

## Six Steps To Laser Theory

**NOTE:**The Voltages used within are for reference points.They may not reflect exact readings from various manufacturers

**STEP 1.. CHARGING** - HI-NEGATIVE, -6KV,(corona wire ) / -1.2KV ( rayon brush ) CHARGES THE DRUM SURFACE . THE OPC SURFACE WILL HOLD A CHARGE AS LONG AS IT IS IN THE DARK. APPROX -600 to -800V IS MAINTAINED ON THE DRUM.

**STEP 2.. IMAGING** - THE LASER DIODE IS TURNED ON WHEREVER A CHARACTER DOT IS TO BE. IT ACTS LIKE A DOT-ROW IMAGER. WHERE THE LASER "WRITES"(exposes drum to light) ABOUT -50V to -100V REMAINS. THE REMAINING CHARGE DISSIPATED TO GROUND BECAUSE THE SURFACE CANNOT HOLD A CHARGE WHEN EXPOSED TO LIGHT. THE LASER DIODE ALSO ACTIVATES THE END OF SCAN (BEGINNING OF SCAN ON SOME MODELS) . THE POLYGON MIRROR SPINS(REFLECTING LASER LIGHT),"PAINTING" A DOT-ROW IMAGE ON THE DRUM. THE PLACE WHERE THE DOTS/CHARACTERS ARE WRITTEN NOW BECOMES A LATENT IMAGE. YOU CAN'T SEE IT , BUT A POSITIVE CHARGE REMAINS(-100V IS POSITIVE COMPARED TO THE -800V)

**STEP 3.. DEVELOPING** - THE DRUM COMES INTO PROXIMITY WITH THE DEVELOPER ROLLER. THE ROLLER HAS POS. CARRIER BEADS AND NEG. TONER. THE TONER IS "STUCK" TO THE BEADS. NEG. TONER IS ATTRACTED TO THE POS. LATENT IMAGE ON THE DRUM. THE IMAGE WILL NOW BE VISIBLE.(THIS IS A GOOD XSHOOTING TIP.) STOP THE SELF-TEST IN MID-CYCLE AND IF YOU CAN SEE THE IMAGE ON THE DRUM , THE FIRST 3 STEPS ARE WORKING O.K. CARRIER BEADS DO NOT TRANSFER , REMAIN IN THE DEVELOPER.

