

Tool Test

Framing Nailers

Look for a gun that toenails well and can consistently set fasteners in dense material



by Tim McNamara

As a framing contractor, I rely on nail guns more than almost any other tool. When I buy a framing gun I look for a model that is comfortable to handle, able to toenail well, and powerful enough to drive nails flush every time. For this article, my crew tested 12 stick nailers: the Bosch SN350-34C, the Bostitch F28WW and F33PT, the DeWalt D51825, the Grip-Rite GRTEFC83, the Hitachi NR83AA3, the Makita AN943, the Max SN883CH/34, the Paslode PF350S, the Porter-Cable FC350A, the Ridgid R350CHA, and the Senco SN901XP.

Most manufacturers produce two versions of every gun — one for 30- to 34-degree nails (usually clipped-head) and another for 20- to 22-degree nails (usually full round-head). Here in western New York, 30- to 34-degree paper-collated nails are the norm, so that's the kind of gun we tested. (The one exception is the Bostitch F28WW, which takes 28-degree wire-collated nails.) The equivalent models for 20- to 22-degree plastic-collated fasteners are listed in the spec chart on page 68.

My crew and I used the tools for several months, trading guns around so we all had experience with each of them. Since we framed several large houses during that period, we were able to evaluate the performance of these tools under real-world conditions.

Although we used the guns hard, we didn't have them long enough to determine their long-term durability.

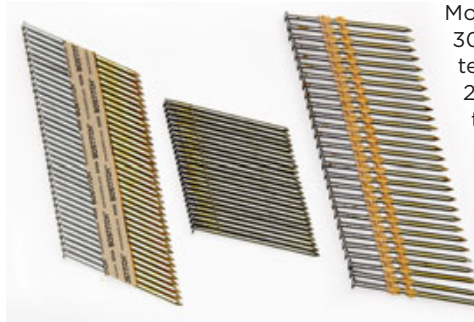
Framing Nailers

Power

All of these guns are powerful enough to be used on sawn lumber, sheathing, and I-joists, but some are better than others at nailing into dense engineered wood beams — especially when fired rapidly. We had a pretty good sense of which guns those were, just from using them on site, but also verified our observations by performing a nailing test. We wanted to gauge the ability of the tools to drive fasteners all the way home in Parallam, TimberStrand, and laminated veneer lumber (LVL). It was a tough but not unrealistic test: We frequently gang engineered beams, and when we do, we drive a lot of fasteners in a short time.

Nailing test. We rapidly drove 30 nails per round and timed how long it took — not to see which guns were faster but to ensure that the carpenter fired each gun at roughly the same speed. What we were after was the number of nails per round driven flush, because it's a problem when nails aren't driven all the way home. Each gun shot two rounds of 10d spikes (3 inches by .131 inch) and one round of 8d ring-shank nails into LVLs; one round of 10d spikes into Parallam; and one round of 10d spikes into TimberStrand. At the end of the test we counted the number of nails driven flush or below the surface, totaled the amount of time needed to drive them, and then averaged the results (see the table, right).

