CESSNA 206

Training Manual

By
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This Training Manual is intended to supplement information received from your flight instructor and approved flight training organisation. It should be used for training purposes only, not for operational use in flight, and is not part of the Civil Aviation Authority or FAA approved Aircraft Operating Manual or Pilot's Operating Handbook. While every effort has been made to ensure completeness and accuracy, the approved aircraft flight manual or pilot's operating handbook should be used as final reference. The authors cannot accept responsibility of any kind from the misuse of this material.

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Note-
ENGLISH SPELLING has been used in this text, which differs slightly from that used by Cessna. Differences in spelling have no bearing on interpretation.

FACTS AT A GLANCE

Common Name: Cessna 206
ICAO Designator: C206
Type: Fixed gear, one to six seat light single engine passenger or utility aircraft. (Note: figures vary between models and serial numbers)

Powerplants	
206G	One 225kW (300hp) Continental IO-520-L fuel injected flat six piston engine driving a three blade constant speed McCauley prop.
206H	One 225kW (300hp) Textron Lycoming IO-540-AC1A driving a three blade constant speed prop.
T206H	One 231kW (310hp) turbocharged TIO-540-AJ1A, Textron Lycoming IO-540-AC1A driving a three blade constant speed prop.
Performance	
206G	Maximum speed at sea level 156kts* Cruise speed 75% power at 6500ft 147kts* Initial rate of climb at sea level 920ft/min Service ceiling 14,800ft Maximum range with reserves standard tanks (59 Gal) 555nm (4.8hours) Takeoff run sea level 275m (900ft), total distance to 50ft obstacle 545 (1780ft). *Performance figures are from POH, which may be a little optimistic.
206H	Maximum speed at sea level 150kts (278km/h); Cruising speed at 75% power at 6500ft 143kts (265km/h); Initial rate of climb 920ft/min; Service ceiling 16,000ft; Takeoff distance sea level 275m (900ft), total distance to 50ft obstacle 570m (1860ft).
T206H	Max speed 315km/h (170kt); Cruising speed at 75% at 20,000ft 165kts (306km/h); Initial rate of climb 1010ft/min; Service ceiling 27,000ft; Takeoff distance 255m (835ft), total distance to 50ft obstacle 535m (1750ft).
Weights	
206G	Stationair II (6 seats) Standard empty weight 898kgs (1977lbs) Utility Version (1 seat) Standard empty weight 852kgs (1875lbs), Maximum ramp 1642kgs (3612lbs), Maximum takeoff and landing 1636kg (3600lb)
206H	Standard empty weight 974kg (2146lb), maximum ramp weight 1640kg (3614lb), Maximum takeoff and landing 1636kg (3600lb),

T206H	Standard empty weight 1011kg (2227lb), maximum ramp weight 1641kg (3616lb), Maximum takeoff and landing 1636kg (3600lb)
Dimensions	
206G	Wing span 10.97m (36ft), length 8.62m (28ft 3in), maximum height (9ft 7.5in)
206H **T206H**	Wing span 10.92m (35ft 10in), length 8.62m (28ft 3in), height 2.92m (9ft 7in). Wing area 16.2m2 (174sq ft).
Capacity	
C205 and C206's all have a typical seating for six adults, with the C206 utility option coming standard with only one seat. The C207 seats seven or eight.	
QRG/Block Operating Information (MAUW unless specified)	
Takeoff:	Short field speed at 50ft 65kts; Normal takeoff speed at 50ft 70-80kts.
Climb:	Vy 84kts Sea Level 78kts 10,000ft, Vx 66kts Sea Level, 70kts 10,000ft; Normal Climb 95-105kts or 500fpm.
Block Cruise:	120kts at 60lt/hr, 5000-7500ft AGL
Landing:	Short field 65kts flap 40; Normal 75-85kts flap up, 65-75kts flap 40.
Emergency:	EFATO 80kts flaps up, 70kts flaps down; Glide 75kts at MAUW , reduce 5kts/400lbs.

Table of Contents

Introduction

This training manual provides technical and operational descriptions of the Cessna 206 aircraft model range.

Information is provided in the introduction on the model C205 and C207, for background information on the model development.

The technical and operational information contained within the book is provided for the Cessna 206 series only.

The information is intended as an instructional aid to assist with conversion and or ab-initio training in conjunction with an approved training organisation and use of the manufacturer's operating handbook. The text is arranged according to the progression typically followed during training to allow easier use by students and assimilation with training programmes. This layout differs from the Pilot's Operating Handbook, which is laid out for easy operational use.

This material does not supersede, nor is it meant to substitute any of the manufacturer’s operation manuals. The material presented has been prepared from the basic design data obtained in the Pilot’s Operating Handbook, engineering manuals and from operational experience.

Illustration 1a C206 Utility (Cargo) Version

History

The Cessna aircraft company has a long and rich history. Founder Clyde Cessna built his first aeroplane in 1911, and taught himself to fly it! He went on to build a number of innovative aeroplanes, including several race and award winning designs.

In 1934, Clyde's nephew, Dwane Wallace, fresh out of college, took over as head of the company. During the depression years Dwane acted as everything from floor sweeper to CEO, even personally flying company planes in air races (several of which he won!). Under Wallace's leadership, the Cessna Aircraft Company eventually became the most successful general aviation company of all time.

The Cessna 205, 206, and 207, known variously as the Super Skywagon, Super Skylane and Stationair, are a family of single engine, general aviation aircraft with fixed landing gear and may be used in commercial air service or for personal use. The family was originally developed from the popular retractable-gear Cessna 210.

The Cessna 206 family is best known for the powerful engine, rugged construction, large cabin and loading capacity. These features have made the aircraft popular 'bush planes' and for aerial work such as skydiving or photography, they can also be equipped with amphibious floats and skis. The combined total number of Cessna 205, 206 and 207 produced so far is over 8500.

Cessna 205

In its initial form the 205 (originally 210-5) was essentially a fixed undercarriage derivative of the 210 Centurion. Although designated as a 1963 model the 205 was introduced to the Cessna lineup late in 1962, followed by the C205A in 1964.

The C205 is powered by the same 260hp IO-470 engine as the 210B and featured an additional small cargo door on the left side of the fuselage.

The 205 retained the early 210’s engine cowling bulge, originally where the 210 stowed its nose wheel on retraction (the space where the nose wheel would have retracted was used for radio equipment in the 205). This distinctive cowling was made more streamlined on the later Cessna 206. There were only 577 Cessna 205's produced, before being replaced by the popular Cessna 206.

Cessna 206

The six-seat Cessna 206 was introduced as a 1964 model and was built until 1986, when Cessna halted production of its single-engine product. It was then re-introduced in 1998 and remains in production at the time of publication. The total number of Cessna 206's produced is now over 6500.

Unlike the C210, from which it is based, the C206 has had relatively few changes over the years. The main changes include the engine (1964 and 1998), electrical system (1965 and 1973) and maximum weight (1967).

Cessna U206

The original 1964 model was the U206, powered by a 285hp Continental IO-520-A. The "U" designation indicated "utility" and this model was equipped with a pilot side door and two opposing rear doors, permitting more convenient access to the back two rows of seats, and permitting easy loading of over-sized cargo.

The TU206 offered a turbocharged version of the U206, powered by the Continental TSIO-520-C engine producing 285hp. In 1967 the turbo TU206 was powered by a TSIO-520-F providing 300hp. The additional 15hp was available at a higher rpm, but was limited to 5 minutes for takeoff and produced a significant noise penalty.

From 1964 to 1969 the U206 was known as the "Super Skywagon". From 1970 it was named the "Stationair", a contraction of "Station Wagon of the Air", which is a good description of the aircraft's intended role.

In 1977 the U206 had its engine upgraded to a Continental IO-520-F of 300 hp (continuous rating, obtained at a more reasonable rpm speed than the previous IO-520-F) and the TU206 engine was changed to the TSIO-520-M producing 310hp.

