

## Technical Description of RYOBI 18V One+ Cordless Drill

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## **Introduction**

### *Historical Background*

The very first power tool was actually invented by a German engineering company, called C&E Fein in 1895, where they had the idea to combine an electric motor with a manual drill. However, the first drill invented had to be handled with two hands and weighed approximately 16.5 pounds. It took 20 years until a better design was made, this was by Duncan Black and Alonzo Decker in Baltimore, Maryland, who utilized a Colt 45. automatic pistol to influence a better handheld design for a power drill (Spark Energy, 2019). Then in 1916, “Black & Decker had begun making their famous pistol-grip, trigger-switch electric drill, from which all modern handheld electric drills are descended”(Spark Energy, 2019).

The RYOBI 18V One+ Cordless Drill was manufactured by the company Ryobi Limited which was founded in 1943 by Yutaka Urakami in Fuchu, Hiroshima. When the company was first established it was made as a private manufacturing company during World War II, therefore the products they made were designed for aircraft or military purposes. After the war ended, the products they developed changed from military use to civilian use. In order to expand from a private enterprise to a larger one, they began to assemble cameras and copy machines. After gaining experience in assembled products, they expanded their branches to printing presses, fishing accessories, and lastly power tools, in 1968 (RYOBI, n.d.).

## Exterior Components

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The following image demonstrates where key components are located, such as, the 24 position clutch, 3/8" keyless chuck, grip zone over-mold, variable speed trigger, LED light, on-board bit storage, and where the battery is placed (compatible with all 18V One+ batteries).



*Figure 1. This figure properly labels the main exterior components located on the RYOBI 18V One+ Cordless Drill (The Home Depot)*

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As shown on Figure 1, there are numerous key components attached to this power drill.

### The 3/8 Inch Keyless Chuck

- The purpose of a drill chuck is to loosen or tighten the grip on the bits that are placed inside.
- When the drill chuck is turned counterclockwise, the bits are loosened, when turned clockwise, the bits are tightened.
- A drill chuck can either be keyless or require a special key.

- When a drill chuck requires a special key, one would have to manually tighten the chuck with said key, after placing the drill bit.
- A special key can be misplaced or broken, a keyless chuck prevents that from happening because a key is not needed.
- A keyless chuck is more convenient and more efficient for producing smaller holes

#### The 24 Position Clutch

- The position clutch modifies the torque output being placed on the fastener, in other words, how deep the bit is going.
- The position clutch setting can be adjusted to either put more force onto the bit to drill a deeper hole or less force to drill a smaller hole.
- For example, if you're driving a screw into a thin wall, you'll want to keep the clutch setting low to prevent the screw from going any deeper than it needs to be.

#### The Variable Speed Trigger

- The variable speed trigger is where one would press down to activate the motor and start up the drill chuck.
- The amount of speed it can go is displayed as 0-600 RPM, which stands for revolutions per minute.

#### The Grip Zone Over-Mold

- This is a rubber molding added onto the power drill to increase control between one's hand and the tool.

#### LED Light

- The LED light is attached to the bottom of the tool

- This works in case a situation presents itself where you'll need the tool in a darker area.

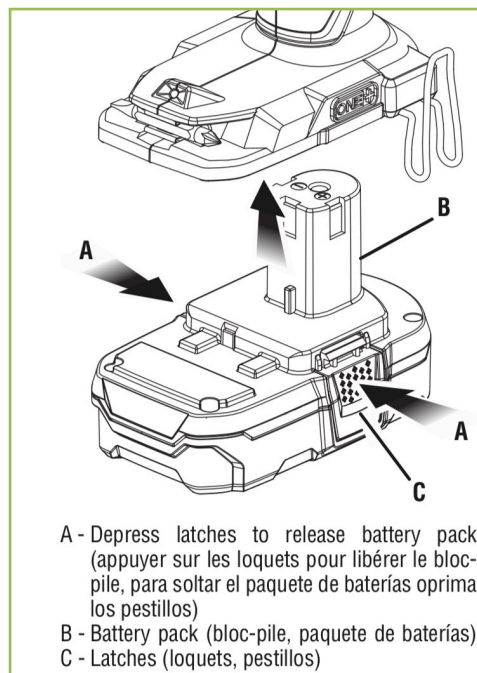
On-Board Bit Storage

- This is used for extra storage to hold an additional bit.

