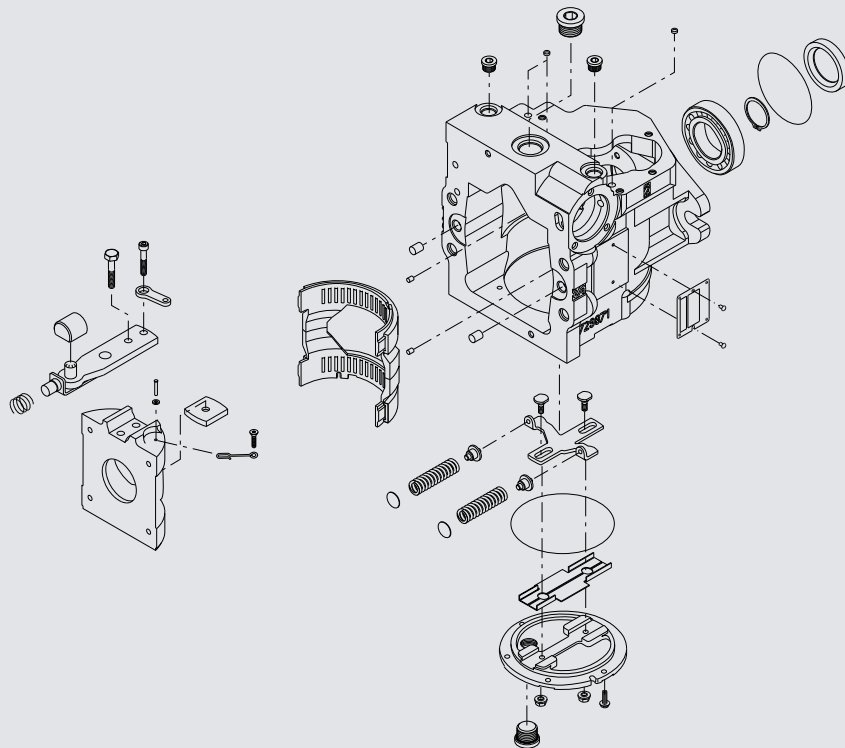


Series 90 42cc

Variable Displacement Pump



Revision history

Table of revisions

Date	Changed	Rev
July 2026	Removed restricted options	0802
May 2026	Updated to 2026 format	0801
November 2025	Removed obsolete part, formatting corrections	0704
August 2025	Updated part number	0703
February 2025	Corrected image for 10_TL shaft	0702
April 2024	Conversion to new template, updated T3 shaft option	0701

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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 product.

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

Date code

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

Example: The service part desired is item G30

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

All units using this order code with a date code prior to 89-17 must use part number "8000151." All units with a date code of 89-17 and newer must use part number "8000243."

About 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

The modular design of this product 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. A part number that has another number following it in parentheses is done to make this a world wide manual. Referring to the Port Configuration in the Order Code on page 8, valid variables are "A" (Inch) and "M" (metric).

Nameplate

Each unit will have a nameplate affixed to the housing. The nameplate of the S90 42cc pumps will include the following information:

Model code

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

Model/material number

The Danfoss model number (also known as material number) is used by the factory in manufacturing. On repeat orders, a complete unit can be ordered by the model number.

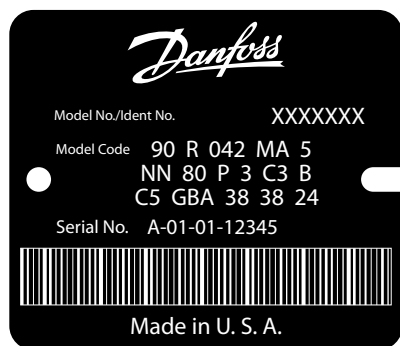
Serial number

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

The letter code indicates the location of original manufacture (assembly).

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

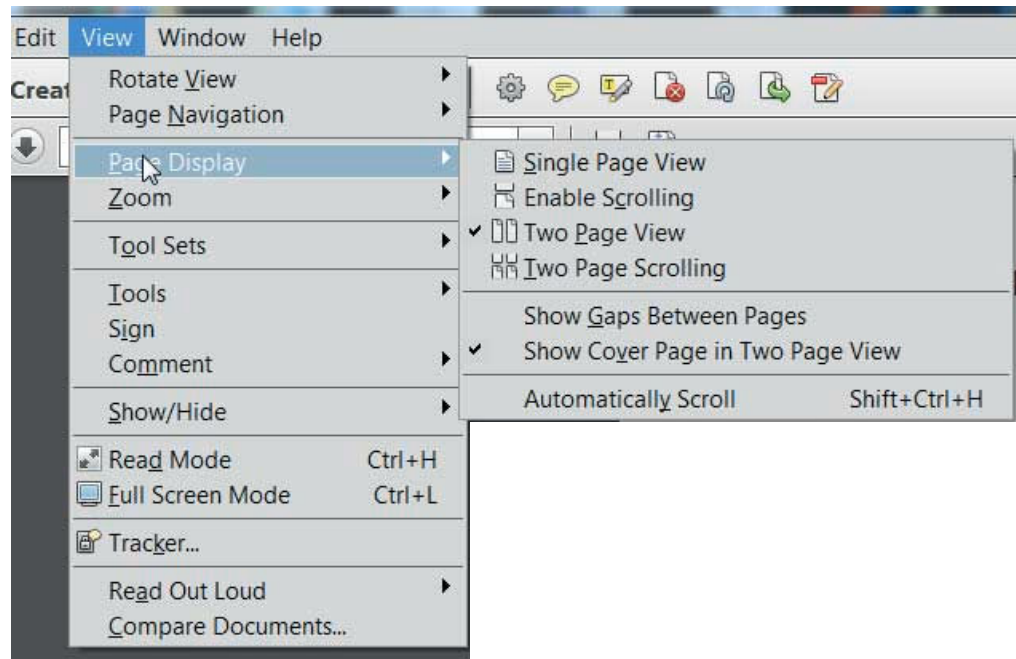
The third number (5 digits) is a sequential number used to identify a specific unit.



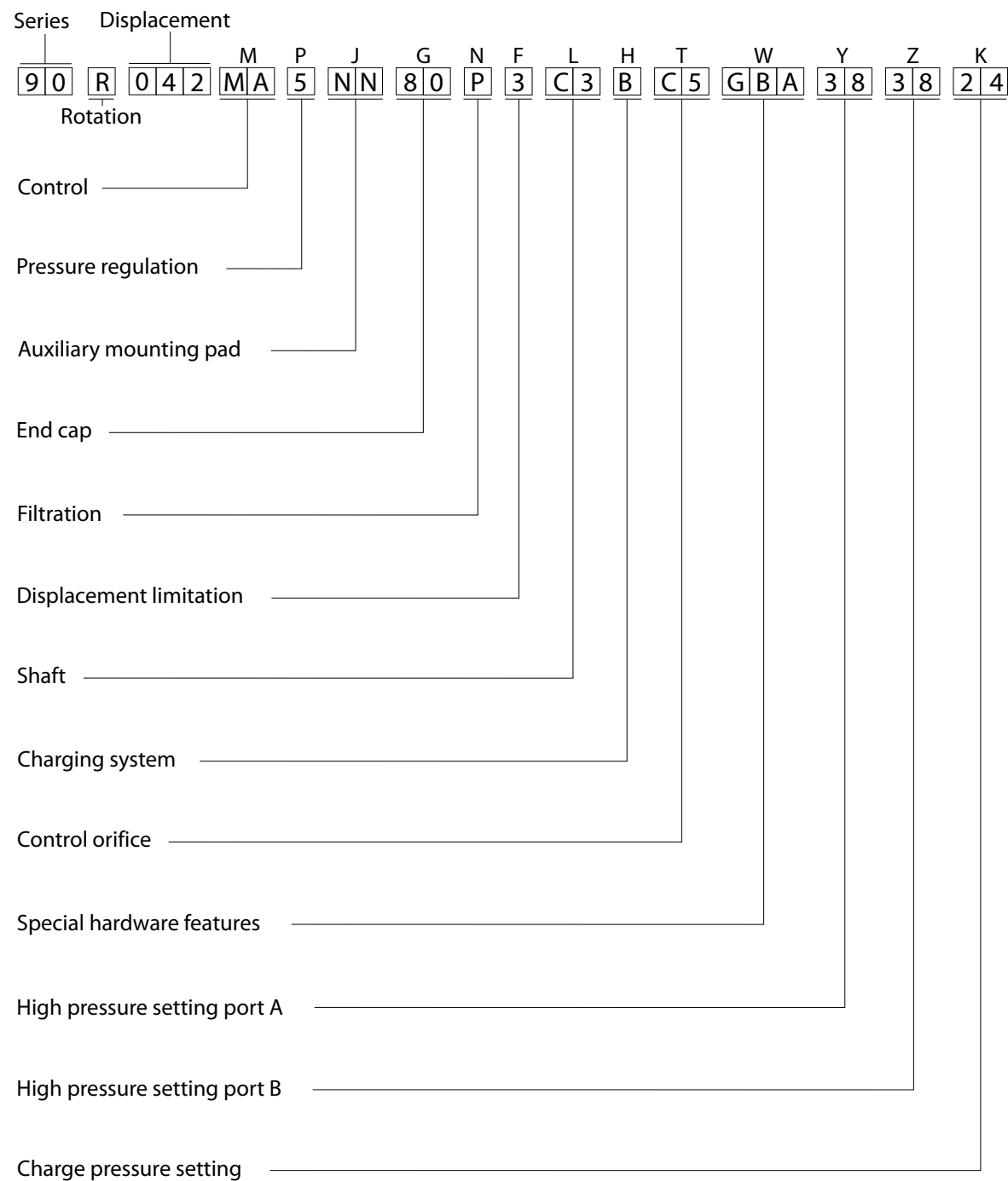
Adobe Acrobat 2-page viewing

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"

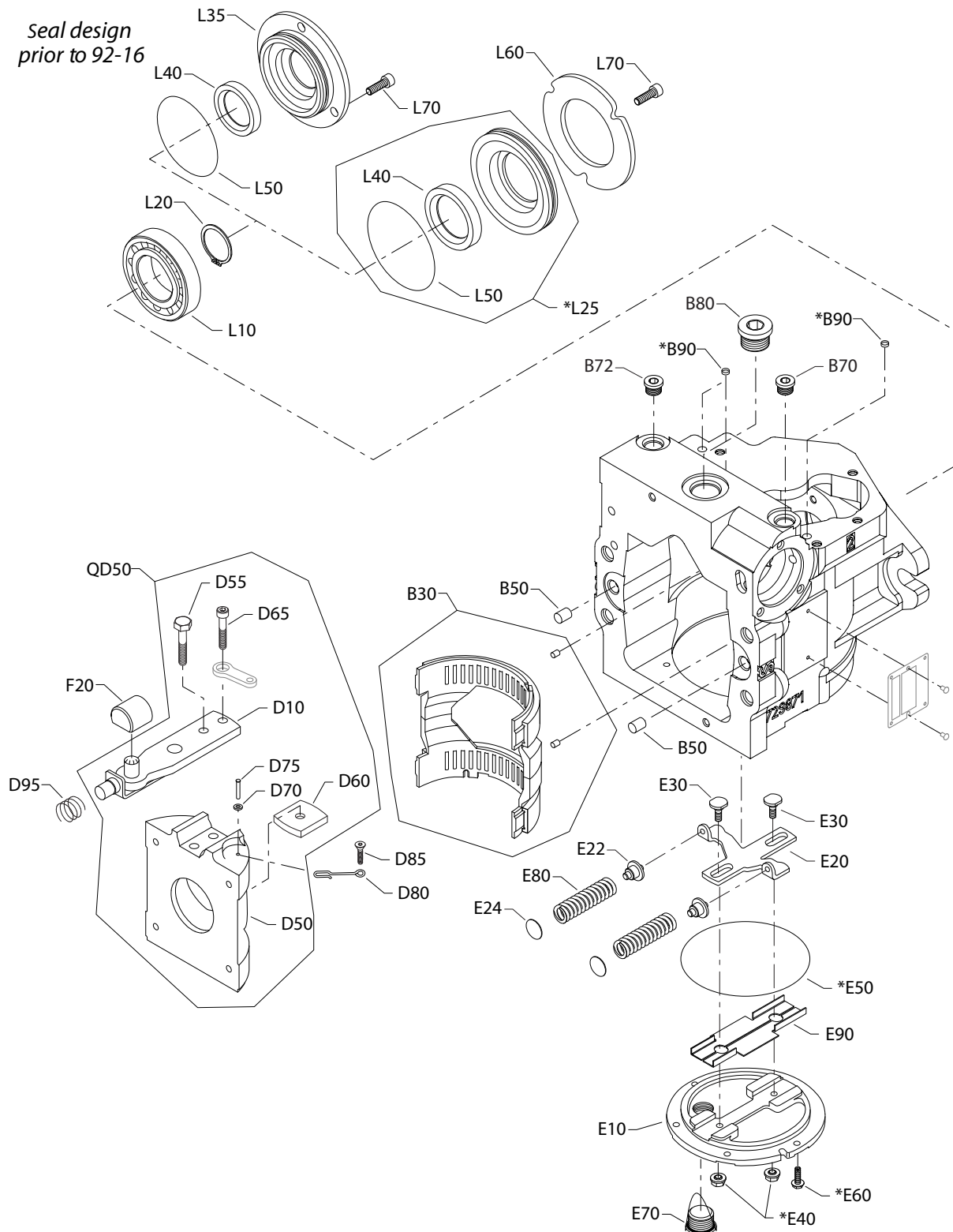


S90 Order code



Common Parts

S90 42cc common parts



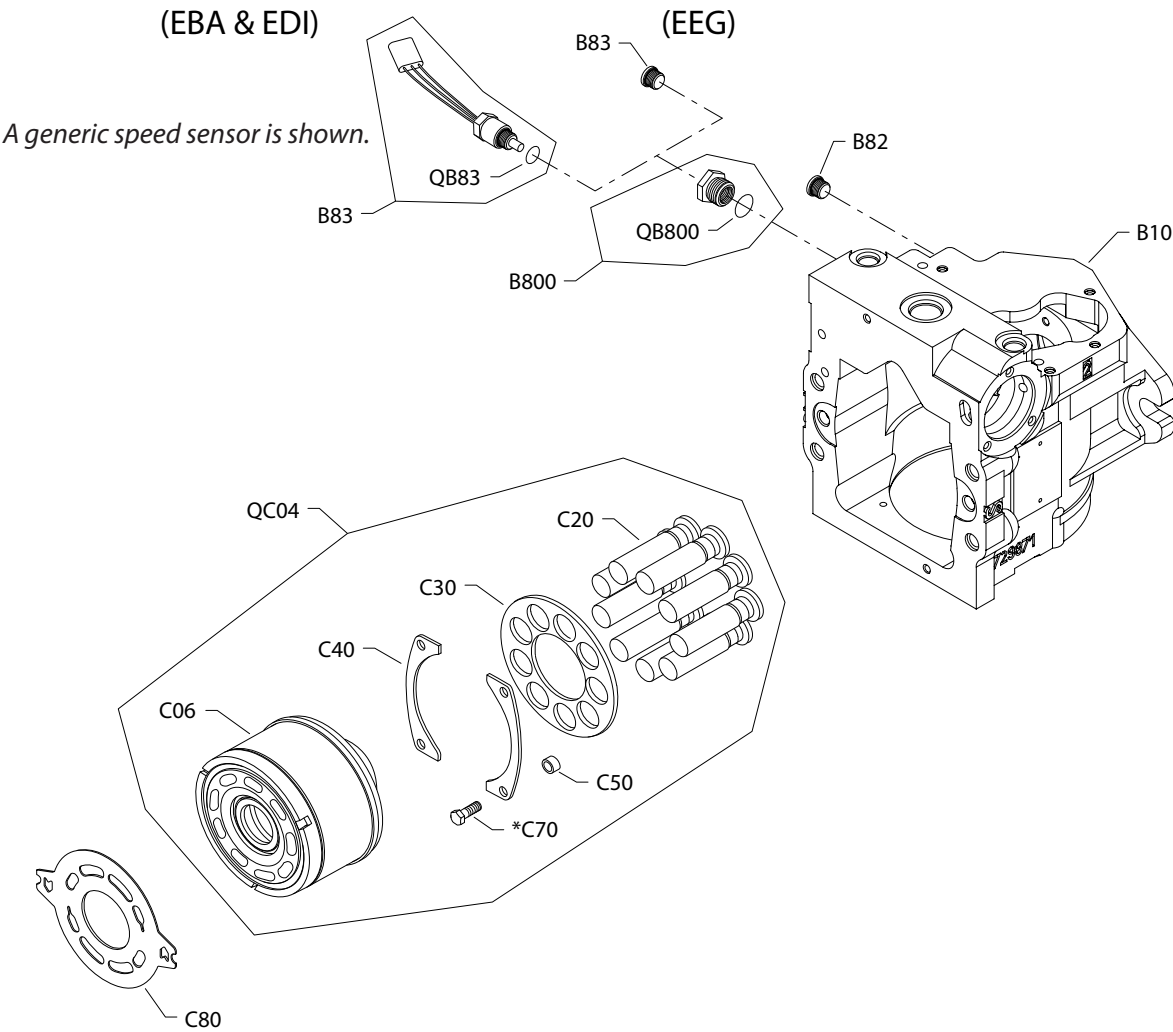
* included in overhaul seal kit Q210

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B50	87-42		9004800-3708	Pin	2
B70	87-42		140644	Plug assembly	1
B72	87-42		140644	Plug assembly	1
B80	87-42		315325 (9005110-8700)	Plug assembly	1
B90	87-42		9803390	Control filter screen	3
D10	87-42		502976	Servo arm assembly (SB-2003-015)	1
D50	87-42		516199	Swashplate (SB-2002-016)	1
D55	87-42		648436	Screw	1
D60	87-42		766014	Swashplate guide	1
D65	87-42		354373	Fillister head screw	1
D70	87-42		9009625-0146	Washer	1
D75	87-42		326637	Spiral head pin	1
D80	87-42		648402	Cage locator	1
D85	87-42		509527	Screw	1
D95	87-42		648675	Spring	1
E10	96-03		501570	Side cover	1
E10	92-16	96-02	506380	Side cover kit (SB-1992-008) & (SB-1996-004)	1
E20	87-42		731984	Leveler	1
E22	87-42		720920	Spring seat	2
E24	87-42		359034	Shim	2
E30	96-07		11056529	Guide post	2
E30	87-42	96-07	344465	Guide post (SB-1996-004)	2
E40	87-42		517862 (9003509-0006)	Seal nut	2
E50	87-42		517376	O-ring	1
E60	87-42		517229	Screw (SB-1994-018)	6
E70	87-42		315325 (9005110-8700)	Plug assembly	1
E80	87-42		332684	Spring	2
E90	96-02		513885	Insert assembly (SB-1996-004) & (SB-1999-041)	1
F20	87-42		11116314	Slider block	1
L10	92-16		357616	Bearing	1
L10	87-42	92-15	690305	Bearing (SB-1992-008)	1
L20	92-16		9006300-0137	Retaining ring	1
L20	87-42	92-15	392134	Retaining ring (SB-1992-008)	1
L25	92-16		11060010	Seal carrier assembly	1
L35	87-42	92-15	689521	Seal carrier (SB-1992-008)	1
L40	10-33		11013519	Lip seal	1
L40	92-16	10-32	9008000-0118	Lip seal	1
L40	87-42	92-15	510390	Lip seal (SB-1992-008)	1
L50	92-16		780247	O-ring	1
L50	87-42	92-15	552224 (9004104-0360)	O-ring (SB-1992-008)	1
L60	92-16		516763	Retainer plate (SB-1992-008)	1
L70	92-16		745208	Screw	3
L70	87-42	92-15	9007210-0604	Screw (SB-1992-008)	3
QB30	87-42		345124	Bearing assembly	1
QD50	87-42		365957	Swashplate kit	1

Special Hardware

Special hardware EBA-EEG

Parts configuration



* included in overhaul seal kit Q210

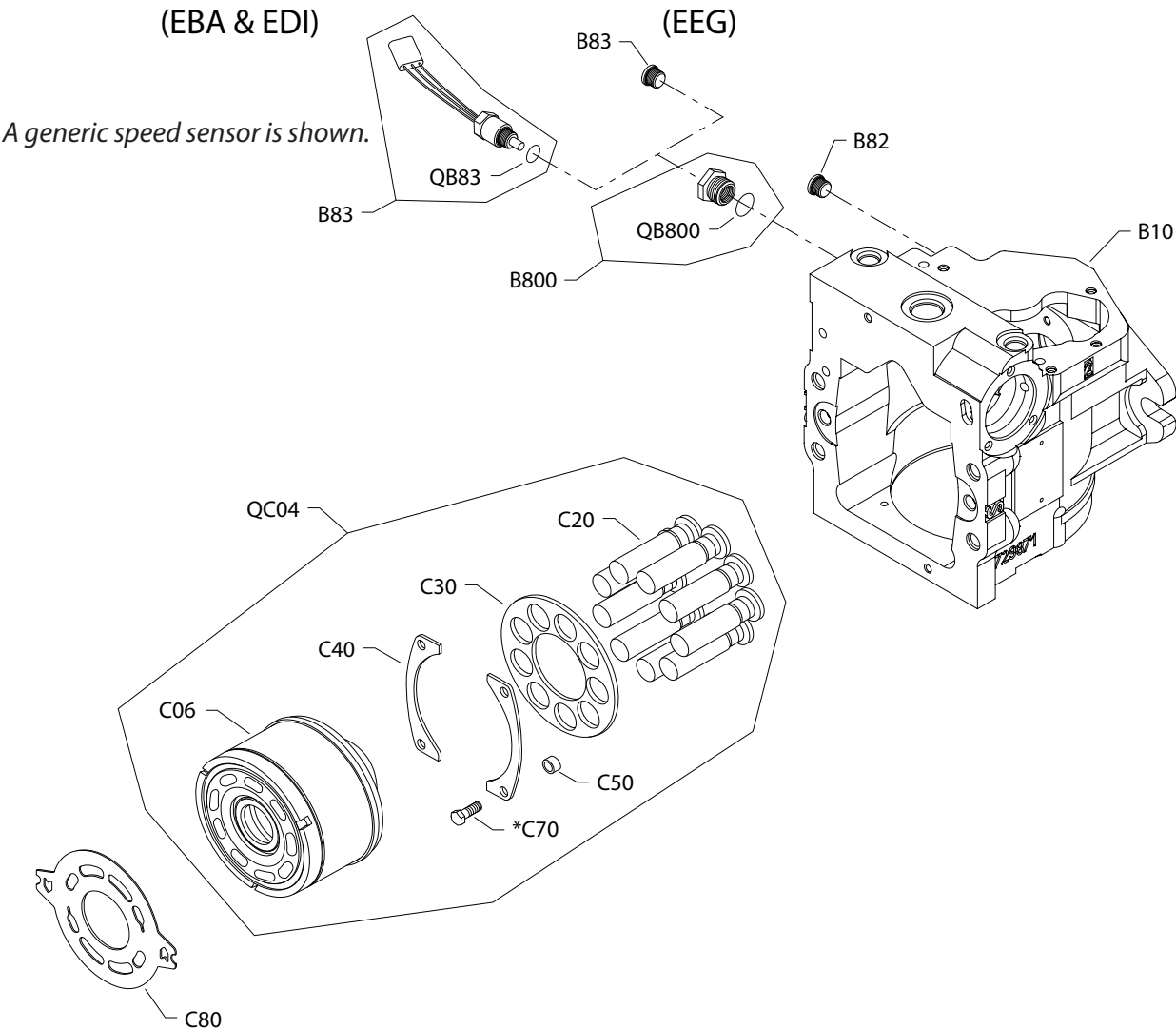
Order Code: EBA

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	04-14		510143	Housing	1
B82	04-14		140644	Plug assembly	1
B83	04-14		KPPG156	Speed sensor	1
B800	04-14		519414	Reducer plug assembly	1
C06	04-14		11094174	Cylinder block assembly with speed ring	1
C20	04-14		706101	Piston assembly	9
C30	04-14		11067347	Slipper guide	1
C40	04-14		321612	Slipper guide bearing	2
C50	04-14		367631	Spacer	4
C70	04-14		648477	Screw	4
C80	04-14		11015183	Valve plate	1
QB83	04-14		085043 (9004201-3700)	O-ring	1
QB800	04-14		012567	O-ring	1
QC04	04-14		11097869	Cylinder block kit with speed ring	1

Order Code: EDI

B10	97-30	12-36	510143	Housing	1
B82	97-30	12-36	140644	Plug assembly	1
B83	97-30	12-36	KPPG156	Speed sensor	1
B800	97-30	12-36	519414	Reducer plug assembly	1
C06	97-30	12-36	11094174	Cylinder block assembly with speed ring	1
C20	97-30	12-36	706101	Piston assembly	9
C30	97-30	12-36	11067347	Slipper guide	1
C40	97-30	12-36	321612	Slipper guide bearing	2
C50	97-30	12-36	367631	Spacer	4
C70	97-30	12-36	648477	Screw	4
C80	97-30	12-36	11015184	Valve plate	1
E82	97-30	12-36	706853	Spring	1
QB83	97-30	12-36	085043 (9004201-3700)	O-ring	1
QB800	97-30	12-36	012567	O-ring	1
QC04	97-30	12-36	11097869	Cylinder block kit with speed ring	1

Parts configuration



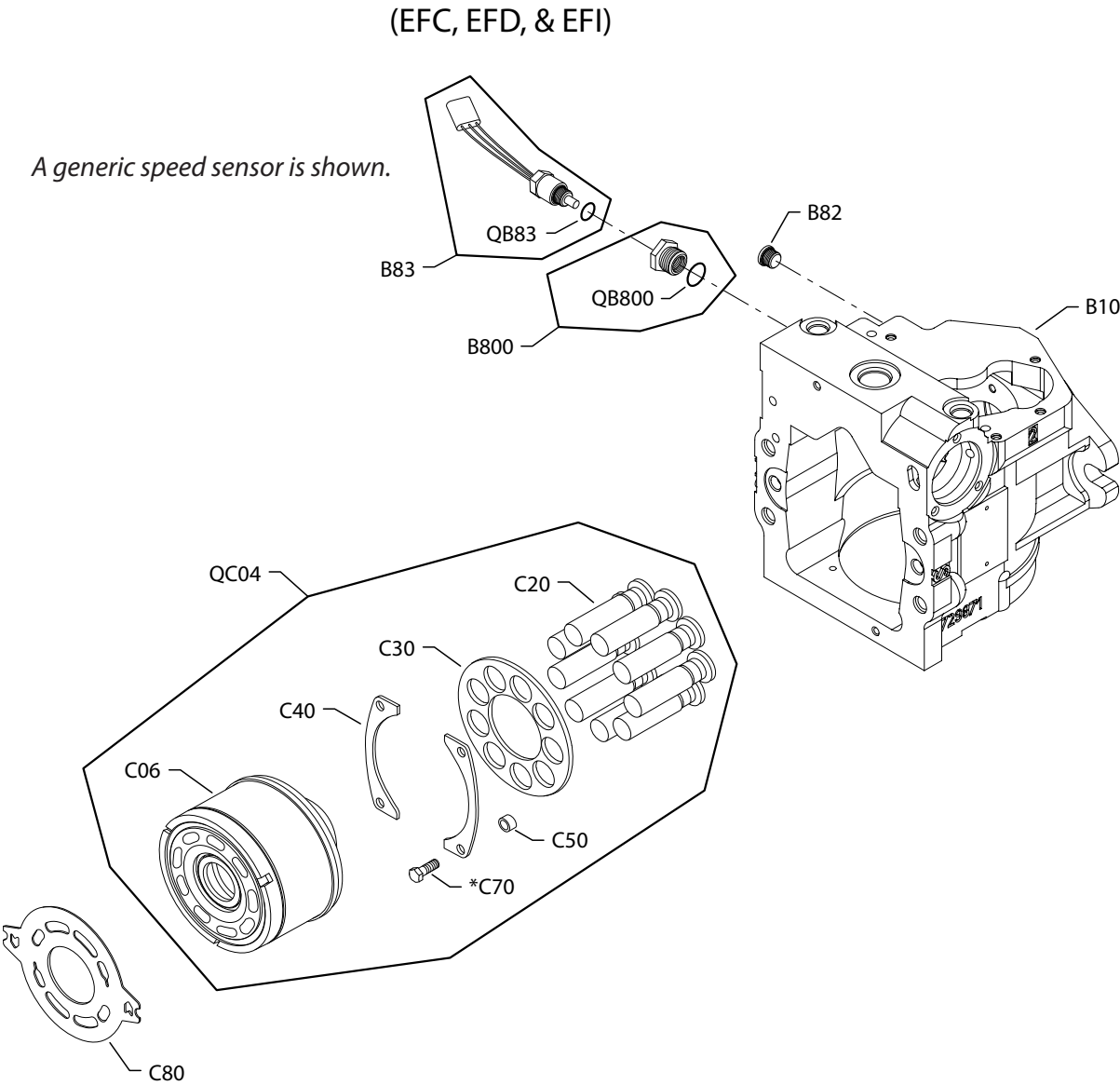
* included in overhaul seal kit Q210

Order Code: EEG

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	98-12		510143	Housing	1
B82	98-12		140644	Plug assembly	1
B83	98-12		KPPG156	Speed sensor	1
B800	98-12		519414	Reducer plug assembly	1
C06	98-12		11094174	Cylinder block assembly with speed ring	1
C20	98-12		706101	Piston assembly	9
C30	98-12		11067347	Slipper guide	1
C40	98-12		321612	Slipper guide bearing	2
C50	98-12		367631	Spacer	4
C70	98-12		648477	Screw	4
C80	98-12		11018107	Valve plate, CW	1
C80	98-12		11018106	Valve plate, CCW	1
QB83	98-12		085043 (9004201-3700)	O-ring	1
QB800	98-12		012567	O-ring	1
QC04	98-12		11097869	Cylinder block kit with speed ring	1

Special hardware EFC-EFI

Parts configuration



* included in overhaul seal kit Q210

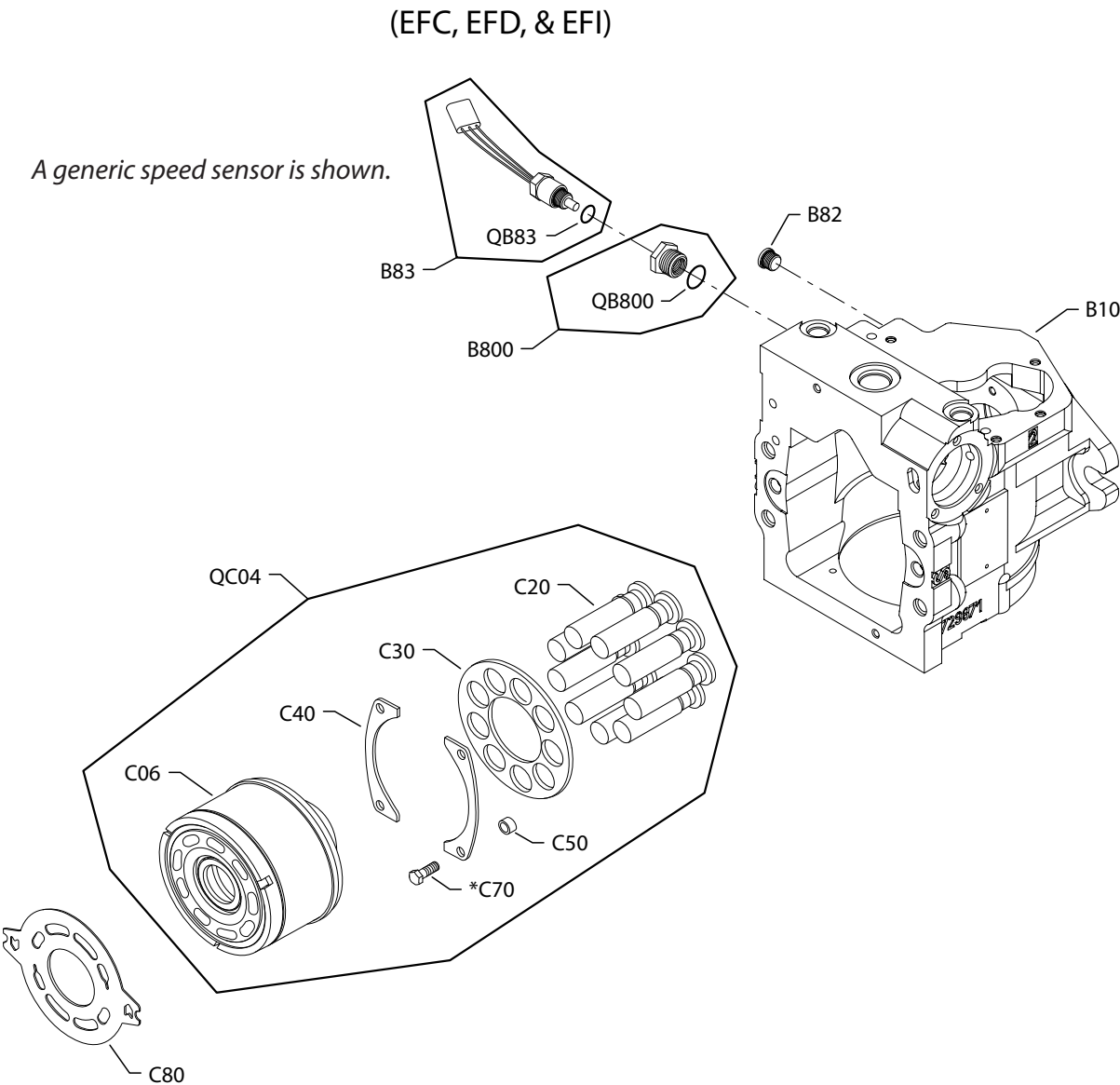
Order Code: EFC

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	04-14		510143	Housing	1
B82	04-14		140644	Plug assembly	1
B83	04-14		KPPG156	Speed sensor	1
B800	04-14		519414	Reducer plug assembly	1
C06	04-14		11094174	Cylinder block assembly with speed ring	1
C20	04-14		706101	Piston assembly	9
C30	04-14		11067347	Slipper guide	1
C40	04-14		321612	Slipper guide bearing	2
C50	04-14		367631	Spacer	4
C70	04-14		648477	Screw	4
C80	04-14		11015183	Valve plate	1
QB83	04-14		085043 (9004201-3700)	O-ring	1
QB800	04-14		012567	O-ring	1
QC04	04-14		11097869	Cylinder block kit with speed ring	1