Production of all versions of the U206 was halted in 1986 when Cessna stopped manufacturing all piston engine aircraft. A total of 5208 U206's had been produced.

Cessna P206

1965 saw the P206 added to the line. In this case the "P" stood for "people", as the P206 had passenger doors on both sides, similar to the Cessna 210 from which it originated.

The P206 was produced from 1965 to 1970 and was powered by a Continental IO-520-A of 285hp. There was a turbocharged model designated TP206 which was powered by a Continental TSIO-520-A also of 285hp.

647 P206's were produced under the name “Super Skylane” which incorrectly made it sound like a version of the Cessna 182.

Cessna 206H

After a production break of twelve years, Cessna started manufacturing a new version of the 206 in 1998, with the introduction of the 206H. The “H” model is generally similar to the previous U206 configuration, with a pilot entry door and double rear doors for access to the middle and back seats. The C206H is marketed under the name "Stationair", and Cessna aptly portrays it as the “Sport Utility Vehicle of the air”.

The 206H is powered by a Lycoming IO-540-AC1A powerplant producing 300hp. The turbocharged T206H is powered by a Lycoming TSIO-540-AJ1A engine of 310hp.

Both the 206H and the T206H remain in production in 2008. By the end of 2004 Cessna had produced 221 206H's and 505 T206H's, for a total production of 726 "H" models.

Cessna 207

The Model 207 was a seven and later eight seat development of the 206, achieved by stretching the design further to allow space for more seats. The nose section was extended 18" by adding a constant-section nose baggage compartment between the passenger compartment and the engine firewall; the aft section was extended by 44" by inserting a constant-area section in the fuselage area just aft of the aft wing attach point. Thus the propeller's ground clearance was unaffected by the change (the nose wheel had moved forward the same distance as the propeller), but the tail moved aft relative to the main wheel position, which made landing (without striking the tail skid on the runway) a greater challenge. The move gave that aircraft a larger turning radius, since the distance between main wheels and nose wheel increased by 18 inches but the nose wheel's maximum allowed deflection was not increased.

The 207 was introduced as a 1969 model featuring a Continental IO-520-F engine of 300hp. A turbocharged version was equipped with a TSIO-520-G of the same output.

At the beginning of production the model was called a Cessna 207 “Skywagon”, but in 1977 the name was changed to “Stationair 7”. 1977 also saw a change in engine on the turbocharged version to a Continental TSIO-520-M producing 310hp – the same engine used in the TU206 of the same vintage.

The 207 added a seat in 1980 and was then known as the "Stationair 8". Production of the 207 was completed in 1984, just two years before U206 production halted. A total of 788 Cessna 207's were manufactured.

The Cessna Model 207 has been popular with air taxi companies, particularly on short runs where its full seating capacity could be used. Very few of these aircraft have seen private use.

Models Differences Table

A brief outline of the models by year with major changes is outlined in the table below.

During practical training, reference should be made to the flight manual of the aeroplane you will be flying to ensure that the limitations applicable for that aeroplane are adhered to. Likewise when flying different models it should always be remembered that MAUW, flap limitations, engine limitations and speeds may vary between models and with modifications. Before flying different models, particularly if maximum performance is required, the POH of the aircraft you are flying should be reviewed to verify differences.

TYPE	***NAME***	***YEAR***	***MODEL***	***MAJOR DIFFERENCES***
C205		1963	205 0001-0480	3300lbs maximum takeoff weight, IO470 engine; essentially a C210B with fixed gear and electric flap
C205A		1964	205 0481-0577	
C206	Super Skywagon	1964	206 0001-0275	Engine changed to IO520
U206	Super Skywagon (Utility Cargo Door)	1965	206 0276-0437	First cargo door version, 14V Alternator replaces Generator
P206	Super Skywagon (Passenger Door)	1965	P206 0001-0160	First C206 to come out with 6 seats as a standard (not optional) fitting
P206	Super Skylane	1965		

TYPE	NAME	YEAR	MODEL	MAJOR DIFFERENCES
U206A	Super Skywagon (Utility Cargo Door)	1966	U206 0438-0656	Maximum takeoff weight increased to 3600lbs
U206B		1967	U206 0657-0914	
U206C		1968	U206 0915	
TU206A	Turbo-System Super Skywagon (Utility Cargo Door)	1966	U206 0438-0656	
TU206B		1967	U206 0657-0914	
TU206		1968	U206 0915	
P206A	Super Skylane	1966	P206 0161-0306	
TP206A	Turbo-System Super Skylane	1966	P206 0161-0306	
P206A	Super Skylane	1966	P206 0161-0306	
P206B		1967	P206 0307-0419	
P206C		1968	P206-0420	
TP206A	Turbo-System Super Skylane	1966	P206 0161-0306	
TP206B		1967	P206 0307-0419	
TP206C		1968	P206-0420	
TU206D U206D	Super Skywagon Turbo-System Super Skywagon	1969	U206-1235 U206-1444	
P206D TP206D	Super Skylane Turbo-System Super Skylane	1969	P206-0520 P206-0603	
U206E	Super Skywagon	1970	U20601445-U20601587	
TU206E	Turbo-System Super Skywagon	1970		
P206E	Super Skylane	1970	P20600604-647	
TP206E	Turbo-System Super Skylane	1970	P20600604-647	
U206E	Stationair Turbo Stationair	1971	U20601588-1700	
U206F	Stationair Turbo Stationair	1972	U20601701-1874	Flap toggle switch changed to pre-select lever
		1973	U20601875-2199	12V battery changed to 24V

TYPE	NAME	YEAR	MODEL	MAJOR DIFFERENCES
U206F	Stationair Turbo Stationair	1974	U20602200-2579	
U206G	Stationair Turbo Stationair Stationair II Turbo Stationair II	1975-76	U20602580-3021	
		1977	U20603522-4074	
U206G	Stationair 6 Turbo Stationair 6 Stationair 6 II Turbo Stationair 6 II	1978 1979 1980 1981 1982 1983 1984	U20604075-4649 U20604650-5309 U20605310-5919 U20605920-6439 U20606440-6699 U20606700-6788 U20606789-6846	In 1979 the bladder tanks were changed to integral wet wing tanks.
U206G	Stationair Turbo Stationair Stationair With Value Group A Turbo Stationair II With Value Group A	1985 1986	U20606847-6920 U20606921-7020	
207	Skywagon 207	1969-1977	20700001-0414	New model C207 introduced, 3800lbs Gross weight, 300 or 310hp IO520 series engine Wing span 432-439”, length 381” 7 or 8 place seating
T207	Turbo Skywagon 207	1969-1977	20700415-0562	
207	Stationair 7 Turbo Stationair 7 Stationair 7 II Turbo Stationair 7 II	1978-1979	20700563-0788	
C207	Stationair 8 Turbo Stationair 8 Stationair 8 II Turbo Stationair 8 II	1980-1984		
206H	Stationair	1998 On	20608001 on	Lycoming IO/TIO-540 engine, annunciator systems. From 2005, G1000 glass avionics optional, from 2007 standard.
T206H	Stationair TC	1998 On	T20608001 on	

Modifications

Common modifications include the famous cargo pod, floats, most of the common STOL kits (eg. Robertson and Sportsman), additional fuel tanks and various engine modifications including a turbine version. Details on common modifications available are outlined in the table on the following page.

At present there is no 'RG' (retractable gear) version of the C206, as offered with the 100 series Cessnas This is presumably because of the similarity and success of the retractable C210 on which the C206 was based.