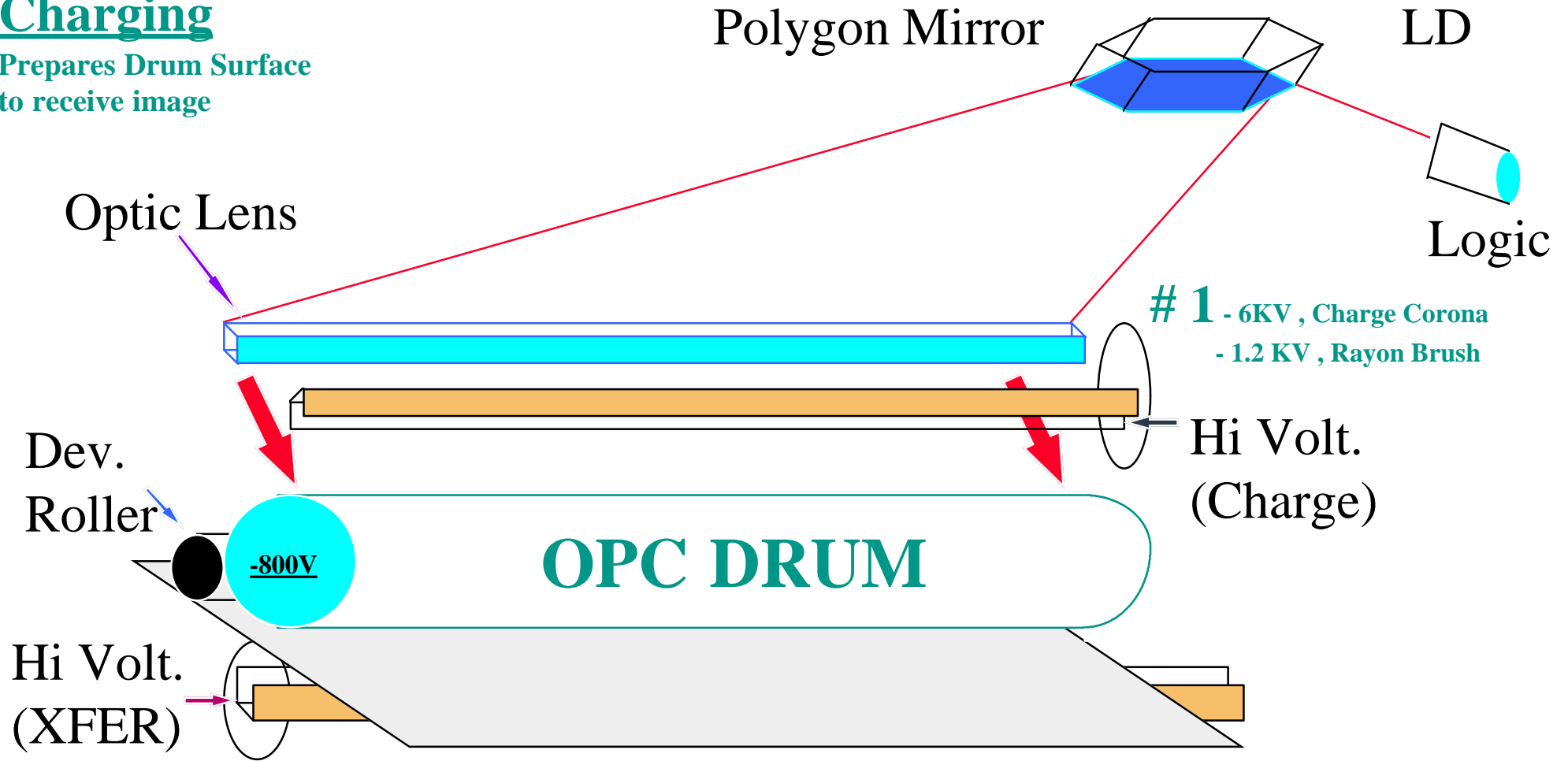
**STEP 4.. TRANSFER**\_- THE PAPER COMES IN PROXIMITY TO THE DRUM AND THE IMAGE. THE PAPER PASSES BETWEEN THE DRUM AND A TRANSFER CORONA. A +5KV,(corona wire ) / +3.2KV ( rayon brush ) "CHARGES" THE PAPER HIGH POSITIVE. THE NEG. TONER IS ATTRACTED TO THE PAPER, THE IMAGE IS NOW ON THE PAPER. HELD LOOSELY IN PLACE BY THE HIGH STATIC CHARGE.

**STEP 5.. FUSING** - THE PAPER PASSES BETWEEN TWO ROLLERS. THE TOP ROLLER IS TEFLON-COATED AND HAS A QUARTZ LAMP CORE THAT HEATS UP TO 170 DEG. CENTIGRADE. THE BOTTOM ROLLER IS RUBBER COATED AND APPLIES ABOUT 14KG OF PRESSURE. HIGH HEAT AND PRESSURE "MELTS" THE TONER INTO THE SURFACE OF THE PAPER.

**STEP 6.. CLEANING** - SOME MACHINES(EPL-6000) USE A SEPARATE DISCHARGE CORONA. SOME USE LAMPS(LIKE THE ALII). SOME JUST USE A CLEANER BAR TO BRUSH THE RESIDUAL TONER OFF INTO THE CARTRIDGE. IN ANY CASE , A CLEANING PROCESS IS NECESSARY TO CLEAN THE DRUM OF REMAINING TONER AND PREP. IT FOR THE NEXT CYCLE.

