

NOTE  
ITEM MARKED \* ARE INSTALLED ON CH-3E 1  
AND HH-3E 24

ITEMS MARKED \*\*\* INSTALLED ON  
HH-3E HELICOPTERS NOS. AF 69-5811  
AND SUBSEQUENT

Figure 4-6. Crewman's Intercommunication (ICS) Stations (Typical) (Sheet 2 of 3)

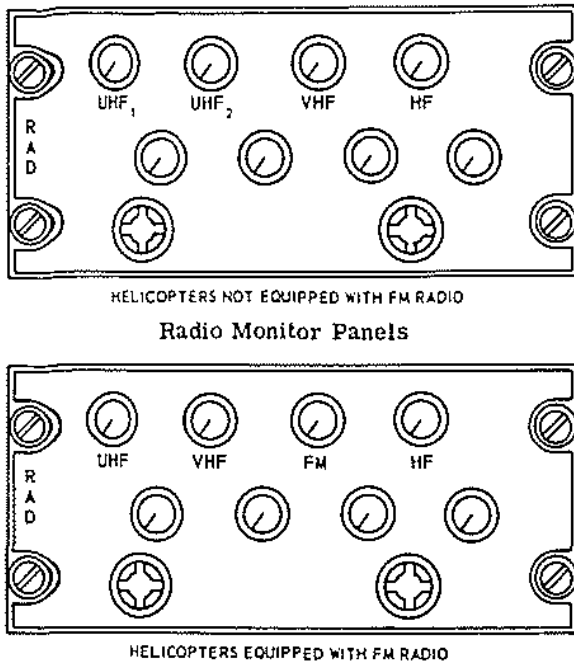


Figure 4-6. Crewman's Intercommunication (ICS) Stations (Typical) Sheet 3 of 3)

helicopters equipped with a loudhailer, the mode selector switch on the loudhailer selector switch must be in the INTERNAL PA position when using the public address system. The speaker-selector switch has marked positions FWD, AFT, and BOTH. When the switch is placed in the FWD or AFT position, voice transmission will be heard through the speaker selected. When the switch is placed in the BOTH position, voice transmission is heard through both speakers. The power switch, marked PWR ON, provides power to the public address system. The volume control marked VOL sets the output level of the entire public address system. The public address system receives electrical power from the dc essential bus and is protected by a circuit breaker, marked PA, located on the dc essential bus portion of the ac nonessential circuit breaker panel.

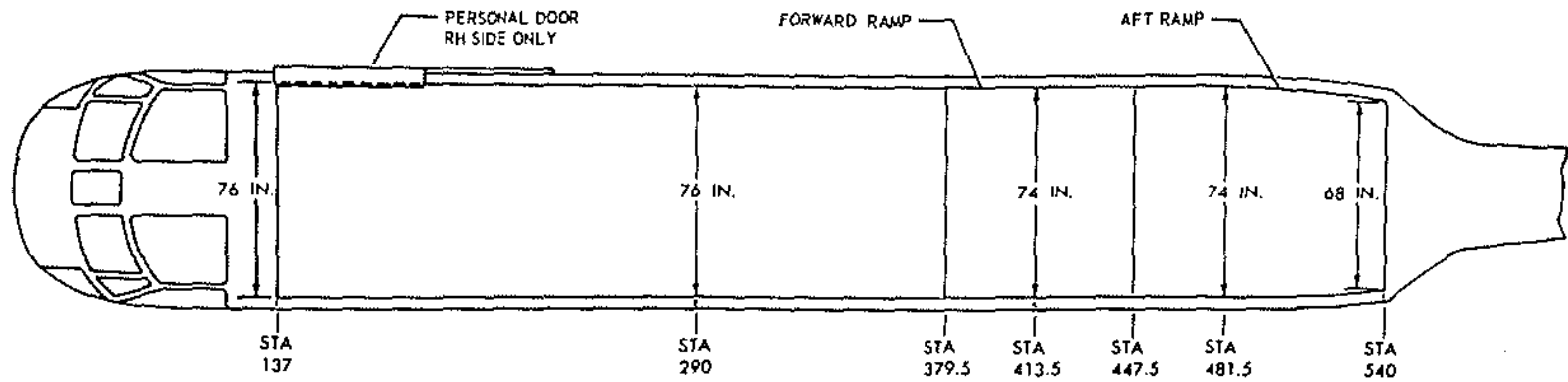
#### LOUDHAILER SYSTEM (AN/UIH-5).

The loudhailer system provides one way voice communication from the pilot, copilot, or the forward cabin station to personnel on the ground. The system provides audible transmission from approximately 10 to 5000 feet when the helicopter is

hovering and audible transmissions up to 2500 feet lateral distance while at an altitude of 500 feet. The system contains a compact, rotatable bracket-mounted, four-cluster speaker assembly installed on the right side of the cabin forward bulkhead. The rotatable mounting bracket arrangement permits the speaker assembly to be manually rotated to an external position outside the cabin door opening and rotated back inside the cabin to permit closing the cabin door. Locking pins are provided on the speaker mounting bracket to prevent movement of the speakers when in the fully extended or retracted position. A switch is installed at the speaker assembly pivot point to prevent accidental speaker operation when the speaker cluster is in the cabin. The speaker installation is mounted in such a manner as to be readily removed or installed. The system receives power from the dc essential bus and is protected by a circuit breaker, marked LOUDHAILER, located on the overhead circuit breaker panel.

