Airstart Equipment Operating Instructions

Table of Contents

- ACE Model: 600 Series
- ACE Model: 500 Series
- DAVCO Model: AS100
- STEWART-STEVENSON Model: TMAC-135, TMAC-150, TMAC-170
- STEWART-STEVENSON Model: TR/TMSS 120
- STEWART-STEVENSON Model: TMD180
- TLD Model: 600 Series
- Trilectron Model: ASP180
- Trilectron Model: ASP100
OPERATING INSTRUCTIONS
EQUIPMENT: AIR START
MANUFACTURER: ACE

TYPE: Diesel
Model: 600 Series

BEFORE STARTING
• Complete Daily Check before using.
• Check placards for special instructions and restrictions.
• Check location of levers, switches and controls.
• Check general condition of entire unit.

STARTING
1. Set hand brake.
2. Connect air delivery hose to aircraft.
3. Assure protective system warning lights are OFF.
4. Place SELECTOR switch to STANDBY position.
5. Depress and hold the SAFETY SYSTEM BYPASS button.
6. Rotate ignition lever to the START position.
7. After the engine starts, release the ignition lever. Continue to hold the BYPASS button until red warning light goes out.

NOTE: DO not keep starter engaged more than 30 seconds at a time.
8. Allow engine to warm up.
9. Open air shutoff valve.
WARNING: DO NOT OPERATE THE MODE SELECTOR SWITCH UNLESS THE AIR DELIVERY HOSE IS UNCOILED AND STRECHTED OUT OR CONNECTED TO THE AIRCRAFT. USE CAUTION WHEN NEAR AIR HOSE CONTACT WITH HIGH AIR AND TEMPERATURE IS DANGEROUS.

10. Move MODE switch to START mode or AIR PAC mode, whichever is desired.
11. The engine speed will automatically increase and decrease according to the demand from the aircraft. This is normal operation.

**NOTE:** DO not select START mode to provide air conditioning. All engine and compressor safety circuits are bypassed in START Mode.

**SHUTDOWN**

1. Place MODE SELECTOR switch in the STANDBY position.
2. Disconnect and stow air delivery hose.
3. Allow unit to run in STANDBY mode for a few minutes to cool (5 minutes minimum).
5. Stop engine by placing ignition lever in OFF position.

**ENGINE PROTECTIVE SHUT-DOWN SYSTEM**

1. In the AIR CONDITION mode, the engine will shut down automatically from high coolant temperature, low engine oil pressure, high compressor air temperature, low compressor oil pressure. The engine will also shut down manually activating the EMERGENCY SHUTDOWN switch on the operator panel.
OPERATING INSTRUCTIONS

EQUIPMENT: AIR START TYPE: Air Storage Bottle

MANUFACTURER: ACE Model: 500-320
Model: 500-1112, 500-1116,
500-1516, 500-1523

BEFORE STARTING
• Complete Daily Check before using.
• Check placards for special instructions and restrictions.
• Check location of levers, switches and controls.
• Check general condition of entire unit.

To Charge Cylinder (Electric Units)
1. Connect AC power cable to proper power source.
2. Set switch (S1) to ON position.

NOTE: Unit will stop at 500 psi cylinder pressure.

To Charge Cylinder (Diesel Units)
1. Place toggle switch in AUTO STOP position.
2. In cold weather, depress and hold GLOW PLUG switch. Hold 30 seconds prior to start.
3. Depress and hold START OVERRIDE switch.
4. Turn ignition switch to the START position.
5. After engine starts, release ignition switch. Continue to hold START OVERRIDE switch for several seconds. In cold weather, hold GLOW PLUG switch until engine smoothes out.
6. Engine will run until cylinder reaches FULL CHARGE. At FULL CHARGE, the engine will automatically shut down. Bottle pressure should read 470-500 psi.
To Start Jet Engine

1. Disconnect and stow power supply cable.
2. Position unit at aircraft and set parking brake.
3. Connect the air supply hose to aircraft.
4. Open control valve signal shutoff.
5. Adjust control valve regulator to approximately 52 psig.
6. When start signal is given, place jet start toggle valve in the ON or UP position.

**NOTE:** DO NOT SHUT OFF TOGGLE VALVE DURING ENGINE START. WAIT UNTIL SIGNAL IS GIVEN FROM CAPTAIN.

7. When the engine start is complete, place jet start toggle valve in the OFF position.
8. Close the control valve signal shutoff.
9. Disconnect air supply hose from aircraft and store.
OPERATING INSTRUCTIONS

EQUIPMENT: AIR START
TYPE: Diesel

MANUFACTURER: DAVCO
Model: AS100

BEFORE STARTING
• Complete Daily Check before using.
• Check placards for special instructions and restrictions.
• Check location of levers, switches and controls.
• Check general condition of entire unit.

