Kodak
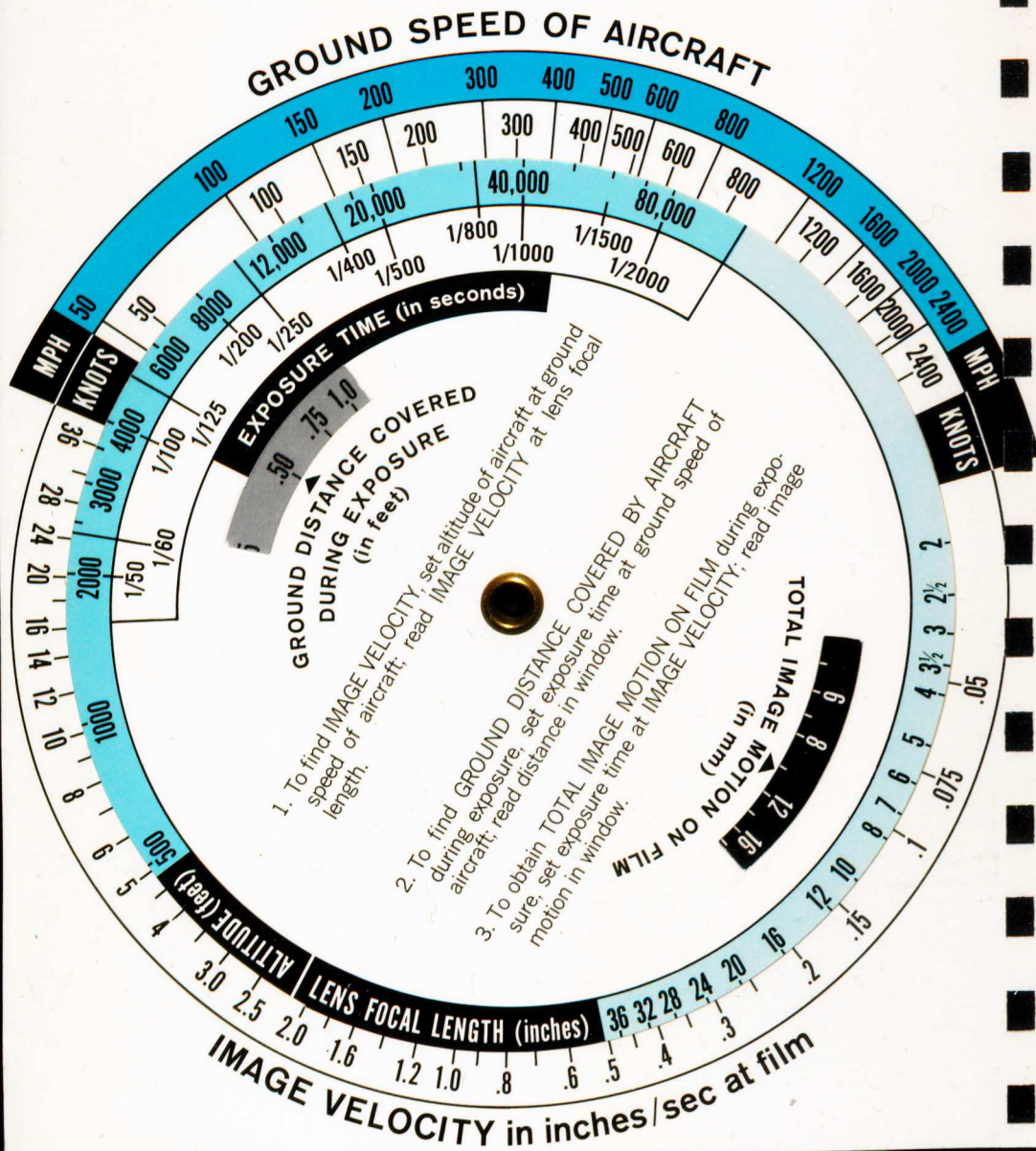
$4.00

KODAK
AERIAL EXPOSURE
COMPUTER

Based on Aerial Film Speed and designed for use with Kodak black-and-white and color aerial films.
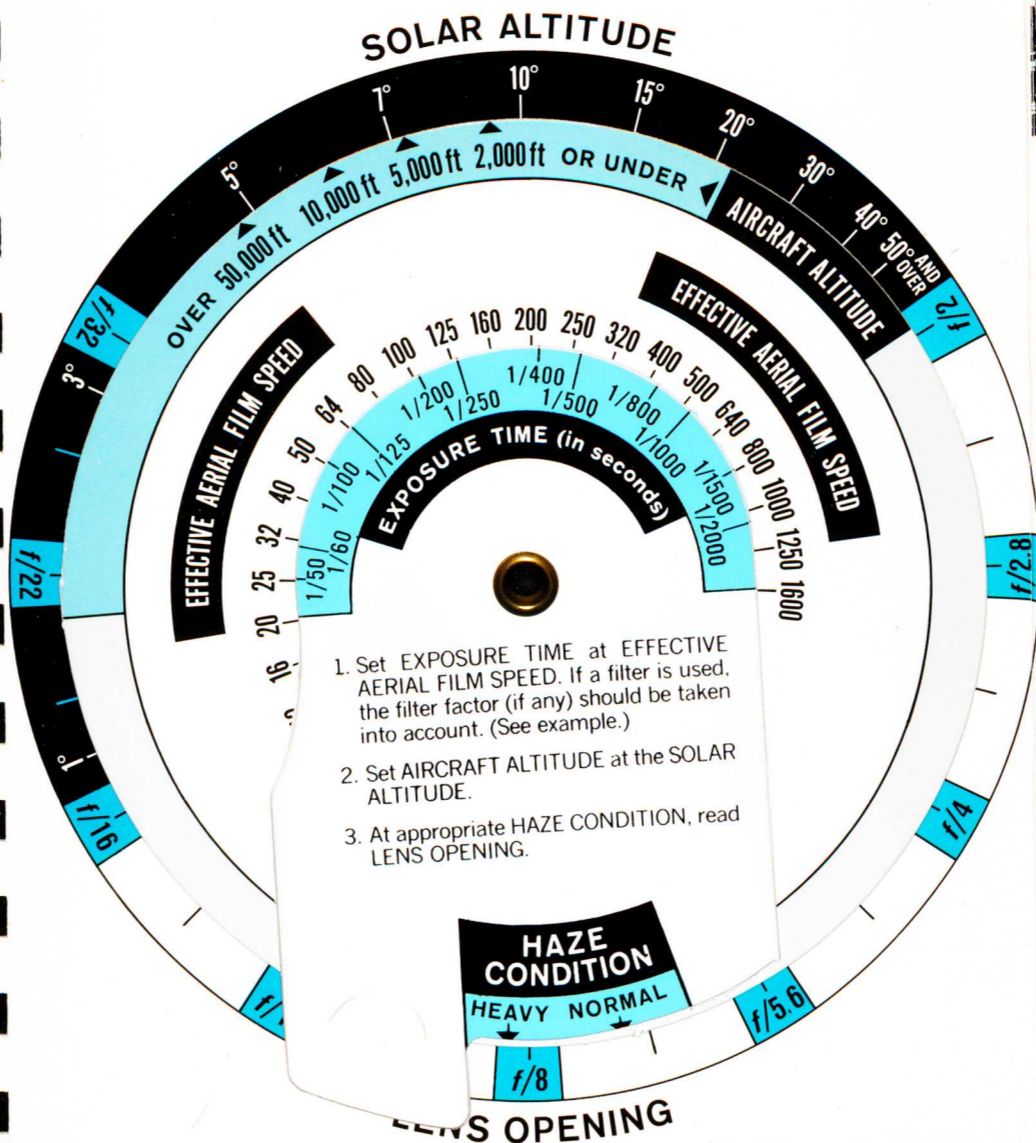
TIME-MOTION DIAL

Subject matter and end use of an aerial photograph dictate image-motion tolerance, or the amount of blur acceptable in a negative. The Time-Motion Dial is useful in determining image motion during exposure and in selecting a tolerable exposure time for various combinations of aircraft speed, altitude, and focal length of lens available.

GROUND SPEED OF AIRCRAFT

GROUND DISTANCE COVERED DURING EXPOSURE (in feet)

EXPOSURE TIME (in seconds)

TOTAL IMAGE MOTION ON FILM (in mm)

ALTITUDE (feet)

LENS FOCAL LENGTH (inches)

IMAGE VELOCITY in inches/sec at film

1. To find IMAGE VELOCITY, set altitude of aircraft at ground speed of aircraft; read IMAGE VELOCITY at lens focal length.

2. To find GROUND DISTANCE COVERED BY AIRCRAFT during exposure, set exposure time at ground speed of aircraft; read distance in window.

