

ICS 49.100
CCS V 56



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 23420-2024

Replacing GB/T 23420-2009

Aircraft lower deck container cargo loader

飞机下货舱集装箱货物装载机

Issued on: August 23, 2024

Implemented on: December 1, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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3 Terms and definitions

3.1 main platform: the device at the rear of the loader that mates with the container and pallet dolly, can be raised and lowered, can rotate through 360° and can move containers and pallets fore and aft and from side to side.

3.2 front platform, called the bridge platform in the body of the document: the device at the front of the loader that mates with the aircraft door, can be raised and lowered and can move containers and pallets fore and aft and from side to side.

3.3 operation platform: the working area on the bridge platform where the control switches and the indicating instruments and lamps of the loader are placed and from which the operator can drive the loader, load and unload cargo and control the other related functions.

4 Classification

By power source, loaders fall into three classes: internal combustion, in which travel and operation are both powered by a fuel engine; electric, in which travel and operation are both powered by a rechargeable energy storage system; and combined, in which travel and operation are powered by a combined power source made up of fuel, a rechargeable energy storage system and mains electricity.

5 Technical requirements

5.1 General. The maximum lifting and conveying mass of the main platform and the maximum bearing and conveying mass of the bridge platform shall be marked in a conspicuous place on the loader. The outer paint coating shall meet 2.2 of QC/T 484-1999, the coatings and chemical conversion layers of components QC/T 625, and the welding of structural parts 3.4.6 of JB/T 5943-2018. There shall be enough working room at the points used for operation, maintenance and testing and along the routes used to change parts. There shall be no leakage of oil, of other liquids or of gas. Main bought-in parts shall have a works certificate of conformity. The pipework of the oil and air systems and the electrical system shall be neatly arranged and firmly clamped and shall not rub or interfere with moving parts. Wiring shall be run as cable or as a loom and shall be routed so as to guard as far as possible against wear, road splash and contact with grease, lubricating oil and fuel, and to prevent overheating. Terminals and numbering of electrical wiring shall carry durable clear markings for repair and maintenance, and electrical fittings, wiring and components shall all be easy to reach.

5.2.1 Basic safety. A night working light shall be fitted. Power steering shall be provided. At least one 8 kg dry powder fire extinguisher shall be carried on the chassis. A type C low intensity aircraft obstruction light meeting 5.3.1.2 and 5.3.1.3 of MH/T 6012-2015 shall be fitted in a conspicuous position. An automatic audible warning device shall be provided that sounds when the loader reverses or the lifting platform descends; when the reversing alarm sounds at the lower limit voltage of 10 V the sound level shall be within the range 75 dB(A) to 120 dB(A). Where the braking signal and the acceleration signal appear together, the machine control system shall respond to the braking signal first. Both the main platform and the bridge platform shall have a mechanical stability locking device for maintenance. The restrictions on the use of the equipment shall be marked clearly and permanently on the loader. An event data recorder (EDR) or an on-board video driving recorder shall be fitted. The filler caps of the fuel and fluid tanks and the charging socket shall be identified by colour as follows: green for diesel; white for water and coolant; yellow for lubricating oil; yellow with a blue stripe for hydraulic oil; black for the charging socket.

5.2.2 Operation platform. The platform shall be on the right of the bridge platform, shall follow the bridge platform up and down, shall be limited by the guides and lie outside them, and shall not affect the conveying of containerised cargo; its front end shall be extendable. A ladder shall be provided to let the operator get on and off the platform easily, and it shall be possible in any situation to climb from the ground onto the bridge platform. The width of the walkway for the operator shall be not less than 400 mm and the standing area not less than 0.5 m by 0.5 m. From the working position of the operator it should be possible to see the load being handled and the edge of the working platform clearly. The operation platform and the walkways shall have handrails or guardrails at a suitable height; the guardrail of the bridge platform shall be not less than 1 100 mm high and shall be adjustable. Anchor points

for safety harnesses shall be provided on the operation platform. Clear working state indicating signals shall be provided on the console and their graphical symbols shall comply with MH/T 0023. The surfaces of the operation platform and of the walkways shall be treated against slipping, and anti-slip material shall be used for steps, ramps, ladder rungs, anti-slip strips and treads. The operation platform and the working surfaces shall be able to carry the rated number of persons, that is the operator on the operation platform and the staff on the working surface, each person counted as 110 kg. A ladder rung shall be able to carry a working load of not less than 110 kg.

5.2.3 Controls. Controls and warning lamps shall be grouped, and shall carry permanent identification, preferably using the graphical symbols of MH/T 0023. Controls shall be placed where the operator can reach them easily; where there are two or more working positions, an interlock shall be provided at each. The direction in which every control moves should agree with the direction of movement of the mechanism and of the cargo it controls, and controls shall have a safe logic control function or a safety locking function to prevent unintended stopping or reversal during operation. The position, size and operating room of hand and foot controls shall let the operator work wearing gloves and boots. The operating force of a hand control shall be not greater than 100 N. A foot control shall be not smaller than 50 mm by 75 mm, its operating force shall be not greater than 300 N and it shall be made of anti-slip material. The controls used to move unit load devices into and out of the aircraft shall be simple to work, so that one operator can position and handle the unit load device and open or close the hold door from the bridge platform.

5.2.4 Emergency devices. Towing attachments shall be provided at the front and the rear of the chassis. The hydraulic valves and the electrical circuits shall have an emergency system for manual operation in the event of a fault. Power steering shall be provided and steering shall remain easy when the machine is towed without power.

5.2.5 Hydraulic system. A safety locking device shall be fitted on the barrel of the lifting cylinder to prevent unintended retraction of the piston rod. A safety device against overload or hydraulic shock shall be provided, the set pressure of the safety relief valve being not more than 1.1 times the rated system pressure. The capacity of the hydraulic tank shall cover the total oil volume with the cylinders fully extended and fully retracted, and the tank shall have a level gauge, an inspection opening and a drain plug. A hydraulic oil temperature alarm shall be provided.

5.2.6 Guarding. All doors shall have devices holding them open or closed; the door retaining devices of the loader shall be able to withstand a maximum wind speed of 120 km/h, and an open door shall not injure anyone. Loader accessories weighing more than 36 kg, or more than 15 kg where only one person is allowed to fit and remove them, shall have a device for lifting or moving them. Nip points that could cause a hazard, such as sprockets, gears, chains, belts, fans and pulleys not shielded by the loader structure or by a guard, shall be guarded. A red mushroom-head emergency stop button shall be placed where it is