

CHAPTER 1

WATERTIGHT CLOSURES, FUNCTIONS AND DESCRIPTIONS

1-1. FUNCTIONS.

The primary function of watertight closures, including doors, hatches, and scuttles, is to provide access and to prevent progressive flooding. The secondary function is to control the spread of fire, toxic vapors, and smoke. Doors, hatches, and scuttles allow movement of personnel throughout the ship. Dogged manhole covers and bolted manhole plates allow access to those compartments, tanks, and voids that are not frequently accessed, but must sometimes be entered to perform material inspections, surveys, and maintenance. The function of manhole covers and plates is to contain or prevent liquids from entering or leaving the space of a void, tank, or cofferdam.

1-2. DESCRIPTIONS.

The watertight closures are described as follows:

- a. Individually Dogged Watertight Doors. (See [figure 1-1](#).) These doors are either 4-, 6-, 8-, 10-, or 12-dogged and watertight. These doors provide access/egress to compartments that are not high usage spaces and which do not require rapid access such as paint lockers, deck gear lockers, or storerooms. The 10-dog doors are usually found below the V-lines in order to maintain a higher degree of watertight integrity.

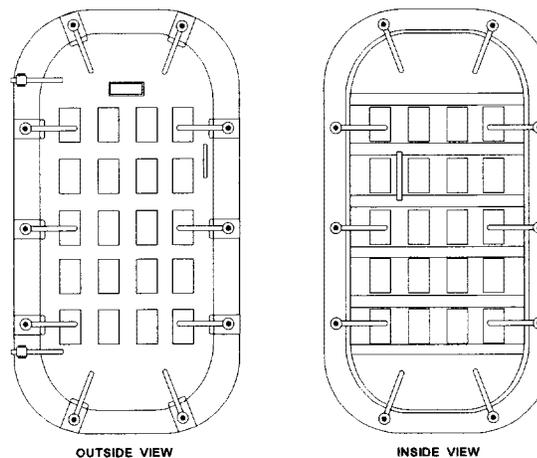


Figure 1-1. Individually Dogged Watertight Door

- b. Quick-Acting Watertight Doors. (See [figure 1-2](#).) These doors are used for routine passage and access/egress into the superstructure from the weather decks, main passageways, or manned spaces such as the Combat Information Center (CIC), Radio Central, Machinery Control Central, or Damage Control Central. These doors are usually placed in high traffic areas.

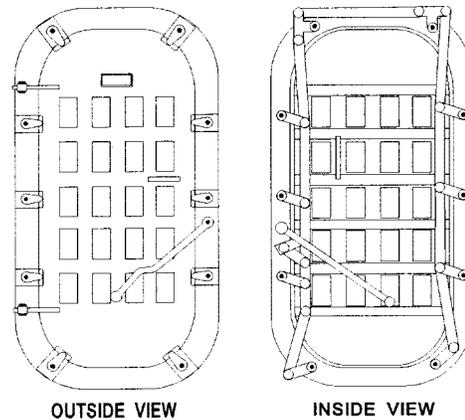


Figure 1-2. Quick-Acting Watertight Door

- c. Quick-Acting Airtight Doors. (See [figure 1-3](#).) These doors are usually located above the V-lines and are used to access fan rooms, storerooms, and spaces where interior bulkheads are required to be airtight. These doors have three dogs on the handle side and no dogs on the hinge side, and are designed to prevent the spread of fire, toxic vapors, and smoke in the event of shipboard casualties.

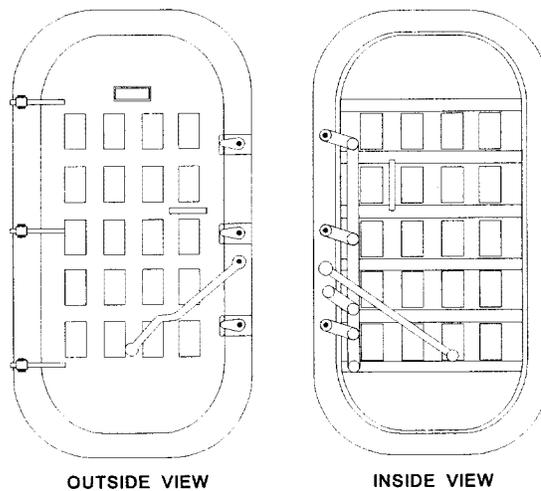


Figure 1-3. Quick-Acting Airtight Door

- d. Raised Watertight Hatches. (See [figure 1-4](#).) These hatches are installed in interior and exterior areas where rapid access/egress is not required. These hatches are usually located in low traffic areas and offset in a corner of a passageway or compartment. These hatches are usually installed in compartments which provide egress by other means. These hatches do not have escape scuttles, and are usually used for stores on/offload and access for heavy equipment.
- e. Raised Watertight Hatches with Scuttles. (See [figure 1-5](#).) These hatches are installed in interior and exterior areas where rapid access/egress is required. These hatches are usually provided in higher traffic areas than the raised watertight hatch, and are offset in a corner of a passageway or compartment. These hatches have escape scuttles to provide rapid access/egress, and are usually located above berthing compartments, manned and unmanned machinery spaces, and all deck levels requiring rapid access/egress.

