

[1. More Options Equal Greater Versatility](#)
(Joystick Maintained Friction, Gated and Latching Option)

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1. More Options Equal Greater Versatility

The new “JL” (with the patent Pending Gimbal mount) and “JM” series joysticks have proven to be a phenomenal success. The initial product offerings included options for single or dual axis and switched or proportional (**Hall Effect analog or PWM**) output signals. We have now added more options to make these joysticks even more versatile to suit your specific needs. These expanded options include the following:

1) -F Friction Hold Option:

- + This option allows the operator to slide the control along a single axis to the desired position and the joystick will maintain that position upon release of the grip.
- + This option is ideal for use in speed control applications, (proportional single axis joysticks only).
- + This option is indicated by simply adding a “dash F” (-F) to the end of the part number. For example a friction maintained single axis proportional JM joystick with a two foot wire harness would be named in the following manner: JM-P1-02-F

2) -G Gated Option:

- + This option allows movement of the control in the X and/or Y axis (forward, back, and/or side to side) only. No diagonal movement is permitted.
- + This option is applied in applications where only one function at a time is to be activated thus restricted movement of the joystick is required.
- + This option is for use with dual axis proportional joysticks only.
- + A dual axis gated joystick is indicated by placing a “dash G” (-G) on the end of the part number. See the following examples:
 - a) Gated dual axis proportional JM joystick with a two foot wire harness: JM-P2-02-G
 - b) Gated single axis proportional joystick with two foot wire harness: JM-P1-02
(note the single axis gated is indicated by a P1 and no other indicator is required in the part number)

3) -G1 Gated Option 1 Detent: Forward:

- + This option indicates a gated joystick with a detent lock in the forward position only. This means if the control is moved the last 30% of forward travel, the joystick will lock in the forward position. Pulling back on the control grip will release the lock and the joystick will spring back to center.
- + Applications for this option are where you require a full maintained signal out without having to hold the control in position.
- + This option can be used with single or dual axis gated proportional joysticks.
- + This Gated option 1 Detent forward option is denoted by placing a “dash G1” (-G1) at the end of the part number regardless if it is a single or dual axis joystick. See the following examples:
 - a) Gated option 1 Detent forward dual axis proportional JM joystick with a two foot harness: JM-P2-02-G1
 - b) Gated option 1 Detent forward single axis proportional JM joystick with a two foot harness: JM-P1-02-G1

4) -G2 Gated Option 2 Detents: Forward, Back:

- + This is similar to the previous option, only this offers a detent lock position in the full forward and back positions on a single axis.
- + This option applies when two maintained functions in the same axis are required.

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- + This option is used with a single or dual axis proportional joystick.
- + The Gated option 2 Detents forward, back is indicated by placing a "dash G2" (-G2) on the end of the part number again regardless if it is a single or dual axis joystick. See the following examples:
 - a) Gated option 2 Detent forward, back dual axis proportional JM joystick with a two foot harness: JM-P2-02-G2
 - b) Gated option 2 Detent forward, back single axis proportional JL joystick with a two foot harness: JL-P1-02-G2

We are confident that with these added options, you will find it even easier to integrate quality Sure Grip Control products into your future projects and applications. Should you have any questions, please keep in mind that we have a full time technical sales staff that can help you determine which Sure Grip product would ideally suit your unique situation.

2. External Wire Routing with Joysticks

The vast majority of wire breakage issues are a result of improper wire routing during installation. If the wire from the control handle is routed down the joystick boot with little slack, the wire will tend to flex over a small area. Eventually the repeated flexing will cause the wire strands to break. The solution is to provide enough slack in the cable so that the flexing motion is distributed over a longer section of wire. Ideally, a loop should be left around the boot to spread the flexing point over a larger area. The images below show incorrect wiring (Fig.1) and correct wiring (Fig.2)
This instruction only fits for S, C and L Series handles.



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3. Wire Sizing and Current Loads of Wire

Wire gauge requirements (Maximum wire length)

One of the most common questions that we are asked through our customer service and support is about the gauge of wire that should be used when installing our products. To answer the question correctly, we need to know the distance the wire will be run, the operating voltage and the solenoid size in watts or amperes. The following shows a chart of the average wire distance runs and solenoid outputs.

Voltage	12.00 V	
Current	2.50 A	
Coil	4.80 Ω	
Power	30.00 W	
Gauge	Length (ft)	Length (m)
12	300	91.44
14	190	57.912
16	120	36.576
18	75	22.86
20	48	14.6304
22	30	9.144
24	19	5.7912

Voltage	12.00 V	
Current	1.25 A	
Coil	9.60 Ω	
Power	15.00 W	
Gauge	Length (ft)	Length (m)
12	600	182.88
14	380	115.824
16	240	73.152
18	150	45.72
20	96	29.2608
22	60	18.288
24	38	11.5824

Voltage	12.00 V	
Current	0.63 A	
Coil	19.20 Ω	
Power	7.50 W	
Gauge	Length (ft)	Length (m)
12	1200	365.76
14	760	231.648
16	760	231.648
18	760	231.648
20	192	58.5216
22	120	36.576
24	76	23.1648

Voltage	24.00 V	
Current	2.50 A	
Coil	9.60 Ω	
Power	60.00 W	
Gauge	Length (ft)	Length (m)
12	300	91.44
14	190	57.912
16	120	36.576
18	75	22.86
20	48	14.6304
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12	600	182.88
14	380	115.824
16	240	73.152
18	150	45.72
20	96	29.2608
22	60	18.288
24	38	11.5824

Voltage	24.00 V	
Current	0.63 A	
Coil	38.40 Ω	
Power	15.00 W	
Gauge	Length (ft)	Length (m)
12	1200	365.76
14	760	231.648
16	760	231.648
18	760	231.648
20	192	58.5216
22	120	36.576
24	76	23.1648

Example: 24 volt system with 1.25 amp solenoids, you can use 20 gauge wire up to 96 feet long.