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LAB REPORT

By Norman Goldberg and Michele A. Frank

No. 1215078

BRONICA SQ-A

Camera Type: Medium-format roll-film single-lens reflex

Normal Lens: 80-mm Zenzanon-S f/2.8

Shutter: Between-lens, electronically governed Seiko #0 with stepless speeds on automatic from 8 to 1/500 sec, stepped speeds from 8 to 1/500 sec on manual; mechanical (nonbattery) speeds 1/500 sec and "T"

Viewfinder: Interchangeable; can be equipped with eye-level finders including AE Prism Finder S (tested), ME Prism Finder S, Prism Finder S, CdS MF Finder S and Waist-Level Finder S. Interchangeable focusing screens: standard screen has central rangefinder spot surrounded by microprism ring on groundglass/Fresnel field, four others available

Metering System: Tested AE Prism Finder S measures through-lens at full aperture with two silicon photodiodes; finder shows shutter speeds from 8 to 1/500 sec plus over/underexposure warning lamps; on auto, steady shutter-speed LED will indicate speed set by metering system; on manual, correct speed for conditions will flicker; EV range 4 to 17 at ASA/ISO 100; auto/manual switch; ASA/ISO film-speed settings from 25 to 3,200; on/off/manual switch

Flash Synchronization: Single PC terminal; X at all speeds to 1/500 sec

Loading: Conventional with interchangeable backs

Film Transport: Knob/crank wind

Other Features: Mirror lockup, provision for multiple exposures, red LED battery check, automatic coupling to camera's metering system of film-speed information programmed into back, shutter-release locking ring, depth-of-field-preview lever on lenses

Accessories: Full line of lenses from 40-mm to 500-mm, two zooms, bellows, extension tubes, 120, 220, 35-mm, and Polaroid film backs, Speed Grip S, Remote Camera Battery Pack using 6-volt 544 (or equivalent)

Weight: 1,781.3 g (3.93 lb.) with AE finder and 80-mm lens

Dimensions: L., 198.7 mm (7.82 in.); H., 153.0 mm (6.02 in.); W., 112.3 mm (4.42 in.) with AE finder 80-mm lens and 120 back

Price: Body, lens, and 120 or 220 back, $1,530; AE Prism Finder S, $760; eye-level prism finder S, $320; waist-level finder S, $69

Distributor: GMI Photographic Inc., P.O. Box U, Farmingdale, NY 11735.

Field Check By Algis Balsys

Like many professional photographers, I find myself using 35-mm equipment much of the time. Occasionally, though, a client will request larger-format pictures.

If I have a choice, or am shooting for myself, the photographs invariably get made with a 6x6-cm roll-film camera: the medium format's bigger negatives produce better results without requiring me to sacrifice too much mobility. With this in mind, I was delighted to get my hands on Bronica's new SQ-A, so I could put it through its paces both in the studio and on the streets of New York.

The SQ-A is an updated version of the Bronica SQ. With its accessory AE Prism Finder S attached, it becomes an aperture-preferred automatic roll-film SLR with metered manual override available at the flick of a switch.

It relies heavily on electronics, as evidenced by the number of gold-plated contacts on the camera body. There are 10 of them, mating with their counterparts on the base of the prism finder (the SQ has eight of these contacts, lacking those that provide automatic exposure).

There are additional electrical-contact points on each of the SQ-A's accessory backs (the film-speed-setting dial is an integral part of the film back), and six more just inside the lens mount. These six mate with their counterparts on the rear of the 10 Zenzanon lenses made for the Bronica SQ and SQ-A.

The contacts transfer exposure information from the camera body to the shutter in the lens, and activate the LEDs in the camera's accessory metering viewfinders.

Power is supplied to the SQ-A by a six-volt silver-oxide or alkaline-manganese battery, which fits snugly into a covered compartment in the camera's baseplate. If the battery is dead or missing, you can still fire the shutter, but only at 1/500 sec. Why such a high shutter speed?

BRONICA SQ-A

Mainly because it provides you with two options. First, it allows you to make action-stopping pictures in good light; and second, it will allow the use of electronic flash, since the between-the-lens leaf shutters used in the SQ-A's lenses will synchronize at any speed.

