

**G/LA CONVERSION BREAKER KITS SOLVE  
RENEWAL PARTS PROBLEMS IN OLDER SWITCHGEAR INSTALLATIONS!**

A significant trend is building toward the modernization and upgrading of older Allis-Chalmers 600-volt drawout switchgear which used Types G-25, G-25A, G-50 and G-50A air circuit breakers manufactured by A-C from 1946 through 1955. Also included are Types LA-25, LA-25A, LA-50 and LA-50A breakers produced from 1954 through 1962 when the line was discontinued in favor of the present LA-600 and LA-1600 breakers featuring static tripping and stored-energy closing.

Many of these older circuit breakers are still operating; and, while renewal parts are still available, procurement times are long and getting longer. In addition, because of low volume, parts costs keep rising and are now close to where the economics of continued operation and maintenance of this old equipment must be considered.

Then, too, the quest for improved electrical protection, greater reliability and performance inherent in the Allis-Chalmers present low-voltage circuit breaker design may be a compelling motive to modernize as is the reason to reduce troublesome repair and maintenance.

To facilitate updating of older equipment, Allis-Chalmers designed G/LA conversion kits in 1966 which since have proved practical. These kits, in the majority of cases, can be used to convert one or more breakers in older Allis-Chalmers switchgear lineups to new and modern LA-600 or LA-1600 breakers. Guidelines often used in updating are as follows:

1. Plant systems are critical. Conversions of older breakers are made to gain greater reliability where outages might cause costly lost production and/or product damage.
2. Renewal parts lead times are lengthy. Most often older breakers having the fewest operations are converted so that the old (but still operable) units can be used as backup breakers or as a source of renewal parts for remaining older breakers.

3. Less costly and easily available parts are required. Marginal breakers (those having the greatest number of operations) are replaced with modern breakers to not only get greater breaker reliability, but also to assure having low-cost and easily obtained parts for the conversion units.

Conversions to the modern LA-600 or LA-1600 breakers are easily made without need to change existing switchgear cubicles and without making expensive cable or conduit modifications. For example, the old breaker is removed and the new unit with its adaptive hardware is fastened to the drawout mechanism. Simple adjustments are then made and the new breaker placed in operation. The old door panel is also removed and replaced with a new one using the existing mounting holes. Average conversion installation time is about four hours per breaker.

The G/LA conversion breaker kits are complete with adaptive hardware and instruction drawings. Sample drawings are attached as follows:

<u>Cubicle Width (Inches)</u>	<u>Drawing Number</u>
18 (LA-600)	18-462-228-801
20 & 28 (LA-600 & LA-1600)	18-375-971-402
26 (LA-600)	18-462-229-801
26 (LA-1600)	18-462-229-802

Many who convert take into consideration that someday complete modernization will take place with the purchase of new switchgear. Here, for example, any of the LA-600 or LA-1600 manually operated breakers purchased previously as conversion units, could be reapplied to new cubicles by merely removing adaptive hardware. The electrically operated conversion units, however, would need secondary finger contacts added in addition to removing of adaptive hardware. Thus conversion breakers literally become "a down payment" on the future to help reduce costs of complete upgrading when it occurs.

The Allis-Chalmers LA-600 and LA-1600 air circuit breakers in the conversion kits are described in Catalog Section SG 1.1a and include a manual or electrical operating (stored-energy) mechanism, arc quenchers, main and arcing contact structure,

tripping current transformers, static overcurrent trip device, tripping actuator control wiring, auxiliary switches, interlocks and position indicators. The breakers are designed for service 600-volts and below with current carrying capacities up to 1600 amp and interrupting capacities up to 75,000 amperes. The conversion breakers have ratings equal to a greater than those they replace with minimizes application considerations, Table 1.

TABLE 1 - G/LA CONVERSION BREAKER RATINGS AT 60 HZ

Volts	Bkr. Type LA-	Frame Size (Amps)	Interrupting Ratings		Short Time and Close and Latch Ratings		Range of Continuous Current Ratings
			Asym. (Avg. 3-Phase Rms)	Sym. (Rms)	Asym. (Rms)	Sym. (Rms)	
600	600	600	25,000	22,000	25,000	22,000	40-600
600	1600	1600	50,000	42,000	50,000	42,000	125-1600
480	600	600	35,000	30,000	25,000	22,000	40-600
480	1600	1600	60,000	50,000	50,000	42,000	125-1600
240	600	600	50,000	42,000	25,000	22,000	40-600
240	1600	1600	75,000	65,000	50,000	42,000	125-1600

Electrically operated stored-energy breakers are closed smoothly and positively by the action of springs precharged by an electric motor. The springs remain charged until the breaker is to be closed. When energy is released to close the breaker, the motor automatically recharges the springs for another closing operation.

Manually operated stored-energy operated breakers also use closing springs which are charged by one downward stroke of a handle. A closing lever, located on the front of the breaker, releases the stored-energy to close the breaker.

Stored energy provides a quick-make mechanism that assures high-speed closing of breaker primary contacts, independent of operator. Positive, controlled closing prevents unnecessary arcing between the movable and stationary breaker contacts as would be the case with slow or hesitant manual closing. This prevents the potentially dangerous results of improper closing, thereby lengthening contact and breaker life.

Located on the front of the breaker are the tripping lever targets which indicate primary contact position and condition of stored-energy springs, racking screw shutter, breaker close

lever, and -- for manual stored-energy breakers -- the charging handle.

Equipped with Static Overcurrent Trip Devices, the conversion breakers provide the optimum in distribution system protection with higher accuracy, versatility and field adjustment benefits than possible with electro-mechanical trip devices. Both timing and tripping functions are performed by the low-energy static trip units using energy from the power system. Several types of Allis-Chalmers Static Trip Devices are available, but each application must be considered for the best choice.