Order Code: EFD

B10	97-30	12-36	510143	Housing	1
B82	97-30	12-36	140644	Plug assembly	1
B83	97-30	12-36	KPPG156	Speed sensor	1
B800	97-30	12-36	519414	Reducer plug assembly	1
C06	97-30	12-36	11094174	Cylinder block assembly with speed ring	1
C20	97-30	12-36	706101	Piston assembly	9
C30	97-30	12-36	11067347	Slipper guide	1
C40	97-30	12-36	321612	Slipper guide bearing	2
C50	97-30	12-36	367631	Spacer	4
C70	97-30	12-36	648477	Screw	4
C80	97-30	12-36	11015184	Valve plate	1
E82	97-30	12-36	706853	Spring	1
QB83	97-30	12-36	085043 (9004201-3700)	O-ring	1
QB800	97-30	12-36	012567	O-ring	1
QC04	97-30	12-36	11097869	Cylinder block kit with speed ring	1

Parts configuration



* included in overhaul seal kit Q210

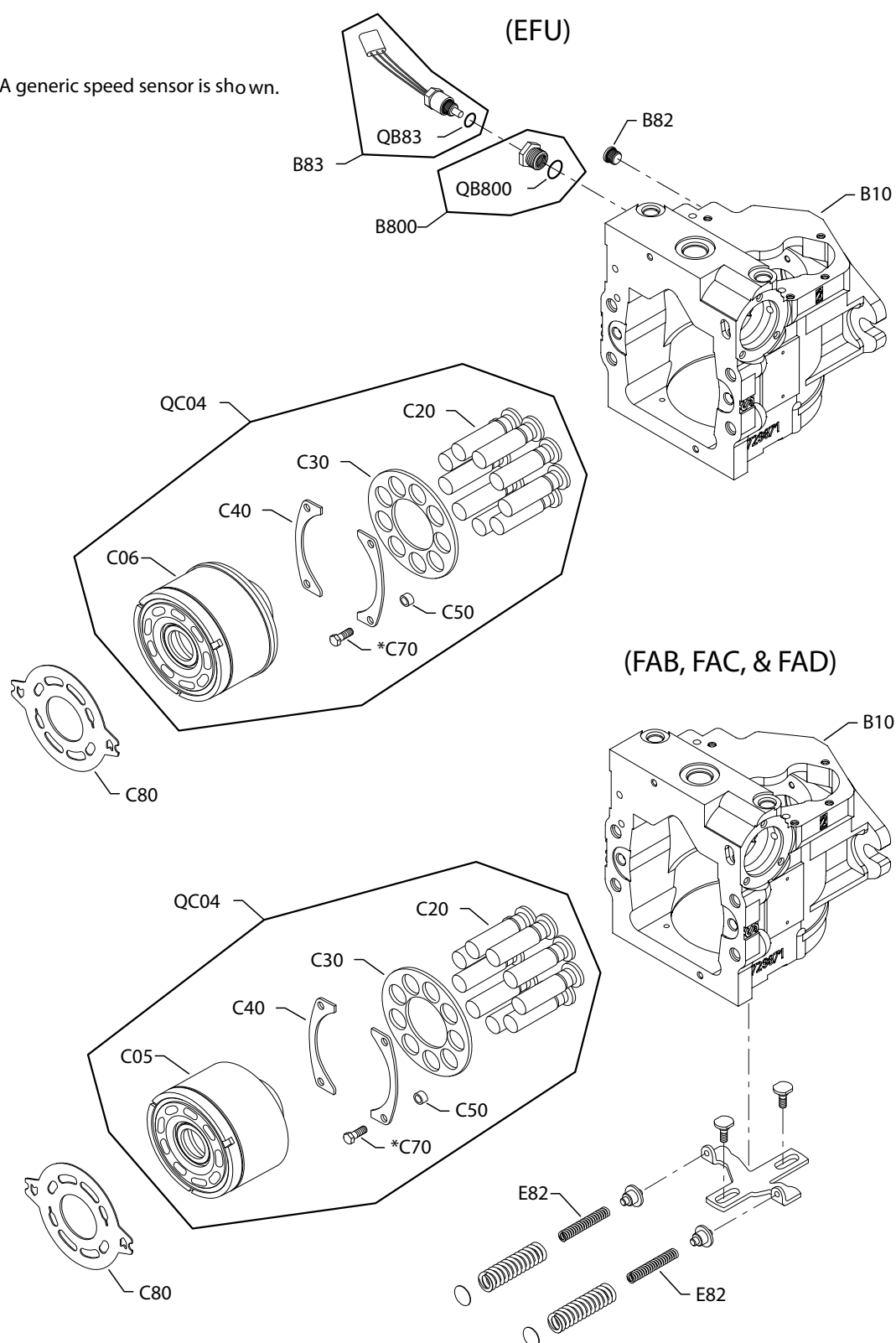
Order Code: EFI

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	98-12		510143	Housing	1
B82	98-12		140644	Plug assembly	1
B83	98-12		KPPG156	Speed sensor	1
B800	98-12		519414	Reducer plug assembly	1
C06	98-12		11094174	Cylinder block assembly with speed ring	1
C20	98-12		706101	Piston assembly	9
C30	98-12		11067347	Slipper guide	1
C40	98-12		321612	Slipper guide bearing	2
C50	98-12		367631	Spacer	4
C70	98-12		648477	Screw	4
C80	98-12		11018107	Valve plate, CW	1
C80	98-12		11018106	Valve plate, CCW	1
QB83	98-12		085043 (9004201-3700)	O-ring	1
QB800	98-12		012567	O-ring	1
QC04	98-12		11097869	Cylinder block kit with speed ring	1

Special hardware EFU-FAD

Parts configuration

A generic speed sensor is shown.



* included in overhaul seal kit Q210

Order Code: EFU

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	13-40		510143	Housing	1
B82	13-40		140644	Plug assembly	1
B83	13-40		KPPG156	Speed sensor	1
B800	13-40		519414	Reducer plug assembly	1
C06	13-40		11094174	Cylinder block assembly with speed ring	1
C20	13-40		706101	Piston assembly	9
C30	13-40		11067347	Slipper guide	1
C40	13-40		321612	Slipper guide bearing	2
C50	13-40		367631	Spacer	4
C70	13-40		648477	Screw	4
C80	13-40		11018107	Valve plate, CW	1
QB83	13-40		085043 (9004201-3700)	O-ring	1
QB800	13-40		012567	O-ring	1
QC04	13-40		11097869	Cylinder block kit with speed ring	1

Order Code: FAB

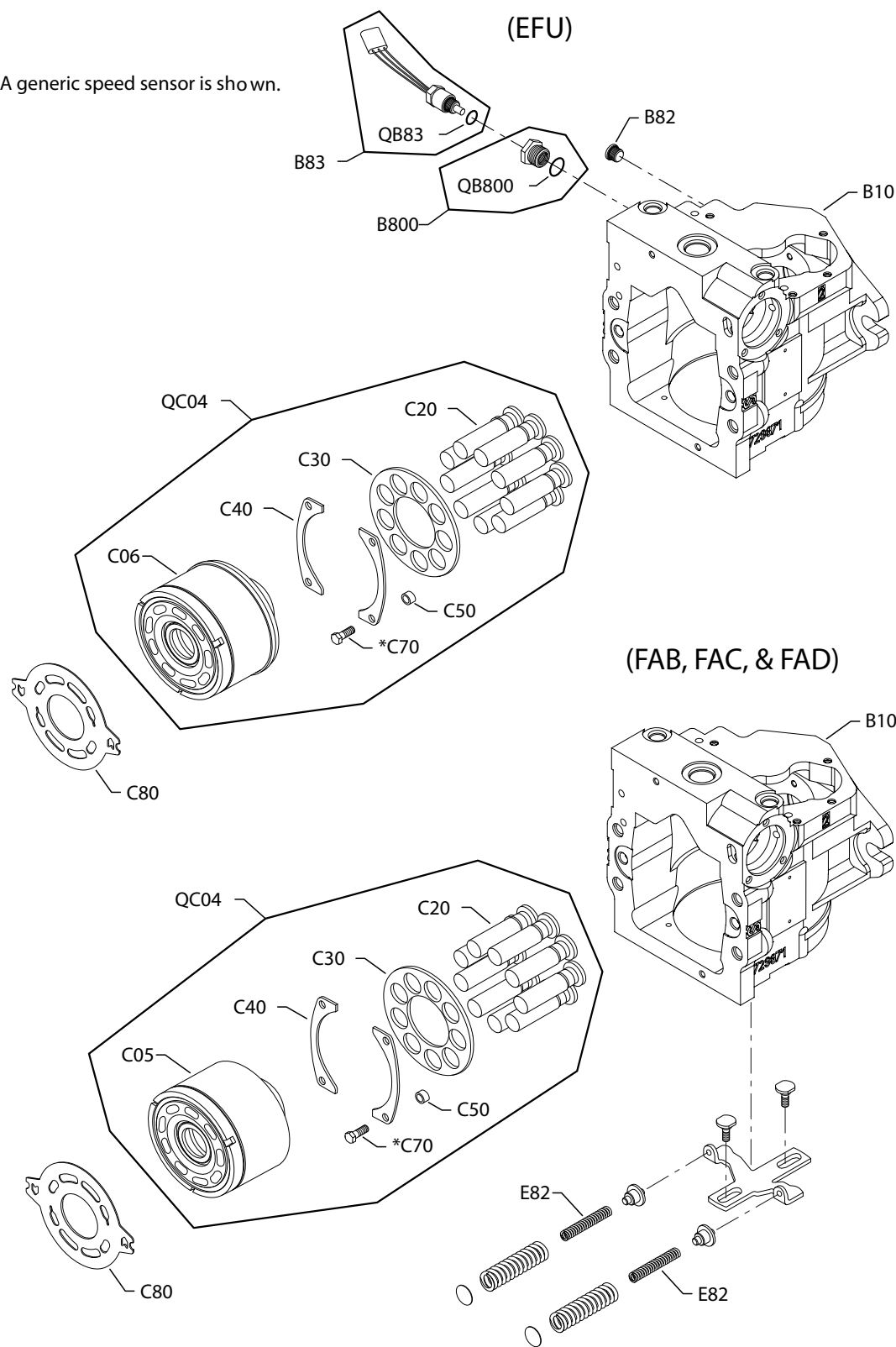
B10	95-15		510142	Housing	1
C05	87-42		763920	Cylinder block assembly without speed ring	1
C20	87-42		706101	Piston assembly <i>(SB-1988-023)</i>	9
C30	87-42		11067347	Slipper guide	1
C40	87-42		321612	Slipper guide bearing	2
C50	87-42		367631	Spacer	4
C70	87-42		648477	Screw	4
C80	87-42		11017476	Valve plate	1
E82	87-42		706853	Spring	2
QC04	87-42		510303 (80520S07)	Cylinder block kit <i>(SB-1993-012)</i>	1

Order Code: FAC

B10	95-15		510142	Housing <i>(SB-1992-008)</i> and <i>(SB-1995-006)</i>	1
C05	87-42		763920	Cylinder block assembly without speed ring	1
C20	87-42		706101	Piston assembly <i>(SB-1988-023)</i>	9
C30	87-42		11067347	Slipper guide	1
C40	87-42		321612	Slipper guide bearing	2
C50	87-42		367631	Spacer	4
C70	87-42		648477	Screw	4
C80	87-42		11015184	Valve plate	1
E82	87-42		706853	Spring	2
QC04	87-42		510303 (80520S07)	Cylinder block kit <i>(SB-1993-012)</i>	1

Parts configuration

A generic speed sensor is shown.



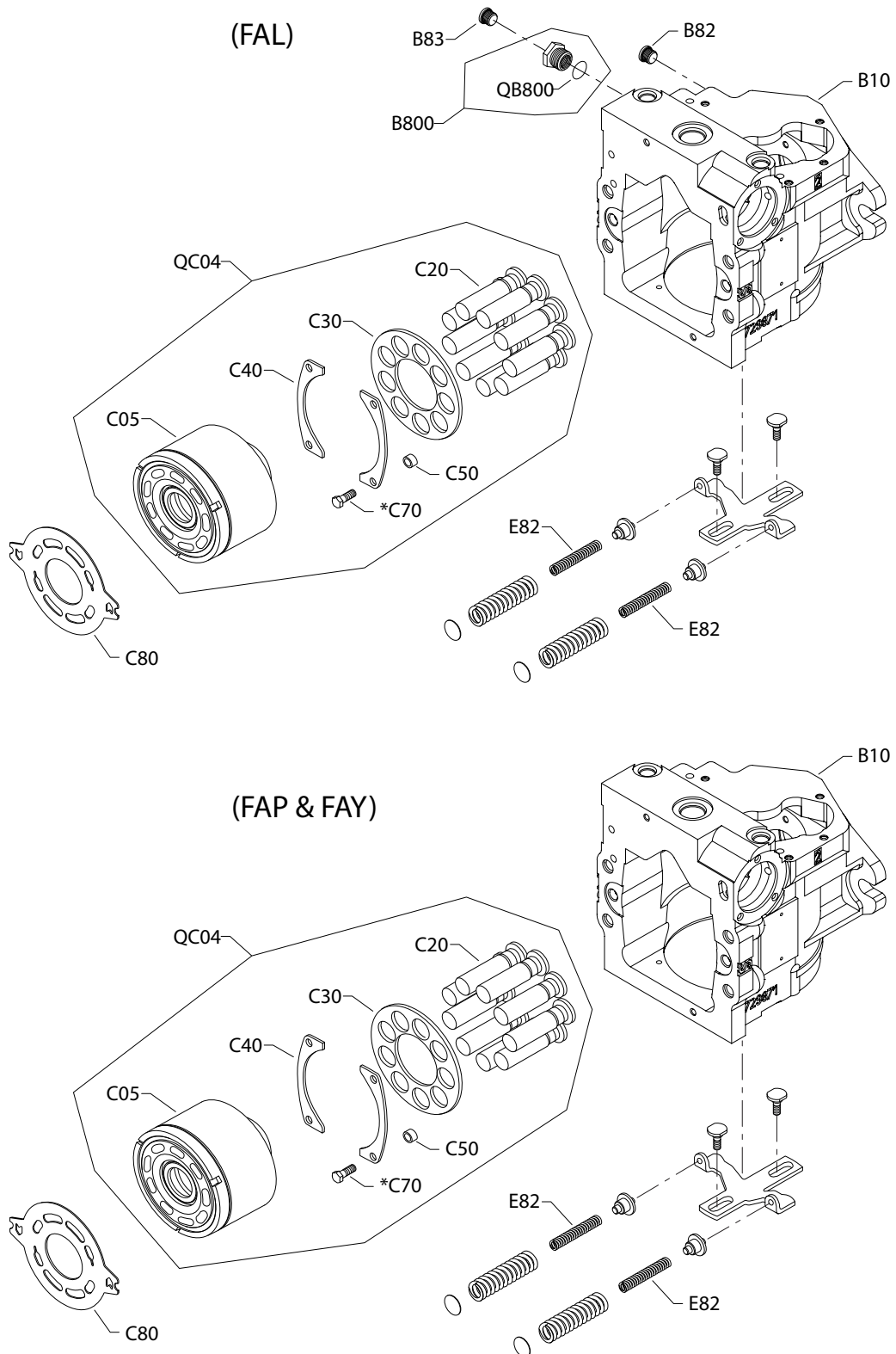
* included in overhaul seal kit Q210

Order Code: FAD

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	95-15		510142	Housing <i>(SB-1992-008)</i> and <i>(SB-1995-006)</i>	1
C05	87-42		763920	Cylinder block assembly without speed ring	1
C20	87-42		706101	Piston assembly <i>(SB-1988-023)</i>	9
C30	87-42		11067347	Slipper guide	1
C40	87-42		321612	Slipper guide bearing	2
C50	87-42		367631	Spacer	4
C70	87-42		648477	Screw	4
C80	87-42		11015183	Valve plate	1
E82	87-42		706853	Spring	2
QC04	87-42		510303 (80520S07)	Cylinder block kit <i>(SB-1993-012)</i>	1

Special hardware FAL-FAY

Parts configuration



* included in overhaul seal kit Q210

Order Code: FAL

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	95-15		510143	Housing	1
B82	95-15		140644	Plug assembly	1
B83	95-15		140644	Plug assembly	1
B800	95-15		519414	Reducer plug assembly	1
C05	95-15		763920	Cylinder block assembly without speed ring	1
C20	95-15		706101	Piston assembly	9
C30	95-15		11067347	Slipper guide	1
C40	95-15		321612	Slipper guide bearing	2
C50	95-15		367631	Spacer	4
C70	95-15		648477	Screw	4
C80	95-15		11017476	Valve plate	1
E82	95-15		706853	Spring	2
QB800	95-15		012567	O-ring	1
QC04	95-15		510303 (80520S07)	Cylinder block kit	1

Order Code: FAP

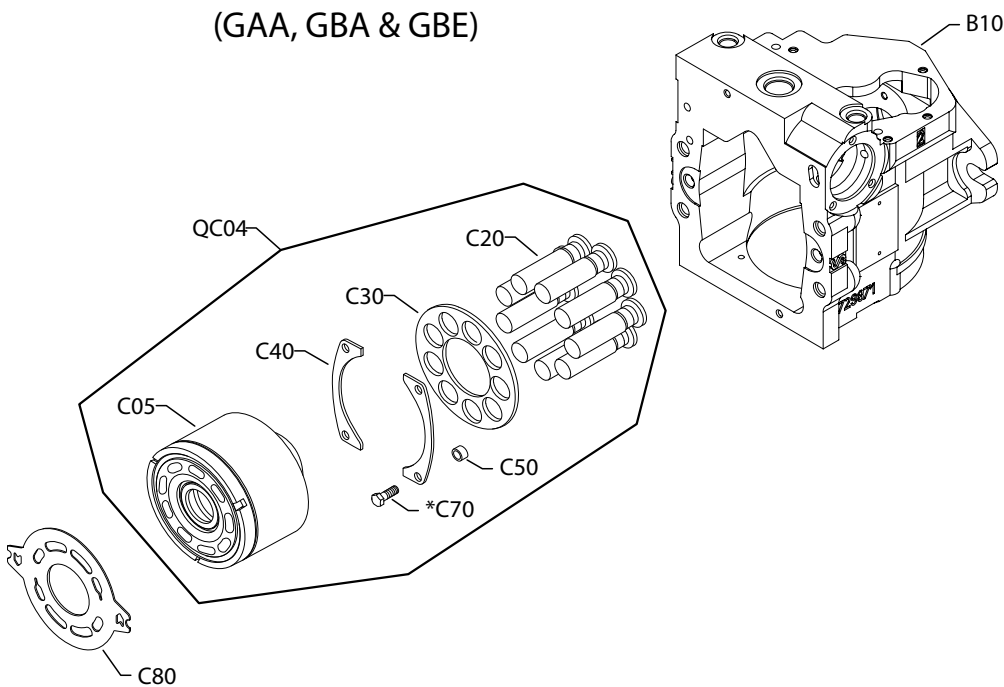
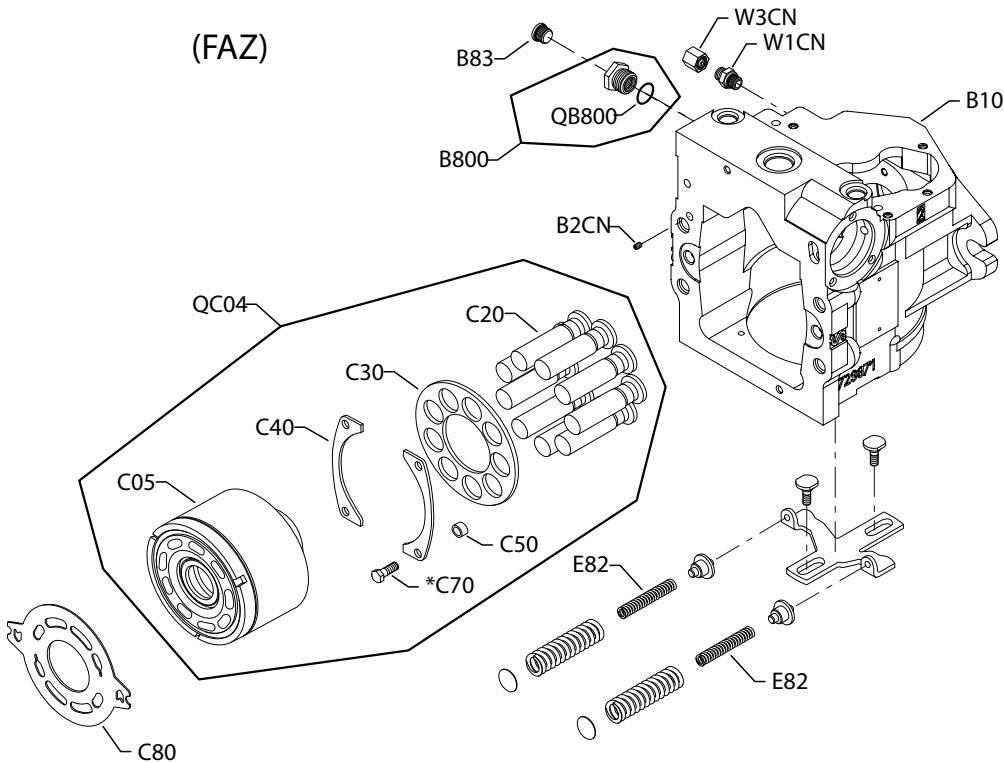
B10	98-03		510142	Housing	1
C05	98-03		763920	Cylinder block assembly without speed ring	1
C20	98-03		706101	Piston assembly	9
C30	98-03		11067347	Slipper guide	1
C40	98-03		321612	Slipper guide bearing	2
C50	98-03		367631	Spacer	4
C70	98-03		648477	Screw	4
C80	98-03		11018107	Valve plate, CW	1
E82	98-03		706853	Spring	2
QC04	98-03		510303 (80520S07)	Cylinder block kit	1

Order Code: FAY

B10	06-03		510142	Housing	1
C05	06-03		763920	Cylinder block assembly without speed ring	1
C20	06-03		706101	Piston assembly	9
C30	06-03		11067347	Slipper guide	1
C40	06-03		321612	Slipper guide bearing	2
C50	06-03		367631	Spacer	4
C70	06-03		648477	Screw	4
C80	06-03		11015183	Valve plate	1
E82	06-03		706853	Spring	2
QC04	06-03		510303 (80520S07)	Cylinder block kit	1

Special hardware FAZ-GBE

Parts configuration



* included in overhaul seal kit Q210

Order Code: FAZ

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	07-27		510143	Housing	1
B2CN	07-27		775312	Set screw	1
B83	07-27		140644	Plug assembly	1
B800	07-27		519414	Reducer plug assembly	1
C05	07-27		763920	Cylinder block assembly without speed ring	1
C20	07-27		706101	Piston assembly	9
C30	07-27		11067347	Slipper guide	1
C40	07-27		321612	Slipper guide bearing	2
C50	07-27		367631	Spacer	4
C70	07-27		648477	Screw	4
C80	07-27		11015184	Valve plate	1
E82	07-27		706853	Spring	2
QB800	07-27		012567	O-ring	1
QC04	07-27		510303 (80520S07)	Cylinder block kit	1
W1CN	07-27		723726	Connector	1
W3CN	07-27		574095	Cap	1

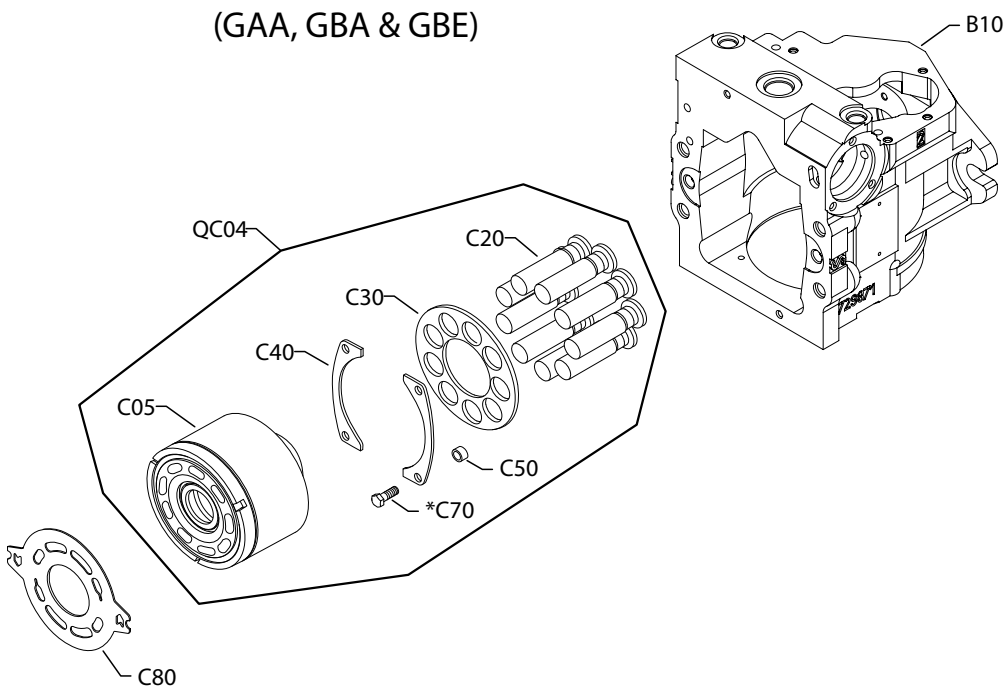
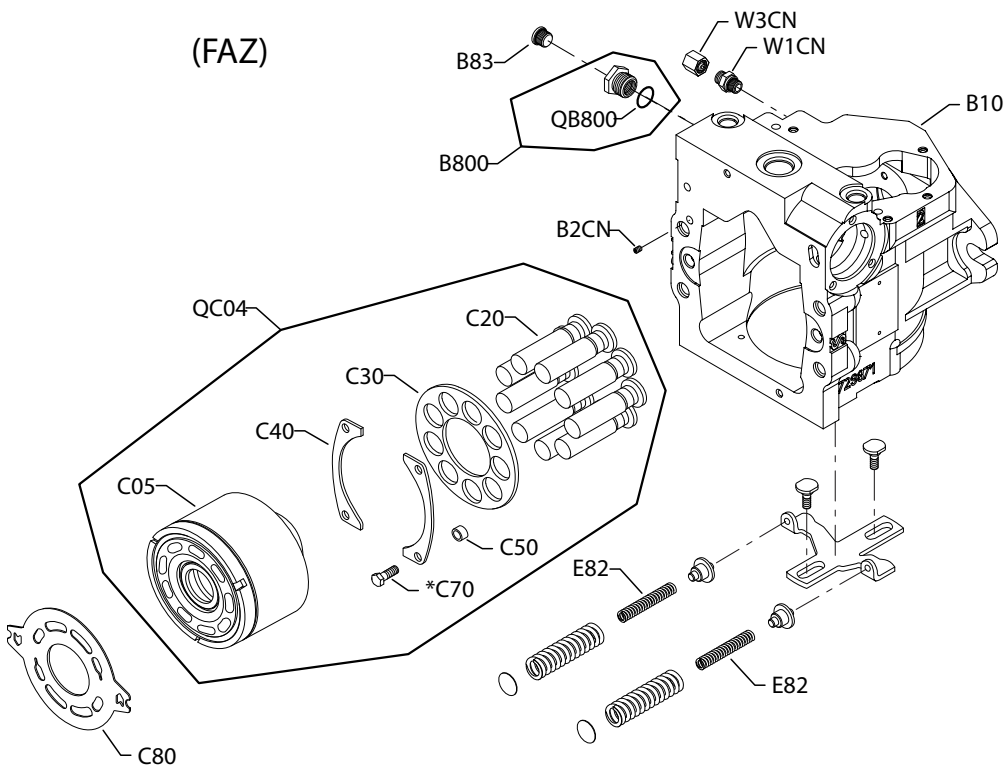
Order Code: GAA

B10	87-42		510142	Housing (SB-1992-008) and (SB-1995-006)	1
C05	87-42		763920	Cylinder block assembly without speed ring	1
C20	87-42		706101	Piston assembly	9
C30	87-42		11067347	Slipper guide	1
C40	87-42		321612	Slipper guide bearing	2
C50	87-42		367631	Spacer	4
C70	87-42		648477	Screw	4
C80	87-42		11017474	Valve plate	1
QC04	87-42		510303 (80520S07)	Cylinder block kit (SB-1993-012)	1

Order Code: GBA

B10	87-42		510142	Housing (SB-1992-008) and (SB-1995-006)	1
C05	87-42		763920	Cylinder block assembly without speed ring	1
C20	87-42		706101	Piston assembly	9
C30	87-42		11067347	Slipper guide	1
C40	87-42		321612	Slipper guide bearing	2
C50	87-42		367631	Spacer	4
C70	87-42		648477	Screw	4
C80	87-42		11015183	Valve plate	1
QC04	87-42		510303 (80520S07)	Cylinder block kit (SB-1993-012)	1

Parts configuration



* included in overhaul seal kit Q210

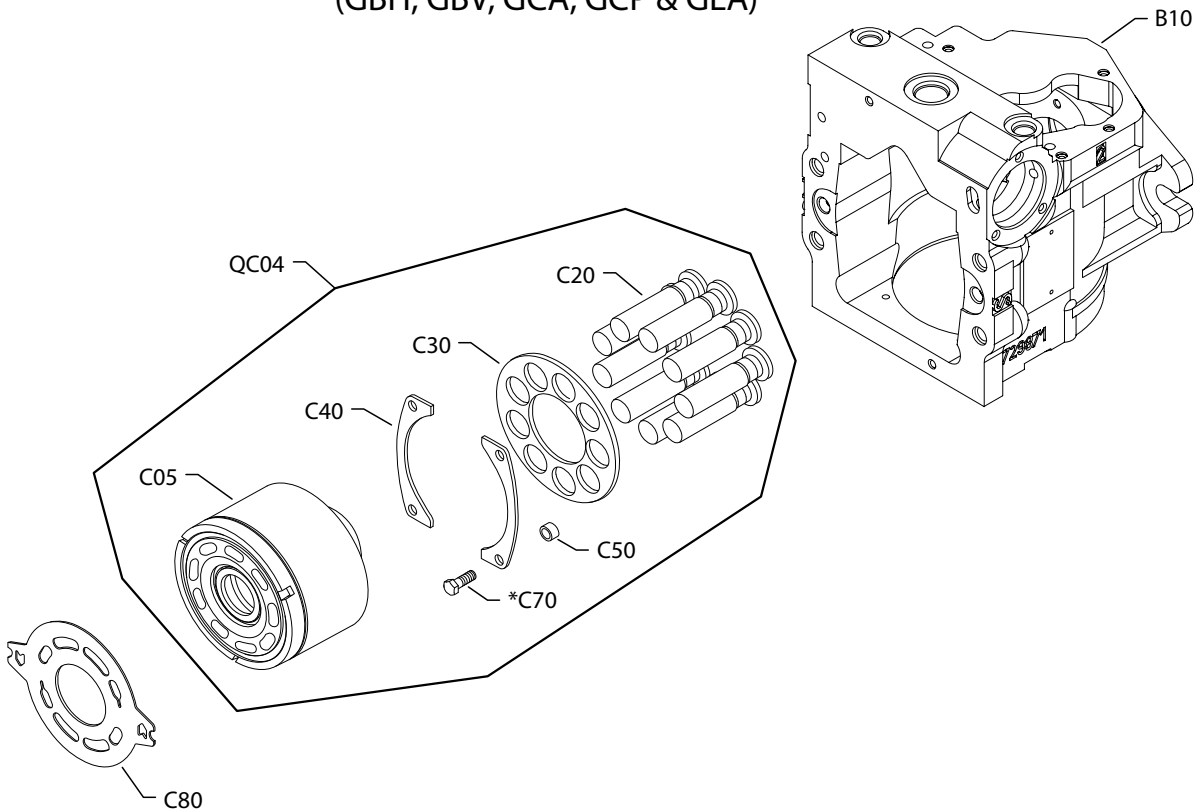
Order Code: GBE

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	94-45		510142	Housing <i>(SB-1992-008)</i> and <i>(SB-1995-006)</i>	1
C05	94-45		763920	Cylinder block assembly without speed ring	1
C20	94-45		706101	Piston assembly	9
C30	94-45		11067347	Slipper guide	1
C40	94-45		321612	Slipper guide bearing	2
C50	94-45		367631	Spacer	4
C70	94-45		648477	Screw	4
C80	94-45		11015183	Valve plate	1
QC04	94-45		510303 (80520S07)	Cylinder block kit <i>(SB-1993-012)</i>	1

Special hardware GBH-GLA

Parts configuration

(GBH, GBV, GCA, GCP & GLA)



* included in overhaul seal kit Q210

Order Code: GBH

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	97-44		510144	Housing	1
C05	97-44		763920	Cylinder block assembly without speed ring	1
C20	97-44		706101	Piston assembly	9
C30	97-44		11067347	Slipper guide	1
C40	97-44		321612	Slipper guide bearing	2
C50	97-44		367631	Spacer	4
C70	97-44		648477	Screw	4
C80	97-44		11015183	Valve plate	1
QC04	97-44		510303 (80520S07)	Cylinder block kit	1

Order Code: GBV

B10	00-13		510142	Housing	1
C05	00-13		763920	Cylinder block assembly without speed ring	1
C20	00-13		706101	Piston assembly	9
C30	00-13		11067347	Slipper guide	1
C40	00-13		321612	Slipper guide bearing	2
C50	00-13		367631	Spacer	4
C70	00-13		648477	Screw	4
C80	00-13		11015183	Valve plate	1
QC04	00-13		510303 (80520S07)	Cylinder block kit	1

