Australian Sport Rotorcraft Association
A Guide to
FLIGHT RULES AND PROCEDURES
For Gyroplane Pilots

NOTE: The following information is intended as a basic guide to the Flight Rules and Procedures applicable to Gyroplane operations in Australia. Where the information contained herein conflicts with that published in CASA Regulations, then the CASA Regulations take precedence.

Where the term "aircraft" is used it refers to fixed wing, helicopters and gyroplanes. Where the term "gyroplane" is used, that rule or regulation is specific to gyroplanes only.

Errors, omissions or necessary additions should be notified to the ASRA Operations Manager without delay.

What are the Regulations?

The Civil Aviation Safety Regulations 1998 ('the CASRs'), together with the Civil Aviation Regulations 1988 ('the 1988 Regulations'), are the detailed legislation of the Commonwealth regarding aviation safety. Both of these sets of regulations are made under the Civil Aviation Act 1988. There are also Civil Aviation Orders made under the 1988 Regulations and that Act.

The 1988 Regulations were made in 1988 and have been amended many times since. They are being progressively reviewed as CASA brings its requirements into line with international standards and best regulatory practice. Major new policies are generally incorporated into the CASRs. The intention is that the matter in the 1988 Regulations and the Civil Aviation Orders will be progressively brought into the CASRs.

Both sets of regulations, and the Orders, are parts of Australian law. They are delegated legislation, made by the Governor-General (for the Regulations) or CASA itself (for the Orders) under authority given by the Commonwealth Parliament.

THE AERONAUTICAL INFORMATION PUBLICATION (AIP) AUSTRALIA

The AIP is the basic aeronautical document and is issued by Airservices Australia in accordance with Air Services Regulations. It contains essential information or instructions on air navigation procedures and requirements that are of a lasting nature. AIP Australia is provided through the medium of the following documents and charts:

- AIP Book;
- En Route Supplement Australia (ERSA);
- Departures and Approach Procedures (DAP);
- AIP Supplement (SUP);
- NOTAM;
- Aeronautical Information Circular (AIC);
- Terminal Area Charts (TAC);
- En Route Charts (ERC), High and Low;
- Planning Chart Australia (PCA);
- Visual Terminal Chart (VTC); and
- Designated Airspace Handbook (DAH).

The AIP is the primary source of information concerning rules of the air, and procedures for the safe and efficient movement of aircraft within Australian airspace. It should be read in conjunction with CARs, CASRs and CAOs, which spell out the statutory (i.e. legal) requirements.

NOTICES TO AIRMEN (NOTAM)

A NOTAM is issued by, or with the authority of Airservices Australia, and provides information of a temporary nature, which is of direct operational significance regarding changes in facilities, service procedures or hazards, which may affect aircraft operations. The following extract from the AIP explains the content and format of a NOTAM.

NOTAM provide information that is of direct operational significance and which may immediately affect aircraft operations. A NOTAM is issued in a Format containing fields (A) to (G) as follows:

A. Location identification, NOTAM number, subject reported, date/time of issue. (For details of NOTAM numbering for both domestic and international Australian NOTAM, refer to paragraphs below).
B. Time of commencement of information contained in Field E.
or
Time of publication where prior notification is required. In this case, Field E commences with "WEF .. (date/time)...". This date/time will then reflect the actual commencement time of the NOTAM information.
C. Time of cessation of information.
D. Times of periods of activity.
E. Plain language text,
(for international NOTAM, ICAO codes are used).
F Lower limit.
G Upper limit.

In the domestic environment, NOTAM numbering is preceded by the letter 'C' followed by the year; eg, **BRISBANE (YBBN) C22/94**.
For each location, a separate series of numbers is issued; thus the NOTAM is identified by both the location and the number, not by the number alone.

