D. OPERATION

Hold the Robotic Hand with its flat face (i.e. the back of the hand) facing up. Grasp the frame with your right hand, with its palm facing down. Put your first three fingers into the pull rings, holding the frame with your thumb and little finger. Pull on the rings to make the Robotic Hand's fingers and thumb bend.
Can you grip your other hand? Can you pick up an object? Put a glove onto the Robotic Hand, and find a shirt or other top with a sleeve long enough to hide your real hand when you are holding the Robotic Hand's frame. Shake hands with your friends with your unique Robotic Hand. They will be amazed!

E. HOW IT WORKS

When you pull on one of the rings, the strings shorten the inside of the fingers attached to the ring. The outside of the finger remains the same length, so the shortening makes the fingers bend inwards.

F. FUN FACTS

• Industrial robots work in factories, moving and joining parts of things being made. They have grippers for picking up objects, with two or three fingers that can open and close.

• In robot hands, the fingers are moved by tiny motors, hydraulic rams or air-powered artificial 'muscles'.

• Robot researchers have built robot hands that look like human hands and have fingers that move like human fingers. They are very complicated machines, using many joints and a dozen or more motors.

• Human-like robot hands could be used in humanoid robots.

• Robot hands have pressure sensors in the finger tips. When the fingers are gripping an object, the sensors prevent the fingers from squashing the object.

• In human hands, thin tendons running inside the fingers make the fingers bend. The tendons are pulled by muscles in the forearm.

• Prosthetic hands are for people who have lost a hand or arm in an accident. They are like robot hands, but they are controlled by electrical signals from the remaining muscles in the arm.

QUESTIONS & COMMENTS

We value you as a customer and your satisfaction with this product is important to us. If you have comments or questions, or you find any part of this kit missing or defective, please do not hesitate to contact our distributor in your country. You will find the address printed on the package. You are also welcome to contact our Marketing Support Team: Email: infodesk@4m-ind.com, Fax (852) 25911566, Tel: (852) 28936241, Web site: WWW.4M-IND.COM

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ROBOTIC HAND

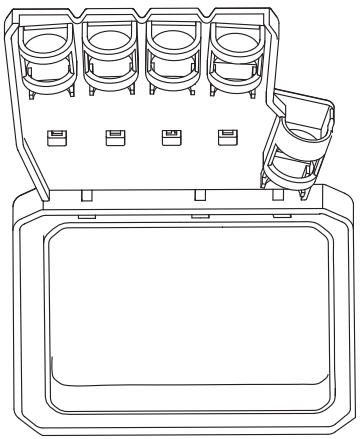
To Parents: Read all instructions before providing guidance to your children.

FOR AGES OVER 8
⚠ WARNING:
CHOCKING HAZARD SMALL PARTS.
NOT FOR CHILDREN UNDER 3 YEARS.

A. SAFETY WARNINGS

1. Please read carefully through all these instructions.
2. Adult supervision and assistance are required at all times.
3. This kit is intended for children over 8 years of age.
4. This kit and the finished product contain small parts which may cause chocking if misused. Keep away from children under 3 years of age.
5. Use of scissors is required. Adult supervision is required when using scissors.

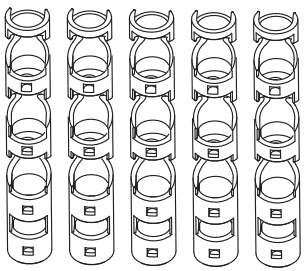
B. CONTENTS



1 hand frame

Fishing lines

5 finger end caps



5 finger tubes

3 pull rings

C. ASSEMBLY

Remarks: You need to tie a number of ***knots*** *on the fishing line in the following assembly instructions. Fishing line is elastic and the knots may loosen themselves over time. Use the measurement templates which indicate the knot positions and lengths of line required. Always tie a few knots to secure the knot in place. Allow extra fishing line when tying the knots. You can always cut away the excess length after the knots are finished.*

1. Starting with the little finger, examine the finger tubes. The end with the narrow ring is the tip and the end with the wider ring is the finger root, which slots into the hand frame. Cut a piece of fishing line 28 cm long. Use TEMPLATE A below for measurement. Place the fishing line on the template and mark the three knot positions with a marker or ball pen on the fishing line. Thread the line through a finger end cap. Tie a few knots at the first knot position to stop it slipping back through the hole in the cap.

2. On the inside of the rings on the finger tubes are small sleeves. Feed the other end of the fishing line through all the sleeves to the end of the finger tube.

3. Now slot the end cap into the end of the finger.

4. Hold the hand frame with the plastic loops facing upwards. Push the finger tube's root end into the first loop. The sleeves holding the fishing line must also be uppermost so that the fingers will bend the correct way.

5. Repeat 1 to 4 steps again for the ring finger (the one next to the little finger).

6. Tie the fishing lines from the first two fingers together at the second knot position. The tied lines should be tight after they are tied. This will allow the fingers to bend properly when the lines are pulled.

7. Thread the ends of the two fishing lines through the first hole in the square holder frame. Tie them into the hole in a pull ring at knot position 3. By now the pull ring should be touching the upper edge of the frame. Cut off any excess fishing line after you have tied all the knots. Try pulling the pull ring – the two fingers should bend properly. If they don't, re-do the knots.

8. Repeat the above steps for the middle and index finger tubes.

9. For the thumb, cut a piece of fishing line 23 cm long and mark the two knot positions following TEMPLATE B below. Now follow steps 1 to 4. Unlike the first four fingers, the thumb does not share a pull ring with another finger. Just tie the line directly to the pull ring at the second knot position.

Check all knots are secured and pull the rings to see if all fingers bend properly. Cut away the excess length. Congratulations! Your Robot Hand is complete.