



SELECT PRODUCTS

**Linear Actuator
Application Charts**
(Including Actuator Controller)

Select Products has developed a line of linear actuators specifically engineered with the custom installer in mind. With sizes ranging from the extra-small but powerful **ACT0004** 4" model to the incredible **ACT00018** 18" super-long version (longest in the car audio industry), every possible installation need is covered. All of these actuators are designed to be the toughest, the most adaptable and the most compact designs possible. Engineered to be fully field serviceable, all models have a smooth operating motion, are super quiet and are designed for a lifetime of operation. These actuators are radically different from anything else you are used to seeing in custom motorized systems. If you need the *best possible* actuators, look no further.

ACT0004 - 4" actuator w/remote mounting motor and flex cable

ACT0006 - 6" actuator w/remote mounting motor and flex cable

ACT0008 - 8" actuator

ACT00012 - 12" actuator

ACT00018 - 18" actuator

Features:

- Strong lifting rate:
 - 25lbs for the 4" and 6" models
 - 100lbs for the 12" and 18" models
 - 150lbs for the 8" and 12" models
- Fast, smooth travel:
 - 1.0" per second max speed for the 8" and 12" models
 - 2.0" per second max speed for the 12" and 18" models
- Maximum current draw at full load:
 - 3.1 amps @ 12volts
- Very quiet operation
- Clevis-style mounting for easy installation
- Adjustable swivel end to maximize installation options and for ease of alignment
- Extremely compact size:

Total height:	4" and 6" models	$\frac{3}{4}$ "
	8", 12", 18" models	1 $\frac{7}{8}$ "
Total width:	4" and 6" models	1 $\frac{5}{8}$ " (w/o motor)
	8", 12", 18" models	3 $\frac{3}{8}$ "
Motor dia.:	4" and 6" models	1 $\frac{3}{8}$ "
	8", 12", 18" models	1 $\frac{1}{2}$ "
Motor width:	4" and 6" models	2 $\frac{7}{8}$ "
	8", 12", 18" models	2 $\frac{1}{2}$ "
Shaft dia.:	4" and 6" models	$\frac{1}{2}$ "
	8", 12", 18" models	$\frac{7}{8}$ "
- Total length:
 - 4" model ACT0004 - 6 $\frac{5}{8}$ " compressed / 9 $\frac{3}{4}$ " extended
 - 6" model ACT0006 - 8 $\frac{3}{4}$ " compressed / 15 $\frac{1}{4}$ " extended
 - 8" model ACT0008 - 14 $\frac{3}{8}$ " compressed / 22 $\frac{5}{8}$ " extended
 - 12" model ACT00012 - 18" compressed / 30" extended
 - 18" model ACT00018 - 24" compressed / 42" extended

The ACT0004 and the ACT0006 are especially unique. The ACT0004 and the ACT0006 actuators are some of the smallest available in the industry! A specially designed drive cable system allows you to remote mount the motor, minimizing space requirements and making for even more flexible installation options. These models are perfect for those tight areas like the dashboard, glovebox or kickpanel. The machined aluminum bodies, drive assemblies and high-performance motors make these super-tough and reliable.

All of these models are 100% Made in the USA exclusively for Select Products.

LINEAR ACTUATOR APPLICATIONS

There are countless installation possibilities for linear actuators. Everything from showing off amps and hiding head units to adjusting the size of a speaker enclosure. One of the most common applications is the basic stealth panel opener on an amplifier and/or processor rack. (fig. 1) This type of application is very simple to accomplish and with good pre-planning can have a very dramatic effect on the overall system presentation.

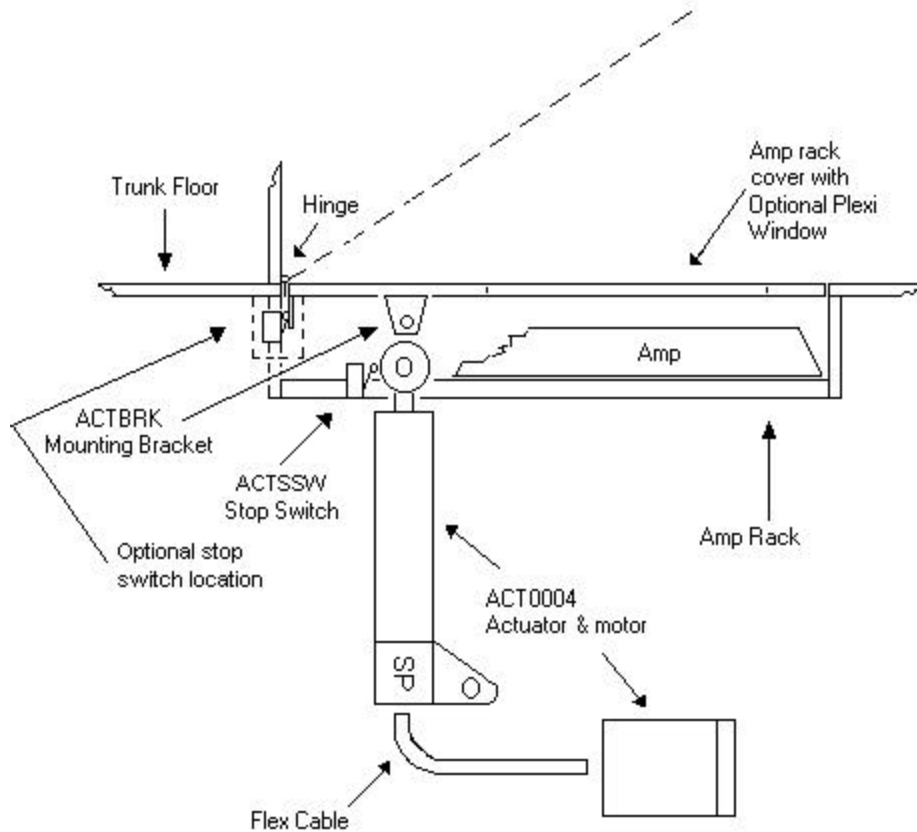


fig. 1

The actuator body can be placed up to 45° off angle from the panel and still operate smoothly. Note the location of the down motion stop switch. If it is not possible to align the switch on the actuator head, you can optionally mount the down travel stop switch near the panel hinge. Be very careful in aligning the stop switch to trigger (turn off) the motor BEFORE reaching its max travel.

