

---

TRANSLATION OF

**BOLLETTINO TECNICO**

Technical content of this Bollettino Tecnico is R.A.I. approved.  
The R.A.I. states mandatory compliance with inspections, modifications  
or technical directives and related time of compliance by means of relevant  
Prescrizioni di Aeronavigabilità

N° **109EP-5**

DATE **December 22, 1999**

REV.

---

Compliance with  
this bulletin is:

**MANDATORY**

---

**MODELS AFFECTED :** A109E

**SUBJECT :**

MODIFICATION OF ENGINE EXHAUST EJECTORS P/N 109-0601-51 BY  
APPLYING THE KIT P/N 109-0822-94.

**REASON :**

To render more efficient locking system of engine exhaust ejector P/N 109-0601-52  
and relative saddle.

**HELICOPTERS AFFECTED :**

All Agusta A109E helicopters up to S/N 11057, excluding S/Ns 11001, 11005,  
11047, 11049, 11055 and 11056.

**NOTE**

The compliance with this Bollettino supersedes requirements of Bollettino Tecnico  
N° 109EP-3 dated 22 December 1998.

**COMPLIANCE :**

Within and not later than 31 December 2000.

**DESCRIPTION :**

In order to improve the reliability of engine exhaust ejector installation P/N 109-  
0601-51 new saddle assemblies P/N 109-0601-79-131/-132 and new damper  
supports with improved shock characteristics have been designed.

In addition a new locking system of ejectors-saddles has been designed by using  
mounting bolts in lieu of the metallic clamp.

This Bollettino is issued with the purpose of providing the necessary instructions to  
apply subject kit including the relevant structural modifications.

---

An appropriate entry should be made in the aircraft log book upon accomplishment.  
If ownership of aircraft has changed, please, forward to new owner.

---

**REQUIRED MANPOWER :**

An estimated twelve (12) manpower hours are required for compliance with this Bollettino.

**WARRANTY :**

The parts required to apply the present Bollettino, if requested before its expiration date, shall be supplied under warranty by Agusta.

Agusta shall also recognize the 12 manhours listed in the Bollettino Tecnico at a fixed rate of USD. 40.00 an amount of USD. 480.00.

**REQUIRED MATERIALS :**

The following materials are required for compliance with this Bollettino:

<u>PART NUMBER</u>	<u>DENOMINATION</u>	<u>Q.TY</u>
109-0822-94-109	Retrofit kit to Reposition saddles ejector attachments (applicable to helicopters from S/N 11002 thru 11057 excluding S/Ns 11005, 11011, 11012, 11021, 11022, 11025, 11026, 11029, 11034, 11035, 11039 and 11040).	1
Consisting of:		
109-0323-53-207	LH aft bracket	.1
109-0323-53-208	RH aft bracket	.1
109-0323-53-213A1	Rib	.2
109-0323-53-217	LH fwd bracket	.1
109-0323-53-218	RH fwd bracket	.1
109-0601-79-131	LH saddle assy	.1
109-0601-79-132	RH saddle assy	.1
109-0602-18-101	Reinforcement plate assy	.2
109-0602-18-105	Strap	.2
109-0602-17-105	LH damper support	.1
109-0602-17-106	RH damper support	.1
109-0707-77-101	Hose assy	.1
109-0822-94-113	Laminated shim	.4
AN3CH5A	Bolt	.10
MS20470AD3-3	Rivet	.40
MS20470AD4-3	Rivet	.40
NAS1097AD4-4	Rivet	.20
LN9025-0510L	Washer	.34
LN9025-0610L	Washer	.12
NAS6603-3	Bolt	.8
MS21070-3	Nut-plate	.8
MS20427M3-4	Rivet	.20
M7885/2-4-02	Rivet	.35

5205 (BARRY)	Damper	.4
MS27039-0809	Screw	.8
MS27039-0810	Screw	.8
MS27039-0811	Screw	.8
MS27039-0812	Screw	.8
MS27039-0814	Screw	.8
MS27039-0815	Screw	.8
MS27039-0816	Screw	.8
MS21042L08	Self-locking nut	.8
NAS6604D20	Bolt	.4
MS20002C4	Washer	.4

109-0822-94-111	Retrofit kit to Reposition saddles ejector attachments (applicable to helicopters S/Ns 11011, 11012, 11021, 11022, 11025, 11026, 11029, 11034, 11035, 11039 and 11040).	1
-----------------	--	---

## Consisting of:

109-0323-53-207	LH aft bracket	.1
109-0323-53-208	RH aft bracket	.1
109-0323-53-213A1	Rib	.2
109-0323-53-217	LH fwd bracket	.1
109-0323-53-218	RH fwd bracket	.1
109-0601-79-131	LH saddle assy	.1
109-0601-79-132	RH saddle assy	.1
109-0602-18-107	Strap	.4
109-0602-17-105	LH damper support	.1
109-0602-17-106	RH damper support	.1
109-0707-77-101	Hose assy	.1
109-0822-94-113	Laminated shim	.4
AN3CH5A	Bolt	.8
MS21076L3	Nut-plate	.8
MS20470AD3-3	Rivet	.40
MS20470AD4-3	Rivet	.40
NAS1097AD4-4	Rivet	.20
LN9025-0510L	Washer	.32
LN9025-0610L	Washer	.12
NAS6603-3	Bolt	.8
MS21070-3	Nut-plate	.8
MS20427M3-4	Rivet	.20
M7885/2-4-02	Rivet	.55
5205 (BARRY)	Damper	.4
MS27039-0809	Screw	.8
MS27039-0810	Screw	.8
MS27039-0811	Screw	.8
MS27039-0812	Screw	.8
MS27039-0814	Screw	.8

MS27039-0815	Screw	.8
MS27039-0816	Screw	.8
MS21042L08	Self-locking nut	.8
NAS6604D20	Bolt	.4
MS20002C4	Washer	.4
NAS1097U3-3	Rivet	.16

In addition, for each kit, the following consumable materials are required:

<u>SPECIFICATION</u>	<u>DENOMINATION</u>	<u>Q.TY</u>
MIL-P-23377	Primer (PRIMERMILP23377)	50 gr.
199-05-004	Abrasive Proseal	60 gr.
Type II, class B2	(code 900001586)	

**SPECIAL TOOLS :**

Ejector saddles positioning tool P/N 109-3600-36-101.

**WEIGHT AND BALANDLE CHANGES :**

Compliance with this Bollettino causes a weight increase of 0.368 Kg, the change of C.G. is negligible.

**REFERENCES :**

Maintenance Manual.

**PUBLICATIONS AFFECTED :**

Pertinent illustrated Parts Catalog  
Pertinent Maintenance Manual.

**COMPLIANCE INSTRUCTIONS :**

**GENERAL NOTE**

After drilling each hole, remove burrs and metal shavings. Apply on bare metal a layer of primer with the exception of hole drilled on ejector.

1. Prepare the helicopter on ground for a safe maintenance, disconnect any power source.
2. Gain access to engine exhaust ejectors by removing upper rear cowling and by opening engine inspection door.
3. Level helicopter in accordance with pertinent Maintenance Manual instructions.

**NOTE**

The following procedure is applicable to both LH and RH engine exhaust ejectors.

4. Remove engine exhaust ejector and relative saddle as follows:

- 4.1 Remove:
- ejector from saddle; for helicopters provided with an attachment clamp, remove clamp and discard it (figure 1), for helicopters provided with attachment bolts, remove bolts and metallic strap and discard them.
  - ejector from bulkhead P/N 109-0641-46 by removing associated hardware, retain both ejector and bolts for reuse.
  - if installed, seal P/N 109-0601-52-123; from ejector and discard it (figure 1).
  - ejector saddle, plate P/N 109-0601-91 if installed, by removing damper nuts, discard items (figures 2,3 and 4)
5. If installed, disconnect and discard hose assy P/N 109-0707-84-101 of engine fire extinguisher system as indicated in figure 5.
6. Connect a new hose assy P/N 109-0707-77-101 to the engine fire extinguisher system as indicated in figure 5.
7. Rework inner support assemblies as follows:

**NOTE**

Adequately protect tail rotor drive shaft and engine exhaust duct to avoid damage and prevent entry of metal shavings in engine.

- 7.1. Mark on central beam position of support or bracket, which of the two is installed, as indicated in figures 6 and 7.
- 7.2. Mark a parallel line to the preceding marked line at a distance of 6 mm as indicated in figures 6 and 7.
- 7.3. Unrivet machined support P/N 109-0302-05-101/-103 or machined support PN 109-27479-103/-104 with relative plate P/N 109-0302-06-101/-102 or bracket P/N 109-0302-99-103/-104, which of these are installed, from central beam.
- 7.4. Position, as indicated in figures 6 and 7, new damper support P/N 109-0602-17-105 (LH) /-106 (RH). Countermark position of beam for subsequent nut-plate installation. Remove damper support and countermark beam with nut-plates.

**NOTE**

Remove nails from beam which may hinder positioning of new support.

- 7.5. Drill four (4) holes  $\varnothing$  5.28 to 5.44 mm and eight (8) holes  $\varnothing$  2.49 to 2.62 mm for nut-plates installation on beam.
- 7.6. Rivet the four nut-plates P/N MS21070-3 on the internal side of the beam with rivets P/N MS20427M3-4.