UNITS OF MEASUREMENT

Measurement	**Units**
Distances used in navigation	nautical miles and tenths
Short distances	metres
Altitudes, elevations and heights	feet
Horizontal speed, including wind speed	knots
Vertical speed	feet per minute
Wind direction for runway operations	degrees magnetic
Wind direction except for runway operations	degrees true
Visibility	kilometres or metres
Altimeter settings	hectopascals
Temperature	degrees celsius
Weight (Mass) Metric	tonnes or kilograms
Time	hours and minutes

GENERAL RULES

An aircraft engine shall not be started or operated:

(a) within 5 metres (17 ft) of any sealed building;
(b) within 8 metres (25 ft) of other aircraft;
(c) within 15 metres (50 ft) of any exposed public area;
(d) within 8 metres (25 ft) of any unsealed building in the case of an aircraft with a maximum takeoff weight not exceeding 5700 kg (12,566 lb).

All the occupants of a gyroplane must wear properly adjusted seat belts, and where applicable, helmets, from the time they board a gyroplane with the intention of flight, until the gyroplane is secured after landing.

The Pilot-In-Command must ensure that the occupants of a gyroplane are fully briefed on the use of the seatbelts, and the location and operation of any safety related equipment fitted.

FUELLING OF AIRCRAFT

During fuelling operations, the aircraft and ground fuelling equipment shall be so located that no fuel tank filling points or vent outlets lie:

(a) within 5 metres (17 ft) of any sealed building;
(b) within 6 metres (20 ft) of any stationary aircraft;
(c) within 15 metres (50 ft) of any exposed public area, and;
(d) within 9 metres (30 ft) of any unsealed building in the case of aircraft with a maximum take-off weight not exceeding 5,700 kg (12,566 lb)

A person shall not smoke or use a naked flame within 15 metres (50 ft) of the aircraft or ground fuelling equipment.
Where the fuelling equipment is not mobile, the aircraft shall be so placed that it can be rapidly moved to a position of safety. This infers that the parking brake, if fitted, must not be set.
The Pilot-In-Command is responsible for ensuring that there is sufficient fuel and oil plus reserves carried for the intended flight and that the fuel and oil is of the correct grade as specified in the Flight Manual or Operators Handbook.

PROHIBITED, RESTRICTED AND DANGER AREAS

The definition of each of these types of area is found in AIP RAC. Flight in Prohibited Areas is indeed prohibited! Flight through Restricted Areas may be made in compliance with specified conditions. Flight through Danger Areas is permissible, but pilots are cautioned that it is necessary for them to assess the danger to their operation. General requirements are discussed in AIP RAC.

DEPICTION OF RESTRICTED AND DANGER AREA

Restricted and Danger Areas are depicted as follows:

- On all charts, Restricted Areas are shown with a red verge.
- On the ERCs and TACS, Danger Areas are shown with a solid red line.
- On the VTCS, Danger Areas are shown with a solid red line with a red dot verge along the inside of its boundary.

- On all charts where a Restricted and Danger Area has a common lateral boundary, only the Restricted Area verge in shown. The Danger Area boundary is indicated by labels.

AIRSPACE

Unless the gyroplane and pilot comply with the requirements laid down in CAOs 95.12 and 95.12.1, gyroplane operations are not permitted inside **controlled airspace** except that classified as **Class E airspace**.

Gyroplanes operating in **Class E airspace** must be equipped with VHF radio, and if Flight Information Services are required, must also be equipped with a transponder. Operations are only permitted under **Visual Meteorological Conditions (VMC).**

To avoid infringing **controlled airspace**, pilots flying at or below 2000' AGL must allow a minimum of 1nml separation from any controlled airspace boundary, and 2nml when flying at or above 2001'AGL.

A "**non-controlled aerodrome**" is an aerodrome at which air traffic control is not operating. This can be either:

- an aerodrome that is always in class G airspace;
- an aerodrome with a control tower where no air traffic control (ATC) is currently provided; or
- an aerodrome which would normally have ATC services provided but such services are presently unavailable.

A **CTAF (Common Traffic Advisory Frequency)** is a radio frequency on which pilots make positional broadcasts when operating in the vicinity of a non-controlled aerodrome.

In the vicinity: An aircraft is in the vicinity of a non-controlled aerodrome if it is within:

- airspace other than controlled airspace; and
- a horizontal distance of 10 NML from the aerodrome (reference point); and
- a height above the aerodrome (reference point) that could result in conflict with operations at that aerodrome.

Operations in the vicinity of **certified or registered aerodromes** require the carriage and use of radio and the pilot-in-command must be qualified to use the radio and must make mandatory broadcasts and other broadcasts when necessary for separation purposes.

