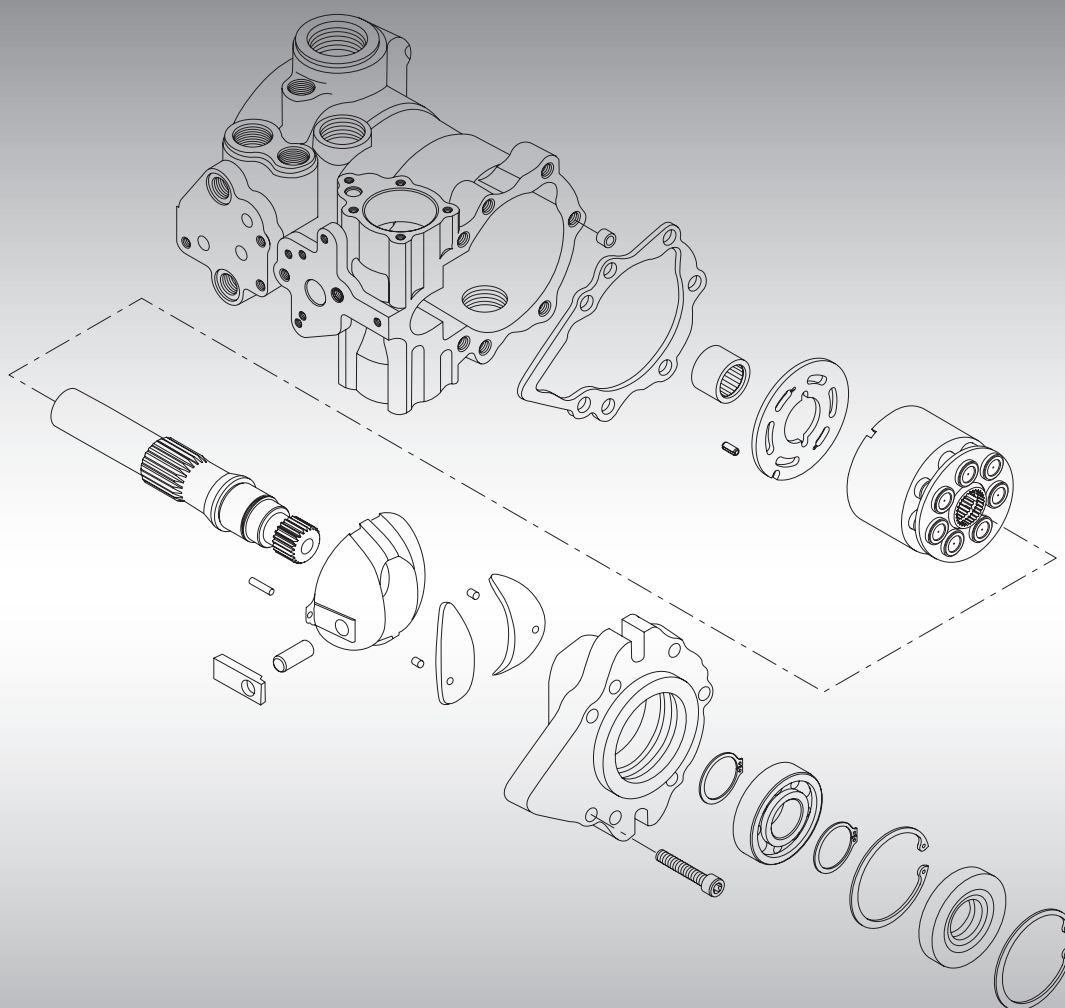


# Parts Manual

# Series 40 M46 Axial Piston Pump




**General Information**

Service parts identification .....	4
Nameplate .....	4
Date code .....	5
Service bulletins.....	5
Procedure to identify a part.....	5
Adobe Acrobat 2-page viewing .....	6
Order code.....	7

**Variable displacement  
pump**

Common parts .....	8-9
Swashplate.....	10-11
Seal .....	10-11
Shaft .....	10-13
Rotation .....	12-13
Charge pump displacement.....	14-15
Charge pressure relief setting.....	14-19
Filtration.....	18-21
Maximum displacement.....	22-29
Bypass.....	28-29
System pressure protection.....	30-37
Control.....	38-53
Control orifice.....	54-75
Auxiliary mounting.....	76-79
Special hardware .....	80-97
Overhaul seal kit .....	97

## Contents

<b>Service Bulletin</b>	SB-1987-011 (cylinder block, valve plate, and housing identification).....	98
	SB-1987-020 (neutral adjustment screw) .....	99
	SB-1987-024 (SCR valve design change).....	100-101
	SB-1987-029 (Servo gauge port) .....	102
	SB-1988-002 (servo piston improvements) .....	103-104
	SB-1989-001 (silicone filled EDC pilot).....	105
	SB-1989-013 (front cover screw size) .....	106
	SB-1989-021 (auxiliary pad cover seal).....	107
	SB-1990-012 (servo cover screw size) .....	108
	SB-1990-017 (filtration adapter).....	109-111
	SB-1991-009 (servo piston bearing ring) .....	112
	SB-1994-002 (swashplate kits).....	113
	SB-1994-011 (retained swashplate journal bearing) .....	114-115
	SB-1994-037 (front cover screw) .....	116
	SB-1995-019 (auxiliary pad seal).....	117
	SB-1995-020 (cylinder block finish) .....	118
	SB-1995-022 (feedback pin) .....	119
	SB-1997-001 (control sleeve) .....	120
	SB-1998-012 (swashplate feedback pin).....	121
	SB-1998-051 (servo adjustment screw).....	122
	SB-1998-052 (EDC and HDC O-ring) .....	123
	SB-1998-077 (slipper material) .....	124
	SB-2002-021 (tapered shaft keyway).....	125
	SB-2002-037 (servo gasket and 0 degree servo stop).....	126
	SB-2006-003 (B pad adapter) .....	127
	SB-2006-004 (system check relief and spring) .....	128
	SB-2006-017 (servo cover) .....	129



## 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 40 M46 variable displacement pump.

The parts listed include all parts which may be used when performing either "Minor Repairs", "Major Repairs" or "Conversions" on the M46 pumps.

### Nameplate

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

#### Model Code

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

#### Model Number

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

#### Serial Number

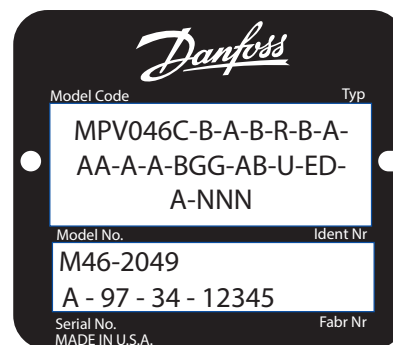
The Sauer-Danfoss serial number is used to identify the manufacture date and the unit sequence in the build. The serial number is also used to identify the units warranty time period.

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

The first number (2 digits) indicates the year of manufacture. ("97" would indicate the unit was manufactured in 1997)

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 2134

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Usage
	2134	94-48		5000116	Coiled pin	1
	2134	84-31	94-47	9004700-1206	Slotted pin (SB-1994-011)	1

All units with a date code of 84-31 and up to and including 94-47, must use part number "9004700-126". All units with a date code of 94-48 and newer must use part number "5000116".

### 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 40 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 301 has the same item number on all motors.)

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: 373282 (9001315-0011), customers would order 9001315-0011 if ordering the part in the United States.)

#### Example of a Part Identification

The nameplate on an M46 variable displacement pump has an Order Code of MPV-046-C-B-A-B-R-B-A-AA-A-A-BGG-AB-U-ED-A-NNN. 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 shaft option for this pump is identified by the code "B". (MPV-046-C-B-A-**B**-R-B-A-AA-A-A-BGG-AB-U-ED-A-NNN)

2) Referring to the Service Parts List, find the shaft group. Next find the order code that relates to this unit, which is "B". The shaft is found to be item 401 and part number 4460268.

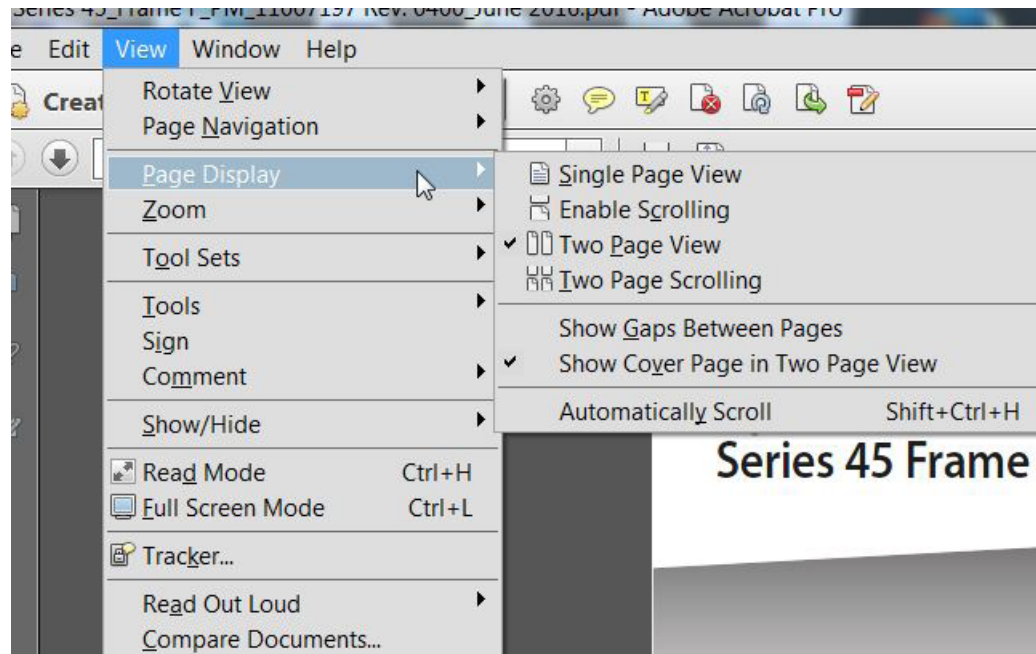


## Adobe Acrobat 2-page viewing

### Adobe Acrobat 2-page viewing

While viewing manual in Adobe Acrobat, the following settings need to be applied to ensure proper page display.

1. Select "View" --> "Page Display" --> "Two Page View"
2. Select "View" --> "Page Display" --> "Show Cover Page in Two Page View"

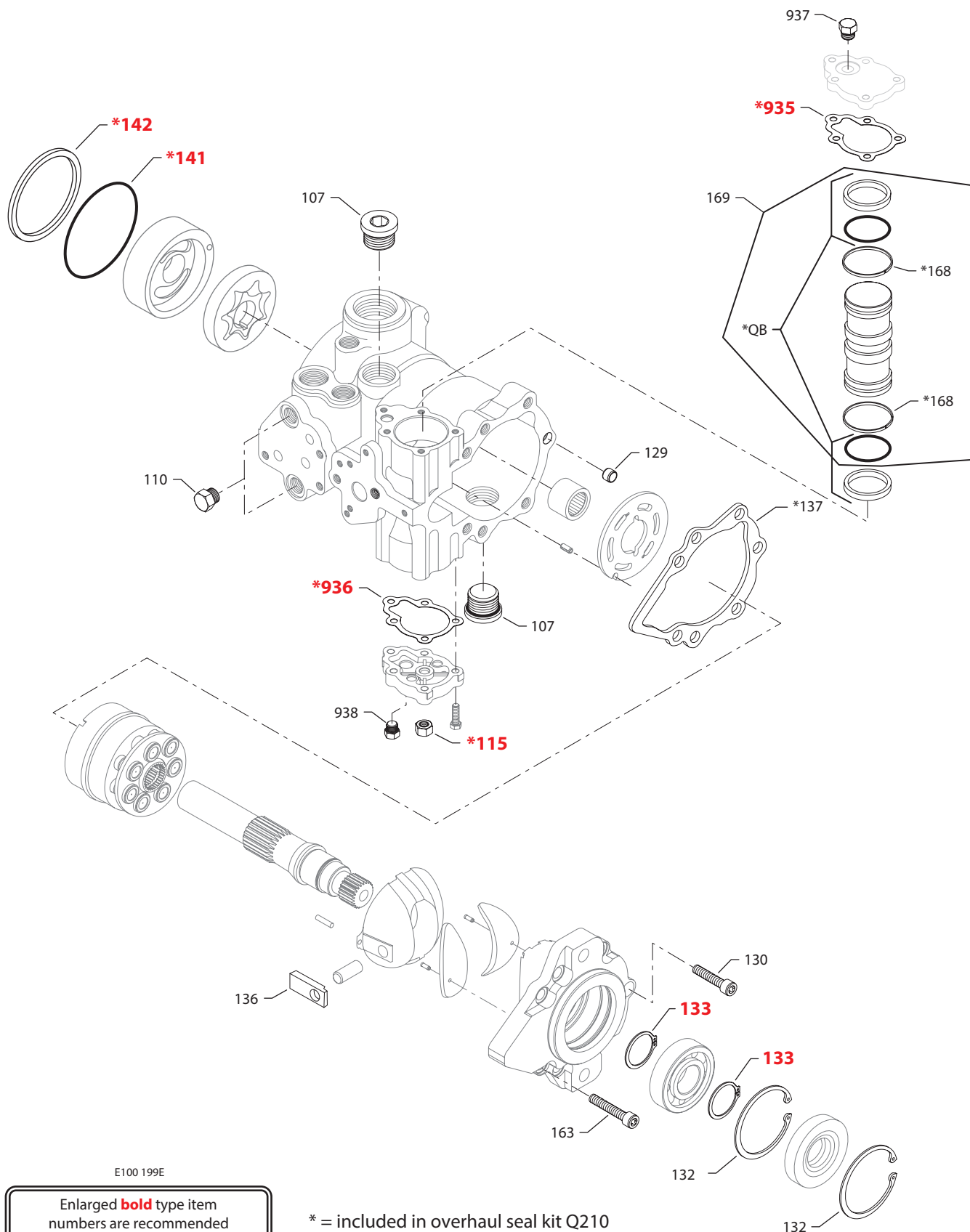


Order code

	M	P	V	0	4	6	C	B	A	B	R	B	A	A	A	A	B	G	G	A	B	U	E	D	A	N	N	N
Product																												
Frame Size																												
Type																												
Swashplate																												
Seal																												
Input Shaft																												
Rotation																												
Charge Pump Displacement																												
Charge Pressure Relief Setting																												
Filtration																												
Maximum Displacement																												
Bypass Valve																												
System Pressure Protection																												
Control																												
Control Handle Position																												
Control Orifice																												
Auxiliary Mounting Pad																												
Special Hardware																												

P100 532E

Variable displacement pump



E100 199E

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

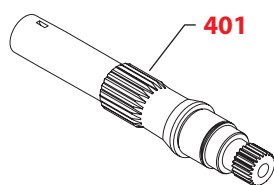
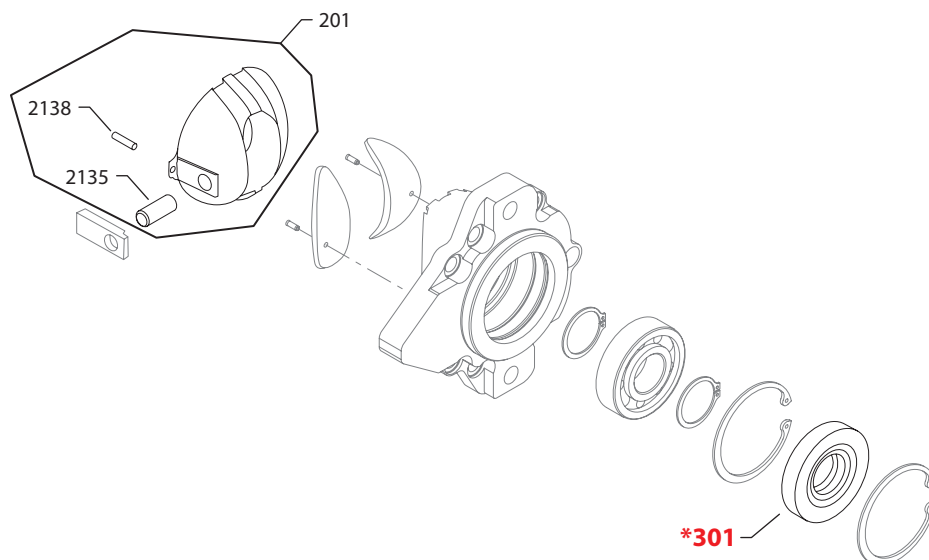
\* = included in overhaul seal kit Q210



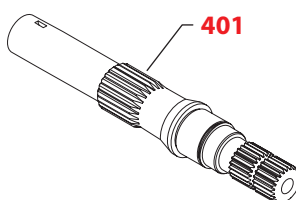
**Variable displacement pump**
**Common parts**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	107	84-31		9005110-9000	Plug assembly	2
	110	84-31		9005100-5600	Plug assembly	2
	115	84-31		9003575-0083	Seal nut	1
	129	85-37		4400090	Pin	1
	129	84-31	85-36	9004875-0067	Pin	1
	130	84-31		5000208	Screw (SB-1994-037)	1
	132	84-31		9006200-0281	Retaining ring	2
	133	84-31		9006300-0137	Retaining ring	2
	136	84-31		4460162	Bearing sleeve	1
	137	84-31		4460564	Front cover gasket	1
	141	84-31		9004375-0023	O-ring	1
	142	84-31		9700864	Temper load ring	1
	163	89-23		5000207	Screw (SB-1994-037)	6
	163	84-31	89-22	9007510-3716	Screw (SB-1989-013)	6
	168	88-05		4460648	Bearing ring (SB-1988-002 & SB-1991-009)	2
	169	88-01		4460474	Servo piston assembly	1
	935	84-31		4461311	Servo cover gasket (SB-2002-037)	1
	936	84-31		4461311	Servo cover gasket (SB-2002-037)	1
	937	87-41		9005100-5600	Plug assembly	1
	937	84-31	87-40	9005100-4400	Plug assembly (SB-1987-029)	1
	938	87-41		9005100-5600	Plug assembly	1
	938	84-31	87-40	9005100-4400	Plug assembly (SB-1987-029)	1
	QB	88-01		4510002	Servo piston ring kit	1

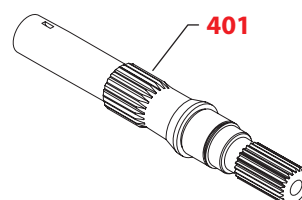
Variable displacement pump



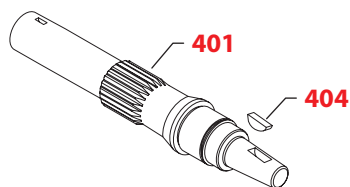
(A, B, D, G, H, J, K, & L)



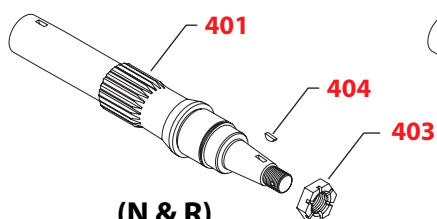
(C)



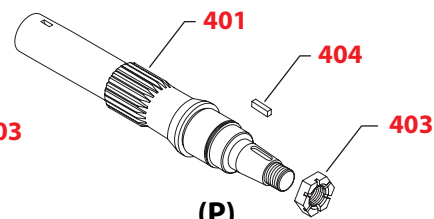
(E)



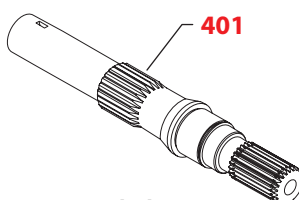
(M)



(N & R)



(P)



(Q)

E100 200E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Swashplates

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
A	135	86-23	94-23	9004820-4416	Pin	1
	138	86-23	94-23	5000507	Pin (SB-1995-022 & SB-1998-012)	1
	200	86-23	94-23	4510072	Non-balanced swashplate kit (SB-1994-002)	1
B	135	86-23		9004820-4416	Pin	1
	138	86-23		5000507	Pin (SB-1995-022 & SB-1998-012)	1
	200	86-23		4510073	Balanced swashplate kit	1

#### Seal

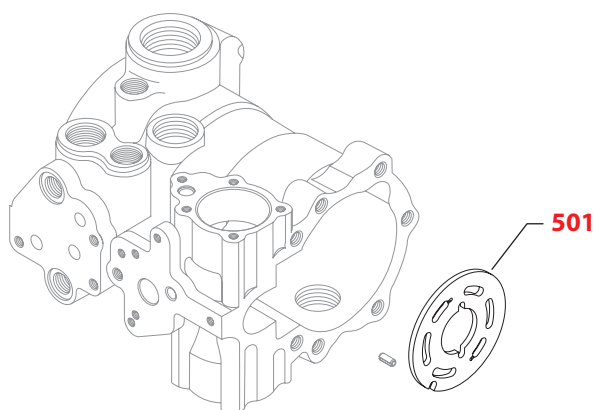
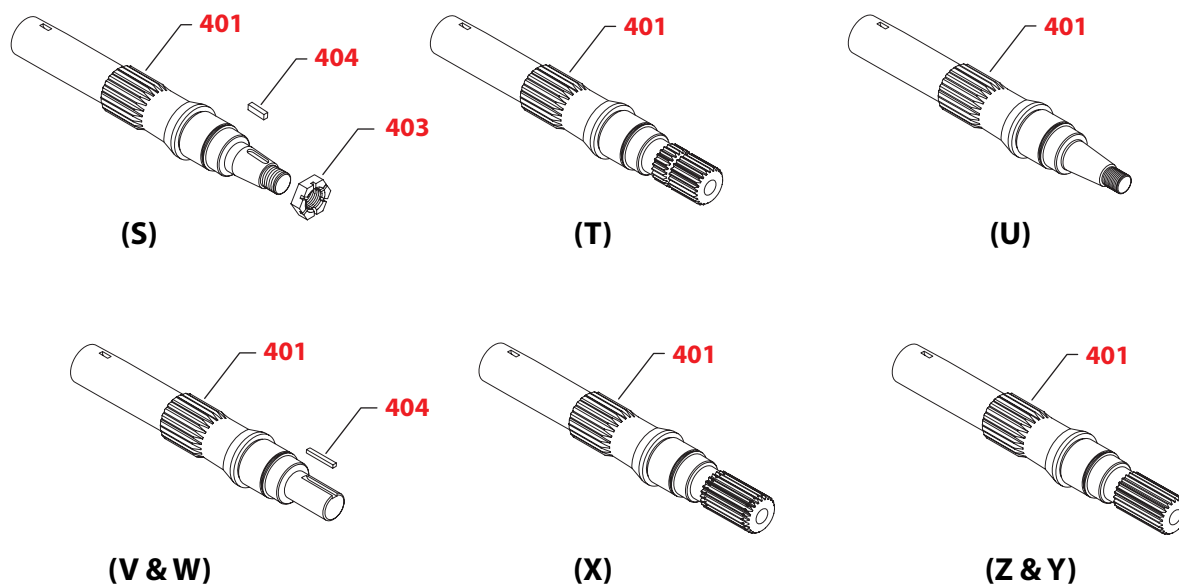
A	301	84-31		9008000-0121	Lip seal	1
B	301	84-31		9008000-0121	Lip seal	1

#### Input shaft

A	401	84-31		4460304	Shaft, 13 tooth, no auxiliary drive	1
B	401	84-31		4460268	Shaft, 13 tooth, 9 tooth auxiliary drive	1
C	401	01-41		4461249	Shaft, 15 tooth, 11 tooth auxiliary drive, special	1
D	401	84-31		4461288	Shaft, 13 tooth, 13 tooth auxiliary drive	1
E	401	97-38		4460966	Shaft, 15 tooth, 9 tooth auxiliary drive	1
G	401	84-31		4460099	Shaft, 15 tooth, no auxiliary drive	1
H	401	84-31		4460102	Shaft, 15 tooth, 9 tooth auxiliary drive	1
J	401	84-31		4460484	Shaft, 15 tooth, 11 tooth auxiliary drive	1
K	401	84-31		4461289	Shaft, 15 tooth, 13 tooth auxiliary drive	1
L	401	90-31		4460638	Shaft, 13 tooth, 11 tooth auxiliary drive	1
M	401	91-46	83-07	4460675	Shaft, tapered, 9 tooth auxiliary drive, special	1
	404	91-46	83-07	9003310-1510	Key	1
N	401	84-31		4460299	Shaft, tapered	1
	403	84-31		9003575-0071	Slotted nut	1
	404	84-31		9003310-2514	Key	1
P	401	85-37		4461308	Shaft, tapered, 9 tooth auxiliary drive (SB-2002-021)	1
	403	85-37		9003575-0071	Slotted nut	1
	404	02-46		5000664	Key, square	1
	404	85-37	02-45	9003310-2514	Key, woodruff (SB-2002-021)	1
Q	401	02-17		4461293	Shaft, 15 tooth, 9 tooth auxiliary drive, special	1
R	401	84-31		4460373	Shaft, tapered, 11 tooth auxiliary drive	1
	403	84-31		9003575-0071	Slotted nut	1
	404	84-31		9003310-2514	Key, woodruff	1



Variable displacement pump



E100 201E

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

**Variable displacement pump**
**Input shaft**

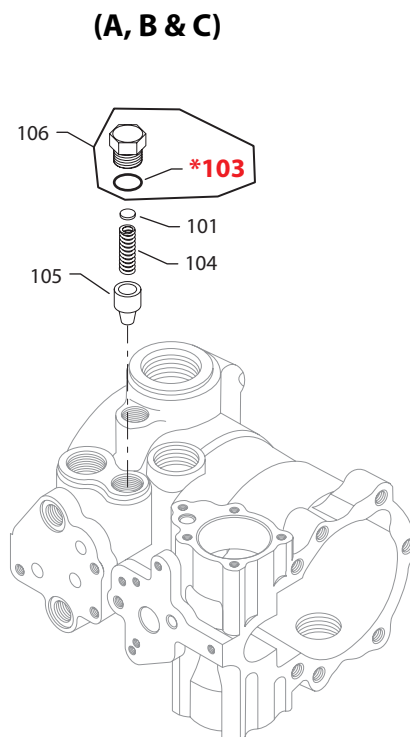
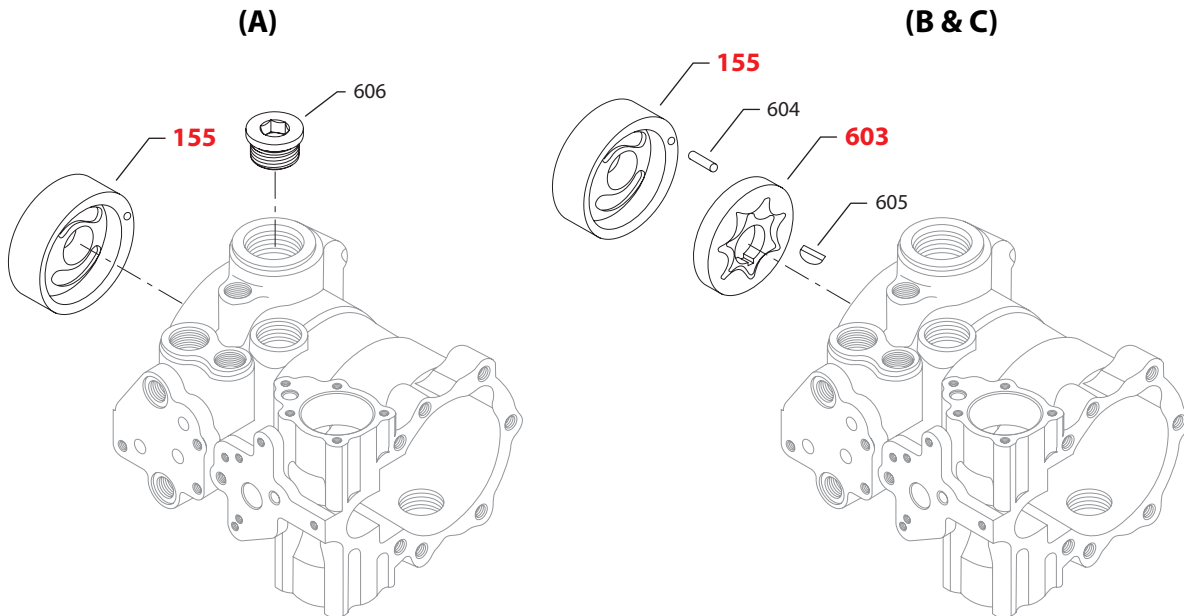
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
S	401	84-31		4461302	Shaft, tapered, 13 tooth auxiliary drive (SB-2002-021)	1
	403	84-31	94-44	9003575-0071	Slotted nut	1
	404	02-46		5000664	Key, square	1
	404	84-31	02-45	9003310-2514	Key, woodruff (SB-2002-021)	1
T	401	03-32		4461323	Shaft, 15 tooth, 9 tooth auxiliary drive, special	1
U	401	95-10		4461291	Shaft, tapered, 13 tooth auxiliary drive	1
V	401	84-31		4460404	Shaft, straight key, no auxiliary drive	1
	404	84-31		9003261-2526	Key, square	1
W	401	84-31		4460390	Shaft, straight key, 9 tooth auxiliary drive	1
	404	84-31		9003261-2526	Key, square	1
X	401	90-31		4461292	Shaft, 15 tooth, 13 tooth auxiliary drive, special	1
Y	401	02-40		4461273	Shaft, 15 tooth, 11 tooth auxiliary drive, special	1
Z	401	00-26		4461181	Shaft, 15 tooth, no auxiliary drive	1

**Rotation**

B	501	84-31		4461105	Valve plate, bi-directional	1
L	501	86-27		4460418	Valve plate, ccw, balanced (SB-1987-011)	1
	501	86-18	86-26	4460319	Valve plate, ccw, non-balanced	1
	501	84-31	86-17	4460109	Valve plate, ccw	1
R	501	86-27		4460417	Valve plate, cw, balanced (SB-1987-011)	1
	501	86-18	86-26	4460318	Valve plate, cw, non-balanced	1
	501	84-31	86-17	4460108	Valve plate, cw	1
S	501	93-20		4460683	Valve plate, cw, quiet	1
T	501	93-20		4460684	Valve plate, ccw, quiet	1



Variable displacement pump



E100 222E

\* = included in overhaul seal kit Q210

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

**Variable displacement pump**
**Charge pump displacement**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
A	155	84-31		4800108-0001	Gerotor cover	1
	606	84-31		9005110-9200	Plug assembly	1
B	155	84-31		4800108-0001	Gerotor cover	1
	603	84-31		4800054-0001	Gerotor assembly	1
	604	86-05		9004800-1913	Pin	1
	604	84-31	86-04	9004875-0083	Pin	1
	605	84-31		9003301-0906	Key	1
C	155	15-25		11166927	Gerotor cover w/hole	1
	603	15-25		4800054-0001	Gerotor assembly	1
	604	15-25		9004800-1913	Pin	1
	605	15-25		9003301-0906	Key	1

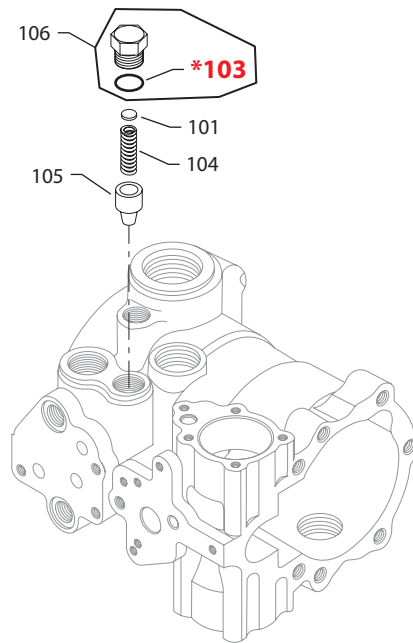
**Charge pressure relief setting**

A	101	86-14		9510445	Shim kit, 220-240 psi	1
	101	84-31	86-13	9510362	Shim kit	1
	103	86-14		9004201-6200	O-ring	1
	103	84-31	86-13	9004201-5000	O-ring	1
	104	86-14		4800431	Charge relief spring	1
	104	84-31	86-13	3102280	Charge relief spring	1
	105	86-14		9800965	Relief valve	1
	105	84-31	86-13	3102274	Relief valve	1
	106	86-14		4461325	Plug assembly	1
	106	84-31	86-13	4250174	Plug assembly	1
B	101	86-14		9510445	Shim kit, 275-300 psi	1
	101	84-31	86-13	9510362	Shim kit	1
	103	86-14		9004201-6200	O-ring	1
	103	84-31	86-13	9004201-5000	O-ring	1
	104	86-14		4800431	Charge relief spring	1
	104	84-31	86-13	3102280	Charge relief spring	1
	105	86-14		9800965	Relief valve	1
	105	84-31	86-13	3102274	Relief valve	1
	106	86-14		4461325	Plug assembly	1
	106	84-31	86-13	4250174	Plug assembly	1
C	101	86-14		9510445	Shim kit, 250-270 psi	1
	101	84-31	86-13	9510362	Shim kit	1
	103	86-14		9004201-6200	O-ring	1
	103	84-31	86-13	9004201-5000	O-ring	1
	104	86-14		4800431	Charge relief spring	1
	104	84-31	86-13	3102280	Charge relief spring	1
	105	86-14		9800965	Relief valve	1
	105	84-31	86-13	3102274	Relief valve	1
	106	86-14		4461325	Plug assembly	1
	106	84-31	86-13	4250174	Plug assembly	1



Variable displacement pump

(D, J, M & S)



E103 527E

\* = included in overhaul seal kit Q210

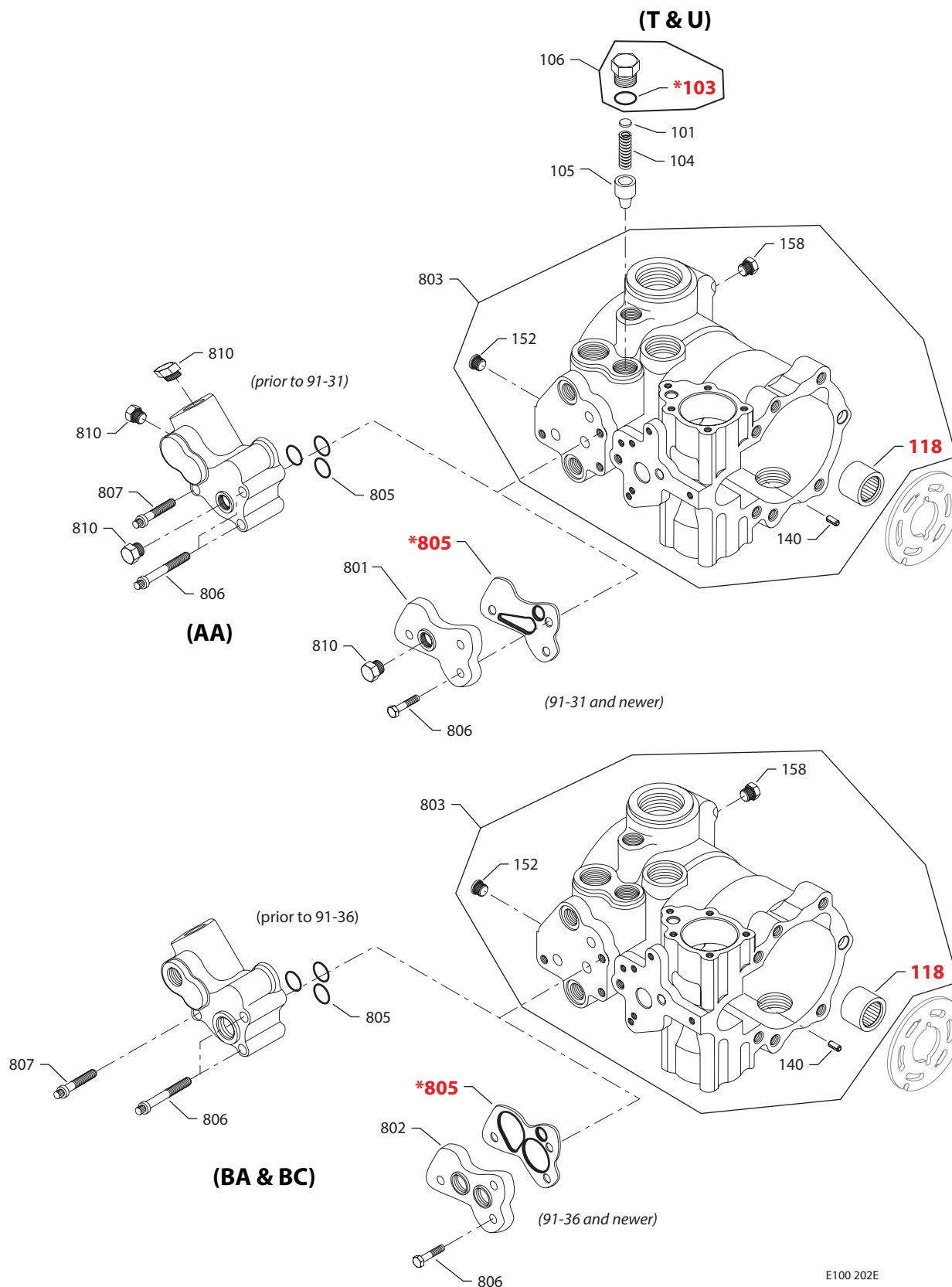
Enlarged **bold** type item  
numbers are recommended  
part to stock for servicing.



