ASME A112.6.1M-1997
(Revision of ASME A112.6.1M-1988)

# FLOOR-AFFIXED SUPPORTS FOR OFF-THE-FLOOR PLUMBING FIXTURES FOR PUBLIC USE

AN AMERICAN NATIONAL STANDARD

**REAFFIRMED 2002**

FOR CURRENT COMMITTEE PERSONNEL
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The American Society of
Mechanical Engineers

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# FLOOR-AFFIXED SUPPORTS FOR OFF-THE-FLOOR PLUMBING FIXTURES FOR PUBLIC USE

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**(Revision of ASME A112.6.1M-1988)**

Date of Issuance: December 22, 1997

This Standard will be revised when the Society approves the issuance of a new edition. There will be no addenda or written interpretations of the requirements of this Standard issued to this edition.



This code or standard was developed under procedures accredited as meeting the criteria for American National Standards. The Consensus Committee that approved the code or standard was balanced to assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment which provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

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The American Society of Mechanical Engineers
345 East 47th Street, New York, NY 10017

# FOREWORD

(This Foreword is not part of ASME A112.6.1M-1997.)

Much of the design evolution of sanitary plumbingware has occurred during this century as water supply and waste systems gained universal acceptance as a basic necessity. About midway through this period, the desirability of off-the-floor water closets and their inherent advantages in improving toilet-room sanitation was recognized. Wide use of this new concept, however, was delayed for many years. When the first off-the-floor closets were designed, the problems of supporting and connecting them to waste systems had not been anticipated; and as a result there were damaged walls and partitions and leaking waste systems. Slowly, a few supporting methods were developed and marketed, but in many instances, installations of off-the-floor fixtures still presented problems. Then, subsequent to World War II, with the introduction of the combination waste fitting and supporting system for off-the-floor water closets, installation was simplified and problems were eliminated to the extent that now this sanitary approach to modern toilet room design has become commonplace.

After such a long development period, the manufacturers of fixture supports were keenly aware of the need for sound design and engineering practices. Accordingly, the benefits of basic design standards were apparent to them and a study was initiated as an industry effort in 1961. Prior to the completion of this work, ASA Sectional Committee A112 (subsequently designated the American National Standards Committee A112, and currently the ASME Standards Committee A112, Standardization of Plumbing Materials and Equipment) was organized and Panel No. 6 of this Committee was assigned the responsibility of developing standards for fixture chair carriers and other supports for off-the-floor fixtures. The original standard resulting from this assignment was granted approval by the American National Standards Institute on March 2, 1972, and issued as ANSI A112.6.1-1972.

Engineering members of the Plumbing & Drainage Institute were appointed to the Task Forces of Panel No. 6 on October 18, 1976 to prepare a revision. The first meeting was held on July 27, 1977, following which a rough draft of the revision was submitted to the task force members. Changes were made and the proposal was approved by Panel No. 6 and subsequently by the A112 Main Committee. That revision was approved by the American National Standards Institute (ANSI) on November 15, 1979. The standard was reviewed again in 1986, resulting in a new format and an expanded scope. This revision of the 1979 edition was approved by ANSI on November 17, 1988.

This current revision includes minor improvements, including the expansion of mandatory language. Suggestions for improvements to this Standard should be sent to The American Society of Mechanical Engineers, Attn: Secretary, A112 Main Committee, 345 East 47th Street, New York, NY 10017.

This revision was approved as an American National Standard on September 8, 1997.

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# FLOOR-AFFIXED SUPPORTS FOR OFF-THE-FLOOR PLUMBING FIXTURES FOR PUBLIC USE

## 1 SCOPE

This Standard applies to floor-affixed supports for off-the-floor plumbing fixtures, including combination carriers and waste fittings for water closets, and carriers for urinals, lavatories, sinks, and water coolers.

This Standard covers definitions, materials and finishes, general requirements, strength and deflection requirements, and details of the various types of supports included herein.

## 2 PURPOSE

The purpose of this Standard is to provide all interested persons, including manufacturers, plumbing code authorities, and others with the minimum design and quality criteria for floor-affixed supports (carriers) for off-the-floor plumbing fixtures. This Standard is not intended as a specification guide. Figures used herein are intended only to describe and portray typical carrier types and are not intended to restrict design or to be used for specification purposes.

## 3 REFERENCE STANDARDS

The following standards are referenced in this document. Unless otherwise specified, the latest edition of each standard shall apply.

ASTM A 48, Specification for Gray Iron Castings
ASTM A 307, Specification for Carbon Steel Bolts and Studs
ASTM A 563, Specification for Carbon and Alloy Steel Nuts
ASTM B 85, Specification for Aluminum-Alloy Die Castings
ASTM B 86, Specification for Zinc-Alloy Die Castings
ASTM B 584, Specification for Copper-Alloy Sand Castings for General Applications

Publisher: American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428

## 4 DEFINITIONS

### 4.1 Fixture Support (Carrier) — General Description

As covered in this Standard, a fixture support (carrier) is a device that is anchored to the floor and concealed in the building construction (i.e., pipe chase), designed to support off-the-floor plumbing fixtures (any sanitary plumbing fixture, located adjacent to the wall, which has no visible contact with the floor in front of the wall) independent of the wall or partition. In addition, combination carriers for off-the-floor water closets include waste fittings to convey fixture discharge to the sanitary drainage system.

### 4.2 Fixture Support (Carrier) — Specific Components

*alignment truss:* the structural member of a carrier designed to maintain proper spacing of other carrier components, usually the uprights. Sometimes called "tie rod."

*anchor studs:* the studs attached to the bearing plate for bottom anchoring of some types of fixtures.

*bearing plate:* a plate attached to the uprights with provisions for bearing or anchor studs.

*bearing studs:* the studs attached to the bearing plate to hold the fixture off the wall.

*concealed arm:* the fixture support member that extends horizontally from the upper end of a lavatory carrier upright and is concealed in the fixture.

*coupling:* the component that compresses the fixture gasket and provides the conduit for waste between the fixture and carrier faceplate. Sometimes called "extension."

*exposed arm:* the fixture support member that extends horizontally from the upper end of a lavatory (or sink) carrier upright, on which the fixture rests, and is fully or partially exposed to view.

*faceplate:* the part of a water closet carrier that holds the fixture bolts; or, in a combination water closet support and fitting, seals the fitting branch opening. In the combination support and fitting, the faceplate shall also be designed to carry the fixture bolts and seal the branch opening.

*fitting:* the sanitary waste fitting component of a combination water closet support and fitting.

*fixture bolts:* the stud members on which the fixture is mounted. Sometimes called "mounting studs."

*foot:* a member of a carrier, which rests on the floor or slab in a concealed location, that anchors and supports the assembly.

*gasket, closet:* see *gasket, fixture.*

*gasket, faceplate:* the sealing element between faceplate and fitting.

*gasket, fixture:* the sealing element between fixture and coupling.

*hanger plate:* a plate attached to the upper ends of the uprights with provisions for mounting the hanger(s) furnished with the fixture.

*header:* the component of a carrier that ties the arm or other fixture support to the upright.

*leveling screws:* the screws located in a carrier arm that bear on the fixture to level it in relation to the floor.

*locking device:* a device that secures a lavatory or sink to a carrier arm.

*support plate:* a plate attached to the uprights with provisions for fixture bolts.

*upright:* the vertical structural member of a carrier which joins the foot with other components to support the fixture.

## 5 MATERIALS AND FINISHES

### 5.1 Materials

The items covered in this Standard shall be of materials that meet all applicable requirements and standards specified herein. It is not the intent of this Standard to limit acceptable materials to those included in this Section. Other materials of equivalent performance shall be permitted.

All castings shall be sound, free of blow holes (holes in casting due to air or gas in the metal or mold), cold shuts (casting defects formed when two streams of metal become so cold they do not fuse upon meeting, i.e., incomplete casting), and other imperfections adversely affecting casting quality, and shall be of uniform wall thickness and true to pattern. They shall also be clean and free of fins (projections on castings due to imperfect joints).

**5.1.1 Cast Iron.** Castings shall conform to ASTM A 48, Class 25.

**5.1.2 Bronze Castings.** Castings shall conform to ASTM B 584, and shall be copper alloys C83600, C83800, or C84400.

**5.1.3 Bolting Materials — Steel.** The materials for studs, nuts, cap screws, and other steel fasteners shall at least equal the requirements of ASTM A 307, Grade A, and ASTM A 563, Grade A. Threads shall be class 2A and 2B. Fasteners shall be plated.

**5.1.4 Aluminum Die Castings.** Die cast aluminum-alloy parts shall conform to ASTM B 85, Alloy G8A (Aluminum Alloy 218).

**5.1.5 Zinc Die Castings.** Die cast zinc-alloy parts shall conform to ASTM B 86, Alloy AG40A.

**5.1.6 Steel Pipe — Structural.** Tubular structural members shall be schedule 40 steel pipe, structural grade, or the equivalent in load bearing properties.

**5.1.7 Steel Plates.** Steel plates shall be hot rolled carbon steel.

### 5.2 Finishes

All parts that are to be coated or plated shall be treated and cleaned as required to provide proper bonding of the finish. It is not the intent of this Standard to limit acceptable finishes to those included herein. The use of other finishes of comparable performance shall be permitted.

**5.2.1 Bronze Chromate.** After preplating cleaning, parts shall be given a commercial grade cadmium plating followed by a commercial grade bronze chromate treatment.

**5.2.2 Cadmium Plate.** After preplating cleaning, parts shall be given a commercial grade cadmium plating.

**5.2.3 Chromium Plate.** After preplating cleaning, parts shall be given a commercial grade chromium plating in accordance with Table 1.

**TABLE 1 CHROMIUM PLATING**

| Metal and Finish | Minimum Thickness of Significant Surfaces | |
|---|---|---|
| | mm | in. |
| Chromium Plating on Brass | ... | ... |
| Copper (optional, not required) | ... | ... |
| Nickel | 0.003 | 0.00010 |
| Chromium | 0.0003 | 0.00001 |
| Chromium Plating on Zinc Alloy | ... | ... |
| Die Castings | ... | ... |
| Copper | 0.005 | 0.00020 |
| Nickel (Final Nickel Coating) | 0.007 | 0.00030 |
| Nickel Plus Copper, Total | 0.009 | 0.00035 |

**5.2.4 Paint Coatings.** Parts shall be cleaned and coated with a paint, lacquer, or synthetic coating in accordance with manufacturer's specifications.

**5.2.5 Powder Coatings.** Parts shall be cleaned, preheated, coated to a thickness of 10-30 mils nominal, and post-cured in accordance with manufacturer's specifications.