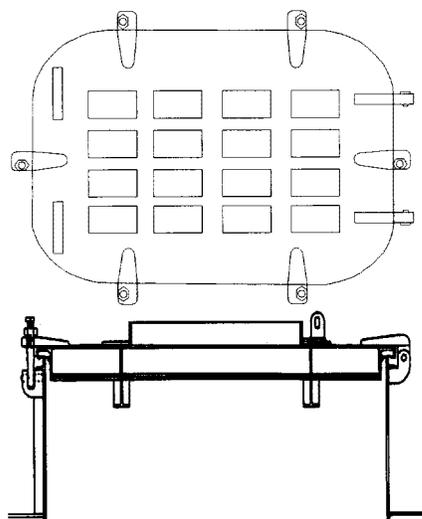


Figure 1-4. Raised Watertight Hatch

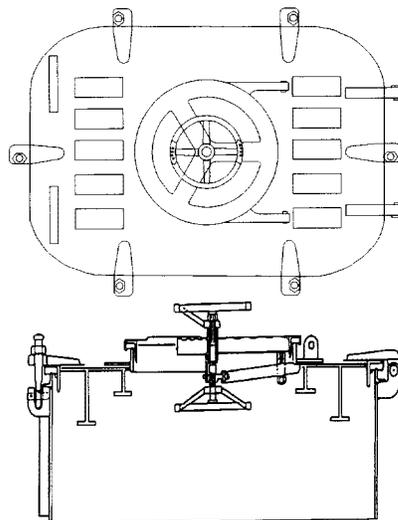


Figure 1-5. Raised Watertight Hatch with Scuttle

- f. Raised Watertight Scuttles. (See [figure 1-6](#).) These scuttles are installed in interior and exterior areas, and are offset in a corner out of high traffic zones where rapid access/egress is required. These scuttles may be used as an alternate access to manned or unmanned spaces, machinery spaces, or storerooms.
- g. Flush Watertight Scuttles. (See [figure 1-7](#).) These scuttles are installed in areas such as flight decks, cargo decks, hangar decks, passageways, or areas of relatively high traffic where a flush deck condition is required to eliminate tripping hazards or to maintain a smooth trucking surface. Trough drains are required for flush scuttles in weather decks.
- h. Flush Watertight Hatches. (See [figure 1-8](#).) These hatches are installed in areas such as flight decks, hangar decks, cargo decks, passageways, or areas of relatively high traffic where a flush deck condition is required to eliminate tripping hazards or to maintain a smooth trucking surface. Trough drains are required for flush hatches in weather decks.

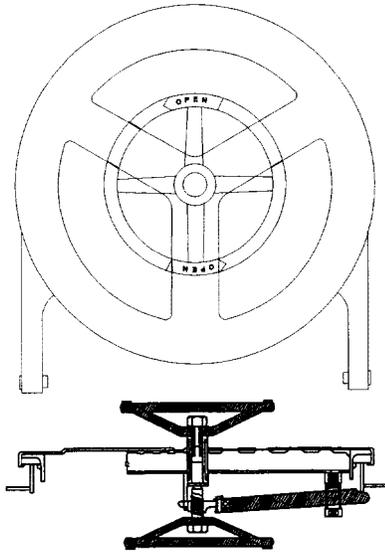


Figure 1-6. Raised Watertight Scuttle

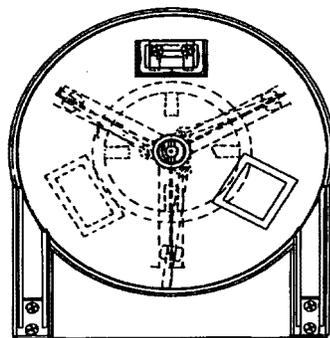


Figure 1-7. Flush Watertight Scuttle

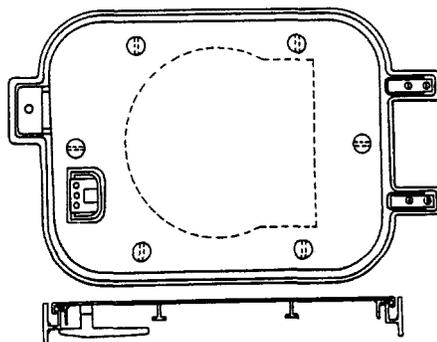


Figure 1-8. Flush Watertight Hatch

- i. Flush Watertight Hatches (6,000 Lb Wheel Load) and Ramped Low Profile Hatches (6,000 Lb Wheel Load). (See [figure 1-9](#)). The 6,000 lb wheel load flush watertight hatch is not illustrated.) These types of hatches are spring-balanced and are installed in areas such as flight decks, hangar decks, cargo decks, passageways, or areas of high traffic that may be subject to wheel loads of up to 6,000 lbs (maximum). For exterior installa-

tions, flush hatches are to be provided with trough drains. Ramped low profile hatches are installed in areas where a minimum height ramped hatch would not be detrimental to shipboard vehicular traffic or pose a tripping hazard.

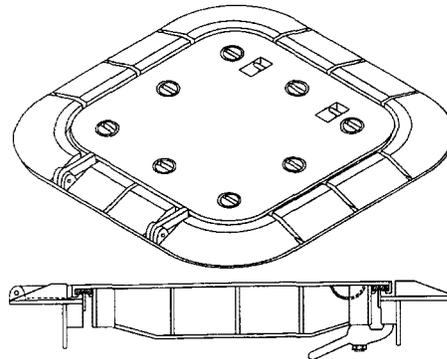


Figure 1-9. Ramped Low Profile Hatch (6,000 Lb Wheel Load)

- j. Flush Watertight Scuttles (6,000 Lb Wheel Load) and Ramped Low Profile Scuttles (6,000 Lb Wheel Load). (See [figure 1-10](#) and [figure 1-11](#).) These types of scuttles are installed in areas such as flight decks, hangar decks, cargo decks, passageways, or areas of high traffic that may be subject to wheel loads of up to 6,000 lbs (maximum). For exterior installations, flush scuttles are to be provided with trough drains. Ramped low profile scuttles are installed in areas where a minimum height ramped scuttle would not be detrimental to shipboard vehicular traffic or pose a tripping hazard.
- k. Manhole Covers. (See [figure 1-12](#).) Manhole covers provide access to tanks, voids, and cofferdams. These covers provide watertight and oiltight integrity. These spaces need to be accessed periodically for inspection or repair.
- l. Watertight Quick-Acting Ballistic Doors. (See [figure 1-13](#) and [figure 7-6](#).) These 3-dog doors are installed in ballistic armored bulkheads, and are the same thickness and material as the plating in which they are fitted. These doors are provided where rapid access is required.
- m. Watertight Individually Dogged Ballistic Doors. (See [figure 1-14](#) and [figure 7-5](#).) These 3-dog doors are installed in ballistic armored bulkheads, and are the same thickness and material as the plating in which they are fitted. These doors are provided where rapid access/egress is not required.
- n. Watertight, Spring-Balanced, Individually Dogged Ballistic Hatches. (See [figure 7-11](#).) These hatches are installed in a ballistic armored deck, and are spring-balanced counterweight or hydraulically operated. The hatch is held open by an automatic catch assembly. The hatch and deck are the same material and thickness.
- o. Balanced Armor Ballistic Scuttles. (See [figure 7-18](#).) These scuttles are 18-, 21-, and 25-inch diameter clear openings. Balanced armor scuttles are used as secondary or emergency access/ egress through a deck, bulkhead, or hatch cover. Scuttles are spring-balanced and are held open by an automatic catch assembly.
- p. Glass-Reinforced Plastic Quick-Acting Watertight Doors. (See [figure 1-15](#).) These glass-reinforced plastic (GRP) doors must meet all the requirements of a standard quick-acting watertight door. These doors are used primarily for minesweeping class ships to reduce magnetic signature.
- q. Glass-Reinforced Plastic Individually Dogged Watertight Doors. (See [figure 1-16](#).) These GRP doors must meet all the requirements of a standard dogged watertight door. These doors are used primarily for mine-sweeping class ships to reduce magnetic signature.
- r. Fixed Lights. (See [figure 1-17](#).) These lights are 4 inches in diameter and are provided in doors to pilothouses, airlocks, supply department offices (disbursing), flammable liquids storerooms, and flammable liquids issue