# Charging

Prepares Drum Surface to receive image



## 1. Charging

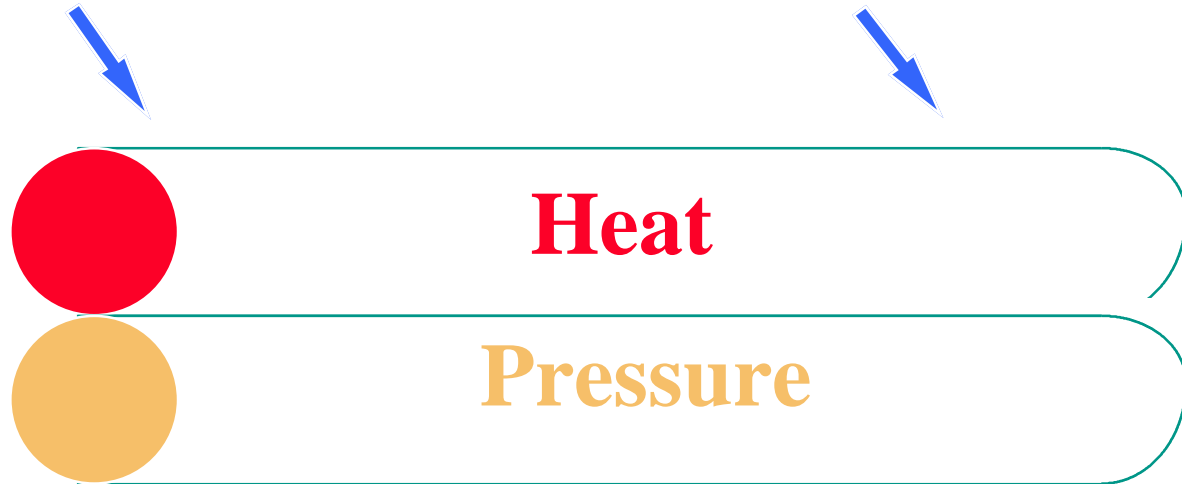
2. Imaging

3. Develop

4. Transfer

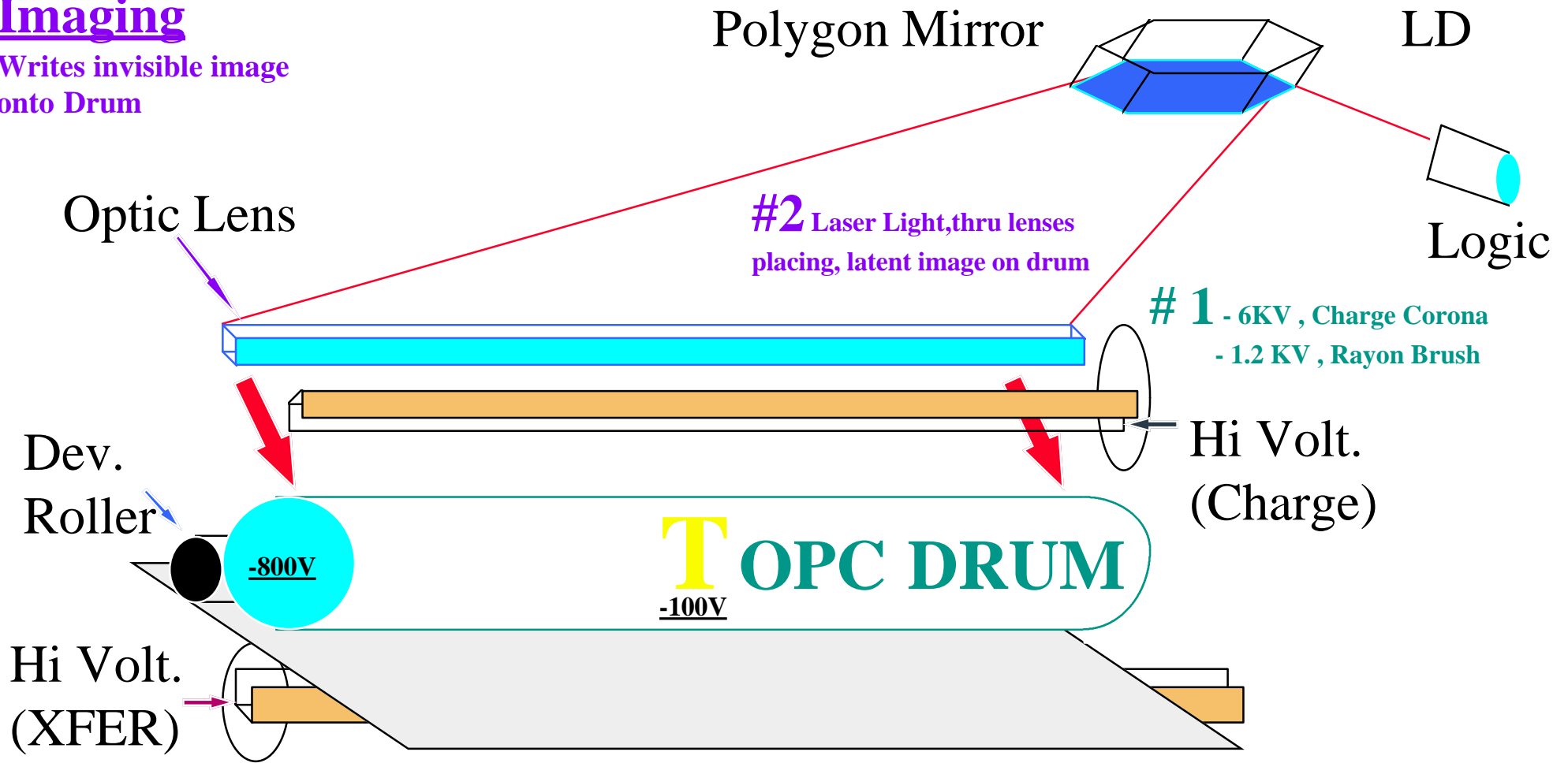
5. Fusing

6. Cleaning



# Imaging

Writes invisible image onto Drum



