CESSNA 206

Royal Products Corporation

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P. O. BOX 22186 WELLSHIRE BRANCH • CABLE ADDRESS: "ROYAL" DENVER, COLO., U.S.A.

CONGRATULATIONS ON HAVING JUST PURCHASED ONE OF THE FINEST SCALE MODEL KITS AVAILABLE TODAY. THIS KIT IS BROUGHT TO YOU BY ROYAL PRODUCTS WHO ALSO SUPPLIED THE 1970 NATIONAL SCALE WINNING "SPIRIT OF ST. LOUIS".

THERE IS A GREAT DEAL OF INDIVIDUAL DETAIL TO BE TAKEN CARE OF PRIOR TO GLUING A TO B SO SIT BACK, RELAX AND CONSIDER THE FOLLOWING PRELIMINARIES.

YOUR CHOICE OF THIS KIT WAS INITIALLY MOTIVATED BY SOME PRIOR EXPERIENCE OR PREFERENCE FOR THIS PARTICULAR MODEL. PERHAPS IT IS A REAL PLANE OF THE SAME DESIGN YOU HAVE FLOWN OR MAYBE OWN NOW. THE POINT IS, RIGHT NOW, ONLY YOU ARE FAMILIAR WITH THAT FEELING. HAVEN'T YOU NOTICED THAT WHEN YOU SPEAK OF THIS BEAUTIFUL SCALE JOB THERE IS THE CASUAL INDIFFERENT LOOK ON YOUR COMPANION'S FACE? WOULD YOU BELIEVE THE SAME INDIFFERENT FEELING COULD BE IN THE JUDGE'S MIND AS HE INSPECTS THIS BEAUTY YOU WILL CREATE? 'TIS POSSIBLE, ISN'T IT?

THE ABSOLUTE FIRST THING YOU MUST DO AT THIS VERY TIME IS DETERMINE WHETHER THIS IS TO BE THE "ULTIMATE SCALE JOB" OR AN "EYEBALL SCALE". IF YOU CHOOSE "EYEBALL SCALE", WHICH IS JUDGED FROM 25 FEET AWAY, THEN YOU MAY AS WELL TURN TO CONSTRUCTION TECHNIQUES AND START BUILDING! HOWEVER, IF YOUR CHOICE IS "ULTIMATE SCALE" , THEN YOUR PROJECT HAS NOT YET BEGUN.

THE NEXT DECISION YOU MUST MAKE IS WHICH PARTICULAR TYPE, MODEL AND SERIES YOU INTEND TO DUPLICATE TO THE NTH DEGREE. THE TYPE (THAT IS BOMBER, FIGHTER, ETC.) HAS ALREADY BEEN DECIDED AS YOU BOUGHT THE KIT. THE MODEL (THAT IS 24-25-26 ETC) MAY NEED TO BE YOUR CHOICE AS FOR INSTANCE, THERE IS NO EASILY RECOGNIZABLE DIFFERENCE BETWEEN A B-44 AND A B-50. THE SERIES VARY WIDELY AND YOU WILL NEED TO MAKE THIS DECISION YOURSELF. FOR INSTANCE THERE IS VERY LITTLE DIFFERENCE BETWEEN A B-52B, B-52C, B-52D AND B-52E TO THE CASUAL OBSERVER, BUT TO THE TRAINED EYE OF A COMPETITION SCALE JUDGE THIS MAKES THE FIRST GREAT DIFFERENCE.

ONCE YOUR CHOICE HAS BEEN MADE AS TO EXACTLY WHICH TYPE, MODEL AND SERIES YOU WILL BUILD, YOUR NEXT TASK WILL BE TO COMPLY WITH THE "SCALE PRESENTATION". BY THIS I MEAN YOU MUST ASSEMBLE AND ARRANGE THE "PROOF" YOU INTEND TO USE, TO THOROUGHLY CONVINCE THE JUDGE THAT YOURS IS THE BEST OF THE BUNCH! KEEP IN MIND THAT YOU CAN'T "TALK" HIM INTO IT SO EXTRA EFFORT SPENT AT THIS STAGE REAPS GREAT BENEFITS LATER.

