

CO₂ Laser Tube Replacement for Compact Models

Prepared January, 1996

Kit Cat. No. AS2355000 for 40C
AS2383500 for 30C
AS2451000 for 20C
Manual Cat. No. PB2696500

 **SHARPLAN**

CO₂ Laser Tube Replacement for Compact Models

I. GENERAL

1. The method of securing the CO₂ laser tube to the optical bench has been changed, effective for Serial No. 20 for the 20C, 40 for the 30C, and 30 for the 40C. The securing brackets have been improved, as well as the method of bracing the tube to the securing brackets by way of plastic support rings.
2. The procedure described below supersedes that indicated in Sections 4.6.2.1 - 4.6.2.4 of the October 1993 edition of the SHARPLAN Compact CO₂ Laser Service Manual, PB2474200.
3. Perform the following procedure only after removing the optical bench from the unit (see Sec. 4.6.1 in Compact CO₂ Laser Service Manual). Place the optical bench on a clean 1.5x0.5m (60" x 20") table with the He-Ne laser tube facing upwards.
4. Do not touch the front mirror. Do not apply pressure to the rear mirror housing or on the laser tube protrusions. Hold the laser tube by its widest diameter only.

II. KIT CONTENTS

Item	Quan.	Cat. No.
CO ₂ Laser Tube	1	AA2374200 (40C) AA2347100 (30C) AA2431500 (20C)
One-piece securing bracket	2	Each includes: Pin PM0142000 Ring PM2696130 Plate PM2696230
Laser tube support	1	PM2695630
Allen screws 3/8" for support	2	MH1238100
Washer for allen screws	2	MH1350200
Container of Flourinert	1	AA0914200

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III. SPECIAL MATERIALS REQUIRED

1. Petroleum Jelly (Vaseline™)
2. Tie-wraps 140mm (5.5") (X10) (P/N EW1068700)
3. Tie-wraps 368mm (14.5") (X2) (P/N EW1068500)
4. Laser tube support.

IV. CO₂ LASER TUBE REMOVAL - OLD DESIGN

1. Tie a 180° loop in the upper (outlet) coolant tube (to avoid coolant leakage), and disconnect the coolant tube from the power detector.
2. Remove the antistatic foam from the CO₂ laser tube by releasing its tie-wrap.
3. Remove the eight CO₂ laser rear securing screws and the three CO₂ laser rear locking screws (with their discs). Loosen the three CO₂ laser front locking

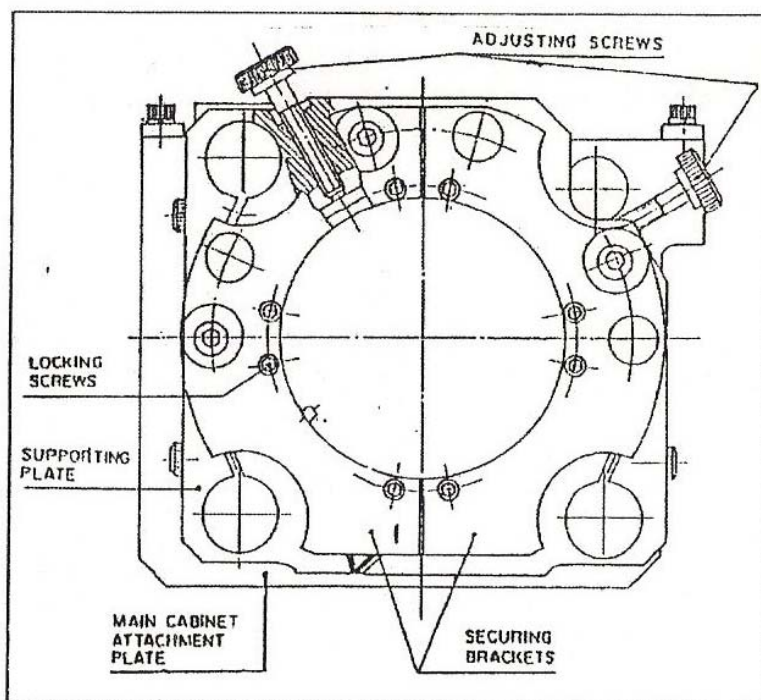


FIGURE 1. CO₂ LASER TUBE SUPPORTING PLATE

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screws (see Figure 1).

4. Remove the two rear securing brackets, and set them **aside**; they will not be used in installing the new tube. Return them to SHARPLAN.
5. Fully open both CO₂ laser rear and front adjusting screws.
6. Slide the CO₂ laser tube towards the rear section of the bench, while simultaneously pulling the high voltage lead and upper coolant tube. The rear bearing housing should come out with the tube, but the front bearing housing should remain in place (see Figure 4).
7. Carefully place the old CO₂ laser tube on the laser tube support, setting it aside for shipment back to SHARPLAN. Tie the electrical wires and the coolant tubing to the laser tube.
8. Remove the eight CO₂ laser front securing screws and the three CO₂ laser front locking screws (with their discs). See Figure 1.
9. Remove the two front securing brackets, and set them **aside**; they will not be used in installing the new tube. Return them to SHARPLAN with the other brackets and the old laser tube.

V. CO₂ LASER TUBE REPLACEMENT

1. Insert the new, one-piece front securing bracket. Insert and tighten the eight CO₂ laser front securing screws. Insert the three front locking screws (with their discs), but leave all locking screws loose in order to perform the tube alignment. See Figure 2.
2. Apply a thin layer of petroleum jelly on the alignment shoes.
3. Apply a thin layer of petroleum jelly on the alignment spring of the CO₂ laser supporting plate and on the bearing housing (see Figure 4) of the front CO₂ laser supporting plate.

