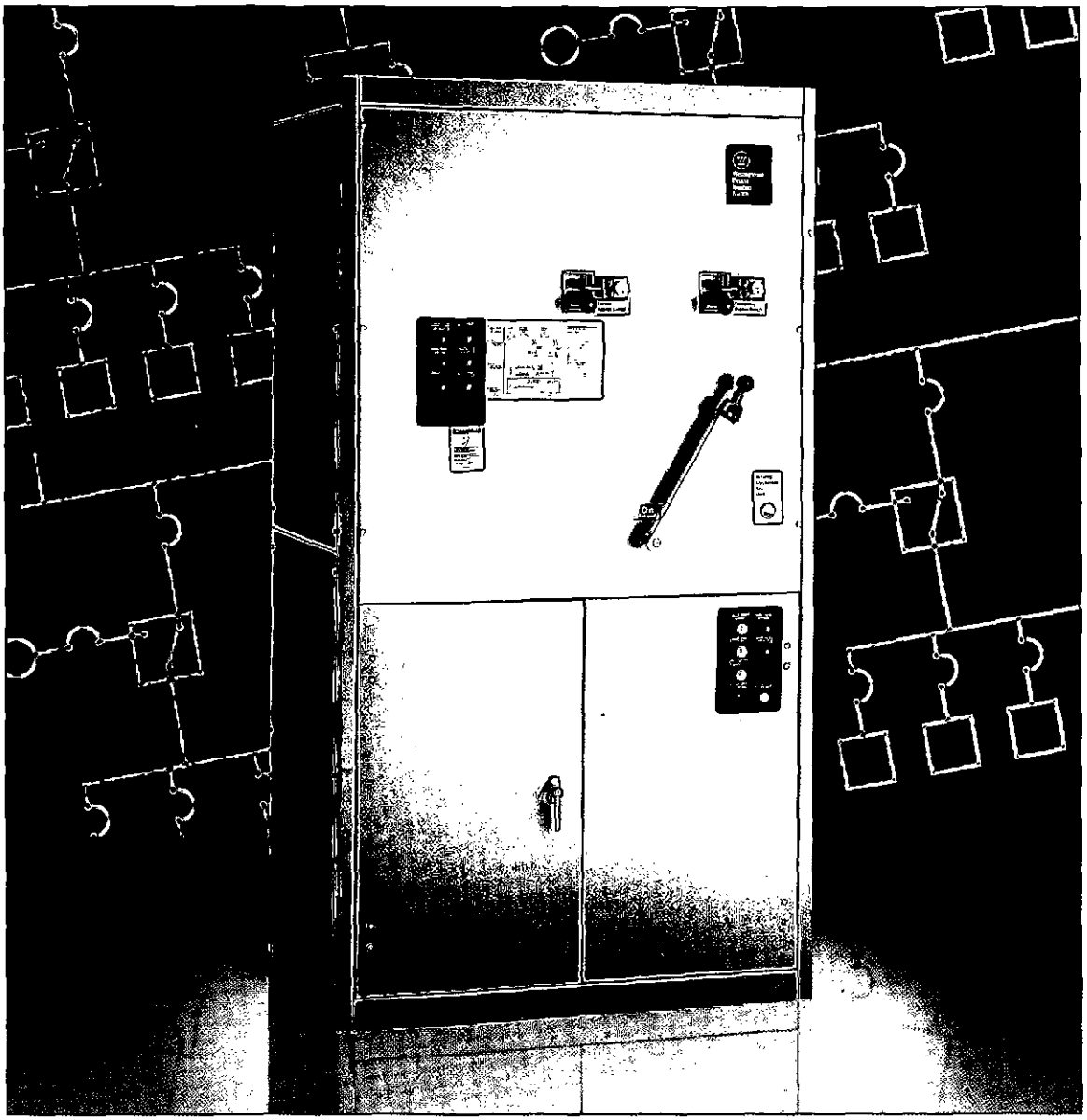
Westinghouse Transfer Switch Equipment

Combination Bypass Isolation and Automatic Transfer Switches 100-1000 Amperes

Proven Westinghouse switch designs ensure reliable transfer from normal to auxiliary power sources—for rapid restoration of essential power in critical applications.