START WITH AN ACCURATE, AUTHENTIC 3-VIEW DRAWING PREFERABLY FROM THE MANUFACTURER, AND WHICH GIVES DIMENSIONS OF THE REAL PLANE. IF NOT AVAILABLE, THEN SUCH GREAT WORKS AS THE COMMERCIAL SCALE 3-VIEWS BY NIETO, NYE, WYLAM, SUPERSCALE, ETC. ARE ACCEPTABLE. I KNOW THIS BECAUSE I JUST READ IT IN THE CURRENT AMA MODEL AIRCRAFT REGULATIONS BOOK WHICH INCIDENTALLY IS THE BOOK BY WHICH YOUR EFFORT WILL BE RATED. NEEDLESS TO SAY, BEFORE YOU GO ANY FURTHER, GET REAL FAMILIAR WITH THE RULES FOR SCALE.

ONE MORE WORD OF ADVICE ABOUT THE "SCALE PRESENTATION". THE BETTER IT LOOKS, THE BETTER YOUR SCORE WILL BE SO DON'T CUT CORNERS OR GO SECOND CLASS! 'NUFF SAID?

NOW THAT YOU'VE ASSEMBLED THE 3-VIEW, TECH DATA, PICTURES AND REFERENCES AND CONSTRUCTED A WELL ORGANIZED, WELL PLANNED, EYE APPEALING PRESENTATION, YOU MUST STUDY, COMPARE, MEASURE AND CAREFULLY PLAN THE MODEL YOU WILL BUILD.

FIRST, SELECT THE SCALE RATIO YOU WILL USE. THIS HAS BEEN <u>APPROXIMATED</u> IN OUR KITS BECAUSE THERE ARE SO MANY VARIANTS BETWEEN EACH DIFFERENT SERIES OF THE BASIC AIR PLANE. YOU MAY CHOOSE THE SERIES WHICH IS CLOSEST TO OUR KIT - STILL YOU WILL HAVE TO MAKE ADJUSTMENTS, PERHAPS AN INCH IN WINGSPAN, 1/2 INCH IN LENGTH OR SO ON. THE POINT IS--THIS IS THE TIME TO PLAN FOR THESE ADJUSTMENTS AND THEY MUST ALL BE THE <u>SAME RATIO</u> FOR MAXIMUM POINTS.

THE EASIEST WAY TO DO THIS IS TO OBTAIN A PAIR OF "PROPORTIONAL" DIVIDERS. THIS IS A TOOL WITH A MOVEABLE PIVOT IN THE MIDDLE AND WHEN OPEN LOOKS LIKE AN "X" WITH NEEDLE POINTS AT EACH TIP. WITH THESE YOU MAY SET THE "RATIO" SO THAT MEASURING WITH ONE END OFF THE 3-VIEW WILL GIVE THE DESIRED MEASUREMENT AT THE OTHER END. CAREFULLY ADJUST THE DRAWINGS WE'VE PROVIDED TO <u>EXACTLY</u> MATCH THE 3-VIEW YOU WILL USE.

NEXT, CAREFULLY STUDY THE MATERIAL YOU'VE GATHERED AND MAKE NOTE OF EXACTLY WHICH DETAILS YOU WILL INCLUDE ON YOUR MODEL AND WHERE AND HOW THEY WILL BE INCORPORATED. FOR INSTANCE, DO YOU PLAN ON FLAPS? RETRACTABLE GEAR? LIGHTS? THOUSANDS OF TECHNIQUES ARE INCLUDED IN MAGAZINES AND COLUMNS WHICH ARE DEVOTED TO SCALE CONSTRUCTION TECHNIQUES SO I'LL LEAVE YOU TO HUNT UP ALL THAT FOR YOURSELF.

