The end cap screws do not change. This eliminates the area where water or high pressure wash chemicals can be trapped around the end cap screws. There now are specific part numbers for the flanges used on each of the three displacement size pumps; 55, 75 and 100 cc.

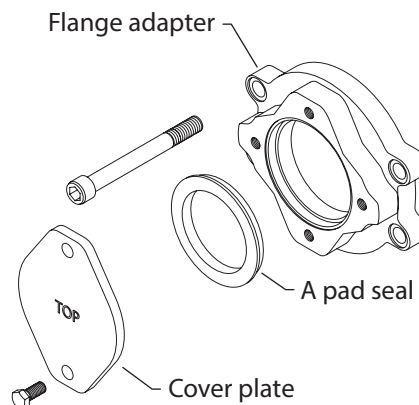
The pumps will now be supplied with the donut style A pad seal and new flat cover, instead of the small O-ring and cover plate (shown in the drawing below).

The overhaul seal kit will include the old O-ring, the new O-ring and the A pad seal.

Old Design



New Design




Service Bulletin: SB-2007-027

Models affected All series 90; 55, 75, and 100 cc pumps with SAE "A" auxiliary mounting flanges.

Serial numbers This change became affective at serial number; A 07-05-xxxxx.

Part numbers affected

Description	Old p/n	Used on	New p/n	Used on
Flange adapter	8000262	55 cc	8000641	55 cc
Flange adapter	8800172	55, 75 & 100 cc	8000641	55 cc
Flange adapter	8800172	55, 75 & 100 cc	8100846	75 cc
Flange adapter	8800172	55, 75 & 100 cc	8200467	100 cc
Washer	9009625-0132	55, 75 & 100 cc	NA	NA
O-ring	9004104-0420	All sizes	9004104-1520	All sizes
A Pad seal	NA	All sizes	4800482	All sizes
Flange cover	9802336	All sizes	4460586	All sizes

Note: If the new auxiliary flange adapter is used, the new O-ring or A pad seal and cover must also be used.

Parts disposition

- Interchangeable - if new O-ring or A pad seal and cover are replaced
- Use parts in stock
- Order replacement parts
- Revise existing part orders



Service Bulletin: SB-2007-051

Products affected Series 90; 55, 75 , and 100 cc pumps

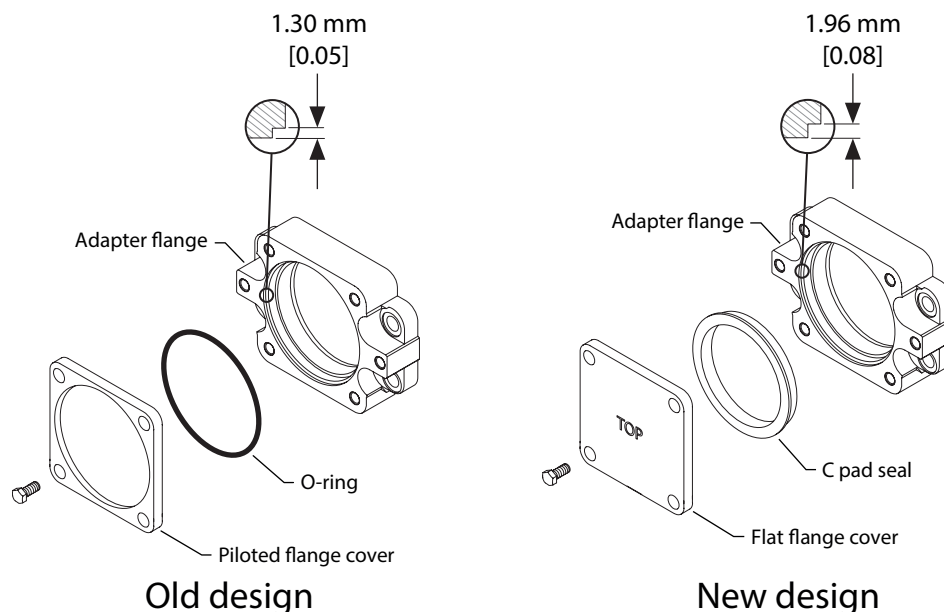
Subject SAE C auxiliary mounting flange

Part numbers affected Sauer-Danfoss is pleased to announce a design improvement on the SAE C auxiliary mounting flange adapter on its series 90 pumps. The frame sizes affected by this change are 55, 75, and 100cc. All manufacturing locations producing these pumps will be changed to this configuration.

