



PRODUCT: HYDRAULIC MATERIAL LIFT

- DELTA offers a complete line of CSA B44 Elevator Code compliant Type B Hydraulic Material Lifts for applications with a maximum travel of 7.6 m and two floors.
- DELTA Type B Hydraulic Material Lifts are available in various sizes and cab configurations in order to satisfy specific building requirements.
- A full range of cab and entrance options are available on all DELTA Type B Hydraulic Material Lifts.

INSTRUCTIONS

This document includes the information required for specifying a Hydraulic Material Lift.

These specifications require user input as follows:

- Where a choice must be made, such as in selecting materials, the text indicates **[Select...]**, bolded and bracketed.
 - Where an option is available, the text indicates **(Optional Selection(s))**, bolded and in parentheses. Choose the appropriate item and delete the other item(s).
 - Where additional information must be provided the text indicates **(Specify...)**, bolded and in parentheses.
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SECTION 14 20 00

1. GENERAL

1.1. INSTRUCTIONS

- 1.1.1. The Elevator Contractor must report in writing to the General Contractor / Consultant any defects of surfaces or work prepared by other trades which may affect the quality or dimensions of their work. Commencement of the Elevator Contractor's work must imply complete acceptance of all work by other trades.

2. QUALIFICATIONS

2.1. STANDARDS

- 2.1.1. To establish a standard for tendering purposes, the Drawings and Specifications are based on DELTA Elevator Co Ltd – Hydraulic Material Lift(s).
- 2.1.2. Lifting Device to be DELTA TYPE B (with riders) Material Lift or approved equal.
- 2.1.3. Employ only Elevator Contractors who have been satisfactorily supplying and installing similar elevating equipment over a period of at least the immediate past five years.

2.2. QUALITY ASSURANCE

- 2.2.1. Employ fully trained and licensed mechanics who are regularly employed in this field.

2.3. SHOP DRAWINGS

- 2.3.1. Submit five (5) copies of all shop drawings for the Architect to review.
- 2.3.2. Do not commence work until reviewed drawings have been returned.

2.4. GUARANTEE

- 2.4.1. The Elevator Contractor must guarantee the work and materials and must make good all defects (but not those due to ordinary wear and tear or to improper use or care) which may develop within one (1) year from the date of completion provided same has been properly used, oiled, and cared for by a registered Elevator Contractor through a Code compliant maintenance agreement, and provided all payments due by the terms of the contract have been made in full when due.
- 2.4.2. Workmanship and any materials supplied and used in this work to be in strict accordance with this specification.

2.5. LEED PROJECT

- 2.5.1. Composite wood resins laminate adhesives must not contain added urea-formaldehyde.

2.6. MEASUREMENTS

- 2.6.1. General Contractor to confirm all hoistway measurements and plumb-ness as per Elevator Contractor shop drawings.

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2.7. MAINTENANCE

- 2.7.1. A quality maintenance service consisting of regular quarterly examinations, adjustments and lubrication of the elevating equipment must be provided by the Elevator Contractor after the elevating equipment has been turned over for the owner's use for a period of:

[Select one of the following]

Three (3) months

Twelve (12) months

- 2.7.2. All work must be performed by competent employees during regular working hours of regular working days and must include emergency 24 hour call back service. This service must not cover adjustments or repairs due to negligence, misuse, abuse or accidents caused by persons other than the Elevator Contractor. Only genuine parts and supplies as used in the manufacture and installation of the original equipment must be provided.

2.8. SCOPE OF WORK

- 2.8.1. Elevator Contractor shall do all work related to the elevator from the main power disconnect to the finished installation of elevator and accessories except for items listed in **s.2.9. WORK BY OTHERS.**

2.9. WORK NOT INCLUDED UNDER THIS CONTRACT BUT SUPPLIED AND/OR INSTALLED BY OTHERS

- 2.9.1. A properly framed and enclosed legal hoistway, including adequate guards and protection of hoistway during the erection period.
- 2.9.2. Hoistway and control room / control space / machine room (as required) and all applicable fire ratings in accordance with elevator, safety, electrical and building Codes. The hoistway must be plumb within 25 mm and not less than the dimensions shown on this layout. All ledges over 100 mm to be bevelled 75° to the horizontal (top and bottom).
- 2.9.3. No conduit, wiring, or piping other than that pertaining to the elevating device is permitted in the hoistway, control room, control space, or machine room.
- 2.9.4. Sleeves for oil and electric ducts from machine room to hoistway as required. All other blockouts, underpinning, pockets, patching, cutouts, grouting and concrete work where required. For remote machine room, provide fire rated service space around elevator electrical conduit as required by the applicable building code
- 2.9.5. Access to the control room / control space / machine room space as required by the governing Code or Authority Having Jurisdiction.
- 2.9.6. Suitable control room / control space / machine room space with legal access and ventilation, with concrete floor. Temperature of control room / control space / machine room to be thermostatically controlled and maintained between 10° C and 32° C. Maximum allowed humidity is 95% non-condensing.
- 2.9.7. A lockable fused disconnect switch with auxiliary contact for each elevating device in the control room / control space / machine room per the Canadian Electric Code with feeder or branch wiring to controller(s) or starter. Permanent single phase and permanent or temporary three-phase power must be available for elevating equipment installation. Temporary power must meet the specified power requirements.
- 2.9.8. A fused 120 VAC, 15 Amp, single phase, disconnect to each controller for cab lighting. Additional, fused 120 VAC, 15 Amp, and / or any in-car GFCI duplex receptacles (one disconnect per elevating device), oil cooler and oil heater.

