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12/92

MODIFICATION INSTRUCTIONS

for the

KODAK X-Omatic MULTILOADER 300

Service Code 3058

MODIFICATION No. 26

Type 1 REQUIRED

PURPOSE:
To increase the reliability

IMPORTANT : Use qualified service personnel to install this modification !

SERIAL NUMBERS : 1001 to 1438

INSTALLATION TIME : Approx. 3.0 hours

SPECIAL TOOLS : none

PARTS REQUIREMENTS : MOD KIT #26 PN 9220120

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PARTS LIST

PART NO.	DESCRIPTION	QUANTITY
9220120	**MOD KIT #26**	

The KIT contains:

4527451	Capacitor 330µF 6.3V	1
4519691	Resistor 390 Ohm 0.25W	1
9221850	Drive Gear	1
9218734	Opener Harness	1
9225332	Cable Repair Kit Y14	1
4283126	Screw M4x10	4
9219283	Dual Mounting Bracket	1
9219282	Clamp for Dual Mounting Bracket	1
5000069	Silicon Glue	1
9212741	Actuator for Cassette End Switch	3
9212731	Mounting Bracket for Cassette End Switch	3
9228950	Optical Flag	3
6081850	Wire Tie (1 package)	1
9220130	IC-Assembly	1
	SOLDER WICK	

INTRODUCTION

This modification consists out of 6 independent alterations.

Part 1:

Some CASSETTES could not always actuate the 3 CASSETTE IN END SWITCHES B5/B6/B7, because their springs are too strong. This caused the ERROR C-74. To avoid this the mechanical parts of the 3 CASSETTE IN END SWITCHES are changed.

Part 2:

The harness to the CASSETTE OPENER SOLENOID was not made out of highly flexible wires. To avoid breaking the harness is replaced.

Part 3:

The wires to the FILM POCKET SOLENOID Y14 broke sometimes. New highly flexible wires will avoid it.

Part 4:

The DRIVE GEAR of the CASSETTE CENTERING MOTOR broke. An improved material is used for the new DRIVE GEAR.

Part 5:

To avoid ERROR I-C2 (The FILM LEADING EDGE is not recognised in the FILM CHUTE) a R/C network is soldered onto PCB A4. . This problem may be caused by MOTOR M12 FILM RELEASE. The FILM RELEASE will stay closed when SENSOR B34 is deactuated due to the play in the gear box of M12 and this results in error I-C2.

Part 6:

To avoid ERROR C-C6/M-9B a modified IC is installed on PCB A5.

NOTE

Always test the function of the ML300 after you finished the installation of each PART. Trouble shooting can be confusing if you install all six PARTS in one go.

Installation

General preparation

1. Switch off the ML300.

2. Take off the PANELS.

PART 1

The following parts are used:

9228950..... Optical Flag 3
9212731..... Mounting Bracket for Cassette End Switch 3
9212741..... Actuator for Cassette End Switch 3
6081850..... Wire Tie

NOTE

The 3 OPTICAL FLAGS may not be needed in every ML300. In some ML300 the SENSORS "CASSETTE IN END SWITCH LEFT-MIDDLE-RIGHT" B5/B6/B7 are glued into the MOUNTING BRACKETS. In such a case the MOUNTING CLIPS of the SENSORS may break. Only for this reason the 3 new OPTICAL FLAGS are part of the MOD KIT. If it is possible to take out the old SENSORS from their BRACKETS without damage, the new SENSORS need not to be installed.

1. Take out all 3 CASSETTE IN END SWITCHES with their MOUNTING BRACKETS.

NOTE

Every MOUNTING BRACKET is fixed with 2 screws just behind the long CASSETTE TRANSPORT ROLLER. Keep those screws, they are used for the new BRACKETS.

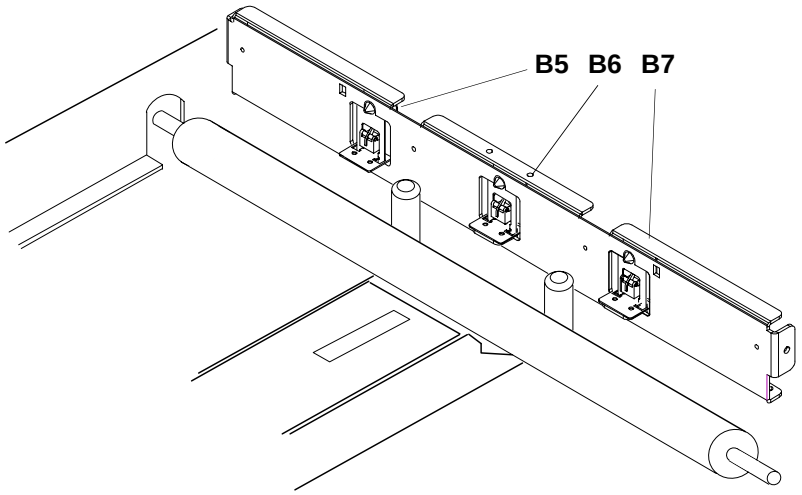


figure 1

2. Try to take out the old SENSORS from the BRACKETS. If this is not possible without damage, discard the BRACKETS together with the SENSORS. If it is possible to remove the SENSORS just discard the BRACKETS.

3. Mount the SENSORS (use 9228950 if necessary) into the new BRACKETS(9212731). Route the SENSOR WIRES as shown and fix them with a WIRE TIE.

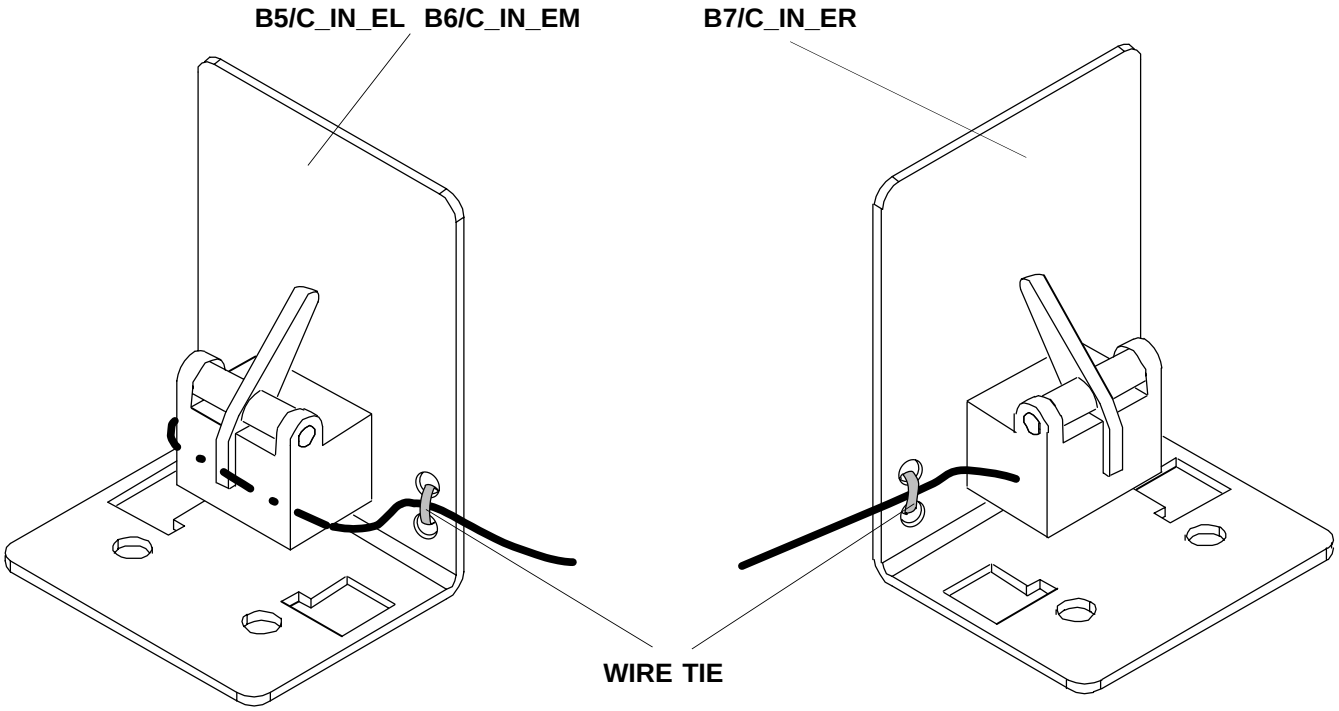


figure 2

4. Assemble the new BRACKETS with the new ACTUATORS(9212741).

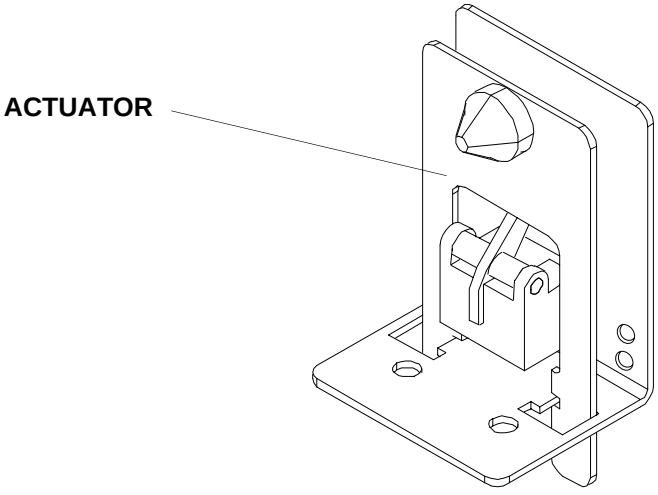


figure 3

5. Mount the new SENSOR ASSEMBLIES from the rear in place of the old ones. Use the MOUNTING SCREWS saved in step 1.

Note

Apply a little glue at the tip of the ALLEN KEY. This makes it easier to insert the screws from behind the long TRANSPORT ROLLER.

