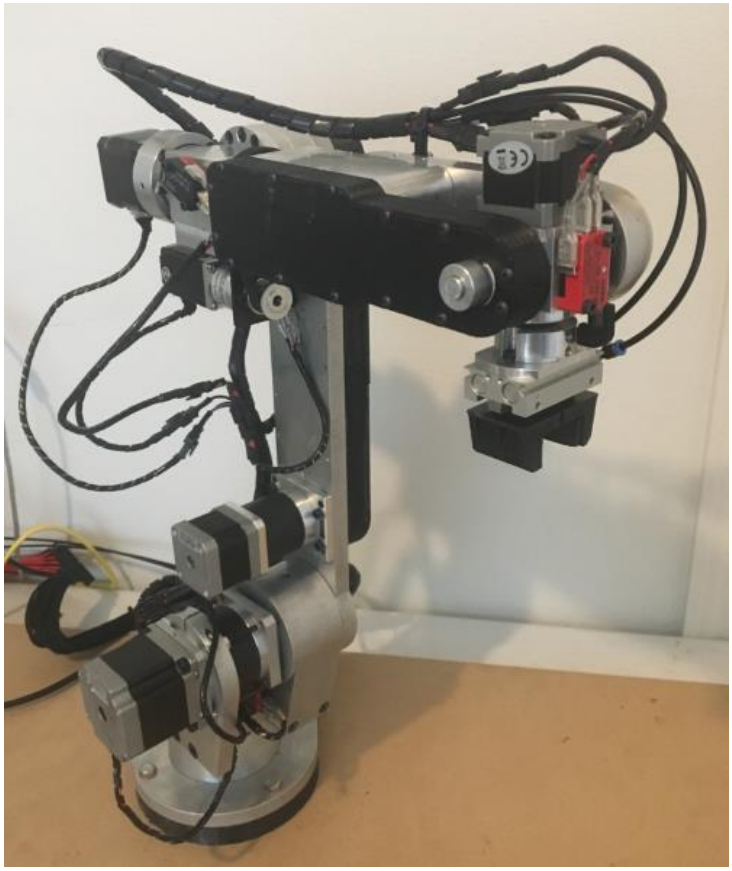


Model AR2 Wiring Harness

WIRING HARNESS ASSEMBLY

BILL OF MATERIALS

All Stepper motors, drivers and power supplies are available at:
www.omc-stepperonline.com

TronicsPros High Quality 4 Pin 4 Color 10m 20m RGB Extension Cable Wire LED Strip Connector RGB 5050 3528 LED Strip
by TronicsPros

$10.96 prime
Some colors are Prime eligible

28

Product Features
... 4 pin LED extension *cable* for SMD 505(strip lights. ...

Hilitchi 240pcs(30set) 2.5mm Pitch 3-Pin JST SM Male & Female Plug Housing and Male/female Pin Header Crimp Terminals Connector Kit
by Hilitchi

$10.63 prime
Only 18 left in stock - order soon.

More Buying Choices
$10.63 (2 new offers)

1

10% off item with purchase of 1 items and 1 more promotion

Product Features
Pin Pitch: 2.5mm

Hilitchi 274pcs(25set) 2.5mm Pitch 4-Pin JST SM Male & Female Plug Housing Male/female Pin Header Crimp Terminals Connector Kit
by Hilitchi

$11.58 prime
Only 5 left in stock - order soon.

More Buying Choices
$10.99 (2 new offers)

4

10% off item with purchase of 1 items and 1 more promotion

Product Features
Pin Pitch: 2.5mm

ATX 24-Pin PSU Female Power Connector Housing Black & 25 Male Pins

$7.94
Buy It Now
Free shipping

FAST 'N FREE
Get it on or before **Thu, Aug. 10**

34Meter Long PE Polyethylene 4mm Spiral Cable Wire Wrap Tube Black

by Amico

$8.39 prime

Only 1 left in stock - order soon.

★★★★☆ ▾ 7

Product Features

... Diameter : *4mm* / 0. ... 03" Package Content : 1 x *Spiral Wrap* ...

uxcell 33ft Length 10mm Dia Tube Computer Manage Cable Wire Spiral Wrap Black

by uxcell

$7.35

prime

More options available:

$7.07 Other Sellers

Product Features

... Package Content: 1 x *Wire Spiral Wrap* Thickness: 0. ... *10mm*/0. ...

uxcell® 10mm Black Polyolefin Insulation Heat Shrink Tubing 3 Meters 9.8ft

by uxcell

$5.94 prime

Get it by **Tuesday, Aug 8**

★★★½☆ ▾ 18

More Buying Choices

$5.03 (2 new offers)

Vktech 150pcs 2:1 Heat Shrink Tubing Tube Sleeving Wire Cable 8 Sizes 2-13mm Black

by Vktech

$5.99 prime

Get it by **Sunday, Sep 17**

★★★★½ ▾ 365

5% off purchase of $50.00 and 1 more promotion ▾

Product Features

Big collection of *heat shrink* tubing, 8 Specifications

More Buying Choices

$5.99 (3 used & new offers)

Switchcraft

Switchcraft EHRJ45P5ES RJ45 CAT5e Feedthru Panel Mount Jack, Shielded, Plastic Black Housing

4.0 out of 5 stars ▾ 7 customer reviews

Was: ~~$11.70~~
Price: $9.99 ✓prime
You Save: $1.71 (15%)

Get $70 off instantly: Pay $0.00 upon approval for the Amazon Prime Rewards Visa Card.

Only 6 left in stock (more on the way).
Want it tomorrow, Feb. 20? Order within **3 hrs 2 mins** and choose **One-Day Shipping** at checkout. Details
Ships from and sold by Amazon.com. Gift-wrap available.

- The EH Series Connectors by Switchcraft is a complete line of Audio, Video and Data Connectors built into standard panel mount XLR housings.
- Custom Combinations can be loaded into any Switchcraft Q-G Panel or any panel or plate punched for standard XLR's

Uxcell a16022200ux0139 Polyurethane PU Air Tube Pipe Hose, 4 mm OD, 2 mm Inner Diameter, 19 m Long Black, Metal, 0.08"

by uxcell

$7.87

FREE Shipping on eligible orders

More Buying Choices
$7.87 (2 new offers)

3.5 out of 5 stars ▾ 2

Product Features
Outside diameter: *4Mm*/0. 16"; inside

Permatex 81158 Black RTV Silicone Sealant. 3 oz.

by Permatex

$6.94

FREE Shipping on eligible orders

More Buying Choices
$4.40 (8 new offers)

4.5 out of 5 stars ▾ 14

Hammond 1591BSBK ABS Project Box Black

4.5 out of 5 stars ▾ 57 customer reviews | 8 answered questions

Amazon's Choice for "abs project box"

Price: $6.51 ✓prime
FREE One-Day Pickup. Details

Get $70 off instantly: Pay $0.00 upon approval for the Amazon Prime Rewards Visa Card.

In Stock.
Want it tomorrow, Feb. 20? Order within **5 hrs 56 mins** and choose **One-Day Shipping** at checkout. Details
Sold by Gerber Electronics and Fulfilled by Amazon. Gift-wrap available.

YXQ

PG16 Waterproof Cable Gland Joints Adjustable Lock Nut Connector For 10-13mm Cable Black Plastic 12Pcs

Be the first to review this item

Price: $8.29 prime

Get $70 off instantly: Pay $0.00 upon approval for the Amazon Prime Rewards Visa Card.

Only 12 left in stock - order soon.

Sold by WLG Electrical and Fulfilled by Amazon. Gift-wrap available.

Size: **PG16**

PG7 | PG9 | PG11 | PG13.5 | **PG16** | PG19 | PG21 | PG24

(you will need 2 packs of 10 aviation plugs)

4 Pin Metal Male Female Panel Connector 16mm GX16-4 Silver Aviation Plug of 10 pcs

★★★★☆ 1 customer review

Note: This item is only available from third-party sellers (see all offers).

Available from these sellers.

- Product Name : Aviation Connector Plug;Model : 16-4;Type : Male Female Plug;
- Contacts Pin Number : 4
- Rated : 125V/5A;WorkingVoltage : AC 200V;Withstand Voltage : AC 1500V
- Total Size : 4.7 x 1.9cm/ 1.8" x 0.7" (Lx Max.W);
- Material&Package: Metal;10 Pairs Aviation Connector Plug

› See more product details

Compare with similar items

New (1) from $12.99 + $5.27 shipping

Monoprice 100-Feet 18AWG CL2 Rated 4-Conductor High-Purity Oxygen-Free Copper Speaker Wire

★★★★★ 85 customer reviews | 15 answered questions

Amazon's Choice for "speaker wire 4 conductor"

Price: $34.55 prime

FREE One-Day Pickup. Details

SV-166-1C25 Limit Switch Long Hinge Roller Arm SPDT Action 3-16A 250VAC (10 pieces)

Be the first to review this item

Price: $7.56 ($0.76 / item) + $4.49 shipping

Note: Not eligible for Amazon Prime.

Only 2 left in stock - order soon.

Get it as soon as Feb. 14 - 17 when you choose **Expedited Shipping** at checkout.

Ships from and sold by Standard Supply Co.

New (1) from $7.56 + $4.49 shipping

Specifications for this item

Brand Name	Yueqing Saigo Electronics

OdiySurveil

OdiySurveil (TM) XV-152-1C25 Hinge Lever Type Miniature Micro Switch(Pack of 5)

★★★★★ 15 customer reviews | 4 answered questions

Price: $8.29 Prime

In Stock.

Want it Friday, April 21? Order within **3 hrs 24 mins** and choose **Two-Day Shipping** at checkout.

Details

Sold by Overseasymall and Fulfilled by Amazon. Gift-wrap available.

- Product Name : Micro Switch;Model No. : XV-152-1C25;
- Actuator Type : Straight Hinge Lever;

(Make sure you buy high quality non roller switch for J6 – note the rivet hinge pin)

https://www.focusattack.com/electrical/wiring/by-gauge/22-awg/

Sharpie Oil-Based Paint Markers, Fine Point, Assorted Colors, 5-Count

by Sharpie

$10.68 ~~$15.99~~ prime

Get it by **Sunday, Sep 17**

More Buying Choices

$4.69 (17 new offers)

★★★★½ 239

Gardner Bender 48-308UVB Mounting Cable Tie, 8 Inch.,50 lbs. Tensile Strength, Wire / Cord Management Industrial and Household Use, Nylon Zip Tie, 100 Pk., UV Resistant Black

by Gardner Bender

$8.39 ~~$9.51~~ prime

Get it by **Tomorrow, Aug 6**

More Buying Choices

4.5 ▾ 52

Product Features

Mounting cable *ties*

IWISS Crimping Tools for Dupont Professional Pin Compression Ratcheting Modular Insulated Terminal Crimper Pin 2.54mm 3.96mm 28-18AWG 0.5-1.0mm2 with Wire-electrode Cutting Die

by Iwiss

$23.00 prime

Get it by **Tuesday, Aug 8**

More Buying Choices

$21.39 (1 used offer)

4.5 ▾ 277

Product Features

... *pins* Wire-electrode cutting die sets promise a high-precision *crimping* ...

