

SERVICE BULLETIN

SERVICE BULLETIN NO: 27-015

REF NO: 169

MODIFICATION NO: 020346

ATA CHAPTER: 27

FLIGHT CONTROLS - FLAPS REPLACEMENT OF INBOARD AND OUTBOARD FLAP FLEXSHAFTS

1. Planning Information

A. Effectivity

- (1) All PC-12 and PC-12/45 aircraft from MSN 101 thru MSN 489 with inboard and/or outboard flap flexshafts 945.02.02.203 and 945.02.02.204 installed.
- (2) All flap flexshafts 945.02.02.203 and 945.02.02.204 held as spare.

B. Concurrent Requirements

None

C. Reason

(1) Problem

It is possible for moisture to go into the inboard and outboard flexshafts through the fittings of the protection hose. This can cause corrosion of the flexshafts.

(2) Solution

Install new flap flexshafts of improved design that give a better protection-hose seal.

D. Description

This Service Bulletin gives the instructions necessary to remove flap flexshafts 945.02.02.203 and 945.02.02.204 and install flap flexshafts 945.02.02.205 and 945.02.02.206.

It also gives instructions to send to PILATUS all flap flexshafts 945.02.02.203 and 945.02.02.204 held as spare.

Flexshafts 945.02.02.205 and 945.02.02.206 supersede flexshafts 945.02.02.203 and 945.02.02.204. Do not install (blue) flexshafts 945.02.02.203 and 945.02.02.204.

Revision A to this Service Bulletin changes the Manpower hours (Para. G).

E. Compliance

Mandatory.

Required at the next 100 Hour/Annual Inspection but not later than six calendar months after the effective date of this Service Bulletin.

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F. Approval

The technical aspects of this Service Bulletin have been approved by the Federal Office for Civil Aviation (FOCA) of Switzerland as an Airworthiness Directive.

PILATUS advises Operators/Owners to check with their local Airworthiness Authorities for any changes, local regulations or sanctions that may affect the embodiment of this Service Bulletin.

G. Manpower

	Total
Replacement of the Left Outboard Flexshaft	1.0
Replacement of the Right Outboard Flexshaft	1.0
Replacement of the Left Inboard Flexshaft	2.0
Replacement of the Right Inboard Flexshaft	2.0
Functional Test of Flap System	2.0
TOTAL MAN-HOURS TO REPLACE ALL FLEXSHAFTS	8.0

NOTE: Man-hours figures do not include the time required to cure sealants and adhesives.

H. Weight and Balance

(1) Weight Change

Not affected.

(2) Moment Change

Not affected.

I. Electrical Load Data

Not changed.

J. Software

Not changed.

K. References

Aircraft Maintenance Manual (AMM), 06-20-00, 25-21-01, 25-22-01, 25-21-04, 25-22-04, 27-50-00 and 27-50-02.

L. Publications Affected

AMM, 05-10-10 and 27-50-02.

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Illustrated Parts Catalog, 27-50-00.

M. Interchangeability of Parts

Pre and Post SB 27-015 (blue) flexshafts are not interchangeable.

2. Material Information

A. Material - Price and Availability

Operators should send orders for flexshafts, to their Authorized Pilatus Service Center, or to:

PILATUS AIRCRAFT LTD.,
CUSTOMER LIAISON MANAGER,
CH-6371 STANS,
SWITZERLAND

General Aviation:
Tel : + 41 41 619 6319
Fax: + 41 41 619 6224
eMail: asommer@pilatus-aircraft.com

Government:
Tel : + 41 41 619 6509
Fax. + 41 41 619 6224
eMail: rpaterson@pilatus-aircraft.com

PILATUS BUSINESS AIRCRAFT LTD.,
PRODUCT SUPPORT DEPARTMENT
11755 AIRPORT WAY
BROOMFIELD, CO 80021.
UNITED STATES OF AMERICA

Tel : 303 465 9099
Fax: 303 465 6040
eMail: Productsupport@PilBal.com

PILATUS AUSTRALIA (Pty.) LTD.,
PO BOX 732
MARLESTON SA 5033
AUSTRALIA

Tel : (08) 8234 4433
Fax: (08) 8234 4499
Free Call: 1800 445 007
eMail: info@pilatus.com.au

B. Material Necessary for Each Aircraft

(1) Material to be Procured

The quantities shown are sufficient to replace all the flap flexshafts installed in the aircraft. Only send an order for new flexshafts to replace flexshafts 945.02.02.203 and 945.02.02.204 if installed.

