



# Rugged Transfer Switches for Medium Voltage Applications



**ASCO** Power Technologies™

ASCO 7000 SERIES  
Medium-Voltage Transfer Switches

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# ASCO 7000 SERIES Medium Voltage Transfer Switches

ASCO 7000 SERIES Medium Voltage Transfer Switches are custom engineered to reliably transfer medium voltage loads under demanding conditions.

ASCO 7000 SERIES Transfer Switches use two vacuum circuit breakers to transfer medium voltage loads between power sources. They offer metal-clad construction and barriered controls to withstand the rigors of medium voltage applications, and removable element circuit breakers and voltage transformers to facilitate inspection, maintenance, and repair. These switches are available with open transition, delayed transition, and closed transition switching sequences for use in a wide range of medium voltage applications.

## Product Details

 [Transfer Switch  
Overview](#)


# 7000 SERIES Medium Voltage Transfer Switches

1200 Ampere models consist of a minimum of two equipment sections. 2000 and 3000 Amp models require a minimum of three sections. Seismic certification, secure outdoor enclosures, and many other features can be provided to meet exact customer specifications.

Key components and features include:

- ASCO 7000 SERIES Transfer Control Center
- Epoxy-insulated copper bus
- Standard, Bypass, and Dual-Switch Configurations
- ANSI C37.20.2 and UL 1008A protective barriers isolate major components
- Transfer Mechanism comprised of two draw-out and shuttered Vacuum Circuit Breakers (VCBs) with optional protective relay:
  - One Normal Source VCB
  - One Emergency Source VCB
- Type SIS control wire with durable wire markings printed directly on insulation
- Fully integrated, multi-section, metal-clad assembly
- Available Seismic Certification
- Two Fused, Draw-Out Voltage Transformers with Open Delta wiring on the normal and emergency power sources
- Available Arc-Resistant Construction

## Power Knowledge

 [Basic Automatic  
Transfer Switch  
Functions](#)



Pioneering technology, unsurpassed technical support, and around-the-clock service make ASCO Medium Voltage Transfer Switches easy to procure and simple to own.



ASCO 7000 SERIES  
1200 Amp Medium  
Voltage Transfer Switch

# 7000 SERIES Power Switching Solutions

## Automatic and Manual Transfer Switching

A mode selector switch selects between automatic and manual control modes. Automatic control options include open, delayed, and closed transition control. Electrically interlocked manual controls on the front door permit user-supervised operation in non-automatic mode.

- Rated 5kV or 15kV
- Capacities from 1 through 4000 amps
- Controller prevents inadvertent operation under low voltage conditions
- Low control circuit currents allow for long distances between remotely control switches and transfer switches
- Standard in-phase monitor for transferring motor loads



## Open Transition Transfer Switching

ASCO Open Transition Transfer Switches feature non-overlapping breaker operation, assuring that electrical power sources remain isolated and effectively interrupt the flow of power. The switch transfers in a 'break-before-make' mode.

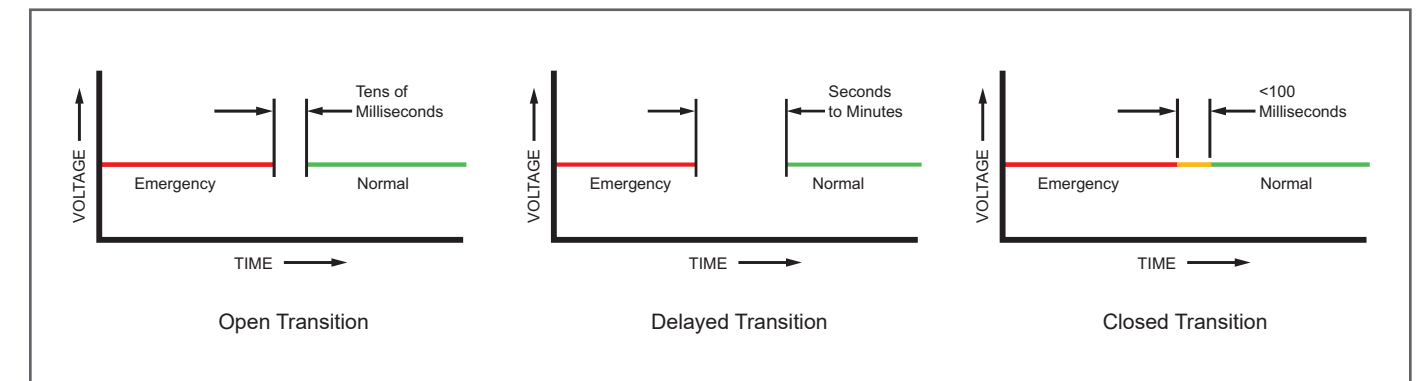
## Delayed Transition Transfer Switching

