International Aero Engines

SERVICE BULLETIN

ENGINE - FUEL AND CONTROL - NEW FUEL DIVERTER AND RETURN VALVE ASSEMBLY WITH NEW CAP SEAL AND ENLARGED SOLENOID ORIFICE - CATEGORY CODE 5 - MOD.ENG-73-0054

1. Planning Information

A. Effectivity

(1) Aircraft: (a) Airbus A320/A321
(b) McDonnel Douglas MD90

(2) Engine: (a) V2500-A1 Engines prior to Serial No. V0361*.
(b) V2500-A5 engines prior to Serial No. V10073.
(c) V2500-D5 Engines prior to Serial No. V20009.

* The serial number data shown is of a preliminary nature and is provided for advanced planning only. A future revision to this Service Bulletin will confirm final serial number effectivity.

B. Reason

(1) Condition

(a) Introduce the new cap seal: (For V2500 all models)

Inspection on some returned units from operators revealed deterioration on packing of solenoid valve. The deterioration would result in incorrect motion of Fuel Diverter Valve (FDV).

(b) Increase solenoid orifice diameter: (For V2500-A1 only)

In-House Test on a Fuel Diverter and Return Valve (FDRV) reveled that the internal pressure activating the FDV was rather marginal against friction during a certain pressure condition.

(2) Background

(a) Introduce the new cap seal: (For V2500 all models)

It was found that the packing of solenoid valve is worn causing internal fuel leakage which may result in incorrect motion of the FDV.

(b) Increase solenoid orifice diameter: (For V2500-A1 only)

The marginal internal pressure was observed on V2500-A5/D5 model and the resolution has been introduced in the model.

(3) Objective

(a) Introduce the new cap seal: (For V2500 all models)

The cap seal has been introduced which attach the packing to protect the packing from excessive wear.

(b) Increase solenoid orifice diameter: (For V2500-A1 only)

To make a commonality solenoid assembly on the FDRV of all V2500 models and also to increase force margin.

(c) Incorporation of this Service Bulletin is designed to maintain unit reliability

(4) Substantiation

Substantiation testing has been successfully completed.

(5) Effect of Bulletin on Workshop Procedures

Removal/Installation	Not affected
Disassembly/Assembly	Not affected
Cleaning	Not affected
Inspection/Check	Not affected
Repair	Not affected
Testing	Not affected

(6) Supplemental Information

The existing FDRV can be reworked and reidentified to a new configuration with accomplishment instructions given in the IHI Service Bulletin No. 13298-73-003 or 17300-73-003.

C. Description

(1) The changes introduced by this Service Bulletin are as follows:

(a) For A1 engines only

1 The orifice diameter of the piston in the solenoid is increased.

(b) For all V2500 engines

1 The cap seal has been installed which attached on the packing on the solenoid valve (See IHI Service Bulletin No.13298-73-003 or 17300-73-003).

D. Compliance

Category Code 5

Accomplishment when the engine is disassembled sufficiently to afford access to the affected subassembly (i.e. Module, Accessory, Component, Build Group) and to all affected spare subassemblies.

E. Approval

The part number changes described in this bulletin have been shown to comply with the applicable Federal Aviation Regulation and are FAA-APPROVED for Engine Model listed.

F. Manpower

Estimated manhours to incorporate the full intent of this bulletin:

Venue	Estimated Manhours
(1) In Service	Not applicable
(2) At Overhaul	Not applicable

G. Weight and Balance

(1) Weight change	None
(2) Moment arm	No effect
(3) Datum	Engine front mount centerline (Power Plant Station - PPS 100)

H. Electrical Load Data

Not affected

I. References

(1) Internal Reference No.

EC93VJ106

(2) Other references

IAE Engine Illustrated Parts Catalog.

Ishikawajima- Harima Heavy Industries Co.,Ltd. (IHI) Service Bulletin No. 13298-73-003 (for A1) and No. 17300-73-003 (for A5/D5), "Engine Fuel Control - New Fuel Diverter and Return Valve Assembly with new Cap Seal and enlarged Solenoid Orifice".

A320 Engine Manual.

A321 Engine Manual.

MD-90 Engine Manual.

J. Other Publications Affected

(1) IAE Engine Illustrated Parts Catalog, 73-13-42 will be revised to add new part number.

(2) IAE Power Plant Illustrated Parts Catalog, 73-13-42 will be revised to add new part number.

(3) IHI Component Maintenance Manual, 73-13-42 and 73-18-52.

2. Accomplishment Instructions

A. Rework Instruction

Refer to IHI Service Bulletin 13298-73-003 or 17300-73-003.

B. Assembly Instruction

(1) For V2500-A1 Engine Model

(a) Remove th existing 5LO055 (13298G12), FDRV from the FCOC as specified in the A320 Engine Manual, 72-00-32, Removal-20 TASK 72-00-32-050-013.

(b) Install the new 5LO060 (13298G13),FDRV to the FCOC as specified in the A320 Engine Manual, 72-00-32, Installation-20, TASK 72-00-32-450-013.

(2) For V2500-A5 Engine Model

(a) Remove the existing 5LO056(17300G05), FDRV from the FCOC as specified in the A321 Engine Manual, 72-00-32, Removal-20, TASK 72-00--32-050-013.

(b) Install the new 5LO061 (17300G06),FDRV to th FCOC as specified in the A321 Engine Manual, 72-00-32, Installation-20, TASK 72-00-32-450-013.

