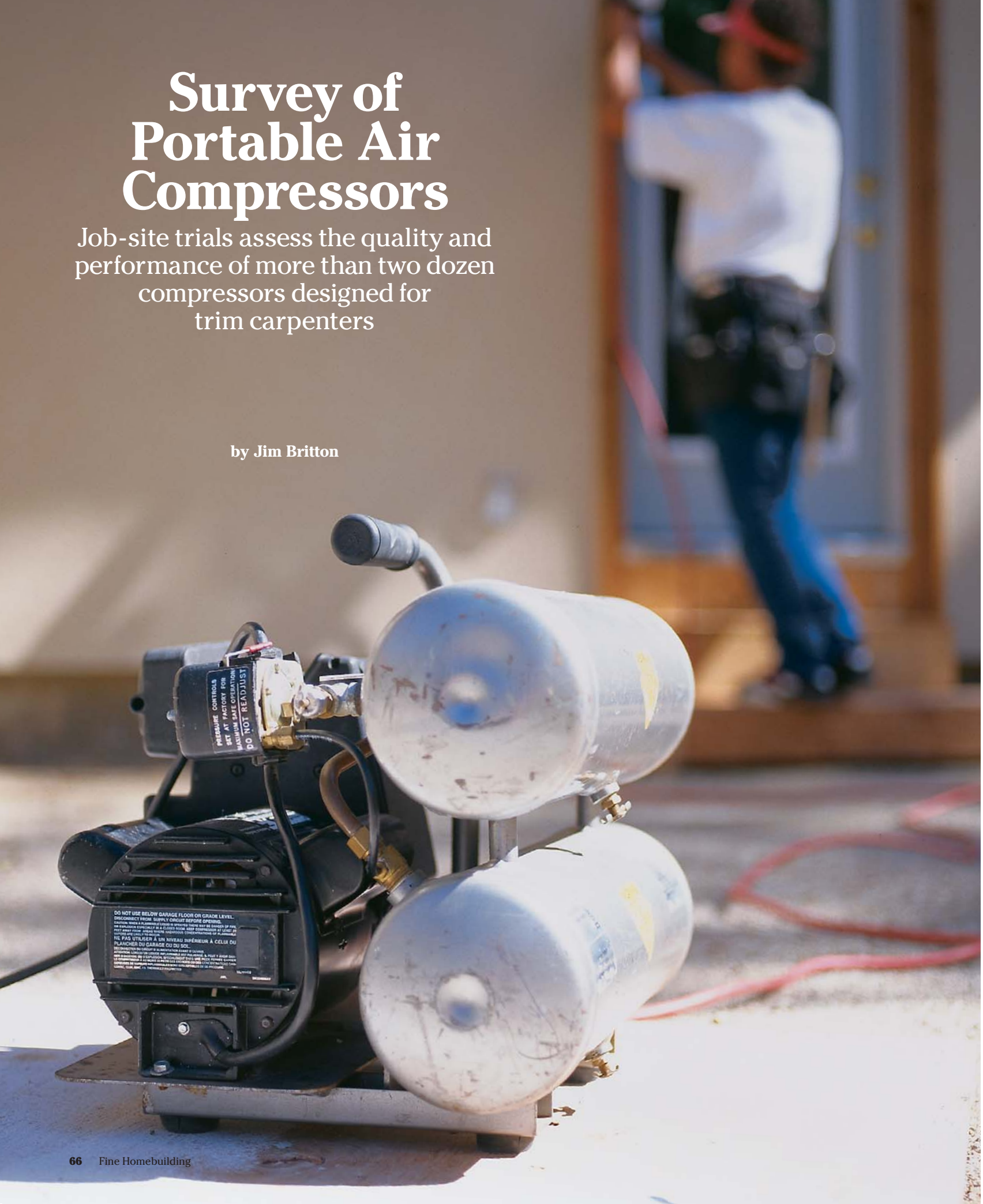
Survey of Portable Air Compressors

Job-site trials assess the quality and performance of more than two dozen compressors designed for trim carpenters

by Jim Britton



As a remodeling contractor and interior-trim specialist, I use my air compressor every day. I can't even imagine working with hand-driven nails anymore. Pneumatic nailers are faster, more accurate and less likely to knock adjacent work out of alignment than hand-driven nails. I also use compressed air to clean my equipment and to remove dust and debris from the work area. So I don't need convincing that pneumatic fasteners are the way to go. And neither do most builders, judging by the number of nailers and compressors on the market these days.