Neiko 01924A Ultimate Self-Adjusting Wire and Cable Stripper

by Neiko

$13.99 ~~$19.99~~ prime

Get it by **Tomorrow, Sep 11**

More Buying Choices

$11.95 (13 used & new offers)

4.5 ▾ 538

Product Features

... Innovative *wire stripper* with self-adjusting mechanism is ideal for ...

You will need 1 limit switch tip
For J6, this part must be 3D printed.
The print file can be found on
The project page with all the other
3D print files.

SECTION 1

FEMALE 4 PIN JST CONNECTOR FOR MOTOR END OF WIRING HARNESS

BEND AND BREAK OFF FEMALE PIN FROM STRIP.

NOTE THAT THE GAP ON THE PIN INSULATION WINGS IS TYPICALLY TOO WIDE OR TOO OPEN.

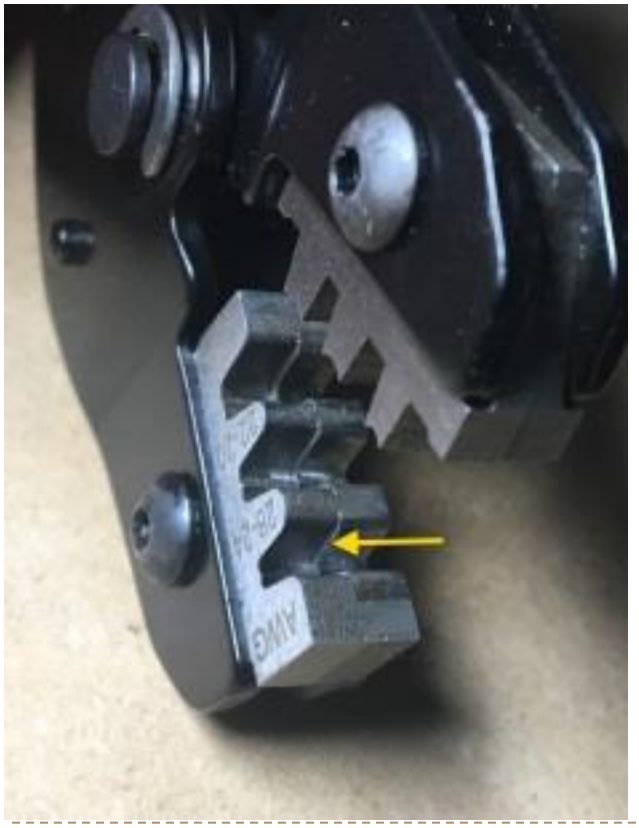
USE NEEDLE NOSE PLIERS TO CLOSE THE GAP AS SHOWN

THE GAP SHOULD NOW LOOK LIKE THIS.

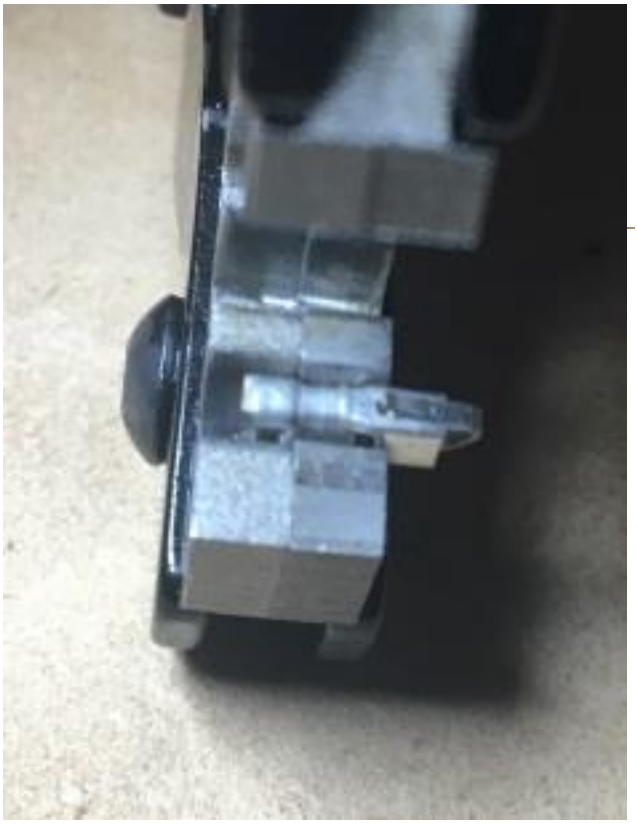
PLACE END OF RIBBON WIRE IN SELF ADJUSTING WIRE STRIPPERS AS SHOWN.

STRIP END LEAVING APPROX 3mm OF WIRE EXPOSED ON ALL 4 WIRES.

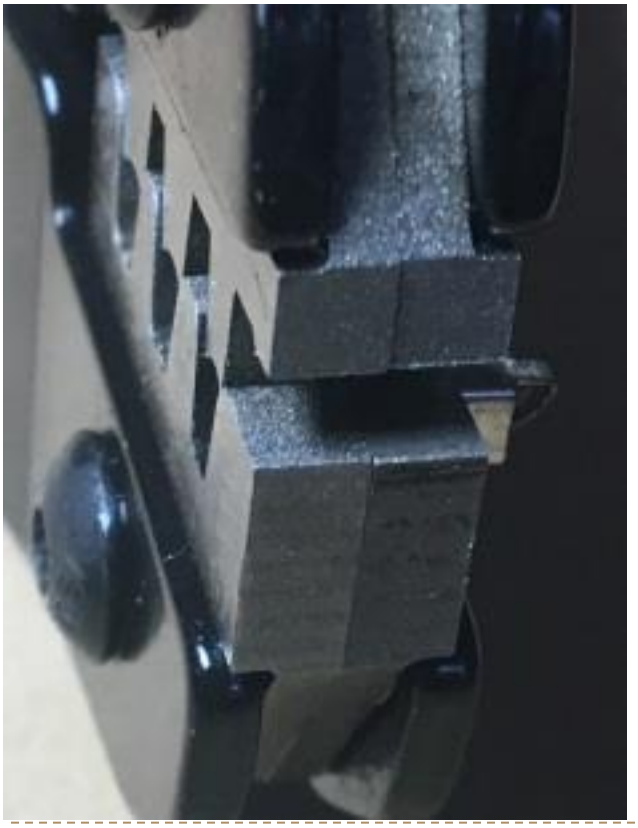
USE CUTTERS OR RAZOR KNIFE TO SEPARATE WIRES.



NOTE THE LIP OR STEP IN THE UPPER JAW OF THE CRIMPING TOOL.

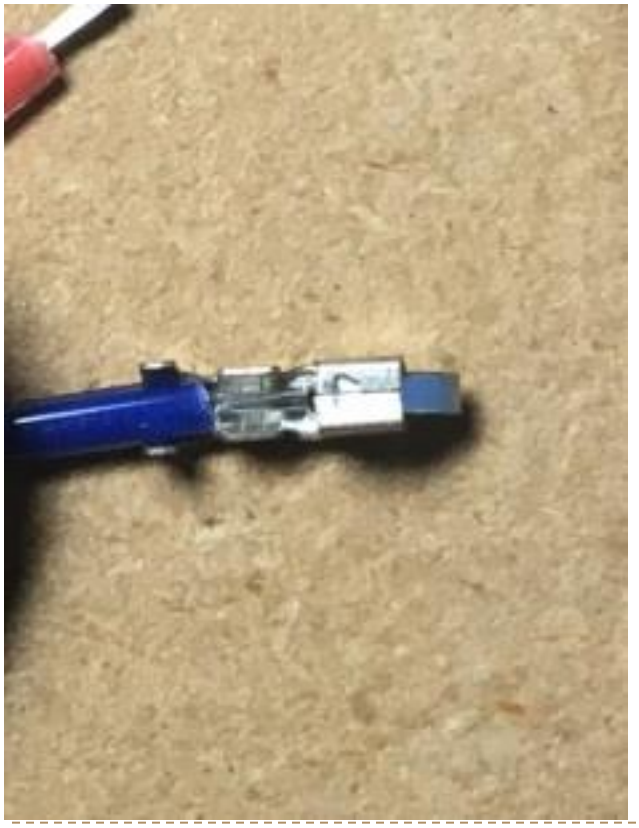


WITH CRIMPING TOOL UPSIDE DOWN IN YOUR LEFT HAND PLACE THE FEMALE PIN INTO THE JAW WITH YOUR RIGHT HAND AS SHOWN. THE WINGS SHOULD BE UP AGAINST THE STEP SHOWN IN THE PREVIOUS STEP..



CLOSE THE CRIMPER SLOWLY INTIL THE RATCHET MECHANISM CLICKS 3 TIMES BUT DO NOT FULLY CLAMP. IT SHOULD LOOK LIKE THIS.

FLIP THE CRIMPER BACK RIGHT SIDE UP AND HOLD WITH YOUR RIGHT HAND, THEN STARTING WITH THE BLUE WIRE AS SHOWN – INSERT THE WIRE INTO THE CRIMPER AND PIN.



THIS PICTURE SHOWS WHERE THE WIRE SHOULD BE SITTING INSIDE THE PIN.

NOTE THE JACKET IS JUST PAST THE LARGE WINGS AND THE WIRE ITESELF IS INSIDE THE SMALLER SET OF WINGS.

IT WILL TAKE PRACTICE TO GET A FEEL FOR HOW TO INSERT THE WIRE INTO THE CRIMPER TO GET THIS ALIGNMENT.

WITH THE WIRE AT THE CORRECT DEPTH COMPETEY CLAMP THE CRIMPER.

THIS PICTURE SHOWS HOW IT SHOULD LOOK AFTER BEING CRIMPED.

NOTE THE JACKET IS FULLY CLAMPED BY THE LARGE WINGS BUT THE JACKET STOPS RIGHT AT THE SMALLER WINGS AND THE SMALLER WINGS HAVE CLAMPED ONLY THE METAL WIRE.

I SUGGEST PRACTICING THIS SEVERAL TIMES TO GET THE HANG OF IT BEFORE TRYING TO MAKE YOUR WIRING HARNESS.

THIS PICTURE SHOWS AN INCORRECTLY CRIMPED CONNECTOR.