- 7.7. Close holes left free on central beam using (refer to figure 6):
  - rivets P/N NAS 1097AD4-4 which correspond with the surface of the new supports.
  - rivets P/N MS20470AD4-3 or MS20470AD3-3 to adjacent areas.
- 7.8. Secure support P/N 109-0602-17 as indicated in figure 6 by using four (4) bolts P/N NAS 6603-3 and four (4) washers P/N LN9025-0610L.
8. Rework external fitting assemblies as follows:
  - 8.1. For helicopters not provided with plates P/N 109-0601-91-101 (LH) /-102(RH) (figure 8), rework external fittings as follows:
    - 8.1.1. Unrivet rib P/N 109-27479-109 (LH) /-110 (RH) from brackets (refer to figure 9)
    - 8.1.2. Install tool P/N 109-3600-36-101 on support P/N 109-0602-17 as indicated in figure 10 and level it by using adjustment handle.
    - 8.1.3. Install rib P/N 109-0323-53-213A1 (LH and RH) on centering assy P/N 109-3600-36-115 and countermark rib with brackets.
    - 8.1.4. Remove tools and rib and drill holes  $\varnothing$  3.30 to 3.43 mm on rib.
    - 8.1.5. Rivet rib to brackets using rivets P/N M7885/2-4-02.
  - 8.2. For helicopters provided with plate P/N 109-0601-91-101 (LH /-102) (RH) (figure 8), rework external fittings as follows:
    - 8.2.1. Gain access to baggage compartment area and remove upper cover.

**CAUTION**

Exercise extreme care during drilling of side beam to avoid damage to hydraulic hoses and cables fitted inside the beam.

- 8.2.2. Unrivet and remove support assy P/N 109-0323-53 (consisting of the rib and two (2) brackets).

**NOTE 1**

Remove from inside of side beam, by gaining access from baggage compartment, work shavings.

**NOTE 2**

Prior to installing rivets on side beam, immerge them in Proseal.  
Apply a light layer of Proseal on all faying surfaces of brackets – beam.

- 8.2.3. Fill free holes using rivets P/N M7885/2-4-02.
  - 8.2.4. Install tool P/N 109-3600-36-101 on support 109-0602-17 as indicated in figure 10 and level it by using the adjustment handwheel .  
Ensure to position tool parallel to bulkhead assy (refer to figure 9).
  - 8.2.5. Install rib P/N 109-0323-53-213A1 (LH and RH) on centering assy P/N 109-3600-36-115 and position fwd bracket P/N 109-0323-53-217 (LH) /-218 (RH) on beam as indicated in figure 9. Countermark beam with bracket.
  - 8.2.6. Position aft bracket P/N 109-0323-53-207 (LH/ -208 (RH) on beam as indicated in figure 9.  
Countermark beam with bracket.
  - 8.2.7. Drill beam  $\varnothing$  3.30 to 3.43 mm and secure brackets to beam using rivets P/N MS 20470AD4 or in alternative rivets P/N M7885/2-4-02.
  - 8.2.8. Countermark rib P/N 109-0323-53-213A1 (LH and RH) with brackets.
  - 8.2.9. Remove tool and rib and drill rib and brackets  $\varnothing$  3.30 to 3.43 mm.
  - 8.2.10 Secure rib to brackets using rivets P/N M7885/2-4-02.
  - 8.2.11 Reinstall baggage compartment upper cover.
9. Install damper P/N BARRY 5205 on support P/N 109-0602-17 and secure as indicated in figure 11 by using four (4) screws P/N MS 27039-0814, eight (8) washers P/N LN9025-0510L and four (4) nuts P/N MS21042-L08.
  10. Install damper P/N BARRY 5205 on support assy and secure as indicated in figure 11 by using four (4) screws P/N MS27039-0809; four (4) and washers P/N LN9025-0510L.

**CAUTION**

Ensure that damper is installed with centering ring facing downwards as indicated in figure 11.

11. For helicopters that were provided with a metallic clamp to secure ejectors-saddles (refer to figure 1), rework ejectors and saddles as follows:
  - 11.1. Match saddle P/N 109-0601-79-131 (LH) /-132 (RH) with metallic strap P/N 109-0602-18-105 and drill  $\varnothing$  5.0 mm  
Enlarge holes of metallic strap to  $\varnothing$  7.5 mm (refer to figure 12)
  - 11.2 Install saddle P/N 109-0601-79-131 (LH) and 109-0601-79-132 (RH) on relative dampers, as indicated in figure 11, by using for each damper: one (1) bolt P/N NAS 6604D20, one (1) washer P/N

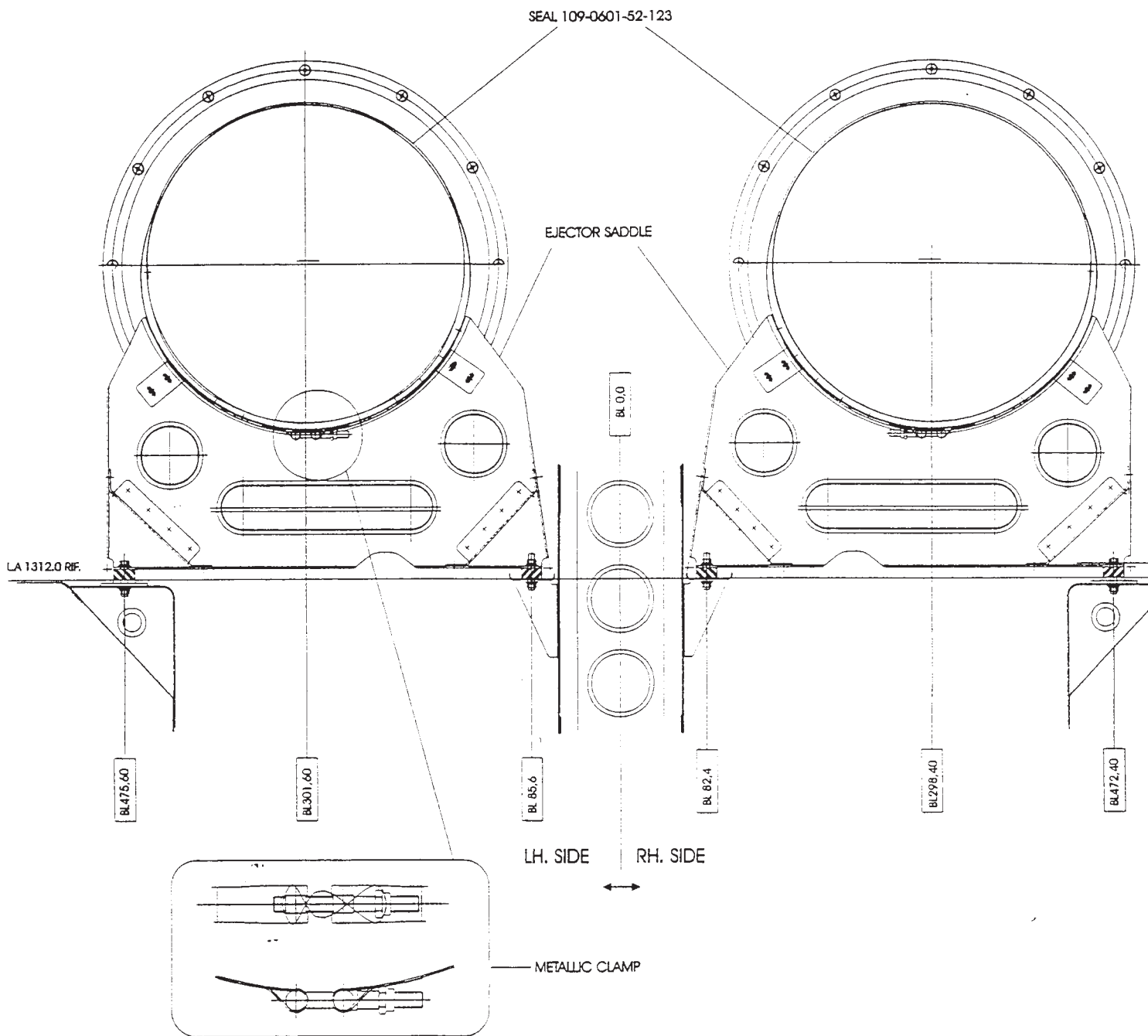
MS20002C4, one (1) washer P/N LN 9025-0610L, and one (1) nut P/N MS21042-4.

- 11.3 Position ejector on saddle and secure to bulkhead with hardware previously removed.
- 11.4 Countermark ejector using saddle holes. Remove ejector and saddle.
- 11.5 Drill ejector  $\varnothing$  7.5 mm as indicated in figure 12.
- 11.6 Install ejector on helicopter and secure to bulkhead, tighten using hardware previously removed.
- 11.7 Detach saddle from damper by removing associated hardware.
- 11.8 Install strap P/N 109-0602-18-105 between ejector and saddle and position reinforcement plate P/N 109-0602-18-101 inside ejectors (refer to figure 12). Secure ejector to relative saddle with five (5) bolts P/N AN3CH5A and five (5) washers P/N AN960C-10L (ref figure 12)
- 12 For helicopters that were provided with bolts to secure ejector-saddles, rework ejectors and saddles as follows:
  - 12.1. Install saddle P/N 109-0601-79-131 (LH) and 109-0601-79-132 (RH) on relative dampers, as indicated in figure 10, by using for each damper: one (1) bolt P/N NAS6604D20 one (1) washer P/N MS20002C4, one (1) washer P/N LN 9025-0610L, and one (1) bolt P/N MS 21042-4.
  - 12.2. Position ejector on saddle and secure to bulkhead with hardware previously removed. Tighten.
  - 12.3. Countermark saddle using ejector holes.
  - 12.4. Remove saddle from dampers.
  - 12.5. Drill saddle with guide holes  $\varnothing$  2.5 mm and using the saddle countermark strap P/N 109-0602-18-107 and drill it with guide holes  $\varnothing$  2.5 mm.
  - 12.6 Fabricate a strap using aluminium to the following dimensions (refer to figure 14):
    - length 386.0 mm
    - width 32.0 mm
    - thickness 6.4 mm
  - 12.7 Install on saddle: strap drilled to  $\varnothing$  2.5 mm, fabricated aluminium strap and a new strap P/N 109-0602-18-107.  
Ensure that straps are correctly seated on saddle (refer to figure 13).
  - 12.8. Drill thru holes to  $\varnothing$  2.5 mm.