In my last article on pneumatics, I evaluated a couple of dozen trim nailers (*FHB* #98, pp. 72-77). In this article, I'll tell you what I learned about the power plants that drive these tools. Earlier this year, I used all the compressors shown here on my job sites in southern Oregon. The compressors ranged in size from 2-gal. hot dogs to 4.5-gal. twin-tank models, and from 1-hp to 2-hp motors. Every one of them got the job done, but some did it better than others. I found some big differences in how long the compressors took to pump themselves up and how much noise they made doing it. There were also some notable discrepancies in the way the machines are finished and detailed. But before we get into that, let's first look at what constitutes one of these compressors.

The major components—All the compressors surveyed here have the same components: the motor/pump; the tank; the pressure switch; the pressure regulator; and the pressure gauges. One gauge reads the tank pressure, and the other reads the outlet, or line, pressure. The regulator controls the line pressure. Turn the knob clockwise for more pressure to the tool, counterclockwise for less. The pressure switch tells the motor/pump when to turn itself on as tank pressure falls as the compressor is used. After working with the compressors discussed here, it becomes obvious that larger motors draw fewer amps, and generally speaking, they will pump up the tank quicker. The higher the rpms, the faster the tank reaches working pressure. But along with high rmps comes more noise.

Tanks come in two shapes: cylinders called hot dogs and circular, pillow-shaped tanks called pancakes. Manufacturers arrange tanks in varying ways. For example, many compressors use a pair of 2-gal. cylinders stacked atop one another to save space. To lower the center of gravity, some put tanks side by side. Pancake tanks are usually used to save floor space, and they have the motor/pump mounted atop the tank. Two manufacturers, however, tip pancakes on edge, encircled by a roll-cage handle that protects the components.

Bigger tanks for bigger fasteners—I urge framers to beware of small compressors. The larger the fastener being driven, the greater the consumption of compressed air. All these compressors will operate framing nailers, but none of them will keep a crew busy sheathing a floor or a roof. These compressors just can't pump fast enough to keep pace with rapid-fire nailing, and their smaller tanks mean they'll be running all the time. At minimum, a framing/sheathing crew needs a 7-gal., 2-hp compressor.

If you're a one-person trim crew, though, a 2-gal. or 3-gal. compressor may be what you need. If you have two carpenters working from the same compressor, you will want a 4-gal., 1½-hp to 2-hp machine.

If you have older nailers requiring more pressure, look for a compressor that operates at higher pressures. If you set line pressure at 110 psi for a fussy nailer, you will have trouble with a compressor that kicks on at 90 psi.

Consider the details—Although performance is pretty straightforward, choosing the right machine can also be a matter of personal preference. For example, I think a good compressor should have gauges that are easy to read. Tank-drain petcocks should be easy to access without being vulnerable. If it's an oil-bath compressor, its dipstick should be easy to reach. Some air cleaners are better than others (bottom photo). I'm also influenced by the paint jobs that manufacturers put on their compressors. Clearly, some companies care more about the finish than others.

Some carpenters have a pretty high tolerance for noise. I don't. The quieter the compressor, the better. After using each compressor on job sites, I brought them back to my workshop and took decibel readings for each

Oil-less compressors use Teflon instead. A Teflon-impregnated ring around the top of the piston rides in an aluminum cylinder to create the seal necessary for an oil-less compressor pump.

Some air cleaners are better than others. Manufacturers use a variety of air cleaners to trap particles before they enter the pump. The author prefers the automotive-type, accordion-fold paper filter that's shown in the upper right-hand corner for its durability and ease of cleaning.

one. They ranged from a screaming-eagle high of 80 db. for the Thomas T-150 to a low of 56 db. for the Thomas T-617HD (this little compressor was so quiet that one colleague described it as sounding like an aquarium pump).

