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Over the past three decades, the training fleet has been dominated by two aircraft: the Cessna 152/172 and the Piper PA-28 Cherokee, later called the Warrior. Tens of thousands of pilots spent their flying hours on these aircraft. Introduced in early 1961, the low-wing PA-28 marked a fundamental change for Piper. It was the first model built in Piper's new Vero Beach, Florida, facility instead of its ancestral home of Lock Haven, Pennsylvania. Cherokee was also the first Piper to build riveting aluminum skins over a lightweight aluminum fuselage design. Piper used to weld steel pipes into farms like a fuselage and then cover them with cloth or aluminum. For a good look at the semi-monocoque of the PA-28 design, remove the panel on the rear bulkhead that separates the luggage compartment from the fuselage. The minimalist structure you see is lightweight but very strong because aluminum skin is an integral part of the strength and integrity of the fuselage. It is also cheaper to build than steel pipe structures of old. The basic design of the PA-28 was a template for numerous Piper two-, four and six-place singles, and even a pair of twins. But the original 160-hp, fixed-transmission PA-28 lives in the new Warrior III. From the beginning, the PA-28 was supposed to be an inexpensive aircraft that offered benign (safe) flight characteristics and reasonable characteristics. The stabilizer, sometimes described as a flying tail, is one of the Warrior's hallmarks. The entire horizontal tail turns like one to act as an elevator. Although it gives pilots a lot of step control, the stabilizer was primarily used because it was considered more economical to build than a conventional stabilizer/lift. Our PA-28-161 Warrior III This philosophy - lower production costs - has also affected the design of the wing. Pa-28 Cherokees have chunky, permanent chord wing planforms. The inboard part of the warrior wing retains this shape, but the leading and rear edges of the outer cone panels. This gives the Warrior a higher ratio of sides (share of wingspan and wing chord). In general, a higher ratio of aspects contributes to a better uplift and performance of the cruise due to lower induced resistance. The conical part of the Warrior wing also includes some washing out. Stand on the wingtip and look down the front edge and you will notice that the cutting edge turns a little down near the tip. This decrease in the angle of morbidity means that even when the root area of the wing has stalled, the outer part of the wing continues to generate lift and the ailerons remain effective. All this means that the plane is more controlled in an aerodynamic stall. Glider, Avionics and Interior: If you entered at any time in an old cherokee or warrior, you will quickly transition to Warrior III. Soldiers I and II, and a two-seater cadet - this preceded. The cantilever's wing (without supporting wings) is equipped with hinged ailerons and four-step (0, 10, 25 and 40 degrees) hinged flaps. The spring, balanced flaps are extended by pulling onto the metal bar between the front seats. Small changes of the nose down step occur when the flaps are extended to 10 and 25 degrees. The field change is more noticeable when the full valve is deployed. The step is trimmed by an anti-servo tab attached to the back edge of the stabilizer. Turn the stabilizer manually and watch the trim tab: it moves in the same direction as the rear edge of the stabilizer, only in the most part. In other words, as the trail edge of the stabilizer rises, the trim tab deflects upwards, but with increased movement. This increases the feel of the elevator, adding to the strength the pilot has to apply to distract him up or down. It also increases the longitudinal stability of the aircraft. While the PA-28 glider is essentially the same, the cabin clearly says that Warrior III is not yesterday's Cherokee. The new cabin treatment begins with a gray, professionally looking metal dashboards devoid of distracting plastic ornaments. Flight instruments are located in the standard T scheme in front of the pilot. The panel includes larger engine tools than previous models and has several new features such as annunciator panels, digital ampeth display load on the alterator, combined oil temperature/oil pressure/fuel pressure sensor, electric motor primer, and internally lit rocker switches. Our avionics package is equipped to operate flight instrumentation rules (IFR). It includes a dual Garmin 430 nav/comm dual-indicator VOR, glideslope receiver, Garmin GTX330 height and motion reporting (Mode-S) transponder, Garmin GMX200 moving map display, Garmin 340 four-seat intercom, just some of the features of the advanced avionics panel. In addition, it has a backup electric vacuum pump - a significant function of flight safety in instrument weather conditions. To keep all electronics humming at full song, Piper updated