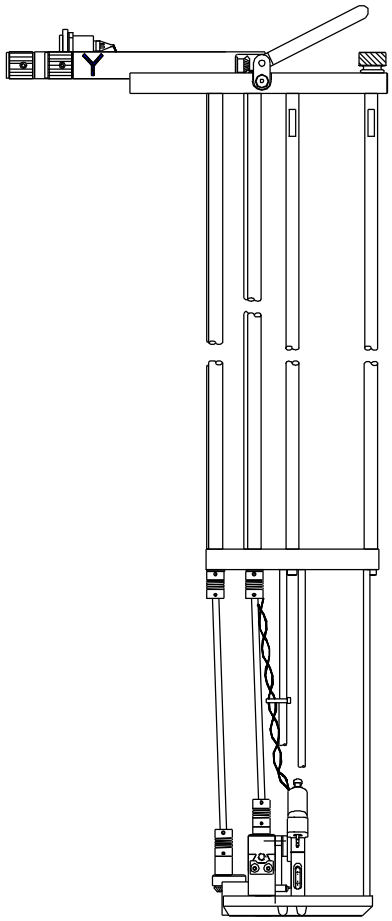
EG3309, EG3311, EG3327 and EG3329
ELECTRIC REMOTE ADJUST INKER
FOR OPTEM VIDEOSCOPE /EG20XX /
LTX HT and HI-T
/ LTX-AC-S / HP 94000 /Teradyne Catalyst PLATFORM
INSTALLATION AND OPERATION MANUAL



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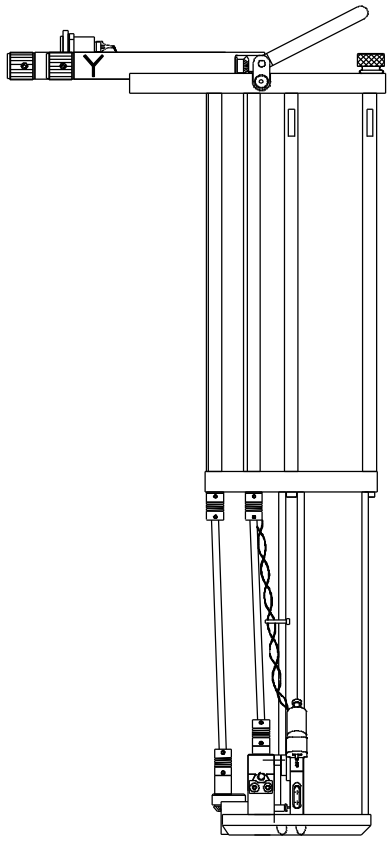
Section 1. Introduction

Theory of Operation



The Xandex EG3309, EG3311, EG3327 and EG3329 Electric Remote Adjust Inkers are designed for use in combination with the Optem Videoscope. The EG3309 model is for use on the LTX-HT test head and the EG3311 with the LTX-AC-S tester. The EG3327 accommodates the depth of the Teradyne Catalyst as the EG3329 does with the Hewlett Packard 94000 tester series, all docked to Electroglas probers.

Xandex Remote Adjust inkers incorporate easy installation and removal from the tester with the ability to change ink cartridges without undocking the test head. Precise X, Y, and Z adjustments to the inker are possible while the test head is docked and the videoscope is in position.

With the exception of the installation of an adapter and a mounting ring to allow installation and removal of the Inker and Videoscope, (the EG3309 also requires installation of a modified delrin spacer in the test head) there are no other modifications required to the test head. The Remote Adjust mounting ring accommodates both the Videoscope and the Inker.

The EG3309, EG3311, EG3327 and EG3329 utilize standard DieMark™ DM-1 cartridges. Ink dots are deposited via solenoid actuation of the DieMark™ cartridge nylon filament, which barely contacts the wafer surface. DieMark™ cartridge needle size, filament diameter, filament length, and ink viscosity are factory tuned. A standard ink reservoir is combined with a variety of needle and filament configurations for different applications and dot sizes.

Thank you for selecting ... XANDEX INC. ...as your inking choice.

Please spend a few minutes familiarizing yourself with the unit. Most questions you may have will be answered in this manual. If you would like further assistance, please contact your local Xandex distributor or call us at (707) 763-7799 or Toll Free in the U.S: (800) 767-9543. FAX (707) 763-2631. For more information about Xandex and our complete line of quality inking and interfacing products, visit us on the Internet at http://www.Xandex.com or email info@xandex.com.

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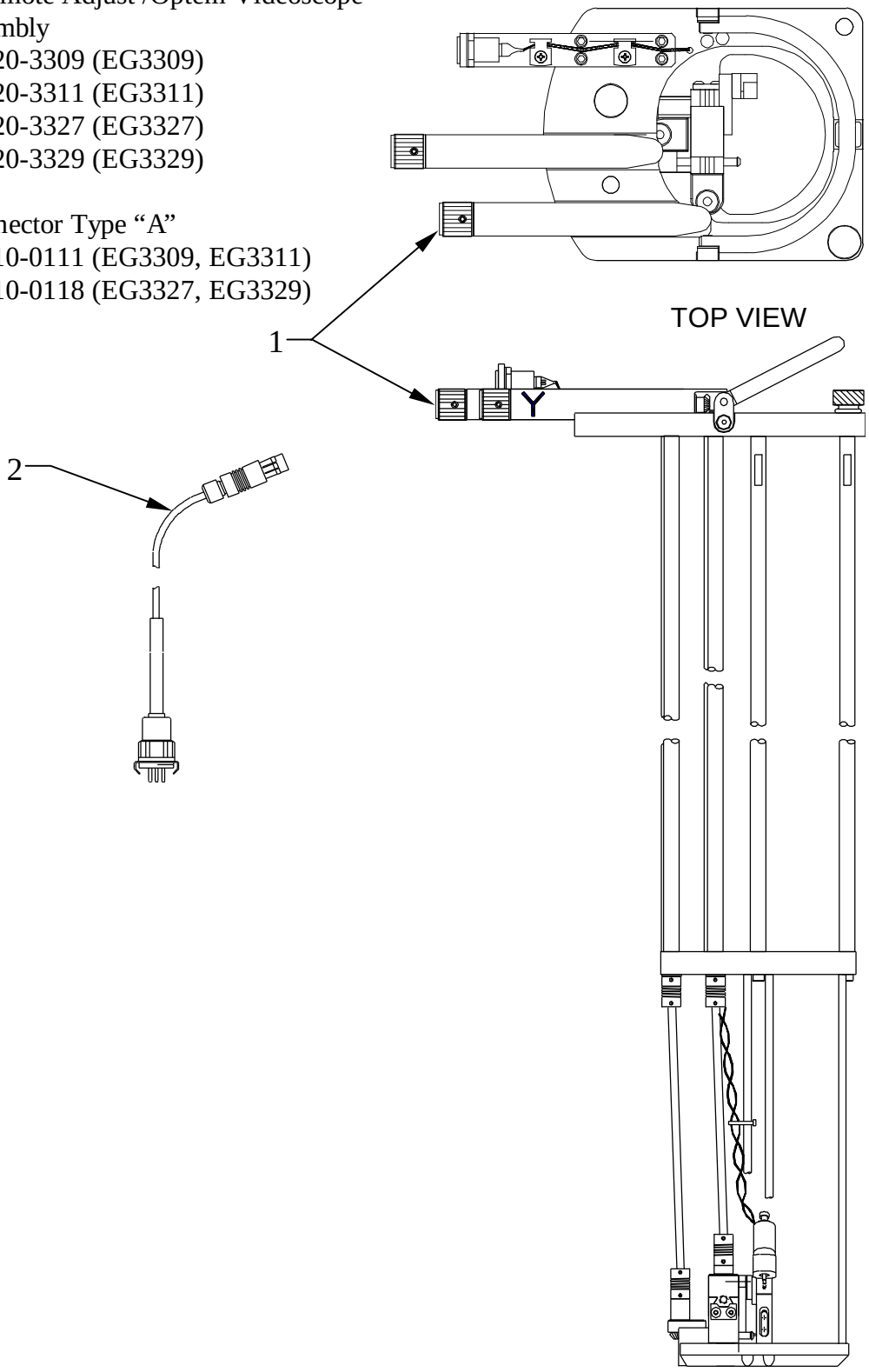
Section 2. System Overview

System Components / Kit Part No. 331-3309 (EG3309), 331-3311 (EG3311) 331-3327 (EG3327) and 331-3329 (EG3329)

1. Electric Remote Adjust /Optem Videoscope Inker Assembly
   Part No. 320-3309 (EG3309)
   Part No. 320-3311 (EG3311)
   Part No. 320-3327 (EG3327)
   Part No. 320-3329 (EG3329)

2. Cable Connector Type “A”
   Part No. 210-0111 (EG3309, EG3311)
   Part No. 210-0118 (EG3327, EG3329)



3. Inker/Videoscope Mounting Ring
   Part No. 220-0047
   (EG3309, EG3311 EG3327 & EG3329)

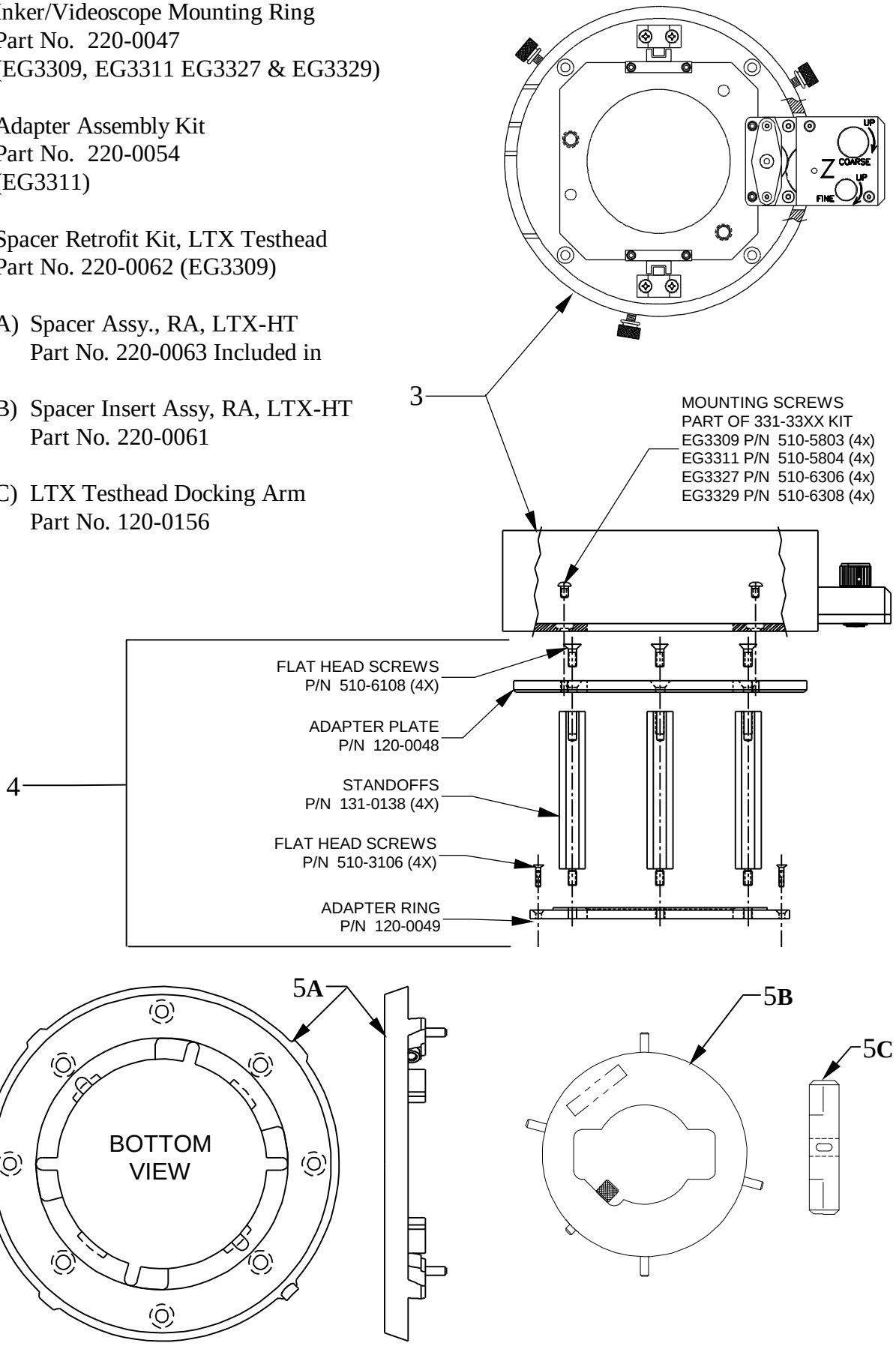
4. Adapter Assembly Kit
   Part No. 220-0054
   (EG3311)

5. Spacer Retrofit Kit, LTX Testhead
   Part No. 220-0062 (EG3309)

   A) Spacer Assy., RA, LTX-HT
      Part No. 220-0063 Included in

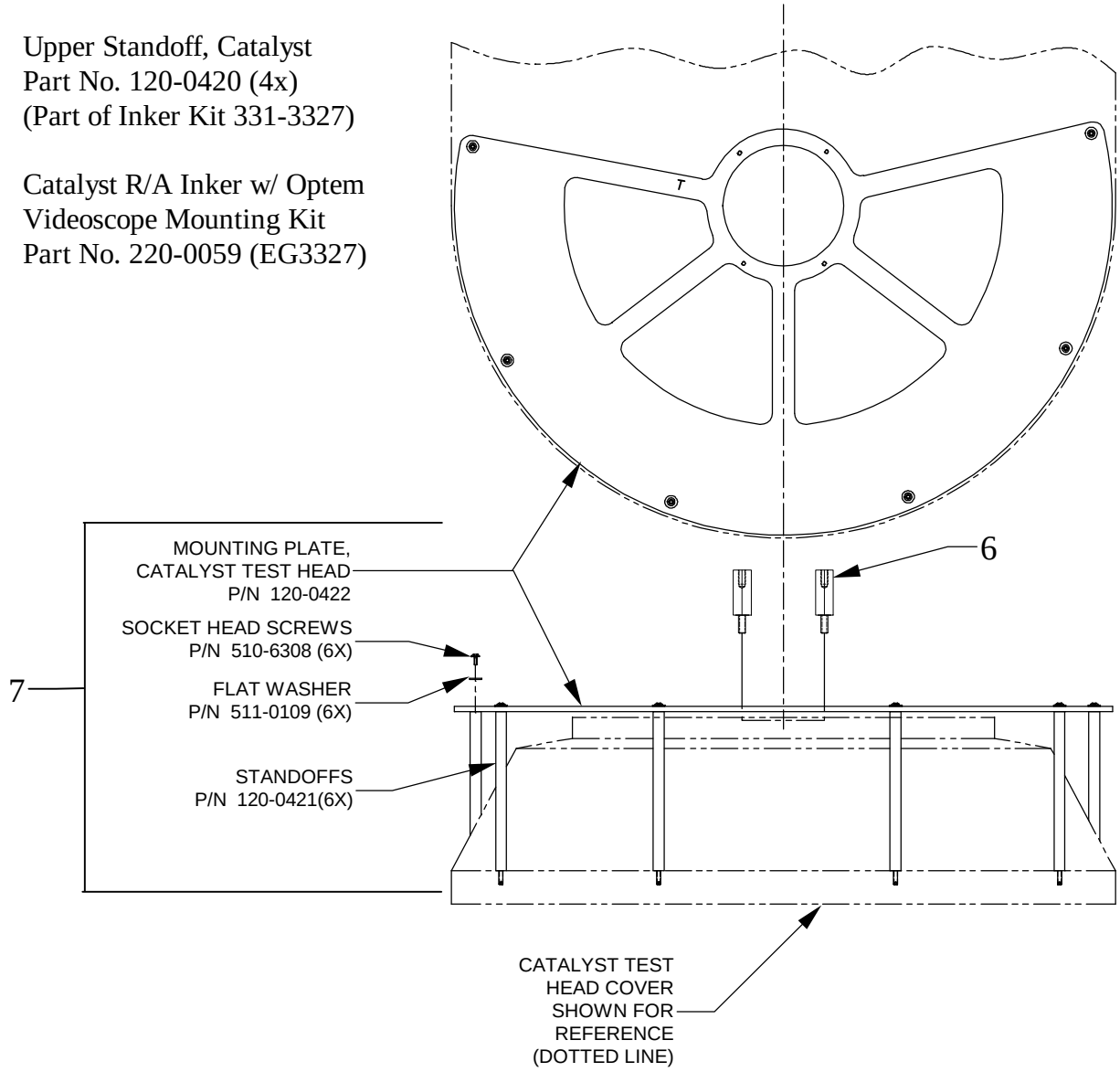
   B) Spacer Insert Assy, RA, LTX-HT
      Part No. 220-0061

   C) LTX Testhead Docking Arm
      Part No. 120-0156



6. Upper Standoff, Catalyst
   Part No. 120-0420 (4x)
   (Part of Inker Kit 331-3327)

7. Catalyst R/A Inker w/ Optem
   Videoscope Mounting Kit
   Part No. 220-0059 (EG3327)



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Section 3. Installation

EG3309 Remote Adjust

The Xandex EG3309 Remote Adjust Inker is designed for use in combination with an Optem Videoscope on an LTX-HT tester docked to an Electroglas 20XX series prober. The Remote Adjust Mounting Ring accommodates both the Videoscope and the Inker. Inker X, Y and Z adjustments can be made with the Videoscope in place. Removal of the inker and Videoscope is necessary only to change ink cartridges. The following describes the steps necessary to install the EG3309 Remote Adjust Inker and the Optem Videoscope.

Installation of the remote adjust inker on your LTX HT or HI-T test head requires that you first replace the delrin spacer (LTX P/N 851-6914-00) which separates the load board from the test head center tube support with a new Xandex spacer assembly (P/N 220-0063 supplied).

An insert, which adapts the Xandex spacer for docking to a handler, and a new "T" docking arm for the LTX plunger assembly are also supplied, along with the modified spacer, in a retrofit kit (P/N 220-0062). Spacer installation is covered below. See the LTX-HT and HI-T Spacer Retrofit Kit section following the LTX-HT installation portion of this chapter for more information.

Spacer Installation

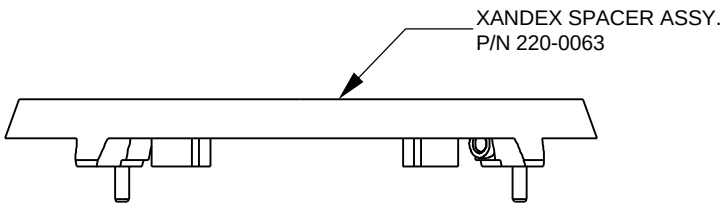
The Xandex delrin spacer is identical in function to the LTX delrin spacer except for a larger center bore to accommodate the inker. An insert assembly (P/N 220-0061) is provided for use with the spacer. The insert will need to be installed when going from wafer sort to final test, as it adapts the modified spacer to accept the "T" docking arm and plunger used when docking the LTX HT test head to a handler.

1. Remove the Videoscope from the test head.

2. Undock the test head and remove any current inker in use. Rotate the test head 180° (DUT up).

3. Remove the load board and the four (4) shoulder screws retaining the existing LTX delrin spacer (LTX P/N 851-6914-00) and remove the spacer.

