
**Road construction and maintenance
equipment — Slipform pavers —
Definitions and commercial
specifications**

*Matériels pour la construction et l'entretien des routes — Machines pour
le pavage — Définitions et spécifications commerciales*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 16039:2004](https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915efc645b00/iso-16039-2004)

<https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915efc645b00/iso-16039-2004>



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 16039:2004

<https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915efc645b00/iso-16039-2004>

© ISO 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

| | |
|--|----|
| Introduction | v |
| 1 Scope..... | 1 |
| 2 Terms and definitions..... | 1 |
| 3 Operating principle | 3 |
| 4 Description of a slipform paver | 3 |
| 4.1 Basic unit | 3 |
| 4.2 Device for execution of drainage structures..... | 4 |
| 4.3 Devices for execution of road-safety structures | 4 |
| 4.4 Equipment of slipform pavers for execution of roadways, airfields, and other large pavement structures..... | 4 |
| 5 Adjustable parameters on a slipform paver..... | 4 |
| 6 Commercial specifications..... | 5 |
| 6.1 General | 5 |
| 6.2 Main assemblies..... | 5 |
| 6.3 General characteristics of a slipform paver..... | 5 |
| 6.4 Engine's data | 6 |
| 6.5 Fluid-tank capacities..... | 7 |
| 6.6 Electrical system..... | 7 |
| 6.7 Dimensional characteristics (small paver) | 7 |
| 6.8 Additional features of a slipform paver..... | 7 |
| 6.9 Additional equipment | 8 |
| Annex A (informative) Examples of slipform-paver designs and their assemblies..... | 9 |
| Bibliography | 16 |

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16039 was prepared by Technical Committee ISO/TC 195, *Building construction machinery and equipment*.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 16039:2004](https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915efc645b00/iso-16039-2004)

<https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915efc645b00/iso-16039-2004>

Introduction

This International Standard deals with slipform pavers for placing, compaction, forming and finishing cement concrete in roadway, street, airport construction and other structures of related design. This International Standard provides definition of equipment and technical characteristics of machinery as well. Enclosed figures explain performance of slipform pavers and their components.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 16039:2004](https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915efc645b00/iso-16039-2004)

<https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915efc645b00/iso-16039-2004>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 16039:2004

<https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915efc645b00/iso-16039-2004>

Road construction and maintenance equipment — Slipform pavers — Definitions and commercial specifications

1 Scope

This International Standard establishes definitions, terminology and the content of commercial literature specifications for mobile, self-operating machines used for placing and finishing cement concrete, commonly called “slipform pavers”, which mould concrete in a plastic condition. It specifies the general machine configuration and the special equipment depending on the types of work to be executed. This work can be concrete roadways, road safety structures (barriers, walls, etc.), road drainage structures (edgings, gulleys, gutters, etc.) and airport paving (runways, taxiways, aprons, etc.).

The document does not apply to machines with non-travelling formwork fixed to the ground and to those construction works which require only a vertical progression.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

slipform paver

mobile machine used for the purpose of applying layers of construction material such as cement concrete on surfaces, or for constructing profiled structures

2.2

mould

element which gives to the concrete the shape desired for the construction work, in particular its transverse cross-section

NOTE The following moulds are typically used by slipform pavers:

- barrier mould;
- curb and gutter mould;
- parapet mould;
- glare-screen mould;
- variable-height median-barrier mould;
- pavement mould;
- canal-ditch mould.

2.3

mounted mould

element which gives to the concrete the shape, entirely supported by the machine frame

NOTE The following mounted mould types can be identified:

- center mounted: the mounting of the slipform mould between the tracks of the machine, also known as straddle;
- side mounted: the mounting of the slipform mould on the outside of the machine frame.

**2.4
floating mould**

mould which is only drawn along by the machine and supported by the already finished part of the construction work

**2.5
concrete-mix distributor**

device which makes it possible to distribute the concrete mix at the front of the paving process (Figure A.7)

NOTE 1 The following examples of concrete mix distributor types can be identified:

- auger: screw-type device used to transfer material (Figure A.7);
- charging conveyor: an endless belt or auger used to elevate concrete mix into a mould or to place it near the center of a pavement;
- diverter plough: a pusher-blade type device used to transfer material from side to side.

NOTE 2 In some designs, the concrete mix may be delivered to a hopper without transverse distribution.

**2.6
reinforcement guide**

set of supports whose role is to position the longitudinal reinforcements within the zone where the concrete mix is plastic

NOTE The reinforcement guide is commonly referred to as rebar flute or flutes.

**2.7
front metering strike-off**

device comprising generally a vertically sliding plate, intended for regulating the concrete mix height within the grout box to a specific depth

**2.8
vibration zone**

zone located perpendicular to the vibration device and within which the concrete mix is in the plastic state, i.e., suitable for slipforming

**2.9
distance of vibration**

maximum distance in a given direction where the action of the vibration is effective

NOTE For internal vibration devices in general, action distance within the concrete mix is referred to (commonly referred to as the “radius of vibration”).

**2.10
final finisher**

plate placed at the rear of the machine, independent of the mould, which rests on the existing construction work with a view to providing secondary finishing of the concrete surface

NOTE The device may be used as an attachment for execution of concrete surfaces. It may be static or dynamic.

