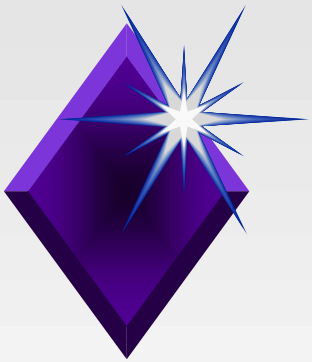


Duracell Packaging Exploratory

Conceptual Approach

Objective

- Convert from Hanging Style to Free-Standing Style Blister Pak
- Use Existing Machines as Much as Possible, Equal Production
- Assure Revisions are Robust & Reliable, and Work for All

Duracell Requirements

- Must Accommodate Multiple Style Paks During Transition
- Must Not Interfere with Hand nor Automated Insert, nor Boxing
- Must be Adaptable to Other Machine Adjustments Readily
- Must Result in Visually & Structurally Acceptable Package

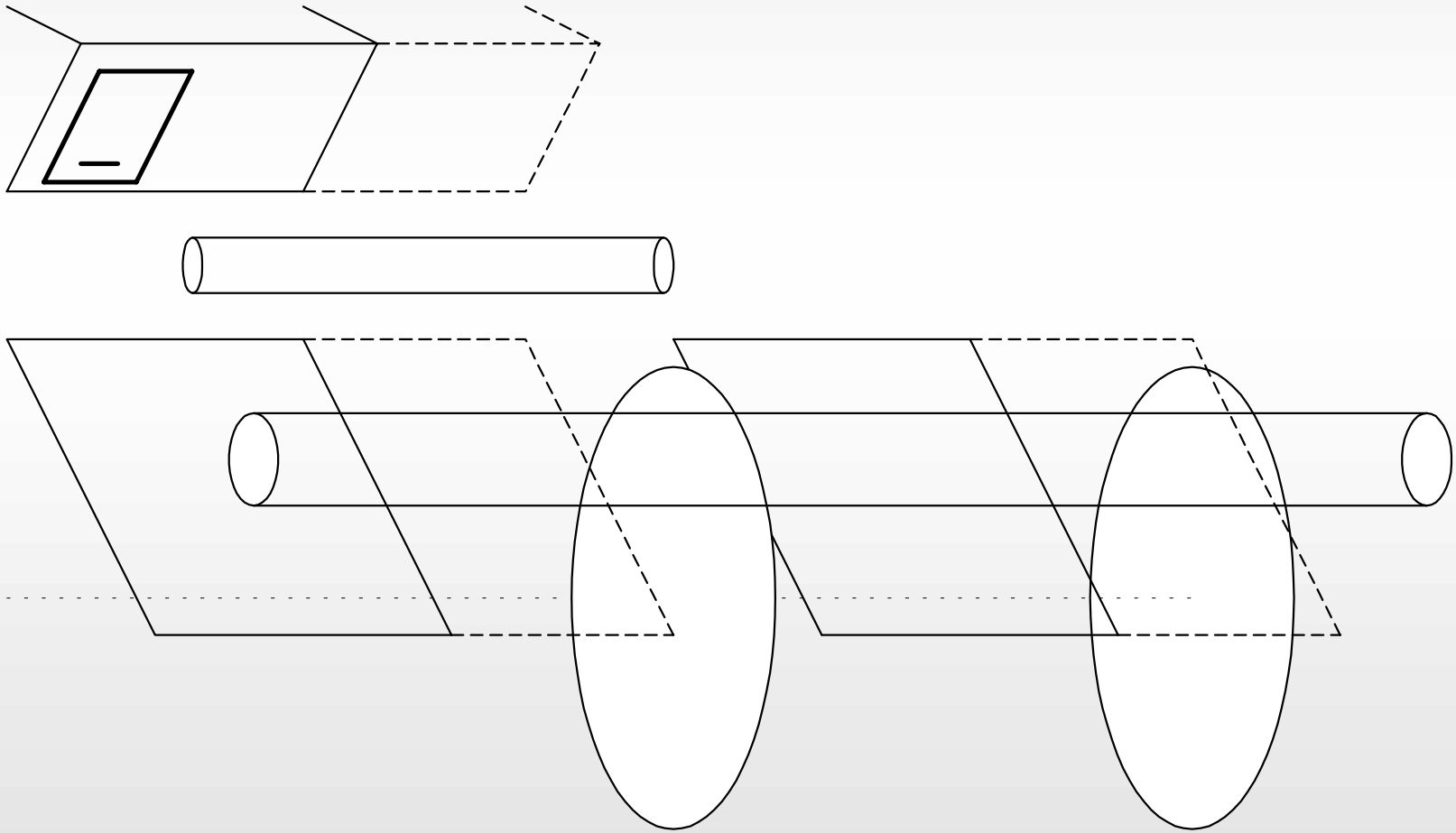
Meeting the Needs

- Transverse Card Feed Requires No Added Real Estate
- Folder Fits Current Card Feed Enclosure, Controls Card Fully
- Should be Capable of Meeting Fastest Line Now; 2 Sec. Stationary
- Modular Design Concept Allows Pre-Ass'y, Brief Installation