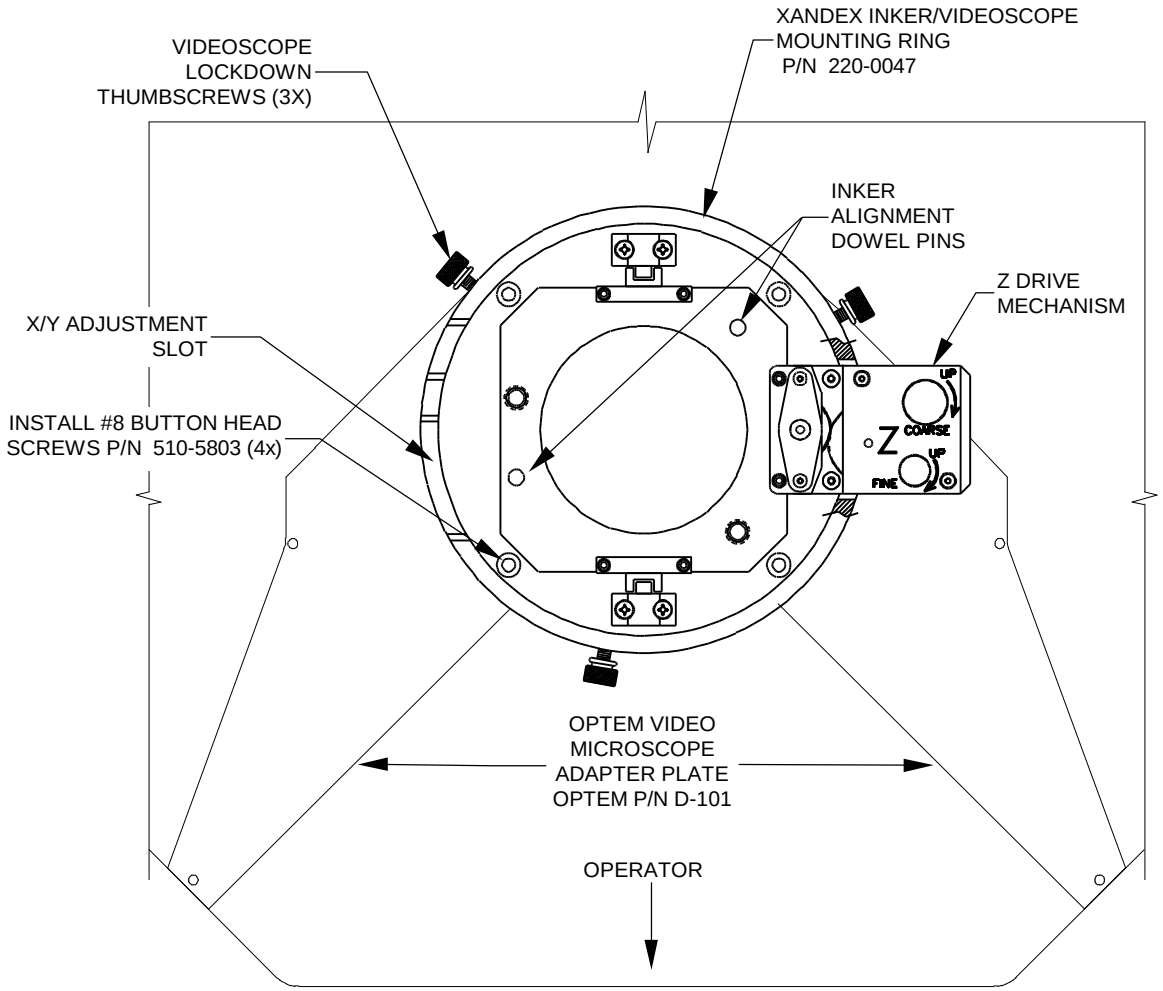
4. Install the Xandex modified spacer using four (4) 6-32 x 1/4 button head screws (P/N 510-4804 supplied) and four (4) washers (P/N 511-0106 supplied).



Mounting Ring Installation

***Note**: The Optem adapter ring assembly, P/N B289075-101 cannot be used with the EG3309 inker and should be removed from the Optem mounting plate.*

1. Rotate the test head so that the spacer/load board is down. Install the *Xandex Inker/Videoscope mounting ring* (P/N 220-0047) onto the *Optem Video Microscope adapter plate* (Optem P/N D-101). Orient the *mounting ring* so that the *Z drive mechanism* is to the operator's right. Assemble to the *Optem adapter plate* using the four *#8 button head screws* (P/N 510-5803, supplied). Do not fully tighten these screws at this time.



INKER/VIDEOSCOPE MOUNTING RING
OVERHEAD VIEW

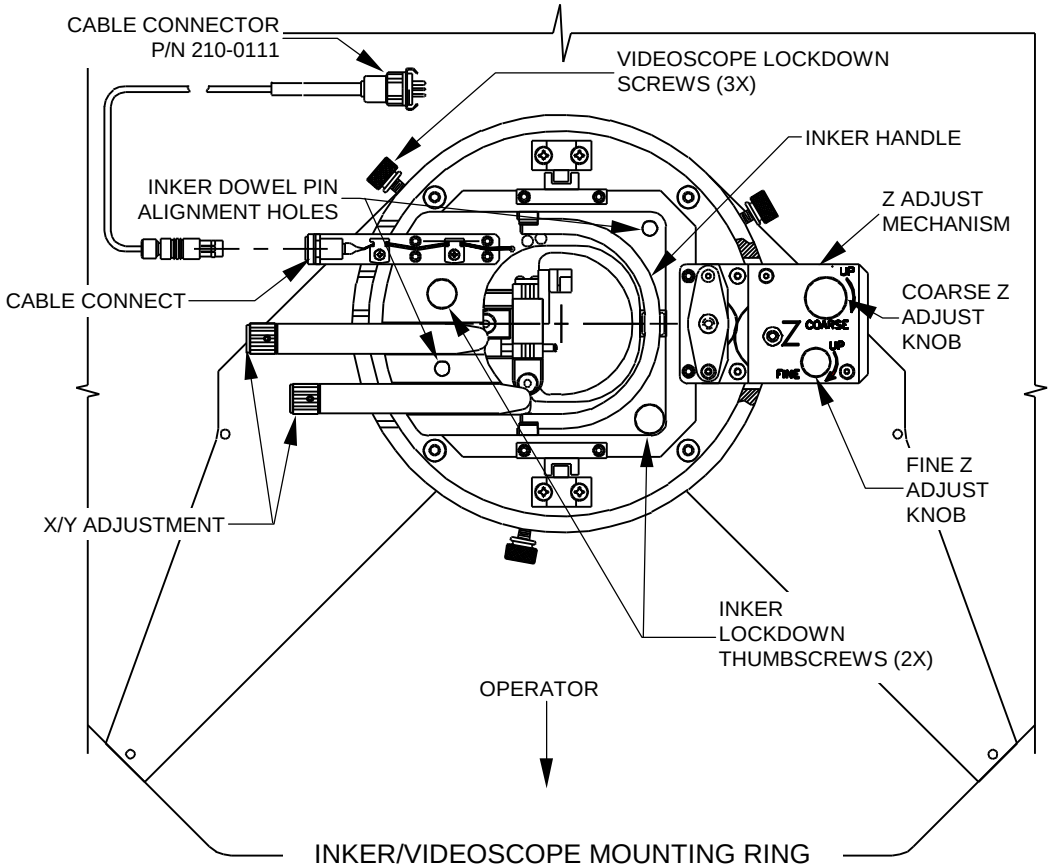
EG3309 Inker Installation

***CAUTION*: When installing the inker, always make sure the X and Y knobs are adjusted to mid position, the mounting ring Z mechanism is adjusted to full Z up position, and the chuck/ wafer is moved to forcer home (safe) position to prevent damage.**

1. For initial inker installation, re-mount the load board and dock the test head to the prober with the probe card removed to avoid damaging the probe tips if the inker is mis-aligned.

2. Before installing the inker, turn *coarse adjustment knob* on the *Z mechanism* all the way up (clockwise) and turn the X and Y knobs to mid travel position. Install the remote adjust inker by lifting it with the *handle* and lowering it through the center of the *mounting ring* and test head. Orient *the X/Y adjustment knobs* to the left, aligning them with the slots on the *mounting ring*. *Alignment holes* in the inker top plate interface with two *dowel pins* on the *mounting ring* for precise inker placement.

3. If the inker is not aligning with the hole in the test head, adjust the *mounting ring* accordingly. Once the *mounting ring* and inker are aligned, tighten the screws retaining the *mounting ring*.

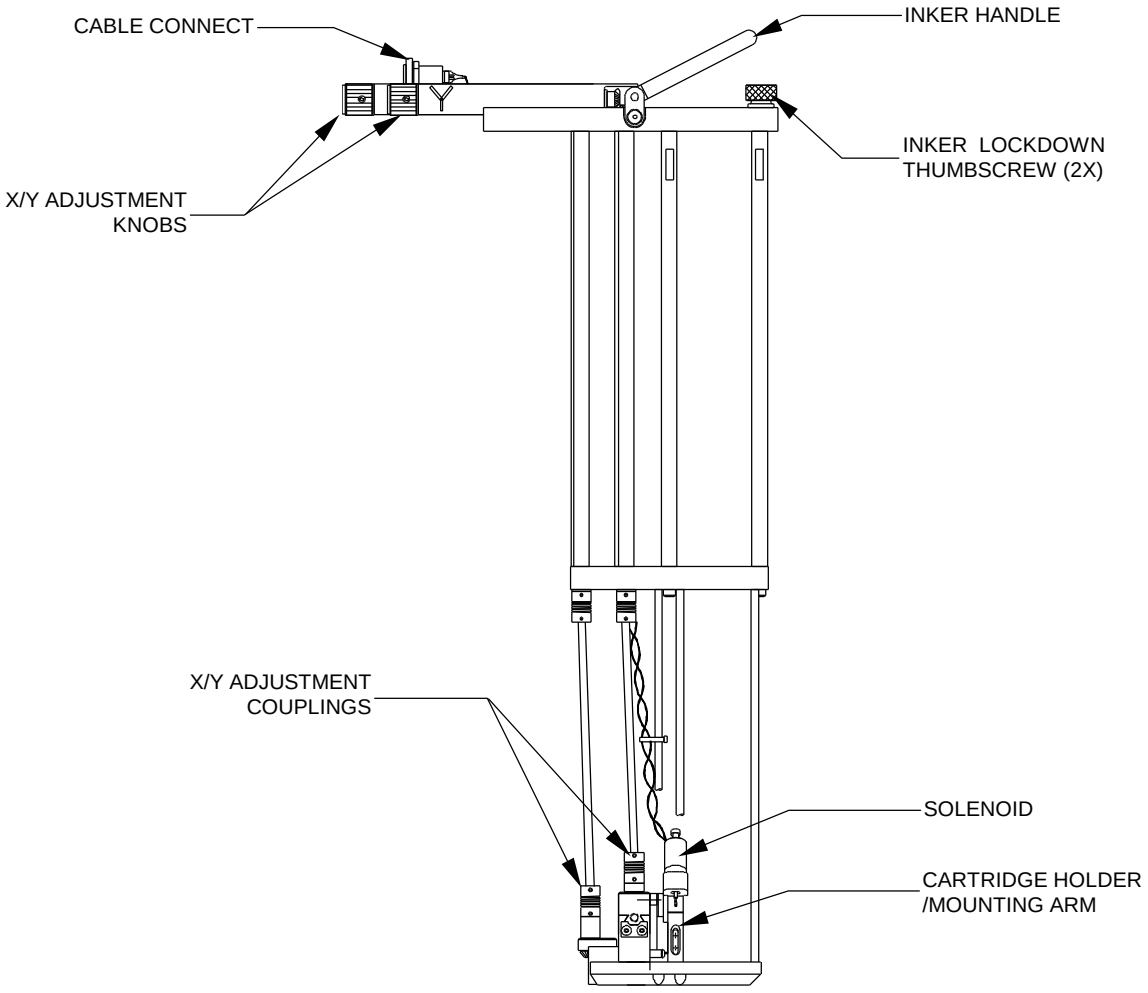


4. Proceed to "Cartridge Installation" procedures as detailed in **Section 4 "System Operation"** for ink cartridge opening, priming and installation procedures.

5. Once you have properly primed and installed a cartridge, replace the probe card and install the inker as before (always make sure Z adjustment is set all the way up) and lock into position using the two *lockdown thumbscrews*. Plug the *cable* (P/N 210-0111) into the *cable connect* on the left side of the inker, and into the appropriate inker jack on the prober.

6. Before installing the Optem Videoscope, adjust the Videoscope X/Y stage so that the Videoscope is approximately in the center of its X/Y adjustment. Loosen the three *Videoscope lockdown thumbscrews* on the side of the *mounting ring* so that no threads are protruding inside the ring. Carefully lower the Videoscope until the stage is seated completely on the *mounting ring*. Tighten the three *lockdown thumbscrews* to retain the Videoscope.

7. Make necessary X/Y/Z adjustments and the inker is now ready for final setup. Proceed to **Section 4. "Inker Alignment"** for detailed instructions.



EG3309 INKER ASSEMBLY COMPONENTS

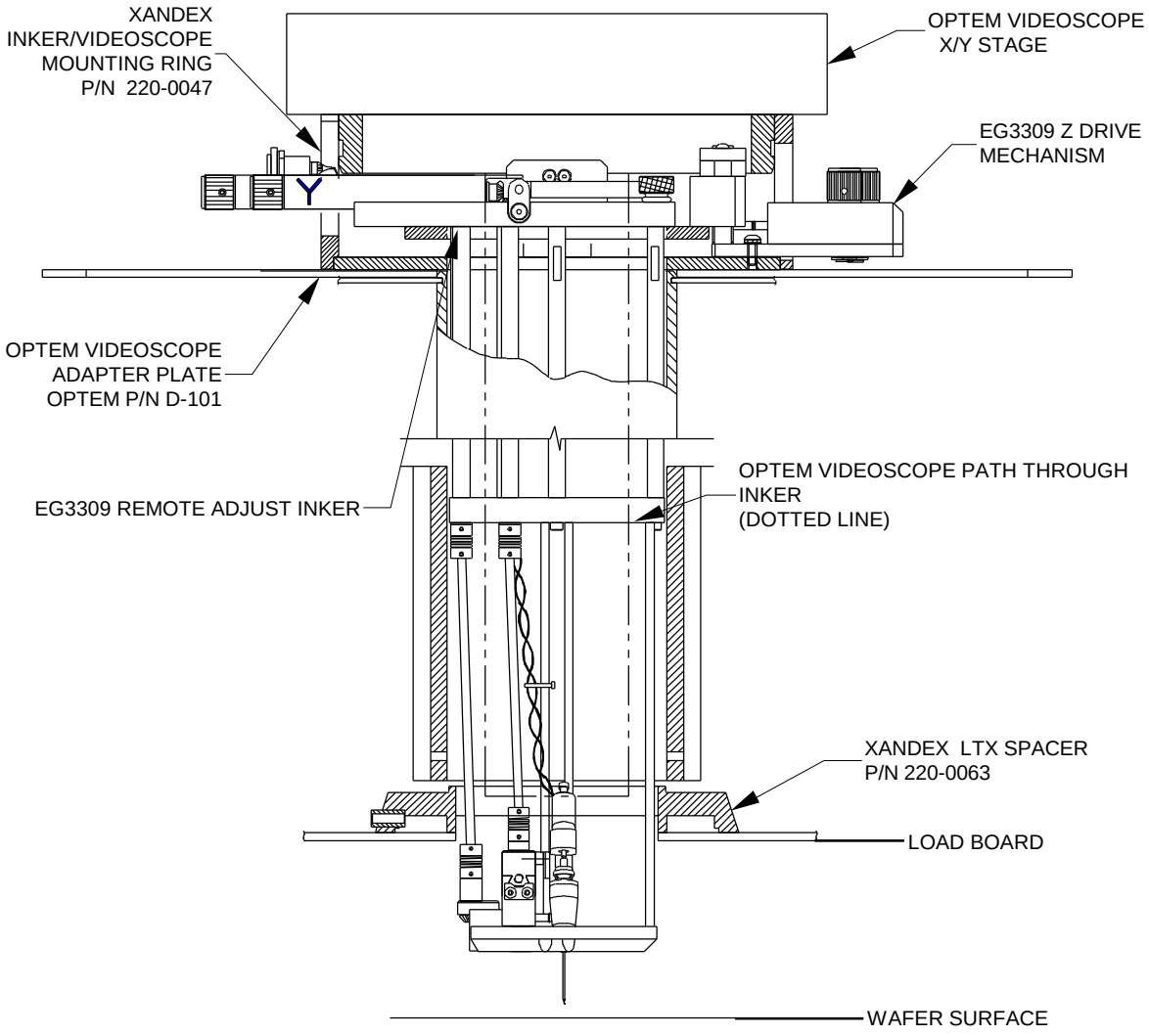
Inker Removal

Remote adjust inkers enable you to install and change cartridges without undocking the test head. Follow the steps below to remove the inker.

1. Drop the prober stage to Z down.
2. Loosen the three (3) *lockdown thumbscrews* and remove the Videoscope.
3. Loosen the two (2) inker *lockdown thumbscrews.*

CAUTION: Before removing the inker, always make sure that the mounting ring Z mechanism is adjusted to full Z up position to prevent probe tip damage.

4. Using the *handle*, lift the inker assembly straight up and out of the test head.

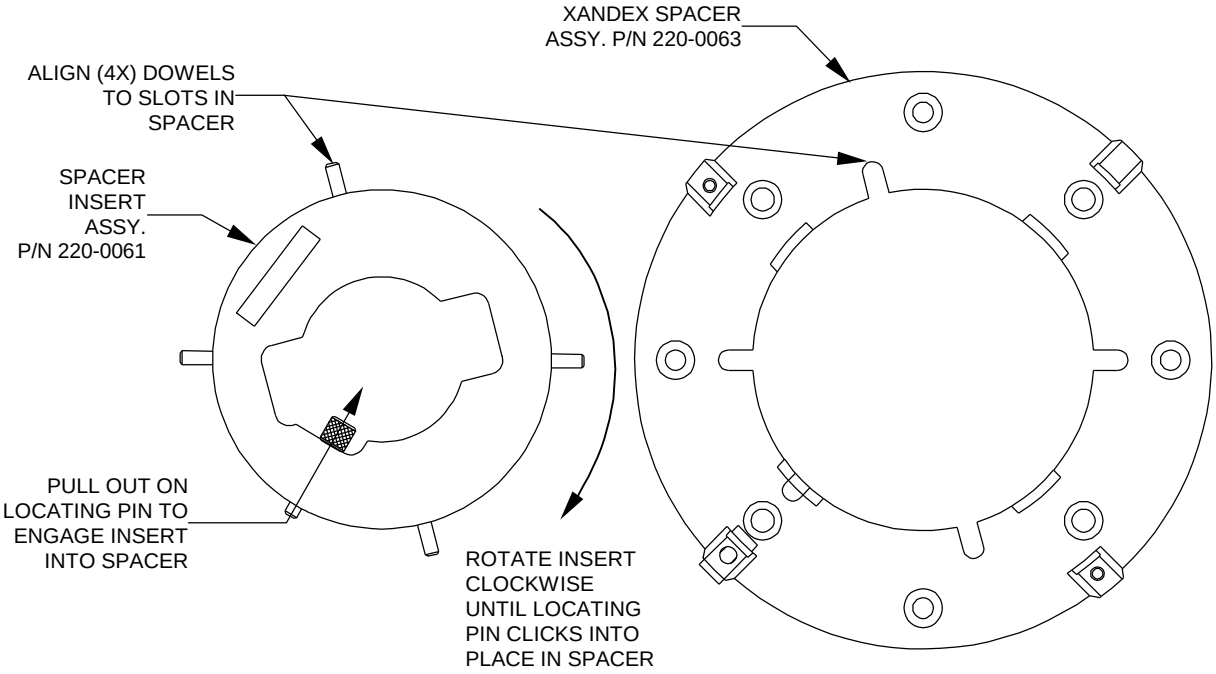


INSTALLED EG3309 INKER/VIDEOSCOPE
CROSS SECTION VIEW

Spacer Retrofit Kit Description

The modified Xandex LTX spacer has a larger center bore than the standard LTX spacer in order to accommodate diameter of the remote adjust inker. Frequent changing of the spacer, when going from wafer sort to final test, is avoided by installation of an insert assembly to accommodate the docking plunger. The docking plunger must be retrofitted with a new small profile "T" arm, which interfaces with the spacer insert to accomplish handler docking.

