"The Straight Word"

Beechcraft 1900 Airliner

1900C-1 & 1900D Series (UC & UE)

I. FLIGHT PROCEDURES:

In these procedures, the PF is always seating in the left seat.

COCKPIT PREPARATION

1		Power Levers	Idle
1		Propeller Levers	Taxi
1		Condition Levers	Cutoff
1		Trims	Set for Takeoff
	2	Cabin Altitude Controller	Set Cruise Level + 1
	2	Bleed Air Valves	Open
	2	Envir Mode Control	Off
1		Ice Vanes	On

BEFORE START

Cabin & Cargo Doors	Secure
Parking Brake	Apply
Battery	On, Check Voltage
Aux Pumps (if fuel in Aux Tanks)	Auto
Beacon	Ground

ENGINE START

These are the items to be repeated for each engine start.
The normal start sequence is 2-1.

Engine Start Switch	On

Once N1 has stabilised at a minimum of 12%, fuel may be opened. Engine light-off should occur about 4 seconds thereafter – abort after 20 seconds if no light-off. Maximum ITT during engine start is 1000°C:

Condition Lever	Low Idle, Check ITT
At 50% N1, Engine Start Switch	Off
Engines Instruments	Check
Generator	Reset, then On

		L & R GEN TIE OPEN Annunciator	Extinguished
		> If not: Bus Sense Switch	Hold to Reset for 5 sec.

The generator may be assisted by putting the Condition Lever at High Idle until the second engine is running. Wait until right generator output is 50% or less before starting the left engine.

		Bus Sense Switch	Test
		AC Buses	Both On

AFTER START

1		Avionic Master Switch	On
1		EFIS Stanbdy Power	On
	2	Standby Horizon	On
1		EFIS Power Switches	4 On
	2	Envir Mode Control	Auto
	2	Flaps	17°

TAXIING

1		Taxi Light	On
1		Parking Brake	Release
1	2	Flight Instruments	Check
1	2	Flight Controls	Check
PF		Propellers	Feather, then High RPM

The “Taxi Check” is then performed by the PNF.

RUN-UP

The run-up shall be made before the first flight of the day.

		Overspeed Governor	Check Stable @~1570 RPM
		Flight Fine Pitch Test	Check Drop ~250 RPM

To test the flight fine pitch, the propellers shall be brought to 1500 RPM (1900C) or 1250 RPM (1900D). The Flight Fine Pitch Test Button shall then be pressed and the appropriate RPM drop observed.

		Autofeather	Test

The power shall be increased to around 1000 lb-ft torque. As the Autofeather Test Button is pressed, both “Autofeather” lights come On. The power shall then be reduced slowly on one engine. While passing 520 lb-ft torque, the opposite engine “Autofeather” light should go Off. As power is reduced further, the corresponding “Autofeather” light should flash, and the propeller should start going into feather.

BEFORE TAKE-OFF

1		Propeller Levers	High RPM
1		Autoignition	Arm
1		Autofeather	Arm
1		Deicing Equipment	6 + Windshields
1		Strobes	On
1		Recognition Lights	On
1		Landing Lights	On
1		Taxi Light	Off
	2	Transponder	Alt
	PNF	Master Warning Panel	Check

AFTER TAKE-OFF

Power is initially applied by the PF, then the PNF trims the power levers to 3100 lb-ft torque. As the aircraft accelerate and Engine Anti-Ice are turned off, the ram air effect will raise to torque to 3500 lb-ft. The First Officer checks the engine gages for proper reading. The callouts and items during the ground roll go as follows:

	PNF	“POWER SET, IN THE GREEN”	
	PNF	“AIRSPEED ALIVE RIGHT”	
PF		“AIRSPEED ALIVE LEFT”	
	PNF	“60”	
PF		Ice Vanes	Off
	PNF	“80 KNOTS”	
PF		“CHECK” or “+5” for example	
	PNF	“V1”	
	PNF	“VR”	
PF		“ROTATE”	
	PNF	“POSITIVE RATE”	
PF		“GEAR UP”	
	PNF	Landing Gear	Up
	PNF	“GEAR UP SELECTED”	
	PNF	“ GEAR UP INDICATED”	
	PNF	“400 ft”	
PF		“FLAPS UP”	
		Flaps	0°
	PNF	“1000 ft”	
PF		“SET CLIMB POWER, AFTER TAKEOFF CHECK”	
	PNF	Power	Set 3500 lb-ft & 1550 RPM

