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NAVFAC IGS-11161 (SEPTEMBER 2002)  
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Preparing Activity: LANTNAVFACENGCOM Based on UFGS-11161N

ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

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SECTION 11161

DOCK LEVELERS

09/02

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NOTE: This guide specification is issued by the Atlantic Division, Naval Facilities Engineering Command for regional use in Italy.

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NOTE: This guide specification covers requirements for dock bumpers, truck-trailer restraining devices, and industrial, mechanical and electro-hydraulic dock levelers of the fixed hinged type. Use dock levelers (ramps) to span and compensate for space and height differentials between loading docks and freight carriers, to facilitate safe and efficient freight transfer. The ramps are recessed into preformed pits in the loading docks. Some paragraphs may need to be supplemented to meet the project requirements.

Comments and suggestion on this specification are welcome and should be directed to the technical proponent of the specification. A listing of the technical proponents, including their organization designation and telephone number, is on the Internet.

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

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PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ITALIAN ELECTROTECHNICAL COMMITTEE (CEI)

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NOTE: A CEI Norm is an Italian technical normative for electrical systems recognized by Italian Law, submitted by a private organization "Comitato Elettrotecnico Italiano" for the Italian territory, available in the Italian language and only in some cases in English.

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CEI 64-8/V1 (1998/01) Electrical installations of buildings

ITALIAN/EUROPEAN HARMONIZATION STANDARDS (UNI EN)(UNI ENV)(CEI EN)  
(UNI EN ISO)(UNI ISO)

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NOTE: A UNI EN, UNI ENV, CEI EN, UNI EN ISO or UNI ISO is a European Standard with a coincident Italian National Standard or International Standard. The two standards are identical, with most (but not all) EN's available in the English language and the UNI available only in the Italian language.

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CEI EN 60034-1 (2001) Rotating electrical machines - Part 1: Rating and performance

CEI EN 60529/A1 (1997/00) Degrees of protection provided by enclosures (IP Code)

CEI EN 60947-2/A1 (1998/99) Low-voltage switchgear and controlgear - Part 2: Circuit-breakers

CEI EN 60947-4-1 (2002) Low-voltage switchgear and controlgear - Part 4: Contactors and motor-starters - Section 1 - Electromechanical contactors and motor-starters

1.2 DEFINITIONS

1.2.1 Industrial Dock Leveler

A manufactured structure designed to span and compensate space and height differentials between a loading dock and freight carrier to facilitate safe, efficient, freight transfer.

1.2.2 Adjustable Loading Ramp

Synonym for Fixed Type Industrial Dock Leveler.

1.2.3 Fixed Type Industrial Dock Leveler

A dock leveler that is permanently affixed to the dock structure, and usually incorporating [an electrohydraulic] [a mechanical] [recessed into dock face further than 380 millimeters] system to position the dock leveler with respect to the freight carrier at the lip end while being fixed at the opposite hinged end.

1.2.4 Velocity Fuse

A valve or similar device that goes into the hydraulic line. If the dock leveler becomes inadvertently or accidentally unsupported, this fuse will freeze the movement of dock leveler within 100 mm of the dock leveler original position.

1.2.5 Carrier

A wheeled, enclosed trailer or container that, when attached to a heavy-duty truck or van, is used to carry bulk freight over long distances.

1.3 SUBMITTALS

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NOTE: Where a "G" in submittal tags follows a submittal item, it indicates Government approval for that item. Add "G" in submittal tags following any added or existing submittal items deemed sufficiently critical, complex, or aesthetically significant to merit approval by the Government. Submittal items not designated with a "G" will be approved by the QC organization.  
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Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-02 Shop Drawings

Fixed type industrial dock leveler; G

Dock bumpers; G

Truck/trailer restraining device; G

For fixed type industrial dock leveler, depict dimensions, tolerances, surface finishes, hardnesses, flush edge angles, method of mounting and anchoring, and control schematics and diagram.

SD-03 Product Data

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NOTE: On small jobs, e.g. replacement of one dock

leveler, not all submitted requirements are  
necessary and must be edited to fit each job.