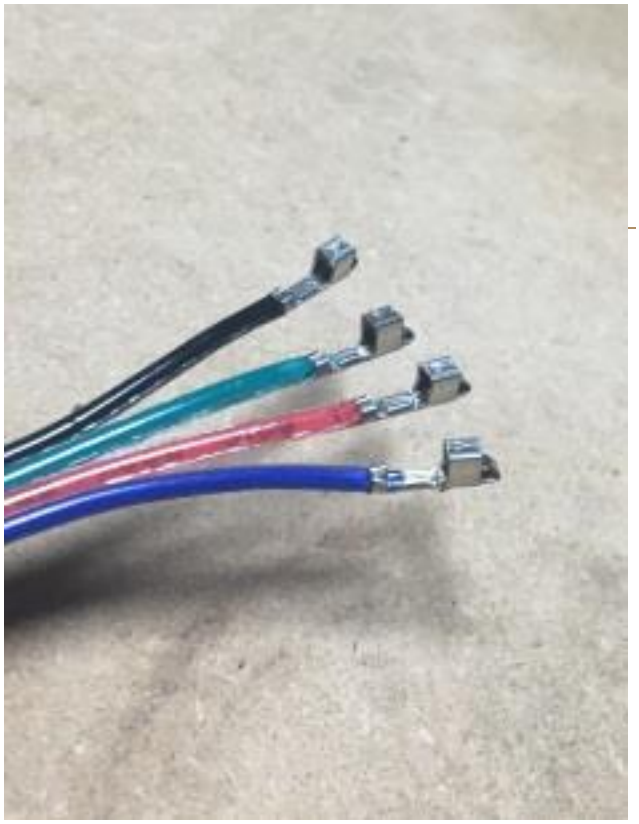
NOTE THE JACKET IS NOT FULLY INSIDE OR CLAMPED BY THE WINGS.

THIS IS NOT ACCEPTABLE – IF IT LOOKS LIKE THIS YOU NEED TO RE-DO IT.

THIS PICTURE ALSO SHOWS AN INCORRECTLY CRIMPED CONNECTOR.

NOTE THE WIRE WAS INSERTED TOO FAR AND THE JACKET IS CLAMPED BY BOTH THE LARGE AND SMALL WINGS.

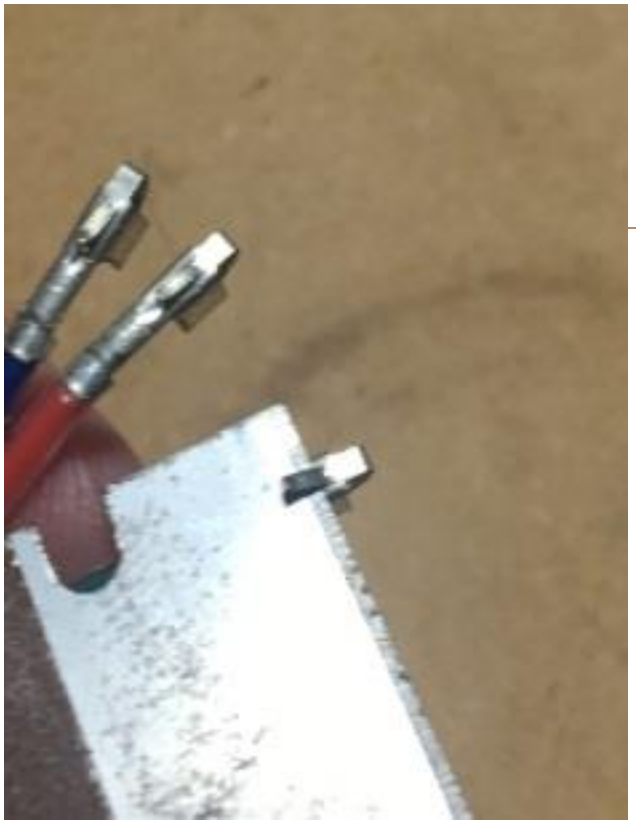
THIS IS NOT ACCEPTABLE – IF IT LOOKS LIKE THIS YOU NEED TO RE-DO IT..



ONCE YOU HAVE MASTERED CRIMPING CONTINUE CRIMPING A PIN ON ALL 4 WIRES AS SHOWN.

PINCH EACH CONNECTOR IN YOUR FINGERS AND TUG ON IT TO MAKE SURE IT DOESN'T COME OFF EASILY. IF IT COMES OFF IT OBVIOSLY NEEDS TO BE REDONE AND WASN'T FULLY CRIMPED.

CUT A LENGTH OF HEAT SHRINK TUBING APPROX 25mm LONG AND RUN WIRES THROUGH IT AS SHOWN.



USE A RAZOR BLADE TO MAKE SURE THE TANGS ON EACH PIN ARE POINTED OUT.

SOMETIMES THEY GET FLATTENED AND WILL NOT LATCH INTO THE PLASTIC HOUSING.

START TO FEED WIRES INTO FEMALE HOUSING AS SHOWN.

CONTINUE TO FULLY INSERT WIRES INTO HOUSING.

NOTE THE TANGS ARE FULLY INSERTED INTO THE SLOTS AND DO NOT PULL BACK OUT

NOTE WITH THE SLOTS FACING YOU THE BLUE WIRE IS ON TOP, THEN RED, GREEN AND BLACK ON THE BOTTOM. IT IS IMPORTANT THEY ARE INSERTED IN THIS ORDER.

APPLY BLACK SILICONE AROUND THE BASE OF THE CONNECTOR ON BOTH SIDES AS SHOWN.

USE A TOOTHPICK TO WORK SILICONE INTO EACH JACKET ON BOTH SIDES.

AFTER WORKING SILICONE INTO CONNECTOR SPREAD IT A SHORT WAY DOWN THE WIRES – IT SHOULD LOOK LIKE THE PICTURE.

SLIDE THE LENGTH OF HEAT SHRINK TUBING OVER THE CONNECTOR AS SHOWN.

USE A HEAT GUN TO SHRINK THE TUBING AS SHOWN.

THIS CONNECTOR IS NOW COMPLETE

SECTION 2

FEMALE 3 PIN JST CONNECTOR FOR LIMIT SWITCH END OF WIRING HARNESS

REMOVE THE BLUE STRAND FROM THE RIBBON WIRE AS THIS CONNECTOR ONLY REQUIRES 3 WIRES.

CRIMP FEMALE PINS TO THE ENDS OF EACH OF THE WIRES STARTING WITH THE RED WIRE AS SHOWN – REFER TO INSTRUCTIONS IN SECTION 1 FOR CRIMPING DETAILS.

INSERT WIRES WITH FEMALE PINS INTO THE 3 PIN FEMALE JST HOUSING AS SHOWN.

NOTE WITH THE SLOTS FACING YOU THE RED WIRE IS ON TOP, THEN GREEN AND BLACK ON THE BOTTOM. IT IS IMPORTANT THEY ARE INSERTED IN THIS ORDER.

APPLY SILICONE AND HEAT SHRINK TUBING AS OUTLINED IN SECTION 1.

THIS CONNECTOR IS NOW COMPLETE.

SECTION 3

MALE 3 PIN JST CONNECTOR LIMIT SWITCH PIGTAILS

CONNECT BLACK, RED AND GREY 22 AWG QUICK DISCONNECT WIRES TO EACH LIMIT SWITCHES FOR ALL 6 AXIS.

NOTE: J1 THROUGH J5 WILL USE THE ROLLER LIMIT SWICH SHOWN. J6 WILL USE A STRAIGH ARM WITH TIP EXTENSION SHOWN IN THE NEXT STEP.

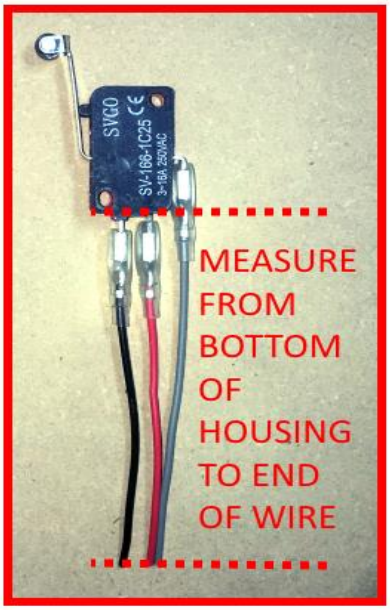
NOTE THE LIMIT SWITCH FOR AXIS 6 USES A STRAIGH ARM LIMIT SWITCH WITH THE J6 LIMIT SWITCH TIP ATTACHED.

LIGHTLY SAND END OF LIMIT SWICH ARM ON BOTH SIDES AND THEN USE EPOXY TO SECURE J6 LIMIT SWITCH TIP TO ARM OF SWITCH.

.STL PRINT FILE FOR THIS TIP CAN BE FOUND ON PROJECT PAGE INCLUDED WITH THE OTHER PRINT FILES FOR THE COMPLETE PRINTED ROBOT.

Cut quick disconnect wires to length for each switch as shown below

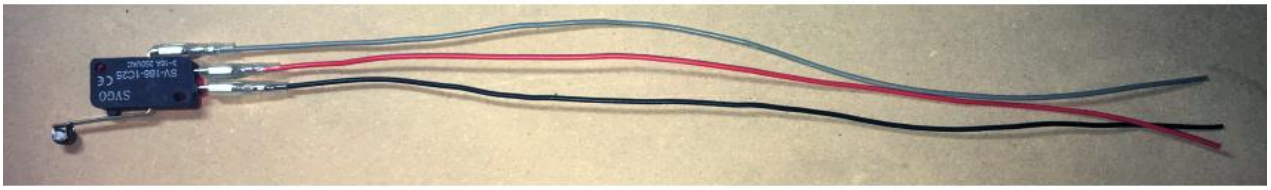
J1 - CUT WIRES TO 8.25cm (3.25")



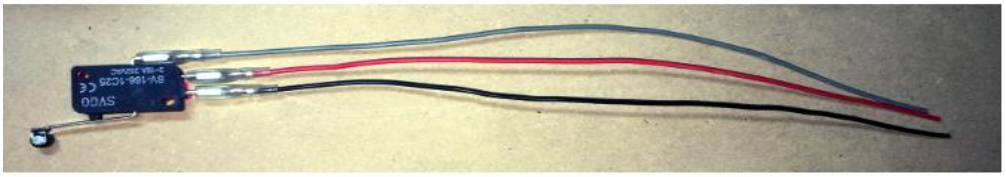
J2 - CUT WIRES TO 8.25cm (3.25")

J3 - CUT WIRES TO 8.25cm (3.25")

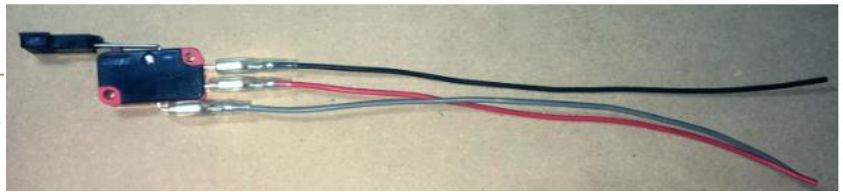
J4 - CUT WIRES TO 30.5cm (12")



J5 - CUT WIRES TO 21.5cm (8.5")



J6 - CUT WIRES TO 17.2cm (6.75")



CRIMP JST MALE PINS TO RED, GREY AND BLACK WIRES IN THE EXACT SAME PROCEEDURE OUTLINED IN SECTION 1 FOR ALL 6 LIMIT SWITCHES.

