

**CHECKLIST FOR NORMAL OPERATION PIPER P28A**

**Parameters, restrictions, procedures and emergency procedures see AFM**

**BEFORE ENGINE START**

1	Aircraft & Cockpit inspection .....	- COMPLETED according AFM .....	1
2	Parking brake.....	- SET .....	2
3	Flight time counter.....	- RECORDED .....	3
4	Ignition key .....	- OFF .....	4
5	Passenger briefing.....	- COMPLETED .....	5
6	Seats.....	- ADJUSTED & LOCKED .....	6
7	Seat belts / shoulder harnesses .....	- FASTENED & ADJUSTED .....	7
8	Mixture.....	- RICH .....	8
9	Carburetor heat .....	- OFF .....	9
10	Controls .....	- FREE & CORRECT .....	10
11	Elevator & Rudder trim .....	- TAKE OFF .....	11
12	Flaps (full range) .....	- CHECKED / UP .....	12
13	Ground Clearance .....	- ON .....	13
14	ATIS .....	- RECEIVED .....	14
15	IFR and special VFR: startup .....	- RECEIVED .....	15
16	Altimeters.....	- SET .....	16
17	Battery & Alternator .....	- ON .....	17
18	Fuel quantity .....	- CHECKED.....	18
19	Fuel selector .....	- FULLEST TANK .....	19
20	Annunciator warnings.....	- TEST .....	20
21	Avionic Master/Ground Clearance .....	- OFF.....	21

**READY FOR ENGINE START**

**ENGINE START**

1	Propeller area.....	- CLEAR .....	1
2	Engine start.....	- according AFM .....	2

**ENGINE START COMPLETED**

**AFTER ENGINE START**

1	Oil pressure.....	- CHECKED.....	1
2	Alternator output.....	- CHECKED.....	2
3	Gyro suction .....	- CHECKED.....	3
4	Fuel pump.....	- OFF .....	4
5	Avionic Master .....	- ON .....	5
6	Annunciator warnings incl. GPS.....	- CHECKED / OFF .....	6
7	Slave System.....	- TEST / SET TO SLAVE.....	7
8	Electrical pitch trim / Autopilot .....	- ON, TEST, DISCONNECT .....	8
9	Avionic & Com Panel .....	- PRESELECTED.....	9
10	Transponder.....	- MODE CHECKED .....	10

**READY FOR TAXI**

schwarz = Liste blau = auswendig

**TAXI**

- |   |                         |                |   |
|---|-------------------------|----------------|---|
| 1 | Brakes & steering ..... | - CHECKED..... | 1 |
| 2 | Gyro instruments .....  | - CHECKED..... | 2 |

**TAXI CHECK COMPLETED****ENGINE TEST**

- |   |                    |                                  |   |
|---|--------------------|----------------------------------|---|
| 1 | Warm up time ..... | - CHECKED.....                   | 1 |
| 2 | Run up .....       | - according AFM and page 4 ..... | 2 |

**ENGINE TEST COMPLETED****BEFORE DEPARTURE**

- |    |                                       |                        |    |
|----|---------------------------------------|------------------------|----|
| 1  | Seats.....                            | - LOCKED .....         | 1  |
| 2  | Seat belts / shoulder harnesses ..... | - FASTENED.....        | 2  |
| 3  | Fuel pump.....                        | - ON .....             | 3  |
| 4  | Fuel quantity .....                   | - CHECKED.....         | 4  |
| 5  | Fuel selector .....                   | - FULLEST TANK .....   | 5  |
| 6  | Mixture.....                          | - SET .....            | 6  |
| 7  | Friction.....                         | - SET .....            | 7  |
| 8  | Carburetor heat .....                 | - OFF.....             | 8  |
| 9  | Primer .....                          | - LOCKED .....         | 9  |
| 10 | Magnetos.....                         | - BOTH.....            | 10 |
| 11 | Controls .....                        | - FREE & EASY .....    | 11 |
| 12 | Elevator & Rudder trim .....          | - TAKE OFF .....       | 12 |
| 13 | Flaps .....                           | - TAKE OFF .....       | 13 |
| 14 | Flight instruments .....              | - SET .....            | 14 |
| 15 | Avionic .....                         | - SET .....            | 17 |
| 16 | Takeoff Briefing.....                 | - COMPLETED.....       | 18 |
| 17 | Transponder.....                      | - CODE SET .....       | 18 |
| 18 | Autopilot .....                       | - DISCONNECT .....     | 19 |
| 19 | Door & Stormwindow .....              | - CLOSED & LOCKED..... | 20 |

