

Drills

NEED TO KNOW

If you do a lot of drilling, some of it heavy, your best bet is a mains drill. There are three main types.

HAMMER

Hammer drills have a pneumatic action, giving around 5,000 blows a minute to the rotating bit. This provides most of the force, so high speed isn't necessary. Hammer drills are best for sustained or heavy-duty drilling in hard materials, such as granite or very hard concrete. For light jobs, with no hammer function, they're slow and can be awkward to handle. Chisel attachments can be added for removing lumps of masonry.

PERCUSSION

Percussion drills rotate at around 3,000 revs per minute (rpm) but for more power their hammer action pounds the turning drill bit at around 40,000 blows a minute. Simple DIY jobs, and softer stone, such as limestone or light concrete, are no problem. Hard stone, such as granite, produces strong vibration and noise because you need to push harder to activate the hammer action. Most percussion drills have one gear but two gears give better screwdriving control.

ROTARY

These basic drills are ideal for simple DIY tasks, such as drilling holes to hang pictures. They rely on fast rotation (around 3,000rpm) so are best for small holes or on softer materials such as wood, metal or plastic.



1 Makita
HAMMER

SDS AND NORMAL DRILL BITS

Most hammer drills need special ridged 'SDS' drill bits (inset, right). These fit into grooves in the drill's chuck (rotating part), allowing the bit to be propelled forward. To drill without hammer action – for small holes in metal, say – you need a normal bit (inset, left). This Makita helpfully comes with a separate chuck for this. For most drills you screw an adaptor to the SDS chuck, which is awkward and makes the drill top-heavy and harder to control.



11 Bosch
PERCUSSION

SIZE AND WEIGHT

Size and weight can vary greatly. Some of the bigger hammer drills we've tested weigh over 5kg. Most people will find this far too heavy for sustained drilling. Also consider size. This Bosch percussion drill is impressively small and weighs just 2kg. It's a lot more comfortable and easier to use in small spaces than some of the more macho models.



Size and weight can vary enormously

BEST BUYS

HAMMER DRILLS

All the hammer drills were easy to use. Unfortunately, many (see Don't Buys) broke down early in our endurance tests. The best allow you to do tough jobs quickly and comfortably. None is good at drilling metal: you're far better off using a percussion or rotary drill. But our Best Buy hammer drill stands out by excelling in all our other tests.

The **Makita (1)**, £200 from Machine Mart, is compact, relatively light, impressively comfortable to handle, and can take on tough jobs, such as hammer drilling and chiselling, with ease. It's also fairly nifty as a screwdriver. It breezed through our endurance tests, which simulate ten years' DIY use, so is a good long-term investment for its quite hefty price tag.

PERCUSSION DRILLS

Higher wattage doesn't necessarily mean stronger drilling. Some of the better drills on test are around the 650- or 750-watt mark. But you do get what you pay for. There are some good models under £50, such as the Bosch

(17), but most under £30 are best avoided. Our Best Buys are easy to use and long-lasting, and are the best for drilling and screwdriving tasks, with no major flaws.

It's hard to beat Bosch on power tools so it's no surprise that the best percussion drill on test is a **Bosch (11)**. It's good across the board, particularly at drilling in metal. It's sturdy, too, surviving our endurance tests without problem. At £70 online, it's not too pricey and boasts handy features such as a dust extraction unit to suck in debris as you drill. There's also a clever chuck design which makes it easier to change the drill bit. It's comfortable and easy to use, too.

We also recommend the **AEG (12)**, £115 from B&Q, and **Milwaukee (13)**, £151 online or in independents. These are identical but differently branded. They stand out by having two gears: common in cordless drills but less usual in corded versions. This allows you to use a slower gear for screwdriving, giving greater control and preventing the screw from being driven in too fast, and these drills did well at this task. They're also robust and

well made, and come supplied with a long 3.9m rubber-coated cord (the cords on some other models are only 2m long). Rubber cords are more flexible and durable than the more usual plastic ones.