Broadcast Area is a defined airspace volume in Class G airspace for which a discrete frequency (e.g. CTAF) has been allocated. All operations, including those at aerodromes (charted and uncharted) and landing sites within this area shall use this CTAF as the broadcast frequency. Charts are annotated: "For operations in this area SFC – (*altitude*) use CTAF (*frequency*)".

Certified or Registered aerodromes may be identified by reference to the entry in the ERSA for a particular aerodrome. An annotation immediately below the location identifier in the top right hand corner of the data sheet indicates CERT for certified and REG for registered aerodromes. The annotation for uncertified or unregistered

aerodromes is UNCR. In general, where the entry for the aerodrome consists of a **grey background**, it is an uncertified or unregistered aerodrome.

Gyroplane operations are not permitted within 8kms (5nml) of a **certified or registered aerodrome** unless the pilot-in-command holds an **ASRA Aerodrome endorsement.**

Operations into private aerodromes require the approval of the owner or operator, and are subject to the terms and conditions laid down by the owner or operator.

VISUAL FLIGHT RULES (VFR)

Gyroplane operations may only be conducted under VFR, in the following conditions:

- By day;
- In Visual Meteorological Conditions (VMC).

Flight conditions applicable to gyroplane operations are defined by CAOs 95.12 and 95.12.1, which are reprinted in the Appendices to the ASRA Operations Manual. However, the VMC stated in these Orders were superseded in 1998, and the VMC applicable to Gyroplanes are as indicated in the table below.

Upon application, CASA may grant exemptions or variations to these flight conditions.

Height	**Flight Vis.**	**Distance from Cloud Horizontal/Vertical**	**Additional Conditions**
Below 10,000ft	5,000m	1,500m horizontal 1,000ft vertical	
At or below 3,000ft AMSL or 1,000ft AGL whichever is the higher	5,000m	Clear of Cloud and in sight of ground or water	Carriage and use of radio is required when operating to these conditions for communication on the appropriate frequency.

Effectively, these rules mean that if you want to fly to the lower VMC minima, then you must fit and use a VHF radio. Flight visibility (how far ahead you can see) does not change, but the vertical and horizontal cloud separation distances are significantly reduced. ASRA recommends the fitting and qualified use of VHF radios.

Note: The term CAVOK is an acronym for Ceiling And Visibility OK. It is defined as visibility of 10 KM or more, no cloud below 5000ft, no cumulonimbus, no precipitation, thunderstorm, shallow fog, low drifting snow or dust devils.

INSTRUMENT FLIGHT RULES (IFR)

Flight under IFR is not permitted by Gyroplanes at any time.

FLIGHT PROCEDURES

NOTE: *Gyroplane operations are limited to a height of 500' AGL unless the pilot-in-command holds an ASRA Above 500' endorsement.*

Gyroplane operations above 5000' AMSL must be conducted in accordance with the following rules:

- Where the planned magnetic track lies between 000 degrees through East to 179 degrees, odd levels plus 500'. Eg.1500, 3500;
- Where the planned magnetic track lies between 180 degrees through West to 359 degrees, even levels plus 500'. Eg. 500, 2500, 4500.

Gyroplane operations below 5000' AMSL must comply with these rules **whenever practicable.**

This system is designed to provide a margin of safety against mid-air conflicts at cruise levels; however, the prime method of maintaining separation remains the "see and avoid" principle.

ALTIMETRY PROCEDURES

To ensure a proper vertical separation, all aircraft operating in the same general vicinity must use the *same altimeter subscale setting.* This setting is known as the **QNH**, and may be local or area.

Australia is divided into a number of **Area QNH zones** (AQZs) to facilitate the provision of accurate Area QNH values. The Area QNH zones are aligned to be coincident with the low-level area forecast (ARFOR) boundaries as shown on the PCA chart. Standard altimetry procedures require that all aircraft operating at or below 10,000' are flown by reference to Mean Sea Level. Therefore gyroplane operations should be conducted with the local or area QNH set on the altimeter sub-scale. To determine the local QNH, it is necessary to set the altimeter sub-scale setting such that the altimeter reads the aerodrome elevation. This setting is valid for all operations within l00nml of the aerodrome. Area QNH may be obtained from the applicable area forecast or responsible Flight Service Unit and is valid for operations within that AQZ.