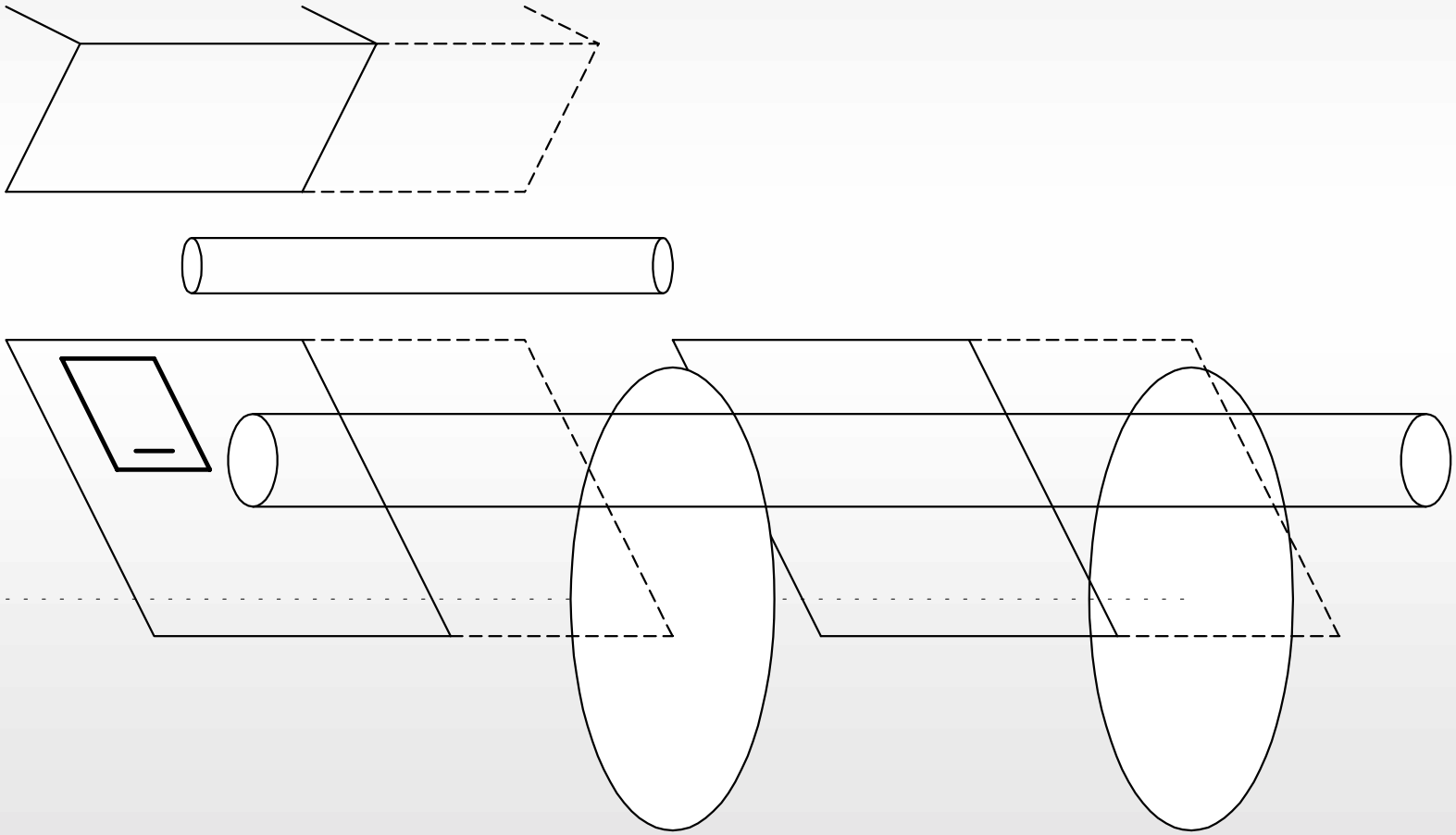
Key Element: Card Placement

- Unlike Current, Card Will Be Placed Logo Side Up On Trays
- Unlike Current, Card Will Be Placed At Lead End Of Machine, So Must Pass Beneath Battery Inserters and Tamping
- All Affected Machines Must Have Trays With Locating Pins
- Components Are Same for 6 and 4 Up

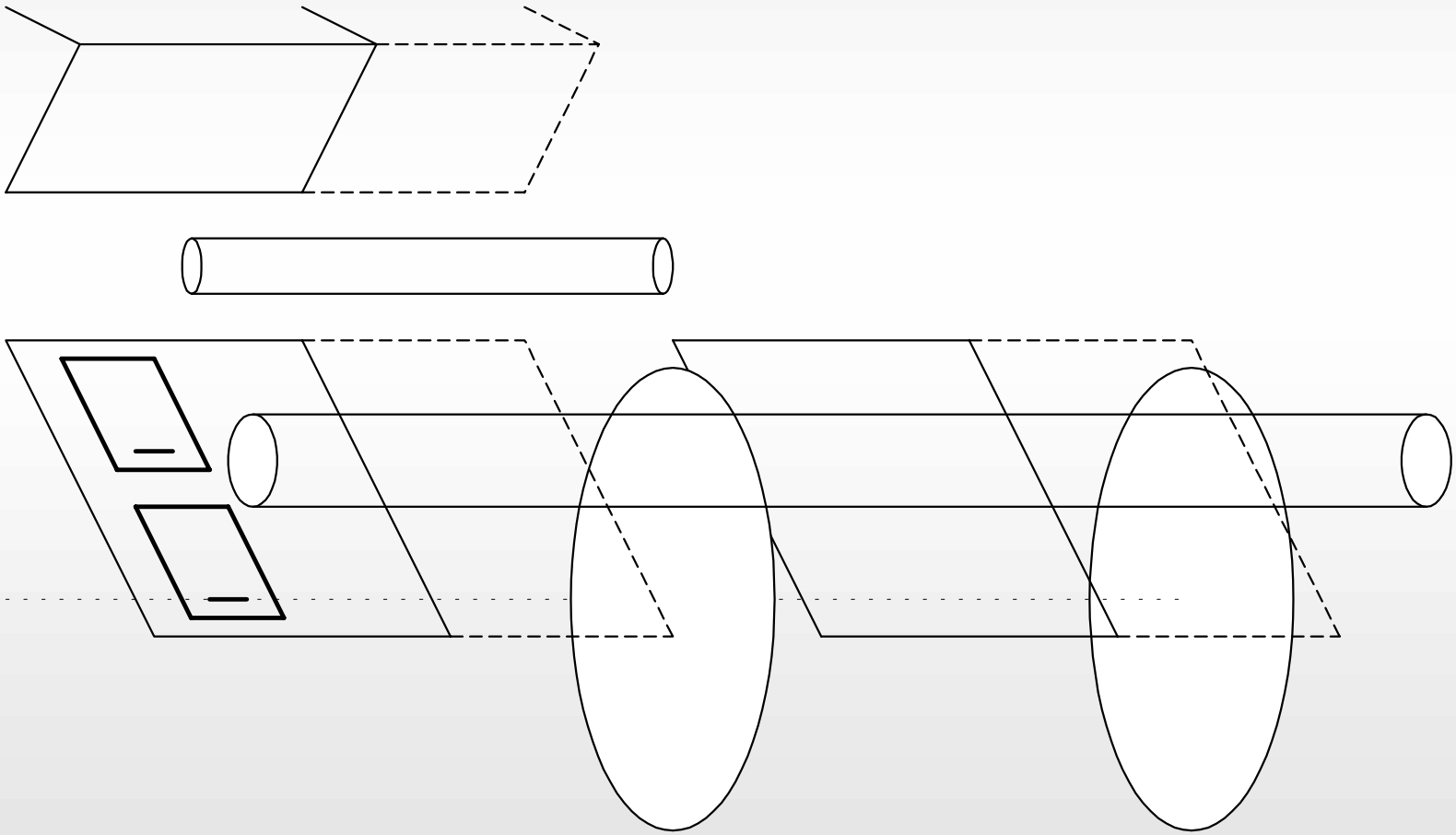
Original Card Feeder Mounts on Sub-Frame with Basket on Mandrel at Sprocket Centers; Allows Simple Co-Planar Adjustments & Locating