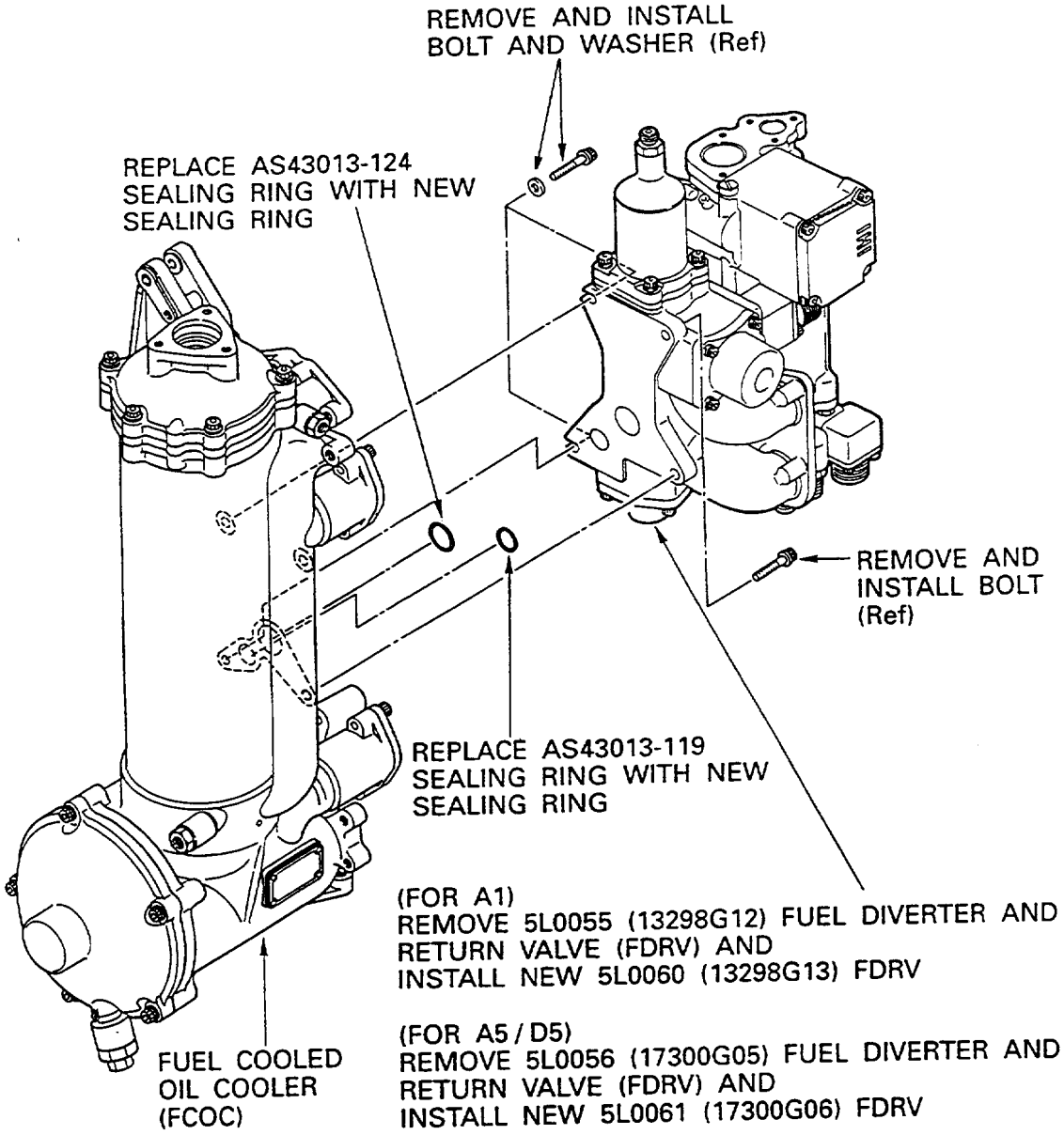
(3) For V2500-D5 engine Model

(a) Remove the existing 5LO056 (17300G05), FDRV from the FCOC as specified in the McDonnel Douglas (MD-90) Engine Manual, 72-00-32.

(b) Install the new 5LO061 (17300G06),FDRV to the FCOC as specified in the McDonnel Douglas (MD-90) Engine Manual, 72-00-32.

C. Recording Instructions

(1) A record of accomplishment is necessary.



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Replacement of the Fuel Diverter and Return Valve (FDRV)
Fig.1

3. Material Information

Applicability: For all V2500 engine to incorporate this Bulletin.

A. Parts affected by this Bulletin:

New Part No. (ATA No.)	Qty	Est'd Unit Price ($)	Keyword	Old Part No. (IPC No.)	Instructions Disposition
5LO060 (73-13-42)	1		.Valve, Fuel Divert & Return (A1)	5LO055 (01-100)	(A)(B)(C)(S1)
5LO061 (73-13-42)	1		.Valve, Fuel Divert & Return (A5/D5)	5LO056 (01-100)	(A)(B)(C)(S1)

B. Instruction/Disposition Code Statements:

(A) New part is currently available.
(B) Old part is no longer available. but can be available after the modification.
(C) New P/N 13298G13 (Old P/N 13298G12)
(D) New P/N 17300G06 (Old P/N 17300G05)
(S1) Old and new parts are freely and fully interchangeable both physically and functionally.

Notes: (C) and (D) give the new IHI part number of the FDRV.
(S2) Alternative parts.

NOTE: Contact the "Ishikawajima - Harima Heavy Industry Co.,Ltd. (IHI) Product Support Department, Customer Support Manager V2500" for information concerning firm prices.

C. Consumables required to incorporate this Bulletin:

CoMat	Material Type
02-099	Lint free cloth
01-124	Isopropyl alcohol
10-038	Petroleum jelly

IHI ISHIKAWAJIMA-HARIMA HEAVY INDUSTRIES CO., LTD.

SERVICE BULLETIN

No. 13298-73-003

ENGINE - FUEL AND CONTROL - NEW FUEL DIVERTER AND RETURN VALVE ASSEMBLY WITH NEW CAP SEAL AND ENLARGED SOLENOID ORIFICE

1. Planning Information

A. Effectivity

This Service Bulletin is applicable to the Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) Fuel Diverter and Return Valve (FDRV) Part Number 13298G12 (IAE Part Number 5L0055) installed on the IAE V2500-A1 engines and the spare FDRV Part Number 13298G12 (IAE Part number 5L0055).

(1) All part number 13298G12 (IAE part number 5L0055).

B. Reason

(1) Part 1 - Introduce the new cap seal:

(a) Condition

Wear occurrence have been observed on packing of solenoid valve in the Fuel Diverter Valve (FDV).

(b) Background

Wear of the solenoid valve packing in the FDV causes internal fuel leakage and FDV can not operate correctly in solenoid de-energized condition.

(c) Objective

1 A cap seal has been introduced to prevent the packing from wearing excessively.

2 Incorporation of this SB is designed to improve unit reliability.

D. Compliance

Category Code 5

Accomplish when the engine is disassembled sufficiently to afford access to the affected subassembly (i. e. module, accessories, components, build groups) and to all affected spare subassemblies.

E. Approval

The part number changes described in this bulletin have been shown to comply with the applicable Federal Aviation Regulation and are FAA-APPROVED for Engine Model Listed.

F. Manpower

Approximately Forty (40) man hours per unit.

G. Material - Price and Availability

(1) Option 1: Operators who wish to have the modification accomplished by IHI.

Accomplishment of this Service Bulletin by IHI will be completed based on IHI standard terms, and prices of sale pertaining to commercial contact IHI's Product Support Dept., Customer Support Manager V2500. for information concerning firm quotation.

(2) Option 2: Operators who wish to accomplish the modification in the shop by replacing solenoid assembly and installing cap seal on packing.

New parts required to accomplish this Service Bulletin are listed in section 3. Material Information and are available at prices and lead times indicated. An order for spare parts should be addressed to:

Ishikawajima-Harima Heavy Industries Co,. Ltd.
229, Tonogaya, Mizuho-Machi, Nishitama-Gun
Tokyo, 190-12 Japan.
(For the attention of the Product Support Department,
Customer Support Manager V2500).

Fax: (0425) 68-7104
Telephone: (0425) 68-7107

H. Tooling - Price and Availability

(1) Special tools are required to accomplish this Service Bulletin as follows:

Assembly Tool :	V25SH-2513
Assembly Tool :	V25SH-2506
Test Block :	V25SH-2600
Test Stand :	VH-25001
E. I. Driver :	V25SH-2101

NOTE: 1. Equivalent substitutes may be used.
2. Contact IHI's Product Support Dept., Customer Support Manager V2500 for information concerning prices.

I. Weight and Balance

Not affected.

J. Electrical Load Data

Not affected.

K. Reference

(1) IAE Service Bulletin No. V2500-ENG-73-0054.

(2) IHI Component Maintenance Manual, 73-13-42, Fuel Diverter and Return Valve, Part Number 13298 series.

L. Other Publications Affected

(1) IHI Component Maintenance Manual, 73-13-42, Fuel Diverter and Return Valve, Part Number 13298 series.

2. Accomplishment Instruction

A. Assembly Instruction

(1) Option 1: Operators who wish to have the modification accomplished by IHI.

(a) Return the part number 13298G12 (IAE part number 5L0055) FDRV for modification and reidentification to:

Ishikawajima-Harima Heavy Industries Co,. Ltd.
229, Tonogaya, Mizuho-Machi, Nishitama-Gun
Tokyo, 190-12 Japan.
(For the attention of the Product Support Department,
Customer Support Manager V2500).

Fax: (0425) 68-7104
Telephone: (0425) 68-7107

NOTE: All part number 13298G12 FDRV's which accomplished the modification by IHI will be reidentified with the following on the new name plates:

(IAE P/N) 5L0060
(IHI P/N) 13298G13

NOTE: All Part number 2411700-21 FDV's subassembly of FDRV's which accomplished the modification by IHI will be reidentified with the following on the 2411793, new name plates:

(Teijin Seiki P/N) 2411700-25

(2) Option 2: Operators who wish to accomplish the modification in the shop by replacing solenoid assembly and installing cap seal on packing.

NOTE: After assembling FDRV, Do the functional test as soon as possible (within three hours is recommended).

(a) Disassemble the 13298G12, FDRV and removal of the 13713P1, name plate by the approved procedures in Reference (2), Disassembly.

(b) Remove the 13266P1, electrical connector and disconnect the leadwire by approved procedures in Reference (2), Disassembly, Paragraph 2. B.

(c) Remove the 2411760-7, solenoid assembly with 2411793, old name plate by the approved procedures in Reference (2), Disassembly, Paragraph 2. E.