Parts list:

- (1) ACT0004 actuator & remote mountable motor w/flex cable and ACTBRKP pivot bracket
- (1) ACTBRK (or machined aluminum ACTBRK2) mounting bracket
- (1) ACTC100 Actuator Controller
- (1) ACTSW operation switch
- (2) *ACTSSW

* Note the use of the ACTSSW stop switches. These work with the Actuator Controller (ACTC100) to stop the motion of the actuator wherever you set them to stop. For safety and reliability, always make sure that the stop switches are set so that the actuator stops moving BEFORE it reaches max travel.

* *Optional:*

- (1) Plexi window (*see the end of this section for info on Select Products plexi materials)

A more advanced but still not complicated actuator application is the sliding rack. This installation project requires a bit more advance planning but the results are very rewarding.

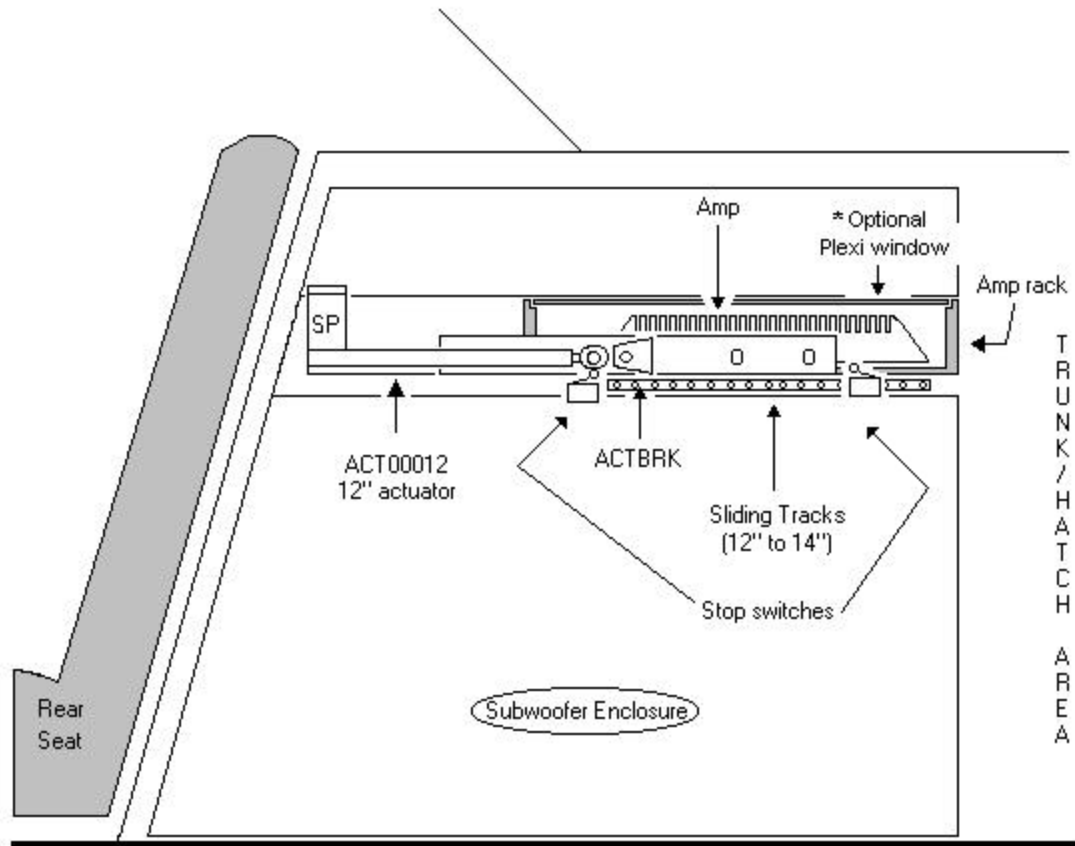


fig. 2

Note the two tracks on the bottom of the amp rack base in addition to the tracks on each side. These are used to stabilize the drawer so there is no "rocking" during motion. The actuator body should be rigidly mounted to the enclosure body to maximize the motors torque and smooth operation.

