

■ ■ “The wicked are wicked, no doubt,” wrote Thackeray, “. . . but who can tell the mischief which the very virtuous do?”

While it's doubtful that the mid-19th-century British novelist had any thought of airplanes in mind when he penned those words, a fair percentage of renter-pilots, airport “lineboys” and, yes, plane owners might do well to heed them. Why? Well, if you've ever watched some of these “gentle” folk park, fuel, or just move airplanes around on the flight line, you wouldn't ask, Mischief indeed!

At the very least, the sit-down method of maneuvering an aircraft can cause skin damage to the horizontal stabilizer. If frequently repeated, some A&Ps say, it could contribute to spar fatigue.

Photos by the author



concern is with much more serious abuse visited upon airplanes in the course of “handling” them on the ground: abuse wrought at times through ignorance, once in a very rare while through sheer spite, but far more often through a simple failure to stop and think. As a renter-pilot whose joy in flying, not to mention joy in living, could very well depend on the kind of treatment given by others to the various birds he flies, I'm truly bothered, because the kind of abuse I have in mind not only turns an airplane into a “dog” in a hurry, but could conceivably affect its airworthiness. Which is to say, it's not just a matter of keeping an airplane neat and new and shiny for the next man who flies it, or for yourself, if you're sole owner—there are certain safety considerations, too.

Now, that latter may sound pretty farfetched—at least it may until you

give some thought to such simple things as tire abuse, for example. How many times have you seen some unthinking renter-pilot or lead-footed lineman stand on one brake, shove the throttle wide open, and grind one tire into the concrete, while pivoting a plane into a tight parking spot? More than once, I'll bet. And more than once, too, I'll venture, you've seen someone shoving an airplane backwards into a tiedown spot, all the while steering it by alternately kicking the nosewheel right and left. A few instances of either kind of abuse can render a plane “unflyable”—thanks to exposed tire cord, or a leaky nose strut, or both—even as it sits there on the line. Worse, either can lead to a blowout or a collapsed strut on takeoff or landing, the aftermath of which could be downright unhealthy, and not just for the airplane.

Along similar lines, a couple of other “simple things” in abusive ground-handling could have far-reaching consequences. “Tailing” a plane into a parking place by sitting on its horizontal stabilizer and shoving backwards with one's legs is a common practice on many a flight line. So is ignoring those little

How Not To Ground-Handle An Airplane

Mistreatment on the flight line can run up your bird's maintenance bills and may impair its safety

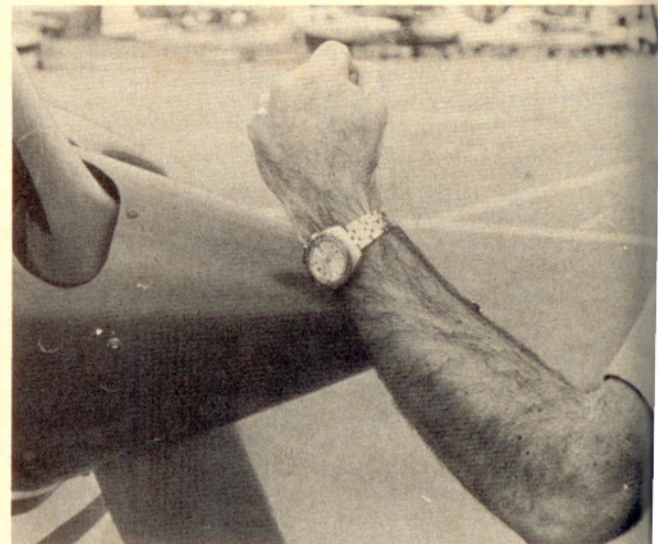
Tugging an airplane by its prop—especially by the tip-end of a single blade—subjects such things as crankshaft bearings and oil seals to distinctly unhealthy forces and may contribute to metal fatigue.

by W. E. SPRAGUE / AOPA 415050

Granted, airplanes—especially the rentable kind—can be expected to suffer a few slings and arrows of unfortunate ground-handling; a matter of “normal wear and tear,” and all that. And if someone's going to complain about things like scuffing a wheel fairing now and then while getting in and out of a plane, or muddy feet on the carpet, or maybe chipping the paint with a tiedown chain, that—as Thackeray himself might well have put it—is just “a bit much.”