rooms. These lights are installed in quick-acting doors that provide routine passage on and above the damage control deck and in spaces where additional visibility is necessary because of traffic considerations. Fixed lights are not installed in watertight doors below the damage control deck (except where required in doors to magazines in which air-launched guided missile components containing liquid propellants are stowed) or in doors leading to the weather. Fixed lights in watertight doors are of sufficient strength to maintain the damage control strength requirements and resistance to damage of the watertight door. Fixed lights, 6 inches in diameter, are installed in air locks, decontamination stations, and pressure lock doors. Doors to weather decks with fixed lights have a dead light cover for darken ship capability.

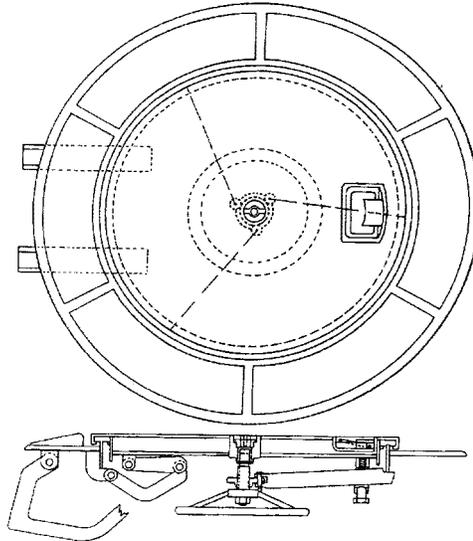


Figure 1-10. Flush Watertight Scuttle (6,000 Lb Wheel Load)

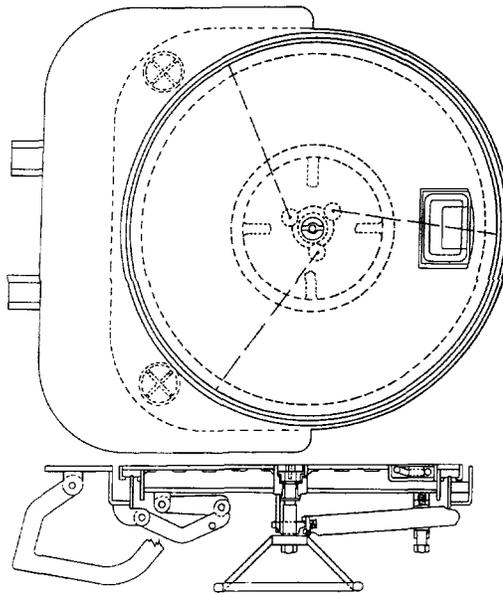


Figure 1-11. Ramped Low Profile Scuttle (6,000 Lb Wheel Load)

