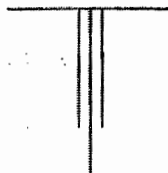


**OWNERS' HANDBOOK**  
FOR  
OPERATION AND MAINTENANCE  
OF  
**THE PIPER APACHE**  
MODELS PA-23 and PA-23-160 AIRPLANES



**PIPER AIRCRAFT CORPORATION, LOCK HAVEN, PA.**

5. Engage starter until engine starts.
6. Retard throttle fully as soon as engine starts to prevent excessive engine vibration.
7. Allow engine to idle out of feather, then adjust engine controls for a slow warm up if the engine is very cold. Adjust to cruising power when engine is warm.

#### 4. EMERGENCY LANDINGS:

The Apache is designed to take gear-up emergency landings without extensive damage to the structure of the airplane. All three wheels protrude about one-third of their diameter when retracted, and structure is provided to take minor loads in this condition. On a wheels-up landing, since the main wheels are forward of their down position, the airplane will tend to settle down at the rear when the landing speed is decreasing, and full forward control wheel pressure should be used to hold the tail up as long as possible. The flaps should not be extended because they will contact the ground first, causing damage to the flap and the wing.

A wheels-up landing should only be made during an emergency when the surface is too soft or too rough to permit a gear-down landing, or when an emergency water landing is necessary.

#### 5. EMERGENCY LANDING GEAR EXTENSION:

If the engine driven hydraulic pump fails, or the left engine driving the pump, extension of the landing gear or flaps is accomplished by supplying hydraulic pressure with the manual hydraulic pump. With the gear or flap control in the desired position, 30-40 strokes of the pump handle will raise or lower the landing gear, and 12 strokes will raise or extend the flaps.

In the event of hydraulic system failure caused by a line breaking or the selector valve malfunctioning, the landing gear can be lowered by using the Emergency Gear Extender. The control for the Extender is located beneath a small cover plate under the pilot's seat. When this control is pulled, CO<sub>2</sub> flows from a cylinder under the floorboards through separate lines to shuttle valves adjacent to the gear extension cylinders. The gas pressure opens the shuttle valves, allowing CO<sub>2</sub> to enter the gear cylinders, extending the gears.