Societe Aeronautique Normande

Saint-Martin Aerodrome

Bernay (Eure)

JODEL DR1050
“Ambassadeur”

INSTRUCTION MANUAL

Re-created from a photocopy of the original

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CONTENTS

SPECIFICATION

Normal Classification - Certificate of type No, 6 (11/3/60)

OVERALL DIMENSIONS

Wing Span	8.72m	28.8ft
Length	6.48m	21.4ft
Height	1.77m	5.8ft

WEIGHT

Empty, with oil	415kg	913lbs
Maximum total weight	750kg	1650lbs
Disposable load	335kg	737lbs

POWER

Continental Engine O-200A	101hp	100hp

UNIT LOADS

Area of wings	13.6 sq. m	146.8 sq. ft
Load per Sq. ft	55kg	11.2 lbs per sq. ft
Load per horsepower	7.4kg	163lbs

TANKS

Fuel	80/87Octane	Avgas 100LL
Front:	55 litres	12 gallons
Rear:	55 litres	12 gallons

3-way selector cock - Front / Rear / Closed

Oil	4.5 litres	1 gallon

SAE 50 Summer - SAE 30 Winter

LANDING GEAR

Front: Rubber shock absorbers, stroke 170mm
Tyres: 420 x 150. Pressure 1.6kg per sq. cm (23lbs psi)
Hydraulic brakes, Lockheed fluid No. 5
Rear: Leaf shock absorber
Rims 6 x 2

BATTERY

12 volts 20 amp/hour

FUSES (delayed action)

Load 20 amps. Radio 12.5 amps.
Instrument Panel and stall warning signal, 6.3 amps

LUBRICATION

All lubricators and wheels:	Retinax H
With oil can:	Engine oil

OPERATING LIMITS

CHARACTERISTIC SPEEDS in Vc at weight of 750kgs (1650 lbs)

Vne	Speed never to be exceeded	260kph	163mph
Vno	Maximum cruising speed for the structure	210kph	131mph
Vp	Manoeuvring speed	170kph	106mph
Vfe	Maximum speed with air brake out	150kph	94mph

LIMIT TRIM COMPENSATION

0.32 to 0.51m aft of the reference point

(leading edge of the rectangular part)

horizontal upper longerons of the fuselage

MAXIMUM WEIGHT

Taking off:	750kg	1650lbs
Landing:	740kg	1628lbs

LIMIT LOAD FACTORS at 750kg (1650lbs)

Positive	3.8g
Negative	1.5g

The breakage load factors are 1.5 times greater

ENGINE LIMITATION

Nominal and continuous maximum:	100hp at 2750rpm
Maximum oil temperature	107°
Oil pressure: 2 to 4 kg per sq. cm.	28 to 57lbs psi

MARKING OF INSTRUMENTS

AIRSPEED INDICATOR

The marks correspond to the following values of Vc:

White arc for flying with air brake out	87-150kph	54-94mph
Green arc for normal flight	87-210kph	54-131mph
Yellow arc for flying only in calm air	210-260kph	130-162mph
Red line - speed never to be exceeded	260kph	162mph

REVOLUTION INDICATOR

Green arc for normal speed	2200-2750rpm
Red line - speed never to be exceeded	2750rpm

OIL TEMPERATURE GAUGE

Green arc for normal temperature	45-107°
Red line which must not be exceeded	107°

OIL PRESSURE

The red pilot light lights up at the minimum pressure.

SPECIAL FEATURES OF OPERATION

See also CHECKLIST in the appendix.

STARTING UP

- Parking brake on. Fuel on front tank. Electric pump on; stop it when the pulsations become very widely spaced. Mixture control pushed in. Operate the throttle lever twice throughout its entire travel. Set Throttle. Battery and generator charge on. Magneto contact. Pull starter.
- For starting when hot: do not pump the throttle lever, open it gently.
- To start when cold: increase the number of manoeuvres by swinging the engine over if necessary.
- Warm up to 1000rpm from 2 to 4 minutes.
- Magneto selection full throttle. Maximum drop 75rpm.
- Revs: 2300 to 2400rpm (according to propeller)

.TAXI-ING

- The brakes act individually at the end of the travel of the rudder bar and they operate together when the parking brake is employed (the latch must always be pressed downwards).
- The wide lading possibilities result in the trim varying considerably. In the case of forward trim, put on the brakes gently, especially when travelling down wind with a strong following wind.

