DOWNWARD OPENING PASSENGER/CREW ENTRANCE DOOR - DESCRIPTION AND OPERATION

1. Description (Figure 1 and Figure 2)

   A. General

      The entrance door for passengers and crew opens downward and outward and is manually controlled from inside or outside the aircraft.

      Rollers are mounted on pull-in levers located on the fore and aft edges near the top of the door. Cams are secured to the fore and aft door frame in such a position to capture the rollers as the door approaches the closed position. This mechanism pulls the door into the full closed position to ease latch cam engagement.

      Guide plates are mounted below the pull-in levers on the door. These plates contact rollers mounted on the door frame and centralize the door as it closes.

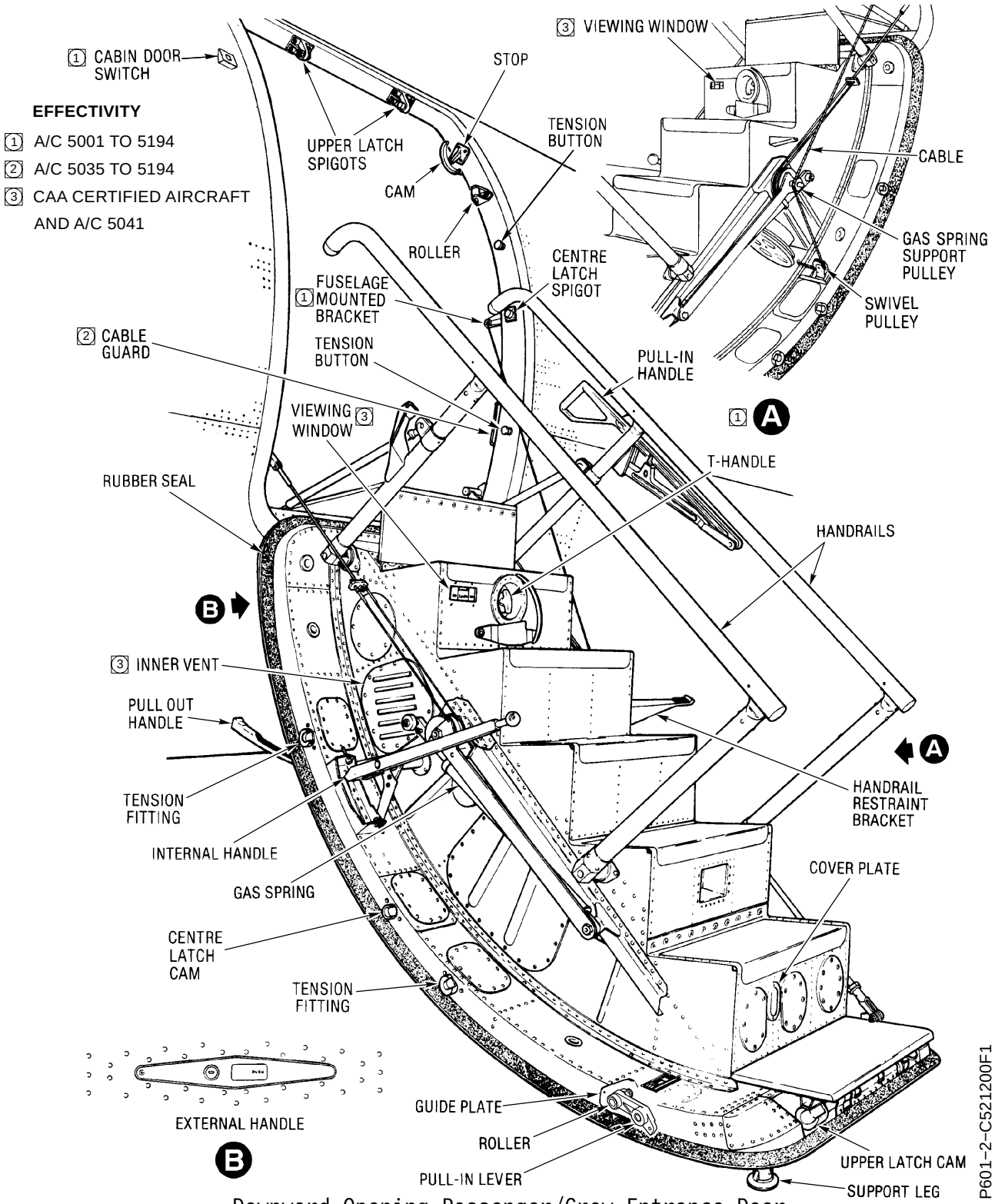
      Four latch cams on the door rotate around four spigots on the door frame to hold the door closed. Two cams are located at the top edge of the door and one on each side at approximately the mid-point.