**5.2.6 Porcelain Enameled Coatings.** Parts shall be annealed, sandblasted, and porcelain enameled with both a ground coat and finish in accordance with manufacturer's specifications.

**5.2.7 Zinc Plate.** After preplating cleaning, parts shall be given a commercial grade zinc plating in accordance with manufacturer's specifications.

## 6 OFF-THE-FLOOR WATER CLOSET SUPPORTS

### 6.1 General Requirements

Supports for off-the-floor water closets shall be combination support (carrier) and waste fitting assemblies. They shall incorporate, as a minimum, a support structure complete with hardware to mount and connect the water closet, fitting and conduit means for conveying the water closet discharge into the sanitary drain line, means to anchor the assembly to the structural floor slab, and any necessary gasketing. The carrier-fitting combination shall be an assembly that (a) will support the fixture independent of the wall or partition, (b) can be fully concealed in the building construction, and (c) meets the strength and deflection requirements specified in Section 11. Materials and finishes shall be in accordance with the applicable paragraphs of Section 5.

**6.1.1** Typical combination supports in general use which meet these requirements consist of a sanitary drainage fitting, a cast iron vertical support member(s), an inlet coupling, gaskets, and assembly hardware and trim with feet for anchoring to the floor slab. See Figs. 1 through 4. Two classes of combination supports are available, one with fitting vertically adjustable, and the other with fitting fixed in relation to fixture elevation.

**6.1.2** It shall not be the intent of this Standard to restrict acceptable combination supports to those described in para. 6.1.1. Alternate types of supports shall be permitted provided they meet the general requirements of para. 6.1.

### 6.2 Waste Fittings

Waste fittings shall be of sanitary drainage design with no protuberances or other irregularities in the flow passageways that could cause a build-up of solids, stoppage, or restriction to the flow of waste material. Changes in direction shall be designed to channel flow into the waste line with minimal turbulence in keeping with drainage, waste, and vent (DWV) fitting practice. All flow passageways shall pass a ball of 54 mm ($2\frac{1}{8}$ in.) minimum diameter through the connected fixture. Vent connections shall be provided for each fixture branch. A common vent shall be permitted for back-to-back fittings provided the vent opening communicates with each fixture branch.

Waste and vent connections and dimensions shall conform to the specifications of the piping system for which the fitting is intended.

### 6.3 Faceplates

Faceplates shall have the necessary strength and rigidity in assembly to meet the requirements of para. 6.1. On vertically adjustable assemblies, the faceplate shall have a watertight seal at its joint with the fitting to withstand a hydrostatic pressure test of 207 kPa (30 psig).

### 6.4 Feet

Each fixture support member (carrier) shall be equipped with vertically adjustable feet that extend between the support member and the floor slab or other base structure. They shall be securely attached to the support member and be of sufficient rigidity in assembly

to meet the requirements of para. 6.1. Feet shall have provisions for anchoring the support (carrier) assembly to the floor slab.

## 7 OFF-THE-FLOOR URINAL SUPPORTS

### 7.1 General Requirements

Supports for off-the-floor urinals shall provide the necessary means for mounting and securing the fixture, a foot or feet to anchor the assembly to the floor slab, adjustability to locate the fixture at the desired height and in relation to the wall, and support for the fixture under normal usage without imposing damaging stress on the wall structure or wall finish. Supports (carriers) shall meet the strength and deflection requirements specified in Section 11. Materials and finishes shall be in accordance with the applicable paragraphs of Section 5.

### 7.2 Urinal Carrier Types

Two types of supports shall be considered with selection depending on the type of fixture to be supported.

*(a)* Type I supports (carriers) with a horizontally adjustable coupling to receive fixture discharge and connect to the sanitary drainage system

*(b)* Type II supports (carriers) without provisions for connecting the fixture to the sanitary drainage system

**7.2.1 Type I Urinal Carrier.** Supports shall incorporate a fixture support plate(s), a horizontally adjustable coupling with sealing means, a fixture gasket, assembly hardware, uprights with feet or an adjustable foot for anchoring to the floor slab, and means to provide for vertical adjustment and securing of the assembly. See Fig. 5. The support (carrier) shall meet the requirements of para. 7.1.

**7.2.2 Type II Urinal Carrier.** Supports shall incorporate two uprights with feet for anchoring to the floor slab, an alignment truss (depending on design) to maintain lateral spacing of uprights, a hanger or support plate with provisions for mounting the fixture hangers and/or fixture bolts, two vertically adjustable headers or the equivalent for securing the plate to the uprights, and assembly hardware. In addition, some Type II supports shall include bearing studs, to hold the lower end of the fixture off the wall, which are secured to a bearing plate. See Fig. 6. The support (carrier) shall meet the requirements of para. 7.1.

## 8 OFF-THE-FLOOR LAVATORY SUPPORTS

### 8.1 General Requirements

Supports for off-the-floor lavatories shall provide the necessary means for mounting and securing the fixture, feet to anchor the assembly to the floor slab, adjustability to locate the fixture at the desired height and in relation to the wall, and support for the fixture under normal usage without imposing damaging stress on the wall structure or wall finish. Supports (carriers) shall meet the strength and deflection requirements specified in Section 11. Materials and finishes shall be in accordance with the applicable paragraphs of Section 5.

### 8.2 Lavatory Carrier Types

Three types of supports shall be considered with selection depending on the type of fixture and mounting specified.

*(a)* Type I — exposed arm carrier
*(b)* Type II — concealed arm carrier
*(c)* Type III — hanger-type carrier

**8.2.1 Type I Lavatory Carrier.** Supports shall incorporate two uprights with feet for anchoring to the floor slab, vertically adjustable headers at the upper ends of the uprights to support the arms with provision to adjust them laterally in relation to the wall surface, enameled exposed arms to support the fixture from the underside, alignment truss or trusses to maintain lateral spacing of uprights, means to level and secure the fixture on the arms, and assembly hardware. See Fig. 7. The support (carrier) shall meet the requirements of para. 8.1.

**8.2.2 Type II Lavatory Carrier.** Supports shall be the same as Type I except in place of enameled exposed arms, the arms shall be the concealed type with leveling and securing means within the fixture. When used to support slab-type lavatories located away from the wall, escutcheons shall be provided to fill the gap between the back of the fixture and the wall to conceal the otherwise exposed parts of the carrier. See Fig. 8. The support (carrier) shall meet the requirements of para. 8.1.

**8.2.3 Type III Lavatory Carrier.** Supports shall incorporate two uprights with feet for anchoring to the floor slab, alignment truss (depending on design) to maintain lateral spacing of the uprights, a hanger plate with provisions for mounting the fixture hanger(s), two vertically adjustable headers or the equivalent for securing the plate to the uprights, and assembly hard-

ware. In addition, some Type III supports shall include anchor studs, to anchor the lower end of the fixture, which are secured to either an extension of the hanger plate or to a bearing plate. See Fig. 9. The support (carrier) shall meet the requirements of para. 8.1.

## 9 OFF-THE-FLOOR SINK SUPPORTS

### 9.1 General Requirements

Supports for off-the-floor sinks shall provide the necessary means for mounting and securing the fixture, feet to anchor the assembly to the floor slab, adjustability to locate the fixture at the desired height and in relation to the wall, and support for the fixture under normal usage without imposing damaging stress on the wall structure or wall finish. Supports (carriers) shall meet the strength and deflection requirements specified in Section 11. Materials and finishes shall be in accordance with the applicable paragraphs of Section 5.

### 9.2 Sink Carrier Types

Four types of supports shall be considered with selection depending on the type of fixture and mounting specified.

*(a)* Type I — exposed arm carrier

*(b)* Type II — hanger-type carrier

*(c)* Type III — combination exposed arm and hanger-type carrier

*(d)* Type IV — support plate-type carrier

**9.2.1 Type I Sink Carrier.** Supports shall incorporate two or more uprights with feet for anchoring to the floor slab, vertically adjustable headers at the upper ends of the uprights to support the arms with provision to adjust them laterally in relation to the wall surface, enameled exposed arms to support the fixture from the underside, alignment truss or trusses to maintain lateral spacing of uprights, means to level and secure the fixture on the arms, and assembly hardware. See Fig. 10. The support (carrier) shall meet the requirements of para. 9.1.

**9.2.2 Type II Sink Carrier.** Supports shall incorporate two or more uprights with feet for anchoring to the floor slab, alignment truss (depending on design) to maintain lateral spacing of uprights, a hanger plate with provisions for mounting the fixture hanger(s), a vertically adjustable header or the equivalent on each upright for securing the plate to the uprights, and assembly hardware. In addition, some Type II supports shall include bearing studs, to hold the lower end of the fixture off the wall, which are normally secured to the uprights with headers or the equivalent. See Fig. 11. The support (carrier) shall meet the requirements of para. 9.1.

**9.2.3 Type III Sink Carrier.** Supports shall incorporate two or more uprights with feet for anchoring to the floor slab, alignment truss (depending on design) to maintain lateral spacing of uprights, a hanger plate with provisions for mounting the fixture hanger(s), a vertically adjustable header or the equivalent on each upright for securing the plate to the uprights, a second vertically adjustable header on each upright to support the arms with provisions to adjust them and the hanger(s) laterally in relation to the wall surface, enameled exposed arms to support the fixture from the underside, and assembly hardware. See Fig. 12. The support (carrier) shall meet the requirements of para. 9.1.

**9.2.4 Type IV Sink Carrier.** Supports shall incorporate two uprights with feet for anchoring to the floor slab, vertically adjustable headers or the equivalent on each upright for securing the support plates to the upright, fixture support plates, a horizontally adjustable coupling with sealing means and with or without drainage fitting (depending on design), a fixture gasket, and assembly hardware. See Fig. 13. The support (carrier) shall meet the requirements of para. 9.1.

## 10 OFF-THE-FLOOR ELECTRIC WATER COOLER SUPPORTS

### 10.1 General Requirements

Supports for off-the-floor electric water coolers (and drinking fountains) shall provide the necessary means for mounting and securing the fixture, feet to anchor the assembly to the floor slab, adjustability to locate the fixture at the desired height and in relation to the wall, and support for the fixture under normal usage without imposing damaging stress on the wall structure or wall finish. Supports (carriers) shall meet the strength and deflection requirements specified in Section 11. Materials and finishes shall be in accordance with the applicable paragraphs of Section 5.

### 10.2 Water Cooler Carrier Types

Two types of supports shall be considered with selection depending on the type of fixture(s) and mounting specified.

*(a)* Type I — hanger-type carrier

*(b)* Type II — bi-level cooler hanger-type carrier

**10.2.1 Type I Water Cooler Carrier.** Supports shall incorporate two uprights with feet for anchoring to the floor slab, alignment truss (depending on design) to maintain lateral spacing of the uprights, a hanger plate with provisions for mounting the fixture hanger, two vertically adjustable headers or the equivalent for securing the plate to the uprights, and assembly hardware. In addition, some Type I supports shall include anchor studs, to anchor the lower end of the fixture, which are secured to a bearing plate. See Fig. 14. The support (carrier) shall meet the requirements of para. 10.1.