(d) Replace the existing solenoid assembly to the new 2411760-9, solenoid assembly by approved procedures in Reference (2), Assembly and Disassembly.

(e) Do a check of wear in the FDV solenoid housing by the approved procedures in Reference (2), Repair 04, and an allowable limit of wear as follows;

Maximum Wear : Width x Depth = 1,5mm x 0,095mm
Position of the wear : 23,5 ± 2,0mm from the port

* Any housing having small wear dimensions than above will not require rework and may be used as is.

(f) Remove the M25988/1-119, M25988/1-014 and M25988/1-013, installed packing on solenoid assembly (Refer to Figure 1).

(g) Install the M25988/1-014, packing on to the solenoid assembly.

(h) Install the 2411770, cap seal on the M25988/1-014, packing using V25SH-2513, assembly tool (Refer to Figure 2).

(i) Do a cap seal sizing to solenoid assembly using V25SH-2513, assembly tool (Refer to Figure 2).

(j) Cool the solenoid assembly for thirty (30) minutes using cooling chamber. Chamber temperature should be minus 40 to minus 50 degrees centigrade.

(k) Install the M25988/1-119, packing on to the solenoid assembly.

(l) Install the M25988/1-013, packing on to the solenoid assembly.

(m) Install the solenoid assembly by the approved procedures in Reference (2), Assembly 2. I.

(n) Install the 13266P1 or 19662P1, electrical connector with leadwire by the approved procedures in Reference (2), Assembly 3. G.

(o) Mark the new part number on the new 13713P1, name plate and identify as follows:
Use the metal stamps by hand press (Refer to Figure 3).

(IAE P/N) 5L0060
(IHI P/N) 13298G13

(p) Assemble the FDRV and installation of the name plate by the approved procedures in Reference (2), Assembly.

(q) Mark the new part number adjacent to old part number on the new 2411793, existing name plate and identify as follows:
Use the hand press method (Refer to Figure 3).

(Teijin Seiki P/N) 2411700-25

NOTE: (1) Clean name plate attaching area on the new 241176-9, solenoid valve assembly with alcohol.

(2) Apply bonding adhesive (Hysol EA929, The Dexter Corp. or equivalent) to name plate.

(3) Wind name plate around the 2411760-9, solenoid valve assembly then bond both end of name plate with winding.

(r) Do a functional testing as follows (Refer to Reference (2), Test and Fault Isolation):

(i) Preparation for the test by the approved procedures in Reference (2), Test and Fault Isolation, Paragraph 3.A (Refer to Figure 4).

(ii) Do a external leakage test by the approved procedures in Reference (2), Test and Fault Isolation, Paragraph 3.C.

(iii) Do a internal leakage test by the approved procedures in Reference (2), Test and Fault Isolation, Paragraph 3.D.

(iv) Make sure the response time of the FDV (Test Condition) are as follows: (Refer to Figure 5 and 6)

1 The unit shall be installed in the setup similar to that shown in Figure 5. Flow and pressure shall be set as shown in condition 1 and 2. The pressure at port 5 or the FDV stroke and the voltage signal to the solenoid shall be monitored and recorded with Time-Scale, as the unit is energized and de-energized.

2 Remove the 2411751, casing from the 13257G2, main subassembly body by removing the MS9556-12, bolts and the AN960C10L, washers. Install V25SH-2506, assembly tool, the AN960C10L, washers and the MS9556-12 bolts on the 13257G2, main subassembly and
Torque the bolts to 38 lbfin (4.3 Nm).

3 Measurement of FDV full stroke (Refer to Figure 6)

(1) Measure the FDV full stroke (dimension A, in figure 6) using slide calipers with solenoid de-energized condition and solenoid energized/supplying the applicable pressure in to the HP (port 9) side (550 psig) condition. Note the FDV full stroke.

4 Response time test (Refer to Figure 5)

A Mode 5 to mode 3 at condition 1

(1) Supply the applicable pressure in to the HP (Port 9) side (550 psig) and reduce the pressure from the LP (Port 10) side (221 psig), adjust by the needle valve (solenoid de-energized).

(2) Measure the change-over time from receipt of the voltage signal to completion of valve travel shall be 0.24 sec. to 1.50 sec. and measure the FDV stroke using slide calipers.

(3) Make sure that FDV moves full stroke in comparison with recorded FDV full stroke (dimension A) in paragraph (r), (iv), 3.

B Mode 3 to mode 5 at condition 1

(1) Supply the applicable pressure in to the HP (Port 9) side (550 psig) and reduce the pressure from the LP (Port 10) side (205 psig), adjust by the needle valve (solenoid energized).

(2) Measure the change-over time from receipt of the voltage signal to completion of valve travel shall be 2.40 sec. to 4.10 sec. and measure the FDV stroke using slide calipers.

(3) Make sure that FDV moves full stroke in comparison with recorded FDV full stroke (dimension A) in paragraph (r), (iv), 3.

C Mode 5 to mode 3 at condition 2

(1) Supply the applicable pressure in to the HP (Port 9) side (550 psig) and reduce the pressure from the LP (Port 10) side (237 psig), adjust by the needle valve (solenoid de-energized).

(2) Measure the change-over time from receipt of the voltage signal to completion of valve travel shall be 0.24 sec. to 1.50 sec. and measure the FDV stroke using slide calipers.

(3) Make sure that FDV moves full stroke in comparison with recorded FDV full stroke (dimension A) in paragraph (r), (iv), 3.

D Mode 3 to mode 5 at condition 2

(1) Supply the applicable pressure in to the HP (Port 9) side (550 psig) and reduce the pressure from the LP (Port 10) side (220 psig), adjust by the needle valve (solenoid energized).

(2) Measure the change-over time from receipt of the voltage signal to completion of valve travel shall be 2.40 sec. to 4.10 sec. and measure the FDV stroke using slide calipers.

(3) Make sure that FDV moves full stroke in comparison with recorded FDV full stroke (dimension A) in paragraph (r), (iv), 3.

5 Remove the V25SH-2506, assembly tool from the 13257G2 main subassembly by removing the MS9556-12, bolts and the AN960C10L, washers. Reinstall the 2411751, casing, the AN960C10L, washers and the MS9556-12, bolts on the 13257G2, main subassembly and Torque the bolts to 38 lbfin (4.3 Nm).

