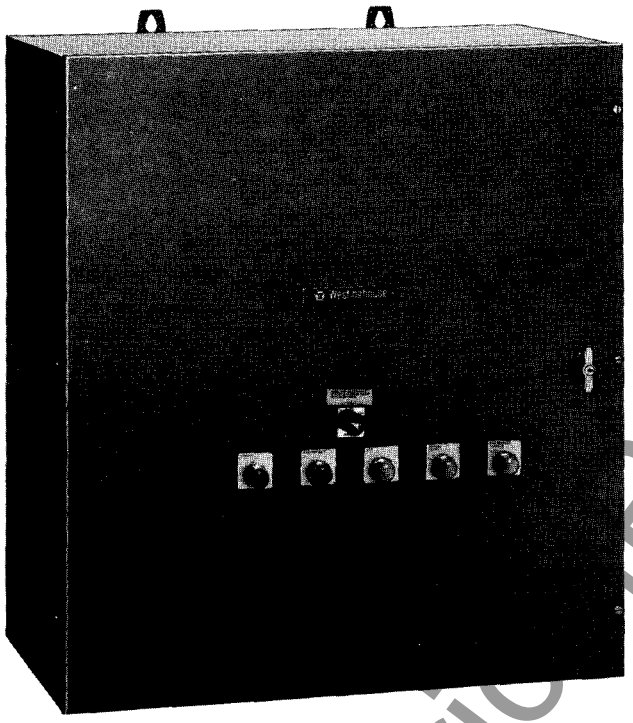
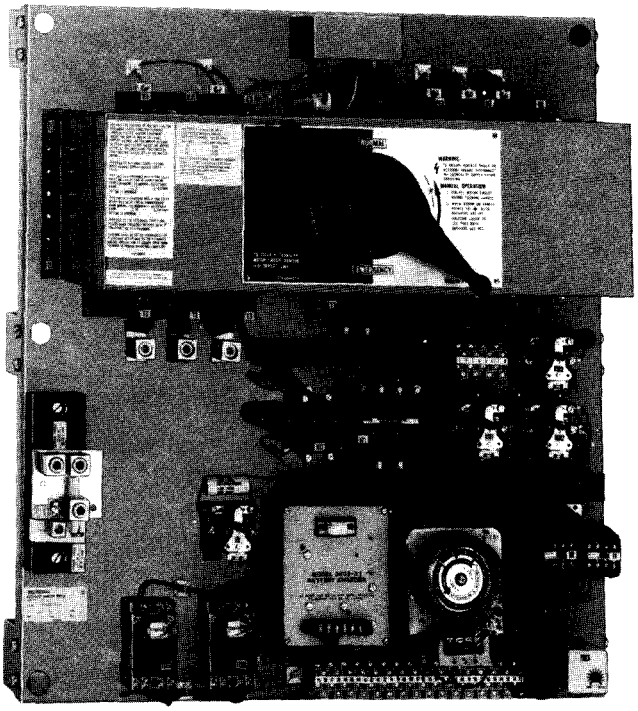
Electromechanical Logic Transfer Switch



Enclosed Transfer Switch



Open Transfer Switch

Electromechanical Logic Transfer Switch

Index

Design Features©

- UL1008 listed 120 through 600 volts Ac
- Rated for all classes of load
- Manual operation under load
- Mechanically and electrically interlocked for safe operation
- Hinged, locked Nema 1 cabinet which meets 1984 NEC requirements for wire bending space
- Three phase undervoltage protection on normal
- 100% rated
- Straight through wiring for easy installation
- Solderless copper/aluminum lugs
- Test selector switch
- Easily identified engine start contacts (closed when normal source fails)
- Insulated, groundable solid neutral bar
- Auxiliary contacts, 2 NO/2 NC
- Industrial duty pilot devices

Standards/Code Compliance©

Westinghouse Automatic Transfer Switches are listed in File E38116 by Underwriters, Inc. under their standard UL 1008. This standard covers requirements for automatic transfer switches intended for use in ordinary locations to provide for lighting and power as follows:
A. In emergency systems, in accordance with articles 517 and 700 in the National Electric Code, ANSI/NFPA 70 and the National Fire Protection Association No. 76A and/or
B. In stand-by systems, in accordance with article 702 of the National Electrical Code and/or
C. In legally required stand-by systems in accordance with article 701 of the National Electrical Code.

Westinghouse Automatic Transfer Switches are available to meet NFPA 110 for emergency and stand-by power systems when ordered with the appropriate options.

An automatic transfer switch for use in a legally required stand-by system is identical to that for emergency systems.

Transfer Switch Application©

Westinghouse electromechanical transfer switches protect critical electrical loads against loss of power continuity by transferring the load to an emergency power source upon failure of the normal source. The load is transferred back to the normal source when power is restored.

Westinghouse transfer switches can be applied on systems having more than two power sources or where interlocking is required between transfer switches or other system components – i.e.; elevators – in fact, wherever it is necessary to protect against loss of electrical service. Potential applications include:

Airports
Banks
Computer Installations
Department Stores
Extended Care Facilities
Fish Hatcheries
Greenhouses
Hospitals
Industrial Plants
Laboratories
Mines
Missile Ranges
Office Buildings
Public Auditoriums
Power Generation Plants
Radar Installations
Radio Stations
Railroad Signals
Ships
Shopping Centers
Subways
TV Studios
Theaters
Tunnels
Waste Water Treatment Facilities

Description©

Westinghouse transfer switches are extremely reliable, safe, rugged, versatile and compact components for use in electrical distribution systems. Transfer switches are applied in exactly the same manner as any unit of power distribution equipment:

1. By circuit function required, and
2. By compatibility/coordination with the overall system performance.

Transfer switches act quickly and positively to assure service continuity when the normal supply of electrical power fails, or falls below preset voltage values.