A small battery-check button on the camera body will illuminate a red LED at the top of the viewing screen if the battery is functioning correctly. If the weather is really cold, it is a good idea to press this button occasionally to check the battery condition. I forgot to do this on one particularly frigid day and found myself unable to shoot at the 1/60 sec I needed until I had replaced the cold battery with another I had warming inside my parka pocket.

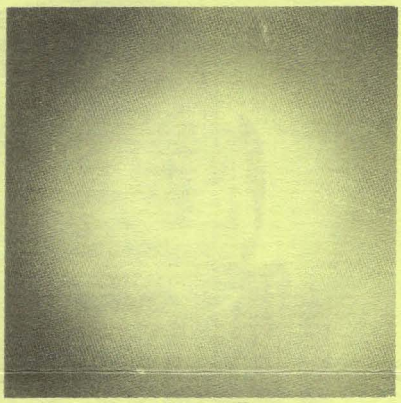
The SQ-A is modular in design. The basic camera body can be fitted with a number of different finders: a 120, 220, Polaroid, or 35-mm film back; and any of the lenses in the SQ system.

The camera given me to check arrived with the automatic-exposure AE Prism Finder S and no waist-level finder. Luckily, the prism finder's excellent brightness and accurate auto-exposure metering system more than compensated for the bulk it added to the already substantial camera.

The prism finder did pose one rather annoying problem, though: attaching the marvelously easy-to-change backs was no longer easy. With the finder in place, it was difficult to see the pair of grooves on the camera body to be mated with two metal tongues at the top of the film back.

Meter-sensitivity pattern

Central, circular emphasis

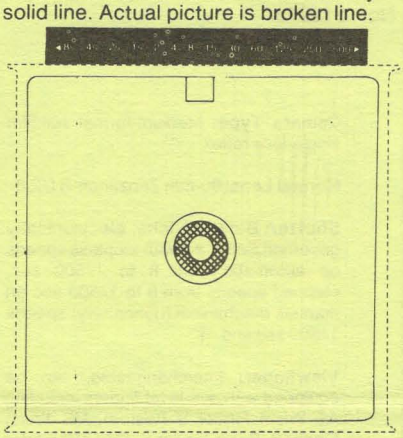


During the month I had the SQ-A I scraped a lot of black paint from the back of the camera, simply by trying to seat the film back properly. Whenever possible, I resorted to taking off the prism before changing backs, but doing this safely and comfortably on the street was rather difficult.

With the back removed, changing film was a breeze. All I had to do was to insert a roll of film into the appropriate chamber, draw some paper leader out and slip that into the take-up spool, then use a folding key at the side of the film back to bring the film's start-indicating arrow into alignment with a triangular index inside the back.

VIEWFINDER
display and framing accurary

Picture area is defined in viewfinder by solid line. Actual picture is broken line.



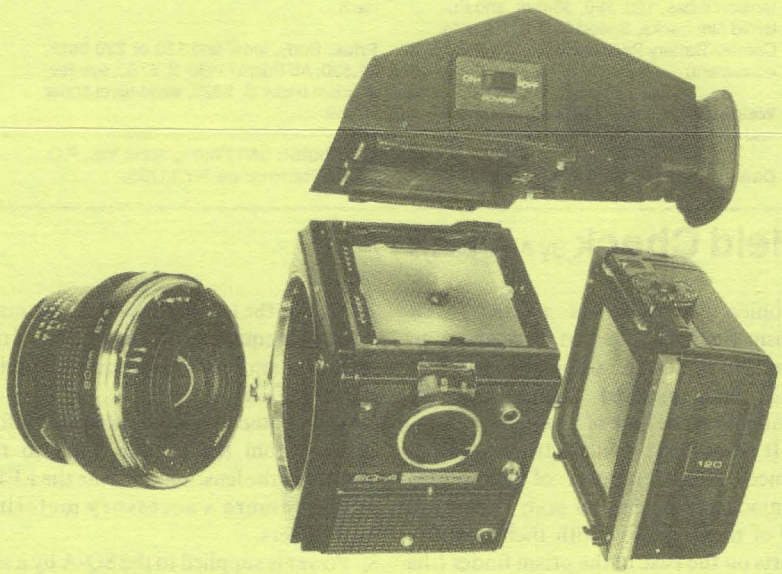
At the top of each back is a circular film-speed-setting dial, marked from ASA/ISO 25/15 to 3,200/36. Full-stop settings are marked numerically, with lines indicating 1/3-stop increments between them.

