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Reality Expansion Pack for X-Plane

Robin DR400-180

Checklists & References

**BEFORE ENGINE START**

- 1. Internal and external inspection ..... COMPLETED
- 2. Canopy ..... AS REQUIRED
- 3. Flaps ..... UP
- 4. Seatbelts ..... FASTEN
- 5. Avionics ..... OFF
- 6. Parking Brake ..... SET
- 7. Passenger Briefing ..... COMPLETED

### ENGINE START

- 1. Surrounding Area ..... CLEAR
- 2. Carb. Heat ..... COLD
- 3. Throttle ..... IDLE
- 4. Mixture ..... RICH
- 5. Master Battery ..... ON
- 6. Anti-collision Light ..... ON
- 7. Fuel Pump ..... ON
- 8. Fuel Pressure ..... CHECK
- 9. Magnetos ..... LEFT
- 10. Throttle ..... PUMP THREE TIMES
- 11. Throttle ..... OPEN 1/2 INCH
- 12. Starter ..... ENGAGE

When engine starts:

- 13. Magnetos ..... BOTH
- 14. Throttle ..... 1000RPM
- 15. Oil Pressure ..... CHECK
- 16. Fuel Pump ..... OFF
- 17. Alternator ..... ON
- 18. Amperometer ..... CHECK
- 19. Alternator Light ..... OFF
- 20. Mixture ..... LEAN AS REQUIRED

**BEFORE TAXI**

- 1. Fuel Selector ..... LEFT
- 2. Warning Lights ..... TEST
- 3. Avionics ..... ON AND SET
- 4. Flight Instruments ..... CHECK AND SET
- 5. Flight Controls ..... TEST
- 6. Taxi Briefing ..... COMPLETED
- 7. Fuel Selector ..... RIGHT

**TAXI**

- 1. Brakes ..... TEST
- 2. Gyro Instruments and Compass ..... CHECK

**ENGINE RUN-UP**

- 1. Parking Brake ..... SET
- 2. Fuel Selector ..... FULLEST TANK
- 3. Oil Temperature ..... > 40°C
- 4. Mixture ..... RICH
- 5. Throttle ..... 2000RPM
- 6. Magnetos ..... CHECK (175-50 RPM)
- 7. Carb Heat ..... CHECK
- 8. Mixture ..... CHECK THEN RICH
- 9. Engine Instr. and Amp. .... CHECK
- 10. Vacuum ..... CHECK
- 11. Throttle ..... IDLE THEN CHECK 600-650RPM
- 12. Throttle ..... 1000RPM

**BEFORE TAKE-OFF**

- 1. Canopy ..... CLOSED AND LATCHED
- 2. Magnetos ..... BOTH
- 3. Mixture ..... RICH
- 4. Carb Heat ..... COLD
- 5. Fuel Pump ..... ON
- 6. Flaps ..... 1 NOTCH
- 7. Trim ..... SET
- 8. Take-off Briefing ..... COMPLETED
- 9. Landing Light ..... ON
- 10. Transponder ..... ALT

**TAKE-OFF**

- 1. Throttle ..... FULL FORWARD (MIN. 2200RPM)
- 2. Rotation at ..... 100 KM/HR
- 3. Climb at Vx ..... 120 KM/HR

At 500ft AGL:

- 4. Accelerate to Vy ..... 150/170 KM/HR
- 5. Flaps ..... UP
- 6. Fuel Pump ..... OFF
- 7. Landing Light ..... OFF

**CLIMB**

- 1. Throttle ..... FULL FORWARD (Max 2700RPM)
- 2. Mixture ..... LEAN AS REQUIRED
- 3. Engine Instruments ..... CHECK
- 4. Gyro and Compass ..... CHECK

**CRUISE**

- 1. Throttle ..... AVOID RED ARC
- 2. Mixture ..... AS REQUIRED
- 3. Gyro and Compass ..... CHECK
- 4. Engine Instr. and Amp. .... CHECK
- 5. Fuel Consumption ..... CHECK

