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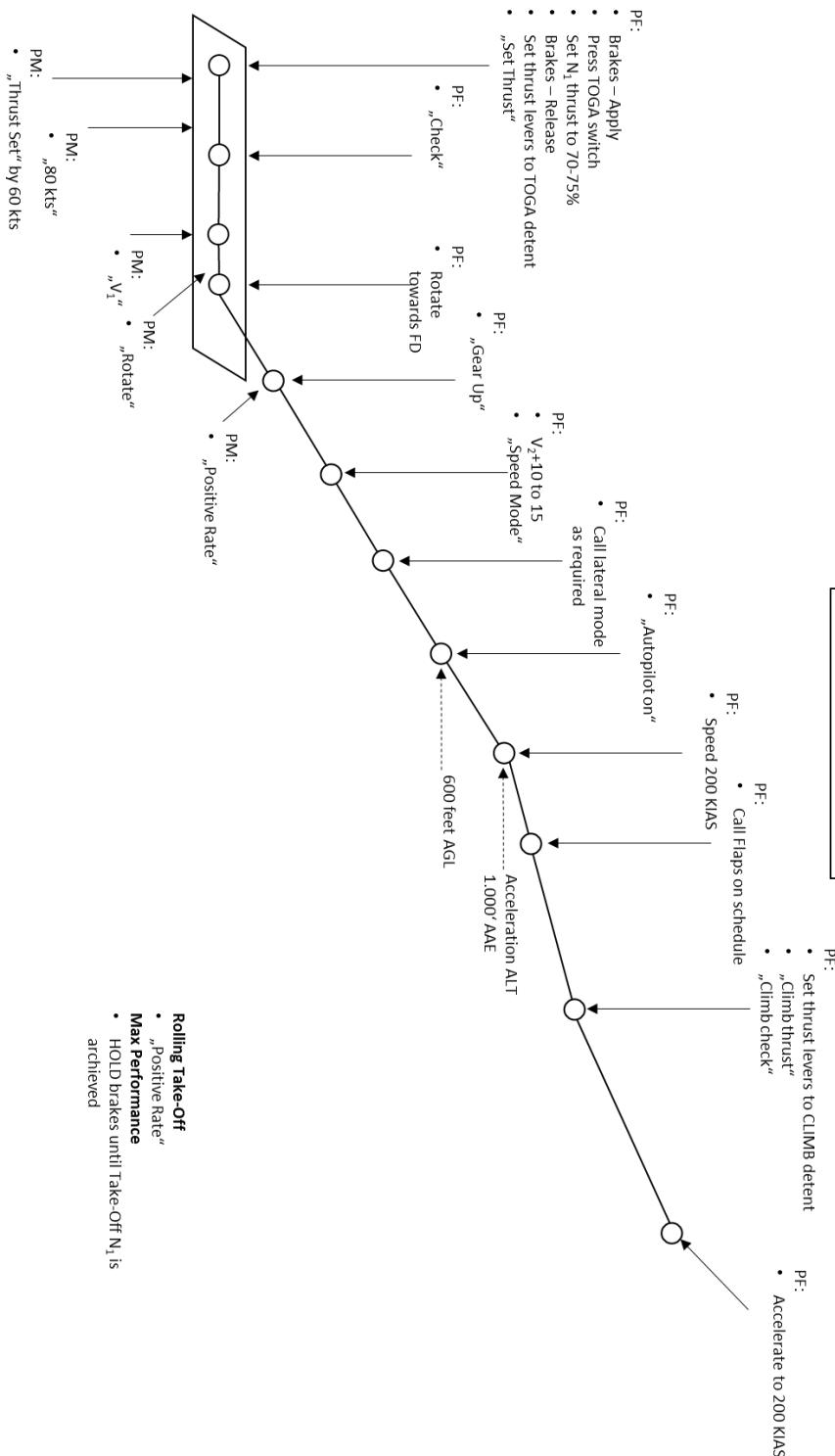
## INTRODUCTION

This Quick Reference Handbook, (QRH), contains checklists and performance tables to be used with Aerosoft / Digital Aviation's representation of the CRJ. This QRH is basically split up in 4 major parts:

- **Procedures:** Graphical representations of how you are supposed to fly a certain set of procedures,
- **Checklists:** The checklists for normal operations,
- **Limitations:** Describes the limitations for the CRJ550, CRJ700ER, CRJ900ER and CRJ1000 in one chapter. In case limitations depend on the aircraft type, the limitations are shown per aircraft type.
- **Aircraft-specific information:** This chapter contains performance charts for the CRJ550/700ER

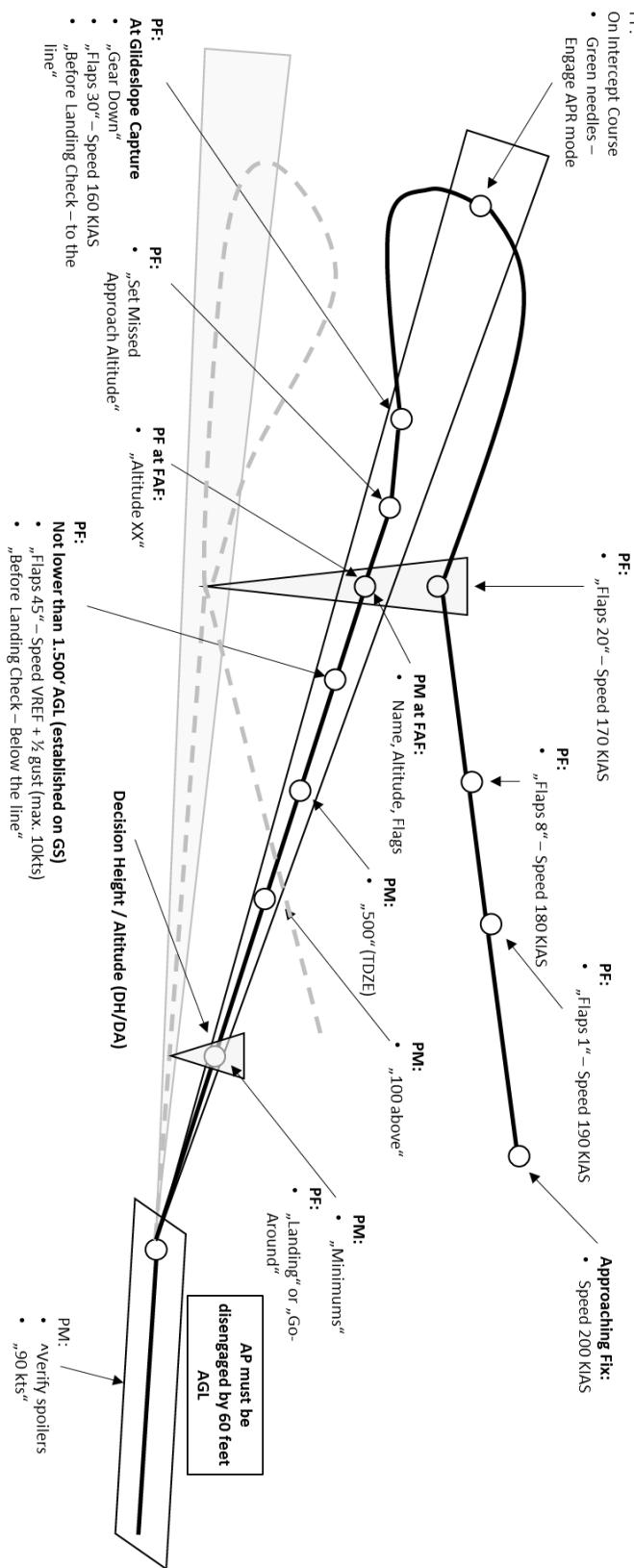
## PROCEDURES

### NORMAL TAKE-OFF



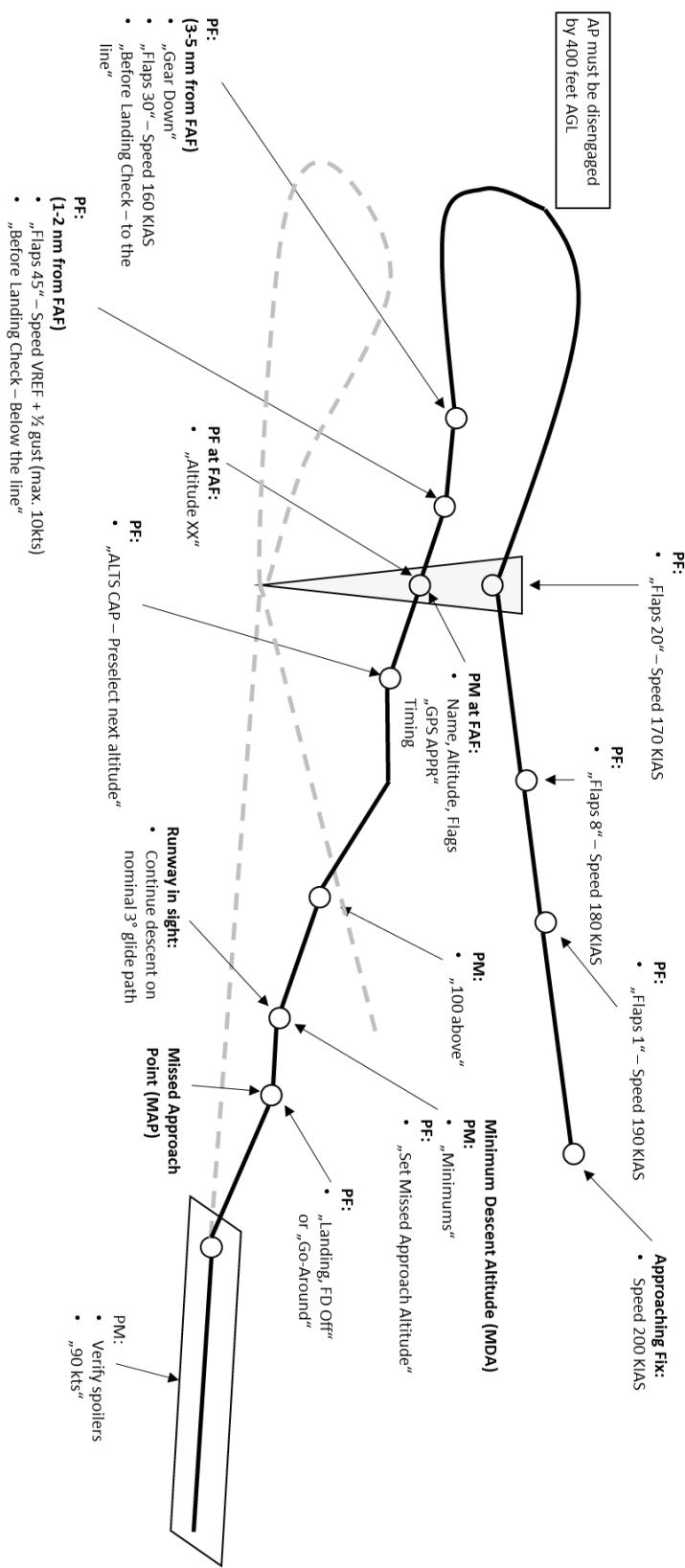
**ILS APPROACH**

**PRECISION (ILS) APPROACH**



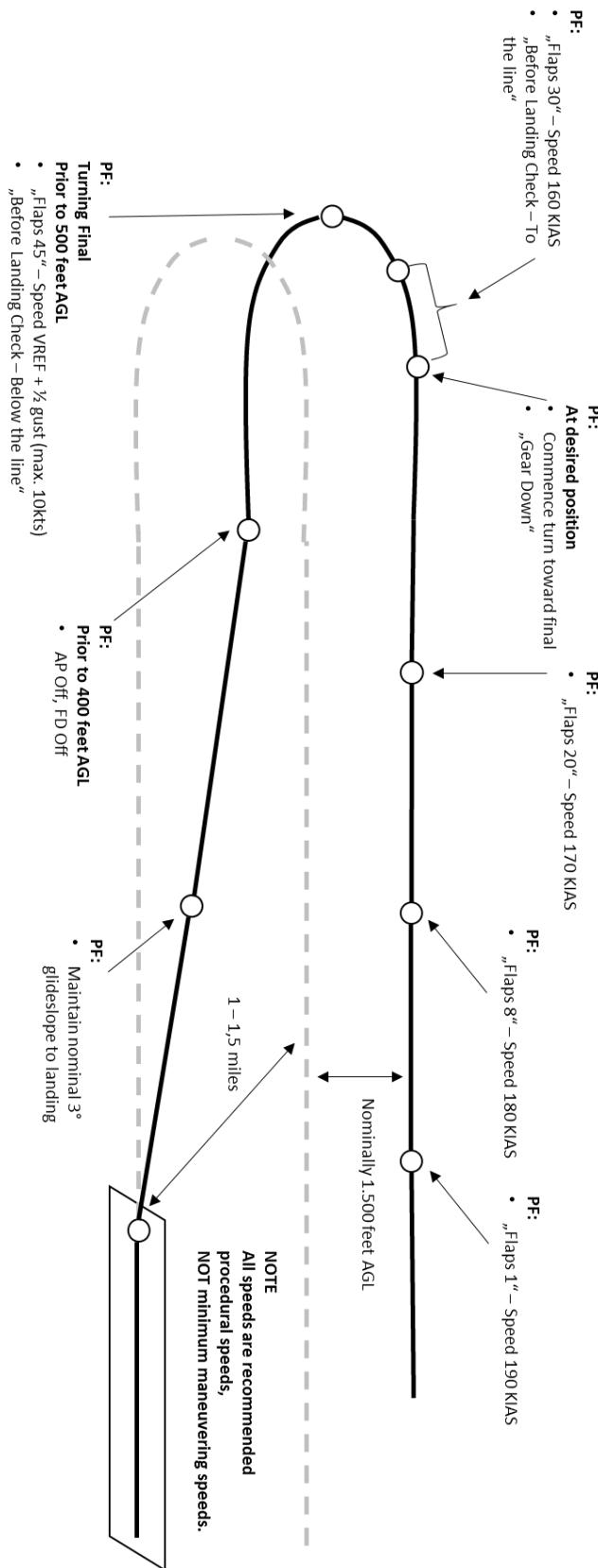
**NON-PRECISION-APPROACH**

**NON-PRECISION APPROACH**



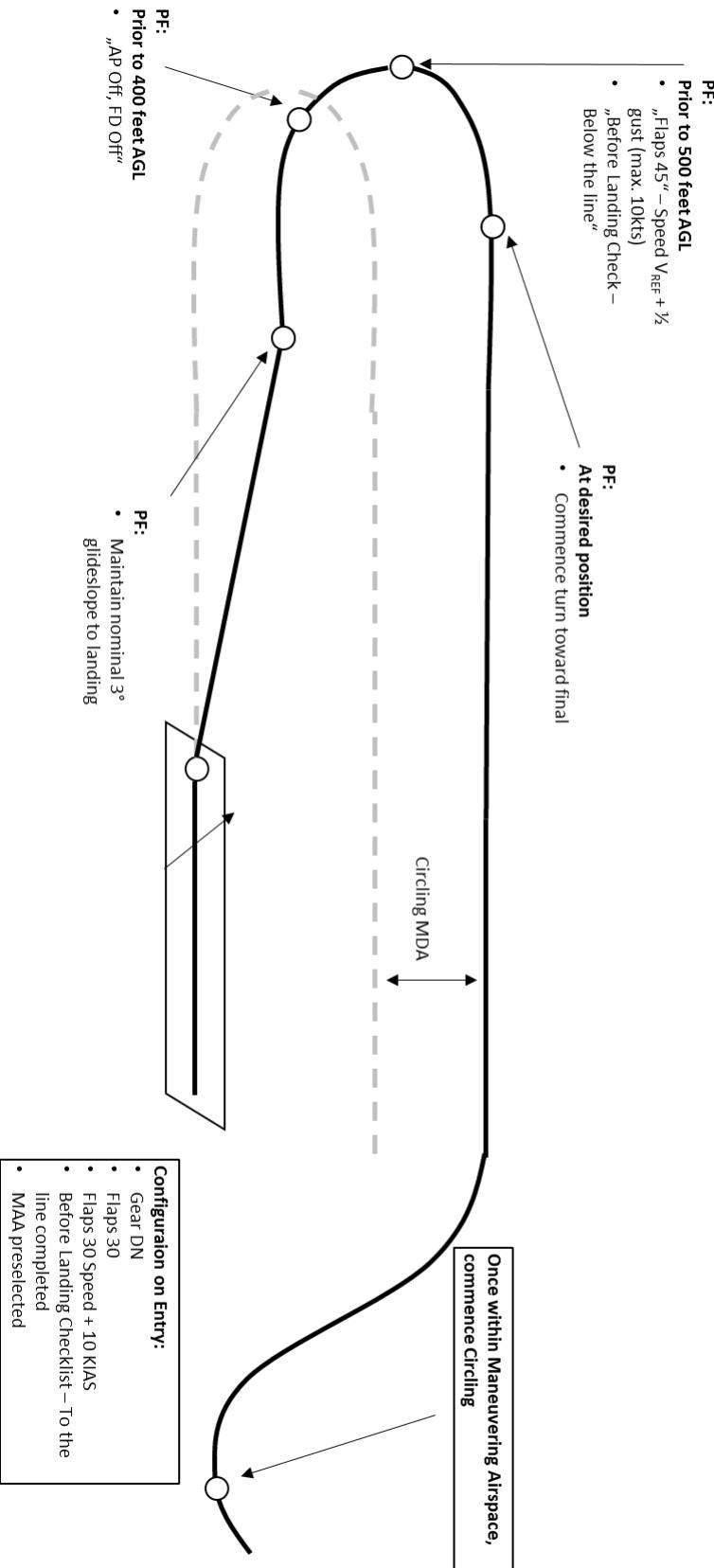
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**STANDARD VISUAL APPROACH**

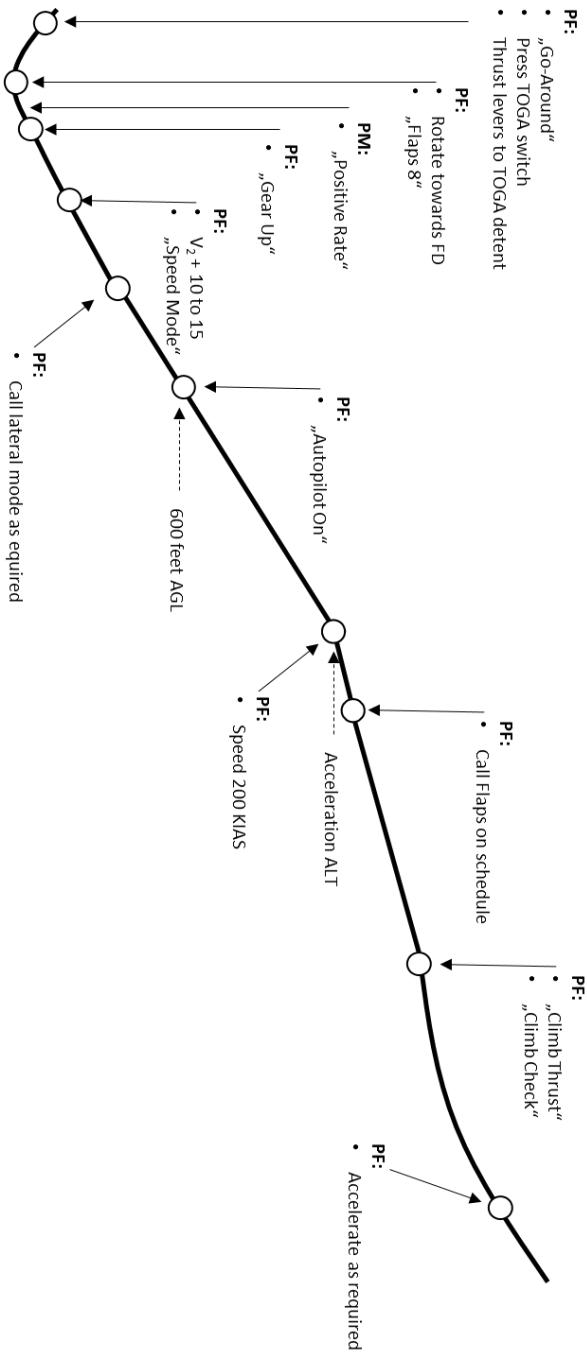


## CIRCLING APPROACH

### CIRCLING APPROACH

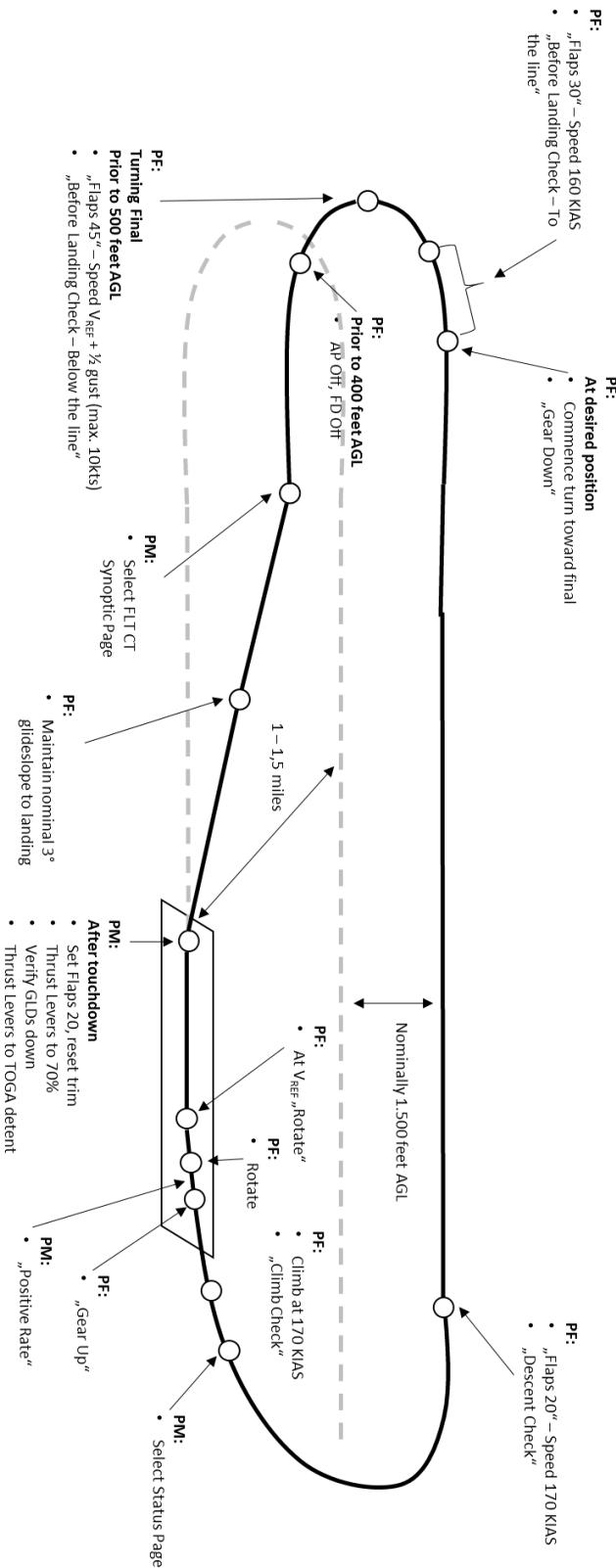


## GO-AROUND



## GO - AROUND

## TOUCH-AND-GO



**CHECKLISTS****PRIOR TO START****SAFETY CHECK**

- 1 Circuit breakers .....CLOSED
- 2 N/W steering switch .....OFF
- 3 Hydraulic pumps .....OFF
- 4 Landing gear lever.....DOWN
- 5 flight spoiler lever .....0
- 6 Slats / flaps lever.....SET (TO ACTUAL FLAP POSITION)
- 7 radar.....OFF
- 8 ADG manual release .....STOWED
- 9 Emergency flap switch .....NORMAL
- 10 Battery master switch.....ON

**Note:** To prevent BLEED MISCONFIG caution messages during APU start, ensure that the wing and cowl anti-ice switches are OFF prior to APU START.