#### Loudhailer Controls.

The loudhailer controls consist of a control panel, located on the pilot's console, a switch panel, mounted on the right side of the cargo compartment forward of the personnel door, and an amplifier, mounted on the right side of the entrance to the pilot's compartment. The control panel contains a power switch, marked LOUDHAILER with marked positions POWER and OFF, and a selector switch that has marked positions INTERNAL PA and EXTERNAL PA. Placing the power switch in the POWER position energizes the system. The selector switch is placed in the EXTERNAL PA position to select the loudhailer system and in the INTERNAL PA system to select the AIC-13 public address system. The switch panel, marked EXTERNAL PA, with marked positions ICS and LOUDHAILER, provides operation for the crewman in the cargo compartment. The LOUDHAILER position selects loudhailer system operation and the ICS position selects the intercommunication system. The amplifier contains a volume control, marked GAIN, that controls the volume of recorded or live transmissions. The volume control is rotated through four numbered positions counter-clockwise to control the volume of recorded transmissions and clockwise to control the volume of live transmissions.



\* CENTER OF FORWARD RAMP

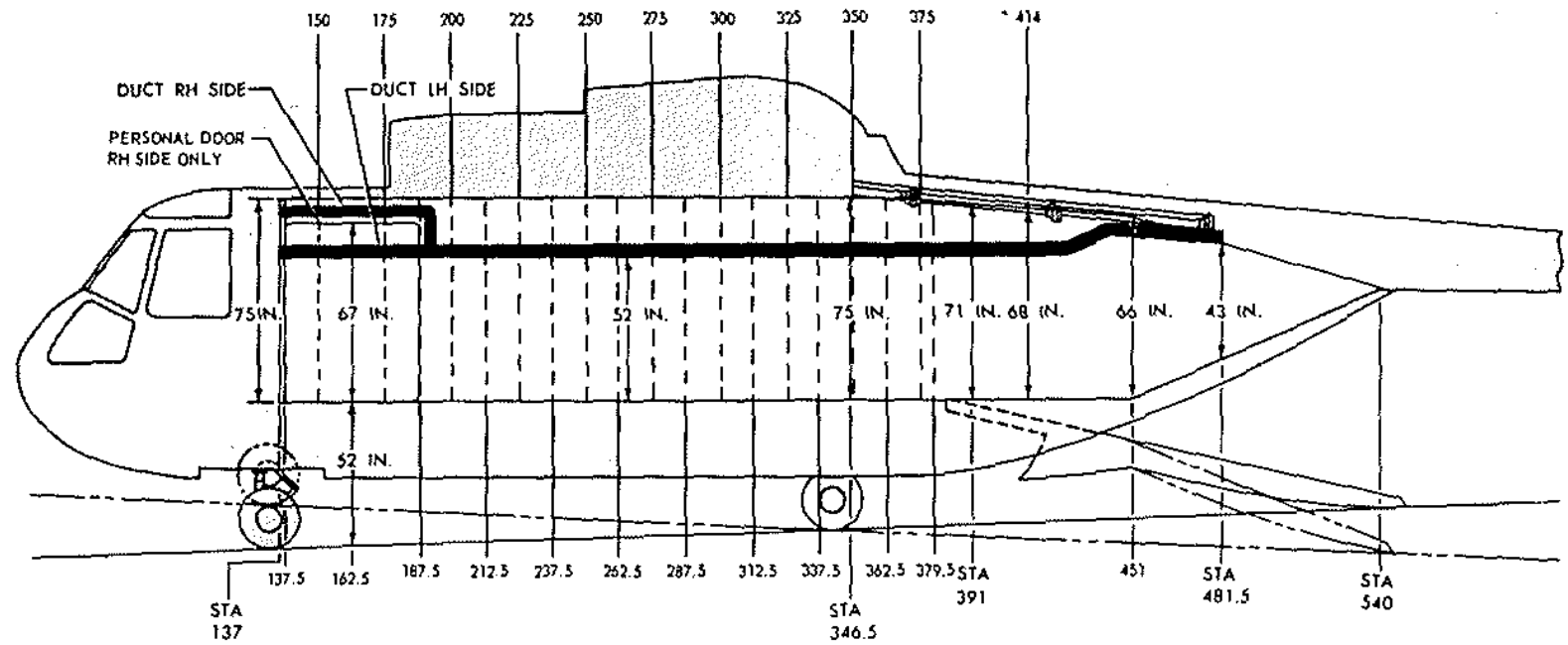


Figure 4-24. Cargo Compartment and Cargo Loading Stations (Sheet 1 of 2)

