

**78**

**EXHAUST**



LIST OF EFFECTIVE TEMPORARY REVISIONS

Revision No.	Date of revision	Date of insertion by user	Signature	Revision No.	Date of revision	Date of insertion by user	Signature
TR001.31	AUG 99	Incorporated at R15					
TR002.32	MAR 00	Incorporated at R12					
TR003.05	N/A						
TR004.04	APR 01	Incorporated at R18					
TR005.05	N/A						
TR006.05	MAY 02	Incorporated at R19					
TR007.05	JUN 02	Incorporated at R19					
TR008.05	MAR 04	Incorporated at R19					
TR009.04	N/A						
TR010.05	N/A						
TR011.32	N/A						
TR012.00	N/A						
TR013.78	FEB 13						



**TEMPORARY REVISION No. TR013.78**

**CAUTION : KEEP THIS PAGE AND POSITION IT BEFORE THE LIST OF EFFECTIVE PAGES OF CHAPTER 78.**

**FILING INSTRUCTIONS :** Insert this Temporary Revision dated FEB 13.

Retain this TR until it is CANCELLED by a normal revision or until replaced by a new TR.

**SUBJECT :** Exhaust.

**REASON :** Improvement of removal / installation and inspection / check procedures of exhaust pipe.

**CONCERNED PAGES :**

<b>TOPICS</b>	<b>PAGES</b>	<b>DATE</b>	<b>NOTE</b>
78-00-00 (BA)	402 to 404	FEB 13	Revised pages
78-00-00 (BA)	601	FEB 13	Revised page





2) If removed, install exchanger (4) – refer to 21-40-01.

**CAUTION : ASSEMBLE ALL THE EXHAUST SYSTEM ELEMENTS BEFORE BEGINNING THE TIGHTENING.**

**CAUTION : DURING THE INSTALLATION OF THE MANIFOLDS ON THE EXHAUST SYSTEM, MAKE SURE THAT THE TIGHTENING FLANGE OF CLAMPS IS NOT IN CONTACT WITH EXCHANGER (4).**

3) If removed, install pipes (1), (5), (6) and (8) on exhaust pipe (7) using clamps (11), bolts (14), spacers (13) and new nuts (12). Do not tighten.

4) Position clamps (11), make flanges of mounting flanges (10) and of pipes (1), (5), (6) and (8) properly coincide with clamps (11) grooves. Pay particular attention to the metallic strip position inside clamp (11). This strip is spot welded inside the clamp and is used as a tightness strip for this clamp.

5) Position all the clamps (11) with bolts (14), spacers (13) and new nuts (12) before beginning the tightening.

6) Approximate tightening of clamps to obtain a rigid assembly to position it on the engine.

With muffler

7) Coat the exhaust outlet tube with petrolatum (TB 04-003). Slide it on the connection elbow.

All

8) Position the assembly on the engine with new gaskets (9) ; correctly position mounting flanges (10), the inclination of which must be directed towards the engine unit. Attach with new nuts (15). Torque – refer to 20-00-01.

9) Be sure of pipes (1), (5), (6) and (8) and mounting flanges (10) alignment on both sides of clamps (11).

**NOTE : Position correctly the exhaust pipe with the four attaching ends of the L.H. and R.H. pipe ends, which are slightly parallel to the cylinder heads exhaust outlets.**

Without muffler

10) Install the lower engine cowling. Make sure that the exhaust outlet tube, inside the engine cowling, is correctly centered. The minimum gap between the exhaust outlet tube and the engine cowling must be equal to 0.39 in (10 mm).

11) Remove the lower engine cowling.

All

**CAUTION : ENSURE A CORRECT TIGHTENING IN ORDER TO HINDER THE ELEMENT RELATIVE ROTATION. AN EXCESSIVE TIGHTENING WILL CAUSE THE CLAMP EARS DISTORTION. THIS IS UNACCEPTABLE WHEN THE EAR ENDS ARE IN CONTACT.**

12) Complete clamps (11) tightening.

With muffler

13) Attach the clamp linking the exhaust outlet tube to the connection elbow – refer to 78-20-00.

All

14) If removed, install the exhaust temperature probe.

15) Engage cool air hose (3) on exchanger (4) side.

- 16) Engage hot air hose (2) on exchanger (4) side.
- 17) Make sure all the tools and materials are removed and the work area is clean and free from debris.
- 18) Install the engine cowlings - refer to 71-10-01.
- 19) Perform a test run-up - refer to 05-30-02.

**CAUTION : THE TIGHTENING CHECK OF THE CLAMPS AND MOUNTING FLANGE NUTS MUST BE PERFORMED WHEN THE ENGINE IS COLD.**

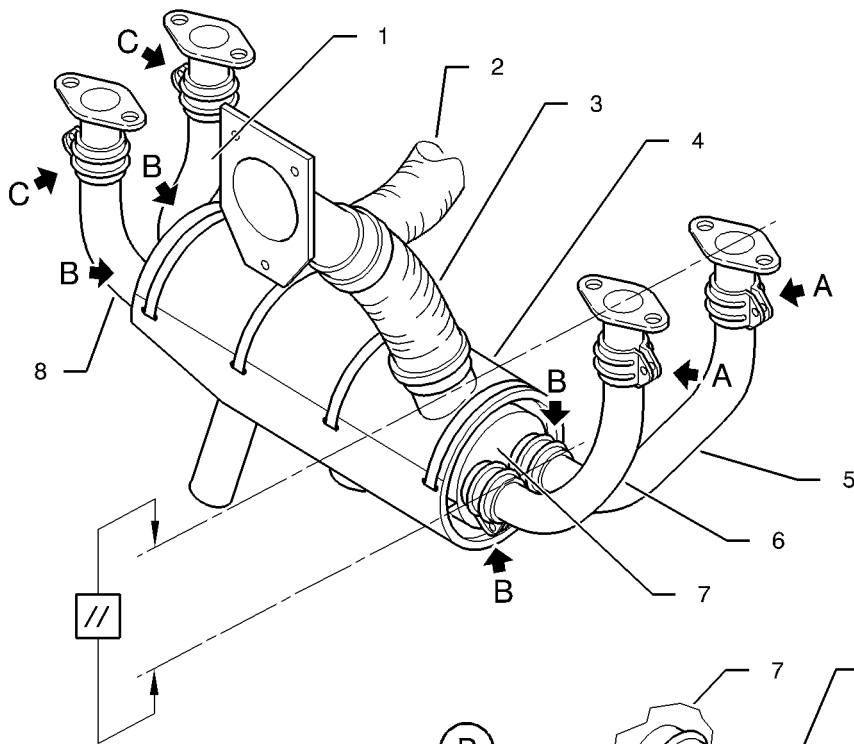
- 20) After performing the test run-up, make sure that :
  - nuts (15) are correctly tightened,
  - clamps (11) are correctly tightened,
  - there is no leak and heating.
- 21) Make sure all the tools and materials are removed and the work area is clean and free from debris.
- 22) Install the engine cowlings - refer to 71-10-01.

Without muffler

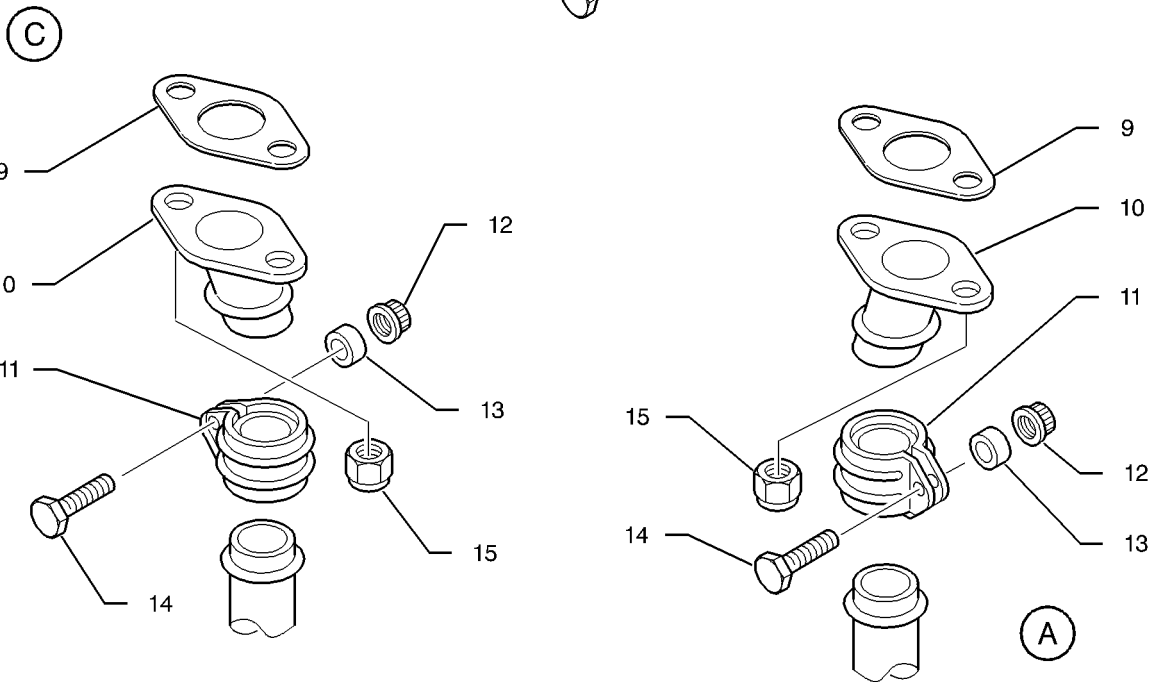
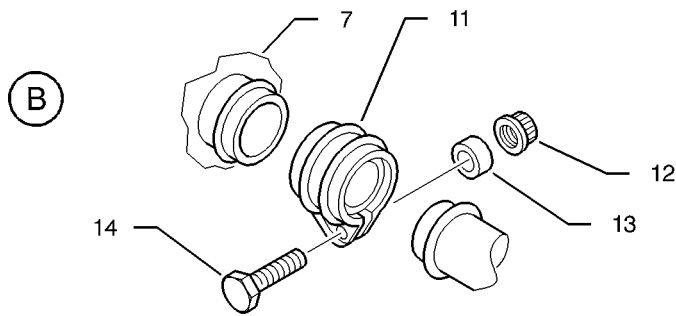
- 23) Check that the exhaust outlet tube is practically centered and that there is no risk of heating the cowling. If not, check the whole assembly ; if the defect persists, contact the manufacturer.  
Check that the L.H. front pipe is not likely to heat the cowling.