**FUEL TANK SWITCH**

- 1. Fuel Pump ..... ON
- 2. Fuel Selector ..... SWITCH
- 3. Fuel Pump ..... OFF
- 4. Fuel Pressure ..... MONITOR



**DESCENT**

- 1. Approach Briefing ..... COMPLETED
- 2. Carb Heat ..... AS REQUIRED
- 3. Fuel Selector ..... FULLEST TANK

**APPROACH**

- 1. FLAP (< 170 Km/hr) ..... 1 NOTCH
- 2. Mixture ..... RICH
- 3. Carb Heat ..... HOT
- 4. Fuel Pump ..... ON
- 5. Landing Light ..... ON
- 6. Speed ..... 150 KM/HR

**FINAL**

- 1. Flaps ..... FULL
- 2. Carb Heat ..... COLD
- 3. Speed ..... 130 KM/HR + 1/2 GUST

**AFTER LANDING**

1. Flaps ..... UP
2. Trim ..... RESET
3. Carb Heat ..... COLD
4. Transponder ..... SBY
5. Fuel Pump ..... OFF
6. Landing Light ..... OFF

**PARKING**

1. Parking Brake ..... ON
2. Avionics ..... OFF
3. Throttle ..... 1000RPM
4. Mixture ..... CUT-OFF
5. Magnetos ..... OFF
6. Eletrical Switches ..... OFF
7. Master Battery ..... OFF
8. Flaps ..... FULL

**ENGINE FAILURE ON TAKE-OFF**

1. Speed ..... AVOID STALL
2. Fuel Selector ..... CLOSE
3. Mixture ..... CLOSE
4. Battery and Alternator ..... OFF
5. Magnetos ..... OFF

**ENGINE FIRE IN FLIGHT**

1. Fuel Selector ..... CLOSE
2. Throttle ..... FULL FORWARD
3. Mixture ..... CUT-OFF
4. Fuel Pump ..... OFF
5. Cabin Heat ..... OFF
6. Emergency Descent ..... Vno - 260 KM/HR
7. Best Glide ..... 150 KM/HR
8. Cockpit ..... PREPARE FOR FORCED LANDING

**ENGINE FAILURE IN FLIGHT**

- 1. Best Glide (No Flap) ..... 150 KM/HR
- 2. Fuel Selector ..... OPEN
- 3. Mixture ..... FULL RICH
- 4. Carb Heat ..... HOT
- 5. Throttle ..... OPEN
- 6. Fuel Pump ..... ON
- 7. Magnetos ..... BOTH
- 8. Cockpit ..... PREPARE FOR FORCED LANDING

**FORCED LANDING**

- 1. Seatbelts ..... FASTEN
- 2. Fuel Selector ..... CLOSED
- 3. Mixture ..... CUT-OFF
- 4. Throttle ..... IDLE
- 5. Fuel Pump ..... OFF
- 6. Magnetos ..... OFF

On final:

- 7. Flaps ..... FULL
- 8. Battery and Alternator ..... OFF
- 9. Canopy ..... UNLATCH

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**FLIGHT MANUAL DR400/180**


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**NOISE LIMITATION**

In compliance with the decree of 19.02.1987, the maximum acceptable noise level for the DR400/180 aircraft, at a certified gross weight of (2425 lb) 1100 kg is 84.6 dB(A) (ICAO annex 16 chapter 10).

The noise level determined under the conditions of the decree, is 76.4 dB(A) at max. continuous power.

The DR400/180 aircraft has received noise limitation certificate nr N45.

**AIRSPEED INSTALLATION CALIBRATION**

**VC = (VI + calibration) is substantially equal to VI**

The above figures do not take into account the ASI own tolerance.

**NOTE**

All speeds in this manual are Indicated Air speeds unless otherwise specified.