Neither drill is cheap and they are a little heavy. But although they look bulky, you can remove the rear handle if working in a restricted space. Drill bits are easy to change, using the same chuck design as on the Bosch (11).

The **Makita (14)** is a great choice, too. At £144 from Screwfix, it's another expensive one. But it's a classy two-gear model and a great choice to make big holes or drill hard surfaces. Precision drilling is impressive, too, and it survived our endurance tests without concern.

Our next Best Buy is a high-powered **Bosch (15)**, around £95 online. Like the cheaper Bosch (11), this drill also has a dust-extraction unit so there's less clearing up to do. It's great at precision drilling and is very easy to use.

Finally, Makita notches up another Best Buy. Like its brandmates, the **Makita (16)** is first class at drilling and good at screwdriving. And it's incredibly good value at £58 from Screwfix.

ROTARY DRILLS

Neither of the rotary drills we tested is good enough to be a Best Buy. Percussion drills are better as they have the option of more power for making big holes or handling tough surfaces. But either rotary drill tested is a good alternative to a cordless drill if you've been thwarted once too often by a flat battery.



16 Makita
PERCUSSION

DON'T BUY

Scores are capped for poor performance in our endurance tests.

Several drills – the Draper (6), Power Devil (7), Black & Decker (8), McKeller (9), Skil (10), Draper (25), Focus (26), McKeller (27), Power Devil (28) and Axminster (29) – broke down

too early in our endurance tests.

The JCB (24) also takes too long on hammer and metal drilling.

None of these drills is expensive, but it's worth spending a bit more for a drill that works efficiently, comfortably and won't break down.



12 AEG
PERCUSSION



13 Milwaukee
PERCUSSION



14 Makita
PERCUSSION



15 Bosch
PERCUSSION

Cordless

Cordless drills are by far the best for light tasks, such as drilling interior walls or doors, and screwdriving, but they can't handle some tasks, such as hard stone. And the tougher the task, the faster the battery drains. They're generally slower and vibrate a lot more than corded drills. However, they are improving, and a cordless Best Buy, the Bosch PSB 24 VE-2 (now £93 in Argos, see 'Cordless drills', *Which?*, February 2005, p50), can match basic mains drills on soft stone such as concrete or sandstone.

Drills

HAMMER

- 1 Makita HR2450T
- 2 Black & Decker XTD24C
- 3 Metabo BHE 24
- 4 Powerbase PB850 RHD
- 5 Ryobi ERH-600V
- 6 Draper PT900K
- 7 Power Devil PDDRHD1050
- 8 Black & Decker KD 960 KC
- 9 McKeller MCKM 14
- 10 Skil 1760

PERCUSSION

- 11 Bosch PSB 650 RA
- 12 AEG Ergomax
- 13 Milwaukee T-TEC 201
- 14 Makita HP2071F
- 15 Bosch PSB 1000 RCA
- 16 Makita HP1621
- 17 Bosch PSB 650 RE
- 18 Ryobi EID-750RE
- 19 Black & Decker KR650RE
- 20 DeWalt D21716-GB
- 21 Black & Decker KR70L
- 22 Draper HD 660 VC
- 23 Makita HP 1620
- 24 JCB-HD1010
- 25 Draper PT810V
- 26 Focus Basics
- 27 McKeller MCKM13
- 28 Power Devil PDD 3021CA
- 29 Axminster AW 500 HD

ROTARY

- 30 Metabo BE 560
- 31 DeWalt D21008-GB

USING THE TABLE

We've tested best-selling hammer, percussion and rotary drills from popular brands.

