

PA28R-201 ARROW

NORMAL PROCEDURES

**GENERAL INFORMATION**

**ALL SPEEDS in KIAS**

Rotate (Vr) .....65-75  
 Best Rate of Climb (Vy) 2750 lbs Gear Up/Gear Down .....90 / 78  
 Best Angle of Climb (Vx) 2750 lbs Gear Up/Gear Down.....78 / 72  
 Maneuvering Speed (Va)  
     At 2750 lbs ..... 118  
     At 1865 lbs .....96  
 Best Glide Speed .....79  
 Stall Speed  
     Power Off, Flaps Up (V<sub>s1</sub>).....60  
     Power Off, Flaps 40<sup>0</sup>, Gear Down (V<sub>s0</sub>).....55  
 Approach Speed  
     Flaps Up.....85  
     Flaps 40<sup>0</sup>.....75  
 Maximum Flaps Extended Speed (Vfe).....103  
 Maximum Structural Speed (Vno).....146  
 Never Exceed Speed (Vne).....183  
 Maximum Takeoff Weight.....2750 lbs  
 Oil (Min / Max) .....2 / 8 qts  
 Fuel  
     Full / Useable.....77 / 72 gal  
     Tabs / Useable .....50 / 45 gal  
 HP .....200 HP  
 Maximum Crosswind .....17

Airport	Desig	Frequency	Elev	TPA	RWY Size	Wx	Runways
Annapolis-Lee	ANP	122.9 CTAF	34	1034	2505x48	122.90	12-30
Bay Bridge	W29	123.0 CTAF	15	1200	2903x60	120.57	11-29
Cambridge	CGE	122.7 CTAF	19	1000	4476x75	120.67	16-34
Carroll Cty	DMW	122.7 CTAF	789	1600	5100x100	121.25	16-34RP
Easton	ESN	122.95 CTAF	74	1100	04-22 5500x100	124.47	04-22RP, 15-33
Frederick	FDK	122.72 CTAF	303	1303	05-23 5220x99	124.87	05RP-23, 12RP-30
Freeway	W00	123.07 CTAF	168	1000	2425x30	--	18-36RP
Hagerstown	HGR	120.3 Twr	703	1700	9-27, 5461x150	126.37	2-20, 9-27
Montgy Cty	GAI	122.7 CTAF	538	1338	4195x75	128.27	14RP-32
Ridgely	1N0	122.8 CTAF	63	1000	3200x50	120.22	12-30
Salisbury	SBY	119.42 Twr	52	800	14-32 5500x150	118.32	5-23, 14-32
Suburban	W18	123.05 CTAF	148	1000	2324x40	--	03-21
Tipton	FME	123.05 CTAF	155	1000	3000x75	127.80	10RP-28

**PREPARATION**

Airplane Status .....	CHECK AROW
Weather .....	SUITABLE
Baggage .....	WEIGHED, STOWED, SECURED
Weight and CG .....	WITHIN LIMITS
Navigation .....	PLANNED
Current Charts .....	ON BOARD
Performance and Range.....	COMPUTED and SAFE

**PREFLIGHT CHECK****COCKPIT**

Hobbs and Tachometer Time (50/100 Hr) .....	CHECK and NOTE
Control Wheel .....	Release Restraints
Gear Handle.....	DOWN
Avionics.....	OFF
Parking Brake .....	SET
Electric Switches .....	OFF
Magneto Switch.....	OFF
Mixture .....	IDLE CUT-OFF
BATT Master Switch .....	ON
Fuel Quantity Gauges .....	CHECK
Annunciator Panel .....	CHECK
BATT Master Switch .....	OFF
Flight Controls.....	CHECK
Flaps .....	CHECK
Trim .....	CHECK, SET NEUTRAL
Pitot and Static Systems .....	DRAIN
Windows.....	CHECK, CLEAN
Tow Bar .....	STOW
Baggage Door.....	CLOSED and SECURE