**2.11
slope controller**

cross-slope sensor, which makes it possible to give a specific slope to the machine performing the construction work to be executed, irrespective of the slope of the support over which the machine moves

NOTE This device can be considered an accessory or attachment item on pavers to measure cross slope and mechanically control the slope attitude of a machine.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

ISO 16039:2004

[https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-](https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915ef645b00/iso-16039-2004)

[915ef645b00/iso-16039-2004](https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322-915ef645b00/iso-16039-2004)

2.12**trimmer**

attachment for a slipform paver for small paving works, with a rotating cutting wheel which can be fitted to produce a level surface for either sub-grades or bases (Figure A.1, item 4)

NOTE A trimmer for large works is typically a separate machine.

2.13**dowel-bar inserter****DBI**

device located at the rear of the mould or on the lateral formwork, or in the mould structure itself, the role of which is to place multiple load-transfer dowel bars (transverse contraction joint) in the freshly paved concrete structure (Figure A.5)

2.14**tie-bar inserter**

device, the role of which is to drive the tie bars into the concrete mix during the paving process (Figure A.6)

NOTE There are several locations for tie-bar inserters: centreline, edge of pavement and shoulder line.

2.15**vibrator for slipform paver**

vibration device mounted in front of the mould to facilitate uniform compaction of the extrusion process

3 Operating principle

Slipform pavers use the properties specific to concrete and in particular its ability

- to become fluid when submitted to vibration;
- to regain its consistency when forced through the extrusion process and no longer submitted to vibration.

The principle of the slipform paver is to use the time the concrete mix is in a plastic condition in order to mould it to the desired shape, by appropriate extrusion-type mould and applied energy.

4 Description of a slipform paver**4.1 Basic unit**

A slipform comprises a self-propelled frame on which are installed the following:

- a device to distribute the concrete mix within the confines of the mould;
- a vibration system used for compaction of the concrete mix when in the plastic state as it is being moulded;
- a mould, which defines the shaping of the concrete;
- a sensor control system for control of steering (alignment), and elevation (grade) from known references;
- a control console and operator's station;
- a power unit.

Depending on the type of work to be executed (drainage structures, road safety structures and pavements), the base machine is equipped with additional devices.

4.2 Device for execution of drainage structures

For execution of drainage structures (edgings, gutters and so on), the slipform paver is supplemented by a device which regulates the delivery of the material within the vibration zone and mould (screw feeder, belt conveyor).

4.3 Devices for execution of road-safety structures

For these construction works (barriers, walls etc.), the slipform paver may include the following equipment:

- a device which regulates the delivery of the material (screw feeder, belt conveyor);
- a mould supply hopper (via its upper part);
- at least two internal vibrators;
- a slipform mould;
- a slope controller which enables the maintenance of the machine's slope attitude while advancing.

The mould, depending on the machine design, may be mounted on the left-hand or right-hand side of the machine frame or underneath this frame.

NOTE Some machines can be operated without a slope controller in certain applications.

4.4 Equipment of slipform pavers for execution of roadways, airfields, and other large pavement structures

iTeh STANDARD PREVIEW
(standards.iteh.ai)

4.4.1 Basic equipment

ISO 16039:2004

<https://standards.iteh.ai/catalog/standards/sist/cf39eebe-22fd-49c0-8322->

For these construction works, the slipform paver includes the following equipment:

- a spreading device or transverse distributor, either auger screw or diverter plough, to spread the material laterally in front of the paving mould;
- a vibrating device. The vibrating device is a set of internal vibrators spread out regularly over the whole width of the construction work. The position of the internal vibrators in the vertical plane is adjustable and is determined as a function of the material to be placed and the layer thickness to be produced;
- a mould with side forms in order to produce the appropriate width pavement;
- a sensor control system for control of steering (alignment) and for control of elevation (grade) from known references.

4.4.2 Other equipment

Depending on the specific cases, the following equipment allows execution of the various paving operations: dowel-bar inserter, tie-bar inserter, internal vibrator and final finisher.

5 Adjustable parameters on a slipform paver

Certain machine parameters can be adjusted in order to take into account the special characteristics of the concrete and of the shape of the construction work. These are as follows:

- the position of the vibration device in relation to the mould, in order to prevent the air which escapes from the concrete mix becoming "trapped" beneath the mould;

- the vibration force (frequency setting), so that the concrete mix is subjected to vibration at the front part of the mould with the underneath rear part of this mould being vibration-free;
- the rate of supply of the concrete mix to take into account, for example, the machine-advancement speed;
- the guiding system sensitivity, in particular to meet the requirements for smoothness specified for the construction work.

6 Commercial specifications

6.1 General

The following characteristics shall be specified.

6.2 Main assemblies

Main assemblies should be specified according to the type of the slipform paver. Examples of the main components of slipform pavers for minor, medium-sized and big road-paving works are presented in the following figures:

- Figure A.1 — Basic components of a small slipform paver;
- Figure A.2 — Basic components of a medium or large slipform paver.

6.3 General characteristics of a slipform paver

6.3.1 Applications

These specifications apply to the following operations:

- single layer paving with small, medium and large paving widths;
- road-drainage structure paving edgings, shoulders, curbs, curb and gutters and so on;
- road safety structures barriers, walls, and so on;
- special purpose paving dual layer paving, canal paving, and so on.

6.3.2 Specifications

The general specifications are listed below, together with the units of measure, where appropriate:

- maximum working width underneath the machine millimetres;
- minimum working width underneath the machine millimetres;
- maximum working width of lateral formwork millimetres;
- maximum working thickness millimetres;
- maximum working height of lateral formwork millimetres;
- working speed metres per minute;
- travelling speed metres per minute;
- number of crawlers (units);