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Reality Expansion Pack for X-Plane

Piper P28R Turbo Arrow III/IV

Checklists & References

Before Starting Engine Checklist

- 1. Passengers BRIEFED
- 2. Avionics switch OFF
- 3. Trims CHECK – T/O position
- 4. Parking Brake SET
- 5. Propeller Control FULL INCREASE rpm
- 6. Alternate air OFF
- 7. Circuit Breakers CHECK in
- 8. All Switches OFF (incl. A/P)
- 9. Audio panel CHECK & SET
- 10. COM/NAV/ADF volume SET (approx. half open)
- 11. Cockpit inspection COMPLETED
- 12. All instruments CHECK
- 13. Flashlight CHECK
- 14. Ignition key IN PACE and OFF
- 15. Master switch ON
- 16. Annunciator panel PRESS TO TEST
- 17. Fuel quantity CHECK SUFFICIENT
- 18. Fuel selector DESIRED TANK - LEAST FULL TANK
- 19. Avionics master switch ON
- 20. ATIS COPIED
- 21. Altimeter SET
- 22. Avionics master switch OFF

STARTING ENGINE

CAUTION

If a positive oil pressure is not indicated within 30 seconds following an engine start, stop the engine and determine the trouble. In cold weather it will take a few seconds longer to get a positive oil pressure indication.

NOTE

To prevent starter damage, limit starter cranking to 30 second periods. If the engine does not start within that time, allow a cooling period of several minutes before engaging starter again. Do not engage the starter immediately after releasing it. This practice may damage the starter mechanism.

- 1. Fuel selector ON (LEAST FULL TANK)
- 2. Mixture full RICH
- 3. Throttle full FORWARD
- 4. Propeller full FORWARD
- 5. Master Switch ON
- 6. Auxiliary fuel pump OFF
- 7. Strobe Lights ON
- 8. Propeller CLEAR

9. Primer ON see table

OAT	Priming Time (s)	
°C	Min	Max
-29	29	34
-27	27	32
-24	25	30
-22	24	28
-20	22	26
-18	20	24
-16	18	22
-13	16	20
-11	15	19
-9	14	17
-7	12	15
-4	11	14
-2	10	13
0	9	11
2	8	10
4	7	9
7	6	8
9	6	7
11	5	7
13	4	6
16	4	5
18	4	5
38	3	4

10. Primer HOLD ON WHEN OAT below 20 °F = - 6 °C

11. Primer RELEASE WHEN OAT above 20 °F = - 6 °C

12. Throttle CLOSE

13. Starter ENGAGE IMMEDIATELY

14. Primer RELEASE

Piper P28R Turbo Arrow III/IV

Normal Operations

- | | |
|---------------------------------|------------------------|
| 15. Auxiliary fuel pump | ON – LOW as necessary |
| 16. Starter warning light | CHECK - OUT |
| 17. Oil Pressure | CHECK |
| 18. Alternator | CHECK |
| 19. Gyro Suction | CHECK (4.8 – 5.1 inHg) |

WARM-UP

- | | |
|----------------------------|-----------------|
| 1. Engine start time | NOTED |
| 2. Throttle | 900 to 1200 RPM |

Briefing and Avionics Checklist

- 1. Departure Briefing PERFORM
- 2. Autopilot Master Switch OFF
- 3. Avionics SET
- 4. Trim SET for take-off

Before Taxiing Checklist

- 1. Alternator & Alt load CHECK
- 2. Pitot heat CHECK (ON – OFF)
- 3. Engine instruments CHECK
- 4. HSI CHECK heading
- 5. Backup Directional Gyro SET
- 6. Lights (Taxi) AS REQUIRED
- 7. Strobe Lights AS REQUIRED

Taxiing Checklist

- 1. Request taxi APPROVED
- 2. Chocks REMOVED
- 3. Taxi Area CLEAR
- 4. Parking Brake RELEASED
- 5. Prop FULL INCREASE
- 6. Throttle APPLY SLOWLY
- 7. Brakes CHECK
- 8. Steering CHECK
- 9. Flight Instruments / Gyro's CHECK
- 10. Transponder SET

Ground Check Checklist

- 1. Parking Brake SET
- 2. Radios & Nav equipm. if recleared: SET, briefed
- 3. Fuel selector SWITCH TANK - FULLEST TANK
- 4. Propeller FULL INCREASE
- 5. Throttle 1800 to 2000 RPM
- 6. Horizon SET
- 7. Horizon second AI SET
- 8. Magnetos CHECK
- 9. Vacuum CHECK (4.8 inHg to 5.1 inHg)
- 10. Oil Temperature CHECK
- 11. Oil Pressure CHECK
- 12. Annunciator Panel PRESS-TO-TEST
- 13. Propeller Control EXERCISE – then FULL INCREASE
- 14. Alternate Air CHECK

