Welcome High flyers

Beechcraft® T-34B Mentor®

History

Carenado®

Beechcraft OFFICIAL LICENSED PRODUCT

full FSX® DIRECTX 10 certified

History

A SHORT HISTORY OF THE BEECHCRAFT MENTOR
By Frank Morris 6/1/2001

The Beechcraft Mentor was the brainchild of Walter Beech, who saw the need for a less expensive and easier-to-fly trainer than the North American Texan/SNJ/Harvard, which the Air Force, U.S. Navy and the United Kingdom used for primary training throughout the 1940s. In November of 1946 Beechcraft had received its Approved Type Certificate on the all new Model 35 Beechcraft Bonanza. By the end of 1977, Beechcraft had produced 10,000 of these popular, record setting, V-tailed civil aircraft.
Beech developed the Mentor as a private venture. During 1948, Beech completed three conceptual designs which were based on the Model 35 Bonanza and were designated Model 45 Mentor by the company. While Beech included a V-tail similar to the Bonanza in this group, the final design emerged with the more conventional tail for the benefit of a conservative military. The first test flight from the Beech field on 2 December 1948, by company test pilot Vern Carstens, was a complete success. During 1949, the Mentor was dispatched on a tour of military air bases throughout the United States, and was sent abroad to perform for the benefit of air officers of the Western European nations. A dramatic demonstration of aerobatic flight was also presented at Chicago's National Air Fair, at O'Hare International airport on the Independence Day weekend, before hundreds of thousands of spectators. Proving that brute strength was not required to put the Mentor through a breath-taking array of maneuvers standard in military combat operations, the pilot was pretty, petite, 100-lb. Betty Skelton – 22 year-old two-time holder of the women's international aerobatic championship. To cheering crowds, the stunts performed by the Mentor were a source of gasps and thrills. To soberminded military observers, it was a reminder of the need for continued readiness to maintain air power for the defense of the free world. A reminder already accentuated by the Communist blockade of Berlin that was taking place at that time.
The USAF placed an order in March of 1950 for three Mentors for competitive evaluation, which were designate as the YT-34. Two of the aircraft were powered by (205-hp) Continental E-185-8 engines, and one with a (225-hp) Continental E-225-8 engine. These aircraft made their first flights in May, June and July of 1950 and were tested extensively during the competition period. They were flown not only by evaluation pilots, but also in the primary training role with pupils and instructors. The T-34 eventually won a long competition to determine a new trainer but Walter Beech, who was the prime mover in the design of this aircraft, did not live to see its production. He died of a heart attack in 1950.
During 1953 the Air Force Phase VI flight tests of the Mentor at Edwards AFB in California, the test plane logged 434 hours of flight in only 32 days. It wrapped up this performance with a 'roundthe-clock' run of 23 hours 20 minutes of flight in one 24-hour period, making seven quick landings during that interval to refuel and change pilots. This functional development phase of routine USAF testing did much to verify the stamina of the Mentor design and construction. A near accident associated with the testing program provided an even more dramatic demonstration of its in-built Beechcraft toughness. At full cruising speed of 189 mph, a YT-34 was inadvertently flown into contact with an aerial cable stretched across a canyon. The cable did not break, but almost stopped the Mentor and spun it around in mid-air, 350 feet above the canyon floor. Through skillful handling, the military pilot righted the airplane before it could touch ground, regained flying speed and flew back to the base, where he made a normal landing. Inspection showed that damage was confined to superficial contusions and abrasions of the right wing leading edge, which bore the imprint of the cable.

On 4 March 1953, the USAF selected the Model 45 as its new primary trainer under the designation T-34A Mentor. The Mentor was put in volume production in early 1954. Ultimately, there were 450 built for that service, 350 by Beech and 100 by the Canadian Car & Foundry Company in Montreal, Canada which was later licensed by Beech tobuild the Mentor.
In July 1951 one of the original prototypes wasmodified to mount two 7.62-mm (0.3-in) machine guns in the wings, with provision for underwing racks capable of accepting six rockets or two 68-kg (150-lb) bombs. The USAF evaluated this version as a potentialclose-support aircraft, but no orders ever materialized. During 1953 the government of Chile placed an order for more than a million dollars worth of T-34As following competition of evaluation with other American, British and French airplanes. In October of 1953, the Republic of Colombia ordered a substantial quantity of Mentors.
The Navy Bureau of Aeronautics ran its own series of extensive tests on the T-34A Mentor at Pensacola, Florida, from 28 September to 4 December of 1953. The principal airplane tested was serial No. G-3, one of the first Mentors produced; and in spite of its age, it came through without ever being out of service due to a mechanical failure. Navy requirements for a training plane were in some ways more stringent than the Air Force. The Navy schooled its pilots from the outset in landing techniques necessary for aircraft carrier operations, which called for abrupt stall-outs just above ground level and heavy "drop-in" landings that imposed great strains on the landing gear. Many well-built airplanes had faltered and "washed out" their landing gears under the severe stresses; but the Mentor gear did not fail. One Navy Commander said he could not "wash out" the Mentor gear in testing.
Other nations of the Free World had been watching the Mentor military test programs with keen interest. In November of 1953, an agreement was reached with the National Safety Forces of Japan for eventual production of Mentors in that country under license to the firm of Fuji Heavy Industries of Tokyo. Beech contracted to furnish initial completed Mentors, followed by parts and manufacturing

Copyright © 2008 By Carenado
Carenado Customer Service: askcarenado@carenado.com
www.carenado.com

History

information necessary to enable its licensee to build the airplane in its own plants. Preliminary phases of a similar agreement were also concluded with the Canadian government to produce the Mentor for Royal Canadian Air Force (RCAF) training in Canada.
On June 17, 1954 the Navy announced that the Mentor had been chosen as its first-step student trainer for use by the Naval Air Training Command with an initial order for several hundred planes. Beechcraft had won over two other airplanes, described by the Navy as “excellent” in evaluation tests conducted at Pensacola, Florida. The Navy trainers would be almost identical externally with the Air Force T-34A, except for removal of a triangular fillet under the rudder, giving it a notched look. Other differences included differential braking for on-ground steering (the 'A' had a steerable nosewheel), an additional degree of wing dihedral, and adjustable rudder pedals as opposed to a moveable seat. The most obvious difference was the high-visibility bright yellow paint, which the Navy considered useful in avoiding collisions around crowded training fields. . Performance of the USAF T-34A and the Navy T-34B would be identical, through expressed in different terms: High Speed 189 mph (164 knots); cruising speed at 60% of rated 225 hp at 10,000 feet, 173 mph (150 knots); maximum permissible diving speed, 280 mph (243 knots). Both versions would afford an extremely high flight safety factor of 10 permitting unrestricted aerobatic maneuvers. Both aircraft weighed in at 2,900 pounds gross, and approximately 2,170 pounds empty. Both used a 225hp Continental engine powering an 88-inch diameter Beech constant speed propeller, affording a rate of climb of 1,230 fpm at sea level, a sea level takeoff run of 780 feet, and a landing run at seal level of 330 feet.
Wing span was 32 feet 10 inches with a length 25 feet 11 inches, a height 9 feet 7 inches; and total wing area including ailerons, of 177.6 square feet. In December of 1954 Beech delivered on the first T-34B trainer, just six months to the day from the date the contract
was signed.
Beech began an experiment in a jet aircraft in 1955 with a two-place jet trainer based on the Mentor design, designated the Model 73 “Jet Mentor”, and using many of the same Mentor components. It was described as “the most economical jet trainer in the world.” It logged many successful test and demonstration flights; but in the meantime, the Air Force settled on a competitive jet trainer with twin engines and unconventional, for a training plane, side-by-side seating built by Cessna and designated the T-37A. The project was shelved, but to the pilots who saw and flew the swift, maneuverable little ship, it was proclaimed, ”The airplane I’d like most to own – just for fun!”
May of 1956-marked the “on schedule” completion of a 40-month program which produced 350 T-34A Mentors for the Air Force. All Air Force aviation cadets were then receiving their primary pilot training in Mentors operated by the nine USAF contract schools. The Mentor was also serving the military forces of Chile, Colombia, El Salvador and Turkey; and was being produced under license from Beech in Japan and Canada to serve the in training Japanese and RCAF pilots.
A $4 million production agreement, executed with the government of Argentina on December 29, 1956, enlarged the scale of Mentor production concurrent with the Navy T-34B program. In addition to providing 15 Beech-built Mentors for flyway delivery to Argentina, the agreement called for 75 more planes to be assembled there. Argentina thus joined Japan and Canada in gaining rights to build Mentors for its own use.
On October 31, 1957, Beech completed its 40-month production program on U.S. Navy T-34Bs, delivering the 423rd and final unit. The Mentor’s record in the primary training programs directed from the Naval Training Center at Pensacola, Florida, found that its syllabus could be shortened, and primary flight time cut from 74 to 36 hours – a better than 50% reduction – since students could attain a higher level of proficiency more quickly in the Mentor. The time required to solo was cut by more than half; and the accident rate was notably improved. In brief, the Mentor was a much better teacher than its bigger, heavier and higher-powered predecessor, and vastly more economical to fly and maintain in the bargain.
Completion of the Navy contract brought to 773 the total number of T-34s delivered to U.S. military flying services, 350 of the T-34A types having been built for the USAF. Production continued for Mentor aircraft and assemblies for export customers.
In mid-January of 1958 there was a flyaway delivery of the first Beechcraft Mentors sold for civil use. Four Mentors were flown from Wichita by officials and staff members of the International Training Center for Civil Aviation (ITCCA), a unique aviation school sponsored by the Government of Mexico and the United Nations to train pilots, mechanics, air controllers and other civil aviation jobs in Central and South America. Deriving some 75% of its support from the Mexican government, the school provided students from throughout Latin America in the highest standard procedures established by the UN’s International Civil Aviation Organization, thus helping to advance the progress of aviation and flight safety in the lands “south of the border.” The ITCCA Mentors were soon to be joined in Mexico by another group of T-34s ordered by the Mexican Navy. Shortly after dawn on 24 April 1959, the first units of a group of 20 new Mentors, ordered some time before by the government of Chile, took off from the Beech Field on the start of a 6,000-mile ferry flight to El Bosque, Chile’s military flying base near Santiago. Flown from Wichita by a party of 30 Chilean Air Force officers and airmen, the Beech trainers enlarged a force of 45 T-34A Mentors previously purchased by Chile.
During 1959, the second of the nation’s good neighbors in South America to acquire new fleets of Beechcraft Mentors during the year completed flyaway deliveries from Wichita in September. Officers and personnel of the Venezuelan Air Force and the Venezuelan government’s Ministry of Communications headed home with the last of 41 Mentors build during 1959 for their respective services – 34 for Air Force training use, 7 for the Ministry’s civilian flying school.

Copyright © 2008 By Carenado
Carenado Customer Service: askcarenado@carenado.com
www.carenado.com

History

Word came in late 1961 from the Pensacola Naval Air Station of notable service marks established by the T-34Bs in use there since 1956. Shortly after mid-year, the 9,000 Naval Air cadet successfully completed primary flight training in the Mentor; and the 1,000th inverted spin was performed for the Flight Instruction Indoctrination Group at Pensacola. Restricted to only a few types of Navy aircraft, the inverted spin – an essential item in the instructor-training syllabus – often imposed severe stresses that harshly tested the structural integrity of the plane. Pensacola's Mentors had been flown more than 445,000 hours, and had compiled a safety record calculated at five times that of previous Navy trainers over a comparable period. Later at Saufley Field, Pensacola VT-1 Mentor-equipped squadron reported a new safety record of 75,000 consecutive accident-free flight hours; and the second-stage VT-3 squadron an all time Navy mark of 80,000 consecutive accident-free hours.
A Navy Mentor passed a notable service milestone early in the year 1963. At Saufley Field at the Naval Air Station, Pensacola, Florida, Training Squadron one of the Naval Air Basic Training Command awarded a "gold seal of approval" to Buno 140705, a T-34B Mentor on its completion of more than 5,000 hours of flight. First of the Navy's Mentors known to have reached this mark, the durable Beechcraft had been the 39th T-34B to come off the Beech production line. Since its manufacture in September, 1955 Buno 140705 had trained 114 Navy and Marine student aviators; had flown 5,115 hours, made 16,459 landings and performed 4,604 loops, 3,401 spins and 17,904 stalls. In 700,000 miles of flight, it was refueled 3,325 times. "Beech Aircraft is certainly to be commended for providing us with equipment like the T-34B Mentor," was the comment of Commander H.E. Kendrick, Squadron One commanding officer. Beechcraft was delighted that the Mentors they had built had earned this praise; for it was almost an axiom in aviation that the only type of airplane that led a harder life than a basic trainer was a target drone.
The USAF phased their Mentors out of service in the early 1960's, in favor of all-jet trainers. The Navy used their initial batch of Mentors until the middle of the 1970's. They were retired when the Navy bought the T-34C Turbo-Mentor, a heavier version of the Mentor which is powered by the Pratt & Whitney Aircraft of Canada PT-6A-25 turboprop engine. In this particular application, it is provided with a torque limiter that restricts power output to some 56 percent of maximum, ensuring constant performance over a wide range of altitude/temperature conditions, and also offering long engine life. The first aircraft was flown on 21 September 1973.

The first Atlantic crossing of a Beechcraft Turbine T-34C-1 trainer on November 16, 1977, en route to a demonstration tour of Europe, was followed next day by the delivery to the U.S. Navy at Pensacola, Florida or the Navy's first T-34C Beechcraft trainers. The Navy aircraft went into immediate service as instructor familiarization units. Student pilot training with the T-34C's would follow early in 1978. Since then production has reached 353 units, with six being transferred to the U.S. Army.
Beech developed a T-34C-1 version for armaments system training, equipped with four underwing hardpoints having a total weapons capacity of 544-kg (1,200-lb). In addition to deployment in such a training role the T-34C-1 is suitable also for forward air control and tactical strike training missions.
The specifications for the T-34C are: maximum cruising speed 246-mph at 5,180-ft, service ceiling above 30,000 ft; maximum range at 20,000-ft 814-miles, weights empty 2,960; and maximum takeoff 4,300 feet. The dimensions are: span 33ft 4in, length 28 ft 8 1/2 in, height 9 ft 7 in, and wing area 179,6 sq ft.
The T-34Bs were sent to various recruiting commands to give potential new aviation cadets a taste of their flying future with the Navy. Many more were sent to Navy flying clubs, or sold to civilian owners.
As a sequel to the U.S. Navy deliveries, a group of pilots from Ecuador staged a flyaway from Beech Field of six of 14 T-34C-1 trainers ordered by that nation.
Ecuador was one of five foreign nations that had placed orders for a total of 69 T-34C-1s and Turbine Mentor 34Cs. The jetprop trainer was on its way, with more than $83 million in U.S. and foreign orders on the books.
Blessings by a Catholic priest were a part of the activities at Beech field as the New Year of 1978 unfolded. The occasion was a formal ceremony honoring the deliver to the Peruvian Navy of a fleet of six T-34C-1s. It was a Peruvian tradition that every vessel and airplane entering the Navy of Peru do so with the invocation of God's protection for the craft and its occupants. Accordingly, Father Ken Melaragno, associate pastor of Saint Margaret Mary Catholic Church in Wichita, invoked a blessing on each of Peru's six trainers as part of the acceptance proceedings. Peruvian Navy pilots carried through the flyaway to Peru without incident.
Moroccan Air Force, Ecuadorian Air Force and Peruvian Navy Beechcraft T-34C-1 trainers were delivered for those countries pilot training programs. Orders from the Argentine Navy and Indonesian Air Force quickly followed in 1978.
In 1978 a mass flyaway from Beech Field by the Argentine Navy pilots of 7 T-34C-1 trainers completed the delivery of a 15-plane fleet to Argentina.

In 1978 a $3.5 million contract from the government of Algeria initiated deliveries of Mentor T-34Cs to the national pilot training school at Oran.
When they were re-certified as civilian aircraft, the FAA mandated several changes to the T-34B. These included a stall strip on the right wing, addition of a stall warning system, removal of the nose gear doors, replacing the tail fillet that had been removed from the 'A' models, and generally reducing the performance restrictions. In addition, T-34Bs did not undergo spin testing as part of their recertification. For this reason, civilian T-34B's registered as Beech D-45's (including those at PRNFC) are NOT certified for aerobatics, even though years of service demonstrated their capability in this regard.

Copyright © 2008 By Carenado
Carenado Customer Service: askcarenado@carenado.com
www.carenado.com

History

During 1981 the delivery of three T-34C-1 trainers to the Navy of Uruguay brought to seven the number of countries which had purchased commercial T-34C-1 and Turbo Mentor 34C versions. In addition to Uruguay were Morocco, Ecuador, Peru, Argentina, Indonesia and Algeria.
In mid-December, the west African nation of Gabon became the eighth foreign nation to purchase international or commercial versions of the T-34C-1 or T-34C turboprop trainers. Gabon's initial order for four T-34C-1s was scheduled for use by the elite Presidential Guard of the nation's president, Omar Bongo.
Today the T-34A and T34B Mentors have become come very popular war birds because of their flying qualities and economy and are welcomed at air shows. They are owned by military and civilian flying clubs as well as many individuals.
The number of T-34s in military flying clubs is not known. There are currently about 200 T-34s in civilian hands. Finally a mention to The six member civilian Lima-Lima precision formation flight team which has performed in air shows from border to border and coast to coast in their T-34s.

References:
The History of Beech
"Fifty Years of Excellence"
William H. McDaniel.
Copyright 1982 by Beech Aircraft Corporation
ISBN 0-911978-00-3
The Complete Encyclopedia of World Aircraft
Copyright 1997 Orbis Publishing Ltd.
ISBN 0-7607-0592-5
Internet Web Pages

The aircraft operation is fictional and for simulation purposes only.

Beechcraft ®T-34B Mentor ® is a trademark of Textron Aviation Inc. and is used under license to RailSimulator.com Ltd d/b/a Dovetail Games.

Copyright © 2008 By Carenado
Carenado Customer Service: askcarenado@carenado.com
www.carenado.com

Carenado®

Beechcraft®

T-34B Mentor®

Checklist

Beechcraft®

OFFICIAL LICENSED PRODUCT

E78022

PREFLIGHT CHECK.
BEFORE EXTERIOR INSPECTION.

1. Form 781- check.
2. Battery and ignition switches- check OFF.
3. Aileron trim tab wheel - 0 degrees.
4. Rudder trim tab knob - 0 degrees.
5. Elevator trim tab wheel - 0 degrees.
6. Landing gear handle - DOWN.
7. Landing gear emergency retract switch - OFF and safetied.
8. Canopy emergency release handle seal - undamaged.
9. Flight controls - unlocked.
10. Flight information publications - check. Check that required navigation and letdown publications are aboard aircraft and accessible.
Rear Cockpit Check for Solo Flight.
11. Safety belt - secure.
12. Should harness - secure.
13. Headset - stowed.
14. Flight controls - free from obstruction.
15. Directional indicator - caged.
16. Fuel booster pump override switches - FORWARD COCKPIT CONTROL.
17. Rear canopy - closed and locked.

EXTERIOR INSPECTION.

Starting at the inboard trailing edge of the left wing, perform the following exterior inspection check using the inspection route outlined. During this inspection, check all exterior surfaces for skin damage or other obvious defects. In addition, check beneath the aircraft for signs of fluid leakage.
1.Left wing.
a. Wing flap - check.
b. Aileron - check; trim tab for servo action.
d. Leading edge and landing light - check.
e. Pilot tube - check.
f. Fuel quantity - check, cap secure.
g. Air intake - check, screen clean.
2.Left main gear.
a. Wheel chocks - in place.
b. Tire - check.
c. Wheel brake - check puck, hydraulic line, adjusting pin recessed 3/16 inch maximum.
d. Strut - check.
e. Landing gear doors - check.
f. Wheel well - unobstructed.
3.Nose section.
a. Left augmentor tube - unobstructed.
b. Left cowling - secure.
c. Propeller - check.
d. Passing light - secure.
e. Air intake - check, unobstructed.
f. Strut - check.
g. Tire and static wire - check.
h. Nose landing gear doors - check.
i. Wheel well - unobstructed.
j. Right cowling - secure.
k. Battery and battery retainer bar - secure.
l. Battery sump jar - check.
m. Exterior canopy emergency release handle - undisturbed.
n. Right augmentor tube - unobstructed.
4.Right main gear - check same as left main gear.
5.Right wing.

Copyright 2004 Carenado®

a. Air intake - check, screen clean.
b. Fuel quantity - check, cap secure.
c. Leading edge and landing light - check.
d. Wing tip and navigation light - check.
e. Aileron - check; trim tab for servo action.
f. Wing flap - check.
6.Fuselage right side.
a. Fuel tank vent - check, 12 degrees forward pitch.
b. Antenna - secure.
c. Static air vent - unobstructed.
7.Empennage.
a. Right horizontal stabilizer - check.
b. Right elevator and trim tab - check.
c. Vertical fin - check.
d. Rudder - check; trim tab for anti-servo action.
e. Navigation light - check.
f. Left elevator and trim tab -check.
g. Left horizontal stabilizer - check.
8.Fuselage left side.
a. Tail skid - check.
b. Under side - check.
c. Static air vent - unobstructed.
d. Baggage compartment - check, door secured.
WARNING.
If aerobatics are to be performed, remove all equippment or other objects from the
baggage compartment.
e. Fuel tank vent - check, 12 degrees forward pitch.

ON ENTERING THE AIRCRAFT.
INTERIOR INSPECTION.
1.Seat - adjust and lock.
2.Seat belt and shoulder harness - fastened.
3.Inertia reel lock - check.
4.Parking brakes - set.
5.Flight controls - check freedom of movement and response.
6.Wing flap lever - NEUTRAL.
If flaps are not up, move flap lever to UP; When flaps are up, move lever to NEUTRAL.
7.Landing light switches - OFF.
8.Fuel selector valve handle - LEFT TANK (if tank is 3/4 or more full).
NOTE
Each time the fuel tank selector valve handle is moved from one position to
the other, the "click and feel" method should be utilized in conjunction with
lining up the handle pointer with the marked position on the fuel tank selector.
9.Fuel booster pump switch - LEFT.
10.Trim tabs - set for take-off.
a. Aileron trim tab wheel - 0 degrees.
b. Rudder trim tab knob - 3 degrees RIGHT (R).
c. Elevator trim tab wheel - 3 degrees UP.
11.Engine control quadrant friction lock knob - adjusted.
12.Mixture level - IDLE CUT-OFF.
13.Propeller lever - FULL INCREASE.
14.Throttle - cracked 1/4 inch.
15.Ignition switch - OFF.
16.Landing gear handle - DOWN.
17.Landing gear emergency retract switch - guard safetied.
18.Carburetor heat handle - IN and LOCKED.

Carenado®
Copyright 2004 Carenado®

19.Clock and altimeter - set.
20.Vertical Velocity Indicator - check for zero reading.
21.Attitude indicator and directional indicator - uncaged.
22.Primer switch - OFF.
23.Safter switch - OFF.
24.Battery switch - OFF.
25.Generator switch - ON.
26.Cockpit air handles - as desired.
27.Landing gear emergency handcrank - disengaged (clutch knob UP and LOCKED).
28.Inverter switch - OFF.
29.Light switches and rheostats - OFF.
30.Radio switch - OFF.
31.Pitot heater switch - OFF (guard down).
32.Circuit breakers - IN.
33.Battery switch - ON.
If external power is available, leave battery switch OFF.
34.Landing gear position indicators - check.
35.Landing gear warning light - test.
36.Fuel quantity gages - check.
37.Fuel pressure (booster pump) - check.
38.Geberator and inverter warning lights - check illuminated.
39.Navigation lights - check STEADY and FLASH positions.
40.External gear down indicator lights - check illuminated.
41.Passing light - check.
42.Pitot heat - check.
43.Instrument and console lights - check.
44.Landing lights - check.
45.Flashlight on board and ready for use - check.