The improvement comes in the form of a more robust sealing geometry with a larger cross-section O-ring. The O-ring groove in the flange will now be sized to mate with a 2.62mm [0.103] cross section O-ring rather than the old 1.78mm [0.070] cross-section O-ring. The Sauer-Danfoss part number for the new O-ring is 9004104-1580 (2.62mm [0.103] x 120.32mm [4.737]). The larger cross-section sealing geometry allows for the use of a donut style C pad seal and a new flat cover for improved assembly. This new configuration is qualified as a running cover. When installing an auxiliary pump, the donut style C pad seal must be discarded and part number 9004104-1580 O-ring used.

The pumps will now be supplied with the donut style seal and new flat cover, instead of the small O-ring and cover plate (shown in the drawing below).

The overhaul seal kit will include the old O-ring, the new O-ring and the new C pad seal




Service Bulletin: SB-2007-051

Models affected All series 90; 55, 75, and 100 cc pumps with SAE "C" auxiliary mounting flanges.

Serial numbers This change became affective at serial number; A 08-19-xxxxx and N 09-30-xxxxx.

Part numbers affected

Description	Old p/n	Used on	New p/n
SAE C flange	8200469	100 cc	8200515
SAE C flange	8100848	75 cc	8100897
SAE C flange	8000643	55 cc	8000740
O-ring	9004100-0480	55, 75 & 100 cc	9004104-1580
C Pad seal	N/A	55, 75 & 100 cc	8801062
Flange cover	8800406	55, 75 & 100 cc	8801060

Note: If the new auxiliary flange adapter is used, the new O-ring or C pad seal and cover must also be used.

Parts disposition

- Interchangeable - if new O-ring or C pad seal and cover are replaced
- Use parts in stock
- Order replacement parts
- Revise existing part orders



Service Bulletin: SB-2007-055

Products affected Series 90; 55, 75 , and 100 cc pumps

Subject SAE B auxiliary mounting flange

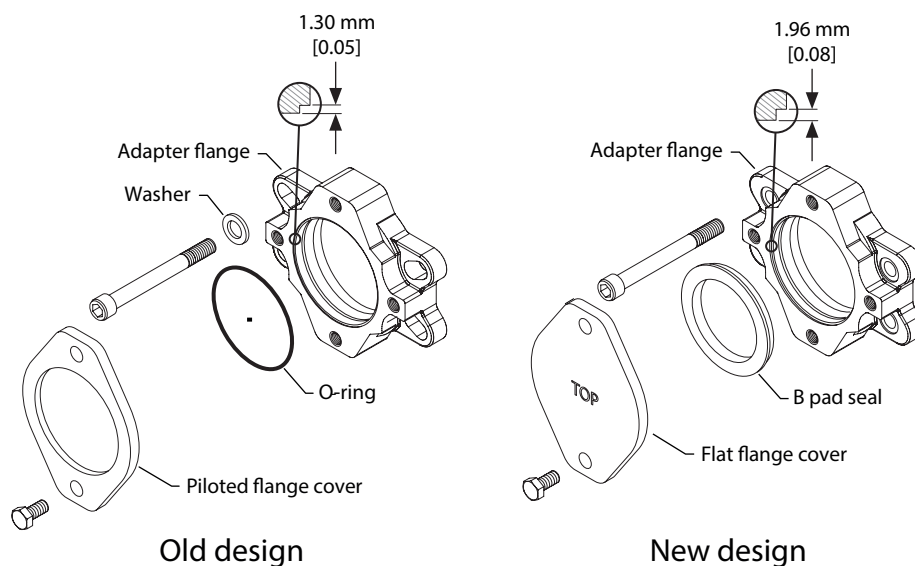
Part numbers affected Sauer-Danfoss is pleased to announce a design improvement on the SAE B auxiliary mounting flange adapter on its series 90 pumps. The frame sizes affected by this change are 55, 75, and 100cc. All manufacturing locations producing these pumps will be changed to this configuration.