Illustration 1b C206 with Cargo Pod

Illustration 1c C206 on Floats

Common Modification's Table

TYPE	*NAME and MANUFACTURER*	*DIFFERENCES and FEATURES*
Any	Cargo Pod	(Various) Extra cargo/luggage room, small speed penalty
Any	Skis / Floats	(Various)
Any	Soloy	Turbine Engine Installation, 418 SHP Allison C20S engine
Any	Engine Conversion, Bonaire	Conversion to IO550 engine, 300hp maximum continuous
Any	Engine Conversion, Atlantic Aero	Conversion to IO550 engine, 300hp maximum continuous
Any	Low Fuel Warning System, O & N Aircraft Modifications	Warns when fuel remaining is less than approximately 7USG
F, G, H	Engine Conversion, Thielert	300 or 310hp V8 diesel engine installation
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)
Any	Wing Tip Tanks, Flint Aero	Two auxiliary tip tanks of 16.5USG in each, used with an electrical transfer pump to each main tank. Higher MTOW (3800lbs) is permitted if tanks are half full. Wing length is also increased by 26 inches.
Any	Horton STOL	Tip and wing surface modifications to permit lower stall speed, take-off and landing speeds and distances
Any	Robertson STOL	Increased lift, more speed, added stability, and lower stall speed, take-off and landing speeds and distances. ?

Note: The table above is included for interest and awareness, as there are many C206s operating with the modifications installed, some modifications may no longer be available for installation.

Terminology

Airspeed		
KIAS	**Knots Indicated Airspeed**	Speed in knots as indicated on the airspeed indicator.
KCAS	**Knots Calibrated Airspeed**	KIAS corrected for instrument error. Note this error is often negligible and CAS may be omitted from calculations.
KTAS	**Knots True Airspeed**	KCAS corrected for density (altitude and temperature) error.
Va	**Max Manoeuvering Speed**	The maximum speed for full or abrupt control inputs.
Vfe	**Maximum Flap Extended Speed**	The highest speed permitted with flap extended. Indicated by the top of the white arc.
Vno	**Maximum Structural Cruising Speed**	Sometimes referred to as "normal operating range". Should not be exceeded except in smooth conditions and only with caution. Indicated by the green arc.
Vne	**Never Exceed speed**	Maximum speed permitted, exceeding will cause structural damage. Indicated by the upper red line.
Vs	**Stall Speed**	The minimum speed before loss of control in the normal cruise configuration. Indicated by the bottom of the green arc. Sometimes referred to as minimum 'steady flight' speed.
Vso	**Stall Speed Landing Configuration**	The minimum speed before loss of control in the landing configuration, at the most forward C of G*. Indicated by the bottom of the white arc.
*forward centre of gravity gives a higher stall speed and so is used for certification		
Vx	**Best Angle of Climb Speed**	The speed which results in the maximum gain in altitude for a given horizontal distance.
Vy	**Best Rate of Climb Speed**	The speed which results in the maximum gain in altitude for a given time, indicated by the maximum rate of climb for the conditions on the VSI.
Vref	**Reference Speed**	The minimum safe approach speed, calculated as 1.3 x Vso.

Vbug	**Nominated Speed**	The speed nominated as indicated by the speed bug, for approach this is Vref plus a safety margin for conditions.
Vr	**Rotation Speed**	The speed which rotation should be initiated.
Vat	**Barrier Speed**	The speed to maintain at the 50ft barrier or on reaching 50ft above the runway.
	Maximum Demonstrated Crosswind	The maximum demonstrated crosswind during testing.
Meteorological Terms		
OAT	**Outside Air Temperature**	Free outside air temperature, or indicated outside air temperature corrected for gauge, position and ram air errors.
IOAT	**Indicated Outside Air Temperature**	Temperature indicated on the temperature gauge.
ISA	**International Standard Atmosphere**	The ICAO international atmosphere, as defined in document 7488. Approximate conditions are a sea level temperature of 15 degrees with a lapse rate of 1.98 degrees per 1000ft, and a sea level pressure of 1013mb with a lapse rate of 1mb per 30ft.
	Standard Temperature	The temperature in the International Standard atmosphere for the associated level, and is 15 degrees Celsius at sea level decreased by two degrees every 1000ft.
	Pressure Altitude	The altitude in the International Standard Atmosphere with a sea level pressure of 1013 and a standard reduction of 1mb per 30ft. Pressure Altitude would be observed with the altimeter subscale set to 1013.
	Density Altitude	The altitude that the prevailing density would occur in the International Standard Atmosphere, and can be found by correcting Pressure Altitude for temperature deviations.
Engine Terms		
BHP	**Brake Horse Power**	The power developed by the engine (actual power available will have some transmission losses).
RPM	**Revolutions per Minute**	Engine drive and propeller speed.

	Static RPM	The maximum RPM obtained during stationery full throttle operation
Weight and Balance Terms		
	Moment Arm	The horizontal distance in inches from reference datum line to the centre of gravity of the item concerned, or from the datum to the item 'station'.
C of G	**Centre of Gravity**	The point about which an aeroplane would balance if it were possible to suspend it at that point. It is the mass centre of the aeroplane, or the theoretical point at which entire weight of the aeroplane is assumed to be concentrated. It may be expressed in percent of MAC (mean aerodynamic chord) or in inches from the reference datum.
	Centre of Gravity Limit	The specified forward and aft points beyond which the CG must not be located. Typically, the forward limit primarily effects the controllability of aircraft and aft limits stability of the aircraft.
	Datum (reference datum)	An imaginary vertical plane or line from which all measurements of arm are taken. The datum is established by the manufacturer.
	Moment	The product of the weight of an item multiplied by its arm and expressed in inch-pounds. The total moment is the weight of the aeroplane multiplied by distance between the datum and the CG.
MZFW	**Maximum Zero Fuel Weight**	The maximum permissible weight to prevent exceeding the wing bending limits. This limit is not always applicable for aircraft with small fuel loads.
BEW	**Basic Empty Weight**	The weight of an empty aeroplane, including permanently installed equipment, fixed ballast, full oil and unusable fuel, and is that specified on the aircraft mass and balance documentation for each individual aircraft.
SEW	**Standard Empty Weight**	The basic empty weight of a standard aeroplane, specified in the POH, and is an average weight given for performance considerations and calculations.
OEW	**Operating Empty Weight**	The weight of the aircraft with crew, unusable fuel, and operational items (galley etc.).

	Payload	The weight the aircraft can carry with the pilot and fuel on board.
MRW	**Maximum Ramp Weight**	The maximum weight for ramp manoeuvring, the maximum takeoff weight plus additional fuel for start taxi and runup.
MTOW	**Maximum Takeoff Weight**	The maximum permissible takeoff weight and sometimes called the maximum all up weight, landing weight is normally lower as allows for burn off and carries shock loads on touchdown.
MLW	**Maximum Landing Weight**	Maximum permissible weight for landing. Sometimes this is the same as the takeoff weight for smaller aircraft.
Note: In recent texts there is a trend towards the use of the correct term 'mass' instead of 'weight', effectively replacing the W with M in all the above abbreviations. In everyday language, and in most aircraft manuals and pilot operating handbooks, the term weight (although technically incorrect) remains in common use. For this reason it has been used here. In this context there is no difference in the applied meaning.		
Other		
AFM	**Aircraft Flight Manual**	These terms are inter-changeable and refer to the approved manufacturer's handbook. General Aviation manufacturers from 1976 began using the term 'Pilot's Operating Handbook', early manuals were called Owner's Manual and most legal texts use the term AFM.
POH	**Pilot's Operating Handbook**	
PIM	**Pilot Information Manual**	A Pilot Information Manual is a new term, coined to refer to a POH or AFM which is not issued to a specific aircraft.

