FF-33 and FF-33B
Painting With Light

The FF-33 Flood Flashlamp produces an average usable lumen level of 55,000 lumens for a duration of 2.50 seconds with a total integrated light output of 140,000 lumen-seconds. The FF-33B provides an average usable lumen level of 30,000 lumens for a duration of 2.50 seconds with a total integrated light output of approximately 75,000 lumen-seconds. Measurements taken with the lamp indicate it may be swung 30° to one side before the output drops to half intensity. Thus, the effective angle for painting with this lamp in order to maintain an even distribution would be 30° from center, or 60° total.

FF-33 clear lamps are found to render best color balance with a tungsten film such as Ektachrome Type B sheet (3200°K) by using an 81EF filter. FF-33B lamps are color balanced for any daylight color film.

Two techniques of painting with light have been tried and found to be very successful. The first involves a hidden position of the lamp from the camera. The operator remains stationary and merely swings the lamp and reflector to paint in the scene. The second technique is a bit more exacting in its requirements and it is used where the layout is such that the lighting of the scene must be performed in front of the camera. This involves walking the lamp along during the flashing or painting. It requires that the light from the flashing lamp be completely shielded from entering the camera to prevent subsequent fogging of the film. Direct light from the flash will also put an objectionable highlight on the film. This method of walking in front of the camera during the flash. As long as he continues to move, there will be no image of him formed on the film during exposure.

The most efficient method of painting subjects of considerable height involves pointing the FF-33 lamp at the highest point at the start of the flash and swinging down in an S, ending at the bottom during the last portion of the output of the lamp. It is extremely important to map out or zone the area to be lighted before starting. If the process is left to chance, overlapping may result, or even open areas of no light, and considerable exposure variation may be the unfortunate outcome.

The painting with FF-33 lamps requires basically only one person. The camera is set up, framed, aperture set, shutter opened and locked open, and then the operator is free to perform the lighting. If there are lights located in the area which cannot be turned off to provide a completely dark scene, a second operator to cover the lens or even close and reopen the shutter may be necessary to prevent the burning in of these lights.

Type Number	Class	Lumen Seconds	Average Usable Lumen Level	Voltage	Kelvin Temp.
FF-33	Open & Shut	140,000	55,000 duration 2½ sec.	4-45	3800°
FF-33B	Open & Shut	75,000	30,000 duration 2½ sec.	4-45	5500°

(Based on 7" Polished Reflector)

ASA Film Speed	One FF-33	Two FF-33	One FF-33B	Two FF-33B
25	235	332	173	245
32	265	375	196	277
40	297	420	219	310
50	332	469	245	346
64	375	530	277	392
80	420	594	310	438
100	470	665	346	489
125	524	740	387	547
160	593	838	438	619
200	663	937	490	693
400	938	1325	693	980
500	1050	1485	775	1096

FF-33 – With Type B color film use 81EF filter
FF-35B – Balanced for all daylight color films

Additional compensation by stopping down or opening up may be required for extremely dark or light subject reflectances. Smaller or larger interiors and/or low or high ceilings may require a similar adjustment.

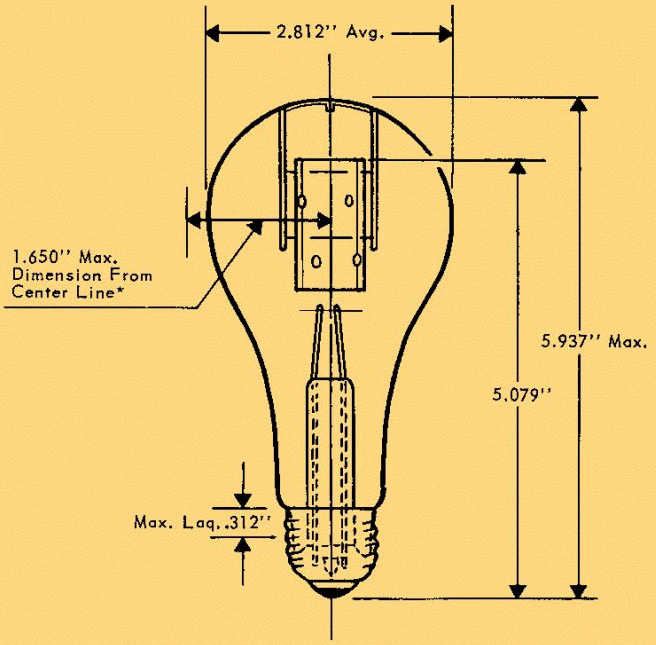
SEQUENCE PHOTOGRAPHY

Guide Number Table For FF-33 Floodflash Lamps With Sequence Or Panoramic Type Cameras

ANSI EXPOSURE INDEX

Exposure Time In Seconds	10–15	15–20	25–50	50–100	100–150	150–200	200	400	800	1600
1/2	88.4	104.5	153.1	216.5	279.5	330.7	353.6	500.0	707.1	1000.0
1/50	17.7	20.9	30.6	43.3	55.9	66.2	70.7	100.0	141.5	200.0
1/100	12.5	14.8	21.7	30.6	39.6	46.8	50.0	70.7	100.0	141.4
1/200	8.9	10.5	15.3	21.7	28.0	33.1	35.4	50.0	70.7	100.0
1/250	7.9	9.4	13.7	19.4	25.0	29.6	31.6	44.7	63.3	89.5
1/500	5.6	6.6	9.7	13.7	17.7	20.9	22.4	31.6	44.7	63.3
1/750	4.6	5.4	7.9	11.2	14.3	16.8	18.1	25.5	36.1	51.0
1/1000	3.9	4.7	6.8	9.7	12.5	14.8	15.8	22.4	31.6	44.7
1/1250	3.5	4.2	6.1	8,7	11.2	13.3	14.1	20.00	28.3	40.0

NOTE: To obtain lens aperture setting, divide guide number by lamp to subject distance in feet.