**READY FOR DEPARTURE****CLIMB**

- |   |                |                |   |
|---|----------------|----------------|---|
| 1 | Flaps .....    | - UP.....      | 1 |
| 2 | Power.....     | - CHECKED..... | 2 |
| 3 | Fuel pump..... | - OFF.....     | 3 |

**CLIMB CHECK COMPLETED****CRUISE**

- |   |                                    |                      |   |
|---|------------------------------------|----------------------|---|
| 1 | Flight- & Engine instruments ..... | - CHECKED.....       | 1 |
| 2 | Fuel.....                          | - CHECKED.....       | 2 |
| 3 | Power.....                         | - SET / CHECKED..... | 3 |

**CRUISE CHECK COMPLETED**

**APPROACH**

1	Approach briefing .....	- COMPLETED .....	1
2	Seats .....	- LOCKED .....	2
3	Seat belts / shoulder harnesses .....	- FASTENED .....	3
4	Flight instruments .....	- SET .....	4
5	Avionic .....	- SET .....	5
6	Autopilot .....	- DISCONNECT .....	6
7	Fuel pump .....	- ON .....	7
8	Fuel quantity .....	- CHECKED .....	8
9	Fuel selector .....	- FULLEST TANK .....	9
10	Mixture .....	- SET .....	10
11	Carburetor heat .....	- AS REQUIRED .....	11

**APPROACH CHECK COMPLETED****FINAL**

1	Flaps .....	- SET .....	1
2	Brakes (pressure) .....	- CHECKED .....	2
3	Brakes .....	- FREE .....	3

**FINAL CHECK COMPLETED****AFTER LANDING**

1	Carburetor heat .....	- OFF .....	1
2	Flaps .....	- UP .....	2
3	Electrical consumers .....	- AS REQUIRED .....	3
4	Transponder .....	- MODE CHECKED .....	4

**AFTER LANDING CHECK COMPLETED****ENGINE SHUT DOWN & PARKING**

1	Electrical consumers .....	- OFF except avionic .....	1
2	Alternator .....	- OFF .....	2
3	Throttle .....	- IDLE .....	3
4	Magnetos grounding .....	- AS REQUIRED .....	4
5	Mixture .....	- CUT OFF .....	5
6	Magnetos .....	- OFF .....	6
7	Avionic .....	- 121.500 TEST .....	7
8	Avionic Master .....	- OFF .....	8
9	Battery .....	- OFF .....	9
10	Flight data .....	- RECORDED .....	10
11	Aircraft .....	- CHOCKED / SECURED .....	11

**PARKING CHECK COMPLETED**

**SPEEDS FOR OPERATION AT MAX. TAKE OFF MASS (MTOM)**

**KIAS**

Rotate .....	FLAPS UP .....	57
Best angle Vx .....	FLAPS UP .....	64
Best rate Vy up to 2000 ft/AGL.....	FLAPS UP .....	76
Cruise climb Vcc above 2000 ft/AGL.....	FLAPS UP .....	87
Initial approach .....	FLAPS 10° .....	80
Intermediate approach.....	FLAPS 25° .....	75
Final approach .....	FLAPS 40° .....	66
Go around .....	before FLAPS UP .....	57
Best glide .....	CLEAN .....	76
Max. demonstrated crosswind .....		17 KT
Max. speed for Flaps .....		102

**POWER SETTINGS**

Take off and climb..... throttle full open  
 Cruise and Cruise Descent.....acc AFM table, 55 - 65 %

**RUN UP**

Engine ..... 2000 RPM  
 Magnetos max. drop / diff ..... 175 / 50 RPM  
 Idle .....500-700 RPM

**POSTFLIGHT**

Refuel standard.....2 cm below Filler Neck = 28 USG/106 lt  
 Refill Oil .....if below 4 QTS to max. 8 QTS

**LOADING**

HB-	Empty mass		Moment [in*lbs]	[kg] cabine load with fuel:			MTOM	
	[lbs]	[kg]		standard	Filler	full	[lbs]	[kg]
PGB	1633	743	142540	338	321	283	2550	1157
PPV	1607	729	140875	352	335	297	2550	1157
PPY	1629	739	142575	342	325	287	2550	1157
PFS	1582	718	136540	363	346	308	2550	1157

**REFUELING**

Standard	28 USG	106 lt	76 kg	168 lbs
Filler Neck	34 USG	129 lt	93 kg	205 lbs
Full	48 USG	182 lt	131 kg	289 lbs