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- 2.9.9. Hoistway ventilation and temperature control required to maintain temperature between 10° C to 32° C. Maximum allowed humidity is 95% non-condensing. Ventilation to be according to local Codes.
- 2.9.10. Adequate supports for buffers, hydraulics, rail brackets, including spreader beams between multiple hoistway if required. Maximum bracket spacing as required by Elevator Contractor. Design for the reaction forces shown on drawings.
- 2.9.11. Front entrance partition walls are not to be constructed until after door frames are in place. If front walls are poured concrete bearing walls, rough openings are to be provided to accept entrance frame and filled in after frames are set. Entrance frames are not designed to support overhead wall loads. Suitable supports for these loads must be provided. If decorative material is applied to listed/certified frames it must conform to the requirements of the certifying organization.
- 2.9.12. Recesses, as required, to accommodate hall signal fixtures.
- 2.9.13. Dry pit reinforced to sustain normal vertical forces from rails and impact loads from buffers and hydraulic jack system. Pit waterproofing, where required.
- 2.9.14. Pit drain always required for pits 600 mm or deeper. Design to handle possible oil in pit drain discharge for hydraulic elevating devices.
- 2.9.15. Where access to a pit over 900 mm in depth is by means of the lowest hoistway entrance, pit ladder(s) extending a minimum of 1220 mm above the sill of the lowest access door, with centreline of rung 115 mm from wall with 300 mm vertically between rungs. Ladder width is 400 mm. Ladder location as shown on drawings. Ladder and attachments must sustain a minimum load of 135 kg.
- 2.9.16. Any cutting, patching, and painting of walls, floors, or partitions together with finish painting of entrance doors and frames.
- 2.9.17. Necessary electric power for light, tools, hoists, etc., during erection as well as electric current for starting, testing and adjusting the elevating device.
- 2.9.18. Pit lighting level to be minimum 100 LX. Pit to contain a 120 VAC light fixture, switch and GFCI convenience outlet. Switch to be accessible from pit access. All conduits in hoistway to be EMT. Light and convenience outlet to be on a dedicated circuit
- 2.9.19. A self-closing, self-latching, fire rated machine room, control room or control space door, a minimum of 750 mm wide x 2030 mm high with a minimum of 2286 mm clear height below all equipment.
- 2.9.20. Feeders, dedicated ground wire and lockable, fused disconnects wired to the elevating device controller.
- 2.9.21. Control room / control space / machine room lighting level to be 200 LX minimum. Must contain a 120 VAC light fixture, switch and GFCI convenience outlet. Switch to be on the lock jamb side of door. All conduits to be EMT.
- 2.9.22. Finished flooring in elevating device cab.
- 2.9.23. Install inserts as provided by Elevator Contractor.
- 2.9.24. Drywall and/or parging on entrance door walls between floors may be needed to ensure 19 mm running clearance with a smooth painted surface on inside the hoistway.
- 2.9.25. For In-ground hydraulic drive configuration:

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- Suitable means of access to and egress from location of cylinder well for truck mounted hole drilling rig.
- Backfill around pit.
- Provide sand and backfill cylinder.

2.10. CODES

- 2.10.1. Installation, elevating device, components, accessories and operation must comply with the CSA B44 Elevator Code currently in effect and all other governing Codes and By-Laws.
- 2.10.2. All welding of elevating device components must be done by a CWB certified company according to CSA Standards W47.1 and W59.

2.11. PERMIT AND INSPECTIONS

- 2.11.1. The Elevator Contractor must furnish all licenses and permits and must arrange for and make all inspections and tests required thereby.
- 2.11.2. The General Contractor must complete the TSSA pre-inspection checklist prior to an initial inspection being scheduled.

2.12. KNOW SITE CONDITIONS

- 2.12.1. The Elevator Contractor to be familiar with job conditions on the site.

2.13. MAINTENANCE CONTROL PROGRAM

- 2.13.1. The Elevator Contractor must provide and leave on site a Maintenance Control Program in compliance with the requirements of the CSA B44 Elevator Code. The procedures and logbook of records must be available to the TSSA upon request.