Once I got the tongues of the film back aligned with the grooves on the camera body, the back slipped into place with a decisive click. The SQ-A has a number of safety features built into its back and body. You cannot remove the back without putting the darkslide into place, nor can you pull out the darkslide with the back removed if you are partway through a roll of film.

With the darkslide in place, the back can be popped off very easily by pressing a small button on the left side of the camera body. It isn't difficult to press this button by accident: the SQ-A manual recommends that, to prevent unintentional disengagement, you remove the darkslide as soon as the back is attached.

With the back in place, a few turns of the large, smooth film-advance crank will automatically bring the first exposure into position. Moving the crank both advances the film and cocks the shutter of the SQ-A—unless you are after multiple exposures: then you must first push a multi-exposure lever down until you see a red dot. Having done so, the advance crank will cock the shutter without advancing the film. The multiple exposures I made all came out in perfect register.

The shutter-speed dial of the SQ-A falls easily between the thumb and forefinger of the left hand. It is marked in speeds from 1/500 down to a full eight sec—a commendably extensive range—but the dial has */continued on page 85*



Interchangeable lenses, backs, viewscreens, and finders make SQ-A versatile. Gold-plated contacts provide electrical link between main body, lens, finder, and back, where film-speed dial is located. Manually selected shutter speeds are set on large dial on camera's side. Button in front of dial is lens-mount bayonet-latch release. Button to rear of dial is battery test. Button on lower-right corner of camera is back-latch release.

no "B" or "T" settings for longer exposures. Instead, each lens has a small lever that can be set at one of two positions: "A" for normal operation of the between-lens shutter, and "T" for time exposures.

The lever is held in place by a tiny setscrew, and is normally kept in its "A" position. I found this arrangement to be less than convenient, especially as the screws on the three lenses I was given to test all had sharp edges and could not be loosened easily with a fingernail. Presumably the designers assumed, with some justification, that anyone requiring exposures longer than eight sec would probably have the time to make the appropriate adjustments on the lens.

One of my favorite features of the SQ-A was its unbelievably quiet shutter In normal operation, the SQ-A makes as much noise as many of the other roll-film SLRs I have used, but most of that comes from its mirror. To find out how quiet the shutter itself was, I activated the SQ-A's three-position mirror-lockup lever, setting it at "C" for continuous mirror lockup. I was making pictures of a static subject and had no need to look through the camera at the time of exposure. With the mirror locked up, I could barely hear the click of the shutter blades as they opened and closed.

The mirror-lockup lever has two additional settings: "N" for normal operation, where the mirror moves out of the light-path just before exposure and comes back down as you advance the film; and "S" for locking the mirror up for a single frame.

All of the SQ-A's major controls fell under the fingers comfortably, and I found the camera to be well-balanced when used at waist level. Shooting at eye level was a little more awkward, because of the SQ-A's boxy proportions and front-mounted shutter release. However, Bronica offers an accessory grip that it claims makes the camera virtually as well-balanced and easy to handle as a 35-mm SLR. Apart from the difficulty I had attaching the film backs when the prism finder was in place, all of the component parts fit together easily and with a commendable solidity. The bayonet lens mount was large and secure, requiring a short counterclockwise turn to mount a lens.

Switch on side of prism finder selects either manual or auto-exposure shutter operation. Push button (A) down to unlatch finder Set lever (B) to make multiple exposures. Lever (C) has three positions: for normal mirror operation, single shot with mirror locked up, continuous shooting with mirror locked up.

Bronica has built in an extremely useful safety precaution in this mechanism. You cannot remove a lens unless the shutter is cocked, so that the mirror is in position to stop light from reaching the film.

The focusing screen supplied with the SQ-A I tried was one of the brightest and snappiest I have seen on any camera to date. Focusing with the combination matte-field/microprism/rangefinder-wedged screen was easy and sure, even on dimly lighted streets at night—something that cannot be said for very many roll-film SLRs.

The screens are easily interchangeable. Five different types are offered, including one with architectural grid lines that would be extremely useful in all kinds of photography besides that of buildings.

The AE Prism Finder S, supplied with my SQ-A, is a rather ungainly looking, plastic-covered device, but it performed beautifully. One side of the housing has a simple on/off switch of the type used in high-intensity desk lamps.