BEFORE STARTING ENGINE.
Always make sure a fire guard is posted, the propeller area clear, and wheel chocks in place before starting engine. Set the parking brake and leave canopy open until the engine is running.

STARTING ENGINE.
The engine can be started from the front cockpit only. Start the engine as follows:
1.Starter - engage.
Check for possible hydraulic lock as engine makes first two revolutions. If hydraulic lock is suspected or encountered, discontinue starting at-tempt and have lower spark plugs removed to drain fluid from cylinders before a restart is attempted.
2.Ignition switch - BOTH (after two engine revolutions).
CAUTION.
Primer is very sensitive. Prime 1/2 to one second when engine is cold. Only a rapid momentary actuation is required when the engine is hot. Primer is neither recommended nor required form warm weather starts.
3.Mixture lever - FULL RICH.
4.Starter switch - OFF (after engine starts).
Continue to prime intermittently, if necessary, to keep engine running.
NOTE.
If engine does not fire after 10 to 15 seconds of continuous cranking or if engine starts then ceases firing, release starter which and proceed as follows:
a. Fuel booster pump switch -OFF.
b. Ignition switch - OFF.
c. Mixture lever - IDLE CUT-OFF.
d. Throttle - OPEN.
Attempt to clear engine of excess fuel by turning it over several times with starter then repeat starting procedure.

Copyright 2004 Carenado®

5.Throttle - 1000 rpm.
6.Oil pressure gage - check.
If oil pressure does not start to rise within 10 seconds or reach 30 psi in 30 seconds, shut down engine and investigate.

ENGINE GROUND OPERATION.

1.Throttle - 1200 to 1600 rpm (for engine warm-up)
Warm up engine at the lowest speed between 1200 and 1600 rpm at which smooth operation is obtained until the oil temperature shows a definite increase or until the oil pressure is stabilized. Do not exceed 1600 rpm until oil temperature has reached minimum operating temperature.
NOTE.
When aircraft serviced with Grade 1100 oil has been exposed to low temperature weather, warm up engine at or below 1600 rpm until the oil temperature reaches 30ºC then increase the rpm until the oil temperature reaches 40ºC before operating the propeller control through several complete cycles.

BEFORE TAXIING.

During engine warm-up, make the following test:
1.Engine instruments - check.
2.Manifold pressure purge valve button - depress (hold for 3 to 5 seconds).
3.Radio switch - ON.
4.Electrical system.
a. Generator voltage - 28 28.5 volts.
b. Loadmeter - check.
c. Generator warning light - out at 900 rpm.
d. Inverter switch - check STANDBY and MAIN.
Set inverter switch to STANBY position, then to MAIN, to test inverter operation. The inverter warning light should go out when switch is moved to either position and illuminates when the switch is a at OFF position. Leave inverter swutch at MAIN after completion of check.
5.Pitot Heat
Turn pitot heater switch on and observe increase on loadmeter. Return switch to OFF position until just prior to take-off.
6.Wing flaps - check operation, wing flap lever-Neutral.
7.Cage and uncage attitude indicator. Cage the J-8 Attitude Indicator to insure proper erection.
NOTE.
The J-8 Attitude Indicator should be energized for at least 30 seconds prior
to caging.
8.Fuel booster pump switch-OFF.
9.Fuel selector valve handle - Right Tank. Check right tank for proper operation - Fuel booster pump switch ON then OFF.
10.Fuel selector valve handle - LEFT TANK (if more than 3/4 full).
11.Idle speed - check.
12.Ignition switch - check (grounded).
Set throttle at 700 rpm and quickly turn ignition switch to OFF and back to BOTH and note whether engine momentarily stops firing. If engine does not stop firing completely, one or more magneto leads are not grounding properly and the engine should be shut down inmediately. As soon as the engine stops, warn ground crew to keep clear of the propeller.
CAUTION.
Perform this check as rapidly as possible to avoid backfiring.
13.Radio operation - check.
TAXIING.
1.Area - check clear for taxi.
2.Wheel chocks - removed.

Copyright 2004 Carenado®

3.Brakes - check.
Hold feet on rudder pedals, release parking brake and let aircraft roll forward. Test brakes before building up taxiing speed by applying firm toe pressure on both pedals.
Taxiing is simplified by the tricycle landing gear and the rudder pedal linkage to the nose wheel. The good visibility and steerable nose wheel give excellent ground handling characteristics. The initial roll should be straight ahead and turns started while the aircraft is in motion. Turning from a standstill requires more power and shortens tire and brake life. Start turns with rudder pedal steering of the nose wheel. To tighten the turn after full pedal deflection is reached, apply brake on the inside of the turn. When stopping the aircraft, stop with the nose wheel stright.
4.Flight instruments - check.
a. Magnetic compass (stand by).Card swings freely, bowl full of liquid.
b. Airspeed indicator reading - check.
c. Altimeter - Set current altimeter setting in the Kollsman window and check for allowable altimeter error.
NOTE.
It is possible to continuously rotate the barometric set knob after baro scale is out of view until eventually the numbers will reappear in the Kollsman window from the opposite side. If the correct altimeter setting is then established the altimeter will read approximately 10,000 feet in error. Special attention should be given to assure that the 10,000 foot pointer is reading correctly.
d. Turn and Slip Indicator - Check needle deflecting in the direction of turn while taxiing; ball free in race.
e. Attitude Indicator - Set the miniature aircraft on the 90 degree indices on the side of the case; check for precession error during taxi turns.

DOWN-WIND TAXIING.
Down-wind taxiing will usually require little or no throttle after the initial roll is established. To avoid overheating the engine when taxiing down-wind, keep the use of power to a minimum. Rather than ride the brakes, let speed build up and apply brakes occasionally.

CROSS-WIND TAXIING.
In taxiing crosswind, the aircraft has the normal tendency to "weathervane" (turn into the wind) due to the wind force acting on the rudder area, however, the "weathervaning" tendency is not difficult to overcome. The nose wheel linkage from the rudder pedals provides the steering control necessary for safe and efficient ground handling. Hold any rudder pressure necessary to correct for a crosswind.

ENGINE RUN UP.
Before turning onto the runway, turn as near into the wind as practical, stop the aircraft clear of the runway, with the nose wheel straight, apply toe brakes and perform the following checks.
1.Fuel selector valve handle - LEFT TANK.
CAUTION.
Sine some aircraft vent the carburetor to the left tank only, warm up, taxi, run up and take-off on the left tank. Just prior to take-off, do not switch to a tank that has not been used extensively in ground operation, since an unnoticed defect in the fuel delivery system could cause loss of engine power during a critical period of take-off operation.
2.Propeller lever - FULL INCREASE.
3.Mixture lever - FULL RICH.
4.Engine instruments - check.
5.Propeller governor - check at 1800 rpm. Note 150-200 rpm drop.
NOTE.

Copyright 2004 Carenado®

To prevent propeller surge during cold weather operation, operate the propeller control through several complete cycles to replace the oil in the propeller system with warm engine oil.
Pull the propeller lever back toward DECREASE until 1600 rpm is obtained (no detent in quadrant) or until contact with the detent is made, in quadrants so equipped. When the desired rpm drop is obtained, return the propeller lever to full INCREASE.
6.Ignition system - check at 200 rpm, 75 rpm maximum drop.
Turn ignition switch to RIGHT (R), note rpm drop and return ignition switch to BOTH until rpm stabilizes. Turn ignition switch to LEFT (L), note drop and return to BOTH.
NOTE.
A marginal rpm drop may be due to fouled plugs resulting from prolonged operation at idle rpm. Advance the throttle to full power for a few seconds in an attempt to clear engine and repeat test.
7.Carburetor heat system - check at 2000 rpm.
Pull carburetor heat handle full out and check for approximately one-half inch decrease in manifold pressure and a rise in carburetor air temperature. Return carburetor heat handle to full IN.
8.Engine power - check (2475 +- 75 rpm). Advance the throttle with a smooth motion to full OPEN (full power) and check to see then the desired rpm is obtained. Acceleration and deceleration during this check should be smooth without backfire, coughing or roughness.
9.Directional indicator - set.
Set take-off heading under top index. Set pointer with magnetic compass and check for proper indications while taxiing to take-off position.
NOTE.
Run engine up to full power only on paved areas to avoid damage to the propeller and aircraft from loose gravel kicked up by the propeller. If no paved surface is available, full power and acceleration checks may be made on the initial portion of the take-off run.

BEFORE TAKE-OFF.
1.Fuel booster pump switch appropriate tank - ON.
NOTE.
Fuel booster pump operation prohibited on airplanes not modified by T.O. 1T34A-542 except during engine start and during flight when fuel pressure gage indicates less than 9 psi.
2.Wing flaps - up (lever - NEUTRAL).
3.Trim tabs - repeat 10, interior inspection.
a. Aileron trim tab wheel - 3 degrees UP.
4.Friction knob lock - adjusted.
5.Mixture lever - FULL RICH.
6.Propeller lever - FULL INCREASE.
7.Engine instruments - check.
8.Flight controls - freedom of movement and proper response.
9.Canopy - position optional.
10.Safety belt and shoulder harness - adjusted.
11.Inertia reel - LOCKED.
12.Flight instruments - set.
After aligning aircraft and runway heading on the dial are set at the top of the case aligned with the index.
13.Pitot Heat - Climatic.
The pitot heat should be on if IFR flight is anticipated or if take-off and flight is to be made in weather conditions where icing and/or moisture is probable.

TAKE-OFF.
Take-off in this aircraft presents no special problems and is further simplified by good visibility and the use of nose wheel steering. Although this is true, any take-off can be improved by proper technique

Copyright 2004 Carenado®

and careful planning. Plan tour take-off according to the following variables affecting take-off techniques: field elevation, gross weight, wind, outside air temperature, type of runway, and height and distance of the nearest obstacles. A normal take-off as outlined herein will give the take-off performance covered in the Performance Data in the Appendix.

NORMAL TAKE-OFF.

Release the brakes and roll into take-off position, aligning the nose wheel with the runway, and advance the throttle smoothly to full OPEN (2600 rpm). During the initial roll, maintain directional control with rudder pedal steering of the nose wheel. The rudder becomes effective for directional control at about 35 knots IAS. When you feel good response to elevator control (approximately 50 to 55 knots) apply back pressure to the stick and raise the nose wheel off the runway. When the aircraft is ready, it will fly itself off the ground at 60 to 65 knots IAS.

MINIMUM RUN TAKE-OFF

For a minimum run take-off, line up with the runway, apply toe brakes and set 75 per cent flaps. Advance the throttle to full OPEN (2600 rpm) and release the brakes. Do not assume a nose-high (take-off) attitude so that runway may be cleared as soon as minimum flying airspeed (approximately 55 knots IAS) is reached. When clear of the runway, retract the gear and drop the nose slightly to gain a safe airspeed; continue with the normal take-off and climb procedure.

OBSTACLE CLEARANCE TAKE-OFF.

Use the same procedure as given for a minimum run take-off to the point of assuming a nose-high attitude. Do not assume the nose high (take-off) attitude until reaching approximately 55 knots IAS. Clear the ground, retract the gear and as soon as a 70 knot airspeed has been attained, hold this airspeed for maximum angle of climb until obstacle is cleared. Accelerate to normal climb speed and retract flaps; continue normal climb.

NOTE.

With normal speeds and the engine developing full power (2600 rpm), no particular caution need be exercised in retracting the flaps since acceleration will be sufficient to offset any tendency for the aircraft to sink. Under conditions of minimum airspeed and/or less than full power, caution should be exercised and the flaps raised in increments of 25 to 30 percent.

CROSSWIND TAKE-OFF.

In accomplishing a crosswind take-off, directional control may be more difficult to maintain, there-fore, use smooth application of power and attempt to correct for the crosswind by holding upwind aileron and by using rudder pedal steering of the nose wheel. If these are not sufficient at the start of the take-off roll, due to the absence of aerodynamic control, some use of brakes may be necessary; however, brakes should not be used after take-off roll is underway since every application of brakes on the take-off roll will lengthen the take-off run. Hold the nose wheel down longer than in a normal take-off, using aileron as required to hold wings level. As required flying airspeed is reached, make a definite pull-off to avoid sideskipping as the aircraft starts to become airborne. When definitely airborne, correct for drift by making a coordinated turn into the wind. Refer to the Appendix, Performance Data for selection of lift-off speed under variable cross wind conditions.

NIGHT TAKE-OFF.

Night take-off procedure is similar to normal daytime take-off; however,

Copyright 2004 Carenado®

you should be thoroughly familiar with the location of all switches and control in the cockpit. Align the aircraft with the runway carefully before starting take-off run, preferably using a sighting point to aid in directional control during the run. After becoming airborne, maintain take off attitude longer than in normal daytime take-off and again altitude required to clear obstacles before assuming normal climb attitude.

AFTER TAKE-OFF - CLIMB.
1.Landing gear handle - UP.
2.Landing gear position indicators - check.
Raise flaps before gear and flaps-down airspeed is reached. Aircraft will climb with nose slightly higher.
3.Propeller lever 2600 rpm (at 100 knots IAS).
4.Carburetor heat handle - climatic.
Climb is normally with full throttle, 2600 rpm. You will note that manifold pressure drops off as altitude increases. Refer to the Climb Chart in the Performance Data, for fuel consumption, recommended airspeeds and rates of climb for varying altitudes and gross weights.
5.Fuel booster pump switch - OFF.

CRUISE.
After the aircraft has reached cruising altitude, trim for level flight and adjust power as necessary to attain cruising airspeed.

DESCENT.
1.Carburetor heat handle - climatic.
2.Mixture lever - FULL RICH.
3.Fuel selector valve handle - Fullest tank (left tank if more than 3/4 full).
4.Parking brake handle - IN.
5.Radio proper frequency - check.
6.Throttle - 15 in. Hg.
Descent from cruising altitude is best accomplished by letting down in a fast, low-power cruise. During prolonged glides or gliding turns the engine should be cleared at least every 180 degrees of turn, or as often as necessary. Clearing the engine has a threefold purpose: To keep the cylinder head temperature above 107 degrees centigrade, to prevent the engine from becoming "loaded up" due to an excessive rich idle mixture, and to give and early warning of carburetor icing during cold weather operation. The throttle should be applied smoothly and evenly during this clearing process to prevent "killing" the engine event an over-rich mixture condition is present.

BEFORE LANDING.
1.Carburetor heat handle - in and locked.
2.Propeller lever - 2400 rpm.
3.Fuel booster pump switch appropriate tank - ON.
NOTE.
Fuel booster pump operation prohibited on airplanes not modified by T.O 1T34A-542 except during engine start and during flight when fuel pressure gage indicates less than 9 psi.
4.Canopy position - Optional.
5.Shoulder harness - Locked.
6.Initial approach.
a. Airspeed - 130 knots IAS.
7.180 degree turn to downwind leg.
a. Throttle - Retard until horn blows.
b. Propeller lever - FULL INCREASE.
8.Downwind leg.
a. Landing gear handle - DOWN. Check position indicators, warning horn and lights.

Carenado®
Copyright 2004 Carenado®

b. Wing flap handle - DOWN.
9.180 degree turn to final approach.
a. Airspeed 80 knots IAS.
10.Final approach.
a. Airspeed - 75 knots IAS.
b. Landing and taxi light switch - as required.
Check brake system by depressing brake pedals and noting resistance to pedals. Plan to enter traffic on a downwind leg at 105 to 110 knots and approximately 1000 feet.

LANDINGS.

NORMAL LANDING.

Normal landing in this aircraft is made with 100 per cent flaps, using either a power-on or power-off approach. In using flaps, lowering approximately 50 per cent on the base leg will help to establish a suitable glide angle for approach and the additional flap can then be applied on the approach as determined by wind velocity. Speed should be decreased throughout the pattern to approximately 80 knots for the base leg and to approximately 75 knots as you begin the flare-out. Start flaring-out just over the end on the runway and, if a power-on approach is used, start removing power simultaneously with flare-out. Round out with a smooth, continuous increase of back pressure on the stick and touch main wheels first, holding the nose wheel of with back pressure and maintaining directional control on the runway with rudder. Lower the nose wheel while you still have ample elevator control the use nose wheel steering for directional control. Let speed dissipate as much a practicable before using brakes. Do not hold brake continuously while slowing down, since braking action and brake life are both improved by using short, intermittent applications of brake.

MINIMUM-RUN LANDING.

A minimum-run landing involves touching down at the lowest speed practicable, to cut down the landing roll. Since this is a maximum-performance maneuver and the aircraft is barely above stalling speed, care must be excercised in handling of the flight controls. Abrupt stick movements could cause a stall and allowing the aircraft to yaw will increase the tendency to roll with the stall. To execute a minimum-run landing, lower full flaps after turn onto final approach and slow the aircraft to 50 knots, controlling the rate-of-descent with power. Plan to land as short as possible and start flare-out just over the fence, using very gradual stick pressure. Keep power on until the touchdown, as slower flying speed is possible with power. Immediately at touchdown, cut the throttle, lower the nose wheel smoothly to the runway and apply brakes.

CAUTION.

Don't use brakes before letting the nose wheel down; doing so scan cause the aircraft to pitch, dropping the nose wheel hard.

CROSSWIND LANDING.

Landing in a crosswind presents no special problems except the elimination of drift correction, at the proper moment, to avoid touching down in a skid. Correction for drift may be accomplished by three methods: crabbing, carrying the upwind wing low (a slip), or a combination of both. Crabbing is most successful for the traffic pattern phase while a combination is most successful for landing. Generally, less flaps should be used, depending on the velocity and angle of the wind since stall characteristics and ground handling characteristics, in a crosswind, are less desirable with full flaps. Approach the runway with crab, but eliminate most of the crab on nearing the runway by replacing the crab with an upwind wing low attitude. Touch down easily onto the low main wheel while flying airspeed remains and

Carenado®
Copyright 2004 Carenado®

allow the aircraft to settle smoothly onto the opposite gear. Lower the nose wheel smoothly to the runway to preserve directional control. If an excessive amount of crab should remain just prior to touchdown, attempt to eliminate it at point of touchdown by used of rudder. If excessive skidding across the runway appears imminent, make a coordinated turn to realign with the runway and drop upwind wing to correct for tendency to drift.

NIGHT LANDING.

Night landing technique is similar to normal daytime landing, except that judgment of distance may be somewhat affected in semi-darkness and with runway floodlights. If runway floodlights are used, avoid locking at the beam of light as there may be a tendency to level off on top of it instead of the runway. Don't use landing lights until at a low enough altitude for them to be of use and avoid using them in thick haze, smoke or fog, as reflected light from the particles in the air will reduce, instead of enhance, visibility.

GO-AROUND.

Make the decision to go around as early as possible, in the landing approach, to provide a safe margin of air speed and altitude. The go-around procedure is a normal maneuver and does not become an emergency procedure unless it is started too late. Accuracy of judgment and early recognition of the need to go around are important; these are developed by practice.

AFTER LANDING.

After landing roll, clear the runway and perform the following checks:
1.Fuel booster pump switch - OFF.
2.Wing flap lever - UP then neutral.
3.Trim tabs - set.
a. Aileron trim tab wheel - 0 degrees.
b. Rudder trim tab knob - 0 degrees.
c. Elevator trim tab wheel - 0 degrees.

NOTE.
When landing is made on unprepared runway, retract the flaps as soon as the nose wheel touches the runway, if practical, to reduce the possibility of damage to the flaps from mud or gravel thrown up by the wheels. Also use caution taxiing over uneven or soft terrain and use a minimum of throttle in loose gravel or sand.

POST FLIGHT ENGINE CHECK.

Park the aircraft with the nose wheel straight, set the parking brake and make the following checks:
1.Instruments - check.
2.Engine idle speed - check.
With the throttle in fully CLOSED position, the engine should idle at 600 to 700 rpm.
3.Ignition switch - check (grounded).
Set throttle at 700 rpm and quickly turn ignition switch to OFF and back to BOTH and note whether engine momentarily stop firing. If engine does not stop firing completely, one or more magneto leads are not grounding properly and the engine should be shut down immediately. As soon as the engine stops, warn ground crew to keep clear of the propeller.
4.Ignition system - check at 200 rpm, 75 rpm maximum drop.
Turn ignition switch to RIGHT (R), note rpm drop and return ignition switch to BOTH until rpm stabilizes. Turn ignition switch to LEFT (L), note drop and return to BOTH.
NOTE.
A marginal rpm drop may be due to fouled plugs resulting from prolonged operation at idle rpm. Advance the throttle to full power

Carenado®
Copyright 2004 Carenado®

for a few seconds in an attempt to clear engine and repeat test.
5.Engine power - check (2475 +- 75 rpm).
Advance the throttle with a smooth motion to full OPEN (full power) and check to see that the desired rpm is obtained. Acceleration and deceleration during this check should be smooth without back fire, coughing or roughness.

NOTE.
Run engine up to full power only on paved areas to avoid damage to the propeller and aircraft from loose gravel kicked up by the propeller.

ENGINE SHUT DOWN.
1.Parking brake - set.
2.Ignition switch - check (if not done during post flight).
3.Throttle - 1000 rpm (for one minute).
4.Mixture lever - IDLE CUT-OFF.

NOTE.
If engine fails to stop firing when mixture lever is moved to IDLE CUT-OFF the fuel metering valve is stuck open, accomplish the following:
a. Ignition switch - leave at BOTH.
b. Throttle - open slightly.
c. Fuel selector valve handle - OFF.
After propeller rotation has stopped completely:
5.Fuel selector valve handle - OFF.
6.Throttle - CLOSED.
7.Ignition switch - OFF.
8.Electrical switches - OFF.

BEFORE LEAVING AIRCRAFT.
1.Flight controls - LOCKED.
2.Form 781 - completed.
3.Wheel chocks - in place.
4.Parking brake handle - IN.
5.Pitot cover - in place.

ENGINE FAILURE.
Engine failure is usually preceded by symptoms which will enable you to take preventive action if you are alert to operating conditions at all times. Instant and complete engine failure most often occurs due to fuel flow or ignition failure. This type of failure due to mechanical causes is seldom encountered. Failure due to carelessness or improper operating techniques is not at all rare and should be guarded against by constant attention to such things as cylinder head temperature, oil pressure, sound of the engine, manifold pressure and rpm and by observing the operating limitations. Land as soon as possible if engine failure is indicated.

ENGINE FAILURE DURING TAKE-OFF (prior to becoming airborne).
1.THROOTLE - CLOSED.
2.BRAKES - APPLY.
3.Canopy position -open.
4.Mixture lever - IDLE CUT-OFF.
5.Fuel selector valve handle - OFF.
6.Ignition switch - OFF.
7.Battery switch - OFF.
8.Generator switch - OFF.
As soon as the aircraft stops, get clear at once.

ENGINE FAILURE DURING TAKE-OFF (after becoming airborne).
1.GLIDE - ESTABLISH.
2.CANOPY POSITION - OPEN.

Copyright 2004 Carenado®

3.MIXTURE LEVER - IDLE CUT-OFF.
4.Fuel selector valve handle - OFF.
5.Ignition switch - OFF.
6.Battery switch - OFF.
7.Generator switch - OFF.
Complete landing and as soon as the aircraft stops, get clear at once.
NOTE.
When engine failure from an unknown cause occurs, there is always the possibility of a resultant engine fire. For this reason, any items of the engine shutdown which cannot be completed before landing, should be completed as soon as practicable on the ground.

