

Mounting Brackets



Standard



Long



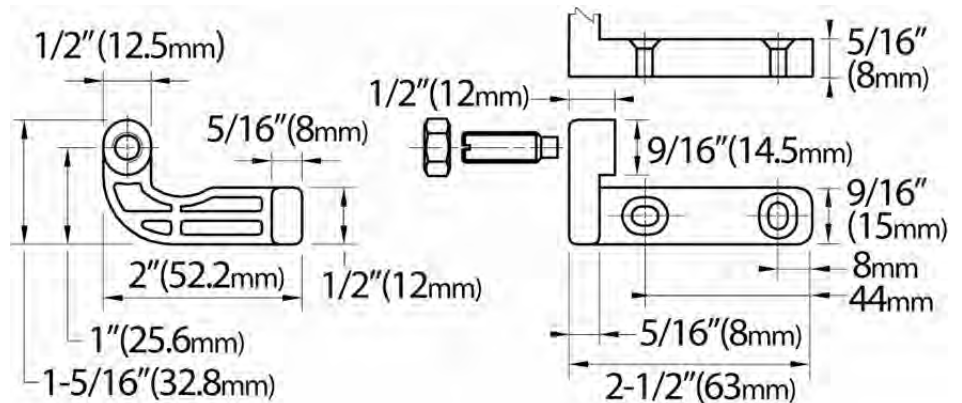
Hopper

Paint Color	Standard brackets pair (sold separately)	Long brackets pair *** (sold separately)
gray RAL 9006	40843F	41455L
black RAL 9005	40844G	41456M
white RAL 9010	40845H	41454K

Hopper bracket (packaged individually)	
Anodized Aluminum, adjustable	41200C

- * Additional brackets may be available. Consult with FFI.
- ** The Standard and Long brackets are packaged in pairs, while the Hopper bracket is packaged individually.

Standard Bracket (VROGMHSDUDWHO)

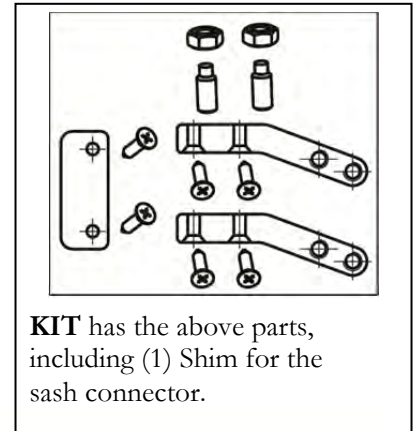


(brackets continued on next page)

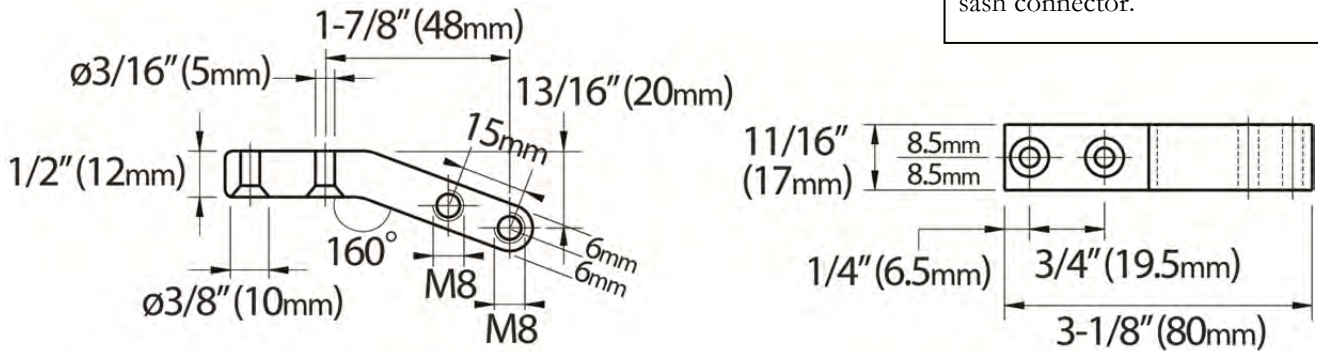
Long Bracket (optional)



Can be included with actuator for orders of 50 or more actuators.

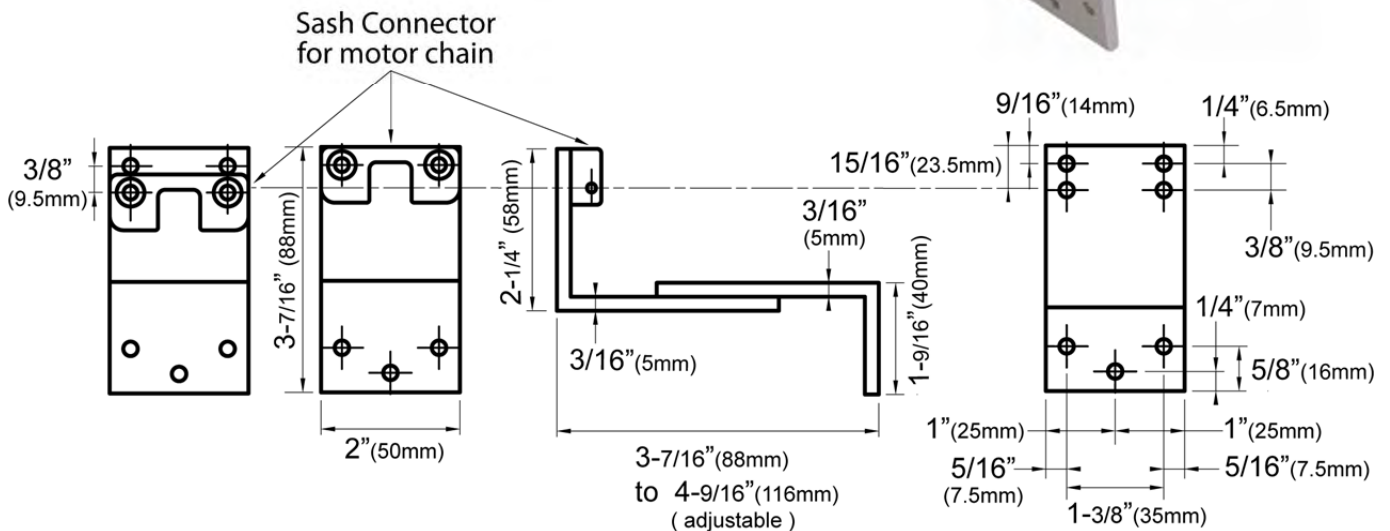


KIT has the above parts, including (1) Shim for the sash connector.