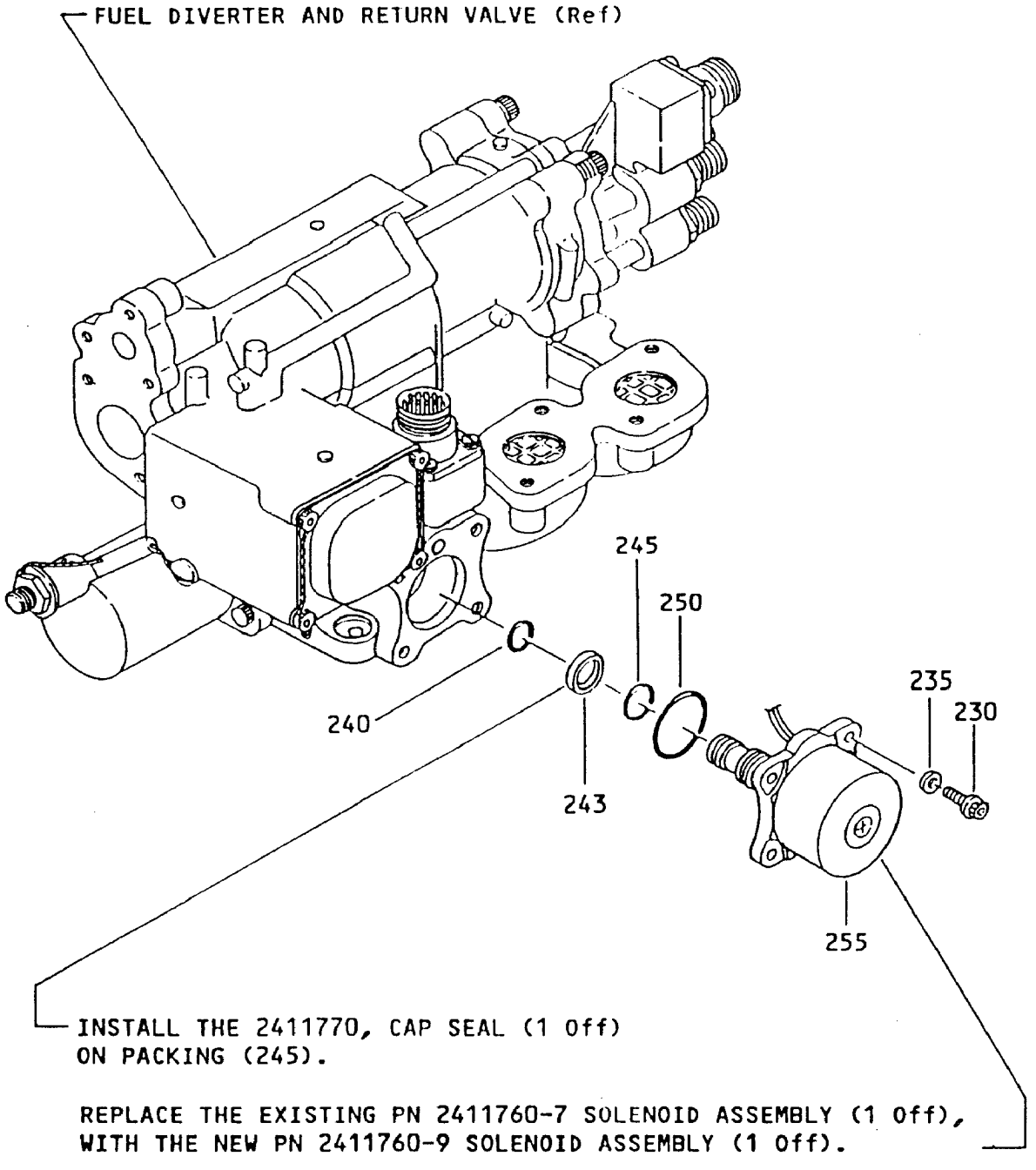
6 Do a functional testing by the approved procedures in Reference (2), Testing and Fault Isolation with this Service Bulletin.

B. Recording Instruction

(1) A record of accomplishment in necessary.

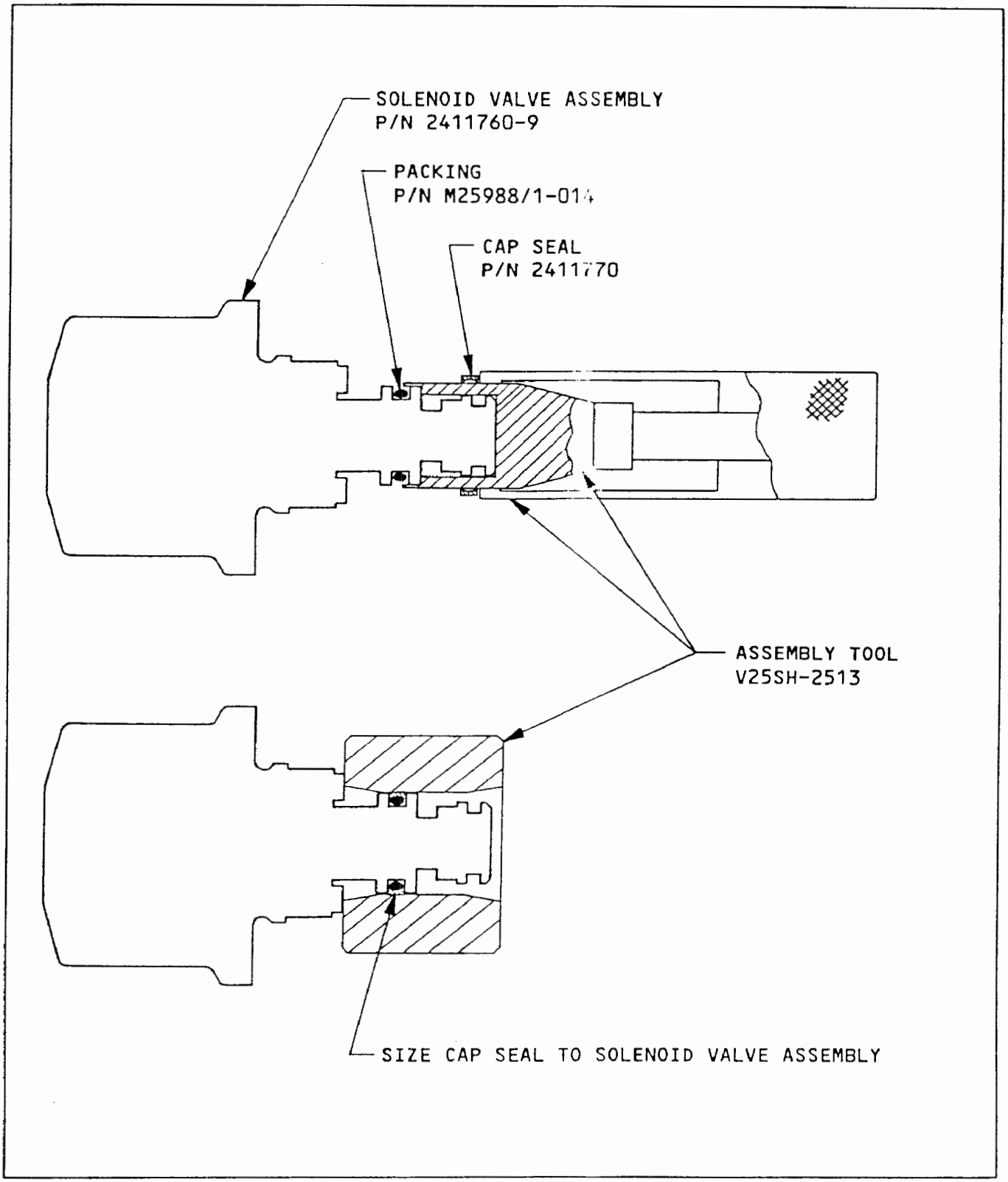
SERVICE BULLETIN

NOTE: ITEM NUMBERS REFER TO IPL FIGURE 3 IN COMPONENT MAINTENANCE MANUAL, 73-13-42.

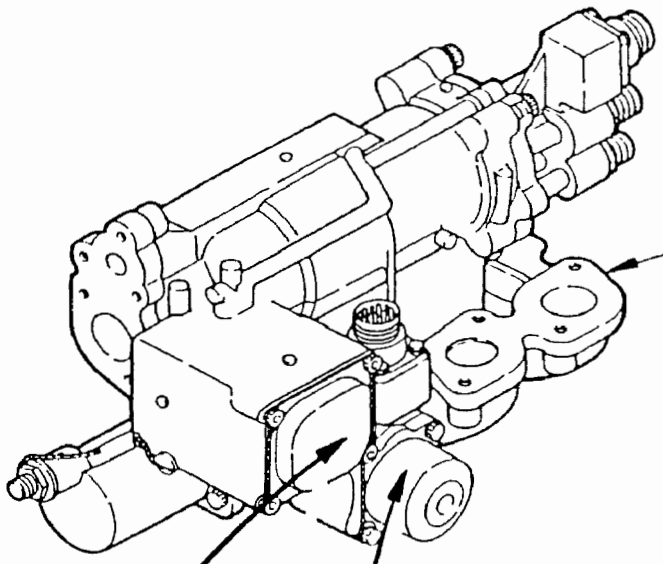


Location of the Cap Seal and Solenoid Assembly (Additional, Old and New Part Configuration)
Figure 1

13298-73-003



Installation of Cap Seal
Figure 2



FUEL DIVERTER AND
RETURN VALVE (Ref)

MARK THE NEW PN 2411700-25 WITH
METAL STAMPS BY HAND PRESS.