WE WILL NOW CONSIDER THE BASIC AIRPLANE AND THEN IT'S CONSTRUCTION.

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THE CESSNA 206 SUPER SKYWAGON

A TRIP TO YOUR LOCAL CESSNA DEALER WILL REVEAL THAT THERE ARE THREE VERSIONS OF THE CESSNA MODEL 206:

U206 SUPER SKYWAGON (STANDARD CARGO, UTILITY MODEL WITH DOUBLE LOADING DOORS.)

P206 UTILITY (SIMILAR TO THE U206 BUT WITH NORMAL PASSENGER DOOR AT FRONT OF THE CABIN ON THE RIGHT SIDE INSTEAD OF DOUBLE DOORS.)

P206 SUPER SKYLANE (DELUXE SIX-SEAT VERSION.)

FURTHER YOU WILL FIND THE DEALER HAS A GREAT DEAL OF LITERATURE AND PICTURES. IN HIS MAINTENANCE SHOPS THERE ARE MANY MANUALS AVAILABLE WITH THREE VIEWS, EXPLODED VIEWS, SPECIFICATIONS AND DETAILS. WHAT'S MORE, YOU ARE LIKELY TO FIND A REAL 206 SOMEWHERE AROUND THE AIRPORT AND THUS, IF YOU ARE CAREFUL, SHOULD BE ABLE TO EXACTLY DUPLICATE IT FOR A TRUE SCALE WINNER.

CESSNA DESCRIBES ITS 206 AS FOLLOWS: TYPE: SINGLE ENGINE CARGO UTILITY AIRCRAFT; WINGS: NACA 2412 FROM ROOT TO JUST INBOARD OF TIP. TIP IS SYMETRICAL. DIHEDRAL: 1° 44' INCIDENCE: 1° 30' AT ROOT - 1° 30' AT TIP. FUSELAGE: ALL METAL SEMI MONOCOQUE. TAIL: CANTILEVER ALL METAL SWEPT VERTICAL WITH LARGE TRIM TAB IN STANDARD ELEVATOR. LANDING GEAR: NON RETRACTABLE TRICYCLE. POWER PLANT: 285 HP CONTINENTAL 10-520-A SIX CYLINDER HORIZONTAL OPPOSED. DRIVING A MCCAULEY DZA 34C 58/90AT-8 TWO BLADE METAL CONSTANT SPEED PROP.

SPECIFICATIONS:

WING SPAN:	36' 7"
LENGTH OVERALL:	27' 9"
HEIGHT OVERALL:	9' 9"
TAIL SPAN:	11' 8"
WHEEL TRACK:	8' 1 3/4"
WING AREA:	175.5 SQUARE FEET
EMPTY WEIGHT:	1705 LBS.
MAX. GROSS:	3300 LBS.
SERVICE CEILING:	16,700 FT.
NORMAL RANGE:	640 MILES

If you are unable to get to a Cessna Dealer, you might write to:

Cessna Aircraft Company
Commercial Aircraft Division
Wichita, Kansas, 67201

and state your needs. Also, Cessna 206 data is available in Jane's All The World's Aircraft and also in many flying magazines at the newsstand.

Notice on the plans, a statement "Scaled from 2" = 1' 0" (1967 model). This is there for your information, so use it accordingly. This model lends itself nicely to scale and for pilots/passengers you'll need 2" = 1' dolls (i.e. a doll 8" tall won't do as it compares to a 4' pilot). If you intend to make this project a true scale model, you must accurately measure and compare variances among the different Cessna 206s you will discover as you develop your scale data.

