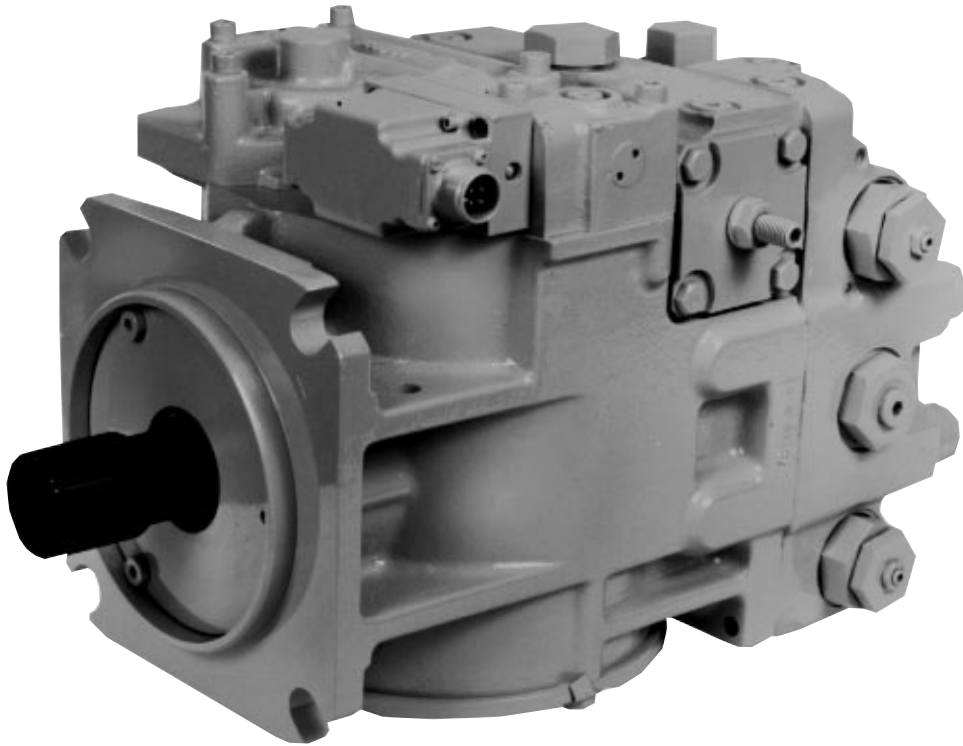


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**Series 90**

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**42 cc - Axial Piston**

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**Pump**

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**Service Parts Manual**

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## Service Parts Identification

The following information and procedure is used to identify the module group, item number, manufactured date, part number, and part name of the parts included in the Series 90 Pump.

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

### - Nameplate -

Each pump will have a nameplate affixed to the housing. The name plate will include the following information.

**Model Code** \_\_\_\_\_  
The Sauer-Sundstrand model code completely defines the specific unit and must be used when ordering the complete unit for the first time or for ordering parts to service the product.

**Model Number** \_\_\_\_\_  
The Sauer-Sundstrand model number is used by the factory in manufacturing. On repeat orders, a complete unit can also be ordered by the model number.

**Serial Number** \_\_\_\_\_  
The Sauer-Sundstrand serial number is used to identify the manufacturing location, manufacturing date and the unit sequence in the build. The serial number is also used to identify the unit's warranty time period.

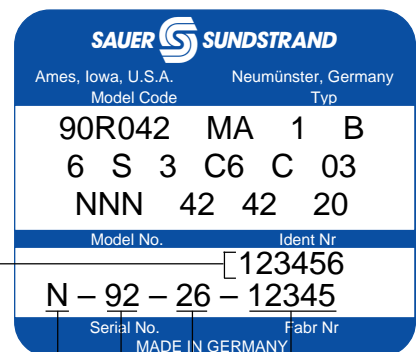
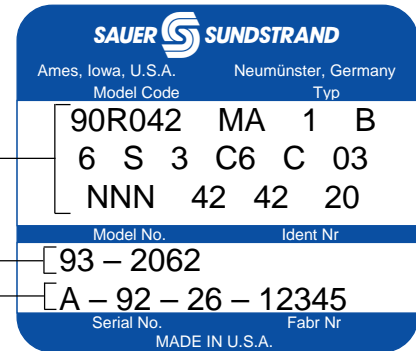
**Identification Number**  
Pumps manufactured in Germany will have an identification number instead of a model number.

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 Neumünster, Germany.

The first number (2 digits) indicates the year of manufacture. ("92" would indicate the unit was manufactured in 1992)

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

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





## Date Code

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

EXAMPLE: The service part desired is Item G308.

<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin → End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model</u>
	G308	89-17 →	792937	End cap gasket	1
	"	87-42 → 89-16	328781	End cap gasket	1

All units using this module group with a date code of 87-42 and up to and including 89-16 must use part number "328781". All units with a date code of 89-17 and up must use part number "792937".

## Service Bulletins

A Service Bulletin Number (**SB- \_ \_ \_ \_**) may follow the "Description" of the part you desire. You must read that Service Bulletin prior to ordering that part. A copy of each of 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 Given Part/Part Number

### General

The modular design of Series 90 units results in a simplified Service Parts List and Part Identification Procedure.

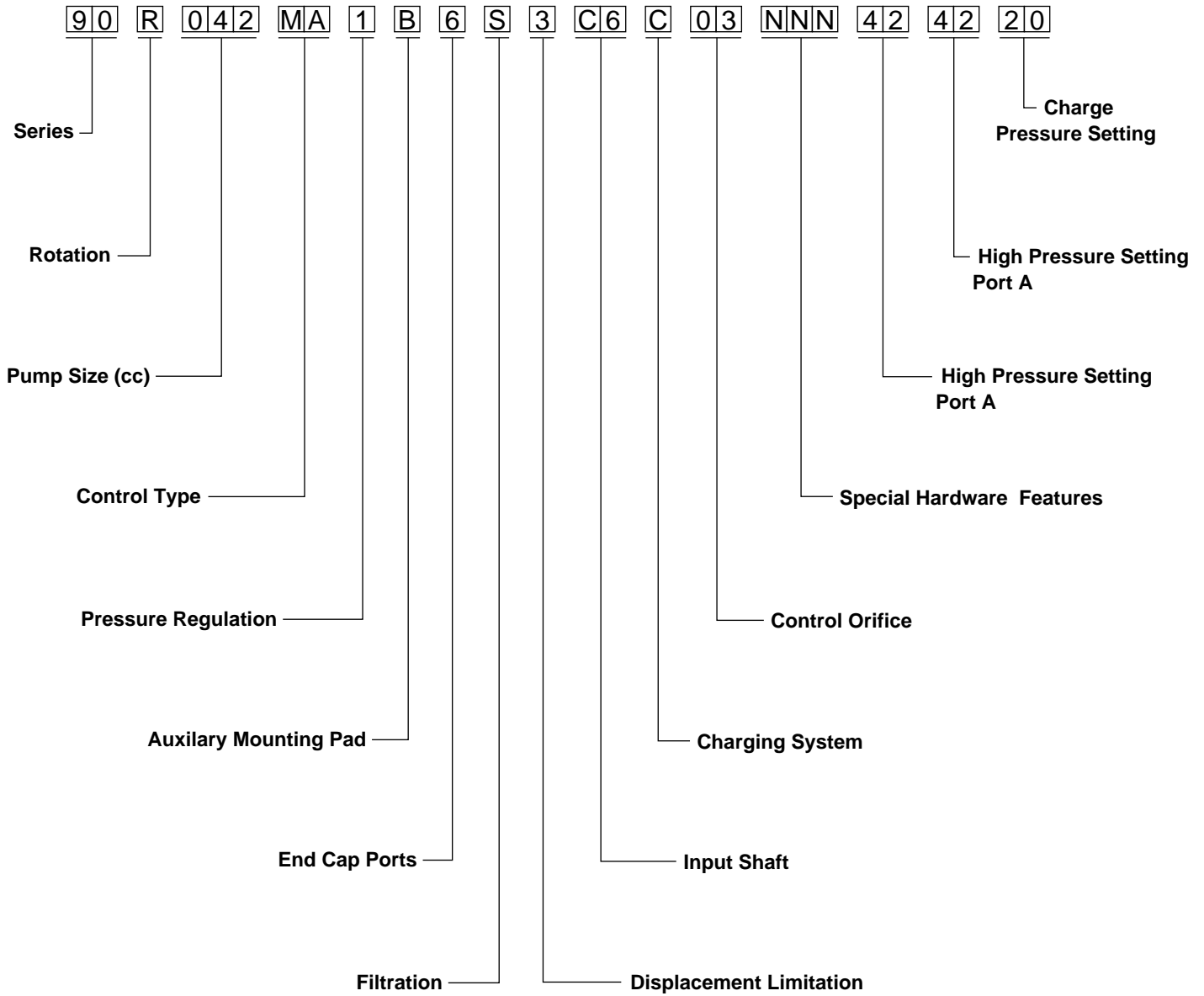
The same item numbers are used for same part description on all units within a product type. (Example: The shaft seal - Item Number L40 has the same item number on all variable displacement pumps.)

All Item Numbers begin with a letter. The letter identifies a particular module. (Example: any items beginning with "K" relate to the charge relief valve; items beginning with "L" relate to the drive shaft components, etc.)

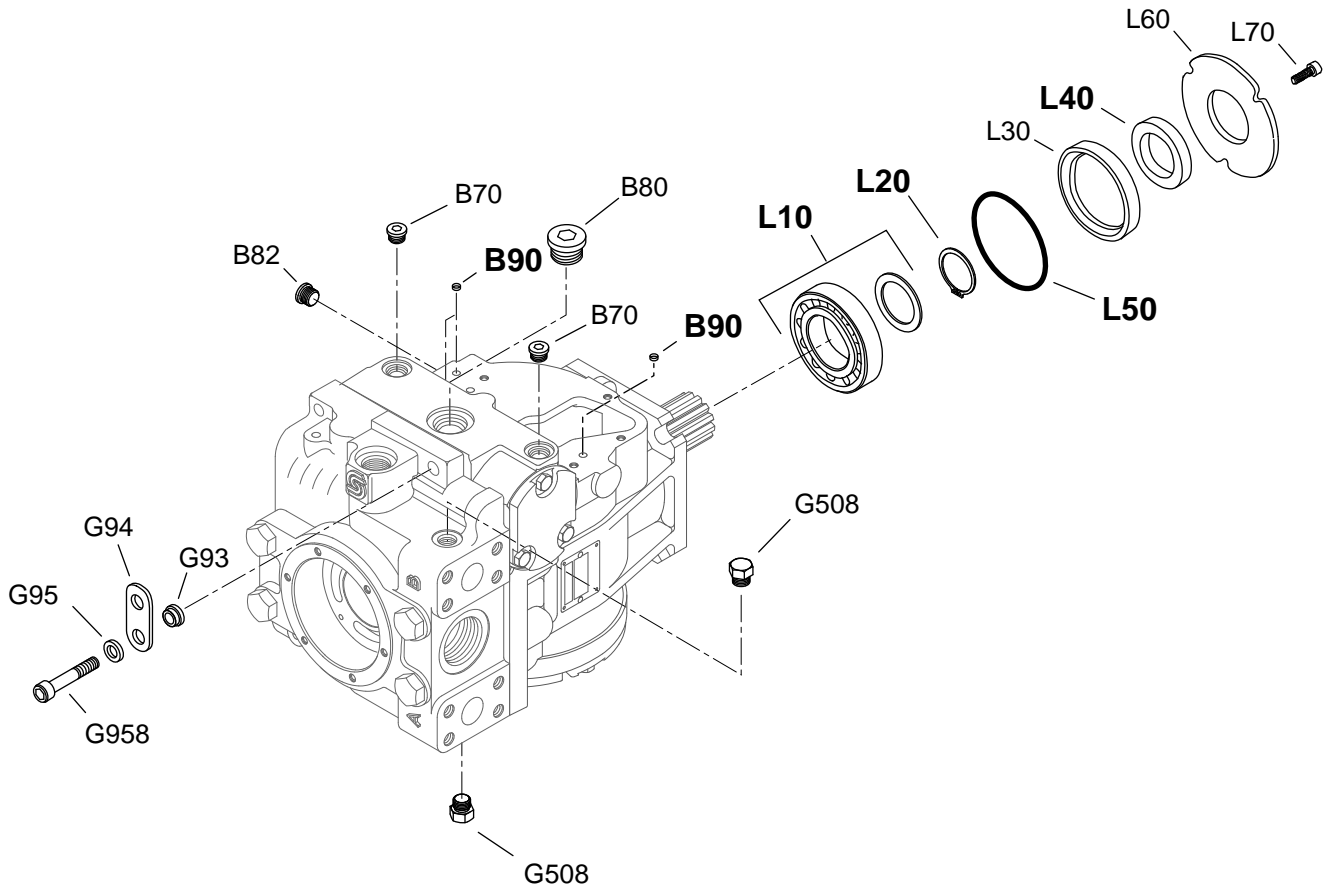
### Example of a Part Identification

The nameplate on a Series 90 pump has an Order Code of 90L042 EP 1 V 6 P 3 S4 E 05 NNN 38 38 20. Use the following procedures to determine the part number of the filtration kit used on this pump.

- 1) Referring to the filtration module in the Model Code ([see page 5](#)), the filtration option for this unit is identified by the code "P" (90L042 EP 1 V 6 **P** 3 S4 E 05 NNN 38 38 20)
- 2) Referring to the Service Parts List, find the filtration group. Next find the order code that relates to this unit, which is "P". The filtration kit is found to be item N00M and part number 8002N00M-A. Also note that the saleable parts included in this kit are indented, which indicates the filter is not included in the kit.



**Common Parts**



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

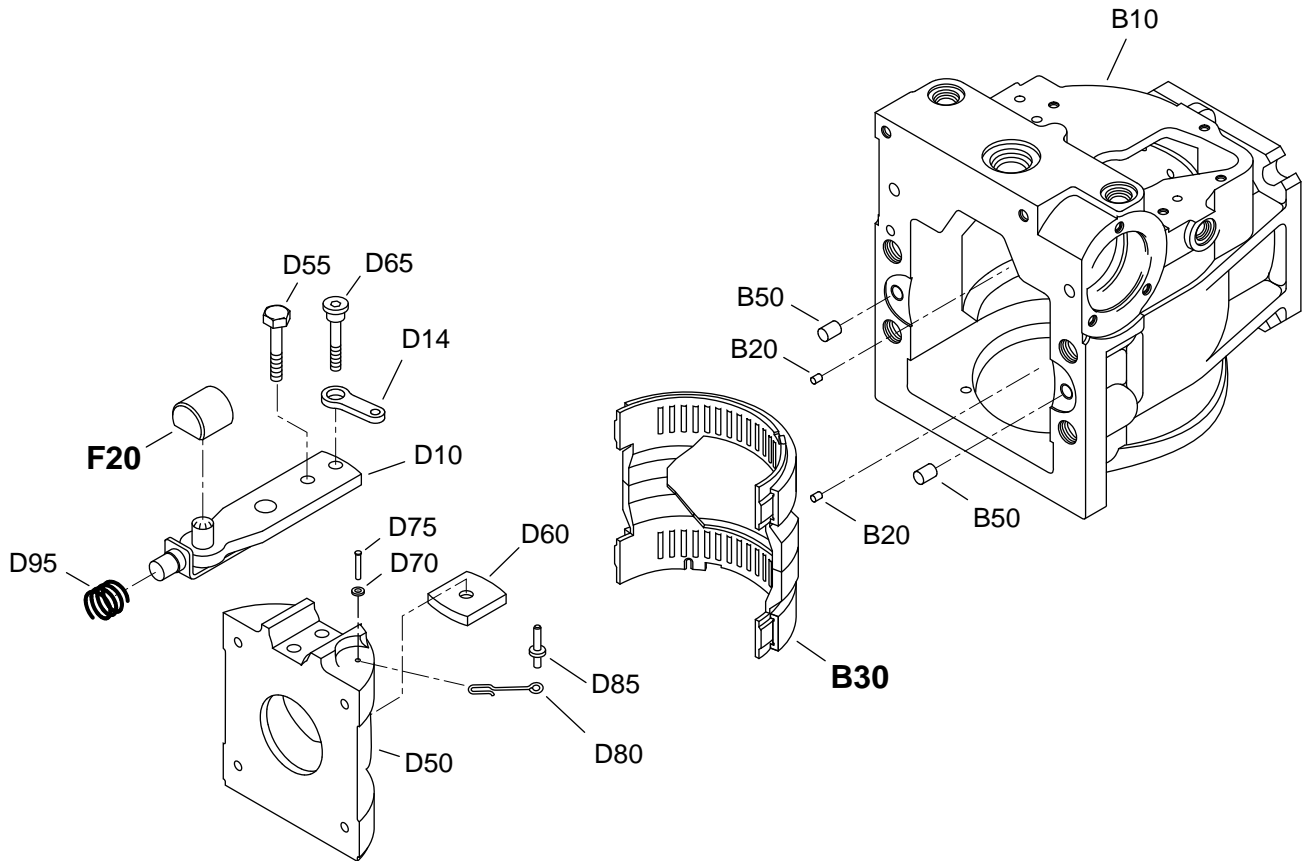


## 42 cc Variable Displacement Pump

<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin</u> → <u>End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
	B70	87-42 →	9005110-5600	Plug	2
	B80	87-42 →	9005110-8700	Plug	1
	B82	92-16 →	9005110-5600	Plug	1
	<b>B90</b>	<b>88-30</b> →	<b>9803390</b>	<b>Control filter screen</b>	<b>3</b>
	G93	89-17 →	8800404	Spacer	1
	G94	89-17 →	8800401	Lifting bracket	1
	G95	89-17 →	723981	Washer	1
	G508	87-42 →	9005100-5600	Plug	2
	G958	92-16 →	500641	Screw	1
	"	89-17 → 92-15	508994	Screw	1
	<b>L10</b>	<b>92-16</b> →	<b>357616</b>	<b>Bearing (SB-9208)</b>	<b>1</b>
	"	87-42 → 92-15	690305	Bearing	1
	<b>L20</b>	<b>92-16</b> →	<b>9006300-0137</b>	<b>Retaining ring (SB-9208)</b>	<b>1</b>
	"	87-42 → 92-15	392134	Retaining ring	1
	L30	92-16 →	340356	Seal carrier (SB-9208)	1
	L35	92-16 →	none	none (SB-9208)	0
	"	87-42 → 92-15	689521	Seal carrier	1
	<b>L40</b>	<b>92-16</b> →	<b>9008000-0118</b>	<b>Lip seal (SB-9208)</b>	<b>1</b>
	"	87-42 → 92-15	656280	Lip seal	1
	<b>L50</b>	<b>92-16</b> →	<b>780247</b>	<b>O-ring (SB-9208)</b>	<b>1</b>
	"	87-42 → 92-15	9004104-0360	O-ring	1
	L60	92-16 →	340349	Retainer plate (SB-9208)	1
	L70	92-16 →	745208	Screw (SB-9208)	3
	"	87-42 → 92-15	9007210-0604	Screw	3

**Bold** Items indicate recommended parts to be stocked for servicing

**Common Parts**



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



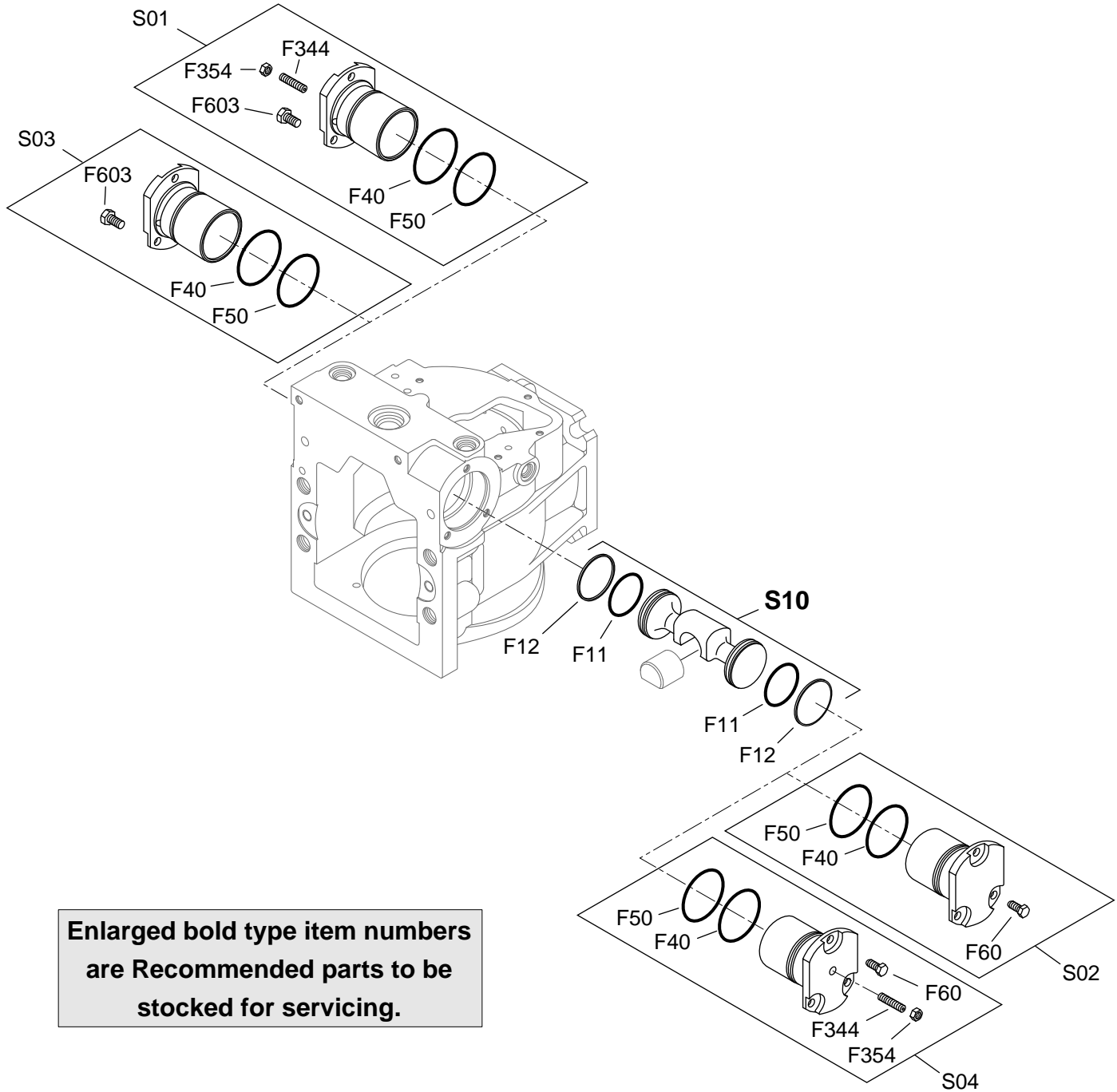


## 42 cc Variable Displacement Pump

<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin</u> → <u>End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
	B10	95-15 →	506740	Variable housing <b>(SB-9506)</b>	1
	"	92-16 → 95-14	503422	Variable housing <b>(SB-9208)</b>	1
	B20	87-42 →	9004800-1904	Pin	2
	<b>B30</b>	<b>89-17</b> →	<b>345124</b>	<b>Bearing</b>	<b>1</b>
	B50	87-42 →	9004800-3708	Pin	2
	D10	89-17 →	502976	Servo arm assembly <b>(SB-9315)</b>	1
	D50	89-17 →	788844	Swashplate	1
	D55	87-42 →	648436	Screw	1
	D60	87-42 →	648352	Swashplate guide	1
	D65	89-17 →	354373	Fillister head screw	1
	D70	87-42 →	9009625-0073	Washer	1
	D75	89-17 →	326637	Spiral head pin	1
	D80	87-42 →	648402	Cage locator	1
	D85	87-42 →	314591	Screw	1
	D14	89-17 →	8100052	Feedback link <b>(SB-9003)</b>	1
	D95	87-42 →	648675	Spring	1
	<b>F20</b>	<b>87-42</b> →	<b>648303</b>	<b>Slider block</b>	<b>1</b>