Spacer Insert Installation



1. With the Xandex Modified spacer assembly installed on the LTX test head, remove the Remote Adjust Inker and orient the test head DUT up.

2. The 220-0061 spacer insert assembly has four dowel pins which interface with four slots on the 220-0063 spacer assembly. Align the dowels on the insert with the slots on the spacer.

3. Pull out on the locating pin on the inside diameter of the spacer insert and engage the spacer insert into the spacer.

4. Rotate the spacer insert clockwise until the spring loaded locating pin clicks into place in the corresponding detent in the spacer.

5. The spacer insert is now ready to accept the retrofitted docking plunger.

Docking Plunger Retrofit

1. The LTX docking plunger must be retrofitted with a new Xandex designed "T" docking arm to accommodate the new spacer insert.

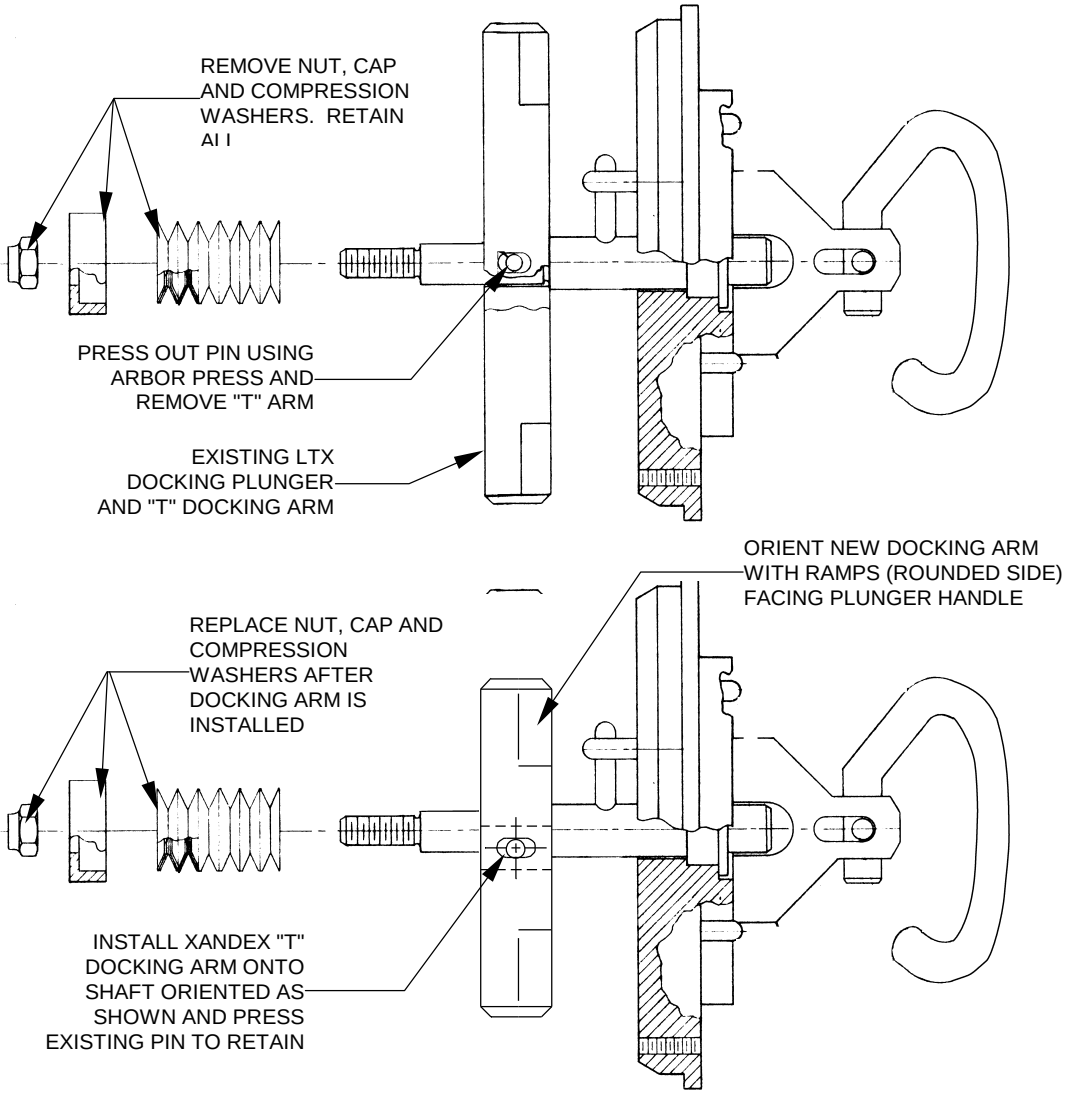
2. Use an Arbor Press to remove the pin retaining the "T" docking arm, from the LTX plunger assembly.

3. Remove the retaining nut, cap and compression washers from the end of the plunger and retain.

4. Insert the new Xandex "T" docking arm onto the plunger shaft oriented as shown. The "Ramp" or rounded sides of the docking arm should be towards the plunger handle.

5. Press the pin retained in step 2 above, back in place to retain the new docking arm.

6. Replace the compression washers, cap and retaining nut removed in step 3. The plunger is now modified for use with the spacer insert.



EG3311 Remote Adjust

The Xandex EG3311 Remote Adjust Inker is designed for use in combination with an Optem Videoscope on an LTX-AC-S tester docked to an Electroglas 20XX Series prober. The Remote Adjust Mounting Ring accommodates both the Videoscope and the Inker. Inker X, Y and Z adjustments can be made with the Videoscope in place. Removal of the inker and Videoscope is necessary only to change ink cartridges. The following describes the steps necessary to install the EG3311 Remote Adjust Inker and the Optem Videoscope.

Adapter Assembly/Mounting Ring Installation

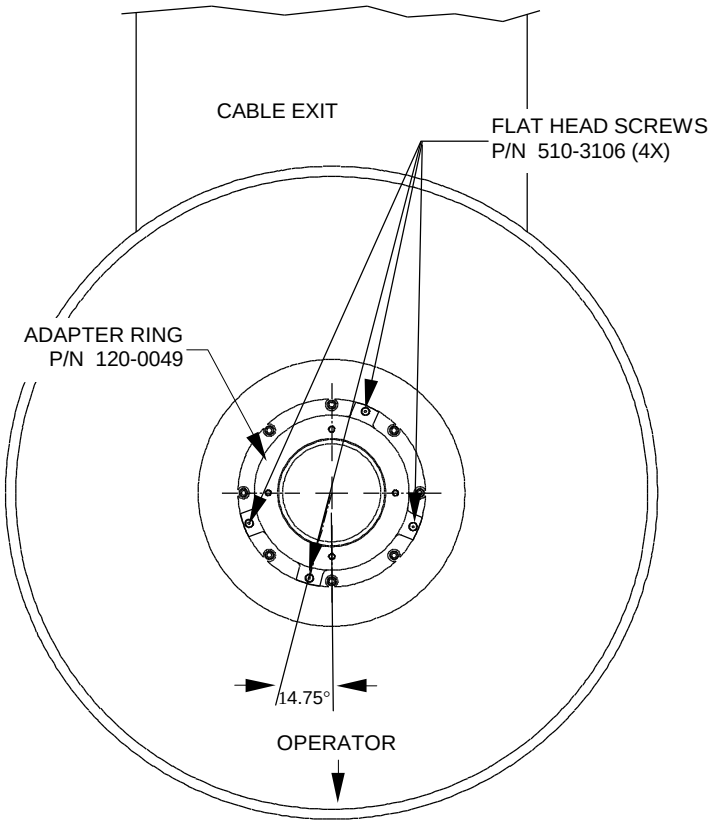
Note: *The supplied Xandex mounting ring accommodates both the Videoscope and the Remote Adjust Inker. No Optem Videoscope mounting hardware is required, and should be removed from the test head if previously installed.*

1. Remove the cover from the test head and set aside.

2. Remove the existing four screws that retain the clear plastic guard.

3. Install the *adapter ring* (P/N 120-0049) over the clear plastic guard, replacing the screws removed in step 2 with four (4X) *#4 flat head screws* (P/N 510-3106, supplied). Orient as shown in drawing below.

4. Re-install the test head cover.

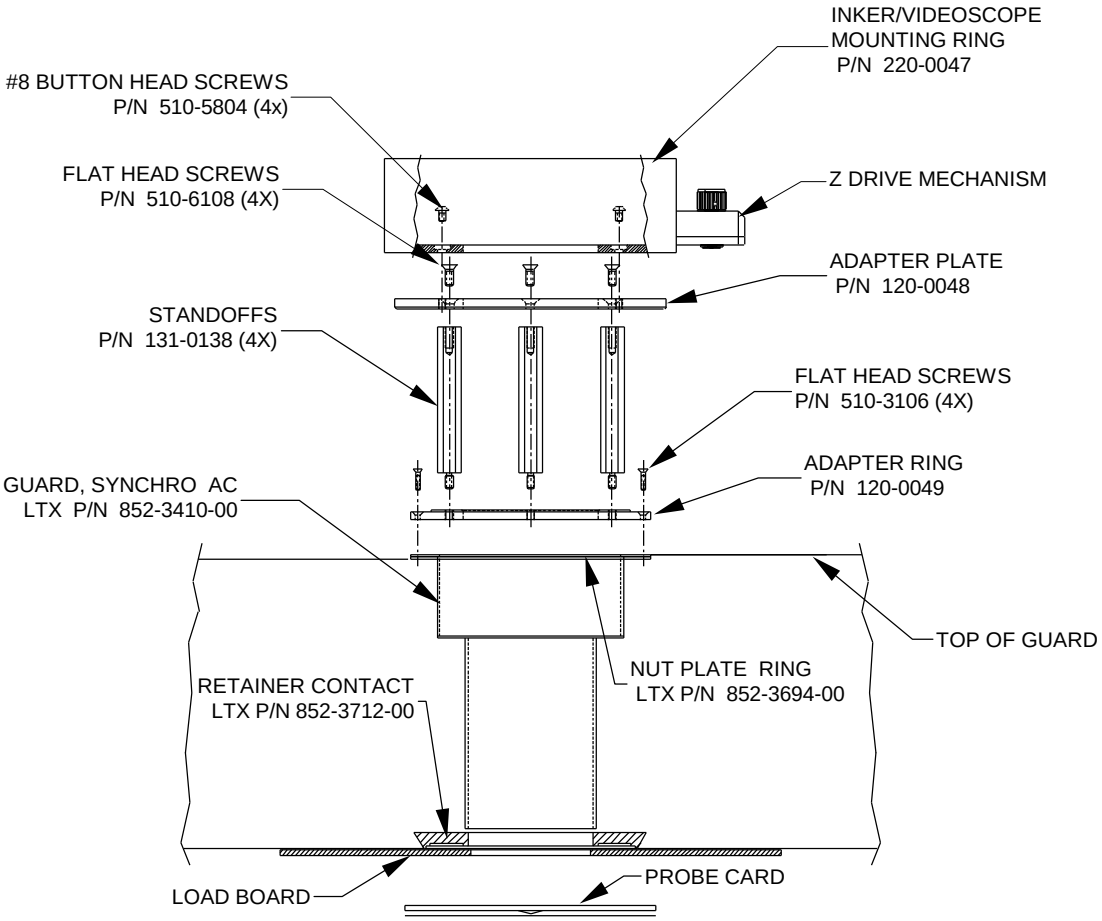


5. Thread the male end of the four *standoffs* (P/N 131-0138) into the four threaded holes on the *adapter ring* (P/N 120-0049). Use a wrench to tighten the *standoffs*.

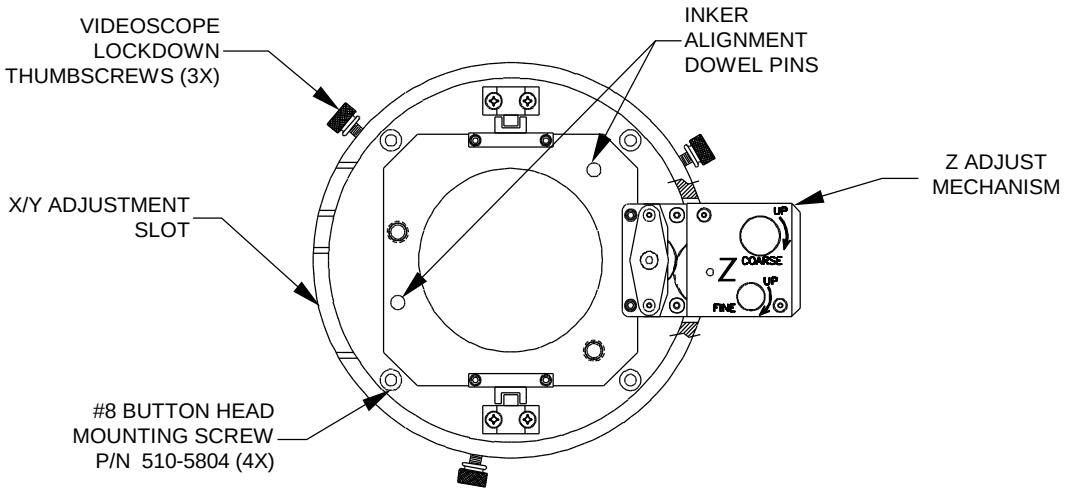
6. Place the *adapter plate* (P/N 120-0048) over the four *standoffs* and install using four (4X) *#10 flat head screws* (P/N 510-6108, supplied). Orientation is of no concern as the plate is symmetrical.

***Note**: Apply a small amount of Loctite 222 to the threads of the standoffs and screws designated in steps 5 and 6.*

7. Install the Inker/Videoscope *mounting ring* (P/N 220-0047) onto the *adapter plate*. Orient the *mounting ring* so that the *Z drive mechanism* is to the operator's right. Assemble the *mounting ring* to the *adapter plate* using four (4X) *#8 button head screws* (P/N 510-5804, supplied). Do not fully tighten these screws at this time.



CROSS SECTION VIEW OF TESTER WITH
COVER REMOVED



INKER/VIDEOSCOPE MOUNTING RING
OVERHEAD VIEW

EG3311 Inker Installation

***CAUTION*: When installing the inker, always make sure the X and Y knobs are adjusted to mid position, the mounting ring Z mechanism is adjusted to full Z up position, and the chuck/ wafer is moved to forcer home (safe) position to prevent damage.**

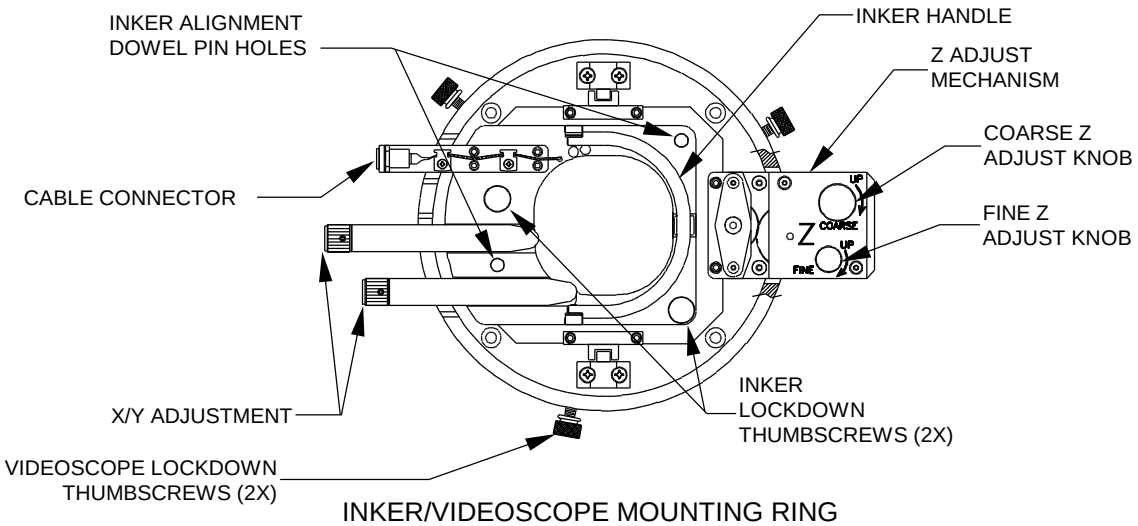
1. For initial inker installation, dock the test head to the prober with the probe card removed to avoid damaging the probe tips if the inker is mis-aligned.

2. Before installing the inker, turn *coarse adjustment knob* on the *Z mechanism* all the way up (clockwise) and turn the X and Y knobs to mid travel position. Lift the remote adjust inker with the *handle* and lower it through the center of the *mounting ring* and test head. Orient *the X/Y adjustment knobs* to the left, aligning them with the slots on the *mounting ring*. *Alignment holes* in the inker top plate interface with two *dowel pins* on the *mounting ring* for precise inker placement.

3. If the inker is not aligning with the hole in the test head, adjust the *mounting ring* accordingly. Once the *mounting ring* and inker are aligned, tighten the screws retaining the *mounting ring*.

4. Proceed to "Cartridge Installation" as detailed in **Section 4 "System Operation"** for ink cartridge opening, priming and installation procedures.

5. Once you have properly primed and installed a cartridge, replace the probe card and install the inker as before (make sure Z adjustment is set all the way up) and lock into position using the two *lockdown thumbscrews*. Plug the *cable* (P/N 210-0111) into the *cable connector* on the left side of the inker, and into the appropriate inker jack on the prober.



INKER/VIDEOSCOPE MOUNTING RING
WITH INKER INSTALLED
OVERHEAD VIEW

6. Before installing the Optem Videoscope, adjust the Videoscope X/Y stage so that the Videoscope is approximately in the center of its X/Y adjustment. Loosen the three *Videoscope lockdown thumbscrews* on the side of the *mounting ring* so that no threads are protruding inside the ring. Carefully lower the Videoscope until the stage is seated completely on the *mounting ring*. Tighten the three *lockdown thumbscrews* to retain the Videoscope.

7. Make necessary X/Y/Z adjustments and the inker is now ready for final setup. Proceed to **Section 4. "Inker Alignment"** for detailed instructions.

Inker Removal

Remote adjust inkers enable you to install and change cartridges without undocking the test head. Follow the steps below to remove the inker.

