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Usb plug socket wiring diagram Dan has been licensed at the level of the electric flight for about 17 years. He has extensive experience in most areas of electrical trade. 3. Direction switch is really two keys that all control in one light. This illustration makes it look simple, but this article explains the intricacies of 3-way switch wires. Wiring 3-Way SwitchWiring 3-direction light switch is not a difficult task... There are only three connections to be made, after all. Making it in the right place is a little more difficult, but still within the capabilities of most homeowners, if someone shows them how. This is where understanding the wiring scheme can help. First, what is a triple switch? When you want to be able to control the light from two different locations (for example, you want to be able to run stair lights from both up and down), this is what electricians call a triple switch. Is it difficult to switch 3-way wire? To replace the switch is not difficult at all: simply watch how you can separate the old one and then put the wires back on the new light switch in the same position. Problems can additional key or if you forget which wire went where. This is when it becomes necessary to understand a little more about how the 3-way switch works and how to read the wiring chart. What do I need to know before I start? If you know what the purpose of each wire is, the task will become much simpler. This article will explain everything you need to know for a 3-way switch wire, with wire diagrams and common wire methods explained. What about the 4-way keys? Read how to connect the 4-Way key for instructions and wire diagrams for four-way wire keys. How to switches are the same. Choose the configuration you want to follow by looking at the diagrams below. If you start from the beginning, #3 chart may be the best place to start, but these methods can be used interchangeably in the old work. They only indicate different ways to run the necessary cables. The #1 chart works when many lighting fixtures share one common breaker, and switches on the same wall. The #2 chart works best when power is available in the ceiling but switch boxes on opposite walls — it is often easier to turn the cable into the ceiling light box rather than between the keys. The #3 chart works best for cases with multiple keys in the same box, as other keys then have power available and other lights can be turned on without having to have a separate power in their running line. #4 diagram can be useful when the light is near the first switch box. It leads to a lot of wires, so it may be necessary to install a larger box. Turn off power in the power board before you start working. Be sure to understand any of the screw stations and wires that serve the purpose. Below, you'll find Descriptions for your guidance. You have a lot of 14-3 NM type cable at hand, which has three isolated wire, or a 20-amp crusher, you'll use 12-3, instead. Most home lighting circuits are 15 amps, which requires only 14 gauge wires. Follow the wire connection chart (see instructions below) with the new triple switch. All white wires used as travelers between the 3-Way switch works: Select ing station screws are three screw stations on either side of the switch one on the end. Each key has the fourth ground station. Small, green screw station on the end is ground station. Green is usually painted, although the picture does not show that the color is good. The screw that is part of the metal frame can often be recognized for switching and not isolated from other metal parts. The green or unshaved ground wire always goes to this ground end. The old keys often did not have this ground station screw, but are no longer legal for use. Now, all the lighting keys must have the ground station screw to attach the ground wire to. One of the other three stations is a different color, usually darker, and is called a common terminal. Mechanically and electrically, this joint tip is connected internally to one of the two other copper screws called traveler stations. When the key is flipped in the other direction, this connected, and the shared terminal is always connected internally to one (but only one) of the passenger terminals. Whichever depends on whether the switch is up or down. It may be worth noting that passenger terminals are essentially interchangeable. Given that each one is to have the traveler's wire attached to it, there are two passenger wires and stations, no matter which passenger wire goes to the station that the traveler. Determine the ground, common, and passenger stations at 3-way switching us a common station on top of this view, with the traveler on the lower end. The ground station screw appears as colored silver at the very bottom. This old switch has no ground/screw station and is no longer legal for use. Make sure that your switch has a ground station. Which wild wire is hot? Which screw is the ground? Select the screw station at the bottom is ground station. All new keys must have land, but some old keys don't. What is a dark screw station? One of the three screw stations will be Different color, usually darker. This is the shared terminal. What are copper screws? The two copper scre ground station. What's a white wire? The white wire is neutral. You'll pack all the neutrals along with the wire is hot at all times unless the entire circuit is turned off in the circuit breaker panel. Note about wire colors: The national electric symbol requires that each wire be neutral and white, and that the floor wires be green. Neutral wires in a cable that is not used for neutral. These wires must be black in color using a magic mark or other method. Many electricians will do this, but many will not, and can make troubleshooting in the future difficult and can be a threat to the safety of anyone else working on the system. I encourage you to take a few seconds necessary to color these non-neutral wires. The colors displayed in these wire diagrams are only common color uses. Not all electricians use the same color code (except neutrals and land), so wires can be different colors. Select all parts of 3-Way Light Switch the terms traveler and subscriber have already been explained, but there are other terms that will be used in this article that also need some explanation. Cable. The term cable refers to a combination of two or more wires, bundled together, usually in the freeze of insulation material. Each wire is isolated in green or left naked (copper), without insulation. Power in. The power cable in is that cable that ends up in a circuit breaker panel or fuse box. It is a cable that provides power to the lighting system. Neutral. This is the white wire contained in the power cable in. It doesn't end when you connect to any switch, although it may be located in a switch box and ends with a wire nut connecting it to another neutral wire. Earth. The wire is based on each switch box or light fixture. It is either colored green or left bare of insulation (copper). This is the second black wire, contained in the power cable. It is hot at all times unless the entire circuit is stopped in the circuit breaker panel. Circuit cutter plate. Usually called a fuse box, it may contain either circuit breakers or valves. This painting controls all the power in the building, and it is where that power can be closed. Two ropes is the label given to a cable that contains two individual wires, in addition to a ground wire. These wires are going to be