Warrior III from a 12-volt to 28-volt electric system. The external power vessel is also standard equipment. Control yokes are heavier and fill the arm, and the front seats, both of which adjust vertically as well as the front and weight, soft with a sturdy material. Flight characteristics: Warrior is certified as in the Normal and Utility category. Steep turns, lazy eights, and chandelies can be performed (deliberate backs are not approved) when the aircraft is operated at or below its Utility category for a maximum takeoff weight of 2020 pounds. Passengers in luggage or rear are not allowed to fly the Utility category. Subtraction of the aircraft's equipped empty weight The 1,500-pound utility weight limit leaves only 520 pounds for fuel and crew. This is not much, so the crew and weight of the fuel should be carefully calculated when planning a flight to incorporate these maneuvers. Warrior III has a good weight holding ability in the normal category, however. With a maximum normal takeoff category weight of 2,440 pounds, you have 940 pounds of payload. If you top two 24-gallon fuel tanks with 288 pounds of fuel, you can still add 652 pounds worth of people and bags. The partial fuel load of 17 gallons per tank can be precisely determined by filling the tab at the bottom of each neck fuel filler. The 4.7-inch center of gravity (CG) range at maximum gross weight (increase to 10 inches by 1,950 pounds gross weight and below) offers good loading flexibility. Work a bit of weight and balance problems, and you'll find you can exceed the aft CG limit with an extreme loading arrangement - two heavy rear passenger seats and 200 pounds in the hold, for example. According to the charts, no combination of heavy front seats and fuel will exceed the front limit of the CG. It should be noted that the pilot's operating directory (POH) does not specify the weight limits of the front or rear seats, but the weight and balance loading schedule only displays points up to 420 pounds for front seat passengers and about 340 for rear seats. For pilots brought up in high wing trainers, starting warrior four-cylinder Lycoming will be the usual except for switching to an electric fuel pump. The switch must be turned off for a moment during pre-takeoff ground checks to ensure the mechanical pump engine works and then turned back on for takeoff and initial ascent. Takeoffs are usually made with retractable flaps. To reduce take-off distances for short and soft field waste, Piper recommends installing flaps at 25 degrees and lifting the nose at a lower speed. The rudder finish - a standard feature controlled by a pen on a pedestal under the throttle quadrant - can be used to center the slide/skid ball during climbs and in long descents. Turning the handle of the steering wheel changes the voltage on the spring connected to the steering pedal torque pipes. In other words, the trim handle changes the relative position of the steering pedals instead of adjusting the tab on the steering wheel itself. In flight, stability is a strong Warrior suit. The dihedral wing contributes to good roll stability, and the stabilizer can be trimmed for a hand-off flight level, even in turns. The deployment of the flaps causes a mild change in height, which is easily trimmed. The ailerons and steering wheel are not interconnected, and when banking in turn, the nose will scour in the opposite direction of the turn scour) if a positive steering wheel is carried out. Stainless steel control cables to protect against corrosion. Cruise performance is what to expect from Four-seater trainer: about 2 miles per minute. The 3,500-foot-long flight and power is set at 75 percent. The air speed set at 105 knots showed a flight speed (KIAS), which turned out to be about 111 knots of true air speed (KTAS). Piper specifications require a 116-knot TAS cruise at 7,000 feet of medium sea level (MSL) and 75 percent capacity. Maneuvers and flap speeds are comfortably high - 111 knots with a maximum gross weight and 103 knots respectively. Since these speeds are located in the area of these cruise speeds, a sharp reduction in power should not be necessary in rough air or for the deployment of flaps. Maneuvering speed (VA) decreases linearly to 88 knots at 1,531 pounds of gross weight, so at a typical operating weight of about 2,125 pounds, the VA would have an approximate valve speed: 103 knots. This allows Warrior pilots to easily remember the specific speed of maneuvering. Another comfort factor is the 20-knot margin separating the 126-knot maximum structural cruising speed (VNO, the top of the green arc) from the typical specified cruise speeds. It would be hard to beat the VNO, even in high descent power. The warrior's inherent stability, low stall speeds and good weight distribution stack the deck in favor of well-executed approaches and nose touch. A mature design with a fresh approach on the inside, Warrior III offers stable and predictable