## FIRE ON GROUND

1	Starter .....	- CRANK ENGINE.....	1
2	Mixture .....	- IDLE CUT OFF .....	2
3	Throttle .....	- FULL OPEN.....	3
4	Fuel Pump.....	- OFF .....	4
5	Fuel selector .....	- OFF .....	5
6	Battery / Alternator .....	- OFF .....	6
7	Pax and Crew .....	- EVACUATE .....	7

## FIRE IN FLIGHT

1	Source of fire .....	- IDENTIFY.....	1
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### ELECTRICAL FIRE (Smoke in cabin)

1	Battery / Alternator .....	- OFF .....	1
2	Vents .....	- OPEN .....	2
3	Cabin heat .....	- OFF .....	3

### LAND AS SOON AS PRACTICABLE

### ENGINE FIRE

1	Fuel selector .....	- OFF .....	1
2	Throttle.....	- CLOSED .....	2
3	Mixture .....	- IDLE CUT OFF .....	3
4	Fuel pump.....	- OFF .....	4
5	Cabin heater and defroster.....	- OFF .....	5
6	Elevator trim.....	- SET FOR BEST GLIDE 73 KIAS .....	6

### PREPARE FOR POWER OFF EMERGENCY LANDING

# ENGINE POWER LOSS IN FLIGHT

1	Attitude .....	- BEST GLIDE SPEED 76 KIAS .....	1
2	Fuel selector .....	- SWITCH .....	2
3	Fuel pump .....	- ON .....	3
4	Mixture .....	- RICH .....	4
5	Carburetor heat .....	- ON .....	5
6	Primer .....	- LOCKED .....	6
7	Ignition .....	- BOTH .....	7
8	Engine instruments .....	- CHECK CAUSE OF POWER LOSS .....	8

## When power is restored

9	Carburetor heat .....	- OFF .....	9
10	Fuel pump .....	- OFF .....	10

## If power is not restored

11	Elevator trim .....	- SET FOR BEST GLIDE 76 KIAS .....	11
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## PREPARE FOR POWER OFF EMERGENCY LANDING

# EMERGENCY LANDING

Trimm for best glide speed 76 KIAS

## Locate suitable field

## When the landing field can easily be reached

1	Seat belts / shoulder harnesses	- TIGHT .....	1
2	Fuel selector .....	- OFF .....	2
3	Mixture .....	- IDLE CUT OFF .....	3
4	Throttle .....	- IDLE .....	4
5	Ignition .....	- OFF .....	5
6	Battery / Alternator .....	- OFF .....	6
7	Flaps .....	- FULL DOWN .....	7
8	Speed .....	- REDUCE FOR FINAL APPROACH .....	8

# ALTERNATOR FAILURE

## No Alternator output or Alternator-Warning (Annunciatorpanel) illuminates

- |   |                                 |                       |   |
|---|---------------------------------|-----------------------|---|
| 1 | Alternator Switch .....         | - CHECK ON .....      | 1 |
| 2 | Alternator Circuit breaker..... | - CHECK PUSH IN ..... | 2 |

**if 1 and 2 are checked on/in and still no output**

## ALTERNATOR RECYCLING PROCEDURE

- |   |                            |                           |   |
|---|----------------------------|---------------------------|---|
| 3 | Electrical consumers ..... | - OFF as practicable..... | 3 |
| 4 | Alternator Switch .....    | - OFF .....               | 4 |
| 5 | Alternator Switch .....    | - ON aft. 5-10 sec.....   | 5 |
| 6 | Alternator output.....     | - CHECKED .....           | 6 |

**if still no output**

- |   |                            |                           |   |
|---|----------------------------|---------------------------|---|
| 7 | Electrical consumers ..... | - OFF as practicable..... | 7 |
|---|----------------------------|---------------------------|---|

**Land on the nearest Airport as practicable**

# RADIO FAILURE

## NO RADIOCONTACT WITH TWR / ACC

- |   |                            |                 |   |
|---|----------------------------|-----------------|---|
| 1 | Radio .....                | - ON .....      | 1 |
| 2 | Vol .....                  | - TEST .....    | 2 |
| 3 | Frequency .....            | - CHECKED ..... | 3 |
| 4 | Headset / Mike Plugs ..... | - CHECKED ..... | 4 |

**if still no contact**

**remain outside of Airspace**

## LOSS OF RADIOCONTACT WITH TWR / ACC

- |   |                            |                 |   |
|---|----------------------------|-----------------|---|
| 1 | Radio .....                | - ON .....      | 1 |
| 2 | Vol .....                  | - TEST .....    | 2 |
| 3 | Headset / Mike Plugs ..... | - CHECKED ..... | 3 |