- 12.9 Remove upper strap, (reinforcement plate) and enlarge holes to  $\varnothing$  6.5 mm, countermark by using nut-plates P/N MS 21076L3 and drill holes  $\varnothing$  2.49 to 2.59 mm in order to be riveted afterwards (refer to figure 14).
- 12.10 Secure nut plates with four (4) rivets P/N NAS1097U3-3 to obtain reinforcement assy (refer to figure 14).
- 12.11 Remove aluminium strap.
- 12.12 Enlarge guide holes  $\varnothing$  2.5 mm of strap P/N 109-0602-18-107 resting against saddle to  $\varnothing$  7.5 mm (refer to figure 14).
- 12.13 Enlarge guide holes  $\varnothing$  2.5 mm of saddle to  $\varnothing$  5.0 mm.
- 12.14 Install strap P/N 109-0602-18-107 drilled to  $\varnothing$  7.5 mm between ejector and saddle and position reinforcement assy inside ejectors.  
Secure ejector to relative saddle with four (4) bolts P/N AN3CH5A and four (4) washers P/N AN960C-10L (refer to figure 12).
13. Record, if present, the vertical distance between saddle and damper.
14. If play results greater than 1 mm remove dampers and install laminated shim (peel as necessary) P/N 109-0822-94-113, as indicated in figure 11.
  - 14.1 Secure laminated shim and damper to support by using :
    - four (4) screws P/N MS 27039-0814 or MS27039-0815 or MS 27039-816, whichever is suitable.
    - eight (8) washers P/N LN 9025-0510L.
    - four (4) nuts P/N MS 21042-L08.
  - 14.2 Secure laminated shim and damper to fittings by using :
    - four (4) screws P/N MS 27039-0810 or MS27039-0811 or MS 27039-812, whichever is suitable.
    - eight (8) washers P/N LN 9025-0510L.
    - four (4) nuts P/N MS 21042-L08.
15. Install saddles P/N 109-0601-79-131 (LH) and 109-0601-79-132 (RH) on relative dampers, as indicated in figure 10, by using for each damper: one (1) bolt P/N NAS 6604D20, one (1) washer P/N MS20002C4, one (1) washer P/N LN9025-0610L, one (1) nut P/N MS 21042-4. Torque to 2.26 Nm.
16. Reinstall upper engine cowling and close engine inspection door.
17. Return helicopter in ready to flight condition.
18. Torque bolts securing saddles-ejectors after the first five (5) to ten (10) flight hours .

19. This new engine exhaust ejector P/N 109-0601-51-115 /-116 modified in accordance with this Bollettino must comply with the inspection requirements contained in the pertinent Maintenance Manual.



NOTE: ALL MEASUREMENTS ARE EXPRESSED IN mm

FIGURE 1

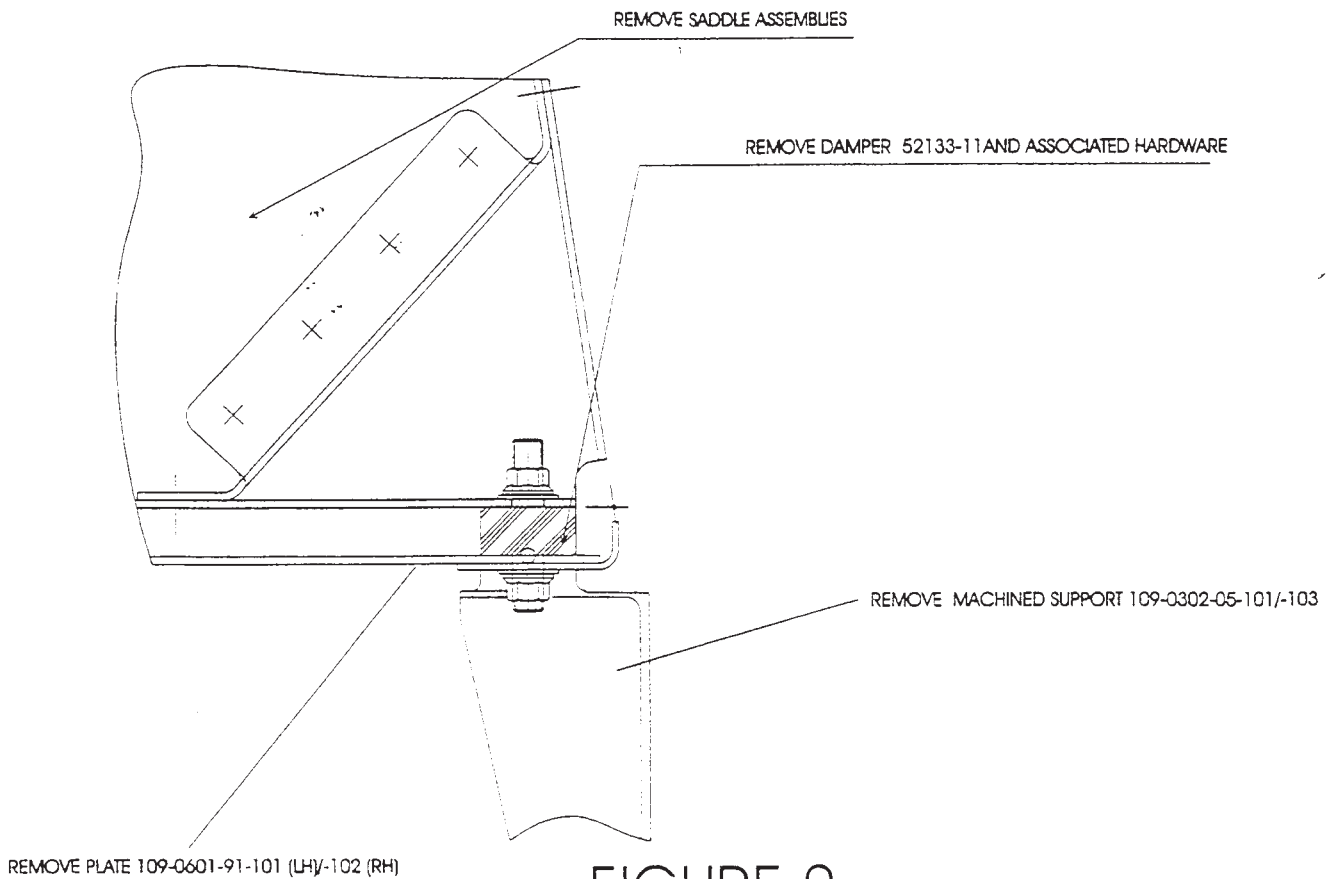
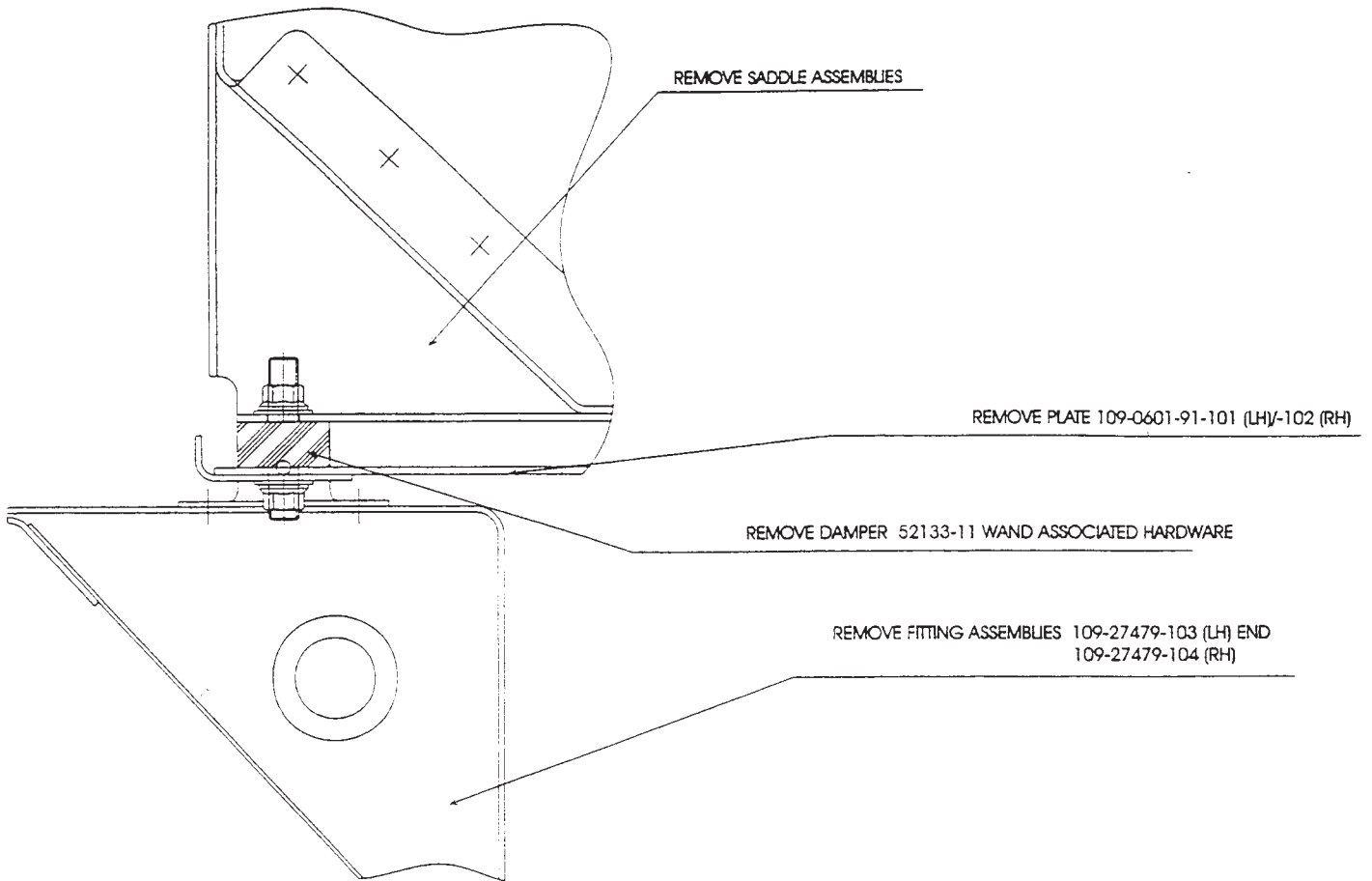