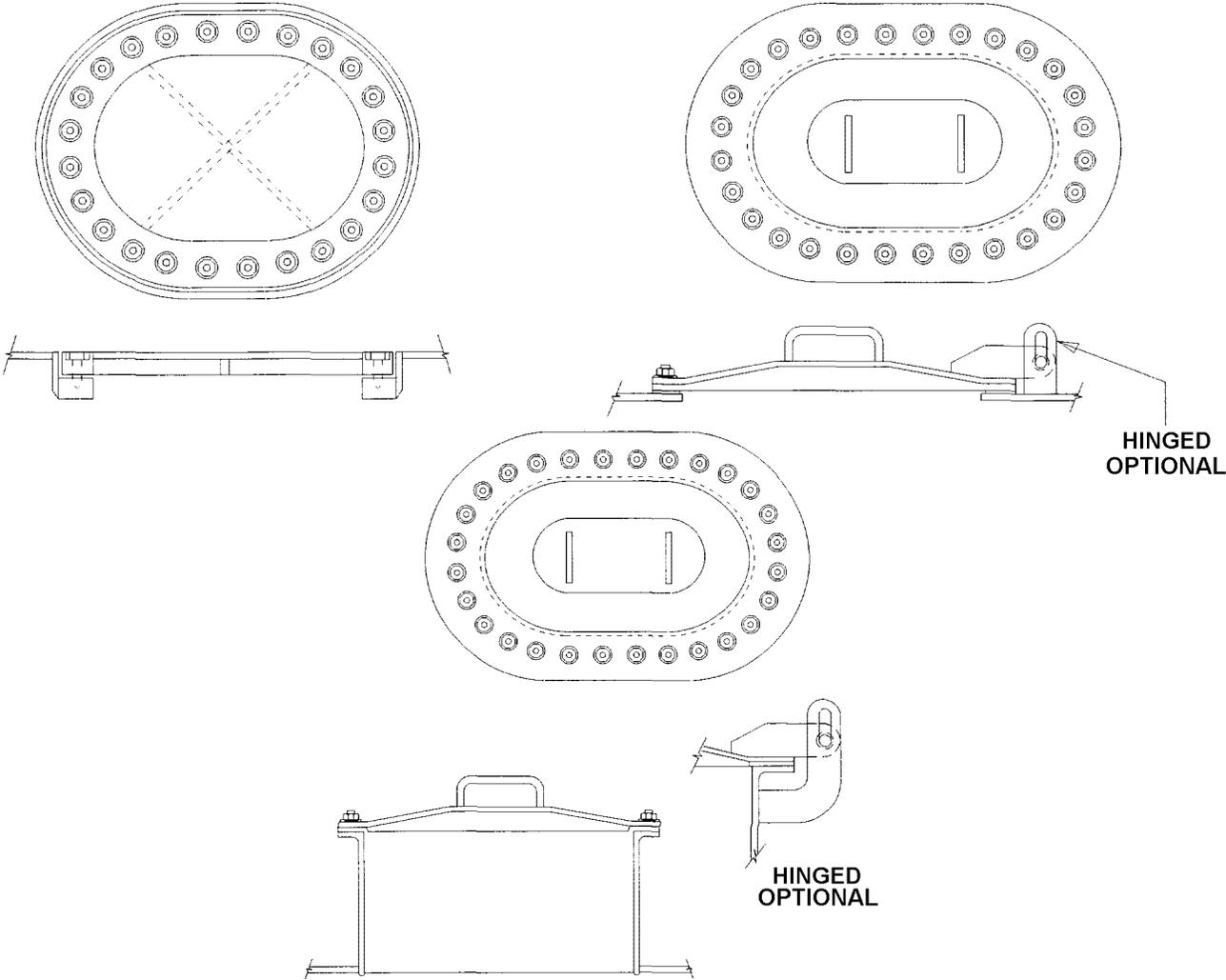


Figure 1-12. Watertight Manhole Cover

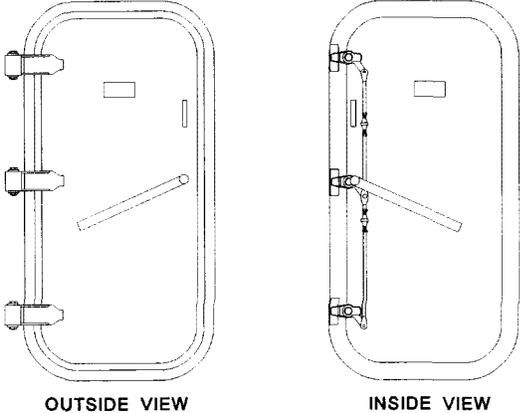


Figure 1-13. Watertight Quick-Acting Ballistic Door

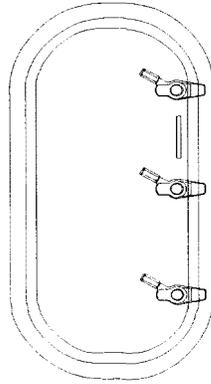


Figure 1-14. Watertight Individually Dogged Ballistic Door

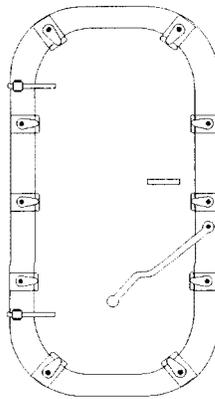


Figure 1-15. Glass-Reinforced Plastic Quick-Acting Watertight Door

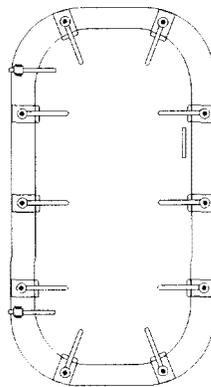


Figure 1-16. Glass-Reinforced Plastic Individually Dogged Watertight Door

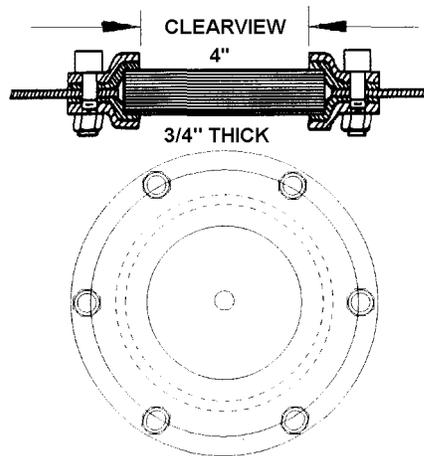


Figure 1-17. Fixed Light

1-3. DESCRIPTIONS OF MACHALTS.

- a. MACHALT 167-31004 (ECP-444) removes the Oilite bronze or CRES flanged and straight bushings, jamnuts, helical spring, and MIL-R-900 gaskets, and installs self-locking nuts, thrust washers, self-lubricated flanged and straight bushings, and silicone rubber gaskets in weatherdeck quick-acting watertight/airtight doors. (See [figure 1-18.](#))
- b. MACHALT 167-31006 (ECP-486) removes the Oilite bronze or CRES flanged and straight bushings, jamnuts, helical spring, and MIL-R-900 gaskets, and installs self-locking nuts, thrust washers, self-lubricated flanged and straight bushings, and silicone rubber gaskets in LHA-1 Class steel interior quick-acting and individually dogged watertight/airtight doors. (See [figure 1-19.](#))
- c. MACHALT 167-53009 (ECP-514) installs a dogging assist latch on high traffic, quick-acting, 3-dog, airtight, nonballistic doors and fragmentation doors. (See [figure 1-20.](#))
- d. MACHALT 167-31006 (ECP-518) removes all replaceable components in the hinge assemblies and replaces with upgraded pins, thrust washers, and self-lubricated bushings on quick-acting watertight doors in high traffic areas. (See [figure 1-21.](#))
- e. MACHALT 167-53008 (ECP-523) removes the existing collective protective system (CPS) door latch and installs a Naval Surface Warfare Center, Carderock Division - Ship Systems Engineering Station (NSWCCD-SSSES), style door latch (gate latch) on the CPS zone boundary quick-acting watertight/airtight doors. (See [figure 1-22.](#))
- f. MACHALT 167-31010 (ECP-526) is installed on exterior doors, well deck doors, and doors in high moisture/humidity areas. This MACHALT removes the Oilite bronze flanged and straight bushings, jamnuts, packing plungers, string, string packing, and helical springs, and installs sintered bronze flanged and straight bushings, O-rings, T-seals, helical springs, self-locking hex nuts, setscrews, and CRES paint shields. The sintered bronze bushings are impregnated with Elisha Technologies EDC 1270 EPL, and the void space within the sleeve is filled with EDC 1270 EPL grease. MACHALT (ECP-526) also replaces the self-lubricated bushings previously installed by MACHALT 167-31004 (ECP-444) on quick-acting weather doors. MACHALT (ECP-526) is not applicable to the newer style doors equipped with grade 316 CRES spindle sleeves. (See [figure 1-23.](#))
- g. MACHALT 167-31011 (ECP-538) replaces all existing replaceable components in the hinge assemblies of quick-acting watertight/quick-acting airtight (QAWT/QAAT) doors in high traffic locations with upgraded pins and thrust washers. Self-lubricated bushings are installed to correct recurring wear and maintain the integrity of the QAWT/QAAT doors. (See [figure 1-24.](#))