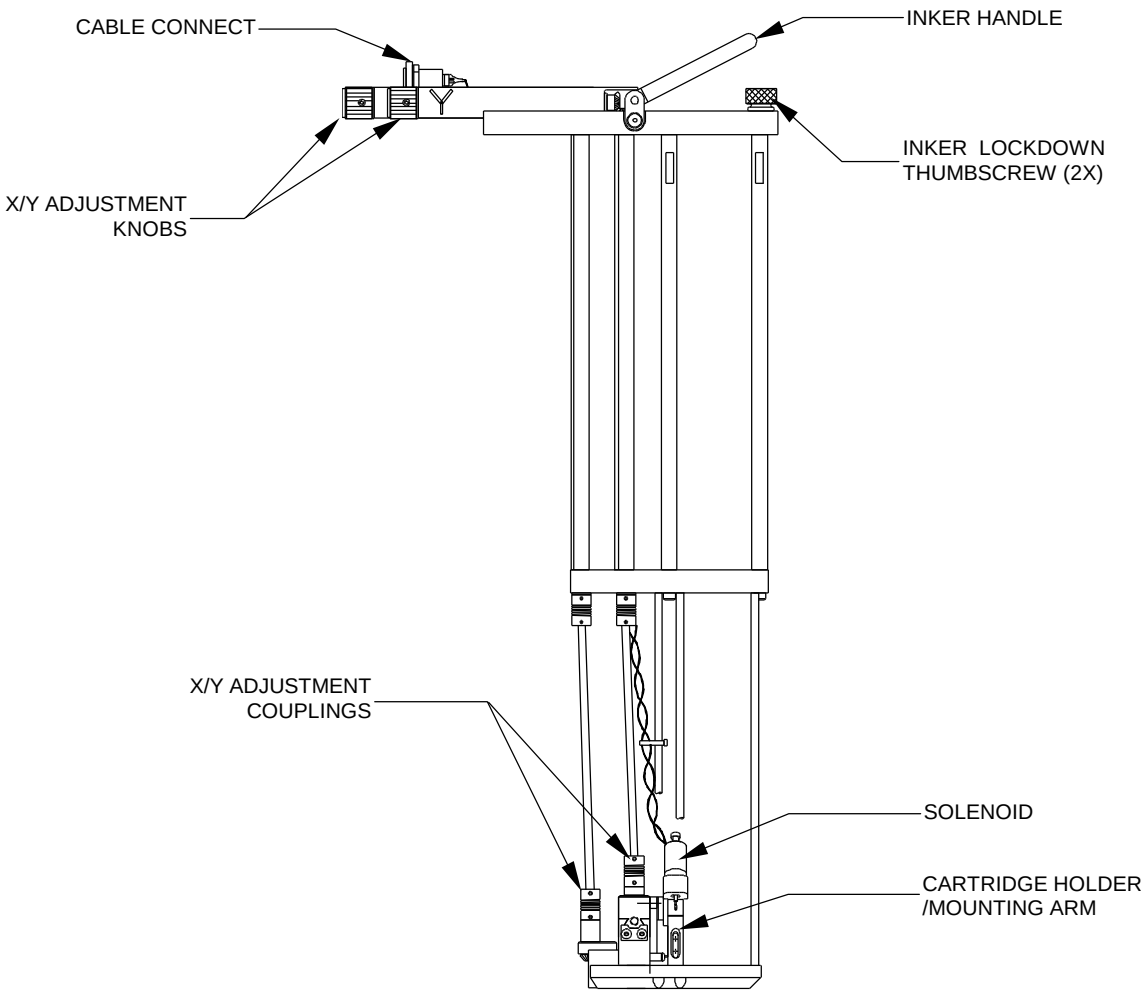
1. Drop the prober stage to Z down.

2. Loosen the three (3) *lockdown thumbscrews* and remove the Videoscope.

3. Loosen the two (2) *inker lockdown thumbscrews*.

CAUTION: Before removing the inker, always make sure that the mounting ring Z mechanism is adjusted to full Z up position to prevent probe tip damage.

4. Using the *handle,* lift the inker assembly straight up and out of the test head.



EG3311 INKER ASSEMBLY COMPONENTS

EG3327 Remote Adjust

The EG3327 Remote Adjust Inker is designed to accommodate the depth of the Teradyne Catalyst test head and is used in combination with an Optem Videoscope. A Mounting Plate (P/N 120-0422) is installed onto the test head with six (6x) standoffs (P/N 120-0421), which replace six of the test head cover screws. The Remote Adjust Mounting Ring is installed onto the mounting plate and accommodates both the Videoscope and the Inker. In "native mode", the Remote Adjust Mounting Ring is installed on the mounting plate using four (4x) upper standoffs (P/N 120-0420). These upper standoffs must be removed for "adaptive mode". In this mode, the Remote Adjust Mounting Ring is installed directly onto the mounting plate to allow the inker to extend farther into the test head.

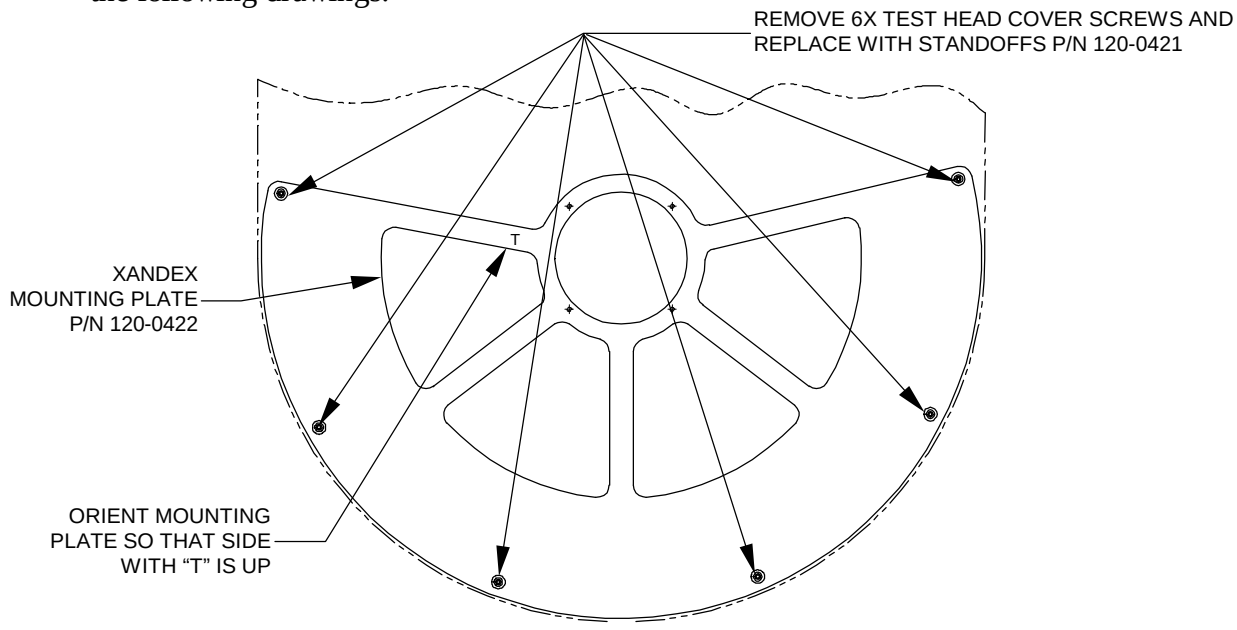
Removal of the Inker and Videoscope is necessary only to switch between native and adaptive modes or to change ink cartridges, as inker X, Y and Z adjustments can be made with the Videoscope in place. The following describes the steps necessary to install the EG3327 Remote Adjust Inker and the Optem Videoscope.

Mounting Plate Installation

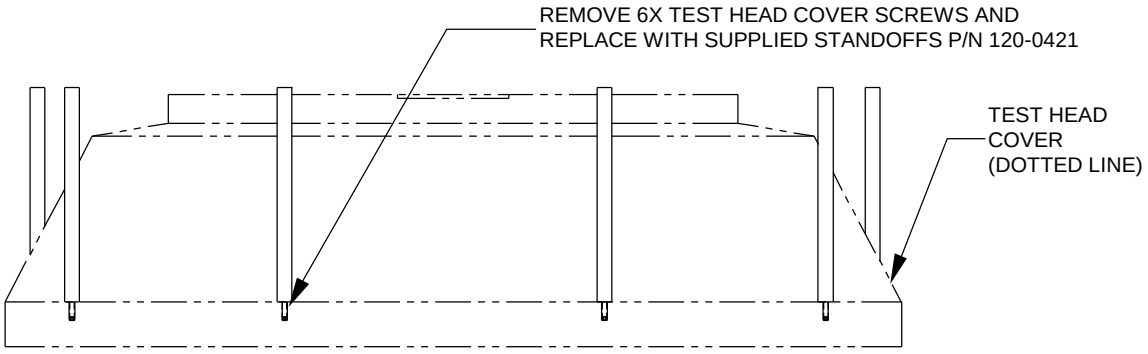
The mounting ring is installed using the components of the *Mounting Plate Adapter Kit*, (P/N 220-0059).

1. Orient the test head, using the manipulator, into a position that will ease overhead work on the test head.

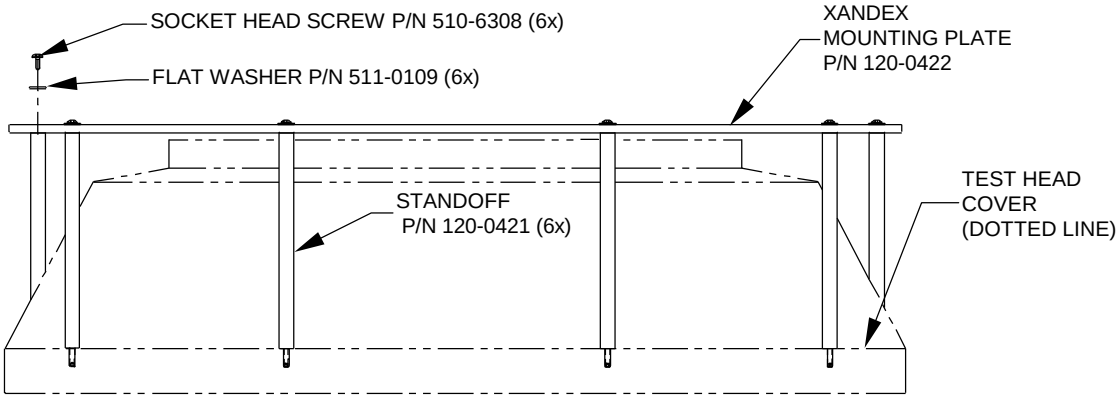
2. Remove the front six test head cover retaining screws from the locations indicated in the following drawings.



3. Replace the six test head cover screws with the six *standoffs* (P/N 120-0421, supplied), using a dab of Loctite 222 (P/N 502-0303, supplied) on the threads of each before installation. The *standoffs* are hex shaped to allow use of a wrench to tighten them if needed. Do not over tighten the standoffs.



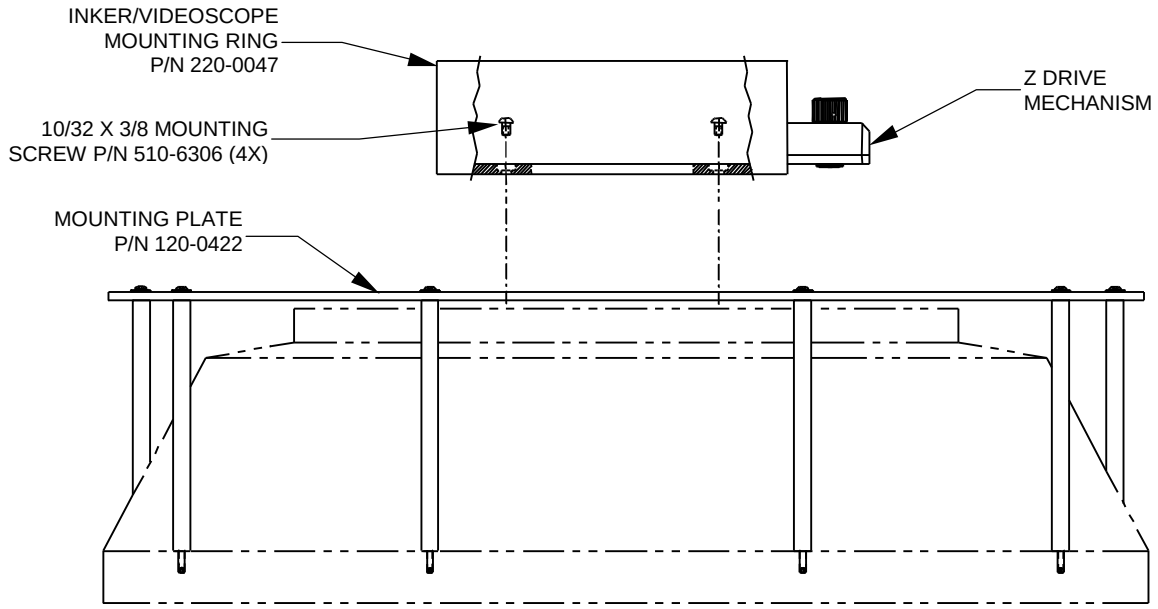
4. Orient the *mounting plate* (P/N 120-0422) so that the side of the plate marked with "T" is face up. Place the *mounting plate* on the *standoffs*, aligning the holes in the *mounting plate* with the corresponding threaded holes in the *standoffs*. Secure the *mounting plate* to the *standoffs* using the six *socket head screws* (P/N 510-6308) and *flat washers* (P/N 511-0109) supplied. Use a dab of Loctite 222 (P/N 502-0303, supplied) on the threads of each screw before installation.



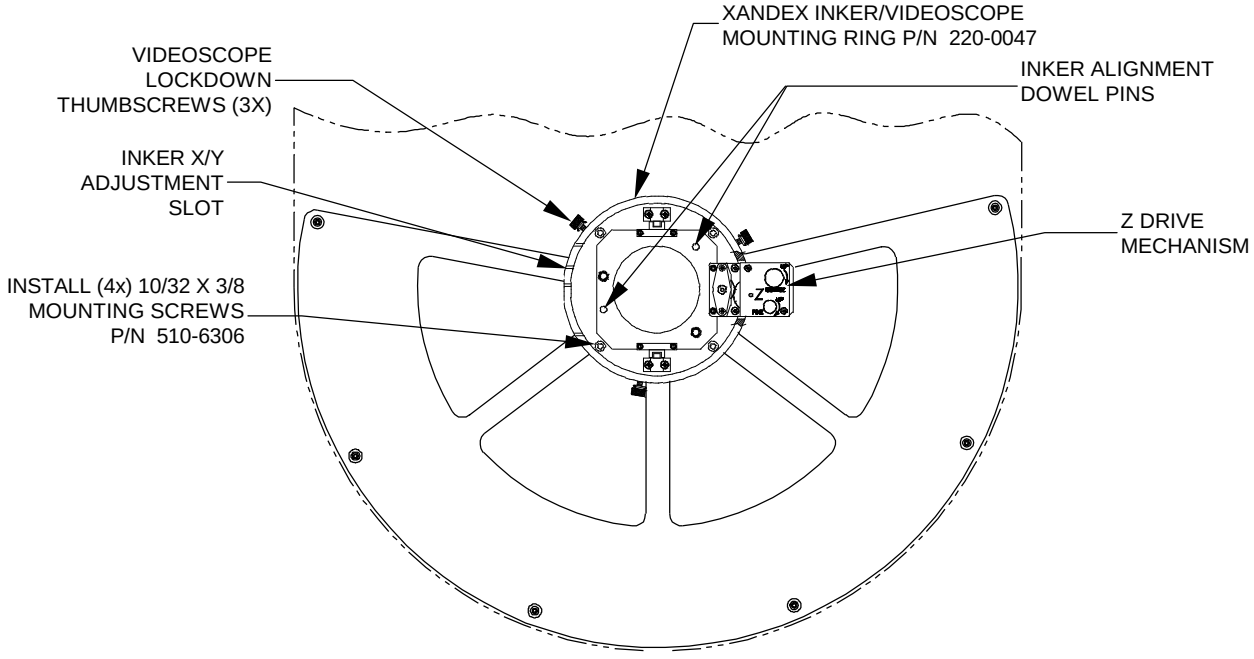
Adaptive Mode Mounting Ring Installation

In ***adaptive mode*** installation, the Inker/Videoscope mounting ring is secured directly to the mounting plate, using four mounting screws.

1. Place the *Xandex Inker/Videoscope mounting ring* (P/N 220-0047) onto the *mounting plate* (P/N 120-0422). Orient the *mounting ring* so that the *Z drive mechanism* is to the operator's right. Assemble the Xandex *mounting ring* to *mounting plate* using the four 10/32 X 3/8 *mounting screws* (P/N 510-6306). Do not fully tighten these screws at this time. Proceed to Inker Installation instructions.



INKER/VIDEOSCOPE MOUNTING RING
ADAPTIVE MODE INSTALLATION



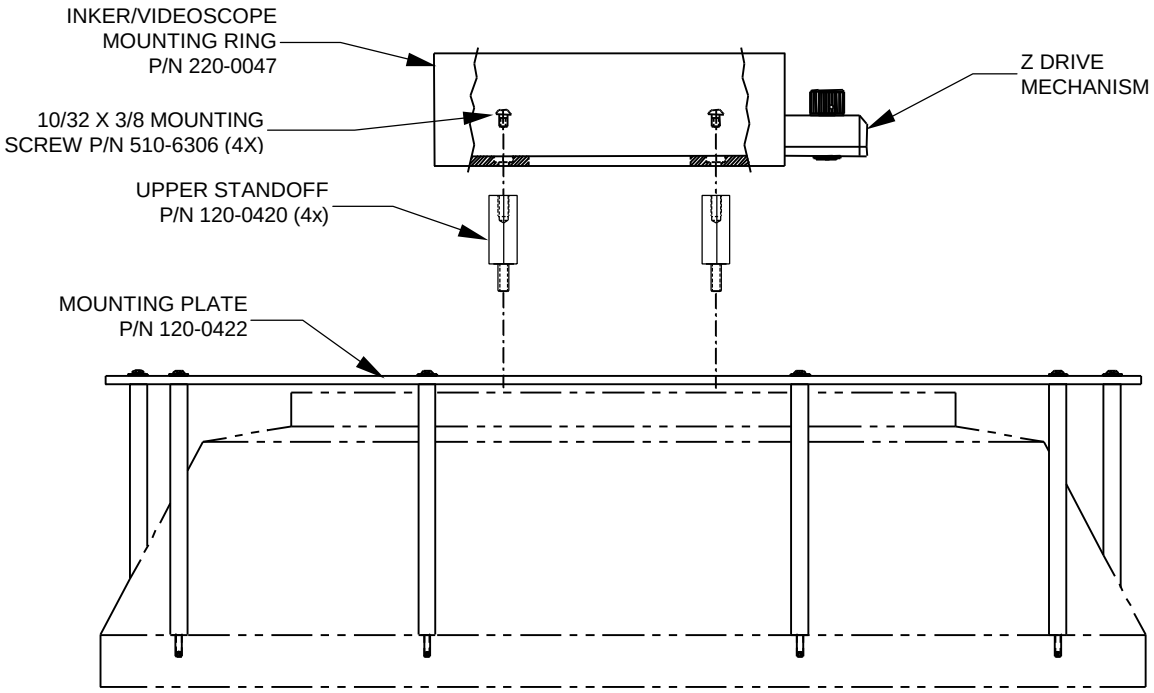
INKER/VIDEOSCOPE MOUNTING RING
INSTALLATION OVERHEAD VIEW

Native Mode Mounting Ring Installation

In ***native mode***, the Inker/Videoscope mounting ring is installed onto four upper standoffs (P/N 120-0420), which elevate the inker and videoscope to accommodate the shorter interface stack-up.

1. Install the four *upper standoffs* (P/N 120-0420) into the threaded holes on the top of the *mounting plate* (P/N 120-0422). The *standoffs* have a hex shape to allow use of a wrench to tighten them. ***Do not*** use Locktite on the threads or over tighten the *standoffs*.

2. Install the *Xandex Inker/Videoscope mounting ring* (P/N 220-0047) onto the *upper standoffs* (P/N 120-0420), using four 10/32 X 3/8 *mounting screws* (P/N 510-6306). Orient the *mounting ring* so that the *Z drive mechanism* is to the operator's right. Do not fully tighten the mounting screws at this time.



