GREEN TRANSPORTS

737 & A320 Family Replacements

Presented

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PACIFIC NORTHWEST SECTION

AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS

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Retired "Graybeards" of THE BOEING COMPANY

GREEN TRANSPORT CHARACTERISTICS

ALL DOUBLE SEATS

SHORT TAKEOFF & LANDING FIELD LENGTHS

MINIMUM TRANS-ATLANTIC RANGE

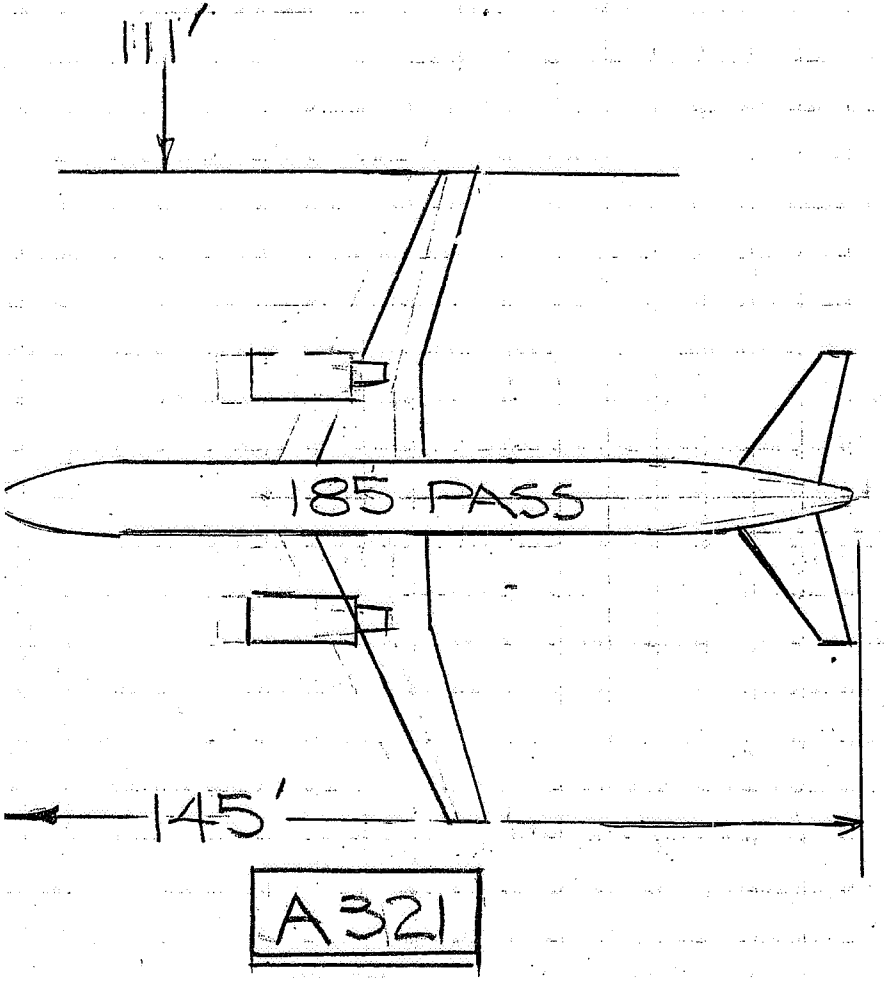
CRUISE MACH NUMBER 0.9

QUIET-POTENTIAL 24 HOUR OPERATIONS

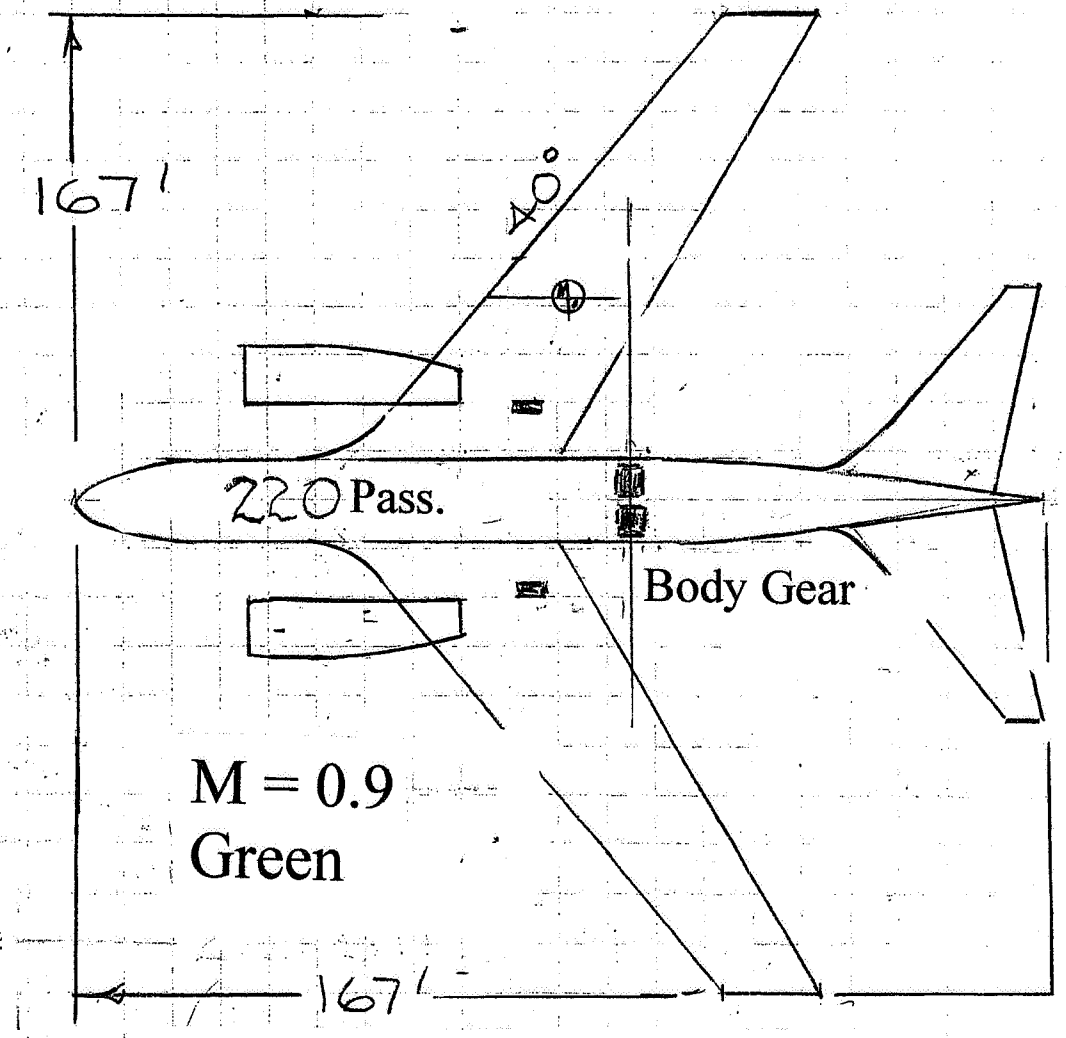
FLIGHT ABOVE CONTRAIL LEVEL, ROUGH AIR, STRONG WINDS