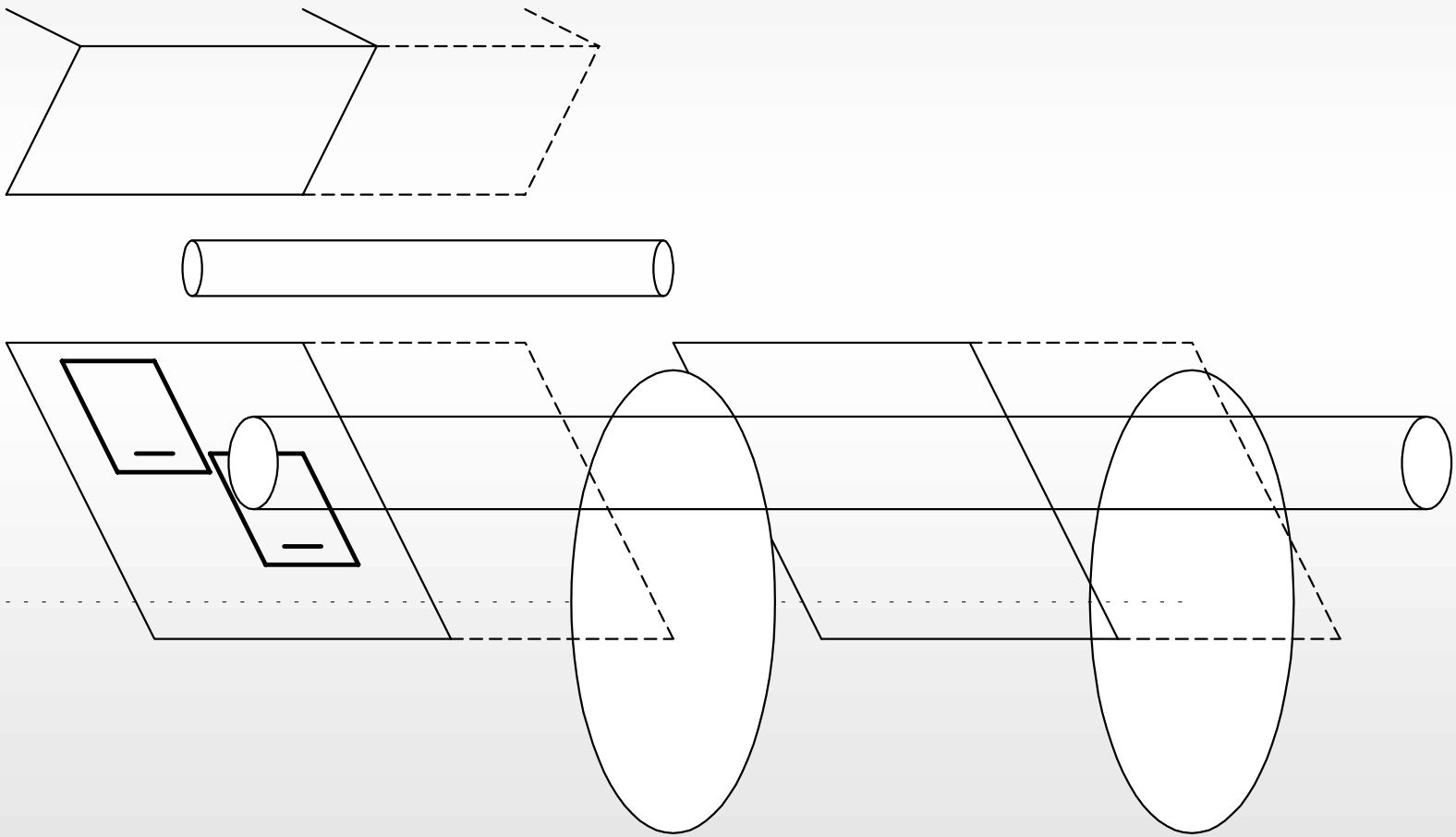
Card Picks, Rotates & Places on Shelf Above Basket. This Allows Current Card Mechanism Use, While Clearing Lateral Feeder and Providing Adequate Time For All Necessary Motions



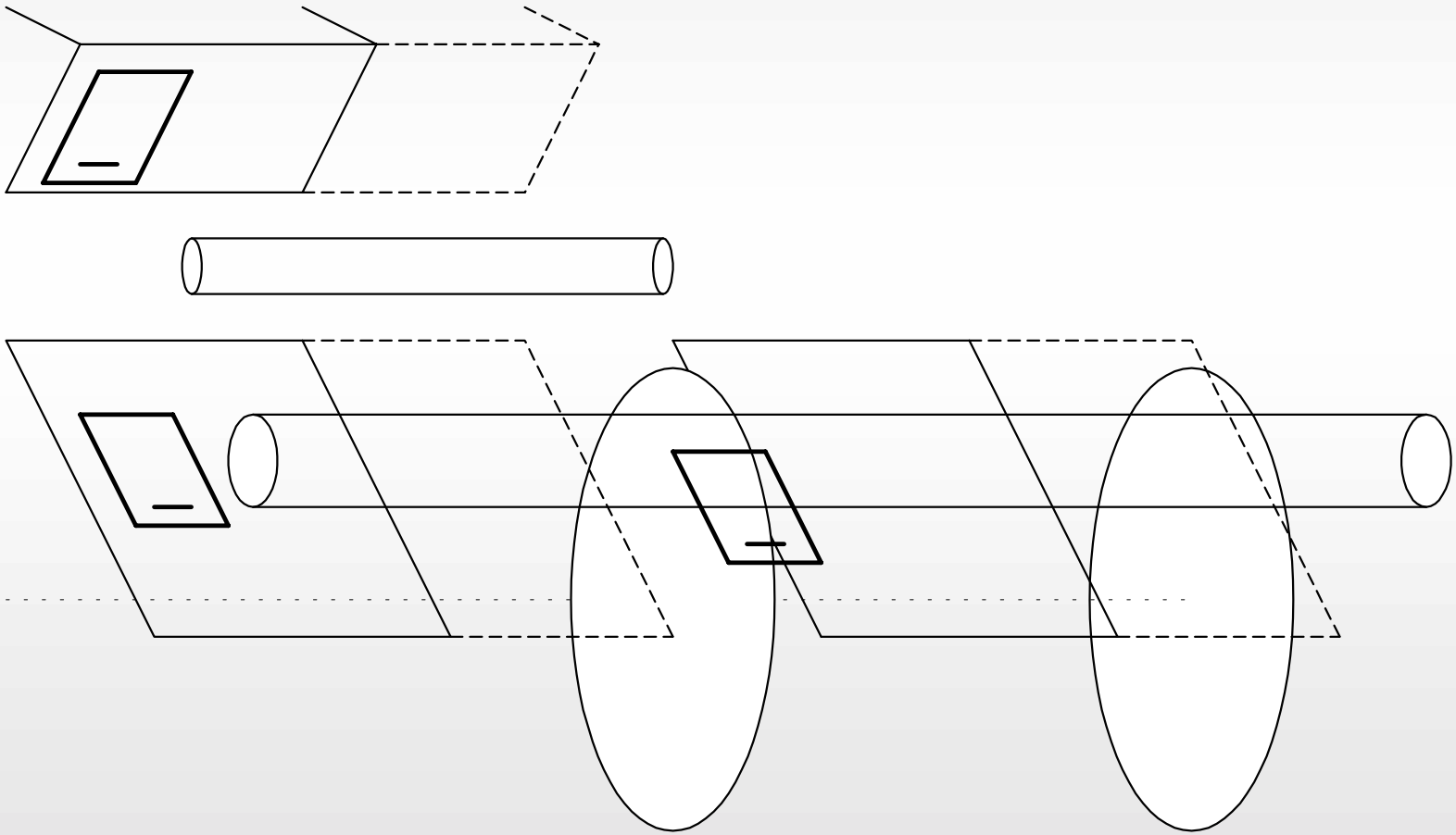
Meanwhile, Previous Card is Released to Fall into Locating Basket for Precise Positioning for Transfer



