52278 Robo-Spider Instruction Poster frontside Size: 430 mm (16.9")(W) x 580 mm (22.8")(H)

5 Colors : C M Y K PMS 877C metallic spot color

Smithsonian®



Spiders:

There are more than 38,000 species of spiders in the world!

All spiders are carnivorous!

Spiders have been sent into Space!

INVERTEBRATES
Invertebrates are animals that do not have a backbone, and they account for almost 97 percent of all known animal species worldwide. Within the invertebrate group are sponges; cnidarians (jellyfish); worms; mollusks (octopus); echinoderms (starfish); chordates; other minor phyla; arthropods (the largest phylum of living organisms at about 1.2 million species: insects, centipedes and millipedes; crustaceans (shrimp and crabs); and finally arachnids (spiders and scorpions). Tarantulas are in the super family Avicularioidea and are generally considered separate from the "true spiders," which are in the superfamily Argiopoidea.

Spiders are a large, distinct, and widespread group, and they come in a wide variety of shapes, colors, and sizes. Certain orb web spiders from Samoa are as small as a pinhead, while the Goliath bird-eating tarantula can have a leg span of more than ten inches. Today there are more than 38,000 described species in the world. The earliest evidence of spiders comes from a 380 million year old (Devonian) fossil. Spiders occur in many types of habitats and are often very abundant. Typical temperate habitats may support up to 800 individual spiders per square meter. Point estimates of spider diversity suggest that more than 600 species may be found in a single hectare of tropical forest.

FEEDING
All spiders are carnivorous. Most eat small insects, but many will eat other spiders, sometimes even ones of their own species. Some larger species of tarantula will eat vertebrates on occasion. Instead of chewing, spiders use another technique to swallow prey. Their mouths are designed to ingest only liquid food, so they use venom to liquefy the tissue of their prey, which they can then swallow. The majority of spiders are web-builders which is how they catch their prey. They wait for insects to get stuck in their web and then pounce on them. Some spiders such as the wolf-spiders and jumping spiders are considered wandering spiders because instead of building a web and waiting, they actively hunt prey. There are others – certain crab-spiders and some species of the genus Misumena – that ambush prey by hiding in flowers and killing the insects that come to pollinate them. Commensal spiders (a species of the genus Argyrodes) live in the webs of larger species and feed on the smaller insects with which the web's owner doesn't bother.

HABITAT
Spiders can be found everywhere from coastal areas to mountainous regions, even in harsh deserts. The only places spiders do not live are in the polar regions, at the peaks of the world's talent mountains, and in open waters of the ocean. They can be found in thick shrubbery, high up in trees, in pastures, beneath stones and fallen trees, in burrows beneath the soil, and even in rock and coral crevices on coastlines. Because of their increasing contact with humans, many spiders now live in the corners of buildings and other man-made structures.

BODY
The body, covered with a protective shield called the exoskeleton, is divided into two sections: the cephalothorax (a fusion of the head and thorax) and the abdomen. Spiders have up to eight eyes, although many species have just six. On the head region of the cephalathorax is the spider's chelicerae, which are a pair of appendages used to seize and kill prey. At the end of these limbs are fangs, which contain poison glands used by spiders to inject venom. Also attached to the head region is a pair of pedipalps, which are short, leg-like appendages, which are used to manipulate prey. The thorax region of the cephalothorax is host to the spider's four pairs of legs. After the cephalothorax is the spider's abdomen, which is covered in spiracles – tiny openings used for respiration. The abdomen also is where spiders have their web-producing spinning organs.

HOW SPIDERS WALK
When you watch a spider walk, it is hard to figure out what the legs are doing; they seem to move in different directions at different speeds. But, that is not the case. It is quite simple. Spiders have four pairs of legs. The first and third pair ("first set") move in unison together, while the second and fourth pair ("second set") move in unison together, opposite of the first set. So as the first set move forward, the second set is moving backward and then vice versa.

SPIDERS IN ART
African artists create striking works of art using images based on an array of domestic and untamed animals. Animals are used as symbols of leadership, to tell the history and moral values of their makers. Animals may be picked because they are beautiful, strong, fierce, well-armored or have special skills. Sometimes the sound the animal makes or the way it moves is important.