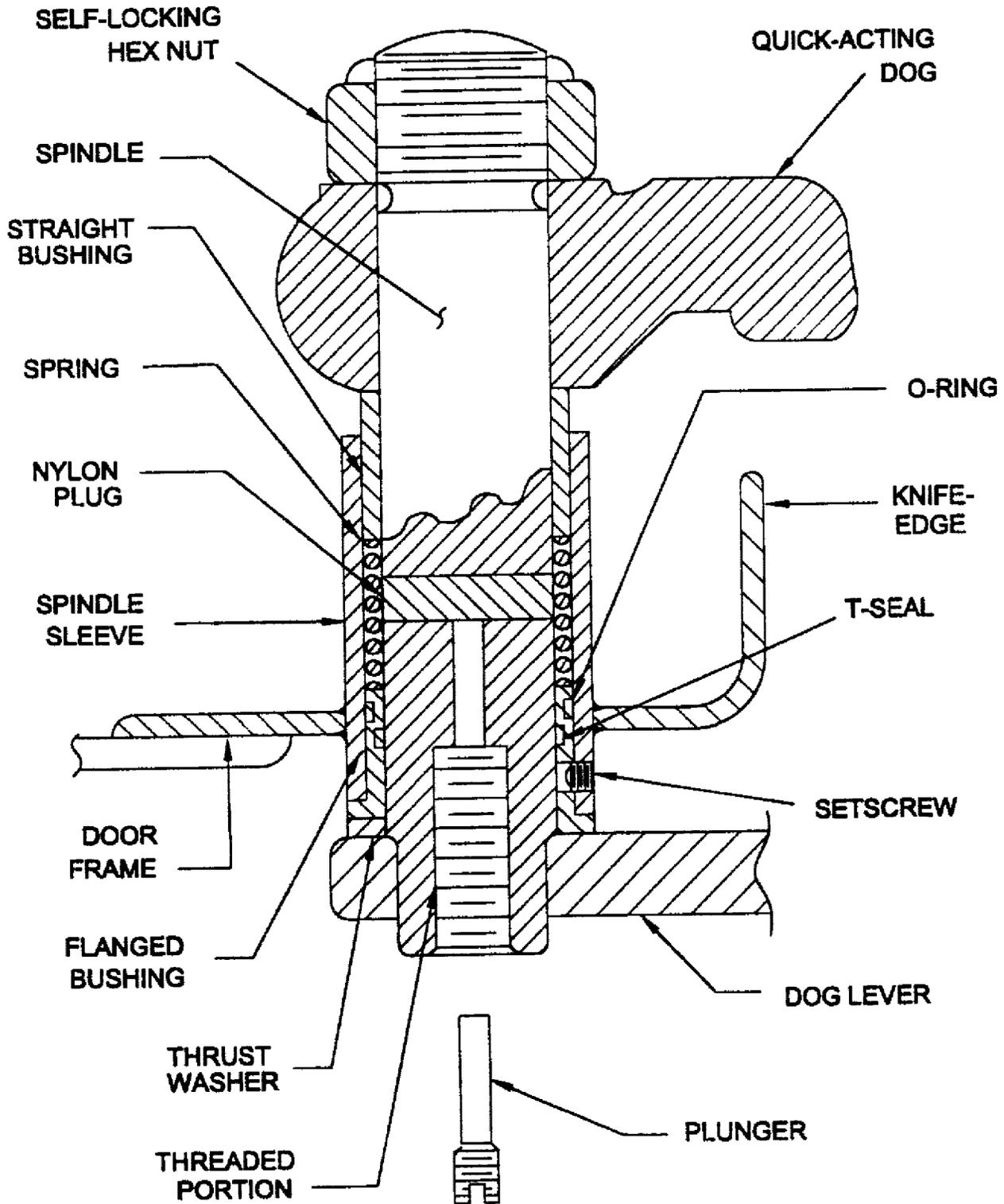


Figure 1-18. Quick-Acting Door Dog Assembly (Cross Section View) Modified by MACHALT 167-31004 (ECP-444)