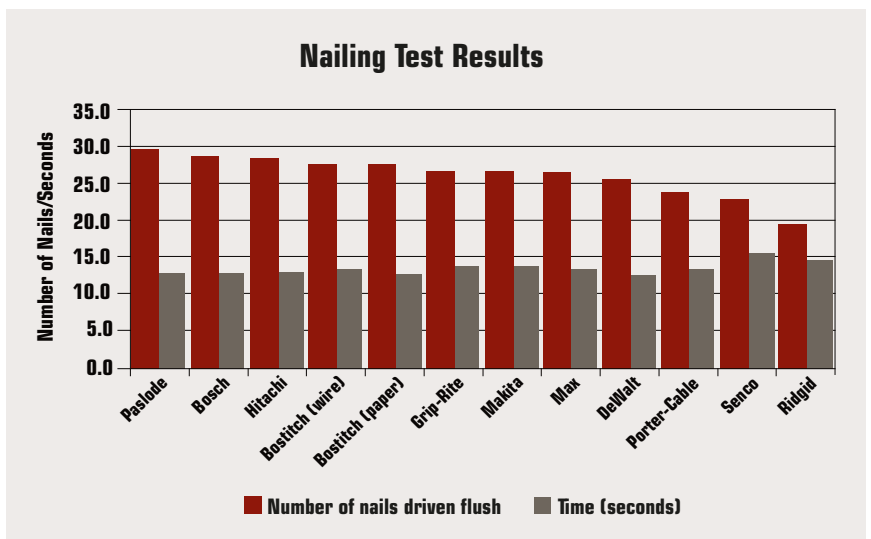
I wouldn't draw too many conclusions from this test or make fine distinctions based on a difference of two or three nails per round. Keep in mind that we tested the tools on the job site, which is different from testing them in a lab under carefully controlled conditions. What I can say, however, is that the finishing order was not a surprise. Based on having used the guns in the field, we thought the Paslode and Bosch would come in near the top and the Senco and Ridgid near the bottom — which is exactly what happened. In fairness to Senco, we tested the company's



Most of the guns in this test take 30- to 34-degree paper-collated fasteners (far left), though one takes 28-degree wire-weld fasteners (center left). Slightly different versions of the guns are available for use with 20- to 22-degree plastic collated fasteners (near left), which are common in areas where wind and seismic codes mandate the use of full round-head nails.



After using the guns for normal framing tasks, the crew tested their power by nailing rapidly into dense engineered material (left), then counting the nails each gun was able to drive flush or below the surface (above). The fewer nails left standing proud, the better.



This table shows the average number of fasteners driven flush or below the surface for each clip of 30 nails, and the average time required to drive them. The tests were performed in LVL, Parallam, and TimberStrand.

Framing Nailers

lightest gun; the results might have been different had we tested the heavier and more powerful SN951XP.

Toenailing

How well a gun toenails depends on how effectively the teeth on the tip engage the wood and whether you can place nails accurately. We got a sense of this from using the tools and from performing a test in which we marked the ends of some 2x4s and tried to hit those marks while toenailing. All of the tips grab pretty well; the ones where the teeth flare out grab the best. I particularly like toenailing with the Bosch because the fine teeth really grab and the slimmer-than-normal piston housing provides a good line of sight to the tip (though it takes some practice to place the fastener where you want it). The Paslode is very good at toenailing, but the DeWalt and Senco are less so, because they don't grab as well. The Ridgid gun has poor visibility and tends to leave nails proud when toenailing.



To test the nosepieces, the crew marked short studs and used the nailers to toenail them to a plate (left). The best guns gripped well and placed the nails close to the original marks.

Size and Weight

Other things being equal, small and light is better than big and heavy. A small gun is more maneuverable in tight quarters and

a light gun is easier to handle, especially overhead. The guns we tested average about 8 pounds apiece, but there is a significant spread between the high and low,

	Bosch SN350-34C	Bostitch F28WW	Bostitch F33PT	DeWalt D51825	Grip-Rite GRTFC83	Hitachi NR83AA3
Height	13 ⁵ / ₈ "	14"	14"	14 ¹ / ₄ "	13 ¹ / ₂ "	14 ³ / ₁₆ "
Length	21 ³ / ₈ "	20"	18"	19"	21 ⁵ / ₈ "	14 ³ / ₁₆ "
Weight* (pounds)	8.6	8.0	8.5	8.4	7.7	8.7
Nail length	2" to 3 ¹ / ₂ "	2" to 3 ¹ / ₂ "	2" to 3 ¹ / ₂ "	2" to 3 ¹ / ₂ "	2" to 3 ¹ / ₄ "	2" to 3 ¹ / ₄ "
Nail diameter	.113" to .148"	.113" to .131"	.113" to .162"	.113" to .131"	.113" to .131"	.113" to .131"
Magazine loading	top	top	top	top	top	rear
Dry-fire lockout	yes	no	no	yes	yes	no
Selectable trigger	yes	no	no	no	no	yes
Rafter hook	no	comp	comp	comp	metal	no
Street price	\$299	\$229	\$229	\$239	\$239	\$299
Country of origin	China	Taiwan	Taiwan	China	Taiwan	Japan
Equivalent 20- to 22-degree model	SN350-20F	F21PL	F21PL	D51850	GRTFR83	NR83A2; NR83A2(S)
	boschtools.com	bostitch.com	bostitch.com	dewalt.com	grip-rite.com	hitachipowertools.com