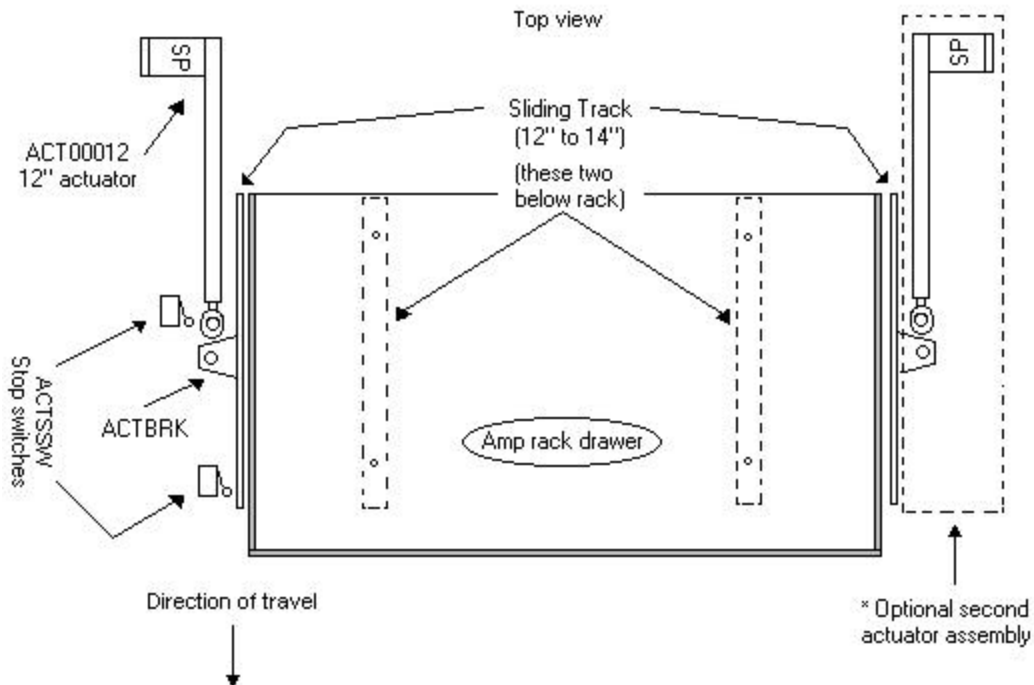


fig. 3

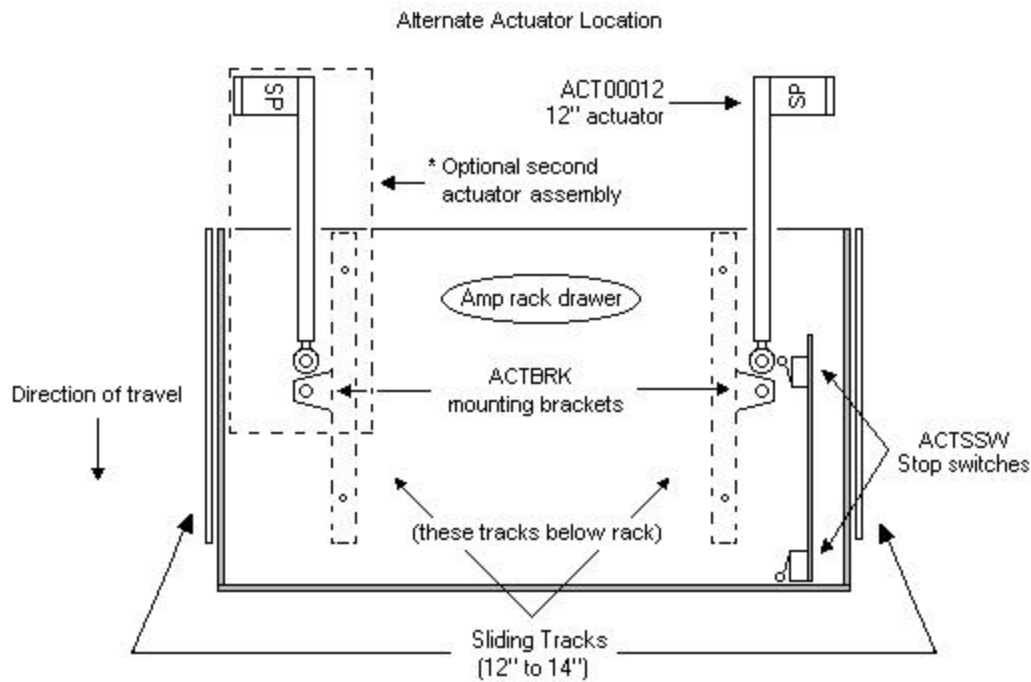
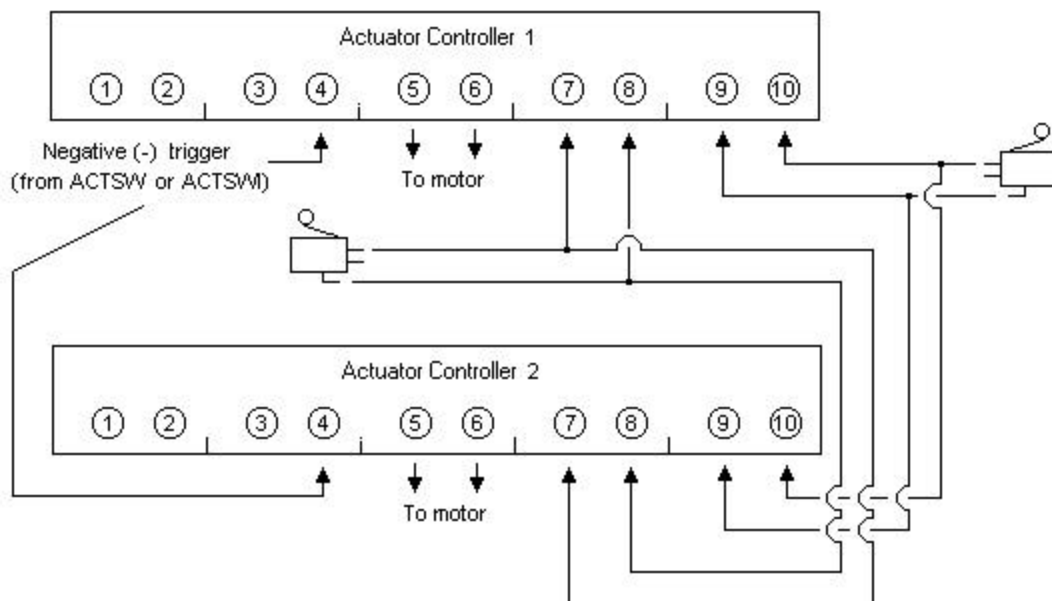


fig. 4

The amp rack is inside the upper center of the enclosure and is designed to slide out and show off the contents (in this case an amplifier). This rack can be either on top of the enclosure or contained within it. Either way, you should assemble, test and complete the entire moving rack system before proceeding to the enclosure construction. This way you will have a complete picture and scale of what space this assembly will take up.

The optional second actuator assemblies shown illustrate the use of two actuators when the amp rack is large, heavy and cumbersome. Most systems will not require more than one actuator unless the rack exceeds 75% of the actuators load limit.

Only one set of up limit down limit switches are necessary with a two-motor arrangement. This is because both Actuator Controllers can be operated by a single set of limit switches.



An optional position for the full retracted (down position) stop switch is illustrated below:

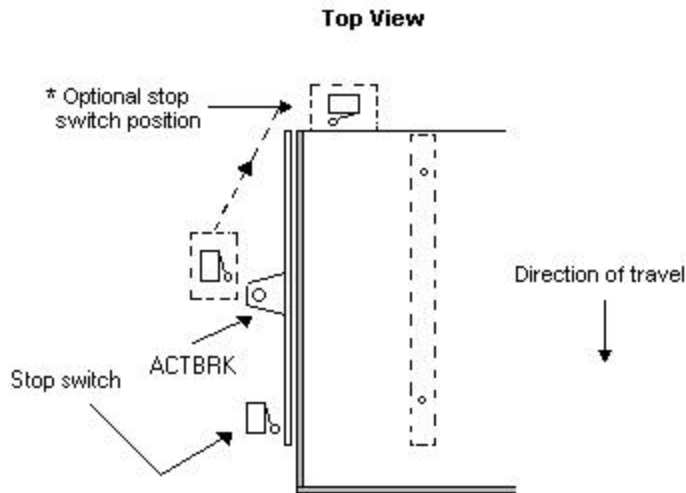


fig. 5

You can mount the rearward travel stop switch at the back of the amp rack. If you position the stop switch at this location, be careful to adjust it to stop the amp rack motion before the actuator reaches max travel AND before the rack pushes up against the switch body.