INSERT WIRES INTO MALE JST HOUSING AS SHOWN – WITH CLIP FACING FORWARD INSERT RED WIRE ON TOP, GREY IN THE MIDDLE AND BLACK ON THE BOTTOM.

INSERT PINS UNTIL THEY ARE FULLY SEATED AND CLICK INTO THE HOUSING.

PLACE SILICONE AROUND WIRES AT BASE OF JST HOUSING AND WORK SILICONE INTO REAR OF CONNECTOR IN THE SAME WAY SHOWN IN SECTION 1.

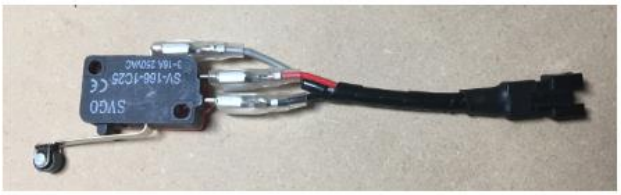
WRAP WIRES WITH 4mm SPIRAL WRAP – MAKE SURE SPIRAL WRAP EMBEDS INTO SILICONE BEFORE IT CURES.

PLACE SHORT LENGTH OF HEAT SHRINK TUBE OVER WIRES AND ONTO JST CONNECTOR AS SHOWN.

USE HEAT GUN TO SHRINK TUBING AROUND CONNECTOR AND WIRES.

AFTER ALL 6 LIMIT SWITCH PIGTAILS ARE COMPLETE USE PAINT PENS TO MARK THE CONNECTORS AS SHOWN ON THE NEXT PAGE

MARK CONNECTORS AS SHOWN



J1 - DO NOT MARK WITH PAINT

J2 - MARK WITH BLUE PAINT PEN

J3 - MARK WITH RED PAINT PEN

J4 - MARK WITH YELLOW PAINT PEN

J5 - MARK WITH WHITE PAINT PEN

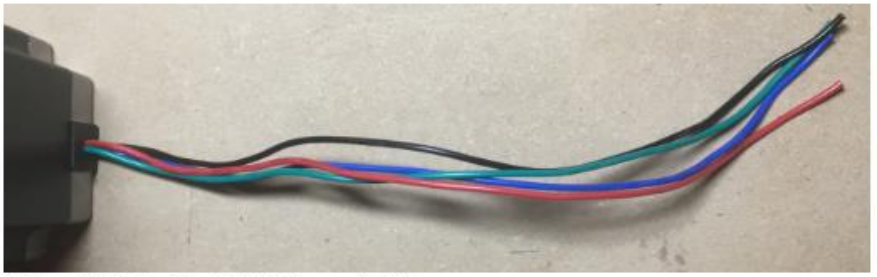
J6 - DO NOT MARK WITH PAIN

SECTION 4

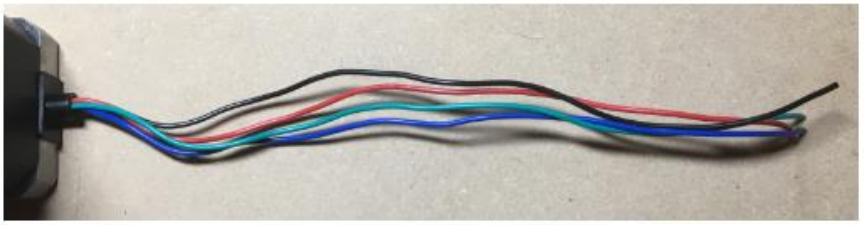
MALE 4 PIN JST CONNECTOR ON MOTOR PIGTAILS

CUT MOTOR WIRES TO THE FOLLOWING LENGTHS

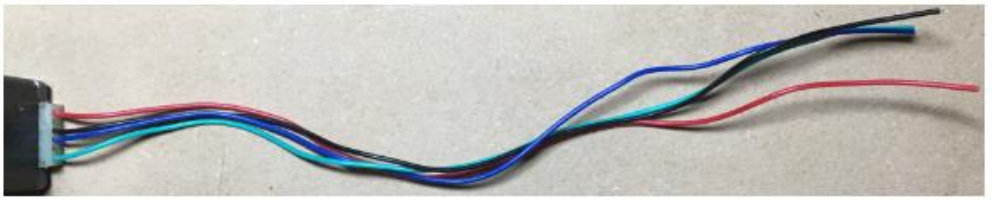
J1 - CUT TO 7.5cm (3")



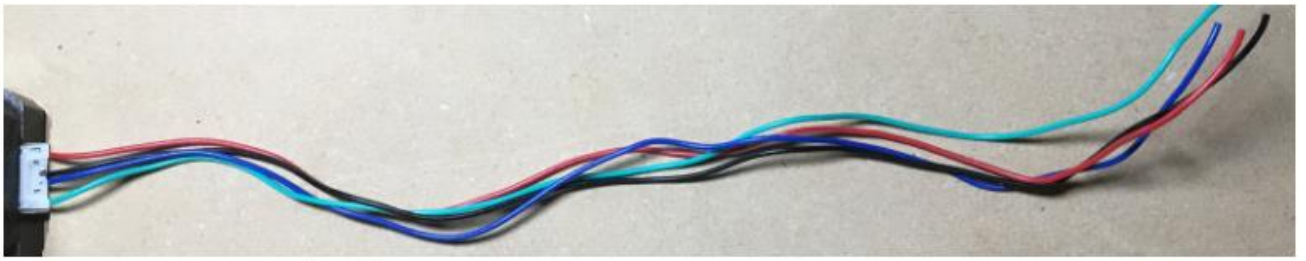
J2 - CUT TO 17.75cm (7")



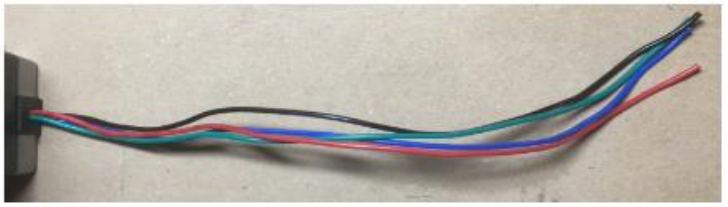
J3 - CUT TO 17.75cm (7")



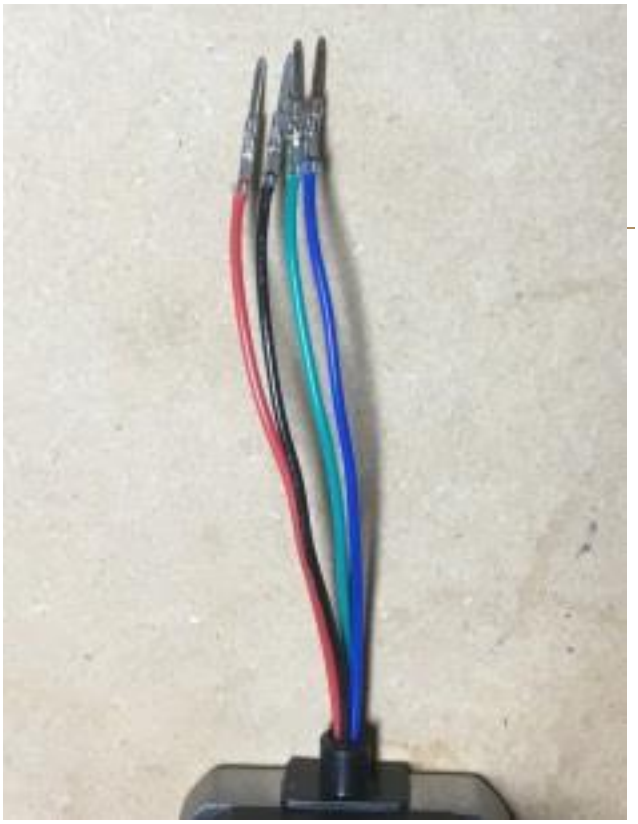
J4 - CUT TO 20.25cm (8")



J5 - CUT TO 28cm (11")



J6 - CUT TO 15.25cm (6")



CRIP MALE JST PINS AS OUTLINED IN SECTION 1 TO EACH WIRE ON ALL 6 MOTORS.

SLIDE SHORT LENGTH OF HEAT SHRINK TUBE OVER WIRES.

WRAP 4mm SPIRAL WRAP AROUND WIRES AND SLIDE UNDER HEAT SHRINK WRAP AS ITS WRAPPED.

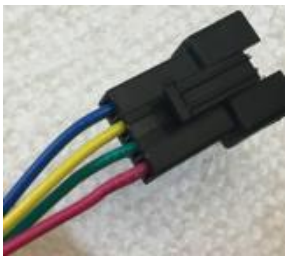
INSERT WIRES INTO MALE JST HOUSING AS SHOWN. – MAKE SURE THEY FULLY CLICK INTO PLACE.

MAKE SURE WITH THE CLIP FACING YOU THAT THE BLUE WIRE IS ON THE LEFT, THEN THE RED, GREEN, AND BLACK ON THE RIGHT.

NOTE: THE MOTORS FOR J4 AND J6 HAVE DIFFERENT WIRE COLORS, SEE ELECTRICAL SCHEMATIC FOR CORRECT COLOR ORDER.

J4 motor

J6 motor



APPLY BLACK SILICONE TO WIRES AND CONNECTOR – WORK SILICONE INTO BACK OF CONNECTOR WITH TOOTH PICK.

FINSIH WRAPPING SPRIRAL WRAP INTIL WRAP IS EMBEDDED INTO SILICONE..

SLIDE HEAT SHRINK TUBE OVER CONNECTOR AS SHOWN.

USE HEAT GUN TO SHRINK TUBING AS SHOWN.

APPLY BLACK SILICONE TO THE BASE OF EACH PIGTAIL.

MARK EACH CONNECTOR WITH PAINT PENS AS SHOWN

J1 - DO NOT MARK WITH PAINT

J2 - MARK WITH BLUE PAINT

J3 - MARK WITH RED PAINT

J4 - MARK WITH YELLOW PAINT

J5 - MARK WITH WHITE PAINT

J6 - DO NOT MARK WITH PAINT

SECTION 5

WIRING HARNESS ASSEMBLY

CUT 6 LENTHS OF 4-STRAND RIBBON WIRE TO THE FOLLOWING LENTHS:

J1- WIRE = 40.6cm (16”) LONG

J2- WIRE = 71cm (28”) LONG

J3- WIRE = 71cm (28”) LONG

J4- WIRE =86.3cm (34”) LONG

J5- WIRE = 86.3cm (34”) LONG

J6- WIRE = 132cm (52”) LONG

CONNECT 4 PIN FEMALE JST CONNECTOR TO ONE END OF EACH WIRE AS OUTLINED IN SECTION 1.