New Part No.	Description	Old Part No.	Qty	Disp. Code	Fig	Item
945.02.02.205	Flexshaft, Flap, Inboard	945.02.02.203	2	R	1	2, 10
945.02.02.206	Flexshaft, Flap, Outboard	945.02.02.204	2	R	1	4

Disposition Codes: D - Discard / R - Return to Pilatus

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C. Material Necessary for Each Spare

(1) Additional Material to be Procured

New Part No.	Description	Old Part No.	Qty	Disp. Code	Fig	Item
553.14.12.344	Disc, Rubber	553.14.12.344	A/R	D	1	17
946.91.26.017	Packing, Preformed	946.91.26.017	A/R	D	1	11

Disposition Codes: D - Discard / R - Return to Pilatus

NOTE: Only send an order for new flexshafts to replace flexshafts 945.02.02.203 and 945.02.02.204 installed in aircraft or held as spare.

NOTE: The rubber disc and packing are necessary only if you replace installed items.

(2) Operator Supplied Materials

Part No.	Description	Qty	Remarks
919.01.11.103	Lockwire	A/R	Item No. P02-007
908.24.02.001	Compound, Anti Seize (60 g tube)	A/R	Item No. P04-029
908.24.02.002	Compound, Anti Seize (600 g tin)	A/R	

D. Warranty

Credit will be issued for all affected aircraft, on approval of a warranty claim, provided the:

- Work is accomplished by an Authorized Service Center during the next 100 Hour Inspection or six months from the effective date of this Service Bulletin
- Flexshafts 945.02.02.203 and/or 945.02.02.204 are sent to and received by PILATUS.

E. Tooling - Cost and Availability

Part No.	Description	Cost	Availability
513.27.12.066	Template, Flexshaft Radius Check	N/A	N/A

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3. Accomplishment Instructions - Aircraft (Ref. Fig. 1)

WARNING: BE CAREFUL WHEN YOU OPERATE THE FLAPS. MAKE SURE THE FLAPS ARE CLEAR. YOU CAN CAUSE INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT.

WARNING: BE CAREFUL WHEN YOU USE THE CONSUMABLE MATERIALS. OBEY THE MANUFACTURERS HEALTH AND SAFETY INSTRUCTIONS.

CAUTION: THE FLAP FLEXSHAFTS ARE EASILY DAMAGED. DO NOT BEND OR MAKE KINKS IN THEM.

A. Removal of the Flap Flexshafts

Only replace flexshafts 945.02.02.203 and 945.02.02.204.

- (1) Remove the flexshafts as applicable (Ref. AMM, 27-50-02, CONFIG 2, Page Block 401).

B. Installation of the Flap Flexshafts

This procedure gives the data and instructions to install the inboard and outboard flap flexshafts. Do only the applicable procedure.

There is a serial number on one of the hexagonal ends of the inner core of each flexshaft. Make sure the end with the serial number is at the inboard end of the flexshafts when you install them.

The installation procedure for the left and right inboard flap flexshafts is different. It is necessary to first connect the left inboard flexshaft to the PDU before you install it in the aircraft. A procedure is given for the left and for the right inboard flap flexshafts.

The procedure given for the outboard flap flexshaft is applicable to the left and the right side.

(1) Install the left inboard flexshaft (2)

- (a) Examine the shaft lock (32) and replace if worn.
- (b) Obey the manufacturers instructions and apply anti-seize compound (Material No. P04-029) to the threads of the screws (9) and (22).
- (c) Make sure the seal (20) is in position and attach left flexshaft (2) to the PDU (1) with the screws (22) and washers (21).
- (d) Safety the screws (22) with lockwire (Material No. P02-007).
- (e) Examine the rubber disc (17) and replace if damaged.
- (f) Put the rubber disc (17) on the flexshaft (2).
- (g) From inside the fuselage, put the flexshaft (2) through the bulkhead connector (19).
- (h) Install locking ring (18) and the rubber disc (17) on to the bulkhead connector (19).
- (i) Put the PDU (1) in position and install the screws (13) and washers (12).
- (j) Install the screw (6) and washer (7).
- (k) Safety the screws (6) and (13) with lockwire (Material No. P02-007).
- (l) Examine the seal (11) and replace if damaged.
- (m) Make sure the seal (11) is in position and connect the right flexshaft (10) to the PDU (1) with the screws (9) and washers (8).

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- (n) Safety the screws (9) with lockwire (Material No. P02-007).
- (o) Connect the electrical connectors (23) and (24) to the PDU (1).