**10.2.2 Type II Water Cooler Carrier.** Supports shall incorporate three uprights with feet for anchoring to the floor slab, alignment truss (depending on design) to maintain lateral spacing of the uprights, hanger plates with provisions for mounting the fixture hangers, vertically adjustable headers or the equivalent for securing the plates to the uprights, and assembly hardware. In addition, some Type II supports shall include anchor studs, to anchor the lower end of the fixture, which are secured to a bearing plate. See Fig. 15. The support (carrier) shall meet the requirements of para. 10.1.

## 11 STRENGTH AND DEFLECTION

### 11.1 General Requirements

All supports (carriers) within the scope of this Standard shall be designed and built to meet or exceed the applicable strength and deflection criteria specified in this Section. All data necessary for performance testing and verification in conformance to specification, para. 11.2, are provided in Fig. 16 and Table 2.

### 11.2 Test Specification

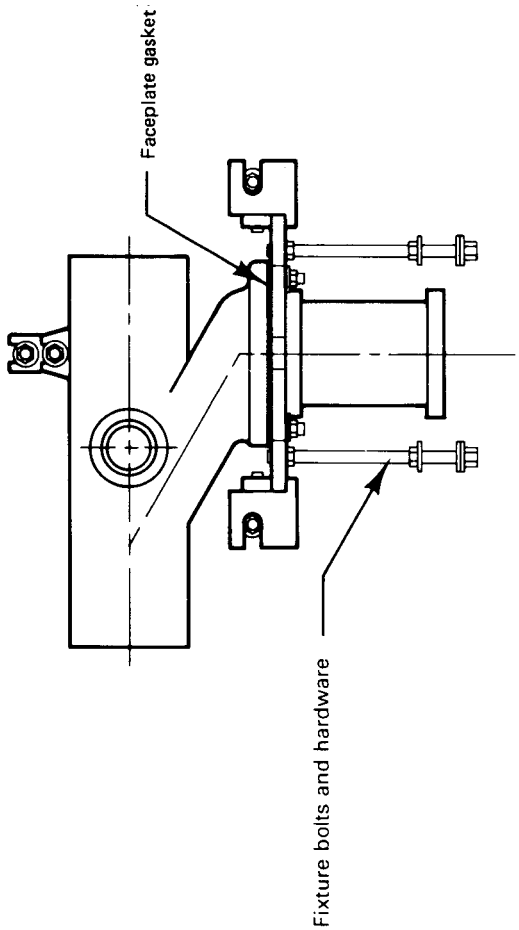
When installed in accordance with manufacturer's instructions in test setup (see Fig. 16), using the dimensional and loading data given in Table 2 for the applicable requirements paragraph, the support (carrier) assembly shall withstand the test at maximum static loading without failure, permanent distortion, or deflection in excess of that specified in Table 2.

## 12 INSTALLATION INSTRUCTIONS

Instructions shall be provided with the product to identify the proper installation of the support or carrier consistent with the loading requirements.

## 13 MARKINGS

Supports and carriers shall be marked with the manufacturer's name or trademark.



