



# GRAFLEX Journal

SHARING INFORMATION ABOUT GRAFLEX AND THEIR CAMERAS

ISSUE 1, 2018

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## GRAFLEX SHUTTER TESTING

By Jim Flack

I am excited to take up the challenge proposed by Graflex Journal to shoot some film with a Graflex and share my results. I have a few Graflex SLR cameras, but only some of them have a working shutter. My favorite camera to shoot is a 4x5 RB Auto Graflex and have both 4x5 sheet film holders and 6x9 roll film holders for the Graflex camera back. I shoot B&W film in either holder.

When preparing a Graflex for use, the first priority is to closely examine the shutter to see that the shutter cloth does not have any visible pin holes and is not too badly wrinkled. Also, it should be able to be wound on the upper spool and move smoothly to the lower spool when the shutter is released. If there are any holes in the shutter cloth or if it cannot be wound and released smoothly, the camera is not a candidate for shooting at this time, but its defects can be noted for potential future repairs.

After confirming that a Graflex's shutter meets the first criterion, no apparent holes in the cloth and the shutter winds and releases smoothly, the next step is to check shutter speeds. We all know that the matrix of spring tension and slit width mounted on the camera is used to select different shutter speeds. What we don't know is whether those settings are accurate, especially for a mechanical camera that is over 100 years old.

Even when new, the accuracy of any camera's focal plane shutter was a topic of concern. In the October, 1907, issue of The Camera Magazine, C.H. Claudy's article titled "Focal Plane Practicalities" discussed these issues. Specifically discussing the Graflex shutter, Mr. Claudy begins, "If, as theory would have it, a two-inch slit at a certain speed gave the same identical exposure as a one-inch slit at half the speed, there would be no choice as to which to use for any set of conditions to which the resulting shutter speed is suitable. As a matter of fact, however, the ten-

sions and the various speeds they give to the slit are variable in various instruments, and vary in each instrument according to temperature and age of the spring and the care which is taken of it. **Consequently, the fixed factor on which dependence can be placed is the size of the slit.** At a given curtain speed, a two-inch slit will admit twice as much light as a one-inch slit, and variations so made are more reliable than variations made with changing tension speeds. This applies to those types of focal plane shutters where the curtain varies in length little, if at all. The Graflex shutter, with its several slits of fixed sizes, cannot have its speeds computed quite so simply. The three-quarter inch slit on this shutter gives an exposure more than twice that which is obtained from the three-eighths of an inch slit, because the spring is wound tighter in the latter case than in the former. Therefore, in answering the original question, **it would seem wise to advise that each owner test his shutter for himself**, on a speed tester or some object moving at a constant speed, and find out whether his tension speeds do what the speed card says they will."

Mr. Claudy goes on to advise, "When there is doubt as to the result of tension and aperture in making up an exposure, give your preference to the smaller aperture and the lower tension when there is movement to be stopped; **when there is no movement, give your preference to the larger aperture and the higher tension.** The reasons are these: If there is doubt about a spring, it is almost universally that it isn't strong enough; I never heard of a spring that grew stronger with age and use. Therefore, if your spring may be weak, don't get your high speeds by it until you have exhausted the small slit limit."

So, testing the accuracy of a focal plane shutter has always been a normal part of the photographer's job when using a Graflex SLR. Today we have a number of relatively inexpensive electronic devices to help us test Graflex shutter speeds. In the past, I've used a Calumet shutter speed tester to measure the shutter speeds of my Auto Graflex on the day of or day before I go out with the camera. But I found the Calumet tester to be tedious to use because it does not give its results directly in fractions of a second. Additional calculations are required for each measurement, and several measurements must be averaged at each slit width and spring tension that you might need to use. Recently I have been using a Pro-Chron XA shutter tester that has made it much easier to make multiple measurements, and it automatically computes the average and displays the results directly in fractions of a second.

It is not surprising to find that the measured shutter speeds differ from the speed indicated by the shutter speed matrix, especially at the slowest and fastest speeds. I've also found that the variation over multiple measurements is the greatest at the slowest and fastest speeds. Fortunately for most uses, if we are smart about selecting film with an ASA rating appropriate to the lighting conditions, we don't need to worry about the very fast or very slow shutter speeds. The middle range of shutter speeds can be made to work for most photographic situations.

Following the advice of C. H. Claudy from 111 years ago, the higher spring tension and wider slit width should be preferred unless the subject is a rapidly moving object. I believe this is especially good advice with older cameras, because the higher spring tension can compensate for weakening of the spring over the years, and it can help overcome inertia and friction in the shutter curtain mechanism, thus giving more reliably consistent exposures.

My RB Auto Graflex has 6 spring tensions and 4 slit widths to choose from its exposure table. For a typical subject and lighting condition, we might need only shutter speeds of from about 1/30 second to about 1/250 second. So, I usually make only shutter speed measurements that give results within that range. Skipping the lowest spring tension, per C.H. Claudy, check to see whether the second or third spring tension gives a reliably "snappy" exposure when set to the widest slit width. If a camera has a particularly weak shutter spring, it may be necessary to go up to setting number 4 or 5 to get "snappy" movement of the shutter curtain. Whatever initial spring tension works okay for the largest slit width, this is where to begin testing your camera's shutter speeds.