Operation

1. General

This section contains information for operating the Davco Model AS-100 Air Start Unit. The operator must read and understand all instructions before attempting to operate the unit.

WARNING
PROLONGED EXPOSURE TO HAZARDOUS NOISE MAY RESULT IN PERMANENT HEARING LOSS. EAR PROTECTION DEVICES MUST BE WORN WHEN WORKING WITHIN CLOSE PROXIMITY OF THIS EQUIPMENT.
### Operating Procedures

#### A. Engine Start Procedures:

The following steps must be performed in the sequence in which they are presented.

**WARNING**
PROLONGED EXPOSURE TO HAZARDOUS NOISE LEVELS MAY RESULT IN PERMANENT HEARING LOSS. EAR PROTECTION DEVICES MUST BE WORN WHEN WORKING WITHIN CLOSE PROXIMITY OF THIS EQUIPMENT.

1. Be sure that the discharge air control valve is in the closed position.
2. Rotate mode switch to IDLE position.
3. Move start/stop switch to the on/start position.
4. Set engine idling switch to "on". The engine control unit will automatically control the starting function and cycle the engine to run.

**CAUTION**
BATTERY MUST BE FULLY CHARGED TO SUPPLY VOLTAGE FOR ENGINE STARTING AND CONTROL.

5. Observe the voltmeter gauge on the engine control panel: charge battery if a low voltage is indicated.

**CAUTION**
IF LOW OR NO OIL PRESSURE IS INDICATED AFTER 10-15 SECONDS OF OPERATION, IMMEDIATELY STOP ENGINE BY PLACING ENGINE IGNITION SWITCH TO THE OFF POSITION. FAILURE TO COMPLY CAN RESULT IN SEVERE ENGINE DAMAGE.

6. Oil pressure gauge should read 10 psi minimum pressure at idle speed, 30 psi minimum at run speed.
7. Water temperature gauge should read 170-195 °F water temperature when engine has warmed.
8. Voltmeter gauge. Voltage should be at least 12 VDC on a 12-volt battery system or 24 volts on a 24-volt battery system.
(9) Observe voltmeter gauge on the engine control panel. If less than 12 volts is indicated, unit is not charging. Use the normal engine shutdown procedure.

(10) After the engine starts, let the engine warm up for at least 3 minutes (at idle), or until the water temperature gauge is in the normal position.

B. **Air Start Operation**:

(1) Connect the hose to the aircraft.

(2) Be sure that the bleed valve is closed.

(3) Open the Discharge Air Control valve.

(4) When the pilot calls for air, turn the mode selector to JET START. The engine will climb to operating rpm and the air pressure will climb to 38 psi–40 psi.

(5) When the pilot gives the engine started or disconnect signal.

(6) Turn the mode switch to IDLE.

(7) Close the discharge air valve.

(8) Open the bleed valve.

(9) Disconnect air supply hose from the aircraft.

(10) Be sure to run the engine at idle for at least 3 minutes so that the engine turbocharger and compressor are cooled down before shutting down the engine.

(11) Turn the on/off switch to the OFF position.

---

**CAUTION**

**DO NOT SHUT THE ENGINE DOWN WITH THE EMERGENCY KILL SWITCH. SEVERE ENGINE AND COMPRESSOR DAMAGE WILL RESULT.**

(12) Store Air Delivery Hose in storage tray.
STEWART-STEVENSON Model: TMAC-135, TMAC-150, TMAC-170

OPERATING INSTRUCTIONS

EQUIPMENT: AIR START

TYPE: Diesel

MANUFACTURER: STEWART-STEVENSON
Model: TMAC-135, TMAC-150, TMAC-170

BEFORE STARTING

• Complete Daily Check before using.
• Check placards for special instructions and restrictions.
• Check location of levers, switches and controls.
• Check general condition of entire unit.

STARTING

1. Set hand brake.
2. Connect air delivery hose to aircraft.
3. Assure protective system warning lights are OFF.
4. Place the MODE SELECTOR switch in UNLOAD position.
5. Press the ENGINE START button; release when engine starts. The engine will attain idle speed when the manually activated throttle is fully depressed.

