

**DIAMOND STAR  
DA-40**

**N445DS**

**CHECKLIST**

# NORMAL PROCEDURES

## PREFLIGHT

### INSIDE CABIN

Canopy Cover ..... Stow  
Aircraft Status ..... **A.R.O.W.**  
W & B / Performance ..... Compute  
Charts ..... As Required  
Baggage ..... Stowed  
Front Canopy/Rear Door ..... Clean & Undamaged

**NOTE: REAR DOOR MUST REMAIN UNLOCKED**

Pitot Cover ..... Remove  
Stall Warning Port Cover ..... Remove  
Control Lock ..... Remove  
Controls ..... Free & Correct  
Engine Control Levers ..... Free & Correct  
Circuit Breakers ..... Check  
Ignition ..... Off  
Avionic Master ..... Off  
Electrical Equipment ..... Off  
Essential Bus Switch ..... Off  
Emergency Battery Switch ..... Safety Wire Intact  
**Master Switch (Battery Only)** ..... **ON**  
Annunciator Panel ..... Check  
Hobbs & Tach ..... Record  
Fuel Quantity ..... Check

**NOTE: FULL FUEL IS BEYOND INDICATORS**

Flaps ..... T / O  
Exterior Lights ..... Check/Off  
Pitot Heat ..... Check  
**Master Switch** ..... **OFF**

## EXTERIOR INSPECTION

### *Left Main Landing Gear:*

Landing Gear Strut .....Inspect  
Brakes / Lines .....Inspect  
Tire .....Inspect Tread / Inflation: 36 PSI  
Chocks .....Remove

**NOTE: SET PARKING BRAKE PRIOR IF A/C IS NOT  
LEVEL**

### *Left Wing:*

Wing Surface ..... Inspect For Gouges  
Step ..... Secure  
Fresh Air Intake (under) ..... Clear  
Lower Openings ..... Check For Fuel Leaks / Spillage  
Sump ..... Drain Sample / Inspect  
Stall Warning Port ..... Clear  
Fuel Filler Cap ..... Inspect / Secure  
Landing Light Housing ..... Secure / Undamaged / Clean  
Pitot Probe ..... Secure / Ports Clear (3)  
Wing Tip ..... Inspect  
Tie Down ..... Remove  
Aileron ..... Inspect Hinges & Linkage  
Aileron Counterweight ..... Clear Of Debris  
Static Wicks ..... Secure & Undamaged  
Flap ..... Inspect Hinges & Linkage  
Flap Counterweight ..... Secure  
Flap Inboard Area ..... Clear Of Debris

*Fuselage, Left Side:*

Baggage .....Secure (66 lbs Main / 11 lbs Aft, Max)  
Rear Seat backs..... Secure  
Rear Door Pushrod ..... Secure  
Rear Door Hinges ..... Secure  
Antennas ..... Secure & Clean  
Fuselage Surface.....Inspect

*Empennage:*

Stabilizers & Control Surfaces .....Inspect  
Static Wicks..... Secure & Undamaged  
Trim Tab Hinges..... Secure / Safety Wire Intact  
Trim Tab Linkage.....Inspect  
Skid Plate.....Inspect  
Tail Tie Down.....Remove

*Fuselage, Right Side:*

Fuselage Surface.....Inspect  
Rear Window.....Inspect  
Emergency Canopy Release .....Inspect Though Window

**NOTE: SAFETY WIRE INTACT**

*Right Wing:*

Flap Inboard Area.....Clear Of Debris  
Flap Counterweight ..... Secure  
Flap..... Inspect Hinges & Linkage  
Static Wicks..... Secure & Undamaged  
Aileron Counterweight .....Clear Of Debris

*Right Wing Continued:*

Aileron..... Inspect Hinges & Linkage  
Tie Down.....Remove  
Wing Tip.....Inspect  
Fuel Filler Cap.....Inspect & Secure  
Sump.....Drain Sample / Inspect  
Lower Openings ..... Check For Fuel Leaks / Spillage  
Step..... Secure  
Outside Air Temp Probe..... Secure  
Wing Surface..... Inspect For Gouges