Hopper Bracket (optional)

Anodized Aluminum, adjustable



Attention:

Prior to installation it is essential to read these safety notices, warnings and installation instructions.

SAFETY NOTICES

- 1) The actuator should be used only on windows or skylights that are out-of-reach of people. Installation below 8 feet (2.5 meters) wall height is not recommended. If sash will be accessible, provide an emergency off-switch.
- 2) Do not approach moving parts until they have come to a complete stop.
- 3) When installing or un-installing the actuator, take proper precautions to avoid accidental closing of the window which might cause injuries to people (for example, impact, squashing, cutting or shearing).
- 4) Unsuitable application or improper installation may result in a loss of system operating functions, window damage and/or injuries to people.
- 5) The actuator must be installed by skilled engineers and licensed electricians.
- 6) Prior to installation make sure that ...
 - a) The actuator is appropriate for the application.
 - b) Window profiles and hinges are suitable to withstand the forces produced by the actuator.
 - c) The windows and sashes can open and close completely and are free of obstacles.
 - d) The existing electrical system complies with local building codes and regulations.
 - e) The power supply is compatible with the actuator's specifications.
 - f) The power circuit is turned OFF before connecting the actuator to it.

WARNINGS

- (1) The actuator is for indoor use only.
- (2) Operating temperature range: 14° to 140° F (-10° to 60° C); maximum relative humidity 60%.
- (3) The actuator uses electronic circuits to sense end-stroke positions and to detect circuit overload.
- (4) Only original parts and fittings may be used to install the actuator.
- (5) Do not use more than one motor on a vent unless using:
 - a) "Synchro-" series motors, which are designed for use on extra-wide vents, or
 - b) Only two tandem motors (not "Synchro-" series) connected to a 40733T Control Box.
- (6) In most applications pivoting brackets are recommended for mounting the actuator.
- (7) **Do not tamper with actuators, or warranty is void!** Do not open the actuator case, disassemble the actuator, clip wires, attempt to repair, or otherwise alter the product. **In case of malfunction, contact FFI Customer Service at 800-677-0228 or service@fenestration.net** for instructions. For defect claims, FFI must inspect the motor. The two-year manufacturer's warranty is provided by Ultraflex Control Systems.
- (8) After installation keep these instructions for later review.

MANUFACTURER'S LIMITED WARRANTY

Ultraflex Control Systems S.r.l. (UCS) products are guaranteed against defects in material and workmanship for a period of **two years** from the date of manufacture. Alleged defective products returned, freight prepaid, within the warranty period will be repaired or replaced free of charge, at UCS's option, if found effectively below UCS quality standards. This guarantee does not cover other claims for direct or indirect damages. In particular, UCS declines liability and excludes guarantee (except for what is stated above) if improper installation or misuse should result in a failure of UCS products. UCS motors should be used together with UCS-approved accessories. Substitutions must meet UCS specifications. Functional Fenestration Inc. (FFI) will honor the manufacturer's limited warranty (stated above) for two years from the date of sale listed on FFI's invoice.

FFI TERMS

Liability of Functional Fenestration Inc (FFI), Hawthorne, CA, as the seller for any defective product is limited to the replacement or credit of FFI product at original cost, and shall not include damages of any kind, whether incidental, consequential or otherwise. **Any claim and return must be made in accordance with FFI Terms and Conditions.**

CORRECT DISPOSAL OF THIS PRODUCT

Responsible disposal of this and other electronic products will help prevent potential negative consequences for the environment and human health. Its aluminum case and other re-usable elements should be re-cycled.

INSTALLATION INSTRUCTIONS

These instructions refer to the mounting and wiring diagrams on the following pages

Installation on Top-Hinged Window with Windowsill or Skylights

- (1) Mark the center-line of the sash and drill the holes.
- (2) Fasten the Sash Connector to the sash with the supplied screws.
- (3) Fasten the actuator to the window sill with Pivoting Brackets (recommended) or appropriate screws (not supplied). If the window is less than 35 inches tall, Pivoting Brackets must be used.
- (4) Attach the chain operator to the sash with the Sash Connector Pin.

Installation on Top-Hinged Window with No Sill, using the Standard or Long Pivot Bracket

- (1) Mark the center-line of the sash and drill the holes.
- (2) Fasten the Sash Connector with the supplied screws.
- (3) Fasten the actuator to the wall just below the window with Pivoting Brackets.
- (4) Attach the chain operator to the sash with the Sash Connector Pin.