CONSTRUCTING THE CESSNA SUPER SKYWAGON

Before you glue anything, carefully unfold the plans and compare them with the scale data you've collected. Examine with detail every consideration. Are you going to incorporate flaps? Lights? Cowl flaps? Brakes? etc. etc. If you are, now is the time to provide for them. Sketch in the additional requirements. Also lay out your radio gear and make plans for its location. A word to the wise here; if this is to be true scale, the radio must be hidden (i.e. aileron and flap servos in wing, rudder and elevator under the seats, receiver and battery pack out of sight and so forth). Finally, notice the model has 654 square inches of wing area. The 8-9 lb. figure for radio weight is based on older model radios which were much heavier than the new ones. The point is don't build heavy. The lighter this model is, the better it will fly. Nuff said?

Let's begin construction with the tail. Study the isometric drawings in the upper right hand corner of the plans. Glue R-1 to R-2 as shown. Use masking tape to attach the two parts of V-7 (on one side only) then fold it back, glue it, pin in position with tape down, and add V-3, V-4, V-5 and V-6 as shown. Install the 1/8" x 3/8" balsa ribs and top off with the other V-7 assembly. Glue V-1 and V-2 together but not to the Vertical fin until after final assembly.

The elevators are tapered so an easy way to do this is build them on a flat surface by gluing E-1, E-2, E-3, E-4 and E-5 together. Next, add the 1/8" x 3/8" balsa ribs and when dry sand the top flat and fit the wire horn as shown.

Build the stab by pinning S-9 in place and then add ribs S-1 through S-7, S-11 and finally two S-8's. When dry remove from the board, sand to shape and carefully add the "skins" (made of two S-13's and S-14 joined together) without stress to insure no warp is built in. Finally, add the tips (S-10's) and when dry sand to shape.

Next step is the wing. Build each panel. Construct the center section and incorporate appropriate dihedral. Study the small isometric drawings of detail and decide what features, such as lights, flaps etc., to incorporate. These instructions will include scale wing incidence which, if used, should make a solid point for your scale presentation. Essentially, the incidence spoken of in the spec. sheet works out to 3^{o} of washout at the tips which is desireable since it contributes to stability and stall control.

Draw a centerline on ribs W-3, two W-4's and W-10. Cut the spars to length, glue the spar doublers in place and set the top spar aside. Pin the bottom spar in place. Pin W-3 and W-4 next to W-5 making certain the centerlines are parallel to the work bench top. Now pin W-10 in place with the centerline inclined 3^{o} such that the trailing end is higher than the leading edge. Now, slip a strip of scrap balsa beneath the aft edge of W-10 and W-4 such that it will support each rib as measured. Be sure it is straight since it will determine the angle of remaining ribs W-5 through W-9. Do likewise, putting another strip from W-4 to W-3 which will support the remaining W-4's. Now carefully pin and glue all ribs W-3 through W-10 onto the bottom spar. Glue the top spar in place and add the 3/32" sheet trailing edge planking. Install W-22 and add W-14, W-15, W-13, W-12 and the

