Westinghouse

Standardized Station-Type Cubicle Switchgear

15 to 34.5 Kv, 1500 and 2500 Mva Interrupting Capacity – Indoor and Outdoor, Compressed Air Breakers

General Information

This price list includes prices for metal-enclosed station type cubicle switchgear, utilizing the type CA compressed air breaker.

Ordering Information

When ordering, specify:

1. Single-line diagram showing main connections, and sketch or statement giving desired order of assembly of units.

2. Type of cable, number and size of conductors, diameter over lead, braid, or other jacket for each power circuit.

3. How power cables are to terminate (clamp terminals or potheads).

4. Where control cables are to enter (top or bottom).

5. Instrument transformer ratios.

6. Maximum overall dimensions of shipping section.

7. Complete information on equipment furnished by others, but mounted in the switchgear structure.

8. Voltage rating of control circuit for both closing and trip coil of the operating mechanisms.

9. Complete nameplate wording for each circuit identification nameplate.

10. Voltage of power supply for air compressor.

Cancelled (BP 1-4) as per letter 8-21-74 attached hereto

Further Information

Description: B-5670

Pricing Instructions

Listed prices are subject to discounts shown in Selling Policy 32-100.

Although this price list reflects actual prices, firm quotations must be obtained from the nearest Westinghouse Sales office.

Price Code 13

Prices are effective February 26, 1968; subject to change without notice.
For standard terms and conditions of sale, refer to Selling Policy 32-100

March 15, 1968
Supersedes PL 32-320, pages 1-6, dated January 28, 1964
E, C/1943/PL

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Table A: Indoor Base Units With Single Bus

Interrupting Rating of Circuit Breaker in Mva	Continuous Current Rating of Unit at 60 Cycles	For 14.4 Kv Service① List Price	For 34.5 Kv Service② List Price
1500	1200	.....	$45100
1500	2000	$ 44500	.....
1500	3000	.....	59800
1500	4000	56100	.....
2500	5000	92000	.....
③2500	6000	103600	.....
③2500	7000	116800	.....

Accessories.....$1400
(including adapter for circuit analyzer)

① For nominal system voltages up to 14.4 kv. These units are designed to withstand high potential tests as follows:
At 60 cycles for one minute.....50 Kv (rms)
Impulse withstand (crest value)...110 Kv (1.5 x 40 ms)

② For nominal system voltages up to 34.5 kv. These units are limited in application to either grounded or ungrounded systems operating at service voltages 38.5 kv or less, and to systems operating at service voltages up to 34.5 kv where the system neutral is grounded, and adequate surge or overvoltage protection is provided. The units are designed to withstand high potential tests as follows:
At 60 cycles for one minute.....80 Kv (rms)
Impulse withstand (crest value)...150 Kv (1.5 x 40 ms)
For applications where these units are to be applied on ungrounded systems operating at service voltages in excess of 28.5 kv, refer the transaction to Westinghouse for prices.
For equipment with 200 kv impulse test value, see Table B.

③ Force ventilated.

Included: Steel enclosed structure with hinged-front enclosures, bolted-on rear plates, three-pole, single-throw compressed air circuit breaker, with electrically controlled pneumatic mechanism, necessary auxiliary switches, 6 single-pole, single-throw group operated disconnecting switches, 6-current transformers, bare segregated phase bus and connections, necessary interlocks, phase-isolating barriers, ground bus, small wiring and terminal boards.

Not Included: Terminations – Termination requirements vary dependent on the equipment configuration. Proper termination should be priced from table C.

Provision for mounting potential transformers or any secondary control devices.

Special Notes

Under no circumstances is it permissible to make any deductions from the prices listed for these base units.

Buses of base units are bare; capacities included in the base units are as follows:

1. Units rated 2000 amperes and below include a 2000 amp bus.
2. Units rated above 2000 amperes include a bus equal to the breaker ampere rating.
3. For increase in bus capacity of a base unit, add price per table F.

Important: Include the price of proper air supply equipment in all quotations as instructed on page 4.

For weatherproofing, see table E.

Table B: 200 Kv BIL

In all cases where the equipment for 34.5 Kv maximum service is to be designed to withstand the following high potential tests:

At 60 cycles for one minute
.....80 Kv (rms)
Impulse withstand (crest value)
.....200 Kv (1.5 x 40 ms)

The equipment shall be priced as follows:

(1) Price the equipment complete from the schedule listed in this price list.

(2) To the total price calculated in accordance with (1), add 10 percent.

