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THE CESSNA 182 TRAINING MANUAL,
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Cessna 182

Training Manual



Red Sky Ventures/Memel CATS

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Model History

We provide the following information to outline significant differences from an operational perspective. A detailed history is provided in the table following and in subsequent chapters.

C182

The early model C182 had the same fuselage as the C180 ("straight back"), without the rear window.

The main operational differences of the C182 are summarised here:

- manual flap lever and the limitation of 100mph (87kts) for all flap selections
- lower maximum all up weight (2550lbs)

Various minor airframe changes were made to gradually bring about the more commonly known version of the C182 including:

- C182A Weight increased to 2650lbs;
- C182C Third window on cabin, swept tail;
- C182E Wrap around rear window, re-profiled cowlings, improved fairings, electric flaps, weight increased to 2800lbs, flap limits increased to 110mph (95kts), optional 8-USGal fuel tanks;
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The addition of the rear window, and swept tail, and later cowlings and fairing modifications were mainly responsible for the present appearance of the C182.

- C182L Preselect flap control, first 10 degrees increased to 160mph (140kts);
- C182N Maximum takeoff weight increased to 2950lbs;
- C182P Tubular steel undercarriage increasing landing weight to 2950lbs, enlarged fin;
- C182Q Maximum rpm reduced to 2400 with O-470U designed for 100/130 fuel, vernier mixture control standard, electrical system changed to 28V and bladder tanks replaced with integral tanks with a higher standard fuel capacity of 88USGal;
- C182R Takeoff weight increased to 3100, 20 degrees flap limit increased to 120kts;
- C182S Fuel injection, first 10 degrees increased to 100kts, annunciator panel, or optional G1000 avionics;
- C182T G1000 avionics now standard equipment.

Major performance options were offered in the late 1970's including:

C182RG (R182), 1977-1986

Retractable version of the Skylane, improved speed but added responsibility.

T182RG and T182, 1979-1986

235hp turbo charged version, service ceiling 20,000 (with oxygen!), added power, added maintenance, increase in MAUW to 3100lbs.

When Cessna resumed production of it's single engine range in the 90's, a new and improved C182S was available.

C182S, C182T, T182T 1997 on

If you are lucky enough to find one of these it is really a dream to operate. After the recovery from public liability suits and the 80's recession, the C182 received upgraded systems and equipment to produce the same proven design with the latest accessories and support.

Significant differences include:

- IO540 fuel injected engine, providing 230hp at 2400rpm;
- Full IFR avionics as standard installation including auto pilot;
- Warning and caution annunciator panel indications or optional G1000 avionics suite;

The S and T have slightly lower load carrying capacity than earlier models due mainly to avionics installations, and the fuel injected system, although alleviating carburettor problems, can be quite complicated for the inexperienced pilot and differences training is highly recommended.

Reims F182

Like all Reims productions we have to admit this model is also an excellent version. Only 169 aircraft were produced.

Significant differences include:

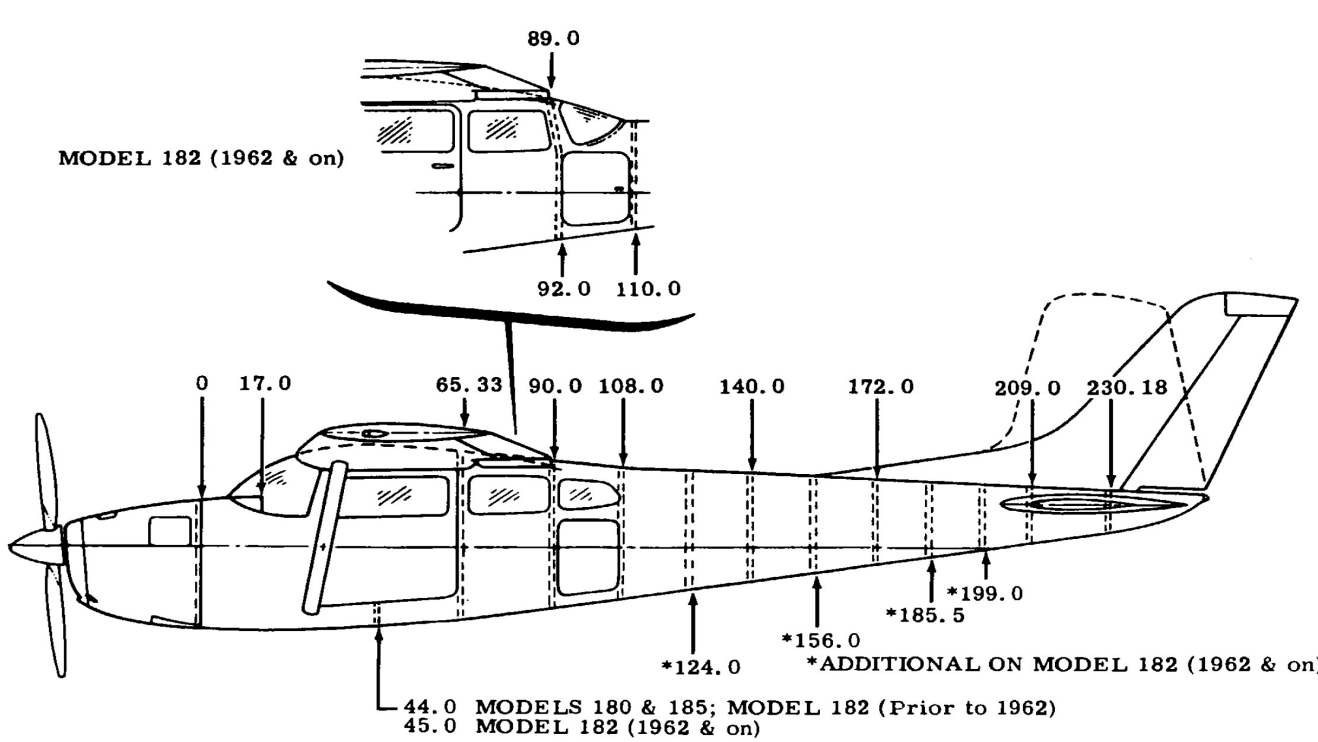
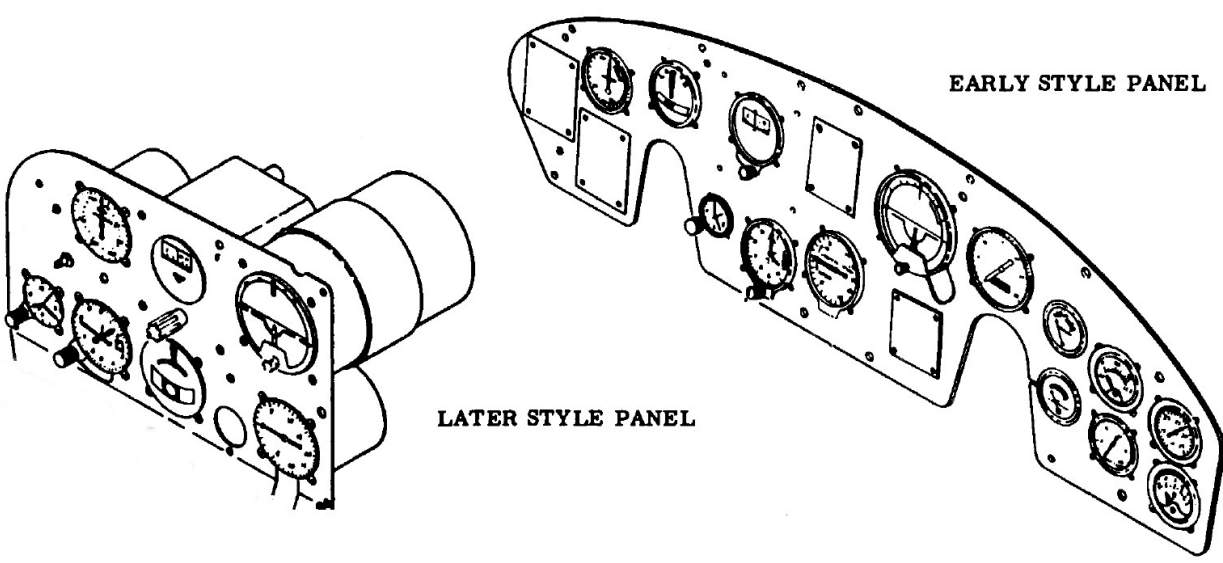
- Lower stall speeds, similar to STOL equipped C182s;
- Slightly higher cruise speeds;
- Different airframe manufacturing processes.