Use paint pens to mark each end
of the motor wires as shown:



J1 - NO PAINT



J2 - BLUE BOTH ENDS



J3 - RED BOTH ENDS



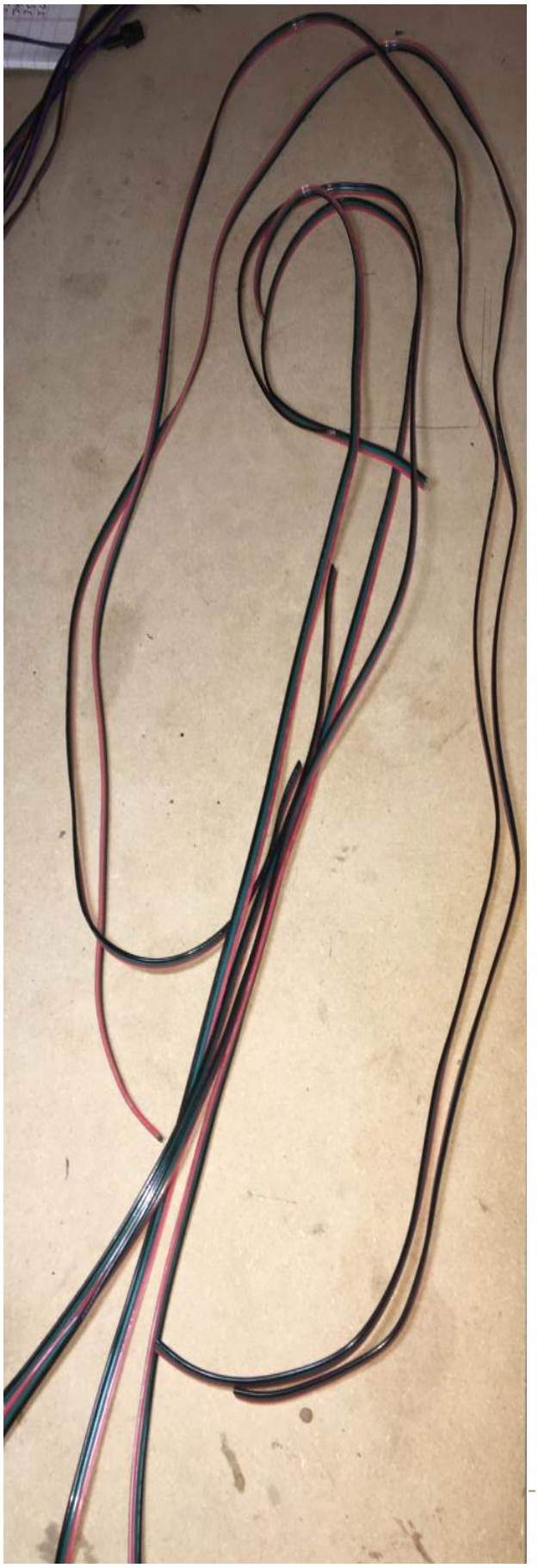
J4 - YELLOW BOTH ENDS



J5 - WHITE BOTH ENDS



J6 - NO PAINT



CUT 6 LENTHS OF STRANDED RIBBON WIRE TO THE FOLLOWING LENTHS – STRIP OFF THE BLUE WIRE FROM EACH SO THAT YOU HAVE 3 STRAND WIRES *(RED, GREEN, BLACK):*

J1- WIRE = 71cm (16") LONG

J2- WIRE = 58.4cm (23") LONG

J3- WIRE = 86.4cm (34") LONG

J4- WIRE =86.4cm (34") LONG

J5- WIRE = 132cm (52") LONG

J6- WIRE = 132cm (52") LONG

THES 6 WIRES WILL BE FOR THE LIMIT SWITCHES.

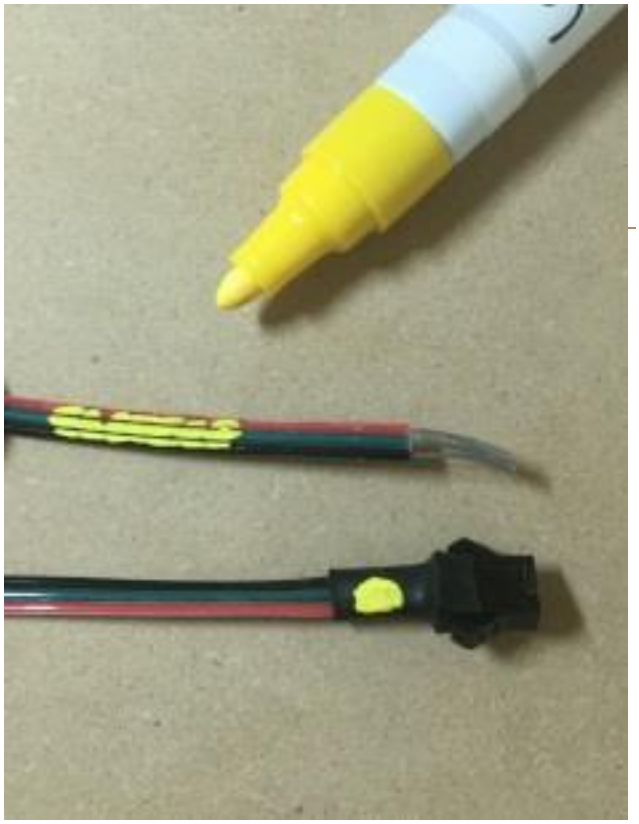
INSTALL 3 PIN FEMALE JST CONNECTOR AS OUTLINED IN SECTION 2 ON THE END OF EACH OF THE 6 LIMIT SWITCH WIRES.

STRIP 6mm TO 8mm FROM THE OTHER END OF THE LIMIT SWITCH WIRES

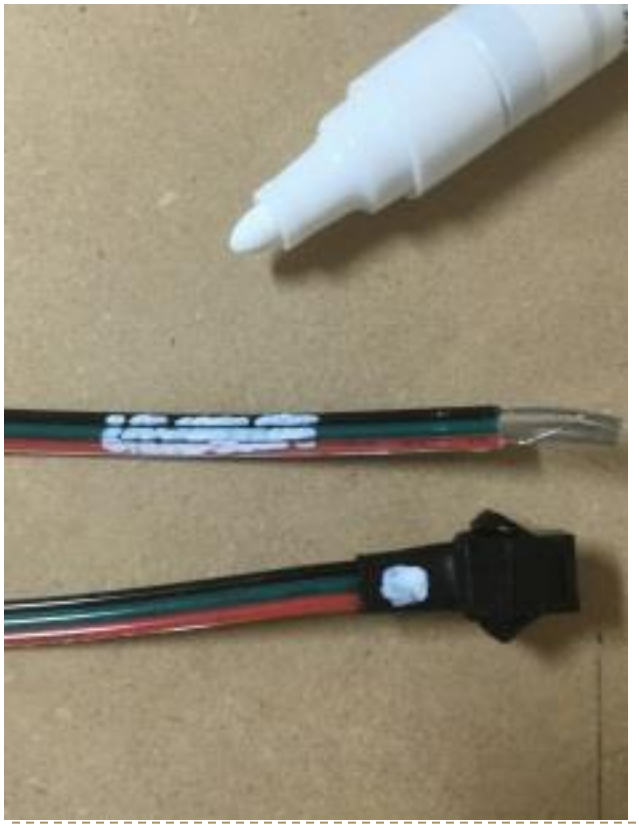
USE BLUE PAINT PEN TO MARK THE J2 LIMIT SWITCH WIRE AT BOTH ENDS AS SHOWN.

NOTE: AS BEFORE THE J1 WIRE DOES NOT NEED TO BE MARKED.

USE RED PAINT PEN TO MARK THE J3 LIMIT SWITCH WIRE AT BOTH ENDS AS SHOWN.



USE YELLOW PAINT PEN TO MARK THE J4 LIMIT SWITCH WIRE AT BOTH ENDS AS SHOWN.



USE WHITE PAINT PEN TO MARK THE J5 LIMIT SWITCH WIRE AT BOTH ENDS AS SHOWN.

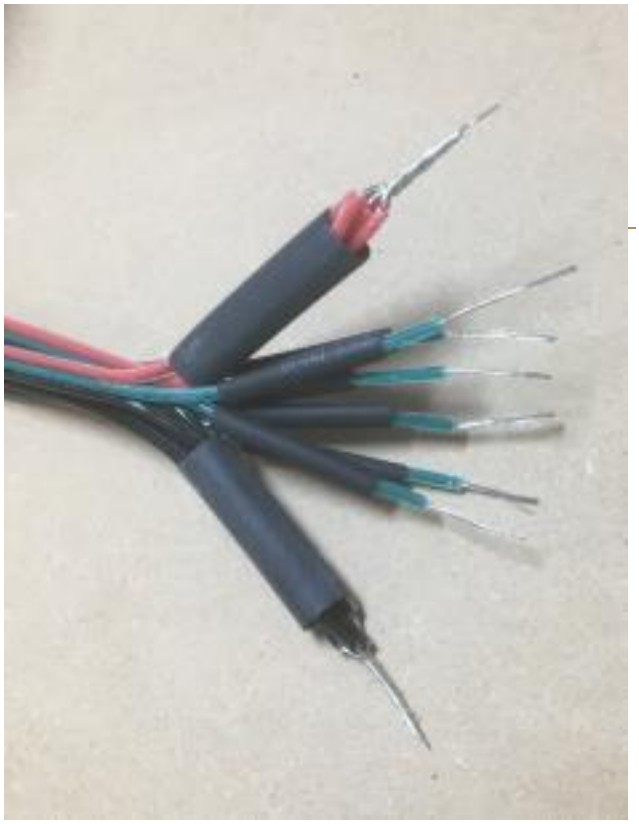
NOTE: AS BEFORE THE J6 WIRE DOES NOT NEED TO BE MARKED.

USE STEPPED BIT TO DRILL 7/8” HOLE IN END OF PROJECT BOX.

PULL ALL MOTOR AND LIMIT SWITCH WIRE ENDS THROUGH PG16 GLAND NUT AS SHOWN

INSTALL WIRE LOOM AND GLAND NUT INTO PROJECT BOX AS SHOWN.