TAKE-OFF

- Cabin doors locked, centre catch in place - trim 0. - electric pump operating on forward tank - air brakes brought in.
- On hard ground with obstacles: full throttle on brakes, let the plane taxi more or less in the flight position up to break-through speed (see take-off table).
- On soft ground, with tail wheel about 10cm. above the ground, take off as soon as possible, flatten out.

CLIMBING

- As soon as the obstacles have been cleared: climbing speed (see climbing table) - adjust trim.

CRUISING

- As convenient, use a speed shown in the "cruising" table - stop the electric pump - adjust trim.

USE OF THE TANKS

- Generally speaking, avoid too great a difference between the indication of the gauges of the forward tank and the aft tank (quarter of the maximum capacity).
- In the case of forward trim, start flying on the forward tank; in the case of aft trim, start flying on the aft tank.
- In the case of a tank running dry, change tanks and switch on the electric pump.
- Note: The last 1.2 gallons of the aft tank cannot be used when climbing.

REGULATION OF CARBURATION

- The heating of the carburettor is permanent and so there is nothing to worry about in this connection; however, if the engine is running with a slightly rich mixture, use the mixture control below normal altitude: in practice, whatever may be the height of flight, with fixed throttle, find the maximum speed on the mixture control and push it back very gently.
- Carry out the adjustment afresh for each variation in altitude or engine speed. Do not forget to push in the mixture control when descending.

ADJUSTING GENERATOR CUT-OUT

- Normally the cut-out is set a the maximum charge. Except for the low engine speed, the ammeter must show a charge which is lower, the nearer the voltage is to 14 volts.
- If this voltage exceeds 14 volts, the adjustment is not correct; alter the cut-out so as to safeguard the battery.
- A temporary operation with the cut-out makes it possible to cut out radio interference due to the voltage regulator.

LANDING

- Reduce speed to Vfe - adjust trim. As a precaution for an over-shoot: mixture control pushed in - electric pump operating on front tank - Landing speed (see table): increase if there is a strong wind or turbulence - Air brake at a suitable moment to arrive at the selected point - watch the speed - A side-slip is of moderate effectiveness - round-out gradually so as to bring the tail to touch down first - In the event of an over-shoot do not forget the air brakes - with aft trim, the brakes may be used to the maximum - in the case of forward trim, use them with moderation.

STOPPING

- Engine at idling speed for a few moments - The mixture control pulled right out acts as a cut-out - Switch off the magneto, battery, generator charge - Fuel turned off - Parking brake on.

PARKING

- Place the aircraft with wind behind it - ailerons and rudder locked - (by plates on the outside) - elevator free or locked down (never up) - Tie down by means of the two rings underneath the wings - Parking brakes on - Put on cabin cover (to give protection against sun, water, dust and inquisitive persons).

CHECKING THE TRIM

- The simple instructions given below will generally make it possible to remain within the extreme limits of trim.
- Utilisation of the passenger space: the passengers should not take the rear seat unless the seats in front have already been occupied, preferably by persons who weigh more.
- Luggage: this is placed by the side of the rear passenger. The small compartment is reserved for clothing.
- The total aft loading must not exceed 110kg. (242 lbs.)
- The figures given below will permit of an exact calculation.

	Average Kgs	Weight Lbs	Distance to reference point
Standard aircraft, } Wooden propeller	415	913	+0.35
empty, with oil } Metal propeller	425	935	+0.32
	Maximum	Weight	
Front passengers	154	339	+0.48
Rear passengers and luggage	110	242	+1.20
Clothing compartment	10	22	+1.68
Fuel, forward	40	88	-0.26
Fuel, aft	40	88	1.17

Trim to stay with 0.32 and 0.51 m aft of reference point.