Oil-bath vs. oil-less pumps—The traditional compressor pump has a piston with a couple of metal rings encircling it. As the piston goes up and down, its crank splashes oil from the crankcase onto the piston. These oil-bath pumps are built to close tolerances and will last for years if well cared for.

The newer, oil-less style pumps have a Teflon-coated seal at the top of the piston. It rides in an anodized aluminum cylinder (top photo, p. 67) that is open to the air below: no crankcase, and no oil.

A great debate rages between the proponents of oil-bath pumps and those who favor oil-less design. The oil-bath side claims much longer

Oil-bath compressors

Emglow AM78

Tank size	4 gal.
HP	1½
Amps	14
List price	$542*
Recovery	10 sec.
On/Off	95/125
Noise level	73 db.
Weight	55.3 lb.
Phone	(814) 269-1000

The original Airmate twin tank must be the most popular compressor in the United States. I see them everywhere. The components are well protected and easy to reach. And the gauges, which point up, are easy to read. Emglow is the only company to coil its air-delivery pipe. This is a nice detail and will relieve vibration conduction and provide for expansion when hot and reduce the temperature of the compressed air. The Emglows are beautifully detailed compressors.

Emglow AM79
Senco PC0321

Tank size	4 gal.
HP	1½
Amps	14
List price	$572*
Recovery	10 sec.
On/Off	95/125
Noise level	73 db.
Weight	57.9 lb.
Phone	(814) 269-1000

This twin stack is the new variation of the famous AM78 Airmate. This design uses side-mounted gauges, which I usually find annoying, but these gauges are large and are angled up slightly. The Italian Fini motor/pump produces great air displacement and, thus, quick recovery time. The handle has been canted for easier carrying, but it is still a two-hander for me. It also weighs a little more than its predecessor. (List price for the Senco model is $519; phone 800-543-4596.)

Ermaco E1500D-4

Tank size	4.2 gal.
HP	1½
Amps	12
List price	$330*
Recovery	25 sec.
On/Off	105/135
Noise level	62 db.
Weight	55.4 lb.
Phone	(800) 448-4873

An Italian import, this compressor is attractive and nicely finished. The side-by-side tanks with their over-the-top handle provide for good carrying and a low center of gravity. It is by far the quietest 4-gal. compressor that I tried, a result of running the motor/pump at much lower rpm. The Ermaco runs less often due to its higher operating pressure of 135 psi. But a consequence of this design is that the recovery time is long. The drain valves in each tank oppose each other, which is a drawback. When the tank is tilted to drain the water, only one side will drain. They should be in the same position on each tank.

Jet DHC15T4

Tank size	4 gal.
HP	1½
Amps	13
List price	$350*
Recovery	16 sec.
On/Off	95/125
Noise level	72 db.
Weight	49.8 lb.
Phone	(800) 274-6848

This nicely finished pancake is made by Emglow. It uses an Italian motor/pump by Dari. The components are well protected and lie within the circumference of the tank. The gauges read from above. The handle is good for one-hand or two-hand portability.

*Retail and mail-order prices are often far less.

pump life. Even some on the oil-less side will agree to this argument in a perfect world. However, so much is contingent on care that I could see a good oil-less compressor outlasting a poorly maintained oil-bath unit. And to lubricate itself properly, an oil-bath compressor should be set up level every time.

I have to admit to being won over by oil-less technology. I like not having an oily film on the compressor (makes it easier to keep clean), and because there's no danger of oil spilling, I don't worry about oil getting on unfinished work surfaces, such as hardwood floors.