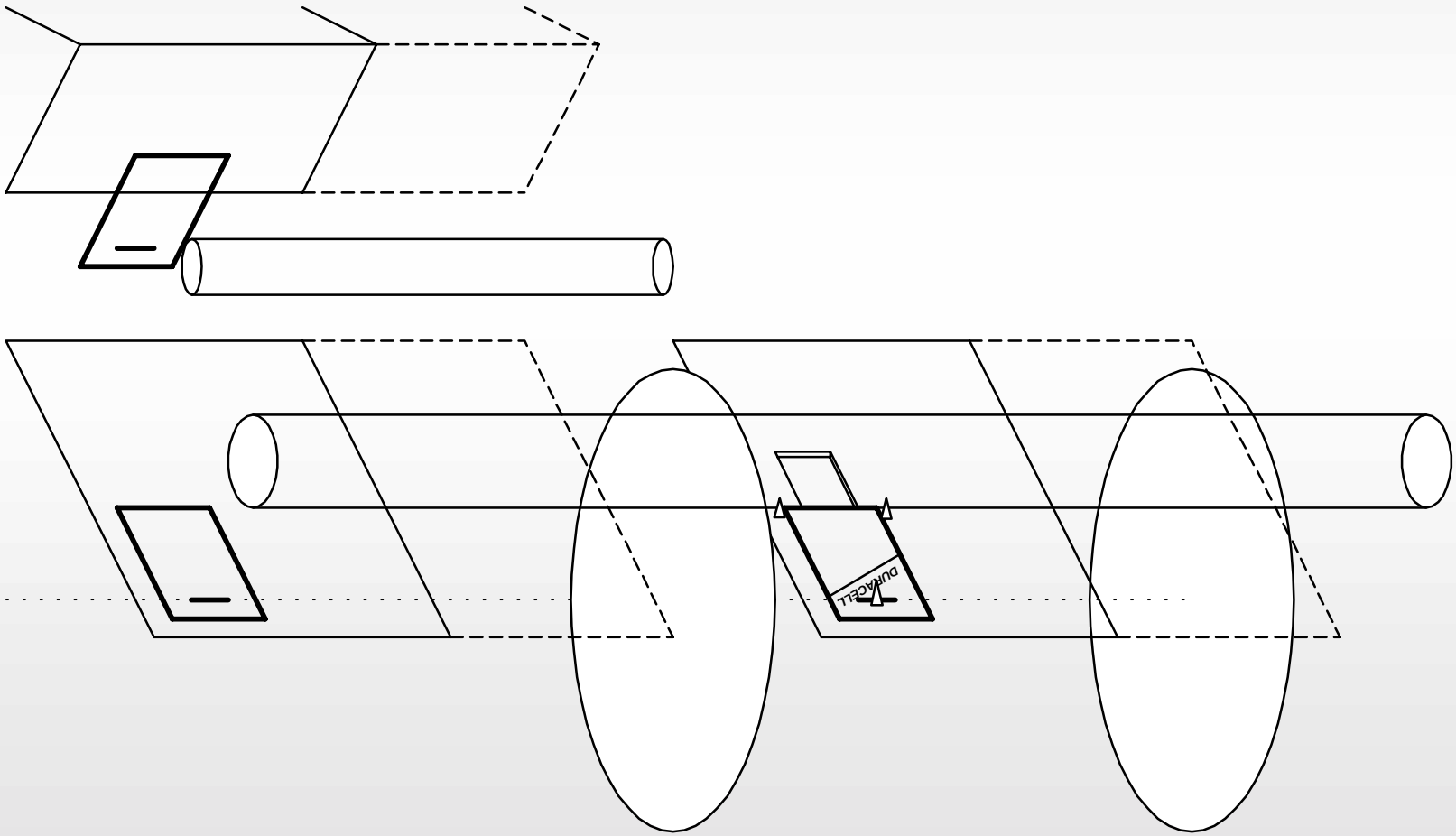
From There, The Card is Lifted Then Transported ...



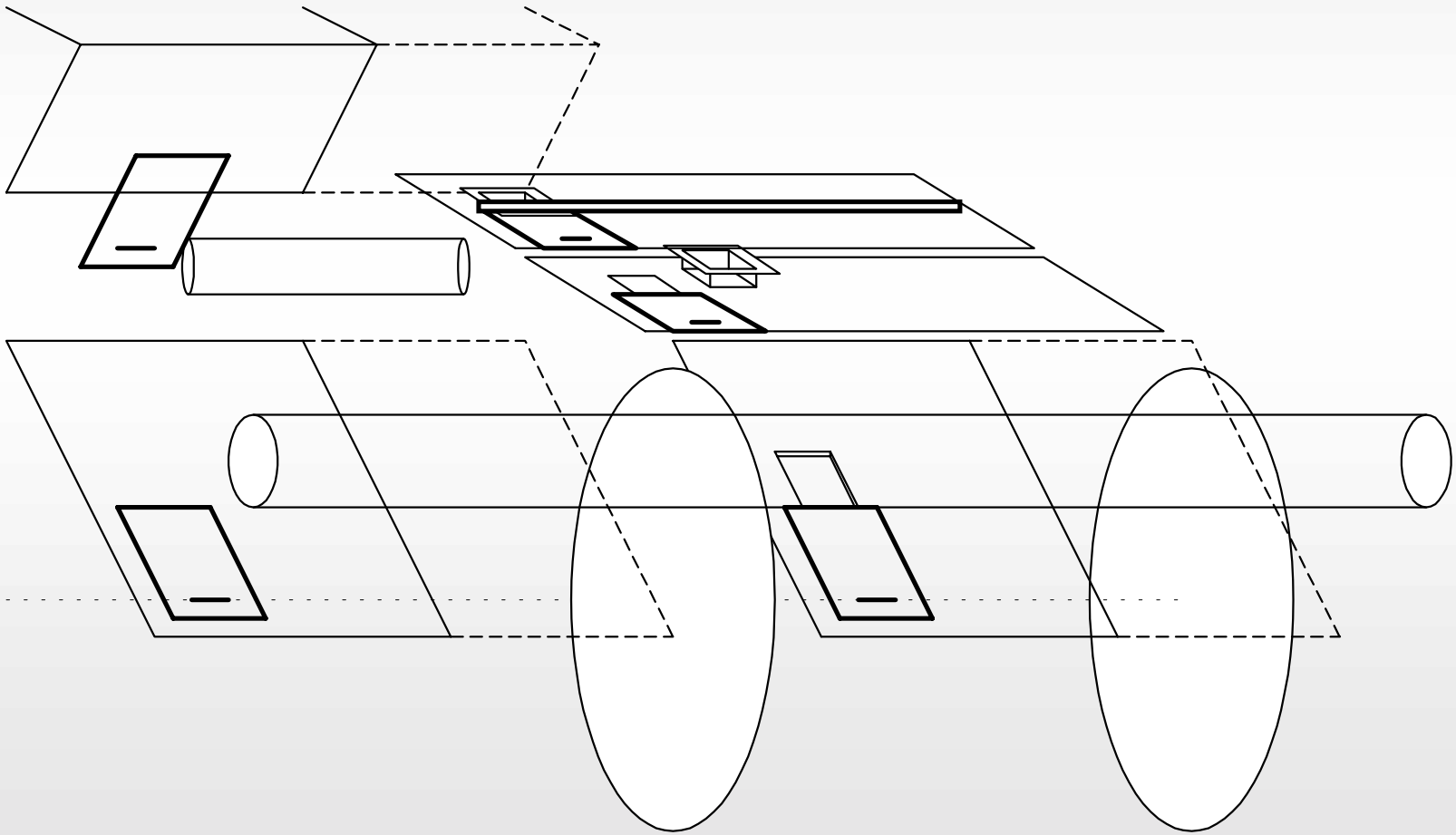
... Across Above the Sprocket to the Tray. As The Transport Occurs, The Waiting Card Is Released to Drop, And a New Card Is Grabbed From the Magazine