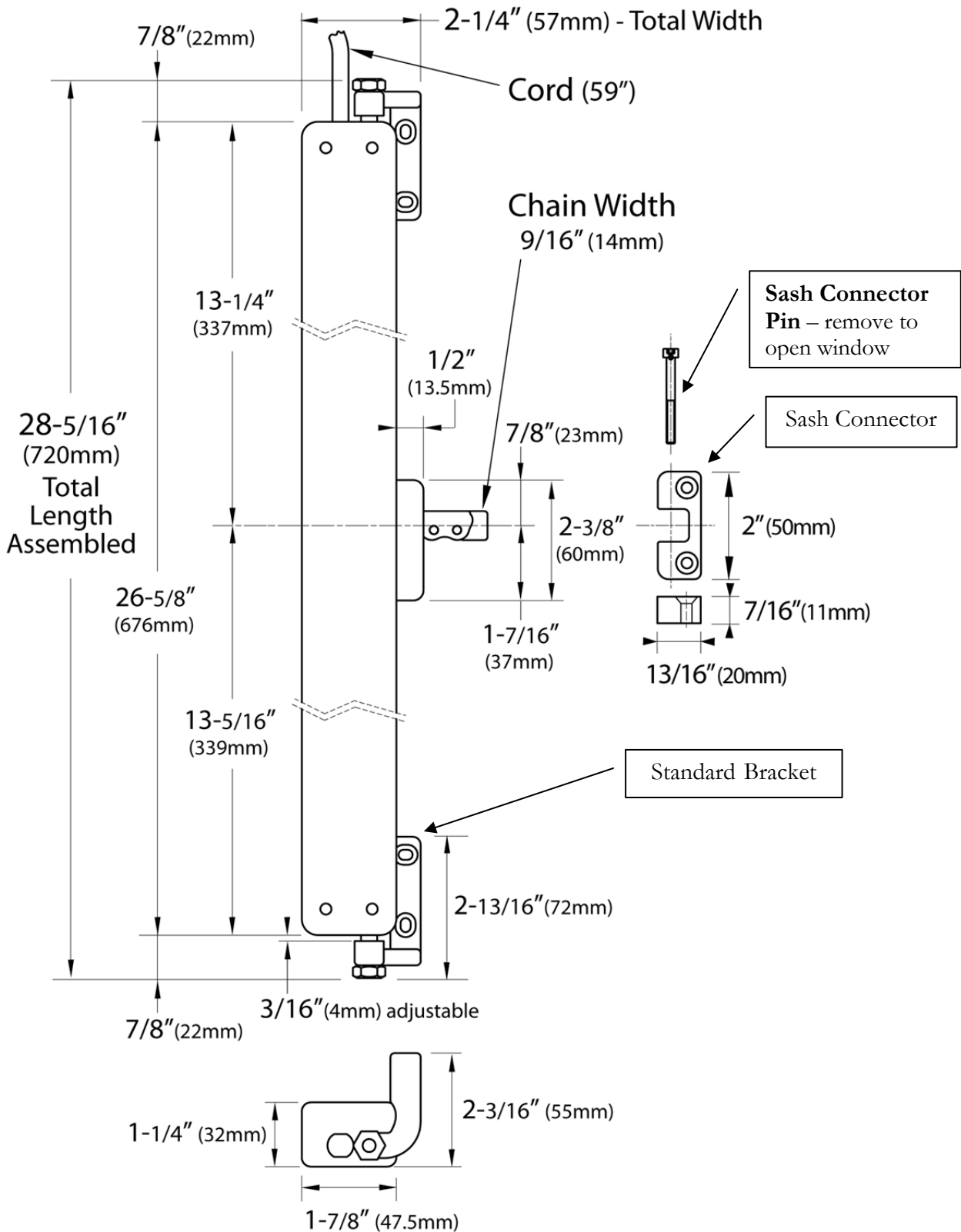
Installation on Bottom-Hinged (Hopper) Windows

- (1) Mark the center-line of the sash and drill the holes.
- (2) Fasten the Sash Connector to the Hopper Bracket, and attach this assembly to the sash.
- (3) Fasten the actuator to the window frame using the Standard Pivoting Brackets.
- (4) Attach the chain operator to the sash with the Sash Connector Pin.

ELECTRICAL CONNECTIONS

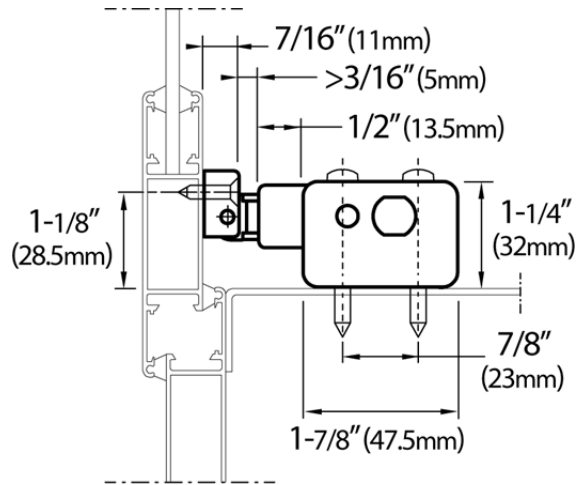
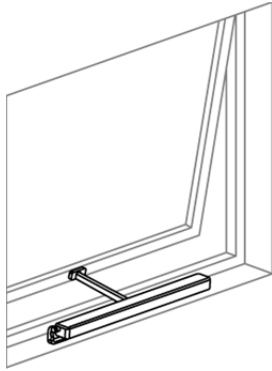
Before specifying electrical connections, refer to **Guidelines for Planning Wiring and Power Supplies** in the following pages.

Case Dimensions Diagram



Mounting Diagram (1)

Sill-mount without brackets

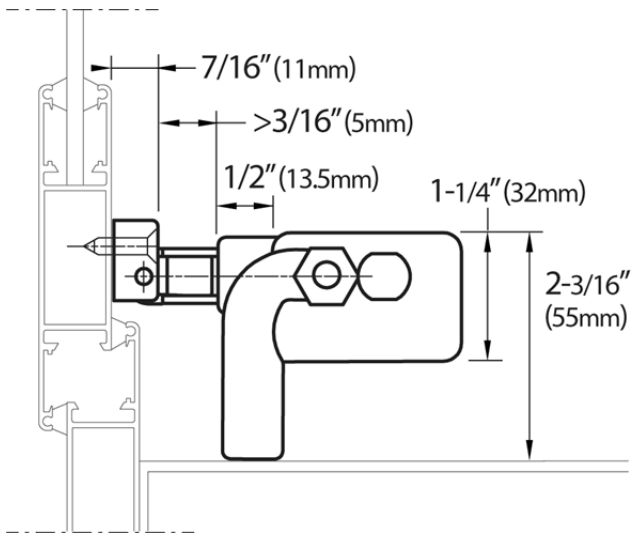
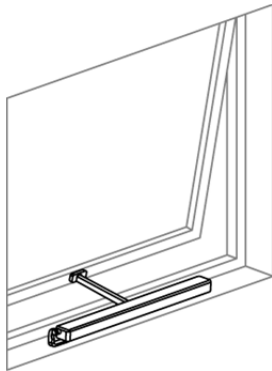


Minimum sash height is 3 times the chain length.