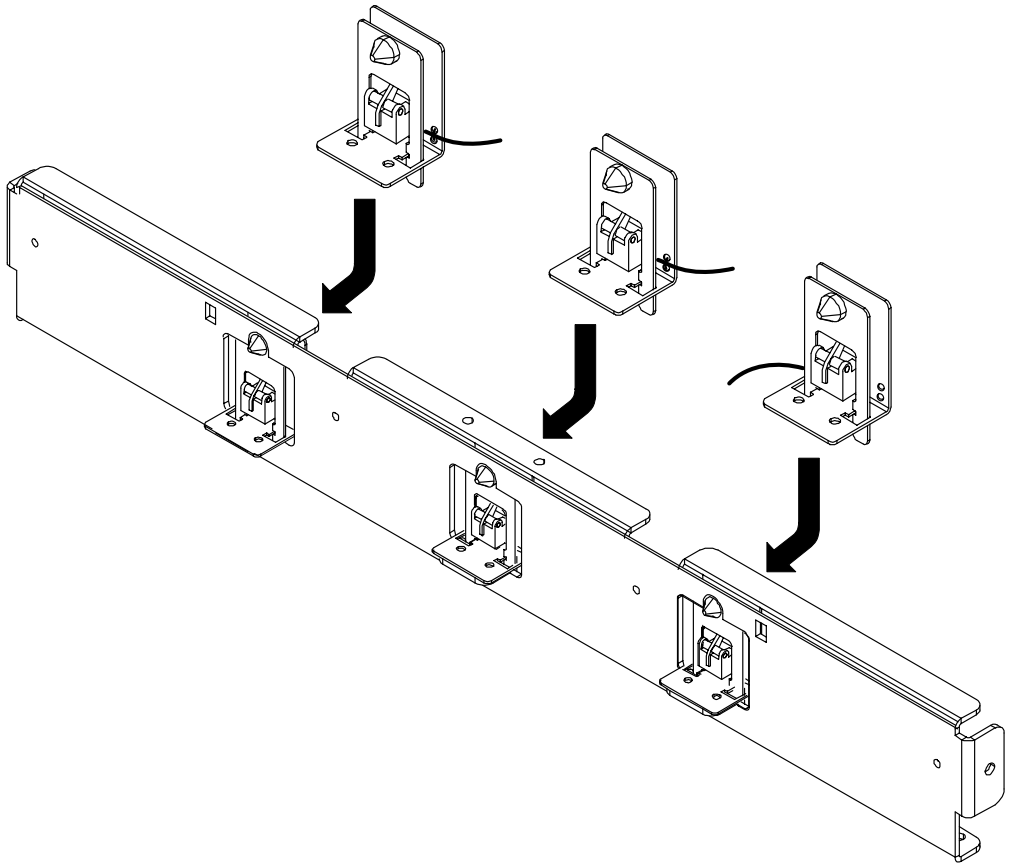


figure 4

6. If you could use the old SENSORS proceed with step 11 else proceed with step 7.

7. Route the SENSOR WIRES through the CASSETTE TRANSPORT AREA in the same way as the old ones.

8. Connect

SENSOR B5/C_IN_EL to A8X17
SENSOR B6/C_IN_EM to A8X18
SENSOR B7/C_IN_ER to A8X19

See the layout of PCB A8 on the next page.

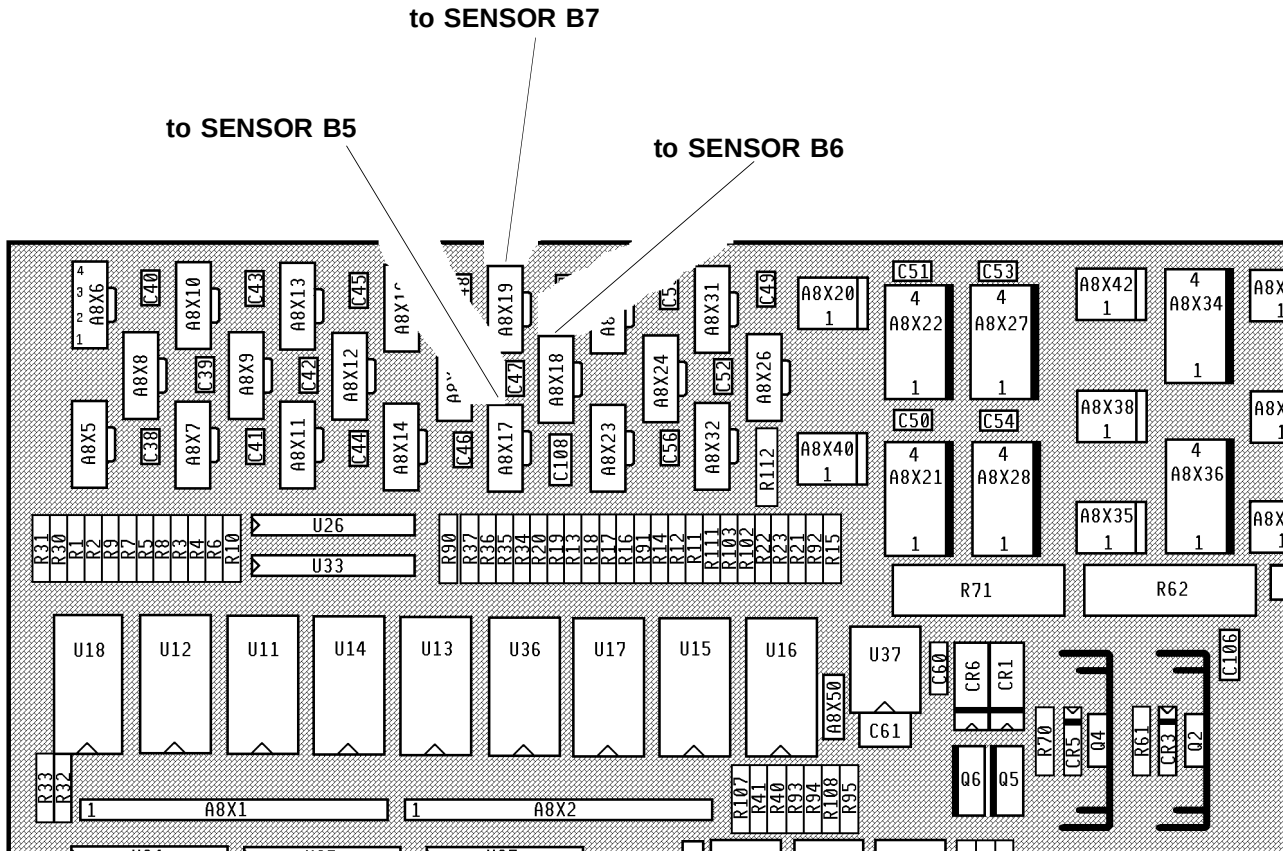


figure 5

9. Fix the wires in the cassette area to the existing self adhesive WIRE TIE SOCKETS.

NOTE

Ensure that the wires do not interfere with moving parts.

10. Hide the excessive wire length in the short CABLE DUCT above PCB A8.

11. Power on the ML300.

12. Connect the LAP TOP.

13. Start the **SERVICE PROGRAM**

Key in	**CD\XML300**	and press ENTER
Key in	START	and press ENTER

14. Select **SERVICE MODE ML300** and press ENTER.

15. After the **ENTER SERVICE MODE MESSAGE** is displayed press ENTER.

16. The **UNIT DATA** are displayed Press ENTER.

17. Do the SENSOR TEST

Select	**COMPONENT TEST**	and press ENTER
Select	**SENSORS**	and press ENTER
Select	**SENSOR TEST WITH SOUND**	and press ENTER

18. Check that SENSORS B5/B6/B7 are not mixed up.

19. Check that all 3 SENSORS are actuated when a CASSETTE is moved manually to the CASSETTE END STOP.

20. Exit the SENSOR TEST
Press BACKSPACE until you come back to the COMPONENT TEST.

NOTE

Do not exit the SERVICE PROGRAM. It is used immediately in PART 2.

