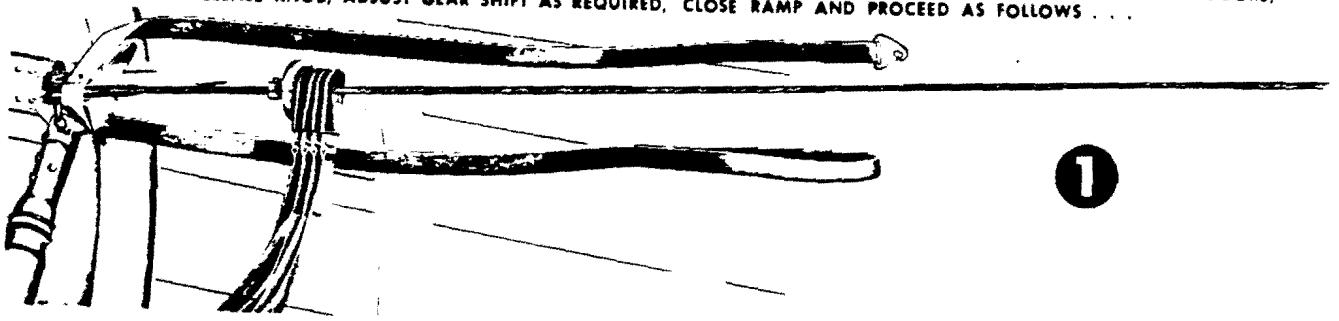
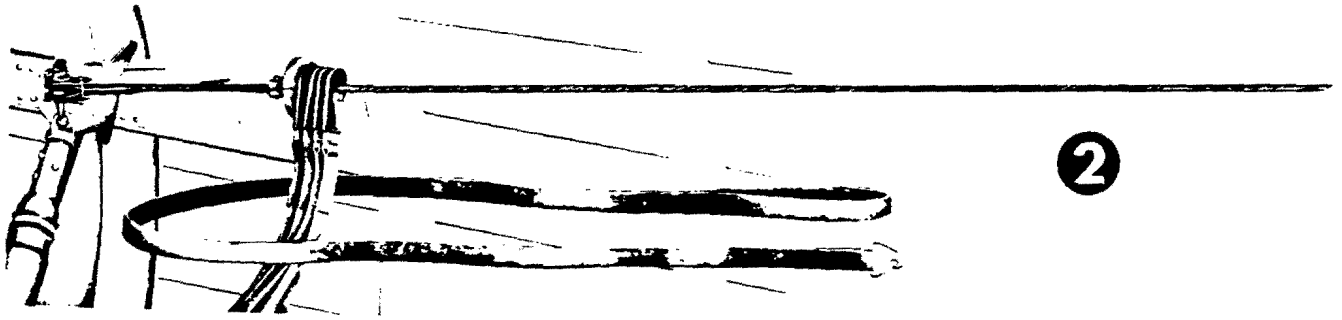
retrieving STATIC LINES

(AFTER RAMP JUMPS)

AFTER PULLING CABLE RELEASE KNOB OF RETRIEVER WINCH AND RELEASING ENOUGH CABLE TO REACH TROOP DOORS, RESET CABLE RELEASE KNOB, ADJUST GEAR SHIFT AS REQUIRED, CLOSE RAMP AND PROCEED AS FOLLOWS . . .

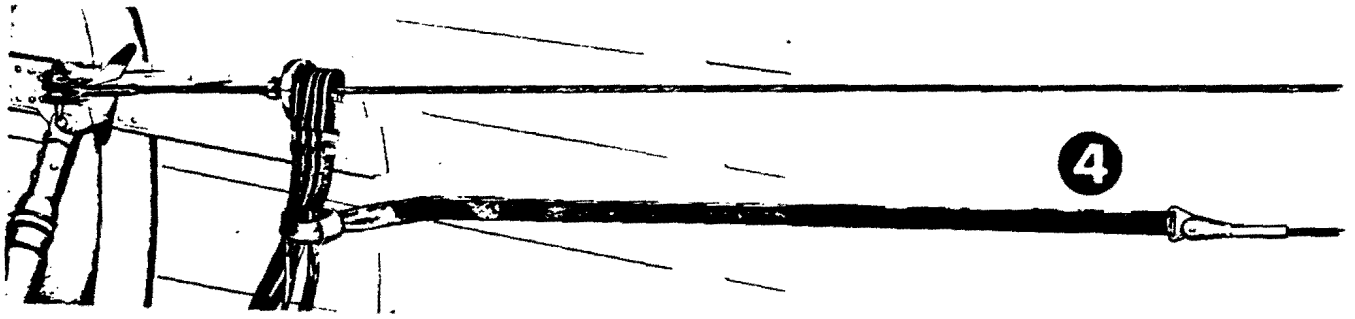


HOLDING ONE END OF SLING IN EACH HAND, MANIPULATE TO RELEASE SLING STRAP FROM UPPER CLEAT.



SLING WILL THEN FALL AROUND THE BUNDLE OF STATIC LINES.

PASS HOOK END OF SLING THROUGH LOOP. HOLDING ON TO HOOK END, RELEASE THE LOOP.



PULL ON HOOK END, THUS SLIDING THE LOOP BACK ALONG THE STRAP TO TIGHTEN AROUND THE STATIC LINES. ATTACH HOOK END OF SLING TO FITTING ON END OF RETRIEVER WINCH CABLE. RETRIEVE LINES BY USE OF WINCH.

Figure 4-28D

Retrieving Static Lines After Cargo Ramp Jumps (Some Aircraft).

Prior to flight, remove the winches from their stowed positions and suspend them from the anchor cables. Ascertain that the cam-type locks are fully rotated and the winches are secure on the cable. Fasten and check the retaining straps and connect the power leads. Remove the slings from the anchor cable stowage bags and rig them as follows:

a. Drape one strap at approximately its midpoint over the aft anchor cable attachment fitting just aft of the cleat.

b. Grasp both halves of the strap together immediately below the cleat to form a loop around the cleat aft of the horns. Rotate the strap and draw the ends of the strap forward in such a way that one end of the strap bends around the outboard edge of the upper horn of the cleat and the other end bends around the outboard edge of the lower horn of the cleat.

c. Keeping the doubled scrap outboard of the anchor cable and taut to prevent its slipping off the cleat, carry the ends forward to engage the keeper strap.

d. Adjust the length of the keeper strap secured to the side wall adjacent to the aft cargo compartment window and engage both the hook and the loop of the sling in the hook of the keeper strap.

e. Tighten the keeper strap to hold the rigged sling strap under tension around the cleat.

f. Similarly rig the sling for the other side of the aircraft.

g. Check that the rigged slings are properly installed and do not pass around nor interfere with any object except the cleats. Check that the slings are not fouled on the aft anchor cable attachment pins or pin locking clips.

After the jump is completed:

a. Pull out the cable release knob on the winch.

b. Pull out sufficient cable to reach to the troop doors.

c. Push in the cable release knob.

d. Place the gear shift knob in HIGH, unless LOW gear is required.

e. Close the ramp.

f. Standing approximately two feet from the aft end of the ramp, remove the two ends of the sling strap from the hook of the keeper strap.

Note

Be careful to grasp and hold both ends of the sling.

g. Bring the end of the sling which passes around the upper horn of the cleat inboard by passing it over the anchor cable.

h. Bring the end of the sling which passes around the lower horn of the cleat inboard by passing it under the anchor cable.

i. Facing aft and holding in the hand which is outboard the end of the sling which passes around the lower horn of the cleat, and in the hand which is inboard the end of the sling which passes around the upper horn of the cleat, extend the inboard arm aloft and inboard. Work the sling back and forth until the sling strap rides up over the upper cleat and falls around the bundle of static lines.

j. Pass the hook end of the sling through the loop end of the sling. Pull on the hook end and release the loop end to ride back along the strap to form a loop around the bundle of static lines.

k. Hook the sling to the retriever cable fitting.

l. Depress the RETRIEVE button on the remote control head.

m. Should the static lines become caught or a new approach of the bundle to the cargo door opening be desired, the LET OUT button may be depressed to let out the static lines slightly. If high airspeed or a man fouled in the static lines should cause the winch to stall in HIGH gear, LOW gear should be employed.

Note

Should the static lines offer undue resistance, try to ascertain the cause before resorting to the use of LOW gear in order to avoid possible damage to the aircraft.

n. Repeat the procedure for the other side of the aircraft. Or, if preferred, the slings may be connected to the retriever cables on both sides of the aircraft and all the lines recovered simultaneously.

o. After the static lines have all been recovered, close the cargo door.

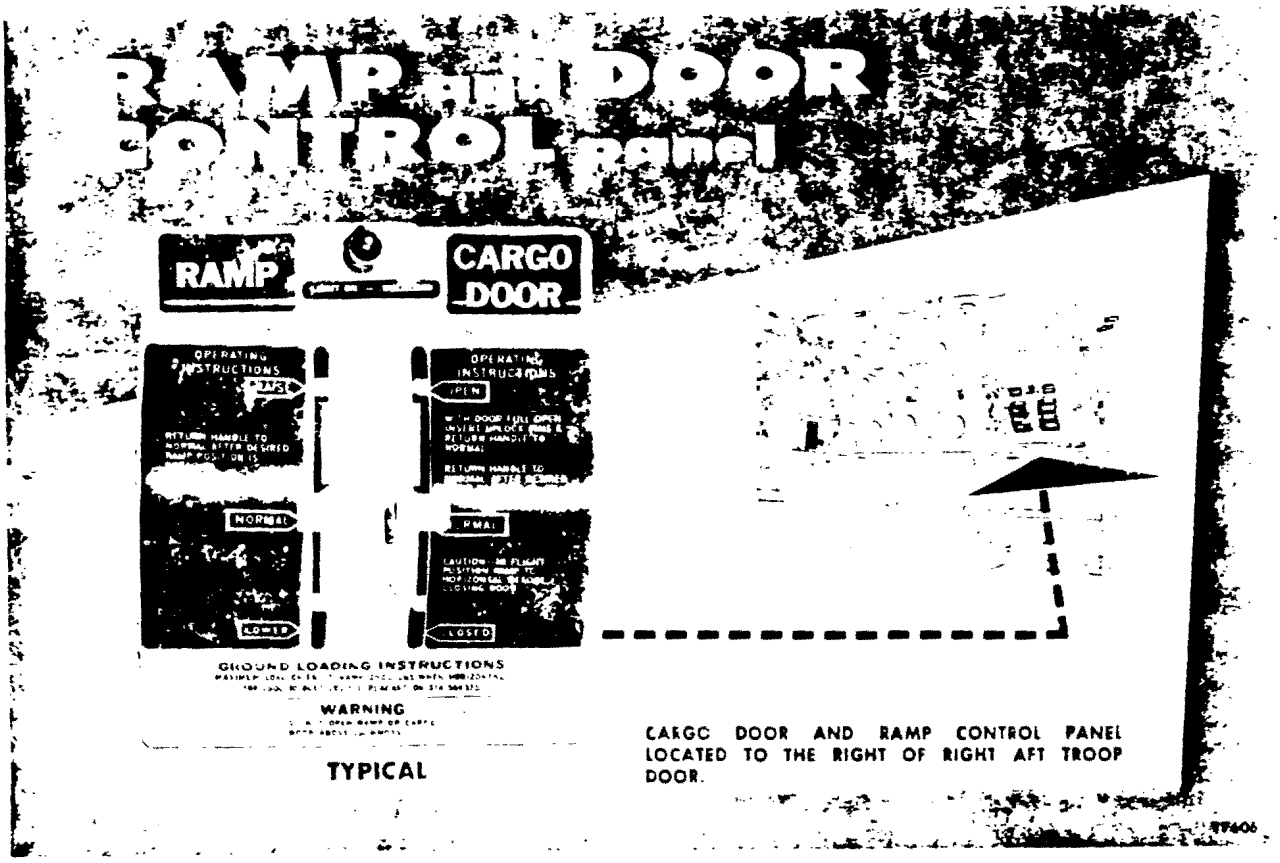


Figure 4-29.

CARGO LOADING EQUIPMENT.

The cargo loading equipment included on the aircraft consists of ramp and cargo door, cargo tiedown fittings and devices, and a load-assist pulley. In addition, on some aircraft, two auxiliary ground loading ramps are stowed in the aft section of the cargo compartment; two pairs of positioning links are also provided to support the ramp during ground loading and heavy equipment drops. For detailed loading instructions, refer to Handbook of Cargo Loading Instruction, T.O. 1C-123B-9.

AUXILIARY GROUND LOADING RAMPS (Some Aircraft).

In order to facilitate the loading of wheeled vehicles and equipment mounted on caster wheels (engine dollies, etc.) the trailing surface of the cargo ramp pad is slotted to permit the temporary installation of auxiliary ground loading ramps. These ramps are approximately 19 inches long, 17 inches wide, and are coated with non-skid compound on the top surface. Attachment is accomplished by placing the two metal horns on the forward end of each auxiliary ramp in a matching pair of slots in the main ramp pad and permitting the opposite end to rest on the ground. Spacing of the slots in the ramp pad is such that four different positions on either side of the centerline are available to accommodate vehicles of different tread widths. A single auxiliary ramp may also be attached in the center of the main ramp if necessary.

Note

Although a total of nine pairs of attaching points are provided, no more than five auxiliary ramps may be attached at one time.

Two auxiliary ramps are supplied with each aircraft and are strapped to the floor of the cargo compartment; one on either side of the main cargo loading ramp (figure 4-35).

CARGO LOAD - ASSIST PULLY.

A load-assist device is provided to assist in the loading of wheeled vehicles. The device, a pulley assembly with supporting arms, may be attached to the cargo floor at various tie-down locations. Any towing vehicle or winch may be used to operate the pulley from a position aft of the aircraft or at the left side with the cable extending through the front entrance door.

CAUTION

When the towing vehicle or winch is placed aft of the aircraft, the maximum permissible draw-bar pull is 3300 pounds, or the equivalent of towing a 13,500-pound wheeled vehicle up the cargo ramp. If the cable is routed through the front entrance door, the maximum permissible load is 2800 pounds, or the equivalent of towing a wheeled vehicle weighing 11,300 pounds up the ramp. Structural damage to the aircraft can result if these limitations are exceeded. In towing vehicles up the ramp, avoid sudden starts and stops which might result in excessive load factors. Do not use the pulleys to drag large crates unless they are placed on rollers.

CARGO DOOR AND RAMP SYSTEMS.

The cargo door and ramp, when closed, fair-in the lower aft portion of the fuselage. The cargo door is hinged at the aft end and opens into the fuselage providing a ground clearance of approximately 100 inches. The ramp is hinged at the forward end and may be raised to a faired-in position approximately 13° above the horizontal, lowered to a fully down position approximately 15° below the horizontal, or stopped at any intermediate position. On some aircraft, a white line is painted on either side of the ramp as well as an aid in placing the ramp at the horizontal position. A further improvement in ramp positioning is provided by two pairs of positioning links which may be attached when required. Refer to RAMP POSITIONING LINKS. The aft end of the ramp is supported, in the down position, by a reinforced pad capable of adjusting itself to uneven terrain. This adjustable feature is spring-loaded so that whenever the ramp is not in contact with the ground, the pad is held snug against the aft end of the ramp. The width of both the ramp and door is approximately 110 inches. The cargo door and ramp are operated hydraulically and insofar as operation is concerned, are individual systems. Refer to CARGO-DOOR AND RAMP LIMITATIONS and AIRSPEED LIMITATIONS, Section V, for information concerning the operation of the cargo door and ramp in flight.

CAUTION

During speed off-loading operations the ramp pad should be maintained approximately 5 inches above ground level. This will prevent the ramp pad from pivoting, thereby causing damage to its leading edge.

CARGO DOOR SYSTEM.

The cargo door is opened and closed by a hydraulic actuator controlled by a directional control valve. Locking and unlocking of the door in the closed position is accomplished automatically with system actuation. Manual locking is provided for securing the door in the open position and manual release provisions are installed for unlocking the door in the closed position should the hydraulic lock malfunction. A warning light system is installed to indicate an unlocked condition of the door in the closed position. A dual thermal relief valve to which the lower and raise lines are connected allows hydraulic fluid to return to the reservoir when ramp system pressure becomes excessive as the result of thermal expansion (refer to figure 4-30).

Cargo Door Hydraulic Lock Operation.

When the cargo door is opened, hydraulic pressure is directed to the cargo door hydraulic pin unlock actuator. Initial movement of the actuator causes the lock drive assembly to pull the lock pin release cables which release the lock pins. The lock drive assembly also functions to open a sequence valve which directs hydraulic pressure to the rod end of the door actuator to accomplish the opening of the cargo door. When the cargo door is closed, the spring-loaded lock pins engage fittings in the fuselage to lock the door in the closed position. If the lock pins do not become fully engaged in the fittings, the warning light switches will not be sufficiently depressed to open the warning light circuit.

Cargo Door Lever.

The cargo door system is controlled by the cargo door lever on the cargo door and ramp control panel (figure 4-29) located on the right side of the fuselage aft of the troop door. The positions of the lever on some aircraft, are OPEN, CLOSED, and POSITION; on other aircraft, POSITION is changed to NORMAL. When the