The intelligence/supervisory circuits on automatic transfer switches constantly monitor the condition of both the normal and emergency power sources to provide the intelligence necessary to effect an automatic, immediate transfer of power from normal source to emergency source. Transfer back to the normal source is automatic.

Monitoring of the power source is always performed on the line side of the source to which the switch is connected, and power for the motor-driven transfer mechanism is taken from the side to which the load is being transferred. The normal power source is the preferred source and the switch will always seek this source when it is available.

Two types of normal power source monitoring (system protection) are offered:

1. Standard: All phases monitored.
2. Optional: Overcurrent/Short Circuit.

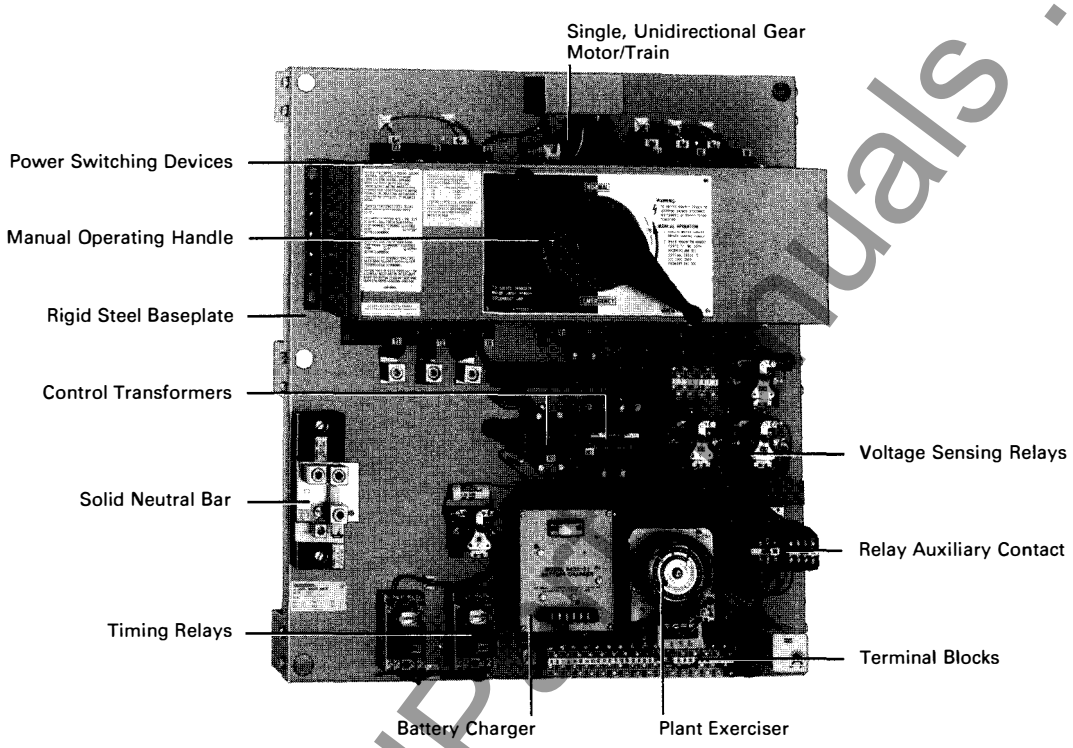
Standard units sense voltage in each phase of the normal power supply. Should the voltage in any phase fail, or drop below the preset dropout voltage, the switch will seek the emergency source.

Overcurrent/short circuit protection can be provided by the addition of thermal magnetic trip units to one or both of the power switching devices.

© Changed since previous issue.

Electromechanical Logic Transfer Switch

Construction Features • Standard Catalog Numbered Switches



Single, unidirectional gear motor/train transfer mechanism, mechanically held and electrically interlocked to prevent an electrical neutral/OFF position, and to prevent both sources being connected to the load simultaneously. No clutch or friction drive.

Fully enclosed contact assemblies transfer the load from normal to emergency and back. These devices assure dependable, reliable operation under all conditions and are continuous duty rated for all classes of loads, open or enclosed. They have high dielectric strength, heavy duty switching and withstand capabilities, and high interrupting capacity.

The power switching devices incorporate a positive quick-make, quick-break toggle mechanism, Westinghouse-developed Deion arc quenchers, and contact assemblies designed for reduced contact surface pitting and burning. Current-carrying members between line and load bus utilize all-brazed construction.

Manual operating handles for the 150 – 400 amp models are electrically "dead". Transfer switch position indicator is visible from the front and shows to which source the switch is connected. Operating handle is mechanically and electrically interlocked with no electric OFF or neutral position. A manual-only neutral position is provided for load circuit maintenance only if the plug connector is removed. Handle "free wheels"; if the switch operates while it is being held, there is no discomfort to the operator. Manual handle is attached permanently to the transfer switch to prevent loss of an unmounted handle.

Rugged/rigid steel baseplate.

Control transformers reduce line voltage to 120 volts Ac for motor operation. All transfer switches are factory wired for voltage specified on order.

Voltage sensing relays on all phases of the normal source.

Relay Auxiliary Contact (See page 5)

Insulated Groundable Neutral (See page 5)

Battery Charger (See page 5)

Plant Exerciser (See page 5)

Terminal blocks easily accessible for speedy connection to external circuits. All customer wiring done at the bottom of the intelligence panel.

Timing Relays (See page 5)

Features Not Shown:

Red engine start contacts for easy identification.