PART 2

The following parts are used:

9219283	DUAL MOUNTING BRACKET	1
9219282	CLAMP for DUAL MOUNTING BRACKET	1
4283126	SCREW M4x10	4
9218734	OPENER HARNESS	1
6081850	WIRE TIE	

1. To gain access to the CASSETTE OPENER SOLENOID WIRES and to the wires of SENSOR B16 CASSETTE REALLY OPEN, the CASSETTE OPENER has to be in its down position.

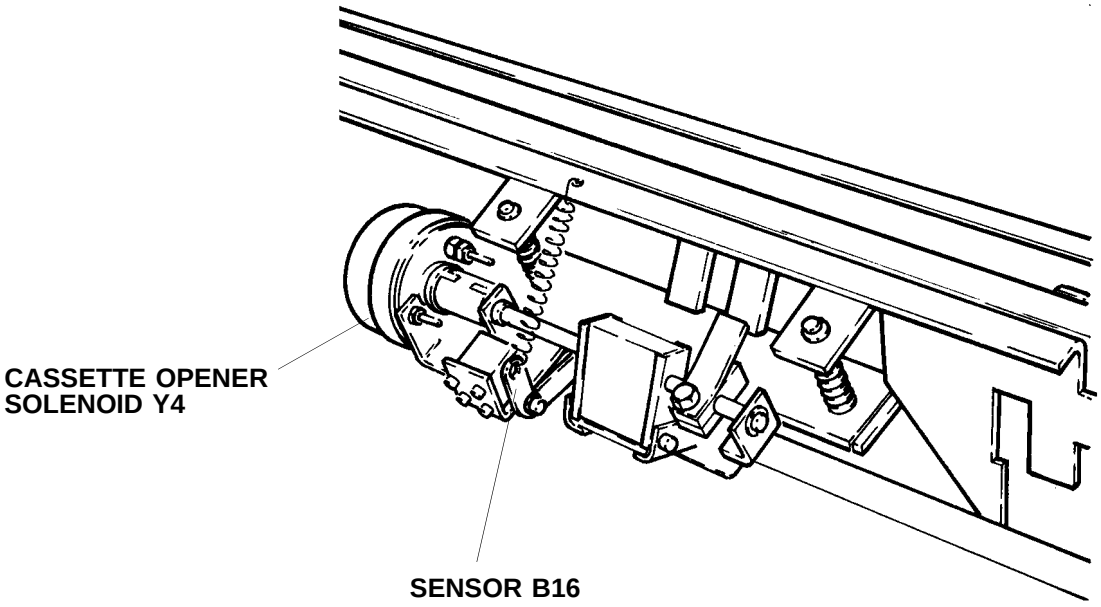


figure 6

Select	CASSETTE MOTORS	and press ENTER
Select	CASSETTE OPENING (M5)	and press ENTER
Select	DOWN	with the CURSOR KEY

WARNING

Keep your hands out of the CASSETTE OPENER AREA as long as the CASSETTE OPENER is moving.

2. Disconnect the CASSETTE OPENER SOLENOID Y4 Connector X40.

3. Disconnect the SENSOR B16 CASSETTE REALLY OPEN Connector X26.

4. Take out the wires and disconnect them at PCB A8X26 and at PCBA8X40.

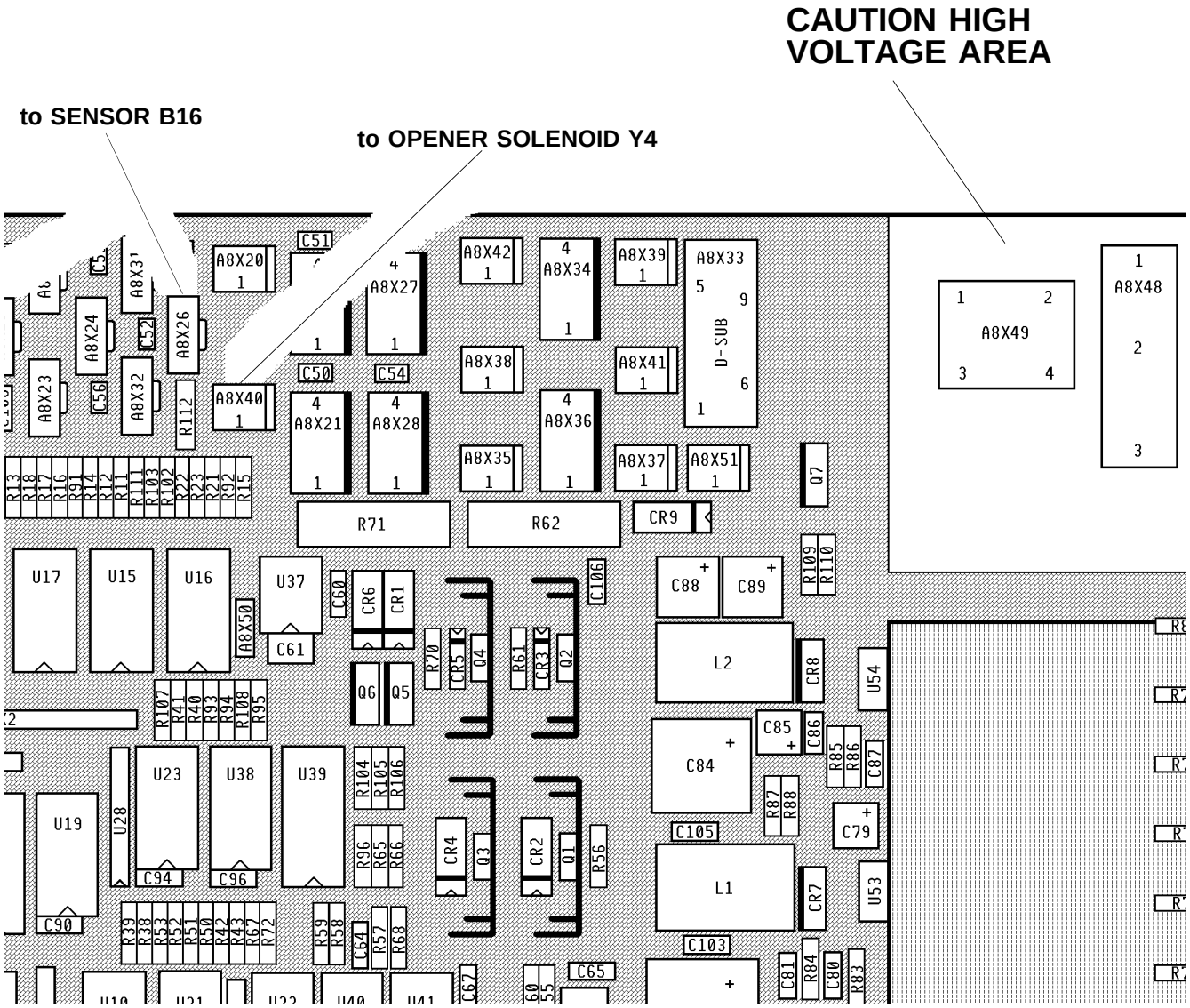


figure 7

5. Discard the wires.

6. Install the DUAL MOUNTING BRACKET (9219283) on the right hand side.

Note

If Mod 22 is already installed replace the right hand MOUNTING BRACKET with the new DUAL MOUNTING BRACKET.