	PNF	Prop Syncrophaser	On
	PNF	Yaw Damper	On
	PNF	Landing Lights	Off
1	2	Altimeters	Set Standard

The “After Takeoff Check” is then performed by the PNF. A climb speed of 160 KIAS shall be taken for normal climb, with a maximum ITT of 740°C.

FLIGHT LEVEL 100 CLIMBING

PF		Fuel	Balanced
	PNF	Pressurisation	Check
	PNF	Recognition Lights	Off

CRUISE

After the aircraft has accelerated to cruise speed in level attitude:

PF		Autofeather	Off
PF		“PUISSANCE DE CROISIERE”	
	PNF	Power & Propeller Levers	Set 720°C ITT &1400 RPM
	PNF	Pressurisation	Check
	PNF	Cabin Temperature	Adjust
PF		Fuel	Balanced

DESCENT

PF		Autofeather	Arm
	PNF	Cabin Altitude Controller	Set Field Elevation + 500

To achieve a 3° descent as programmed in the KLN90B: press the DSC button 45 seconds prior to the point of descent, then press the VS button when passing 1000 fpm descent rate.

APPROACH

These actions are done after setting the flaps at 17°.

Autofeather	Arm
Propellers	1550 RPM
Landing Lights	On
Altimeters	Check QNH

BEFORE LANDING

Normal arrival techniques are done in the following order:

- Flaps 17°.
- Landing gear down.

- Flaps 35°.

Theses actions are asked by the PF to the PNF, when he deems necessary. A speed of 160 knots shall be maintained in the approach environment. The required power setting to maintain Vref varies with weight, but normally stands around 1000 lb-ft. Once stabilized on final approach, the following actions are completed:

PNF	Windshield Heat	Off
	Yaw Damp	Off
	Prop Sync	Off
	Propeller Levers	Full Forward
	Condition Levers (if short-field)	High Idle

The “Before Landing Check” is then performed by the PNF.

AFTER LANDING

When the speed is controlled, the PF asks the PNF to perform his “After Landing Items”. When these are completed, he performs his items and requests the “After Landing Checklist”. Both pilots must never be performing their items together while the aircraft is moving.

PF	Auto-Ignition	Off
PF	Auto-Feather	Off
PF	Ice Protection	Off
PNF	Flaps	Up
PNF	Trims	Reset
PNF	Propeller Levers	Taxi
PNF	Transponder	Standby
PNF	Lights	Set
PNF	Engine Anti-Ice	On

ENGINE SHUTDOWN

PF	Parking Brake	Set
PF	Anti-Skid	Off
PF	Power Steering	Off
PF	EFIS Power Switches	Off
PNF	Standby Horizon	Off & Caged
PF	EFIS Auxiliary Power Switch	Off
PF	Avionic Master Switch	Off
PF	Inverter Switches	Off
PNF	Lights	Nav, Bcn & Cabin
PNF	Vent Blower	Off
PNF	Environment Mode Control	Off
PF	Auxiliary Fuel Pumps	Off
PF	ITT	Stabilized
PF	Condition Levers	Cutoff

When the propellers drop below 500 RPM, they shall be feathered. Then all electrical switched and the Battery / Generators bar shall be turned off.

II. SYSTEMS DESCRIPTION:

FLIGHT CONTROLS

Conventional surfaces, operated mechanically.
Mechanical trims.

ENGINES & PROPELLERS

Two Pratt & Whitney PT6A-65B, 1100 shp each (1900C-1).
Two Pratt & Whitney PT6A-67D, 1279 shp each (1900D).