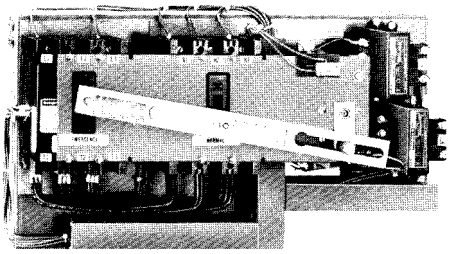
All wiring numbered for easy identification.

Enclosures utilize heavy duty steel construction.

Electromechanical Logic Transfer Switch

Construction Features, *Continued*

Transfer Mechanisms



Transfer Mechanism, 30-100 Ampere Switch

The function of the transfer mechanism is to provide an electrical operation to transfer the switch's main contacts to the position directed by the intelligence circuit. The transfer mechanism provides a positive mechanical interlock to prevent both power switching devices from being closed at the same time. It is designed to leave the devices trip-free in the closed position, permitting thermal and short circuit protection to be incorporated in either side if required.

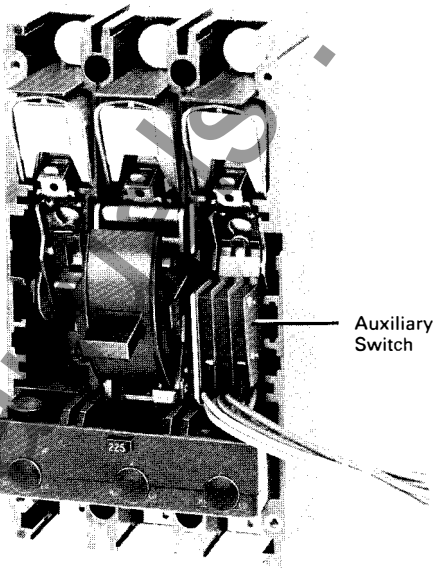
30-100 Ampere Switches: The transfer mechanism consists of a cam mounted directly on the out-put shaft of the transfer motor. A slide pin engages a pivot hole in the cam and converts rotary motion to linear motion. The slide pin is carried by a pivoted, rocker arm lever which operates the breaker handles.

150 – 400 Ampere Switches: The transfer mechanism used in these units consists of a free-wheel, ratchet sprocket drive, a center drive gear, secondary spur gears and two cams which operate the breaker handles.

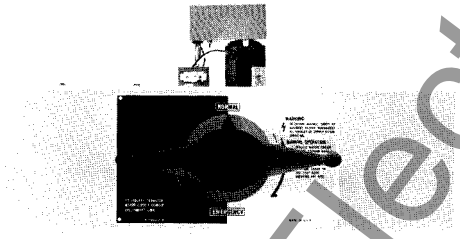
The conversion of rotary motion to linear motion is accomplished by a roller mounted eccentrically on each secondary gear, which drives its associated cam by riding in the cam's groove. The cams travel vertically on guide rods attached to a housing which encloses the entire mechanism. This mechanism utilizes a rugged motor and gearbox. Brake pressure is spring-maintained and is released only when the motor is energized.

A manual operating handle is supplied external to the mechanism housing. This allows manual operation of the switch under load without disconnecting the power sources. The free-wheel, ratchet sprocket drive permits disengagement of the gear train from the gear motor when the switch is being operated manually. During electrical operation of the transfer mechanism, the free-wheel feature enables the manual operation handle to remain stationary.

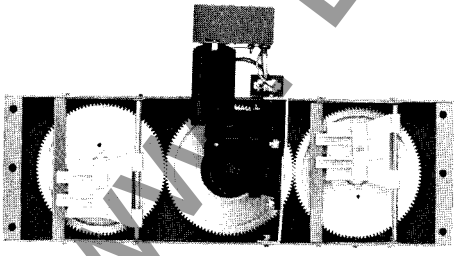
30-100 ampere transfer switches utilize limit switches mounted externally to the switching devices and operated by projections on the operating mechanism cam. Each switch is synchronized with its associated switching device to open when the switching device closes. 150 ampere and above utilize auxiliary switches mounted in the power switching device and operated by the device mechanism's main contacts. Each switch opens when its associated device closes.



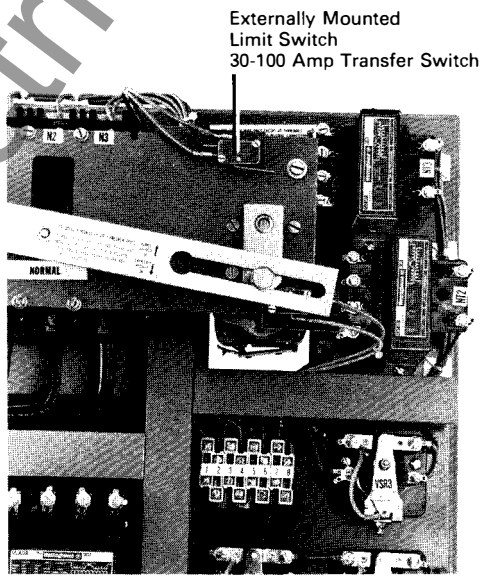
Auxiliary Switch Installed in Power Switching Device



Transfer Mechanism, 150-400 Ampere Switch



Rearview, Transfer Mechanism, 150-400 Ampere Switches

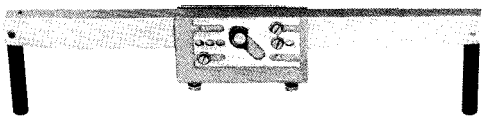


Electromechanical Logic Transfer Switch

Construction Features, *Continued*

Mechanical Interlocks
Westinghouse switches utilize two separate and isolated mechanical interlocks to prevent both sources from being connected to the load circuit simultaneously. They are:

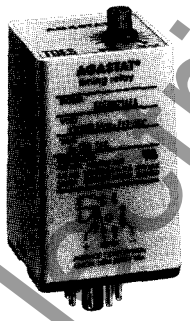
(1) Transfer mechanism which does not rely on clutches or friction drives. All parts, from normal device handle to emergency device handle, are in positive contact with all other parts through use of gear teeth, woodruff keys, and slide pins.