**Variable displacement pump**
**Charge pressure relief setting**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
D	101	86-14		9510445	Shim kit, 240-260 psi	1
	101	84-31	86-13	9510362	Shim kit, 240-260 psi	1
	103	86-14		9004201-6200	O-ring	1
	103	84-31	86-13	9004201-5000	O-ring	1
	104	86-14		4800431	Charge relief spring	1
	104	84-31	86-13	3102280	Charge relief spring	1
	105	86-14		9800965	Relief valve	1
	105	84-31	86-13	3102274	Relief valve	1
	106	86-14		4461325	Plug assembly	1
	106	84-31	86-13	4250174	Plug assembly	1
J	101	86-14		9510445	Shim kit, 300-325 psi	1
	101	84-31	86-13	9510362	Shim kit, 300-325 psi	1
	103	86-14		9004201-6200	O-ring	1
	103	84-31	86-13	9004201-5000	O-ring	1
	104	86-14		4800431	Charge relief spring	1
	104	84-31	86-13	3102280	Charge relief spring	1
	105	86-14		9800965	Relief valve	1
	105	84-31	86-13	3102274	Relief valve	1
	106	86-14		4461325	Plug assembly	1
	106	84-31	86-13	4250174	Plug assembly	1
M	101	86-14		9510445	Shim kit, 400-425 psi	1
	101	84-31	86-13	9510362	Shim kit, 400-425 psi	1
	103	86-14		9004201-6200	O-ring	1
	103	84-31	86-13	9004201-5000	O-ring	1
	104	86-14		4800431	Charge relief spring	1
	104	84-31	86-13	3102280	Charge relief spring	1
	105	86-14		9800965	Relief valve	1
	105	84-31	86-13	3102274	Relief valve	1
	106	86-14		4461325	Plug assembly	1
	106	84-31	86-13	4250174	Plug assembly	1
S	101	86-14		9510445	Shim kit, 350-370 psi	1
	101	84-31	86-13	9510362	Shim kit	1
	103	86-14		9004201-6200	O-ring	1
	103	84-31	86-13	9004201-5000	O-ring	1
	104	86-14		4800431	Charge relief spring	1
	104	84-31	86-13	3102280	Charge relief spring	1
	105	86-14		9800965	Relief valve	1
	105	84-31	86-13	3102274	Relief valve	1
	106	86-14		4461325	Plug assembly	1
	106	84-31	86-13	4250174	Plug assembly	1

Variable displacement pump



E100 202E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Charge pressure relief setting

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T	101	94-08		9510445	Shim kit, 400-425 psi	1
	103	94-08		9004201-6200	O-ring	1
	104	94-08		4800431	Charge relief spring	1
	105	94-08		4800356	Relief valve, .050 orificed	1
	106	94-08		4461325	Plug assembly	1
U	101	86-14		9510445	Shim kit, 380-400 psi	1
	101	84-31	86-13	9510362	Shim kit	1
	103	86-14		9004201-6200	O-ring	1
	103	84-31	86-13	9004201-5000	O-ring	1
	104	86-14		4800431	Charge relief spring	1
	104	84-31	86-13	3102280	Charge relief spring	1
	105	86-14		9800965	Relief valve	1
	105	84-31	86-13	3102274	Relief valve	1
	106	86-14		4461325	Plug assembly	1
	106	84-31	86-13	4250174	Plug assembly	1

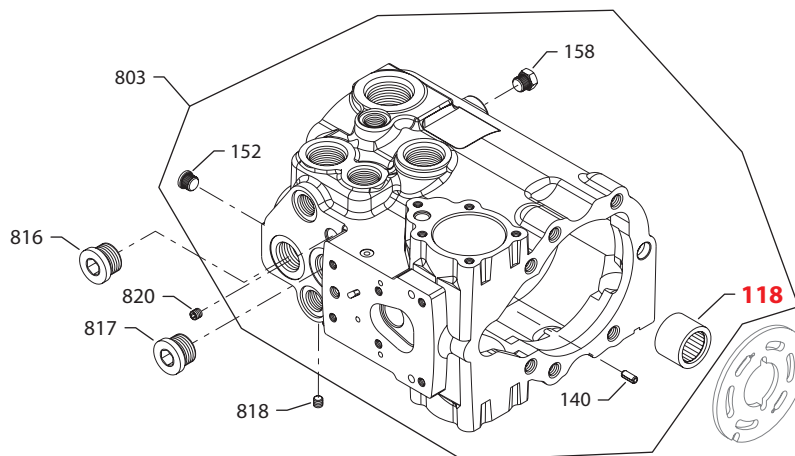
#### Filtration

AA	118	97-44		9001465-0010	Needle bearing	1
	140	86-14		9004700-1907	Slotted pin	1
	152	08-32		9005110-5600	Plug assembly	1
	158	84-31		9005100-5600	Plug assembly	1
	801	91-31		4460643	Filtration adaptor, suction (SB-1990-017)	1
	803	84-31		4460579	Housing assembly (SB-1987-011 & SB-1987-024)	1
	805	91-31		4460655	Filtration adaptor seal, suction (SB-1990-017)	1
	805	86-14	91-30	9004101-0170	O-ring	3
	805	84-31	86-13	9004104-0180	O-ring	2
	806	91-31		9007206-3116	Screw (SB-1990-017)	3
	806	86-14	91-30	9007500-3130	Screw	2
	806	84-31	86-13	9007200-3124	Screw	2
	807	86-14	91-30	9007500-3124	Screw (SB-1990-017)	1
	807	84-31	86-13	9007200-3124	Screw	1
	810	91-31		9005100-5600	Plug assembly	1
	810	84-31	91-30	9005100-5600	Plug assembly	3
BA & BC	118	97-44		9001465-0010	Needle bearing	1
	140	86-14		9004700-1907	Slotted pin	1
	152	08-32		9005110-5600	Plug assembly	1
	158	84-31		9005100-5600	Plug assembly	1
	801	91-36		4460644	Filtration adaptor, remote (SB-1990-017)	1
	803	84-31		4460579	Housing assembly (SB-1987-011 & SB-1987-024)	1
	805	91-36		4460656	Filtration adaptor seal, remote (SB-1990-017)	1
	805	86-40	91-35	9004101-0170	O-ring	3
	805	84-31	86-39	9004104-0180	O-ring	2
	806	91-36		9007206-3116	Screw (SB-1990-017)	3
	806	86-40	91-35	9007500-3130	Screw	2
	806	84-31	86-39	9007200-3124	Screw	2
	807	86-40	91-35	9007500-3124	Screw (SB-1990-017)	1
	807	84-31	86-39	9007200-3124	Screw	1

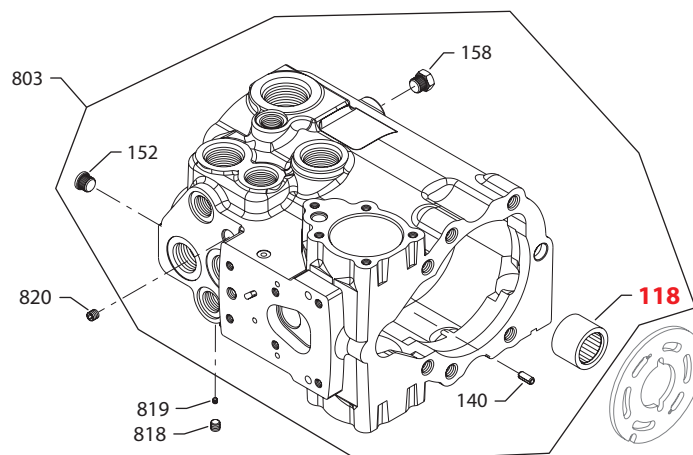


Variable displacement pump

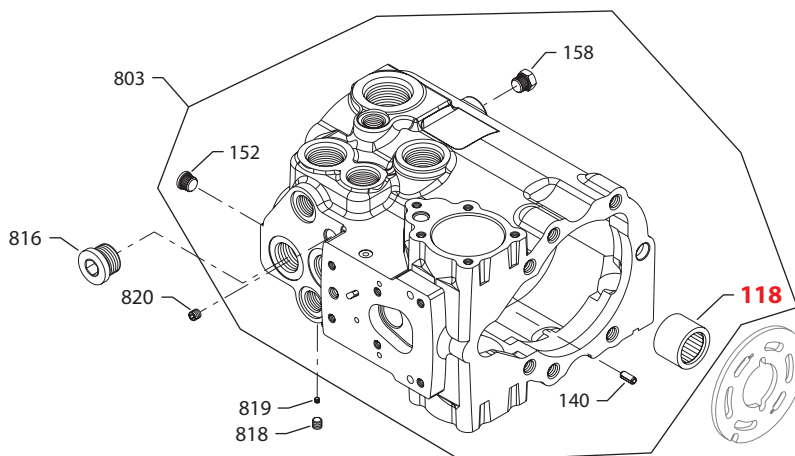
(HA)



(HB)



(HC)



E103 528E

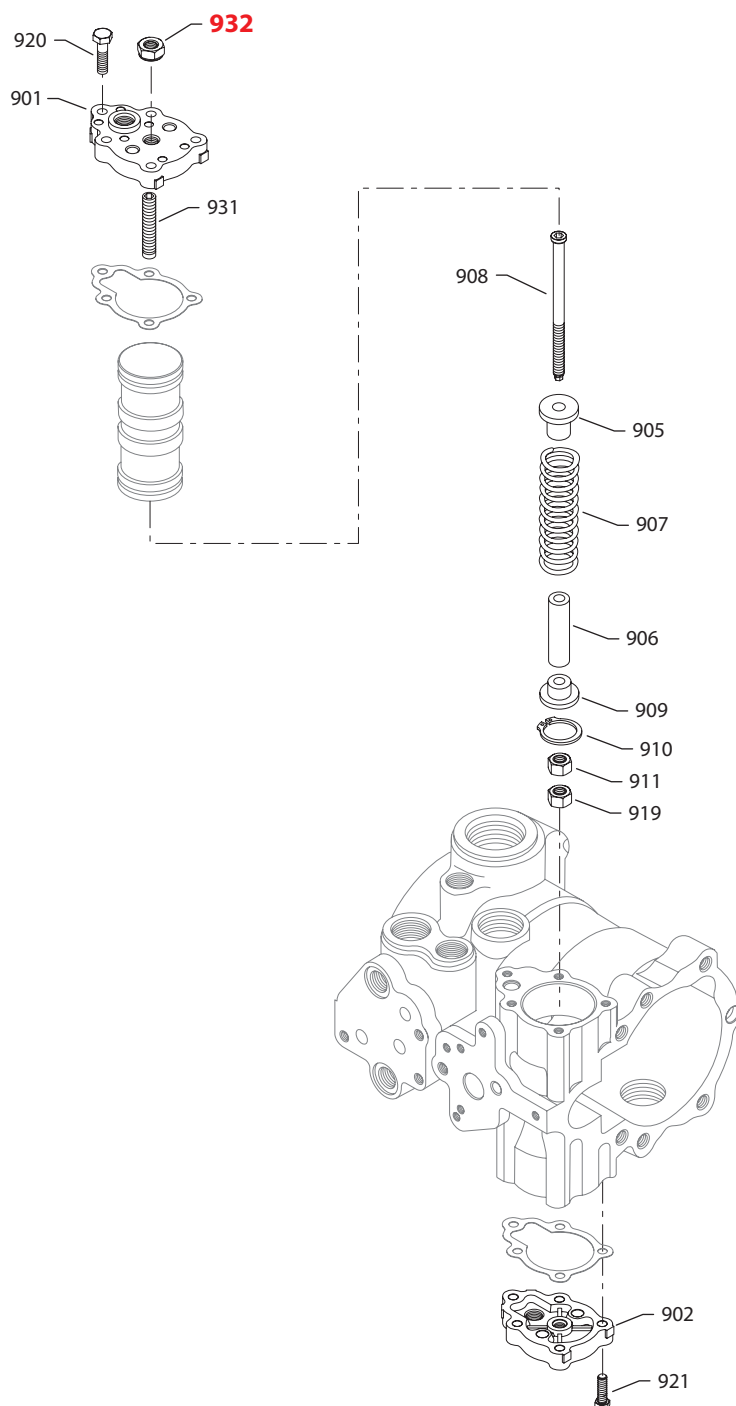
Enlarged **bold** type item numbers are recommended part to stock for servicing.

**Variable displacement pump**
**Filtration**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
HA	118	14-13		9001465-0010	Needle bearing	1
	140	14-13		9004700-1907	Slotted pin	1
	152	14-13		9005110-5600	Plug assembly	1
	158	14-13		9005100-5600	Plug assembly	1
	803	14-13		11149587	Housing assembly	1
	816	14-13		9005100-8700	Plug assembly	1
	817	14-13		9005100-8700	Plug assembly	1
	818	14-13		11151777	Pipe plug w/sealant	1
	820	14-13		11151777	Pipe plug w/sealant	1
HB	118	14-13		9001465-0010	Needle bearing	1
	140	14-13		9004700-1907	Slotted pin	1
	152	14-13		9005110-5600	Plug assembly	1
	158	14-13		9005100-5600	Plug assembly	1
	803	14-13		11149587	Housing assembly	1
	818	14-13		11151777	Pipe plug w/sealant	1
	819	14-13		11151778	Pipe plug w/sealant	1
	820	14-13		11151777	Pipe plug w/sealant	1
HC	118	14-13		9001465-0010	Needle bearing	1
	140	14-13		9004700-1907	Slotted pin	1
	152	14-13		9005110-5600	Plug assembly	1
	158	14-13		9005100-5600	Plug assembly	1
	803	14-13		11149587	Housing assembly	1
	816	14-13		9005100-8700	Plug assembly	1
	818	14-13		11151777	Pipe plug w/sealant	1
	819	14-13		11151778	Pipe plug w/sealant	1
	820	14-13		11151777	Pipe plug w/sealant	1



Variable displacement pump



E100 203E

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

**Variable displacement pump**
**Common maximum displacement parts**

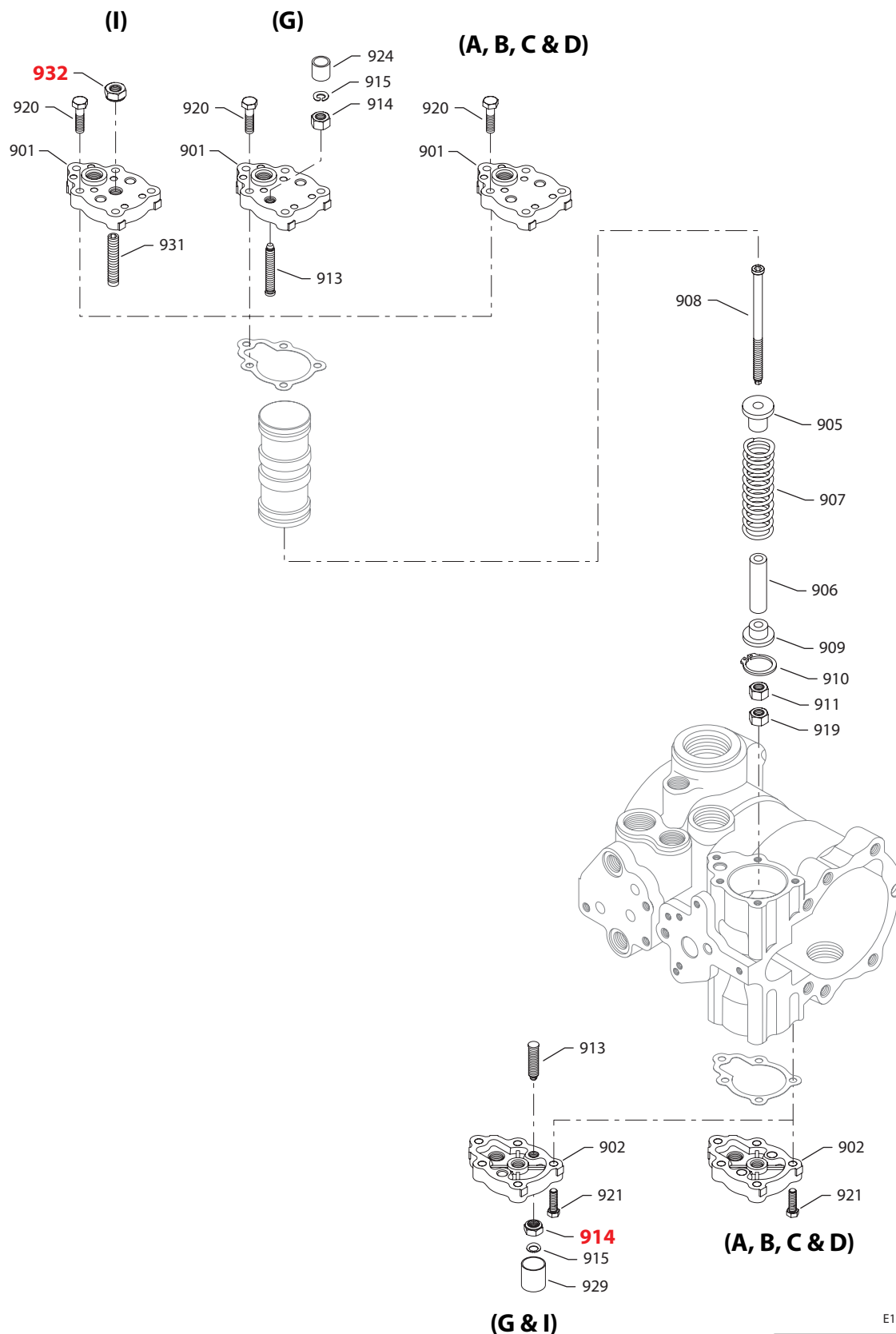
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	901	01-30		4460455-0002	Servo cover	1
	902	01-30		4460455-0002	Servo cover	1
	905	84-31		4461034	Spring guide (SB-1998-051)	1
	907	84-31		4460164	Servo spring	1
	908	84-31		4461033	Servo screw (SB-1998-051)	1
	909	84-31		4460302	Spring guide	1
	910	84-31		9006220-0131	Retaining ring	1
	911	84-31		9003535-3700	Nut	1
	919	87-40		5000480	Nut	1
	920	84-31		9007276-0134	Screw (SB-1990-012)	5
	921	84-31		9007276-0134	Screw (SB-1990-012)	5

**Maximum displacement**

1	906	01-30		4460303-0002	Servo stop	1
	931	01-30		4460946	Servo stop	1
	932	01-30		9003575-0083	Seal nut	1
2	906	01-27		4460303-0004	Servo stop	1
	931	01-27		4460946	Servo stop	1
	932	01-27		9003575-0083	Seal nut	1
3	906	03-32		4460303-0006	Servo stop	1
	931	03-32		4460946	Servo stop	1
	932	03-32		9003575-0083	Seal nut	1
4	906	06-02		4460303-0001	Servo stop	1
	931	06-02		4460946	Servo stop	1
	932	06-02		9003575-0083	Seal nut	1
5	906	07-42		4460303-0003	Servo stop	1
	931	07-42		4460946	Servo stop	1
	932	07-42		9003575-0083	Seal nut	1
7	906	09-05		4460997	Servo stop	1
	931	09-05		4460946	Servo stop	1
	932	09-05		9003575-0083	Seal nut	1
8	906	11-25		4460997	Servo stop	1
	931	11-25		4460946	Servo stop	1
	932	11-25		9003575-0083	Seal nut	1
9	906	11-25		4460303-0006	Servo stop	1
	931	11-25		4460946	Servo stop	1
	932	11-25		9003575-0083	Seal nut	1



Variable displacement pump



E100 204E

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



**Variable displacement pump**
**Common maximum displacement parts**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	905	84-31		4461034	Spring guide (SB-1998-051)	1
	907	84-31		4460164	Servo spring	1
	908	84-31		4461033	Servo screw (SB-1998-051)	1
	909	84-31		4460302	Spring guide	1
	910	84-31		9006220-0131	Retaining ring	1
	911	84-31		9003535-3700	Nut	1
	919	87-40		5000480	Nut	1
	920	84-31		9007276-0134	Screw	5
	921	84-31		9007376-0134	Screw	5

**Maximum displacement**

A	901	87-41		4460455-0004	Servo cover (SB-1987-029 & SB-2006-017)	1
	902	87-41		4460455-0002	Servo cover (SB-1987-029)	1
	906	84-31		4460303-0001	Servo stop	1
B	901	87-41		4460455-0004	Servo cover (SB-1987-029 & SB-2006-017)	1
	902	87-41		4460455-0002	Servo cover (SB-1987-029)	1
	906	84-31		4460303-0002	Servo stop	1
C	901	87-41		4460455-0004	Servo cover (SB-1987-029 & SB-2006-017)	1
	902	87-41		4460455-0002	Servo cover (SB-1987-029)	1
	906	84-31		4460303-0003	Servo stop	1
D	901	87-41		4460455-0004	Servo cover (SB-1987-029 & SB-2006-017)	1
	902	87-41		4460455-0002	Servo cover (SB-1987-029)	1
	906	84-31		4460303-0004	Servo stop	1
G	901	87-41		4460455-0003	Servo cover (SB-1987-029)	1
	902	87-41		4460455-0001	Servo cover (SB-1987-029)	1
	906	84-31		4460303-0001	Servo stop	1
	913	84-31		4460603	Servo stop	2
	914	84-31		9003575-0094	Seal nut	2
	915	84-31		9006326-0025	Retaining ring	2
	924	84-31		4800174	Servo adjust cover	1
	929	84-31		4800174	Servo adjust cover	1
I	901	13-44		4460455-0002	Servo cover	1
	902	13-44		4460455-0001	Servo cover	1
	906	13-44		4460303-0003	Servo stop	1
	913	13-44		4460603	Servo stop	1
	914	13-44		9003575-0094	Seal nut	1
	915	13-44		9006326-0025	Retaining ring	1
	929	13-44		4800174	Servo adjust cover	1
	931	13-44		4460946	Servo stop	1
	932	13-44		9003575-0083	Seal nut	1

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Common maximum displacement parts

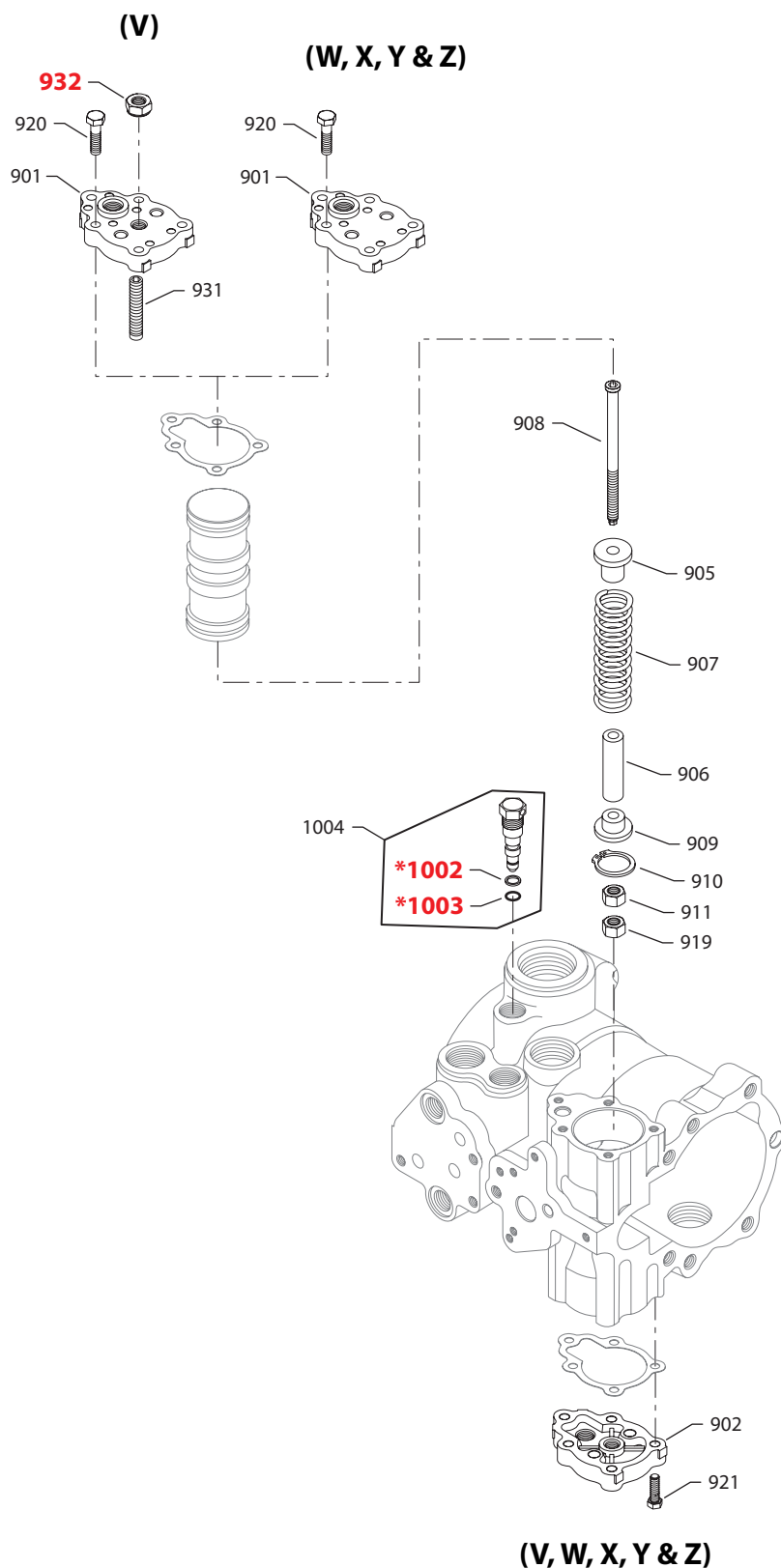
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	905	84-31		4461034	Spring guide (SB-1998-051)	1
	907	84-31		4460164	Servo spring	1
	908	84-31		4461033	Servo screw (SB-1998-051)	1
	909	84-31		4460302	Spring guide	1
	910	84-31		9006220-0131	Retaining ring	1
	911	84-31		9003535-3700	Nut	1
	919	87-40		5000480	Nut	1
	920	84-31		9007276-0134	Screw	5
	921	84-31		9007376-0134	Screw	5

#### Maximum displacement

J	901	03-10		4460455-0002	Servo cover	1
	902	03-10		4460455-0001	Servo cover	1
	906	03-10		4460303-0001	Servo stop	1
	913	03-10		4460603	Servo stop	1
	914	03-10		9003575-0094	Seal nut	1
	915	03-10		9006326-0025	Retaining ring	1
	929	03-10		4800174	Servo adjust cover	1
	931	03-10		4460946	Servo stop	1
	932	03-10		9003575-0083	Seal nut	1
L	901	87-41		4460455-0004	Servo cover (SB-1987-029 & SB-2006-017)	1
	902	87-41		4460455-0002	Servo cover	1
	906	87-41		4460303-0005	Servo stop	1
P	901	91-20		4460455-0003	Servo cover	1
	902	91-20		4460455-0002	Servo cover	1
	906	91-20		4460303-0002	Servo stop	1
	913	91-20		4460603	Servo stop	1
	914	91-20		9003575-0094	Seal nut	1
	915	91-20		9006326-0025	Retaining ring	1
	924	91-20		4800174	Servo adjust cover	1
Q	901	11-25		4460455-0002	Servo cover	1
	902	11-25		4460455-0002	Servo cover	1
	906	11-25		4460997	Servo stop	1
	931	11-25		4460946	Servo stop	1
	932	11-25		9003575-0083	Seal nut	1
R	901	92-30		4460455-0004	Servo cover (SB-1987-029 & SB-2006-017)	1
	902	92-30		4460455-0002	Servo cover	1
	906	92-30		4460303-0006	Servo stop	1
S	901	93-38		4460455-0004	Servo cover (SB-1987-029 & SB-2006-017)	1
	902	93-38		4460455-0002	Servo cover	1
	906	93-38		4460721	Servo stop	1
T	901	93-38		4460455-0004	Servo cover (SB-1987-029 & SB-2006-017)	1
	902	93-38		4460455-0002	Servo cover	1
	906	93-38		4460722	Servo stop	1



Variable displacement pump



E100 206E

\* = included in overhaul seal kit Q210

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

**Variable displacement pump**
**Common maximum displacement parts**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	905	84-31		4461034	Spring guide (SB-1998-051)	1
	907	84-31		4460164	Servo spring	1
	908	84-31		4461033	Servo screw (SB-1998-051)	1
	909	84-31		4460302	Spring guide	1
	910	84-31		9006220-0131	Retaining ring	1
	911	84-31		9003535-3700	Nut	1
	919	87-40		5000480	Nut	1
	920	84-31		9007276-0134	Screw	5
	921	84-31		9007376-0134	Screw	5

**Maximum displacement**

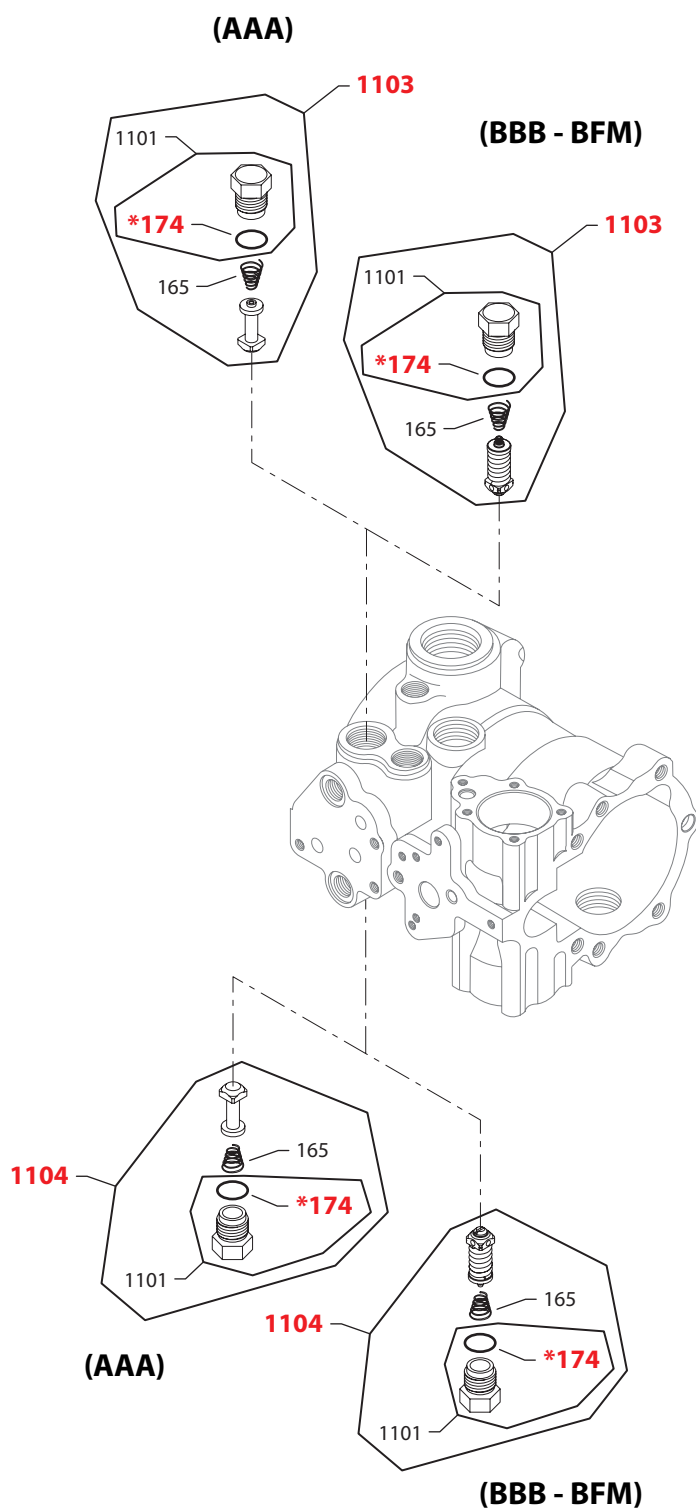
V	901	97-26		4460455-0002	Servo cover	1
	902	97-26		4460455-0002	Servo cover	1
	906	97-26		4460303-0001	Servo stop	1
	931	97-26		4460946	Servo stop	1
	932	97-26		9003575-0083	Seal nut	1
W	901	98-09		4460455-0004	Servo cover (SB-1987-029 & SB-2006-017)	1
	902	98-09		4460455-0002	Servo cover	1
	906	98-09		4460997	Servo stop	1
X	901	99-26		4460455-0002	Servo cover	1
	902	99-26		4460455-0002	Servo cover	1
	906	99-26		4460303-0002	Servo stop	1
	931	99-26		4460946	Servo stop	1
	932	99-26		9003575-0083	Seal nut	1
Y	901	00-40		4460455-0002	Servo cover	1
	902	00-40		4460455-0002	Servo cover	1
	906	00-40		4460303-0001	Servo stop	1
	931	00-40		4460946	Servo stop	1
	932	00-40		9003575-0083	Seal nut	1
Z	901	01-30		4460455-0002	Servo cover	1
	902	01-30		4460455-0002	Servo cover	1
	906	01-30		4460303-0002	Servo stop	1
	931	01-30		4460946	Servo stop	1
	932	01-30		9003575-0083	Seal nut	1

**Bypass valve**

A	1004	84-31		4461332	Bypass valve assembly	1
	1002	84-31		9006110-0120	Back up ring	1
	1003	84-31		5000654	O-ring	1
B	1004	84-31		4461333	Bypass valve assembly, .031" orifice	1
	1002	84-31		9006110-0120	Back up ring	1
	1003	84-31		5000654	O-ring	1
C	1004	84-31		4461334	Bypass valve assembly, .040" orifice	1
	1002	84-31		9006110-0120	Back up ring	1
	1003	84-31		5000654	O-ring	1



Variable displacement pump



E100 208E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Common system pressure protection parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	165	84-31		4461386	Conical spring (SB-2006-004)	2
	174	84-31		9004201-7500	O-ring	2
	1101	84-31		4461455	SCR plug/spring assembly (SB-2006-017)	2

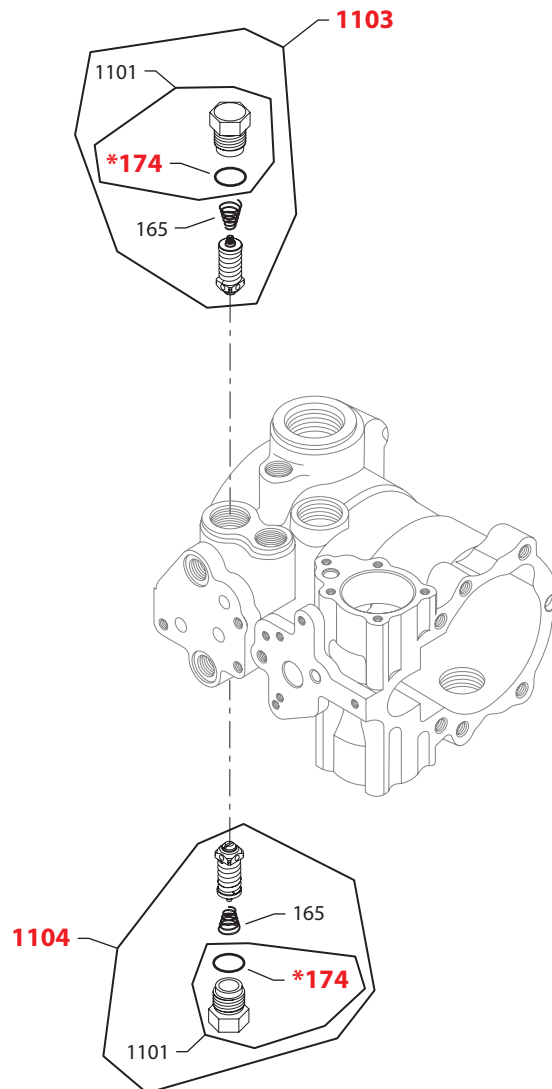
#### System pressure protection

AAA	1103	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
BBB	1103	87-38		4510004-0175	SCR valve kit, 175 bar [2538 psi] (SB-1987-024)	1
	1104	87-38		4510004-0175	SCR valve kit, 175 bar [2538 psi] (SB-1987-024)	1
BBF	1103	87-38		4510004-0175	SCR valve kit, 175 bar [2538 psi] (SB-1987-024)	1
	1104	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
BBG	1103	87-38		4510004-0175	SCR valve kit, 175 bar [2538 psi] (SB-1987-024)	1
	1104	87-38		4510004-0280	SCR valve kit, 280 bar [4060 psi] (SB-1987-024)	1
BBJ	1103	87-38		4510004-0175	SCR valve kit, 175 bar [2538 psi] (SB-1987-024)	1
	1104	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
BCC	1103	87-38		4510004-0190	SCR valve kit, 190 bar [2755 psi] (SB-1987-024)	1
	1104	87-38		4510004-0190	SCR valve kit, 190 bar [2755 psi] (SB-1987-024)	1
BCE	1103	87-38		4510004-0190	SCR valve kit, 190 bar [2755 psi] (SB-1987-024)	1
	1104	87-38		4510004-0230	SCR valve kit, 230 bar [3335 psi] (SB-1987-024)	1
BDD	1103	87-38		4510004-0210	SCR valve kit, 210 bar [3045 psi] (SB-1987-024)	1
	1104	87-38		4510004-0210	SCR valve kit, 210 bar [3045 psi] (SB-1987-024)	1
BED	1103	87-38		4510004-0230	SCR valve kit, 230 bar [3335 psi] (SB-1987-024)	1
	1104	87-38		4510004-0210	SCR valve kit, 210 bar [3045 psi] (SB-1987-024)	1
BEE	1103	87-38		4510004-0230	SCR valve kit, 230 bar [3335 psi] (SB-1987-024)	1
	1104	87-38		4510004-0230	SCR valve kit, 230 bar [3335 psi] (SB-1987-024)	1
BEF	1103	87-38		4510004-0230	SCR valve kit, 230 bar [3335 psi] (SB-1987-024)	1
	1104	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
BEJ	1103	87-38		4510004-0230	SCR valve kit, 230 bar [3335 psi] (SB-1987-024)	1
	1104	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
BFD	1103	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
	1104	87-38		4510004-0210	SCR valve kit, 210 bar [3045 psi] (SB-1987-024)	1
BFF	1103	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
	1104	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
BFM	1103	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
	1104	87-38		4510004-0140	SCR valve kit, 140 bar [2030 psi] (SB-1987-024)	1



Variable displacement pump

(BGB - BLL)



E103 529E

\* = included in overhaul seal kit Q210

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



## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Common system pressure protection parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	165	84-31		4461386	Conical spring (SB-2006-004)	2
	174	84-31		9004201-7500	O-ring	2
	1101	84-31		4461455	SCR plug/spring assembly (SB-2006-017)	2