**Bold** Items indicate recommended parts to be stocked for servicing

**Displacement Limitation**





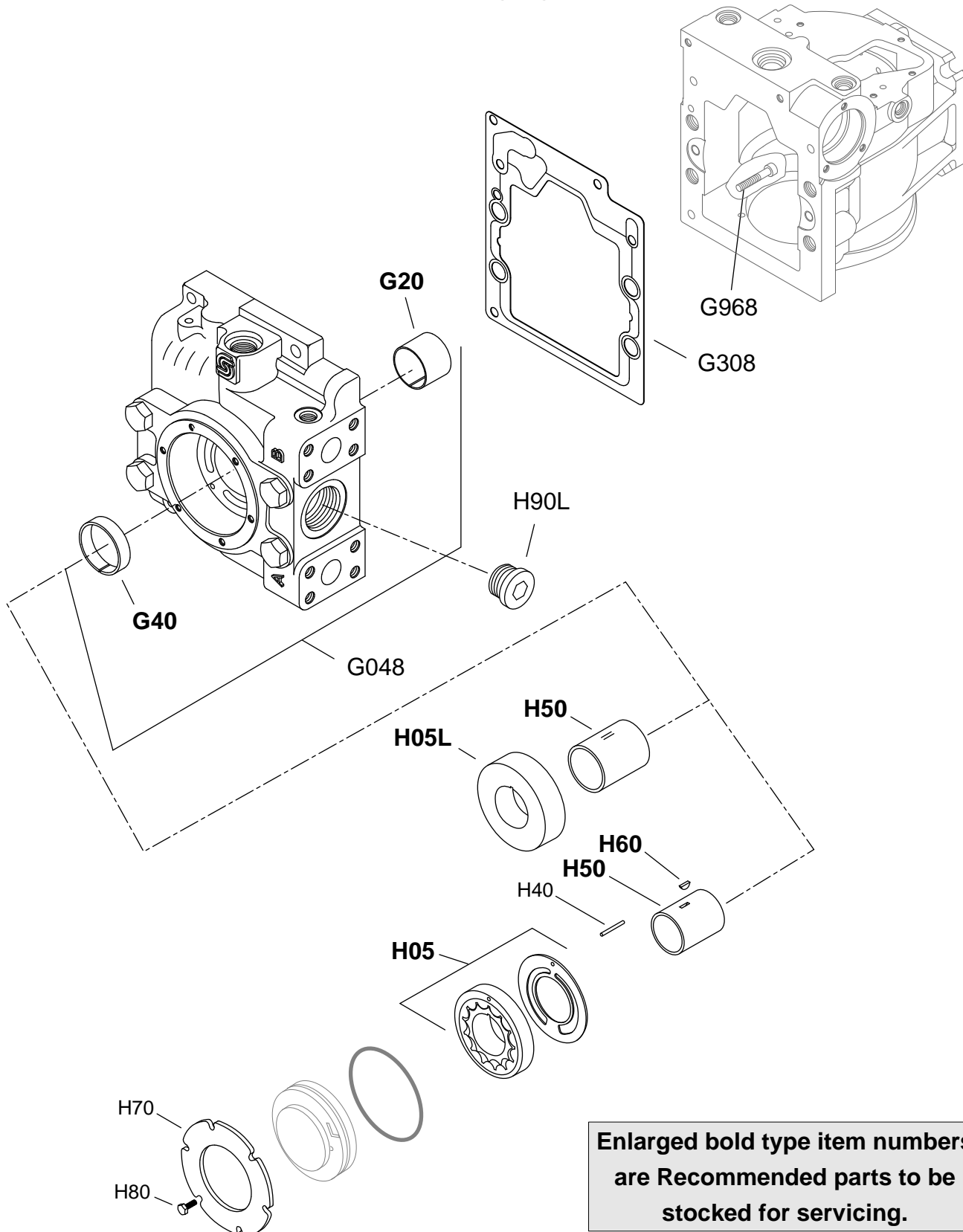
## 42 cc Variable Displacement Pump

### Displacement Limitation Group

Order Code	Item	Date Code Begin → End	Part Number	Description	Qty. per Model/Kit	
3	S02	90-51 →	8052F003-B	Servo sleeve kit, No limitation	1	
	"	87-42 → 90-50	8510089	Servo sleeve kit <b>(SB-9505)</b>	1	
	F40	87-42 →	706242	O-ring	1	
	F50	87-42 →	338517	O-ring	1	
	F603	87-42 →	648451	Screw	3	
	S03	90-51 →	8052F003-B	Servo sleeve kit, No limitation	1	
	"	87-42 → 90-50	8510089	Servo sleeve kit <b>(SB-9505)</b>	1	
	F40	87-42 →	706242	O-ring	1	
	F50	87-42 →	338517	O-ring	1	
	F60	87-42 →	648451	Screw	3	
	4	S01	90-51 →	8052F004-B	Servo sleeve kit, Adjustable	1
		"	87-42 → 90-50	8510090	Servo sleeve kit <b>(SB-9505)</b>	1
		F40	87-42 →	706242	O-ring	1
		F50	87-42 →	338517	O-ring	1
F603		87-42 →	648451	Screw	3	
F344		87-42 →	9007712-0814	Set screw	1	
F354		87-42 →	9003509-0008	Seal nut	1	
S04		90-51 →	8052F004-B	Servo sleeve kit, Adjustable	1	
"		87-42 → 90-50	8510090	Servo sleeve kit <b>(SB-9505)</b>	1	
F40		87-42 →	706242	O-ring	1	
F50		87-42 →	338517	O-ring	1	
F60		87-42 →	648451	Screw	3	
F344		87-42 →	9007712-0814	Set screw	1	
F354		87-42 →	9003509-0008	Seal nut	1	
<b>S10</b>		<b>90-51 →</b>	<b>80520S10-A</b>	<b>Servo piston kit (SB-9107)</b>	<b>1</b>	
"		87-42 → 90-50	8510089 or 8510090	Servo piston kit <b>(SB-9505)</b>	1	
F11		90-51 →	9004100-1220	O-ring <b>(SB-9107)</b>	2	
"		87-42 → 90-50	9004100-1210	O-ring	2	
F12		90-51 →	350454	Piston ring <b>(SB-9107)</b>	2	
"		87-42 → 90-50	648345	Piston ring	2	

**Bold** Items indicate recommended parts to be stocked for servicing

**End Cap/Charging System**



## 42 cc Variable Displacement Pump

### G: End Cap Group

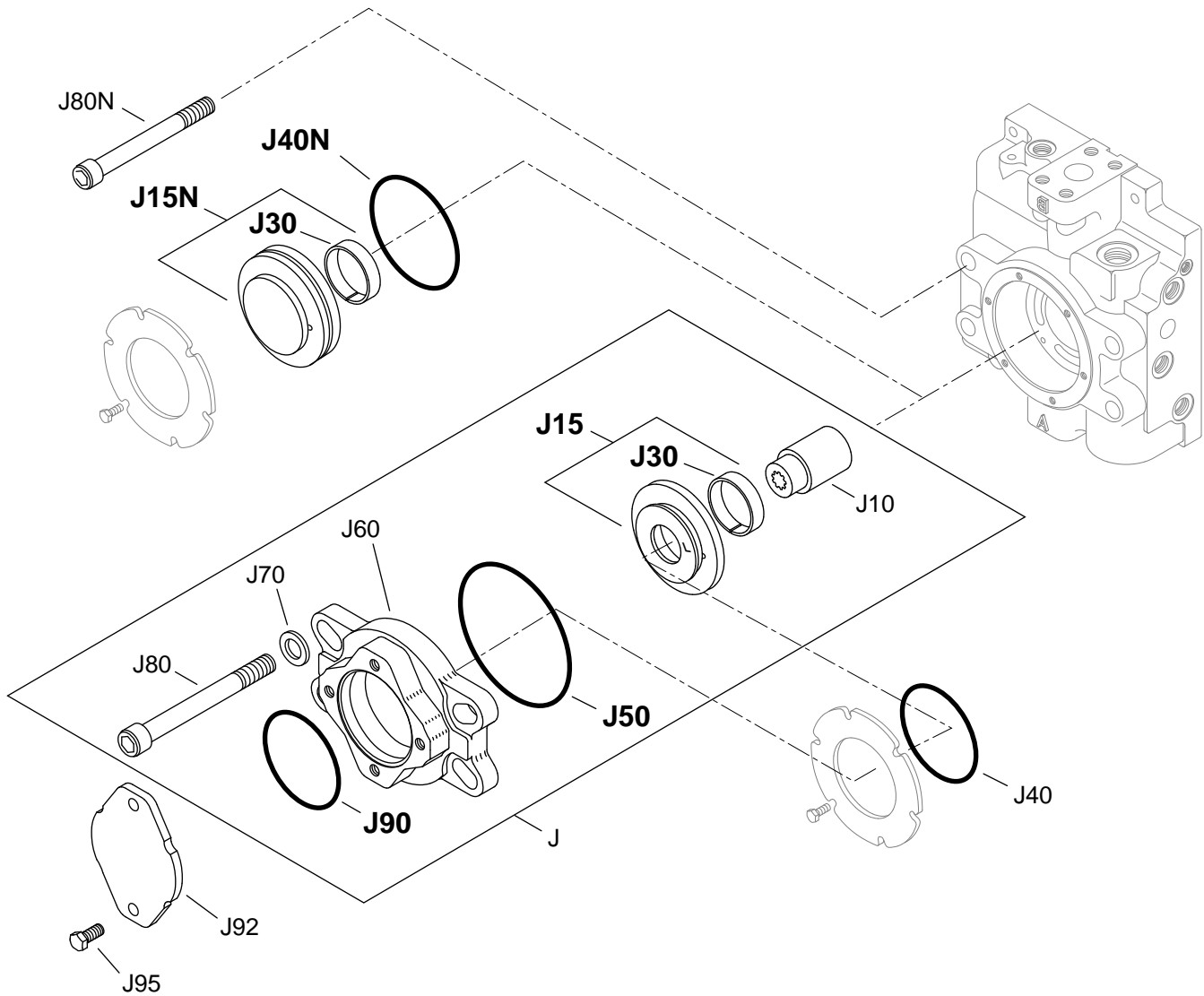
Order Code	Item	Date Code Begin → End	Part Number	Description	Qty. per Model/Kit
8	G048	92-16 →	506785	End cap, twin ports (SB-9506)	1
	G20	92-16 →	343830	Journal bearing (SB-9208)	1
	"	87-42 → 92-15	648030	Journal bearing	1
	G40	87-42 →	648055	Bushing	1
	G068	89-17 →	None	None	0
	"	87-42 → 89-16	689109	Valve housing	1
	G078	89-17 →	None	None	0
	"	87-42 → 89-16	9007314-0608	Screw	4
	G088	89-17 →	None	None	0
	"	87-42 → 89-16	689117	Gasket	1
	G308	89-17 →	506698	End cap gasket (SB-9506)	1
	"	87-42 → 89-16	328781	End cap gasket	1
	G968	89-17 →	354407	Screw	1

### H: Charging System Group

B	<b>H05</b>	<b>92-16 →</b>	<b>501990</b>	<b>Charge pump - 11 cc/rev (SB-9504)</b>	<b>1</b>
	H40	87-42 →	9004875-0013	Pin	1
	<b>H50</b>	<b>92-16 →</b>	<b>505202</b>	<b>Charge pump shaft (SB-9502)</b>	<b>1</b>
	"	88-27 → 92-15	715243	Charge pump shaft (SB-9208)	1
	<b>H60</b>	<b>92-16 →</b>	<b>9003310-1206</b>	<b>Key (SB-9502)</b>	<b>1</b>
	H70	88-27 →	8800424	Retaining plate	1
	H80	88-27 →	648451	Screw	6
	C	<b>H05</b>	<b>92-16 →</b>	<b>501991</b>	<b>Charge pump - 14 cc/rev (SB-9504)</b>
H40		87-42 →	9004875-0013	Pin	1
<b>H50</b>		<b>92-16 →</b>	<b>505202</b>	<b>Charge pump shaft (SB-9502)</b>	<b>1</b>
"		88-27 → 92-15	715243	Charge pump shaft (SB-9208)	1
<b>H60</b>		<b>92-16 →</b>	<b>9003310-1206</b>	<b>Key (SB-9502)</b>	<b>1</b>
H70		88-27 →	8800424	Retaining plate	1
H80		88-27 →	648451	Screw	6
L		<b>H05</b>	<b>88-27 →</b>	<b>8800466-0042</b>	<b>Charge pump - spacer</b>
	<b>H50</b>	<b>92-16 →</b>	<b>505202</b>	<b>Charge pump shaft (SB-9502)</b>	<b>1</b>
	"	88-27 → 92-15	715243	Charge pump shaft (SB-9208)	1
	H70	88-27 →	8800424	Retaining plate	1
	H80	88-27 →	648451	Screw	6
	H90L	88-27 →	9005110-9000	Plug	1

**Bold** Items indicate recommended parts to be stocked for servicing

### Auxiliary Mounting Pad



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

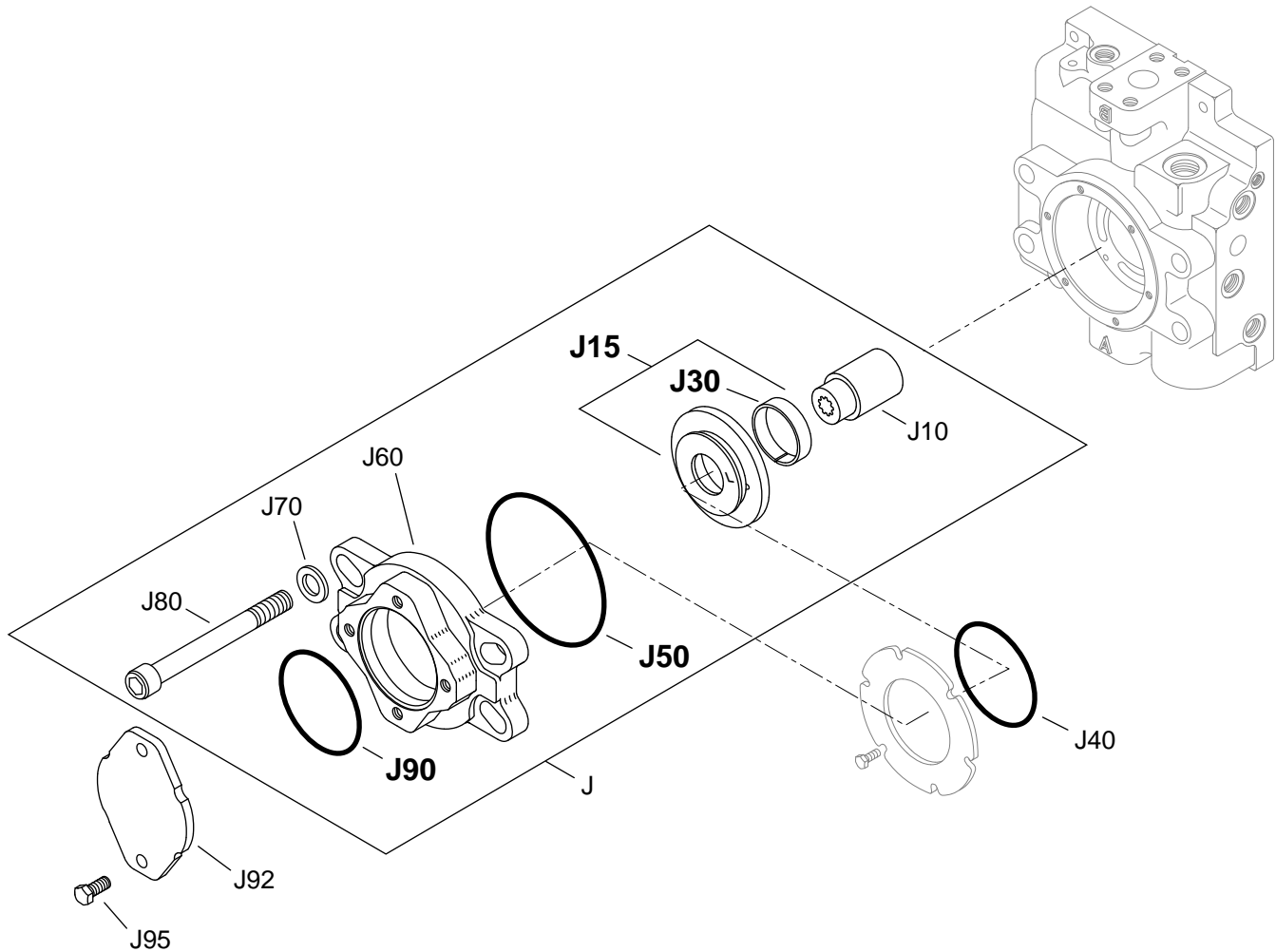


## 42 cc Variable Displacement Pump

### J: Auxiliary Mounting Pad Group

Order Code	Item	Date Code Begin → End	Part Number	Description	Qty. per Model/Kit
A	J	92-16 →	8052J00A-A	Aux. Mtg. 'A' flange, 9T (SB-9208)	1
	J10	92-16 →	341016	Coupling (SB-9208)	1
	"	87-42 → 92-15	323972	Coupling	1
	<b>J15</b>	<b>92-16 →</b>	<b>8800832</b>	<b>Cover assy., CW (SB-9504)</b>	<b>1</b>
	"	<b>92-16 →</b>	<b>8800833</b>	<b>Cover assy., CCW (SB-9504)</b>	<b>1</b>
	"	87-42 → 92-15	347542	Cover assembly (SB-9208)	1
	<b>J30</b>	<b>92-16 →</b>	<b>8700008</b>	<b>Bushing (SB-9208)</b>	<b>1</b>
	"	87-42 → 92-15	648055	Bushing	1
	J40	87-42 → 92-15	9004104-0440	O-ring	1
	<b>J50</b>	<b>87-42 →</b>	<b>9004104-1580</b>	<b>O-ring</b>	<b>1</b>
	J60	87-42 →	506777	Flange adaptor (SB-9506)	1
	J70	95-15 →	506753	Washer	4
	"	87-42 → 95-14	294462	Washer (SB-9506)	4
	J80	95-15 →	507585	Screw, m12 x 110 (SB-9506)	4
	"	87-42 → 95-14	321893	Socket head screw, m10 x 110	4
	<b>J90</b>	<b>87-42 →</b>	<b>9004104-0420</b>	<b>O-ring</b>	<b>1</b>
	J92	87-42 →	9802336	Cover plate	1
	J95	87-42 →	9007200-3714	Screw	2
B	J	92-16 →	8052J00B-A	Aux. Mtg. 'B' flange, 13T (SB-9208)	1
	J10	92-16 →	341024	Coupling (SB-9208)	1
	"	87-42 → 92-15	324228	Coupling	1
	<b>J15</b>	<b>92-16 →</b>	<b>8800832</b>	<b>Cover assy., CW (SB-9504)</b>	<b>1</b>
	"	<b>92-16 →</b>	<b>8800833</b>	<b>Cover assy., CCW (SB-9504)</b>	<b>1</b>
	"	87-42 → 92-15	347542	Cover assembly (SB-9208)	1
	<b>J30</b>	<b>92-16 →</b>	<b>8700008</b>	<b>Bushing (SB-9208)</b>	<b>1</b>
	"	87-42 → 92-15	648055	Bushing	1
	J40	87-42 → 92-15	9004104-0440	O-ring	1
	<b>J50</b>	<b>87-42 →</b>	<b>9004104-1580</b>	<b>O-ring</b>	<b>1</b>
	J60	92-16 →	506778	Flange adaptor (SB-9506)	1
	"	87-42 → 92-15	664094	Flange adaptor (SB-9208)	1
	J70	95-15 →	506753	Washer	4
	"	87-42 → 95-14	294462	Washer (SB-9506)	4
	J80	95-15 →	507585	Screw, m12 x 110 (SB-9506)	4
	"	87-42 → 95-14	321893	Socket head screw, m10 x 110	4
	<b>J90</b>	<b>87-42 →</b>	<b>9004104-0440</b>	<b>O-ring</b>	<b>1</b>
	J92	87-42 →	4460370	Cover plate	1
	J95	87-42 →	9007200-5021	Screw	2
N	J15N	92-16 →	8800834	Cover assembly (SB-9504)	1
	"	87-42 → 92-15	717264	Cover assembly (SB-9208)	1
	J30N	92-16 →	664771	Bushing (SB-9208)	1
	"	87-42 → 92-15	648055	Bushing	1
	J40N	87-42 →	9004104-0440	O-ring	1
	J70	87-42 → 95-14	294462	Washer (SB-9506)	4
	J80N	95-15 →	506800	Screw, m12 x 90 (SB-9506)	4
	"	87-42 → 95-14	321661	Screw	4

### Auxiliary Mounting Pad



**Enlarged bold type item numbers  
are Recommended parts to be  
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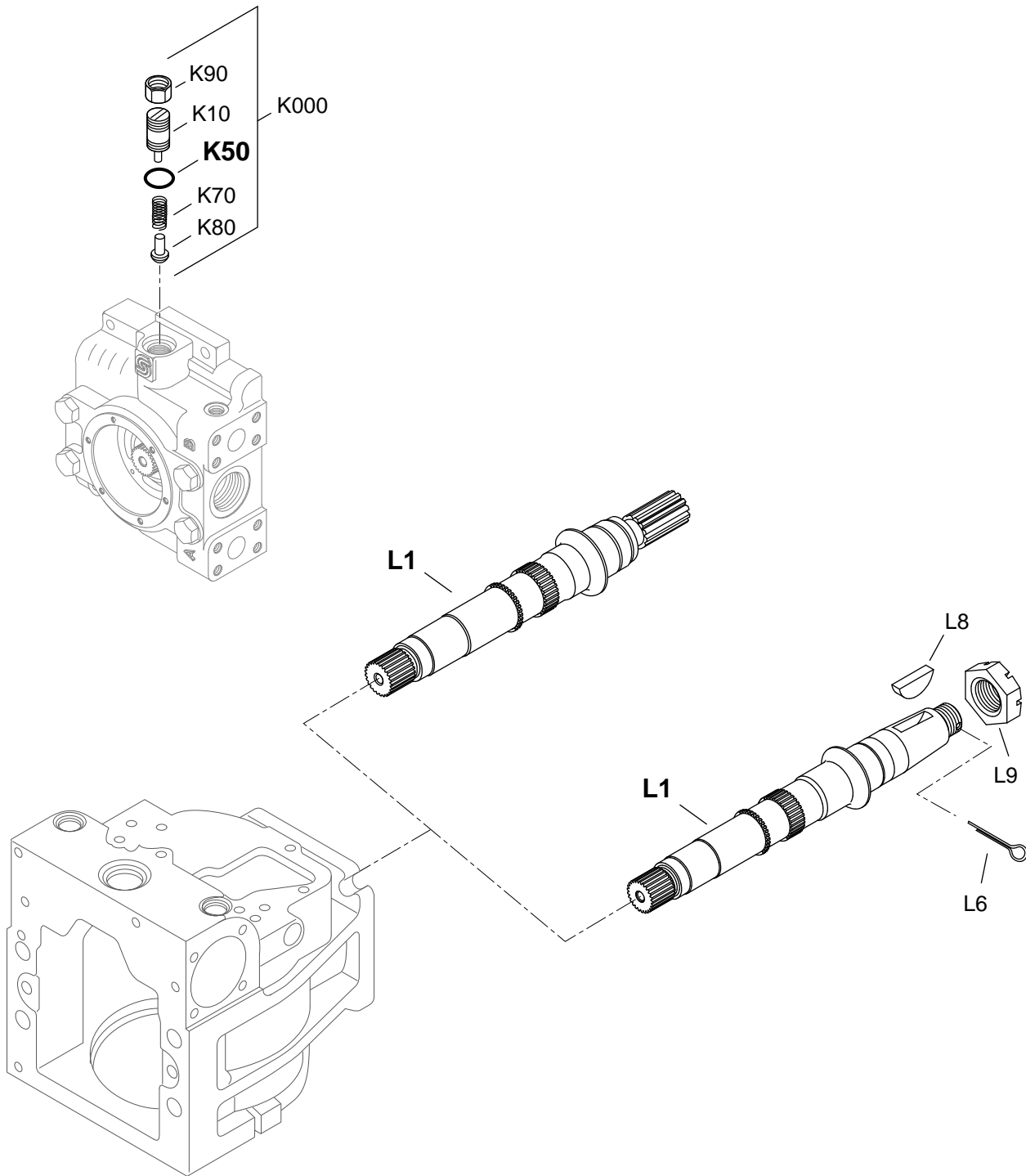
## 42 cc Variable Displacement Pump