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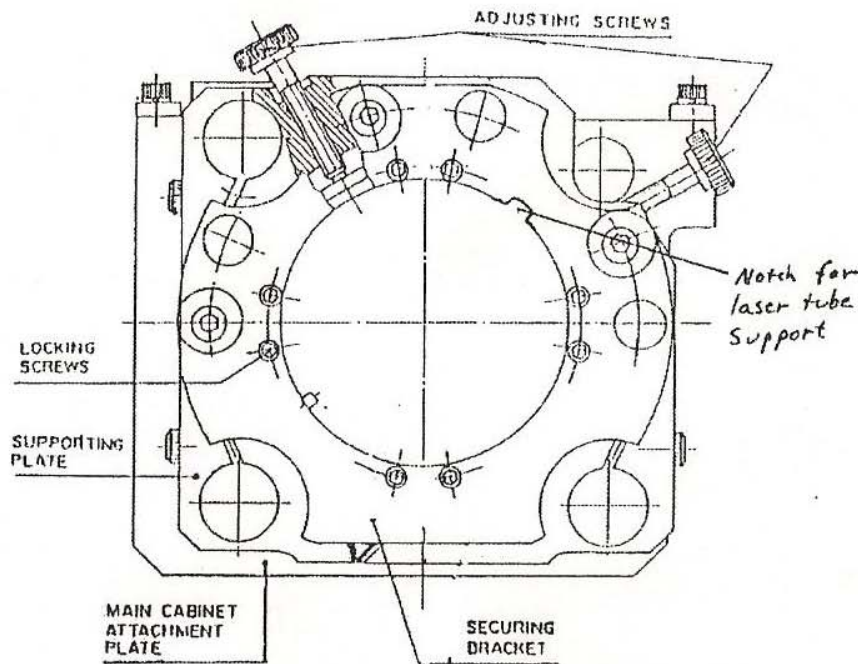


Figure 2. NEW CO₂ LASER TUBE SUPPORTING PLATE

4. Place the CO₂ front and rear laser adjusting screws at the midpoint of their range.
5. Insert the high voltage lead and upper coolant tube into the bench, and carefully insert the new tube into the bench until the bearings almost reach the supporting plates.
6. While inserting the tube into the bench, do not allow the fixing pins of the supporting rings to fall out. These pins are the contact points between the laser tube and the securing brackets, and one of them (for each ring) contains a rubber O-ring (see Figure 3).

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7. Remove the protective cover from the front mirror, and insert the mirror into the protective dust sleeve (see Figure 4-24 in the Service Manual).
8. Gently push the new tube forwards. Verify that the front bearing housing pin enters the front bearing groove.

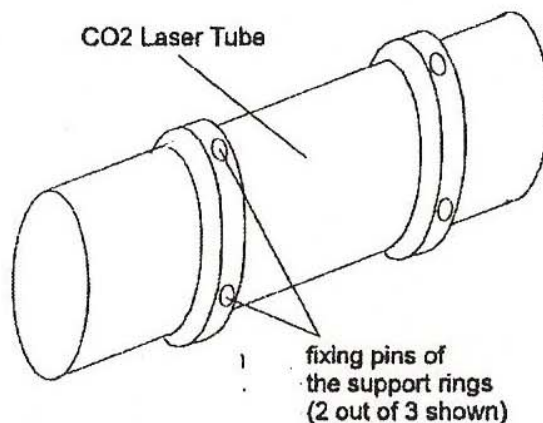


Figure 3. LASER TUBE, WITH
FIXING PINS

9. Insert the new, one-piece rear securing bracket. Insert and tighten the eight CO₂ laser rear securing screws. Insert the three rear locking screws (with their discs), but leave all locking screws loose in order to perform the tube alignment.
10. Using the Allen screws enclosed, screw in the laser tube support for the rear securing bracket.
11. Connect the upper (outlet) coolant tube to the power detector and release the 180° tie-wrap. Manually tighten the fitting by a final 1/4 turn with a wrench. Verify that the tube is not in the path of the He-Ne beam.
12. Replace the antistatic foam and secure with a 368mm tie-wrap. Verify that the foam touches the front supporting plate.

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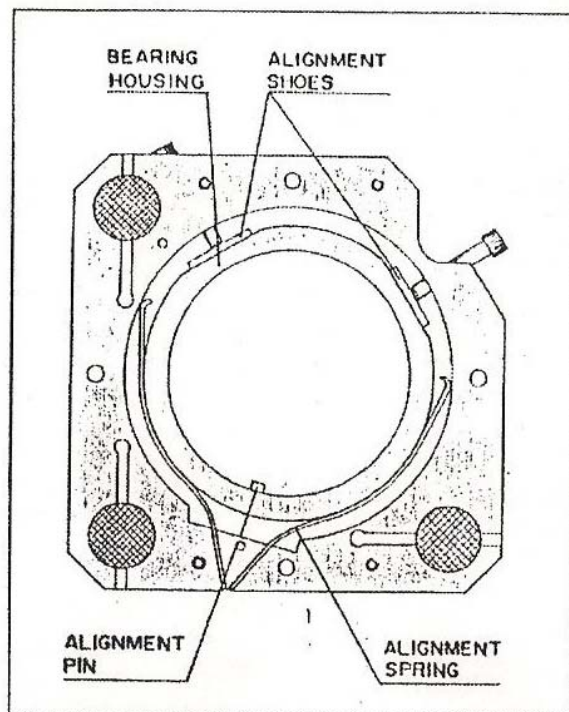


FIGURE 4. CO₂ LASER TUBE FRONT SUPPORTING PLATE
WITH SECURING BRACKETS REMOVED