



EMB145 - EMB135

AIRCRAFT  
MAINTENANCE MANUAL

FUEL PLUMBING - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

- A. Always obey these procedures during the removal/installation of tubes:
  - (1) System identification.
  - (2) Tubing assembly configuration.
  - (3) Tubing material identification.
- B. Serviceable nuts and fitting can be used again after the removal of tubing.
- C. For the tubing installation, correctly align the fittings and tubing to permit the nuts to be turned down by hand before the wrench tightening. Do not use fitting nuts to pull tubing and/or fittings into alignment.
- D. Use the applicable torque wrench for the correct torque application. If it is necessary to use extensions, the torque wrench must be adjusted to make an allowance for the torque value increase or decrease. Refer to the torque connection method in ([AMM MPP 20-10-01/200](#)).
- E. Torque values, when given in the Maintenance Manual tasks, have priority over the torque given in this section.
- F. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	DESCRIPTION	EFFECTIVITY
<a href="#">28-00-01-000-801-A</a>	FUEL PLUMBING - REMOVAL	ALL
<a href="#">28-00-01-400-801-A</a>	FUEL PLUMBING - INSTALLATION	ALL



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TASK 28-00-01-000-801-A

EFFECTIVITY: ALL

2. FUEL PLUMBING - REMOVAL

A. General

- (1) This procedure gives the instructions to remove tubes and hoses.

B. References

REFERENCE	DESIGNATION
AMM MPP 28-00-00/200	- MAINTENANCE PRACTICES

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	On damaged tubes

I. Preparation

SUBTASK 841-002-A

- (1) Make sure that the aircraft is safe for maintenance.
- (2) On the Circuit Breaker Panel, open the circuit breakers below and attach a DO-NOT-CLOSE tag to them:
  - FUEL PUMPS - 1A, 1B, 1C (2A, 2B, 2C).

J. Removal (Figure 401)

SUBTASK 020-002-A

**WARNING: BEFORE YOU DO THE TASK, OBEY THE SAFETY PRECAUTIONS GIVEN IN AMM MPP 28-00-00/200 TO PREVENT INJURY TO PERSONS AND DAMAGE TO THE MATERIAL.**

- (1) Get access to the tube/fitting assembly.