TENSION NUMBER	1/8	3/8	3/4	1/2
1	350	110	40	10
2	440	135	50	15
3	550	160	65	20
4	680	195	75	25
5	825	235	90	30
6	1000	295	50	35

THE FOLMER GRAFLEX CORPORATION  
ROCHESTER, N. Y., U. S. A.



I use our dining room table as a test bench to measure a camera's shutter speeds. My desk light is my light source at the front of the camera, and I've found that

a stack of three books is about the right height to position the shutter tester in the middle of the camera back, close to the focal plane shutter. Instructions for this shutter tester suggest removing the lens if there is not enough light through the camera to trigger the tester. In my case, my desk light is bright enough to use, even with the lens in place.

With the spring tension selected, typically number 2 or 3, begin collecting shutter speed data for the widest slit width using a shutter testing device such as the Calumet or ProChron XA mentioned above. Leave the spring tension at that initial setting, and collect several data samples of shutter speed of the widest slit width. Typically, I collect from 5 to 10 data samples. If the data from several tests are very close, then you can have confidence that the average of all the test runs will be a good shutter speed value for that combination of spring tension and slit width. If there is wide variance

in the data, you may need to start over at the next highest spring tension to get reliable results.

For example, the test of my RB Auto Graflex at spring tension 2 and slit width 1/2 yielded an average of 1/26.4 second over 8 samples in a range from 1/26.1 to 1/26.7 second. Because these data are in a tight range, I can have confidence that the shutter speed for my RB Auto Graflex will be very close to 1/26.4 second when set at tension number 2 and slit width of 1/2, and it does not matter to me that the camera's matrix says it should be 1/15<sup>th</sup> of a second. I can trust my measurements when determining actual exposures.

After collecting data for the widest slit width, wind the shutter curtain to the next smaller slit width and repeat the shutter speed testing process using that same spring tension setting. Again, make several tests and collect data to verify consistency and to compute the average shutter speed at that combination of slit width and spring tension. The ProChron XA computes the average of the tests automatically, or you could set up an Excel spread sheet that would compute the average of your tests. Repeat this process for the remaining slit widths while keeping the spring tension at that same initial setting.

After completing this process, you will have computed the average shutter speed for each of the four slit widths at that initial spring tension setting. The data may give you enough range of exposure that you do not need further testing to use the camera at any one of these 4 settings. However, if you want more latitude in selecting shutter speeds, you can wind the spring tension to the next highest number and repeat these tests again for each of the slit widths. At this point, you will have 8 different calibrated shutter speed combinations to use. It does not matter at all whether this data matches the data on the Graflex shutter speed matrix on the camera. It matters only that you now know what shutter speed to expect from each of those eight calibrated spring tension and slit width combinations. You can make your own matrix on paper and refer to it when using the camera.



You can, of course, go further and run similar tests for more (or even all) of the spring tension and slit width combinations. What is important is that you get reliable data about how to select spring tension and slit width that will give you a predictable and reliable shutter speed in the range you need to make photographs. Remember that shutter speed is only one factor that controls exposure. In addition to the ASA rating of the film you choose, you also have the lens f-stop available to control the final exposure.

Remembering the "Sunny 16" rule: To estimate the correct exposure on a bright, sunny day, use f/16 as the aperture setting, and set the shutter speed to be 1 over the film's ASA rating. So, using ASA 100 film, the shutter speed should be set to 1/100<sup>th</sup> of a second and the aperture set to f/16. Using ASA 200 film would require a shutter speed of 1/200<sup>th</sup> of a second at f/16. With reliable shutter speed data (as measured by testing) in the 1/30 second to 1/250 second range, the lens aperture settings from f/4.5 to f/22 will provide adequate control of exposure for the majority of photographic situations.

## MAKING A FOCAL PLANE SHUTTER

By Jeff Yost



Recently, I spent the day watching John Minnick build a new focal plane shutter for my 1918/19 3x4 Auto (non-revolving back), Serial #104688. John is well-known for his creative genius of mating a super fast Aero-Ektar 178mm F/2.5 lens with a 4x5 RB Auto and naming it the "AERO-LIBERATOR." His creations have stimulated demand from customers all over the world for a unique, custom-built Graflex SLR. Each new creation is given a special name by its new owner. A recent creation was christened "Lucinda." The name is engraved on a special brass plaque that is affixed to the side, which also details the newly reprogrammed shutter speeds.



The reader might wonder, why would one have to reprogram the shutter speeds? After all, isn't the original Graflex shutter speed plate good enough? Without getting into the specifics too deeply, time, age, wear and tear eventually weaken the shutter's spring and mechanisms. Besides, one might question the original speeds' accuracy. The bottom line is most of our Graflex shutters no longer clock the speeds like they used to when new. John claims that the fastest shutter speeds attainable run between 1/300th to 1/400th of a second versus the original 1/1000th! ...but, this is another topic for another article.