1. Charging

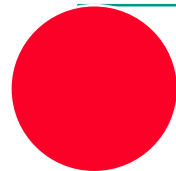
2. Imaging

3. Develop

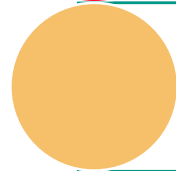
4. Transfer

5. Fusing

6. Cleaning



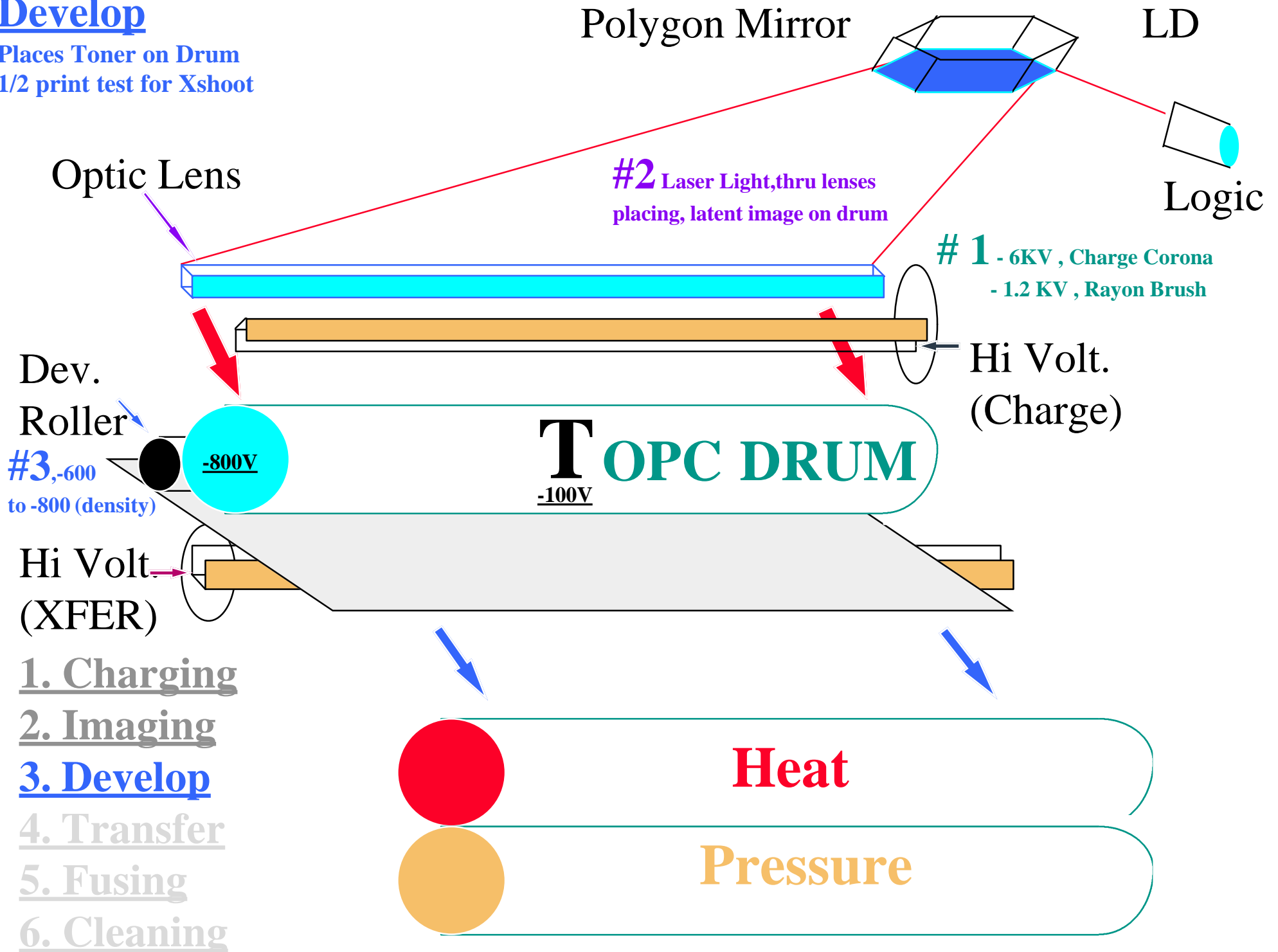
**Heat**



**Pressure**

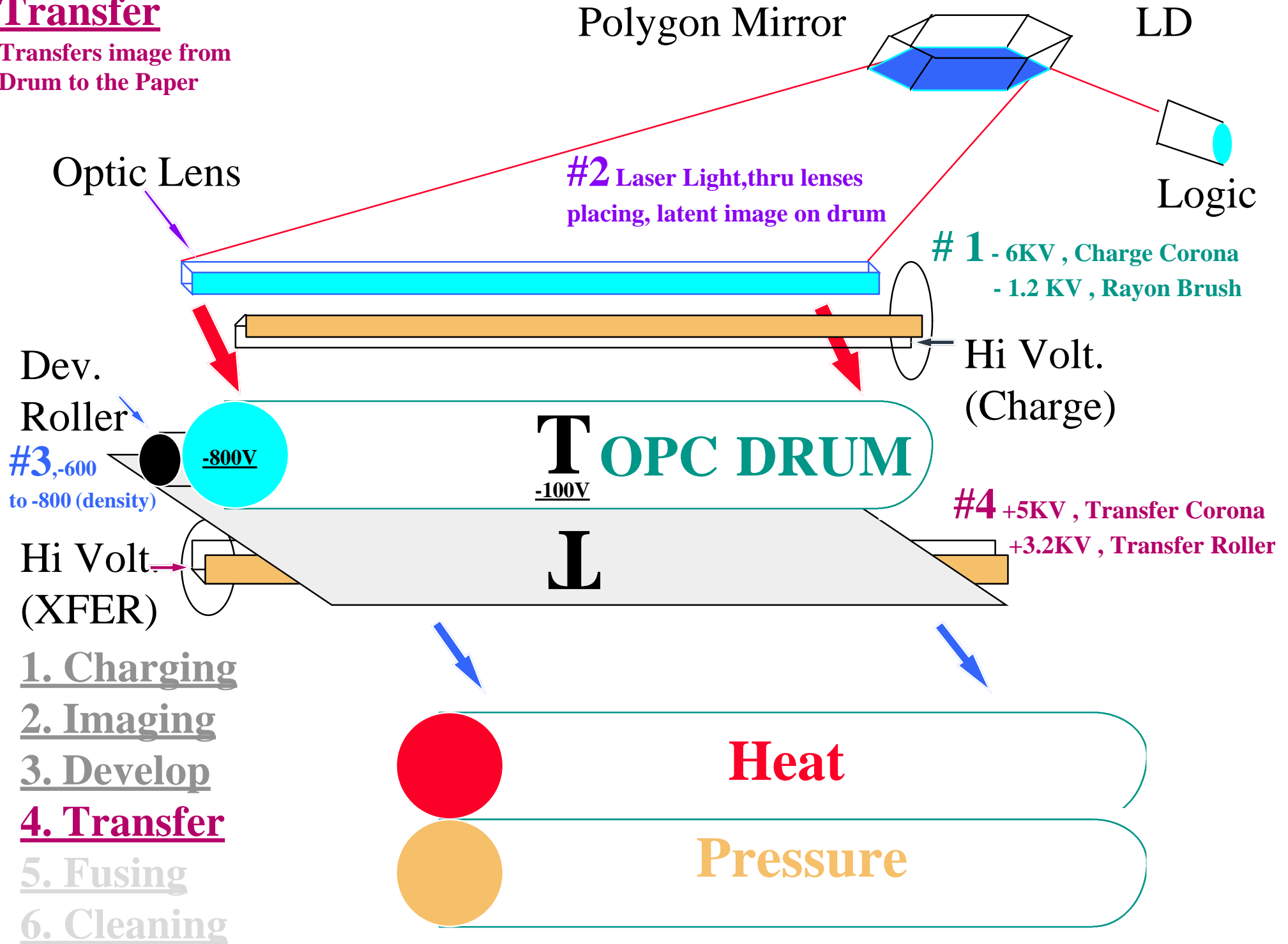