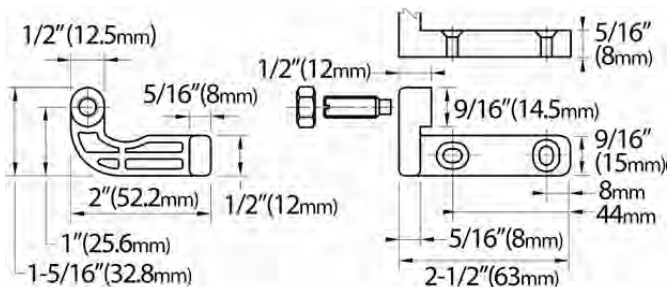
Screen applications are possible but not shown here.

Mounting Diagram (2)

Sill-mount with Standard brackets

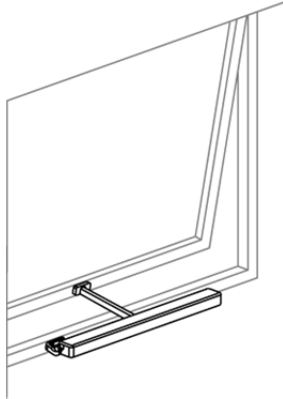


Screen applications are possible but not shown here.

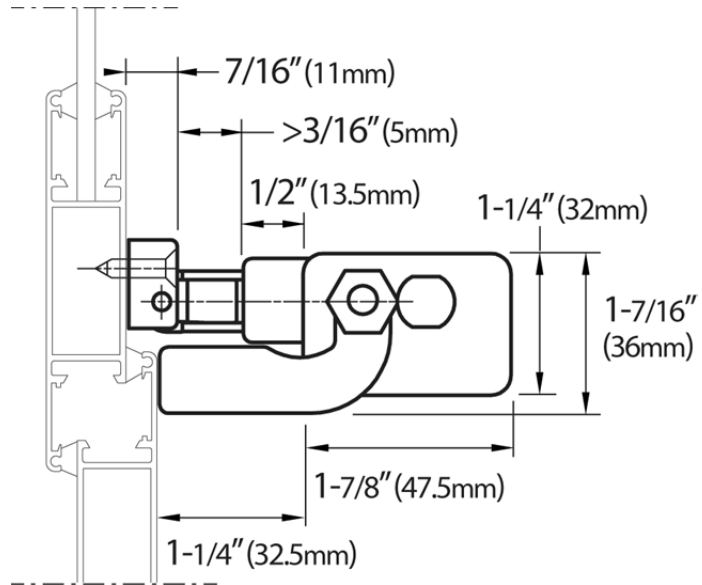


Mounting Diagram (3)

Wall-mount with Standard brackets

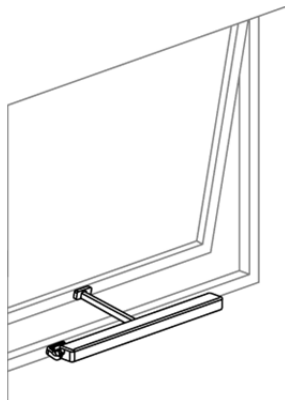


Screen applications are possible but not shown here.

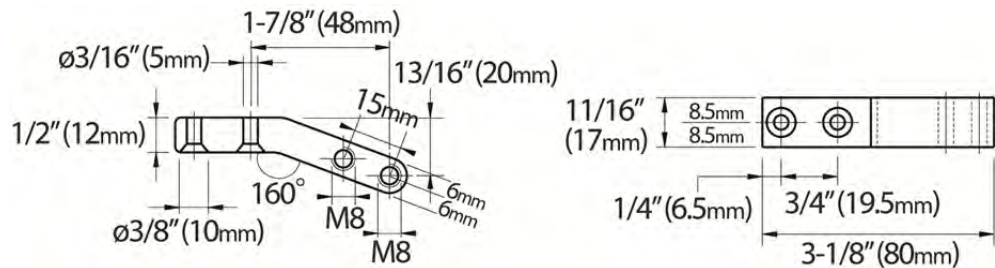
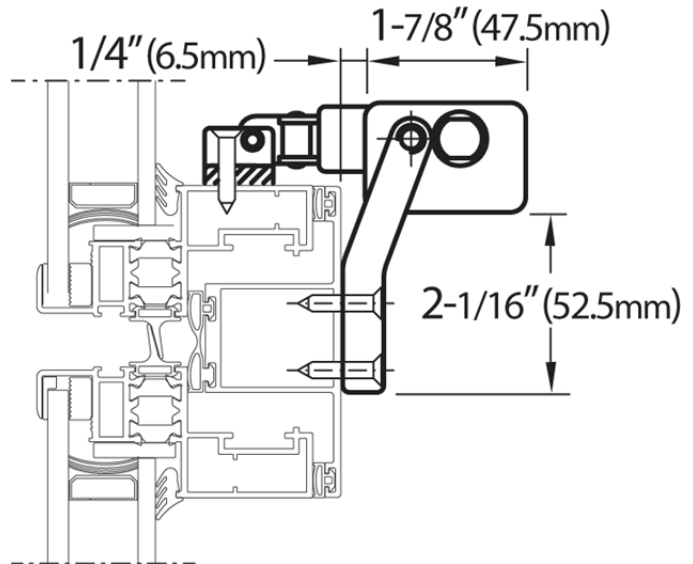


Mounting Diagram (4)

