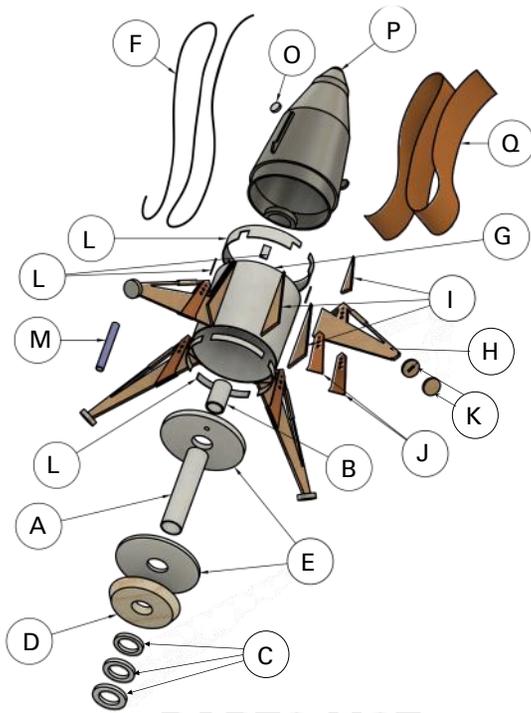


EXPLODED VIEW



PARTS LIST

A	1	Motor Tube	BT-2-1.25
B	1	Thrust Block	TB-2
C	3	Nozzle Rings	TKMX-02
D	1	Base Disk	FMX-02
E	2	Centering Rings	TKMX-02
F	1	Kevlar Shock Cord	SCK-18
G	1	Body Tube	ST-11-1.094
H	4	Lander Legs	FMX-02-A
I	12	Leg Supports	FMX-02-A
J	8	Strut Support Details	LSKMX-02
K	8	Foot Pads	FMX-02
L	12	Body Wraps	PWKMX-02
M	1	Launch Lug	LL-MX-1
N	1	Stuffer Tube (Not Shown) ..	BT-2+1.5
O	2	Antenna Dishes	FMX-02-A
P	1	3D Printed Nose Cone	PNC-11-3D-ML
Q	1	Streamer Pack	SP-112
R	1	Leg Alignment Tools	TKMX-02
		(Not Shown)	
S	1	Decal Sheet	DKMX-02
		(Not Shown)	

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About the MX Mars Lander™

The MX Mars Lander is a Downscale of the Estes Mars Lander that was introduced in 1969. It was designed by Wayne Kellner. The full size Mars Lander had operating Landing gear. The Mars Lander was released as Cat. No. K-42 and had an introductory price of \$4.75.

Jay Berry was inspired to engineer the MX Mars Lander™ to utilize the Micro Maxx brand of engines. These engines allow MX rockets to be flown in a smaller flying field for greater recoverability.

The plan was to keep the kit simple, while Phil Queen was creating the instructions and building and flying this tiny kit he decided there was room for more detail. A big thanks goes out to Mark McBride for going so far as creating an outstanding 3D printed nose cone that is light enough to allow a tiny kit like this to fly.

About Semroc

Semroc Astronautics Corporation was started by Carl McLawhorn in his college dorm at North Carolina State University in November, 1967. Convincing a small group of investors in his home town of Ayden, North Carolina to invest in a small corporation, the company was re-incorporated as Semroc Astronautics Corporation on December 31, 1969.

Semroc produced a full line of model rocket kits and motors. At its peak, Semroc had twenty-five full time employees working at two facilities. One was for research and development, printing, shipping, and administration. The other was outside of town and handled all production and model rocket motor manufacturing. For several years, Semroc successfully sold model rocket kits, supplies, and motors by mail-order and in hobby shops. In early 1971, Semroc became insolvent and had to close its doors.

After 31 years of dreams and preparations, Semroc Astronautics Corporation was reincorporated on April 2, 2002 with a strong commitment to putting the fun back into model rocketry. Many years of excellent service to the rocketry community passed by until sadly, on August 11 2013, Carl passed away and left a great void in the hearts of many rocketeers. He is forever in our hearts and minds.

In February of 2015, Semroc was sold to eRockets and moved to Dayton, Ohio where it resides today. It is our goal to continue the level of service and dedication to the hobby Carl and his family were so well known for. We strive to serve you, our customers, to the best of our abilities as we carry the vision of Carl McLawhorn boldly into the future.