LEADING EDGE 3/32" PLANKING. ADD THE RIB CAPSTRIPS ON TOP ONLY. WHEN DRY REMOVE FROM THE PLANS AND INVERT THE STRUCTURE. INSTALL 3/32" BALSA WEBS (PRE-CUT) BETWEEN RIBS ON THE FACE OF THE WING SPARS FROM W-3 OUT TO W-8. THE GRAIN MUST BE VERTICAL AND BE SURE TO LEAVE NO GAPS. INSTALL W-16 AND W-17 INSIDE W-3. ADD W-18, W-19 AND THE STRUT BRACKET AS SHOWN ON THE PLAN. WHEN DRY REMOVE ALL THE PINS AND GLUE ON THE LEADING EDGE PLANKING. BE SURE NO STRESS IS INVOLVED AS YOU MAY DESTROY THE "WASHOUT" OR CAUSE AN UNWANTED WARP. NEXT ADD THE W-12, W-13, W-14 AND W-15 PIECES AND THEN BEVEL THE EDGE OF THE TOP TRAILING EDGE SHEET WHILE CAREFULLY ADDING THE BOTTOM SHEET AND CAPSTRIPS (IN THAT ORDER). INSTALL THE AILERON LINKAGE AND BELLCRANK AS SHOWN ON THE PLANS, INSURING A SMOOTH OPERATION OF ALL COMPONENTS. AT THIS TIME BUILD THE AILERON ON ITS TOP SHEET, BOLTING THE HORN IN PLACE ON W-26 AND THEN INSTALLING IT AND THE W-24'S AS SHOWN. ADD W-23 AND THE BOTTOM SHEET. CHECK THE LINKAGE FIT AND MOVEMENT. THEN CHECK THE WING ALIGNMENT WITH THE AILERON TAPED IN PLACE. IF YOU CANNOT "SAND IN" THE "WASHOUT" THEN HOLD THE AILERON IN STEAM AND BEND IT TO SHAPE. WHILE HOLDING IT, REMOVE TO COOL AND RECHECK IT. WHEN SATISFIED WITH THE CONTOUR, ADD THE WING PANEL LEADING EDGE AND TIP, AS SHOWN ON THE PLAN, AND SAND IT ALL TO SHAPE. BUILD THE REMAINING PANEL LIKEWISE.

TO BUILD THE CENTER SECTION OF THE WING, EACH PANEL MUST BE PINNED IN PLACE WITH THE TIPS BLOCKED UP 1 3/8" AS SHOWN ON THE PLANS. TO DO THIS, THE BOTTOM OF THE BOTTOM SPARS MUST BE BEVELED. WHEN SATISFIED WITH THE FIT, ADD WC-2 FILLER WITH WC-3 PLYWOOD BRACES AND FINALLY WC-1.

THEN ADD W-2, W-1, WC-4 AND WC-5 IN THAT ORDER. INSTALL WC-6 FALSE RIBS AND WC-10 PLANKING. CARVE AND SAND WC-7'S TO SHAPE AND ADD THE 1/8" X 3/8" BALSA STRIP AND TOP PLANKING. WHEN DRY, SAND THE WING TO SHAPE AND BUILD THE STRUTS AFTER THE FUSELAGE HAS BEEN BUILT.

ALIGNMENT IS THE BIG PROBLEM WE FACE WHEN BUILDING THE FUSELAGE. BEFORE BEGINNING, CAREFULLY DRAW A VERTICAL CENTERLINE ON EACH FORMER. USE A BLACK PEN TO INSURE IT SHOWS WELL. GLUE F-1 AND F-2 TOGETHER. USE EPOXY TO LAMINATE F-3, F-4, F-5 AND F-22 AS SHOWN. TAKE CARE TO MAKE ONE RIGHT AND ONE LEFT. ADD THE 1/4" SQUARE BALSA LONGERONS AS SHOWN AND CHECK LOCATION USING SEVERAL FORMERS. REFER TO THE ISOMETRIC DRAWING, JUST ABOVE THE DORSAL FIN, AND INSTALL ALL FORMERS AS SHOWN (THE LEFT FUSELAGE SIDE IS NOT SHOWN FOR CLARITY). YOU WILL BE ABLE TO SEE YOUR CENTERLINE MARKS AS YOU GO AND MUST INSURE THEIR ALIGNMENT OR RISK THE INTOLERABLE POSSIBILITY OF A CROOKED FUSELAGE. WHEN SATISFIED WITH THE ALIGNMENT, LET THIS STRUCTURE DRY OVERNIGHT. REFER TO THE DRAWINGS ABOVE THE WING AND INSTALL ALL THOSE PARTS SHOWN ONLY AFTER THE 1/8" BALSA FUSELAGE TOP PLANKING IS INSTALLED. TO INSURE PROPER PLACEMENT, F-30 AND F-23 ARE INSTALLED AFTER THE WING IS FITTED. WITH THE WING IN PLACE, PIN THE STAB AND VERTICAL FIN WITH PROPER ALIGNMENT AND THEN ADD ALL THE TAIL BLOCKS AS SHOWN. WHEN SECURE, REMOVE THE WING, STAB AND FIN AND TURN THE STRUCTURE OVER. ADD THE 1/8" SHEET BALSA COVERING OVER THE 1/4" SQUARE LONGERONS THAT SPAN FROM F-14 TO F-21. BOLT THE DURAL GEAR IN PLACE AND ADD F-32 BY "SPOT" GLUING IT TO ALLOW FOR EASY REMOVAL IF NECESSARY. AFTER NOSE GEAR IS