Order Code: GCA

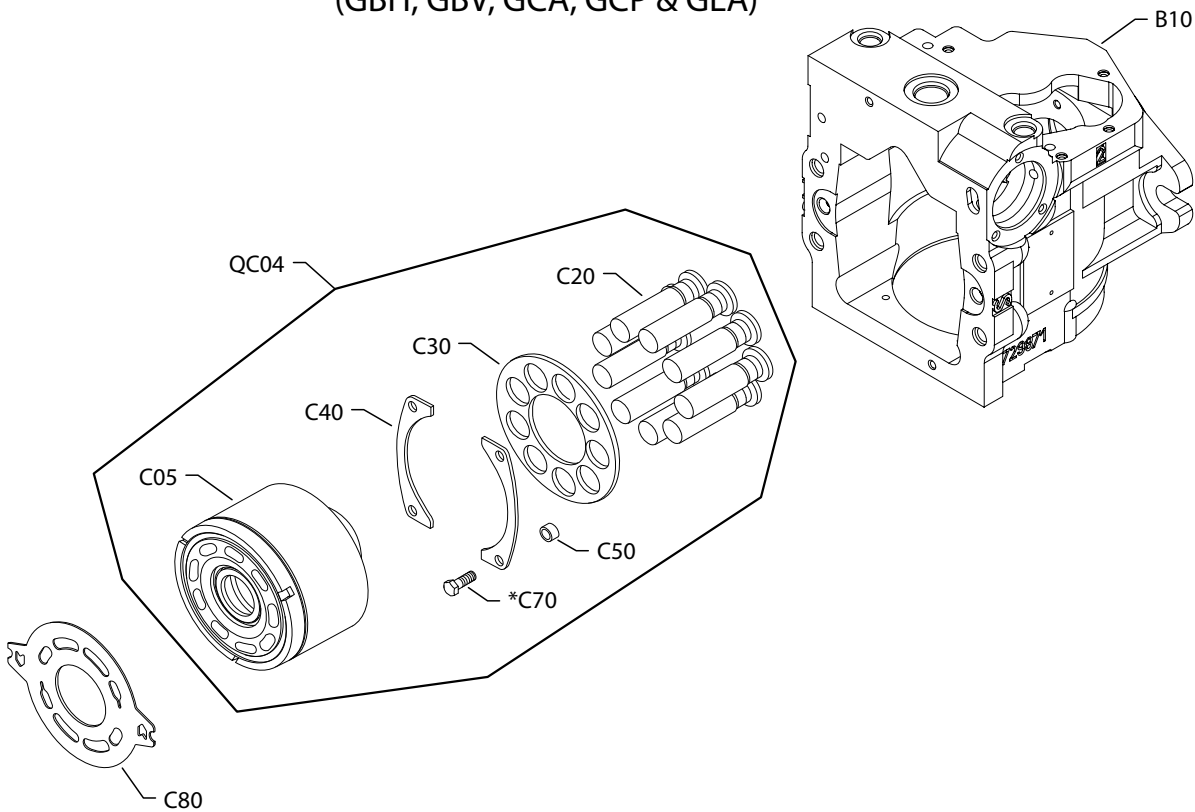
B10	95-14		510142	Housing (<i>SB-1992-008</i>) and (<i>SB-1995-006</i>)	1
C05	87-42		763920	Cylinder block assembly without speed ring	1
C20	87-42		706101	Piston assembly	9
C30	87-42		11067347	Slipper guide	1
C40	87-42		321612	Slipper guide bearing	2
C50	87-42		367631	Spacer	4
C70	87-42		648477	Screw	4
C80	87-42		11015184	Valve plate	1
QC04	87-42		510303 (80520S07)	Cylinder block kit (<i>SB-1993-012</i>)	1

Order Code: GCP

B10	95-14		510142	Housing	1
C05	95-14		763920	Cylinder block assembly without speed ring	1
C20	95-14		706101	Piston assembly	9
C30	95-14		11067347	Slipper guide	1
C40	95-14		321612	Slipper guide bearing	2
C50	95-14		367631	Spacer	4
C70	95-14		648477	Screw	4
C80	95-14		11015184	Valve plate	1
QC04	95-14		510303 (80520S07)	Cylinder block kit	1

Parts configuration

(GBH, GBV, GCA, GCP & GLA)



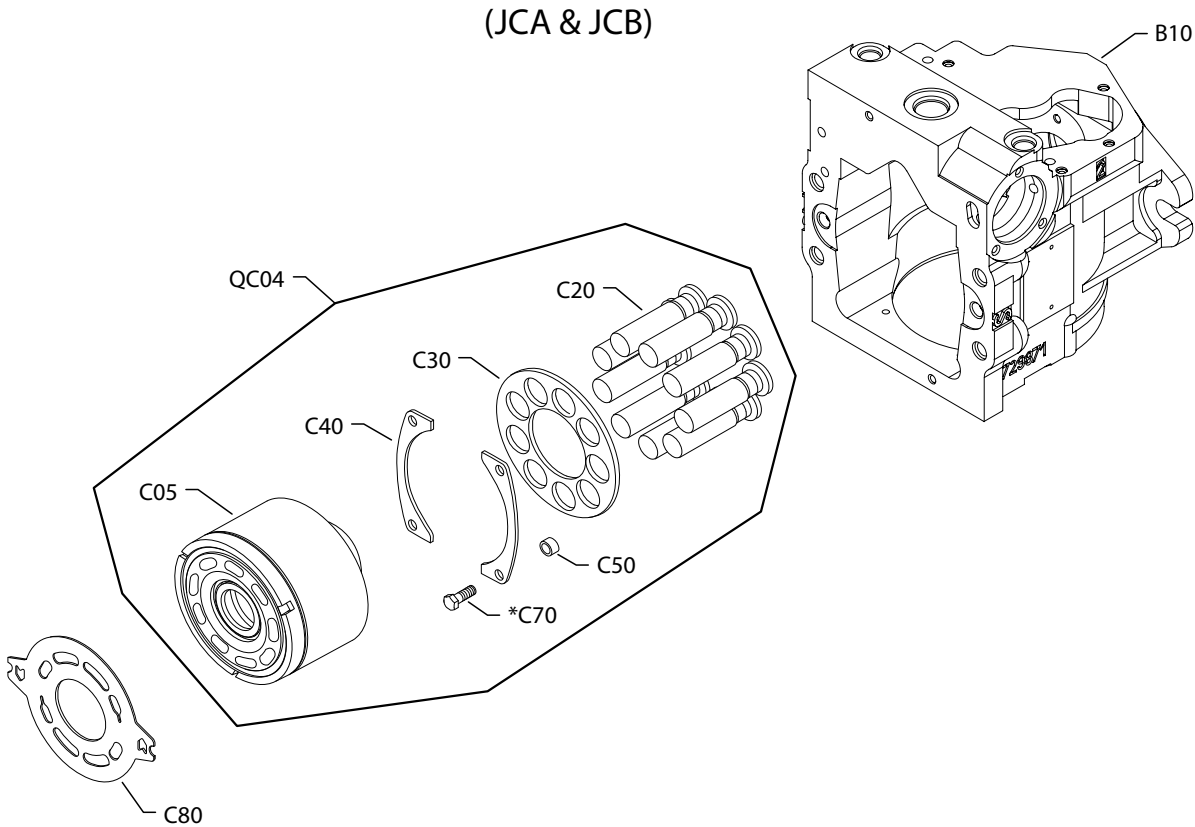
* included in overhaul seal kit Q210

Order Code: GLA

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	98-04		510142	Housing	1
C05	98-04		763920	Cylinder block assembly without speed ring	1
C20	98-04		706101	Piston assembly	9
C30	98-04		11067347	Slipper guide	1
C40	98-04		321612	Slipper guide bearing	2
C50	98-04		367631	Spacer	4
C70	98-04		648477	Screw	4
C80	98-04		11018107	Valve plate, CW	1
C80	98-04		11018106	Valve plate, CCW	1
QC04	98-04		510303 (80520S07)	Cylinder block kit	1

Special hardware JCA-JCB

Parts configuration



* included in overhaul seal kit Q210

Order Code: JCA

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
B10	08-12		510142	Housing	1
C05	08-12		763920	Cylinder block assembly without speed ring	1
C20	08-12		706101	Piston assembly	9
C30	08-12		11067347	Slipper guide	1
C40	08-12		321612	Slipper guide bearing	2
C50	08-12		367631	Spacer	4
C70	08-12		648477	Screw	4
C80	08-12		11015183	Valve plate	1
QC04	08-12		510303 (80520S07)	Cylinder block kit	1

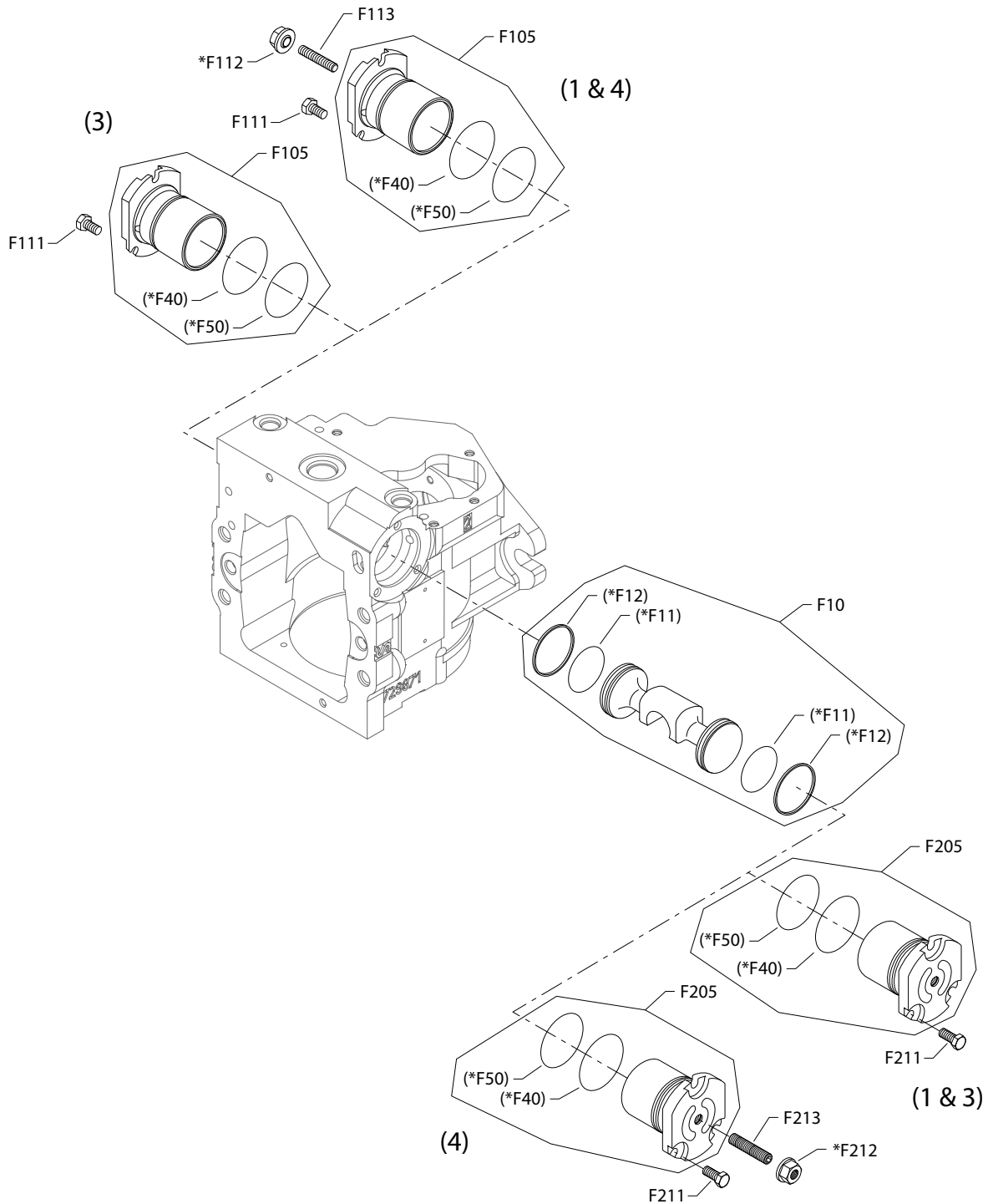
Order Code: JCB

B10	09-14		510142	Housing	1
C05	09-14		763920	Cylinder block assembly without speed ring	1
C20	09-14		706101	Piston assembly	9
C30	09-14		11067347	Slipper guide	1
C40	09-14		321612	Slipper guide bearing	2
C50	09-14		367631	Spacer	4
C70	09-14		648477	Screw	4
C80	09-14		11015183	Valve plate	1
QC04	09-14		510303 (80520S07)	Cylinder block kit	1

Displacement Limitation

Displacement limitation 1-4

Parts configuration



* included in overhaul seal kit Q210

() not available individually

Displacement limitation***Order Code: 1***

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
F10	01-01		11046683	Servo piston assembly	1
F105	01-01		11060702	Servo sleeve kit, adjustable	1
F111	01-01		508438	Screw	3
F112	01-01		505412 (9003509-0008)	Seal nut	1
F113	01-01		5000747	Set screw	1
F205	01-01		11059758	Servo sleeve kit, non-adjustable	1
F211	01-01		508438	Screw	3

Order Code: 3

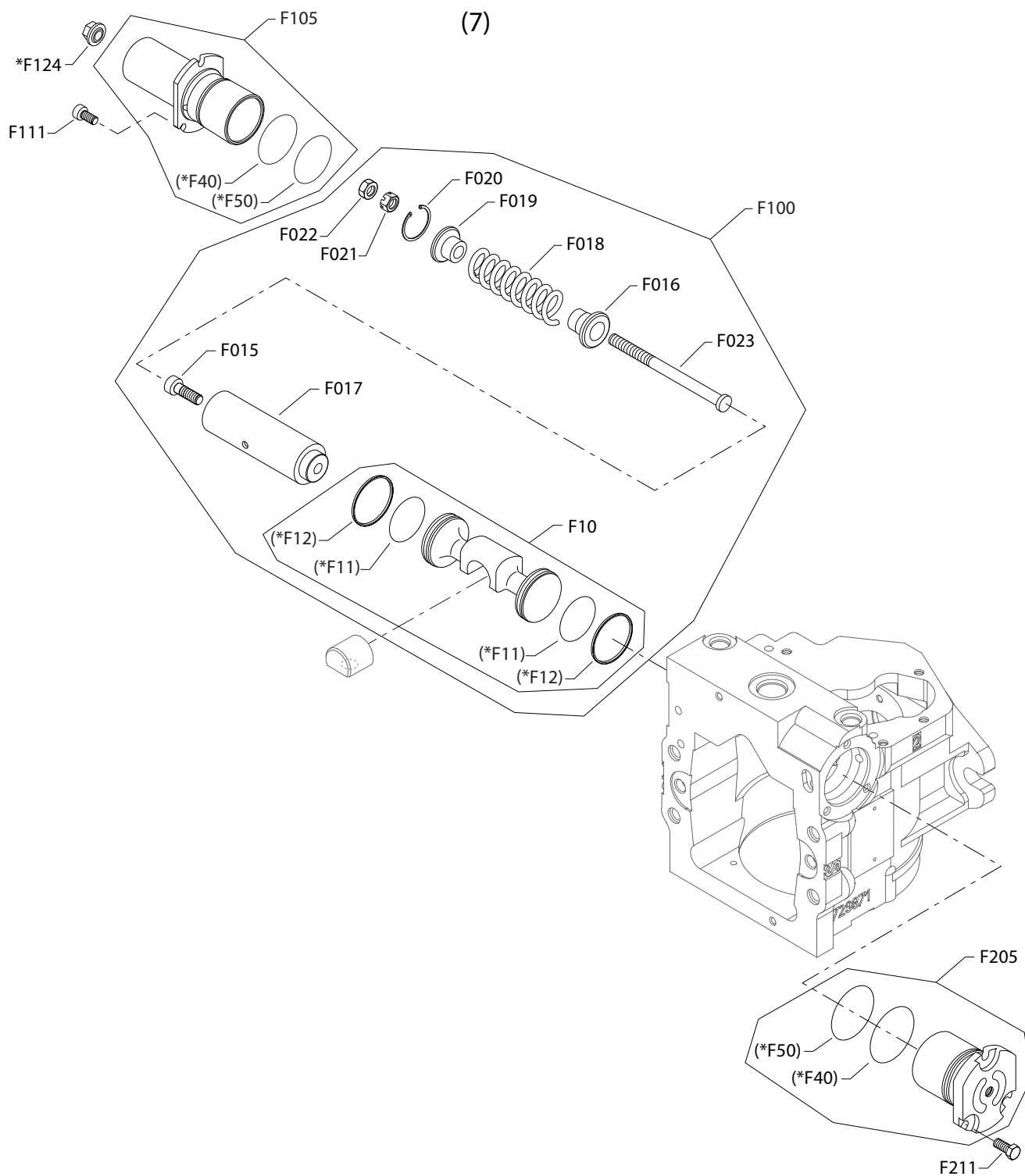
	87-42	90-50	8510089	Servo sleeve/piston replacement kit (SB-1995-005)	1
F10	90-51		11046683	Servo piston assembly	1
F105	90-51		11059758	Servo sleeve assembly, non-adjustable	1
F111	87-42		508438	Screw	3
F205	90-51		11059758	Servo sleeve assembly, non-adjustable	1
F211	87-42		508438	Screw	3

Order Code: 4

	87-42	90-50	8510090	Servo sleeve/piston replacement kit (SB-1995-005)	1
F10	90-51		11046683	Servo piston assembly	1
F105	90-51		11060702	Servo sleeve assembly, adjustable	1
F111	87-42		508438	Screw	3
F112	87-42		505412 (9003509-0008)	Seal nut	1
F113	87-42		5000747	Set screw	1
F205	90-51		11060702	Servo sleeve assembly, adjustable	1
F211	87-42		508438	Screw	3
F212	87-42		505412 (9003509-0008)	Seal nut	1
F213	87-42		5000747	Set screw	1

Displacement limitation 7

Parts configuration

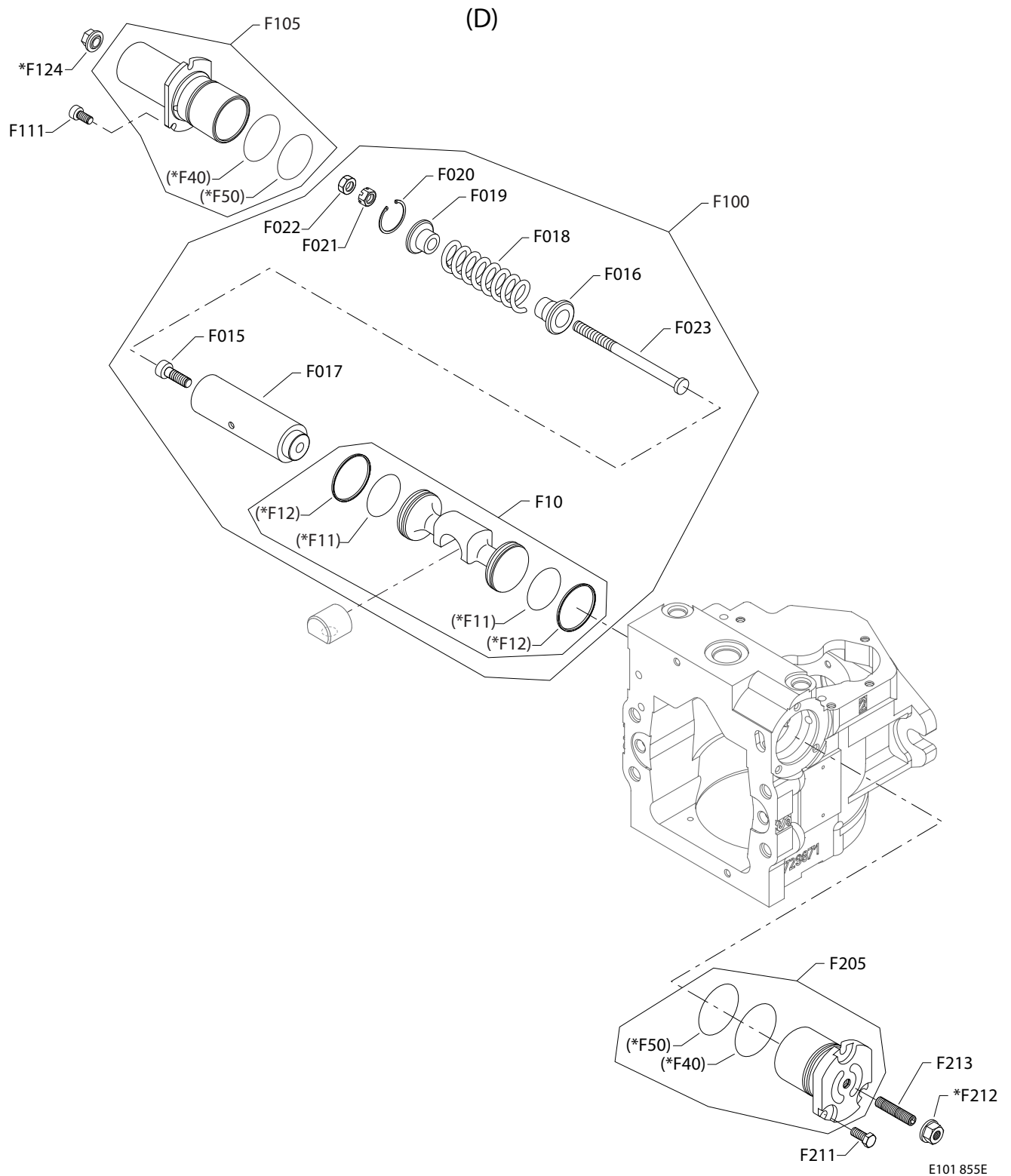


Order Code: 7

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
F10	96-20		11046684	Servo piston assembly	1
F015	96-20		345496	Screw	1
F016	96-20		507098	Spring guide	1
F017	96-20		345413	Spring housing	1
F018	96-20		351791	Spring	1
F019	96-20		507097	Spring guide	1
F020	96-20		070169	Retaining ring	1
F021	96-20		507044	Castle nut	1
F022	96-20		345470	Hex nut	1
F023	96-20		11140219	Adjust screw	1
F100	96-20		513979	Servo assembly	1
F105	96-20		11060671	Servo cylinder assembly, NFPE	1
F111	96-20		503674	Screw	3
F124	96-20		612291	Seal nut, M12	1
F205	96-20		11059758	Servo cylinder assembly, non-adjustable	1
F211	96-20		508438	Screw	3

Displacement limitation D

Parts configuration



* included in overhaul seal kit Q210

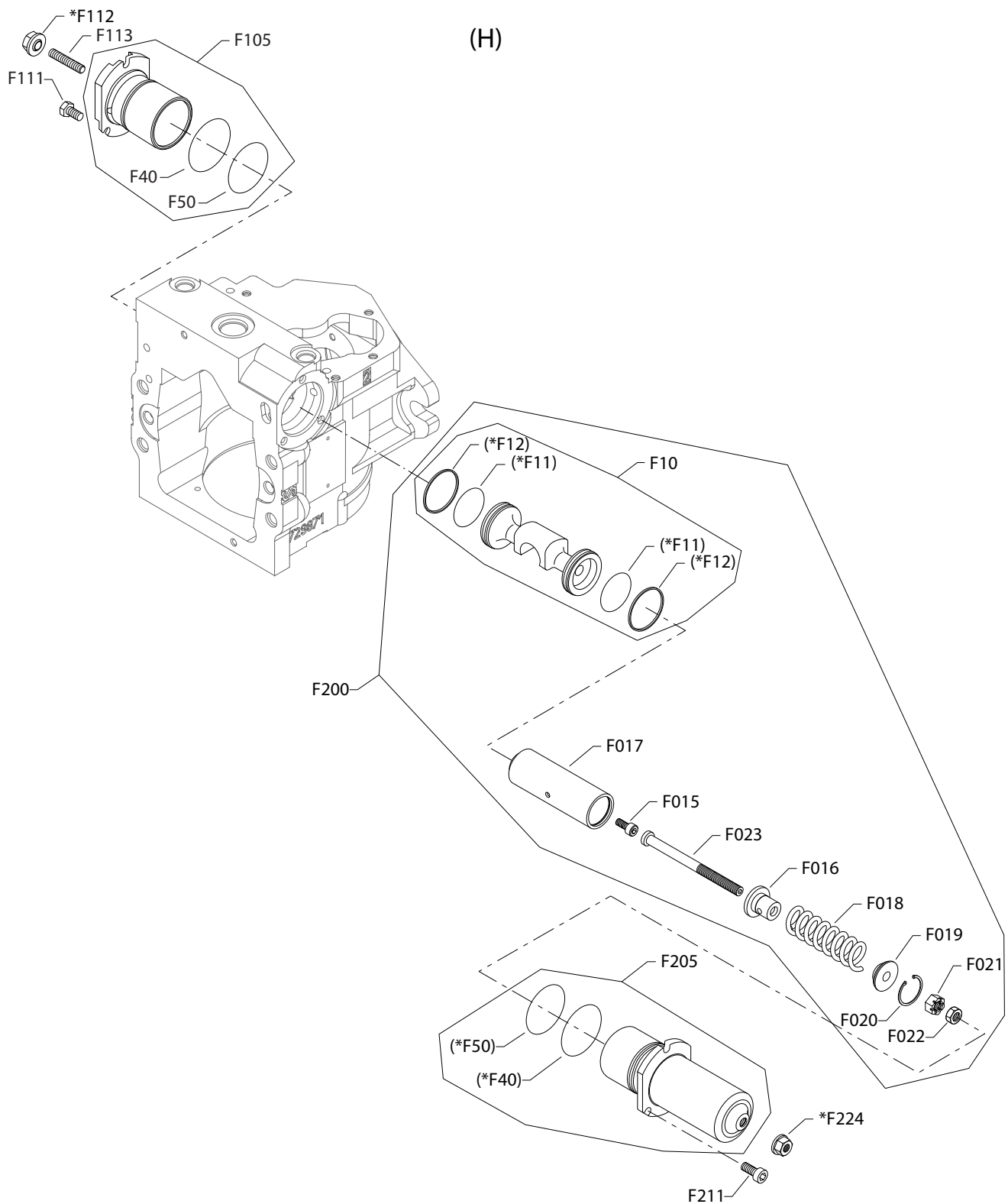
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Order Code: D

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
F10	02-51		11046684	Servo piston assembly	1
F015	02-51		345496	Screw	1
F016	02-51		507098	Spring guide	1
F017	02-51		345413	Spring housing	1
F018	02-51		351791	Spring	1
F019	02-51		507097	Spring guide	1
F020	02-51		070169	Retaining ring	1
F021	02-51		507044	Castle nut	1
F022	02-51		345470	Hex nut	1
F023	02-51		11140219	Adjust screw	1
F100	02-51		513979	Servo assembly	1
F105	02-51		11060671	Servo cylinder assembly, NFPE	1
F111	02-51		503674	Screw	3
F124	02-51		612291	Seal nut, M12	1
F205	02-51		11060702	Servo cylinder assembly, non-adjustable	1
F211	02-51		508438	Screw	3
F212	02-51		505412	Seal nut	1

Displacement limitation H

Parts configuration



* included in overhaul seal kit Q210

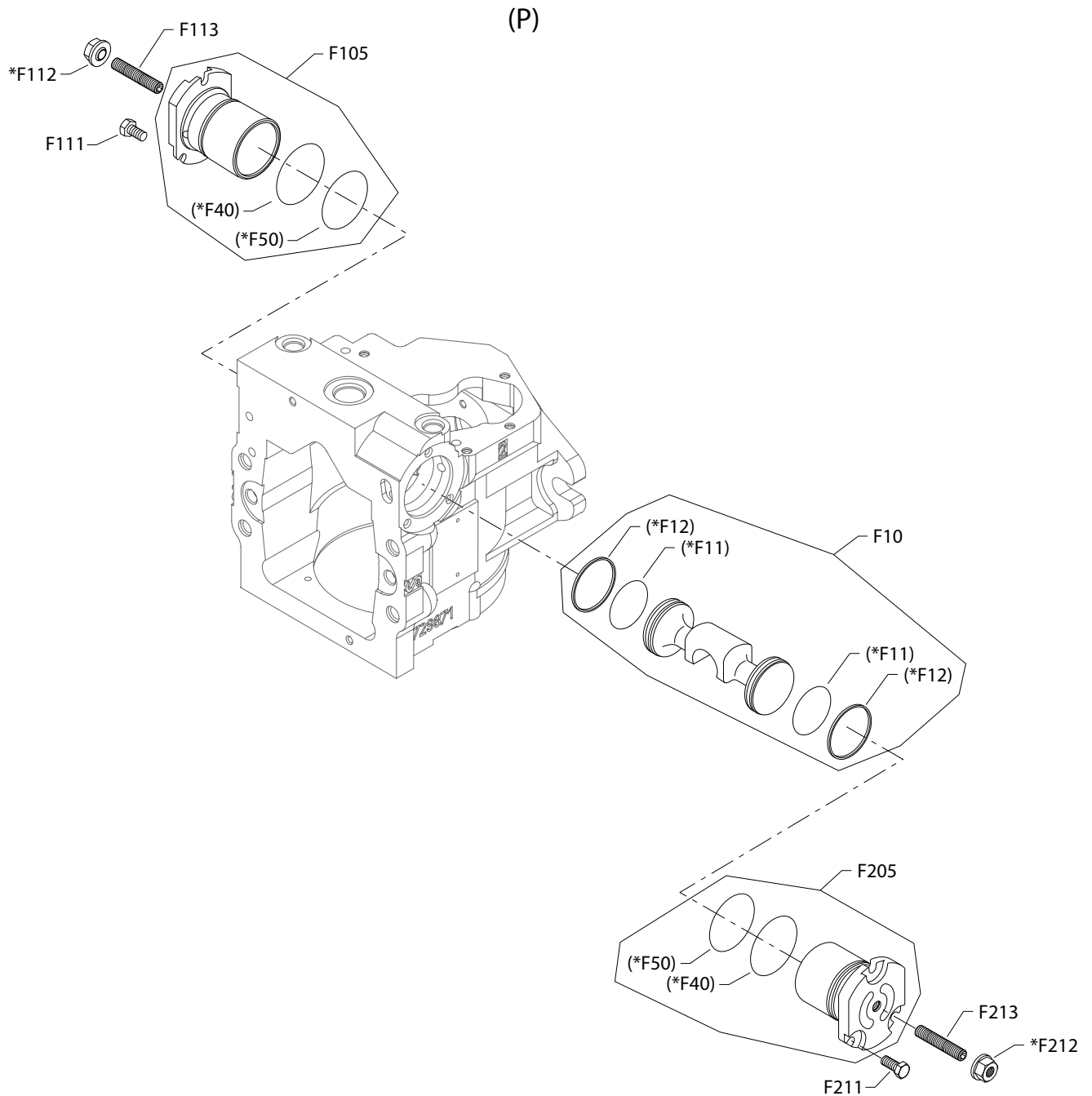
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Order Code: H

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
F10	98-18		11046684	Servo piston assembly	1
F015	98-18		345496	Screw	1
F016	98-18		507098	Spring guide	1
F017	98-18		345413	Spring housing	1
F018	98-18		351791	Spring	1
F019	98-18		507097	Spring guide	1
F020	98-18		070169	Retaining ring	1
F021	98-18		507044	Castle nut	1
F022	98-18		345470	Hex nut	1
F023	98-18		11140219	Adjust screw	1
F105	98-18		11060702	Servo cylinder assembly, non-adjustable	1
F111	98-18		508438	Screw	3
F112	98-18		505412	Seal nut	1
F113	98-18		5000747	Set screw, M8 x 45	1
F200	98-18		513979	Servo assembly	1
F205	98-18		11060671	Servo cylinder assembly, NFPE	1
F211	98-18		503674	Screw	3
F224	98-18		612291	Seal nut, M12	1

Displacement limitation P

Parts configuration



* included in overhaul seal kit Q210

() not available individually

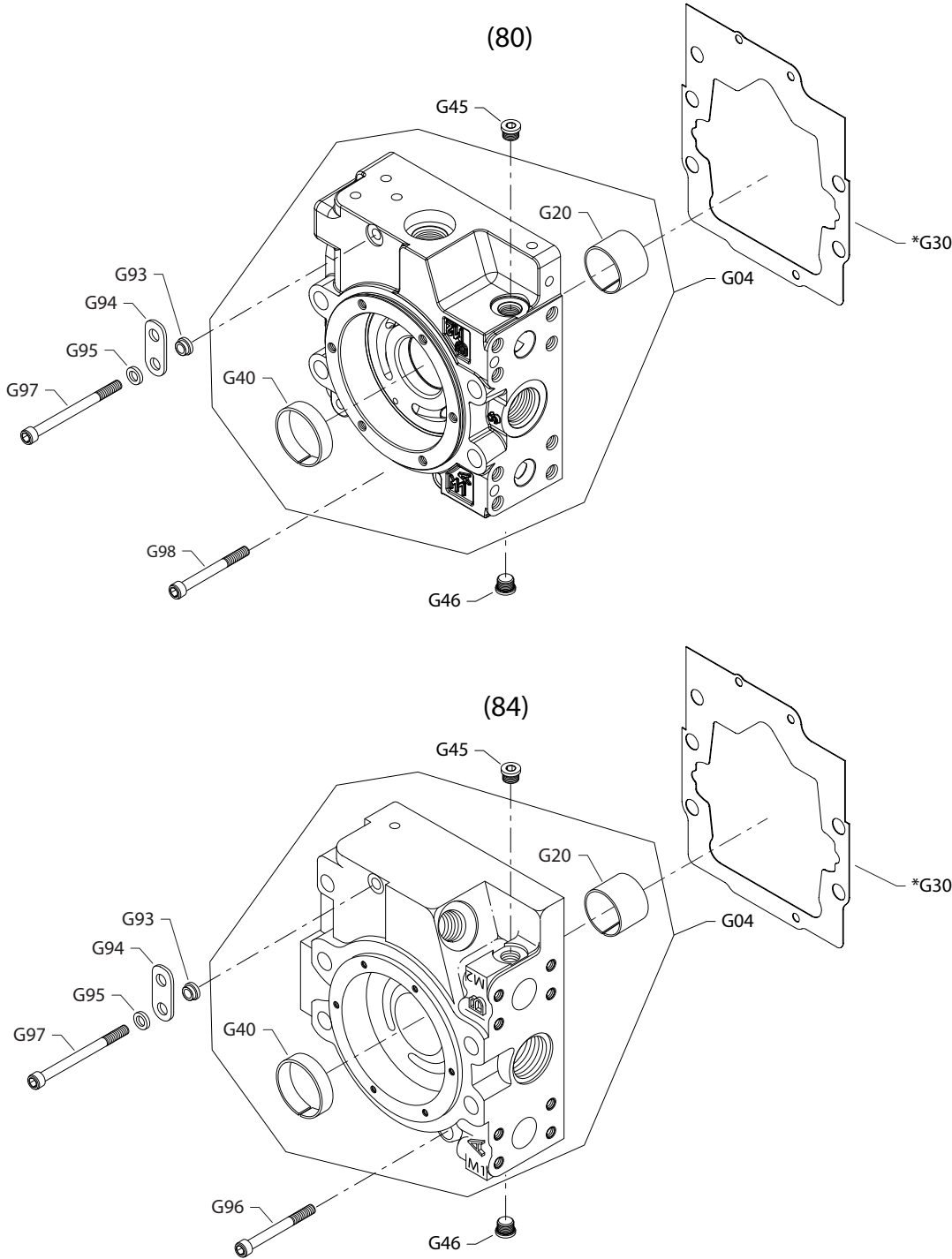
Order Code: P

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
F10	02-06		11046683	Servo piston assembly	1
F105	02-06		11060702	Servo sleeve assembly, adjustable	1
F111	02-06		508438	Screw	3
F112	02-06		505412 (9003509-0008)	Seal nut	1
F113	02-06		719401	Set screw, M8 x 50	1
F205	02-06		11060702	Servo sleeve assembly, adjustable	1
F211	02-06		508438	Screw	3
F212	02-06		505412 (9003509-0008)	Seal nut	1
F213	02-06		719401	Set screw, M8 x 50	1