Cargo DOOR SYSTEM

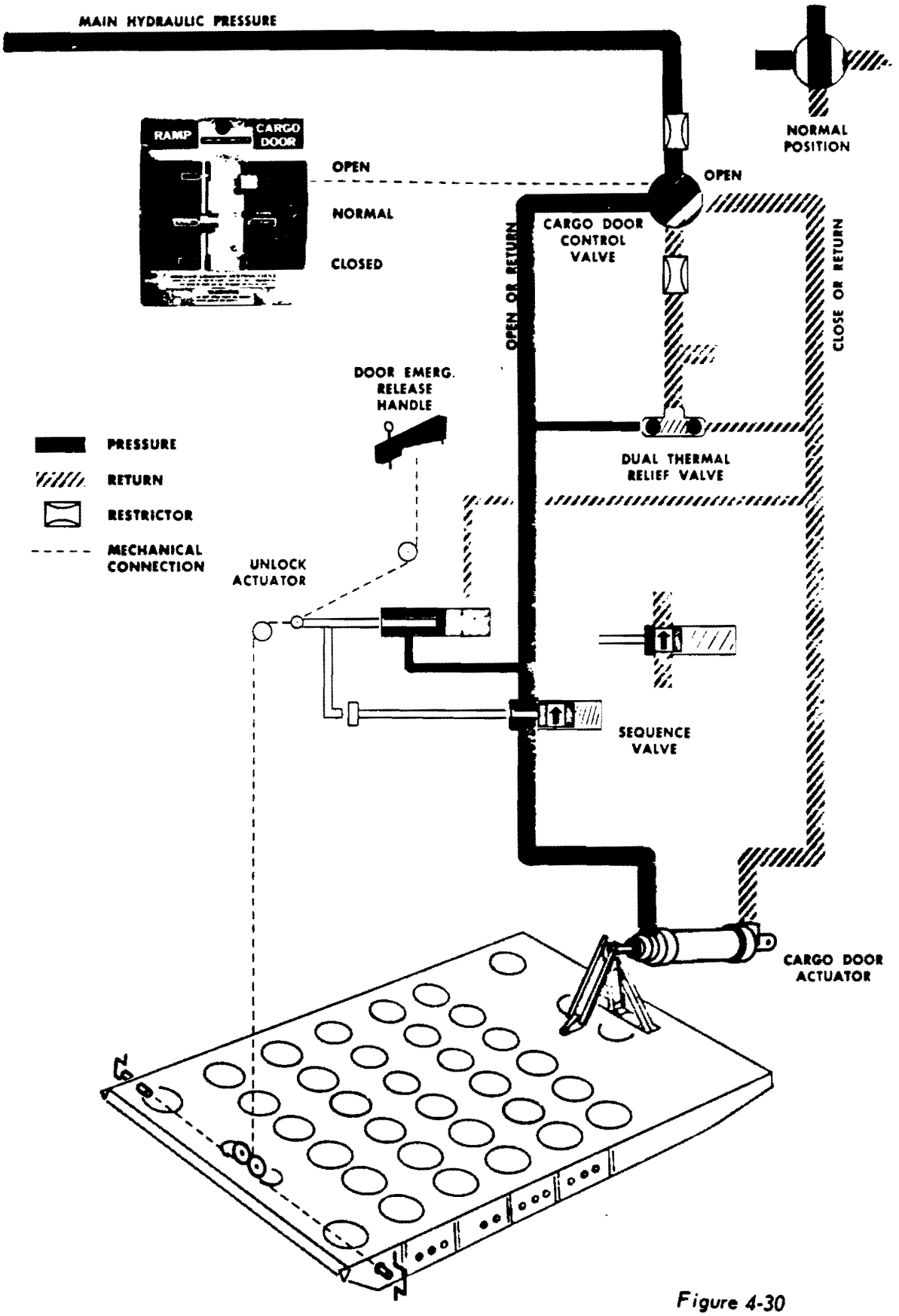


Figure 4-30

Cargo RAMP SYSTEM

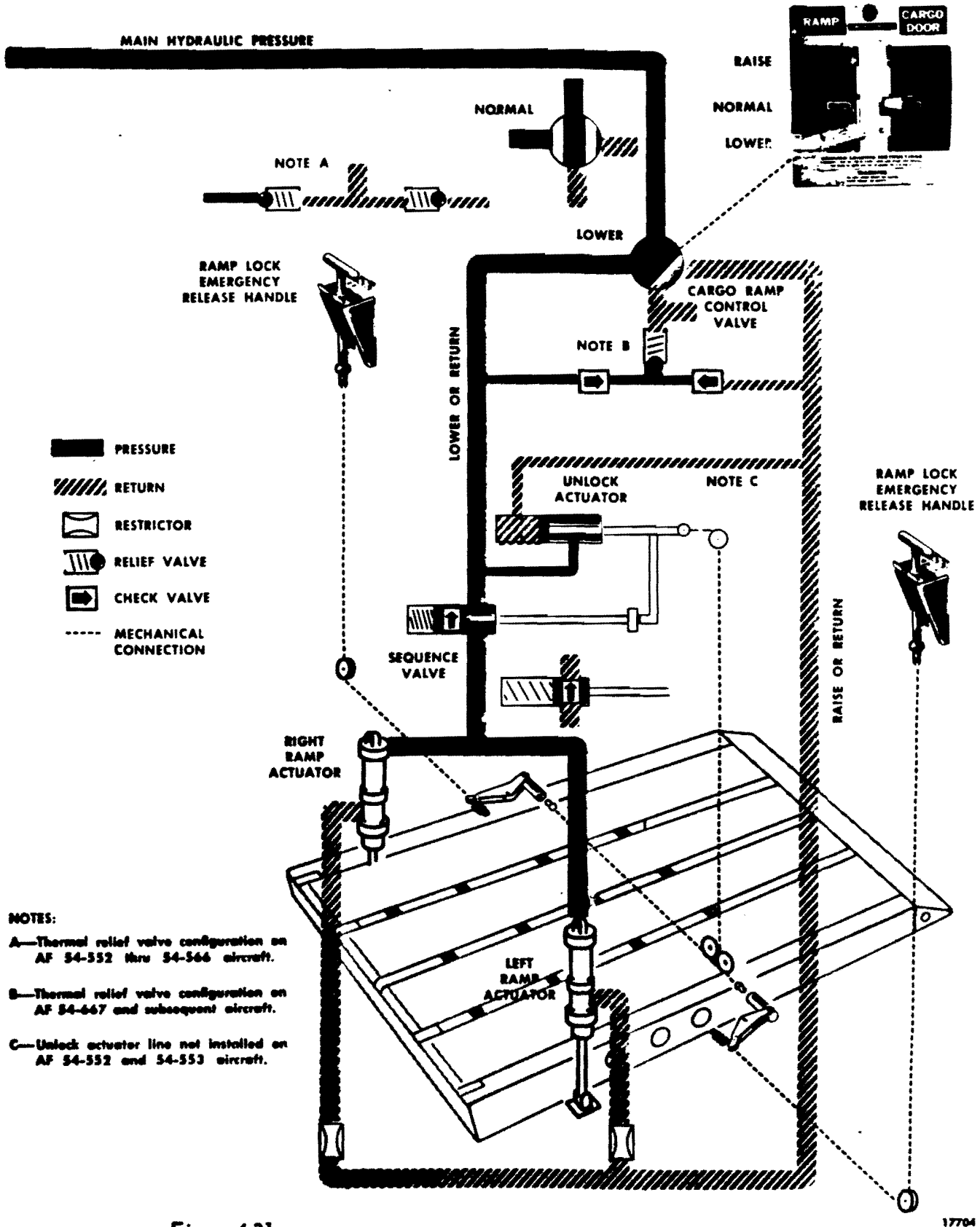


Figure 4-31

lever is moved to the OPEN position, the directional control valve, which is mechanically connected to the lever, is so positioned that hydraulic pressure is directed to the door pin unlock actuator and the rod end of the door actuator. In NORMAL (POSITION), the directional control valve closes off the open and close (pressure and return) lines, thus retaining the door at any desired stationary position from the fully open to fully closed positions. When the lever is placed in CLOSED, the directional control valve directs hydraulic fluid under pressure to the cylinder end of the door actuator, causing the piston to extend and the door to close. On some aircraft, the cargo door lever is spring-loaded to the NORMAL (POSITION) position and will return to this position when released. On other aircraft, the spring-loaded feature of the lever is removed and the lever must be returned manually to the NORMAL position.

Cargo Door Uplock Pins.

Chained to the bulkhead at the forward end of the cargo door are two cargo door uplock pins (figure 4-35). When the cargo door is raised, these pins are inserted at the up-stops to lock the cargo door in the full up position.

CAUTION

Both uplock pins must be inserted to preclude warping the cargo door.

Cargo Door Lock Emergency Release Handle.

The cargo door lock emergency release handle (figure 4-35) provides a means of mechanically unlocking the cargo door in the event of hydraulic system failure. The release handle, safetied in the NORMAL position by a pin, is mounted at the center of the forward edge of the door. When the handle is moved to the EMERGENCY RELEASE position, the cargo door locking pin cable is pulled and the locks are released, allowing the door to be raised manually.

CAUTION

Before unlocking the cargo door by means of the cargo door lock emergency release handle, the cargo door lever must be placed in the OPEN position to prevent damaging the locking pin actuator.

Cargo Door and Ramp Warning Lights.

A red 28-volt dc ramp and cargo door light (figure 1-58), mounted on the copilot's instrument panel, when illuminated, indicates that the cargo ramp or cargo door are not closed and locked. On some aircraft, an additional warning light serving the same purpose is installed on the cargo door and ramp control panel.

CARGO RAMP SYSTEM.

The cargo ramp is raised and lowered by two hydraulic actuators controlled by a directional control valve. Locking and unlocking of the ramp in the faired-in position is accomplished automatically with system actuation. Manual release provisions are installed for unlocking the ramp should the hydraulic lock malfunction. A warning light system is installed to indicate an unlocked condition of the ramp in the faired-in position. Flow control valves installed in the raise lines of the actuators restrict the rate of hydraulic fluid flow as the ramp is lowered, regulating the ramp lowering speed, regardless of the load. The lower and raise lines are connected to a common thermal relief valve which allows hydraulic fluid to return to the reservoir when system pressure becomes excessive as a result of thermal expansion. Separation of the lines is maintained by a check valve in each line. Refer to figure 4-31.

Cargo Ramp Hydraulic Lock Operation.

When the cargo ramp is lowered, hydraulic pressure is directed to the cargo ramp hydraulic pin unlock actuator. Initial movement of the actuator causes the lock drive assembly to pull the lock pin release cable which releases the lock pins. The lock drive assembly also functions to open a sequence valve which directs hydraulic pressure to both ramp actuators, causing the pistons to extend and lower the ramp. When the cargo ramp is raised, the spring-loaded lock pins engage fittings in the fuselage to lock the ramp in the faired-in or raised position. On AF 54-555 and subsequent aircraft, a hydraulic line is added. This line is teed into the actuator raise line and is routed to the locking side of the cargo ramp unlock actuator to insure proper locking of the ramp. If the lock pins do not become fully engaged in the fittings, the warning light switches will not be sufficiently depressed to open the warning light circuit.

Cargo Ramp Lever.

The cargo ramp system is controlled by the cargo ramp lever on the cargo door and ramp control panel (figure 4-29) located on the right side of the fuselage

aft of the troop door. The positions of the lever on some aircraft are RAISE, LOWER, and POSITION; on other aircraft, POSITION is changed to NORMAL. When the lever is moved to the LOWER position, the directional control valve which is mechanically connected to the lever, is so positioned that hydraulic pressure is directed to the ramp pin unlock actuator and the cylinder end of the ramp actuators. In NORMAL (POSITION), the directional control valve closes off the raise and lower (pressure and return) lines, thus retaining the ramp at any desired stationary position from the fully raised to fully lowered positions. When the lever is placed in RAISE, the directional control valve directs hydraulic fluid under pressure to the piston end of the ramp actuators, causing the pistons to retract and the ramp to rise. On aircraft AF 54-552 through 54-646, the cargo ramp lever is spring-loaded to the NORMAL (POSITION) position and will return to this position when released. On all other aircraft, the spring-loaded feature of the lever is removed and the lever must be returned manually to the NORMAL position.

Ramp Positioning Links.

Two pairs of detachable ramp positioning links (figure 4-32) are provided to support the ramp during air drops of heavy equipment and loading situations in which the ramp need be raised off the ground. Attaching points for the links (figure 4-35), are located at the aft end of the ramp on either side and on the fuselage frames supporting the rear cargo compartment bulkheads. When required to support the ramp, the links are pinned to these attaching points and are secured with cotter pins. As the ramp moves down, the links unfold with a scissors-like action until a stop on the upper member of each pair of links engages the lower member and holds the links in a slightly off-center position. When the ramp is retracted, the off-center position permits the links to fold forward until the ramp is closed. By moving the pivot pin connecting the upper and lower members, the length of the links may be adjusted so as to support the ramp in any of five different positions, 2.5° up, horizontal, 2.5° down, 5° down, and 10° down. These positions are designated by the letters A through E respectively engraved on the links, and are tabulated on placards attached to the rear cargo compartment bulkheads.

CAUTION

When changing the position of the pivot pin, make certain that similarly lettered holes in the upper and lower members are used. Otherwise, the links will not fold when an attempt is made to raise the ramp. Check that link settings on either side of the ramp are the same.

When not in use, the links may be stowed in brackets attached to the aft side of the rear cargo compartment bulkheads.

Cargo Ramp Lock Emergency Release Handles.

In the event that the cargo ramp lock pins are not released hydraulically, they may be released mechanically by pulling the T-shaped ramp lock emergency release handles (figure 4-35) from their brackets and repositioning the lower shoulder of the handles on the bracket. When the ramp has been free fallen, the handles should be returned to their original position.

Ramp And Cargo Door Warning Light.

A red 28-volt dc ramp and cargo door light (figure 1-58) mounted on the copilot's instrument panel, when illuminated, indicates that either the cargo ramp or cargo door or both are not closed and locked. On some aircraft, an additional warning light serving the same purpose is installed on the cargo door and ramp control panel.

NORMAL OPERATING PROCEDURE.

The procedure for normal operation of both the cargo door and ramp are outlined below. No order of sequence is necessary in opening or closing the ramp and door.

WARNING

Be sure area is clear before operation.

Whenever a cargo door is opened during flight, no crew member or passenger will go aft of fuselage station 365 without wearing a parachute or restraining harness. The aircraft commander will be notified prior to opening any door or the ramp whenever the engines are operating.

To Open The Cargo Door.

The following procedure should be employed in opening the cargo door.

CAUTION

Before opening the cargo door inflight, refer to CARGO DOOR AND RAMP LIMITATIONS and AIRSPEED LIMITATIONS, Section V.

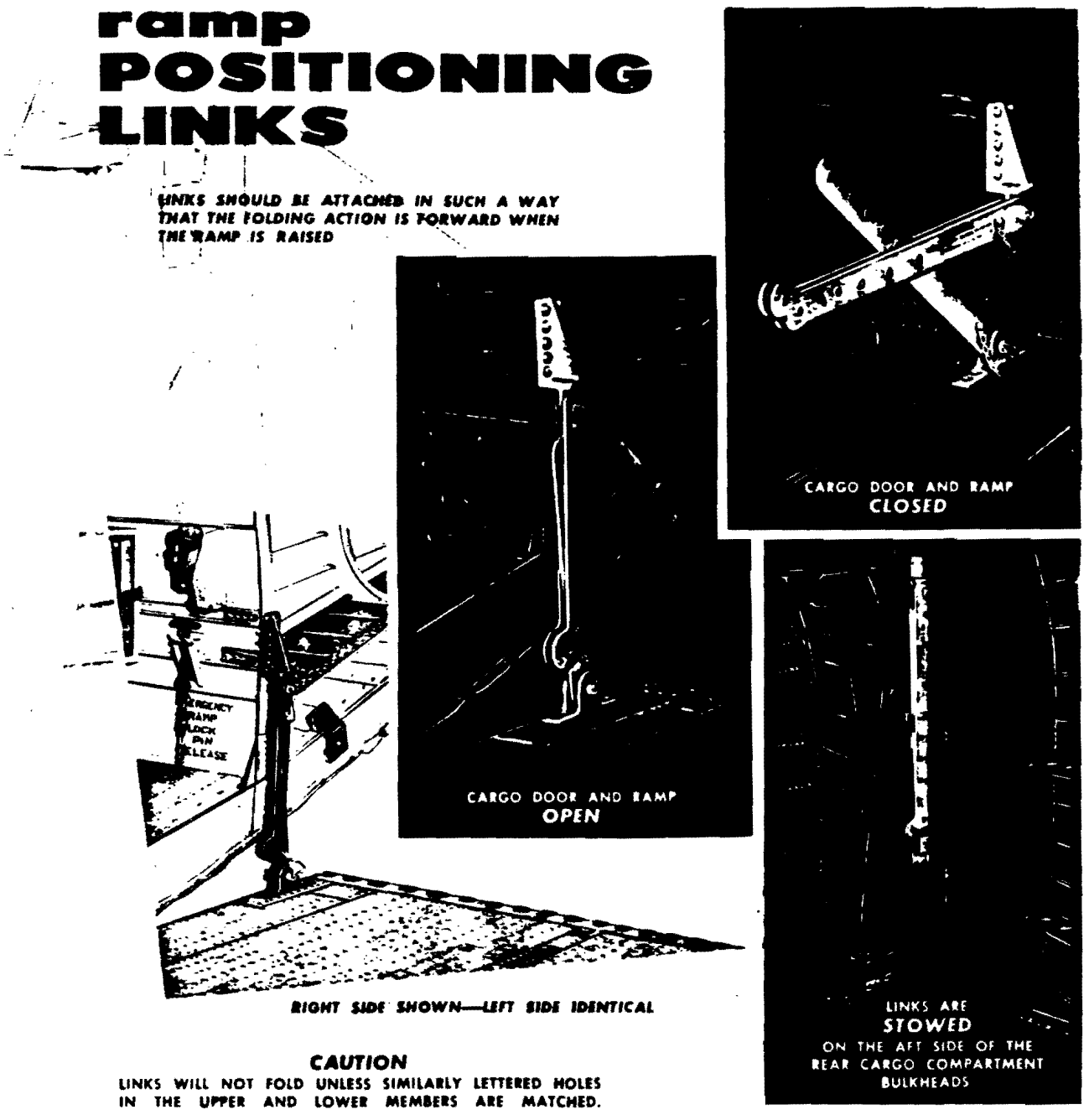


Figure 4-32

a. Place the cargo door lever in the OPEN position.

b. Insert the uplock pins, after the door is fully open.

c. Return cargo door lever to NORMAL (POSITION).

Note

To position the cargo door at any intermediate height, place the cargo door lever in either the OPEN or CLOSED position until the desired degree of opening is obtained. Then return the lever to NORMAL (POSITION).

To Close The Cargo Door.

The following procedure should be employed in closing the cargo door:

a. Remove the cargo door uplock pins.

b. Place the cargo door lever in the CLOSED position until the cargo door is fully down and the lock pins engaged.

c. Visually check that the lock pins are engaged. If the electrical system is energized and both locks are engaged, ramp and door warning lights will go out (assuming the cargo ramp is up and locked).

d. Return cargo door lever to NORMAL (POSITION).

Note

If the cargo door does not close in flight due to the slipstream pressure against it, lower the ramp to the horizontal position, close the cargo door, then raise the ramp to the CLOSE position.

To Lower The Cargo Ramp.

The following procedure should be employed in lowering the cargo ramp:

CAUTION

Before positioning the cargo ramp in flight, refer to AIRSPEED LIMITATIONS, Section V.

a. Place the cargo ramp lever in the LOWER position.

b. When the ramp has reached the down position, return ramp lever to NORMAL (POSITION).

Note

To position the cargo ramp at any intermediate height, place the cargo ramp lever to either the LOWER or RAISE position until the desired ramp level is obtained. Then return the ramp control to NORMAL (POSITION).

To Raise The Cargo Ramp.

The following procedure should be employed in raising the cargo ramp:

CAUTION

Check that auxiliary ground loading ramps have been removed before attempting to raise the cargo ramp. Failure to do so may result in structural damage.

a. Place the cargo ramp lever in the RAISE position until the cargo ramp is fully retracted and the lock pins engaged.

b. Visaully check that the lock pins are engaged. If the electrical system is energized and the cargo door is closed and locked, the ramp and door warning lights will go out when both ramp lock pins are engaged.

c. Return cargo ramp lever to NORMAL (POSITION).

To Attach Ramp Positioning Links.

When air drop of heavy equipment is anticipated, or when loading of heavy equipment requires that the ramp be raised off the ground, positioning links should be attached. Refer to CARGO DOOR AND RAMP LIMITATIONS, Section V.

a. Close the cargo ramp.

b. Remove the links from the stowage brackets on the aft side of the rear cargo compartment bulkheads.

c. Check that the pin connecting the upper and lower members of each pair of links is in the proper holes for the desired ramp position. Refer to placards on rear cargo compartment bulkheads.

CAUTION

Links will not fold unless similarly lettered holes in the upper and lower members are matched.

d. Pin the upper member (double piece) of each pair of links to the attachment points on the fuselage frames. Secure with cotter pins.

Note

Links should be attached in such a way that folding action is forward when the ramp is raised.

e. Pin the lower member (single piece) of each pair of links to the attachment points on the ramp. Secure with cotter pins.

f. Check that both pairs of links are adjusted for the same ramp position.

EMERGENCY OPERATION.

To Open The Cargo Door Manually.

If hydraulic system failure occurs, the cargo door may be opened manually by using the following procedure:

CAUTION

Before unlocking the cargo door by means of the cargo door lock emergency release handle, the cargo door lever must be held in the OPEN position to prevent damaging the locking pin actuator.

a. Release the door locking pins by use of the cargo door lock emergency release handle.
b. Lift the cargo door into the full up position and lock into position with the uplock pins.

Note

When the aircraft is operated in slow flight with the flaps down (45°) and the aft troop doors removed, it may be impossible to open the cargo door manually. Refer to CARGO DOOR AND RAMP LIMITIATIONS, Section V.

To Close The Cargo Door Manually.

The following procedure is recommended for closing the cargo door manually should a hydraulic system failure occur:

CAUTION

When the uplock locks are released, the cargo door, having been manually opened, may fall free and should be restrained.

a. Release the uplock pins and ease the cargo door into the down position.
b. Check that the down lock pins engage. Assuming that the ramp is up and locked, and the electrical system is energized, the ramp and door warning lights will go out when both lock pins are engaged.

To Lower The Cargo Ramp Manually.

WARNING

Make sure that personnel are clear of the ramp before ramp is allowed to fall free.

WARNING

Do not allow the ramp to fall free in flight. Insure ramp position links are installed in the pivot pins in the B or C position. When the ramp is lowered below 2-1/2° from the horizontal position, it adversely affects the flight characteristics of the aircraft.