Battery Holder

- Below the drill is a space made specifically to attach the battery that runs the power drill, which is expanded on in the next section.
- It is also compatible with all 18V One+ batteries.

*Battery*



*Figure 2. This figure demonstrates how to insert the battery(A),the battery pack itself(B), and the latches(C). (The Home Depot)*



*Figure 3. The placement of the battery*

*(The Home Depot)*

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### How the Battery Works

The battery is detachable due to that fact that it is also rechargeable. In order to detach or reattach the battery, follow the steps below, which are also provided in figure 2.

- One must push down on the latches(A) located on both sides of the battery
- While holding down on the two latches, simply push the battery upward into the drill and release to secure it.
- The battery can be replaced as long as it is an 18V One+ battery.
- Figure 3 displays how the battery will look after attaching the battery pack.

*Charger*

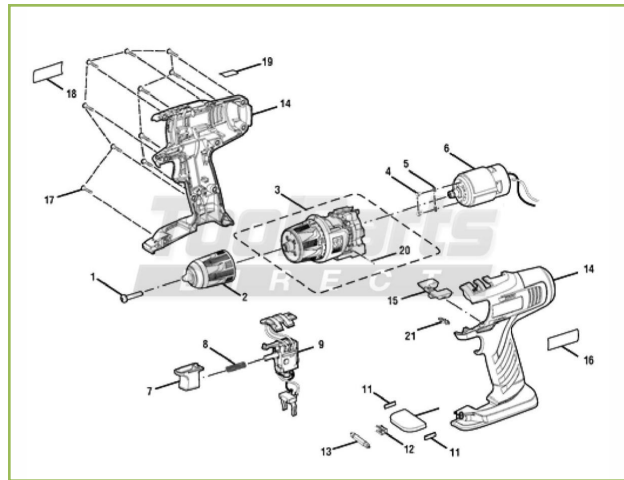
*Figure 4. Charger and Battery (The Home Depot)*

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The image displayed in figure 4 demonstrates the charger which is used to recharge the battery. To place the battery in the charger, there is no need to press down on the latches, simply insert it in and plug into any type A or type B outlet to charge.



**Interior Components**



*Figure 5. Schematics with labeled Interior Components(Ryobi P250 18V ONE+ AUTOSHIFT DRILL)*

Ref	Model	Product Name
1	6613402	SCREW, M6X1.0X27MM NI-PLATE
2	690033084	CHUCK
3	302969001	CLUTCH CAP & GEAR BOX ASSEMBLY
4	660212001	SCREW (M4 x 6MM)
5	670030004	SPRING WASHER
6	230219001	MOTOR ASSEMBLY
7	516393001	TRIGGER
7	516393003	TRIGGER
8	672626001	SPRING TRIGGER
9	270001410	SWITCH ASSEMBLY
9	270001423	SWITCH ASSEMBLY (BC)
10	300823003	MAGNET
11	560444002	"PLASTIC, FOAM RUBBER W/ADHESIVE"
12	630206007	BIT CLIP *** REPLACES 6320601***
13	6782045	BIT (PH2 & S6 L50mm)
14	302968001	HOUSING ASSEMBLY
15	302901001	FORWARD/REVERSE BUTTON
16	940114178	LOGO LABEL
17	660031012	SCREW M3.5 X 14MM
18	940976336	DATA LABEL
19	940001149	SHIFT ICON LABEL
20	672248001	HOLD PIN
21	632774003	PLATE SPRING

*Figure 6. Names of the labeled parts (Ryobi P250 18V ONE+ AUTOSHIFT DRILL)*

All the interior parts being described are following the numbers as they are labeled in the image. Each part is replaceable and can be purchased alone.

### *Screws and Labels*

The screws hold certain aspects of the product together. As seen in fig 5, numbers 1, 4, and 17 are all major screws. These screws are as follows; a MgX1.0X27MM NI-Plate screw(1), a M4 by 6MM screw(4) and a M3.5 by 6MM screw(17).