Factors and Formulas

Conversion Factors

lbs to kg	1kg = 2.204lbs	kgs to lbs	1lb = .454kgs
USG to lt	1USG = 3.785Lt	lt to USG	1lt = 0.264USG
lt to Imp Gal	1lt = 0.22 Imp G	Imp.Gal to lt	1Imp G = 4.55lt
nm to km	1nm = 1.852km	km to nm	1km = 0.54nm
nm to St.m to ft	1nm = 1.15stm 1nm = 6080ft	St.m to nm to ft	1 st.m = 0.87nm 1 st.m =5280ft
feet to meters	1 FT = 0.3048 m	meters to feet	1 m = 3.281 FT
inches to cm	1 inch = 2.54cm	cm to inches	1cm = 0.394”
Hpa(mb) to “Hg	1mb = .029536”	“ Hg to Hpa (mb)	1” = 33.8mb

AVGAS FUEL Volume / weight SG = 0.72

Litres	Lt/kg	kgs	Litres	lbs/lts	Lbs
1.39	1	0.72	0.631	1	1.58

Crosswind component per 10 kts of wind

Kts	10	20	30	40	50	60	70	80
10	2	3	5	6	8	9	9	10

Formulas

Celsius (C) to Fahrenheit (F)	C = 5/9 x(F-32), F = Cx9/5+32
Pressure altitude (PA)	PA = Altitude AMSL + 30 x (1013-QNH)
Standard Temperature (ST)	ST = 15 – 2 x PA/1000 ie. 2 degrees cooler per 1000ft altitude
Density altitude (DA)	DA = PA +(-) 120ft/deg above (below) ST i.e. 120Ft higher for every degree hotter than standard
Specific Gravity	SG x volume in litres = weight in kgs
One in 60 rule	1 degree of arc ≅ 1nm at a radius of 60nm i.e degrees of arc approximately equal length of arc at a radius of 60nm
Rate 1 Turn Radius	R = GS/60/π, ≅ GS/20
Rate 1 Turn Bank Angle	Degrees of Bank ≅ G/S/10+7
Percent to fpm	fpm ≅ % x G/S Or fpm = % x G/S x 1.013
Percent to Degrees	TANGENT (radians) x100 = Gradient in % INVERSE TANGENT (%/100) = Angle in Radians
Degrees to Radians	Degrees x $\pi / 180 =$ radians
Gust factor (Rule of Thumb)	Vbug = Vref+1/2HWC + Gust eg. Wind 20kts gusting 25 at 30 degrees to Runway: Vbug = Vref +.7x10+5 = Vref+12, If the Vref is 75kts, Vat should be 75+12 = 87kts

Pilot's Operating Handbook

The approved manufacturer's operating handbook, is issued for the specific model and serial number, and includes all applicable supplements and modifications done on that aircraft. It is legally required to be on board the aircraft during flight, and is the master document for all flight information.

In 1975, the US General Aviation Manufacturer's Association introduced the 'GAMA Specification No. 1' format for light aircraft manufacturer's handbook, calling it a 'Pilot's Operating Handbook' (POH). This format was later adopted by ICAO in their Guidance Document 9516, and is now required for all newly certified light aircraft by ICAO member states. Most light aircraft listed as built in 1976 or later, have a POH in this format.

This format was designed for the best ergonomic use during flight. It is recommended that pilots become familiar with the order and contents of each section, as summarised in the table below.

Section 1	General	Definitions and abbreviations
Section 2	Limitations	Specific operating limits, placards and specifications
Section 3	Emergencies	Complete descriptions of action in the event of any emergency or non-normal situation
Section 4	Normal Operations	Complete descriptions of required actions for all normal situations
Section 5	Performance	Performance graphs for takeoff, climb, cruise, and landing, and often includes stall speeds, CAS and crosswind calculation
Section 6	Weight and Balance	Loading specifications, limitations and loading graphs or tables
Section 7	Systems Descriptions	Technical descriptions of the entire aircraft, engine and all systems
Section 8	Servicing and maintenance	Maintenance requirements, inspections, storage, oil requirements, towing and handling.
Section 9	Supplements	Supplement sections follow the format above for additional equipment or modifications.
Section 10	Safety Information	General safety information and helpful operational recommendations

For use in training this text should be read in conjunction with the POH from *on board* the aircraft you are going to be flying. Even if you have a copy of a POH for the same model C206, the aircraft you are flying may have supplements for modifications and optional equipment which affect the operational performance.

AIRCRAFT TECHNICAL INFORMATION

General

The Cessna 206 aircraft is a single-engine, high-wing monoplane of an all metal, semi-monocoque construction. Wings are externally braced with a single strut attached to the fuselage and contain sealed sections forming integral or bladder type fuel bays.

The fixed tricycle landing gear consists of tubular spring-steel main gear struts and a steerable nose wheel with an air-hydraulic fluid shock strut.

The six place seating arrangement is of conventional, forward facing type.

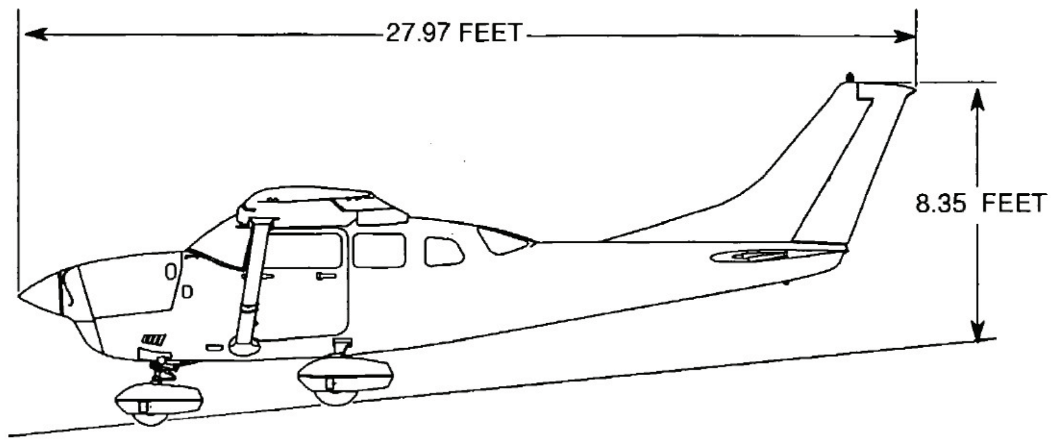


Illustration 2a C206H Left Profile

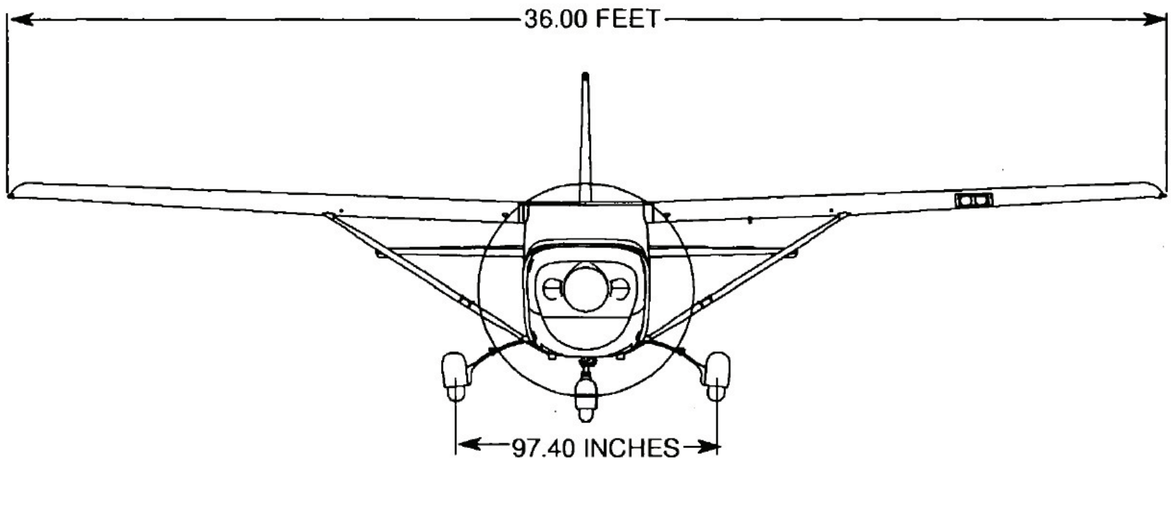


Illustration 2b C206H Front Profile

The standard power plant installation is a horizontally-opposed, air-cooled, six-cylinder, fuel injected engine driving an all-metal, constant-speed propeller. The engine is typically normally aspirated, however higher performance is offered in the turbocharged version of the Model 206.