ENGINE FAILURE INMEDIATELY AFTER TAKE-OFF (over unprepared landing area).
If the engine fails after the aircraft has left the ground and there is not sufficient prepared landing area remaining in front of the aircraft, lower the nose to avoid a stall and prepare to land straight ahead.
WARNING.
Under no circumstances should a turn be attempted at low altitude with a dead engine, except slight deviations to avoid hitting an obstacle. A controlled crash landing straight ahead is preferable to the likelihood of a stall causing an uncontrolled roll, and crash, out of a turn.
1.LANDING GEAR HANDLE - UP.
WARNING.
Make no attempt to land on unprepared or unfamiliar terrain with the landing gear
extended.
NOTE.
Approximately 7 to 8 seconds are required to extend the gear and approximately 10 seconds are required for retraction.
2.CANOPY - OPEN.
3.MIXTURE LEVER - IDLE CUT-OFF.
4.FUEL SELECTOR VALVE HANDLE - OFF.
5.IGNITION SWITCH - OFF.
6.BATTERY SWITCH - OFF.
7.GENERATOR SWITCH - OFF.
Accomplish a gear-up landing.

ENGINE FAILURE DURING FLIGHT.
In the event of engine failure during flight, maintain 90 knots IAS for best glide distance and prepare for a forced landing. Attempt to start engine if deemed reasonably safe and if altitude permits. If engine fails to re-start, shut down engine and make a forced landing ; at night or if a forced landing is not possible, bail out.
Immediately upon encountering partial power failure, such as loss of power, loss of fuel pressure, rough running engine, etc., proceed as follows:
1.AIRSPEED - MAINTAIN 90 KNOTS.
CAUTION.
Many engine failures are the result of fuel starvation due to poor fuel planning,
therefore, is not certain from which tank fuel selector valve handle when switching
tanks. It is otherwise possible to switch into the OFF position inadvertently.
NOTE.
Do not lock shoulder harness until after cutting all switches that cannot be reached
with the harness locked. If you don't have time to get the harness locked, the
automatic lock will function on impact.

Copyright 2004 Carenado®

2.FUEL SELECTOR VALVE HANDLE - SWITCH TANKS.
3.FUEL BOOSTER PUMP SWITCH - ON (APPROPIATE TANK).
4.THROTTLE - ADVANCE 1/2 INCH BEYOND PRESENT SEETING.
5.MIXTURE LEVER - FULL RICH.
6.Propeller lever - FULL INCREASE.
7.Ignition switch - check BOTH.
8.Battery switch - check ON.
9.Generator switch - check ON.
10.CARBURETOR HEAT HANDLE - CLIMATIC.
Complete Power Failure:
1.AIRSPEED - MAINTAIN 90 KNOTS.
2.ATTEMPT ENGINE AIRSTART IF ALTITUDE PERMITS.
Engine Air Start:
1.Mixture lever - IDLE CUT-OFF.
2.Propeller lever - FULL INCREASE.
3.Fuel selector valve handle - OFF.
Turning the fuel selector valve OFF for a few seconds will clear the engine in the event of excessive fuel flow.
NOTE.
If the failure was due to the fuel metering valve sticking in full open position, the
carburetor will deliver an excess of fuel, with constant flooding. Shutting off fuel
momentarily will clear the engine and possibly restore operation.
4.Throttle - FULL OPEN.
5.Fuel selector valve handle - ON (fullest tank).
6.Fuel booster pump switch - ON (appropriate tank).
7.Throttle - 1/4 INCH OPEN.
8.Mixture lever - FULL RICH.
9.Primer switch - AS REQUIRED.
a. If engine fires, primer switch - ON (as required to reach field).
10.If engine fails to restart, make FORCED LANDING or BAIL OUT.

FUEL PRESSURE DROP - ENGINE OPERATING NORMALLY.
If the fuel pressure drops below the operating limits, but the engine continues to operate normally, the cause may be one or more of the following: primer leakage, oil dilution solenoid leakage, engine driven fuel pump by-pass valve leakage, clogged pressure line, instrument failure, or line leakage. Whenever fuel pressure drops and the engine continues to operate normally, the first concern of the pilot must be to guard against the outbreak of an engine fire. The greatest danger lies in the fact that the pilot develops a false sense of security because no fire exists at the time the fuel pressure drop is noticed nor after a prolonged period of flight. However, when the throttle is retarded (as in preparation for a landing), an engine fire develops and the results are usually disastrous. What has happened is that a fuel leak existed, but the cooling and dispersing effect of the airflow through the engine compartment at cruising speed has prevented the start of a fire. When the throttle was retarded, the airspeed dropped and the airflow was reduced sufficiently to permit ignition of the leaking fuel. Any change in the airflow pattern, such as reducing RPM or entering a climb, can start a fire if a fuel leak exists. Increasing the power is less likely to start a fire since airspeed will be increased, but even here there is a possibilty of fire since the exhaust heat and flame pattern may change sufficiently to outweigh the increase in cooling airflow.
Accordingly, it must be the objective of the pilot to eliminate the leaking fuel before any change is made to the airflow or exhaust pattern. The most effective means of accomplishing this is by moving the mixture lever to IDLE CUT-OFF before any throttle reduction, or any other engine shutdown procedure is initiated. An additional advantage of moving the mixture lever to IDLE CUT-OFF is that it

Copyright 2004 Carenado®

provides the most rapid means of eliminating exhaust stack flames and reducing exhaust heat.

DURING GROUND OPERATION.

If the fuel pressure drops below minimum operating limits during ground operation, but the engine continues to operate normally, stop the aircraft, shut down the engine, and have a fire guard stand by. DO NOT TAKE OFF until the cause has been investigated and corrected.

DURING FLIGHT.

One of the following two alternative courses of action will be use in the event of a fuel pressure drop during flight while the engines continues to operate normally: keep the engine in operation until a suitable landing area is reached or keep the engine in operation at or above cruising speed while maintain watch for fire.

KEEP THE ENGINE IN OPERATION UNTIL A SUITABLE LANDING AREA IS RECHED.

The aircraft should be maneuvered to a position from which a forced landing can be accomplished prior to any throttle manipulation, then shut the engine down and make a forced landing.

ENGINE SHUTDOWN.

1.MIXTURE LEVER - IDLE CUT-OFF

WARNING.

Whenever fuel pressure drops and engine continues to operate normally, mixture lever must be moved to off before airspeed is reduced, or before any engine shutdown procedure is initiated such as retarding the throttle.

2.Propeller lever - FULL DECREASE.

3.Throttle - CLOSED.

NOTE.

The landing gear warning horn will sound and the landing gear warning light will illuminate as soon as the throttle is closed. The horn may be silenced and the warning light extinguished by pressing the landing gear warning horn silencing button.

4.FUEL SELECTOR VALVE HANDLE - OFF.

5.FUEL BOOSTER PUMP SWITCH - OFF.

6.Ignition switch -OFF.

7.Battery switch - OFF.

8.Generator switch - OFF.

NOTE.

For landing use MAXIMUM GLIDE and FORCED LANDING procedures. If a landing as possible on a runway, turn battery switch on long enough to extend the gear, if it appears reasonably safe.

KEEP THE ENGINE IN OPERATION AT OR ABOVE CRUISING SPEED WHILE MAINTAINING WATCH FOR FIRE.

This may be done if it can be reasonably ascertained that the indicated fuel pressure drop has not resulted from a fuel leak. The aircraft should be maneuvered to a position from which a safe power-of landing can be accomplished prior to any throttle manipulation. Upon retarding the throttle a close watch should be maintained for fire. If a fire should occur, use ENGINE FIRE DURING FLIGHT procedures.

NOTE.

TO KEEP THE ENGINE IN OPERATION UNTIL A SUITABLE LANDING AREA IS
REACHED is generally the safest; however, the pilot's proficiency, size and condition of the landing site, weather conditions, and known conditions of the aircraft are factors to be considered.

MAXIMUM GLIDE.

The greatest gliding distance can be attained by leaving the gear and flaps up, pulling the propeller lever to full DECREASE (selecting positive high pitch) and maintaining 90 knots IAS. At design gross weight, this will give a glide ratio, however, will decrease by approximately 25 per cent if the propeller is not in positive high pitch.

Carenado®
Copyright 2004 Carenado®

NOTE.
Opening the canopy will slightly decrease the glide ratio. To obtain positive high pitch on aircraft equipped with a detent in the engine control quadrant, by pass the detent and pull the propeller lever to the full extent of quadrant travel.
CAUTION.
The engine is not to be operated at speeds below 1600 rpm, with power on, be cause of the development of excessively high B.M.E.P.
Once over a chosen landing area, the glide ratio can be decreased by positioning the propeller lever to full INCREASE. Additional drag, if required, may be gained by lowering the flaps and gear.
NOTE.
The landing gear should be down only if landing is to be made on a prepared runway or smooth surface.

SIMULATED FORCED LANDING.

1.Throttle - CLOSED.
CAUTION.
It is important to cushion the high inertia loads on the master rod bearings which occur at conditions of high RPM and low manifold pressure. It is well to remember that each hundred RPM requires at least one inch manifold pressure. Operation at high RPM and low manifold pressure should be kept to a minimum.
2.Glide - Establish 90 knots IAS (to High Key).
3.Canpy position - Open (Both cockpits, if occupied).
4.Fuel selector valve handle - Switch tanks.
5.Fuel booster pump switch - ON (appropriate tank).
6.Fuel pressure gage - Check.
7.Wing flaps UP (lever - NEUTRAL).
8.Mixture lever - FULL RICH.
9.Propeller lever - FULL INCREASE.
10.Trim - as necessary.

FORCED LANDING.

1.Throotle - CLOSED.
2.GLIDE - ESTABLISH 90 KNOTS IAS (to high key).
3.CANOPY POSITION - OPEN (Both cockpits , if occupied).
4.Fuel selector valve handle - OFF.
5.Fuel booster pump switch - OFF.
6.Propeller lever - UP.
7.Mixture lever - IDLE CUT OFF.
8.Propeller lever - FULL DECREASE.

LANDING PATTERN.

1.High key point (1500-2000 feet) :
a. Landing gear handle - DOWN (if landing on prepared surface or runway). Maintain 80 knots IAS.
WARNING.
Make no attempt to land on unprepared or unfamiliar terrain with the landing gear extended.
b. Wing flap lever - As required.
2.Low Key Point (1200-1500 feet, 80 knots IAS):
a. Ignition switch - OFF.
b. Battery switch - OFF.
c. Generator switch - OFF.
3.Base Key Point (800-1000 feet):
a. SHOULDER HARNESS - LOCKED.
b. Maintain 80 knots IAS.
4.Final Approach:
a. Trim - As necessary.
b. Maintain 80 knots IAS.
NOTE.

Copyright 2004 Carenado®

The 360º Force Landing pattern is typical and may require modifications to fit existing conditions.

PROPELLER FAILURE.

1.Throttle - CLOSED.
2.Oitch attitude - increase.
3.Propeller lever - FULL DECREASE.
If Propeller Is Uncontrollable:
4.Wing flap lever - DOWN.
5.Airspeed - approximately 60 knots.

PROPELLER BOLT FAILURE.

The pilot can recognize propeller bolt failure by a definite and unusual vibration of the engine. When propeller bolt failure is suspected, the following procedure should be accomplished:
1.Soothly reduce throttle to idle, maintain safe airspeed.
2.Check landing gear and flaps up.
3.Slowly reduce propeller control to 1600 rpm.
4.Smoothly advance throttle to maintain 90 knots airspeed and level flight (approximately 21-23 inches MAP).
5.Proceed directly to the nearest available airport and land. If altitude or other conditions make above procedure unsafe, power will be reduced to any extent possible, with emphasis placed on smooth movement of propeller control. The above procedures will place minimum stress on the remaining propeller (control) bolt.
Failure of either the governing system or the linkage from the propeller lever will result in the propeller going to full low pitch (high rpm). The governor control arm connecting with the propeller lever linkage is spring-loaded to the full high rpm position and any other failure resulting in loss of oil flow or oil pressure to the propeller hub will also result in full low pitch due to the centrifugal twisting moment on the blades. Under power-on conditions, full low pitch will result in engine over-speeding. Should a runway propeller condition occur, close the throttle immediately and pull the aircraft up into a climb to introduce a load on the engine and slow it down, then attempt to bring the rpm within normal range with the propeller lever. If the propeller cannot be controlled, continue flight under reduced power. Slow the aircraft until airspeed is below gear and flaps-down limit airspeed then lower the flaps and maintain approximately 15 knots above stalling speed, keeping rpm from exceeding maximum, if possible, and land immediately.

PROPELLER OPERATION WITH NO POWER.

In the event of engine failure, provided there is oil pressure, sufficient propeller control is available to establish and maintain positive high pitch operation and consequently maximum glide.

FIRE.

NOTE.
No engine fire extinguishing system is installed on this aircraft.

ENGINE FIRE DURING START.

Fire during starting may occur in either the induction or exhaust systems. However , pilot technique is the same in combating both types of fires. If fire occurs, keep the engine turning in an attempt to clear or start the engine, as the fire may be blown out the exhaust or drawn through the engine and extinguished. Engine fire is not readily apparent from the cockpit, since the exhaust augmentor tubes are at the underside of the fuselage. Should a fire occur during starting, continue cranking with starter in an attempt to get engine started. If engine fails to start and fire persist, shutdown the engine as follows:

Copyright 2004 Carenado®

1.MIXTURE LEVER - IDLE CUT-OFF
2.THROTTLE - FULL OPEN, CONTINUE CRANKING.
CAUTION
Do not use primer to start engine as priming will not facilitate most starts and may aggravate the fire.
3.FUEL SELECTOR VALVE HANDLE - OFF.
4.IGNITION SWITCH - OFF.
5.Starter switch - OFF.
6.BATTERY SWITCH - OFF.
7.SIGNAL GROUND CREW TO USE FIRE EXTINGUISHERS.
8.Get clear of aircraft.
The engine compartment is accessible for fire fighting through a push-in access door on the right side of the engine compartment. Do not attempt to restart the engine if the fire extinguished is used.

ENGINE FIRE AFTER START.

If engine starts and fire persist, shutdown the engine as follows:
1.MIXTURE LEVER - IDLE CUT-OFF.
2.THROTTLE - FULL OPEN.
3.FUEL SELECTOR VALVE HANDLE - OFF.
4.IGNITION SWITCH - OFF.
5.BATTERY SWITCH - OFF.
6.SIGNAL GROUND CREW TO USE FIRE EXTINGUISHERS.
7.Get clear of aircraft.

ENGINE FIRE DURING FLIGHT.

1.MIXTURE LEVER - IDLE CUT-OFF.
2.FUEL SELECTOR VALVE HANDLE - OFF.
3.Ignition switch - OFF.
4.Battery switch - OFF.
5.Generator switch - OFF.
6.Make FORCED LANDING or BAIL OUT.
Use the foregoing procedure if it is deemed impractical to attempt to extinguish an engine fire in flight. Never attempt to land the aircraft with a serious fire that cannot be extinguished if there is sufficient altitude to bail out. The decision to bail out will depend on judgment and the seriousness of the fire.
NOTE.
If a forced landing is possible on a runway, turn the battery switch on long enough to
extend the gear, if it appears reasonably safe, otherwise, extend the gear manually
or land with gear up.

FUSELAGE FIRE IN FIGHT.

1.Canopy position - closed .
Closing the canopy and reducing airspeed will minimize draft through the cockpit.
2.Cockpit air handles - FULL OUT.
3.Battery switch - OFF.
4.Generator switch - OFF.
Turn on the switches, one at a time, in an attempt to determine the nature of the fire. If the fire is not stopped by turning off electrical power supply and no other means of extinguishing it appears feasible, either bail out or land the aircraft, depending on altitude and seriousness of fire. A landing should not be attempted with a serious fire if there is sufficient altitude to bail out.
WING FIRE.
There is little that can be done to control a wing fire, except to try to blow fire out by slipping the aircraft away from the fire. If the fire cannot be extinguished immediately in this manner, bail out.

ELECTRICAL FIRE.

Copyright 2004 Carenado®

1.Battery switch - OFF.
2.Generator switch - OFF.
3.All electrical equipment - OFF.
4.All circuit breakers - OUT.
All circuits except starter relays are protected by circuit breakers, which isolate a short-circuit and tend to prevent a fire. Should and electrical fire start, however, try to locate the faulty circuit by using the foregoing procedure. Turn on the generator and battery switches, one at a time, to determine if either circuit is faulty. If the generator and battery circuits are all right, monitor the remaining switches and circuit breakers one at a time to locate and isolate the shorted circuit. If the shorted circuit is not located, use only that equipment which it may become necessary to use. Refer to ELECTRICAL SYSTEM EMERGENCY OPERATION, this section.
SMOKE AND FUME ELIMINATION.
1.Cockpit cold air handle - IN.
2.Cockpit air handle - OUT.
NOTE.
The cockpit hot air valves should be left closed since the possibility of the duct system being damaged by the fire may direct additional smoke to the cockpit.
3.Canopy position - open.
Reduce airspeed and use the foregoing procedure to relieve the cockpit of smoke and fumes. If conditions get worse, stand by to bail out.
BAIL OUT.
1.Wing flap lever - DOWN.
Reduce speed as much as possible, with full flaps, to provide a more tail high attitude.
2.Canopy - OPEN or jettison.
3.Seats - full up.
4.Safety belt and shoulder harness - unfasten.
Make sure safety belts and shoulder harness will not foul on clothing or parachute on exit.
5.Headset - remove.
WARNING.
- In a spin, both pilots should out toward the outside of the spin to minimize the
possibility of being struck by the aircraft.
- Seat cannot be raised to full up position for spin bailout, due to centrifugal force.
Make the decision to abandon the aircraft while there is still plenty of altitude and (when possible) power and directional control. Head the aircraft toward an uninhabited area and jettison the canopy if desired. To leave the front cockpit, crawl out on the wing and dive off the trailing edge head first (at high airspeed, pull yourself out in a vaulting dive onto the wing, as it is possible to be swept off the wing while climbing out). To leave the rear cockpit, dive overboard toward the trailing edge.

LANDING EMERGENCIES (Except ditching).
GEAR UP LANDING.
1.CANPY POSITION - OPEN.
2.Wing flap lever - DOWN.
When comitted to Landing:
3.Throttle - CLOSED.
4.MIXTURE LEVER - IDLE CUT-OFF.
5.Fuel selector valve handle - OFF.
Just Before Touchdown:
6.IGNITION SWITCH - OFF.
7.BATTERY SWITCH - OFF.
8.GENERATOR SWITCH - OFF.

Copyright 2004 Carenado®

9.INERTIA REEL - LOCKED.

NOTE.

Lock inertia reel only after turning off all switches which would be out of reach after the inertia reel is locked, the automatic lock will function on impact.

If the gear cannot be extended, use the foregoing procedure and land wheels-up. Make a normal approach using power and flaps as required to provide a slightly nose high attitude, but not fully stalled. Touch down in this attitude and as soon as the aircraft has stopped, get clear at once. Gear-up landings should be accomplished preferably on hard surface, since soft ground or sod tends to roll up into chunks, damaging the underside of the fuselage.

LANDING WITH NOSE GEAR RETRACTED.

1.CANOPY POSITION - OPEN.
2.Throttle - CLOSED.
3.MIXTURE LEVER - IDLE CUT-OFF.
4.Elevator trim tab wheel - full nose down.
5.IGNITION SWITCH - OFF.
6.BATTERY SWITCH - OFF.
7.GENERATOR SWITCH - OFF.
8.Fuel selector valve handle - OFF.

Should the nose gear fail to extend, make a normal approach and landing. After touching main wheels down, hold the nose up as long as possible with full back stick and initiate the foregoing procedure before the nose settles onto the ground. Get clear of the aircraft as soon as it stops.

LANDING ON UNPREPARED RUNWAY.

Landing procedure for unprepared strips is similar to normal landing on paved runways, except that if the surface is very rough, touch down as smoothly as possible to minimize shocks loads on the landing gear. If feasible, avoid using full flaps on loose gravel, as particles thrown up by the wheels would damage flaps. Use brakes with caution on soft or uncertain ground, to prevent digging the nose wheel into the ground.

LANDING WITH FLAT TIRE.

A flat tire on a main wheel will act as a brake when on the ground, tending to turn the aircraft into the flat. Touch down well over to the opposite side of the runway to allow room for a swerve and hold directional control with opposite brake. A flat nose wheel tire will reduce nose wheel stability and hard applications of brake should be avoided. After landing with a flat tire, park the aircraft clear of the runway and shut down the engine; do not taxi in with a flat tire.

CAUTION.

Do not taxi without brakes. Call the tower operator and request a toe to move the aircraft into maintenance.

LANDING WITH ONE MAIN GEAR RETRACTED.

Due to the design of the gear actuation system, all gear being extended and retracted through push rods from a single actuator, failure of one gear to extend is very unlikely. Should a break in the linkage occur, the affected gear will usually drop to the extended position. If at any time one gear position indicators fails to indicate gear fully extended. have the gear position checked visually by another pilot or by the control tower on a fly-by. If it is verified that one gear is not fully extended, attempt to retract all gear and make a gear up landing.

If all gear cannot be retracted, make a normal approach with full flaps and power on, to reduce landing speed to a minimum, carrying the wing slightly lower on the down and locked side. Touch down smoothly on the down and locked main gear, holding the opposite

Copyright 2004 Carenado®

wing up with aileron as long as possible after nose wheel touches down. As soon as the down and locked gear touches down, proceed as follows:
1.CANOPY POSITION - OPEN.
2.Throttle - CLOSED.
3.MIXTURE LEVER - IDLE CUT-OFF.
4.Fuel selector valve handle - OFF.
5.IGNITION SWITCH - OFF.
6.BATTERY SWITCH - OFF.
7.GENERATOR SWITCH - OFF.
As wing tip strickes the ground, apply opposite brake hard. Get clear of the aircraft as soon as it stops.

EMERGENCY ENTRANCE.

Both canopies can be removed from the outside in an emergency, by means of an external canopy emergency release handle on the right side of the fuselage, just below the forward end of the front canopy rail. Pulling the handle out releases boyh dets of canopy rails from the fuselage and both assemblies can then be removed.

DITCHING.

Since all survival equipment carried will be personal equipment, there is usually no reason to ditch the aircraft; a bail-out is preferable. If, for some reason, ditching is necessary, use the radio distress procedure and plan to touch down before all fuel is exhausted, to have power for a controlled approach.
1.LADING GEAR HANDLE - CHECK UP.
2.CANOPY POSITION - OPEN.
3.Battery switch - OFF.
4.SAFETY BELT - FASTENED.
5.Life raft or life preserver - check.
6.Wing flap lever - DOWN.
Make normal approach with power, if possible, and flare out to normal landing attitude. Approach stall attitude at a speed at which full control of aircraft can be maintained. Unless wind is high or sea is rough, plan approach heading parallel to any uniform swell pattern and try to touch down along wave crest just after crest passes. If wind is as high as 25 knots or surface is irregular, the best procedure is to approach into the wind and touch down on falling side of wave. Just before touchdown:
7.Ignition switch - OFF.
8.INERTIA REEL - LOCKED.
Get clear of the aircraft as soon as it comes to rest, since it may stay afloat only a few seconds. Stay near the site of the ditching if possible, to aid search personnel in rescue efforts.

FUEL SYSTEM EMERGENCY OPERATION.
FUEL PUMP FAILURE.

If the engine-driven fuel pump fails, fuel can be supplied to the engine by turning on the electrically-driven booster pump in the tank being used. The booster pump provides sufficient pressure for all normal engine operation in flight.

ELECTRICAL POWER SUPPLY SYSTEM EMERGENCY OPERATION.
DC POWER FAILURE.