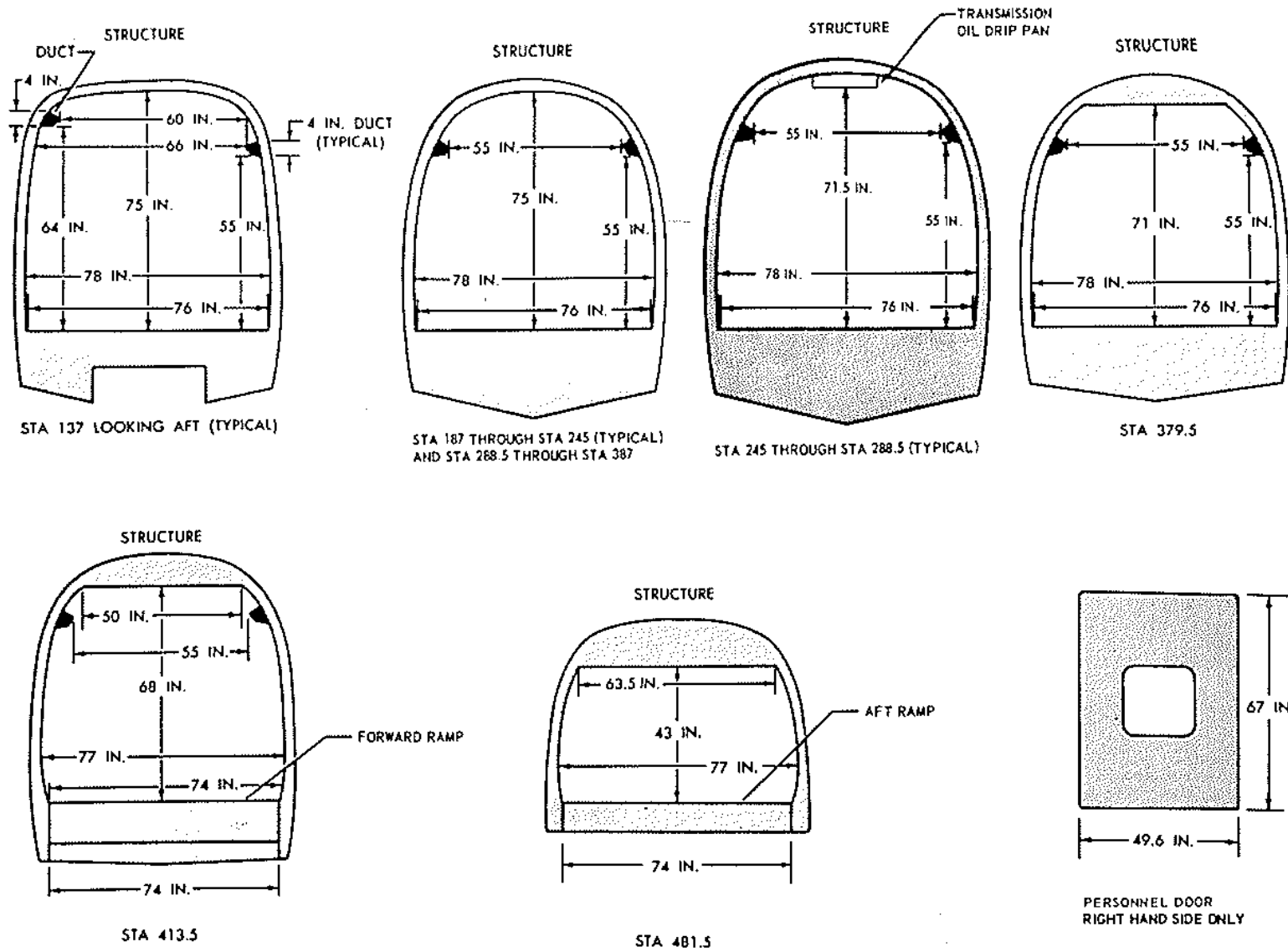


Figure 4-24. Cargo Compartment and Cargo Loading Stations (Sheet 2 of 2)

capacity hydraulic rescue hoist which is permanently externally mounted above the personnel door. On those helicopters equipped with armament configuration, a jettisonable window and release mechanism, four chest protectors, three M60 machine guns, forward and aft gun mounts, aft gun platform, ammunition containers, and rings and supports are installed. When loading the helicopter, refer to Section V for center of gravity and weight limitations and T.O. 1-B-40, Handbook of Weight and Balance Data.

### WARNING

When soundproofing is removed, cargo compartment passengers should wear helmets or ear plugs to avoid possible ear damage due to the noise level.

#### CARGO LOADING STATIONS.

The cargo compartment is divided into marked cg stations, at 25-inch intervals, between stations 150 and 375. Cargo loading scales corresponding to these marked stations are provided on the load adjuster. The cg loading stations are marked at eye level for easy locating. The cargo compartment may also be subdivided into unmarked 25-inch interval loading areas from fuselage station 137 to 451 as indicated on load adjuster. Cargo should be loaded between these stations so that the cargo cg falls on the respective cg stations.