- 11 APU / AC electrics .....AS REQUIRED / ESTABLISHED  
*Do not start APU before firex monitor test is completed*
- 12 IRS .....NAV
- 13 Emergency Equipment.....CHECKED
- 14 Gear and safety pins .....ON-BOARD
- 15 Airplane documents.....CHECKED
- 16 Hydraulic 3A pump .....AS REQUIRED
- 17 FMS initialization .....COMPLETE

**CABIN INSPECTION**

- 1 Cabin inspection .....ACCOMPLISH

**EXTERNAL WALKAROUND**

- 1 walk around inspection .....ACCOMPLISH

---

**ORIGINATING CHECK**

- 1 Internal and external preflight checks.....COMPLETE
- 2 Pedals, seat and harness.....ADJUSTED
- 3 Crew oxygen and masks.....CHECKED / QUANTITY  
*only first flight of the day*
- 4 Audio warning panel.....CHECKED
- 5 Electrical power panel .....CHECKED
- 6 Fire detection / firex monitor test .....COMPLETE  
*only first flight of the day*
- 7 External lights panel .....CHECKED
- 8 Fuel panel .....CHECKED
- 9 Bleed air panel.....CHECKED
- 10 APU panel .....AS REQUIRED
- 11 Start panel.....CHECKED
- 12 Hydraulic panel .....CHECKED
- 13 ELT switch.....ARM / RESET
- 14 CABIN PRESS panel .....CHECKED
- 15 Air conditioning panel.....CHECKED
- 16 Ice detector tests .....COMPLETE  
*only first flight of the day*
- 17 WSHLD switches .....LOW
- 18 EMER LTS switch .....ARM
- 19 Standby compass .....CHECKED
- 20 STALL test .....COMPLETE  
*only first flight of the day*
- 21 N/W STRG switch .....OFF
- 22 Clocks .....SET
- 23 EFIS Control panels .....CHECKED
- 24 Instrument panels.....CHECKED
- 25 EICAS and Standby instrument .....CHECKED
- 26 Anti-Skid test .....COMPLETE  
*only first flight of the day*
- 27 MLG BAY OVHT TEST .....COMPLETE  
*only first flight of the day*
- 28 Upper pedestal .....CHECKED
- 29 Thrust lever quadrant .....CHECKED

- 30 Avionics .....CHECKED  
31 Trims .....CHECKED  
32 YAW DAMPER.....ENGAGE  
33 Source Select panel.....NORM  
34 Lower pedestal.....CHECKED

---

**BEFORE START CHECK**

- 1 PASS SIGNS.....ON  
2 LDG ELEV .....SET  
3 BOOST PUMPS .....ON / Checked  
Monitor centre tank quantity for not less than 10 minutes' centre tank fuel  
quantity must not increase by more than 68kg (150lb) after both boost pumps are  
selected on
- 4 Altimeters .....SET  
5 FMS / IRS .....SET  
6 Radios and Nav aids .....SET FOR DEPARTURE  
7 take-off briefing .....COMPLETE

---

**CLEARED TO START CHECK**

- 1 APU / AC electrics .....ON / CHECKED  
2 Papers .....ON BOARD  
3 Take-off data .....SET  
4 Doors.....CLOSED / LOCKED  
5 Beacon .....ON  
6 Fuel pumps and quantity .....ON (QTY)  
7 Hydraulic pumps .....AUTO / ON  
8 Parking brake .....AS REQUIRED

**Note:** Releasing the parking brake and turn off nose wheel steering if push-back is required.  
Audio and visual communications with the ground crew must be maintained always during  
push-back.

- 9 Engines.....START  
10 Fuel Feed Check Valve test .....COMPLETE  
First flight of the day

**PRIOR TO TAKE-OFF**

**AFTER START CHECK**

**Note:** Do not accelerate engine until oil pressure is in the normal operating range.

- 1 GEN 1 and GEN 2 ..... AUTO
- 2 BLEED valves and packs ..... AUTO / ON
- 3 Anti-Ice ..... AS REQUIRED
- 4 Probes ..... ON
- 5 Electrics ..... CHECKED
- 6 Rudder ..... CHECKED
- 7 N/W STRG ..... ARMED

**TAXI CHECK**

**Note:** At airports where runway structural repair or debris is known to exist, use thrust reversers with extreme caution to preclude the possibility of foreign object damage (fod) from occurring.

- 1 Flaps ..... \_\_\_\_ ° INDICATING
- 2 Flight controls ..... CHECKED
- 3 Trims ..... GREEN AND \_\_\_\_ °
- 4 Thrust reversers ..... ARMED
- 5 Flight instruments ..... CHECKED
- 6 FMS ..... AUTOTUNE
- 7 BRAKE TEMP ..... CHECKED

**BEFORE TAKE-OFF CHECK**

- 1 Lights and strobes ..... AS REQUIRED
- 2 Fuel, XFLOW ..... MAN AND OFF
- 3 IGNITION / ANTI-ICE ..... AS REQUIRED
- 4 Flight attendant ..... ADVISED
- 5 Transponder / TCAS ..... ON / AS REQUIRED
- 6 Radar / terrain display ..... AS REQUIRED
- 7 CAS ..... CHECKED AND CLEARED

## AFTER TAKE-OFF

### CLIMB CHECK

- 1 Fuel, XLFOW.....AUTO
- 2 Bleeds and APU.....SET
- 3 Lights and PASS SIGNS .....AS REQUIRED
- 4 Thrust reversers .....OFF
- 5 CAS .....CHECKED AND CLEARED

## PRIOR TO LANDING

### DESCENT CHECK

- 1 LDG ELEV.....SET
- 2 Fuel .....CHECKED
- 3 TCAS .....AS REQUIRED
- 4 Radar .....AS REQUIRED
- 5 Terrain display .....AS REQUIRED
- 6 CAS .....CHECKED AND CLEARED
- 7 Landing data .....SET
- 8 Approach briefing .....COMPLETE

### APPROACH CHECK

- 1 Altimeters .....\_\_\_\_ . \_\_\_\_ SET
- 2 APU and Bleeds.....SET
- 3 Lights and PASS SIGNS .....AS REQUIRED

### BEFORE LANDING CHECK

- 1 Flight attendant .....ADVISED
- 2 PASS SIGNS.....ON
- 3 Thrust reversers .....ARMED
- 4 LDG GEAR.....DN / DOWN
- 5 Flaps .....\_\_\_\_ ° INDICATING

## GO-AROUND PROCEDURE

**Caution:** A go-around manoeuvre should not be attempted after the thrust reverser have been deployed.

**Note:** The minimum fuel quantity for go-around is 272kg (600lb) per wing (with the airplane level) and assuming a maximum airplane climb attitude of 10° nose up.

- 1 Radios and nav aids .....SET FOR GO AROUND
- 2 Thrust Levers / TOGA switch.....ADVANCE TO TOGA / PRESS  
Advance thrust levers to the TOGA detent, then press TOGA switch
- 3 Airplane.....ROTATE SMOOTHLY TOWARDS THE FLIGHT DIRECTOR BAR
- 4 Flaps .....8
- 5 Pitch attitude .....ADJUST TO ACHIEVE AN AIRSPEED OF  $V_{2GA}+10$  OR HIGHER AS FLAPS ARE RETRACTED TO 8°

When positive rate of climb is achieved:

- 6 Landing gear .....RETRACT / UP
- 7 Airspeed .....MAINTAIN  $V_{2GA}+10$  OR HIGHER
- 8 Normal climb out procedures.....ACCOMPLISH

## AFTER LANDING

### AFTER LANDING CHECK

- 1 APU .....AS REQUIRED
- 2 Transponder / radar .....STBY / OFF
- 3 Flaps .....UP
- 4 Lights and strobes .....AS REQUIRED
- 5 Probes .....OFF

### SHUTDOWN CHECK

**Caution:** Inform ground crew of 'hot' brakes condition as soon as possible.

**Note:** Thrust reversers must be stowed prior to engine shutdown.

- 1 Chocks and Brakes .....AS REQUIRED
- 2 Electrics .....SET
- 3 Fuel and Check valve test .....COMPLETE
- 3 Thrust levers .....SHUT OFF
- 4 Seat Belts .....OFF
- 5 ANTI ICE .....OFF
- 6 Fuel pumps .....OFF
- 7 Hydraulic 3A pump .....AS REQUIRED
- 8 Beacon .....OFF
- 9 N/W STRG switch .....OFF

---

**TERMINATING CHECK**

- 1 Chocks and Brakes .....IN / OFF
- 2 IRS .....OFF
- 3 Thrust levers .....OFF
- 4 EMER LTS switch .....OFF
- 5 WSHLD switch .....OFF
- 6 AFT CARGO switch .....OFF
- 7 HYDRALIC pumps .....OFF
- 8 EXTERNAL LTS switches.....OFF
- 9 APU START / STOP .....OFF
- 10 APU PWR FUEL.....OFF
- 11 DC SERVICE switch .....OFF
- 12 BATTERY MASTER switch .....OFF
- 13 DOME LIGHT switch.....OFF
- 14 Boarding lights .....OFF

## LIMITATIONS

The CRJ is certified for day and night operation, VFR, IFR and flight in icing conditions.

### STRUCTURAL WEIGHT LIMITATIONS

The simulated aircraft in this package are the CRJ550 and CRJ700ER.

	CRJ550		CRJ700ER	
<b>Maximum passengers</b>	50		70	
<b>Empty Weight</b>	19'931 kg	43'940 lbs	20'290 kg	44'731 lbs
<b>Dry Operating Weight</b>	20'290 kg	44'731 lbs	20'752 kg	45'750 lbs
<b>Maximum zero fuel weight (MZFW)</b>	26'762 kg	59'000 lbs	28'259 kg	62'300 lbs
<b>Maximum Payload</b>	7'051 kg	15'545 lbs	8'190 kg	18'055 lbs
<b>Cargo Weight</b>	2'438 kg	5'375 lbs	2'438 kg	5'375 lbs
<b>Maximum Ramp Weight</b>	29'937 kg	66'000 lbs	34'133 kg	75'250 lbs
<b>Maximum take-off weight (MTOW)</b>	29'484 kg	65'000 lbs	34'019 kg	75'000 lbs
<b>Maximum landing weight (MLW)</b>	27'670 kg	61'000 lbs	30'391 kg	67'000 lbs

	CRJ900ER		CRJ1000	
<b>Maximum passengers</b>	90		100	
<b>Empty Weight</b>	21'432 kg	48'000 lbs	23'474 kg	51'751 lbs
<b>Dry Operating Weight</b>	22'131 kg	48'790 lbs	24'494 kg	54'000 lbs
<b>Maximum zero fuel weight (MZFW)</b>	31'751 kg	70'000 lbs	35'154 kg	77'500 lbs
<b>Maximum Payload</b>	9'907kg	21'840lbs	11'966 kg	26'380lbs
<b>Cargo Weight</b>	2'756kg	6'075lbs	3'257 kg	7'180lbs
<b>Maximum Ramp Weight</b>	37'735kg	82'750lbs	41'867 kg	92'300lbs
<b>Maximum take-off weight (MTOW)</b>	37'421kg	82'500lbs	41'640 kg	91'800lbs
<b>Maximum landing weight (MLW)</b>	33'340kg	73'500lbs	36'968 kg	81'500lbs

## OPERATING LIMITATIONS (ALTITUDE AND TEMPERATURE)

- Maximum airport pressure altitude for take-off and landing is 8'000 feet
- Maximum operating altitude is 41'000 feet
- Maximum ambient air temperature approved for take-off and landing is ISA+35°C
- Minimum ambient temperature approved for take-off is -40°C (-40 °F)

## OPERATION IN ICING CONDITIONS

The anti-ice system must be activated when encountering icing conditions. Ice being detected by the ice detector or visible moisture like fog, clouds, any form of precipitation and TAT of 10°C and less require the activation of the anti-ice systems, except the SAT is -40°C (-40°F) or below.

## COWL ANTI-ICE SYSTEM

**Ground Operations:** OAT of 10°C (50°F) or below and visible moisture in any form (fog with visibility of 1,500 meters (one mile) or less, rain, precipitation), or operating on contaminated (snow, rain, slush, ...) runways/aprons/taxiways require the COWL anti-ice system to be activated.

**Flight Operations:** The cowl anti-ice system must be activated in the following two cases; when in icing conditions, or in case ICE accumulation is annunciate by the ice detection system.

## WING ANTI-ICE SYSTEM

**Ground Operations:** OAT of 5°C (41°F) or below and visible moisture in any form (fog with visibility of 1,500 meters (one mile) or less, rain, precipitation), or operating on contaminated (snow, rain, slush, ...) runways/aprons/taxiways require the WING anti-ice system to be activated.

**Flight Operations:** The wing anti-ice system must be ON when ICE is annunciated by the ice detection system, or when in icing conditions and the airspeed is less than 230 KIAS.

Do not hold in icing conditions with the flaps / slats extended.

## RUNWAY SLOPES

The maximum runway slopes approved for take-off and landing are: +2% (uphill) -2% (downhill).

## TAILWIND CONDITIONS

The maximum tailwind component approved for take-off and landing is 10kts.

## MINIMUM FLIGHT CREW

The minimum flight crew is one Captain and one First Officer.

**MAXIMUM OCCUPANTS**

The total number of passengers carried shall not exceed:

CRJ550	50
CRJ700ER	70
CRJ900ER	90
CRJ1000	100

**CARGO**

Flight must be within 60 minutes of a suitable airport, if cargo is carried in either cargo compartment

**POWER PLANT**

Type: General Electric CF34-8C5B1

**ENGINES INDICATIONS**

The engine limit display markings on the EICAS must be adhered to in any case.

Depending on the customer and the respective settings displayed on the EICAS might differ and be more conservative from the limitations described here. The indications on the EICAS must be used nevertheless.

**RED** – indicates maximum and minimum Limitations

**AMBER** - caution range

**GREEN** - Normal operating range

CF34-8C5B1			
Indication	Red	Amber	Green
<b>N<sub>1</sub> % RPM</b>	99,5	-	0 to 99,4
<b>N<sub>2</sub> % RPM</b>	99,4	-	0 to 99,3
<b>ITT °C</b>	Variable*	-	Variable*
<b>OIL TEMP°C</b>	164	156 to 163	-40 to 155
<b>OIL PRESS psi</b>	0 to 24	Variable	Variabe

\*The respective ITT limit will be calculated automatically and displayed on the EICAS.

**THRUST MANAGEMENT DATA**

The crew must verify, that the target  $N_1$  values stay within  $\pm 1.0\%$  tolerance of the values provided on the thrust setting charts. See the respective sections in the performance chapter of this QRH.

**ENGINE WARM-UP**

The engine is supposed to be run in IDLE until oil pressure reaches the normal operating range.

The following 2 minutes after engine start  $N_1$  may not exceed 75% unless all operating indications are in normal range already.

## Engine operating limits

Limit	Ground Start	Assisted Air Start	Windmill Start	Idle	Max. Continuous	Normal Take-off (TOGA)	APR (Max Power)
$N_1$	-	-	-	20 - 25%	99,50%	99,50%	99,50%
ITT	815°C	815°C	927°C	-	960°C	923°C (2 min)	1'006°C (2 min)
$N_2$	0-45%	0-45%		55-65%	98,00%	99,40%	99,40%
Oil Temp	-40°C (minimum)				155°C	163°C (15 min)	163°C (15 min)
Oil Press	182 psi 95 psi (after 10 min)	182 psi 95 psi (after 10 min)	182 psi 95 psi (after 10 min)	25-60 psi 25--95 psi (oil temp < 60 °C)	45-95 psi	45-95 psi	45-95 psi
Minimum Oil Level for Flight	40% minimum with affected engine not started	-	-	-	-	-	-

- [1] Normal take-off power and Maximum power (two engines) is limited to 5 minutes.
- [2] APR power (one engine) is limited to 10 minutes.
- [3] ITT must be below 120°C before attempting to ground start engine.
- [4] Maximum oil pressure is limited to 156 psi when oil temperature transient is less than 60°C.
- [5] Oil pressures (above IDLE) between 25 psi and 45 psi require oil temperature monitoring.
- [6] Oil pressure should show positive value during start and may peak beyond 182 psi (max display value). Oil pressures above 182 psi are displayed as amber dashes. Oil pressure may be greater than 95 psi for a maximum of 10 minutes.
- [7] For further details, refer to the Airplane Operating Manual
- [8] ITT must be below 90°C before attempting to air start engine.

---

**CONTINUOUS ENGINE IGNITION**

Continuous engine ignition must be activated when encountering either of the following conditions:

- Take-offs and landings on contaminated runways
- Flight through moderate or heavier intensity rain
- Flight through moderate or heavier intensity turbulence
- Flight near thunderstorms.

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**STARTER CRANKING LIMITS**

The starter may not be used if indicated N<sub>2</sub> rpm exceeds 45%. The engine starters may not be activated longer than certain time limits. The time limits are shown on the following tables.

**ENGINE START (GROUND)**

<b>START</b>	<b>MAX TIME ON</b>	<b>FOLLOWED BY</b>
1 & 2	90 seconds	10 seconds cool down
3 through 5	90 seconds	5 minutes cool down

**ENGINE START OR MOTORING (IN FLIGHT)**

<b>START</b>	<b>MAX TIME ON</b>	<b>FOLLOWED BY</b>
1	120 seconds	10 seconds cool down
2 through 5	60 seconds	5 minutes cool down

**MOTORING (GROUND)**

<b>START</b>	<b>MAX TIME ON</b>	<b>FOLLOWED BY</b>
1	90 seconds	5 minutes cool down
2 through 5	30 seconds	5 minutes cool down

**ENGINE RELIGHT**

RELIGHT TYPE	ENVELOPE	
	CRJ550/CRJ700ER	CRJ900ER/CRJ1000
Wind milling	Altitude from 21'000 feet to 10'000 feet: Speed 290 KIAS to V <sub>MO</sub> and 7.2% N <sub>2</sub> minimum.	Altitude from 25'000 feet to sea level: Speed 250 KIAS to V <sub>MO</sub> and 7.2% N <sub>2</sub> minimum.
Wind milling	Altitude from 10'000 feet to sea level: Speed 250 KIAS to V <sub>MO</sub> and 7.2% N <sub>2</sub> minimum.	
Starter-assisted	Altitude from 21'000 feet to sea level: Speed from V <sub>REF</sub> up to V <sub>MO</sub> and from 0 to 45% N <sub>2</sub> .	
All-Engine-Out Rapid Relight	Altitude from 10'000 feet to sea level: FADEC rapid relight capability has been demonstrated at 200 KIAS for up to 15-second fuel interruptions	

**FUEL**

The maximum permissible fuel imbalance between main left tank and the main right tank:

- During Take-off: 136 kg (300 lb)
- All other phases of flight: 363 kg (800 lb)

As soon as a tank's quantity indicator reads zero fuel, the remaining fuel is **not useable**.

The following table shows the maximum useable fuel quantity per tank (based on 6.75 lb per US gal, and 2'046 lb per kg conversion factors):

	Pressure Refueling	Gravity Refueling
<b>Left main tank</b>	3'398 kg (7,492 lb)	3'306 kg (7,290 lb)
<b>Right main tank</b>	3'398 kg (7,492 lb)	3'306 kg (7,290 lb)
<b>Centre tank</b>	2'091 kg (4,610 lb)	
<b>Total</b>	8'887 kg (19'594 lb)	6'612 kg (14'580 lb)

**Take-off with a fuel load more than 227 kg (500 lb) in the centre tank is only permitted under certain conditions:**

- each main wing tank is above 1'996 kg (4'400 lb), or
- each main wing tank is above 907 kg (2'000 lb), and
- the allowable zero fuel weight is reduced by the weight of the fuel in the centre tank more than 227 kg (500 lb); and
- the centre of gravity (CG) in this configuration is verified to be within the allowable CG envelope as calculated from the Load sheet.

The minimum fuel quantity for go-around is 272 kg (600 lb) per wing (with the aircraft level) and assuming a maximum aircraft climb attitude of 10 degrees nose up.

**FUEL TEMPERATURE**

- Take-off with engine fuel temperature indications below 5°C (41 °F) is prohibited.
- Take-off with bulk fuel temperature indications below the limits stated is prohibited.
- During flight, bulk fuel temperature must remain above the applicable bulk fuel freezing point.

<b>FUEL</b>	<b>BULK FUEL TAKE-OFF LIMIT MINIMUM TEMPERATURE</b>	<b>BULK FUEL FREEZING POINT</b>
<b>ASTM D 1'655 Jet A</b>	-30°C	-40°C
<b>ASTM D 1'655 JET A1</b>	-37°C	-47°C

**FUEL CROSSFLOW**

Powered crossflow and gravity crossflow must be off for take-off.

**AUXILIARY POWER UNIT, APU**

TYPE: Allied Signal RE 220 (RJ)

MAXIMUM RPM: 106%

**STARTING:**

1. Minimum ambient temperature for starting a cold soaked APU on the ground is -40°C
2. Maximum EGT (dependent upon altitude and temperature): 692 °C to 1'038 °C
3. Maximum amount of start attempts in one hour: 3

A two-minute delay must be observed between cranking attempts to allow for cooling of starter and starter contactor and for APU drainage.