NOTE: Do not keep starter engaged more than 30 seconds.

This unit is equipped with a cold start kit. In extreme cold, it may be necessary to inject ether into engine by pulling ether aid cable handle. To use, rotate engine with starter, then pull cable handle. NEVER INJECT ETHER INTO THE ENGINE UNLESS IT IS ROTATING.

6. Allow engine to warm up.
7. Pull the throttle control “T” handle OUT to MAXIMUM LOAD SPEED position (2100 RPM) and lock.
8. Move the MODE SELECTOR switch to either JET START mode or AIR CONDITION mode as desired.
WARNING: DO NOT OPERATE THE MODE SELECTOR SWITCH UNLESS THE AIR DELIVERY HOSE IS UNCOILED AND STRETCHED OUT OR CONNECTED TO AIRCRAFT. USE CAUTION WHEN NEAR AIR HOSE AS CONTACT WITH HIGH PRESSURE, HIGH TEMPERATURE AIR IS DANGEROUS.

NOTE: The engine mounted governor is set to attain rated load speed at maximum throttle. Only during compressor operation at rated load speed can the MODE SELECTOR switch be moved from either JET START to AIR CONDITION or AIR CONDITION to JET START.

SHUT DOWN

1. Place MODE SELECTOR switch in the UNLOAD position.
2. UNLOCK and depress the throttle control “T” handle to the IDLE position.
3. Disconnect and stow the air hose.
4. Allow engine to run at IDLE until compressor air temperature (as indicated by compressor air temp. gauge) drops below 250’ F
5. Press ENGINE STOP button and hold until the stops.

ENGINE PROTECTIVE SHUT-DOWN SYSTEM

In AIR CONDITION mode, the engine will shut down automatically from overspeed, high engine coolant temperature, low engine oil pressure, high compressor air temperature, high compressor oil temperature and low compressor oil pressure. The engine will also shut down by manually activating the EMERGENCY SHUT-DOWN switch on operator panel. In the event of an emergency engine shut down because of an abnormal operating condition, the air box flapper valve must be manually reset with the air shut down latch assembly located on the back of the engine intake air box. Otherwise, the engine will not start.
STEWART-STEVENSON Model: TR/TMSS 120

OPERATING INSTRUCTIONS
EQUIPMENT: AIR START TYPE: Diesel
MANUFACTURER: STEWART-STEVENSON Model: TR/TMSS 120

BEFORE STARTING
• Complete Daily Check before using.
• Check placards for special instructions and restrictions.
• Check location of levers, switches and controls.
• Check general condition of entire unit.

STARTING PROCEDURES.
1. Connect air delivery hose to aircraft.
2. Set the MODE SELECTOR Switch to the UNLOAD position.
3. Place Lamp and Fuel Gage Test Switch to Test position. The Fuel Level gage will indicate fuel level in tank. The COMPRESSOR AND ENGINE Fault Indication Lamp and ENGINE CONTROL Switch ON Lamp will illuminate. If these lamps do not illuminate, check for bad light bulbs.
4. Place Engine RUN/STOP Switch to RUN position.

CAUTION
TO AVOID OVERHEATING OF STARTER, DO NOT ATTEMPT ENGAGING STARTING MORE THAN 30 SECONDS WITHOUT ALLOWING A MINIMUM COOLING PERIOD (2) MINUTES

CAUTION
DO NOT OPERATE UNIT AT IDLE SPEED OR NO-LOAD CONDITION FOR EXTENDED PERIODS THIS CAUSES CARBON BUILD-UP IN ENGINE

5. Place ENGINE START switch to crank position, release when engine starts. Upon start-up, the engine will attain idle speed.
WARNING
DO NOT OPERATE MODE SELECTOR SWITCH UNLESS THE DELIVERY HOSE IS UNCOILED AND STRETCHED OUT AND CONNECTED TO AIRCRAFT. THE HOSE SHOULD BE INSPECTED AND IN GOOD CONDITION.

6. After allowing unit to warm up it’s ready to operate in one of its load modes (JET START or AIR PACKS).

SHUTDOWN PROCEDURES.
1. Operate the MODE SELECTOR Switch to the UNLOAD position. This will cause engine to run at idle speed and compressor to dump air through unloader silencer unit.
2. Allow unit to run until compressor air temperature (as indicated by COMPRESSOR AIR TEMP Gage) drops below 250°F
3. Place the Engine RUN/STOP switch to STOP position. Engine will stop

WARNING
THE AIR DELIVERY HOSE MAY BE HOT ALLOW TO COOL, HANDLE WITH GLOVES.
4. Disconnect and stow air delivery hose.
STEWART-STEVENVSON

OPERATING INSTRUCTIONS

EQUIPMENT: AIR START TYPE: Diesel

MANUFACTURER: STEWART-STEVENVSON Model: TMD180

BEFORE STARTING

• Complete Daily Check before using.
• Check placards for special instructions and restrictions.
• Check location of levers, switches and controls.
• Check general condition of entire unit.