Black and white, with green or bare ground (copper). Three rope is a cable with three wires, plus the ground. Normally the colors are black, black and red with extra green or bare (copper) floor. Understand the wire diagram will show two 3-way keys (but not the wall box they are featured in), the various cables and wires used in the configuration being discussed, the lights. How does electricity flow through switching? To understand the wire chart, you should know that the electrical current enters the system on the black wire in the power cable in, passes through the switches, through the light fixture, and returns to the white wire in power in the cable. If the circuit is broken, or a bad light bulb), the current will not flow and the lamp will not light up. For discussion purposes, each 3-way key will be considered to be a common station connected to the right passenger station when it is in a bottom position. This is not necessarily true, however, it's simply useful for discussion purposes. Read the descriptions carefully and compare them with diagrams to understand diagrams. Each graph will have a description of how the current moves in order to light the lamp. Testers voltage test is an invaluable tool here to work on electrical circuits. Both Fluke and Klein make a professional quality test, and the cheapest ones are usually available as well. As a professional electrician for 20 years, there is always one in my pocket, and anyone who works around electricity must carry one too. Turn off power before you start working! Install light SwitchOnce is the correct location of each wire using the wire charts below, the light switch is connected to the appropriate wire and installed in the light switch box. Make sure the power goes out before making any calls! Older keys vs. newer ones: Many residential lighting switches have a small hole at the back of the switch that can be pushed to the wire, and all the keys have screws on the side. The image of the old switch above has both pushing in holes and nails; The other is an expensive key that has holes to insert wires but the screws must be tightened as well. Many keys have only screws, with no holes. There is a crocodile tape on the back of the switch; It shows how isolated it is to strip off if the payment method in the connection is to be used. If nails will be used, more insulation needs to be removed. How to attach wires to screw stations: If the screws to be used for contact, bend the end of the wire stripped in a half circle using the nose needle pliers, wrap the wire around clockwise. Tighten each screw firmly. Fold the wires neatly back into the wall box and push the switch into the box. Usually the ground screw goes down, towards the floor, but can be inserted into the position even with 3-way and 4-way keys. 3 Wire scheme method #13 direction of wire switching diagram with power cable entering the light box. The wiring diagram #1, power in this example BoxIn light, enters the power cable into the light box. This method of wire operation is common when several single-share fractional lamps are common, and the keys are both on the same wall. Cables must run in the light box, between the keys, and from the light box to only one of the keys. Lets follow the current as it lights up the lamp in a light fixture: the current enters the light box on a black wire, as it always does. This wire is attached to a white wire in a two-rope cable that goes to the first switch box (not the switch), where it is connected to the white wire in the three rope cable and continues to the second switch, in the common terminal. If the key is up, it will exit the switch on the right passenger station and continue on the red wire back to the passenger station on the first switch. If this switch is also up, it will come out of this shift from a common station on a black wire in a two-light switch rope cable. Continuing down this black wire, the electricity enters the light fixture goes to. The current will pass through the light, exit the white wire, neutral and return to the power cable in.

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Note about the color of the wire: In this example, the only neutral wire is the white wire in the power cable (which is always white). All other white wires must be colored. 3-Way striped wires #23 direction of the switch wire: power in the
light box with 3 rope cables to each switch box. Wire chart #2, power in boxIn light this 3-direction wire switch diagram, power line enters the light box, but then 3 rope cables are installed between the light box and each switch box. This method may be used when power is available in the ceiling but the
switch boxes are on opposite walls — it is often easier to run the cable in the ceiling light box rather than between the keys. If the current is followed... Comes in the light box on the black wire and then flows to the common station on a single key using a white wire (colored) it comes out of the switch from
the passenger station and then returns to the light box, where it is only divided into another wire goes to the passes through this switch, exits again from the common station, and again enters the light box, where it goes to the light itself. Neutral moves from power
cable in directly to light 3-Way wire graph #33 in the direction of wire diagram with power entry switch, through the second switch, and on the light fixture. This is a reasonable method for cases with multiple keys in the same box, as
other keys then have power available and other lights can be turned on without having to have a separate power in the line must be taken to a light fixture by rope 3. The white wire should be used here, where the symbol requires
that all neutral wires be white. After the current... The first switch enters on the black wire and is connected to a shared station. If the key is in the lower position, it comes out that switch on
black, common, wire and continues to light. After passing through the light fixture, the current returns to the second switch box on the white wire in the 3 cord used between the switch boxes, and continues to the first switch box, where it is tied to the white power in the
wire and back to the fuse box. The whole circle and the lamp will light up. 3-Way wiring scheme #43 the direction of the wire: power in enters the switch #1 along with the cable to
the light fixture. This can lead to a lot of wiring in this box, but it can be useful when the light is near the first switch box. It may be necessary to have a larger box to contain all the wires. After the current... The switch box enters the black wire at the shared terminal. If the key is up, it will exit the box on the
red traveler's wire and continue the passenger station in the second switch. If this switch is too, it will exit the switch box where it is tied to the black wire in the 2nd cord going to the light. Passing through the lamp, it returns on
the white wire (neutral) to the first switch box, where it is tied to the white wire (neutral) back to the fuse box. The circuit is complete and the lamp lights up. Commonality in all diagrams Common wires for all these wire diagrams is that neutral, white wire of the lamp connects directly to the white, neutral
wire of the power cable in without ever finishing the switch. It may or may not be attached to another white wire in a box, but it never ends on a key - just on the lighting device. Black in wire power always goes to the common switch, often changing colors by having to connect to different cables.