For anyone who might get the idea that building a new focal plane shutter is an easy job, it isn't. It takes a whole day (in my case, 10 hours) to build, install, and time the various apertures correctly, tweak, and finally test the newly installed shutter's final speeds. (John also custom dials-in the shutter speeds to his client's particular camera, making it slower, or faster, pending upon their shooting preferences.)

How many times have we purchased a camera from a seller who claims, "the shutter curtain appears to work properly," only to discover that it doesn't. Time, dirt, dried lubricants, and a tired spring all take a heavy toll upon a shutter's speed. Many Graflex aficionados agree today that the speed of their cameras is about half of what their particular Graflex placard states, i.e., the top speed is somewhere in the 300 - 400th of a second versus 1000, as John states!

John has literally built dozens of new Graflex SLR shutters. Along with possessing the knowledge and experience, it also requires specialty tools. Needless to say, having access to the proper shutter material that is of the same thickness and light-proof density, similar to what Graflex used, but, made with modern materials, is highly critical and difficult to find. It's the holy grail. John also was fortunate to acquire some OEM (original equipment manufacturer, Graflex's Western Division) Graflex parts from the late Fred Lustig. Plus, he's made new edging for each upper and lower aperture window. My Auto required ten.

While many of us struggle to find competent craftsmen who have the knowledge, and material resources, it was reassuring to find John Minnick available in the USA. At the end of the day, I left convinced that John Minnick is the über Graflex SLR Shuttermeister who has an endless passion to keep our old girls running.

*Ed. Although John is known primarily for his Aero-Liberator and custom creations, as with Jeff, he does straight restorations of Graflex cameras. To find out more, John can be reached at [johnminnick@gmail.com](mailto:johnminnick@gmail.com), or You can view his website at <http://johnminnick.com/>.*

## FLEA MARKET FIND REVEALS THE GRAFLEX CURE FOR THOSE "DANGLING WIRES"

By Alan Hunt

There's an air of anticipation tinged with apprehension as you browse the aisles at a local flea market. What treasure will get your attention above the usual mundane stuff that fills most booths? Can I buy it at a bargain price? And worst of all, will somebody snatch it up before me?

Well, a gentleman could have beaten me to a flea market treasure recently. But he was maybe put off by the dust-laden appearance of the 4x5 Pacemaker Speed Graphic that had also caught my eye. I'm being kind when I use the term "dust." This was dirt and dust with a capital D covering every inch of the (thankfully) closed camera body. And the dust layer extended to the beaten-up camera bag holding the Graphic.



As I carefully retrieved the camera from the bag, the seller priced it at \$25. Pointing to the thick layer of dust, I successfully countered with an offer of \$20. The forlorn-looking Speed Graphic was mine!



Once home, I checked the condition of the lens (135mm f/4.7 Optar in a Graphex shutter), the bellows, and the rear focal plane shutter. They all looked and functioned surprisingly well, considering their lengthy slumber. I spent countless hours with Q-tips

and brushes gently removing the layers of dust from the camera exterior. It was obvious that the Graphic had been stored for decades, possibly in a garden shed somewhere, judging by the amount of dirt.

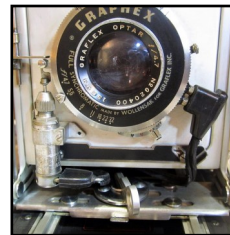
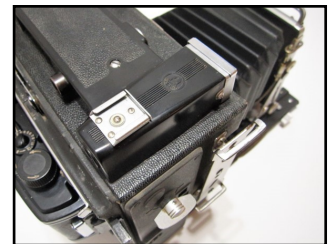
Keeping the Speed Graphic company in the camera bag was a Graflex 2773 flash unit containing a Graflex 2795 BC battery capacitor cartridge; a long, coiled Paramount flash cord; a Kodak lens hood; and five Graphic and Fidelity film holders, some with film still inside. On one of the holders was scribbled in pencil the word "Royals." As an Englishman, born and bred, who has lived permanently in Texas since 1975, I was obviously interested. Who was this mystery shooter who owned the camera? Did he/she really snap a picture or two of members of the Royal Family? Coming back to earth, I told myself to be sensible and continue the joyous task of bringing this sleeping beauty back to life. Anyway, perhaps the word "Royals" hinted at a picture-taking session with the Kansas City Royals...or something.

But the situation did beg the question why this dust-covered Speed Graphic was abandoned? Hadn't this famous American photographic standard performed well over the years for its owner? The only clue I could find to his or her identity was a transfer located

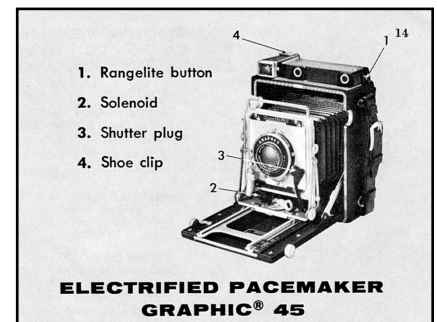
on the bed near the serial number plate. The transfer bore the name of a camera shop in Port Huron, Michigan. And Michigan is a long way from Texas. Eventually I concluded that the camera would be the only one capable of revealing the true identity of this mystery snapper. And cameras don't talk.

