INTERNATIONAL STANDARD

ISO 7752-2

Second edition
2011-11-01

Cranes — Control layout and characteristics —

Part 2: Basic arrangement and requirements for mobile cranes

Appareils de levage à charge suspendue — Disposition et caractéristiques des commandes —

Partie 2: Disposition et exigences de base pour les grues mobiles

Reference number
ISO 7752-2:2011(E)

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Published in Switzerland

Foreword

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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 7752-2 was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 6, *Mobile cranes*.

This second edition cancels and replaces the first edition (ISO 7752-2:1985), which has been technically revised. It also incorporates the Addendum ISO 7752-2:1985/Add 1:1986.

ISO 7752 consists of the following parts, under the general title *Cranes — Control layout and characteristics*:

— *Part 1: General principles*

— *Part 2: Basic arrangement and requirements for mobile cranes*

— *Part 3: Tower cranes*

— *Part 4: Jib cranes*

— *Part 5: Overhead travelling cranes and portal bridge cranes*

Introduction

Mobile crane operators frequently transfer from one crane to another of different model or manufacturer. This part of ISO 7752 establishes a consistent arrangement and movement for the basic controls used during the crane-operating cycle, to reduce operator confusion or incorrect control in an emergency.

Cranes — Control layout and characteristics —

Part 2:
Basic arrangement and requirements for mobile cranes

1 Scope

This part of ISO 7752 establishes the arrangement, requirements and direction of movement of the basic controls for slewing, load hoisting and lowering, and boom luffing and telescoping, on mobile cranes as defined in ISO 4306-2. It deals with bi-directional controls and the basic arrangement and requirements for cross-shift levers (multi-directional controls). It is intended to be used in conjunction with ISO 7752-1.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4306-2, *Cranes — Vocabulary — Part 2: Mobile cranes*

ISO 7752-1, *Cranes — Control layout and characteristics — Part 1: General principles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4306-2 and the following apply.

3.1
operator
person operating the crane for the purposes of positioning loads

[ISO 7752-1]

3.2
control
actuating device which forms an interface between the crane operator and crane control system

[ISO 7752-1]

3.3
control station
permanent position of controls on or off the crane

[ISO 7752-1]

4 Bi-directional levers, crane with fixed-length boom

The basic controls shall be arranged as shown in Figure 1.

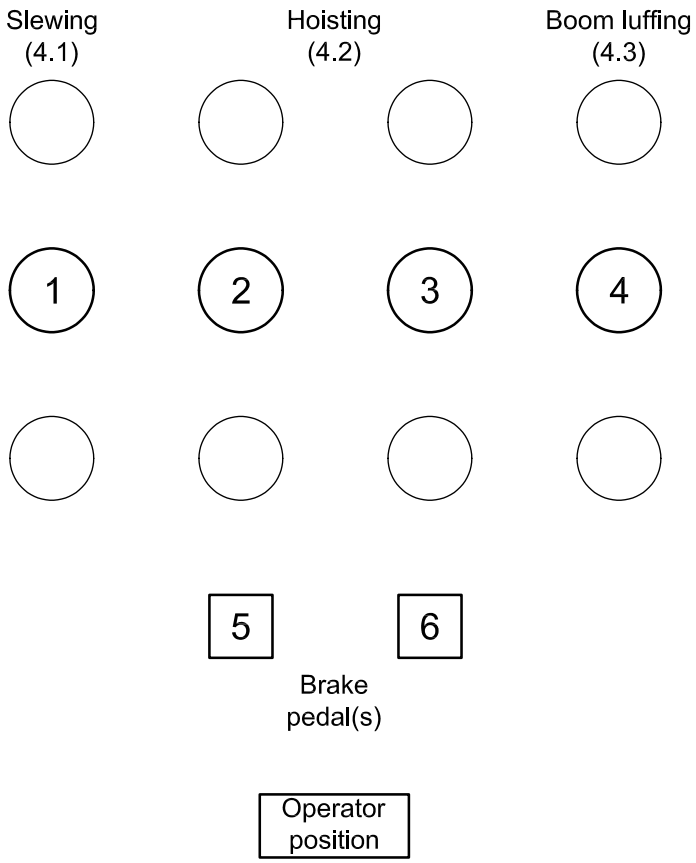

Figure 1 — Crane control diagram for cranes fitted with fixed-length boom

4.1 Slewing control — Hand lever 1

Push the lever forward to slew towards the boom:

— slew left (operator's position on right side);

— slew right (operator's position on left side or centre of crane).