Engine limitations (-65B):

- Torque : 3400 lb-ft.
- Propeller : 1400-1700 RPM.
- ITT : 750°C (cruise), 810°C (meto), 1000°C (start).

Engine limitations (-67D):

- Torque : 3750 lb-ft (meto), 3950 lb-ft (t/o).
- Propeller : 950-1700 RPM.
- ITT : 760°C (cruise), 780°C (meto), 800°C (t/o), 1000°C (stt).

Ignition is provided by two igniters, one being sufficient for engine start. The autoignition system should be Armed during flight. When torque drops below 550 lb-ft, ignition goes on. The “L or R IGNITION ON” green light will then go On.

Inertial Separators, electrically actuated, prevent ingestion of ice or debris by the engines and must be On when operating in heavy precipitation or on unimproved runways. They cause a slight torque loss. If the separator has not reached the desired position after 30 seconds, the corresponding “ENG ICE FAIL” amber light will come On. A standby motor can be selected to move the Inertial Separator if the primary motor has failed.

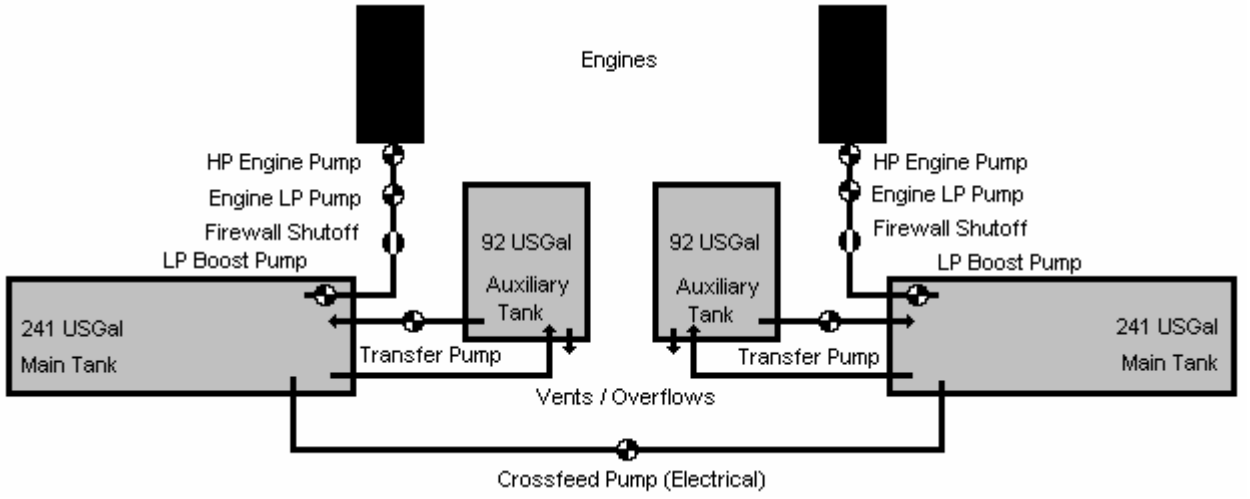
The propellers are controlled by three governors: one primary (standard type) and two secondary (standard overspeed and FCU restrictor). They are fully reversible, and have a ground and a flight idle pitch controlled by a squat switch. They are equipped with an autofeathering device which will actuate in case torque drops below about 520 lbs on one engine while the power levers are forward.

FUEL SYSTEM

Four fuel tanks in the following configuration:

- Mains (“Outboards”): 2 x 241 USGal (2 x 1608 lbs)

- Auxiliaries (“Inboards”): 2 x 92 USGal (2 x 616 lbs)
- Total : 666 USGal (4448 lbs)
  = 2530 litres



Each engine feeds from its main tank via an engine-driven LP boost pump driving several jet-pumps. In case the LP boost pump fails, an electrical LP Standby Pump can be turned On. The engine also has an engine-driven HP fuel pump, which has no backup in case of failure – the FCU will simply shut fuel off. If both LP pumps cannot maintain LP fuel pressure (“Fuel Press” light remaining On), the HP fuel pump can only be operated for 10 hours before being overhauled.