BOLTED IN, ADD THE STRUT FITTINGS AND BOTTOM PLANKING BETWEEN F-8 AND F-13. REFER TO THE DRAWINGS IN FRONT OF THE NOSE GEAR AS WELL AS SIDE AND TOP VIEWS WHEN ASSEMBLING ALL THE NOSE BLOCKS. YOU MAY PREFER TO PLANK THE NOSE TOP AND INSTALL THE TANK AND ENGINE PRIOR TO INSTALLING THE NOSE BLOCK. WHEN ASSEMBLING THE WHEEL FAIRINGS, YOU SHOULD REFER TO YOUR SCALE DATA BECAUSE THERE ARE SEVERAL POSSIBLE SHAPES. FINISH THIS PHASE WITH THE CARVING AND SANDING AND THEN GO ON TO THE NEXT STEP.

PREPARED FOR AND WRITTEN FOR:
ROYAL PRODUCTS CORP.

BY: JAMES SIMPSON
DECEMBER 1971

THE FINISH WORK

The construction phase concluded with the remaining parts being stuck one to another and/or "shape" sanded. This pile of parts which may resemble an airplane depending on arrangement must now be finished to satisfy the goal.

One of the keys to a good finish is sand, sand, sand, dust it off and sand once more. Remember that, as it's important. The first sanding is done with rougher open coat sand paper (I prefer aluminum oxide or garnet paper) 280-320 range. I glue mine to 1"x4"x12" blocks with spray contact adhesive or "sticky back" by Scotch. It's best to sand all components prior to final assembly and is also much easier. The next sand is done with 320-400 grit paper. After this step take a good rest, then come back and sand until tired again. Now wipe the plane down with a clean soft rag and check it for seams, low spots, and symmetry. Then sand once more with the 400 grit.

If you plan to "MonoKote" your eyeball scale, it is done at this stage on bare wood and in accordance with the directions furnished with the "MonoKote". After it's all monokoted, go to the final assembly step.

If you plan an ultimate scale job finish you must paint it 'cause no real airplanes are monokoted. (Too bad, though!) You must decide what type hinges you will use now because it makes a difference. If you are going to use hinges with removable hinge pins, then install all hinges and control rods, linkage, radio gear, (according to manufacturers instructions) etc., at this time. Then dismantle it and cover it individually. If you are to use "hidden" hinges (like the no glue molded nylon ones) then cover all the separate pieces and then assemble them.

To prepare the model for covering, you dope the balsa with at least a 50/50 dope-thinner mixture. After each coat sand lightly and continue until no "fuzz" occurs after doping. (Usually 3 or 4 coats). Now cover with the material of your choice (for instance, silk, silron, nylon etc.) check the grain (look at a corner of the material to discover the grain is parallel to the heaviest or most dense threads whichever the case). The grain must go lengthwise on each piece.

To apply the covering, cut it oversize, hold in place and spray with a fine fine mist water sprayer carefully working out all the wrinkles and dope it while still wet with the brush nearly parallel to the surface and lightly, lightly stroking it. If done while wet, the dope will "float" on the damp surface and dry "white or cloudy" but will require far fewer coats and the cloudy look will disappear after the 2nd or 3rd coat.