If failure of the hydraulic system occurs, the cargo ramp may be manually lowered by using the following procedure:
a. Place the cargo ramp lever in LOWER to permit escape of static hydraulic pressure.
b. Release the locking pins by use of the cargo ramp emergency lock release handles.
c. Return the lock release handles to their normal position on the bracket.

To Raise The Cargo Ramp Manually.

If failure of the hydraulic system occurs, the cargo ramp may be manually raised to the faired-in position by employing the following procedure:
a. Place the cargo ramp lever in the RAISE position. This will position the control valve so that, in raising the ramp, resistance from trapped fluid will be eliminated.
b. Raise the cargo ramp to the normal faired-in position, making certain that the ramp locking pins are engaged. Because of the weight involved, several men will be required to raise the ramp to the locked position.
c. Visually check that the cargo ramp lock pins are engaged. If the electrical system is energized and the cargo door is closed and locked, the ramp and door warning lights will go out when both ramp locking pins are engaged.
d. Return the cargo ramp lever to NORMAL.

MISCELLANEOUS EQUIPMENT.

The following items of miscellaneous equipment are installed in the aircraft: navigator's seat (some aircraft), windshield wipers, cargo compartment doors, stowage provisions, clear view windows, spare lamps, blackout curtains, data case, map cases and flight report holders, engine and crew compartment covers, pitot tube covers, dust excluders, checklists, drinking water container, relief tubes, portable ladder, and ash trays.

NAVIGATOR'S SEAT (Some Aircraft).

WARNING

The navigator's seat is not stressed to sustain the loads imposed by rapid accelerations or decelerations with the seat occupied. The navigator, therefore, will occupy one of the troop seats during take-off and landing. During these operations, both the navigator's seat and worktable should be stowed.

The navigator's in-flight station is equipped with a swivel-type seat supported from the forward bulkhead by a tubular bracket. The bracket swings and locks at four locations to provide a seat position in the crew compartment doorway, a duty position at the navigator's worktable, and two stowed positions, one with the seat back erect and one with the seat back collapsed. The seat swivels completely around and may be faced in any direction unless obstructed by other equipment. Four locked swivel positions are available. A handle located under the left hand side of the seat permits unlocking of the seat or support bracket from any locked position. Pulling up on the handle part of the way unlocks the seat and allows it to swivel; further pulling up on the handle unlocks the support bracket. After the handle is released, the seat or support will automatically relock at the next lockable position that is reached. The seat back may be adjusted to either of two erect positions by inserting the pip pins in the seat back support as desired. When stowing the seat for litter installation, the pip pins may be removed and the seat back collapsed either forward or backward to the horizontal position.

CAUTION

To avoid damaging the seat, do not occupy nor impose loads upon the seat back while the back is in the unsupported, collapsed condition.

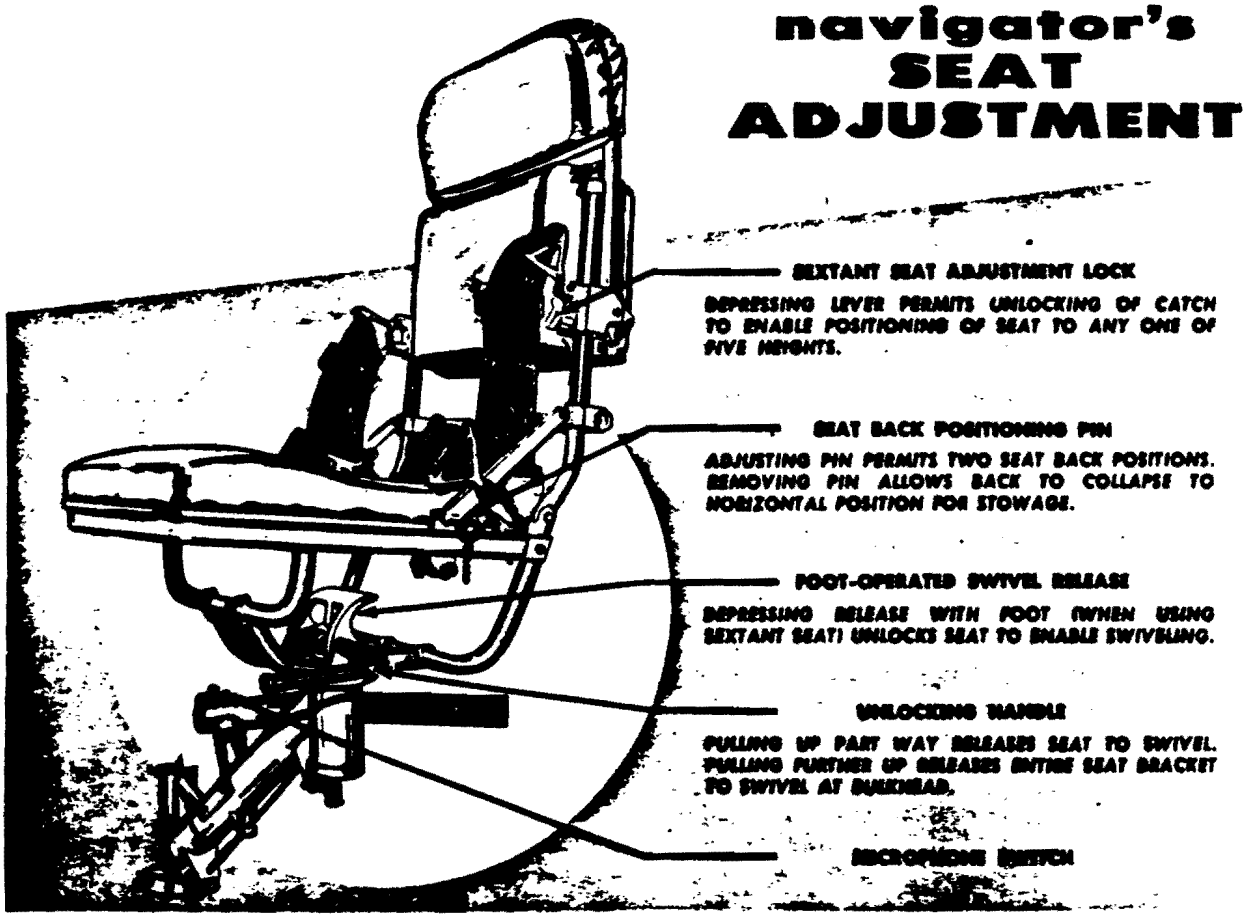


Figure 4-33

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When the periscopic sextant, mounted through the crew ditching hatch, is to be employed, the navigator may convert the back of the regular seat to a seat at a higher level by tipping the back of the regular seat forward into the horizontal position. The regular seat may then be tipped up by lifting the front edge, and the exposed frame used as a foot rest while using the sextant seat. The navigator's sextant seat may be locked at any one of five heights by the lever-operated, spring-loaded plunger locks which engage the holes in the back frame.

CAUTION

Ascertain that both locks are engaged before occupying the navigator's sextant seat, to avoid damaging the seat by imposing strain on one side only.

While using the sextant seat, the seat may be unlocked to swivel by depressing the foot-operated release which is exposed when the navigator's regular seat is raised. Safety belts are provided for both the regular and sextant seats. A handrail, two leather-loop assist straps overhead, and a footrest rail equipped with a microphone button are installed for the comfort and assistance of the navigator. Refer to figure 4-33.

WINDSHIELD WIPERS.

A 28-volt dc electrically-operated windshield wiper is installed on the windshield panel in front of each pilot. Both wipers are operated by an electric motor, with a separate flexible shaft extending to each wiper converter, which in turn, drives the blades.

CAUTION

To avoid scratching the windshield, the windshield wiper blades should not be operated when the windshield is dry.

Windshield Wiper Rheostat (Some Aircraft).

The windshield wiper rheostat with ON, OFF, and PARK positions is located on the engine start panel. To energize the windshield wipers, turn the control knob clockwise to the ON position which will start the wipers at high speed. Counterclockwise rotations of the rheostat will then reduce wiper speed until the OFF position is reached, at which time the wipers will stop. Further movement of the rheostat to the spring-loaded PARK position will then again energize the motor to return the blades to horizontal position.

Windshield Wiper Switch (Some Aircraft).

A windshield wiper switch (figure 1-7) controls the operation of the wipers. The switch is located on the engine start panel and is operated by a knob. Switch positions are LOW, MED, HIGH, OFF and PARK. To energize the wiper motor, turn the knob clockwise to any desired wiper speed; clockwise rotation will decrease the speed of the wipers. Counterclockwise rotation from any desired setting will increase wiper speed until the HIGH position of the switch is reached. To turn off the windshield wipers, turn the knob to the OFF position. Further movement of the knob to the spring-loaded PARK position will energize the motor to return the wiper blades to the horizontal position.

CARGO COMPARTMENT STOWAGE BOX (Some Aircraft).

A stowage box for stowing tie-down rings and devices, litter pole fittings, blackout curtains, pitot tube covers, and mooring pins is provided at the forward end of the left wheel well.

STOWAGE PROVISIONS (Some Aircraft).

Stowage facilities for the equipment formerly stowed in the stowage box are provided along the side walls of the cargo compartment forward of the wheel wells. Rails, placarded containers, and brackets retain the tie-down rings, plugs, and devices; litter pole floor fittings and spacer rails, blackout curtains, mooring fittings, and static links.

CARGO COMPARTMENT DOORS.

The cargo compartment is provided with three doors, one at the forward end on the left side, and one on each side, aft of the main wheel wells. The two aft doors open inward; the front entrance door opens outward. Each door is equipped with an emergency quick-release handle. Refer to QUICK-RELEASE HANDLES, Section I.

CAUTION

The front entrance door must not be opened or jettisoned in flight. Because of its position forward of the propeller it is not a safe exit or jettison hatch. If the door itself is jettisoned, damage to the left propeller may result.

The aft troop doors may be opened in flight by means of a handle on the inner face of each door. The doors may be secured in the open position by a hook and eye arrangement.

CLEAR VIEW WINDOWS.

A clear view window is located at each side of the windshield. The two fixed positions of the windows are fully open and fully closed. Each window is secured in the closed position by two manually-operated latches and a locking pin; the locking pin, alone holds the window in the open position. The window is opened by disengaging the latches, pulling down on the locking pin handle, and moving the window aft until the locking pin engages in a slot in the slide assembly. Closing the window is accomplished by pulling down on the locking pin handle and moving the window to the closed and locked position. In the event of windshield wiper malfunction, the clear view windows may be opened to obtain an unobstructed view.

Note

Whenever the control columns and wheels are near the neutral position, the clear view windows cannot be fully opened and locked because the windows contact the wheels. The control wheels can be moved slightly to provide the clearance necessary to open the windows. In the full open and closed positions of the windows, there is adequate clearance.

SPARE LAMPS BOX.

Spare bulbs are stored in the spare lamps box (figure 1-40) on the bulkhead behind the copilot's seat. The spare bulbs included may be used in replacing faulty bulbs in the edge lights, red and clear dome lights, jump lights, instrument panel floor lights, formation lights and warning lights.

BLACKOUT CURTAINS.

Cargo compartment transparent areas are provided with snap-on blackout curtains. These curtains are stored in the stowage box when not in use. Crew compartment overhead windows and the crew compartment entrance door are covered by sliding-type curtains.

CARGO COMPARTMENT DATA CASE.

On some aircraft a data case is installed in the cargo compartment on the forward face of the right aft bulkhead at the cargo door. On other aircraft a data case (figure 4-35) is installed just forward of the aft bulkhead on the right side of the cargo compartment.

MAP CASES AND FLIGHT REPORT HOLDERS.

Two combination map case and flight report holders are located in the crew compartment. One (figure 1-39) is attached to the console at the left of the pilot's seat, and the other (figure 1-40) is on the radio rack behind the copilot's seat.

ENGINE AND CREW COMPARTMENT COVERS.

Engine and crew compartment covers are provided with the aircraft. Incorporated in the engine covers are pockets to protect the engine exhaust ports and sleeves for attaching ducts for engine preheating. When not in use, these covers are lashed down to the inner side of the cargo door.

PITOT TUBE COVERS.

Pitot tube covers are provided to exclude dust, water and other foreign matter from the pitot system during the time the aircraft is parked on the ground. While in flight, the covers may be stowed in the cargo compartment.

DRINKING WATER EQUIPMENT.

A drinking water container (figure 1-39) and a drinking cup dispenser (figure 1-39) are located on the left side of the crew compartment behind the pilot's seat.

RELIEF TUBES (Some Aircraft).

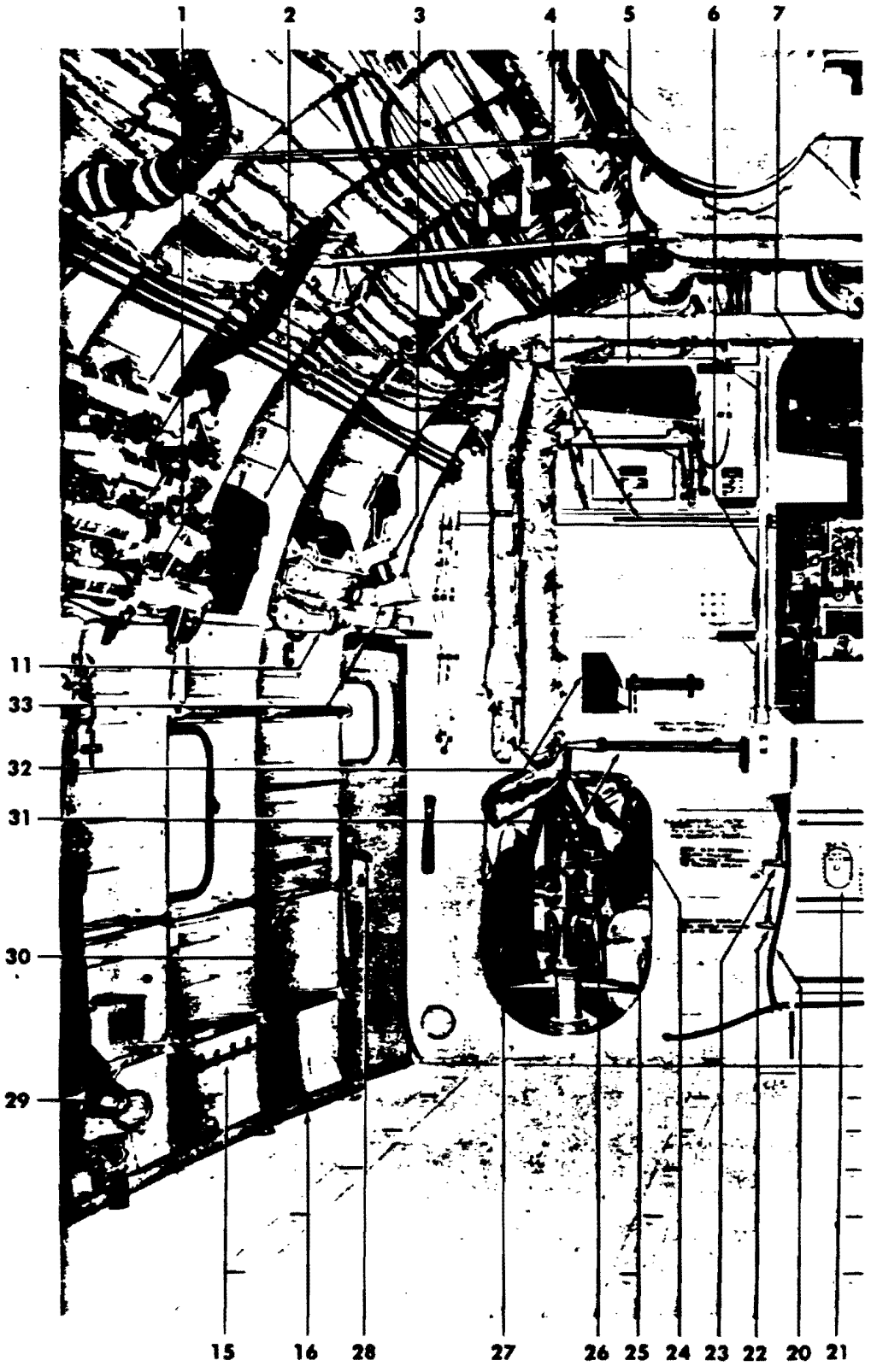
Three relief tubes are installed in the cargo compartment, one tube is located just forward of the bulkhead aft of the left paratroop door, one tube located on the right wheel well aft bulkhead, and one tube on the aft face of the forward cargo compartment forward bulkhead. A fourth tube located aft of the pilot's station and uses the same venturi as the forward cargo compartment relief tube.

RELIEF TUBES (Some Aircraft).

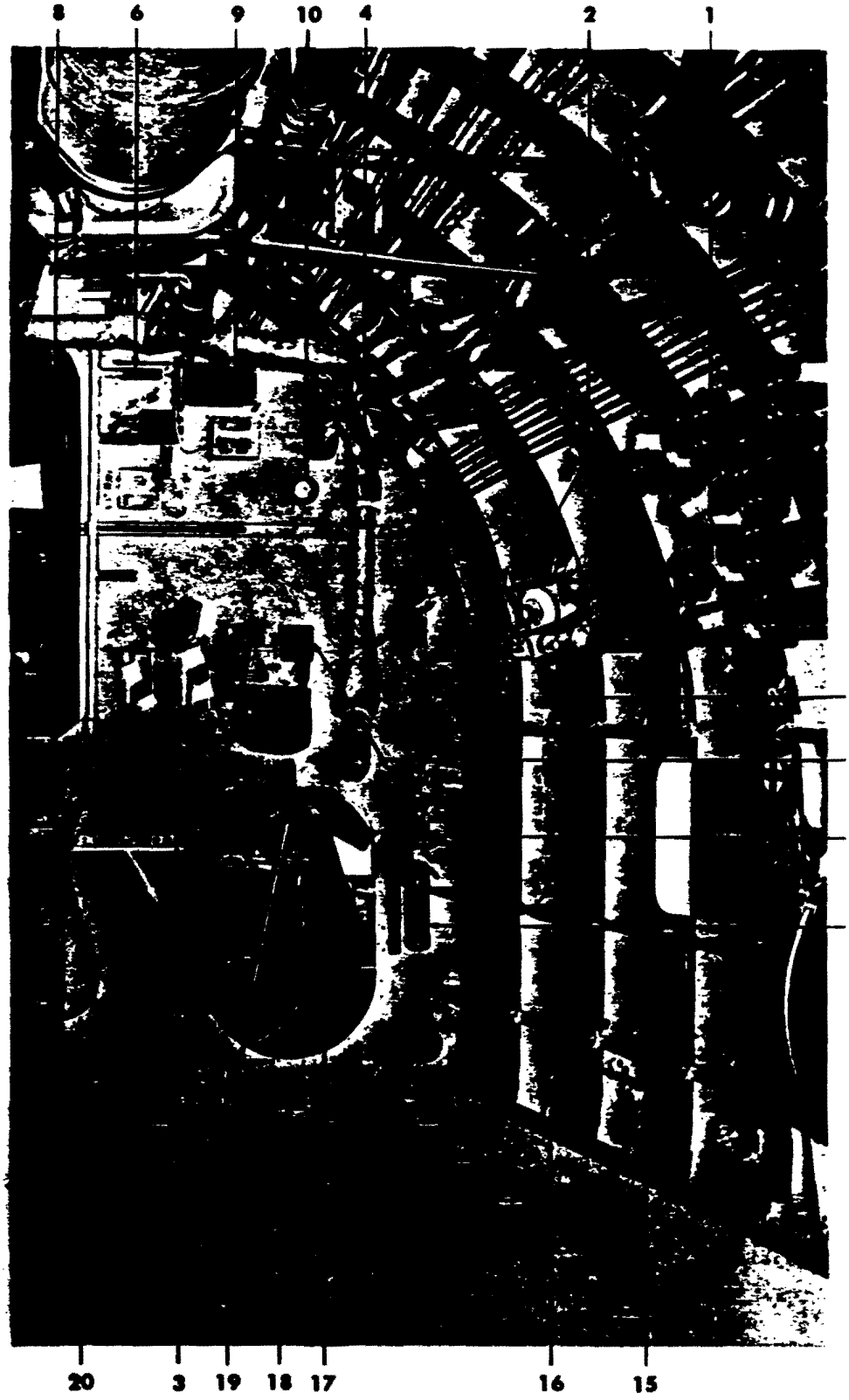
Two relief tubes are installed on the aircraft. Both are located on the cargo compartment forward bulkhead (figure 4-34), one on either side of the crew compartment entrance door.