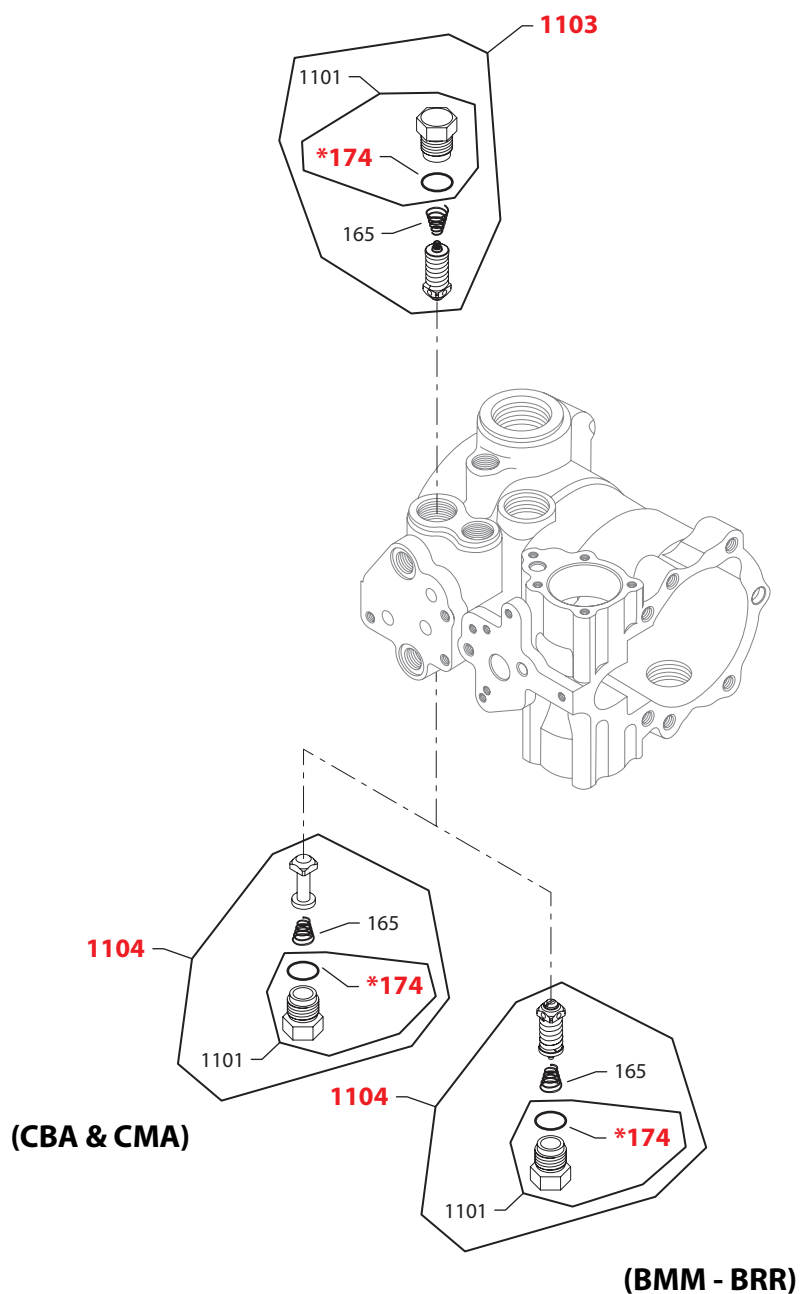
#### System pressure protection

BGB	1103	87-38		4510004-0280	SCR valve kit, 280 bar [4060 psi] (SB-1987-024)	1
	1104	87-38		4510004-0175	SCR valve kit, 175 bar [2538 psi] (SB-1987-024)	1
BGD	1103	87-38		4510004-0280	SCR valve kit, 280 bar [4060 psi] (SB-1987-024)	1
	1104	87-38		4510004-0210	SCR valve kit, 210 bar [3045 psi] (SB-1987-024)	1
BGE	1103	87-38		4510004-0280	SCR valve kit, 280 bar [4060 psi] (SB-1987-024)	1
	1104	87-38		4510004-0230	SCR valve kit, 230 bar [3335 psi] (SB-1987-024)	1
BGG	1103	87-38		4510004-0280	SCR valve kit, 280 bar [4060 psi] (SB-1987-024)	1
	1104	87-38		4510004-0280	SCR valve kit, 280 bar [4060 psi] (SB-1987-024)	1
BHF	1103	87-38		4510004-0300	SCR valve kit, 300 bar [4350 psi] (SB-1987-024)	1
	1104	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
BHH	1103	87-38		4510004-0300	SCR valve kit, 300 bar [4350 psi] (SB-1987-024)	1
	1104	87-38		4510004-0300	SCR valve kit, 300 bar [4350 psi] (SB-1987-024)	1
BHJ	1103	87-38		4510004-0300	SCR valve kit, 300 bar [4350 psi] (SB-1987-024)	1
	1104	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
BHM	1103	87-38		4510004-0300	SCR valve kit, 300 bar [4350 psi] (SB-1987-024)	1
	1104	87-38		4510004-0140	SCR valve kit, 140 bar [2030 psi] (SB-1987-024)	1
BJB	1103	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
	1104	87-38		4510004-0175	SCR valve kit, 175 bar [2538 psi] (SB-1987-024)	1
BJF	1103	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
	1104	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
BJG	1103	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
	1104	87-38		4510004-0280	SCR valve kit, 280 bar [4060 psi] (SB-1987-024)	1
BJJ	1103	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
	1104	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
BKK	1103	87-38		4510004-0360	SCR valve kit, 360 bar [5220 psi] (SB-1987-024)	1
	1104	87-38		4510004-0360	SCR valve kit, 360 bar [5220 psi] (SB-1987-024)	1
BLF	1103	87-38		4510004-0415	SCR valve kit, 415 bar [6020 psi] (SB-1987-024)	1
	1104	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
BLL	1103	87-38		4510004-0415	SCR valve kit, 415 bar [6020 psi] (SB-1987-024)	1
	1104	87-38		4510004-0415	SCR valve kit, 415 bar [6020 psi] (SB-1987-024)	1



Variable displacement pump

(BMJ - CMA)



E103 543E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Common system pressure protection parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	165	84-31		4461386	Conical spring (SB-2006-004)	2
	174	84-31		9004201-7500	O-ring	2
	1101	84-31		4461455	SCR plug/spring assembly (SB-2006-017)	2

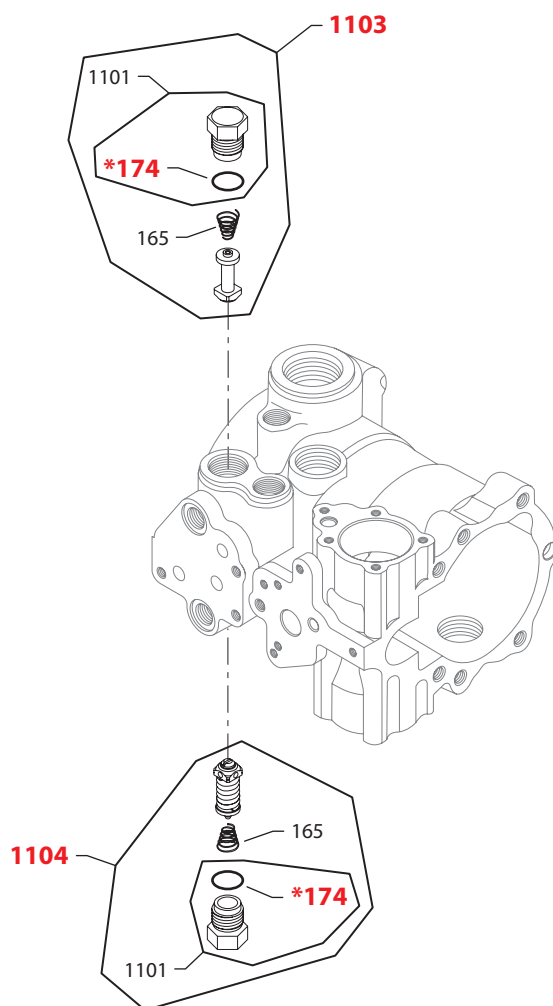
#### System pressure protection

BMJ	1103	87-38		4510004-0140	SCR valve kit, 140 bar [2030 psi] (SB-1987-024)	1
	1104	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
BMM	1103	87-38		4510004-0140	SCR valve kit, 140 bar [2030 psi] (SB-1987-024)	1
	1104	87-38		4510004-0140	SCR valve kit, 140 bar [2030 psi] (SB-1987-024)	1
BRF	1103	00-26		4510004-0325	SCR valve kit, 325 bar [4712 psi]	1
	1104	00-26		4510004-0250	SCR valve kit, 250 bar [3625 psi]	1
BRJ	1103	00-26		4510004-0325	SCR valve kit, 325 bar [4712 psi]	1
	1104	00-26		4510004-0345	SCR valve kit, 345 bar [5000 psi]	1
BRR	1103	96-51		4510004-0325	SCR valve kit, 325 bar [4712 psi]	1
	1104	96-51		4510004-0325	SCR valve kit, 325 bar [4712 psi]	1
CBA	1103	87-38		4510004-0175	SCR valve kit, 175 bar [2538 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
CCA	1103	87-38		4510004-0190	SCR valve kit, 190 bar [2755 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
CDA	1103	87-38		4510004-0210	SCR valve kit, 210 bar [3045 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
CEA	1103	87-38		4510004-0230	SCR valve kit, 230 bar [3335 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
CFA	1103	87-38		4510004-0250	SCR valve kit, 250 bar [3625 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
CGA	1103	87-38		4510004-0280	SCR valve kit, 280 bar [4060 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
CHA	1103	87-38		4510004-0300	SCR valve kit, 300 bar [4350 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
CJA	1103	87-38		4510004-0345	SCR valve kit, 345 bar [5000 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
CKA	1103	87-38		4510004-0360	SCR valve kit, 360 bar [5220 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
CMA	1103	87-38		4510004-0140	SCR valve kit, 210 bar [2030 psi] (SB-1987-024)	1
	1104	87-38		4510004-0000	Check valve kit (SB-1987-024)	1



Variable displacement pump

(DAB - DAK)



E103 530E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

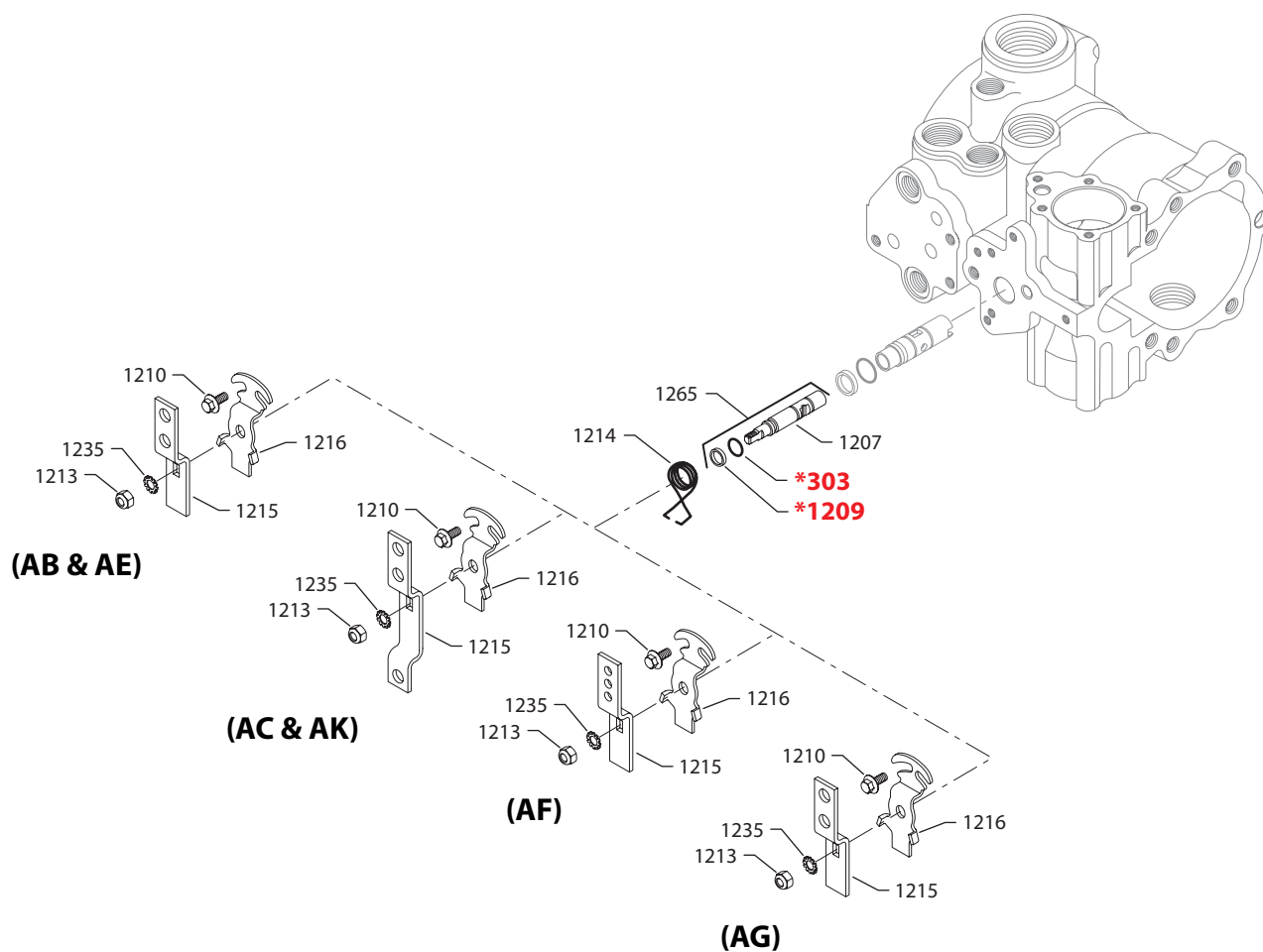
#### Common system pressure protection parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	165	84-31		4461386	Conical spring (SB-2006-004)	2
	174	84-31		9004201-7500	O-ring	2
	1101	84-31		4461455	SCR plug/spring assembly (SB-2006-017)	2

#### System pressure protection

DAB	1103	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
	1104	87-38		4510004-0175	SCR valve kit, 175 bar [2538 psi] (SB-1987-024)	1
DAC	1103	87-38		4510004-0000	Check valve kit (SB-1987-024)	1
	1104	87-38		4510004-0190	SCR valve kit, 190 bar [2755 psi] (SB-1987-024)	1
DAD	1103	91-07		4510004-0000	Check valve kit	1
	1104	91-07		4510004-0210	SCR valve kit, 210 bar [3045 psi]	1
DAE	1103	91-07		4510004-0000	Check valve kit	1
	1104	91-07		4510004-0230	SCR valve kit, 230 bar [3335 psi]	1
DAF	1103	91-07		4510004-0000	Check valve kit	1
	1104	91-07		4510004-0250	SCR valve kit, 250 bar [3625 psi]	1
DAG	1103	91-07		4510004-0000	Check valve kit	1
	1104	91-07		4510004-0280	SCR valve kit, 280 bar [4060 psi]	1
DAH	1103	91-07		4510004-0000	Check valve kit	1
	1104	91-07		4510004-0300	SCR valve kit, 300 bar [4350 psi]	1
DAJ	1103	91-07		4510004-0000	Check valve kit	1
	1104	91-07		4510004-0345	SCR valve kit, 345 bar [5000 psi]	1
DAK	1103	91-07		4510004-0000	Check valve kit	1
	1104	91-07		4510004-0360	SCR valve kit, 360 bar [5220 psi]	1

Variable displacement pump



E100 211E

\* = included in overhaul seal kit Q210

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

## Variable displacement pump

### Common control parts

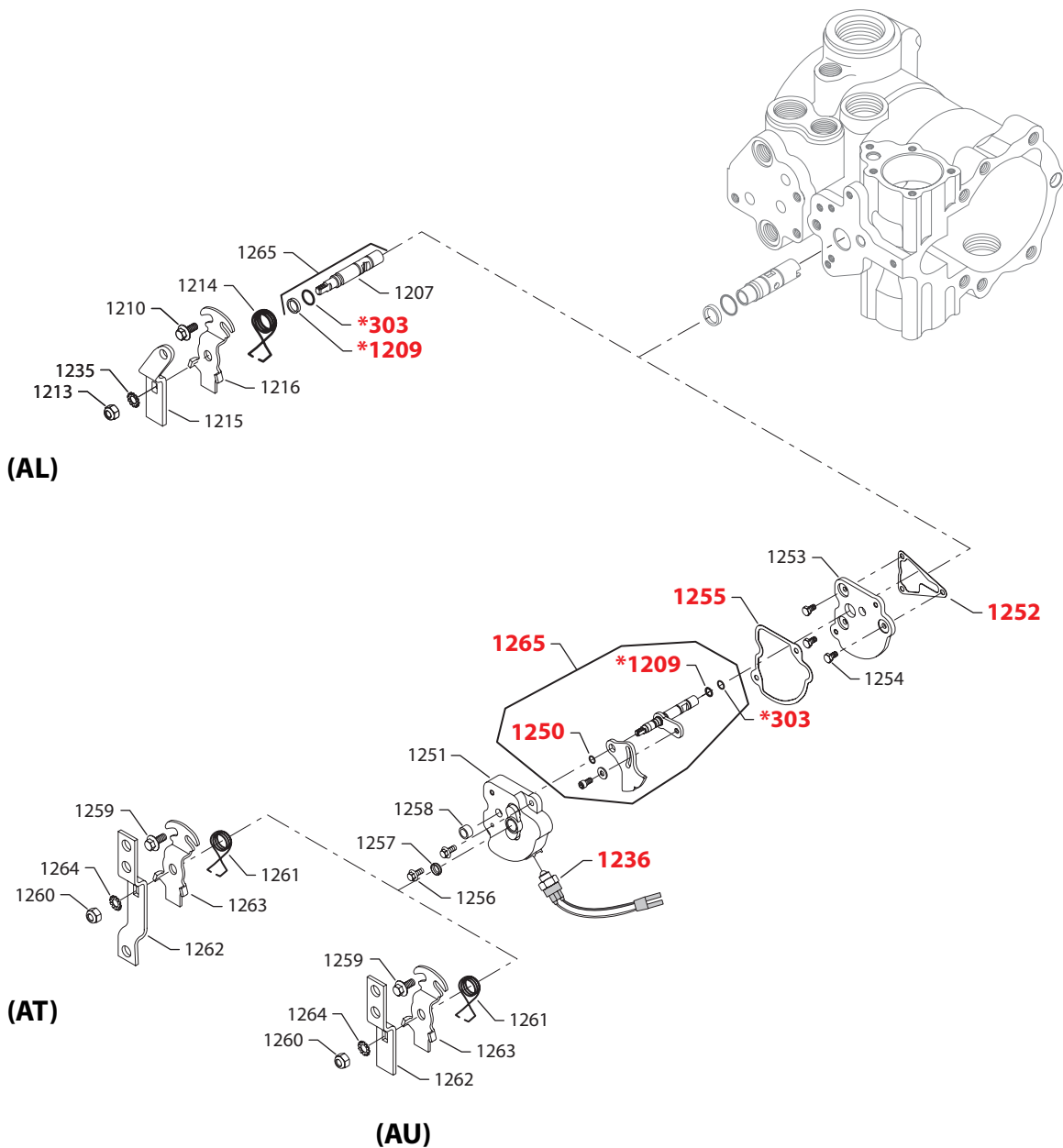
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	303	84-31		5000654	O-ring	1
	1209	84-31		9006150-0120	Back up ring	1
	1213	84-31		9003575-0102	Lock nut	1
	1235	84-31		9009660-3100	Toothlock washer	1

### Control

AB	1207	84-31	86-13	4460316	Spool	1
	1210	84-31		9007276-0123	Screw (SB-1987-020)	1
	1214	84-31		4800315	Neutral return spring	1
	1215	84-31		4800086-0002	Handle	1
	1216	84-31		4800084	Neutral return bracket	1
	1265	86-14		4461327	Spool assembly	1
AC	1207	84-31	86-13	4460316	Spool	1
	1210	84-31		9007276-0123	Screw (SB-1987-020)	1
	1214	84-31		4800315	Neutral return spring	1
	1215	84-31		4800153	Handle	1
	1216	84-31		4800084	Neutral return bracket	1
	1265	86-14		4461327	Spool assembly	1
AE	1207	84-31	86-13	4460316	Spool	1
	1210	84-31		9007276-0123	Screw (SB-1987-020)	1
	1214	84-31		4800315	Neutral return spring	1
	1215	84-31		4800086-0002	Handle	1
	1216	84-31		4800084	Neutral return bracket	1
	1265	86-14		4461327	Spool assembly	1
AF	1207	84-31	86-13	4460316	Spool	1
	1210	84-31	03-07	9007276-0123	Screw (SB-1987-020)	1
	1214	84-31	03-07	4800315	Neutral return spring	1
	1215	84-31	03-07	4800137	Handle	1
	1216	84-31	03-07	4800084	Neutral return bracket	1
	1265	86-14	03-07	4461331	Spool assembly	1
AG	1207	84-31	86-13	4460316	Spool	1
	1210	84-31	03-07	9007276-0123	Screw (SB-1987-020)	1
	1214	84-31	03-07	4800315	Neutral return spring	1
	1215	84-31	03-07	4800086-0002	Handle	1
	1216	84-31	03-07	4800089	Neutral return bracket	1
	1265	84-31	03-07	4461327	Spool assembly	1
AK	1210	89-02		9007276-0123	Screw	1
	1214	89-02		4800315	Neutral return spring	1
	1215	89-02		4800153	Handle	1
	1216	89-02		4800084	Neutral return bracket	1
	1265	89-02		4461331	Spool assembly	1



Variable displacement pump



E100 213E

\* = included in overhaul seal kit Q210

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



**Variable displacement pump**
**Control**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
AL	303	89-39	03-07	5000654	O-ring	1
	1209	89-39	03-07	9006150-0120	Back up ring	1
	1210	89-39	03-07	9007276-0123	Screw	1
	1213	89-39	03-07	9003575-0102	Lock nut	1
	1214	89-39	03-07	4800315	Neutral return spring	1
	1215	89-39	03-07	4800184	Handle	1
	1216	89-39	03-07	4800084	Neutral return bracket	1
	1235	89-39	03-07	9009660-3100	Toothlock washer	1
	1265	89-39	03-07	4461327	Spool assembly	1
AT	303	95-38		5000654	O-ring	1
	1209	95-38		9006150-0120	Back up ring	1
	1236	95-38		4700033	Neutral start switch	1
	1250	95-38		9004100-0110	O-ring	1
	1251	95-38		4461049	Neutral start switch cover	1
	1252	95-38		4460789	Neutral start switch mounting plate gasket	1
	1253	95-38		4461051	Neutral start switch plate assembly	1
	1254	95-38		5000385	Screw	3
	1255	95-38		4461053	Neutral start switch cover gasket	1
	1256	95-38		9007276-0123	Screw	2
	1257	95-38		9005215-6200	Expansion plug	1
	1258	95-38		4460817	Control spring spacer	1
	1259	95-38		9007276-0123	Screw	1
	1260	95-38		9003575-0102	Nut	1
	1261	95-38		4800315	Neutral return spring	1
	1262	95-38		4800153	Control handle	1
	1263	95-38		4800084	Neutral return bracket	1
	1264	95-38		9009660-3100	Toothlock washer	1
	1265	95-38		4461305	Spool assembly	1
AU	303	97-24		5000654	O-ring	1
	1209	97-24		9006150-0120	Back up ring	1
	1236	97-24		503545	Neutral start switch	1
	1250	97-24		9004100-0110	O-ring	1
	1251	97-24		4461049	Neutral start switch cover	1
	1252	97-24		4460789	Neutral start switch mounting plate gasket	1
	1253	97-24		4461051	Neutral start switch plate assembly	1
	1254	97-24		5000385	Screw	3
	1255	97-24		4461053	Neutral start switch cover gasket	1
	1256	97-24		9007276-0123	Screw	2
	1257	97-24		9005215-6200	Expansion plug	1
	1258	97-24		4460817	Control spring spacer	1
	1259	97-24		9007276-0123	Screw	1
	1260	97-24		9003575-0102	Nut	1
	1261	97-24		4800315	Neutral return spring	1
	1262	97-24		4800086-0002	Control handle	1
	1263	97-24		4800084	Neutral return bracket	1
	1264	97-24		9009660-3100	Toothlock washer	1
	1265	97-24		4461305	Spool assembly	1

**(AW)**



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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

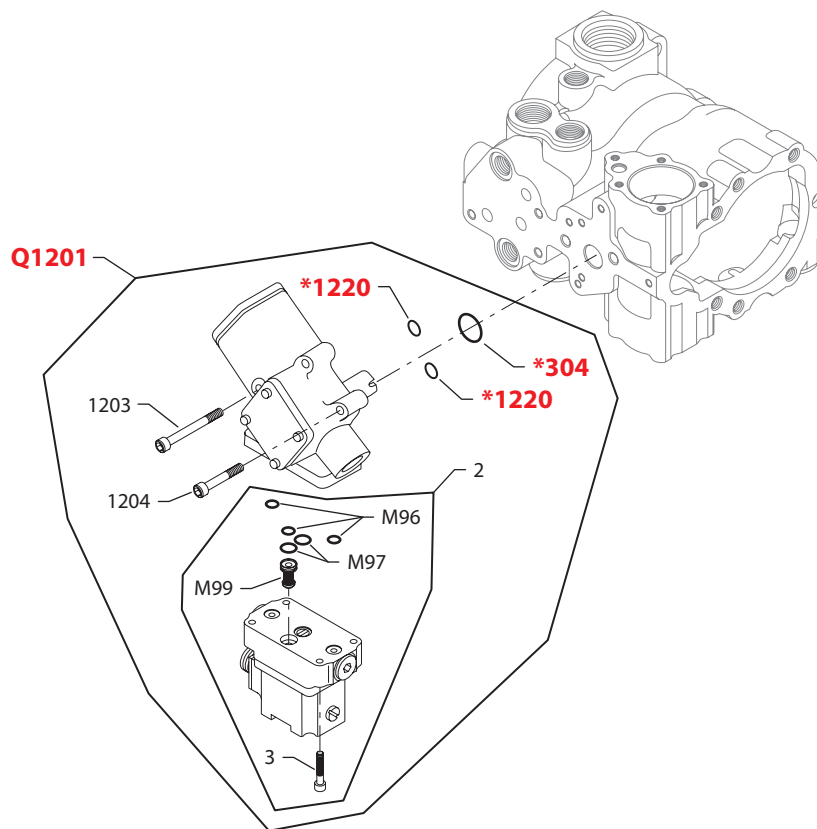
#### Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
AW	303	06-02		5000654	O-ring	1
	1209	06-02		9006150-0120	Back up ring	1
	1210	06-02		9007276-0123	Screw	1
	1213	06-02		9003575-0102	Lock nut	1
	1214	06-02		4800315	Neutral return spring	1
	1215	06-02		4800086-0002	Handle	1
	1216	06-02		4800084	Neutral return bracket	1
	1235	06-02		9009660-3100	Toothlock washer	1
	1265	06-02		4461331	Spool assembly	1
BA	304	98-33		9004101-1190	O-ring (SB-1998-052)	1
	304	85-37	98-32	9004100-0210	O-ring	1
	1203	85-37		9007300-2532	Screw	2
	1204	85-37		9007300-2512	Screw	2
	1220	85-37		9004101-0140	O-ring	2
	Q1201	85-37		11013628	HDC (SB-1998-052 & SB-1997-001)	1
BB	304	98-33		9004101-1190	O-ring (SB-1998-052)	1
	304	90-17	98-32	9004100-0210	O-ring	1
	1203	90-17		9007300-2532	Screw	2
	1204	90-17		9007300-2512	Screw	2
	1220	90-17		9004101-0140	O-ring	2
	Q1201	90-17		11013629	HDC (SB-1998-052 & SB-1997-001)	1
BC	304	98-33		9004101-1190	O-ring (SB-1998-052)	1
	304	90-17	98-32	9004100-0210	O-ring	1
	1203	90-17		9007300-2532	Screw	2
	1204	90-17		9007300-2512	Screw	2
	1220	90-17		9004101-0140	O-ring	2
	Q1201	90-17		11013630	HDC (SB-1998-052 & SB-1997-001)	1
CA	Replaced by "CB" (SB-1989-01)					
CB	2	85-37		MCV116A3102	PCP, single, Weatherpack	1
	3	85-37		K04064	Screw	4
	304	98-31		9004101-1190	O-ring (SB-1998-052)	1
	304	85-37	98-30	9004100-0210	O-ring	1
	1203	85-37		9007300-2532	Screw	2
	1204	85-37		9007300-2512	Screw	2
	1220	85-37		9004101-0140	O-ring	2
	M96	85-37		9004105-0120	O-ring	3
	M97	85-37		9004105-0130	O-ring	2
	M99	85-37		K08572	Filter assembly	1
	Q1201	85-37		11013624	EDC kit (SB-1998-052, SB-1997-001, & SB-1989-001)	1
CC	Replaced by "CD" (SB-1989-01)					



Variable displacement pump

(CD, CE, CG & CH)



E103 544E

\* = included in overhaul seal kit Q210

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

# Parts Manual

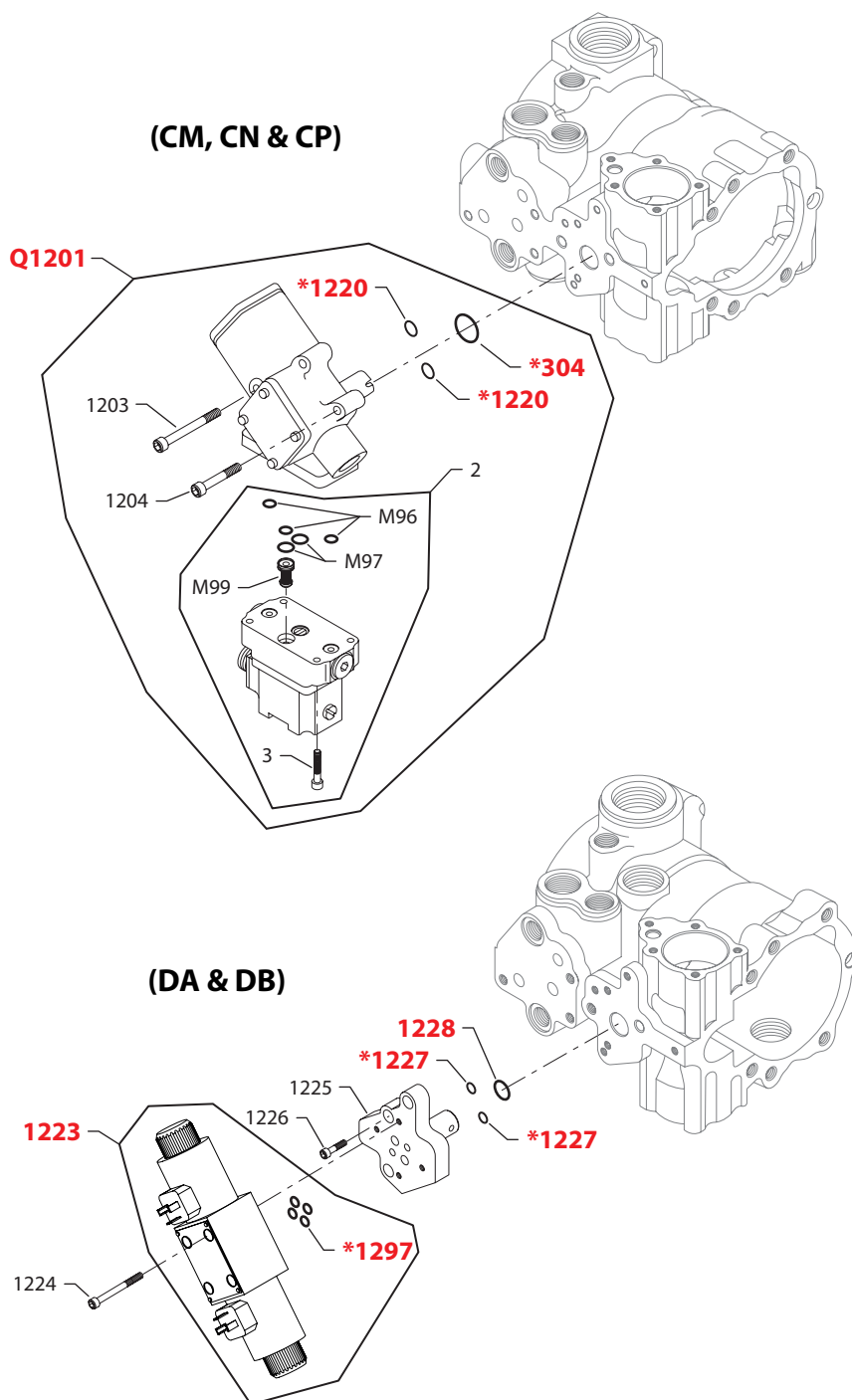
# Series 40 M46 Axial Piston Pump

## Variable displacement pump

### Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CD	2	85-37		MCV116A3101	PCP, single, MS	1
	3	85-37		K04064	Screw	4
	304	98-31		9004101-1190	O-ring (SB-1998-052)	1
	304	85-37	98-30	9004100-0210	O-ring	1
	1203	85-37		9007300-2532	Screw	2
	1204	85-37		9007300-2512	Screw	2
	1220	85-37		9004101-0140	O-ring	2
	M96	85-37		9004105-0120	O-ring	3
	M97	85-37		9004105-0130	O-ring	2
	M99	85-37		K08572	Filter assembly	1
	Q1201	85-37		11013625	EDC kit (SB-1998-052, SB-1997-001, & SB-1989-001)	1
CE	2	85-37		MCV116A3204	PCP, dual, Weatherpack	1
	3	85-37		K04064	Screw	4
	304	98-31		9004101-1190	O-ring (SB-1998-052)	1
	304	85-37	98-30	9004100-0210	O-ring	1
	1203	85-37		9007300-2532	Screw	2
	1204	85-37		9007300-2512	Screw	2
	1220	85-37		9004101-0140	O-ring	2
	M96	85-37		9004105-0120	O-ring	3
	M97	85-37		9004105-0130	O-ring	2
	M99	85-37		K08572	Filter assembly	1
	Q1201	85-37		11164081	EDC kit (SB-1998-052, SB-1997-001, & SB-1989-001)	1
CG	2	85-37		MCV116A3201	PCP, dual, MS	1
	3	85-37		K04064	Screw	4
	304	98-31		9004101-1190	O-ring (SB-1998-052)	1
	304	85-37	98-30	9004100-0210	O-ring	1
	1203	85-37		9007300-2532	Screw	2
	1204	85-37		9007300-2512	Screw	2
	1220	85-37		9004101-0140	O-ring	2
	M96	85-37		9004105-0120	O-ring	3
	M97	85-37		9004105-0130	O-ring	2
	M99	85-37		K08572	Filter assembly	1
	Q1201	85-37		11013626	EDC (SB-1998-052, SB-1997-001, & SB-1989-001)	1
CH	2	94-23		MCV116A3501	PCP, dual, MS	1
	3	94-23		K04064	Screw	4
	304	98-31		9004101-1190	O-ring (SB-1998-052)	1
	304	94-23	98-30	9004100-0210	O-ring	1
	1203	94-23		9007300-2532	Screw	2
	1204	94-23		9007300-2512	Screw	2
	1220	94-23		9004101-0140	O-ring	2
	M96	94-23		9004105-0120	O-ring	3
	M97	94-23		9004105-0130	O-ring	2
	M99	94-23		K08572	Filter assembly	1
	Q1201	94-23		11013627	EDC kit (SB-1998-052, SB-1997-001, & SB-1989-001)	1

Variable displacement pump



E100 215E

\* = included in overhaul seal kit Q210

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

## Parts Manual

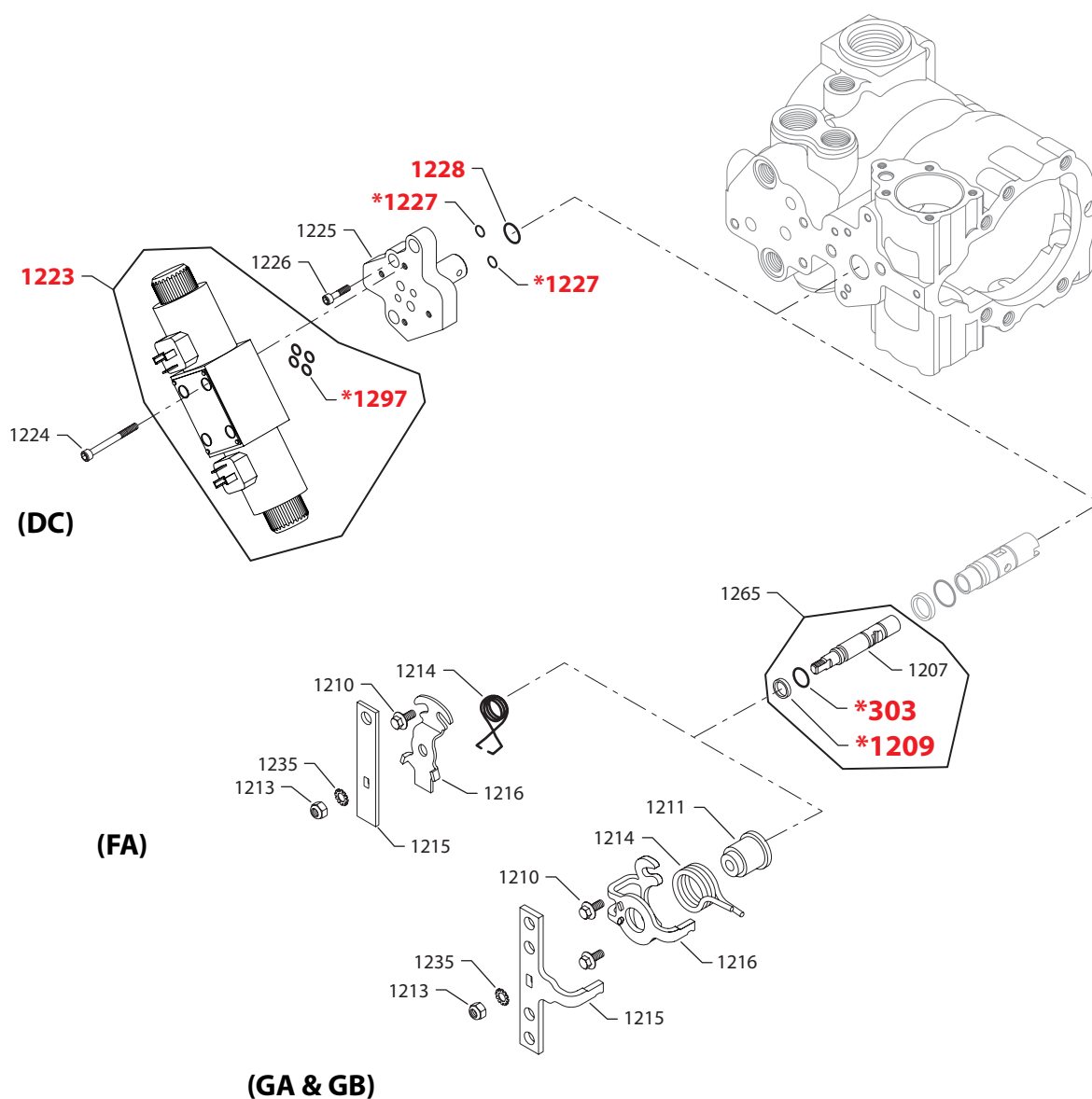
## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Control

