Expanded Normals
Beechcraft Model 95

Preflight

Visually check airplane for general condition during preflight inspection. In cold weather remove even small accumulations of frost, ice, or snow from the wings, tail, and control surfaces. Also ensure control surfaces contain no internal accumulations of ice or debris. Refer to checklist in aircraft for further guidance.

Prior to IFR flight ensure that the pitot heat is warm to the touch within 30 seconds after turning on. Prior to all flights ensure that the taxi light is operational.

If night flight is planned, check operation of all lights and make sure flashlight is available.

Starting Engines

If engines have not been operated for several hours and feel cool to the touch, use the Engine Start Checklist. Switch on battery, generators and left magnetos. Place mixture controls just above the first screw located on the mixture control column and turn on electric fuel pumps momentarily to ensure proper operation (fuel pressure). Then prime the engines by advancing the throttles three full times prior to engine start. If the engines are warm to the touch, prime the engines by advancing the throttles one full time before engine start. Either engine may be started first. Use of the primers located by the fuel selectors is not necessary for engine start.

Once the engine starts, idle at 800 to 1000 rpm and ensure oil pressure stabilizes.

Taxiing

Test brakes and use rpm as needed to taxi. Avoid excessive use of brakes when taxiing.

Differential power is NOT normally needed to make turns. Avoid excessive differential power when taxiing as it may damage the nose gear.

It is normal and recommended to pull the mixture controls back to the top of the first screw while taxiing but the mixture must be placed approximately at the second screw on the mixture control column prior to run-up.

Taxiing on one engine is not recommended. In an emergency it is possible to taxi on one engine, if possible avoid stopping once started in motion as the greatest stress to the nose gear occurs when first beginning to move on one engine.

Runup

Runup procedure is conventional. Magneto and mixture operation are checked when called for on the Runup Checklist. Please refer to checklist for further guidance.

A mag-drop of more than 125 is not acceptable. If the mag drop is more than 125 but generally smooth, suspect a rich mixture. This is particularly likely in warm weather. Pull back the mixture control by approximately one inch to lean, while running up the engine, and then repeat the magneto check. If the drop is then within limits, flight may be continued.

A mag-drop of more than 125 accompanied by a rough engine operation may mean that a spark plug has become fouled. To clear the fouled plug, increase rpm to 2200 then lean the mixture until rpm drops 25 to 50 rpm. Allow the engine to run in the leaned condition for 10-20 seconds, then return the mixture to the second screw on the mixture control column and reset rpm to 2200. Repeat the magneto check. If the mag-drop is now normal the flight may be continued. If the mag-drop still exceeds 125 after the above procedure has been completed, repeat the clearing procedure but with full throttle (be sure to monitor engine temperature). If the mag-drop still exceeds limits, further attempts to clear the plugs will likely be futile. The flight must be terminated and an A&P will be required to rectify the problem.

Pre-Takeoff planning and Brief

Due to the nature of multi-Engine airplanes, proper planning prior to takeoff is extremely important. Such things as temperature, altitude of the airport (density altitude), weight of the aircraft and length of the runway should all be taken into account. Single engine performance should then be computed under the current conditions, along with, accelerate stop, accelerate go, single engine climb and obstacle clearance. NEVER leave the ground before Vmc is reached and preferably Vmc +5 as a minimum (Vsse). If an engine fails prior to reaching Vmc, retard the throttles and stop straight ahead. If the engine fails after Vmc and WITHOUT sufficient runway to land, fly the Blue line (87 KIAS) and raise the gear and flaps if extended. ALWAYS be prepared to lose an engine. A proper briefing would include all these items: for example the pilot should communicate:

"Once cleared for takeoff I will hold the brakes and advance the throttles at which point I will check the engine instruments for proper indications. At brake release I will hold centerline and call airspeed alive passing 40 KIAS. I will then call Vmc (73 KIAS) speed and plan to be lifting the nose wheel at 78 KIAS (Vr). Once airborne I will tap the brakes and call positive climb gear up followed by lowering the nose to attain Blue line (87 KIAS); with a max speed of 91 KIAS (Vy). At or above 500 AGL I will make my first power reduction and switch to the Aux. tanks. In the unlikely event of an engine failure on the runway, prior to reaching Vmc, I will retard the throttles and stop straight ahead. If I lose an engine after Vmc, and insufficient runway to land, place the mixtures, props, and throttles full forward and hold blue line. I will then raise the gear and flaps and troubleshoot the engine failure once sufficient altitude permits and workload permitting. If not I will identify and verify the inoperative engine; feather it and return for a landing"

Normal Takeoff

All takeoffs are performed using full power. Full power should be maintained to at least 500 agl. Above 500 agl pilots may reduce power to normal climb power.

Normal takeoffs are conducted with zero flaps. Under normal wind conditions the nose-wheel should be lifted off at 78 KIAS so that the airplane smoothly leaves the ground. It is vital to accelerate as quickly as possible to Vyse (87 Vyse) after takeoff. The gear should be retracted with a positive rate of climb AND insufficient runway left to land. Climb should be sustained at Vyse (87 KIAS) and a maximum of Vy (91 KIAS) until at least 500 ft agl. Above 500 ft. the pilot may accelerate to enroute climb speed (110 – 123 KIAS) and reduce power to 24-25 squared for the climb. Adjust the mixtures along with the power reduction to 25 degrees rich of peak EGT, (the star "*" is peak EGT). After the power reduction, ***and workload permitting***, switch to the Aux. tanks by first switching fuel ***indicator*** switch to Aux. and then the fuel ***selectors*** to Aux Tanks, followed by turning off the fuel boost pumps, while monitoring fuel pressure. It is recommended to switch to Aux. tanks at a safe altitude.

Short Field Takeoff

Short field takeoffs are performed with 20° flaps.

Taxi to obtain maximum possible runway length. If possible, without damaging the propellers, hold the brakes and apply full power-check normal engine power indications.

Keep the airplane in a level attitude during the takeoff roll. Lift the nose-wheel at 73 KIAS (Vmc). Climb until clear of any obstacle at 78 KIAS. Retract the gear once positive rate of climb is confirmed. Once clear of obstacles, accelerate to Vyse. Retract the flaps once above 87 KIAS and well above all obstacles (at least 50 feet above).

Soft or Rough Field Takeoff

Takeoff on a soft or rough field may require liftoff below Vmc. This procedure is therefore not recommended.

For takeoff on a soft field it is recommended to use 20° flaps and liftoff at 73 KIAS if possible. If liftoff must be made below 73 KIAS, apply elevator back pressure and accelerate in ground effect to 73 KIAS or above as quickly as possible. Be prepared for immediate reduction in power and landing straight ahead should an engine fail below Vmc. Leave the gear extended until positive climb is established.

Climb

After takeoff, pilots should normally climb at Vyse until at least 500 ft agl. Climb may be continued above 500 ft. at Vyse at the pilot's discretion.

Vx should be used if obstacles must be cleared. Extended climb at Vx requires careful monitoring of engine temperature. Cowl flaps should be left open for climbs at Vx.

Above 500 agl power may be reduced to climb power, which is 24-25 inches manifold pressure (or as available) and 2400-2500 rpm.

Once above 500 ft agl, pilots may climb at the enroute climb speed of 110 to 123 KIAS. Mixture should be leaned to 25 degrees rich of peak EGT, the "*". Cowl flaps should be set in accordance with cylinder head temperature. Cowl flaps may be closed as long as CHT remains in the normal operating range, preferably at or below 475º

Cruise

Cruise power should be set in accordance with the charts in POH. Maximum cruise power setting is 75%. Recommended power setting is 70% or less.

Once engine temperatures stabilize, mixture may be adjusted with the EGT to obtain maximum exhaust gas temperature (lean to the "*", peak EGT is the star).

Holds

Recommended hold speed is 125-130 KIAS. RPM should be set to 2300 to 2400 and manifold pressure to 20 inches.