The improvement comes in the form of a more robust sealing geometry with a larger cross-section O-ring. The O-ring groove in the flange will now be sized to mate with a 2.62mm [0.103] cross section O-ring rather than the old 1.78mm [0.070] cross-section O-ring. The Sauer-Danfoss part number for the new O-ring is 9004104-1540 (2.62mm [0.103] x 94.92mm [3.737]). The larger cross-section sealing geometry allows for the use of a donut style B pad seal and a new flat cover for improved assembly. This new configuration is qualified as a running cover. When installing an auxiliary pump, the donut style B pad seal must be discarded and part number 9004104-1540 O-ring used.

Also, the flanges will no longer have a slotted interface with a washer for the end cap screws. The flanges will now have round through holes for the end cap screws and will use no washers. The end cap screws do not change. This eliminates the area where water or high pressure wash chemicals can be trapped around the end cap screws. There now are specific part numbers for the flanges used on each of the three displacement size pumps; 55, 75 and 100 cc.

The pumps will now be supplied with the donut style seal and new flat cover, instead of the small O-ring and cover plate (shown in the drawing below).

The overhaul seal kit will include the old O-ring, the new O-ring and the new B pad seal.




Service Bulletin: SB-2007-055

Models affected All series 90; 55, 75, and 100 cc pumps with SAE "B" auxiliary mounting flanges.

Serial numbers This change became affective at serial number; A 08-19-xxxxx.

Part numbers affected

Description	Old p/n	Used on	New p/n	Used on
Metric B flange	8800983	55, 75 & 100 cc	8200540	100 cc
SAE B flange	8800173	55, 75 & 100 cc	8200468	100 cc
SAE B flange	8800173	55, 75 & 100 cc	8100847	75 cc
Metric B flange	8800983	55, 75 & 100 cc	8100938	75 cc
SAE B flange	8800173	55, 75 & 100 cc	8000642	55 cc
SAE B flange	8000263	55, 75 & 100 cc	8000642	55 cc
Washer	9009625-0132	55, 75 & 100 cc	N/A	N/A
O-ring	9004104-0450	55, 75 & 100 cc	9004104-1540	55, 75 & 100 cc
B Pad seal	N/A	55, 75 & 100 cc	8801061	55, 75 & 100 cc
Flange cover	4460370	55, 75 & 100 cc	8801059	55, 75 & 100 cc

Note: If the new auxiliary flange adapter is used, the new O-ring or B pad seal and cover must also be used.

Parts disposition

- Interchangeable - if new O-ring or C pad seal and cover are replaced
- Use parts in stock
- Order replacement parts
- Revise existing part orders