- 1 - R.H. rear pipe
- 2 - Hot air hose
- 3 - Cool air hose
- 4 - Exchanger
- 5 - L.H. rear pipe
- 6 - L.H. front pipe
- 7 - Exhaust pipe
- 8 - R.H. front pipe
- 9 - Gasket
- 10 - Mounting flange
- 11 - Clamp
- 12 - Nut
- 13 - Spacer
- 14 - Bolt
- 15 - Nut



Exhaust - Removal / Installation  
Figure 401

14780000AAAUVZ4102

## EXHAUST

### INSPECTION / CHECK

#### 1. CHECK OF THE EXHAUST (Figure 601)

##### A. Tools and consumable materials

None

##### B. Procedure

- 1) Check for leaks.
- 2) Check for cracks on pipes (6), mounting flanges (2) and exhaust pipe (8). Pay particular attention to welds. If there are cracks at side flanges of exhaust pipe (8), replace the flanges or replace the stainless steel exhaust pipe by an inconel exhaust pipe - refer to the Illustrated Parts Catalog.
- 3) Check welded flanges of pipes (6), mounting flanges (2) and exhaust pipe (8). Straighten (if necessary) the ends.

**NOTE : Straighten the exhaust pipe and pipe cylindrical parts, then do a dimension check. If an aspect or dimension defect is detected on the pipes, mounting flanges and exhaust pipe after rectifications, the concerned part must be discarded and replaced.**

- 4) Check flange diameter of pipes, mounting flanges and exhaust pipe. For an exhaust assembly which ageing is equal or superior to 100 flight hours, this diameter must be equal to 1.92 in (- 0 ; - 0.06) [48.8 mm (- 0 ; - 1.5)].
- 5) Check that diameter difference ( $\Delta$ ) between both flanges of a same junction is less than 0.04 in (1 mm).

**NOTE : If the  $\Delta$  is greater than 0.04 in (1 mm), replace the part which is furthest from the nominal dimension 1.92 in (48.8 mm).**

- 6) Check clamps (3) to check for cracks and distortions, check condition and attachment of metallic seal band inside the clamp. For any defect, discard and replace the clamp.
- 7) Perform a detailed inspection of the exchanger to check for cracks and distortions.
- 8) If there are cracks on the exchanger - refer to 21-40-01.
- 9) Check the position of mounting flanges (2), the inclination of which must be directed towards the engine unit - refer to 78-00-00 page 401.

AAAA

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## EXHAUST

### DESCRIPTION AND OPERATION

#### 1. GENERAL

The exhaust system allows to discharge outwards the gases burnt by the engine.

The main elements are :

- manifold,
- exhaust pipe,
- muffler (option).

#### 2. LOCATION (Figures 1, 1A and 2)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Manifold	1	100	121 / 131	78-00-00
Exhaust pipe	1	100	121 / 131	78-00-00
Muffler (option)	1	200	/	78-20-00

#### 3. DESCRIPTION

##### A. Manifold

The manifold includes pipes, the purpose of which is to route the gases burnt by the cylinders to the exhaust pipe. They are located on both sides of the engine and connect the cylinders to the exhaust pipe through pipes and clamps.

##### B. Exhaust pipe

The exhaust pipe is located crosswise under the power plant. It is the part of the burnt gas exhaust assembly which receives and expands the gases when they arrive from the manifold. The exhaust pipe discharges the expanded gases outwards through a tube.

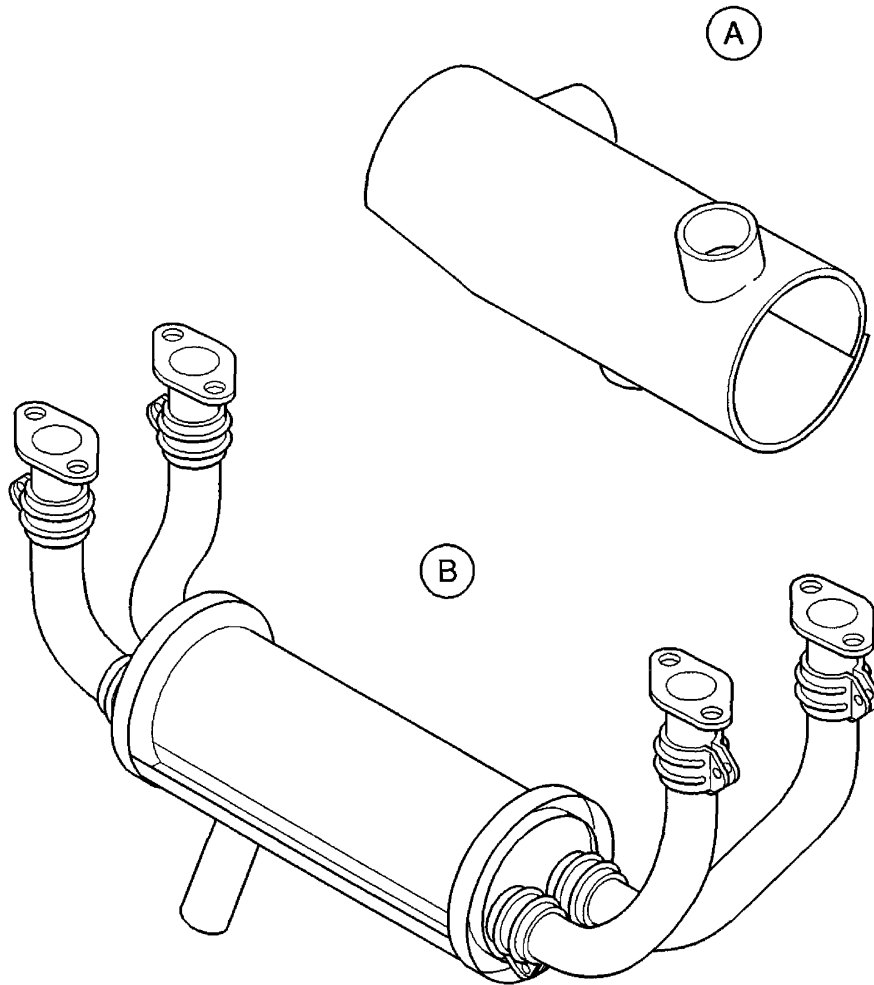
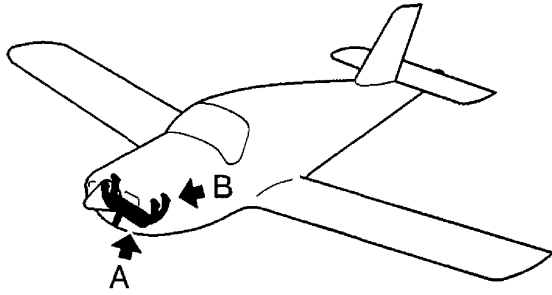
**NOTE : The exhaust pipe is provided with an exchanger ensuring the cabin air regulation and windshield de-icing.**

##### C. Muffler (option)

The muffler consists of a casing crossed by a perforated tube. These components are linked by two cones, a fixed forward cone and a removable rear cone. The part comprised between the casing and the perforated tube is filled with stainless steel wool. The muffler receives the burnt gases from the exhaust pipe through tubes and it discharges these gases outside while reducing noise.

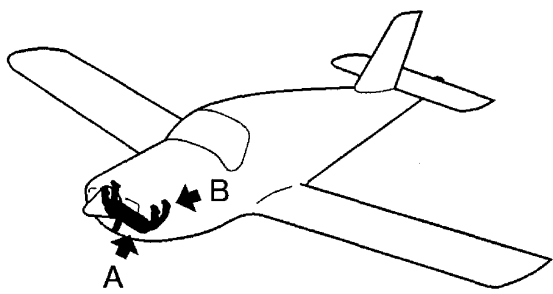
Located between frame C0 and frame C1, the muffler is attached under the fuselage with supports installed on vibration isolators.