SPECIFICATION

Price For Best Buys we give the cheapest, widely available high-street price as we went to press. Prices for other models are a guide to what you should expect to pay. Online prices are in *italics*. Speed The manufacturer's stated top speed. Where two values are

Specification						Using		Performance					Score
Price (£)	Power (watts)	Speed (rpm)	Reverse	Speed lock	Weight (kg)	Features	Convenience	Chiselling	Hammer	Metal	Screwdriving	Endurance	(%)
200	780	1,100	✓	✓	2.9	●	☆	☆	☆	●	○	★	60
130	650	1,100	✓	✓	2.8	●	☆	●	☆	●	○	★	52
128	705	1,000	✓	✓	3.1	●	☆	n/a	○	●	○	★	51
40	850	750			4.6	●	○	★	☆	●	●	○	43
94	600	850	✓	✓	2.9	☆	☆	n/a	●	●	○	★	36
70	900	800			5.0	●	☆	☆	☆	●	●	●	33
40	1,050	800			5.5	●	○	★	☆	●	●	●	24
70	750	1,000			3.2	☆	☆	○	☆	●	○	●	22
40	1,010	850			5.9	●	○	○	★	●	●	●	21
100	800	1100	✓	✓	3.2	☆	☆	○	○	●	○	●	12
70	650	3,000	✓	✓	2.0	☆	☆	n/a	○	☆	○	★	73
115	750	1,200/3,400	✓	✓	2.6	○	☆	n/a	○	○	○	★	71
151	750	1,200/3,400	✓	✓	2.6	○	☆	n/a	○	○	○	★	71
144	1,010	1,200/2,900	✓	✓	2.6	●	○	n/a	☆	☆	○	★	69
95	1,010	2,700	✓	✓	2.1	☆	★	n/a	○	○	○	★	68
58	650	2,800	✓	✓	2.0	●	○	n/a	☆	☆	○	★	64
32	650	3,000	✓	✓	1.9	☆	○	n/a	☆	○	●	★	62
35	750	2,800	✓	✓	2.1	●	○	n/a	○	☆	○	★	60
40	650	3,000	✓	✓	2.0	○	●	n/a	○	○	○	★	55
80	701	2,600	✓	✓	1.9	●	●	n/a	☆	○	○	☆	53
48	630	3,000	✓	✓	2.2	●	○	n/a	○	☆	○	○	49
46	600	2,900	✓	✓	1.7	○	●	n/a	☆	○	●	★	49
59	650	2,800	✓	✓	2.1	●	○	n/a	○	○	○	★	47
26	1,010	1,400	✓	✓	2.6	☆	●	n/a	●	●	○	●	21
25	810	3,000	✓	✓	2.1	☆	●	n/a	●	○	○	●	20
10	500	2,700	✓	✓	1.8	●	●	n/a	●	○	●	●	16
25	810	2,800	✓	✓	2.2	☆	○	n/a	○	○	○	●	12
15	710	2,800	✓	✓	2.1	☆	●	n/a	●	☆	○	●	10
20	500	2,500	✓	✓	1.8	●	●	n/a	●	○	●	●	9
56	560	2,800	✓	✓	1.9	★	●	n/a	n/a	○	○	☆	48
88	550	2,500	✓	✓	1.5	●	○	n/a	n/a	○	☆	★	47

given, the drill has two gears.

Reverse Whether the drill can also turn anticlockwise – helpful for removing screws. **Speed lock** This enables you to set a maximum speed which the drill won't exceed.

USING

Features Whether there are helpful features such as dust retention units, depth stops and second handles. **Convenience** A panel of experienced DIYers assessed each drill for weight,

controls, balance, changing drill bits, instructions and comfort during use.

PERFORMANCE

Chiselling Based on the time taken to chisel a slot (24x3x2cm) in a concrete floor tile.

Hammer We measured the time taken to drill holes of various sizes and depths in concrete and granite. **Metal** We assessed how quickly the drills can bore holes in metal, without using

their hammer function.

Screwdriving We measured the time taken to drive screws into metal and wood and how easy it was to control the drill.

Endurance Our endurance tests simulate approximately ten years' DIY use.



SCORE

Ignores price and is based on:

Hammer drilling	25%
Endurance	20%
Screwdriving	7.5%
Features	5%
Instructions	5%

Plus for hammer drills

Convenience	15%
Metal drilling	15%
Chiselling	7.5%
Plus for percussion/rotary drills	
Convenience	20%
Metal drilling	17.5%