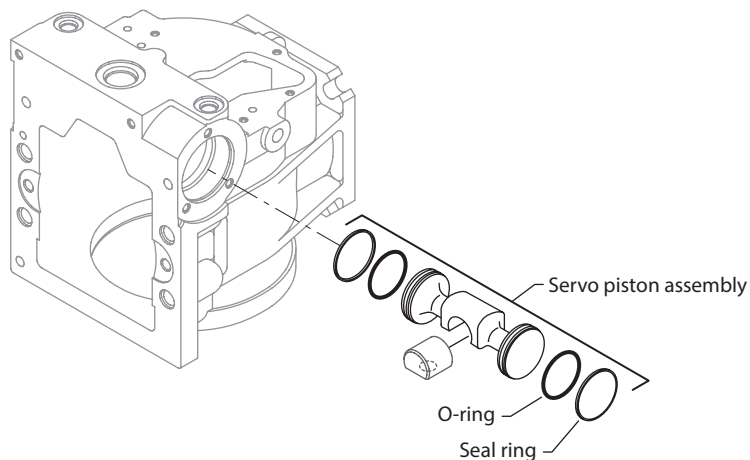


Service Bulletin: SB-2009-035

Products affected Series 90 75 and 100 cc pumps

Subject Change supplier of servo piston assemblies

Description The supplier has changed for servo piston assemblies used in Series 90 pumps, size 75 and 100 cc. These assemblies include the servo piston, O-rings and seal rings. The part number of the servo piston assemblies has changed to better track this change. The new servo piston assemblies are completely interchangeable with the old servo piston assemblies. The old part numbers will become obsolete and not available for service.



Models affected Series 90 75 and 100cc pumps.

Serial numbers This change went into effect at serial number A09-25-XXXXX.

Part numbers affected

Description	Old part number	New part number
Servo piston assembly, 75cc	516683	11041752
Servo piston assembly, 100cc	516684	11044943

Parts disposition

- Interchangeable
- Use parts in stock
- Order replacement parts
- Revise existing part orders

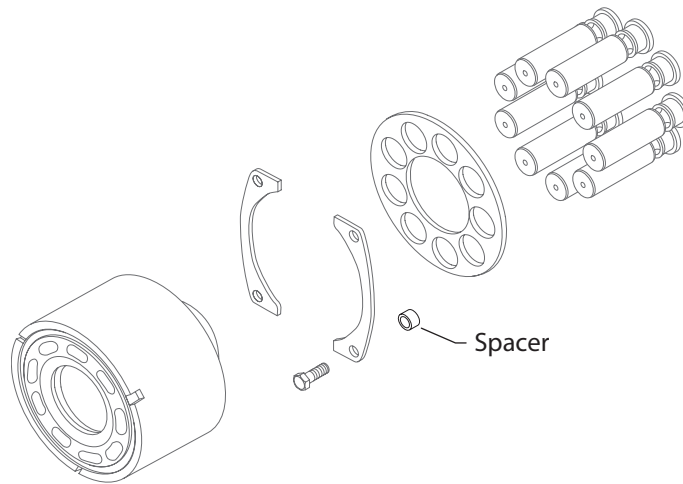


Service Bulletin: SB-2009-038

Products affected Series 90 55, 75 and 100 cc pumps

Subject Slipper hold down spacer

Description The supplier for the spacers, used for slipper hold down spacing in series 90 pumps, has changed. The new part is physically and functionally interchangeable in all applications. The part numbers have changed to better track this change. The old part numbers will become obsolete and not available for service.



Models affected Series 90 55, 75 and 100 cc pumps.

Serial numbers This change became effective at serial number: A09-38-XXXXX for 55cc (14-Sep-2009)
 A10-04-XXXXX for 75cc (22-Jan-2010)
 A09-38-XXXXX for 100cc (12-Aug-2009)

Part numbers affected

Spacer	Old part number	New part number
55cc	8000619	11065864
75cc	8100777	11065865
100cc	8200422	11065866

Parts disposition ■ Non-interchangeable

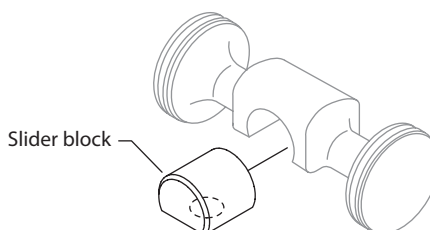


Service Bulletin: SB-2009-049

Products affected Series 90 100cc pumps

Subject Slider block supplier change

Description The supplier for the slider block used in series 90 100 cc pumps has changed. The new slider block is physically and functionally interchangeable in all applications. The part number of the slider block has changed to better track this change. The old part number will become obsolete and not available for service.



Models affected All Series 90 100cc variable displacement pumps.