All well and good, and I'm with you. Except that I'm not talking about the usual scrapes and dings any aircraft is bound to acquire in its lifetime. My

Checking the security of the spinner by pounding it mightily during your preflight could loosen its mounting screws. Eventually, such continued mistreatment might lead to loss of the spinner in flight.



stenciled signs on wings and tail sections that read "no step" and "no lift." Either can promote "skin" cracks that could not only result in "down time" for repairs but, according to several A&Ps of my acquaintance, could also contribute to the fatigue of certain internal structural members. Which latter, of course, is anything but conducive to general airworthiness and safety.

Another favorite target for abusive ground-handling is the propeller spinner, perhaps the most "simple thing" on any plane. I've seen renter-pilots, supposedly checking its security while preflighting, pound on that bullet-shaped gadget up there on the nose with such force that it was a wonder it didn't come off right then and there. That it didn't is a tribute to the amazing tenacity of sheet-metal screws. Somewhere and sometime, however, such mistreated spinners may very well come off—like maybe in flight. A suddenly departing spinner, it's true, would have little direct bearing on safety; it would probably whirl off into the blue in the direction of its spin. At best, though, it would be none too good for your nerves, and it's interesting to wonder what might happen if it came whipping straight back into the prop and windshield. More to the point, perhaps, is the fact that the general airworthiness of certain makes and models of planes demands that they have intact spinners. The absence of same is not just "illegal," but raises Cain with proper engine cooling.

Speaking of spinners brings up the matter of props themselves, and the fact that there seem to be a good many linemen and pilots who can't resist using them for handgrips when tugging airplanes about on the flight line. Now propellers can and do take a good deal of punishment, as witness the countless little nicks and gouges they are heir to in the course of ordinary use. What's more, look at the stress and strain they must sustain in hauling a whole airplane through the sky. Surely, pushing and pulling on them is harmless enough, isn't it?

Well, first, there's the matter of your own personal safety, in this case. A broken or loose "ground wire" can, of course, be every bit as effective as turning the mag switches to the "on" position. But aside from the fact that you

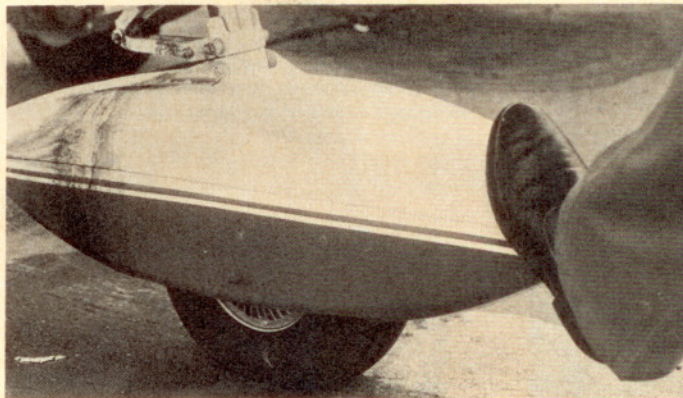
could suddenly find yourself tangling with a "hot," spinning prop, pushing or pulling on one that's definitely "cold"—especially toward the tip-end of a single blade—is still ill-advised. Doing so subjects things like crankshaft bearings and oil seals to unnecessary stress. Moreover, according to some of my A&P friends, it can contribute to hub failure in constant-speed props; and in the blades of either constant-speed or fixed-pitch props, it can even help promote metal fatigue. Granted, this kind of abuse is far more likely to show up in terms of increased maintenance bills than in the course of flight. But if it's your own plane, why create more expense for yourself? And if it's a rented bird, would you like to be flying it in the event that it *doesn't* show up just in the form of repair costs?

Another favorite handgrip of the insensitive ground-handler seems to be the midpoint in the span of a wing strut. Most modern struts, it's true, will suffer very little as a consequence of this particular abuse. Designed with a wide, airfoil-shaped cross section, they can resist the pull of the beefiest pilot or lineman. But some struts are not so designed and can in fact be bent by pulling on them, so why develop the habit at all? In the course of handling

different planes, it's too easy to grab a handful of the "wrong" type. Even the wide, airfoil type of strut, subjected to this kind of abuse, could begin to fatigue at its anchor points. And, on the subject of struts, there is one kind of abuse that none of them can tolerate—using them as a step, in order to clamber up on a high-winged plane to check the tanks or fuel it. Yet I'll bet you've seen it done as often as I have. It takes no great imagination to see a relationship between bent struts, on the one hand, and "doggy-looking" airplanes and flight safety on the other.