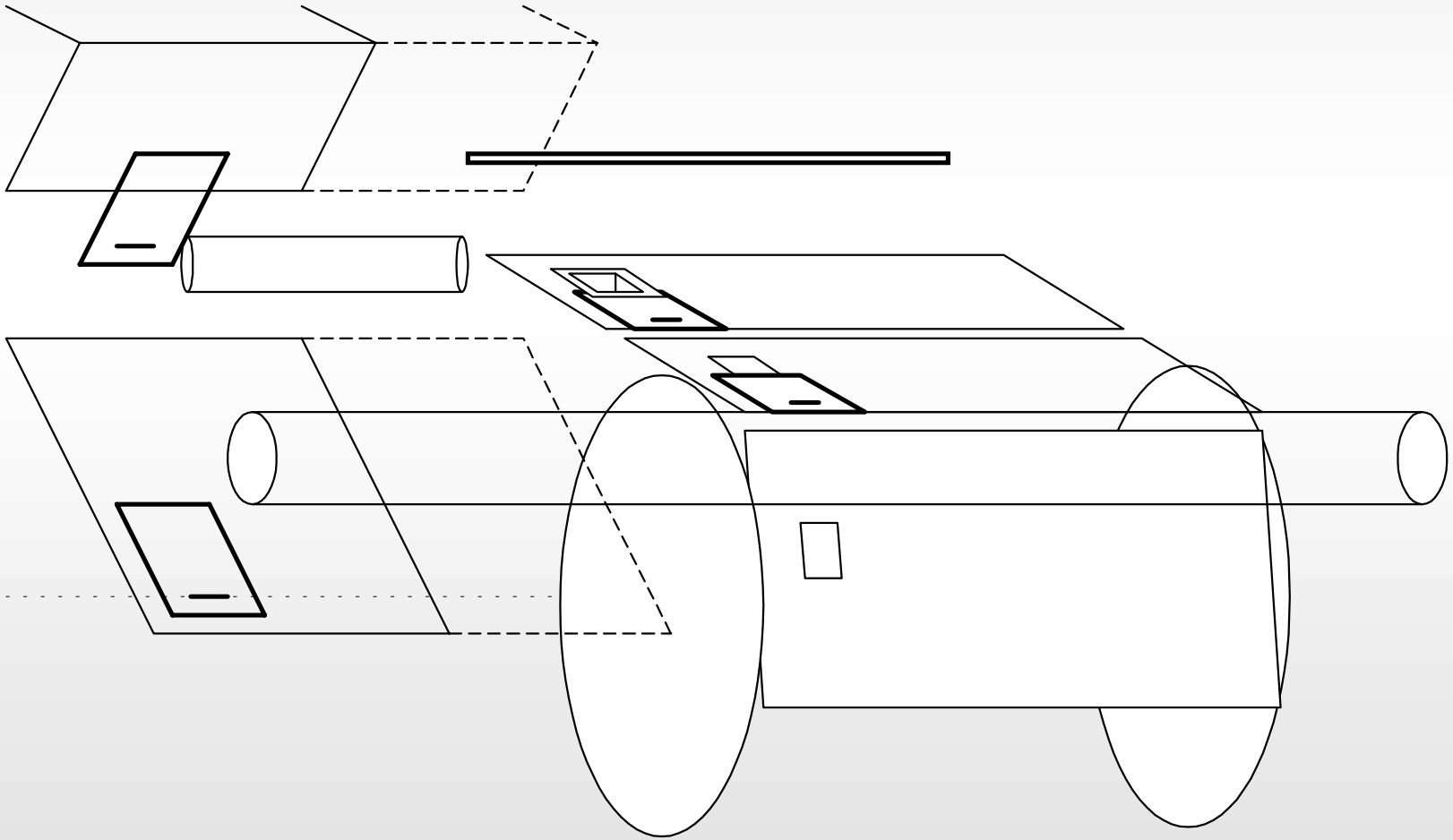
Finally, The Card is Placed On The Tray, Located By Pins, With The Logo Side Facing Up, Then The Traverse Mechanism Moves to Clear The Frame



During This Motion, The Blister Transfer From The Shear Continues As Before, Above The Transverse Mechanism, To Place The Blister In The Tray With The Lower Flange Atop The Bottom Edge of The Card. A Bar Seal From Above Fuses These Two At The Next Tray Position During This Same Stationary Time.



After Sealing, The Bar Lifts Up, The Card Transport Clears the Frame, The Card Placement Continues, And The Trays are Free To Traverse To Their Next Station Forward.



Key Element: Folder Mechanism

- Must Locate Card Through All Motions
- Relocate Pins For Hang vs. Stand Ass'y, and Change Card Pivot Point
- Must Heat Narrow Line Of Plastic Below Card Edge, Without Heating Card
- Blister Must Have Zero Draft at Bottom
- Must Lock Card To Prevent Springback
- Must Conform to Current Orientation

Basic Folder Concepts; Contingent is Hanging Pak

Rotator stays clear (to right) at vertical position to clear transfer

Card is pressed upward through tray from underneath to 30 deg

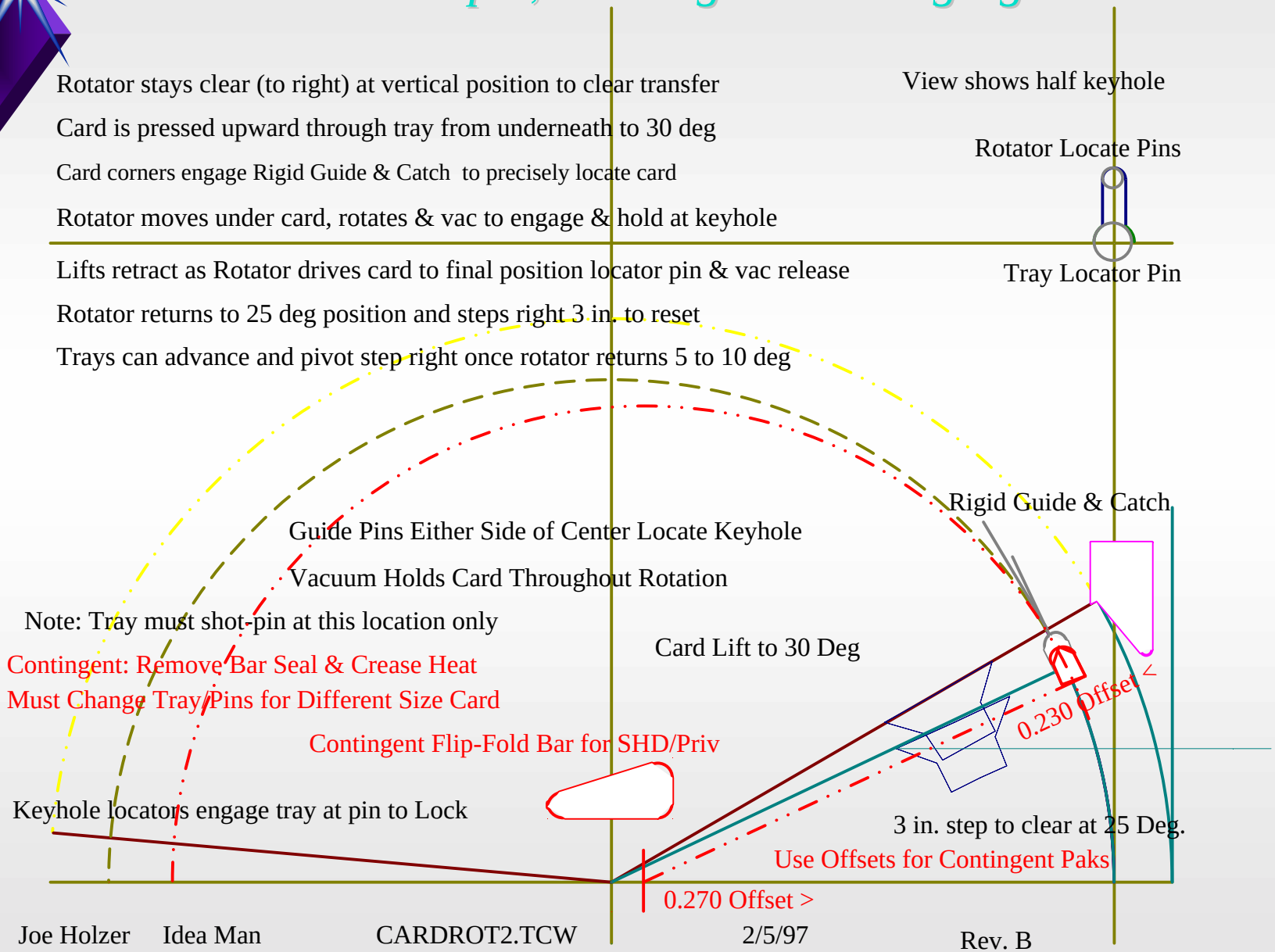
Card corners engage Rigid Guide & Catch to precisely locate card