EXAMPLE OF CALCULATION

Aircraft, empty	415	X	0.35	=	145
Front passengers	150	X	0.48	=	72
Rear passengers & luggage	100	X	1.20	=	120
Front luggage	20	X	-0.47	=	-9
Fuel (full) forward	40	X	-0.26	=	-10
Fuel (full) aft	40	X	1.17	=	47
	745				**374**
Trim:	374 ÷ 745	=	0.50m		

CRUISING PERFORMANCES

Wooden fixed-pitch airscrew: JODEL D11 - 28/4

P = 750kg (1,650lbs)

% nominal power	Consumption litres/hr (galls/hr)	Endurance	Altitude Est metres (feet)	Engine speed rpm	Speed kmh (mph)	Range Km (miles)
75%			0	2550	190 (119)	980 (613)
	21.3 lph (5gph)	5.2 hours	1000 (3300)	2620	195 (122)	1010 (631)
(75hp)			2000 (6600)	2700	200 (125)	1035 (647)
			2400 (7920)	2750	203 (127)	1050 (656)
65%			0	2420	178 (111)	1060 (663)
	18.5 lph (4gph)	6 hours	1000 (3300)	2480	183 (114)	1090 (681)
(65hp)			2000 (6600)	2560	188 (118)	1120 (700)
			3000 (9900)	2660	193 (121)	1150 (719)
55%			0	2260	164 (103)	1130 (706)
	16.0 lph (3.5gph)	6.9 hours	1000 (3300)	2320	166 (104)	1145 (716)
(54hp)			2000 (6600)	2400	170 (106)	1170 (731)
			3000 (9900)	2470	174 (109)	1200 (750)
45%			0	2070	146 (91)	1190 (744)
	13.5 lph (3gph)	8.2 hours	1000 (3300)	2130	146 (91)	1190 (744)
(44hp)			2000 (6600)	2190	146 (91)	1190 (744)
			3000 (9900)	2220	143 (89)	1165 (728)

Engine speed for propeller rotating at 2,850 rpm, travelling horizontally, full throttle.

CRUISING PERFORMANCES

Metal fixed-pitch airscrew: Ratier (set –3.1)

P = 750kg (1,650lbs)

% nominal power	Consumption litres/hr (galls/hr)	Endurance	Altitude Est metres (feet)	Engine speed rpm	Speed kmh (mph)	Range Km (miles)
75%			0	2550	197 (123)	1020 (638)
	21.3 lph (5gph)	5.2 hours	1000 (3300)	2630	202 (126)	1045 (653)
(75hp)			2000 (6600)	2715	209 (131)	1080 (675)
			2400 (7920)	2720	210 (131)	1085 (678)
65%			0	2420	186 (116)	1110 (694)
	18.5 lph (4gph)	6 hours	1000 (3300)	2500	191 (119)	1140 (713)
(65hp)			2000 (6600)	2570	197 (123)	1170 (731)
			3000 (9900)	2650	202 (126)	1200 (750)
55%			0	2260	172 (108)	1190 (744)
	16.0 lph (3.5gph)	6.9 hours	1000 (3300)	2330	176 (110)	1215 (759)
(54hp)			2000 (6600)	2400	181 (113)	1250 (781)
			3000 (9900)	2480	184 (115)	1270 (794)
45%			0	2080	155 (97)	1265 (791)
	13.5 lph (3gph)	8.2 hours	1000 (3300)	2150	157 (98)	1285 (803)
(44hp)			2000 (6600)	2210	161 (101)	1310 (819)
			3000 (9900)	2280	161 (101)	1310 (819)

Engine speed for propeller rotating at 2,850 rpm, travelling horizontally, full throttle.

CRUISING PERFORMANCES – REAL WORLD EXAMPLE

Wooden fixed-pitch airscrew: JODEL D11 - 28/4

P = 750kg (1,650lbs). Using real fuel quantities and including 1.2 galls un-useable plus 45 minutes reserve.