Endcap

End cap 80-84

Parts configuration



* included in overhaul seal kit Q210

End cap**Order Code: 80**

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
G04	92-16		506785	End cap, twin ports (SB-1995-006)	1
G20	92-16		343830	Journal bearing (SB-1992-008)	1
G20	87-42	92-15	648030	Journal bearing	1
G30	89-17		512833	End cap gasket	1
G40	87-42		648055	Bushing	1
G45	89-17		140644	Plug assembly	1
G46	89-17		140644	Plug assembly	1
G93	89-17		511930	Spacer	1
G94	89-17		8800565	Lifting bracket	1
G95	89-17		086637	Washer	1
G97	92-16		511937	Screw	1
G97	89-17	92-15	508994	Screw	1
G98	89-17		354407	Screw	1

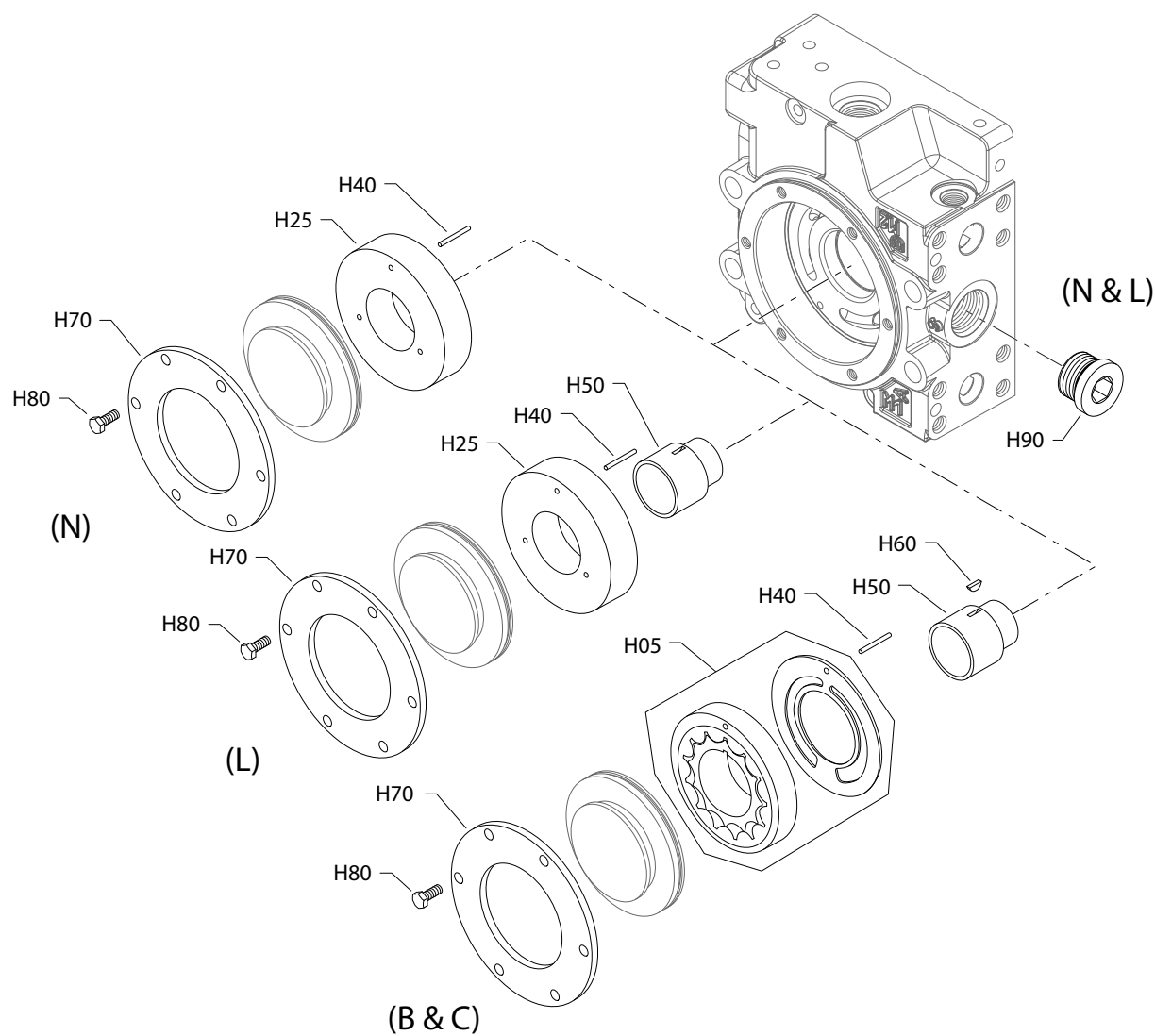
Order Code: 84

G04	04-48	13-28	506786	End cap, twin ports	1
G20	04-48	13-28	343830	Journal bearing	1
G30	04-48	13-28	512833	End cap gasket	1
G40	04-48	13-28	648055	Bushing	1
G45	04-48	13-28	140644	Plug assembly	1
G46	04-48	13-28	140644	Plug assembly	1
G93	04-48	13-28	511930	Spacer	1
G94	04-48	13-28	8800565	Lifting bracket	1
G95	04-48	13-28	086637	Washer	1
G96	04-48	13-28	354407	Screw	1
G97	04-48	13-28	511937	Screw	1

Charging System

Charging system B-N

Parts configuration



Charging system***Order Code: B***

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
H05	92-16		501990	Charge pump set, 11 cc <i>(SB-1995-004)</i>	1
H40	87-42		9004875-0013	Pin	1
H50	92-16		11138376	Charge pump shaft <i>(SB-1995-002,1997-014, 2015-031)</i>	1
H60	92-16		9003310-1206	Key <i>(SB-1995-002)</i>	1
H70	88-27		516761	Retaining plate	1
H80	88-27		648451	Screw	6

Order Code: C

H05	92-16		501991-S	Charge pump set, 14 cc <i>(SB-1995-004)</i>	1
H40	87-42		9004875-0013	Pin	1
H50	92-16		11138376	Charge pump shaft <i>(SB-1995-002,1997-014, 2015-031)</i>	1
H60	92-16		9003310-1206	Key <i>(SB-1995-002)</i>	1
H70	88-27		516761	Retaining plate	1
H80	88-27		648451	Screw	6

Order Code: L

H25	92-16		11077864	Charge pump spacer	1
H40	09-47		9004875-0013	Pin	1
H50	92-16		11138376	Charge pump shaft <i>(SB-1995-002,1997-014, 2015-031)</i>	1
H70	88-27		516761	Retaining plate	1
H80	88-27		648451	Screw	6
H90	88-27		664524 (9005110-9000)	Plug assembly	1

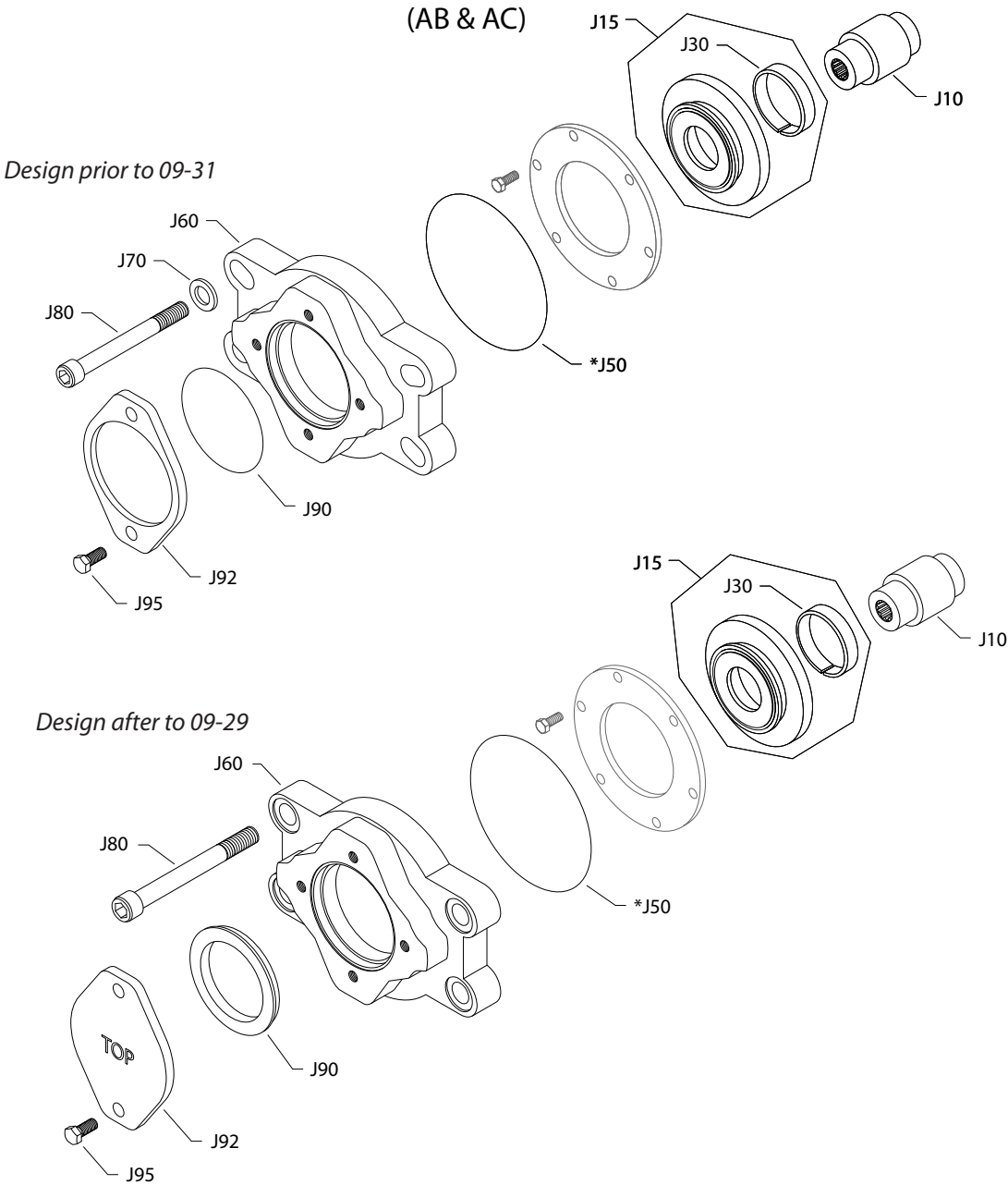
Order Code: N

H25	92-16		11077864	Charge pump spacer	1
H40	09-47		9004875-0013	Pin	1
H70	88-27		516761	Retaining plate	1
H80	88-27		648451	Screw	6
H90	88-27		664524 (9005110-9000)	Plug assembly	1

Auxiliary Mounting

Auxiliary mounting AB-AC

Parts configuration



* included in overhaul seal kit Q210

Auxiliary mounting**Order Code: AB**

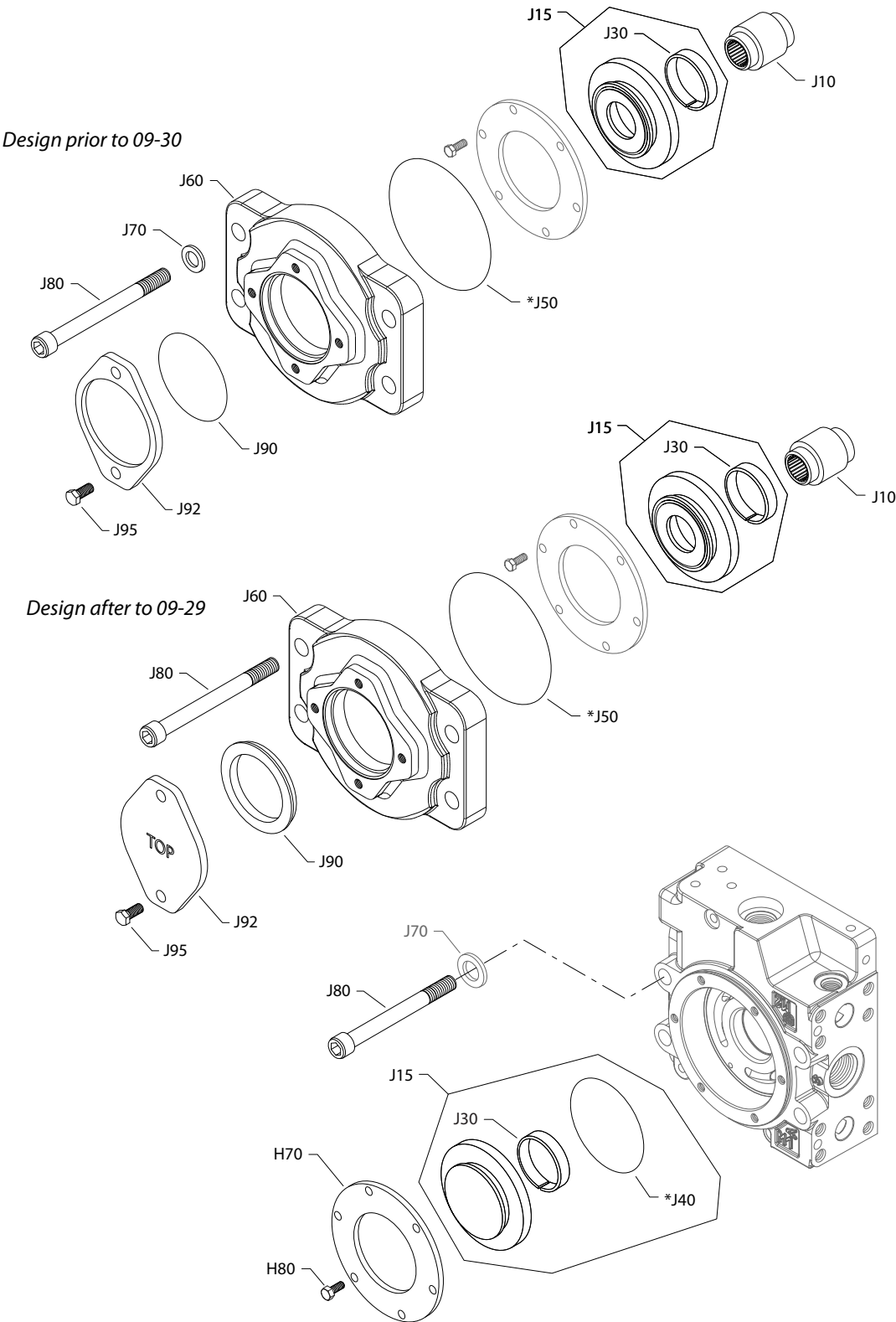
Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
J10	92-16		11053281	Coupling, 9 tooth (SB-1992-008) & (SB-2011-025)	1
J15	92-16		8800832	Cover assembly, CW (SB-1995-004) & (SB-2005-011)	1
J15	92-16		8800833	Cover assembly, CCW (SB-1995-004) & (SB-2005-011)	1
J30	92-16		664771 (8700008)	Bushing (SB-1992-008)	1
J30	87-42	92-15	648055	Bushing	1
J40	87-42	92-15	680892 (9004104-0440)	O-ring (SB-1992-008)	1
J50	87-42		056739 (9004104-1580)	O-ring	1
J60	87-42		520944	Flange adapter (SB-1995-006) & (SB-2009-074)	1
J70	95-15	09-29	506753	Washer (SB-2009-074)	4
J70	87-42	95-14	294462	Washer, hardened (SB-1995-006)	4
J80	95-15		507585	Screw, M12 x 110	4
J80	87-42	95-14	321893	Screw, M10 x 110	4
J90	09-30		4800482	A pad seal (SB-2009-074)	1
J90	87-42	09-29	726950 (9004104-0420)	O-ring	1
J92	09-30		4460586	Cover plate	1
J92	87-42	09-29	9802336	Cover plate (SB-2009-074)	1
J95	87-42		9007200-3714	Screw	2

Order Code: AC

J10	91-48		11053277	Coupling, 11 tooth	1
J15	91-48		8800832	Cover assembly, CW (SB-1995-004) & (SB-2005-011)	1
J15	91-48		8800833	Cover assembly, CCW (SB-1995-004) & (SB-2005-011)	1
J30	91-48		664771 (8700008)	Bushing (SB-1992-008)	1
J30	91-48	92-15	648055	Bushing	1
J40	91-48	92-15	680892 (9004104-0440)	O-ring (SB-1992-008)	1
J50	91-48		056739 (9004104-1580)	O-ring	1
J60	91-48		520944	Flange adapter (SB-1995-006) & (SB-2009-074)	1
J70	95-15	09-29	506753	Washer (SB-2009-074)	4
J70	91-48	95-14	294462	Washer, hardened (SB-1995-006)	4
J80	95-15		507585	Screw, M12 x 110	4
J80	91-48	95-14	321893	Screw, M10 x 110	4
J90	09-30		4800482	A pad seal (SB-2009-074)	1
J90	91-48	09-29	726950 (9004104-0420)	O-ring	1
J92	09-30		4460586	Cover plate	1
J92	91-48	09-29	9802336	Cover plate (SB-2009-074)	1
J95	91-48		9007200-3714	Screw	2

Auxiliary mounting BB-NN

Parts configuration



* included in overhaul seal kit Q210

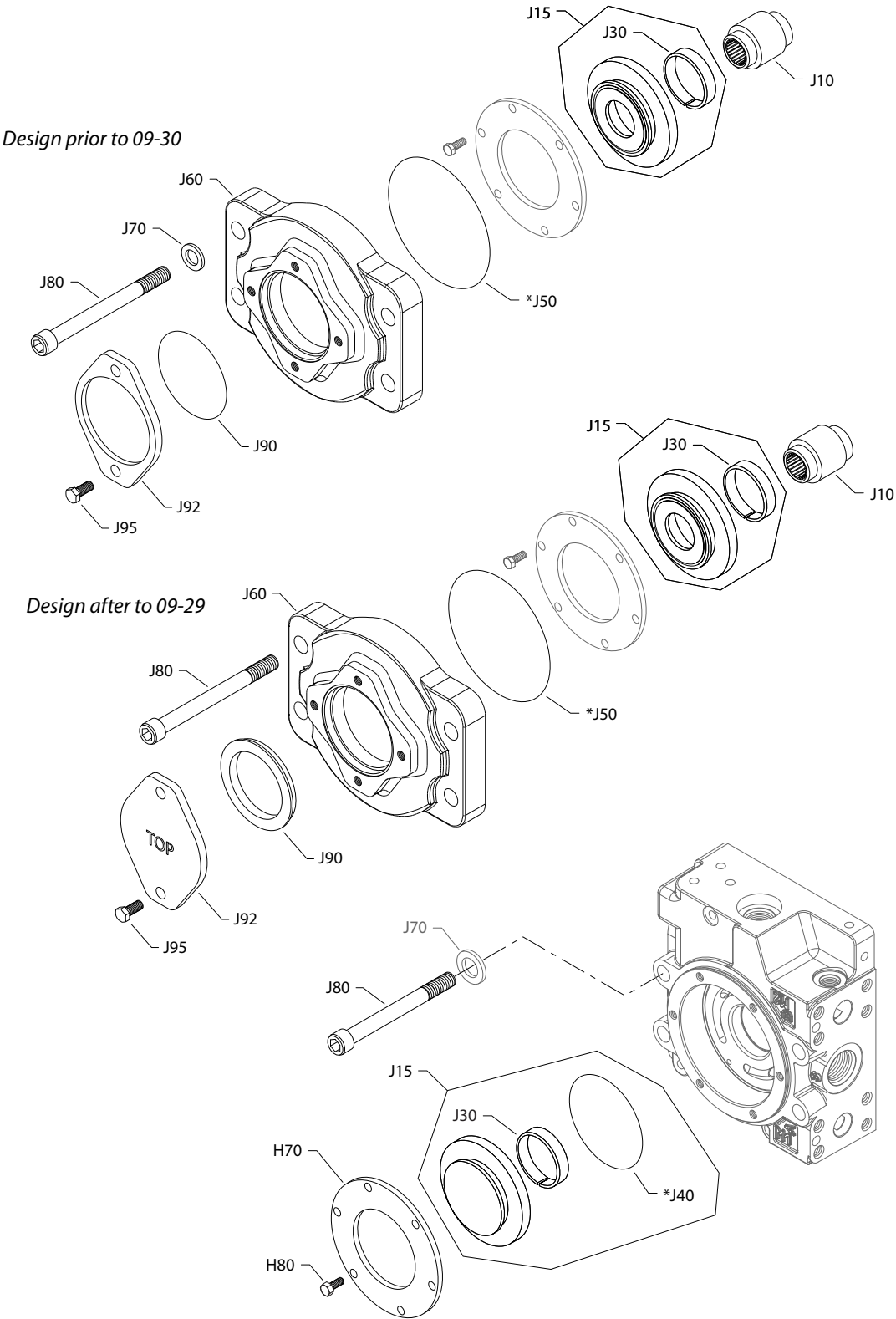
Order Code: BB

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
J10	92-16		11053280	Coupling, 15 tooth	1
J15	92-16		8800832	Cover assembly, CW (SB-1995-004) & (SB-2005-011)	1
J15	92-16		8800833	Cover assembly, CW (SB-1995-004) & (SB-2005-011)	1
J30	92-16		664771 (8700008)	Bushing (SB-1992-008)	1
J30	91-07	92-15	648055	Bushing	1
J40	91-07	92-15	680892 (9004104-0440)	O-ring (SB-1992-008)	1
J50	91-07		056739 (9004104-1580)	O-ring	1
J60	91-07		520945	Flange adapter (SB-1995-006) & (SB-2009-075)	1
J70	95-15	09-29	506753	Washer	4
J70	91-07	95-14	294462	Washer, hardened (SB-1995-006)	4
J80	95-15		507585	Screw, M12 x 110	4
J80	91-07	95-14	321893	Screw, M10 x 110	4
J90	09-30		8801061	B pad seal (SB-2009-075)	1
J90	91-07	09-29	726935 (9004104-0450)	O-ring	1
J92	09-30		8801059	Cover	1
J92	91-07	09-29	4460370	Cover plate	1
J95	91-07		9007200-5021	Screw	2

Order Code: BC

J10	92-16		11053279	Coupling, 13 tooth	1
J15	92-16		8800832	Cover assembly, CW (SB-1995-004) & (SB-2005-011)	1
J15	92-16		8800833	Cover assembly, CCW (SB-1995-004) & (SB-2005-011)	1
J30	92-16		664771 (8700008)	Bushing (SB-1992-008)	1
J30	91-07	92-15	648055	Bushing	1
J40	91-07	92-15	680892 (9004104-0440)	O-ring (SB-1992-008)	1
J50	91-07		056739 (9004104-1580)	O-ring	1
J60	91-07		520945	Flange adapter (SB-1995-006) & (SB-2009-075)	1
J70	95-15	09-29	506753	Washer	4
J70	91-07	95-14	294462	Washer, hardened (SB-1995-006)	4
J80	95-15		507585	Screw, M12 x 110	4
J80	91-07	95-14	321893	Screw, M10 x 110	4
J90	09-30		8801061	B pad seal (SB-2009-075)	1
J90	91-07	09-29	726935 (9004104-0450)	O-ring	1
J92	09-30		8801059	Cover	1
J92	91-07	09-29	4460370	Cover plate	1
J95	91-07		9007200-5021	Screw	2

Parts configuration



* included in overhaul seal kit Q210

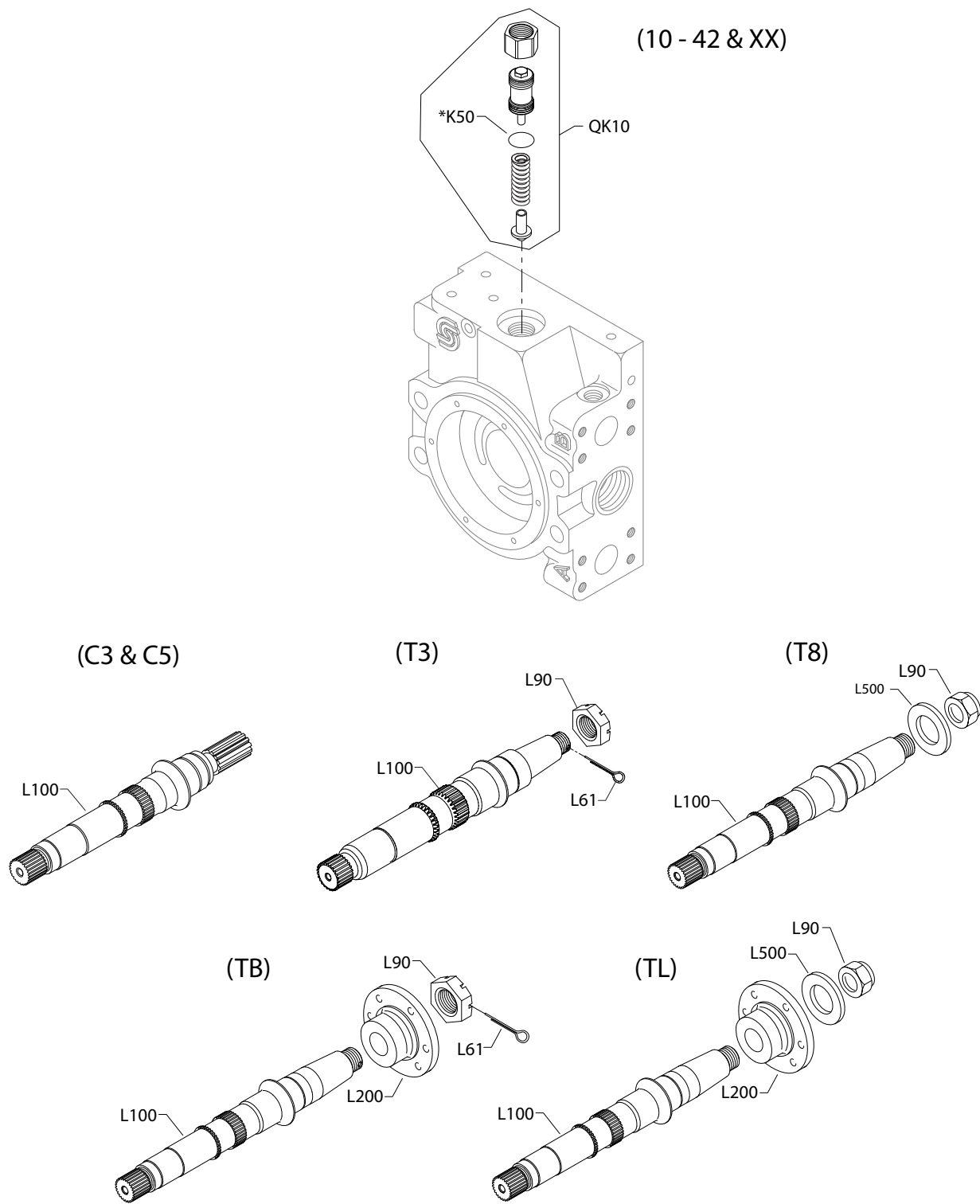
Order Code: NN

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
J15	92-16		8800834	Cover assembly, (SB-1995-004)	1
J30	92-16		664771 (8700008)	Bushing (SB-1992-008)	1
J30	87-42	92-15	648055	Bushing	1
J40	87-42		680892 (9004104-0440)	O-ring (SB-1992-008)	1
J70	87-42	95-14	294462	Washer (SB-1995-006)	4
J80	95-15		506800	Screw, M12 x 90	4
J80	87-42	95-14	321661	Screw, M10 x 90	4

Shaft

Shaft 10-TL

Parts configuration



* included in overhaul seal kit Q210

Charge pressure relief**Order Code: 10-30**

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
QK10	87-42		8002K000-A	Charge relief valve kit, 10-30 bar <i>(SB-1989-002)</i>	1
K50	87-42		001149 (9004201-6200)	O-ring <i>(SB-1989-002)</i>	1

Order Code: 32-42

QK10	94-13		8510269	Charge relief valve kit, 30-42 bar	1
K50	94-13		001149 (9004201-6200)	O-ring	1

Order Code: XX

QK10	94-13		8510269	Charge relief valve kit, 30-42 bar	1
K50	94-13		001149 (9004201-6200)	O-ring	1

Shaft**Order Code: C3**

L100	92-16		340521	Shaft, 15 tooth spline <i>(SB-1992-008)</i>	1
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Order Code: C5

L100	93-26		742775	Shaft, 19 tooth spline	1
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Order Code: T3

L61	92-16		716761 (9004600-1224)	Cotter pin	1
L90	87-42		9003575-0071	Slotted nut	1
L100	92-16		342915	Shaft, 15, tapered <i>(SB-1992-008)</i> & <i>(SB-1994-007)</i>	1

Order Code: T8

L90	98-48		512472	Nut	1
L100	98-48		511778	Shaft, tapered without keyway	1
L500	98-48		512473	Washer	1

Order Code: TB

L61	04-50		716761 (9004600-1224)	Cotter pin	1
L90	04-50		9003575-0071	Slotted nut	1
L100	04-50		342915	Shaft, tapered	1
L200	04-50		753848	Flange	1

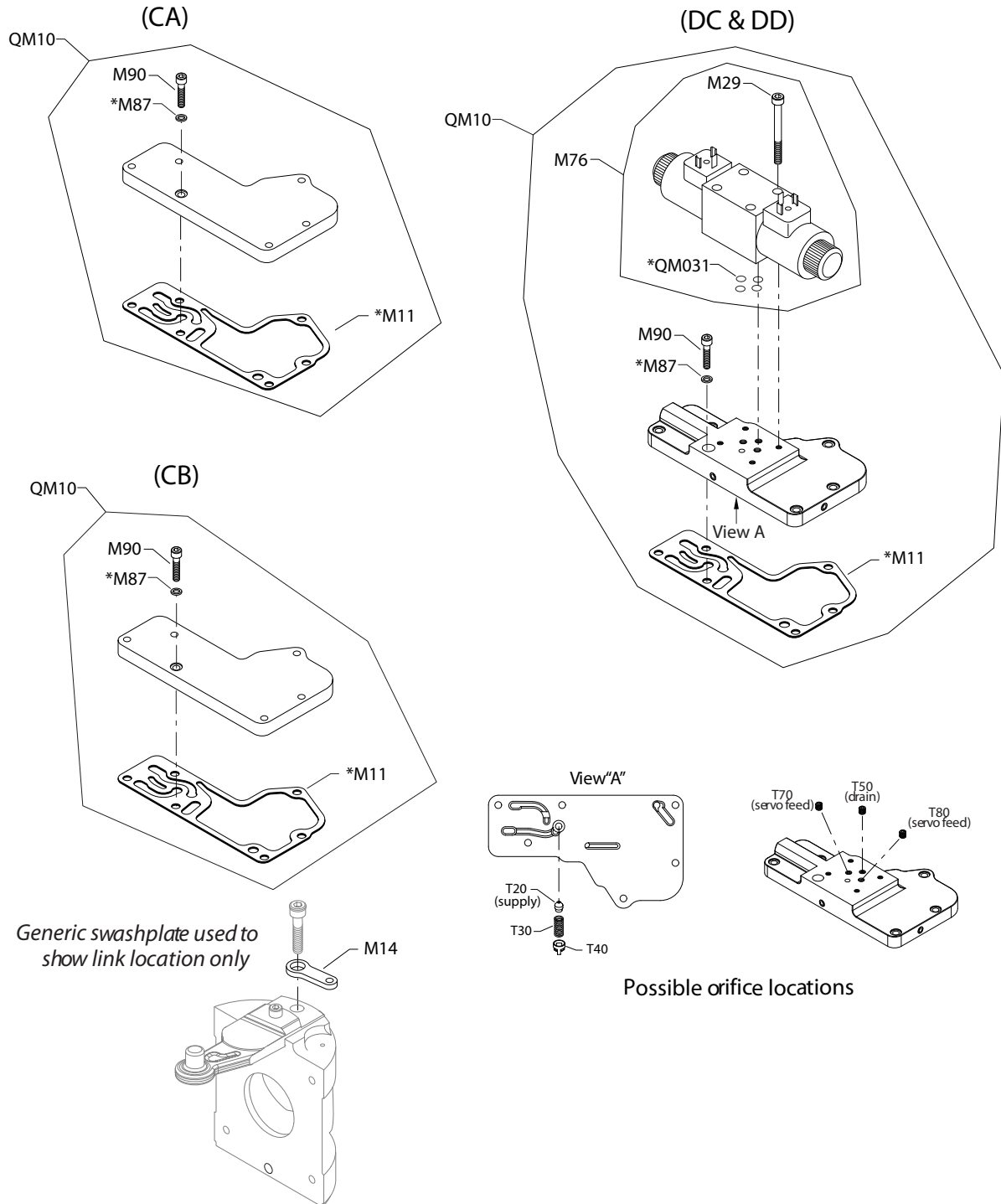
Order Code: TL

L90	98-48		512472	Nut	1
L100	98-48		511778	Shaft, tapered	1
L200	98-48		753848	Flange	1
L500	98-48		512473	Washer	1

Control

Control CA-DD

Parts configuration



* included in overhaul seal kit Q210

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

Order Code: CA

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M11	87-42		8800520	Control gasket	1
M87	87-42		592386	Seal washer	1
M90	87-42		693341 (9007314-0606)	Screw	6
QM10	87-42		8002M0CA-A	Control cover plate kit	1
QM210	87-42		11096319	Control seal kit	1