SEA-LEVEL CABIN ALTITUDE, 100% FRESH AIR, DISEASE FREE CONDITIONING

Base Model Green Transport



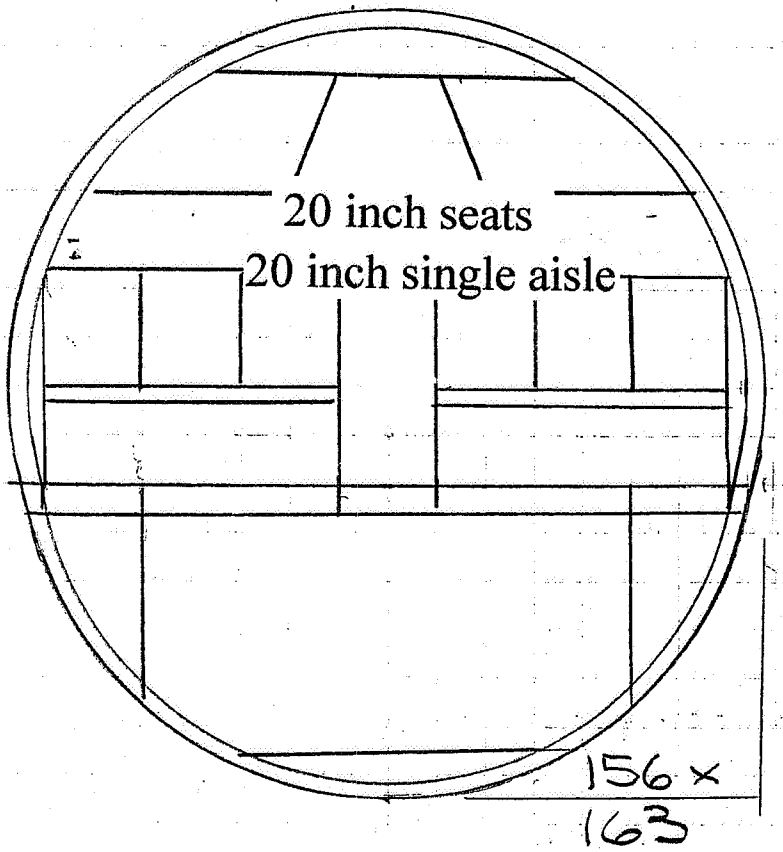
35,000 lb. Thrust CFM class engines



70,000 lb. Thrust Genx class engines

A320 Family

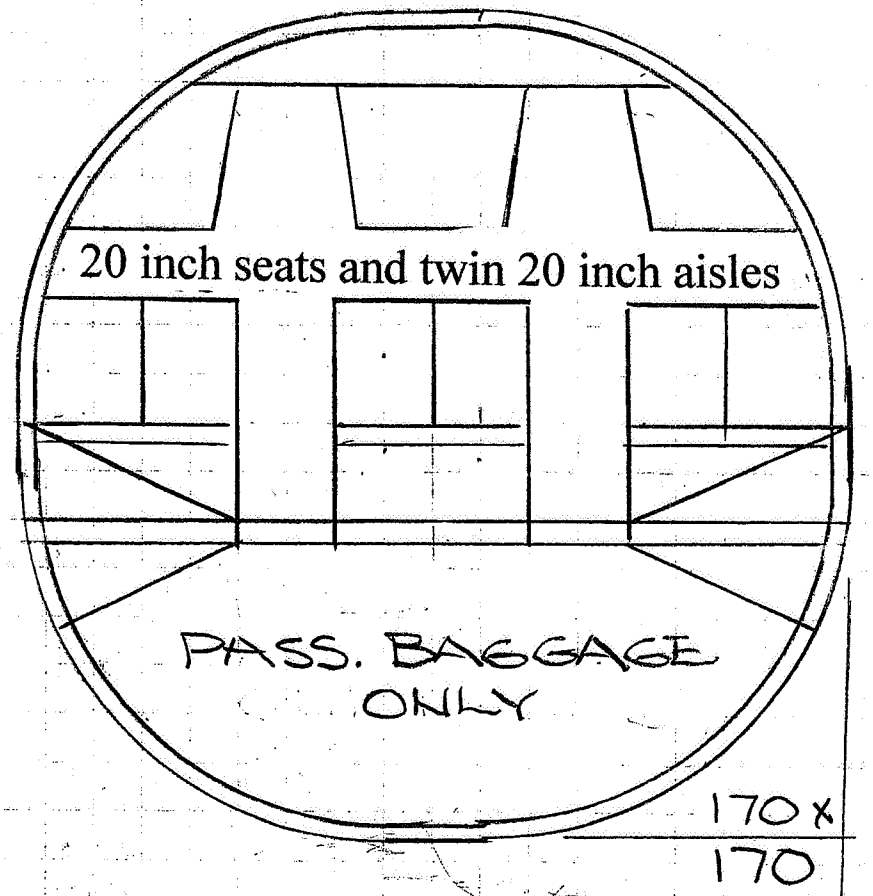
107 to 185 Pass.



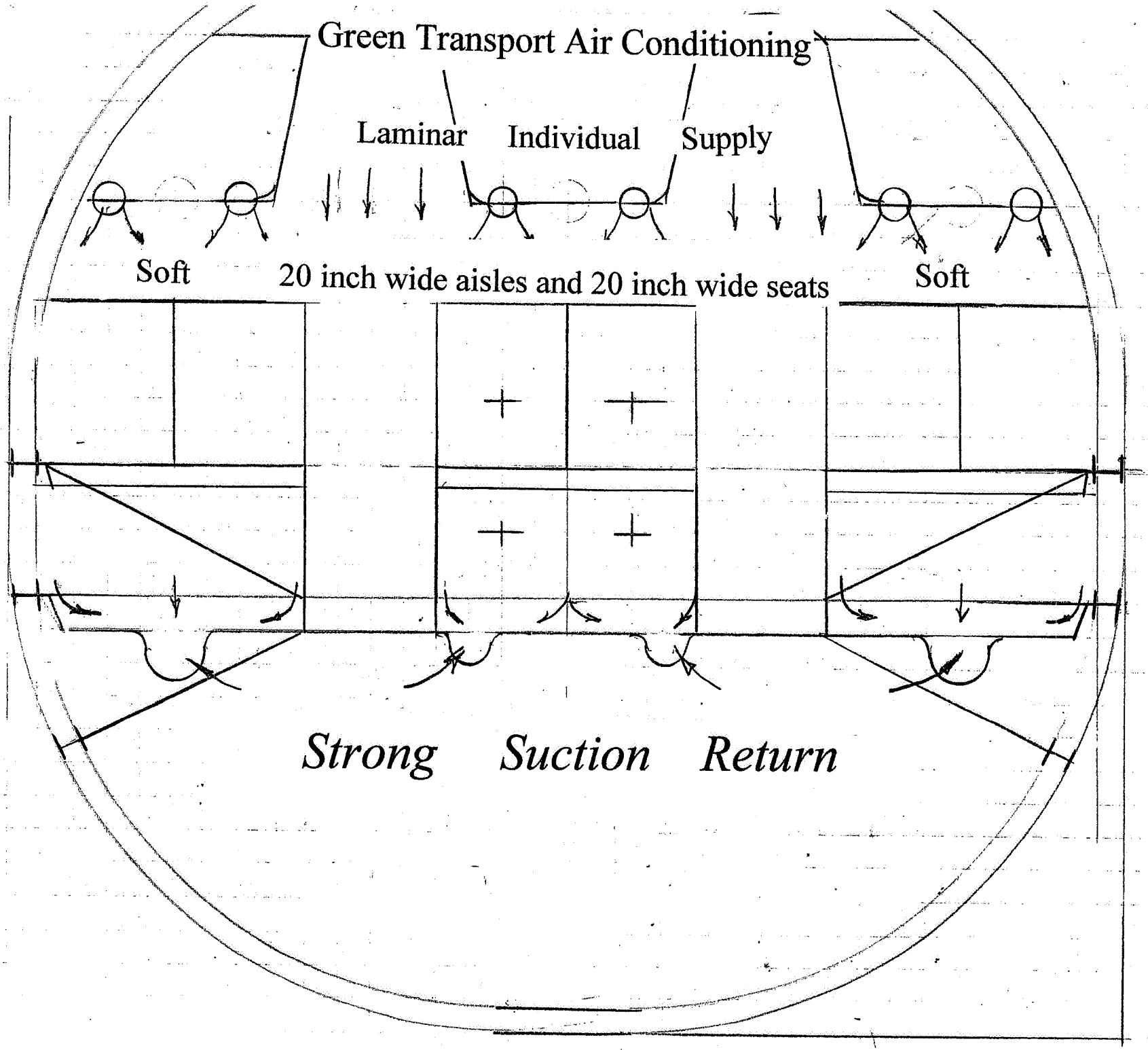
111' SPAN
103/146 L.
1320 FT²
30/35,000 ENG.

Green Transport Family

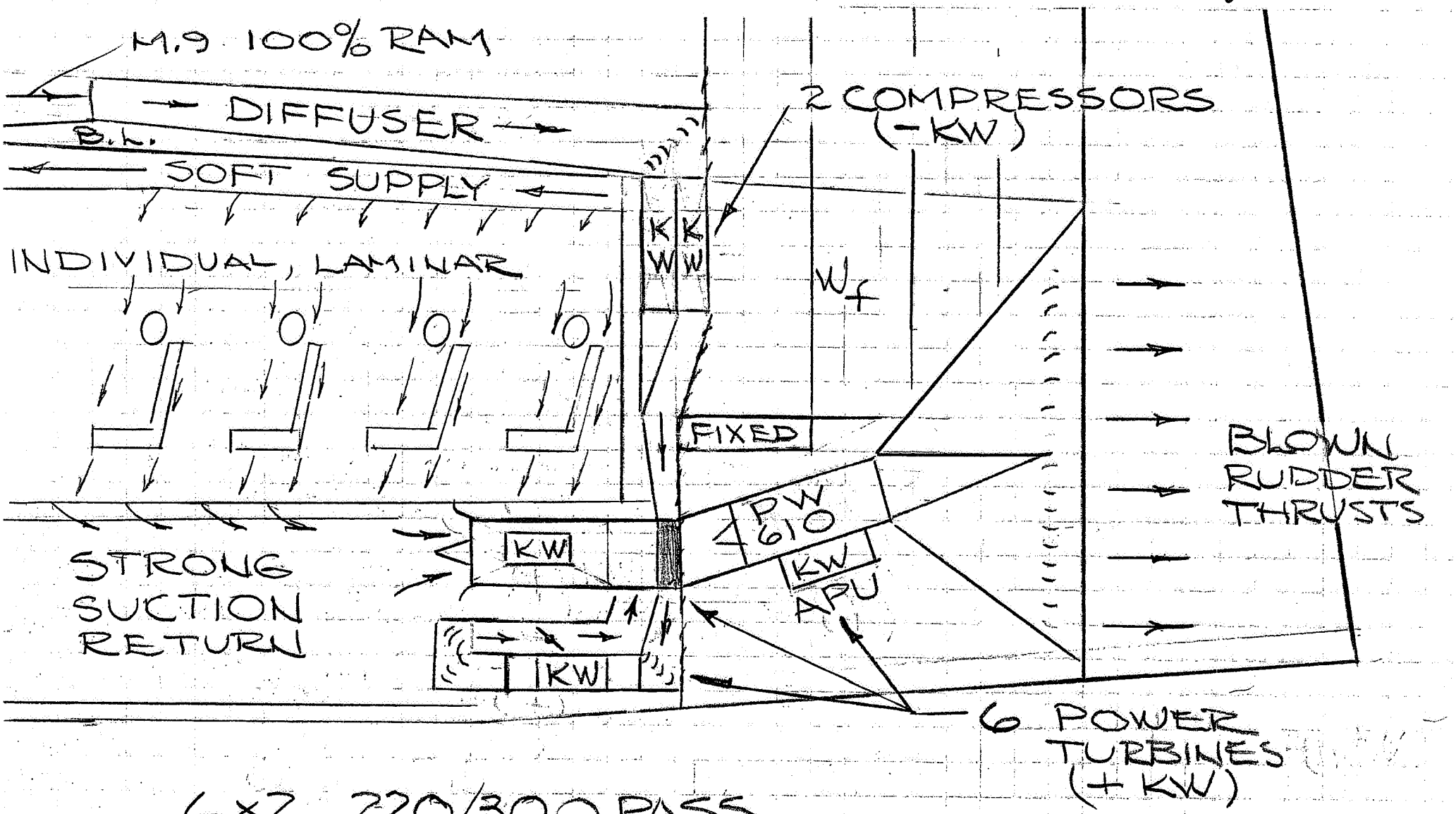
220 to 300 Pass.