Fuel can be transferred from an auxiliary to a main tank using an electrical Transfer Pump. Excess fuel in the main tank during transfer is returned through the vent to the auxiliary tank. Once transfer is complete (auxiliary tank empty), a pressure switch will activate the “No Fuel Transfer” signal on the annunciator panel. In the On position, the transfer pump will then keep on turning until switched Off, while in the Auto position it will cut off and the light signal will immediately extinguish. If the transfer pump is unserviceable, auxiliary fuel becomes unusable. It is worthwhile to note that the transfer pumps are normally cooled by the transferred fuel, and that they include a thermal switch which will automatically cut them in case of overheat.

Crossfeed is achieved through an electrical pump which transfers fuel from one main tank to another. This pump can be used to correct any fuel imbalance even when engines are not running. While crossfeeding, both electrical LP boost pumps should be Off, as the Crossfeed Switch will automatically turn On the LP boost pump on the appropriate side.

The engine shutdown system ensures that all fuel in the lines is burnt, by blowing P3 air into them after cutoff.

Maximum fuel imbalance is 200 lbs.

HYDRAULIC SYSTEM

The hydraulic system is a standard power pack run by a 28 V pump plugged onto the Center Bus. The pump is protected by a 60 Amps breaker. The system runs only when the landing gear is operated. The pump will automatically stop turning after 16 seconds.

Normal system pressure is around 2500 psi. An 800 psi accumulator located in the left wheel well dampens pressure in the system. The hydraulic tank is located in _____, and has a safety well.