Order Code: CB

M11	87-42		8800520	Control gasket	1
M14	87-42		11070304	Feedback link	1
M87	87-42		592386	Seal washer	1
M90	87-42		693341 (9007314-0606)	Screw	6
QM10	87-42		8002M0CA-A	Control cover plate kit	1
QM210	87-42		11096319	Control seal kit	1

Order Code: DC

M11	87-42		8800520	Control gasket	1
M76	87-42		687103/P	Solenoid valve, 12v	1
M87	87-42		592386	Seal washer	1
M90	87-42		693341 (9007314-0606)	Screw	6
QM10	87-42		8002M0DC-A	3-position control kit, 12 volt	1
QM031	87-42		11099647	Valve seal kit	1
QM210	87-42		11096161	Control seal kit	1

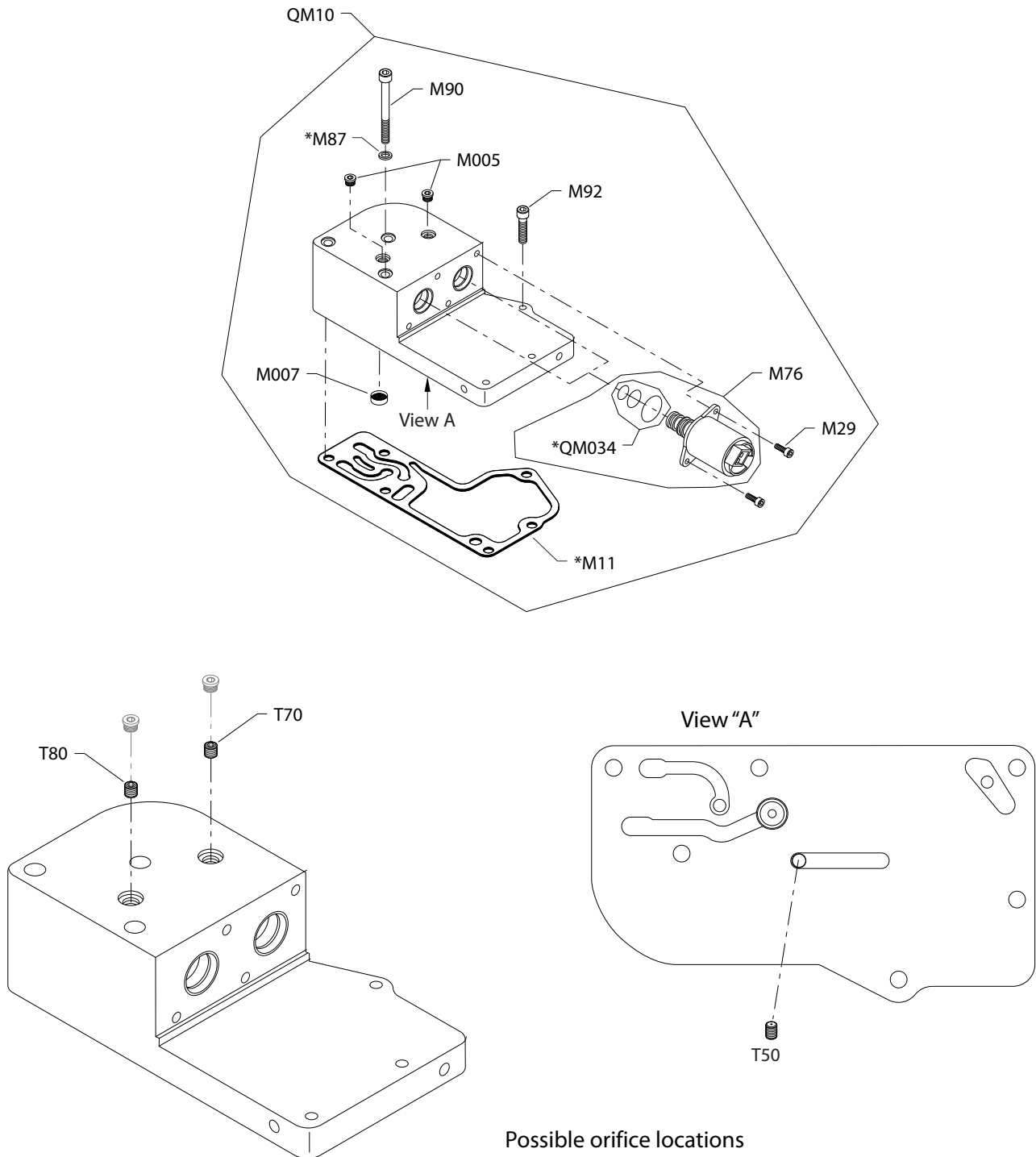
Order Code: DD

M11	87-42		8800520	Control gasket	1
M76	87-42		549907/P	Solenoid valve, 24v	1
M87	87-42		592386	Seal washer	1
M90	87-42		693341 (9007314-0606)	Screw	6
QM10	87-42		8510314	3-position control kit, 24 volt	1
QM031	87-42		11099647	Valve seal kit	1
QM210	87-42		11096161	Control seal kit	1

Control FA-FD

Parts configuration

(FA, FB, FC & FD)



* included in overhaul seal kit Q210

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

Order Code: FA

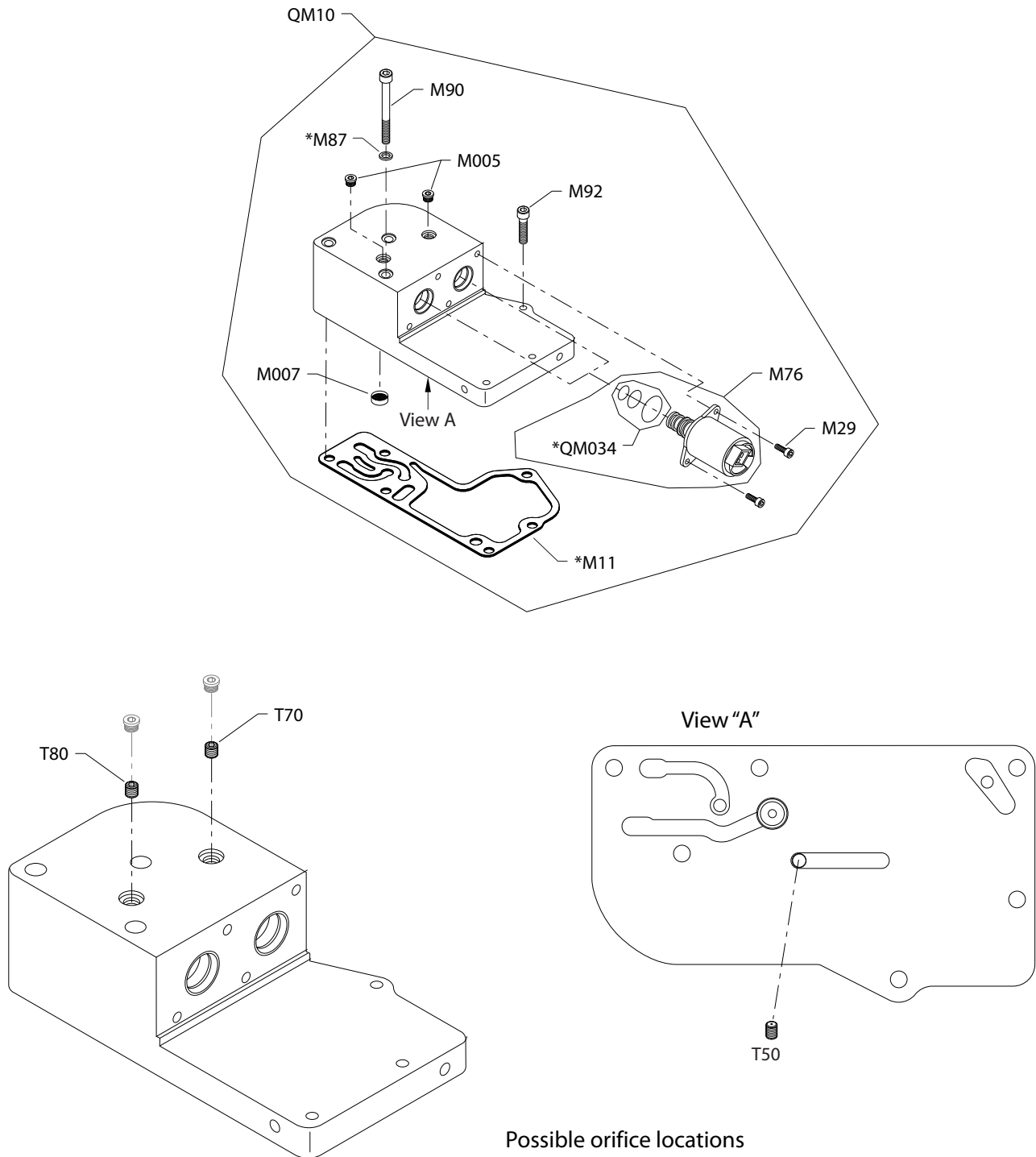
Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M11	97-30		8800520	Control gasket	1
M29	97-30		067694	Screw	4
M76	97-30		518080	Solenoid valve, 12v	2
M87	97-30		592386	Seal washer	1
M90	97-30		9007314-0614	Screw, M6 x 65	3
M92	97-30		041160 (9007314-0605)	Screw, M6 x 20	3
M005	97-30		11040532	Plug assembly	2
M007	97-30		K00775	Filter screen	1
QM10	97-30		11067537	NFPE control kit, 12v	1
QM034	97-30		11099849	Solenoid valve seal kit	1
QM210	97-30		11100027	Control seal kit	1

Order Code: FB

M11	97-35		8800520	Control gasket	1
M29	97-35		067694	Screw	4
M76	97-35		518081	Solenoid valve, 24v	2
M87	97-35		592386	Seal washer	1
M90	97-35		9007314-0614	Screw, M6 x 65	3
M92	97-35		041160 (9007314-0605)	Screw, M6 x 20	3
M005	97-35		11040532	Plug assembly	2
M007	97-35		K00775	Filter screen	1
QM10	97-35		11067538	NFPE control kit, 24v	1
QM034	97-35		11099849	Solenoid valve seal kit	1
QM210	97-35		11100027	Control seal kit	1

Parts configuration

(FA, FB, FC & FD)



* included in overhaul seal kit Q210

Note

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

Order Code: FC

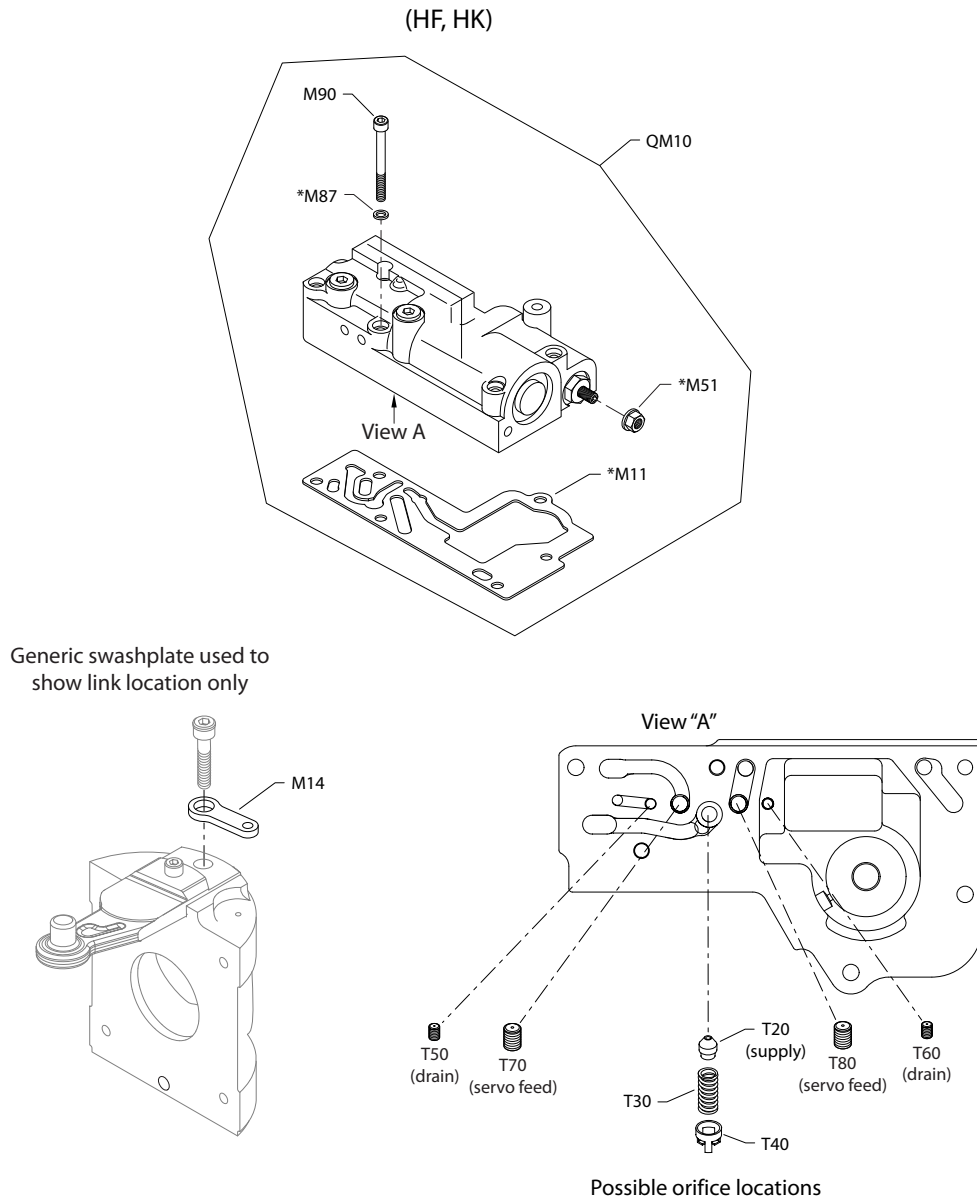
Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M11	97-35		8800520	Control gasket	1
M29	97-35		067694	Screw	4
M76	97-35		521709	Solenoid valve, 12v	2
M87	97-35		592386	Seal washer	1
M90	97-35		9007314-0614	Screw, M6 x 65	3
M92	97-35		041160 (9007314-0605)	Screw, M6 x 20	3
M005	97-35		11040532	Plug assembly	2
M007	97-35		K00775	Filter screen	1
QM10	97-35		8510220	NFPE control kit, 12v	1
QM034	97-35		11099849	Solenoid valve seal kit	1
QM210	97-35		11100027	Control seal kit	1

Order Code: FD

M11	97-35		8800520	Control gasket	1
M29	97-35		067694	Screw	4
M76	97-35		517214	Solenoid valve, 24v	2
M87	97-35		592386	Seal washer	1
M90	97-35		9007314-0614	Screw, M6 x 65	3
M92	97-35		041160 (9007314-0605)	Screw, M6 x 20	3
M005	97-35		11040532	Plug assembly	2
M007	97-35		K00775	Filter screen	1
QM10	97-35		8510380	NFPE control kit, 24v	1
QM034	97-35		11099849	Solenoid valve seal kit	1
QM210	97-35		11100027	Control seal kit	1

Control HF-HK

Parts configuration



* included in overhaul seal kit Q210

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

Order Code: HF

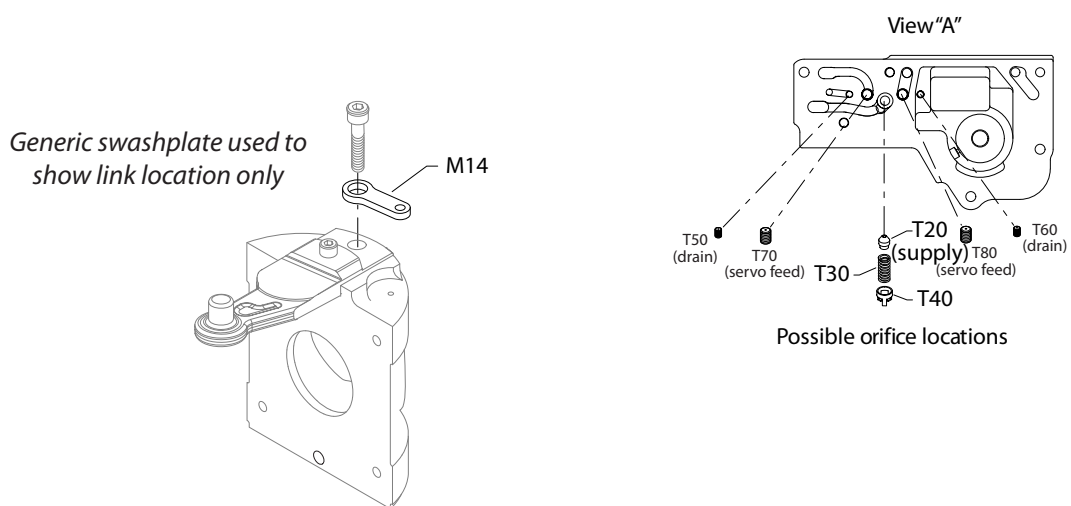
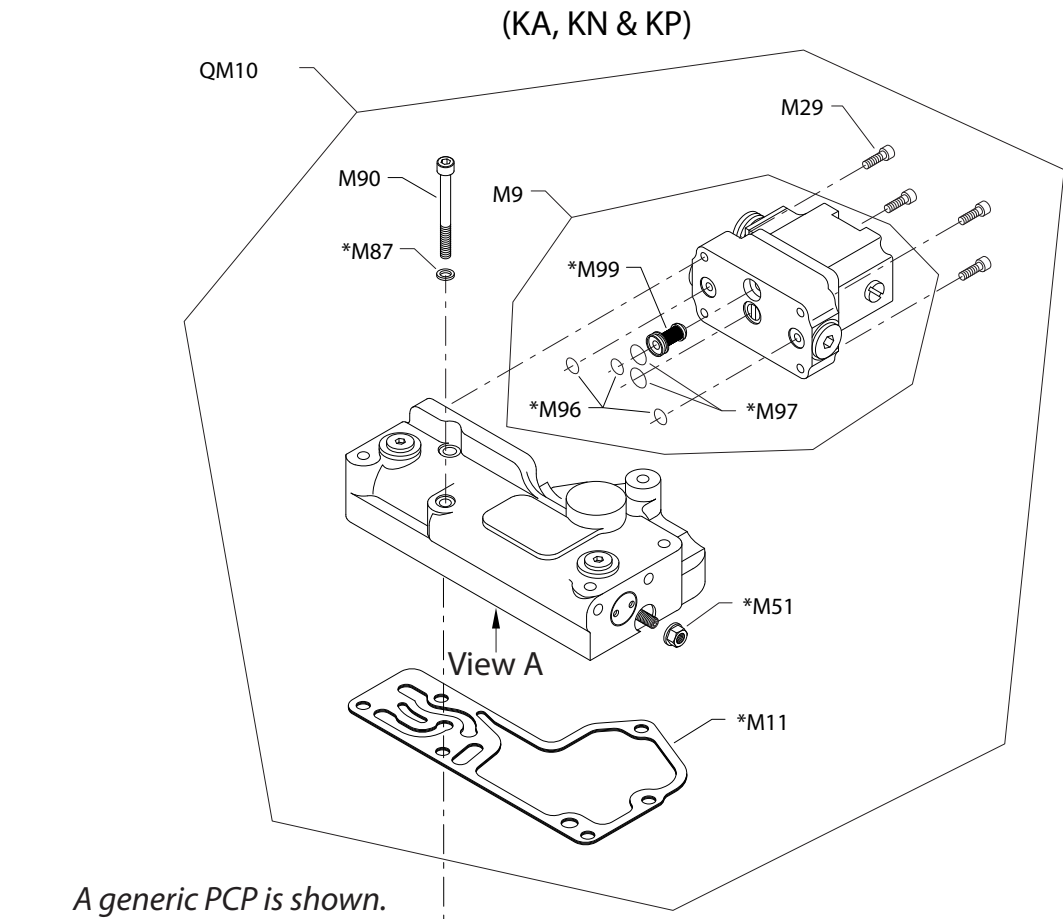
Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M11	93-47		K11419	Control gasket <i>(SB-1993-002)</i>	1
M14	93-47		11070304	Feedback link	1
M51	93-47		9003509-0008	Seal nut	1
M87	93-47		592386	Seal washer	1
M90	93-47		692889 (9007314-0611)	Screw	6
QM10	93-47		8002M0HF-A	HDC kit, 3-11 bar	1
QM210	93-47		11096267	Control seal kit	1

Order Code: HK

M11	93-47		K11419	Control gasket <i>(SB-1993-002)</i>	1
M14	93-47		11070304	Feedback link	1
M51	93-47		9003509-0008	Seal nut	1
M87	93-47		592386	Seal washer	1
M90	93-47		692889 (9007314-0611)	Screw	6
QM10	93-47		8002M0HK-A	HDC kit, 1-11 bar	1
QM210	93-47		11096267	Control seal kit	1

Control KA-KP

Parts configuration



* included in overhaul seal kit Q210

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

Order Code: KA

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M9	95-26		MCV116G4201	PCP, MS connector	1
M11	95-26		8800520	Control gasket	1
M14	95-26		11070304	Feedback link	1
M29	95-26		K07067	Screw	4
M51	95-26		9003509-0008	Seal nut	1
M87	95-26		592386	Seal washer	1
M90	95-26		692889 (9007314-0611)	Screw	6
M96	95-26		011296 (9004105-0120)	O-ring	3
M97	95-26		9004105-0130	O-ring	1
M99	95-26		K08572	Filter assembly	1
QM10	95-26		8510177	EDC3 kit, MS connector, dual coil	1
QM210	95-26		11096131	Control seal kit	1

Order Code: KN

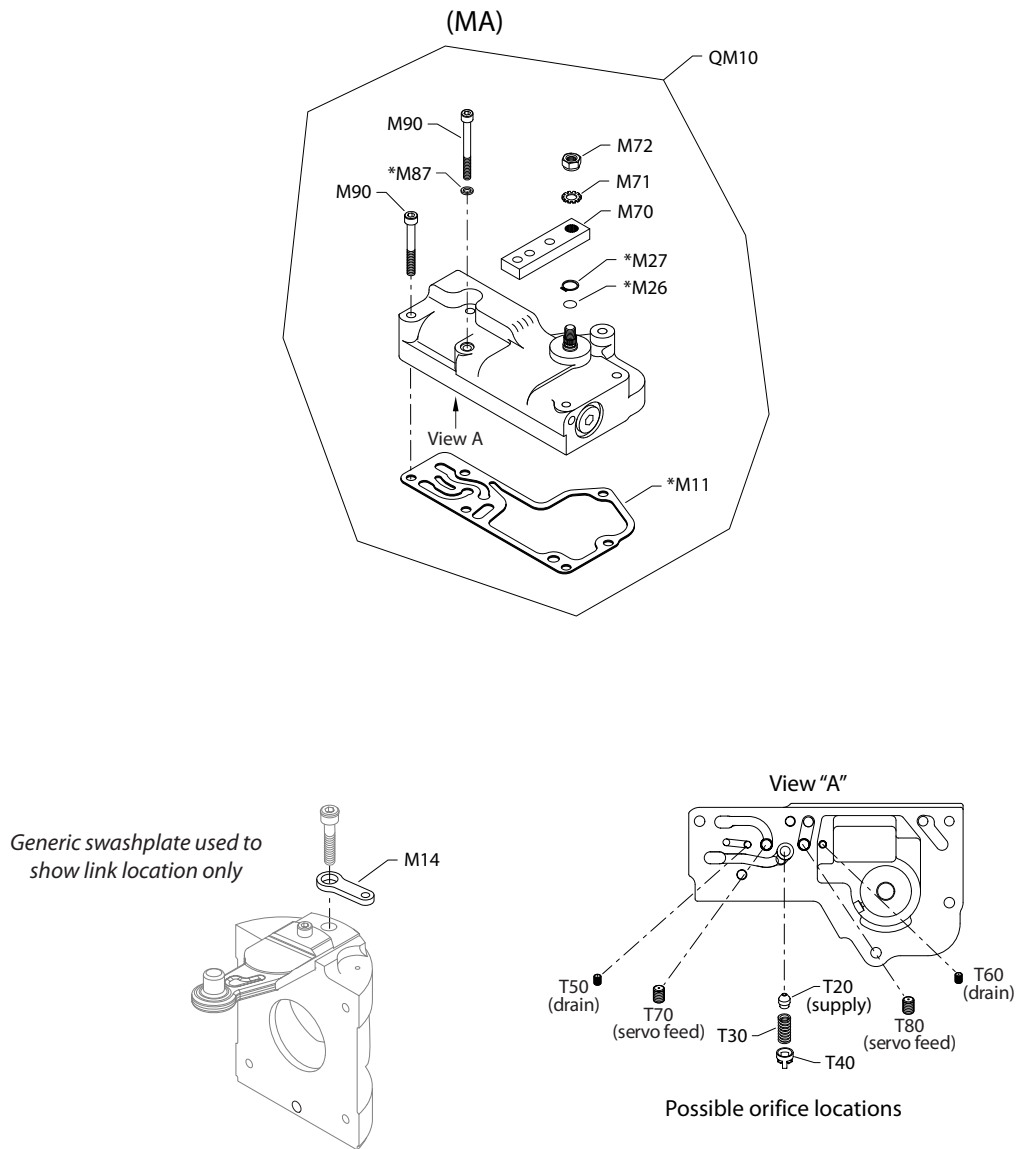
M9	95-51		MCV116A3501	PCP, MS connector	1
M11	95-51		8800520	Control gasket	1
M14	95-51		11070304	Feedback link	1
M29	95-51		K07067	Screw	4
M51	95-51		9003509-0008	Seal nut	1
M87	95-51		592386	Seal washer	1
M90	95-51		692889 (9007314-0611)	Screw	6
M96	95-51		011296 (9004105-0120)	O-ring	3
M97	95-51		9004105-0130	O-ring	1
M99	95-51		K08572	Filter assembly	1
QM10	95-51		11018295	EDC3 kit, MS connector, single coil	1
QM210	95-51		11096131	Control seal kit	1

Order Code: KP

M9	95-26		MCV116G4204	PCP, Weather-pack connector	1
M11	95-26		8800520	Control gasket	1
M14	95-26		11070304	Feedback link	1
M29	95-26		K07067	Screw	4
M51	95-26		9003509-0008	Seal nut	1
M87	95-26		592386	Seal washer	1
M90	95-26		692889 (9007314-0611)	Screw	6
M96	95-26		011296 (9004105-0120)	O-ring	3
M97	95-26		9004105-0130	O-ring	1
M99	95-26		K08572	Filter assembly	1
QM10	95-26		8510355	EDC3 kit, Weather-pack connector, dual coil	1
QM210	95-26		11096131	Control seal kit	1

Control MA

Parts configuration



* included in overhaul seal kit Q210

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

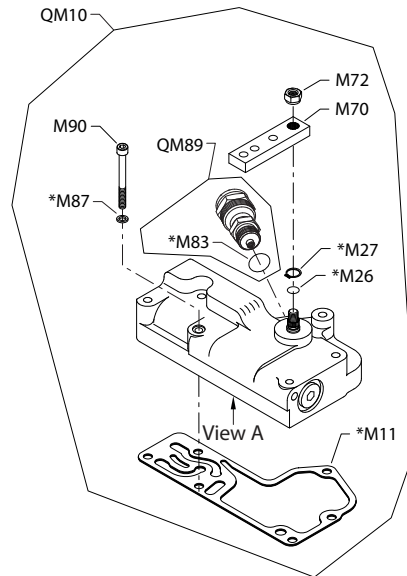
Order Code: MA

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M11	87-42		8800520	Control gasket	1
M14	87-42		11070304	Feedback link	1
M26	87-42		144725 (9004105-0110)	O-ring	1
M27	87-42		9006300-0044	Retaining ring	1
M70	87-42		9800916	Control handle	1
M72	87-42		040642 (9003513-0800)	Nut	1
M87	87-42		592386	Seal washer	1
M90	87-42		692889 (9007314-0611)	Screw	6
QM10	87-42		8002M0MA-A	MDC kit	1
QM210	87-42		11096275	Control seal kit	1

Control MS

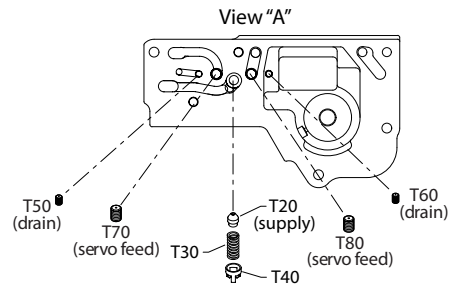
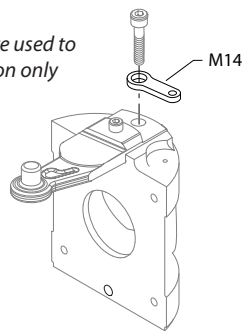
Parts configuration

(MS)



A generic neutral start switch is shown.

Generic swashplate used to show link location only



Possible orifice locations

* included in overhaul seal kit Q210

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

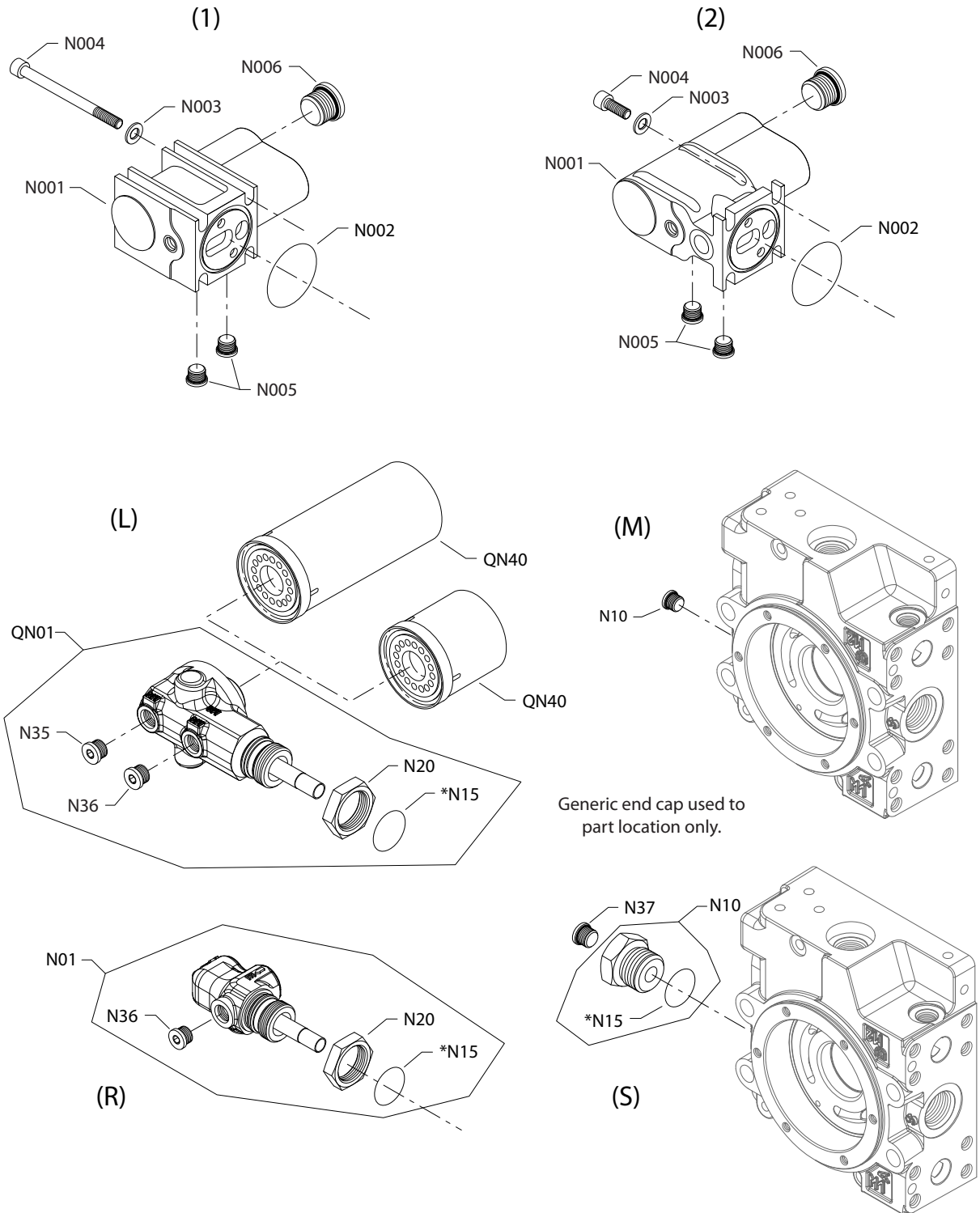
Order Code: MS

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
M11	87-42		8800520	Control gasket	1
M14	87-42		11070304	Feedback link	1
M26	87-42		144725 (9004105-0110)	O-ring	1
M27	87-42		9006300-0044	Retaining ring	1
M70	87-42		9800916	Control handle	1
M72	87-42		040642 (9003513-0800)	Nut	1
M83	87-42		001131 (9004201-5000)	O-ring	1
M87	87-42		592386	Seal washer	1
M90	87-42		692889 (9007314-0611)	Screw	6
QM10	87-42		8510127	MDC kit w/wide deadband, high force nss	1
QM89	87-42		8510027	Neutral start switch kit	1
QM210	87-42		11096275	Control seal kit	1

Filtration

Filtration 1-5

Parts configuration



* included in overhaul seal kit Q210

Order Code: 1

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
N001	94-43	12-36	504096	Filter manifold	1
N002	94-43	12-36	9004104-0320	O-ring	1
N003	94-43	12-36	002311 (9009610-3459)	Washer	4
N004	94-43	12-36	505442	Screw	4
N005	94-43	12-36	140644	Plug assembly	2
N006	94-43	12-36	320002 (9005110-9200)	Plug assembly	1

Order Code: 2

N001	94-43	12-36	505414	Filter manifold	1
N002	94-43	12-36	9004104-0320	O-ring	1
N003	94-43	12-36	002311 (9009610-3459)	Washer	4
N004	94-43	12-36	713594	Screw	4
N005	94-43	12-36	140644	Plug assembly	2
N006	94-43	12-36	320002 (9005110-9200)	Plug assembly	1