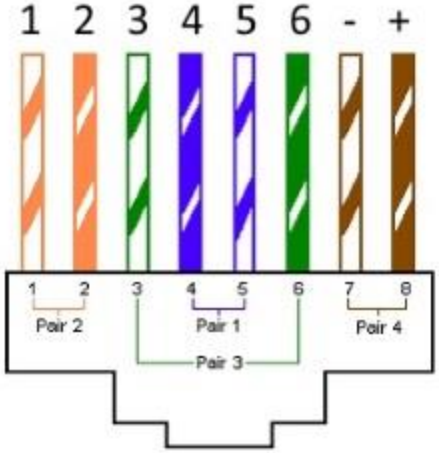
PULL LIMIT SWITCH WIRES FAR ENOUGH OUT OF BOX TO GIVE YOURSELF SOME ROOM TO WORK. ON THE STRIPPED END OF LIMIT SWITCH WIRES – SEPARATE THE WIRE STRANDS THEN TWIST ALL THE RED WIRES TOGETHER AND THEN TWIST ALL THE BLACK WIRES TOGETHER.



SLIP 2.5cm (1") LENGTH OF 6mm HEAT SHRINK TUBING OVER RED AND BLACK WIRE BUNDLES.

SLIP 2.5cm (1") LENGTH OF 2mm HEAT SHRINK TUBING OVER EACH OF THE GREEN WIRES.

CUT OFF MALE END OF RJ45 EXTENSION WIRE AND STRIP OFF OUTER SHEETHING AS SHOWN.



THE FOLLOWING STEPS WILL CONNECT THE GREEN LIMIT SWITCH WIRES TO THE CORRECT RJ45 WIRES.

THE IMAGE TO THE LEFT SHOWS THE COLOR CODE FOR WHICH RJ45 WIRE GOES TO WHICH LIMIT SWITCH

J1 = WHITE / ORANGE STRIPE

J2 = ORANGE / WHITE STRIPE

J3 = WHITE / GREEN STRIPE

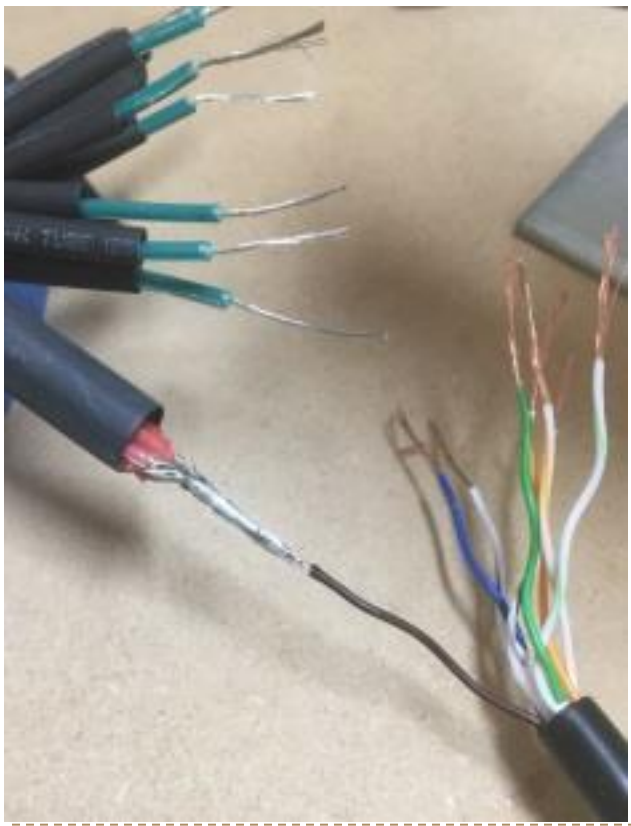
J4 = BLUE / WHITE STRIPE

J5 = WHITE / BLUE STRIPE

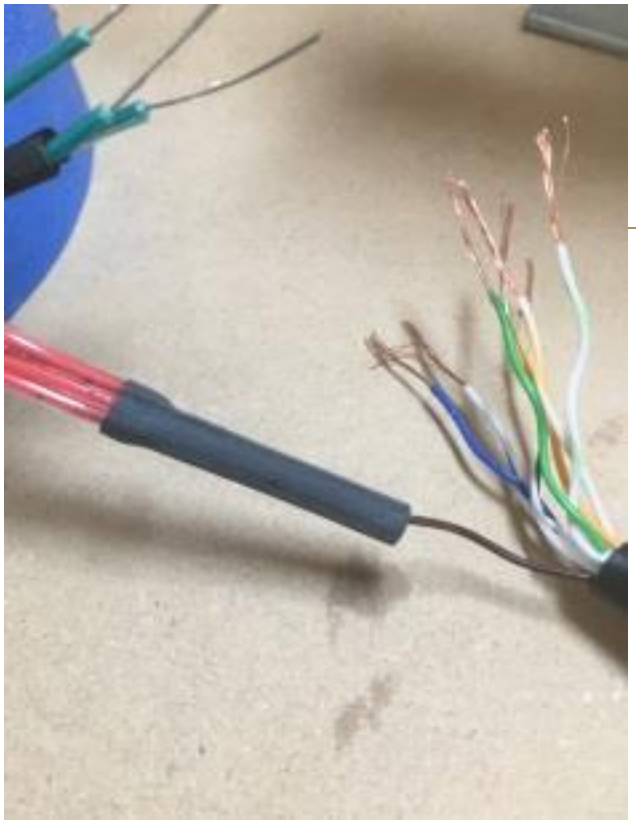
J6 = GREEN / WHITE STRIPE

COMMON NEGATIVE = WHITE / BROWN STRIPE.

COMMON POSITIVE = BROWN / WHITE STRIPE.



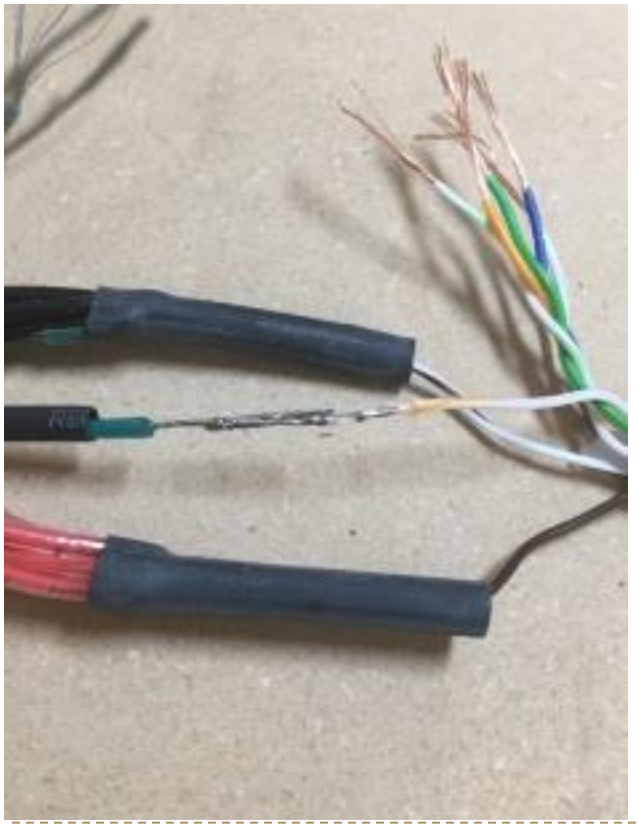
SOLDER BROWN WIRE FROM RJ45 TO THE GROUP OF RED WIRES AS SHOWN.



SLIDE HEAT SHRINK TUBE OVER SOLDER JOINT AND USE HEAT GUN TO SHRINK TUBE.

SOLDER WHITE / BROWN STRIPE WIRE TO THE GROUP OF BLACK WIRES.

SLIDE HEAT SHRINK TUBE OVER SOLDER JOINT AND USE HEAT GUN TO SHRINK TUBE.



TRACE UNPAINTED GREEN WIRE FROM SHORT J1 LIMIT SWITCH WIRE AND SOLDER TO THE WHITE / ORANGE STRIPE WIRE.

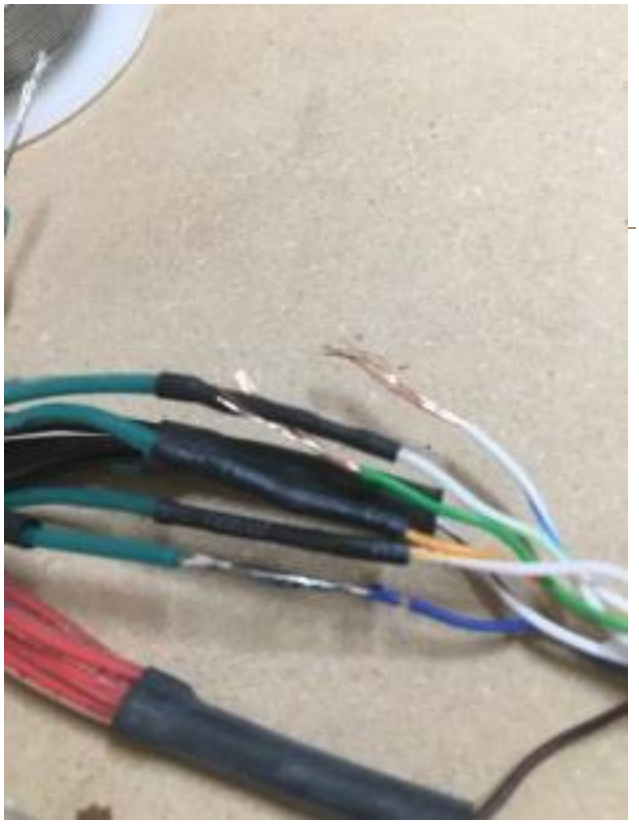
THEN SLIDE HEAT SHRINK TUBE OVER SOLDER JOINT AND SHRINK WITH HEAT GUN.

FIND THE J2 LIMIT SWITCH WIRE WHICH WAS MARKED WITH BLUE PAINT PEN AND SOLDER TO THE ORANGE / WHITE STRIPE WIRE.

THEN SLIDE HEAT SHRINK TUBE OVER SOLDER JOINT AND SHRINK WITH HEAT GUN.

FIND THE J3 LIMIT SWITCH WIRE WHICH WAS MARKED WITH RED PAINT PEN AND SOLDER TO THE WHITE / GREEN STRIPE WIRE.

THEN SLIDE HEAT SHRINK TUBE OVER SOLDER JOINT AND SHRINK WITH HEAT GUN.



FIND THE J4 LIMIT SWITCH WIRE WHICH WAS MARKED WITH YELLOW PAINT PEN AND SOLDER TO THE BLUE / WHITE STRIPE WIRE.

THEN SLIDE HEAT SHRINK TUBE OVER SOLDER JOINT AND SHRINK WITH HEAT GUN.

