4.3.1 Initialization Sequence

The initialization sequence begins with the spinup of the gyros and the initialization of the EA1 microprocessor. Next, the gimbal locking pins are removed. After removal of the gimbal locking pins, the antenna is free to move and is commanded to find the Master Index Pulse (MIP) angles. The movement is limited by the gimbal stops (Figure 4-3). The alpha (α) gimbal has a full 360° movement with a stop at the +154°/ -206° angle. The beta (β) gimbal is limited to 160° of movement: -85° forward to 75° aft from the 0° position.

The MIP angles are reference angles that are loaded into the microprocessor whenever the differential encoder disk on the gimbal motor shaft is at that position. The beta MIP angle is -23.25° and the alpha MIP angle is 116.5° (Figure 4-3). The antenna is commanded to the beta MIP angle first and then to the alpha MIP angle. Once the gimbals have reached the MIP angles, the gimbal angles are commanded to 0°/0°. This action positions the antenna so that the radar beam is parallel to the orbiter minus Z-axis. The 0°/0° position should be reflected on the digital display on Panel A2 when the DIGI-DIS SEL switch is in EL/AZ (Figure 4-4). The MIP search and the 0°/0° antenna positioning are controlled by an automatic program in the EA1 microprocessor. The final antenna position is reached about 2 minutes after the Ku-band system is powered on.

The initialization sequence also includes the TWT warmup, which nominally takes 3.5 to 4 minutes. The initialization process is complete in approximately 4 minutes, but there is no indication that it is complete.

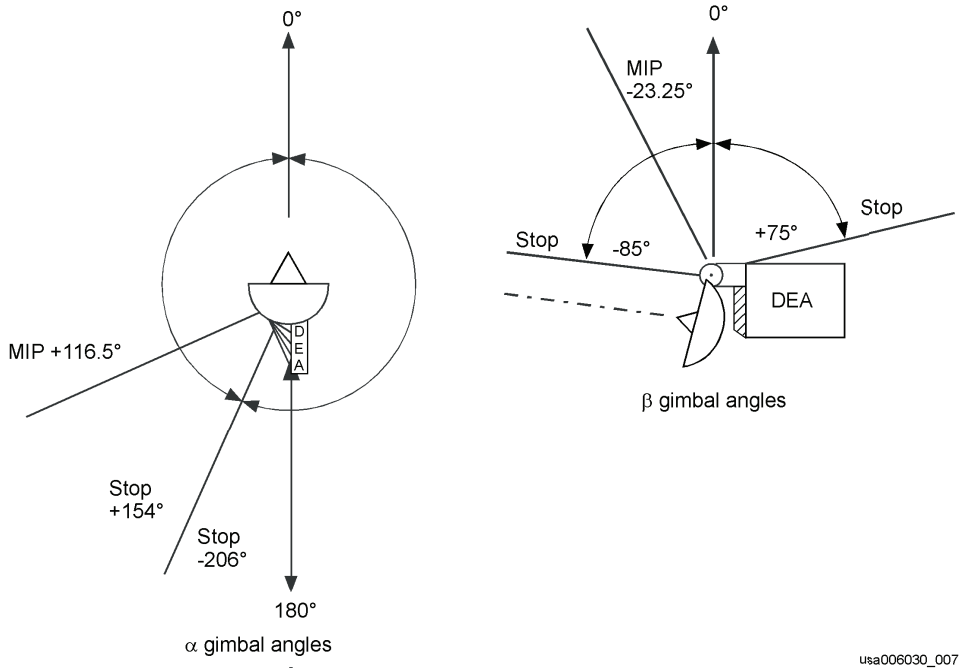

Figure 4-3. Gimbal angle movement