FIGURE 2

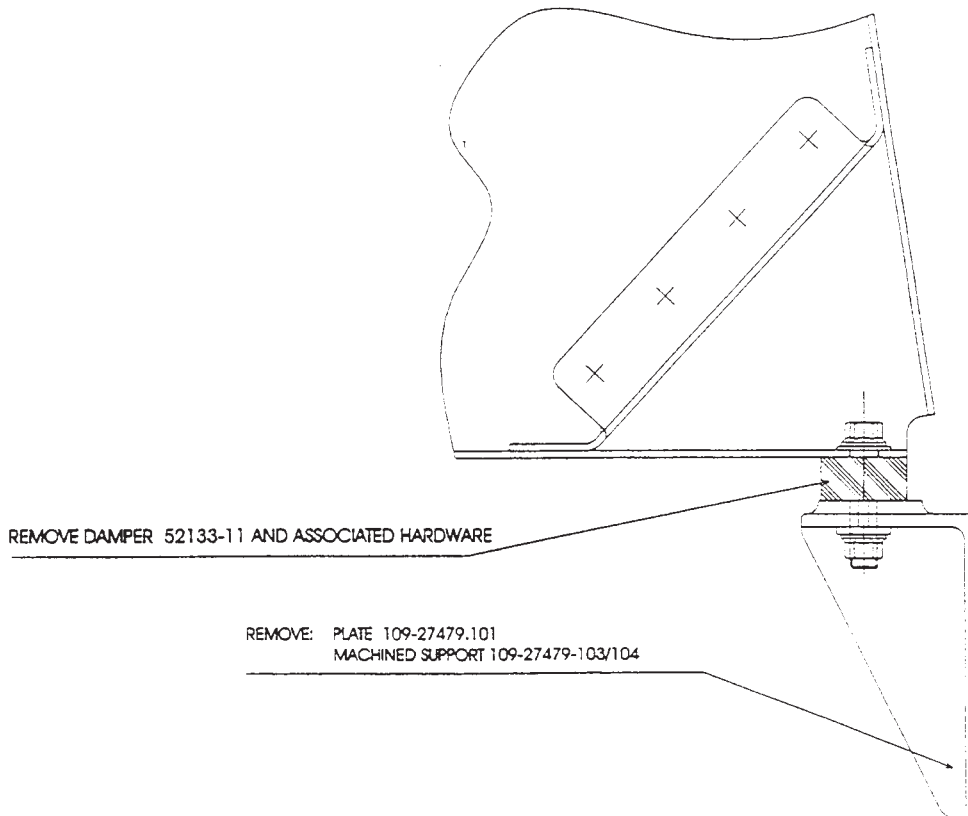
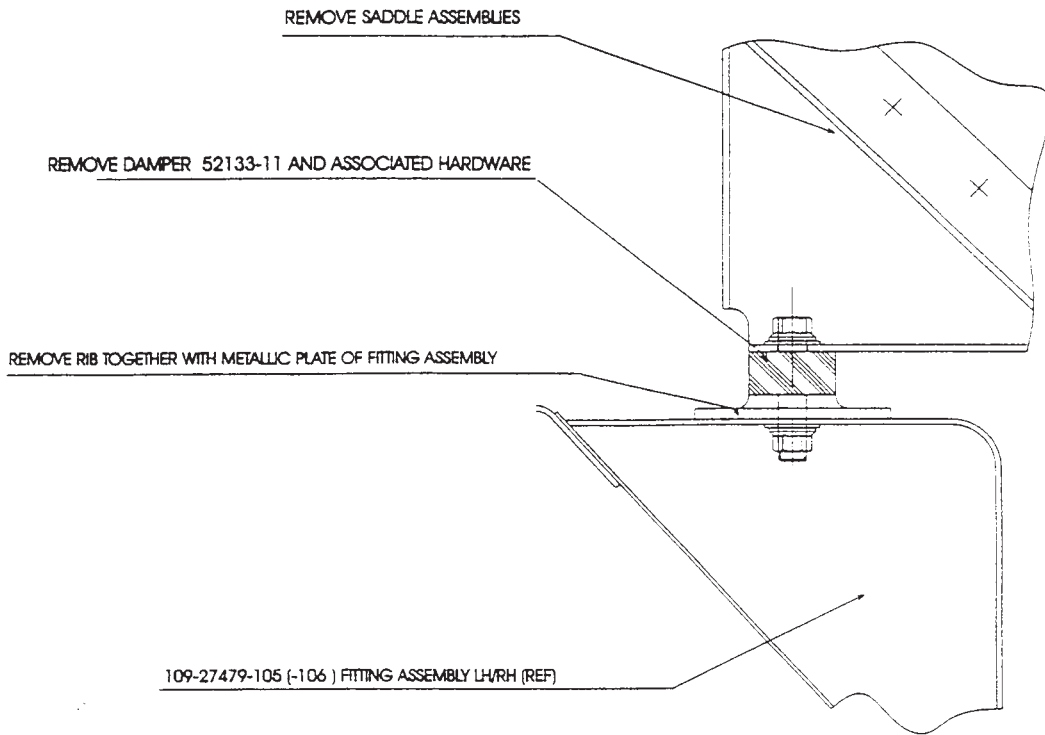