If failure of the generator occurs, illuminating the generator warning light, or if generator voltage consistently exceeds 30 volts, the generator switch should be turned OFF. All non-essential electrical equipment should be turned off to conserve battery power for gear extension. In the event of a complete electrical power failure, or if it becomes necessary to turn both generator and battery switches

Copyright 2004 Carenado®

OFF, the primary flight attitude instruments will be inoperative and the gear will have to be extended manually.

AC POWER FAILURE.

If the inverter warning light illuminates, indicating failure of the main inverter, turn the inverter switch to STANDBY. If the light still illuminates, no ac power is available and the attitude and directional indicators will be inoperative.

WING FLAP EMERGENCY OPERATION.

No emergency operation of the wing flaps is provided.

LANDING GEAR EMERGENCY OPERATION.

LANDING GEAR EMERGENCY RETRACTATION.

To retract the landing gear on the ground in an emergency, move the landing gear emergency retract switch UP.

NOTE.

The landing gear emergency retract switch is guarder in the DOWN position with a safety wired guard. To operate the switch, break the safety wire by forcing the guard up.

LANDING GEAR EMERGENCY EXTENSION.

Procedure to follow in lowering the gear manually is shown. Exercise care to fully engage the clutch knob before attempting to crank the gear down.

NOTE.

If electrical power is available, continue extension until gear position indicators
show all gear fully extended; if all electrical power is off, the gear position indicators will be inoperative and the crank should be operated until in cannot be moved further.

IMPORTANT NOTE.

This is a complete checklist include in the Real Flight Manual of T-34 Mentor …Some functions of this list don't work in MFS but all information has been included to teach you this interesting airplane. This software is intended for entertainment purposes ONLY. And this is not an instructional on how to fly the real Beechcraft Mentor.

Carenado®
Copyright 2004 Carenado®

The aircraft operation is fictional and for simulation purposes only.

Beechcraft ®T-34B Mentor ® is a trademark of Textron Aviation Inc. and is used under license to RailSimulator.com Ltd d/b/a Dovetail Games.

Carenado

Beechcraft®
T-34B Mentor®

Cockpit Guide

Beechcraft
OFFICIAL LICENSED PRODUCT

AIRCRAFT.

The T-34B aircraft is a two-place,single-engine, tandem-seating trainer, built by Beech Aircraft Corporation. This aircraft is designed to meet the requirements of ruggedness and safety demanded of a primary trainer and at the same time prepare the student pilot for the transition to heavier, higher-performance aircraft which he will fly later. Noteworthy features include tricycle landing gear, constant-speed propeller and full instrumentation in both cockpits. Although dual controls are provided for student training, solo flight must be accomplished from the front cockpit only.

DIMENSIONS.

The over-all dimensions of the aircraft areas follows:
Wing Span .... 32.8 feet
Length ....25. 9 feet
Height(at rest) ....9. 6 feet
Tread ....9. 6 feet

GROSS WEIGHT.

The normal gross weight of the aircraft is 2950 pounds.

ENGINE.

The aircraft is powered by a Continental six-cylinder, air-cooled, horizontally-opposed engine which develops 225 horsepower at 2600 rpm at sea level. the engine is equipped with a direct drive starter,

Copyright 2004 Carenado®

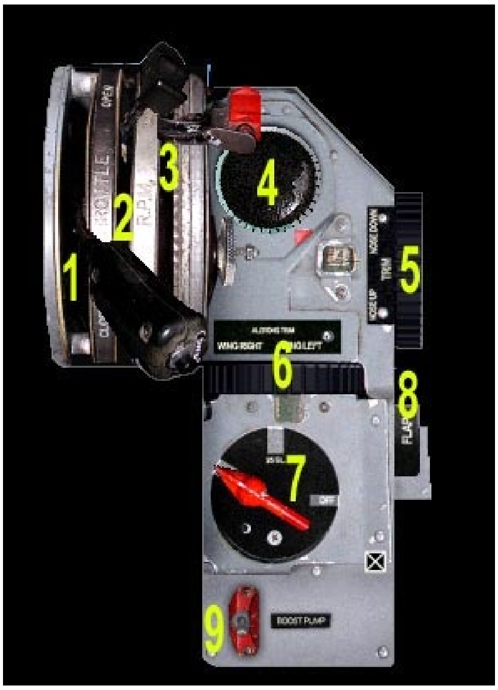
pressure type carburetor, and obtains slight additional thrust and greatly improved cooling from an augmentor tube exhaust system. Model designation of the engine is O-470-13 or O-470-13A .

INSTRUMENTS.

All instruments except the free air temperature gage, at the top of the windshield, are duplicated in both cockpits. A magnetic compass is mounted atop each instrument panel shroud. All other instruments are located on the instrument panels

ENGINE CONTROL QUADRANT.

Primary engine controls are conveniently located in the engine control quadrant on the left side of each cockpit.



1.Throttle.

The throttle located on the out-board side of each quadrant is CLOSED aft, OPEN forward, and can be placed in any intermediate position for a desired manifold pressure. Two microphone buttons, (Not Modeled) one ford radio transmission and one for interphone operation, are located in the throttle handgrip. Retarding the throttle to approximately 12 inches of Hg. actuates the landing gear warning system which causes the horn to sound any time the gear is not down.

2.-Mixture Lever.

Fuel-air ratio delivered by the carburetor to the engine is controlled by the mixture lever on the inboard side of the quadrant. Moving the lever full forward to RICH provides the richest fuel mixture, this

Copyright 2004 Carenado®

position is used for all ground, high power and low altitude operation. Movement of the lever aft toward LEAN progressively leans the mixture. The amount of leaning required varies with altitude. Moving the lever full aft to IDLE CUT-OFF shuts off all fuel flow at the carburetor.

3.-Propeller Lever.

The pilot's manual control over the propeller is maintained by a propeller control lever on the engine control quadrant in each pilot's compartment.This propeller control lever, wish is connected to the propeller governor itself, wish in turn controls the various rpm settings.As the propeller control lever is moved forward, engine speed will increase, if the propeller control lever is moved aft travel limit of the propeller control marks the normal low operating rpm setting and should never be bypassed with power applied to the engine

TRIM TABS.

Trim tabs are installed on all flight control surfaces and all, except the right aileron tab, are controllable from either cockpit. The right aileron tab can be adjusted on the ground only. Cable control from either cockpit operates a jackscrew at each tab and the jackscrew is linked to the tab by a pushrod to insure irreversibility. Both aileron tabs incorporate servo action; as each aileron deflects from neutral, its tab moves in the opposite direction, assisting in the control deflection and lightening aileron stick forces. The rudder trim tab is of the anti-servo type; as the rudder is displaced from neutral, the tabs moves in the same direction, increasing effective rudder area and the force required to displace it. This provision also increases rudder control "feel".

4.-Rudder Trim Tab Knob.

The rudder trim tab knob is located in the left console in each cockpit. Clockwise rotation of the knob moves the tab to the left and counterclockwise rotation moves the tab to the right.

Rudder trim tab Position Indicator.

The rudder trim tab position indicator is a part of the rudder trim tab knob. Turning of the trim tab knob directly turns a pointer which moves over an indexed scale to provide a visual reference of the rudder trim tab position. The indexed scale is calibrated to show the approximate tab deflection in degrees.

5.-Elevator Trim Tab Wheel.

The elevator trim tab wheel is located on the left console in each cockpit. Rotation of the wheel forward raises the tab and lowers the nose of the aircraft. Rotation of the wheel aft lowers the tab and raises the nose of the aircraft.

Elevator Trim Tab Position Indicator.

The elevator trim tab position indicator is located on the left console and the operates as an integral part of the elevator trim tab wheel. As the wheel is turned, the amount of tab applied is shown on an indexed scale visible through a window adjacent to the tab control. The indexed scale is calibrated to show the approximate tab deflection in degrees.

6.-Aileron Trim Tab Wheel.

The aileron trim tab wheel is located in the left console in each

Copyright 2004 Carenado®

cockpit. Rotation of the wheel clockwise (inboard) raises the tab on the left aileron and counter clockwise (outboard) rotation lowers the tab. The right aileron trim tab is not affected by rotation of the trim tab wheel.

Aileron Trim Tab Position Indicator.
The aileron trim tab position indicator is located on the left console in each cockpit and operates as an integral part of the aileron trim tab wheel. As the wheel is turned, the amount of tab applied is shown on an indexed scale visible through a window adjacent to the tab control. The indexed scale is calibrated to show the approximate tab deflection in degrees.

7.-Fuel Selector Valve Handle.
The Fuel Selector Valve Handle is located on the left console in each cockpit.The handle has three placarded positions, OFF, LEFT and RIGHT. Positioning the Handle at LEFT or RIGHT tank position permits movement of fuel from the corresponding tank t the engine and routes return fuel to the same tank. A fuel strainer forms an integral part of the valve body.Turning the Handle to OFF position shuts off all fuel flow from boths tanks.

8.-Wing Flaps.
Electrically operated, single slot-type flaps extend from the fuselage to the aileron on each wing. The flaps are operable from either cockpit and a flap position indicator is provided on each instrument panel. No emergency system is provided for operation of the flaps in the event of the electrical failure.

Wing Flap Lever.
Flap motor operation is controlled by a three position lever on the left console in each cockpit. Lifting the lever UP raises the flaps; moving the lever DOWN lowers them. Moving the lever to the center (OFF) position will stop the flaps at any intermediate point, otherwise, they will continue until full up or down travel is reached, at which time limit switches shut off the motor whether or not the switch is move to OFF position. The time period required to fully extend or retract the flaps is approximately 10 seconds. A 10-amp push-to-reset type circuit breaker is located in the main circuit breaker panel. By MFS limitations the flaps are limited to 3 positions 10-15-30 degrees.

Wing Flap Position Indicator.
Position of the flaps is indicated in terms of percentage of maximum extension (not in degrees) by a flap position indicator on the bottom of the instrument panel in each cockpit. Full pointer deflection of 100 percent indicates full flap extension of 30 degrees. A 5-amp push-to-reset type circuit breaker is located in the main circuit breaker panel in the front cockpit.

9.-Fuel Booster Pump
The booster pumps serve as an auxiliary source of fuel pressure and are used for starting, and in the event of engine-driven fuel pump failure.

10.-Starter Switch
The starter switch is located at the top of the right hand subpanel adjacent to the primer switch in the front cockpit only. The switch is spring loaded to the OFF position. Actuation of the switch to on

Copyright 2004 Carenado®

energizes the starter relay, which in turn completes the circuit to the direct-cracking electric starter. The starter is automatically engaged when the switch is actuated ON and disengaged when the starter switch is released. Electrical Power for the operation is supplied directly by the main DC bus.

11.-Battery Switch.

The battery is connected to the power distribution system through a two-position ON-OFF BATTERY switch located on the right subpanel

inthe front cockpit only. Placing the switch in the OFF position removes battery power from the bus system but does not affect generator operation.

12.-Generator Switch.

The generator supplies power to the system through the reverse current relay which electrically disconnects the generator when output drops below battery voltage. In case of generator failure, the generator can be disconnected from the system electrically by a two-position ON-OFF generator switch located on the right subpanel in the front cockpit only.

13.-Avionic Master

14.- Generator Failure Light.

Copyright 2004 Carenado®

Proper generator operation is indicated by the generator failure light located on the right subpanel in each cockpit. When the generator is not running fast enough to generate current and open the generator failure light relay, the relay remains closed and allows the warning light to remain illuminated, indicating no generator output. The generator failure light circuit is protected by a 5-amp push-to-reset circuit breaker located on the main circuit breaker panel on the right side of the front cockpit.

15.- Parking Brake Handle.
A parking brake handle is located on the right subpanel in the front cockpit only. The parking brakes are set by first pulling out the handle, then applying toe brakes. The parking brakes can be released only by pushing the handle in. Pulling the handle out seats a check valve in the system and any brake pressure subsequently applied by the pedals is held. Pushing the handle in unseats the check valve, releasing pressure.

16.- Cockpit Cold Air Handle.

17.- Cockpit Hot Air Handle.

LANDING GEAR SYSTEM.
The electrically-operated tricycle landing gear is fully retractable. The mains wheels retract inboard into the wings and the nose wheel retracts aft into the fuselage. Fairing doors, operated by gear movement, fully cover all wheels when retracted. The main gear inboard doors open during the gear extension and close again when the gear is fully extended. All gear is actuated by a single dc motor and actuator gear box located under the front cockpit. Individual uplocks actuated by the retraction system lock the gear positively in the retracted position. No downlocks are provided since the offset or over-center pivot of the linkage provides a geometric locking effect when fully extended. The linkage is also spring loaded to the offset position.
The nose wheel steering mechanism is such, that the wheel is automatically centered and the rudder pedals relieved of the nose steering load when weight of the aircraft is removed from the nose gear.
A safety switch on the right main strut prevents accidental gear retraction on the ground, but provisions are made for emergency on-the-ground retraction. In flight, the gear may be manually extended, but not retracted, in a emergency. All landing gear electrical circuits, are operable only with the battery switch ON or external power or generator output applied. No emergency bus system is employed.

18.-Landing Gear Handle.
The landing gear handle is located on the left subpanel in each cockpit. Moving the handle to UP or DOWN, no neutral position is provided, actuates a switch which controls the reversible motor that retracts or extends the gear. Approximately 7 to 8 seconds are required to extend the gear and approximately 10 seconds are required for retraction. The handle is formed in the shape of a wheel and is made of clear translucent material with a red warning light installed inside which illuminates the entire handle any time the landing gear is in any position not corresponding to that of the handle.

19.- Ignition Switch.
Ignition is supplied by two magnetos which are grounded individually through the ignition switch. The magnetos automatically provide a

Copyright 2004 Carenado®

retarded and intensified spark for engine starting. The right magneto fires the upper plugs and the left magneto fires the lower plugs.

20.- Carburetor Heat Handle
The carburetor Heat handle is located on the left subpanel below the instrument panel in the front of cockpit only. Operation of this handle provides a selection of an alternate source of warm air from the engine compartment to the carburetor. With the handle Full IN, ram air enters the carburettor through the carburettor air intake below the propeller spinner. Pulling the handle FULL OUT operates a butterfly valve in the duct system, shutting of the normal air flow and admitting warm air from the engine compartment. Intermediate positions between FULL IN and FULL OUT result in a mixture of warm and normal ram air.

21.- Radios
VHF Com radio and the ADF radio.
Below Transponder and Audio Panel.

Copyright 2004 Carenado®

22.- Lights Panel
Nav Lights, Strobe Lights, Taxi Lights, Lading Lights, Beacon and Pitot Heat Switch.

Copyright 2004 Carenado®

23.- Flight Hour Recorder

24.- Gmeter

25.- Magnetic Compass

26.- Remote Reading Compass Indicator

It features a heading indicator that serves the same purpose as the heading bug on a modern light plane's HSI.Ê The knob is used to set the point of the heading indicator (double-lines) on the intended heading, then the plane is steered to bring the compass needle between the parallel lines, and keep them lined up.(Info from MAAM document www.maam.org)

27.- Airspeed Indicator

The airspeed indicator, located on the upper left hand side of each instrument panel, operates by pressure differential between pitot tube impact pressure, and static pressure and is calibrated in knots. No external adjusting knobs are provided.

28.- Directional Gyro

Driven by a gyroscope.It works with the Magnetic Compass feedback.

29.- Attitude Indicator

The type J-8 attitude indicator is located at the top of each instrument panel, adjacent to the directional indicator, and is operating by alternating current from either inverter. A fixed symbol in front of the face of the indicator represents the aircraft and a movable horizontal bar behind the aircraft symbol represents the horizon. With the aircraft in a level flight attitude, the aircraft symbol is superimposed on the horizon bar. With the aircraft in a nose-up attitude, the horizon bar lowers and in a bank to the right, the horizon bar banks to the left; the aircraft symbol then appears to have lifted above the horizon bar and banked to the right. The aircraft symbol may be adjusted vertically by means of the small knob at the lower left corner of the indicator to correct for variations in level flight attitude at different airspeeds and gross weights.

NOTE

Allow 30 seconds after power is applied to the type J-8 Attitude Indicator for the gyro to attain speed, then cage immediately thereafter, to prevent unnecessary torque stresses on the instrument mechanism. The J-8 will be caged by means of a gyro centering device operated by pulling the cage knob.

WARNING

A slight amount of pitch error in the indication of the attitude indicator will result from accelerations or decelerations. It will appear as a slight climb indication after deceleration when the airplane is flying straight and level. This error will be most noticeable at the time the airplane breaks ground during the take off-run. At this time, a climb indication error of about 11/2 bar widths will normally be noticed; however, the exact amount of error will depend upon the acceleration and elapsed time of each individual take-off. The erection system will automatically remove the error after the acceleration ceases. The attitude indicator is caged by drawing the "Pull to Cage" knob

Copyright 2004 Carenado®

Main panel

Beechcraft MENTOR T-34B

Copyright 2004 Carenado®

away from the face of the instrument. A momentary stop will be felt when the caging mechanism is engaged, and as the caging knob is pulled further, the pitch caging mechanism will engage. As soon as the knob reaches the limits of is travel, it should be immediately released. The knob should be pushed toward the face of the instrument to uncage the gyro. Further travel or precession indicates that the caging mechanism is not releasing properly or that the erection mechanism is not functioning properly. The indicator is designed to operate through all attitudes and need not be cage for any maneuver. The attitude indicator circuit is protected by the 10-amp inverter circuit breaker located on the main circuit breaker panel in the front cockpit.

CAUTION
A temporary displacement of the gyro from its normal position during turns, commonly referred to as "turn error", may be introduced into the indicator when normal turns are performed. The caging knob should not be pulled violently and
caging of the indicator should be kept to a minimum and never accomplished in flight except when the aircraft is in straight and level flight.

30.- EGT

31.- Manifold Pressure and Fuel Pressure Gage

32.- Landing Gear Handle.

33.- Landing Gear Position Control.

34.- Radio Compass

The name of this gauge may be a bit misleading.Ê In modern terms, it is an Automatic Direction Finder (ADF), but without the rotating compass ring with which you are probably familiar.Ê When a Non-Directional Beacon (NDB) station is tuned and being received by the ADF receiver, the needle of the radio compass will point toward the station.Ê Keep in mind that the bearing number the needle points to is NOT the direction to the station.Ê It is the bearing relative to the plane's heading.(Info from MAAM document www.maam.org)

35.- Altimeter
A conventional altimeter is installed on the left hand side of each instrument panel for use in determining pressure altitude of the aircraft above sea level. The altimeter functions on static pressure alone and is equipped with three pointers which are used to indicate values of altitude as they pass over a dial graduated in units of feet. A borometric dial is also incorporated in the instrument and may be set in conjunction with the altitude pointers by an external adjusting knob. Adjustment is made with the knob so that the reading on the barometric dial will correspond to the actual barometric condition of the area in which the aircraft is located.

36.- Turn and Sleep Indicator
The turn-and-slip indicator is located on the center of each instrument panel below the directional indicator. The turn-and-slip indicator operates directly from the dc power supply system and is utilized to provide visual indication of the rate and coordination of a turn. The indicator is equipped with a pointer which indicates the rate of a turn and an inclinometer tube and ball which indicates slips, skids and coordination. No adjustment or caging knobs are required to operate the indicator. The turn-and-slip indicator is protected by a 5-amp push-to-reset circuit breaker located on the main circuit breaker panel in the front cockpit.

Copyright 2004 Carenado®

37.- Vertical Velocity Indicator

The vertical velocity indicator, located in the center of each instrument panel, operates on static pressure alone and is calibrated to indicate the rate of climb or descent on feet-per-minute

38.- Tachometer

39.- Cylinder Head Temperature Gage

40.- Starter and Electric Power System

41.- Left and Right Fuel Quantity Gages

Two fuel quantity gages located on the bottom of each instrument panel indicate the quantity of fuel in the two tanks in fractions of tank capacity. The gages operate on electrical power from the main DC bus through a potentiometer type transmitter in each tank. A5-amp push-to-reset type circuit breaker is located on the main circuit breaker panel in the front cockpit.

42.- Ammeter

43.- Clock

44.- Oil Pressure Gage

45.- Oil Temperature Gage

46.- Suction Gage

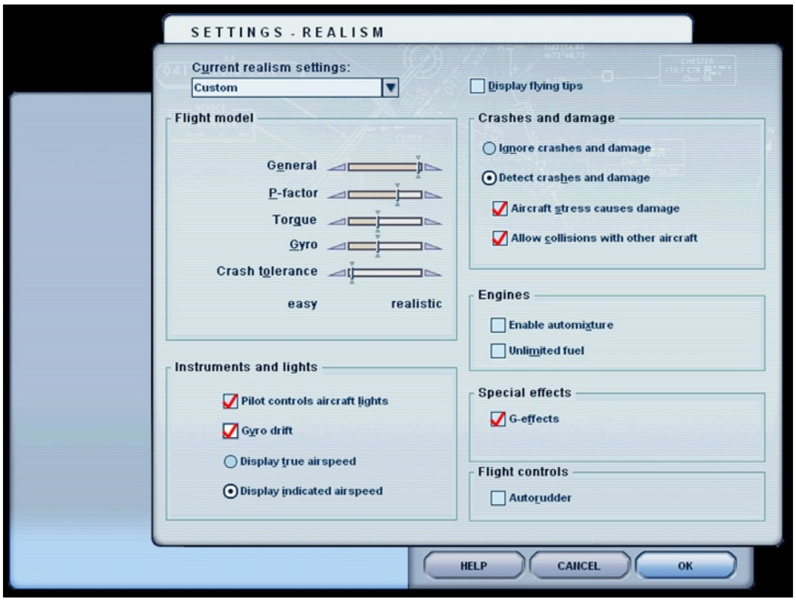
PANEL SELECTION ICONS.

To display the different Panels, press the knob  *and it deploy the Panel Selection Icons*

Copyright 2004 Carenado®

REALISM SETTING

Acrobatic maneuvers,with the exception of inverted spins,are permitted in this aircraft,however,the aircraft should not be subjeted to negative G forcesfor periods in excess of 5 seconds.(15 in real life) Prolongued inverted flight in excess of this period causes starvation as there is no means of insuring a continuous flow of fuel in this attitude...To obtain this behavior in your FS2004 you must set Realism Setting as following.



FLIGHT CONTROL SYSTEM.

The primary flight control surfaces (ailerons, rudder and elevator) may be operated from either cockpit by conventional stick and rudder pedal controls. Trim tabs on the control surfaces, except the right aileron, are mechanically operated from either cockpit.

RUDDER PEDALS.

The rudder pedals, which are also used to apply brakes by toe action, are mechanically linked to the nose wheel for ground steering and are not adjustable. Individual seat to pedal adjustment is provided by fore-and-aft adjustment of each seat.

LANDING GEAR WARNING HORN.

The landing gear warning horn, located between the cockpits just aft of the pilot's seat back in the front cockpit, sounds if the landing gear handle is moved to UP and the aircraft on the ground. In flight, retarding the throttle to a position equivalent to approximately 12 inches of manifold pressure with any gear not fully extended and locked will also sound the horn. The landing gear warning horn operates directly from the aircraft's main dc bus. The circuit is protected by 5-amp push-to-reset type circuit breaker located on the main circuit breaker panel on the right side of the front cockpit.

WHEEL BRAKE SYSTEM.

The main landing wheels are equipped with hydraulic brakes, operated by toe pressure on the rudder pedals in either cockpit. Fluid from a reservoir aft of the firewall supplies a master cylinder at each pedal.

Copyright 2004 Carenado®

Toe action on the rudder pedals actuates the cylinder, and applies brake pressure to the corresponding wheel.