CIRCUIT PROCEDURES (See diagram below)

NOTE: *Gyroplane operations are limited to a height of 500' AGL unless the pilot-in-command holds an ASRA Above 500' AGL endorsement.*

Refer to the ASRA Operations Manual Section 4.03 for a circuit diagram.

All circuits are left hand unless otherwise specified in the ERSA.

Where non-standard circuit directions, heights or operating procedures apply to a specific aerodrome, these are defined in the ERSA and must be complied with regardless of aircraft type.

All available collision avoidance lights, taxi and landing lights should be switched on during operations at aerodromes.

Circuit heights are based on performance.

For jets, turboprops and high performance aircraft with a downwind speed of greater than 120KT the circuit height is 1500'AGL.

For typical single-engine piston aircraft the circuit height is 1000'AGL.

For ultralights with a maximum speed of 55KT, helicopters and **gyroplanes,** the circuit height is **500'AGL** unless otherwise specified in the ERSA. Pilots no holding an Above 500' endorsement must operate at a **maximum of 500' AGL** regardless of ERSA requirements.

During initial climb-out, **the turn onto crosswind** should be made appropriate to the performance of the aircraft , so as to be at circuit height when turning downwind, but in any case **not less than 500'** .

When **departing** from the circuit area, aircraft should depart by extending one of the standard circuit legs. However, an aircraft should not execute a turn opposite to the circuit direction unless the aircraft is well outside area and no traffic conflict exists. This will normally be least 3 NML from the departure end of the runway.

When arriving at an aerodrome to land, the standard circuit will normally be joined on the upwind, crosswind or downwind legs, at or before mid-downwind.