% nominal power	Consumption litres/hr (galls/hr)	Endurance	Altitude Est metres (feet)	Engine speed rpm	Speed kmh (mph)	Range Km (miles)
75%			0	2550	190 (119)	703 (439)
	21.3 lph (5gph)	5.2 hours	1000 (3300)	2620	195 (122)	722 (451)
(75hp)	[110-5.5nu-16res	[3.7 hours]	2000 (6600)	2700	200 (125)	740 (463)
	= 88.5 lit (19.5 g)]		2400 (7920)	2750	203 (127)	751 (469)
65%			0	2420	178 (111)	872 (545)
	18.5 lph (4gph)	6 hours	1000 (3300)	2480	183 (114)	897 (560)
(65hp)	[110-5.5nu-16res	[4.9 hours]	2000 (6600)	2560	188 (118)	921 (576)
	= 88.5 lit (19.5 g)]		3000 (9900)	2660	193 (121)	946 (591)
55%			0	2260	164 (103)	918 (574)
	16.0 lph (3.5gph)	6.9 hours	1000 (3300)	2320	166 (104)	930 (581)
(54hp)	[110-5.5nu-16res	[5.6 hours]	2000 (6600)	2400	170 (106)	952 (595)
	= 88.5 lit (19.5 g)]		3000 (9900)	2470	174 (109)	975 (609)
45%			0	2070	146 (91)	949 (593)
	13.5 lph (3gph)	8.2 hours	1000 (3300)	2130	146 (91)	949 (593)
(44hp)	[110-5.5nu-16res	[6.5 hours]	2000 (6600)	2190	146 (91)	949 (593)
	= 88.5 lit (19.5 g)]		3000 (9900)	2220	143 (89)	930 (581)

Engine speed for propeller rotating at 2,850 rpm, travelling horizontally, full throttle.

DISTANCE FOR CLEARING 15m (50ft) ON TAKE-OFF

According to altitude Zp and Temperature. Wood or metal airscrew. Wind zero.

ON A CONCRETE STRIP f = 0.03

Height above sea level m (ft)	Weight kg (lbs)	Speed kph (mph)	0ºC	15ºC	30ºC	45ºC
0 (0)	600 (1320)	95 (59)	275 (908)	295 (974)	315 (1040)	340 (1122)
	750 (1650)	105 (66)	430 (1419)	460 (1518)	495 (1634)	535 (1766)
500 (1650)	600 (1320)	95 (59)	310 (1023)	335 (1106)	360 (1188)	390 (1287)
	750 (1650)	105 (66)	490 (1617)	530 (1749)	575 (1898)	625 (2063)
1000 (3300)	600 (1320)	95 (59)	360 (1188)	390 (1287)	420 (1386)	450 (1485)
	750 (1650)	105 (66)	575 (1898)	630 (2079)	680 (2244)	740 (2442)
1500 (4950)	600 (1320)	95 (59)	415 (1370)	445 (1469)	480 (1584)	515 (1700)
	750 (1650)	105 (66)	675 (2228)	730 (2409)	790 (2607)	870 (2871)

of which approximately 70% whilst taxi-ing

ON A GRASS STRIP f = 0.10

Height above sea level m (ft)	Weight kg (lbs)	Speed kph (mph)	0ºC	15ºC	30ºC	45ºC
0 (0)	600 (1320)	95 (59)	315 (1040)	335 (1106)	362 (1195)	392 (1294)
	750 (1650)	105 (66)	525 (1733)	565 (1865)	615 (2030)	675 (2228)
500 (1650)	600 (1320)	95 (59)	360 (1188)	385 (1271)	420 (1386)	455 (1502)
	750 (1650)	105 (66)	610 (2013)	670 (2211)	735 (2426)	805 (2657)
1000 (3300)	600 (1320)	95 (59)	415 (1370)	455 (1502)	495 (1634)	535 (1766)
	750 (1650)	105 (66)	735 (2426)	810 (2673)	885 (2921)	975 (3218)
1500 (4950)	600 (1320)	95 (59)	490 (1617)	530 (1749)	575 (1898)	630 (2079)
	750 (1650)	105 (66)	880 (2904)	965 (3185)	1060 (3498)	1195 (3944)

of which approximately 70% whilst taxi-ing

For each condition the upper figure indicates the distance for a weight of 600 kg (1320 lbs) to take-off and pass over an obstacle at Vc = 95 kph (59mph). The lower figure for a weight of 750 kg (1650 lbs) take-off and passing the obstacle at Vc = 105 kph (66 mph).