**OPERATING RANGE:**

- Maximum EGT on ground: 682°C to 789 °C
- Maximum EGT in flight: 773 °C to 806 °C
- Maximum EGT: 1'038°C (not to be exceeded under any conditions).

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**APU BLEED AIR****APU BLEED AIR LIMITATIONS**

<b>System / Condition</b>	<b>Limitation</b>
Bleed air extraction	not permitted above 25'000.
Engine-start during ground operations	No bleed air extraction limitation. Each engine may be started using the APU as a bleed air source.

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**APU GENERATOR**

The maximum permissible load on the APU generator is 40 kVA.

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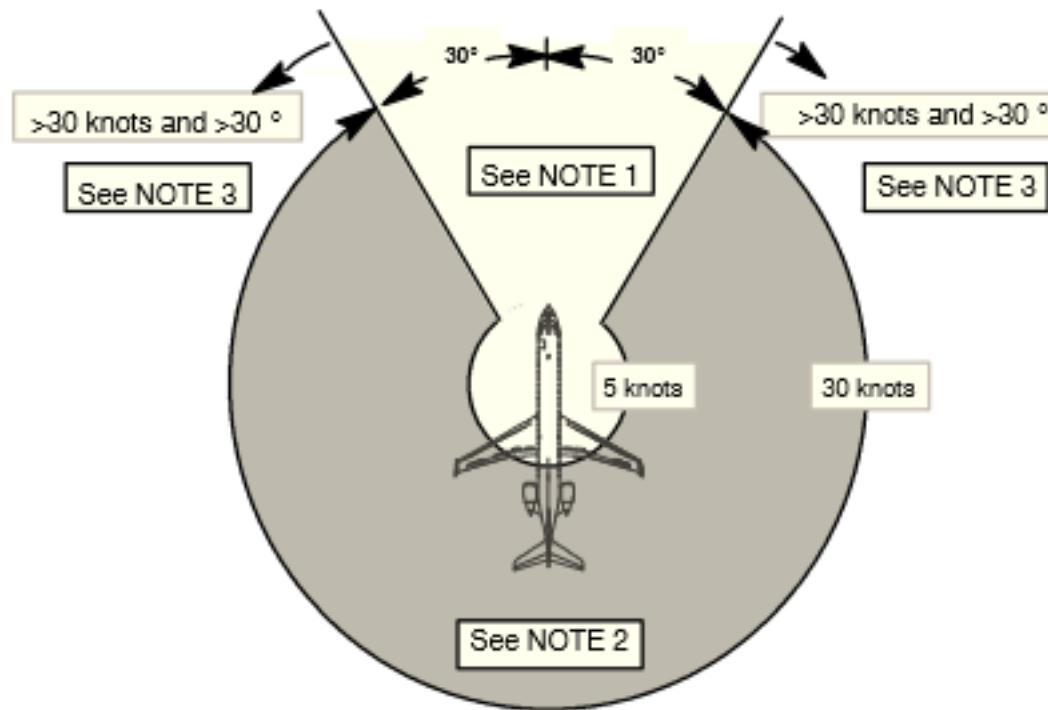
**APU INDICATIONS**

The APU limit display markings on the EICAS must be used to determine compliance with the maximum limit and precautionary ranges. If EICAS markings show more conservative limitation those specified below, the limit markings on the EICAS should be used.

<b>INDICATION</b>	<b>RED</b>	<b>GREEN</b>
APU EGT °C	807	0 to 806
APU % RPM	107	0 to 106

## ENGINE OPERATING PROCEDURE LIMITS DUE TO WIND

Wind and fan speed limitations as shown in the illustration below must be observed:



	Wind Condition	Limitation
NOTE 1	Within 30° on either direction of the airplane nose; no wind speed limit OR >30° in either direction of the airplane nose; <5 knots wind speed.	No limitation – TOGA thrust may be applied before brakes released.
NOTE 2	>30° in either direction of the airplane nose, between 5 and 30 knots wind speed	Apply maximum of 75% N1 before brakes released, then TOGA thrust.
NOTE 3	>30° in either direction of the airplane nose; >30 knots wind speed	Apply maximum of idle / taxi thrust before brakes released, then TOGA thrust.

## OPERATING SPEEDS

The maximum operating speed is not to be exceeded during any phase off light (i.e. climb, cruise, descent).

### RVSM MAXIMUM CRUISE MACH NUMBER

The maximum cruise MACH number when operating in RVSM airspace: 0.83.

### DESIGN MANEUVERING SPEED

Full deflection of rudder and aileron, or manoeuvres that involve angles of attack near the stall, must be performed at speeds below  $V_A$ .

Avoid large and alternating control inputs, especially in combination with large changes in pitch, roll, or yaw large side slip angles) as they may cause structural failure at any speed, including below  $V_A$ .

### FLAPS EXTENDED SPEED

The maximum speeds at which the flaps may be extended are:

- FLAPS 1: 230 KIAS
- FLAPS 8: 230 KIAS
- FLAPS 20: 230 KIAS
- FLAPS 30: 185 KIAS
- FLAPS 45: 170 KIAS

### MAXIMUM LANDING GEAR OPERATING SPEED

- Maximum speed to extend the landing gear is: 220 KIAS
- Maximum speed to fly with landing gear extended and locked: 220 KIAS
- Maximum speed at which the landing gear needs to be retracted: 200 KIAS

### TIRE LIMIT SPEED

The tire limit on the ground is:

CRJ550 / CRJ700ER 182 kts  
CRJ900ER/CRJ1000: 195 kts

### MAXIMUM AIRSPEED FOR ADG OPERATION

The maximum speed to operate the Air Driven Generator, ADG  $V_{MO}$  /  $M_{MO}$ .

### TURBULENCE PENETRATION SPEED

The maximum airspeed for turbulence penetration: 280 KIAS or 0.75 Mach, (whichever is higher).

**MINIMUM OPERATING LIMIT SPEED**

As soon as the stick shaker is activated a further speed reduction is prohibited.

**WINDSHIELD WIPER OPERATION**

Maximum windshield wiper operation speed: 250 KIAS.

In case the windshield wiper has failed in a non-parked position, the airplane speed must not exceed 250 KIAS.

To prevent the wipers from jamming using the INT mode is prohibited.

**MANEUVERING LOADS****MANEUVERING LIMIT LOAD FACTORS**

Maximum load factor during manoeuvres, turns etc - Flaps up: -1.0G to 2.5G

Maximum load factor during manoeuvres, turns etc - Flaps down: 0.0G to 2.0G

**SIDE SLIP MANUEVERS**

Avoid unnecessary and large side slips during low speed high altitude cruise.

**SYSTEM LIMITATIONS****AIR-CONDITIONING & PRESSURIZATION**

- Maximum relief differential pressure 8.7psi
- Maximum negative differential pressure -0.5psi
- Max. pressure differential during taxi, take-off and landing 0.1psi
- **CRJ550/700ER** Maximum altitude for single pack operation 31'000 feet
- **CRJ900ER/1000** Maximum altitude for single pack operation 25'000 feet

The airplane must be completely depressurized prior to opening any of the airplane doors.  
The EMER DEPRESS button may not be used above 15'000ft to prevent possible harm to crew and/or passenger 's ears

**AUTOMATIC FLIGHT CONTROL SYSTEM**

The following tables shows the minimum heights to which autopilot usage is approved depending on the flight phase and glide path angle respectively.

FLIGHT PHASE	GLIDEPATH ANGLE	Airport elevation		MINIMUM USE HEIGHT
		≤ 4'000 feet	> 4'000 feet	
Take-off	-	-	-	600 feet AGL
Non-precision approach	-	Approved	Approved	400 feet AGL
Precision approach	≤ 3.5°	Approved	Approved	80 feet AGL
	> 3.5° ≤ 4.0°	Approved	Approved	120 feet AGL

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**ELECTRICAL SYSTEMS****PERMISSIBLE LOADS ON AC SYSTEM**

The following table shows the maximum individual AC generator loading:

AC LOAD LIMIT (KVA)		
ALTITUDE (FEET)	MAIN GENERATOR (EACH)	APU GENERATOR
0 – 41'000	40	40

**PERMISSIBLE LOADS ON DC SYSTEMS**

- In Flight: Maximum continuous load on each TRU 120 amps.
- Ground Operation: Maximum time for ground operations with DC power only 5 minutes (to protect the CRT displays from damage)

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**FLIGHT CONTROLS – LIFT / DRAG DEVICES**

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**SLATS / FLAPS**

- En-route use of slats / flaps is prohibited.
- Flight with slats / flaps extended at altitudes above 15'000 feet is prohibited.

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**FLIGHT SPOILER**

- Do not extend the flight spoilers below 300ft AGL.
- Furthermore, do not extend the flight spoiler at airspeeds below the recommended approach speed plus 10 KIAS.

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**STALL PROTECTION SYSTEM**

Both stall protection systems switches must remain on for all phases of flight.

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**THRUST REVERSERS**

- Thrust reversers may not be activated during flight – they are approved for ground use only
- The thrust levers may not be activated during touch and go – only on full stop landings.
- Display of any thrust reverser icons or EICAS warnings before takeoff is a no-go-item
- **CRJ550/700ER/1000:** The thrust reversers may be used with maximum thrust until passing 75 kts
- **CRJ550/700ER:** Below 75 kts only idle reverser is allowed
- **CRJ900ER:** The thrust reversers may be used with maximum thrust until passing 60 kts
- **CRJ900ER/1000:** Below 60 kts only idle reverser is allowed
- Backing up / power push with the reversers is prohibited

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**TAXI LIGHTS**

As soon as the aircraft is not moving for 10 minutes or longer the TAXI lights must be switched OFF.

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**MINIMUM DESCENT ALTITUDE, MDA**

In case the given Minimum descent altitude, MDA may not be dialled in using the DH/MDA knob, please select the next highest 10-foot increment.

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**TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS)**

To comply with a resolution advisory (RA) from the TCAS system, the pilots are authorized to deviate from air traffic control's clearance.

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#### INTEGRATED STANDBY INSTRUMENT (ISI)

In case NAV 1 is tuned to a valid ILS frequency, the ISI will display localizer and glideslope deviation on the back-course approach. The use of the ISI localizer and back course information is not allowed for back course approaches.

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#### PNEUMATIC SYSTEM

**IN FLIGHT:** In case the APU is selected as a bleed source in manual mode, using the WING and / or COWL anti-ice is prohibited.

**ON THE GROUND:** To prevent an engine stall or engine instability during taxi please comply to the following items:

- APU running, prior and during taxi:
- BLEED SOURCE must be switched to BOTH ENG
- BLEED VALVES must be switched to MANUAL
- Prior to takeoff (before advancing the thrust levers further than ground idle)
- BLEED VALVES must be switched to AUTO

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#### FLIGHT DECK DOOR

The flight deck door must be closed and locked always during the flight.

## CRJ 550 / 700ER

## LOADSHEET

**CRJ 550 / 700ER TAKEOFF AND LANDING DATA CARD****WEIGHT AND BALANCE****PAYOUT**

Maximum CRJ550: 7'051kg / 15'545lbs Maximum CRJ700ER: 8'190kg / 18'055lbs

Description	Maximum Weight		Passenger count		Arm		Weight [kg or lbs]	Moment
	[kg]	[lbs]	Max	Actual	[in]	[ft]		
Dry Operation Weight	20.290	44.731			789,6	65,80		
Pilots	95ea	209ea	2		255	21,25		
Forward Flight Attendant	75ea	165ea	1		312	26,00		
Aft Flight Attendant	75ea	165ea	1		962	80,17		
Passengers Rows 1-3	84ea	185ea	10		439	36,58		
Passengers Rows 4-6	84ea	185ea	12		530	44,17		
Passengers Rows 7-9	84ea	185ea	12		623	51,92		
Passengers Rows 10-12	84ea	185ea	12		716	59,67		
Passengers Rows 14-16	84ea	185ea	12		819	68,25		
Passengers Rows 18-20	84ea	185ea	12		912	76,00		
Forward Cargo compartment	454	1.001			557	46,42		
Aft Cargo compartment	1.497	3.003			1.049	87,42		
<b>Zero Fuel Weight (ZFW)</b>	<b>28.259</b>	<b>62.300</b>						

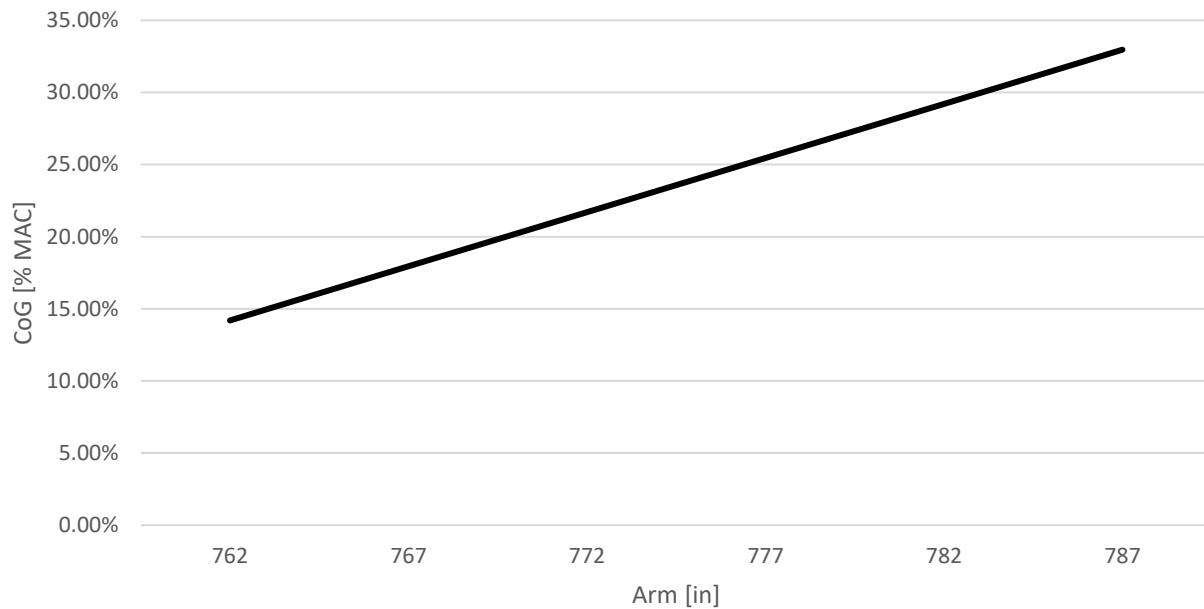
**FUEL**

Fuel Wing tanks (left + right)	6.832	15.062			777	64,75		
Fuel Center tank	2.115	4.663			745	62,08		

**TAKEOFF**

Description	Maximum Weight		Passenger count		Arm		Weight	Moment
	[kg]	[lbs]	Max	Actual	[in]	[ft]	[kg or lbs]	
Takeoff Weight = Zero Fuel Weight + Est. Fuel at Takeoff	34.019	75.000						
Center of Gravity [% MAC]								

CoG (CRJ700)



**TAKEOFF**

Airport	Field Elev.	QNH
RWY.	C.G. & Trim	Temp.
$V_1$	$V_R$	$V_2$
Flaps 20 → Flaps 8	Flaps 8 → Flaps 1	Flaps 1 → Flaps 0

**LANDING**

Est. Rem. Fuel

**Landing Weight = Zero Fuel Weight + Est. Rem. Fuel****Max. Landing Weight****CRJ550:** 27'670kg / 61'000lbs **CRJ700ER:** 30.391kg / 67.000lbs**CRJ900ER:** 33.340kg / 73.500lbs **CRJ1000:** 36'968 kg / 81'500lbs

Airport	Field Elev.	QNH
RWY.	C.G. & Trim	Temp.
$V_{Ref}$	$V_{2GA}$	
Flaps 20 → Flaps 8	Flaps 8 → Flaps 1	Flaps 1 → Flaps 0

**PERFORMANCE**

**V-SPEED-TABLES**

50'000LBS / 22'680KG

50'000lbs / 22'680 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
<b>Min Maneuvering</b>	<b>166</b>	<b>150</b>	<b>144</b>	<b>138</b>	<b>134</b>	126
<b>V<sub>REF</sub></b>	156	140	134	128	124	<b>116</b>

Takeoff												
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON												
Flaps	8°						20°					
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000		
<b>V<sub>1</sub></b>	≤ 10°C	113	113	113	114	114	114	114	113	113	112	
	20°C	112	113	113	113	114	114	113	113	112	112	
	30°C	112	113	114	114	115	114	113	113	112	112	
	40°C	113	114	115	38° / 115	34° / 115	113	112	112	38° / 112	34° / 112	
	MAX TEMP	50° / 115	46° / 115	42° / 115			50° / 112	46° / 112	42° / 112			
<b>V<sub>R</sub></b>	≤ 10°C	116	116	116	116	116	114	114	113	113	112	
	20°C	116	116	116	116	116	114	113	113	112	112	
	30°C	116	116	116	116	116	114	113	113	112	112	
	40°C	116	116	116	38° / 116	34° / 116	113	112	112	38° / 112	34° / 112	
	MAX TEMP	50° / 116	46° / 116	42° / 116			50° / 112	46° / 112	42° / 112			
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	132 / 123						129					
	<b>Flap Retraction</b>	144 (Flaps 1)			148 (Flaps 0)			131 (Flaps 8)	149 (Flaps 1)	149 (Flaps 0)		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	163	165	168	171	173	175	177	180	182	185	188
<b>V<sub>MD</sub>/Min Hold</b>	177	186	187	188	190	193	195	197	200	202	205

52'000LBS / 23'587 KGS

52'000lbs / 23'587 kgs						
Landing						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>169</b>	<b>153</b>	<b>147</b>	<b>141</b>	<b>137</b>	<b>129</b>
<b>V<sub>REF</sub></b>	159	143	137	131	127	<b>119</b>

Takeoff												
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON												
<b>Flaps</b>		<b>8°</b>				<b>20°</b>						
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000		
<b>V<sub>1</sub></b>	≤ 10°C	113	114	114	114	115	114	113	113	112	112	
	20°C	113	113	114	114	115	113	113	113	112	112	
	30°C	113	114	114	115	115	114	113	112	112	112	
	40°C	114	115	115	38° / 116	34° / 115	113	112	112	38° / 112	34° / 112	
	MAX TEMP	50° / 115	46° / 116	42° / 115		50° / 112	46° / 112	42° / 112				
<b>V<sub>R</sub></b>	≤ 10°C	116	116	116	116	116	114	113	113	112	112	
	20°C	116	116	116	116	116	113	113	113	112	112	
	30°C	116	116	116	116	116	113	113	112	112	112	
	40°C	116	116	116	38° / 116	34° / 116	113	112	112	38° / 112	34° / 112	
	MAX TEMP	50° / 116	46° / 116	42° / 116		50° / 112	46° / 112	42° / 112				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	<b>131 / 126</b>						<b>128</b>					
<b>Flap Retraction</b>	<b>143 (Flaps 1)</b>			<b>151 (Flaps 0)</b>			<b>140 (Flaps 8)</b>	<b>148 (Flaps 1)</b>	<b>151 (Flaps 0)</b>			

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
<b>Altitude (FL)</b>	<10'000	210	230	250	270	290	310	330	350	370	390
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	166	168	171	175	177	179	181	184	186	189	192
<b>V<sub>MD</sub>/Min Hold</b>	180	190	191	193	195	198	200	202	205	207	208

53'000LBS / 24'040 KGS

53'000lbs / 24'040 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
Min Maneuvering	170	154	148	142	138	130
V <sub>REF</sub>	160	144	138	132	128	120

Takeoff													
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON													
Flaps	8°						20°						
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000			
<b>V<sub>1</sub></b>	≤ 10°C	113	114	114	114	115	114	113	113	112	112		
	20°C	113	113	114	114	115	113	113	113	112	112		
	30°C	113	114	114	115	115	113	113	112	112	111		
	40°C	114	115	115	38° / 116	34° / 115	113	112	112	38° / 111	34° / 111		
	MAX TEMP	50° / 115	46° / 116	42° / 115		50° / 112	46° / 112	42° / 112					
<b>V<sub>R</sub></b>	≤ 10°C	116	116	116	116	116	114	113	113	112	112		
	20°C	116	116	116	116	116	113	113	113	112	112		
	30°C	116	116	116	116	116	113	113	112	112	111		
	40°C	116	116	116	38° / 116	34° / 116	113	112	112	38° / 111	34° / 111		
	MAX TEMP	50° / 116	46° / 116	42° / 116		50° / 112	46° / 112	42° / 112					
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	130 / 127						127						
<b>Flap Retraction</b>	142 (Flaps 1)			152 (Flaps 0)			139 (Flaps 8)	147 (Flaps 1)	152 (Flaps 0)				

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
V <sub>FTO</sub> / V <sub>ENR</sub>	167	170	173	176	178	181	183	186	188	191	194
V <sub>MD</sub> /Min Hold	18	192	193	195	197	200	202	205	207	209	209

54'000LBS / 24'494 KGS

54'000lbs / 24'494 kgs						
Landing						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>171</b>	<b>155</b>	<b>149</b>	<b>143</b>	<b>139</b>	<b>131</b>
<b>V<sub>REF</sub></b>	161	145	139	133	129	121

Takeoff													
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON													
<b>Flaps</b>		8°				20°							
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000			
<b>V<sub>1</sub></b>	≤ 10°C	114	114	114	115	115	114	113	113	112	112		
	20°C	114	114	114	115	115	113	113	113	112	112		
	30°C	113	114	115	115	116	113	113	112	112	111		
	40°C	115	115	115	38° / 116	34° / 116	113	112	112	38° / 111	34° / 111		
	MAX TEMP	50° / 116	46° / 116	42° / 116			50° / 112	46° / 112	42° / 112				
<b>V<sub>R</sub></b>	≤ 10°C	116	116	116	116	116	114	113	113	112	112		
	20°C	116	116	116	116	116	113	113	113	112	112		
	30°C	116	116	116	116	116	113	112	112	112	111		
	40°C	116	116	116	38° / 116	34° / 116	113	112	112	38° / 111	34° / 111		
	MAX TEMP	50° / 116	46° / 116	42° / 116			50° / 112	46° / 112	42° / 112				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>		130 / 128				127							
<b>Flap Retraction</b>		142 (Flaps 1)		154 (Flaps 0)		139 (Flaps 8)		147 (Flaps 1)		154 (Flaps 0)			