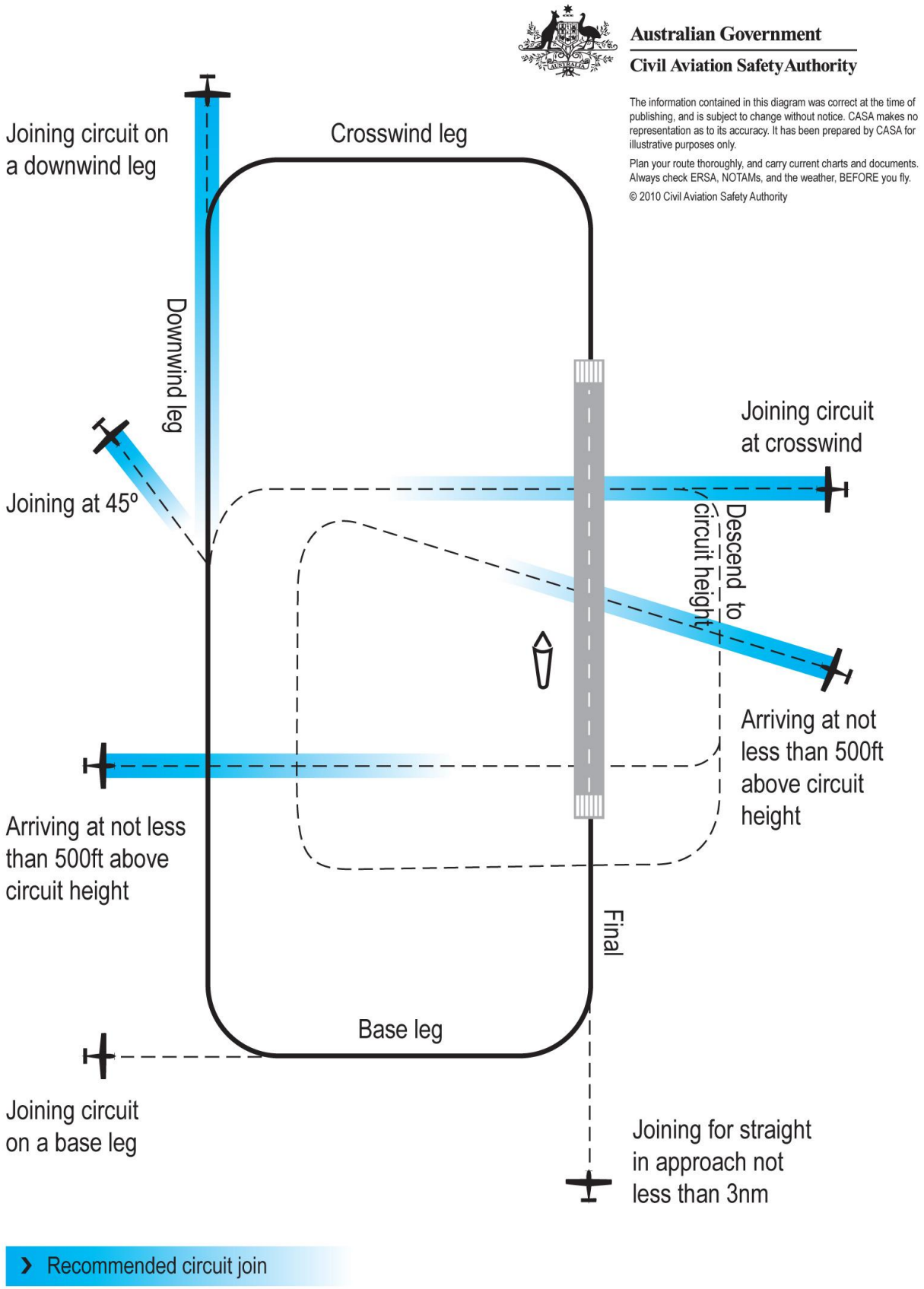
When the pilot is unfamiliar with the aerodrome layout, its serviceability, the wind speed and direction or the circuit direction has not been determined prior to arrival, the overfly procedure should be used. The pilot should overfly or circle the aerodrome at least 500' above circuit altitude, usually 2000' or more above the aerodrome elevation. When the circuit direction has been determined, the pilot should position the aircraft to a point well clear before descending to the appropriate circuit altitude on the non-active side of the circuit. At no time should a pilot descend on the active side of the circuit from directly above the aerodrome.
It is recommended that gyroplanes join the circuit by overflying midfield at 500' above aerodrome elevation to avoid conflict with higher or faster traffic.
When intending to join the circuit from overhead, an aircraft should descend on the non-active side of the circuit and be established at its circuit altitude as it crosses the runway centerline on crosswind, between midfield and the departure end of the runway.

Circuit **entry from the active side** of a circuit is achieved by establishing the aircraft at circuit height, then approaching the circuit on a course 45 degrees to the downwind leg to join at mid-field. Traffic already established in the circuit has right of way.

The turn onto the final leg of a circuit should be made at a distance and height that is common to the operations at the aerodrome and commensurate with the speed flown in the circuit for the aircraft type. In any case, the turn onto final should be completed **by 500' above airfield elevation.**

A straight-in approach, although not recommended, is permitted by any radio-equipped aircraft provided that such an approach does not disrupt the flow of arriving or departing traffic, the pilot has ascertained the wind direction, the aircraft is aligned with the runway in use by 3NM from the runway threshold and positional broadcasts are made at 3NM from the runway threshold.

Joining on base leg, whilst not prohibited is not recommended standard procedure. However, pilots who choose to join on base leg should only do so if they have determined the wind speed and direction, the runway in use, give way to all other traffic in the circuit and broadcast their intentions.


Australian Government
Civil Aviation Safety Authority
The information contained in this diagram was correct at the time of publishing, and is subject to change without notice. CASA makes no representation as to its accuracy. It has been prepared by CASA for illustrative purposes only.
Plan your route thoroughly, and carry current charts and documents. Always check ERSA, NOTAMs, and the weather, BEFORE you fly.
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Joining circuit on a downwind leg
Crosswind leg
Downwind leg
Joining circuit at crosswind
Joining at 45º
Descend to circuit height
Arriving at not less than 500ft above circuit height
Arriving at not less than 500ft above circuit height
Final
Base leg
Joining circuit on a base leg
Joining for straight in approach not less than 3nm
› Recommended circuit join

If it becomes necessary to **abort a landing**, a pilot should manoeuvre so as to keep other traffic in sight, maintain a safe distance from all aircraft and rejoin the circuit when it is safe to do so. This may involve manoeuvring to the right, left or maintaining the runway centerline, depending on traffic, the circuit direction and terrain.

