

+ power FUNCTIONS



Battery box



Remote control



XL Motor



Receiver



Sound brick



Motor



POWER FUNCTIONS FAQ



What is Power Functions?

LEGO Power Functions is our new electric building system with powerful motors and remote control.

Why the change to a new system?

We have at least 3 good reasons to update with LEGO Power Functions:

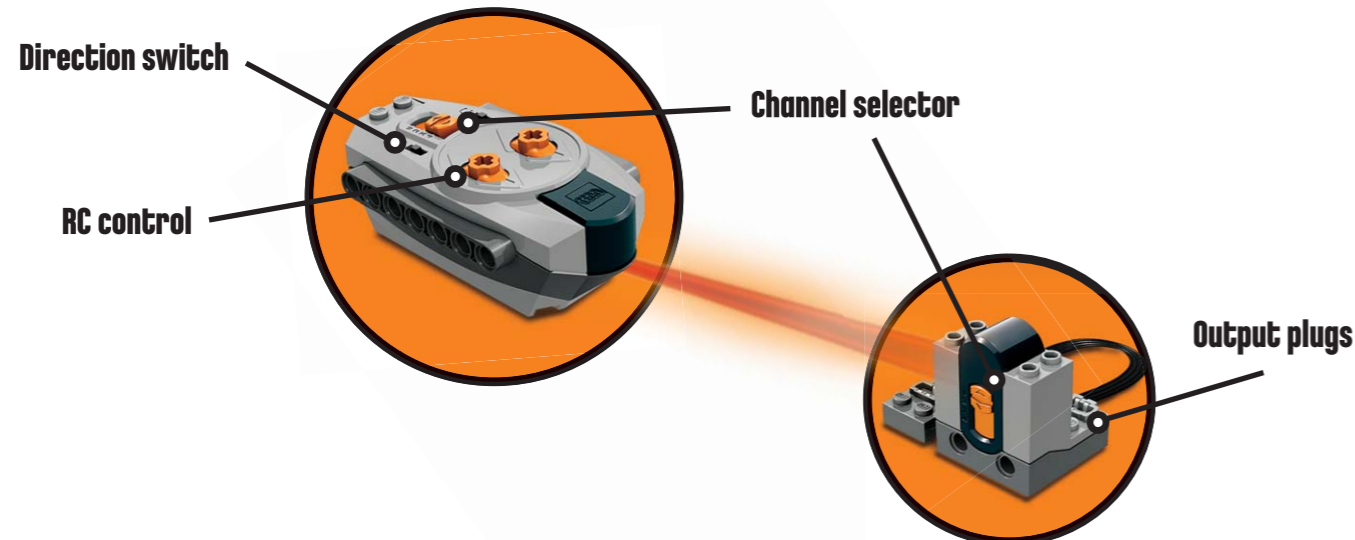
- The Power Functions elements are cheaper
- 4 connections in the plug gives new possibilities now and in the future
- The new family design makes Power Functions easy to understand and communicate

How does the Power Functions system work?

The Battery box gives power to the system. With a motor connected to the plug it will drive the motor in either direction when the switch is pushed to either side – a green light will indicate that the power is ON. In the middle position power is turned OFF.

The RC handset and RC receiver work together – the handset sends IR signals to control the receiver. The receiver has 2 outputs. With the 2 control buttons on the handset you control each output to drive a motor back and forth. If the direction you control a motor is not logic (e.g. driving forward when you push the button backwards) you use the direction switch on the handset to flip the direction of that output. The RC system has 4 channels. The channel selector on both handset and receiver must be on the same channel to take control. 4 kids can play at the same time on separate channels or you can have 4 receivers in one model giving control over 8 different functions.

In the future we can make other types of functions like light or sound and we can even have sensors and intelligent control.



Which batteries are needed?

Battery box
6 AA batteries (Alkaline or rechargeable)

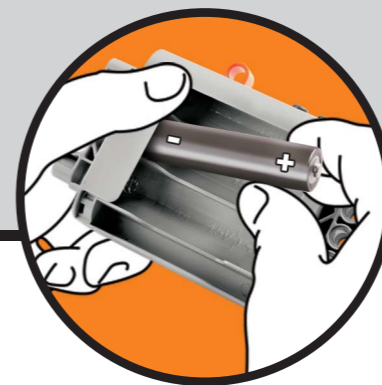
RC handset
3 AAA batteries

How do I change the batteries?