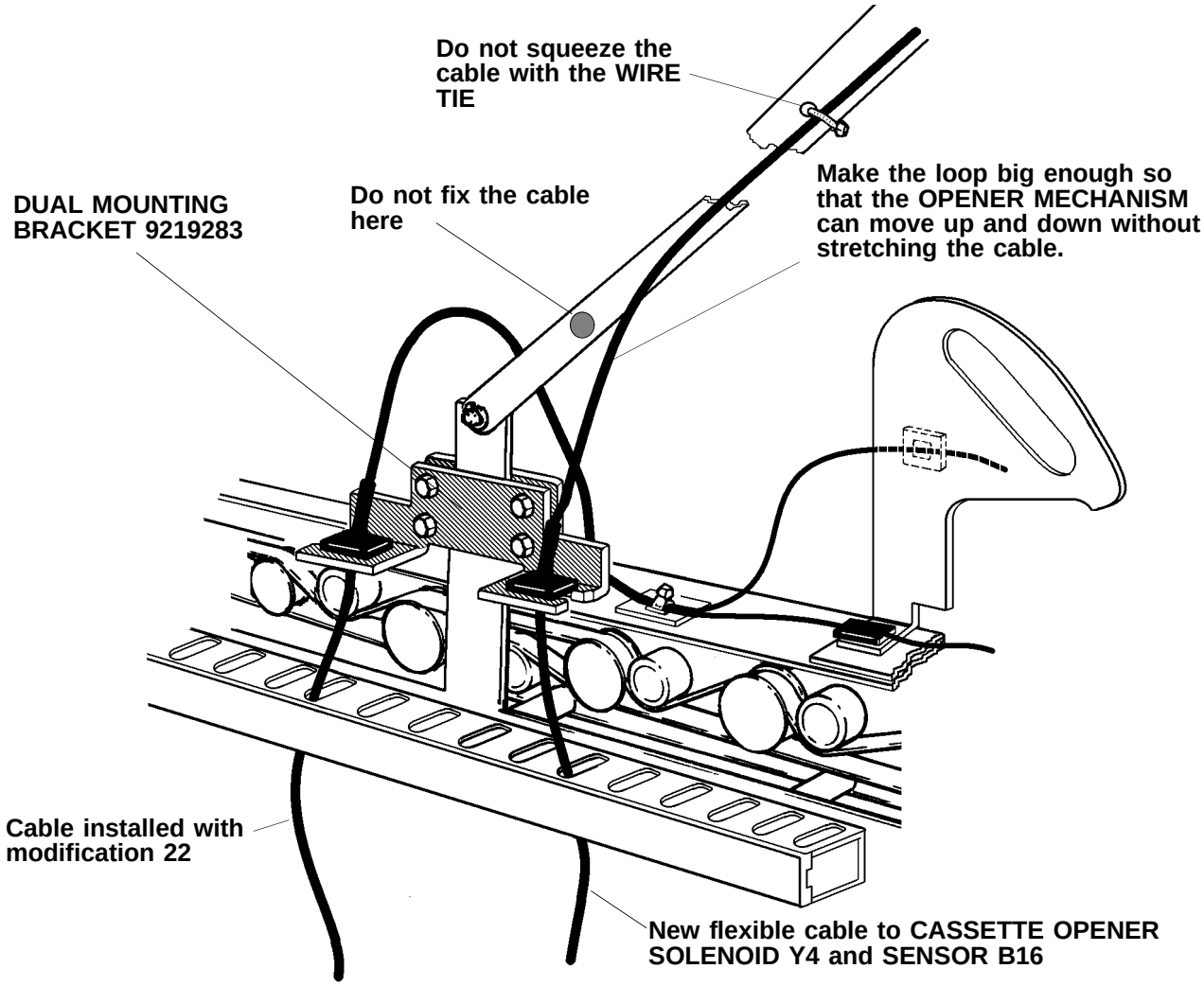


figure 8

7. Install the OPENER HARNESS(9218734). Engage the STRAIN RELIEFS of the OPENER HARNESS and of the MOD 22 CABLE into the MOUNTING BRACKET. If the openings in the BRACKET are too small for the STRAIN RELIEFS open them a little with a pair of pliers.

8. Route the OPENER HARNESS along the OPENER BRACKETS (just like the wires removed previously) to the OPENER SOLENOID Y4 and to the SENSOR B16. Connect SENSOR and SOLENOID.

9. Fix the harness with WIRE TIES.

10. Connect the OPENER HARNESS to

PCBA8 CONNECTOR X26
PCBA8 CONNECTOR X40
Route the wires through the small CABLE DUCT above PCB A8.

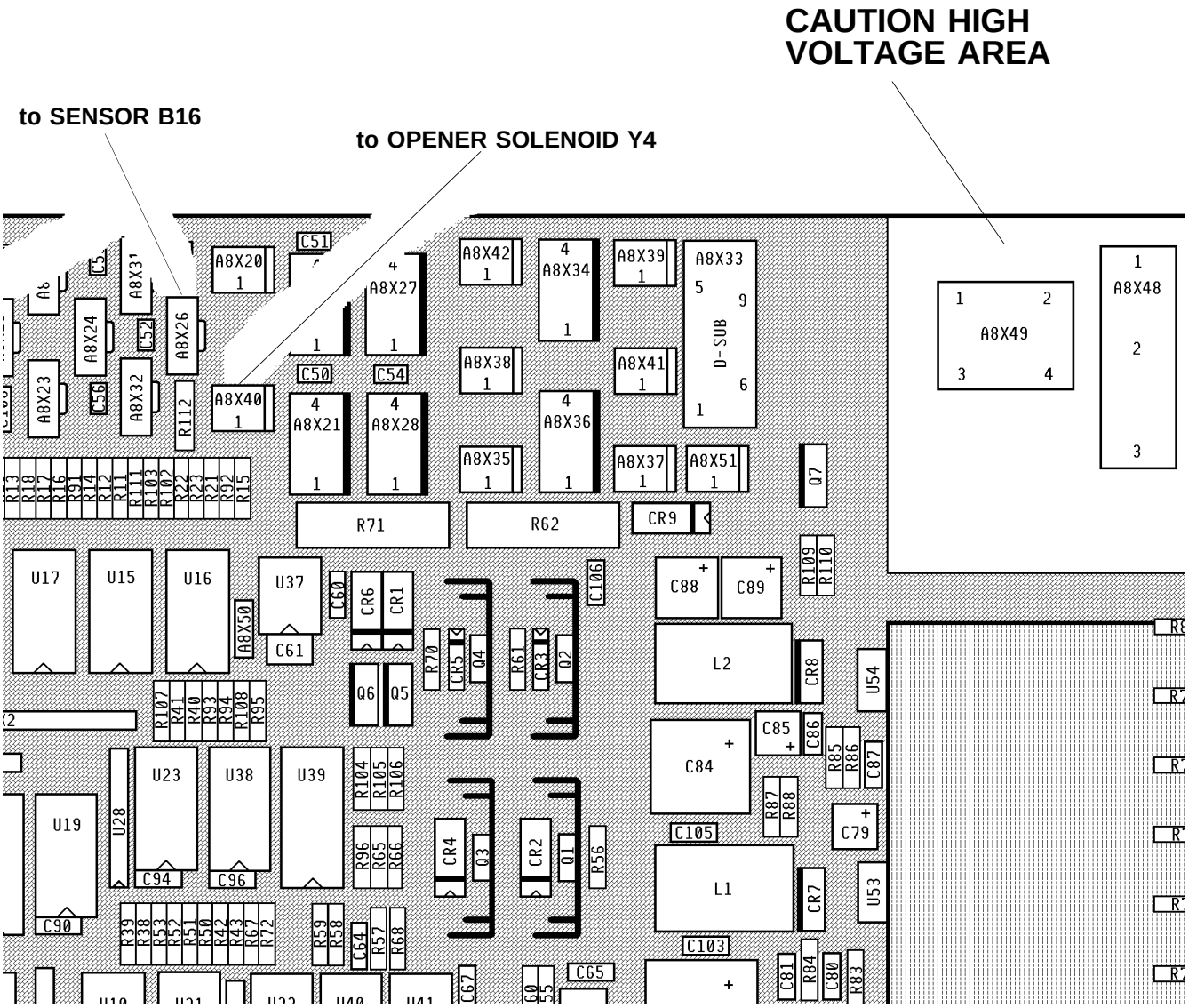


figure 9

11. Select UP/DOWN at the LAP TOP . Check during the UP/DOWN movement of the OPENER that the harness does not interfere with fixed or with moving parts.

WARNING

Keep your hands out of the CASSETTE OPENER AREA as long as the CASSETTE OPENER is moving.

12. Press BACKSPACE twice to go to the SCREEN COMPONENT TEST.

13. Check the CASSETTE OPENER SOLENOID Y4.

Select	**SOLENOIDS**	and press ENTER
Select	**CASSETTE OPENER (Y4)**	and press ENTER
Select	**SOLENOID ON**	with the CURSOR KEY
Select	**SOLENOID OFF**	with the CURSOR KEY

14. Press BACKSPACE twice to go to the screen COMPONENT TEST.

15. Check the SENSOR B16.

Select	**SENSORS**	and press ENTER
Select	**SENSOR TEST WITH SOUND**	and press ENTER

Manually actuate B16 to see if it operates correctly.