Cutler-Hammer

EATON

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Switch Application Section

Westinghouse Combination Bypass Isolation and Automatic Transfer Switches are designed for applications where preventive maintenance, inspection and testing must be accomplished while maintaining continuity of power to the load. This is typically required in critical life support systems and standby power situations that require safe maintenance of the system with no disruption of the power. Westinghouse Combination Bypass Isolation and Automatic Transfer Switches meet or exceed all industry standards for endurance, reliability and performance. They are listed under Underwriters Laboratories UL 1008 Standard for Transfer Switch Equipment. They also comply with emergency and standby system requirements as defined in NFPA 99 for health care facilities.

DESIGN HIGHLIGHTS

- Overcurrent protection available
- UL 1008 service entrance available
- Simple test circuit
- Designed to safely withstand fault currents
- Seismic qualified for UBC Zone 4
- Manufactured in an ISO 9002 facility and designed in an ISO 9001 facility

Westinghouse Transfer Switch Equipment offers flexibility and versatility to the system designer and user. All switches include the basic features necessary for normal operation as standard (see next page). Cutler-Hammer also offers an extensive array of optional features and accessories that permits the user to customize a new transfer switch to match the application. The customization process is simple. Select the appropriate catalog number for your application from the charts below. Then choose any optional features or accessories needed to complete the project requirements.

CATALOG NUMBER

SWITCH TYPE	FRAME	SWITCH* (SEE NOTES)	AMPERES	VOLTAGE FREQUENCY	ENCLOSURE TYPE	UL
BIHS	FD = 100A	A	0100 = 100A	A = 120/60	S = Type 1	U
	KD = 150-300A	B	0150 = 150A	B = 208/60		
	LD = 400A	C	0225 = 225A	E = 600/60		
	NB = 600-1000A	D	0300 = 300A	G = 220/50/60		
			0400 = 400A	H = 380/50		
			0600 = 600A	K = 600/50		
			0800 = 800A	M = 230/50		
			1000 = 1000A	N = 401/50		
				O = 415/50		
				W = 240/60		
				X = 480/60		
				Z = 365/50		

* A = Fixed Mount, Molded Case Switch (MCS) Both
B = Fixed Mount, Molded Case Circuit Breaker (MCCB) Both
C = Fixed Mount, MCCB Normal, MCS Emergency
D = Fixed Mount, MCS Normal, MCCB Emergency

WITHSTAND, CLOSING AND INTERRUPTING RATINGS
(kA RMS SYM)

SWITCH AMPERAGE	NUMBER OF SWITCHED POLES	WHEN PROTECTED BY MCCBs — TEST VOLTAGE 240V	480V	600V	WHEN PROTECTED BY FUSES — RATING	TEST VOLTAGE	FUSE TYPE	MAX. FUSE AMPERAGE
100	2, 3, 4	100	65	25	100	600	J, T	200
					200	480	J, T	200
					100	480	J, T	400
150-300	2, 3, 4	100	65	25	100	600	RK5	400
					200	600	J, T	400
					100	600	J, T	600
400	2, 3, 4	100	65	25	100	600	RK5	600
					200	600	J, T	600
					100	600	L	1200
600	2, 3	65	50	25	100	600	L	800
					200	480	L	800
	4	65	35	25	100	480	L	1200
					200	600	L	1600
800-1000	2, 3	65	50	25	200	600	L	1600
	4	65	35	25	200	600	L	1600

Main Power Contacts of the Normal Bypass Switch, Emergency Bypass Switch, Positive Isolating Mechanism and Automatic Transfer Switch that make up the Westinghouse Combination Bypass Isolation and Automatic Transfer Switch have identical Withstand, Closing and Interrupting Ratings as shown above. On 4 pole units, the Switched Neutral Contacts have ratings identical to the Main Power Contacts.

RELIABLE AND EASY TO USE

SUPERIOR MAIN CONTACT STRUCTURE

The Westinghouse Combination Bypass Isolation and Automatic Transfer Switch meets or exceeds the standards set forth in UL 1008, UL 1087 and UL 489. No other transfer switch manufacturer has met the rigid testing requirements of this combination of standards. Completely enclosed contacts provide both safety and reliability. They also ensure the integrity of the contact assemblies and minimize the need for periodic maintenance of the contacts, reducing downtime and maintenance time.

LONG-LIFE DESIGN

Main contacts employ Westinghouse-developed De-Ion® arc quenchers and contact arcing horns for extended in-service life and reduced pitting and burning of contact surfaces.

