

1981 CESSNA 172RG SYSTEMS SUMMARY- N28RJ

ENGINE

Lycoming 4 cylinder O-360, 180 HP @ 2700 RPM, air cooled, direct drive, horizontally opposed, normally aspirated. Major accessories include starter, belt driven alternator, dual magnetos, and a vacuum pump. Oil capacity is 9 quarts maximum; 6 quarts minimum required for flight.

PROPELLER

McCauley, two blade, all metal, constant speed propeller. A propeller governor uses oil from the crankcase to control the RPM by changing the blade pitch for increased efficiency.

BRAKES

Single-disc, hydraulically-actuated discs on each landing gear provide braking. Two master cylinders, one behind each brake pedal on the pilot's side control each individual wheel. The co-pilot's brake pedals are mechanically linked to the pilots brake pedals.

FLAPS

The flaps are electrically operated single slot type. Flaps are extended or retracted by positioning the wing flap switch lever to the desired flap deflection position. The flap switch lever has stops at the 10°, 20° and 30° positions. A scale and pointer indicates the flap travel in degrees. Ten (10°) of flaps may be selected at 130 KIAS. Flap selection greater than 10° should not be made above 100 KIAS.

FUEL SYSTEM

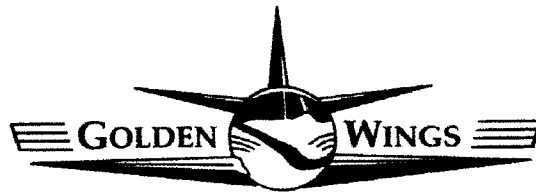
Fuel is carried in two wing tanks with a total capacity of 66 gallons, of which 62 gallons is useable. Each tank is fitted with a fuel filler collar. The tank can be filled to the bottom of the collar with 24 gallons, total fuel is then 48 gallons of which 44 gallons is useable. The fuel selector valve is labeled with the total useable fuel. Fuel is gravity fed to the engine. The fuel selector valve has four positions: Both, Left, Right, Off. The fuel selector should be set to Both for all takeoffs and landings. Each fuel tank has one drain valve. The fuel system can be drained by pulling on the fuel strainer knob located under the access panel on the right side of the engine cowling.

ELECTRICAL SYSTEM

Electrical energy is supplied by a 28 volt direct current system powered by an engine driven 60 amp alternator. A 24 volt battery is located aft of the rear cabin wall. The ammeter indicates the charging rate, in amperes, of current supplied from the alternator to the battery. The ammeter will show a discharge when the alternator is not functioning or the electrical load exceeds the output capacity of the alternator. Electrical circuits are protected by circuit breakers mounted on the instrument panel.

LANDING GEAR

The landing gear is actuated by an electrically driven hydraulic power pack located behind the firewall between the pilot's and co-pilot's rudder pedals. To retract or extend the landing gear, pull outward on the gear lever and move it to the desired position. Normal operation of the gear should require 5 - 7 seconds to fully extend or retract. Two position indicator lights are located next to the gear handle. Press to test. The color should be **GREEN** for gear down, **AMBER** for gear up. An electrically operated squat switch, actuated by the nose gear, prevents inadvertent retraction whenever the nose strut is compressed by the weight of the airplane. A hand operated hydraulic pump, located between the front seats, is provided for manual extension of the landing gear in the event of a landing gear system failure.



1981 CESSNA 172RG RECOMMENDED PROCEDURES N28RJ

STEEP POWER TURNS

Two 90° or one 180° turns. Set power to 22" MP & 2300 RPM and note the airspeed. Roll into a bank of 45° angle of bank. Begin applying back pressure and add 1" to 2" MP passing 30° angle of bank. Begin roll out 10° before assigned heading and relax back pressure, reduce power to 22" MP passing 30° angle of bank. Maintain a constant altitude, airspeed, and roll out on the assigned heading or landmark.