3. To obtain TOTAL IMAGE MOTION on film during exposure, set exposure time at IMAGE VELOCITY; read motion in window.

EXPOSURE DIAL

The **KODAK Aerial Exposure Computer** will usually give an exposure within the film-exposure latitude, presuming that lenses of average transmission will be used and that the Effective Aerial Film Speed used will be that for the film-process combination selected. Proper exposure depends, to some extent, on the photographer's judgment regarding haze condition and amount of tolerable image motion. With extremely bright or dark subjects, some exposure adjustment may be necessary.

The characteristics of aerial scenes differ markedly from those of ordinary pictorial scenes; different film-speed criteria are used to relate aerial-scene characteristics to practical exposure recommendations. Effective Aerial Film Speeds (not to be confused with conventional film speeds which are designed for pictorial photography) for black-and-white negative aerial films are based on 3/2E, where E is the exposure (in meter-candle-seconds) at the point on the characteristic curve where the density is 0.3 above base plus fog density.

SOLAR ALTITUDE

AIRCRAFT ALTITUDE

OVER 50,000 ft · 10,000 ft · 5,000 ft · 2,000 ft OR UNDER

EFFECTIVE AERIAL FILM SPEED

EXPOSURE TIME (in seconds)

1. Set EXPOSURE TIME at EFFECTIVE AERIAL FILM SPEED. If a filter is used, the filter factor (if any) should be taken into account. (See example.)

2. Set AIRCRAFT ALTITUDE at the SOLAR ALTITUDE.

3. At appropriate HAZE CONDITION, read LENS OPENING.

HAZE CONDITION — HEAVY / NORMAL

LENS OPENING

LATITUDE ZONE MAP

DATE TABLE

A	Dec. 21	A
B	Dec. 5	Jan. 5	B
C	Nov. 20	Jan. 20	C
D	Nov. 4	Feb. 5	D
E	Oct. 20	Feb. 20	E
F	Oct. 5	Mar. 7	F
G	Sept. 20	Mar. 22	G
H	Sept. 5	Apr. 6	H
I	Aug. 20	Apr. 22	I
J	Aug. 5	May 7	J
K	July 21	May 22	K
L	July 6	June 6	L
M	June 21	M

SOLAR ALTITUDE TABLES

SOLAR ALTITUDE TABLES

LATITUDE 50° / LATITUDE 90°

	NORTH 0500,1900	0530,1830	0600,1800	0630,1730	0700,1700	0730,1630	0800,1600	0830,1530	0900,1500	0930,1430	1000,1400	1030,1330	1100,1300	1130,1230	1200 SOUTH		NORTH / ALL TIMES / SOUTH
A									6	9	12	14	16	16	17		
B								3	9	12	15	17	18	19	20		
C							4	9	13	17	20	23	25	27	28		
D						5	9	14	18	22	26	29	31	33	34		
E					5	10	14	19	23	27	31	34	37	39	40		F 6
F				4	9	14	18	23	28	32	36	39	42	44	46		
G			3	8	13	17	22	27	32	36	41	45	47	50	51		H 11
H		3	8	13	17	22	27	32	36	41	45	49	51	54	56		
I			5	9	14	18	23	28	33	37	41	45	47	50	51		J 17
J	3	8	13	17	22	27	32	36	41	45	49	51	54	56	57		
K	6	11	15	20	25	30	35	39	44	48	52	55	59	60			L 20
L	8	13	17	22	27	32	36	41	45	49	54	57	60	63			M 23
M	8	13	18	22	27	32	37	42	46	50	55	58	61	63	64		23

(Side column for South, bottom-to-top: M L K J I H G F E D C B A)

LATITUDE 60°

	NORTH 0400,2000	0430,1930	0500,1900	0530,1830	0600,1800	0630,1730	0700,1700	0730,1630	0800,1600	0830,1530	0900,1500	0930,1430	1000,1400	1030,1330	1100,1300	1130,1230	1200 SOUTH
A												3	4	6	6	7	
B											3	4	5	6	7	7	
C										3	6	7	9	7	7	7	
D								1	4	7	10	11	12	13			
E							4	7	10	13	15	16	17	18	18		
F					3	7	10	14	17	20	22	23	23	24			
G				4	8	11	15	18	21	23	26	28	29	30			
H			2	5	9	13	16	20	23	26	30	32	34	35			
I		4	7	10	14	18	21	25	28	31	34	37	39	40	41		
J	1	4	7	11	14	18	22	25	29	33	36	39	41	42			
K	4	7	11	14	18	22	25	29	33	36	39	42	45	46	47		
L	6	9	13	16	20	24	27	31	34	38	41	44	47	49	50		
M	6	10	13	17	20	24	27	31	35	39	42	45	48	51	52	53	54

