



AIR - INCORPORATE A NON-RETURN VALVE INTO THE LPC BLEED-MASTER ACTUATOR LP RETURN LINE  
- CATEGORY CODE 4 - MOD.ENG-75-0019

1. Planning Information

A. Effectivity

- (1) Aircraft: Airbus A320
- (2) All Dowty & Smiths Industries Controls Limited, LPC Bleed-Master Actuators Type No. 1666 Mk2 (IAE Part Number 5L0023) installed on V2500-A1 Engines, prior to serial Number V0166 and the spare LPC Bleed-Master Actuators Type No. 1666 Mk2 (IAE Part Number 5L0023).

B. Reason

(1) Condition

During priming of the fuel system, contamination may enter the LPC Bleed-Master Actuator. This may cause a deviation in the schedule of the actuator from the schedule commanded by the Electronic Engine Control.

(2) Background

There have been instances of this condition occurring during production engine test operation. An investigation has shown a need for line check valve into the LP return line to prevent reverse flow of the fuel with contaminants into the LPC Bleed-Master Actuator servo mechanism.

(3) Objective

The changes in configuration recommended in this Service Bulletin are designed to improve engine reliability.

(4) Substantiation

The changes introduced by this Service Bulletin have been subjected to functional testing, on a test engine and rig testing by the vendor. The results obtained were satisfactory.

(5) Effect of Bulletin on workshop procedure:

**V2500-ENG-75-0019**



## SERVICE BULLETIN

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

## (6) Supplemental Information

None

C. Description

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

(a) A Union Adaptor which is fitted in the LP return port of the LPC Bleed-Master Actuator has been changed with a Non-return Valve A/O (See Figure 1).

(b) Existing Part Number of LPC Bleed-Master Actuator has been changed to a new Part Number (See Figure 1).

(2) Existing LPC Bleed-Master Actuator can be reworked and reidentified to a new Part Number.

(3) New PN 5L0032, LPC Bleed-Master Actuator and new PN 1666-3003, Non-return Valve A/O will be available for future replacement purposes.

(4) The following Service Bulletin must be incorporated in conjunction with this Service Bulletin:

Dowty Fuel Systems Service Bulletin No. 1666-75-001 (DFS MOD. D. TV. 028) (Refer to 1.K. (1)).

D. Approval

The Part Number changes and/or part modifications described in Sections 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Model listed.

E. Compliance

Category Code 4

Accomplish at the first visit of an engine or a module to a maintenance base capable of compliance with the accomplishment instructions regardless of the planned maintenance action or the reason for engine removal.

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F. Manpower

Estimated Manhours to incorporate the full intent of this Bulletin:

Venue	Estimated Manhours
(1) In service	TOTAL 1 hour 2 minutes
(a) To gain access	17 minutes
(i) Open fan cowl doors	8 minutes
(ii) Open thrust reversers	9 minutes
(b) To embody	30 minutes
(i) Remove L.P.C. bleed master actuator (P.N. 5L0023)	10 minutes
(ii) Install L.P.C. bleed master actuator (P.N. 5L0032)	20 minutes
(c) Return engine to flyable status	15 minutes
(i) Close thrust reversers	7 minutes
(ii) Close fan cowls doors	8 minutes
(2) At Overhaul .. .. .	Not applicable

G. Material - Price and Availability

- (1) Modification Kit D.TV.028 is required and can be procured directly from the vendor:

Dowty Fuel Systems  
Arle Court  
Cheltenham  
Gloucestershire  
GL51 0TP  
ENGLAND

Telephone: 0242 221144, Telefacsimile: 0242 533340

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- (2) See 3. 'Material Information' for prices and availability of future spares.

#### H. Tooling - Price and Availability

Special tools are not required to accomplish this Service Bulletin.

#### I. Weight and Balance

- (1) Weight change .. .. Negligeable
- (2) Moment arm .. .. No effect
- (3) Datum .. .. Engine front centerline  
(Power Plant Section (PPS) 100)

#### J. Electrical Load Data

This Service Bulletin has no effect on the aircraft electrical load.