167/208 SPAN
167/208 LENGTH
4600/5040 FT²
70/90,000 ENG.


Green Transport Air Conditioning
Laminar
Individual
Supply
Soft
20 inch wide aisles and 20 inch wide seats
Soft
Strong
Suction
Return

Green Transport Air Conditioning 100% Fresh Clean Air System



6×2 220/300 PASS.

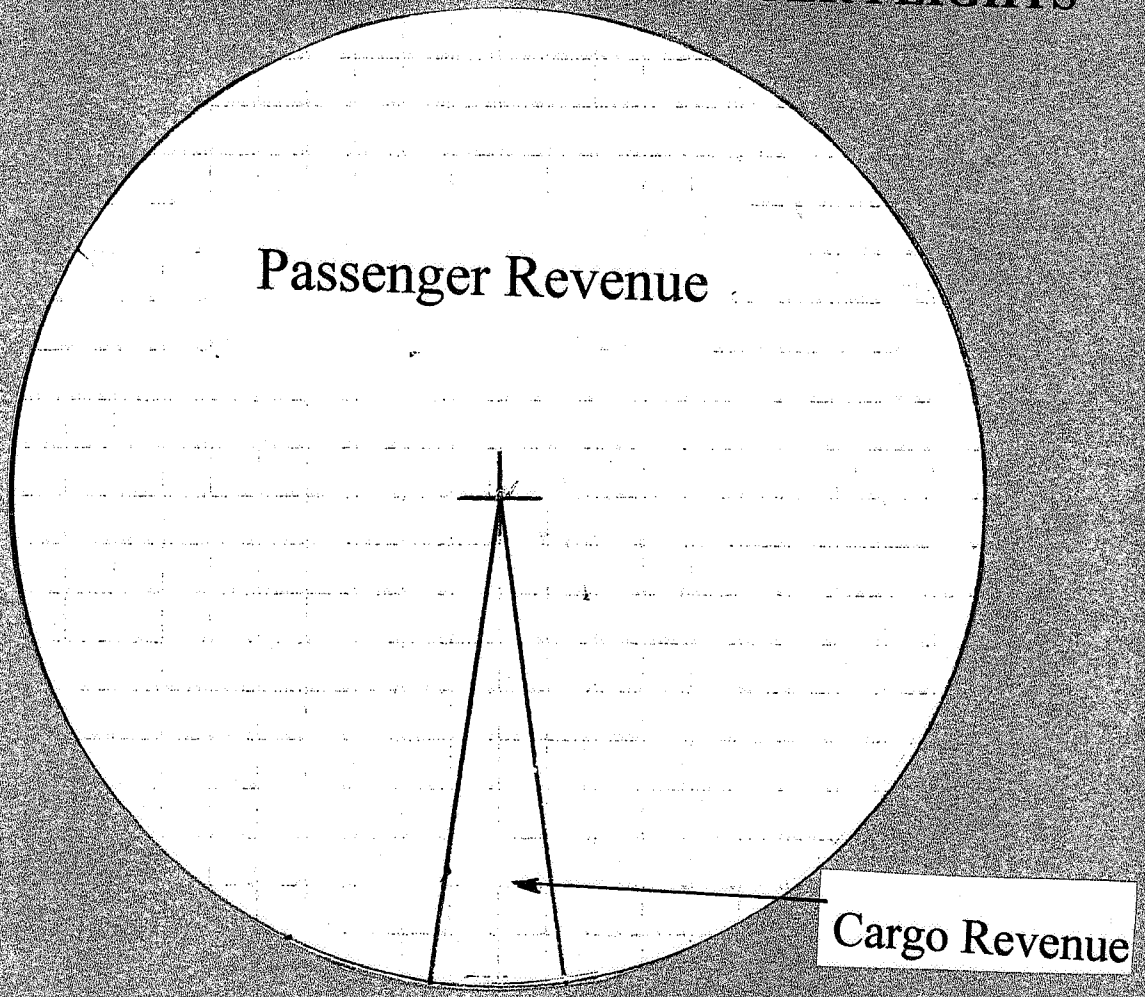
SELF-POWERED AIR-CON

ZERO FUEL POTENTIAL

GREEN TRANSPORTS

SOME FACTORS IN DESIGN ANALYSIS

AIRLINE REVENUE FROM PASSENGER FLIGHTS



GREEN L/D x V/tSFC TECHNOLOGY
(2006 LEVELS PLUS 10%)

747 WING-BODY MAIN GEAR TYPE

50% M.A.C. C.G.—UP TAIL LOAD

LONG DUCT MIXER SUPRESSOR POWERPLANT NACELLE

RIGID COMPRESSOR BLADE CLEARANCE

360 DEG. CLEAN FAN DUCT (NO STRUT)

ZERO BLEED, ZERO KW IMPROVED Genx-TRENT ENG.