**if still no contact**

- |   |                  |                       |   |
|---|------------------|-----------------------|---|
| 4 | Transponder..... | - 7600 / ALT .....    | 4 |
| 5 | Procedure .....  | - ACCORDING AIP ..... | 5 |

**GROUND PROCEDURES****BEFORE FIRST TAXI**

1	Time (Block off).....	-	TABULATED.....	1
2	Directional Gyro.....	-	SET.....	2
3	Taxi Area.....	-	FREE.....	3

**TAXI**

1	Taxi Light.....	-	ON.....	1
2	Power.....	-	SET.....	2
3	Parking Brake.....	-	RELEASED.....	3

**AFTER FIRST TAXI**

1	Brakes.....	-	CHECKED.....	1
2	Attitude Indicator.....	-	ERECTED / STABLE.....	2
3	Turn Coordinator.....	-	L/R TURNING.....	3
4	Directional Gyro.....	-	L/R TURN: DECREASING/INCREASING.....	4

**STOP**

1	Power.....	-	SET.....	1
2	Parking Brake.....	-	SET.....	2
3	Taxi Light.....	-	OFF.....	3

**LINING UP**

1	Wind (RTF / Windssock).....	-	DIRECTION / SPEED.....	1
2	Runway.....	-	IDENTIFIED.....	2
3	Approach Sector.....	-	FREE.....	3
4	Lights (Landing / Strobe).....	-	ON.....	4

**LINED UP & TAKE OFF**

1	Brakes.....	-	PUSH.....	1
2	Runway & Gyro Heading.....	-	COMPARE.....	2
3	Take Off Power.....	-	SET.....	3
4	Power (min. RPM).....	-	CHECKED.....	4
5	Brakes.....	-	RELEASED.....	5
6	Speed.....	-	RISE.....	6

**PARKING**

1	Time (Block on).....	-	TABULATED.....	1
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**TAKEOFF BRIEFING****Departure**

Wind.....	Richtung, Stärke, Einfluss auf Start
Takeoff procedure .....	Gewicht, Temperatur, Pistenzustand
Speeds.....	Profil & Geschwindigkeit bis 2000 ft AAL
Routing / airspace restrictions.....	Flugweg zum verlassen Flugplatzzone

**Emergency**

Malfunction on Ground .....	Massnahmen vor dem Abheben
Engine failure TO & Climbout.....	erste Massnahmen nach dem Start
Major Malfunction after TO .....	Massnahmen und Flugweg nach dem Start

**APPROACH BRIEFING**

Runway in use, routing .....	Flugweg und Höhengates beim Anflug
Airspace restrictions .....	Einschränkungen auf dem Flugweg
Missed approach.....	Flugweg und Höhen nach einem Durchstart

**FINAL SPEED CALCULATION**

## MASS FACTOR

Speed Reduction on Final

**1 KT per 30 kg below MTOM**

## WIND FACTOR

Speed Increments Final

if windspeed or gust is exceeding 10% of v-FINAL

**Add 1/2 of headwind component to v-FINAL**

## EXAMPLE FINAL-SPEED INCREMENT

v-FINAL	66 KIAS		
v-HEADWIND	6 KT		
Windspeed	below 10% v-FINAL	=> increment 0	=> 66 KIAS
v-FINAL	66 KIAS		
v-HEADWIND	20 KT		
Windspeed	above 10% v-FINAL	=> increment +10 KT	=> 76 KIAS
v-FINAL	66 KIAS		
v-HEADWIND	20 up to 36 KT		
Gustspeed above	10% v-FINAL	=> increment +18 KT	=> 84 KIAS