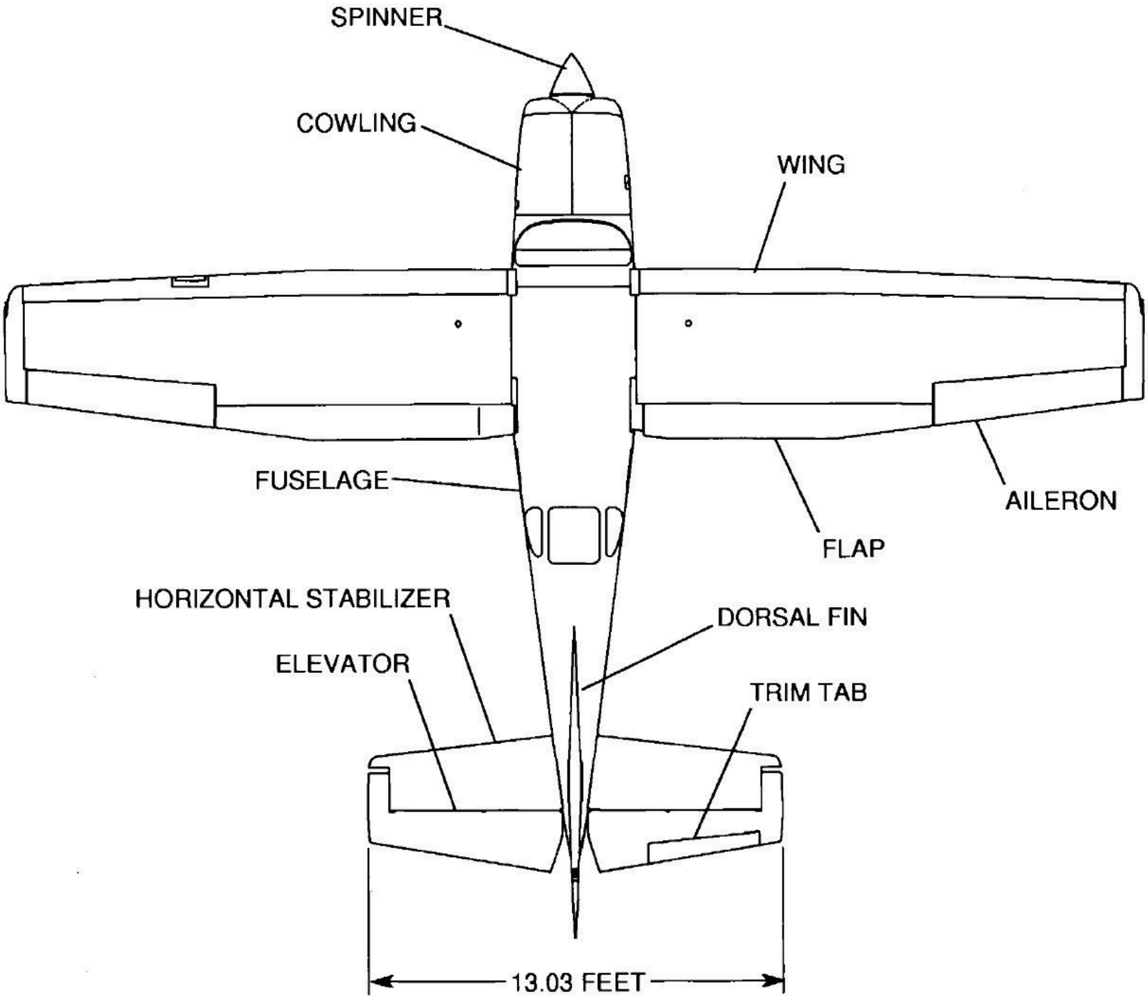


Illustration 2c C206H Top View

Engine

The aeroplane is powered by a flat 6 cylinder horizontally opposed piston engine.

Some common engine configurations include:

- ✈ U206/P206 - One 225kW (300hp) Continental IO-520-L fuel injected, normally aspirated, flat six piston engine driving a three blade constant speed prop.
- ✈ T206 - One 230kW (310hp) fuel injected and turbocharged TSIO-520-R, driving a constant speed three blade prop.
- ✈ 206H- One 225kW (300hp) Lycoming IO-540 fuel injected, normally aspirated, flat six piston engine driving a three blade constant speed prop.
- ✈ T206H - One 230kW (310hp) Lycoming IO-540 fuel injected and turbocharged TSIO-540-R, driving a constant speed three blade prop.
- ✈ Bonaire/IO550 Engine Conversion - One 240kW (300hp) Continental IO-550-L fuel injected, normally aspirated, flat six piston engine driving a three blade constant speed prop.

Maximum power may be either maximum continuous or limited to five minutes for takeoff.

In the IO-520 maximum power is 300bhp at 2850rpm, and maximum continuous is 285bhp at 2700rpm. The engine specifications for the IO520 and TSIO520 are included on the following pages. The Bonaire engine develops the maximum 300bhp at 2700rpm with no time limitations at full power.

The propeller is a three bladed, constant speed, aluminium alloy McCauley propeller. The propeller is approximately 2m (80 inches) in diameter. Some models of C206 may be equipped with a three bladed, constant speed, aluminium alloy Hartzel propeller.