SIMPLE, RELIABLE OPERATION

The automatic transfer switch is operated by a single, unidirectional gear motor transfer mechanism that receives its power from the source to which it is being transferred. Bypass and Isolating Mechanisms are manually operated by handles which ensure true quick-break, quick-make operation under full load conditions.

SECURE ISOLATION

Triple interlocking of ATS main contacts (2 mechanical, 1 electrical) ensure that both power sources cannot be simultaneously connected to the load. Bypass switches are key interlocked to prevent paralleling of sources.

RELIABLE SOLID STATE LOGIC

The transfer switch intelligence panel utilizes the reliable, close differential sensing Westinghouse Modular Solid State Logic Package. This provides the system designer the opportunity to tailor the switch to the application as well as providing the capability of future upgrading of logic components in the field.

VERSATILE CONTROL

Control Logic Panel interconnects with Power Switching Panel via insulated, keyed plug connectors to permit total isolation of controls for routine maintenance.

EASY ADAPTABILITY

Most optional sensing and timing functions are performed by plug-in printed circuit cards. Others are performed by clearly-marked, solid state panel-mounted relay timers with 10A contact ratings.

STANDARD FEATURES AND ACCESSORIES

TEST SELECTOR SWITCH

Provides a spring release pushbutton for test operation of the ATS. It simulates a loss of the Normal Power Source, initiates an engine start and transfers the load to the Emergency/Standby Power Source.

ENGINE STARTING CONTACT

Provides a 10A, 30VDC contact closure to initiate engine starting upon failure of the Normal Power Source. This feature, specifically designed for low current applications, is wired to red terminal blocks on the control panel for ease of identification and maintenance.

FULL PHASE PROTECTION

Provides phase failure protection on each phase of the Normal Power Source. Should the voltage drop below a pre-selected, fully adjustable value on any phase, a signal is sent to initiate engine start.

TIME DELAY NORMAL TO EMERGENCY

Provides a delay, adjustable .2 - 64 minutes, when transferring from the Normal Power Source to the Emergency Power Source. This accessory does not affect the engine starting circuit. Timing begins when emergency/standby voltage begins.

TIME DELAY ENGINE START

This accessory is for use when the Emergency Power Source is an engine generator. It delays initiation of the engine start circuit for .5 - 15 seconds (adjustable) in order to override momentary power outages or voltage fluctuations of the Normal Power Source.

TIME DELAY EMERGENCY TO NORMAL

Delays the retransfer from the Emergency/Standby Power Source to the Normal Power Source to permit stabilization of the Normal Power Source before retransfer is made. Timing is adjustable .2 - 64 minutes and begins when the Normal Power Source appears. If the Emergency/Standby Power Source fails during timing, retransfer to the Normal Power Source is immediate, overriding the time delay.

TIME DELAY ENGINE COOLDOWN

Permits the engine to continue to run unloaded after retransfer to the Normal Power Source has been made. Timing is adjustable .2 - 64 minutes and begins when retransfer is completed.

FULLY RATED NEUTRAL

Provides a fully rated solid neutral for all 2 and 3 pole switches. All 4 pole switches are supplied with switched neutral contacts of identical construction and rating as the power poles and are mounted on the power contact shaft, integral to the completely enclosed contact assemblies.

MULTI-TAP VOLTAGE SELECTION

Provides line voltage selection of 208, 220, 240, 380, 415, 480 or 600VAC, 50 to 60 Hz by proper insertion of voltage selection plug.

EMERGENCY/STANDBY SOURCE MONITORING

Relay monitor prevents transfer from the Normal Power Source to the Emergency/Standby Power Source until that source has attained 90% of nominal voltage and frequency. In addition, when the switch is in the Emergency/Standby position and that source falls outside the monitored parameters, a load retransfer is initiated to the Normal Power Source if it is present.

INDICATING LIGHTS

Indicate switch position. Green for Normal position, red for Emergency/Standby position.

RELAY AUXILIARY CONTACTS

Provides three Form C contacts for each source. On the Normal Power Source, energized when the load is connected to the Normal Power Source and normal voltage is present. On the Emergency/Standby Power Source, energized whenever emergency/standby voltage is present.