INKER/VIDEOSCOPE MOUNTING RING
NATIVE MODE INSTALLATION

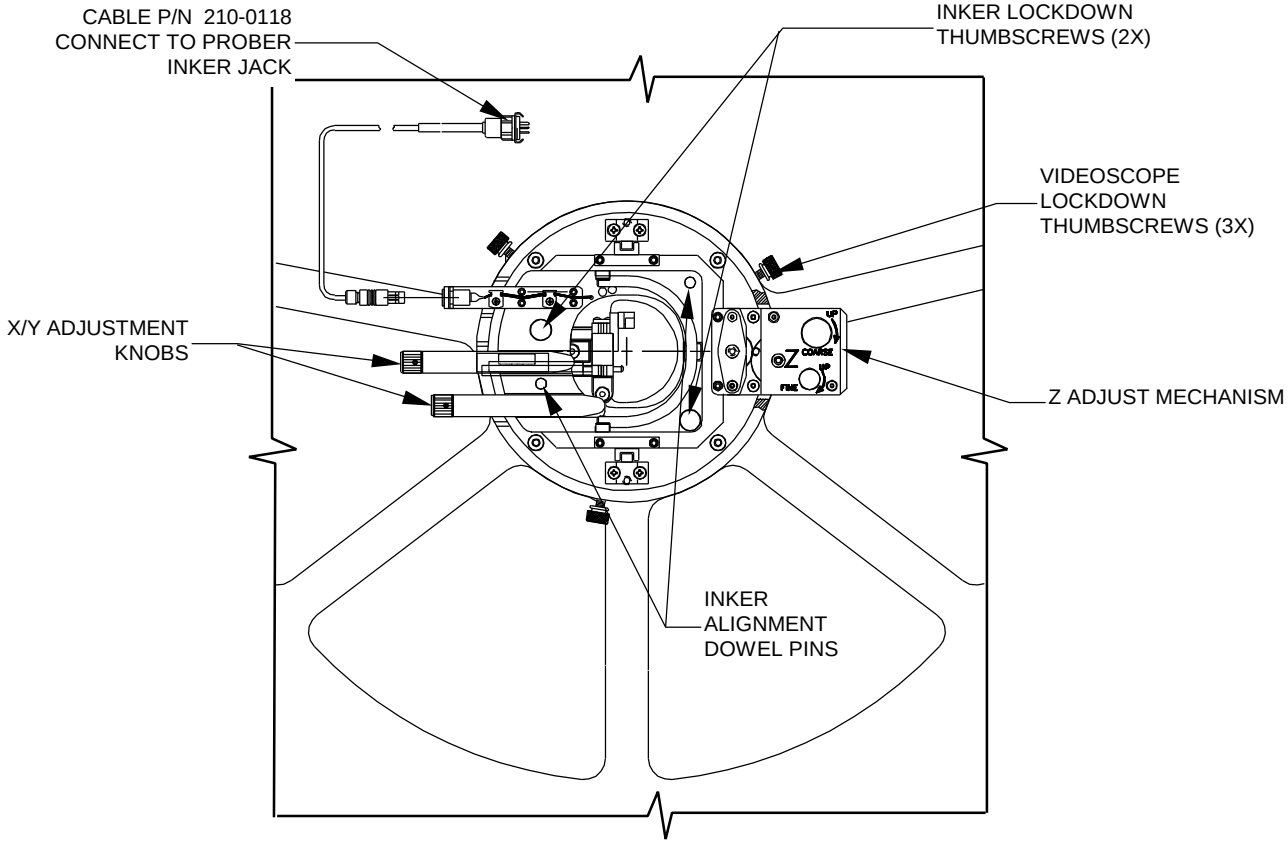
EG3327 Inker Installation

***CAUTION*: When installing the inker, always make sure the X and Y knobs are adjusted to mid position, the mounting ring Z mechanism is adjusted to full Z up position, and the chuck/ wafer is moved to forcer home (safe) position to prevent damage.**

1. Before installing the inker, turn *coarse adjustment knob* on the *Z mechanism* all the way up (clockwise) and turn the X and Y knobs to mid travel position. Install the remote adjust inker by lifting it by the *handle* and lowering it through the center of the *mounting ring* and test head. Orient *the X/Y adjustment knobs* to the left, aligning them with the slots on the *mounting ring*. *Alignment holes* in the inker top plate interface with two *dowel pins* on the *mounting ring* for precise inker placement.

2. If the inker is not aligning with the hole in the test head, adjust the *mounting ring* accordingly. Once the *mounting ring* and inker are aligned, tighten the screws retaining the *mounting ring* to the *mounting plate*.

Note: *In native mode installation, it may be necessary to leave* ***both*** *the upper standoffs and Mounting Ring mounting screws loose enough to allow for adjustment of the inker and mounting ring before fully tightening first the standoffs and then the mounting screws.*



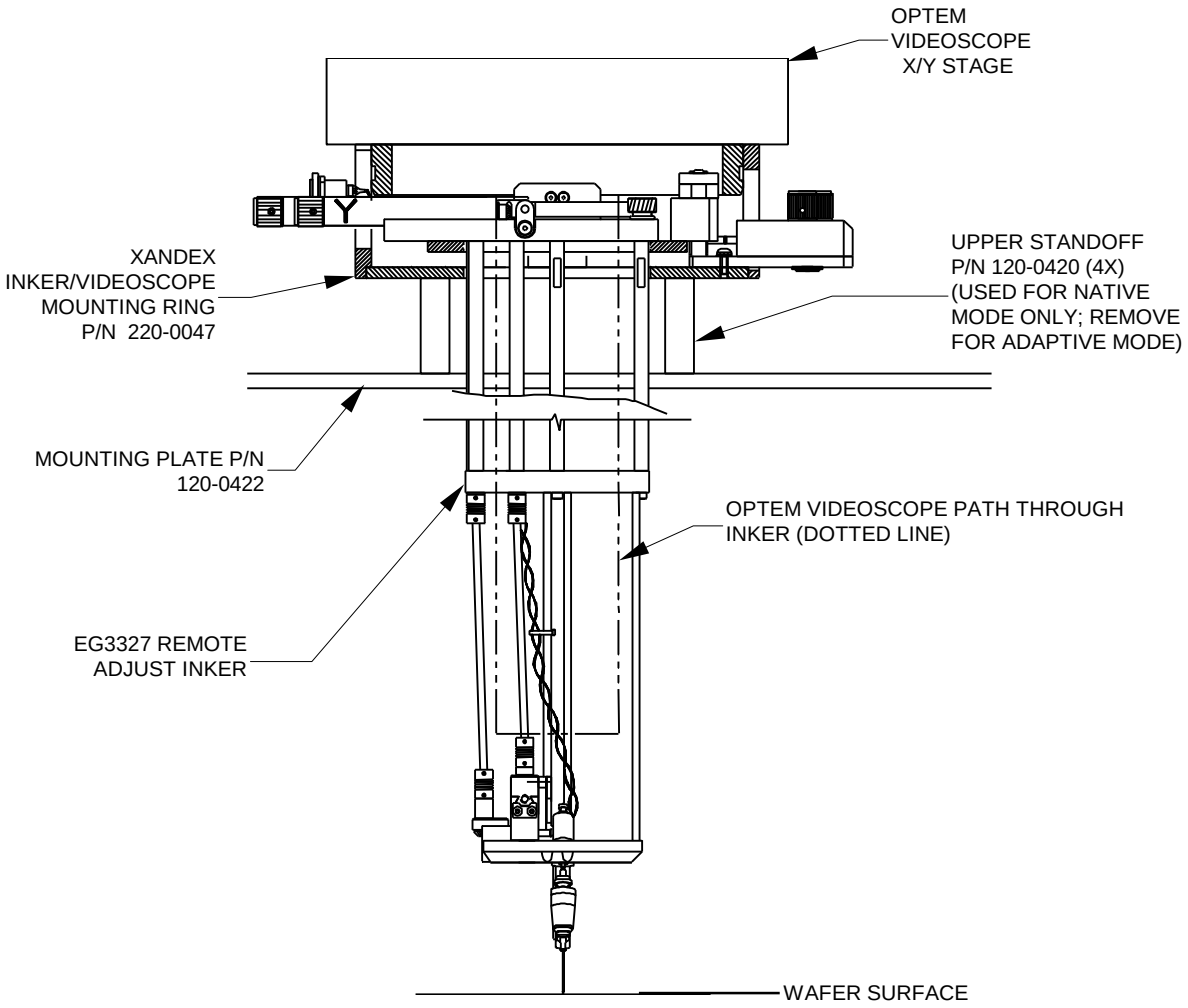
EG3327 INKER INSTALLATION OVERHEAD VIEW

3. Proceed to "Cartridge Installation" procedures as detailed in **Section 4 "System Operation"** for ink cartridge opening, priming and installation procedures.

4. Once you have properly primed and installed a cartridge, install the inker as before (always make sure Z adjustment is set all the way up) and lock into position using the two *lockdown thumbscrews*. Plug the *cable* (P/N 210-0118) into the *cable connect* on the left side of the inker and into the appropriate inker jack on the prober.

5. Before installing the Optem Videoscope, adjust the Videoscope X/Y stage so that the Videoscope is approximately in the center of its X/Y adjustment. Loosen the three *Videoscope lockdown thumbscrews* on the side of the *mounting ring* so that no threads are protruding inside the ring. Carefully lower the Videoscope until the stage is seated completely on the *mounting ring*. Tighten the three *lockdown thumbscrews* to retain the Videoscope.

6. Make necessary X/Y/Z adjustments and the inker is now ready for final setup. Proceed to **Section 4 "Inker Alignment"** for detailed instructions.



INSTALLED EG3327 INKER/VIDEOSCOPE CROSS SECTION

Inker Removal

Remote adjust inkers enable you to install and change cartridges without undocking the test head. Follow the steps below to remove the inker.

1. Drop the prober stage to Z down.

2. Loosen the three (3X) *videoscope lockdown thumbscrews* and remove the Videoscope.

3. Loosen the two (2X) inker *lockdown thumbscrews*.

CAUTION: Before removing the inker, always make sure that the mounting ring Z mechanism is adjusted to full Z up position to prevent probe tip damage.

4. Using the *handle*, lift the inker assembly straight up and out of the test head.

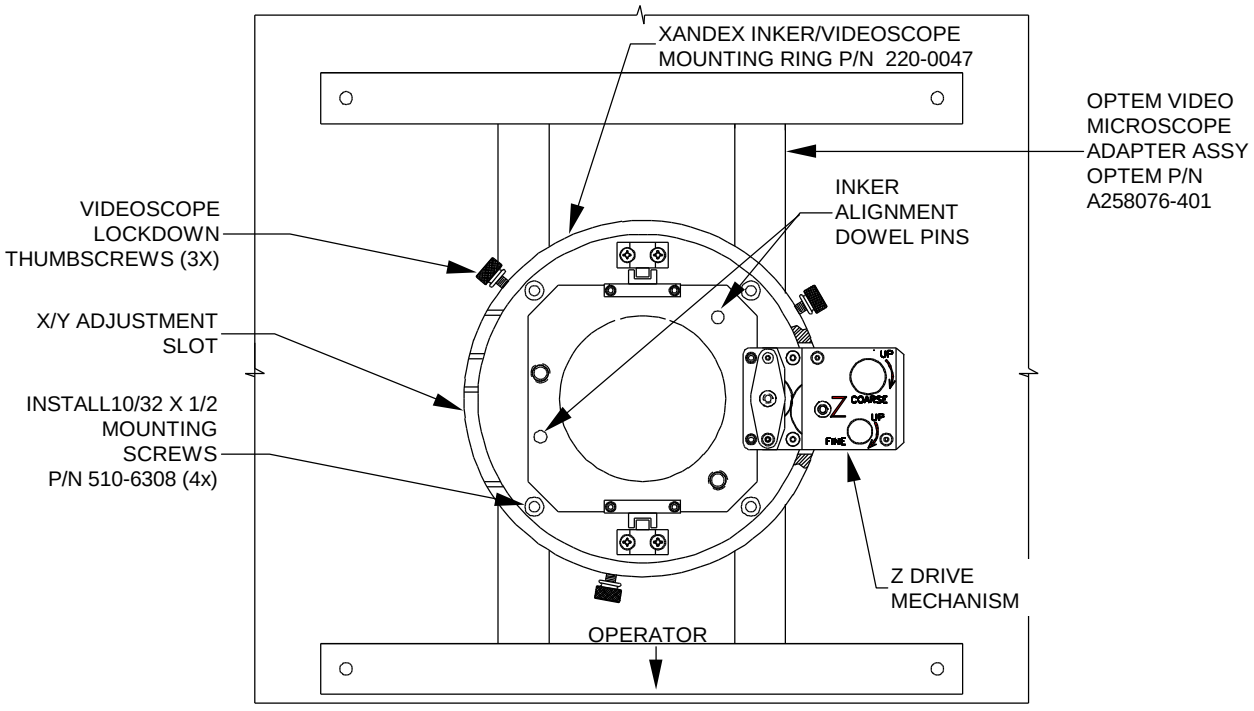
EG3329 Remote Adjust

The Xandex EG3329 Remote Adjust Inker is designed for use in combination with an Optem Videoscope on a Hewlett Packard 94000 series tester docked to an Electroglas 20XX series prober. The Remote Adjust Mounting Ring accommodates both the Videoscope and the Inker. Inker X, Y and Z adjustments can be made with the Videoscope in place. Removal of the Inker and Videoscope is necessary only to change ink cartridges. The following describes the steps necessary to install the EG3329 Remote Adjust Inker and the Optem Videoscope.

Mounting Ring Installation

1. Install the Optem video microscope adapter mounting bracket kit (Optem P/N A258076-401) onto the HP 94000 tester per directions supplied by Optem. Remove the Optem adapter ring assembly (Optem P/N B289075-101) from the mounting bracket rails, if included with the mounting bracket assembly, as it is replaced by the *Xandex Inker/Videoscope mounting ring* (P/N 220-0047) which accommodates both the inker and the Videoscope.

2. Install the *Xandex Inker/Videoscope mounting ring* (P/N 220-0047) to the *Optem Video Microscope adapter mounting bracket* (Optem P/N A258076-401). Orient the *mounting ring* so that the *Z drive mechanism* is to the operator's right. Assemble the Xandex *mounting ring* to the *Optem mounting bracket* in place of the Optem adapter ring assembly using the four 10/32 X 1/2 *mounting screws* (P/N 510-6308, supplied). Do not fully tighten these screws at this time.



INKER/VIDEOSCOPE MOUNTING RING
INSTALLATION OVERHEAD VIEW

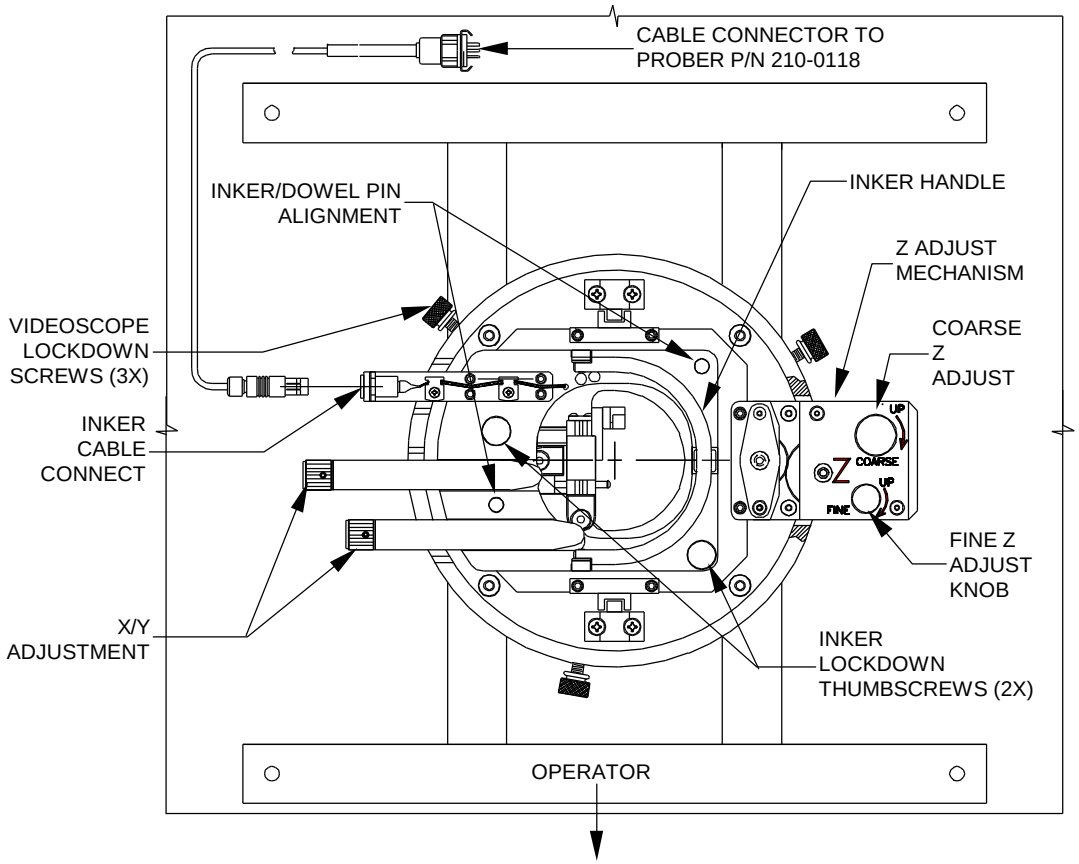
EG3329 Inker Installation

***CAUTION*: When installing the inker, always make sure the X and Y knobs are adjusted to mid position, the mounting ring Z mechanism is adjusted to full Z up position, and the chuck/ wafer is moved to forcer home (safe) position to prevent damage.**

1. For initial inker installation, dock the test head to the prober with the probe card removed to avoid damaging the probe tips if the inker is misaligned.

2. Before installing the inker, turn *coarse adjustment knob* on the *Z mechanism* all the way up (clockwise) and turn the X and Y knobs to mid travel position. Install the remote adjust inker by lifting it with the *handle* and lowering it through the center of the *mounting ring* and test head. Orient *the X/Y adjustment knobs* to the left, aligning them with the slots on the *mounting ring*. *Alignment holes* in the inker top plate interface with two *dowel pins* on the *mounting ring* for precise inker placement.

3. If the inker is not aligning with the hole in the test head, adjust the *mounting ring* accordingly. Once the *mounting ring* and inker are aligned, tighten the screws retaining the *mounting ring* to the Optem mounting bracket.



