TO: ALL HOLDERS OF LANDING GEAR MODULAR PACKAGE ASSEMBLY OVERHAUL MANUAL, 32-09-11

REVISION NO. 11, DATED MAR 1/03

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D & O	D / Assy	Cleaning	Insp/Chk	Repair	Assy	F / C	Test	T / Shooting	S / Tools	Storage	IPL	L / Overhaul
Changed a vendor part number callout for flow regulator (5)												X	
Identified ports D and U on housing (17)	X				X			X				X	
Added clarifications and updated callouts	X	X	X	X	X	X		X			X		

LANDING GEAR MODULAR PACKAGE ASSEMBLY

32-09-11

BOEING P/N 65-44691-3 thru -6

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 30467 PRR 31941	May 15/68 Mar 10/72

LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

	PAGE	DATE	PAGE	DATE	PAGE	DATE
32-09-11						
*	T-1	Mar 1/03				
	T-2	BLANK				
*	LEP-1	Mar 1/03				
	LEP-2	BLANK				
*	T/C-1	Mar 1/03				
	T/C-2	BLANK				
*	1	Mar 1/03				
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	12	Nov 1/99				

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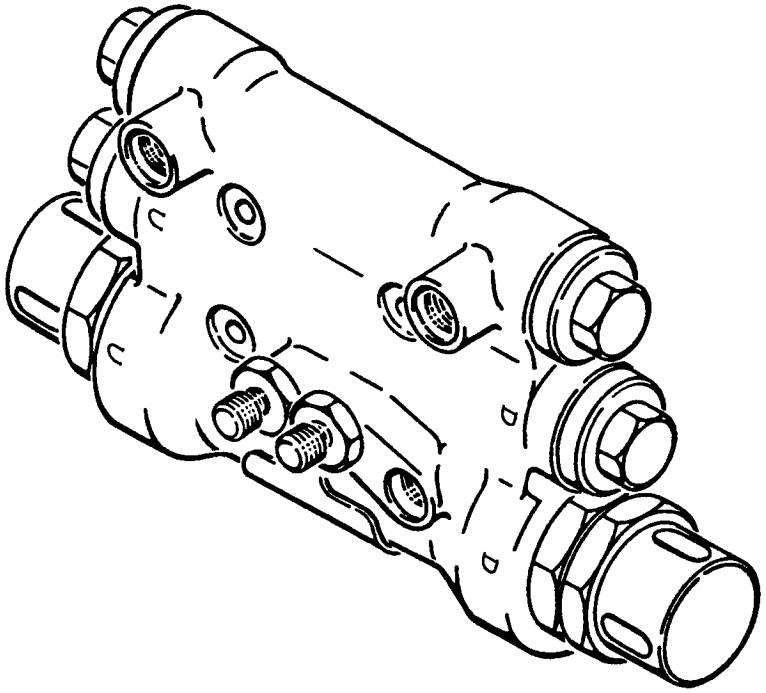
*[1] Special instructions are not necessary. Use standard industry practices and the instructions contained in SOPM 20-30-03.

LANDING GEAR MODULAR PACKAGE ASSEMBLY



Landing Gear Modular Package Assembly
Figure 1

1. DESCRIPTION AND OPERATION

A. The landing gear modular package assembly is an aluminum housing with flow regulators, restrictors and priority valves. The housing has five ports for hydraulic system connections. The modular packages adjust the flow of hydraulic fluid sent to the main and nose landing gear actuators and lock actuators for smooth, synchronized landing gear retraction and extension.

B. Leading Particulars (Approximate)

Length -- 9.4 inches
Width -- 5.2 inches
Height -- 3.2 inches
Weight -- 5.1 pounds
Operating Fluid -- BMS 3-11 hydraulic fluid

2. DISASSEMBLY (Fig. 5)

A. Remove all lockwire.

B. Hold the unit in a vise or fixture that will not damage it.

C. Unscrew priority valves (1). Remove backup rings (2) and packings (3).

D. Unscrew flow regulators or restrictors (4, 5). Remove backup rings (6) and packings (7, 8).

E. Unscrew flow regulators (9). Remove backup rings (10) and packings (11, 12).

F. Remove check valves (13) and packings (14) (if used) from housing (17).

G. Remove screws (15) and nameplate (16) from housing.

H. Refer to the applicable vendor's instructions for overhaul of flow regulators (4, 5, 9), restrictors (4, 5), priority valves (1) and check valves (13).