Centre the lever to release the slewing power.

Pull back the lever to reverse direction.

4.2 Hoisting control — Hand lever 2 and foot pedal 5, hand lever 3 and foot pedal 6

Pull the lever back to hoist the load.

Centre the lever to release the power and to hold the load (if equipped with an automatic brake) or to control the load by depressing the brake pedal.

Push the lever forward to lower the load.

4.3 Boom luffing control — Hand lever 4

Pull the lever back to raise the boom.

Centre the lever to hold the boom in position.

Push the lever forward to lower the boom.

4.4 Boom luffing control — Alternative arrangement (foot pedal operation)

The basic controls shall be arranged as shown in Figure 2.

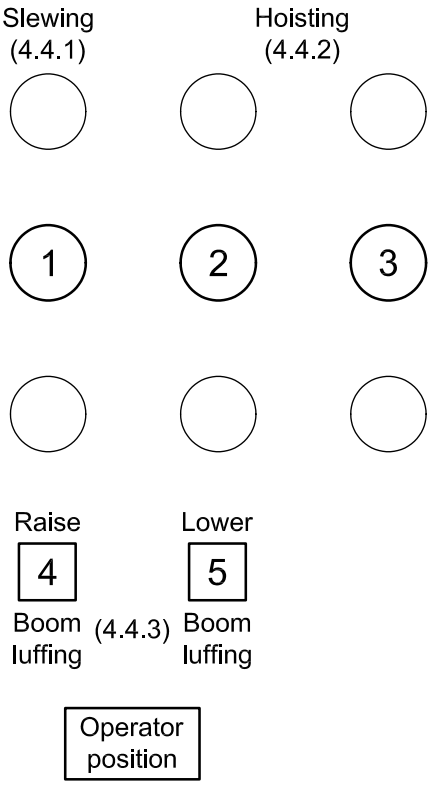

Figure 2 — Crane control diagram for cranes fitted with fixed-length boom and alternative arrangement for boom luffing control (foot pedals)

4.4.1 Slewing control — Hand lever 1

Push the lever forward to slew towards the boom:

— slew left (operator's position on right side);

— slew right (operator's position on left side or centre of crane).

Centre the lever to release the slewing power.

Pull back the lever to reverse direction.

4.4.2 Hoisting control — Hand lever 2, hand lever 3

Pull the lever back to hoist the load.

Centre the lever to release the power and to hold the load.

Push the lever forward to lower the load.

4.4.3 Boom luffing control — Foot pedals 4 and 5

Depress foot pedal 4 to raise the boom.

Depress foot pedal 5 to lower the boom.

Release foot pedals 4 and 5 to hold the boom stationary.

5 Bi-directional levers, crane with telescoping boom

The basic controls shall be arranged as shown in Figure 3.