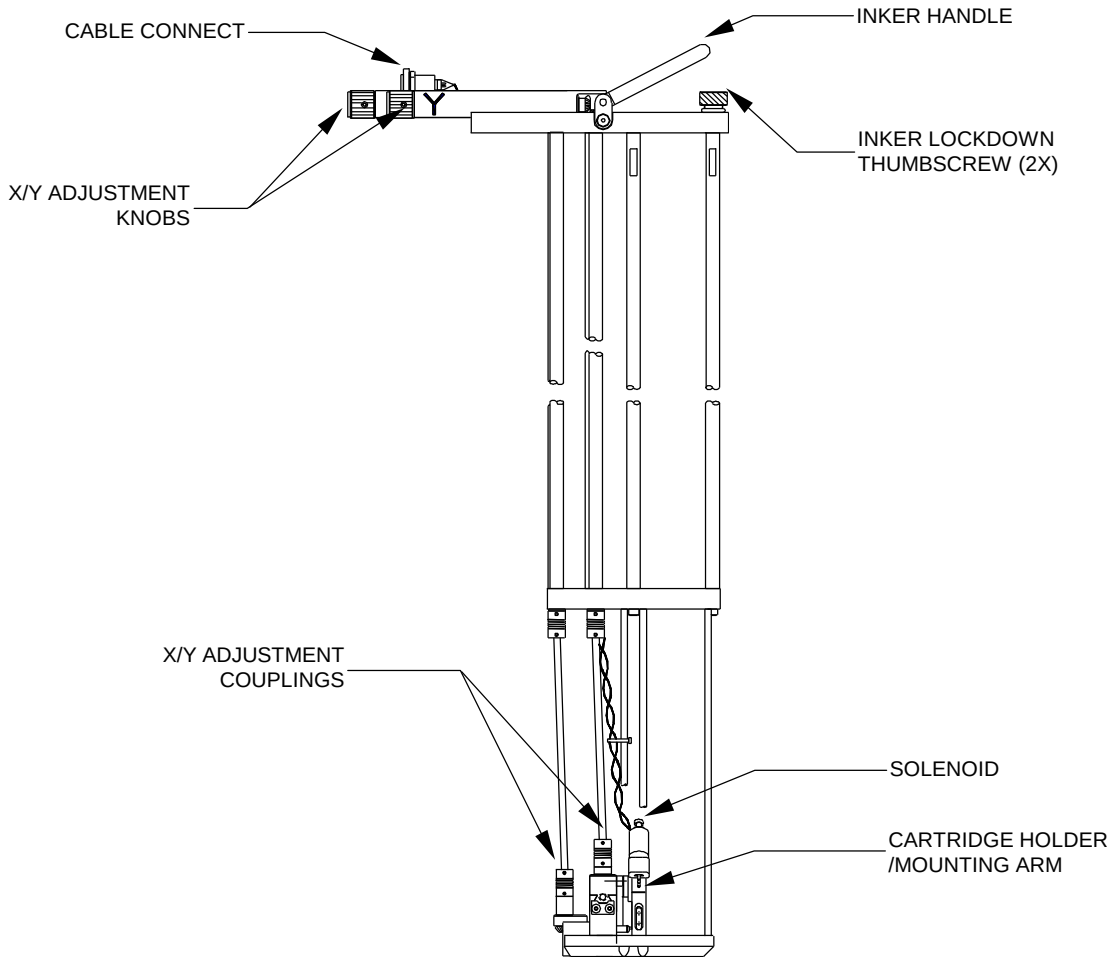
INKER/VIDEOSCOPE MOUNTING RING
WITH INKER INSTALLED
OVERHEAD VIEW

4. Proceed to "Cartridge Installation" procedures as detailed in **Section 4 "System Operation"** for ink cartridge opening, priming and installation procedures.

5. Once you have properly primed and installed a cartridge, replace the probe card and install the inker as before (always make sure Z adjustment is set all the way up) and lock into position using the two *lockdown thumbscrews*. Plug the *cable* (P/N 210-0118) into the *cable connect* on the left side of the inker, and into the appropriate inker jack on the prober.

6. Before installing the Optem Videoscope, adjust the Videoscope X/Y stage so that the Videoscope is approximately in the center of its X/Y adjustment. Loosen the three *Videoscope lockdown thumbscrews* on the side of the *mounting ring* so that no threads are protruding inside the ring. Carefully lower the Videoscope until the stage is seated completely on the *mounting ring*. Tighten the three *lockdown thumbscrews* to retain the Videoscope.

7. Make necessary X/Y/Z adjustments and the inker is now ready for final setup. Proceed to **Section 4 "Inker Alignment"** for detailed instructions.



EG3329 INKER ASSEMBLY COMPONENTS

Inker Removal

Remote adjust inkers enable you to install and change cartridges without undocking the test head. Follow the steps below to remove the inker.

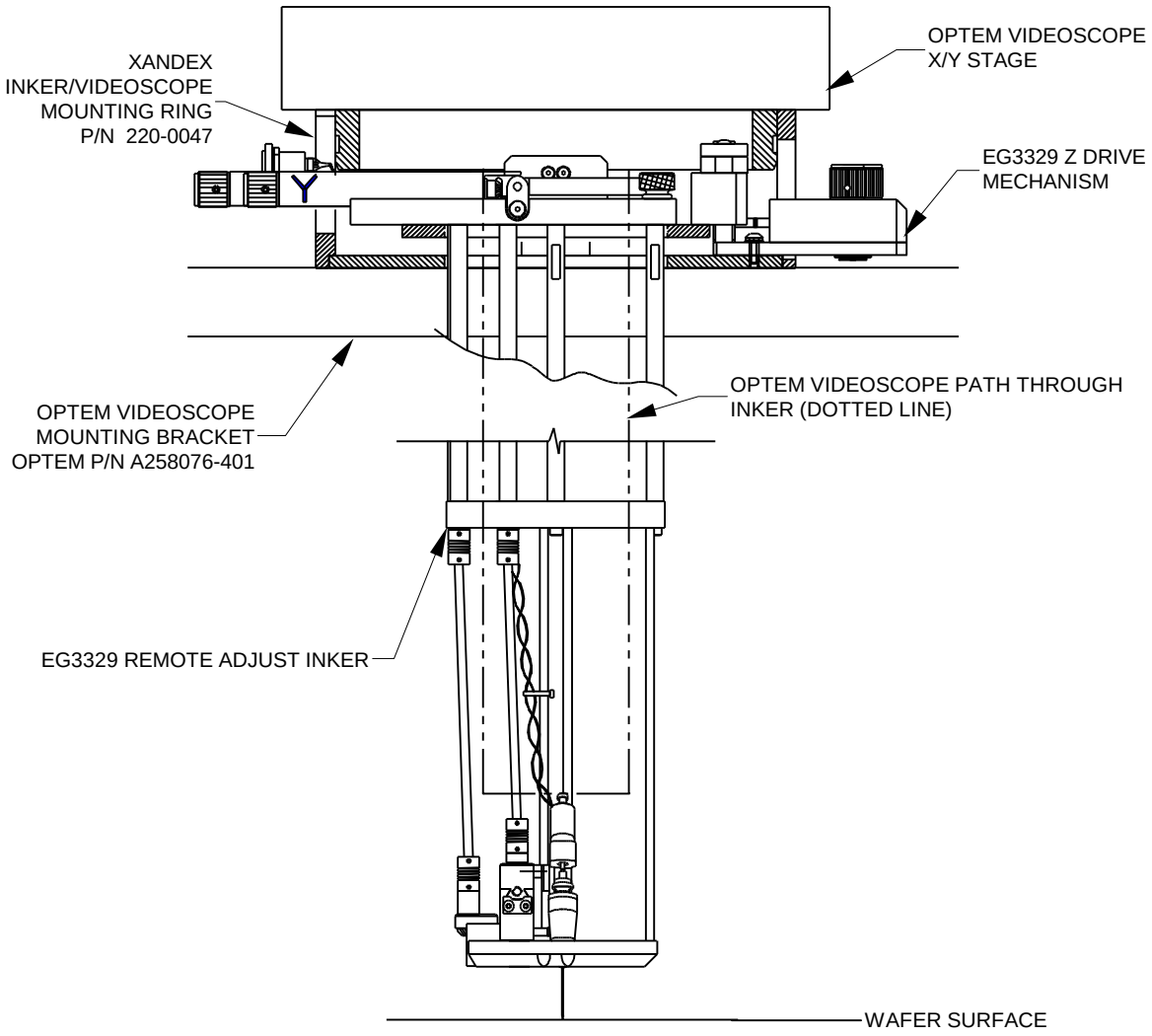
1. Drop the prober stage to Z down.

2. Loosen the three (3) *lockdown thumbscrews* and remove the Videoscope.

3. Loosen the two (2) inker *lockdown thumbscrews.*

CAUTION: Before removing the inker, always make sure that the mounting ring Z mechanism is adjusted to full Z up position to prevent probe tip damage.

4. Using the *handle*, lift the inker assembly straight up and out of the test head.



INSTALLED EG3329 INKER/VIDEOSCOPE
CROSS SECTION VIEW

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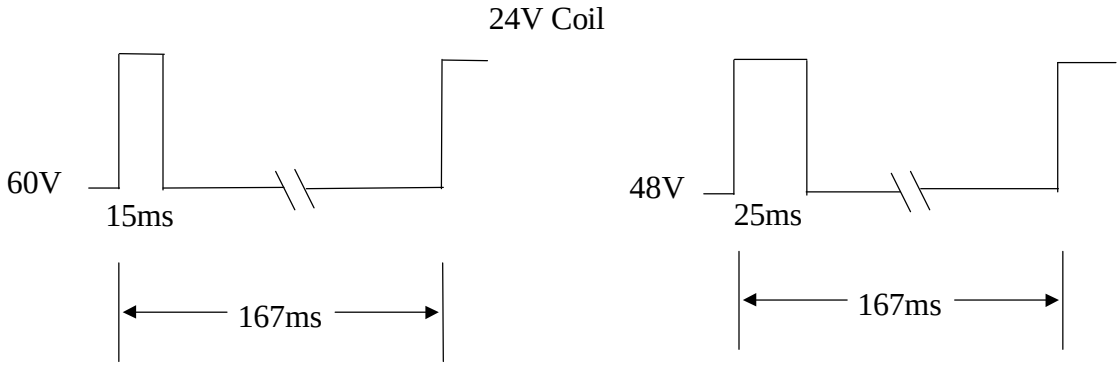
Section 4. System Operation

Remote Adjust Inker Operation

Inker Actuation:

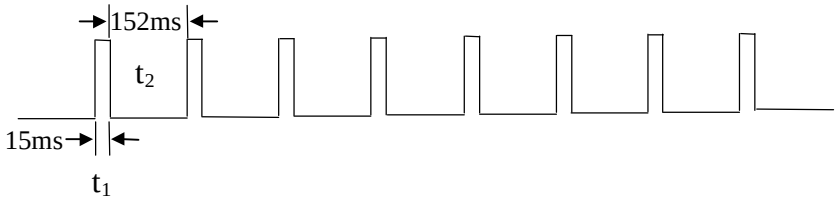
The EG3309, EG3311, EG3327 and EG3329 Electric Remote Adjust Inkers operate via an electronic pulse sent from the prober to actuate the inker solenoid. Upon actuation, the solenoid plunger drives the cartridge filament to the fully extended position, making slight contact with the wafer surface and depositing an ink droplet forming a dot. The electronic pulse will vary depending on the coil drive voltage (48VDC minimum), as well as the pulse width and duty cycle. It is recommended that the drive voltage of the pulse is at least twice the solenoid coil voltage specification (i.e., 24VDC solenoid = 48VDC drive voltage). The pulse width will vary depending on the drive voltage, as shown below:



Pulse Width in milliseconds.

For voltages greater than 60VDC the on time of the cycle must be shortened. Maximum coil operating temperature must not exceed 100°C. The inker should not be operated more than 10 cycles without an ink cartridge installed (the cartridge can be empty) or damage to the solenoid may occur. 167ms is the minimum total cycle time. If faster inking is required, a pneumatic inker is recommended.

The duty cycle is a function of the time the solenoid is energized versus the total cycle time, as shown below where t_1 = time on and t_2 = time off. For example;



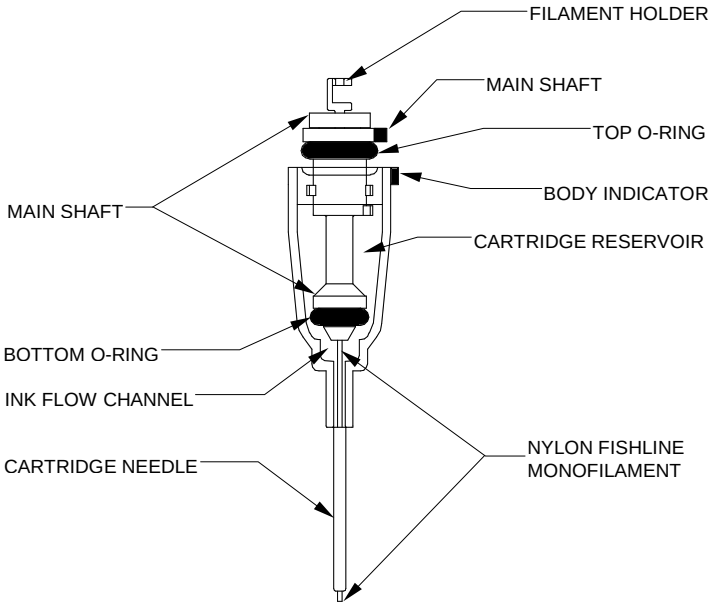
$$\text{Duty Cycle (as \%)} = \frac{t_1}{(t_1 + t_2)} \times 100 \quad \text{or} \quad \frac{15}{(15 + 152)} \times 100 = 8.9\%$$

A duty cycle of 20% is acceptable, <10% is optimal. If problems exist with the inker actuation, please refer to "Inker Drive Verification" as detailed in **Section 6 "Maintenance & Troubleshooting"** of this manual.

Ink Cartridge

The EG3309, EG3311 EG3327 and EG3329 Electric Remote Adjust Inkers use DM-1 filament cartridges, available in a variety of sizes. The DM-1 cartridge has a polypropylene reservoir and monofilament fishline encased in a stainless steel needle. After opening and priming, the monofilament wicks the ink to the filament tip each time the inker fires. The DM-1 cartridge contains approximately 0.60 grams of ink in the reservoir. For dot production figures and related information see **Section 5 "Ink,"** and **Section 8 "System Specifications."**

DM-1 Ink Cartridge Overview



- **Cartridge Description**

A cartridge is an ink reservoir sealed by two O-rings, top and bottom. A monofilament fishline passes through the cartridge main body and needle and is attached at the top to the filament holder.

- **Open Cartridge Description**

A cartridge is opened by pulling the main shaft up to lift the bottom O-ring and open up the ink flow channels.

- **Cartridge Priming**

Priming is necessary to establish continuous ink flow into the cartridge needle. The cartridge is primed by lifting the main shaft (and bottom O-ring) to fill the reservoir under the bottom O-ring with ink and actuating the filament, coating it with ink all the way to the needle tip. The cartridge is ready for use when the ink flow channels are open (i.e., bottom O-ring is raised and the space below the bottom O-ring is full of ink), the filament is coated with ink to the needle tip and the main shaft is locked in position so that it cannot move up or down. Detailed cartridge opening, priming and installation instructions appear later in this section.

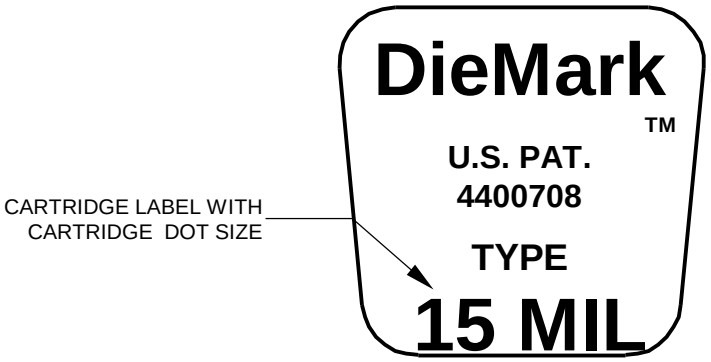
Ink Cartridge Labeling

DieMark™ ink cartridges are individually labeled with two distinct labels. One label shows the cartridge dot size and the other label indicates the ink batch number, ink type and expiration date of the cartridge.

Do not remove the labels from the cartridges as this can cause cartridge type and ink types to be confused at cartridge installation, resulting in improper performance. Removal of cartridge labels will also void the cartridge warranty.

DieMarkä Cartridge Type Label

This label contains the cartridge dot size, (10mil, 15mil etc.).

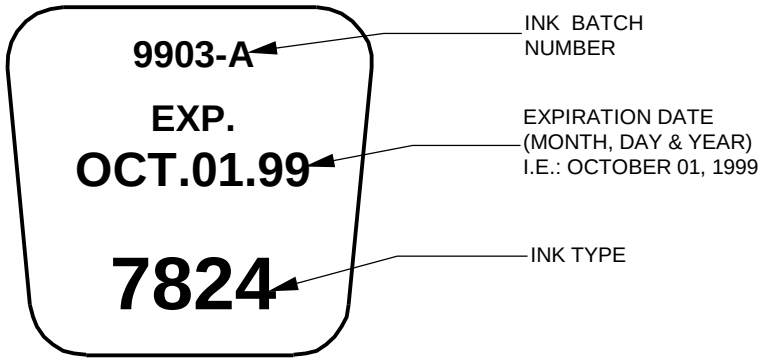


DieMarkä Cartridge Expiration Date Label

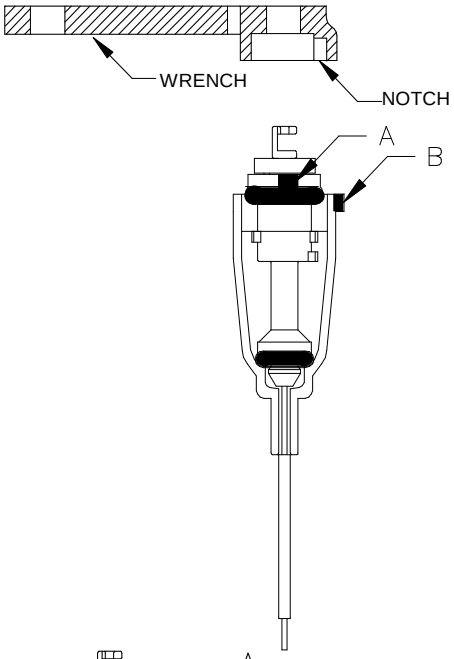
This label indicates the ink type and batch number of the ink contained in the cartridge and the cartridge expiration date. Expiration dates shown are for *unopened* cartridges.

- Markem® 6990, 6993, 6997 and Xandex 8103 = Four (4) months.
- Xandex 7824 and 7824T = Two (2) months.

After the cartridge is opened, consistent ink flow can only be expected for up to five (5) days for Markem® 6990, 6993, 6997 and Xandex 8103 and three (3) days for Xandex 7824 and Xandex 7824T.



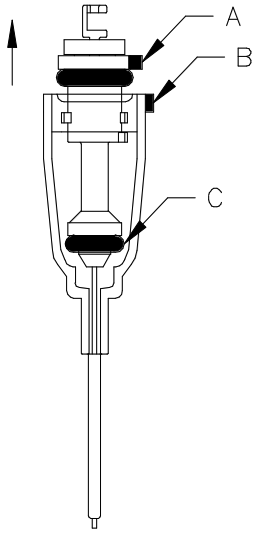
Opening the Cartridge



A plastic wrench is used to open and prime a cartridge. The wrench fits very tightly and has a shallow cup with a notch to fit over the top of the main shaft. The notch location is indicated by an alignment "bump" on the end of the wrench.

1. Two reference points on the ink cartridge are used in opening and priming the cartridge.
   - An alignment "bump" at the top of main shaft called the *"main shaft indicator"* (A).
   - An alignment "bump" on the cartridge body near the top called the *"body indicator"* (B).

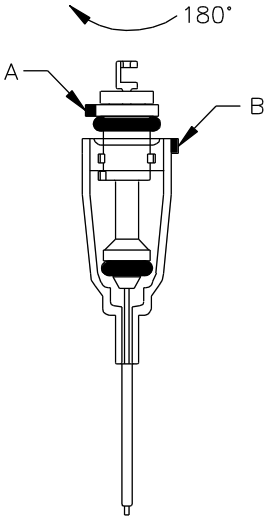
2. Align the *"main shaft indicator"* (A) with the notch in the wrench and fit the wrench over the top of the *main shaft*.



