

## PART 3

Chapter 3 — CIRCUIT PROCEDURE AND  
LANDING

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**1 Circuit procedure**

(a) 620 lb of fuel should be allowed for a circuit, landing and possible overshoot. With the landing gear down, 6900 RPM and 23° flap (two notches) give a comfortable speed of about 180 knots. To reduce speed for joining the circuit flap can be used within the limitations to augment the airbrake. Do not select more than one hydraulic service at a time and allow the cycle of each hydraulic operation to be completed before the next service is operated.

(b) Carry out the '**Pre Landing Checks**'. When checking the brakes the lever should be held on for 2 to 3 seconds. If the system is serviceable both brake needles remain at maximum pressure. If a hydraulic pipe is fractured, a lower than normal pressure will be indicated initially and this will decrease at a rate depending on the size of the fracture. The check should not be repeated because at each operation hydraulic oil will be lost.

*(c) Final approach*

(i) Turn across wind at 160 knots (minimum), aiming to lower full flap on the final stages. Steep approaches are not recommended.

(ii) To ensure rapid engine response maintain at least 4500 RPM until finally committed to a landing. Under conditions of high wind or gustiness it is more comfortable if the speeds below are increased by 5 knots.

(iii) The recommended speeds at the runway threshold are:

At maximum landing weight (18500 lb)	...	...	145 knots
At 17000 lb	...	...	140 knots
At 16000 lb	...	...	135 knots
At 15000 lb	...	...	130 knots

(iv) It is recommended that the brake parachute is streamed when landing at AWW above 17000 lb.

## 2 Landing

As the touchdown point is approached, check the rate of descent and fly the aircraft gently on to the ground at about 5 to 10 knots less than the runway threshold speeds. Holding off may result in an excessive nose-up attitude (particularly in the case of a flapless landing or when carrying outboard stores) with the likelihood of scraping the tail cone and/or dropping a wing; if the latter occurs, corrective aileron may be effective in raising the wing, but it is recommended that the rudder is used as the primary lateral control during the touchdown phase. Lower the nosewheel on to the runway immediately after touchdown and apply gentle braking.

## 3 Braking

NOTE: The shortest landing run is achieved by lowering the nosewheel firmly on to the runway immediately after touchdown, streaming the brake parachute, applying maximum wheel braking and simultaneously pulling the control column fully back and trimming nose-up.

### (a) General

The maxaret units do not operate until the wheels are turning, therefore, if the aircraft is allowed to touch down with brakes on, the wheels will lock and the tyres may burst. The aircraft must be firmly on the runway before the brakes are applied.

### (b) Dry surface

The maxaret units normally prevent the wheels locking when excessive brake pressure is applied. The landing run can be considerably reduced by applying full brake pressure continuously but, since this causes rapid tyre wear, gentler use of the brakes is recommended. If skidding or wheel slipping is felt, or if difficulty in keeping straight is encountered, release the brakes momentarily. After a landing which has involved heavy braking, ten minutes should elapse before the next landing; in addition, if the intervening period of taxiing has involved prolonged use of the brakes, twenty minutes should elapse before the next landing. The same precautions should be observed for brake tests.

(c) *Wet surface*

The retardation may be considerably reduced, depending on the degree of wetness of the runway surface. On a wet surface, it is recommended that light braking application should be commenced as soon as the aircraft is firmly on the ground and the wheels turning. The brake application may be increased progressively as the speed is reduced. If skidding or wheel-slipping is felt, the pressure should be momentarily released and gradually re-applied.

(d) *Flooded or icy surfaces*

Due to the drastic reduction in braking effectiveness, these surfaces should be avoided when possible. When landing, an accurate touchdown at the correct speed is essential and the brakes should be applied carefully. If the wheels lock, the brakes should be released and time allowed for the wheels to rotate before re-applying the brakes.

(e) *Use of the braking parachute*

The braking parachute may be used for full stop landings to assist deceleration. Once the aircraft is firmly on the ground, stream the parachute and apply the wheelbrakes. Correct streaming is indicated by a marked increase in deceleration and the red warning light coming on. After clearing the runway and before jettisoning the parachute, set the engine at 4000 RPM. At this RPM full voltage from the generators to the release is assured and a pull force is applied to the parachute. When the parachute is jettisoned, or if it fails to jettison, return the control switch to STREAM immediately.

#### 4 Overshooting

(a) Open the throttle smoothly to the power required, raise the landing gear and at a safe height raise the flaps and retrim as necessary. If it is necessary to overshoot from the runway after the braking parachute has been streamed, open the throttle fully and select OFF, JETTISON. If the parachute fails to jettison, try the instructor's control. If the parachute still fails to jettison, increasing speed to 155 knots should ensure separation.

(b) Provided that a minimum fuel state of 200 lb per side is indicated, a further circuit may safely be attempted. Below this fuel state care must be taken to avoid excessive nose-up attitude or acceleration on

overshoot, which may cause fuel in the tanks to move away from the booster pumps resulting in possible fuel starvation.

## 5 Instrument approach

The following are the recommended airspeed, power and flap settings for an instrument approach with the landing gear down. The power setting is approximate and may require adjustment to meet configuration and wind variations:

	RPM	Flaps	Airspeed
Downwind	6900	23°	180 knots
Base leg	6900	23°	180 knots
Glidepath	6900	Full	150/160 knots

When practising GCAS with a high fuel state or carrying out a GCA prior to landing overweight, maintain the higher recommended airspeed on the glidepath.

## 6 Flapless landing

The circuit should be adjusted to give a long shallow approach and the threshold crossed at 150 knots. With a clean aircraft speed decreases very slowly when the throttle is closed. When drop tanks and/or rocket launchers are fitted, speed decreases more quickly. Take care to avoid an excessive nose-up attitude, especially when outboard stores are carried and with low fuel states. Place the aircraft firmly on the runway as soon as possible, lower the nosewheel to the ground, stream the brake parachute, apply the brakes and, if necessary, close the HP cock. The landing run is very much increased. Use the arrester hook if necessary.

## 7 Crosswind landing

The 'crab' technique is recommended when landing crosswind. In light crosswinds no difficulty should be encountered but in strong crosswinds full rudder may be necessary to yaw the nose into line with the runway before touchdown. At low speeds the effect of rudder is delayed and this must be anticipated; the use of full rudder produces a marked roll which must be countered by judicious use of aileron. When drift has been checked, fly the aircraft on to the ground and place the nosewheel on the runway without delay. If the crosswind is strong or gusting, increase the approach and threshold speeds by 5 knots.



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