#### K. References

- (1) Internal Reference No.

EC90VJ049

- (2) Other References

The Vendor Service Bulletin, Dowty Fuel Systems Service Bulletin No.1666-75-001 (DFS MOD.D.TV.028), 'Engine Compressor Control - LPC Bleed-Master Actuator - Introduction of Return Port Non-return Valve'.

V2500 Powerplant Illustrated Parts Catalog, 73-11-49 and 75-31-42

A320 Aircraft Maintenance Manual, 75-31-42, Actuator - Master, LP Compressor Bleed - Removal/Installation, TASK 75-31-42-000-010 and TASK 75-31-42-400-010.

Dowty and Smiths Industries Control Limited, Component Maintenance Manual, 75-31-42.

V2500 Overhaul Processes and Consumable Index.

#### L. Other Publications Affected

- (1) V2500 Engine Illustrated Parts Catalog, 75-31-42
- (2) V2500 Power Plant Illustrated Parts Catalog, 75-31-42.



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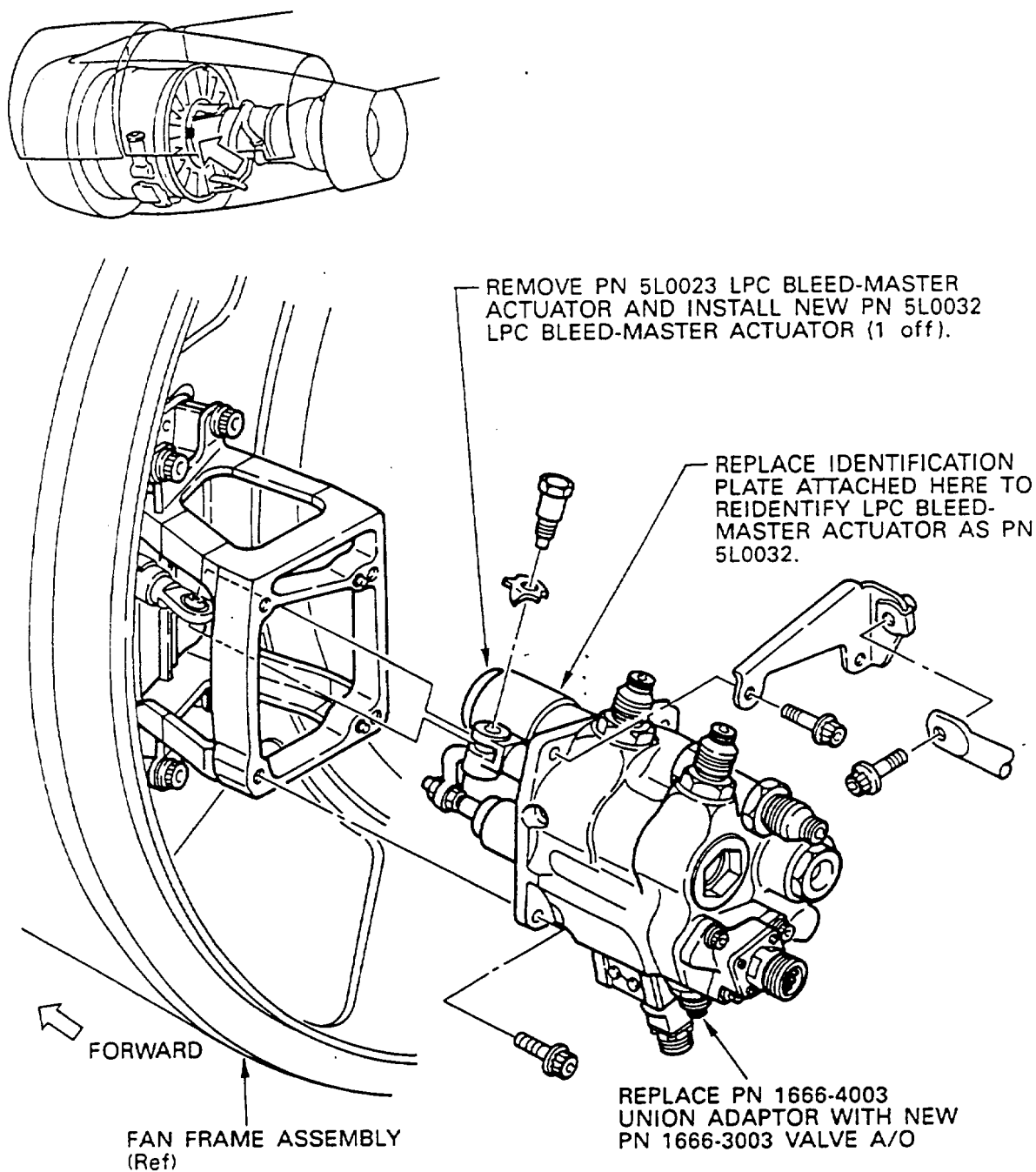
- (3) Dowty and Smiths Industries Controls Limited, Component Maintenance Manual, 75-31-42.