16. Exit the SENSOR TEST. Do not leave the COMPONENT TEST. It will be used in PART 3 again.

PART 3

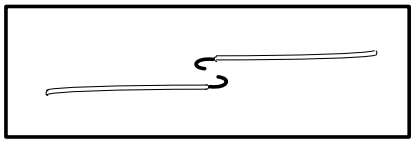
The following parts are used:

9225332..... CABLE REPAIR KIT 1
6081850..... WIRE TIE

NOTE

Check if the highly flexible wires are already installed.(Production Units with SN =>1326 are already modified)

1. Cut the 2 SOLENOID WIRES so that the remaining wires at the SOLENOID Y14 have a length of 75mm.



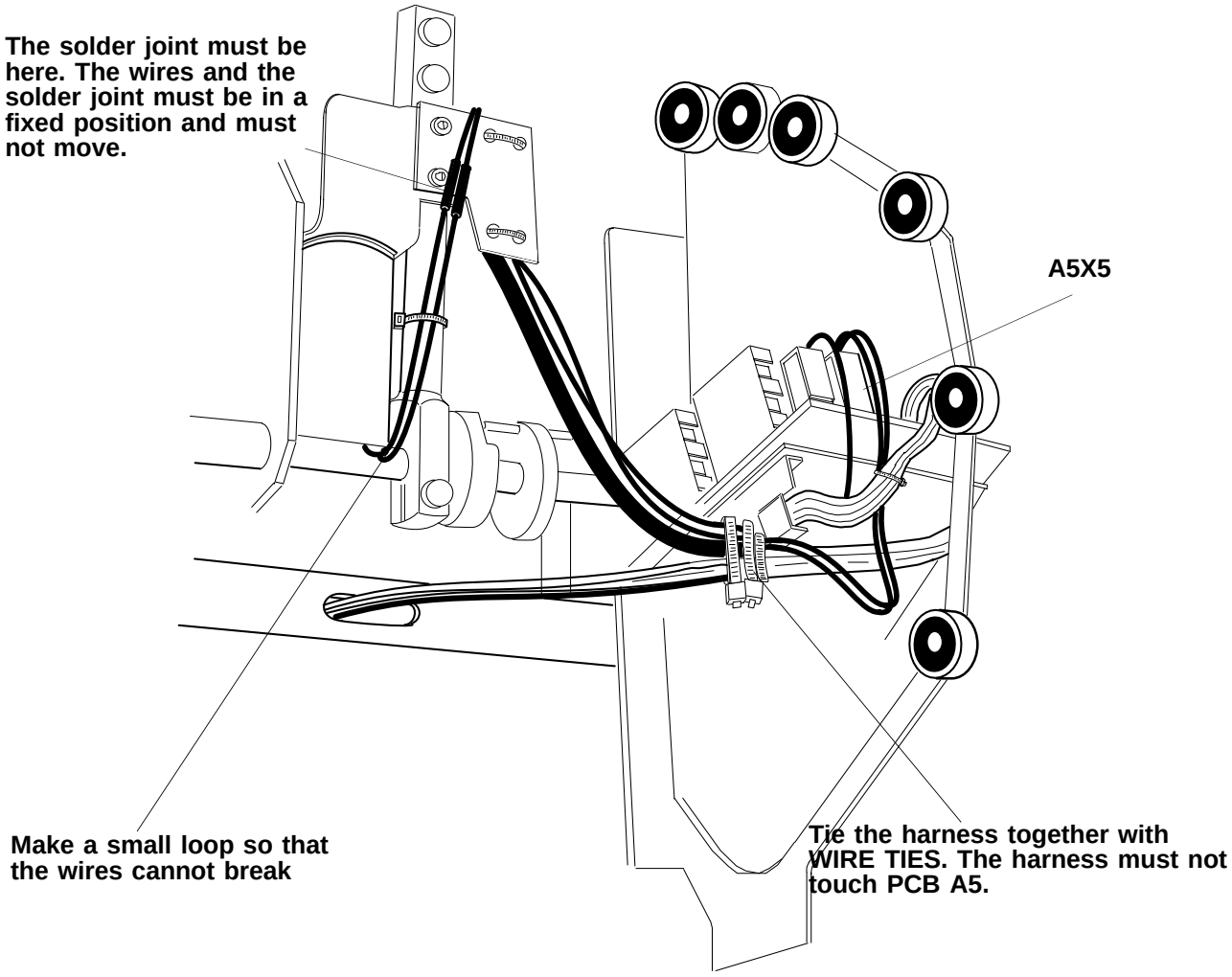


figure 10

2. Disconnect the old cable from CONNECTOR A5X5 and discard it.

3. Apply the SHRINKING TUBE to both new wires.

4. Solder the new wires to the remaining SOLENOID WIRES.

NOTE

It is a safety requirement that the wires are hooked together prior to soldering. See the insert in figure 10.

5. Insulate the solder joints with the SHRINKING TUBE.

6. Insert the plug of the new cable into CONNECTOR A5X5.

7. Fix the cable with WIRE TIES to the FILM POCKET SUCKER BAR ARM.

CAUTION

The 2 wires must be on the left side of the MOUNTING BRACKET. Otherwise, the wires may be pinched and might break when the FILM POCKET SUCKER BAR is rotated fully out of the MAGAZINE.

8. Fix the new wires to the existing harness.

NOTE

Do not squeeze the silicon hoses with the WIRE TIES.

9. Check that the SOLENOID Y14 MAGAZINE SUCKER BAR TILTING works correctly.

Select	**SOLENOIDS**	and press ENTER
Select	**TILTING MAGAZINE SUCKER BAR (Y14)**	and press ENTER
Select	**SOLENOID ON**	with the CURSOR KEY
Select	**SOLENOID OFF**	with the CURSOR KEY

NOTE

Make sure that all wires and hoses of the FILM POCKET will not be stretched and cannot be caught by moving or stationary parts.

10. Exit the SERVICE PROGRAM

Press 3 times BACKSPACE to come to the MAIN MENU

Select	**QUIT ML300 SERVICE MODE**	and press ENTER
Select	**QUIT THE PROGRAM**	and press ENTER.

11. Fix the SILICON HOSE below PCB A5 with a piece of tape to the black HOSE. Without this tape is it possible that the black hose can move the SILICON HOSE out of position.

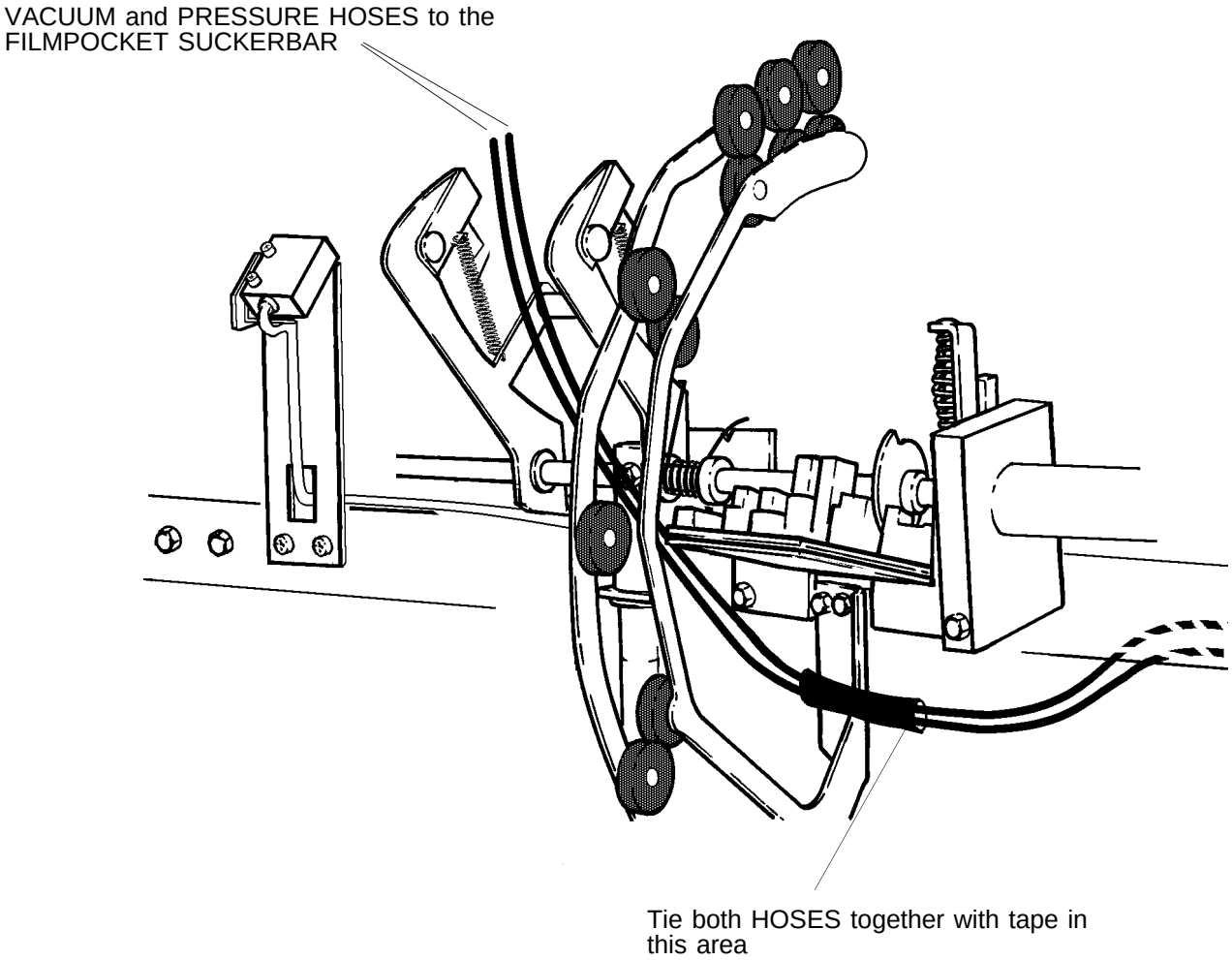


figure 11

PART 4:

The following part is used:

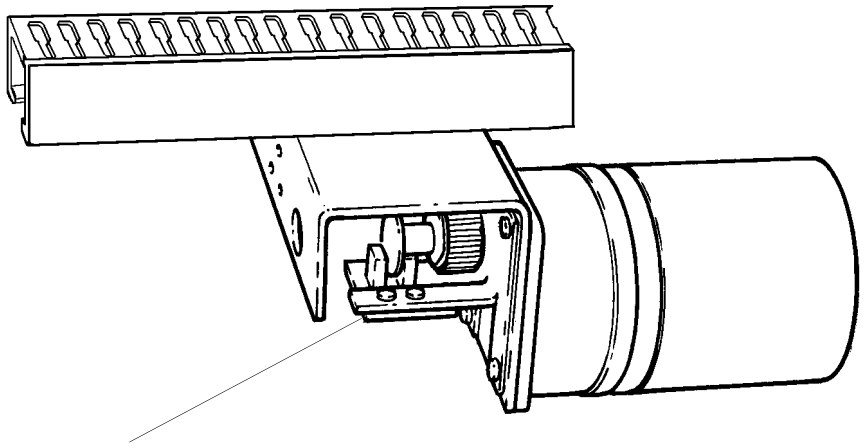
9221850..... DRIVE GEAR..... 1

NOTE

Check if the new white DRIVE GEAR is already installed.

1. Switch off the ML300.

2. Take off the ODOMETER A10/2 from its MOUNTING BRACKET.



ODOMETER A10/2

figure 12

3. Take off the ODOMETER WHEEL

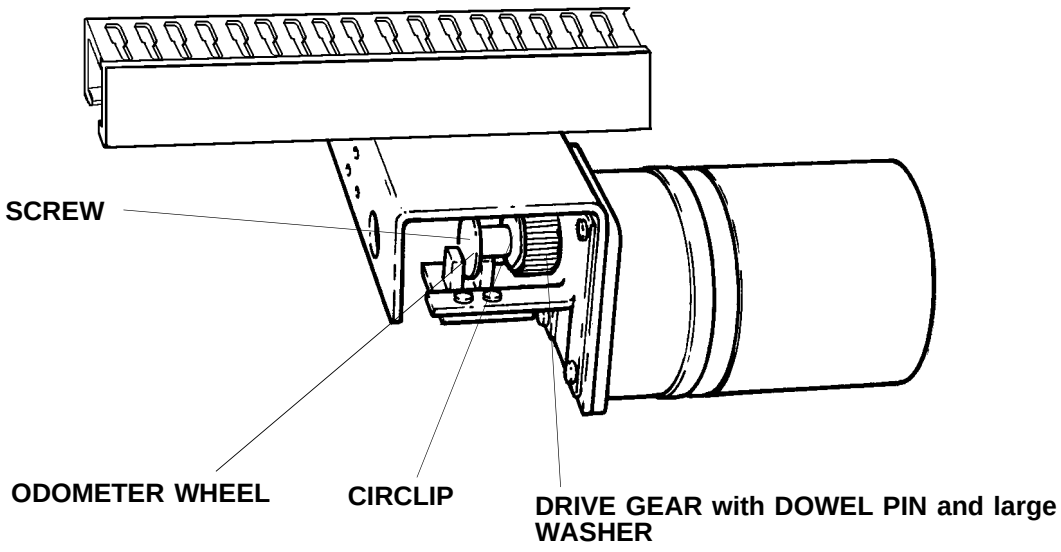


figure 13

4. Take off the CIRCLIP. See figure 13.

5. Take off the large WASHER. See figure 13.

6. Push the TOOTHED BELT off the DRIVE GEAR. This is possible without loosening the MOUNTING SCREWS of the CENTERING MOTOR.

7. Take off the DRIVE GEAR.

Note

Do not loose the DOWEL PIN when you take off the DRIVE GEAR.

8. Mount the new DRIVE GEAR (9221850 white plastic).

9. Push the TOOTHED BELT onto the DRIVE GEAR.

10. Secure the DRIVE GEAR with the large WASHER and the CIRCLIP.

11. Mount the ODOMETER A10/2.

13. Do the ODOMETER ADJUSTMENT as explained below.

14. The PCB A10/2 has to be positioned as shown.

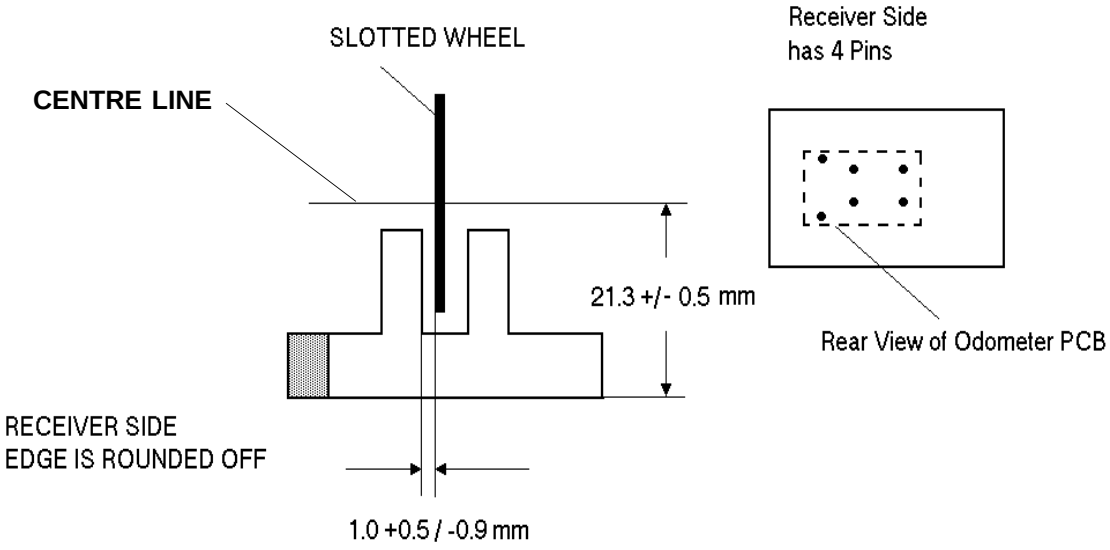


figure 14

15. If the vertical distance is not 21.3mm, carefully bent the PCB HOLDER up or down .

16. If the horizontal distance is not 1mmt, loosen the MOUNTING SCREWS of the PCB and move it as required.

17. In the case that the PCB cannot be moved far enough, take out the PCB and elongate the MOUNTING HOLES carefully with a small file.

18. To test the CASSETTE CENTERING, do the CASSETTE LENGTH ADJUSTMENT.

Switch on the ML300
Start the **SERVICE PROGRAM**

Key in	**CD\XML300**	and press ENTER
Key in	START	and press ENTER

19. Select **SERVICE MODE ML300** and press ENTER.

20. After the **ENTER SERVICE MODE MESSAGE** is displayed press ENTER.

21. The UNIT DATA are displayed. Press ENTER.

22.

Select	CHANGE ML300 DATA	and press ENTER
Select	CHANGE PARAMETER	and press ENTER
Select	CASSETTE LENGTH	and press ENTER.
Follow the instructions given on the LAP TOP screen.		
Select	STORE PARAMETER	and press ENTER
Press BACKSPACE twice to go to the MAIN MENU		
Select QUIT ML300 SERVICE MODE		and press ENTER
Select	QUIT THE PROGRAM	and press ENTER

23. Switch off the ML300.

PART 5

The following parts are used:

4527451	CAPACITOR 330µF 6.3V	1
4519691	RESISTOR 390 Ohm 0.25W	1
5000069	SILICON GLUE	1
	SOLDER WICK	

Note

Check if these parts are already installed in your unit. Starting with SN1333 (except 1335) all ML300 are already modified. An unknown number of ML300 in US have already been modified in the field.

NOTE

Take proper ESD SAFETY PRECAUTIONS when you install PART 5 of this modification.