NOTE

Engine is warm for takeoff when oil temperature is at least 100 °F

- 1. Auxiliary Fuel Pump OFF
- 2. Fuel Pressure CHECK
- 3. Throttle RETARD 1200 RPM
- 4. Manifold Pressure Line DRAIN (5 sec at < 25 inHg)

Before Takeoff Checklist

1. Master Switch ON
2. Flight Instruments CHECK
3. Fuel Selector PROPER TANK - FULLEST
4. Auxiliary Fuel Pump OFF
5. Engine Gauges CHECK
6. Alternate Air CLOSED
7. Seat Backs ERECT
8. Seats ADJUSTED& LOCKED IN POSITION
9. Mixture SET
10. Prop SET
11. Belts/Harness FASTENED/ADJUSTED
12. Flaps CHECK - SET
13. Trim tab SET
14. Controls FREE
15. Doors LATCHED
16. Magnetos verify BOTH
17. Autopilot NOT ACTIVE
18. HSI CHECK heading
19. Departure Clearance RECEIVED
20. Window CLOSED
21. Landing Light ON

Piper P28R Turbo Arrow III/IV

Normal Operations

-
- | | |
|-------------------------------------|--------------------|
| 22. Nav lights & Panel lights | AS REQUIRED |
| 23. Strobe Lights | AS REQUIRED |
| 24. Pitot Heat | ON |
| 25. Clearance limit | KNOWN |
| 26. Departure time | NOTED |
| 27. Transponder | CORRECT CODE & ALT |
| 28. Parking Brake | RELEASE |

TAKEOFF - GENERAL

NOTE

At altitudes below 12,000 feet, normal take offs are made with less than full throttle setting. Use the throttle as required to obtain 41 In. Hg. manifold pressure DO NOT EXCEED 41 inHg MANIFOLD PRESSURE. The overboost warning light will illuminate when manifold pressure approaches the maximum limit.

NORMAL TECHNIQUE

- 1. Flaps SET
- 2. Trim Tab SET
- 3. Heading CHECKED
- 4. Power Max 41 inHg
- 5. Accelerate to 70-77 KIAS
- 6. Control wheel BACK PRESSURE to rotate to climb attitude
- 7. Best Angle of Climb Speed, gear down, flaps up 73 KIAS
- 8. Best Rate of Climb Speed, gear down, flaps up 79 KIAS
- 9. Positive climb CHECK
- 10. Gear BRAKES, UP
- 11. Best Angle of Climb Speed, gear up, flaps up 79 KIAS
- 12. Best Rate of Climb Speed, gear up, flaps up 97 KIAS
- 13. 200 ft AGL: Flaps RETRACT
- 14. 200 ft AGL: Transponder CHECK - ALT

FOR CLIMB SEE NEXT PAGE

SHORT FIELD, OBSTACLE CLEARANCE

- 1. Flaps 25°, second notch
- 2. Trim Tab SET
- 3. Heading CHECKED
- 4. Power Max 41 inHg
- 5. Accelerate to 53 - 64 KIAS depending on aircraft weight
- 6. Control wheel BACK PRESSURE to rotate to climb attitude

After breaking ground:

- 7. Accelerate to 59 – 68 KIAS depending on aircraft weight
- 8. Gear BRAKES, UP
- 9. Accelerate to ... Best flaps up Angle of Climb speed 79 KIAS
- 10. Flaps RETRACT slowly, climb past obstacle
- 11. Accelerate to .. Best flaps up Rate of Climb Speed 97 KIAS
- 12. 200 ft AGL: Transponder CHECK - ALT

SOFT FIELD

- 1. Flaps 25°, second notch
- 2. Trim Tab SET
- 3. Heading CHECKED
- 4. Power Max 41 inHg
- 5. Accelerate to 53 - 64 KIAS depending on aircraft weight
- 6. Control wheel BACK PRESSURE to rotate to climb attitude

After breaking ground:

- 7. Accelerate to 59 – 68 KIAS depending on aircraft weight
- 8. Gear BRAKES, UP
- 9. Accelerate to Best Rate of Climb Speed 97 KIAS
- 10. Flaps RETRACT slowly
- 11. 200 ft AGL: Transponder CHECK - ALT

TAKEOFF CLIMB

- 1. Mixture FULL RICH
- 2. Propeller Speed 2575 RPM
- 3. Manifold Pressure DO NOT EXCEED 41 inHg

Climb Speed:

- Best Angle 79 KIAS
- Best Rate 97 KIAS
- 4. Auxiliary Fuel Pump LO – if required

CRUISE CLIMB

After takeoff: set when adequate terrain clearance obtained
(e.g. 500 feet AGL)

1. Mixture FULL RICH
2. Manifold Pressure 33 inHg
3. Propeller Speed 2450 RPM
4. Best Rate of Climb Speed 97 KIAS
5. Climb Speed (improved cooling etc.) 104 KIAS
6. Cylinder Head Temp CHECK - MAX 460 °F
7. Auxiliary Fuel Pump LO – if required

At transition altitude or outside CTR:

8. Landing Light OFF
9. Altimeter QNE (1013 hPa) at Transition Alt
10. Fuel CHECK and SET
11. Auxiliary Fuel pump OFF at desired altitude

Cruise Checklist

NOTE

The maximum permissible cylinder head temperature for all operations is 460°F. To obtain maximum service life of engine components, cylinder head temperature should not exceed 440 °F during cruise operation. Adjust cylinderhead temperatures by reducing power, adjusting the mixture, or any combination of these methods.