Everything seemed to check out on the Speed Graphic. The body release trigger fired the front and back shutters as it should, but I was puzzled by two original equipment bi-post cords at the front shutter -- one connected to a shutter solenoid, the other plugged into a sync connector. But why, I pondered, do the cords disappear under the front standard and the bellows on their way up to the body roof and the viewfinder/rangefinder housing? And where is the power source up there to fire the solenoid?

I was equally confused by a hot shoe that looked "factory installed" on the rear top surface of the viewfinder. To my knowledge, most Pacemaker Speed/Crown Graphic models do not have a factory installed hot shoe in this location. I hooked up my ohm meter to the hot shoe and the sync connector and discovered that the two were indeed connected!



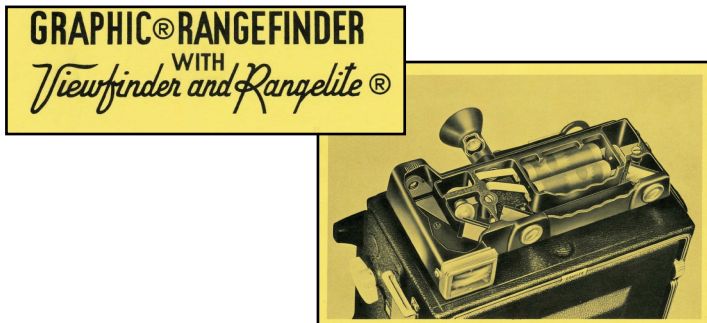
My knowledge of Graphics is decidedly limited, so I decided the next step would be to contact [Graflex Journal](#) editor Ken Metcalf, to add my name to the list of [Journal](#) recipients. In my email, I casually mentioned the hot shoe feature of my Speed Graphic. Ken emailed me back almost immediately saying that if the hot shoe was factory installed, I could be in possession of a fairly rare camera.



Helping to solve my camera mystery, he sent archived Graflex material that described an "Electrified" Pacemaker Graphic 45 with the shutter cords permanently installed, thus eliminating the need to unplug them every time the camera was closed. With this modification, the solenoid power was provided by the batteries (two AA type) that normally power the Rangelite feature of the Graphic top mounted rangefinder.

This meant that in addition to the normal body release trigger, the user could fire the shutter by pressing the red button on the left side of the rangefinder/viewfinder housing -- the red button that normally powers the Rangelite.

A Graflex display advertisement that appeared in a 1956 magazine also hailed the "convenience" factor of the electrified cameras, with "no dangling wires" and "no need to disconnect the trip cord when closing the camera." The ad pointed out that the modification "Permits the camera to be held and allows the shutter to be released with the left hand while an electronic flash unit is held off camera with the right hand."



The quoted price for the camera was \$325.50 for the Crown Graphic model and \$381.50 for the Speed Graphic. Graflex advised prospective customers they could buy the camera for "as little as \$17.58 a month." These prices were higher than the price tags for the standard models and – according to the comparative rarity of the electrified versions – most buyers seemed quite happy to cope with the "dangling wires" problem themselves. (This modification probably voids the use of the Rangelite on the Graphic, but I was unable to remove the viewfinder/rangefinder housing to confirm this. The wires inside the housing are so snugly installed that I could only raise the housing about one eighth of an inch from its installed position after removing the two screws.)

Almost as scarce as the camera itself, a copy of the "Supplementary Instructions for Electrified Pacemaker Graphic 45" was recently found. The four-page leaflet describes for the new owner the procedures designed "to eliminate external wiring" on the camera.

The step-by-step instructions explain that the Graphic Rangelite power supply and solenoid on the camera have been connected with internal cords. "Connect your Graflite Battery Case or Strobflash Lamp Head with the trip cord #2723 to the wired shoe on top of the viewfinder. Insert two fresh photoflash penlite batteries in the rangefinder battery compartment (insert them end for end). Your camera is now 'electrified.' Now, holding your camera with your left hand slipped under the handle strap, the red button on the rangefinder is located conveniently under your left thumb for easy tripping of the solenoid."

The instructions add that the batteries accepted by the Graphic Rangefinder "will be found to be sufficient for tripping the solenoid from 200 to 300 times under normal conditions." A cautionary note about the camera's connecting cords follows: "Space for the built-in connecting cords is very limited, but if when closing the camera, the track is racked back before the front standard is pushed back, the cords should fold into place without jamming."

The publication date on this printed copy of the Supplementary Instructions has been changed from March 1956 to June 1957, suggesting that the leaflet was updated at least once during production of this camera.