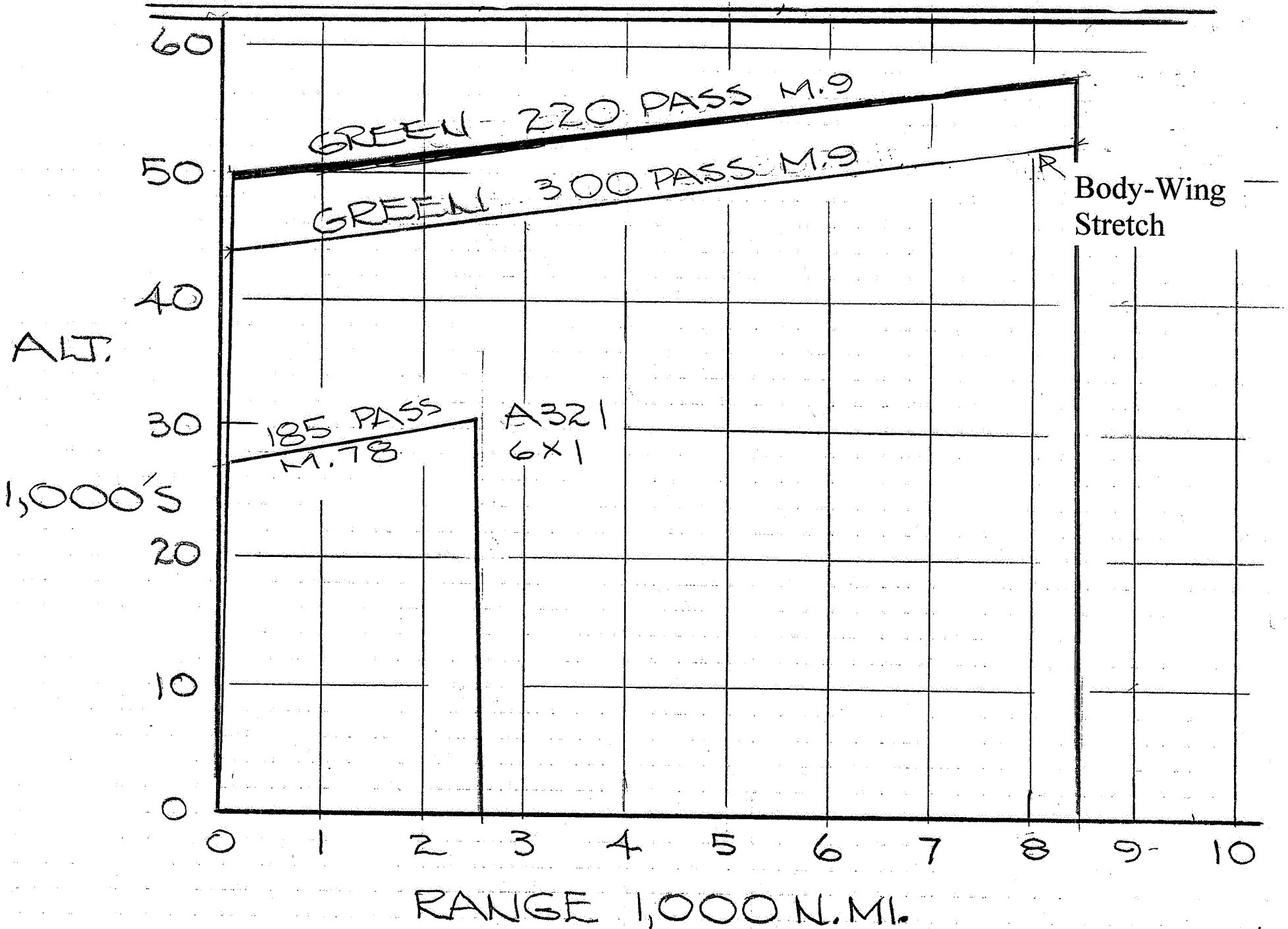
NEAR ZERO AIR CONDITIONING FUEL USEAGE

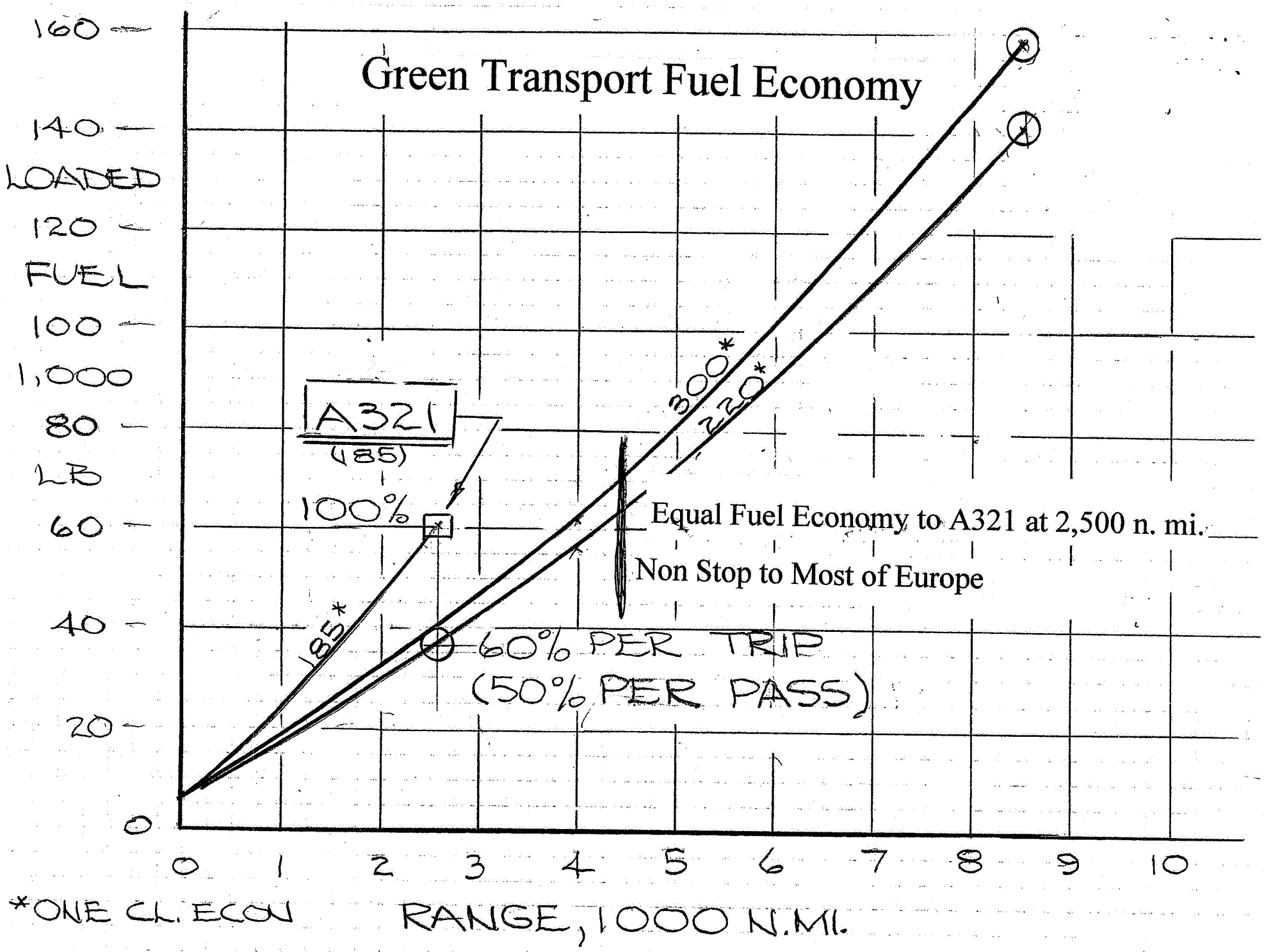
NO UPSWEEP, FISHTAIL-BLOWN BODY CLOSURE

NO EXTERNAL FLAP BOATS

VORTEX GENERATORS DEVELOPED IN EWT

Green Transport Family Flight Profile




Green Transport Fuel Economy
160
140
LOADED
120
FUEL
100
1,000
80
LB
60
40
20
0
A321
(185)
100%
300*
220*
185*
Equal Fuel Economy to A321 at 2,500 n. mi.
Non Stop to Most of Europe
60% PER TRIP
(50% PER PASS)
0 1 2 3 4 5 6 7 8 9 10
*ONE CL. ECON
RANGE, 1000 N.MI.

QUIET GREEN TRANSPORTS

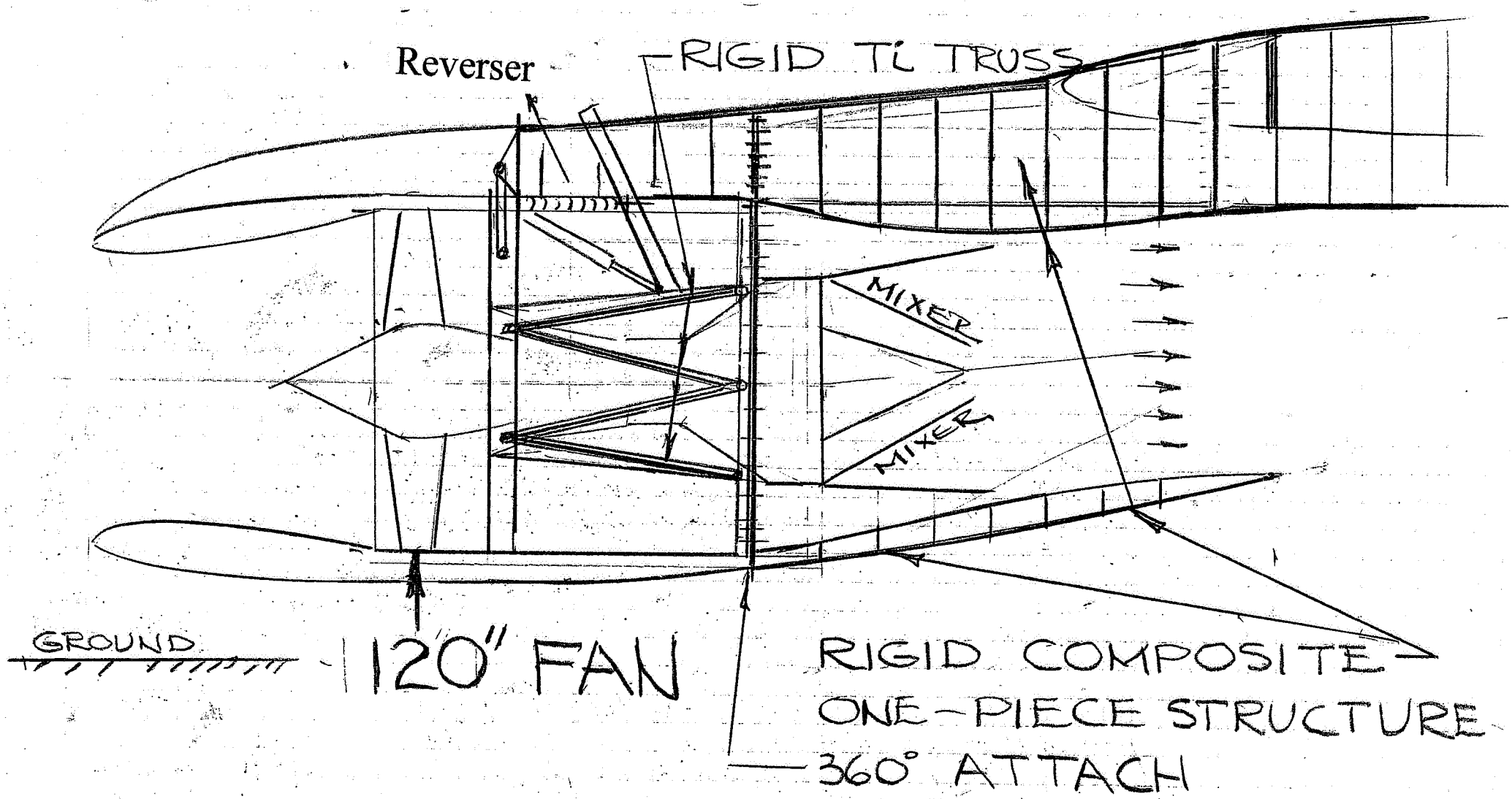
NOISE ABATEMENT

APPROACH- IDLE THRUST GEAR UP TO INNER MARKER

CONSTANT RPM & VELOCITY-DRAG CONTROL BY FLAPERONS

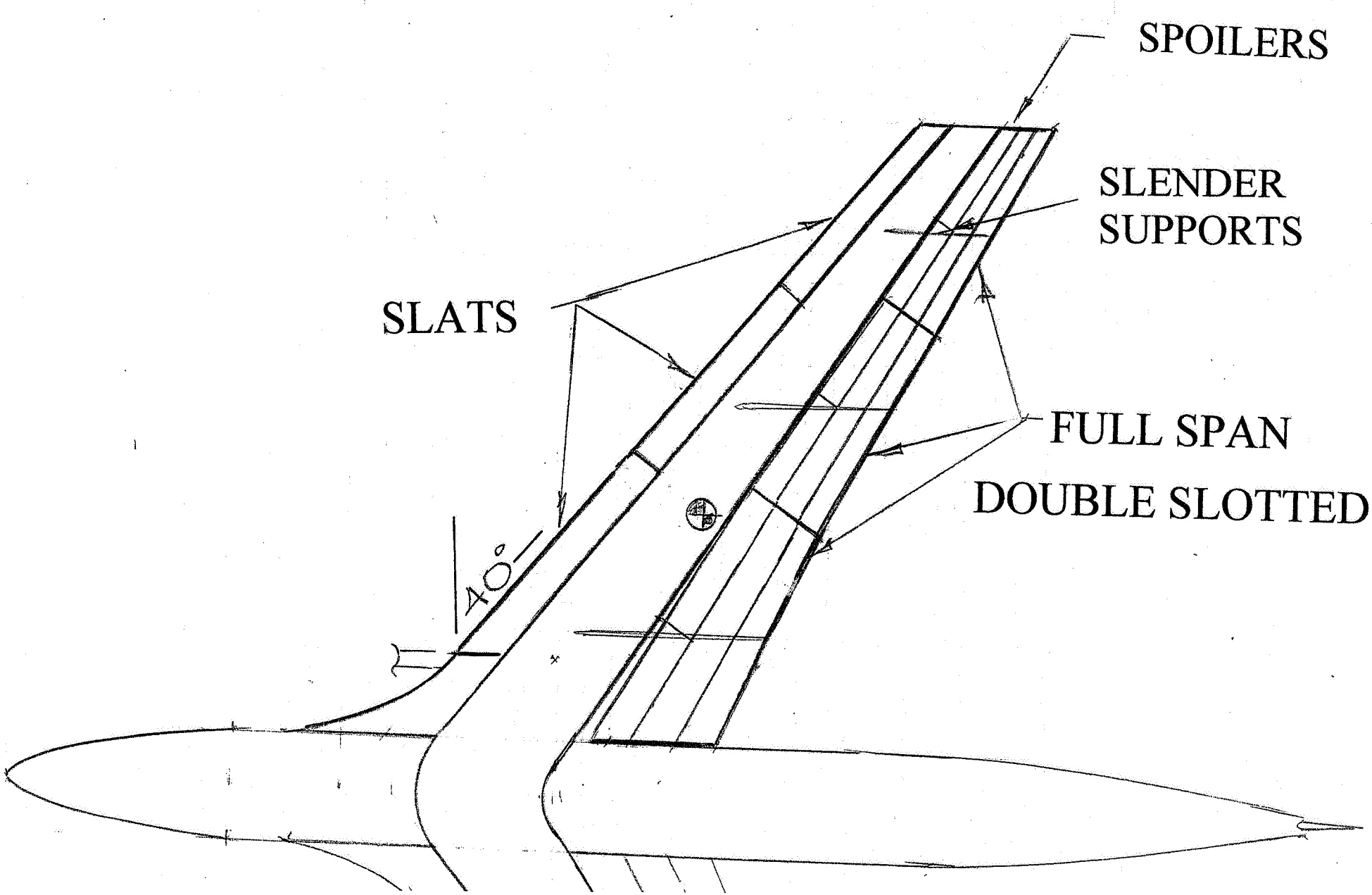
FULL SPAN FLAPERONS PRODUCE VERY LOW VORTICITY