LANDING DISTANCES FROM PASSING OVER 15m (50ft) UNTIL COMPLETE STOPPAGE

According to altitude Zp and Temperature with air brakes operating. Wind zero. Figures are valid on all types of ground, corresponding to an average braking.

f = 0.3

Height above sea level m (ft)	Weight kg (lbs)	Speed kph (mph)	0ºC	15ºC	30ºC	45ºC
0 (0)	600 (1320)	101 (63)	355 (1172)	365 (1205)	380 (1254)	390 (1287)
	750 (1650)	113 (71)	410 (1353)	425 (1403)	445 (1469)	460 (1518)
500 (1650)	600 (1320)	101 (63)	370 (1221)	380 (1254)	395 (1304)	410 (1353)
	750 (1650)	113 (71)	430 (1419)	445 (1469)	465 (1535)	480 (1584)
1000 (3300)	600 (1320)	101 (63)	385 (1271)	395 (1304)	410 (1353)	425 (1403)
	750 (1650)	113 (71)	450 (1485)	465 (1535)	485 (1601)	500 (1650)
1500 (4950)	600 (1320)	101 (63)	400 (1320)	415 (1370)	430 (1419)	445 (1469)
	750 (1650)	113 (71)	470 (1551)	485 (1601)	505 (1667)	525 (1733)

For each condition the upper figure indicates the landing distance for a weight of 600 kg (1320 lbs) at Vc of presentation = 101 kph (63mph). The lower figure for a weight of 750 kg (1650 lbs) at Vc of presentation = 113 kph (71 mph).

CLIMBING PERFORMANCES

Maximum climbing speeds and absolute ceilings.

Wood or metal airscrews.

Weight	v at Z = 0	v at Z = max.
750kg	3 metres per second	5,000 metres
(1650 lbs)	(600 ft per min)	(16,500 ft)
	Vc = 130kph	Vc = 122kph
	(81mph)	(76mph)
650kg	4.5 metres per second	6,800 metres
(1320 lbs)	(900 ft per min)	(22,440 ft)
	Vc = 125kph	Vc = 108kph
	(78mph)	(68mph)

STALLING SPEED

At 750kg (1650lbs)

Inclinations	0º	30º	45º	60º
Load factors	1.00	1.15	1.41	2.00
Vc	87 kph	93 kph	107 kph	123 kph
	(54 mph)	(58 mph)	(67 mph)	(77 mph)

STANDARDISING THE AIRSPEED INDICATOR

Kph									
Vi	240	220	200	180	160	140	120	100	90
Vc	233	214	194	175	156	136	117	98	88
Mph									
Vi	150	138	125	113	100	88	75	63	56
Vc	146	134	121	109	98	85	73	61	55

SPEEDS AND ALTITUDES

The following abbreviations are currently used to designate the speed:

- That indicated by the airspeed indicator — Vi (IAS)
- Which would have been indicated by an exact airspeed indicator — Vc (TIAS)
- Of the aircraft in relation to the air — V (TAS)

Vc is obtained from Vi by the standardisation curve:

V = Vc x k

Where: K =	1	1.05	1.11	1.16	1.22	1.29	1.36
For Zd:	0	1000	2000	3000	4000	5000	6000

Where Zd is the density altitude which can be estimated from Zp the pressure altitude (read on an altimeter set at 1013), knowing that Zd is 100metres higher than Zp for each 3º of temperature above the standard (15º when Zp = 0 and decreasing by 6.5º per 1000 metres).

EXAMPLE OF CALCULATION

Vc = 200 Zp = 1400 t = 24º

From which we get:

$t_{st} = 15 - 6.5 \times 1.4 = 6º$

$t - t_{st} = 24 - 6 = +18º$

$Zd = 1400 + 100 \times 18/3 = 2000$ metres

K = 1.1 V = 200 x 1.1 = 220kph

We will recall once more that in order to read from an altimeter the altitude above sea level it is necessary to set the QNH given by the Meteorological Office. By setting QFE of a given place one reads the altitude above this place.

MAINTENANCE

PRECAUTIONS

- Sunlight is harmful to rubber, paint, plexiglas (not particularly to wooden aircraft).
- Water, if it accumulates and remains in the interior, may cause the glue joints to deteriorate.
- Consequently, do not leave your aircraft out-of-doors for no purpose even if it is fine weather. In the event of rain or washing, make sure that the water does not accumulate anywhere. Mop it up if necessary. If you take this precaution, a wooden aircraft will last for a long time, because it does not know fatigue, which is by no means the case with metal and, moreover, the possibility of repairing metal at any point is far inferior.