Stalls

The stall characteristics are conventional. Aural and visual warnings are provided; by an electric stall horn and red light located on the left side of the instrument panel, approximately 5 knots before the actual stall. An aerodynamic warning, caused by a tail buffet, occurs just before the actual stall.

Please refer to the Multi-engine maneuvers document and PTS for arrival and departure stall standards.

Stalls must be initiated at an altitude such that recovery is accomplished by 3000 ft agl or above.

When recovering from a stall, great care must be taken when applying power if airspeed is below Vmc. It is recommended to avoid application of full power until airspeed is above Vmc.

If flaps are extended during the stall, they should not be retracted until the stall has been eliminated and the airspeed is above 87 KIAS.

Descent

Normally manifold pressure is reduced to 20 inches in descents in order to maintain a constant indicated airspeed. It is acceptable to allow airspeed to increase during the descent provided that airspeed limitations are not exceeded.

The mixture level should be advanced progressively as the descent continues to prevent over-lean operation due to increasing air density. Mixture should be adjusted prior to increasing manifold pressure to stop a descent.

Normal Approach and Landing

Speed should be reduced from cruise to 130 KIAS before gear is extended and while an approach to landing is initiated. Set 16 inches of manifold pressure and lower gear at pilot's discretion (somewhere on the 45º and downwind works). Abeam the numbers extend flaps to 10 degrees and trim 7 units. On base extend flaps to 20 degrees and trim 10 units nose up. Turning final extend full flaps and trim 13 units nose up. Leave power at 16 inches for entire approach and adjust as necessary on short final. Approach speed should be 87-90 KIAS. Pre-landing checklist should be completed prior to commencing final descent for landing or at gear extension (GUMPS); this works on a normal visual approach, turning base at a 45º.

For a landing with full flaps, initiate VFR approaches at 105 KIAS with 10° flaps (abeam the numbers and power at 16 inches), then 90-100 KIAS with 20° flaps (on base), then 87 – 90 KIAS with full flaps (on final). Speed should remain at 87 KIAS or above until landing is assured and then be reduced so that it is 80 KIAS crossing the fence. *Leave mixtures leaned throughout the approach and landing. If a go-around is initiated place mixtures full forward. (If it is a concern, place the mixtures full forward for the go-around on short final with the "mixtures, props, gear" callout.)*

In the flare, hold the airplane off just enough that the main wheels touch down before the nose-wheel. Throttle should be zero at the time of touch down. Apply braking as required without locking the wheels. Flaps should be left extended until the landing roll is complete.

In the event of a crosswind, apply aileron into the wind and hold the input after touch down. Use rudder to keep straight.

For landings with gusting winds, speeds should be increased by half the gust. Do not exceed flap-operating speeds.

For a landing with **no flaps**, initiate VFR approaches at 120 KIAS,(abeam the numbers reduce power to 16 inches) then reduce speed progressively remaining at 90 KIAS or above until landing is assured. Then plan to reduce airspeed to 90 KIAS crossing the fence. (stall usually occurs just below 80 KIAS)

For the **visual single engine approach**, abeam the numbers or GS intercept, lower the gear, extend flaps to 20º and reduce power to 20 inches on the operating engine (dead engine should be zero thrust and trim should be set to 9 units nose up). This should yield a speed of 95-100 KIAS. Landing can be made with flaps 20º or full flaps when landing is assured. If a missed must be executed retract gear and flaps immediately, with a positive rate of climb.

TOUCH AND GOES ARE PROHIBITED. FOR TRAINING PURPOSES TAXI BACKS MUST BE PERFORMED.

Instrument approaches

In the approach environment the throttles should be reduced to 20 inches (clean and level), which will produce a speed of approximately 125-130 KIAS. If intercepting the glide slope from above the gear is at the pilot's discretion in order to intercept the glide path. If it is necessary to level off with the gear down, leave power at 20 inches, which will produce a speed of approximately 100 KIAS. At glide slope intercept, lower flaps to 20º and reduce power to 16 inches for the approach. If intercepting the glide slope from below and at cruise power (23 squared), reduce power to 16 inches, lower the gear one dot below glide slope and at gear speed, then position flaps to 20º at GS intercept and in the white arc for the approach, which should produce an approach speed of 90 KIAS. Final flaps may be extended for landing or left at 20º.