FIGURE 3

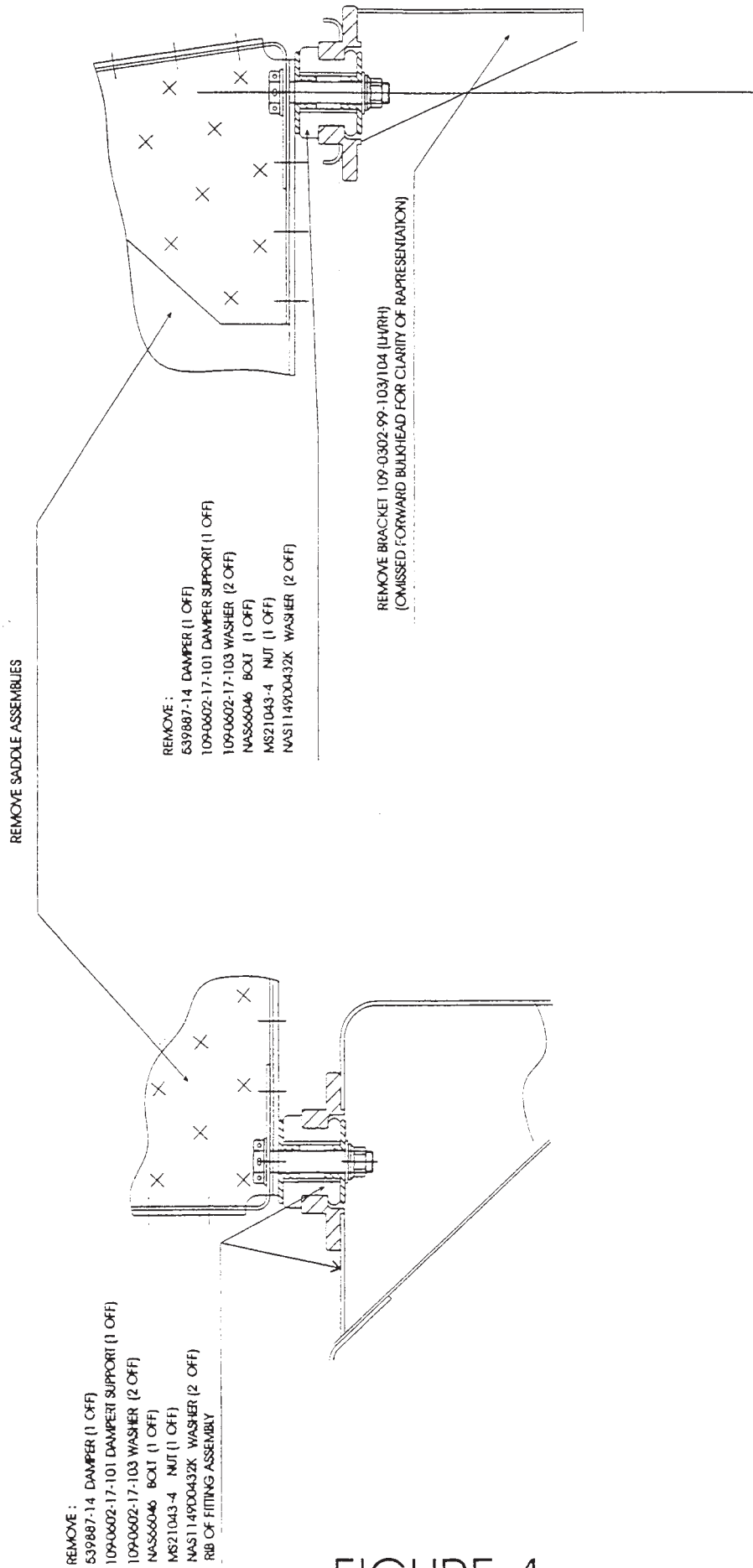


FIGURE 4

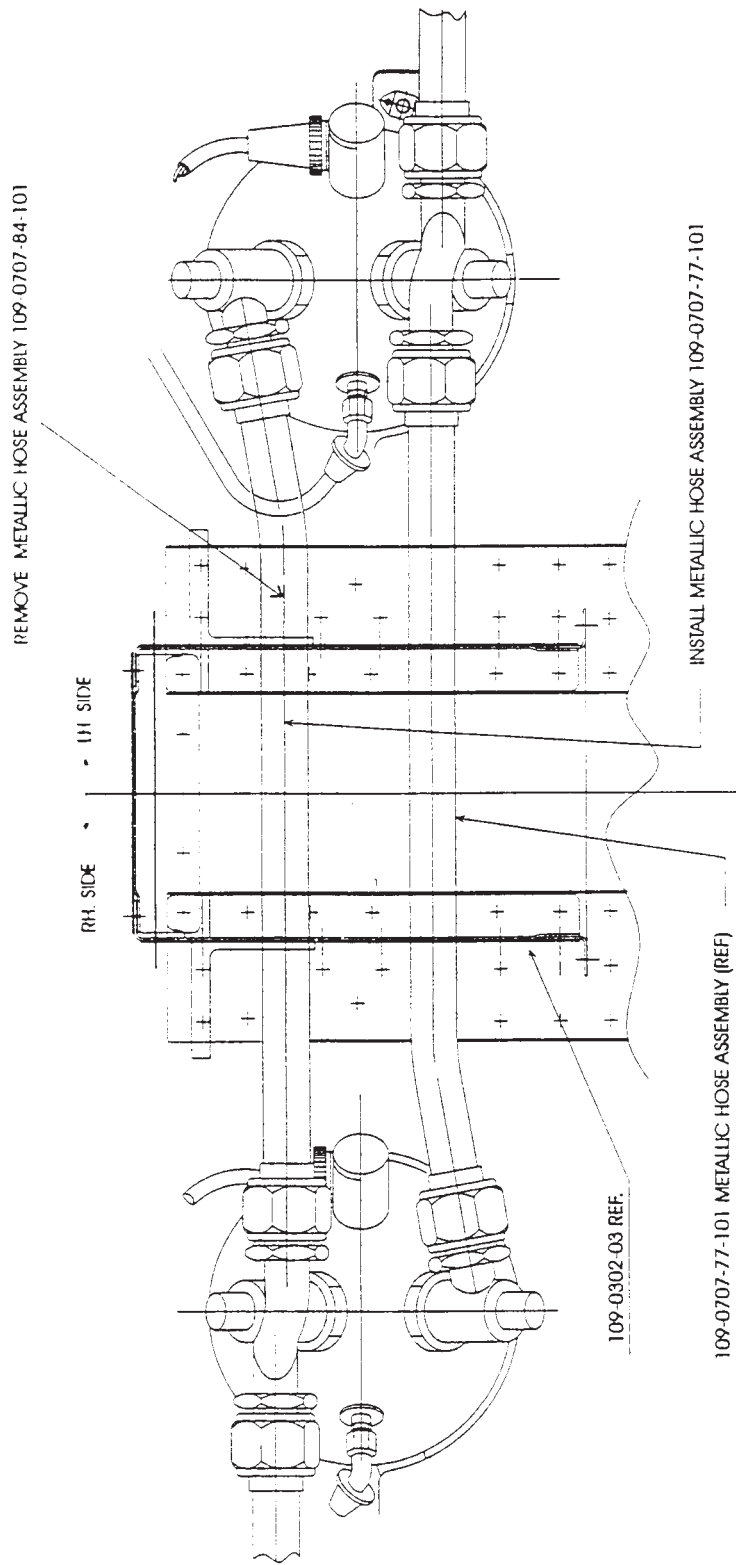


FIGURE 5

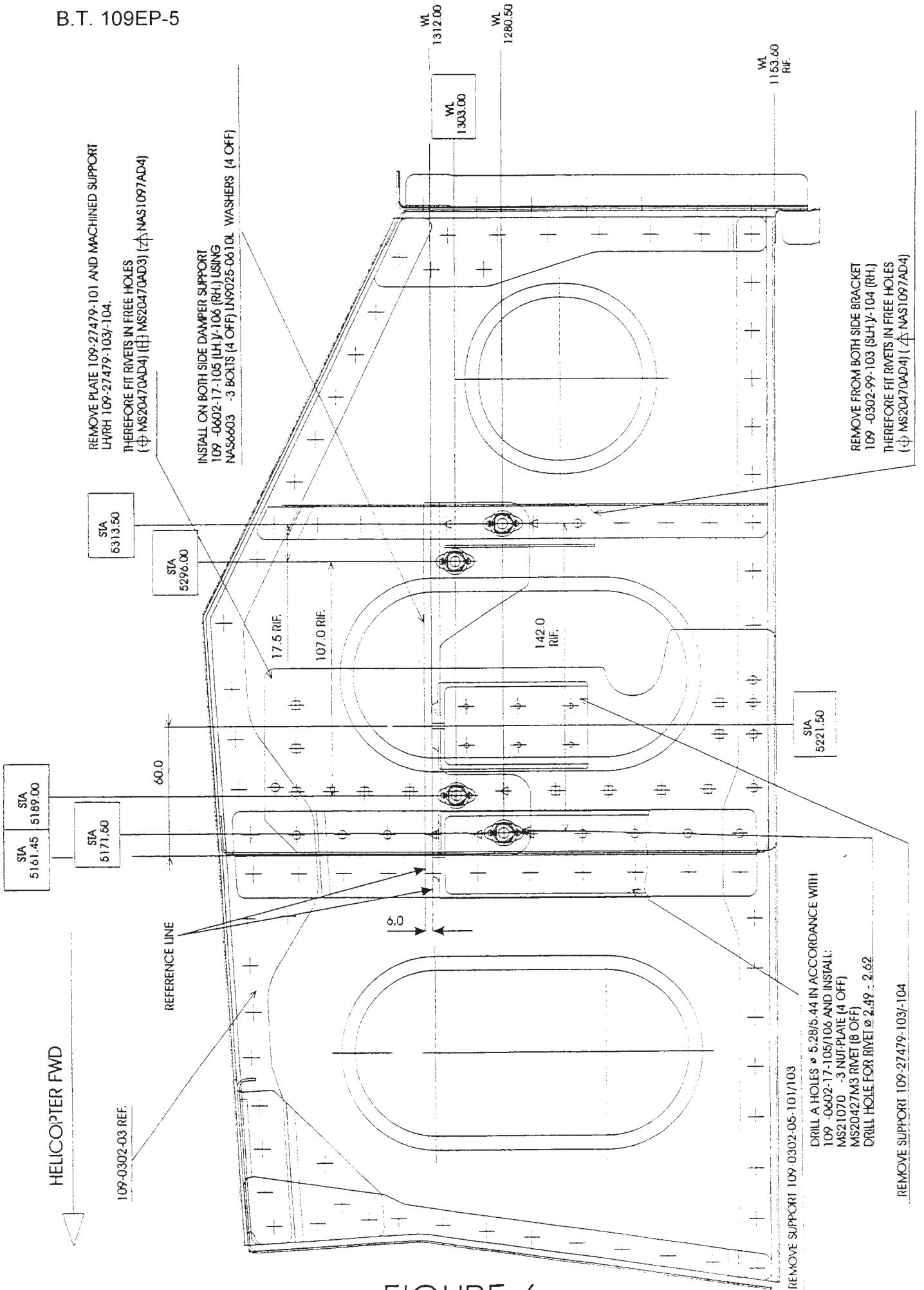


FIGURE 6