VALVE DIVERTER, FUEL
PN 2411700-
SERNO
MFD BY TEIJIN SEIKI CO.,LTD.

COPY THE EXISTING SERIAL NUMBER.

PN 2411793 NAME PLATE (1 Off)

IHI
VALVE FUEL-DIVERT & RETURN
IAE P/N
IHI P/N
SERIAL No.
MOD No.
MANUFACTURED BY ISHIKAWAJIMA HARIMA HEAVY INDUSTRIES CO. LTD AND TEIJIN SEIKI CO LTD JAPAN

MARK THE NEW PN 5L0060 WITH
METAL STAMPS BY HAND PRESS

MARK THE NEW PN 13298G13 WITH
METAL STAMPS BY HAND PRESS

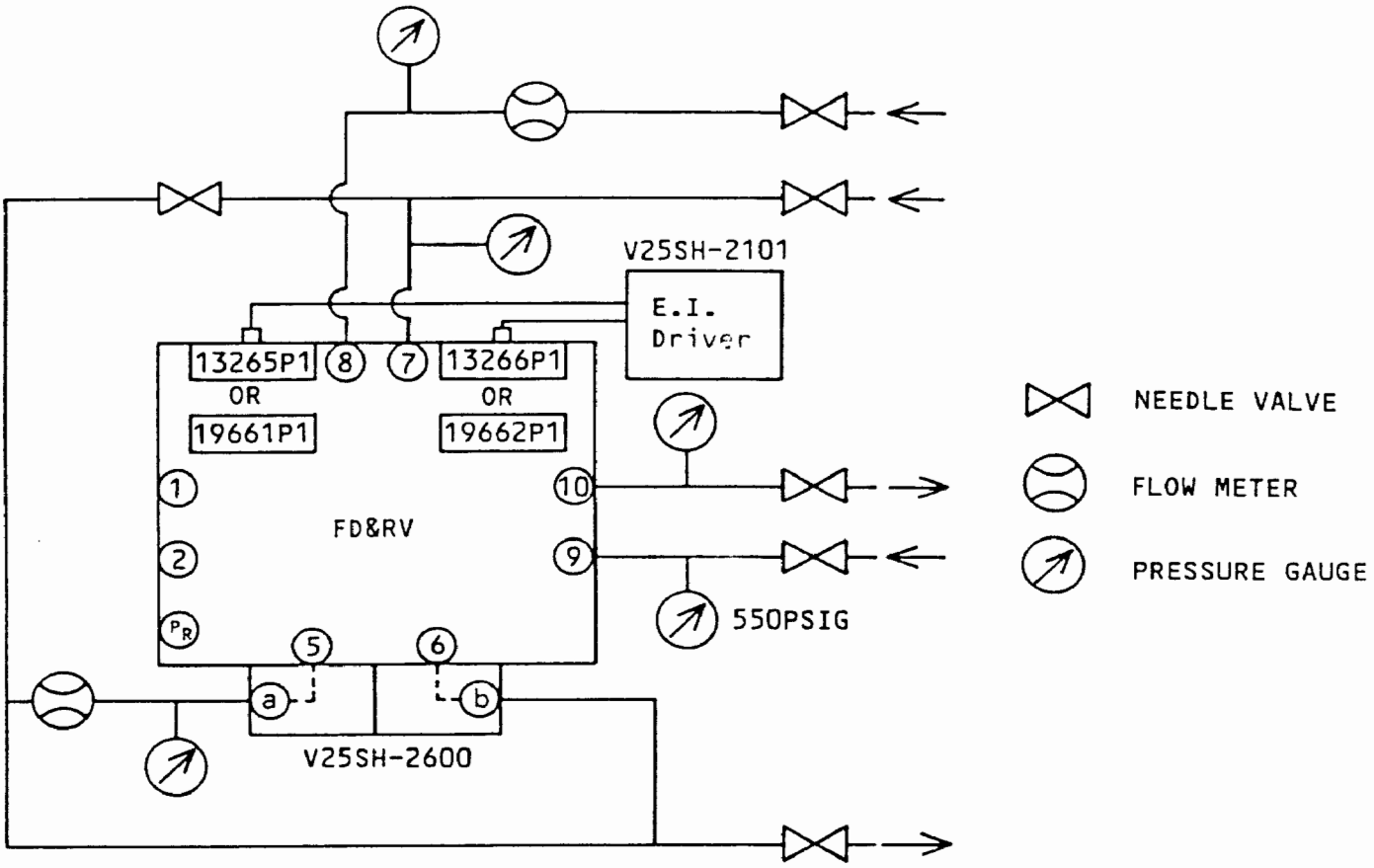
COPY THE EXISTING SERIAL NUMBER

UNNECESSARY TO IDENTIFY

REMOVE AND DISCARD OLD PLATE AND
INSTALL THE NEW PN 13713P1 NAME PLATE (1 off)

Reidentification of Fuel Diverter and Return Valve
Figure 3

OPERATION	SYSTEM OPERATION MODE			
	1	3	4	5
TORQUE MOTOR CURRENT (TMC)	+40 - +50 mA	-40 - -50 mA	+40 - +50 mA	-40 - -50 mA
LVDT OUTPUT RATIO (R)	MAX. 0.52	0.050 TO 0.054	MAX. 0.52	0.050 TO 0.054
SOLENOID	ON	ON	OFF	OFF
SOLENOID VOLTAGE	28 V	28 V	____	____



RESPONSE TIME TEST SETUP

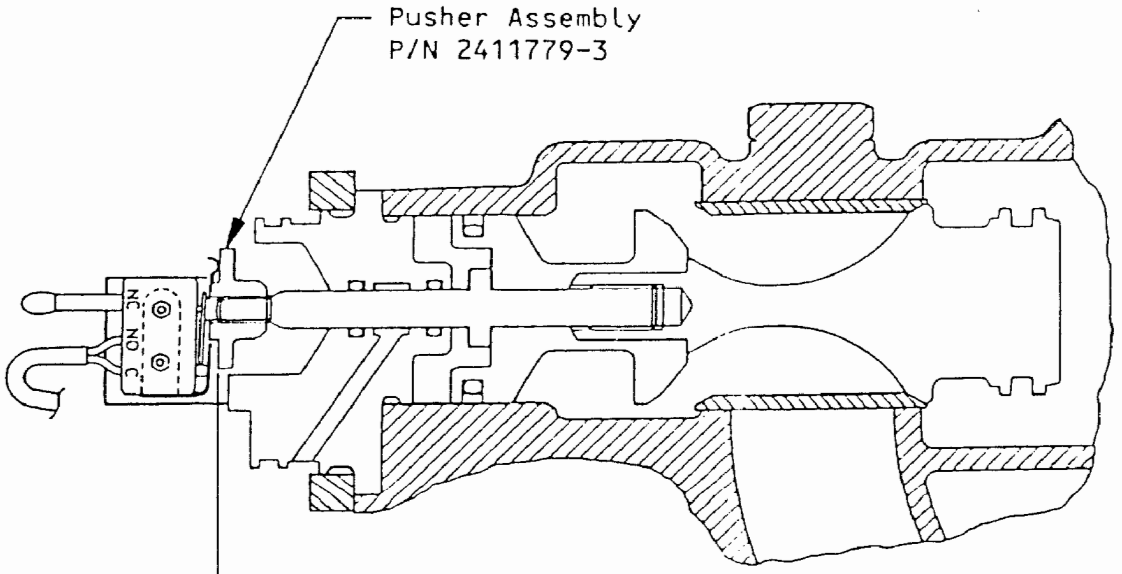
SETTING	FLOW AT P8	P5 (PSIG)	P7 (PSIG)	P8 (PSIG)	P10 (PSIG)	ACCURACY
MODE 5	10168 PPH	170	213	219	221	±5 PSIG
MODE 3	10168 PPH	200	201	203	205	±500PPH

TEST CONDITION 1

SETTING	FLOW AT P8	P5 (PSIG)	P7 (PSIG)	P8 (PSIG)	P10 (PSIG)	ACCURACY
MODE 5	10513 PPH	180	229	235	237	±5 PSIG
MODE 3	10513 PPH	215	216	218	220	±500PPH