3. INSPECTION/CHECK (Fig. 5)

A. Examine all parts for defects by standard industry practices.

B. Penetrant examine housing (17) (SOPM 20-20-02).

4. REPAIR (Fig. 5)

A. Repair small defects by standard industry practices.

B. Refinish

NOTE: Refer to SOPM 20-30-02 for stripping of protective finishes. Refer to SOPM 20-41-01 for explanation of F and SRF finish codes.

(1) Housing (17) -- Chromic acid anodize (F-2.26) all over. Apply a 0.20-inch-wide stripe of BMS 10-11, Type 1 primer (SRF-12.205) followed by BMS 10-11, Type 2 enamel (F-21.27-302, which replaces SRF-14.904-302) around the boss of ports D and U (Fig. 1, 2, 5). Put this paint 0.10 inch from the face of the port.

C. Replacement

(1) Replace backup rings (2, 6, 10) and packings (3, 7, 8, 11, 12, 14).

(2) Nameplate (16) -- Steel stamp the serial number and the assembly number on the replacement nameplate before installation. Apply BMS 5-95 sealant to the faying surfaces of the nameplate and housing (17). Apply Type 41 clear protective coating (F-21.34) to the sealant and the adjacent area.

6. ASSEMBLY (Fig. 5)

A. Materials

NOTE: Equivalent substitutes can be used.

(1) Hydraulic Fluid -- BMS 3-11 (SOPM 20-60-03)

(2) Assembly Lube -- MCS-352 (SOPM 20-60-03)

(3) Sealant -- RTV 162 (SOPM 20-60-04)

(4) Grease -- BMS 3-33 or MIL-G-23827 (SOPM 20-60-03)

B. Before assembly, lightly lubricate all threads, O-ring packings and backup rings with hydraulic fluid or assembly lube.

C. Be careful not to accidentally interchange flow regulators (4, 5, 9) and restrictors (4, 5) during assembly.

D. Check valves (13)

(1) Install packings (14) on check valves (13).

(2) Install check valves (13) in housing (17). Tighten them to 135-150 lb-in.

E. Flow regulators (9)

(1) Install packings (11, 12) and backup rings (10) on regulators (9).

(2) Install regulators (9) in housing (17). Tighten them to 425-500 lb-in.

F. Flow regulators or restrictors (4, 5)

(1) Install packings (7, 8) and backup rings (6) on regulators or restrictors (4, 5).

(2) Install regulators or restrictors (4, 5) in housing (17). Tighten them to 425-500 lb-in.

G. Priority valves (1)

(1) Install packings (3) and backup rings (2) on valves (1).

(2) Install valves (1) in housing (17). Tighten them to 425-500 lb-in.

(3) Apply a bead of sealant around the circumference of the mating threads of valves (1) and housing (17) (SOPM 20-50-19).

H. Apply grease to threads of screws (15) and install them with nameplate (16) on housing (17).

I. Lockwire priority valve (1), regulator or restrictor (4, 5) and regulator (9) together on each side of housing (17), by the double twist method (SOPM 20-50-02).

6. TESTING

A. Preparation for Test

(1) Do these tests at room temperature, with BMS 3-11 hydraulic fluid. Refer to Fig. 2 for the schematic diagram and the locations of test ports.

(2) Bleed off all air from unit before the test.

(3) Flow through any open port is not external leakage.

CAUTION: DO NOT APPLY COMPRESSED AIR TO THE PORTS AT ANY TIME.

B. Proof Test

(1) With ports 1, 2 and 5 blocked, apply 5400 psi to ports 3 and 4 for two minutes. There must be no external leakage or permanent set.