*Right Main Landing Gear:*

Landing Gear Strut .....Inspect  
Brakes / Lines .....Inspect  
Tire ..... Inspect Tread / Inflation: 36 PSI  
Chocks.....Remove

*Front Fuselage:*

Oil Level..... Check (4 qts Min., 6 qts Recommended)  
Aux Power Door..... Secure  
Cowling (Right Side)..... Secure  
Exhaust Stack ..... Secure  
Antennas..... Secure & Clean  
Gascolator.....Drain & Inspect  
Vent Pipes.....Check For Blockage  
Nose Wheel Strut..... Secure  
Tire ..... Inspect Tread / Inflation: 29 PSI  
Air Intakes (3)..... Clear Of Debris  
Propeller .....Inspect  
Propeller Spinner ..... Secure  
Cowling (Left Side)..... Secure

## BEFORE STARTING ENGINE

Preflight Inspection.....Complete  
Rudder Pedals ..... Adjusted & Locked  
Passenger Briefing.....Complete  
Seat Belts ..... Secure  
Rear Door ..... Secure

**NOTE: DO NOT LOCK WITH KEY, EMERGENCY  
EXIT**

Front Canopy ..... Position 1 or 2  
Parking Brake ..... Set / Pump Pedals 3 Times  
Flight Controls..... Free & Correct  
Trim Wheel.....Set T/O  
Throttle ..... Idle  
RPM ..... High (Forward)  
Mixture ..... Lean  
Friction Lock ..... As Required  
Alternate Engine Air Source..... Check Freedom / Off  
Alternate Static Source ..... Check Freedom / Off  
Avionics Master Switch.....Off  
Essential Bus Switch .....Off  
**Master Switch (Battery Only)..... ON**  
Annunciator Panel ..... Set Button  
Fuel Selector..... Fullest Tank

## STARTING ENGINE

### COLD ENGINE START

Strobe Lights ..... On  
Fuel Pump..... On  
Throttle ..... Forward 1”

## COLD ENGINE START CONTINUED

Mixture ..... **Rich** (3-5 Sec, Fuel Flow 18, PSI) **Then Lean**  
Fuel Pump.....Off  
Throttle .....Cracked  
**AREA** ..... **CLEAR**  
Ignition Switch .....**Start**

*When Engine Fires:*

Mixture ..... Full Rich  
Throttle ..... 1000 RPM  
Oil Pressure ..... **Green** (15 Sec)  
**Master Switch (Alt)** ..... **ON**  
Ammeter ..... Check  
Mixture .....Lean For Altitude  
Fuel Pressure ..... Check (14-35 PSI)  
Annunciator Panel ..... Check (Hold for 2 Sec)

## WARM ENGINE START

Strobe Lights ..... On  
Fuel Pump..... On  
Throttle ..... Forward 1”  
Mixture ..... **Rich** (1-3 Sec) **Then Lean**  
**AREA** ..... **CLEAR**  
Ignition .....**Start**

*When Engine Fires:*

Mixture ..... Full Rich  
Throttle ..... 1000 RPM  
Oil Pressure ..... **Green** (15 Sec)  
**Master Switch (Alt)** ..... **ON**

## WARM ENGINE START CONTINUED

Ammeter ..... Check  
Mixture ..... Lean For Altitude  
Fuel Pressure ..... Check (14-35 PSI)  
Annunciator Panel ..... Check (Hold for 2 Sec)

## FLOODED ENGINE

Strobe Lights ..... On  
Fuel Pump ..... OFF  
Mixture ..... IDLE CUT OFF  
Throttle ..... Half Travel  
AREA ..... CLEAR  
Ignition ..... Start  
Throttle ..... Idle When Engine Fires

*When Engine Fires:*

Mixture ..... Full Rich  
Throttle ..... 1000 RPM  
Oil Pressure ..... Green (15 Sec)  
Master Switch (Alt) ..... ON  
Ammeter ..... Check  
Mixture ..... Lean For Altitude  
Fuel Pressure ..... Check (14-35 PSI)  
Annunciator Panel ..... Check (Hold for 2 Sec)

## BEFORE TAXI

Avionic Master ..... On

NOTE: The auto pilot will perform a self test. Disregard any failure notice until after the test has been completed.