**RIGHT WING**

Wing .....	FREE of ICE, SNOW and FROST
Control Surfaces .....	CHECK for INTERFERENCE
Hinges.....	CHECK for INTERFERENCE
Static Wicks.....	CHECK
Wing Tip and Lights.....	CHECK SECURE
Fuel Tank.....	CHECK SUPPLY SECURE CAP
Fuel Tank Sump .....	DRAIN, CHECK for WATER SEDIMENT and PROPER FUEL COLOR
Fuel Vent .....	CLEAR
Tie Down and Chock.....	REMOVE
Main Gear Strut .....	PROPER INFLATION (2.5 ±0.25 In)
Tire .....	CHECK
Brake Block and Discs .....	CHECK
Fresh Air Inlet.....	CLEAR

**NOSE SECTION**

General Condition .....	CHECK
Cowling .....	SECURE
Oil.....	CHECK QUANTITY
Dipstick .....	PROPERLY SEATED
Engine Baffle Seals .....	CHECK
Windshield.....	CLEAN
Nose Gear Strut .....	PROPER INFLATION (2.75 ±0.25 In)
Nose Wheel Tire.....	CHECK
Prop and Spinner .....	CHECK for DAMAGE
Air Inlets.....	CLEAR
Alternator Belt.....	CHECK TENSION
Landing Light .....	CHECK
Fuel Strainer .....	DRAIN, CHECK for WATER SEDIMENT and PROPER FUEL COLOR

**LEFT WING**

Wing .....	FREE of ICE, SNOW and FROST
Fresh Air Inlet.....	CLEAR
Stall Strips .....	CHECK
Main Gear Strut .....	PROPER INFLATION (2.5 ± 0.25 In)
Tire .....	CHECK
Brake Block and Discs .....	CHECK
Fuel Vent .....	CLEAR
Tie Down and Chock.....	REMOVE
Pitot Head .....	REMOVE COVER, HOLES CLEAR
Fuel Tank.....	CHECK SUPPLY SECURE CAP
Fuel Tank Sump .....	DRAIN, CHECK for WATER SEDIMENT and PROPER FUEL COLOR
Wing Tip and Lights.....	CHECK
Control Surfaces .....	CHECK FOR INTERFERENCE
Hinges.....	CHECK FOR INTERFERENCE
Static Wicks.....	CHECK

**FUSELAGE**

Antennas .....	CHECK
Left Static Vent.....	CLEAR
Empennage .....	FREE of ICE, SNOW and FROST
Fresh Air Inlet.....	CLEAR
Stabilator and Trim Tab.....	CHECK for INTERFERENCE
Tail Tie-Down .....	REMOVE
BATT MASTR Switch.....	ON
Cockpit Lighting.....	CHECK
Nav, Strobe, Landing Lights.....	CHECK
Stall Warning.....	CHECK
Pitot Heat.....	CHECK
All Switches.....	OFF

**LAST CHECK**

Walk around aircraft giving it a last visual check; for general appearance, tie downs, chocks removed, oil or fuel leaks/spills, cowlings closed, icing, etc.

**BEFORE STARTING ENGINE**

Passengers.....	BOARDED and BRIEFED
Cabin Door .....	CLOSED and LATCHED
Overhead Latch .....	SECURED
Seat Belts and Harnesses .....	SECURE
Inertial Reel .....	CHECK
Seats.....	ADJUSTED and SECURED
Circuit Breakers.....	ALL IN
Parking Brake .....	SET ON
Alternate Air.....	OFF
Propeller .....	FULL INCREASE RPM
Avionics Master.....	OFF
Fuel Selector.....	DESIRED TANK
Flaps .....	RETRACTED
Anti-Collision Light .....	ON

**STARTING ENGINE WHEN COLD**

Throttle ..... OPEN 1/4 INCH  
 BATT MASTR Switch ..... ON  
 ALTR Switch ..... ON  
 Anti-Collision Light ..... ON  
 Electric Fuel Pump ..... ON  
 Mixture ..... RICH – then IDLE CUT OFF  
 Propeller ..... “CLEAR PROP”  
 Foot Brakes ..... HOLD  
 Starter ..... ENGAGE

*(If engine does not start within 10 seconds  
 prime and repeat starting procedures).*

Mixture ..... FULL RICH when ENGINE STARTS  
 Throttle ..... ADJUST for 1,000 RPM  
 Oil Pressure ..... CHECK  
 Electric Fuel Pump ..... OFF  
 Fuel Pressure ..... CHECK