Robertson STOL kits

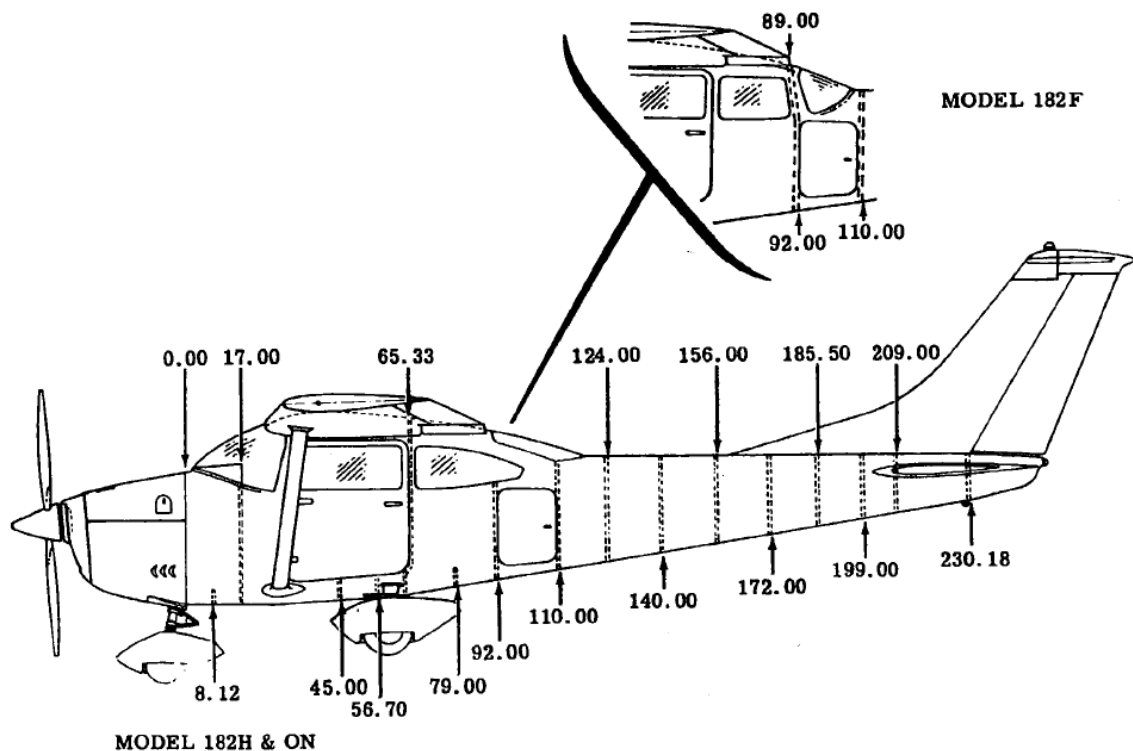
Additions of Robertson STOL Kits (Sierra Industries) to the C182 produce remarkable short field performance and stall speeds that approach that of a 152, however without any significant increase drag in the cruise. It is an impressive modification, however must be taken carefully if you wish to use it to its limits. Care should be taken at low speed where operating near the wrong side of the drag curve, particularly when at MAUW and with high density altitudes.

Model History Versus Serial Number

Model	Name	Year	Starting Serial Number	Significant Changes
C182		1956	18233000	2550lbs maximum weight, Continental 0470-L engine developing 230hp at 2600rpm, 14V electrical system.
C182A	Skylane for deluxe version only	1957	18233843	2650lbs maximum weight, increase from 60 to 65USgal fuel capacity, useable fuel remains at 55USgal. Some minor improvements to the airframe and fittings including modified instrument panel layout. Electrical fuel gagues and low voltage warning light standard.
		1958	18234754-34999	Skylane name introduced for deluxe model. Exhaust moved for improved cooling, rudder linkages changed to bungee type, and improved instrument lighting.
			18251001	
C182B		1959	18251557	Cowl flaps added.
C182C		1960	18252359	Tail fin and rudder changed to a swept tail shape and third cabin side window added on each side. Flush caps replaced with standard raised grip fuel caps. Minor interior changes including plastic control wheel grip, and major changes to fuselage and cowlings designs to improve maintenance.

Model	Name	Year	Starting Serial Number	Significant Changes
 <p>MODEL 182 (1962 & on)</p> <p>89.0</p> <p>92.0 110.0</p> <p>0 17.0 65.33 90.0 108.0 140.0 172.0 209.0 230.18</p> <p>*124.0 *156.0 *185.5 *199.0</p> <p>*ADDITIONAL ON MODEL 182 (1962 & on)</p> <p>44.0 MODELS 180 & 185; MODEL 182 (Prior to 1962)</p> <p>45.0 MODEL 182 (1962 & on)</p>				
C182D		1961	18253008*	The last of the 'straight back' models. The instrument panel layout improved, with the artificial horizon in a more direct line of sight from the left seat. Cowling fastenings changed to quick release type. Pull starter replaced by key starter.
 <p>EARLY STYLE PANEL</p> <p>LATER STYLE PANEL</p>				

Model	Name	Year	Starting Serial Number	Significant Changes
C182E		1962	18253599	Maximum weight increased to 2800lbs Optional 84 USG tank (80 USG useable) Cut down rear fuselage and added "omni-vision" wraparound rear window, flap limit increased on all stages from 100mph to 110mph (95kts), manual flap replaced by electric flap with a toggle switch and indicator. Pull contactor master switch change to a rocker type. Engine changed to 0470-R.