Wall-mount with Long brackets



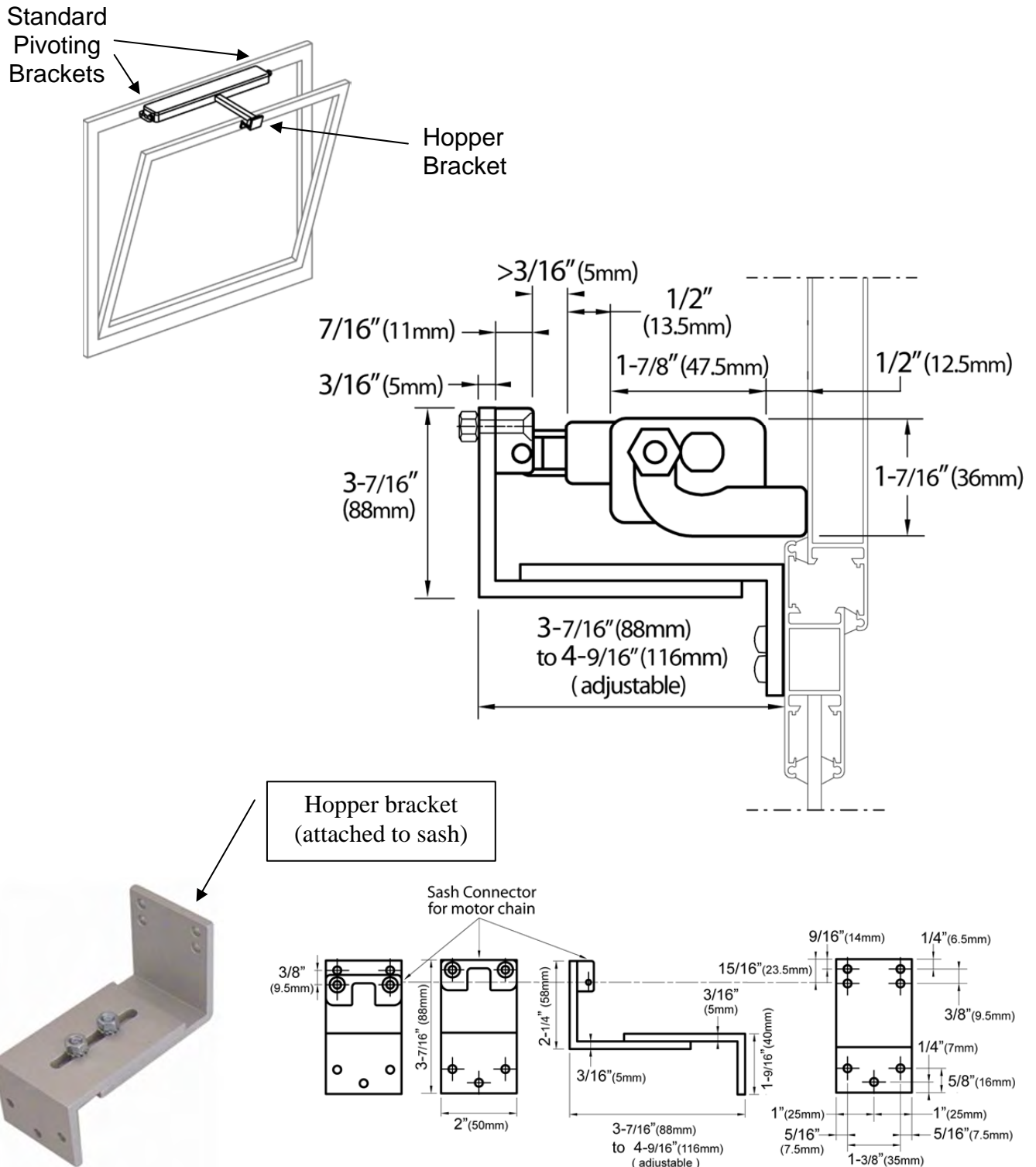
Screen applications are possible but not shown here.



Mounting Diagram (5)

Hopper mount with Standard brackets and Hopper bracket

- * More Hopper mounting options are available.
- * Screen applications are possible but not shown here.



Guidelines for Planning Wiring, Power Supplies, and Other Accessories

Every automation project is different and will require varying electrical wiring and power arrangements, which are the responsibility of the project electrical contractor. FFI is a material supplier and not a project subcontractor. Based on project experiences, however, FFI does have some general advice for project electrical contractors who are planning electrical wiring and power requirements:

The **distance between power supply and actuator** is a critical factor in the design of every project. The distance means the actual length of wire, not the distance “as the crow flies” between the actuators, power supplies, and power source. Electrical contractors are responsible to **plan and account for voltage drop** that occurs along the distance of wire. Therefore **voltage drop calculations** are critical to ensure adequate power to actuators. (There are electrical calculators for voltage drop available online for reference, for example at http://www.electrician2.com/calculators/vd_calculator_initial.html).

Power supplies and wiring need to provide for normal actuator amperage current draw and also for exceptional current demands at open and close, which can produce amperage spikes up to 2 to 3 times normal demand.

A reliable and consistent current supply is critical to the operation of actuators and accessories. Even a momentary drop in voltage below the stated requirement of 24VDC +\ - 10% may result in malfunction. For these reasons, FFI strongly recommends that power supplies, controls, and conductors be sized to provide capacity of minimally 150%, and up to 250%, of normal operating amperage requirements.

Supply lines to the power supply must also be ample for peak demand. Additional factors (such as temperature or number of connections) may affect performance of the conductor.

Arrangements for proper field wiring must be coordinated by the electrical contractor. Project specifications for number of actuators and wire run distance will affect the size of wire gauge, conduits, and raceways. Consult with FFI before ordering power supplies and wiring for your project.