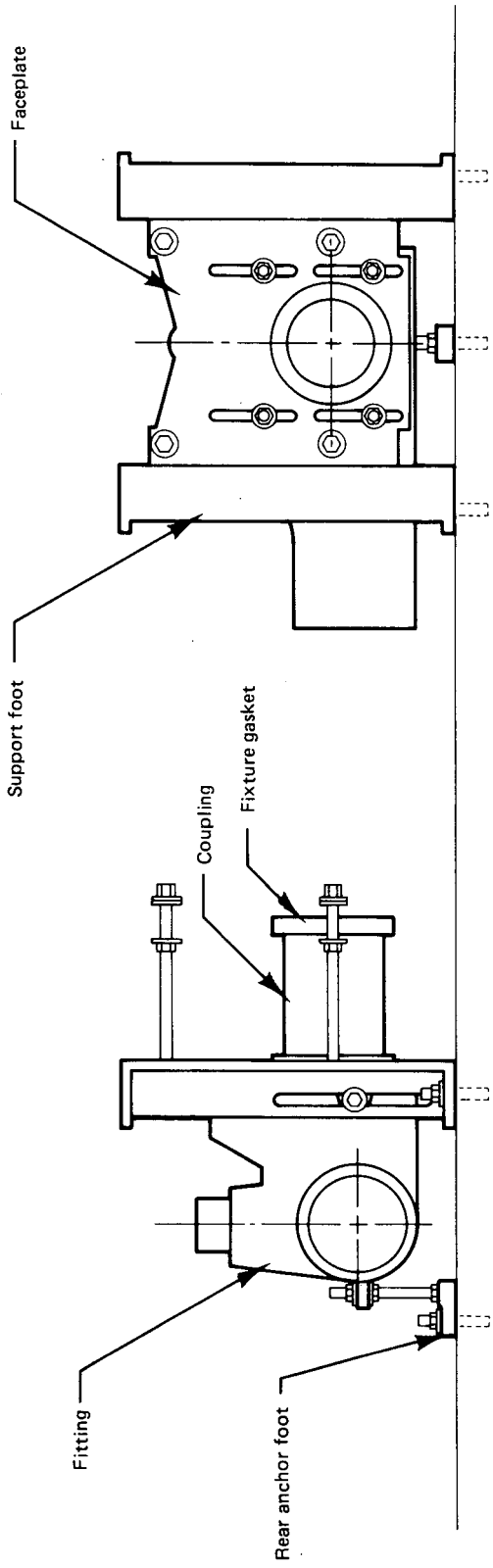




**FIG. 1 TYPICAL OFF-THE-FLOOR WATER CLOSET SUPPORT WITH SINGLE HORIZONTAL VERTICALLY ADJUSTABLE FITTING**

**FIG. 2 TYPICAL OFF-THE-FLOOR WATER CLOSET SUPPORT WITH DOUBLE HORIZONTAL VERTICALLY ADJUSTABLE FITTING**

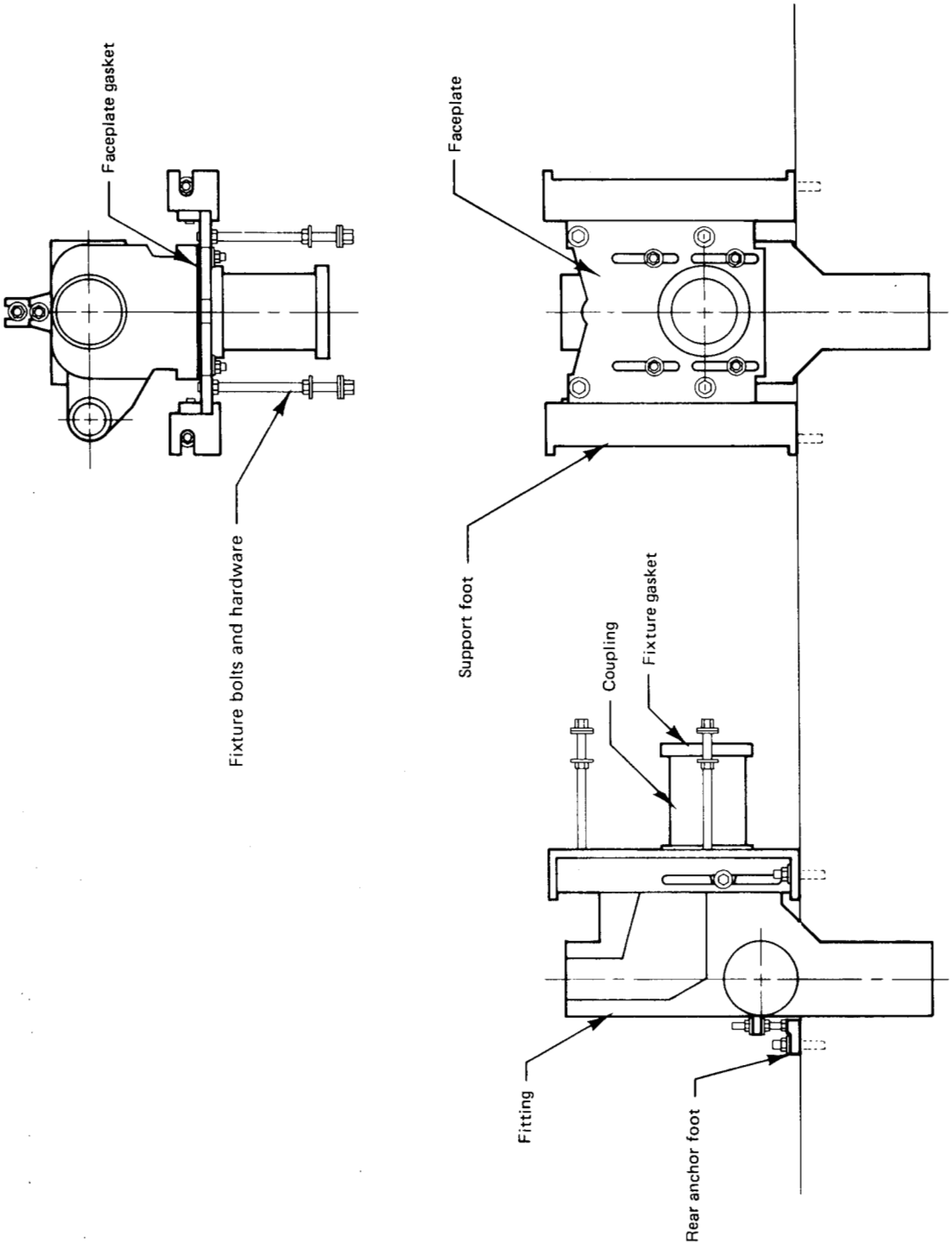



**FIG. 3 TYPICAL OFF-THE-FLOOR WATER CLOSET SUPPORT WITH SINGLE VERTICAL ADJUSTABLE FITTING**

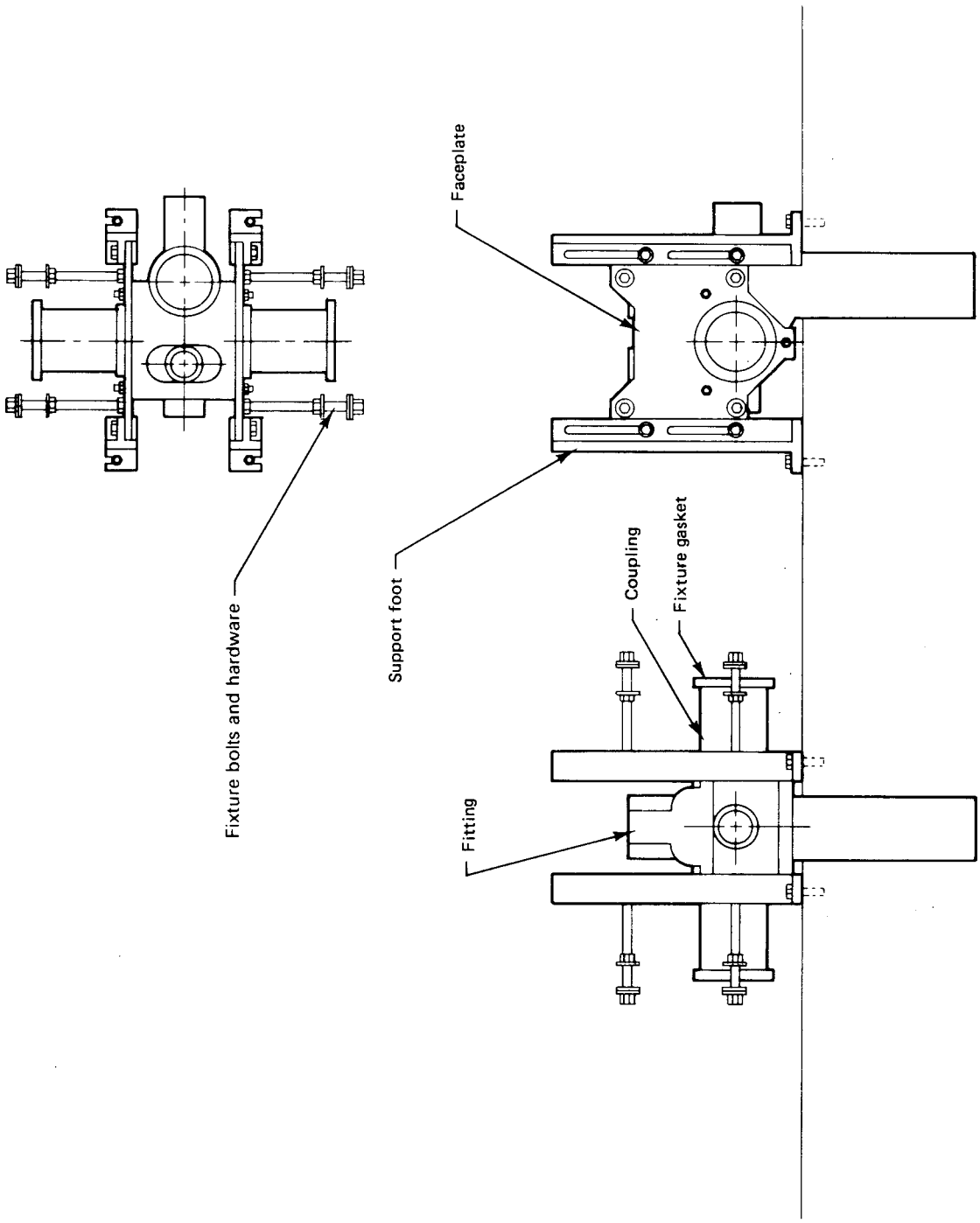



**FIG. 4 TYPICAL OFF-THE-FLOOR WATER CLOSET SUPPORT WITH DOUBLE VERTICAL FIXED FITTING**

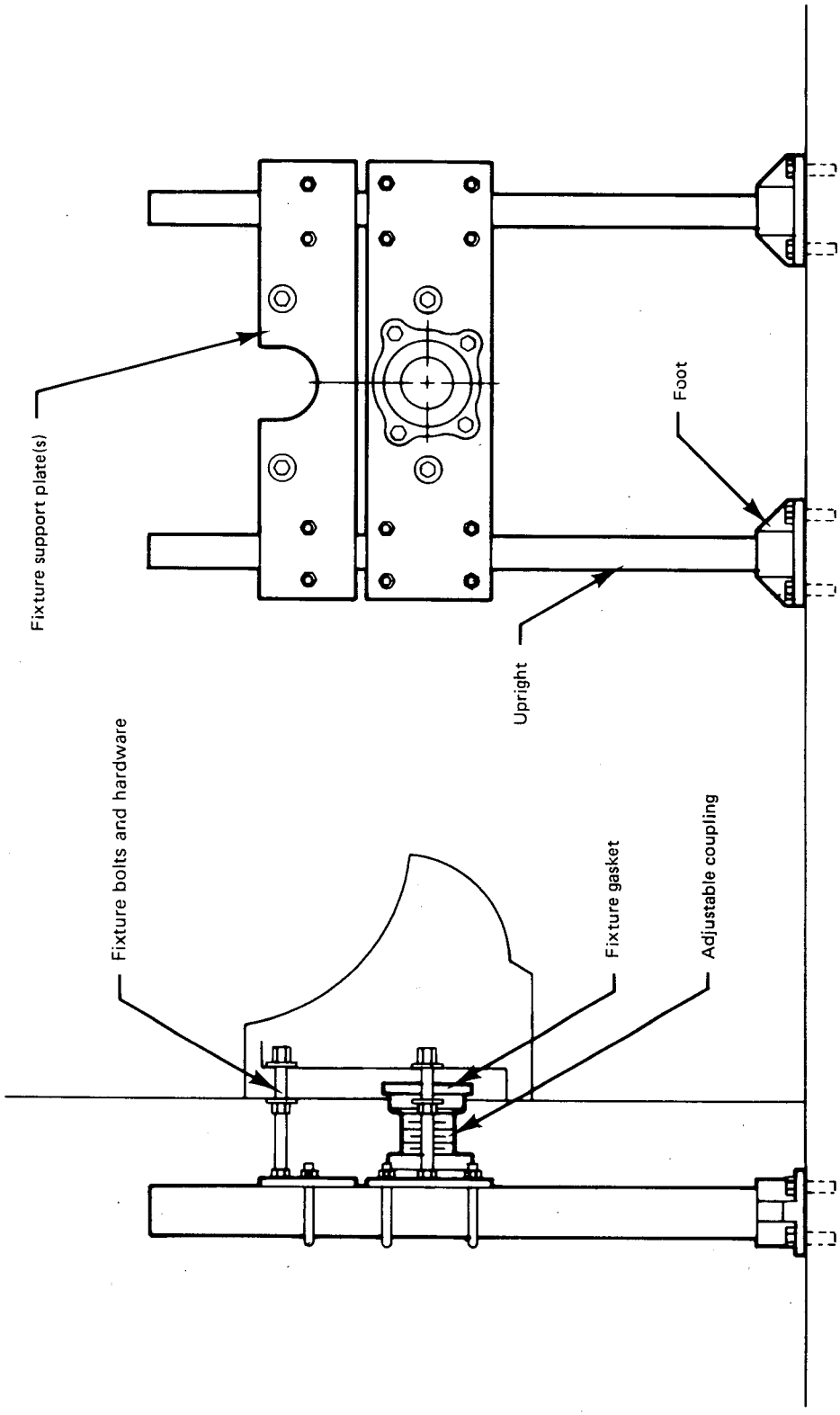



**FIG. 5 TYPE I URINAL CARRIER**

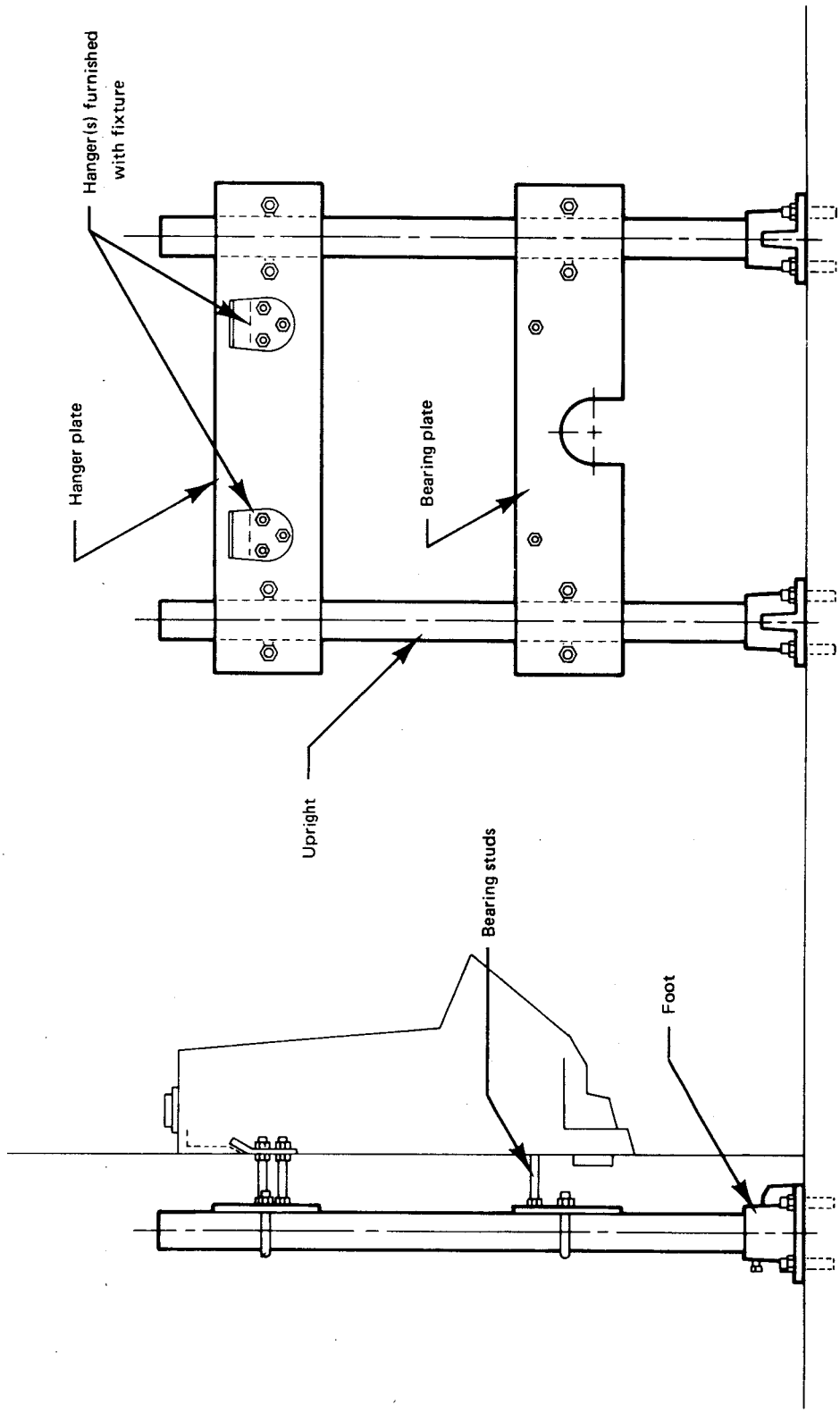



**FIG. 6 TYPE II URINAL CARRIER**

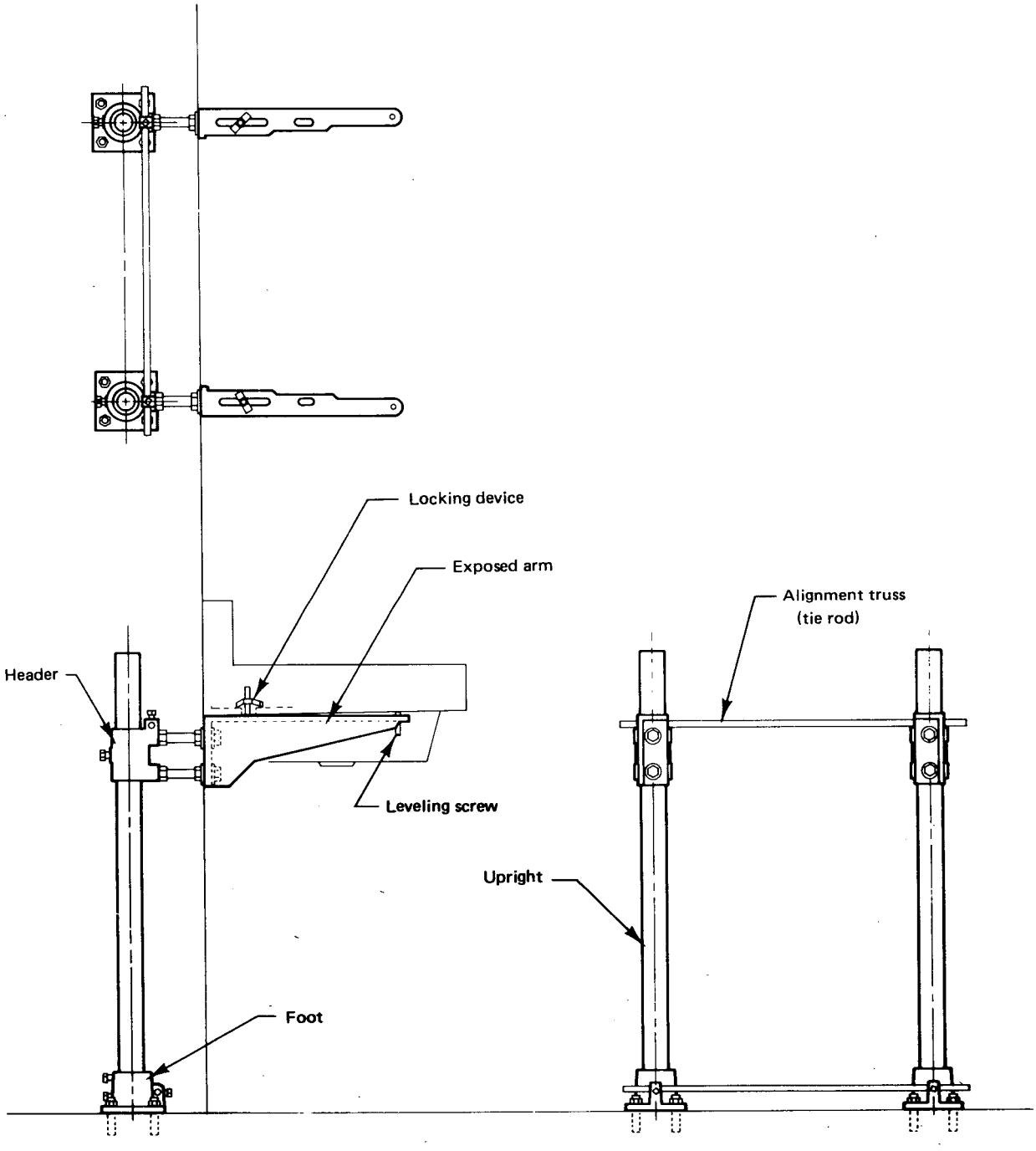



**FIG. 7 TYPE I LAVATORY CARRIER**

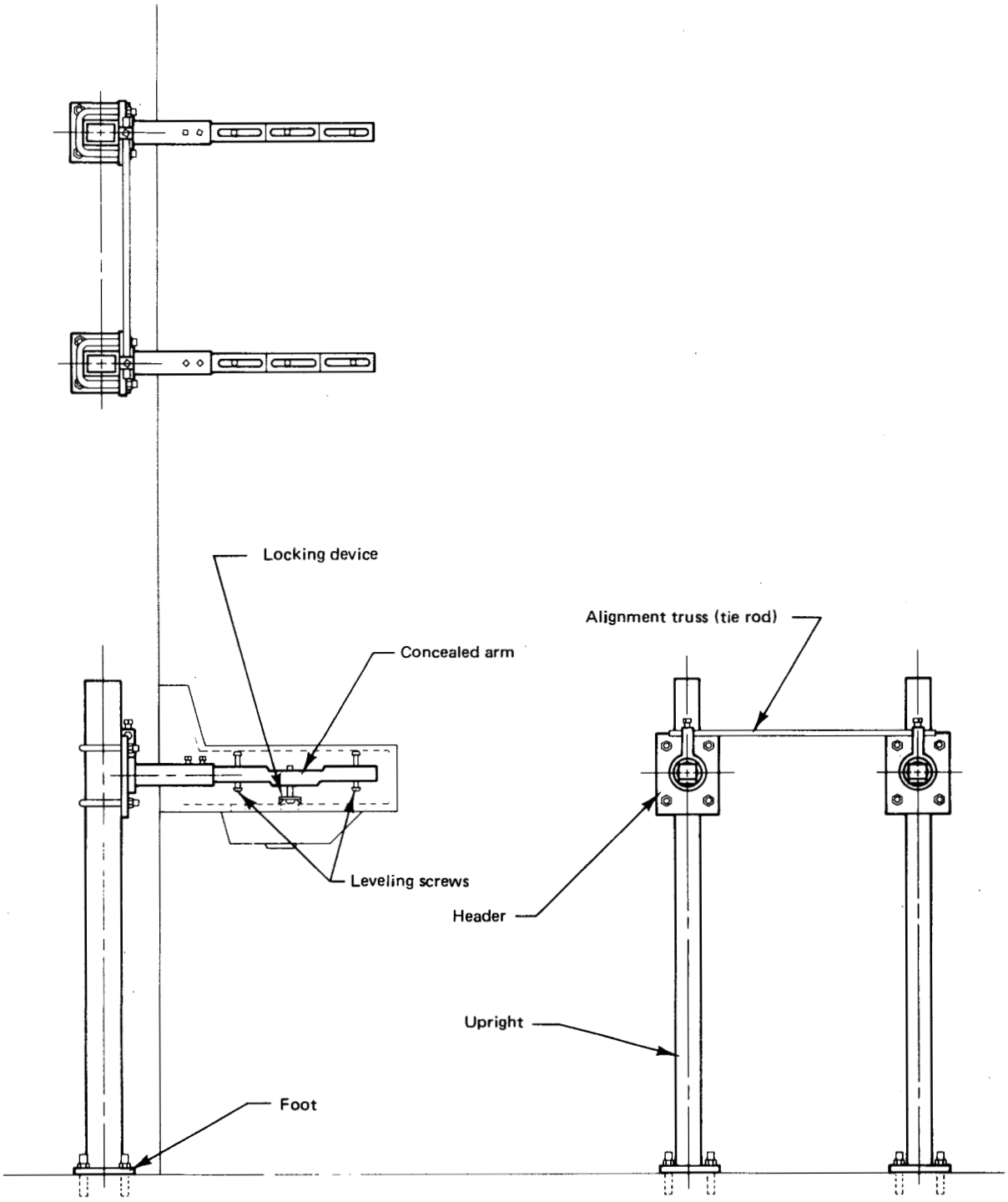



