Docket No. SA-520

Exhibit No. 9-D

NATIONAL TRANSPORTATION SAFETY BOARD

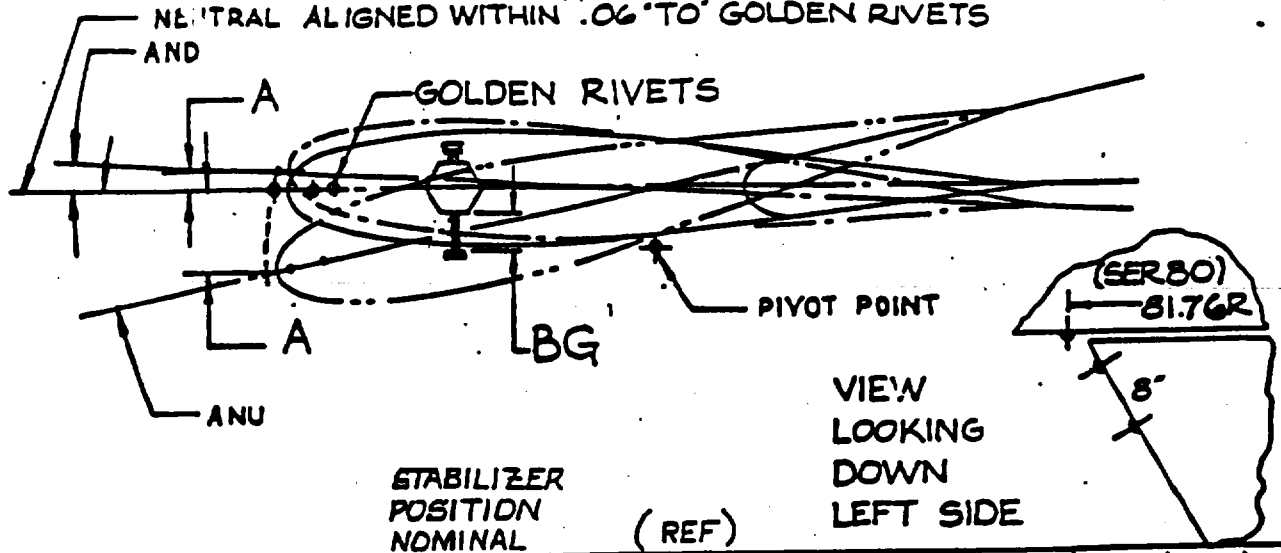
Washington, D.C.

Horizontal Stabilizer Actuator Travel Data

(4 Pages)