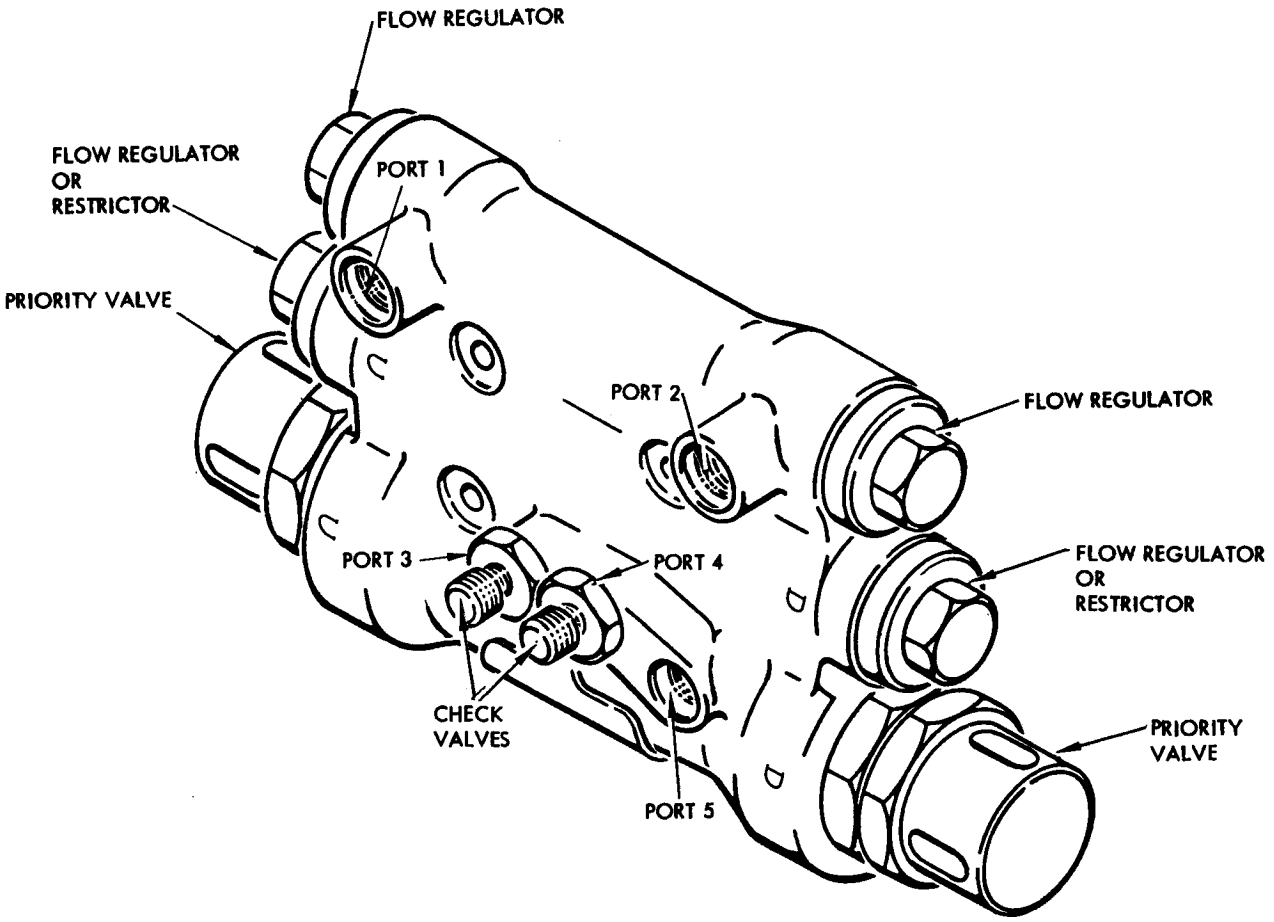
(2) Do step (1) again with 2 psi pressure. There must be no external leakage.