GROUND ROLL FOR BOTH TAKEOFF & LANDING ---15 SECONDS



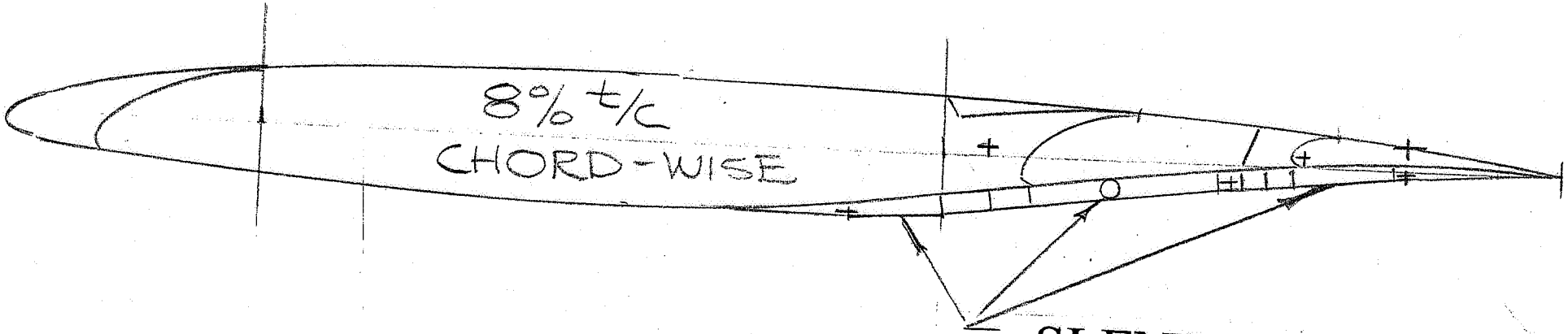
Quiet Green Propulsion System
220 Pass. 70,000 lb Thrust