# Develop

Places Toner on Drum  
1/2 print test for Xshoot



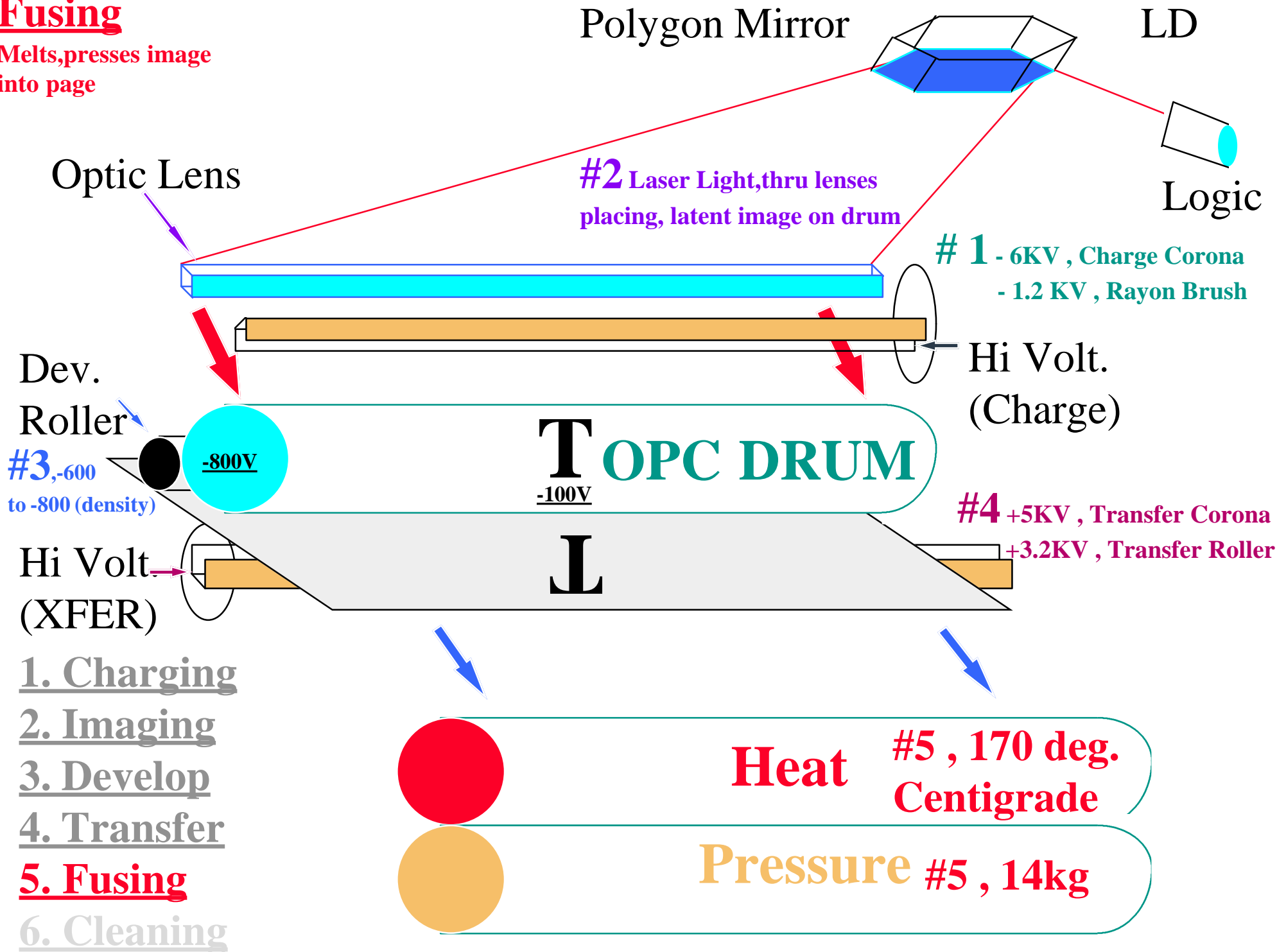
# Transfer

Transfers image from Drum to the Paper



# Fusing

Melts, presses image into page



# Cleaning

Cleans Drum Surface  
To Prepare for next Cycle

Polygon Mirror

LD

Logic

Optic Lens

Dev.  
Roller

Hi Volt.  
(XFER)

Hi Volt.  
(Charge)

**OPC DRUM**

1. Charging

2. Imaging

3. Develop

4. Transfer

5. Fusing

6. Cleaning

**Heat**

**Pressure**