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Fixed type industrial dock leveler; G

Dock bumpers; G

Truck/trailer restraining device; G

SD-10 Operation and Maintenance Data

Fixed type industrial dock leveler, Data Package 3; G

Truck/trailer restraining device, Data Package 2; G

Submit data package in accordance with 01781, "Operation and  
Maintenance Data."

SD-11 Closeout Submittals

As-built drawings

#### 1.4 GENERAL REQUIREMENTS

Section 15050, "Basic Mechanical Materials and Methods," applies to this  
section, with the additions and modifications specified herein.

#### 1.5 NAMEPLATE

Attach corrosion-resistant metal plate securely and legibly on the exterior  
surface of the dock leveler. Include the following information indented or  
embossed on the plate:

- a. Description of the equipment: Describe procedures for operating  
and services equipment, and warnings or cautions of hazardous  
procedures.
- b. Name of the manufacturer.
- c. Serial and model number.
- d. Rated capacity in kilograms.
- e. Shipping weight.
- f. Date of manufacture (month and year).

#### 1.6 DISASSEMBLY FOR SHIPMENT

Matchmark and tag parts which are disassembled for shipment with metal  
tags. Provide waterproofed tags and markings.

#### 1.7 MANUFACTURER'S REPRESENTATIVE

Furnish services of Fixed Type Industrial Dock Leveler technicians, experienced in installation and operation of the type of system being provided, to supervise installation, testing, adjustment of system, and instruction to Government personnel.

## 1.8 QUALITY ASSURANCE

### 1.8.1 Drawings: Requirements

Submit record as-built drawings. Include mechanical and electrical components, testing and acceptance (one copy sepia transparency) for each industrial dock leveler.

## PART 2 PRODUCTS

### 2.1 SOURCE MANUFACTURERS

#### 2.1.1 Dock Leveler Equipment

The following manufacturers provide dock levelers, dock bumpers and truck restraining device equipment and components that generally comply with these specifications:

CAMPISA S.r.l.  
Via Ruffini, 13  
20030 Palazzolo Milanese (MI) - Italy  
Tel. 02/990397.1  
Fax 02/99044351  
E-mail: campisa@campisa.it  
Web: www.campisa.it

HAFSA S.r.l.  
Via Macconi, 108/21  
38100 Trento - Italy  
Tel. 0461/432511  
Fax 0461/432500  
E-mail: cdit@crawford.it

KOPRON S.r.l.  
Via C. Battisti, 181  
20061 Carugate (MI)  
Tel: 02/92150340  
Fax: 02/9252418

LOAD SYSTEMS S.r.l.  
Piazza Tommaseo, 2  
20123 Milano  
Tel: 02/462800  
Fax: 02/48193143

### 2.2 GENERAL CONFORMANCE, DOCK LEVELERS

Make provision for maintenance access to understructure and lifting

mechanism. Provide steel tread plate lip and platform, hinged and supported from beneath by steel framework that contains lifting, positioning, and lowering assembly. Ensure that platform surface is flush with surrounding floor surface of loading dock when not in service. Provide integral positive restraint when leveler is in maintenance position.

#### 2.2.1 Environmental

Design, fabricate, and finish loading ramp to permit washing with water and detergents, and operating in an ambient temperature from minus 17 degrees C to 43 degrees C.

#### 2.2.2 Dock Leveler Height Adjustment

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**NOTE: Maximum vertical adjustment could be 900 mm,  
if needed.**  
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Provide a ramp whose incline can be adjusted to suit the height of the freight carrier. Allow the loading ramp a minimum of [600] [\_\_\_\_\_] mm of vertical adjustment. Divide [300] [\_\_\_\_\_] mm above and [300] [\_\_\_\_\_] mm below the platform height.

#### 2.2.3 Dock Leveler Extension and Retraction

Extend non-fixed end of the dock leveler from a retracted position behind the line of the loading dock platform bumpers to at least 300 mm beyond the forward edge of the dock platform bumpers so as to rest on the bed of the freight carrier. The difference in length of the platform from its fully retracted position to its fully extended position shall be practically constant throughout the ramp, including the ramp extension.