$A = 2R \sin[(\ )/2]$ $BG = .805(\ )+2$

HORIZONTAL STABILIZER



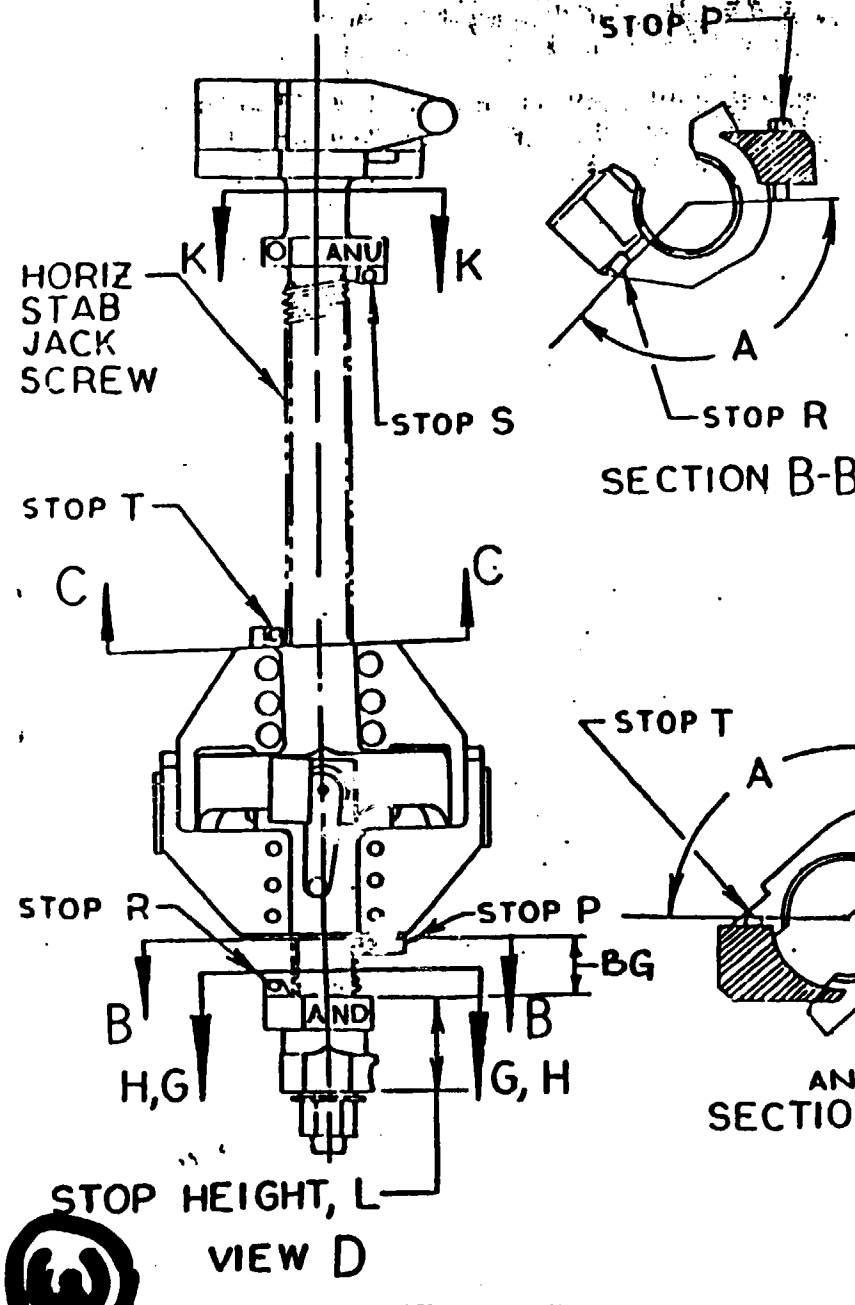
STABILIZER POSITION NOMINAL (REF)

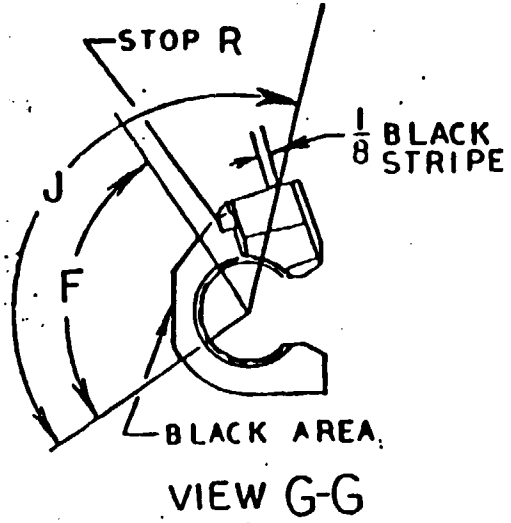
SERIES	AND (DEG) ANU (DEG)	A (INCH)	BG (INCH)	BG (INCH) AT NEUTRAL
BASIC	AND 1.0 ANU 9.0	1.13 ± .18 10.18 ± .25	0.78 ± .11 8.83 ± .14	1.59 ± .04
-20	AND .5 ANU 12.0	.56 ± .18 13.75 ± .25	1.19 ± .11 11.25 ± .14	
-30	AND 1.5 ANU 12.0	1.81 ± .18 13.75 ± .25	1.42 ± .11 12.27 ± .14	2.61 ± .04
-33-34	AND 2.6 ANU 12.0	2.93 ± .18 13.75 ± .25	0.92 ± .11 12.67 ± .14	3.01 ± .04
-40 -50	AND 2.1 ANU 12.0	2.43 ± .18 13.75 ± .25	0.92 ± .11 12.27 ± .14	2.61 ± .04
-30	ANU 5.0 ANU 8.0		6.63 ± .11 9.05 ± .14	
-33, -34	ANU 5.0 ANU 8.0		7.03 ± .11 9.45 ± .14	
-40, -50	ANU 5.0 ANU 8.0		6.63 ± .11 9.05 ± .14	