Regardless of color, one common key will be Directly connected to a black wire in power. The other common terminal on the other switch always goes straight (though maybe again) to the light fixture. Do not guit on the other switch. There are two passenger wires; They always go straight from one key to
the other. No passenger wire ever ends up in the light fixture, power in the cable, or on anything but the passenger station, although it may paste to a different cable somewhere. Neutral wires are always white, and the white wire is not connected to the white power in the wire some other colors must be
colored. The floor wires are always green or bare of insulation (copper). Each key, as well as a light fixture, must have a ground wire finished for it. The only exception is old houses that do not have floor wires in the boxes. If there is a ground wire in the box it must be finished on the switch and light. Last
note about build codes: Recent changes in code require that each box have a neutral wire switch in it. This means not only a white wire on the power in the cable. This rule aims to provide the future capability to use a faded device or other device that may require
a neutral wire and to stop homeowners from disconnecting or using the ground wire for other purposes. The new work (such as adding a new triple switch) must comply with this code. What is the best method or diagram to continue? The only wire graph shown here is legally for #3 use, although #1 can
be adjusted by adding a 2-wire cable from the bottom box to the light. Any neutrals in the switch box that are unused either divided together or, in one neutral case, simply crowned off with wire nut and stomped back into the box. Am I required to replace all wires that do not meet the current code? Simply
replacing the switch does not mean that the room needs to be rewired, as the existing wiring is very in and acceptable. The old work does not mean that the room needs to be re-done to comply with the law and that is why it is not acceptable (by the current code) wire charts discussed here in this article. Other materials and
links that may help YouIn public, not difficult to replace or install keys, most homeowners are perfectly able to do so. For more help and quidance, read install or replace Light Switch. If you add a new light fixture to work with new 3-way keys and want some help, read install and light fixture wires. Regard
whether you are replacing the switch or installing new keys in a major reconfiguration, perhaps the most useful tool to possess is the non-connection AC voltage detector. Make sure that whenever you do any kind of electrical work you first tested with a good voltage detector. This article is accurate and
honest to the author's knowledge. The content is for Or for entertainment purposes only and does not replace personal counsel or professional advice in commercial, financial, legal or technical matters. Question answers: Can a faded key be installed in a triple key? Answer: Yes, but you should use a
three-way baht key. Most of the faded keys won't work. Q: Is there a 3-way to change the diagram with three lights in the circle? Answer: To add more light games simply use the same wires that to the existing fixture and expand it even further to but many additional games you want. Simply paste a new
wire into the wire going to the current light. They will all come and go off at the same time a question: on the box, or does it need to go to the box and then to switch? Can you go to the box? My house is wired only to the box, but I was told that it should also go to
the switch. Answer: The current electric code requires all keys to be based on. It is easy enough to add a short pigtail from the box to the switch l've replaced is more than 50 years old. There is a white wire on one side of the box (at
the bottom), and a red wire on the same side (top). On the other side, there is a black wire (top). The new three-way switch box has a green screw at the bottom on one side, and a black barlow on the other side at the bottom, with two golden-colored screws at the top. Can I attach wires to the new box in
the same old place, regardless of colors? Answer: Yes, but you did not mention the ground wire (on the ground wire to be a green screw, which means finding the source of the ground wire and
turning it on to this switch. The electric code requires every ground wire key now although the reasons have not been used for many years. Otherwise, hook the wires the same way. The worst case scenario is that the switch will not work properly, then it will swap a few wires and try again so it doesn't
work properly. It's always fun trying to decipher what an electrician or home did fifty years ago! Question: I have a setting that looks like a 3-way diagram #1, based on the composition of two keys (I haven't fallen in the light yet), but when I separated both the keys from the wires, both of the traveler's hot
lines went. The power white wires in the cable remained hot as well. How could this happen? Is it possible that this is actually a 4 way, and I have just failed to select an additional switch? Answer: As the passenger wire moves from one passenger station to one key to the passenger station on the other
switch, it is not possible to remove both ends of the keys and have the wire be hot. not associated with anything at all, and Be hot. What kind of lab do you use to determine if the wire is hot? The offline test mentioned in the article can be sensitive enough to capture static electricity transmitted from one
wire to another even though it does not touch. They are meant to ensure the wire is dead, and I did not have one give a false negative (showing a dead wire), but the price is that sometimes they can appear hot when the wire is not. If the wires are hot when you disconnect, then there is another source of
energy that has not yet been identified, and the wires are going somewhere you are aware. It is doubtful to have a 4-way switch - those have four stops on them (plus the ground), and they are all travelers. No power line should ever end on the 4-direction switch. Q: Can you direct me to a diagram to
configure 3-way keys? Answer: There is a link near the beginning of the article on 3-way keys. Here again: If you understand correctly, one - only one - of traveler's wires is always hot. If this is true, one can put an outlet in the middle of each passenger wire with the result of one port or the other - but not
both - being 'ON'? Answer: You could do it, but only one key - one with the power of the fuse box - will work on them. You can even set it up to the top or bottom of a single port, but not both, on, depending on how the switch flips. You will have to ensure that there is a neutral wire running with others and
available at each port. Question: I have the script in the picture in chart 1 of this article and I've gone through my wire countless times and it still doesn't work. I'll be positive I have correct but it doesn't work. How do I diagnose my wiring problem? Answer: Is the crusher on the light bulbs good? Is the
makeup in the light box right? If you put the black wire in the light bulb, does it light up? If all these are good, the best guess is that either black or white from the lightbox is not connected to a shared station, but one of the traveler's stations. It is always possible that one of the keys is bad as well - even the