SLOW FLIGHT

Two 90° or one 180° clearing turns. Open the cowl flaps and reduce power to 15" MP. Below 100 KIAS, select 30° flaps. At an airspeed of 55 KIAS add power to approximately 20" MP. Maintain 55 KIAS with pitch control, altitude with power, and a constant heading with an emphasis on rudder control. To recover advance power to 23" MP, lower the nose, *slowly* select the flaps up in increments while accelerating to cruise. Adjust cowl flaps as necessary.

APPROACH TO LANDING STALL

Two 90° or one 180° clearing turns. Open the cowl flaps and reduce power to 15" MP, increase RPM to max and increase mixture to full rich. Below 140 KIAS lower the landing gear, and below 100 KIAS select 30° flaps. Establish the aircraft in a landing attitude. Hold this attitude by increasing elevator back pressure until obtaining stall buffet. To recover, decrease the pitch, select full power, 20° flaps and accelerate to V_x (67 KIAS) climb airspeed. Retract flaps to 10 degrees and retract the landing gear when a positive rate of climb is established and increase speed to V_y (84 KIAS). Retract the remaining flaps with a minimum altitude loss. Reduce power to cruise power setting.

TAKEOFF/DEPARTURE STALL

Two 90° or one 180° clearing turns. Open the cowl flaps and reduce power to 15" MP, increase RPM to max and mixture to full. Below 140 KIAS lower the landing gear. Slow to 80 KIAS and increase pitch to slightly higher than climb attitude, roll into 20° bank turn. Select a power setting of 22" MP & 2400 RPM and hold this attitude by increasing elevator back pressure until obtaining stall buffet. To recover, decrease pitch, select full power, accelerate to climb airspeed. Retract the landing gear when a positive rate of climb is established and increase speed to V_y (84 KIAS).

MAXIMUM PERFORMANCE TAKEOFF OVER AN OBSTACLE (SHORT FIELD)

Taxi into position using all available runway, hold the brakes, advance power smoothly to full MP and RPM, release brakes: Accelerate to 55 KIAS, rotate and climb at 63 KIAS. Retract gear when clear of the obstacle, or if no obstacle is present, when a positive rate of climb is established. After obstacle clearance, accelerate to V_y (84 KIAS), until sufficient altitude is reached, then accelerate to normal enroute climb of 85-95 KIAS.

SOFT FIELD TAKEOFF

Select 20° flaps, advance power smoothly to full MP and RPM while accelerating down the runway. If you wish to achieve the minimum takeoff run, do not use the brakes for steering if possible (do not stop as you come out onto the takeoff area, keep rolling and steadily increasing power while holding the yoke back to get the nosewheel off and steering with the rudder). Establish an attitude that will get the nose wheel 3-5" off the ground as you accelerate. Let the airplane fly itself into the air. Once airborne, remain in ground effect, lower nose and accelerate to V_x (67 KIAS), retract the landing gear. Remain in ground effect until reaching V_y (84 KIAS), and if the aircraft will climb out of ground effect, let it do so, then *slowly* retract the flaps.

This information is to be used as a guide only. It does not replace the pilot's responsibility to be familiar with and follow the procedures outlined in the aircraft's P.O.H. ©2002 Golden Wings, Inc. Mar 12, 2002

NORMAL LANDING

Set power to 22" MP with the landing gear down on the downwind . At the abeam position reduce power to 15"MP and select 10 degrees flaps slowing to 75 KIAS. Base leg select 20 degrees flaps, airspeed to 70 KIAS. On final, select full flaps and maintain 63 KIAS. TRIM. Make sure to have the airplane perfectly trimmed on final approach. In the landing flare, touch down on the mains, holding the nose wheel off until the elevator loses effectiveness. Remain off the brakes until after touchdown and use the brakes only as necessary for stopping. *When clear of runway perform after landing check list.*