Carefully trim (with a double edge razor blade) and sand the "rough" areas but be careful not to "cut" or "sand" out the fibers over a "high" place like a rib.

When surface remains smooth after a coat of dope (3rd or 4th coat) it's time to thin the mixture and add talc or cornstarch for filler "body". Sand after each coat

UNTIL DESIRED SMOOTHNESS IS ACHEIVED. THEN ASSEMBLE THE PARTS AND SPRAY PAINT THE FINAL COLORS TO SUIT. JUST REMEMBER ALOT OF PLANES MODELED ARE GLOSSY WHEN THE PROTOTYPE WAS NOT. THIS MISTAKE COSTS POINTS. AS I MENTIONED EARLIER, I WON'T PRESUME TO ADVISE ON ACHIEVING THE "ULTIMATE SCALE" FINISH, BUT IF IN DOUBT, THERE ARE VOLUMES WRITTEN ON THE SUBJECT. THERE MAY EVEN BE A "SCALE NUT" IN YOUR AREA WHO CAN HELP. DON'T FORGET THE PLASTIC MODELER WHO KNOWS FINISHES. REMEMBER ALSO, THE PLASTIC MODEL IS AN EXCELLENT SOURCE OF SCALE DETAIL AS WELL.

PREPARED AND WRITTEN FOR ROYAL PRODUCTS CORP.
BY JAMES L. SIMPSON

BALANCE AND FLIGHT

THERE BEFORE YOU, IS THE RESULT OF THESE MANY EFFORTS. ALL OF THE WORK IS DONE, YOU SAY. NAY, SAY I. ALL OF WHAT IS DONE, ANYONE COULD DO. WHAT LIES AHEAD IS IMPORTANT FOR IT MAKES AN ALMIGHTY DIFFERENCE.

THIS PHASE BEGINS WITH THE MODEL READY FOR FLIGHT AND ENDS WITH A SUCCESSFUL LANDING. BEGIN WITH THE AIRPLANE ASSEMBLED AS IF TO FLY. SET IT ON A SMOOTH SURFACE WITH A PLAIN UNBROKEN BACKGROUND AND GO AROUND BEHIND THE CRAFT AND "EYEBALL" IT. VERY CAREFULLY CHECK TO SEE THAT THE RUDDER AND VERTICAL FIN ARE PERFECTLY ALIGNED. IN THE CASE OF TWIN RUDDERS, MEASURE THEM ACCURATELY. IS THE HORIZONTAL STABILIZER PARALLEL TO THE WING? ARE THERE ANY WARPS IN ANY OF THE FLYING SURFACES? IS THE FUSELAGE STRAIGHT? IF THE ANSWER IS YES TO ALL THESE QUESTIONS, YOU ARE IN GREAT SHAPE. IF NOT, ADJUST IT SO IT IS. YOU KNOW WHAT MUST BE DONE TO ALIGN SURFACES BUT WAIT AWHILE TO DO THAT WHILE WE CONSIDER WARPS.

WARPS ARE CROOKED OR "BENT" SURFACES. THEY CAUSE MOST ACCIDENTS. IT ISN'T NECESSARY AS THEY CAN BE FIXED. ON ANY WOOD AIRPLANE WHICH HAS BEEN DOPED OR PAINTED WITH ANY OF SEVERAL DIFFERENT PAINTS THE PROBLEM IS TO SOFTEN THE PAINT AND TWIST THE SURFACE OPPOSITE THE WARP, THEN LET IT HARDEN AGAIN.

THE PAINT CAN GENERALLY BE SOFTENED TWO WAYS. IT CAN BE HEATED OR DISSOLVED. TO HEAT IT, USE STEAM. IF A SMALL SURFACE IS THE PROBLEM, A TEAKETTLE OVER A STOVE DOES NICELY. IF A LARGE SURFACE IS WARPED, THE OUTLET BEHIND A STEAM CLEANING PLANT WILL DO THE JOB. YOU APPLY BOTH SIDES OF THE WARPED SURFACE TO THE STEAM UNTIL GOOD AND HOT, THEN HOLD OPPOSITE WARP, REMOVE FROM STEAM AND ALLOW TO COOL WELL. WAIT AWHILE, THEN CHECK AGAIN. DO THIS UNTIL THE WARP IS GONE.