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CM	2	99-21		MCV116A3206	PCP, dual, Metri-pack	1
	3	99-21		K04064	Screw	4
	304	99-21		9004101-1190	O-ring	1
	1203	99-21		9007300-2532	Screw	2
	1204	99-21		9007300-2512	Screw	2
	1220	99-21		9004101-0140	O-ring	2
	M96	99-21		9004105-0120	O-ring	3
	M97	99-21		9004105-0130	O-ring	2
	M99	99-21		K08572	Filter assembly	1
	Q1201	99-21		11186868	EDC kit	1
CN	2	99-21		MCV116A3214	PCP, dual, Deutsch	1
	3	99-21		K04064	Screw	4
	304	99-21		9004101-1190	O-ring	1
	1203	99-21		9007300-2532	Screw	2
	1204	99-21		9007300-2512	Screw	2
	1220	99-21		9004101-0140	O-ring	2
	M96	99-21		9004105-0120	O-ring	3
	M97	99-21		9004105-0130	O-ring	2
	M99	99-21		K08572	Filter assembly	1
	Q1201	99-21		11186869	EDC kit	1
CP	2	01-02		MCV116A3203	PCP, dual, Weatherpack	1
	3	01-02		K04064	Screw	4
	304	01-02		9004101-1190	O-ring	1
	1203	01-02		9007300-2532	Screw	2
	1204	01-02		9007300-2512	Screw	2
	1220	01-02		9004101-0140	O-ring	2
	M96	01-02		9004105-0120	O-ring	3
	M97	01-02		9004105-0130	O-ring	2
	M99	01-02		K08572	Filter assembly	1
	Q1201	01-02		11186870	EDC	1
DA	1223	91-07		9700873	Solenoid valve, 12 volt	1
	1224	91-07		9007315-0507	Screw	4
	1225	91-07		11061680	Manifold assembly	1
	1226	91-07		9007300-2512	Screw	3
	1227	91-07		9004101-0140	O-ring	2
	1228	91-07		9004100-0200	O-ring	1
	1297	91-07		9004104-0120	O-ring	4
DB	1223	91-07		9700918	Solenoid valve, 24 volt	1
	1224	91-07		9007315-0507	Screw	4
	1225	91-07		11061680	Manifold assembly	1
	1226	91-07		9007300-2512	Screw	3
	1227	91-07		9004101-0140	O-ring	2
	1228	91-07		9004100-0200	O-ring	1
	1297	91-07		9004104-0120	O-ring	4

Variable displacement pump



E100 216E

\* = included in overhaul seal kit Q210

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



**Variable displacement pump**
**Control**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
DC	1223	14-11		11149166	Solenoid valve, 12 volt, Duetsch conn.	1
	1224	14-11		9007315-0510	Screw	4
	1225	14-11		11061680	Manifold assembly	1
	1226	14-11		9007300-2512	Screw	3
	1227	14-11		9004101-0140	O-ring	2
	1228	14-11		9004100-0200	O-ring	1
	1297	14-11		9004104-0120	O-ring	4
FA	303	02-46		5000654	O-ring	1
	1209	02-46		9006150-0120	Back up ring	1
	1210	02-46		9007276-0123	Screw (SB-1987-020)	2
	1213	02-46		9003575-0102	Nut	1
	1214	02-46		4800315	Neutral return spring	1
	1215	02-46		4461272	Handle	1
	1216	02-46		4800084	Neutral return bracket	1
	1235	02-46		9009660-3100	Toothlock washer	1
	1265	02-46		4461331	Spool assembly	1
GA	303	02-46		5000654	O-ring	1
	1209	02-46		9006150-0120	Back up ring	1
	1210	97-43		9007276-0123	Screw (SB-1987-020)	2
	1211	97-43		4461234	Spring guide	1
	1213	97-43		9003575-0102	Nut	1
	1214	97-43		4461061	Neutral return spring	1
	1215	97-43		4461065	Handle	1
	1216	97-43		4461187	Neutral return bracket	1
	1235	97-43		9009660-3100	Toothlock washer	1
	1265	97-43		4461328	Spool assembly	1
GB	303	02-46		5000654	O-ring	1
	1209	02-46		9006150-0120	Back up ring	1
	1210	97-43		9007276-0123	Screw (SB-1987-020)	2
	1211	97-43		4461234	Spring guide	1
	1213	97-43		9003575-0102	Nut	1
	1214	97-43		4461061	Neutral return spring	1
	1215	97-43		4461065	Handle	1
	1216	97-43		4461187	Neutral return bracket	1
	1235	97-43		9009660-3100	Toothlock washer	1
	1265	97-43		4461329	Spool assembly	1

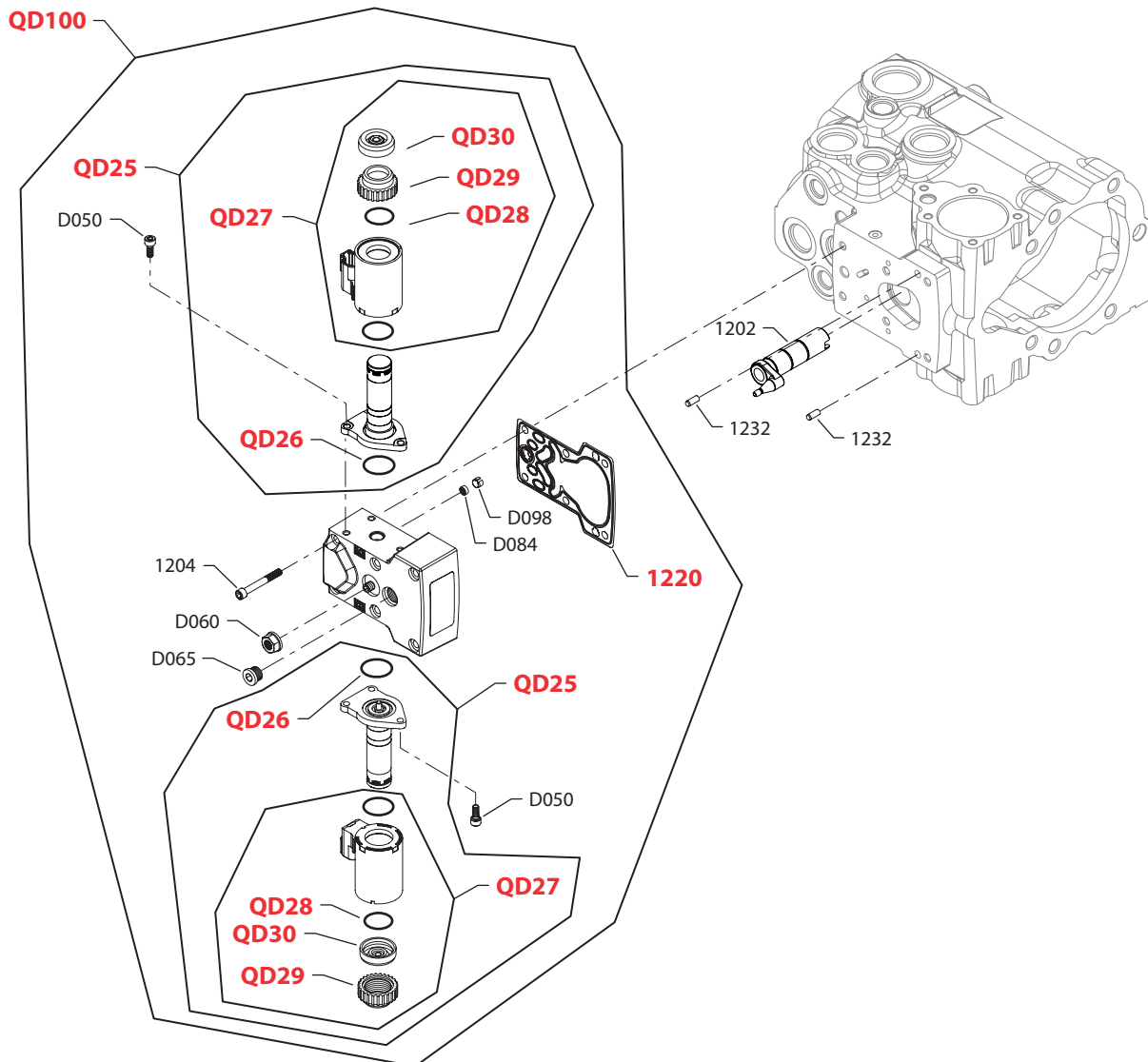
Enlarged **bold** type item numbers are recommended part to stock for servicing.

**Variable displacement pump**
**Control**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
GD	303	02-46		5000654	O-ring	1
	1209	02-46		9006150-0120	Back up ring	2
	1210	98-24		9007276-0123	Screw (SB-1987-020)	1
	1211	98-24		4461234	Spring guide	1
	1213	98-24		9003575-0102	Nut	1
	1214	98-24		4461213	Neutral return spring	1
	1215	98-24		4461286	Handle	1
	1216	98-24		4461150	Neutral return bracket	1
	1235	98-24		9009660-3100	Toothlock washer	1
	1265	98-24		4461329	Spool assembly	1
GG	303	02-46		5000654	O-ring	1
	1209	02-46		9006150-0120	Back up ring	1
	1210	97-43		9007276-0123	Screw (SB-1987-020)	2
	1211	97-43		4461234	Spring guide	1
	1213	97-43		9003575-0102	Nut	1
	1214	97-43		4461060	Neutral return spring	1
	1215	97-43		4461065	Handle	1
	1216	97-43		4461187	Neutral return bracket	1
	1235	97-43		9009660-3100	Toothlock washer	1
	1265	97-43		4461329	Spool assembly	1
GJ	303	02-46		5000654	O-ring	1
	1209	02-46		9006150-0120	Back up ring	1
	1210	98-24		9007276-0123	Screw (SB-1987-020)	2
	1211	98-24		4461234	Spring guide	1
	1213	98-24		9003575-0102	Nut	1
	1214	98-24		4461060	Neutral return spring	1
	1215	98-24		4461065	Handle	1
	1216	98-24		4461187	Neutral return bracket	1
	1235	98-24		9009660-3100	Toothlock washer	1
	1265	98-24		4461328	Spool assembly	1

Variable displacement pump

(HA & HB)



E103 531E

\* = included in overhaul seal kit Q210

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

**Variable displacement pump**
**Control**

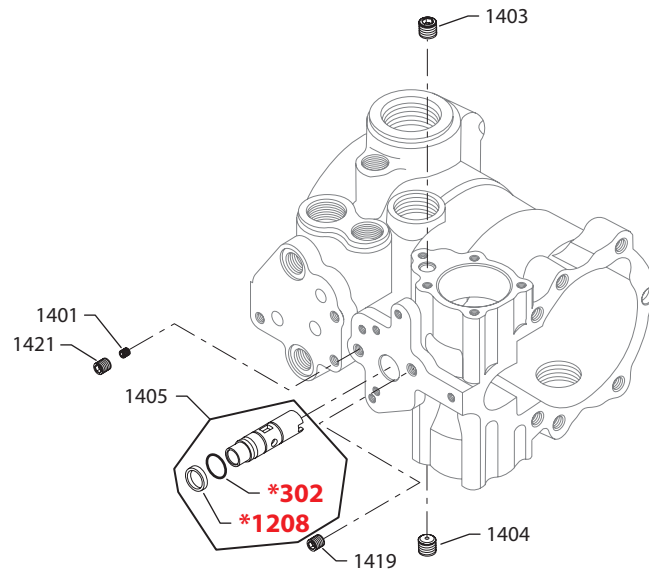
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
HA	1202	14-13		11144508	Feedback sleeve	1
	1204	14-13		505038	Screw	6
	1220	14-13		11173377	Gasket	1
	1232	14-13		310979	Pin	2
	D050	14-13		716860	Screw	6
	D060	14-13		612291	Seal nut	1
	D065	14-13		140642	Plug assembly	1
	D084	14-13		140967	Screen	1
	D098	14-13		11012505	Locking ring	1
	QD25	14-13		140750	Solenoid valve, 12v, MOR	2
	QD26	14-13		11001952	O-ring	2
	QD27	14-13		11004698	Coil kit, 12v	2
	QD28	14-13		063172	O-ring	2
	QD29	14-13		11004749	Coil nut	2
	QD30	14-13		11027883	Cap	2
	QD100	14-13		11019732	EDC kit, 24v	1
HB	1202	14-13		11144508	Feedback sleeve	1
	1204	14-13		505038	Screw	6
	1220	14-13		11173377	Gasket	1
	1232	14-13		310979	Pin	2
	D050	14-13		716860	Screw	6
	D060	14-13		612291	Seal nut	1
	D065	14-13		140642	Plug assembly	1
	D084	14-13		140967	Screen	1
	D098	14-13		11012505	Locking ring	1
	QD25	14-13		140751	Solenoid valve, 24v, MOR	2
	QD26	14-13		11001952	O-ring	2
	QD27	14-13		11004700	Coil kit, 24v	2
	QD28	14-13		063172	O-ring	2
	QD29	14-13		11004750	Coil nut	2
	QD30	14-13		11027883	Cap	2
	QD100	14-13		11019733	EDC kit, 24v	1

**Control handle position**

A	Not applicable (no control handle)
B	Both up and down
D	Down
U	Up



Variable displacement pump



E103 532E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

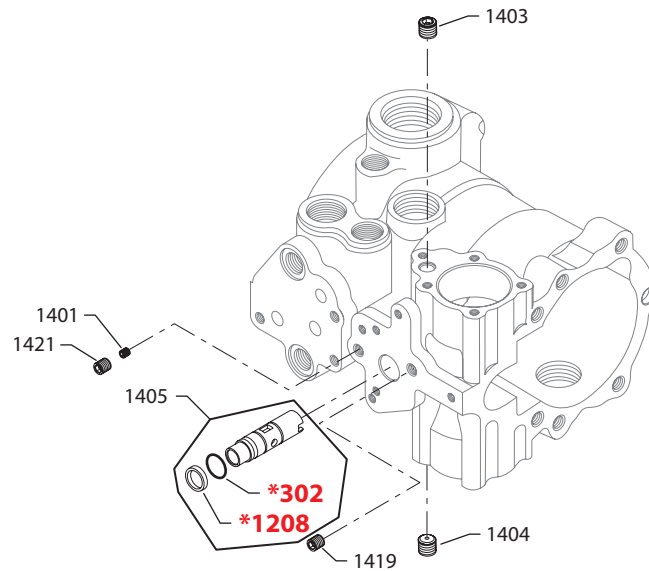
#### Control orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
AA	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0006	Orifice plug, .031"	1
	1405	86-14		4510160	Sleeve assembly, .031" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
AB	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0006	Orifice plug, .031"	1
	1405	86-14		4510158	Sleeve assembly, .036" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
AD	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0006	Orifice plug, .031"	1
	1405	86-14		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
AF	302	88-33		5000653	O-ring	1
	1208	88-33		9006150-0160	Back up ring	1
	1401	88-33		4800155-0006	Orifice plug, .031"	1
	1405	88-33		4510157	Sleeve assembly, .250" (SB-1997-001)	1
	1419	88-33		9005001-1200	Pipe plug	1
	1421	88-33		9005001-1200	Pipe plug	1
BA	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0001	Orifice plug, .036"	1
	1405	86-14		4510160	Sleeve assembly, .031" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
BB	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0001	Orifice plug, .036"	1
	1405	86-14		4510158	Sleeve assembly, .036" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1



Variable displacement pump

(BD - CD)



E103 532E

\* = included in overhaul seal kit Q210

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



## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

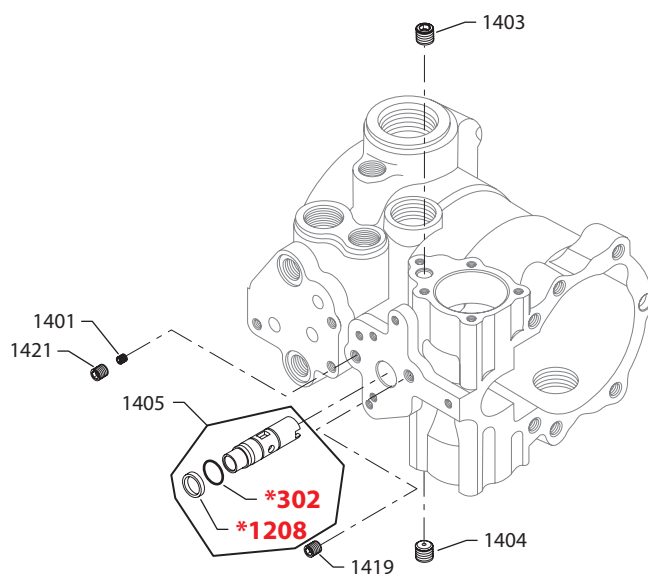
#### Control orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
BD	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0001	Orifice plug, .036"	1
	1405	86-14		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
BF	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0001	Orifice plug, .036"	1
	1405	86-14		4510157	Sleeve assembly, .250" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
BP	302	98-16		5000653	O-ring	1
	1208	98-16		9006150-0160	Back up ring	1
	1401	98-16		4800155-0001	Orifice plug, .036"	1
	1405	98-16		4461358	Sleeve assembly, .062"	1
	1419	98-16		9005001-1200	Pipe plug	1
	1421	98-16		9005001-1200	Pipe plug	1
CA	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0004	Orifice plug, .041"	1
	1405	86-14		4510160	Sleeve assembly, .031" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
CB	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0004	Orifice plug, .041"	1
	1405	86-14		4510158	Sleeve assembly, .036" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
CD	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0004	Orifice plug, .041"	1
	1405	86-14		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1

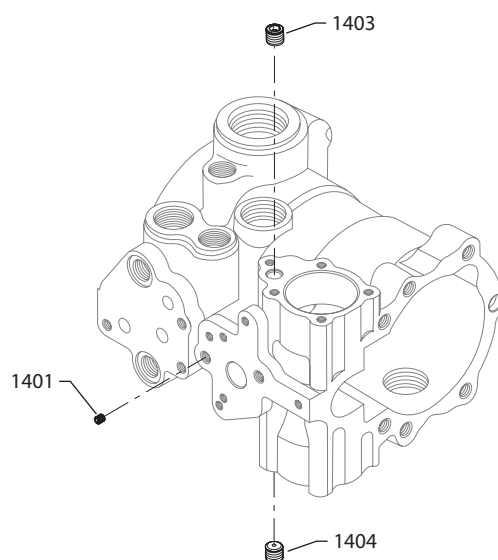


Variable displacement pump

(CF - DF)



(DS & DT)



E103 533E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

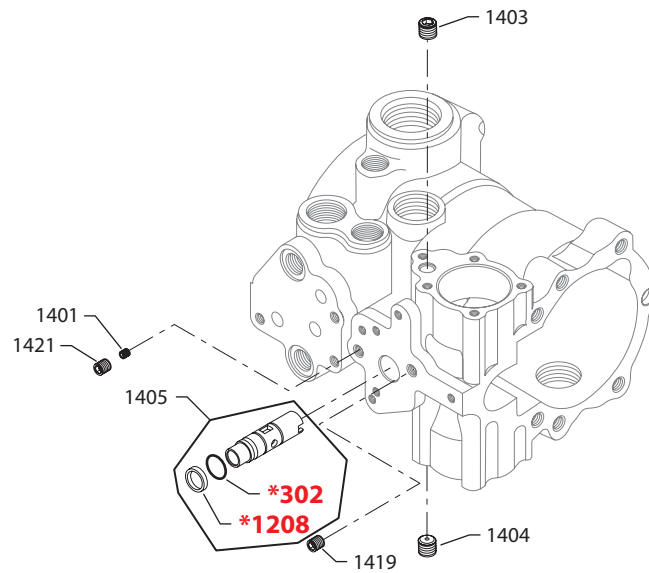
### Variable displacement pump

#### Control orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
CF	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0004	Orifice plug, .041"	1
	1405	86-14		4510157	Sleeve assembly, .250" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
DA	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0002	Orifice plug, .046"	1
	1405	86-14		4510160	Sleeve assembly, .031" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
DB	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0002	Orifice plug, .046"	1
	1405	86-14		4510158	Sleeve assembly, .036" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
DD	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0002	Orifice plug, .046"	1
	1405	86-14		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
DF	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0002	Orifice plug, .046"	1
	1405	86-14		4510157	Sleeve assembly, .250" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
DS	1401	02-01		4800155-0002	Orifice plug, .046"	1
	1403	02-01		4460333-0002	Orifice plug, .046"	1
	1404	02-01		4460333-0002	Orifice plug, .046"	1
DT	1401	04-36		4800155-0005	Orifice plug, .062"	1
	1403	04-36		4460333-0002	Orifice plug, .046"	1
	1404	04-36		4460333-0002	Orifice plug, .046"	1



Variable displacement pump



E103 532E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

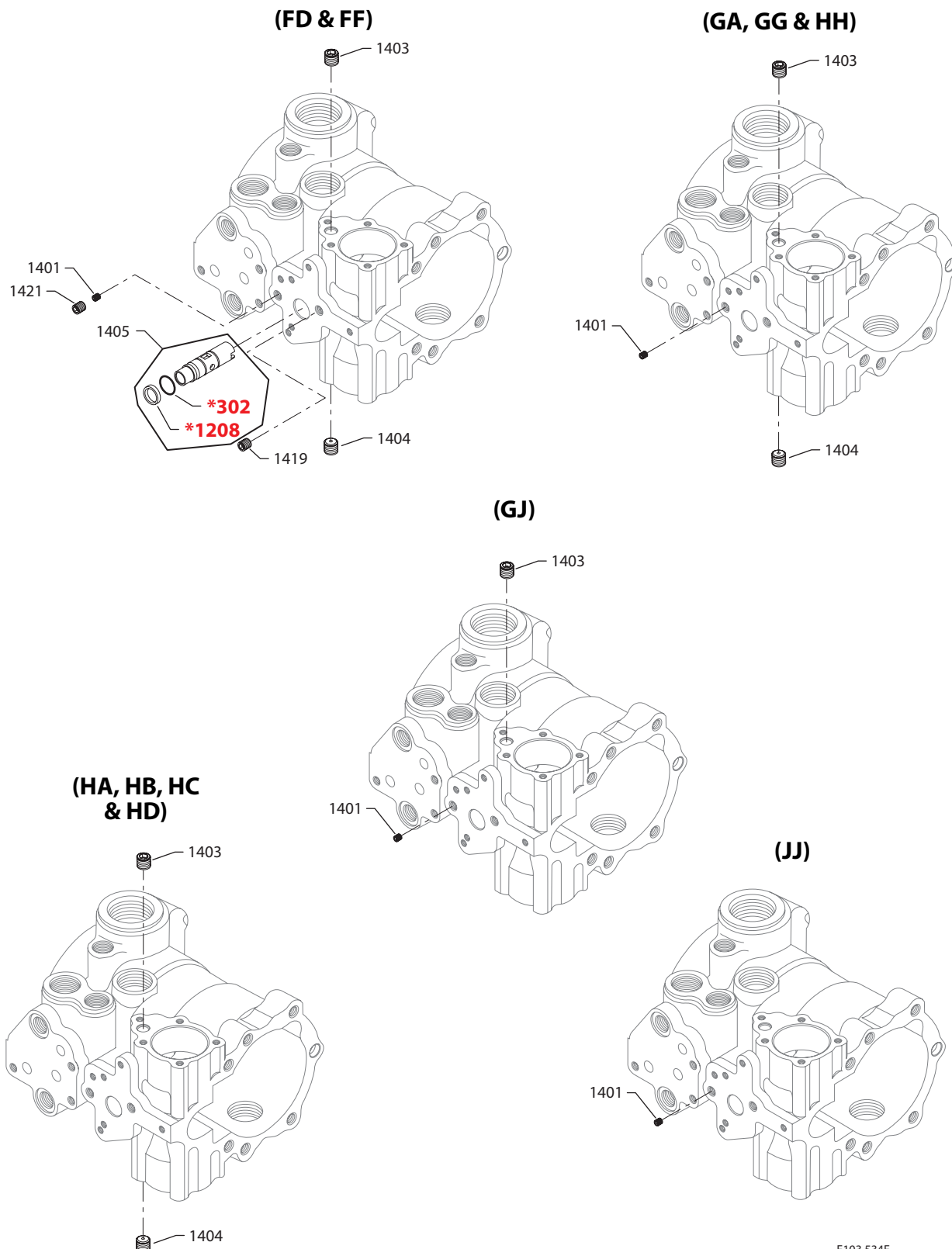
### Variable displacement pump

#### Control orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
EA	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0003	Orifice plug, .054"	1
	1405	86-14		4510160	Sleeve assembly, .031" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
EB	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0003	Orifice plug, .054"	1
	1405	86-14		4510158	Sleeve assembly, .036" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
ED	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0003	Orifice plug, .054"	1
	1405	86-14		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
EF	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0003	Orifice plug, .054"	1
	1405	86-14		4510157	Sleeve assembly, .250" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
FA	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0007	Orifice plug, .146"	1
	1405	86-14		4510160	Sleeve assembly, .031" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
FB	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0007	Orifice plug, .146"	1
	1405	86-14		4510158	Sleeve assembly, .036" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1



Variable displacement pump



\* = included in overhaul seal kit Q210

E103 534E

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

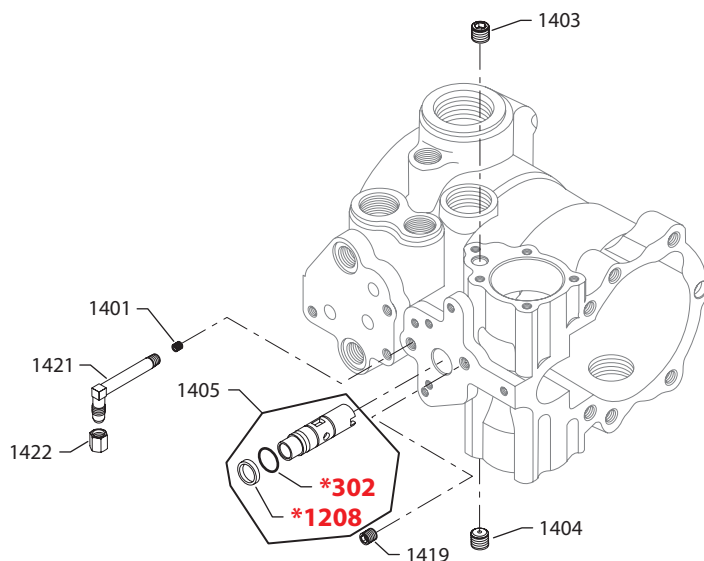
#### Control orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
FD	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0007	Orifice plug, .146"	1
	1405	86-14		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
FF	302	86-14		5000653	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1401	86-14		4800155-0007	Orifice plug, .146"	1
	1405	86-14		4510157	Sleeve assembly, .250" (SB-1997-001)	1
	Also replace control spool assembly with p/n 4461327 if manufacture date is 86-14 thru 87-31.					
	1419	86-14		9005001-1200	Pipe plug	1
	1421	86-14		9005001-1200	Pipe plug	1
GA	1401	10-10		4800155-0006	Orifice plug, .031"	1
	1403	10-10		4460333-0003	Orifice plug, .054"	1
	1404	10-10		4460333-0003	Orifice plug, .054"	1
GG	1401	84-31		4800155-0007	Orifice plug, .156"	1
	1403	84-31		4460333-0003	Orifice plug, .054"	1
	1404	84-31		4460333-0003	Orifice plug, .054"	1
GJ	1401	14-25		4800155-0007	Orifice plug, .156"	1
	1403	14-25		4460333-0003	Orifice plug, .054"	1
HA	1403	14-25		4460333-0002	Orifice plug, .046"	1
	1404	14-25		4460333-0002	Orifice plug, .046"	1
HB	1403	14-25		4460333-0003	Orifice plug, .054"	1
	1404	14-25		4460333-0003	Orifice plug, .054"	1
HC	1403	14-25		4460333-0001	Orifice plug, .036"	1
	1404	14-25		4460333-0001	Orifice plug, .036"	1
HD	1403	14-25		4460691	Orifice plug, .024"	1
	1404	14-25		4460691	Orifice plug, .024"	1
HE				None		
HH	1401	84-31		4800155-0007	Orifice plug, .156"	1
	1403	84-31		4460333-0001	Orifice plug, .036"	1
	1404	84-31		4460333-0001	Orifice plug, .036"	1
JJ	1401	84-31		4800155-0007	Orifice plug, .156"	1

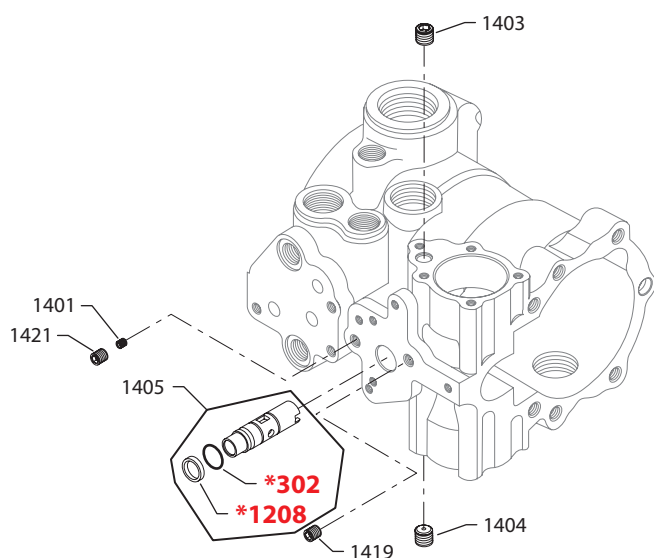


Variable displacement pump

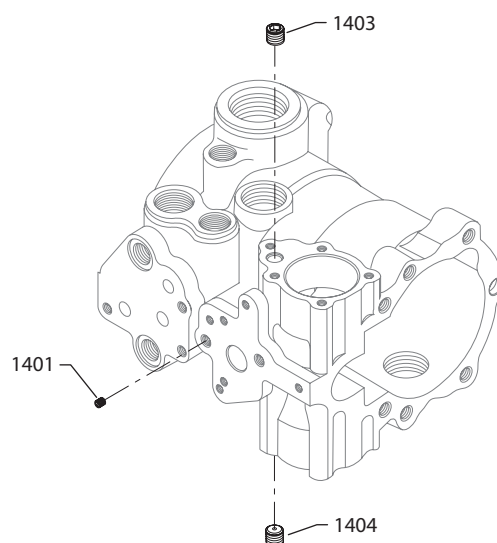
(KF & MF)



(LA, PF & SA)



(RR, SS & TT)



E100 218E

\* = included in overhaul seal kit Q210

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



## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

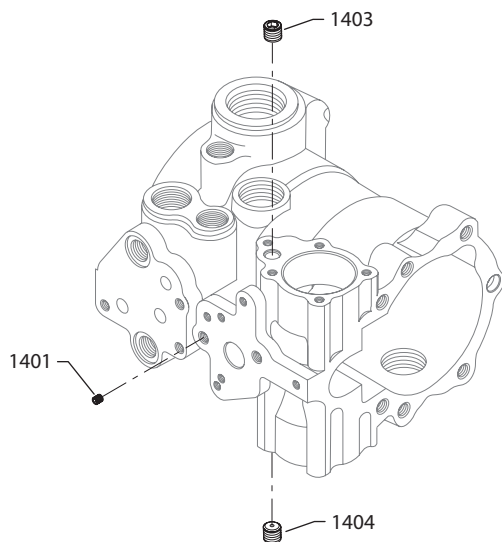
#### Control orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
KF	302	03-18		5000653	O-ring	1
	1208	03-18		9006150-0160	Back up ring	1
	1401	03-18		9005001-0600	Pipe plug	1
	1405	03-18		4510157	Sleeve assembly, .250"	1
	1419	03-18		9005001-1200	Pipe plug	1
	1421	03-18		4461159	Elbow	1
	1422	03-18		9001800-4400	Cap	1
LA	302	89-01		5000653	O-ring	1
	1208	89-01		9006150-0160	Back up ring	1
	1401	89-01		4800155-0011	Orifice plug, .028"	1
	1405	89-01		4461342	Sleeve assembly, .031" (SB-1997-001)	1
	1419	89-01		9005001-1200	Pipe plug	1
	1421	89-01		9005001-1200	Pipe plug	1
MF	302	03-18		5000653	O-ring	1
	1208	03-18		9006150-0160	Back up ring	1
	1401	03-18		9005001-0600	Pipe plug	1
	1405	03-18		4461340	Sleeve assembly, .250"	1
	1419	03-18		9005001-1200	Pipe plug	1
	1421	03-18		4461320	Elbow	1
	1422	03-18		9001800-4400	Cap	1
PF	302	87-32		5000653	O-ring	1
	1208	87-32		9006150-0160	Back up ring	1
	1401	87-32		4800155-0005	Orifice plug, .062"	1
	1405	87-32		4461340	Sleeve assembly, .250" (SB-1997-001)	1
	1419	87-32		9005001-1200	Pipe plug	1
	1421	87-32		9005001-1200	Pipe plug	1
RR	1401	84-31		4800155-0007	Orifice plug, .156"	1
	1403	84-31		4460333-0005	Orifice plug, .031"	1
	1404	84-31		4460333-0005	Orifice plug, .031"	1
SA	302	88-07		5000653	O-ring	1
	1208	88-07		9006150-0160	Back up ring	1
	1401	88-01		9005001-0600	Pipe plug	1
	1405	88-07		4461342	Sleeve assembly, .031" (SB-1997-001)	1
	1419	88-07		9005001-1200	Pipe plug	1
	1421	88-07		9005001-1200	Pipe plug	1
SS	1401	84-31		4800155-0007	Orifice plug, .156"	1
	1403	84-31		4460333-0002	Orifice plug, .046"	1
	1404	84-31		4460333-0002	Orifice plug, .046"	1
TT	1401	84-31		4800155-0007	Orifice plug, .156"	1
	1403	84-31		4460333-0007	Orifice plug, .028"	1
	1404	84-31		4460333-0007	Orifice plug, .028"	1

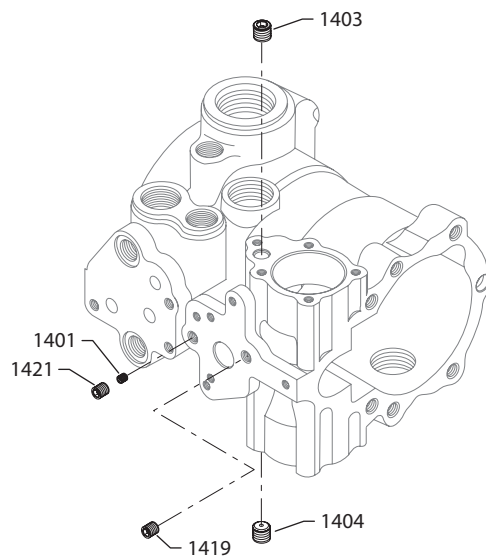


Variable displacement pump

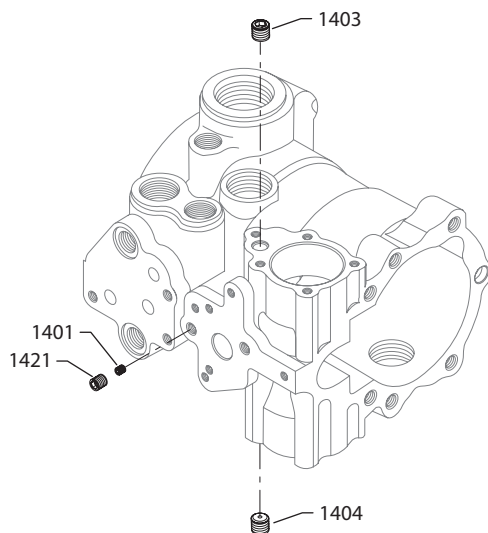
(UU, VV & YC)



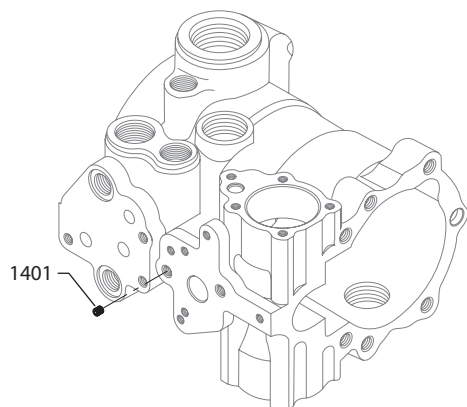
(WA)



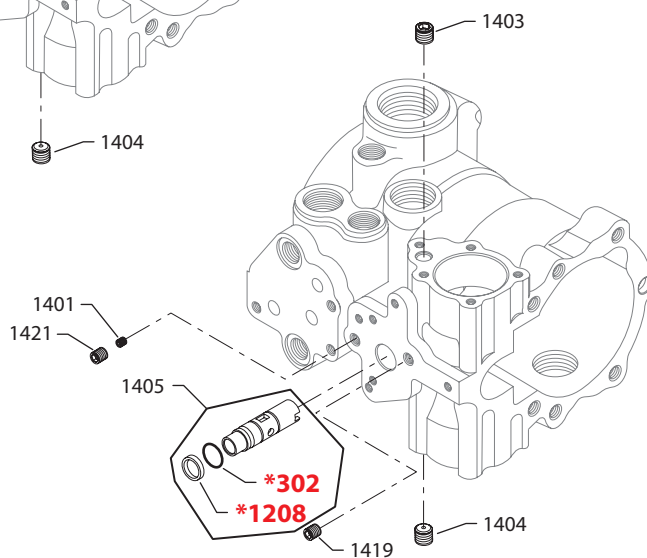
(WB)



(YA)



(YB, YD & YE)