**STARTING ENGINE WHEN HOT**

Throttle ..... ½ INCH OPEN  
 ALTR Switch ..... ON  
 BATT MASTR Switch ..... ON  
 Anti-Collision Lights ..... ON  
 Electric Fuel Pump ..... ON  
 Mixture ..... IDLE CUT-OFF  
 Propeller ..... “CLEAR PROP”  
 Starter ..... ENGAGE  
 Mixture ..... FULL RICH after STARTING  
 Throttle ..... ADJUST for 1,000 RPM  
 Oil Pressure ..... CHECK  
 Electric Fuel Pump ..... OFF  
 Fuel Pressure ..... CHECK

**STARTING ENGINE WHEN FLOODED**

- Throttle ..... OPEN FULL
- ALTR Switch.....ON
- BATT MASTR Switch.....ON
- Electric Fuel Pump ..... OFF
- Anti-Collision Light .....ON
- Mixture ..... IDLE CUT-OFF
- Propeller ..... “CLEAR PROP”
- Starter ..... ENGAGE
- Mixture ..... FULL RICH after STARTING
- Throttle ..... ADJUST for 1,000 RPM
- Oil Pressure ..... CHECK
- Fuel Pressure ..... CHECK

**ENGINE START WITH EXTERNAL POWER SOURCE**

- BATT MASTR Switch..... OFF
- ALTR Switch..... OFF
- All Electrical Equipment ..... OFF
- Terminals..... CONNECT
- External Power Plug..... INSERT in RECEPTACLE

Proceed with normal start

- Throttle ..... LOWEST POSSIBLE RPM
- External Power Plug..... REMOVE from RECEPTACLE
- BATT MASTR Switch.....ON
- ALTR Switch..... ON – CHECK AMMETER
- Oil Pressure ..... CHECK

**WARM-UP**

- Throttle ..... 1400 to 1500 RPM

**INSTRUMENT COCKPIT CHECK:**

Radio Master Switch .....	ON
Audio Selector Panel .....	ON
Intercom.....	ON
ADF .....	ON, TEST and TUNED
Radios .....	ON and TUNED
Transponder.....	ON STANDBY
VORs .....	ON and TUNED
Clock .....	VERIFY CORRECT TIME or ADJUST
Air Speed Indicator.....	VERIFY "0" INDICATION
Attitude Indicator.....	SET, VERIFY OPERATION
Altimeter.....	SET, NOTE DISCREPANCY
Magnetic Compass .....	CHECK
Slaved HSI.....	CHECK w/MAG COMPASS
Turn Coordinator/Inclinometer.....	CHECK
VSI.....	CHECK
Alternate Static Source.....	VERIFY SET CORRECTLY
Garmin 430.....	FLT PLAN ENTERED and ACTIVATED

**TAXIING**

Radios.....	CHECK
Taxi area .....	CLEAR
Parking brake.....	RELEASE
Propeller .....	HIGH RPM
Throttle .....	APPLY SLOWLY
Foot brakes .....	CHECK
Steering.....	CHECK



**GROUND CHECK**

Parking Brake .....	SET
Propeller .....	FULL INCREASE
Throttle .....	2000 RPM
Magnetos .....	CHECK
	<i>(Max. Drop 175 RPM Difference 50 RPM)</i>
Vacuum .....	4.8 to 5.1 inches Hg
Oil Temperature.....	CHECK
Oil Pressure .....	CHECK
Ammeter .....	CHECK
Annunciator Panel .....	PRESS-TO-TEST
Propeller .....	EXERCISE – then FULL INCREASE
Alternate Air.....	CHECK
Electric Fuel Pump .....	OFF
Fuel Pressure .....	CHECK
Throttle .....	RETARD

**BEFORE TAKE-OFF**

BATT MASTR Switch.....	ON
ALTR Switch.....	ON
Flight Instruments.....	CHECK
Fuel Selector.....	PROPER TANK
Electric Fuel Pump .....	ON
Anti-Collision Light .....	ON
Engine Gauges.....	Check in Green
Alternate Air.....	CLOSED
Seat Backs .....	ERECT
Mixture .....	FULL RICH
Propeller .....	FULL INCREASE
Belts/Harness.....	FASTENED/CHECK
Flaps .....	SET
Trim Tab.....	SET
Controls .....	FREE and CORRECT