ASCO Delayed Transition Transfer Switches provide a prescribed disconnect time for load transfers between power sources. The adjustable period of delay allows stored energy loads to dissipate power. Stored energy loads may include motors and drives, rectifier banks, power correction and filtration devices, and load management applications. Interlocking prevents direct simultaneous connection of both sources to the load.

## Closed Transition Transfer Switching

ASCO Closed Transition Transfer Switches feature overlapping breaker operation, permitting the transfer of electrical loads while maintaining electrical continuity. The switch transfers in a 'make-before-break' mode if all synchronization parameters for both sources are within acceptable ranges. Control logic in the ASCO 7000 SERIES Transfer Control Center monitors source conditions and automatically determines if the transfer should occur using an open (conventional non-overlap mode) or closed transition sequence.

Closed transition transfers within 5 electrical degrees is achieved passively, without control of the engine generator set. Therefore, no additional control wire runs are required between the Automatic Transfer Switch and engine generator set governor or voltage regulator. Prescribed overlap time in a closed transition transfer typically is less than 100 milliseconds.



## Power Knowledge

[Transferring Motor Loads Between Power Sources](#)

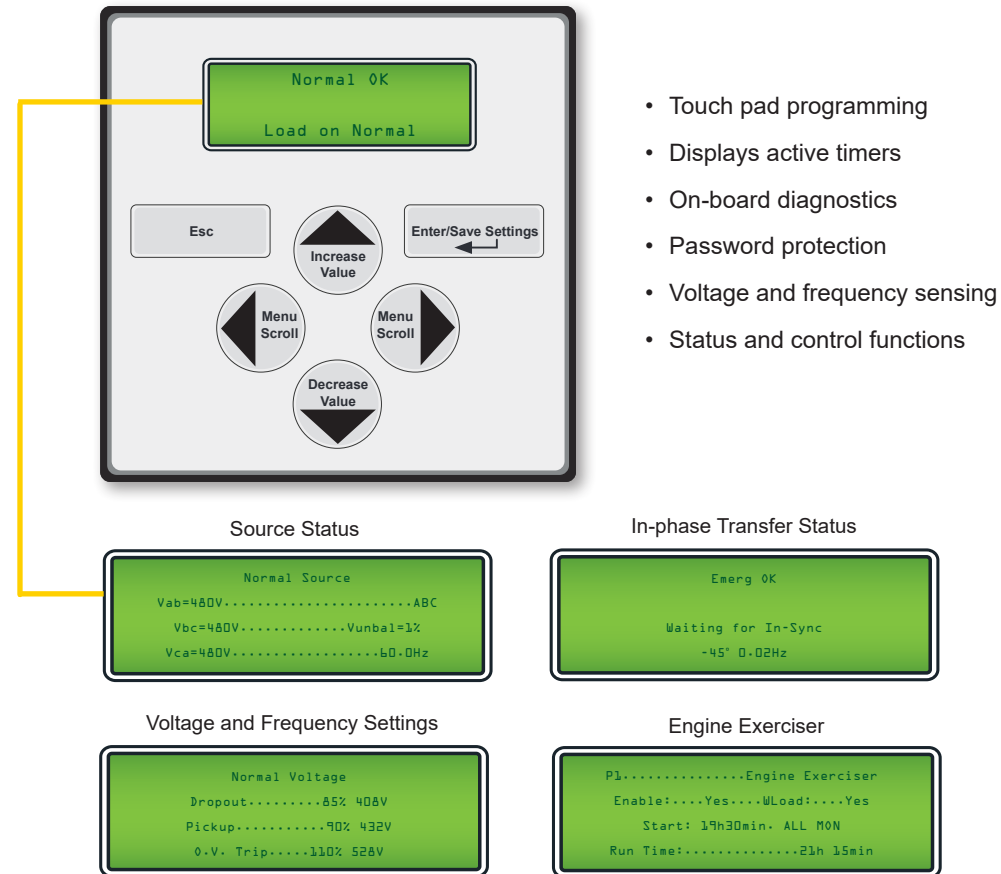
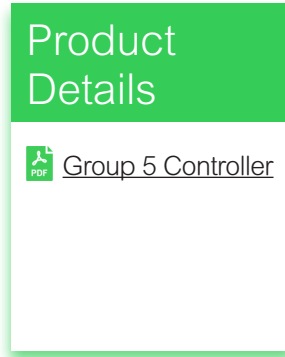
[Transition Mode Basics](#)