Most of the older Allis-Chalmers G and LA air circuit breakers can be converted to utilize the modern LA-600 and LA-1600 breakers, but some installations may be of special design in that (1) instrumentation may interfere with simple conversion, (2) control circuitry may be complicated or it cannot be duplicated in the conversion breakers, (3) bus work may depart from standard to make conversion costs prohibitive. Also, "future" compartments of older switchgear lineups will not accept conversion breakers unless already equipped for breakers of the older design.

Therefore, to make certain that conversion is feasible, Allis-Chalmers Controls Division engineers will need the serial numbers stamped on the nameplates of the breakers to be changed as well as the switchgear cubicle serial number. For example: The serial number of the air circuit breaker appears on the nameplate of it and may read -- 328495. A typical switchgear cubicle serial number may read -- 2-51494 found on the nameplate on the left hand side plate of the first cubicle in a lineup or the first unit nearest the transformer.

Allis-Chalmers salesmen, service representatives or agents can help you to assess your needs by assisting in the completion of the attached G/LA Conversion Breaker Worksheet to arrive at an approximate net cost. They can also help to determine the type of Static Trip Device required for a particular application.

G/LA CONVERSION BREAKER KIT WORKSHEET  
Conversion Air Circuit Breakers and Accessories Approximate Net Prices

CALL  
FRANK PRINCE

To Replace Breakers		In Existing Switchgear Cubicles & Width Shown				Use Modern Air Circuit Breaker Conversion Kit as follows:				Approx. Net Price(*)	(*) Type of Static Trip Device	Serial No. of Breakers	Serial No. of Cubicles	Approx. Total \$
G-25, (A) and/or LA-25(A)	G-50, (A) and/or LA-50(A)	L-18 (18")	L3-20 (20")	L-26 (26")	L3-28 (28")	Manual Opr. LA 600	Elect. Opr. LA 1600	Manual Opr. LA 600	Elect. Opr. LA 1600					
X		X				X				\$1554.00				
X		X					X			1885.00				
X			X			X				1554.00				
X			X				X			1885.00				
X				X		X				1554.00				
X				X			X			1885.00				
	X						X			2950.00				
	X							X		3650.00				
	X				X		X			2950.00				
	X				X			X		3650.00				

(\*) Base price includes a Dual Static Trip Device with long-time delay and instantaneous elements. If a Selective Static Trip Device is required, (long-time delay and short-time delay elements) add \$155.00 approx. net price to above breaker prices.

Net Price	\$
Accessories	
Approx. Total Net Price	\$

Accessories for Conversion Breakers	
Description	Approx. Net Price
Undervoltage Device - Instantaneous Time (Req'd for Motor Starters)	\$115.00
Shunt Trip (for manually operated breakers)	115.00
Auxiliary Switch - 4 Contacts Max. (for man. opr. breakers)	85.00
Auxiliary Switch - Each add'l 4 Cont. for above SW.	85.00
Ground Fault (3-wire Appl.)	150.00
Ground Fault (4-wire Appl.) (+)	300.00

Important Note:  
Prices are approximate and should be used for estimating purposes only. Send this worksheet to your Allis-Chalmers representative or agent for a firm quotation on the conversion breakers listed above.

Company Name

Address

City

State

Zip

Your Name

(+) Four wire ground fault is needed when loads are connected from line-to-neutral (lighting loads) and require the installation of a tripping transformer in the switchgear bus compartment in series with the neutral cable.

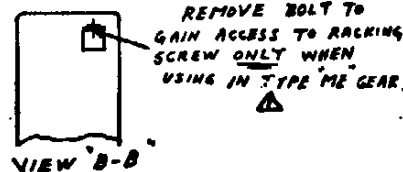


REV.	DESCRIPTION	DRG. NO.	DATE
1	FIELD MODIFICATION 18-375-91		
2	ADAPTOR & BRKR		
3	ADAPTOR & BRKR		
4	PANEL	18-375-173	501
5	PANEL	18-711-547	501

01	1-13-46	25
REV	Δ(1-4) ADDED NOTE	
	VIEW 'B-B' EXT. G.R.	
02	9-5-46	2A
REV		

# FIELD MODIFICATION INSTRUCTIONS

- PANEL MOUNTING**  
REMOVE OLD AND MOUNT NEW DOOR PANEL (IT. 4-5) USING THE EXISTING FRAME HINGE HOLES
- INSULATION**  
CHECK THE INTEGRITY OF THE INSULATION AT THE TOP OF THE BRKR. COMPT. AND REPLACE OR REPAIR INSULATION IF NECESSARY
- REPLACEMENT BRKR. AND ADAPTOR.**  
WITH THE PANTOGRAPH FULLY WITHDRAWN MOUNT THE REPLACEMENT BRKR. GROUND BRKR. AND ADJUST THE MECHANICAL TRIP ARRANGEMENT SO THAT THE BRKR. TRIPS BEFORE GOING INTO OR OUT OF THE CONNECTED POSITION (THIS ADJUSTMENT IS VERY IMPORTANT)



CONFIDENTIAL - PROPERTY OF ALLIS-CHALMERS MFG. CO.		18-375-91-402	
3018 HA		FIELD MODIFICATION	
UNLESS OTHERWISE SPECIFIED		DATE	
1. PLACE DIM. = .068	2. PLACE DIM. = .030	3. PLACE DIM. = .010	4. PLACE DIM. = .010
ANGULAR =		SHOULDER TO	
ON S.E. PRESS		98	
BY 2-14-46		PART NO. 18-375-971-402 (1)	