In the African culture, spiders represent wisdom and divination and serves as a channel of communication with the spirit world and, as such, its image is also linked with leadership and rulers. Because the ground-dwelling tarantula (or earth spider) lives underground in spider silk-lined nests, it is thought to be closer to the realm of the dead who are buried in the earth. The spider's ability to produce spider silk also places it in a special group of animals and insects that share skills with humans-in this case, the talent to spin or weave. Anansi the spider is a trickster whose stories were brought to America where the spider was transformed into the clever Brer Rabbit.

FUN FACT
Arabella and Anita have the right stuff. These two common spiders were NASA's first eight-legged astronauts! Anita and Arabella got their mission because a high-school student named Judy Miles wondered if spiders could spin webs in a weightless environment. She suggested sending spiders into space to find out. NASA space scientists liked her proposal and went to work designing special cages, lights, and cameras.

On August 5, 1973, Arabella and Anita blasted off into space on Skylab II. On her first day in orbit, Arabella didn't do well. She spun sloppy webs and obviously felt the effects of weightlessness. However, by her third day in space, she was spinning just as though she were back at home. Her webs were finer in space, which was expected, but the pattern remained the same. She proved that spiders can spin nearly Earth-like webs in space. Their bodies are memorialized for their small, vital part in increasing our knowledge of space and are part of the Smithsonian's collections.

Robo-Spider

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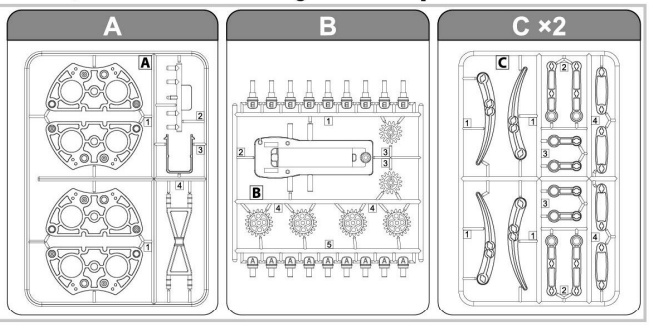
DIAGRAM OF PARTS

Smithsonian **Robo-Spider** **Ages 8 and up** **ITEM # 52278**

P1 Gear box	P2 Terminal	P3 Terminal	P4 Rubber tube	P5 Battery Cover
Qty 1	Qty 1	Qty 1	Qty 1	Qty 1

Wire Cutter	Scissors	1.5V AA Battery	Screw drive
Not included	Not included	Not included	Not included

Plastic Parts:
Using a diagonal cutter (not included) and with adult supervision, cut apart the plastic parts in order as shown.