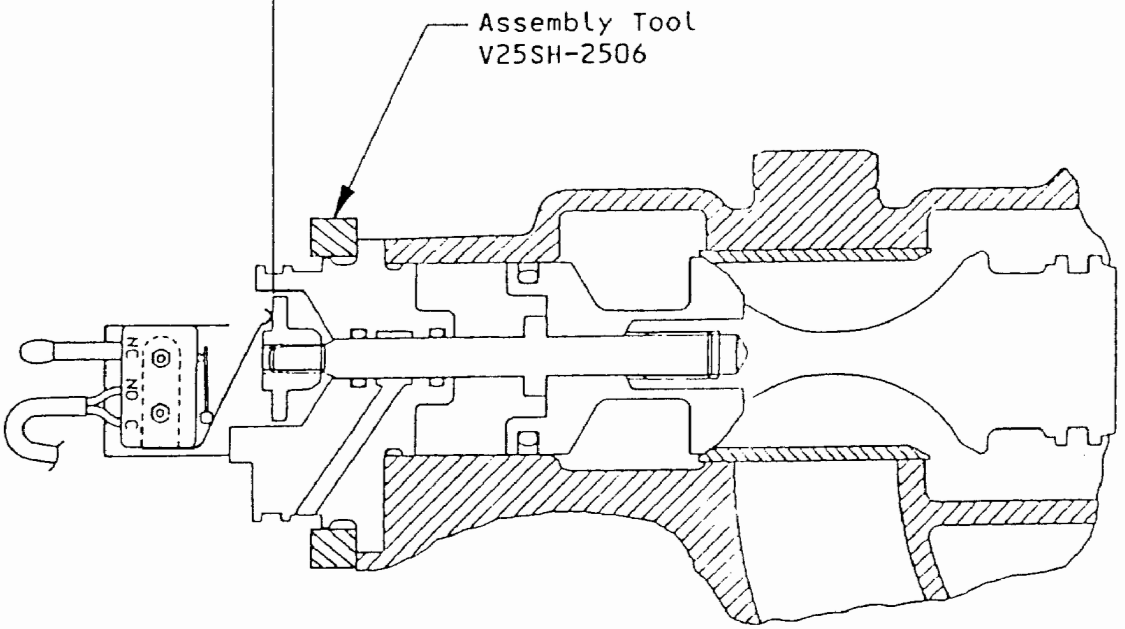
TEST CONDITION 2

Response Time of the FDV - Test Condition
Figure 5



Condition : 1. Solenoid de-energized.

A
(FDV Full Stroke)



Condition : 1. Supply fuel pressure (550 psig) to port 9.
2. Solenoid energized.

Measurement of FDV Full Stroke
Figure 6

3. Material Information

Applicability: For each IHI 13298G12, (IAE PN 5L0055), FDRV. That is installed on V2500-A1 engine and the spare FDRV to incorporate this Bulletin.

A. Kits associated with this Bulletin:

None

B. Parts affected by this bulletin:

New Part No. (IPL No.)	Qty	Unit Price	Lead Time	Keyword	Old Part No.	Instruction/ Disposition
13298G13 (1-1)	1	---	---	Valve, Fuel Dvt & Return	13298G12	(A) (B) (S1) (1D)
2411700-25 (3-1)	1	---	---	Valve, Fuel Diverter	2411700-21	(S1) (1D)
2411770 (3-243)	1	*	90 days	Cap Seal	None	(A)
2411760-9 (3-255)	1	*	90 days	Solenoid Assembly	2411760-7	(A) (B) (S1)
13266P1 or 19662P1 (1-30)	1	*	90 days	Electrical Connector	13266P1 or 19662P1	(A) (S1)
M25988/1-013 or M25988/2-013 (3-240)	1	*	90 days	Packing	M25988/1-013 or M25988/2-013	(A) (S1)
M25988/1-014 or M25988/2-014 (3-245)	1	*	90 days	Packing	M25988/1-014 or M25988/2-014	(A) (S1)
M25988/1-119 or M25988/2-119 (3-250)	1	*	90 days	Packing	M25988/1-119 or M25988/2-119	(A) (S1)
2411793	1	*	90 days	Plate, name	2411793	(A) (S1)
13713P1 (1-20)	1	*	90 days	Plate, name	13713P1	(A) (S1)

C. Instruction/Disposition Code Statements:

(A) New part will be available for sale.
(B) Old part will no longer be available for sale.
(S1) Old and new part are freely and fully interchangeable, both physically and functionally.
(1D) Old part can be reworked and reidentified to a new part number.

NOTE: * Contact the IHI's Product Support Dept., Customer Support Manager V2500 for information concerning prices.

IHI ISHIKAWAJIMA-HARIMA HEAVY INDUSTRIES CO., LTD.

SERVICE BULLETIN

No. 17300-73-003

ENGINE - FUEL AND CONTROL - NEW FUEL DIVERTER AND RETURN VALVE ASSEMBLY WITH NEW CAP SEAL

1. Planning Information

A. Effectivity

This Service Bulletin is applicable to the Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) Fuel Diverter and Return Valve (FDRV) Part Number 17300G05 (IAE Part Number 5L0056) installed on the IAE V2500-A5/D5 engines and the spare FDRV Part Number 17300G05 (IAE Part number 5L0056).

(1) All part number 17300G05 (IAE part number 5L0056) for V2500-A5 and D5 engines.

B. Reason

(1) Condition

Wear occurrence have been observed on packing of solenoid valve in the Fuel Diverter Valve (FDV).

(2) Background

Due to wear in the FDV solenoid valve packing the FDV can not operate correctly under solenoid de-energized condition.
This condition causes fuel leaks.

(3) Objective

(a) A cap seal has been introduced which will prevent the packing from excessive wear.

(b) Incorporation of this SB is designed to improve unit reliability.

C. Description

(1) A cap seal has been introduced to prevent excessive wear of the packing.

(2) Incorporation of this SB is designed to improve unit reliability.

D. Compliance

Category Code 5

Accomplish when the engine is disassembled sufficiently to afford access to the affected subassembly (i.e. module, accessories, components, build groups) and to all affected spare subassmblies.

E. Approval

The part number changes described in this bulletin have been shown to comply with the applicable Federal Aviation Regulation and are FAA-APPROVED for Engine Model Listed.

F. Manpower

Approximately Forty (40) man hours per unit.

G. Material - Price and Availability

(1) Option 1: Operators who wish to have the modification accomplished by IHI.

Accomplishment of this Service Bulletin by IHI will be completed based on IHI standard terms, and prices of sale pertaining to commercial contact IHI's Product Support Dept., Customer Support Manager V2500. for information concerning firm quotation.

(2) Option 2: Operators who wish to accomplish the modification in the shop by installing cap seal on packing.

New parts required to accomplish this Service Bulletin are listed in section 3. Material Information and are available at prices and lead times indicated. An order for spare parts should be addressed to:

Ishikawajima-Harima Heavy Industries Co,. Ltd.
229, Tonogaya, Mizuho-Machi, Nishitama-Gun
Tokyo, 190-12 Japan.
(For the attention of the Product Support Department,
Customer Support Manager V2500).

Fax: (0425)68-7104
Telephone: (0425)68-7107

H. Tooling - Price and Availability

(1) Special tools are required to accomplish this Service Bulletin as follows:

Assembly Tool : V25SH-2513

NOTE: 1. Equivalent substitutes may be used.
2. Contact IHI's V2500 Product Support Dept., Customer Support Manager for information concerning prices.

I. Weight and Balance

Not affected.

J. Electrical Load Data

Not affected.

K. Reference

(1) IAE Service Bulletin No. V2500-ENG-73-0054.

(2) IHI Component Maintenance Manual, 73-18-52, Fuel Diverter and Return Valve, Part Number 17300 series.

L. Other Publications Affected

(1) IHI Component Maintenance Manual, 73-18-52, Fuel Diverter and Return Valve, Part Number 17300 series.