NOSE WHEEL STEERING.
The steerable nose wheel is mechanically controled by the rudder pedals through a range of 18 degrees to either side of center, which is the limited of rudder pedal travel. Full turning range of 30 degrees to either side requires application of brakes of the inside of the turn. Shimmy dampener displacement permits this additional deflection and permits turns with a 3-foot radius to the inside wheel. The "give" thus provided in the system also dampens nose wheel ground shocks which would otherwise be transmitted through the linkage to the rudder.

FREE AIR TEMPERATURE GAGE.
A selft-contained type C-13B thermometer, mounted on the forward windshield, indicates the temperature of the outside air, which is of prime importance in determining and predicting airspeeds, altitudes and meteorological conditions.

IMPORTANT NOTE.

This software is intended for entertainment purposes ONLY. And this is not an instructional on how to fly the real Beechcraft Mentor.

The aircraft operation is fictional and for simulation purposes only.

Beechcraft® T-34B Mentor® is a trademark of Textron Aviation Inc. and is used under license to RailSimulator.com Ltd d/b/a Dovetail Games.

Copyright 2004 Carenado®

Carenado®

Beechcraft®

T-34B Mentor®

Performance

Beechcraft

OFFICIAL LICENSED PRODUCT

E78022

The aircraft operation is fictional and for simulation purposes only.

Beechcraft ® T-34B Mentor ® is a trademark of Textron Aviation Inc. and is used under license to RailSimulator.com Ltd d/b/a Dovetail Games.

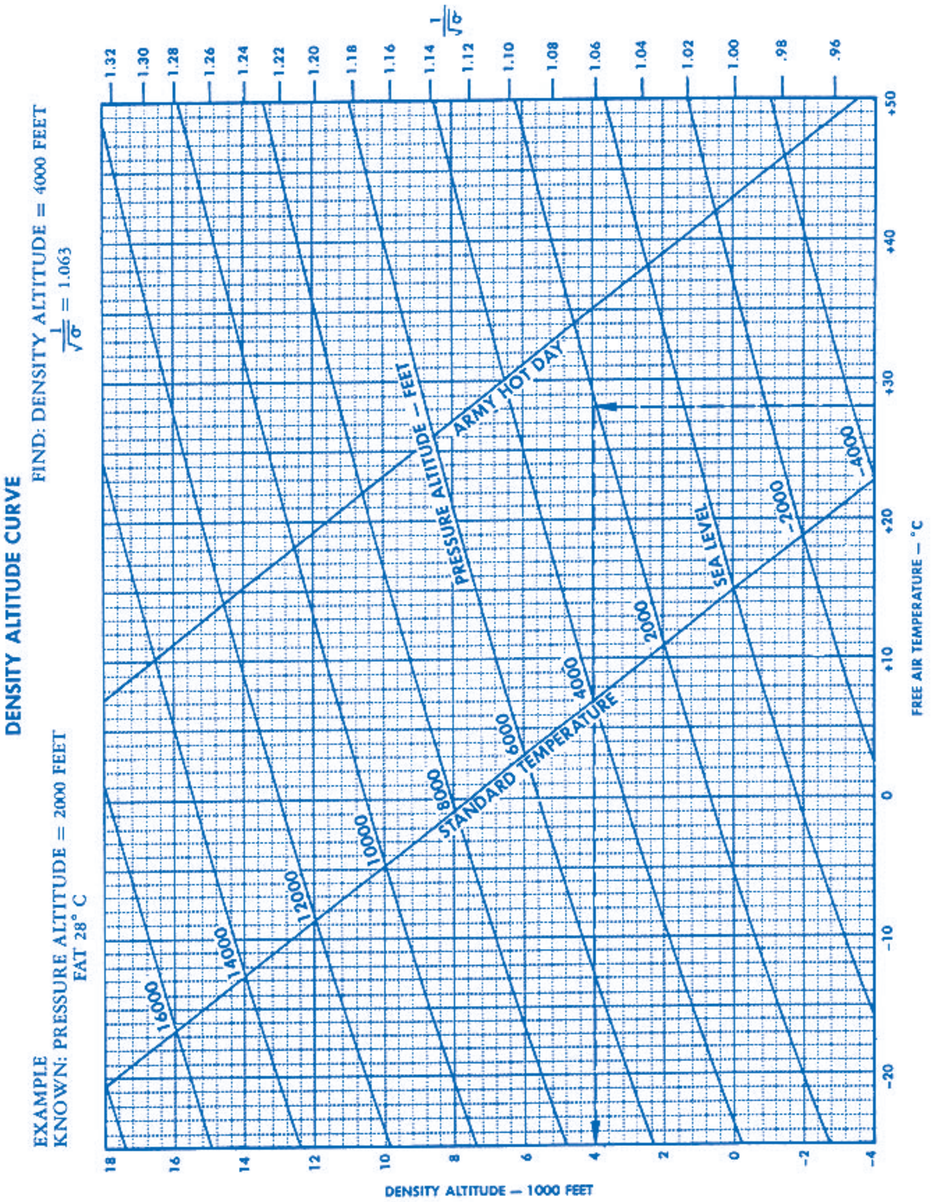


Figure A-2

Copyright 2004 Carenado®

TEMPERATURE CONVERSION

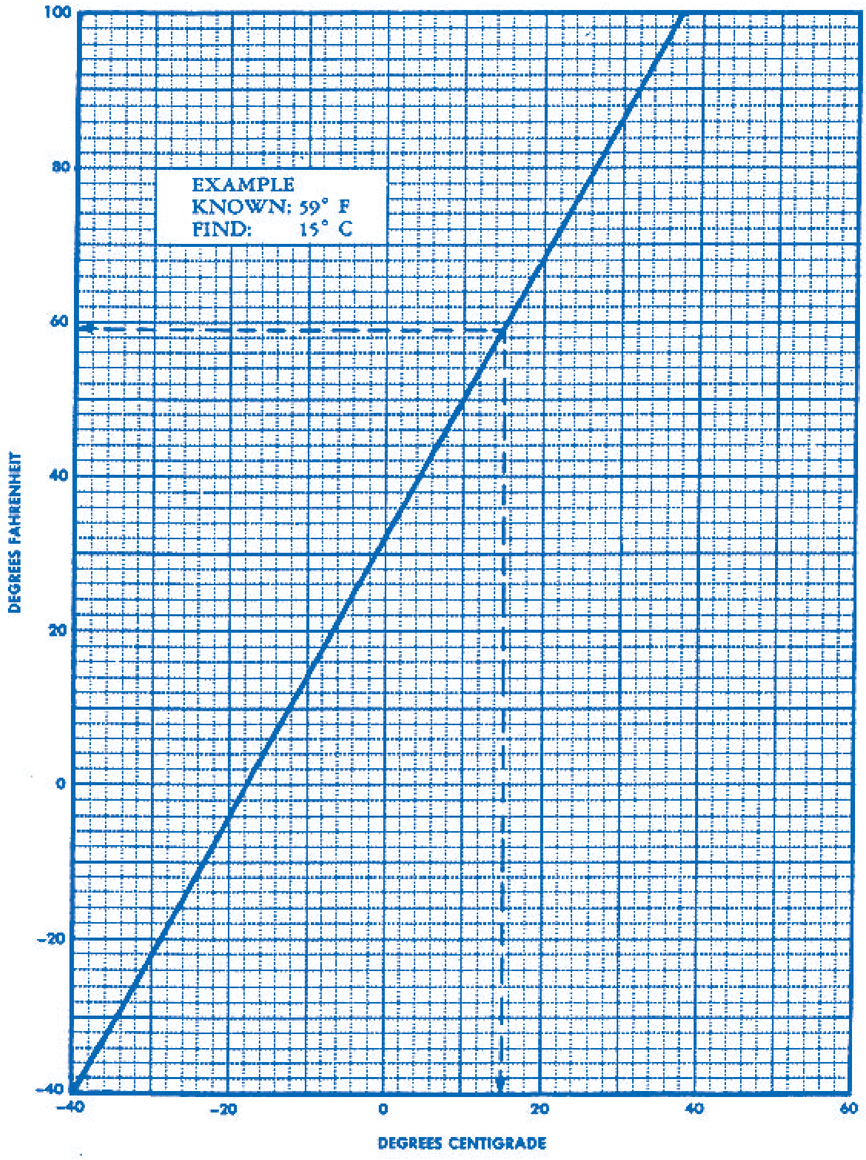
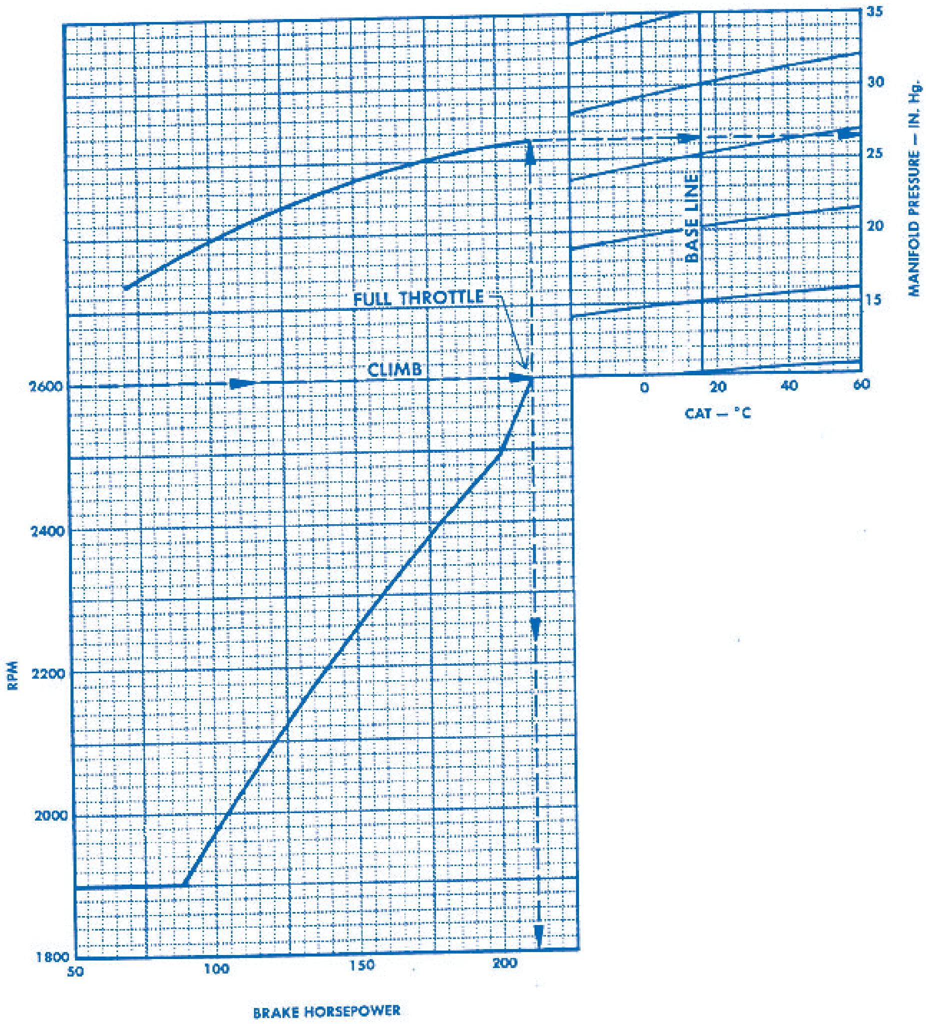


Figure A-1

Carenado®
Copyright 2004 Carenado®

POWER SCHEDULE
2000 FEET
BEST POWER MIXTURE

MODEL T-34A ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-4

Carenado®
Copyright 2004 Carenado®

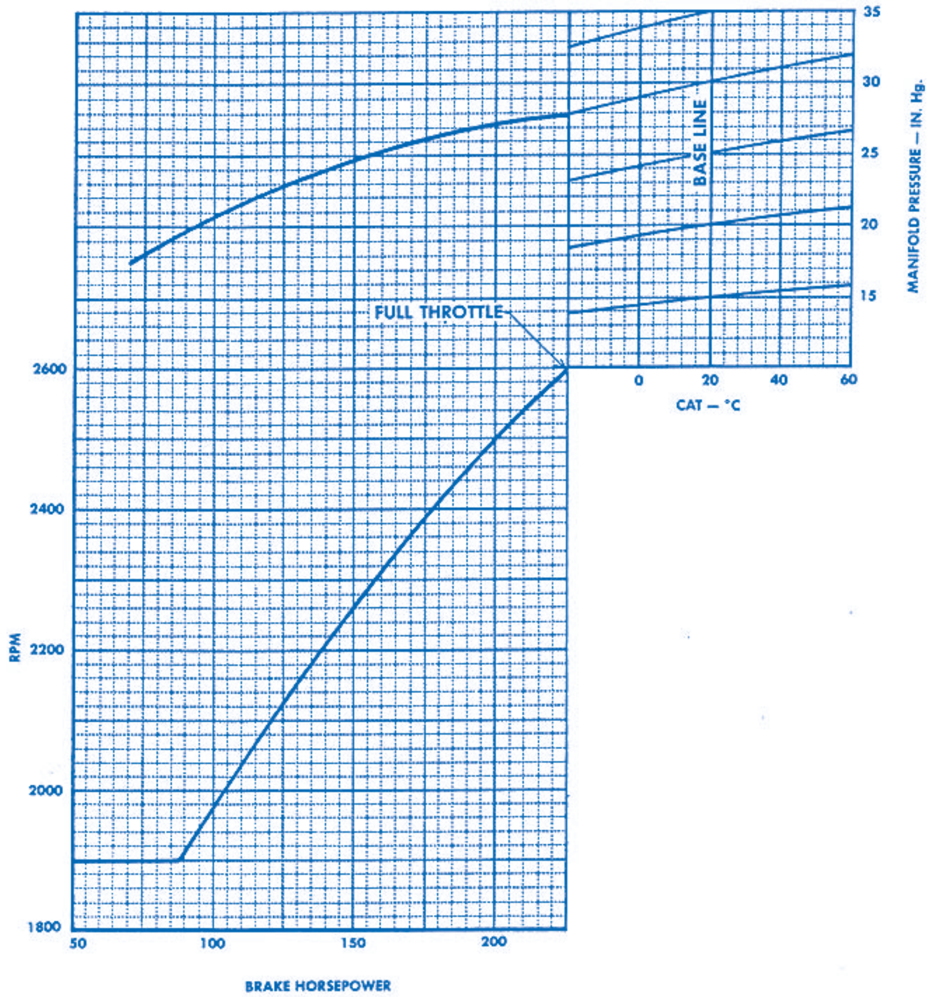
Beechcraft
Mentor T-34B

Performance

POWER SCHEDULE
SEA LEVEL
BEST POWER MIXTURE

MODEL T-34A

ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-3

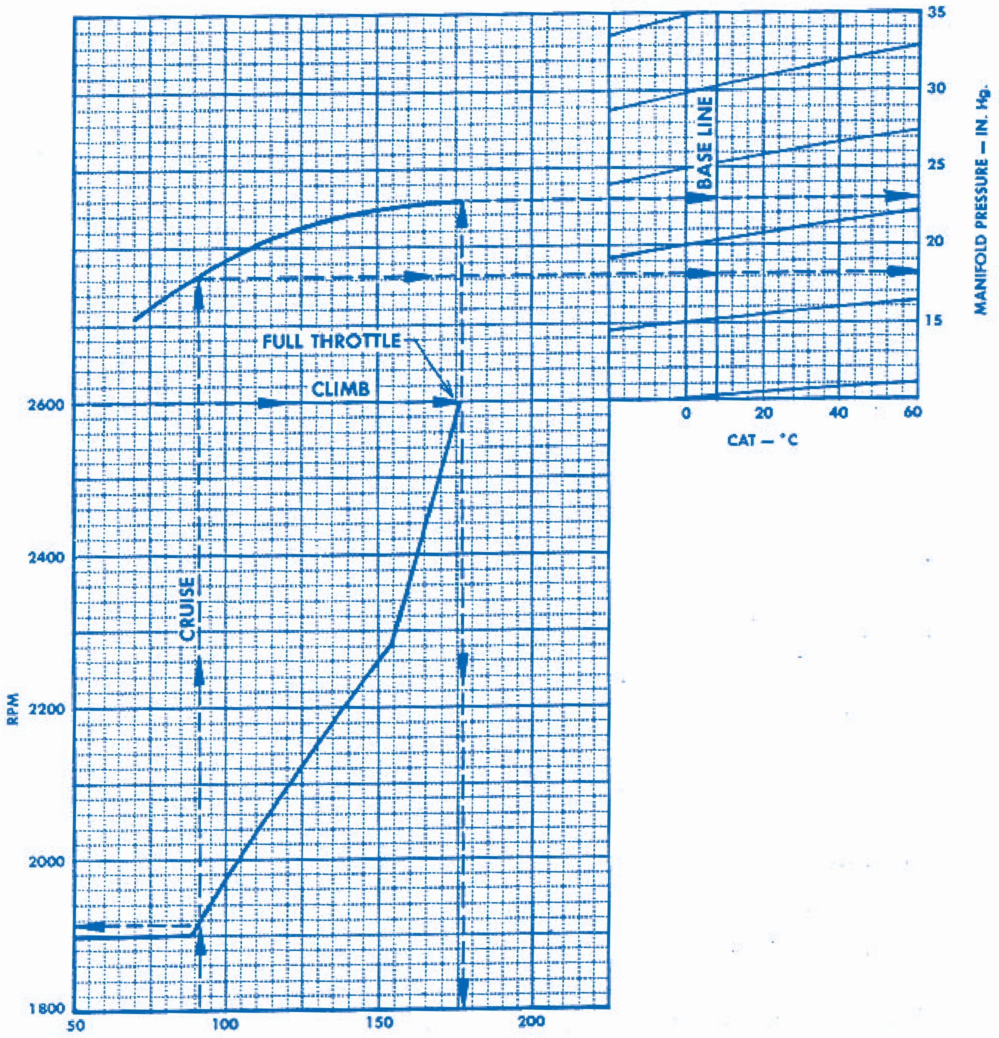
Copyright 2004 Carenado®

Beechcraft
Mentor T-34B

Performance

POWER SCHEDULE
6000 FEET
BEST POWER MIXTURE

MODEL T-34A ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

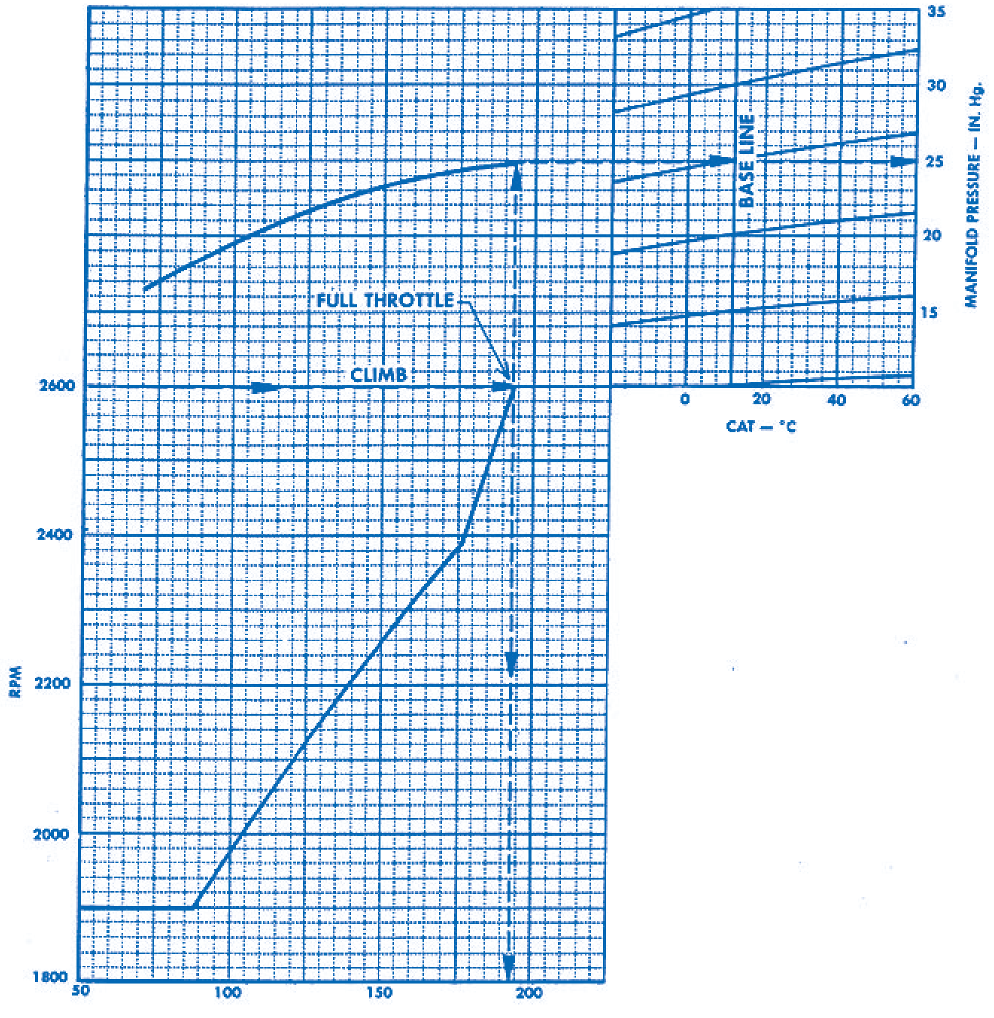
FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Carenado®
Copyright 2004 Carenado®

Appendix T.O. 1T-34A-1

POWER SCHEDULE
4000 FEET
BEST POWER MIXTURE

MODEL T-34A ENGINE: O-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

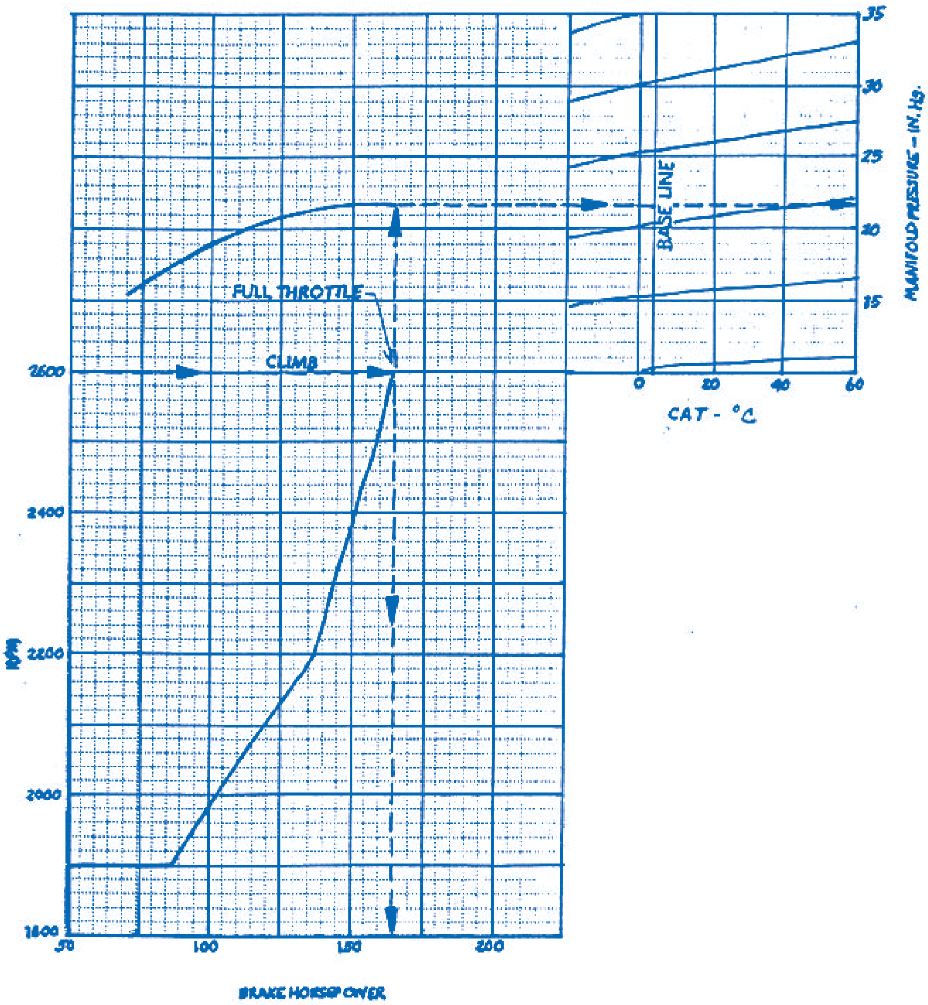
FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-5