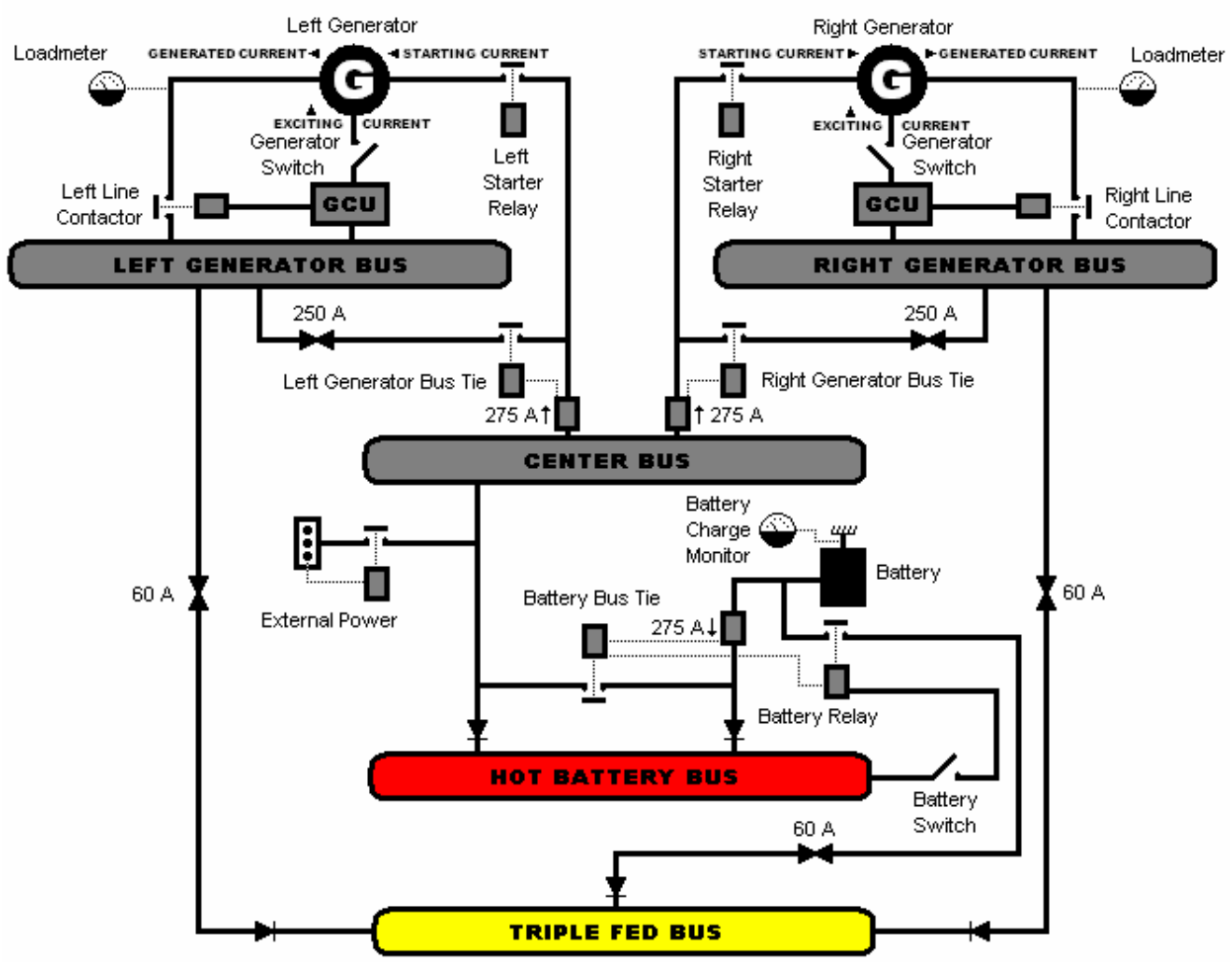
ELECTRICAL SYSTEM

28 VDC system:

- One 34-amp-hour NiCad battery in the inboard right wing.
- Two 300-amps starter-generators.

Two inverters, which may be selected independently, convert 28 VDC into 26 & 115 VAC, 400 Hz. They should be used alternatively on odd & even days. These inverters are normally powered by their respective generator bus, but they will switch to the Center Bus if the generator bus is inop. (1900C-1)

Two inverters are provided, and each one feeds its AC Bus. They convert 28 VDC into 26 & 115 VAC, 400 Hz. They should be used together. If an inverter fails, the corresponding AC Bus Switch should be placed to Transfer so that the remaining inverter powers both AC buses. (1900D)



The system is made up of five buses, in this order of priority:

- The Left & Right Generator Buses.
- The Center (Battery) Bus, powered by the generator buses or the battery.
- The Triple Fed Bus, powered by both generator buses and the battery (always 1 V less than the rest of the circuit).
- The Hot Battery Bus.

All switches or breakers fed by secure buses (Center or Triple Fed Buses) are circled in white.

The circuit is protected from a faulty bus by fuses, relays and three HED (Hall Effect Devices) or bus ties which open when current exceeds 275 Amps. They are deactivated during cross-start sequences and landing gear operation. There is one bus tie for the Center Bus and another one for each generator bus.

When battery is turned on, the Battery Relay and the Battery Bus Tie close: the Triple Fed Bus and the Center Bus are powered, and current is also available for the starters. If the generator buses need to be powered by the battery, the generator bus ties may be manually closed by putting the Gen Ties Switch to Man Close.

After the first engine is started, the corresponding Generator Switch should be held momentarily to Reset, then released, to put the generator online. This will close the generator line contactor and both generator ties, and all buses will then be powered by the generator. The battery is charged via the Center Bus, and this is the only way for it to be.

The Generator Ties may be checked by placing the Gen Ties Switch to Open and checking the buses voltages. In this configuration, the generators power their respective bus and the Triple Fed Bus. The Center Bus and the Hot Battery Bus are powered by the battery. Hence the voltmeter should read:

- Ext Pwr 0 V
- Ctr Bus 24 V
- L Gen 28 V
- R Gen 28 V
- TFB 27 V
- Bat 24 V

The overvoltage test consists in testing the bus ties. Placing the Bus Sense Switch to Test will send an overvoltage signal to each bus tie, and these will open to isolate their respective bus. Hence the voltmeter should read:

- Ext Pwr 0 V
- Ctr Bus 0 V
- L Gen 28 V
- R Gen 28 V
- TFB 27 V
- Bat 24 V

In case of a generator bus short circuit, the corresponding generator bus tie and generator line contactor will open. It is possible to attempt reconnecting the generator bus once by placing the Bus Sense Switch to Reset.