E103 535E

\* = included in overhaul seal kit Q210

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

# Parts Manual

## Series 40 M46 Axial Piston Pump

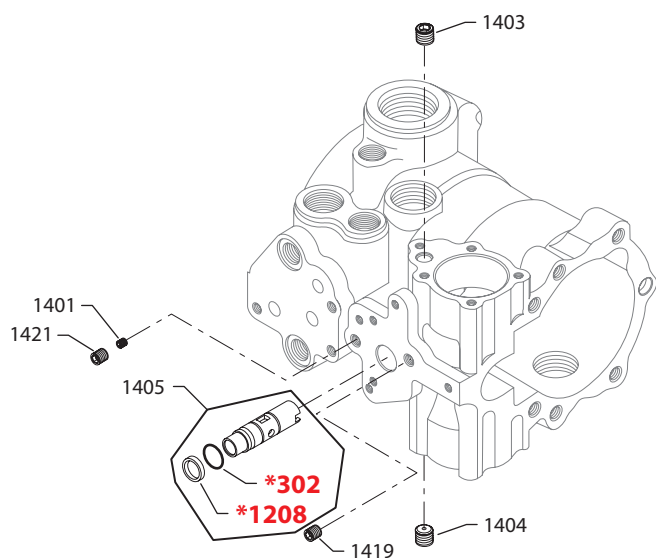
### Variable displacement pump

#### Control orifice

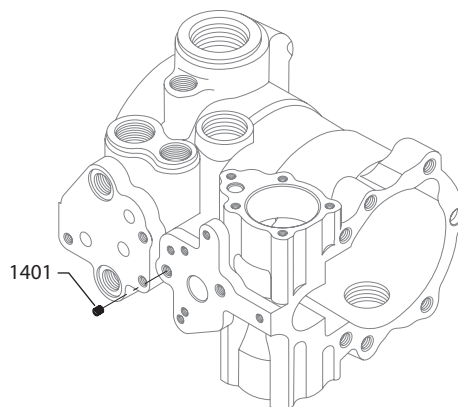
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
UU	1401	92-50		4800155-0007	Orifice plug, .156"	1
	1403	92-50		4460691	Orifice plug, .024"	1
	1404	92-50		4460691	Orifice plug, .024"	1
VV	1401	98-45		4800155-0007	Orifice plug, .156"	1
	1403	98-45		4461047	Orifice plug, .034"	1
	1404	98-45		4461047	Orifice plug, .034"	1
WA	1401	03-29		4800155-0007	Orifice plug, .156"	1
	1403	03-29		4460333-0005	Orifice plug, .031"	1
	1404	03-29		4460333-0005	Orifice plug, .031"	1
	1419	03-29		11062005	Orifice plug, .635mm	1
	1421	03-29		11062005	Orifice plug, .635mm	1
WB	1401	03-29		4800155-0007	Orifice plug, .156"	1
	1403	03-29		4460333-0001	Orifice plug, .036"	1
	1404	03-29		4460333-0001	Orifice plug, .036"	1
	1421	03-29		11062005	Orifice plug, .635mm	1
YA	1401	01-12		4800155-0002	Orifice plug, .046"	1
YB	302	02-42		5000653	O-ring	1
	1208	02-42		9006150-0160	Back up ring	1
	1401	02-42		4800155-0006	Orifice plug, .031"	1
	1403	02-42		4460333-0002	Orifice plug, .046"	1
	1404	02-42		4460333-0002	Orifice plug, .046"	1
	1405	02-42		4461358	Sleeve assembly, .062"	1
	1419	02-42		9005001-1200	Pipe plug	1
	1421	02-42		9005001-1200	Pipe plug	1
YC	1401	03-26		4800155-0002	Orifice plug, .046"	1
	1403	03-26		4460333-0003	Orifice plug, .054"	1
	1404	03-26		4460333-0003	Orifice plug, .054"	1
YD	302	03-39		5000653	O-ring	1
	1208	03-39		9006150-0160	Back up ring	1
	1401	03-39		4800155-0007	Orifice plug, .156"	1
	1403	03-39		4460333-0005	Orifice plug, .031"	1
	1404	03-39		4460333-0005	Orifice plug, .031"	1
	1405	03-39		4510160	Sleeve assembly, .031"	1
	1419	03-39		9005001-1200	Pipe plug	1
	1421	03-39		9005001-1200	Pipe plug	1
YE	302	03-49		5000653	O-ring	1
	1208	03-49		9006150-0160	Back up ring	1
	1401	03-49		4800155-0002	Orifice plug, .046"	1
	1403	03-49		4460333-0007	Orifice plug, .028"	1
	1404	03-49		4460333-0007	Orifice plug, .028"	1
	1405	03-49		4510159	Sleeve assembly, .046"	1
	1419	03-49		9005001-1200	Pipe plug	1
	1421	03-49		9005001-1200	Pipe plug	1

Variable displacement pump

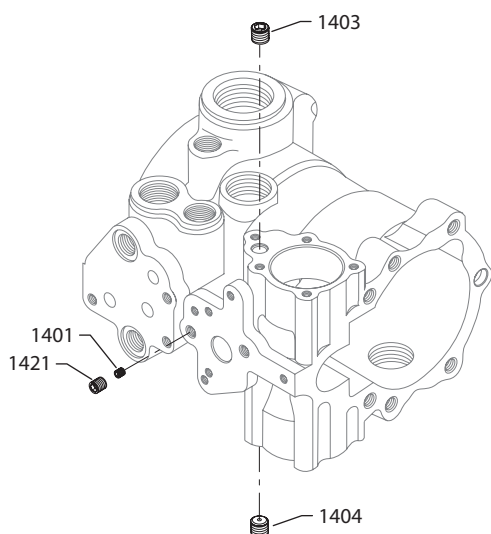
(YF, YG & YH)



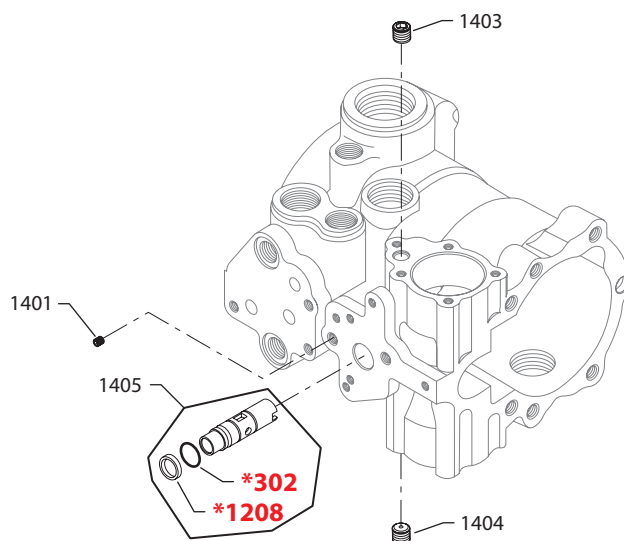
(ZA)



(ZB, ZD & ZF)



(ZE)



E103 536E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

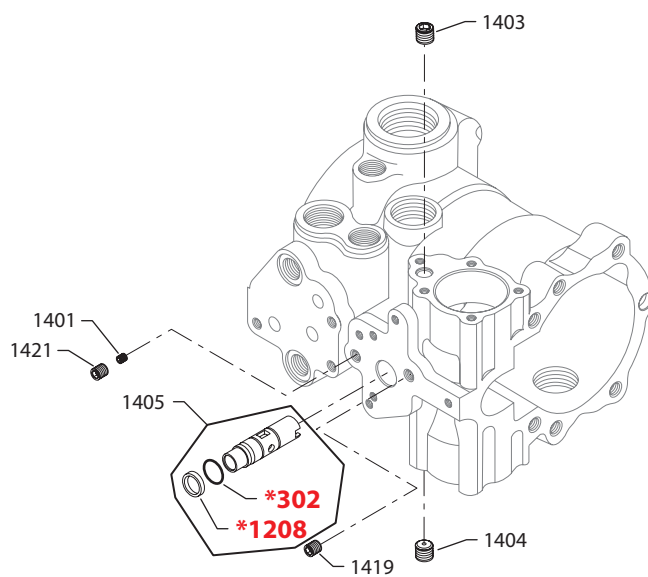
### Variable displacement pump

#### Control orifice

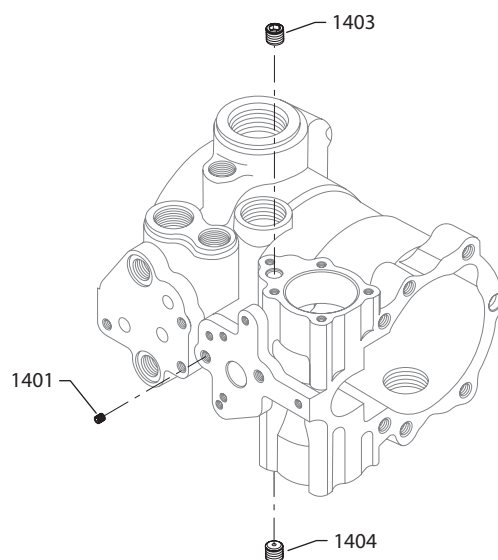
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
YF	302	04-36		5000653	O-ring	1
	1208	04-36		9006150-0160	Back up ring	1
	1401	04-36		4800155-0005	Orifice plug, .062"	1
	1403	04-36		4460333-0007	Orifice plug, .028"	1
	1404	04-36		4460333-0007	Orifice plug, .028"	1
	1405	04-36		4510159	Sleeve assembly, .046"	1
	1419	04-36		9005001-1200	Pipe plug	1
	1421	04-36		9005001-1200	Pipe plug	1
YG	302	97-24		5000653	O-ring	1
	1208	97-24		9006150-0160	Back up ring	1
	1401	97-24		4800155-0011	Orifice plug, .028"	1
	1403	97-24		4460333-0003	Orifice plug, .054"	1
	1404	97-24		4460333-0003	Orifice plug, .054"	1
	1405	97-24		4510159	Sleeve assembly, .046"	1
	1419	97-24		9005001-1200	Pipe plug	1
	1421	97-24		9005001-1200	Pipe plug	1
YH	302	98-04		5000653	O-ring	1
	1208	98-04		9006150-0160	Back up ring	1
	1401	98-04		4800155-0006	Orifice plug, .031"	1
	1403	98-04		4460333-0007	Orifice plug, .028"	1
	1404	98-04		4460333-0007	Orifice plug, .028"	1
	1405	98-04		4461342	Sleeve assembly, .031"	1
	1419	98-04		9005001-1200	Pipe plug	1
	1421	98-04		9005001-1200	Pipe plug	1
ZA	1401	02-42		4800155-0001	Orifice plug, .036"	1
ZB	1401	94-43		4800155-0002	Orifice plug, .046"	1
	1403	94-43		4460333-0001	Orifice plug, .036"	1
	1404	94-43		4460333-0001	Orifice plug, .036"	1
ZD	1401	94-09		4800155-0012	Orifice plug, .020"	1
	1403	94-09		4460333-0005	Orifice plug, .031"	1
	1404	94-09		4460333-0005	Orifice plug, .031"	1
ZE	302	97-10		5000653	O-ring	1
	1208	97-10		9006150-0160	Back up ring	1
	1401	97-10		4800155-0003	Orifice plug, .054"	1
	1403	97-10		4460333-0002	Orifice plug, .046"	1
	1404	97-10		4460333-0002	Orifice plug, .046"	1
	1405	97-10		4461341	Sleeve assembly, .046"	1
ZF	1401	94-09		4800155-0006	Orifice plug, .031"	1
	1403	94-09		4460333-0005	Orifice plug, .031"	1
	1404	94-09		4460333-0005	Orifice plug, .031"	1

Variable displacement pump

(ZJ, ZK, ZL & ZM)



(ZG & ZH)



E103 533E

\* = included in overhaul seal kit Q210

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

# Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

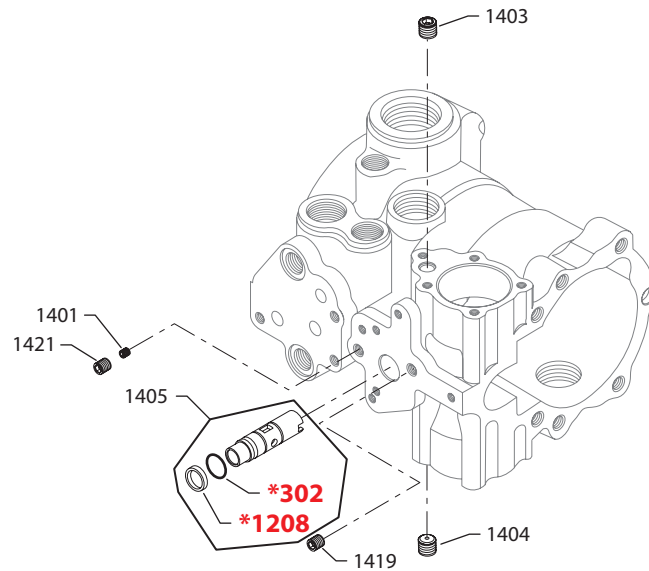
#### Control orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
ZG	1401	92-31		4800155-0002	Orifice plug, .046"	1
	1403	92-31		4460333-0007	Orifice plug, .028"	1
	1404	92-31		4460333-0007	Orifice plug, .028"	1
ZH	1401	91-22		4800155-0012	Orifice plug, .020"	1
	1403	91-22		4460333-0002	Orifice plug, .046"	1
	1404	91-22		4460333-0002	Orifice plug, .046"	1
ZJ	302	90-42		5000653	O-ring	1
	1208	90-42		9006150-0160	Back up ring	1
	1401	90-42		4800155-0007	Orifice plug, .156"	1
	1403	90-42		4460333-0005	Orifice plug, .031"	1
	1404	90-42		4460333-0005	Orifice plug, .031"	1
	1405	90-42		4510157	Sleeve assembly, .250" (SB-1997-001)	1
	1419	90-42		9005001-1200	Pipe plug	1
	1421	90-42		9005001-1200	Pipe plug	1
ZK	302	90-35		5000653	O-ring	1
	1208	90-35		9006150-0160	Back up ring	1
	1401	90-35		4800155-0003	Orifice plug, .054"	1
	1403	90-35		4460333-0001	Orifice plug, .036"	1
	1404	90-35		4460333-0001	Orifice plug, .036"	1
	1405	90-35		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	1419	90-35		9005001-1200	Pipe plug	1
	1421	90-35		9005001-1200	Pipe plug	1
ZL	302	90-31		5000653	O-ring	1
	1208	90-31		9006150-0160	Back up ring	1
	1401	90-31		4800155-0004	Orifice plug, .041"	1
	1403	90-31		4460333-0005	Orifice plug, .031"	1
	1404	90-31		4460333-0005	Orifice plug, .031"	1
	1405	90-31		4510160	Sleeve assembly, .031" (SB-1997-001)	1
	1419	90-31		9005001-1200	Pipe plug	1
	1421	90-31		9005001-1200	Pipe plug	1
ZM	302	90-26		5000653	O-ring	1
	1208	90-26		9006150-0160	Back up ring	1
	1401	90-26		4800155-0001	Orifice plug, .036"	1
	1403	90-26		4460333-0005	Orifice plug, .031"	1
	1404	90-26		4460333-0005	Orifice plug, .031"	1
	1405	90-26		4510160	Sleeve assembly, .031" (SB-1997-001)	1
	1419	90-26		9005001-1200	Pipe plug	1
	1421	90-26		9005001-1200	Pipe plug	1



Variable displacement pump

(ZP, ZR, ZS, ZT & ZU)



E103 532E

\* = included in overhaul seal kit Q210

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

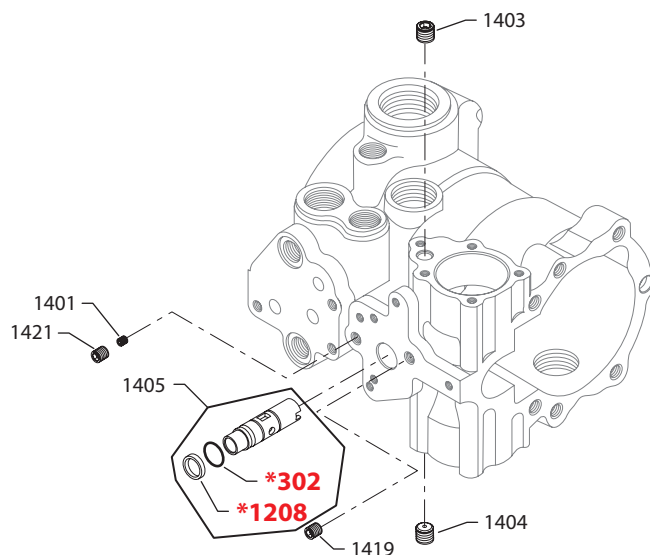


**Variable displacement pump**
**Control orifice**

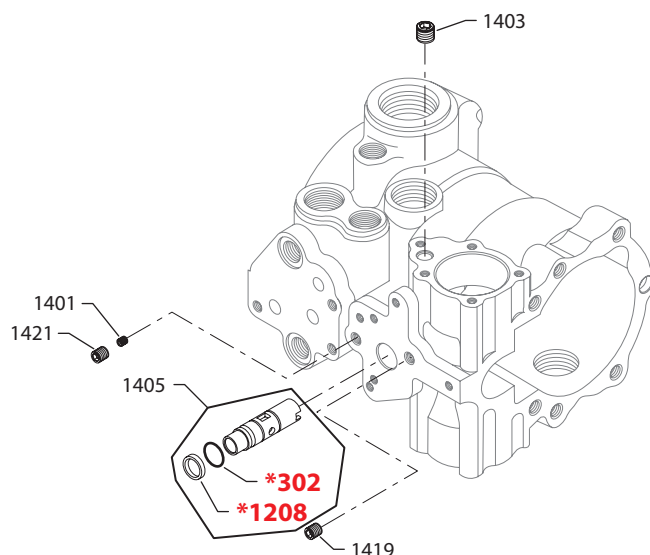
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
ZP	302	89-13		5000653	O-ring	1
	1208	89-13		9006150-0160	Back up ring	1
	1401	89-13		4800155-0001	Orifice plug, .036"	1
	1403	89-13		4460333-0006	Orifice plug, none	1
	1404	89-13		4460333-0006	Orifice plug, none	1
	1405	89-13		4510157	Sleeve assembly, .250" (SB-1997-001)	1
	1419	89-13		9005001-1200	Pipe plug	1
	1421	89-13		9005001-1200	Pipe plug	1
ZR	302	89-02		5000653	O-ring	1
	1208	89-02		9006150-0160	Back up ring	1
	1401	89-02		4800155-0006	Orifice plug, .031"	1
	1403	89-02		4460333-0005	Orifice plug, .031"	1
	1404	89-02		4460333-0005	Orifice plug, .031"	1
	1405	89-02		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	1419	89-02		9005001-1200	Pipe plug	1
	1421	89-02		9005001-1200	Pipe plug	1
ZS	302	88-09		5000653	O-ring	1
	1208	88-09		9006150-0160	Back up ring	1
	1401	88-09		4800155-0007	Orifice plug, .146"	1
	1403	88-09		4460333-0002	Orifice plug, .046"	1
	1404	88-09		4460333-0002	Orifice plug, .046"	1
	1405	88-09		4510157	Sleeve assembly, .250" (SB-1997-001)	1
	1419	88-09		9005001-1200	Pipe plug	1
	1421	88-09		9005001-1200	Pipe plug	1
ZT	302	88-02		5000653	O-ring	1
	1208	88-02		9006150-0160	Back up ring	1
	1401	88-02		4800155-0003	Orifice plug, .054"	1
	1403	88-02		4460333-0007	Orifice plug, .028"	1
	1404	88-02		4460333-0007	Orifice plug, .028"	1
	1405	88-02		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	1419	88-02		9005001-1200	Pipe plug	1
	1421	88-02		9005001-1200	Pipe plug	1
ZU	302	88-02		5000653	O-ring	1
	1208	88-02		9006150-0160	Back up ring	1
	1401	88-02		4800155-0007	Orifice plug, .146"	1
	1403	88-02		4460333-0007	Orifice plug, .028"	1
	1404	88-02		4460333-0007	Orifice plug, .028"	1
	1405	88-02		4510159	Sleeve assembly, .046" (SB-1997-001)	1
	1419	88-02		9005001-1200	Pipe plug	1
	1421	88-02		9005001-1200	Pipe plug	1

Variable displacement pump

(ZV, ZW, ZX & ZY)



(ZZ)



E103 537E

\* = included in overhaul seal kit Q210

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

# Parts Manual

## Series 40 M46 Axial Piston Pump

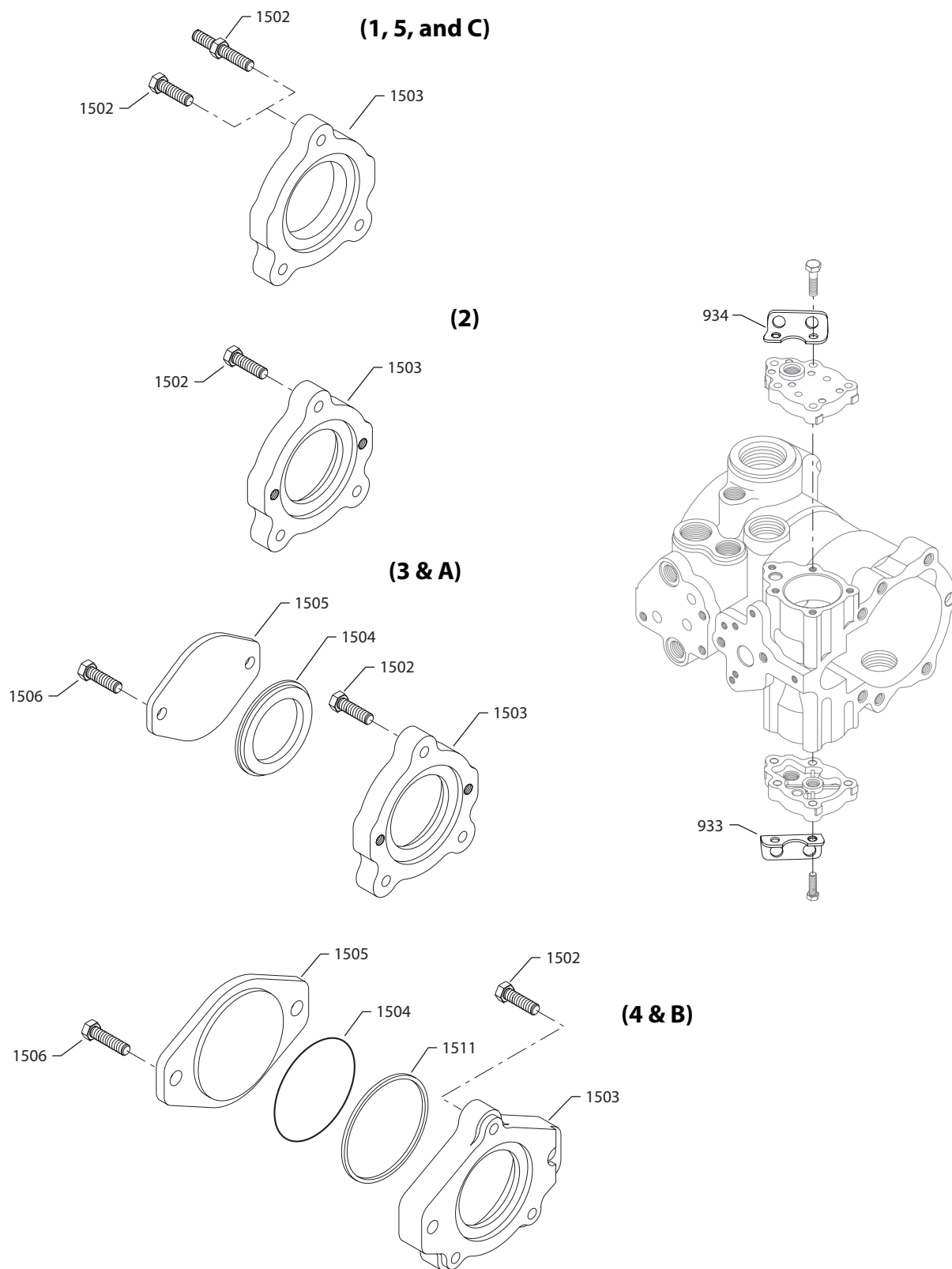
### Variable displacement pump

#### Control orifice

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
ZV	302	87-50		5000653	O-ring	1
	1208	87-50		9006150-0160	Back up ring	1
	1401	87-50		4800155-0006	Orifice plug, .031"	1
	1403	87-50		4460333-0003	Orifice plug, .054"	1
	1404	87-50		4460333-0005	Orifice plug, .031"	1
	1405	87-50		4461342	Sleeve assembly, .031" (SB-1997-001)	1
	1419	87-50		9005001-1200	Pipe plug	1
	1421	87-50		9005001-1200	Pipe plug	1
ZW	302	87-50		5000653	O-ring	1
	1208	87-50		9006150-0160	Back up ring	1
	1401	87-50		9005001-0600	Pipe plug	1
	1403	87-50		4460333-0006	Orifice plug, none	1
	1404	87-50		4460333-0006	Orifice plug, none	1
	1405	87-50		4461341	Sleeve assembly, .046" (SB-1997-001)	1
	1419	87-50		9005001-1200	Pipe plug	1
	1421	87-50		9005001-1200	Pipe plug	1
ZX	302	96-37		5000653	O-ring	1
	1208	96-37		9006150-0160	Back up ring	1
	1401	96-37		4800155-0004	Orifice plug, .041"	1
	1403	96-37		4460333-0003	Orifice plug, .054"	1
	1404	96-37		4460333-0003	Orifice plug, .054"	1
	1405	96-37		4461341	Sleeve assembly, .046" (SB-1997-001)	1
	1419	96-37		9005001-1200	Pipe plug	1
	1421	96-37		9005001-1200	Pipe plug	1
ZY	302	87-35		5000653	O-ring	1
	1208	87-35		9006150-0160	Back up ring	1
	1401	87-35		4800155-0006	Orifice plug, .031"	1
	1403	87-35		4460333-0005	Orifice plug, .031"	1
	1404	87-35		4460333-0005	Orifice plug, .031"	1
	1405	87-35		4461342	Sleeve assembly, .031" (SB-1997-001)	1
	1419	87-35		9005001-1200	Pipe plug	1
	1421	87-35		9005001-1200	Pipe plug	1
ZZ	302	87-22		5000653	O-ring	1
	1208	87-22		9006150-0160	Back up ring	1
	1401	87-22		4800155-0006	Orifice plug, .031"	1
	1403	87-22		4460333-0005	Orifice plug, .031"	1
	1405	87-22		4461342	Sleeve assembly, .031" (SB-1997-001)	1
	1419	87-22		9005001-1200	Pipe plug	1
	1421	87-22		9005001-1200	Pipe plug	1



Variable displacement pump



E100 219 E

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

## Parts Manual

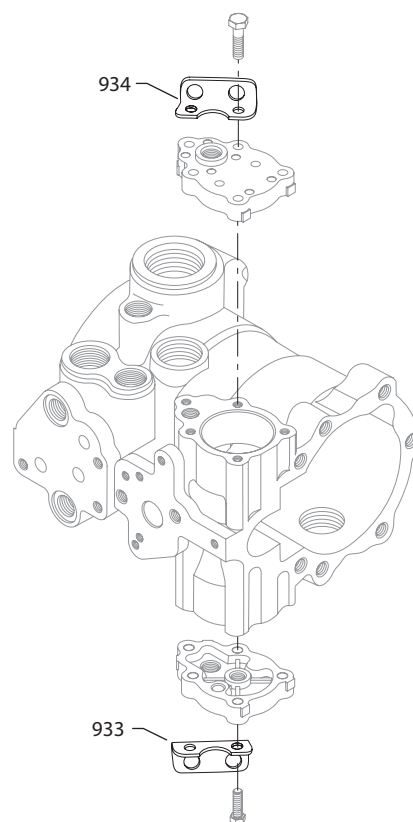
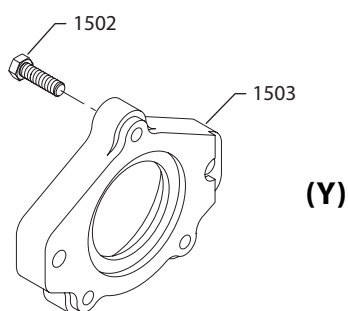
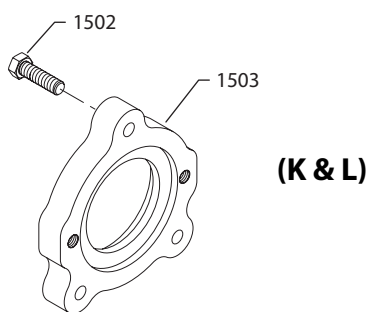
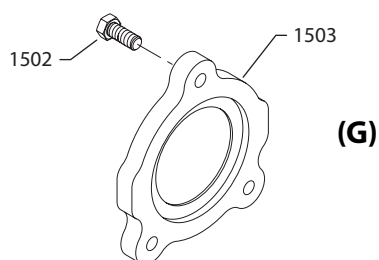
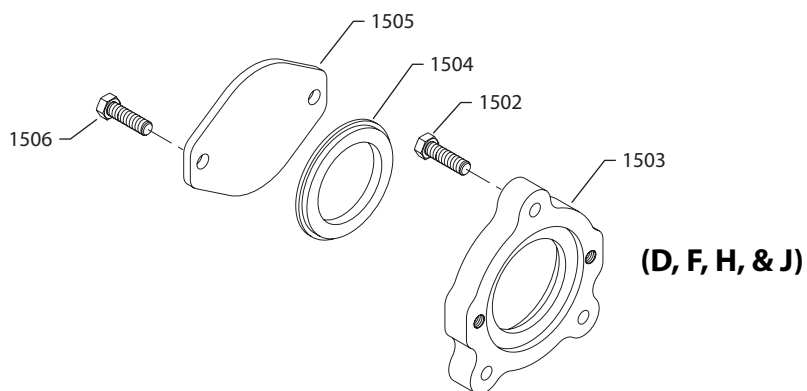
## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Auxiliary mounting

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
1	934	00-10		4460311	Lifting bracket	1
	1502	00-10		4461141	Bolt, special	3
	1503	00-10		4460326	Charge pump cover	1
2	933	00-31		4460311	Lifting bracket	1
	1502	00-31		9007200-3716	Screw	3
	1503	00-31		4460405	Adapter flange	1
3	933	00-31		4460311	Lifting bracket	1
	1502	00-31		9007200-3716	Screw	3
	1503	00-31		4460405	Adapter flange	1
	1504	00-31		4800482	A pad seal	1
	1505	00-31		4460586	Cover plate	1
	1506	00-31		9007200-3716	Screw	2
4	933	00-31		4460311	Lifting bracket	1
	1502	00-31		9007200-3716	Screw	3
	1503	00-31		4461453	Adapter flange (SB-2006-003)	1
	1504	00-31		9004100-0440	O-ring	1
	1505	00-31		4460370	Cover plate	1
	1506	00-31		9007200-5022	Screw	2
	1511	00-31		9004375-0020	O-ring	1
5	933	04-26		4460311	Lifting bracket	1
	1502	04-26		9007200-3716	Screw	3
	1503	04-26		4460326	Charge pump cover	1
A	934	86-18		4460311	Lifting bracket	1
	1502	86-18		9007200-3716	Screw	3
	1503	86-18		4460405	Adapter flange	1
	1504	89-43		4800482	A pad seal (SB-1989-021 & SB-1995-019)	1
	1505	89-43		4460586	Cover plate (SB-1989-021)	1
	1506	86-18		9007200-3716	Screw	2
B	934	00-31		4460311	Lifting bracket	1
	1502	00-31		9007200-3716	Screw	3
	1503	00-31		4461453	Adapter flange (SB-2006-003)	1
	1504	00-31		9004100-0440	O-ring	1
	1505	00-31		4460370	Cover plate	1
	1506	00-31		9007200-5022	Screw	2
	1511	00-31		9004375-0020	O-ring	1
C	934	84-31		4460311	Lifting bracket	1
	1502	84-31		9007200-3716	Screw	3
	1503	84-31		4460326	Charge pump cover	1

Variable displacement pump



E100 212E

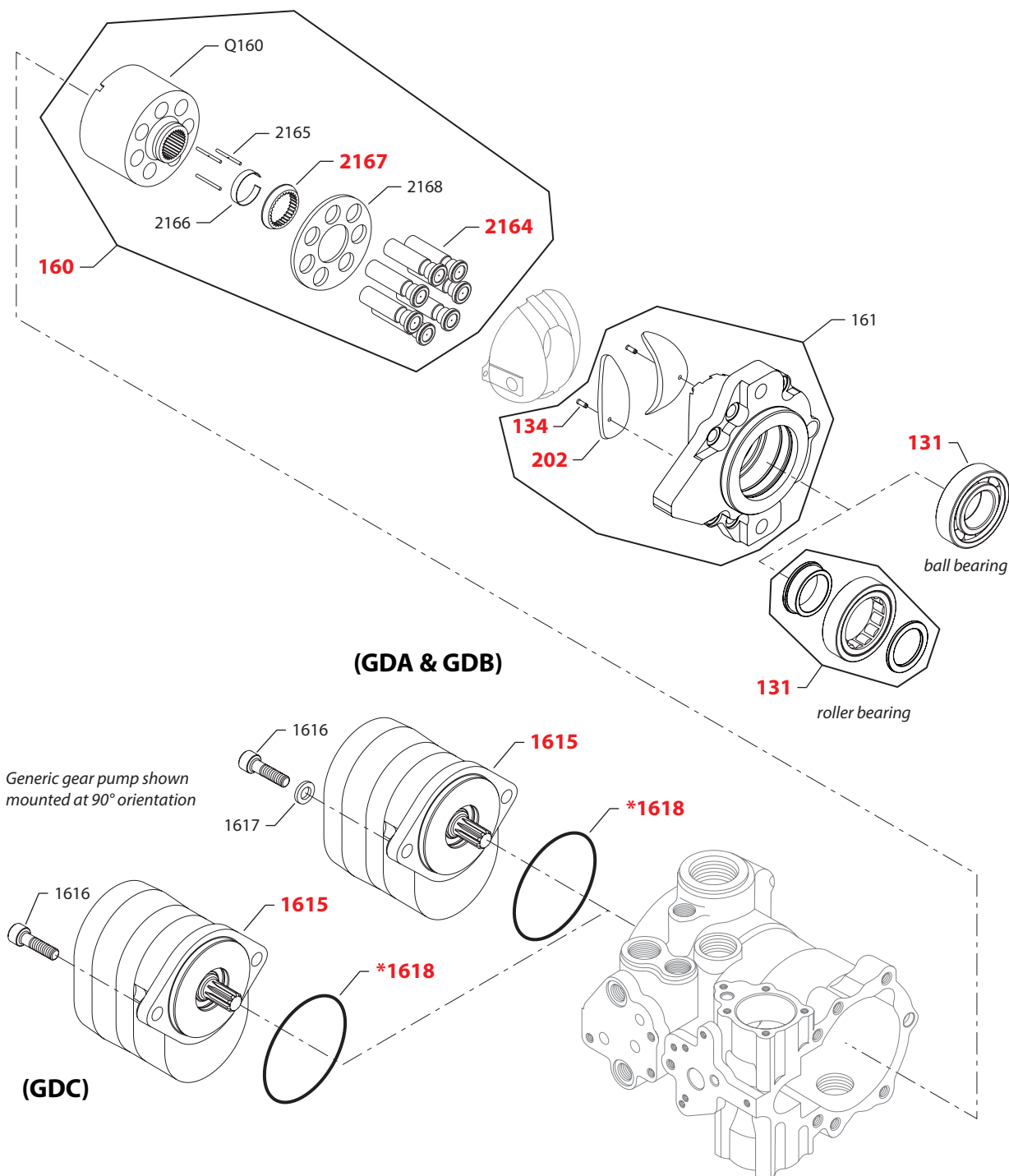
Enlarged **bold** type item numbers are recommended part to stock for servicing.