It is recommended that the actuators be connected directly to the sliding tracks rather than "pushing" the rack directly. This arrangement will cause less binding of the assembly. If space limitations require you to have the actuator push the drawer, make sure to mount the motor to the rack's *center of gravity* rather than just the measured center. This will alleviate most binding issues.

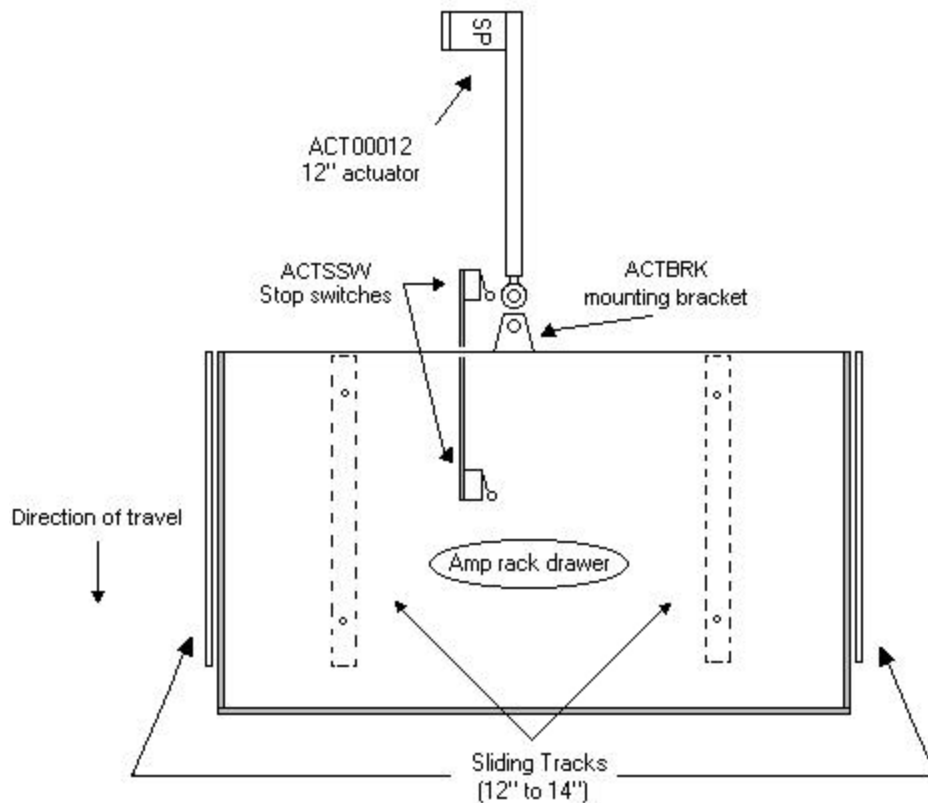


fig. 6

Parts list:

- (1) ACT0012 actuator w/ACTBRKP pivot bracket
- (2) ACTBRK (or machined aluminum ACTBRK2) mounting bracket
- (4) Sliding tracks of the appropriate length
- (1) ACTC100 Actuator Controller
- (1) ACTSW operation switch
- (2) ACTSSW

The ACTSSW stop switches work with the Actuator Controller (ACTC100) to stop the motion of the actuator(s) wherever you set them to stop. For safety and reliability, always make sure to carefully align the stop switches so that they are contacted and the actuator stops moving BEFORE it reaches max travel in either direction.

If two actuators are required for your application, you will need the following additional parts:

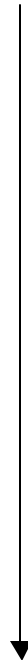
- (1) ACT0012 actuator w/ACTBRKP pivot bracket
- (2) ACTBRK (or machined aluminum ACTBRK2) mounting bracket
- (1) ACTC100 Actuator Controller

An optional plexi window is shown in figure 2.

** Optional:*

- (1) Plexi window (*see the end of this section for info on Select Products Plexi materials)

MORE



Illustrated here is a dual rack moving system (fig.7).

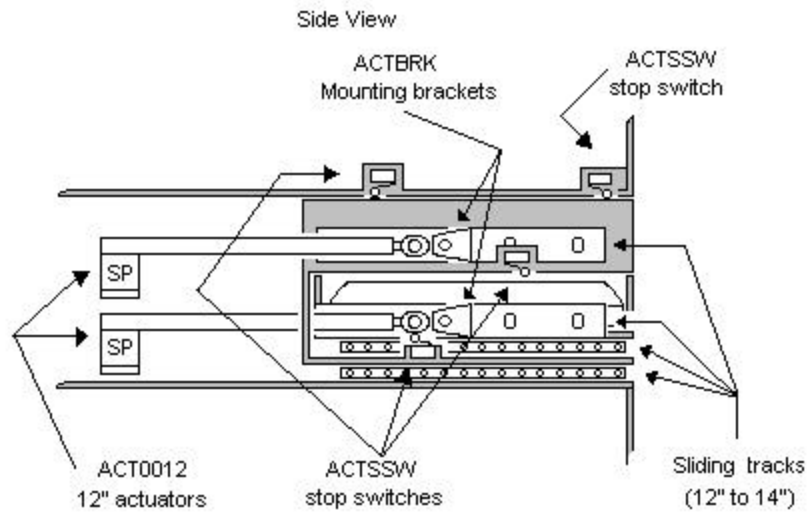


fig. 7

This is designed to slide both racks together until the top actuator is stopped by triggering stop switch 1 (fig. 8).

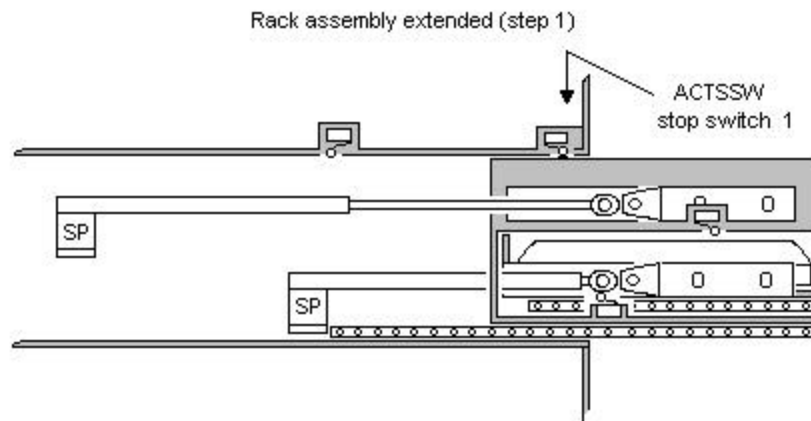


fig. 8

Once the main assembly stops moving, the lower assembly is automatically activated and moves outward until the assembly is stopped by triggering stop switch 2 (fig. 9). This allows you to display several pieces of electronics in a small space and with a minimum of hardware.