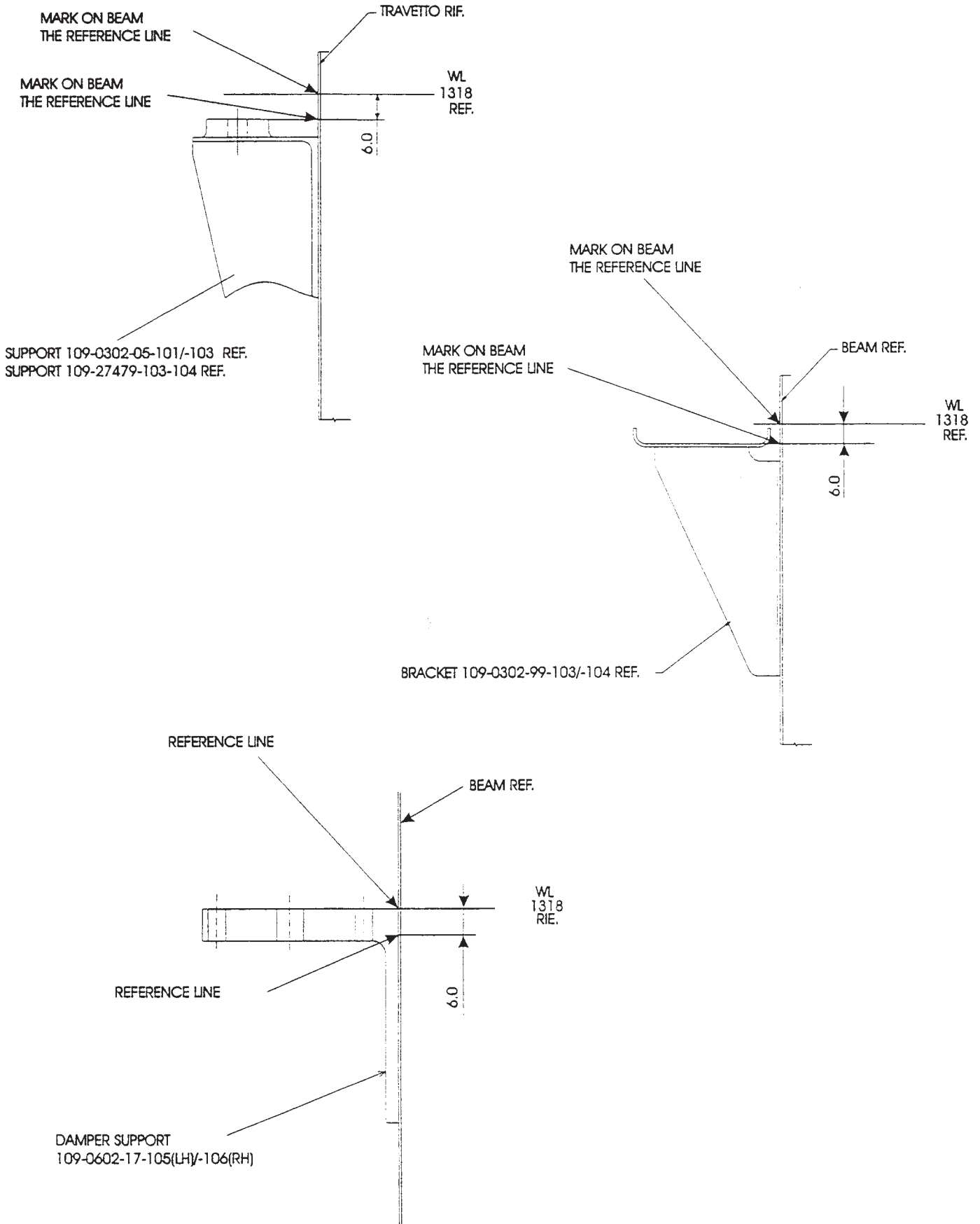


FIGURE 7

REMOVE: PLATE 109-27479-101  
MACHINED SUPPORT 109-0302-05-101/103

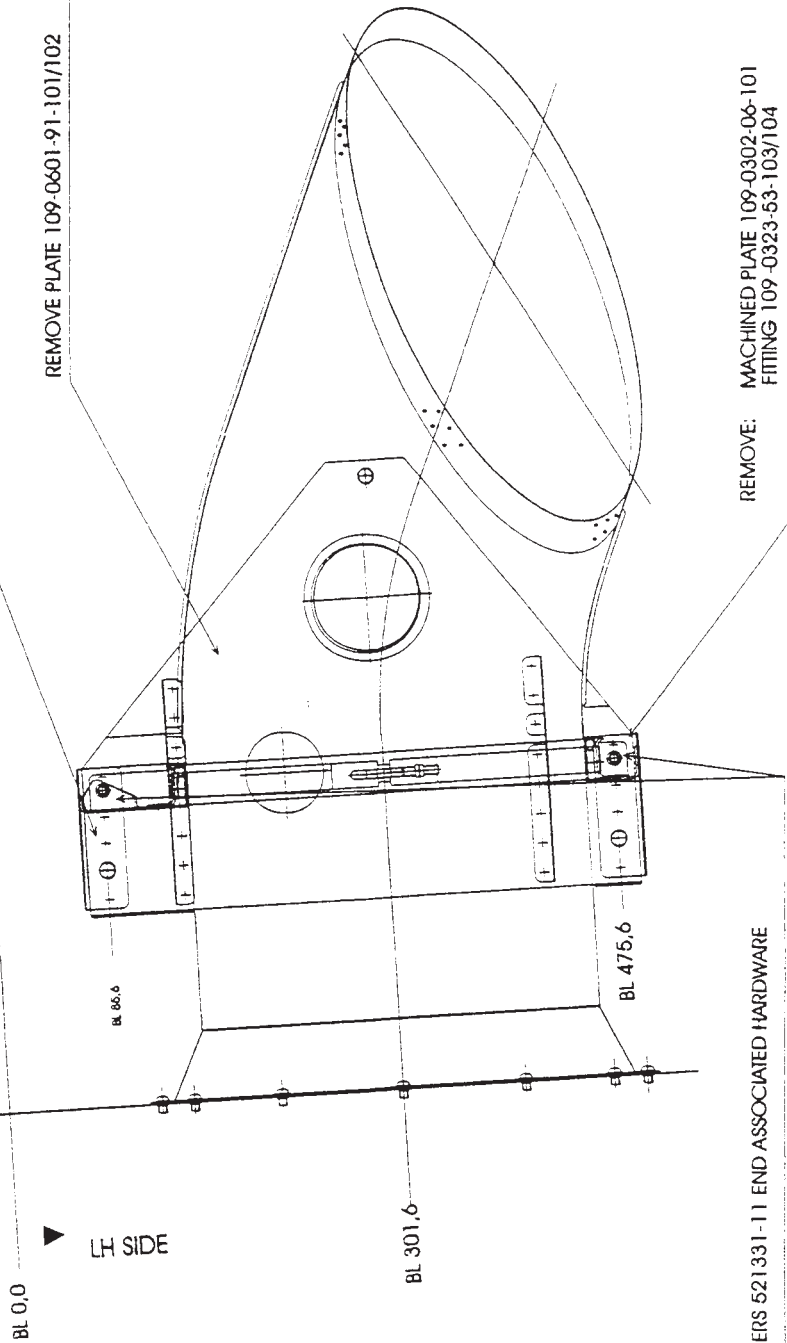


FIGURE 8