Engine Profile Diagrams

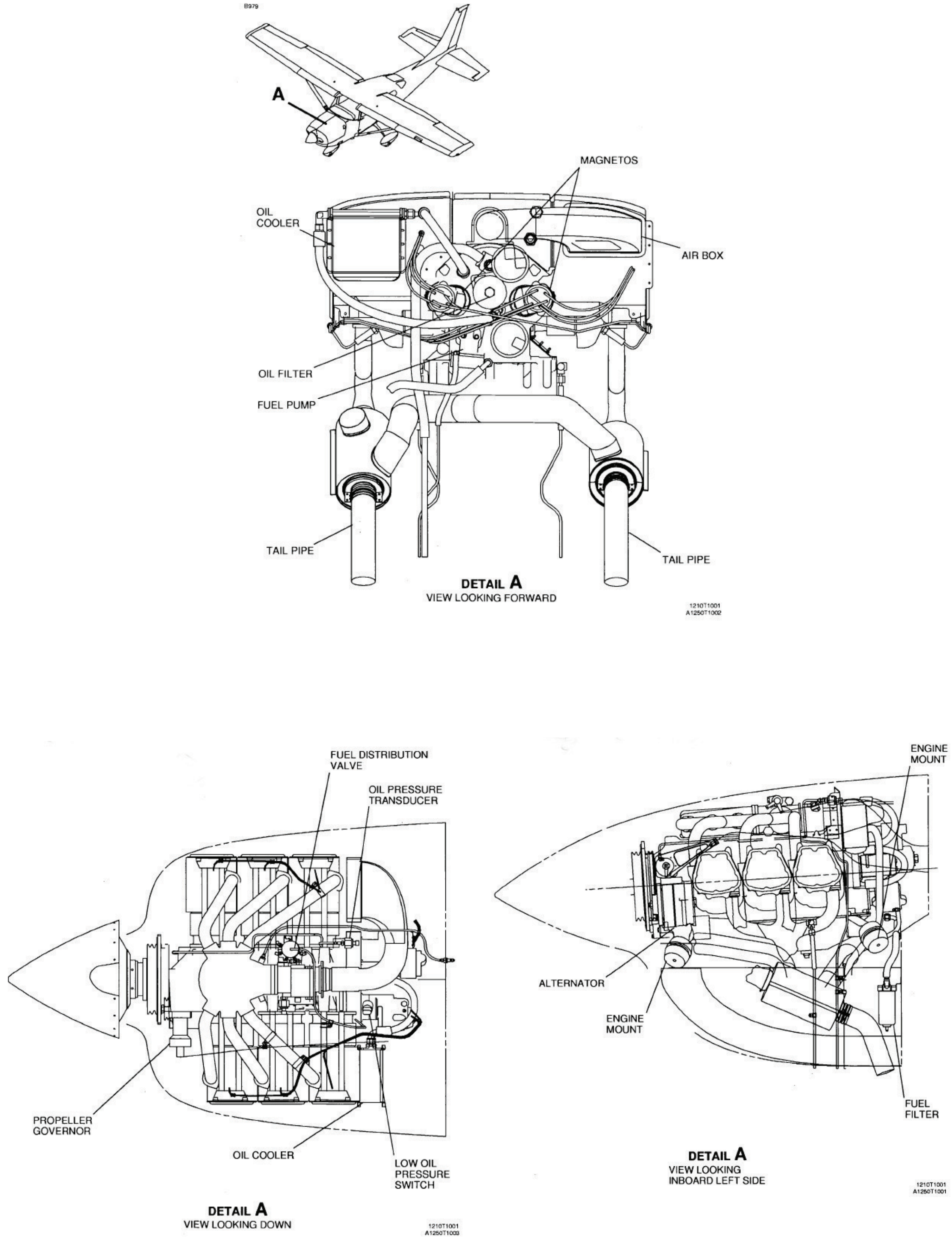


Illustration 6a Engine Profiles

Fuel System

The fuel system consists of two vented fuel tanks (one in each wing), two fuel reservoir tanks, a fuel selector valve, auxiliary fuel pump, fuel strainer, engine-driven fuel pump, fuel/air control unit, fuel manifold, and fuel injection nozzles.

Fuel flows by gravity from tanks to two reservoir tanks, to a three-position selector valve, through a bypass in the auxiliary fuel pump (when it is not in operation), and through a strainer to an engine-driven fuel pump. The engine-driven pump delivers the fuel to the fuel/air control unit where it is metered and directed to a manifold which distributes the metered fuel/air mixture to each cylinder.

A schematic of the fuel system can be seen on the following page.

Fuel Tanks

The main fuel tanks are either integral tanks (late models) or bladder tanks (early models).

Models may differ slightly in the fuel capacity, typical fuel tank capacities are:

- ✈ Standard Tanks 1964-1977:
  61USG, 29.5 USG usable each side (65USG Total);
- ✈ Long Range Tanks 1964-1977:
  80 USG, 38 USG usable per side (84USG Total);
- ✈ Standard Tanks 1977-1978:
  59USG, 29.5 USG usable each side (63USG Total);
- ✈ Long Range Tanks 1977-1978:
  76 USG, 38 USG usable per side (80USG Total);
- ✈ Wet Wing (Integral) Tanks (1979 on):
  88 USG, 44USG usable per side (92USG Total).

It is important to remember with regard to fuel planning, that the amount of fuel we can put into fuel tanks is limited by the volume of the tanks, and therefore usable fuel is always provided in volume, such as gallons and litres. However, the engine is only sensitive to the mass of fuel, and not to the volume. The engine will consume a certain mass (lbs or kgs) of fuel per hour.

Electrical System

Electrical energy for the aircraft is supplied by a direct-current, single wire, negative ground, electrical system with a lead acid battery.

The system is either:

For models before 1965:

- ✈ 12 Volt, 33 amp-hours Battery;
- ✈ 14 Volt 35 or 50 Amp Generator.

For models after 1965:

- ✈ 12 Volt, 33 amp-hours Battery;
- ✈ 14 Volt 52 or 60 Amp Alternator.

Or for models after 1973:

- ✈ 24 Volt, 12.75 or 15.5 amp-hours Battery;
- ✈ 28 Volt, 60 or 95 Amp Alternator.

Aircraft equipped with the G1000 (glass cockpit) additionally have a 24V standby battery, for operation of the G1000's flight instruments, navigation and communications and engine instrument for approximately 30 minutes after failure of the main battery or on pilot selection following an alternator failure.

Battery

The battery supplies power for starting and furnishes a reserve source of power in the event of alternator or generator failure.

Battery capacity in amp-hours provides a measure of the amount of load the battery is capable of supplying. This capacity provides a certain level of current for a certain time. A 25 amp-hour battery is capable of steadily supplying a current of 1 amp for 25 hours and 5 amp for 5 hours and so on.

The battery may be located under the floor in the the rear baggage, under the floorboards beneath the pilot's seat (1961 models), or most commonly under the engine cowl, behind the firewall.

Alternator/Generator

An engine-driven alternator or generator is the normal source of power during flight and maintains a battery charge, controlled by a voltage regulator/alternator control unit.

FLIGHT OPERATIONS

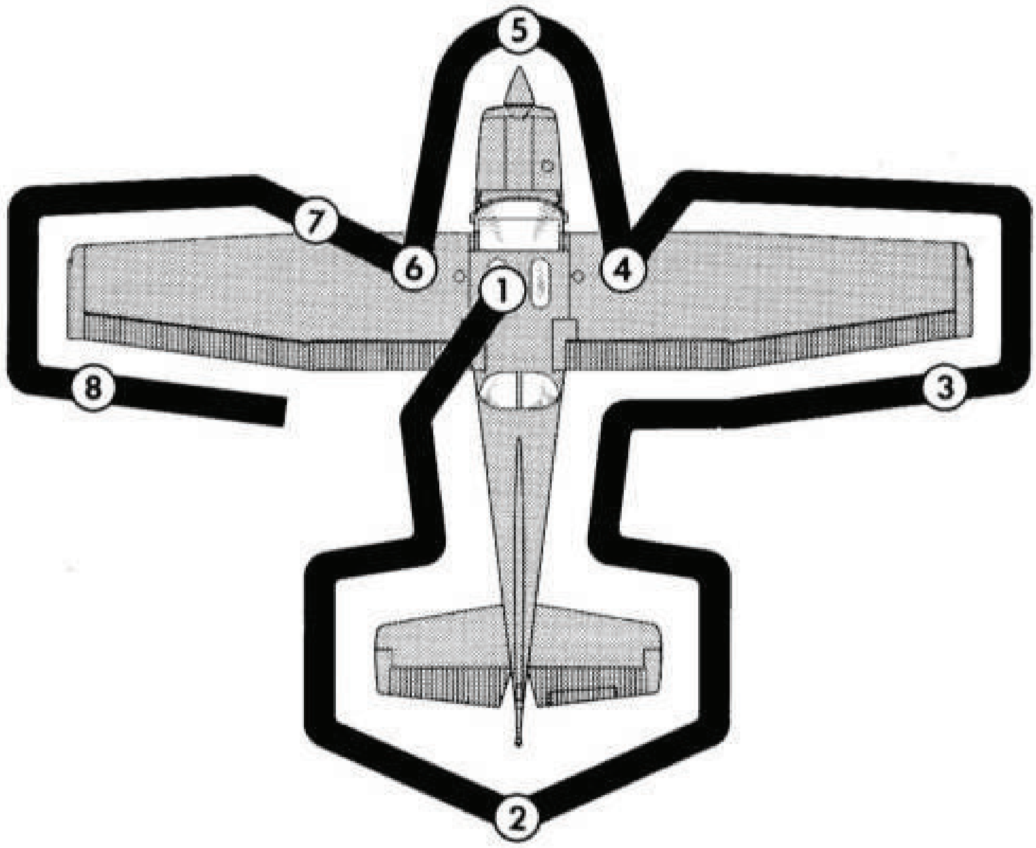
The following sections have been compiled from some of the common Cessna Pilot's Operating Handbooks for the C206 series. Additional notes and handling tips have been included from certified flight instructors and flight engineers. Most speeds have been rounded up to the nearest 5kts.