2. Accomplishment Instruction

A. Assembly Instruction

(1) Option 1: Operators who wish to have the modification accomplished by IHI.

(a) Return the part number 17300G05 (IAE part number 5L0056) FDRV for modification and reidentification to:

Ishikawajima-Harima Heavy Industries Co,. Ltd.
229, Tonogaya, Mizuho-Machi, Nishitama-Gun
Tokyo, 190-12 Japan.
(For the attention of the Product Support Department,
Customer Support Manager V2500).

Fax: (0425) 68-7104
Telephone: (0425) 68-7107

NOTE: All part number 17300G05 FDRV's which accomplished the modification by IHI will be reidentified with the following on the 2411793, existing name plates:

(IAE P/N) 5L0061
(IHI P/N) 17300G06

NOTE: All Part number 2411700-23 FDV's, subassembly of FDRV's which accomplished the modification by IHI will be reidentified with the following on the 2411793, existing name plates:

(Teijin Seiki P/N) 2411700-27

(2) Option 2: Operators who wish to accomplish the modification in the shop by installing cap seal on packing.

NOTE: After assembling FDRV, do functional test as soon as possible (within three hours is recommended).

(a) Disassemble the 17300G05, FDRV and the 13713P1, name plate by the approved procedures in Reference (2), Disassembly.

(b) Remove the 13266P1, electrical connector and disconnect the leadwire by the approved procedures in Reference (2), Disassembly, Paragraph 2. B.

(c) Remove the 2411760-9, solenoid assembly by the approved procedures in Reference (2), Disassembly, Paragraph 3. E.

(d) Do a check of wear in the FDV solenoid housing by the approved procedures in Reference (2), Repair 04, and an allowable limit of wear as follows;

Maximum Wear : Width x Depth = 1,5mm x 0,095mm
Position of the wear : 23,5 ± 2,0mm from the port
* Any housing having small wear dimensions than above will not require rework and may be used as is.

(e) Remove the M25988/1-119, M25988/1-014 and M25988/1-013, installed packing on solenoid assembly (Refer to Figure 1).

(f) Install the M25988/1-014, packing on to the solenoid assembly.

(g) Install the 2411770, cap seal on the M25988/1-014, packing using V25SH-2513, assembly tool (Refer to Figure 2).

(h) Do a cap seal sizing to solenoid assembly using V25SH-2513, assembly tool (Refer to Figure 2).

(i) Cool the solenoid assembly for thirty (30) minutes using cooling chamber. Chamber temperature should be minus 40 to minus 50 degrees centigrade.

(j) Install the M25988/1-119, packing on to the solenoid assembly.

(k) Install the M25988/1-013, packing on to the solenoid assembly.

(l) Install the solenoid assembly by the approved procedures in Reference (2), Assembly, Paragraph 2. I.

(m) Install the 13266P1 or 19662P1, electrical connector with leadwire by the approved procedures in Reference (2), Assembly, Paragraph 3. G.

(n) Mark the new part number on the new 13713P1, name plate and identify as follows:
Use the metal stamps by hand press (Refer to Figure 3).

(IAE P/N) 5L0061
(IHI P/N) 17300G06

(o) Assemble the FDRV and installation of the name plate by the approved procedures in Reference (2), Assembly.

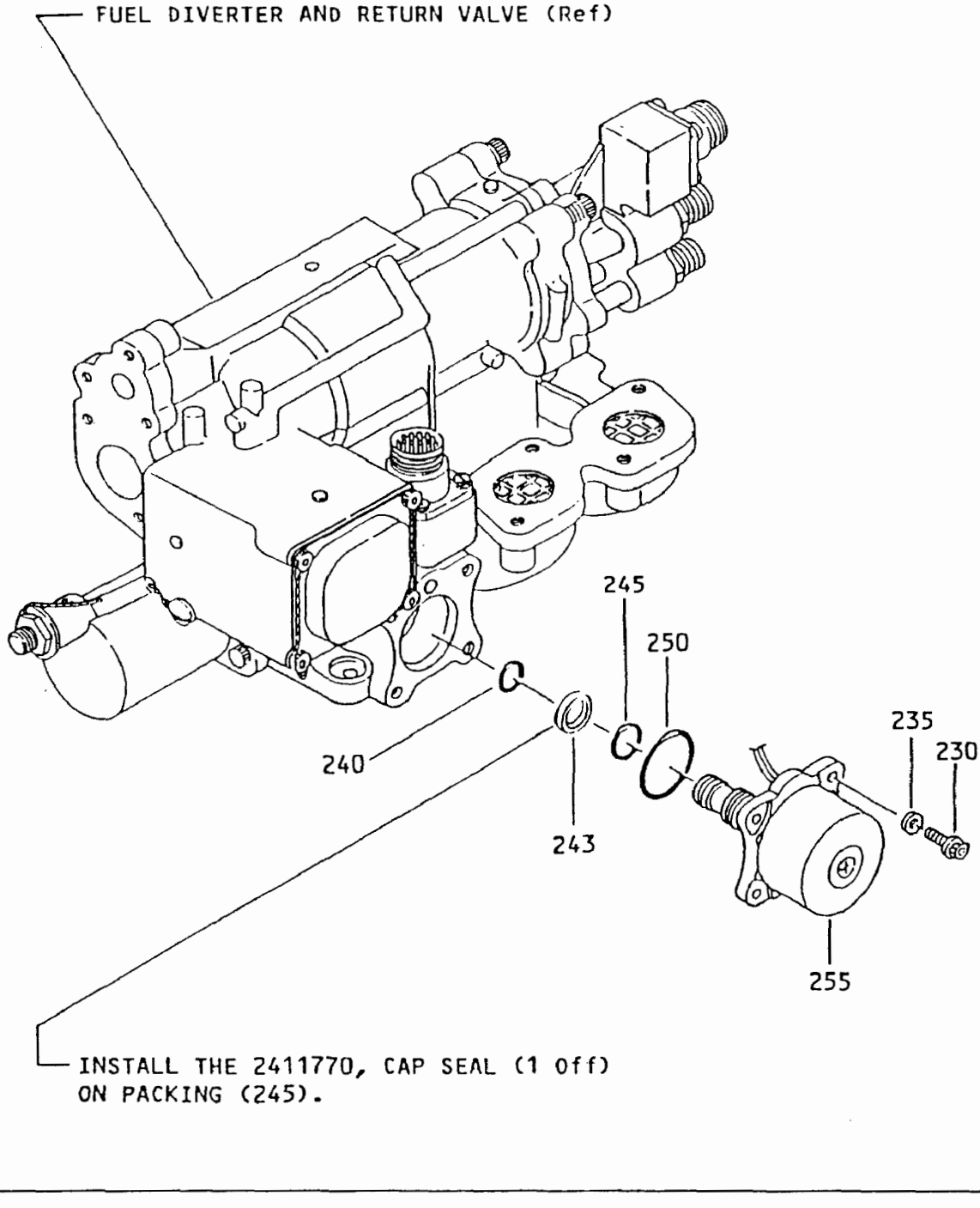
(p) Identify with the new part number adjacent to old part number on the 2411793, existing name plate.
Use the vibro peen method (Refer to Figure 3).

(q) Do a functional test by approved procedures in Reference (2), Testing and Fault Isolation, Paragraph 3. C, 3. D, 3. G.