### J: Auxiliary Mounting Pad Group

Order Code	Item	Date Code Begin → End	Part Number	Description	Qty. per Model/Kit
T	J10	93-47 →	787937	Coupling, 11 tooth	1
	<b>J15</b>	<b>93-47 →</b>	<b>8800832</b>	<b>Cover assy., CW (SB-9504)</b>	<b>1</b>
	"	93-47 →	8800833	Cover assy., CCW (SB-9504)	1
	<b>J30</b>	<b>93-47 →</b>	<b>8700008</b>	<b>Bushing</b>	<b>1</b>
	<b>J50</b>	<b>93-47 →</b>	<b>9004104-1580</b>	<b>O-ring</b>	<b>1</b>
	J60	93-47 →	506777	Flange adaptor (SB-9506)	1
	J70	95-15 →	506753	Washer	4
	"	93-47 → 95-14	294462	Washer (SB-9506)	4
	J80	95-15 →	507585	Screw, m12 x 110 (SB-9506)	4
	"	93-47 → 95-14	321893	Socket head screw, m10 x 110	4
	<b>J90</b>	<b>93-47 →</b>	<b>9004104-0420</b>	<b>O-ring</b>	<b>1</b>
	J92	93-47 →	9802336	Cover plate	1
	J95	93-47 →	9007200-3714	Screw	2
V	J	92-16 →	8052J00V-A	Aux. Mtg. 'B-B' flange, 15T (SB-9208)	1
	J10	92-16 →	342907	Coupling (SB-9208)	1
	"	87-42 → 92-15	664060	Coupling	1
	<b>J15</b>	<b>92-16 →</b>	<b>8800832</b>	<b>Cover assy., CW (SB-9504)</b>	<b>1</b>
	"	92-16 →	8800833	Cover assy., CCW (SB-9504)	1
	"	87-42 → 92-15	347542	Cover assembly (SB-9208)	1
	<b>J30</b>	<b>92-16 →</b>	<b>8700008</b>	<b>Bushing (SB-9208)</b>	<b>1</b>
	"	87-42 → 92-15	648055	Bushing	1
	J40	87-42 → 92-15	9004104-0440	O-ring	1
	<b>J50</b>	<b>87-42 →</b>	<b>9004104-1580</b>	<b>O-ring</b>	<b>1</b>
	J60	92-16 →	506778	Flange adaptor (SB-9506)	1
	"	87-42 → 92-15	664094	Flange adaptor (SB-9208)	1
	J70	95-15 →	506753	Washer	4
	"	87-42 → 95-14	294462	Washer (SB-9506)	4
	J80	95-15 →	507585	Screw, m12 x 110 (SB-9506)	4
	"	87-42 → 95-14	321893	Socket head screw, m10 x 110	4
	<b>J90</b>	<b>87-42 →</b>	<b>9004104-0440</b>	<b>O-ring</b>	<b>1</b>
	J92	87-42 →	4460370	Cover plate	1
	J95	87-42 →	9007200-5021	Screw	2

**Bold** Items indicate recommended parts to be stocked for servicing

### Shaft



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



## 42 cc Variable Displacement Pump

### K: Charge Pressure Setting

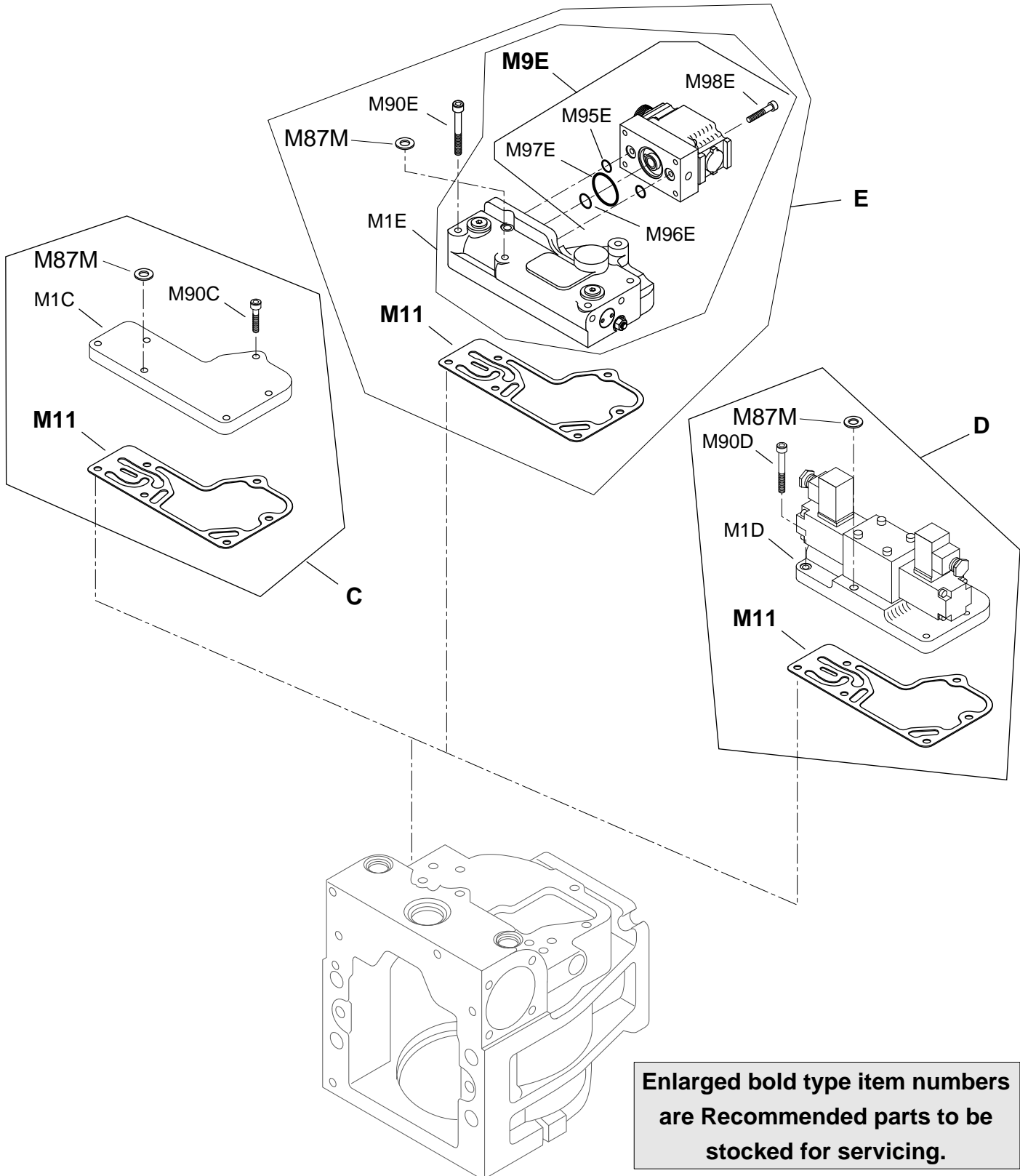
<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin</u> → <u>End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
00-30	K000	87-02 →	8002K000-A	Adj. charge relief kit <b>(SB-8902)</b>	1
	K10	87-02 →	8800488-2000	Plug assembly <b>(SB-8902)</b>	1
	<b>K50</b>	<b>87-02</b> →	<b>9004201-6200</b>	<b>O-ring (SB-8902)</b>	<b>1</b>
	K70	87-02 →	8800197	Spring, 10-30 bar <b>(SB-8902)</b>	1
	K80	87-02 →	8800449	Poppet <b>(SB-8902)</b>	1
	K90	87-02 →	9003575-0101	Nut <b>(SB-8902)</b>	1
31-42	K10	94-13 →	8800488-2000	Plug assembly	1
	<b>K50</b>	<b>94-13</b> →	<b>9004201-6200</b>	<b>O-ring</b>	<b>1</b>
	K70	94-13 →	344127	Spring, 31-42 bar	1
	K80	94-13 →	8800449	Poppet	1
	K90	94-13 →	9003575-0101	Nut	1

### L: Shaft Group

<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin</u> → <u>End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
<b>C3</b>	<b>L1</b>	<b>92-16</b> →	<b>340521</b>	<b>Shaft, 15T 16/32 (SB-9208)</b>	<b>1</b>
	"	87-42 → 92-15	689414	Shaft, 15T 16/32	1
<b>T3</b>	<b>L1</b>	<b>92-16</b> →	<b>342915</b>	<b>Shaft, 1.0 taper (SB-9208)</b>	<b>1</b>
	"	87-42 → 92-15	309088	Shaft, 1.0 taper	1
	L6	92-16 →	9004600-1224	Cotter pin	1
	L8	87-42 → 94-11	9003310-2514	Key	1
	L9	87-42 →	9003575-0071	Slotted nut	1

**Bold** Items indicate recommended parts to be stocked for servicing

**Control**





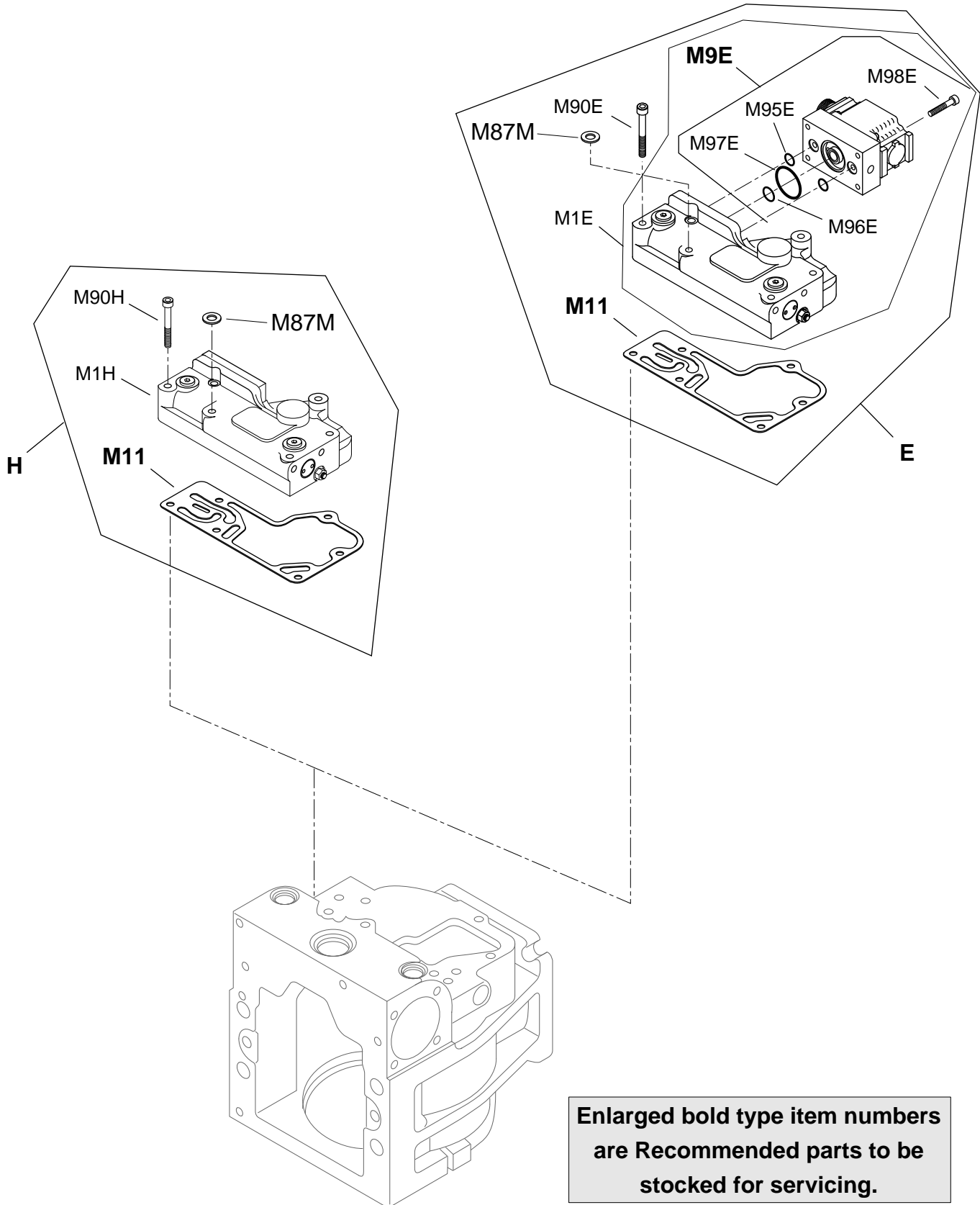
## 42 cc Variable Displacement Pump

### M: Control Group

Order Code	Item	Date Code Begin → End	Part Number	Description	Qty. per Model/Kit
CA	C	87-02 →	8002M0CA-A	Control cover plate kit	1
	<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1C	87-02 →	8800335	Cover plate	1
	<b>M87E</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90C	87-02 →	9007314-0606	Screw	6
(No feedback link on Swashplate)					
CB	C	87-02 →	8002M0CA-A	Control cover plate kit	1
	<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1C	87-02 →	8800335	Cover plate	1
	<b>M87E</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90C	87-02 →	9007314-0606	Screw	6
(Feedback link on Swashplate)					
DC	<b>D</b>	<b>87-02</b> →	<b>8002M0DC-A</b>	<b>Control kit,3 position sol.,12v</b>	<b>1</b>
	<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1D	87-02 →	343947	Control, 3 position, 12v	1
	<b>M87E</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90D	87-02 →	9007314-0606	Screw	6
EA	<b>E</b>	<b>87-42</b> →	<b>8002M0EA-B</b>	<b>EDC kit w/MS connector</b>	<b>1</b>
	<b>M11</b>	<b>87-42</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	E1E	87-42 →	MCV111B0502	EDC kit w/MS connector	1
	<b>M9E</b>	<b>87-42</b> →	<b>MCV110A1017</b>	<b>PCP type 3 oil filled</b>	<b>1</b>
	<b>M87E</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90E	87-42 →	9007314-0611	Screw	6
	M95E	87-42 →	9004104-0120	O-ring	2
	M96E	87-42 →	9004104-0140	O-ring	1
	M97E	87-42 →	9004104-0240	O-ring	1
	M98E	87-42 →	9007315-0504	Screw	4
	EN	<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>
M1E		87-02 →	MCV114A0507	EDC2, ms conn., (4-20MA)	1
<b>M9E</b>		<b>87-02</b> →	<b>MCV116A3501</b>	<b>PCP type 3, oil filled, ms</b>	<b>1</b>
<b>M87E</b>		<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
M95E		87-02 →	9004104-0120	O-ring	2
M96E		87-02 →	9004104-0140	O-ring	1
M97E		87-02 →	9004104-0240	O-ring	1
M98E		87-02 →	9007315-0504	Screw	4
M90E		87-02 →	9007314-0611	Screw	6

**Bold** Items indicate recommended parts to be stocked for servicing

**Control**





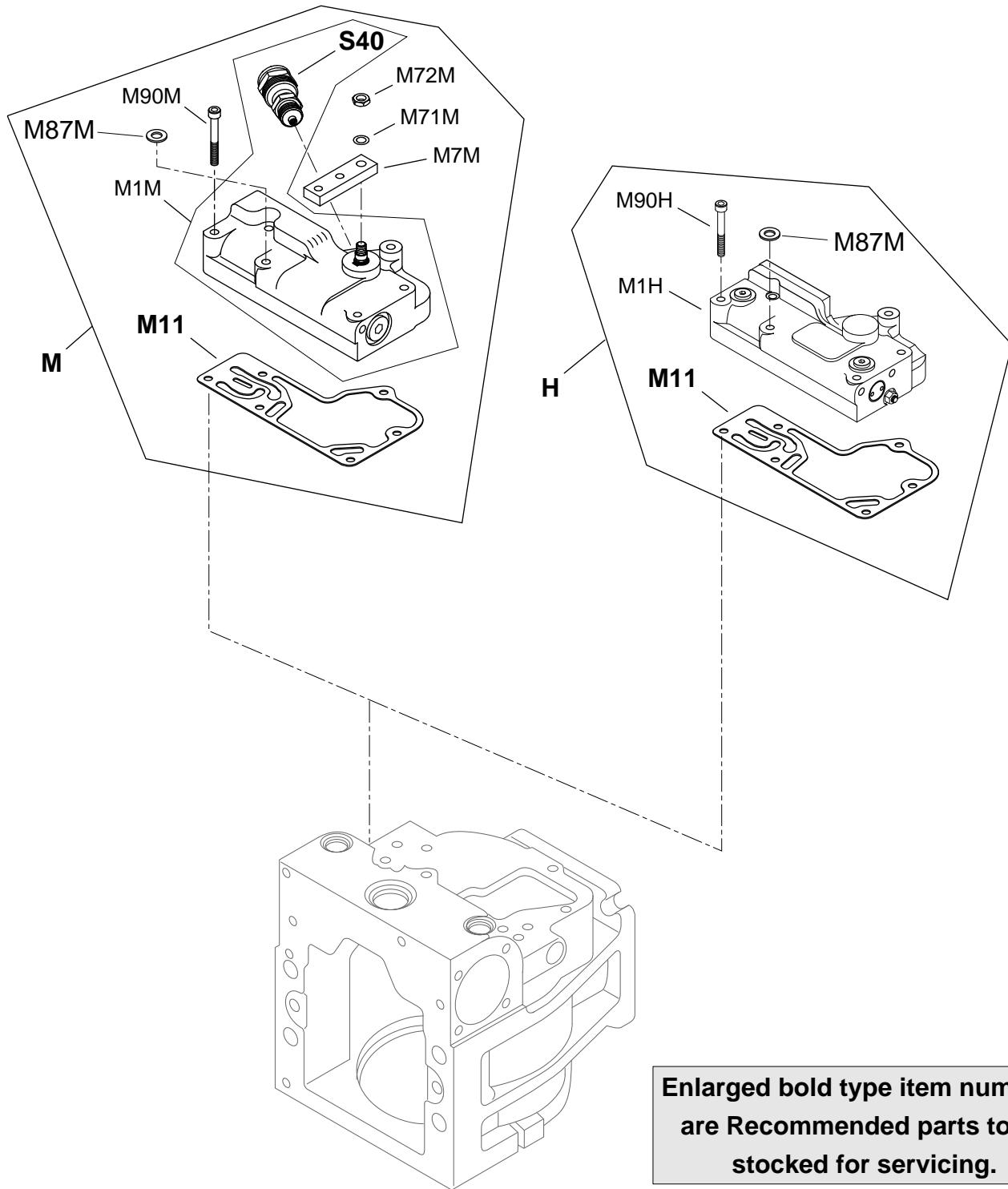
## 42 cc Variable Displacement Pump

### M: Control Group

Order Code	Item	Date Code Begin → End	Part Number	Description	Qty. per Model/Kit
EP	<b>E</b>	<b>87-42</b> →	<b>8002M0EP-B</b>	<b>EDC1 kit, packard connector</b>	<b>1</b>
	<b>M11</b>	<b>87-42</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1E	87-42 →	MCV111B0504	EDC1 packard connector	1
	<b>M9E</b>	<b>87-42</b> →	<b>MCV110A1058</b>	<b>PCP type 3, packard conn.</b>	<b>1</b>
	<b>M87E</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90E	87-42 →	9007314-0611	Screw	6
	M95E	87-42 →	9004104-0120	O-ring	2
	M96E	87-42 →	9004104-0140	O-ring	1
	M97E	87-42 →	9004104-0240	O-ring	1
	M98E	87-42 →	9007315-0504	Screw	4
EX	<b>E</b>	<b>87-42</b> →	<b>8002M0EX-B</b>	<b>EDC1 kit, metri-pack connector</b>	<b>1</b>
	<b>M11</b>	<b>87-42</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1E	87-42 →	MCV111B0506	EDC1 metri-pack connector	1
	<b>M9E</b>	<b>87-42</b> →	<b>MCV110A1090</b>	<b>PCP type 3, metri-pack conn.</b>	<b>1</b>
	<b>M87E</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90E	87-42 →	9007314-0611	Screw	6
	M95E	87-42 →	9004104-0120	O-ring	2
	M96E	87-42 →	9004104-0140	O-ring	1
	M97E	87-42 →	9004104-0240	O-ring	1
	M98E	87-42 →	9007315-0504	Screw	4
EY	<b>M11</b>	<b>87-42</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1E	87-42 →	MCV111C0504	EDC1 packard connector	1
	<b>M9E</b>	<b>87-42</b> →	<b>MCV110A1058</b>	<b>PCP type 3, packard conn.</b>	<b>1</b>
	<b>M87E</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90E	87-42 →	9007314-0611	Screw	6
	M95E	87-42 →	9004104-0120	O-ring	2
	M96E	87-42 →	9004104-0140	O-ring	1
	M97E	87-42 →	9004104-0240	O-ring	1
	M98E	87-42 →	9007315-0504	Screw	4
	HA	<b>M1H</b>	<b>87-42</b> →	<b>MCV112A0502</b>	<b>HDC, 1-11 bar</b>
<b>M11</b>		<b>87-42</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
<b>M87H</b>		<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
M90H		87-42 →	9007314-0611	Screw	6
HB	<b>M1H</b>	<b>87-42</b> →	<b>MCV112A0501</b>	<b>HDC, 1-6.7 bar</b>	<b>1</b>
	<b>M11</b>	<b>87-42</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	<b>M87H</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90H	87-42 →	9007314-0611	Screw	6
HF	<b>H</b>	<b>87-42</b> →	<b>8002M0HF-A</b>	<b>HDC2 kit, 3-11 bar</b>	<b>1</b>
	<b>M11</b>	<b>87-42</b> →	<b>K11419</b>	<b>Control gasket (SB-9302)</b>	<b>1</b>
	M1H	87-42 →	MCV115A0503	HDC, 3-11 bar	1
	<b>M87H</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90H	87-42 →	9007314-0611	Screw	6