POH's vary slightly between models, therefore this information is provided as a GUIDELINE ONLY. For operational purposes the POH from the aircraft you are flying, (which by law must be on board the aircraft during flight), should be referred to.

NORMAL FLIGHT PROCEDURES

Pre-flight Inspection

The preflight inspection should be done in anticlockwise direction as indicated in the flight manual, beginning with the interior inspection.



Cabin

Ensure the required documents (certificate of airworthiness, maintenance release, radio licence, weight and balance, flight folio, flight manual, and any other flight specific documents) are on board and valid. Perform a visual inspection of the panel from right to left, and top to bottom to ensure all instruments and equipment are in order.

Control lock – REMOVE
Ignition switch – OFF
Lights - OFF except beacon
Master switch – ON
Fuel quantity – CHECK

Confirm cargo door closed,
Flap lever – DOWN
External Electrical Equipment – CHECK if required (lights, pitot,)
Master switch – OFF
Fuel shut-off valve – APPROPRIATE TANK (the fullest tank or the tank desired to be used for start).

Cabin Inspection G1000 Models

Additionally for G1000 equipped aircraft the following items need to be checked:

With the master switch on:Ensure PFD display visible, check the required annunciators are displayed. Confirm both avionics fans are operational – turn on each of the avionics buses separately and confirm the fan can be heard.

With the master switch OFFTest the standby battery – hold in the TEST position for approx 20 seconds ensure green light remains on. (This test is described before start in the POH, however if the standby bettery is required for flight it is preferable to complete the test now).

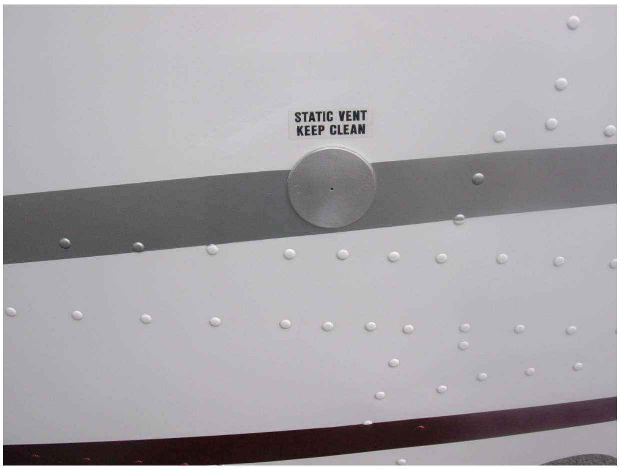
Operational Check of Lights

Before turning master switch off, if lights are required, switch all lights on, confirm their operation visually, then turn all off again except beacon.
This is required for a night flight and a good idea for all flights.

Exterior Inspection

Visually check the aeroplane for general condition during the walk-around inspection, ensuring all surfaces are sound and no signs of structural damage, worked rivets, missing screws, lock wires or loose connections.

Aft Fuselage, Left Side



Check left static port for blockage.

For passenger versions, once loading is complete, ensure the baggage door is secure. *Caution, worn locks have led to inadvertent opening in flight, where possible bar opening with tow bar or similar device, and lock the door to be sure.*

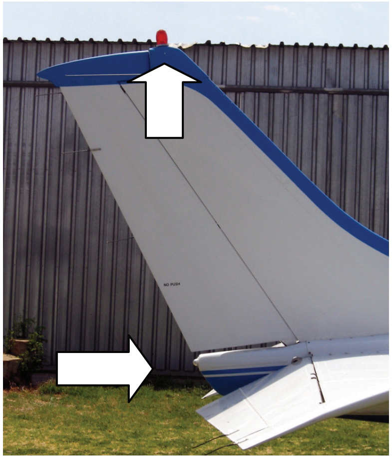
Check general condition of aft fuselage and windows.
(Cargo version has no rear baggage door on left side).

Tail Section

Check top, bottom, and side surfaces for any damage. Ensure balance weights secure. Remove rudder gust lock and tie-downs if installed.

Ensure Elevator secure and undamaged. Check all linkages free, lock pins in place. Check full and free movement of control. Check trim is undamaged and in neutral position.

Rudder linkage and turn-buckles secure and lock wires and pins in place, check for full and free movement of control surfaces.



Check Beacon, rear navigation light, and tail mounted aerials are undamaged and secure.

Aft Fuselage, Right Side and Right Wing

Check the flaps do not retract if pushed, and flap rollers allow small amount of play in down position. Check for damage to surface and flap tracks, operating linkage free movement, adequate grease and security of all nuts and lock pins.
Ensure Cargo Door is closed
Check right side static port (if installed).

Check aileron surface for damage, security of hinge point, and ensure full and free movement. Check wing tip vent unobstructed.

Check condition, security and colour of navigation light.

Ensure all aerials are undamaged and secure. Check top and bottom wing surfaces for any damage or accumulations on wing. *Ice or excessive dirt must be removed before flight.* Remove wing tie down and vent covers if installed.

Check visually for desired fuel level using a suitable calibrated dipstick.

Check that fuel cap is secure, and vent is unobstructed.

Check for security, condition of strut and tyre. Check tyre for wear, cuts or abrasions, and slippage. Recommended tyre pressure should be maintained. Remember, that any drop in temperature of air inside a tyre causes a corresponding drop in air pressure and vice versa.

Use sampler cup and drain a small quantity of fuel from tank sump quick-drain valves, under the wing and underneath the cabin, checking for water, sediment and proper fuel grade (first flight of the day and after refuelling). Ensure the drains are seated correctly and not leaking.

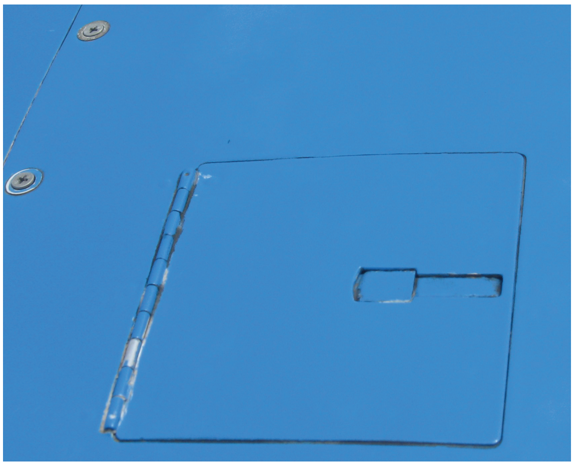
Special note regarding precautions during fuelling and fuel drains:
With integral tanks it is possible to have airlocks in the interlinked compartments, resulting in the wing tank appearing full but containing less than full capacity. Whenever maximum range is required, ensure the aircraft is level, and filling is carried out slowly, allowing time to settle. For bladder tanks, it is common for water to be trapped in crevices of the bladders where they become unstuck, and this also requires rocking of the wings after filling to resettle the water in the sump. Fuel should be allowed to settle a minimum of 15 minutes, before draining. Ideally fill up the previous night.

Check security of nuts and split pins, operating linkages, and security and state of shimmy damper. Visually check exhaust for signs of wear, on first flight, if engine is cool check exhaust is secure.

Check oleo for proper inflation and damping. Check cowl flaps for rigidity and operation.

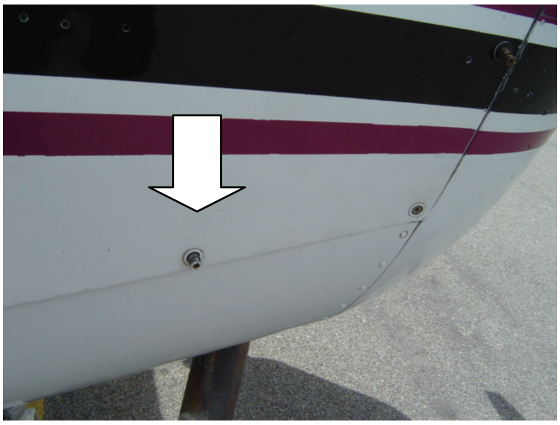
Check oil cooler secure and unobstructed, and alternator belt secure. Ensure no debris inside engine cowls from birds or other sources.