CARGO COMPARTMENT...forward

(TYPICAL)



1. LITTER POLES
2. PARATROOP ANCHOR CABLE STOWAGE BAGS
3. FLASHLIGHT HOLDERS
4. PARATROOP ANCHOR CABLE ATTACHMENT FITTING
5. RADIO COMPASS UNIT
6. CREW DITCHING HATCH ESCAPE LADDER
7. CREW COMPARTMENT ENTRANCE WAY
8. CREW COMPARTMENT ENTRANCE CURTAIN
9. IGNITION ANALYZER LEAD STORAGE LOCKER
10. ALARM BELL
11. STATIC LINE RETRIEVER
12. INTERPHONE CONTROL BOX
13. RADIO COMPARTMENT LIGHT SWITCHES
14. FIRE EXTINGUISHER
15. CARGO TIE-DOWN RINGS STOWAGE
16. HEAT DISTRIBUTION DUCT
17. BRAKE SYSTEM ACCUMULATOR AND PRESSURE GAGE



18. BAIL-OUT CHUTE
19. RADIO COMPARTMENT
20. RELIEF TUBES
21. NOSE GEAR GROUND LOCK PIN ACCESS
22. NOSE GEAR EMERGENCY DOWN LOCK HANDLE
23. NOSE GEAR EMERGENCY UPLOCK RELEASE
24. OXYGEN COMPARTMENT
25. OXYGEN BOTTLES
26. DRIFTMETER
27. AIR BRAKE BOTTLE AND PRESSURE GAGE
28. FRONT ENTRANCE DOOR HANDLE
29. CARGO TIE-DOWN SOCKET PLUGS STOWAGE
30. CARGO TIE-DOWN CHAIN STOWAGE
31. EMERGENCY LANDING GEAR CRANK
32. EMERGENCY HAND AXE
33. FRONT ENTRANCE DOOR QUICK RELEASE HANDLE

Figure 4-34

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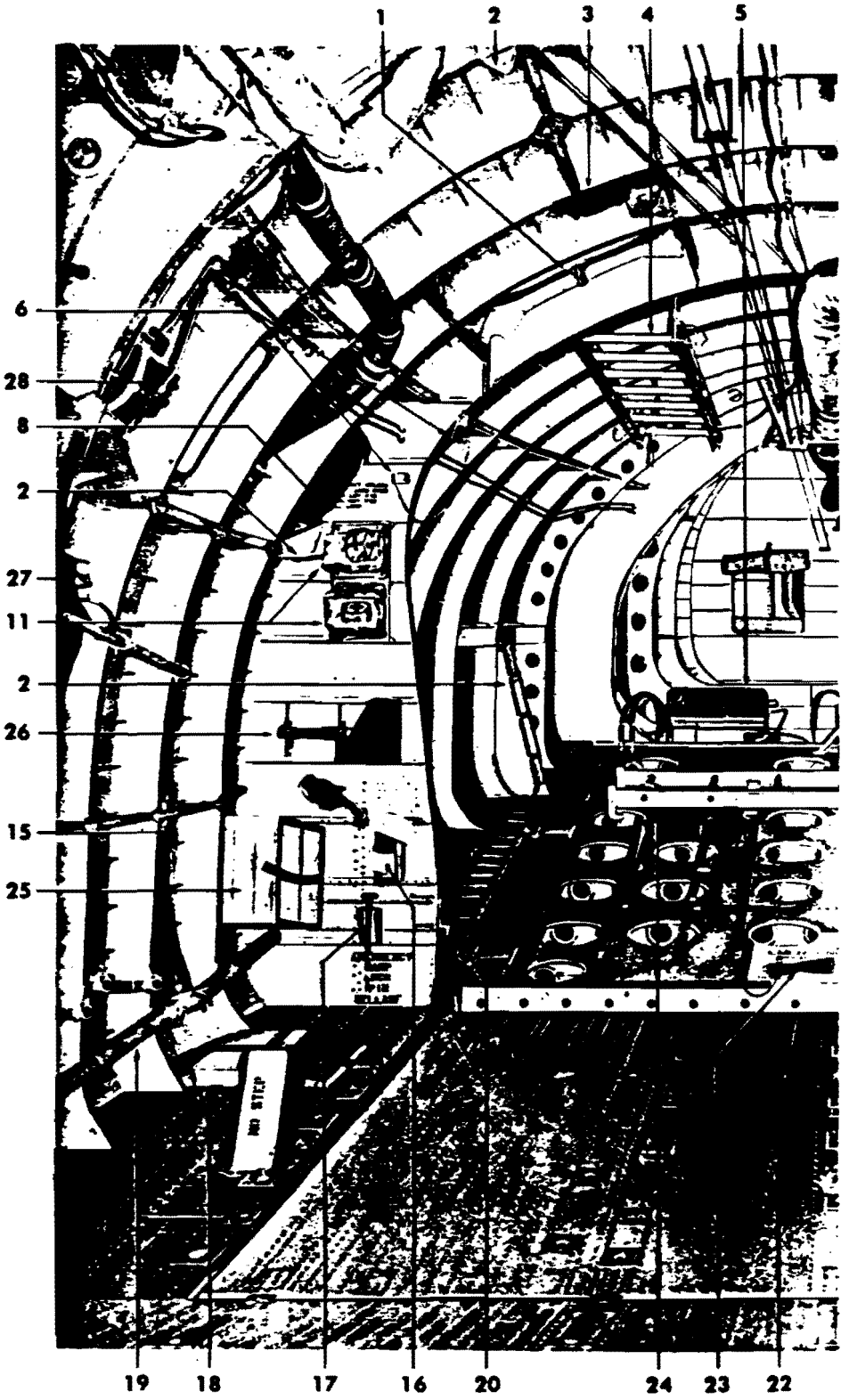
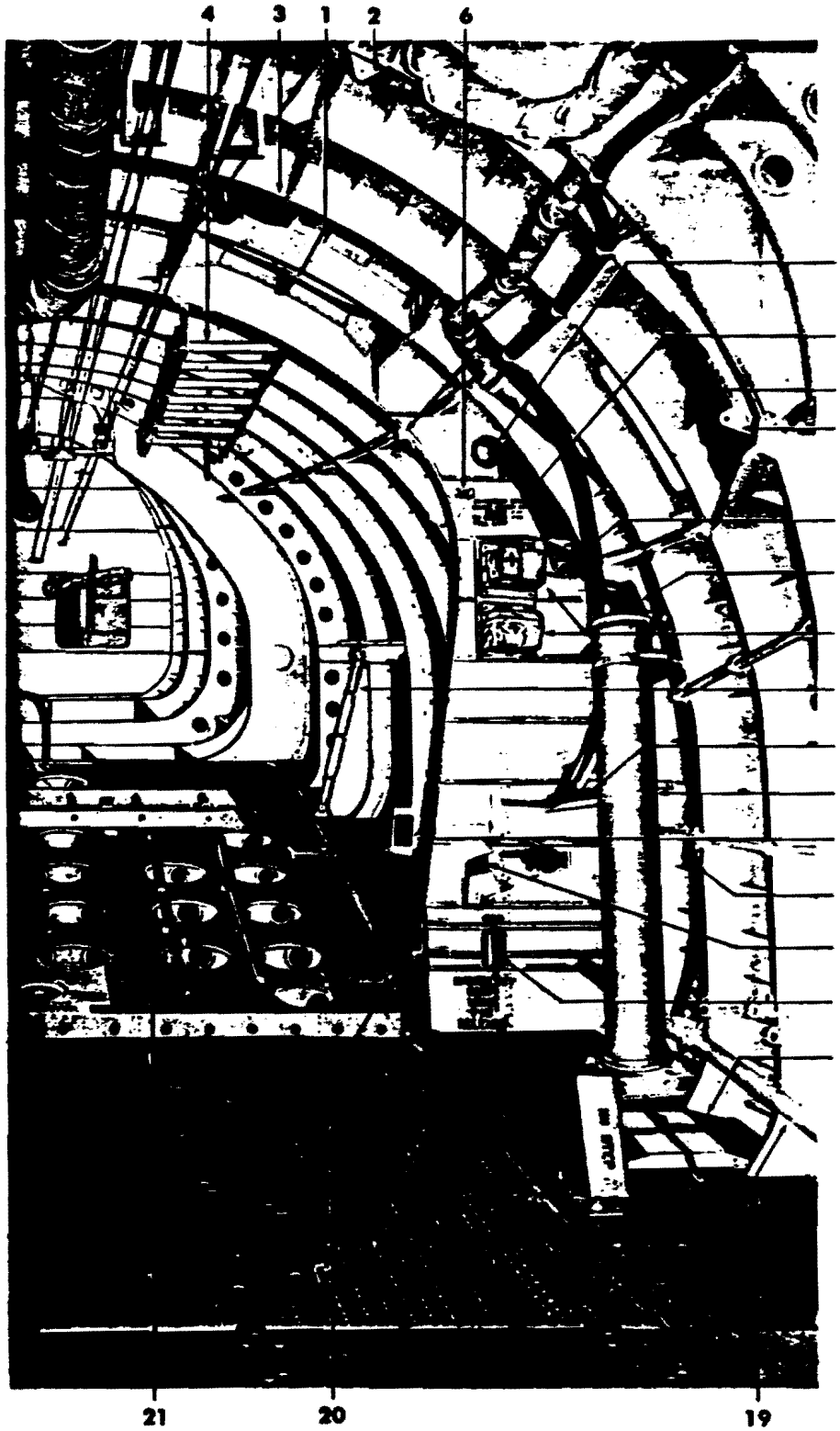
CARGO COMPARTMENT . . . aft

(TYPICAL)



1. DITCHING HATCH HANDLE
2. PARATROOP ANCHOR CABLE ATTACHMENT FITTINGS
3. LITTER STRAP STOWAGE
4. DITCHING HATCH ESCAPE LADDERS
5. UHF COMMAND SET
6. CARGO DOOR UPLOCKS AND PINS
7. ALARM BELL
8. TENSIONING CABLE STOWAGE
9. SPREADER CABLE STOWAGE
10. AILERON DEICING COMPRESSOR
11. FIRST AID KITS
12. AN/CRT-3 EMERGENCY RADIO STOWAGE
13. AILERON DEICING ACCUMULATOR
14. TROOP JUMP SIGNAL LIGHTS
15. CABIN HEAT VALVES
16. FLASHLIGHT HOLDERS



17. EMERGENCY RAMP LOCK RELEASE HANDLES
18. AUXILIARY GROUND LOADING RAMPS
19. HEAT DISTRIBUTION DUCT
20. RAMP POSITIONING LINK ATTACHMENT FITTINGS
21. CARGO DOOR
22. CARGO RAMP
23. CARGO DOOR EMERGENCY RELEASE HANDLE
24. PORTABLE LADDER
25. DATA CASE
26. EMERGENCY HAND AXE
27. INTERPHONE CORD STOWAGE
28. RAMP AND CARGO DOOR CONTROL PANEL

Figure 4-35

17689

PORTABLE LADDER.

A two-piece, portable ladder (figure 4-35) is installed on the cargo door. In its stowed position the ladder is folded, and is secured to the door by straps. When the ladder is used as a continuous piece, two quick-release pins are inserted in the holes adjacent to the pins at the hinge point. The upper half of the ladder incorporates an extension which is held in place in either a stowed or an extended position by quick-release pins. The ladder is designed so that either of the aft ditching hatch ladders may be incorporated as an extension.

DUST EXCLUDERS.

Dust excluders are provided for the carburetor air intakes, exhaust stacks, heater air scoop, the heater exhaust outlets, and jet air inlets and tailpipe covers.

ASH RECEIVERS.

A hemispherical ash receiver is located on each side of the pedestal for the use of the pilot and copilot. Each ash receiver is attached to its bracket by a snap ring and can be removed for cleaning by a rotating motion.

MEDICAL POWER RECEPTACLES.

Four medical power receptacles, installed on each side of the cargo compartment above the windows just forward of the wheel wells, supply electrical power for medical equipment during the evacuation of wounded personnel. The outlets provide 28-volt dc power from the primary bus.

SPRAY SYSTEM (A/A45Y-1). (A)

To provide the desired liquid spraying capability, a 1000-gallon supply tank is held in place by standard tie-down devices in the center section of the cargo compartment at approximately the aircraft center-of-gravity. A pumping engine mounted on the aft end of the tank support structure is used to pump the liquid chemicals through discharge lines routed to externally mounted spray booms which are located under each aircraft wing and under the aft section of the fuselage. Fluid release is controlled by an electrically operated spray valve. With the valve open, fluid is released from the spray booms through a series of nozzles spaced along the booms. A recirculation line is provided so that whenever the spray valve is closed during spraying runs, the liquid will recirculate back through the tank. When the tank is empty, a float valve in the tank automatically electrically closes the spray valve and at the same time grounds out the magneto, stopping the spray engine. Electrical power for system operation is obtained from the static line retriever outlet located at approximately station 132 on the right side of the aircraft. Operating power is 28-volts dc. Controls for system operating and pumping engine operation are contained on a control console located just aft of the pumping engine. A seat is also mounted at the control panel for the convenience of the operator. Refer to figure 4-36 for a simplified schematic of system operation.

LIQUID SPRAY TANK. (A)

A 1000-gallon spray supply tank is secured in place in the cargo compartment area just forward of the wheel wells. Filling may be accomplished either by gravity flow through a filler point on the top aft end of the tank or, when using engine pumping pressure, through a refill valve in the pump recirculating line. See figure 4-37. A manually controlled drain valve is provided at the left side of the tank near floor level. Fluid quantity and temperature indication is afforded by two gages on the left side of the tank. A series of internal baffle plates prevent sloshing of fluid within the tank. Tank venting is through a line from the top forward end of the tank. Also contained within the tank is a float valve which, when actuated by the tank-empty condition, closes the spray valve and shuts down the engine.

PUMPING UNIT AND ENGINE. (A)

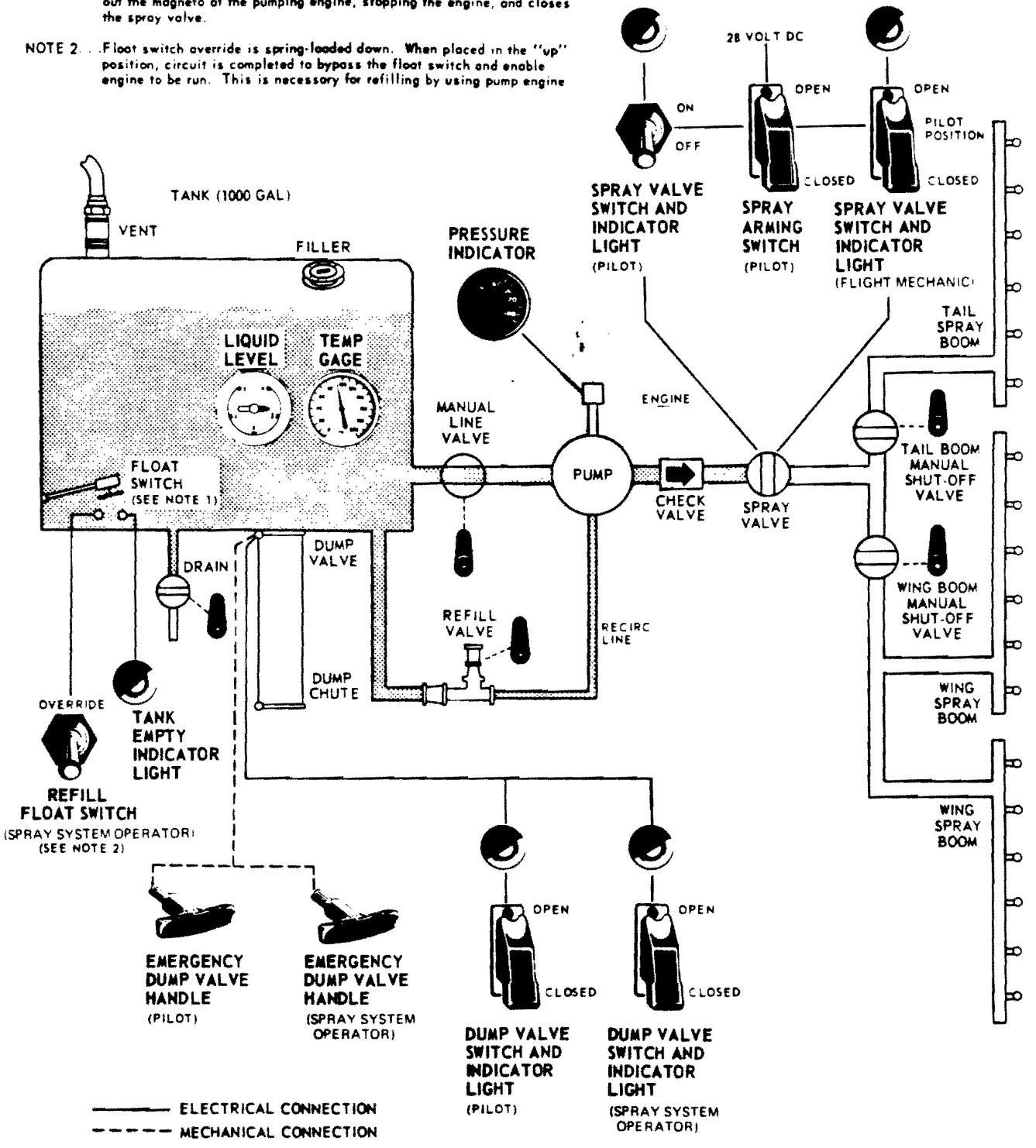
A liquid chemical pumping unit and pumping engine, together with associated plumbing, are shock mounted on the aft end of the tank support structure. This engine-pump combination controls flow of fluid chemical from the tank to the external spray booms. In addition, the engine-pump combination may be used to pressure refill the chemical storage tank. The pump (figure 4-38) is a single-stage, closed impeller, self-priming centrifugal type and is capable of delivering 100 to 400 gallons per minute. It consists essentially of an impeller and pump body and is driven by the engine through direct drive. Therefore the speed of the engine is actually controlling the pumping pressure. The pumping engine used is a four-cylinder, horizontally opposed, air-cooled, overhead valve, 84-cubic inch displacement engine. It will develop 20 continuous horsepower at 3600 rpm. Fuel for operation of the engine is supplied from a five-gallon removable container. Engine starting and control is afforded by controls and indicators on the console panel (see figure 4-39). The engine is exhausted through an exhaust line routed out the right side of the fuselage at station 295.

ENGINE CONTROLS. (A)

Complete engine control is provided by controls and indicators located on a console mounted just aft of the pumping engine. Refer to figure 4-39. Engine controls and indicators are as follows:

NOTE 1. . .When tank is empty, float switch illuminates tank empty light, grounds out the magneto of the pumping engine, stopping the engine, and closes the spray valve.