In case of a Center Bus short circuit, the Battery Tie will open and both 250 Amps fuses will blow. The Generator Ties will remain closed. The landing gear will have to be extended manually, and the battery will not be charged.

In case of a Triple Fed Bus short circuit, all three 60 Amps fuses will blow. The annunciator panel.

The external power plug is located at the bottom back of the left engine nacelle. The “External Power” annunciator will go On as soon as a GPU is plugged in, even if it is not working. The battery should be On, then the GPU voltage checked, before the Ext Pwr Switch is turned On. The Generator Bus Ties will then close automatically.

There is a single Avionics Master Switch, which closes the relays to three independent avionics buses:

- N°1 Avionics Bus powered by the Triple Fed Bus.
- N°2 Avionics Bus powered by the Left Generator Bus.
- N°3 Avionics Bus powered by the Right Generator Bus.

PNEUMATIC SYSTEM

The pneumatic system uses P3 bleed air regulated to 18 psi for the following functions:

- Surface deicing.
- Brakes deicing & overheat control (option).
- Bleed air leak control.
- Instruments (vaccum via a venturi).
- Hydraulic tank pressurisation.
- Hobbsmeter.

A single engine can provide enough air for all these systems.

The bleed air leak & brake deicing overheat controls are achieved through the use of EVA tubes. These tubes follow the bleed air lines. They are filled with 18 psi air, and they are designed to melt at the temperatures which would be encountered in case of a ruptured bleed air line. When they do so, the “L or R BL AIR FAIL” or the “L or R BK DI OVHT” lights, as appropriate, will go On. In this case, the corresponding Bleed Air Switch shall be turned to Instr & Envir Off.

ENVIRONMENTAL SYSTEMS

Pressurisation works off P3 bleed air from both engines. The maximum Δp of 4.8 psi (1900C-1) or 5.1 psi (1900D) allows flights up to FL250.

The bleed air is regulated in temperature and pressure, and the system will automatically shut off in case any of overheat or excessive pressure. The “L or R Envir Fail” light will then come On. An ACM (Air Cycle Machine) located in the right inboard wing will then cool or heat the air. If the aircraft is on the ground, a fan will automatically turn on to provide ram air to the ACM. If the ACM can not cool the air down enough, an air conditioning system driven off the right engine is provided and will automatically go online.

Cabin temperature can be controlled automatically by placing the Mode Control Knob to Auto and using the Cabin Temp Knob. In the manual mode, only the ACM Bypass Valve position is controlled by the Man Temp Switch (60 seconds from fully open to fully closed).

The oxygen system consists in two bottles located in the nose. The system is opened by pulling the Oxygen Pull Knob which opens the circuit: oxygen is then available to the crew. Pulling the Cabin Oxygen Pull Knob will allow the cabin masks to fall out.

LANDING GEAR & WHEELS

The landing gear is electrically-controlled by a solenoid and hydraulically actuated by the power pack. There is a 2 Amps breaker next to the gear handle, protecting the solenoid switch. A landing gear safety switch prevents retraction on the ground, and will light up the red handle lights. The handle lights will also come On while the gear is in transit, or when the power levers are retarded with the gear up.

A Gear Up Warning Horn sounds every time one of the throttle levers is pulled back (can be cancelled) and every time one of the wing flaps extends further than the Approach position

(cannot be cancelled). The green lights, handle lights, and Gear Up Warning Horn are independent systems.

A Landing Gear Alternate Extension Handle is provided between the pilot seat and the pedestal, and may be used only to extend the gear. Prior to using the pump, the pilot should ensure that the gear handle is down and that the 2 Amps Landing Gear Relay breaker had been pulled. About 80 hand-pump strokes should be sufficient to extend the gear.

The brakes are multi-disc and work with master cylinders located on both pilots' pedals. The brake fluid is MIL-H-5606 and the tank is located in the right side of the nose compartment.