**Bold** Items indicate recommended parts to be stocked for servicing

### Control







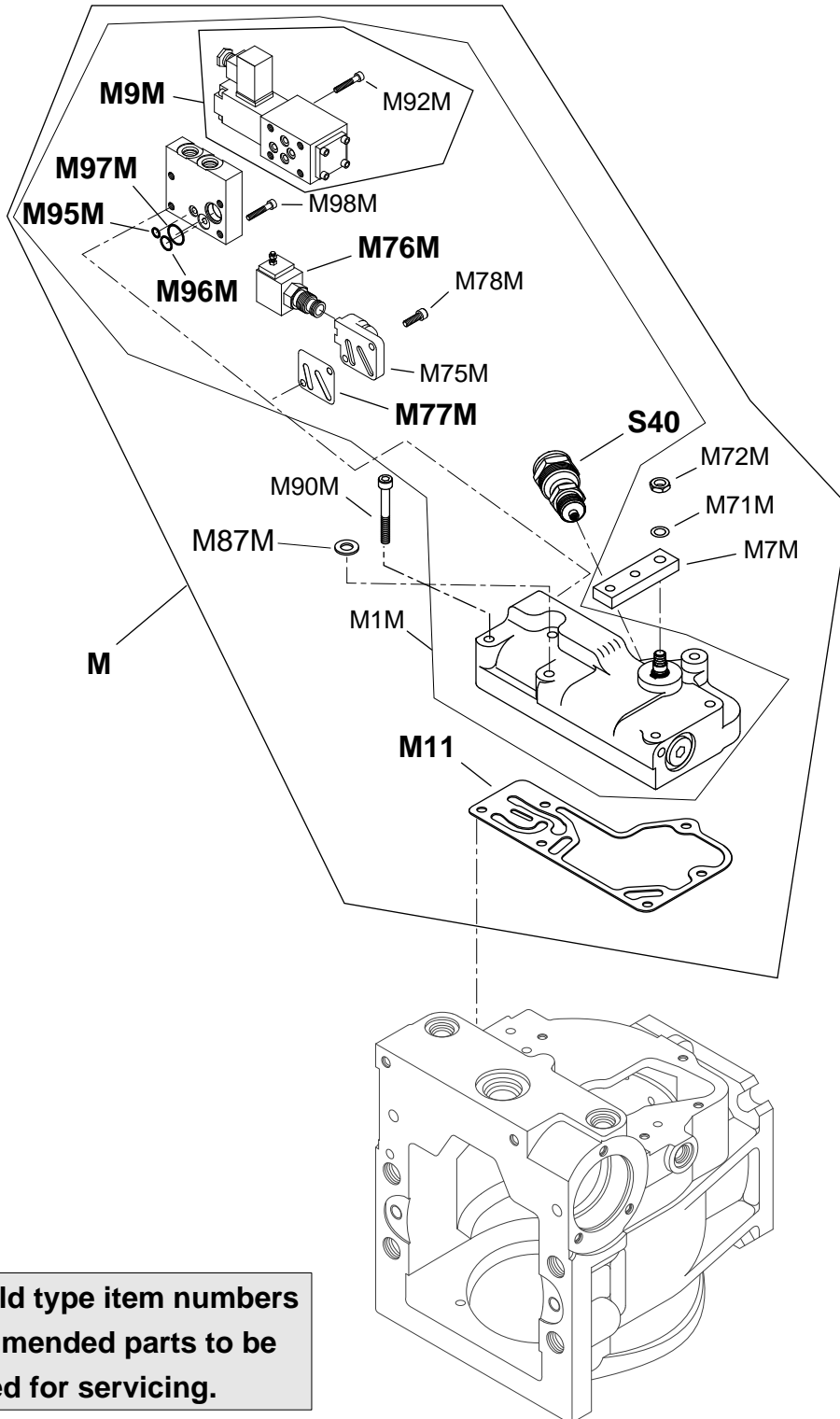
## 42 cc Variable Displacement Pump

### M: Control Group

Order Code	Item	Date Code Begin → End	Part Number	Description	Qty. per Model/Kit
HK	<b>H</b>	<b>87-42</b> →	<b>8002M0HK-A</b>	<b>HDC2 kit, 1-11 bar</b>	<b>1</b>
	<b>M11</b>	<b>87-42</b> →	<b>K11419</b>	<b>Control gasket (SB-9302)</b>	<b>1</b>
	M1H	87-42 →	MCV115A0502	HDC, 1-11 bar	1
	<b>M87H</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90H	87-42 →	9007314-0611	Screw	6
HM	<b>H</b>	<b>87-42</b> →	<b>8002M0HM-A</b>	<b>HDC2 kit, 1-6.7 bar</b>	<b>1</b>
	<b>M11</b>	<b>87-42</b> →	<b>K11419</b>	<b>Control gasket (SB-9302)</b>	<b>1</b>
	M1H	87-42 →	MCV115A0501	HDC, 1-6.7 bar	1
	<b>M87H</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90H	87-42 →	9007314-0611	Screw	6
MA	<b>M</b>	<b>87-42</b> →	<b>8002M0MA-A</b>	<b>MDC w/o neutral start switch</b>	<b>1</b>
	<b>M11</b>	<b>87-42</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1M	87-42 →	8800262	MDC without neutral start	1
	M7M	87-42 →	9800916	Control handle	1
	M71M	87-42 →	9009660-3100	Washer	1
	M72M	87-42 →	9003513-0800	Nut	1
	<b>M87M</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90M	87-42 →	9007314-0611	Screw	6
MB	<b>M</b>	<b>87-42</b> →	<b>8002M0MB-A</b>	<b>MDC kit with neutral start</b>	<b>1</b>
	<b>M11</b>	<b>87-42</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1M	87-42 →	8800328	MDC with neutral start switch	1
	M7M	87-42 →	9800916	Control handle	1
	M71M	87-42 →	9009660-3100	Washer	1
	M72M	87-42 →	9003513-0800	Nut	1
	<b>M87M</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90M	87-42 →	9007314-0611	Screw	6
	<b>S40</b>	<b>87-42</b> →	<b>80020S40</b>	<b>Neutral start switch kit</b>	<b>1</b>
MC	<b>M</b>	<b>87-02</b> →	<b>8002M0MC-A</b>	<b>MDC kit w/12v solenoid valve</b>	<b>1</b>
	<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1M	87-02 →	8800369	MDC w/sol. valve	1
	M7M	87-02 →	9800916	Control handle	1
	M71M	87-02 →	9009660-3100	Washer	1
	M72M	87-02 →	9003513-0800	Nut	1
	M75M	95-10 →	505022	Control manifold (SB-9503)	1
	<b>M76M</b>	<b>87-02</b> →	<b>9700803</b>	<b>Solenoid valve, 12v, single screw</b>	<b>1</b>
	<b>M77M</b>	<b>87-02</b> →	<b>8800882</b>	<b>Manifold gasket</b>	<b>1</b>
	M78M	95-10 →	9007314-0606	Screw (SB-9503)	2
	"	87-02 → 95-09	9007314-0605	Screw	2
	<b>M87M</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>
	M90M	87-02 →	9007314-0611	Screw	6

**Bold** Items indicate recommended parts to be stocked for servicing

**Control**



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

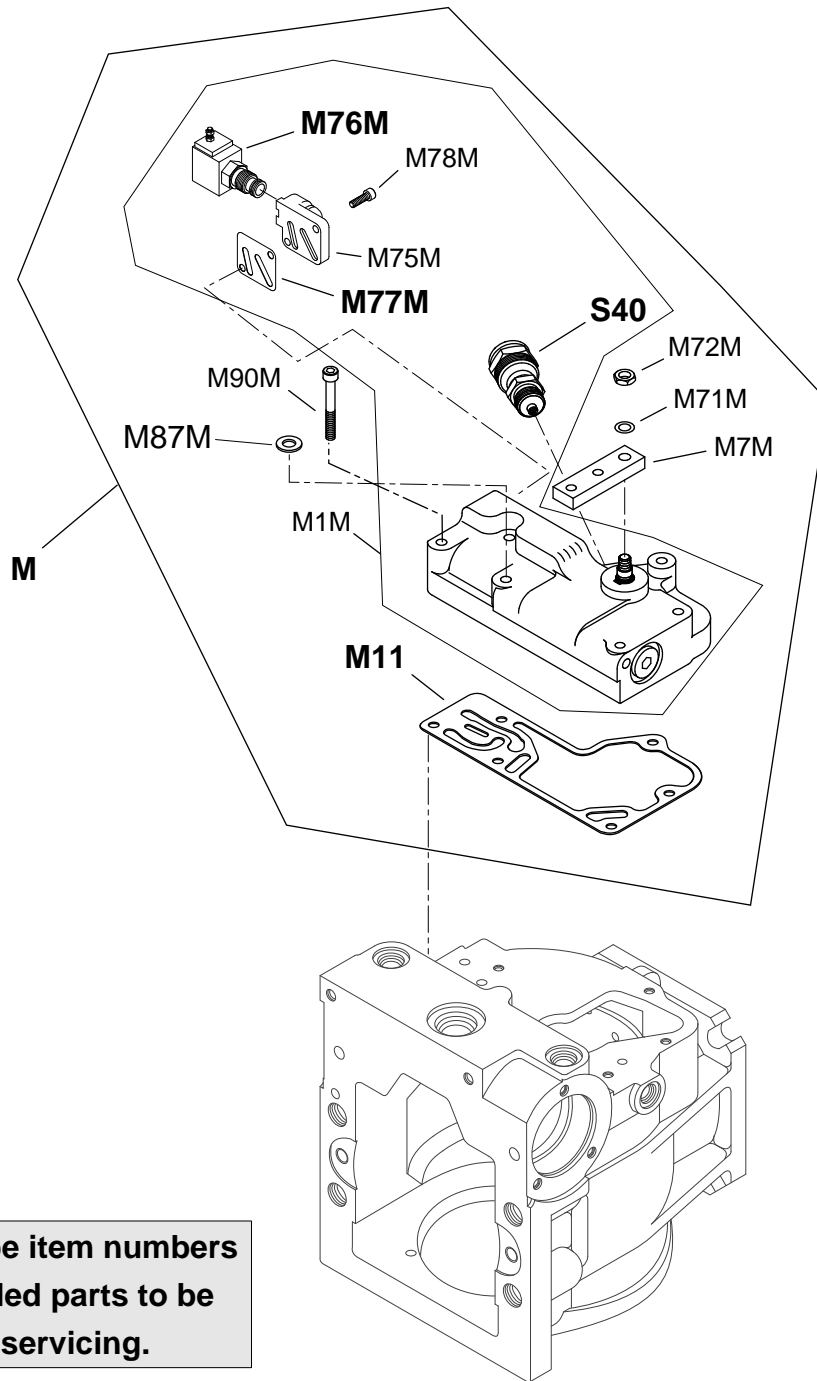


## 42 cc Variable Displacement Pump M: Control Group

Order Code	Item	Date Code Begin → End	Part Number	Description	Qty. per Model/Kit	
MD	<b>M</b>	<b>87-02</b> →	<b>8002M0MD-A</b>	<b>MDC w/12v sol. valve, nss</b>	<b>1</b>	
	<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>	
	M1M	87-02 →	8800367	MDC w/sol. valve, 12v, nss	1	
	M7M	87-02 →	9800916	Control handle	1	
	M71M	87-02 →	9009660-3100	Washer	1	
	M72M	87-02 →	9003513-0800	Nut	1	
	M75M	95-10 →	505022	Control manifold (SB-9503)	1	
	<b>M76M</b>	<b>87-02</b> →	<b>9700886</b>	<b>Solenoid valve, 12v, double screw</b>	<b>1</b>	
	<b>M77M</b>	<b>87-02</b> →	<b>8800882</b>	<b>Manifold gasket</b>	<b>1</b>	
	M78M	95-10 →	9007314-0606	Screw (SB-9503)	2	
	"	87-02 → 95-09	9007314-0605	Screw	2	
	<b>M87M</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>	
	M90M	87-02 →	9007314-0611	Screw	6	
	<b>S40</b>	<b>87-02</b> →	<b>80020S40</b>	<b>Neutral start switch kit</b>	<b>1</b>	
	ME	<b>M</b>	<b>87-02</b> →	<b>8002M0ME-A</b>	<b>MDC w/2 position sol. valve</b>	<b>1</b>
		<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
M1M		87-02 →	323949	MDC w/2 position sol. valve, 12v	1	
M7M		87-02 →	9800916	Control handle	1	
<b>M9M</b>		<b>87-02</b> →	<b>8510107</b>	<b>Solenoid kit, 12v (SB-9510)</b>	<b>1</b>	
M71M		87-02 →	9009660-3100	Washer	1	
M72M		87-02 →	9003513-0800	Nut	1	
<b>M87M</b>		<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>	
M90M		87-02 →	9007314-0611	Screw	6	
M92M		95-24 →	9007315-0507	Screw (SB-9510)	4	
"		87-02 → 95-23	9007315-0510	Screw	4	
<b>M95M</b>		<b>87-02</b> →	<b>9004105-0110</b>	<b>O-ring</b>	<b>1</b>	
<b>M96M</b>		<b>87-02</b> →	<b>9004105-0140</b>	<b>O-ring</b>	<b>1</b>	
<b>M97M</b>		<b>87-02</b> →	<b>9004105-0190</b>	<b>O-ring</b>	<b>1</b>	
M98M		87-02 →	9007315-0505	Metric screw	4	
MF		<b>M</b>	<b>87-02</b> →	<b>8002M0MF-A</b>	<b>MDC w/24v sol. valve</b>	<b>1</b>
	<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>	
	M1M	87-02 →	8800557	MDC w/sol. valve, 24v	1	
	M7M	87-02 →	9800916	Control handle	1	
	M71M	87-02 →	9009660-3100	Washer	1	
	M72M	87-02 →	9003513-0800	Nut	1	
	M75M	95-10 →	505022	Control manifold (SB-9503)	1	
	<b>M76M</b>	<b>87-02</b> →	<b>8700087</b>	<b>Solenoid valve, 24v</b>	<b>1</b>	
	<b>M77M</b>	<b>87-02</b> →	<b>8800882</b>	<b>Manifold gasket</b>	<b>1</b>	
	M78M	95-10 →	9007314-0606	Screw (SB-9503)	2	
	"	87-02 → 95-09	9007314-0605	Screw	2	
	<b>M87M</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>	
	M90M	87-02 →	9007314-0611	Screw	6	

**Bold** Items indicate recommended parts to be stocked for servicing

### Control



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

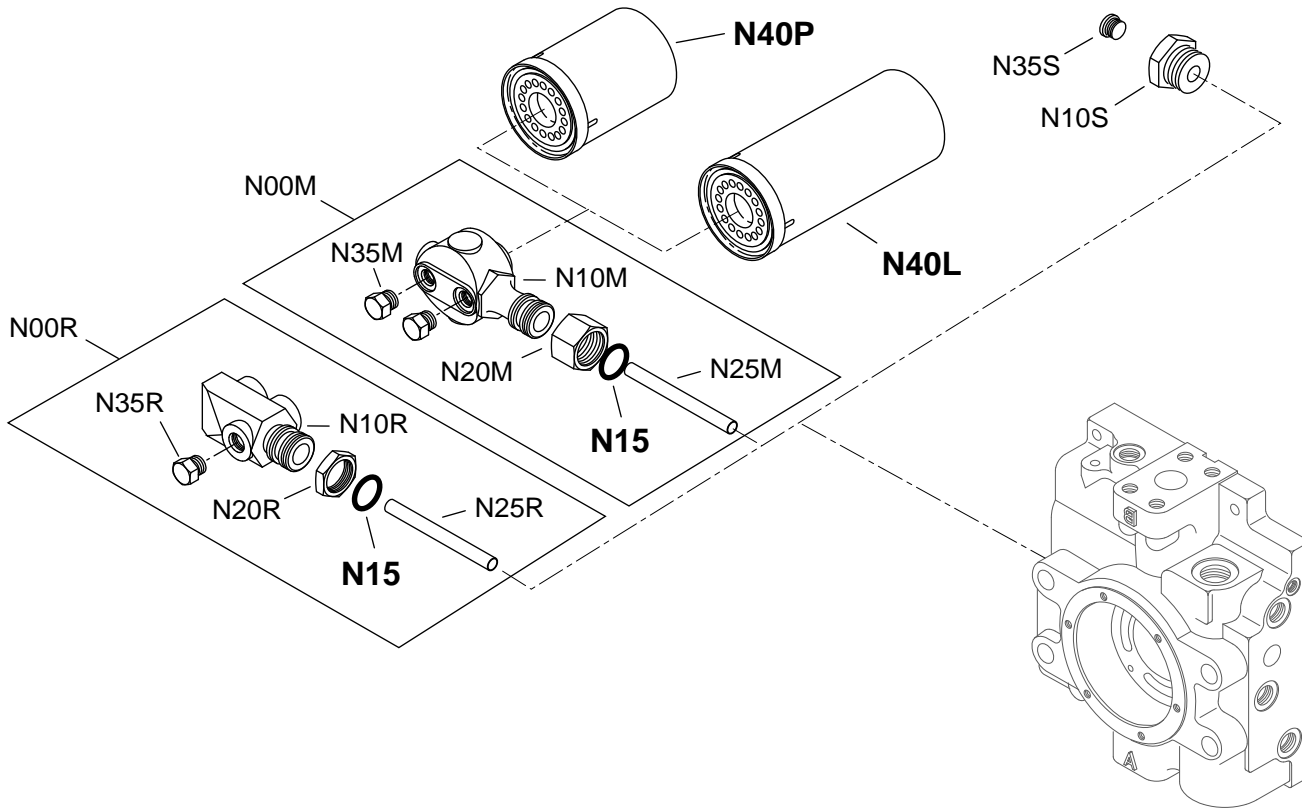


## 42 cc Variable Displacement Pump M: Control Group

Order Code	Item	Date Code Begin → End	Part Number	Description	Qty. per Model/Kit	
MG	<b>M</b>	<b>87-02</b> →	<b>8002M0MG-A</b>	<b>MDC w/24v sol. valve, nss</b>	<b>1</b>	
	<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>	
	M1M	87-02 →	8800558	MDC w/sol. valve, 24v, nss	1	
	M7M	87-02 →	9800916	Control handle	1	
	M71M	87-02 →	9009660-3100	Washer	1	
	M72M	87-02 →	9003513-0800	Nut	1	
	M75M	95-10 →	505022	Control manifold (SB-9503)	1	
	<b>M76M</b>	<b>87-02</b> →	<b>8700087</b>	<b>Solenoid valve, 24v</b>	<b>1</b>	
	<b>M77M</b>	<b>87-02</b> →	<b>8800882</b>	<b>Manifold gasket</b>	<b>1</b>	
	M78M	95-10 →	9007314-0606	Screw (SB-9503)	2	
	"	87-02 → 95-09	9007314-0605	Screw	2	
	<b>M87M</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>	
	M90M	87-02 →	9007314-0611	Screw	6	
	<b>S40</b>	<b>87-02</b> →	<b>80020S40</b>	<b>Neutral start switch kit</b>	<b>1</b>	
	MK	<b>M</b>	<b>87-02</b> →	<b>8002M0MK-A</b>	<b>MDC kit, wide deadband, nss</b>	<b>1</b>
		<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
M1M		87-02 →	8800594	MDC, wide deadband, nss	1	
M7M		87-02 →	9800916	Control handle	1	
M71M		87-02 →	9009660-3100	Washer	1	
M72M		87-02 →	9003513-0800	Nut	1	
<b>M87M</b>		<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>	
M90M		87-02 →	9007314-0611	Screw	6	
<b>S40</b>		<b>87-02</b> →	<b>80020S40</b>	<b>Neutral start switch kit</b>	<b>1</b>	
ML		<b>M11</b>	<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>
	M1M	87-02 →	8800602	MDC, w/neutral start switch	1	
	M7M	87-02 →	9800916	Control handle	1	
	M71M	87-02 →	9009660-3100	Washer	1	
	M72M	87-02 →	9003513-0800	Nut	1	
	<b>M87M</b>	<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>	
	M90M	87-02 →	9007314-0611	Screw	6	
	<b>S40</b>	<b>87-02</b> →	<b>8510027</b>	<b>Neutral start switch kit (SB-9514)</b>	<b>1</b>	
	MR	<b>M</b>	<b>87-02</b> →	<b>8002M0MR-A</b>	<b>MDC w/24v sol. valve, hf nss</b>	<b>1</b>
<b>M11</b>		<b>87-02</b> →	<b>8800520</b>	<b>Control gasket</b>	<b>1</b>	
M1M		87-02 →	8800835	MDC w/sol. valve, 24v, hf nss	1	
M7M		87-02 →	9800916	Control handle	1	
M71M		87-02 →	9009660-3100	Washer	1	
M72M		87-02 →	9003513-0800	Nut	1	
M75M		95-10 →	505022	Control manifold (SB-9503)	1	
<b>M76M</b>		<b>87-02</b> →	<b>8700087</b>	<b>Solenoid valve, 24v</b>	<b>1</b>	
<b>M77M</b>		<b>87-02</b> →	<b>8800882</b>	<b>Manifold gasket</b>	<b>1</b>	
M78M		95-10 →	9007314-0606	Screw (SB-9503)	2	
"		87-02 → 95-09	9007314-0605	Screw	2	
<b>M87M</b>		<b>87-42</b> →	<b>592386</b>	<b>Seal washer</b>	<b>1</b>	
M90M		87-02 →	9007314-0611	Screw	6	
<b>S40</b>		<b>87-02</b> →	<b>8510027</b>	<b>Neutral start switch kit (SB-9514)</b>	<b>1</b>	

**Bold** Items indicate recommended parts to be stocked for servicing

### Filtration



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



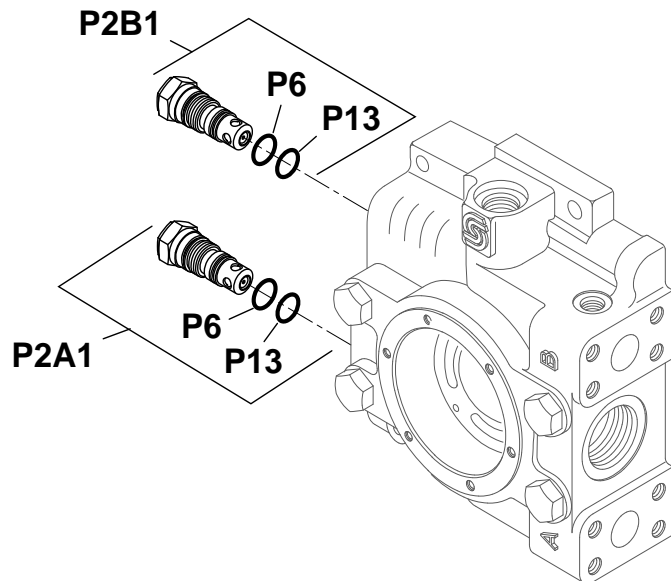
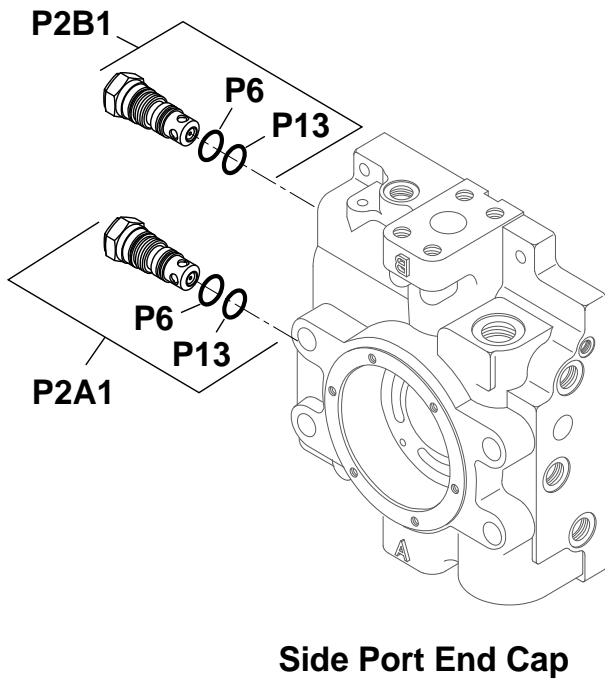
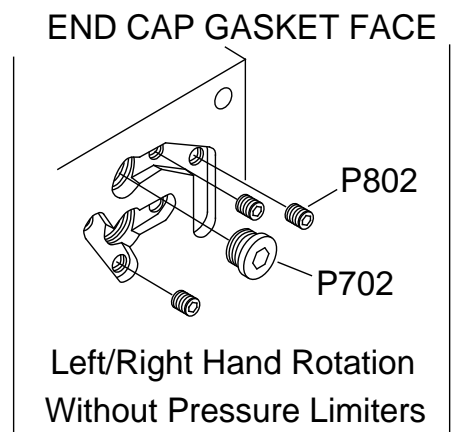
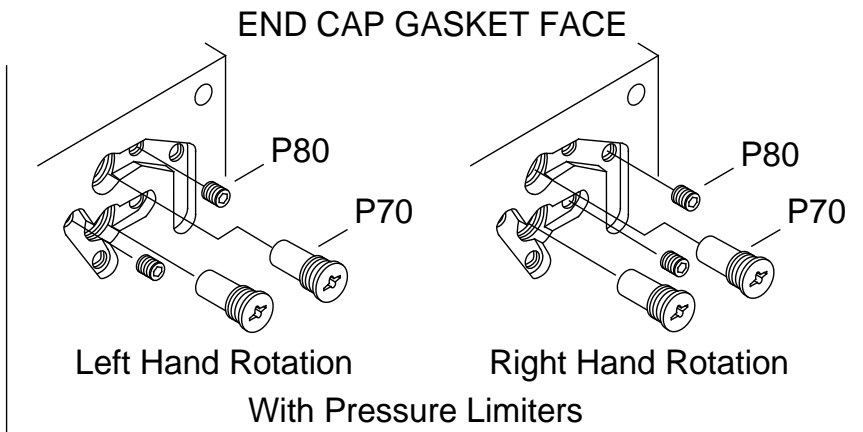
## 42 cc Variable Displacement Pump