NOTE 2. . .Float switch override is spring-loaded down. When placed in the "up" position, circuit is completed to bypass the float switch and enable engine to be run. This is necessary for refilling by using pump engine



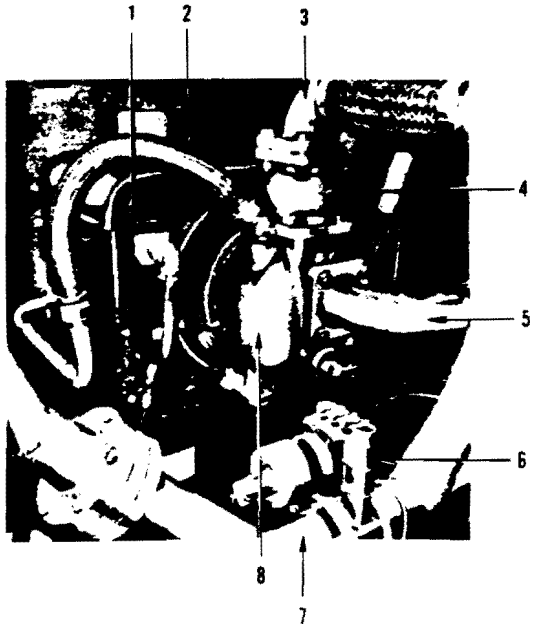
A/A45Y-1 SPRAY SYSTEM (A)

Figure 4-36

A/A45Y-1 SPRAY TANK INSTALLATION (A)

1. SPRAY TANK
2. SPRAY TANK VENT
3. SPRAY ENGINE EXHAUST
4. SPRAY CONSOLE
5. SPRAY PUMP OUTLET LINE
6. SPRAY LINES LEADING TO WING BOOMS
7. SPRAY LINE LEADING TO TAIL BOOM
8. SPRAY OPERATOR PROTECTIVE SHIELD
9. SPRAY PUMP ENGINE
10. AUXILIARY FUEL TRANSFER EQUIPMENT (INSTALLED FOR FERRY PURPOSES ONLY)
11. REFILL VALVE

Figure 4-37



1 SPRAY ENGINE
2 RECIRCULATION LINE
3 OUTLET LINE (FROM SUPPLY TANK)
4 CHECK VALVE
5 INLET LINE (FROM SUPPLY TANK)
6 SPRAY VALVE
7 PRESSURE LINE (TO SPRAY BOOMS)
8 SPRAY PUMP

SPRAY PUMP (A/A45Y-1) A

Figure 4-38

Magneto Switch. A

A magneto switch (figure 4-39) when in the down position, grounds the magneto, preventing engine operation. In the up position the ground is removed from the magneto, permitting the engine to run (if the tank is not empty).

Note

The tank float switch will also ground the magneto when the tank is empty and prevent engine operation.

Choke Switch. A

A spring-loaded, push-button switch, (figure 4-39) controls operation of the pumping engine choke. When the switch is depressed, electrical power is applied to the choke solenoid, which in turn actuates the engine choke. Power is supplied through the STARTER AND CHOKE circuit breaker.

Starter Switch. A

A guarded, spring-loaded, push-button switch (figure 4-39) controls power to the engine starter. When the switch is depressed, power is applied to the starter solenoid which completes the power circuit to the engine starter. Power to the switch is through the STARTER AND CHOKE circuit breaker.

Throttle Switch. A

A three-position throttle toggle switch (figure 4-39) spring-loaded to neutral, is used to electrically control the speed of the pumping engine. When the switch is held in DECREASE or INCREASE, engine speed will be varied accordingly. Engine speed may be set at any level between maximum and idle by merely releasing the switch to the neutral position. Electrical power is through the THROTTLES circuit breaker.

Note

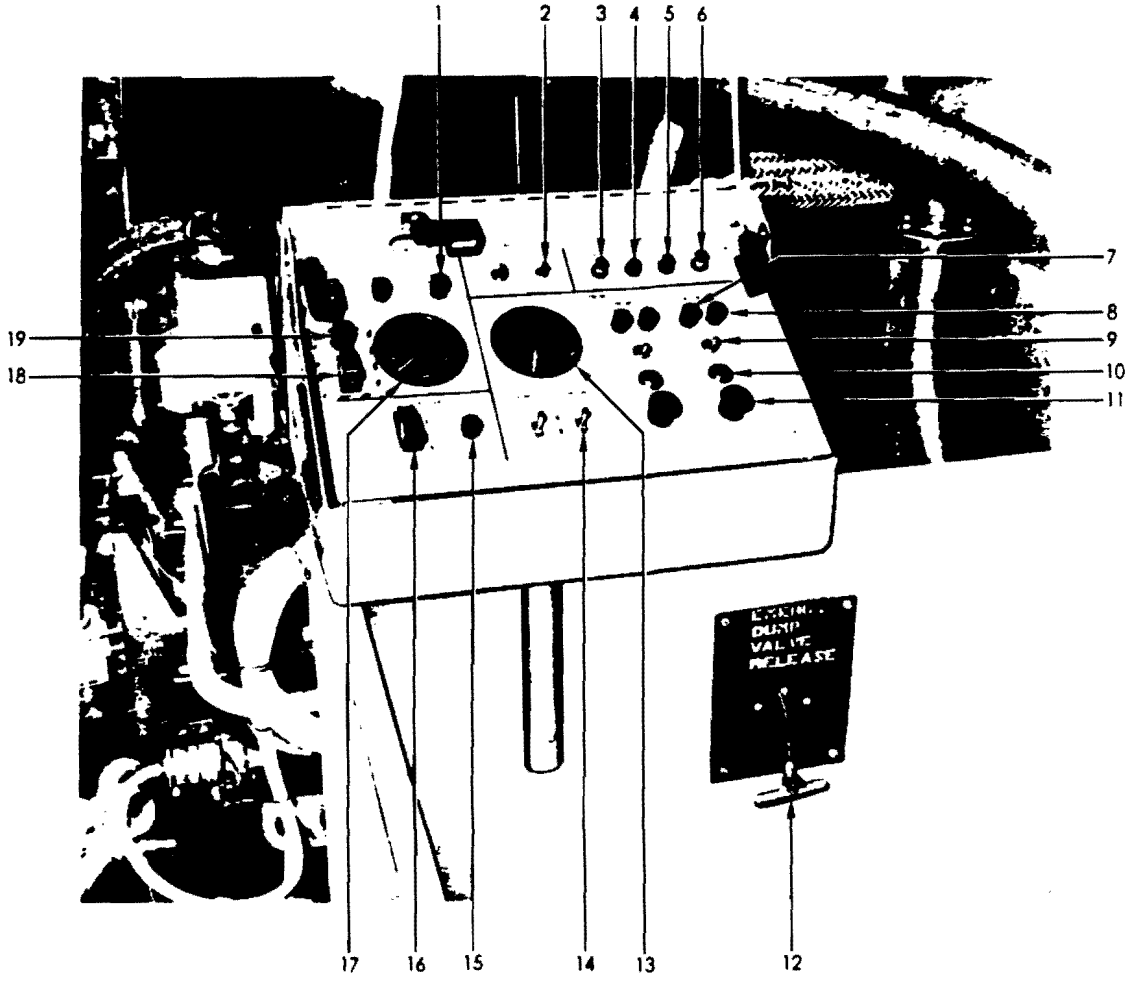
A governor on the engine regulates the engine maximum rpm.

Tachometer. A

An engine tachometer (figure 4-39) indicates the engine speed in hundreds of rpm.

Oil Pressure Indicator Lights. A

A red OIL PRESSURE LOW indicator light (figure 4-39) illuminates when engine oil pressure is low and remains on until oil pressure is again normal. A green OIL PRESSURE OPERATE indicator light (figure 4-39) will remain illuminated whenever engine oil pressure is normal. Power is supplied to the lights through the INDICATORS circuit breaker.



1. TANK EMPTY INDICATOR LIGHT
2. FLOAT SWITCH OVERRIDE SWITCH
3. STARTER AND CHOKE CIRCUIT BREAKER
4. THROTTLE CIRCUIT BREAKER
5. INDICATORS CIRCUIT BREAKER
6. SPRAY VALVE CIRCUIT BREAKER
7. OIL PRESSURE LOW LIGHT
8. OIL PRESSURE OPERATE LIGHT
9. MAGNETO SWITCH
10. CHOKE SWITCH
11. START SWITCH
12. EMERGENCY DUMP HANDLE
13. TACHOMETER
14. THROTTLE SWITCH
15. SPRAY VALVE OPEN LIGHT
16. SPRAY VALVE SWITCH
17. PRESSURE INDICATOR
18. EMERGENCY DUMP SWITCH
19. EMERGENCY DUMP INDICATOR LIGHT

NOTE

ITEMS NOT CALLED OUT ARE NOT USED WITH THIS INSTALLATION.

CONSOLE CONTROL PANEL (A/A45Y-1) (A)

Figure 4-39

TO START THE PUMPING ENGINE. (A)

Note

Prior to starting, the flight engineer should ascertain that the spray pumping engine has been properly serviced. **(Refer to figure 1-7)**

To start the engine, proceed as follows:

a. Refill valve - Closed.

b. Manual line valve - Open.

c. Aircraft electrical power (or external) - Applied.

d. Console spray valve switch - Closed (guard down).

e. All spray system circuit breakers - In.

f. Magneto switch - Up.

g. Throttle switch - DECREASE for 15 seconds.

h. Throttle switch - INCREASE for 2 seconds.

i. Choke switch - Pressed.

Note

The choke switch should be used as needed to obtain smooth running.

j. Start switch - Pressed, until engine starts.

Note

Immediately after starting, the oil pressure OPERATE (green) light should illuminate. Should the green light fail to illuminate or fail to remain illuminated, the engine should be shut down and the cause investigated.

TO STOP THE PUMPING ENGINE. (A)

To complete engine shutdown after automatic shutdown, proceed as follows:

Note

Whenever the spray tank is pumped dry the engine will automatically shut down and the spray valve will automatically close.

a. Spray valve switch - CLOSED, guard down.

b. Magneto switch - Down.

c. Throttle switch - DECREASE for 15 seconds.

To shut down engine (without automatic shutdown).

a. Console spray valve switch - CLOSED, guard down.

b. Throttle switch - DECREASE for 15 seconds. Let engine idle for two to three minutes.

c. Magneto switch - Down.

LIQUID SYSTEM CONTROLS - SPRAY CONSOLE. (A)

Controls for the liquid spray system operation, located on and adjacent to the spray console panel, include the following: spray valve switch, spray valve indicator light, dump valve switch, dump valve indicator light, fluid pressure indicator, float switch override switch, tank empty indicator light, and emergency dump handle. All of these controls are operated by the flight mechanic.

Spray Valve Switch. (A)

A spray valve switch (figure 4-39, with three positions placarded OPEN, PILOT POSITION, and CLOSED, controls operation of the spray valve from the spray console panel. When placed in the OPEN position, the spray valve is opened and pressurized liquid is released to the spray booms. When placed in the CLOSED position, the spray valve is closed and pressurized liquid returns to the supply tank through the recirculation line. The PILOT POSITION on the switch energizes the pilot's spray arming switch and thus enables the pilot to control the spray valve operation. Electrical power is supplied through the SPRAY VALVE circuit breaker.

Spray Valve Indicator Light. (A)

A spray valve green indicator light (figure 4-39) illuminates whenever the spray valve is open. Electrical power for operation of the light is from the 28-volt dc primary bus through the AERIAL SPRAY circuit breaker located on the pilot's overhead circuit breaker panel.

Dump Valve Switch. (A)
(Console Control Panel)

A guarded, two-position switch (figure 4-39) placarded DUMP VALVE, is installed on the spray console panel. When the switch is in the CLOSED position, the dump valve is shut, preventing release of fluid. When placed in OPEN, the dump valve is electrically opened, releasing the contents of the tank. Electrical power for dump valve operation is supplied from the primary bus through the AERIAL SPRAY circuit breaker located on the pilot's overhead circuit breaker panel.

Dump Valve Indicator Light. (Console Control Panel) A

A dump valve red indicator light (figure 4-39) illuminates when the dump valve is open. Electrical power for operation of the light is through the AERIAL SPRAY circuit breaker.

System Pressure Indicator. A

A fluid pressure indicator (figure 4-39) is mounted just above the spray valve switch on the console control panel. It operates in response to a signal from the fluid pressure transducer located in the discharge line just above the spray valve. Electrical power to the instrument is through the INDICATORS circuit breaker.

Float Switch Override Switch. A

A float switch override switch (figure 4-39) is provided to enable the pumping engine to be started when the tank is empty. (This is necessary when using the spray engine pump to refill the tank. Refer to SELF FILLING procedure, this section.) When the switch, which is spring-loaded to the down position, is placed to up, the pumping engine may be started. A holding coil holds the float switch override in the up position until the float switch is actuated. Power is supplied to the override switch through the INDICATORS circuit breaker.

Tank Empty Indicator Light. A

A tank empty red indicator light (figure 4-39) mounted just above the fluid pressure indicator, illuminates whenever the tank float switch is actuated by low agent level. Power to the light is through the INDICATORS circuit breaker.

Emergency Dump Handle. A

A T-type emergency dump handle (figure 4-39) cable connected to the dump valve is installed on the forward wall of the flight engineer's protective shield. The handle is placarded EMER. DUMP VALVE RELEASE. When the handle is pulled, the tank dump valve is mechanically opened and the entire contents of the tank are dumped. The action is non-reversible; once the handle is pulled, the entire load will be dumped.

LIQUID SYSTEM CONTROLS-CREW COMPARTMENT. A B

The following controls, located in the crew compartment, are operated by the pilot: spray arming switch, spray valve switch, spray switch indicator light, dump valve switch, dump valve indicator light, and emergency dump handle.

Spray Arming Switch. A B

A two-position, guarded switch (figure 4-5) located on the pilot's instrument panel, arms the pilot's spray valve switch. The spray arming switch is placarded SPRAY VALVE with two positions, OPEN and CLOSED. In the OPEN position, the pilot's spray valve switch is armed and the pilot controls the operation of the spray valve providing the console spray valve switch is placed in the PILOT POSITION. When the spray arming switch is placed in the CLOSED position, the pilot's spray valve switch is deenergized and the pilot cannot control the spray valve operation. Electrical power for this switch is supplied through the SPRAY VALVE circuit breaker.

Spray Valve Switch. A B

The spray valve ON-OFF switch (figure 4-40) mounted on the pilot's control wheel, operates the system spray valve when the spray arming switch is OPEN and the console spray valve switch is placed in the PILOT POSITION. When the spray valve switch is placed in the ON position, the spray valve opens and pressurized liquid is released to the spray booms. Tne spray valve is closed when the spray valve switch is placed in the OFF position and pressurized liquid is returned to the supply tank through the recirculation line. Electrical power is supplied through the SPRAY VALVE circuit breaker.

Spray Valve Indicator Light. A

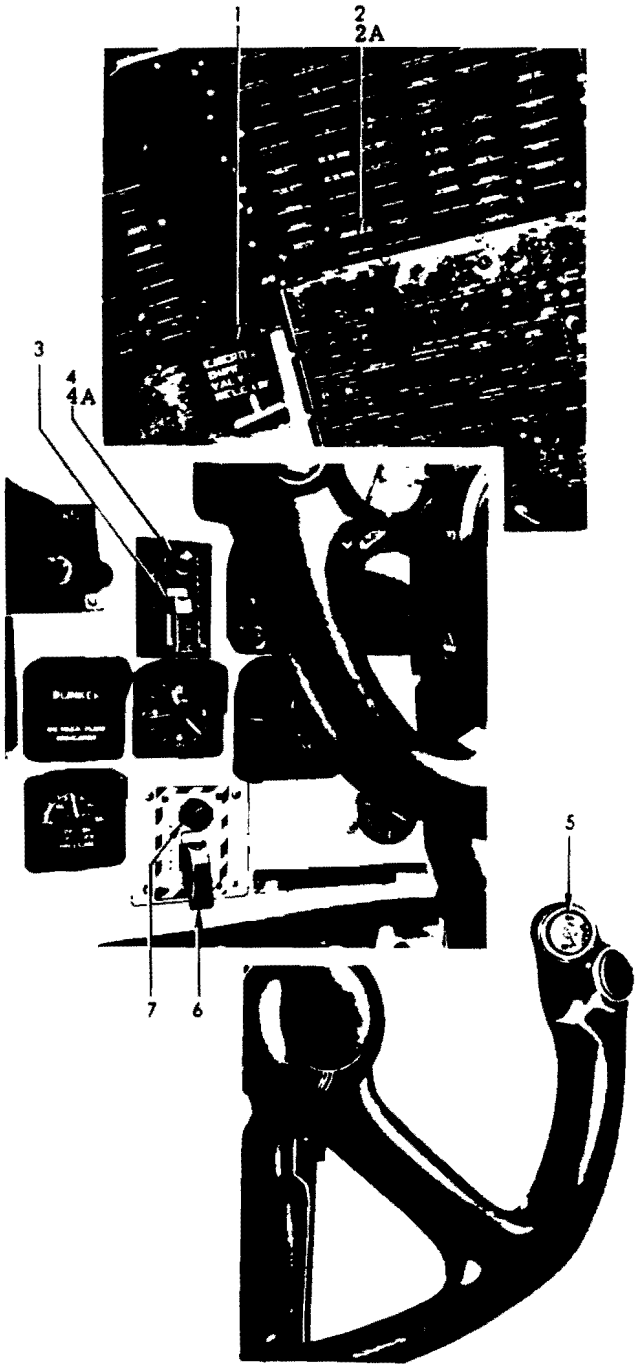
A spray valve green indicator light (figure 4-40), located directly above the spray arming switch, illuminates when the spray valve is open. Electrical power for operation of the light is through the AERIAL SPRAY circuit breaker located on the pilot's overhead circuit breaker panel. The spray valve indicator light and the corresponding light on the console illuminate simultaneously.

Dump Valve Switch. A B

A guarded, two-position switch (figure 4-40) is installed on the pilot's instrument panel and placarded DUMP VALVE. The two switch positions are placarded OPEN and CLOSED. When in the normal CLOSED position, the dump valve is closed and the tank can be filled. When the dump switch is placed in the OPEN position the dump valve is opened and the tank contents are dumped very rapidly. Electrical power is supplied through the AERIAL SPRAY circuit breaker located on the pilot's overhead circuit breaker panel.

Dump Valve Indicator Light. A B

A dump valve red indicator light (figure 4-40), located directly above the dump valve switch, illumi-



CREW COMPARTMENT

SPRAY SYSTEM CONTROLS

— typical

1. EMERGENCY DUMP HANDLE (A)
2. AERIAL SPRAY CIRCUIT BREAKER
2A. EMERGENCY DUMP CIRCUIT BREAKER (B)
3. SPRAY ARMING SWITCH
4. SPRAY VALVE INDICATOR LIGHT (A)
4A. SPRAY BUS ARMED INDICATOR LIGHT (B)
5. SPRAY VALVE SWITCH
6. DUMP VALVE SWITCH
7. DUMP VALVE INDICATOR LIGHT

Figure 4-40

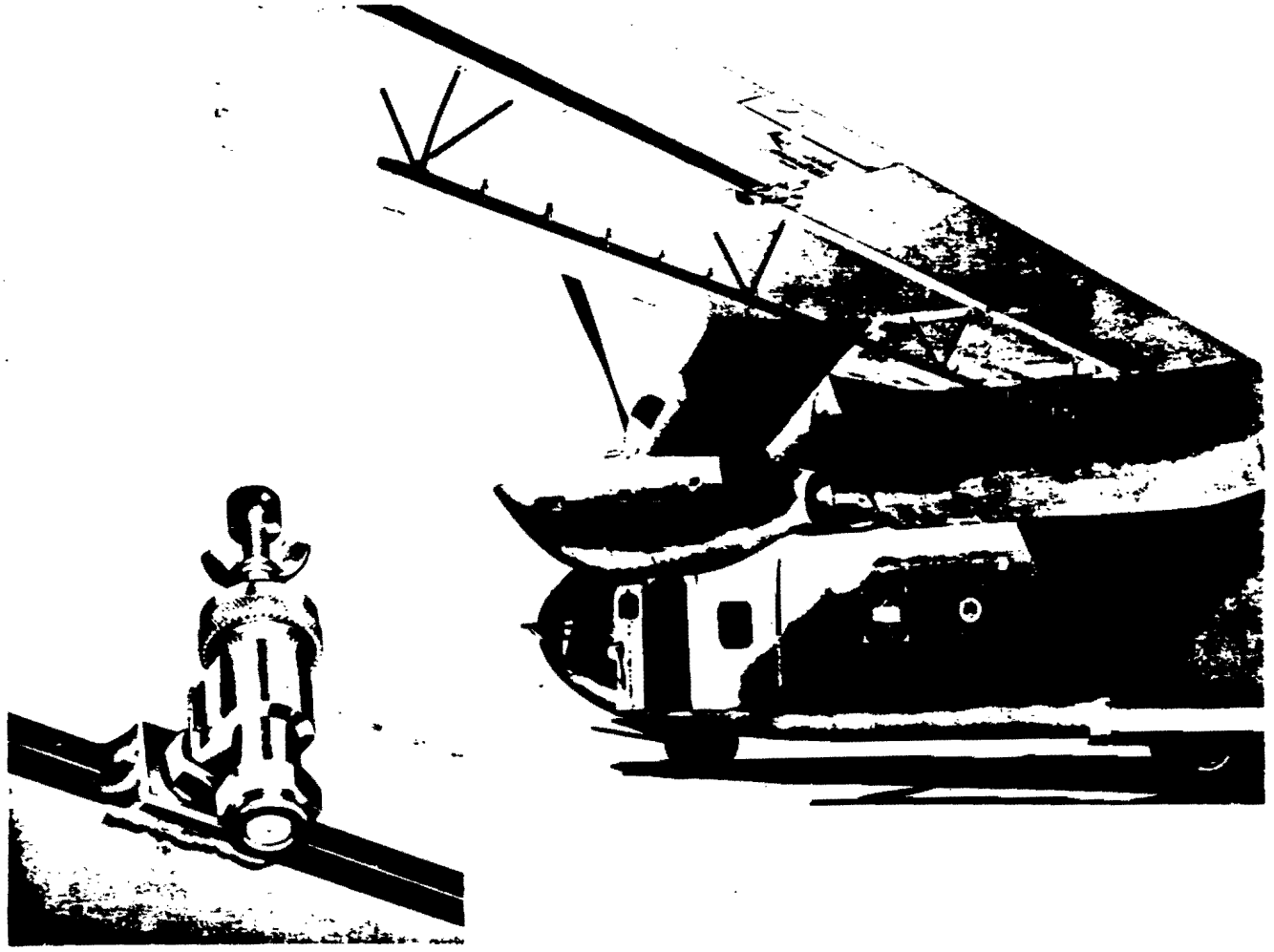
nates when the dump valve is open. Electrical power for the operation of the light is through the AERIAL SPRAY circuit breaker. The dump valve indicator light and the corresponding light on the console illuminate simultaneously.