**STALL SPEEDS**

Weight 1100 kg (2425 lb) engine idle	km/h (kt)		
	0°	30°	60°
Bank angle			
Flaps up	105 (57)	113 (61)	148 (78)
Flaps Take off position	99 (53)	106 (57)	140 (76)
Flaps Landing position	95 (51)	102 (55)	134 (72)

*FLIGHT MANUAL DR400/180*

**TAKE OFF PERFORMANCE**

At gross weight 1100 kg (2425 lb)  
 Without wind, flaps in "take off position" (1<sup>st</sup> notch), engine full power.

Take off speed.....(54 kt) 100 km/h  
 Over 15 m (50 ft) barrier speed.....(70 kt) 130 km/h

Pressure Altitude (ft)	Temperature °C (°F)	Weight 1100 Kg (2425 lb)				Weight 900 kg (1984 lb)			
		Take off distance		Run to clear 15m(50ft) barrier		Take off distance		Run to clear 15m(50ft) barrier	
		m	(ft)	m	(ft)	m	(ft)	m	(ft)
0	- 5 (23) Std = 15 (59) 35 (95)	215	(700)	445	(1450)	120	(395)	250	(820)
		250	(815)	515	(1690)	140	(460)	290	(955)
		290	(945)	600	(1955)	165	(535)	340	(1105)
2500	- 10 (14) Std = 10 (50) 30 (86)	260	(860)	540	(1780)	150	(485)	310	(1005)
		305	(1005)	635	(2085)	175	(565)	360	(1175)
		355	(1165)	735	(2415)	200	(655)	415	(1360)
5000	- 15 (5) Std = 5 (41) 25 (77)	330	(1075)	680	(2225)	185	(605)	385	(1255)
		385	(1260)	795	(2610)	215	(710)	450	(1475)
		445	(1465)	925	(3035)	250	(825)	520	(1710)
8000	- 21 (-6) Std = -1 (30) 19 (66)	430	(1410)	890	(2925)	245	(795)	505	(1660)
		505	(1660)	1050	(3445)	285	(940)	590	(1945)
		590	(1935)	1225	(4010)	335	(1095)	695	(2265)

Head wind influence: For 10 kt multiply by 0.85  
 For 20 kt multiply by 0.65  
 For 30 kt multiply by 0.55

Down wind influence: Add 10% to distance per section of 2 kt

Dried grass runway: Add 15%

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**FLIGHT MANUAL DR400/180**


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**CLIMB PERFORMANCE****1) Flaps, take off position:**

At maximum weight of 1100 kg (2425 lb) in standard atmosphere

Maximum rate of climb after take off ..... (827 ft/mn) 4.2 m/s  
 reduction of 0.24 m/s (47 ft/mn) per 1000 ft  
 Best rate of climb speed ..... (81 kt) 150 km/h  
 Best angle of climb speed ..... (70 kt) 130 km/h

**2) Flaps up:**

In standard atmosphere,  
 Full throttle, mixture best power,

- At maximum weight of 1100 kg (2425 lb):

Maximum rate of climb after take off ..... (885 ft/mn) 4.5 m/s  
 reduction of 0.24 m/s (47 ft/mn) per 1000 ft  
 Service ceiling ..... 14720 ft  
 Best rate of climb speed after take off ..... (92 kt) 170 km/h  
 up to ceiling (86 kt) 160 km/h  
 Best angle of climb speed ..... (76 kt) 140 km/h

- At weight of 900 kg (1984 lb):

Maximum rate of climb after take off ..... (1200 ft/mn) 6.1 m/s  
 reduction of 0.26 m/s (51 ft/mn) per 1000 ft  
 Service ceiling ..... 19720 ft

**Temperature influence:**

Each 10°C above standard, lowers the ceiling by 1000 ft and reduces rate of climb by 0.24 m/s (47 ft/mn).