NOSEWHEEL STEERING (option 1900D)

The steering system uses fluid from the brakes hydraulic tank, and runs with an electrical pump located in the nose wheel well.

When the system is Off, the nose wheel is free to caster. Activation of the system is achieved by placing the Power Steering Switch to On, selecting either the Taxi (15° turn) or Park (55° turn) modes, and pressing the switch on the left power lever. The green "Pwr Steer Engaged" light will confirm that power steering is On. If the power levers are advanced past around 90% N1, the system will deactivate as it is designed purely for taxi and parking.

An amber "Pwr Steer Fail" light will indicate an electrical failure of the system, or a low hydraulic pressure. The former would automatically deactivate the system, while the latter would cause the steering to act sluggish.

Another amber "Man Steer Fail" light will indicate that the nose wheel failed to go to free castering mode as the power steering has disengaged. The nose wheel will then remain in the position it had when the steering was deactivated (hydraulic lock).

WING FLAPS

The single-slot wing flaps are electrically actuated. They have four positions: Up, Take-Off, Approach and Landing (1900C-1).

The single-slot wing flaps are electrically actuated. They have three positions: 0°, 17° and 35° (1900D).

FIRE WARNING & PROTECTION

The fire warning system consists in a fire loop and an amplifier for each engine. A Loop Test button tests the loop continuity and will provide a "Fire Pull" (1900C-1) or yellow "Fire Loop" (1900D) indication. An Amp Test button tests the amplifier and will provide a "Fire Pull" indication.

The fire protection system is powered by the Hot Battery Bus and consists in two Fire Handles and two halon bottles in the nacelles. Pulling the Fire Handle will arm the corresponding extinguisher and illuminate the red "Ext Push" light. The yellow "D" light will

indicate a discharged bottle, while the green “OK” light will illuminate to indicate a satisfactory test of the firing circuit (1900C-1). On the 1900D, there are two extinguisher tests:

- Test A should provide “D” & “OK” indications.
- Test B should provide an “OK” indication.

Two manual fire extinguishers are provided for the occupants ; one is located in the cockpit, and the other one on the passenger door.

ICE PROTECTION

The ice protection equipment includes:

- Engine intake anti-ice: circulated exhaust air, on at all times.

- Pitot & static anti-ice: electrical, switch-actuated, not to be used on the ground.

- Propeller anti-ice: electrical, switch-actuated. The “Auto” switch gives a 90 seconds on / 90 seconds off cycle. The “Manual” switch is spring loaded and keeps the heat on. An ammeter is provided to check the deicing takes place on all blades.

- Windshield anti-ice: electrical, switch-actuated for each one. “Normal” position automatically maintains about 40°C on the entire windshield. The “Hi” position maintains heat on two thirds of the windshield at all times.

- Stall warning anti-ice: electrical, switch-actuated, not to be used on the ground.

- Fuel tank vent anti-ice : electrical, switch-actuated.

- Surface deice: pneumatic off 18 psi air, switch-actuated. The “Single” position gives a 6 seconds outboard wings / 6 seconds inboard wings & stabs cycle. The “Manual” position is spring-loaded and inflates all boots at a time.

- Brakes anti-ice: pneumatic off P3 air, switch-actuated, “L & R BRK DEICE ON” green lights. Deactivated while gear is up.

The windshield wipers have Slow, Fast & Park positions. The wipers should not be used without water on the windshield.

III. PERFORMANCE:

TAKEOFF (1900D without antiskid)

Normal takeoff: 3500 ft-lbs torque, 1700 RPM, flaps 17°.

For a paved field at 2000 ft elevation, ISA + 20°C, no wind, MTOW and bleeds On, expect a TODR of 2000 metres.

Soft & Short-field takeoff: 3950 ft-lbs torque, 1700 RPM, flaps 17°.

For a clean dirt field at 2000 ft elevation, ISA + 20°C, no wind, MTOW and bleeds Envir Off, expect a TODR of 1500 metres.