[Transferring Motor Loads with Zero Power Interruption](#)

# 7000 SERIES Controls

## Group 5 Controller

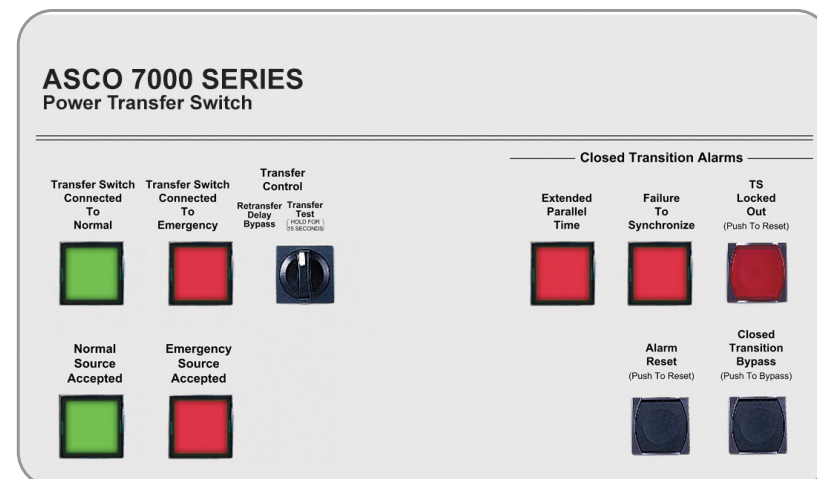
The 7000 SERIES Group 5 Controller is reliable and field-proven. It provides all of the voltage, frequency, control, timing, and diagnostic functions required for most emergency and standby power applications.