CLEANING

- Wash with soap and water. Rinse thoroughly, but never with a hose jet.
- Polish the paintwork with very slightly abrasive products; do not use wax or silicone products.
- For the glass parts, use Plexipol.

DAILY INSPECTION

Check:

- The satisfactory external condition of the aircraft, particularly the lower parts.
- The proper operation of the landing gear, balancing the aircraft by the ends of the wings.
- The tyre pressure.
- The springs of the tail wheel.
- The tension of the flying controls; when giving impulses with the stick, one should not hear the cables flapping; in case of doubt, check with a tension gauge for a tension of 8 to 4 kg (17 to 30 lbs) for elevator and ailerons control. The rudder control has no initial tension (see regulation of brakes).
- The oil level in the engine.
- See whether there is any obvious trace of leakage of oil, fuel or exhaust.
- The correct clearance of the engine controls.
- The condition of the cowlings, the airscrew and its cone.
- Check to see that the pitot head intakes are clean as well as the air vents of the tanks.
- The condition of the stall warning system.
- Drain the tanks and the fuel filter.

INSPECTION TO BE CARRIED OUT EVERY MONTH OR EVERY 50 FLYING HOURS

- Change the engine oil (drainage every 25 hours)

Clean:
- The oil filter
- The fuel filter
- The air intake filter
- Flush out the carburettor

Check:
- That no pipe or wire is being worn as a result of friction or vibration..
- The condition of the brake lines.
- The level of the oil for the brakes.
- The level of the battery.

Lubricate:
- Using engine oil, control surface hinges, the bearings of the rudder bars, the spindle at the base of the control column (the bearings of the torsion tube through the wing spar should only be lubricated with graphited tallow general overhaul).
- The mechanism of the tail wheel (Retinax H).

INSPECTION TO BE CARRIED OUT EVERY 3 MONTHS OR EVERY 100 FLYING HOURS

In addition to the operations to be carried out every 50 hours,

Check:
- The internal appearance of the fuselage, particularly the bottom of the back and the floorboards of the cabin.
- The tightening (moderate on wood) of the principal connections:
    - 6 airscrew bolts
    - 4 engine bolts
    - 8 engine bearer bolts
    - 4 bolts for attaching wing unit
    - 4 bolts for attaching tail plane
    - 3 bolts for tail spring
    - 8 bolts for undercarriage
    - possibly the bolts of the control surface hinges.
- The cables on their guides and their pulleys and also to make sure that they do not rub anywhere.
- Low pressure leak test of the airspeed indicator circuit.
- The distance between the bottom of the axle of the wheels and the bottom of the lower guide of the fixed leg of the landing gear in the following cases:
    - Aircraft at rest: greater than 140mm.
      If not, the shock absorbers must be changed.
    - Wheels of the ground: less than 235 mm.
      If not the return stop must be changed.
- The condition of the air deflectors.
- The state and fixing of the pipes for oil, fuel and exhaust and the electric wires.

Clean:
- The filter on the carburettor inlet.
- The mobile legs of the landing gear, and grease them again.

Lubricate:
- The engine controls.
- The axles of the ends of the control cables.
- The airbrake control (the flap bearings should only be lubricated with graphited tallow general overhaul).
- The trim control.

SPECIAL INSPECTION

When going from a damp region to a hot dry region:

Check:

- The tension of the cables.
- The tightness of the connections (particularly the propeller and the tail plane).

CONVERSION TABLE

Kilometres into miles	multiply by 5 and divide by 8 (0.625)
Square metres into feet	multiply by 10.80
Metres into feet	multiply by 3.30
Centimetres into inches	multiply by 0.39
Litres into gallons	multiply by 0.22
Kilograms into lbs.	multiply by 2.20
Kilograms per sq. centimetre Into lbs per sq. in.	multiply by 14.20
French h.p. into Engligh h.p.	multiply by 0.99

ADJUSTMENT LIMITS

AILERONS

With the control column vertical, trailing edges adjusted from 0 to 5 mm above that of the wing.

Movement ± 12º Tolerance + 3º to 0º

TAIL PLANE

Axis of symmetry parallel to the upper longerons of the fuselage.

Tolerance ± 0.3º

ELEVATOR

0º in the extension of the tail plane.