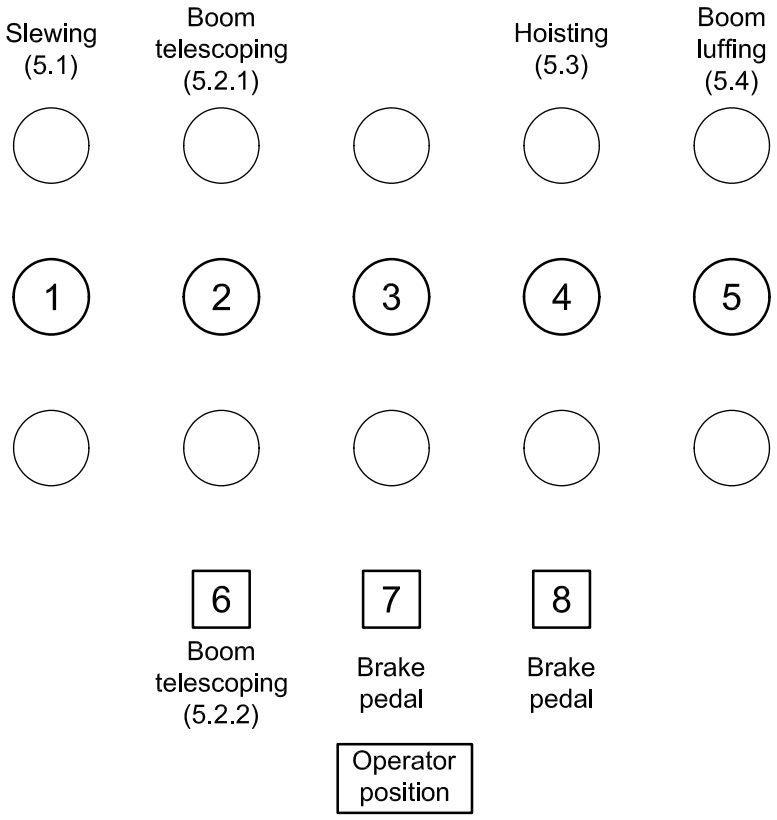

Figure 3 — Crane control diagram for cranes fitted with telescoping boom

5.1 Slewing control — Hand lever 1

Push the lever forward to slew towards the boom:

— slew left (operator's position on right side);

— slew right (operator's position on left side or centre of crane).

Centre the lever to release the slewing power.

Pull back the lever to reverse direction.

5.2 Boom telescoping control

5.2.1 Hand lever 2

Push the lever forward to extend the boom.

Centre the lever to hold the boom extension position.

Pull the lever back to retract the boom.

5.2.2 Foot pedal 6 — Optional (in place of hand lever 2)

Rock the pedal forward (toe down) to extend the boom.

Centre the pedal to hold the boom extension position.

Rock the pedal rearward (heel down) to retract the boom.

5.3 Hoisting control — Hand lever 3 and foot pedal 7, hand lever 4 and foot pedal 8

Pull the lever back to hoist the load.

Centre the lever to release the power and to hold the load (if equipped with an automatic brake), or control the load by depressing the brake pedal.

Push the lever forward to lower the load (if equipped with an automatic brake) or activate “powered load lowering”.

5.4 Boom luffing control — Hand lever 5

Pull the lever back to raise the boom.

Centre the lever to hold the boom in position.

Push the lever forward to lower the boom.

Additional levers may be located between levers 1 and 2 for independently telescoping boom sections.

6 Cross-shift levers (multi-directional controls), crane with fixed-length boom

6.1 Basic control arrangement

The basic controls shall be arranged as shown in Figure 4.

As an alternative, foot pedals may be provided for luffing (see 6.2.3).

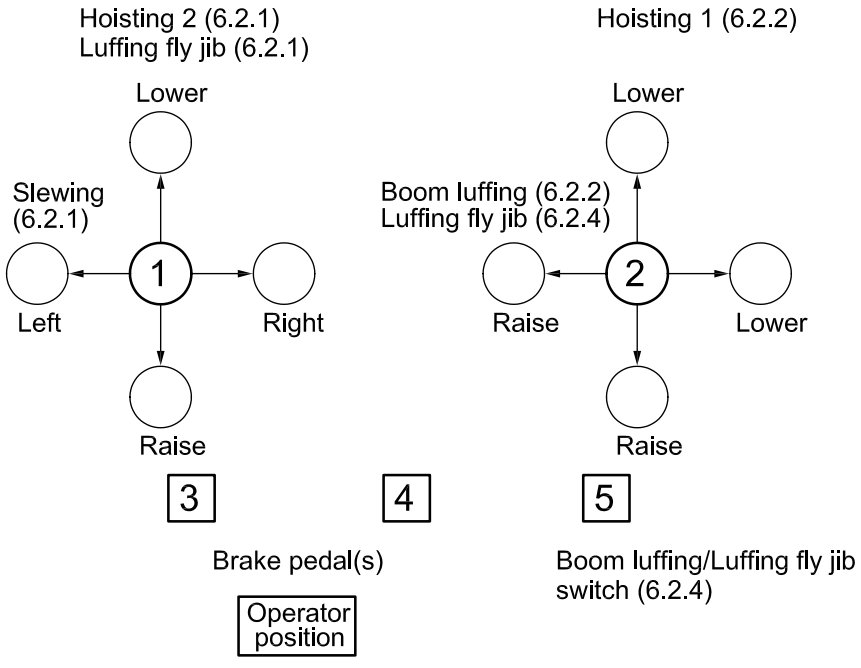

Figure 4 — Crane control diagram for cranes fitted with fixed-length boom

6.2 Direction of movement

6.2.1 Hoisting 2 and slewing control — Hand lever 1 and foot pedal 3

6.2.1.1 Vertical lever

Pull the lever back to raise the load (or fly jib).