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*FLIGHT MANUAL DR400/180*


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**Time, Consumption, Climb distance**

At gross weight 1100 kg (2425 lb)  
 Without wind, in standard atmosphere,  
 Flaps retracted, full power: maximum rate of climb after take off.  
 Start and roll consumption included.

PRESSURE ALTITUDE ZP (ft)	TIME (min)	FUEL CONSUMPTION l (imp/us gal)	RANGE	
			(km)	(Nm)
3000	4	4.5 (1/1.2)	9.3	5
5500	7.5	8 (1.8/2.1)	17.6	9.5
8500	16.5	15 (3.3/4)	38.8	21

**Glide performance**

Engine off, the aircraft glides 9,3 time its height (without wind) at 150 km/h (81 kt).

Altitude and temperature do not have a perceptible influence.

*FLIGHT MANUAL DR400/180***CRUISE PERFORMANCE**

At gross weight 1100 kg (2425 lb), in standard atmosphere.  
 Optimum mixture setting, usable fuel (41.58 imp/49.1 us gal ) 189 l.  
 Without reserve fuel, without wind.

Consumption and climbing time compensated with descent.

ALTI- TUDE  Zp(ft)	POWER		FUEL CONSUMPTION			TRUE AIR SPEED		ENDU- RANCE	RANGE	
	%	rpm	gal/h			km/h	kt	h.min	km	Nm
			l/h	imp	us					
0	75	2500	38	8.4	10.2	237	128	4.55	1178	636
	65	2350	33	7.3	8.8	220	119	5.40	1248	674
2500	75	2550	38	8.4	10.2	243	131	4.55	1208	652
	65	2400	33	7.3	8.8	225	121	5.40	1288	696
4500	75	2600	38	8.4	10.2	248	134	4.55	1233	666
	65	2450	33	7.3	8.8	230	124	5.40	1317	711
6500	75	2650	38	8.4	10.2	254	137	4.55	1263	682
	65	2500	33	7.3	8.8	235	127	5.40	1345	727
8500	75	2700	38	8.4	10.2	257	139	4.55	1278	690
	65	2550	33	7.3	8.8	240	130	5.40	1375	742
10500	65	2580	33	7.3	8.8	245	132	5.40	1402	757

**FLIGHT MANUAL DR400/180**

**LANDING PERFORMANCE**

At gross weight 1045 kg (2304 lb),  
 Without wind, flaps in "landing" position, engine idling,  
 Dried and plane concrete runway,

Over 15 m (50 ft) barrier speed ..... (68 kt) 125 km/h  
 Touch down speed ..... (51 kt) 95 km/h

PRESSURE ALTITUDE Zp (ft)	TEMPERATURE °C (°F)	WEIGHT 1045 kg (2304 lb)		WEIGHT 845 kg (1863 lb)	
		Landing distance	Landing ground roll	Landing distance	Landing ground roll
		m (ft)	over 15m(50ft) barrier m (ft)	m (ft)	over 15m(50ft) barrier m (ft)
0	- 5 (23)	230 (755)	500 (1641)	190 (623)	425 (1394)
	Std = 15 (59)	250 (820)	530 (1739)	200 (656)	450 (1476)
	35 (95)	270 (886)	560 (1837)	215 (705)	475 (1558)
4000	- 13 (7)	260 (853)	550 (1805)	210 (689)	465 (1526)
	Std = 7 (45)	280 (919)	585 (1919)	230 (755)	495 (1624)
	27 (81)	300 (984)	620 (2034)	240 (787)	520 (1706)
8000	- 21 (-6)	295 (968)	610 (2001)	240 (787)	510 (1673)
	Std = - 1 (30)	320 (1050)	650 (2133)	260 (853)	545 (1788)
	19 (66)	340 (1116)	690 (2264)	275 (902)	575 (1887)

Head wind influence: For 10 kt multiply by 0,85  
 For 20 kt multiply by 0,65  
 For 30 kt multiply by 0,55

Down wind influence: Add 10% to distance per section of 2 kt

Dried grass runway: Add 15%