Emergency Dump Handle. (A)

A T-type handle (figure 4-40), cable-connected to the dump valve, is installed to the left of the accessory control panel. The handle is placarded EMERG. DUMP VALVE RELEASE. When the handle is pulled, the tank dump valve is mechanically opened and the entire contents of the tank are dumped. The action is non-reversible; once the handle is pulled, the entire load will be dumped.

SPRAY BOOMS. (A) (B)

A liquid spray boom is suspended under each aircraft wing by brackets attached to the wing. The booms extend from just outboard of the nacelles to wing station 483. A third boom is mounted under the aircraft fuselage just aft of the cargo ramp at station 622. Liquid pressure lines are routed from the engine pump to the inboard ends of the wing booms and to right end of the nacelle boom. Controlled fluid release from the booms is maintained by a series of adjustable spray nozzles installed along the length of the booms. Spacing of nozzles along the booms may be varied to obtain desired flow patterns. When nozzles are removed, plugs are inserted in the holes. Refer to figure 4-41.



LIQUID SPRAY BOOM AND NOZZLES — typical

Figure 4-41

POWER-FILL PROCEDURE. (A)

The power-fill procedure enables use of the spray engine pump to refill the liquid spray tank. This method of filling utilizes fluid remaining in the tank to initiate the pumping action.

WARNING

Do not refill gas tank inside of aircraft.

1. Manually load 50 gallons of chemical to prime system through tank filler cap.
2. Tank filler cap - Remove

CAUTION

Failure to remove cap will overpressurize tank during filling.

3. Power fill hose - Connected

   Connect power fill hose to the refill ball valve and to the source of chemical.

4. Refill ball valve - Closed
5. Aircraft electrical power - ON

   Use external power if available. Battery is not sufficient. Use APP if necessary.

6. Power section circuit breakers - IN
7. Spray valve switch - CLOSED
8. Magneto switch - OFF
9. Throttle switch - DECREASE for 15 seconds
10. Throttle switch - INCREASE for 2 seconds
11. Magneto switch - ON
12. Start switch - PRESS

    Release when engine fires

    Note

    If engine does not start, depress choke switch on instrument panel for a few seconds or until engine fires. If engine still fails to start, pull manual choke knob on engine.

13. Oil pressure - Checked

    After engine starts check indicator light is green.

CAUTION

If engine oil pressure light remains red, stop engine immediately by positioning magneto switch OFF.

14. Fluid pressure - Checked

    Allow 30 seconds for self-priming of pump and check for 20 PSI at 1500 RPM.

15. RPM - INCREASE

    After reasonable warm-up period, toggle throttle until 3700 rpm is indicated on tachometer. Tach will drop to 3600 RPM normally after short operating interval.

16. Pressure indicator - 60 ± 5 PSI.
17. Refill ball valve - OPEN

    Operate until quantity indicator shows amount needed for mission.

18. Engine - Shutdown

    Reduce engine RPM to 1500 RPM and allow to cool.

19. Magneto switch - OFF
20. Refill ball valve - CLOSED

    Should be closed when engine is not running or when pressure is zero.

21. Power fill hose - Disconnect

    Allow to drain into suitable container, flush, clean and stow hose.

CAUTION

Marshall aircraft into an approved area to avoid contamination.

SPRAY SYSTEM (IPSS). (B)

On UC-123K aircraft modified to provide the desired liquid chemical spray capability, two or three 325-gallon, palletized tank and cradle assemblies (figure 1-64) may be installed and held in place by standard tie-down devices. The tank(s) is located in the center section of the cargo compartment between stations 200 and 390, at approximately the aircraft center of gravity. A palletized Hi-volume system containing the pump, engine, recirculating and spray valves, and engine control panel assembly, loaded aft of the tank and cradle assemblies, is used to pump the liquid chemical through existing

externally mounted spray booms which are mounted under each wing. An operator's pallet assembly, containing the operator's console panel assembly, operator's seat, control valves, motor, pump, and air purge system (air bottles, shut-off valve, and gauges) is located aft of the tank and cradle assemblies and on the left side of the Hi-volume system pallet. With the spray system operating and all manual shut-off valves open, liquid chemical release is controlled by electrically and manually operated spray valves. With the spray valve open, liquid chemical is released from the spray booms through a series of nozzles spaced along the booms. Recirculation lines for the spray system are installed so that whenever the spray valves are closed during spray runs, the liquid will recirculate back through the tank(s). Electrical power circuit protection for spray system operation is located on the right main equipment panel at station 345. Operating power is 28 volts dc. Refer to Figure 4-42 for a simplified schematic of system operation.

LIQUID SPRAY TANK. (B)

Two or three 325-gallon spray tank configuration can be installed and secured in the cargo compartment between stations 200 and 390. Filling the tank or tanks is accomplished through a fill neck located on top of each tank (for individual tank filling), or through a Hi-volume power fill line located on the Hi-volume intake line (for filling tank(s) through recirculating lines), or through the ULV power fill quick disconnect on the operator pallet, using the electrical motor and pump, through the ULV recirculating lines (see figure 4-43). A vent line is installed on top of each tank for overboard venting. Each tank is equipped with internal baffle plates to reduce sloshing of fluids.

HI-VOLUME PUMPING UNIT AND ENGINE. (B)

A palletized liquid chemical pumping unit, pumping engine, and control panel, together with associated valves and plumbing, are positioned aft of the tank and cradle assemblies. The engine-pump combination controls flow of liquid chemical (for Hi-volume spray operation) from the tank to the external booms.

ULV PUMP AND MOTOR. (B)

The motor driven pump (figure 4-44) is a belt/pulley driven, rotary gear pump, and is capable of delivering 20 gallons of liquid chemical per minute to the ULV booms. In addition, the motor driven pump can be used to refill the tank(s), pump the liquid chemical out of tank(s) into containers, used for tank(s) flushing, or for chemical recirculation.

ENGINE CONTROLS. (B)

Complete engine control is provided by the controls and indicators located on the engine console assembly mounted on the Hi-volume system pallet assembly above the engine. The engine console assembly is mounted facing left for operator access (see figure 4-45). Description of engine controls and indicators are as follows:

Ignition Switch. (B)

An IGNITION switch (figure 4-45), when in the OFF position, grounds the magneto, preventing engine operation. With the switch in the ON position, the ground is removed from the magneto, permitting the engine to run.

Choke Control Assembly. (B)

A push-pull CHOKE control assembly (figure 4-45) is mechanically linked to the choke and controls operation of the pumping engine choke. A support for the mechanical linkage of the choke control is located on the rear side of the carburetor.

Start Control Assembly. (B)

A push-pull START control assembly (figure 4-45) is mechanically linked to the starter lever. Pulling the START control assembly fully out actuates the starter lever which, in turn, closes the starter switch, energizing the starter.

Cylinder Head Temperature. (B)

An engine CYL HEAD TEMP gauge (figure 4-45) is installed on the engine console assembly. This gauge checks operating cylinder head temperatures.

Oil Temperature. (B)

An engine OIL TEMP gauge (figure 4-45) is installed on the engine console assembly. This gauge measures oil temperature received by the thermo gauge adapter screwed into the sump above the rear mount bracket.

Oil Pressure. (B)

An OIL PRESSURE gauge (figure 4-45) is installed on the engine console assembly, and shows indications of oil pressure at the discharge side of the engine oil pump. Oil pressure at engine idle speeds of 800 to 900 rpm shall not be less than 20 psi, and at normal operating speeds, within the range of 30 to 50 psi.

Tachometer. (B)

An ENGINE RPM tachometer (figure 4-45) is installed on the engine console assembly, and indicates engine speed in hundreds of rpm.

IMPROVED PESTICIDE SPRAY SYSTEM SCHEMATIC (IPSS) B

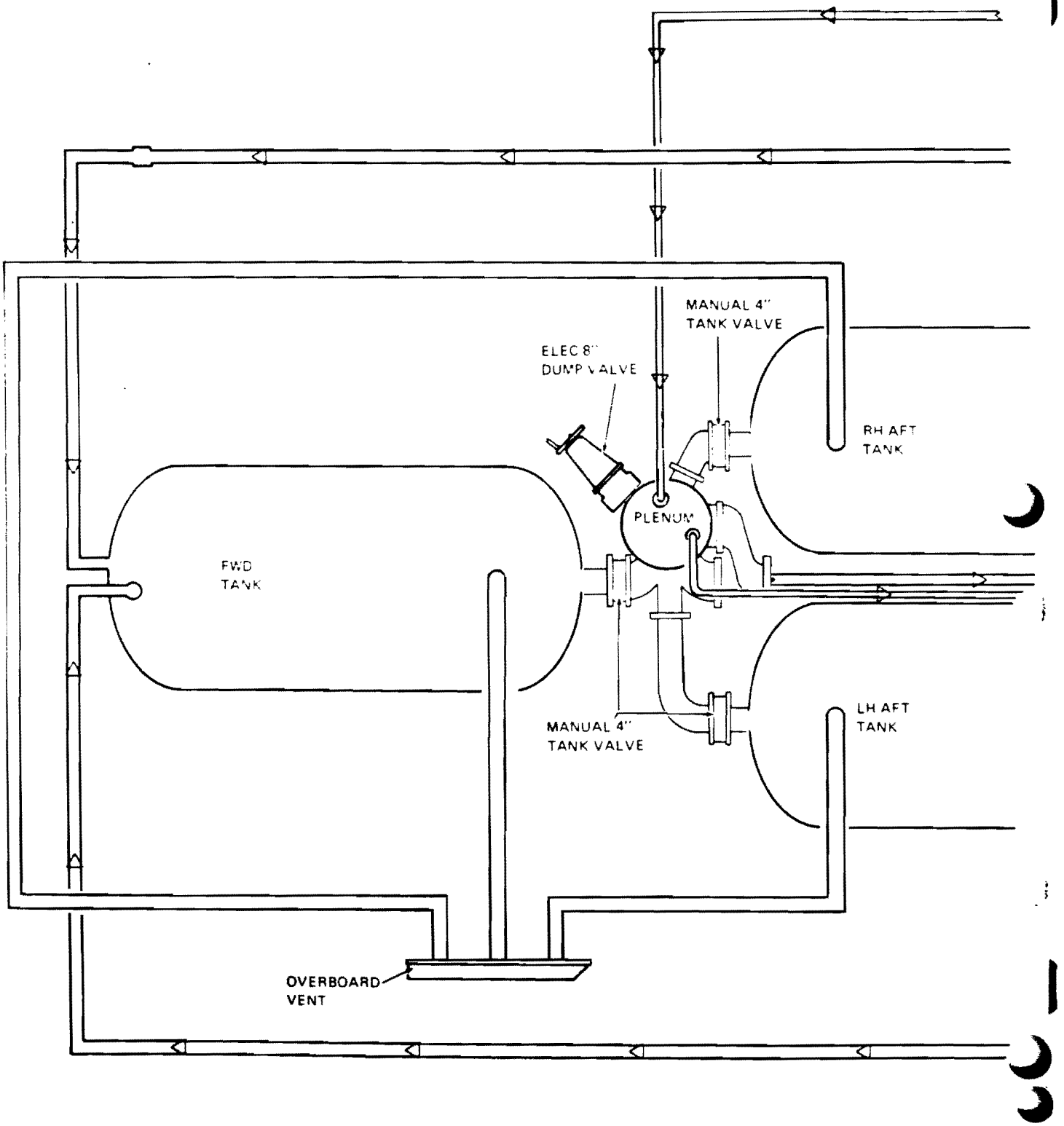


Figure 4-42 (Sheet 1 of 2)

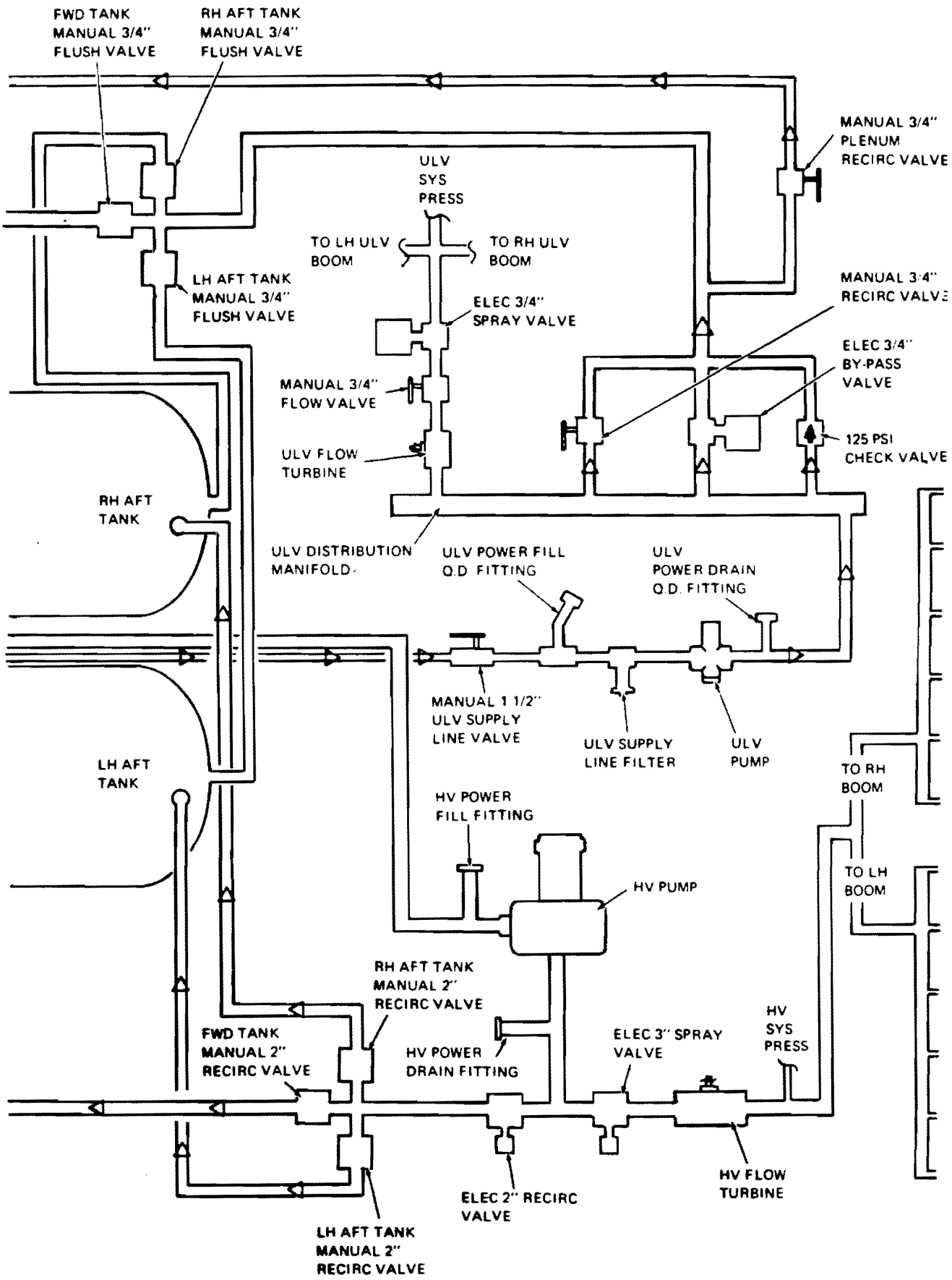
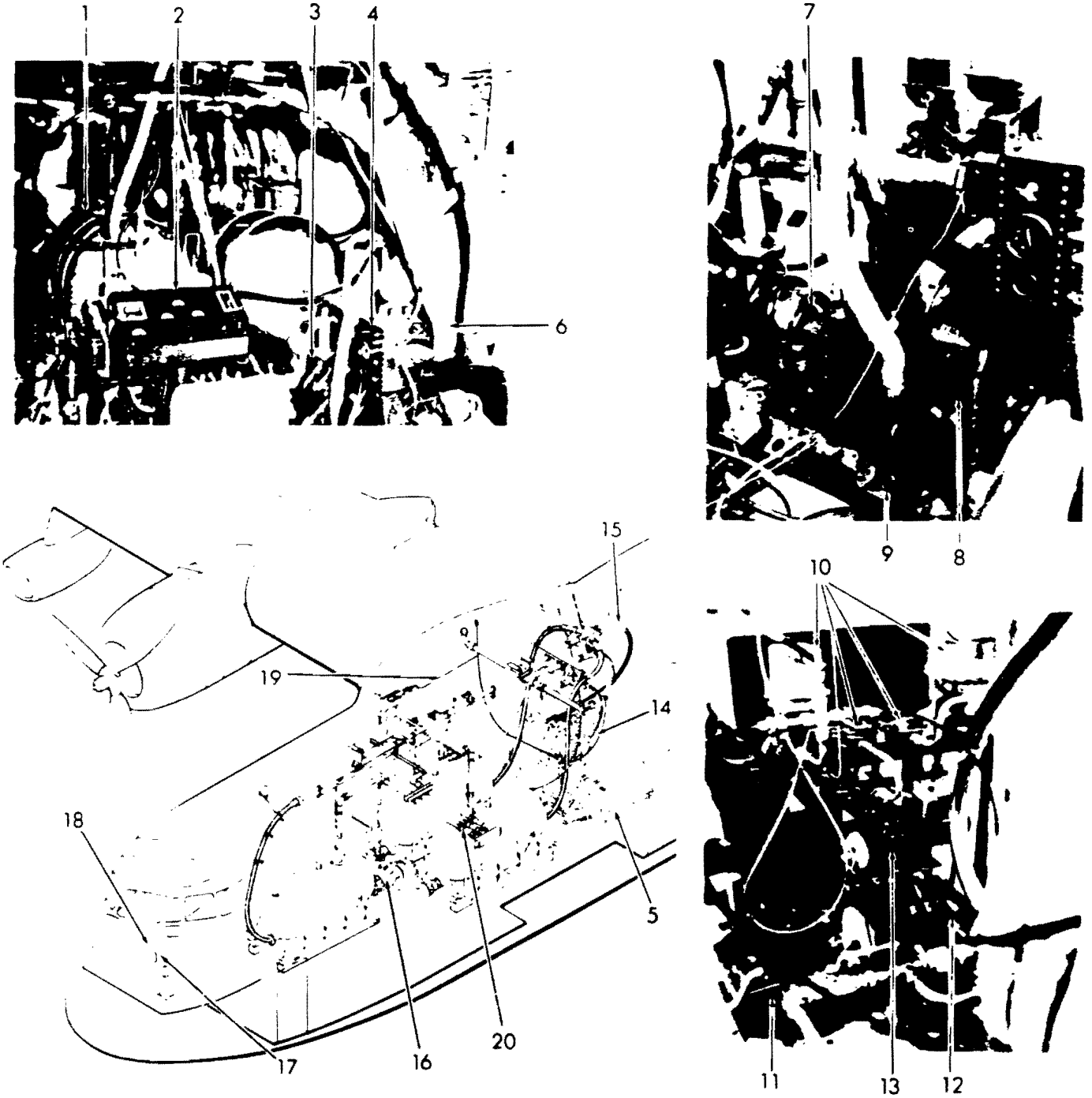


Figure 4-42 (Sheet 2 of 2)

IMPROVED PESTICIDE SPRAY INSTALLATION (IPSS) B



1. TANK AND CRADLE ASSY
2. OPERATOR CONSOLE PANEL ASSY
3. ENGINE CONSOLE ASSY
4. HI-VOLUME ENGINE CONSOLE ASSY
5. ULV POWER DRAIN QUICK DISC
6. HI-VOLUME OUTLET HOSE
7. HI-VOLUME PUMP
8. HI-VOLUME ENGINE
9. HI-VOLUME PALLET ASSY
10. ULV CONTROL VALVES
11. OPERATOR PALLET ASSY
12. ULV PUMP
13. ULV MOTOR
14. ULV RECIRC LINES
15. HI-VOLUME RECIRC LINES
16. PLENUM
17. PILOT'S SPRAY SWITCH
18. EMERGENCY DUMP SWITCH
19. HI-VOLUME ENGINE FUEL LINE
20. VENT LINES

Figure 4-43

SPRAY PUMPS (IPSS) B

ULV SYSTEM

1. ULV – SHUTOFF VALVE
2. ULV – MOTOR
3. ULV PUMP
4. FILTER
5. ULV POWER FILL QUICK DISCONNECT

HI-VOLUME SYSTEM

1. HI-VOLUME POWER FILL LINE
2. HI-VOLUME POWER DRAIN LINE
3. ENGINE DRIVEN PUMP

Figure 4-44

Throttle Control Assembly. B

A push-pull THROTTLE control assembly (figure 4-45) is mechanically linked to the throttle lever of the engine governor. When the THROTTLE handle is pulled out or pushed in, engine speed will be varied accordingly, as well as Hi-volume output pressure.