**Variable displacement pump**
**Auxiliary mounting**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
D	934	86-18	01-36	4460311	Lifting bracket	1
	1502	86-18	01-36	9007200-3716	Screw	3
	1503	86-18	01-36	4460405	Adapter flange	1
	1504	89-43	01-36	4800482	A pad seal (SB-1989-021 & SB-1995-019)	1
	1505	89-43	01-36	4460586	Cover plate (SB-1989-021)	1
	1506	86-18	01-36	9007200-3716	Screw	2
F	933	12-34		4460311	Lifting bracket	1
	1502	12-34		9007200-3716	Screw	3
	1503	12-34		4460744	Adapter flange, metric threads	1
	1504	12-34		4800482	A pad seal	1
	1505	12-34		4460586	Cover plate	1
	1506	12-34		370247	Screw, M10 x 20	2
G	934	93-50	01-36	4460311	Lifting bracket	1
	1502	93-50	01-36	9007200-3710	Screw	3
	1503	93-50	01-36	678904	Charge pump cover	1
H	934	94-33		4460311	Lifting bracket	1
	1502	94-33		9007200-3716	Screw	3
	1503	94-33		4460744	Adapter flange, metric threads	1
	1504	94-33		4800482	A pad seal	1
	1505	94-33		4460586	Cover plate	1
	1506	94-33		370247	Screw, M10 x 20	2
J	934	94-33	01-36	4460311	Lifting bracket	1
	1502	94-33	01-36	9007200-3716	Screw	3
	1503	94-33	01-36	4460744	Adapter flange	1
	1504	94-33	01-36	4800482	A pad seal	1
	1505	94-33	01-36	4460586	Cover plate	1
	1506	94-33	01-36	9007210-1006	Screw	2
K	934	95-05		4460311	Lifting bracket	1
	1502	95-05		9007200-3716	Screw	3
	1503	95-05		4460405	Charge pump cover	1
L	934	95-05	01-36	4460311	Lifting bracket	1
	1502	95-05	01-36	9007200-3716	Screw	3
	1503	95-05	01-36	4460405	Charge pump cover	1
Y	934	00-23		4460311	Lifting bracket	1
	1502	00-23		9007200-3716	Screw	3
	1503	00-23		4461453	Charge pump cover (SB-2006-003)	1



Variable displacement pump



E100 220 E

\* = included in overhaul seal kit Q210

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



## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

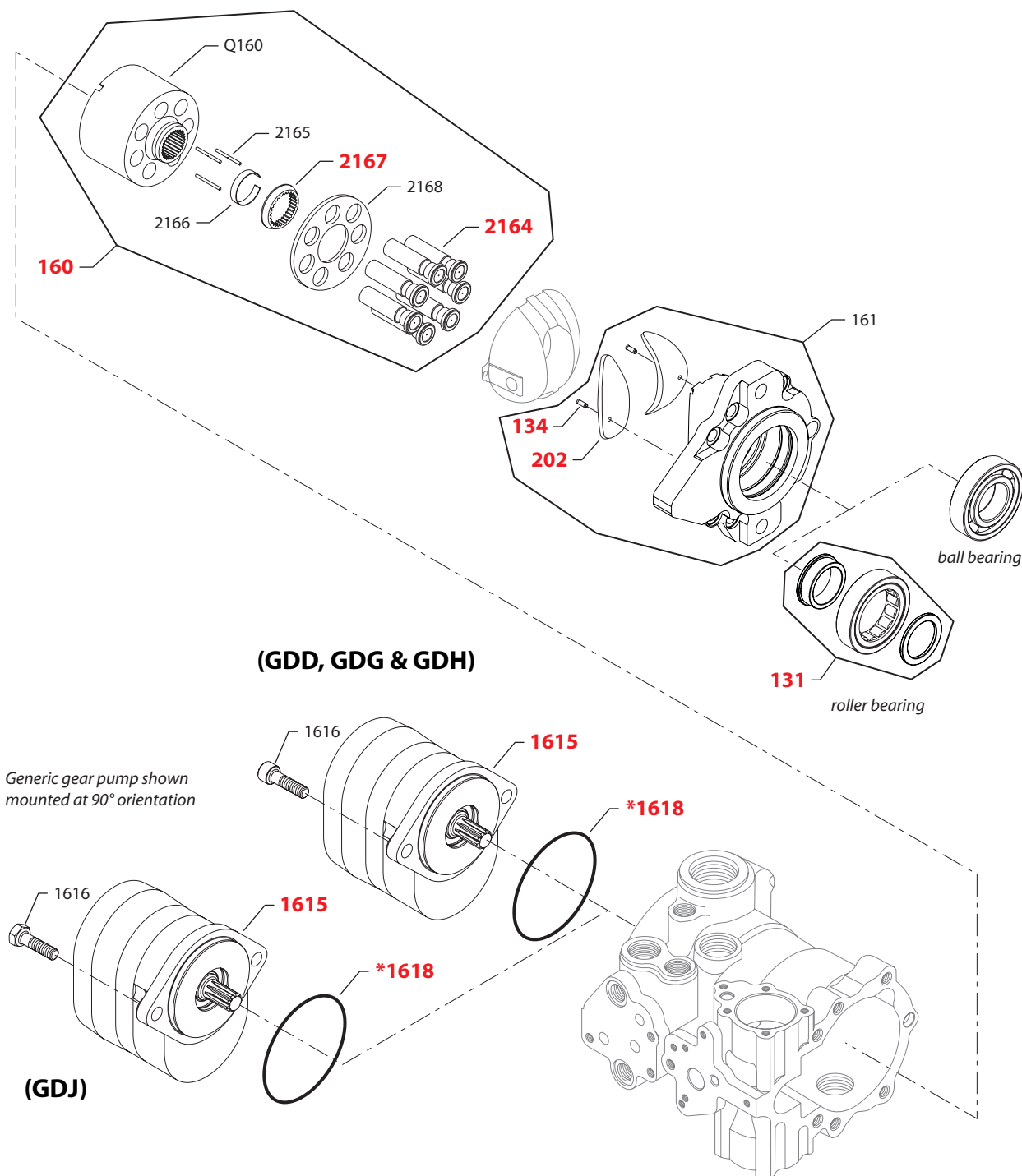
#### Common special hardware parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	2165	84-31		9004875-0113	Holddown pin	3
	2166	84-31		4460028	Holddown pin retainer	1
	2164	84-31		4461032	Piston assembly (SB-1998-077)	7
	2168	84-31		4460009	Slipper guide	1
	2167	84-31		4460180	Retainer guide	1
	2134	84-31		5000116	Coiled pin	2

#### Special hardware

DTN	131	03-19		5000731	Ball bearing	1
	160	03-19		4460890	Cylinder block kit	1
	161	03-19		4461349	Front cover assembly	1
	202	03-19		4460696	Journal bearing	2
	Q160	03-19		11183528	Cylinder block assembly	1
FCR	131	10-24		357616	Roller bearing	1
	160	10-24		4460890	Cylinder block kit	1
	161	10-24		4461349	Front cover assembly	1
	202	10-24		4460696	Journal bearing	2
	Q160	10-24		11183528	Cylinder block assembly	1
GDA	131	04-26		5000731	Ball bearing	1
	160	04-26		4460890	Cylinder block kit	1
	161	04-26		4461349	Front cover assembly	1
	202	04-26		4460696	Journal bearing	2
	1615	04-26		163D71568	Gear pump, 0 ° mounting orientation	1
	1616	04-26		5000208	Screw	2
	1617	04-26		9009610-4069	Washer	2
	1618	04-26		5000373	O-ring	1
	Q160	04-26		11183528	Cylinder block assembly	1
GDB	131	04-26		357616	Roller bearing	1
	160	04-26		4460890	Cylinder block kit	1
	161	04-26		4461349	Front cover assembly	1
	202	04-26		4460696	Journal bearing	2
	1615	04-26		163D1435	Gear pump, 0 ° mounting orientation	1
	1616	04-26		5000208	Screw	2
	1617	04-26		9009610-4069	Washer	2
	1618	04-26		5000373	O-ring	1
	Q160	04-26		11183528	Cylinder block assembly	1
GDC	131	04-26		357616	Roller bearing	1
	160	04-26		4460890	Cylinder block kit	1
	161	04-26		4461349	Front cover assembly	1
	202	04-26		4460696	Journal bearing	2
	1615	04-26		163D70056	Gear pump, 0 ° mounting orientation	1
	1616	04-26		5000208	Screw	2
	1618	04-26		5000373	O-ring	1
	Q160	04-26		11183528	Cylinder block assembly	1

Variable displacement pump



E103 538E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Common special hardware parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	2165	84-31		9004875-0113	Holddown pin	3
	2166	84-31		4460028	Holddown pin retainer	1
	2164	84-31		4461032	Piston assembly (SB-1998-077)	7
	2168	84-31		4460009	Slipper guide	1
	2167	84-31		4460180	Retainer guide	1
	2134	84-31		5000116	Coiled pin	2

#### Special hardware

GDD	131	04-26		357616	Roller bearing	1
	160	04-26		4460890	Cylinder block kit	1
	161	04-26		4461349	Front cover assembly	1
	202	04-26		4460696	Journal bearing	2
	1615	04-26		163D1436	Gear pump, 180° mounting orientation	1
	1616	04-26		5000208	Screw	2
	1618	04-26		5000373	O-ring	1
	Q160	04-26		11183528	Cylinder block assembly	1

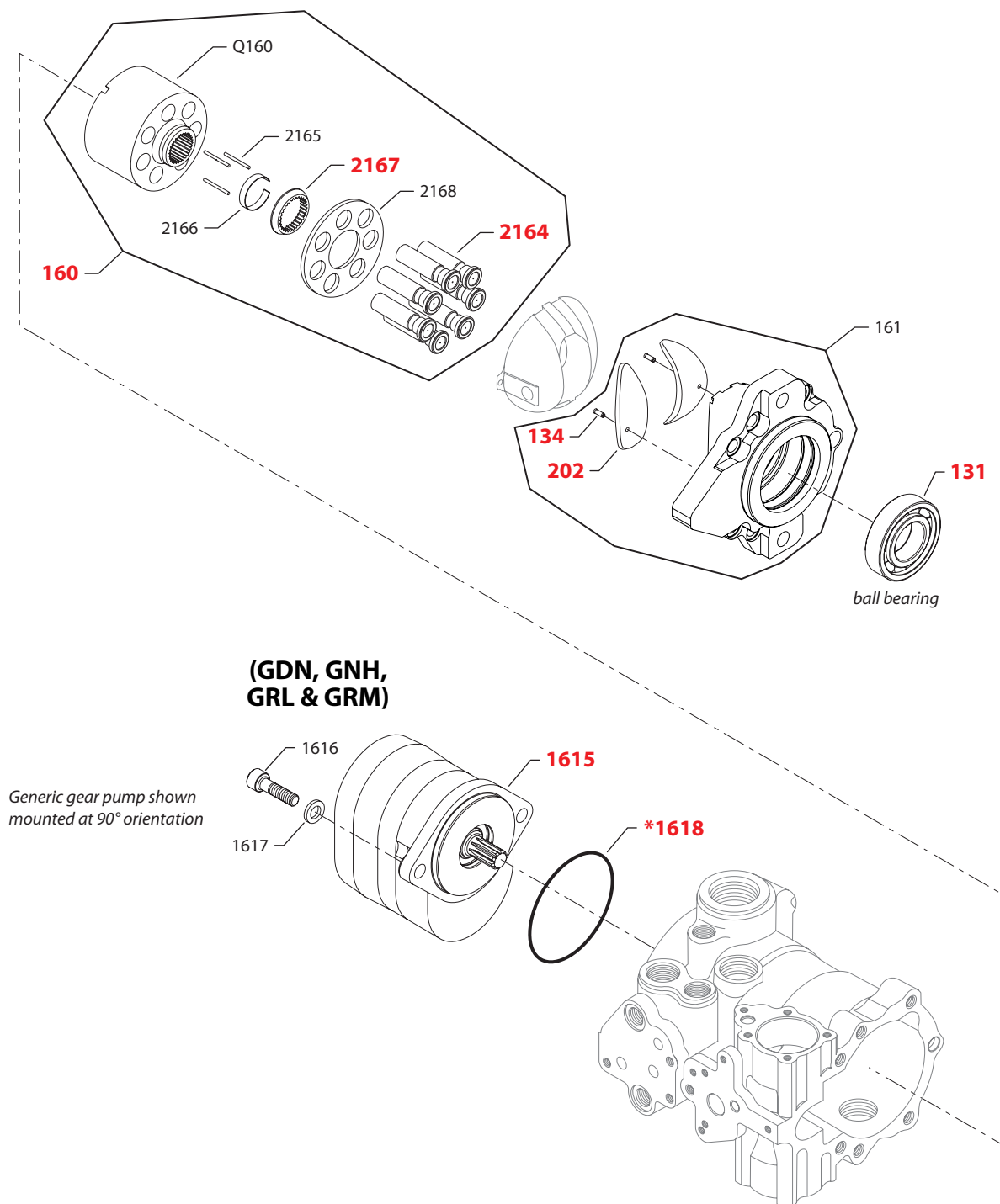
GDG	131	03-32		5000731	Ball bearing	1
	160	03-32		4460890	Cylinder block kit	1
	161	03-32		4461349	Front cover assembly	1
	202	03-32		4460696	Journal bearing	2
	1615	03-32		163D70052	Gear pump, 180 ° mounting orientation	1
	1616	03-32		5000208	Screw	2
	1618	03-32		5000373	O-ring	1
	Q160	04-26		11183528	Cylinder block assembly	1

GDH	131	04-26		357616	Roller bearing	1
	160	04-26		4460890	Cylinder block	1
	161	04-26		4461349	Front cover assembly	1
	202	04-26		4460696	Journal bearing	2
	1615	04-26		163D1437	Gear pump, 0° mounting orientation	1
	1616	04-26		5000208	Screw	2
	1618	04-26		5000373	O-ring	1
	Q160	04-26		11183528	Cylinder block assembly	1

GDJ	131	11-06		5000731	Ball bearing	1
	160	11-06		4460890	Cylinder block kit	1
	161	11-06		4461349	Front cover assembly	1
	202	11-06		4460696	Journal bearing	2
	1615	11-06		83002057	Gear pump, 0° mounting orientation	1
	1616	11-06		9007200-5022	Screw	2
	1618	11-06		9004100-0440	O-ring	1
	Q160	11-06		11183528	Cylinder block assembly	1



Variable displacement pump



E103 539E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Common special hardware parts

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	2165	84-31		9004875-0113	Holddown pin	3
	2166	84-31		4460028	Holddown pin retainer	1
	2164	84-31		4461032	Piston assembly (SB-1998-077)	7
	2168	84-31		4460009	Slipper guide	1
	2167	84-31		4460180	Retainer guide	1
	2134	84-31		5000116	Coiled pin	2

#### Special hardware

GDN	131	03-43		5000731	Ball bearing	1
	160	03-43		4461090	Cylinder block kit	1
	161	03-43		4461349	Front cover assembly	1
	202	03-43		4460696	Journal bearing	2
	1615	03-43		163D71568	Gear pump, 0° mounting orientation	1
	1616	03-43		5000208	Screw	2
	1617	03-43		9009610-4069	Washer	2
	1618	03-43		5000373	O-ring	1
	Q160	03-43		11183654	Cylinder block assembly	1

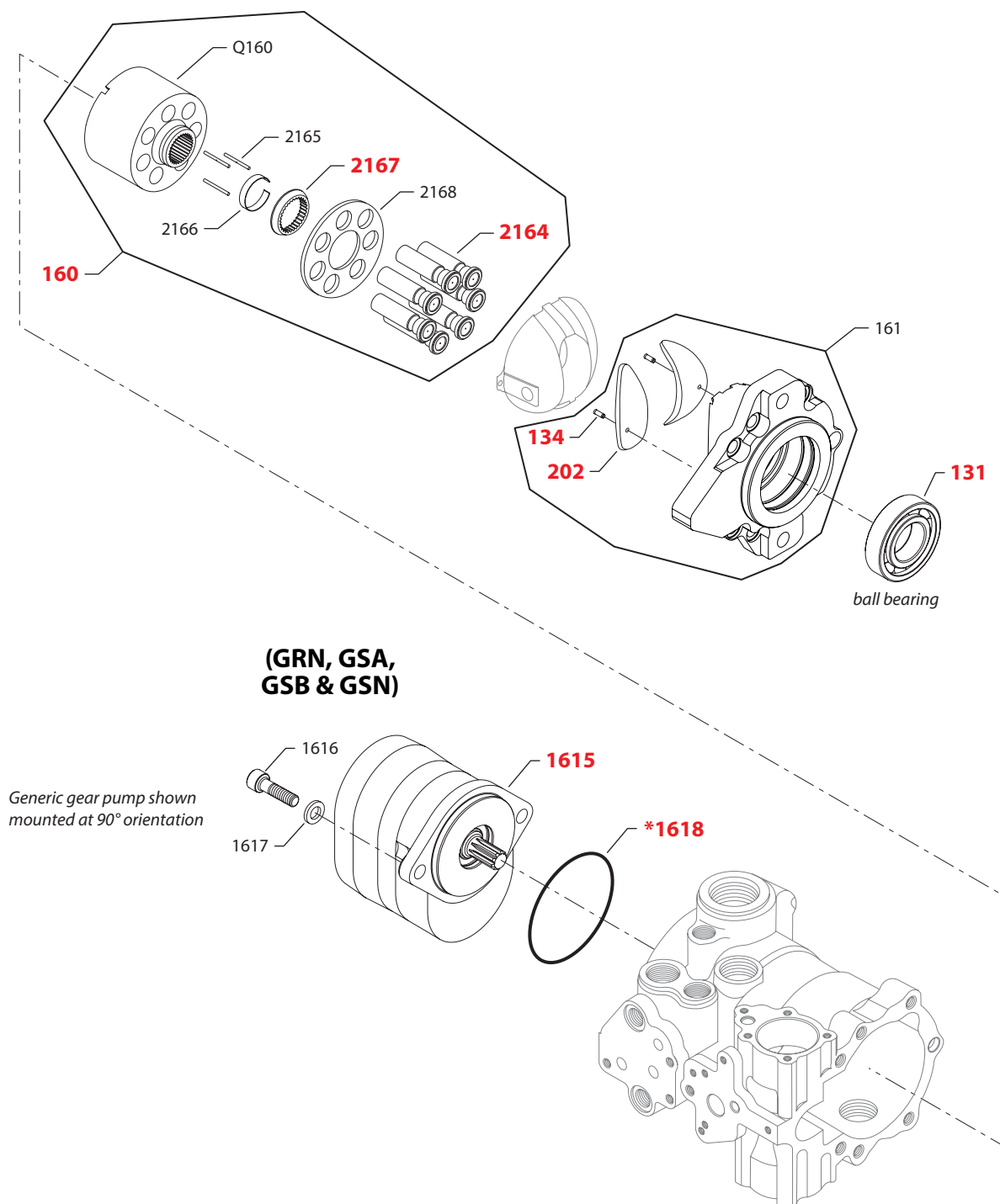
GNH	131	09-08		5000731	Ball bearing	1
	160	09-08		4460890	Cylinder block kit	1
	161	09-08		4461349	Front cover assembly	1
	202	09-08		4460696	Journal bearing	2
	1615	09-08		111.20.130.00	Gear pump, 180 ° mounting orientation	1
	1616	09-08		5000208	Screw	2
	1617	09-08		9009610-4069	Washer	2
	1618	09-08		5000373	O-ring	1
	Q160	09-08		11183528	Cylinder block assembly	1

GRL	131	99-03		5000731	Ball bearing	1
	160	99-03		4460890	Cylinder block kit	1
	161	99-03		4461349	Front cover assembly	1
	202	99-03		4460696	Journal bearing	2
	1615	99-03		111.20.130.00	Gear pump, 0 ° mounting orientation	1
	1616	99-03		5000208	Screw	2
	1617	99-03		9009610-4069	Washer	2
	1618	99-03		5000373	O-ring	1
	Q160	99-03		11183528	Cylinder block assembly	1

GRM	131	99-03		5000731	Ball bearing	1
	160	99-03		4460890	Cylinder block kit	1
	161	99-03		4461349	Front cover assembly	1
	202	99-03		4460696	Journal bearing	2
	1615	99-03		111.20.134.00	Gear pump, 0 ° mounting orientation	1
	1616	99-03		5000208	Screw	2
	1617	99-03		9009610-4069	Washer	2
	1618	99-03		5000373	O-ring	1
	Q160	99-03		11183528	Cylinder block assembly	1



Variable displacement pump



E103 539E

\* = included in overhaul seal kit Q210

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

**Variable displacement pump**
**Common special hardware parts**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	2165	84-31		9004875-0113	Holddown pin	3
	2166	84-31		4460028	Holddown pin retainer	1
	2164	84-31		4461032	Piston assembly (SB-1998-077)	7
	2168	84-31		4460009	Slipper guide	1
	2167	84-31		4460180	Retainer guide	1
	2134	84-31		5000116	Coiled pin	2

**Special hardware**

GRN	131	03-26		5000731	Ball bearing	1
	160	03-26		4461090	Cylinder block kit	1
	161	03-26		4461349	Front cover assembly	1
	202	03-26		4460696	Journal bearing	2
	1615	03-26		111.20.134.00	Gear pump, 0° mounting orientation	1
	1616	03-26		5000208	Screw	2
	1617	03-26		9009610-4069	Washer	2
	1618	03-26		5000373	O-ring	1
	Q160	03-26		11183654	Cylinder block assembly	1

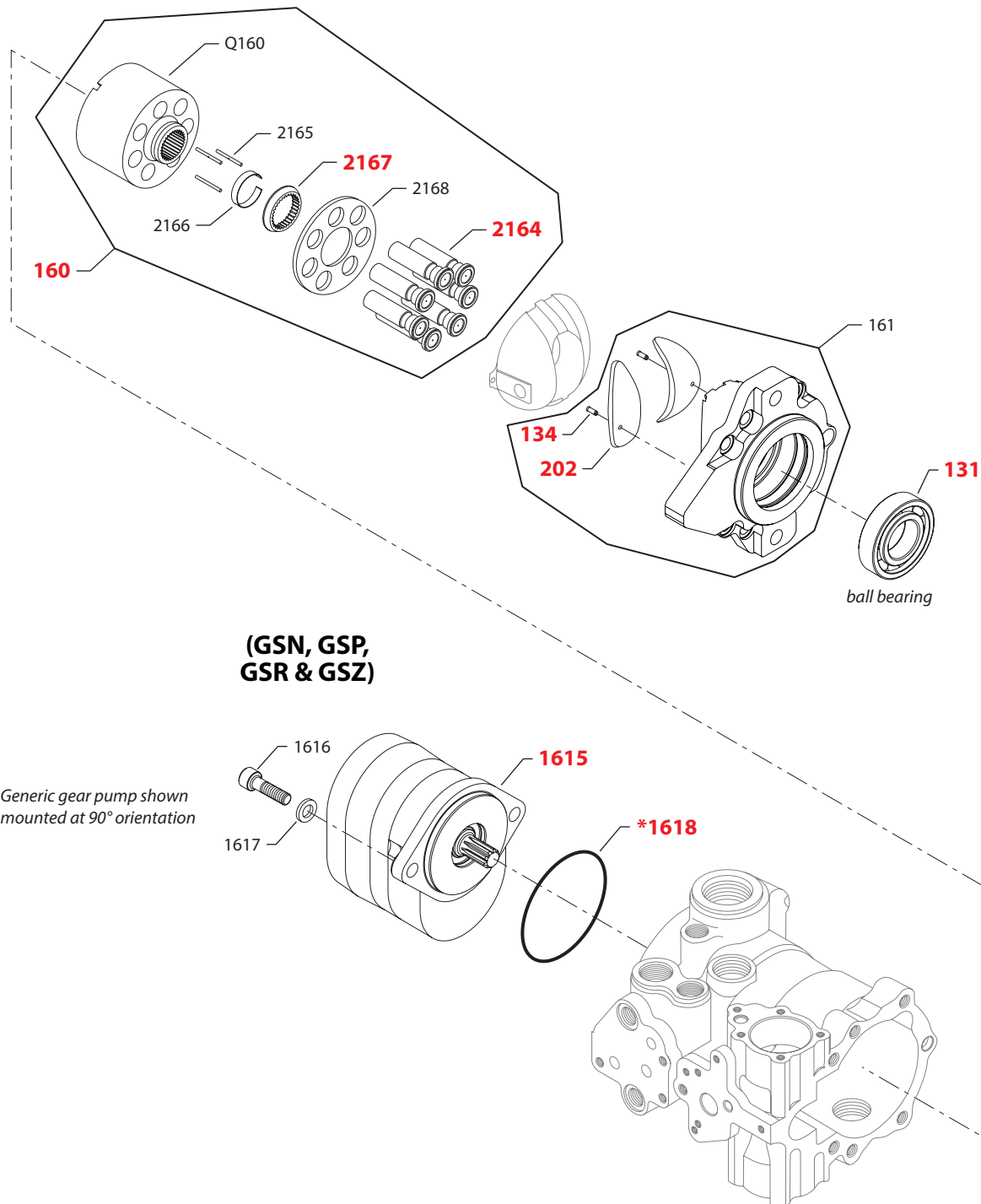
GSA	131	00-03		5000731	Ball bearing	1
	160	00-03		4460890	Cylinder block kit	1
	161	00-03		4461349	Front cover assembly	1
	202	00-03		4460696	Journal bearing	2
	1615	00-03		111.20.135.00	Gear pump, 0° mounting orientation	1
	1616	00-03		5000208	Screw	2
	1617	00-03		9009610-4069	Washer	2
	1618	00-03		5000373	O-ring	1
	Q160	00-03		11183528	Cylinder block assembly	1

GSB	131	02-49		5000731	Ball bearing	1
	160	02-49		4460890	Cylinder block kit	1
	161	02-49		4461349	Front cover assembly	1
	202	02-49		4460696	Journal bearing	2
	1615	02-49		181.20.C17.00	Gear pump, 0° mounting orientation	1
	1616	02-49		5000208	Screw	2
	1617	02-49		9009610-4069	Washer	2
	1618	02-49		5000373	O-ring	1
	Q160	02-49		11183528	Cylinder block assembly	1

GSN	131	03-26		5000731	Ball bearing	1
	160	03-26		4461090	Cylinder block kit	1
	161	03-26		4461349	Front cover assembly	1
	202	03-26		4460696	Journal bearing	2
	1615	03-26		181.20.C17.00	Gear pump, 0° mounting orientation	1
	1616	03-26		5000208	Screw	2
	1617	03-26		9009610-4069	Washer	2
	1618	03-26		5000373	O-ring	1
	Q160	03-26		11183654	Cylinder block assembly	1



Variable displacement pump



E103 539E

\* = included in overhaul seal kit Q210

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



**Variable displacement pump**
**Common special hardware parts**

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	2165	84-31		9004875-0113	Holddown pin	3
	2166	84-31		4460028	Holddown pin retainer	1
	2164	84-31		4461032	Piston assembly (SB-1998-077)	7
	2168	84-31		4460009	Slipper guide	1
	2167	84-31		4460180	Retainer guide	1
	2134	84-31		5000116	Coiled pin	2

**Special hardware**

GSN	131	03-26		5000731	Ball bearing	1
	160	03-26		4461090	Cylinder block kit	1
	161	03-26		4461349	Front cover assembly	1
	202	03-26		4460696	Journal bearing	2
	1615	03-26		181.20.C17.00	Gear pump, 0° mounting orientation	1
	1616	03-26		5000208	Screw	2
	1617	03-26		9009610-4069	Washer	2
	1618	03-26		5000373	O-ring	1
	Q160	03-26		11183654	Cylinder block assembly	1

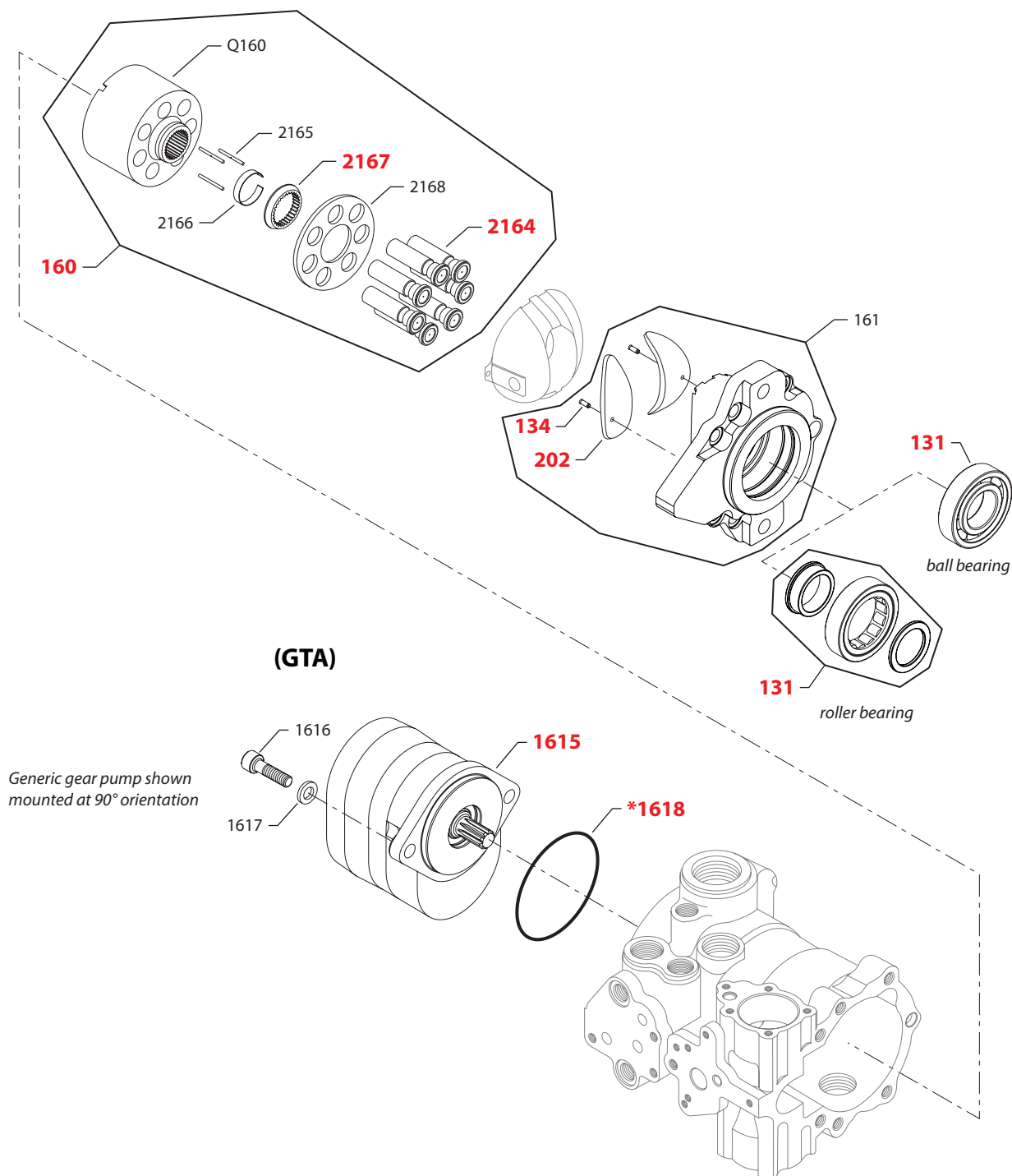
GSP	131	01-06		5000731	Ball bearing	1
	160	01-06		4460890	Cylinder block kit	1
	161	01-06		4461349	Front cover assembly	1
	202	01-06		4460696	Journal bearing	2
	1615	01-06		111.20.141.00	Gear pump, 0° mounting orientation	1
	1616	01-06		5000208	Screw	2
	1617	01-06		9009610-4069	Washer	2
	1618	01-06		5000373	O-ring	1
	Q160	01-06		11183528	Cylinder block assembly	1

GSR	131	01-26		5000731	Ball bearing	1
	160	01-26		4460890	Cylinder block kit	1
	161	01-26		4461349	Front cover assembly	1
	202	01-26		4460696	Journal bearing	2
	1615	01-26		111.20.141.00	Gear pump, 180° mounting orientation	1
	1616	01-26		5000208	Screw	2
	1617	01-26		9009610-4069	Washer	2
	1618	01-26		5000373	O-ring	1
	Q160	01-26		11183528	Cylinder block assembly	1

GSZ	131	01-45		5000731	Ball bearing	1
	160	01-45		4460890	Cylinder block kit	1
	161	01-45		4461349	Front cover assembly	1
	202	01-45		4460696	Journal bearing	2
	1615	01-45		181.22.021.00	Gear pump, 0° mounting orientation	1
	1616	01-45		5000208	Screw	2
	1617	01-45		9009610-4069	Washer	2
	1618	01-45		5000373	O-ring	1
	Q160	01-45		11183528	Cylinder block assembly	1



Variable displacement pump



E103 540E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Common special hardware parts

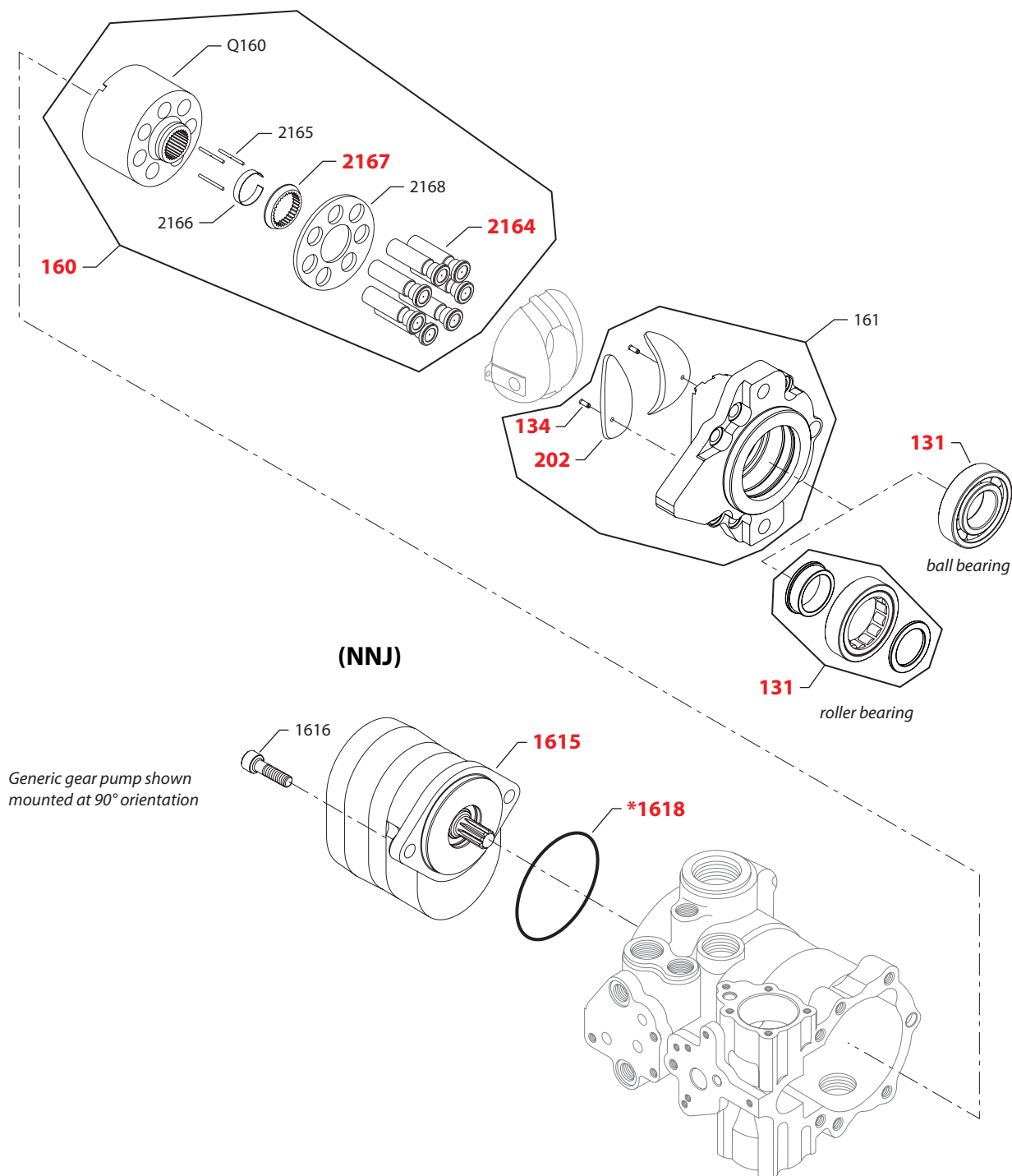
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	2165	84-31		9004875-0113	Holddown pin	3
	2166	84-31		4460028	Holddown pin retainer	1
	2164	84-31		4461032	Piston assembly (SB-1998-077)	7
	2168	84-31		4460009	Slipper guide	1
	2167	84-31		4460180	Retainer guide	1
	2134	84-31		5000116	Coiled pin	2

#### Special hardware

GTA	131	03-43		5000731	Ball bearing	1
	160	03-43		4461090	Cylinder block kit	1
	161	03-43		4461349	Front cover assembly	1
	202	03-43		4460696	Journal bearing	2
	1615	03-43		181.22.021.00	Gear pump, 0° mounting orientation	1
	1616	03-43		5000208	Screw	2
	1617	03-43		9009610-4069	Washer	2
	1618	03-43		5000373	O-ring	1
	Q160	03-43		11183654	Cylinder block assembly	1
NAM	131	09-19		5000731	Ball bearing	1
	160	09-19		4460890	Cylinder block kit	1
	161	09-19		4461349	Front cover assembly	1
	202	09-19		4460696	Journal bearing	2
	Q160	09-19		11183528	Cylinder block assembly	1
NBN	131	03-26		5000731	Ball bearing	1
	160	03-26		4461090	Cylinder block kit	1
	161	03-26		4461349	Front cover assembly	1
	202	03-26		4460696	Journal bearing	2
	Q160	03-26		11183654	Cylinder block assembly	1
NNA	131	06-10		357616	Roller bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	Q160	06-10		11183528	Cylinder block assembly	1
NNB	131	06-10		357616	Roller bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	Q160	06-10		11183528	Cylinder block assembly	1
NNC	131	06-10		5000731	Ball bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	Q160	06-10		11183528	Cylinder block assembly	1



Variable displacement pump



E103 541E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Common special hardware parts

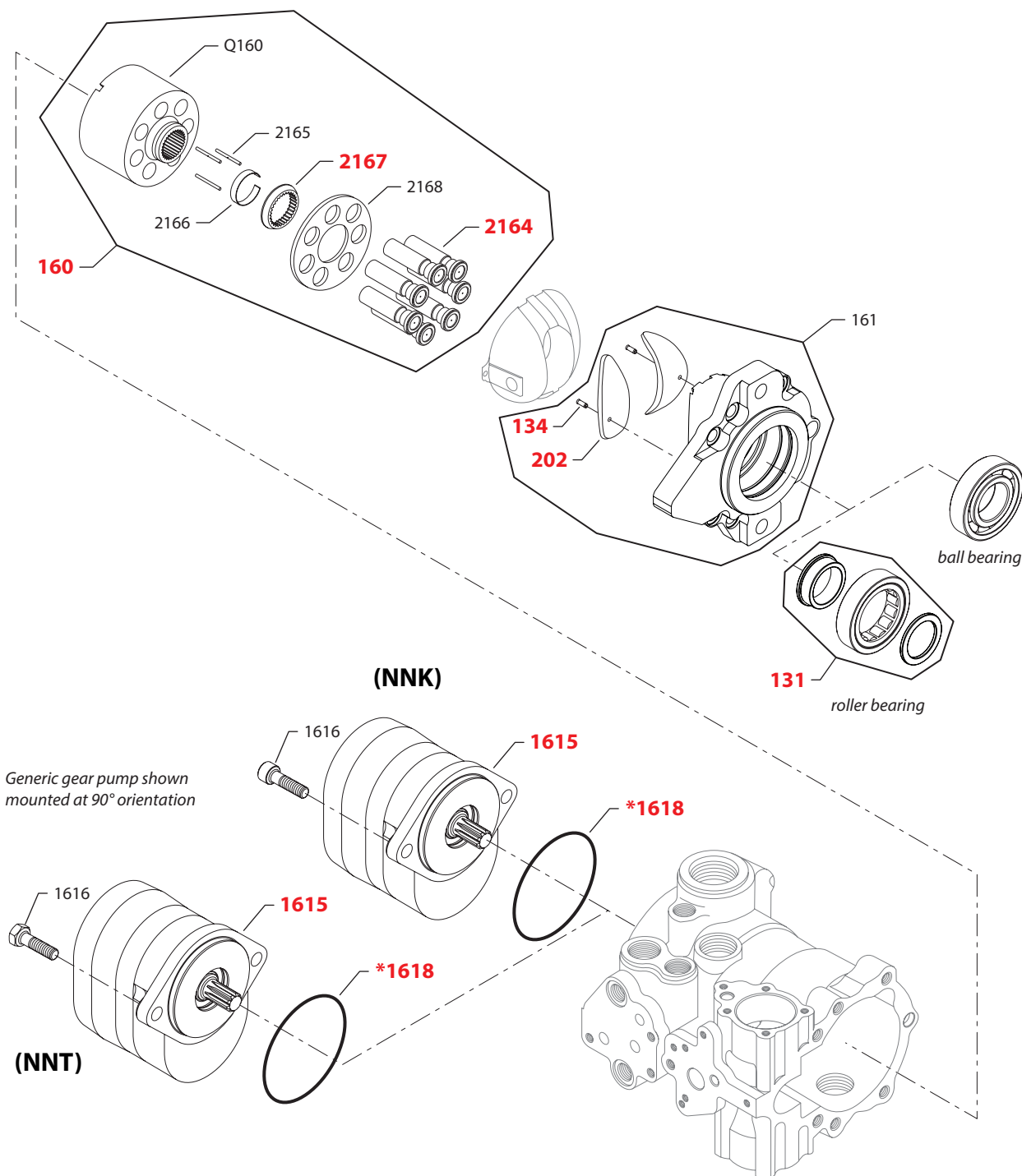
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	2165	84-31		9004875-0113	Holddown pin	3
	2166	84-31		4460028	Holddown pin retainer	1
	2164	84-31		4461032	Piston assembly (SB-1998-077)	7
	2168	84-31		4460009	Slipper guide	1
	2167	84-31		4460180	Retainer guide	1
	2134	84-31		5000116	Coiled pin	2

#### Special hardware

NND	131	06-10		5000731	Ball bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	Q160	06-10		11183528	Cylinder block assembly	1
NNE	131	06-10		5000731	Ball bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	Q160	06-10		11183528	Cylinder block assembly	1
NNF	131	06-10		5000731	Ball bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	Q160	06-10		11183528	Cylinder block assembly	1
NNG	131	06-10		5000731	Ball bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	Q160	06-10		11183528	Cylinder block assembly	1
NNH	131	06-10		5000731	Ball bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	Q160	06-10		11183528	Cylinder block assembly	1
NNJ	131	06-10		357616	Roller bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	1615	06-10		163D1437	Gear pump, 0° mounting orientation	1
	1616	06-10		5000208	Screw	2
	1618	06-10		5000373	O-ring	1
	Q160	06-10		11183528	Cylinder block assembly	1



Variable displacement pump



E103 538E

\* = included in overhaul seal kit Q210

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

## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Common special hardware parts