NOTE

In order to keep the airplane in best lateral trim during cruise flight, the fuel should be used alternately from each tank at 20 minutes intervals.

- 1. Power SET per power table
- 2. Mixture ADJUST
- 3. Auxiliary Fuel Pump LO – if required
- 4. Fuel balance MONITOR & TIME
- 5. Engine instruments MONITOR
- 6. Electronics MONITOR
- 7. Location MONITOR

ARRIVAL

- 1. ATIS COPIED
- 2. STAR/Approach plates SELECT
- 3. Holding inbound track KNOWN/SET
- 4. Holding entry KNOWN TYPE
- 5. Radio's and nav equip. SET
- 6. Crew briefing Route, Approach plate
- 7. Crew briefing Weather

APPROACH AND LANDING

1. Landing Light ON
2. Brakes CHECK / OFF
3. Magnetos CHECK - BOTH
4. Loose items SECURE
5. Annunciators CHECK
6. Terrain clearance/MSA KNOWN
7. Descent/Approach/Entry CLEARANCE RECEIVED
8. Altimeter SET
9. Fuel Selector PROPER TANK – FULLEST
10. Seat Backs ERECT
11. Seats ADJUSTED & LOCKED IN POSITION
12. Belts/Harness FASTEN/ADJUST
13. Missed approach point KNOWN
14. Pos. Fix Alt. KNOWN
15. MDA/DA KNOWN
16. Cockpit silence REQUEST
17. Mixture SET full RICH
18. Gear DOWN - 133 KIAS max.
19. Flaps SET – 108 KIAS max.
20. Trim to 75 KIAS

FINAL

- 1. Prop FULL FORWARD
- 2. Undercarriage THREE GREENS
- 3. Flaps SET

After Landing Checklist

- 1. Landing time NOTED
- 2. Stopwatch START for engine shutdown time
- 3. Flaps RETRACT
- 4. Strobe Lights AS REQUIRED
- 5. Landing, Taxi Lights AS REQUIRED
- 6. Pitot Heat OFF
- 7. Transponder CHECK - GND

Stopping Engine Checklist

- 1. Strobe Lights ON
- 2. ELT annunciator CHECK – OFF

At least 5 minutes after landing:

- 3. Avionics Master Switch OFF
- 4. Propeller FULL INCREASE
- 5. Throttle FULL AFT (IDLE)
- 6. Mixture IDLE CUT-OFF
- 7. Magnetos OFF
- 8. Switch off time NOTED
- 9. Master Switch OFF

Parking Checklist

- 1. Parking Brake SET
- 2. Control Wheel SECURED with belts
- 3. Flaps FULL UP
- 4. Wheel Chocks IN PLACE
- 5. Tie Downs SECURE

ENGINE POWER LOSS DURING TAKEOFF

a) If sufficient runway remains for a normal landing, leave gear down and land straight ahead.

b) If area ahead is rough, or if it is necessary to clear obstructions:

- 1. Gear Selector Switch UP
- 2. Auxiliary Fuel Pump OFF
- 3. Fuel Selector OFF
- 4. MixtureIDLE CUT-OFF

c) If sufficient altitude has been gained to attempt a restart:

Maintain Safe Airspeed

- 5. Fuel Selector SWITCH to tank containing fuel
- 6. Auxiliary fuel pump UNLATCH, HI
- 7. Mixture RICH
- 8. Alternate Air ALTERNATE
- 9. Emergency Gear lever as required
- 10. If power is not regained: Prepare for power off landing.

ENGINE POWER LOSS IN FLIGHT

Trim for 97 KIAS (Power off glide speed)

1. Fuel selector SWITCH to tank containing fuel
2. Auxiliary Fuel Pump UNLATCH, HI
3. Mixture RICH
4. Alternate Air OPEN
5. Engine Gauges CHECK for indication of cause of power loss

If no fuel pressure is indicated, check tank selector position to be sure it is on a tank containing fuel.

a) If power is restored:

6. Alternate Air CLOSED
7. Auxiliary Fuel Pump OFF

Land as soon as practical and investigate cause of power loss.

b) If power is not restored:

Trim for 97 KIAS (Power off glide speed)

Prepare for power off landing.