Note

A governor on the engine regulates the engine's maximum rpm.

STARTING HI-VOLUME PUMPING ENGINE. B

Note

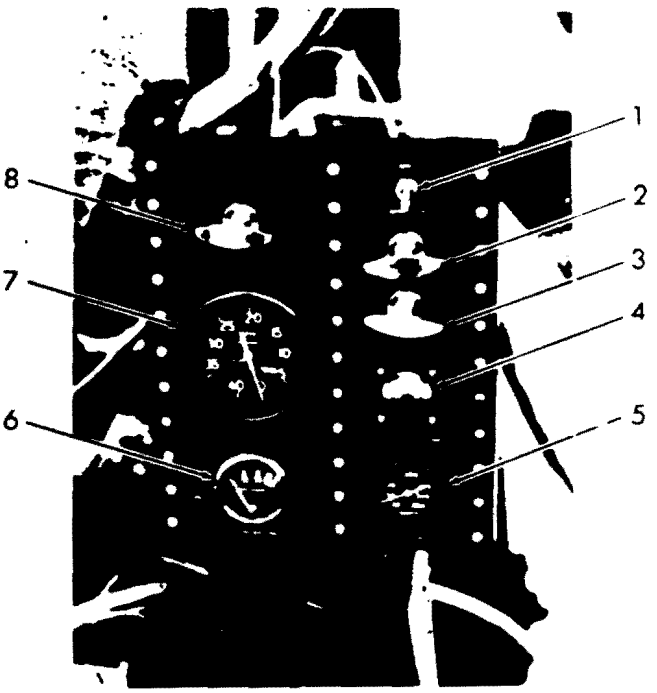
Prior to starting engine, the flight mechanic should ascertain that the pumping engine has been properly serviced. (Refer to (figure 1-64.)

To start engine, perform the following:

a. Aircraft electrical power (or external) - Applied.

HI-VOLUME ENGINE CONSOLE ASSEMBLY AND OPERATOR CONSOLE PANEL ASSEMBLY (IPSS) B

1. IGNITION SWITCH
2. CHOKE CONTROL ASSY
3. START CONTROL ASSY
4. CYL HEAD TEMP GAUGE
5. OIL TEMP GAUGE
6. OIL PRESSURE GAUGE
7. ENGINE RPM TACHOMETER
8. THROTTLE CONTROL ASSY
9. SYSTEM PRESSURE GAUGE
10. FLOWMETER GAUGE
11. EMERGENCY DUMP IND
12. EMERGENCY DUMP SWITCH
13. SYSTEM ARMED IND
14. HV-ULV SYSTEM SWITCH
15. HV RECIRCULATING SWITCH
16. FWD TANK QUANTITY GAUGE
17. RIGHT AFT TANK QUANTITY GAUGE
18. LEFT AFT TANK QUANTITY GAUGE



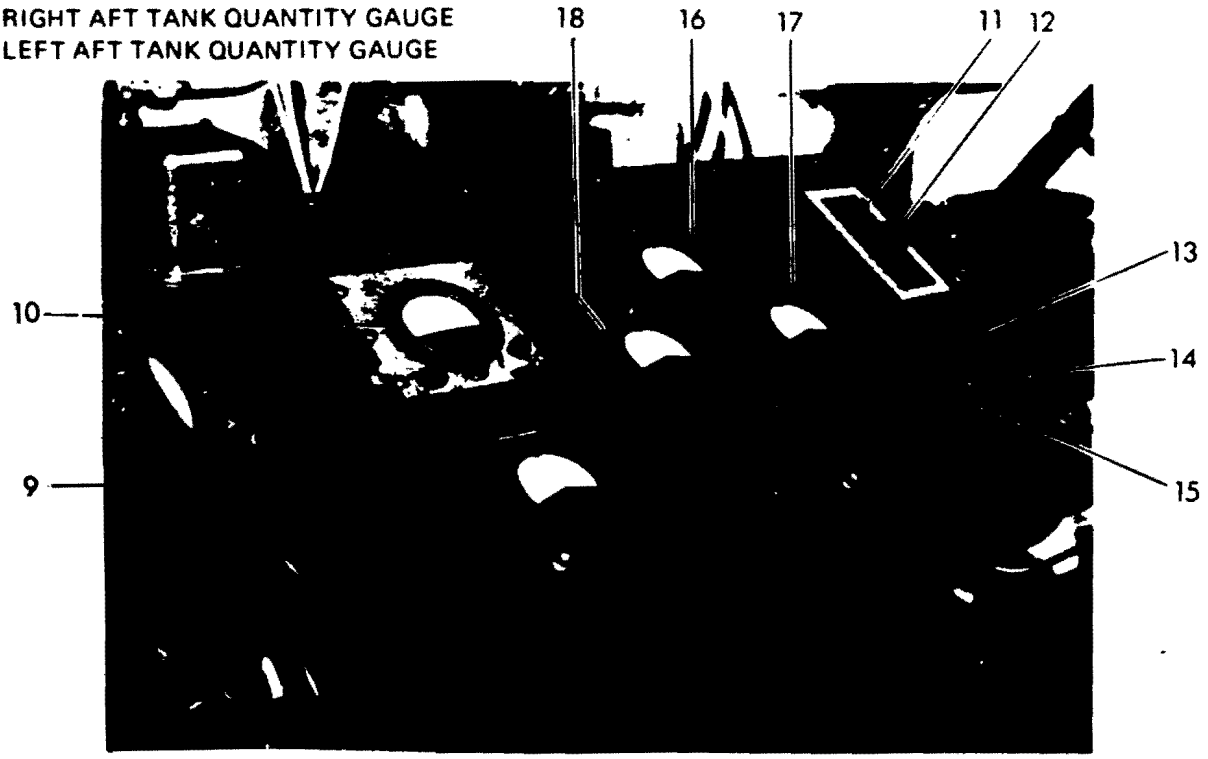


Figure 4-45

b. SPRAY ARMING switch - ON (on pilot's instrument panel).

c. Manual fuel shut-off valve - Open.

d. IGNITION switch - ON.

e. START control handle - Out; pull out to start, then push in.

f. THROTTLE control handle - Out; pull out to desired engine rpm.

g. CHOKE control handle - Out; as required for smooth engine running.

CAUTION

Immediately after starting engine, the oil pressure gauge should indicate within allowable limits (green area on gauge). If correct oil pressure is not evident, the engine should be shut down immediately.

TO STOP HI-VOLUME PUMPING ENGINE. B

To stop engine, perform the following:

Note

Prior to engine shut-down, after normal operations, the engine should be allowed to cool off. This is accomplished by idling the engine at 1000 - 1200 rpm for three minutes.

a. THROTTLE control handle - In.

b. IGNITION switch - OFF.

c. Manual fuel shut-off valve - As desired.

IMPROVED PESTICIDE SPRAY SYSTEM CONTROLS - OPERATOR CONSOLE PANEL ASSEMBLY. B

Controls and indicators for the liquid chemical spray system operation, located on the operator's console panel assembly mounted on the operator's console pallet assembly, include the following: SYSTEM PRESSURE gauge, FLOWMETER gauge; EMERGENCY DUMP indicator light; EMERGENCY DUMP switch; SYSTEM ARMED indicator light; HV-ULV SYSTEM SELECT switch; HV RECIRC-OPEN-CLOSE switch, and three quantity indicating gauges. All these controls are operated by the spray system operator. Operator console assembly components descriptions are as follows:

System Pressure. B

A spray SYSTEM PRESSURE gauge (figure 4-45) is mounted on the operator's console panel assembly, and operates in response to the spray system pressure. The gauge is connected to a fitting in the discharge line of the system being used.

Flowmeter. B

A spray system FLOWMETER gauge (figure 4-45) is mounted on the operator's console panel assembly, and operates in response to liquid chemical flow to the spray booms and to the one-half inch nylon tubing attached to the spray booms (for ULV), in gallons per minute (gpm). The FLOWMETER gauge is capable of indicating liquid chemical dispersion, in increments of 10 gpm, up to 500 gpm for the Hi-volume system, and liquid chemical dispersion, in increments of 1/10 gpm, up to 5 gpm, or in increments of 1 gpm, up to 20 gpm for the ULV system.

Dump Valve Indicators. B

Two dump valve indicators, one decaled DUMP VALVE (figure 4-40) on the pilot's instrument panel, and one decaled EMERGENCY DUMP IND (figure 4-45) on the operator's console, should illuminate when the pilot's DUMP VALVE switch (figure 4-40) or the EMERGENCY DUMP switch (figure 4-45) on the operator's console is placed in the OPEN position. Power for both indicators is obtained from the aircraft's EMERGENCY DUMP (figure 4-40) circuit breaker located on the pilot's overhead circuit breaker panel.

Dump Valve Switches. B

When the two guarded, two-position switches, one decaled DUMP VALVE (figure 4-40) on the pilot's instrument panel and one decaled EMERGENCY DUMP (figure 4-45) on the operator's console, are both in the CLOSED position, the dump valve is closed. When either switch is placed in the OPEN position, the dump valve will be electrically opened. Power for both switches is obtained from the aircraft's EMERGENCY DUMP circuit breaker located on the pilot's overhead circuit breaker panel.

Spray Arming Indicators. B

Two spray system armed indicators, one located directly above the SPRAY ARMING switch (figure 4-40) on the pilot's instrument panel and one decaled SYSTEM ARMED (figure 4-45) on the operator's console, should illuminate when the pilot places the SPRAY ARMING switch in the ON position. Power for both indicators is obtained from the aircraft's EMERGENCY DUMP circuit breaker located on the pilot's overhead circuit breaker panel.

Spray Arming Switch. B

A two-position, guarded switch (figure 4-40), located on pilot's instrument panel and decaled SPRAY BUS ARMED ON-OFF, arms the pilot's SPRAY valve

switch (figure 4-40) and the indicators and switches on the operator's console. With the pilot's SPRAY valve switch in the OFF position, the selected system's spray valves will close and the liquid chemical will be recirculated back into the plenum for the ULV system, or the tank or tanks for the Hi-volume system. Spray operation is controlled only by the pilot. Power for the SPRAY ARMED switch is obtained from the aircraft's EMERGENCY DUMP circuit breaker located on the pilot's overhead circuit breaker panel.

HV-ULV System Select Switch. (B)

The HV-ULV SYSTEM SELECT switch (figure, 4-45) on the operator's console selects the desired spray system. With the engine and pump operating, the SYSTEM SELECT switch in the HV position, and the pilot's SPRAY valve switch (figure 4-40) in the ON position, the high volume four-inch output valve will open for liquid dispersion; also, the high volume two-inch recirculating line valve will open as determined by the spray operator. SYSTEM PRESSURE and FLOWMETER (figure 4-45) indications for the high volume system will be determined by the rpm setting of the engine. When the SYSTEM SELECT switch is in the ULV position and the pilot's SPRAY valve is in the ON position, the ULV output valve will open for liquid chemical dispersion, as supplied by the electric motor and pump (max. 20 gallons per min.); also, the ULV recirculating line manual valves will open as determined by the spray operator. Power for the HV-ULV SYSTEM SELECT switch is obtained through the SPRAY BUS ARMED circuit.

HV RECIRC Switch. (B)

A HV RECIRC OPEN - CLOSE switch (figure 4-45) on the operator's console regulates the amount of liquid chemical recirculation in the HV system.

AIR PURGE SYSTEM. (B)

The air purge system is designed to purge the ULV spray booms of liquid prior to and after flushing. Air purging the spray chemical residue in the booms prior to flushing makes possible a more efficient use of the flushing agent. Air purging after flushing insures the booms are clean of any liquid residue left over from the flushing step. Air for purging is stored in two compressed air cylinders which are located beneath the floor of the spray operator's pallet. A filler valve and pressure gauge are located on the left side of the spray operator's pallet floor. System air pressure should be maintained between 600 and 1800 psi. It requires approximately 200 psi to complete two air purges. A manually operated screw type valve to turn the system on and off is located on the lower right side of the spray operator's console. The air purge system supply line is connected to the ULV system downstream of the ULV electric spray valve. The air purge system contains a one-way check valve to prevent chemical from entering the air purge system.

ULV POWER FILLING PROCEDURE. (B)

This filling procedure utilizes the aircrafts ULV electric motor and pump to power fill the spray tank(s). Power filling all three tanks using the ULV electric motor and pump requires approximately 50 minutes.

Note

Designate a loading supervisor. Use rags to cover suction end of probe when transferring from drum to drum. Spray operator will be within reach of operator pallet for operation or to shutdown system. An assistant will position drums on ground to aid in power filling. Select ULV belt mode for more rapid filling.

1. System select switch - HV

   Switch should be left in this position when system is shutdown.

2. Aircraft electrical power - ON

   Use external power if available. Battery is not sufficient. Use APP as necessary.

3. Secondary bus switch - MONITOR

4. Spray valve arming switch - ON

   Check indicator lights in cockpit and on operator pallet.

5. Spray switch - ON

   This closes ULV electrical recirculation valve, opens ULV electrical spray valve.

6. System circuit breakers - In

7. Manual valve(s) - All closed

8. All overhead recirculation valve(s) - Closed

WARNING

Due to current placement of pressure relief valve, open overhead (ULV) flush valve to same tank(s) being filled to avoid over pressurizing system.

9. Tank filler cap - On

10. Power fill hoses - Connected

    Connect external hose to pump inlet line; internal hose from pump outlet to tank nipple.

CAUTION

Liquid wieght limit per tank is 3178 pounds.

11. System select switch - ULV

    Pump should begin filling operation. If filling does not start, prime pump by cycling system on and off with system select switch at short intervals. If priming is unsuccessful after 4 to 6 cycles discontinue and trouble shoot system. Monitor system for leaks while filling.

CAUTION

Shutdown system by placing system select switch to HV if leak is detected. Neutralize and clean up all spills immediately.

HV POWER FILLING PROCEDURES. (B)

Note

Designate a loading supervisor. Use rags to cover suction end of probe when transferring from drum to drum. Spray operator will be within reach of operator pallet for operation or to shutdown system. An assistant will position drums on ground to aid in power filling.

1. Manually load 25 gallons of chemical to prime pump. Load through inlet ground fill port.
2. System select switch - HV
3. ULV supply valve - CLOSED
4. Power fill hose - Connected

   Connect power fill hose to the power fill port.

5. Electrical power - ON

   Use external power if available. Battery is not sufficient. Use APP as necessary.

6. Recirculation valves - OPEN (Electric and manual)

   Open the electrical recirculation valve and the overhead manual recirculation valve(s) to tank(s) being filled. Chemical flows through these valves to desired tank(s).

7. Tank valves - CLOSED
8. HV Engine - START and IDLE

   Refer to Section IV for starting procedures. Adjust throttle to 1,000 RPM for filling. Tanks will begin filling immediately.

CAUTION

Do not exceed 3178 pounds in each tank. Monitor filling closely to avoid overflow of tank or tanks being filled.

If prime is lost shutdown engine for one minute. Chemical will flow down recirculation lines and reprime pump. If not successful, open tank valve allowing fluid to flow through plenum and supply line to prime pump. Close tank valve when filling resumes.

9. Manual recirculation valve(s) - CLOSE

   When a tank is filled, close the associated manual recirculation valve to prevent overfilling.

10. HV Engine - Shutdown

    Shutdown engine as last tank reaches desired fill level. Shutdown is accomplished by turning off ignition. Allow to cool.

11. Fuel valve - CLOSE
12. Power fill hose - Disconnect

    Disconnect, flush, clean, and stow hose. Replace cap on power fill port.

13. Manual valves - CLOSE

    Close all manual valves.

SPRAY SYSTEM FLUSHING AND AIR PURGING. (B)

Spray system flushing and air purging is necessary to clean the system of chemical to prevent excessive corrosion and possible clogging. Different flushing agents ranging from water to diesel fuel can be used to clean the system depending on the spray chemical used. System flushing is accomplished in various ways. This depends on whether the high or low volume system was used and also, on whether or not there is chemical remaining in the tank(s) at the completion of the spray mission. System flushing is segreated into two areas. One area being the tank(s) and associated plumbing to the plenum. The other is the plenum out to and including the spray nozzles. In all cases the latter should be flushed in flight. When possible, the tank(s) which contained the spray chemical should also be flushed in flight. In this situation the residue left over after flushing should be sprayed out through the booms prior to flushing the booms. It is not possible to flush the tanks and booms at the sametime. When

spray chemical is left in the tank(s) at the completion of a mission, tank draining and flushing must be accomplished on the ground. Air purging of the ULV spray booms should be accomplished before and after flushing the ULV booms. No provisions have been made for air purging the high volume booms. Air purging is accomplished as follows:

ULV Flushing - No Chemical Remaining. B

1. Spray switch - OFF.
2. Spray chemical tank valve(s) - CLOSED.
3. Flushing agent tank valve - OPEN.
4. Tank flush line valve - OPEN.
5. ULV recirc valve - CLOSED.

Note

Closing the ULV recirc valve before opening the tank flush line valve will cause an over pressure in the system.

Operate in this mode a sufficient length of time to flush the spray chemical tank(s).

6. ULV recirc valve - OPEN.
7. Tank flush line valve - CLOSED.

Note

Closing the tank flush line valve before opening the ULV recirc valve will cause an over pressure in the system.

8. Flush agent tank valve - CLOSED.
9. Spray chemical tank valve(s) - OPEN.
10. Spray switch - ON.

    Spray out flushing agent and chemical residue contained in the spray chemical tank (s).