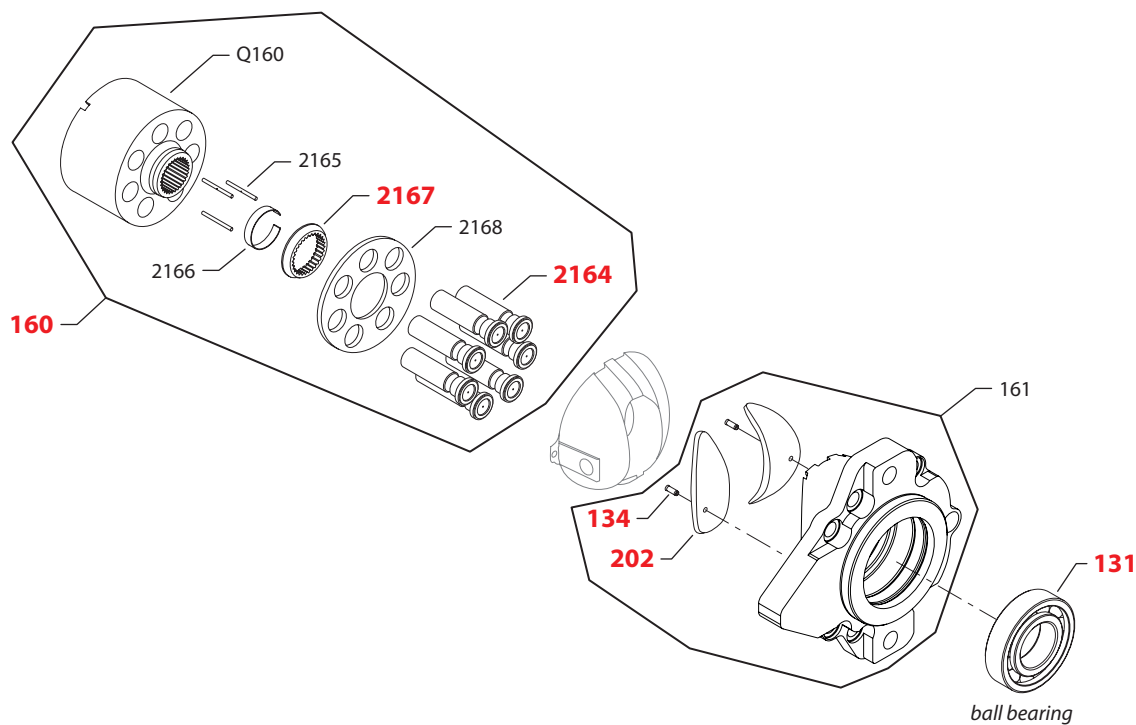
Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
	2165	84-31		9004875-0113	Holddown pin	3
	2166	84-31		4460028	Holddown pin retainer	1
	2164	84-31		4461032	Piston assembly (SB-1998-077)	7
	2168	84-31		4460009	Slipper guide	1
	2167	84-31		4460180	Retainer guide	1
	2134	84-31		5000116	Coiled pin	2

#### Special hardware

NNK	131	06-10		357616	Roller bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	1615	06-10		163D70056	Gear pump, 180° mounting orientation	1
	1616	06-10		5000208	Screw	2
	1618	06-10		5000373	O-ring	1
	Q160	06-10		11183528	Cylinder block assembly	1
NNL	131	06-10		357616	Roller bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	Q160	06-10		11183528	Cylinder block assembly	1
NNN	131	84-31		5000731	Ball bearing	1
	160	86-17		4460890	Cylinder block kit	1
	160	84-31	86-17	4460110	Cylinder block kit	1
	161	84-31		4461349	Front cover assembly	1
	202	84-31		4460696	Journal bearing	2
	Q160	86-17		11183528	Cylinder block assembly	1
NNR	131	92-50		357616	Roller bearing	1
	160	92-50		4460890	Cylinder block kit	1
	161	92-50		4461349	Front cover assembly	1
	202	92-50		4460696	Journal bearing	2
	Q160	92-50		11183528	Cylinder block assembly	1
NNT	131	06-10		5000731	Ball bearing	1
	160	06-10		4460890	Cylinder block kit	1
	161	06-10		4461349	Front cover assembly	1
	202	06-10		4460696	Journal bearing	2
	1615	06-10		83017066	Gear pump, 0° mounting orientation	1
	1616	06-10		9007200-5022	Screw	2
	1618	06-10		9004100-0440	O-ring	1
	Q160	06-10		11183528	Cylinder block assembly	1
NNU	131	13-07		357616	Roller bearing	1
	160	13-07		4460890	Cylinder block kit	1
	161	13-07		4461349	Front cover assembly	1
	202	13-07		4460696	Journal bearing	2
	Q160	13-07		11183528	Cylinder block assembly	1



Variable displacement pump



E103 542E

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



## Parts Manual

## Series 40 M46 Axial Piston Pump

### Variable displacement pump

#### Special hardware

Order Code	Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
NNV	131	13-07		5000731	Ball bearing	1
	160	13-07		4460890	Cylinder block kit	1
	161	13-07		4461349	Front cover assembly	1
	202	13-07		4460696	Journal bearing	2
	2165	13-07		9004875-0113	Holddown pin	3
	2166	13-07		4460028	Holddown pin retainer	1
	2164	13-07		4461032	Piston assembly (SB-1998-077)	7
	2168	13-07		4460009	Slipper guide	1
	2167	13-07		4460180	Retainer guide	1
	2134	13-07		5000116	Coiled pin	2
	Q160	13-07		11183528	Cylinder block assembly	1

#### Overhaul seal kit

	Q210	93-39		4510017	Overhaul seal kit, M46 PV	1
	103	86-14		9004201-6200	O-ring	1
	115	84-31		9003575-0083	Seal nut	1
	137	84-31		4460564	Front cover gasket	1
	141	84-31		9004375-0023	O-ring	1
	142	84-31		9700864	Temper load ring	1
	166A	84-31		9004201-7500	O-ring	2
	168	88-05		4460648	Bearing ring (SB-1991-009)	2
	301	84-31		9008000-0121	Lip seal	1
	302	86-14		5000653	O-ring	1
	303	84-31		5000654	O-ring	1
	304	98-33		9004101-1190	O-ring (SB-1998-052)	1
	805	91-31		4460655	Filtration adaptor seal, suction (SB-1990-017)	1
	805	91-36		4460656	Filtration adaptor seal, remote (SB-1990-017)	1
	916	88-01		8700067	Piston ring	1
	918	88-01		9004100-1310	O-ring	2
	922	88-01		8700067	Piston ring	1
	935	84-31		4461311	Servo cover gasket	1
	936	84-31		4461311	Servo cover gasket	1
	1002	84-31		9006110-0120	Back up ring	1
	1003	84-31		5000654	O-ring	1
	1208	86-14		9006150-0160	Back up ring	1
	1209	84-31		9006150-0120	Back up ring	1
	1220	85-37		9004101-0140	O-ring	2
	1228	91-07		9004100-0200	O-ring	1
	1297	91-07		9004104-0120	O-ring	4
	1618	99-03		5000373	O-ring	1
	1618	06-10		9004100-0440	O-ring	1



## Service bulletin: SB-1887-011

### Products affected

M46 variable pumps

### Subject

Parts identification

### Description

The M46 single and tandem variable displacement pump Service Parts Manuals, 2-40608 and 2-40610, clearly define which part number cylinder block, valve plate, and housing belong to specific vintage pumps.

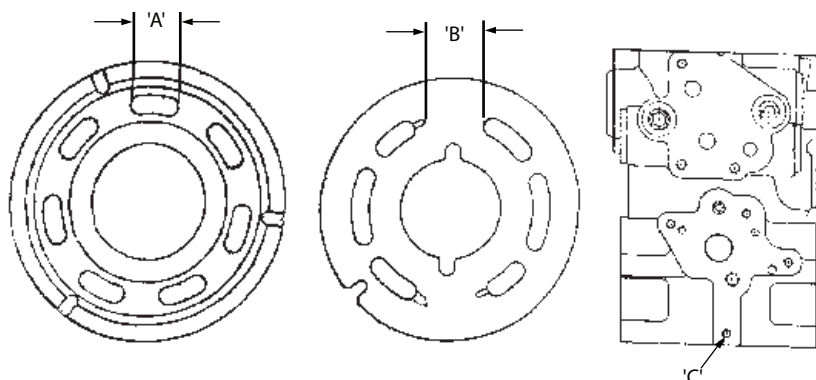
The purpose of this bulletin is to assist in easy identification of M46 cylinder blocks, valve plates, and housings, should they get "mixed up" in your stock.

**IMPORTANT:** For satisfactory pump efficiency, you must use the correct vintage housing, plate, and cylinder block within a given pump.

**HOUSINGS:** There are (2) vintages of housings, the current, which will accept EDC/HDC, and MDC, and the old version (prior to 86-14), which will accept only one or the other control. An easy housing identifier is that the current design housing has threaded hole "C", and the pre 86-14 has no hole in that area.

**CYLINDER BLOCKS:** There are (2) vintages of pump cylinder blocks. On the current, P/N 4460288, "A" dimension is approximately 1" and on the older P/N 4460174, "A" dimension is approximately .7"

**VALVE PLATES:** There are (3) vintages of pump valve plates. "B" dimension is approximately .55" on P/N 4460108 and P/N 4460109, .9" on P/N 4460318 and P/N 4460319, and 1.01" on P/N 4460417 and P/N 4460418.



### Models affected

All M46 single and tandem pumps.

### Serial numbers

All M46 single and tandem pumps.

### Part numbers affected

See applicable Parts Manual

### Parts disposition

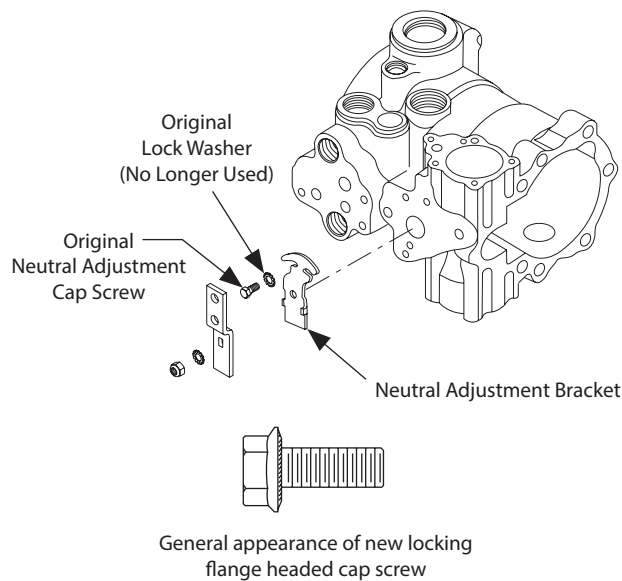
■ Not applicable

Service bulletin: SB-1987-020

**Products affected** M46 variable displacement pumps and motors with mechanical displacement control.

**Subject** Improved neutral adjustment cap screw.

**Description** As a product improvement, Sauer-Danfoss is changing the neutral adjustment cap screw on all M46 mechanical displacement control pumps and motors from a standard cap screw and star lockwasher, to a locking flangeheaded cap screw. There is no washer used with the new cap screw.



**Models affected** All M46-2xxx single pumps, M91-46xxx tandem pumps, and M46-4xxx variable motors with mechanical displacement controls.

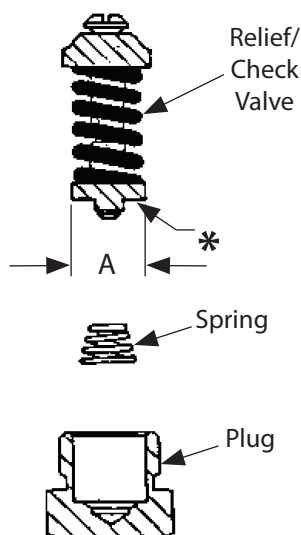
**Serial numbers** New hardware incorporated at serial number A-87-28-xxxxx.

**Part numbers affected** New cap screw part number is 9007276-0123.

**Parts disposition** ■ Use new parts at first repair


**Service bulletin: SB-1987-024**

<b>Products affected</b>	M46 variable displacement pumps and model 90-7001 transmission
<b>Subject</b>	Notice of high pressure relief/check valve change.
<b>Description</b>	<p>Service Bulletin 1987-004, dated 6/15/87, announced an upcoming high pressure relief/check valve design change to M46 and 90-7001 transmissions. This change, which takes affect October 1987, provides a higher performance and more cost effective design.</p> <p>The new design part will affect the housing and relief/check valve on M46 pumps and the center section and relief/check valve on the Model 90-7001 transmission.</p> <p>The new and current design relief valve plug, relief valve, housing, and center section will not be interchangeable.</p> <p>Sauer-Danfoss will no longer produce the current design M46 housings and Model 90-7001 center section.</p> <p>Service part requirements for the housing or center section on units built before this change will also require the purchase of the new design relief/check valve, however, experience has shown housings or center sections are rarely needed as service parts. Sundstrand-Sauer will continue to offer both the current and new design relief/check valve as service parts.</p> <p>New design valves will be sold in kit form only. The kit includes a relief valve plug, spring, and relief/check valve.</p>
<b>Models affected</b>	All M46 single and tandem pumps, and model 90-7001 transmission.
<b>Serial numbers</b>	On M46, new style relief/check valves will be incorporated with serial number A-87-40-xxxxx. On 90-7001, new style relief/check valves will be incorporated with serial number A-87-39-xxxxx.
<b>Part numbers affected</b>	see attachment
<b>Parts disposition</b>	<div> <div></div> Non-interchangeable </div>



# ATTACHMENT "A"

## Part Identification Information

Should different vintage parts get mixed, below are some identifiers.

"A" diameter on the new style relief/check valves .55".

"A" diameter on the old style M46 relief/check is .64".

"A" diameter on the old style 90-7001 relief/check valve is .467"

"B" diameter on the new style relief/check valve plug is .554".

"B" diameter on the old style M46 relief/check valve plug is .65".

"B" diameter on old style 90-7001 relief/check valve plug is .475".

\*The pressure setting of the relief valve, in bar, will be marked on this surface.

## M46

Current	New Style	
Check/Relief Valve	Description	Check/Relief Valve
4510001-0000	Kit-charge Check Only	4510004-0000
4510001-0050	Kit-175 Bar Relief/check	4510004-0175
4510001-0051	Kit-210 Bar Relief/Check	4510004-0210
4510001-0052	Kit-230 Bar Relief/Check	4510004-0230
4510001-0053	Kit-250 Bar Relief/Check	4510004-0250
4510001-0054	Kit-280 Bar Relief/Check	4510004-0280
4510001-0055	Kit-300 Bar Relief/Check	4510004-0300
4510001-0056	Kit 345 Bar Relief/Check	4510004-0345
4510001-0057	Kit-415 Bar Relief/Check	4510004-0415
4510001-0058	Kit-190 Bar Relief/Check	4510004-0190
4510001-0062	Kit-360 Bar Relief/Check	4510004-0360

P/N of new style M46 single housing is 4460440.

P/N of new style M46 tandem front housing is 4460438.

P/N of new style M46 tandem rear housing is 4460439.

Serial number incorporation is not required since the motor model numbers change.



**Service bulletin: SB-1987-029**

**Products affected**

All M46 single and tandem pumps.

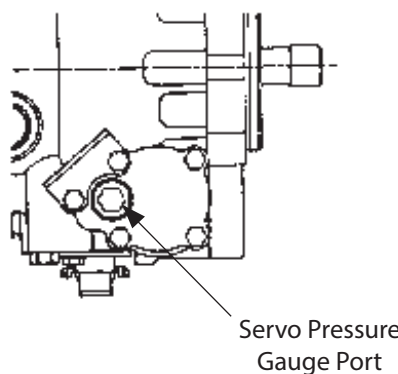
**Subject**

Notice of gauge port change.

**Description**

Effective in mid-October, the servo pressure gauge ports on M46 servo covers was changed from 7/16"-20 straight thread O-ring to 9/16-18 straight thread O-ring.

This change is an effort for Sauer-Danfoss to have consistency in gauge port sizing.



**Models affected**

All M46-2xxx single pumps, M91-46xxx tandem pumps.

**Serial numbers**

This change became effective at serial number A-87-42-xxxxx.

**Part numbers affected**

Servo cover 4460388-xxxx is replaced by 4460455-xxxx.

4460388-xxxx servo covers are no longer available as service parts,

**Parts disposition**

■ Use new parts at first repair

**Service bulletin: SB-1988-002**

<b>Products affected</b>	M46 pumps and variable motors
<b>Subject</b>	Servo piston improvements
<b>Description</b>	<p>Two product improvements have taken place in the M46 product line.</p> <p>The first improvement involves a change in the servo backlash adjustment from one self locking nut to a stronger double nut arrangement. A .335" wide nut takes the place of the self locking nut, and is adjusted to set zero backlash as in the previous design. After backlash is set, a .225" wide nut is torqued to 18-27 ft. lbs. against the thicker nut to act as a lock nut. (Figure 2 and 3)</p> <p>The second improvement involves the addition of a nonmetallic bearing ring to enhance the bearing characteristics of the housing bore/servo piston interface. The rings are of a split design and simply fit into grooves located inside the current grooves for the servo piston seal rings. Before installing the bearing rings to the servo piston, the bearing rings must be preformed. Simply curl the bearing ring around your finger until its O.D. is approximately 1", and let stand for approximately (5) minutes. To assemble, install the (2) bearing rings into the bearing ring grooves, (2) O-rings into the piston ring grooves, and (1) of the (2) piston rings over its O-ring. Do not install the piston ring closest to the neutral adjustment screw (Figure 3). Spread a light film of oil on the seal and bearing ring. Next slide the servo piston into the housing bore, adjustment screw first, until the adjustment screw end piston ring groove is just exposed. Then install the second piston ring and oil and slide the piston into position in the housing. (Figure 4).</p>
<b>Models affected</b>	All M46 pumps and variable motors.
<b>Serial numbers</b>	Double nut backlash was incorporated at serial number 87-41-xxxxx. Bearing ring was incorporated at serial number 88-05-xxxxx.
<b>Part numbers affected</b>	<p>.335" nut is p/n 9003535-3700</p> <p>.225" nut is p/n 9003561-3700</p> <p>Bearing ring is p/n 4460477</p> <p>Servo piston with groove for bearing ring is 460474</p>
<b>Parts disposition</b>	<p>■ Interchangeable - 4460474 servo piston with 4460477 ring will fit all vintages of M46 housings. See SB-1987-005 for installation instructions for older housing without a lead-in chamfer.</p>

Service bulletin: SB-1988-002

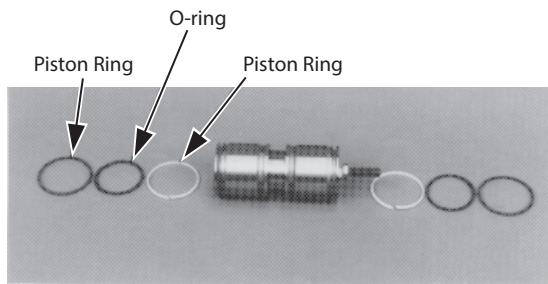


Fig. 1  
Servo piston assembly with rings

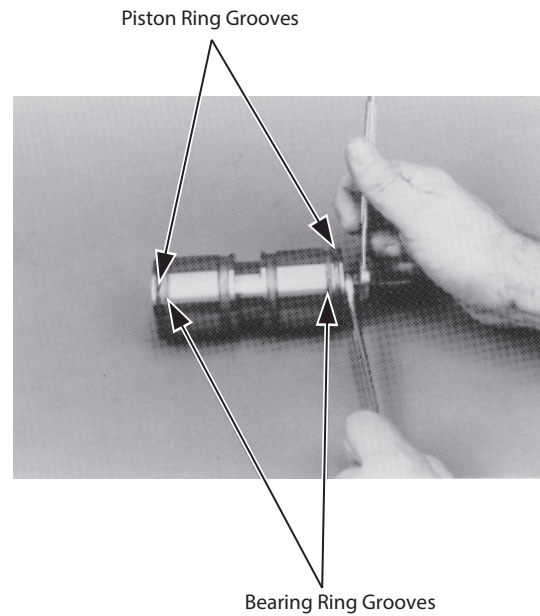


Fig. 2  
Bearing ring grooves  
Tightening the backlash locknut

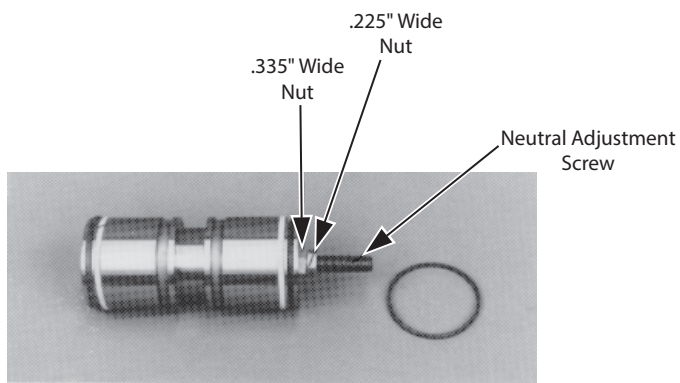


Fig. 3  
Servo piston assembly with all  
rings installed except the closest  
to the neutral adjustment screw.

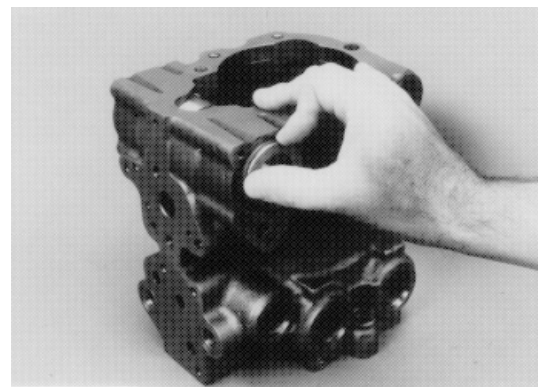


Fig. 4  
Installing second piston ring



**Service bulletin: SB-1989-001**

<b>Products affected</b>	Series 20, series 30 and M46 pumps			
<b>Subject</b>	Change to silicone filled pilot on electrical displacement controls.			
<b>Description</b>	<p>During late 1988, all series 20, series 30, and M46 pumps with the electrical displacement control (EDC) option were updated to include the silicone oil filled pressure control pilot (PCP). Prior to this change the silicone oil filling was optional.</p> <p>The addition of the silicone oil prevents moisture build up in the torque motor area of the valve and dampens vibrations.</p> <p>The new valve is totally interchangeable with the old. The old style (dry) controls and (dry) PCP valves for controls will be obsoleted and unavailable as service parts.</p> <p>Model numbers of M46 pumps with non silicone filled controls will be obsoleted and changed to new models with the silicone oil filled feature. Series 20 and 30 model numbers will not change.</p>			
<b>Models affected</b>	Series 20, series 30 and M46 pumps with electrical displacement controls. New M46 pump model numbers will be assigned upon order.			
<b>Serial numbers</b>	All pumps shipped after November 28, 1988 or with S/N 88-48-xxxx, include the silicone oil filled pilot.			
<b>Part numbers affected</b>	Control Valves	PCP Valves		
	Old P/N	New P/N	Old P/N	New P/N
	MCV104Axx01	MCV104Axx02	MCV101A1214	MCV101A1255
	MCV104Axx05	MCV104Axx06	MCV101A1313	MCV101A1347
	MCV104Axx04	MCV104Axx03	MCV101A1222	MCV101A1248
	MCV104Axx08	MCV104Axx07	MCV101A1321	MCV101A1339
	MCV105Axx01	MCV105Axx02	MCV101A1063	MCV101A1006
	MCV105Axx05	MCV105Axx06	MCV101A1071	MCV101A1055
	MCV105Axx04	MCV105Axx03		
	MCV105Axx08	MCV105Axx07		
	MCV109Axx01	MCV109Axx02		
	MCV109Axx04	MCV109Axx03		
<b>Parts disposition</b>	<div> <div></div> Interchangeable </div>			



**Service bulletin: SB-1989-013**

**Products affected**

M46 variable pumps, tandem pumps, and variable motors

**Subject**

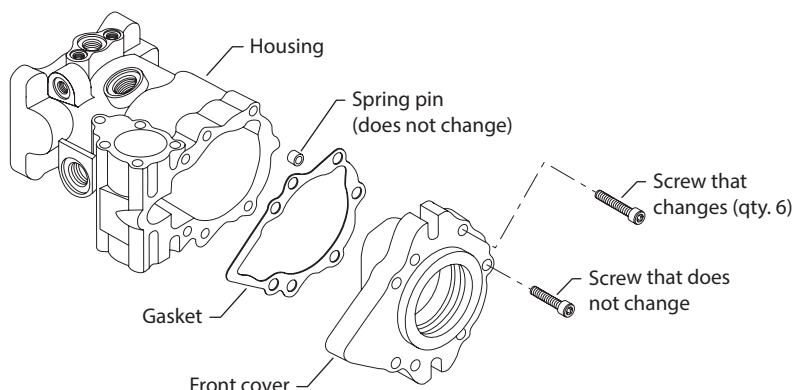
Front cover cap screw change

**Description**

As a product improvement, six (6) of the seven (7) front cover screws on M46 variable displacement units will increase in size from 3/8-16 to 7/16-14. This improvement increases the front cover to housing clamping force, and reduces the potential for leaks or screw breakage.

A 7/16" 12 point socket is required to remove and install the new 7/16" screws. The 3/8" screw continues to require a 3/8" 12 point socket. The installation torque is 60-74 lbf·ft. (81-100 Nm) for the 7/16" screws and 39-47 lbf·ft. (53-64 Nm) for the 3/8" screw.

All variable pump and motor housings, including both front and rear tandem pump housings, will change and the old (all 3/8" screw hole) housings will no longer be available as service parts. Housings are rarely sold as service part items, but if required, a new front cover and screws must be used with the new housing. The gasket will change, however, the new style gasket will fit any vintage pump. The front cover (plus rear cover on tandems) will also change, but old style covers will remain available as service parts, and must be used to repair older vintage pumps and variable motors.



**Models affected**

All M46-2xxx single pumps, M91-46xxx tandem pumps, and M46-4xxx variable motors.

**Serial numbers**

The change will take place at serial number A-89-23-xxxxx.

**Part numbers affected**

Description	Old part number	New part number
Housing - single pump	*4460440	4460579
Housing - front tandem pump	*4460438	4460568
Housing - rear tandem pump	*4460439	4460569
Housing - standard variable motor	*4460452	4460565
Housing - for thru shaft variable motor	*4460453	4460566
Front cover - standard	4460392	4460563
Front cover - special mounting	4460478	4460573
Rear cover - "A" flange tandem pump	4460449	4460571
Rear cover - "B" flange tandem pump	4460437	4460572
Cover gasket	*4460409	4460564
12 point screw (quantity 6)	9007510-3716	9007510-4416

**Parts disposition**

■ Interchangeable

Service bulletin: SB-1989-021

**Products affected**

M25, M35 & M46 single and tandem pumps, with SAE A auxiliary pad.

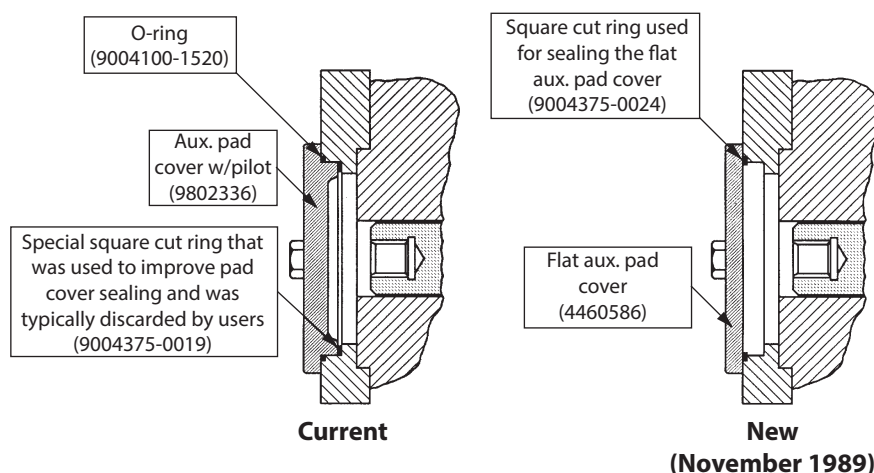
**Subject**

Auxiliary pad cover seal change

**Description**

Effective in November of 1989, we will no longer supply an O-ring under the auxiliary pad cover that is capable of sealing an auxiliary pump. A new pad cover, with a square cut ring designed only for sealing the pad cover, will be used. Customers currently reusing the pad cover O-ring to seal an auxiliary pump must supply their own O-ring after this change.

The O-ring required to seal an auxiliary pad is a standard 70 durometer O-ring with a .103" cross section and 3.237" I.D. with ARP 568 uniform dash number -152. This O-ring can be purchased from Sundstrand-Sauer under part number 9004100-1520.



**Models affected**

All M25-2xxx, M35-xxx, and M46-2xxx single pumps. All M91-25xxx, M91-35xxx, and M91-46xxx tandem pumps with auxiliary mounting pad..

**Serial numbers**

The change will take place at serial number A-89-45-xxxxx. for M46 pumps. The change will take place at serial number A-89-38-xxxxx. for M25 and M35 pumps.

**Part numbers affected**

Refer to drawing above.

**Parts disposition**

■ Interchangeable



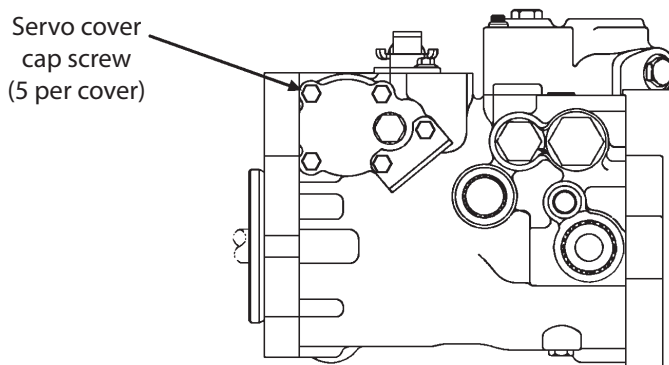
**Service bulletin: SB-1990-012**

**Products affected**      M46 pumps & variable motors

**Subject**      Servo cover cap screw change

**Description**      In the 3rd quarter of 1990, the screws that retain the servo covers to the housing will change from hex head screws with flat washers to flange head screws with no washers.

The wrench size required to remove the screws decreases from 7/16" to 3/8". The screw torque remains unchanged at 11 to 13 lbf·ft [16 Nm].



**Models affected**      All M46-2xxx single pumps, M91-46xxx tandem pumps, and M46-4xxx variable motors.

**Serial numbers**      N/A

Part numbers affected	Description    Old part number    New part number		
	Screw	9007206-2522	9007276-0134
	Washer	9009610-2850	not used

**Parts disposition**      ■ Interchangeable

**Service bulletin: SB-1990-017**

**Products affected** M46 variable displacement pumps

**Subject** Filtration adapter changes

**Description** This bulletin was issued in June, 1991 for advanced information. The purpose of this revision "C" is to reflect a correct P/N for the new style installation screw. (See part numbers affected on reverse side of the page.)

As part of our overall series 40 product improvement program, we have redesigned the filtration adapter blocks used on single and tandem M46 pumps. This change incorporates a more effective seal with the pump housing and reduces the adapter thickness, thus providing a more compact overall pump package. Three (3) O-rings seal the current filtration adapters to pump housings. The new design utilizes a single gasket for sealing.

This change will impact customers using remote filtration or an external source for charge pressure (no charge pump). Also, any vehicle with a charge pressure monitor connected to this adapter block could be affected. The new remote filtration adapter block does not have a filter inlet gauge port, however, this may be accomplished with a tee on the port leading to the remote filter. The new suction filtration adapter does not include the two (2) alternate charge pressure gauge ports.

The dimensional differences are shown on the attached comparative drawings. All port sizes remain the same.

**Models affected** All M46-2xxx single pumps and M91-46xxx tandem pumps.

**Serial numbers** The change will take place during May, 1991 for the suction filtration adapter and late 1991 for the remote filtration adapter.

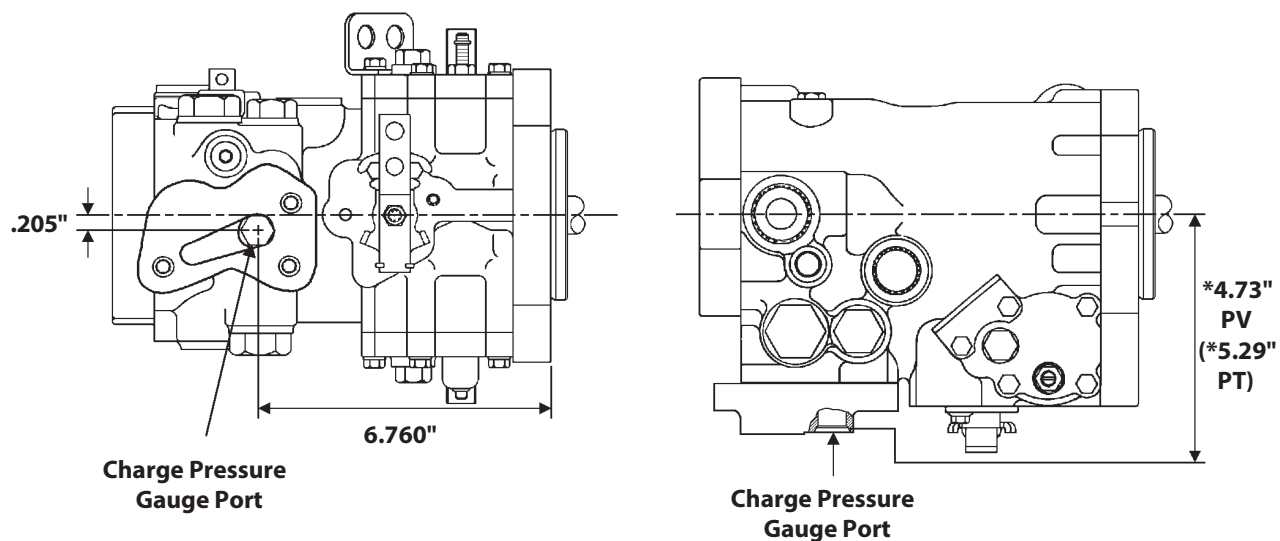
**Part numbers affected**

Option	Current Style P/N	New Style P/N
Suction filtration adapter	4460345	4460643
Remote filtration adapter	4460434	4460644
Seal gasket - suction	(3) 9004101-0170 O-rings	4460655
Seal gasket - remote	(3) 9004101-0170 O-rings	4460656
Installation screws	(2) 9007500-3130 (1) 9007500-3124	(3) 9007206-3116

**Parts disposition** ■ Interchangeable - New adapter will fit all housings since serial number A-86-14-xxxxx.

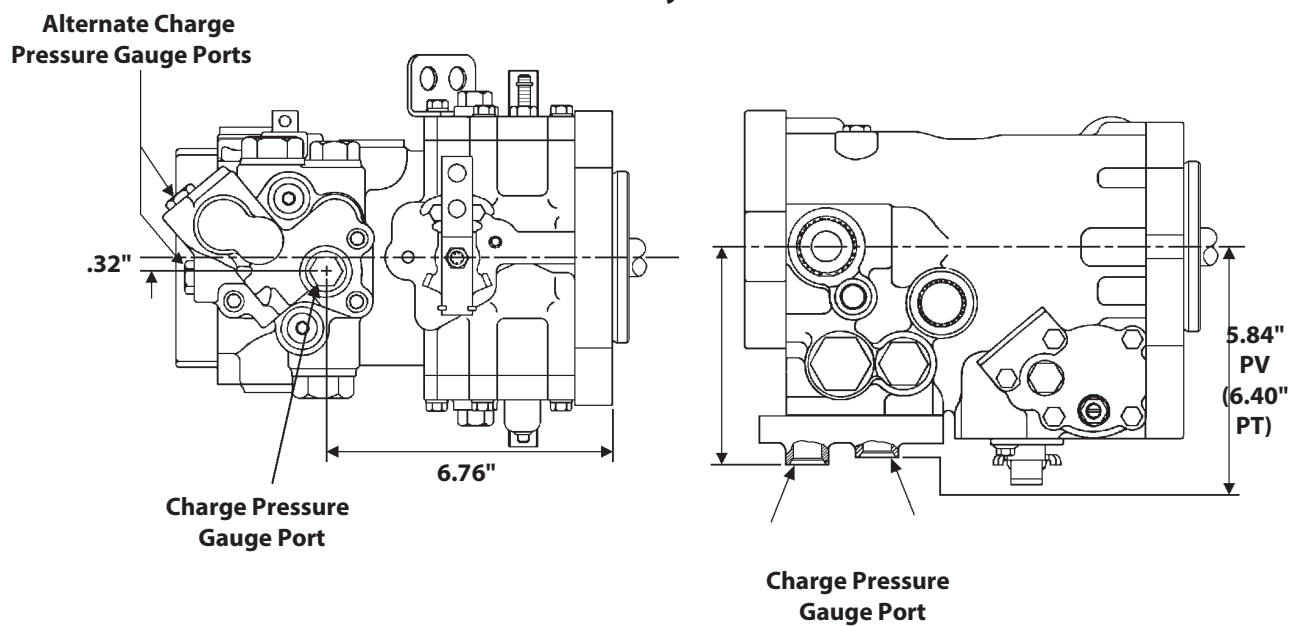
## Suction Filtration Option

### New Style



\* On the April issue, these dimensions were 4.93" PV & 5.49" PT

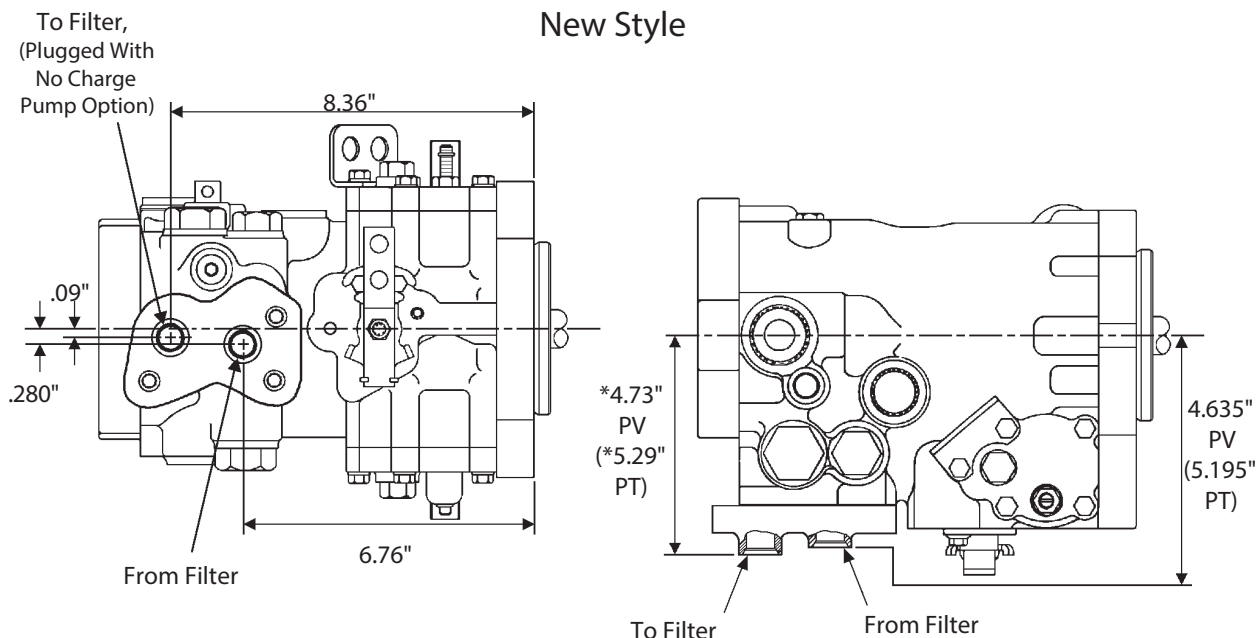
### Old Style



## Remote Pressure Filtration Option

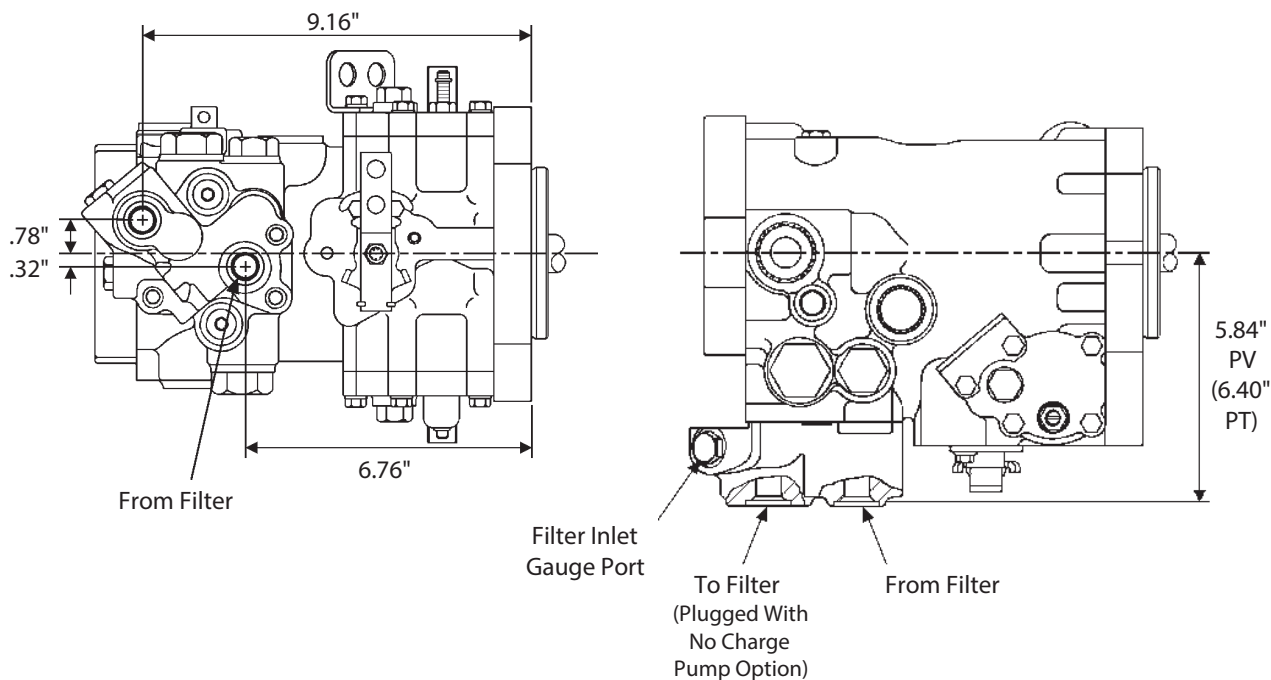
(Also "No Charge Pump Option")

### New Style



\* On the April issue, these dimensions were 4.93" PV and 5.49" PT

### Old Style





Service bulletin: SB-1991-009A

**Products affected** M46 variable displacement pumps and motors

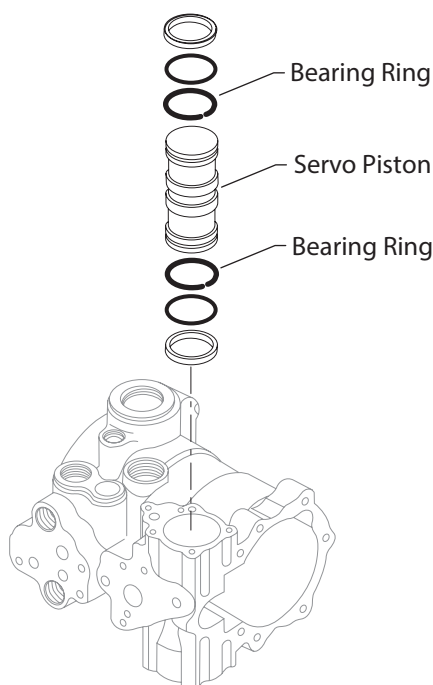
**Subject** Brass bearing ring

**Description** The part number of the nylon bearing was incorrect in the 4-26-91 version of this bulletin. The purpose of this revision "A" is to correct that error.