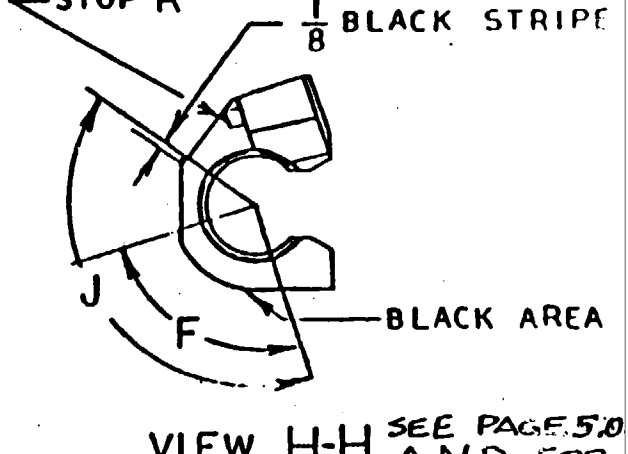
CONT. ON SHEET 5.3

CONT. FROM SHEET 5.2.0 (HORIZONTAL STABILIZER)

SERIES	AND (DEG) ANU (DEG)	A (INCH)	BG (INCH)	BG (INCH) AT NEUTRAL
-80	AND 2.1	2.98 ± .25	1.32 ± .14	3.01 ± .04
	ANU 12.2	17.27 ± .31	12.83 ± .16	
CHECK PTS FOR FLT. DATA RECORDER	ANU 8.0	11.34 ± .25	9.45 ± .14	
	ANU 10.0	14.16 ± .25	11.06 ± .14	
	ANU 4.0	5.67 ± .25	6.23 ± .11	
	ANU 6.0	8.51 ± .25	7.84 ± .11	
-87	AND 2.1	3.00 ± .25	1.26 ± .15	2.93 ± .04
	ANU 14.5	20.64 ± .15	14.63 ± .08	
	ANU 4.0	5.71 ± .25	6.13 ± .11	
	ANU 6.0	8.56 ± .25	7.74 ± .11	
	ANU 8.0	11.41 ± .25	9.36 ± .14	
	ANU 10.0	14.25 ± .25	10.97 ± .14	
	ANU 12.0	17.09 ± .31	12.60 ± .16	







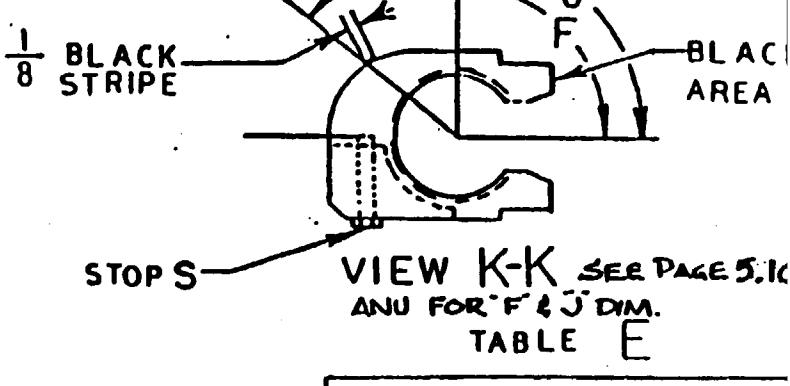


TABLE E

SERIES IDENTIFICATION DATA		
SERIES	LOWER STOP HEIGHT (L)	LOWER RI MARKS
10,20	2.575	NONE
30	1.560	VIEW G-G
33,34,80,87	1.161	VIEW H-H
40.60	1.560	VIEW H-H