11. Spray switch - OFF.
12. Spray chemical tank valve(s) - CLOSED.
13. Flushing agent tank valve - OPEN.
14. Air purge - Completed.

    Air purge long enough to clear all liquid from the spray booms.

15. Spray switch - ON.

    Operate in this mode a sufficient length of time to flush the ULV recirc line, plenum, spray booms, and associated plumbing.

16. Spray switch - OFF.
17. Air purge - Completed.

    Air purge long enough to clear all liquid from the spray booms.

ULV Flushing - Chemical Remaining. B

ULV Flushing with chemical left over will be accomplished by first completing steps k through q above inflight. After landing and power draining the left over chemical, accomplish steps b through i above to flush the tank(s). After flushing the spray chemical tank(s), power drain the flushing residue.

Hi-Volume Flushing - No Chemical Remaining. B

1. Spray switch - OFF.
2. Spray chemical tank valve(s) - CLOSED.
3. Flushing agent tank valve - OPEN.

    Operate in this mode a sufficient length of time to flush the Hi-Volume recirc line(s) and Hi-Volume pump.

4. System select switch - ULV.
5. Tank flush line valve - OPEN.
6. ULV recirc valve - CLOSED.

Note

Closing the ULV recirc valve before opening the tank flush line valve will cause an over pressure in the system.

Operate in this mode a sufficient length of time to flush the spray chemical tank(s).

7. ULV recirc valve - OPEN.
8. Tank flush line valve - CLOSED.

Note

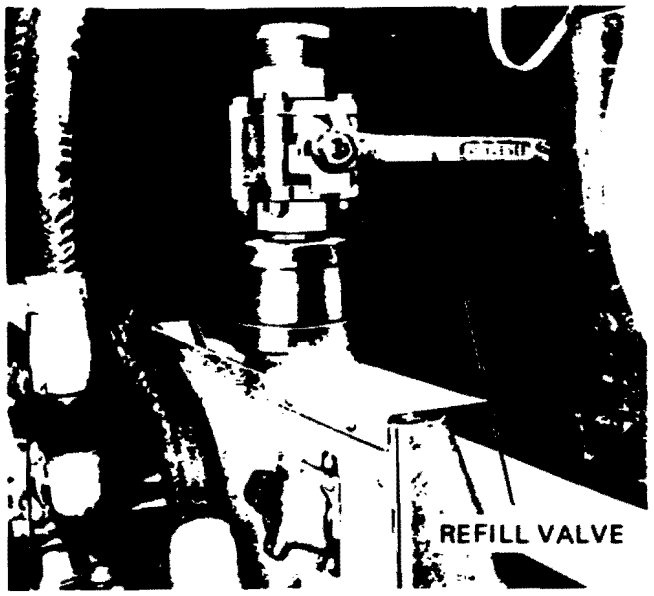
Closing the tank flush line valve before opening the ULV recirc valve will cause an over pressure in the system.

9. System select switch - HIV.
10. Flush agent tank valve - CLOSED.
11. Spray chemical tank valve(s) - OPEN.
12. Spray switch - ON.

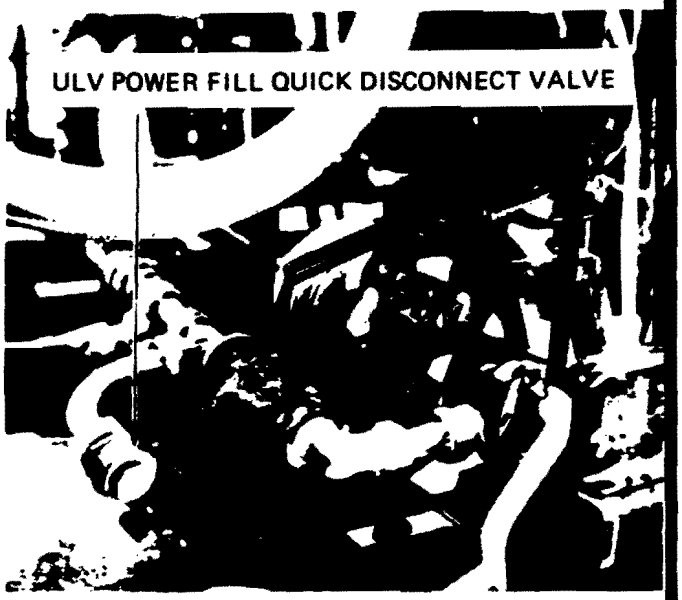
    Spray out flushing agent and chemical residue contained in the spray chemical tank(s).

REFILL VALVES

A/A45Y-1 (A)



IPSS (B)



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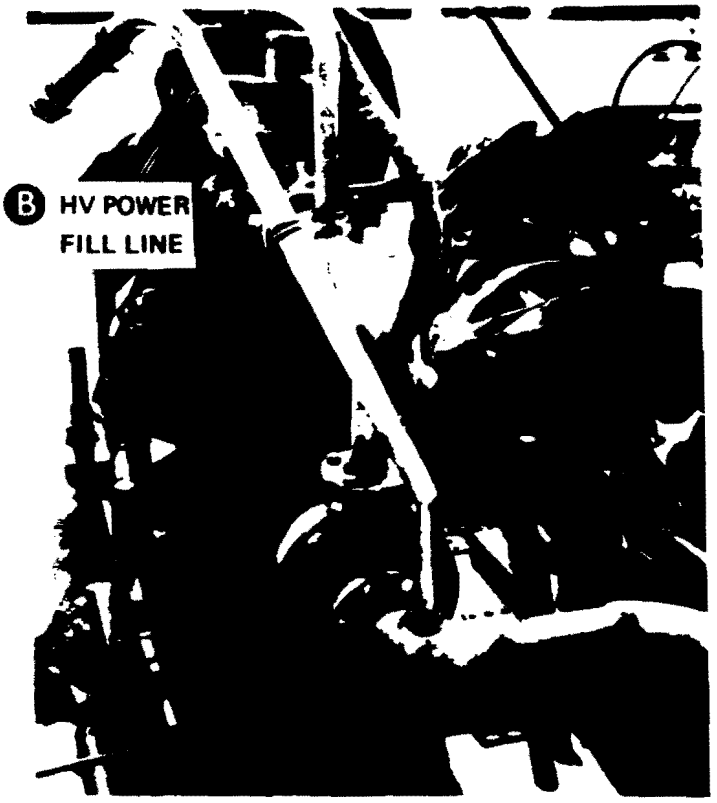


Figure 4-46

13. Spray switch - OFF.
14. Spray chemical tank valve(s) - CLOSED.
15. Flush agent tank valve - OPEN.
16. Spray switch - ON.

    Operate in this mode a sufficient length of time to flush the plenum, Hi-Volume spray booms, and associated plumbing.

17. Spray switch - OFF.

HI-VOLUME FLUSHING - CHEMICAL REMAINING. (B)

Hi-Volume flushing with chemical left over will be accomplished by first completing steps 13 through 17 above in flight. After landing and power draining the left over chemical, accomplish steps b. through k. above to flush the tank(s). After flushing the spray tank(s), power drain the flushing residue.

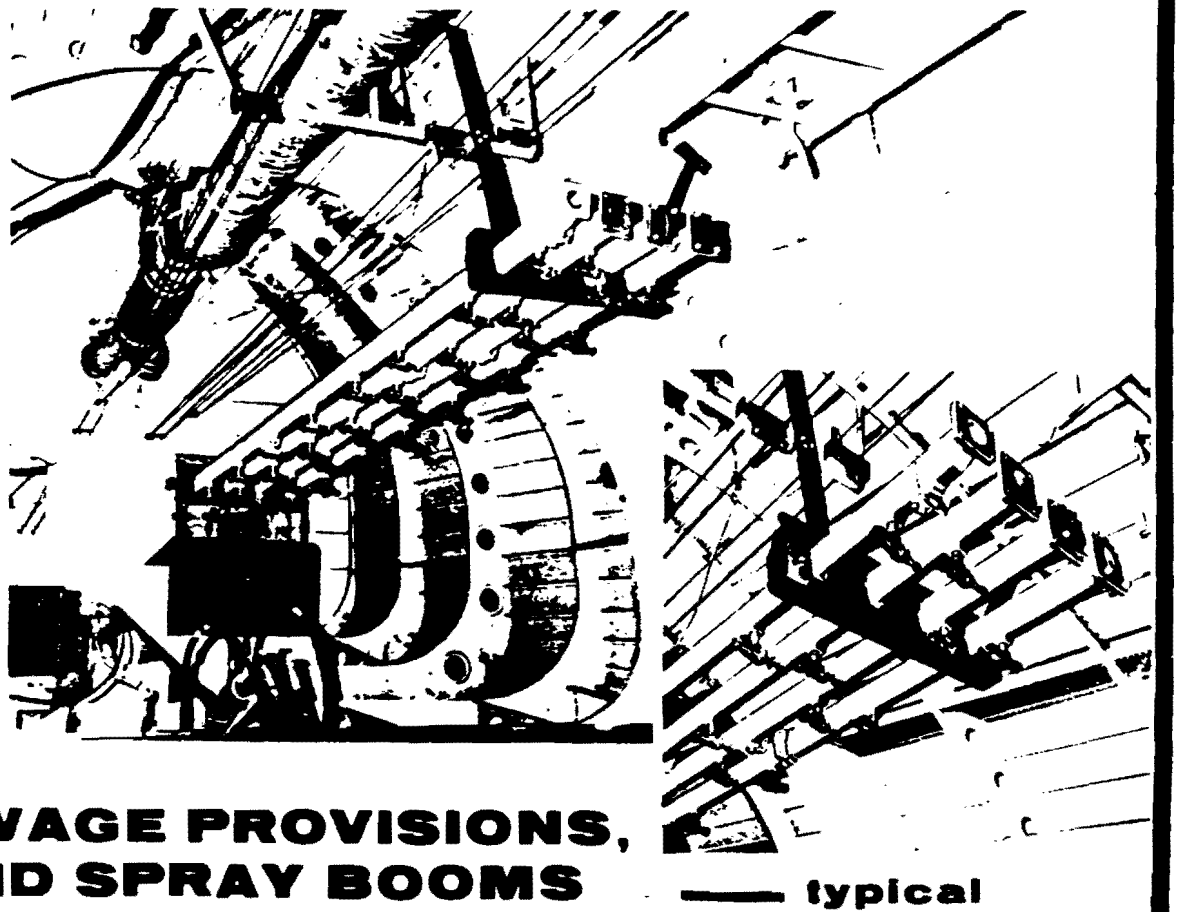
MISCELLANEOUS EQUIPMENT. (A) (B)

LIQUID SPRAY BOOM STOWAGE PROVISION.

Stowage facilities are provided for stowage of the liquid spray booms when they are removed from the aircraft exterior mountings. Racks, located on the aft left side of the aircraft interior above the cargo door area, may be used for this purpose. Appropriate placarding on the racks indicates the proper placement of the individual booms for stowage. Refer to figure 4-47.

CREW COMPARTMENT ACRYLIC SIDE WINDOWS.

On aircraft modified in accordance with T.O. 1C-123(U)K-501, all crew compartment side windows, with the exception of the pilot's and copilot's sliding



STOWAGE PROVISIONS, LIQUID SPRAY BOOMS — typical

Figure 4-47

windows, are made of shatterproof stretched acrylic plastic. Ordinary glass and unstretched acrylic plastic will shatter if impacted by projectiles. Stretched acrylic does not shatter after impact but remains intact except for a hole the size of the projectile core.

PERSONNEL PROTECTIVE ARMOR.

On UC-123K aircraft modified in accordance with T.O. 1C-123(U)K-502, protective armor plating is installed to protect the flight crew during hostile spraying operation. Refer to figure 4-45.

Pilot and Copilot Armor.

The pilot and copilot armor consists of panels for seat bottoms, seat backs, seat sides, lower window areas, and the floor.

Nose Armor.

Two panels in the nose area provide frontal protection for the instrument panel and protection for the crew against secondary fragments. The two panels are bolted to the bulkhead forward of the flight instrument panel. They are accessible through the nose wheel-well opening.

Crew Chief/Spray Operator Armor.

An armored seat with a free-standing support frame is provided for the spray operator. The seat bottom, back, and sides are made of armor panels. Fabric-covered cushions and a seat belt are included. The seat assembly is bolted to tie-down fittings in the cargo floor.

Spray Pump Gas Tank Armor.

The spray pump gas tank (figure 4-46) sits in an open-top enclosure made of armor panels. The tank is retained with a strap. The tank enclosure is mounted on the spray tank cradle.

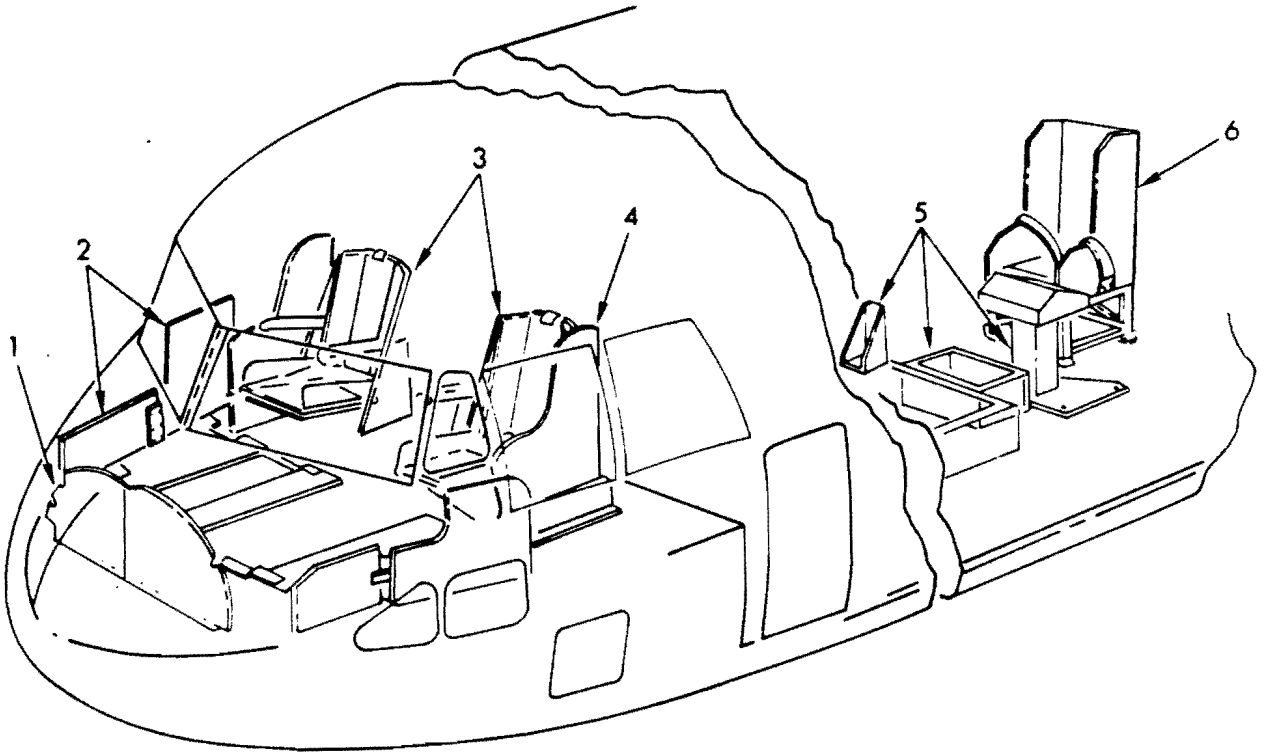
CONSOLE CONTROL PANEL PEDESTAL.

The console control panel is mounted on a free-standing pedestal (figure 4-48) that bolts to the cargo deck. The pedestal is located so the console control panel may be operated from the spray operator's seat.

EMERGENCY DUMP VALVE CONTROL.

The emergency dump valve control (figure 4-48) is mounted permanently on the spray tank cradle. It can also be operated from the spray operator's seat.

ARMOR INSTALLATION



1. NOSE BULKHEAD ARMOR
2. COPILOT SIDE AND FLOOR ARMOR
3. SEAT ARMOR
4. PILOT SIDE AND FLOOR ARMOR
5. SPRAY OPERATOR STATION ARMOR
6. FLIGHT MECHANIC SEAT ARMOR

Figure 4-48

CONSOLE CONTROL PANEL PEDESTAL

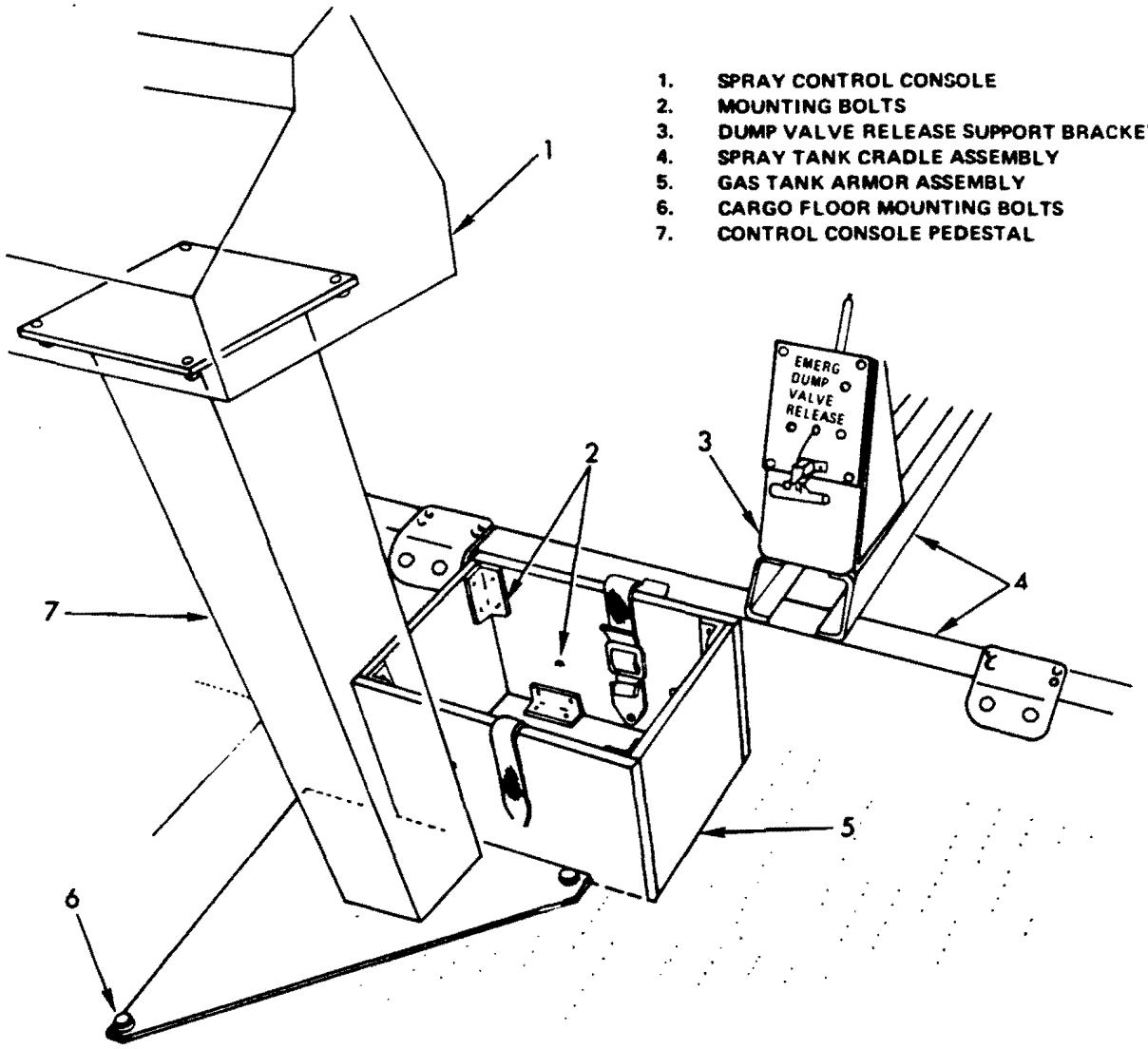


Figure 4-49