The bearing rings, used on all M46 servo pistons, are changing from a glass filled nylon material to brass. The brass material will provide a better life in severe duty applications.

There are no functional or operational differences between the nylon and brass rings.

Assembly procedures remain the same except extreme care should be taken not to deform or twist the rings any more than necessary when sliding the rings over the piston and into their grooves.



**Models affected** All M46-2xxx single pumps, M91-46xxx tandem pumps, and M46-4xxx variable motors.

**Serial numbers** The change will take place at serial number A-89-23-xxxxx.

Part numbers affected	Description	Old part number	New part number
	Bearing ring	4460477	4460648

**Parts disposition**

- Interchangeable
- Use parts in stock



**Service bulletin: SB-1994-002**

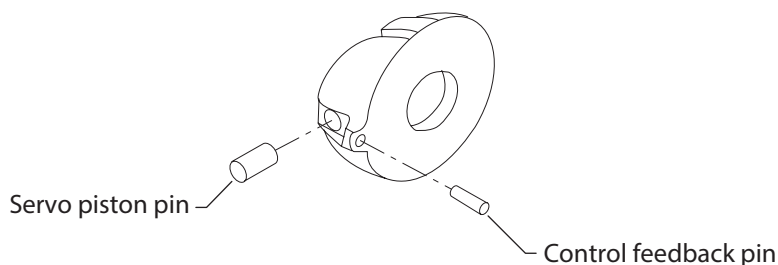
**Products affected** M46 variable pumps & variable motors

**Subject** Swashplate kits

**Description** When replacing the swashplate in M46 variable pumps and motors, the servo piston pin and control feedback pin also need to be replaced. Sauer-Danfoss will provide service kits containing swashplates with these pins installed. These swashplate kits will work in the variable motor with the control feedback pin installed, even though the control pin is not necessary.

Swashplates without the pins installed will no longer be available as spare parts.

These assemblies may be used in units from serial number A-86-23-xxxxx to the present



**Models affected** All M46-2xxx single pumps, M91-46xxx tandem pumps, and M46-4xxx variable motors.

**Serial numbers** A-86-23 and beyond

**Part numbers affected**

Description	Part number
Swashplate kit (non-balanced)	4510072
Swashplate kit (balanced)	4510073
Swashplate (non-balanced)	4460393
Swashplate (balanced)	4460394
Control feedback pin	9004700-2512
Servo piston pin	9004820-4416

**Parts disposition** ■ Interchangeable



**Service bulletin: SB-1994-011A**

**Products affected**

M46 variable pump, variable motor and tandem pump.

**Subject**

Retained swashplate journal bearings.

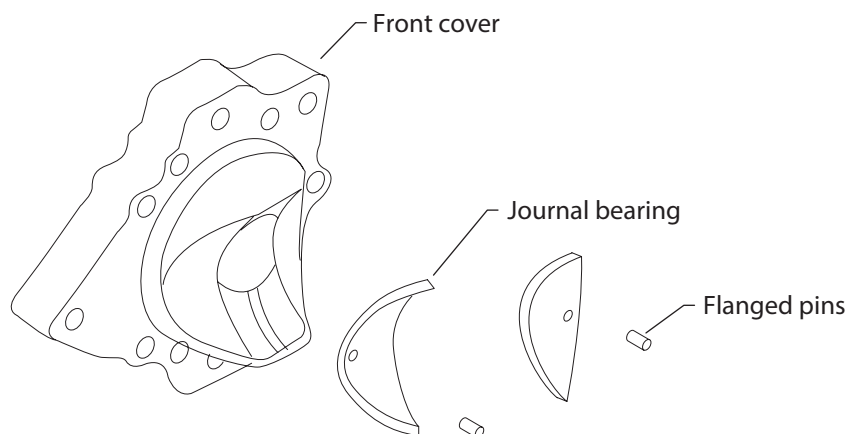
**Description**

As a product improvement Sauer-Danfoss is changing the way the journal bearings are held in place on the front cover of the M46 variable units. This change makes it easier to assemble the unit because the bearings are retained with a flanged pin to the front cover.

The hole in the bearing, along with the OD of the pin, became larger. The hole size of the old bearing was .125 inches and the hole size of the new bearing is .137 inches. The new bearing can be used with the old pin when repairing old style units. Thus the need to pull out the old pins and replace with flanged pins and new bearings is not necessary. The old bearing with the .125 hole will be obsoleted and replaced with the new bearing with the .137 hole.

To install the new bearings and pins, install the pin through the hole in the bearing from the running surface side. Using a small hammer and punch, seat the pin into the hole of the front cover. After completing the installation process, be sure the head of the pin is below the surface of the bearing material to insure the pin does not score the swashplate mating surface.

Since the non-balanced swashplate module was inactivated in new production units in second quarter 1994, the non-balanced swashplate bearings will not change.



**Service bulletin: SB-1994-011A**
**Models affected**

All M46-2xxx single pumps, M91-46xxx tandem pumps, and M46-4xxx variable motors.

**Serial numbers**

The change will become effective per the following chart:

Tandem pumps	94-47 and beyond
Single pumps	94-47 and beyond
Variable motors (flange style)	95-02 and beyond
Variable motor (cartridge flange)	95-07 and beyond

**Part numbers affected**

Description	Where used	Old p/n	New p/n
Journal bearing	PV & PT balanced swashplate	4460320-0001	4460696
Journal bearing	PV & PT non-balanced swashplate	4460325-0001	No change
Journal bearing	Variable motor (SAE flange)	4460320-0003	4460397
Journal bearing	Variable motor (cartridge flange)	4460320-0003	4460697
Slotted pin	All variable units*	9004700-1206	5000116

\* Except variable units with the non-balanced swashplate

**parts disposition**

- Interchangeable - old pin/new bearing Non-
- Interchangeable - new pin/old bearing



**Service bulletin: SB-1994-037**

**Products affected**

M46 variable pump, tandem pump, and variable motor

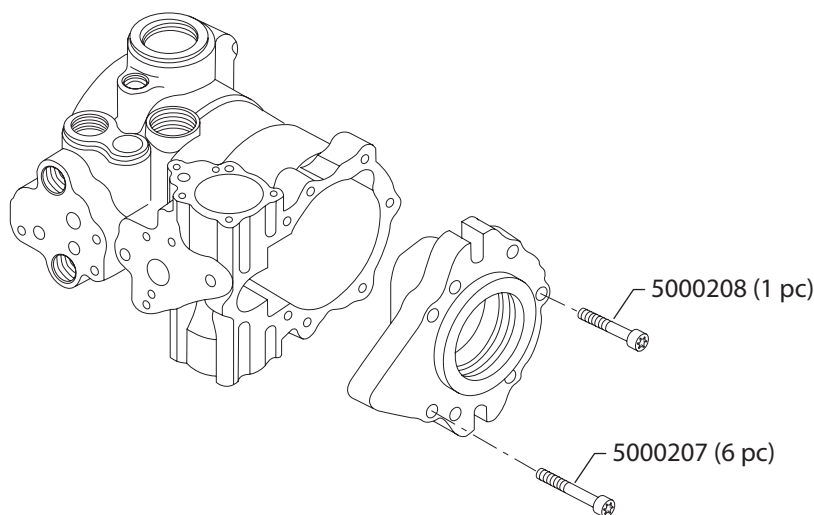
**Subject**

Front cover screws

**Description**

As a product improvement, Sauer-Danfoss is changing the screws that fasten the front cover to the housing of the M46 pumps and variable motors.

The old screws had a 7/16 12 point head or 3/8 12 point head. The new screws have an internal T50 or an internal T55 torx head. The torque will remain the same as the old screws. The old screws are obsolete and no longer available as a service part.



**Models affected**

All M46-2xxx single pumps, M91-46xxx tandem pumps, and M46-4xxx variable motors.

**Serial numbers**

This change became effective at serial number A-94-37-xxxxx.

**Part numbers affected**

Description	Old part number	New part number
7/16 12 point screw	9007510-4416	-
3/8 12 point screw	9007510-3720	-
T55 torx screw	-	5000207
T50 torx screw	-	5000208

**Parts disposition**

■ Interchangeable

Service bulletin: SB-1995-019

**Products affected**

15 Series, M25, M35 & M46 single and tandem pumps with SAE "A" pad

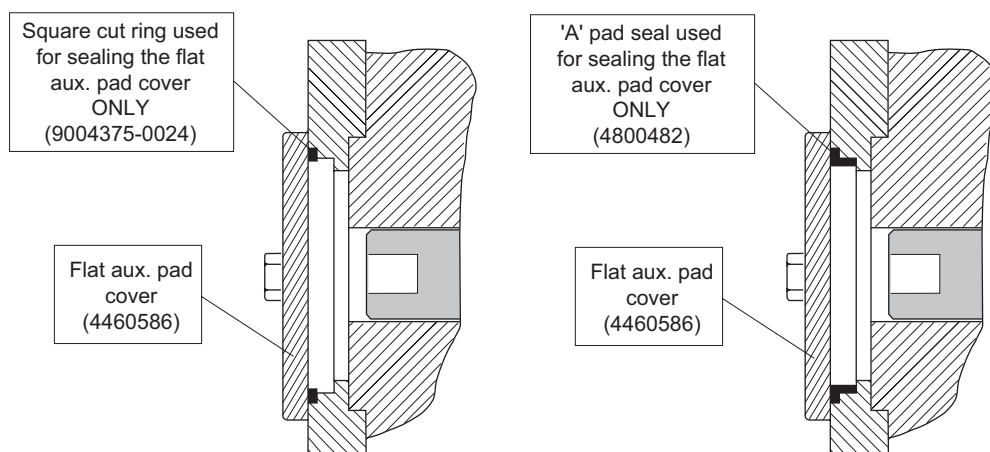
**Subject**

Auxiliary pad cover seal change

**Description**

Effective in November of 1995, Sauer-Danfoss changed the auxiliary 'A' pad seal from a square cut ring to doughnut type seal. The sealing capacity of the new seal is equal to that of the square cut ring, but makes assembly much easier.

If the pad cover is removed to install an auxiliary pump, an O-ring must be used to seal that joint. The O-ring required is a standard 70 durometer O-ring with a .103" cross section and a 3.237" ID. This O-ring may be purchased from Sauer-Danfoss under part number 9004100-1520.



**Models affected**

All 15-2xxx, M25-2xxx, M91-25xxx, M46-2xxxx and M91-46xxx with SAE "A" pad.

**Serial numbers**

The change will take place at serial number A-95-45-xxxxx.

**Part numbers affected**

Description	Old part number	New part number
A pad seal	9004375-0024	4800482

**Parts disposition**

■ Interchangeable


**Service bulletin: SB-1995-020A**
**Products affected**

M46 variable pumps & variable motors

**Subject**

Swashplate kits

**Description**

As a product improvement, Sauer-Danfoss is changing the finish on M46 cylinder block. The old cylinder blocks had a shiny steel finish. The new cylinder blocks have a dark gray finish.

All repairs that call for a new cylinder block should use the new block. Return new 4460583 cylinder blocks and 4460289 cylinder block kits for credit and reorder the new part numbers.

**Models affected**

All M46 pumps, fixed motors, and variable motors.

**Serial numbers**

This change became effective at week 96-19 on all fixed motors, and 96-35 for all variable pumps and variable motors.

**Part numbers affected**

Description	Old part number	New part number
Cylinder block	4460583	4460832
Cylinder block kit	4460289	4460890

**Parts disposition**

■ Interchangeable

**Service bulletin: SB-1995-022**

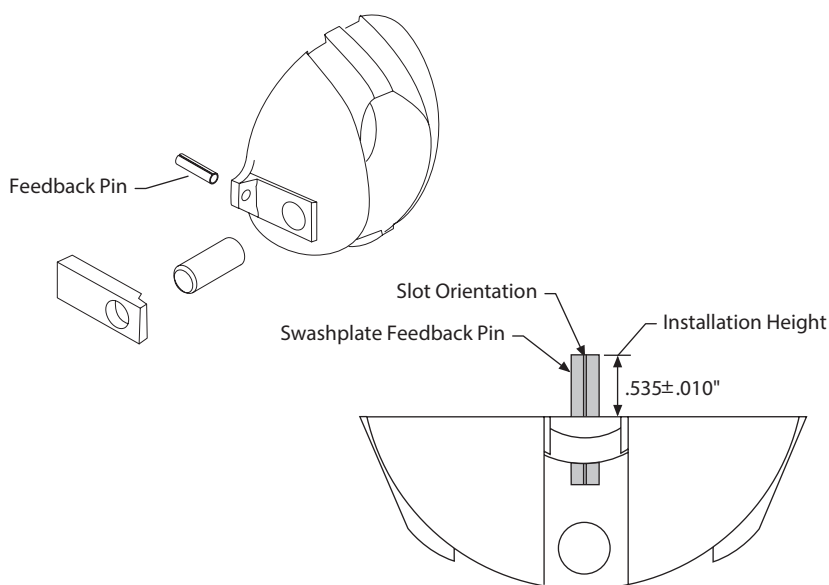
**Products affected** Series 40 M46 single and tandem pumps

**Subject** Increased length of feedback pin

**Description** As a product improvement, Sauer-Danfoss is increasing the length of the swashplate feedback pin on the variable swashplate assembly. The installed height changes are from  $.340 \pm .010$  to  $.535 \pm .010$ .

The feedback pin should be replaced with the new pin on any repair. The old pin will become obsolete. As a reminder when installing the slotted pin, the slot must be either facing the rotating kit or turned  $180^\circ$  away from the rotating kit.

If the pump you are working on was manufactured between A-86-14 and A-97-12, be sure and use a new style control sleeve. See service bulletin SB-1997-001. For product manufactured before 86-14, consult Sauer-Danfoss



**Models affected** All M46-2xxx and M91-46xxx.

**Serial numbers** This change became effective at serial number A-96-01-xxxxx.

**Part numbers affected**

Description	Old part number	New part number
Slotted pin	9004700-2512	5000381
Pin length	.075"	.9375"

**Parts disposition**  Non-interchangeable


**Service bulletin: SB-1997-001**
**Products affected**

Series 40 M46 single and tandem pumps

**Subject**

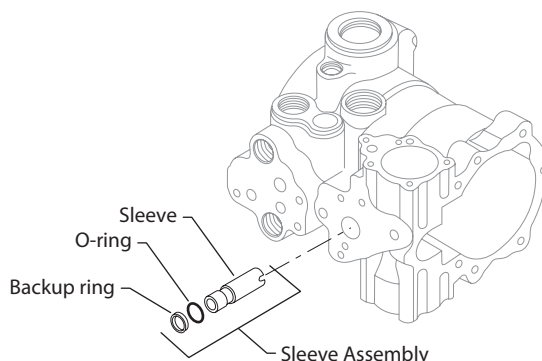
Improvement in serviceability of the control sleeve.

**Description**

To improve serviceability of the M46 control sleeve, Sauer-Danfoss is increasing the feedback slot width of the control valve sleeve. This is an interchangeable change from pump serial number A-86-14-xxxxx and newer. For pumps manufactured earlier, consult the M46 service parts manual BLN-2-41650.

When installing the new control sleeve, be sure that the slot engages the feedback roll pin. Also insure that there is no rotational free play between the feedback roll pin and the slot of the control valve sleeve. If there is rotational free play you must change the feedback roll pin. See service bulletin SB-1995-022.

A sleeve assembly has been created with the O-ring and backup ring installed. See page two for detailed part number information.


**Models affected**

All M46-2xxx and M91-46xxx.

**Serial numbers**

For the MDC, effective at serial number A-97-12-xxxxx and newer.  
For EDC/HDC, effective at serial number A-97-09-xxxxx and newer.

**Part numbers affected**

Description	Old p/n	New p/n
MDC sleeve assembly (.046" orifice)	4460414-0002	4510159
MDC sleeve assembly (.031" orifice)	4460414-0003	4510160
MDC sleeve assembly (.025" orifice)	4460414-0004	4510157
MDC sleeve assembly (.036" orifice)	4460414-0005	4510158
MDC service sleeve assembly (.046" orifice)	4460640-0002	4510159
MDC service sleeve assembly (.031" orifice)	4460640-0003	4510160
MDC service sleeve assembly (.025" orifice)	4460640-0004	4510157
MDC service sleeve assembly (.036" orifice)	4460640-0005	4510158
Electric displacement control	MCV105A30xx	MCV105B30xx
Hydraulic displacement control	MCV108A30xx	MCV108B30xx
EDC/HDC sleeve assembly	K12679	K22539*

MDC = Manual Displacement Control

\* will work on both EDC and HDC

**Parts disposition**

■ Interchangeable from serial number A-86-14-xxxxx



**Service bulletin: SB-1998-012**

**Products affected**

Series 40, M46 single and tandem pumps

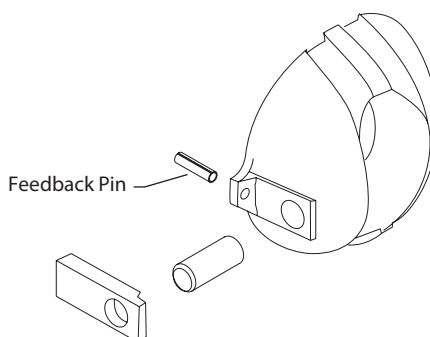
**Subject**

New part number for swashplate feedback pin

**Description**

Sauer-Danfoss has improved the roundness for the swashplate feedback pin used in the M46 variable pumps. If you have any of the old pins in your stock, return them for credit and order the new part number.

If you are repairing an M46 pump and the slot in the feedback pin has turned and is no longer either facing the rotating group or 180 degrees away from the rotating group or is not of the increased length design, the pin must be changed. (Reference SB-9522)



**Models affected**

All M46-2xxx and M91-46xxx model numbers

**Serial numbers**

Units built A-98-08-xxxxx and newer have the new pin.

**Part numbers affected**

Description	Old part number	New part number	Status of old part
Feedback pin	5000381	5000507	Obsolete

**Parts disposition**

■ Interchangeable



**Service bulletin: SB-1998-051**

**Products affected**

Series 40, M46 single and tandem pumps

**Subject**

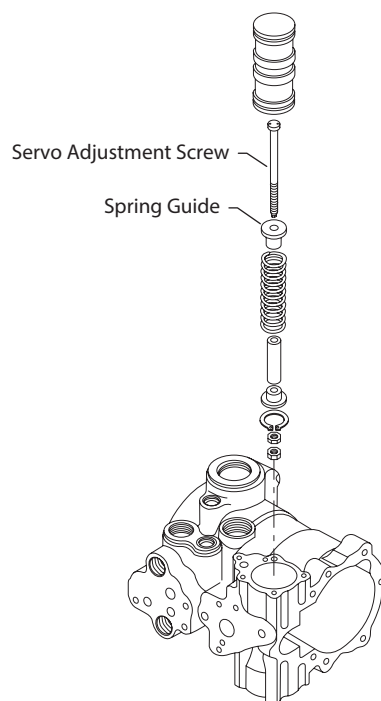
Servo adjustment screw

**Description**

As a product improvement, Sauer-Danfoss has modified the design of the servo adjustment screw in order to make it more robust and lengthen its fatigue life. In conjunction with this change, and as a result of it, the spring guide has also been changed. The new spring guide is compatible with both the old and the new servo screw.

If replacement of the old servo screw is required, both the new servo screw and the new spring guide need to be replaced because, the old spring guide is not compatible with the new servo screw.

The old spring guide and the old servo adjustment screw are obsolete and no longer available as a service part.



**Models affected**

All M46-2xxx and M91-46xxx model numbers

**Serial numbers**

Units built after A-98-40-xxxxx have the old servo screw and new spring guide.  
Units built after A-99-14-xxxxx have the new servo screw and new spring guide.

**Part numbers affected**

Description	Old part number	New part number
Servo screw*	4460732	4461033
Spring guide	4460548	4461034

\* If part number 4460732 is being replaced, both 4461033 and 4461034 need to be replaced

**Parts disposition**

- Interchangeable - see text on front page
- Non-interchangeable - see text on front page

Service bulletin: SB-1998-052

**Products affected**

M46 single and tandem pumps

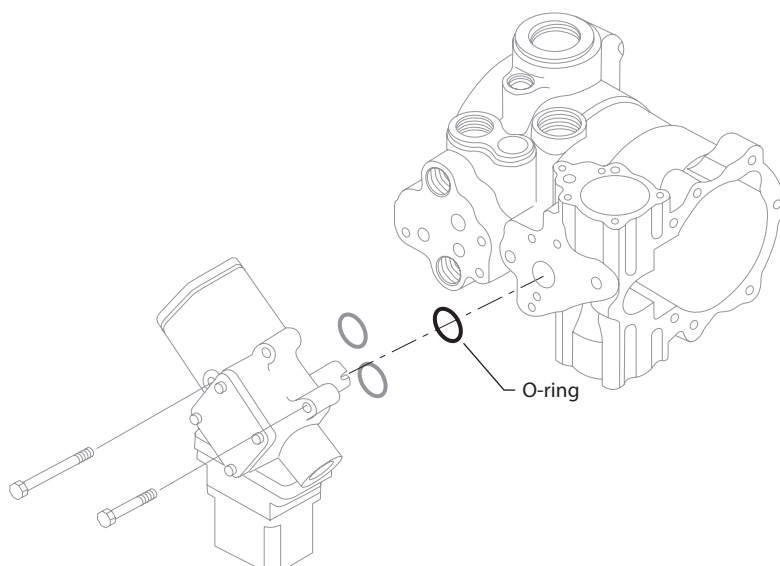
**Subject**

EDC and HDC O-ring change

**Description**

In order to improve the robustness of the EDC and HDC control, Sauer-Danfoss has redesigned the control housing to accept a stiffer O-ring with a larger cross section. This change requires that a deeper O-ring groove be machined into the control's housing, thus making the two O-rings non-interchangeable.

EDCs and HDCs manufactured before this change took place, will require the smaller cross-sectional diameter O-ring and this part will still be available as a service part. New EDCs and HDCs when ordered will come with the new, larger, cross-sectional diameter O-ring. Overhaul seal kits have both the old and the new O-rings in them so that any vintage pump may be serviced.



**Models affected**

All single and tandem M46 pumps that are equipped with an EDC or HDC.

**Serial numbers**

All EDC units produced prior to 98-31-xxxxx use the old O-ring.  
All HDC units produced prior to 98-33-xxxxx use the old O-ring.

**Part numbers affected**

Description	Old part number	New part number
O-ring, .070 x .926, 70D	9004100-0210	N/A
O-ring, .103 x .924, 90D	N/A	9004101-1190

**Parts disposition**

■ Non-interchangeable


**Service bulletin: SB-1998-077**
**Products affected**

Series 40 - M46 pumps and motors

**Subject**

Slipper material change

**Description**

Sauer-Danfoss has made a material change to the slipper component used in the piston assemblies of all Series 40 M46 pumps and motors. This change increases the robustness of the design while maintaining the consistency of the slipper's performance. To aid in tracking this change, Sauer-Danfoss has released a new part number for the piston assemblies.

The new piston assembly is fully interchangeable with the one previously used. The previous piston assembly has become obsolete, due to this part number change. (The cylinder block kits all incorporate the new slippers, but none of the cylinder block kit part numbers have been changed.)

This bulletin was issued in May of 1999. The purpose of this revision is to remove the slipper part number from page two, due to the fact that it is not available as a service part.

**Models affected**

All Series 40 M46 products.

**Serial numbers**

All service parts and production units ordered or built after March 1, 1999 or serial number A-99-10-xxxxx.

**Part numbers affected**

Description	Old part number	New part number
Piston assembly	4460650	4461032

**Parts disposition**

■ Interchangeable

Service bulletin: SB-2002-021

**Products affected**

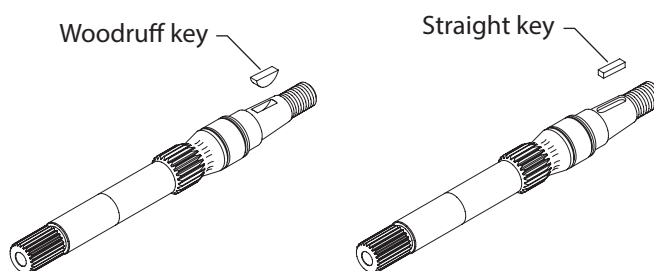
Series 40: M25, M35, M44, M46, and LV pumps and motors

**Subject**

Change from woodruff key to straight key on tapered shaft.

**Description**

Sauer-Danfoss will use a straight key rather than a woodruff key in tapered shafts on all Series 40 pumps and motors. Tapered shafts requiring a woodruff key are obsolete. The woodruff key, however, will remain available for service requirements. Customers requiring a replacement shaft need the straight key.



**Models affected**

Series 40: M25, M35, M44, M46, and LV models using tapered shafts.

**Serial numbers**

This change became effective during the 2002 build year.

**Part numbers affected**

Old part number	New part number	Description
9003310-2514	-	Woodruff key, .248 x .875
-	5000664	Square key, .250 x .750
4250012	4250164	Shaft, pump
4254500	4254568	Shaft, LV, tapered
4350390	4350805	Shaft, fixedv motor, tapered
4350432	4350791	Shaft, tandem, tapered
4460309	4461308	Shaft, pump, tapered/9T aux.
4461290	4461302	Shaft, pump, tapered/13T aux.
4460577	4461309	Shaft, motor, tapered
4460804	4461306	Shaft, MV, 13 tooth/1" dia. 1.5" tapered
4460772	4461307	Shaft, Tandem, tapered

**Parts disposition**

■ Interchangeable if shaft and key are both replaced



**Service bulletin: SB-2002-037**

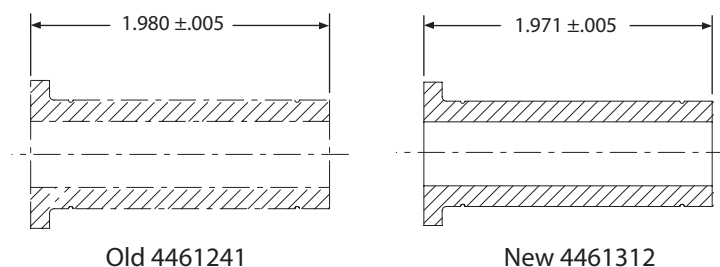
**Products affected**      Series 40 M46 pumps and motors

**Subject**      Servo gasket and 0 degree servo stop

**Description**      As a design improvement, Sauer-Danfoss has introduced a new servo gasket with improved sealing capability. The new servo gasket is interchangeable for service on all M46 pumps and motors, except for M46 motors, using the 0 degree servo stop option.

During service repair, if a motor has the obsolete 0 degree servo stop (4461241), and you replace the servo gaskets with the new servo gaskets (4461311), you must install a new 0 degree servo stop (4461312). This accommodates the new, thinner servo gaskets.

The old servo gasket and 0 degree servo stop are obsolete. They are no longer available.



**Models affected**      All series 40 M46 variable pumps and motors.

**Serial numbers**      This change became effective at serial number K-02-47-xxxxx.

Part numbers affected	Description	Old part number	New part number
	Servo gasket	4460413	4461311
	Servo stop	4461241	4461312

**Parts disposition**      ■ Interchangeable (except for motors manufactured before serial number K-02-47-xxxxx using 0 degree servo stop)

**Service bulletin: SB-2006-003**

**Products affected**

Series 40 M46 pumps

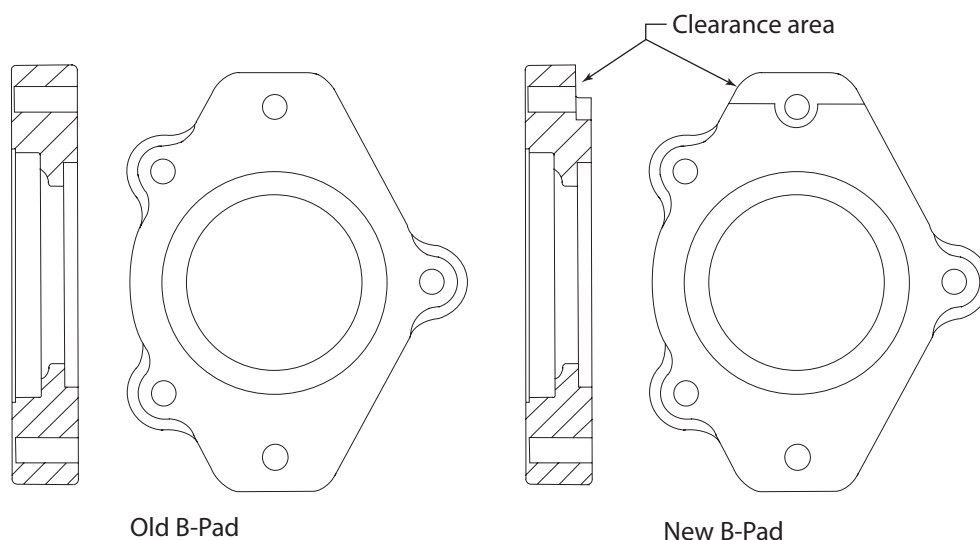
**Subject**

Auxiliary adapter - B pad

**Description**

As a design improvement, Sauer-Danfoss has changed the configuration of the B pad adapter for M46 single pumps. A clearance area has been added to the SAE-B pad adapter to improve wrench access to the charge inlet fitting installed in the pump housing.

The new and old adapters are interchangeable. The old adapter is obsolete and no longer available as a service part.



**Models affected**

All series 40 M46 single pumps.

**Serial numbers**

This change became effective at serial number A-06-39-xxxxx.

**Part numbers affected**

Description	Old part number	New part number
B pad adapter	4460433	4461453

**Parts disposition**

- Interchangeable
- Use parts in stock



**Service bulletin: SB-2006-004**

**Products affected**

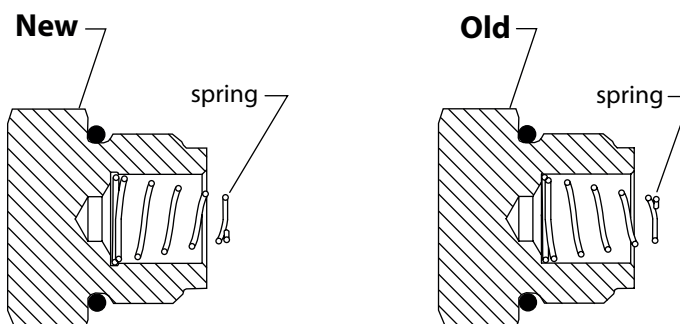
Series 40 M46 pumps

**Subject**

System check relief (SCR) plug and spring

**Description**

As a product improvement, Sauer-Danfoss has changed the SCR plug and spring. The new plug and spring clip together to simplify the assembly process. The old plug and spring are obsolete and no longer available for service. A new spring cannot be used with an old plug, an old spring cannot be used with a new plug. A new plug/spring assembly is interchangeable with an old plug/spring assembly.



**Models affected**

Series 40 M46 pumps.

**Serial numbers**

This change became effective at serial number A-06-10-xxxxx.

**Part numbers affected**

Description	Old part number	New part number
Plug	4460635	4461454
Spring	4800780	4461386
Spring/plug assembly	4461326	4461455

**Parts disposition**

- Interchangeable as an assembly
- Use parts in stock



**Service bulletin: SB-2006-017**

**Products affected**

Series 40 M46 pumps

**Subject**

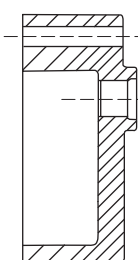
Servo cover

**Description**

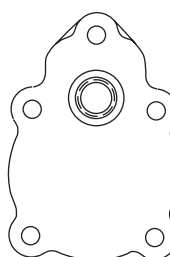
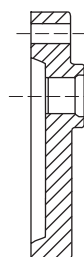
Sauer-Danfoss is obsoleting 4460562 servo cover due to low production and service volumes. The cover is no longer available.

The replacement servo cover is not directly interchangeable for service. The old servo cover can be replaced by using the current production servo cover (4460455-0004) and five installation screws (9007276-0134).

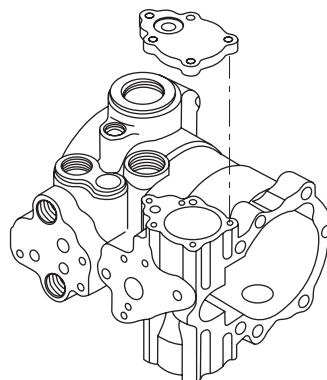
Old Servo Cover



New Servo Cover



Servo Cover



**Models affected**

All 40 M46 pumps.

**Serial numbers**

This change became effective at serial number A-06-51-xxxxx.

**Part numbers affected**

Description	Old part number	New part number
Servo cover	4460562	4460455-0004
Screw	9007206-2528	9007276-0134

**Parts disposition**

- Non-interchangeable
- Use parts in stock



**Notes**

**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](http://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](http://www.comatrol.com)

#### Schwarzmüller-Inverter

[www.schwarzmueller-inverter.com](http://www.schwarzmueller-inverter.com)

#### Turolla

[www.turollaocg.com](http://www.turollaocg.com)

#### Valmova

[www.valmova.com](http://www.valmova.com)

#### Hydro-Gear

[www.hydro-gear.com](http://www.hydro-gear.com)

#### Daikin-Sauer-Danfoss

[www.daikin-sauer-danfoss.com](http://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**  
22F, Block C, Yishan Rd  
Shanghai 200233, China  
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.