- A – Exchanger
- B – Exhaust pipe

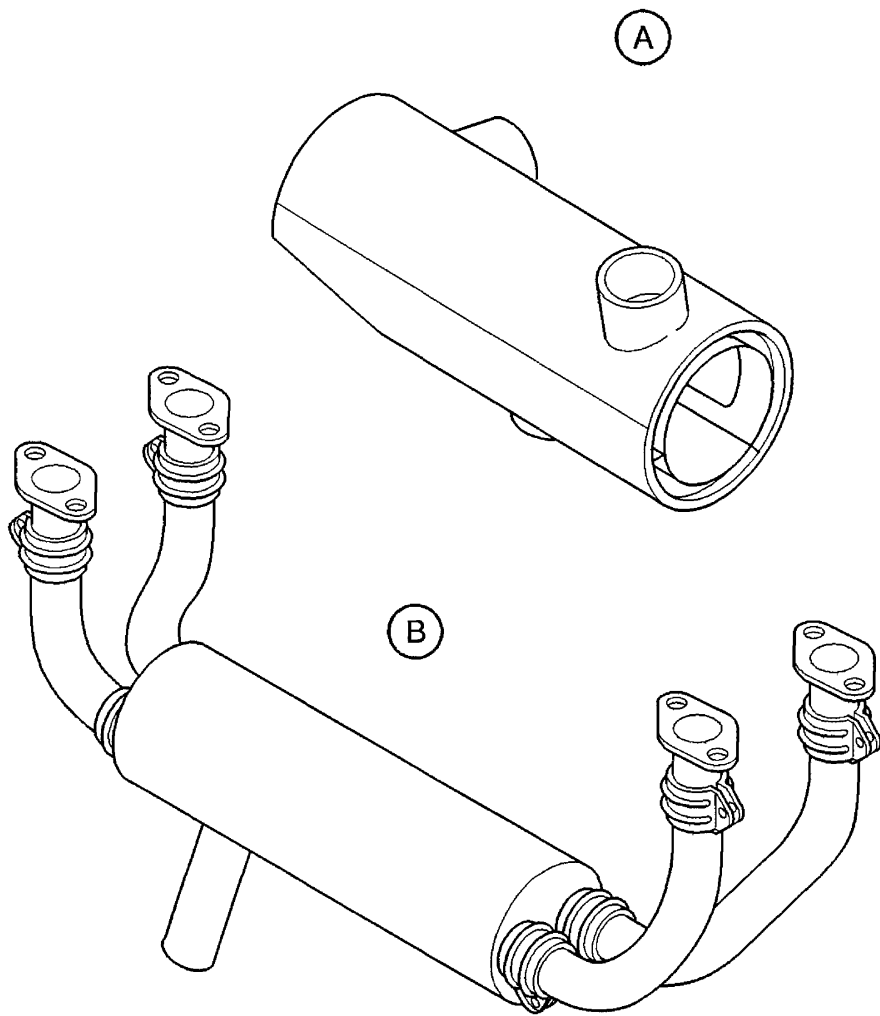


Exhaust – Location of components  
Figure 1 – S / N 1 – 374 Pre-SB 19, 62 and 72

14780000-AAUVZ4000



- A - Exchanger
- B - Exhaust pipe



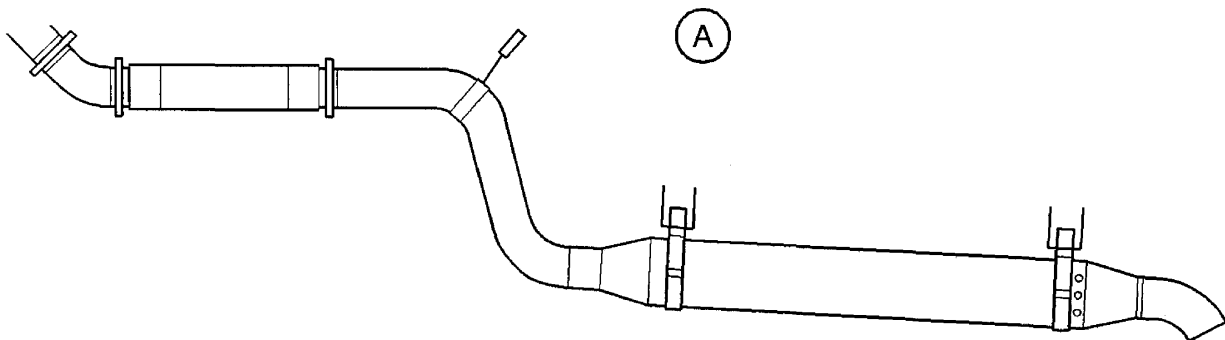
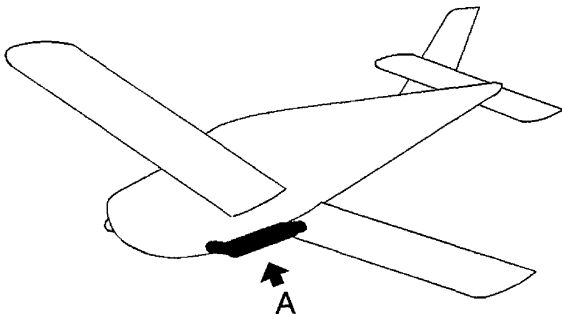
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Exhaust - Location of components  
Figure 1A - S / N 375 - 9999  
S / N 1 - 374 Post-SB 19, 62 and 72

AEAA  
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78-00-00 (BA)

A – Muffler (option)



I4780000AA/BEVZ4100

Exhaust – Location of components  
Figure 2

AEAA  
Validity : S / N 1 – 9999

78-00-00 (BA)

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JUL 99

## EXHAUST

### REMOVAL / INSTALLATION

#### 1. REMOVAL OF THE EXHAUST (Figure 401)

##### A. Tools and consumable materials

None

##### B. Procedure

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.**

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.**

- 1) Remove the engine cowlings - refer to 71-10-01.
- 2) Disengage hot air hose (2) on exchanger (4) side.
- 3) Disengage cool air hose (3) on exchanger (4) side.

##### With muffler

- 4) Remove the clamp attaching the connection elbow on the exhaust outlet tube - refer to 78-20-00.

##### All

- 5) If installed, remove the exhaust temperature probe.
- 6) Remove nuts (12), spacers (13), bolts (14) and clamps (11) on L.H. front pipe (6), L.H. rear pipe (5), R.H. front pipe (8) and R.H. rear pipe (1) while holding the exhaust assembly. Discard nuts (12).
- 7) Remove the exhaust assembly.
- 8) Remove, if necessary, nuts (15), mounting flanges (10) and gaskets (9). Discard nuts (15) and gaskets (9).
- 9) Remove, if necessary, nuts (12), spacers (13), bolts (14), clamps (11) and pipes (1), (5), (6) and (8) after marking them. Discard nuts (12).
- 10) Remove, if necessary, exchanger (4) - refer to 21-40-01.

#### 2. INSTALLATION OF THE EXHAUST (Figure 401)

##### A. Tools and consumable materials

- Petrolatum (TB 04-003)
- Adhesive (TB 08-907)

##### B. Procedure

**NOTE : Attach the heat shield on the carburetor heating pipe with adhesive (TB 08-907).  
If (a) new hose(s) is (are) installed, make sure that there are no traces of grease (silicone) left inside when removed from their mold. Any traces should be removed with a dry cloth.**

**NOTE : Coat bolts (14) and mounting flange (10) attachment studs with petrolatum (TB 04-003).**

- 1) Check the condition of the exhaust assembly - refer to Page 601.

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2) If removed, install exchanger (4) - refer to 21-40-01.

**CAUTION : ASSEMBLE ALL THE EXHAUST SYSTEM ELEMENTS BEFORE BEGINNING THE TIGHTENING.**

**CAUTION : DURING THE INSTALLATION OF THE MANIFOLDS ON THE EXHAUST SYSTEM, MAKE SURE THAT THE TIGHTENING FLANGE OF CLAMPS IS NOT IN CONTACT WITH EXCHANGER (4).**

3) If removed, install pipes (1), (5), (6) and (8) on exhaust pipe (7) using clamps (11), bolts (14), spacers (13) and new nuts (12). Do not tighten.

4) Position clamps (11), make flanges of mounting flanges (10) and of pipes (1), (5), (6) and (8) properly coincide with clamps (11) grooves. Pay particular attention to the metallic strip position inside clamp (11). This strip is spot welded inside the clamp and is used as a tightness strip for this clamp.

5) Position all the clamps (11) with bolts (14), spacers (13) and new nuts (12) before beginning the tightening.

6) Approximate tightening of clamps to obtain a rigid assembly to position it on the engine.

With muffler

7) Coat the exhaust outlet tube with petrolatum (TB 04-003). Slide it on the connection elbow.

All

8) Position the assembly on the engine with new gaskets (9) ; correctly position mounting flanges (10) in order to avoid stress installation. Attach with new nuts (15). Torque - refer to 20-00-01.

9) Be sure of pipes (1), (5), (6) and (8) and mounting flanges (10) alignment on both sides of clamps (11).

**NOTE : Position correctly the exhaust pipe with the four attaching ends of the L.H. and R.H. pipe ends, which are slightly parallel to the cylinder heads exhaust outlets.**

Without muffler

10) Install the lower engine cowling. Make sure that the exhaust outlet tube, inside the engine cowling, is correctly centered. The minimum gap between the exhaust outlet tube and the engine cowling must be equal to 0.39 in (10 mm).

11) Remove the lower engine cowling.

All

**CAUTION : ENSURE A CORRECT TIGHTENING IN ORDER TO HINDER THE ELEMENT RELATIVE ROTATION. AN EXCESSIVE TIGHTENING WILL CAUSE THE CLAMP EARS DISTORTION. THIS IS UNACCEPTABLE WHEN THE EAR ENDS ARE IN CONTACT.**

12) Complete clamps (11) tightening.

With muffler

13) Attach the clamp linking the exhaust outlet tube to the connection elbow - refer to 78-20-00.

All

14) If removed, install the exhaust temperature probe.

15) Engage cool air hose (3) on exchanger (4) side.

16) Engage hot air hose (2) on exchanger (4) side.

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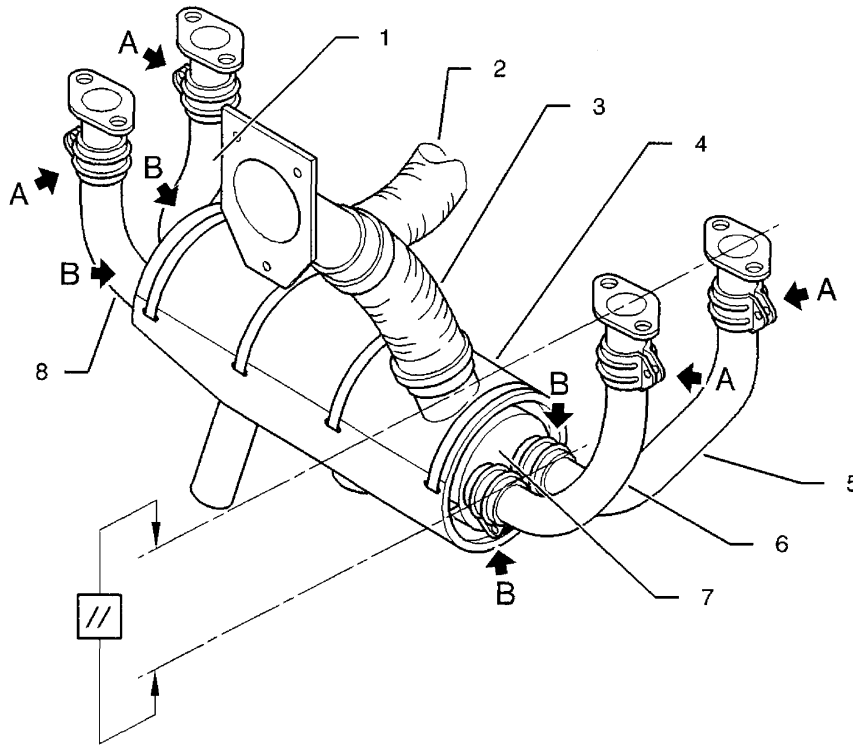
- 17) Make sure all the tools and materials are removed and the work area is clean and free from debris.
- 18) Install the engine cowlings - refer to 71-10-01.
- 19) Perform a test run-up - refer to 05-30-02.