Minimum movement: 20º downwards 25º upwards

TRIM

0º in the extension of the elevator.

Minimum movement: 25º downwards 40º upwards

RUDDER

0º in the axis of symmetry of the aircraft.

Movement ± 25º Tolerance + 3º to 0º

CORRECTIONS OF CONTROLS

- Weather calm - average load symmetrical - cruising speed.
- Without touching the pedals, the ball must be exactly in the middle - adjust rudder trim tab so as to obtain this result.
- Only after doing this, adjust the trim tab for the ailerons so that the inclination is zero.

ADJUSTING THE BRAKES AND THE RUDDER

Adjust and check the following points in the order given:

1. ALIGNMENT OF THE MASTER CYLINDERS

This adjustment, which is effected by a screwed fork end and lock nut, is carried out before the installation of the brake unit on the aircraft and must never be altered during service, except in the event of the replacement of a part belonging to this unit.

It is correct when, at the attachment of the master cylinders, the two levers occupy the same position and the free clearance of these two levers when manoeuvred simultaneously is from 2 to 4 mm at the level of the rods (the operating lever being pushed as far forward as it will go).

2. CLEARANCE OF THE BRAKE SHOES

This is regulated by means of the four standard eccentrics (adjust by means of a screwdriver, lock in position by nut). It must be the minimum possible, whilst still leaving the wheels free.

3. CHECKING THE SYSTEM

Under a stress of approximately 25kg applied on to the operating lever, the displacement of the two levers of the master cylinders at the level of the rods must be less than 30mm. Moreover, the difference in displacement of the two levers must not exceed 5mm.

If this is not so and Point 2 is correct, and the unit is properly filled with liquid (Lockheed No. 5), bleed the pipes (standard unit), and check the condition of the flexible tubes.

In the event of there being no resistance until the distance between the movements of the levers is about 20mm, one circuit has a leak, which may be inside the master cylinder; in this case, replace it.

4. ADJUSTMENT TO THE RUDDER BARS

Release the rudder cables and lift the tail wheel from the ground. Adjustment is carried out by turning the rods after disconnecting them from the rudder bar. The adjustment should be such that a pressure of approximately 15 kg (33lbs) on each of the pedals brings them to about 10 to 12 mm from their end position.

When the plane is in use, before carrying out this adjustment again, it is necessary to be certain that the brake shoes are regulated so that they are as near to the drums as possible and it is also necessary to be certain that the systems are properly bled. If this becomes necessary, it shows that the flexible tubes are ageing.

5. RUDDER CONTROLS

Regulate the tightening units so that when each of the pedals is in the position defined in 4, the rudder is turned 25º to one way or the other from its neutral position. (Gently oppose the turning of the rudder so as to keep the cables taut).

This adjustment must be checked every time a necessity is felt for regulating the tension of the cables of the other controls.

NOTE:

If these conditions are fulfilled, particularly Condition 3, and the aircraft has a tendency to show symmetrical braking, the fault must be due to the condition of the drums and linings: rust, grease. (The bearings of the wheels must be greased lightly with Retinax H).

APPENDIX

DAILY INSPECTION

Check:

- **The satisfactory external condition of the aircraft, particularly the lower parts.**
  - **The proper operation of the landing gear, balancing the aircraft by the ends of the wings.**
  - **The tyre pressure.**
  - **The springs of the tail wheel.**
  - **The tension of the flying controls; when giving impulses with the stick, one should not hear the cables flapping; in case of doubt, check with a tension gauge for a tension of 8 to 4 kg (17 to 30 lbs) for elevator and ailerons control. The rudder control has no initial tension (see regulation of brakes).**
  - **The oil level in the engine.**
  - **See whether there is any obvious trace of leakage of oil, fuel or exhaust.**
  - **The correct clearance of the engine controls.**
  - **The condition of the cowlings, the airscrew and its cone.**
  - **Check to see that the pitot head intakes are clean as well as the air vents of the tanks.**
  - **The condition of the stall warning system.**
  - **Drain the tanks and the fuel filter.**