STARTING PROCEDURES

This unit is equipped with an emergency stop switch, which is to be used only for emergency conditions.

1. Set parking brake and block tires with chocks.
2. Check fuel level by lifting up on fuel level check switch. Fill tank if required.
3. If ambient temperature is below 10 °F (-12 °C ) and unit is equipped with optional fuel heater, place fuel heater switch in on position ten minutes prior to starting engine.
4. Disconnect optional oil/coolant/battery heater electrical power (if applicable).
5. Check engine and compressor oil levels.
6. Place compressor mode selector switch in unload position.
7. Close air delivery/cutoff valve(s) and air bleed down ball valve(s).
8. Connect air hose(s) to aircraft.
9. Place the engine run-stop switch in the run position. The check engine light and engine trouble light will come on providing automatic lamp check. Allow several seconds for these lights to go out.
10. Verify that all fault lamp bulbs on the control panel are functioning by lifting up momentarily on the lamp test switch.

11. To start engine, lift up on engine start switch; release switch immediately when engine starts. Do not crank engine for more than 15 seconds at a time, with a 30 second rest between cranks.

12. Ensure all engine/compressor trouble lights are dark. If any are illuminated, place engine run-stop switch in stop position and correct the problem before proceeding. If only the check engine light comes on, operation may be continued: see engine diagnostics section.

13. Check compressor and engine gauges for normal operating conditions. Run unit in unload mode for approximately 5 minutes to allow engine to warm up. Engine idle speed is 1100 rpm.

14. Ensure that air hose(s) are still properly connected to aircraft.

Do not operate mode selector switch unless the delivery hose is uncoiled and stretched out or connected to aircraft. The delivery hose should be kept in good condition and thoroughly inspected. Moreover, personnel should use caution when near hose as contact with high-pressure, high-temperature air is dangerous.

The engine and compressor safeties are bypassed in JET START mode. Therefore, the unit is to be operated in jet start mode only when the pilot is ready to start the aircraft engines. If an engine or compressor trouble light comes on while unit is being operated in jet start mode and an aircraft is being started, do not shut unit down as aircraft engine could be damaged. If an aircraft engine is not being started, advise aircraft pilot that start is to be aborted; then place mode selector switch in unload.

Unit should shut down automatically within 30 seconds. (Refer to engine diagnostics section for diagnosing engine problem). If unit does not shut down after 30 seconds, shut it down with the emergency stop switch.

15. With air delivery/cutoff valve(s) and air bleed down ball valve(s) still closed, place compressor mode selector switch in jet start or air packs position as required. The engine will momentarily speed up, then return to idle speed.

16. Open air delivery/cutoff valve(s) of selected hose(s)
Never open air delivery/cutoff valve(s) without the air hose(s) being properly connected to an aircraft or test fixture.

Note: This unit has an automatic throttle control system. Engine will speed up as required in response to aircraft air demand, and will return to idle when there is no/low demand. Maximum engine speed is 2100 rpm in AIR PACKS and JET START modes.

SHUTDOWN PROCEDURES
1. Place compressor mode selector switch in unload position.
2. Place the engine run-stop switch in stop position. The engine will continue to run for approximately 5 minutes, allowing the compressor and engine turbo to cool down before the engine is automatically shut down.

For immediate shutdown. The emergency stop switch may be used only for emergency conditions.

3. If fuel heater switch was placed on, return it to the off position. Failure to do so will discharge battery.
4. Close air delivery/cutoff valve(s).
5. Open bleed down ball valve(s) to relieve any pressure remaining in the hose(s). Never open air delivery/cutoff valve(s) without the air hose(s) being properly connected to an aircraft or test fixture. For immediate shutdown. The emergency stop switch may be used only for emergency conditions

Do not unplug air hose(s) with mode selector switch in AIR PACKS or JET START position, as hose(s) will be under pressure.