SEMROC

mx Mars Lander

High Quality 3D Printed
Nose Cone

Colorful Decals

Laser Cut
Parts

Construction
Jig



Engineered by
Jay Berry
Phil Queen
Mark McBride

Made in the U.S.A by Semroc - Dayton, Ohio

MX Mars Lander™ Kit No. KMX-02

Specifications		Engine	Approx. Altitude
Body Diameter	1.18" (3.0cm)	Micro Maxx	50'
Length	3.9" (9.9cm)		
Fin Span	4.6" (11.68cm)		
Net Weight	0.42 oz. (11.9g)		

Skill Level 3

TOOLS

You will need the following for your assembly:
Emory board or File Knife Scissors Tweezers (helpful)
White or Wood Glue 220 Grit Sandpaper
Medium Viscosity Super Glue Brush or Spray Paint

MOTOR MOUNT ASSEMBLY

❑ 1. Locate the Motor Tube (A) and the Thrust Block (B). Glue the Thrust Block into the Motor Tube inserting the Thrust block until it is flush with the end of the Motor Tube.

❑ 2. Find the piece of cardstock that has the three (3) rings on it. These rings make up the Nozzle at the end of the motor tube. Carefully remove the rings from the cardstock. **Do not discard the scrap piece of cardstock at this time. You will need it later.**

❑ 3. Glue the Nozzle Rings (C) onto the Motor Tube (A) on the end opposite the Thrust Ring (B). Make sure you put the smallest ring on first and the largest ring on last. Keep these flush with the end of the motor tube.

❑ 4. Once the glue has dried on the Nozzle rings, use a file or some sandpaper to smooth the rings into a cone shape. An Emory Board works very well to do this.

❑ 5. Glue the Base Disk (D) on the Motor Tube next to the Nozzle Rings. Make sure the etched on ring on the disk is facing the Nozzle Rings. Remove the Bottom Centering Ring (E) from the middle of one of the Leg Alignment Jigs. The Bottom Centering Ring does not have the small hole for the shock cord. The Bottom Centering Ring goes against



the Base Disk. The Base Disk needs to be beveled to the line on the disk. Again use a file or sandpaper to shape the disk so that it has a taper from the edge to the line as shown in the picture at right.

❑ 6. Tie a small loop in one end of the Kevlar shock cord (F), large enough to go around the Motor Tube. Remove the remaining Centering Ring (E) from the other Leg Alignment Jig and feed the end of the Kevlar cord without the loop through the small hole. Slide the loop on the Kevlar cord around the motor Tube and slide the Centering ring onto the end of the Motor Tube that has the Thrust Block. Use the notch in the side of the Leg Alignment Jig to position the Centering Ring on the Motor Tube. The Centering Ring should be 1/4" from the end. Put a glue fillet on the Centering Rings to hold them in place. Set aside to dry.

ATTACH LANDING LEGS

❑ 7. If you haven't cleaned up the Leg Alignment Jigs, go ahead and do so now. Start by Sliding both Alignment Jigs onto one end of the Body Tube (G). Carefully remove one of the Lander Legs (H) from the Laser Cut Basswood Sheet and glue it to the body tube (as shown in the picture at right). Make sure the leg is flush with the end of the body tube and is firmly against the tube. Set the tube and the Jigs on a flat surface to keep the legs perpendicular to the body tube. Continue adding legs to the body tube until you have all four (4) legs in-



stalled. You will most likely have to set the body tube on it's top to glue legs 3 and 4 on because of the way they extend past the jigs, but if the first two legs are dry enough, they should keep the others in line without any problem.

❑ 8. Once the Legs are dry enough, it's time to start gluing on the leg supports (I). Start by gluing on a large support on one side of a leg as shown at right. The Short Side of the Triangle goes toward the bottom and should be flush with the end of the body tube. Also make sure it is snug against the leg. Repeat for the other 3 legs.

❑ 9. Continue adding to the leg supports by gluing the smaller section to the outside piece. **Note:** The edge with the square corner goes against the body tube as shown. These pieces should be glued flush with the side piece. Again, keep everything nice and tight. Repeat for the other 3 legs.

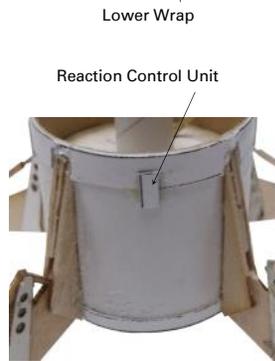
❑ 10. Finish the leg supports by gluing the final outside support to the opposite side of the leg. Keep the top side flush with the center section and the bottom flush with the bottom of the body tube. Repeat for the other 3 lander legs.

❑ 11. Locate the Strut Support Detail Pieces (J) and apply them to both sides of the leg. Align them with the support on the leg and keep them flush with the bottom of the leg. Add the Foot Pads (K) to the end of the legs. Put the one with the slot on first and then a second one centered on the first with the wood grain running opposite.