I am not aware of the production numbers of the Electrified Graphics or the factory production methods for this model. Did they complete them in batches, or were they simply taken from production and modified on an individual basis to fulfill orders? Production of the Electrified Graphic was announced in March 1956 and discontinued in November 1958. The two models were equipped with the f/4.7 Optar lens in fully synchronized shutter and the built-in Graphic Rangefinder. The Crown Graphic had the catalog number CFE-93, and the Speed Graphic was cataloged as SFE-93.

The serial number of my Speed Graphic starts with the figures 911. I have searched auction sites for news of other Electrified Graphics over the past few months, but have found only two, both Crown Graphics. One had a serial number starting with the three figures 909, and the other camera started with the figures 922, indicating the huge serial number spread where these cameras could be found. The two on auction had apparently lost their shutter cords running under the bellows, but they still had the factory installed hot shoe on the top of the viewfinder.

Age probably had a lot to do with the disappearance of the wiring on those two Graphics. The rubber casing around the wire cracks and decays. This has also taken a toll on the wiring under the bellows on my Speed Graphic, and there was major battery corrosion on one of the battery terminals in the viewfinder/rangefinder housing. I have removed most of this corrosion with the help of white vinegar and baking soda, and – surprisingly – the shutter now performs with a push of the small red button on the side of the housing.



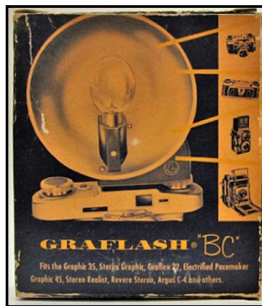
Later tests with the hot shoe setup showed that it, too, performed the way the Graflex promotional material claimed. Lacking a 2723 Unicord, which Graflex recommended for the hot shoe/hand-held flash connection, I had to make do with a PC cord and a hand-held Vivitar 283 electronic flash. The cord was plugged into a PC connection on the side of a German manufactured hot shoe attachment, seated in the Graphic's hot shoe. This combination triggered the flash successfully with a press of the red button. Next, I mounted an electronic flash directly in the hot shoe, and it also fired successfully. I am convinced that similar performance could be achieved with any type of flash equipment connected to or mounted directly in the Graphic hot shoe.



Graflex announced the Electrified Graphics with this photograph in a May 1956 [Trade Notes](#) item, explaining that the idea for the new modification came from a District Manager who "electrified" his own Pacemaker Graphic.

A glance at the wiring on my camera reminds me that the electrified feature is living on borrowed time, and Ken kindly circulated fellow collectors to request their help in dealing with old wires. Many great suggestions were received, and I will eventually adopt one of these ideas to solve the problem. In the meantime, the shutter on the Speed Graphic continues to perform as it should with a press of the little red button. Most of you collectors will know and appreciate the thrill I experienced when I pressed that button and the solenoid clicked into action, tripping the shutter for the first time in decades.

I wish in a way that old Speed Graphic COULD talk. What a tale it could tell!



Mini Graflex "BC" flash advertised for the "Electrified Pace-maker Graphic 45."



**GRAFLEX ADS  
COURTESY GEORGE DUNBAR**

*Closeups!*

**Sharp as a needle  
with your SPEED GRAPHIC!**

The photograph above is another example of what the word versatility means when referring to the famous SPEED GRAPHIC. You know the kind of speed about this camera takes... sharp, clear. You know the kind of outstanding portraits it is capable of taking. And here you see the kind of needle-sharp, really sharp pictures the new Pacemaker GRAFLEX (Speed or Crown) can obtain for you—making them truly the finest all-around camera money can buy! Invest now in the all-purpose camera you'll be proud to own! See your local dealer for full details. For descriptive literature, write to Room 15, Graflex, Inc., Rochester 8, N. Y.

GRAFLEX camera and accessories shown here are available only by order from the Rochester 8, New York, N. Y. U. S. A.

Get Prize-Winning Pictures With **GRAFLEX**

Western Division, 3043 Wilshire Blvd., Los Angeles

Life Magazine, 1948.

**A NEW FEATURE!  
ELECTRIFIED  
PACEMAKER GRAPHIC 45**



Graflex encouraged employees to work in their off-hours on ideas for improving company products. In a 2016 issue of the Graflex Journal, we wrote about a \$4,000 prize that was given in 1955 to Mr. Traino, an instrument maker, in the experimental shop.

Here is the 1956 Graflex Trade Notes account of the development of the Electrified Pacemaker, this time without a prize or name recognition.

"Last summer, one of our District Managers 'electrified' his Pacemaker Graphic so that he could operate the front shutter remotely with power supplied by the Graphic rangefinder batteries. It appeared interesting. So...a half dozen hand samples were made up and 'pre-viewed' to a cross-section of Graflex Dealers and professional photographers of the PA of A Convention in Chicago last August. A few dozen of them were 'ordered on the spot' at a premium price. These were manufactured and delivered...and they have been so well liked by the users who have had them in service, and these have in turn led to enough demands for more of them that we have decided to make the 'electrified' Pacemaker '45' available as a catalog item."