1. Switch off the ML300.

2. Unsolder RESISTOR R57(180 Ohm) and replace it with RESISTOR 4519661 (390 Ohm).

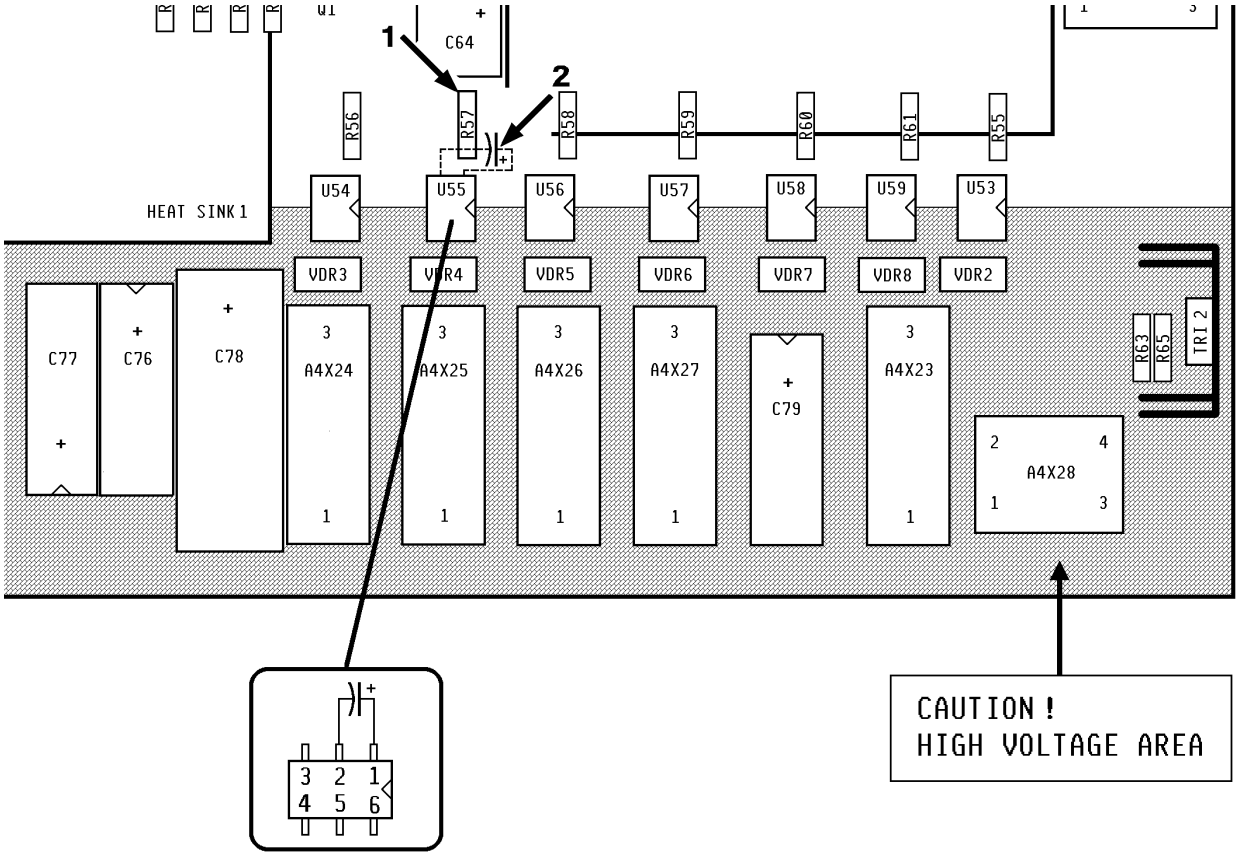


figure 15

3. Solder the CAPACITOR 330µF to Pin 1 and 2 of U55.

WARNING

The + PIN of the CAPACITOR must be soldered to PIN 1 of U55.

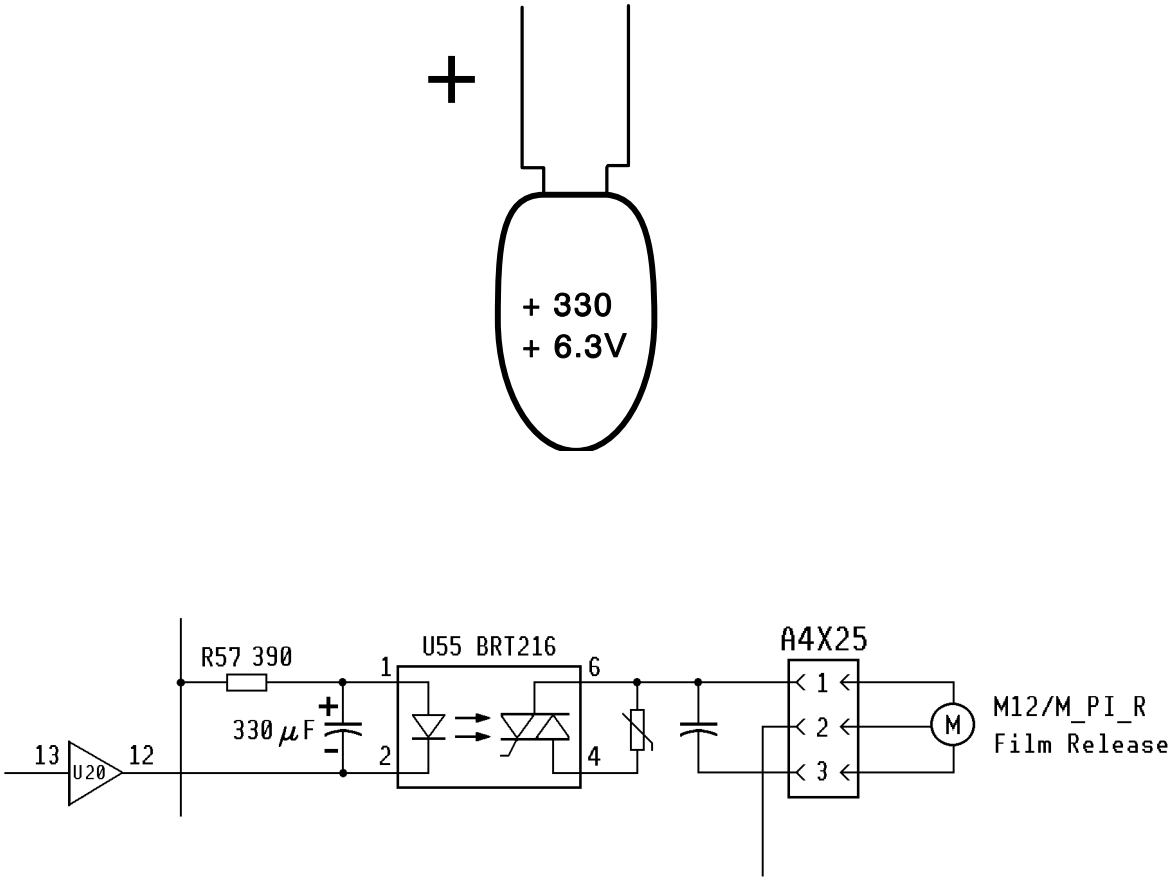


figure 16

4. Bend the CAPACITOR away from the HIGH VOLTAGE AREA. It is a violation of the SAFETY RULES if it is mounted in the direction of the HIGH VOLTAGE AREA and if its PINS touch another COMPONENT. See figure 15 for the HIGH VOLTAGE AREA.

5. Fix it with a little SILICON GLUE to the PCB.

6. Switch on the ML300 and run a few cycles to check for correct function of the FILM RELEASE.

NOTE

Do this test with TEST FILMS only. Take all MAGAZINES, loaded with CUSTOMER FILMSout of the ML300.

PART 6:

The following part is used:

9220130..... modified IC for PCB A5 U1 1

NOTE

The modified IC is a small assembly. It consists of an IC, 2 RESISTORS and an IC SOCKET.

NOTE

Take proper ESD SAFETY PRECAUTIONS when you install PART 6 of this modification.

1. Switch off the ML300.

2. Take out IC U1 from PCB A5 and replace it with the new IC-ASSEMBLY 9220130.

Replace U1 with the IC-Assembly. Check the orientation of the IC-NOTCH before you insert it.