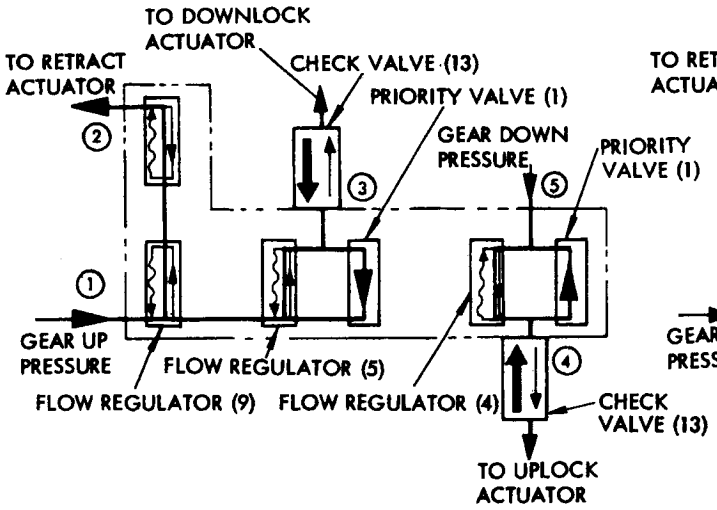
(3) If external leakage occurs, remove the parts at the leak locations and replace the packings as necessary.

C. Functional Test

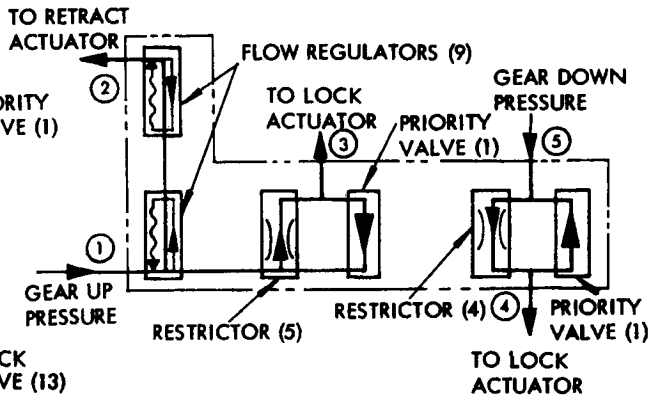
(1) Do the tests of 65-44691-3, -5 (main landing gear) assembly per Fig. 3.

(2) Do the tests of 65-44691-4, -6 (nose landing gear) assembly per Fig. 4.





ASSY 65-44691-3, -5 (MAIN GEAR)



ASSY 65-44691-4, -6 (NOSE GEAR)

Test Port Locations and Schematic Diagrams
Figure 2

Test Sequence	Plugged Port	Pressurized Port	Applied Pressure (PSI)	Flow Measurement	
				Flow Form Port	Rate of Flow (GPM)
1	None	4	200	5	0.052 - 0.096
2	None	4	3000	5	0.052 - 0.096
2A	Slowly increase the pressure until the flow from port 5 is 0.55 gpm. Pressure differential between ports 4 and 5 must be 3500 - 3960 psi.				
3	None	5	3000	4	0.16 - 0.22
4	2	3	200	1	0.48 - 0.63
5	2	3	3000	1	0.48 - 0.63
5A	Slowly increase the pressure until the flow from port 1 is 0.95 gpm. Pressure differential between ports 3 and 1 must be 3500 - 3960 psi.				
6	2	1	3000	3	0.16 - 0.22
7	3	1	400	2	5.40 - 6.60
8	3	1	3000	2	5.40 - 6.60
9	3	2	400	1	5.40 - 6.60
10	3	2	3000	1	5.40 - 6.60

65-44691-3, -5
Functional Test Sequence
Figure 3

Test Sequence	Plugged Port	Pressurized Port	Applied Pressure (PSI)	Flow Measurement	
				Flow Form Port	Rate of Flow (GPM)
1	None	4	3000	5	0.41 - 0.49
2	Slowly apply pressure to port 4 until the flow from port 5 is 0.94 gpm. Pressure differential between ports 4 and 5 must be 3500 - 3960 psi.				
3	None	5	3000	4	0.41 - 0.49
4	2	3	3000	1	0.15 - 0.19
5	Slowly apply pressure to port 3 until the flow from port 1 is 0.66 gpm. Pressure differential between ports 3 and 1 must be 3500 - 3960 psi.				
6	2	1	3000	3	0.15 - 0.19
7	3	1	400	2	2.30 - 2.90
8	3	1	3000	2	2.30 -2.90
9	3	2	400	1	2.30 -2.90
10	3	2	3000	1	2.30 -2.90