## **BEFORE TAXI CONTINUED**

Electrical Equipment ..... As Required  
Nav Lights ..... As Required  
Flaps ..... Up

**NOTE: Nav lights ON will dim flap indicator light.**

Fuel Selector ..... Switch Tanks  
Fuel Computer ..... Set  
Pitot Heat ..... Test

**NOTE: It is normal for the pitot annunciator light to stay on when the pitot heat switch is turned off.**

Attitude Indicator ..... Cage (Release Slowly)  
HSI Slave Switch ..... Set Slave  
ADF Nav Head ..... Adjust to HSI  
ATIS (KAPA) ..... 120.30  
GROUND CONTROL (KAPA) ..... 121.80  
CLEARANCE DEL (KAPA) ..... 128.60  
VOR Test ..... KAPA VOT 108.20  
Transponder ..... Set Code

## **TAXIING**

Parking Brake ..... Release  
Brakes ..... Test  
IFR Taxi Check .... Perform When Clear Of Congested Area

## **IFR TAXI CHECK**

Comm # 1 ..... TX & RX Normally  
Comm # 2 ..... TX & RX Normally  
Nav # 1 ..... RX Normally, Vol Down  
Nav # 2 ..... RX Normally, Vol Down  
Marker Beacons ..... Test / On / As Req

## IFR TAXI CHECK CONTINUED

Mag Compass Bowl Full, No Bubbles, Swings Free & Correct  
Clock ..... Set  
Airspeed..... Zero  
Attitude Indicator..... Cage (Release Slowly)  
Altimeter..... Set (Within 75' of known elevation)  
Turn Coordinator ..... No Flag, Turns in Correct Direction  
HSI ..... No Flags, Movement & Heading Correct  
VSI ..... Zero  
Pitot Heat..... Check Operation

**NOTE: IFR OPERATION IS NOT APPROVED IF THE  
AIRCRAFT HAD TO BE JUMP STARTED**

## BEFORE TAKE-OFF

Position A/C ..... Into The Wind  
Parking Brake ..... Set (Pump 3 Times)  
Fuel Selector..... Fullest

**NOTE: Be sure that both tanks have run for at least 1  
minute @ 1500 RPM prior to Take-Off**

Seat Belts ..... Secure  
Rear Door ..... Secure  
Canopy ..... Closed  
Door Annunciator Light ..... Off  
Engine Instruments ..... Green  
Circuit Breakers..... In  
Fuel Pressure ..... (15-25 PSI)  
Fuel Pump..... On  
Mixture ..... Rich (Below 5000')  
Flaps ..... T/O  
Trim..... T/O  
Flight Controls..... Free  
Throttle ..... 2000 RPM

## BEFORE TAKE-OFF CONTINUED

Mixture ..... Lean For Alt. (1350 EGT)  
Propeller ..... Cycle (500 rpm max drop)  
Mag Check .....Max Drop 175 RPM 50 Difference  
Throttle ..... Idle  
Alternate Air ..... Closed  
Landing Light ..... As Required  
Taxi Light ..... As Required  
Strobes ..... Recheck ON  
Transponder ..... Set Alt  
Ground Control ..... (KAPA) Call Run-up Complete  
Parking Brake ..... Release

## TAKE-OFF

### NORMAL (5000' MSL & ABOVE)

Throttle ..... Full Forward (2 Sec App)  
Directional Control ..... Switch To Rudder ASAP  
Lift Nose Wheel ..... 59 KIAS  
Climb Out ..... 70 KIAS

### *Above 300' AGL*

Propeller ..... 2400 RPM  
Flaps ..... Up  
Fuel Pump ..... Off  
Landing Lights ..... As Required