### N: Filtration Group

<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin</u> → <u>End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
L	N00M	87-42 →	8052N00M-A	Filtration kit - int	1
	N10M	89-17 →	722157	Manifold	1
	<b>N15</b>	<b>87-42</b> →	<b>9004201-7500</b>	<b>O-ring</b>	<b>1</b>
	N20M	87-42 →	9002863-1200	Nut	1
	N25M	87-42 →	8800180	Tube	1
	N35M	87-42 →	9005100-5600	Plug	1
	<b>N40L</b>	<b>87-42</b> →	<b>8700068</b>	<b>Filter, long</b>	<b>1</b>
	P	N00M	87-42 →	8052N00M-A	Filtration kit - int
N10M		89-17 →	722157	Manifold	1
<b>N15</b>		<b>87-42</b> →	<b>9004201-7500</b>	<b>O-ring</b>	<b>1</b>
N20M		87-42 →	9002863-1200	Nut	1
N25M		87-42 →	8800180	Tube	1
N35M		87-42 →	9005100-5600	Plug	1
<b>N40P</b>		<b>87-42</b> →	<b>9700810</b>	<b>Filter, short</b>	<b>1</b>
R		N00R	89-17 →	8052N00R-A	Filtration kit - remote
	N10R	89-17 →	350785	Manifold	1
	<b>N15</b>	<b>87-42</b> →	<b>9004201-7500</b>	<b>O-ring</b>	<b>1</b>
	N20R	87-42 →	9002863-1200	Nut	1
	N25R	87-42 →	8800210	Tube	1
	N35R	87-42 →	9005100-5600	Plug	1
	S	N10S	87-42 → current	9002842-1206	Fitting
N35S		87-42 → current	9005110-5600	Plug	1

**Bold** Items indicate recommended parts to be stocked for servicing

**High Pressure Regulation**



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





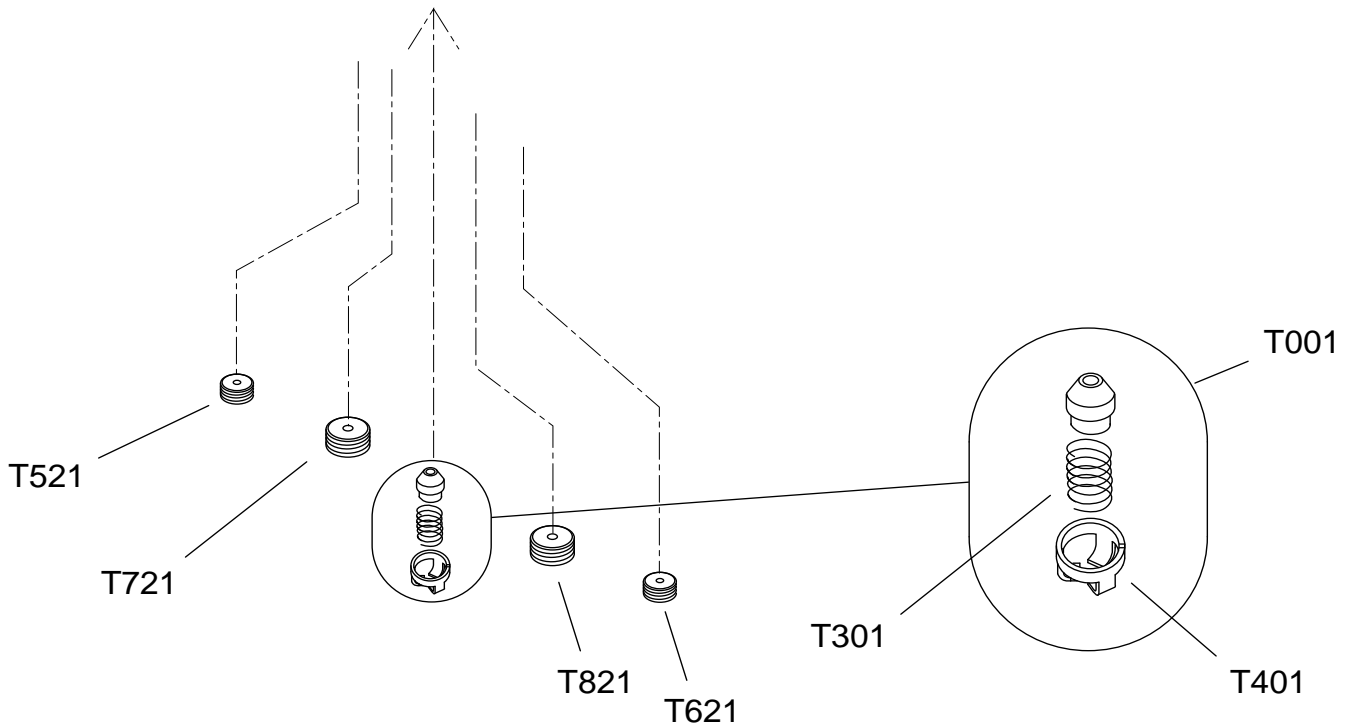
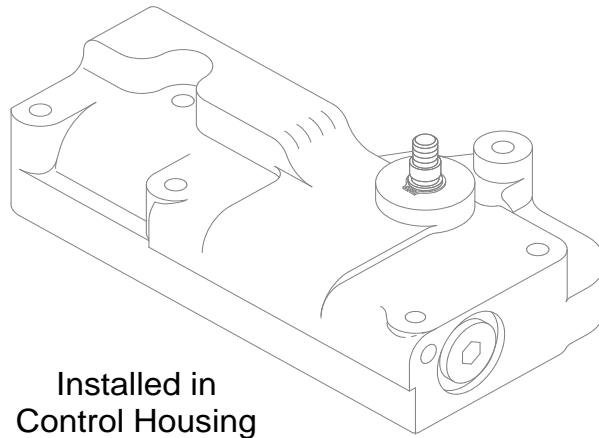
## 42 cc Variable Displacement Pump

### P: High Pressure Regulation Group

<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin</u> → <u>End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
1 (Range 1)	<b>P2A1</b>	<b>87-02</b> →	<b>8510022-1</b>	<b>Multi-function valve kit (w/PL)</b>	<b>1</b>
	<b>P2B1</b>	<b>87-02</b> →	<b>8510022-1</b>	<b>Multi-function valve kit</b>	<b>1</b>
	<b>P6</b>	<b>87-02</b> →	<b>9004100-0200</b>	<b>O-ring</b>	<b>2</b>
	<b>P13</b>	<b>87-02</b> →	<b>9004105-0190</b>	<b>O-ring</b>	<b>2</b>
	P70	87-02 →	8800188	Check valve	2
	P80	87-02 →	9005475-0004	Special plug	2
2 (Range 1)	<b>P2A1</b>	<b>87-02</b> →	<b>8510022-2</b>	<b>Multi-function valve kit (w/o PL)</b>	<b>1</b>
	<b>P2B1</b>	<b>87-02</b> →	<b>8510022-2</b>	<b>Multi-function valve kit</b>	<b>1</b>
	<b>P6</b>	<b>87-02</b> →	<b>9004100-0200</b>	<b>O-ring</b>	<b>2</b>
	<b>P13</b>	<b>87-02</b> →	<b>9004105-0190</b>	<b>O-ring</b>	<b>2</b>
	P702	87-02 →	9005110-4400	Plug	1
	P802	87-02 →	9005475-0004	Special plug	3
6 (Range 2)	<b>P2A1</b>	<b>87-02</b> →	<b>8510022-6</b>	<b>Multi-function valve kit (w/PL)</b>	<b>1</b>
	<b>P2B1</b>	<b>87-02</b> →	<b>8510022-6</b>	<b>Multi-function valve kit</b>	<b>1</b>
	<b>P6</b>	<b>87-02</b> →	<b>9004100-0200</b>	<b>O-ring</b>	<b>2</b>
	<b>P13</b>	<b>87-02</b> →	<b>9004105-0190</b>	<b>O-ring</b>	<b>2</b>
	P70	87-02 →	8800188	Check valve	2
	P80	87-02 →	9005475-0004	Special plug	2
7 (Range 2)	<b>P2A1</b>	<b>87-02</b> →	<b>8510022-7</b>	<b>Multi-function valve kit (w/o PL)</b>	<b>1</b>
	<b>P2B1</b>	<b>87-02</b> →	<b>8510022-7</b>	<b>Multi-function valve kit</b>	<b>1</b>
	<b>P6</b>	<b>87-02</b> →	<b>9004100-0200</b>	<b>O-ring</b>	<b>2</b>
	<b>P13</b>	<b>87-02</b> →	<b>9004105-0190</b>	<b>O-ring</b>	<b>2</b>
	P702	87-02 →	9005110-4400	Plug	1
	P802	87-02 →	9005475-0004	Special plug	3
B	<b>P2A1</b>	<b>87-42</b> →	<b>8510022-1</b>	<b>Multi-function valve kit (w/o PL)</b>	<b>1</b>
	<b>P2B1</b>	<b>87-42</b> →	<b>8510022-7</b>	<b>Multi-function valve kit (w/o PL)</b>	<b>1</b>
	<b>P6</b>	<b>87-42</b> →	<b>9004100-0200</b>	<b>O-ring</b>	<b>2</b>
	<b>P13</b>	<b>87-42</b> →	<b>9004105-0190</b>	<b>O-ring</b>	<b>2</b>
	P702	87-42 →	9005110-4400	Plug	1
	P802	87-42 →	9005475-0004	Special plug	3

**Bold** Items indicate recommended parts to be stocked for servicing

**Orifice**



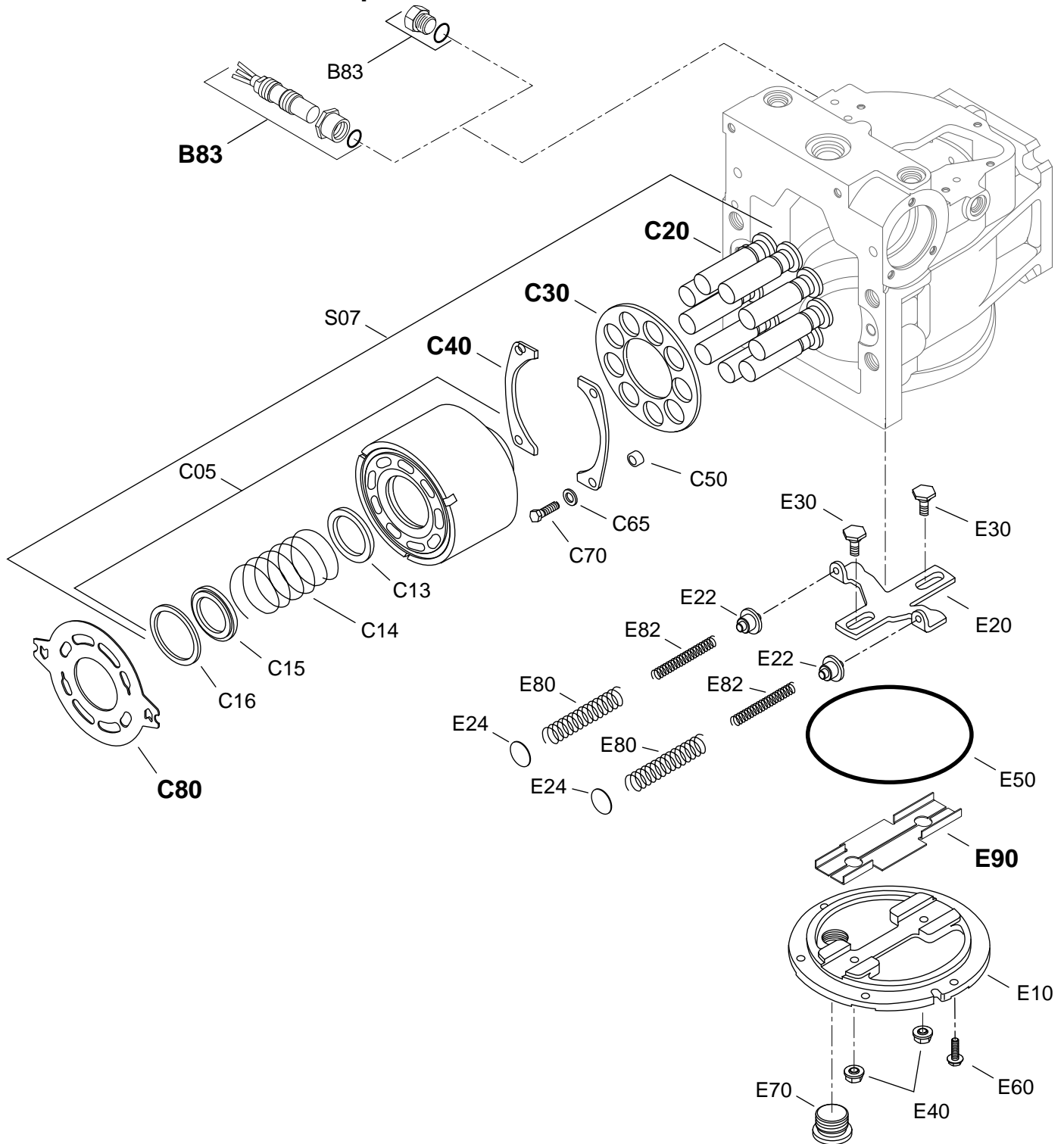


## 42 cc Variable Displacement Pump

### T: Orifice Group

<u>Order Code</u>	<u>Item</u>	<u>Date Code Begin</u> → <u>End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
01	T001	87-02 →	8002T001-A	Control orifice kit - .018	1
	T301	87-02 →	8700007	Spring	1
	T401	87-02 →	8800340	Spring retainer	1
02	T001	87-02 →	8002T002-A	Control orifice kit - .026	1
	T301	87-02 →	8700007	Spring	1
	T401	87-02 →	8800340	Spring retainer	1
03	T001	87-02 →	8002T003-A	Control orifice kit - .032	1
	T301	87-02 →	8700007	Spring	1
	T401	87-02 →	8800340	Spring retainer	1
04	T001	87-02 →	8002T004-A	Control orifice kit - .040	1
	T301	87-02 →	8700007	Spring	1
	T401	87-02 →	8800340	Spring retainer	1
05	T001	87-02 →	8002T005-A	Control orifice kit - .054	1
	T301	87-02 →	8700007	Spring	1
	T401	87-02 →	8800340	Spring retainer	1
06	T001	87-02 →	8002T006-A	Control orifice kit - .062	1
	T301	87-02 →	8700007	Spring	1
	T401	87-02 →	8800340	Spring retainer	1
09	T001	87-02 →	8002T009-A	Control orifice kit - .092	1
	T301	87-02 →	8700007	Spring	1
	T401	87-02 →	8800340	Spring retainer	1
22	T001	87-02 →	8002T022-A	Control orifice kit - .022	1
	T301	87-02 →	8700007	Spring	1
	T401	87-02 →	8800340	Spring retainer	1
29	T001	91-30 →	8002T003-A	Control orifice kit - .032	1
	T301	91-30 →	8700007	Spring	1
	T401	91-30 →	8800340	Spring retainer	1
	T521	91-30 →	639104	Orifice plug, .7mm, M5 x 6	1
	T621	91-30 →	639104	Orifice plug, .7mm, M5 x 6	1
50	T001	87-02 →	8002T002-A	Control orifice kit - .026	1
	T301	87-02 →	8700007	Spring	1
	T401	87-02 →	8800340	Spring retainer	1
	T721	87-02 →	521054	Orifice plug, .9mm	1
	T821	87-02 →	521054	Orifice plug, .9mm M8 x 8	1

**Special Hardware Feature**



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



### 42 cc Variable Displacement Pump

<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin</u> → <u>End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
	S07	87-42 →	80520S07	Cylinder block kit <b>(SB-9312)</b>	1
	C05	87-42 →	763920	Cylinder block assembly	1
	C13	87-42 →	647909	Spring seat	1
	C14	87-42 →	648154	Cylinder block spring	1
	C15	87-42 →	647925	Spring retainer	1
	C16	87-42 →	9006250-0169	Retaining ring	1
	<b>C20</b>	<b>87-42</b> →	<b>706101</b>	<b>Piston assembly (SB-8823)</b>	<b>9</b>
	<b>C30</b>	<b>87-42</b> →	<b>735472</b>	<b>Slipper guide</b>	<b>1</b>
	<b>C40</b>	<b>87-42</b> →	<b>321612</b>	<b>Slipper guide bearing</b>	<b>1</b>
	C50	87-42 →	367631	Spacer	4
	C70	87-42 →	648477	Screw	4
	<i>E10</i>	<i>96-03</i> →	<i>501570</i>	<i>Side cover</i>	<i>1</i>
	"	<i>92-16</i> → <i>96-02</i>	<i>506380</i>	<i>Side cover (SB-9604)</i>	<i>1</i>
	"	<i>87-42</i> → <i>92-15</i>	<i>671602</i>	<i>Side cover (SB-9208)</i>	<i>1</i>
	E20	87-42 →	731984	Leveler <b>(SB-9208)</b>	1
	E22	87-42 →	720920	Spring seat	2
	E24	87-42 →	359034	Shim	2
	E30	96-03 →	506369	Guide post <b>(SB-9604)</b>	2
	"	<i>87-42</i> → <i>96-02</i>	<i>344465</i>	<i>Guide post</i>	<i>2</i>
	E40	87-42 →	9003509-0006	Nut	2
	E50	92-16 →	767962	O-ring	1
	"	<i>87-42</i> → <i>92-15</i>	<i>767582</i>	<i>O-ring</i>	<i>1</i>
	E60	87-42 →	648477	Screw <b>(SB-9418)</b>	6
	E70	87-42 →	9005110-8700	Plug	1
	E80	87-42 →	332684	Spring	2
	<b>E90</b>	<b>96-02</b> →	<b>506916</b>	<b>Insert assembly (SB-9604)</b>	<b>1</b>

### W: Special Hardware Group

<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin</u> → <u>End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
FAB & NBN	<b>C80</b>	<b>87-42</b> →	<b>500338</b>	<b>Valve plate</b>	<b>1</b>
	E82	87-42 →	706853	Spring	2
GBA & NNN	<b>C80</b>	<b>87-42</b> →	<b>758383</b>	<b>Valve plate (SB-9526)</b>	<b>1</b>

**Bold** Items indicate recommended parts to be stocked for servicing



## 42 cc Variable Displacement Pump Overhaul Seal Kit

<u>Order Code</u>	<u>Item</u>	<u>Date Code</u> <u>Begin → End</u>	<u>Part Number</u>	<u>Description</u>	<u>Qty. per Model/Kit</u>
	<b>S30</b>	<b>87-42 →</b>	<b>80520S30</b>	<b>Overhaul seal kit, 042 PV</b>	<b>1</b>
	C70	87-42 →	648477	Screw	4
	E40	87-42 →	9003509-0006	Nut	2
	E50	87-42 →	767962	O-ring	1
	E60	87-42 →	648477	Screw	6
	F11	90-51 →	9004100-1220	O-ring <b>(SB-9107)</b>	2
	"	87-42 → 90-50	9004100-1210	O-ring	2
	F12	90-51 →	350454	Piston ring <b>(SB-9107)</b>	2
	"	87-42 → 90-50	648345	Piston ring	2
	F40	87-42 →	706242	O-ring	2
	F50	87-42 →	338517	O-ring	2
	G308	89-17 →	506698	End cap gasket	1
	J40	87-42 →	9004104-0440	O-ring	1
	J50	87-42 →	9004104-1580	O-ring	1
	J90	87-42 →	9004104-0420	O-ring	1
	J90	87-42 →	9004104-0440	O-ring	1
	K50	87-42 →	9004201-6200	O-ring <b>(SB-8902)</b>	1
	L40	92-16 →	9008000-0118	Lip seal <b>(SB-9208)</b>	1
	"	87-42 → 92-15	656280	Lip seal	1
	L50	92-16 →	780247	O-ring <b>(SB-9208A)</b>	1
	"	87-42 → 92-15	9004104-0360	O-ring	1
	M11	87-42 →	8800520	Control gasket	1
	M11	87-42 →	K11419	Control gasket <b>(SB-9302)</b>	1
	M77M	87-42 →	8800882	Manifold gasket	1
	M87M	87-42 →	592386	Seal washer	1
	M95E	87-42 →	9004104-0120	O-ring	2
	M96E	87-42 →	9004104-0140	O-ring	1
	M97E	87-42 →	9004104-0240	O-ring	1
	N15	87-42 →	9004201-7500	O-ring	1
	P6	87-42 →	9004100-0200	O-ring	2
	P13	87-42 →	9004105-0190	O-ring	2

**Bold** Items indicate recommended parts to be stocked for servicing



**NOTES**

## Service Bulletin SB-8823

**PRODUCTS AFFECTED:** Series 90 Pumps and Motors

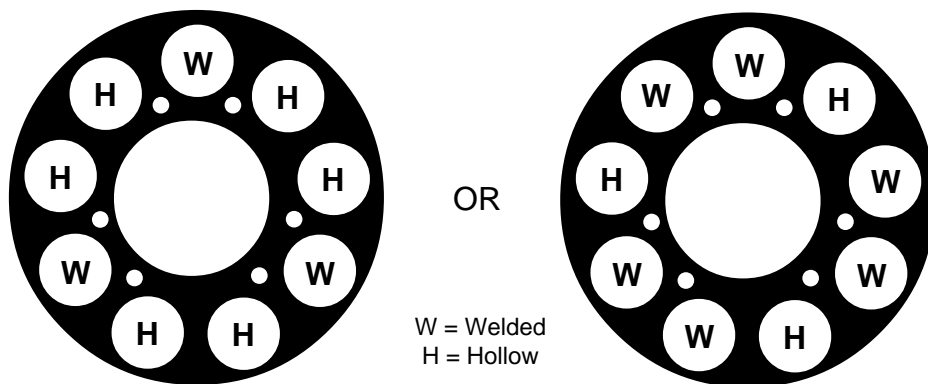
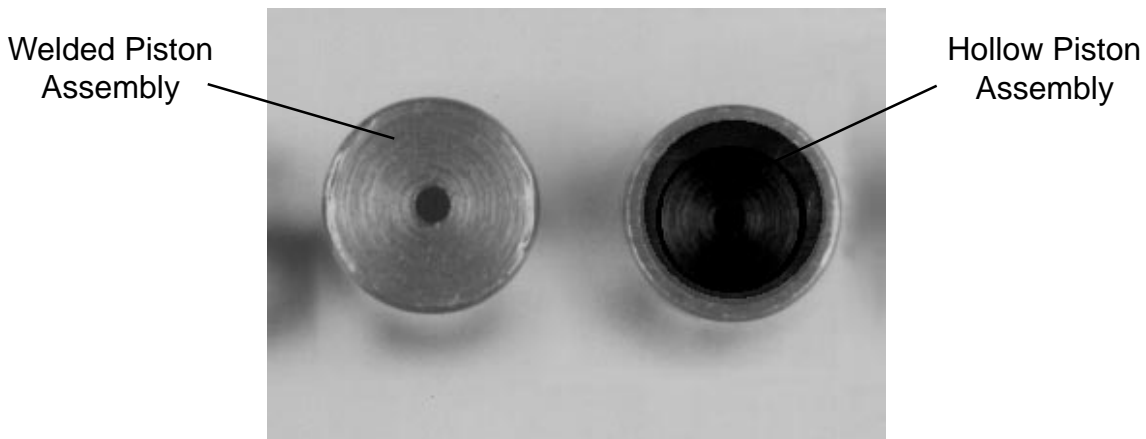
**SUBJECT:** Piston Improvement

### 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 service parts. The hollow pistons will be obsolete. Part numbers for INDIVIDUAL welded piston assemblies are listed on the back side of 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 installed in the cylinder block symmetrically, in multiples of three (3).