In addition, the power tool comes with labels attached to display important information. Firstly, there is a logo label(16) that demonstrates the company the drill originates from. In addition to that, there is also a data label(18) which contains information like where it was made, the battery that is compatible with this model, and its maximum speed. Lastly, there is the shift icon label(19), this label directs individuals on where to shift.

### *Spring Parts and Assemblies*

A very important part of the drill is the spring washer(5) which is placed between the clutch cap assembly(3) and the motor(6), this part absorbs vibrations and prevents the interior components from fastening or loosening due to the tension. In addition to that, there's also the spring trigger(8), which is placed inside the variable speed trigger and pushes the trigger back in place after being used. Lastly, the plate spring(21) is a plate of steel where a series of springs in the product are rested upon.

One of the major assemblies is the clutch cap and gear assembly(3), this part is located right before the chuck and connects to the motor. This controls the torque speed due to its connection to the motor, it also connects to the reverse switch. The motor assembly(6) or in other words, the motor, converts electrical energy into mechanical energy and is a major component

that runs the power drill. There are various types of drill motors but the two most common are a brushless motors and brushed motors. A brushed motor uses carbon brushes which transmit power, as for brushless motors which utilize magnets to generate power. This product contains a brushless motor which is more efficient due to no risk of overheating, less use of energy, and reduced maintenance, compared to the brushed motor (Jameson, n.d.). Another form of assembly is a switch assembly(9) which in most cases represents the on/off switch, however once the battery is connected to the device, it automatically turns on. Therefore, the switch assembly controls the reverse switch, this part of the products allows for the power drill to either drill a screw in or take one out. Lastly, the housing assembly(14) which is the outer casing that holds all the interior components together.

#### *Other Main Components*

The trigger(7) is the part that activates the motor and causes the chuck to begin its rotating motion. Lastly, there is the forward/reverse(15) switch that enables the drill to change directions.

#### **Additional Information**

If you have any concerns or wish to replace certain parts, feel free to contact 1-800-525-2579 or visit [www.ryobitools.com](http://www.ryobitools.com). When contacting about a product you already own, make sure to have the model and serial number of the product, located on the data plate.

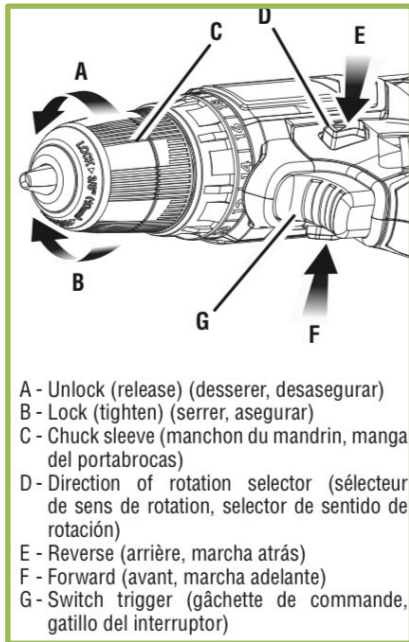
#### *Cautions/Warnings*

- Do not use any kind of solvents when cleaning the product, solvents have a higher chance of damaging the product. Try using a dry clean cloth.
- Do not use this tool in any wet condition, it could result in electric shock
- Do not expose this tool to any fire, for it could lead to an explosion
- Do not wear any loose clothing that can get stuck on the drill
- Do not attempt to attach any other battery that wasn't made for this product
- Do not drive a screw into a surface where there might be hidden wiring, for it can cause an electric shock

#### *Compatible Bits*

There are various types of drill bits that can be purchased separately. However, not all drill bits fit in all drills, to ensure one purchases the right drill bits, one must look at the size of the chuck. In this case, the RYOBI 18V One+ Cordless Drill contains a  $\frac{3}{8}$  inch chuck, therefore this drill can only accept drill bits with a shaft extending  $\frac{3}{8}$  inches or less. In other words, the diameter of the drill bit must be  $\frac{3}{8}$  inches or less.