      The latch cams are rotated by a handle and a system of push rods and torque tubes. The upper cams have a detent in which a spring-loaded pawl seats. The handle assembly consists of a single-lever internal handle located on the forward side of the stair and an external handle. The external handle stows into a recess in the outer skin of the door and in this position, the recess acts as a lock for the latching mechanism.

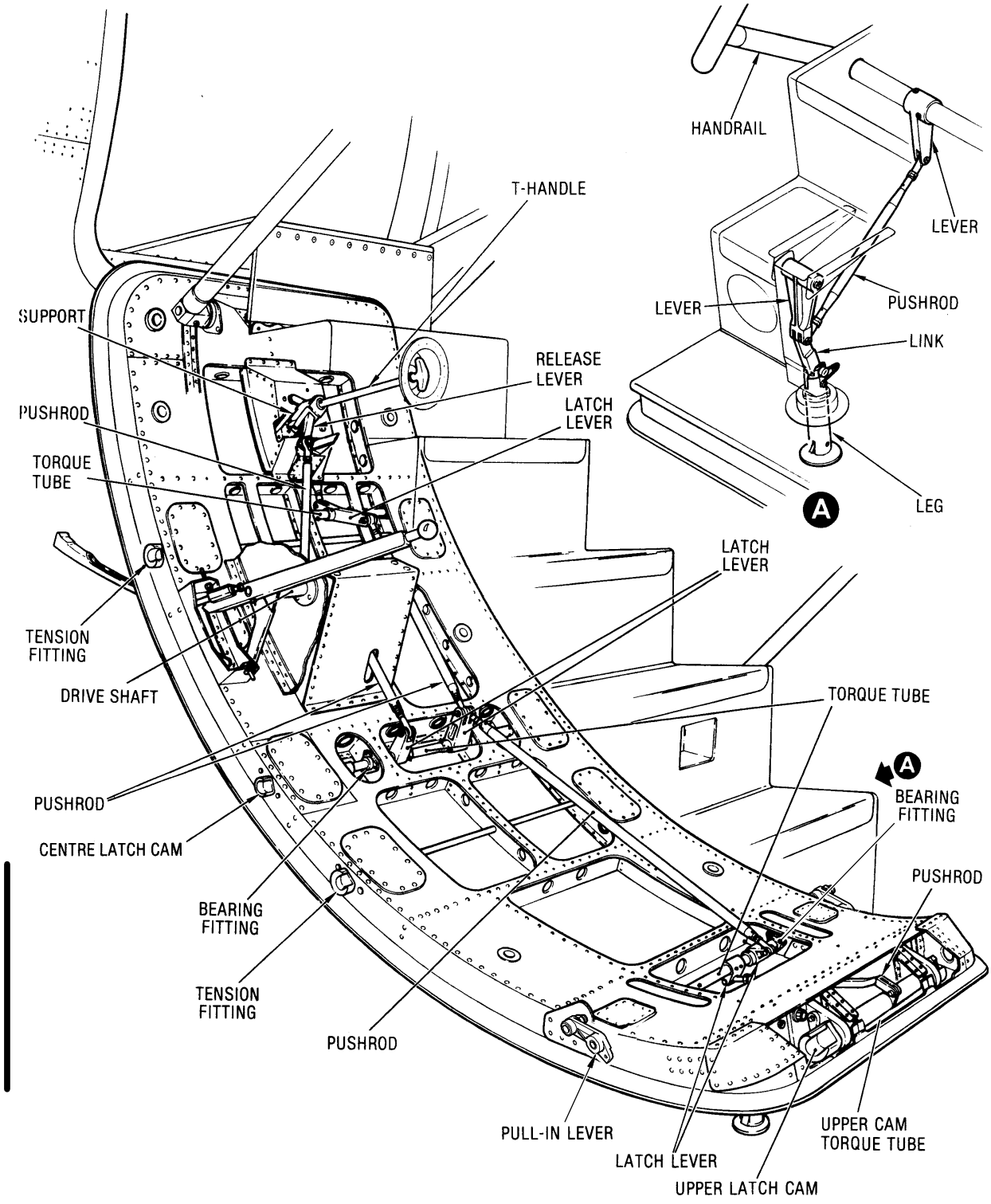
      A two-inch rubber stop is fitted to the piston rod end of the forward gas spring. This stop prevents the operating handles from moving to the closed and latched position with the door open.