FULL SPAN QUIET SIMPLICITY



CLEAN WING CRUISE

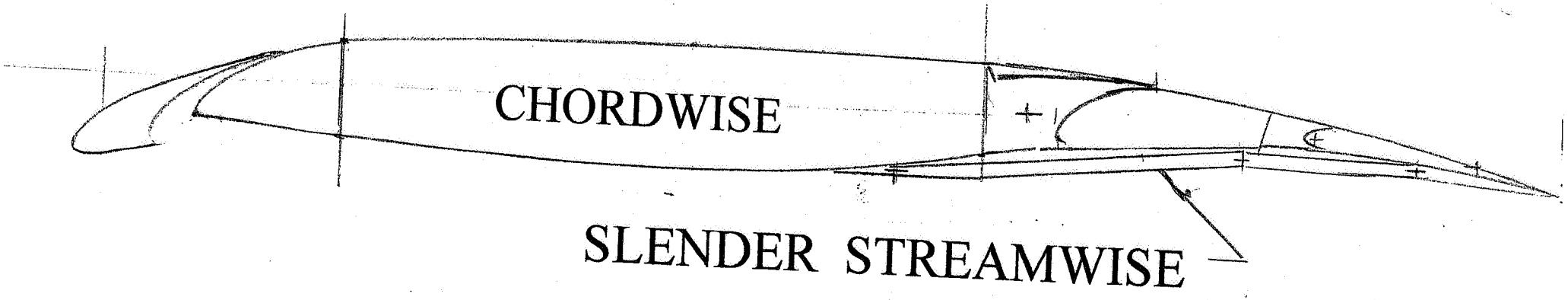
40 DEG. L.E. t/c = 6.7% M = 0.90



SLENDER
STREAMWISE

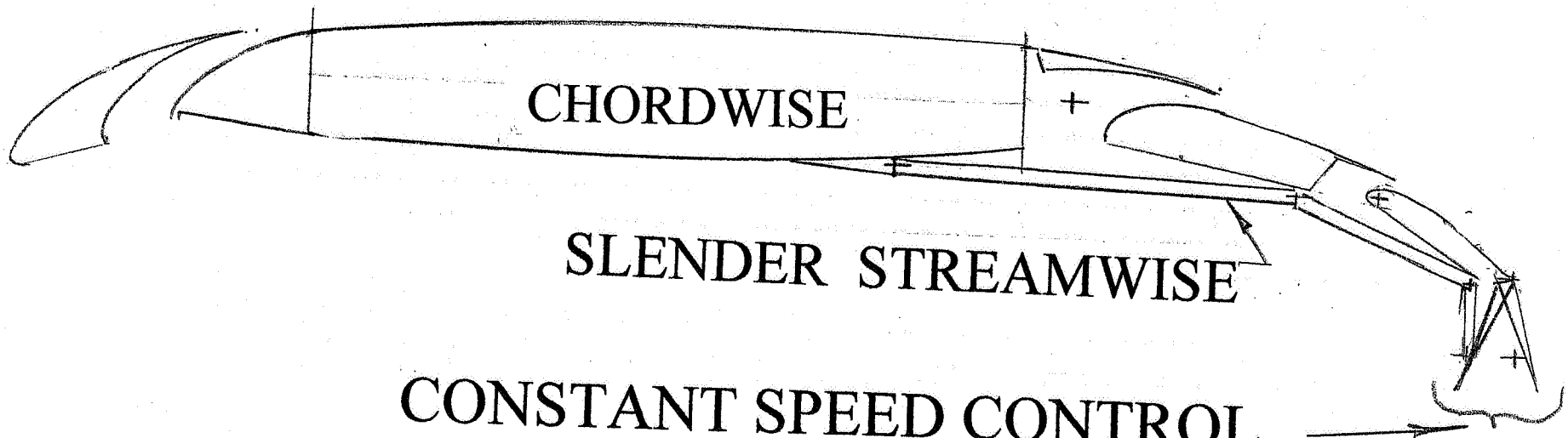
CLEAN WING

TAKEOFF and OVER COMMUNITY

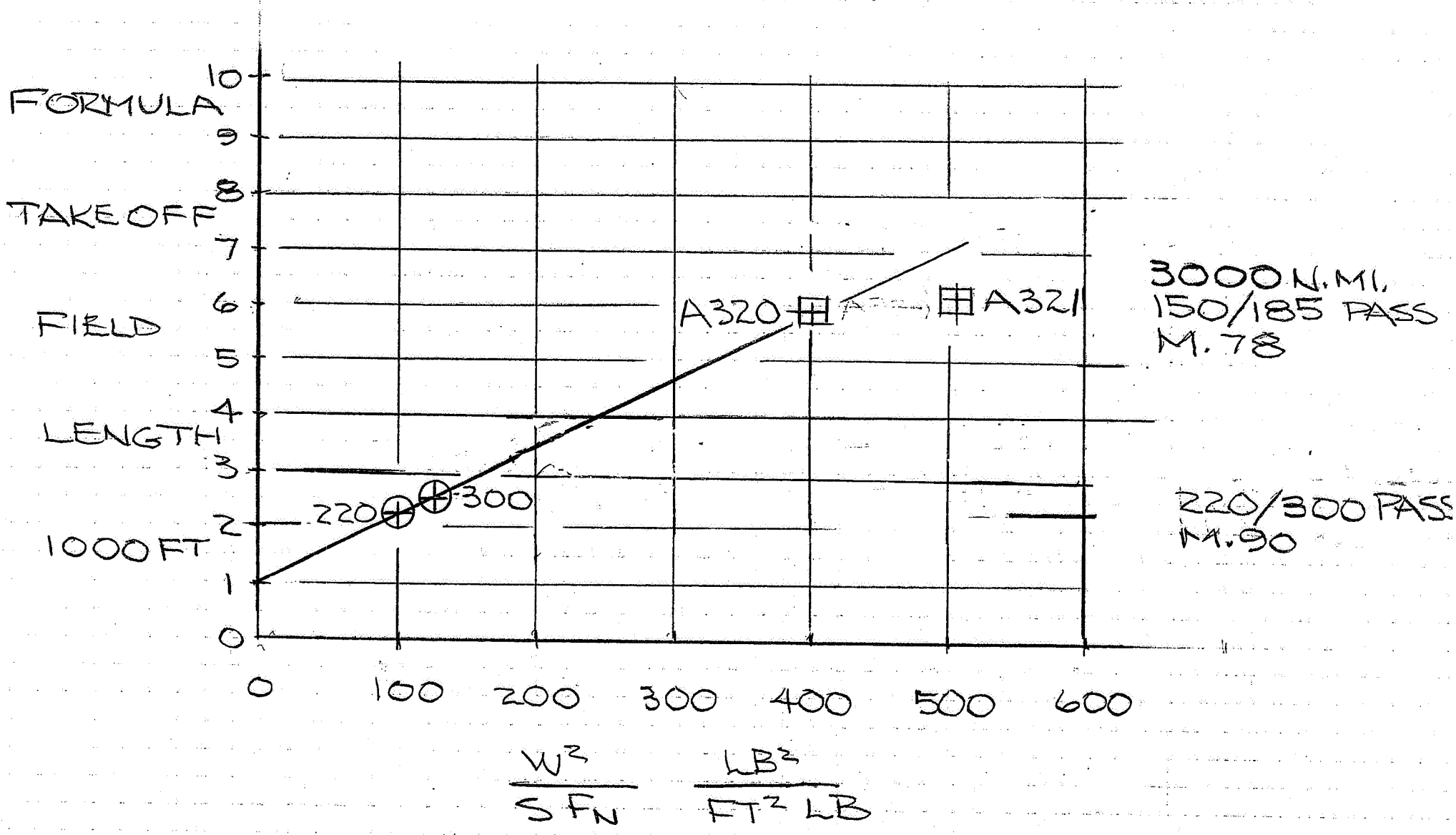


CONSTANT IDLE APPROACH

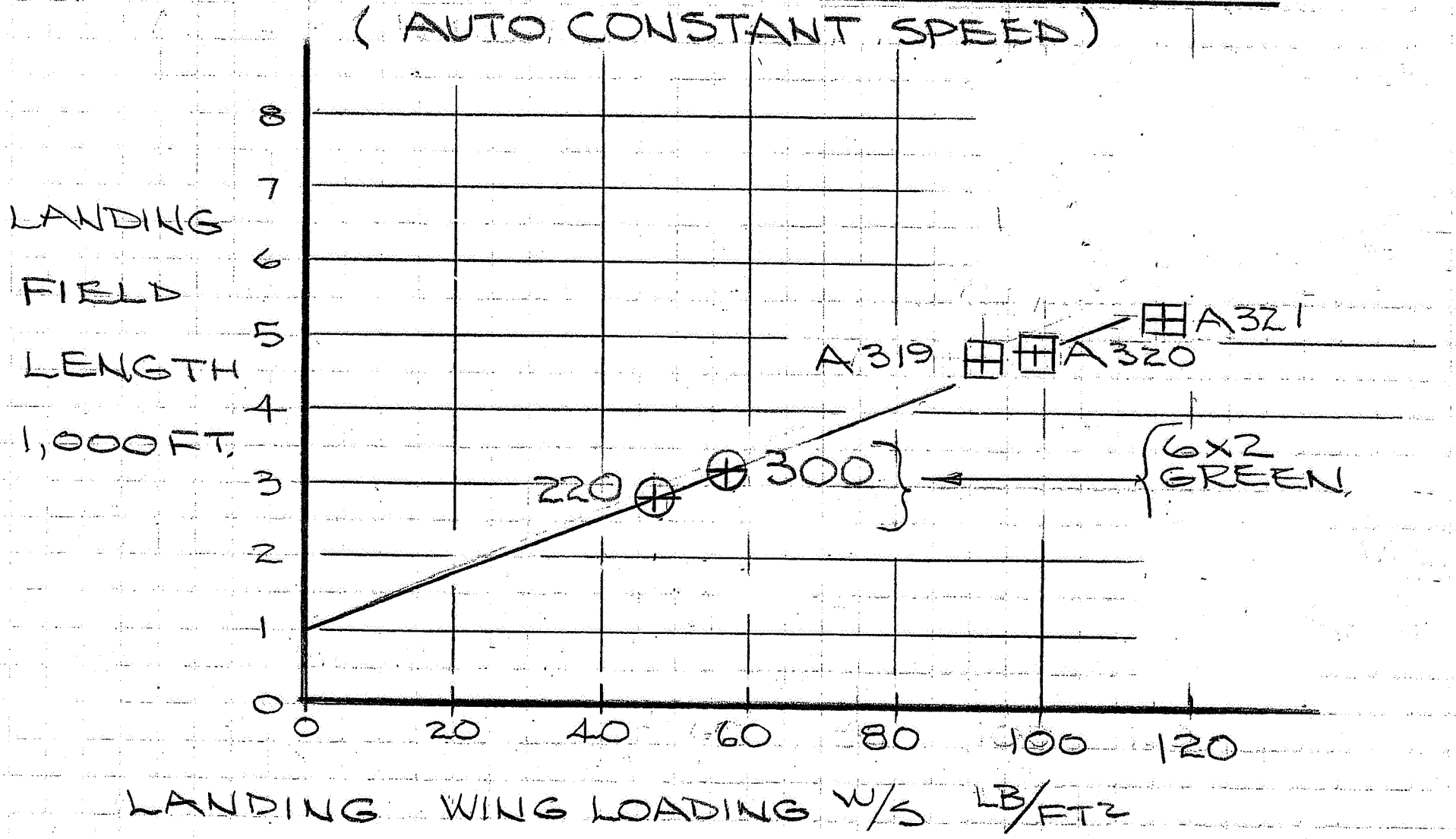
LOW Q GEAR UP



Green Takeoff Field Length



Green Landing Field Length



GREEN TRANSPORT TECHNOLOGY FEATURES

MAXIMUM USE OF COMPOSITES

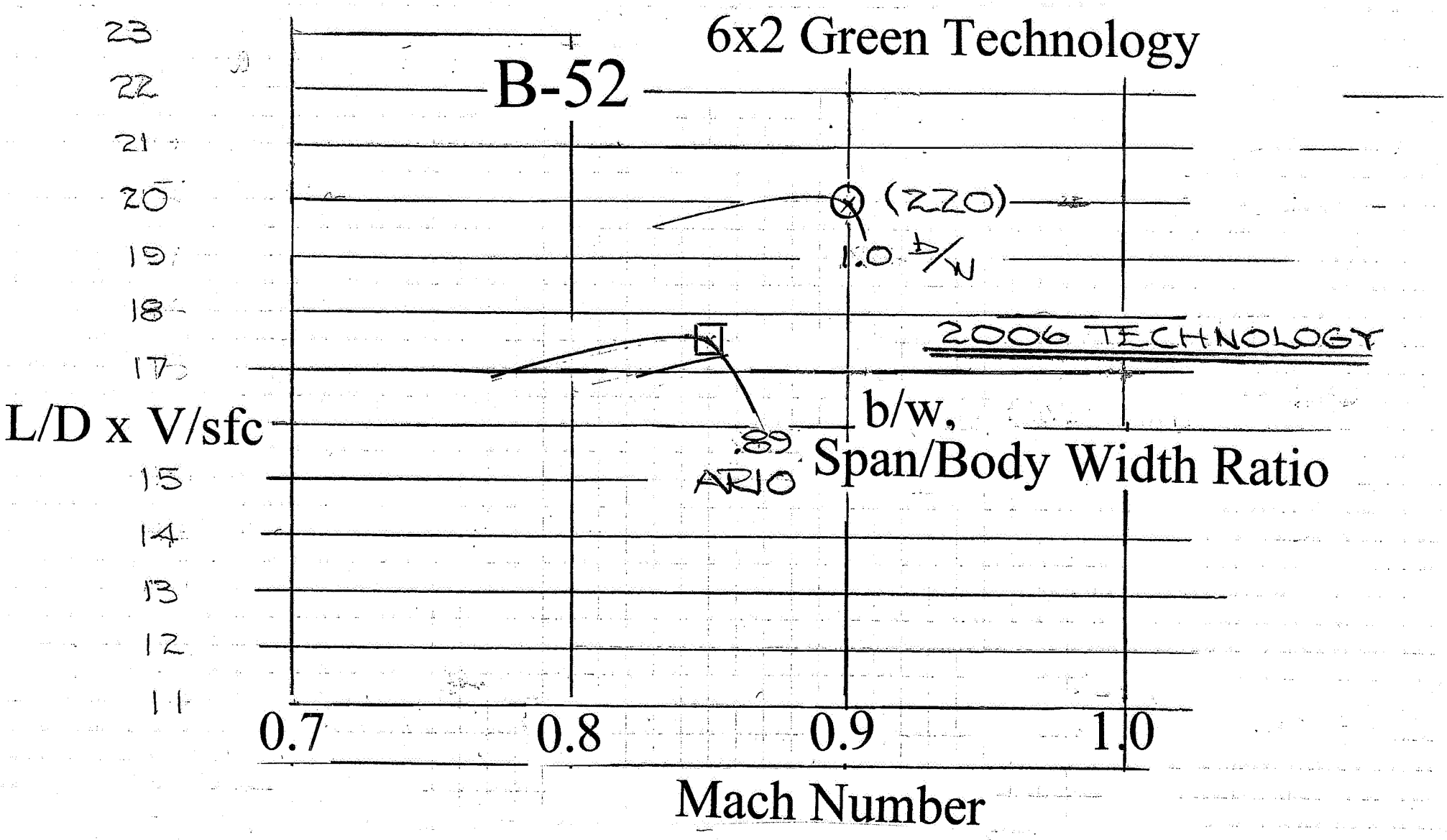