CHECKLIST G-AWWN - Jodel DR1050

PRE-START CHECKS

- **Arrange harness but do not lock**
- **Close doors but do not lock centre catch**
- **Parking Brake** — **ON**
- **Radio, Transponder & GPS** — **OFF**
- **Air brakes** — **OFF/ON/OFF**
- **Check Controls - sense & movement**
- **Check Trim**
- **MASTER** — **ON**
- **Set FUEL to FRONT tank**
- **Electric Fuel Pump** — **ON**
- **Set Mixture to RICH** — **IN**
- **[ONLY WHEN COLD] Pump Throttle twice**
- **Check Throttle friction**
- **Set Throttle slightly open**
- **BEACON** — **ON**
- **Set MAGENTO 1** — **ON**
- **Call "CLEAR PROP"**
- **Pull START**

POST START CHECKS

- **Set MAGNETO 2** — **ON**
- **Set 1000rpm for 2-4 minutes until warm**
- **Lock door centre catch**
- **Lock harnesses and check secure**
- **Check Ammeter charging**
- **Check Oil Temperature and Pressure rising to green**
- **Set Throttle to full open 2300-2400rpm**
- **Check Magnetos - maximum 75rpm drop**
- **Set Altimeter Pressure - QFE / QNH**
- **Set Intercom** — **ON**
- **Set Radios** — **ON and SET frequency**
- **Set Transponder to 7700 & STANDBY**
- **Radio Check**
- **Get Taxi Clearance**
- **Check Oil Temperature and Pressure** — **GREEN**
- **Brakes** — **OFF**
- **Taxi - check handbrake & foot brakes**

POWER CHECKS

- **Position into wind**
- **Brakes** — **ON**
- **Set Throttle to full open 2300-2400rpm**
- **Check Oil Temperature and Pressure**
- **Check Magnetos - maximum 75rpm drop**
- **Check Carb Heat - maximum 75rpm drop**
- **Check Ammeter charging**
- **Set IDLE and reset 1000 rpm**

PRE TAKE OFF CHECKS

- **Check Controls - sense & movement**
- **Check Trim**
- **Check Fuel on FRONT tank**
- **Check Electric Pump** — **ON**
- **Check Air Brakes** — **OFF**
- **Brakes** — **OFF**
- **Set Transponder** — **ON**

TAKE OFF

- **Check Compass**
- **Throttle** — **FULL**
- **Oil Temperature and Pressure**
- **Artificial Horizon and ASI working**
- **Once airborne & in the cruise,**
  - **Set Direction Indicator to compass heading**
  - **Set Electric Pump** — **OFF**

IN FLIGHT

- **Fuel tanks** — **SWITCH as needed**
  - **PUMP ON / Switch / PUMP OFF**
- **Radio Frequency correct?**
- **Engine - Ts & Ps; Mixture; Ammeter; Carburettor Ice?**
- **Direction - Compass & DF**
- **Altitude - check pressure setting QFE / QNH**

CALL SEQUENCE

- **Call sign and aircraft type:** **GAWWN** **/ Jodel DR1050**
- **Position** **……..**
- **Heading** **……..**
- **Altitude / QNH** **……..**
- **Intention** **……..**
- **Service** **……..**

LANDING - Downwind checks

- **Brakes** — **OFF**
- **Undercarriage** — **DOWN**
- **Mixture set to RICH** — **IN**
- **Magentos** — **BOTH ON**
- **Fuel set to FRONT tank**
  - **Electric Pump** — **ON**
  - **Check sufficient for go around**
- **Instruments**
  - **Altimeter Pressure**
  - **ASI**
  - **Compass**
  - **Direction Finder**
- **Air Brakes** — **OFF**
- **Carburettor Heat** — **Check**
- **Hatches** — **CLOSED**
- **Harnesses** — **SECURE**

SHUT DOWN

- **Brakes** — **ON**
- **Radio & Transponder** — **OFF**
- **Set 1200rpm**
- **Check MAGNETOS**
- **Mixture** — **LEAN**
- **MAGNETOS** — **OFF**
- **MASTER** — **OFF**

FREQUENCIES

EMERGENCY	**121.5**		
STANSTED	**120.625**	**LUTON**	**129.55**
CAMBRIDGE	**123.6**	**GRANSDEN**	**130.85**
CRANFIELD	**122.85**	**BOURN**	**129.8**
FOWLMERE	**122.075**	**Duxford AFIS & then**	**120.925**
WYTON	**134.05**		