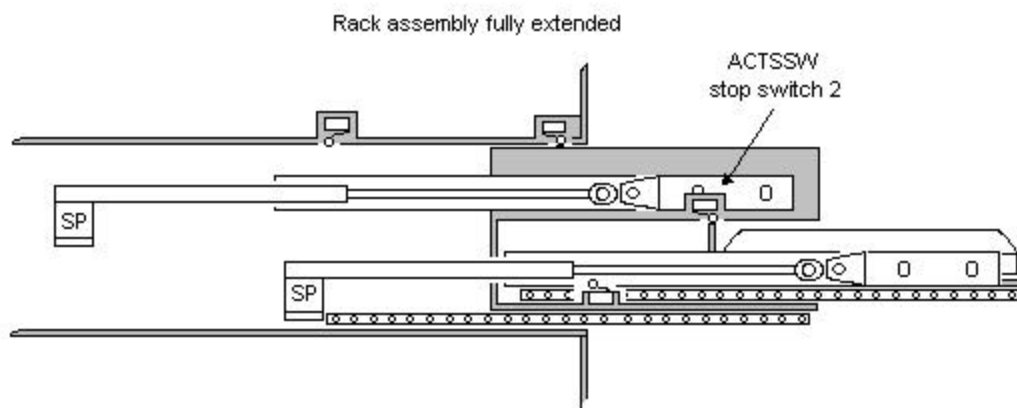


fig. 9

This dual rack system is not much more complex than the single rack system. Essentially what you have is two single rack assemblies in one package. With careful pre-planning, this assembly can be easily constructed. It is recommended that you use one actuator on each end of the rack assembly with this type of system. This is due to the size and weight of each rack.

There are two ways to set up the electrical operation of this assembly, Manual and Auto-Sequencing:

- a) Manual - Each rack is manually operated, working independent of the other. Each requires a separate ACTSW (or ACTSWI) trigger switch, one for each Actuator Controller (fig. 10). At the end of the travel of the main assembly, you manually trigger the lower assembly by pressing the second switch.

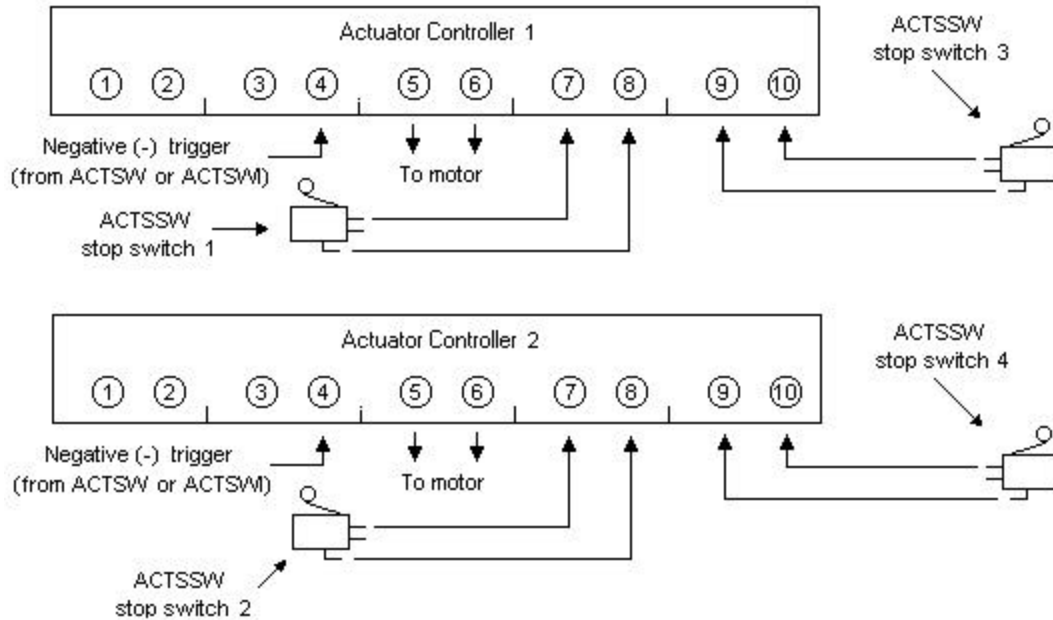
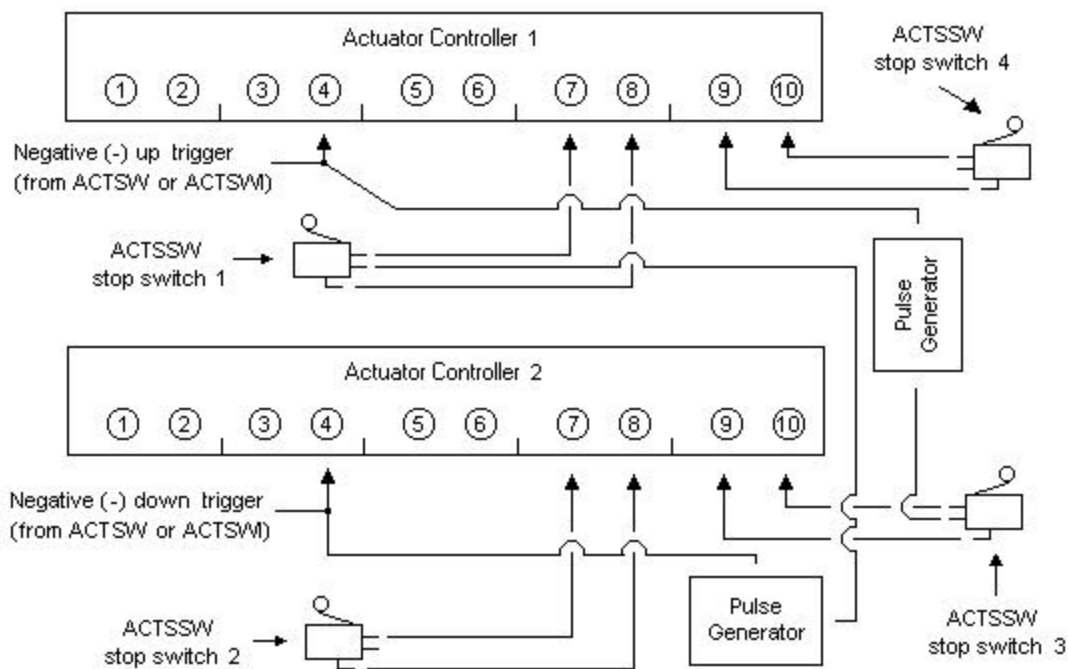