      Hand rails are fitted fore and aft of the stairs. The rails are in a retracted or stowed position with the door closed and extend to the operating position with the door open.

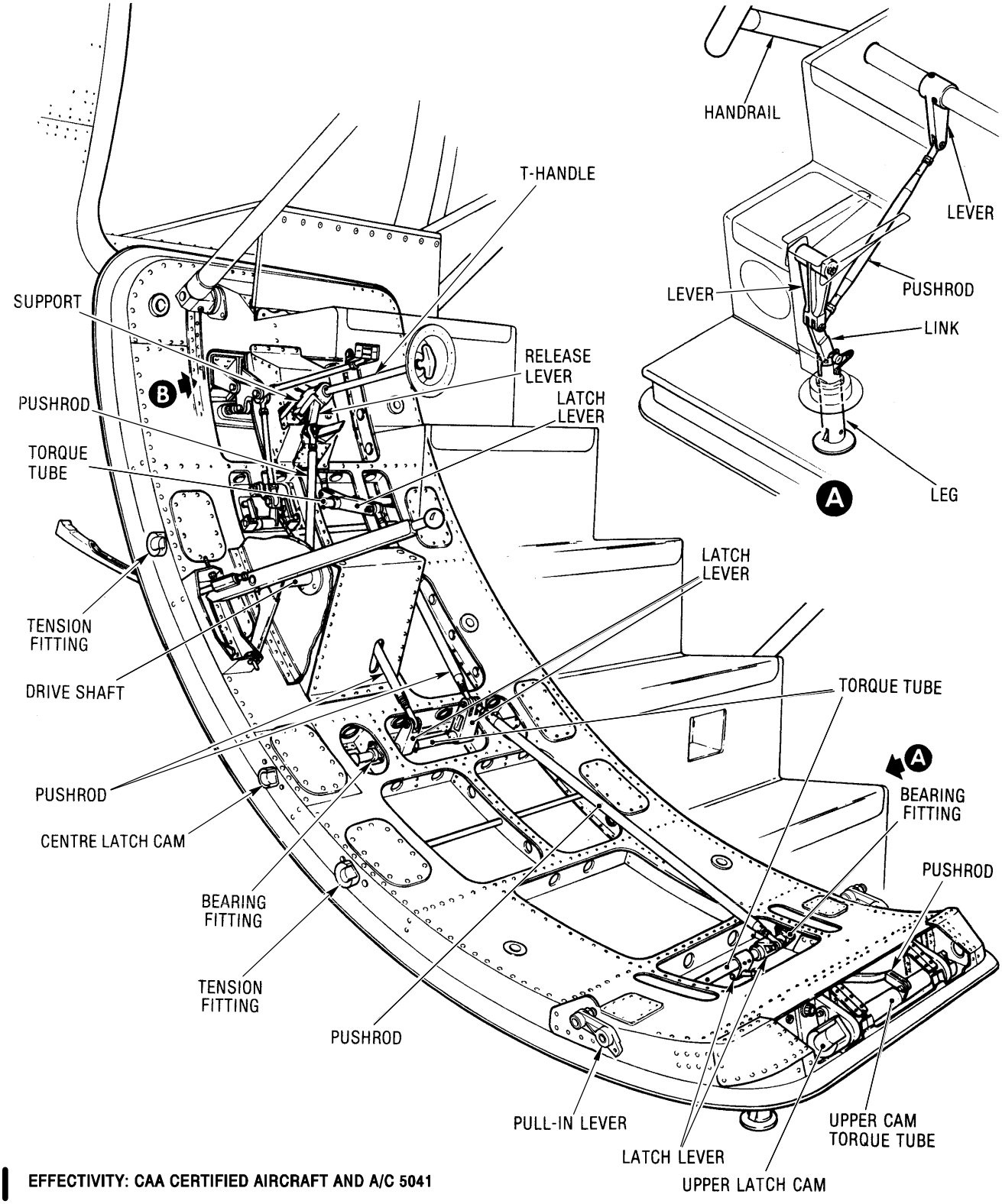
      The door is supported from the ground by a support leg in the open position. The leg is retracted and extended by the hand rail operating mechanism.