new brand keys can be defective. If you have a voltmeter, preferably a non-contact test, you can explore it too. Using wire colors in the key should be hot all the time. One passenger or the other in the same key must be hot, changing with the switch coup. If all it works,
travelers in the other switch go hot or cold as the first switch is flipped, and the black wire in the other switch is flipped. Check these should be hot or not, as this switch is flipped. Check these should be hot or not, as this switch is flipped. Check these should tell you where the problem is. Q: Can I use a 3-way key with only two wires? Answer: No. There must be three wires between the
two. You can use the switch with only two wires, but it will act as a regular switch, not a three-way switch, one of the decora style
(square key that just rocks up and down) then the wires go to the same place they did on the wall key. Q: How do I strip some of the insulation from the wire? Answer: Preferably with a wire stripping tool. If one is unavailable a knife can even be used as a sharp cooking knife. Cut around the insulation,
being very careful not to touch the copper wire, and then stripping the line down one side. Wire cutters can also be used by twisting them to push off the insulation you want to remove. Again you should take a great deal of caution not to damage the wire
inside. Either way, if the wire is stolen it must be cut and the process begins over © 2010 Dan HarmonCommentsDan Harmon (author) of Boise, Idaho on August 30, 2019: You are welcome, Marius. Thanks for the comment - it's always nice to hear I've been helping someone. Marius Theodore on August
30, 2019: Mr. Dan thank you for making time to be on this blog and on the comprehensive answers and charts they offer. It helped me think deeply about what was happening at a work site. The answers are always in front of us... We just need guidance sometimes. This is where I will check periodically in
the future. Dan Harmon (author) of Boise, Idaho, May 12, 2019: @Pierre: Use none of the diagrams above, and simply connect the wires together. Black to black, white and earth to earth for as many lights as you like. Dan Harmon (author) of Boise, Idaho on January 21, 2019: @George: You
have one key 4 ways, one with four wires. It must be two more, three way, keys with three wires each on the circle. When more than 2 keys are needed, it requires 2 triple road keys and all the rest 4 road switches. Help on how to wire 4 road keys can be found in: on January 21, 2019:1 3 light switch
keys have one has 4 wires attached to four screws on the switch,,, the other has 3 wires attached. WhyDan Harmon (author) of Boise, Idaho on December 5, 2018: @Bill: You can't do this using only 2 connector cable (12-2), unless you run two cableinstead of one. As shown in the charts and as shown,
you must have 3 wires between keys, meaning 12-3. Bill on 05 December 2018: I'm wanting to put 3 3way switch es in my garage using 12 2 wires no I just run a wire between two Simon keys on September 14, 2017: I Such a page, Marshall was very useful on 04, 2017: Thank you Dan for your response
again. This is a cheap metal roof mounted one type fixture bulb that is surrounded by a round ball. It now has LED light in it, and I don't use the light until it's fixed. The switch has been disconnected. Today I left a message for an electrician claiming that a friend recommended. I expect that i will call again
on Monday. The reason I guit all my DIY work is that I hope that the electrician will alert our homeowners council if he agrees that the building was illegally miswired (with no reasons on the keys and fixtures) when constructed. In 1977, all new construction should have all electrical fittings, outlets, and keys
on the floor. I therefore think that this entire apartment complex was built on cheap (for other reasons too). What I want is for the homeowners association to send messages to other apartment owners that each of their units should be electrically inspected and based on (if necessary). I don't think the
Homeowners Association will act unless they receive a letter from an electrician with the company that is heading on it. Frankly, I doubt they will act anyway even if they have received such a message. This makes me wonder if I should go to town about this if necessary. Am I making a lot of work to do
about nothing? The way I see it, there are nearly 400 apartments and condominiums in our complex that have unfounded lighting fixtures and light bulb or touches metal screws on the light key cover, if the fixture or switch short into it. Dan
Harmon (author) of Boise. Idaho. August 4, 2017; Maybe not, I do not know what kind of fixture this is, but the lamps are designed with the heat disposal of the light bulb in mind. I've just closed any possibility of getting air so it can heat up. If you really want to do it. I suggest an LED bulb because it
doesn't put out anywhere near the heat of the glowing bulb. Of course, if you mean you have removed the fixture and left the box open behind it, then yes it is fine to cover it with plastic. Marshall on August 03, 2017: Hi Dan, today I opened my 8-foot-high ceiling light fixture with a triple problem. I found out
he's not on earth. Having found so many lighting switches in my apartment that we are not grounded, I have come to the possible conclusion that the original contractor never linked the foundations! I think this ceiling light fixture had not been opened before a short long story, so I stopped my DIY work and
will be calling an electrician tomorrow. My question is this: because this light fixture is very close to the bathroom and because it will be difficult for me to close it again, I have put a plastic cover over it to prevent the bathroom moisture from short of this ungrounded fixture, An electrician comes to fix it. Is
that the right thing to do? Dan Harmon (author) of Boise, Idaho, July 30, 2017; Ok, It seems to me like your two switch contains the switch station to the light. This is not consistent with your appointment of hot wire, or with Statement 2 but - I don't quite
understand what you see for some reason. At this point, I would cut all the wires (other than the wiring floor) from the keys (somehow mark them to where they went, just in case) and re-examine what is only hot with the crusher on. At the switch point with hot in it can be wired with hot go to the common
and both travelers connect. Then check the other switch; These are travelers and the only remaining leg switch that goes to the joint on this switch. I'm fairly sure that hot catalytic is the hot wire of the plate, which means that your two switch contains a hot switch and one switch has a switch to light, but
something may be missing. Marshall on July 28, 2017: Thank you for your response again Dan. I've done some sorting and here's my notes.1... The light is only on when both switch one (hallway through the front door) and two switch (bedroom) are even in position.2... But when one switch is higher, the
two switch is down, and the light is off.3... Also when one switch is down, the two switch either up or down, and the light is off. That's why I identified the one switch, and the bedroom key switch two. But the strange thing is that the second switch (bedroom) is practically next to the plate
box. Switch one (lobby) beyond the plate box. Is the switch closest to the panel box on a triple connection always recognized as a single switch? Here are some AC test notes on the two telecommunications switches. (One key was closed until only two switchs were opened up.) But first, a few notes:
Note: One switch is a three-way switch with a hot connected common terminal, and the non-missing traveler connected to one of the travelers. Note 2: The second switch is an old single pole key (I will replace it with three pole switches) with a piece of black electric tape on the hot wire, not tape on the
missing traveler.1 ... When both one switch and two switch are up (light), then both the hot wires and the traveler is missing on the two switch are down (light off), then only hotwire is hot, the traveler is missing is cold = dead.3 ... When one switch is
higher. the two switch is down (light off), again, just hot hot, the traveler is not missing is cool / dead.4... But when one switch is down, the two 
white neutral wire that found pieces of the other three neutral wires in this double ring (each of the keys are on double bands) switch (which I suspect is the missing traveler) 6...but the hot wire (on the two keys) is a hot stimulation that is a tail with four other black hot wires. (But this saying is supposed to
be directly connected to the light, and never hooked with multiple wires/other combination). So, I have MISCONNECTION! Could I have misidentified one key and the second switch? Marshalldan Harmon (author) of Boise, Idaho on July 28, 2017: You're right - in a wired set correctly can't be hot. One will
be, but the other is going to light, and therefore can't be hot all the time or be light all the time. Sounds like a serious mix-up, perhaps with one of the travelers going into the light instead of the other switch. You have some work in front of you, just to sort out what wires are going to where. Marshall on July
23, 2017:I You have another question about my 3 road keys. Re: Black wires that connect to the common station on each of the wires be hot when cutting from the common screw? The wire is as hot as I understand it, is a wire that is engergized even when cut,
unless the crusher is turned off to that circle. What I'm getting is if all of the black wires that connect to the common screw on each of the 3 road keys are hot (even when disconnecting, that means the power comes from both power in the cable and from the light fixture, that is, the power coming from both
directions at once.) Note: both keys are not partially installed for this reason). Did I miss something here? or that this is a serious bad connection? Remember, I said that both of the original 3 road keys have been replaced with 1 way at once. (I know it's supposed to be a 3 rd road connection) and I
wonder if that might be the reason for it. Can some unfamiliar witty with 3 road wires have installed 1 road keys after having problems? Dan Harmon (author) of Boise, Idaho, July 21, 2017: I hope it all helps. No, I didn't give any print. But the host company, HubPages.com has decided that this is not
something they want to see. I'm not sure - I've never tried printing comments and haven't heard any other complaints about it. Could it be something about avatars? Marshall on July 21, 2017: Thank you Dan for your second response! I think it would be very useful. I was able to print your article re: 3-way
keys, but I can't print any of the comments (either all of them, or just my, as well as your selected answers). Has print been disabled Comments? Dan Harmon (author) of Boise, Idaho on July 21, 2017: It's ok to paste 4 hot with a pig's tail (your spore) to switch. But these braids must go to the common
screw on the switch, not the traveler. The traveler swires just go to the other switch. I think you have an idea: use one black traveler (already in place) and white wires that are not included in with other whites as neutral as the other traveler after making sure the other end is where you think it is and that it
does nothing else in between squares. I'm assuming that the second switch has the switch leg going to the light, along with neutral - if so using extra white as a traveler (after recording black on both ends) is fine. Just don't paste any additional wires for this traveler (or any other traveler). No nut wire
should ever be on the traveler more than 2 wires in it, simply hold the same wire without adding any more. All reasons must always be together, besides braids to any key, port or other device. (Only a matter of terminology, but the 3-WAY switch is not 2 or 3 pole switch. Technically it is a double THROW
switch, connecting one wire to one or two other wires, not just one at a time. Marshall on July 21, 2017: Thank you for your response Dan, I asked: But are you sure that someone in the past did not use what was traveling to run something else? An outlet or something? I don't think so here is what I'm sure
of... 1...I have wooden study and plastic boxes.2... In the bedroom 2 ring switch box, one of the Romys neutrals was cut, with a piece of electric tape covering the naked end.3... In the lobby 2 box ring switch, two neutrals had a white masking tape on them to mark them
(I'm since replacing the white electric tape). The other two neutrals didn't have any tag tape.4... I know that these two keys as I found them were one pole keys for some reason. Why replace 3 pole keys with one pole keys? Since I replaced the single pole entrance
with 3 new pole, I intend to do the same in the bedroom.5... An inherited tenant said he was an electrician who lived in the apartment in 2000, and rented it until 2014, when I moved). He installed track lighting in the living room (different circle) which was different from the lighting
fixture that was installed when I lived in that unit before from 1985 to 1987. I think it might be messing around with pole 3 connection for some reason. Anyway, the track lighting went off in 2013 when my sister was renting the unit from me, according to my sister (I now live in the unit as an
occupier).6...two outlets in the neighborhoods It is part of the same circle as all bedroom outlets. Is this unusual?7...one of the bedroom, which is the original construction.8 ... When I lived there before, I had no electrical
problems of any kind. Since I moved into the unit in 2014, not only does the pole connection 3 not work properly, but the 2 ring box in the living room has a bad key on/off and/or a bad dimmer switch that is used to control the track lighting that exploded (since it was replaced with a pull chain roof fan Two
years ago that always worked fine), I replaced all the ports (some were loose), And I had a glitch in the design pfe stab lock (which I still have and I would get tested, but where? definitely not UL!) the painting box was replaced in 2015. I also link the causes in 2 ring boxes in the bathroom and hallway (the
bedroom is next).9...all four black hot wires are pigtailed together in the bedroom 2 ring box, with black wire spears connected to the keys. Is this kosher?10...all four floor wires in the hallway 2 ring box are now connected together. But I originally found them with only one connected one (2 times). All four
floor wires in the bedroom 2 ring box are properly connected together, but are not based on swit; ches (which I intend to correct soon)11...one traveler that is plugged into the bedroom 2 ring box is a black catalytic that is plugged into all four black wires romis (see #9). So, if you hook one of the 4 neutral
roms for it, you will have to relabel it with a black electric tape to indicate that it is now hot. But first, I have to do a continuity test to determine the other (lobby) 2 ring switch. You may have said that the traveler's wire should connect directly from one 3 pole switch to 3