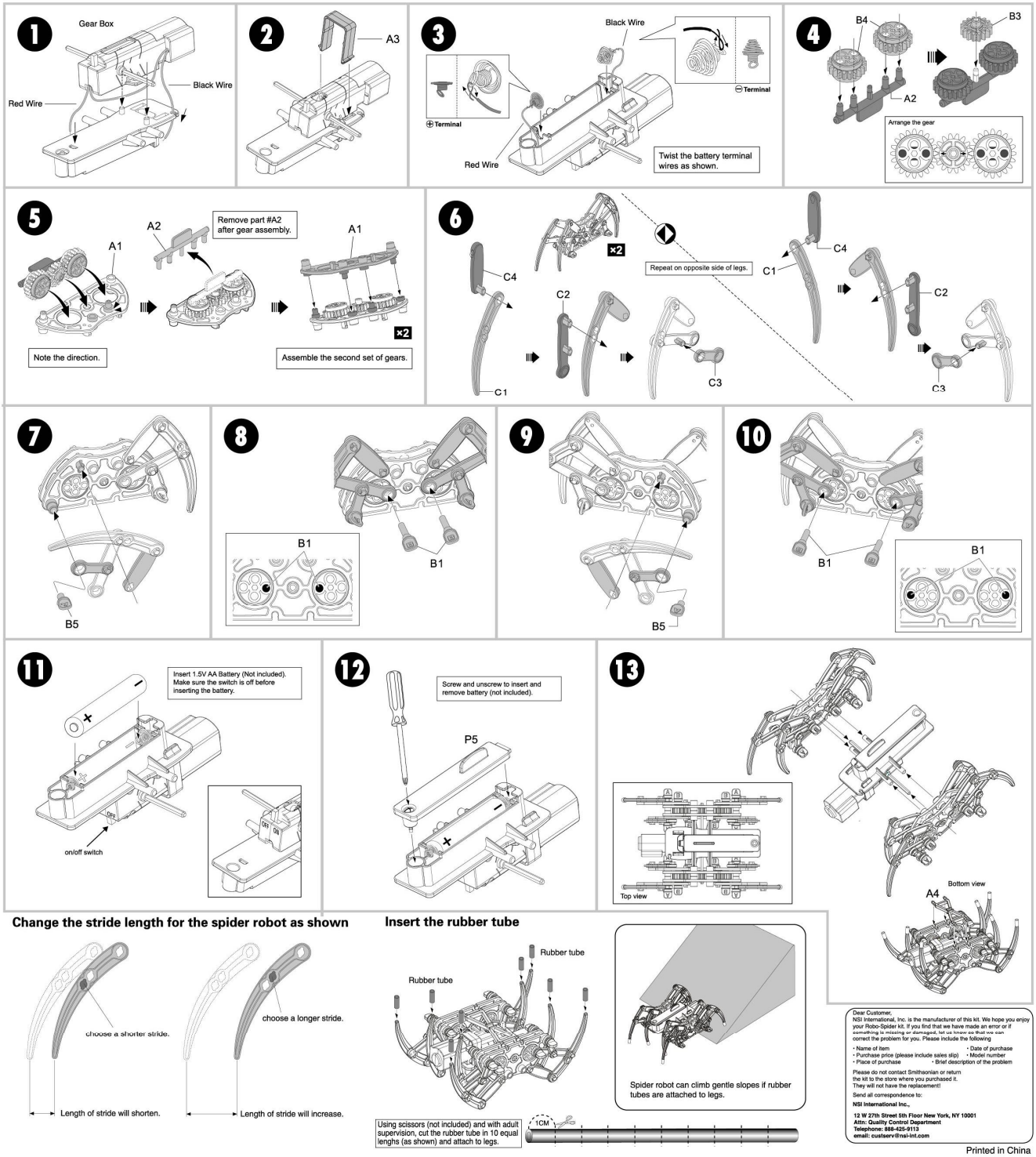
Mechanical Parts

⚠ WARNING:
CHOKING HAZARD - Small parts.
Not for children under 3 years.

BATTERY SAFETY INFORMATION
- Non-rechargeable batteries are not to be recharged.
- Rechargeable batteries are to be removed from the toy before being charged.
- Rechargeable batteries are only to be charged under adult supervision.
- Different types of batteries or new and used batteries are not to be mixed.
- Only batteries of the same or equivalent type as recommended are to be used.
- Batteries are to be inserted with the correct polarity.
- Exhausted batteries are to be removed from the toy.
- The supply terminals are not to be short-circuited.
- Keep packaging for reference since it contains important information.
- Do not mix old and new batteries.
- Do not mix alkaline, standard (carbon zinc) or rechargeable (nickel-cadmium) batteries.

ASSEMBLING YOUR ROBO-SPIDER

Adult Supervision required.



Change the stride length for the spider robot as shown

Insert the rubber tube

Using scissors (not included) and with adult supervision, cut the rubber tube in 10 equal lenghs (as shown) and attach to legs.

Dear Customer,
NSI International, Inc. is the manufacturer of this kit. We hope you enjoy your Robo-Spider kit. If you find that we have made an error or if something is missing or damaged, let us know so that we can correct the problem for you. Please include the following

- Name of item
- Date of purchase
- Purchase price (please include sales slip)
- Model number
- Place of purchase
- Brief description of the problem

Please do not contact Smithsonian or return the kit to the store where you purchased it. They will not have the replacement!

Send all correspondence to:

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Attn: Quality Control Department
Telephone: 888-425-9113
email: custserv@nsi-intl.com

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