**NOW**  
only **\$17.58** a month  
BUYS A  
**COMPLETE  
GRAPHIC  
OUTFIT**

**GRAFLEX-MADE Pacemaker GRAPHIC and GRAFLITE**

Now your GRAFLEX dealer can sell you any new GRAFLEX-MADE camera or equipment on an Easy Payment Plan. On a Pacemaker Graphic and Graflite combination you can take up to 20 months to pay and you only need 10% down.

**USE YOUR PRESENT CAMERA AS ALL OR PART OF THE DOWN PAYMENT**

Most authorized Graflex dealers will be glad to appraise your present camera free of charge and will accept it as a trade-in. In many cases your "trade-in" will more than equal the cash down payment.

Convenient payments can be arranged to pay the balance. As an example: the 4x5 Crown Graphic outfit illustrated above, completely equipped with 135mm. Optar lens in a Graphex fully synchronized shutter; Graphex Rangefinder that accepts interchangeable cams to match wide angle, normal and telephoto lenses; Graflite flash unit with 3-cell battery case and 5" reflector; battery case mounting bracket; and 20' shutter cord... is yours for only \$17.58 a month.

This is the time to step up to a Pacemaker Graphic! As the most versatile camera on the market it offers many advantages that will help you get consistently better pictures. Ask your dealer to demonstrate the Pacemaker Graphic or write for a descriptive folder on the camera and accessories: Dept. P-46, Graflex, Inc., Rochester 8, N. Y.

Prices include Federal tax where applicable and are subject to change without notice. Prices are slightly higher in Canada.

**GRAFLEX** *Prize-Winning Camera and Equipment*  
DEPT. P-46, GRAFLEX, INC., ROCHESTER 8, N. Y.

Pop Photography, 1956.

## ROBERT GOLDMAN



Robert Goldman is a contributor to the [Graflex Journal](http://www.ignomini.com/) and collector of mainly stereo cameras. His collection can be enjoyed at <http://www.ignomini.com/>. In addition to the stereo cameras are several nice Graflex cameras...including the 4x5 R. B. Auto Graflex at left. Here is what he writes about the camera:

"A thing of beauty is a joy forever...and then there's this beast, or should we say family of beasts? My father was a Speed Graphic sort of fellow. In fact, I think he still has the camera he used as a high school newspaper photographer. When I started learning 35mm photography in school, he went on at length about how superior the results were from a medium format camera, so I wound up buying a Series B Graflex. Can't possibly recall why, other than I must have fallen in love with the idea of large black boxes. This is the second of what eventually became a three-camera stable, including an RB Series B and a Series D. The other two are both 4 x 5s. This one is in 3 1/4 x 4 1/4, which meant that when 3 1/4 cut sheet film was discontinued shortly after I bought the camera, I wound up cutting down 4 x 5 sheets in the dark. Still have ten fingers in spite of my best efforts. As for results, it must be said the fine grain of a medium format image is very impressive. Unfortunately, I never had access to a medium format enlarger, so it was contact prints only. I've scanned a couple of my old negatives and have to admit they really are good. I learned a lesson about lenses when the first camera I was considering had a bubble in the front element of the lens. I queried the seller about it, and he explained something about plane of focus and how he was sure I would love the results - bubble or no bubble. He turned out to be correct, it's a wonderful old lens. At the time, I never would have imagined that years later I would find myself telling guys the specks in their digital shots came from sensor dust and couldn't possibly be that little dust mote inside the lens. What goes around comes around."

Not shown on the web site is a Series B, and as he explains :

"And to thoroughly embarrass myself, attached are a photo of me with my Series B and a shot I took with the camera on a 7,000 mile MG car rally in 1986. The cockpit of the car visible in front of me in the camera photo is the one I drove from CA to NY for the start of the rally, then drove back to CA. I left the MG in CA and drove the station wagon and trailer you see in the second photo from CA back to Toronto, Canada. I put in 11,000 miles on the trip.

I never should have taken that camera with me. It's the one I mentioned with a bubble in its Kodak Anastigmat lens. One passenger, trying to be helpful, picked it up by the strap...end of strap. I also put a big scrape in the leather. Although it wasn't then and isn't now a valuable camera, I always felt bad about the damage. I never liked damaging my everyday cameras, much less something vintage."



# FOLMER & SCHWING CAMERA BACKS

1894-1904

By Ken Metcalf

The purpose of this article is to set out, and illustrate where possible, different camera backs used by Folmer & Schwing Mfg. prior to purchase by George Eastman in 1905. These backs can be grouped into: 1. Top and side loading, 2. Spring backs, and 3. Backs made for attaching accessories.

Complicating the project, it appears the company sold custom fitted cameras with backs not as described in catalogs and may have modified backs when cameras were returned for repairs and/or updates.

## Top and Side Loading Backs

From the 1904 description of The Graphic Camera:

"Liberal space is provided in the front when the camera is closed, and room is allowed at the back of the camera for carrying three Double Plate Holders, a Magazine Plate Holder or a Cartridge Roll Holder.