Description

SWITCH OPERATION

BYPASS TO NORMAL

1. Turn "GENERATOR" switch to "OFF"
2. Place isolating mechanism handle in "OFF" position
3. Turn and remove key
4. Place key in "NORMAL BYPASS" lock
5. Turn "NORMAL BYPASS" to "ON"

BYPASS TO EMERGENCY

1. Turn "GENERATOR" switch to "RUN"
2. Place isolating mechanism handle in "OFF" position
3. Turn and remove key
4. Place key in "EMERGENCY BYPASS" lock
5. Turn "EMERGENCY BYPASS" to "ON"

RETURN TO NORMAL OPERATION

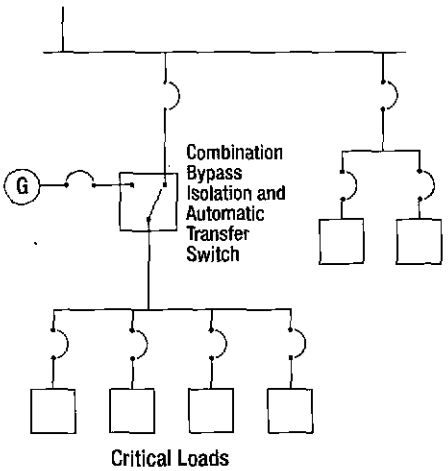
1. Place appropriate bypass in "OFF" position
2. Turn and remove key
3. Place key in isolating mechanism lock
4. Place isolating mechanism handle in "ON" position
5. Turn "GENERATOR" switch to "AUTO"

BENEFITS

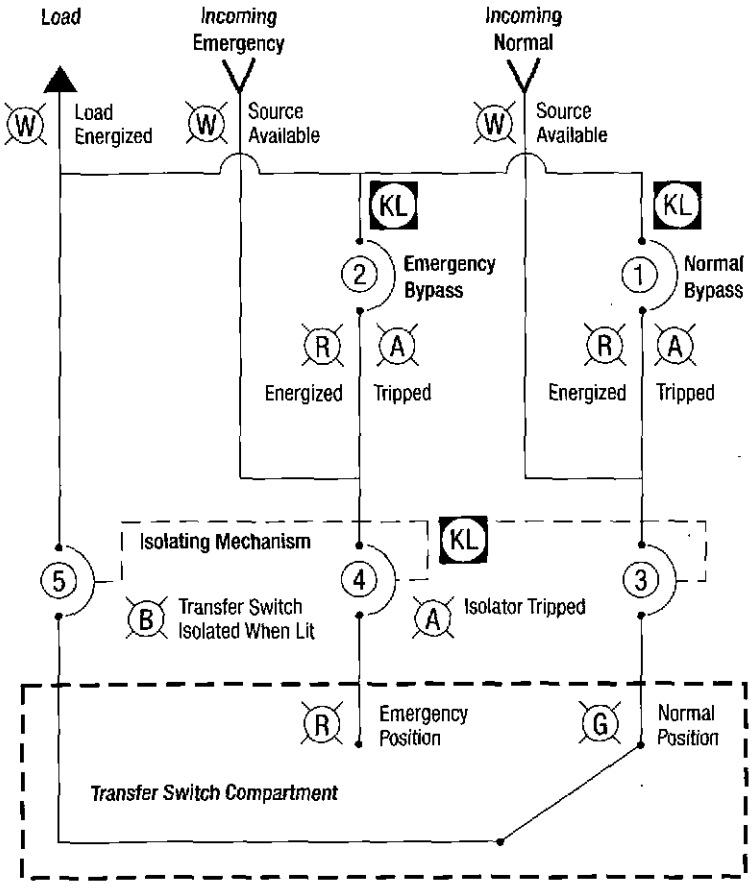
The Westinghouse Combination Bypass Isolation and Automatic Transfer Switch eliminates all of the complicated drawout mechanisms required on competitive products for total isolation of the transfer switch, and instead utilizes foolproof mechanical Kirk Key interlocking combined with a positive Total Isolation Mechanism. The result is the safest, easiest-to-operate bypass isolation switch available in the marketplace today.

When the transfer switch is in the Isolated position, complete testing of the ATS can be accomplished via a special insulated keyed connector. This allows the operator to completely test the entire operating sequence of the ATS while maintaining power to the connected load. In addition, a portable hand-held test kit is available to easily test and accurately calibrate the modular Solid State Logic sensing and timing cards, thus giving the owner an added level of confidence and assurance.