Order Code: D

			None		
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Order Code: L

N15	87-42		001156 (9004201-7500)	O-ring	1
N20	87-42		11049921	Nut	1
N35	87-42		140644	Plug assembly	1
N36	87-42		140644	Plug assembly	1
QN01	87-42		11145248	Filter manifold kit	1
QN40	87-42		11004919	Filter, long	1

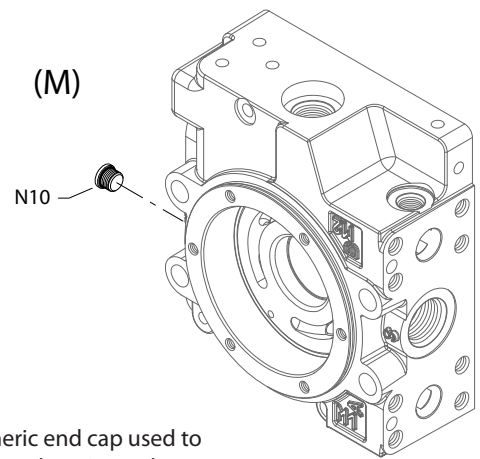
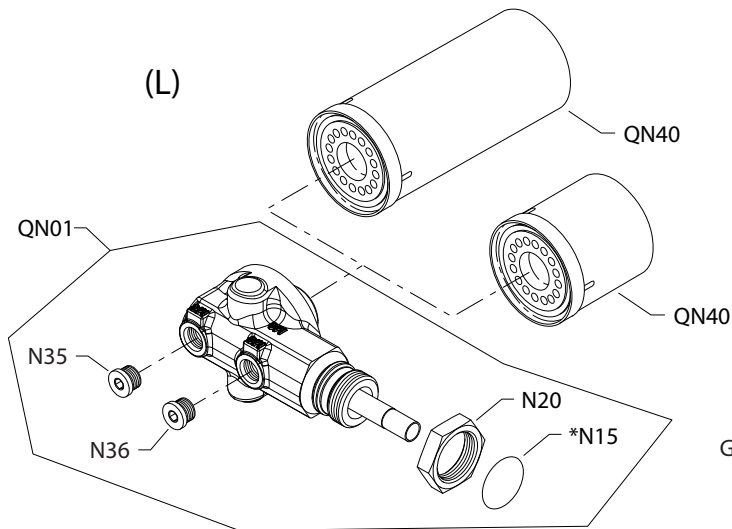
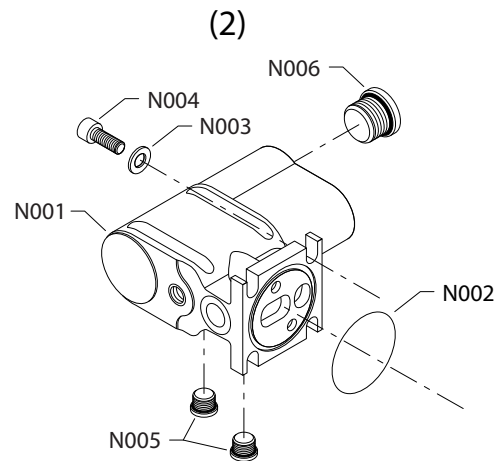
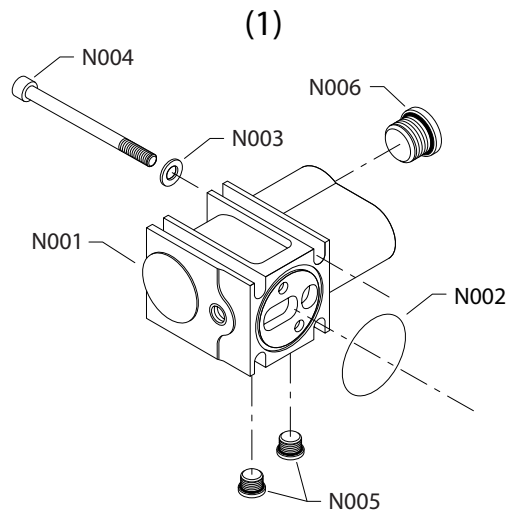
Order Code: M

N10	87-42	12-36	140644	Plug assembly	1
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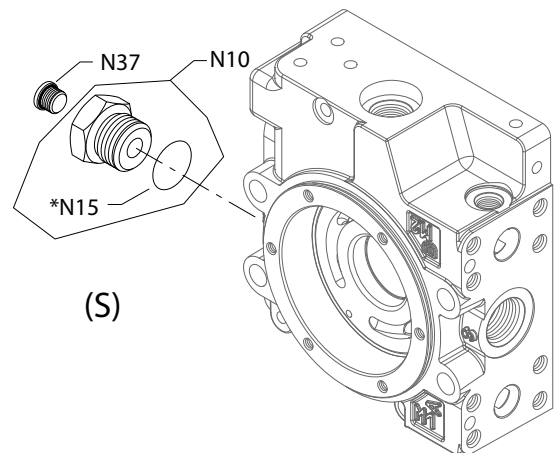
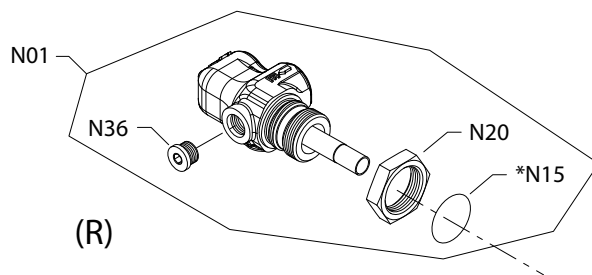
Order Code: P

N15	87-42		001156 (9004201-7500)	O-ring	1
N20	87-42		11049921	Nut	1
N35	87-42		140644	Plug assembly	1
N36	87-42		140644	Plug assembly	1
QN01	87-42		11145248	Filter manifold kit	1
QN40	87-42		11004917	Filter, short	1

Parts configuration



Generic end cap used to
part location only.



* included in overhaul seal kit Q210

Order Code: R

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
N01	87-42		11060426	Filter manifold assembly, remote	1
N15	87-42		001156 (9004201-7500)	O-ring	1
N20	87-42		11049921	Nut	1
N36	87-42		140644	Plug assembly	1

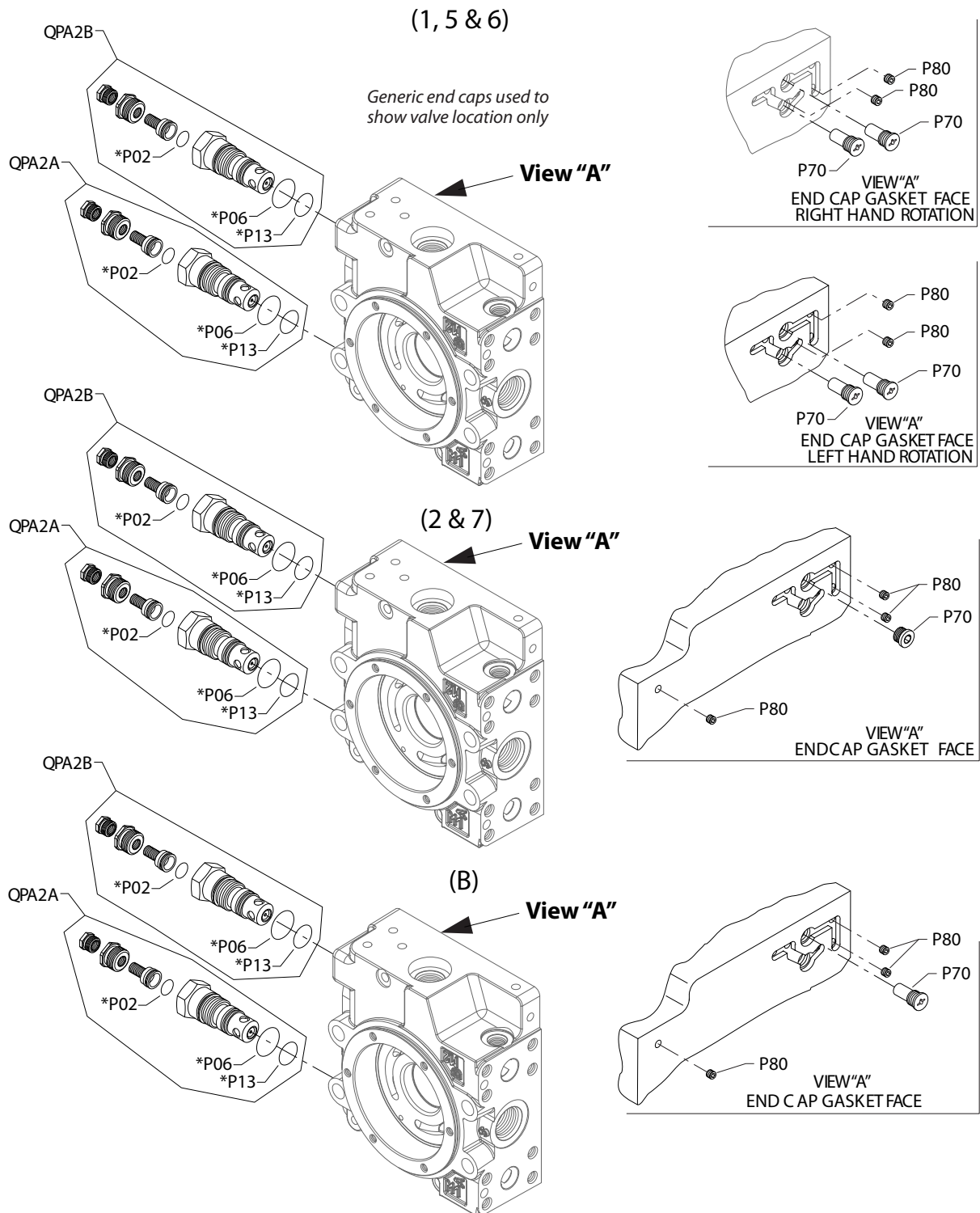
Order Code: S

N10	87-42		671990 (9002842-1206)	Reducer assembly	1
N15	87-42		001156 (9004201-7500)	O-ring	1
N37	87-42		140644	Plug assembly	1

High Pressure Protection

High pressure protection 1-B

Parts configuration



* included in overhaul seal kit Q210

High pressure regulation**Order Code: 1**

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
P02	87-42		688721	O-ring	2
P06	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2
P70	87-42		8800188	Check valve assembly	2
P80	87-42		9005475-0004	Special pipe plug	2
QPA2A	87-42		8510022-1	Multi-function valve kit	1
QPA2B	87-42		8510022-1	Multi-function valve kit	1

Order Code: 2

P02	87-42		688721	O-ring	2
P06	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2
P70	87-42		9005110-4400	Plug assembly	1
P80	87-42		9005475-0004	Special pipe plug	3
QPA2A	87-42		8510022-2	Multi-function valve kit	1
QPA2B	87-42		8510022-2	Multi-function valve kit	1

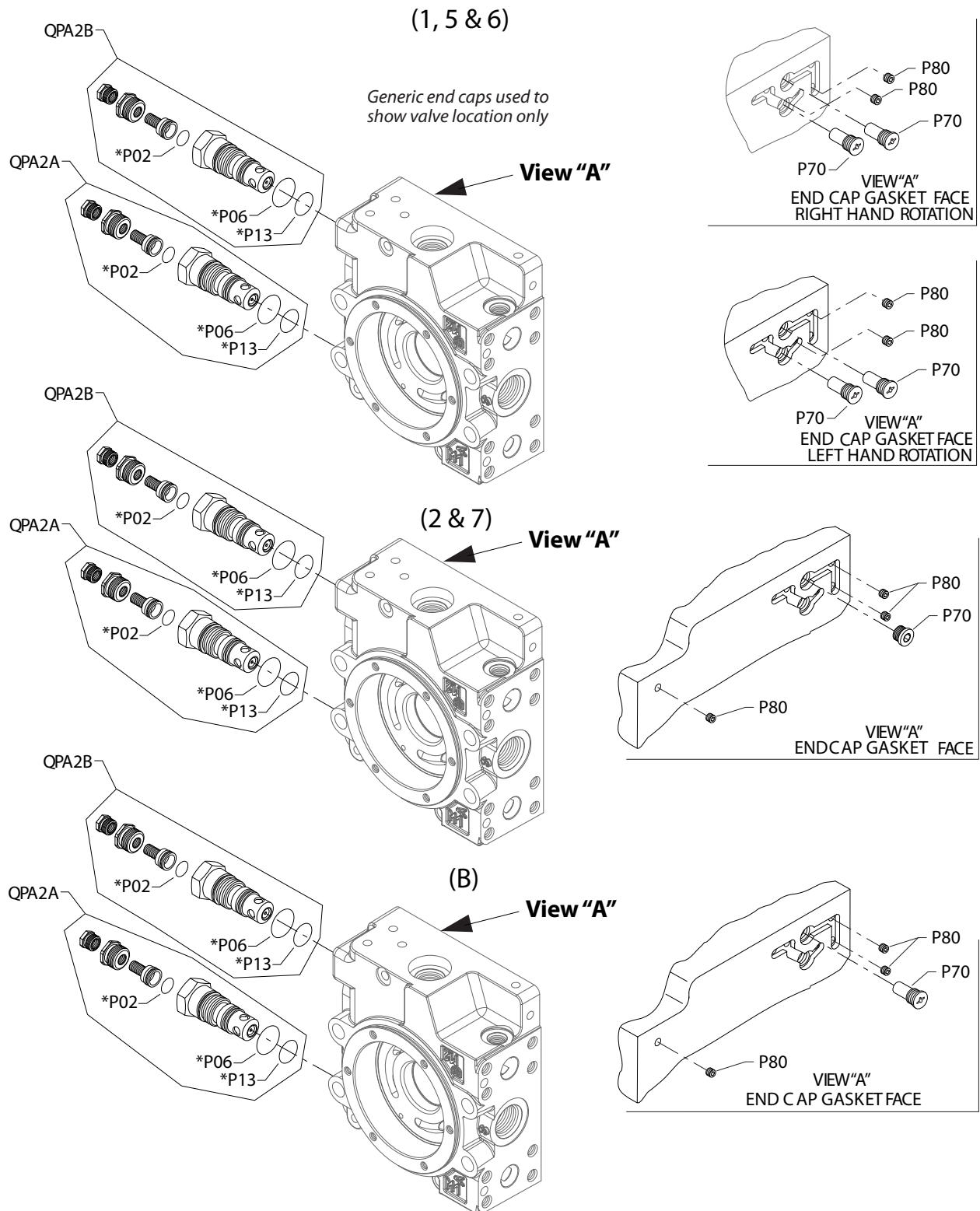
Order Code: 5

P02	87-42		688721	O-ring	2
P06	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2
P70	87-42		8800188	Check valve assembly	2
P80	87-42		9005475-0004	Special pipe plug	2
QPA2A	87-42		8510240	Multi-function valve kit	1
QPA2B	87-42		8510240	Multi-function valve kit	1

Order Code: 6

P02	87-42		688721	O-ring	2
P06	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2
P70	87-42		8800188	Check valve assembly	2
P80	87-42		9005475-0004	Special pipe plug	2
QPA2A	87-42		8510022-6	Multi-function valve kit	1
QPA2B	87-42		8510022-6	Multi-function valve kit	1

Parts configuration



* included in overhaul seal kit Q210

Order Code: 7

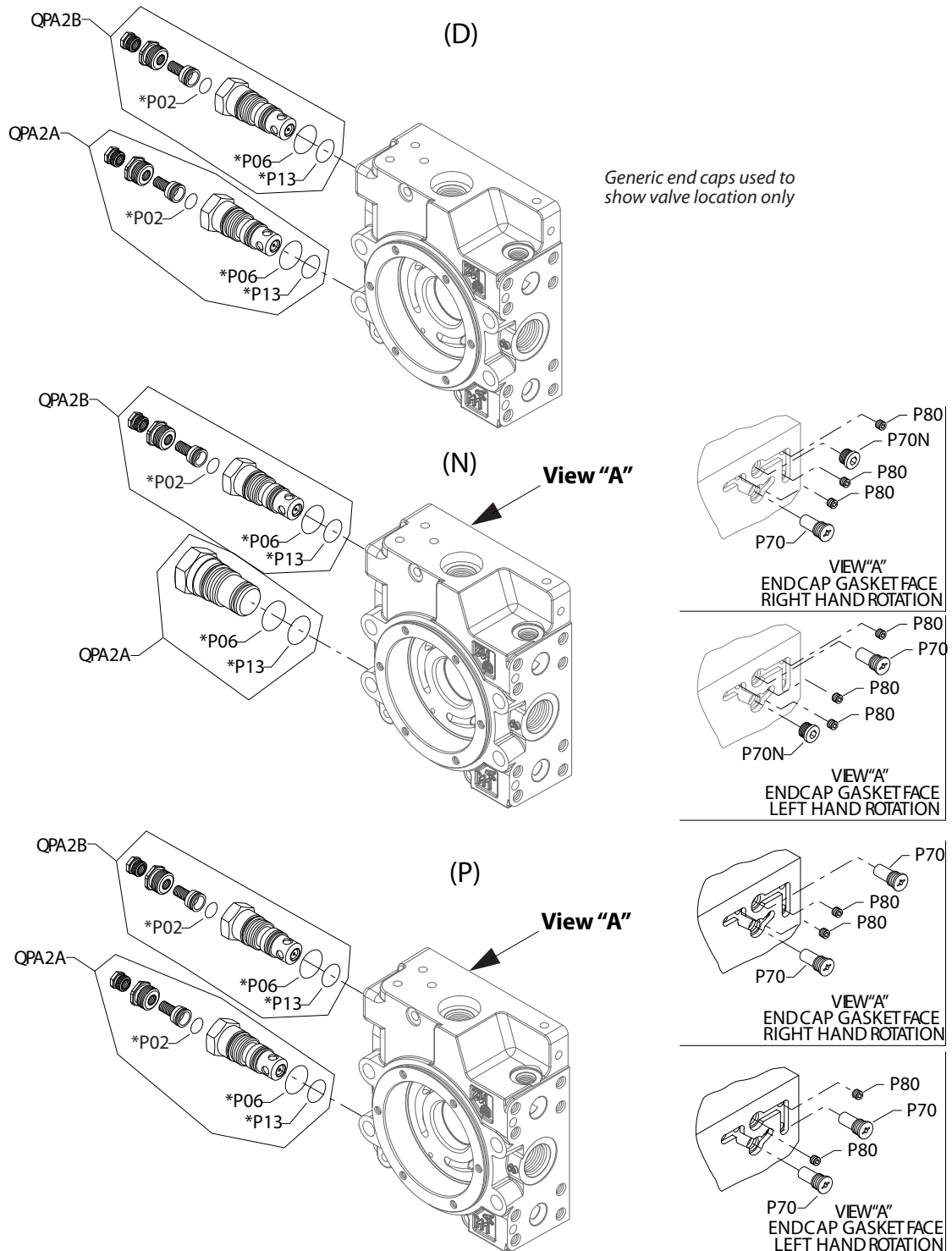
Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
P02	87-42		688721	O-ring	2
P16	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2
P70	87-42		9005110-4400	Plug assembly	1
P80	87-42		9005475-0004	Special pipe plug	3
QPA2A	87-42		8510022-7	Multi-function valve kit	1
QPA2B	87-42		8510022-7	Multi-function valve kit	1

Order Code: B

P02	87-42		688721	O-ring	2
P06	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2
P70	87-42		8800188	Check valve assembly	1
P80	87-42		9005475-0004	Special pipe plug	3
QPA2A	87-42		8510022-1	Multi-function valve kit	1
QPA2B	87-42		8510022-7	Multi-function valve kit	1

High pressure protection D-P

Parts configuration



* included in overhaul seal kit Q210

Order Code: D

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
P02	87-42		688721	O-ring	2
P06	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2
QPA2A	87-42		8510388	Multi-function valve kit	1
QPA2B	87-42		8510388	Multi-function valve kit	1

Order Code: N

P02	87-42		688721	O-ring	1
P06	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2
P70	87-42		8800188	Check valve assembly	1
P70N	87-42		9005110-4400	Plug assembly	1
P80	87-42		9005475-0004	Special pipe plug	3
PA2A	87-42		781971	Plug assembly	1
QPA2B	87-42		8510022-1	Multi-function valve kit	1

Order Code: P

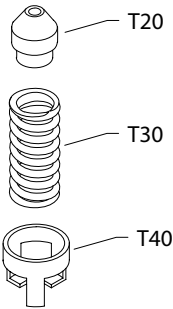
P02	87-42		688721	O-ring	1
P06	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2
P70	87-42		8800188	Check valve assembly	2
P80	87-42		9005475-0004	Special pipe plug	2
QPA2A	87-42		8510389	Multi-function valve kit	1
QPA2B	87-42		8510389	Multi-function valve kit	1

Orifice

Orifice 01-23

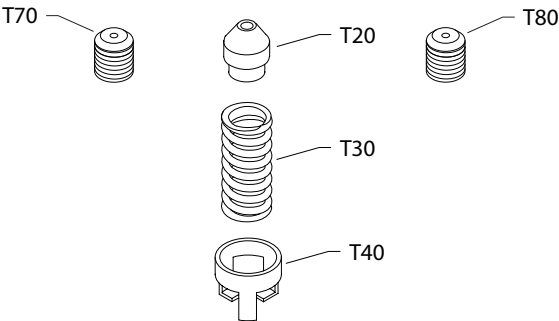
Parts configuration

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



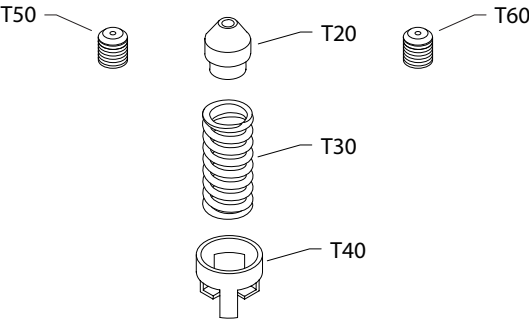
See control drawing
for orifice location

(21)



See control drawing
for orifice location

(23)



See control drawing
for orifice location

Order Code: 00

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
			None		

Order Code: 01

T20	87-42		8801136	Orificed check valve, .018"	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1

Order Code: 02

T20	87-42		8801139	Orificed check valve, .026"	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1

Order Code: 03

T20	87-42		11061958	Orificed check valve, .81mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1

Order Code: 04

T20	87-42		11061970	Orificed check valve, 1.02mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1

Order Code: 05

T20	87-42		11061981	Orificed check valve, 1.37mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1

Order Code: 06

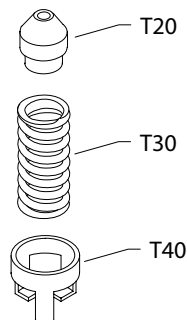
T20	87-42		11061993	Orificed check valve, 1.57mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1

Order Code: 09

T20	87-42		11062006	Orificed check valve, 2.34mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1

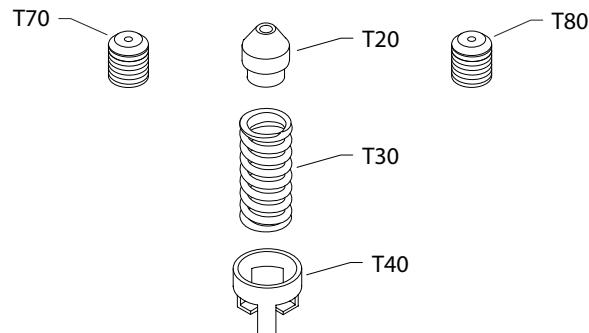
Parts configuration

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



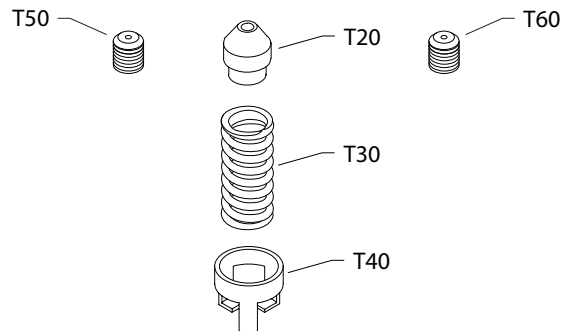
See control drawing
for orifice location

(21)



See control drawing
for orifice location

(23)



See control drawing
for orifice location

Order Code: 21

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T20	87-42		11061970	Orificed check valve, 1.02mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T70	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1
T80	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1

Order Code: 22

T20	87-42		8801137	Orificed check valve, .022"	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1

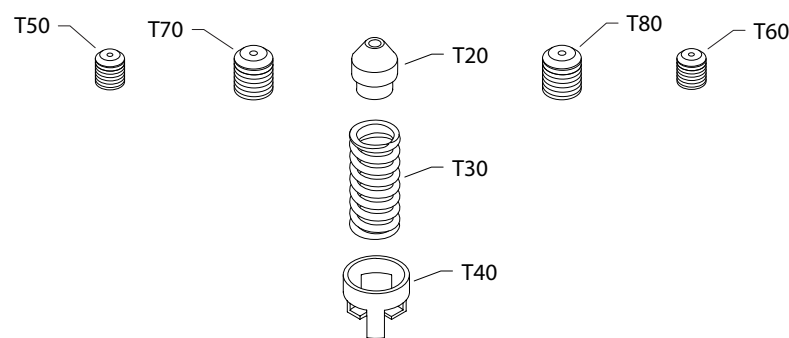
Order Code: 23

T20	87-42		11061958	Orificed check valve, 0.81mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		639153	Orifice plug, 1.3mm, M5 x 6	1
T60	87-42		639153	Orifice plug, 1.3mm, M5 x 6	1

Orifice 25-34

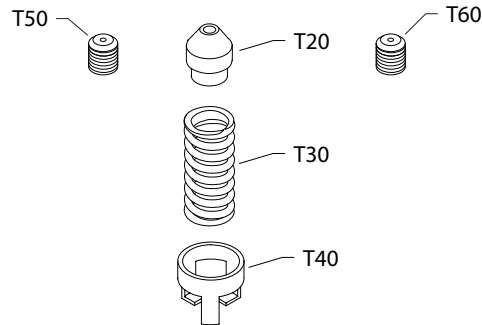
Parts configuration

(25, 28, & 30)



See control drawing
for orifice location

(26 & 29)



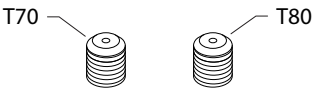
See control drawing
for orifice location

(32)



See control drawing
for orifice location

(34)



See control drawing
for orifice location

Order Code: 25

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T20	87-42		8801139	Orificed check valve, .026"	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		606657	Orifice plug, 0.5mm, M5 x 6	1
T60	87-42		606657	Orifice plug, 0.5mm, M5 x 6	1
T70	87-42		716837	Orifice plug, 0.6mm, M8 x 8	1
T80	87-42		716837	Orifice plug, 0.6mm, M8 x 8	1

Order Code: 26

T20	87-42		11061958	Orificed check valve, .81mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1
T60	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1

Order Code: 28

T20	87-42		8801139	Orificed check valve, .026"	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		639104	Orifice plug, 0.7mm, M5 x 6	1
T60	87-42		639104	Orifice plug, 0.7mm, M5 x 6	1
T70	87-42		704650	Orifice plug, 0.7mm, M8 x 8	1
T80	87-42		704650	Orifice plug, 0.7mm, M8 x 8	1

Order Code: 29

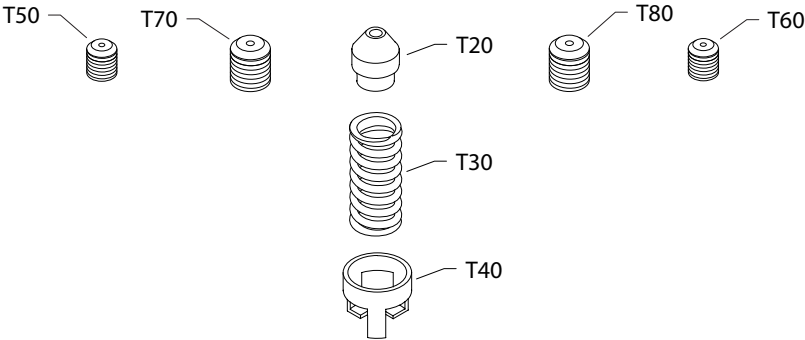
T20	87-42		11061958	Orificed check valve, .81mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		639104	Orifice plug, 0.7mm, M5 x 6	1
T60	87-42		639104	Orifice plug, 0.7mm, M5 x 6	1

Order Code: 30

T20	87-42		8801139	Orificed check valve, .026"	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		639153	Orifice plug, 1.3mm, M5 x 6	1
T60	87-42		639153	Orifice plug, 1.3mm, M5 x 6	1
T70	87-42		704650	Orifice plug, 0.7mm, M8 x 8	1
T80	87-42		704650	Orifice plug, 0.7mm, M8 x 8	1

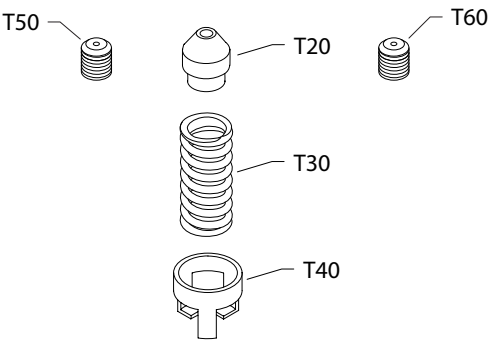
Parts configuration

(25, 28, & 30)



See control drawing
for orifice location

(26 & 29)



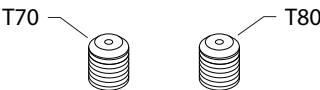
See control drawing
for orifice location

(32)



See control drawing
for orifice location

(34)



See control drawing
for orifice location

Order Code: 32

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T50	87-42		639120	Orifice plug, 1.0mm, M5 x 6	1
T60	87-42		639153	Orifice plug, 1.3mm, M5 x 6	1

Order Code: 33

			None		
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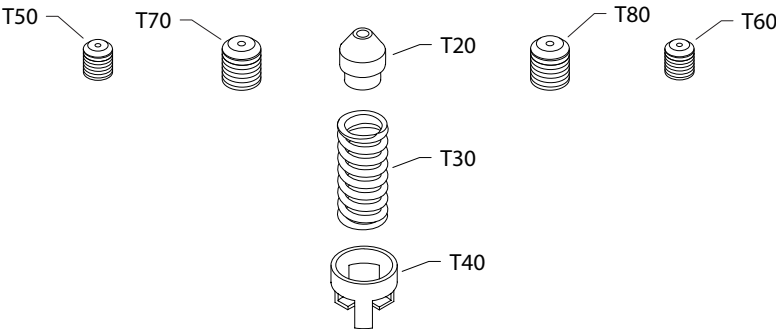
Order Code: 34

T70	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1
T80	87-42		755793	Orifice plug, 1.0mm, M8 x 8	1

Orifice 35-74

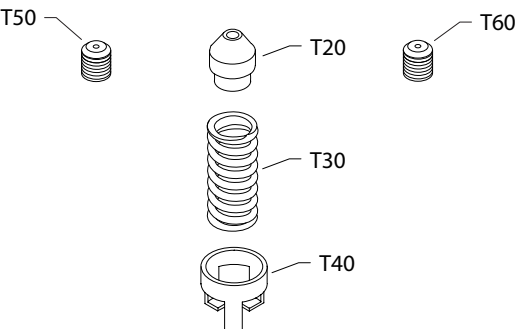
Parts configuration

(35)



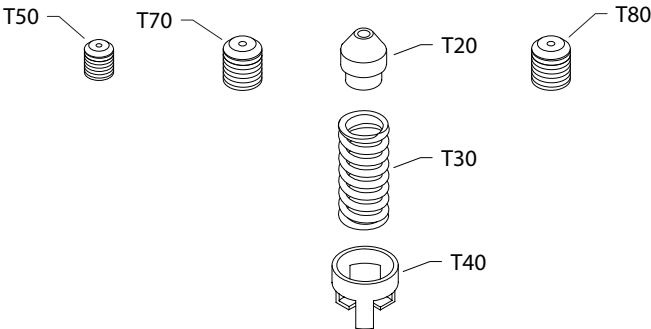
See control drawing
for orifice location

(37, 45, 46 & 49)



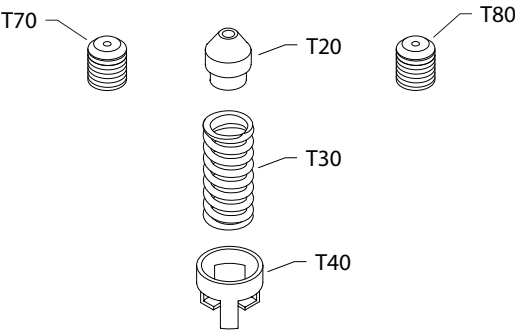
See control drawing
for orifice location

(50)



See control drawing
for orifice location

(59 & 74)



See control drawing
for orifice location

Order Code: 35

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T20	87-42		11061958	Orificed check valve, 0.81mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1
T60	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1
T70	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1
T80	87-42		714477	Orifice plug, 0.8mm, M8 x 8	1

Order Code: 37

T20	87-42		11061981	Orificed check valve, 1.37mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		639120	Orifice plug, 1.0mm, M5 x 6	1
T60	87-42		639120	Orifice plug, 1.0mm, M5 x 6	1

Order Code: 45

T20	87-42		11061958	Orificed check valve, 0.81mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		639153	Orifice plug, 1.3mm, M5 x 6	1
T60	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1

Order Code: 46

T20	87-42		8801139	Orificed check valve, .026"	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1
T60	87-42		598292	Orifice plug, 0.8mm, M5 x 6	1

Order Code: 49

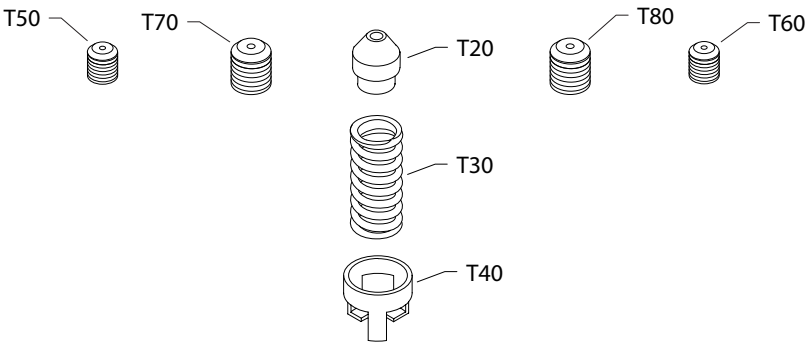
T20	87-42		11061958	Orificed check valve, 0.81mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		639120	Orifice plug, 1.0mm, M5 x 6	1
T60	87-42		639120	Orifice plug, 1.0mm, M5 x 6	1