#### 2.2.4 Loading Ramp Compensation

Provide automatic compensation with ramp platform loaded or unloaded for:

##### 2.2.4.1 Freight Carrier Out of Level

Out of level freight carrier bed condition (difference in elevation from side to side at the rear of the carrier bed): Allow a minimum correction of one inch for each 450 mm and maximum 100 mm correction of ramp width over the width of the ramp. Ensure the rear edge of the ramp parallel with the rear of the frame in order to prevent tripping or be a pinching hazard.

##### 2.2.4.2 Loading and Unloading of the Freight Carrier

When the lip is extended so as to rest on the bed of motor truck or trailer provide compensation 100 mm for carrier spring deflection so that contact will be maintained between lip and carrier bed.

#### 2.2.5 Safety Devices

##### 2.2.5.1 Electro-Hydraulic System

Provide velocity fuse, ballcheck valve, or other device to automatically prevent a drop of more than 100 mm of the lip should the freight carrier move away from the dock leaving the lip unsupported. Activate this device with a static, dynamic, or impact load exceeding 10 percent of the rated load on the lip and ramp.

#### 2.2.5.2 Mechanical System

Include a three-position safety system to limit platform fall to dock level and 100 and 200 mm below dock level by means of double structural steel safety legs. Safety legs shall not be deactivated by dock leveler. Ensures safety legs independent of dock leveler motion and retractable from the top of the platform for below dock level control.

#### 2.2.5.3 Dock Bumpers

Provide ramp and load dock face with laminated rubber, tire-fabric, or equivalent dock bumpers recommended by the dock leveler manufacturer.

#### 2.2.6 Rated Capacity

Minimum 9070 kilograms roll over capacity.

#### 2.2.7 Ramp Load Carrying Surface

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**NOTE: If dimensions for width and length of dock leveler ramp platform surface vary from that specified, so indicate.**  
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The live load carrying surface of the ramp shall be [1825] [\_\_\_\_\_] mm plus or minus 75 mm wide and [3050] [\_\_\_\_\_] mm plus or minus 225 mm long with the dock leveler lip retracted.

### 2.3 OPERATION

#### 2.3.1 Mechanical Control

Mechanical chain-activated, with extension-spring operation and counter-balance non-manual, raising and lowering system. Once the freight carrier has departed, manually return the platform to the stored, level position. Ensure the ramp, in its stored position capable of being lowered below dock platform level without extending the lip of the ramp.

#### 2.3.2 Electro-Hydraulic Control

Provide each dock leveler with a pushbutton station to activate motor, pump, and valves.

##### 2.3.2.1 Pushbutton

Heavy-duty dust tight and oil tight type rated in accordance with CEI EN

60947-4-1 for alternating current. To prevent accidental operation and damage, ensure each button to be recessed in its station or be protected by a peripheral collar (ring) or shroud. Indelibly identify each pushbutton by means of cast or etched letters on the station. Provide emergency "STOP" button of momentary type with manual reset or continuous pressing (constant pressure) type. This stop button shall stop all dock leveler movement, regardless of the position of the ramp or lip at the time the "STOP" button is depressed.

#### 2.3.2.2 Hinged Lip Ramp Movement

Apply continuous pressure on the "UP" button to raise the loading ramp, descend the lip onto the bed of the freight carrier. Once the freight carrier has departed, the lip shall automatically fall or retract to its down position, and the ramp shall return to its stored dock level position. The ramp, in its stored position, shall have the capability of being lowered below dock level without extending the lip of the ramp to service truck end loads which may be lower than loading dock surface position. Allow 4 to 6 seconds to fully extend or retract the lip.

### 2.4 CONSTRUCTION AND MATERIALS

Construct all load carrying parts of forged or welded steel.

#### 2.4.1 Structure

The entire live load carrying surface of the ramp and rear attachment shall be not less than 13 mm thick, 350 MPa minimum yield strength, low alloy, nonskid steel tread plate. Provide minimum 16 mm vertical projections on the live load carrying surface. Bevel the lip or ramp extension. Design load carrying surfaces to permit free movement of powered hand or platform trucks, low lift pallet trucks, and fork lift trucks. Fabricate lip hinge of not less than 13 mm wall seamless steel tubing.