POSITIONAL BROADCASTS

The standard broadcast format is;

a. {Location} Traffic
b. {Aircraft type}
c. {Callsign}
d. {Position/intentions}
e. {Location}

There are seven (7) situations where a pilot is expected to broadcast his intentions. These are **mandatory at certified and registered aerodromes**:

- Before or during taxiing;
- Immediately prior to entering a runway;
- Inbound at 10 nml or earlier from the aerodrome;
- Immediately before joining the circuit;
- On a straight-in approach, on final, by 3nml from the threshold;
- on a base-join approach, before joining on base; and
- on entering the vicinity of a non-towered aerodrome, where the pilot intends to fly through the vicinity, but not land.

Non essential chat must be kept to a minimum to avoid frequency clutter.

Following are examples of positional broadcasts that are **mandatory at certified and registered aerodromes** and are strongly recommended for radio-equipped aircraft operating at any other non-controlled aerodrome:

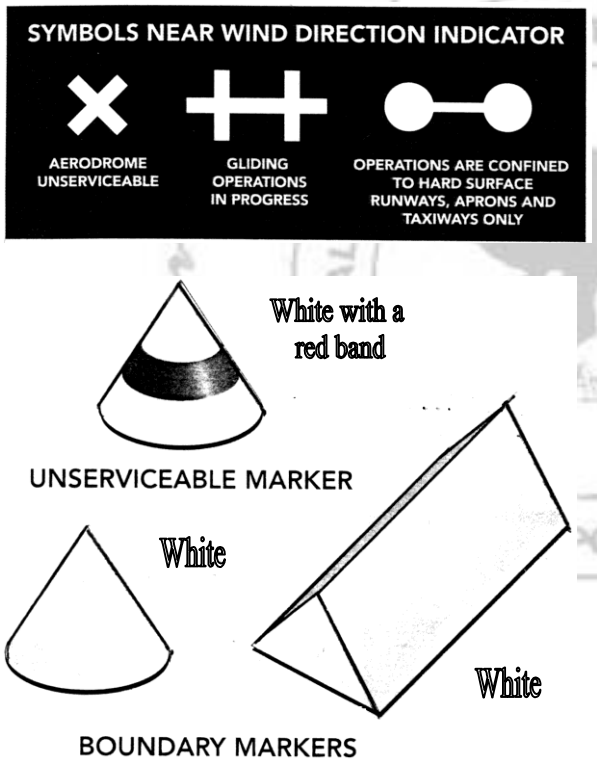
POSITION	BROADCAST
Before or during taxiing	"Bathurst traffic, gyro ninety one twenty two (G 9122), taxiing Bathurst for circuits, runway one seven, Bathurst"
Before entering the runway for takeoff	"Bathurst traffic, gyro ninety one twenty two, lining up, rolling runway one seven, for circuits, Bathurst"
Joining the circuit	"Bathurst traffic, gyro ninety one twenty two, joining crosswind (downwind), runway one seven, Bathurst"
Joining on base leg	"Bathurst traffic, gyro ninety one twenty two, joining base, runway one seven, Bathurst"
Inbound (before 10NM)	"Bathurst traffic, gyro ninety one twenty two, one one miles north, one thousand five hundred, inbound, ETA (25), Bathurst"

At 3NM final, straight-in approach	"Bathurst traffic, gyro ninety one twenty two, three mile final straight in, runway one seven, Bathurst"
Inbound and overflying	"Bathurst traffic, gyro ninety one twenty two, one one miles south east, two thousand five hundred, overflying for {destination or next turning point}

When at or in the vicinity of non-controlled aerodromes marked on charts that have not been assigned a discrete frequency, use 126.7.

When operating at aerodromes not depicted on aeronautical charts, pilots should monitor and broadcast their intentions on the relevant Area VHF frequency.

AERODROME GROUND SIGNALS



HOLDING POINT – Two broken and two unbroken yellow lines painted across the strip or taxiway **OR** one single broken and one single unbroken line painted across the strip or taxiway. The broken line(s) is (are) located closest to the runway.