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
<b>Altitude (FL)</b>	<10'000	210	230	250	270	290	310	330	350	370	390
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	169	172	175	178	180	182	185	187	190	193	196
<b>V<sub>MD</sub>/Min Hold</b>	184	194	195	197	200	202	205	207	209	212	211

55'000LBS / 24'948 KGS

55'000lbs / 24'948 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
Min Maneuvering	172	156	150	144	140	132
V <sub>REF</sub>	162	146	140	134	130	122

Takeoff												
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON												
Flaps	8°						20°					
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000		
<b>V<sub>1</sub></b>	≤ 10°C	114	114	114	115	115	113	113	113	112	112	
	20°C	114	114	114	115	115	113	113	113	112	112	
	30°C	113	114	115	115	116	113	113	112	112	111	
	40°C	115	115	115	38° / 116	34° / 116	113	112	112	38° / 111	34° / 111	
	MAX TEMP	50° / 116	46° / 116	42° / 116		50° / 112	46° / 112	42° / 112				
<b>V<sub>R</sub></b>	≤ 10°C	116	116	116	116	116	113	113	113	112	112	
	20°C	116	116	116	116	116	113	113	113	112	112	
	30°C	116	116	116	116	116	113	113	112	112	111	
	40°C	116	116	116	38° / 116	34° / 116	113	112	112	38° / 111	34° / 111	
	MAX TEMP	50° / 116	46° / 116	42° / 116		50° / 112	46° / 112	42° / 112				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	130 / 129						127					
	<b>Flap Retraction</b>	142 (Flaps 1)			155 (Flaps 0)			139 (Flaps 8)	147 (Flaps 1)	155 (Flaps 0)		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
V <sub>FTO</sub> / V <sub>ENR</sub>	170	174	177	180	182	184	186	189	192	195	198
V <sub>MD</sub> /Min Hold	185	196	197	199	202	205	207	209	212	214	212

56'000LBS / 25'401 KGS

56'000lbs / 25'401 kgs						
Landing						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>173</b>	<b>157</b>	<b>151</b>	<b>145</b>	<b>141</b>	<b>133</b>
<b>V<sub>REF</sub></b>	<b>163</b>	<b>147</b>	<b>141</b>	<b>135</b>	<b>131</b>	<b>123</b>

Takeoff												
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON												
<b>Flaps</b>		<b>8°</b>				<b>20°</b>						
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000		
<b>V<sub>1</sub></b>	≤ 10°C	114	115	115	116	117	114	113	113	112	112	
	20°C	114	114	115	116	117	113	113	113	112	112	
	30°C	114	115	116	117	119	114	113	112	112	112	
	40°C	115	116	117	38° / 118	34° / 118	113	112	112	38° / 112	34° / 112	
	MAX TEMP	50° / 117	46° / 117	42° / 117			50° / 112	46° / 112	42° / 112			
<b>V<sub>R</sub></b>	≤ 10°C	116	116	116	116	117	113	113	113	112	112	
	20°C	116	116	116	117	117	113	113	113	112	112	
	30°C	116	116	117	117	118	113	113	112	112	112	
	40°C	116	117	117	38° / 118	34° / 118	113	112	112	38° / 112	34° / 112	
	MAX TEMP	50° / 117	46° / 117	42° / 117			50° / 112	46° / 112	42° / 112			
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	<b>130 / 130</b>						<b>127</b>					
<b>Flap Retraction</b>	<b>142 (Flaps 1)</b>				<b>157 (Flaps 0)</b>				<b>139 (Flaps 8)</b>	<b>147 (Flaps 1)</b>	<b>157 (Flaps 0)</b>	

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
<b>Altitude (FL)</b>	<b>&lt;10'000</b>	<b>210</b>	<b>230</b>	<b>250</b>	<b>270</b>	<b>290</b>	<b>310</b>	<b>330</b>	<b>350</b>	<b>370</b>	<b>390</b>
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	172	175	178	182	184	186	188	191	194	197	200
<b>V<sub>MD</sub>/Min Hold</b>	187	198	200	202	204	207	209	212	214	216	213

57'000LBS / 25'855 KGS

57'000lbs / 25'855 kgs						
Landing						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>174</b>	<b>158</b>	<b>152</b>	<b>146</b>	<b>142</b>	<b>134</b>
<b>V<sub>REF</sub></b>	<b>164</b>	<b>148</b>	<b>142</b>	<b>136</b>	<b>132</b>	<b>124</b>

Takeoff												
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON												
<b>Flaps</b>		<b>8°</b>				<b>20°</b>						
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000		
<b>V<sub>1</sub></b>	≤ 10°C	114	115	115	116	117	113	113	113	112	112	
	20°C	114	114	115	116	117	113	113	112	112	112	
	30°C	114	115	116	117	119	113	113	112	112	113	
	40°C	115	116	118	38° / 119	34° / 119	112	112	112	38° / 113	34° / 113	
	MAX TEMP	50° / 117	46° / 118	42° / 118		50° / 112	46° / 112	42° / 112				
<b>V<sub>R</sub></b>	≤ 10°C	116	116	116	116	117	113	113	113	112	112	
	20°C	116	116	116	117	118	113	113	112	112	112	
	30°C	116	116	117	118	119	113	113	112	112	113	
	40°C	116	117	118	38° / 119	34° / 119	112	112	112	38° / 113	34° / 113	
	MAX TEMP	50° / 117	46° / 118	42° / 118		50° / 112	46° / 112	42° / 112				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	<b>129 / 131</b>						<b>126</b>					
<b>Flap Retraction</b>	<b>141 (Flaps 1)</b>			<b>158 (Flaps 0)</b>			<b>138 (Flaps 8)</b>	<b>146 (Flaps 1)</b>	<b>158 (Flaps 0)</b>			

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
<b>Altitude (FL)</b>	<b>&lt;10'000</b>	<b>210</b>	<b>230</b>	<b>250</b>	<b>270</b>	<b>290</b>	<b>310</b>	<b>330</b>	<b>350</b>	<b>370</b>	<b>390</b>
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	173	177	180	183	185	188	190	193	195	198	202
<b>V<sub>MD</sub>/Min Hold</b>	189	200	202	204	207	209	212	214	216	218	214

58'000LBS / 26'308 KGS

58'000lbs / 26'308 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
Min Maneuvering	175	159	153	147	143	135
V <sub>REF</sub>	165	149	143	137	133	125

Takeoff													
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON													
Flaps	8°						20°						
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000			
<b>V<sub>1</sub></b>	≤ 10°C	115	116	117	118	118	113	113	112	113	113		
	20°C	115	116	117	118	11	113	113	112	113	114		
	30°C	115	116	117	119	120	113	113	113	113	114		
	40°C	117	118	119	38° / 120	34° / 120	112	113	113	38° / 114	34° / 114		
	MAX TEMP	50° / 118	46° / 119	42° / 119			50° / 113	46° / 113	42° / 113				
<b>V<sub>R</sub></b>	≤ 10°C	116	116	117	118	119	113	113	113	113	113		
	20°C	117	117	117	118	119	113	113	113	113	114		
	30°C	117	117	118	119	120	113	113	113	113	114		
	40°C	117	118	119	38° / 120	34° / 120	112	113	113	38° / 114	34° / 114		
	MAX TEMP	50° / 118	46° / 119	42° / 119			50° / 113	46° / 113	42° / 113				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	130 / 133						126						
	<b>Flap Retraction</b>			142 (Flaps 1)	160 (Flaps 0)			138 (Flaps 8)	146 (Flaps 1)	160 (Flaps 0)			

Additional speeds											
Approximate Single Engine Drift down Altitude - FL280											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
V <sub>FTO</sub> / V <sub>ENR</sub>	175	178	182	185	187	189	192	194	197	200	204
V <sub>MD</sub> /Min Hold	190	202	204	206	209	211	214	216	219	219	215

59'000LBS / 26'762 KGS

59'000lbs / 26'762 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
<b>Min Maneuvering</b>	<b>176</b>	<b>160</b>	<b>154</b>	<b>148</b>	<b>144</b>	136
<b>V<sub>REF</sub></b>	166	150	144	138	134	<b>126</b>

Takeoff													
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON													
Flaps	8°						20°						
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000			
<b>V<sub>1</sub></b>	≤ 10°C	116	117	118	119	119	113	113	112	113	114		
	20°C	116	117	118	119	120	113	113	112	113	115		
	30°C	115	116	119	120	121	113	112	113	114	115		
	40°C	118	119	120	38° / 121	34° / 121	112	113	114	38° / 115	34° / 115		
	MAX TEMP	50° / 119	46° / 120	42° / 120			50° / 114	46° / 115	42° / 114				
<b>V<sub>R</sub></b>	≤ 10°C	117	117	118	119	120	113	113	112	114	114		
	20°C	117	118	118	119	120	113	113	113	114	115		
	30°C	117	118	119	120	121	113	112	113	114	115		
	40°C	118	119	120	38° / 121	34° / 121	112	113	114	38° / 115	34° / 115		
	MAX TEMP	50° / 119	46° / 120	42° / 120			50° / 114	46° / 115	42° / 114				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	130 / 134						125						
<b>Flap Retraction</b>	142 (Flaps 1)			161 (Flaps 0)			137 (Flaps 8)	145 (Flaps 1)	161 (Flaps 0)				

Additional speeds											
Approximate Single Engine Drift down Altitude - FL280											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	176	180	183	187	189	191	193	196	199	202	206
<b>V<sub>MD</sub>/Min Hold</b>	192	204	206	208	211	214	216	218	221	220	216

60'000LBS / 27'216 KGS

60'000lbs / 27'216 kgs						
Landing						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>177</b>	<b>161</b>	<b>155</b>	<b>149</b>	<b>145</b>	<b>137</b>
<b>V<sub>REF</sub></b>	<b>167</b>	<b>151</b>	<b>145</b>	<b>139</b>	<b>135</b>	<b>127</b>

Takeoff													
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON													
<b>Flaps</b>		<b>8°</b>				<b>20°</b>							
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000			
<b>V<sub>1</sub></b>	≤ 10°C	117	118	119	120	121	113	114	113	114	115		
	20°C	117	118	118	120	122	113	114	113	114	115		
	30°C	117	118	120	122	123	113	113	115	116	117		
	40°C	119	120	121	38° / 123	34° / 123	114	115	116	38° / 117	34° / 117		
	MAX TEMP	50° / 121	46° / 121	42° / 121			50° / 115	46° / 116	42° / 116				
<b>V<sub>R</sub></b>	≤ 10°C	118	119	120	120	121	113	114	114	114	115		
	20°C	118	119	120	121	122	113	114	114	115	116		
	30°C	118	119	120	122	123	114	114	115	116	117		
	40°C	119	120	121	38° / 123	34° / 123	114	115	116	38° / 117	34° / 117		
	MAX TEMP	50° / 121	46° / 122	42° / 121			50° / 115	46° / 116	42° / 116				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	<b>131 / 135</b>						<b>125</b>						
<b>Flap Retraction</b>	<b>143 (Flaps 1)</b>			<b>163 (Flaps 0)</b>			<b>137 (Flaps 8)</b>	<b>145 (Flaps 1)</b>	<b>163 (Flaps 0)</b>				

Additional speeds											
Approximate Single Engine Drift down Altitude - FL270											
<b>Altitude (FL)</b>	<b>&lt;10'000</b>	<b>210</b>	<b>230</b>	<b>250</b>	<b>270</b>	<b>290</b>	<b>310</b>	<b>330</b>	<b>350</b>	<b>370</b>	<b>390</b>
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	178	181	185	189	191	193	195	198	201	204	208
<b>V<sub>MD</sub>/Min Hold</b>	194	206	208	211	214	216	218	221	223	222	217

61'000LBS / 27'669 KGS

61'000lbs / 27'669 kgs						
Landing						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>178</b>	<b>162</b>	<b>156</b>	<b>150</b>	<b>146</b>	<b>138</b>
<b>V<sub>REF</sub></b>	<b>168</b>	<b>152</b>	<b>146</b>	<b>140</b>	<b>136</b>	<b>128</b>

Takeoff													
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON													
<b>Flaps</b>		<b>8°</b>				<b>20°</b>							
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000			
<b>V<sub>1</sub></b>	≤ 10°C	118	119	120	121	122	113	114	115	115	116		
	20°C	118	119	120	121	123	113	114	115	116	117		
	30°C	118	120	121	123	124	113	114	116	117	118		
	40°C	120	121	122	38° / 124	34° / 124	115	116	117	38° / 118	34° / 118		
	MAX TEMP	50° / 122	46° / 123	42° / 122			50° / 116	46° / 117	42° / 117				
<b>V<sub>R</sub></b>	≤ 10°C	119	120	121	121	122	113	114	115	115	116		
	20°C	119	120	121	122	123	113	114	115	116	117		
	30°C	119	120	121	123	124	114	115	116	117	118		
	40°C	120	121	122	38° / 124	34° / 124	115	116	117	38° / 118	34° / 118		
	MAX TEMP	50° / 122	46° / 123	42° / 122			50° / 116	46° / 117	42° / 117				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	<b>132 / 136</b>						<b>125</b>						
<b>Flap Retraction</b>	<b>144 (Flaps 1)</b>			<b>164 (Flaps 0)</b>			<b>137 (Flaps 8)</b>	<b>145 (Flaps 1)</b>	<b>164 (Flaps 0)</b>				

Additional speeds											
Approximate Single Engine Drift down Altitude - FL270											
<b>Altitude (FL)</b>	<b>&lt;10'000</b>	<b>210</b>	<b>230</b>	<b>250</b>	<b>270</b>	<b>290</b>	<b>310</b>	<b>330</b>	<b>350</b>	<b>370</b>	<b>390</b>
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	179	183	186	190	192	195	197	200	203	206	210
<b>V<sub>MD</sub>/Min Hold</b>	196	208	210	213	216	218	221	223	225	223	218

62'000LBS / 28'123 KGS

62'000lbs / 28'123 kgs						
Landing						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>179</b>	<b>163</b>	<b>157</b>	<b>151</b>	<b>147</b>	<b>139</b>
<b>V<sub>REF</sub></b>	169	153	147	14	137	<b>129</b>

Takeoff													
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON													
<b>Flaps</b>		<b>8°</b>				<b>20°</b>							
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000			
<b>V<sub>1</sub></b>	≤ 10°C	120	121	122	123	124	114	115	116	117	118		
	20°C	120	121	122	123	124	114	115	116	117	118		
	30°C	120	121	123	124	125	114	116	117	118	119		
	40°C	122	123	124	38° / 125	34° / 125	116	117	118	38° / 119	34° / 119		
	MAX TEMP	50° / 123	46° / 125	42° / 124			50° / 117	46° / 118	42° / 118				
<b>V<sub>R</sub></b>	≤ 10°C	120	121	122	123	124	114	115	116	117	118		
	20°C	121	121	122	123	124	115	115	116	117	118		
	30°C	121	122	123	124	125	115	116	117	118	119		
	40°C	121	123	124	38° / 125	34° / 125	116	117	118	38° / 119	34° / 119		
	MAX TEMP	50° / 123	46° / 125	42° / 124			50° / 117	46° / 118	42° / 118				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	<b>133 / 137</b>						<b>126</b>						
<b>Flap Retraction</b>	<b>145 (Flaps 1)</b>			<b>166 (Flaps 0)</b>			<b>138 (Flaps 8)</b>	<b>146 (Flaps 1)</b>	<b>166 (Flaps 0)</b>				

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
<b>Altitude (FL)</b>	<10'000	210	230	250	270	290	310	330	350	370	390
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	181	184	188	192	194	196	199	202	205	208	211
<b>V<sub>MD</sub>/Min Hold</b>	199	210	212	215	218	220	223	225	227	224	219

63'000LBS / 28'576 KGS

63'000lbs / 28'576 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
Min Maneuvering	180	164	158	152	148	140
V <sub>REF</sub>	170	154	148	142	138	130

Takeoff												
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON												
Flaps	8°						20°					
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000		
<b>V<sub>1</sub></b>	≤ 10°C	121	122	123	124	125	115	116	117	118	119	
	20°C	121	122	123	124	125	115	116	117	118	119	
	30°C	121	122	124	125	126	115	117	118	119	120	
	40°C	123	124	125	38° / 126	34° / 126	117	118	119	38° / 120	34° / 120	
	MAX TEMP	50° / 124	46° / 126	42° / 125			50° / 118	46° / 119	42° / 119			
<b>V<sub>R</sub></b>	≤ 10°C	121	122	123	124	125	115	116	117	118	119	
	20°C	122	122	123	124	125	116	116	117	118	119	
	30°C	122	123	124	125	126	116	117	118	119	120	
	40°C	121	124	125	38° / 126	34° / 126	117	118	119	38° / 120	34° / 120	
	MAX TEMP	50° / 124	46° / 126	42° / 125			50° / 118	46° / 119	42° / 119			
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	133 / 138						127					
	<b>Flap Retraction</b>			145 (Flaps 1)	167 (Flaps 0)			139 (Flaps 8)	147 (Flaps 1)	167 (Flaps 0)		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
V <sub>FTO</sub> / V <sub>ENR</sub>	182	186	189	193	195	198	200	203	206	209	213
V <sub>MD</sub> /Min Hold	201	212	214	217	220	222	225	227	228	225	219

64'000LBS / 29'030 KGS

64'000lbs / 29'030 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
<b>Min Maneuvering</b>	<b>182</b>	<b>166</b>	<b>160</b>	<b>154</b>	<b>150</b>	142
<b>V<sub>REF</sub></b>	172	156	150	144	140	<b>132</b>

Takeoff													
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON													
Flaps	8°						20°						
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000			
<b>V<sub>1</sub></b>	≤ 10°C	122	123	124	125	126	116	118	118	119	120		
	20°C	122	123	124	125	127	116	117	118	120	121		
	30°C	122	124	125	126	128	116	118	119	120	122		
	40°C	124	125	127	38° / 128	34° / 128	118	119	120	38° / 121	34° / 122		
	MAX TEMP	50° / 126	46° / 127	42° / 127			50° / 120	46° / 121	42° / 120				
<b>V<sub>R</sub></b>	≤ 10°C	123	123	124	125	126	117	118	118	119	120		
	20°C	123	124	124	125	127	117	118	118	120	121		
	30°C	123	124	125	126	128	117	118	119	120	122		
	40°C	123	125	127	38° / 128	34° / 128	118	119	120	38° / 121	34° / 122		
	MAX TEMP	50° / 126	46° / 127	42° / 127			50° / 120	46° / 121	42° / 120				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	134 / 139						128						
<b>Flap Retraction</b>	146 (Flaps 1)			169 (Flaps 0)			140 (Flaps 8)	148 (Flaps 1)	169 (Flaps 0)				

Additional speeds											
Approximate Single Engine Drift down Altitude - FL260											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	184	187	191	195	197	199	202	205	208	211	215
<b>V<sub>MD</sub>/Min Hold</b>	203	214	217	220	222	225	227	230	230	226	-

65'000LBS / 29'484 KGS

65'000lbs / 29'484 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
Min Maneuvering	183	167	161	155	151	143
V <sub>REF</sub>	173	157	151	145	141	133

Takeoff												
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON												
Flaps	8°						20°					
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000		
<b>V<sub>1</sub></b>	≤ 10°C	123	124	125	126	127	117	119	119	120	121	
	20°C	123	124	125	126	128	117	118	119	121	122	
	30°C	123	125	126	127	129	117	119	120	121	123	
	40°C	125	126	128	38° / 129	34° / 129	119	120	121	38° / 122	34° / 123	
	MAX TEMP	50° / 127	46° / 128	42° / 128			50° / 121	46° / 122	42° / 121			
<b>V<sub>R</sub></b>	≤ 10°C	124	124	125	126	127	118	119	119	120	121	
	20°C	124	125	125	126	128	118	119	119	121	122	
	30°C	124	125	126	127	129	118	119	120	121	123	
	40°C	125	126	128	38° / 129	34° / 129	119	120	121	38° / 122	34° / 123	
	MAX TEMP	50° / 127	46° / 128	42° / 128			50° / 121	46° / 122	42° / 121			
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	135 / 140						129					
	<b>Flap Retraction</b>			147 (Flaps 1)	170 (Flaps 0)			141 (Flaps 8)	149 (Flaps 1)	170 (Flaps 0)		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
V <sub>FTO</sub> / V <sub>ENR</sub>	185	189	192	196	198	201	204	207	210	213	217
V <sub>MD</sub> /Min Hold	206	216	219	222	224	227	229	232	231	227	-

66'000LBS / 29'937 KGS

66'000lbs / 29'937 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
Min Maneuvering	184	168	162	156	152	144
V <sub>REF</sub>	174	158	152	146	142	134

Takeoff											
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON											
Flaps	8°					20°					
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000	
<b>V<sub>1</sub></b>	≤ 10°C	125	126	127	128	129	119	120	120	121	123
	20°C	125	126	127	128	129	119	120	121	122	123
	30°C	125	126	128	129	130	119	120	121	123	124
	40°C	126	128	129	38° / 130	34° / 130	120	121	123	38° / 124	34° / 124
	MAX TEMP	50° / 128	46° / 130	42° / 129			50° / 122	46° / 123	42° / 123		
<b>V<sub>R</sub></b>	≤ 10°C	125	126	127	128	129	119	120	120	121	123
	20°C	125	126	127	128	129	119	120	121	122	123
	30°C	125	126	128	129	130	119	120	121	123	124
	40°C	126	128	129	38° / 130	34° / 130	120	121	123	38° / 124	34° / 124
	MAX TEMP	50° / 128	46° / 130	42° / 129			50° / 122	46° / 123	42° / 123		
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	136 / 142					130					
<b>Flap Retraction</b>	136 (Flaps 1)			142 (Flaps 0)			142 (Flaps 8)	150 (Flaps 1)	172 (Flaps 0)		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL250											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
V <sub>FTO</sub> / V <sub>ENR</sub>	187	190	194	198	200	203	206	209	212	215	219
V <sub>MD</sub> /Min Hold	208	218	221	224	226	229	231	234	232	228	-

67'000LBS / 30'391 KGS

67'000lbs / 30'391 kgs						
Landing						
Flaps	0°	1°	8°	20°	30°	45°
<b>Min Maneuvering</b>	185	169	163	157	153	145
<b>V<sub>REF</sub></b>	175	159	153	147	143	135