STAB POSITION	"BG" DIM	"PK" DIMENSION
3.1° AND STOP Δ+	.520	5.743
2.1° AND	1.32	6.543
0°	3.01	8.233
2° ANU	4.62	9.843
4°	6.23	11.453
6°	7.84	13.063
8°	9.45	14.673
10°	11.06	16.283
12.2° ANU	12.83	18.053
12.5° ANU STOP *Δ	13.0715	18.2945
AND #	− 9.223	− A (BY DEFINITION)

*ESTIMATES

Δ ≡ NON ROTATIONAL IMPACT OF NUT ONTO STOP

POINT AT WHICH SCREW LEAVES NUT

15.3° AND FROM COMPUTER MODEL

1"BG = 1.242° HS

2° HS ÷ 1.61" BG

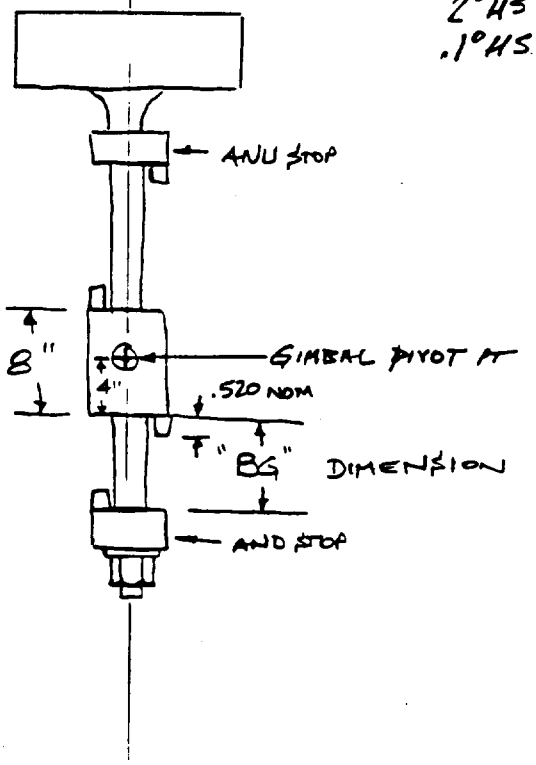
.1° HS ÷ .0805" BG

1.32"
.520"
.800 INCH × 1.242° HS / 1" BG

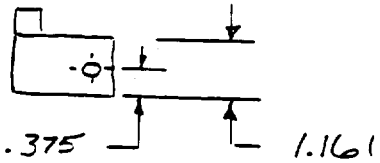
= .9936°
+ 2.1°
= 3.0936°

.062 × 1.242° HS
= .077 + 3.09

GAP CLOSED → 3.1706°



AND STOP:

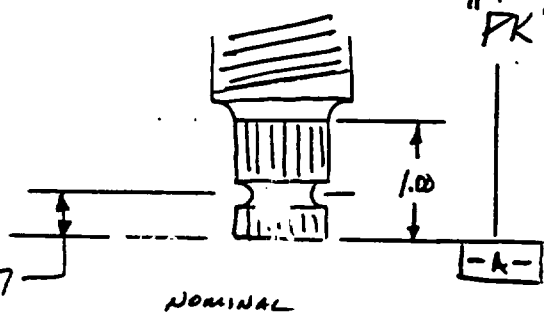


NOMINAL DIMENSIONS

1.161
.375
.786

.437
.375
.062

ACME SCREW:



NOMINAL DIMENSIONS

PK = BG + A + .786 + .437

≡ DISTANCE BETWEEN BOTTOM END OF ACME SCREW ℄ -A- AND MIDPOINT OF ACME NUT

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