SHORT FIELD LANDING

Set power to 22"MP with the landing gear down on the downwind. At the abeam position reduce power to 15"MP and select 10° flaps slowing to 75 KIAS. Base leg select 20 degrees flaps, reduce airspeed to 70 KIAS. On final, select flaps to full. Maintain airspeed at 63 KIAS. TRIM. Make sure to have the airplane perfectly trimmed on final approach. When over the obstacle, or if reaching the runway is assured, reduce the power to idle, while simultaneously lowering the nose to maintain 63 KIAS. In the landing flare, touch down on the mains first, lower the nose to the runway, retract the flaps, hold back pressure on the yoke and apply maximum braking without skidding the tires. *When clear of runway perform after landing check list.*

SOFT FIELD LANDING

Set power to 22" MP with the landing gear down on the downwind . At the abeam position reduce power to 15" MP, and select 10° flaps slowing to 75 KIAS. Base leg select 20 degrees flaps and reduce airspeed to 70 KIAS. On final, set flaps to full and maintain 63 KIAS. TRIM. Make sure to have the airplane perfectly trimmed to the proper pitch attitude on final approach. In the landing flare use power as required, but insure you carry just a little power as you touch down to minimize touchdown speed. Pick a touchdown point, and attempt to hold the airplane off the runway as long as possible by landing on the mains while increasing back pressure until elevator losses its effectiveness, controlling nose wheel touchdown. Use no brakes, power should be reduced to idle after landing, during rollout, while holding the nosewheel off the ground until it cannot longer be held off with full aft elevator control. *When clear of runway perform after landing check list.*

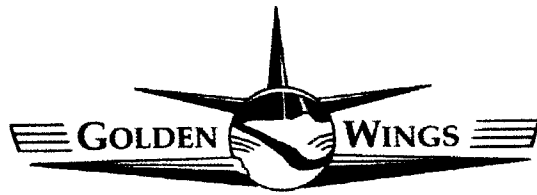
GO AROUND

Power to full MP and RPM, carburetor heat off, establish climb attitude, retract flaps to 20° immediately. While accelerating retract flaps to 10 degrees, retract landing gear. Retract remaining flaps, accelerate to normal climb speed and adjust power.

INSTRUMENT APPROACH POWER SETTINGS

ILS : 100 KIAS: 16" MP & 2300 RPM

NON-PRECISION: 100 KIAS: 13" MP & 2300 RPM



AIRCRAFT CHECK-OUT C-172RG N28RJ

Aircraft Make and Model _____.
Engine Make and Model _____.
Rated Horsepower _____ BHP at _____ RPM
Propeller Type _____.
Maximum Gross Weight _____ LB. Maximum Weight in Baggage _____ LB.
Basic Empty Weight for N _____ is _____ LB.
Useful Load for N _____ is _____ LB.

Speeds

Vne _____ KIAS Vfe _____ KIAS Vr _____ KIAS
Vno _____ KIAS Vy _____ KIAS Vso _____ KIAS
Va _____ KIAS at _____ LB. Vx _____ KIAS Vsl _____ KIAS
Enroute Climb Speed _____ KIAS Vlo _____ KIAS Vle _____ KIAS
Final Approach Speed with Flaps Down _____ KIAS
Final Approach Speed with Flaps up _____ KIAS
Demonstrated Crosswind Component _____ KIAS
Best Glide Speed _____ KIAS

Fuel/Oil System

Number of Fuel Tanks _____.
Total Capacity of each Tank _____.
Total Usable Fuel _____ Gallons
Where are the fuel drains located? _____.
Fuel Grade and color _____.
Oil Capacity _____ Qt.
Minimum Oil Quantity for Flight _____ Qt.
Oil Type Used _____ 50 Wt.

Electrical System

_____ Volt Battery _____ Volt Alternator
If the ammeter is indicating a Discharge, what might this be indicative of?
1. _____ or
2. _____.
Where is the battery Located _____.
Where is the External Power Receptacle Located _____.