**CAUTION : THE TIGHTENING CHECK OF THE CLAMPS AND MOUNTING FLANGE NUTS MUST BE PERFORMED WHEN THE ENGINE IS COLD.**

- 20) After performing the test run-up, make sure that :
  - nuts (15) are correctly tightened,
  - clamps (11) are correctly tightened,
  - there is no leak and heating.
- 21) Make sure all the tools and materials are removed and the work area is clean and free from debris.
- 22) Install the engine cowlings - refer to 71-10-01.

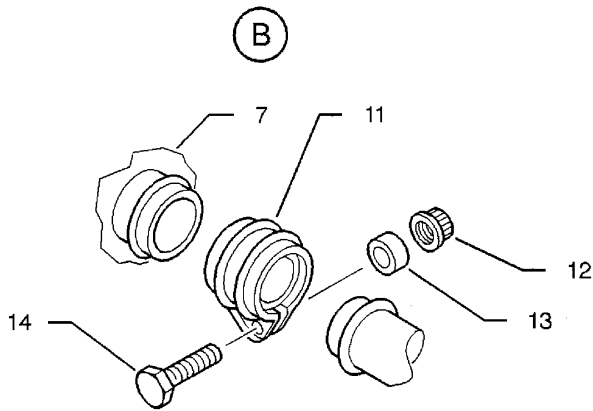
Without muffler

- 23) Check that the exhaust outlet tube is practically centered and that there is no risk of heating the cowling. If not, check the whole assembly ; if the defect persists, contact the manufacturer.  
Check that the L.H. front pipe is not likely to heat the cowling.

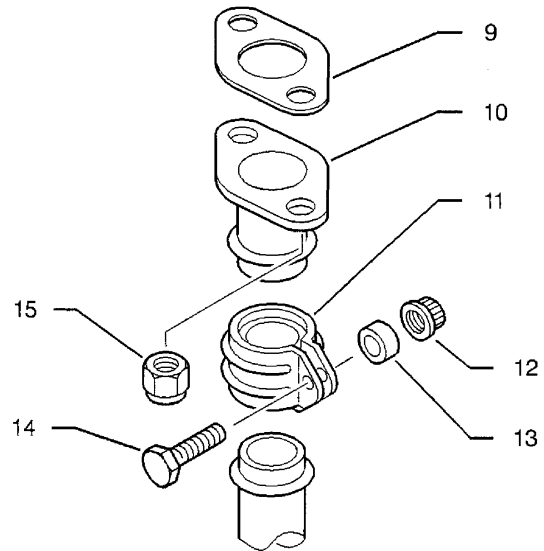


- 1 - R.H. rear pipe
- 2 - Hot air hose
- 3 - Cool air hose
- 4 - Exchanger
- 5 - L.H. rear pipe
- 6 - L.H. front pipe
- 7 - Exhaust pipe
- 8 - R.H. front pipe
- 9 - Gasket
- 10 - Mounting flange
- 11 - Clamp
- 12 - Nut
- 13 - Spacer
- 14 - Bolt
- 15 - Nut

(A)



(B)



Exhaust - Removal / Installation  
Figure 401

14780000AAAUVZ4101

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## EXHAUST

### INSPECTION / CHECK

#### 1. CHECK OF THE EXHAUST (Figure 601)

##### A. Tools and consumable materials

None

##### B. Procedure

- 1) Check for leaks.
- 2) Check for cracks on pipes (6), mounting flanges (2) and exhaust pipe (8). Pay particular attention to welds. If there are cracks at side flanges of exhaust pipe (8), replace the flanges or replace the stainless steel exhaust pipe by an inconel exhaust pipe - refer to the Illustrated Parts Catalog.
- 3) Check welded flanges of pipes (6), mounting flanges (2) and exhaust pipe (8). Straighten (if necessary) the ends.

**NOTE : Straighten the exhaust pipe and pipe cylindrical parts, then do a dimension check. If an aspect or dimension defect is detected on the pipes, mounting flanges and exhaust pipe after rectifications, the concerned part must be discarded and replaced.**

- 4) Check flange diameter of pipes, mounting flanges and exhaust pipe. For an exhaust assembly which ageing is equal or superior to 100 flight hours, this diameter must be equal to 1.92 in (- 0 ; - 0.06) [48.8 mm (- 0 ; - 1.5)].
- 5) Check that diameter difference ( $\Delta$ ) between both flanges of a same junction is less than 0.04 in (1 mm).

**NOTE : If the  $\Delta$  is greater than 0.04 in (1 mm), replace the part which is furthest from the nominal dimension 1.92 in (48.8 mm).**

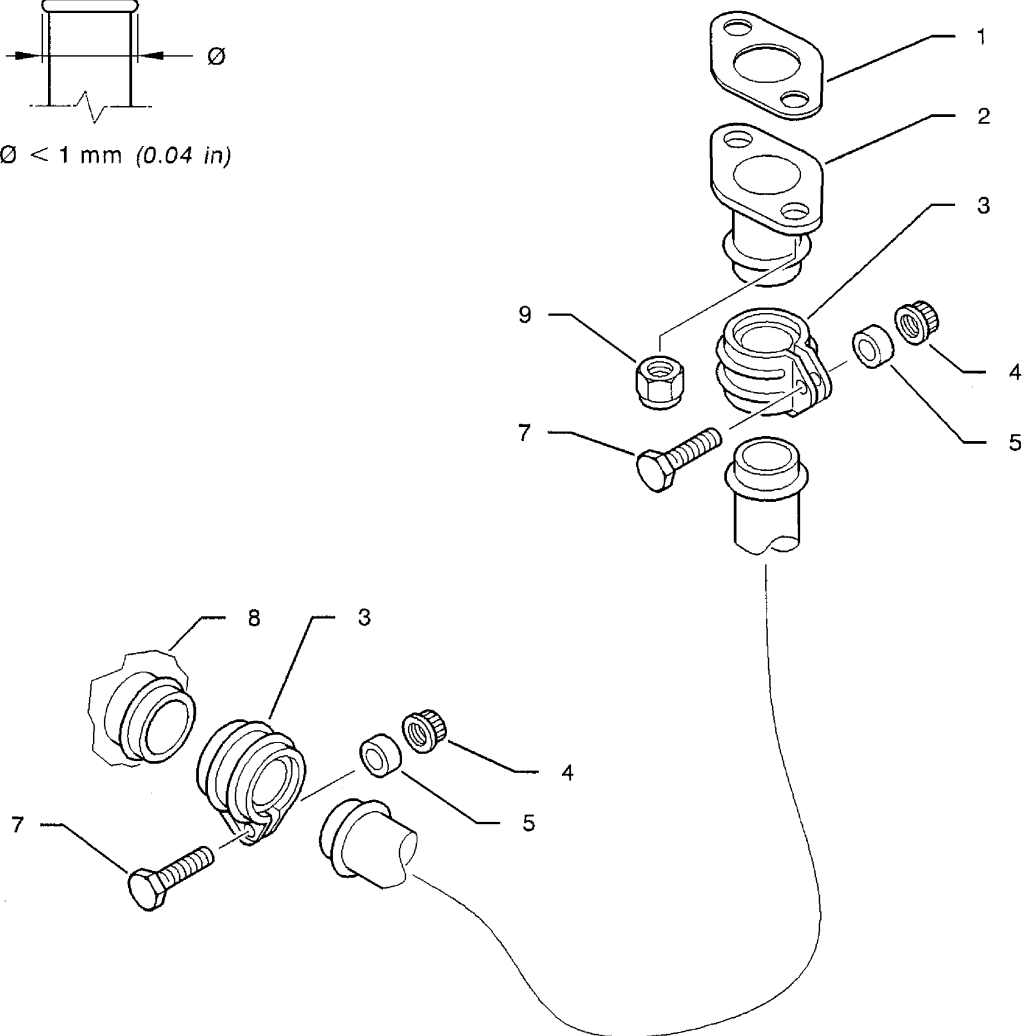
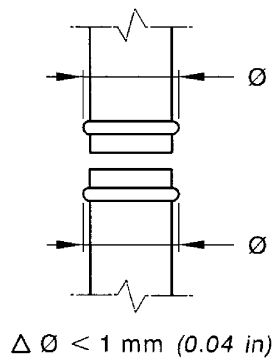
- 6) Check clamps (3) to check for cracks and distortions, check condition and attachment of metallic seal band inside the clamp. For any defect, discard and replace the clamp.
- 7) Perform a detailed inspection of the exchanger to check for cracks and distortions.
- 8) If there are cracks on the exchanger - refer to 21-40-01.