3. Turn the *"main shaft indicator"* (A) towards the *"body indicator"* (B) on the cartridge until they are aligned.

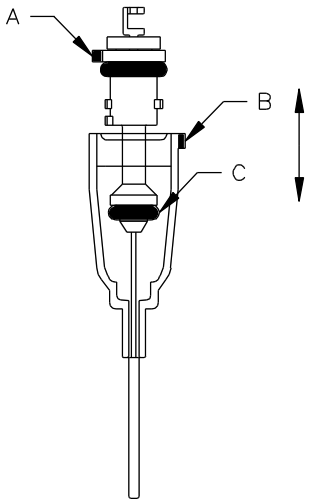
4. Hold the wrench at the cup section, between thumb and index finger, and pull up the *main shaft* with the wrench until it stops. The *bottom O-ring* (C) should be lifted from its sealed position, opening *the ink flow channels*. Visually inspect the *bottom O-ring* (C) and verify that it has lifted and the ink is flowing into the channels.

5. If the *bottom O-ring* is not lifted, close the cartridge by using the wrench to re-align the *"main shaft indicator"* and *"body indicator"*. Push the *main shaft* down to re-seat it. Repeat this procedure if necessary until the *bottom O-ring* is lifted.



6. After the *main shaft* and the *bottom O-ring* are lifted, turn the *main shaft* with the wrench until the *indicators* (A & B) are positioned exactly at opposite sides of the cartridge (at 180° with respect to each other). There is a small hole at the top of the wrench through which the *"body indicator"* (B) can be seen when it is at 180° from the *"main shaft indicator"* (A). Turn the wrench slowly while looking through this hole for the *"body indicator"* (B).

Priming the Cartridge

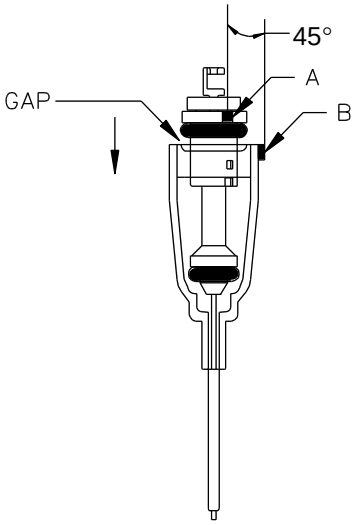


The purpose of priming the cartridge is to insure that the lower reservoir and the *ink flow channels* below the *bottom O-ring* are completely filled with ink. This will insure even, continuous ink flow. To prime the cartridge follow the steps below.

1. Hold the cartridge steady in one hand and the wrench at the cup area (top of the *main shaft*) with the other.

2. Keeping the indicators at 180° from each other, pull up very gradually and lift the *main shaft* while wiggling the wrench slightly from side to side.

3. Stop lifting the *main shaft* when it is 2/3 out of the reservoir.



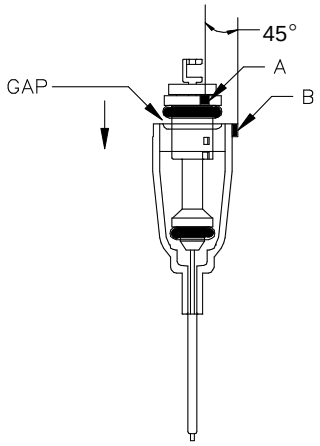
4. Lower the *main shaft* back to its original position while stirring the ink.

5. Repeat steps 1-4 two to three times until space below the *bottom O-ring* is completely filled with ink.

6. Lower the *main shaft* the final time as far down as it will go (until it stops). The *indicators* should still be 180° from each other and the *main shaft* back down to the pre-prime position.

7. Turn the *main shaft* 1/4 turn in either direction. This locks the *main shaft* in position so that it cannot be moved up or down. There should be a gap between the *top O-ring* and the *cartridge body*. Push the *filament holder* down and remove the wrench. The cartridge is now primed and ready for installation on the inker.

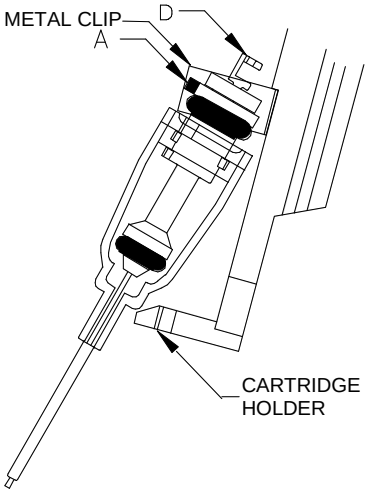
Cartridge Inspection



Visually inspect the primed cartridge before installing it on the inker and verify that the following conditions exist;

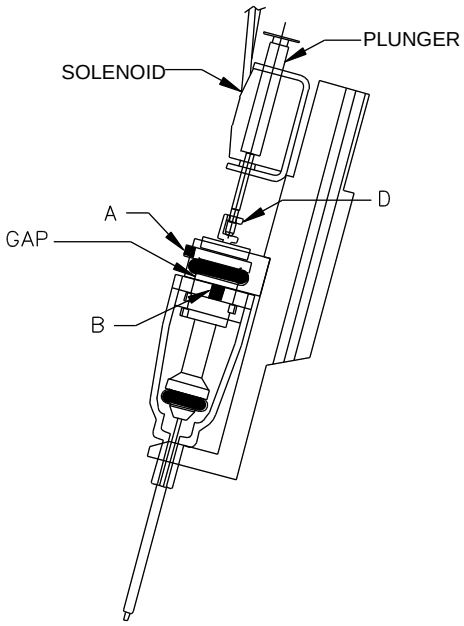
- The *bottom O-ring* is lifted and the *ink flow channels* under the bottom O-ring are completely filled with ink.
- The cartridge *alignment indicators* are 1/4 turn from each other. This way the *main shaft* cannot be pushed up or down.
- There is a *gap* between the *top O-ring* and the *cartridge body* indicating that the cartridge has not been inadvertently closed.

Cartridge Installation



1. Verify that the *filament holder* (D) has been pushed down.

2. Push the *main shaft* section into the *metal clip* on the *cartridge holder*. Make sure the *"main shaft indicator"* (A) is pointing outwards. Press the *cartridge body* until it snaps into place. Verify that the *gap* has not closed and the *indicators* are still 1/4 turn from each other. If these conditions are NOT satisfactory, remove the cartridge from the clip and review the priming procedure.



3. Align the *solenoid plunger* with the *filament holder* (D) and push the *plunger* until it snaps into the *filament holder*. In this position the *plunger* should move up and down freely. Manually depress the *plunger* a number of times to verify operation, occasionally rotating the *plunger* to insure free movement.

4. Exercise the *plunger* manually or electrically until ink flow is established in the *stainless steel needle* and the *monofilament* is coated with ink. A standard DM-1 cartridge requires a minimum of 30-40 *plunger* strokes to properly establish ink flow. When the *filament* is completely coated with ink, check the *needle tip* for excess ink and wipe with a clean lint free cloth if necessary.

Inker Alignment

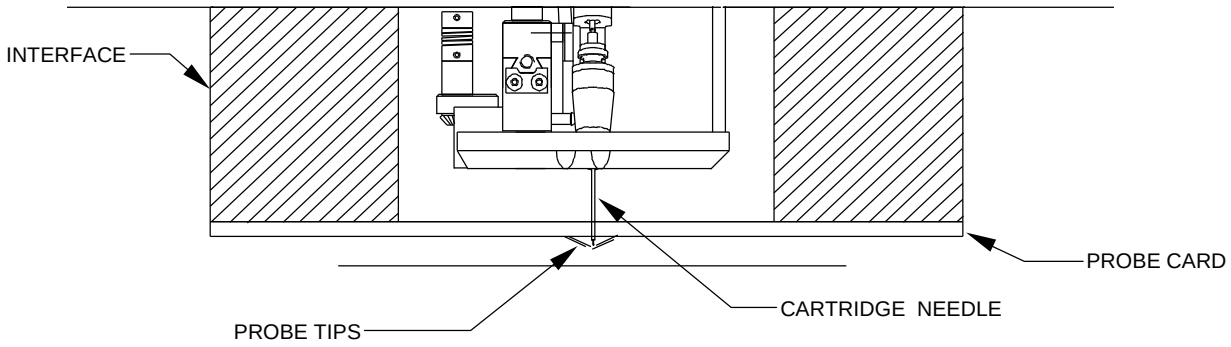
1. Prepare, prime and install a cartridge per the instructions in this section (4). Cartridge priming is done prior to the cartridge being installed into the inker. Once priming is completed, snap the cartridge into the inker per the instructions.

2. With the chuck still in a safe position out from under the probe card, and the Z height of the inker set all the way up, install the inker onto the adapter assembly in the test head.

***CAUTION* : Be careful to lower the inker straight down, so as not to damage the cartridge tip or probe needles.**

3. Re-install the Videoscope and focus on the cartridge tip. Center the cartridge tip to the probe tips using the X/Y adjustment knobs.

4. While viewing the probe tips from the under side of the ring carrier with the Z height set all the way up, the cartridge tip should be above the probe tips. If the cartridge tip is above the probe tips, turn the *Z adjust knob* counter-clockwise to lower the cartridge. If you are able to extend the cartridge beyond the probe tips, you are now ready for inking.



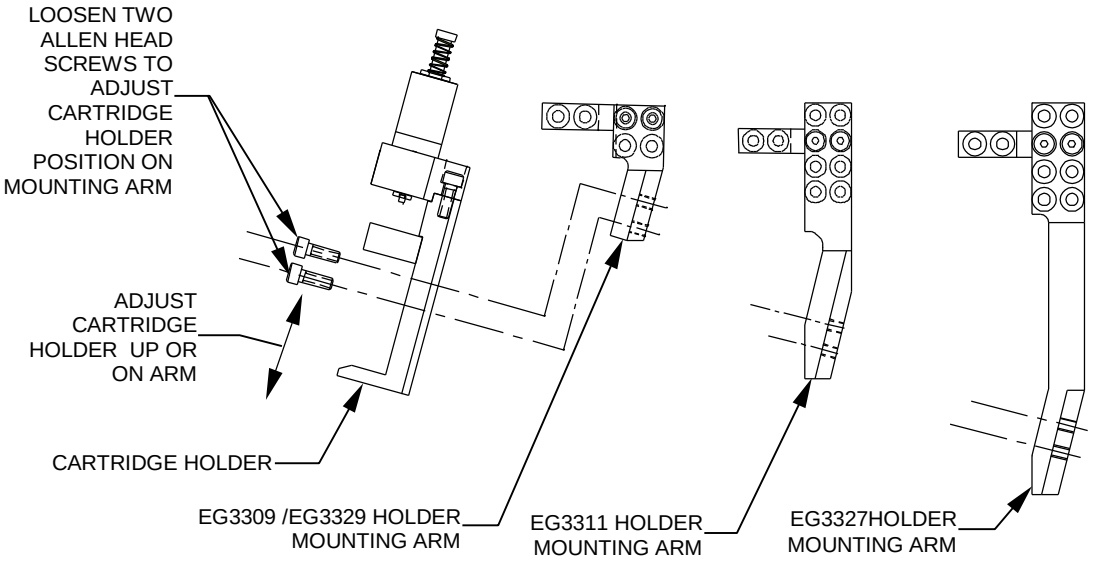
5. If the cartridge tip extends past the probe tips in the full Z up position, or the cartridge tip still does not protrude below the probe tips in the full Z down position, an adjustment to the *holder mounting arm* must be made to accommodate the different length required. Proceed to **"Adjusting Cartridge Holder Arm Height"** in this section.

Adjusting Cartridge Holder and Arm Height

If the cartridge tip does not extend past the probe tips with the inker in the full Z down position or the cartridge tip protrudes below the probe tips with the inker in the full Z up position, adjustment of the *cartridge holder* and/or the *holder mounting arm* is required. The *cartridge holder* is adjustable by 0.10″ in all models.

Both the *cartridge holder* and the *holder mounting arm* are adjustable on all models. Adjustment of the *cartridge holder* should be performed first. The *holder mounting arm* should only be adjusted if there is insufficient adjustment available through the *cartridge holder*. The *cartridge holder mounting arm* is at the correct height when the tip of the cartridge adequately clears the probe tips when the inker is in Z up position, and the cartridge tip extends beyond the probe tips in Z down adjustment.

Cartridge Holder Adjustment (All models)



1. Remove the inker from the test head and remove the ink cartridge.

2. Loosen but do not remove the two Allen head screws that attach the cartridge holder to the mounting arm.

3. Adjust the cartridge holder up or down on the mounting arm as desired and tighten the screws. Re-install the ink cartridge.

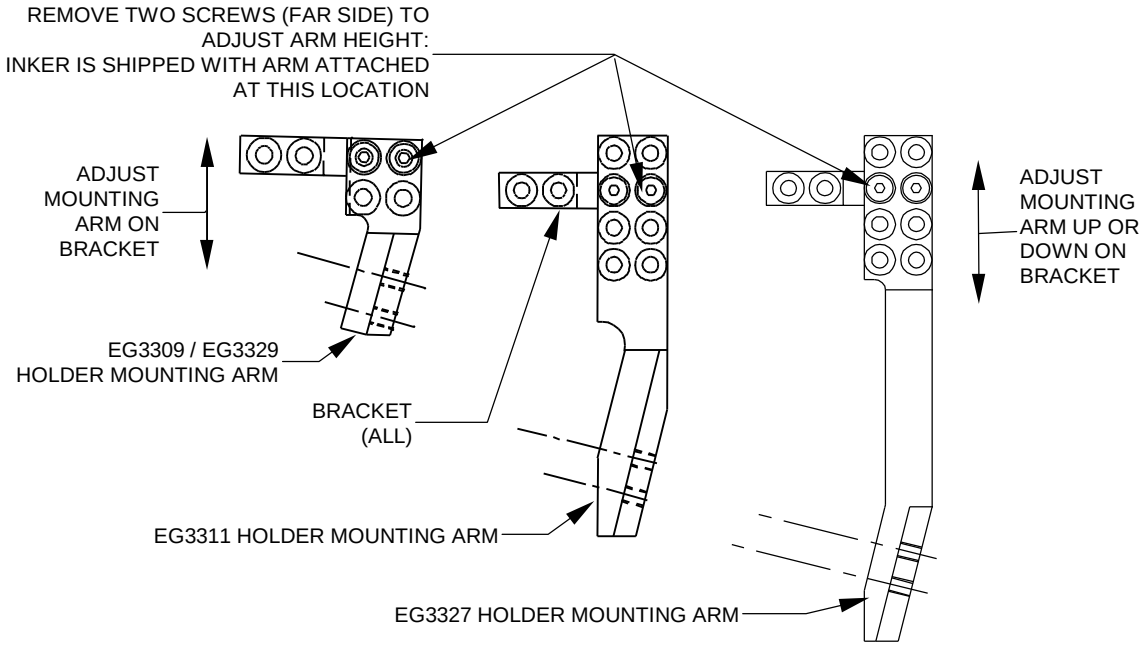
4. Re-install the inker in the test head and check the Z height setup to verify proper adjustment. If additional adjustment is required, proceed to **Cartridge Holder Mounting Arm Height** adjustment.

CAUTION : ***Always verify that the inker is centered in X and Y position and that inker Z height is adjusted completely up before installing inker into test head or damage to the probe tips may occur.***

Changing the Cartridge Holder Mounting Arm Height (All models)

1. Remove the inker from the test head and remove the ink cartridge.

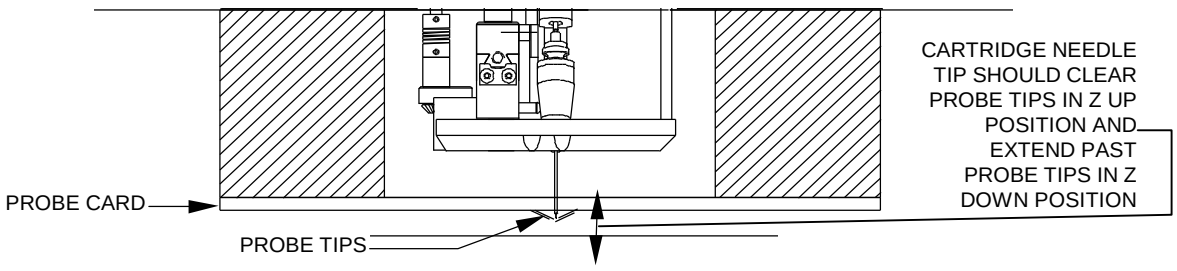
2. Remove the two slotted, flat head screws retaining the *holder mounting arm* to the *bracket*. The mounting holes on the arm are spaced in increments of 0.10 inches.



3. Raise or lower the arm according to your height change requirements. The EG3309 and EG3329 mounting arm allows only 0.10″ adjustment.

4. Re-install the two slotted flat head screws, using a dab of Loctite 222 on each screw before installation. Make sure the *holder mounting arm* is flush against the *bracket* when tightening the screws. Re-install the ink cartridge.

5. Re-install the inker in the test head and check the Z height setup to verify proper adjustment.



Final Setup and Adjustments

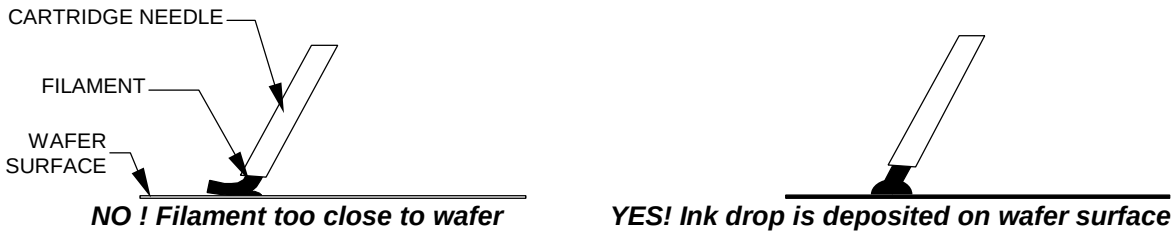
1. Prepare, prime and install an ink cartridge per the instructions in this section (4).

2. With the chuck still in a safe position out from under the probe card, verify the inker Z height is set to full Z up (full clockwise *Z adjust knob* adjustment) position before installing the inker into the test head.

3. Re-install the Videoscope and focus on the *cartridge tip*.

4. Place a sample or scrap wafer on the chuck and move directly under the cartridge tip. Raise the chuck height to normal Z inking position.

5. While monitoring the cartridge/wafer surface through the Videoscope, fire the inker a few times and inspect the results. Slowly turn the *Z adjust knob* counter-clockwise while firing the inker until dots begin to appear on the wafer surface. The cartridge *filament* should barely contact the wafer surface.



NO ! Filament too close to wafer ***YES! Ink drop is deposited on wafer surface***

<u>CAUTION</u> : Do not allow the cartridge tip to contact the wafer surface while performing Z Height adjustment. Damage to the filament and/or wafer surface may occur.

6. Adjust the Z height with the *Z adjust knob* until dots are round and of proper size. The cartridge *filament* should barely contact the *wafer surface*, only close enough so the ink droplet wicks off onto the wafer surface.

7. Remove the sample/scrap wafer and replace with a production wafer. Move the chuck under the inker and perform X & Y adjustment to desired die position.

Section 6. Maintenance and Troubleshooting

This Troubleshooting section for the EG3309, EG3311, EG3327 and EG3329 Electric Remote Adjust Inkers is divided into two parts. The first part covers ink and the DM-1 ink cartridge. The second part covers the Remote Adjust Inker.