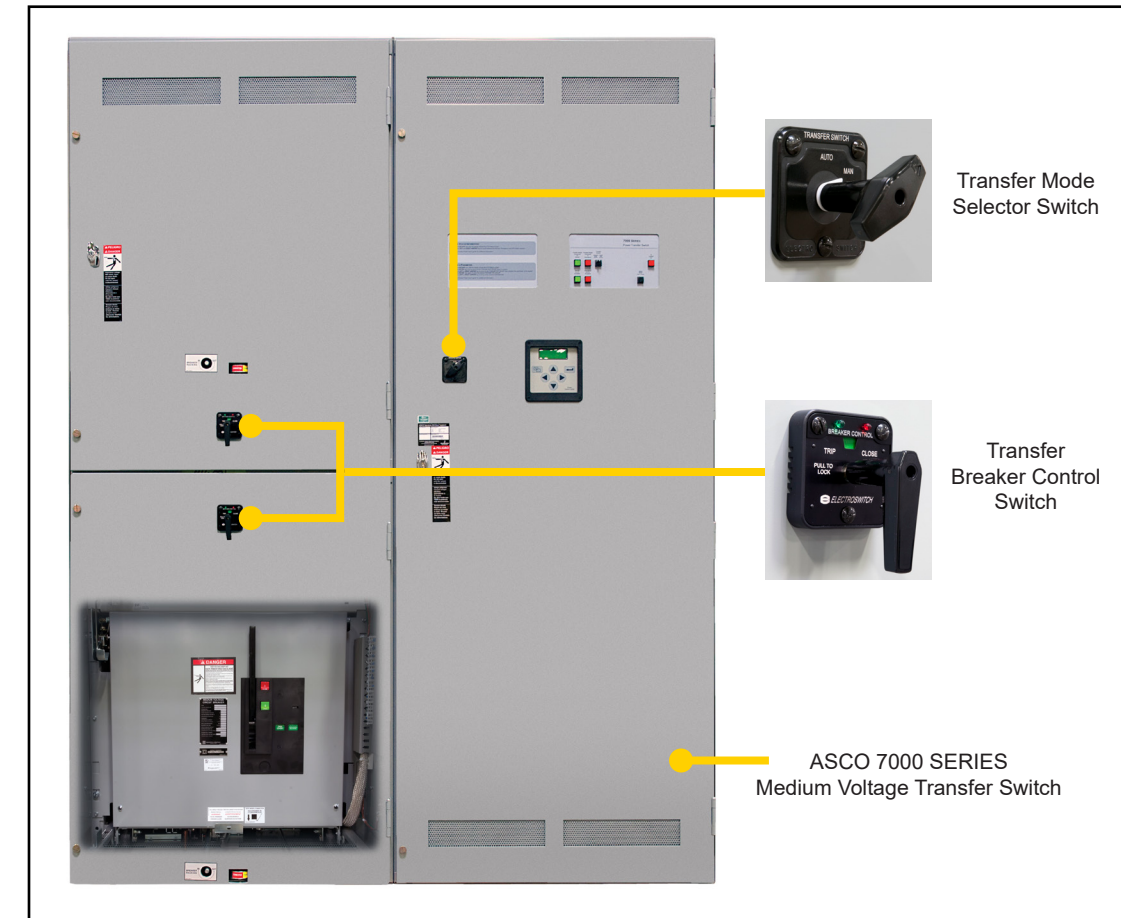
## Instrumentation, Control and Metering

Available equipment includes:

- PowerQuest® Critical Power Management Systems (CPMS)
- Analog and/or digital metering for current, voltage power, power factor, and frequency.
- Discrete indicator lights for status and control information at a glance
- Multi-ratio Potential Transformers and Current Transformers



# 7000 SERIES Manual and Mode Controls



## Transfer Mode Selector Switch



- Every circuit breaker includes a breaker control switch for manually opening and closing breakers
- Operator can open breakers in any control mode
- Operate can only close breakers in manual mode

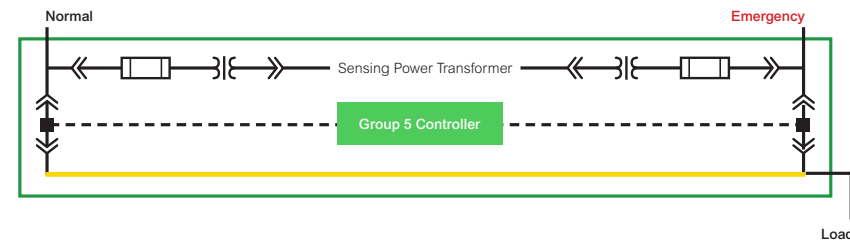
## Transfer Breaker Control Switch



- Allows an operator to trip a transfer switch breaker in any control mode
- Enables an operator to close the breaker in manual mode with interlock protection
- "Trip", "Close", and "Pull to Lock" handle positions
- Indicator LEDs show whether the breaker is closed, open, or tripped