*by author, includes air fitting

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Makers like Max and Senco have shortened some of their guns to make them easier to maneuver in narrow framing cavities; you can see the difference in size in the photo at left (the Max gun is on the left). The author lined up all the tools to get a sense of their relative bulk. Viewed from the front (below) from left to right are the Max, Senco, Paslode, Bostitch F33PT, DeWalt, Bosch, Grip-Rite, Ridgid, Porter-Cable, Bostitch F28WW, Hitachi, and Makita. Viewed from the back (bottom), the order is reversed.

with the Makita weighing in at 9.3 pounds and the Max at 7.2 pounds.

Lighter guns tend to have more recoil than heavy ones. This was not a major issue with any of the tools we tested, though we did notice it more with the Ridgid and Senco.

Size is as important as weight, though it's harder to define because there are so many dimensions to consider. When I say a gun is compact, I am referring primarily to its top-to-bottom height, because that dimension determines the ease with which it can be used sideways in narrow framing bays. The Max and Senco are significantly shorter than average. Their short stature



Table continued from previous page	Makita AN943	Max SN883CH/34	Paslode PF350S	Porter-Cable FC350A	Ridgid R350CHA	Senco SN901XP
Height	14 ³ / ₈ "	12 ¹ / ₄ "	13"	14"	13 ⁷ / ₈ "	11 ⁵ / ₈ "
Length	17 ⁷ / ₈ "	18 ¹ / ₈ "	18"	14 ¹ / ₄ "	18 ³ / ₄ "	17 ³ / ₈ "
Weight* (pounds)	9.3	7.2	8.0	8.2	7.7	7.4
Nail length	2" to 3 ¹ / ₂ "	2" to 3 ¹ / ₄ "	2" to 3 ¹ / ₂ "	2" to 3 ¹ / ₂ "	2" to 3 ¹ / ₂ "	2" to 3 ¹ / ₄ "
Nail diameter	.113" to .131"	.113" to .131"	.113" to .131"	.113" to .131"	.113" to .131"	.113" to .148"
Magazine loading	rear	rear	rear	rear	rear	rear
Dry-fire lockout	yes	no	yes	no	yes	yes
Selectable trigger	yes	yes	yes	yes	yes	yes
Rafter hook	metal	no	metal	no	comp	no
Street price	\$299	\$279	\$299	\$199	\$229	\$249
Country of origin	Taiwan	Thailand	assembled in USA	Taiwan	Taiwan	China
Equivalent 20- to 22-degree model	AN923	SN883RH	DF350S (DuoFast)	FR350A	R350RHA	SN902XP
	makitatools.com	www.maxusacorp.com	paslode.com	portercable.com	ridgid.com	senco.com

*by author, includes air fitting



BOSCH SN350-34C

The SN350-34C is one of our favorites, a powerful gun with a slimmer-than-normal piston housing that makes for a good line of sight to the tip. It has a couple of unique and useful features: a metal strike plate on top for tapping studs into position and a quick-release magazine that can be removed to clear jammed fasteners. The ribbed rubber grip is comfortable to hold, and the aggressive tip grabs well when toenailing. Our one complaint is that this tool does not include a rafter hook; the manufacturer sells an optional one, but it's hard to find and will set you back \$25.



BOSTITCH F28WW

The F28WW stands out less for its performance than for the 28-degree wire-collated fasteners it uses. Popular in parts of New England, these fasteners are far less common than the paper- and plastic-collated nails most carpenters use. We like the pivoting rafter hook and push-button depth-of-drive mechanism of this tool. It has good power, but we had occasional problems with double-firing.