other pole switch (but connect the broken connections in between OK). But I think you said that under no circumstances, connecting travelers indirectly stimulates all four white neutrals, or black hots that are pigtailed together inside the box, if you understand you correctly. Anyway, I hope this will help me
in my situation. Thank you very much for what you have said to me so far. Dan Harmon (author) of Boise, Idaho on July 20, 2017: I'm sorry, but I can't answer the guestion about the 1977 code - that was before my time. If you have 2 14-2 wires running between the keys, and have wooden studs (almost
certainly) and plastic boxes (probably) then you can make it work with what you have. You will have to figure out which cable is in each switch box and then color the ends of one white wire. Make it any color but white or green. At this point you have all the wires you need to make 3 road keys and light
work. But are you sure that someone in the past didn't use what was to be To run something else? Port or something? Marshall on July 20, 2017:I He lives in an old apartment building in 1977 in the United States. The entry light in my bedroom is controlled by two triangular road keys that are housed
inside two separate double ring light switch box. The way it is now, one key must be left in position even all the time, in order to switch the other to turn the light on or off. But the two adapters must be able to work completely independently if they are each other. There is no cable 14-3 used for triple
communication. There are only 14-2 cables available for this connection. Black wires are used for the common one of the passenger is missing. But I suspect it was originally a neutral white stimulating contact from the other passenger station on each
switch until the four neutral wires all tied together in each of the double ring boxes. I know this does not meet the current code, but did you meet the newest code back in 1977? My real guestion is do I ever have a new wire 14-3 add to the circuit that has a safe 3 pole connection switch? Dan Harmon
(author) of Boise, Idaho on March 22, 2017: Hello Angela: You seem to have a very old house and this could be a problem. If the wires encased in the outer hold) you could replace the box with old work or cut into a plastic box - this is not a difficult thing to do and
it's very inexpensive. If the wires are not Romex, but the old door handle and tube, it is not something you really want to deal with, so if you can not see that all these wires are closed together in the outer gland, or each wire enters the box separately, do not try it. Outside of that, the only thing left is to
protect those bolts on the side - I'm not aware of any keys available for the day with screws on the back. One possibility is to use the electric tape and wrap the entire switch, go to the side, across and around the top completely, complete the circuit several times, and cover those nails with several layers of
tape. Many electricians will do this as a matter of course. But if the nails are already touching, this is probably not a real good solution, and movement over the years can wear a hole in the tape. Best have to cut a rigid piece of plastic (not a piece of plastic bag), as thick as possible, slide along with the
switch, keep the screws away from the box wall. Do both sides of the switch. There are also insulating materials available, similar to what is made of circuit board, which will work as well and very thin. Angela Schmidt on March 21, 2017: We have a three-way key in our bathroom for light, fan and night
light. We decided to put in a new one as we did re-bath and wanted colors to match. The old switch had screws on the They touch this metal box, causing it to ignite when it turns on the power. What can we do? (Hopefully that makes sense -- I don't
know anything about wiring.) Thank you! Dan Harmon (author) of Boise, Idaho, January 11, 2017: You can't do this with the keys to three ways. Consider that if they are both down, and light off, you will have to turn both of them into a position up to turn it on, defeating the purpose of switching three ways.
What you can do, though, is set them so that they are either up or both to be on - when they are opposite each other the light is out. Wire them, try it and see what happens. If it's not what you want, either flip one or reverse the traveler's wires on just one of the them.ddevol47@gmail.com on January 1,
2017: this is no more than a comment of a question. I think I got a few years back a coworker showed me a way to wire three way turned so that you'll always have two triangular road keys in the bottom position when you turn off and two in position up when on. If he did that he looked at the time as he
did, I would like to know how I think it is not possible. I'm right I just wasn't so trying to. Your article was a thank you for all your insight and knowledge. Dan Harmon (author) of Boise, Idaho on November 10, 2016: The best you will be able to do is wire port to a shared terminal from switch instead of
passenger terminals. If the next power in the port will be on all the time, if the light will port go and off. But there is another problem as well. Unless you can fully guarantee that the white wire is neutral (and it may not be) the wire may be a port in a chain with light and it will not work properly. If you
understand it correctly, this white wire is finished on the switch: if this is not neutral, what you are trying to do will not work as you wire and light in the chain port. It is dangerous in this way and it must not be done. Unless there are additional wires of the three mentioned, all in one cable, you can not make
a work port. There must be an extra cable, with white and black wire in it, in the box to make the port work at all. Rick on November 10, 2016: Hi Dan, I have a light key on my stairwell wall at the top (level two of the house) and at the bottom (1st level of the house). Works as a key 2.2. Turn on the ascent,
turn off once or turn on the top floor to get off and stop once down. Any way... I put the dopling port on the other side of the wall of the light switch. The light switch has 3 wires and a ground connection. One red, one hot black, one neutral white (all
wired from the back of the switch) and floor wires to screw box. I'm wired double expecting to work but it has some When I turn on the light switch, the power turns on to the doblog. I've turned the wires around but still hasn't had success. I
didn't notice but if I touch the neutral switch light to screw the ground everything works like I expect. Can you help shed some light on this? Dan Harmon (author) of Boise. Idaho on March 27, 2016; Pete, you'll have a power line in this box, plus at least 3 wires out. One for each light, It will be possible to
put two of them on one 3 romis wire, though, using black and red as switching legs (one for each light) and neutral. Does this question answer on March 27, 2016:I 3 Light Switch in box 2x4 and I want all its switchmoses light on October 11, 2015: Good jobDan Harmon (author) of Boise. Idaho on March
29, 2014: Article 404.2 (C) is what you're looking for. For the lighting control controlloads provided by the general purpose branch circuit on the ground for the controlled lighting circuit at the replacement site and thanks to pat; 3 Keys to the Road isn't
really that tough, just a little different than most people used to think about switches. donald on March 29, 2014: He was just looking to see if the code was called for a specific wire color for travelers and happened on your site. I am pleased to see that there are individuals out there who take the time to