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- 1 - Gasket
- 2 - Mounting flange
- 3 - Clamp
- 4 - Nut
- 5 - Spacer
- 6 - Pipe
- 7 - Bolt
- 8 - Exhaust pipe
- 9 - Nut



Exhaust - Inspection / Check  
Figure 601

14780000AAAUVZ4200

AAAA  
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## MUFFLER SERVICING

### 1. REPLACEMENT OF THE STEEL WOOL (Figures 301 and 302)

#### A. Tools and consumable materials

- Protective gloves
- Aluminium rod, length 37.4 in (950 mm)
- Blanking cap, dia. 2.3 in (60 mm)
- Serflex clamp, dia. 2.3 in (60 mm)
- Cleaning agent (TB 11-003)
- Drip pan
- Anti-seize product (TB 05-901)
- Compressed air source

#### B. Procedure

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.**

**WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.**

- 1) Make an extraction and filling tool with an aluminium rod, length about 37.4 in (950 mm).
  - a) At an end, fold back the rod in order to make a hook to extract the used steel wool.
  - b) At the other end, fold back the rod in order to make a circle of about 1 in (25 mm), perpendicular to the rod to pack with the new steel wool.
- 2) Remove nut (10), washer (9) and bolt (8). Discard nut (10).
- 3) Remove nuts (11), washers (12), bolts (13) and lower half-clamps (7). Discard nuts (11).
- 4) Remove muffler (6).
- 5) Remove screws (26) and the muffler rear section.

**WARNING : THE HANDLING OF STEEL WOOL MAY CAUSE DEEP WOUNDS AND POSSIBLE INFECTIONS. USE PROTECTIVE GLOVES.**

- 6) Using the extraction tool, remove all the steel wool and discard it.
- 7) Shake muffler (6) and tilt it downwards to remove steel wool deposits.
- 8) Blank off the muffler input using a cap maintained by a serflex clamp.

**WARNING : TAKE NECESSARY PRECAUTIONS IN ORDER TO AVOID PROJECTIONS.**

- 9) Clean the inside of the muffler with a cleaning agent (TB 11-003) by shaking the muffler.
- 10) Empty the muffler contents into a drip pan and let it drip until the product evaporates.
- 11) Remove the blanking cap and blow compressed air into the muffler.

12) Put the new steel wool and pack it progressively using the extraction tool.

**NOTE : For too narrow areas, use the hook to pack steel wool.**

13) Fill the muffler up to its outlet and coat the interface with the rear section using anti-seize product (TB 05-901).

14) Slide the rear section into muffler (6), make sure that no steel strand appears between the two sheet metals.

15) Install screws (26) lubricated with anti-seize product (TB 05-901).

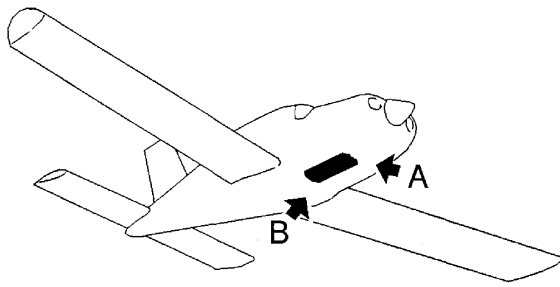
16) Coat the interfaces of pipe (23) and muffler (6) with anti-seize product (TB 05-901).

17) Slide muffler (6) on pipe (23), position it on upper half-clamps (21) and (22) and install lower half-clamps (7) with bolts (13), washers (12) and new nuts (11).

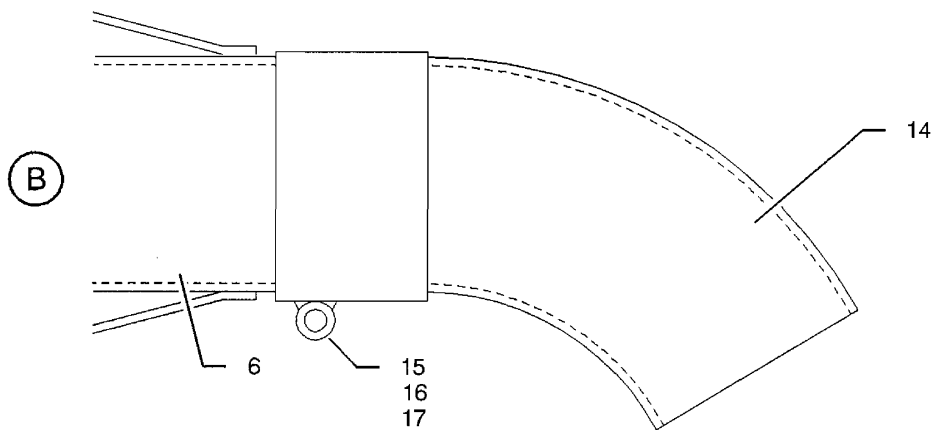
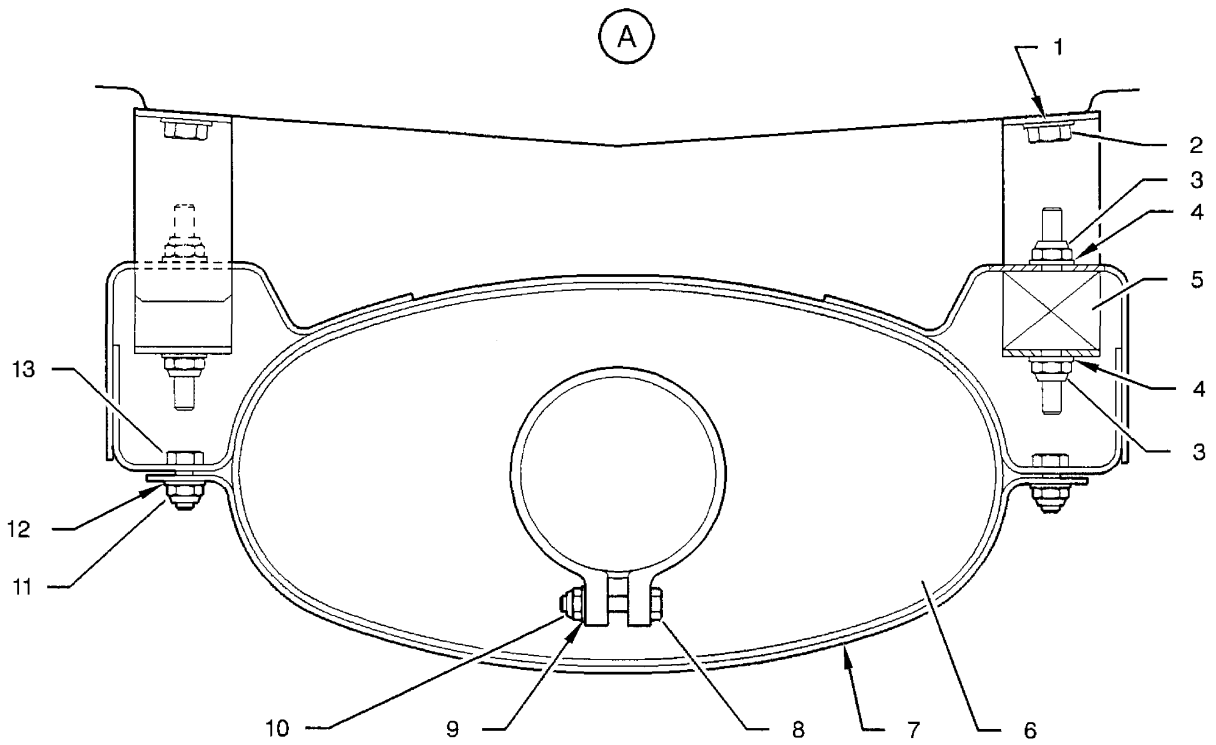
**NOTE : Obey the dimension of 5.12 in (130 mm) - refer to Figure 302.**

18) Install bolt (8), washer (9) and new nut (10).

19) Make sure all the tools and materials are removed and the work area is clean and free from debris.



- |                      |                  |
|----------------------|------------------|
| 1 - Washer           | 10 - Nut         |
| 2 - Bolt             | 11 - Nut         |
| 3 - Nut              | 12 - Washer      |
| 4 - Washer           | 13 - Bolt        |
| 5 - Elastic stud     | 14 - Outlet tube |
| 6 - Muffler          | 15 - Bolt        |
| 7 - Lower half-clamp | 16 - Washer      |
| 8 - Bolt             | 17 - Nut         |
| 9 - Washer           |                  |