TO DISSOLVE THE PAINT, USE MORE COATS OF PAINT OVER BOTH SIDES OF THE WARP. THIS DOESN'T WORK ON ALL PAINT, BUT HAS BEEN DONE SUCCESSFULLY WITH DOPE AND LACQUER. I HAVE ALSO SEEN GUYS FASTEN THE SURFACE DOWN IN PROPER POSITION AND PAINT AND PAINT UNTIL IT WILL STAY. THAT'S THE HARD WAY.

NOW THAT ALL THE WARPS ARE GONE, REASSEMBLE THE PLANE, PUT IT ON A TRUE FLAT SURFACE AND MEASURE THE DISTANCE FROM THAT SURFACE TO LEADING EDGE OF WING, THEN FROM THE SURFACE TO TRAILING EDGE OF WING AT SAME STATION (CHORD POINT) AND VERIFY THAT IT AGREES WITH THE INCIDENCE SHOWN ON THE PLANS. DO THE SAME FOR THE TAIL. IF IT DOESN'T AGREE, DO WHATEVER IS NECESSARY TO MAKE IT AGREE.

NEXT CHECK THE THRUST. FASTEN A STRING TO THE CENTERLINE OF THE PLANE BACK NEAR THE TAIL AND COMPARE THE DISTANCE TO EACH PROP TIP WITH THE PROP HORIZONTAL INSURING THAT THE OFFSET AGREES WITH THAT SHOWN ON THE PLANS. THEN VERTICAL FOR DOWNTHRUST.

NOW, CHECK THE BALANCE POINT TO BE SURE IT IS EXACTLY AS SHOWN ON THE PLAN. IF NOT, ADD WEIGHT OR RELOCATE THE RADIO IN SUCH A MANNER THAT IT AGREES WITH THAT SHOWN.

LASTLY, TURN THE RADIO ON AND OPERATE ALL THE SURFACES ONE AT A TIME TO INSURE THAT THEY MOVE IN THE PROPER DIRECTION, DO NOT BIND, DO NOT INTERACT WITH OTHER CONTROLS AND DO RUN SMOOTHLY. WHEN YOU HAVE SATISFIED ALL THESE REQUIREMENTS, PUT THE OUTFIT ON CHARGE ALL NIGHT BEFORE YOU GO FLY.

WHEN YOU GET TO THE FIELD, DON'T BE AFRAID TO ASK AN EXPERT TO FLY YOUR PLANE FOR YOU IF YOU ARE A NOVICE OR IF YOU HAVEN'T FLOWN IN AWHILE.

IF YOU DECIDE TO FLY IT YOURSELF, PLAN YOUR FLIGHT FROM TAKEOFF, THROUGH CLIMB, TURNS, PATTERN, APPROACH AND LANDING WITH CAREFUL CONSIDERATION GIVEN TO WIND DIRECTION, RUNWAY ORIENTATION, OTHER TRAFFIC AND RELATIVE POSITION OF THE SUN.

I HAVE SEEN EVERYTHING MENTIONED IN THIS CHAPTER CAUSE A SCALE JOB TO CRASH WHEN NOT DONE PROPERLY, SO IF YOU WILL CAREFULLY TEND EACH ONE OF THESE POINTS, YOUR ODDS WILL BE MUCH MUCH BETTER. DON'T YOU AGREE?

GOOD LUCK AND HAPPY LANDING!

PREPARED AND WRITTEN FOR ROYAL PRODUCTS CORP.
BY JAMES L. SIMPSON