Table C: Terminations

Seal-off bushings
Wall or floor bushings (indoor)
Potheads④ (add compartmentation⑤)
Provision for termination of segregated phase or isolated phase bus without bushings

Rating in Continuous Amperes	Voltage Class: 14.4 Kv Service	34.5 Kv Service
	List Price Per 3-Phase Set	
1200	$2220	$2620
2000	2410	2940
3000	2620	3340
4000	2940	3890
5000	3340	4450
6000	3890	5270
7000	4720	6100
8000	5560	6950

④ Current capacity up to that of breaker base unit.

⑤ For compartment for use with base unit, add $2700 for 14.4 Kv service, and $3500 for 34.5 Kv service. For compartment for use as bus entrance add from table D.

Indoor/Outdoor Bushings,
Provision for termination of segregated phase bus including self-off bushings.

Rating in Continuous Amperes	Voltage Class: 14.4 Kv Service	34.5 Kv Service
	List Price Per 3-Phase Set	
1200	$3330	$ 3930
2000	3615	4410
3000	3930	5010
4000	4410	5835
5000	5010	6675
6000	5835	7905
7000	7080	9150
8000	8340	10425

Provision for termination of isolated phase bus including seal-off bushings.

Rating in Continuous Amperes	Voltage Class: 14.4 Kv Service	34.5 Kv Service
	List Price Per 3-Phase Set	
1200	$ 4440	$ 5240
2000	4820	5880
3000	5240	6680
4000	5880	7780
5000	6680	8900
6000	7780	10540
7000	9440	12200
8000	11120	13900

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Table D: Auxiliary Compartments

	For 14.4 Kv Service List Price	For 34.5 Kv Service List Price
① Auxiliary, compartment	$12000	$16000

① Included: Bare 2000 amp bus and necessary connections. For increase in bus capacity price per table F. Compartment will accommodate 2 sets of potential transformers with current-limiting fuses, or 1 set of potential transformers (with fuses) and 1 set of 3 single-pole, single-throw disconnecting switches, group-operated. No potential transformers included. May be used as bus entrance compartment.

Special note: For individual circuits all potential transformer compartments must be located adjacent to the circuits affected. Primary crossovers are forbidden.

An auxiliary compartment is required for bus section units.

Table E: Weatherproofing

For an outdoor assembly, an appropriate charge must be made from this table for each breaker and auxiliary unit included in the assembly.

Interrupting Rating of Base Unit Breaker in Kva	List Price 14.4 Kv Service	34.5 Kv Service
1,500,000	$7750	$11300
2,500,000	9500	.....

Table F: Change in Bus Capacity of Basic Assemblies (Segregated)②

Ampere Increase Over Basic Equipment Bus	Maximum Momentary Rating of Bus (Amps) 115,000	190,000	100,000
	For 14.4 Kv Service List Price		For 34.5 Kv Service List Price
1000	$1760	$1935	$2160
2000	3520	3870	4320
3000	4280	4710	....
4000	7040	7745	....
5000	8800	9680	....

② The prices listed in this table apply to increase in the bus capacities of any of the basic equipments listed in tables A and D, wherein the equipments rated 2000 amp or less include a bus rated 2000 amp, and units rated in excess of 2000 amp include a bus equal to the breaker or disconnecting switch rating.

Table G: Potential Transformers③

Where actual circuit requirements dictate the use of only one potential transformer, price one for each such circuit.

Where actual circuit requirements dictate the need for more than one potential transformer, price, for each such application, a set of three, connected in wye.

With Current-Limiting Drawout Fuses

Primary④ Voltage	60 Cycle List Price
14000 volts⑤	$1340
23000 volts⑥	3340
24500 volts⑥	4060

③ All potential transformers require an auxiliary compartment. See table D.

④ The potential transformers are insulated to meet the standard AIEE test for these voltage ratings.

⑤ This item may be priced only when the entire cubicle assembly, with the exception of the potential transformer is required to withstand a high potential test of 50 kv for one minute.

⑥ These items may be priced only when the entire cubicle assembly, with the exception of the potential transformer, is required to withstand a high potential test of 80 kv for one minute.

Table H: Current Transformers

With 5 Ampere Secondary Rating⑦

Rating in Amperes	List Price Each⑧
Up to 3000	$375
3001 to 6000	460
6001 to 7000	560

⑦ To price transformer with 2.5 ampere secondary, use 5 ampere secondary price multiplied by 1.5.

⑧ For mounting around any available breaker, switch or seal-off bushing. If no bushing is available, add price of seal-off bushing from table C.