#### CARGO FLOOR.

The cargo floor, made up of one-inch thick honeycomb floor panels, is supported by transverse bulkheads and beams. The cargo floor is approximately 310.5 inches long and 76 inches wide. The last 68 inches of the floor form the horizontal ramp floor which can be lowered and raised to facilitate cargo and/or troop loading and unloading. The floor has a positive non-skid surface. Three rows of low friction longitudinal skid strips are installed on top of the cargo floor to provide floor protection and facilitate cargo handling. The cargo floor is removable in the areas above the fuel tanks and is sealed to prevent water, dust, and dirt filtering into the area beneath the floor line. The cargo floor area is designed to support, during flight and/or during loading, a maximum load of 200 pounds per

square foot; however, higher weights may be carried if shoring is used to distribute the weight over a larger area.

#### TIEDOWN FITTINGS.

The two types of tiedown fittings (figure 4-25) used are the fitting for the standard type of cargo restraint, and the combination cargo restraint and lug for troop seat and litter floor attachments. The recessed tiedown fittings (figure 4-26) have 2500-pound restraint capability. The 2500-pound tiedown fittings are used to secure cargo, litter support straps, troop seat legs, and the crewman's safety harness. There are three 5000 pound tiedowns, one located near the personnel door and two located either side of the tail end of the aft ramp. The 5000 pound tiedown fitting near the personnel door is used for cargo loading through the ramp or as a dead-man when winching cargo out of the compartment.

#### TIEDOWN DEVICES.

Various types of tiedown devices may be used for securing cargo. One type is a turnbuckle arrangement for tightening the tiedown chains, another is a webbed type strap with hooks for attaching to tiedown fittings. Nets and strong rope may also be used.

#### RAMP SYSTEM.

The ramp system is divided into two sections, the forward ramp which is horizontal with the cargo compartment floor in the closed position, and the aft ramp which conforms to the contour of the fuselage in the closed position. The aft ramp is hinged to the forward ramp and opens outward and downward. The clearance between the ramp, in the open position, and the fuselage structure may be increased by KNEELING the helicopter. The ramp surface has transverse non-skid material installed for personnel footing and for loading vehicular cargo. Fittings rated at 2500 pounds are installed to secure light cargo carried on the forward ramp. There are no cargo tiedown fittings on the aft ramp floor. Two tiedown fittings rated at 5000 pounds each are used to suspend the ramp or for pulley block attachments when winching cargo through the ramp. The ramp system (figure 4-27) is electrically controlled and hydraulically actuated