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Location of the LPC Bleed-Master Actuator  
Fig.1

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## 2. Accomplishment Instructions

### A. Pre-requisite Instructions

- (1) Remove the existing PN 5L0023, LPC Bleed-Master Actuator, from the engine by the approved procedure in the Aircraft Maintenance Manual, 75-31-42, Removal/Installation, TASK 75-31-42-000-010. (Refer to 1.K.(3)).

NOTE: For uninstalled LPC Bleed-Master Actuator to the engine, this step is not necessary.

### B. Removal Instructions

- (1) Do a modification on PN 5L0023, LPC Bleed-Master Actuator and reidentify as PN 5L0032, LPC Bleed-Master Actuator by the instructions given in the vendor Service Bulletin, Dowty Fuel Systems S.B. No.1666-75-001 (DFS MOD.D.TV.028). (Refer to 1.K.(1)).

### C. Post-requisite Instructions

- (1) Install the new PN 5L0032, LPC Bleed-Master Actuator, to the engine by the approved procedures in the Aircraft Maintenance Manual, 75-31-42, Removal/Installation, TASK 75-31-42-400-010. (Refer to 1.K.(3)).

NOTE: For uninstalled LPC Bleed-Master Actuator to the engine, this step is not necessary.

### D. Recording Instructions

- (1) A record of accomplishment is necessary.



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3. Material Information

Applicability: For each Dowty and Smiths Industries Controls Limited, LPC Bleed-Master Actuator Type No.1666 Mk2 (IAE Part Number 5L0023) installed on V2500-A1 Engine and the spare LPC Bleed-Master Actuator to incorporate this Bulletin.

A. Kits associated with this Bulletin:

None

B. Parts affected by this Bulletin:

New Part No. (ATA No.)	Qty	Est'd Unit Price (\$)	Keyword	Old Part No. (IPC No.)	Instructions Disposition
5L0032 (75-31-42)	1		Actuator Master-LPC Bleed	5L0023 (01-100)	(A)(B)(S1) (1D)
1666-3003 (75-31-42)	1		Valve, assy of	1666-4003 (01-141)	(A)(C)(S1) (2D)

C. Instructions/Disposition Code Statements

- (A) New part is currently available for sale.
- (B) Old part will no longer be available for sale.
- (C) Old part will continue to be supplied on other applications.
- (S1) Old and new part is freely and fully interchangeable, both physically and functionally.
- (1D) Old part can be reworked and reidentified to the new part number.
- (2D) Old part can be used up on other applications.

D. Expendables required to incorporate this Bulletin.

Part No.	ATA/IPC No.	Qty	Keyword
MS9967-012	73-11-49 12-096	2	Ring, Sealing (Estimated Unit Price \$1.89)
MS9967-011	73-11-49 14-096	2	Ring, Sealing (Estimated Unit Price \$2.64)
MS9967-011	73-11-49 15-096	2	Ring, Sealing
MS9967-011	73-11-49 16-096	2	Ring, Sealing
AS44692	75-31-42 01-115	1	Washer, Key (Estimated Unit Price \$2.81)

NOTE: For uninstalled LPC BleedMaster Actuator to the engine, this paragraph is not applicable.