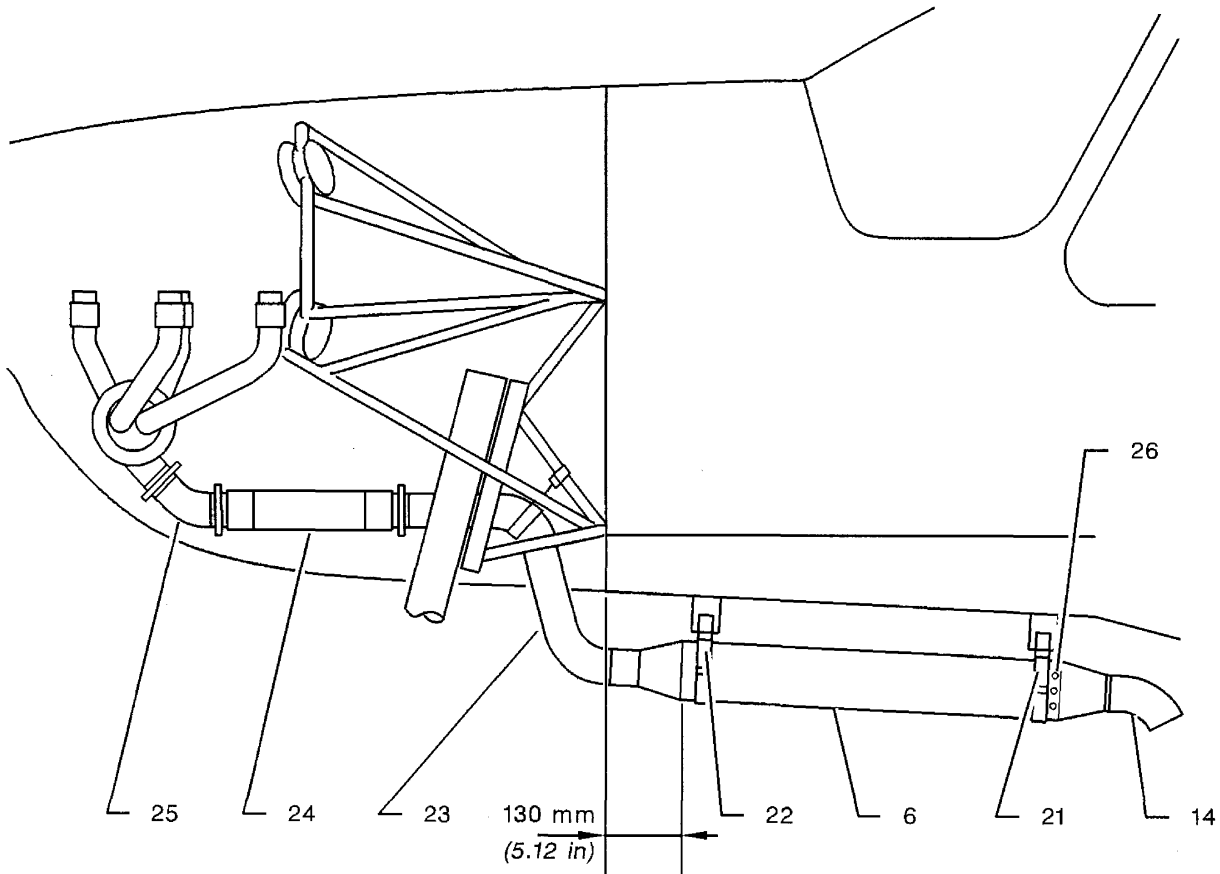


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Muffler - Servicing  
Figure 301

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Validity : OPTION

- 6 - Muffler
- 14 - Outlet tube
- 21 - Upper half-clamp
- 22 - Upper half-clamp
- 23 - Pipe
- 24 - Hose
- 25 - Connection elbow
- 26 - Screw



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Muffler - Servicing  
Figure 302

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Validity : OPTION

## MUFFLER

### REMOVAL / INSTALLATION

#### 1. REMOVAL OF THE MUFFLER (Figures 401, 402, 403, 404 and 405)

##### A. Tools and consumable materials

None

##### B. Procedure

**WARNING** : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.

**WARNING** : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.

- 1) Remove the engine cowlings - refer to 71-10-01.
- 2) Remove nut (10), washer (9) and bolt (8). Discard nut (10).
- 3) Remove nuts (11), washers (12), bolts (13) and lower half-clamps (7). Discard nuts (11).
- 4) Remove muffler (6).
- 5) Remove nut (17), washer (16) and bolt (15). Discard nut (17).
- 6) Remove outlet tube (14).
- 7) Remove nuts (35), washers (34), bolts (33) and clamps (32). Discard nuts (35).
- 8) Remove nuts (45), bolts (48), washers (46) and half-clamps (44) and (49). Discard nuts (45).
- 9) Disengage connection elbow (25) from exhaust outlet tube (31) and remove the pipe assembly.
- 10) Disengage pipe (23) and connection elbow (25) from hose (24).
- 11) Remove, if necessary, cables (47) and clamps (41). Retain bolts (50) and washers (43). Discard nuts (42).
- 12) Remove, if necessary, upper half-clamps (21) and (22). Retain bolts (2) and washers (1).
- 13) Remove, if necessary, elastic studs (5). Retain washers (4). Discard nuts (3).
- 14) Remove, if necessary, the exhaust - refer to 78-00-00.

#### 2. INSTALLATION OF THE MUFFLER (Figures 401, 402, 403, 404 and 405)

##### A. Tools and consumable materials

- Anti-seize product (TB 05-901)

##### B. Procedure

**NOTE** : Coat with anti-seize product (TB 05-901) bolt threads and interfaces of pipes, muffler and exhaust outlet tube.

- 1) If removed, install the exhaust - refer to 78-00-00.
- 2) If removed, position and attach elastic studs (5) to the upper half-clamps (22) and (21) with washers (4) and new nuts (3).

- 3) If removed, position and attach upper half-clamps (22) and (21) with washers (1) and bolts (2).
- 4) Attach the muffler with lower half-clamps (7), bolts (13), washers (12) and new nuts (11). Do not tighten.
- 5) If removed, position clamps (41) on landing gear mount tubes (52), axis of clamps (41) at 1.57 in (40 mm) from firewall (61) - refer to Figure 405.

**NOTE : Make sure that protective tape (51) on the landing gear mount is in good condition, replace it if necessary.**

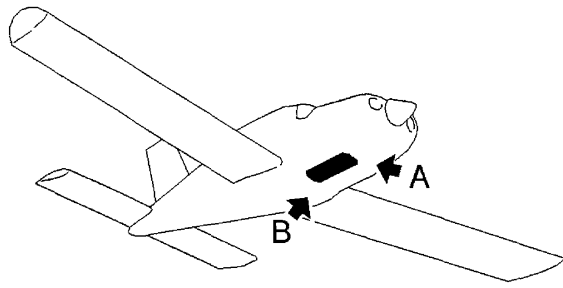
- 6) Attach cables (47) to clamps (41) with bolts (50), washers (43) and new nuts (42). Do not tighten.
- 7) Slide up to holes (36) connection elbow (25) on exhaust outlet tube (31), hose (24) on connection elbow (25), pipe (23) into muffler (6) and pipe (23) into hose (24).

**NOTE : Slide pipe (23) into muffler (6) on a length of 1.1 in (28 mm).**

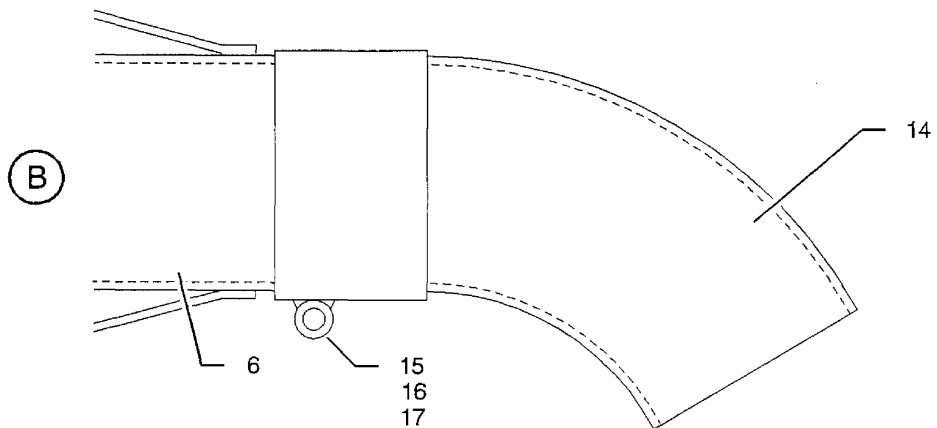
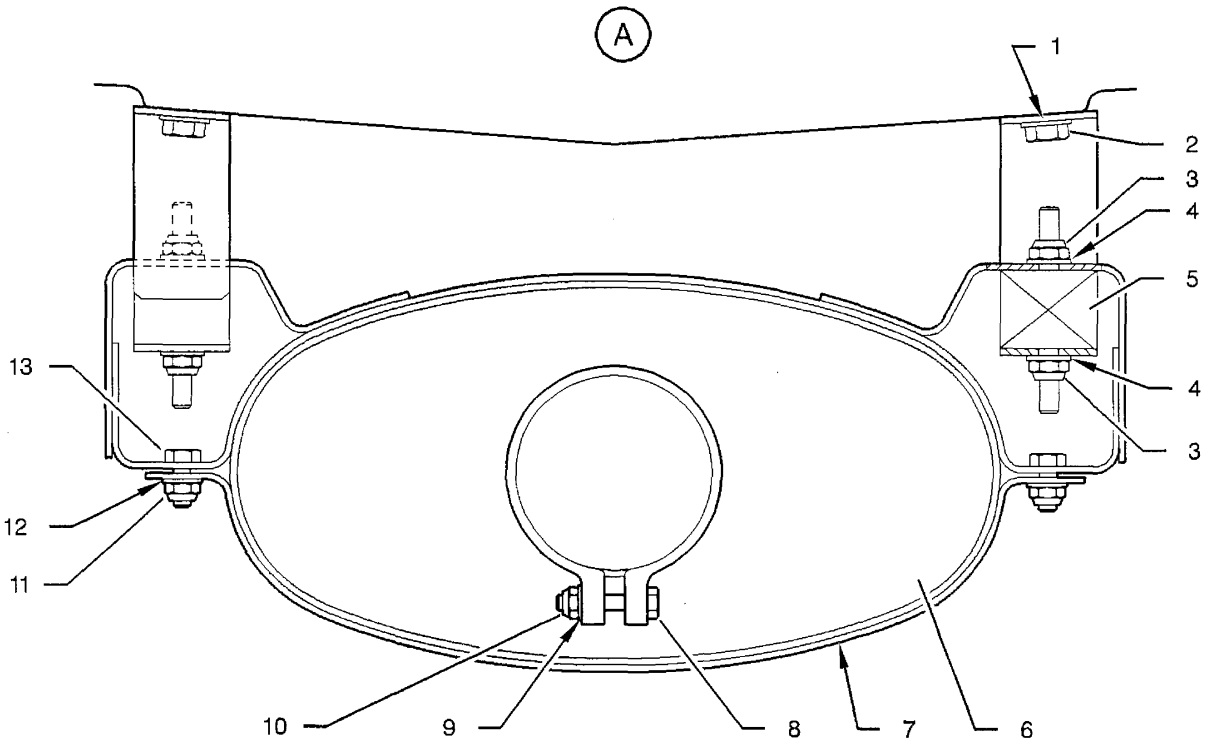
- 8) Attach connection elbow (25) on exhaust outlet tube (31), hose (24) on connection elbow (25) and on pipe (23) with clamps (32), bolts (33), washers (34) and new nuts (35).
- 9) Position half-clamps (49) and (44) on pipe (23).
- 10) Attach cables (47) to half-clamps (44) and (49) with bolts (48), washers (46) and new nuts (45).