Takeoff											
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON											
Flaps	8°					20°					
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000	
<b>V<sub>1</sub></b>	≤ 10°C	126	127	128	129	130	120	121	121	122	124
	20°C	126	127	128	129	130	120	121	122	123	124
	30°C	126	127	129	130	131	120	121	122	124	125
	40°C	127	129	130	38° / 131	34° / 131	121	122	124	38° / 125	34° / 125
	MAX TEMP	50° / 129	46° / 131	42° / 130			50° / 123	46° / 124	42° / 124		
<b>V<sub>R</sub></b>	≤ 10°C	126	127	128	129	130	120	121	121	122	124
	20°C	126	127	128	129	130	120	121	122	123	124
	30°C	126	127	129	130	131	120	121	122	124	125
	40°C	127	129	130	38° / 131	34° / 131	121	122	124	38° / 125	34° / 125
	MAX TEMP	50° / 129	46° / 131	42° / 130			50° / 123	46° / 124	42° / 124		
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	137 / 143					130					
<b>Flap Retraction</b>	149 (Flaps 1)			173 (Flaps 0)			142 (Flaps 8)	150 (Flaps 1)	173 (Flaps 0)		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	188	192	195	199	202	205	207	210	213	217	220
<b>V<sub>MD</sub>/Min Hold</b>	210	220	223	226	228	231	233	236	233	228	-

68'000LBS / 30'844 KGS

68'000lbs / 30'844 kgs						
Landing (overweight)						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>186</b>	<b>170</b>	<b>164</b>	<b>158</b>	<b>154</b>	<b>146</b>
<b>V<sub>REF</sub></b>	<b>176</b>	<b>160</b>	<b>154</b>	<b>148</b>	<b>144</b>	<b>136</b>

Takeoff											
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON											
<b>Flaps</b>		<b>8°</b>				<b>20°</b>					
<b>Press. Alt.</b>	<b>0</b>	<b>2'000</b>	<b>4'000</b>	<b>6'000</b>	<b>8'000</b>	<b>0</b>	<b>2'000</b>	<b>4'000</b>	<b>6'000</b>	<b>8'000</b>	
<b>V<sub>1</sub></b>	≤ 10°C	127	128	129	130	131	121	122	123	124	125
	20°C	127	128	129	130	132	121	122	123	124	125
	30°C	127	128	130	131	133	121	122	124	125	126
	40°C	129	130	131	38° / 133	34° / 133	123	124	125	38° / 126	34° / 126
	MAX TEMP	50° / 131	46° / 132	42° / 131			50° / 124	46° / 125	42° / 125		
<b>V<sub>R</sub></b>	≤ 10°C	127	128	129	130	131	121	122	123	124	125
	20°C	127	128	129	130	132	121	122	123	124	125
	30°C	128	129	130	131	133	121	122	124	125	126
	40°C	129	130	131	38° / 133	34° / 133	123	124	125	38° / 126	34° / 126
	MAX TEMP	50° / 131	46° / 132	42° / 131			50° / 124	46° / 125	42° / 125		
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	<b>138 / 144</b>					<b>131</b>					
<b>Flap Retraction</b>	<b>150 (Flaps 1)</b>			<b>175 (Flaps 0)</b>			<b>143 (Flaps 8)</b>	<b>151 (Flaps 1)</b>	<b>175 (Flaps 0)</b>		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
<b>Altitude (FL)</b>	<b>&lt;10'000</b>	<b>210</b>	<b>230</b>	<b>250</b>	<b>270</b>	<b>290</b>	<b>310</b>	<b>330</b>	<b>350</b>	<b>370</b>	<b>390</b>
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	190	193	197	201	203	206	209	212	215	218	222
<b>V<sub>MD</sub>/Min Hold</b>	213	222	225	228	230	233	235	237	234	229	-

69'000LBS / 31'298 KGS

69'000lbs / 31'298 kgs						
Landing (overweight)						
Flaps	0°	1°	8°	20°	30°	45°
Min Maneuvering	187	171	165	159	155	147
V <sub>REF</sub>	177	161	155	149	145	137

Takeoff													
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON													
Flaps		8°				20°							
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000			
<b>V<sub>1</sub></b>	≤ 10°C	128	129	130	131	132	122	123	124	125	126		
	20°C	128	129	130	131	133	122	123	124	125	126		
	30°C	128	129	131	132	134	122	123	125	126	127		
	40°C	130	131	132	38° / 134	34° / 134	124	125	126	38° / 127	34° / 127		
	MAX TEMP	50° / 132	46° / 133	42° / 132			50° / 125	46° / 126	42° / 126				
<b>V<sub>R</sub></b>	≤ 10°C	128	129	130	131	132	122	123	124	125	126		
	20°C	128	129	130	131	133	122	123	124	125	126		
	30°C	129	130	131	132	134	122	123	125	126	127		
	40°C	130	131	132	38° / 134	34° / 134	124	125	126	38° / 127	34° / 127		
	MAX TEMP	50° / 132	46° / 133	42° / 132			50° / 125	46° / 126	42° / 126				
<b>V<sub>2</sub> / V<sub>2GA</sub></b>		139 / 145				132							
<b>Flap Retraction</b>		151 (Flaps 1)		176 (Flaps 0)		144 (Flaps 8)		152 (Flaps 1)		176 (Flaps 0)			

Additional speeds											
Approximate Single Engine Drift down Altitude - FL240											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
V <sub>FTO</sub> / V <sub>ENR</sub>	191	195	197	202	205	208	210	213	216	220	224
V <sub>MD</sub> /Min Hold	215	224	227	230	233	235	238	239	235	230	-

70'000LBS / 31'751 KGS

70'000lbs / 31'751 kgs						
Landing (overweight)						
Flaps	0°	1°	8°	20°	30°	45°
Min Maneuvering	188	172	166	160	156	148
V <sub>REF</sub>	178	162	156	150	146	138

Takeoff												
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON												
Flaps		8°				20°						
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000		
<b>V<sub>1</sub></b>	≤ 10°C	129	130	131	132	133	123	124	125	126	127	
	20°C	129	130	131	133	134	123	124	125	126	128	
	30°C	129	131	132	134	135	123	125	126	127	128	
	40°C	131	132	134	38° / 135	34° / 135	125	126	127	38° / 128	34° / 128	
	MAX TEMP	50° / 133	46° / 134	42° / 134			50° / 126	46° / 128	42° / 127			
<b>V<sub>R</sub></b>	≤ 10°C	129	130	131	132	133	123	124	125	126	127	
	20°C	130	130	131	133	134	123	124	125	126	127	
	30°C	130	131	132	134	135	123	125	126	127	128	
	40°C	131	132	134	38° / 135	34° / 135	125	126	127	38° / 128	34° / 128	
	MAX TEMP	50° / 133	46° / 134	42° / 134			50° / 126	46° / 128	42° / 127			
<b>V<sub>2</sub> / V<sub>2GA</sub></b>		140 / 146				133						
<b>Flap Retraction</b>		152 (Flaps 1)		177 (Flaps 0)		145 (Flaps 8)	153 (Flaps 1)	177 (Flaps 0)				

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
V <sub>FTO</sub> / V <sub>ENR</sub>	192	196	200	204	206	209	212	215	218	222	226
V <sub>MD</sub> /Min Hold	217	226	230	232	235	237	240	240	236	231	-

71'000LBS / 32'205 KGS

71'000lbs / 32'205 kgs						
Landing (overweight)						
Flaps	0°	1°	8°	20°	30°	45°
Min Maneuvering	189	173	167	161	157	149
V <sub>REF</sub>	179	163	157	151	147	139

Takeoff											
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON											
Flaps	8°					20°					
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000	
<b>V<sub>1</sub></b>	≤ 10°C	130	131	132	133	134	124	125	126	127	128
	20°C	130	131	132	134	135	124	125	126	127	129
	30°C	130	132	133	135	136	124	126	127	128	129
	40°C	132	133	135	38° / 136	34° / 136	126	127	128	38° / 129	34° / 129
	MAX TEMP	50° / 134	46° / 135	42° / 135			50° / 127	46° / 129	42° / 128		
<b>V<sub>R</sub></b>	≤ 10°C	130	131	132	133	134	124	125	126	127	128
	20°C	131	131	132	134	135	124	125	126	127	128
	30°C	131	132	133	135	136	124	126	127	128	129
	40°C	132	133	135	38° / 136	34° / 136	126	127	128	38° / 128	34° / 129
	MAX TEMP	50° / 134	46° / 135	42° / 135			50° / 127	46° / 129	42° / 128		
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	141 / 147					134					
<b>Flap Retraction</b>	153 (Flaps 1)			178 (Flaps 0)			146 (Flaps 8)	154 (Flaps 1)	178 (Flaps 0)		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL310											
Altitude (FL)	<10'000	210	230	250	270	290	310	330	350	370	390
V <sub>FTO</sub> / V <sub>ENR</sub>	193	198	201	205	208	211	214	217	220	224	227
V <sub>MD</sub> /Min Hold	219	229	232	234	237	239	242	241	237	231	-

72'000LBS / 32'659 KGS

72'000lbs / 32'659 kgs						
Landing (overweight)						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>190</b>	<b>174</b>	<b>168</b>	<b>162</b>	<b>158</b>	<b>150</b>
<b>V<sub>REF</sub></b>	<b>180</b>	<b>164</b>	<b>158</b>	<b>152</b>	<b>148</b>	<b>140</b>

Takeoff											
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON											
<b>Flaps</b>	<b>8°</b>					<b>20°</b>					
<b>Press. Alt.</b>	<b>0</b>	<b>2'000</b>	<b>4'000</b>	<b>6'000</b>	<b>8'000</b>	<b>0</b>	<b>2'000</b>	<b>4'000</b>	<b>6'000</b>	<b>8'000</b>	
<b>V<sub>1</sub></b>	≤ 10°C	132	132	134	135	136	125	126	127	128	129
	20°C	132	133	134	135	136	125	126	128	129	130
	30°C	132	133	135	136	137	126	127	128	129	130
	40°C	133	135	136	38° / 137	34° / 137	127	128	129	38° / 130	34° / 130
	MAX TEMP	50° / 135	46° / 137	42° / 136			50° / 127	46° / 130	42° / 129		
<b>V<sub>R</sub></b>	≤ 10°C	132	132	134	135	136	125	126	127	128	129
	20°C	132	133	134	135	136	125	126	128	129	130
	30°C	132	133	135	136	137	126	127	128	129	130
	40°C	133	135	136	38° / 137	34° / 137	127	128	129	38° / 129	34° / 130
	MAX TEMP	50° / 135	46° / 137	42° / 136			50° / 129	46° / 130	42° / 129		
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	<b>142 / 148</b>					<b>135</b>					
<b>Flap Retraction</b>	<b>154 (Flaps 1)</b>			<b>180 (Flaps 0)</b>			<b>147 (Flaps 8)</b>	<b>155 (Flaps 1)</b>	<b>180 (Flaps 0)</b>		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL220											
<b>Altitude (FL)</b>	<b>&lt;10'000</b>	<b>210</b>	<b>230</b>	<b>250</b>	<b>270</b>	<b>290</b>	<b>310</b>	<b>330</b>	<b>350</b>	<b>370</b>	<b>390</b>
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	195	199	203	207	209	212	215	218	222	225	229
<b>V<sub>MD</sub>/Min Hold</b>	222	231	233	236	239	241	244	242	238	-	-

73'000LBS / 33'112 KGS

73'000lbs / 33'112 kgs						
Landing (overweight)						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>191</b>	<b>175</b>	<b>169</b>	<b>163</b>	<b>159</b>	<b>151</b>
<b>V<sub>REF</sub></b>	<b>181</b>	<b>165</b>	<b>159</b>	<b>153</b>	<b>149</b>	<b>141</b>

Takeoff											
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON											
<b>Flaps</b>		<b>8°</b>				<b>20°</b>					
<b>Press. Alt.</b>	<b>0</b>	<b>2'000</b>	<b>4'000</b>	<b>6'000</b>	<b>8'000</b>	<b>0</b>	<b>2'000</b>	<b>4'000</b>	<b>6'000</b>	<b>8'000</b>	
<b>V<sub>1</sub></b>	≤ 10°C	133	133	135	136	137	126	127	128	129	130
	20°C	133	134	135	136	137	126	127	129	130	131
	30°C	133	134	136	137	138	127	128	129	130	131
	40°C	134	136	137	38° / 138	34° / 138	128	129	130	38° / 130	34° / 131
	MAX TEMP	50° / 136	46° / 138	42° / 137			50° / 130	46° / 131	42° / 130		
<b>V<sub>R</sub></b>	≤ 10°C	133	133	135	136	137	126	127	128	129	130
	20°C	133	134	135	136	137	126	127	129	130	131
	30°C	133	134	136	137	138	127	128	129	130	131
	40°C	134	136	137	38° / 138	34° / 138	128	129	130	38° / 130	34° / 131
	MAX TEMP	50° / 136	46° / 138	42° / 137			50° / 130	46° / 131	42° / 130		
<b>V<sub>2</sub> / V<sub>2GA</sub></b>	<b>143 / 149</b>					<b>136</b>					
<b>Flap Retraction</b>	<b>155 (Flaps 1)</b>			<b>181 (Flaps 0)</b>			<b>148 (Flaps 8)</b>	<b>156 (Flaps 1)</b>	<b>181 (Flaps 0)</b>		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL220											
<b>Altitude (FL)</b>	<b>&lt;10'000</b>	<b>210</b>	<b>230</b>	<b>250</b>	<b>270</b>	<b>290</b>	<b>310</b>	<b>330</b>	<b>350</b>	<b>370</b>	<b>390</b>
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	196	200	204	208	211	214	217	220	223	227	231
<b>V<sub>MD</sub>/Min Hold</b>	223	233	235	238	241	243	246	244	239	-	-

74'000LBS / 33'566 KGS

74'000lbs / 33'566 kgs						
Landing (overweight)						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>192</b>	<b>176</b>	<b>170</b>	<b>164</b>	<b>160</b>	<b>152</b>
<b>V<sub>REF</sub></b>	<b>182</b>	<b>166</b>	<b>160</b>	<b>154</b>	<b>150</b>	<b>142</b>

Takeoff											
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON											
<b>Flaps</b>		<b>8°</b>				<b>20°</b>					
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000	
<b>V<sub>1</sub></b>	≤ 10°C	134	135	136	137	138	127	129	129	130	131
	20°C	134	135	136	137	139	128	130	130	131	132
	30°C	134	135	137	138	139	128	130	130	132	132
	40°C	136	137	138	38° / 139	34° / 139	129	131	131	38° / 132	34° / 132
	MAX TEMP	50° / 138	46° / 139	42° / 138			50° / 131	46° / 131	42° / 131		
<b>V<sub>R</sub></b>	≤ 10°C	134	135	136	137	138	127	128	129	130	131
	20°C	134	135	136	137	139	128	129	130	131	132
	30°C	134	135	137	138	139	128	129	130	132	132
	40°C	136	137	138	38° / 139	34° / 139	129	130	131	38° / 132	34° / 132
	MAX TEMP	50° / 138	46° / 139	42° / 138			50° / 131	46° / 131	42° / 131		
<b>V<sub>2</sub> / V<sub>2GA</sub></b>		<b>144 / 150</b>				<b>137</b>					
<b>Flap Retraction</b>		<b>156 (Flaps 1)</b>			<b>186 (Flaps 0)</b>		<b>149 (Flaps 8)</b>	<b>157 (Flaps 1)</b>	<b>183 (Flaps 0)</b>		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL220											
<b>Altitude (FL)</b>	<b>&lt;10'000</b>	<b>210</b>	<b>230</b>	<b>250</b>	<b>270</b>	<b>290</b>	<b>310</b>	<b>330</b>	<b>350</b>	<b>370</b>	<b>390</b>
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	198	202	206	210	212	215	218	221	225	229	233
<b>V<sub>MD</sub>/Min Hold</b>	225	235	237	240	243	245	248	245	240	-	-

75'000LBS / 34'019 KGS

75'000lbs / 34'019 kgs						
Landing (overweight)						
<b>Flaps</b>	<b>0°</b>	<b>1°</b>	<b>8°</b>	<b>20°</b>	<b>30°</b>	<b>45°</b>
<b>Min Maneuvering</b>	<b>193</b>	<b>177</b>	<b>171</b>	<b>165</b>	<b>161</b>	<b>153</b>
<b>V<sub>REF</sub></b>	<b>183</b>	<b>167</b>	<b>161</b>	<b>155</b>	<b>151</b>	<b>143</b>

Takeoff											
Add 1 kt to V <sub>1</sub> & V <sub>R</sub> for Wing & Cowl A/I ON											
<b>Flaps</b>		<b>8°</b>				<b>20°</b>					
Press. Alt.	0	2'000	4'000	6'000	8'000	0	2'000	4'000	6'000	8'000	
<b>V<sub>1</sub></b>	≤ 10°C	135	136	137	138	139	128	129	130	131	132
	20°C	135	136	137	138	140	129	130	131	132	133
	30°C	135	136	138	139	140	129	130	131	133	133
	40°C	137	138	139	38° / 140	34° / 140	130	131	132	38° / 133	34° / 133
	MAX TEMP	50° / 139	46° / 140	42° / 139			50° / 132	46° / 131	42° / 132		
<b>V<sub>R</sub></b>	≤ 10°C	135	136	137	138	139	128	129	130	131	132
	20°C	135	136	137	138	140	129	130	131	132	133
	30°C	135	136	138	139	140	129	130	131	132	133
	40°C	137	138	139	38° / 140	34° / 140	130	131	132	38° / 133	34° / 133
	MAX TEMP	50° / 139	46° / 140	42° / 139			50° / 132	46° / 131	42° / 132		
<b>V<sub>2</sub> / V<sub>2GA</sub></b>		<b>144 / 151</b>				<b>137</b>					
<b>Flap Retraction</b>		<b>156 (Flaps 1)</b>			<b>186 (Flaps 0)</b>		<b>149 (Flaps 8)</b>	<b>157 (Flaps 1)</b>	<b>184 (Flaps 0)</b>		

Additional speeds											
Approximate Single Engine Drift down Altitude - FL210											
<b>Altitude (FL)</b>	<10'000	<b>210</b>	<b>230</b>	<b>250</b>	<b>270</b>	<b>290</b>	<b>310</b>	<b>330</b>	<b>350</b>	<b>370</b>	<b>390</b>
<b>V<sub>FTO</sub> / V<sub>ENR</sub></b>	199	203	207	211	214	217	220	223	226	230	234
<b>V<sub>MD</sub>/Min Hold</b>	226	237	239	242	244	247	249	246	240	-	-

## STABILIZER TRIM TAKE-OFF SETTING - FLAPS 8

C.G [%MAC]	Trim Setting [Units]								
	22'680kg	24'267kg	25'855kg	26'000kg	27'259kg	28'259kg	30'000kg	32'000kg	34'000kg
	50'000lbs	53'500lbs	57'000lbs	61'300lbs	62'300lbs	65'000lbs	69'000lbs	72'000lbs	75'000lbs
14	6,7	7,2	7,7	8,4	8,4	8,6	8,8	8,9	9,1
15	6,6	7,0	7,5	8,2	8,2	8,5	8,6	8,7	8,9
17	6,3	6,7	7,1	7,8	7,8	8,1	8,2	8,3	8,5
19	6,0	6,4	6,8	7,5	7,5	7,7	7,8	8,0	8,1
21	5,7	6,1	6,5	7,1	7,1	7,4	7,5	7,6	7,7
23	5,4	5,8	6,1	6,7	6,7	6,9	7,1	7,2	7,2
25	5,1	5,4	5,8	6,1	6,4	6,6	6,7	6,8	6,8
27	4,8	5,1	5,5	6,0	6,0	6,2	6,3	6,4	6,4
29	4,5	4,8	5,1	5,6	5,6	5,8	5,9	6,0	6,0
31	4,2	4,5	4,8	5,3	5,3	5,4	5,5	5,6	5,6
33	3,9	4,2	4,4	4,9	4,9	5,0	5,1	5,2	5,2
35	3,6	3,9	4,1	4,5	-	-	-	-	-

## STABILIZER TRIM TAKE-OFF SETTING - FLAPS 20

C.G [%MAC]	Trim Setting [Units]								
	22'680kg	24'267kg	25'855kg	26'000kg	27'259kg	28'259kg	30'000kg	32'000kg	34'000kg
	50'000lbs	53'500lbs	57'000lbs	61'300lbs	62'300lbs	65'000lbs	69'000lbs	72'000lbs	75'000lbs
14	5,8	6,3	6,7	6,8	7,9	7,9	8,6	9,3	9,7
15	5,6	6,1	6,5	6,6	7,6	7,6	8,4	9,0	9,4
17	5,3	5,8	6,2	6,2	7,2	7,2	8,0	8,5	8,9
19	5,0	5,5	5,8	5,9	6,8	6,8	7,5	8,0	8,4
21	4,7	5,1	5,5	5,5	6,4	6,4	7,1	7,5	7,9
23	4,4	4,8	5,1	5,2	6,0	6,0	6,6	7,7	7,4
25	4,1	4,4	4,7	4,8	5,6	5,6	6,2	6,6	6,8
27	3,8	4,1	4,4	4,4	5,2	5,2	5,7	6,1	6,3
29	3,6	3,7	4	4,1	4,7	4,7	5,3	5,6	5,8
31	3,6	3,6	3,7	3,7	4,3	4,3	4,8	5,1	5,3
33	3,6	3,6	3,6	3,6	3,9	3,9	4,4	4,6	4,8
35	3,6	3,6	3,6	3,6	3,6	-	-	-	-

NORMAL TAKE-OFF THRUST SETTINGS (ALL ENGINES OPERATING) %N<sub>1</sub> – STATIC TO 65KIAS

## ENGINE BLEEDS CLOSED

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								83,9	84,2
-40	-40	79,3	79,7	80,5	81,3	82,1	83,1	84,0	84,8	85,0
-35	-31	80,1	80,5	81,3	82,1	82,9	83,9	84,8	85,6	85,9
-30	-22	80,9	81,3	82,2	82,9	83,8	84,7	85,7	86,4	86,7
-25	-13	81,7	82,1	82,9	83,8	84,6	85,5	86,5	87,3	87,5
-20	-4	82,4	82,9	83,8	84,6	85,4	86,3	87,3	88,1	88,3
-15	5	83,2	83,7	84,5	85,3	86,2	87,1	88,1	88,9	89,1
-10	14	84,0	84,5	85,3	86,1	87,0	87,9	88,9	89,7	89,9
-5	23	84,8	85,3	86,1	86,9	87,8	88,7	89,7	90,4	90,7
0	32	85,5	86,0	86,8	87,7	88,6	89,5	90,5	91,2	91,5
5	41	86,3	86,8	87,6	88,4	89,3	90,3	91,2	92,0	92,0
10	50	87,0	87,5	88,4	89,2	90,1	91,0	92,0	91,9	91,8
15	59	87,8	88,2	89,1	89,9	90,8	91,6	91,5	91,4	91,3
20	68	88,5	89,0	89,8	90,7	91,1	91,0	90,9	90,8	90,7
25	77	89,2	89,7	90,6	90,6	90,5	90,4	90,3	90,2	90,1
30	86	89,9	90,4	90,2	89,9	89,7	89,6	89,5	89,4	89,4
35	95	89,5	89,6	89,4	89,1	88,9	88,8	88,7	88,7	
40	104	88,3	88,3	88,3	88,2	88,1	88,0			
45	113	86,9	86,9	87,0	87,3	87,2				
50	122	85,4	85,4	85,5	86,4					