Rotator moves under card, rotates & vac to engage & hold at keyhole

Lifts retract as Rotator drives card to final position locator pin & vac release

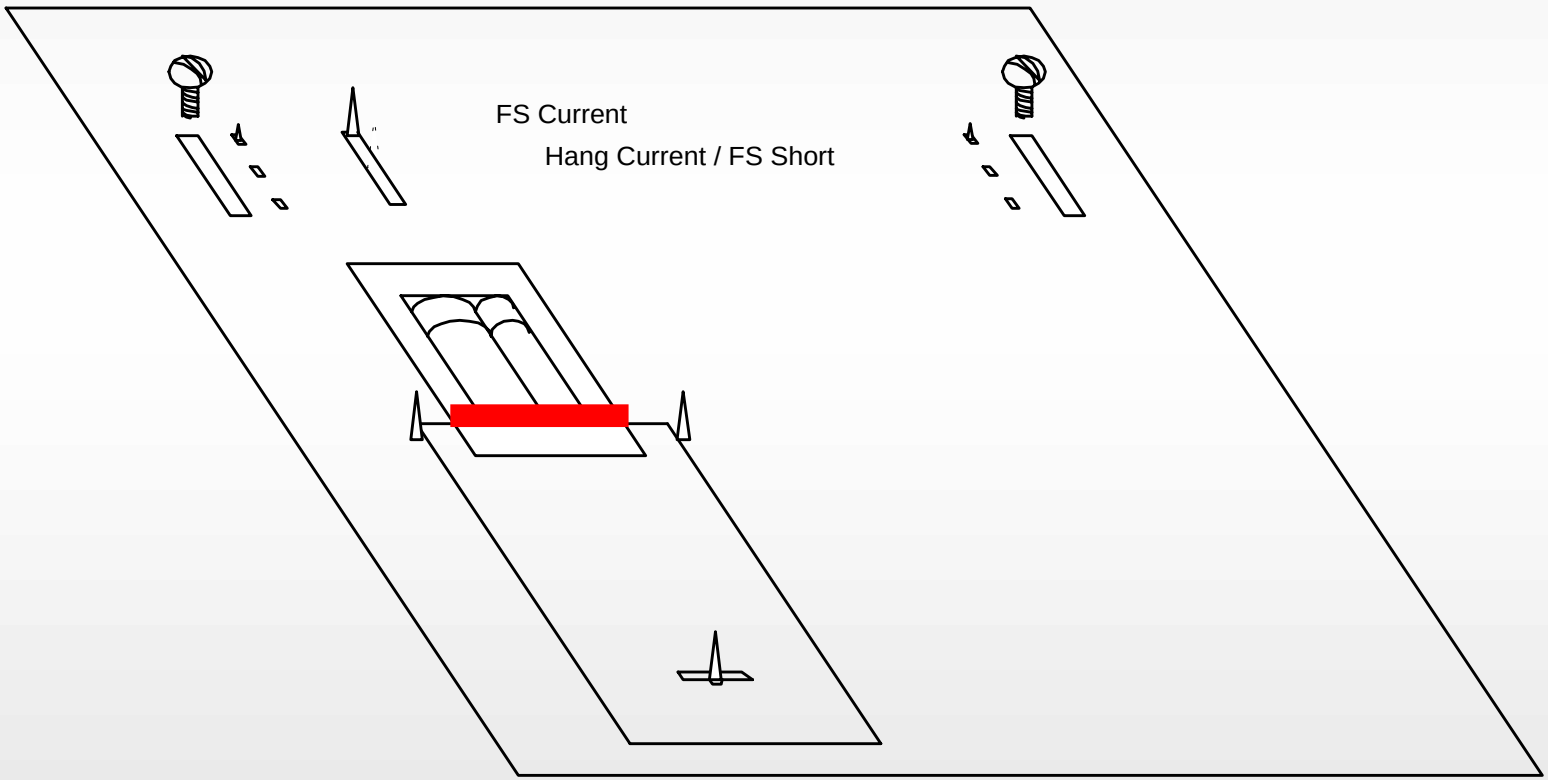
Rotator returns to 25 deg position and steps right 3 in. to reset

