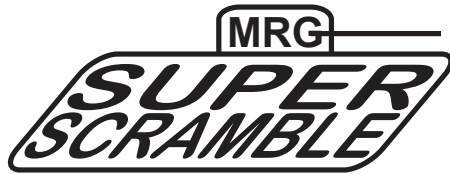


Manitoba Robot Game's **Super Scramble** Instruction Set



We at the Manitoba Robot Games, want you to have a successful and fun time building and competing with your Super Scramble Robot. If you have any comments please direct them to Ian at rcdesign@mts.net

Follow these steps to construct your first competitive robot.

Step 1

READ all the instructions carefully before opening any packages!

Step 2

There are many ways to build your robot. Study the options and make a decision. You can always rebuild it later in a different configuration. Winning robots are always the result of testing, modifications, rebuilds, improvements, sweat and some luck.

Step 3.

Collect all the tools you will need, and especially a tray so that small parts have less chance of rolling onto the floor and falling into oblivion.

Tools

You will need:...

Hobby Knife., Small Side Cutters, #1 Phillips Screwdriver, Small Needle nose Pliers, Soldering Pencil and Solder, Materials to customize your robot.

Also useful:..., Electrical Tape, Crazyglue or 5 min Epoxy.

The safest knives are sharp ones. Hobby knives can be sharpened on a small piece of waterproof sand paper about 320 or 400 grit (that is the black sandpaper with the green backing).

Gear Box Options

The Tamiya gearbox that is included in your kit can be assembled in one of three ways as shown on the gearbox carton. The front of the box shows an A type and the back of the box shows types A, B and C

A & B are variations on the same 58:1 gear ratio. This gives a higher speed but lower torque robot. A and B are the same ratio but have axle at different the heights. Probably A is the better choice as it keeps the gearbox as low as possible to the ground.

The C type functions better in the reverse direction to the A and B types but has a 203:1 gear ratio which means a lower speed but higher torque. Head to head the stronger of the two and because of the lower speed it is easier to steer, but the object of this competition is "first to the opposite end".

Universal Plate Options

The Tamiya Universal Plate that is included in your kit is a quick and convenient way to mount the gearbox and wheels, but you can use any other material, including wood, aluminum, sheet plastic or a coke bottle. Let your imagination fly!

Track Options

The Tamiya track that is included in your kit can be assembled to combine to make several different lengths of track. You can either choose the layout of the driving and support wheels then adjust the track to fit or make up the track then move the wheels to provide the tension on the track.

The track kit assumes that you will use the axles provided but that limits the clearance under the robot, To create the greatest clearance between the body of the robot and any obstacles then the idler wheels need to be mounted as much as possible within the verticle area bounded by the track.. This may need you to aquire some other materials, not provided in this kit..

An important variable in track efficiency is the amount and type of support given to

Track Options cont...

the track between the driven and bounding wheels. The ideal support would change between convex, concave and straight depending on the terrain, but that is probably impractical. Having a sprung section helps to conform to the terrain but may not be able to maintain the ideal tension between the track and the driven wheel. You may need to do some experimentation in this area.

Step 4

Route the control wires and connect to the motors.

Step 5

A good design is never complete. Here are some suggestions to improve your robot's chance of winning.

Optimizing Appearance

There is only one rule that applies here, which states that the name of the robot or suitable identity for the robot must be clearly visible so that spectators can identify the contestants. There are many options here. You could shape a body from styrofoam and paint it, add sponsor's decals, or simply have the robot's name emblazoned across the front in flashing lights. It's your choice. Have fun with this step but remember to keep the message appropriate, after all, your robot may be displayed in the news media.

Making the Electrical Connections

The controller in your kit will need some assembly. There are instructions inside the box. As with the gear box, be sure to add grease to the moving parts.

Be sure to secure the wires to the body so they are not pulled from the solder tabs on the ends of the motors. We suggest installing two "C" cell batteries into the controller body and then hold the Blue and Yellow wires to the right motor tabs. Push the right controller lever forward and look at the direction that the track rotates. It should be going forward. If that is not the case then swap position of the Blue and Yellow wires and try again.

When you are satisfied that you have the correct wiring pattern, you may solder these connections. Repeat this with the left motor and the White and Red wires.

TIP.. After soldering the wires to the motor and testing it, wrap some PVC electrical tape around both motors. This will ensure the wire connections are safe from damage and keep the motors from being ejected due to any gear backlash.

Optimizing Performance

Think about the shapes that the robot will have to climb over, half cylinder, step, diagonal steps, sand, rolling spheres and rolling cylinders. What will be the best attack angle of the track in order to gain the best purchase on that surface? Try to find a compromise between each shape/material. How can you best support the track between the idler wheels?

Remember that the Maximum size for your robot is 20 cm x 20 cm. and no more than 15cm high.

One of the rules says that the robot must be able to accept a 1" diameter Steel ball from a height of 7" from the playing field surface and still have this ball at the completion of the course. A simple, and inexpensive, container to accomplish this is the top third of a 600 ml soft drink bottle mounted upside down. Can the location of the steel ball trigger a light to tell you that the round has begun?

Each Robot should be Unique and Identifiable.

Don't forget to add your Robot's Name also.