Walking Beam Interlock

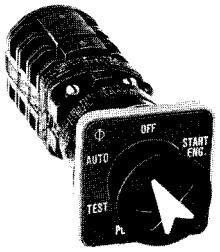
(2) Walking beam interlock provided interlocking of both devices so that only one may be closed, yet both may be open at any given time. This interlock mounts on panel at the rear of the power switching devices. When one device is closed, a non-conductive plunger extends into the opposite device to prevent it from closing. The closed device must open before the open device may be closed.

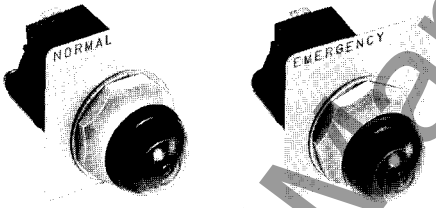
Timing Relays©



Options 1, 2, 3, 4, 30, 31 and 32 use state of the art universal solid state timing relays rated for 10 ampere contacts.

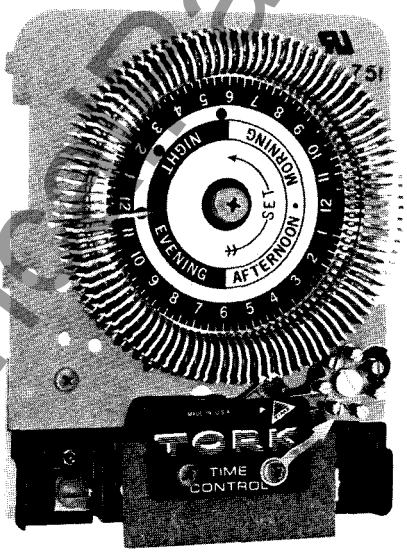
Pilot Devices©





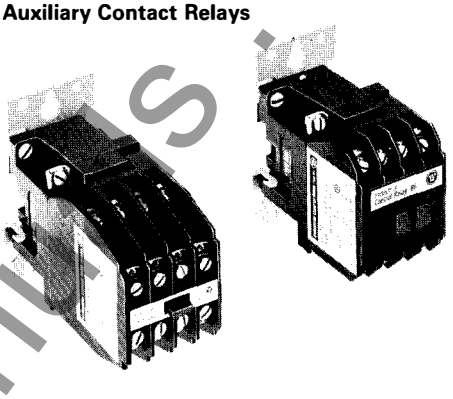
Options 6, 7, 8, 11B-11E, 12 and 29 are performed by industrial duty pilot devices.

Plant Exerciser



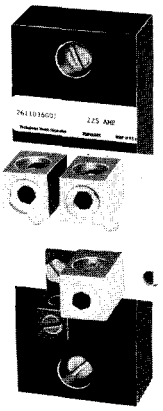
Option 23, Plant Exerciser, is a 168 hour clock timer which permits automatic test operation of the plant at least once a week at pre-selected intervals. Timer is adjustable from 0 – 168 hours in multiples of 15 minutes, and is mounted with the switch. Available with or without interrupting the normal power supply. Optional failsafe operation is available.

Auxiliary Contact Relays



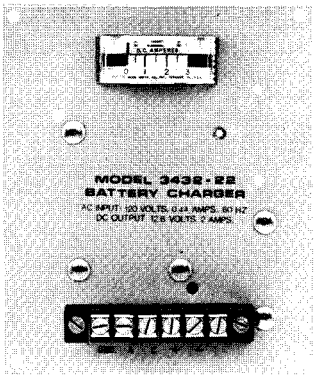
Option 14 uses Westinghouse type BF relays featuring self-wiping 10 ampere contacts.

Insulated Groundable Solid Neutral Bar



This standard feature provides insulated, groundable neutrals, 100% rated with provisions for line and load connections.

Battery Charger



Option 24, Battery Charger, provides trickle charge Dc output of 12 or 24 volts. Mounted with transfer switch not in a separate enclosure.

Electromechanical Logic Transfer Switch

User Benefits

Accurate, Reliable Protection Each pole of every power switching device is individually calibrated and tested in a controlled temperature to meet UL Inc. requirements. Especially hardened, ground and polished trip latches assure continuous and accurate tripping characteristics when supplied.

Long Contact Life Quick-make, quick-break toggle mechanism, coupled with De-ion arc quenchers, assure long contact life with minimal burning and pitting of contact surfaces.

Westinghouse Power Switching Devices provide for reduced downtime and maintenance costs. These devices are long-lived and are designed for maintenance-free, repetitive duty without costly shutdowns. Because the device is resettable, downtime amounts to only a matter of seconds after the overload or fault has been corrected.

Reduced Operation Cost Welded internal parts, high contact pressure, and silver alloy, butt-type contacts used in Westinghouse power switching devices offer less resistance to electrical current than bolted joints and hinge joints of other devices. Thus, lower watts loss means savings in electrical power.

Protection Against Single Phasing A fault or overload on any phase opens all poles of the power switching device, minimizing the possibility of single phasing polyphase motors. (Options 16 or 17 only.)