POWER OFF LANDING

1. Propeller ControlFULL DECREASE

Best gliding angle 97 KIAS

2. Suitable field LOCATE

3. Spiral pattern ESTABLISH

1000 ft.above field at downwind position for normal landing approach.

When field can easily be reached SLOW to 75 KIAS for shortest landing.

GEAR DOWN EMERGENCY LANDING

Touchdowns should normally be made at lowest possible
airspeed with full flaps.

When committed to landing:

- 1. Landing Gear Selector DOWN
- 2. Throttle CLOSED
- 3. MixtureIDLE CUT-OFF
- 4. Master Switch OFF
- 5. Ignition OFF
- 6. Fuel Selector OFF
- 7. Seat belt and harness TIGHT

GEAR UP EMERGENCY LANDING

In case of very soft or very wet ground

In the event a gear up landing is required proceed as follows:

- 1. Flaps AS DESIRED
- 2. Throttle CLOSED
- 3. Mixture IDLE CUT-OFF
- 4. Flaps AS REQUIRED
- 5. Master Switch OFF
- 6. Ignition OFF
- 7. Fuel Selector OFF
- 8. Seat belt and harness TIGHT

Contact surface at minimum possible airspeed.

EMERGENCY LANDING GEAR EXTENSION

EXTRA IN CASE OF TRAINING ONLY:

1. LANDING GEAR PUMP CB PULL

Prior to emergency extension procedure:

1. Master Switch CHECK ON
2. Circuit Breakers CHECK
3. Panel lights OFF (in daytime)
4. Gear indicator bulbs CHECK

If landing gear does not check down and locked:

5. Airspeed BELOW 88 KIAS
6. Landing Gear Selector DOWN

If gear has still failed to lock down:

7. Emergency lever MOVE to EMERGENCY DOWN

If gear has still failed to lock down: yaw airplane abruptly from side to side with the rudder.

If the nose gear will not lock down using above procedure slow down to lowest safe speed attainable using Lowest power setting required for safe operation and accomplish the following:

8. Landing gear selector switch DOWN position

If gear does not check down:

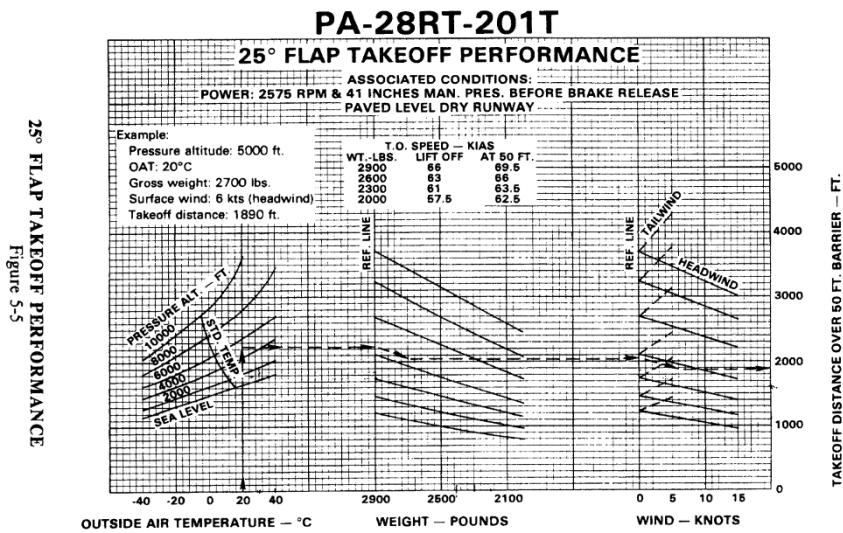
9. Gear Selector Switch CYCLE UP then DOWN

IN CASE OF TRAINING ONLY:

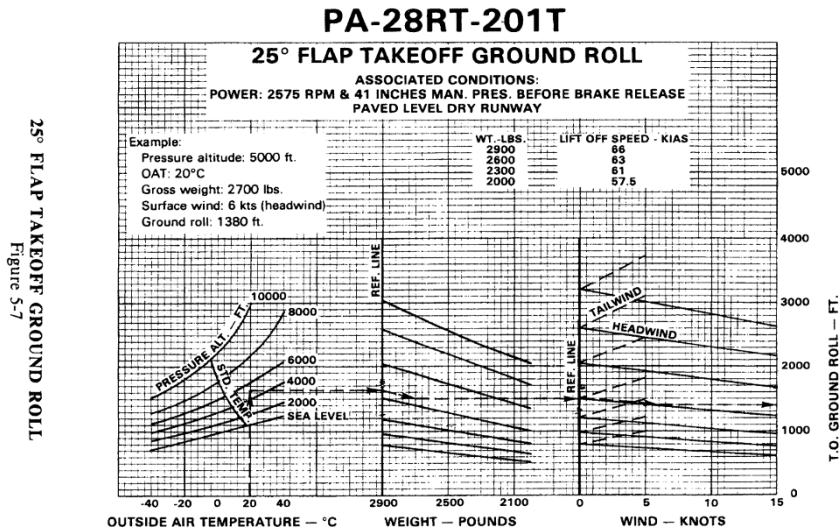
1. LANDING GEAR PUMP CB RESET

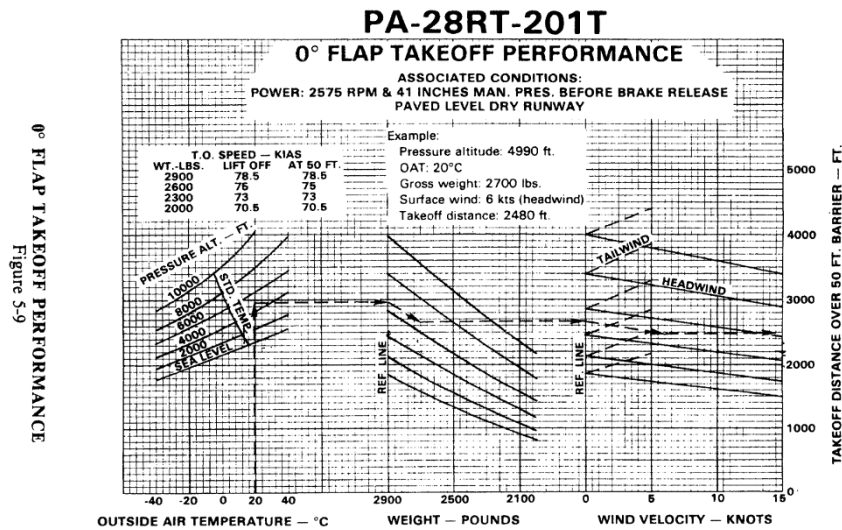
AIRSPEEDS FOR SAFE OPERATIONS

Best Angle of Climb Speed	79 KIAS
Best Rate of Climb Speed	97 KIAS
Turbulent Air Operating Speed (2900LBS)	124 KIAS)
Turbulent Air Operating Speed (1893LBS)	97 KIAS
Landing Final Approach Speed (Flaps 40°)	75 KIAS
Maximum Demonstrated Crosswind Velocity	17 KIAS
Maximum Flaps Extended Speed	108 KIAS
Best power off glide speed, prop full decr.	97 KIAS