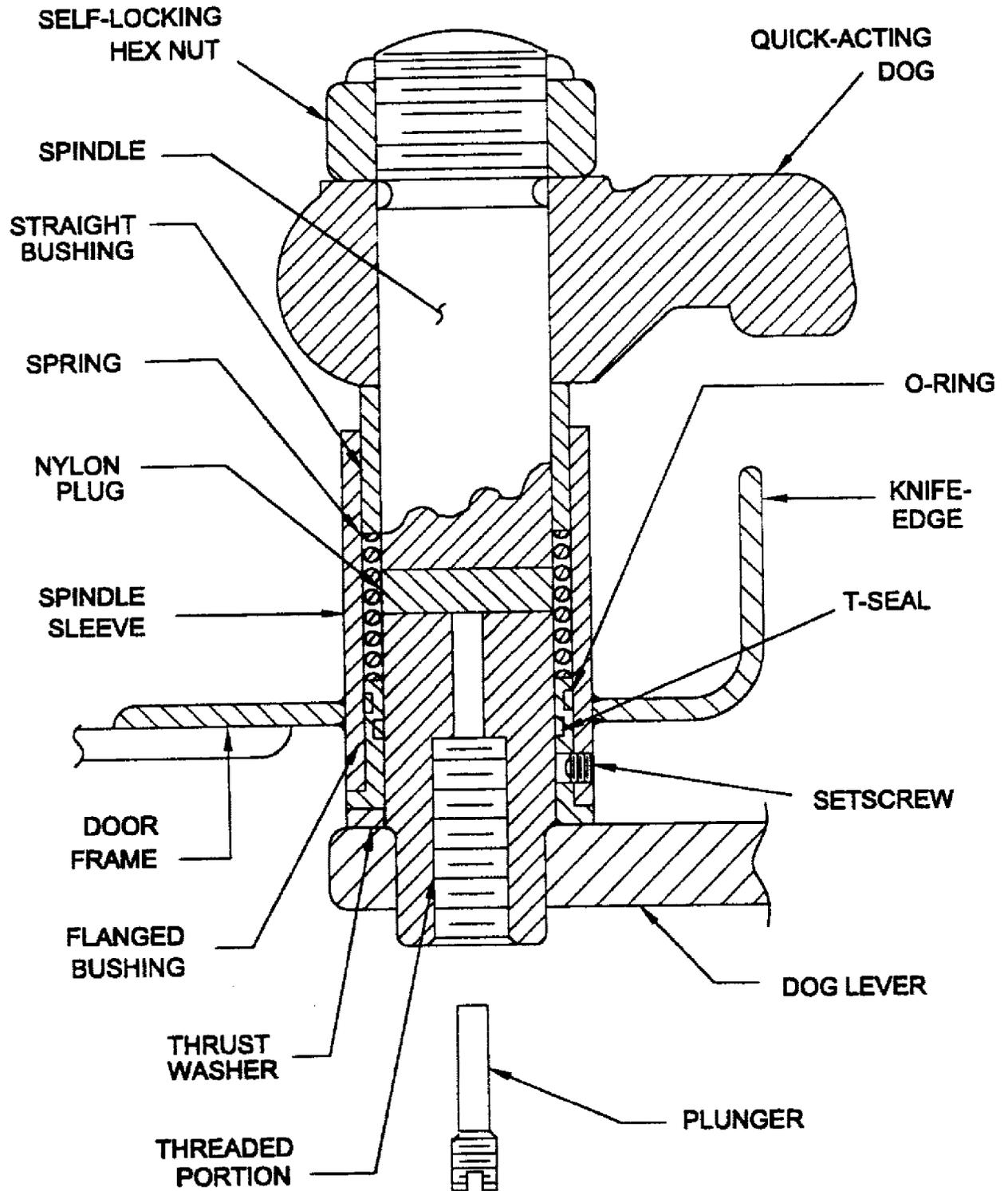


Figure 1-19. Quick-Acting Door Dog Assembly (Cross Section View) Modified by MACHALT 167-31006 (ECP-486)

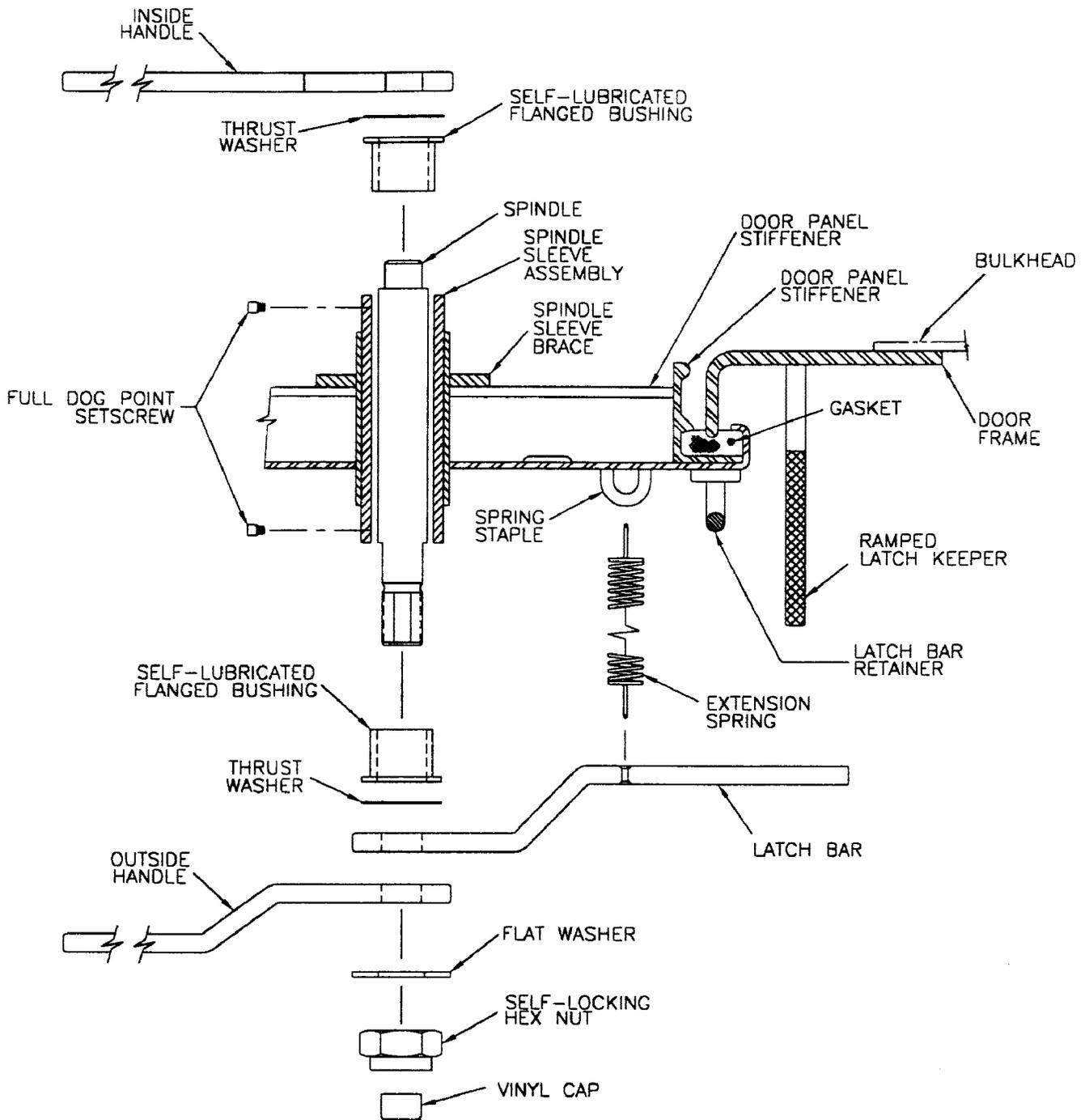


Figure 1-20. Dogging Assist Latch Installed by MACHALT 167-53009 (ECP-514)