The Westinghouse Combination Bypass Isolation and Automatic Transfer Switch utilizes modified molded case switches, designed specifically for high duty repetitive load transfer, as a means to bypass and totally isolate the transfer switch. This device provides for a reliable, rugged installation that can withstand very high level short circuits. In addition, 100-400 Ampere units utilize Westinghouse World Class Series C Technology that offers the highest Withstand, Closing and Interrupting Ratings available in the marketplace today.



Typical Application



Single-Line Diagram—Typical Configuration

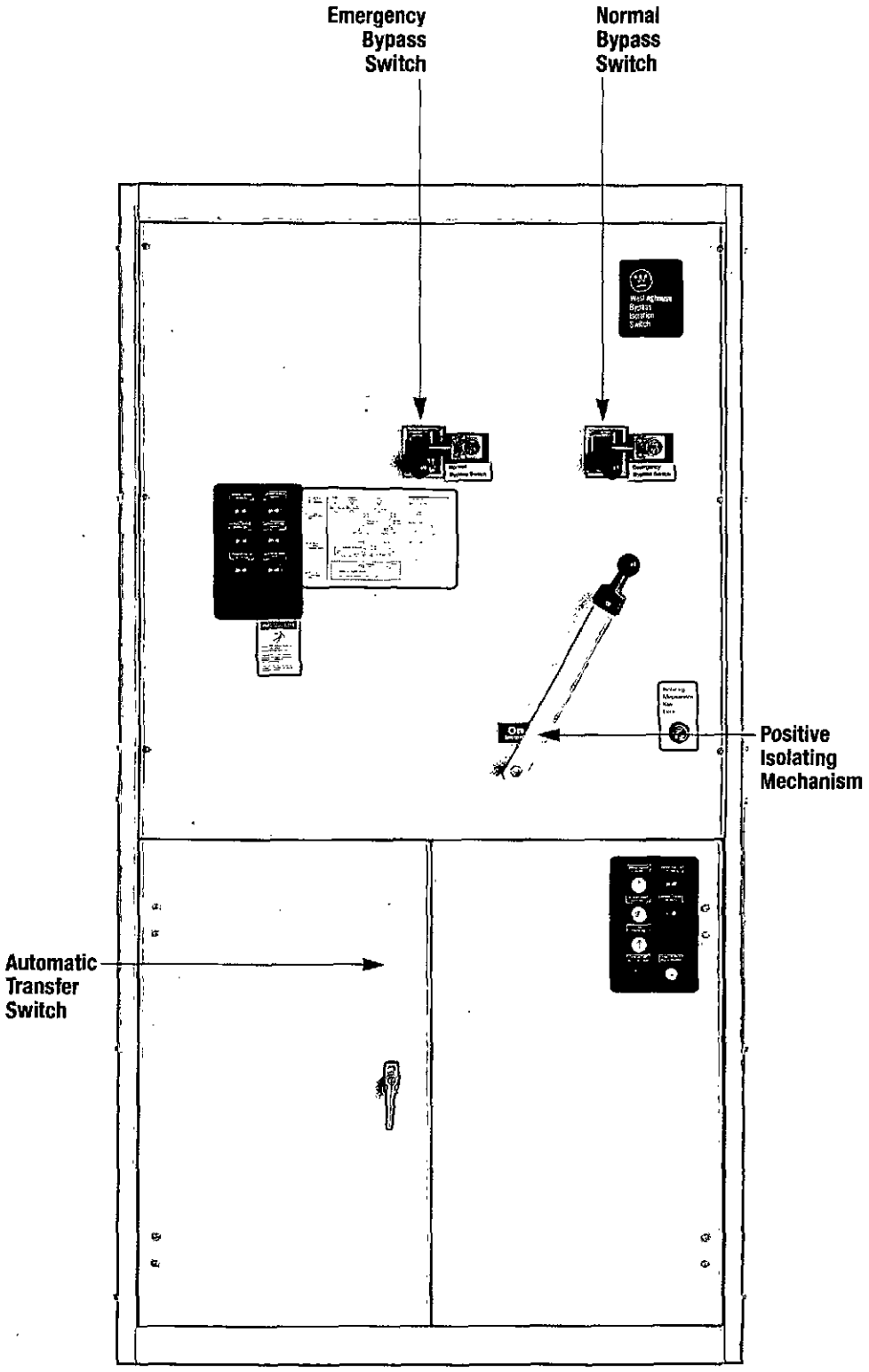
Functional and Operational Capabilities

Our overall design criteria is to provide you with a Combination Bypass Isolation and Automatic Transfer Switch that offers the utmost in flexibility, reliability and value. The long list of standards and codes below illustrates the versatility of our unit. The Westinghouse Combination Bypass Isolation and Automatic Transfer Switch meets or exceeds many national and international standards. It is also designed and built in accordance with the following:

UL 1008	***Standard for Safety for Automatic Transfer Switches***
UL 489	***Standard for Circuit Breakers***
UL 1087	***Standard for Molded Case Switches***
NEC	***Articles 517, 700, 701, 702***
ANSI/NFPA 70	
NFPA 110	***Emergency and Standby Power Systems***
NFPA 99	***Health Care Facilities***
EGSA	***Standard for Transfer Switches***
NEMA	***ICS 2-447.10***
UBC	***Uniform Building Code for Seismic Zone 4***
ISO 9000	***International Organization for Standardization***

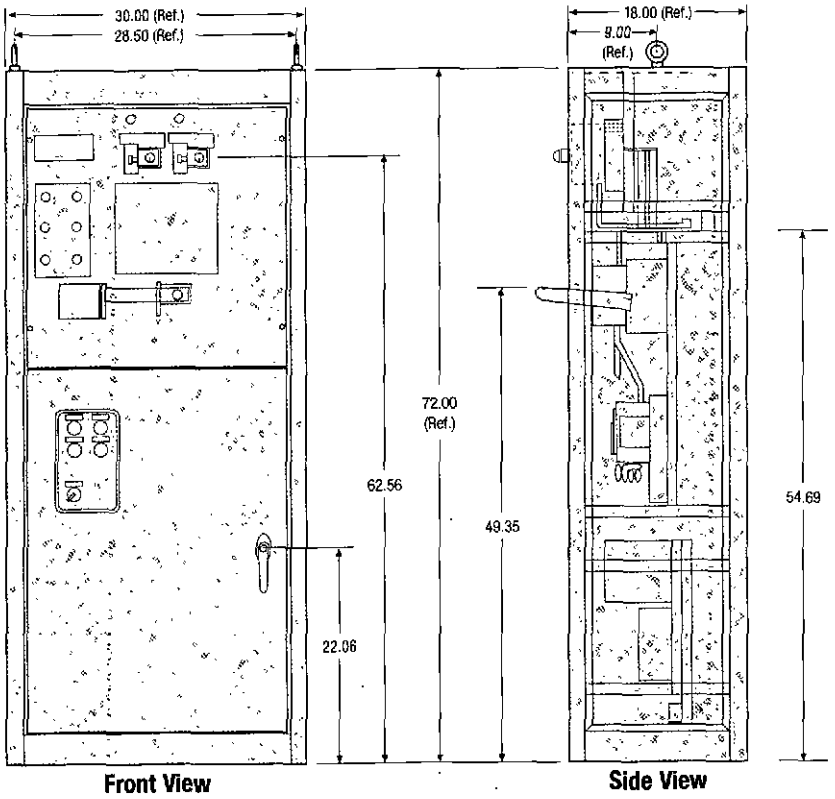
BASIC SWITCH DESIGN

Westinghouse Combination Bypass Isolation and Automatic Transfer Switches consist of a Normal Bypass Switch, Emergency Bypass Switch, a Positive Isolating Mechanism and a Westinghouse Solid State Logic Automatic Transfer Switch. All sub-assemblies are tested individually, and the complete assembly is subjected to full operational testing before shipment from Cutler-Hammer's Transfer Switch manufacturing facility located in Beaver, PA.