Centre the lever to hold the load (or fly jib) in position (if equipped with an automatic brake), or control the load by depressing the brake pedal.

Push the lever forward to lower the load (or fly jib).

6.2.1.2 Horizontal lever

Move the lever to the left to slew left.

Centre the lever to release the slewing power.

Move the lever to the right to slew right.

6.2.2 Hoisting 1 and luffing control — Hand lever 2 and foot pedal 4

6.2.2.1 Vertical lever

Pull the lever back to raise the load.

Centre the lever to hold the load in position (if equipped with an automatic brake), or control the load by depressing the brake pedal.

Push the lever forward to lower the load.

6.2.2.2 Horizontal lever

Move the lever to the left to raise the boom.

Centre the lever to hold the boom in position.

Move the lever to the right to lower the boom.

6.2.3 Foot pedals 3 and 4

Foot pedals 3 and 4 may be used for luffing of the boom if hoist drums are equipped with automatic brakes (see 4.4.3).

6.2.4 Luffing/luffing fly jib selection switch 5 in conjunction with hand lever 2

6.2.4.1 Selection switch 5 in position “Luffing” (see 6.2.2.2)

6.2.4.2 Selection switch 5 in position “Luffing fly jib”

Move the lever to the left to raise the luffing fly jib.

Centre the lever to hold the luffing fly jib in position.

Move the lever to the right to lower the luffing fly jib.

7 Cross-shift levers (multi-directional controls) — Cranes with telescoping boom

7.1 Basic control arrangement

The basic controls shall be arranged as shown in Figure 5.

As an alternative, a foot pedal may be provided for telescoping (see 7.2.3.2).