Cabin Doors..... CLOSED and LATCHED  
 Departure Briefing..... COMPLETE  
 Time and Timer ..... RECORD/START  
 Landing Light .....ON  
 Transponder.....ALT  
 Parking Brake ..... OFF  
 Takeoff Clearance ..... OBTAIN

## **TAKEOFF**

### **NORMAL**

Flaps ..... SET  
 Trim Tab..... SET  
 Accelerate to 65 to 75 KIAS (*depending on weight*)  
 Control Wheel .....BACK PRESSURE to ROTATE

### **SHORT FIELD TAKEOFF (*over obstacle*)**

Flaps ..... 25° (Second Notch)  
 Accelerate .....to 50-60 KIAS (*depending on weight*)  
 Control wheel .....BACK PRESSURE to ROTATE  
 Climb ..... 55-65 KIAS (*depending on weight*)  
 Gear ..... UP  
 Accelerate .....to 78 KIAS (Vx Gear Up)  
 Flaps ..... Retract Slowly  
 Accelerate .....to 90 KIAS (Vy Gear Up)

**SOFT FIELD TAKEOFF**

Flaps ..... 25° (Second Notch)  
 Accelerate ..... to 50-60 KIAS (*depending on weight*)  
 Control wheel ..... BACK PRESSURE to ROTATE  
 Climb ..... 55-65 KIAS (*depending on weight*)  
 Gear ..... UP  
 Accelerate ..... to 78 KIAS (V<sub>x</sub> Gear Up)  
 Accelerate ..... to 90 KIAS (V<sub>y</sub> Gear Up)  
 Flaps ..... RETRACT SLOWLY

**CLIMB**

(V<sub>y</sub>) Best Rate (2750 lbs) (Gear Up, Flaps Up) ..... 90 KIAS  
 (V<sub>y</sub>) Best Rate (2750 lbs) (Gear Down, Flaps Up) ..... 78 KIAS  
 (V<sub>x</sub>) Best Rate (2750 lbs) (Gear Up, Flaps Up) ..... 78 KIAS  
 (V<sub>y</sub>) Best Rate (2750 lbs) (Gear Down, Flaps Up) ..... 72 KIAS  
 En Route Climb ..... 104 KIAS  
 Electric Fuel Pump ..... OFF at desired altitude

**CRUISE**

Normal Maximum Power ..... 75%  
 Power ..... SET per power table  
 Mixture ..... ADJUST

**APPROACH AND LANDING**

ATIS/AWOS/ASOS .....	OBTAIN
Altimeter .....	SET
Communication Radios .....	SET
Fuel Selector .....	PROPER TANK
Seat Backs .....	ERECT
Belts/Harness .....	FASTEN
Electric Fuel Pump .....	ON
Mixture .....	SET
Propeller .....	FULL INCREASE
Gear .....	DOWN – 129 KIAS max
Flaps .....	SET – 103 KIAS max
<b><u>G</u></b> as .....	Fuel Selector Fullest Tank
<b><u>U</u></b> nder Carriage .....	Check Wheels Down
<b><u>M</u></b> ixture .....	Rich
<b><u>P</u></b> ump .....	Fuel Pump ON
<b><u>S</u></b> eats .....	Seats erect and belts secure
<b><u>S</u></b> witches .....	Landing Lights ON
Flaps .....	Set
Trim .....	SET for 75 KIAS

Flaps ..... Retract  
Electric Fuel Pump ..... OFF  
Avionics ..... OFF  
Electrical Switches ..... OFF  
Propeller ..... FULL INCREASE  
Throttle ..... CLOSED  
Mixture ..... IDLE CUT-OFF  
ALTR Switch ..... OFF  
BATT MASTR Switch ..... OFF

**PARKING**

Parking Brake ..... SET  
Hobbs / Tachometer ..... RECORD  
Control Wheel ..... SECURE with BELTS  
Flaps ..... FULL UP  
Wheel Chocks ..... IN PLACE  
Tie Downs ..... Secure