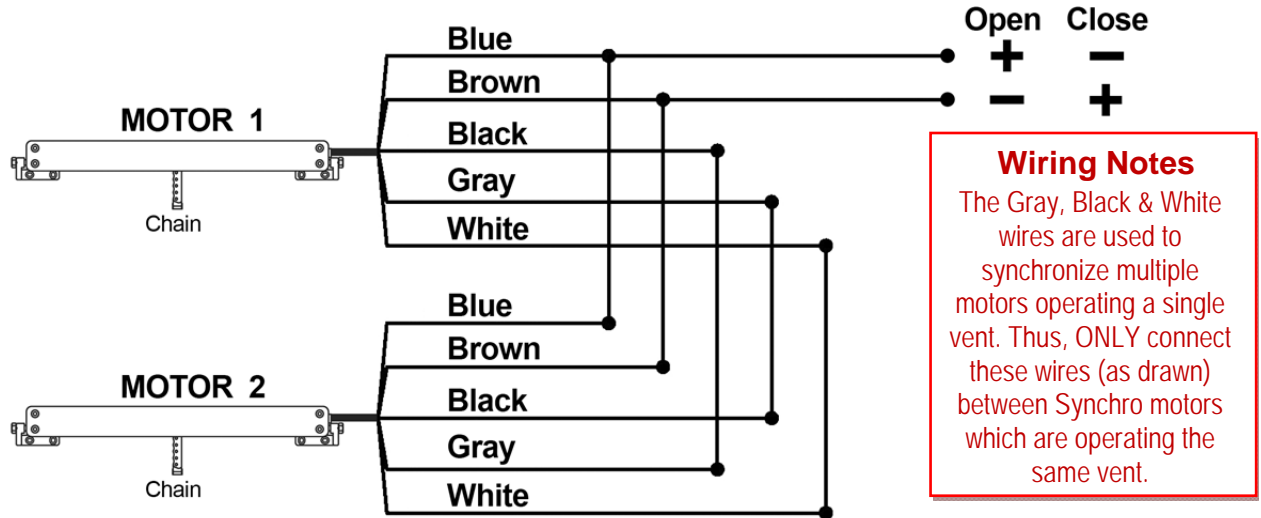
In the past, FFI provided a generic sample wire gauge and run length chart, which was for reference for a single motor only, under standard operating conditions, and not intended as a job-specific guide. However, due to situations of this information being mis-interpreted in planning for multiple-motor projects, FFI no longer supplies this chart.

Again, proper field materials and wiring must be confirmed by the project electrical contractor. While planning project, refer to last page of this guide: ‘Automation Project Material Supply Chart’. Consult with FFI for additional advice for your project.

View Synchro-Quasar diagram A, B, C, D or E to match actuator model & project requirements.

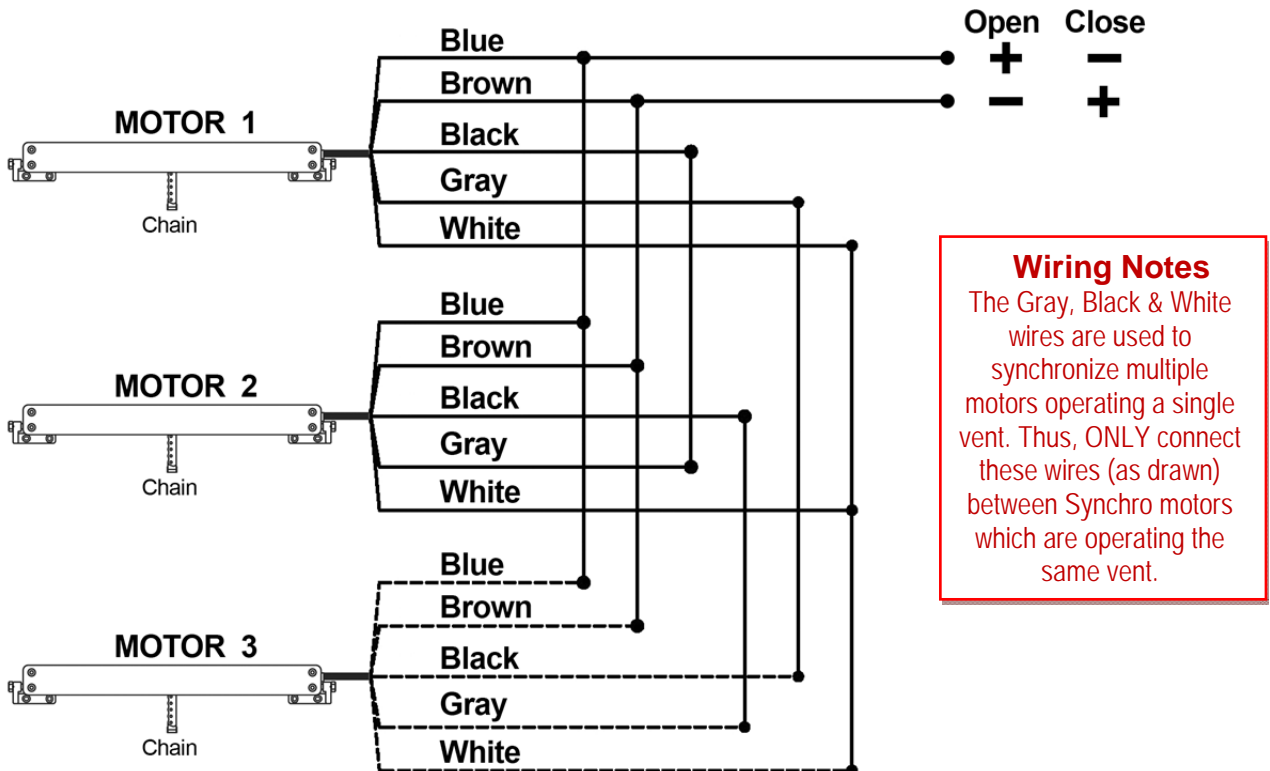
Sample Wiring Diagram (A): for connecting 2 DC Synchro-Quasar motors