Copyright 2004 Carenado®

POWER SCHEDULE
8000 FEET
BEST POWER MIXTURE

MODEL T-34A ENGINE O-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-7

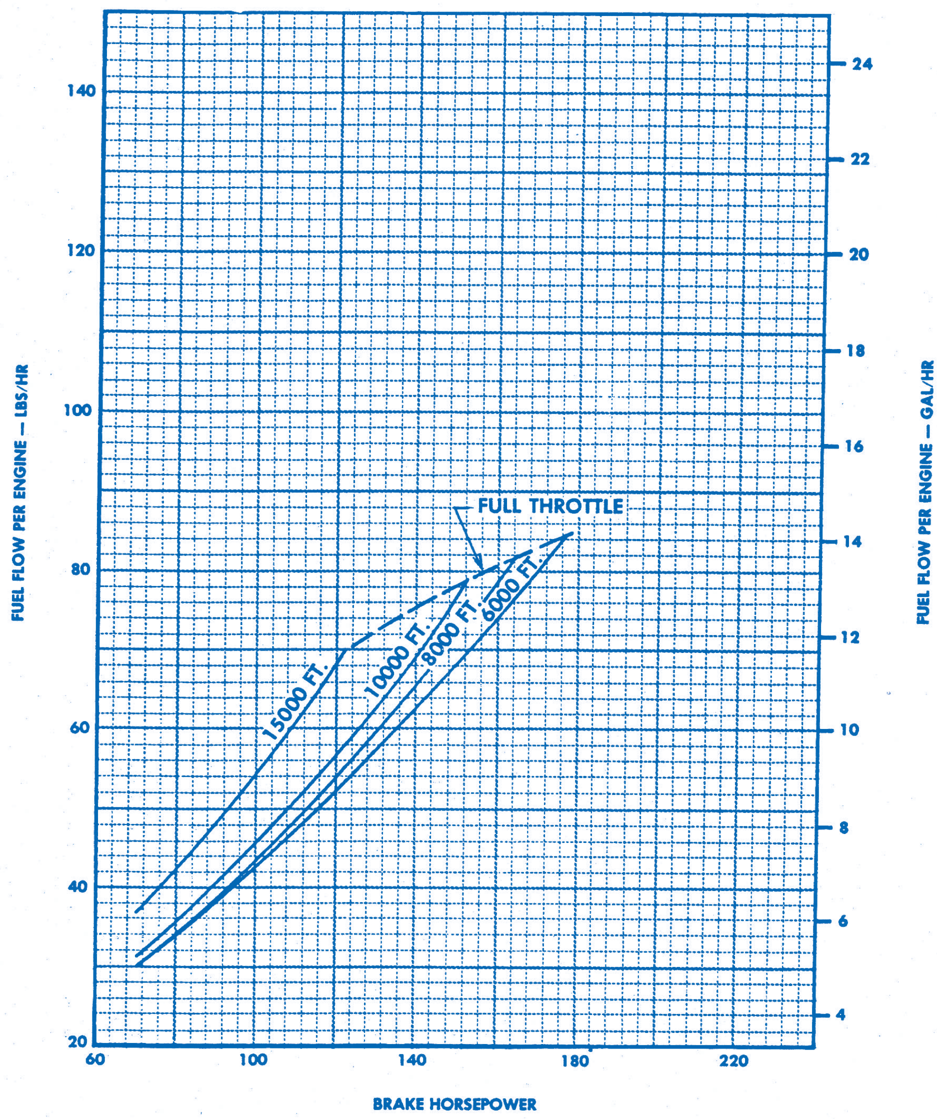
Carenado
Copyright 2004 Carenado®

FUEL FLOW PER ENGINE

BEST POWER MIXTURE

MODEL T-34A

ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

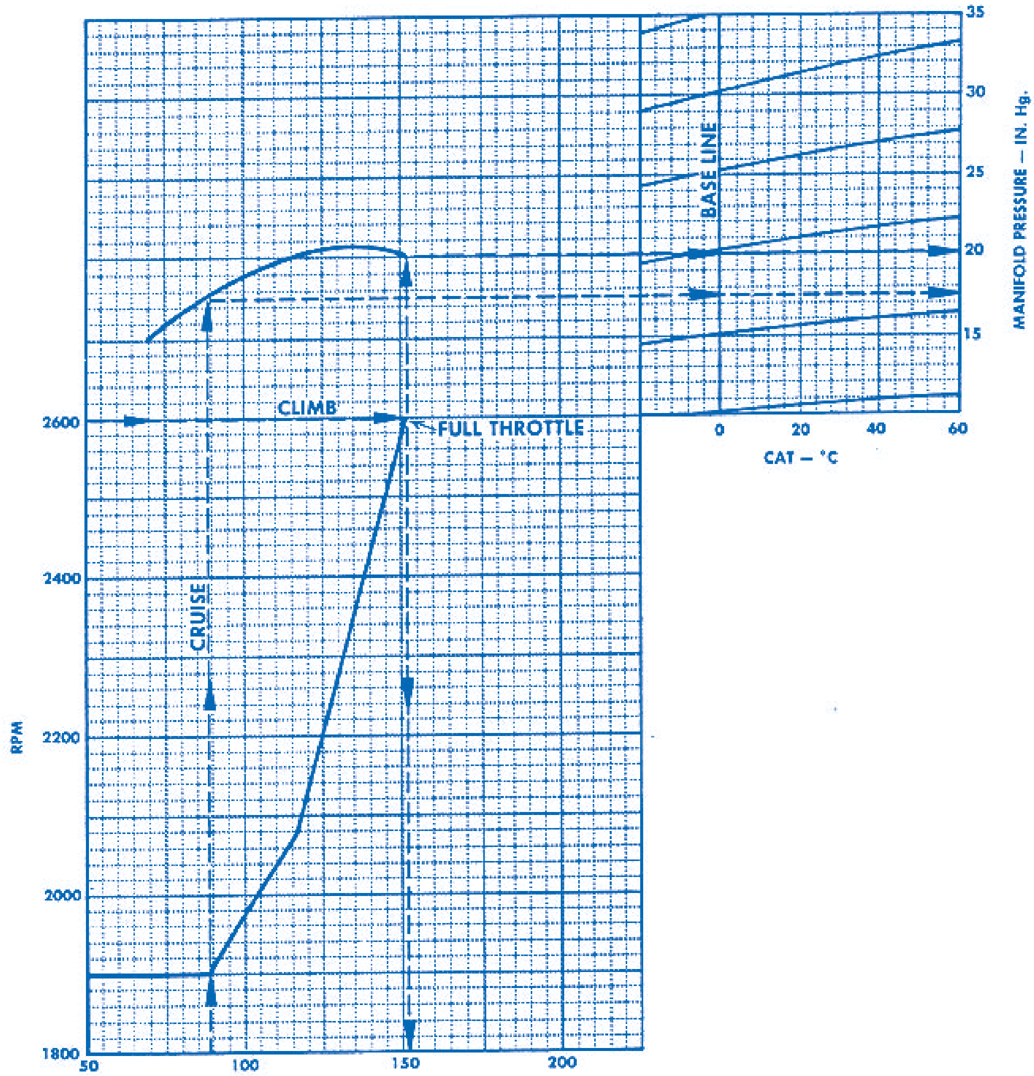
Figure A-11

Copyright 2004 Carenado®

POWER SCHEDULE
10000 FEET
BEST POWER MIXTURE

MODEL T-34A

ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

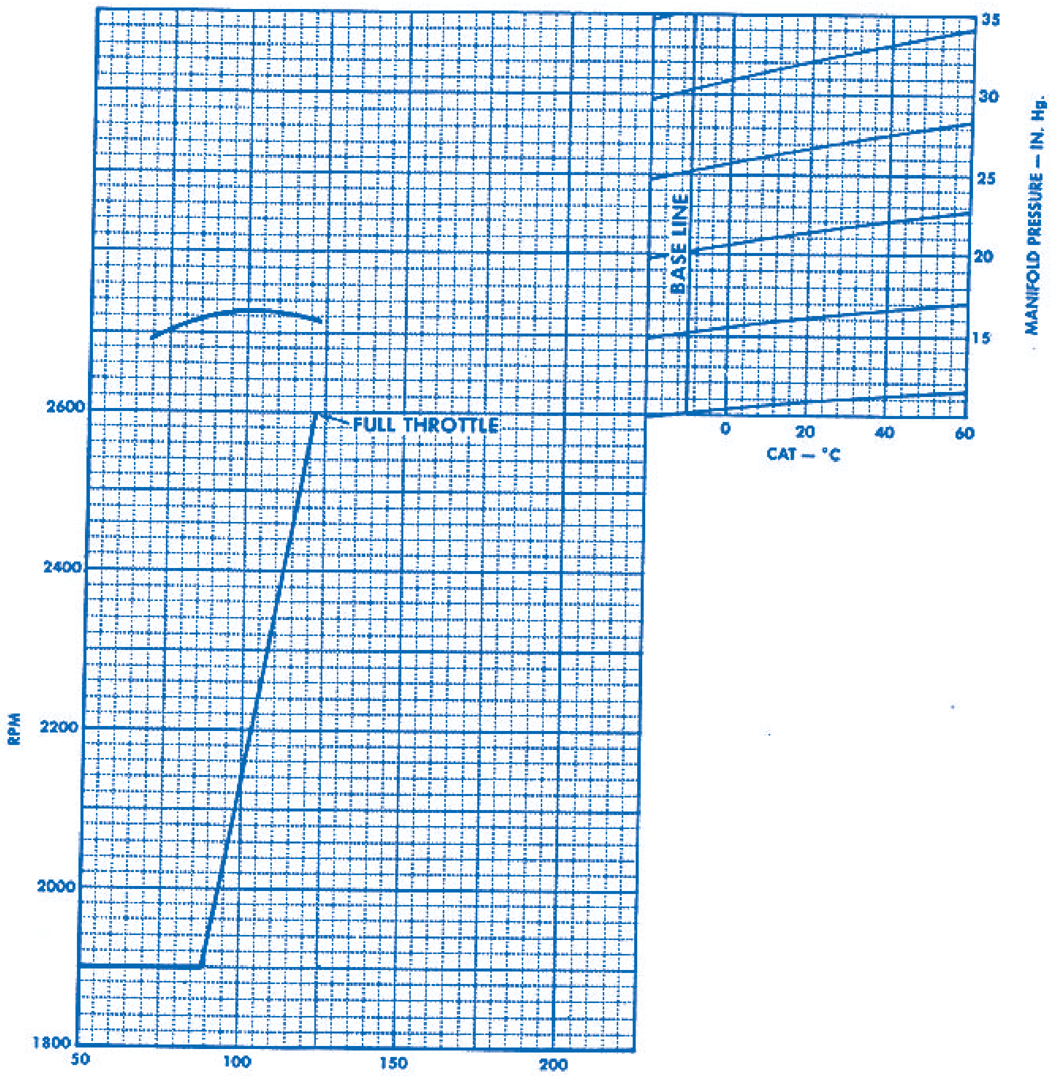
Figure A-8

Carenado
Copyright 2004 Carenado®

MODEL T-34A

POWER SCHEDULE
15000 FEET
BEST POWER MIXTURE

ENGINE: O-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-9

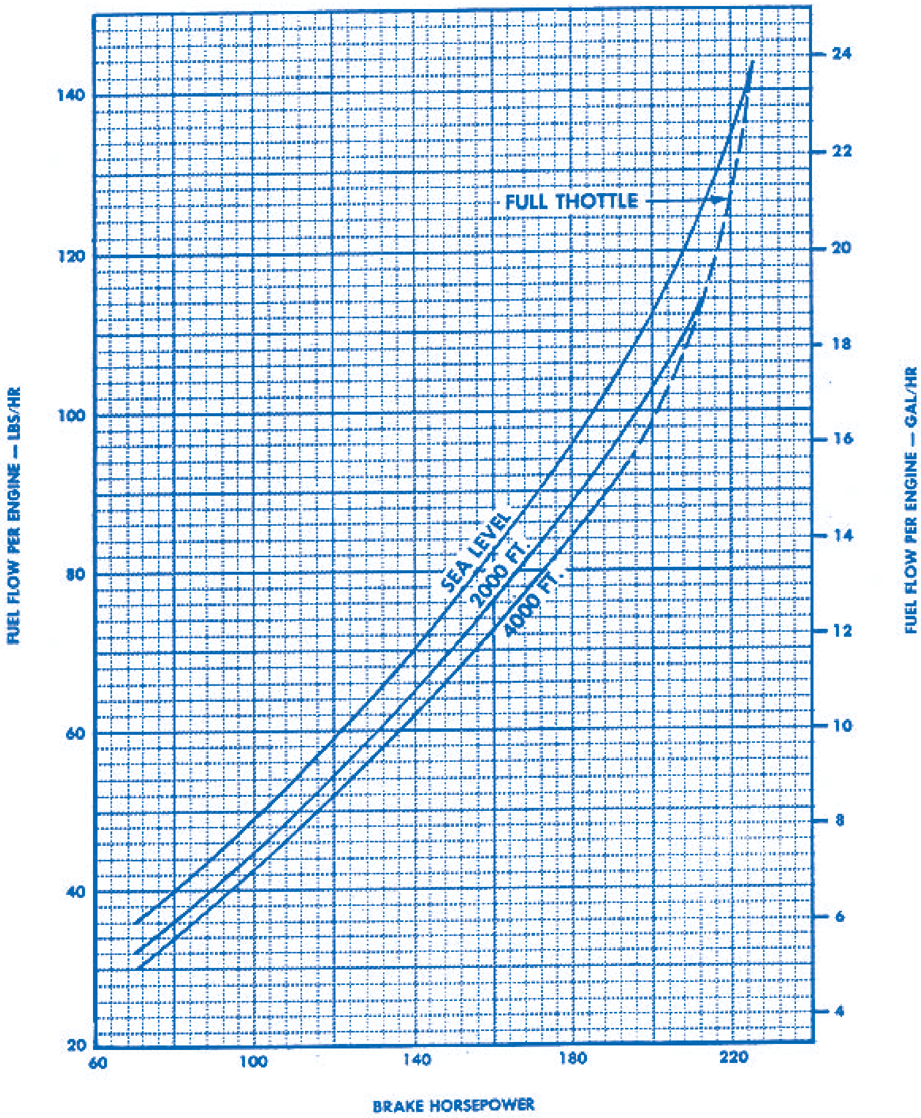
Copyright 2004 Carenado®

FUEL FLOW PER ENGINE

BEST POWER MIXTURE

MODEL T-34A

ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

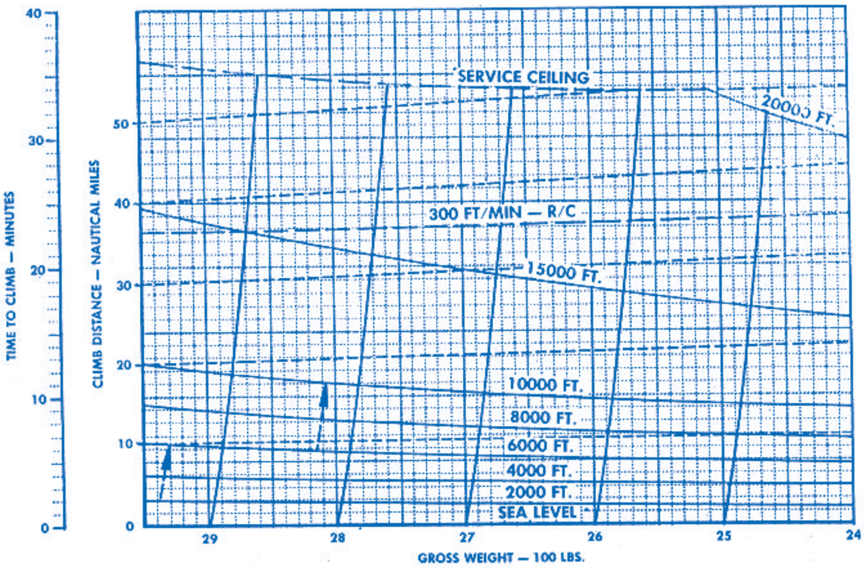
Carenado
Copyright 2004 Carenado®

Figure A-10

CLIMB
STANDARD DAY — NO WIND
"METO" POWER

MODEL T-34A

ENGINE: 0-470-13



MAX. CLIMB POWER SCHEDULE 2600 RPM

ALT. FT.	MAP IN. Hg.	CARB. MIX.
SL	28.0	FR
2000	26.5	FR
4000	25.0	ML
6000	23.0	ML
8000	21.6	ML
10000	20.0	ML
15000	15.5	ML
20000	12.5	ML

(APPROX.) BEST CLIMB SPEED

GROSS WEIGHT	IAS KNOTS
2500	87
2600	88
2700	90
2800	91
2900	93

NOTE: IAS IS REDUCED 1 KNOT FOR EACH 1000 FT. INCREASE IN ALTITUDE.

NOTE: START, TAXI AND TAKE-OFF FUEL ALLOWANCE = 12 POUNDS

NOTE: FOR EACH 1°C HOTTER THAN STANDARD FAT, ADD 25 LBS. TO ACTUAL AIRPLANE GROSS WEIGHT TO OBTAIN AN EQUIVALENT WEIGHT FOR CLIMB DETERMINATION.

Figure A-14

T.O. 1T-34A-1

DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Copyright 2004 Carenado®

TAKE-OFF CROSSWIND CHART

MODEL T-34A

ENGINE: O-470-13

EXAMPLE:

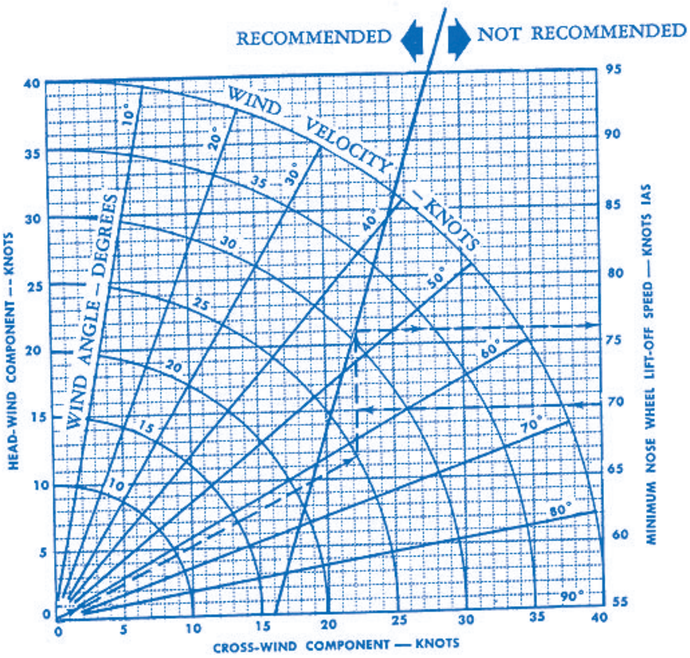
GIVEN:
TAKEOFF RUNWAY - 1
WIND - 073°/25 KNOTS.

FIND:
IS TAKE-OFF RECOMMENDED AT PREDICTED TAKE-OFF SPEED OF 70 KNOTS.

NOTE
MAXIMUM ALLOWABLE NOSEWHEEL LIFT-OFF SPEED IS 90 KNOTS BECAUSE OF LANDING GEAR LIMIT.

NOTE
ENTER CHART WITH MAXIMUM GUST VELOCITY.

SOLUTION:
1. RUNWAY WIND ANGLE - 73° — 10° = 63°
2. AT WIND VELOCITY OF 25 KNOTS AND 63° RUNWAY ANGLE, FIND CROSSWIND COMPONENT OF 22 KNOTS AND HEADWIND COMPONENT OF 11 KNOTS.
3. PROCEED VERTICALLY TO PREDICTED TAKE-OFF AIRSPEED OF 70 KNOTS AND DETERMINE TAKE-OFF AS *NOT RECOMMENDED*. CONTINUE VERTICALLY AND DETERMINE THAT TAKE-OFF SPEED MUST BE INCREASED TO 76 KNOTS BEFORE THE TAKE-OFF IS RECOMMENDED.



DATA AS OF: DECEMBER 1958
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-11A

Carenado
Copyright 2004 Carenado®

LANDING CROSSWIND CHART

MODEL T-34A

ENGINE: 0-470-13

EXAMPLE:

GIVEN:
LANDING RUNWAY - 1
WIND - 073°/25 KNOTS.

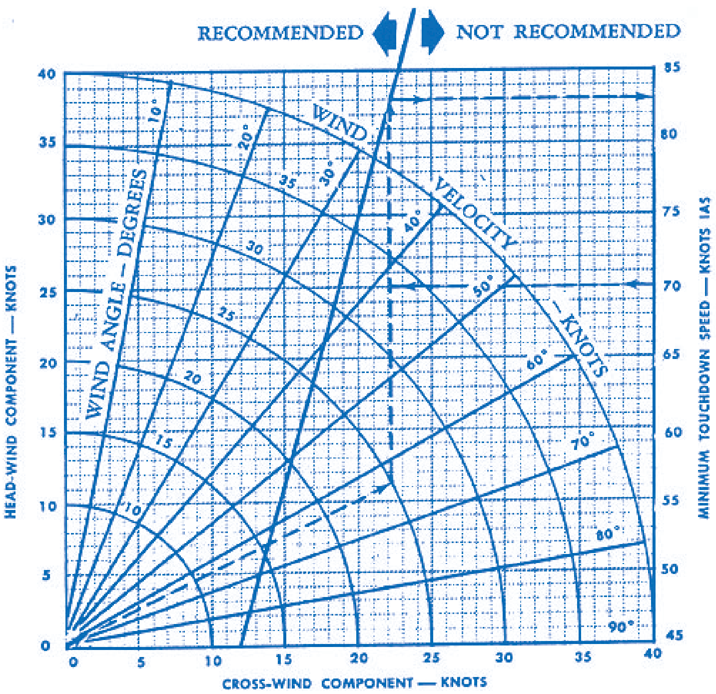
FIND:
IS LANDING RECOMMENDED AT PREDICTED LANDING SPEED OF 70 KNOTS.

NOTE
MAXIMUM ALLOWABLE NOSEWHEEL TOUCHDOWN SPEED IS 90 KNOTS BECAUSE OF LANDING GEAR LIMIT.

NOTE
ENTER CHART WITH MAXIMUM GUST VELOCITY.

SOLUTION:

1. RUNWAY WIND ANGLE - 73°—10° = 63°
2. AT WIND VELOCITY OF 25 KNOTS AND 63° RUNWAY ANGLE, FIND CROSSWIND COMPONENT OF 22 KNOTS AND HEADWIND COMPONENT OF 11 KNOTS.
3. PROCEED VERTICALLY TO PREDICTED LANDING AIRSPEED OF 70 KNOTS AND DETERMINE LANDING AS *NOT RECOMMENDED.* CONTINUE VERTICALLY AND DETERMINE THAT LANDING SPEED MUST BE INCREASED TO 83 KNOTS BEFORE THE LANDING IS RECOMMENDED.