Serial numbers This change became effective at serial number A09-35-XXXXX. (28 August 2009)

Part numbers affected

Description	Old part number	New part number
Slider block	8200225	11061908

- Parts disposition**
- Interchangeable
 - Use parts in stock

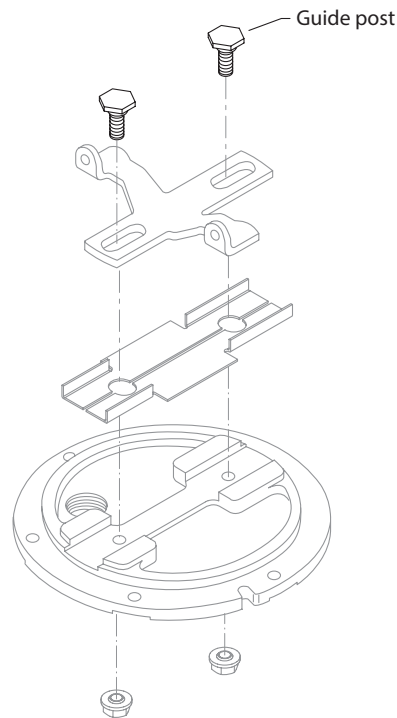


Service Bulletin: SB-2009-073

Products affected Series 90 75 and 100 cc pumps

Subject Supplier charge for guide posts

Description The supplier has changed, for the guide posts used in series 90 75 and 100 cc pumps. The new guide posts are interchangeable with the old guide posts. A new part number has been assigned to the new guide post to better track this change. The old part number has become obsolete and not available for service.



Models affected Series 90 75 and 100 cc pumps

Serial numbers This change became effective at serial number A-09-50-xxxxx (21 December 2009)

Part numbers affected

Description	Old part number	New part number
Guide post	8000575	11056531

Parts disposition ■ Interchangeable



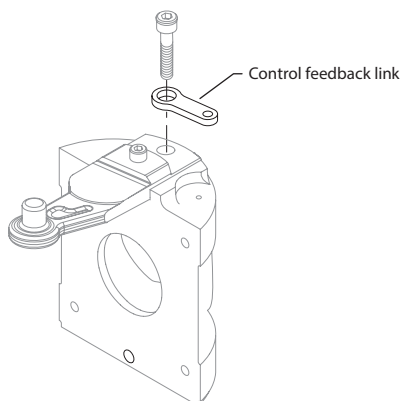
Service Bulletin: SB-2013-011

Products affected Series 90 42-250cc pumps

Subject Feedback link - Control

Description Sauer-Danfoss has changed to a global supplier for the control feedback links used in Series 90 42-250cc pumps.

Old parts and new parts are completely interchangeable. Part numbers will be changing for tracking purposes. Old parts will become obsolete and no longer available as a service part.



Models affected Series 90 42-250cc pumps

Part numbers affected

Control feedback link	Old part number	New part number
42cc pumps	648600	11070304
55 & 75cc pumps	8000602	11070305
100cc pumps	8200413	11070306
130cc pumps	340091	11070307
180 & 250cc pupms	747451	11070308

Parts disposition

- Interchangeable
- Use parts in stock



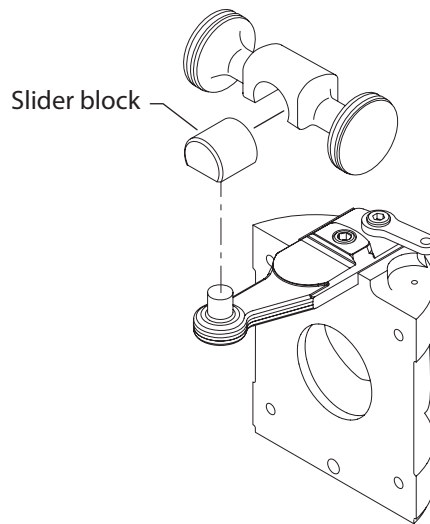
Service Bulletin: SB-2015-005

Products affected Series 90 42-250cc pumps

Subject Slider block supplier change

Description The supplier has changed for Series 90 pump slider blocks. Parts are completely interchangeable.