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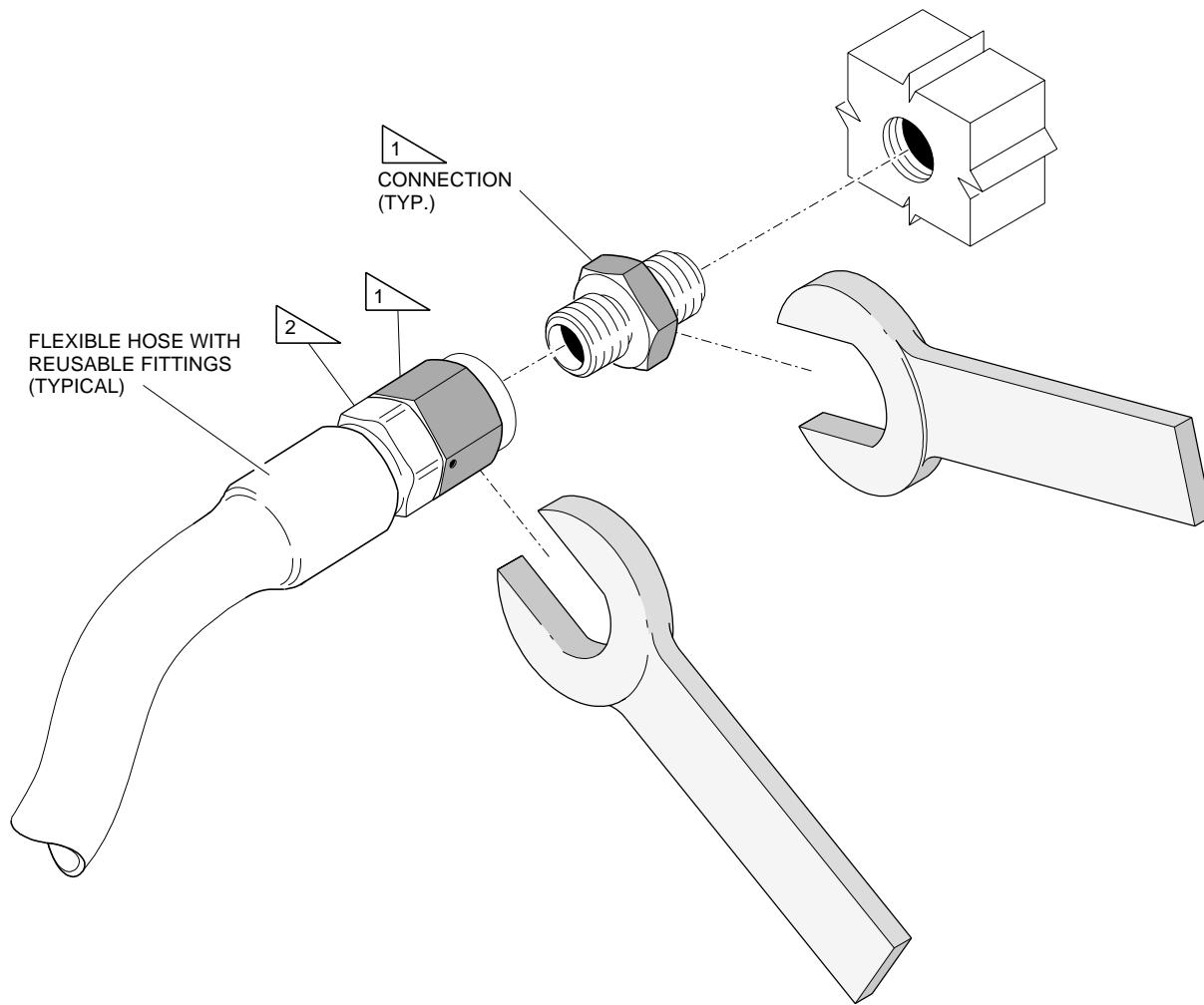
- (2) If applicable, remove the clamps, tube clamp blocks, bonding wires that support the tube to be removed, and, if necessary, the adjacent tube.
- (3) Put a container below the tubing (fluid systems only).
- (4) Remove the tube or hose as applicable.

**CAUTION:** • DO NOT ALLOW LINES OR FITTINGS TO BE WITHOUT CAPS: DIRT CAN CAUSE SYSTEM CONTAMINATION, DAMAGE TO COMPONENTS, AND LEAKAGE.  
• CLEAN ALL ACCUMULATION OF FUEL FALLEN DOWN.

- (5) Install protection caps at the ends of removed tubes and system fittings.

**EFFECTIVITY: ALL**

Points of Fitting where to Apply Torque to Tighten Flexible Hoses with Reusable Fittings  
Figure 401



 **1** APPLY REQUIRED TORQUE ONLY TO THE HIGHLIGHTED POINTS.

 **2** DO NOT APPLY TORQUE TO THIS POINT.

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TASK 28-00-01-400-801-A

EFFECTIVITY: ALL

3. FUEL PLUMBING - INSTALLATION

## A. General

- (1) This procedure gives the instructions to install the tubes and hoses.

## B. Zones and Accesses

Not Applicable

## C. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Torque wrench (torque ranges - refer to tables 401)	To install the tubing	
Commercially available	Crowfoot wrenches (Dimensions : 7/16"; 1/2"; 9/16"; 5/8"; 11/16"; 13/16"; 7/8"; 15/16"; 1"; 11/16"; 1 1/8"; 1 3/16"; 1 1/4"; 1 5/16"; 1 3/8"; 1 1/2"; 1 5/8"; 1 13/16"; 1 7/8" and 1 15/16")	To install the tubing	

## D. Auxiliary Items

Not Applicable

## E. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MEP-13-073	Rodhiasolve E-23	AR

## F. Expandable Parts

Not Applicable

## G. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	In the repair area

## H. Installation (Figure 401)

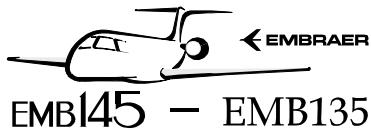
## SUBTASK 420-002-A

- (1) Make sure that the tubing is correctly identified with the part number and color bands.