**CAUTION : CABLES (47) MUST BE INSTALLED WITHOUT STRESS, IF NECESSARY MODIFY THE POSITION OF CLAMPS (41).**

- 11) Check that the pipes are correctly routed without stress. Tighten clamps (41).
- 12) Check the correct slide-in, slot completely covered, and attach muffler (6) to pipe (23) with bolt (8), washer (9) and new nut (10).
- 13) Tighten nuts (11) attaching clamps of muffler (6).
- 14) Position outlet tube (14) on muffler (6) directed 45° to the left. Attach it with bolt (15), washer (16) and new nut (17).
- 15) Make sure that there is a gap from 0.31 to 0.39 in (8 to 10 mm) between landing gear mount tubes (52) and pipe (23). Turn the wheel to R.H. stop, make sure there is a gap from 0.31 to 0.39 in (8 to 10 mm) between the landing gear leg and pipe (23).
- 16) Make sure all the tools and materials are removed and the work area is clean and free from debris.
- 17) Install the lower engine cowling. Make sure there is a minimum gap of 0.24 in (6 mm) between the R.H. vent hole and hose (24).
- 18) Install engine cowling 121 - refer to 71-10-01.



- |                      |                  |
|----------------------|------------------|
| 1 - Washer           | 10 - Nut         |
| 2 - Bolt             | 11 - Nut         |
| 3 - Nut              | 12 - Washer      |
| 4 - Washer           | 13 - Bolt        |
| 5 - Elastic stud     | 14 - Outlet tube |
| 6 - Muffler          | 15 - Bolt        |
| 7 - Lower half-clamp | 16 - Washer      |
| 8 - Bolt             | 17 - Nut         |
| 9 - Washer           |                  |

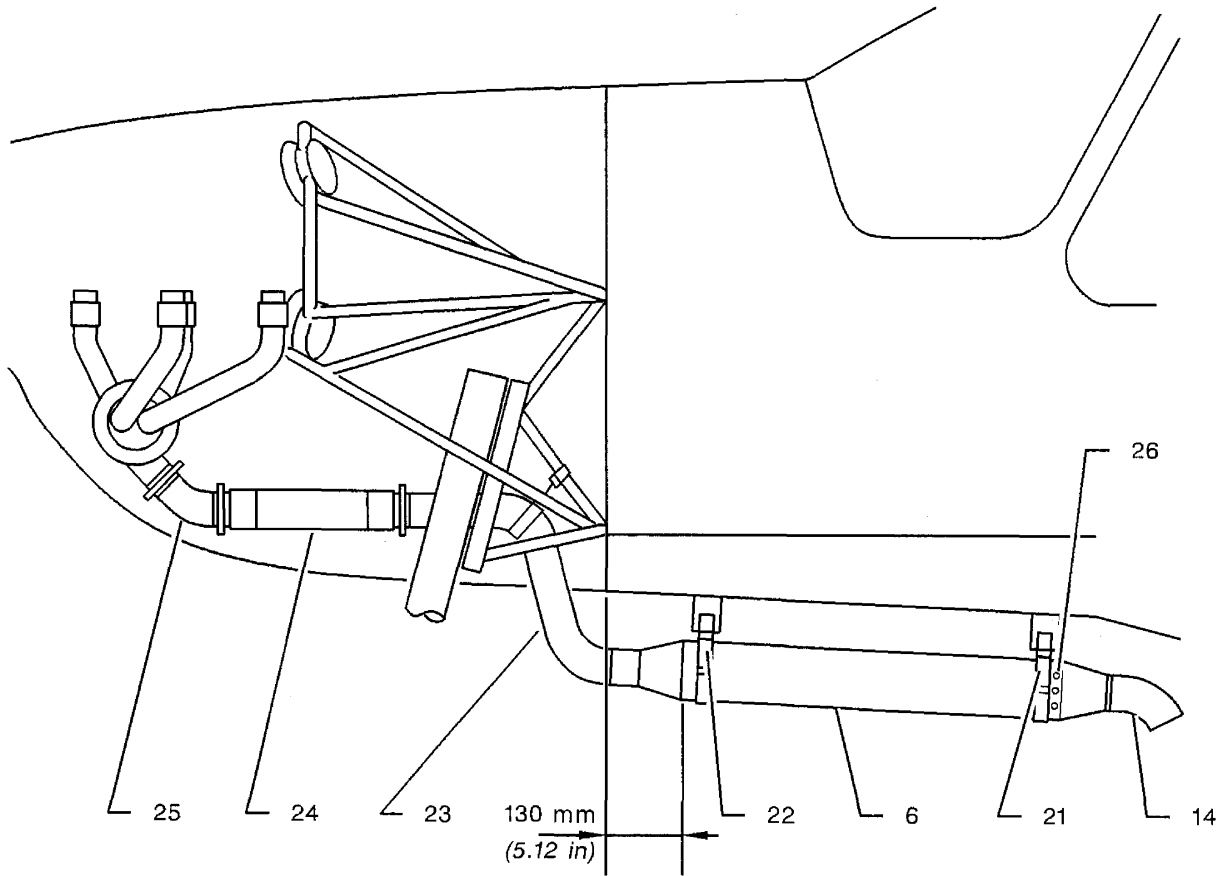


Muffler - Removal / Installation  
Figure 401

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Validity : OPTION

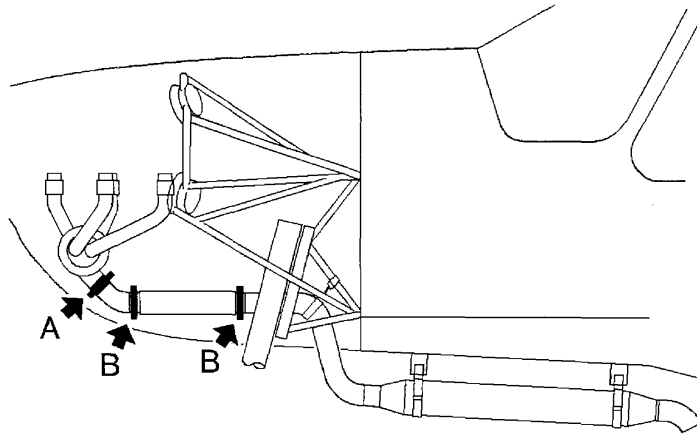
- 6 - Muffler
- 14 - Outlet tube
- 21 - Upper half-clamp
- 22 - Upper half-clamp
- 23 - Pipe
- 24 - Hose
- 25 - Connection elbow
- 26 - Screw



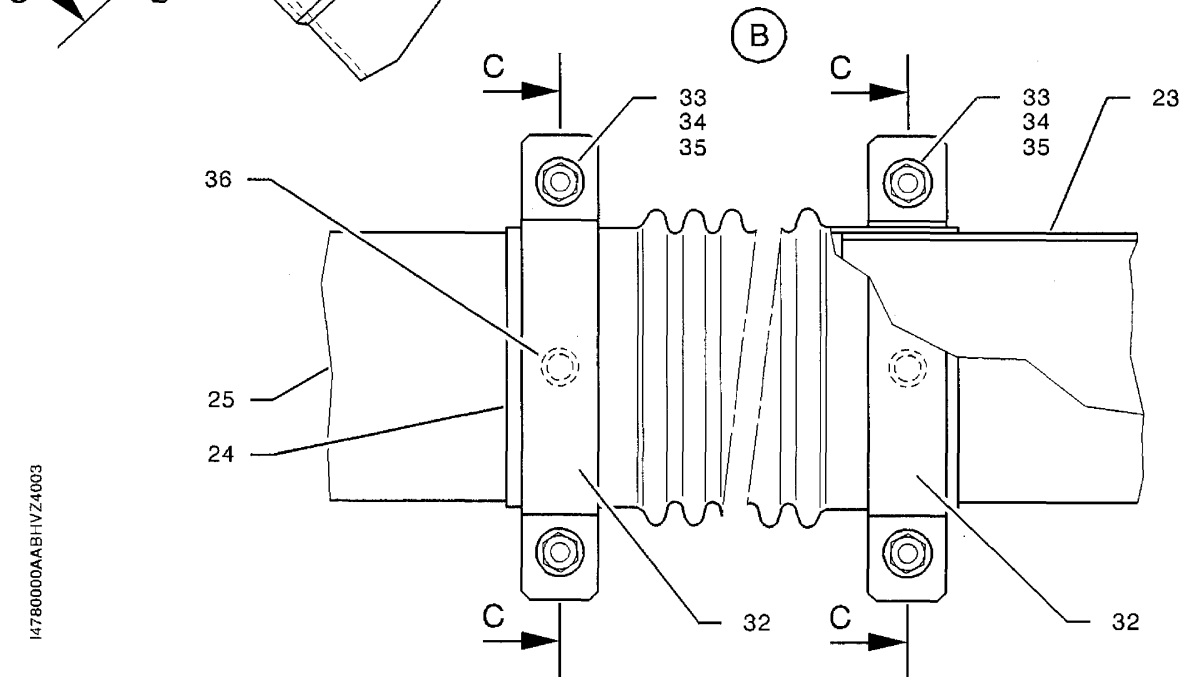
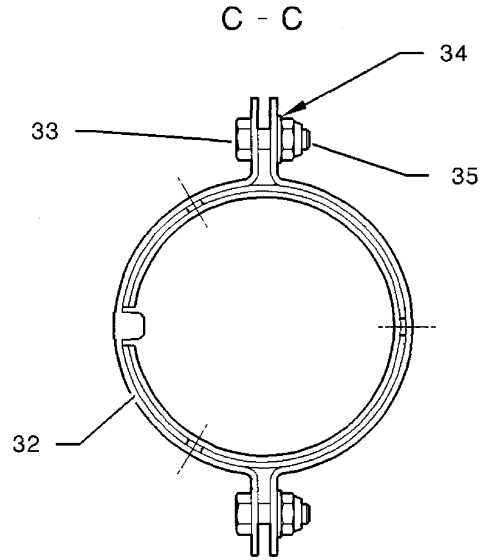
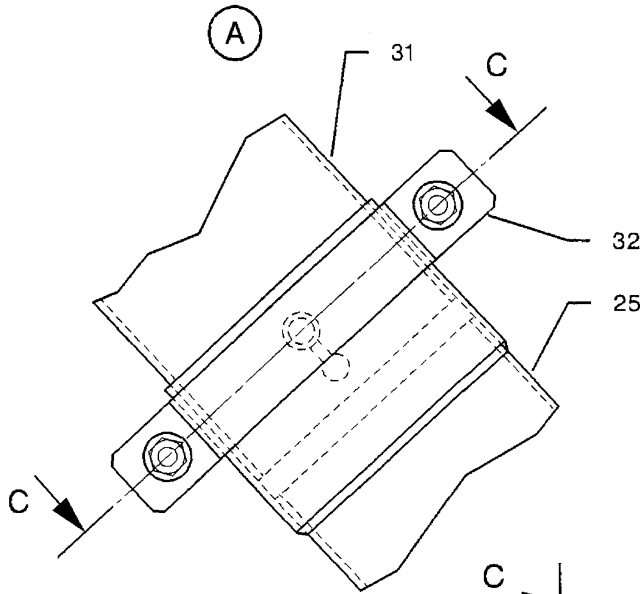
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Muffler - Removal / Installation  
Figure 402