When replacing hollow pistons with welded pistons, it is mandatory that the welded pistons be incorporated symmetrically in multiples of three (3).



## Service Bulletin SB-8823

### MODELS AFFECTED:

All Series 90 Pumps and Motors

93-XXXX  
94-XXXX  
95-XXXX  
96-XXXX

### SERIAL NUMBERS AFFECTED:

Welded pistons will be incorporated into all Series 90 pumps and motors by the end of the first quarter of 1989.

### PART NUMBERS AFFECTED:

<u>PART NUMBER</u>	<u>DESCRIPTION</u>
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:

- Not Applicable
- Interchangeable (in groups of 3)
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

### DISTRIBUTION:

- All Product Related Sauer-Sundstrand Distributors
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- All ASCs
- Non-Restricted Distribution

## Service Bulletin SB-8824 Rev. A

**PRODUCTS AFFECTED:** Series 90 Pumps  
**SUBJECT:** Remote Pressure Filtration Adapter Change

**DESCRIPTION:**

**NOTICE**

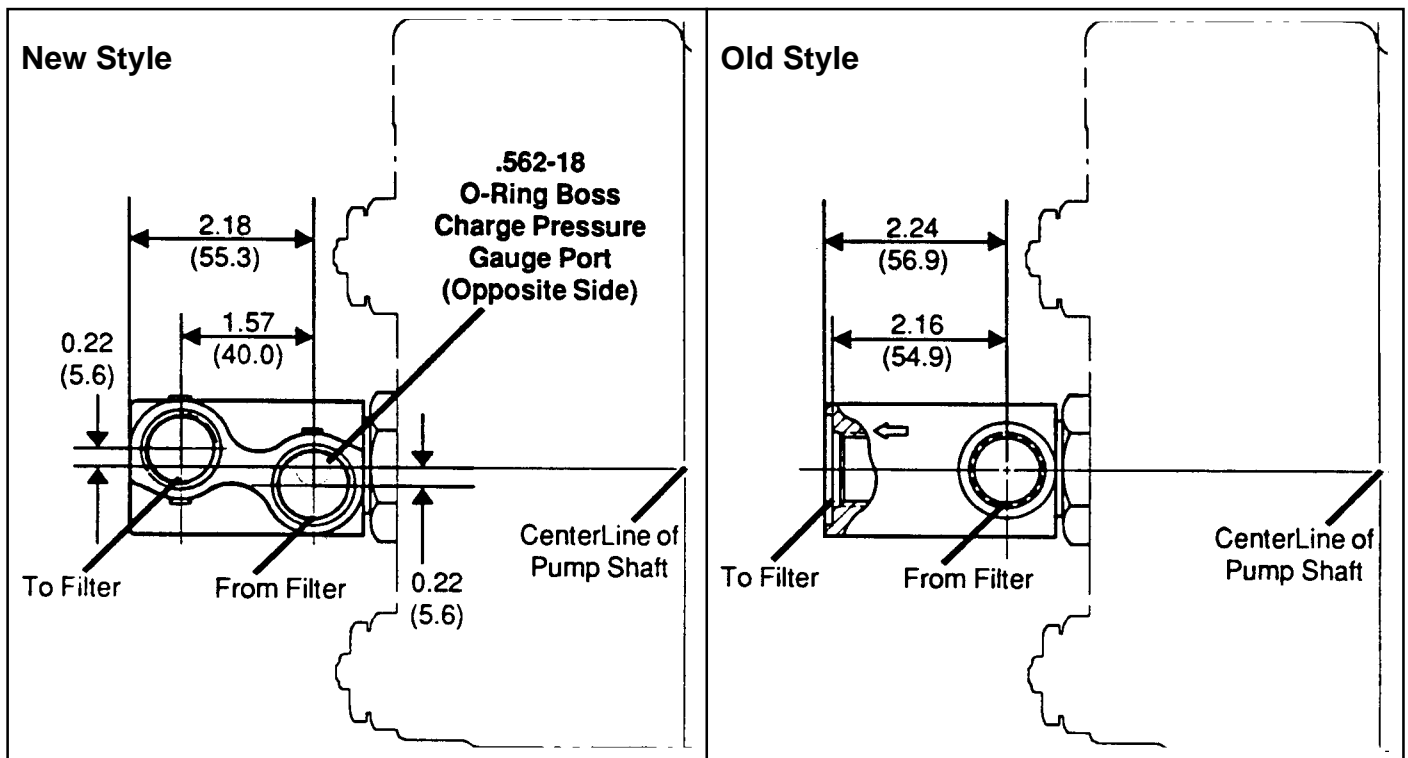
The initial issue of this bulletin (dated 12/19/88) did not include an incorporation date. This revision is being distributed to inform all users of the exact incorporation date. You may remove the initial issue of this bulletin from your files.

**DESCRIPTION**

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

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

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



## Service Bulletin SB-8824 Rev. A

### MODELS AFFECTED:

All Series 90 pumps (93-2xxx, 94-2xxx, 95-2xxx, 96-2xxx) with Remote Pressure Filtration (Option R).

### SERIAL NUMBERS AFFECTED:

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

### PART NUMBERS AFFECTED:

<u>Part Number</u>	<u>Description</u>
8002N00R-A	Filtration Remote - Kit ("New Style")

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable (changes to machine plumbing will probably be necessary)
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

### DISTRIBUTION:

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## Service Bulletin SB-8902

**PRODUCTS AFFECTED:** Series 90 Pumps

**SUBJECT:** Incorporation of Adjustable Charge Relief Valve

### DESCRIPTION:

As a product improvement, Sauer-Sundstrand is incorporating an externally 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).

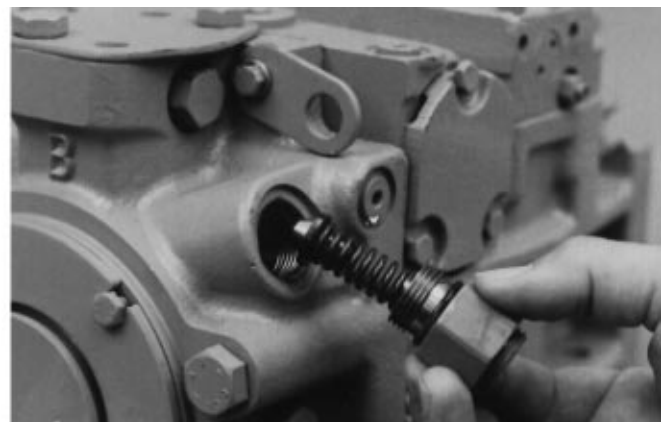
**NOTE** This improvement changes the design of the charge relief valve poppet and plug. The new style charge relief valve may protrude from the pump end cap approximately 0.27 in. (6.9 mm) farther than the shim adjustable design.

To adjust the new design valve, first install gauges to measure charge pressure and case 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 nut with a large screwdriver while observing the charge pressure and case pressure. Clockwise (CW) rotation of the plug increases the setting, while counterclockwise (CCW) rotation decreases the setting (at a rate of approximately 50 psi [3.4 bar] per turn). Charge pressure settings are referenced to case pressure. Once the desired setting is achieved, torque the lock nut to 34 to 41 lbs•ft (46 to 55 Nm) and remove the gauges.

Sauer-Sundstrand will offer an adjustable charge relief valve kit for sale as a spare 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 be made obsolete and will no longer be available as spare parts.



**Adjusting Charge Relief Valve**



**Charge Relief Valve Assembly**

## Service Bulletin SB-8902

### MODELS AFFECTED:

All Series 90 Pumps (93-2xxx, 94-2xxx, 95-2xxx, and 96-2xxx)

### SERIAL NUMBERS AFFECTED:

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:

<u>Part Number</u>	<u>Description</u>
8002K000-A	Adjustable Charge Relief Valve Kit - "New Style" (Includes poppet, spring, plug, O-ring, and lock nut)

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable (as an assembly)
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

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## Service Bulletin SB-9003

**PRODUCTS AFFECTED:** Series 90 - 42cc Variable Pumps

**SUBJECT:** Feedback Link

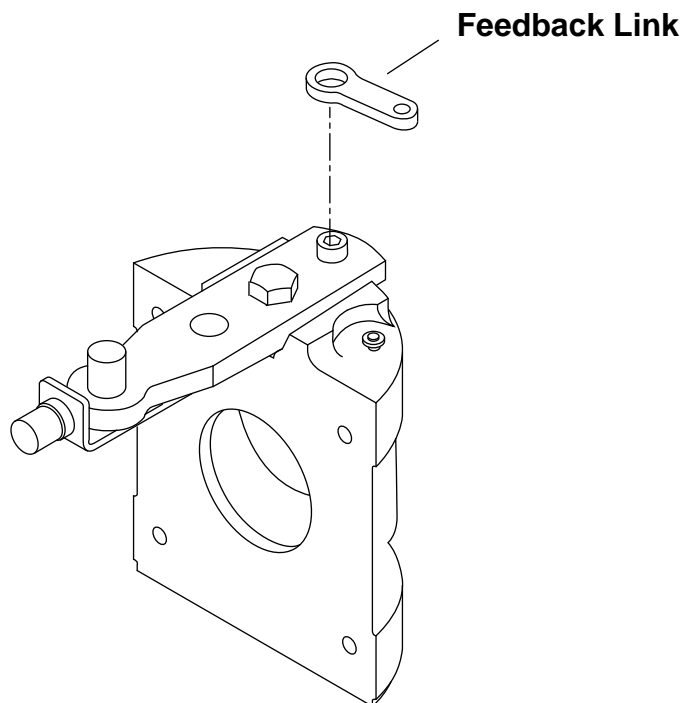
### DESCRIPTION:

Series 90 - 42cc variable pumps equipped with controls which do not require feedback links, must have the links removed. "CA" cover plates or "DC" three position solenoid controls do not require this link.

Please check your records to determine if links were left in pumps during conversions. These pumps must be retrofitted. Removing the link requires a total pump teardown.

### WARNING

If left in the pump, the link may swing into a position causing the swashplate to stick in stroke. This will result in a no neutral condition.



## **Service Bulletin SB-9003**

### **MODELS AFFECTED:**

All Series 90 - 42cc pumps (93-2xxx)

### **SERIAL NUMBERS AFFECTED:**

All pumps

### **PART NUMBERS AFFECTED:**

N/A

### **PARTS DISPOSITION:**

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
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- Scrap New Parts and Supply for Credit

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## Service Bulletin SB-9107

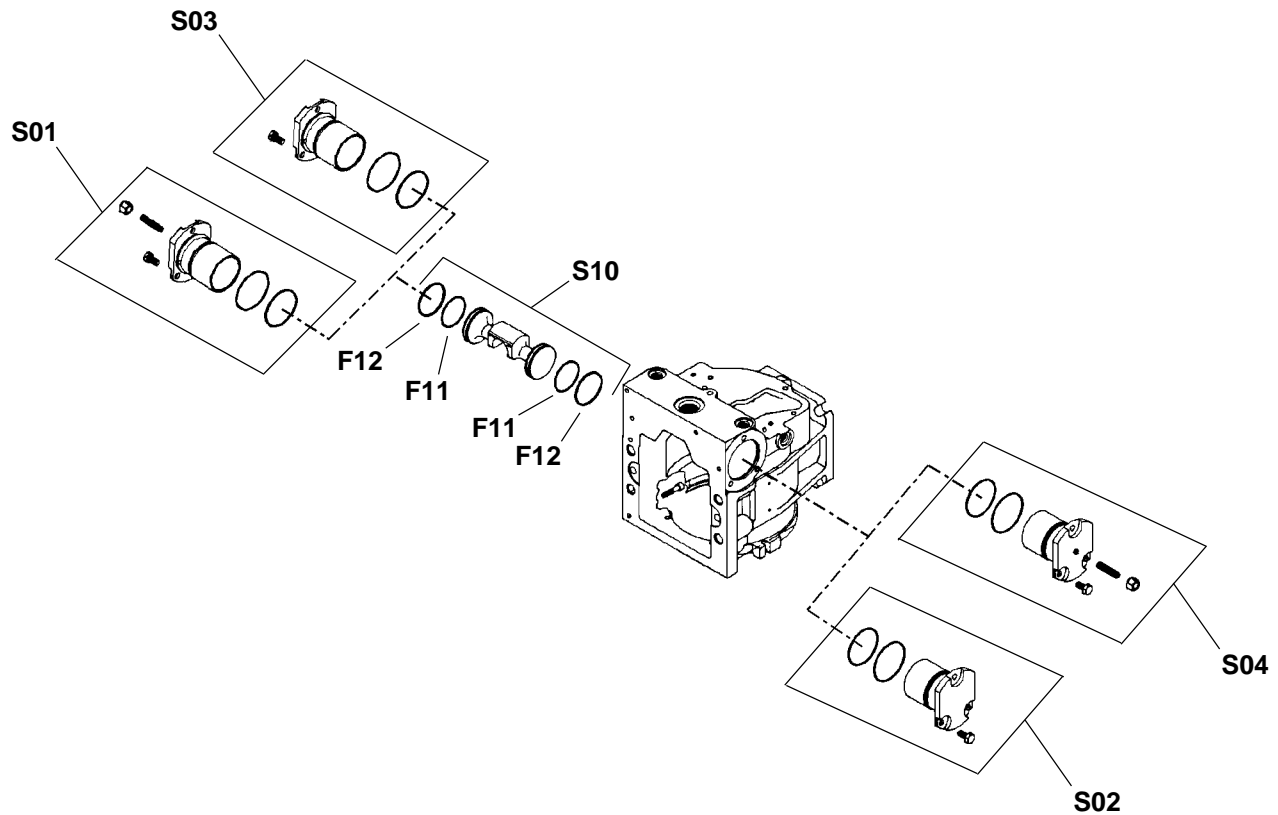
**PRODUCTS AFFECTED:** Series 90 42 cc Variable Pumps  
**SUBJECT:** Servo System Change

### DESCRIPTION:

The servo piston diameter (area) has been increased on Series 90 42cc pumps. This improvement will lower the servo pressure required to stroke the pump.

This change creates non-interchangeability of servo sleeves, servo sleeve kits, servo pistons, and servo piston seal rings.

Old style parts will remain available as spare parts.







## Service Bulletin SB-9107

### MODELS AFFECTED:

All 93-2xxx variable pumps

### SERIAL NUMBERS AFFECTED:

Change incorporated at serial number N-90-51-xxxxx

### PART NUMBERS AFFECTED:

Item	Description	Old Style p/n (Prior to N-90-51)	New Style p/n (N-90-51 & Later)
S01 & S04	Servo Sleeve Kit-Adjustable	8052F004-A	8052F004-B
S02 & S03	Servo Sleeve Kit-No Limitation	8052F003-A	8052F003-B
S10	Servo Piston Kit	80520S10	80520S10-A
F11	O-ring	9004100-1210	9004100-1220
F12	Piston ring	648345	350454

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

### DISTRIBUTION:

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## **Service Bulletin SB-9208A**

**PRODUCTS AFFECTED:** Series 90: 42 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 “blockpoint” change. The objective of the blockpoint 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 endcaps will no longer be available as spare parts.



## Service Bulletin SB-9208A

### FRAME SIZE: 042

Parts Affected:

<u>Item</u>	<u>Description</u>	<u>Pre " block point" Part Number</u>	<u>New Part Number (92-16 &amp; Later)</u>
<b>Common Parts Group, 42 cc</b>			
B10	Variable Housing	325050◇	503422
E10	Side Cover	671602	751305
E20	Leveler	673897◇★	731984
L10	Bearing	690305	357616
L20	Retaining Ring	392134	9006300-0137
L30	Seal Carrier	N/A	340356
L35	Seal Carrier	689521	Deleted
L40	Lip Seal	656280	9008000-0118
L50	O-Ring	9004104-0360	780247
L60	Retainer Plate	N/A	340349
L70	Screw	9007210-0604	745208
<b>End Cap Group: G</b>			
G048	Endcap - Twin Ports	333179◇	769562
G20	Journal Bearing	648030	343830
G958	Screw	508994	500641
G968	Screw	36178	354407

- ★ Interchangeable
- ◇ Obsolete



## Service Bulletin SB-9208A

### FRAME SIZE: 042

Parts Affected:

<u>Item</u>	<u>Description</u>	<u>Pre "blockpoint" Part Number</u>	<u>New Part Number (92-16 &amp; Later)</u>
<b>Charging System Group: H</b>			
Effects Groups HB, HC, and HL			
H50	Charge Pump Shaft	715243	340364
<b>Auxiliary Mounting 'A' Flange, 9T</b>			
J10	Coupling	323972	341016
J15	Cover Assy	347542	347567
J30	Bushing	648055	8700008
<b>Auxiliary Mounting 'B' Flange, 13T</b>			
J10	Coupling	324228	341024
J15	Cover Assembly	347542	347567
J30	Bushing	648055	8700008
J60	Flange Adaptor	664094	340539
<b>Auxiliary Mounting - None</b>			
J15N	Cover Assembly	717264	347559
J30N	Bushing	648055	8700008
<b>Auxiliary Mounting 'B-B' Flange, 15T</b>			
J10	Coupling	664060	342907
J15	Cover Assy	347542	347567
J30	Bushing	648055	8700008
J60	Flange Adaptor	664094	340539
<b>Drive Shaft Group: L</b>			
L1C3	Shaft-PV, 15T 16/32	689414	340521
L1T3	Shaft-PV, 1:0 Taper	309088	342915

## Service Bulletin SB-9208A

### MODELS AFFECTED:

All Series 90: 93-2XXX Variable Pumps.

### SERIAL NUMBERS AFFECTED:

Change incorporated at serial number: N-92-16-XXXXX

### 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 to match change in housing.
- End Cap: Match housing change.
- Input Shaft: A 19 tooth option, thus a larger shaft roller bearing. Shaft seal hardware changed to accomodate new bearing and commonize the design with the larger displacement units.
- Charge Pump: Charge pump shaft and cover changed for commonality with the larger displacement units.
- SAE "B" Pad: New charge pump shaft accomodates revised auxiliary pad drive couplings.

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable
- Non-Interchangeable Except Where Noted
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

### DISTRIBUTION:

- All Product Related Sundstrand-Sauer Distributors
- All Product Related OEM's
- All ASCs
- Non-Restricted Distribution

## Service Bulletin SB-9302

**PRODUCTS AFFECTED:** Series 90 Pumps: All Frame Sizes

**SUBJECT:** Control Gasket Changes for New  
MCV115 Hydraulic Displacement Control

**DESCRIPTION:**

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

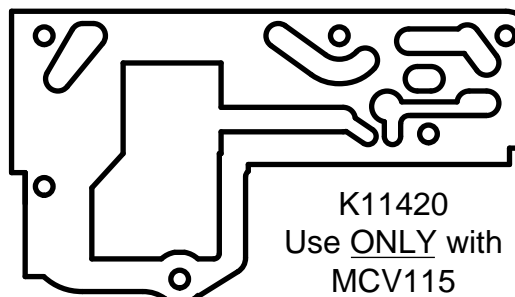
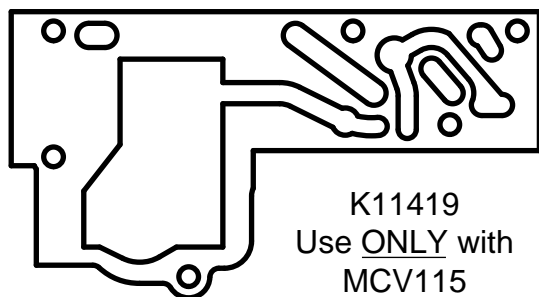
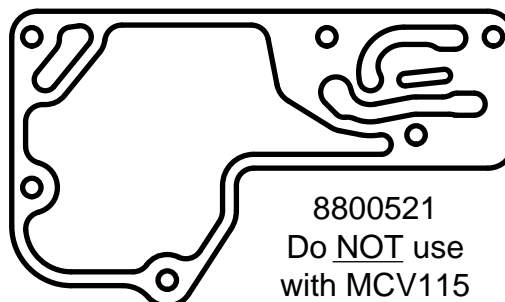
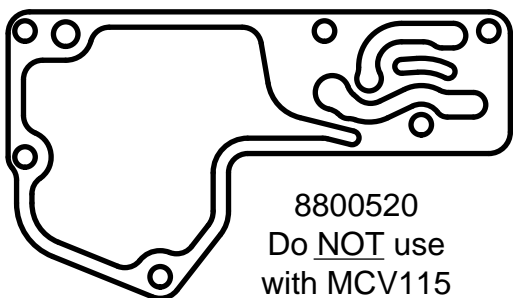
The control gasket also changed, and the new style gasket must be used with the MCV115 control. The old style gasket is to be used with the MCV112 control, all manual displacement controls, and MCV111 electric displacement controls.

**WARNING**

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

**30 cc/42 cc/55 cc**

**75 cc/100 cc/130 cc**



## Service Bulletin SB-9302

**MODELS AFFECTED:**

All 92-2xxx, 93-2xxx, 94-2xxx, 95-2xxx, 96-2xx, and 97-2xxx pumps.

**SERIAL NUMBERS AFFECTED:**

October 1992 and beyond.