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E. Consumables required to incorporate this Bulletin.

CoMat 01-124, Cleaning Fluid (Isopropyl Alcohol)

CoMat 10-039, Lubricant (Engine Oil)

CoMat 02-147, Lockwire

NOTE: For uninstalled actuator stator vane to the engine, this paragraph is not applicable.

NOTE: The estimated 1991 unit prices shown are provided for planning purposes only and do not constitute a firm quotation. Consult the IAE Price Catalog or contact IAE's Spare Parts Sales Department for information concerning firm prices.



# Dowty Fuel Systems

## SERVICE BULLETIN

1666-75-001

ENGINE COMPRESSOR CONTROL - LPC BLEED -  
MASTER ACTUATOR - INTRODUCTION OF  
RETURN PORT NON-RETURN VALVE

(IAE SB V2500-ENG-75-0019)  
(DFS MOD.D.TV.028)

1. Planning Information

A. Effectivity

- (1) Airbus - A320.
- (2) Engine: V2500-A1.
- (3) LPC Bleed Master Actuators Type No. 1666 Mk2,  
prior to Serial Number 1666300.

B. Reason

- (1) Condition.

It has been noted that a reversal of the LP fuel return flow may take place during fuel system priming, resulting in possible contamination of the LPC Bleed-Master Actuator.

- (2) Background.

The LP return line is currently unprotected from reverse flow and a number of units have been found contaminated as a result. The condition was identified during flight certification testing on the engine.

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### (3) Objective.

Incorporation of the changes introduced by this Service Bulletin (Modification), are designed to protect the unit against fuel borne contamination.

### (4) Substantiation.

The changes introduced by this Service Bulletin (Modification), have been shown, by detailed engineering analysis to correct the condition.

### C. Description

- (1) The modification introduces a non-return valve into the unit LP return line to prevent reverse flow into the unit.

### D. Compliance

Category Code 4.

Accomplish at the first visit of an engine or module to a maintenance base capable of compliance with the accomplishment instructions regardless of the planned maintenance action or the reason for engine removal.

### E. Approval

Service Bulletin 1666-75-001 (Mod.D.TV.028), (IAE SB V2500-ENG-75-0019), was technically agreed by IAE on Nov. 27/90. The part number changes and/or part modifications described in this Bulletin have been shown to comply with the appropriate Federal Aviation Regulations and are FAA approved for those units listed in this bulletin.

### F. Manpower

- (1) 1.5 man hours are necessary to incorporate this Service Bulletin (Modification), at Engine Maintenance Level.
- (2) No additional man hours are necessary to incorporate this Service Bulletin (Modification), at Component Maintenance Level.

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### G. Material - Price and Availability

- (1) The following parts are required:

<u>Part No</u>	<u>Keyword</u>	<u>Qty</u>
1666-3003	Valve, Assy of	1
STD831-16	Ring, sealing	1
215-426	Plate, identification	1
215-410	Strap	1

- (2) For price and availability, see the supplement to this Bulletin.

### H. Tooling - Price and Availability

- (1) Additional Tools.

None.

- (2) Tools Made Redundant.

None.

### I. Weight and Balance

- (1) Weight change .... 0.21oz (6gm) increase
- (2) Moment arm ..... Not affected
- (3) Datum ..... Engine front mount centerline  
(Power Plant Station (PPS)100)

### J. References

- (1) Dowty and Smiths Industries Controls Limited,  
Component Maintenance Manual 75-31-42.
- (2) IAE Service Bulletin V2500-ENG-75-0019.
- (3) Dowty Fuel Systems Mod.D.TV.028.

### K. Other Publications Affected

Nil.

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### 2. Accomplishment Instructions

#### A. Remove the LPC Bleed-Master Actuator (Actuator), from the Engine

- (1) Remove the Actuator from the engine in accordance with IAE SB V2500-ENG-75-0019.
- (2) Take the Actuator to a clean environment for installation of the non-return valve.