Hose temperatures may be near 500 °F (260 °C) after the unit has been operated. Therefore, wait until the air hose coupling has cooled or use appropriate gloves to protect hands.
6. Unplug air hose(s) from aircraft and store them.
7. Remove wheel chocks and release parking brake before moving unit.
8. After moving unit, set parking brake and block tires with chocks.
9. Reconnect optional oil/coolant/battery heater electrical power (if applicable).
10. Close the manual bleed down valve.
11. Perform any necessary maintenance procedures as listed in Chapter 2, Section 1.

ENGINE PROTECTIVE SHUTDOWNS

1. In the AIR PACKS mode, the unit will shut down automatically from high engine coolant temperature, low engine oil pressure, high compressor air temperature, high compressor oil temperature, and low compressor oil pressure.
TLD Model: 600 Series

OPERATING INSTRUCTIONS
EQUIPMENT: AIR START TYPE: Diesel
MANUFACTURER: TLD Model: 600-100, 600-150, 600-180

BEFORE STARTING
• Complete Daily Check before using.
• Check placards for special instructions and restrictions.
• Check location of levers, switches and controls.
• Check general condition of entire unit.

Control Panel (next page)

1. Fuel Level Gauge
2. Electronic Gauge
3. Panel Light
4. Compressor Low Oil Pressure Light
5. Compressor High Discharge Temp. Light
6. Compressor High Oil Temp. Light
7. Wait Light
8. Check Engine Light
9. Stop Engine Light
10. Diagnostic Switch
11. Low Fuel Light
12. Engine Maintenance Light
13. Engine Cool-down Light
14. Engine Warm-up Light
15. Unit Ready Light
16. Emergency Stop Switch
17. Selector Switch
18. Ignition Switch
19. Diagnostic Connector
20. Compressor Discharge Air Pressure Gauge
<table>
<thead>
<tr>
<th>Description</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>COOLANT LEVEL</td>
<td><img src="image1" alt="Coolant Level Symbol" /></td>
</tr>
<tr>
<td>COOLANT TEMPERATURE</td>
<td><img src="image2" alt="Coolant Temperature Symbol" /></td>
</tr>
<tr>
<td>OIL PRESSURE</td>
<td><img src="image3" alt="Oil Pressure Symbol" /></td>
</tr>
<tr>
<td>OIL TEMPERATURE</td>
<td><img src="image4" alt="Oil Temperature Symbol" /></td>
</tr>
<tr>
<td>ENGINE HEATER LIGHT</td>
<td><img src="image5" alt="Engine Heater Light Symbol" /></td>
</tr>
<tr>
<td>CHECK ENGINE</td>
<td><img src="image6" alt="Check Engine Symbol" /></td>
</tr>
<tr>
<td>STOP ENGINE</td>
<td><img src="image7" alt="Stop Engine Symbol" /></td>
</tr>
<tr>
<td>DIAGNOSTIC SWITCH / PLUG</td>
<td><img src="image8" alt="Diagnostic Switch/Plug Symbol" /></td>
</tr>
<tr>
<td>FUEL LEVEL</td>
<td><img src="image9" alt="Fuel Level Symbol" /></td>
</tr>
<tr>
<td>ENGINE MAINANTANCE</td>
<td><img src="image10" alt="Engine Maintenance Symbol" /></td>
</tr>
<tr>
<td>ENGINE COOLDOWN</td>
<td><img src="image11" alt="Engine Cool Down Symbol" /></td>
</tr>
<tr>
<td>ENGINE WARMUP</td>
<td><img src="image12" alt="Engine Warm Up Symbol" /></td>
</tr>
<tr>
<td>READY</td>
<td><img src="image13" alt="Ready Symbol" /></td>
</tr>
<tr>
<td>PRESSURE</td>
<td><img src="image14" alt="Pressure Symbol" /></td>
</tr>
<tr>
<td>DISCHARGE TEMPERATURE</td>
<td><img src="image15" alt="Discharge Temperature Symbol" /></td>
</tr>
<tr>
<td>JET START</td>
<td><img src="image16" alt="Jet Start Symbol" /></td>
</tr>
<tr>
<td>IDLE / STANDBY</td>
<td><img src="image17" alt="Idle/Standy Symbol" /></td>
</tr>
<tr>
<td>AIR PADS</td>
<td><img src="image18" alt="Air Pads Symbol" /></td>
</tr>
<tr>
<td>OFF</td>
<td><img src="image19" alt="Off Symbol" /></td>
</tr>
<tr>
<td>ON</td>
<td><img src="image20" alt="On Symbol" /></td>
</tr>
<tr>
<td>START</td>
<td><img src="image21" alt="Start Symbol" /></td>
</tr>
<tr>
<td>ENGINE</td>
<td><img src="image22" alt="Engine Symbol" /></td>
</tr>
<tr>
<td>COMPRESSOR</td>
<td><img src="image23" alt="Compressor Symbol" /></td>
</tr>
<tr>
<td>JET START TIME EXCEEDED</td>
<td><img src="image24" alt="Jet Start Time Exceeded Symbol" /></td>
</tr>
<tr>
<td>FILTER SOILED</td>
<td><img src="image25" alt="Filter Soiled Symbol" /></td>
</tr>
</tbody>
</table>
Unit Operation
A. Turn ignition switch to  position to start engine
B. Allow engine to run at idle for 2 minutes to warm up to operating temperature
C. Connect hose(s) to aircraft
D. Select desired mode of operation:
   - Airplane mode
   - Water mode
E. Open shutoff valve(s)