**FINAL APPROACH SPEED**

=

**v-FINAL - Mass Factor + Wind Factor**

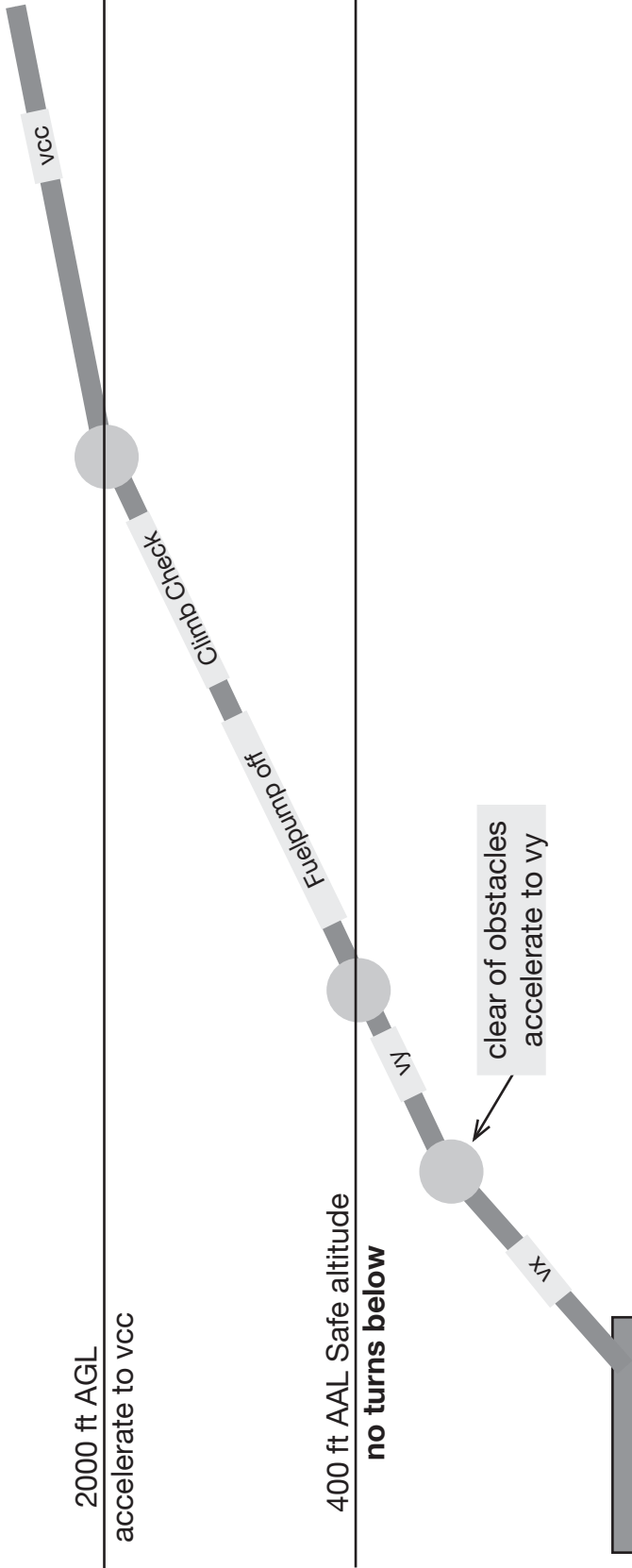
## BANK FACTOR

*if bankangle for turning final is more than 25°***Add 5 KT to v-INTERMEDIATE****FLIGHTPATH CALCULATION**