(2) Install the right inboard flexshaft (10)

- (a) Examine the shaft lock (32) and replace if worn.
- (b) Examine the rubber disc (17) and replace if damaged.
- (c) Put the rubber disc (17) on the flap drive shaft (10).
- (d) From inside of the fuselage put the end of the flexshaft (10) (that does not have the shaft lock attached) through the bulkhead connector (19).
- (e) Install the locking ring (18) and the rubber disc (17) on to the bulkhead connector (19).
- (f) Obey the manufacturers instructions and apply anti-seize compound (Material No. P04-029) to the threads of the screws (9) and (30).
- (g) Make sure the seal (11) is in position and install the right flexshaft (10) to the PDU (1) with the screws (9) and washers (8).
- (h) Safety the screws (9) with lockwire (Material No. P02-007).

(3) Install the inboard flap flexshafts (2) and (10)

This procedure is applicable to the left and the right side.

- (a) Install the flange (16), bolts (14) and washers (15) on the bulkhead connector (19).
- (b) Make sure the seal (29) is in position and install flexshaft (2) to the flap screw actuator (3) with the shaft lock (32), screws (30) and washers (31).
- (c) Safety the screws (30) with lockwire (Material No. P02-007).
- (d) Install the clamp (26) on the flexshaft (2) with the screw (25), washer (27) and nut (28).
- (e) Use the bend radius template (513.27.12.066) do a check of the flexshaft routing. Make sure the radius of all bends in the flexshaft is greater than that of the bend radius template. You can use the:
 - Inside radius of the template to do a check of the outer curves of the flexshaft
 - Outside radius of the template to a check of the inner curves of the flexshaft.
- (f) If the radius of the flexshaft is incorrect, loosen clamp (26), adjust the routing of the flexshaft and tighten clamp (26).
- (g) Do Steps (e) and (f) as necessary until the radii of the flexshaft is correct.

(4) Install the outboard flap flexshafts

This procedure is applicable to the left and the right side.

- (a) Put the flexshaft (4) through the wing trailing-edge ribs.
- (b) Obey the manufacturers instructions and apply anti-seize compound (Material No. P04-029) to the threads of the screws (35) and (36).
- (c) Make sure the seal (33) is in position and install the flexshaft (4) in the inboard flap screw actuator (3).
- (d) Install the two screws (35) and washers (34).

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- (e) Safety the screws (35) with the lockwire (Material No. P02-007).
 - (f) Make sure the seal (38) is in position and install the flexshaft (4) in the outboard flap screw actuator (5).
 - (g) Install the two screws (36) and washers (37).
 - (h) Safety the screws (36) with the lockwire (Material No. P02-007).
 - (i) Install, but do not tighten, the cable ties (39) (Material No. P09-014) on the flap drive shaft (4).
- (5) Remove the DO NOT OPERATE THE FLAPS warning sign.
 - (6) Remove the safety clip and close the circuit breaker:
CB 034 (FLAP PWR)
 - (7) Do the functional test of the flap system (Ref. AMM, 27-50-00, Page Block 501).

(8) Adjust the outboard flap flexshaft

This procedure is applicable to the left and the right side.

- (a) Adjust the routing of the flexshaft until the radii of the flexshaft is correct
 - (i) Use the bend radius template (513.27.12.066) do a check of the applicable flexshaft routing. Make sure the radius of all bends in the flexshaft is greater than that of the bend radius template. You can use the:
 - Inside radius of the template to do a check of the outer curves of the flexshaft
 - Outside radius of the template to do a check of the inner curves of the flexshaft.
 - (ii) Tighten the cable ties (39) on the outboard flexshaft (4).
 - (iii) Do the radius check again (Ref. Step (i)).
 - (iv) If radii is incorrect, cut and discard the tie-wraps (39). Do Steps (i) thru (iv) again until the radii are correct.

C. Close up

- (1) Make sure the work area is clean and clear of tools and other items.
- (2) Install as necessary the access panels 12 EZ, 12 GZ, 12 HZ, 12 IZ, 12 FL, 12 FR, 51 JB, 61 JB, 51 KB, 61KB (Ref. AMM, 06-20-00, Page Block 1).
- (3) Install as necessary the carpets (Ref. AMM, 25-21-04 or 25-22-04, Page Block 401).
- (4) Install as necessary the passenger seats removed from the work area (Ref. AMM, 25-21-01 or 25-22-01, Page Block 401).

D. Documentation

- (1) Make an entry in the Aircraft Logbook that this Service Bulletin has been incorporated.