Table J: 3-Single Throw Disconnecting Switches, Group Operated⑨

Rating in Amperes Continuous	Momentary	For 14.4 Kv Service List Price	For 34.5 Kv Service List Price
1200	60000	$ 2460	$2900
2000	80000	3980	4370
3000	120000	5300	5800
4000	150000	6960	....
5000	175000	8850	....
6000	200000	11550	....

⑨ Price the minimum switch that will satisfy continuous and momentary values.

Included: Interlocks and connections.

Not Included: Compartmentation. All switches require an auxiliary compartment, add from table D.

Table K: Surge Protective Equipment

Equipment	Maximum Service Voltage 14.4 List Price	34.5 List Price
3 – Lightning Arresters (3ø)	$2400	$3470
3 – Capacitors (3ø)	1600	2000

Included: Mounting and connections.

Not Included: Compartmentation, add from table D only if assembly does not include an auxiliary compartment with sufficient space to contain this equipment. Normally surge equipment can be included in the same compartment with potential transformers.

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Air Supply Equipment for Compressed Air Circuit Breakers

When cubicle equipments with compressed air circuit breakers are priced from table A, proper air supply equipment must also be priced in accordance with the following procedure:

a. Select from table L the proper "Air Factor" quantity for each breaker rating which is priced for the proposed installation. The sum of these air factors is the "Total Station Air Factor."

b. From table M, select the price of the required air supply equipment in accordance with the listed total station air factor range within which falls the total air factor determined per "a" above.
Example: Assume an installation which will include 10 breakers each rated 14.4 Kv, 1500 mva. The total station air factor equals 10 x 10, or 100 (table L). In table M, item 2 lists an air factor range of 51-100. Therefore, the proper air supply equipment price is **list $12450.**

c. In some installations it may be desired, or specified, to include sectionalized air supply equipment. For such an arrangement, price multiple air supply equipment. The equipment priced for each section shall correspond to that listed in table M for the total station air factor.

Table L: Air Supply Factors

Breaker Volts	Breaker Mva	Air Supply Factor
14.4	1500	10
14.4	2500	15
34.5	1500	15

Table M: Air Supply Equipment Prices①

Total Station Air Factor②	List Price For Air Supply Equipment③
0-50	**$ 7800**
51-100	**12450**
101-200	**15450**
201-300	**23000**

① For addition of air supply equipment to an existing installation, refer to Headquarters.

② For air factor totals exceeding those given here, refer to Headquarters.

③ For thoes exceptional cases where the customer specifies two full-capacity equipments for an installation, complete duplicate air supply equipment must be priced.

Metal-Enclosed Segregated Phase Bus

a. Prepare a one-line drawing of the proposed installation.

b. Prepare a physical layout drawing of the installation with complete dimensions, then proceed as follows:

1. Measure centerline footages of the conductor from the faceplates of all equipment or compartments, measuring through station service taps, disconnecting switches, and current transformers.

2. Add up the footage increments required by elbows, tees, and crossovers as follows:

For each 90°L, add 2 feet of bus

For other angles (more or less than 90° add 5 feet of bus

For each T, add 3 feet of bus

For each X, add 6 feet of bus (be sure to include, in the measurement of centerline footages, the distance between bus levels)

Where more than one size of bus is involved in an L, T, or X, add this footage to the larger size bus.

3. Select bus structure prices from schedules listed in table N as determined by the requirements for amperes (continuous and momentary) and the service voltage.

4. For intermediate continuous ampere ratings, use the price of the next higher continuous ampere rating listed.

5. For a single-phase conductor, use 50% of the listed price for a 3-phase conductor of corresponding rating.

6. For a 2-leg conductor, use 75% of the listed price for a 3-phase conductor of corresponding rating.

7. For a 4-leg conductor, use 133⅓% of the listed price for a 3-phase conductor of corresponding rating.

8. For insulated, instead of bare, conductor, use listed price plus 33⅓%.

9. The insulation level of these conductors is identical to that specified for the basic cubicles listed in table A.

Note: This bus to be priced only for use with cubicle equipment.

Table N: Indoor or Outdoor Segregated Phase Bus Run (3-Phase ,Bare)

Rating of Conductors in Continuous Amperes	14.4 Kv Max. Service			34.5 Kv Max. Service
	Momentary Rating in Rms Total Asymmetrical Amperes④			
	77000	115000	190000	100000
	List Price Per Foot			
1200	**$500**	...	....	**$645**
2000	**500**	...	....	**645**
3000	**595**	**$645**	....	**745**
4000	...	**705**	**$ 745**	...
5000	...	...	**825**	...
6000	...	...	**915**	...
7000	...	...	**1015**	...

④ To get symmetrical amperes, divide by 1.6.

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Switchgear Division. East Pittsburgh, Pa.
Printed in USA