RULES OF THE AIR

Refer to the ASRA Operations Manual Section 4.04 for this information.

TAKEOFF AND LANDING PROCEDURES

An aircraft must not commence takeoff until:

- A preceding departing aircraft using the same runway has;
    a. crossed the upwind end of the runway; or
    b. commenced a turn; or
    c. if the runway is longer than 1800m, become airborne and is at least 1800m ahead of the proposed point of lift-off; or
    d. if both aircraft have a MTOW below 2000kg, the preceding aircraft is airborne and is at least 600m ahead of the proposed lift-off point.
- A preceding landing aircraft using the same runway, has vacated it and is taxying away from the runway; or
- A preceding aircraft, using another runway, has crossed or stopped short of the take-off aircraft's runway.

Where there is more than one parallel strip, the above separation minima shall apply to aircraft taking off on any parallel runways as if they were a single runway.

Aircraft taxying or stationary on any parallel runway must not affect operations on the others.

Where aircraft operate to a contra-circuit, simultaneous operations are permitted.

An aircraft must not continue its approach to land beyond the runway threshold until:

- A preceding departing aircraft using the same runway is airborne, and:
    a. has commenced a turn; or
    b. is beyond a point on the runway at which the landing aircraft could be expected to complete its landing roll and there is sufficient distance to manoeuvre safely in the event of a missed approach;
- A preceding aircraft using the same runway has vacated it and is taxying away from the runway;
- A preceding aircraft using another runway has crossed or stopped short of the landing aircraft's runway.

Where there is more than one parallel strip, the above separation minima shall apply to aircraft taking off on any parallel runways as if they were a single runway.

Aircraft taxying or stationary on any parallel runway must not affect operations on the others.

Where aircraft operate to a contra-circuit, simultaneous operations are permitted.

After landing, the runway strip should be vacated as soon as possible, and an aircraft should not stop until clear of the runway strip.

An aircraft on final approach to a runway has priority over another aircraft that is holding ready for takeoff from that runway.

DATE/TIME

Universal Coordinated Time (UTC) is used for all aviation-associated activities.

The date/time group is shown as month, day, time on the 24 hour clock, UTC. Thus 03031930 indicates 30 minutes past 7PM, on the 3rd of March, UTC.

All time zones in Australia are ahead of UTC, so to obtain local time the appropriate difference must be added to the UTC time.

BEGINNING AND END OF DAYLIGHT

Daylight and darkness graphs are found in the Visual Flight Guide (VFG), ERSA and the Australian AIP, together with instructions on how to use them.

All flights should be planned to arrive at destination at least 10 minutes before last light at the destination.

Additional time should be allowed when ambient conditions indicate that normal levels of light may not be available at the estimated time of arrival. eg. Heavy cloud cover, particularly to the west; visibility reduced in rain, dust or haze.

Additional time should also be allowed at the end of a cross-country flight, due to the possibility of encountering more adverse winds than those used during flight planning.

EMERGENCY LOCATOR TRANSMITTERS (ELT)

CASA regulations require that all Australian aircraft with more than one seat must carry an **eligible ELT** or **an eligible portable ELT** if embarking on a flight of **more than 50 nmls from its departure point**. To be an eligible, ELT or portable ELT, it must meet the following requirements:

(a) if activated, operate simultaneously:

1. in the frequency band 406 MHz – 406.1 MHZ; and
2. on 121.5 MHz;

(b) it must be registered with the Australian Maritime Safety Authority;

(c) if it is fitted with a Lithium – Sulphur Dioxide battery, it must be an authorised type.

Despite the above regulation, **ASRA strongly recommends** that **ALL** ASRA registered gyroplanes carry an eligible ELT or portable ELT.

REFERENCE MATERIAL

Up to date versions of the CAOs and are available on the Airservices website at http://www.casa.gov.au/rules/index.htm.

The AIP and an amendment service are available from Airservices Australia by subscription. Details are available on their website at www.airservicesaustralia.com

The contents of the ERSA may be viewed through the Airservices website at http://www.airservicesaustralia.com/publications/aip.asp