Maximum Personal Safety Westinghouse power switching devices are dead-front, therefore, operating personnel are not exposed to live parts. Load connecting bus between the normal and emergency devices is behind the panel on the 150-400 amp switches.

Reduced Installation Cost Small size of switch requires less space in applying the switch. In many cases, over-current/short circuit protection can be incorporated in the switch eliminating the additional cost of upstream protective devices.

Simplified Application The power switching device of the Westinghouse switch enables the switch to have withstand, closing, and interrupting rating equivalent to the power switching device's interrupting rating for easy coordination with upstream breakers or fuses.

Increased Protection When the power switching device is provided with magnetic protection, backup protection is provided for the upstream protective device in the event of a short circuit.

Rating is continuous, either open or enclosed, for all classes of loads. If optional thermal magnetic protection is provided, the ampere rating of the switch is determined by the trip unit rating.

Low Transfer Current Drain The mechanically held transfer motor is energized only during transfer. The transfer motor draws very low currents.

Straight Through Wiring

Compact Design

Completely Self Contained No separate power source, battery or otherwise, required for operation.

The common load connection of the power switching device is located behind the panel for the 150-400 amp ratings. Load interconnections on 100 amp and smaller are accomplished by cable connection.

Engine Start Contact Closes on normal source failure.

Electromechanical Logic Transfer Switch

Transfer Switch Selection Guide©

Automatic transfer switches are selected in a manner similar to other components selected for application in an electrical distribution system. Thus, the following normal and alternate system characteristics should be identified in order to match properly the automatic transfer switch to the system requirements in accordance with NEC and other applicable codes or standards:

a. Voltage
b. Number of phases
c. Number of wires
d. Frequency (60 Hz only)
e. Number of switched poles (2 or 3 pole only)
f. Type of load (motor, electric heating, etc. or a combination of types)
g. Continuous current and/or horsepower requirements of the load
h. Available fault current
i. Whether for emergency or standby service
j. Whether it is necessary to disconnect load from both power sources simultaneously
k. Whether the switch is to include integral overcurrent protection
l. Special options

Transfer Switch Catalog Number Explanation©

For Use Only in Explaining Catalog Numbers

Type Switch	Construction	No. of Switches Poles	Ampere Rating	Voltage ①	Enclosure
A TS	**B P**	**3**	**0225**	**–**	**K**
A – Automatic Transfer Switch	B – Circuit Breaker – Electro-Mechanical Single Panel	2 – 2 Pole 3 – 3 Pole	0030 – 30 Amp 0070 – 70 Amp 0100 – 100 Amp 0150 – 150 Amp 0225 – 225 Amp 0400 – 150 Amp	A – 120/60 B – 208/60 G – 220/60 W – 240/60 X – 480/60 E – 600/60	K – Open S – Nema 1 J – Nema 12 R – Nema 3R

© Changed since previous issue.
① Contact Westinghouse for voltages other than those listed.

Electromechanical Logic Transfer Switch

Ordering Information

1. Order by description and catalog number

   A. Type of System
   1 Phase, 2 Wire: Use 2 pole switch
   1 Phase, 3 Wire: Use 2 pole switch
   3 Phase, 3 Wire: Use 3 pole switch
   3 Phase, 4 Wire: Use 3 pole switch

   For other types, refer to Westinghouse

2. Specify:

   A. System Voltage and frequency.
   B. No. of phases and wires.
   C. Current

3. Select switch catalog number from listings from the following table.

4. Select desired options and order by option number.

5. Ordering example: Automatic Transfer Switch, Catalog Number ATSBP30225XS, 480 volts, 60 Hz, 3 phase, 4 wire, 225 ampere, with Options 1A, 2A, 3C, in Nema 1 enclosure.

6. **List Prices**: Refer to Price List 29-922.