Order Code: 50

T20	87-42		8801139	Orificed check valve, .026"	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T50	87-42		310771	Orifice plug, 1.2mm, M6 x 6	1
T70	87-42		517571	Orifice plug, 0.9mm, M6 x 6	1
T80	87-42		517571	Orifice plug, 0.9mm, M6 x 6	1

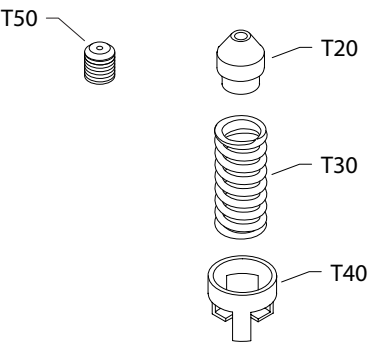
Parts configuration

(35)



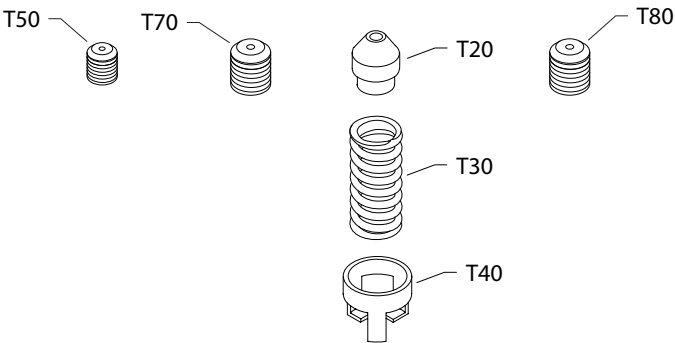
See control drawing
for orifice location

(37, 45, 46 & 49)



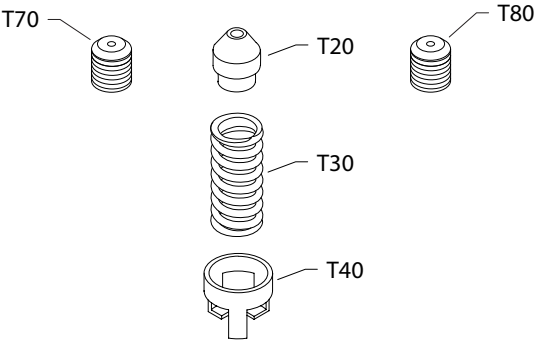
See control drawing
for orifice location

(50)



See control drawing
for orifice location

(59 & 74)



See control drawing
for orifice location

Order Code: 59

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T20	87-42		8801139	Orificed check valve, 0.026	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T70	87-42		739144	Orifice plug, 0.8mm, M6 x 6	1
T80	87-42		739144	Orifice plug, 0.8mm, M6 x 6	1

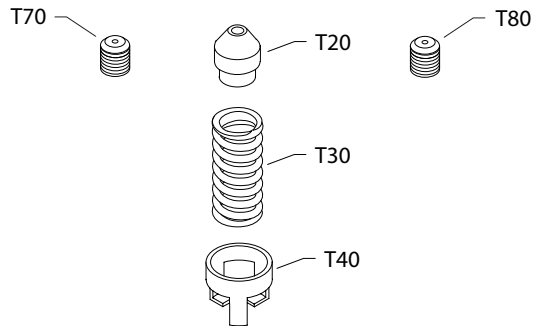
Order Code: 74

T20	89-41		11061958	Orificed check valve, .026"	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T70	89-41		755793	Orifice plug, 1.0mm, M8 x 8	1
T80	89-41		755793	Orifice plug, 1.0mm, M8 x 8	1

Orifice 76-B4

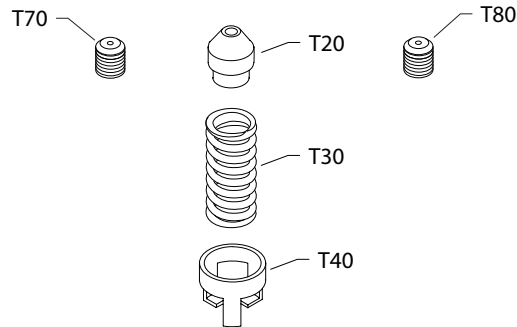
Parts configuration

(76, 99 & A5)



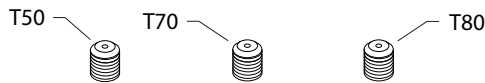
See control drawing
for orifice location

(78)



See control drawing
for orifice location

(82, B3 & B4)



See control drawing
for orifice location

(84, A4 & B2)



See control drawing
for orifice location

Order Code: 76

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T20	89-41		8801139	Orificed check valve, 0.66mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T70	89-41		578542	Orifice plug, 0.8mm, M6 x 8	1
T80	89-41		578542	Orifice plug, 0.8mm, M6 x 8	1

Order Code: 78

T20	87-42		8801139	Orificed check valve, 0.66mm	1
T30	87-42		679506 (8700007)	Spring	1
T40	87-42		8801303	Spring retainer	1
T70	87-42		578542	Orifice plug, 0.8mm, M6 x 8	1
T80	87-42		578542	Orifice plug, 0.8mm, M6 x 8	1

Order Code: 82

T50	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
T70	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
T80	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1

Order Code: 84

T70	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
T80	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1

Order Code: 99

T20	89-41		8801301	Orificed check valve, .047"	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T70	89-41		517572	Orifice plug, 1.5mm, M6 x 6	1
T80	89-41		517572	Orifice plug, 1.5mm, M6 x 6	1

Order Code: A4

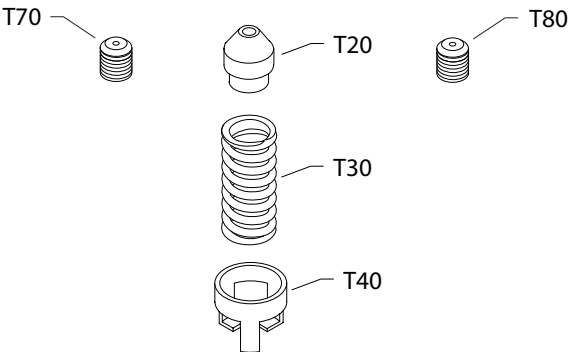
T70	89-41		578542	Orifice plug, 0.8mm, M6 x 8	1
T80	89-41		578542	Orifice plug, 0.8mm, M6 x 8	1

Order Code: A5

T20	89-41		11061970	Control orifice kit, 1.02mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T70	89-41		578542	Orifice plug, 0.8mm, M6 x 8	1
T80	89-41		578542	Orifice plug, 0.8mm, M6 x 8	1

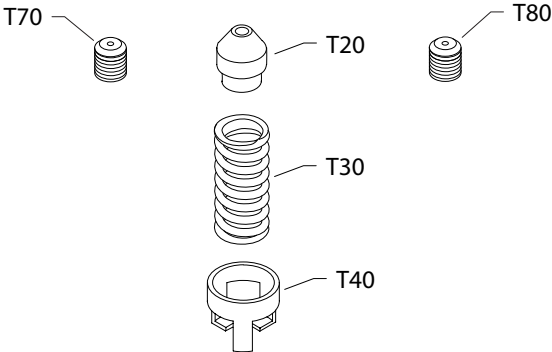
Parts configuration

(76, 99 & A5)



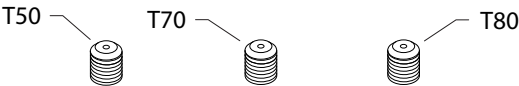
See control drawing
for orifice location

(78)



See control drawing
for orifice location

(82, B3 & B4)



See control drawing
for orifice location

(84, A4 & B2)



See control drawing
for orifice location

Order Code: B1

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T50	89-41		507042	Orifice plug, 1.5mm, M6 x 8	1

Order Code: B2

T70	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
T80	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1

Order Code: B3

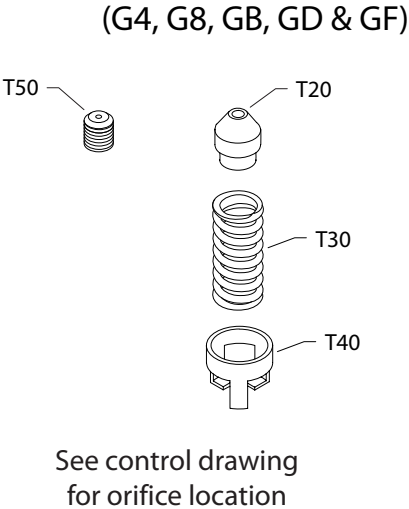
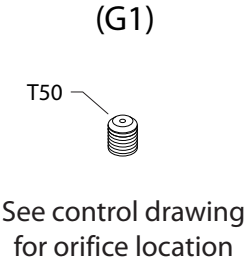
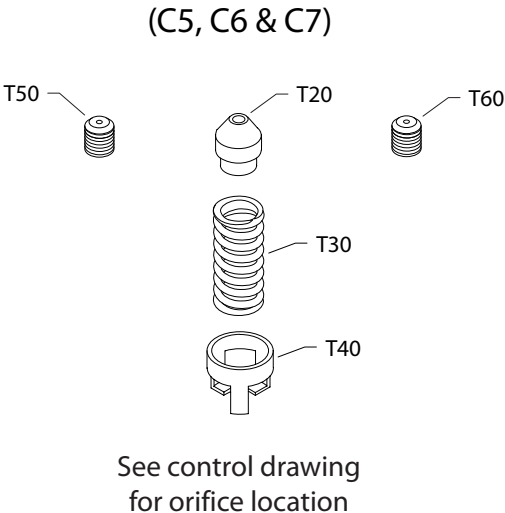
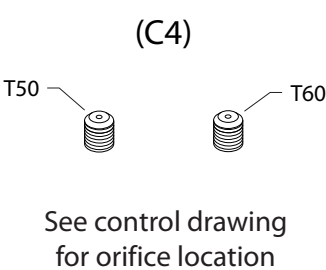
T50	89-41		507042	Orifice plug, 1.5mm, M6 x 8	1
T70	89-41		739144	Orifice plug, 0.8mm, M6 x 6	1
T80	89-41		739144	Orifice plug, 0.8mm, M6 x 6	1

Order Code: B4

T50	89-41		507042	Orifice plug, 1.5mm, M6 x 8	1
T70	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1
T80	89-41		310771	Orifice plug, 1.2mm, M6 x 6	1

Orifice C4-GF

Parts configuration



Order Code: C4

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T50	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
T60	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1

Order Code: C5

T20	89-41		11061958	Orificed check valve, 0.81mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
T60	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1

Order Code: C6

T20	89-41		11061970	Control orifice kit, 1.02mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
T60	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1

Order Code: C7

T20	89-41		11061981	Control orifice kit, 1.37mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1
T60	89-41		639161	Orifice plug, 1.4 mm, M5 x 6	1

Order Code: G1

T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1
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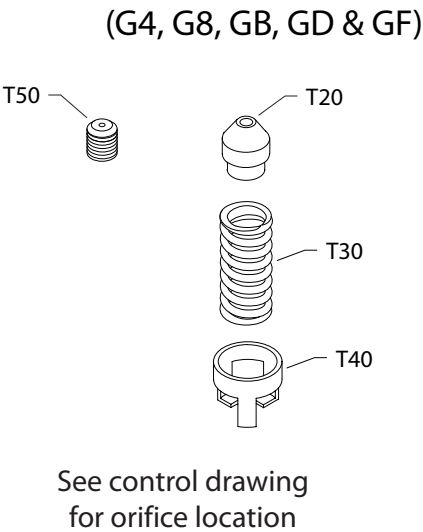
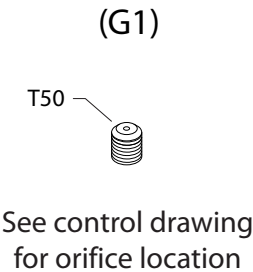
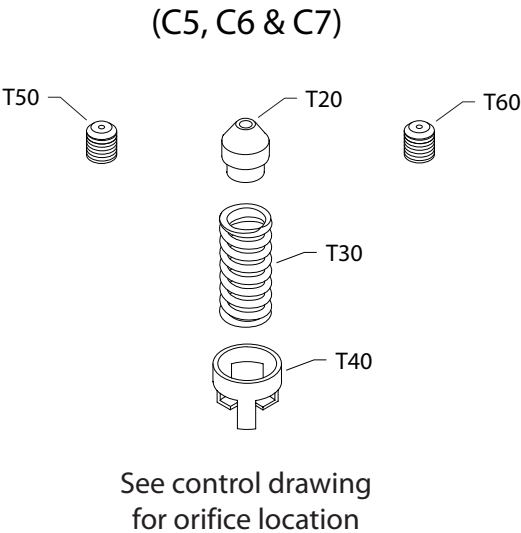
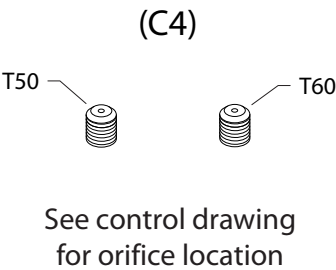
Order Code: G4

T20	89-41		8801136	Control orifice kit, .018"	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1

Order Code: G8

T20	89-41		8801139	Orificed check valve, .026"	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1

Parts configuration



Order Code: GB

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T20	89-41		11061958	Orificed check valve, 0.81mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1

Order Code: GD

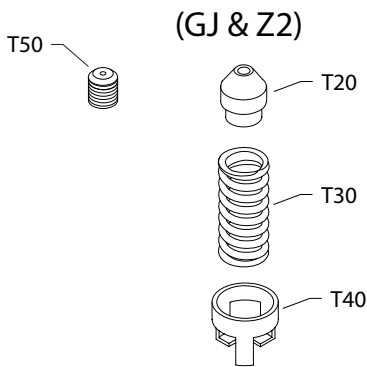
T20	89-41		11061993	Orificed check valve, 1.57mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1

Order Code: GF

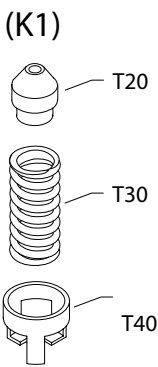
T20	89-41		11061970	Control orifice kit, 1.02mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1

Orifice GJ-Z3

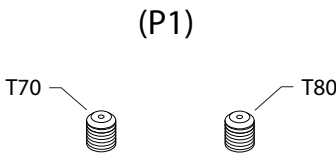
Parts configuration



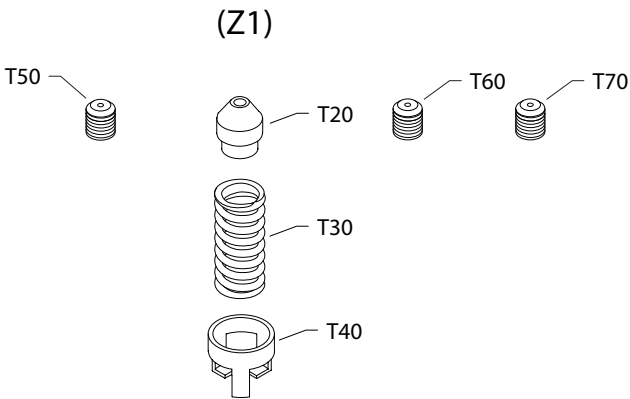
See control drawing
for orifice location



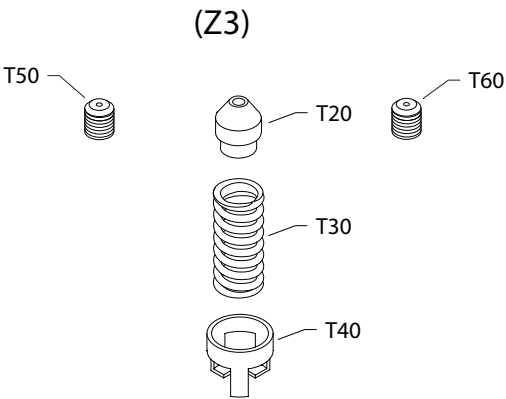
See control drawing
for orifice location



See control drawing
for orifice location



See control drawing
for orifice location



See control drawing
for orifice location

Order Code: GJ

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
T20	89-41		11061981	Control orifice kit, 1.37mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		310771	Orifice plug, 1.2 mm, M6 x 6	1

Order Code: K1

T20	89-41		11061981	Control orifice kit, 1.37mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1

Order Code: P1

T70	11-40		508014	Orifice plug, 1.0mm, M6 x 6	1
T80	11-40		508014	Orifice plug, 1.0mm, M6 x 6	1

Order Code: Z1

T20	89-41		11061958	Control orifice kit, 0.81mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		519659	Orifice plug, 1.0mm, M6 x 6	1
T60	89-41		519659	Orifice plug, 1.0mm, M6 x 6	1
T70	89-41		519659	Orifice plug, 1.0mm, M6 x 6	1

Order Code: Z2

T20	89-41		11061958	Control orifice kit, 0.81mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		739144	Orifice plug, 0.8mm, M6 x 6	1

Order Code: Z3

T20	89-41		11061970	Control orifice kit, 1.02mm	1
T30	89-41		679506 (8700007)	Spring	1
T40	89-41		8801303	Spring retainer	1
T50	89-41		519659	Orifice plug, 1.0mm, M6 x 6	1
T60	89-41		519659	Orifice plug, 1.0mm, M6 x 6	1

Overhaul Seal Kit

Overhaul seal kit

Item	Date Begin	Date End	Part Number	Part Name	Qty. per Model/Kit
Q210	87-42		11095646	Seal kit, base pump, 42cc	1
B90	87-42		9803390	Filter screen	3
C70	87-42		648477	Screw	4
E40	87-42		517862 (9003509-0006)	Seal nut, M6	2
E50	87-42		517376	O-ring	1
E60	87-42		517229	Screw	6
F11	87-42		not sold separately	O-ring	2
F12	87-42		not sold separately	Piston ring	2
F40	87-42		not sold separately	O-ring	2
F50	87-42		not sold separately	O-ring	2
F112	87-42		505412 (9003509-0008)	Seal nut, M8	1
F124	87-42		612291 (9003508-0008)	Seal nut, M8	1
F212	87-42		505412 (9003509-0008)	Seal nut, M8	1
F224	87-42		612291 (9003508-0008)	Seal nut, M8	1
G30	87-42		512833	End cap gasket	1
J40	87-42		680892 (9004104-0440)	O-ring	1
J50	87-42		056739 (9004104-1580)	O-ring	1
K50	87-42		001149 (9004201-6200)	O-ring	1
L25	87-42		11060010	Seal carrier assembly	1
N15	87-42		001156 (9004201-7500)	O-ring	1
P02	87-42		688721	O-ring	2
P06	87-42		071811	O-ring	2
P13	87-42		544742 (9004105-0190)	O-ring	2

Service Bulletin

Service bulletin: SB-1988-023

Products affected

Series 90 pumps and motors

Subject

Piston improvement

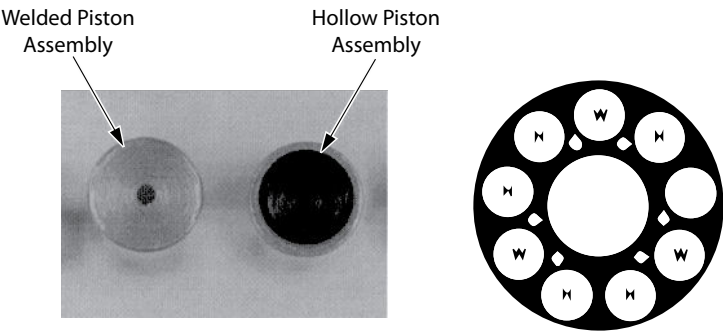
Description

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

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

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

SB-1988-023



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

Models affected

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

Serial numbers

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

Part numbers affected

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

Parts disposition

Interchangeable

Service Bulletin: SB-1989-002

Products affected

Series 90 pumps

Subject

Incorporation of adjustable charge relief valve

Description

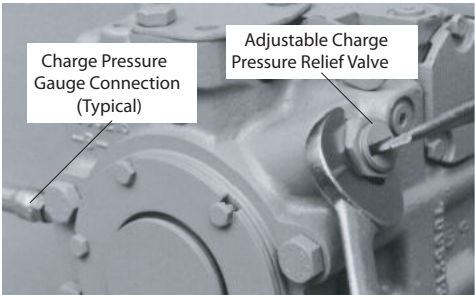
As a product improvement Sauer-Danfoss is incorporating an adjustable charge relief valve on all series 90 variable displacement pumps. This design replaces the previous shim adjustable charge relief valve. The new design valve provides a range of pressure adjustment which covers the available charge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

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

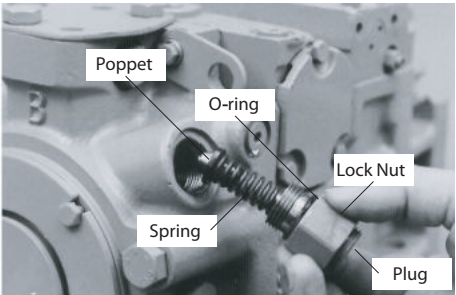
To adjust the new design valve, first install a gauge to measure charge pressure as described in the series 90 service manual. Loosen the adjustment lock nut with a 1-1/16 in hex wrench. Operate the pump at an input speed of 1700 to 2000 rpm and turn the adjustment plug with a large screwdriver while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

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

SB-1989-002



Adjusting Charge Relief Valve



Charge Relief Valve Assembly

Models affected

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

Serial numbers

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

Part numbers affected

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

Parts disposition

Interchangeable (as an assembly)

Service Bulletin: SB-1992-008

Products affected

Series 90 pumps

Subject

Incorporation of adjustable part valve

Description

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

Models affected

All 93-2xxx pumps

Serial numbers

N/A

Part numbers affected

Refer to next page of this bulletin for specific part numbers.

- Housing: Thickness adjacent to the side cover has been increased.
- Side cover: Thickness increased to match change in housing.
- End cap: Match housing change.
- Input shaft: A 19 tooth open, thus a larger shaft roller bearing. Shaft seal hardware changed to accommodate new bearing and commonize the design with larger displacement units.
- Charge pump: Charge pump shaft and cover changed for commonality with the larger displacement units
- SAE "B" pad: New charge pump shaft accommodates revised auxiliary pad drive couplings

Parts disposition

Not applicable

Frame size: 042 - parts affected*Common parts group, 42 cc*

Item	Description	Pre-block point part number	New part number 92-12 & later
B10	Variable housing	325050 (O)	503422
E10	Side cover	671602 (I & O)	751305
E20	Leveler	673897	731984
L10	Bearing	690305	357616
L20	Retaining ring	392134	9006300-0137
L30	Seal carrier	N/A	340356
L35	Seal carrier	689521	Deleted
L40	Lip seal	656280	9008000-0118
L50	O-ring	9004104-0360	780247
L60	Retainer plate	N/A	340349
L70	Screw	9007210-0604	746208

End cap group: G

Item	Description	Pre-block point part number	New part number 92-12 and later
G048	End cap, twin ports	333179 (O)	769562
G20	Journal bearing	648030	343830
G958	Screw	508994	500641
G968	Screw	36178 (I)	354407

Charging system group: H (affects options B, C, and L)

H50	Charge pump shaft	715243	340364
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Auxiliary mounting, 'A' flange, 9 tooth

J10	Coupling	323972	341016
J15	Cover assembly	347542	347567
J30	Bushing	648055	8700008

Auxiliary mounting, 'B' flange, 13 tooth

J10	Coupling	324228	341024
J15	Cover assembly	347542	347567
J30	Bushing	648055	8700008
J60	Flange adapter	664094	340539

Auxiliary mounting, none

J15N	Cover assembly	717264	347559
J30	Bushing	648055	8700008

Auxiliary mounting, 'B-B' flange, 15 tooth

J10	Coupling	664060	342907
J15	Cover assembly	347542	347567
J30	Bushing	648055	8700008
J60	Flange adapter	664094	340539

Input shaft: L

L1C3	Shaft, 15T 16.32	689414	340521
L1T3	Shaft, 1.0 taper	753855	342915

Special hardware: W

B83	Speed pickup plug	N/A	9005110-5600
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(I) Interchangeable

(O) Obsolete

Service Bulletin: SB-1993-002

Products affected

Series 90 pump: All frame sizes

Subject

Control gasket changes for MCV115 hydraulic displacement control

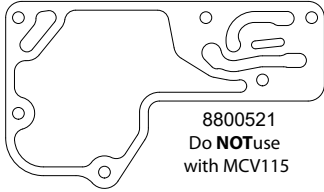
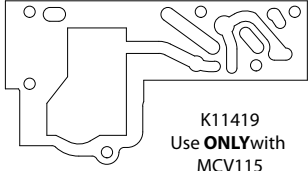
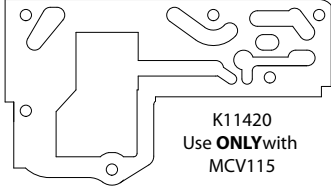
Description

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

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

SB-1993-002

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

30cc/42cc/55cc	75cc/100cc/130cc
 8800520 Do NOT use with MCV115	 8800521 Do NOT use with MCV115
 K11419 Use ONLY with MCV115	 K11420 Use ONLY with MCV115

Models affected

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

Serial numbers

October 1992 and beyond

Part numbers affected

Frame size	Control gasket for EDC (MCV111)	Control gasket for HDC		Control gasket for MDC (8x02M0Mx)
		(MCV112)	(MCV115)	
30/42/55 cc	8800520	8800520	K11419	8800520
75/100/130 cc	8800521	8800521	K11420	8800521

Parts disposition

Non-interchangeable

Service Bulletin: SB-1993-012

Products affected

All Series 90 pumps

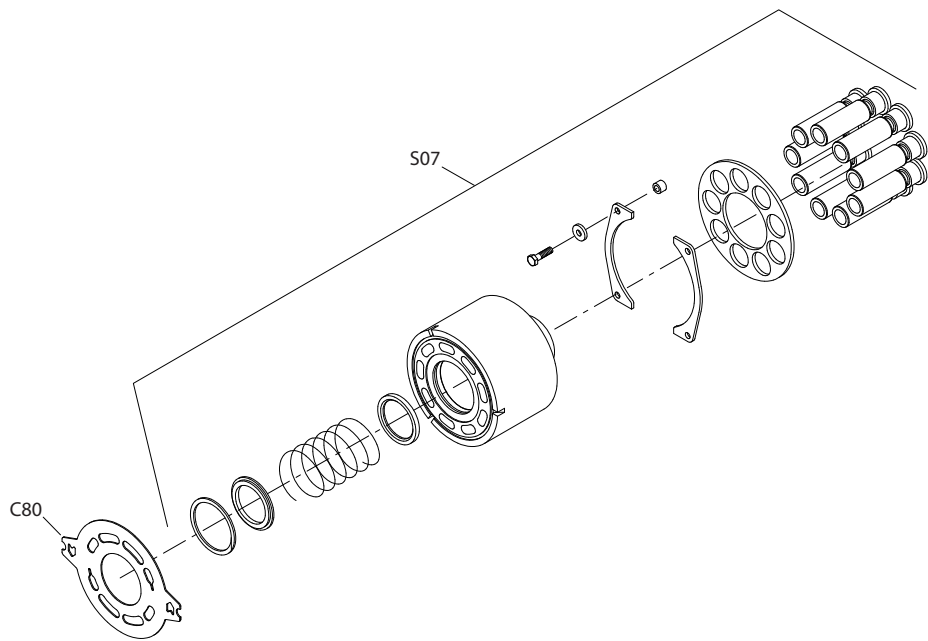
Subject

Removal of valve plate from cylinder block kit

Description

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

SB-1993-012



Models affected

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

Serial numbers

Not applicable

Part numbers affected

Frame size	Cylinder block kit
42 cc	80520S07
55 cc	80020S07
75 cc	81020S07
100 cc	82020S07
130 cc	83020S07

Parts disposition

Not Applicable

SB-1993-015A

Products affected

Series 90 pump: All frame sizes

Subject

Servo arm interference with speed sensor ring

Description

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

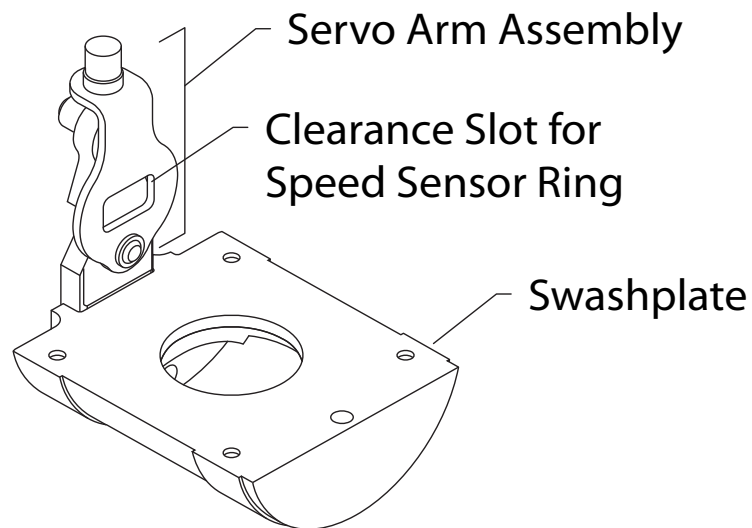
A potential interference problem has been identified in series 90 42, 55, 75, and 100 cc frame size pumps built since early 1992. Interference may occur between the swashplate hold down bracket on the servo arm and the speed sensor ring, which may be installed on the cylinder block as an option.

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

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

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

SB-1993-015A



Models affected

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

Serial numbers

42 cc at serial number 92-16-xxxxx

55 cc at serial number 92-06-xxxxx

75 cc at serial number 92-17-xxxxx

1000 cc at serial number 92-12-xxxxx

Part numbers affected

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

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

Parts disposition

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

Service Bulletin: SB-1994-007

Products affected

Series 90 pump: 42cc and 130cc Variable Pumps

Subject

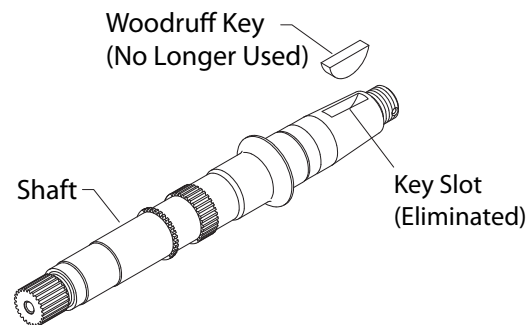
Tapered Shaft Key Deletion

Description

The tapered shaft option on Series 90 42 cc and 130 cc variable pumps will no longer contain a woodruff key slot. Shaft part numbers will not change.

The key will remain available as a service part.

SB-1994-007



Models affected

All 93-2xxx, 932xxx, 97-2xxx and 972xxx Variable Pumps

Serial numbers

93-11 and beyond

Part numbers affected

Pump size	Deleted Key P/N
42 cc	9003310-2514
130 cc	9003325-0005

Parts disposition

Not Applicable

Service Bulletin: SB-1994-018

Products affected

Series 90 variable pumps

Subject

Side cover washer elimination

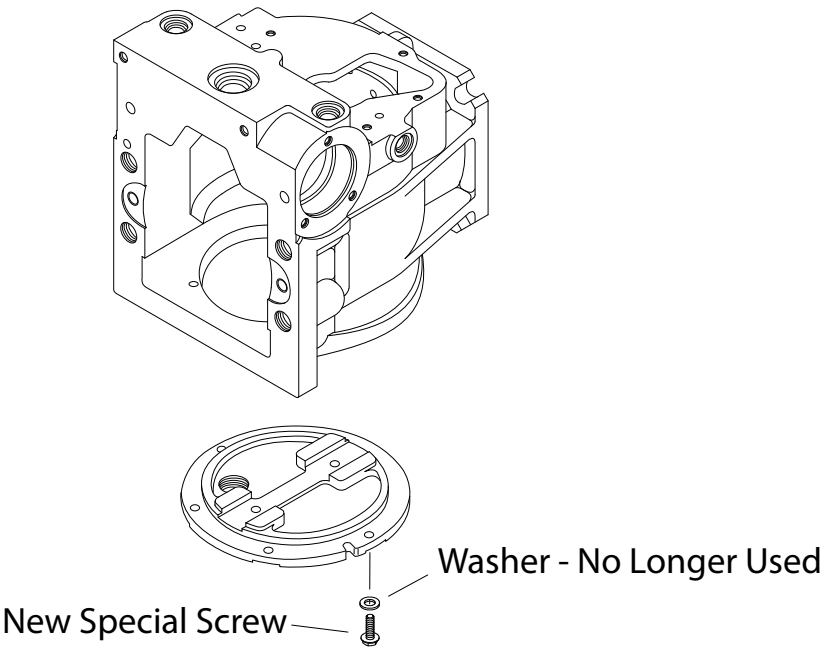
Description

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

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

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

SB-1994-018



Models affected

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

Serial numbers

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

Part numbers affected

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

Parts disposition

Interchangeable

Service Bulletin: SB-1995-002

Products affected

Series 90 42 cc variable pumps

Subject

Charge pump shaft key change

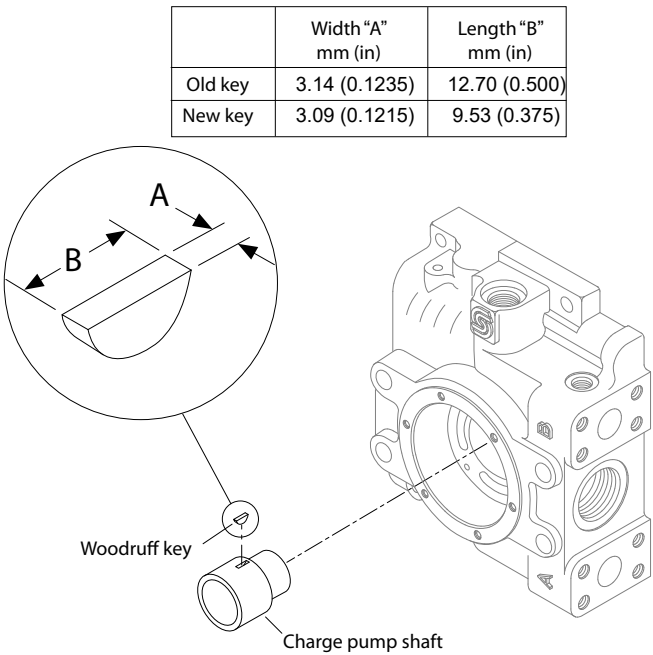
Description

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

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

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

SB-1995-002



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

Models affected

All 42 cc variable pumps

Serial numbers

Serial number N-92-16-xxxxx and beyond

Part numbers affected

Description	Old part number	New part number
Woodruff key	9003310-1208	9003310-1206
Charge pump shaft	340364	505202

Parts disposition

Interchangeable if BOTH charge pump shaft and woodruff key are changed

SB-1995-003

Products affected

Series 90 variable pumps - all frame sizes

Subject

Manual displacement control (MDC) with DC electric solenoid override

Description

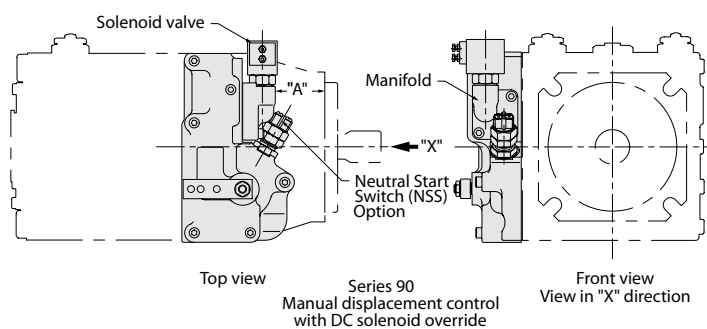
In order to accommodate our European customers, the manifold which attaches to the front of the manual displacement control (MDC) housing is being changed.