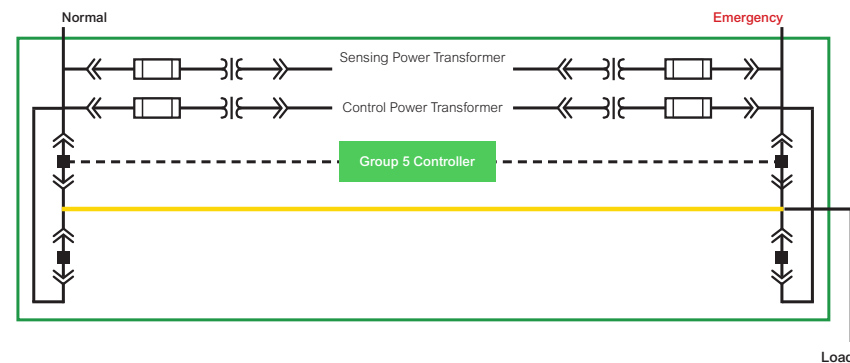
# Flexible Configurations for Advanced Redundancy

## A Standard Two-Breaker Transfer Switch for Transferring Loads Between Two Sources



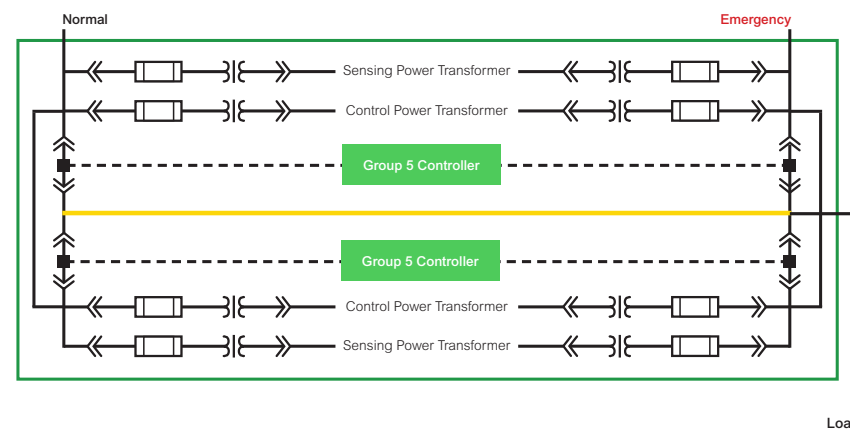
- Two breakers and controller transfer load to either of two power sources
- Two Open Delta Power Transformers provide breaker charging power, control power, and source voltage measurements
- Control power derives from the destination source

## A Two-Breaker Transfer Switch with Bypass-Isolation Capability that Avoids Interruptions to Loads and Facilitates Testing and Maintenance



- One Automatic or Non-Automatic Transfer Switch and two additional breakers serve as a Bypass
- Additional Control Power Transformers provide charging power for breakers
- Enables servicing primary switching devices without disrupting power to load
- Provides manual transfer when in bypass mode

## A Two-Breaker Transfer Switch that Bypasses to a Second Two-Breaker Transfer Switch, Enabling Load Transfer Between Sources Even in Bypass Mode



- Two automatic or non-automatic two-breaker transfer switches with a manual selector.
- Provides automatic transfer when in bypass position

## Circuit Breakers

Dual-breaker configuration provides higher reliability for medium-voltage applications. Each circuit breaker contains three separately mounted vacuum interrupters with an integral contact wear gap indicator. Stored energy devices provide fast operation to interrupt and isolate faults and include electric motor charging and manual charging handle.