#### B. Install the Non-Return Valve (Figure 1)

CAUTION: MAKE SURE THAT THE CONNECTION MARKED 'LP RETURN' IS CORRECTLY IDENTIFIED.

- (1) Loosen and remove the union adaptor (2-10) from the Actuator connection marked 'LP RETURN'; remove the sealing ring (2-20).
- (2) Install the new toroidal sealing ring STD831-16 (supplied with the Mod. kit), to the non-return valve assy. 1666-3003.
- (3) Assemble the non-return valve assy. 1666-3003 to the Actuator connection marked 'LP RETURN'; torque tighten the non-return valve assy. to 300 lbf.in. (34 Nm).
- (4) Release the strap (1-20) which secures the identification plate (1-30) and remove the strap and the identification plate; keep the identification plate but discard the strap.

#### C. Re-identify the Actuator

- (1) Get the new data plate 215-426 (supplied with the Mod. kit).
- (2) Refer to the information marked on the first identification plate (1-30) and mark the new identification plate as follows (use 3/32in. (2.5mm)) letter/number stamps with the data plate held on a flat surface):

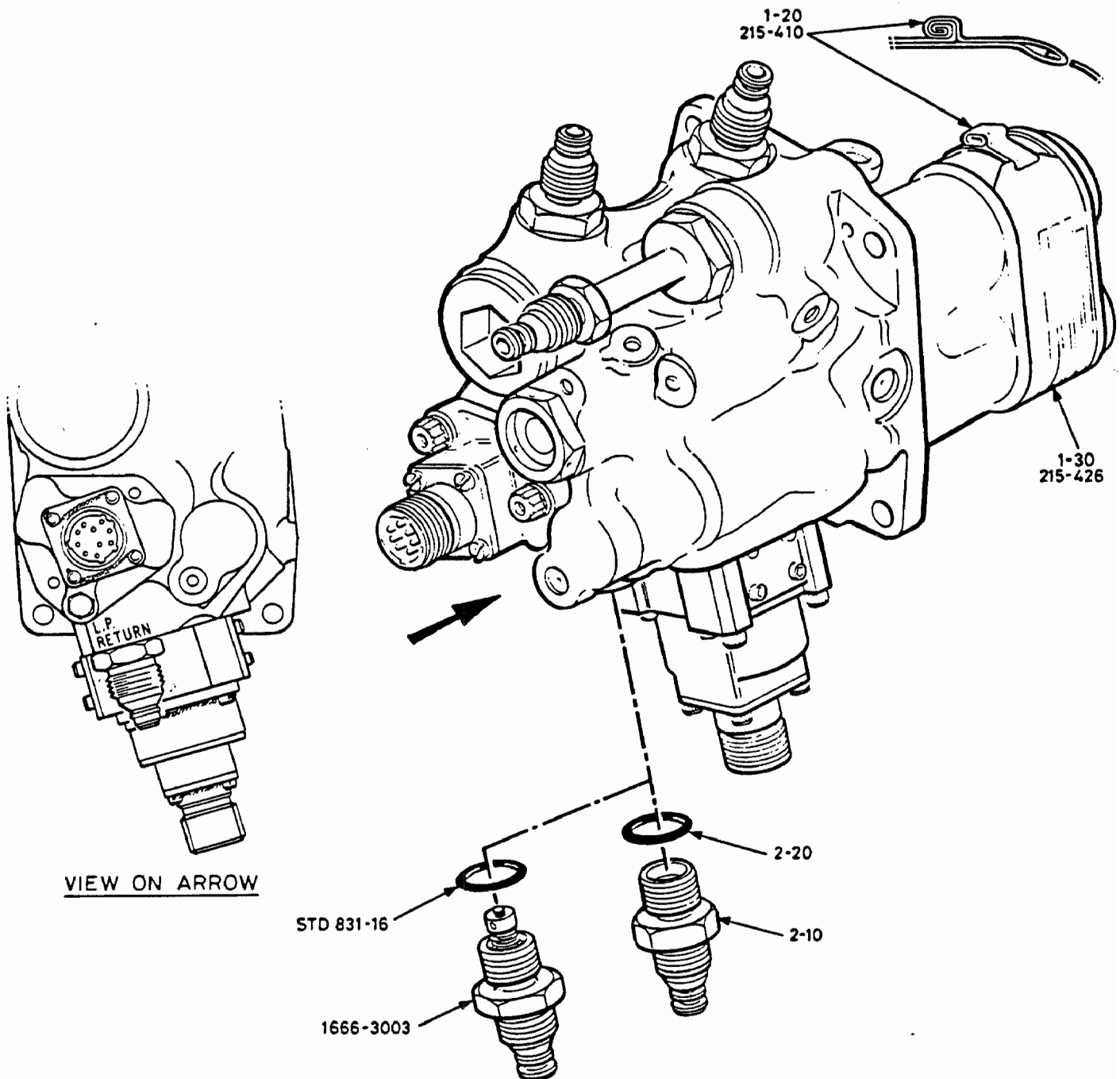
IAE No. - Mark 5L0032

TYPE No. - Mark 1666 Mk.3

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Assembling the Non-return Valve  
Figure 1

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SER. No. - Mark as on the first identification plate.

MOD. No. - Mark any numbers from the first plate plus D.TV.028

(3) Where possible, fill in the stamped letters/numbers with black paint and wipe away the surplus.

(4) Destroy the first identification plate.

D. Attach the Identification Plate to the Actuator  
(Figure 1)

(1) Bend the new identification plate 215-426 to the shape of the Actuator body; use the body as a former.

(2) Attach the identification plate to the Actuator; use the new strap 215-410. Loop the strap through both ends of the identification plate and bend the ends together as shown.