Downward Opening Passenger/Crew Entrance Door
Figure 1

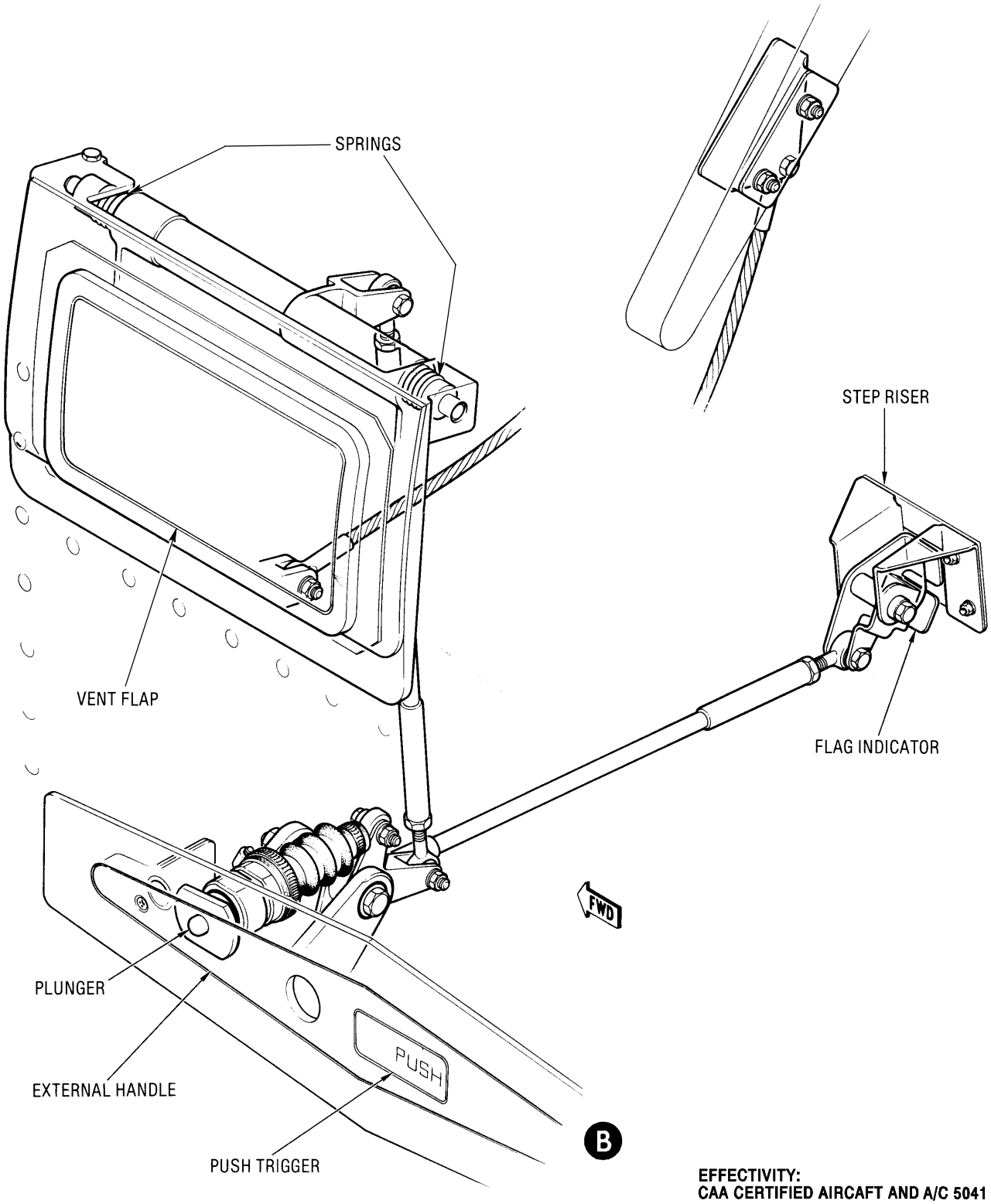


Door Latch Mechanism
Figure 2



EFFECTIVITY: CAA CERTIFIED AIRCRAFT AND A/C 5041

Door Latch and Flap Mechanism
Figure 3 (Sheet 3)



EFFECTIVITY:
CAA CERTIFIED AIRCAFT AND A/C 5041

Door Latch and Flap Mechanism
Figure 3 (Sheet 4)

On CAA certified aircraft and aircraft 5041 (Figure 3)
a spring-loaded vent flap is fitted to the outside of the crew/passenger door, above and forward of the external handle. In the external handle recess is a small plunger which is depressed by the stowing action of the external handle. The plunger closes the vent flap through a system of rods and levers. The vent flap is opened by releasing the external handle. The vent flap is also connected to the door locking mechanism by a cable which opens the vent flap when the door is unlocked. An adjustable rod connected to the external recess plunger operates a painted flap-type indicator which is viewed through a transparent window adjacent to the internal T-handle.