Part numbers have been changed for tracking purposes. As a result old part numbers will become obsolete and no longer available as service parts.



Models affected Series 90 42-250cc pumps

Part numbers affected

Description	Old Part Number	New Part Number	Effective Date
Slider block 42 NMS	648303	11116314	N/A
Slider block 55-75 NMS	8800750	11116313	6-Aug-2014
Slider block 55-75 AMS	11061964	11116313	6-Sept-2014
Slider block 100 AMS	11061908	11116312	10-Mar-2014
Slider block 100 NMS	756197	11116312	20-Feb-2015
Slider block 130 NMS	11000317	11116309	9-Dec-2014
Slider block 180-250 NMS	746479	11116308	24-Oct-2014

- Parts disposition**
- Interchangeable
 - Use parts in stock



Notes



Products we offer:

- Bent Axis Motors
- Closed Circuit Axial Piston Pumps and Motors
- Displays
- Electrohydraulic Power Steering
- Electrohydraulics
- Hydraulic Power Steering
- Integrated Systems
- Joysticks and Control Handles
- Microcontrollers and Software
- Open Circuit Axial Piston Pumps
- Orbital Motors
- PLUS+1® GUIDE
- Proportional Valves
- Sensors
- Steering
- Transit Mixer Drives

Danfoss Power Solutions is a global manufacturer and supplier of high-quality hydraulic and electronic components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market. Building on our extensive applications expertise, we work closely with our customers to ensure exceptional performance for a broad range of off-highway vehicles.

We help OEMs around the world speed up system development, reduce costs and bring vehicles to market faster.
Danfoss – Your Strongest Partner in Mobile Hydraulics.

Go to www.powersolutions.danfoss.com for further product information.

Wherever off-highway vehicles are at work, so is Danfoss.

We offer expert worldwide support for our customers, ensuring the best possible solutions for outstanding performance. And with an extensive network of Global Service Partners, we also provide comprehensive global service for all of our components.

Please contact the Danfoss Power Solution representative nearest you.

Comatrol

www.comatrol.com

Schwarzmueller-Inverter

www.schwarzmueller-inverter.com

Turolla

www.turollaocg.com

Valmova

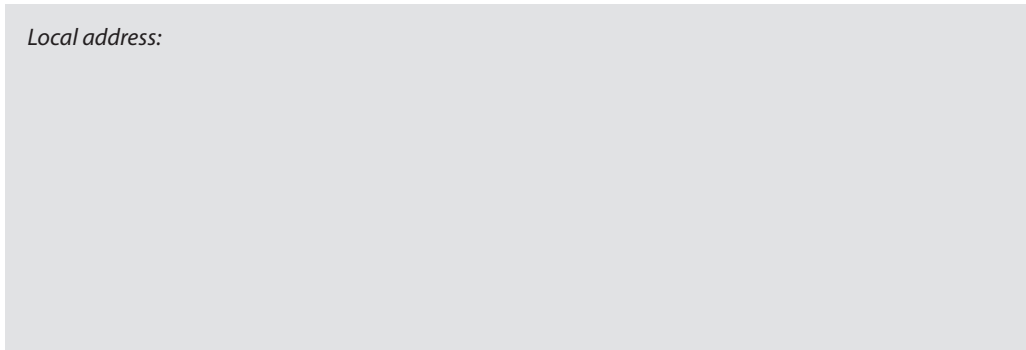
www.valmova.com

Hydro-Gear

www.hydro-gear.com

Daikin-Sauer-Danfoss

www.daikin-sauer-danfoss.com



Local address:

Danfoss Power Solutions US Company
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000

Danfoss Power Solutions GmbH & Co. OHG
Krokamp 35
D-24539 Neumünster, Germany
Phone: +49 4321 871 0

Danfoss Power Solutions ApS
Nordborgvej 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 4444

Danfoss Power Solutions
Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 3418 5200

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without consequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.