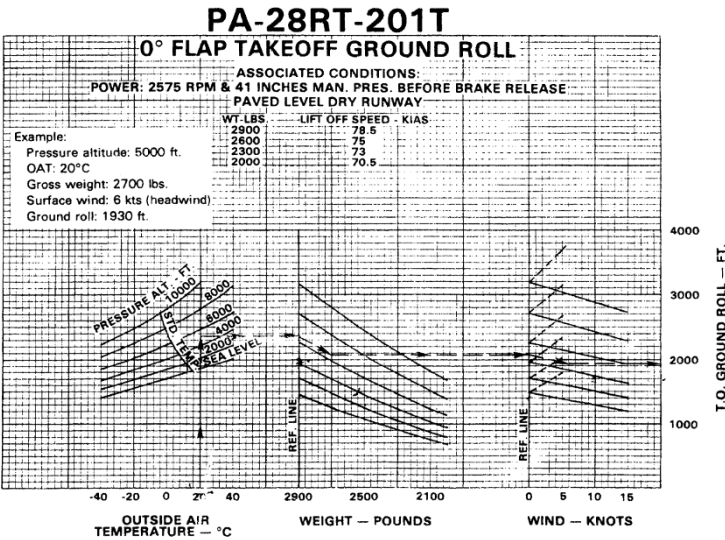


25° FLAP TAKEOFF PERFORMANCE
Figure 5-5

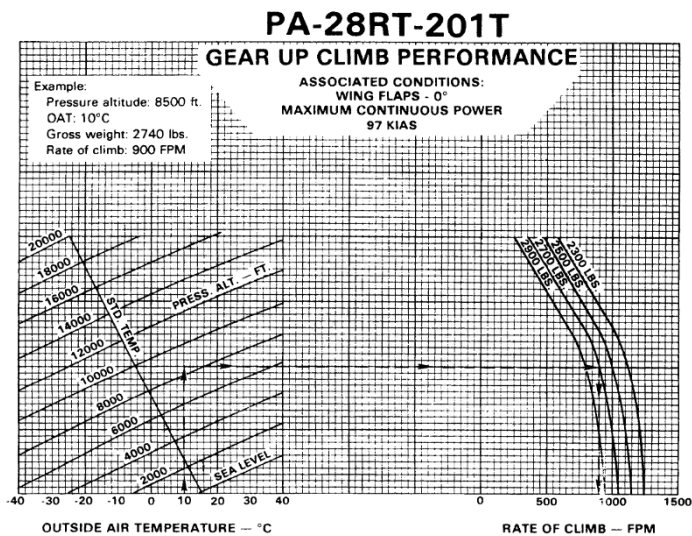




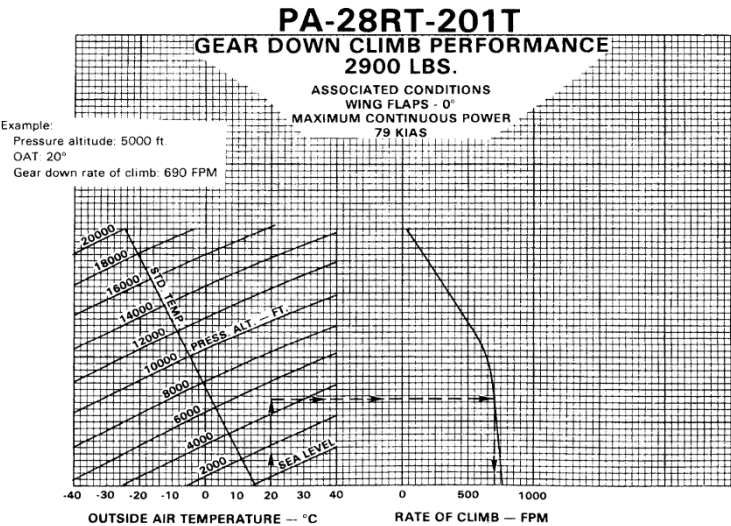
0° FLAP TAKEOFF GROUND ROLL
Figure 5-11



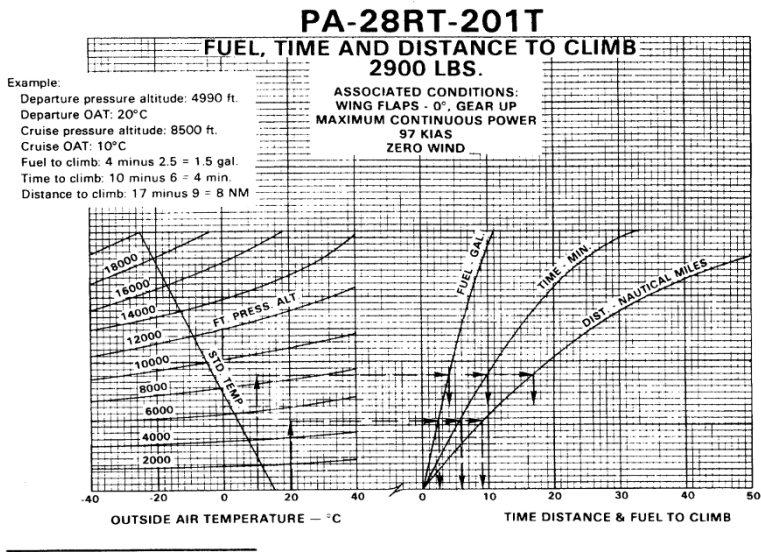
GEAR UP CLIMB PERFORMANCE
Figure 5-13



GEAR DOWN CLIMB PERFORMANCE
Figure 5-15



FUEL, TIME AND DISTANCE TO CLIMB
Figure 5-17



POWER SETTING TABLE — T.C.M. TSIO 360FB SERIES

PRESS. ALT. FEET	STD. ALT. TEMP. °C	55% POWER						65% POWER						75% POWER					
		RPM	2200	2300	2400	2500	2575	2200	2300	2400	2500	2575	2200	2300	2400	2500	2575		
		MANIFOLD PRESSURE — INCHES MERCURY																	
S.L.	15	29.0	27.7	26.8	26.0	25.0	32.8	31.1	30.0	29.2	28.2	34.8	33.8	32.8	31.5				
2000	11	29.0	27.7	26.8	26.0	25.0	32.8	31.1	30.0	29.2	28.2	34.8	33.8	32.8	31.5				
4000	7	29.0	27.7	26.8	26.0	25.0	32.8	31.1	30.0	29.2	28.2	34.8	33.8	32.8	31.5				
6000	3	29.0	27.7	26.8	26.0	25.0	32.8	31.1	30.0	29.2	28.2	34.8	33.8	32.8	31.5				
8000	-1	29.0	27.7	26.8	26.0	25.0	—	31.1	30.0	29.2	28.2	—	33.8	32.8	31.5				
10000	-5	29.0	27.7	26.8	26.0	25.0	—	31.1	30.0	29.2	28.2	—	33.8	32.8	31.5				
12000	-9	—	27.7	26.8	26.0	25.0	—	—	30.0	29.2	28.2	—	—	32.8	31.5				
14000	-13	—	27.7	26.8	26.0	25.0	—	—	30.0	29.2	28.2	—	—	32.8	31.5				
16000	-17	—	—	26.8	26.0	25.0	—	—	—	29.2	28.2	—	—	—	31.5				
18000	-21	—	—	—	26.0	25.0	—	—	—	29.2	28.2	—	—	—	31.5				
20000	-25	—	—	—	26.0	25.0	—	—	—	—	28.2	—	—	—	31.5				

To maintain constant power, add approximately 1% for each 6°C above standard, subtract approximately 1% for each 6°C below standard.