**NOTE: Other take-off and climb out speeds may apply to your operation. Consult the A/C POH as necessary**

**NOTE: At lower elevation airports, throttle reduction prior to RPM reduction may be required**

## SHORT / SOFT FIELD TAKE-OFF

Brakes ..... Apply  
Flaps ..... T/O  
Throttle ..... Max Power  
Engine Instruments ..... **Green**  
Elevator Control ..... Full Aft  
Brakes ..... Release  
Hold Direction ..... Using Rudder Only  
Elevator Control ... Release Slowly When Nose Wheel Lifts  
**Allow Aircraft To Lift Off As Soon As Possible**  
Airspeed **Accelerate In Ground Effect To 66 KIAS** (2535 lbs)  
..... **60 KIAS** (2205 lbs)  
..... **54 KIAS** (1874 lbs)

*Above 300' AGL*

Propeller ..... 2400 RPM  
Flaps ..... Up  
Fuel Pump ..... Off  
Landing Lights ..... As Required

## **CLIMB**

### Best Rate Of Climb

Flaps ..... T/O  
Airspeed ..... 66 KIAS (2535 lbs)  
..... 60 KIAS (2205 lbs)  
..... 54 KIAS (1874 lbs)  
Propeller ..... 2400 RPM  
Throttle ..... Max Power  
Mixture ..... As Required

## CLIMB CONTINUED

Engine Instruments ..... Green  
Trim ..... As Required

### Cruise Climb

Flaps ..... Up  
Airspeed..... 73 KIAS (2535 lbs)  
..... 68 KIAS (2205 lbs)  
..... 60 KIAS (1874 lbs)  
Propeller ..... 2400 RPM  
Throttle ..... Max Power  
Mixture ..... As Required  
Engine Instruments ..... Green  
Trim ..... As Required

## CRUISE

Flaps ..... Up  
Mixture ..... As Required  
Throttle ..... As Required  
Propeller ..... 1800-2400 RPM

## DESCENT

Mixture ..... As Required  
Throttle ..... As Required  
Propeller ..... 1800-2400 RPM  
ATIS (KAPA)..... 120.30  
Landing Light ..... On

# LANDING APPROACH

## NORMAL

Fuel Selector..... Fullest Tank  
Fuel Pump..... ON  
Seat Belts ..... Secure  
Airspeed..... Reduce to 100 KIAS Downwind  
Trim..... As Required

### *Abeam Touchdown Point*

Mixture .....As Required (Rich Below 5000')  
Throttle ..... 11" or As Required  
Airspeed..... 90 KIAS  
Flaps .....T/O  
Airspeed..... 70 KIAS  
GUMPS .....On Base

### *Final Approach*

Flaps ..... LDG  
Airspeed..... 67 KIAS (2407 lbs)  
..... 63 KIAS (2205 lbs)  
..... 58 KIAS (1874 lbs)

**NOTE: Adjust speed higher as needed to compensate for winds and other necessary conditions**

## SHORT FIELD LANDING

### *Final Approach, Obstacle Cleared*

Throttle ..... Idle  
Propeller ..... Full Forward  
Flaps ..... LDG  
Airspeed..... **71 KIAS** (2535 lbs)  
..... **63 KIAS** (2205 lbs)  
..... **58 KIAS** (1874 lbs)

## GO-AROUND

Throttle ..... Max Power  
Airspeed..... **66 KIAS**  
Flaps ..... T/O

### *Above 300' AGL*

Propeller ..... 2400 RPM  
Flaps ..... Up  
Fuel Pump..... Off  
Landing Lights..... As Required

## AFTER LANDING

Throttle ..... Idle  
Brakes ..... As Required  
Lights..... As Required  
Fuel Pump..... Off  
Flaps ..... Up  
Transponder ..... Standby  
Pitot Heat ..... Off