**PART NUMBERS AFFECTED:**

Frame Size	Control Gasket for EDC (MCV111)	Control Gasket for HDC		Control Gasket for MDC (8X02M0MX)
		(MCV112)	(MCV115)	
30/42/55cc	8800520	8800520	K11419	8800520
75/100/130cc	8800521	8800521	K11420	8800521

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

**DISTRIBUTION:**

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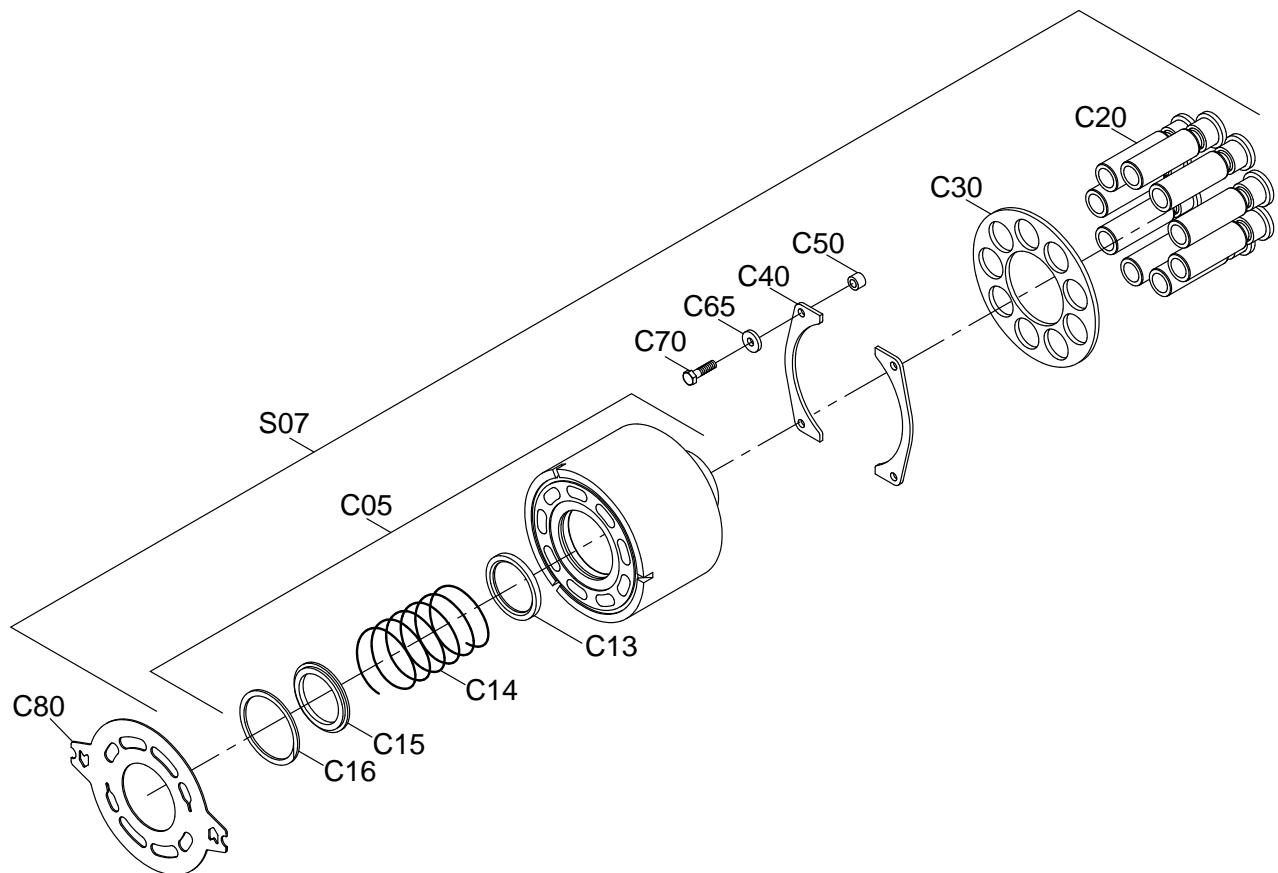
## Service Bulletin SB-9312

**PRODUCTS AFFECTED:** All Series 90 Pumps

**SUBJECT:** Removal of Valve Plate from Cylinder Block Kit

### DESCRIPTION:

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





## Service Bulletin SB-9312

**MODELS AFFECTED:**

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

**SERIAL NUMBERS AFFECTED:**

Not Applicable

**PART NUMBERS AFFECTED:**

Frame Size	Cylinder Block Kit
42 cc	80520S07
55 cc	80020S07
75 cc	81020S07
100 cc	82020S07
130 cc	83020S07

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

**DISTRIBUTION:**

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## Service Bulletin SB-9315 Rev. A

**PRODUCTS AFFECTED:** 90 Series Variable Pumps 042, 055, 075 and 100 cc

**SUBJECT:** Servo Arm Interference with Speed Sensor Ring

**DESCRIPTION:**

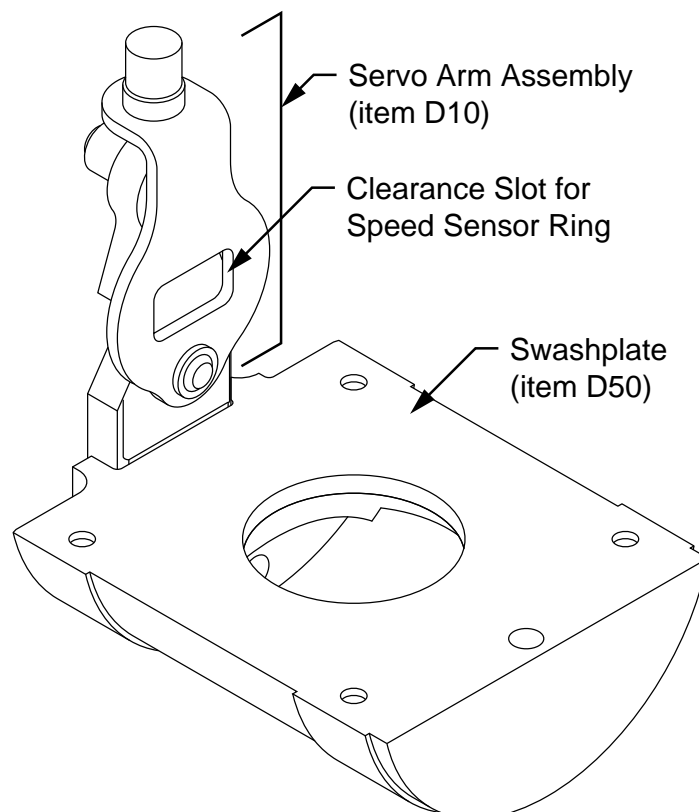
**NOTE:** This Service Bulletin revision adds the 042 cc Frame Size and the incorporation date of the 055 through 100 cc.

A potential interference problem has been identified in Series 90 042, 055, 075, and 100 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 sensor ring must be installed in one of the subject pumps, a servo arm assembly with the new style hold down will also be required.

Sometime during the first quarter of 1994, all 055, 075 and 100 cc pumps will be equipped with the new design hold down bracket. The 042 cc pumps will implement the new design hold down bracket in the second quarter of 1994. A revision to this bulletin will be issued when exact incorporation date is known.



## Service Bulletin SB-9315 Rev. A

### MODELS AFFECTED:

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

### SERIAL NUMBERS AFFECTED:

042 cc → S/N's beginning with 92-16 and later

055 cc → S/N's beginning with 92-06 and later

075 cc → S/N's beginning with 92-17 and later

100 cc → S/N's beginning with 92-12 and later

All 55, 75, 100 cc units built in Ames beginning with S/N A-94-11 and later will have the new servo arm assembly installed. The 100 cc units from Neumunster will also incorporate on this date. The 75 cc units built in Neumunster will incorporate on 94-14. The 42 cc does not have an incorporation date as of yet.

### PART NUMBERS AFFECTED:

Frame Size	Old Servo Arm (no slot in bracket)	New Servo Arm (with slotted bracket)
042 cc	354282	502976
055 cc	8000191	8000318
075 cc	8100366	8100499
100 cc	8200182	8200268

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable
- Non-Interchangeable - Pumps with a speed ring must use the new servo arm.
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

### DISTRIBUTION:

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## Service Bulletin SB-9405

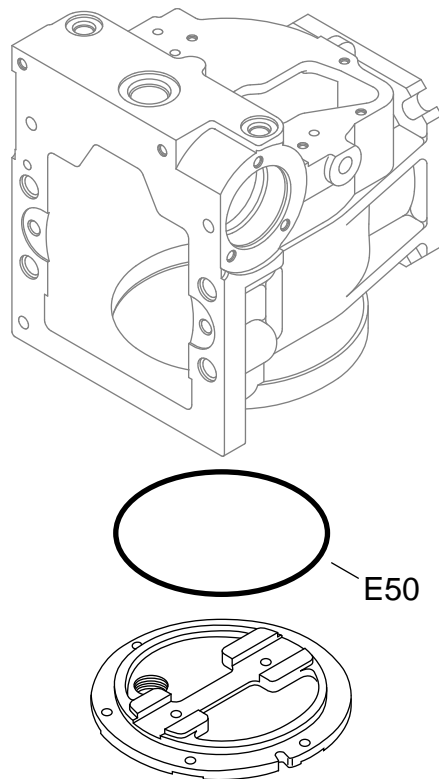
**PRODUCTS AFFECTED:** Series 90: 42 cc Pumps

**SUBJECT:** Side Cover Component Redesign (Supplement to SB-9208)

**DESCRIPTION:**

During the redesign of the Series 90 42 cc pumps, service bulletin SB-9208 overlooked a non-interchangeable change to the O-ring (item E50) on the side cover. This bulletin is to notify you of these changes. This change should also be noted in your Service Parts Manual (BLN-2-41674) page 34.

The old thinner O-ring will remain available for repairs.



## Service Bulletin SB-9405

**MODELS AFFECTED:**

All Series 90: 93-2xxxx Variable Pumps

**SERIAL NUMBERS AFFECTED:**

Change incorporated at serial number N-92-16-xxxxx

**PART NUMBERS AFFECTED:**

Item	Description	Pre "Blockpoint" Part Number	New Part Number (92-16 and Later)
E50	O-ring	767582	767962

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

**DISTRIBUTION:**

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## Service Bulletin SB-9409

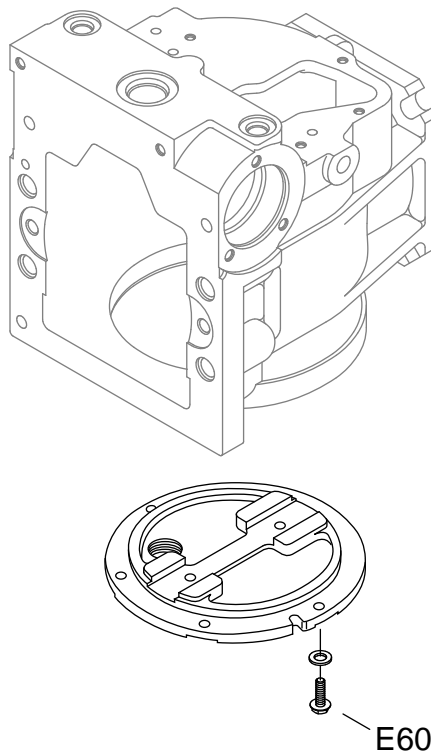
**PRODUCTS AFFECTED:** Series 90: 42 cc Pumps

**SUBJECT:** Side Cover Screws (Supplement to SB-9102)

**DESCRIPTION:**

The lock tab washers, located under the side cover screws, were changed to flat washers in 1991. The screws (item E60), which must be replaced if they are removed for any reason, were also made longer on 42 cc pumps at this time. This change was overlooked on SB-9102.

The new longer screws must be used when repairing 42 cc variable pumps.



## Service Bulletin SB-9409

**MODELS AFFECTED:**

All Series 90: 93-2xxxx Variable Pumps

**SERIAL NUMBERS AFFECTED:**

Longer screws can be used on any vintage pump

**PART NUMBERS AFFECTED:**

Item	Pump Size	Old Screw P/N	New Screw P/N
E60	42 cc	648469	648477

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
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## Service Bulletin SB-9413 Rev. A

**PRODUCTS AFFECTED:** Series 90 and Series 51 Units with  
Pulse Pickup (Speed Sensing)

**SUBJECT:** Pulse Pick-up Change

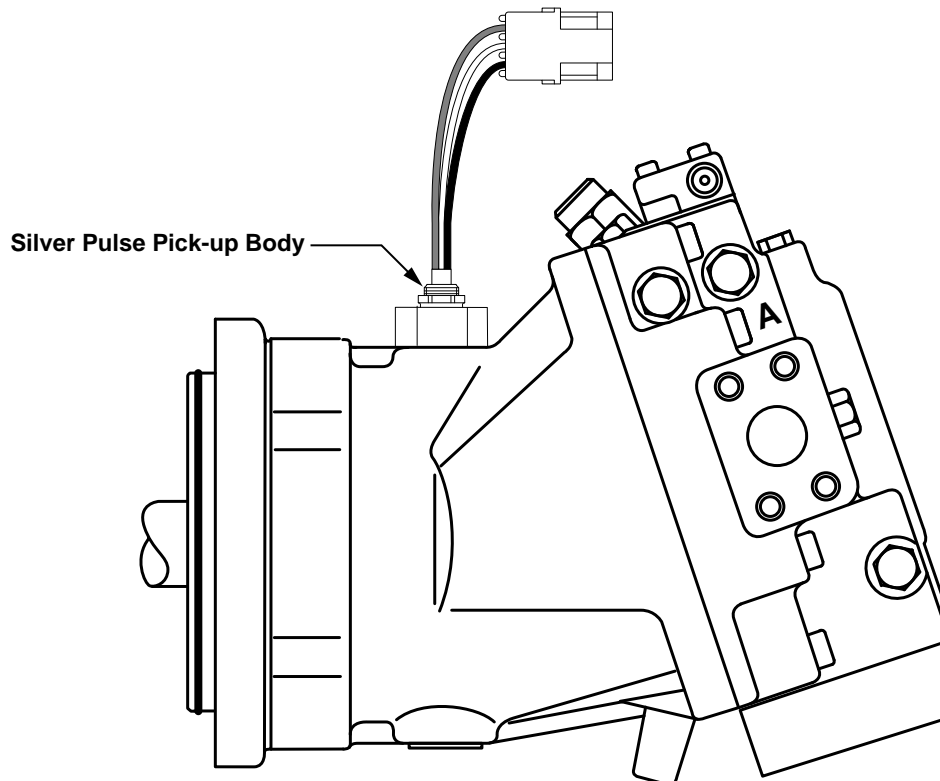
### DESCRIPTION:

A small number of pulse pick-ups used on pumps and motors between June 1992 and April 1994 have been found to be defective due to corrosion of internal circuitry.

The corrosion of the internal circuitry may cause intermittent operation or partial loss of signal and eventual failure.

A typical installation of a pulse pick-up is pictured below. Note the "silver" color of the potentially defective pulse pick-up body. This should be replaced with a pulse pick-up body that is "black" in color.

**NOTE:** If your speed sensor is in an electrical closed loop feedback circuit, possibly used with a microprocessor, the silver colored speed sensor must be changed regardless of the special hardware features code.







## Service Bulletin SB-9413 Rev. A

**MODELS AFFECTED:**

All pumps and motors that used the pulse pick-up option, which is indicated by the special hardware features order code.

Options: 51 Series = ACA, NNT, AAA, NNU, ABA  
90 Series = EAA, EAB, EAD, NNS, EBB, ECA

90L055 EA 1 N  
6 S 3 C6 C 03  
**EAA** 35 35 24

51V160 RFIN  
F1A1 ANE1 **ACA**  
050AA21 0322

**SERIAL NUMBERS AFFECTED:**

A-92-22-xxxxx thru A-94-17-xxxxx

**PART NUMBERS AFFECTED:**

Sensor	Connector Style	Body Color
KPPA124	Weather Pack	Silver
KPPB124	Weather Pack	Silver
KPPA125	Metri Pac	Silver
KPPB125	Metri Pac	Silver
KPPC124	Weather Pac	Black
KPPC125	Metri Pac	Black

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
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**DISTRIBUTION:**

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## Service Bulletin SB-9418

**PRODUCTS AFFECTED:** Series 90 Variable Pumps

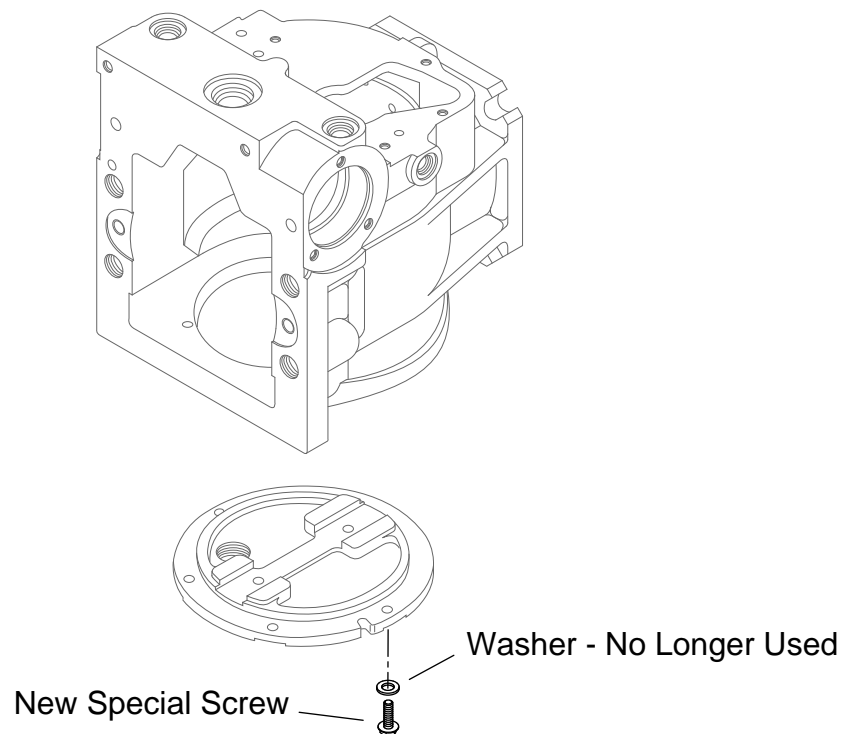
**SUBJECT:** Side Cover Washer Elimination

**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.



## Service Bulletin SB-9418

**MODELS AFFECTED:**

All Series 90 42 thru 130 cc variable pumps

**SERIAL NUMBERS AFFECTED:**

Change took place during the 2<sup>nd</sup> and 3<sup>rd</sup> quarter of 1994

**PART NUMBERS AFFECTED:**

Pump Size	Old Screw	New Screw
42 cc	648477	Same Part Number
55-100 cc	9007276-0115	5000206
130 cc	308700	Same Part Number

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

**DISTRIBUTION:**

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- Non-Restricted Distribution

## Service Bulletin SB-9502

**PRODUCTS AFFECTED:** Series 90: 42 cc Pumps

**SUBJECT:** Charge Pump Shaft Key Change

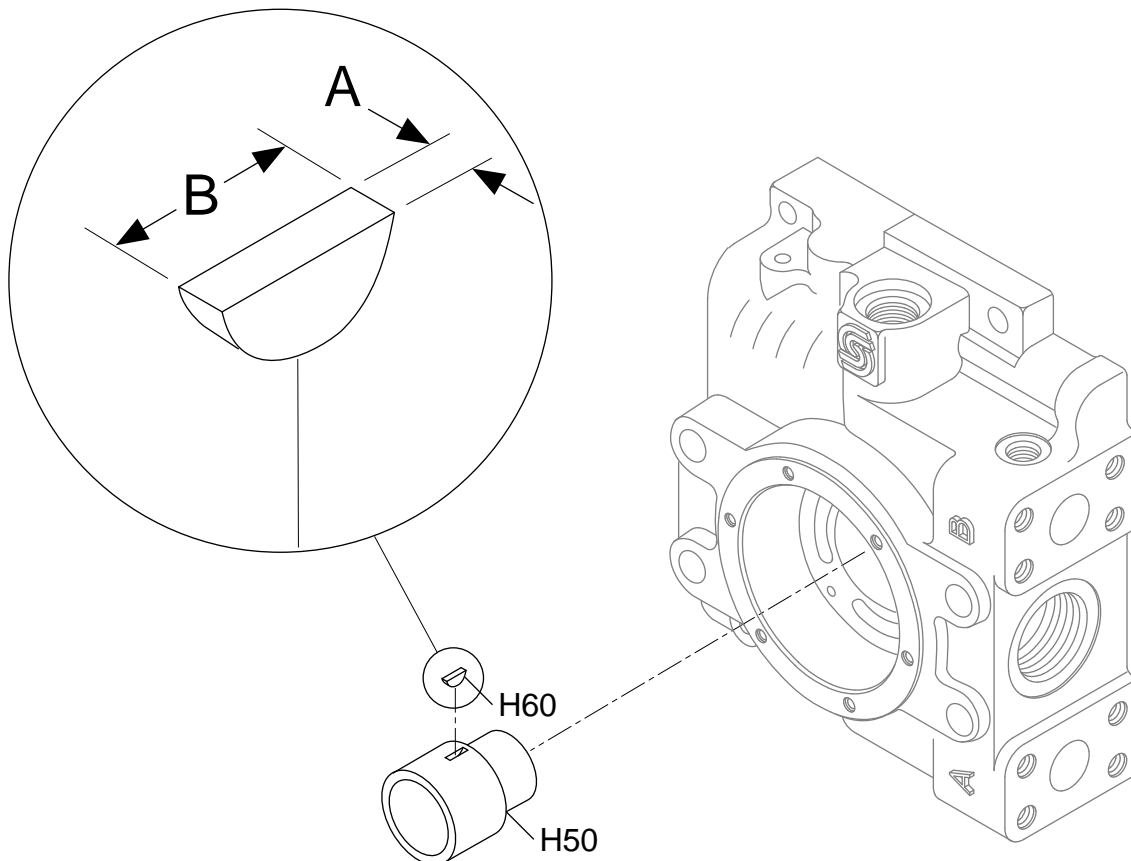
**DESCRIPTION:**

As a product improvement, Sauer-Sundstrand has made a design change to the charge pump shaft and woodruff key used on 42 cc variable pumps.

The new key is smaller to eliminate a potential interference problem. The old charge pump shaft will be obsoleted and no longer available as a service part.

This is an interchangeable change within the affected serial number range, if both the charge pump shaft and key are replaced together.

	Width "A" mm (in)	Length "B" mm (in)
Old Key	3.14 (0.1235)	12.70 (0.500)
New Key	3.09 (0.1215)	9.53 (0.375)



## Service Bulletin SB-9502

### MODELS AFFECTED:

All 42 cc variable pumps


### SERIAL NUMBERS AFFECTED:

Serial number N-92-16-xxxxx and beyond

### PART NUMBERS AFFECTED:

Description	Old P/N	New P/N
Woodruff Key	9003310-1208	9003310-1206
Charge Pump Shaft	340364	505202

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable  If **BOTH** charge pump shaft and woodruff key are changed
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

### DISTRIBUTION:

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## Service Bulletin SB-9503

**PRODUCTS AFFECTED:** Series 90 Pumps - All Frame Sizes

**SUBJECT:** Manual Displacement Control (MDC)  
with DC Electric Solenoid Override

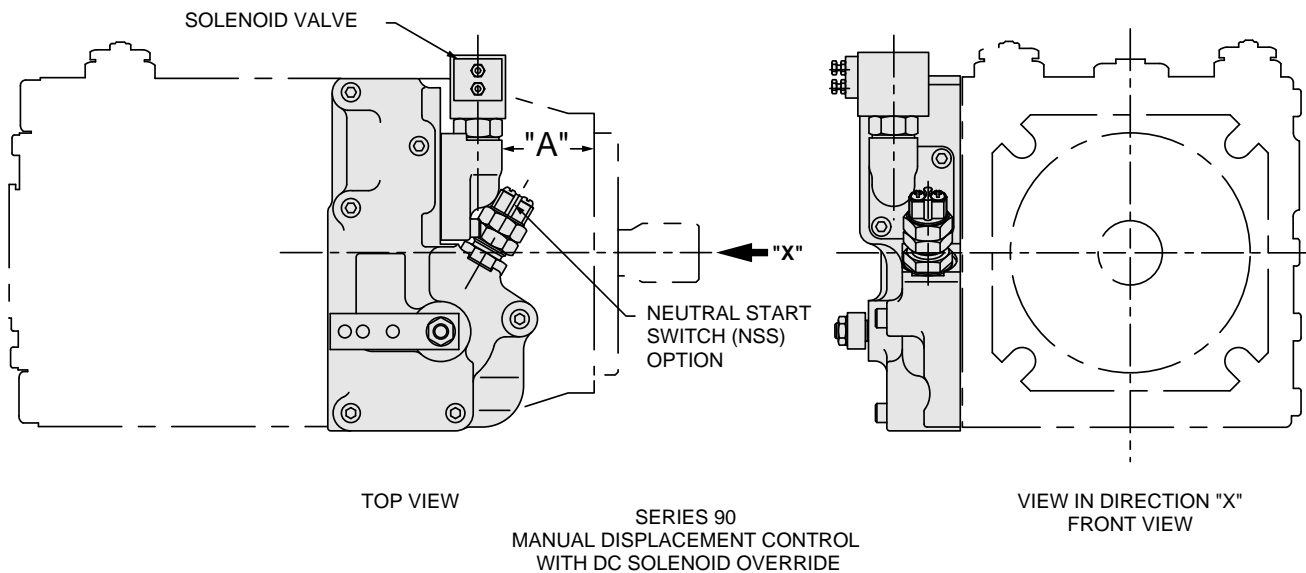
**DESCRIPTION:**

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

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

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

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



Frame Size		042	055	075	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]

## Service Bulletin SB-9503

### MODELS AFFECTED:

All Series 90 Variable Pumps using manual displacement control (MDC) with DC electric solenoid override.