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

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

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

SB-1995-003



Frame size		42	55	75	100	130
Dimension "A" mm [in]	Current	39.9 [1.57]	55.9 [2.20]	54.1 [2.13]	60.2 [2.37]	74.4 [2.93]
	Future	34.9 [1.37]	50.9 [2.0]	49.1 [1.93]	55.2 [2.17]	69.4 [2.73]

Models affected

All series 90 variable pumps using MDC with DC electric solenoid override.

Serial numbers

Change will take place in March 1995.

Part numbers affected

Description	Current part number	New part number	Quantity
Manifold	8800365	505022	1
Screw	9007314-0605	9007314-0606	2

Parts disposition

Interchangeable (new manifold requires longer screws)

Service Bulletin: SB-1995-004

Models affected

All 42 cc variable pumps

Serial numbers

Units built between N-92-16-xxxxx and N-94-12-xxxxx

Part numbers affected

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

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

Obsolete charge pump parts		Chg. pump displacement	Auxiliary pad	Rotation	Replacement kit
Gear set	Cover				
8052043	347559	11 cc	No	LH or RH	8510078
	347567		Yes	LH	8510079
	347567		Yes	RH	8510080
8052044	347559	14 cc	No	LH or RH	8510081
	347567		Yes	LH	8510082
	347567		Yes	RH	8510083

The following information pertains to "L" charge pump option only:

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

Parts disposition

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

Service Bulletin: SB-1995-005

Products affected

Series 90 42 cc variable pumps

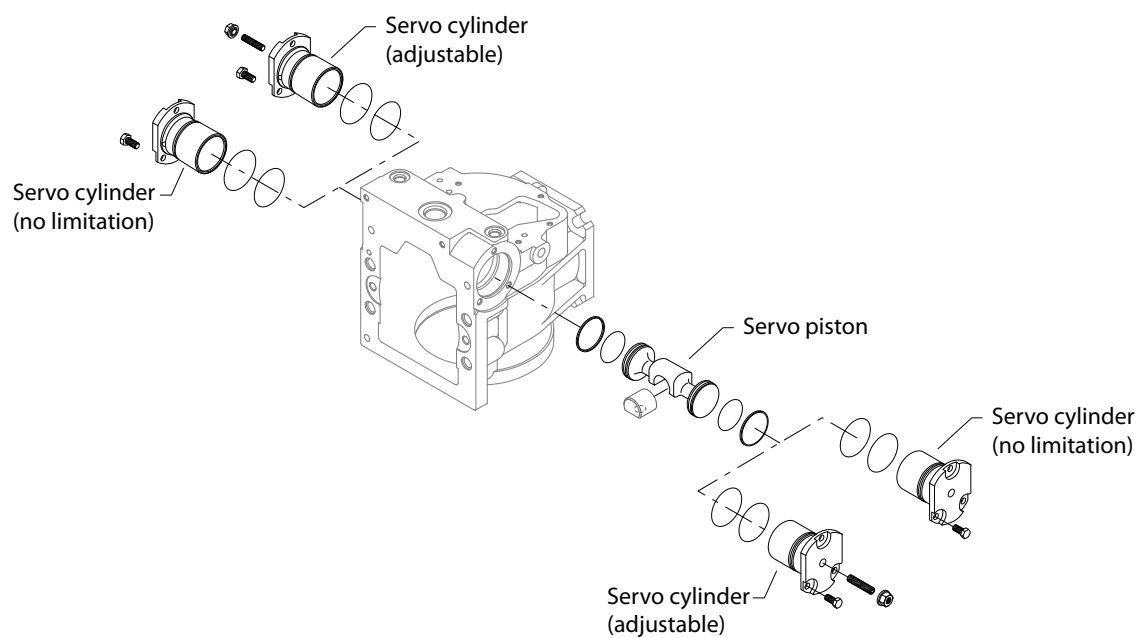
Subject

Obsolete servo system parts

Description

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

SB-1995-005



Models affected

All 42 cc variable pumps

Serial numbers

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

Part numbers affected

Description	Old style p/n	Replacement p/n
Servo sleeve kit - No limitation	8052F003-A	8510089
Servo sleeve kit - adjustable	8052F004-A	8510090
Servo piston kit	80520S10	8510089*or 8510090*

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

Parts disposition

Non-interchangeable

Service Bulletin: SB-1995-006

Products affected

Series 90 42 cc variable pumps

Subject

End cap bolt size change

Description

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

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

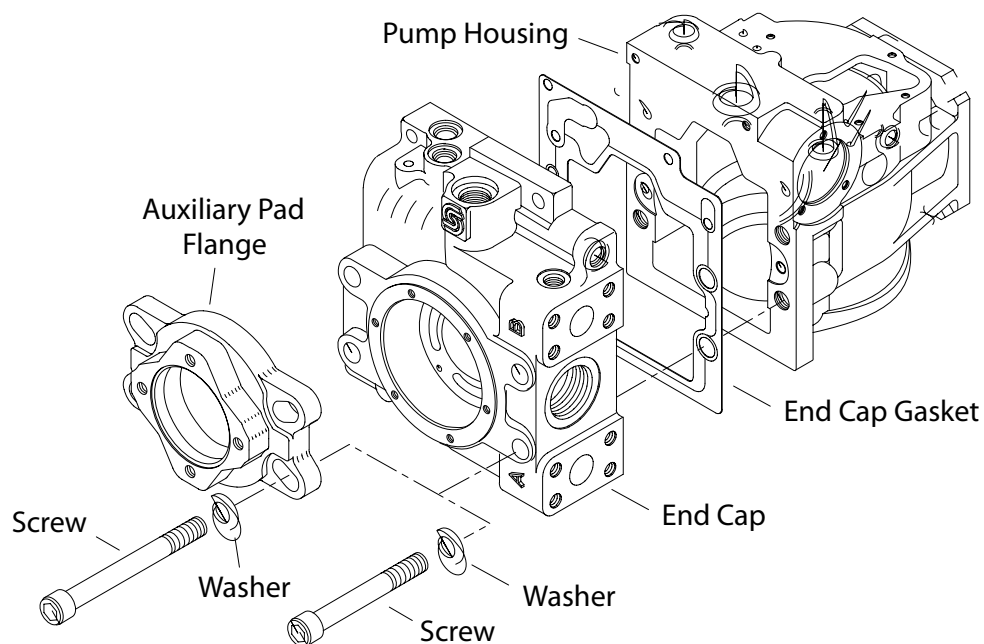
The new end cap and gasket can be used the old housing if hardened washers are used with the M10 end cap screws.

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

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

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

SB-1995-006



Models affected

All 42 cc variable pumps

Serial numbers

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

Part numbers affected

Description	Old style p/n	New style p/n
End cap	769562	506785
End cap gasket	792937	506698
Screws (with auxiliary mounting pad)	321893	913590
Screws (without auxiliary mounting pad)	321661	506800
Washer	294462	506753
Hardened washer for M10 screws	N/A	294462
Pump housing	792705	506740

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

SB-1995-026

Products affected

Series 90 42 cc - 130 cc variable pumps

Subject

Standard valve plate part number change

Description

As a product improvement, Sauer-Danfoss is changing the standard valve plate used in series 90 42 thru 130 cc variable pumps. (refer to PIB-9507)

The purpose of this bulletin is notification of part number changes for the order codes affected. During unit repair, do not replace the new style valve plate with an old style valve plate. However, the old style may be replace with a new style valve plate.

The old style valve plates will be obsoleted and no longer available as a service part.

Models affected

All 932xxx, 942xxx, 952xxx, 962xxx, and 972xxx variable pumps

Serial numbers

This change became effective at serial number N-95-48-xxxxx

Part numbers affected

Unit	Old order code	Old valve plate part number	New order code	New valve plate part number
42 cc	NNN	500337	GBA	758383
55 cc	NNN	8000071	GBA	8000431
75 cc	NNN	8100145	GBA	501332
100 cc	NNN	8200041	GBA	501327
130 cc	NNN	700203	GBA	758425

Parts disposition

Interchangeable - do NOT substitute the old valve plate for the new valve plate

SB-1996-004

Products affected

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

Subject

Side cover design change

Description

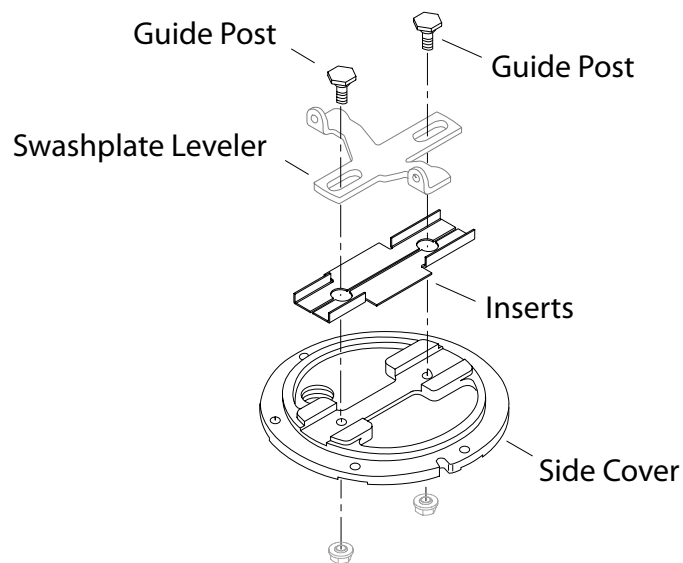
As a product improvement, Sauer-Sundstrand is changing the side cover and swashplate leveler (T-Bar) guide post design.

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

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

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

SB-1996-004



Models affected

All series 42, 130, 180, and 250cc variable pumps

Serial numbers

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

Part numbers affected

Old part numbers			New part numbers		
Description	Guide post	Side cover	Insert assy.	Guide post	Replacement kit
42 cc	344465	751305	506916	506369	506380
130 cc	503205	746107	8300004	506368	11027814
180 cc	503205	746404	506914	506368	506290
250 cc	503205	746404	506914	506368	506290

Parts disposition

Interchangeable - piece parts are not interchangeable

Service Bulletin: SB-1997-014

Products affected

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

Subject

Charge pump shaft part number change

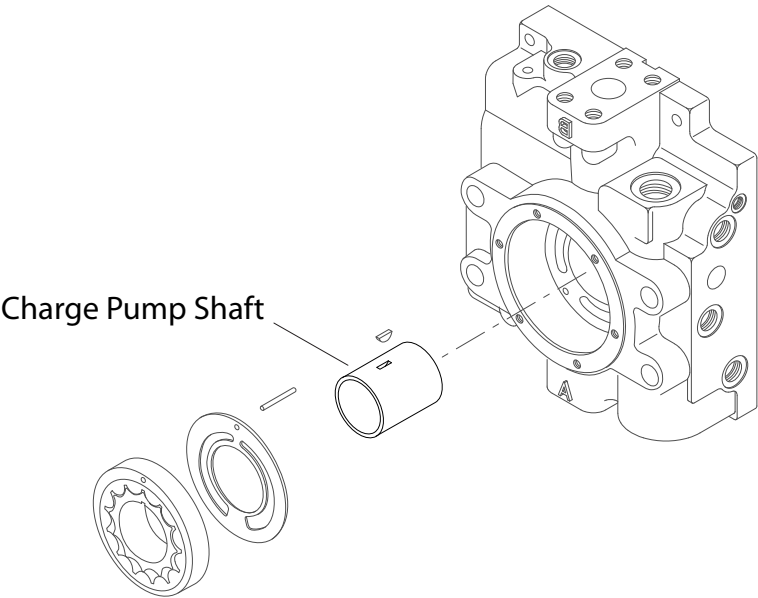
Description

As a product improvement, Sauer-Danfoss has changed the design of the charge pump shaft used in series 90 42, 130, 180, and 250 cc variable pumps.

The new and old shafts are interchangeable.

The old style charge pump shaft will become obsolete and no longer available as a service part.

SB-1997-014



Models affected

All 932xxx, 972xxx, 982xxx, and 992xxx variable pumps

Serial numbers

See table below

Part numbers affected

Frame size	Old shaft part number	New shaft part number	Effectivity date
42	505202	509485	97-06
130	501399	509483	97-06
180	503519	509484	97-12
250	504439	509482	97-12

Parts disposition

Interchangeable

Service Bulletin: SB-1999-041A

Products affected

Series 90 variable pumps

Subject

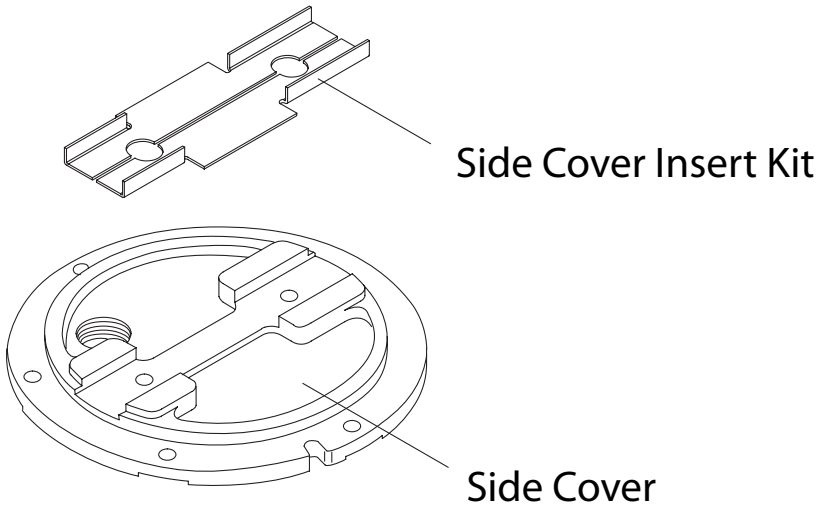
Change to side cover insert material

Description

As a product improvement, Sauer-Danfoss has changed the side cover insert material to improve wear characteristics. The new material is more wear resistant than the previous material.

In order to track this change, new part numbers have been created and the old part numbers will be obsolete.

SB-1999-041A



Models affected

93-2xxxx, 94-2xxxx, 95-2xxxx, 96-2xxxx, 97-2xxxx, 98-2xxxx, and 99-2xxxx

Serial numbers

Frame size	NMS effectivity date	Ames effectivity date
42 cc	N-99-36-xxxxx	N/A
55 cc	N-00-18-xxxxx	A-00-18-xxxxx
75 cc	N-99-26-xxxxx	A-00-38-xxxxx
100 cc	N-99-31-xxxxx	A-00-38-xxxxx
130 cc	N-99-33-xxxxx	N/A
180 cc	N-99-36-xxxxx	N/A
250 cc	N-99-36-xxxxx	N/A

Part numbers affected

Frame size	Old part number	New part number
42 cc	506916	513885
55 cc	8000406	513886-S
75 cc	8000562	513888
100 cc	8200321	513889-S
130 cc	8300004	513890-S
180 cc	506914	513891
250 cc	506914	513891

Parts disposition

Interchangeable

Service Bulletin: SB-2002-016

Products affected

Series 90 42 cc variable pumps

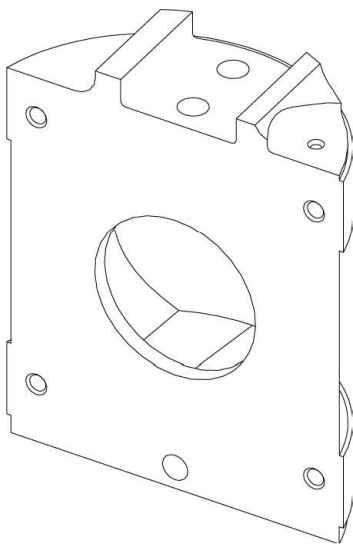
Subject

Swashplate change in material heat treatment

Description

Sauer-Danfoss has changed the heat treatment process of the swashplate in the series 90 42 cc pump. The new swashplate and old swashplate are interchangeable.

SB-2002-016



Models affected

All series 90 42 cc variable pumps

Serial numbers

This change became effective at serial number N-01-43-xxxxx.

Part numbers affected

Old part number	New part number
509630	516199

Parts disposition

Interchangeable

Service Bulletin: SB-2003-015

Products affected

Series 45 K and L frame open circuit pumps

Subject

Pressure balanced swashplate and larger servo piston

Description

Sauer-Danfoss has made a change to the swashplate, servo piston and servo piston guide. This change includes making the swashplate pressure balanced and the diameter of the servo piston and servo guide larger.

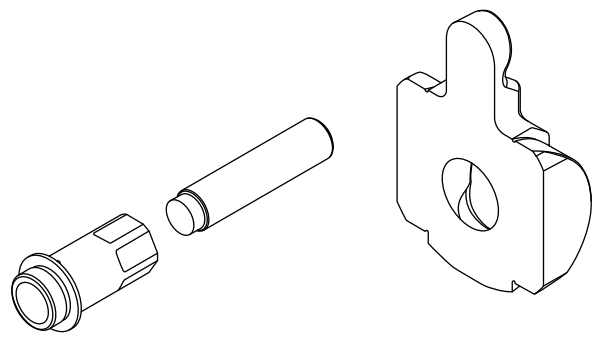
Lab testing shows that the new larger diameter servo piston and guide with the new pressure balanced swashplate to be more stable and better response.

The smaller diameter servo piston and guide should not be used with a new pressure balanced swashplate. This combination could make the system unstable.

The larger diameter servo piston and guide should not be used with an old style swashplate. This combination could make the system slow to respond.

The smaller diameter servo piston and guide and the unbalanced swashplate are still available as service parts.

SB-2003-015



Models affected

All Series 45 K and L frame open circuit pumps except; 7004024, 7004025, 7004026, 7004117.

Serial numbers

This change became effective at serial number DC-04-49-xxxxx.

Part numbers affected

Description	Old part number	New part number
Servo piston 100%	1700220	1700875
Servo piston 92%	1700219	1701129
Servo piston 60%	1700598	1701130
Servo piston guide	1700221	1700201
Swashplate	1700890	1700704

Parts disposition

Interchangeable

Service Bulletin: SB-2005-011

Products affected

Series 90 42 thru 100 cc pumps

Subject

Auxiliary flange charge pump cover

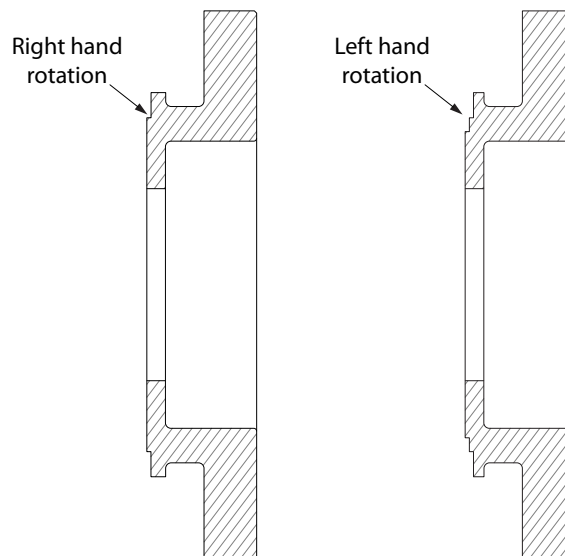
Description

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

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

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

SB-2005-011



Models affected

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

Serial numbers

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

Part numbers affected

None

Parts disposition

Interchangeable

SB-2009-074

Products affected

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

Subject

SAE A auxiliary mounting flange, O-ring seal

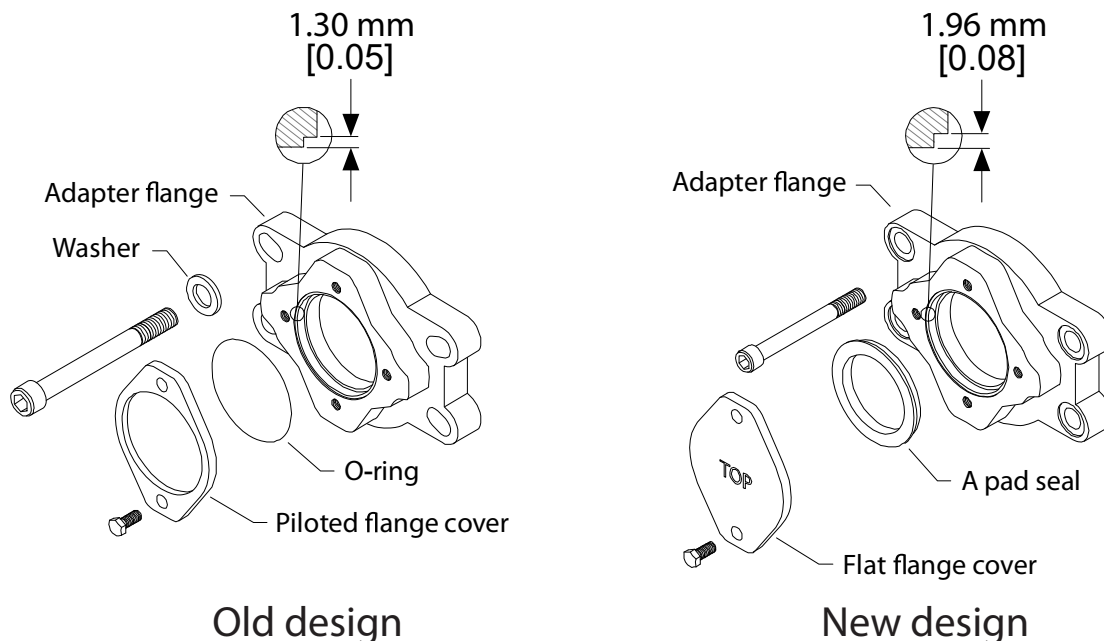
Description

Sauer-Danfoss is pleased to announce a design improvement on the SAE A auxiliary mounting flange adapter on its series 90 pumps. The frame sizes affected by this change are 42, 130, 180 and 250cc. All manufacturing locations producing these pumps will be changed to this configuration.

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

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

SB-2009-074

**Models affected**

All series 90 42, 130, 180 and 250cc pumps with an SAE A auxiliary mounting flange.

Serial numbers

Change became effective at serial number N-09-30-xxxxx. (20 July 2009)

Part numbers affected

Description	Old part number	New part number	Used on
A flange adapter	511040	520944	42cc
A flange adapter	505113	520946	130cc
A flange adapter	505136	520949	180 and 250cc
O-ring	9004104-0420	9004104-1520	all sizes
A pad seal	N/A	4800482	all sizes
Flange cover	9802336	4460586	all sizes

Parts disposition

Interchangeable if new O-ring or if the pad seal and new cover are used.

SB-2009-075

Products affected

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

Subject

SAE B auxiliary mounting flange, O-ring seal

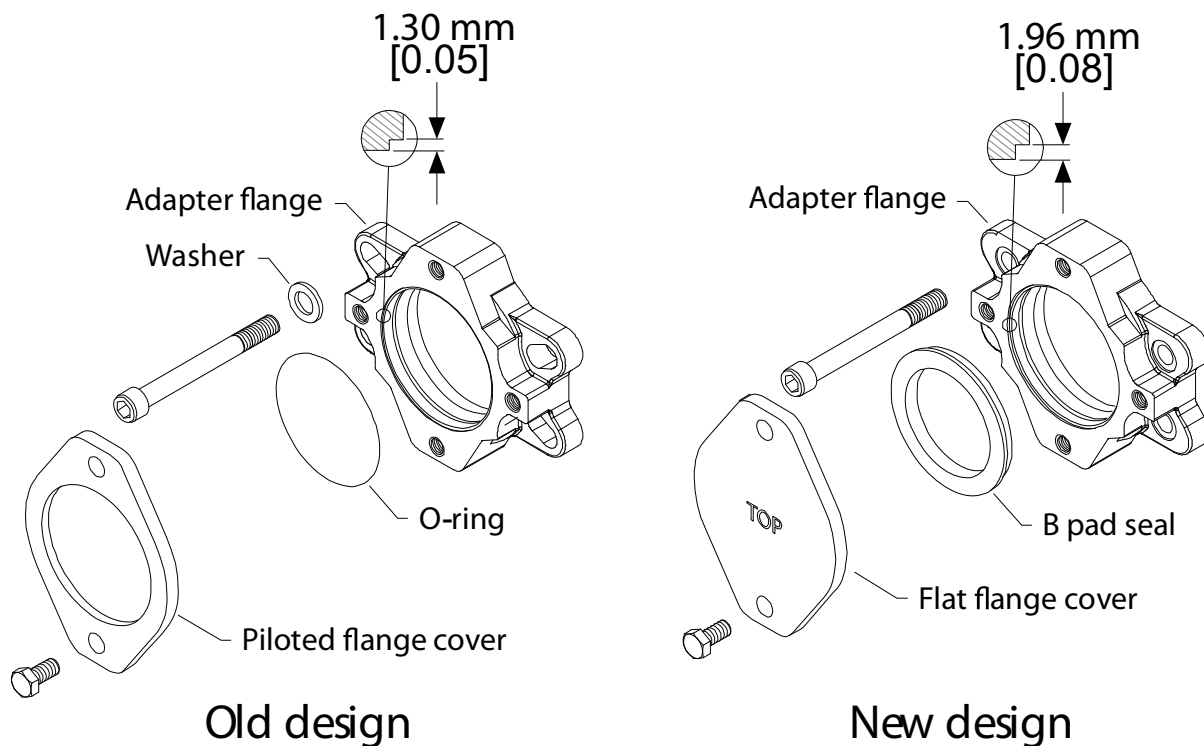
Description

Sauer-Danfoss is pleased to announce a design improvement on the SAE B auxiliary mounting flange adapter on its series 90 pumps. The frame sizes affected by this change are 42, 130, 180 and 250cc. All manufacturing locations producing these pumps will be changed to this configuration.

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

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

SB-2009-075

**Models affected**

All series 90 42, 130, 180 and 250cc pumps with an SAE B auxiliary mounting flange.

Serial numbers

Change became effective at serial number N-09-30-xxxxx. (20 July 2009)

Part numbers affected

Description	Old part number	New part number	Used on
B flange adapter	506778	520945	42cc
B flange adapter	503230	520947	130cc
B flange adapter	11000255	11039180	130cc
B flange adapter	505132	520950	180 and 250cc
O-ring	9004104-0450	9004104-1540	all sizes
B pad seal	N/A	8801061	all sizes
Flange cover	4460370	8801059	all sizes

Parts disposition

Interchangeable if new O-ring or if the pad seal and new cover are used.

Service Bulletin: SB-2009-076

Products affected

Series 90 130, 180 and 250cc variable pumps

Subject

SAE C auxiliary mounting flange, O-ring seal

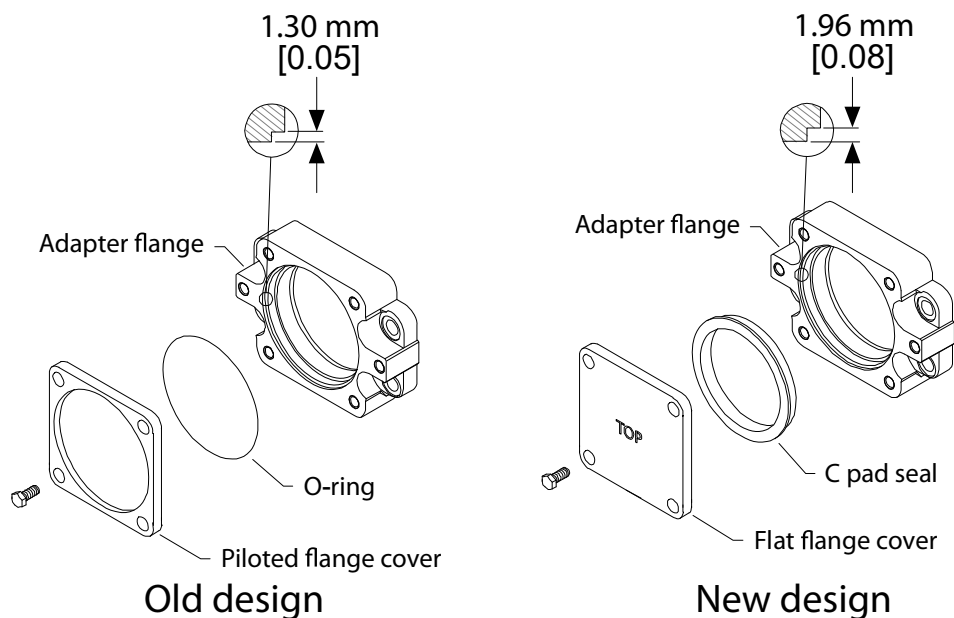
Description

Sauer-Danfoss is pleased to announce a design improvement on the SAE C auxiliary mounting flange adapter on its series 90 pumps. The frame sizes affected by this change are 130, 180 and 250cc. All manufacturing locations producing these pumps will be changed to this configuration.

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

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

SB-2009-076

**Models affected**

All series 90 130, 180 and 250cc pumps with an SAE C auxiliary mounting flange.

Serial numbers

Change became effective at serial number N-09-30-xxxxx. (20 July 2009)

Part numbers affected

Description	Old part number	New part number	Used on
C Flange adapter	505116	513617	130 cc
C Flange adapter	508407	11039184	130 cc
C Flange adapter	515116	513617	130 cc
C Flange adapter	505139	520951	180cc and 250cc
C Flange adapter	508406	11039178	180cc and 250cc
O-ring	9004100-0480	9004104-1580	All units
C pad seal	NA	8801062	All units
Flange cover	8800406	8801060	All units

Parts disposition

Interchangeable if new O-ring or if the pad seal and new cover are used.

Service Bulletin: SB-2011-025

Products affected

Series 90 30cc, 42cc, 55cc, 75cc, 100cc, 130cc, 180cc, and 250cc pumps

Subject

Supplier change for the auxiliary drive coupling

Description

The supplier has changed for the auxiliary drive couplings used in the Series 90 pumps. The new couplings are completely interchangeable with the old couplings. New part numbers have been issued for tracking purposes. The old part numbers are obsolete and no longer available for service.

Models affected

All Series 90 pumps with auxiliary drive.

Serial numbers

N/A

Part numbers affected

Coupling description	Old part number	New part number
30cc & 42cc 9 tooth coupling	341016	11053281
30cc & 42cc 13 tooth coupling	341024	11053279
30cc & 42cc 15 tooth coupling	342907	11053280
42cc & 55cc 20 tooth coupling	503271	11053273
55cc 11 tooth coupling	8000142	11053344
55cc 15 tooth coupling	8000077	11053340
55cc 15 tooth coupling	8000130	11053343
75cc & 100cc 14 tooth coupling	8801196	11053346
75cc & 100cc 19 tooth coupling	8100407	11053342
75cc & 100cc 25 tooth coupling	503918	11053278
130cc 9 tooth coupling	310466	11053288
130cc 13 tooth coupling	310490	11053283
130cc 14 tooth coupling	310508	11053284
130cc 17 tooth coupling	501386	11053286
130cc 21 tooth coupling	705954	11053287
130cc - 250cc 25 tooth coupling	504517	11053338
180cc 17 tooth coupling	510100	11053337
180cc & 250cc 9 tooth coupling	766964	11053336
180cc & 250cc 27 tooth coupling	751701	11053335

Parts disposition

Interchangeable

Service Bulletin: SB-2015-031

Products affected

Series 90 pumps

Subject

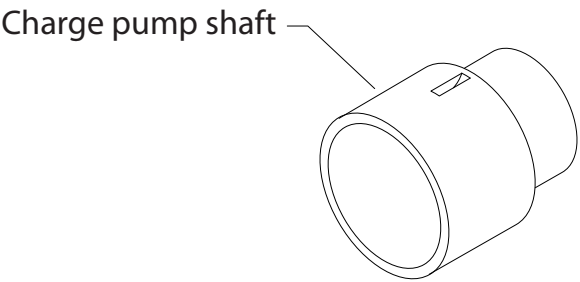
Charge pump shaft supplier change

Description

The supplier for 42cc, 130cc, 180cc and 250cc charge pump shafts on Series 90 units has changed. Part numbers have been changed for tracking purposes.

Old and new parts are completely interchangeable. Old part numbers will become obsolete and no longer available as a service part.

SB-2015-031



Models affected

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

Serial numbers

See chart below for effective dates of change.

Part numbers affected

Description	Old part number	New part number	Implementation Date
Charge pump shaft 90/42	513438	11138376	20-Jul-2015 (15-30)
Charge pump shaft 90/130	513435	11138378	30-Nov-2015 (15-49)
Charge pump shaft 90/130	513436	11138379	11-Aug-2015 (15-33)
Charge pump shaft 90/180	11002443	11138380	N/A
Charge pump shaft 90/250	518691	11138381	N/A

Parts disposition

Interchangeable

Use parts in stock

Revise existing part orders



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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 2222

Danfoss
Power Solutions Trading
(Shanghai) Co., Ltd.
Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 2080 6201

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