There are still other ways in which the careless and thoughtless among us frequently abuse still other portions of a plane's anatomy while tending to its needs and positionings on the flight line. But by now the point is no doubt clear: airplanes on the ground deserve every bit as much in the way of careful handling as airplanes in the air—in some ways, perhaps even more. In the air, a plane can withstand several thousand pounds of G-force; on the ground, a mere 165 pounds of lineman, pilot or owner can, as they say, play hell with it.

The first rule of careful ground-handling is, of course, use a tow bar. The second rule—applicable only if



A size-10 D-width is no substitute for a tow bar. Steering a plane by kicking the nosewheel can promote nose-strut failure, as witness the strut leak this bird has already developed.



Risking a bent wing strut by pulling on it in mid-span is bad enough, but standing on it to check the fuel tanks is an unforgivable abuse.



Ground-Handling Airplanes

(Continued from preceding page)

there just is no tow bar around—is use your head, as well as your hands and feet, whenever you tug or taxi an earthbound bird about. In the areas we've examined, for instance, a little such headwork suggests the following:

1. When taxiing in tight quarters, don't stand on one brake, blast the throttle, and pivot. Instead, while holding a modest rpm, try a series of quick little jabs on the brake pedal. You'll turn darned near as tightly, and the tire, able to roll a bit, won't have its tread ground down to the cord. And if the quarters are too tight, shut down the engine, get out, and move the plane around bodily.

2. When moving a plane bodily—either around in an arc as in No. 1, or say, into a tiedown spot—it's okay to push it back a few feet, providing you don't have to play soccer with the nosewheel in order to keep it going straight. If the nosewheel is cocked or the distance is too great, you're applying your muscle power at the wrong end of the plane. Go back to the tail.


3. When "tailing" your bird, whether around a point or into a parking space, face rearward and push *gently*, if firmly, against the leading edges of the horizontal and vertical stabilizers, with your hands as close to the fuselage as possible. Never push or pull on trailing edges of the wings or tail surfaces. If your plane is a "taildragger" with a swiveling tailwheel, make sure the wheel is turned 180 degrees. If it's a tricycle-gear aircraft, lay one arm and as much of your torso as you can over its "spine," just ahead of the vertical stabilizer, spreading your weight as best you can. This, of course, is to lift the nosewheel enough to let it "trail" in the direction of travel. In moving the tail right or left, "press" against the fuselage—don't push—with your body. And at all times, of course, watch for and heed those little stenciled signs. (When you're pushing a tri-gear aircraft backward, it helps to have someone in the cockpit to operate the pedals.)

4. If you must push or pull on a propeller, use both hands, placing one on either side of the hub or spinner, as close to the hub or spinner as possible. In pulling, use only as much of your fingers as needed—preferably not more than the first joint curled around the edge of the prop blade. In pushing, use only the "flat" of the hand. This technique not only equalizes the force on


the crankshaft and avoids "bending" the blades but also safeguards your hands and fingers, should the prop turn out to be "hot." The best bet, though, is to regard all props as "hot" and leave them alone. Concerning prop spinners, a close look and perhaps a bit of pressure applied with the palms of your hands should suffice in preflighting them for security.

5. Where wing struts are concerned, it's okay to pull on them, providing you do so as close to either end as possible. And, again, the byword is "gently." The only thing to be said about standing on a strut to check fuel or top the tanks, however, is *don't*. Use a ladder or a stout wooden box instead; just about anything, in fact, other than the strut. (Some of the new Cessnas have footholds on the struts and handholds on the cowlings as optional equipment to allow a pilot to check fuel tanks without a stepladder. They are great additions.)

So there we have it—the kind of mischief that the otherwise virtuous may do where earthbound birds are concerned. To some, it may yet seem that troubling oneself over proper and improper ways of ground-handling airplanes still amounts to much ado over relatively nothing; and perhaps these are the ones to whom Thackeray's words really apply. To the rest of us, though—to those who are willing to give a moment's thought to the pleasure, comfort and, yes, safety of others—hopefully it's a case of "virtue is as virtue does." □



Never try to move an airplane by pushing or pulling on the trailing surfaces of wings or tail. Such carelessness could quite possibly lead to serious structural damage.



Thoughtlessly ignoring a "no step" sign is anything but beneficial to this—or any—airplane.

THE AUTHOR

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Note swirl marks on this tire—the result of maneuvering into a tight parking space by locking one brake, ramming the throttle wide, and pivoting the airplane through a turn. Abused tires lead to blowouts, which can lead to groundloops, which can lead to . . .