Battery box
Take off one lid on each side and insert 3 AA batteries in each side.

RC handset
Unfit the screw on the backside, take off the lid and insert 3 AAA.

It is important to change all batteries at the same time – not mixing old and new ones – flat batteries will leak or get hot when mixed with new ones.



What is the battery lifetime?

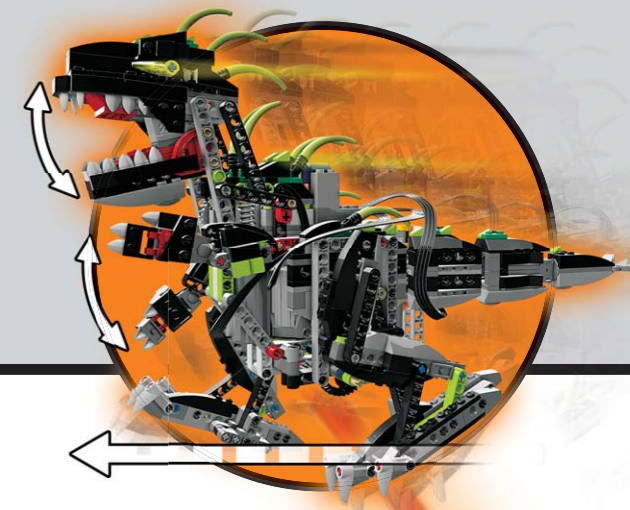
Battery box
Around 4 hours with a heavy loaded model like the Dozer

RC handset
2-3 years

What indicates that the batteries are flat?

Battery box
Motors run slower. Change batteries when model performance is no longer OK.

RC handset
Reaching distance decrease and control is lost.



Why does my model only run for a short period after I changed the batteries?

1. Make sure that all 6 batteries were changed – not just the 3 batteries in one side
2. Use Alkaline or rechargeable batteries
3. Remember to turn off the Battery box when it is not used

Why is my Power Functions model running slow?

There can be three reasons for this:

1. Make sure that all gearing from the motor to the moving parts is running smooth
2. Make sure the batteries in the Battery box are fresh
3. Too many motors are running at the same time at too high load

How many motors can I drive at the same time?

As a rule of thumb you can drive 2 XL Motors or 4 Medium motors at the same time. The Battery box and the RC receiver are overload protected, so driving too many motors will not damage anything.

When overload protection is activated the Battery box or the RC receiver will cut off power to the output until power consumption drops under the allowed value. To regain power unblock the motor or disconnect motors from the output. The power a motor consumes depends on the load you put on the motor. At a sensible load (what we call nominal load) the motor is most effective. If the motor is blocked it will consume a lot of power. The XL Motor takes about twice as much power as the Medium motor.





What do I do if my Power Functions model is not running?

1. Make sure there are fresh batteries in the Battery box and the RC handset
2. Make sure all plugs are properly connected
3. Make sure the green light on the Battery box is ON
4. Make sure the green light on the RC receiver is ON
5. Make sure there is connection between RC handset and – receiver (see FAQ)
6. Make sure motors are not blocked

How do I know there is connection between my RC handset and - receiver?

1. On the receiver the green light at the channel selector indicates power is ON
2. On the handset the green light in the front indicates control is active
3. Make sure that the handset and receiver are set to the same channel
4. The green light on the receiver will flicker to indicate reception of control

What is the reaching distance of the RC?

This will depend on many things – under normal conditions reaching distance will exceed 10m.

The following things will reduce reaching distance:

- Bright sunlight
- Low batteries in the RC handset
- Blocking of the line of sight

Can I use Power Functions elements with my old 9V elements and the NXT?

Yes, with the Power Functions extension wire you can use most of the 9V elements and the NXT together with Power Functions.

Where can I learn more about the Power Functions system?

On www.LEGO.com you can get a lot of information about the possibilities with Power Functions and also get ideas to things you can build with it.