65-44691-4, -6

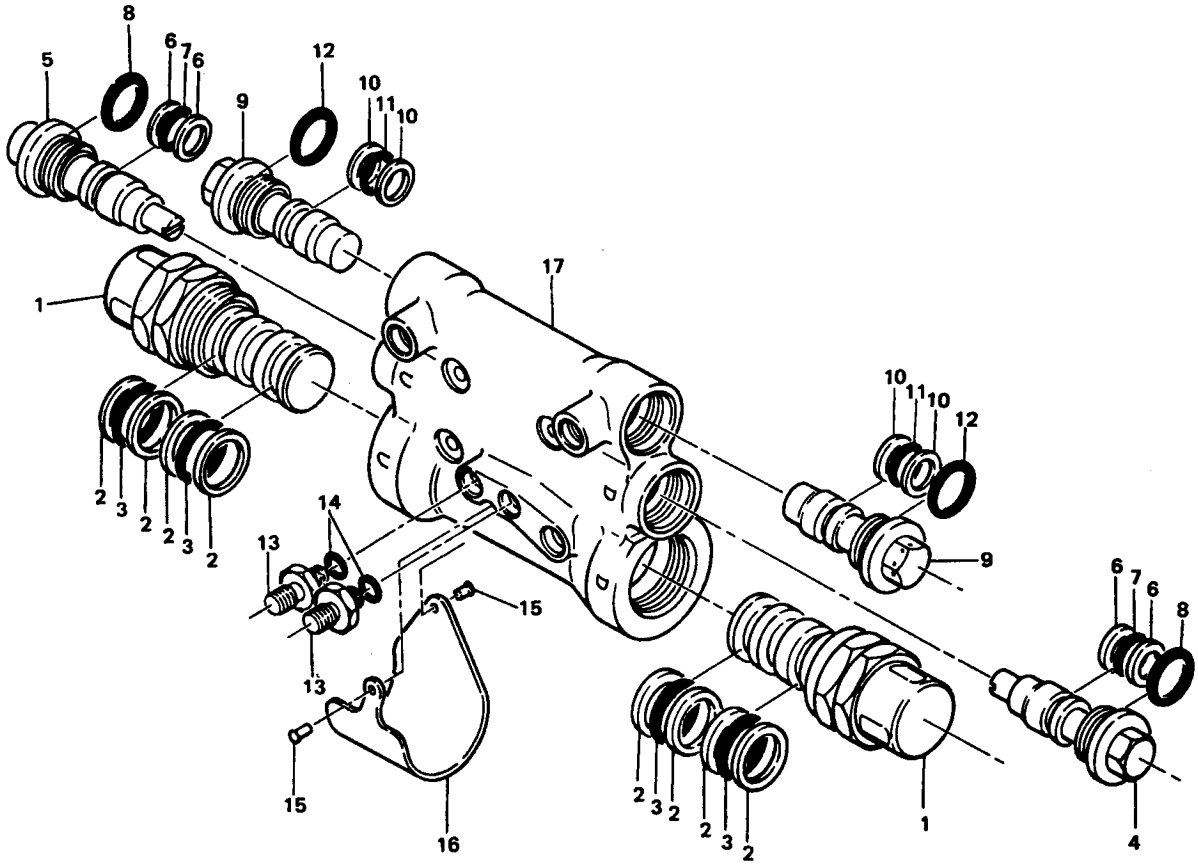
Functional Test Sequence
Figure 4

7. STORAGE INSTRUCTIONS

A. After the test, partially fill the unit with BMS 3-11 hydraulic fluid. If Skydrol 7000 was used in the test, be sure to drain and flush the unit before you fill it with BMS 3-11 hydraulic fluid. Install hydraulic-fluid-resistant plugs on the ports.

B. Give protection to the unit and put it away by standard industry practices and the instructions contained in SOPM 20-44-02 and SOPM 20-70-01.