Trays can advance and pivot step right once rotator returns 5 to 10 deg

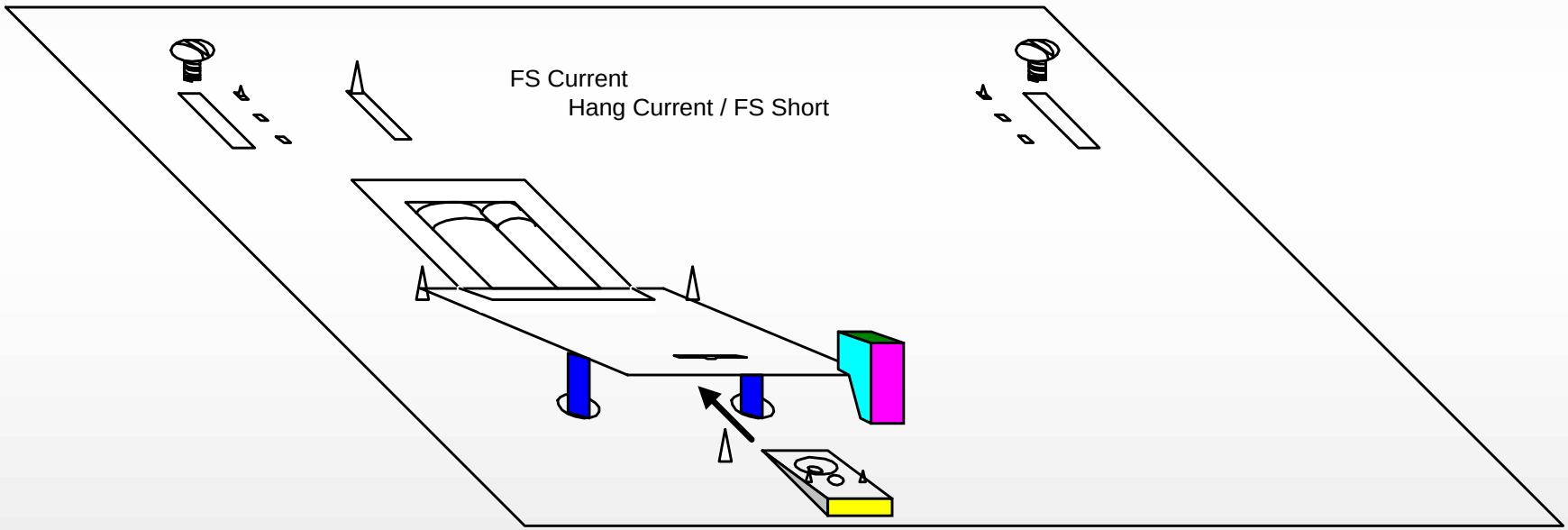


Joe Holzer Idea Man CARDROT2.TCW 2/5/97 Rev. B

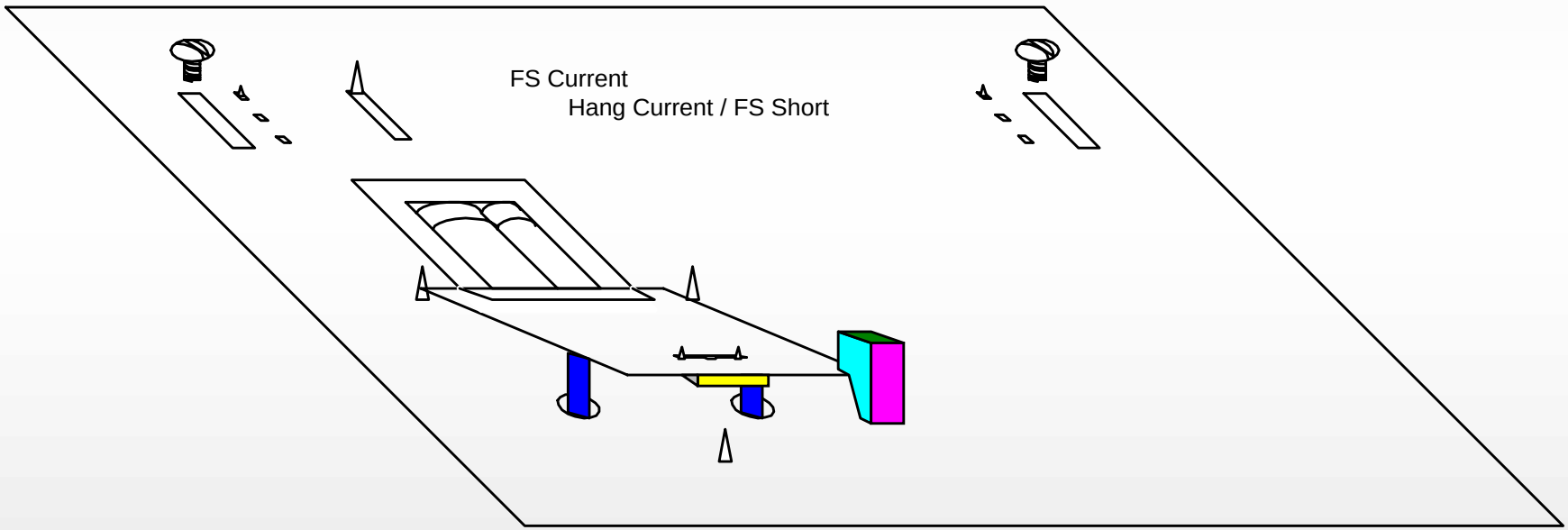
At Hinge, Plastic Is Pattern Heated Only To Crease (Not Performed For Hanging Paks) Note Screws Show Movable Pin Bar for Fast Change



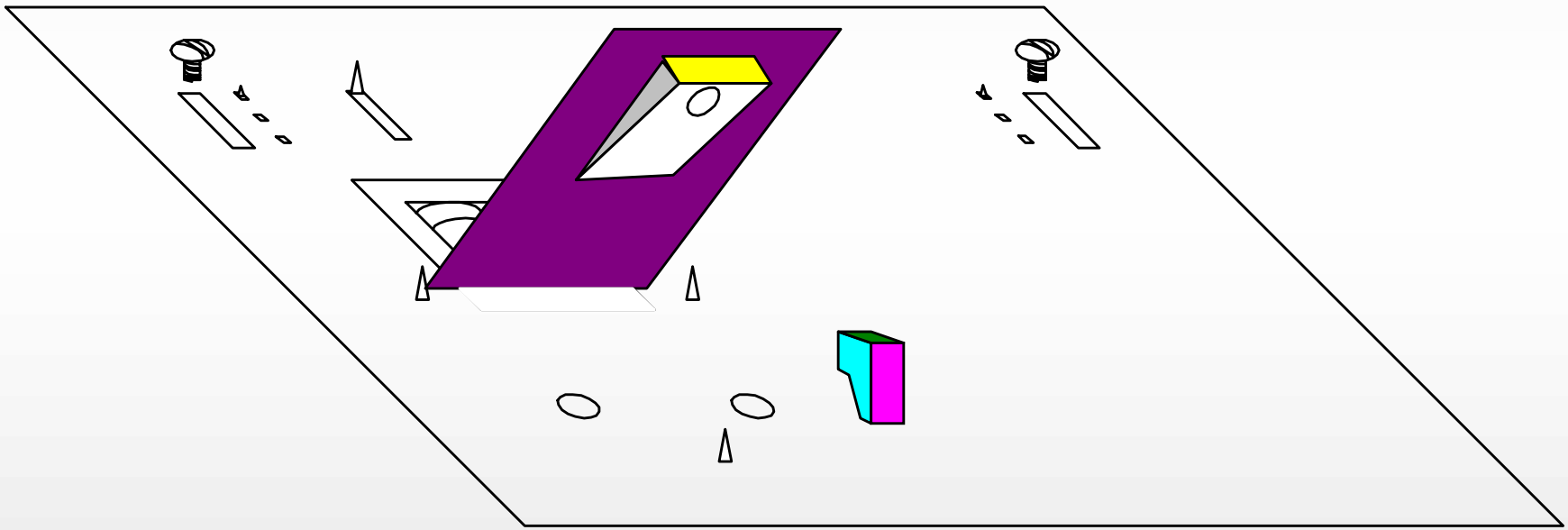
After Transfer to Next Station, Vertical Lift Through The Tray Positions the Card at 30 Deg. Incline, and Constrains Card Location at the Top Corners. A Tool With Suction & Keyhole Locators Travels Beneath ...