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4. Accomplishment Instructions - Spares

A. Replacement of Flexshafts

CAUTION: THE FLAP FLEXSHAFTS ARE EASILY DAMAGED. DO NOT BEND OR MAKE KINKS IN THEM.

CAUTION: FLAP FLEXSHAFTS IN STORAGE MUST BE KEPT IN A STRAIGHT POSITION.

- (1) Send all flexshafts 945.02.02.203 and 945.02.02.204 held as spare or in store to an Authorized Pilatus Service Center or to:

PILATUS AIRCRAFT LTD.,
CUSTOMER LIAISON MANAGER,
CH-6371 STANS,
SWITZERLAND

General Aviation:
Tel : + 41 41 619 6319
Fax: + 41 41 619 6224
eMail: asommer@pilatus-aircraft.com

Government:
Tel : + 41 41 619 6509
Fax. + 41 41 619 6224
eMail: rpaterson@pilatus-aircraft.com

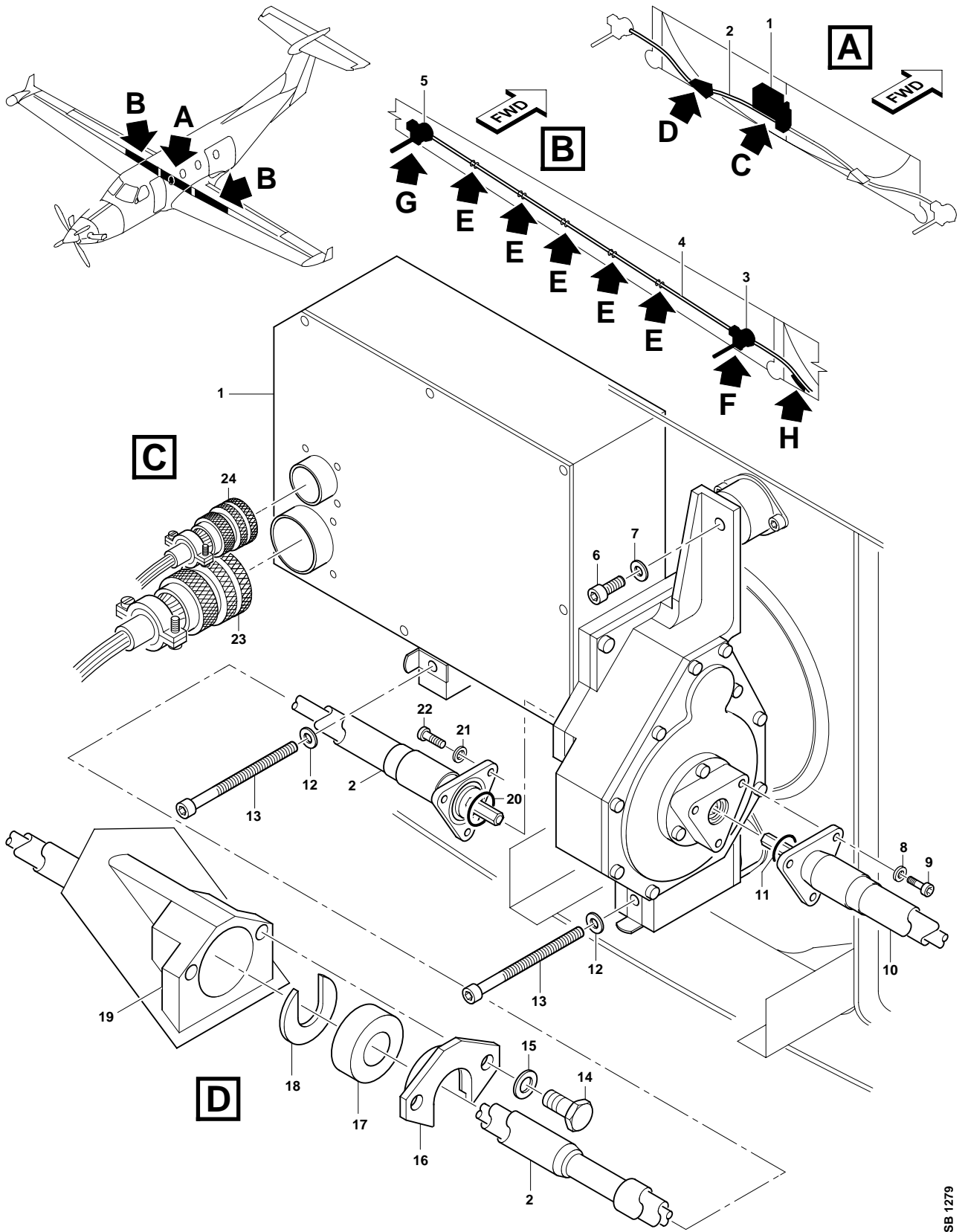
PILATUS BUSINESS AIRCRAFT LTD.,
PRODUCT SUPPORT DEPARTMENT
11755 AIRPORT WAY
BROOMFIELD, CO 80021.
UNITED STATES OF AMERICA