fig. 10

- b) Auto-Sequence - Both racks can be operated as a set, with the lower assembly being triggered by the completed movement of the main assembly. This is done with a single switch and is automatic. The wiring for this setup is a bit more complex but still relatively easy for the experienced installer.



A negative (-) pulse from the ACTSW momentary switch starts the process. Actuator Controller 1 is activated and extends the main assembly until ACTSSW stop switch 1 is triggered. This activates the pulse

generator that sends a negative (-) pulse to Actuator Controller 2, activating it and extending the lower rack assembly until ACTSSW stop switch 2 is triggered, stopping the forward motion of the rack. The entire process is reversed when Actuator Controller 2 is triggered once again by pushing the ACTSW momentary switch. The lower assembly retracts until ACTSSW stop switch 3 is triggered, which activates the pulse generator that sends a negative (-) pulse to Actuator Controller 1, activating it and retracting the main assembly until ACTSSW stop switch 4 is triggered.

CAUTION: You will need to provide two pulse generators in order to use the auto-sequence wiring system. You must connect the output of the N.O. (normally open) contacts from stop switches 1 and 3 to pulse generators BEFORE connecting them to pin 4 of the Actuator Controllers. You cannot directly connect the output of these switches to the controllers. If you do, you will damage the Actuator Controllers permanently.

The construction of this system is best done in stages. The first step is to build the main (outer) assembly. Once you have completed this construction and testing, you should work on the mounting arrangement for this assembly. Once the mounting arrangement is complete, you can begin building the inner (lower) rack. Test the assembly, first separately, then mounted within the main housing. All you have to do then is install the completed assembly and retest. Done!

Parts list:

- (4) ACT00012 12" actuators w/4 ACTBRKP pivot brackets
- (8) ACTBRK (or machined aluminum ACTBRK2) mounting brackets
- (4) ACTC100 Actuator Controllers (see system operation below)
- (1) ACTSW operation switch - or
- (2) ACTSW operation switches

(System operation will dictate the necessary number of momentary switches needed)

- (4) ACTSSW

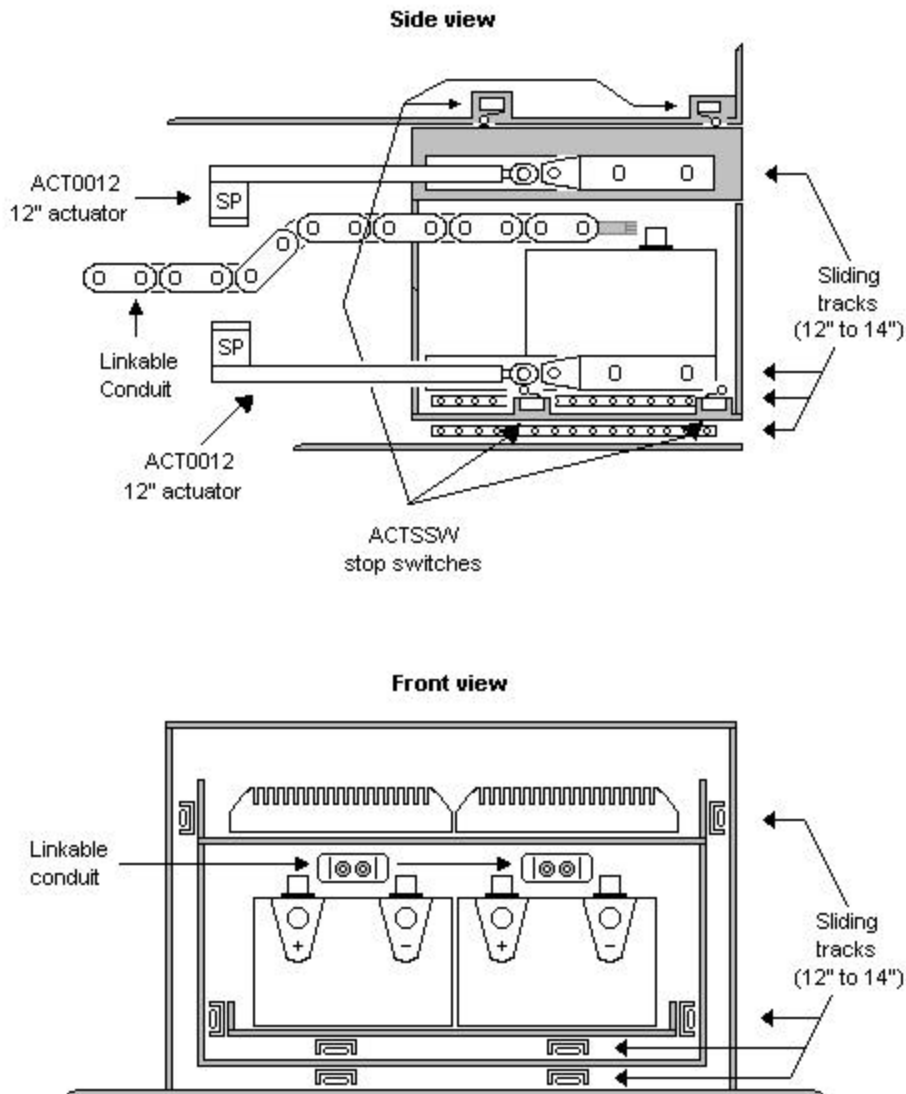
The ACTSSW stop switches work with the Actuator Controllers (ACTC100) to stop the motion of the actuator(s) wherever you set them to stop. For safety and reliability, always make sure to carefully align the stop switches so that they are contacted and the actuator stops moving BEFORE it reaches max travel in either direction.