C182F	C182 or Skylane	1963	18254424	Optional autopilot available. Improved overhead instrument lighting.
C182G		1964	18255059	One piece rear window fitted, aft cabin windows enlarged.
C182H		1965	55845	Pointed spinner replaces rounded shape. Horizontal stabiliser and elevator width increased. One piece front windshield.

Model	Name	Year	Starting Serial Number	Significant Changes
C182J		1966	56685	Rotary door latches fitted, larger cowl access panel provided for easier maintenance.
C182K		1967	57626	An alternator replaces the generator for electrical power supply.
C182L		1968	58506	Flap toggle switch replaced by a "pre-select" lever and floating arm indicator, flap limiting speed on first 10 degrees increased to 160mph (140kts). AH moved to central position, to resemble later more ergonomic instrument panel configurations. Sump fuel stainer control moved from instrument panel to beside oil dipstick.
A182J	Argentine C182	1966	A182-001	Argentinian built C182.
A182K		1967	A182-057	
A182L		1968	A182-097 on	
C182M	C182 or Skylane	1969	18259306	Generator output increased to 60 Amps.
C182N		1970	18260056	Maximum takeoff weight increased to 2950lbs, landing weight remains 2800lbs. Split rocker master switch installed to isolate battery from alternator.
C182N		1971	18260446	Shoulder harnesses standard in front seats, 80lbs baggage permitted in aft compartment, total still 120lbs.
C182P	C182 or Skylane	1972	18260826	Flat spring steel main landing gear struts replaced with tubular steel. Landing weight increased to 2950lbs to match takeoff weight. Baggage in aft compartment now total 200lbs (120 in forward part and 80 in aft part of compartment). Landing lights shifted from wing to nose cowling. Engine gauge markings relabelled with arcs for improved ergonomics. High voltage sensor and 'High Voltage' warning light replaces the generator warning light.

Model	Name	Year	Starting Serial Number	Significant Changes
		1973	18261426	Factory installed avionics upgraded from 100 channel to 200 channel.
		1974	18262466	Door handles now close flush with armrest in locked position.
		1975	18263476	Engine changed to O-470-S. Improved cowling and fairing design increases reported cruise speed approximately 5kts. Lower profile glareshield.
C182	Skylane only	1976	18264296	Airspeed indicator changed from mph to kts, flap limit placards converted from 110mph to 95kts. Optional electric trim.
F182P	Reims	1976	F1820001-F1820025	Built by Reims in France
A182M	Argentine C182	1969	Not assigned	Argentinian models.
A182N		1970	A1820117-A182136	
A182N		197	Not assigned	
A182N		1972	Not assigned	
A182N	AMC182	1973	A1820137-A182146	
A182N		1974-1976	Not assigned	
C182Q	Skylane or Skylane II	1977	18265176-18265965	Changed to Avgas 100/130 engine design with Continental O-470-U, developing 230hp at 2400rpm, maximum rpm reduced primarily for noise, but also a reported improved climb performance. Vernier mixture control now standard.
C182Q		1978	18265966-18266590 & 18263479	Electrical system changed from 14 to 28 Volts, battery capacity 24V, 12.75 or 15.5 amp-hr. Engine configured for Avgas 100LL/100. Avionics master switch installed. Window latch redesigned to sit flush with window indent.

Model	Name	Year	Starting Serial Number	Significant Changes
C182Q		1979	18266591-18267300	Integral fuel tank replaces bladder tank and capacity increased to 92USgal, 88USgal usable. Alternator control unit changed to integral unit, 'high voltage' warning light relabelled 'low voltage'.
C182Q		1980	18267301, 18267302-18267715	New audio panel with marker beacons. A pull type alternator circuit breaker fitted.
F182P	Reims/Cessna Skylane/II	1977	F18200026-F18200064	Built by Reims in France.
F182Q	F Skylane	1978	F18200065-F18200094	
F182Q	F Skylane II	1979	F18200095-F18200129	
F182Q		1980	F18200130-F18200169	
C182R/T182	Skylane or Turbo Skylane/ Skylane II or Turbo Skylane II/	1981	18267716-18268055 & 18267302	Maximum weight increased to 3100lbs for takeoff, landing weight remains 2950lbs. Introduction of optional turbo-charged engine with designator T182. Door latch redesigned to include an upper latching pin.
		1982	118268056	
	Skylane or Turbo Skylane -With Value Group A	1983	18268294	Low Vacuum warning light fitted, flap speed for 20 degrees increased to 120kts.
		1984	18268369	Rear shoulder harnesses standard.
		1985	18268434	
		1986	18268542-18268586	
R182/TR182	Skylane RG	1978-1986	R18200002-R18202039	Retractable version and turbo retractable version, with Lycoming O-540-J3C5D, 235hp at 2400rpm.