- ASCO 7000 SERIES Medium Voltage Transfer Switches utilize two or more Square-D VR Vacuum Breakers
- Horizontal draw-out breaker for non-disruptive testing or removal, designed for use with metal-clad switchgear
- Hermetically sealed vacuum breakers
- Matched circuit breakers for Interchangeability
- Short mechanical stroke for fast operation

## Protective Relays

Protective relays are used to protect and coordinate equipment and circuits between the medium and low voltage systems in a facility's power distribution system. Available circuit protections include:

- Three-stage overcurrent protection
- Zero-sequence overcurrent protection
- Overload protection

Available Protective Relays include:

- ANSI Device 32 – Directional Power
- ANSI Device 50 – Instantaneous Overcurrent
- ANSI Device 51 – AC Inverse Time Overcurrent
- ANSI Device 46 – Reverse Phase/Phase-Balance Current
- ANSI Device 47 – Phase Sequence/ Phase-Balance Voltage
- ANSI Device 86 – Lockout: Assures fault acknowledgement by locking a breaker open after a fault trip, then requires manual intervention to reset the breaker for automatic control.

## Instrument Transformers

Voltage Transformers and Current Transformers signal circuit voltage and current. Standard construction includes ANSI C57.13 metering class transformers for consistent and reliable performance. These include grounded truck-mounts for safe withdrawal and maintenance, as well as fusing for circuit protection. Revenue-grade instruments, test blocks, and additional protective relays are available.

# Transfer Switch Communications and Metering

## Communication



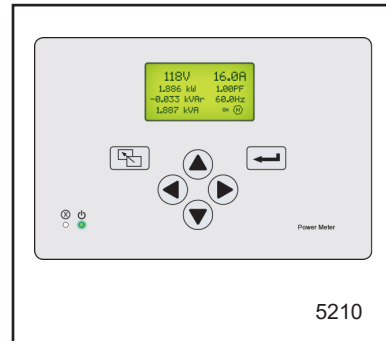
### Turn Transfer Switches into Power Information Portals

5170 Connectivity Module – Makes status and power information from a single switch available to via ModBUS, SNMP, and web pages.

### Product Details

[5170 Connectivity Module](#)

## Metering



### Transfer Switches are the Perfect Place to Monitor Power Flow, Power Conditions, and Power Events

5210 Power Meter – Provides deeper insight into circuit status and conditions.

### Product Details

[5210 Power Meter](#)

[PowerLogic PM 8000](#)



PowerLogic PM 8000 – Schneider Electric's compact, high-performance, power meter simplifies power quality and maximizes versatility.

# Optional Accessories

Time Delays and Extended Control Power	
1G	External 24VDC auxiliary power connections (Standard on MVATS)
Indicators and Customer Control Circuits	
30B	Load shed circuit
31BG	Provides 2 sets of Form C contacts rated at 6A for each of the following status signals: normal source acceptability, emergency source acceptability, pre/post transfer signal.
Special Applications	
138B	TOC Breaker truck-operated contact switch
136A	3" Infrared viewports

Notes:  
Contact ASCO for information about available Protective Relays

# Available Medium Voltage Transfer Switch Ratings

Voltage Class	Interrupt Classes (kA Symm.)	Rated Current (A)
15 kV	25	1200
	40	2000
	50	3000
5kV	40	1200
	50	2000
	50	3000

Construction, testing, and safety conform to the following standards:

- ANSI/IEEE C37.20.2 – Standard for Metal-Clad Switchgear
- ANSI/NEMA C37.55 – Switchgear – Medium Voltage Metal-Clad Assemblies – Conformance Test Procedures
- UL 1008A Listed – Standard for Medium Voltage Transfer Switches

## Additional Information

Controls	Technical Information
<a href="#">Group 5 Controller &amp; Power Control Center</a>	<a href="#">Outline Drawings &amp; Wiring Diagrams</a>

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