Assembly Instructions for Polar Camera ground tripod

Parts:

-3 4' lengths of double-height 1' square aluminum tubing, lettered at each end
-2 3'5" lengths of double-height tubing, with a 4" gap in one tube, lettered at one end
-1 shorter (~1') length of double-height tubing attached to a solid aluminum triangle, unlettered
-3 0.25" thick aluminum plates, lettered, with 4 or 5 small holes and one large hole

-3 threaded 1" steel rods ~1' long
-3 0.5" thick aluminum disks ~6" in diameter
-6 nuts to fit threaded rods, 3 modified to wingnuts
-6 11/16" diameter stainless steel (SS) washers
-3 10-24 x 1/2" SS cap screws
-1 jar of yellow-grey grease, wrapped in duct tape

-2 4' lengths of aluminum tubing, with letters punched along length
-4 2' lengths, two with small flanges at ends, each with letters punched at ends
-2 8" double-height lengths of aluminum tubing, with locking latches at midpoints
-1 4" square aluminum block with a 3" hole through center, marked on upper surface
-1 large steel screw with torque handles to fit hole in solid aluminum triangle
-1 1/4" thick steel washer to fit above screw

-14 1/4-20 x 2" SS socket head screws
-22 1/4-20 x 1.5" SS socket head screws
-5 1/4-20 x 3/8" SS socket head screws
-4 10-24 x 3/8" SS socket head screws
-washers for all 1/4-20 screws
-nuts for 1/4-20 x 2" screws

Assembling tripod:

-lay out double-height aluminum tubing so lettered ends come together; two N ends at apex of triangle, three E ends to your right, and three W ends to your left;
-all letters should be visible on upper surface of upper tube, and the two shorter pieces should fit through each other's gaps;
-loosely join the two shorter pieces with a 1/4-20 x 3/8" screw;
-loosely join each shorter piece to the longer piece meeting it at right angles using two 1/4-20 x 1.5" screws with washers;
-loosely attach the two or three pieces meeting at each apex of the triangle to the similarly-lettered 1/4" aluminum plate, using five 1/4-20 x 2" screws, with washers and nuts on the underside of the plate, for corners W and E, and four screws etc. for corner N;
-loosely attach the shortest piece of double-height tubing, with the aluminum triangle, to the base of the triangle and the crosspieces intersecting at the center of the triangle, using six 1/4-20 x 1.5" screws and washers;
-once all screws are in place, proceed to tighten all screws and nuts, moving from the center outward;
-with each threaded steel rod, hold it vertical with the threaded end on the floor so a small threaded hole can be seen in the other end;

-place a 1/2" aluminum disk on the upper end so the circular recess in the disk is visible;
-place two 11/16" diameter washers in the recess and attach the disk to the rod with a 10-24 x 1/2" button-head slotted screw, fastening it tightly;
-once all the disks have been attached to rods, invert the rods, sitting them on their disks;
-using a rag or sturdy tissue, apply grease liberally to all threads of each rod;
-thread a wingnut about 2" onto each rod;
-set the tripod onto the rods so each rod passes through the large hole in one of the aluminum plates at one vertex of the tripod;
-thread the other nuts onto the rods but don't snug them down until the tripod has been put in place and levelled;

Assembling the rectangular camera frame:
-lay out the single-height aluminum tubes with the 4' lengths running side-to-side and the shorter lengths running between them; tube "1" farther from you, and tube "2" nearer;
-lay the short tubes between the long tubes, with punched letters on the upper surface, so these letters match the letters on the adjacent long tubes;
-the two tubes with flanges go at the ends of the 4' tubes, with flanges pointing inward;
-loosely attach all tubes with 1/4-20 x 1.5" screws and washers;
-loosely thread 10-24 x 3/8" screws through holes in flanges into 4' tubes;
-place 4" square aluminum block in center of frame with black marks on tubes and square aligned, and loosely attach the square to the tubes with 1/4-20 x 1.5" screws and washers;
-turn frame over and place short double-height tubes, with angled ends and latches, at corners having extra holes on bottom side (each tube is lettered to correspond with only one corner);
-loosely attach short tubes to frame with 1/4-20 x 3/8" screws;
-when all pieces have been loosely joined with screws, tighten all screws, proceeding from the center outward;

Final assembly:
-place rectangular frame on top of tripod so that the round hole in the square aluminum block fits over the round aluminum disk at the center of the tripod, and the clamp tubes are on bottom side and toward apex of triangle;
-place the 1/4" steel washer over the disk on the tripod and insert the large SS screw, tightening it to hold the frame to the tripod;

Tripod installation:
-place on fairly level surface with apex of triangle oriented approximately toward the direction of the desired central meridian (geographic N), within ±10 degrees;
-from here on the apex is assumed to point north;
-level the tripod and rectangular frame using the supplied 2' carpenter's level, first along the N-S direction (apex - base), and then along the E-W direction (along the base of the triangle), by turning the wingnuts to adjust the height of each corner of the tripod;
-tighten the upper nuts at the corners of the tripod;