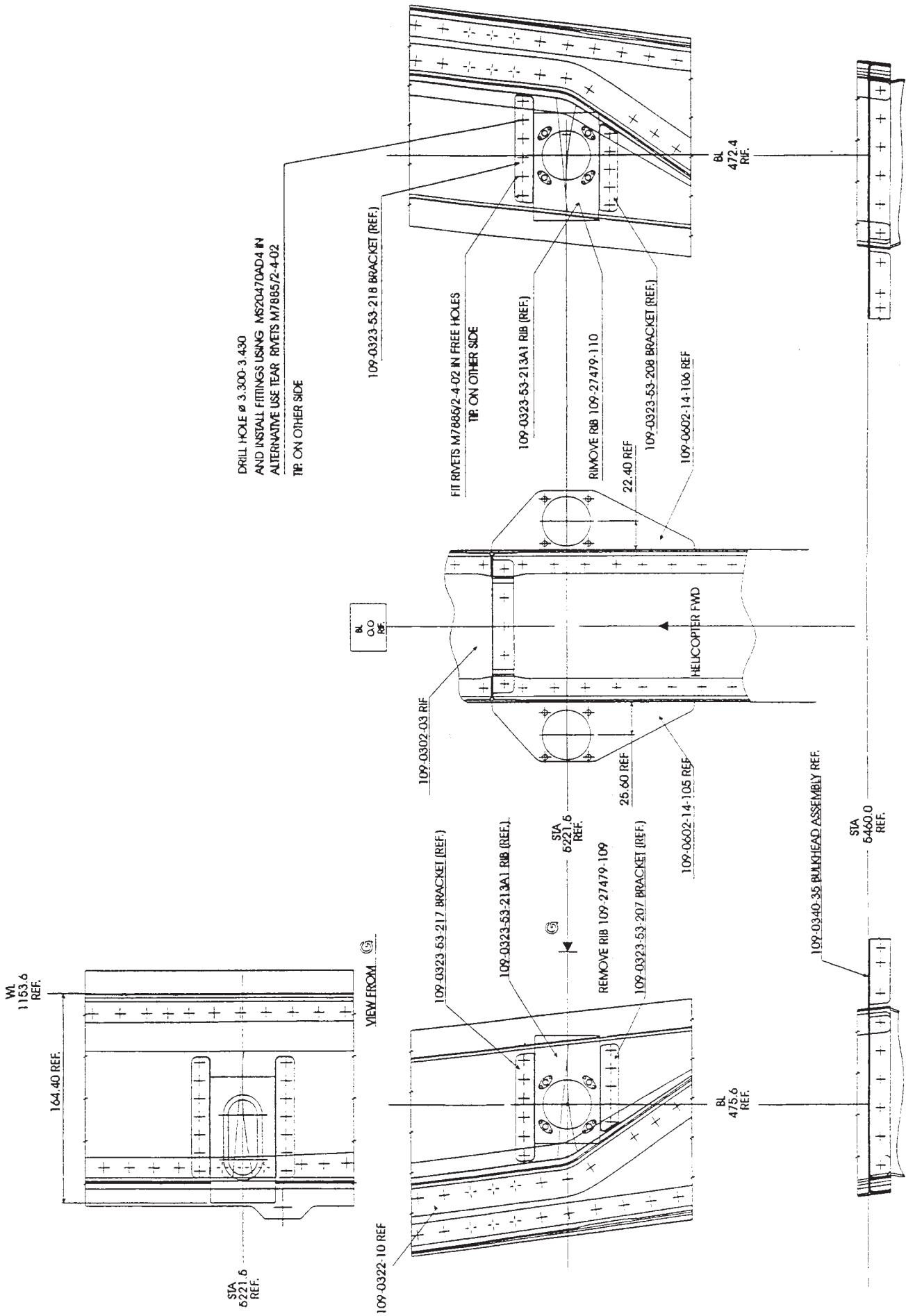


FIGURE 9

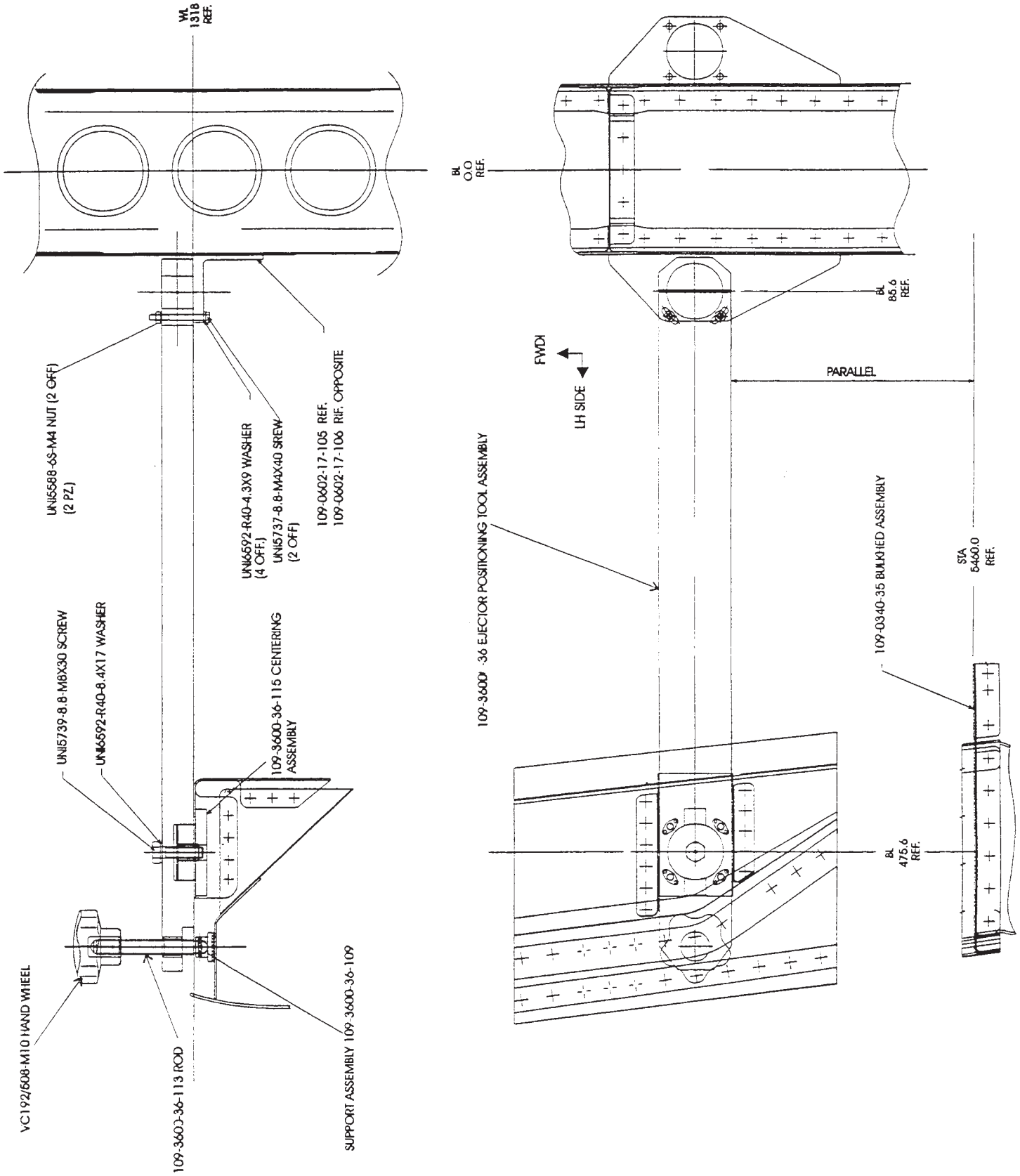
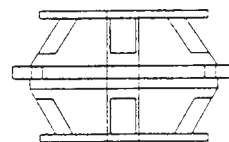
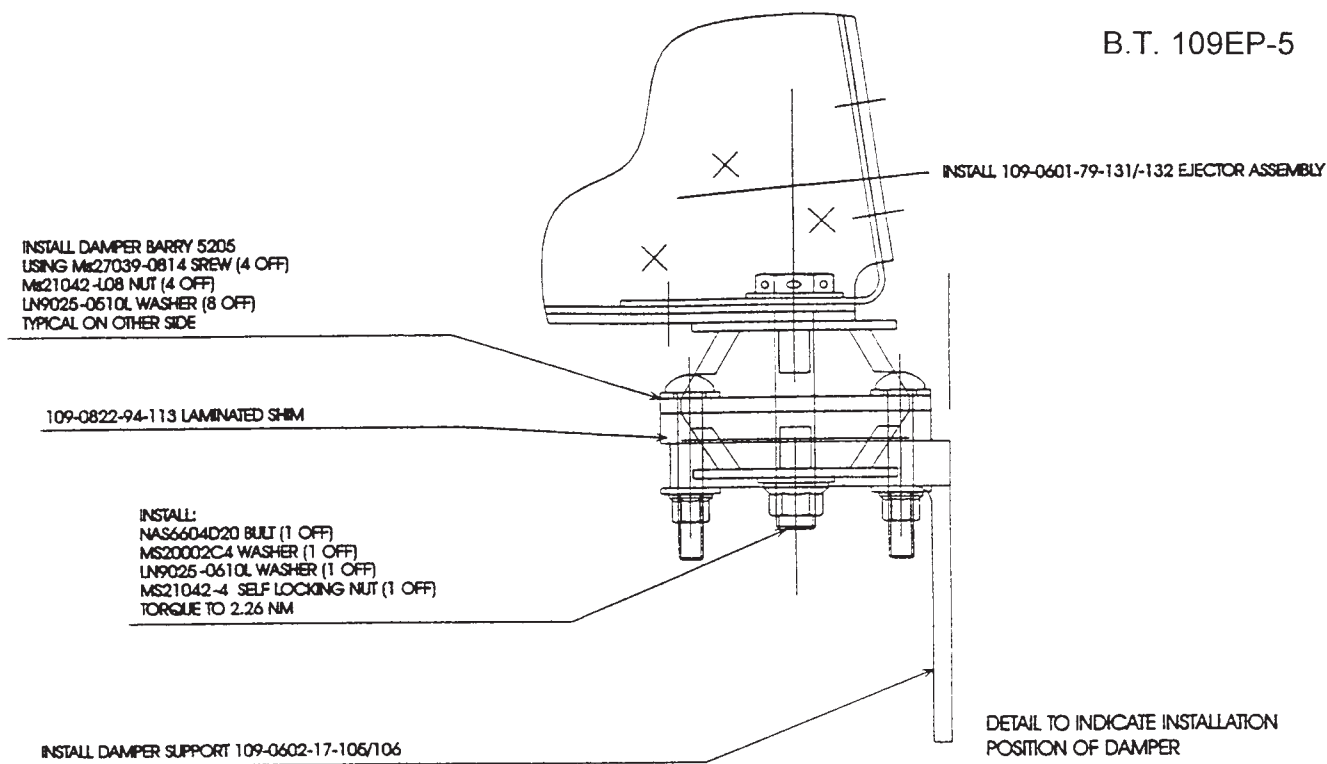