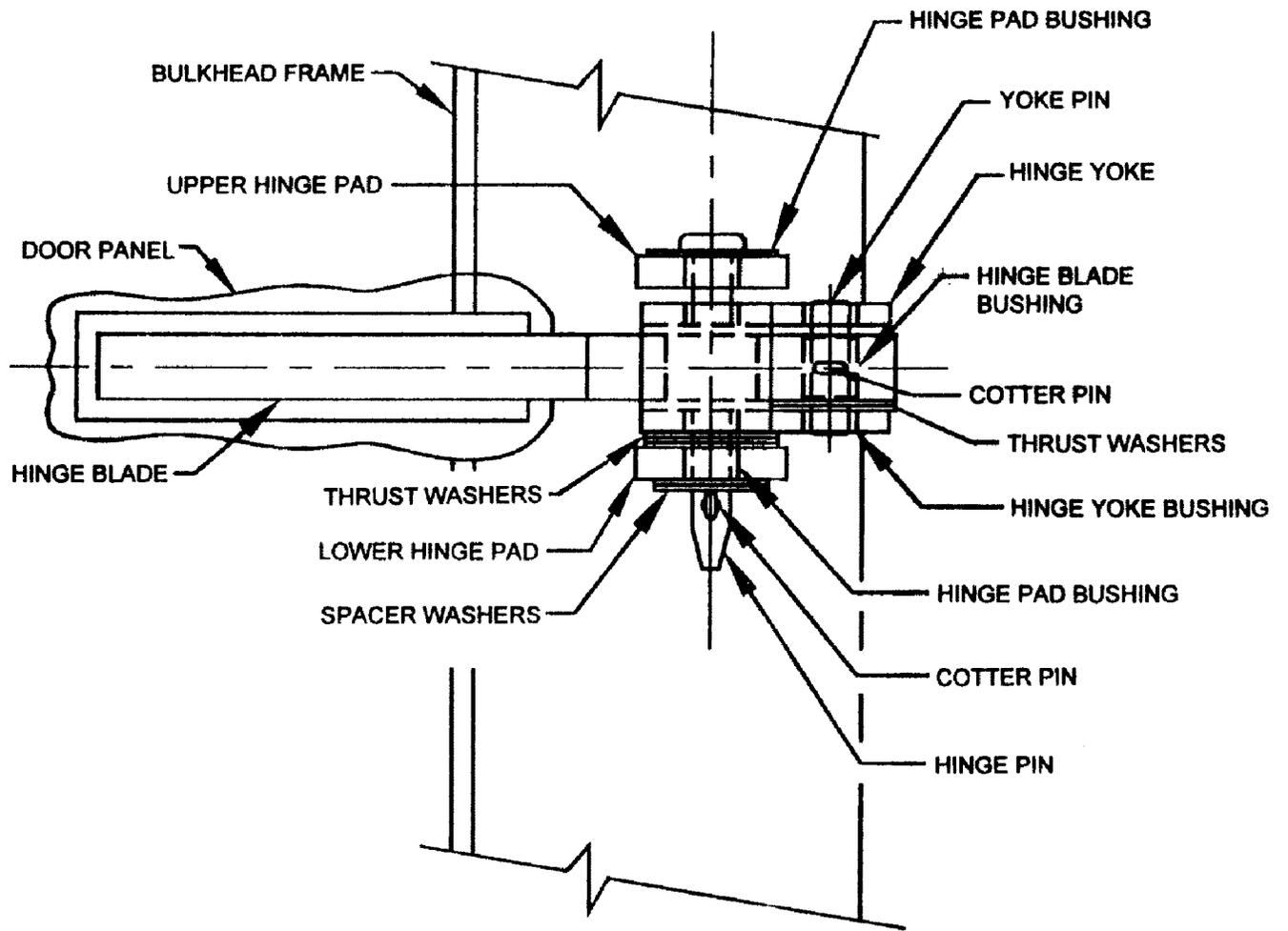


Figure 1-21. Quick-Acting Watertight Door Hinge Assembly Modified by MACHALT 167-31006 (ECP-518)

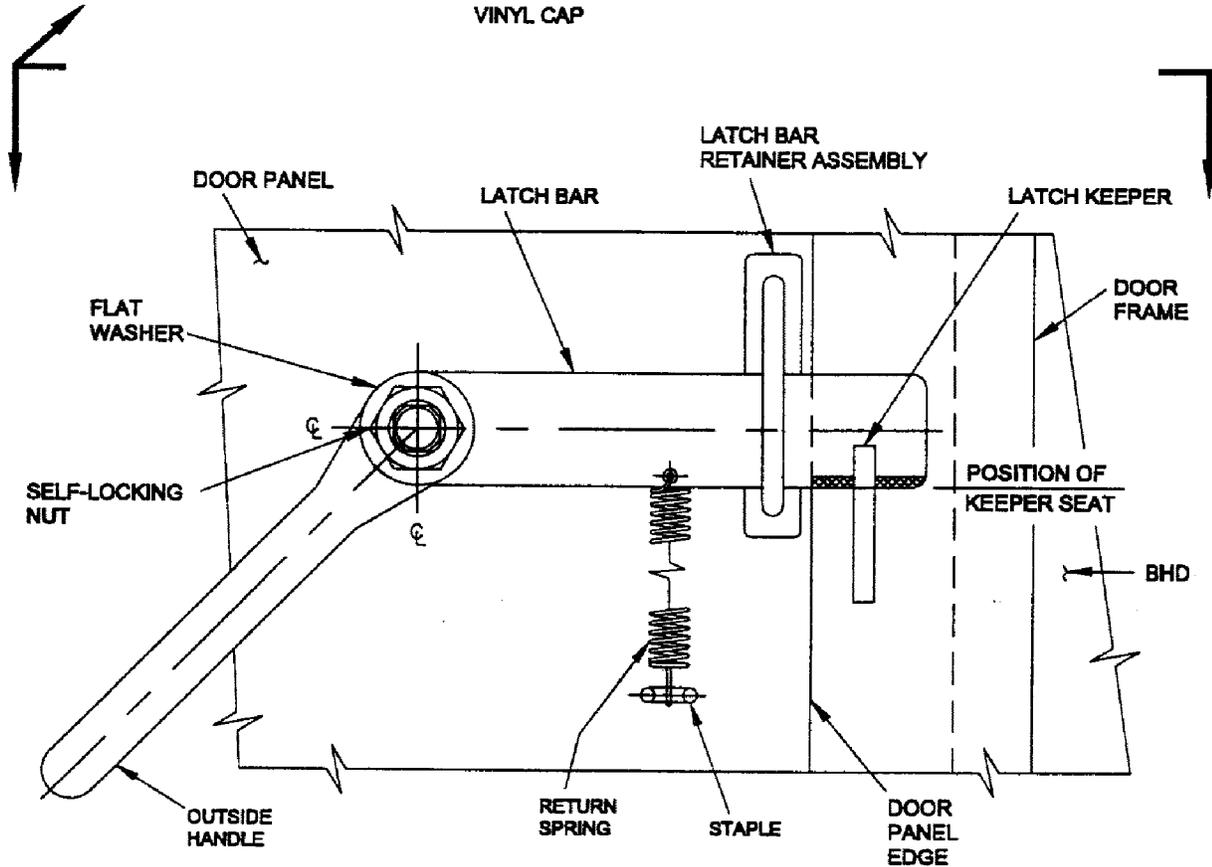
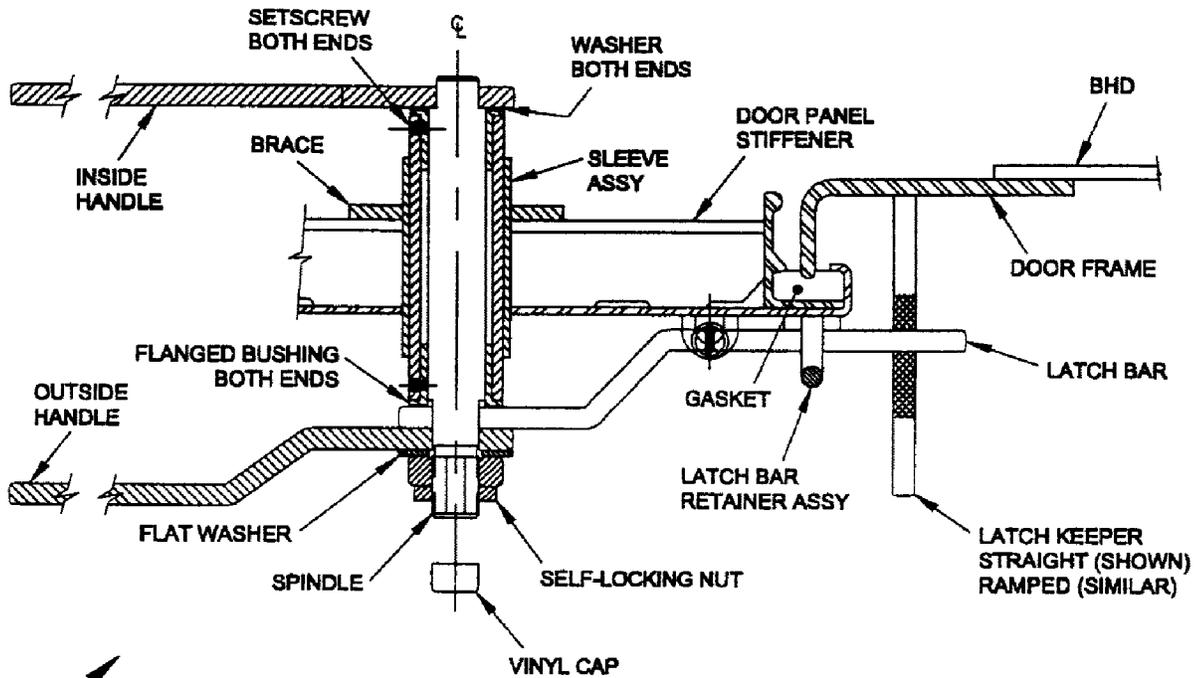