## PACKS ON, ANTI ICE OFF

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								83,4	83,6
-40	-40	78,8	79,3	80,1	80,8	81,6	82,6	83,5	84,2	84,4
-35	-31	79,6	80,1	80,9	81,7	82,4	83,4	84,3	85,1	85,3
-30	-22	80,4	80,9	81,7	82,5	83,3	84,2	85,1	85,9	86,1
-25	-13	81,2	81,7	82,5	83,3	84,1	85,0	85,9	86,7	86,9
-20	-4	82,0	82,5	83,3	84,1	84,9	85,8	86,7	87,5	87,7
-15	5	82,8	83,2	84,1	84,4	85,7	86,6	87,5	88,3	88,5
-10	14	83,5	84,0	84,8	85,6	86,4	87,4	88,3	89,1	89,3
-5	23	84,3	84,8	85,8	86,4	87,2	88,1	89,1	89,8	90,0
0	32	85,0	85,6	86,3	87,2	88,0	88,9	89,9	90,6	90,8
5	41	85,8	86,3	87,1	87,9	88,7	89,7	90,6	91,4	91,3
10	50	86,5	87,0	87,8	88,7	89,5	90,4	91,4	91,2	91,1
15	59	87,2	87,7	88,6	89,4	90,2	90,9	90,8	90,7	90,5
20	68	87,9	88,4	89,3	90,1	90,5	90,4	90,2	90,1	89,9
25	77	88,7	89,2	90,0	90,0	89,8	89,7	89,6	89,4	89,2
30	86	89,4	89,9	89,6	89,3	89,0	88,9	88,7	88,6	88,5
35	95	88,9	89,0	88,9	88,4	88,2	88,0	87,9	87,8	
40	104	87,6	87,7	87,6	87,5	87,3	87,1			
45	113	86,2	86,2	86,2	86,6	86,3				
50	122	84,7	84,7	84,7	85,6					

**PACKS ON, COWL ANTI ICE ON**

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								83,4	83,6
-40	-40	78,8	79,3	80,1	80,8	81,6	82,6	83,5	84,2	84,4
-35	-31	79,8	80,1	80,9	81,7	82,4	83,4	84,3	85,1	85,3
-30	-22	80,4	80,9	81,7	82,5	83,3	84,2	85,1	85,9	86,1
-25	-13	81,2	81,7	82,5	83,3	84,1	85,0	85,9	86,7	86,9
-20	-4	82,0	82,5	83,3	84,1	84,9	85,8	86,7	87,5	87,7
-15	5	82,8	83,2	84,1	84,8	85,7	86,6	87,5	88,3	88,5
-10	14	83,5	84,0	84,3	85,6	86,4	87,4	88,3	89,1	89,3
-5	23	84,3	84,8	85,6	86,4	87,2	88,1	89,1	89,8	90,0
0	32	85,0	85,5	86,3	87,2	88,0	88,9	89,9	90,6	90,8
5	41	85,8	86,3	87,1	87,9	88,7	89,7	90,6	91,1	91,0
10	50	86,5	87,0	87,8	88,7	89,5	90,4	90,8	90,6	90,4

**PACKS ON, COWL & WING ANTI ICE ON**

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								83,4	83,6
-40	-40	78,8	79,3	80,1	80,8	81,8	82,6	83,5	84,2	84,4
-35	-31	79,6	80,1	80,9	81,7	82,4	83,4	84,3	85,1	85,3
-30	-22	80,4	80,9	81,7	82,5	83,3	84,2	85,1	85,9	86,1
-25	-13	81,2	81,7	82,5	83,3	84,1	85,0	85,9	86,7	86,9
-20	-4	82,0	82,5	83,3	84,1	84,9	85,8	86,7	87,5	87,7
-15	5	82,8	83,2	84,1	84,8	85,7	86,6	87,5	88,3	88,4
-10	14	83,5	84,0	84,8	85,6	86,4	87,4	88,3	88,8	88,8
-5	23	84,3	84,8	85,6	86,4	87,2	88,1	88,9	88,4	88,1
0	32	85,0	85,5	86,3	87,2	88,0	88,7	88,3	88,0	86,2
5	41	85,8	86,3	87,1	87,9	88,8	88,2	87,8	87,4	85,1
10	50	86,5	87,0	87,5	88,5	88,0	87,6	87,2	86,6	84,4

GO-AROUND THRUST SETTINGS (ALL ENGINES OPERATING) %N<sub>1</sub>

## ENGINE BLEEDS CLOSED

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								84,1	84,4
-40	-40	79,2	79,5	80,6	81,3	82,2	83,2	84,0	84,9	85,2
-35	-31	80,1	80,5	81,3	82,2	82,9	83,9	84,8	85,8	86,0
-30	-22	80,9	81,2	82,3	83,0	83,8	84,8	85,8	86,6	86,9
-25	-13	81,7	82,0	83,0	83,9	84,6	85,6	86,6	87,5	87,7
-20	-4	82,4	82,8	83,9	84,7	85,4	86,4	87,4	88,3	88,5
-15	5	83,1	83,6	84,6	85,4	86,3	87,2	88,2	89,1	89,3
-10	14	84,0	84,4	85,4	86,2	87,0	88,0	89,0	89,9	90,1
-5	23	84,8	85,1	86,1	87,0	87,8	88,8	89,8	90,6	90,9
0	32	85,5	85,9	86,9	87,8	88,6	89,6	90,5	91,3	91,7
5	41	86,3	86,7	87,7	88,5	89,4	90,3	91,2	92,1	91,8
10	50	86,9	87,4	88,5	89,3	90,1	91,1	92,1	91,6	91,4
15	59	87,8	88,1	89,2	90,0	90,8	91,7	91,3	91,1	91,0
20	68	88,5	88,9	89,9	90,8	91,1	90,9	90,9	90,6	90,3
25	77	89,1	89,7	90,7	90,6	90,5	90,3	90,2	89,9	89,8
30	86	89,9	90,3	90,0	89,7	89,6	89,6	89,4	89,2	89,0
35	95	89,4	89,3	89,2	88,7	88,5	88,5	88,6	88,6	
40	104	88,2	88,0	87,8	87,7	87,6	87,5			
45	113	86,7	86,5	86,6	86,8	86,7				
50	122	85,2	85,0	85,1	86,0					

## PACKS ON, ANTI ICE OFF

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								83,7	83,9
-40	-40	78,8	79,2	80,2	80,9	81,7	82,7	83,6	84,4	84,7
-35	-31	79,6	80,0	81,0	81,8	82,5	83,5	84,4	85,3	85,6
-30	-22	80,4	80,8	81,8	82,6	83,3	84,3	85,2	86,1	86,4
-25	-13	81,2	81,6	82,6	83,4	84,2	85,1	86,0	86,9	87,2
-20	-4	82,0	82,4	83,4	84,2	85,0	85,9	86,7	87,7	88,0
-15	5	82,8	83,1	84,2	84,5	85,7	86,7	87,6	88,5	88,8
-10	14	83,5	83,9	84,9	85,7	86,5	87,5	88,4	89,4	89,5
-5	23	84,3	84,7	85,9	86,5	87,3	88,3	89,2	90,0	90,3
0	32	85,0	85,5	86,4	87,3	88,1	89,1	90,0	90,9	91,0
5	41	85,8	86,2	87,2	88,1	88,8	89,8	90,7	91,6	91,2
10	50	86,5	86,9	87,9	88,8	89,6	90,6	91,5	90,9	90,8
15	59	87,1	87,6	88,6	89,5	90,8	91,0	90,7	90,5	90,3
20	68	87,9	88,2	89,5	90,2	90,6	90,4	90,2	89,9	89,6
25	77	88,7	89,1	90,1	90,0	89,8	89,7	89,6	89,2	88,9
30	86	89,4	89,8	89,4	89,2	88,9	88,9	88,6	88,5	88,2
35	95	88,8	88,7	88,6	88,1	87,9	87,7	87,8	87,7	
40	104	87,5	87,4	87,2	87,1	86,9	86,5			
45	113	86,0	85,8	85,8	86,2	85,8				
50	122	84,5	84,3	84,3	85,2					

**PACKS ON, COWL ANTI ICE ON**

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								84,5	85,3
-40	-40	78,8	79,2	80,2	80,9	81,7	82,7	83,6	84,4	84,7
-35	-31	79,8	80,0	81,0	81,8	82,5	83,5	84,4	85,3	85,6
-30	-22	80,4	80,8	81,8	82,6	83,4	84,3	85,2	86,1	86,4
-25	-13	81,2	81,6	82,6	83,4	84,2	85,1	86,0	86,9	87,2
-20	-4	82,0	82,4	83,4	84,2	85,0	85,9	86,8	87,7	88,0
-15	5	82,8	83,1	84,2	84,9	85,8	86,7	87,6	88,5	88,8
-10	14	83,5	83,9	84,4	85,7	86,5	87,5	88,4	89,4	89,5
-5	23	84,3	84,7	85,7	86,5	87,3	88,3	89,2	90,0	90,3
0	32	85,0	85,4	86,4	87,3	88,1	89,1	90,0	90,9	91,0
5	41	85,8	86,2	87,2	88,1	88,8	89,8	90,7	91,2	90,7
10	50	86,5	86,9	87,9	88,8	89,6	90,6	90,8	90,3	90,2

**PACKS ON, COWL & WING ANTI ICE ON**

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								83,7	83,9
-40	-40	78,8	79,2	80,2	80,9	81,9	82,7	83,6	84,4	84,7
-35	-31	79,6	80,0	81,0	81,8	82,5	83,5	84,4	85,3	85,6
-30	-22	80,4	80,8	81,8	82,6	83,4	84,3	85,2	86,1	86,4
-25	-13	81,2	81,6	82,6	83,4	84,2	85,1	86,0	86,9	87,2
-20	-4	82,0	82,4	83,4	84,2	85,0	85,9	86,8	87,7	88,0
-15	5	82,8	83,1	84,2	84,9	85,8	86,7	87,6	88,5	88,7
-10	14	83,5	83,9	84,9	85,7	86,5	87,5	88,4	89,2	88,6
-5	23	84,3	84,7	85,7	86,5	87,3	88,3	89,2	88,4	88,0
0	32	85,0	85,4	86,4	87,3	88,1	89,0	88,4	88,1	86,2
5	41	85,8	86,2	87,2	88,1	89,0	88,4	88,1	87,5	86,6
10	50	86,5	86,9	87,6	88,8	88,2	87,7	87,4	86,7	85,9

GO-AROUND THRUST SETTINGS (ONE ENGINE INOPERATIVE) %N<sub>1</sub>

## PACKS OFF, BLEEDS CLOSED

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								81,8	82,9
-40	-40	76,6	77,0	77,7	78,7	79,4	80,1	81,2	82,7	83,6
-35	-31	77,4	77,7	78,6	79,4	80,2	81,0	82,0	83,5	84,6
-30	-22	78,2	78,5	79,5	80,2	81,0	81,7	82,9	84,3	85,4
-25	-13	79,0	79,3	80,1	81,1	81,8	82,5	83,7	85,2	86,2
-20	-4	79,6	80,1	81,0	81,9	82,6	83,3	84,5	86,0	87,0
-15	5	80,4	80,9	81,7	82,6	83,4	84,1	85,3	86,8	87,8
-10	14	81,2	81,7	82,5	83,4	84,2	85,0	86,1	87,6	88,6
-5	23	82,0	82,5	83,3	84,2	85,0	85,8	86,9	88,4	89,4
0	32	82,7	83,1	84,0	85,0	85,9	86,6	87,8	89,2	90,3
5	41	83,4	83,9	84,8	85,8	86,5	87,5	88,7	90,3	90,7
10	50	84,2	84,6	85,6	86,5	87,3	88,5	90,2	90,2	90,0
15	59	84,9	85,3	86,3	87,2	88,4	89,6	89,5	89,3	89,0
20	68	85,6	86,1	87,0	88,2	88,9	88,7	88,4	88,4	88,3
25	77	86,3	86,8	87,8	88,1	88,1	88,0	87,9	87,7	87,6
30	86	87,0	87,6	87,5	87,4	87,3	87,2	87,0	87,3	86,9
35	95	86,8	87,0	86,7	86,7	86,5	86,4	86,0	86,0	
40	104	85,5	85,6	85,8	85,7	85,7	85,6			
45	113	84,1	84,3	84,4	84,8	84,6				
50	122	82,7	83,0	83,1	83,9					

## PACKS ON, ANTI ICE OFF

OAT		Pressure Altitude								
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000
-45	-49								81,3	82,3
-40	-40	76,1	76,7	77,4	78,3	78,9	79,7	80,8	82,1	83,0
-35	-31	76,9	77,4	78,3	79,1	79,7	80,6	81,6	83,0	84,0
-30	-22	77,7	78,2	79,1	79,9	80,6	81,3	82,4	83,8	84,8
-25	-13	78,5	79,0	79,8	80,7	81,4	82,1	83,2	84,6	85,6
-20	-4	79,2	79,8	80,6	81,5	82,2	82,9	84,0	85,4	86,4
-15	5	80,0	80,5	81,4	81,8	83,0	83,7	84,8	86,2	87,2
-10	14	80,7	81,3	82,1	83,0	83,7	84,6	85,6	87,0	88,0
-5	23	81,5	82,1	83,1	83,8	84,5	85,3	86,4	87,8	88,7
0	32	82,2	82,8	83,6	84,6	85,4	86,1	87,3	88,6	89,6
5	41	82,9	83,5	84,4	85,4	86,0	87,0	88,1	89,7	90,0
10	50	83,7	84,2	85,1	86,1	86,8	88,0	89,6	89,5	89,3
15	59	84,3	84,9	85,9	86,8	87,9	88,9	88,8	88,6	88,3
20	68	85,0	85,6	86,6	87,7	88,4	88,2	87,8	87,8	87,6
25	77	85,8	86,4	87,3	87,6	87,5	87,4	87,3	87,0	86,8
30	86	86,5	87,2	87,0	86,8	86,6	86,5	86,2	86,6	86,1
35	95	86,2	86,5	86,3	86,0	85,8	85,6	85,2	85,1	
40	104	84,9	85,1	85,2	85,1	84,9	84,7			
45	113	83,5	83,7	83,7	84,2	83,8				
50	122	82,1	82,3	82,3	83,2					

**PACKS ON, COWL ANTI ICE ON**

OAT		Pressure Altitude									
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000	
-45	-49									81,2	82,1
-40	-40	75,9	76,4	77,2	78,0	78,7	79,6	80,6	82,1	82,9	
-35	-31	76,9	77,1	78,1	79,0	79,5	80,4	81,4	83,0	83,7	
-30	-22	77,5	77,9	78,8	79,7	80,5	81,2	82,3	83,8	84,5	
-25	-13	78,3	78,7	79,6	80,5	81,3	82,0	83,1	84,6	85,3	
-20	-4	79,1	79,5	80,4	81,3	82,1	82,8	83,9	85,4	86,1	
-15	5	79,9	80,2	81,2	82,1	82,9	83,6	84,7	86,3	86,9	
-10	14	80,5	81,0	81,4	82,9	83,5	84,4	85,5	87,0	87,7	
-5	23	81,3	81,8	82,6	83,6	84,3	85,1	86,3	87,7	88,3	
0	32	82,0	82,5	83,4	84,4	85,2	85,9	87,1	88,5	89,4	
5	41	82,8	83,2	84,1	85,1	85,8	86,8	88,3	89,3	89,4	
10	50	83,5	84,0	84,9	85,9	86,7	88,0	88,8	88,7	88,1	

**PACKS ON, COWL & WING ANTI ICE ON**

OAT		Pressure Altitude									
°C	°F	-1000	0	2000	4000	6000	8000	10000	12000	14000	
-45	-49									81,2	82,1
-40	-40	75,9	76,4	77,2	78,0	78,9	79,6	80,6	82,1	82,9	
-35	-31	76,7	77,1	78,1	79,0	79,5	80,4	81,4	83,0	83,7	
-30	-22	77,5	77,9	78,8	79,7	80,5	81,2	82,3	83,8	84,5	
-25	-13	78,3	78,7	79,6	80,5	81,3	82,0	83,1	84,6	85,3	
-20	-4	79,1	79,5	80,4	81,3	82,1	82,8	83,9	85,4	86,1	
-15	5	79,9	80,2	81,2	82,1	82,9	83,6	84,7	86,5	87,1	
-10	14	80,5	81,0	81,8	82,9	83,5	84,4	86,2	87,1	87,5	
-5	23	81,3	81,8	82,6	83,6	84,3	85,7	87,2	86,5	86,0	
0	32	82,0	82,5	83,4	84,4	85,6	86,9	86,3	85,6	83,8	
5	41	82,8	83,2	84,1	85,2	86,9	86,3	85,4	84,9	81,1	
10	50	83,5	84,0	84,7	86,3	86,0	85,6	84,8	84,0	80,7	

MAXIMUM CONTINUOUS THRUST (ONE ENGINE INOPERATIVE), %N<sub>1</sub> – 170KIAS

PACKS ON, ANTI ICE OFF

SAT		Pressure Altitude								
°C		0	5000	10000	15000	20000	25000	30000	35000	41000
-70	-94							85,5	85,8	85,5
-65	-85						85,8	86,4	86,7	86,3
-60	-76					85,2	86,7	87,3	87,6	87,2
-55	-67					86,1	87,5	88,2	88,4	88,1
-50	-58				85,0	87,0	88,4	89,1	89,2	88,9
-45	-49			83,7	85,9	87,8	89,2	89,9	90,0	89,3
-40	-40	80,4	82,5	84,6	86,8	88,7	90,1	90,8	90,8	88,8
-35	-31	81,2	83,3	85,4	87,6	89,5	90,9	91,8	90,3	88,2
-30	-22	82,0	84,2	86,3	88,4	90,3	91,8	92,0	89,6	87,4
-25	-13	82,8	85,0	87,1	89,2	91,2	92,6	91,4	89,0	86,6
-20	-4	83,6	85,8	87,9	90,1	92,0	92,3	90,7	88,3	85,6
-15	5	84,4	86,6	88,7	90,9	92,8	91,6	90,1	87,6	
-10	14	85,2	87,4	89,5	91,7	92,2	91,0	89,5	86,8	
-5	23	86,0	88,2	90,3	92,4	91,7	90,4	88,6		
0	32	86,8	89,0	91,1	92,0	91,1	89,8	87,6		
5	41	87,5	89,7	91,9	91,4	90,6	89,2			
10	50	88,3	90,5	91,4	90,9	89,9	88,6			
15	59	89,0	91,3	90,9	90,2	89,3				
20	68	89,7	90,7	90,2	89,6	88,7				
25	77	90,5	90,0	89,5	88,9					
30	86	89,7	89,2	88,7	88,2					
35	95	88,7	88,4	87,9	87,4					
40	104	87,4	87,8	87,0						
45	113	86,0	86,7	86,2						
50	122	84,7	85,8							

PACKS ON, COWL ANTI ICE ON

SAT		Pressure Altitude						
°C		0	5000	10000	15000	20000	25000	30000
-70	-94							
-65	-85						85,8	86,4
-60	-76					85,2	86,7	87,3
-55	-67					86,1	87,5	88,2
-50	-58				85,0	87,0	88,4	89,1
-45	-49			83,7	85,9	87,8	89,2	89,9
-40	-40	80,4	82,5	84,6	86,8	88,7	90,1	90,8
-35	-31	81,2	83,3	85,4	87,8	89,5	90,9	91,1
-30	-22	82,0	84,2	86,3	88,4	90,3	91,8	90,4
-25	-13	82,8	85,0	87,1	89,2	91,2	91,7	89,8
-20	-4	83,6	85,8	87,9	90,1	92,0	91,1	89,2
-15	5	84,4	86,6	88,7	90,9	92,0	90,5	88,7
-10	14	85,2	87,4	89,5	91,7	91,5	89,9	88,2
-5	23	86,0	88,2	90,3	91,9	90,9	89,3	87,6
0	32	86,8	89,0	91,1	91,3	90,3	88,7	86,8
5	41	87,5	89,7	91,4	90,8	89,8	88,2	
10	50	88,3	90,5	90,9	90,2	89,2	87,0	

## PACKS ON, WING AND COWL ANTI ICE ON

SAT		Pressure Altitude						
°C		0	5000	10000	15000	20000	25000	30000
-70	-94							
-65	-85						85,3	84,0
-60	-76					84,8	86,2	83,9
-55	-67					85,7	86,2	83,8
-50	-58				85,0	86,5	85,7	83,6
-45	-49			82,7	85,9	87,4	85,3	83,5
-40	-40	80,4	82,5	84,6	86,8	88,2	84,7	83,3
-35	-31	81,2	83,3	85,4	87,6	87,6	84,2	83,0
-30	-22	82,0	84,2	86,3	88,4	87,1	83,9	82,6
-25	-13	82,8	85,0	87,1	89,2	86,6	83,6	82,2
-20	-4	83,8	85,8	87,9	89,5	86,0	83,0	81,8
-15	5	84,4	86,6	88,7	88,8	85,4	82,3	81,3
-10	14	85,2	87,4	89,1	86,6	84,3	81,7	81,0
-5	23	86,0	88,2	88,7	85,1	83,1	81,0	80,6
0	32	86,8	89,0	88,3	84,3	81,9	80,7	80,2
5	41	87,5	88,4	87,8	83,6	81,1	80,3	
10	50	88,2	87,8	87,3	82,9	80,7	79,9	