FOR REFERENCE ONLY – NOT PROJECT SPECIFIC



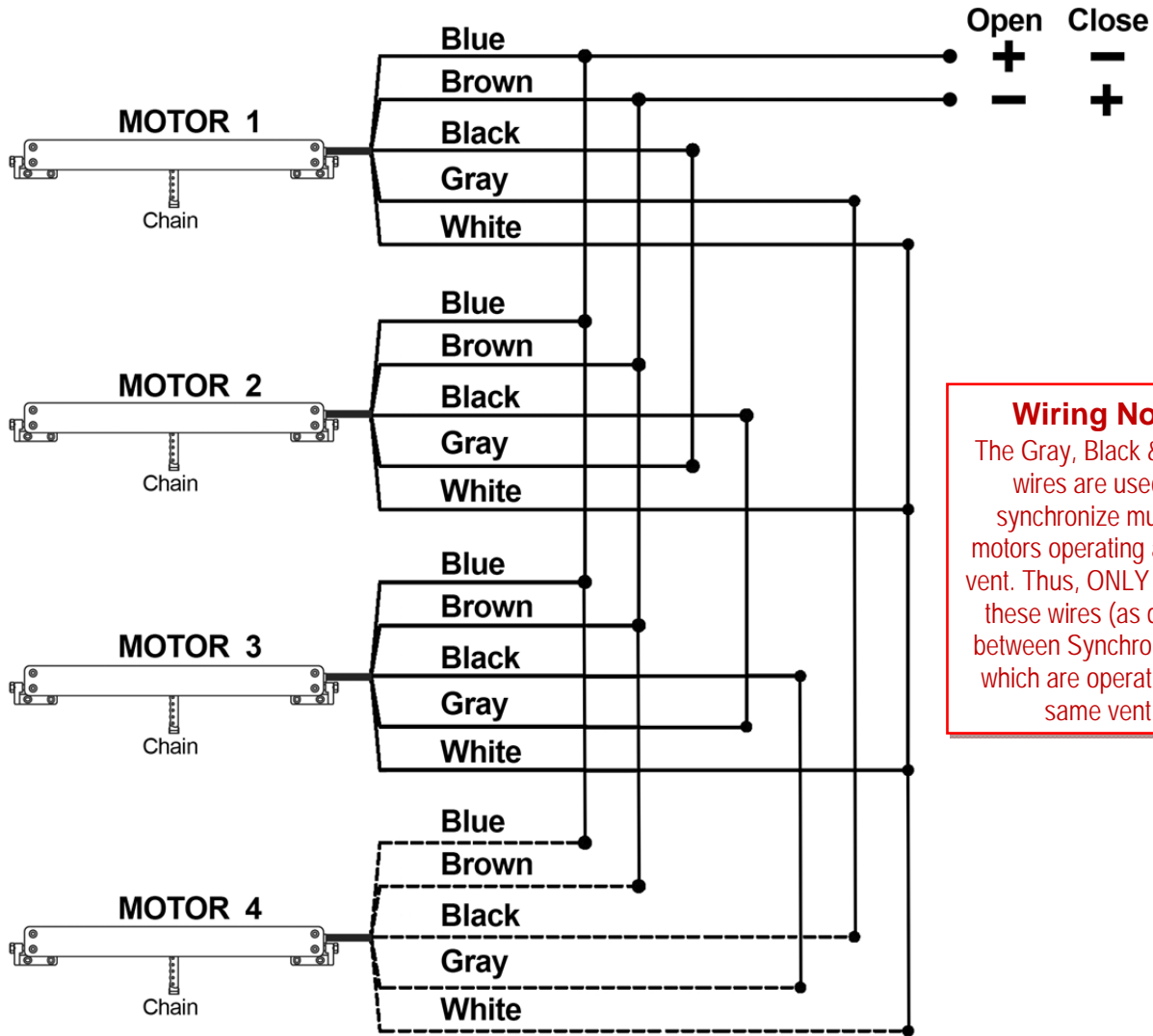
Sample Wiring Diagram (B): for connecting 3 DC Synchro-Quasar motors