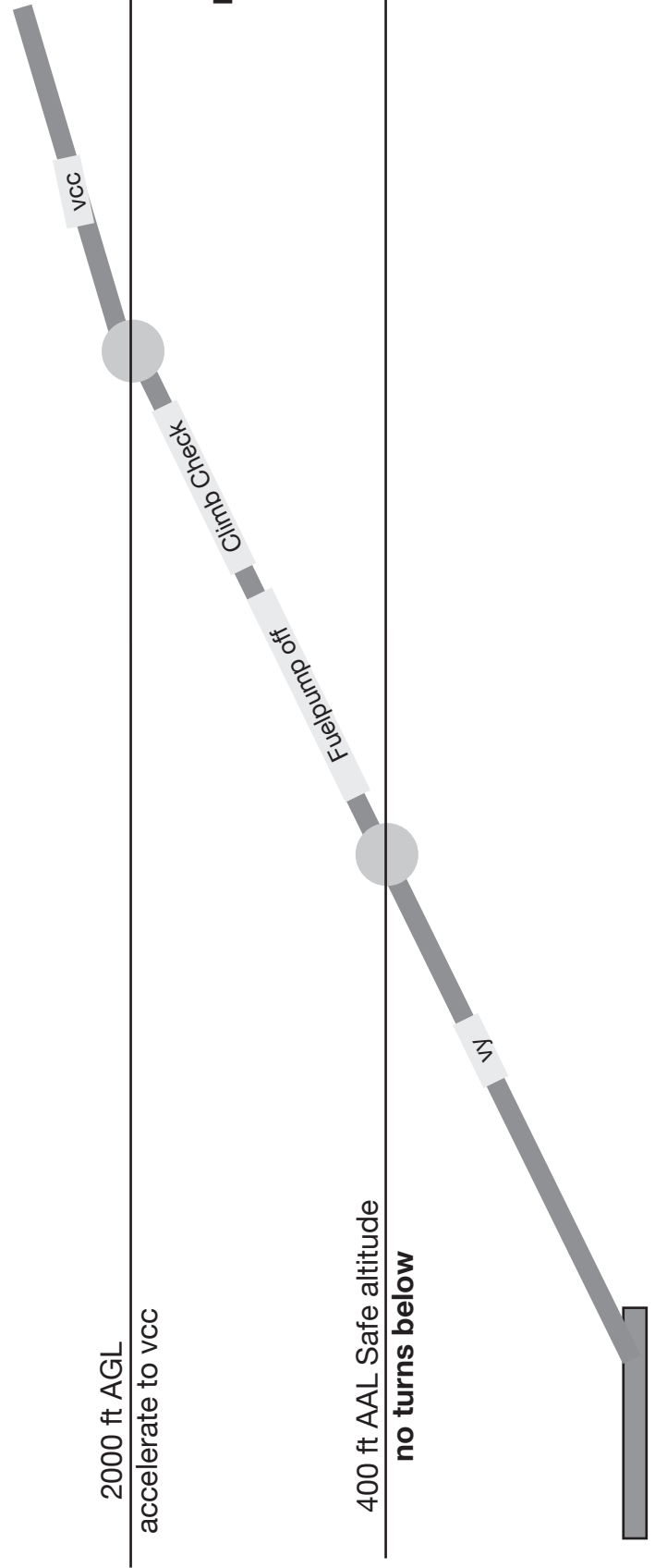
Flight angle	Gradient [ft/nm], [%]	ROD/ROC [ft/min]	ref. RPM (no wind)
3°	300 ft/nm = 5%	GS x 5	1700
4°	400 ft/nm = 7%	GS x 7	1600
5°	500 ft/nm = 9%	GS x 9	1500

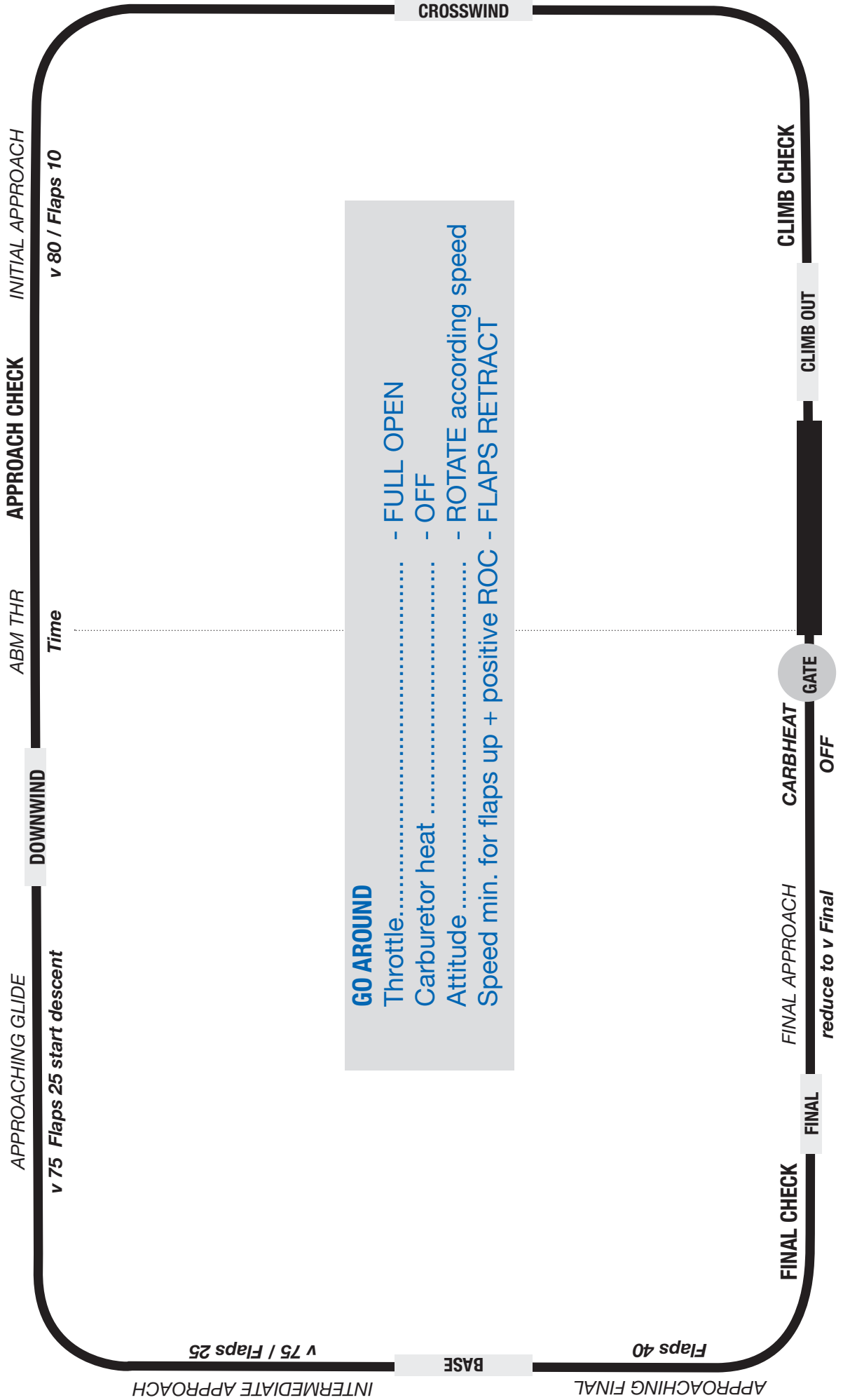
**ROD/ROC[ft/min] = GS [kts] x Gradient [%]**