- (4) Sliding tracks

Optional:

- (2) Plexi windows (*see the end of this section for info on Select Products Plexi materials)

This dual rack system will also work for an amp/battery setup:



With this application, it is recommended that each rack be manually operated, working independent of each other. You can use the first switch to “show” the electronics of the system and use the second switch to expose the battery tray for either show or servicing. Each rack requires a separate ACTSW (or ACTSWI) trigger switch. Because the racks are independent of each other, you can keep the main assembly retracted and extend the battery rack portion to access the area while minimizing the space requirements.

Note the use of the Linkable Conduit System for running the main power wires out of the moving assembly. This conduit is ideal for locations where the cables for the system must be protected from snagging and fraying against the moving parts. It is very important to protect these main power wires as any snags here can mean a serious problem.

Multiple heavy-duty sliding tracks are a MUST here in order to assure smooth operation and long-term reliability of the assembly.

Along with the parts for the moving portion of the install, all of the finish materials are available from Select Products as well. Everything for the professional look and finish you demand is available.

- Hardware and connectors - We carry only the best, 3M connectors of every type.
- Screws - from the basic panhead screw to the Select Products **exclusive** Stainless Steel Security Screws
- Adhesives - Every type of adhesive used in installation, from Weld-On #3 for Plexiglas™ to bulk spray glue used in the Select Products SSG3000 spray gun.
- Carpet - Every grade is available from basic Trunkliner to Auto Fab Deluxe, the industry's best carpet material.
- Vinyl - From the basic two-way stretch Miami series to our exceptional HF (heat-formable) series, we have the vinyl you want!
- Grill Cloth - Sebring, LeMans and Monaco. All excellent, with the Monaco having the best acoustical transparency available.
- Tweed - Professional Series. Teflon treated automotive-grade. This is the highest quality tweed available on the market. Even, continuous coloring and extremely fade-resistant.
- ABS and ABS laminates - Sheet and various sized standard black pieces; with woodgrain finishes, brushed aluminum and carbon fiber Thermo-Lamination patterns available also.
- Specialty gauges - L.E.D. and Vacuum Florescent Temp, Volt and Current gauges and meters, in casings both rectangular and round.
- Power capacitors, buss bar sets, power blocks,
- Sound damping materials - We have only the best, including and the incredible new **PROCON™** **PRO**fessional **CON**trol sound damping products.
- **SPECTRAL™** series pre-assembled crossovers and crossover components (Caps n' Coils).
- Grill metals - Various perforation patterns and material thickness' available.
- Specialty tools - Glue/staple/hot air guns, saw blades, Router and specialty bits (including the exclusive Rabbit Pro), air tools. You name it, we got it!

In addition, the materials to produce the Plexi windows shown in the illustrations are available from Select Products.

- Plexi - clear, colored, gloss black and mirror finishes w/various thickness' from 1/8" to 1" thick and pre-cut sizes from 16"x32" to 48"x32"
- Plexi bender - an exclusive product
- Buffing materials - wheels, pads, compounds
- Adhesives - joint glues (Weld-On 3,4,16), adhesives/sealants
- Plexi Polish - polishing compounds, finished cleaners, polish and towels
- Plexi saw blade - specially designed to cut without melting/burning

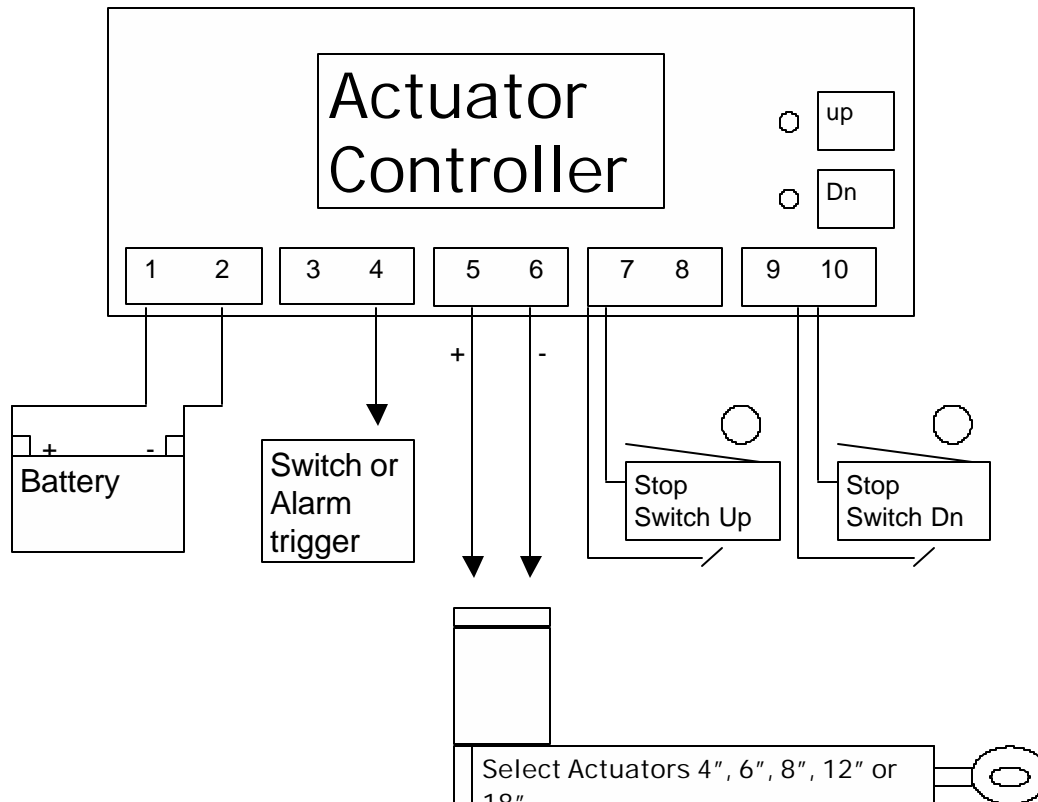
Or you can use one of Select Products pre-cut, pre-finished Plexi windows. These come in various sizes and shapes. They are ideal for this and will save you TONS of time and money.