On the other side, a similar switch is marked "auto" and "manual." With the activating switch on and the mode switch set to "auto," the finder's electronic innards, using a pair of silicon photodiodes (SPDs), determine the required exposure. The AE system, metering at full aperture across the entire screen, determines the shutter speed, based on lens-aperture and film-speed settings. It gave me excellent exposures most of the time.

The speeds chosen by the automatic-exposure system are shown by LEDs at the top of the finder, just outside the picture area. Two small, red LED triangles at the left and right of the shutter-speed scale warn against under-and overexposure, respectively. In the auto mode, the speed being set will glow steadily; with the finder in its manual mode, the speed suggested is indicated by a flickering LED.

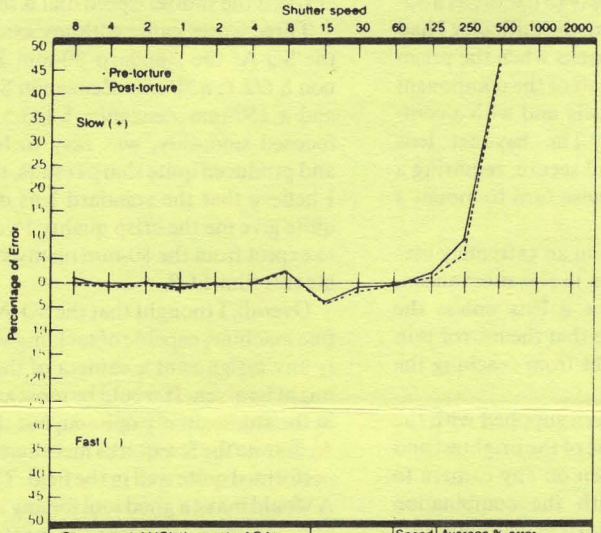
If you make the mistake of leaving the finder's power switch off and the mode switch on "auto," the camera will fire at 1/500 sec, no matter what shutter speed is set on the shutter-speed dial. With the finder off and its mode switch set to "manual," the shutter will fire at whatever speed the shutter-speed dial is set on.

Three lenses came with my sample of the SQ-A: the standard 80-mm Zenzanon S f/2.8; a 50-mm Zenzanon S f/3.5; and a 150-mm Zenzanon S f/3.5. Each focused smoothly, was easy to handle, and produced quite sharp results, though I believe that the standard lens did not quite give me the crisp quality I've come to expect from the 80-mm on my venerable roll-film TLR.

Overall, I thought that the SQ-A was a fine machine, capable of tackling virtually any assignment a camera of this type might be given. It would be most at home in the studio, in my opinion; but the SQ-A, despite the few quirks mentioned, also performed quite well in the field. The SQ-A would make a good tool for any serious photographer, amateur or professional—especially if he wanted exposure automation.

LAB REPORT

SHUTTER PERFORMANCE



Suggested ANSI (formerly ASA) shutter-accuracy standards are shown by shaded area. Higher speeds have more tolerance

Extreme temperature test

Speed	Average % error			
	-20°C		+49°C	
1/15	-3.75	-6.15		
1/125	-8.00	+3.13		
1/500	+30.50	+45.00		

EXPOSURE SYSTEM

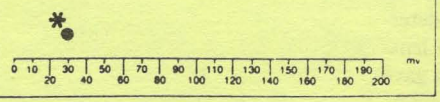
EV ERROR: Top figures are pre-torture, low figures post-torture