APPROXIMATE FUEL FLOW

CRUISE POWER

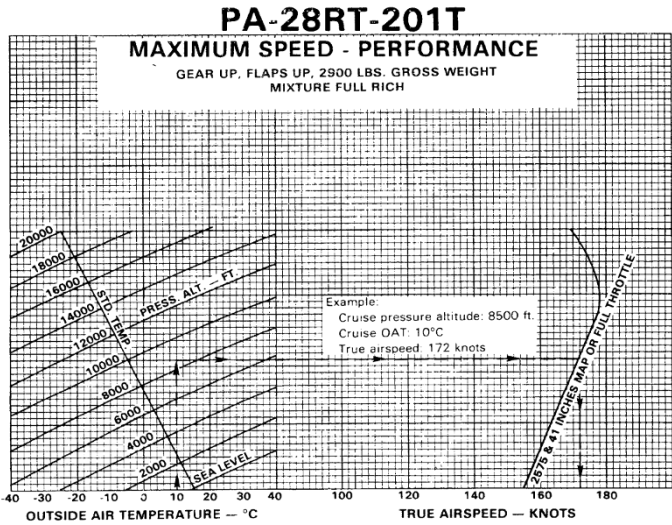
55% Power 9.2 GPH
65% Power 10.8 GPH
75% Power 12.0 GPH

NOTE: Fuel flow will vary with altitude; therefore, cruise fuel control must be accomplished by adjusting EGT (peak EGT for best economy and peak EGT plus 100°F rich for best power) rather than leaning to an indicated fuel flow.

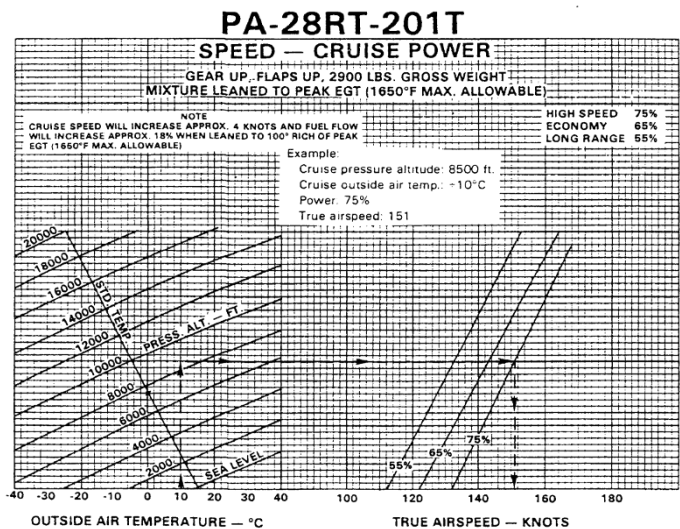
The Plane Operating Handbook is quite casual about engine operating physics. The POH shows constant manifold pressure settings yielding the same power output for a given RPM at any altitude from sea level to FL200. The manifold pressure values reported in the table above must therefore be corrected by the pilot by subtracting roughly one inch of manifold pressure every 3000 feet of cruise altitude to achieve the corresponding power output. Take care of your engine :-)

The SimCoders Team

MAXIMUM SPEED - PERFORMANCE
Figure 5-21



SPEED - CRUISE POWER
Figure 5-23



Example

Cruise pressure altitude: 8500 ft.