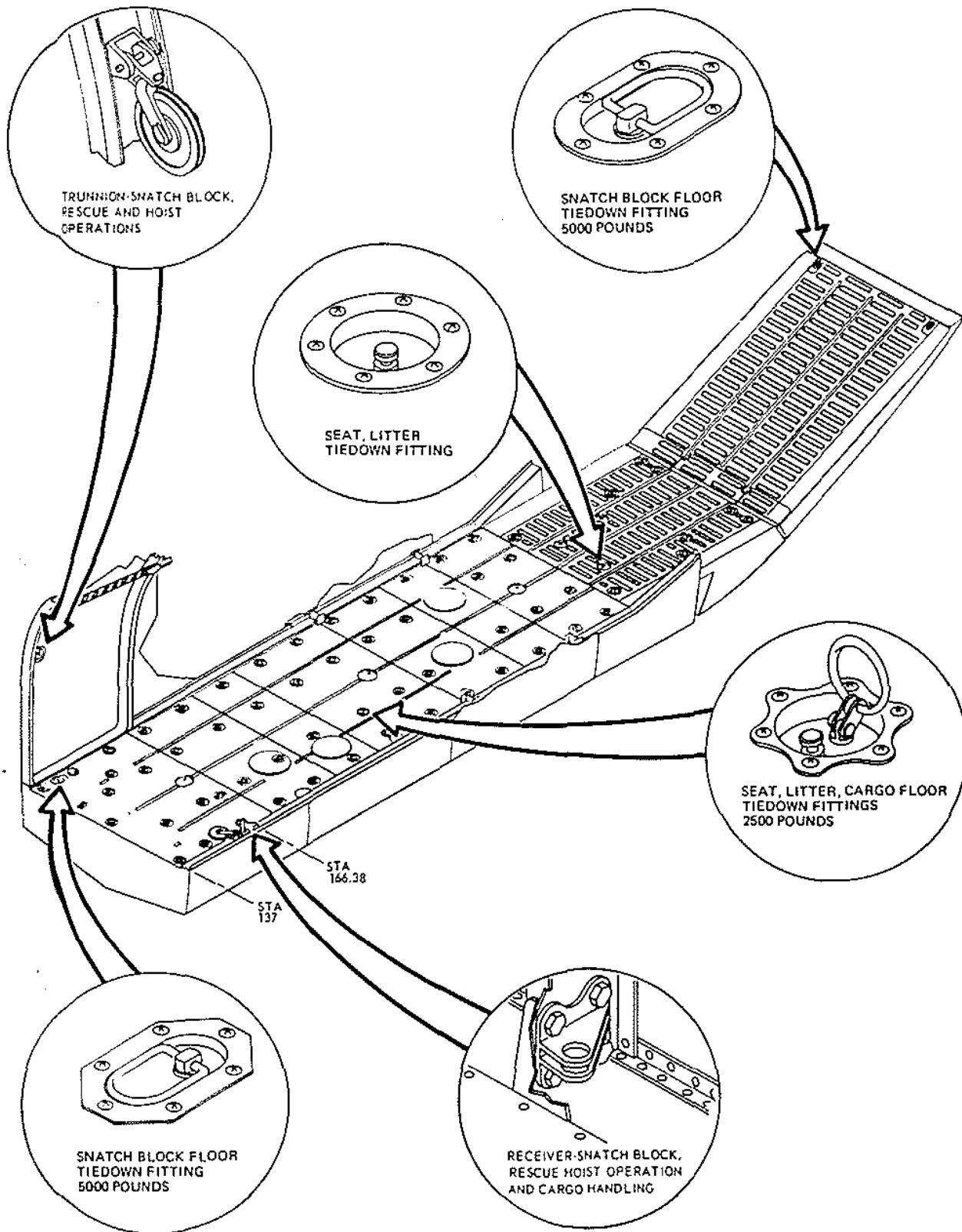


Figure 4-25. Tiedown Fittings

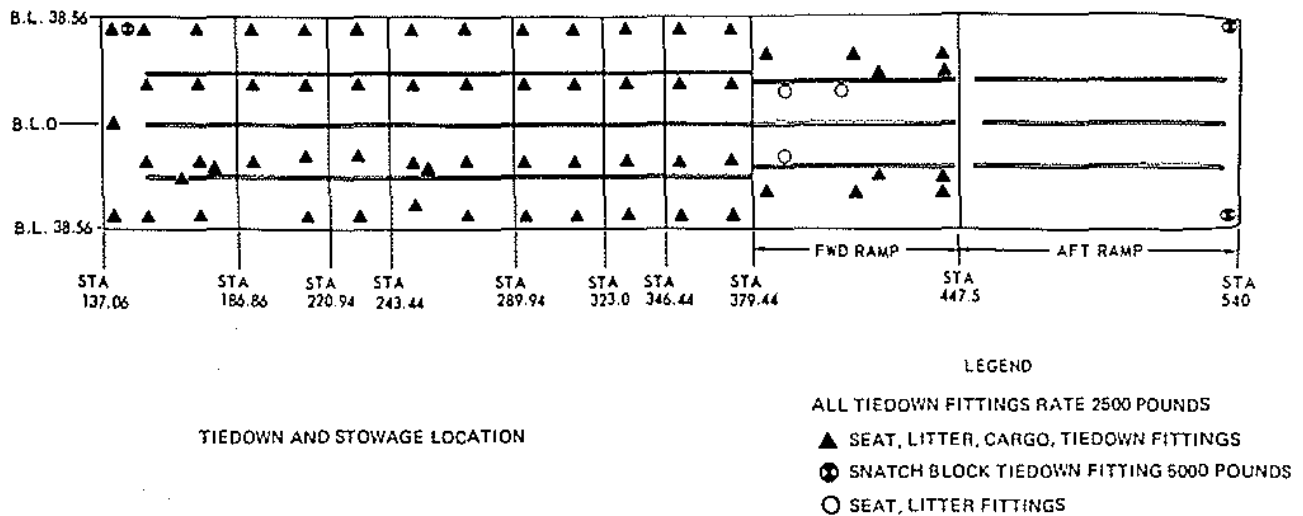


Figure 4-26. Location of Tiedown Fittings

by hydraulic pressure from the utility hydraulic system. The auxiliary power unit is the normal source of power for operation of the ramp. The ramp may be lowered manually when hydraulic or electrical power is not available. The aft ramp may be opened in the air, on the ground, or on the water. The forward ramp can be opened beyond the horizontal position only when the weight of the helicopter is on the helicopter's wheels and the aft ramp is unlocked. The ramp system controls consist of a pilot's ramp master switch, a pilot's ramp control panel, a crewmember's ramp control panel, and a manual uplock release. When actuated, electrical switches on the ramp control panels energize hydraulic solenoid valves which direct hydraulic pressure to the up or down sides of the ramp actuating cylinders.

### WARNING

The aft ramp cables must be attached and the forward ramp locked for all flights. If the ramp should extend beyond the horizontal position in flight, the helicopter may assume an extreme nosedown attitude.

### CAUTION

Personnel should refrain from standing on the aft ramp, without cables attached, to avoid damage to the ramp hydraulic system. To avoid damaging the aft ramp, no cargo exceeding 50 pounds should rest on the aft ramp without the aft ramp cables installed.