My compressor is a 1½-hp Campbell Hausfield twin-tank oil-less unit. It has been worked hard for three years, approximately 30 weeks per year. It still works fine. In fact, as research for this article, I sent it to my repair shop for service. There was little sign of wear. The motor was in good shape. The piston and Teflon ring were not as tight as new, but were sealing

Hitachi EC6B

Tank size	3 gal.
HP	1
Amps	9
List price	$540*
Recovery	24 sec.
On/Off	100/125
Noise level	69 db.
Weight	43.1 lb.
Phone	(800) 829-4752

At 69 db., this 3-gal. pancake compressor is fairly quiet. It is compact and low, and all the components fall smartly into the tank circumference. At 43 lb., it is the lightest pancake I tested. Fiac of Italy manufactures this unit for Hitachi. It rests on three suction-cup feet that really work. Also, with three feet, it never rocks on uneven surfaces. The drain protrudes a bit too far, and this hampers the tilting needed to eliminate the condensate. I didn't care for the side-read gauges. I do like the rigid copper pressure-relief tube. With only minor problems, this is a pleasing compressor that is well presented.

Hitachi EC12

Tank size	4.3 gal.
HP	2
Amps	14.5
List price	$608*
Recovery	17 sec.
On/Off	100/125
Noise level	75 db.
Weight	60 lb.
Phone	(800) 829-4752

Hitachi once again called on Fiac to make their 2-hp twin stack. At 4.3 gal., this good-looking machine has slightly larger tanks than most twins. The drain is well protected, and it tilts easily to remove condensate. Hitachi has used a slimmer tank, which brings the handle closer to the carrier. I can almost carry this compressor one-handed. The drawbacks are few. Although I like the single-screw air filter, it is positioned directly above the dipstick. The dipstick consequently has to be made in two pieces to be removable. Its requirement for 5W50 synthetic oil made filling it a hassle. But all things considered, it's a fine compressor.

Rol-Air D1500HPV5

Tank size	4 gal.
HP	1½
Amps	14
List price	$528*
Recovery	14 sec.
On/Off	105/135
Noise level	74 db.
Weight	55.4 lb.
Phone	(920) 349-3281

This 4.5 gal. is a pancake variant. The cake is turned 90° and is mounted on the frame at the circumference. A crossbar and handle combine to create a roll cage that provides several ways to carry this unit while protecting the components. This compressor uses the same Fini motor/pump found in the Emglow compressors. But its recovery time is greater because the pressures are set higher. The only shortcoming for me was that the drain petcock is too close to the frame. I don't have the finger dexterity to turn it. Other than that, this is a fine compressor.

Stanley Bostitch CWC100

Tank size	4 gal.
HP	1
Amps	12
List price	$295*
Recovery	23 sec.
On/Off	105/135
Noise level	71 db.
Weight	51.5 lb.
Phone	(800) 556-6696

Stanley has produced (by Fiac) a traditional pancake with a partial roll cage. This design results in more carrying options plus good component protection. I really like the drain location. Simply tip the compressor on the nearest foot for easy draining. On the other hand, this pump has the same filter/dipstick problem that mars the Hitachi EC12. The gauges are side mounted. On the job site the compressor seemed to run often and long. This is a one-gun compressor.

*Retail and mail-order prices are often far less.

well. If you take care of it, an oil-bath compressor will last longer than an oil-less one. But the oil-bath compressor will cost more to repair. Oil-less compressors can be rebuilt for about $50 worth of parts, by you, on site.

Taking the confusion out of performance ratings—Judging performance by reviewing promotional materials or talking to salespeople can be frustrating. Problem is, there aren't any standardized tests for comparing performance. Take air delivery, a common measure of performance, for example. Air delivery measures the amount of compressed air supplied in a given amount of time at a given outlet pressure. For this to be a meaningful number, all the manufacturers would have to use the same outlet pressure on their data sheets. They don't.

Even air displacement can't be used for a comparison. Air displacement is the amount of outside air (measured in cubic feet) that a compressor

Oil-less compressors

Coleman/Powermate CP150

Tank size	4 gal.
HP	1½
Amps	15
List price	$424*
Recovery	26 sec.
On/Off	95/125
Noise level	79 db.
Weight	61.9 lb.
Phone	(800) 445-1805

The CP150 is a tilted pancake with extra handles that create a roll cage. I found this compressor the easiest to carry of any 4-gal. model. The components and the drain petcock are well protected. For all the noise it makes, I expected more performance. The recovery time is poor. Yet the unit worked well on the job. I found the gauges to be easy to read. The air filter is poorly conceived. As with all the Powermates, the foam filter is under a plastic cap that is part of the pump cover. The slot in the cap suggests opening it with a screwdriver, but the slot is too large for a screwdriver to get a good purchase on the cap.