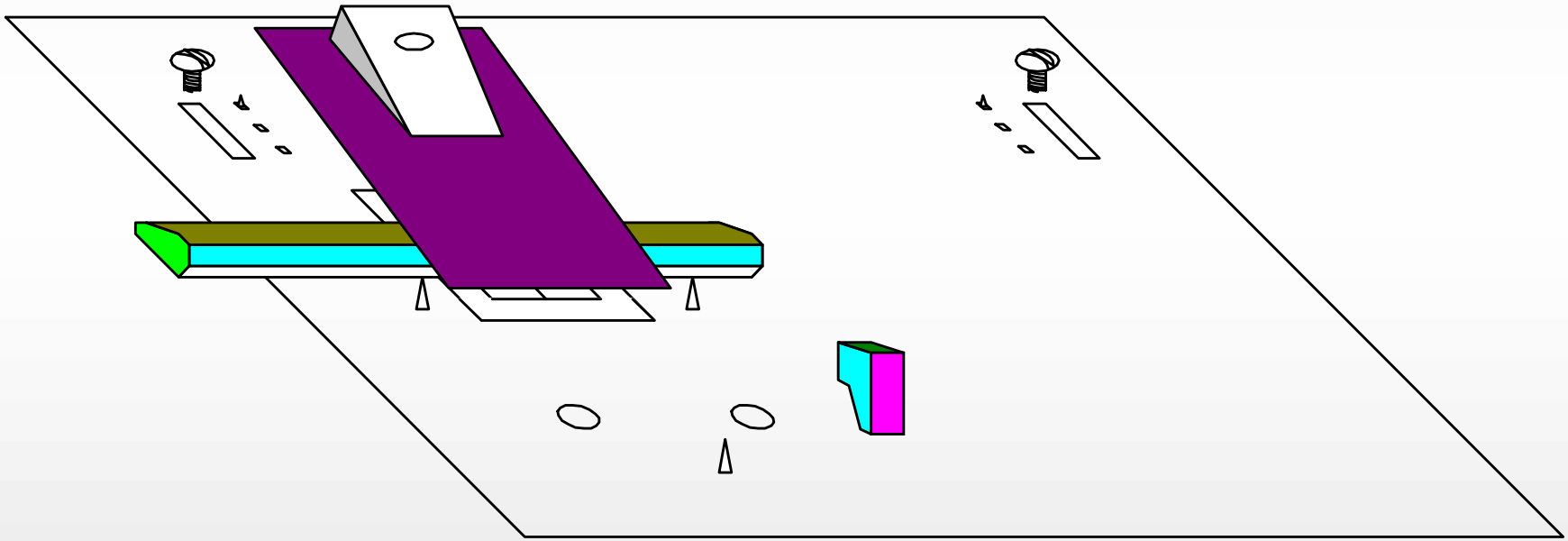
... Then Starts Rotation. The Pins Locate the Keyhole Ends, Then the Suction Holds the Card Through Full Rotation to Prevent Mislocation & Assure Tolerances



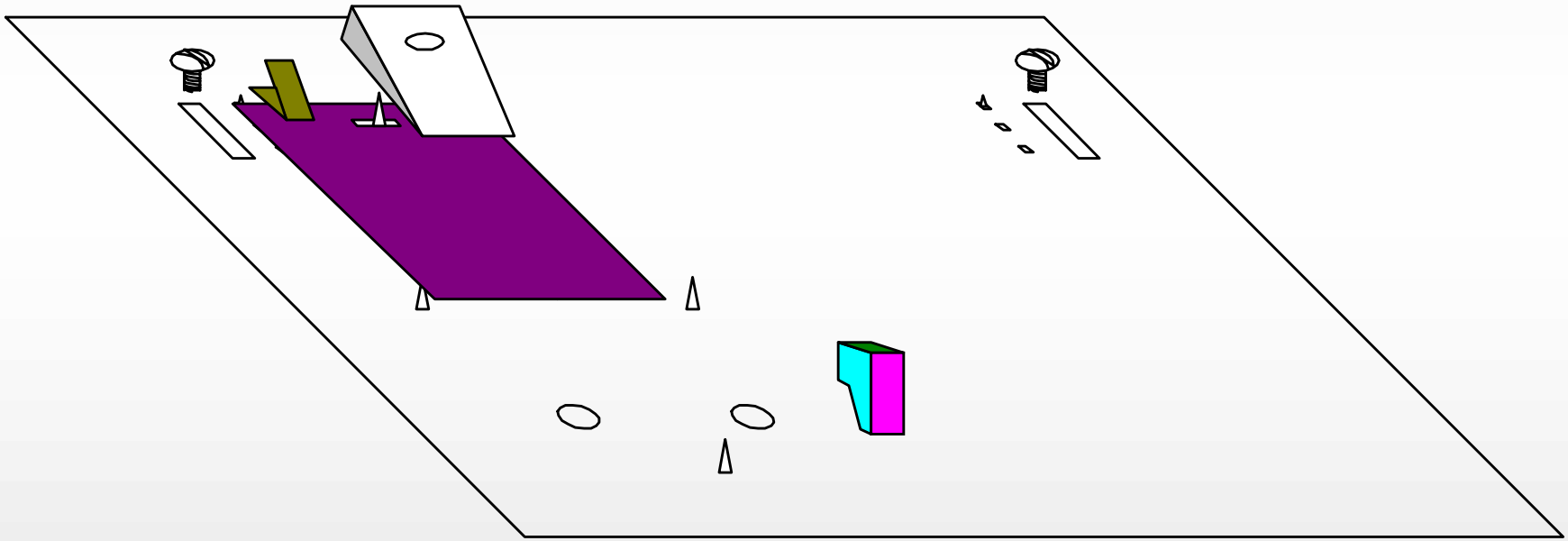
Rotator Pivots Card While Controlling Location, About Heated Crease For Free Standing Paks ...



... Or Slide From Beneath The Blister Flange And Over The Intercept Bar For Current Style Paks ...



... Places The Card Over The Final Pin & Latches Under The Catch Tabs, Then Moves Back To Clear For Tray Transfer To Final Card Seal Position & New Card



Key Benefits

- Relatively Lowest Cost Due To Use Of Existing Card Dispense & Place
- Allows for Concurrent Styles with 2 - 4 Hour Changeover (See Next Slide for Details)
- Minimal Disruption to Machines; May Allow Some Overlap With Refurbish
- Maximizes Flexibility in Machine Scheduling & Package Mix

Changing Pak Style Using Same Card & Blister Sizes

- Move Pin Bars on Each Tray (60 Min.)
- Mount / Dismount Intercept Bar & Switch Seal Bar & Crease Heat On / Off (10 Min.)
- Move Rotator Pins & Pivot Point To New Offset Using Pre-Cut Spacers (20 Min.)
- (If Req'd) Final Seal Anvil (30 Min.)

Added Change Times for Card or Blister Size Changes

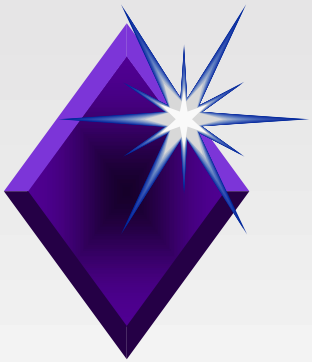
- Move Both Pin Bars on All Trays (60 Min.)
- Insert Card Guides on Feeders (20 Min.)
- Change Blister Form Tooling (90 Min.)
- Replace All Trays or Inserts (180 Min.)
- Locate Battery Inserters If Used (20 Min.)

Risks & Issues

- Cycle Time Adequate for Traverse & Place, Lift & Rotate?
- Differing Card Sizes Complicate Changeover & Inventory Picture
- Mix of Domestic, Private, SHD & International & Change Plans
- Machine Availability Windows vs. Marketing Needs & Technical

Next Steps

- Select Machine & Location for Prototyping
- Coordinate Schedule for Machines to Change & Set Timelines
- Commence Detail Design & Test for Prototype, Then Production
- Seek Quotes & Funding Approval
- Roll Out Implementation



Any Questions?

Thank You!