**Climbout  
with obstacles**



**Climbout  
no obstacles**





Time

INITIAL APPROACH

v 80 / Flaps 10

APPROACH CHECK

ABM THR

DOWNWIND

APPROACHING GLIDE

v 75 Flaps 25 start descent

CROSSWIND

CLIMB CHECK

CLIMB OUT

GATE

CARBHEAT

OFF

FINAL APPROACH

reduce to v Final

FINAL

FINAL CHECK

APPROACHING FINAL

Flaps 40

BASE

INTERMEDIATE APPROACH

v 75 / Flaps 25



**Betriebsgrenzen**

**Der Autopilot darf nicht angewendet werden bei:**

- Airspeed ..... > 140 KIAS
- Flaps ..... > 10° (1. Stellung)
- Go around und missed approach
- Start und Landung

**Emergency**

**Autopilot unterbrechen**

- AP DISC-Switch ..... drücken
- AP-Switch ..... OFF
- BATTERY MASTER..... kurz ausschalten
- AP Sicherung ..... ziehen

**Trimmung unterbrechen**

- TRIM INTR switch ..... drücken und halten
- TRIM switch ..... OFF
- TRIM Sicherung ..... ziehen und TRIM INTR switch loslassen
- Trimmrad ..... von Hand bewegen

**Achtung!**

Damit der Autopilot in den Betriebsarten ALT oder VS benützt werden kann, muss vorher ein horizontaler Modus gewählt sein (CWS, HDG oder NAV).

Damit der Autopilot in den Betriebsarten CWS, ALT oder VS benützt werden kann, muss die elektrische Trimmung eingeschaltet sein!

**Autopilot Selbst-Test**

- RADIO MASTER ..... ON
- AP switch ..... ON

**Während 5 Sekunden werden alle Segmente des AP-Displays angezeigt**

**Nach 5 Sekunden erscheint RDY (ready) oder FAIL (Fehler)**

**oder**

**keine Anzeige, falls Drehzahl des Turn Coordinator zu niedrige**

**Bei FAIL oder keiner Anzeige kann der Autopilot nicht in Betrieb genommen werden!**

**Autopilot ausschalten before Take off**

- AP ..... disconnect
- CONTROLS ..... free and easy
- TRIMM ..... set for Takeoff

**AP-MODI****CWS (control wheel steering)**

Durch drücken des CWS Switch werden die gegenwärtigen Roll und Pitch Lagen durch den AP beibehalten, jedoch wird Roll auf max. 90% eines Standard Turns limitiert. Auf diese Weise können Kreise geflogen werden.

**HDG (GNS 430 auf Mode VLOC)**

Headingbug ..... Heading einstellen  
 HDG Taste ..... drücken.