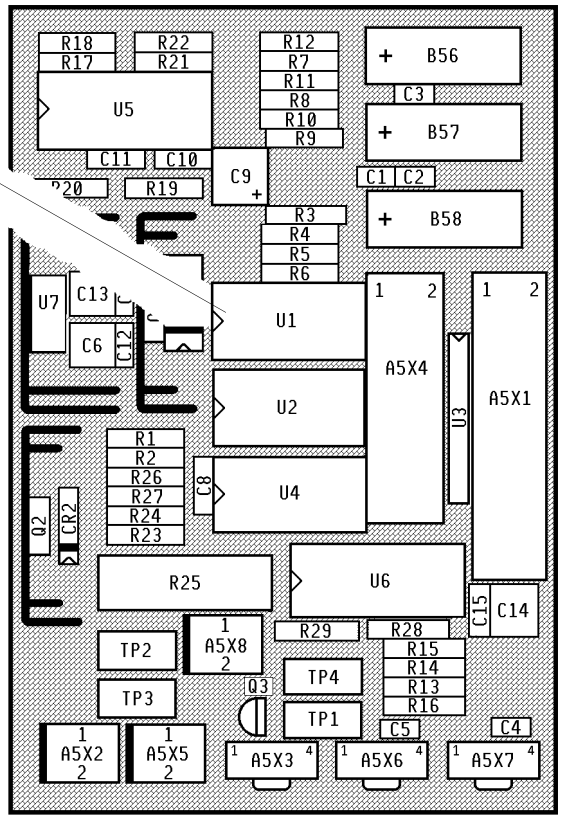


figure 17

PCB A5 with IC-ASSEMBLY U1

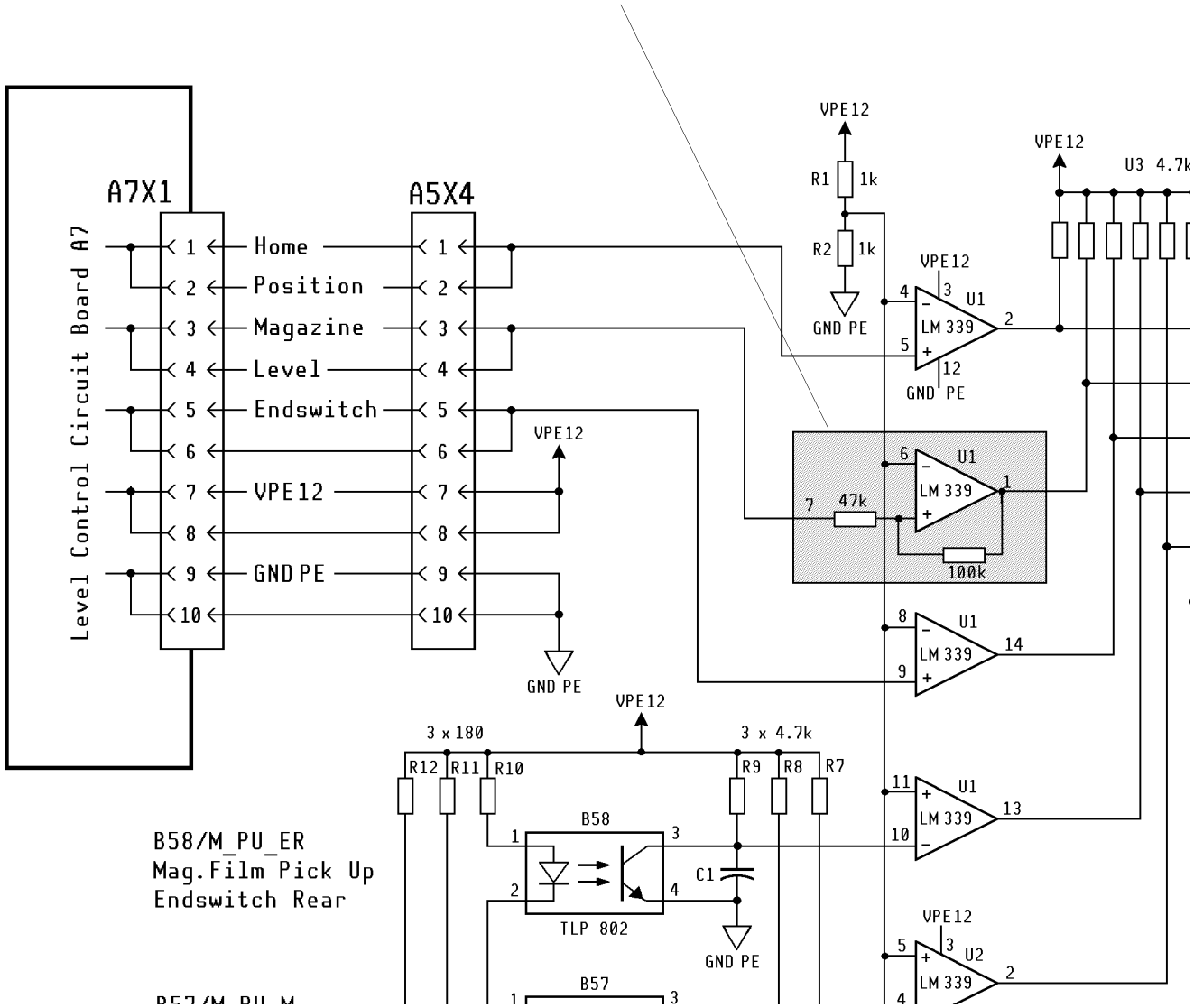


figure 18

3. Switch on the ML300 and run a few cycles to check for correct function of the ML300 .

NOTE

Do this test with TEST FILMS only. Take all MAGAZINES, loaded with CUSTOMER FILMS, out of the ML300.

4. Circle No.26 on the MODIFICATION LABEL.

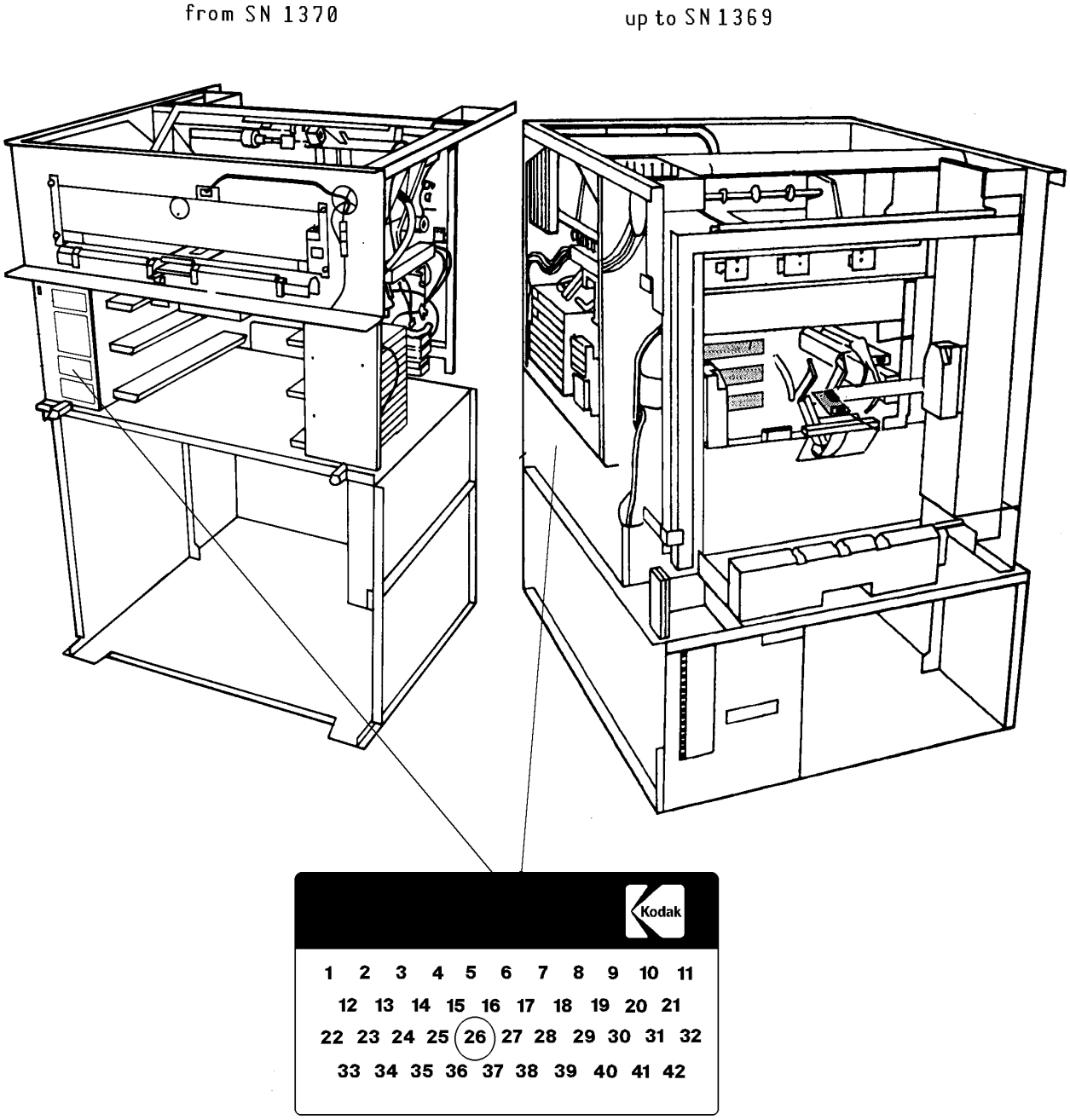

from SN 1370
up to SN 1369
Kodak
1 2 3 4 5 6 7 8 9 10 11
12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42

figure 19

FINAL TEST

1. Take all CUSTOMER FILMS out of the MAGAZINES.

2. Load the smallest and the largest MAGAZINES with TEST FILMS.

3. Insert both MAGAZINES into the ML300.

4. Switch on the ML300.

5. While the PANELS are off run several cycles with the smallest and the largest CASSETTE.

6. Check for correct operation.

7. Check that the harnesses do not interfere with moving parts and that they are not caught by the mechanics.

8. Mount all PANELS.

9. Again run a few cycles. This ensures that nothing went wrong when mounting the PANELS.

10. Load the MAGAZINES with CUSTOMER FILMS.

11. Insert the MAGAZINES into the ML300.

12. Again run a few cycles with customer films. Check for clear films.

CUSTOMER EQUIPMENT SERVICES KODAK AG STUTTGART GERMANY