Tel : 303 465 9099
Fax: 303 465 6040
eMail: Productsupport@PilBal.com

PILATUS AUSTRALIA (Pty.) LTD.,
PO BOX 732
MARLESTON SA 5033
AUSTRALIA

Tel : (08) 8234 4433
Fax: (08) 8234 4499
Free Call: 1800 445 007
eMail: info@pilatus.com.au


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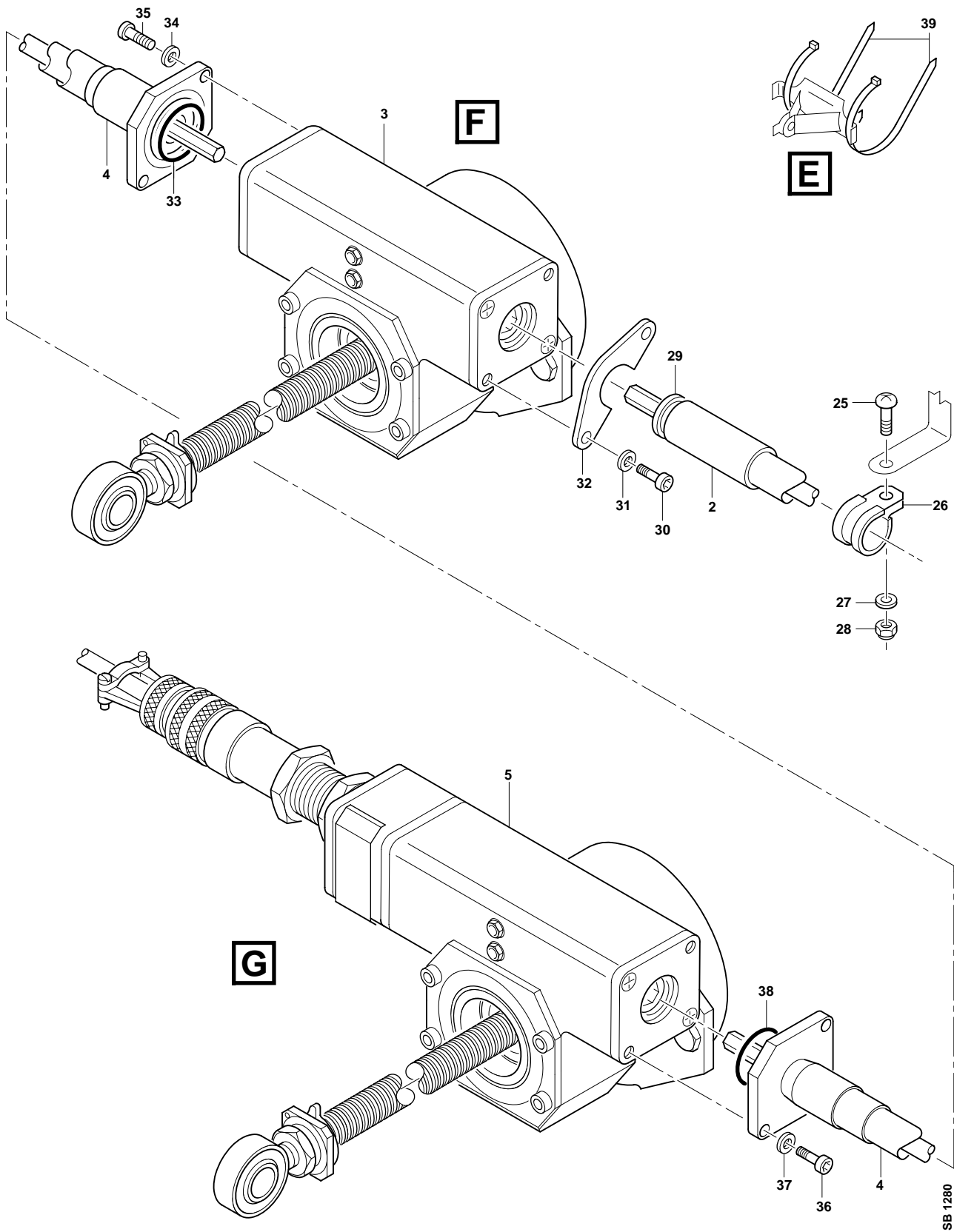
Flap Flexshafts - Installation
 Figure 1 (Sheet 1 of 3)