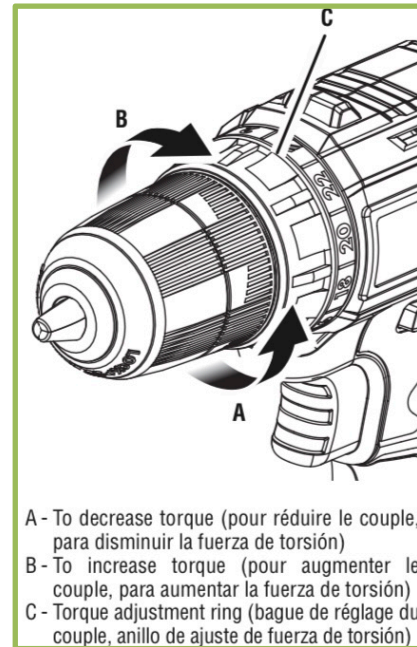
**How to Use the RYOBI 18V ONE+ Cordless Drill**



*Figure 7.*

*Important Parts on the Usage of the Product*


*This figure demonstrates how to tighten(B) or loosen(A) the chuck, the chuck(C), the forward or reverse switch(D), as well as, the forward button(F) or the reverse button(E), and the switch trigger(G) (The Home Depot).*



*Figure 8.*

*Additional Important Parts*

*This figure demonstrates the adjustment ring(C) and the direction to increase(B) and decrease (A) torque (The Home Depot)*

- 1 - 4 For driving small screws
- 5 - 8 For driving screws into soft material
- 9 - 12 For driving screws into soft and hard materials
- 13 - 16 For driving screws into hard wood
- 17 - 23 For driving large screws
-  For heavy drilling

*Figure 9. Proper torque settings that correlates with the type of material and the size of the screw being used (The Home Depot).*

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View the following steps in order to use the RYOBI 18V ONE+ Cordless Drill:

- First rotate the adjustment ring(C) to fit the torque setting that matches the screw being used and the type of material being drilled into.
  - In case one doesn't know which specific setting fits the type of material and size of the screw, figure 9 displays the proper torque settings.
- After the torque setting has been adjusted, select the drill bit that will be used, deciding which drill bit to use is based upon the size and style of the screw it'll align with, as well as, the size of the chuck.
  - The drill bit must be smaller than the diameter of the chuck (further elaborated in the *Compatible Bits* section).
- Once the drill bit has been selected, ensure that the chuck(C) is loose enough to be able to place the drill bit inside, after it's placed inside, tighten the chuck(B) in order to guarantee the bit stays in place.
- Before starting the process of drilling, one must confirm that the drill is set to the right setting, whether one wants to drill a screw forward(F) to insert a screw or reverse(E) to remove a screw.
  - In other words, check the forward/reverse switch(D) to make sure it's in the desired position.

- Once the previous steps have been completed, simply align the drill with the screw or on the point one wishes to be drilled, hold the drill firmly, and press down on the switch trigger(G).
- To discontinue this action, simply let go of the trigger.

### **Conclusion**

Thank you for purchasing the RYOBI 18V One+ Cordless Drill. This model is efficient for various projects or constructions. We do not recommend you use this product to make larger holes than the drill can handle. After reading the history and detailed information on the components, we hope that you enjoy your new product.

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*Oxide Drill and Drive Kit (31-Piece)-PDD209K-A983102*. The Home Depot. [https://](https://www.homedepot.com/p/RYOBI-ONE-18V-Cordless-3-8-in-Drill-Driver-Kit-with-1-5-Ah-Battery-and-Charger-w-Black-Oxide-Drill-and-Drive-Kit-31-Piece-PDD209K-A983102/314810775?source=shoppingads&locale=en-US)

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[Ah-Battery-and-Charger-w-Black-Oxide-Drill-and-Drive-Kit-31-Piece-PDD209K-](https://www.homedepot.com/p/RYOBI-ONE-18V-Cordless-3-8-in-Drill-Driver-Kit-with-1-5-Ah-Battery-and-Charger-w-Black-Oxide-Drill-and-Drive-Kit-31-Piece-PDD209K-A983102/314810775?source=shoppingads&locale=en-US)