Figure 1-22. Collective Protective System (CPS) Door Latch Installed by MACHALT 167-53008 (ECP-523)

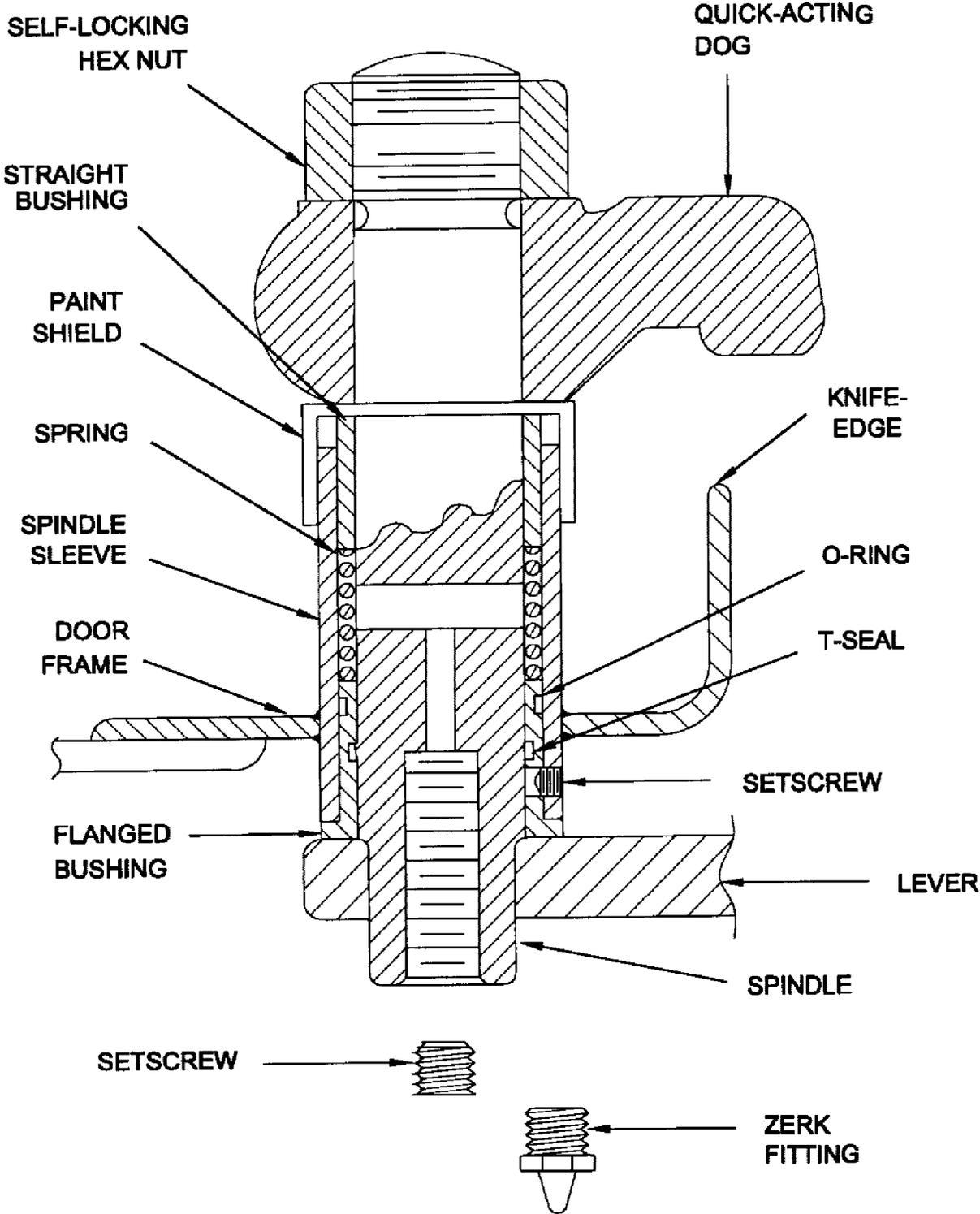


Figure 1-23. Quick-Acting Door Dog Assembly (Cross Section View) Modified by MACHALT 167-31010 (ECP-526)