Coleman/Powermate CS175

Tank size	4 gal.
HP	1¾
Amps	15
List price	$494*
Recovery	23 sec.
On/Off	95/125
Noise level	79 db.
Weight	55.8 lb.
Phone	(800) 445-1805

This twin-tank compressor worked well on the job, but it is obnoxiously loud. For as much power as Coleman claims, this compressor has too long of a recovery time. The drain and the components are well protected, but the finish seemed thin and had already started to wear off in places.

Coleman/Powermate CH100

Tank size	2.5 gal.
HP	1
Amps	15
List price	$363*
Recovery	24 sec.
On/Off	95/125
Noise level	72 db.
Weight	46.3 lb.
Phone	(800) 445-1805

This is a 2½-gal., single-tank compressor with 1 hp. Although it shares all the negative points of the other Powermates, surprisingly, it is the most likable of the line. It is not nearly as loud. I did like the handle and balance for carrying this compressor. The drain petcock is well positioned. I didn't care for the side-mounted gauges. Bungee this one for transport, though—it is top heavy.

Campbell Hausfeld WL5043

Tank size	4 gal.
HP	1½
Amps	14
List price	$189*
Recovery	23 sec.
On/Off	90/125
Noise level	67 db.
Weight	51.6 lb.
Phone	(800) 543-6400

This 4-gal., 1½-hp pancake is very clean. The components lie within the circumference of the tank. The petcock is located well for drainage. This compressor has a comfortable D-shaped handle. I can just about carry it one-handed. My only beef with this compressor is that to read the outlet-pressure gauge from above, I had to make the regulator knob face the pump. This tool is skillfully built. The paint is good. A nice presentation.

*Retail and mail-order prices are often far less.

will cram into the tank in one minute (cfm). Judging by my studies, it is obvious that some manufacturers inflate, so to speak, this figure. Some manufacturers don't even bother to include cfm ratings with the information about their compressors.

I think the important statistic is the time it takes the pump to get from its startup psi level to its shutoff psi level. The Emglow compressors, for example, shut off at 125 psi, and then they turn on again when the pressure sinks to 95 psi. It takes them 10 seconds—the recovery time—to get from 95 psi to 125 psi. That's a pretty quick recovery time. Another compressor that has similar specs, the Coleman/Powermate CP150, takes 26 seconds for its recovery time.

Chances are very good that a trim carpenter working alone will not outrun a compressor that recovers in 26 seconds. A carpentry crew with multiple workers, on the other hand, will need a compressor that recovers

Campbell Hausfeld WL5058

Tank size	4 gal.
HP	2
Amps	13.5
List price	$364*
Recovery	16 sec.
On/Off	90/125
Noise level	68 db.
Weight	61.4 lb.
Phone	(800) 543-6400

With stacked twin tanks, this 2-hp, 4-gal. compressor is another well-finished machine. The motor has a lower current draw. The components are well protected. I find that the single handle doesn't work for me. Yet good performance, low amps, quiet running and simple design make this compressor a winner.

DeVilbiss SDS100E3D

Tank size	3 gal.
HP	1
Amps	15
List price	$199*
Recovery	16 sec.
On/Off	90/120
Noise level	71 db.
Weight	46 lb.
Phone	(800) 888-2468

I didn't like anything about this model except the drain petcock. It is a 3-gal. hot-dog style that weighs a whopping 9 lb. more than its literature states. The pressure-relief tube blew off the first time it was run. After I secured the tube at the pressure switch, I found a leaky gauge fitting. After a screw and spacer fell out of the plastic cover, I became concerned with the integrity of this compressor.