#### Aft Ramp.

An aft ramp, approximately six feet in length, at the end of the cargo compartment, is used for the loading and unloading of cargo and personnel. The aft ramp is locked in the closed position by two uplock cylinders. The uplock cylinders are mechanically latched and hydraulically released. Two safety cables are to be attached to the aft ramp whenever flight is made, regardless of whether the aft ramp is open or closed. The cables are attached to the fuselage structure and are stowed above the aft ramp along the left and right-hand cargo compartment side panels. A light, marked RAMP, on the pilot's caution panel will illuminate when the aft ramp is not up or not locked. The light receives electrical power from the dc essential bus through

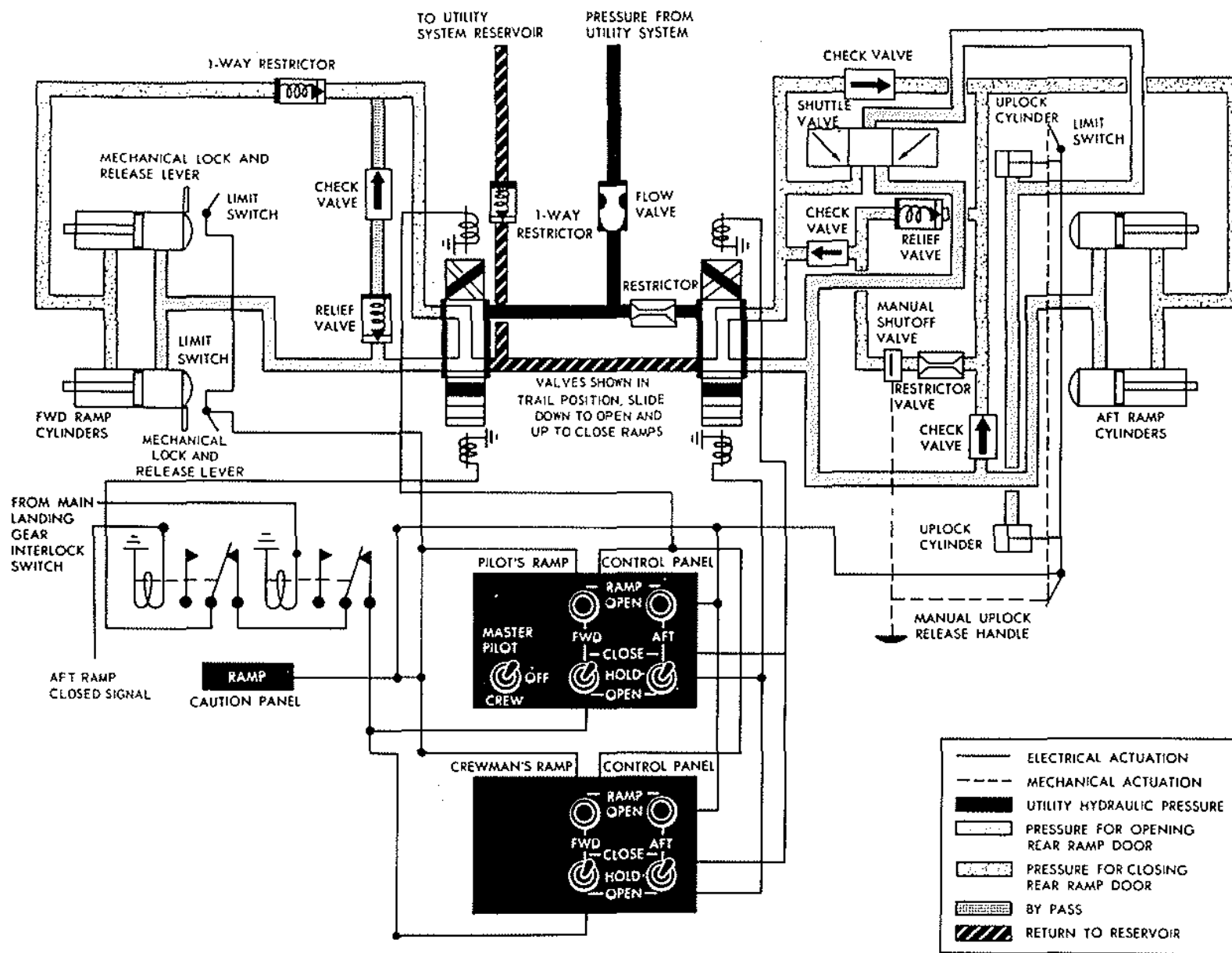


Figure 4-27. Ramp Actuating System

a circuit breaker, under the general heading INDICATOR LTS and marked RAMP, located on the overhead dc circuit breaker panel. The aft ramp will tend to float upward at speeds above 70 knots and will assume a partially closed position. On those helicopters which have the armament configuration, two tracks are installed on the aft ramp.

#### NOTE

The aft ramp may be opened and closed in flight and during climbs and descents at forward speeds no greater than 115 knots.

#### Forward Ramp.

The forward ramp, approximately five feet eight inches in length, may be lowered with the aft ramp to make an inclined entrance to the cargo compartment. The forward ramp contains tiedown fittings for cargo tiedown, troop seats, skid strips, and a nonskid material surface for traction. The forward ramp is lowered in sequence, after the aft ramp is lowered, and raised before the aft ramp is raised. The forward ramp is locked in the closed position by mechanically latched uplocks incorporated in the forward ramp actuating cylinders. The forward ramp is released by hydraulic pressure.