FIND THE J5 LIMIT SWITCH WIRE WHICH WAS MARKED WITH WHITE PAINT PEN AND SOLDER TO THE WHITE / BLUE STRIPE WIRE.

THEN SLIDE HEAT SHRINK TUBE OVER SOLDER JOINT AND SHRINK WITH HEAT GUN.

FIND THE REMAINING J6 LIMIT SWITCH WIRE WHICH WAS NOT MARKED AND SOLDER TO THE GREEN / WHITE STRIPE WIRE.

THEN SLIDE HEAT SHRINK TUBE OVER SOLDER JOINT AND SHRINK WITH HEAT GUN.

SLIDE THE LARGE 10mm HEAT SHRINK TUBE OVER THE ENTIRE BUNDLE OF JOINTS AND USE HEAT SHRINK GUN TO SHRINK TUBING.

USE STEPPED BIT TO DRILL (x6) 5/8" diameter holes evenly spaced as shown.

Holes are 7/8" from edges and 1" apart.

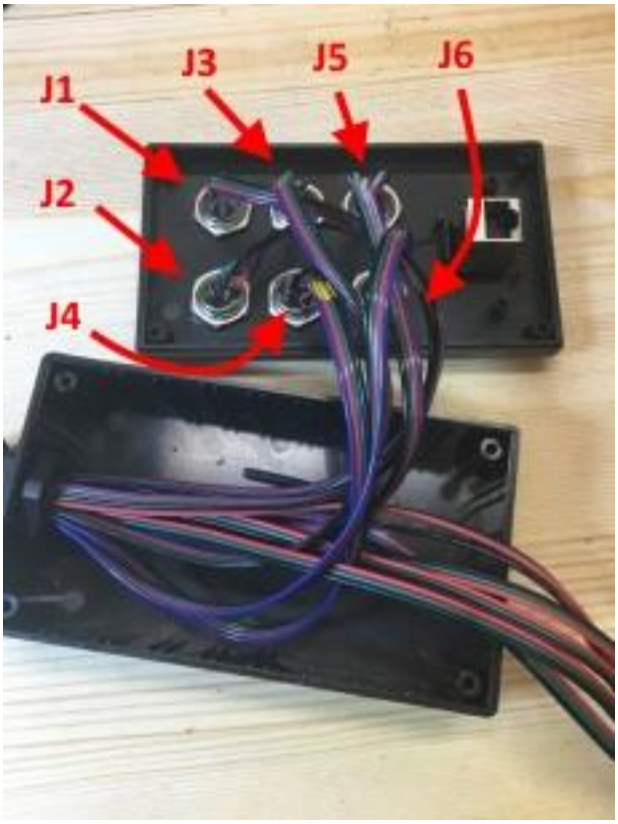
Use drill bit and rotary tool bit to create a square hole at end opposite the 6 holes as shown. Hole should be 7/8" x 3/4" to accept the RJ45 panel mount plug.

Install (x6) male side 4pin aviation plugs and (x1) RJ45 panel mount jack as shown in project box cover.

Solder the J1 motor wires to the back side of aviation plug as shown.

Looking at the back of the connector solder the black wire to upper left , green wire upper right, red wire to lower left and the blue wire to lower right.

VIEW FROM BACKSIDE OF CONNECTOR



Solder the remaining motor wires to aviation plugs as shown.

Install RJ45 plug into panel socket.

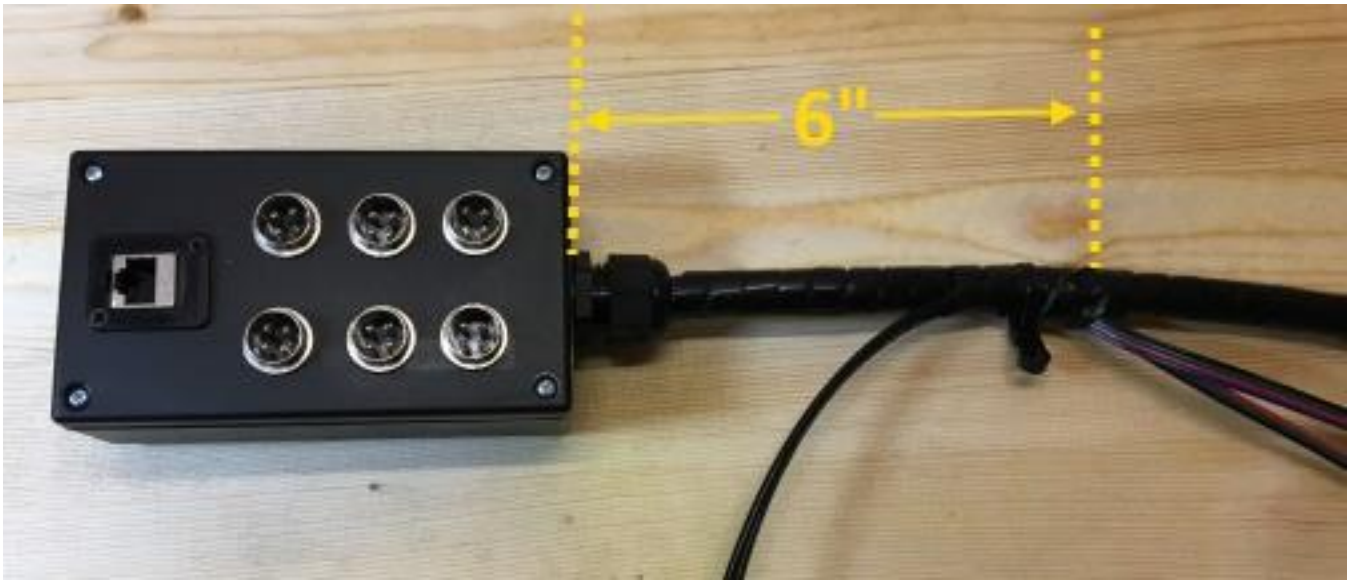
Carefully pull wire slack out and install cover on project box.

Work10mm wire wrap under gland nut and into gland.

Tighten gland nut.

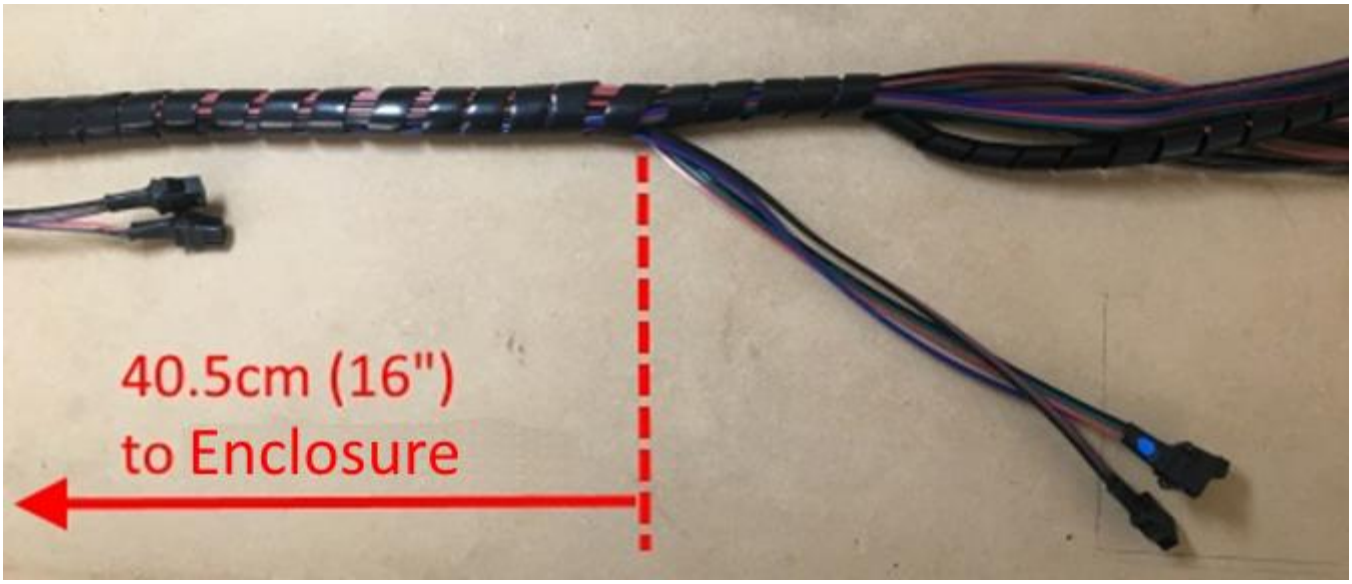
Use digital multi meter to test continuity on every pin of every motor wire and every limit switch wire.

IF YOU WILL BE USING A PNEUMATIC GRIPPER LAY PNEUMATIC LINES ALONG WITH WIRE BUNDLES. THE PNEUMATIC LINES CAN BE AS LONG AS YOU WANT BUT MAKE SURE THE PNEUMATIC LINES EXTEND APPROX 8" PAST THE J6 CONNECTORS AT THE VERY END OF THE HARNESS.



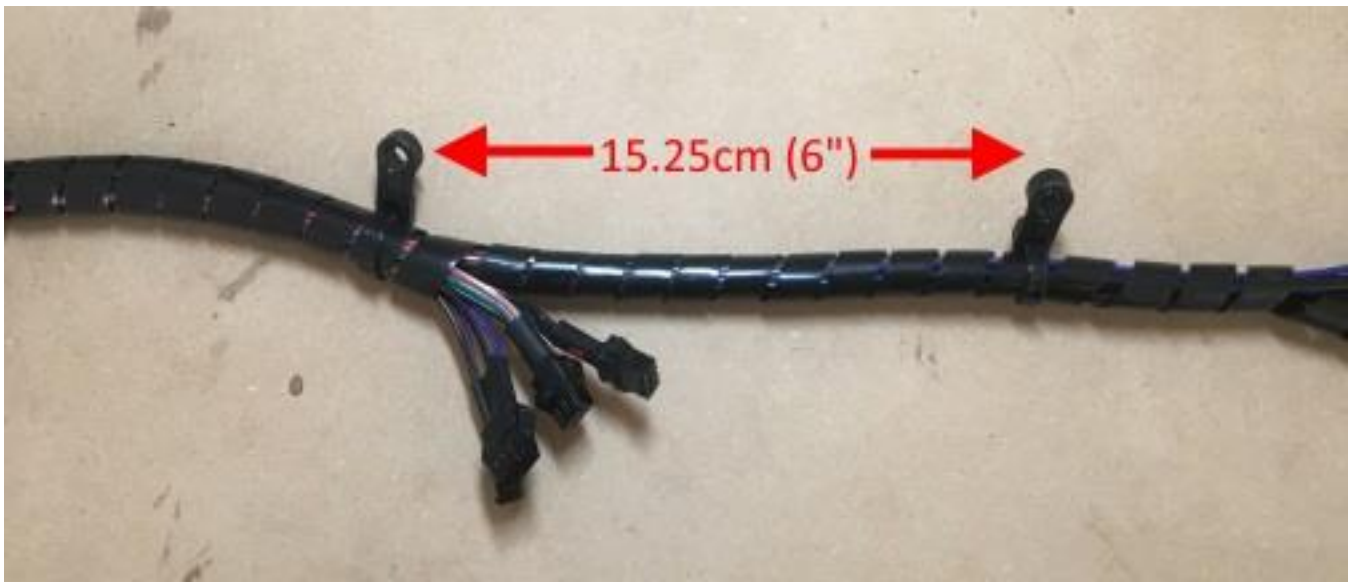
WRAP BUNDLE WITH 10mm SPIRAL WRAP AS SHOWN – WHEN YOU ARE 15.25cm (6") FROM END OF ENCLOSURE PULL THE J1 MOTOR AND LIMIT WIRES OUT OF THE BUNDLE.