BOSTITCH F33PT

The F33PT closely resembles Bostitch's wire-weld nailer but is a half-pound heavier. Features include a pivoting rafter hook, a push-button depth-of-drive mechanism, and an accessory tip that allows you to use it in place of a metal connector nailer. This is a powerful gun, but it feels somewhat bulky and occasionally double-fired on us.



DEWALT D51825

Based on the specs, the D51825 does not stand out in any way. Even so, it was a crew favorite. We simply like the way it feels to hold and use this gun, which — while heavier than average — is very well-balanced. Among its better features are an oversized swiveling plastic board hook and a push-button depth-of-drive mechanism that is very easy to adjust.



GRIP-RITE GRFC83

Lighter and more compact than the other models, the GRFC83 is in other respects an average gun. It does the job but there's nothing very special about it. The nosepiece grips better than most when toenailing, but the small nail slot makes loading the tool slow. The oversized metal rafter hook fits thick material but projects so far forward it can pivot around and hit your wrist.



HITACHI NR83AA3

This solid, no-frills gun operates smoothly and powerfully. There have been multiple generations of NR83 series tools, so we are confident this gun will be durable. We're also aware that it's somewhat dated. It does not have a dry-fire lockout or rafter hook, and it's the only gun we reviewed without adjustable depth-of-drive — and yet it was one of the better tools at setting fasteners to the proper depth. This is a good nail gun, but it is one of the heavier and bulkier models around.

makes them look wider in front, but this didn't affect our line of sight.

Features

Certain features definitely enhance the usability of a framing gun — for example, a board hook, a dry-fire lockout, or a depth-of-drive mechanism that is particularly easy to adjust.

Board hook. About half of the guns in this test come with board hooks, a feature

that allows the user to hang the tool from a sawhorse or nearby framing member. The better board hooks are fully adjustable (they pivot to different positions) and large enough to fit over thick material like 2¼-inch I-joists. I like the Paslode and DeWalt hooks the best because they pivot freely and will fit over thicker framing material. The hooks on the Grip-Rite, Makita, and Ridgid models only fit 2-by material. Makita's hook fits a little too

tightly on the board and adjusts to only two positions.

Magazine. Framing guns load from the top or the rear. I have a slight preference for rear-loading models because they seem to have fewer problems with the paper-collated fasteners we normally use. With a rear-loading gun, you put in the nails and pull the follower back until it just catches the back of the clip. With a top-loading gun, you pull the follower



MAKITA AN943

The AN943 works well and has all of the latest features: a switchable trigger, dry-fire lockout, a built-in air filter, and a three-position metal board hook. Unfortunately, it's noticeably heavier than other models and weighted too much toward the nose.



MAX SN883CH/34

Weighing a mere 7.2 pounds and measuring 12 1/4 inches top-to-bottom, the SN883CH/34 is extremely light and compact. This makes for easier handling overhead and in narrow joist bays. For a gun of its weight, it has surprisingly little recoil. It has a switchable trigger and a built-in air filter but lacks a board hook and a dry-fire lockout mechanism.



PASLODE PF350S

The PF350S is our favorite model because it is light and well-balanced and has the power to consistently set nails in dense material. The contoured rubber grip is comfortable to grasp and the steeply angled air fitting makes it easy to connect the hose while wearing gloves. With tool-less depth-of-drive, dry-fire lockout, and a substantial rafter hook, it has all the features we look for in a framing gun.



PORTER-CABLE FC350A

Other than its low price, there is nothing very special about this tool. The FC350A can do the job, but it had a hard time setting nails in dense engineered lumber — it scored third lowest in our nailing test. Although it is light and short front-to-back, the gun does not feel particularly compact.