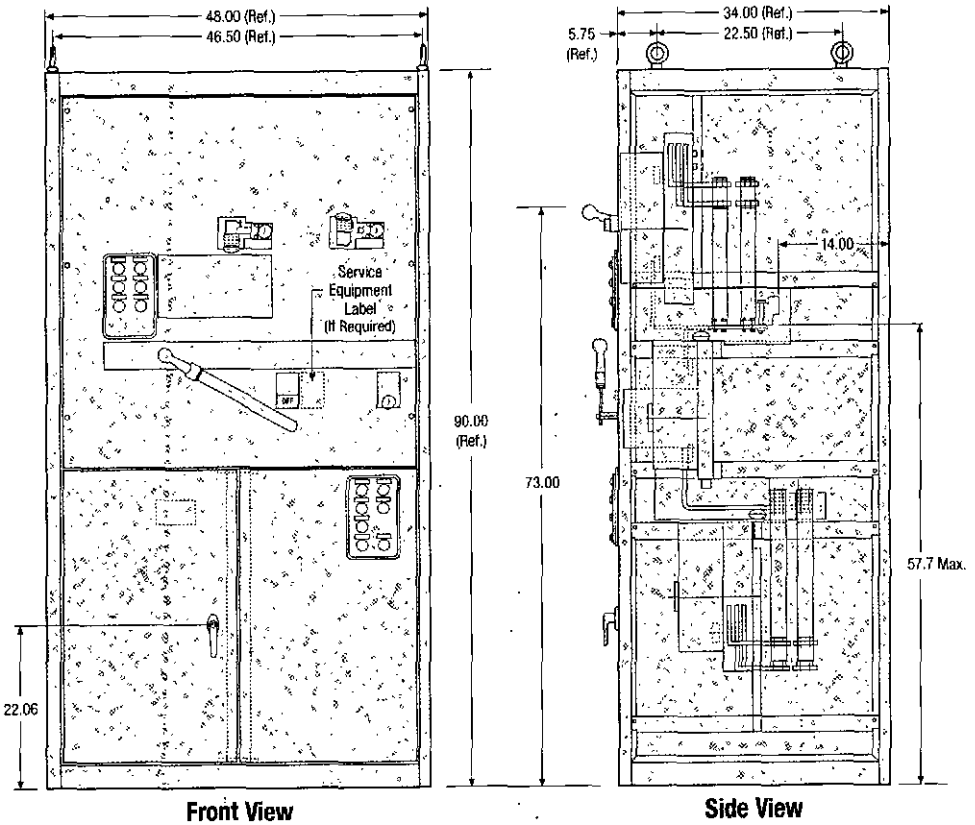


150-1000 Ampere Combination Bypass Isolation and Automatic Transfer Switch

Transfer Switch Dimensions



100 Ampere Enclosure Dimensions



150-1000 Ampere Enclosure Dimensions

Optional Features and Accessories

In addition to the standard features and accessories, the following optional features and accessories are also available to match your application requirements:

SOURCE MONITORING – NORMAL POWER SUPPLY

- ❑ 26C OVER VOLTAGE – Full Phase, adjustable
- ❑ 26D AREA PROTECTION – Remote Sensing
- ❑ 26E UNDER FREQUENCY – Single Phase, adjustable
- ❑ 26F OVER FREQUENCY – Single Phase, adjustable

SOURCE MONITORING – EMERGENCY POWER SUPPLY

- ❑ 5C OVER FREQUENCY – Single Phase, adjustable
- ❑ 5E OVER VOLTAGE – Single Phase,adjustable
- ❑ 5F UNDER VOLTAGE – Three Phase, adjustable
- ❑ 5G OVER VOLTAGE – Three Phase, adjustable

TIME DELAYS

- ❑ 2C TDES, adjustable 4-120 seconds
- ❑ 30A CRANKING LIMITER – adjustable 4-120 seconds
- ❑ 32A DELAYED TRANSITION – adjustable 0-120 seconds
- ❑ 35A PRE-TRANSFER SIGNAL DEVICE – adjustable 0-120 seconds

TIME DELAY BYPASS PUSHBUTTONS

- ❑ 8C BYPASS TDEN PUSHBUTTON
- ❑ 8D BYPASS TDNE PUSHBUTTON

ALTERNATE TEST OPERATORS & SELECTOR SWITCHES

- ❑ 6D AUTO/TEST SWITCH – Maintained contact
- ❑ 6G KEY OPERATED AUTO/TEST SWITCH – Maintained contact
- ❑ 6H FOUR POSITION SELECTOR SWITCH – Test, Auto, Off, Engine Start
- ❑ 9B MAINTENANCE SELECTOR SWITCH – Maintained contact
- ❑ 10B PREFERRED SOURCE SELECTOR SWITCH – Utility/Utility or Utility/Generator
- ❑ 10D PREFERRED SOURCE SELECTOR SWITCH – Dual Generator

INDICATING LIGHTS

- ❑ 12G NORMAL SOURCE PILOT LIGHT – White
- ❑ 12H EMERGENCY SOURCE PILOT LIGHT – White
- ❑ 12L NORMAL TRIP PILOT LIGHT – Amber
- ❑ 12M EMERGENCY TRIP PILOT LIGHT – Amber (12L & 12M available only with Option 16)