DeVilbiss SDS100E4D Craftsman 16345

Tank size	4 gal.
HP	1
Amps	15
List price	$229*
Recovery	19 sec.
On/Off	90/120
Noise level	71 db.
Weight	48.8 lb.
Phone	(800) 888-2468

This 4-gal., 1-hp pancake is an improvement over the hot dog. The gauges read from above, and the drain is well protected. It is not a loud compressor. It does weigh 7 lb. more than listed in the manufacturer's literature. The air filter on this one and on the hot dog is a skimpy piece of foam that buttons to the air intake. This is the only compressor in the survey that crept across the floor. (The Craftsman model has a list price of $240; phone 800-377-7414.)

DeVilbiss SDSC150E4STD Craftsman 15445

Tank size	4 gal.
HP	1½
Amps	12
List price	$249*
Recovery	23 sec.
On/Off	100/125
Noise level	71 db.
Weight	57.4 lb.
Phone #	(800) 888-2468

This twin-tank, 4-gal., 1½-hp unit is the best in the line. The frame has been nicely bent into a partial roll cage that makes this compressor easy to carry. The components are protected, and the gauges read from the top. The single-screw air filter is a bit awkward going on, but a big improvement over the other models. I like the rigid pressure-relief tube. The drain petcock touches the floor when the unit is tilted, so be careful not to bend it. It worked well on the job site. (The Craftsman model has a list price of $280; phone 800-377-7414.)

*Retail and mail-order prices are often far less.

quickly. The recovery time for each compressor is included in the individual assessments.

Maintenance and operation tips—I'm amazed when I see a carpenter using a filthy compressor. After all, it is a tool that can be used to clean itself. I keep an air nozzle with my compressor, and I use it daily to blow out any dust that catches in the motor and pump. If I'm on a dusty job site, I use compressed air to clean the air filter once a week. With the compressor unplugged, I take the cover off the switch and blow the dust off it as well.

At the end of the day, I open the petcocks at the bottom of the tanks and drain the condensate. Some compressors require tilting to drain their tanks completely. I also leave the petcocks open when not in use. If you've got an oil-bath pump, check its oil level daily, and change the oil according to the owner's manual.

Oil-less compressors (continued)

Hitachi EC6C

Tank size	3 gal.
HP	1
Amps	9
List price	$580*
Recovery	27 sec.
On/Off	100/125
Noise level	67 db.
Weight	44.4 lb.
Phone	(800) 829-4752

Fiac has made Hitachi's 3-gal. pancake. As with all the Italian compressors, the drain petcock closes easily without firm tightening. The petcock is well positioned for draining—tip it up on the nearest foot. This compressor also has suction-cup feet that hold great on less porous floors. The handle, which is incorporated in the motor/pump cover, makes the compressor easy to carry. The outlet-pressure gauge reads from the side.

Makita Mac 1200

Tank size	4 gal.
HP	2
Amps	15
List price	$698*
Recovery	15 sec.
On/Off	95/125
Noise level	78 db.
Weight	61.4 lb.
Phone	(714) 522-8088

If noise level equaled performance, the Mac 1200 would take the day. This compressor is loud. It also appears as though this 4-gal., 2-hp unit doesn't perform up to the boastful claim of 11.9 cfm of air displacement. If it could stuff that much air into its tank, the recovery time would be around 6 sec. It is not. On the plus side, the gauges are easily read, and this compressor has the best air filter of the bunch. I like the twist-off metal cover with the automotive-type filter inside. The steel handle is in the right place, but the compressor is very heavy.

Makita Mac 500

Tank size	2.5 gal.
HP	1
Amps	10
List price	$390*
Recovery	19 sec.
On/Off	90/115
Noise level	77 db.
Weight	24.4 lb.
Phone	(714) 522-8088

This 2.5-gal., 1-hp hot-dog-style compressor is the lightest that I tried. The gauges read from above. The handle is in the plastic cover, and it is easy to carry. It is the only hot dog not prone to tipping. The major drawback to this compressor is the noise.