FIGURE 10



DAMPER SHALL BE INSTALLED WITH CENTERING RING OF PLATE FACING DOWNWARDS

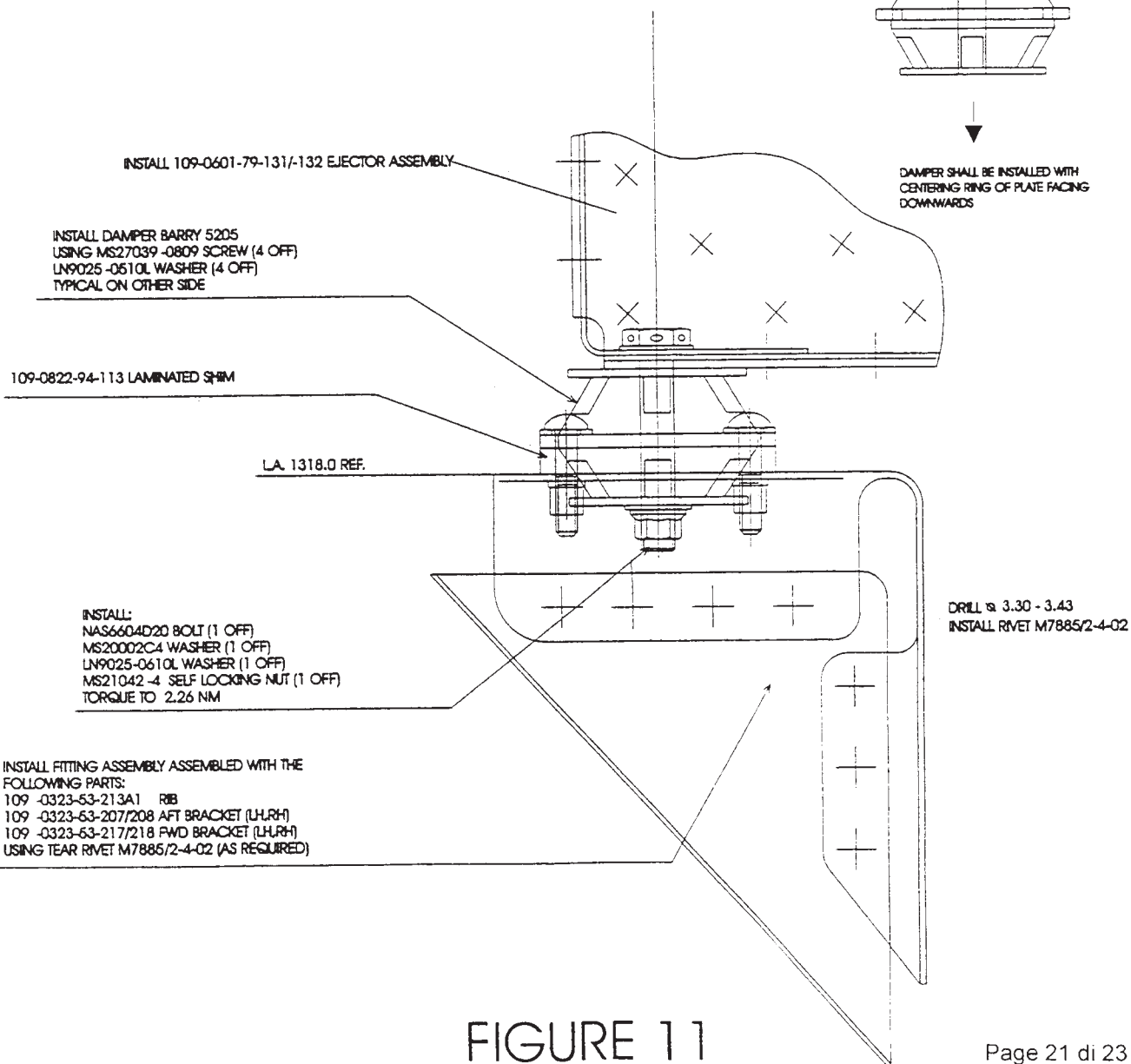


FIGURE 11

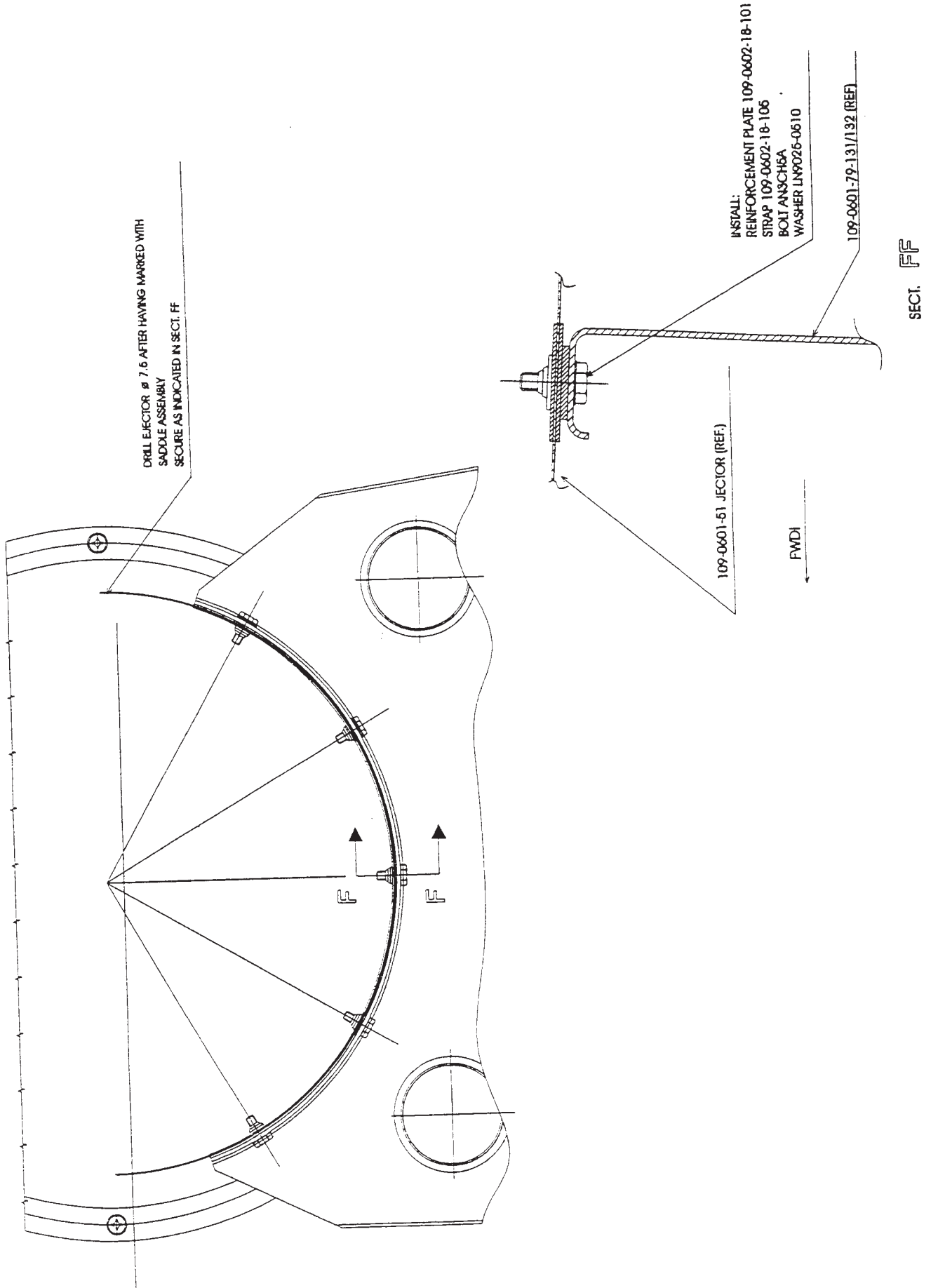


FIGURE 12

DRAWINGS NOT IN SCALE

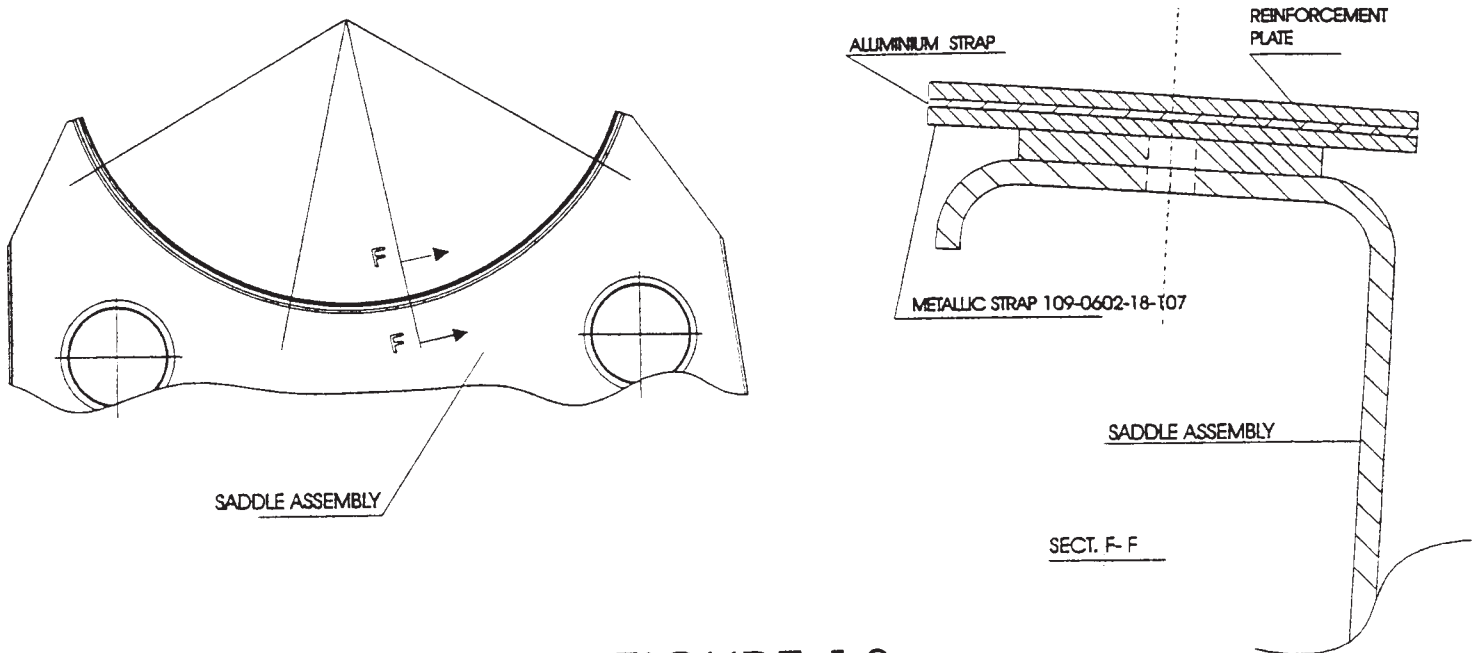


FIGURE 13

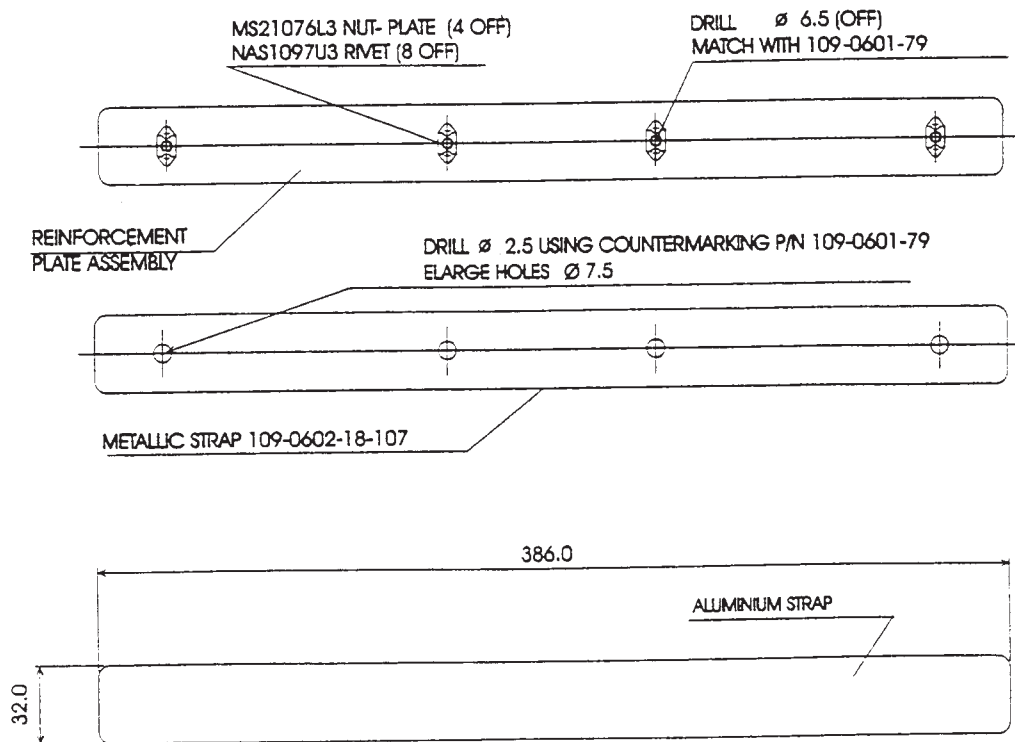


FIGURE 14