**NOTE:** The tubing used inside of the fuel tanks must not have external markings such as decals and color bands.

- (2) Do a check of the tubing for abrasion, kinking, protection, wear, dents, scores, and notches.

- (3) Inspect the flared ends of the tubing for cracks, burrs, sharp edges, or other unsatisfactory conditions. Make sure that the sleeves are correctly installed on the flared ends.



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- (4) Make sure that the nuts move freely on the sleeves.
- (5) Remove all protection caps tubes or hoses. Make sure that they are not obstructed.
- (6) Put the tubing in the aircraft. Do not apply the final torque to clamps, tubing clamp blocks, and bonding wires, if applicable, to pull the tubing into alignment with the fitting.  
**NOTE:** If the tubing is flexible, carefully prevent kinks as a result of sharp bends or twisting.
- (7) Align the tubes and fittings. Let the tube end stay against the fitting.

**CAUTION:** TOO MUCH TIGHTENING CAN CAUSE DAMAGE TO THREADS OR MATING PARTS. BEFORE YOU APPLY THE TORQUE, HOLD THE UNION OR FITTING WITH THE CORRECT WRENCH.

- (8) Hold the tube end against and aligned with the fitting. Turn the nut by hand until it touches the sleeve or flange.

**CAUTION:**

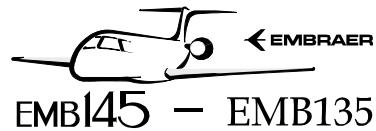
- DO NOT USE A TIGHTENING NUT TO PULL THE TUBING INTO ALIGNMENT.
- DO NOT USE A FLEXIBLE-TUBING-END ADAPTER FOR TORQUE APPLICATION.
- MAKE SURE THAT THE FLEXIBLE TUBE IS NOT TWISTED BEFORE AND AFTER TORQUE APPLICATION.
- FOR FLEXIBLE HOSES WITH REUSABLE FITTINGS OF THE TYPE SHOWN IN FIGURE 401, APPLY TORQUE TO THE POINTS SHOWN.

- (9) Hold the union or fitting with the correct wrench and tighten the assembly. Refer to Table 401 and torque the tightening nut or fitting.
- (10) If applicable, tighten all tubing clamps, tubing clamp blocks, and bonding wires.
- (11) Prepare the surface to install the bonding jumpers as follows, if applicable:
  - (a) Clean the areas to be bonded with a clean cloth soaked with Rodhiasolve E-23 solvent.
  - (b) Rub the areas with a clean dry cloth before the solvent evaporation.
- (12) Install the bonding jumpers on the tubing immediately after the faying surface is cleaned, if applicable.

I. Follow on

SUBTASK 842-002-A

- (1) Remove all tools, materials, and equipment from the work area.
- (2) Make sure the area is clean.
- (3) On the Circuit Breaker Panel, remove the DO-NOT-CLOSE tag from them and close the circuit breakers below:



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- FUEL PUMPS - 1A, 1B, 1C (2A, 2B, 2C).
- (4) After the installation of the fuel system tubing, do a leak test. If a leakage is found, tighten the nut or replace the fitting, as necessary.

Table 401 - TIGHTENING TORQUE FOR FITTING

TUBING SIZE ( $\phi D$ )			TIGHTENING TORQUE (POUNDS X INCHES)	
DASH NUMBER	INCHES	MM	ALUMINUM TUBE OR FLEXIBLE TUBING WITH ALUMINUM FITTING	
			MINIMUM	MAXIMUM
02	1/8	3.2	20	30
03	3/16	4.8	25	35
04	1/4	6.3	50	65
05	5/16	7.9	70	90
06	3/8	9.5	110	130
08	1/2	12.7	230	260
10	5/8	15.9	330	360
12	3/4	19.0	460	500
16	1	25.4	500	700
20	1 1/4	31.7	800	900
24	1 1/2	38.1	800	900
32	2	50.8	1800	2000