2. Unit Shutdown
A. Place selector switch in position
B. Close shutoff valve(s)
C. Disconnect hose(s) from aircraft
D. Allow engine to cool down for 2 minutes in idle
E. Turn ignition switch to  position

NOTE:
See attached sheet titled “Pictogram Definitions” for interpretation of pictograms/symbols.

WARNING
THE EMERGENCY SHUT-DOWN SWITCH IS FOR EMERGENCY SHUTDOWN ONLY.
“DO NOT USE THIS SWITCH FOR NORMAL UNIT SHUT-DOWN”

ENGINE DAMAGE WILL OCCUR. AN EMERGENCY STOP COUNTER IS LOCATED INSIDE THE UNIT AND CANNOT BE RESET
IN THE EVENT OF AN EMERGENCY SHUT-DOWN, THE SWITCH MUST BE RESET BEFORE THE UNIT CAN BE PUT BACK INTO SERVICE.
(NOTE: ENSURE THAT UNIT IS OPERATIONAL BEFORE BEING PUT BACK INTO SERVICE)
TO RESET THE SWITCH, TWIST THE RED MUSHROOM CAP  
THE UNIT WILL NOT START WITHOUT RESETTING THE EMERGENCY SHUT-DOWN SWITCH.
Pre-start Inspection
1. Check the engine oil level.
2. Check the engine coolant level.
3. Check the compressor oil level.
4. Make a visual check of the unit for conditions which could affect serviceability.

Unit Starting Procedures
The engine and compressor operating controls and monitoring instruments are mounted on the instrument panel.
1. Check that the shutoff/bleed valves are closed.
2. Ensure that the selector switch is in the “Standby” position.
3. Turn the ignition switch to the “Start” position to start engine.
4. Allow engine to warm up to operating temperature.
5. Connect the hoses to the aircraft.
6. Select desired mode of operation: “Air Pacs” or “Jet Start”.
7. Open the shutoff/bleed valves.

![Diagram showing engine and selector switch]

**WARNING:**

UNITS WITH TURBOCHARGED ENGINES MUST BE OPERATED FOR A MINIMUM OF 2 MINUTES AT IDLE (1,000 RPM) TO ALLOW THE TURBOCHARGER TO COOL DOWN; OTHERWISE SERIOUS ENGINE DAMAGE COULD RESULT.

Shutting Down the Unit
1. Place the selector switch in the “Standby” position.
2. Close the shutoff/bleed valves.
3. Disconnect hoses from aircraft.
4. Allow the engine to cool down for 2 at idle speed.
5. Turn the ignition switch to the “OFF” position.

![Diagram showing emergency stop switch]

**WARNING:**

ONLY USE THE EMERGENCY STOP SWITCH IN AN EMERGENCY. CONTINUED SHUTDOWN OF THE ENGINE VIA THE EMERGENCY STOP SWITCH WILL CAUSE DAMAGE TO THE ENGINE AND TURBO.
OPERATING INSTRUCTIONS
EQUIPMENT: AIR START
MANUFACTURER: Trilectron

BEFORE STARTING
• Complete Daily Check before using.
• Check placards for special instructions and restrictions.
• Check location of levers, switches and controls.
• Check general condition of entire unit.

WARNING
PROLONGED EXPOSURE TO HAZARDOUS NOISE MAY RESULT IN PERMANENT HEARING LOSS.
EAR PROTECTION MUST BE WORN WHEN WORKING WITHIN A CLOSE PROXIMITY!!