B. Power Assist System

On aircraft 5001 to 5194,
the entrance door has a power assist system for closing the door. The system consists of a motor/gearbox assembly, an electrical switch, a swivel pulley, a pulley mounted on the gas spring support structure and a cable connected from the motor pulley to the fuselage.

The motor/gearbox assembly located in the door structure, consists of an electrical motor and gearbox, and electrically activated clutch and a pulley with a cable rewind spring attached to the outer side. The motor is powered from the 28V DC essential bus.

A cable wound onto the motor pulley is routed through an opening in the door panel via pulleys to the fuselage mounted bracket.

The electrical switch is a momentary contact type. It is located on a fuselage mounted bracket, forward of the entrance door. The bracket is labelled CABIN DOOR with the switch actuated position labelled RAISE.

On aircraft 5035 to 5194,
a cable guard located on the inside of the door aft frame behind the lower tension button prevents the cable from being snagged when opening the door.

2. Operation

CAUTION: IF THE DOOR IS OPEN WHILE THE AIRCRAFT IS BEING MOVED, PLACED ON JACKS OR HAS ZERO FUEL, TWO DOOR SUPPORT CABLES (GSE REF. NO. 10-10-27) MUST BE IN PLACE TO PREVENT DAMAGE TO DOOR.

REMOVE ALL ICE, SNOW AND SLUSH FROM DOOR SUPPORT LEG BEFORE CLOSING DOOR.

A. General

When opening the door from outside of the aircraft, it may be necessary to unlock the external handle integral trigger with a key. Pressing this trigger which is marked PUSH, ejects the handle from the door recess such that it may be rotated. Rotating the handle counterclockwise to the overcentre stop ejects a pull-out handle located adjacent to the door forward edge. The door is opened by pulling down and outward on the pull-out handle. The counterbalance system slows the final downward movement of the door to cushion ground contact of the door support leg.

The door is closed from outside of the aircraft by lifting it up and inward to the closed position. The external handle must then be rotated clockwise to operate the pull-in mechanism, stow the pull-out handle and latch the door. The external handle is then pushed into its stowed position. The PUSH trigger must be flush with the external handle to be fully stowed and may be locked with a key.

The door is opened from inside the aircraft by moving the internal handle upward. This movement releases the external handle from its recess and unlatches the door. The push-out mechanism pushes the door outward as the unlatch cycle ends. A firm push outward to arms length against the upper step opens the door.

A pull-in handle located on the aft handrail is used when closing the door from inside the aircraft. The door is raised to the closed position by pulling inboard and downward on the pull-in handle. Moving the internal handle downward operates the pull-in mechanism and latches the door. The external handle must then be stowed by pulling the T-handle recessed in a stair riser. The T-handle is then pushed into its stowed position and a cover placed over the recess. Stowing the T-handle arms the external handle so that it is ready to spring out when released.

On CAA certified aircraft and aircraft 5041,
when the external handle is stowed, an indicator shows the legend LOCKED against a green background between two witness marks. When the external handle is not stowed the legend UNLOCKED appears in the viewing window between the two witness marks against a red background. The last action of closing the crew/passenger door after the latches are all correctly locked is to stow the external handle. The vent flap is closed by this action which allows the cabin to be pressurized.

B. Power Assist System

NOTE: Set and hold the CABIN DOOR switch in the RAISE position for the complete door closing cycle. Inadvertent release of the CABIN DOOR switch may cause a rapid descent of the door.

On aircraft 5001 to 5194,
a power assist system provides the option of closing the door electrically from within the aircraft. It can lift the door from any open position to the fully closed position.

Setting and holding the CABIN DOOR switch in the RAISE position, activates the motor and engages the clutch. As the motor rotates, the motor mounted pulley winds the cable to close the door. Releasing the CABIN DOOR switch, deactivates the motor and disengages the clutch. In this position, the door can either be locked closed or pushed outward and allowed to descent to the fully open position. The cable rewind spring maintains cable tension during manual operation.

The door can be powered through 10 closing cycles without pause for cooling. The motor incorporates an overheat protection system. All other operations including emergency openings are completely unaffected by the power assist system.