describe the work of the triangular circle in as understandable detail as you have. A pat on the back. I have a question what article calls for there to be neutral in each switch box? I haven't been in the book for some time, and it makes sense to me. However it would be benificial to be able to show
customers they have to pay more for a job! Thank you. Dan Harmon (author) of Boise, Idaho on March 05, 2014: You will need to install the new 4 switch in the way between two of the 3 road switches. Between the meaning of electrically, not necessarily naturally. You will need 12-3 of 3 way, to route 4
and on to the other route 3. Instructions and charts are available here: on March 05, 2014:I You have 3 road switch that works properly in my basement. I want to add another key, to make it 4 way, between the two existing keys. I have a 12-3 run from switch to switch. The power to the light comes from
one key with 12-2. Is that possible without taking Drywall? Dan Harmon (author) of Boise, Idaho on March 02, 2014: It doesn't look as if your motion sensors are 3 way. Are you quite sure they are? In addition, the old keys, if 3 way, had three stations on them, in addition to the ground, to have all the
wires. Two black wires are not enough - what are the other wires/colors in the boxes? Jacob on March 02, 2014:I You have 3 way in my My route 2 new motion sensors have 3 red black and ground but the old keys have 2 black wires and I know one witch is common but with only 3 wires how do I connect
4 wireDan Harmon (author) of Boise, Idaho on December 27, 2013: Almost certainly in one or another of the common wire keys has been switched with the traveler. Check the switch where the power arises and check that the first one then the other traveler is powered when the switch is flipped. If not,
one of the travelers is exchanged with the authority here. Then check in the other switch that can turn power, or not, regardless of the traveler is hot, to the common wire, If not, one of the wires is exchanged with the common go to the light fixture. From your description, the problem lies in the power
switch. This switch must always produce power in one of the two travelers. Jerry Leviner on December 27, 2013: My problem after wiring for a new light won't come in any of the switch. It loses power in non-power switching! What did
do wrong? Dan Harmon (author) of Boise, Idaho on June 26, 2013: If you put both a black fixture and a wire to the black wire of the circuit cutter the best thing that would happen is that it will blow the breaker. Most likely, in residential construction, it will cause each metal of the fixture to become hot
whenever the light is turned on. Touching both the light and the ground source like a sink faucet will be shocking. So, it is not ok at all to put the floor wires, simply bend the fixture ground back into the box. The primary purpose of the floor wire
there is to blow up the crusher if the fixture is somehow faulty and the black wire is to touch the metal parts of the fixture is in good shape (presumably a new fixture is) there will be no problem. Philip on June 26, 2013: I You have a friend doing work in my
bathroom that has old wires coming from the circuit cutter. The new lighting device we add has a ground wire and stated that it would be acceptable to twist the ground wire. Is that right; Dan Harmon (author) of Boise, Idaho on April 20, 2013: Yes, that would work well. See the article on
four road keys for wire diagrams. Just keep adding more than 4 road keys to the chart, always between two 3 road keys. One 3 way will have incoming power and the other will have the same light feed cable 14 Guage wire is fine, as long as it is
fed from 15 amp valves. Do not use 14 gauge wire on a circuit with 20 amp breaker. ... Article on 4 Road switches bob on April 20, 2013: I need to power one light of seven or eight different locations using 3 way and 4 road keys using 14/3 wires I can do it many Dan Harmon (author) of Boise, Idaho on
November 29, 2012: Amshas, I'm not sure what I'm referring to. If you can be more specific in your needs and what you are trying to achieve, maybe I can help you out.amshad on November 27, 2012: This is useful but I need 3 way 3 swicthDan Harmon (author) of Boise, Idaho on September 13, 2012:
What I'm missing is that there is no on or off with the three-way switch. When the switch is above, the shared terminal is connected to the other passenger. There is no stop position. One passenger terminal or the other is always
connected to the shared passenger terminal. Wiring charts basically only show different styles of running cables physically; Passenger terminal on the other key - never with the light or energy received. Robert on September 13, 2012: I'm sorry, but these
four wires all digram seems to me the same thing. That's not an independent connection. If the first switch on the second switch does not work. I'm not looking for a solution like Dan Harmon (author) of Boise, Idaho on July 11, 2012: Thank you for the
compliment. This switch may seem complicated at first, but the heart is actually very simple. The best thing about them is that they always electrically connect themselves regardless of the physical reality of the running wire. Dan Harmon (author) of Boise, Idaho on February 23, 2012: If you have three
white wires to one side then they are either neutral wires or causes. Any hot position to the same side as either neutral or ground will immediately blow the valves or crusher. With more information I may be able to offer more concrete advice. Is this the old (pre-1950s) knob and wire tube? Are there cables
in the box that contain (or more) wires in each cable? Are there any wires in the box that are tied together? Does this have to be a switch, with half-hot all the time and half a switch? Are the wires old enough to suffer from discoloration, at least to the point that black has become gray or dirty white? So
now I see a box with three neutrals and only one wire I can't imagine any application where this would be useful except maybe the knob and tubular wire, where there were no cables. All regular house wires have at least black and white in each cable. Or this is a non-house with wire entering the box via
the canal (pipe)? Fee on February 23, 2012: rewiring old 3 white wires to 1 side of port 1 black to the hot side - I can only assume that 1 of the white wire should be hot as well, since the wont port work? thanks Dan Harmon (author) of Boise, Idaho on January 03, 2012: @ Stefan - if you're sledding the white
wire to the hot, then it's hot, not, and it should be colored at both ends so that no one will mistake the actual neutral. Black ribbon is fine for this purpose. Understand that it is not the color that makes neutral; Those wires or electrons flowing in do not know what color of insulation is. People do, though,
that's why the NEC has decided to be all white neutral - when you're scattering this white wire to hot black is no longer neutral and shouldn't be white wire. You can change the color from white to anything else (except
green), but never say, black, to white. The only exception is #4 and large wires, which are so large that the only use in most homes is from the street to your home. Stefan on January 03, 2012:Thanks for chart 4. Any other book I looked at at Home Depot or online showed chart 4. Once I plug everything
in, I color a neutral encoding that has been linked to the hot with black tape. I hope this is the right thing to do, since it has been neutral to hot acts like hot when the appropriate combo conversion is performed. Did you do right by marking the hot neutral in the second switch box? Thanks. Dan Harmon