#### 2.4.2 Toe Guards or Skirts

Provide sides or edges, except front and rear edges, of the ramps which rise above the surrounding loading dock with sheet carbon steel skirts or toe guards of minimum 1.8 mm nominal thickness. Toe guards or skirts shall be smooth faced and mounted flush with the edges of the ramp surface. Ensure sufficient depth of toe guards or skirts to protect the full operating range of dock travel. Ensure the construction capable of resisting a minimum lateral force of 4.5 kilograms with a maximum deflection of 13 mm.

### 2.5 ELECTRO-HYDRAULIC SYSTEM

Provide a separate and complete system for each dock leveler. Include an electric motor, motor drive, hydraulic pump, hydraulic ram, pressure relief valve, fluid reservoir, strainer, filter, hydraulic control-valve cylinders, hose, piping, fittings, and hydraulic fluid. Incorporate a means for filling and draining hydraulic fluid. Design cylinders, pump, and control valves to withstand not less than 150 percent of the design operating pressure. Provide hydraulic hose, fittings, pipe, and tubing

with working pressures based upon a minimum 4 to 1 safety factor of bursting pressure.

## 2.6 ELECTRICAL REQUIREMENTS

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**NOTE: Standard available ratings for 3 phase motors are 230 or 400 volts. If motors are used with 208 volt distribution systems, a booster transformer must be provided.**  
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CEI 64-8/V1, CEI EN 60034-1, CEI EN 60529/A1, and CEI EN 60947-4-1. Electrical characteristics shall be [230] [or] [400] volt, three phase, 50 Hz alternating current power supply. Provide all electrical equipment on the loading ramp. Provide interconnecting wiring for components of packaged equipment as an integral part of the equipment. Include motor, switches, junction box, conduit, wiring cables, panel enclosed control station, motor controller, heater coils, timer, transformer, terminal blocks, and fuses. Provide CEI EN 60529/A1 electrical enclosures. Color code all wiring.

### 2.6.1 Motor

Conform to CEI EN 60034-1 and continuous duty or 60-minute time rated, industrial type, single speed rated for operating conditions. Provide electrical insulation systems conforming to CEI EN 60034-1. Provide permanently lubricated antifriction ball or roller bearings.

### 2.6.2 Control

CEI EN 60947-4-1, AC3 utilization category controller for heavy industrial service. Provide an electrically operated, full magnetic, nonreversing type controller for the motor. Equip all control enclosures with locks and keys.

### 2.6.3 Transformer

Totally enclosed, self-cooled, dry type. Feed the transformer from the load side of the main disconnecting device. Incorporate circuit breakers with ground fault interrupting protection conforming to CEI EN 60947-2/A1.

## 2.7 ACCESSORIES

### 2.7.1 Dock Truck or Trailer Restraining Device

Self-aligning device. Mount this device as recommended by the manufacturer which shall engage the ICC bar of the truck/trailer with a positive restraining force of not less than 8150 kilograms. This device must be able to service all truck or trailers having ICC bars located between 300 and 750 mm above ground level (when truck or trailer is unloaded) and recessed up to 225 mm from the rear of truck or trailer. Provide a means to protect the device from disabling damage in the event that more than 8150 kilograms of force is exerted by the restrained truck or trailer.

Manually control activation and deactivation from inside the building.

#### 2.7.2 Dock Bumpers

Provide bumpers capable of sustaining repeated impacts from trucks or trailers without damage to the dock, dock levelers, or bumpers.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

Install and adjust in accordance with CEI 64-8/V1, and manufacturer's approved detail drawings and as-built system assembly drawings. Install controls so operator can see dock leveler while manipulating controls.

##### 3.1.1 Pit

Do not pour the pit for the adjustable loading ramp until the design and detail drawings have been approved. If the pit size is limited by construction conditions involved, alter the dock leveler equipment to fit the pit. Clearly indicate these alterations or modifications on the drawings. Check and verify appropriate measurements at the building. The clearances between the ramp and pit shall not exceed 50 mm.