Manual input: aperture

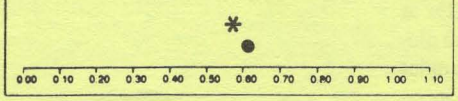
ASA	25			100			400		
BLV	5	10	15	5	10	15	5	10	15
2.8	-0.4 -0.4	-0.3 -0.4		-0.3 -0.3	-0.5 -0.3		-0.3 -0.3	±0.0 ±0.0	
4	-0.5 -0.5	-0.4 -0.4		-0.5 -0.4	-0.3 -0.4		-0.3 -0.3	-0.5 -0.5	
5.6	-0.4 -0.4	-0.4 -0.4	-0.5 -0.4	-0.5 -0.4	-0.3 -0.4		-0.3 -0.3	-0.3 -0.1	
8	-0.3 -0.3	-0.4 -0.4	-0.4 -0.4	-0.5 -0.4	-0.4 -0.4		-0.4 -0.3	-0.3 -0.1	
11		-0.4 -0.4	-0.4 -0.4	-0.3 -0.3	-0.4 -0.4	-0.3 -0.3	-0.4 -0.3	-0.3 -0.1	
16		-0.4 -0.4	-0.4 -0.4	-0.1 -0.1	-0.3 -0.4	-0.3 -0.3	-0.5 -0.4	-0.3 -0.1	
22		-0.4 -0.4	-0.4 -0.4		-0.3 -0.4	-0.3 -0.3	-0.1 -0.1	-0.3 -0.1	-0.3 ±0.0

Blank spaces show limits of camera's dynamic range and/or values tested.
BLV: scene luminance=EV @ ASA100. ANSI tolerances: ±0.5EV.

NOISE LEVEL (Millivolts):



VIBRATION LEVEL (Volts):



Pre-torture ● Post-torture ✱

Noise and vibration standards do not exist, but relative levels become evident when values for several cameras are compared

MISCELLANEOUS DATA

FUNCTION	PRE-TORTURE	POST-TORTURE
Shutter-trip force:	350 grams	350 grams
Shutter-trip travel:	2.0 mm	2.0 mm
Self-timer:		
Minimum:	N.A.	N.A.
Synchronization:		
Electronic Flash:	¹ 0.0 msec @ all speeds	0.0 msec @ all speeds

Stripdown Report

Even if it weren't obvious from the exterior, an inside look at the SQ-A shows how closely related it is to Bronica's ETR. See the Lab Report on that 4.5x6-cm SLR in the November, 1978 issue of POP PHOTO, and you'll be struck with the similarities between it and the SQ-A.

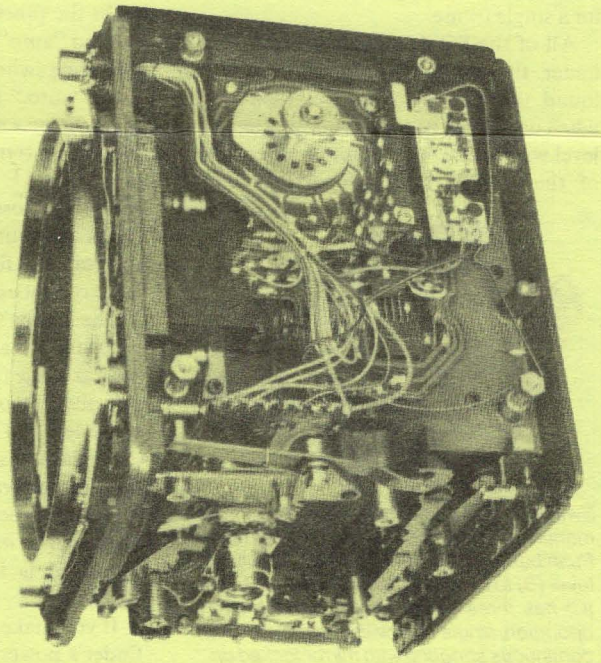
The same Seiko shutter is used. This is a five-leaf design that employs an electromagnet to arrest the blades in the open position. The blades are actuated by springs, gears, and levers, just as is the rest of the camera—despite the impressive collection of electronic hardware in the AE Prism Finder S, and the generous use of gold-plated contacts on the camera's front, top, and back.

The six front contacts serve the interchangeable lenses, each with its own shutter and diaphragm. Three of the contacts carry f-stop information from the diaphragm back to the metering system in the prism finder. Two contacts are used to energize the shutter's electromagnet for speed regulation. The sixth contact connects the synchro switch in the shutter to the PC outlet on the camera's front cowl.

Ten contacts on the camera's top, at the front edge of the finder screen, form the interface between the AE finder and the camera. Two more contacts, at the rear of the finder, mate with those on the film magazine, whose film-speed dial controls a variable resistor.

The camera really comes into its own when the AE finder is employed, and especially when the finder is switched into its auto mode, thus making it operate in the aperture-priority auto-exposure mode. The finder's two silicon cells straddle the eyepiece and are backed up by a very photogenic (i.e., colorful and well-made) circuit board jammed to the edges with discrete components and integrated circuits.