A large spring actuated panel is provided for focusing.

A spring actuated door is placed in the side [or top] of the camera for convenience in inserting plate holders and drawing slides.

The ground glass focusing screen is spring actuated and removable."



Left, 4x5 Graphic Jr., and right, 4x5 Telescopic Graphic Special ca. 1898-1901.

## Spring Backs

From the 1901 catalog description of The Graphic Camera:

"The Ground Glass Screen is spring-actuated and recedes to receive plate-holder, closing automatically where plate-holder is withdrawn. Springs of sufficient tension are used to hold plate-holders firmly in position."

This style of back was used after 1904.

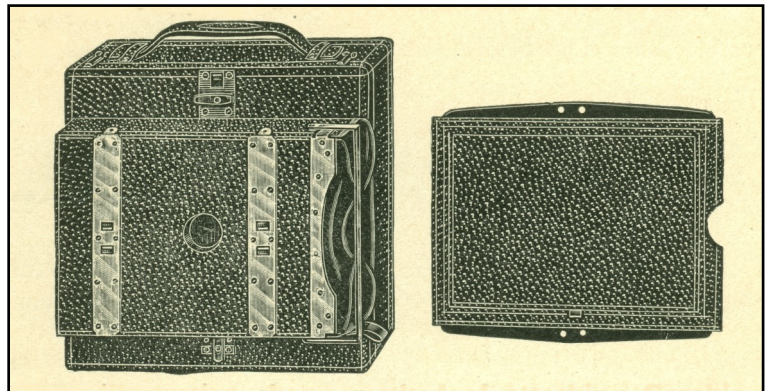


4x5 Reversible Back Cycle Graphic ca. 1902.

## Backs Made For Accepting Accessories

From the 1901 catalog description of one method of attaching accessories:

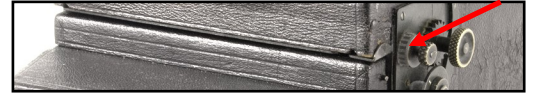
"The above [at right] illustration shows method of attaching Graphic Magazine Plate-holder to Reversible Back Cycle Graphic. Magazine Plate-Holder is held in position by two brass pins at bottom and sliding bolt at top, and may be readily removed and ground glass replaced for focusing. Ground glass is held in position by two turn buttons clamping springs, which does not interfere with the ordinary plate-holder being used."



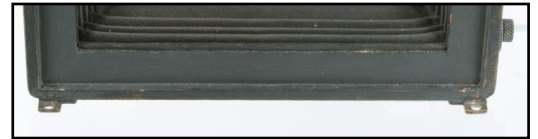




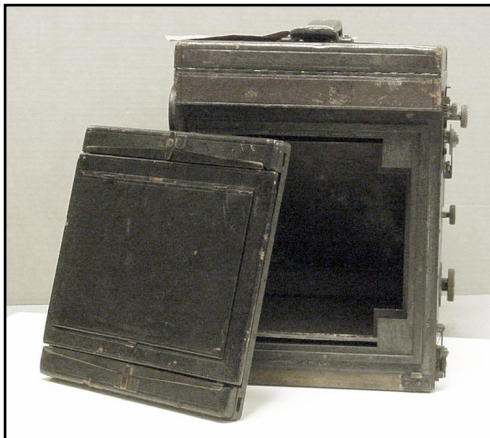
5x7 original reversible back Graflex, serial number 7031; ca. 1901-1902 courtesy George Eastman Museum collection (1974.0037.2464). The spring back is secured with two "turn buttons," while the reversible back is held in place by a slide bar at the top and two pin brackets on the bottom.



Slide bar.

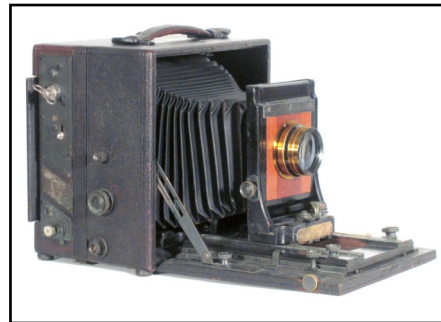
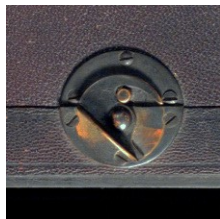


Pin brackets.



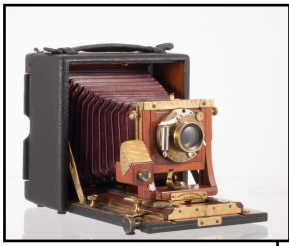
Original Graflex with reversible back removed.

5x7 Reversible Back Cycle Graphic Special serial number 7680, Ca. 1904-1905. Spring back attached with pins used on Original Graflex and latch unique to this model F&S camera. Focal plane shutter is part of spring back.



Fixed back 4x5 Original Graflex serial 6670, Ca. 1902, with slide locks from 1905 patent, Courtesy George Eastman Museum (1974.0037.2472).