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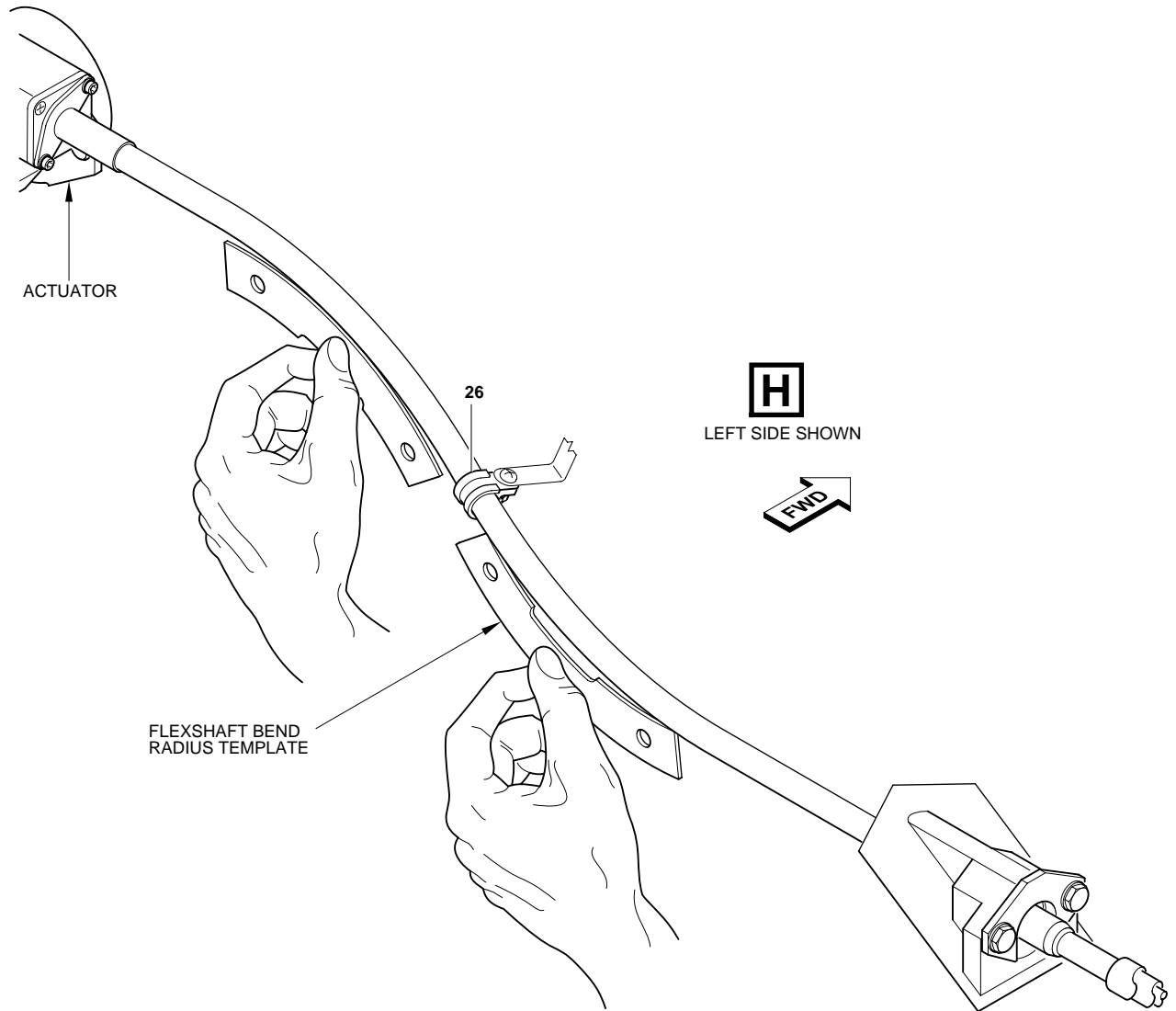
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Flap Flexshafts - Installation
 Figure 1 (Sheet 2 of 3)

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Flap Flexshafts - Installation
Figure 1 (Sheet 3 of 3)