Check condition and cleanliness of landing light, condition and security of oil filter. Check propeller and spinner for nicks and security. Ensure propeller blades and spinner cover is secure. When engine is cold the propeller may be turned through to assist with pre-start lubrication. *Always treat the propeller as live.*



Check oil cap is secure (by opening the top oil filler panel, or through front cowl opening), and ensure oil filler panel is closed securely.

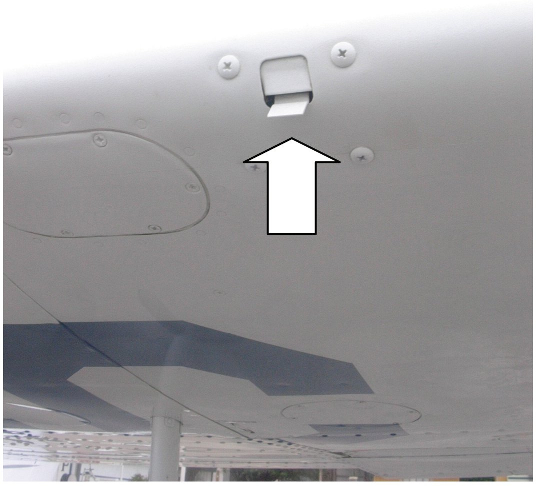
Open inspection cover, check oil level. Minimum oil 7 quarts, fill to 10 for extended flights.
Before first flight of the day and after each refuelling, pull out fuel strainer to check the fuel sample. Check strainer drain is fully closed.



Check security and condition of engine cowling. *On the picture nut on the left is unsecured.*

Differences on the Left Side

Remove the pitot tube cover, and check the pitot tube for cleanliness, security and clear opening passage.



Check operation of stall warning.

Conduct the check of the left wing in the same manner as the right.
(Except the navigation light should be red!)

Final Inspection

Just before climbing in and starting the engines, complete a final walk around, to save embarrassing, costly or even dangerous oversights.
Check all chocks and covers are removed, fuel/oil caps and door latches are secure, and the aircraft is in a position to safely taxi without excessive manoeuvring or power application.

Passenger Briefing

After completion of the preflight inspection and preferably before boarding the aircraft, take some time to explain to the passengers safety equipment, safety harnesses and seat belts and operation of the doors/windows.

The following items should be included:
- ✈ Location and use of the Fire Extinguisher;
- ✈ Location and use of the Axe;
- ✈ Location of the First Aid Kit;
- ✈ Location of emergency water and normal water;
- ✈ Location of any other emergency equipment;
- ✈ Latching, unlatching and fastening of safety harnesses;
- ✈ When harnesses should be worn, and when they must be worn;
- ✈ Opening, Closing and Locking of doors and windows;
- ✈ Rear door (when installed): emergency opening with flaps extended;
- ✈ Actions in the event of a forced landing or ditching;
- ✈ Cockpit safety procedures (front seat passenger) and critical phases of flight.

Starting

Before engine start or priming is carried out, all controls should be set in the appropriate positions and the panel pre-start scan completed. Priming before you are ready to start can be counter-productive, since by the time you are ready to start the priming fuel is no longer at the point of combustion, but has assisted in washing any residual oil off the cylinder walls.

Checklists before start may be broken down into 'master off' and 'master on' checks, or more correctly named 'before start', and 'ready to start' checks. The latter items are done only once the aircraft has a start clearance, and is in a position to immediately start the engine. The reason for splitting up the checklist is that certain items such as selecting the master on and priming the engine ideally should not be done too far in advance of the start, as the delay will run down the battery and reduce the effectiveness of the priming.

- ✈ Once before start flows are completed, the following before start checks are recommended:
  - **Preflight Inspection** – COMPLETE;
  - **Tach/Hobbs/Time –** RECORDED;
  - **Passenger Briefing** – COMPLETE;
  - **Brakes –** SET/HOLD;
  - **Doors** – CLOSED;
  - **Seats / Seatbelts –** ADJUSTED, LOCKED;
  - **Fuel Selector Valve** – BOTH/CORRECT TANK;
  - **Cowl Flaps** – OPEN;

PERFORMANCE SPECIFICATIONS

Performance figures, unless otherwise specified, are given at maximum load (3600lbs) and as an indicated air speed.

Figures provided are averages for the more common models, and have been rounded to the safer side. Performance varies significantly between models, the average or most common figures are indicated. REMEMBER these figures may not correspond to those for your particular model, ALWAYS Confirm performance and operating requirements in the approved aircraft flight manual before flying.

Structural Limitations

Gross weight (take-off and landing)	3600lbs (1966 and later)	
Standard empty weight	1850lbs - 2500lbs	
Maximum baggage allowance in aft compartment	180lbs	
Flight load factor (flaps up)	+3.8g – -1.52g	
Flight load factor (flaps down)	+2.0g – 0g	
Engine Specifications	**Maximum (5 minutes only)**	**Maximum Continuous**
Engine (Continental IO-520 series) power	300BHP at 2850rpm	285BHP at 2700rpm
Engine (Continental TSIO-520 series) power	310BHP at 2700rpm	285BHP at 2600rpm
Engine (Lycoming TSIO-540 series) power	325BHP at 2700 rpm, (flat rated) maximum continuous	
Oil capacity	12Qts normally aspirated engines, 13Qts Turbo and External Filter engines Do not operate on less than 9Qts* minimum	
*Curiously, many models of C210 and C206 have the same engine whilst Cessna recommends a minimum of 7Qts for the C210 and 9Qts for the C206. This may be due to the tendency of C206s to sit tail low, as an inaccurate reading will be obtained if the engine is not relatively level. However, most aircraft maintenance engineers recommend to operate on the high side for the C210, and the low side for the C206.		

GROUND PLANNING

For in-depth ground planning, the figures in the flight manual for the aircraft you are flying must be used. For approximate calculations, block figures may be used.

Block figures must provide built in error margins, for example speeds must be lower and fuel consumptions higher that those normally experienced, and to those specified in the POH. These figures should normally allow a margin for error of approximately 10% over the POH figures. Sample block figures are provided above for a normally aspirated C206, but remember, this will *not* apply to all models.

Block figures are a simple method for estimating performance, but should NEVER be used where the performance is critical.

When calculating cruise performance and fuel consumption from the flight manual, remember that the figures indicated are for a new aeroplane, and typically a minimum of 10% contingency (a factor of 1.1) should be applied to all figures where no other safety factor is applied. It is a recommended to apply a minimum 10% contingency to all fuel calculations, and in some countries 10% contingency fuel is required to be carried by law.

It is also important to remember to use the flight manual from the aircraft you are flying when calculating performance. As illustrated clearly in this manual, different models and different modifications on the same model can vary the performance significantly between different aircraft serial numbers.

Most POH's will have graphs similar to the ones included below, later models provide slightly improved versions, however performance graphs can vary significantly, especially if a modification such as an engine or STOL kit has been completed. In this case the graphs will be provided by the approved Supplemental Type Certificate (STC) from the company offering the modification. These graphs should have been duplicated in the performance section, however some operators erroneously leave them in the supplement section at the back of the operating handbook or place them in a separate folder all together.

When calculating performance, ensure all instructions and foot notes are read, as these can have an effect on the graph or table's interpretation and use. Thereafter tables must be read using the appropriate ambient data and weights. For example, do not use airfield elevation when pressure or density altitude is required. In the graphs below, pressure altitude is applied at a range of temperatures, however in some graphs only one temperature is provided for each altitude, therefore it must be deduced that the required