#### Pilot's Ramp Master Switch.

The ramp master switch, located on the pilot's ramp control panel, marked MASTER has marked positions, PILOT, OFF, and CREW. Placing the master switch in the PILOT position transfers electrical power to the switches on the pilot's ramp control panel. Placing the master switch in the CREW position transfers electrical power to the switches on the crewmember's ramp control panel. The master switch receives electrical power from the dc essential bus, through a circuit breaker, marked RAMP, located on the overhead dc circuit breaker panel.

#### Pilot's and Crewmember's Ramp Control Panels.

A pilot's ramp control panel is located on the cockpit console (figures 1-17 and 1-18). On some helicopters, the pilot's ramp control panel is located on the pilot's console to the right of the pilot's seat. The crewmember's RAMP CONTROL

panel is located on the right-hand cargo compartment side panel above the ramp. The ramp control panels (figure 4-28) consist of a forward ramp switch, aft ramp switch, forward and aft RAMP OPEN warning lights, and a CABLE caution light. The aft ramp switch, marked AFT, with marked positions CLOSE, HOLD, and OPEN, controls the operation of the aft ramp. The RAMP OPEN caution light, marked AFT, will illuminate when the aft ramp is not up and locked. The forward ramp switch, marked FWD, with marked positions CLOSE and OPEN, controls the operation of the forward ramp. Extra long cargo may be extended over the aft ramp door with the aft ramp open (horizontal) in flight, but should be loaded in such a way that cargo does not come in contact with the aft ramp. Due to interlocks in the forward ramp control circuit, the forward ramp cannot be opened until the aft ramp is unlocked and the weight of the helicopter is on the helicopter's wheels. The RAMP OPEN caution light, marked FWD, will illuminate when the forward ramp is not up and locked.

#### NOTE

The CABLE caution light on the ramp control panel is inoperative.

#### Aft Ramp Uplock Release Levers.

There are two manual uplock release levers (figure 4-29). One lever is located on the right-hand side of the cargo compartment above the ramp. The other, the handle type, is located externally under the right hand side of the tail pylon, aft of the ramp, in an oblong metal container with a hinged cover marked RAMP EXIT RELEASE HANDLE INSIDE. Both controls are connected by a cable to provide a mechanical release of the aft ramp uplocks when electrical or hydraulic power is not available. When actuated, the uplocks are released and the ramp will lower under its own weight. Snubbing action during the ramp opening is provided by fluid trapped in the ramp actuating system hydraulic lines.

#### Forward Ramp Uplock Release Levers.

A manual release lever for the forward ramp actuating cylinder uplocks is installed on the top side of each forward ramp actuating cylinder. The manual releases provide the means of unlocking the forward ramp when electrical or hydraulic power