**AP dreht Flugzeug auf das gewünschte Heading.**

Für ein neues HDG Heading den Bug verstellen (max.  $\pm 150^\circ$  vom aktuellen HDG)

**VS (vertical speed)**

VS Taste ..... drücken  
 mit Drehknopf ROC/ROD ..... einstellen (max  $\pm 1600$  fpm)

**ALT (altitude)**

ALT Taste ..... drücken

**AP hält die momentane Druckhöhe****Höhenkorrekturen mit dem VS-Drehknopf**

Durch drehen in Schritten von  $\pm 20$  ft möglich

**Höhenkorrekturen grösser als  $\pm 360$  ft**

ROD/ROC im VS Mode wählen

**NAV mode**

(Headingbug wird nicht benötigt, HSI liefert li/re und Kurs-Info)

**Standard 45° Intercept**

VOR Frequenz ..... einstellen  
 HSI Track am Anzeigegerät ..... einstellen  
 NAV-Taste ..... drücken

**bei Vollausschlag des CDI macht der AP einen 45° Intercept auf den gewünschten Track**

**Variabler Intercept-Winkel (maximal 45°)**

VOR Frequenz ..... einstellen  
 HSI Track am Anzeigegerät ..... einstellen  
 Headingbug auf Intercept HDG ..... einstellen ( $< 45^\circ$  Abweichung zum Track)  
 HDG und NAV Tasten ..... gleichzeitig drücken

**HDG + NAV wird angezeigt**

**AP fliegt das Intercept-heading und dreht dann auf den Track ein (HDG erlischt)**

**GPS Steering (GPSS) Mode**

GPSS aktivieren ..... NAV-Taste 2x drücken

**NAV und GPSS werden angezeigt**

**CDI und der HDG-Bug haben keine Funktion! GPS steuert direkt den Autopilot.**

**Ausschalten des GPSS-Mode**

NAV od. HDG od. CWS ..... drücken.

**AUTOPILOT NAV-SELECTOR**

GPS im V-LOC- &amp; AP NAV-Mode

**AP fliegt VOR/LOC gem.HSI-Setting**

GPS im GPS- &amp; AP NAV-Mode

**AP fliegt GPS-Signal gem.HSI-Setting**

GPS im GPS- &amp; AP GPSS-Mod

**AP fliegt nur GPS-Signa (HSI / CDI / HDG-Bug ohne Funktion)****Autopilot vollständig testen****Funktion manual electrical trim**

RADIO MASTER-, AP &amp; TRIM Switch . . . . .ON

Electrical Trim . . . . .DN

**Trimrad muss in Richtung Nose DN drehen**

Electrical Trim . . . . .UP

**Trimrad muss in Richtung Nose UP drehen**

Electrical Trim . . . . .UP oder DN

**El. Trim muss bei Betätigen der Handtrimmung stoppen**

Beide Trim-Knöpfe.....einzelnen drücken

**El. Trim darf sich nicht verändern**

während der elektrischen Trimmung TRIM INTR Switch . . . . .drücken

**Elektrische Trimmung darf erst beim Loslassen wieder funktionieren****Funktion auto trim (normale Funktion)**

RADIO MASTER-, AP- &amp; TRIM-switch . . . . .ON

Steuerhorn zentrieren und Tasten HDG und VS . . . . .kurzzeitig drücken

**Display zeigt HDG und VS**

Taste CWS . . . . .drücken und wieder loslassen

**Display zeigt CWS und VS**

Taste CWS . . . . .drücken und gedrückt halten

**Steuer muss frei bewegbar sein**

Taste CWS . . . . .loslassen

**Servos des Autopilot greifen wieder**

Drehknopf VS.....auf ROD+ drehen

**Steuerhorn bewegt sich langsam nach hinten**

Drehknopf VS.....auf ROD- drehen

**Steuerhorn bewegt sich langsam nach vorne**

TRIM INTR switch . . . . .drücken

**AP muss ausschalten**

HDG Mode . . . . .einschalten

**Steuer muss dem Headingbug folgen**

Taste ALT drücken . . . . . Steuerhorn leicht nach hinten ziehen

**nach ca. 3 Sek muss die Trimmung Richtung Nose DN laufen, TRIM blinkt.**

Steuerhorn . . . . . leicht nach vorne drücken

**nach ca. 3 Sekunden muss die Trimmung Richtung Nose UP laufen**

TRIM-switch ..... ausschalten  
Kurs-Pfeil des HSI unter lubber line stellen und Taste NAV ..... drücken  
Kurspfeil ..... links und rechts drehen

**Steuerhorn muss folgen**

Aktive VOR-Station..... einstellen  
Kurspfeil einstellen, so dass CDI 1-2 dots ausgeschlagen ist

**Steuerhorn muss in Richtung der Nadel drehen**

Taste REV ..... drücken

**das Steuerhorn muss entgegengesetzt der Bewegung des Kurspfeils und des CDI bewegen**

TRIM switch..... einschalten

Trimmung UP oder DN ..... betätigen

**AP schaltet aus**