FULL SPAN-VARIABLE CAMBER WING

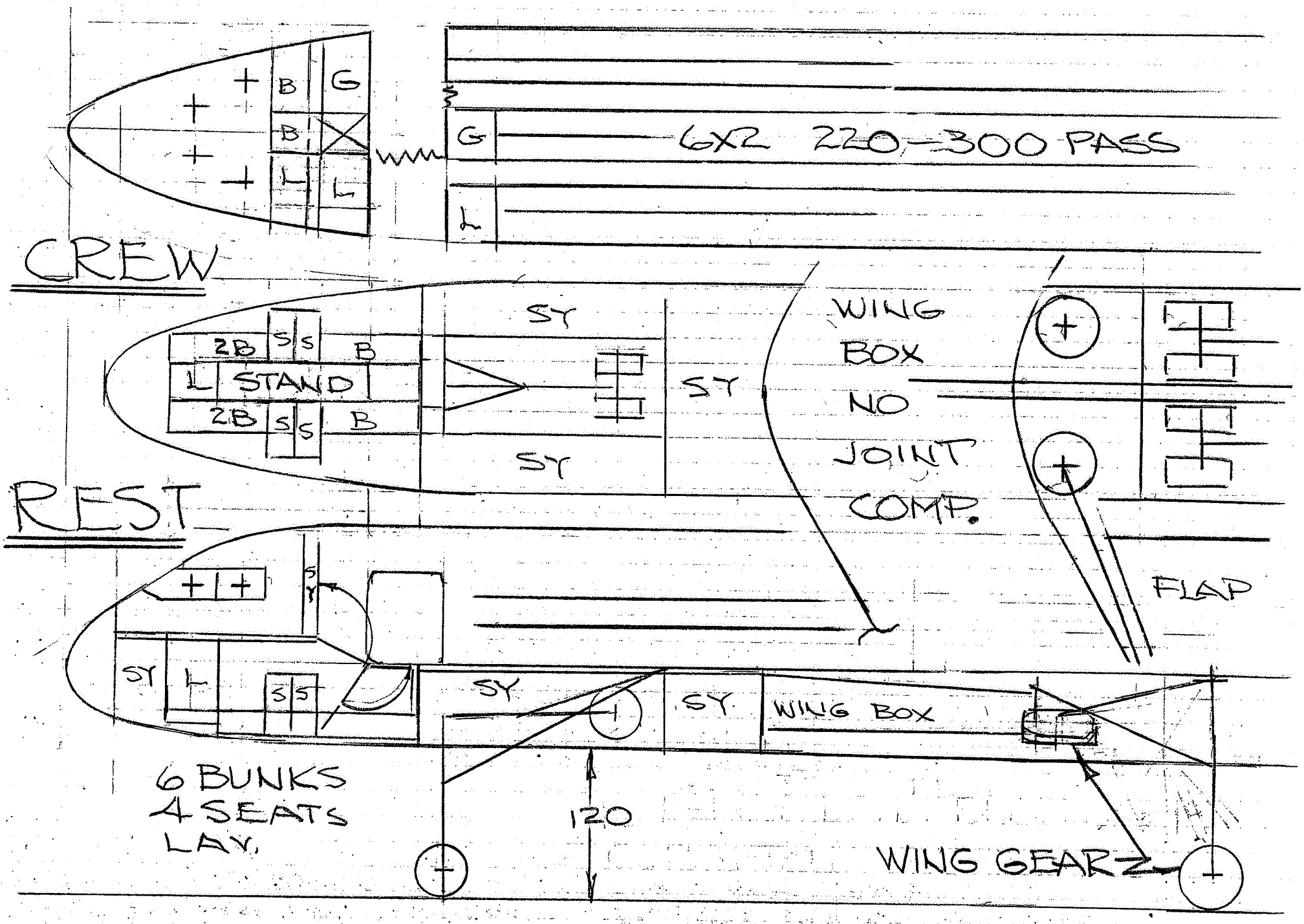
4 OLEO WING-BODY LANDING GEAR

40 DEG. LEADING EDGE SWEEP, CRUISE AT M = 0.9

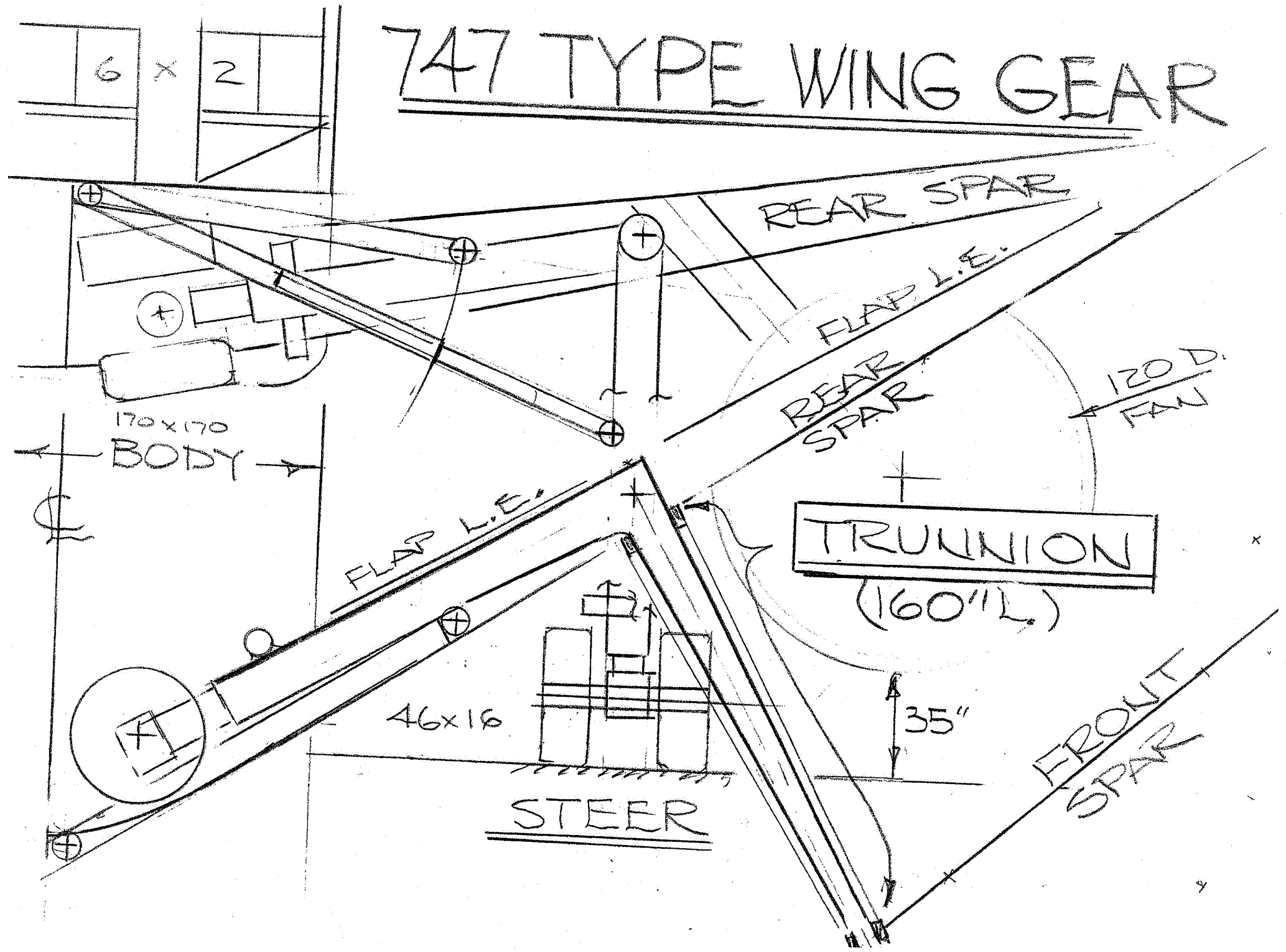
AUTOMATIC SLAT EXTENSION

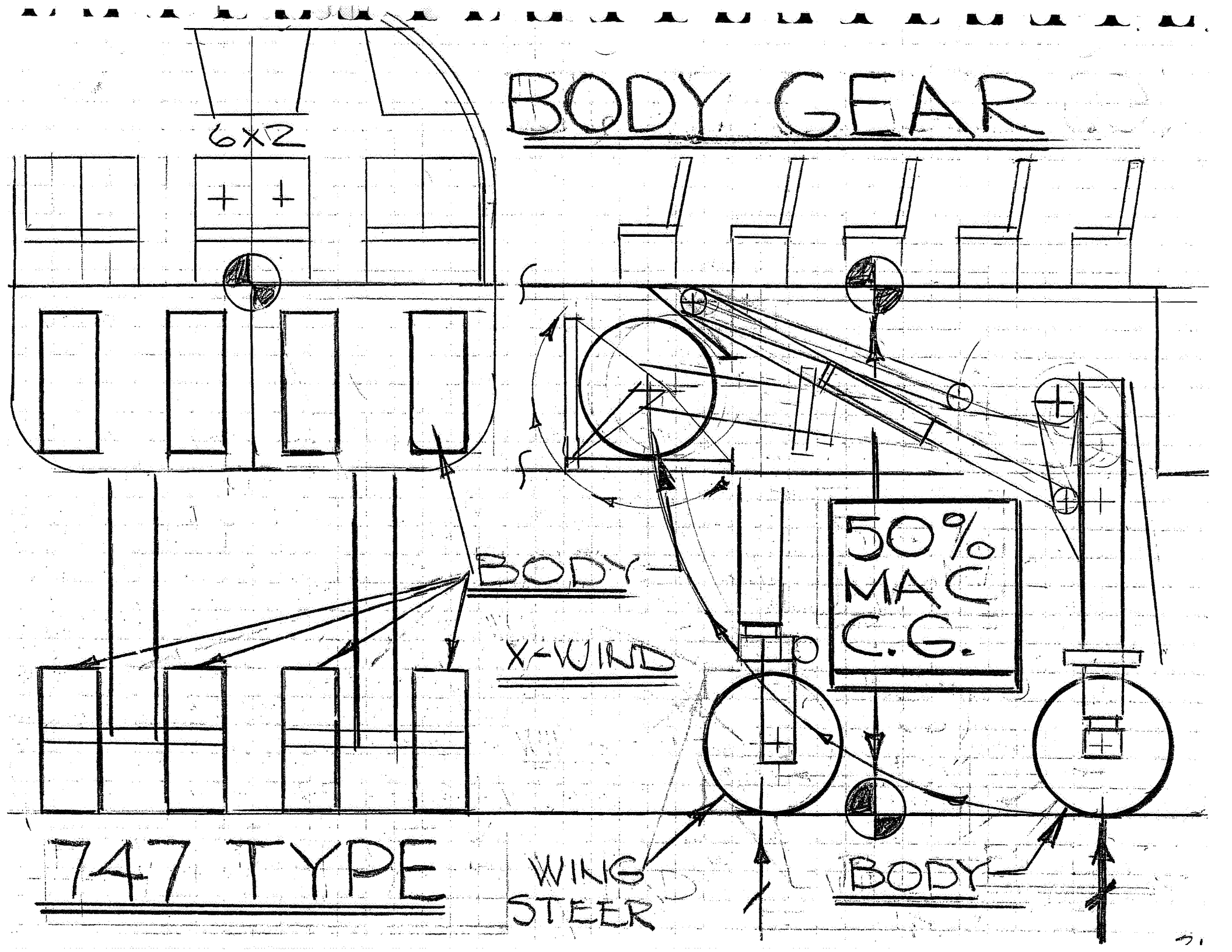
Green Transport Cruise Efficiency

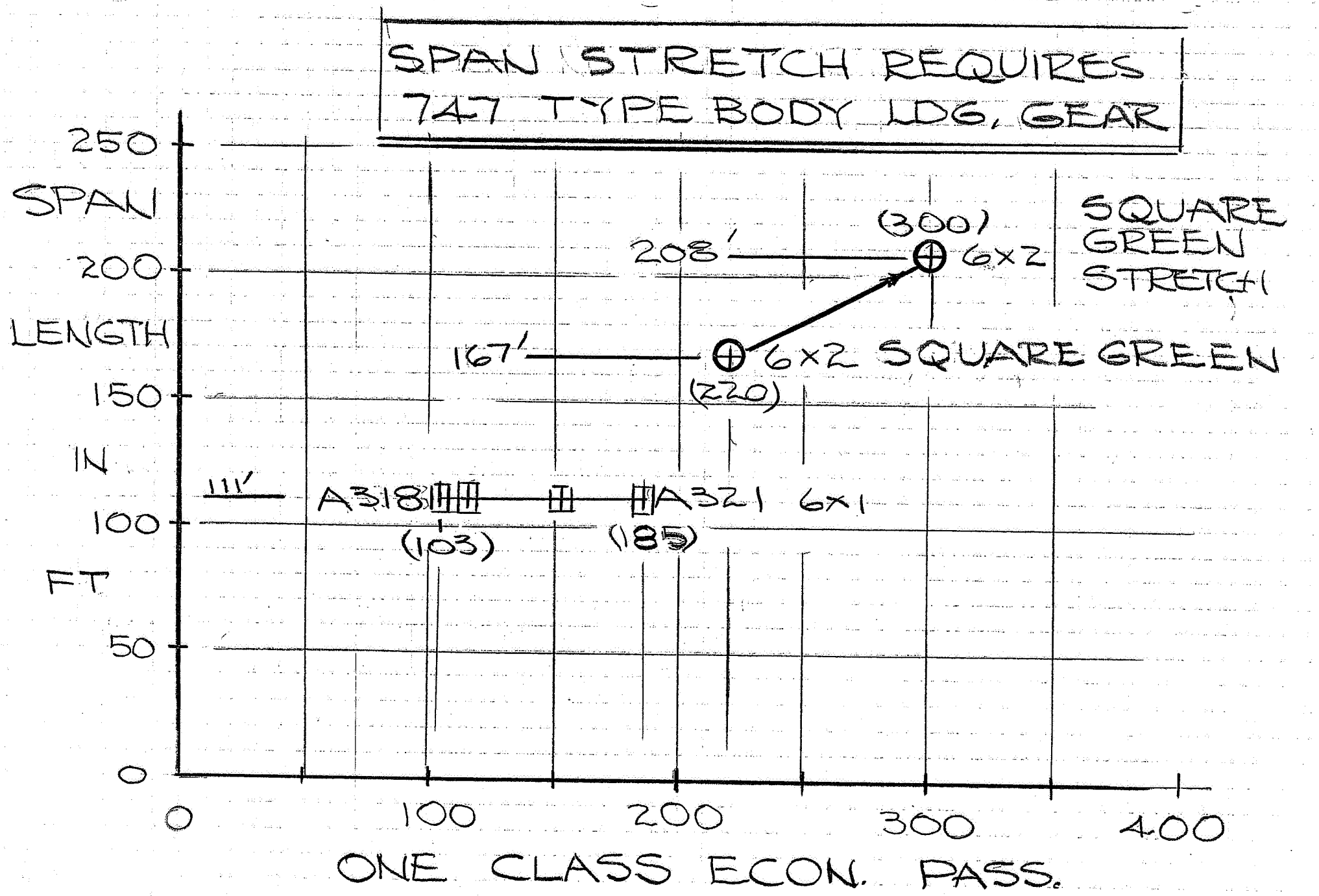


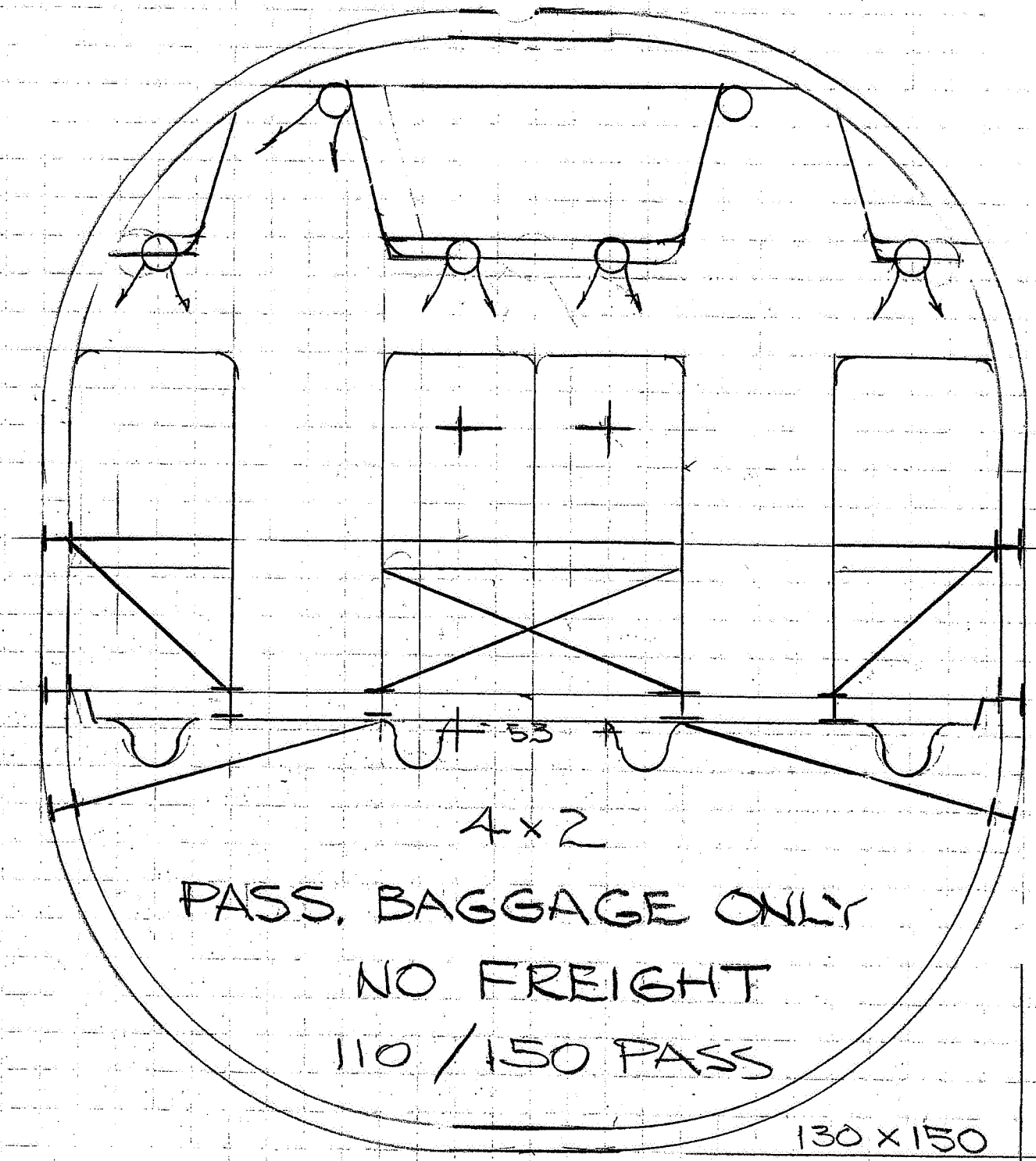

B
G
B
L
L
G
L
6X2 220-300 PASS
CREW
2B
S
S
B
L
STAND
2B
S
S
B
SY
SY
SY
WING
BOX
NO
JOINT
COMP.
REST
+
+
SY
SY
L
S
S
SY
SY
SY
WING BOX
FLAP
6 BUNKS
4 SEATS
LAV.
120
WING GEAR

747 TYPE WING GEAR




BODY GEAR
6X2
BODY
X-WIND
50%
MAC
C.G.
747 TYPE
WING
STEER
BODY


SPAN STRETCH REQUIRES
747 TYPE BODY LDG. GEAR
250
SPAN
200
LENGTH
150
IN
100
FT
50
0
0
100
200
300
400
208'
(300)
6x2
SQUARE
GREEN
STRETCH
167'
6x2 SQUARE GREEN
(220)
111'
A318
(103)
A321
(185)
6x1
ONE CLASS ECON. PASS.


53
4 x 2
PASS. BAGGAGE ONLY
NO FREIGHT
110 / 150 PASS
130 x 150

1961 X 1961
PASS. BAGGAGE ONLY
NO FREIGHT
360/500 PASS.
7 X 2
54
20
20
19
20
24
20
19
20
20
96
96
96