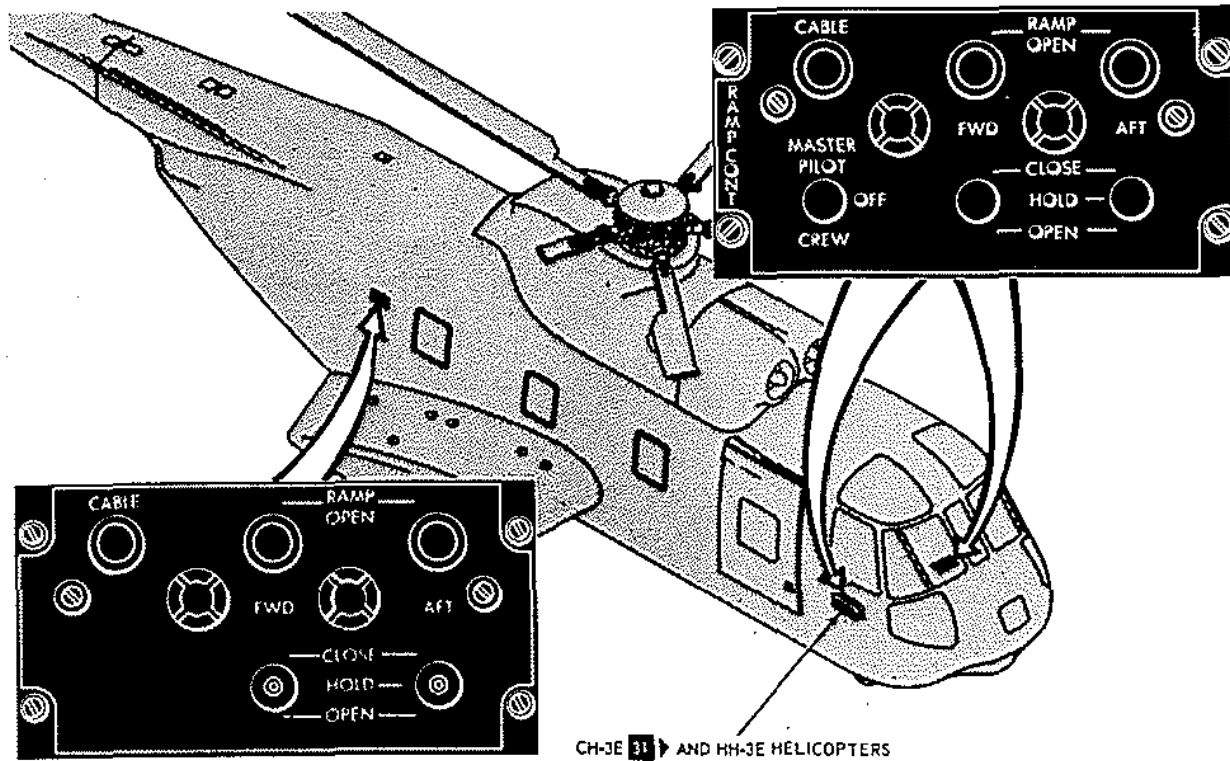


Figure 4-28. Ramp Control Panels (Typical)

is not available. The ramp will then lower under its own weight. The rate of ramp lowering is controlled by a restrictor.

**Normal Operation.**

To lower the ramp, proceed as follows:

1. APU — 100%.

**CAUTION**

Before lowering ramp, make sure that the area under the ramp is clear of personnel and equipment and the ground under the ramp is of equal load-carrying ability, to avoid twisting the ramp when heavy loads are applied. Make sure the ground is free of rocks, stumps, etc., to avoid damaging aft ramp outer skin.

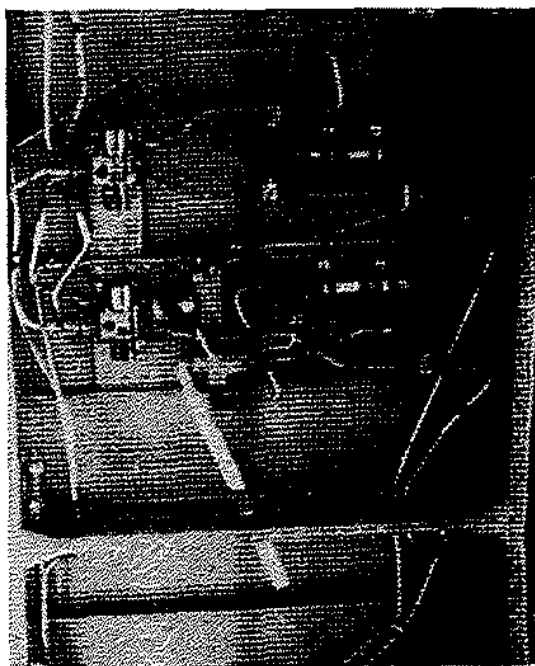
**NOTE**

Before lowering the ramp, check that troop seats and cargo tiedown devices are disconnected from the forward ramp.

2. Ramp master switch — PILOT OR CREW.
3. AFT ramp switch — OPEN (RAMP caution light — ON, AFT RAMP OPEN WARNING light — ON).
4. FWD ramp switch — OPEN (FWD RAMP OPEN WARNING light — ON).

To raise the cargo ramp, proceed as follows:

1. APU — 100%.
2. Ramp master switch — PILOT or CREW.



AFT RAMP

EXTERNAL  
MANUAL  
RELEASE

FWD RAMP

3. FWD ramp switch — CLOSE (FWD RAMP OPEN WARNING light — OUT).
4. FWD ramp switch — HOLD.

Figure 4-29. Ramp Uplock Release Levers

5. AFT ramp switch — CLOSE (AFT RAMP OPEN warning light — OUT).
6. AFT ramp switch — HOLD.

#### Manual Operation.

To lower the ramp, manually, proceed as follows:

1. Aft ramp uplock release levers — PULL.
2. From outside, external manual release — PULL.
3. Forward ramp uplock release levers — PULL.

#### NOTE

The aft ramp may be raised manually.

#### PERSONNEL DOOR.

A door is installed in the forward section of the cargo compartment, on the right-hand side of the fuselage. The door provides a means for loading personnel or cargo while on the ground or while hovering. The door, approximately 5.5 feet high and 4 feet wide, rides on tracks mounted above and below the door on the outside of the fuselage. A positive acting latch is installed in the door to prevent inadvertent opening in flight. The latch allows the door to be held open in three different positions. The door may be opened from inside the compartment or from the outside, while on the ground, by turning the latch handle and sliding the door aft. In the event of an emergency, the door may be jettisoned by pulling down on the release handle located at the top of the door and pushing the door outward. A personnel ladder, normally stowed on the left side of the cargo compartment aft of the electronics rack, is installed in the sill of the door to permit entry of personnel. Some helicopters are equipped with a one piece improved ladder that is stowed in the provisions provided on the left-hand cabin wall above the aft ramp. The personnel ladder should be removed and stowed prior to taxi so as not to interfere with rapid emergency egress. The hoist boom may be installed at the door for cargo loading or rescue operations. The door cannot be closed with the boom installed in the hoist position. A light, marked CARGO