Model	Name	Year	Starting Serial Number	Significant Changes
<p><i>Note 1: Unlike most Cessna's which have the suffix RG to designate retractable, Cessna termed the retractable version of the Cessna 182 "R182", unfortunately this is easily confused with the C182R and also can be confused with terminology used to designate the C172 military and Hawk XP version - "R172" which is not retractable. In this text the term C182RG has been used to refer to the retractable version to avoid confusion.</i></p>				
182S	Skylane	1997-2001	18280001	Engine changed to Lycoming IO-540-AB1A5, fuel injected, 230hp at 2400rpm, dual vacuum system, annunciator panel or optional G1000 avionics. Maximum ramp weight increased to 3110Lbs, takeoff and landing remain unchanged. First 10 degrees flap limit increased to 100kts.
182T	Skylane	2001 on	18280945	Minor modifications to engine cowling, wheel fairings and step. G1000 avionics now standard equipment.
T182T	Skylane TC	2001 on	T18208001	Lycoming TIO540-AK1A, turbo, fuel injected, 235hp at 2400rpm, 4 place oxygen system.
<p><i>Note 2: The designator T182/TR182 was given to models from 1978 on which were fitted with a turbocharger, again this should not be confused with the later design C182T which is normally aspirated.</i></p>				

Common Modifications Table

There are over 500 STCs on the C182, it would not be useful to list them all here. This table attempts to identify a few of the more commonly used and more widely beneficial modifications available.

TYPE	NAME and MANUFACTURER	DIFFERENCES and FEATURES
Any	Air Research Technology Inc STOL kit	Increases weight to 2950, useful on older models, extends the wing by 37 inches, which also increases performance.
Any	Ski's/Floats (Various)	C182s (unlike the less suitable C172) unfortunately never had a factory float plane option available, however a number of STC's are available for full conversion to seaplane operation.

TYPE	NAME and MANUFACTURER	DIFFERENCES and FEATURES
	Flight Bonus speed kit (available from Horton STOLcraft)	Reported to improve cruise speed 12-18kts.
Any	Drag reduction kits (Various)	Various – normally involving speed fairings to reduce form drag, there are various drag reduction kits available to improve cruise speeds.
	Engine Modifications, (Various)	Various engine refits are available, the most common being the IO470, IO520, and IO550 engines, for improved performance. All these also being fuel injected, additionally address carburettor and carb-ice issues.
Any	Horton STOL	Tip and wing surface modifications to permit lower stall speed, take-off and landing speeds and thus lower distances.
Any	Robertson STOL	Increased lift, more speed, added stability, and lower stall speed, take-off and landing speeds and distances.
Any	Vortex Generators (Micro Aerodynamics)	Reduction in surface drag and induced drag, improving boundary layer adherence, and decreasing stall speed, improved performance.
<p><i>Note: All manufacturers of performance related modifications will have full information available on the increases projected from the kit, in terms of speed, takeoff and landing, fuel burn, and climb enhancements. It is recommended that these figures be reviewed carefully in terms of desire attributes.</i></p> <p><i>Aircraft fitted with performance modifications must have POH supplements indicating difference – these supplements must referred to in the relevant main sections of the POH where applicable.</i></p>		
Any	Low Fuel Warning System, O & N Aircraft Modifications	Warns when fuel remaining is less than approximately 7USGal for older models (restarts have a low fuel warning system).
Any	Fuel Cap Monarch Air	Umbrella style fuel caps which fix problems with leaks, predominantly occurring in older flush mounted caps, (available for most Cessna types)
1956-76 engines only	Autogas modification, Various	Engine modification to permit operation on autogas (available to engines were certified for operation with 80/87 octane, 1976 and prior). There is an increased tendency for carb icing and fuel vaporisation, and a slight power reduction, but Autogas can provide much lower costs and convenience in many countries



Early Model Straight-back/no Swept Tail C182



C182RG Skylane with Rear Window