BATTERY CHARGERS

- ❑ 24C 5A, 12VDC OUTPUT – Separate mount, requires 120VAC power source
- ❑ 24D 5A, 24VDC OUTPUT – Separate mount, requires 120VAC power source

SHUNT TRIPS

- ❑ 33A SHUNT TRIP ON NORMAL POWER SOURCE – Coil Voltage_____
- ❑ 33B SHUNT TRIP ON EMERGENCY POWER SOURCE – Coil Voltage _____

INTEGRAL OVERCURRENT PROTECTION

- ❑ 16B DIGITRIP – Both sources
- ❑ 16E DIGITRIP – Emergency Source
- ❑ 16N DIGITRIP – Normal Source

SERVICE ENTRANCE RATING

- ❑ 37A SERVICE ENTRANCE RATING WITHOUT GROUND FAULT PROTECTION
- ❑ 37B SERVICE ENTRANCE RATING WITH GROUND FAULT PROTECTION

SOLID STATE DIGITAL PLANT EXERCISERS

- ❑ 23C PLANT EXERCISER WITHOUT LOAD TRANSFER – Adjustable 0-168 hours, 0-10 programs
- ❑ 23D PLANT EXERCISER WITH LOAD TRANSFER – Adjustable 0-168 hours, 0-10 programs
- ❑ 23G PLANT EXERCISER WITH SELECTOR SWITCH – Allows choice of exercise with or without load transfer, or a bypass of exercise period
- ❑ 23I PLANT EXERCISER WITH LOAD TRANSFER AND FAIL-SAFE FEATURE
- ❑ 23J PLANT EXERCISER WITH SELECTOR SWITCH AND FAIL-SAFE FEATURE

METERING

- ❑ 18I IQ GENERATOR – Normal Power Source only – Microprocessor based voltmeter, ammeter, and frequency meter
- ❑ 18J IQ GENERATOR – Emergency Source only
- ❑ 18K IQ GENERATOR – Both sources
- ❑ 18L IQ DATA PLUS II – Normal Source only, advanced microprocessor based metering
- ❑ 18M IQ DATA PLUS II – Emergency Source only
- ❑ 18N IQ DATA PLUS II – Both sources
- ❑ 18P IMPACC Communications

PORTABLE TEST KIT

- ❑ 38A TEST KIT – Portable, hand-held test kit to test solid state control logic cards and output relays

SPACE HEATER WITH THERMOSTAT

- ❑ 41A 100 WATT HEATER – Requires separate 120V power supply
- ❑ 41B 200 WATT HEATER – Requires separate 120V power supply
- ❑ 41C 400 WATT HEATER – Requires separate 120V power supply

INTELLIGENCE CIRCUIT FUSES

- ❑ 28A INTELLIGENCE CIRCUIT FUSES – Fuses all non-essential circuitry

ALTERNATE OPERATIONAL MODES

- ❑ 29D PUSHBUTTON OPERATED TRANSFER SWITCH – Provides non-automatic operation of the transfer switch
- ❑ 29E PUSHBUTTON RETURN TO NORMAL
- ❑ 29G SELECTABLE AUTOMATIC/NON-AUTOMATIC OPERATION OF TRANSFER SWITCH – Non-UL.
- ❑ 29J SELECTABLE AUTOMATIC/PUSH-BUTTON RETURN TO NORMAL ON TRANSFER SWITCH

FOR ADDITIONAL INFORMATION ON WESTINGHOUSE TRANSFER SWITCHES:

Bypass Isolation Transfer Switches 800-3000 Amperes	B 1221
Mini-SPB Transfer Switches 600-1200 Amperes	B 1222
ATS Solid State Logic	SA 12075
ATS Relay Logic	SA 12076
ATS Renewal Parts Catalog	SA 12077
Automatic, Manual, Non-Automatic Transfer Switches Vertical Design 150-1000 Amperes	B 1223
Automatic, Manual, Non-Automatic Transfer Switches 30-4000 Amperes, Price List	PL 29-920
Transfer Switch Equipment 30-4000 Amperes	TB 29-925
ATS Renewal Parts Price List	PL 29-995
Drawout Transfer Switches 800-4000 Amperes	SA 11873

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