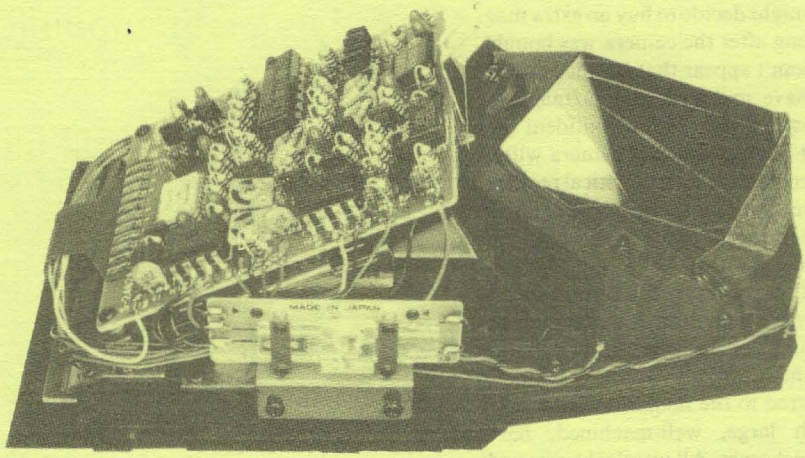
The rest of the finder is heavily laden with the big prisms needed to produce the erect and laterally correct image of the



View from lower-left corner shows gold-plated shutter-speed-setting switch near top, battery-test circuit board to its right. Wires are neatly bundled, interior is uncrowded, workmanship good.