8. ILLUSTRATED PARTS LIST



Landing Gear Modular Package Assembly
Figure 5

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
5-					
	65-44691-3		MODULAR ASSY, LANDING GEAR	A	RF
	65-44691-4		MODULAR ASSY, LANDING GEAR	B	RF
	65-44691-5		MODULAR ASSY, LANDING GEAR	C	RF
	65-44691-6		MODULAR ASSY, LANDING GEAR	D	RF
1	4538		. VALVE, PRIORITY, V06177 (BOEING 10-60599-1)		2
2	MS28782-19		. RING, BACKUP		8
3	NAS1611-214		. PACKING, O-RING		4
4	6174-2		. REGULATOR, FLOW, V06177 (BOEING 10-61240-14)(PREF)	AC	1
4	1158A08S5		. REGULATOR, FLOW, V82271 (BOEING 10-61240-1) (OPT TO 10-61240-14) *[1]	AC	1
4	6F2392-6		. RESTRICTOR, V99240 (BOEING 10-61243-6)	BD	1
5	6174-1		. REGULATOR, FLOW, V06177 (BOEING 10-61240-17)(PREF)	AC	1
5	1158E57S5		. REGULATOR, FLOW, V82271 (BOEING 10-61240-5) (OPT TO 10-61240-17) *[1]	AC	1
5	6F2392-5		. RESTRICTOR, V99240 (BOEING 10-61243-5)	BD	1
6	MS28782-13		. RING, BACKUP		4
7	NAS1611-115		. PACKING, O-RING		2
8	NAS1612-12		. PACKING, O-RING		2
9	6172		. REGULATOR, FLOW, V06177 (BOEING 10-61240-16)(PREF)	AC	2
9	1158C6-0S5		. REGULATOR, FLOW, V82271 (BOEING 10-61240-3) (OPT TO 10-61240-16) *[1]	AC	2
9	6170		. REGULATOR, FLOW, V06177 (BOEING 10-61240-15)(PREF)	BD	2
9	1158B2-6S5		. REGULATOR, FLOW, V82271 (BOEING 10-61240-2) (OPT TO 10-61240-15) *[1]	BD	2
10	MS28782-13		. RING, BACKUP		4
11	NAS1611-115		. PACKING, O-RING		2
12	NAS1612-12		. PACKING, O-RING		2
13	2670064-409		. CHECK VALVE, RESTRICTOR, V92003 (PREF)	AC	2
13	H61C0712-509		. CHECK VALVE, RESTRICTOR, V92003 (OPT)	AC	2

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
13	6F2396		. CHECK VALVE, RESTRICTOR, V99240 (OPT)	AC	2
14	NAS1612-4		. PACKING, O-RING	AC	2
15	MS21318-7		. SCREW		2
16	69-35779-2		. NAMEPLATE		1
16	69-35779-1		. NAMEPLATE (OPT)		1
17	65-44692-1		. HOUSING	A	1
17	65-44692-2		. HOUSING	B	1
17	65-44692-4		. HOUSING	C	1
17	65-44692-5		. HOUSING	D	1

*[1] These flow regulators have vendor part numbers that indicate the flow limit in GPM, as follows:

Boeing Spec Part Number	Boeing Cross-Ref Part Number	Vendor-Label Part Number	Flow Limit GPM
10-61240-1	1158A08S5	1158A-.08S5	0.08
10-61240-2	1158B2-6S5	1158B-2.6S5	2.60
10-61240-3	1158C6-0S5	1158C-6.0S5	6.00
10-61240-5	1158E57S5	1158E-.57S5	0.57

VENDORS

VO6177 PNEUDRAULICS, INC., 8275 HELMS AVE., RANCHO CUCAMONGA, CALIFORNIA 91730-4519

V82271 SEE V98441

V92003 PARKER-HANNIFIN CORP., 18321 JAMBOREE BLVD., P.O. BOX C-19510, IRVINE, CALIFORNIA 92713-9510

V98441 STRATOFLEX AEROSPACE MILITARY CONNECTOR DIV., 220 ROBERTS CUT-OFF, FORT WORTH, TEXAS

V99240 CRISSAIR CO., 38905 - 10TH ST., EAST, PALMDALE, CALIFORNIA 93550-3415