For the **single engine instrument approach** extend the gear at glide slope intercept, lower flaps to 20º and reduce power to 20 inches on the operating engine (dead engine should be at zero thrust and trim should be set to 9 units nose up). This should produce a speed of approx. 100 KIAS. Land with flaps 20º or full flaps only when landing is assured. The missed approach should be executed by immediately retracting the gear and raising the flaps with a positive rate of climb.

Short Field Approach and Landing

Short field landings are conducted with full flaps. Final descent should be initiated with the gear, and then full flaps to be stabilized on final.

The speed at 50 ft. agl should be 78 KIAS plus half the wind gust factor. Maintain this speed until crossing the fence.

It is recommended that when the pilot is not familiar with the short field landing characteristics that 78 KIAS plus half the gust factor should be established well before 50 ft. agl and a stabilized approach be flown.

After touch down, flaps must be retracted in order to maximize braking. However, **GREAT CARE** must be taken not to retract the gear.

Apply maximum braking without locking the wheels. Hold the control column full aft while braking.

Soft or Rough Field Approach and Landing

Soft or rough field landings are conducted with full flaps. Final descent should be initiated with the gear and full flaps.

The speed at 50 ft. agl should be 78 KIAS plus half the wind gust factor. Maintain this speed until the flare.

Flare slightly higher than normal and hold the airplane off to land in slightly higher than normal pitch attitude. No more than a slight amount of power should be on at touch down. After landing, gently lower the nose-wheel to the ground.

If damage to the flaps is a concern, due to rocks and debris thrown up by the main wheels, retract the flaps upon landing. However take **GREAT CARE** not to retract the gear.

With the nose-wheel on the ground, keep the control column full aft during the landing roll. Brake as needed (test brakes early on the landing roll). DO NOT attempt to keep the nose-wheel off the ground for a prolonged period after landing.

On soft surface it is advisable to avoid coming to a complete stop, as greater propeller wear will result when a stationary airplane starts to move and the possibility of getting stuck.

Crosswind Landing

When landing in a strong crosswind, use the minimum flap setting required for the field length.
The wing low method of drift compensation is best. After touch down, maintain directional control with rudder and keep the ailerons turned into the wind.

No specific crosswind limit has been established for landing in this airplane; however, certification standards require a capability of 20% of stall speed, which is 12 knots with full flaps and 14 knots with zero flaps. Stall speed is lower at reduced weight so it is not certain that these values are achievable at lower weights.

Balked Landing (IFR Missed Approach)

In a balked landing (go around), apply full power and establish a climb. Immediately reduce flaps to 20°, retract the gear once a positive rate of climb is established and open the cowl flaps; if obstacles must be cleared during the go-around, climb at Vx or more with 20° of flaps until clear of the obstacle. Once obstacles are cleared, accelerate to Vy or above and retract flaps to zero. Reduce power to climb setting once above 500 agl.

IFR missed approach procedure involves the same considerations as the Balked Landing above. Generally a missed approach is initiated from a speed well above 80 KIAS and obstacles are not a factor. If this is the case the procedure is simply; Full power, retract flaps to 20°, once positive rate of climb is established, retract the gear and open cowl flaps, confirm speed is above 87 KIAS, retract flaps to zero and climb at Vy or higher while maintaining the required climb gradient of the procedure.

Single engine balked landing follows the same procedure as above, however performance will be marginal. In some cases, it may not be possible to establish positive rate of climb before retracting the gear. In such cases, the pilot must determine that the airplane will not strike the ground. Pilots should maintain situational awareness and realize that single engine balked landing is not possible when above, or even near, the single engine service ceiling. See single engine climb performance chart in the POH.

After landing flow

After exiting the runway and coming to a complete stop, clean up the aircraft. Start from the left side and turn the transponder to standby/off, flap handle to the up position, re-trim to 3 units nose up, place flap handle in the off position, lean mixtures to the top of first screw, place fuel boost pumps off, cowl flaps open and taxi light to off.