Control Panel
STARTING OPERATION:

1. Connect air duct(s) to the aircraft. Ensure both output valves are in the CLOSED position.

2. Set ENGINE ON/OFF switch to ON. The POWER ON indicator lamp will be illuminated. **DO NOT** start engine until these lights go out.

3. Set MODE SELECTOR switch to the UNLOADED and leave in this position.

   **CAUTION**

   TO PREVENT DAMAGE TO THE STARTER, **DO NOT** ENGAGE THE STARTING MOTOR FOR MORE THAN 30 SECONDS AT A TIME. WAIT TWO MINUTES BETWEEN EACH ATTEMPT TO START. FAILURE TO COMPLY MAY CAUSE STARTER DAMAGE.

4. Press the ENGINE START switch. Engine will start and come up to idle speed. Engine oil pressure must be indicated on the oil pressure gauge within 15 seconds of starting, or engine will shutdown.

5. Allow engine to run for 2-3 minutes for proper warm-up. When at operating temperature, the engine indicator gauges shall read as follows: (Engine Coolant): 170 to 195’ F, (Engine Oil Pressure): 20 psi at IDLE, 63 psi when in UNLOAD, JET START, or AIR COND. Modes.
AIR CONDITION MODE OPERATION:

**WARNING !!**

AN OPEN AIR DELIVERY BALL VALVE ON A UNSECURED DELIVERY DUCT, WILL DISCHARGE A HIGH VOLUME OF LOW PRESSURE AIR CAUSING COUPLING TO BE FLUNG ABOUT IN A UNCONTROLLED MANNER, POTENTIALLY CAUSING DAMAGE TO EQUIPMENT, OR SEVERE INJURY TO PERSONNEL.

1. With delivery air hose connected to aircraft, open the Air Delivery Ball Valve(s) to be utilized.

2. Set COMPRESSOR MODE SELECTOR switch to AIR COND. Air delivery will begin. Engine speed will vary as the automatic pressure control system regulates output pressure Excess air will be vented through the automatic bypass system.

3. Should a fault condition occur, the appropriate panel fault lamp will be illuminated, causing the unit to automatically shutdown. Once the fault has been corrected, set ENGINE ON/OFF switch to OFF to rest the fault circuit, and the unit may be restarted.
JET START MODE OPERATION:

**WARNING !**

AN OPEN AIR DELIVERY BALL VALVE ON A UNSECURED DUCT, WILL DISCHARGE A HIGH VOLUME OF LOW PRESSURE AIR CAUSING HOSE TO BE FLUNG ABOUT IN AN UNCONTROLLED MANNER POTENTIALLY CAUSING DAMAGE TO PERSONNEL OR EQUIPMENT.

1. With delivery air hose connected to aircraft, open Air Delivery Ball Valve.
2. Set COMPRESSOR MODE SELECTOR switch to JET START. Air delivery will begin.
3. If fault condition occurs, the appropriate control panel lamp will be illuminated, but the unit WILL NOT shut down. After jet start operations are completed and the MODE SELECTOR switch is set to AIR COND. Or UNLOADED, the unit will automatically shutdown. Once the fault has been corrected, set ENGINE ON/OFF switch to OFF to reset the fault circuit, and then unit may be restarted.

UNIT SHUTDOWN

To shutdown the unit, set MODE SELECTOR switch to UNLOADED position. Engine speed will drop to idle.

1. Close Air Delivery Valve.
2. Disconnect air delivery ducts from aircraft.
3. Allow unit to idle for 5 minutes for cool down.
4. Set ENGINE ON/OFF switch to OFF to shutdown operation.
Trilectron  Model: ASP100

OPERATING INSTRUCTIONS
EQUIPMENT: AIR START  TYPE: Diesel
MANUFACTURER: Trilectron  Model: ASP100

BEFORE STARTING
• Complete Daily Check before using.
• Check placards for special instructions and restrictions.
• Check location of levers, switches and controls.
• Check general condition of entire unit.

Control Panel

WARNING
PROLONGED EXPOSURE TO HAZARDOUS NOISE MAY RESULT IN PERMANENT HEARING LOSS. EAR PROTECTION MUST BE WORN WHEN WORKING WITHIN A CLOSE PROXIMITY !!