##### 3.1.2 Miscellaneous Metalwork

Section 05500, "Metal Fabrications."

##### 3.1.3 Waterproofing

[Section 07121, "Built-Up Bituminous Waterproofing."] [Section 07132, "Elastomeric Sheet Waterproofing."]

#### 3.2 CLEANING, TREATMENT AND PAINTING

In accordance with manufacturer's standard practice shop clean, treat and paint ferrous surfaces including platform, lip, frame, [springs,] [motor,] [pump,] cylinders, [valves,] and any other non-cadmium plated or non-galvanized surface.

##### 3.2.1 Workmanship

Conduct field touch-up work as to avoid damaging other surfaces and public property in the area. Do not apply field applied paint during foggy, damp, rainy weather, or the ambient temperatures below 7 degrees C and above 35 degrees C.

##### 3.2.2 Dissimilar Metals Protection

Insulate control surfaces by electrolytically inactive materials.

##### 3.2.3 Finish Coat Color

Brilliant yellow and black. Paint 75 mm wide black and yellow diagonal

stripes on all vertical surfaces of pit, skirts, and platform edges exposed above adjacent surfaces at any ramp position. Paint similar stripes on top of ramp surfaces in 50 mm wide band around outside edges (except for fixed edge).

### 3.3 FIELD TESTS

The Contractor is fully responsible to provide personnel, instruments, materials, and equipment including test vehicles, for the administration and direction of the tests. Correct defects and repeat tests under the cognizance of the Contracting Officer and the dock leveler manufacturer. The Contracting Officer shall certify the test load.

#### 3.3.1 Roll-Over Load Tests

Move roll-over load of 9070 kilograms over the dock leveler between the bed of a freight carrier and the building loading dock surface for 10 cycles. With the ramp extension retracted and the ramp platform leveled with the building loading dock surface, run a 9070 kilograms roll-over load over the ramp in various directions for 20 cycles. No permanent deformation [or hydraulic system leakage] shall occur subsequent to examination after these roll-over tests.

#### 3.3.2 Drop Tests

Twice, drop test the dock leveler at the indicated rated capacity as follows: With the load on the platform and the lip resting on a vehicle carrier bed not less than 250 mm above loading dock surface, pull the carrier or pull away from the lip, leaving the loading ramp unsupported. The measured vertical drop of the dock leveler taken at the point where the lip rests on the vehicle carrier shall not exceed 100 mm during each of the drop tests. Inspect the loading ramp after each drop and ensure no damage or distortion to the mechanical, [electrical] or structural components. [There shall be no leakage from the hydraulic system.]

#### 3.3.3 Acceptance Tests

Perform an acceptance test in the presence of the dock leveler manufacturer and the Contracting Officer subsequent to roll-over load tests and drop tests. Conduct operation of the equipment through all of its motions and specified checks as follows: (a) extend lip to rest on a variety of freight carriers with beds up 300 mm above and below dock level; (b) test 100 mm drop limitation with 3175 kilograms load on ramp, evenly distributed; (c) test level compensation with the ramp, loaded with a minimum of 3175 kilograms; and (d) test proper compensation (float) for various compression of countersprings, with ramp loaded and unloaded.

### [3.4 INSTRUCTION TO GOVERNMENT PERSONNEL

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**NOTE: The brackets have been provided around this paragraph because replacement of one dock leveler at an existing facility may not require training. Check with facility before deciding whether this training**

is required since existing personnel may be knowledgeable of dock leveler operations and maintenance.

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Upon completion of the work and at a time designated by the Contracting Officer, the services of a competent Technician regularly employed or authorized by the manufacturer of the dock leveler shall be provided for instructing Government personnel in the proper operation, maintenance, safety, and emergency procedures of the dock leveler. The period of instruction shall be not less than one nor more than two eight-hour working days. The training shall be conducted at the job site or at any other location mutually satisfactory to the Government and the Contractor.

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