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**Audience Profile Sheet**

<p><b>Reader:</b></p> <p>Individuals who have recently purchased the product</p>		
<p><b>Kind of Reader:</b></p>	<p>Primary <u>  X  </u></p>	<p>Secondary <u>      </u></p>
<p><b>Reader's Level of Education:</b></p> <p>Secondary School</p>		
<p><b>Reader's Professional Experience:</b></p> <p>Minimal</p>		
<p><b>Reader's Job Responsibilities:</b></p> <p>Home design, Engineering</p>		
<p><b>Reader's Personal Characteristics:</b></p> <p>Enjoys hands on activities</p>		
<p><b>Reader's Cultural Background:</b></p> <p>N/A</p>		
<p><b>Reader's Attitude Toward the Writer:</b></p> <p>N/A</p>		
<p><b>Reader's Attitude Toward Information:</b></p> <p>Very interested because they wish to properly work a power drill</p>		
<p><b>Reader's Expectations:</b></p> <p>Be informed on how to safely utilize the product they just purchased</p>		
<p><b>Reader's Way of Reading the Document:</b></p> <p>Thoroughly read the exterior and additional information, skim the interior components and history</p>		
<p><b>Reader's Reading Skill:</b></p>		

**Sufficient**

**Reader's Physical Environment:**

**At work or at home**

### **Reflection**

The genre of this assignment is a technical description because it follows the necessary requirements of a technical description. This includes a table of contents, history on the product, a detailed explanation on the exterior and interior components and images to illustrate the information being described. The media I utilized was digital because it was not only written on a digital platform, but it was also submitted through a digital website for the audience.

My stance is neutral because I aim to inform my readers on the item they have purchased. By reading my technical description, I'm hoping my readers will gain more knowledge on the exterior parts, interior parts, function, purpose, and history of the product.

The exigence that influenced the creation of a technical description for a RYOBI 18V One+ Cordless Drill, is due to the fact that my concentration is mechanical engineering and I use this item very often. The power drill has developed profoundly over time. Not only is the power drill a product that numerous mechanical engineers, or even homeowners, use, but it is also a mechanical engineering invention in itself. This product is very efficient, it reduces the time it takes to drill compared to older models and it runs on a motor and battery. The idea that it is utilized by the field it was created by is what sparked the creation of this technical description.

The purpose of my technical description is to inform my audience on the RYOBI 18V One+ Cordless Drill, to provide them with information on the exterior and interior parts of the product, as well as precautions and contact information. This specific power drill has certain at-

tachments like a reverse switch, a position clutch, and a keyless chuck, that my audience might not be aware of after purchasing the product. In addition to that, by reading the technical description my audience will also be more informed on how to be safe when using this product. For example, the fact that it is not waterproof and can also be very flammable.

My target audience were individuals who have just recently purchased the product and have no experience using a power drill. In most cases when someone purchases a product it comes with a manual that includes its function and parts. In this technical description, I aimed to include a simple but thorough explanation on the exterior parts, so that my audience can understand how to use the device, and a detailed section on the interior components in case anything goes wrong and they wish to replace these items. In addition, I provided some background information to cure some curiosity provided by my audience and additional information on how to contact the company that made the product and how to safely use it, by following the section on precautions. Lastly, I thanked my audience for purchasing the specific product.

I feel that with this assignment, I met a specific amount of course learning outcomes that will help develop my writing. This assignment meets course learning outcomes 2, 3, and 8. It demonstrates my use of number 2, enhancing strategies for reading, drafting, revising, editing, and self-assessment, because when writing my technical description I felt the need to go over every aspect of my writing to ensure that my audience would understand the way I'm wording the information presented. It also demonstrates my use of number 3, negotiate your own writing goals and audience expectations regarding conventions of genre, medium, and rhetorical situa-

tion, because in order to properly structure my writing and provide the best language I had to keep in mind the audience I'd be addressing and how I would want them to read it. Lastly, this assignment also meets number 8, strengthen your source use practices (including evaluating, integrating, quoting, paraphrasing, summarizing, synthesizing, analyzing, and citing sources), because I found myself doing an immense amount of research where I had to decide which information to cite and which to paraphrase, in order to provide the best content for my audience.