Cruise 9: 15.00 g air temp., -10°C

Power: 75%

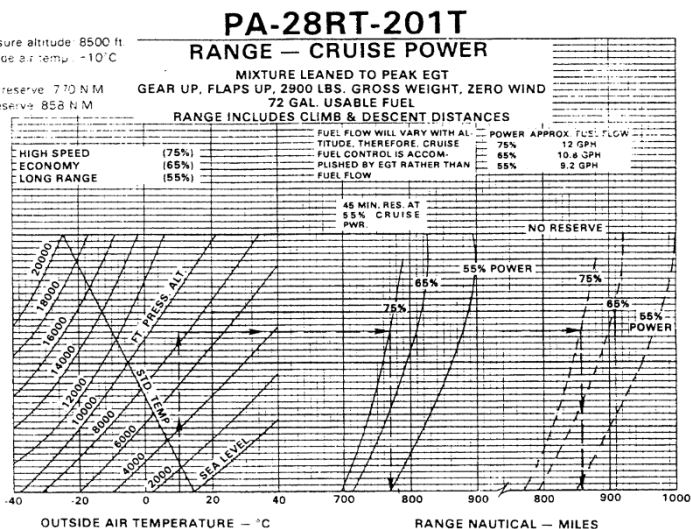
Range with reserve 770 NM

Range w/o. reserve 858 N M

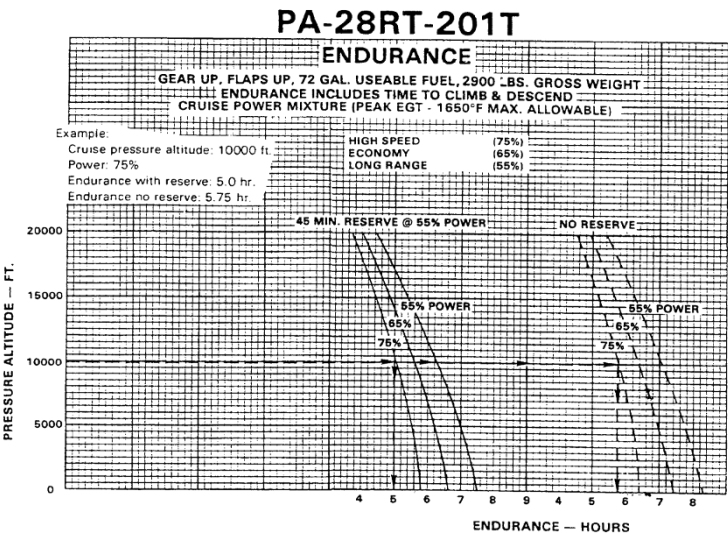
Charge No. Reserve 050 NIM

RANGE - CRUISE POWER

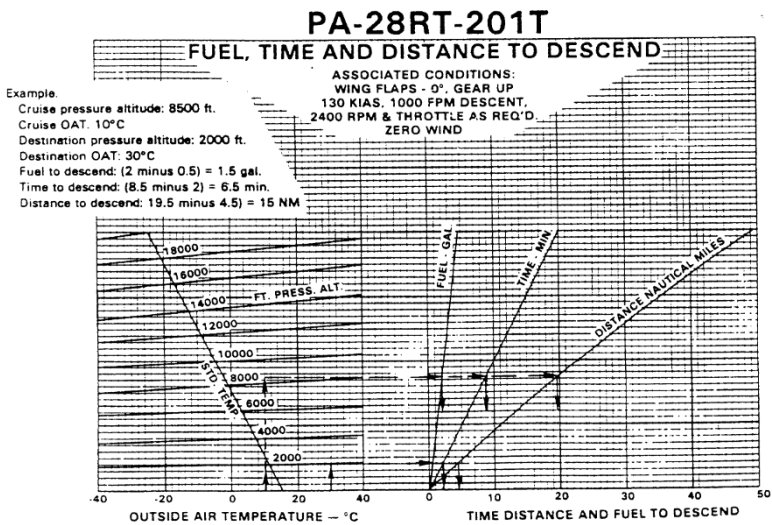
Figure 5-27

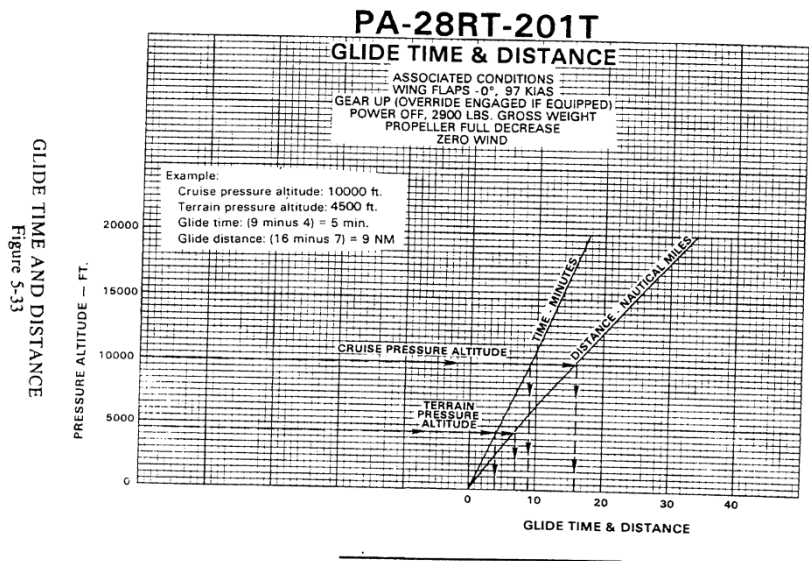


ENDURANCE
Figure 5-29



FUEL, TIME AND DISTANCE TO DESCEND
Figure 5-31





GLIDE TIME AND DISTANCE
Figure 5-33

LANDING DISTANCE OVER 50 FT.
Figure 5-35