This style of back was not shown in any catalog or on other sample camera. It could have been returned after 1905 and modified.



Comparison of reversible spring backs. On left, serial number 4884 from previous page, and on right, serial number 6813 (1974.00371.7722) , courtesy George Eastman Museum, configured to be removed to accept accessories, using one brass pin.



Tourist Graflex. Removable and non-reversible back, courtesy George Eastman Museum (1974.0037.2369). Single pin system with keeper at bottom and slide lock at top.

5x7 Stereo Graflex, courtesy George Eastman Museum (1983.0836.0006). Same system as used on Tourist Graflex.



Tourist 7505, courtesy Thomas Evans.





3¼x4¼ The Folding Pocket Graphic, ca. 1901-1904, courtesy George Eastman Museum (1974.0037.2084).



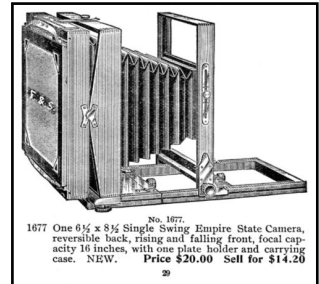
Originated with the 3¼x4¼ Folding Pocket Graphic, this camera's accessory attachment method was also used on the 5x7 Press Graflex of 1907, so this was one of the few systems that survived beyond the early experimental period.

### Conclusions

Prior to introduction of the patented slide lock in 1905, F&S experimented with various backs, and only the Press Graflex continued to use one on the Folding Pocket Graphic.

Folmer & Schwing was formally purchased by Mr. Eastman in December 1905, but the patent containing the slide lock (843,140) was filed in May of 1905, and in a letter to Mr. Eastman, Folmer wrote of the "experimental models of the 4x5 and 5x7 'AUTO-GRALEX'." Although not set out in the "claims" section of the patent, on line 86-87 is the statement that "At the rear of the exposure-opening...appropriate ways...are provided for plate holders." Although Eastman made many positive changes to the overly complicated Folmer & Schwing line of cameras, the slide lock and one-piece shutter, it appears, were not among the changes.

While editing my article, Thomas Evans reminded me of the early cameras designed for tripod use, the view cameras. At right is his early serial number 4165 (ca. 1897-1904) Reversible Back Graphic, showing a variation of the spring back. Also, at far right is an illustration from Folmer & Schwing's 1897 Bargain List of a camera with a similar back.



In these two internet pictures, a roll film and film pack adapter (the latter from Premo) were made with pin holes on the top, versus the spring usually used, as shown on page 10.

## Graflex Journal

*The Graflex Journal is dedicated to enriching the study of the Graflex company, its history, and products. It is published by and for hobbyists/users, and is not a for-profit publication. Other photographic groups may reprint uncopyrighted material provided credit is given the Journal and the author. We would appreciate a copy of the reprint.*

Masthead photo: Sergeant Karen Hermiston of the Second World War Canadian Women's Army Corps holding a speed graphic camera. From Kodachrome, sent by George Dunbar and enhanced by Bob Lansdale.

They now have the Pathe Cinematographe up-link, for the motion picture camera in the George Eastman Museum.

<https://sketchfab.com/models/b26f42914db342bd91b6fc130800a709>

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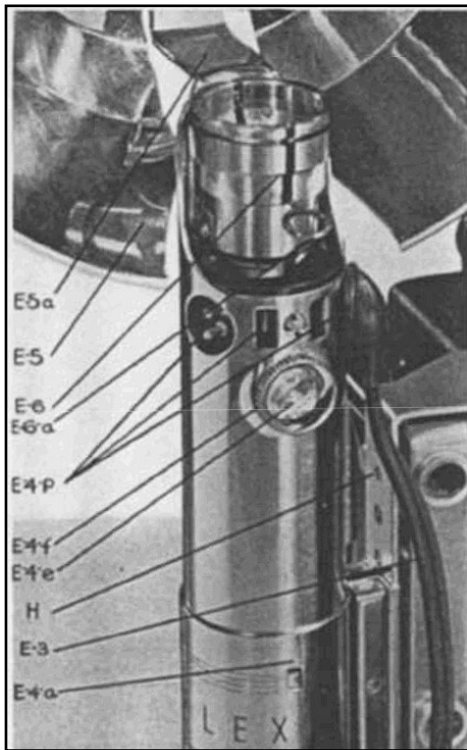
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## FLASH!



Prior to WWII, in the US's lend/lease program, many Speed Graphics were sent to Great Britain (named C-1), with one modification made to the flash battery case. It had a turned aluminum socket with a wire eject lever in the center. The original socket system was removed from the battery case by a pin.



From their website: "Edward Meyer, VP of Exhibits & Archives for Ripley's Believe It or Not!, acquired this piece at the Profiles in History Hollywood Auction on June 28, 2017, for a staggering \$450,000!"

**Check out this Graflex site from Thomas Evans!**

<http://graflexcamera.tumblr.com/>

It is prepared with care and filled with interesting articles.