**FIG. 8 TYPE II LAVATORY CARRIER**

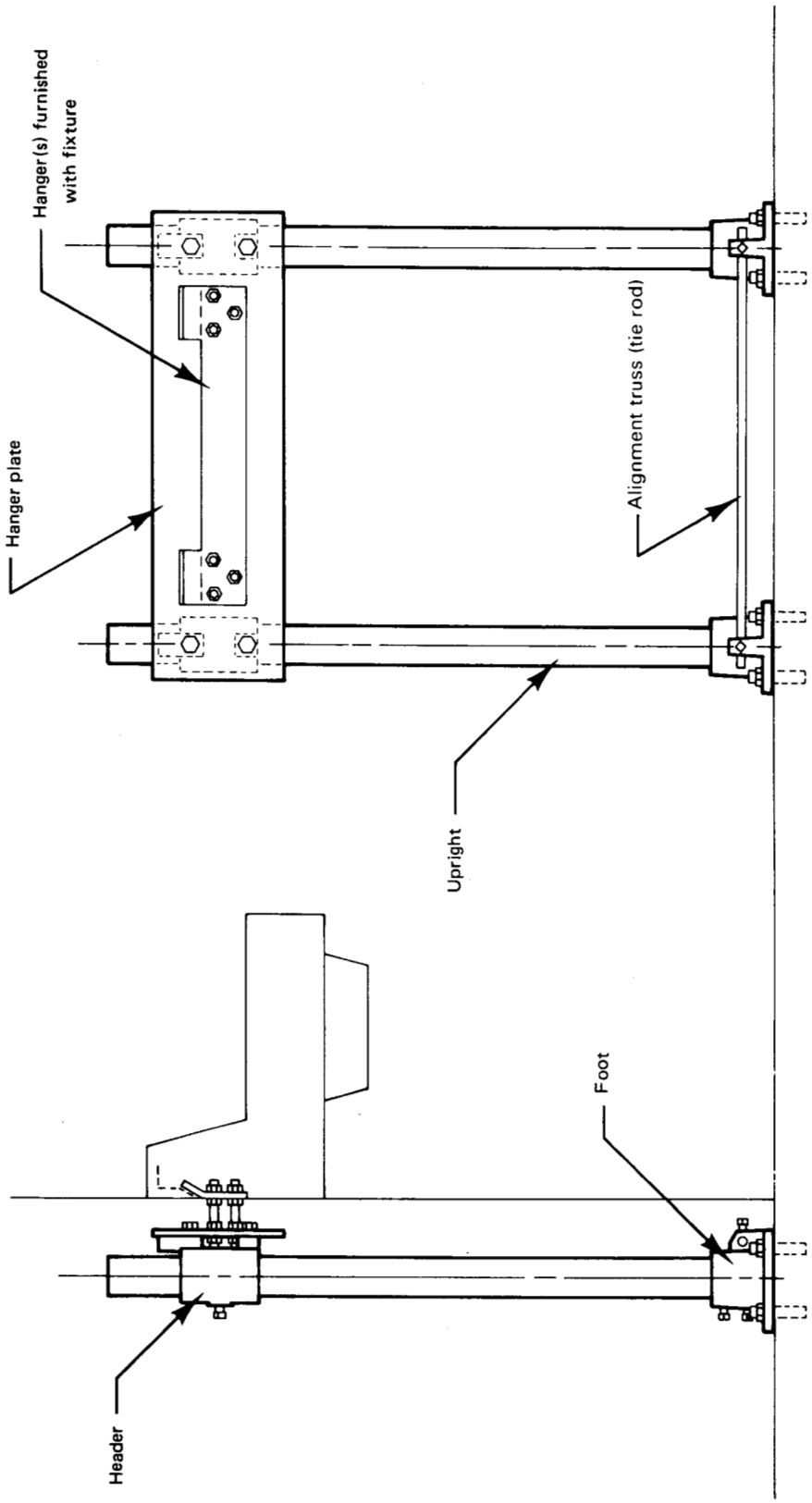



FIG. 9 TYPE III LAVATORY CARRIER

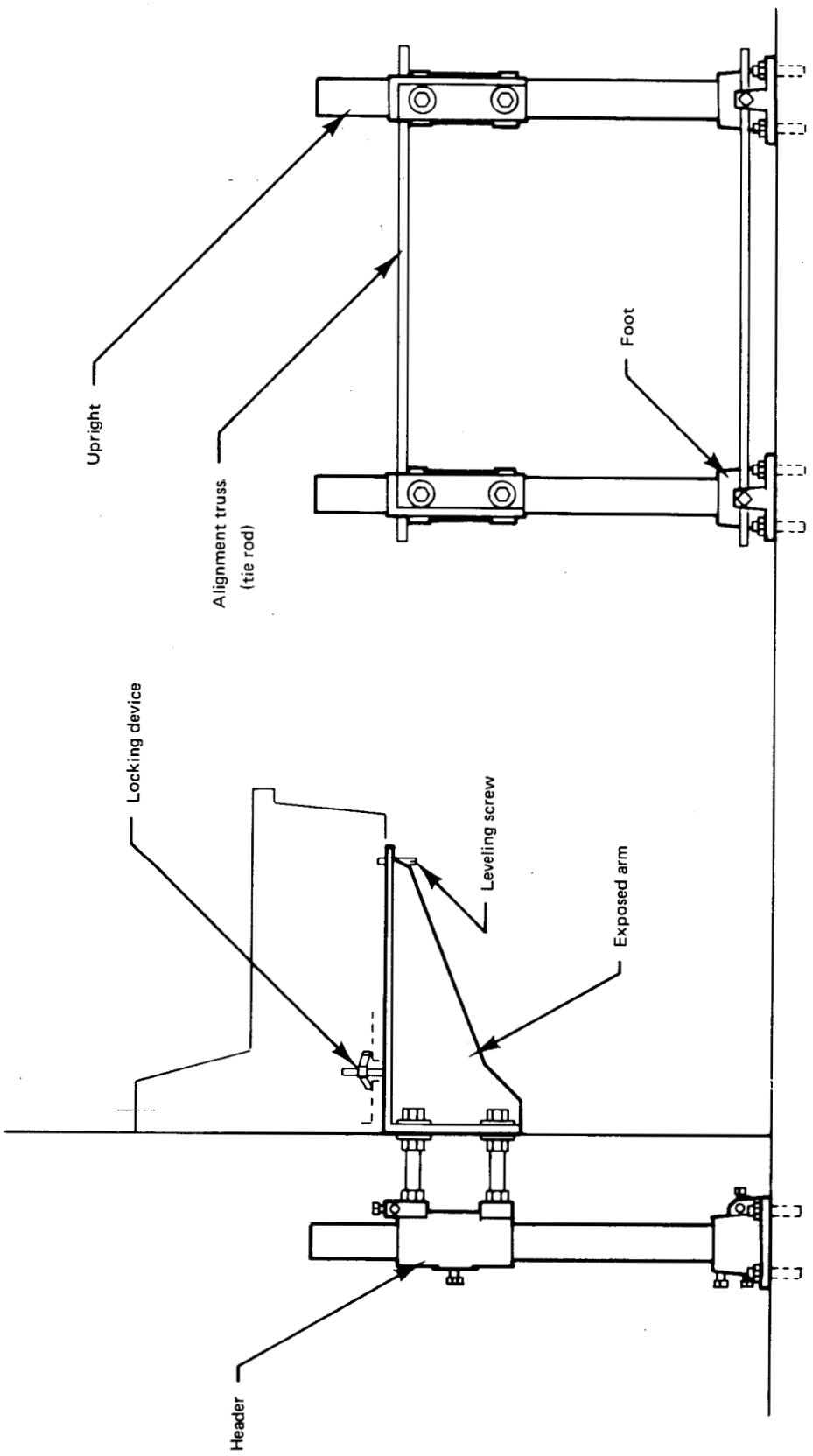



**FIG.10 TYPE I SINK CARRIER**

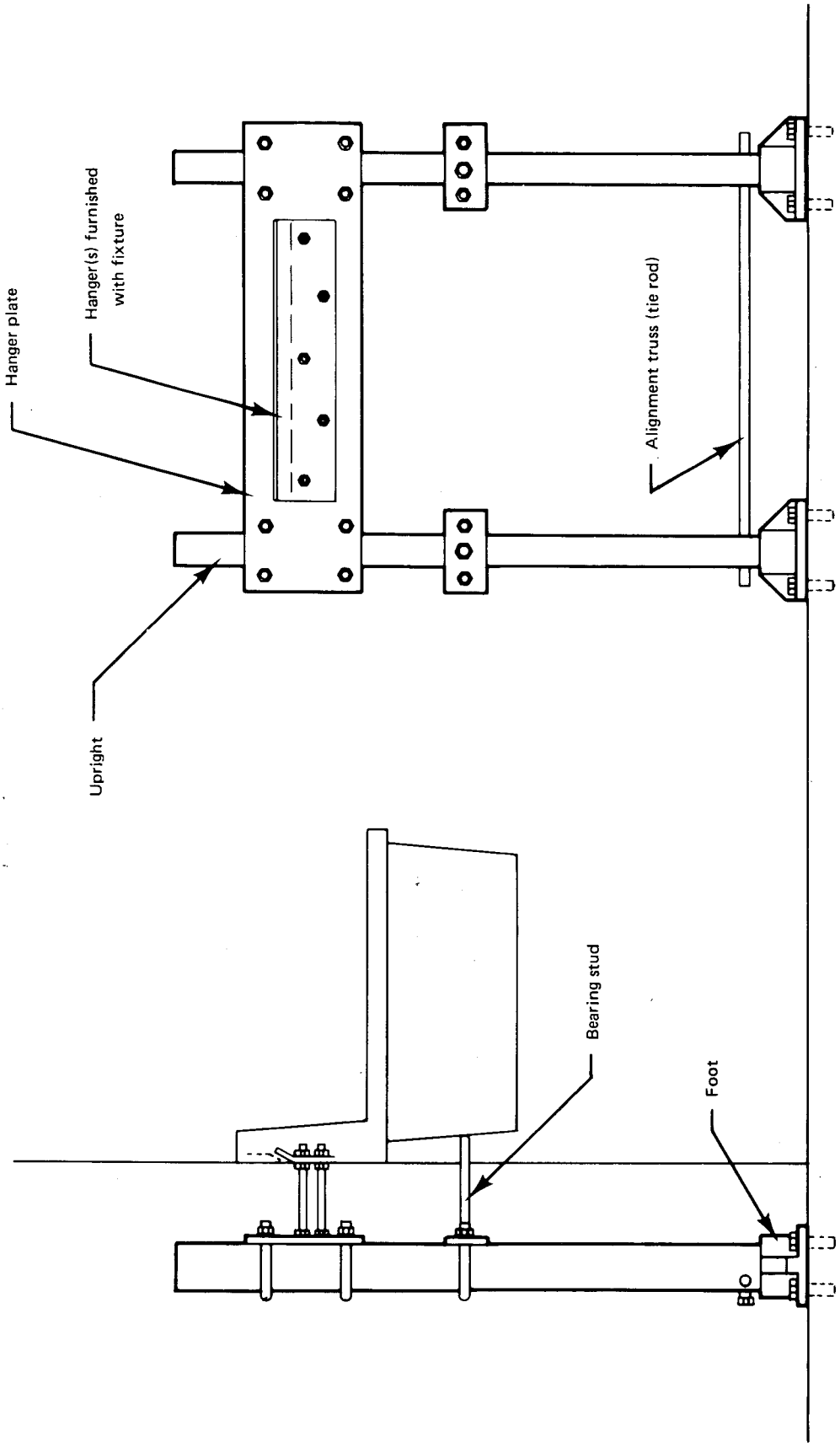



FIG.11 TYPE II SINK CARRIER

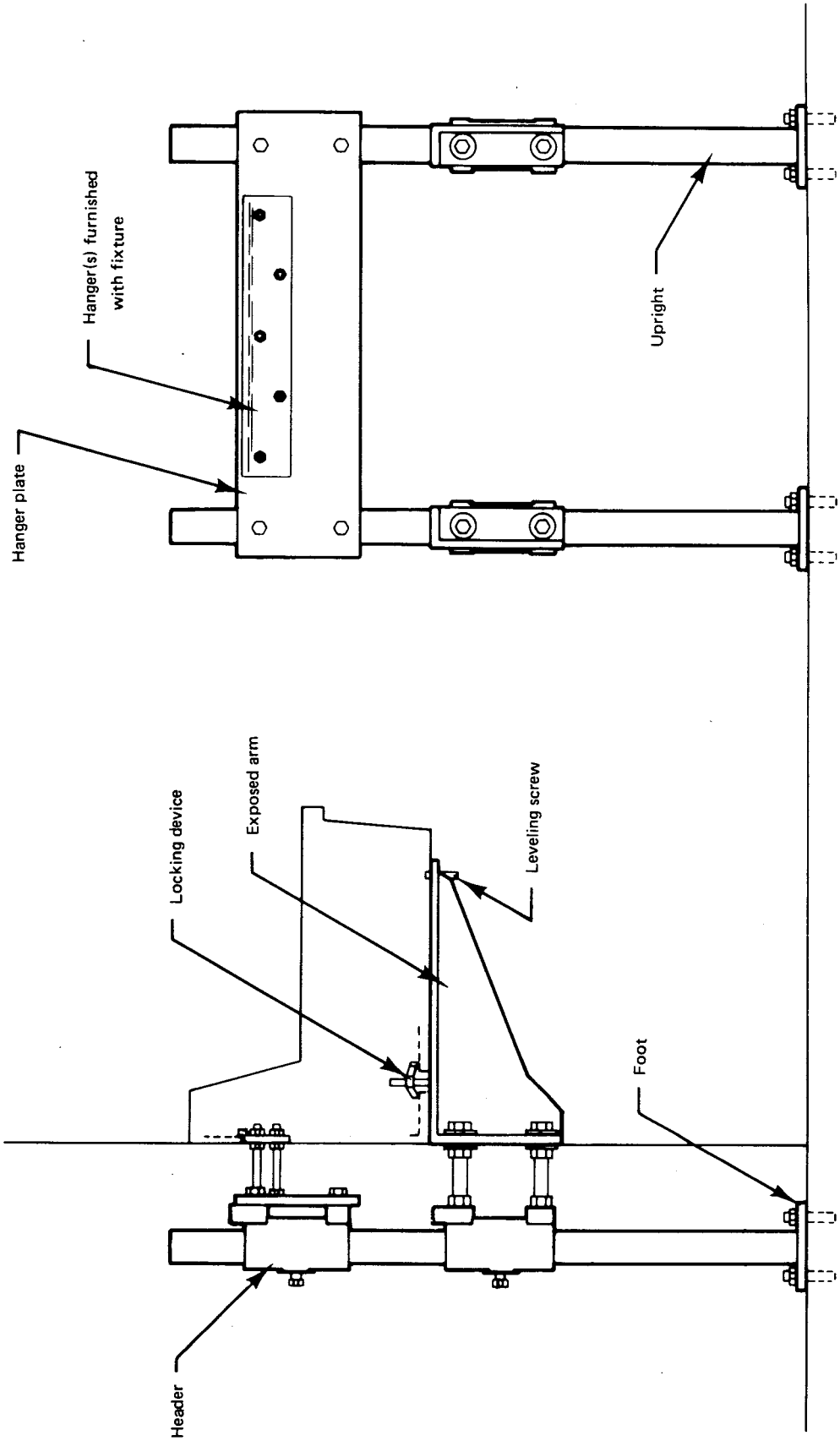



FIG. 12 TYPE III SINK CARRIER

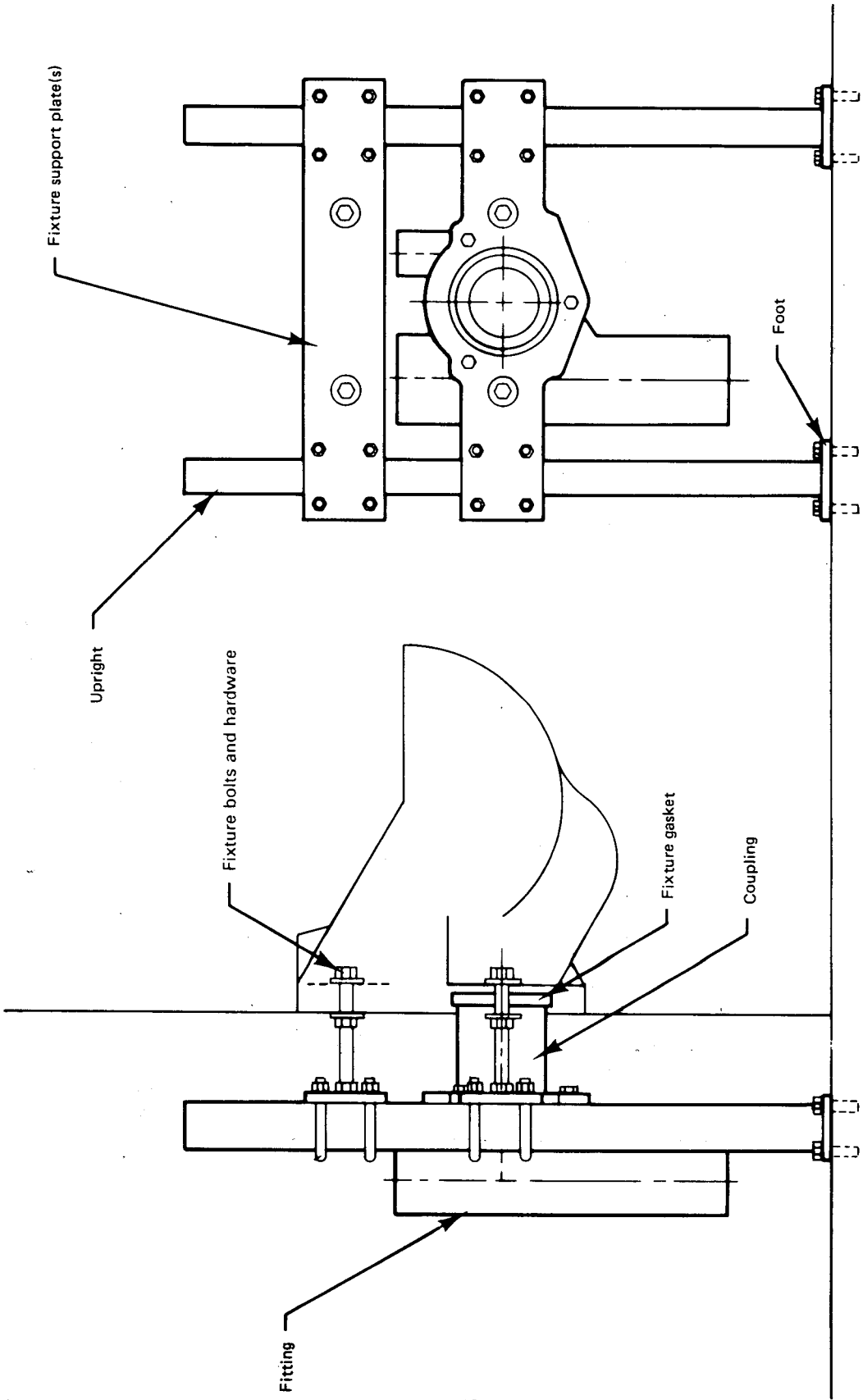



FIG. 13 TYPE IV SINK CARRIER

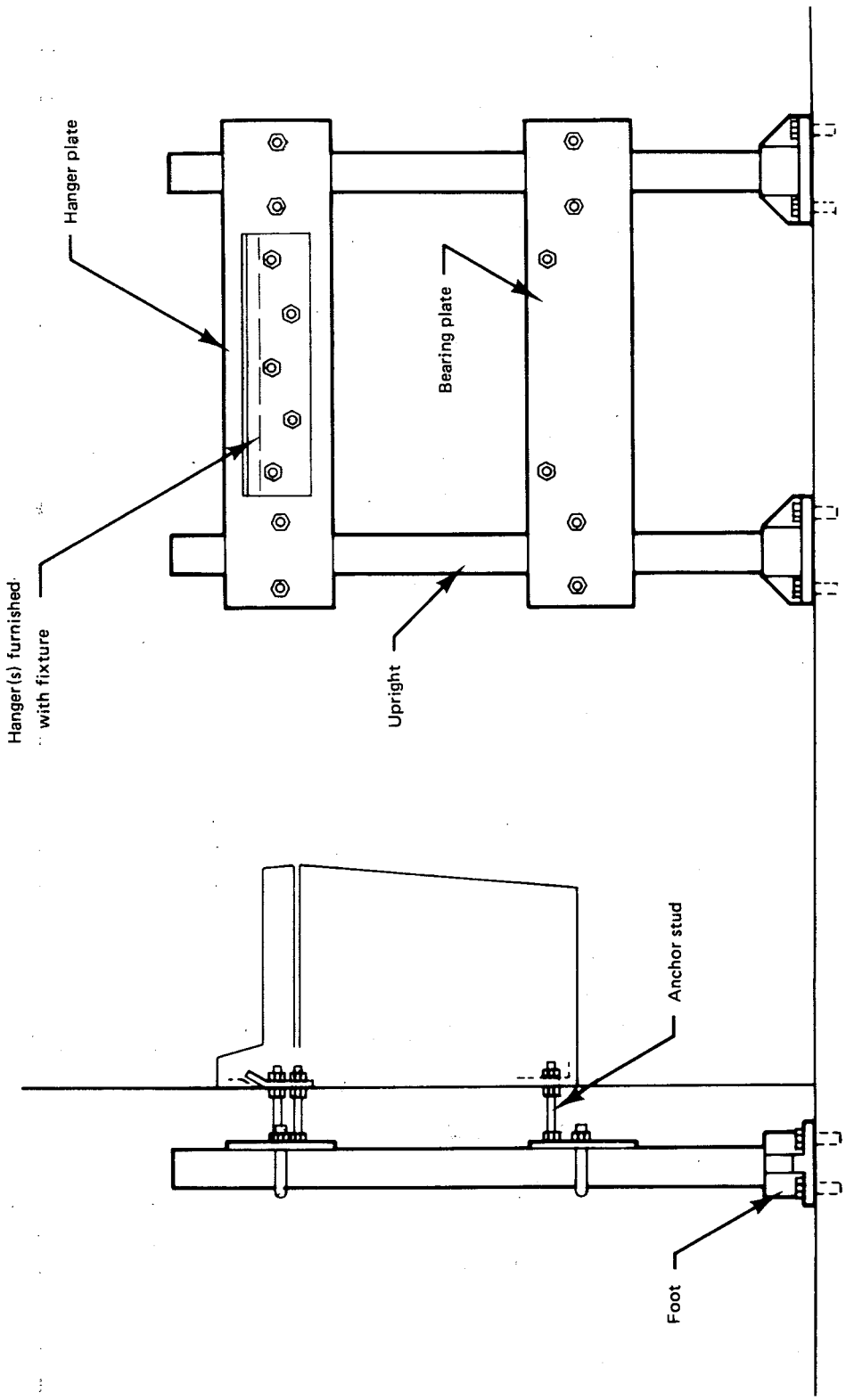



FIG. 14 TYPE I WATER COOLER CARRIER

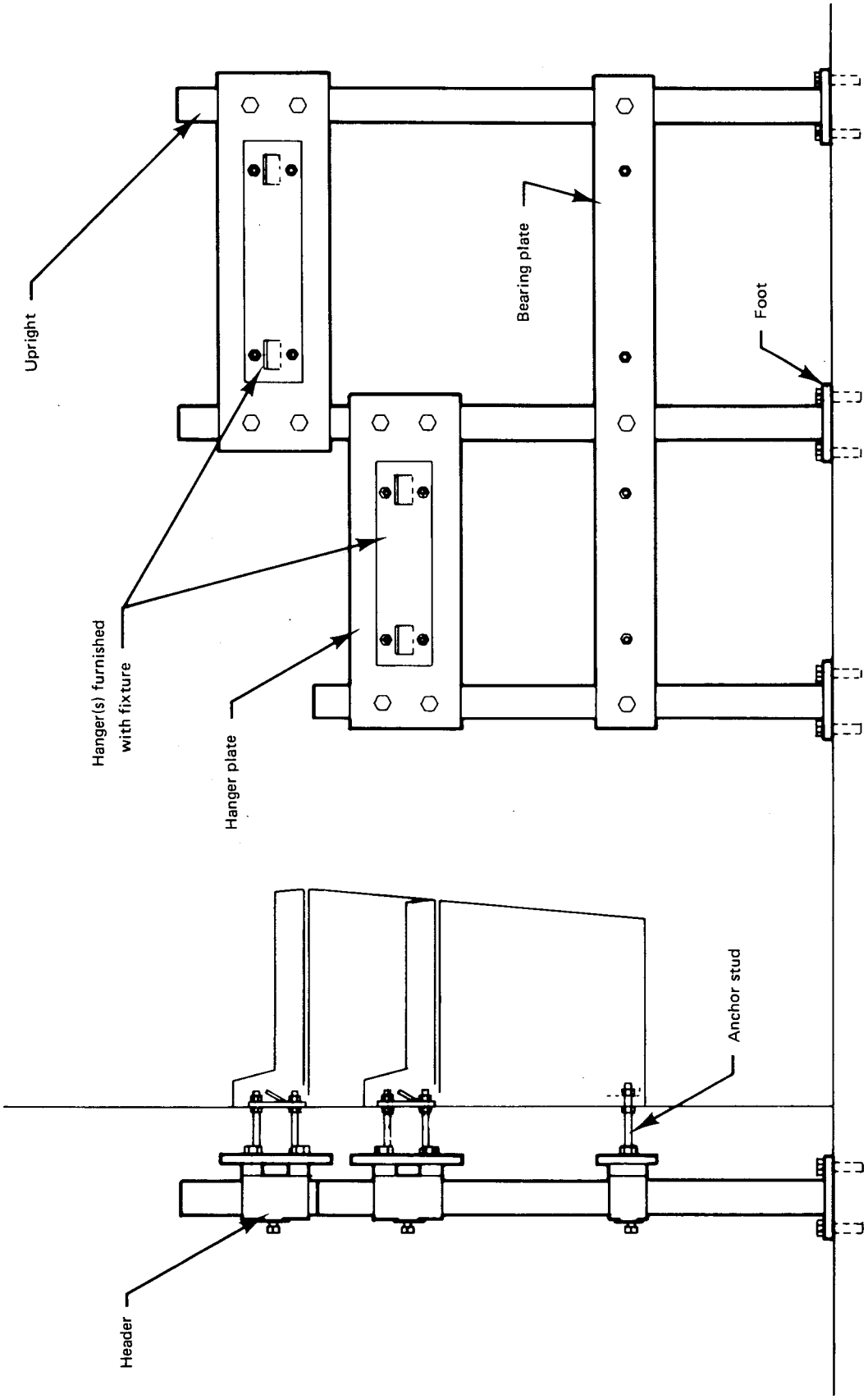
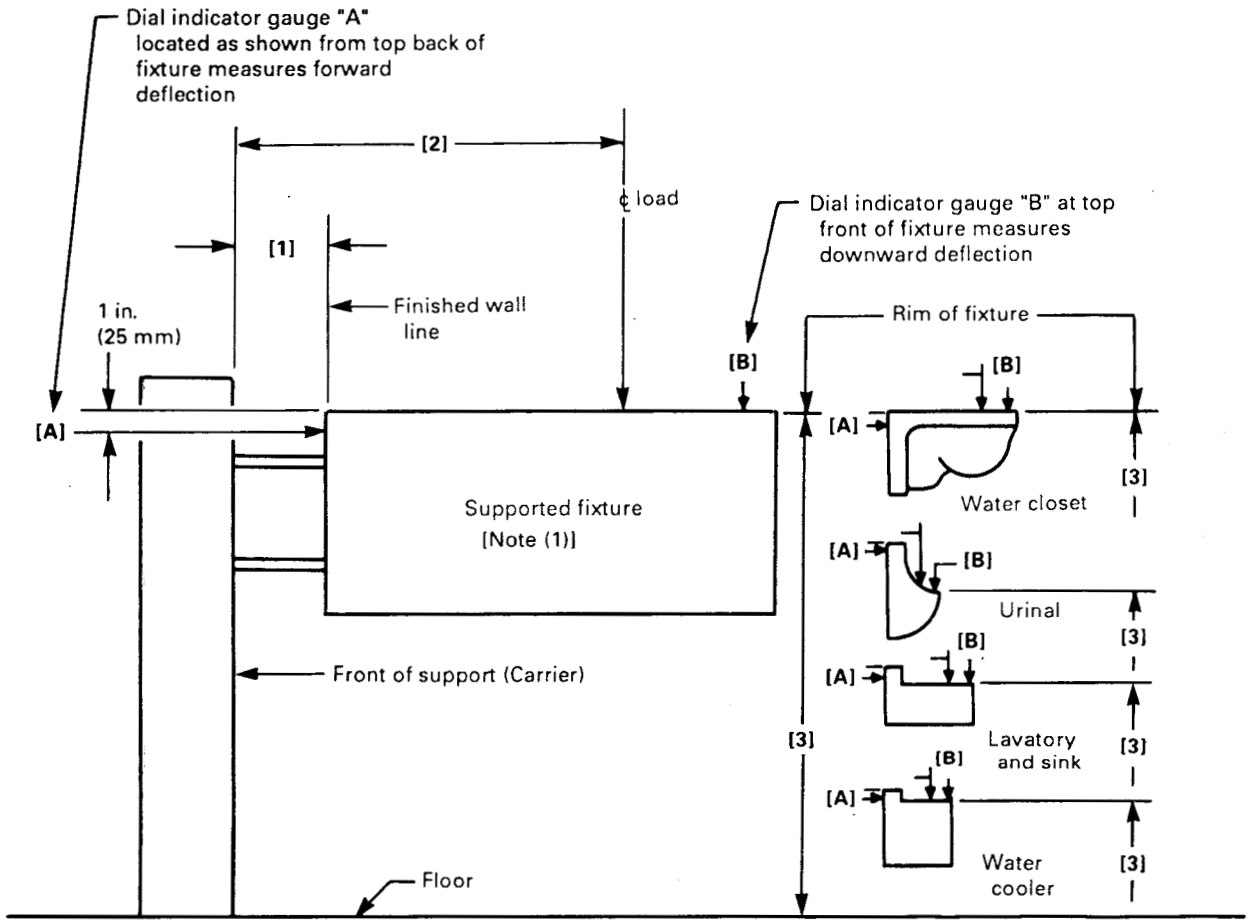



FIG. 15 TYPE II WATER COOLER CARRIER




GENERAL NOTE:
[1], [2], [3], [A], and [B] are referenced to the same shown in Table 2.

NOTE:

(1) A suitable loading platform may be used in lieu of an actual plumbing fixture for the purpose of testing, except for hanger types where a fixture with hanger(s) is recommended.

**FIG. 16 SCHEMATIC ARRANGEMENT OF TEST SETUP APPLICABLE TO ALL SUPPORT (CARRIER) TYPES COVERED BY THIS STANDARD**

## TABLE 2 STRENGTH AND DEFLECTION TEST CRITERIA FOR FIXTURE SUPPORTS (CARRIERS) COVERED BY THIS STANDARD

| Requirements Paragraph | Support (Carrier) Type | Dimensions | | | Max. Test Load kg (lb) | Max. Deflection | |
|---|---|---|---|---|---|---|---|
| | | mm (in.) [1] | mm (in.) [Note (1)] [2] | mm (in.) [3] | | mm (in.) [A] | mm (in.) [B] |
| 6.1 | Water closet | 102 (4) | 584 (23) | 381 (15) | 136 (300) | 3.2 (0.125) | 9.5 (0.375) |
| 7.1 | Type I urinal | 76 (3) | 457 (18) | 610 (24) | 136 (300) | 3.2 (0.125) | 9.5 (0.375) |
| 7.1 | Type II urinal [Note (2)] | 76 (3) | 330 (13) | 610 (24) | 91 (200) | 3.2 (0.125) | 6.4 (0.250) |
| 8.1 | Type I lavatory | 76 (3) | 432 (17) | 787 (31) | 136 (300) | 3.2 (0.125) | 9.5 (0.375) |
| 8.1 | Type II lavatory | 76 (3) | 432 (17) [Note (3)] | 787 (31) | 113 (250) | 3.2 (0.125) | 9.5 (0.375) [Note (3)] |
| 8.1 | Type III lavatory [Note (2)] | 76 (3) | 432 (17) | 787 (31) | 91 (200) | 3.2 (0.125) | 9.5 (0.375) |
| 9.1 | Type I sink | 76 (3) | 457 (18) | 914 (36) | 68 (150) [Note (4)] | 3.2 (0.125) | 9.5 (0.375) |
| 9.1 | Type II sink [Note (2)] | 76 (3) | 457 (18) | 914 (36) | 46 (100) [Note (4)] | 3.2 (0.125) | 9.5 (0.375) |
| 9.1 | Type III sink [Note (2)] | 76 (3) | 432 (17) | 787 (31) | 68 (150) [Note (4)] | 3.2 (0.125) | 9.5 (0.375) |
| 9.1 | Type IV sink | 76 (3) | 457 (18) | 762 (30) | 136 (300) | 3.2 (0.125) | 9.5 (0.375) |
| 10.1 | Type I cooler [Note (2)] | 76 (3) | 330 (13) | 1016 (40) | 91 (200) | 3.2 (0.125) | 6.4 (0.250) |
| 10.1 | Type II cooler [Note (2)] | 76 (3) | 330 (13) | 914 (36) | 136 (300) | 3.2 (0.125) | 6.4 (0.250) |

GENERAL NOTES:
(a) [1], [2], [3], [A], and [B] are referenced to the same shown in Fig. 16.
(b) Millimeters are rounded.

NOTES:
(1) Dimensions [2] are average. [2] = 75% of fixture depth + [1] for a given fixture.
(2) Tests of hanger type carriers shall be conducted with (simulated) wall in test setup.
(3) Dimension [2] shall be 559 mm (22 in.) for wheel chair lavatory carriers.
Deflection [B] shall be 13 mm (0.5 in.) for wheel chair lavatory carriers.
(4) Load Per Upright. Example: 3 Upright Carrier, multiply load given by 3.

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