handling, good cargo transportation capability, and reasonable cruise characteristics. These are the qualities responsible for the 35-year-old and the production of this most basic of the PA-28 family. How safe is it? Does the PA-28's track record of safety support its reputation as an obedient aircraft? Yes, according to a safety review published by the AOPA Aviation Safety Fund (ASF). The ASF examined reports from the National Transportation Safety Board (NTSB) of 1,164 fixed-transmission PA-28 accidents that occurred between 1982 and 1988. (The study also looked at the safety of the PA-28 Arrow retractable gear record, but that's not discussed here.) Of these, 415 were described as serious, resulting in serious or fatal injuries, and 747 as minor. The ASF found that almost 83 per cent of PA-28 crashes were caused by pilot error. This is consistent with the ASF's analysis that piloting error accounts for about 80 percent of all general aviation accidents. The ASF survey found that pilots with low time and pilots with little PA-28 experience are the most vulnerable to accidents. Just over 37 percent of serious accidents occurred involving pilots with 200 hours or less total time, and most of them were pilots with between 100 hours and 200 hours. ASF suggests that new pilots become self-confident in their abilities and explore flight for which their training did not prepare them. More than half of the serious accidents occurred involving pilots with 200 hours or less time in PA-28s. Pilot's crash in PA-28 follows deplorable deplorable Preventable pattern: Visual Flight Rules (VFR) and Instrumentation Rules (IFR) pilots flying VFR in instrument weather conditions (IMC); poor control of the aircraft at critical stages of flight - take-off and landing; and run out of gases. The study also found that flying to IMC at night carries a significantly higher risk than in daylight. The safety review has not revealed any design features that can be said to contribute to accidents. Aircraft-related accidents accounted for only 8.1 per cent of all PA-28 accidents during the reporting period. Of these, the propulsion system or propeller problem rank high, but this is consistent with another type of aircraft. The ASF found that the history of the PA-28 crash is compared to similar fixed-transmission aircraft such as the Cessna 172. The lesson that PA-28 pilots - or any pilot, for that matter - can learn from the ASF safety review is to analyze your skills and fly in them. The ASF's PA-28 Safety Review includes individual crash notes as well as ground and flight training outlines that instructors and students can use to jump on the plane. The curriculum focuses on areas that have been proven to be high-risk factors. With the class's nearly 35-year legacy of basic PA-28 design and history as a training aircraft, one would expect Warrior III to exude functions conducive to flight instruction. And that's pretty much true. Among its attributes: From metal panels and new yokes to inertial seat belt coil strap-shoulder latch to upholstery, the Warrior III cab is functional and attractive. Special attention for training have a four-door, left and right push-to-talk buttons and vertically adjustable front seats, all of which are standard equipment. Instructors who rejoice at pulling circuit breakers and flipping electric switches at students to check their coolness under fire will love Warrior III. Electric rocker-type switches and retractable circuit switches are located on the right side of the panel - in front of the instructor. The good news for students is that the annunciator panel will light up orange to warn the pilot of a disconnected circuit or switch. Another feature in the student's favor - and the instructor's disadvantage - is that the fuel selector is on the left kick panel, and out of the instructor's reach. Reliable and intuitive, hand flaps provide feedback that is not possible with electrically activated flaps. There's no way the door will pop open in flight if you're really working on forgetting to provide the top latch of the double door latch warrior III. to latch. The left door would be nice. The generous-sized luggage compartment can swallow up to 200 pounds of flight gear, extra oil, night bags, and everything else students, instructors, and can think of toss out there. The 10-foot-wide main tread gear makes for stable ground handling and good cross-wind directional control. Birds beware: Each side of the top hood lifts to expose the entire engine compartment for a thorough pre-flight inspection. The electric system is 28 volt strong, more than enough to power all-electric. Even with tanks topped with 48 gallons of payload, about 635 pounds of payload is available for people and bags. Warrior lacks the handling of Problems and Tomahawk lessons, but this non-surprise manner makes it a simple, stable and predictable aircraft. Plane.

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