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Validity : OPTION



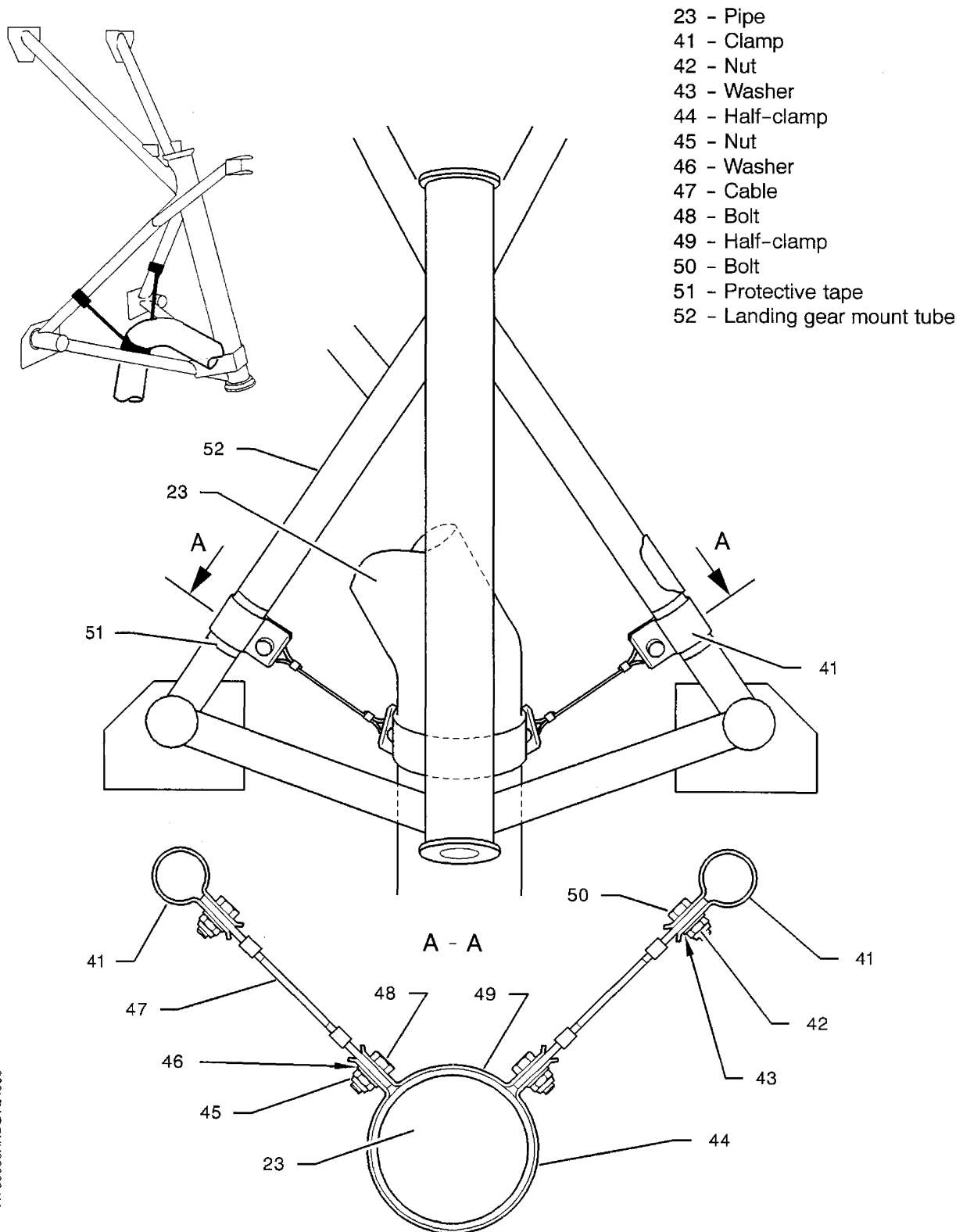
- 23 - Pipe
- 24 - Hose
- 25 - Connection elbow
- 31 - Exhaust outlet tube
- 32 - Clamp
- 33 - Bolt
- 34 - Washer
- 35 - Nut
- 36 - Hole



Muffler - Removal / Installation  
Figure 403

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Validity : OPTION

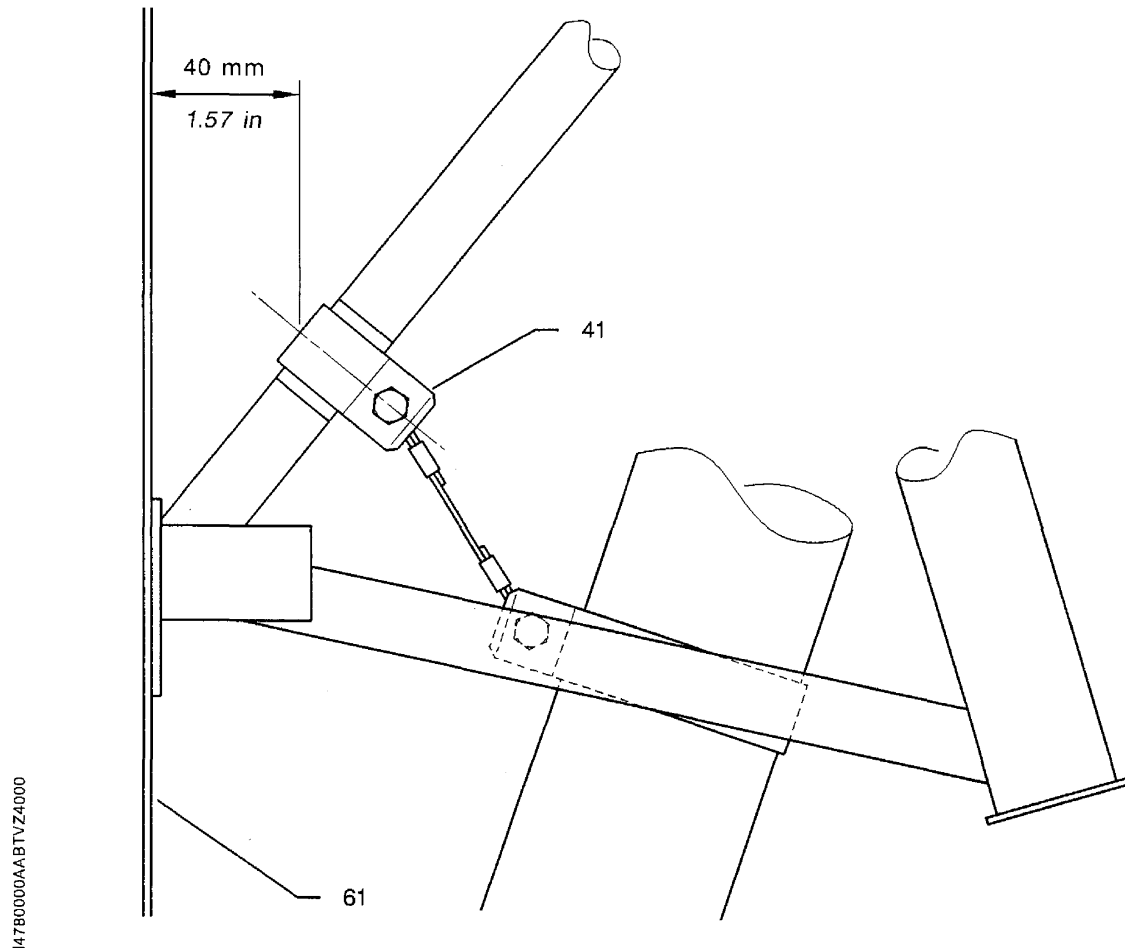
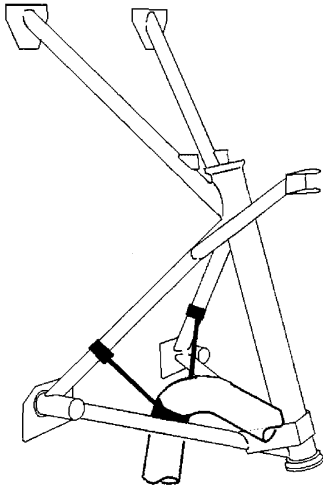


Muller - Removal / Installation  
Figure 404

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41 - Clamp  
61 - Firewall



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Muffler - Removal / Installation  
Figure 405

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Validity : OPTION

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