Landing Gear

1. What are the unsafe gear indications? _____
2. What is the procedure for emergency gear extension? _____

Power Setting and Engine Care

1. What is Climb Power Setting? _____ MP _____ RPM.
2. What is Cruise Power Setting? _____ MP _____ RPM.
3. During a descent from cruise altitude, the engine should be "stage cooled" at _____ inches of manifold per _____ minute (s).
4. What power setting should be established for entering the traffic pattern?
Approximate MP _____ and RPM _____.

5. Cowl Flaps should be OPEN/CLOSED.....

- _____ While Taxiing
- _____ During Climb to Altitude
- _____ During Cruise Flight
- _____ During Descent from Altitude
- _____ After Landing and Clear of Runway

Aircraft Performance

1. Complete the following Weight and Balance

Basic Empty Weight	_____ LB.	Moment	_____
Usable Fuel	_____ LB.	Moment	_____
Pilot and Front Passenger	_____ LB.	Moment	_____
Rear Passengers	_____ LB.	Moment	_____
Baggage	_____ LB.	Moment	_____

Total Weight _____ LB. divide by Total Moment _____ = _____ CG

2. Takeoff

Calculate the ground roll and total to clear a 50 foot obstacle takeoff distances at maximum gross weight, departing from a field elevation of 2500 feet. ATIS reports wind calm and temperature 20 degrees C.

3. Enroute:

Calculate the maximum endurance and fuel flow per hour at 7500 feet cruise altitude, using a cruise power setting of 21 inches MP and 2400 RPM.

What percentage BHP and TAS can you expect with this pressure and 2300 RPM?

4. Landing:

Calculate the ground roll and total to clear a 50 foot obstacle landing distance at maximum gross weight, sea level field elevation, standard temperature, wind calm.

5. What is the recommended short field approach airspeed and configuration? _____

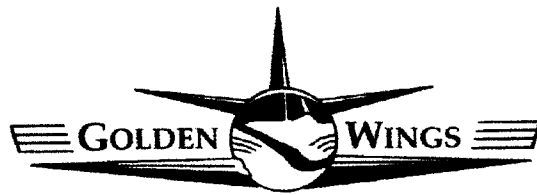
6. What is the recommended soft field take off and landing procedure? _____

7. Describe the "Go Around" procedure: _____

Pilots Name _____

Date _____

Instructor _____



Golden Wings, Inc. Aircraft Checkout Form N28RJ

Name _____
 Date Last Biennial _____ or Date Last Annual _____
 Date Last Medical _____ Class _____ Pilot Cert.# _____
 Hours PIC _____ Hours last 6 months _____ Pilot Ratings _____
 Aircraft Check Out (Date) _____ Type A/C _____ N _____

Phase I: Oral Operational Quiz Check if satisfactory

Recent changes in FAR's _____
 Airspace, controlled and uncontrolled _____
 Airplane and equipment documents _____
 Airplane performance and proper operation of all installed equipment _____
 Airplane loading, weight and balance _____
 Preflight line check _____
 High Altitude operations (density altitude) _____

Phase II: Basic Piloting Technique

Normal and crosswind takeoffs and landings _____
 Short field takeoff and landing over 50' obstacle _____
 Soft field takeoff and landing _____
 Flight at minimum controllable airspeeds _____
 Stalls from all normally anticipated flight attitudes _____
 Go-arounds _____
 720° steep turns(45° bank minimum) _____
 Slips to a landing _____
 In-flight emergency procedures _____
 Simulated equipment failures _____
 Radio communication and navigation _____
 High Density Altitude Operations _____
 Other (specify) _____

Phase III: Instrument Flight

Straight and level, shallow climbing and descending turns to given altitude heading _____
 Approaches (# _____, type _____), for IFR pilots _____
 Recovery from start of power-on spiral _____
 Recovery from the approach to a climbing stall _____
 High Density Altitude Flight Operations _____
 Emergency descents _____
 Other (specify) _____

Comments _____

Instructor Name _____ Signature _____

CFI No. _____ Expiration Date _____

Signature of pilot _____ Date _____