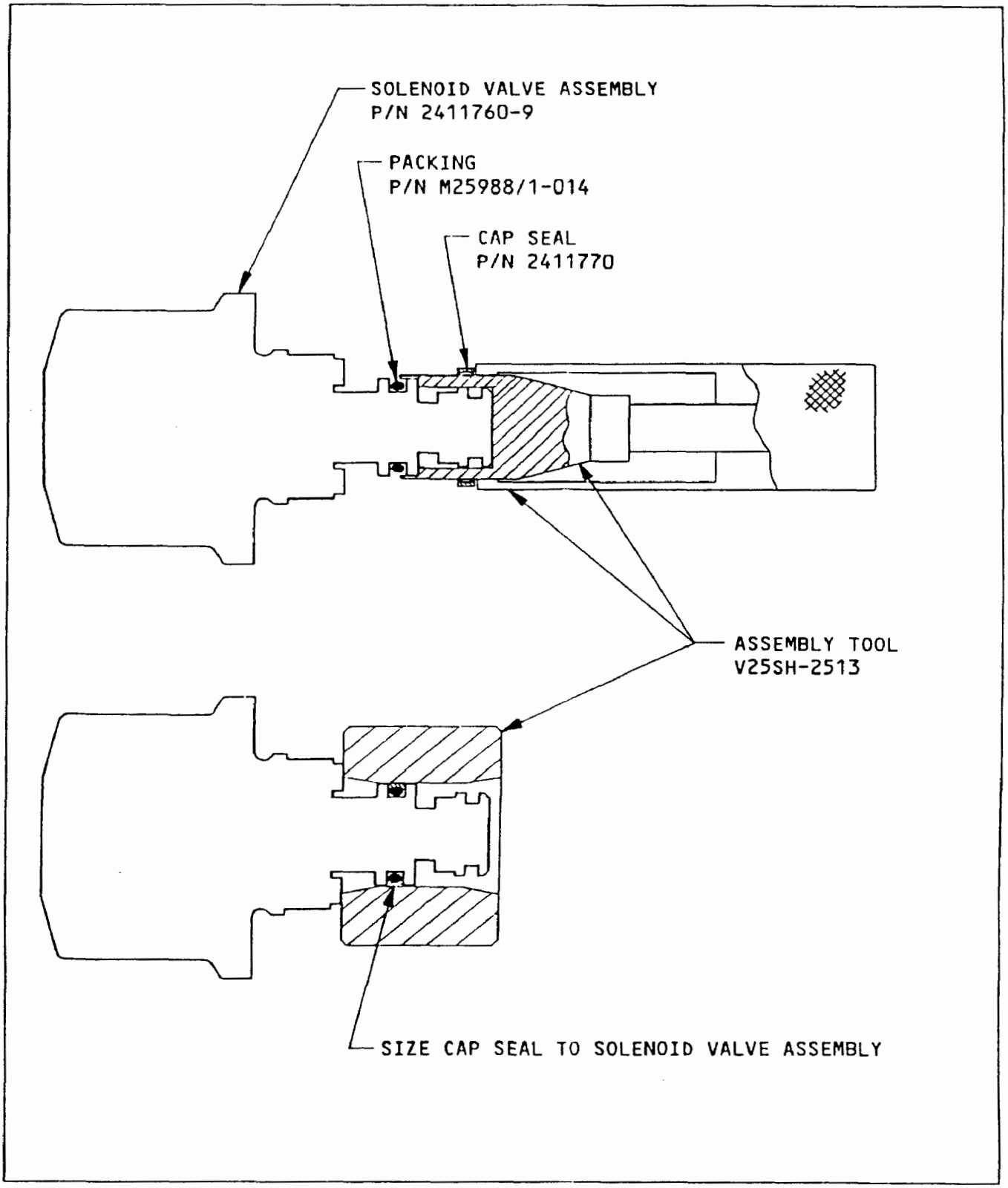
B. Recording Instruction

(1) A record of accomplishment in necessary.

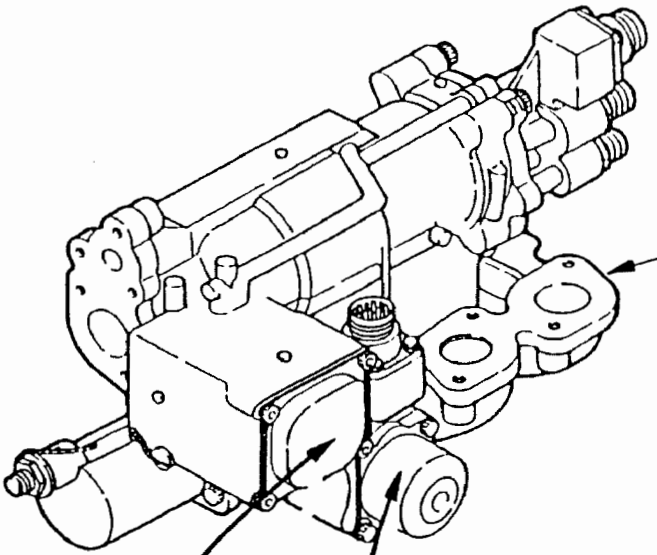
NOTE: ITEM NUMBERS REFER TO IPL FIGURE 3 IN COMPONENT MAINTENANCE MANUAL, 73-18-52.



Location of the Cap Seal
(Additional New Part Configuration)
Figure 1



Installation of Cap Seal
Figure 2

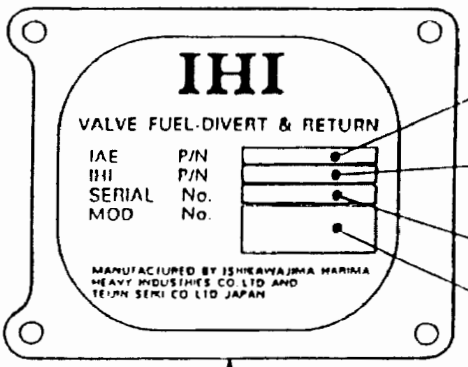


FUEL DIVERTER AND
RETURN VALVE (Ref)

VALVE DIVERTER, FUEL
PN 2411700-[ ]
SERNO [ ]
MFD BY TEIJIN SEIKI CO.,LTD.

MARK THE NEW PN 2411700-27 WITH VIBRO PEEN ADJACENT TO THE EXISTING PN 2411700-23. MAKE TWO LINES (======) ON EXISTING PN TO ERASE IT.

PN 2411793 NAME PLATE (1 Off)



MARK THE NEW PN 5L0061 WITH METAL STAMPS BY HAND PRESS

MARK THE NEW PN 17300G06 WITH METAL STAMPS BY HAND PRESS

COPY THE EXISTING SERIAL NUMBER

UNNECESSARY TO IDENTIFY

REMOVE AND DISCARD OLD PLATE AND
INSTALL THE NEW PN 13713P1 NAME PLATE (1 off)

Reidentification of Fuel Diverter and Return Valve
Figure 3

3. Material Information

Applicability: For each IHI 17300G05, (IAE PN 5L0056), FDRV. That is installed on V2500-A5/D5 engine and the spare FDRV to incorporate this Bulletin.

A. Kits associated with this Bulletin:

None

B. Parts affected by this bulletin:

New Part No. (IPL No.)	Qty	Unit Price	Lead Time	Keyword	Old Part No.	Instruction/ Disposition
17300G06 (1-1)	1	----	----	Valve, Fuel Dvt & Return	17300G05	(A) (B) (S1) (1D)
2411700-27 (3-1)	1	----	----	Valve, Fuel Diverter	2411700-23	(S1) (1D)
2411770 (3-243)	1	*	90 days	Cap Seal	None	(A)
13266P1 or 19662P1 (1-30)	1	*	90 days	Electrical Connector	13266P1 or 19662P1	(A) (S1)
M25988/1-013 or M25988/2-013 (3-240)	1	*	90 days	Packing	M25988/1-119 or M25988/2-119	(A) (S1)
M25988/1-014 or M25988/2-014 (3-245)	1	*	90 days	Packing	M25988/1-014 or M25988/2-014	(A) (S1)
M25988/1-119 or M25988/2-119 (3-250)	1	*	90 days	Packing	M25988/1-119 or M25988/2-119	(A) (S1)
2411793	1	*	90 days	Plate, name	2411793	(A) (S1)
13713P1	1	*	90 days	Plate, name	13713P1	(A) (S1)

C. Instruction/Disposition Code Statements:

(A) New part will be available for sale.
(B) Old part is no longer available for sale.
(S1) Old and new part are freely and fully interchangeable, both physically and functionally.
(1D) Old part can be reworked and reidentified to a new part number.

NOTE: * Contact the IHI's Product Support Dept. Customer Support Manager V2500 for information concerning prices.