LATITUDE 70°

	NORTH 2400	0300,2300	0100,2300	0130,2230	0200,2200	0230,2130	0300,2100	0330,2030	0400,2000	0430,1930	0500,1900	0530,1830	0600,1800	0630,1730	0700,1700	0730,1630	0800,1600	0830,1530	0900,1500	0930,1430	1000,1400	1030,1330	1100,1300	1130,1230	1200 SOUTH
D																				2	3	3	4		
E																	3	4	6	7	7				
F													2	4	6	8	10	12	13	13	14	14			
G										3	5	8	10	12	14	16	18	19	20						
H								2	4	6	9	11	13	15	17	19	21	23	25	26	26				
I			1	2	4	6	8	10	13	15	17	19	21	23	25	27	29	30	31						
J	2	2	3	5	6	8	10	12	14	16	18	20	22	24	26	28	29	31	32						
K	3	3	5	6	8	10	12	14	15	17	20	22	23	25	27	29	32	35	37	38	39				
L	3	4	5	7	9	11	12	14	17	19	21	23	25	27	29	31	33	37	38	40	42	42	43	44	
M	3	4	6	7																					

(Side column for South: J I H G F E D C B A)

LATITUDE 80°

	NORTH 2400	0100,2300	0130,2230	0200,2200	0230,2130	0300,2100	0330,2030	0400,2000	0430,1930	0500,1900	0530,1830	0600,1800	0630,1730	0700,1700	0730,1630	0800,1600	0830,1530	0900,1500	0930,1430	1000,1400	1030,1330	1100,1300	1130,1230	1200 SOUTH
F														1	2	3	4	5	6	7	8	9	10	
G	1	2	2	3	4	4	5	7	8	9	10	12	13	14	15	16	17	18	19					
H	2	3	4	5	6	7	8	9	11	12	13	14	16	17	18	20	21	22	23	24				
I	6	7	5	6	8	9	10	12	13	14	16	17	19	20	21	23	24	25	26	27				
J	7	7	8	9	10	12	13	14	16	17	18	20	21	22	24	25	26	27						
K	10	11	11	12	13	14	16	17	18	20	21	23	24	26	27	28	29	30						
L	12	12	13	14	15	16	18	19	21	22	23	25	26	27	29	30	31	33	33					
M	13	13	14	15	17	18	20	21	23	24	26	27	28	30	31	33	33	34						

EXAMPLE OF HOW TO USE THE
Kodak Aerial Exposure Computer

KNOWN FACTORS:

Flying Altitude—2,000 feet
Ground Speed—150 knots
Lens Focal Length—8 inches
Exposure Time—1/200 second
Filter—none

Latitude—40° North
Date—September 5
Time—0700 hours (standard time)
Effective Aerial Film Speed—64
Haze Condition—Normal

Note: If a filter is used, the filter factor (if any) should be taken into account. Either the Effective Aerial Film Speed should be divided by the filter factor, or the exposure time should be multiplied by the filter factor.

TIME-MOTION DIAL

To Find Image Velocity:
a. Set flying altitude (2,000 feet) at ground speed of aircraft (150 knots).
b. At lens focal length (8 inches), read Image Velocity of 1.0 inch/second.

To Find Ground Distance Covered During Exposure:
a. Set exposure time (1/200 second) at ground speed of aircraft (150 knots).
b. Read 1.25 feet in window.

To Find Total Image Motion on Film:
a. Set exposure time (1/200 second) at Image Velocity of 1.0 inch/second.
b. Read .12 mm in window.

Note: If the image motion is unacceptable, select a **shorter** exposure time and recompute for reduced image motion; then use the Exposure Dial.

EXPOSURE DIAL

To Find Lens Opening:
a. From Date Table, find "H" opposite September 5. (To determine solar altitudes for dates other than those listed in the Date Table, interpolation in the Solar Altitude Table should be made between the two closest listed dates.)
b. Use 40° Latitude Chart in Solar Altitude Tables; use North column; on line H under 0700 time, the solar altitude is 15°. (See Note below.)
c. Set exposure time (1/200 second) at Effective Aerial Film Speed (64).
d. Turn interlocked dial so that aircraft altitude (2,000 feet) is at solar altitude of 15°.
e. At normal haze condition, read lens opening of f/6.7.

Note: Solar altitude 50° and over—no exposure change; solar altitude less than 1°—too dark for normal aerial photography.

KODAK AERIAL EXPOSURE COMPUTER

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