CLIMB (1900C)

Normal climb: ____ ft-lbs torque, ____ RPM, ___°C max ITT.

Use a 150 KIAS cruise climb speed, and expect a MTOW, bleeds On rate of climb of 1300 fpm at MSL.

CLIMB (1900D)

Normal Climb: Torque to Achieve 720° ITT, 1550 RPM.

Use a 160 KIAS cruise climb speed, and expect a MTOW, bleeds On rate of climb of 1300 fpm at MSL with ISA + 20°C.

Max Performance Climb: 3750 ft-lbs torque, 1700 RPM, 780°C max ITT.

Use a 140 KIAS climb speed (or as per checklist or CLIMB mode), and expect a MTOW, bleeds On rate of climb of 2100 fpm at MSL with ISA + 20°C.

CRUISE (1900C)

Normal cruise: ____ ft-lbs torque, ____ RPM, 750°C max ITT.

Expect to cruise at 250 KTAS, with a fuel consumption of ____ LPH around FL200. For flight planning purposes, an overall consumption of ____ LPH may be used.

CRUISE (1900D)

Normal Cruise: Torque to Achieve 720°C ITT, 1400 RPM.

Expect to cruise at 265 KTAS, with a fuel consumption of 800 PPH around FL230. For flight planning purposes, an consumption of 1000 PPH for the first hour and 800 PPH for the next ones may be used.

LANDING (1900D without antiskid)

Normal landing: flaps down, full brakes and reverse on impact.

For a paved field at 2000 ft elevation, ISA + 20°C, no wind and MLW, expect an LDR of 950 metres.

N-1 PERFORMANCE

Single-engine climb: 3750 ft-lbs torque, 1700 RPM, 780°C max ITT.

Use a 128 KIAS climb speed, bleeds & anti-ice Off and expect a MTOW, ISA + 20°C rate of climb of 600 fpm at MSL.

IV. WEIGHT & BALANCE:

LIMITATIONS

(1900C-1)		(1900D)	
MRW	16,710 lbs	MRW	17,230 lbs
MTOW	16,600 lbs	MTOW	17,120 lbs
MLW	16,100 lbs	MLW	16,765 lbs
MZFW	14,000 lbs	MZFW	15,165 lbs
Max Passengers	19		

Maximum Forward Cabin Compartment Load	250 lbs
Maximum Forward Cabin Compartment Hanger Load	100 lbs
Maximum Aft Cabin Compartment (Forward) Load	880 lbs (1900C-1)
Maximum Aft Cabin Compartment (Forward) Load	1,000 lbs (1900D)
Maximum Aft Cabin Compartment (Aft) Load	630 lbs

USEFUL LOADS

(1900C-1)	
Empty Weight (Std pax config, 2 crew)	10,150 lbs
Maximum Fuel Load (2519 l)	4,484 lbs
MZFW Limited Useful Load	3,850 lbs
Full Fuel Useful Load	2,076 lbs

(1900D)	
Empty Weight (Std pax config Pax, 2 crew)	11,000 lbs
Maximum Fuel Load (2519 l)	4,484 lbs
MZFW Limited Useful Load	4,165 lbs
Full Fuel Useful Load	1,746 lbs

V. SPEEDS:

Vso =	84 KIAS	Vx =	122 KIAS
Vsi =	___ KIAS	Vy =	138 KIAS
Vmca =	92 KIAS	Vxse =	122 KIAS
		Vyse =	128 KIAS
		Vsse =	105 KIAS
Vfe/to =	153 KIAS (1900C-1)		
Vfe/apc =	168 KIAS (1900C-1)	Va =	188 KIAS @ MTOW (1900C-1)
Vfe/ldg =	198 KIAS (1900C-1)	Va =	178 KIAS @ MTOW (1900D)
Vfe/17° =	188 KIAS (1900D)	Vmo =247 KIAS or 0.48 Mach	
Vfe/35° =	154 KIAS (1900D)		
Vlo = Vle =	180 KIAS	Vbg =	140 KIAS @ MTOW