CONTINUE WRAPPING SPIRAL WRAP PAST THE SPOT WHERE THE J1 WIRES EXIT THE WRAP – THEN ATTACH A MOUNTING CABLE TIE AS SHOWN.



CONTINUE WRAPING BUNDLE WITH SPIRAL WRAP – WHEN YOU ARE 40.5cm (16") FROM ATX CONNECTOR PULL THE J2 MOTOR AND LIMIT WIRES AS WELL AS THE J2 MOTOR OUT OF THE WRAP AS SHOWN.

CONTINUE WRAPPING BUNDLE WITH SPIRAL WRAP – WHEN YOU GET JUST PAST 69cm FROM ATX CONNECTOR BREAK THE J4 AND J5 MOTOR CONNECTORS AND J2 AND J4 LIMIT CONNECTORS OUT OF THE WRAP. THEN PLACE A MOUNTING CABLE TIE 68.5cm FROM ATX CONNECTOR.



CONTINUE WRAPPING BUNDLE AND PLACE ANOTHER MOUNTING CABLE TIE 15.25cm (6") FROM PREVIOIUS CABLE TIE.

CONTINUE WRAPPING SPIRAL WRAP ALL THE WAY TO THE J6 CONNECTORS AS SHOWN. INSTALL MOUNTING CABLE TIE AT END OF SPIRAL WRAP AS SHOWN.

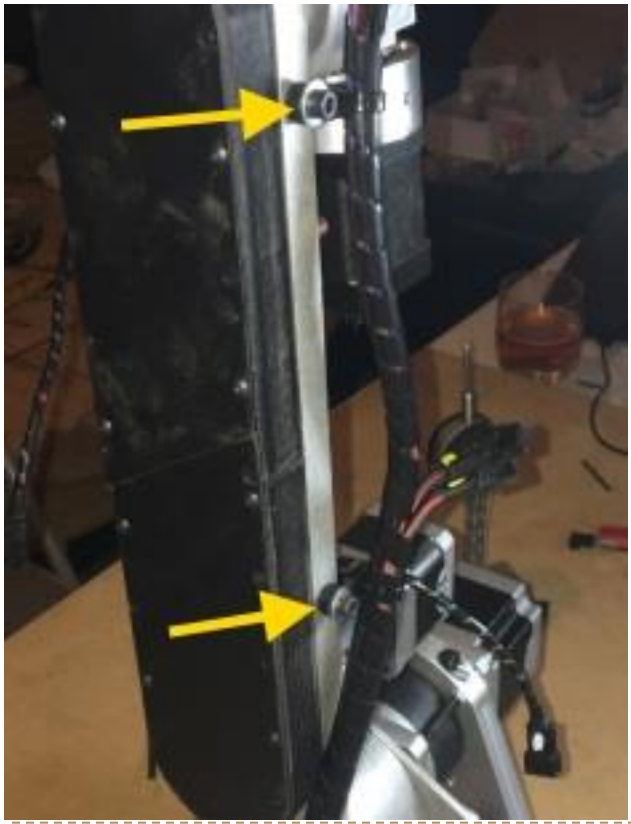
GO BACK TO THE J2 & 3 MOTOR AND LIMIT WIRES THAT EXIT THE LOOM AND WRAP THEM IN SPIRAL WRAP AND THEN WRAP THE JOINT WITH ELECTRICAL TAPE AS SHOWN.

WIRING HARNESS IS NOW COMPLETE

SECTION 6

WIRING HARNESS INSTALLATION

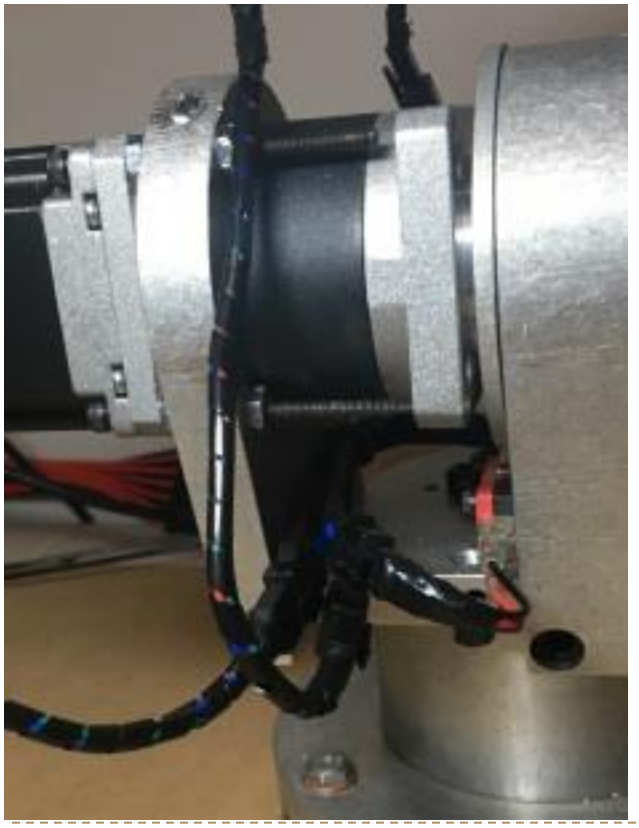
SECURE HARNESS TO BASEPLATE USING M4 SCREW ANDTHEN CONNECT THE J1 MOTOR AND LIMIT SWITCH CONNECTORS.



SECURE THE HARNESS TO THE J2 ARM USING M4 SCREWS THROUGH THE CABLE TIE MOUNTS AS SHOWN.

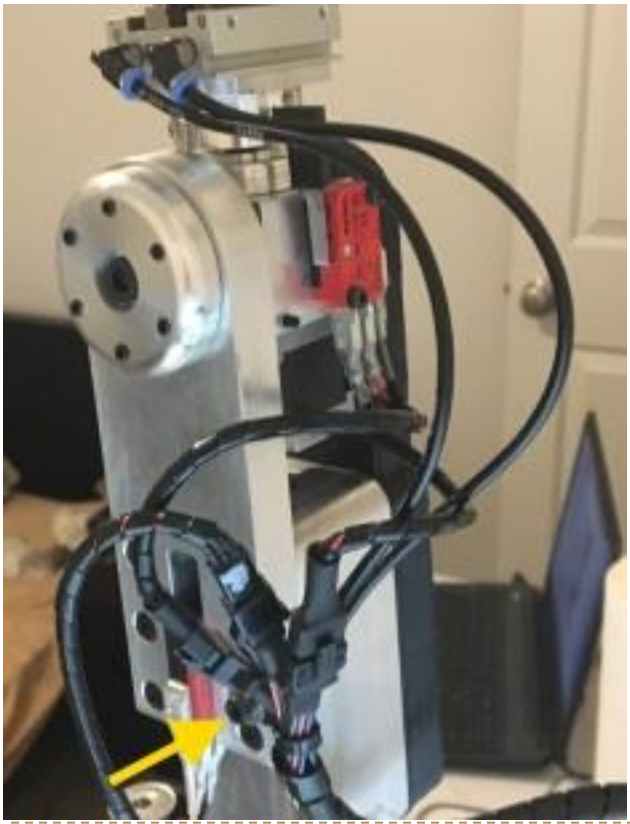
ROUTE THE J2 & J3 MOTOR AND LIMIT SWITCH WIRES THROUGH THE CENTER OF ROBOT AND THEN SECURE TO THE J2 MOTOR SUPPORT PLATE USING A STANDARD CABLE TIE THROUGH THE SIDE HOLE AS SHOWN.

THE CABLE TIE SHOULD REMAIN LOOSE AROUND THE WIRES – JUST TIGHT ENOUGH SO THE CONNECTORS CANT SLIP THROUGH THE TIE AND THE WIRES CANT SWING INTO THE J2 LIMIT SWITCH.



CONNECT THE J2 & J3 MOTOR CONNECTORS AND THE J2 LIMIT SWITCH CONNECTOR AS SHOWN.

CONNECT THE J4 & J5 MOTOR AND LIMIT SWITCH CONNECTORS AS SHOWN.



SECURE THE END OF THE HARNESS TO THE J5 SUPPORT ARM AS SHOWN USING A M4 SCREW AND THEN CONNECT THE J5 & J6 CONNECTORS AS WELL AS THE PNEUMATIC GRIPPER TUBES.

THIS CONCLUDES THE WIRING HARNESS MANUAL – PLEASE VISIT THE PROJECT PAGE AND REVIEW THE VIDEO ON STARTUP AND CALIBRATION.

SECTION 7

MOTOR CABLES

You will need to make 6 cables for the robot and a 7th if you are building a travel track.

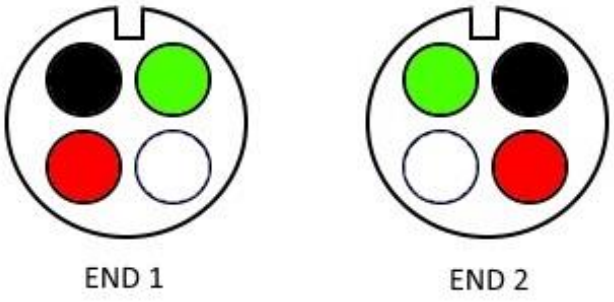
Cut each cable to whatever length you need – in this example I have cut each cable to 6' long.

Strip 10mm of outer sheathing off each end of cable.

Strip 5mm sheathing off each wire and then tin each wire with solder as shown.

Pre apply solder to each contact on connector.

Solder wires to each contact on connector – see following steps for wire position.



VIEW FROM BACK SIDE OF CONNECTORS

Cables are "straight through" - solder wires on each end of cable mirror image to the other as shown in the sketch and photo shown.

Wrap electrical tape around solder joints to prevent any potential short on connector housing.

Slide connector housing over connector and install screw.

Tighten screws on wire clamp.

Repeat this process for each cable needed.