Ordering Data for Westinghouse Automatic Transfer Switches

Circuit Breaker Switches, Single Panel, Electro-Mechanical Logic©

System Voltage	Type	30 Amperes	70 Amperes	100 Amperes	150 Amperes	225 Amperes	400 Amperes
2 Pole							
120	Open	ATSBP20030AK	ATSBP20070AK	ATSBP20100AK	ATSBP20150AK	ATSBP20225AK	ATSBP20400AK
1Ph.3W	NEMA 1 Encl.	ATSBP20030AS	ATSBP20070AS	ATSBP20100AS	ATSBP20150AS	ATSBP20225AS	ATSBP20400AS
	NEMA 12 Encl.	ATSBP20030AJ	ATSBP20070AJ	ATSBP20100AJ	ATSBP20150AJ	ATSBP20225AJ	ATSBP20400AJ
	NEMA 3R Encl.	ATSBP20030AR	ATSBP20070AR	ATSBP20100AR	ATSBP20150AR	ATSBP20225AR	ATSBP20400AR
120/240	Open	ATSBP20030WK	ATSBP20070WK	ATSBP20100WK	ATSBP20150WK	ATSBP20225WK	ATSBP20400WK
1Ph.3W	NEMA 1 Encl.	ATSBP20030WS	ATSBP20070WS	ATSBP20100WS	ATSBP20150WS	ATSBP20225WS	ATSBP20400WS
	NEMA 12 Encl.	ATSBP20030WJ	ATSBP20070WJ	ATSBP20100WJ	ATSBP20150WJ	ATSBP20225WJ	ATSBP20400WJ
	NEMA 3R Encl.	ATSBP20030WR	ATSBP20070WR	ATSBP20100WR	ATSBP20150WR	ATSBP20225WR	ATSBP20400WR
3 Pole							
120/208	Open	ATSBP30030BK	ATSBP30070BK	ATSBP30100BK	ATSBP30150BK	ATSBP30225BK	ATSBP30400BK
3Ph.4W	NEMA 1 Encl.	ATSBP30030BS	ATSBP30070BS	ATSBP30100BS	ATSBP30150BS	ATSBP30225BS	ATSBP30400BS
	NEMA 12 Encl.	ATSBP30030BJ	ATSBP30070BJ	ATSBP30100BJ	ATSBP30150BJ	ATSBP30225BJ	ATSBP30400BJ
	NEMA 3R Encl.	ATSBP30030BR	ATSBP30070BR	ATSBP30100BR	ATSBP30150BR	ATSBP30225BR	ATSBP30400BR
120/240	Open	ATSBP30030WK	ATSBP30070WK	ATSBP30100WK	ATSBP30150WK	ATSBP30225WK	ATSBP30400WK
3Ph.3W	NEMA 1 Encl.	ATSBP30030WS	ATSBP30070WS	ATSBP30100WS	ATSBP30150WS	ATSBP30225WS	ATSBP30400WS
	NEMA 12 Encl.	ATSBP30030WJ	ATSBP30070WJ	ATSBP30100WJ	ATSBP30150WJ	ATSBP30225WJ	ATSBP30400WJ
	NEMA 3R Encl.	ATSBP30030WR	ATSBP30070WR	ATSBP30100WR	ATSBP30150WR	ATSBP30225WR	ATSBP30400WR
277/480	Open	ATSBP30030XK	ATSBP30070XK	ATSBP30100XK	ATSBP30150XK	ATSBP30225XK	ATSBP30400XK
3Ph.4W	NEMA 1 Encl.	ATSBP30030XS	ATSBP30070XS	ATSBP30100XS	ATSBP30150XS	ATSBP30225XS	ATSBP30400XS
	NEMA 12 Encl.	ATSBP30030XJ	ATSBP30070XJ	ATSBP30100XJ	ATSBP30150XJ	ATSBP30225XJ	ATSBP30400XJ
	NEMA 3R Encl.	ATSBP30030XR	ATSBP30070XR	ATSBP30100XR	ATSBP30150XR	ATSBP30225XR	ATSBP30400XR
347/600	Open	ATSBP30030EK	ATSBP30070EK	ATSBP30100EK	ATSBP30150EK	ATSBP30225EK	ATSBP30400EK
3Ph.4W	NEMA 1 Encl.	ATSBP30030ES	ATSBP30070ES	ATSBP30100ES	ATSBP30150ES	ATSBP30225ES	ATSBP30400ES
	NEMA 12 Encl.	ATSBP30030EJ	ATSBP30070EJ	ATSBP30100EJ	ATSBP30150EJ	ATSBP30225EJ	ATSBP30400EJ
	NEMA 3R Encl.	ATSBP30030ER	ATSBP30070ER	ATSBP30100ER	ATSBP30150ER	ATSBP30225ER	ATSBP30400ER

© Changed or added since previous issue.

Electromechanical Logic Transfer Switch

Single Panel Options

1. Time Delay Normal to Emergency (TDNE)①
Delays the transfer from normal in order to over-ride momentary power outages/ fluctuations. Timing begins when Emergency source appears. Does not affect initiation of engine start circuit.

A. Adjustable 5 to 50 seconds.

2. Time Delay on Engine Starting (TDES)Ⓒ
This option is for use only where the emergency source is an engine generator. It delays initiation of the engine start circuit in order to over-ride momentary power outages or fluctuations. Does not affect ability of the switch to transfer from Normal to Emergency source.

A. Adjustable .5-15 seconds.
B. Adjustable 4-120 seconds.

3. Time Delay Emergency to Normal (TDEN)①
Delays the transfer from emergency to permit stabilization of the normal power source before retransfer is made. Timing begins when the normal source appears. If the Emergency source fails during timing, transfer to Normal source is immediate, overriding the time delay.

A. Adjustable 0 to 60 seconds.
C. Adjustable 0 to 30 minutes.

4. Time Delay for Engine Cooloff (TDEC)①
Permits the generator to run under a no-load condition after transfer to Normal has been made. Timing begins when transfer is made.

A. Adjustable 3 to 30 minutes.

5B. Frequency/Voltage Relay for Emergency Source
Relay is connected to 1 phase only of the Emergency source, constantly monitoring that phase. Prevents transfer from Normal to Emergency until the engine generator has reached its operating frequency and voltage. When switch is in the Emergency position and the Emergency source is outside the relay setting, the switch will initiate transfer to the Normal position if the Normal source is present.

6. Test PushbuttonⒸ
Provides test operation of the transfer switch by simulating a loss of normal power. Engine starting will be initiated and transfer to the Emergency source will occur.

Momentary Contact (Pushbutton – TPB)
(When selected, the Standard Test Selector Switch is omitted)
A. For separate mounting.
B. In cover of enclosed switches.

7. Four Position Selector SwitchⒸ
Permits four modes of switch operation: TEST, AUTO, OFF, and ENGINE START. The OFF position de-energizes the control relays and opens the engine start circuit. The switch will not operate nor will the engine start on power failure. A white light is also furnished that lights only when the switch is in the off position. The TEST position simulates power failure. Engine starting is initiated and the switch will transfer when emergency voltage appears. The AUTO position returns the transfer switch to Normal operation. The ENGINE START position retains the transfer switch in normal and initiates the engine start circuit. The switch will not transfer unless the normal source fails. (When selected, the Standard Test Selector Switch is omitted.)