RIDGID R350CHA

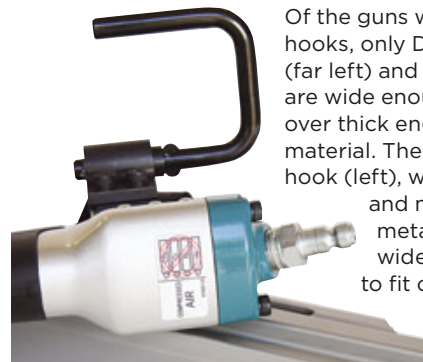
This lighter-than-average gun has every feature a framer could ask for, including a swivel air fitting, a pivoting rafter hook, and dry-fire lockout. However, the depth-of-drive mechanism and covering housing stick out far enough to obstruct your view during toenailing. Of greater concern is this gun's tendency to leave nail heads above the surface, especially in dense material.



SENCO SN901XP

The SN901XP is extremely light and compact, but the tip does not grab very well when toenailing and the gun is unable to consistently set nails in dense engineered lumber. We experienced more recoil with this tool than with most other models.

all the way back (until it catches), drop in the nails, and then release the follower, causing it to slam into the fasteners from behind. The force of the follower striking the nails is sometimes enough to damage the collation (especially if it's wet) and cause the gun to jam. I particularly like the Bosch magazine: It has a quick-release lever that allows you to remove it without tools when you need to get at jammed nails.



Of the guns with rafter hooks, only DeWalt's (far left) and Paslode's are wide enough to fit over thick engineered material. The Makita's hook (left), while sturdy and made from metal, is barely wide enough to fit over 2-by lumber.

Framing Nailers

Firing modes. With most of these tools it's possible to switch between bump-fire and single-shot mode by flipping a switch on the trigger. With the Bostitch, DeWalt, and Grip-Rite guns, changing modes requires the installation of a different trigger (which usually comes with the gun). Either method of getting to bump-fire is fine by me; there is no advantage in being able to switch back to single-fire mode.

Of greater importance to me is whether or not the gun has a dry-fire lockout mechanism. A dry-fire lockout prevents the gun from firing when empty and usually kicks in when there are three or four nails left in the magazine. Longtime carpenters recognize the sound and feel of a gun firing empty, so this mechanism may not make much difference to them. But it's helpful for less-experienced crewmembers who might not notice that they are firing blanks and continue to nail things up only



A quick-release lever allows the Bosch tool's magazine to be removed without tools when clearing jammed nails.

to have them fall down or end up improperly fastened.

Depth-of-drive mechanism. Tool-less depth-adjustment mechanisms have come to be standard on framing guns. Most rely on a thumbwheel (under the trigger or on the nose) to extend and retract the contact element. The mechanisms on the DeWalt and both Bostitch models are activated by a push-button on the nose. I particularly like this design because it's quick and easy to use. On the Bostitch F33PT, the push-button can also be used to detach the standard tip and replace it with one suitable for attaching metal framing hardware.

The Hitachi gun does not have adjustable depth-of-drive, but it was one of the better guns in terms of its ability to drive nails flush.



The thumbwheel on the nose of the Paslode (above) is typical of the depth-of-drive mechanisms found on most framing guns. The thumb-activated mechanisms on the DeWalt (right) and Bostitch guns are particularly easy to use.



Favorite Models

Over time, the carpenters on our crew gravitated toward the same three framing guns. In descending order of preference they were the Paslode, the DeWalt, and the Bosch.

Paslode's gun feels powerful in use and came out on top in our nailing test. It's lighter than average and has a comfortable contoured grip and trigger. The metal rafter hook pivots to several positions and is wide enough to fit over thick engineered framing members.

With its comfortable grip and trigger, the DeWalt was a crew favorite. The board hook pivots freely and will fit over thick framing material, and the push-button depth-of-drive mechanism is very easy to set. Although not particularly light, the tool is well-balanced and easy to handle.

The Bosch proved its power in the field and was the No. 2 model in our nailing test. It has a sharp aggressive nosepiece, a comfortable ribbed grip, and a quick-release magazine that makes it easy to clear jams. The slim piston housing makes for a very good view to the tip. This gun would have placed higher if it came with a board hook.

Tim McNamara is a framing carpenter and contractor in Rochester, N.Y. This article first appeared in Tools of the Trade magazine.