DATA AS OF: DECEMBER 1958
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-11B

Copyright 2004 Carenado®

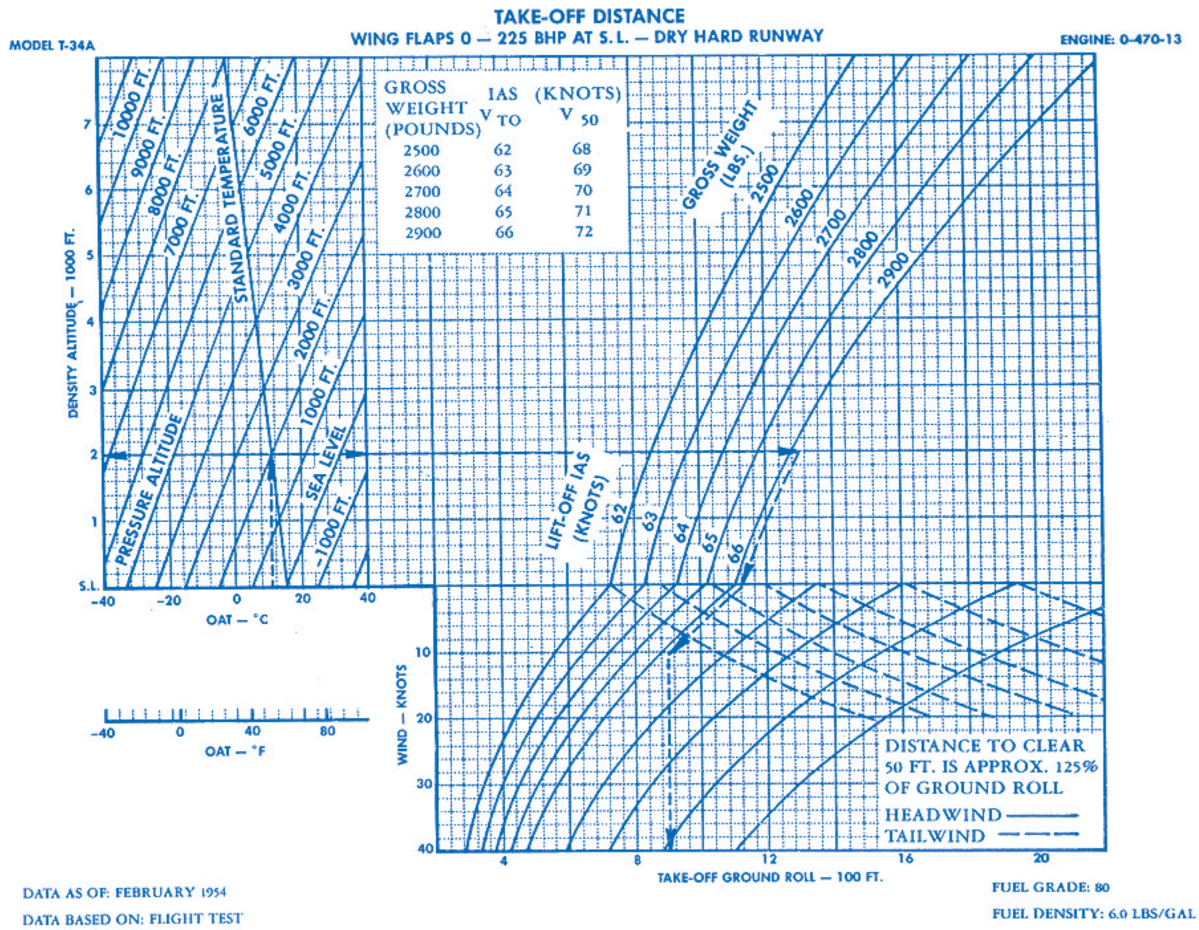


Figure A-12

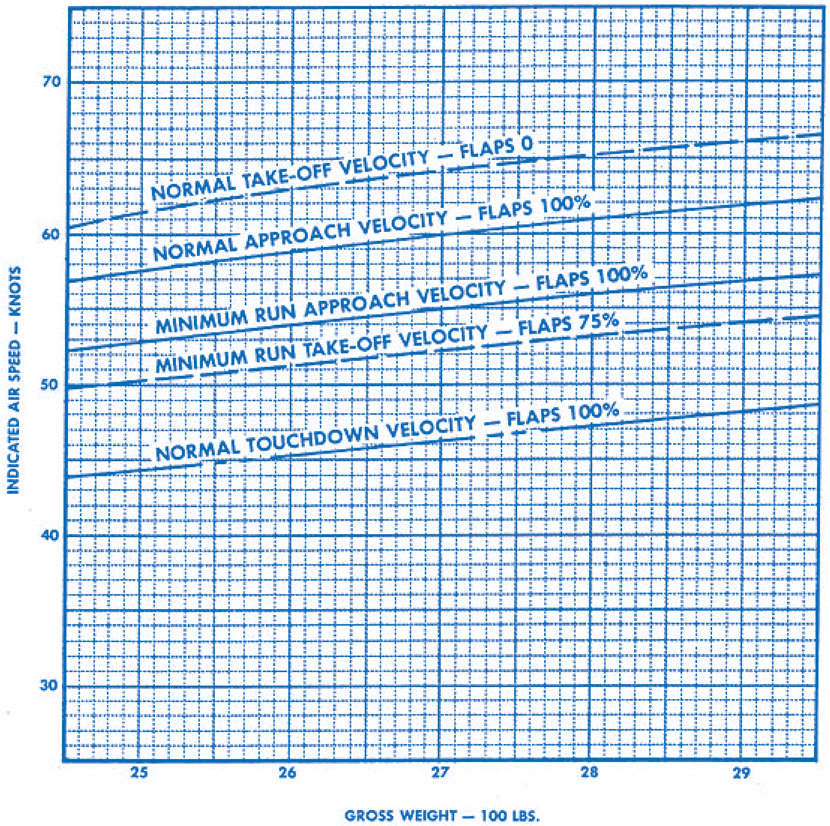
T.O. 1T-34A-1

Copyright 2004 Carenado®

TAKE-OFF, APPROACH AND TOUCHDOWN VELOCITY

MODEL T-34A

ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-13

Copyright 2004 Carenado®

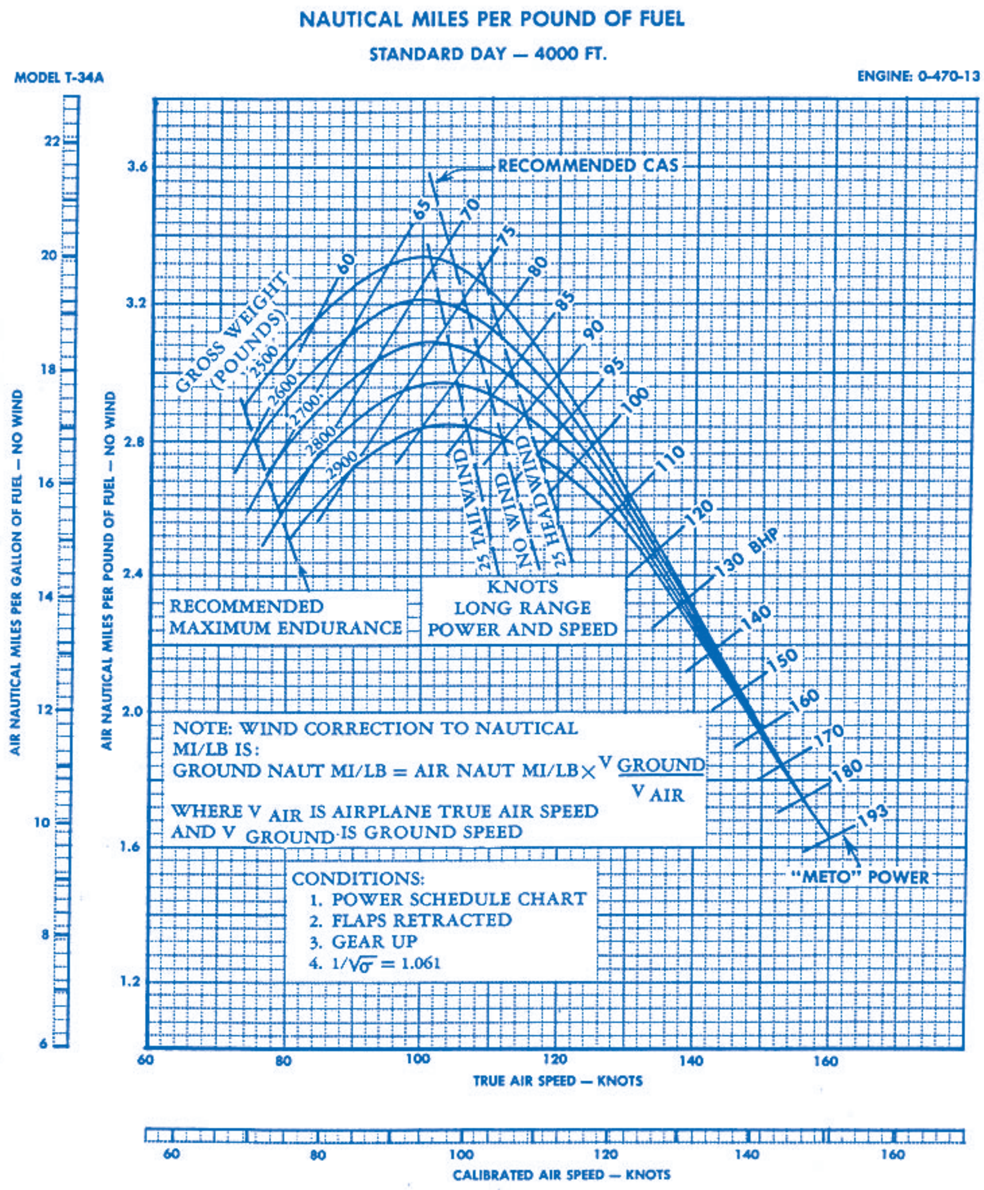


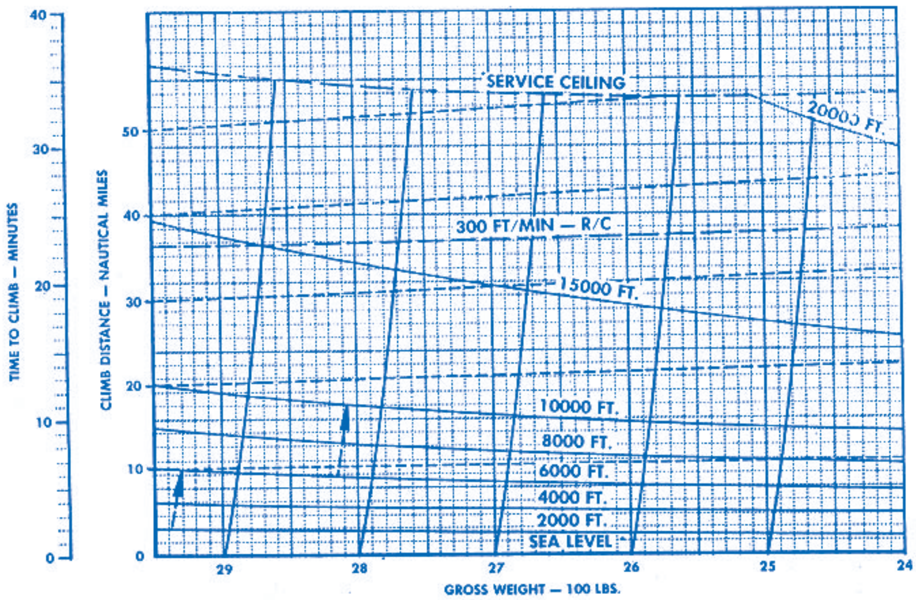
Figure A-17

Carenado®
Copyright 2004 Carenado®

MODEL T-34A

CLIMB
STANDARD DAY — NO WIND
"METO" POWER

ENGINE: 0-470-13



MAX. CLIMB POWER SCHEDULE 2600 RPM

ALT. FT.	MAP IN. Hg.	CARB. MIX.
SL	28.0	FR
2000	26.5	FR
4000	25.0	ML
6000	23.0	ML
8000	21.6	ML
10000	20.0	ML
15000	15.5	ML
20000	12.5	ML

(APPROX.) BEST CLIMB SPEED

GROSS WEIGHT	IAS KNOTS
2500	87
2600	88
2700	90
2800	91
2900	93

NOTE: IAS IS REDUCED 1 KNOT FOR EACH 1000 FT. INCREASE IN ALTITUDE.

NOTE: START, TAXI AND TAKE-OFF FUEL ALLOWANCE = 12 POUNDS

NOTE: FOR EACH 1°C HOTTER THAN STANDARD FAT, ADD 25 LBS. TO ACTUAL AIRPLANE GROSS WEIGHT TO OBTAIN AN EQUIVALENT WEIGHT FOR CLIMB DETERMINATION.

Figure A-14

T.O. 1T-34A-1

DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

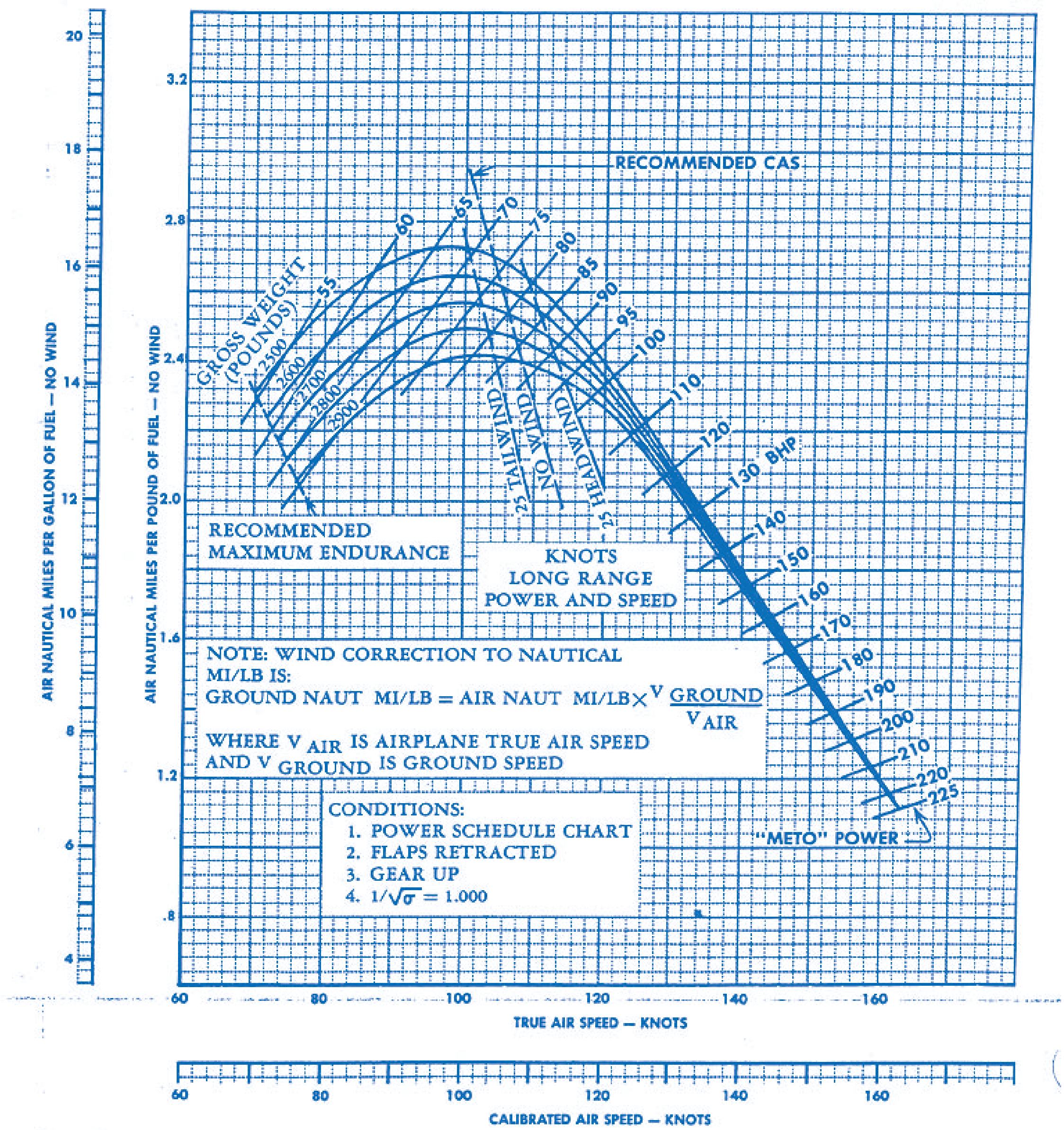
FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Copyright 2004 Carenado®

NAUTICAL MILES PER POUND OF FUEL

STANDARD DAY — SEA LEVEL

MODEL T-34A ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

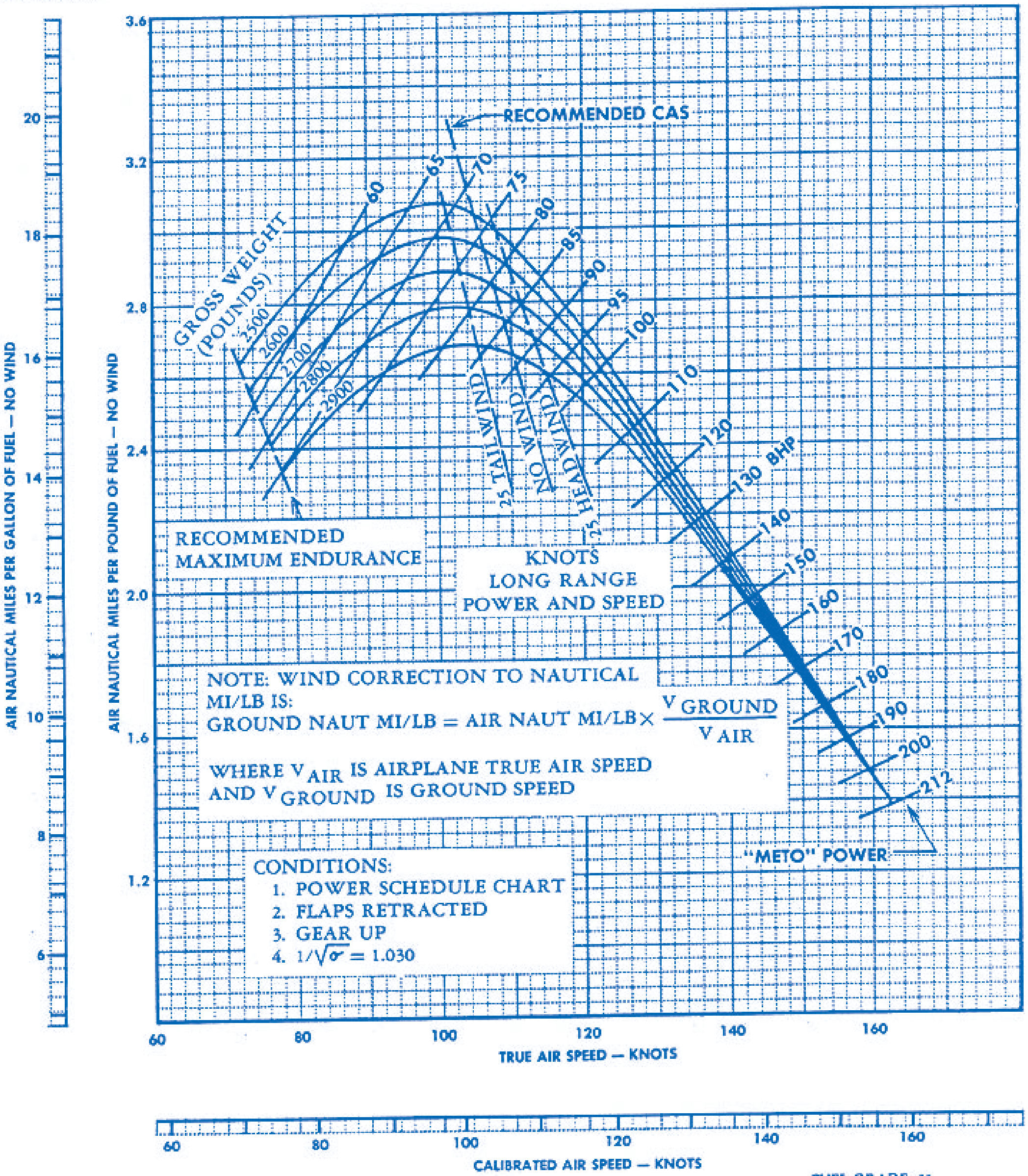
Figure A-15

Carenado®
Copyright 2004 Carenado®

NAUTICAL MILES PER POUND OF FUEL

STANDARD DAY — 2000 FT.