FOR REFERENCE ONLY – NOT PROJECT SPECIFIC



Sample Wiring Diagram (C): for connecting 4 DC Synchro-Quasar motors

FOR REFERENCE ONLY – NOT PROJECT SPECIFIC

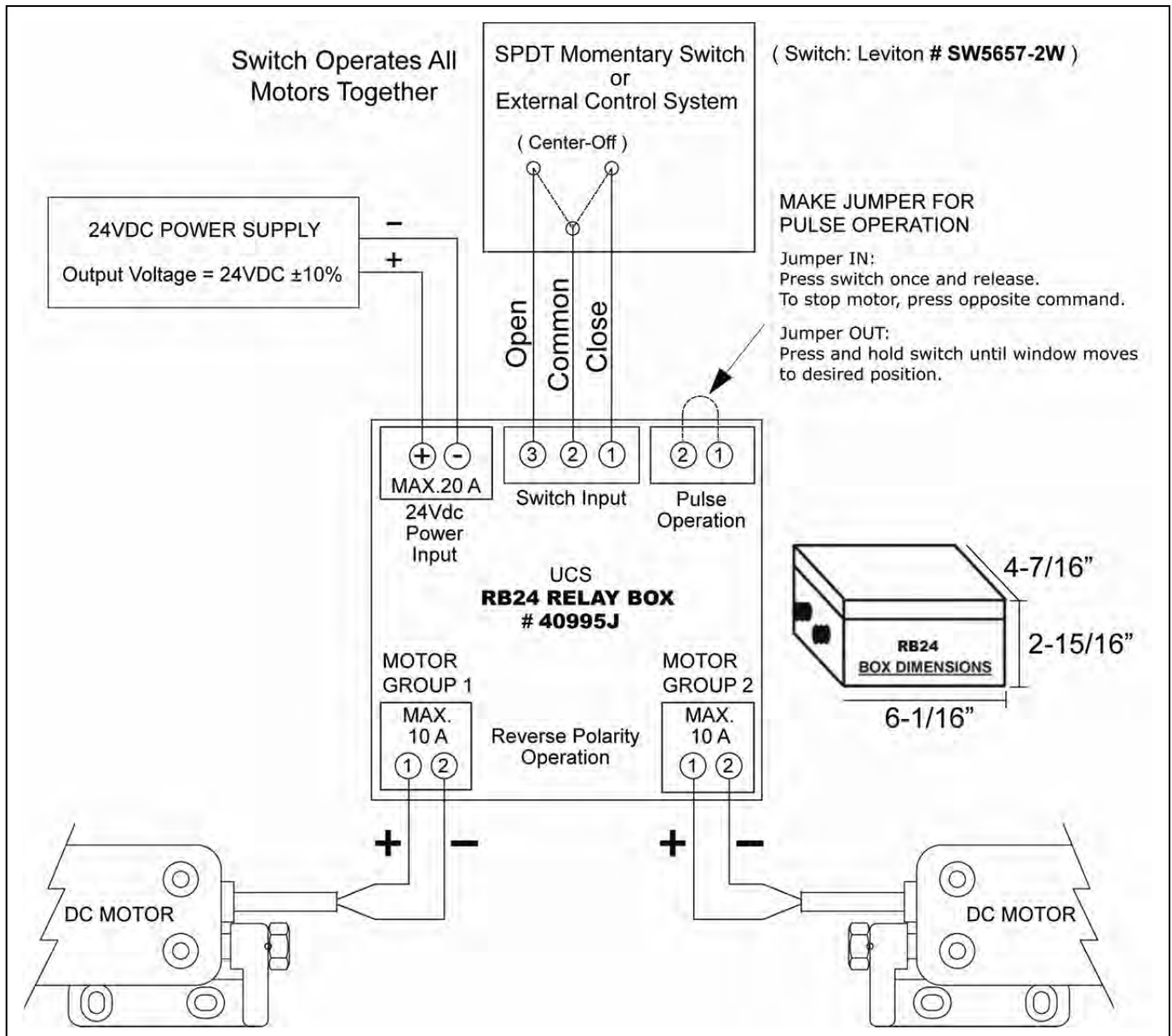


Wiring Notes
 The Gray, Black & White wires are used to synchronize multiple motors operating a single vent. Thus, ONLY connect these wires (as drawn) between Synchro motors which are operating the same vent.

Sample Wiring Diagram (D): for Synchro-Quasar DC with Control Relay Box for interface with DDS, BMS, BAS, HVAC, or Home Automation Systems

FOR REFERENCE ONLY – NOT PROJECT SPECIFIC

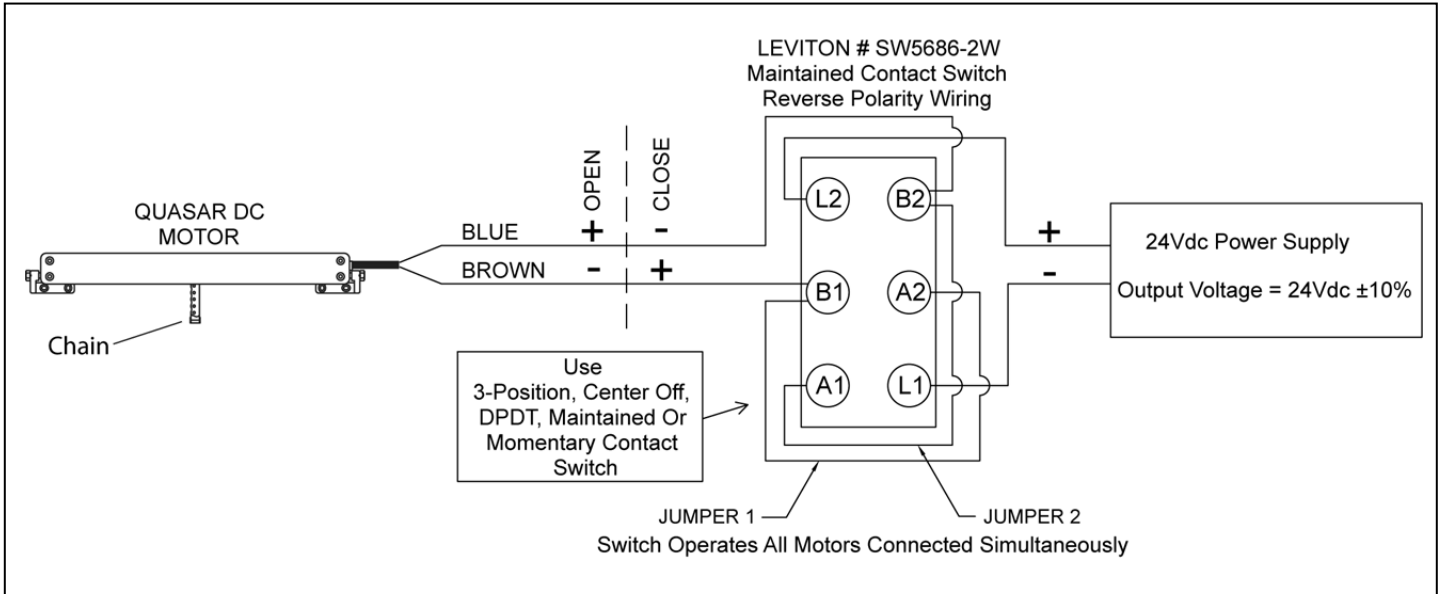
This wiring scheme is recommended for low voltage systems because it turns off power to motors after a time delay (< 1 minute), in accordance with the manufacturer’s recommendation.



Power Supplies: FFI has a variety of Power Supplies that are UL listed; ask for part numbers and advise.
Relay Boxes/Control Boxes: In addition to the RB24 control relay box model shown above, FFI has a variety of **UL Listed Control Boxes** for interface with direct Digital Control (DDC) and Building Management Systems (BMS); ask for part numbers and advise.

Sample Wiring Diagram (E): Synchro-Quasar DC with maintained contact switch

FOR REFERENCE ONLY – NOT PROJECT SPECIFIC



Operation of Maintained Contact Switch DPDT (Double Pole-Double Throw):

- Maintained contact means switch must be pressed continuously until actuator(s) reach open or closed position.
- To **open**, **press and hold** the switch up until the actuator chain has fully extended.
- To **close**, **press and hold** the switch down until the actuator chain has fully retracted.