C. For separate mounting.
D. In cover of enclosed switch.

8. Bypass Pushbutton
Provides a by-pass on TDEN (Option 3) relay, permitting switch to be transferred to Normal without time delay. Option is normally used in testing when it is not desirable to wait for the timer to finish its timing sequence.

A. Bypass TDEN (PBEN) for separate mounting.
C. Bypass TDEN (PBEN) in enclosure cover.

11. Circuit Breaker Reset
This option provides means of resetting thermal magnetic breakers when used in the transfer switch.

A. Manual: Supplied as standard with options 16A, 16E, 16F and 17A.
B. Normal Breaker Reset PB for separate mounting.
C. Emerg. Breaker Reset PB for separate mounting.
D. Normal Breaker Reset PB in cover of Enclosed Switch.
E. Emerg. Breaker Reset PB in cover of Enclosed Switch.
F. Circuit Breaker Lock-out: Prevents transfer if breaker trips (supplied as standard with options 16A, 16E, 16F and 17A).

12. Pilot LightsⒸ
Pilot lights can be furnished to indicate (1) switch position; (2) source condition; and (3) tripped condition.

Switch Position: Utilizes a 1A breaker auxiliary contact.

A. Normal Supply (green) for separate mounting.
B. Emergency Supply (red) for separate mounting
C. Normal Supply (green) in cover of enclosed switch.
D. Emergency Supply (red) in cover of enclosed switch.

Source Condition: Indicates whether or not source voltage is present.

E. Normal Supply (white) for separate mounting.
F. Emergency supply (white) for separate mounting.
G. Normal supply (white) in cover of enclosed switch.
H. Emergency supply (white) in enclosure cover.

Tripped Condition: Available only with thermal-magnetic breakers, Options 16 and 17.

J. Normal supply (amber) for separate mounting.
K. Emergency supply (amber) for separate mounting.
L. Normal supply (amber) in enclosure cover.
M. Emergency supply (amber) in enclosure cover.

14. Relay Auxiliary Contact
The Normal source relay is energized only when the switch is in the Normal position and Normal power is present. The Emergency source relay is energized whenever the Emergency source is present.

A. Normal Source: Provides 1 NO and 1 NC contacts.
B. Emergency Source: Provides 1 NO and 1 NC.

16. Thermal Magnetic, or Non-Automatic Breakers in Place of Standard High Instantaneous Trip BreakersⒸ
Use of this option can, in many cases, eliminate the need for separate upstream overcurrent/short circuit protection, thus enabling code requirements to be met with a device that takes up less space and requires less

Ⓒ Changed since previous issue.
① Timing ranges are recommended ranges only. Actual time settings can be adjusted from 0 seconds to 10 hours. All timers are factory set at 0 seconds.

Electromechanical Logic Transfer Switch

wiring. Either the Normal or Emergency breaker, or both, may be replaced. Includes Option 11F except for Options 16B, G, H.

A. Thermal Magnetic: Specify rating and trip from table below.

Switch Rating Amps	Poles 2	Poles 3	Trip Ratings Available Amps
30	X	X	10,15,25,30
70	X	X	10,15,25,30,40,50,60,70
100	X	X	10,15,25,30,40,50,60,70,90,100
150©	X	X	70,90,100,125,150
225	X	X	70,90,100,125,150,175,200,225
400	X	X	250,300,350,400

B. Molded Case Switches
E. Thermal Magnetic breaker, emergency source only.
F. Thermal Magnetic Breaker, normal source only.
G. Molded Case Switch, emergency source only.
H. Molded Case Switch, normal source only.

17. MARK 75 Circuit Breakers in Place of Standard High Instantaneous Trip Breakers (includes Option 11F)©

A. Thermal Magnetic MARK 75: Specify rating and trip from table below.

Switch Availability Rating Amps	Poles 2	Poles 3	Trip Ratings
30	X	X	
70	X	X	
100	X	X	Same as
150©	X	X	Option
225	X	X	16A
400	X	X	

18. Enclosures and Instrumentation
Nema 1: Standard, painted with ASA 61 gray paint. Optional colors available. Lockable T-handle supplied as standard.

Nema 12: Dust-tite gasketed, painted with ASA 61. Optional colors available.

Nema 3R: Weather resistant rain-tite, painted with ASA 61. Optional colors available.

AS. Nema 1, suffix "S" on catalog number.
AJ. Nema 12, suffix "J" on catalog number.
AR. Nema 3R, suffix "R" on catalog number.

E. Voltmeter mounted in cover (includes potential transformers and selector switch).
F. Ammeter mounted in cover (includes current transformers and selector switch).
G. Frequency Meter
H. Running Time Meter
Note: Above Options E through H might require separate enclosure. Contact Westinghouse.

21. Non-Standard Terminals
A. Refer to wire terminal data, page 12 and specify terminal desired.

23. Plant Exerciser
168-hour clock timer provides for automatic test operation of the plant for preselected intervals (adj. 0-168 hrs. in multiples of 15 minutes) at least once a week, mounted on intelligence circuit.

C. Without interrupting normal supply.
D. By simulation of power failure.
Note: Both C and D are connected to the load bus.
G. Plant Exerciser with Selector Switch for choosing 23C, 23D, or for bypassing exerciser. Contact Westinghouse about 14 day timer.

24. Battery Charger
The trickle charge Dc output is 12 or 24 volts. Units are panel mounted. Automatic high-low charge rate with 2 amp high rate maximum.