TYPE FF33

- Class – Special (For High Speed Motion Pictures, Sequence Photography, and Painting with Light)
- Duration – 1.75 Seconds
- Lag Time – 50 millisec.
- Rated Lumen – Seconds 140,000

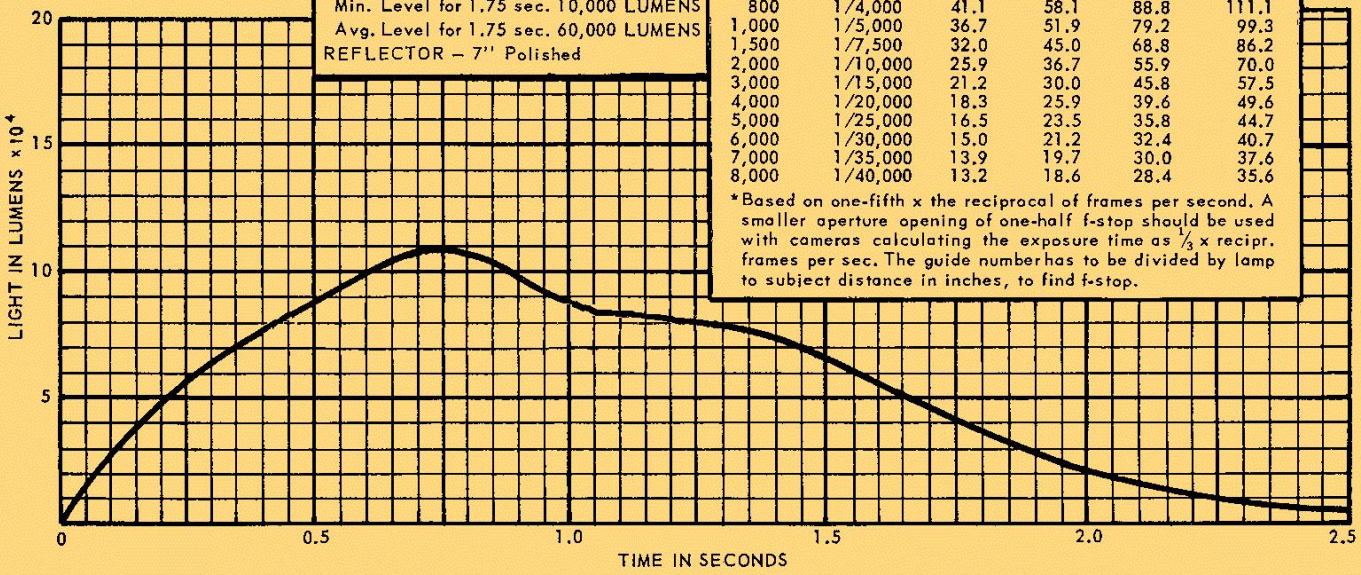
- Approx. Color Temp. – 3800°K
- Min. B.C. Power – 10 MWS
- Bulb Type – A-23
- Base Type – Medium Screw #102
- Voltage – 4.5-45 Volts
- Amp. – 3

NOTE: Lacquer coating not to exceed .008" thickness.
Maximum side solder elevation $\frac{1}{64}$" at a point $\frac{1}{8}$" from top of the base.
Cannot be flashed in series with #3 photoflash lamps.

*Includes bulb diameter tolerances and eccentricity of bulb to base.

TYPE FF-33

DATA
COLOR TEMP – 3800°K
LIGHT OUTPUT –
Min. Level for 1.75 sec. 10,000 LUMENS
Avg. Level for 1.75 sec. 60,000 LUMENS
REFLECTOR – 7'' Polished



CHARACTERISTICS FOR TYPE FF-33 FLOODFLASH LAMP

GUIDE NUMBERS FOR FLOODFLASH LAMPS
FOR HIGH SPEED MOTION PICTURES

Camera Speed Frames per Sec.	*Frames Exposure Time in Sec.	Guide No. for light to subj. dist. in inches FILM EXPOSURE INDEX 25-50	50-100	150-200	250-300
200	1/1,000	82.1	116.0	177.3	222.3
300	1/1,500	71.3	100.8	154.1	193.0
400	1/2,000	58.1	82.3	125.7	157.4
600	1/3,000	47.2	66.6	101.7	127.5
800	1/4,000	41.1	58.1	88.8	111.1
1,000	1/5,000	36.7	51.9	79.2	99.3
1,500	1/7,500	32.0	45.0	68.8	86.2
2,000	1/10,000	25.9	36.7	55.9	70.0
3,000	1/15,000	21.2	30.0	45.8	57.5
4,000	1/20,000	18.3	25.9	39.6	49.6
5,000	1/25,000	16.5	23.5	35.8	44.7
6,000	1/30,000	15.0	21.2	32.4	40.7
7,000	1/35,000	13.9	19.7	30.0	37.6
8,000	1/40,000	13.2	18.6	28.4	35.6

*Based on one-fifth x the reciprocal of frames per second. A smaller aperture opening of one-half f-stop should be used with cameras calculating the exposure time as $\frac{1}{3}$ x recipr. frames per sec. The guide number has to be divided by lamp to subject distance in inches, to find f-stop.