BODY WRAPS

❑ 12. Carefully cut out the Body Wraps (L) from the Cardstock Sheet. These will be glued to the top and bottom edges of the Body Tube between the Landing Legs. Start by putting a small line of glue along the bottom edge of the body tube and placing a straight Body Wrap even with the edge of the Body Tube. Depending how well you got the Leg Supports glued to the legs, you may need to trim the Wrap to length before gluing it to the body tube. Once you have all 4 Lower Wraps glued on, proceed to the Upper Wrap. You will notice it has been designed with notches on the ends to fit around the tops of the Leg Supports. Again, fit as needed keeping these even with the top of the body tube. Once the Upper Wraps, (4), have been applied, add the Reaction Control Unit to the center of the Upper Wrap and place it over the box marked with the X.



❑ 13. Using Medium Cure Super Glue, attach the Launch Lug (M) to the body tube next to one of the Leg Supports. Center the Launch Lug between the top and bottom of the body tube

INSTALL MOTOR MOUNT

❑ 14. Take the shock cord and store it in the end of the motor tube so it is out of the way. Place a generous bead of glue around the lower edge of the inside of the Body Tube. Put a generous bead of glue on the underside of the upper centering ring of the Motor Mount.

Pass the Upper Centering Ring through the ring of glue in the Body Tube and then insert the Lower Centering ring into the Body Tube. Using the notch in the piece of fiberboard that had the Nozzle Rings, locate the Motor Mount in the body tube. Rotate the Body tube several times to get the glue to adhere to all the parts and form a good joint. Set aside to dry.



❑ 15. After the Motor Mount has cured sufficiently remove the shock cord from the motor tube and glue the Stuffer Tube (N) to the top of the Motor Tube. The Stuffer Tube should slide over the end of the Motor Tube and rest against the Upper Centering Ring. Add a fillet of glue around the Stuffer Tube to seal and hold the tube.



FINAL ASSEMBLY

❑ 16. Glue the Antenna Dishes (O) to the top of the molded on conduit on the 3D Printed Nose Cone (P). Extra Dishes have been included in case you lose any. These are the small disks located on the Basswood Fin Sheet. These Dishes should be centered on the conduit with the dish sticking up above the top of the conduit.

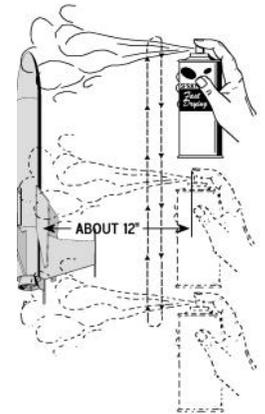


❑ 17. Tie the Shock Cord to the small loop in the Nose Cone. Make sure the cord is firmly attached. Take the piece of Streamer Material (Q) and cut it in half lengthwise so it is 1/2 inch wide. Once you have the streamer cut to width, secure one end of the Streamer to the Shock Cord with Masking Tape as shown at right.



FINISHING YOUR MODEL

❑ 18. Now that you have completed assembly of your MX Mars Lander it is time for finishing. For best looking results, we recommend starting off giving your model a base coat of White Paint. Spray Paint is the easiest, but put it on in very light mist coats to avoid runs in the paint. Once you have a good Base coat finished you can proceed with the following colors.



Overall Model	White
Landing Gear	Red
Strut Supports	Orange
Large Exhaust Ring	Black
Exhaust Nozzle	Gold
Landing Gear Pads	Silver
Control Cylinders	Silver

❑ 19. Refer to the photo on the front of the instructions for decal placement. The decals supplied are waterslide decals. Each decal should be cut separately from the sheet. Apply each decal before starting the next. Think about where you want to apply each decal and check for fit before wetting the decal. Soak each decal in water for about 30 seconds or until it slides easily off the backing paper. Slide the decal off the paper and onto the model surface. Blot dry using the backing paper.

FLIGHT PREPPING

❑ 20. The MX Mars Lander is designed to fly on the Micro Maxx Motor. It needs to be friction fit with some masking tape in the motor tube to keep it from being expelled when the ejection charge goes off.

❑ 21. Pack the streamer and shock cord around the stuffer tube and install the nose cone. Recovery wadding isn't required in the stuffer tube but it is recommended, just to help protect the nosecone.

❑ 22. Prepare a Micromax Launch Pad with a Starter. Slide the MX Mars Lander down the launch rod onto the Starter. Connect the ignition wires. Conduct a countdown. 5-4-3-2-1-Launch.

We recommend the eRockets eR 9080 Launch Rod and Holder to launch your MX Mars Lander.

Have Fun with your MX Mars Lander.