### SERIAL NUMBERS AFFECTED:

Change will take place in March '95

### PART NUMBERS AFFECTED:

	Current Part Number	New Part Number	Quantity
Manifold	8800365	505022	1
Screw	9007314-0605	9007314-0606	2

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable (new manifold requires longer screws)
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

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## Service Bulletin SB-9504

**PRODUCTS AFFECTED:** Series 90: 42 cc Pumps

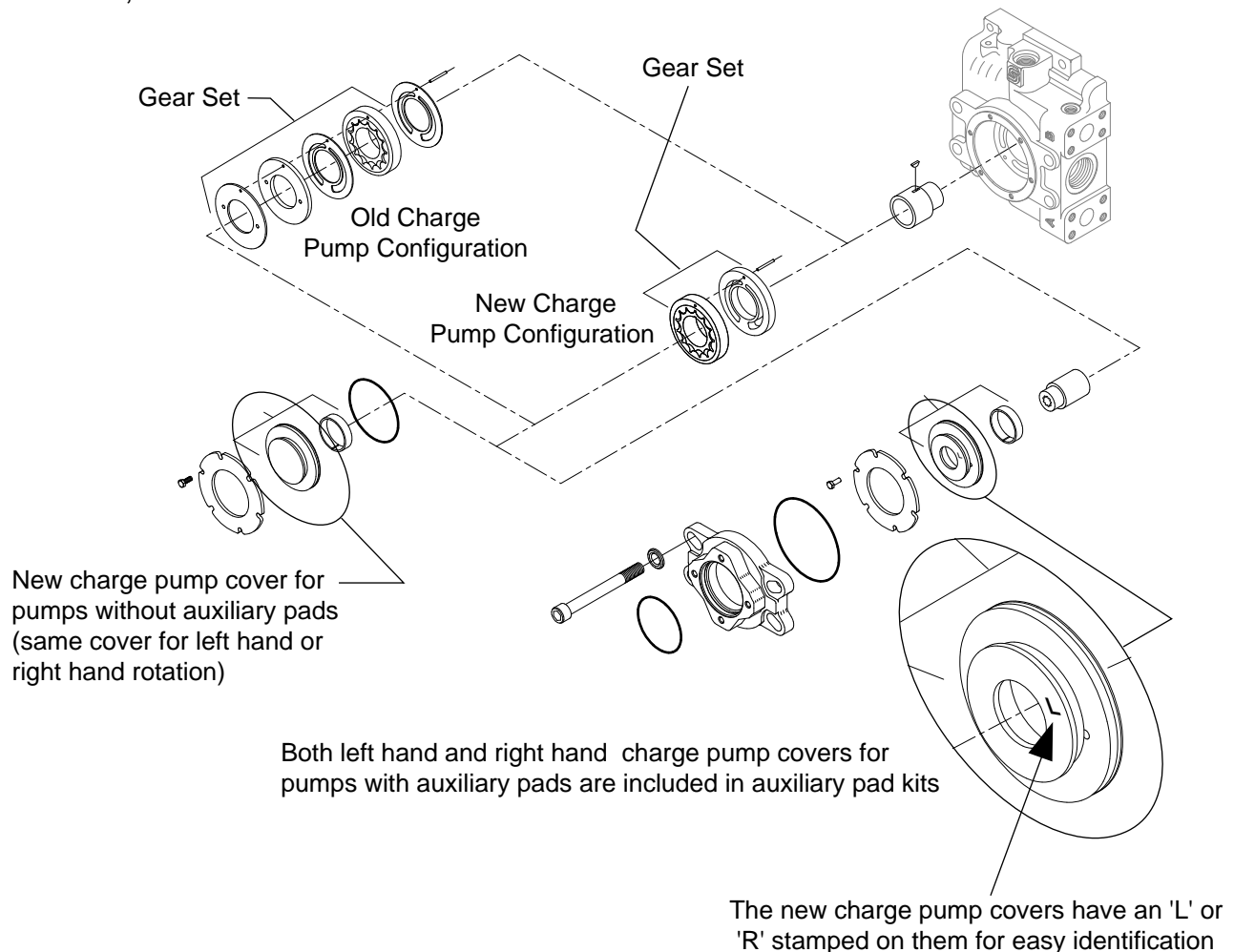
**SUBJECT:** Charge Pump Design Change

**DESCRIPTION:**

To improve efficiency and reliability, the number of charge pump parts in the Series 90 42 cc pump is being reduced. The charge pump design is being changed to make the outer port plate an integral part of the charge pump cover and to eliminate the distance plates.

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 complete charge pump assembly can be interchanged with corresponding hardware from 92-16 and beyond. **However, piece parts are not interchangeable.** For units prior to 92-16, consult Sauer-Sundstrand.





## Service Bulletin SB-9504

**SERIAL NUMBERS AFFECTED:** Units built between N-92-16-xxxxx and N-94-12-xxxxx

**PART NUMBERS AFFECTED:**

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

1. Charge pump displacement (11 or 14 cc)
2. Auxiliary pad (Yes or No)
3. Rotation (LH or RH)

Obsolated Charge Pump Parts		Chg. pump displacement	Auxiliary pad	Rotation	Replacement Kit
Gear Set	Cover				
8052043	347559	11 cc	No	LH or RH	8510078
	347567		Yes	LH	8510079
	347567		Yes	RH	8510080
8052044	347559	14 cc	No	LH or RH	8510081
	347567		Yes	LH	8510082
	347567		Yes	RH	8510083

**The following information pertains to 'L' charge pump option only:**

Old Cover (92-16 to 94-12)	Auxiliary pad	Rotation	Replacement Cover
347559	No	LH or RH	8800834
347567	Yes	LH	8800833
347567	Yes	RH	8800832

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable 
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

Interchangeable for manufacture date 92-16 and beyond. Piece parts are not interchangeable.

**DISTRIBUTION:**

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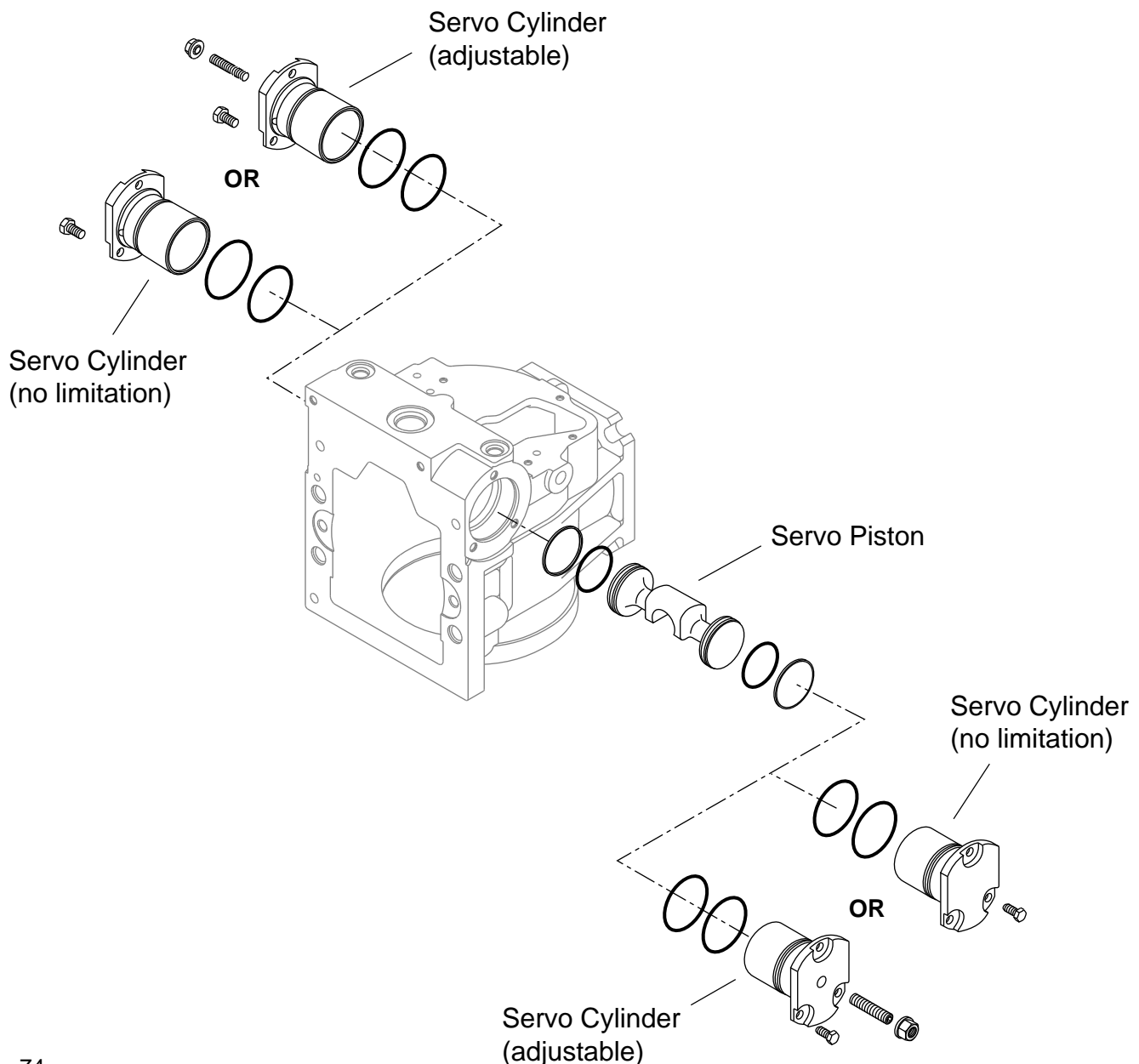
## Service Bulletin SB-9505

**PRODUCTS AFFECTED:** Series 90 42 cc Variable Pumps

**SUBJECT:** Obsolete servo system parts

**DESCRIPTION:**

The servo piston diameter was increased on Series 90 42 cc pumps in 1990. The old style parts are being obsoleted and will no longer be available as service parts. A kit containing necessary replacement parts has been created. Refer to page two of this bulletin for the appropriate kit part number.



## Service Bulletin SB-9505

### MODELS AFFECTED:

All 42 cc variable pumps

### SERIAL NUMBERS AFFECTED:

Units built prior to serial number N-90-51-xxxxx

### PART NUMBERS AFFECTED:

Description	Old Style p/n	Replacement p/n
Displacement Limiter Kit - No Limitation	8052F003-A	8510089
Displacement Limiter Kit - Adjustable	8052F004-A	8510090
Servo Piston Kit	80520S10	8510089* or 8510090*

**\* The new servo piston hardware is included in these kits and must be used with the new servo cylinders. If a servo piston is required, the appropriate displacement limiter kit must be ordered.**

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable (all parts must be replaced)
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

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## Service Bulletin SB-9506

**PRODUCTS AFFECTED:** Series 90 42 cc Variable Pumps

**SUBJECT:** End Cap Bolt Size Change

### DESCRIPTION:

As a product improvement, Sauer-Sundstrand is changing the screws that fasten the end cap to the pump housing from M10 to M12.

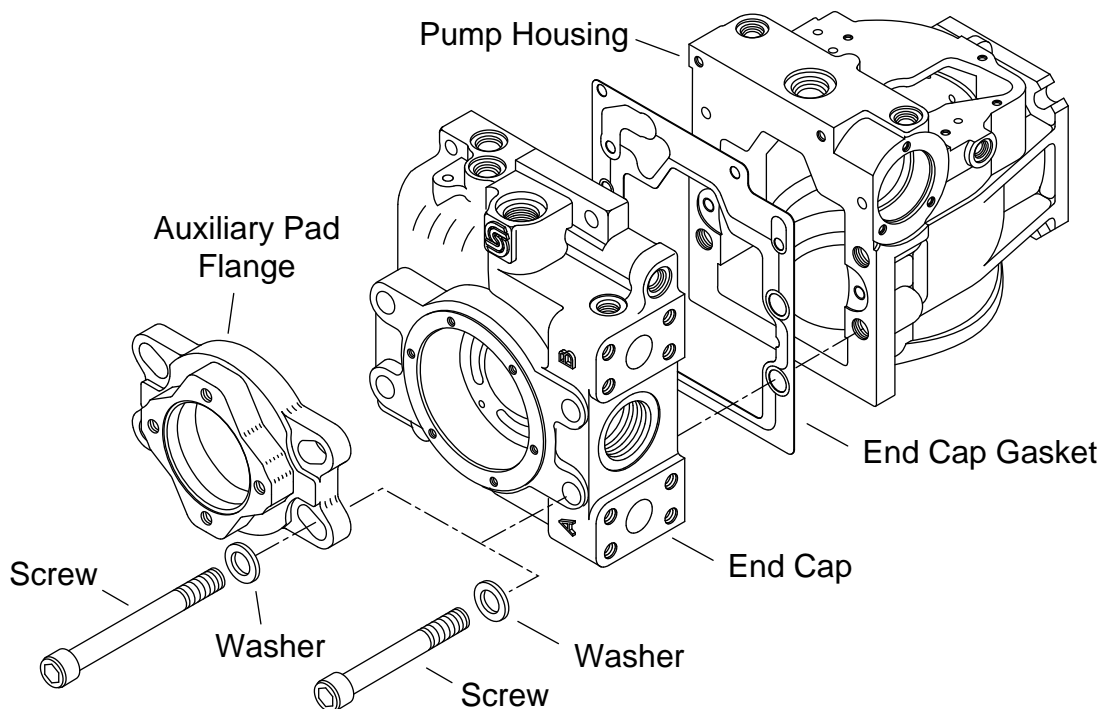
This change will require a new housing, end cap gasket, end cap, auxiliary mounting pad flange and screws.

The new end cap and gasket can be used with the old housing if hardened washers are used with the M10 end cap screws.

The new auxiliary mounting pad flange can be used with the old end cap and housing if hardened washers are used with the M10 end cap screws. The auxiliary mounting pad kits will include both the new washers and hardened washers for the M10 screws.

The new housing can only be used with all new style parts.

The old style housing will remain available as a service part as long as inventory lasts. All other parts will be obsoleted and no longer available.



## Service Bulletin SB-9506

**MODELS AFFECTED:**

All 42 cc variable pumps

**SERIAL NUMBERS AFFECTED:**

Units built between serial number N-92-16-xxxxx and N-95-14-xxxxx

**PART NUMBERS AFFECTED:**

Description	Old Style p/n	New Style p/n
End Cap	769562	506785
End Cap Gasket	792937	506698
Screws (with auxiliary mounting pad)	321893	913590
Screws (without auxiliary mounting pad)	321661	506800
Washer	294462	506753
Hardened Washer for M10 Screws	N/A	294462
Pump Housing	792705	506740

Note: Auxiliary mounting pad kit part numbers will not change.

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

**Refer to Page 1**

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## Service Bulletin SB-9510

**PRODUCTS AFFECTED:** Series 90 Variable Pumps

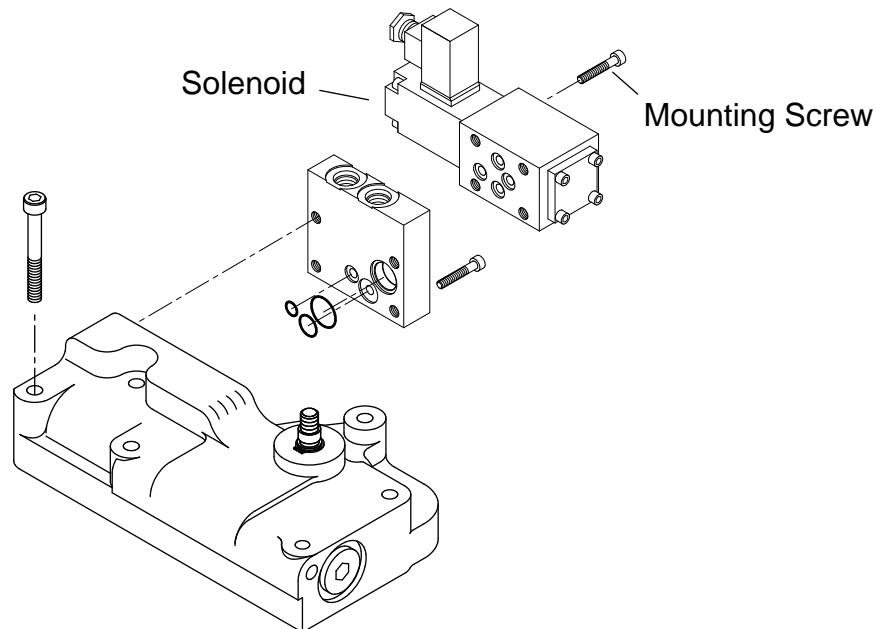
**SUBJECT:** Solenoid Valve Change

**DESCRIPTION:**

Sauer-Sundstrand has changed suppliers of the solenoid valve for the manual displacement control with 12 volt two position solenoid valve (order codes ME and MJ).

The new solenoid valve requires shorter mounting screws.

The old solenoid valve is being obsoleted and no longer available as a service part. A kit has been created that includes the new solenoid valve and the appropriate mounting screws.



## Service Bulletin SB-9510

### MODELS AFFECTED:

All Series 90 variable pumps using control order codes ME and MJ

### SERIAL NUMBERS AFFECTED:

Units built N-95-24-xxxxx and after

### PART NUMBERS AFFECTED:

Old Solenoid	Old Screws	Replacement Kit
504381	9007315-0510	8510107

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable 
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

Piece parts are not interchangeable.

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## Service Bulletin SB-9514

**PRODUCTS AFFECTED:** Series 20 & 90 Pumps With  
Optional Neutral Start Switch

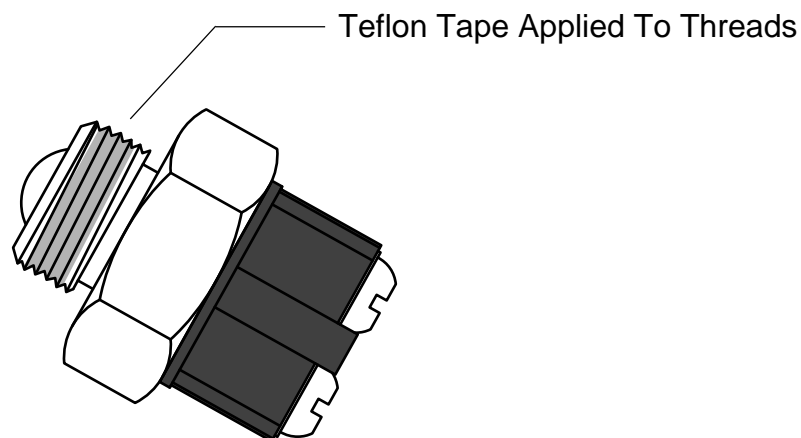
**SUBJECT:** Neutral Start Switch Change

**DESCRIPTION:**

Sauer-Sundstrand has changed suppliers of the neutral start switch on Series 20 and some neutral start switch options (MR, MS and ML) on Series 90 pumps. Advanced notification of this change was given with Product Information Bulletin number PIB-9403.

The new switch has Teflon tape on the threads instead of Vibra-Seal. New Teflon tape should be applied to the threads if the switch is removed for any reason.

Due to interchangeability, the old switch has been obsoleted and no longer available as a service part.





## Service Bulletin SB-9514

**MODELS AFFECTED:**

All Series 20 variable pumps and Series 90 variable pumps using control order codes ML, MR and MS

**SERIAL NUMBERS AFFECTED:**

Units built N-95-17-xxxxx and after

**PART NUMBERS AFFECTED:**

Old Switch	New Switch	NSS Kit
9700922	503545	8510027*

\* The Neutral Start Switch Kit part number did not change

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

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## Service Bulletin SB-9526

**PRODUCTS AFFECTED:** Series 90: 42 -130 cc Variable Pumps

**SUBJECT:** Standard Valve Plate Part Number Change

**DESCRIPTION:**

As a product improvement Sauer-Sundstrand is changing the standard valve plate used in Series 90 - 42 thru 130 cc variable pumps (ref. PIB-9507).

The purpose of this bulletin is notification of part number changes for the order codes affected. During unit repair, do not replace the new style valve plate with an old style valve plate. However, the old style may be replaced with a new style valve plate. The old style valve plates will be obsoleted and no longer available as a service part.

## Service Bulletin SB-9526

### MODELS AFFECTED:

All 932xxx, 942xxx, 952xxx, 962xxx & 972xxx Variable Pumps

### SERIAL NUMBERS AFFECTED:

This change became effective at 95-48-xxxxx

### PART NUMBERS AFFECTED:

<u>Unit</u>	<u>Old Order Code</u>	<u>Old Valve Plate Part Number</u>	<u>New Order Code</u>	<u>New Valve Plate Part Number</u>
42cc	NNN	500368	GBA	758383
55cc	NNN	8000071	GBA	8000431
75cc	NNN	8100145	GBA	501332
100cc	NNN	8200041	GBA	501327
130cc	NNN	700203	GBA	758425

### PARTS DISPOSITION:

- Not Applicable
- Interchangeable → Do NOT substitute the old valve plate for the new valve plate
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

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## Service Bulletin SB-9604

**PRODUCTS AFFECTED:** Series 90, 42, 130,180, & 250 cc Variable Pumps

**SUBJECT:** Side Cover Design Change

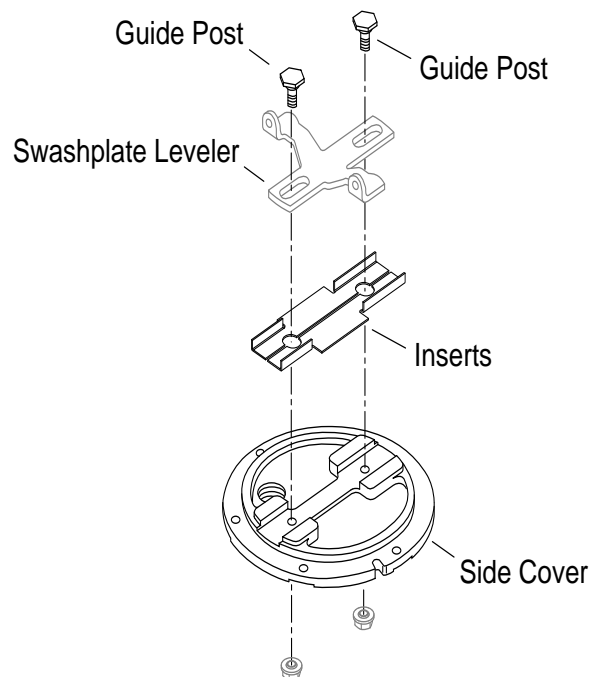
### DESCRIPTION:

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

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

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

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





## Service Bulletin SB-9604

**MODELS AFFECTED:**

All 42, 130, 180, & 250 cc variable pumps

**SERIAL NUMBERS AFFECTED:**

This change became effective at serial number N-96-08-xxxxx

**PART NUMBERS AFFECTED:**

Description	Old Part Numbers		New Part Numbers		
	Guide Post	Side Cover	Insert assy.	Guide Post	Side Cover Kit
42 cc	344465	751305	506916	506369	506380
130 cc	503205	746107	8300004	506368	506289
180 cc	503205	746404	506914	506368	506290
250 cc	503205	746404	506914	506368	506290

**PARTS DISPOSITION:**

- Not Applicable
- Interchangeable as a kit
- Non-Interchangeable
- Use Parts in Stock
- Scrap Used Parts
- Return New Parts for Credit
- Order Replacement Parts
- Rework Parts in Stock
- Revise Existing Part Orders
- Scrap New Parts and Supply for Credit

**Piece parts are not interchangeable**

**DISTRIBUTION:**

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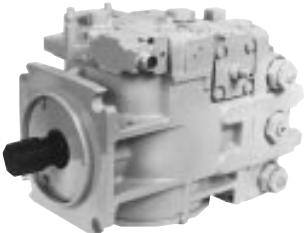


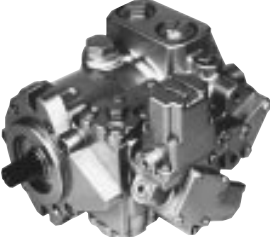
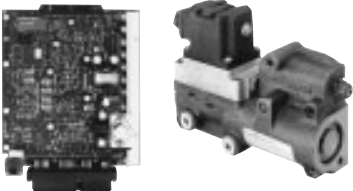
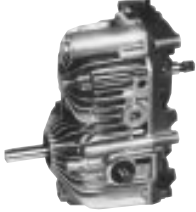

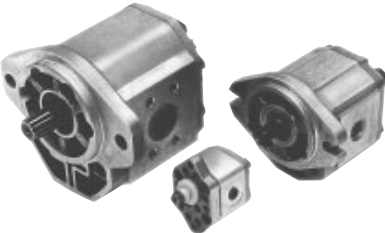

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