Troubleshooting the DM-1 Ink Cartridge

Problem		Solution
The lower O-ring does not lift when opening a cartridge.		This sometimes occurs when ink dries around the lower O-ring. Push the main shaft down, keeping the indicators aligned. Then pull up the shaft while slanting it to one side as much as possible to lift the O-ring.
The cartridge is opened per instructions and the fishline comes out smoothly, but the ink does not flow down the needle.		It usually takes 30 to 40 strokes before the phenolic inks travel all the way down the needle. Viscous epoxy and air dry inks may require longer. After priming, but before the inker is installed into the test head, manually activate the plunger 30 to 40 strokes until ink appears at the needle tip.
Some ink dots tend to crack after baking using Xandex recommended cure cycles.		This occurrence is related to the ink surface tension, wafer surface conditions and too long a delay time between inking and curing. To remedy this situation, the curing cycle has to be modified (reduce time and temperature). See **Section 5 "Ink Curing."**
Runny, blobbing ink or skipping dots.		1. Check ink shelf life. Markem® 6990, 6993, 6997 and Xandex 8103 inks should be used within 4 months or 5 days of cartridge opening. Xandex 7824 and Xandex 7824T inks within 2 months or 3 days after cartridge opening. 2. Check for exposure to extreme temperatures. Cartridges should be stored at 25°C. **DO NOT refrigerate the cartridges.** Occasionally, ink is subjected to much higher temperatures (40-50° C) for an extended time during transport. This could break down the ink such that its viscosity and surface tension are altered permanently. 3. Inker Z height may be adjusted too high. Ink can not wick off the filament and builds up, creating blobbing and skipping. Re-adjust inker Z height and alignment. See **Section 4 "Final Setup and Alignment."**

Problem		Solution
Small, inconsistent, skipping or no ink dots.		1. The ink flow channels may be blocked. This could be due to any one of the following: A. The bottom O-ring is not lifted at all. In this case, when the cartridge is primed only a small amount of the ink flows into the space below the O-ring. This is enough to start inking, but the inker quickly uses up that ink (i.e., on two or three wafers) and will start to skip. To eliminate the problem, close the cartridge, re-open and prime again. See **Section 4 "Opening the Cartridge."** B. The cartridge is opened and primed correctly but is closed inadvertently before it is mounted on the holder. The main shaft is pushed down all the way, leaving no gap and the fishline appears to be too long. To correct this problem, pull up the main shaft until it stops, then turn it 1/4 of a turn in either direction. See **Section 4 "Priming the Cartridge."** C. During priming, an air bubble may have become trapped under the bottom O-ring. This inhibits the full flow of ink. To eliminate air bubbles, reseal the cartridge and repeat the priming procedure in **Section 4.** 2. Verify that coil and cartridge are in line; visually check the straightness of the plunger and check for possible damage to the plunger spring. The plunger should travel smoothly and freely when actuated manually from any position. If there is any binding replace the plunger and/or spring. 3. Chuck top or wafer surface not planar. Verify planarity of both. 4. Inker Z height may be adjusted too high. Re-adjust inker Z height and alignment. See **Section 4 "Final Setup and Alignment."** 5. Incorrect inker drive, in which case the plunger will travel very sluggishly. See **"Inker Drive Verification"** later in this Section (6).
Elongated instead of round dots.		1. Inker is set too close to the wafer. The cartridge should be positioned so that the filament barely touches the wafer surface when it is fully exposed. See **Section 4 "Final Setup and Alignment."**

Troubleshooting the Electric Remote Adjust Inker

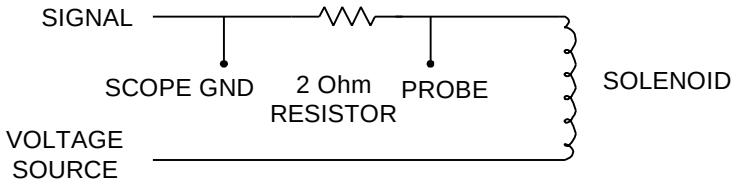
Problem		Solution
Cartridge tip does not reach wafer surface.		1. If you are using probe cards with needle depth of greater that 0.080", you can adjust the inker arm mounting down 0.10" to accommodate the longer probe tips. See **"Adjusting Cartridge Holder and Arm Height"** in **Section 4.**
Unable to make X, Y or Z adjustments.		1. Visually inspect installation to make sure there is nothing interfering with the X, Y or Z travel (i.e., wires, etc.). Remove any interference. 2. Check to see if shafts are attached properly to the couplings and gear cases. Tighten set screws if required.
Videoscope interference.		The EG3309, EG3311, EG3327 and EG3329 are designed to be used with the OPTEM VIDEO MICROSCOPE (Videoscope) If you are using a model other than this contact Xandex.
The inker is working intermittently from the outset.		1. Incorrect inker drive, in which case the plunger will travel very sluggishly. The 290Ω coil on the Remote Adjust Inker requires an inker drive signal of 48 volts with 25 ms pulse duration. See **"Inker Drive Verification"** later in this Section (6). 2. The plunger might be bent. This can happen when pushing the plunger through the coil. Manually actuate the plunger a few times, rotate ¼ turn and repeat. The plunger should travel freely. Replace if necessary. 3. During opening of the cartridge, the fishline monofilament has been kinked because the main shaft was lowered quickly or incorrectly. Replace the cartridge. See **Section 4 "Priming the Cartridge."** 4. Faulty electrical connection somewhere on the line. Check the continuity of electrical supply connections to the inker and correct as necessary.

Problem		Solution
The inker works fine for awhile (4-8 hours), then starts to skip badly.		1. Ink flow channels are blocked by the lower O-ring. If the bottom O-ring is not lifted during opening and priming, the small amount of ink below will be used up after a few rows, while the remainder is trapped in the reservoir. Remove the cartridge, close and repeat opening and priming procedure in **Section 4**. 2. When the cartridge is installed on the holder, the indicators are left aligned instead of moved 1/4 turn into locking position, and the main shaft has been pushed closed. Remove the cartridge and repeat opening and priming procedure in **Section 4**. 3. Wrong inker drive being used. Sometimes the coil problem does not appear at the outset. If the actuation pulse is marginally acceptable the plunger will travel less than a full stroke as the solenoid heats up. This causes the inker to miss badly. See **"Inker Drive Verification"** in this Section (6) to check inker drive, pulse width, and cycle time.
Inker X/Y travel does not permit inking in the center of the Die. DO NOT BEND THE CARTRIDGE NEEDLE!		1. Verify the test head is co-planar with the ring carrier. If it is not, this will effect the X/Y position of the inker. Shimming the test head to achieve planarity may be required. 2. Verify that the inker is mounted properly on the mounting ring adapter. 3. Verify that the ink cartridge is "snapped" all the way into the holder. Support the back edge of the holder with your index finger and press the cartridge back with your thumb until it snaps all the way into the clip holder "tongs" on the holder. 4. Visually examine the installation to ensure that there is no interference between the inker body and any portion of the test head. 5. Remove the inker and check the cartridge. Cartridges are manufactured to a ±2° tolerance. Rotating the cartridge 90° or 180° (depending on whether you are off center in the X or Y direction) may solve your inability to ink in the center of a die.

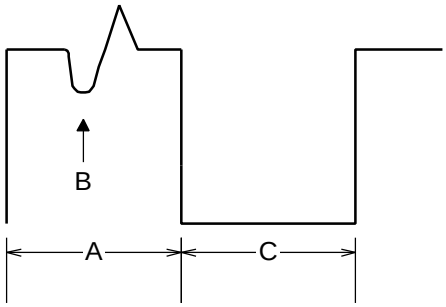
Inker Drive Verification

Xandex inkers operate nominally across all common prober circuits. If inker performance is not acceptable, it may be due to incorrect inker drive. The 290Ω coil used in the remote adjust inker solenoid requires a minimum of 48VDC for consistent solenoid actuation. Verify that the inker drive output signal is ≥48VDC by connecting an oscilloscope to the prober inker connection and actuating the inker several times. If the drive voltage is less than 48VDC consult your prober manufacturer for the prober's recommended inker drive voltage modification procedure. If the voltage is ≥48VDC and acceptable results are still not achieved, the drive signal may be analyzed using the procedure below.

Referring to the prober manual, install a 2Ω 10 watt resistor in series with the inker solenoid as shown below:



Using an oscilloscope, connect a probe as shown above and measure the arrival time of the solenoid. Set the time scale to 5 ms per division and the voltage to 1 mV per division. Fire the inker several times and look for the following trace.



A = On time of inker pulse.
B = Solenoid arrival point. This indicates that the plunger has bottomed out in the coil.
C = Off time of inker cycle.

"B" is the critical component of this waveform. It is the visual indication that the plunger has traveled its full stroke. If the "kick" is not visible, or if it moves off the right side of the trace to a point beyond the falling edge, adjustment to the prober inker drive circuit is required.

COIL RESISTANCE	MINIMUM DRIVE VDC	COLD ARRIVAL TIME	HOT ARRIVAL TIME
290 Ω (±10Ω)	48VDC	15-18 ms	20-24 ms

To verify the inker drive circuitry, perform a minimum of 5 test cycles with each cycle consisting of 2 minutes of constant inking using "Typical Drive Voltage" with a 25 ms pulse width and a 30 second rest period between cycles. The "Cold Arrival" times are measured during the 1st cycle and the "Hot Arrival" times are measured during the 5th cycle.

If arrival times are acceptable, no further change is required. If the current configuration is inadequate, increase the drive pulse width to 30 ms. If this still does not provide acceptable operation, increase the inker drive voltage by 20% and decrease the pulse width by 25%.

If acceptable results are still not achieved, contact Xandex Customer Service for assistance.

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Section 7. Options

Available Options for the EG3309, EG3311, EG3327 and EG3329

An Ink Dot Counter Box is available for the EG3309, EG3311, EG3327 and EG3329, which can easily be connected between the inker and the prober. This allows tabulation of a running dot count to assess inker and cartridge use. Specifications and installation instructions are listed below.

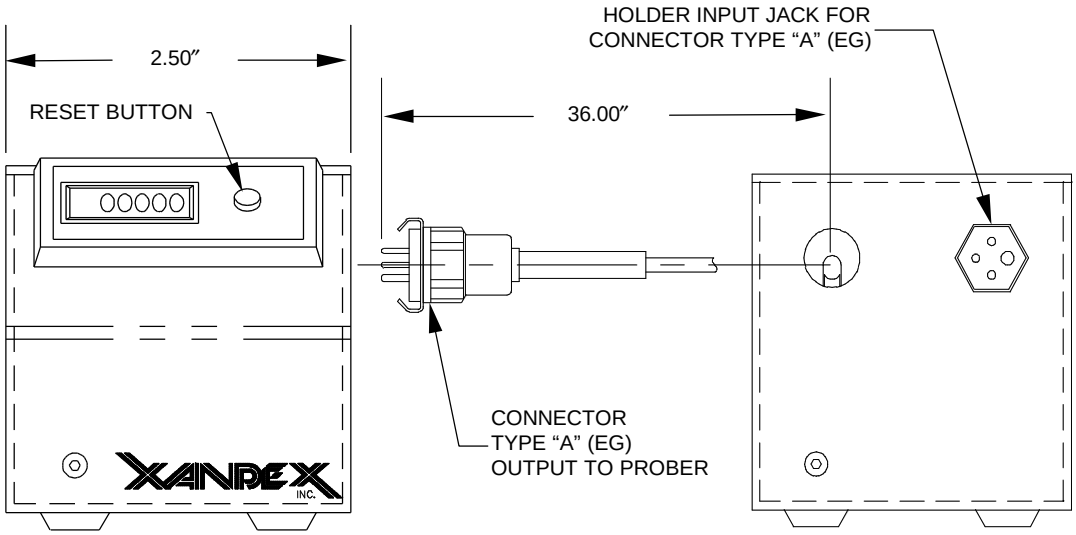
Order Part No. 350-0003.

Ink Dot Counter Box Specifications

Size:	2.5″ Cube (63.5mm)
Weight:	5.6 Oz (0.16kg)
Power Consumption:	15mA typical @ 60V input, 100% duty cycle
Input Level:	12V - 60V
Count Speed:	100 counts/second maximum, with minimum 5 ms on time, 5 ms pause between pulses
Input Cable:	36″ nominal with various connectors depending on unit configuration
Output Level:	Parallel to input, 100% of input signal level is reflected to output
Counter:	6 digit LCD, 0.2″ high, powered by a lithium battery with a 10 year shelf life.
Operating Temperature:	-30°C to +75°C (-22°F to +167°F)

Installation

Disconnect the inker from the prober jack and plug it into the connector on the back of the Counter Box. Plug the Counter Box cable into the appropriate inker driver connection on the prober. The Counter Box is now installed and ready to run. To clear the counter display, press the round red button on the display.

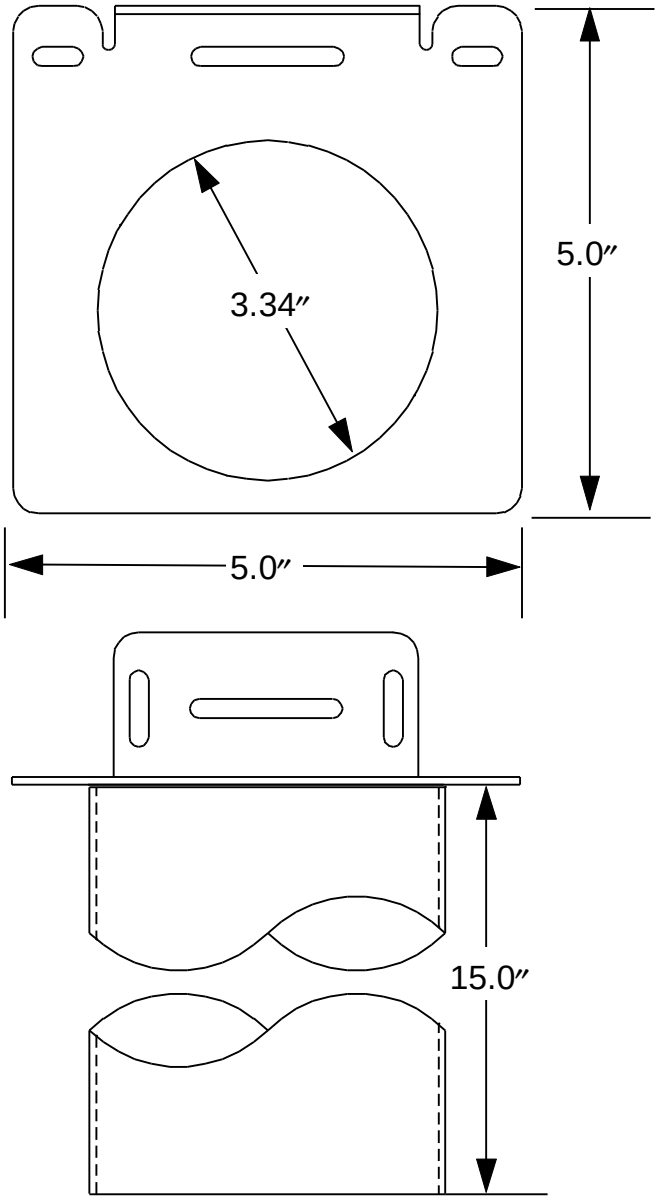


Remote Adjust Rack Kit

A Remote Adjust Rack Kit is available for remote adjust inkers for safely storing the inker when removed from the test head. The Remote Adjust Rack Kit supports and surrounds the inker body and cartridge with a sturdy aluminum tube for added protection when the inker must be removed from the test head during docking and undocking.

This kit accommodates both electric and pneumatic Xandex remote adjust inkers with up to a 3.25″ diameter and 15″ length (mounting surface to cartridge tip) and includes mounting hardware and a synch strap for versatile "mount anywhere" positioning.

Order Part No. 220-0044.



Section 8. System Specifications

Electric Remote Adjust Specifications

Inker Drive Input: All models; 48 volts @ 25 ms pulse duration

Model EG3309, EG3327 and EG3329

X Travel: ± 0.20"

Y Travel: ± 0.25"

Z Travel: 0.25"

Model EG3311

X Travel: -0.10", +0.30"

Y Travel: - 0.35", +0.15"

Z Travel: 0.25"

Ink Cartridge Specifications

Cartridge dot production and dot size are influenced by many factors, including inker drive, coil voltage, ambient temperature and ink type. The following figures are average dot quantities for the cartridge types listed and are based on complete use within cartridge open shelf life periods of 5 days maximum for Markem® 6990, 6993, 6997 and Xandex 8103 inks and 3 days maximum for Xandex 7824 and 7824T inks. Testing was performed under controlled, optimum laboratory conditions on unetched wafers. These figures are meant for use as guidelines and as such, cannot be guaranteed.

DieMarkô Filament Cartridge
Average Dot Production

Type	# of Dots	Type	# of Dots
8 mil	325,000 dots	25 mil	60,000 dots
10 mil	250,000 dots	28 mil	30,000 dots
15 mil	175,000 dots	30 mil	15,000 dots
20 mil	125,000 dots		

Cartridge Model	Exposed Needle Length	Available Inks	Cartridge Type
DM-1	0.75"	Markem® 6990, 6993, 6997, Xandex 7824, 7824T Xandex 8103	08 mil 10 mil 15 mil 20 mil* 25 mil✓ 28 mil** 30 mil***

Not available in 7824, 7824T or 8103 **Not available in 6990 or 8103 * Not available in 7824T black ✓ Not available in 8103*

Seller warrants as follows:

All material supplied will conform to the description stated.
All products will be free of defects in materials and workmanship under normal use for the following periods:

1. Stated shelf life of Inker Cartridges:
   - Markem® 6990, 6993, 6997 and Xandex 8103= Four (4) months. Five (5) days after cartridge opening.
   - Xandex 7824 and 7824T = Two (2) months. Three (3) days after cartridge opening.
2. Ninety (90) days from the date of delivery to the customer for all other products.

   SELLER MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS. IT SHALL BE AT SELLER'S OPTION TO HAVE THE DEFECTIVE PRODUCT REPAIRED OR REPLACED, OR TO GRANT A REFUND OF THE PURCHASE PRICE.

3. Seller, upon request, may furnish to Buyer such technical advice as it may be able to supply with reference to the use by Buyer of any material delivered hereunder. Seller, however, assumes no obligation or liability for the advice given or results obtained. Buyer expressly agrees that it will implement any advice thus given at its own risk and agrees to indemnify and hold harmless against any liabilities, costs, or expense resulting there from.
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5. If you have any questions or need further assistance please call, fax or write:

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Customer Service
1125 N. McDowell Blvd.
Petaluma, California 94954 U.S.A.
Toll Free in the United States (800) 767-9543
or (707) 763-7799 FAX (707) 763-2631
Internet http://www.xandex.com
Email: info@xandex.com

Description	Drawing Number
EG3309 Inker Kit	331-3309
Bill of Materials	2 of 2
Inker Assembly, Model EG3309	320-3309
	1 of 3
	2 of 3
Bill of Materials	3 of 3
O.D. Model EG3309	900-0190
	1 of 3
	2 of 3
	3 of 3
EG3311 Inker Kit	331-3311
Bill of Materials	2 of 2
Inker Assembly, Model EG3311	320-3311
	1 of 3
	2 of 3
Bill of Materials	3 of 3
EG3327 Inker Kit	331-3327
Bill of Materials	2 of 2
Inker Assembly, Model EG3327	320-3327
	1 of 3
	2 of 3
Bill of Materials	3 of 3
O.D. Model EG3327	900-3327
	1 of 3
	2 of 3
	3 of 3
EG3329 Inker Kit	331-3329
Bill of Materials	2 of 2
Inker Assembly, Model EG3329	320-3329
	1 of 3
	2 of 3
Bill of Materials	3 of 3

O.D. Model EG3329	900-0201
	1 of 3
	2 of 3
	3 of 3
Adapter Assembly, R/A Optem Videoscope	220-0047
	1 of 2
Bill of Materials	2 of 2
LTX Spacer Retrofit Kit	220-0062
	1 of 2
Bill of Materials	2 of 2
Adapter Assembly, R/A LTX-AC-S	220-0054
	1 of 2
Bill of Materials	2 of 2
Catalyst R/A Inker w/ Videoscope Adapter Kit	220-0059
	1 of 2
Bill of Materials	2 of 2