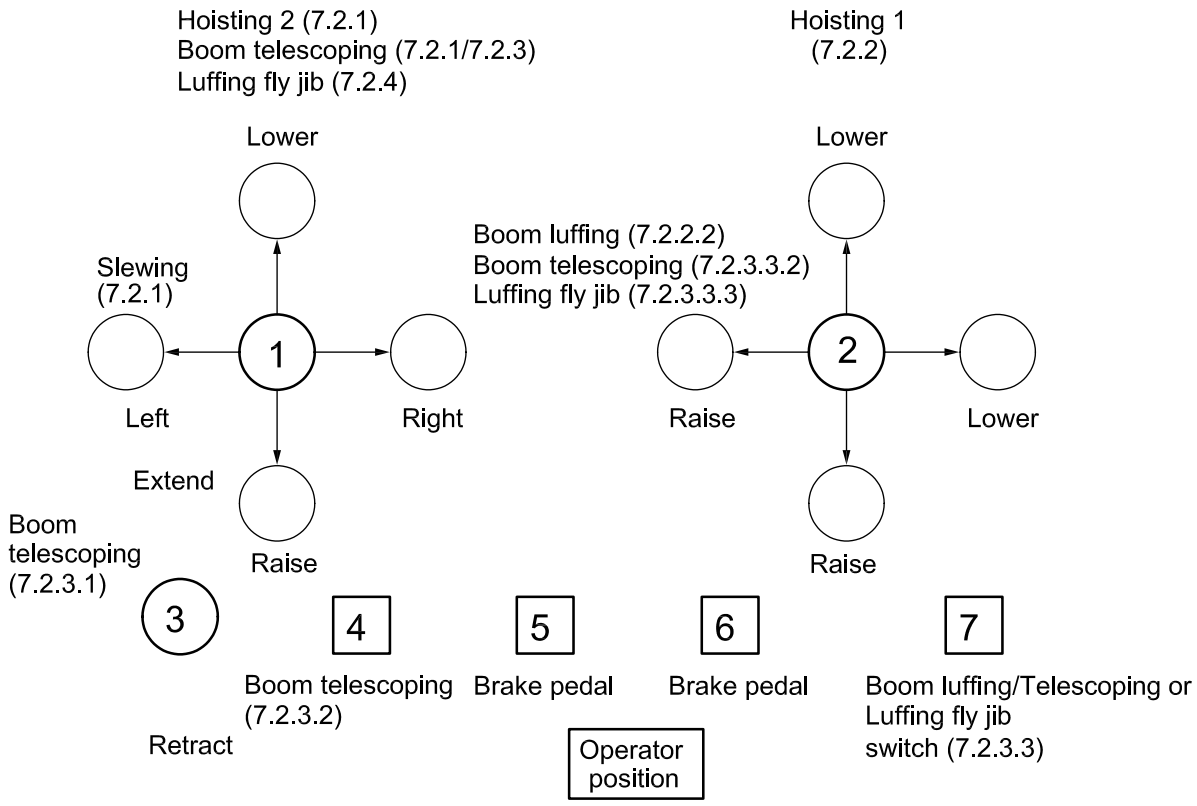

Figure 5 — Crane control diagram for cranes fitted with telescoping boom

7.2 Direction of movement

7.2.1 Hoisting 2 and slewing control — Hand lever 1 and foot pedal 5

7.2.1.1 Vertical lever

Pull the lever back to raise the load (or retract the boom).

Centre the lever to hold the load (or keep the boom) in position (if equipped with an automatic brake), or control load by depressing the brake pedal.

Push the lever forward to lower the load (or extend the boom).

7.2.1.2 Horizontal lever

Move the lever to the left to slew left.

Centre the lever to release the slewing power.

Move the lever to the right to slew right.

7.2.2 Hoisting 1 and luffing control — Hand lever 2 and foot pedal 6

7.2.2.1 Vertical lever

Pull the lever back to raise the load.

Centre the lever to hold the load in position (if equipped with an automatic brake), or control the load by depressing the brake control.

Push the lever forward to lower the load.

7.2.2.2 Horizontal lever

Move the lever to the left to raise the boom.

Centre the lever to hold the boom in position.

Move the lever to the right to lower the boom.

7.2.3 Boom telescoping control in conjunction with a separate lever(s)

7.2.3.1 Hand lever 3

Push the lever forward to extend the boom.

Centre the lever to hold the boom in position.

Pull the lever back to retract the boom.

NOTE The boom telescoping function can be the fore and aft movement of lever 1 (see 7.2.1.1).

7.2.3.2 Foot pedal 4 (optional) in place of hand lever 3

Rock the pedal forward (toe down) to extend the boom.

Centre the pedal to hold the boom extension position.

Rock the pedal rearward (heel down) to retract the boom.

7.2.3.3 Boom luffing/boom telescoping/luffing fly jib selection switch 7 in conjunction with hand lever 2 instead of hand lever 3 and foot pedal 4

7.2.3.3.1 Selection switch 7 in position "Boom luffing" (see 7.2.2.2)

7.2.3.3.2 Selection switch 7 in position "Boom telescoping"

Move the lever to the left to retract the boom.

Centre the lever to hold the boom in position.

Move the lever to the right to extend the boom.

7.2.3.3.3 Selection switch 7 in position "Luffing fly jib"

Move the lever to the left to raise the luffing fly jib.

Centre the lever to hold the luffing fly jib in position.

Move the lever to the right to lower the luffing fly jib.

7.2.4 Luffing fly jib control (instead of hoisting 2) — Hand lever 1

Pull the lever back to raise the luffing fly jib.

Centre the lever to hold the luffing fly jib in position.

Push the lever to lower the luffing fly jib.

8 Remote control station

8.1 The relative positions and movements of controls shall be in accordance either with Clause 4 and 5 or with Clause 6 and 7 depending on the case.

8.2 Provision shall be made for the crane motion to stop in the event of a malfunction in the control signal for any crane motion.

8.3 Provision shall be made for emergency stop in the event of a device malfunction.

9 General requirements

9.1 The basic controls used during the crane operating cycle (see Figures 1 to 5) shall be located within easy reach of the operator while he is at his station.

9.2 Hand levers and foot pedals shall be provided with a means for holding the control in the neutral position without the use of positive holding devices. They shall return to the neutral position automatically upon release by the operator unless intentionally restrained for functional purposes.

9.3 The required control operating forces shall not be greater than 160 N on hand levers, and not greater than 225 N on foot pedals.

9.4 The required control operating travel distance shall not be greater than 260 mm from neutral (mid-position) to forward or reverse positions; for foot pedals, the travel distance shall not be greater than 260 mm.

10 Control for other functions

Other controls for mobile crane functions, not covered in this part of ISO 7752 (for example, travel, steering and slewing brake), may be installed in conjunction with or within the area encompassed by the basic controls, provided they are arranged to avoid operator confusion and/or physical interference.

ICS 53.020.20

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