MAXIMUM CONTINUOUS THRUST (ONE ENGINE INOPERATIVE), %N<sub>1</sub> – 230 KIAS

## ENGINE PACKS ON, ANTI ICE OFF

SAT		Pressure Altitude						
°C		0	5000	10000	15000	20000	25000	30000
-70	-94							
-65	-85						85,3	84,0
-60	-76					84,8	86,2	83,9
-55	-67					85,7	86,2	83,8
-50	-58				85,0	86,5	85,7	83,6
-45	-49			82,7	85,9	87,4	85,3	83,5
-40	-40	80,4	82,5	84,6	86,8	88,2	84,7	83,3
-35	-31	81,2	83,3	85,4	87,6	87,6	84,2	83,0
-30	-22	82,0	84,2	86,3	88,4	87,1	83,9	82,6
-25	-13	82,8	85,0	87,1	89,2	86,6	83,6	82,2
-20	-4	83,8	85,8	87,9	89,5	86,0	83,0	81,8
-15	5	84,4	86,6	88,7	88,8	85,4	82,3	81,3
-10	14	85,2	87,4	89,1	86,6	84,3	81,7	81,0
-5	23	86,0	88,2	88,7	85,1	83,1	81,0	80,6
0	32	86,8	89,0	88,3	84,3	81,9	80,7	80,2
5	41	87,5	88,4	87,8	83,6	81,1	80,3	
10	50	88,2	87,8	87,3	82,9	80,7	79,9	

**PACKS ON, COWL ANTI ICE ON**

SAT		Pressure Altitude						
°C		0	5000	10000	15000	20000	25000	30000
-70	-94							
-65	-85						85,4	86,7
-60	-76					84,8	86,3	87,6
-55	-67					85,7	87,2	88,5
-50	-58				84,8	86,6	88,1	89,4
-45	-49			83,7	85,7	87,5	88,9	90,3
-40	-40	80,2	82,4	84,5	86,6	88,3	89,8	91,1
-35	-31	81,0	83,3	85,4	87,4	89,2	90,7	90,7
-30	-22	81,8	84,1	86,2	88,3	90,0	91,5	90,2
-25	-13	82,6	84,9	87,1	89,1	90,9	91,4	89,7
-20	-4	83,4	85,7	87,9	89,9	91,7	90,9	89,2
-15	5	84,2	86,5	88,7	90,7	91,9	90,4	88,7
-10	14	85,0	87,3	89,5	91,5	91,4	89,9	88,2
-5	23	85,8	88,1	90,3	91,8	90,9	89,4	87,7
0	32	86,5	88,9	91,1	91,3	90,4	88,8	87,2
5	41	87,3	89,7	91,4	90,8	89,8	88,2	
10	50	88,0	90,4	90,9	90,2	89,2	87,6	

**PACKS ON, COWL & WING ANTI ICE ON**

SAT		Pressure Altitude						
°C		0	5000	10000	15000	20000	25000	30000
-70	-94							
-65	-85						84,9	84,4
-60	-76					84,6	85,8	84,1
-55	-67					85,5	86,7	84,0
-50	-58				84,8	86,4	86,5	83,9
-45	-49			83,7	85,7	87,3	86,1	83,7
-40	-40	80,2	82,4	84,5	86,8	88,1	85,6	83,5
-35	-31	81,0	83,3	85,4	87,4	88,6	85,1	83,3
-30	-22	81,8	84,1	86,2	88,3	87,8	84,6	82,9
-25	-13	82,6	84,9	87,1	89,1	87,2	84,1	82,6
-20	-4	83,4	85,7	87,9	89,5	86,6	83,3	82,2
-15	5	84,2	86,5	88,7	89,2	86,1	82,6	81,8
-10	14	85,0	87,3	89,1	88,9	85,0	82,0	81,4
-5	23	85,8	88,1	88,8	87,8	83,9	81,4	81,1
0	32	86,5	88,9	88,4	85,7	82,7	81,0	80,7
5	41	87,3	88,8	87,9	84,1	81,5	80,6	
10	50	88,0	88,0	87,4	83,4	80,9	80,2	

**V<sub>2</sub> GO-AROUND SPEEDS, FLAPS 8**

Weight [lbs]	Weight [kg]	V <sub>2GA</sub> [KIAS]
50'000	22'680	133*
52'000	23'000	133*
54'000	24'000	133*
57'000	25'000	133*
58'000	26'000	133*
60'000	27'000	136*
62'000	28'000	138*
64'000	28'000	140
66'000	29'000	143
68'000	30'000	145
70'000	31'000	147
72'000	32'000	149
74'000	33'000	152
76'000	34'000	154
78'000	35'000	156

\* For weights less than 28'000kg and altitudes less than 2'000ft, use the V<sub>2GA</sub> presented in the table below

Weight [lbs]	Weight [kg]	V <sub>2GA</sub> Sea Level (KIAS)		V <sub>2GA</sub> 1'000ft (KIAS)		V <sub>2GA</sub> 2'000ft (KIAS)	
		OAT		OAT		OAT	
		Below 35°C	35°C & above	Below 35°C	35°C & above	Below 35°C	35°C & above
50'000	22'680	153	133	143	133	133	133
54'000	24'500	144	133	133	133	133	133
57'000	27'220	136	133	133	133	133	133
60'000	27'220	136	133	133	133	133	133

## LANDING DATA, LANDING GEAR DOWN, FLAPS 45

Weight [lbs]	Weight [kg]	VREF (KIAS)	Pressure Altitude (x 1'000ft)					
			0	2	4	6	8	10
Actual Landing Distance (Meters / Feet)								
50'000	22'680	125	825 2'706	861 2'823	899 2'950	941 3'088	990 3'247	1'048 3'438
52'000	23'000	125	825 2'710	861 2'827	899 2'954	942 3'092	990 3'251	1'048 3'443
54'000	24'000	125	826 2'713	862 2'831	901 2'958	943 3'096	992 3'255	1'050 3'447
56'000	25'000	125	828 2'716	864 2'835	902 2'962	944 3'100	993 3'259	1'051 3'450
57'000	25'800	125	828 2'718	864 2'837	903 2'965	945 3'105	994 3'266	1'054 3'465
59'000	26'000	125	832 2'786	868 2'909	907 3'041	950 3'186	999 3'357	1'061 3'568
61'000	27'000	128	855 2'854	892 2'981	933 3'117	977 3'266	1'031 3'454	1'096 3'671
63'000	28'000	130	878 2'921	917 3'052	959 3'192	1'005 3'352	1'064 3'550	1'130 3'772
65'000	29'000	132	900 2'987	940 3'121	983 3'265	1'034 3'439	1'095 3'643	1'164 3'872
67'000	30'000	135	922 3'052	963 3'189	1'009 3'344	1'063 3'527	1'127 3'736	1'197 3'971
69'000	31'000	137	943 3'116	986 3'258	1'035 3'424	1'093 3'615	1'158 3'830	1'231 4'072
71'000	32'000	139	965 3'181	1'010 3'331	1'063 3'506	1'122 3'702	1'189 3'923	1'266 4'177
73'000	33'000	141	987 3'245	1'035 3'406	1'091 3'589	1'152 3'790	1'221 4'017	1'302 4'285
75'000	34'000	143	1'009 3'313	1'061 3'482	1'118 3'671	1'181 3'877	1'253 4'112	1'339 4'395
77'000	35'000	145	1'034 3'386	1'088 3'562	1'147 3'756	1'212 3'969	1'287 4'215	1'378 4'511

 $V_{REF}$  = speed at 50 ft screen height (KIAS), Flaps 45°

Actual Landing Distance = Dry Landing Field Length x 0,6

**LANDING DATA, LANDING WITH FLAPS OTHER THAN FLAPS 45**

Weight [lbs]	Weight [kg]	Flap Setting (degrees)				
		0	1	8	20	30
V <sub>ref</sub> (KIAS)						
50'000	22'680	165	149	143	137	133
52'000	23'000	165	149	143	137	133
54'000	24'000	165	149	143	137	133
56'000	25'000	165	149	143	137	133
57'000	25'800	165	149	143	137	133
59'000	26'000	165	149	143	137	133
61'000	27'000	168	152	146	140	136
63'000	28'000	170	154	148	142	138
65'000	29'000	172	156	150	144	140
67'000	30'000	175	159	153	147	143
69'000	31'000	177	161	155	149	145
71'000	32'000	179	163	157	151	147
73'000	33'000	181	165	159	153	149
75'000	34'000	183	167	161	155	151
77'000	35'000	185	169	163	157	153

## FLIGHT PLANNING

## SIMPLIFIED FLIGHT PLANNING CHART (CRJ550 &amp; 700ER)

- Distance to alternate: 150 nm
- Estimated FL to alternate: FL180
- Reserve fuel: 30 Min
- Calculation based on profile:
  - Climb and Descent with 250 KIAS (below 10.000ft) / 290 KIAS (above 10.000ft)
  - Cruise at 300 KIAS or Mach M0.74

Distance [nm]	Time [hh:mm]	Flight Level		
		Fuel [kg]	Fuel [lbs]	
2.000	04:48	FL380 8.310 18.320	8.821 19.447	
1.750	04:12	FL380 7.367 16.241	7.814 17.227	
1.500	03:37	FL380 6.466 14.255	6.823 15.042	FL380 7.104 15.662
1.250	03:01	FL380 5.602 12.350	5.872 12.946	FL380 6.193 13.653
1.000	02:26	FL380 4.812 10.609	4.980 10.979	FL380 5.238 11.548
750	01:50	FL380 4.018 8.858	4.127 9.098	FL380 4.313 9.509
500	01:13	FL280 3.517 7.754	3.581 7.895	FL280 3.634 8.012
250	00:42	FL180 2.701 5.955	2.743 6.047	FL180 2.777 6.122
		<b>22.500</b> <b>49.604</b>	<b>25.000</b> <b>55.115</b>	<b>27.500</b> <b>60.627</b>
				<b>Zero Fuel Weight [kg]</b> <b>Zero Fuel Weight [lbs]</b>
				<b>32.500</b> <b>70.550</b>
				<b>66.139</b> <b>70.550</b>

## CLIMB (FL-050 TO FL-190)

Flight Level		Weight [1,000 lbs]											
		53	55	57	60	62	64	66	68	71	73	75	77
		Weight [t]											
		24	25	26	27	28	29	30	31	32	33	34	35
190	Min.	5,2	5,5	5,8	6,1	6,4	6,6	6,9	7,2	7,5	7,9	8,1	8,5
	nm	28,0	29,4	30,9	32,4	33,9	35,4	37,0	38,7	40,3	42,1	43,8	45,8
	kg	279	293	308	322	337	352	368	384	400	417	435	452
	lbs	615	646	679	710	743	776	811	847	882	919	959	996
180	Min.	4,9	5,1	5,4	5,7	5,9	6,2	6,4	6,7	7	7,3	7,6	7,9
	nm	25,8	27,1	28,5	29,9	31,3	32,7	34,1	35,6	37,1	38,8	40,4	42,1
	kg.	263	276	289	303	317	331	346	361	376	392	408	425
	lbs	580	608	637	668	699	730	763	796	829	864	899	937
170	Min.	4,5	4,8	5	5,2	5,5	5,7	6	6,2	6,5	6,8	7	7,4
	nm	23,7	24,9	26,1	27,3	28,6	29,9	31,2	32,6	34	35,4	36,9	38,5
	kg.	246	258	271	283	296	310	323	337	351	366	382	397
	lbs	542	569	597	624	653	683	712	743	774	807	842	875
160	Min.	4,2	4,4	4,6	4,8	5	5,3	5,5	5,7	6	6,2	6,5	6,8
	nm	21,5	22,6	23,7	24,8	26	27,2	28,3	29,5	30,8	32,1	33,5	34,8
	kg.	230	241	252	264	276	289	301	314	327	341	355	370
	lbs	507	531	556	582	608	637	664	692	721	752	783	816
150	Min.	3,8	4	4,2	4,4	4,6	4,8	5	5,2	5,5	5,7	5,9	6,2
	nm	19,3	20,3	21,3	22,3	23,3	24,4	25,4	26,5	27,6	28,8	30	31,2
	kg.	213	223	234	245	256	268	279	291	303	316	329	342
	lbs	470	492	516	540	564	591	615	642	668	697	725	754
140	Min.	3,4	3,6	3,8	4	4,2	4,4	4,5	4,7	5	5,2	5,3	5,6
	nm	17,3	18,2	19,1	20	20,8	21,8	22,7	23,7	24,7	25,8	26,8	27,9
	kg.	194,2	203,2	213,2	223,2	233,4	244,2	254,2	265,2	276,2	288	299,8	311,6
	lbs	428	448	470	492	515	538	560	585	609	635	661	687
130	Min.	3,1	3,2	3,4	3,6	3,8	3,9	4,1	4,2	4,5	4,6	4,8	5
	nm	15,3	16	16,8	17,6	18,4	19,2	20,1	20,9	21,8	22,7	23,7	24,6
	kg.	175,4	183,4	192,4	201,4	210,8	220,4	229,4	239,4	249,4	260	270,6	281,2
	lbs	387	404	424	444	465	486	506	528	550	573	597	620
120	Min.	2,7	2,9	3	3,1	3,3	3,5	3,6	3,8	3,9	4,1	4,2	4,5
	nm	13,2	13,9	14,6	15,3	15,9	16,7	17,4	18,2	18,9	19,7	20,5	21,4
	kg.	156,6	163,6	171,6	179,6	188,2	196,6	204,6	213,6	222,6	232	241,4	250,8
	lbs	345	361	378	396	415	433	451	471	491	511	532	553
110	Min.	2,4	2,5	2,6	2,7	2,9	3	3,2	3,3	3,4	3,5	3,7	3,9
	nm	11,2	11,7	12,3	12,9	13,5	14,1	14,8	15,4	16	16,6	17,4	18,1
	kg.	137,8	143,8	150,8	157,8	165,6	172,8	179,8	187,8	195,8	204	212,2	220,4
	lbs	304	317	332	348	365	381	396	414	432	450	468	486
100	Min.	2	2,1	2,2	2,3	2,5	2,6	2,7	2,8	2,9	3	3,1	3,3
	nm	9,2	9,6	10,1	10,6	11	11,5	12,1	12,6	13,1	13,6	14,2	14,8
	kg.	119	124	130	136	143	149	155	162	169	176	183	190
	lbs	262	273	287	300	315	328	342	357	373	388	403	419
50	Min.	0,8	0,8	0,9	0,9	1	1	1	1,1	1,1	1,2	1,2	1,3
	nm	3,5	3,6	3,8	4	4,2	4,4	4,5	4,7	4,9	5,1	5,3	5,6
	kg.	49	51	54	56	59	61	64	66	69	72	75	78
	lbs	108	112	119	123	130	134	141	146	152	159	165	172

## CLIMB (FL-200 TO FL-290)

Flight Level		Weight [1,000lbs]											
		Weight [t]											
		53	55	57	60	62	64	66	68	71	73	75	77
		24	25	26	27	28	29	30	31	32	33	34	35
290	Min.	9,8	10,3	10,9	11,4	12	12,5	13,1	13,8	14,4	15,1	15,8	16,6
	nm	59,5	62,6	65,9	69,3	72,8	76,3	80,0	83,3	87,9	92,2	96,7	101,5
	kg	468	493	518	544	570	597	625	655	685	717	751	786
	lbs	1032	1087	1142	1199	1257	1316	1378	1444	1510	1581	1656	1733
280	Min.	9,3	9,8	10,3	10,8	11,4	11,9	12,4	13	13,6	14,3	14,9	15,7
	nm	55,7	58,7	61,7	64,9	68,1	71,4	74,8	78	82	86	90,1	94,5
	kg.	449	472	496	521	546	571	598	626	655	685	717	750
	lbs	990	1041	1093	1149	1204	1259	1318	1380	1444	1510	1581	1653
270	Min.	8,8	9,2	9,7	10,2	10,7	11,2	11,7	12,2	12,8	13,4	14	14,7
	nm	51,9	54,7	57,5	60,4	63,3	66,4	69,5	72,7	76,1	79,7	83,5	87,4
	kg.	429	451	474	497	521	545	571	596	624	652	682	713
	lbs	946	994	1045	1096	1149	1202	1259	1314	1376	1437	1504	1572
260	Min.	8,3	8,7	9,1	9,6	10,1	10,5	11	11,5	12	12,6	13,1	13,8
	nm	48,3	50,9	53,4	56,1	58,8	61,6	64,5	67,5	70,6	73,9	77,3	80,9
	kg.	409	430	451	473	496	519	543	567	593	619	647	676
	lbs	902	948	994	1043	1093	1144	1197	1250	1307	1365	1426	1490
250	Min.	7,7	8,1	8,5	9	9,4	9,8	10,3	10,7	11,2	11,7	12,2	12,8
	nm	44,6	47	49,3	51,8	54,3	56,8	59,5	62,2	65	68	71	74,3
	kg.	388	408	428	449	470	492	514	537	561	586	612	639
	lbs	855	899	944	990	1036	1085	1133	1184	1237	1292	1349	1409
240	Min.	7,3	7,7	8	8,5	8,9	9,3	9,7	10,1	10,6	11	11,5	12,1
	nm	41,7	43,9	46,1	48,4	50,8	53,1	55,6	58,1	60,7	63,5	66,3	69,3
	kg.	370	389	408	427	447	468	489	511	534	557	582	607
	lbs	816	858	899	941	985	1032	1078	1127	1177	1228	1283	1338
230	Min.	6,9	7,2	7,6	8	8,4	8,7	9,1	9,5	9,9	10,4	10,8	11,3
	nm	38,8	40,9	42,9	45	47,2	49,4	51,7	54	56,4	59	61,5	64,3
	kg.	351	369	387	406	425	444	464	485	506	528	552	575
	lbs	774	814	853	895	937	979	1023	1069	1116	1164	1217	1268
220	Min.	6,4	6,8	7,1	7,5	7,8	8,2	8,6	8,9	9,3	9,7	10,1	10,6
	nm	36	37,8	39,7	41,7	43,7	45,6	47,7	49,9	52,1	54,4	56,8	59,4
	kg.	333	350	367	384	402	421	440	459	479	500	521	544
	lbs	734	772	809	847	886	928	970	1012	1056	1102	1149	1199
210	Min.	6	6,3	6,7	7	7,3	7,6	8	8,3	8,6	9,1	9,4	9,8
	nm	33,1	34,8	36,5	38,3	40,1	41,9	43,8	45,8	47,8	49,9	52	54,4
	kg.	314	330	346	363	380	397	415	433	451	471	491	512
	lbs	692	728	763	800	838	875	915	955	994	1038	1082	1129
200	Min.	5,6	5,9	6,2	6,5	6,8	7,1	7,4	7,7	8	8,4	8,7	9,1
	nm	30,2	31,7	33,3	34,9	36,6	38,2	39,9	41,7	43,5	45,4	47,3	49,4
	kg.	296	311	326	341	357	373	390	407	424	442	461	480
	lbs	653	686	719	752	787	822	860	897	935	974	1016	1058

## CLIMB (FL-300 TO FL-390)

Flight Level		Weight [1,000lbs]												
		53	55	57	60	62	64	66	68	71	73	75	77	
		Weight [t]												
		24	25	26	27	28	29	30	31	32	33	34	35	
390	Min.	15,6	16,5	17,5	18,6	19,8	21	22,5	24,1	26	28,4	31,6	36,6	
	nm	100,6	106,8	113,5	120,6	128,4	136,9	146,4	157,4	170,6	187,0	209,0	244,1	
	kg	646	683	723	764	809	857	909	967	1035	1116	1219	1371	
	lbs	1424	1506	1594	1684	1784	1889	2004	2132	2282	2460	2687	3023	
380	Min.	14,8	15,7	16,6	17,6	18,6	19,7	21	22,4	23,9	25,8	28,2	31,6	
	nm	95	100,7	106,8	112,8	120,1	127,6	135,8	145	155,7	168,5	184,7	208,2	
	kg	624,5	660	697,5	736,5	778	822	869	920,5	979	1046	1127,5	1236,5	
	lbs	1377	1455	1538	1624	1715	1812	1916	2029	2158	2306	2486	2726	
370	Min.	14	14,8	15,6	16,5	17,4	18,4	19,4	20,6	21,8	23,2	24,7	26,5	
	nm	89,3	94,6	100	105	111,8	118,3	125,2	132,6	140,8	150	160,3	172,2	
	kg	603	637	672	709	747	787	829	874	923	976	1036	1102	
	lbs	1329	1404	1482	1563	1647	1735	1828	1927	2035	2152	2284	2429	
360	Min.	13,4	14,1	14,9	15,7	16,6	17,5	18,4	19,5	20,6	21,8	23,2	24,7	
	nm	84,9	89,9	94,9	99,9	105,9	111,8	118,1	124,8	132,2	140,2	149,2	159,2	
	kg	585	618	651	686	722	760	800	842	887	936	990	1049	
	lbs	1290	1362	1435	1512	1592	1676	1764	1856	1956	2064	2183	2313	
350	Min.	12,7	13,4	14,2	14,9	15,7	16,6	17,4	18,4	19,4	20,4	21,6	22,8	
	nm	80,5	85,1	89,8	94,8	100	105,3	111	117	123,5	130,4	138	146,2	
	kg	567	598	630	663	697	733	770	809	851	896	943	995	
	lbs	1250	1318	1389	1462	1537	1616	1698	1784	1876	1975	2079	2194	
340	Min.	12,2	12,9	13,6	14,3	15,1	15,9	16,7	17,6	18,5	19,4	20,5	21,6	
	nm	76,8	81,1	85,5	90,2	95	100	105,3	110,9	116,9	123,2	130,1	137,5	
	kg	551	580	611	643	675	710	745	782	822	864	908	956	
	lbs	1215	1279	1347	1418	1488	1565	1642	1724	1812	1905	2002	2108	
330	Min.	11,7	12,3	13	13,7	14,4	15,1	15,9	16,7	17,5	18,4	19,3	20,4	
	nm	73	77,1	81,2	85,5	90	94,7	99,6	104,8	110,2	116	122,2	128,8	
	kg	534	562	592	622	653	686	720	755	792	832	873	917	
	lbs	1177	1239	1305	1371	1440	1512	1587	1664	1746	1834	1925	2022	
320	Min.	11,2	11,8	12,5	13,1	13,8	14,5	15,2	15,9	16,7	17,6	18,4	19,4	
	nm	69,6	73,4	77,3	81,4	85,6	90	94,5	99,4	104,4	109,8	115,5	121,6	
	kg	518	545	574	603	633	664	696	730	765	803	842	884	
	lbs	1142	1202	1265	1329	1396	1464	1534	1609	1687	1770	1856	1949	
310	Min.	10,7	11,3	11,9	12,5	13,1	13,8	14,4	15,1	15,9	16,7	17,5	18,4	
	nm	66,1	69,7	73,4	77,2	81,1	85,2	89,4	93,9	98,6	103,6	108,8	114,4	
	kg	501	528	555	583	612	641	672	704	738	773	811	850	
	lbs	1105	1164	1224	1285	1349	1413	1482	1552	1627	1704	1788	1874	
300	Min.	10,3	10,8	11,4	12	12,6	13,2	13,8	14,5	15,2	15,9	16,7	17,5	
	nm	62,8	66,2	69,7	73,3	77	80,8	84,7	88,6	93,3	97,9	102,8	108	
	kg	485	511	537	564	591	619	649	680	712	745	781	818	
	lbs	1069	1127	1184	1243	1303	1365	1431	1499	1570	1642	1722	1803	