MODEL T-34A ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-16

Copyright 2004 Carenado®

Beechcraft
Mentor T-34B

Performance

T.O. 1T-34A-1

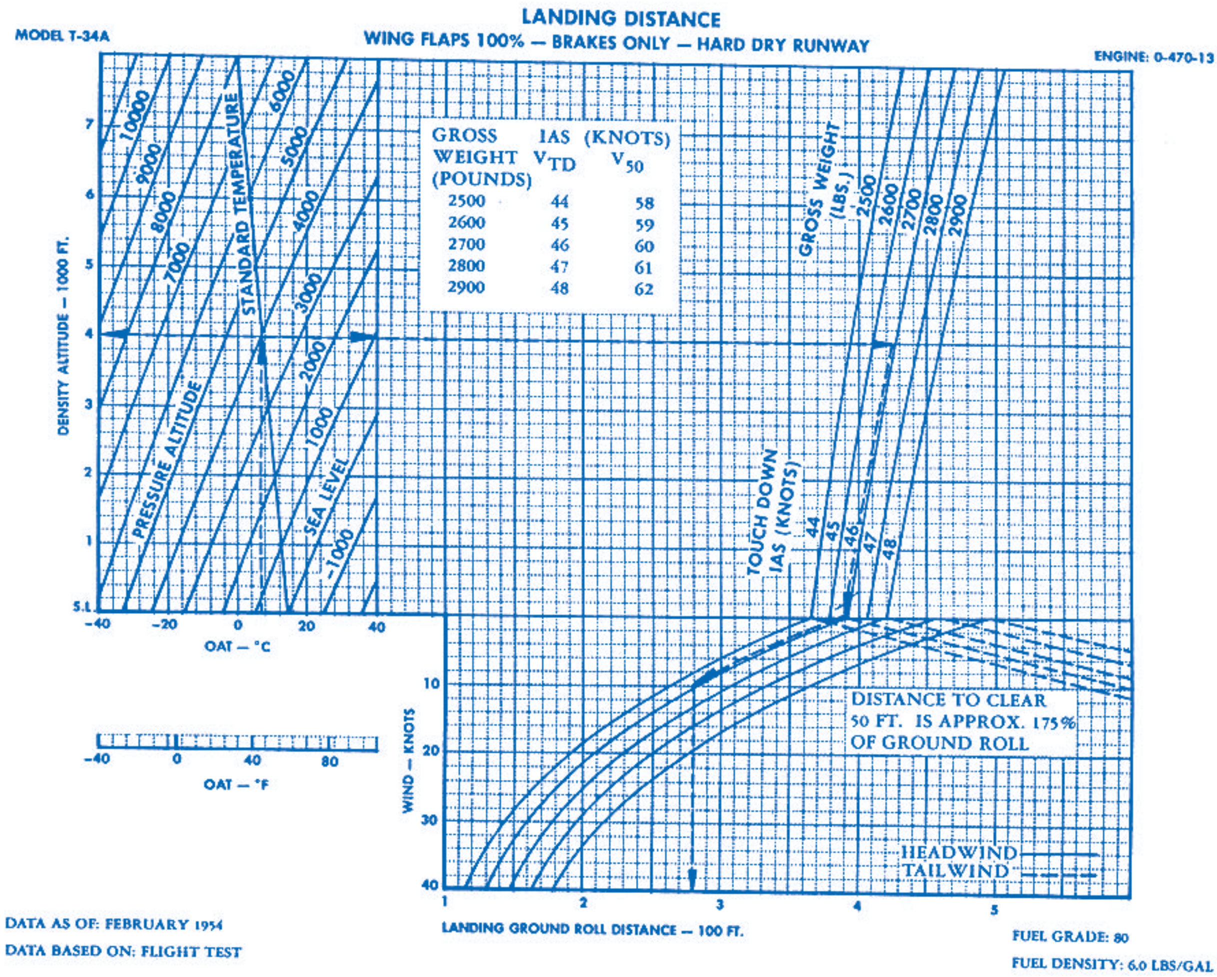


Figure A-25

Appendix

A-30

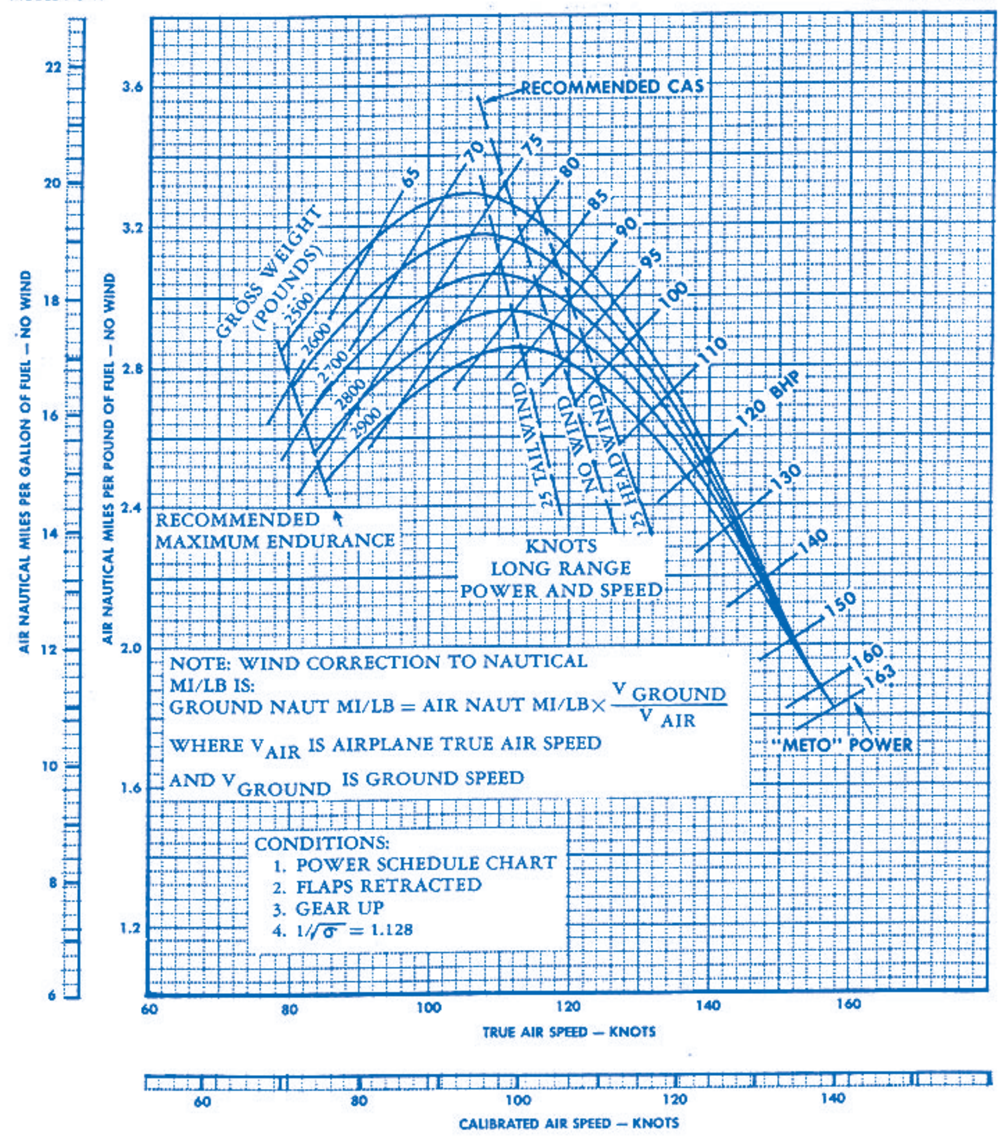
Carenado

Copyright 2004 Carenado®

NAUTICAL MILES PER POUND OF FUEL

STANDARD DAY — 8000 FT.

MODEL T-34A ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-19

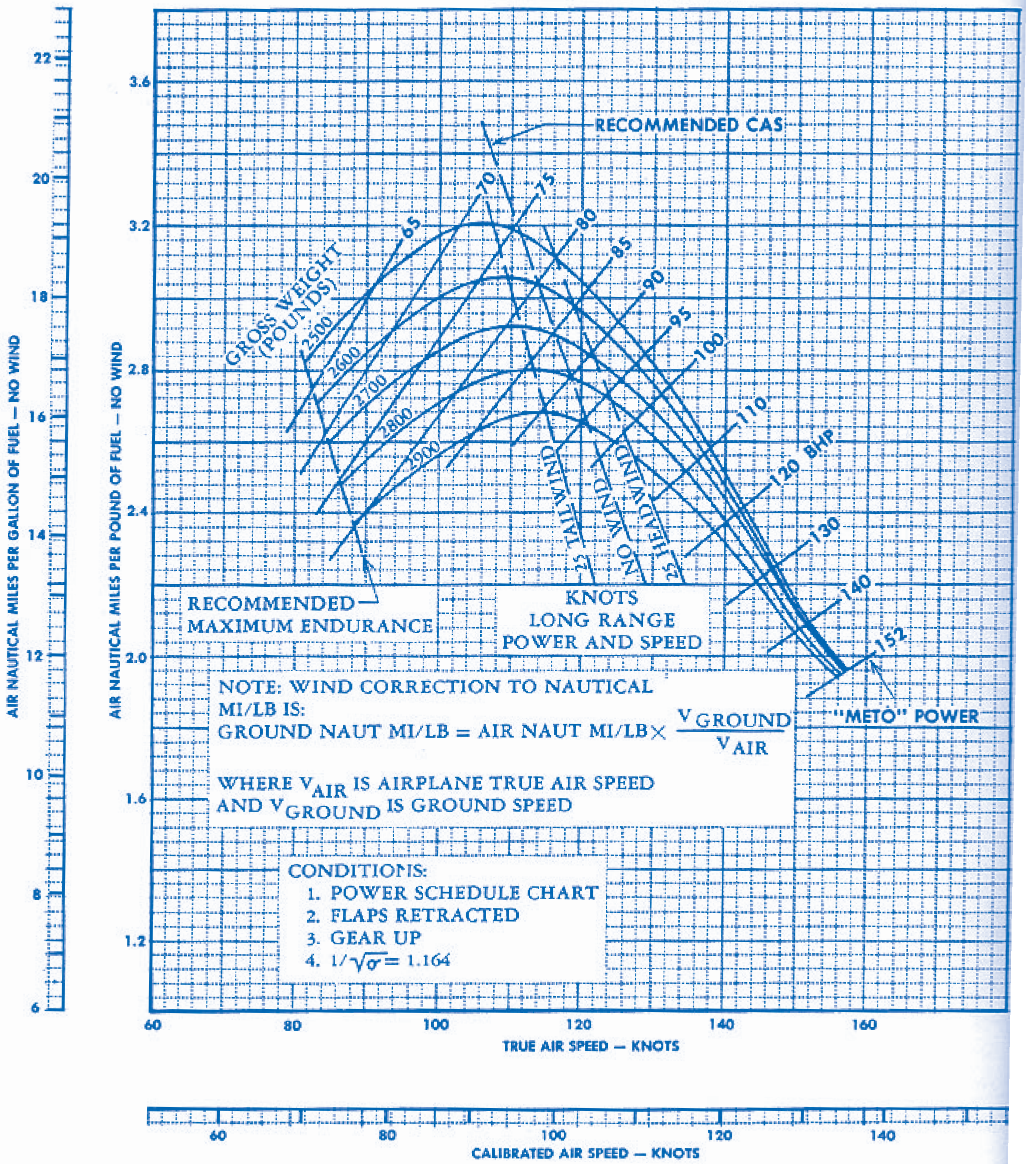
Carenado
Copyright 2004 Carenado®

Beechcraft
Mentor T-34B

Performance

NAUTICAL MILES PER POUND OF FUEL
STANDARD DAY — 10000 FT.

MODEL T-34A ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

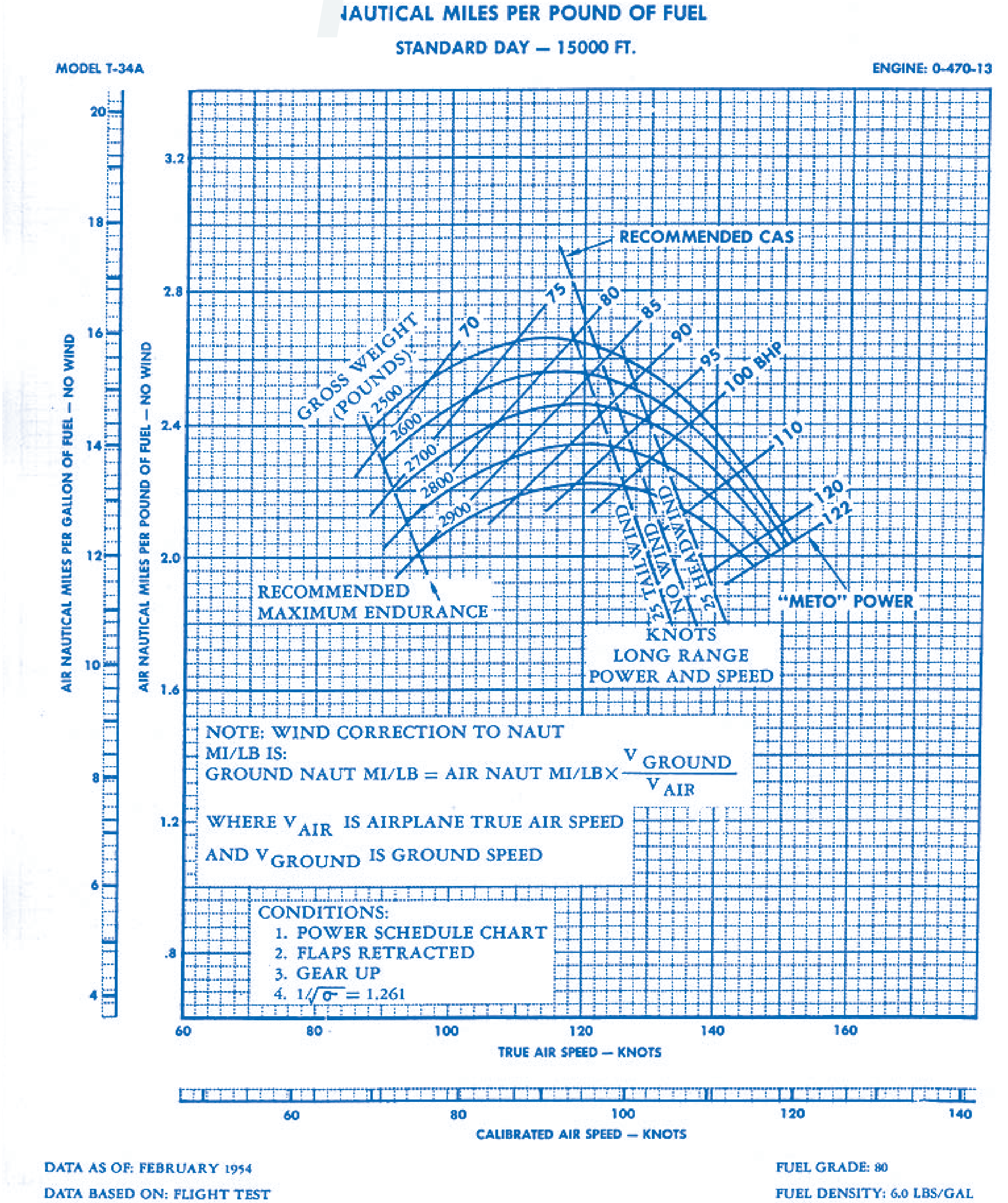
FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-20

Copyright 2004 Carenado®

Beechcraft
Mentor T-34B

Performance



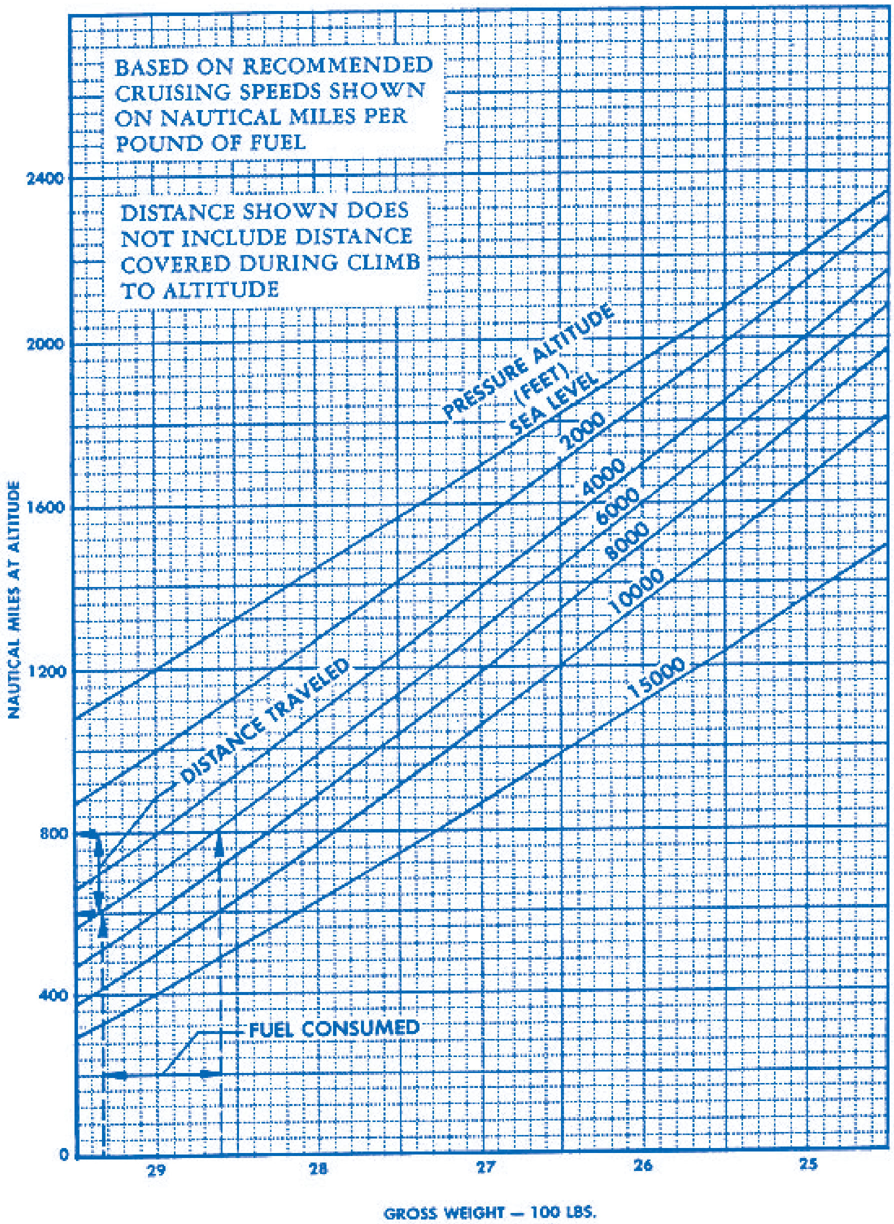
Carenado
Copyright 2004 Carenado®

LONG RANGE PREDICTION — DISTANCE (NO WIND)

STANDARD DAY

MODEL T-34A

ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED [illegible]HT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

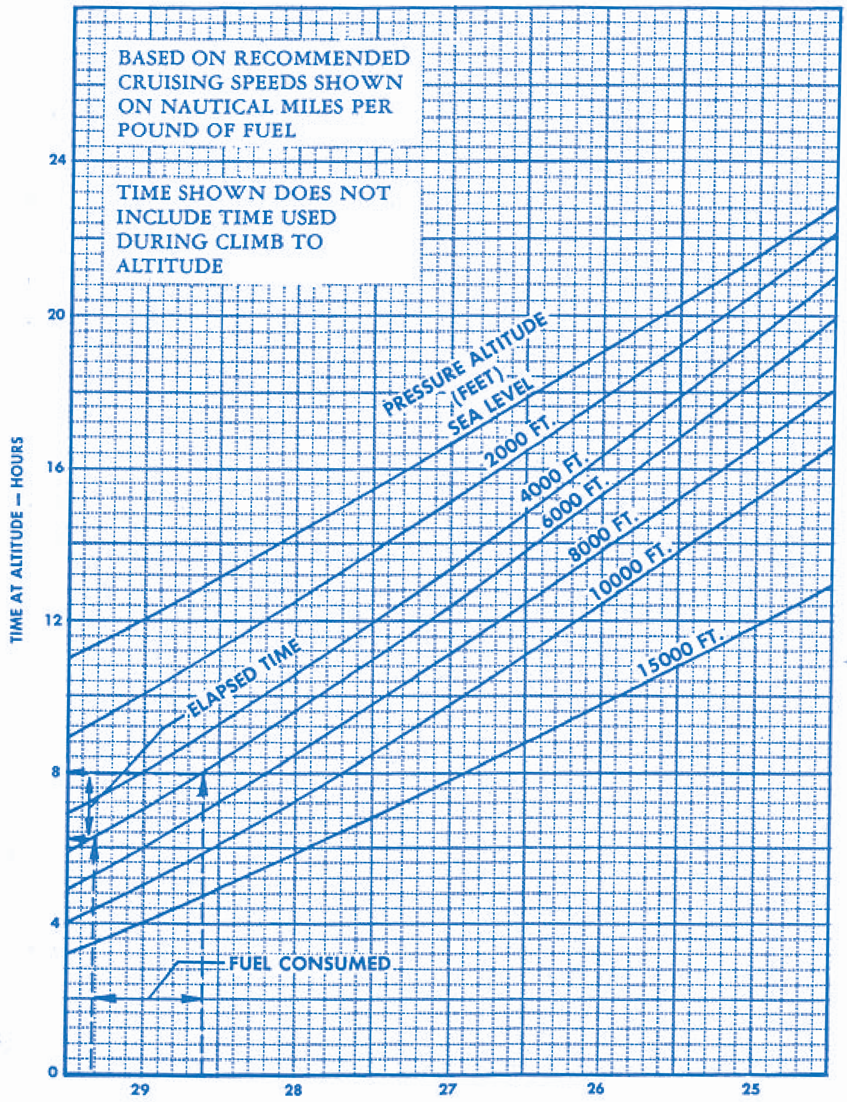
Figure A-22

Carenado
Copyright 2004 Carenado®

LONG RANGE PREDICTION — TIME (NO WIND)

STANDARD DAY

MODEL T-34A ENGINE: 0-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

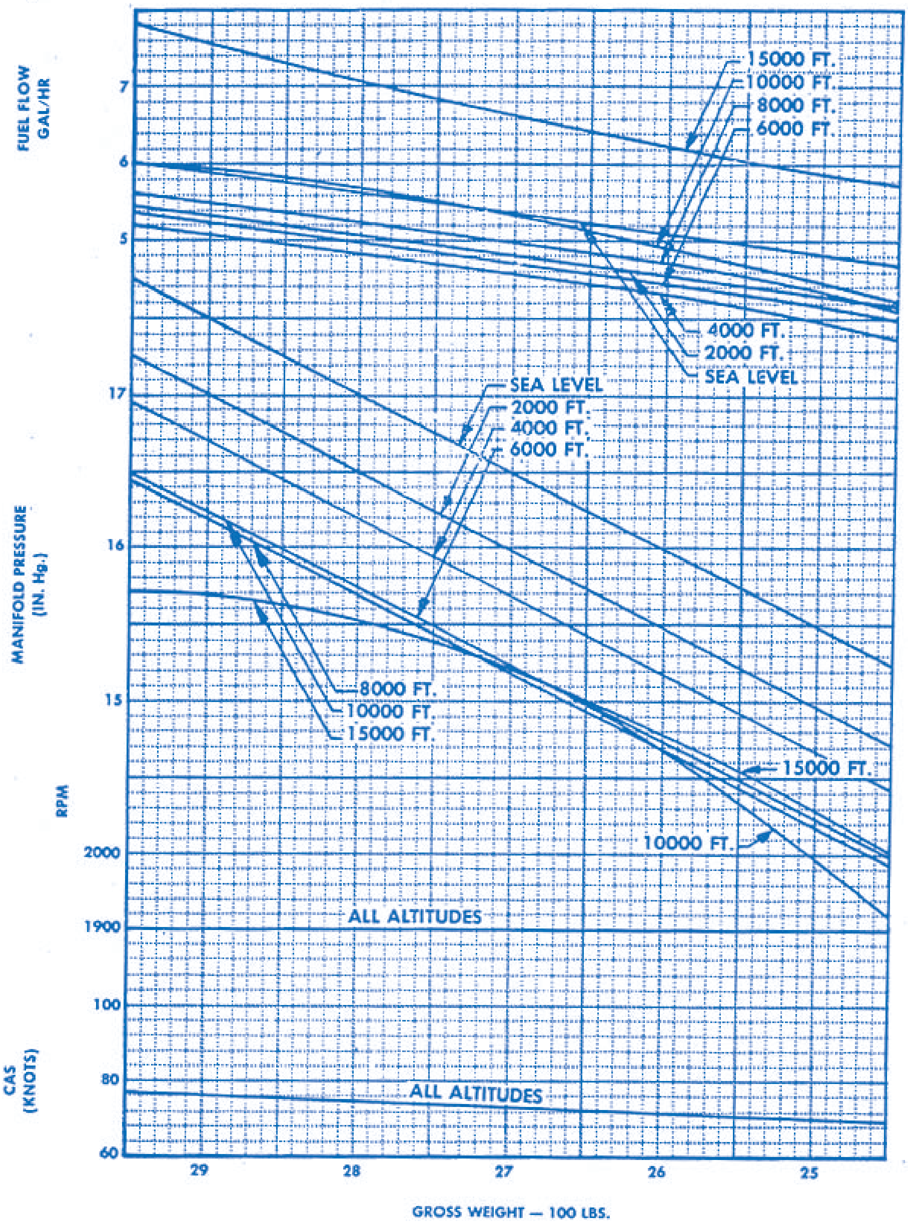
Figure A-23

Carenado®
Copyright 2004 Carenado®

MAXIMUM ENDURANCE

MODEL T-34A

ENGINE: O-470-13



DATA AS OF: FEBRUARY 1954
DATA BASED ON: FLIGHT TEST

FUEL GRADE: 80
FUEL DENSITY: 6.0 LBS/GAL

Figure A-24

Copyright 2004 Carenado®