See the Select Products catalog for a complete listing of the over 1200 parts available to make your installation a work of ART. Or visit us on the web at www.selectproducts.com

ACTUATOR CONTROLLER exclusively by Select Products

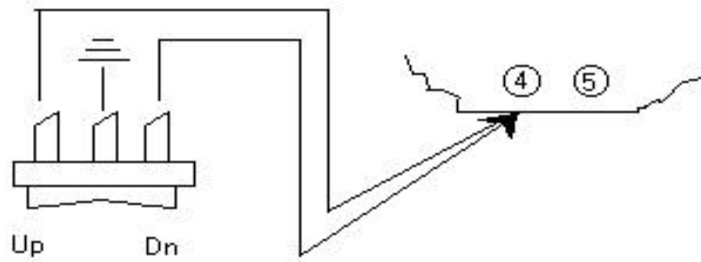
Along with these radical new actuators, Select Products has introduced the Actuator Controller. This unit is manufactured exclusively by Select Products and is the best method for integrating actuators into your installations. This product was developed after numerous requests for a reliable, accurately repetitive control system for complex actuator functions.

The Actuator Controller makes integrating and operating your moving system installations quick and easy.

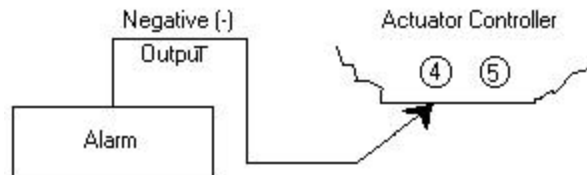


Installing and operating the Select Products Actuator Controller is quick and simple. There are 10 wiring points and that's all! Once you have completed the installation of the actuator and its limit switches, you just follow these simple steps:

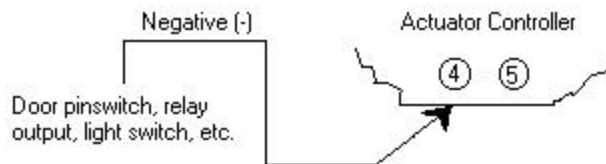
- (a) +12v input - Connect a constant (battery +) 12volt lead, with a 7.5amp fuse at the source, to pin 1.
Keep the fuse out until you complete the rest of the wiring.
- b) -12v input/Gnd - Connect a solid ground to pin 2
- c) Skip pin 3
- d) -12v input trigger (momentary or latched) - Connect a negative (-) "trigger wire" to pin 4. This wire can be activated by using a momentary switch like the Select Products ACTSW (or ACTSWI if illuminated).



You can also use a latching or momentary pulsed negative (-) output from an alarm.



Or any latching or momentary negative (-) pulse from any source.



e) Motor +12v output - Connect the positive (+) side of the actuator motor to pin 5

f) Motor -12v output - Connect the negative (-) side of the actuator motor to pin 6

WARNING: The Actuator Controller is designed to operate only **ONE (1)** actuator at a time. It has a maximum current draw of 5amps on the motor control (pins 5 and 6). DO NOT operate multiple actuators directly from this product.

g) Stop Switch controls - Pins 7 and 8 are the stop switch connections for the up (forward or maximum out) travel of the actuator. Pins 9 and 10 are the stop switch connections for the down (back or maximum in) travel of the actuator. Both these connections are a *normally closed* loop. When the Actuator Controller senses one of these circuits "open", it automatically stops the actuator from traveling any further that direction and then automatically sets itself for reverse operation.

Thats it! You're done!

ACTUATOR INSTALLATION ACCESSORIES

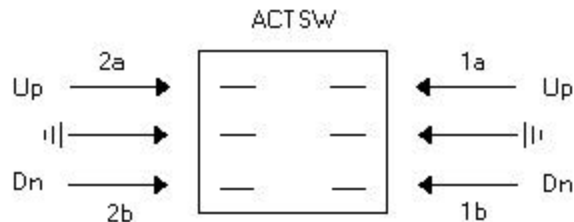
A complete series of specialized actuator accessories has been developed by Select Products to aid you with all your unique installation ideas. Everything from mounting brackets to control switches are available to make your custom job easier than ever.

Switches

ACTSW or ACTSWI -

Both standard and illuminated momentary switches are available. You can use either the basic ACTSW actuator switch or step up to the ACTSWI that has built-in illumination.

The ACTSW is a compact momentary DPDT switch. The center pins on each side are the "common" connection with the "a" pins used for the up setting and the "b" pins used for the down setting.

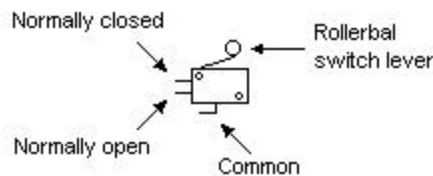


The ACTSWI is the momentary illuminated switch.

ACTSSW Stop Switch -

The Select Products ACTSSW stop switches are ideal for most actuator projects. They are a basic normally closed switch with a rollerball on the switch lever, making them ideal for moving systems.

ACTSSW wiring diagram



Mounting (or attachment) Brackets -

The ACTBRK (steel) and the ACTBRK2 (machined aluminum) brackets are ideal pieces for use in vertical lift or sliding rack applications. Their unique design allows you to compensate for pivot angles. They have a wide attachment pin making for less binding and smoother pivoting. Both have slotted mounting holes making alignment easier. The ACTBRK2 is CNC'd out of an aluminum block and machine finished making it perfect for those super-custom installations.

Pivot Head/Bracket -

Ever had the actuator install done and come to find out it binds or kinks even with your best alignment efforts? With the use of our ACTBRKP pivoting head, alignment and twist problems are eliminated. It is similar to a "Heim joint" in that it has a swiveling or rotating ball mount so that when connected to a mounting point, it allows for "play" in the motions angle, making alignment and movement easier and smoother. All Select Products actuators come with this head standard.

Linkable Conduit System -

One of the toughest issues facing an installer when they build a moving system is how to tie off the wires and cables that are attached to it and protect them. Select Products has eliminated these headaches by introducing the **Linkable Conduit System**. This product is similar in concept to a bicycle chain, but on a much larger scale. Made of a super-tough poly-resin compound, it is the solution for protecting your work. It is very easy to work with, has a radical bend radius of approx. 6", can be linked together to create virtually any length and allows for a very compact, strong system to hide and protect your cables and wires. If you have not seen this unique and innovative product, you own it to yourself to check it out!

Linkable Conduit comes in 1" and 1.5" widths. Both have a .75" height. Larger sizes are available if needed.