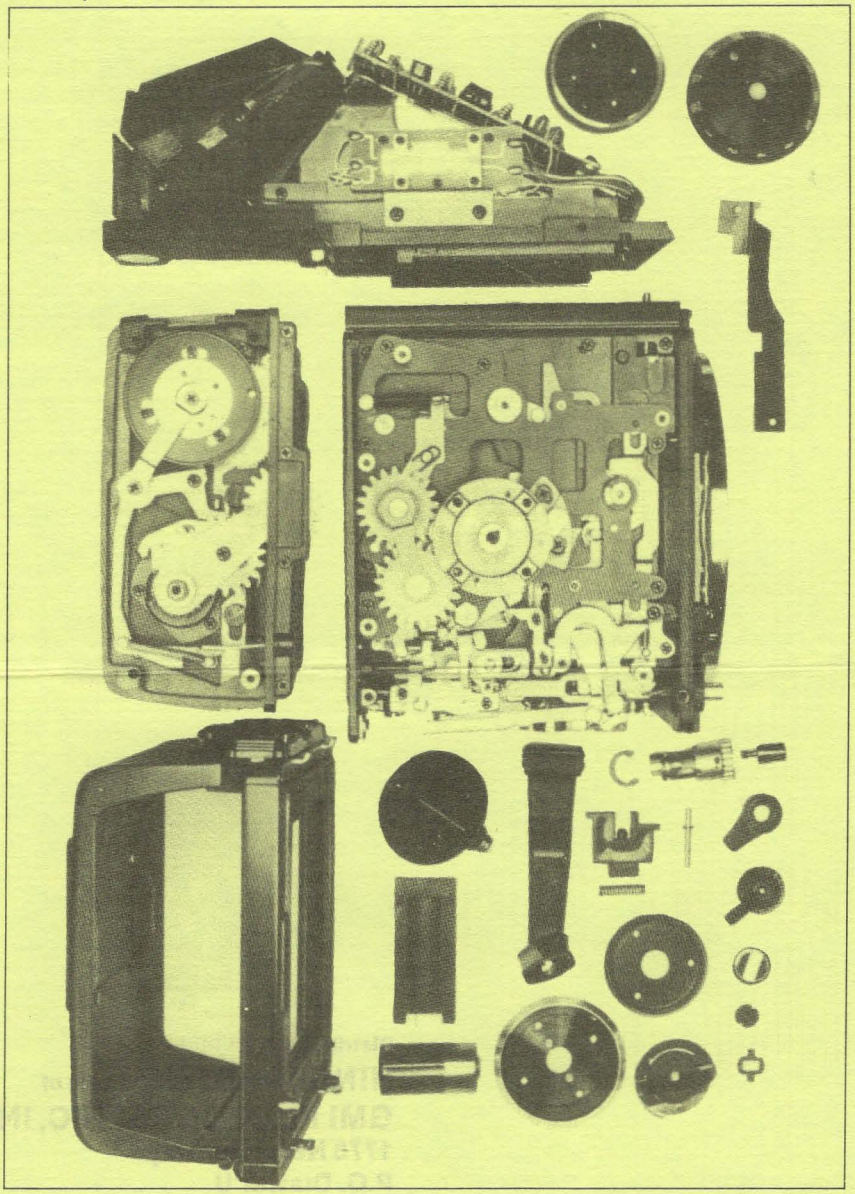
BRONICA SQ-A

Each lens has a five-leaf Seiko shutter, shown here with blades partly open. Main spring is at 12:00; electromagnet, at 9:00, traps blades open. F-stop settings are traced by resistor network; see bottom arc.



Prism finder's front section is crammed with electronic devices for controlling exposure.

Multilead printed-wire ribbon at front edge goes to LED array for shutter-speed display. Twisted wires going to rear connect photocells to circuit board; main prism lies underneath latter. Roof prism at rear makes image correct, left to right.



SQ-A's mechanical section has large, strong parts with almost no wet lubrication. Camera is a blend of aluminum die casting and plastic body parts.

	Interior	Exterior
Material choice:	Good	Good
Assembly, finish:	Good	Good
Repair access: Good		
Seal against dirt: Fair/Poor		
Do frequently made adjustments require major stripdown? No		
Modular construction? Yes		
Replace key parts easily? Yes		

viewscreen. The two finder switches are large, gold-plated, and first-rate.

The camera body is an aluminum die-casting. The top is machined as a reference surface for the finder, whose mating surface is glass-fiber-filled polycarbonate—the same material used throughout much of the camera and the film magazine. Curiously, the camera's body-cover panels, a "natural" for the use of plastic, are made of stamped aluminum.

The (interchangeable) focusing screen is located by a pair of machined supports that are shimmed for exact registration. This attention to focus integrity is praiseworthy. The film magazine's molded-plastic face fits against the painted, nonmachined die-casting of the camera's rear surface. If the same efforts had been taken here as in the viewscreen location, the rear surface would be finish-machined, as would the front of the film magazine, which would have been aluminum.

As it is, the (aluminum) film-channel rails inside the film magazine are finish-machined, perhaps as a final step to assure correct register. Ideally, this would be done with the magazine locked on the camera body. */continued*

But the serial numbers (magazine and camera) don't match, and the camera owner might decide to buy an extra magazine long after the camera was bought, so it doesn't appear that Bronica intended to have matched camera/magazine sets. Instead, they seeem confident that any SQ-A magazine and camera will fit together with the correct optical registration, even without the elegance of finish-machined metal parts establishing this registration.

In all other ways, the film magazine and camera body form a unified mechanism that cooperates admirably: motion from the camera's winding crank is transferred to the magazine's film drive through large, well-machined, hardened-steel gears. All interlocks are made to withstand the kind of service associated with professional use. In short, there is no weak link.

The large mirror operates through a compound linkage and relies solely on foam-plastic strips at the front and rear-bottom edges of the viewscreen frame to cushion the impact of its upswing. The "safety shutter," a panel that seals off the film aperture and follows the mirror after it rises, enjoys no resilient cushion at the end of its upward swing. But thanks to their size, both the mirror and safety-shutter panels have to push a lot of air out of their way as they move. This creates a pneumatic damping action that combines with the camera's mass to minimize the worst effects of the mirror action.

The camera's left side contains the shutter-speed-resistor network and switch, along with other circuitry. Gold-plated contacts on the switch, large components, neat wiring, and an uncrowded parts layout all inspire confidence.

The four-claw-bayonet body flange is narrow in profile, but adequate for the job of supporting the lenses. It's well-anchored to the body with eight screws.

The shutter-cocking/trip ring is mounted in a ball-bearing race for minimum drag. The camera, in general, has very little wet lubrication. This helps reduce the problems caused when dust gets into any mechanism, and the SQ-A's modular design makes it nearly impossible to keep dust out as you change film magazines, lenses, and/or finders. Once all the modules are in place, the camera is reasonably well-sealed against dust. ✪

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