C. 12 volt
D. 24 volt

29. Type of Operation©
② B. Pushbutton Operation Only (Pushbuttons for separate mounting). Includes two pushbuttons for operating the transfer switch from normal to emergency and from emergency to normal. No automatic operation is included.
C. Pushbutton Return to Normal (Pushbutton for separate mounting). Automatic operation normal to emergency, pushbutton operation emergency to normal.
Failsafe feature provides immediate transfer Emergency to Normal if the Emergency source fails and Normal is available.
② D. Same as Option 29B, except pushbuttons in cover of enclosed switch.
E. Same as Option 29C except pushbutton in cover of enclosed switch.
② F. Automatic/Manual Operation. Two position selector (marked Auto/Manual) permits selection of automatic or manual operation. Includes Option 29B which only operates when the switch is in the manual mode. For separate mounting.
② G. Same as Option 29F except pushbutton and selector switch mounted in cover of enclosed switch.

30. Cranking Limiter①
A. Adjustable 20-200 seconds. Interrupts motor start circuit if voltage does not appear within pre-selected time.

31. Audible Alarm with Silencing Switch
Sounds alarm when switch is in the emergency position and emergency voltage is present.

A. For separate mounting.
B. Enclosure mounted.

32. Time Delay Neutral①©
Provides a time delay in the Neutral position when the load is transferred in either direction to prevent excessive inrush currents due to out-of-phase switching of large motor loads. Utilizes a 1A Breaker auxiliary contact.

A. Adjustable 5 to 50 seconds.

33. Shunt Trip©
Wired to terminal blocks for customer connection. Specify coil voltage desired. (120 Vac supplied if none specified)

A. Supplied in Normal breaker.
B. Supplied in Emergency breaker.

40. Special Paint: Contact Westinghouse

© Changed since previous issue.
① Timing ranges are recommended ranges only. Actual time settings can be adjusted from 0 seconds to 10 hours. All timers are factory set at 0 seconds.
② Not U.L. Listed.

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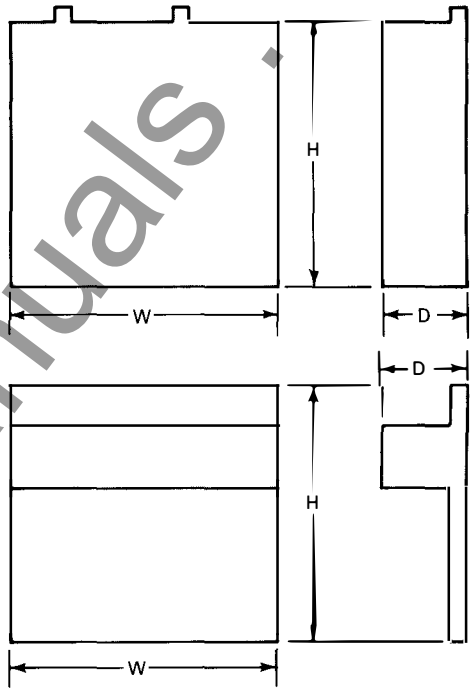
Dimensions and Weights, 2 and 3 Pole Switches

Approximate Only; Not to be used for construction purposes unless approved

Amp. Rating	No. of Poles	Enclosed Switches Dimensions, Inches H	W	D	Space Required to open Door, Ins.	Wt., Lbs.	Open Switches Dimensions, Inches H	W	D	Wt., Lbs.
30	2,3	32 11/16	24 3/16	7 7/8	29 1/2	150	26	19 1/4	7 1/2	100
70	2,3	32 11/16	24 3/16	7 7/8	29 1/2	150	26	19 1/4	7 1/2	100
100	2,3	32 11/16	24 3/16	7 7/8	29 1/2	150	26	19 1/4	7 1/2	100
150©	2,3	39	36	14 3/4	50 3/4	340	31 1/4	28	12 3/4	230
225	2,3	39	36	14 3/4	50 3/4	340	31 1/4	28	12 3/4	230
400	2,3	39	36	14 3/4	50 3/4	370	31 1/4	28	13 1/2	245



Technical Data

Applicable with standard Westinghouse High Instantaneous Magnetic Only Power Switching Devices

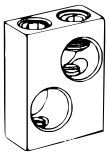
Switch Rating, Amps	UL Standard Withstand & Closing	UL Standards Interrupting	Withstand Ratings Symmetrical When used with Current Limiting	Maximum Fuse	When used with Molded Case Cir. Breaker	Interrupting Rating	Closing Rating
30	5000	180	200,000	①	14,000	14,000	14,000
70	5000	420	200,000	①	14,000	14,000	14,000
100	5000	600	200,000	①	14,000	14,000	14,000
150©	10,000	900	200,000	①	22,000	22,000	22,000
225	10,000	1350	200,000	①	22,000	22,000	22,000
400	10,000	2400	200,000	①	30,000	30,000	30,000

① Any Current Limiting U/L Listed Fuse Properly Applied Within Its Ratings.
© Added since previous issue.

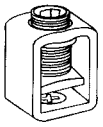
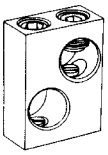
Electromechanical Logic Transfer Switch

Terminal Data

Standard Terminals

Switch Rating, Amps	Option	Aluminum Terminal	Used With Breaker	Wire Range	No. of Cables	Type of Conductor
30 70 100	Standard		FB	#6-1/0	1	Cu/Al
150 225	Standard		KA, HKA	#6-350 MCM or #4-350 MCM	1 1	Cu/Al
400	Standard		LA, HLA	250-500 MCM	2	Cu/Al

Optional Terminals

Switch Rating, Amps	Option	Copper Terminal	Used With Breaker	Wire Range	No. of Cables	Type of Conductor
150 225	Option 21A		KA, HKA	#6-350 MCM	1	Cu
400	Option 21A		LA, HLA	250-500 MCM	2	Cu

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