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Industrial trucks — Specification for indicator lights for container handling and grappler arm operations

*Chariots de manutention — Spécifications relatives aux voyants lumineux
pour la manutention de conteneurs et les opérations de bras de grappin*



Reference number
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Foreword

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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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15871 was prepared by Technical Committee ISO/TC 110, *Industrial trucks*, Subcommittee SC 2, *Safety of powered industrial trucks*.

Industrial trucks — Specification for indicator lights for container handling and grapple arm operations

1 Scope

This International Standard specifies requirements for indicator lights to show the status of freight-container-handling spreaders and grapple arms.

This International Standard is applicable to

- a) container-handling spreaders with twistlocks for handling unladen and/or laden freight containers,
- b) grapple (bottom lift) arms for handling semi-trailers and swap bodies,

when fitted to

- counterbalanced lift trucks, with masts, as defined in 3.1.3.1.1 of ISO 5053:1987,
- single side-loading trucks as defined in 3.1.3.1.7 of ISO 5053:1987,
- rough terrain trucks, with masts, as defined in 3.1.3.1.8 of ISO 5053:1987, or
- variable-reach trucks.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standard.

ISO 5053:1987, *Powered industrial trucks — Terminology*.

3 Terms and definitions

For the purposes of this International Standard the following terms and definitions apply.

3.1

variable-reach trucks

counterbalanced lift trucks with telescopic booms, as defined in 4.13.2.2.2 of ISO 5053:1987, for stacking loads

3.2

light “on”

illumination from the indicator continuous with respect to time and at full output

3.3

light “flashing”

illumination from the indicator nominally equally divided between the conditions of light "on" and light "off"

3.4

light “off”

no illumination from the indicator

3.5

non-reflective shield

device to minimize stray light from an unrelated source that would make the indicator light simulate an unintended "on" condition

3.6

arms clamped

load-engaging part of the grappler arm in full horizontal contact with the load

3.7

foot seated

load-engaging part of the grappler arm in full vertical contact with the load

3.8

arm fully up

grappler arm raised to its highest position to provide clearance over the top of the load

3.9

arm fully down

grappler arm completely lowered and ready to engage the load

4 Requirements

NOTE To minimize the number of lights required, three conditions of the light are employed: “off”, “flashing” and “on”.

4.1 Freight-container-handling spreaders

NOTE See 4.3.1 for location of indicator lights. See Table 1 for a tabular presentation of 4.1.1 and 4.1.2.

4.1.1 Twistlocks located in the freight container

When all the twistlocks are fully located in the freight container corner pockets, orange light Y shall be “on”. When the freight container is lifted, this light shall go “off”.

4.1.2 Twistlocks locked/unlocked

When all the twistlocks are fully unlocked, the red light R shall be “on”.

In any intermediate position of the twistlocks, the red light R may be "flashing". Provision of this "flashing" red light is optional.

When all the twistlocks are fully locked in the freight container corner pockets, the green light G shall be “on”.

Table 1 — Handling freight containers by twistlocks

Twistlock position	Colour of light	Mode of operation of light		Comment
		On	Flashing	
Seated in container	Orange	X		
Fully unlocked	Red	X		
Neither locked nor unlocked	Red		X	Fitment optional
Fully locked	Green	X		

4.2 Grappler arms

NOTE See 4.3.1 for location of indicator lights. See Table 2 for tabular presentation of 4.2.1.1 to 4.2.1.4.

4.2.1 Arms

NOTE Normally indication by lights is only necessary for the front arms which are out of sight of the operator (for additional lights see 4.4).

4.2.1.1 Front arms fully up

When both front arms are fully up, the white light W shall be "on".

4.2.1.2 Front arms fully down and fully unclamped

When both front arms are fully down and fully unclamped, the yellow light Y shall be "on".

4.2.1.3 Front arms fully down and partially clamped

When both front arms are fully down and neither clamped nor unclamped, the yellow light Y shall be "on" and the red light R may be "flashing". Provision of this "flashing" red light condition is optional.

4.2.1.4 Front arms fully down and fully clamped

When both arms are fully down, fully clamped and seated, the green light shall be "on".

Table 2 — Handling loads by grappling arms

Arm position	Colour of light	Mode of operation of light		Comment
		On	Flashing	
Front arms fully up	White	X		
Front arms fully down and fully unclamped	Yellow	X		
Front arms fully down and neither clamped nor unclamped	Yellow Red	X	X	Fitment optional
Front arms fully down, fully clamped and seated	Green	X		

4.3 Details of indicator lights

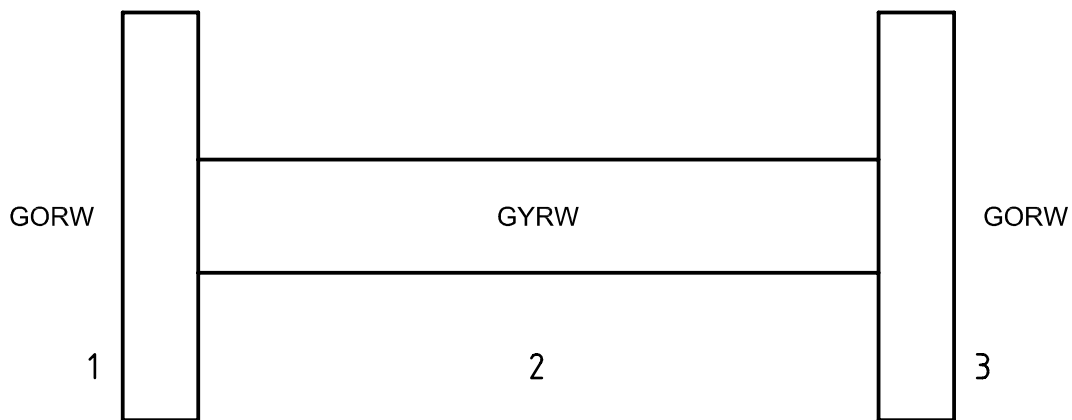
4.3.1 Location

4.3.1.1 Indicator lights shall be mounted in a position visible to the operator in his normal operating position. A non-reflective shield may be necessary.

4.3.1.2 If fitted on the freight-container-handling spreader or grapple arms, the relative position of the lights to one another shall be as shown in Figure 1.

Lights within, or adjacent to, the operator's position shall be in the same relative positions.

4.3.1.3 The light displays may be duplicated to indicate the status at each end of the handling attachment, or quadrupled to show the status at each corner of the attachment. The relative positioning shall correspond to that of the function(s) that they are indicating.



Key

- 1 Left
- 2 Rear (truck side)
- 3 Right

NOTE G = green; O = orange; R = red; W = white; Y = yellow.

Figure 1 — Relative positions of the lights

4.3.2 Size, power and frequency of the indicator lights

4.3.2.1 Indicator lights on freight-container-handling spreader or grapple arms

These lights shall have a minimum area of 1 200 mm² and shall have a minimum electrical power of 20 W.

4.3.2.2 Indicator lights at the operator's position

These lights shall have a minimum area of 200 mm² and shall have a minimum electrical power of 2 W.

4.3.2.3 Frequency

If flashing lights are used, their flash frequency shall be between 120 and 180 flashes per minute.

4.4 Optional additional indicator lights — Grappler arms

4.4.1 If required, additional indicator lights may be fitted on the attachment, or within or adjacent to the operator's position, to signal the status of the rear arms. In this case they shall be as specified in 4.2.1.1 to 4.2.1.4 and shall be below or nearer to the operator than the indicators for the front arms.

4.4.2 Any other indicator lights shall be agreed between the parties concerned.

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