(3) Make sure that the identification plate is installed correctly on the Actuator.

E. Install the Actuator on the Engine

(1) Install the Actuator on the engine in accordance with IAE SB V2500-ENG-0019.

F. A Record of Accomplishment is Required

3. Material Information

A. Modification Kit

Modification kit D.TV.028 comprises the parts given in Para.C.

B. Parts to be Re-worked

None.



# Dowty Fuel Systems

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### C. New Production Parts

The following new parts will be available as spares:

<u>New Part No.</u>	<u>Qty</u>	<u>Keyword</u>	<u>Old Part No.</u>
1666-3003	1	Valve, Assy of	-
STD831-16	1	Ring, sealing	STD831-16
215-426	1	Plate, identification	215-426
215-410	1	Strap	215-410

### D. Redundant Parts

<u>IPL</u> <u>Fig/Item</u>	<u>New</u> <u>Part No.</u>	<u>Qty</u>	<u>Keyword</u>	<u>Old Part No.</u>
2-10	-	1	Adaptor, union	1666-4003

### E. Identification of Units

The type of equipment affected by this Mod. is:

<u>Unit</u>	<u>Type No.</u>
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LPC Bleed Master Actuator 1666 Mk.2(becomes 1666 Mk.3)
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# Dowty Fuel Systems

## SERVICE BULLETIN

1666-75-001 (SUPPLEMENT)

ENGINE COMPRESSOR CONTROL - LPC BLEED -  
MASTER ACTUATOR - INTRODUCTION OF  
RETURN PORT NON-RETURN VALVE

(IAE SB V2500-ENG-75-0019)  
(DFS MOD.D.TV.028)

1. Modification Kit

Modification kit D.TV.028 comprises the parts given in Para.2.

2. New Production Parts

<u>Part No</u>	<u>Qty per</u> <u>Unit</u>	<u>Keyword</u>	<u>Gross</u> <u>World List</u> <u>Price (\$)</u>	<u>Availability</u> <u>on Receipt</u> <u>of Order</u>
1666-3003	1	Valve, Assy of	\$1085.18	120 days
STD831-16	1	Ring, sealing	\$9.01	140 days
215-426	1	Plate, identification	\$14.16	90 days
215-410	1	Strap	\$6.85	90 days

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