**CRUISE 300 KIAS / M.74 (FL-100 TO FL-240)**

		Weight [1,000lbs]												
		53					55    57    60    62    64					66    68    71		
		24	25	26	27	28	29	30	31	32	33	34	35	36
	nm/hr	425	425	425	425	425	425	425	425	425	425	425	425	425
240	kg/hr/engine	817	823	829	835	842	848	854	861	868	875	883	892	892
	lbs/hr/engine	1801	1814	1828	1841	1856	1870	1883	1898	1914	1929	1947	1967	1967
230	nm/hr	418	418	418	418	418	418	418	418	418	418	418	418	418
	kg/hr/engine	819	824	831	837	843	850	856	862	869	876	884	893	893
	lbs/hr/engine	1806	1817	1832	1845	1858	1874	1887	1900	1916	1931	1949	1969	1969
220	nm/hr	412	412	412	412	412	412	412	412	412	412	412	412	412
	kg/hr/engine	820	826	832	838	844	851	857	864	871	878	885	894	894
	lbs/hr/engine	1808	1821	1834	1847	1861	1876	1889	1905	1920	1936	1951	1971	1971
210	nm/hr	406	406	406	406	406	406	406	406	406	406	406	406	406
	kg/hr/engine	822	828	833	839	846	852	858	865	872	879	887	895	895
	lbs/hr/engine	1812	1825	1836	1850	1865	1878	1892	1907	1922	1938	1956	1973	1973
200	nm/hr	400	400	400	400	400	400	400	400	400	400	400	400	400
	kg/hr/engine	824	829	835	841	847	853	860	866	873	880	888	895	895
	lbs/hr/engine	1817	1828	1841	1854	1867	1881	1896	1909	1925	1940	1958	1973	1973
190	nm/hr	394	394	394	394	394	394	394	394	394	394	394	394	394
	kg/hr/engine	826	832	838	844	850	856	862	869	876	883	890	898	898
	lbs/hr/engine	1821	1834	1847	1861	1874	1887	1900	1916	1931	1947	1962	1980	1980
180	nm/hr	388	388	388	388	388	388	388	388	388	388	388	388	388
	kg/hr/engine	829	834	840	846	852	858	865	871	878	885	892	900	900
	lbs/hr/engine	1828	1839	1852	1865	1878	1892	1907	1920	1936	1951	1967	1984	1984
170	nm/hr	382	382	382	382	382	382	382	382	382	382	382	382	382
	kg/hr/engine	831	836	842	848	854	861	867	873	880	887	894	902	902
	lbs/hr/engine	1832	1843	1856	1870	1883	1898	1911	1925	1940	1956	1971	1989	1989
160	nm/hr	377	377	377	377	377	377	377	377	377	377	377	377	377
	kg/hr/engine	833	838	844	850	856	863	869	875	882	889	896	904	904
	lbs/hr/engine	1836	1847	1861	1874	1887	1903	1916	1929	1944	1960	1975	1993	1993
150	nm/hr	371	371	371	371	371	371	371	371	371	371	371	371	371
	kg/hr/engine	833	839	845	851	858	864	870	877	883	890	897	905	905
	lbs/hr/engine	1836	1850	1863	1876	1892	1905	1918	1933	1947	1962	1978	1995	1995
140	nm/hr	366	366	366	366	366	366	366	366	366	366	366	366	366
	kg/hr/engine	835	841	847	853	860	866	872	879	885	892	899	907	907
	lbs/hr/engine	1841	1854	1867	1881	1896	1909	1922	1938	1951	1967	1982	2000	2000
130	nm/hr	360	360	360	360	360	360	360	360	360	360	360	360	360
	kg/hr/engine	837	842	849	855	861	868	874	881	887	894	901	908	908
	lbs/hr/engine	1845	1856	1872	1885	1898	1914	1927	1942	1956	1971	1986	2002	2002
120	nm/hr	355	355	355	355	355	355	355	355	355	355	355	355	355
	kg/hr/engine	838	843	850	856	862	869	875	882	888	895	902	909	909
	lbs/hr/engine	1847	1858	1874	1887	1900	1916	1929	1944	1958	1973	1989	2004	2004
110	nm/hr	350	350	350	350	350	350	350	350	350	350	350	350	350
	kg/hr/engine	844	844	850	857	863	870	876	883	889	896	903	910	910
	lbs/hr/engine	1847	1861	1874	1889	1903	1918	1931	1947	1960	1975	1991	2006	2006
100	nm/hr	345	345	345	345	345	345	345	345	345	345	345	345	345
	kg/hr/engine	839	845	851	857	864	870	877	883	890	896	903	910	910
	lbs/hr/engine	1850	1863	1876	1889	1905	1918	1933	1947	1962	1978	1995	2006	2006

Flight Level

ISA CORRECTION CRZ TAS = ADD/SUBSTRACT 2,2% PER +/- 10° DEVIATION

ISA CORRECTION CRZ FUEL = ADD/SUBSTRACT 3,1% PER +/- 10° DEVIATION

**CRUISE 200 KIAS / M.74 (FL-250 TO FL-390)**

		Weight [1,000lbs]											
		Weight [t]					Weight [kg]						
		53	55	57	60	62	64	66	68	71	73	75	77
		24	25	26	27	28	29	30	31	32	33	34	35
		nm/hr	424	424	424	424	424	424	424	424	424	424	424
		kg/hr/engine	577	586	597	609	623	639	665	676	697	697	697
		lbs/hr/engine	1272	1292	1316	1343	1373	1409	1466	1490	1537		
		nm/hr	424	424	424	424	424	424	424	424	424	424	424
		kg/hr/engine	593	601	610	621	633	646	665	678	696		
		lbs/hr/engine	1307	1325	1345	1369	1396	1424	1466	1495	1534		
		nm/hr	424	424	424	424	424	424	424	424	424	424	424
		kg/hr/engine	608	615	623	632	642	653	665	679	695	711	730
		lbs/hr/engine	1340	1356	1373	1393	1415	1440	1466	1497	1532	1567	1609
		nm/hr	425	425	425	425	425	425	425	425	425	425	425
		kg/hr/engine	624	632	639	648	656	666	677	690	703	718	734
		lbs/hr/engine	1376	1393	1409	1429	1446	1468	1493	1521	1550	1583	1618
		nm/hr	426	426	426	426	426	426	426	426	426	426	426
		kg/hr/engine	640	648	655	663	670	679	689	700	711	724	738
		lbs/hr/engine	1411	1429	1444	1462	1477	1497	1519	1543	1567	1596	1627
		nm/hr	428	428	428	428	428	428	428	428	428	428	428
		kg/hr/engine	659	666	673	681	689	697	706	716	726	738	750
		lbs/hr/engine	1453	1468	1484	1501	1519	1537	1556	1579	1601	1627	1653
		nm/hr	430	430	430	430	430	430	430	430	430	430	430
		kg/hr/engine	677	684	691	699	707	715	723	731	740	751	762
		lbs/hr/engine	1493	1508	1523	1541	1559	1576	1594	1612	1631	1656	1680
		nm/hr	432	432	432	432	432	432	432	432	432	432	432
		kg/hr/engine	698	704	711	718	726	734	742	750	759	769	778
		lbs/hr/engine	1539	1552	1567	1583	1601	1618	1636	1653	1673	1695	1715
		nm/hr	434	434	434	434	434	434	434	434	434	434	434
		kg/hr/engine	718	724	730	737	744	752	761	769	778	786	794
		lbs/hr/engine	1583	1596	1609	1625	1640	1658	1678	1695	1715	1733	1750
		nm/hr	436	436	436	436	436	436	436	436	436	436	436
		kg/hr/engine	741	747	753	759	766	773	781	789	798	807	815
		lbs/hr/engine	1634	1647	1660	1673	1689	1704	1722	1739	1759	1779	1797
		nm/hr	438	438	438	438	438	438	438	438	438	438	438
		kg/hr/engine	763	769	775	781	787	794	801	809	818	827	835
		lbs/hr/engine	1682	1695	1709	1722	1735	1750	1766	1784	1803	1823	1841
		nm/hr	440	440	440	440	440	440	440	440	440	440	440
		kg/hr/engine	788	794	800	806	812	818	825	832	840	849	857
		lbs/hr/engine	1737	1750	1764	1777	1790	1803	1819	1834	1852	1872	1889
		nm/hr	441	441	441	441	441	441	441	441	441	441	441
		kg/hr/engine	812	818	824	830	836	842	848	855	862	870	878
		lbs/hr/engine	1790	1803	1817	1830	1843	1856	1870	1885	1900	1918	1936
		nm/hr	438	438	438	438	438	438	438	438	438	438	438
		kg/hr/engine	819	825	831	837	843	849	855	862	869	876	885
		lbs/hr/engine	1806	1819	1832	1845	1858	1872	1885	1900	1916	1931	1951
		nm/hr	431	431	431	431	431	431	431	431	431	431	431
		kg/hr/engine	816	822	828	834	840	847	853	859	866	874	882
		lbs/hr/engine	1799	1812	1825	1839	1852	1867	1881	1894	1909	1927	1944

Flight Level

ISA CORRECTION CRZ TAS = ADD/SUBSTRACT 2,2% PER +/- 10° DEVIATION  
 ISA CORRECTION CRZ FUEL = ADD/SUBSTRACT 3,1% PER +/- 10° DEVIATION

VOL  
2

2-1-82

21-Feb-2021

1969

1956

1936

1918

1909

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## DESCENT (FL-390 TO FL-300)

Flight Level		Weight [1,000lbs]											
		53	55	57	60	62	64	66	68	71	73	75	77
		24	25	26	27	28	29	30	31	32	33	34	35
390	Min.	17,3	17,3	17,3	17,3	17,3	17,3	17,3	17,3	17,3	17,3	17,4	17,6
	nm	106,2	105,7	105,2	104,8	104,4	104,0	103,7	103,3	103,0	102,7	103,4	104,6
	kg	164	159	153	148	143	138	133	128	123	118	117	118
	lbs	362	351	337	326	315	304	293	282	271	260	258	260
380	Min.	16,4	16,4	16,4	16,4	16,4	16,4	16,5	16,6	16,8	17	17,2	
	nm	99,8	99,3	98,8	98,4	98	97,5	97	97	98	99,4	100,5	101,8
	kg	151	145,5	139,5	134,5	129	124	119,5	116	112	113	114,5	116
	lbs	333	321	308	297	284	273	263	256	247	249	252	256
370	Min.	15,5	15,5	15,5	15,5	15,5	15,5	15,6	15,8	16,1	16,3	16,6	16,8
	nm	93,3	92,9	92,4	92	91,6	91,2	91,5	92,8	94,5	96,1	97,5	98,9
	kg	138	132	126	121	115	110	106	107	108	110	112	114
	lbs	304	291	278	267	254	243	234	236	238	243	247	251
360	Min.	14,5	14,5	14,5	14,5	14,7	14,9	15,1	15,4	15,7	16	16,2	16,5
	nm	86,3	85,9	85,4	85	85,8	87	88,6	90,1	91,8	93,4	94,8	96,2
	kg	122	116	110	104	100	100	102	104	106	108	110	112
	lbs	269	256	243	229	220	220	225	229	234	238	243	247
350	Min.	13,5	13,5	13,5	13,8	14,1	14,4	14,7	15	15,3	15,6	15,8	16,1
	nm	79,2	78,8	78,3	79,8	81,8	83,7	85,6	87,4	89	90,6	92	93,4
	kg	105	99	93	94	96	98	100	102	104	106	108	109
	lbs	231	218	205	207	212	216	220	225	229	234	238	240
340	Min.	12,6	12,9	13,2	13,5	13,8	14,1	14,4	14,7	15	15,3	15,5	15,7
	nm	74,1	74,5	75,8	77,5	79,5	81,3	83,2	84,9	86,5	88,1	89,5	90,9
	kg	94	89	90	92	94	96	98	100	102	104	106	107
	lbs	207	196	198	203	207	212	216	220	225	229	234	236
330	Min.	12	12,4	12,8	13,1	13,4	13,7	14	14,3	14,6	14,9	15,1	15,3
	nm	69	71,1	73,2	75,1	77,1	78,9	80,7	82,4	84	85,5	86,9	88,3
	kg	83	85	88	90	92	94	96	98	100	102	104	105
	lbs	183	187	194	198	203	207	212	216	220	225	229	231
320	Min.	11,8	12,1	12,5	12,8	13,1	13,4	13,7	14	14,3	14,6	14,8	15
	nm	67	69,1	71,1	73	74,9	76,7	78,4	80,1	81,7	83,1	84,5	85,8
	kg	82	84	87	89	91	93	95	97	99	100	102	103
	lbs	181	185	192	196	201	205	209	214	218	220	225	227
310	Min.	11,5	11,8	12,2	12,5	12,8	13,1	13,4	13,7	13,9	14,2	14,4	14,6
	nm	65	67	69	70,9	72,7	74,4	76,1	77,7	79,3	80,7	82,1	83,3
	kg	80	82	85	87	89	91	93	95	97	98	100	101
	lbs	176	181	187	192	196	201	205	209	214	216	220	223
300	Min.	11,3	11,6	11,9	12,3	12,6	12,8	13,1	13,4	13,6	13,9	14,1	14,3
	nm	63,2	65,2	67,1	68,9	70,7	72,3	74	75,6	77,1	78,5	79,8	81
	kg	79	81	84	86	88	90	92	94	95	97	98	100
	lbs	174	179	185	190	194	198	203	207	209	214	216	220

## DESCENT (FL-290 TO FL-200)

Flight Level		Weight [1,000lbs]											
		53	55	57	60	62	64	66	68	71	73	75	77
		24	25	26	27	28	29	30	31	32	33	34	35
290	Min.	11	11,3	11,6	12	12,3	12,5	12,8	13,1	13,3	13,6	13,8	14
	nm	61,4	63,3	65,1	66,9	68,6	70,2	71,8	73,4	74,8	76,2	77,5	78,7
	kg	77	79	82	84	86	88	90	92	93	95	96	98
	lbs	170	174	181	185	190	194	198	203	205	209	212	216
280	Min.	10,7	11	11,3	11,7	12	12,2	12,5	12,8	13	13,3	13,5	13,7
	nm	59,3	61,2	62,9	64,6	66,3	67,9	69,4	70,9	72,3	73,6	74,9	76
	kg	76	78	80	82	84	86	88	90	91	93	94	96
	lbs	168	172	176	181	185	190	194	198	201	205	207	212
270	Min.	10,4	10,7	11	11,3	11,6	11,9	12,1	12,4	12,6	12,9	13,1	13,3
	nm	57,2	59	60,7	62,3	63,9	65,5	66,9	68,4	69,7	71	72,2	73,3
	kg	74	76	78	80	82	84	86	88	89	91	92	94
	lbs	163	168	172	176	181	185	190	194	196	201	203	207
260	Min.	10,1	10,4	10,7	11	11,3	11,5	11,8	12	12,2	12,5	12,7	12,9
	nm	55	56,7	58,3	59,9	61,4	62,9	64,3	65,7	67	68,2	69,3	70,4
	kg	73	75	77	79	80	82	84	86	87	89	90	92
	lbs	161	165	170	174	176	181	185	190	192	196	198	203
250	Min.	9,8	10,1	10,4	10,6	10,9	11,1	11,4	11,6	11,8	12,1	12,2	12,4
	nm	52,8	54,4	55,9	57,4	58,9	60,3	61,6	62,9	64,2	65,3	66,4	67,4
	kg	71	73	75	77	78	80	82	84	85	87	88	89
	lbs	157	161	165	170	172	176	181	185	187	192	194	196
240	Min.	9,5	9,8	10	10,3	10,5	10,7	11	11,2	11,4	11,7	11,8	12
	nm	50,6	52,2	53,6	55	56,5	57,8	59,1	60,3	61,5	62,6	63,6	64,6
	kg	69	71	73	75	76	78	80	82	83	85	86	87
	lbs	152	157	161	165	168	172	176	181	183	187	190	192
230	Min.	9,2	9,4	9,7	9,9	10,2	10,4	10,6	10,8	11	11,3	11,4	11,6
	nm	48,5	50	51,3	52,7	54,1	55,3	56,5	57,7	58,8	59,9	60,9	61,8
	kg	67	69	71	73	74	76	78	80	81	82	84	85
	lbs	148	152	157	161	163	168	172	176	179	181	185	187
220	Min.	8,8	9,1	9,3	9,6	9,8	10	10,3	10,5	10,7	10,8	11	11,1
	nm	46,3	47,7	49,1	50,3	51,6	52,8	54	55,1	56,2	57,1	58,1	59
	kg	66	67	69	71	72	74	75	77	78	80	81	82
	lbs	146	148	152	157	159	163	165	170	172	176	179	181
210	Min.	8,5	8,7	9	9,2	9,5	9,7	9,9	10,1	10,3	10,4	10,6	10,7
	nm	44,2	45,5	46,8	48	49,2	50,3	51,4	52,5	53,5	54,4	55,4	56,2
	kg	64	65	67	69	70	72	73	75	76	77	79	80
	lbs	141	143	148	152	154	159	161	165	168	170	174	176
200	Min.	8,2	8,4	8,6	8,9	9,1	9,3	9,5	9,7	9,9	10	10,2	10,3
	nm	42	43,3	44,5	45,6	46,8	47,8	48,9	49,9	50,8	51,7	52,6	53,4
	kg	62	63	65	67	68	70	71	73	74	75	77	78
	lbs	137	139	143	148	150	154	157	161	163	165	170	172

## DESCENT (FL-190 TO FL-050)

Flight Level		Weight [1,000lbs]											
		53	55	57	60	62	64	66	68	71	73	75	77
		Weight [t]											
		24	25	26	27	28	29	30	31	32	33	34	35
190	Min.	7,9	8,1	8,3	8,5	8,7	8,9	9,1	9,3	9,5	9,6	9,8	9,9
	nm	40,0	41,2	42,3	43,4	44,5	45,5	46,5	47,4	48,3	49,1	50,0	50,7
	kg	60	61	63	65	66	68	69	71	72	73	74	75
	lbs	132	134	139	143	146	150	152	157	159	161	163	165
180	Min.	7,5	7,7	7,9	8,2	8,3	8,5	8,7	8,9	9,1	9,2	9,4	9,5
	nm	37,9	39,1	40,1	41,2	42,2	43,1	44,1	44,9	45,8	46,5	47,3	48
	kg	58	59	61	63	64	65	67	68	69	70	72	72
	lbs	128	130	134	139	141	143	148	150	152	154	159	159
170	Min.	7,2	7,4	7,6	7,8	8	8,2	8,3	8,5	8,6	8,7	8,9	9
	nm	35,9	36,9	38	38,9	39,9	40,8	41,6	42,5	43,2	44	44,7	45,4
	kg	56	57	59	60	61	63	64	66	67	68	69	70
	lbs	123	126	130	132	134	139	141	146	148	150	152	154
160	Min.	6,8	7	7,2	7,5	7,6	7,8	7,9	8,1	8,2	8,3	8,5	8,6
	nm	33,8	34,8	35,8	36,7	37,6	38,4	39,2	40	40,7	41,4	42	42,7
	kg	54	55	57	58	59	60	62	63	64	65	67	67
	lbs	119	121	126	128	130	132	137	139	141	143	148	148
150	Min.	6,5	6,7	6,9	7,1	7,2	7,4	7,5	7,7	7,8	7,9	8,1	8,2
	nm	31,8	32,7	33,6	34,5	35,3	36,1	36,8	37,5	38,2	38,8	39,4	40
	kg	52	53	55	56	57	58	60	61	62	63	64	64
	lbs	115	117	121	123	126	128	132	134	137	139	141	141
140	Min.	6,1	6,3	6,4	6,6	6,7	6,9	7	7,2	7,3	7,4	7,5	7,6
	nm	29,4	30,2	31	31,9	32,6	33,3	33,9	34,6	35,2	35,8	36,3	36,8
	kg	49	50	51,8	52,6	53,6	54,6	56,4	57,4	58,2	59,2	60	60,2
	lbs	108	110	114	116	118	120	124	127	128	131	132	133
130	Min.	5,7	5,8	6	6,1	6,2	6,4	6,5	6,7	6,8	6,8	7	7,1
	nm	27	27,7	28,5	29,2	29,9	30,5	31,1	31,7	32,2	32,7	33,2	33,7
	kg	46	47	48,6	49,2	50,2	51,2	52,8	53,8	54,4	55,4	56	56,4
	lbs	101	104	107	108	111	113	116	119	120	122	123	124
120	Min.	5,2	5,4	5,5	5,7	5,8	5,9	6	6,1	6,2	6,3	6,4	6,5
	nm	24,5	25,3	25,9	26,6	27,1	27,7	28,2	28,7	29,3	29,7	30,1	30,5
	kg	43	44	45,4	45,8	46,8	47,8	49,2	50,2	50,6	51,6	52	52,6
	lbs	95	97	100	101	103	105	108	111	112	114	115	116
110	Min.	4,8	4,9	5,1	5,2	5,3	5,4	5,5	5,6	5,7	5,7	5,9	6
	nm	22,1	22,8	23,4	23,9	24,4	24,9	25,4	25,8	26,3	26,6	27	27,4
	kg	40	41	42,2	42,4	43,4	44,4	45,6	46,6	46,8	47,8	48	48,8
	lbs	88	90	93	93	96	98	101	103	103	105	106	108
100	Min.	4,4	4,5	4,6	4,7	4,8	4,9	5	5,1	5,2	5,2	5,3	5,4
	nm	19,7	20,3	20,8	21,3	21,7	22,1	22,5	22,9	23,3	23,6	23,9	24,2
	kg	37	38	39	39	40	41	42	43	43	44	44	45
	lbs	82	84	86	86	88	90	93	95	95	97	97	99
50	Min.	1,9	1,9	2	2	2,1	2,1	2,1	2,2	2,2	2,2	2,3	2,3
	nm	8,1	8,3	8,6	8,7	8,9	9,1	9,3	9,4	9,6	9,7	9,8	10
	kg	17	17	18	18	19	19	19	20	20	20	20	21
	lbs	37	37	40	40	42	42	42	44	44	44	44	46

Aerosoft – Digital Aviation  
**CRJ 550/700**

**QUICK REFERENCE GUIDE**

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