NOTE
For cold weather operation, at ambient temperatures below 50°F The unit is equipped with a 120VAC engine oil sump and coolant heaters for engine preheat. Power must be applied to the unit at least one hour prior to cold weather starting. Prior to first operation of the day, the unit must be inspected to ensure safe and reliable operation.
STARTING OPERATION:

1. Ensure Air Delivery Ball Valve is in the full CLOSED position.
2. OPEN manual air dump valve located at lower right of hose basket, by pulling handle fully out. (Manual Dump Valve)
3. Set ENGINE ON/OFF switch to ON. The POWER ON indicator lamp will be illuminated. **DO NOT** start engine until these lights go out.
4. Set MODE SELECTOR switch to the UNLOADED and leave in this position.

**WARNING !!**

PRIOR TO STARTING UNIT, AIR DELIVERY BALL VALVE MUST BE FULLY CLOSED OR THE AIR HOSE MUST BE CONNECTED TO AIRCRAFT OR TEST STAND.

**CAUTION**

TO PREVENT DAMAGE TO THE STARTER, DO NOT ENGAGE THE STARTING MOTOR FOR MORE THAN 30 SECONDS AT A TIME. WAIT TWO MINUTES BETWEEN EACH ATTEMPT TO START. FAILURE TO COMPLY MAY CAUSE STARTER DAMAGE.

5. Press the START switch. Engine will start and come up to idle speed.
6. Engine oil pressure must be indicated on the oil pressure gauge within 15 seconds of starting, or engine will shutdown. Allow engine to run for 5 minutes for proper warm-up (ENGINE WAIT indicator will go out after 5-minute warm up period) When at operating temperature, the engine indicator gauges shall read as follows: (Engine Coolant): 170 to 195° F, (Engine Oil Pressure): 20 psi at IDLE, 63 psi when in UNLOADED, JET START, or AIR COND. Modes.
7. Visually inspect outside of unit and underneath for signs of loose hardware, fluid leaks, or any condition which could potentially damage equipment or personnel.
8. This completes the engine start up procedure. To SHUTDOWN the Unit, Set ENGINE ON/OFF switch to “OFF”. TIMED COOL DOWN indicator will light. Unit will run for several minutes for cool down, then automatically shut-down. The POWER ON indicator light will go out.
AIR CONDITION MODE OPERATION:

1. Close manual air dump valve located at lower right of hose basket, by Pushing handle full into unit.

   **WARNING!!**

   AN OPEN AIR DELIVERY BALL VALVE ON A UNSECURED DELIVERY DUCT, WILL DISCHARGE A HIGH VOLUME OF LOW PRESSURE AIR CAUSING COUPLING TO BE FLUNG ABOUT IN A UNCONTROLLED MANNER, POTENTIALLY CAUSING DAMAGE TO EQUIPMENT, OR SEVERE INJURY TO PERSONNEL.

2. With delivery air hose connected to aircraft, open the Air Delivery Ball Valve.

3. Set MODE SELECTOR switch to AIR COND. Air delivery will begin. Engine speed will vary as the automatic pressure control system regulates output pressure Excess air will be vented through the automatic bypass system.

4. Should a fault condition occur, the appropriate panel fault lamp will be illuminated, causing the unit to automatically shutdown.

5. Unit Shut-Down set MODE SELECTOR switch to UNLOADED, Close the Air Delivery Valve.

6. Set ENGINE ON/OFF switch to OFF. TIMED COOL DOWN indicator light will illuminate. Unit will run for several minutes to cool down and then automatically shut down.
JET START MODE OPERATION:

WARNING !!

AN OPEN AIR DELIVERY BALL VALVE ON A UNSECURED DUCT, WILL DISCHARGE A HIGH VOLUME OF LOW PRESSURE AIR CAUSING HOSE TO BE FLUNG ABOUT IN AN UNCONTROLLED MANNER POTENTIALLY CAUSING DAMAGE TO PERSONNEL OR EQUIPMENT.

1. With delivery air hose connected to aircraft, open Air Delivery Ball Valve.
2. Set MODE SELECTOR switch to JET START. Air delivery will begin.

NOTE

If fault condition occurs, the appropriate control panel lamp will be illuminated, but the unit WILL NOT shut down. After jet start operations are completed and the MODE SELECTOR switch is set to AIR COND. Or UNLOADED, the unit will automatically shutdown. Once the fault has been corrected, set ENGINE ON/OFF switch to OFF to reset the fault circuit, and then unit may be restarted.

3. Unit shutdown, set MODE SELECTOR switch to UNLOADED position
4. Close Air Delivery Valve.
5. Set ENGINE ON/OFF switch to OFF. TIMED COOL DOWN indicator light will illuminate. Unit will run for several minutes, then automatically shut-down.
6. Disconnect air hose and stow.