## ENGINE SHUT-DOWN

Parking Brake .....	Set
Throttle .....	1000 RPM
Engine Instruments .....	Check
Magneto Safety Check.....	Perform
Throttle .....	1700 RPM
Mixture .....	Lean
Throttle .....	1200 RPM
Electrical Equipment .....	Off
Avionics Power Switch .....	Off
Mixture .....	Idle Cut-Off
<i>When Engine Stops:</i>	
Ignition .....	OFF
Tach Time.....	Note
<b>MASTER SWITCH.....</b>	<b>OFF</b>

## SECURING

Parking Brake .....	Off
Main Gear.....	Just Over Cable
Wings .....	Tie Down
Position A/C .....	Move Back & Chock Main Gear
Tail .....	Tie Down
Pitot Cover.....	Install
Stall Warning Port Cover.....	Install
Control Lock.....	Install
Hobbs & Tach Time .....	Record
Canopy Cover .....	Remove
Canopy & Back Door .....	Lock
Canopy Cover.....	Install

**NOTE:** The “N” Number should face forward and the label with “Bruce’s Covers” should be on the pilot’s side. Be sure cover fits snug with few wrinkles

# AIRSPEEDS FOR EMERGENCY OPERATIONS

Engine Failure After Take-Off ..... Flaps T/O  
..... 72 KIAS (2535 lbs)  
..... 66 KIAS (2205 lbs)  
..... 59 KIAS (1874 lbs)

Airspeed For Best Glide Angle..... Flaps Up  
..... 73 KIAS (2535 lbs)  
..... 68 KIAS (2205 lbs)  
..... 60 KIAS (1874 lbs)

Emergency Landing Without Engine..... Flaps Up  
..... 73 KIAS (2535 lbs)  
..... 68 KIAS (2535 lbs)  
..... 60 KIAS (1874 lbs)

..... Flaps T/O  
..... 72 KIAS (2535 lbs)  
..... 66 KIAS (2205 lbs)  
..... 59 KIAS (1874 lbs)

..... Flaps LDG  
..... 71 KIAS (2535 lbs)  
..... 63 KIAS (2205 lbs)  
..... 58 KIAS (1874 lbs)

## **ENGINE FAILURE ON TAKE-OFF ROLL**

*Before Vr, Runway Remains:*

Throttle ..... Idle  
Brakes ..... Apply  
Directional Control ..... Maintain

*Insufficient Runway Remains:*

Throttle ..... Idle  
Brakes ..... Apply  
Directional Control ..... Maintain  
Mixture ..... Idle Cut-Off  
Fuel Selector ..... Off  
Ignition ..... Off  
Master Switch ..... Off

## **ENGINE FAILURE AFTER TAKE-OFF**

*Less Than 500' AGL, Flaps T/O*

Airspeed..... 72 KIAS (2535 lbs)  
..... 66 KIAS (2205 lbs)  
..... 59 KIAS (1874 lbs)  
Throttle ..... Idle  
Mixture ..... Idle Cut-Off  
Ignition ..... Off  
Master Switch ..... Off  
Land ..... Straight Ahead, Minor Turns

# ENGINE FAILURE IN FLIGHT

*When Altitude Permits Time For A Restart Attempt*

Airspeed.....Flaps Up  
..... 73 KIAS (2535 lbs)  
..... 68 KIAS (2205 lbs)  
..... 60 KIAS (1874 lbs)  
Fuel Selector..... Switch Tanks  
Fuel Pump..... ON  
Ignition Switch ..... Both  
Circuit Breakers..... Check (IGN)  
Throttle .....Max Power  
Propeller ..... Full Forward  
Mixture ..... Check  
Alternate Air..... Open

*If Engine Fails To Restart:*

Airspeed..... Best Glide  
Transponder..... 7700  
Mayday..... 121.50  
Landing Site ..... Choose Best  
Throttle ..... Close  
Mixture ..... Idle Cut-Off  
Fuel Selector.....Off  
Ignition Switch .....Off  
Flaps ..... As Required, LDG Recommended  
Master Switch.....Off

**NOTE:  
CONSULT POH FOR ADDITIONAL EMERGENCY  
PROCEDURES**