Stanley Bostitch CWC200WT

Tank size	4.5 gal.
HP	2
Amps	14
List price	$325*
Recovery	23 sec.
On/Off	95/125
Noise level	76 db.
Weight	56 lb.
Phone	(800) 556-6696

Fiac of Italy has produced this compressor for Stanley. It is a 4.5-gal., 2-hp, low-profile design. The motor/pump is set between the tanks. This design provides excellent component protection in a unit that will never tip over. But it does take more floor space. The handle connects the ends of the tanks and allows the compressor to be carried like a suitcase. The drains are well placed at the tank bottoms. Why the designer brought the air outlet straight up and placed the gauge sideways, one can only wonder. The suction-cup feet keep this compressor where you put it. The recovery time is long, and this tool is loud.

*Retail and mail-order prices are often far less.

When I'm getting ready to start work in the morning, I let the compressor run for a couple of minutes before closing the petcocks. This dries out the tanks, and it keeps moisture from getting into my nailers.

If you're working outside, set the compressor on a sheet of plywood. Never set a compressor in the dirt, especially if you're using one of the oil-less models. Their pumps are open to the air, and a dusty atmosphere will hasten their demise.

All the compressors I examined can be run on extension cords. But keep in mind that increased cord length or decreased cord gauge will increase amperage and shorten the life of the motor. It is better to keep the compressor close to the power source and to lay out more air hose. □

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Thomas T-30

Tank size	4.5 gal.
HP	1¼
Amps	12
List price	$339*
Recovery	21 sec.
On/Off	100/125
Noise level	67 db.
Weight	51.8 lb.
Phone	(800) 558-7721

Thomas, the original patent holder of oil-less technology, sells several small compressors in varying configurations. Their 4½-gal. pancake features a 1¼-hp, low-amperage motor for long life. It is quiet. It is a bit slow recovering to maximum pressure, so this is a one-carpenter compressor. All the components reside in the circumference of the tank. The outlet gauge is facing up for easy reading. The drain petcock skims the floor when the unit is tilted to drain the water. This compressor is easy to work with, and it carries well with its head-mounted handle. Like all the Thomas machines, it is beautifully detailed.

Thomas T-150 ST

Tank size	4 gal.
HP	2
Amps	12.5
List price	$349*
Recovery	9 sec.
On/Off	100/125
Noise level	80 db.
Weight	68 lb.
Phone	(800) 558-7721

This compressor was the loudest in the survey. But unlike its competitors, it is a prodigious performer. Its scant 9-sec. recovery time was the fastest in the survey, indicating great air displacement. Wow! The 2-hp motor is huge, resulting in a low amp draw. At 68 lb., it is the heaviest machine in the survey. The handle is canted to help you strong folks, but I carried it two handed by the ends of the tank. As with all the Thomas compressors, there is no plastic cover over the components. I like this no-nonsense look. This is a two-nailer unit.

Thomas T-2820 ST

Tank size	4 gal.
HP	2
Amps	13.5
List price	$459*
Recovery	10 sec.
On/Off	100/125
Noise level	69 db.
Weight	65.9 lb.
Phone	(800) 558-7721

With nearly the performance of the T-150, this offering pumps up fast, and it is quiet. Thomas has done this by connecting two motor/pump assemblies in tandem. This compressor has two 1-hp motors and two pumps. Together, they draw only 13.5 amps. The up-facing outlet gauge is easily read. I don't care much for the air filter. It's a quirky clamshell affair. Have your Teflon tape handy when you clean the filter (the threaded plastic nipple splits in half when you open the filter case). Despite this complaint, this is my favorite oil-less compressor.

Thomas T-617 HD

Tank size	2 gal.
HP	½
Amps	4.2
List price	$250*
Recovery	30 sec.
On/Off	100/125
Noise level	56 db.
Weight	24.5 lb.
Phone	(800) 558-7721

This little compressor has been attracting attention since the day it arrived. It is tiny and by far the quietest compressor tested. At 56 db., it would barely register on the sound meter. With the components mounted atop the 2-gal. tank, it is top heavy, so surround it or lay it on its side in the truck. As should be expected, it produces small volumes of air. The person who needs a tool like this could be a pickup finish carpenter or a cabinet installer. This unit has no pressure regulator on the outlet, so your tool must be flexible in the pressure range of 100 psi to 125 psi. At 3.7 amps, this motor should never fail. It has the great Thomas look.

*Retail and mail-order prices are often far less.