(author) of Boise, Idaho on January 02, 2012: First, causes should not be separated. Any and all the reasons in the same box are always to be linked together (exceptions can be made for reasons of private computer circuits). Let me see if you understand what you're trying to do. Two switches to turn on
light (A) and two switches to turn on light (B). The power comes from the valve panel in the box with the first switch, (call it 1A). The same power will then go to switch (1B). From that point, the wires are the same for each control circuit. I'm assuming here that one light is to be wired as in the #3 chart. The
other light, with its two own keys is also wired as in the #3 chart. If this is the case, then the power in the wire (black), the strength in neutral (white) and the ground (naked or green) must go to each of the first two keys, one for each light, Simply run the two rope between these two keys, paste on the
power in the cable, and handle each set of independent keys. Let me know if this answers your question. If not, let me know either with another comment here or with an email (contact information near the top right, under my profile information). These things are difficult to answer with limited information
and with just a written word, We can solve it. Bradage on January 02, 2012: Do you have any suggestions for wire 2 3 separate way switch light) from the same power source? I've gone that up and disconnected the neutrals in the second switch but still can't get the power to turn
off. Do I need to separate the land too? Dan Harmon (author) of Boise, Idaho on December 07, 2011: It's really hard to diagnose from a distance, but the next power in the second switch will always come in (when the first switch has the first power cable) on the traveler. You must have two wires marked
by one traveler as common (which will not go hot without that second wired switch). If one T sign never goes hot, I would doubt that it is a subscriber, not a traveler. You can use volt meter, or offline voltage detector to track wires. Make sure that the wires are crowned and safe in the second box and run
the power. Flipping the switch first should give you two wires that go hot, then cold when the switch is flipped - these are travelers in the second switch. From your description, which leaves two wires, connect one of them to any traveler and turn this traveler hot, but if the light running this wire is then the
ioint and the fourth wire should simply be crowned with wire nut. However, it is possible that previous owners wired in the second switch that did not work properly. If you use a wire scheme #3 above, and use only two rope wire, the switches may work, but not properly. Is this probably what happened?dr
on December 06, 2011: Our oldest house had 3 switch between the road to the connected fan/lights. Power comes in switch #1 to the fan/lights that work. . . But we're trying to add the switch #2 back in. We had a wire marked as T - the traveler but we can't get the switch
#2 to work again - we can't seem to get power for it. There is no modern 3 wire used, two separate double wires were originally used. Can you go from switching power #1 to switch #2? Would we be better off running a new wire 3 to switch #2 or can we try to get it to work again as it is? Dan Harmon
(author) of Boise, Idaho on November 14, 2011: It's actually pretty simple, isn't it? All those wires and colors often on 3 way light switch looks confusing but once you understand what's actually going on it's not too bad. Glad you found it helpful, thanks for the comment. It's always good to hear that I was
able to help out rocco on November 14, 2011: Thank you very much, for multiple ways, I now have a better understanding of the terminology and wiring methodDan Harmon (author) of Boise, Idaho on September 11, 2011:Good. It is certainly tempting to save some time and effort by cutting corners, but
this is not the right place. It's just too serious, now and in future wade on September 11, 2011: Thanks for I wouldn't feel good about doing it that way. But he had turned the wire and had his walls up to add him to his room I thought I might be able to save him time from a setback. Again, thanks, I see it is
not worth the risk. Dan Harmon (author) of Boise, Idaho on Sep 09, 2011:Yes, in more than one. Without land there is a potential risk of shock. You will be unable to take advantage of the legally required ground screw on the switch. It is not legal to do what you are proposing and any future problems (a
house probably burning) that can follow that the wires will lead to liability to whoever did it. In many states it is illegal to sell a house with known shortcomings like this without notifying the buyer, at which point the sale probably won't go through. In short, don't do it. As an electrician I won't do it, and if his
boss orders him he will refuse. It is not worth it. Good luck with your project.wade on September 07, 2011: Thank you
both for commenting; It helps to find information useful.imamsaheb on September 07, 2011: When we look at connectipons to learn to simplify, thanks to uManna in the wild of Australia on March 06, 2011: This is useful. Thanks.Dan Harmon (author) of Boise, Idaho on January 25, 2011: Thanks for
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comment - I hope you find use for information.whitton on January 25, 2011:Thank you for this very informative Hub.Dan Harmon (author) of Boise, Idaho on November 29, 2010:Thank you, both on ping and s compliment.tamron on November 29, 2010: Hey pinged! Well done and a well-written electric article! Dan Harmon (author) of Boise, Idaho on November 17, 2010: Thank you. I can't help but hope that someone will find it useful in wire 3 way switch.stars439 from Louisiana, Magnolia and Swan State. October 27, 2010: Great information. GBYDan Harmon (author) of Boise, Idaho on October 18, 2010: You're absolutely right that it can be very frustrating. I once tried trouble shooting a friend's work and he had installed method 4 instead of 3 method (which is possible and will work) but it was wired wrong. Looked right if you do not notice screw 4, but will not work properly. Nearly 2 hours of tearing all the keys and 4 lights can be a little away before you notice his mistake! Very frustrating!dgicre from USA on October 18, 2010: This is great! Very common problem and link 3/way keys up The method leads to some interesting and often frustrating experiences. Dan Harmon (author) of Boise, Idaho on October 18, 2010: Thank you. I can't help but hope that someone will find it useful in wire 3 way switch.stars439 from Louisiana, Magnolia and Swan State. October 27, 2010: Great information. GBYDan Harmon (author) of Boise, Idaho on October 18, 2010: You're absolutely right that it can be very frustrating. I once tried trouble shooting a friend's work and he had installed method 4 instead of 3 method (which is possible and will work) but it was wired wrong. Looked right if you do not notice screw 4, but will not work properly. Nearly 2 hours of tearing all the keys and 4 lights can be very frustrating. I once tried trouble shooting a friend's work and he had installed method 4 instead of 3 method (which is possible and will work properly. Nearly 2 hours of tearing all the keys and 4 lights can be very frustrating. I once tried troub

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