3. PRODUCTS

3.1. ELEVATING DEVICE

- 3.1.1. Hydraulic Material Lift, Type B (with riders)
- 3.1.2. Rated Load:
 - [Select one of the following]**
 - 454 kg**
 - 635 kg**
 - Other kg (Contact DELTA for this option)**
- 3.1.3. Loading Class: Class A – General Freight Loading
- 3.1.4. Drive Configuration:
 - [Select one of the following]**
 - In-Ground Hydraulic**
 - Hole-less Hydraulic**
- 3.1.5. Rated Speed: 0.15 m/s.
- 3.1.6. Car Inside Dimensions: Refer to Architectural Drawings
- 3.1.7. Hoistway Size: Refer to Architectural Drawings
- 3.1.8. Operation: Constant pressure push buttons.

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- 3.1.9. Hoistway Entrances Size: 890 mm wide by 2030 mm high.
- 3.1.10. Entrance Type: Swing door
- [Select one of the following]**
Left
Right
- 3.1.11. Door Operation: Manual
- 3.1.12. Travel: Refer to Architectural Drawings. Maximum 7.6 metres.
- 3.1.13. Stops: Refer to Architectural Drawings.
- 3.1.14. Openings: Refer to Architectural Drawings.
- 3.1.15. Power Supply:
- [Select one of the following]**
220 VAC, 1 phase, 60 Hertz
208 VAC, 3 phase, 60 Hertz
- 3.1.16. Lighting Supply: 120 Volts, 60 Hertz, 15 Amp
- 3.1.17. Elevating device must comply with the CSA B44 Elevator Code version currently in effect, including Supplements.

3.2. CAR CAB SPECIFICATIONS

- 3.2.1. The cab enclosure must consist of 13 mm melamine panels fastened to a welded steel frame, trimmed with stainless steel edging and kick plates on both walls. The cab must have enclosed sides, which are a minimum of 2030 mm high. Other standard features of the cab enclosure include:
- Emergency lights to automatically operate in the event of a power failure
 - Audible alarm to operate when STOP button is pressed
 - Alarm to remain operational in the event of a failure in the normal building power supply
 - Battery powered emergency lowering will allow the lift to move in a down direction in event of a building power failure
 - Cab must have removable panels for ease of access of all serviceable components from inside the cab enclosure
 - Limit and levelling switches must be behind the removable cab walls in a vandal resistant location
 - Key switch and stop button to be pre-assembled, mounted and pre-wired to the cab enclosure
 - To prevent interference with the persons using the lift, the cab key switch, when activated, will prevent the hall buttons from operating
 - The cab platform must be constructed of a steel frame with all welding to be done by certified welders. The cab platform and sling must be of steel, cantilever-designed and securely bolted together plumb and square.
 - Lighting: Two separate LED strip light fixtures
 - Battery Emergency Power for lowering of the elevating device
 - Light toggle switch
 - Handrail to be cylindrical and located below car control panel
- 3.2.2. Cab Options:

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(Optional selections)
Telephone Cabinet
Plastic Laminate Cab Panels

3.2.3. Emergency Car Lighting: The emergency power unit must illuminate the car and provide current to the alarm bell in the event of normal power failure. The equipment must comply with the requirements of the current CSA B44 Elevator Code.

3.2.4. Entrances: Must be manufactured in accordance with procedures established by fire testing authorities and must be labelled for a minimum of 1.5 hours.

3.2.5. Hall Floor Indicator:

(Optional Selection)
(Specify quantity) for each elevating device to be installed at (specify location) landing.

3.2.6. Certificate Frame. Mounted on:

[Select one of the following]
Controller Door
Cab Wall

3.3. CYLINDER AND PLUNGER (JACK UNIT)

3.3.1. The jack must be designed and constructed in accordance with the applicable requirements of the CSA B44 Elevator Code. It must be of sufficient size to lift the gross load the height specified, and must be factory tested to insure adequate strength and freedom from leakage.

3.3.2. The jack unit must consist of the following parts: A plunger of heavy seamless steel tubing accurately turned and polished; a stop ring electrically welded to the plunger to prevent the plunger from leaving the cylinder; a packing seal of suitable design and quality; a drip ring around the cylinder top; a cylinder constructed of steel pipe complete with a pipe connection and air bleeder.

3.4. POWER UNIT

3.4.1. The pumping unit must be a unit of integral design and must include an electric motor connected to a pump, a hydraulic control system, a storage tank, necessary piping connections, and a controller, all compactly designed as a single self-contained unit. The motor and pump assembly must be mounted on a rubber isolated inner base. Standard features include:

- Adjustable pressure relief valve
- Low-pressure sensor in hydraulic valve
- Manually operable down valve to lower lift in the event of an emergency
- Pressure gauge
- Gate valve, to isolate cylinder from pump unit
- Electrical solenoid for down direction control
- 120V control and safety circuit with CSA approved components
- Non-interference timer to allow time for users to leave the cab before control is given to landing stations

(Optional selection)
Lockable Machine Cabinet

3.5. PUMP

3.5.1. The pump must be a positive displacement screw type to give smooth operation and must be designed and manufactured for elevating device service.

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3.6. MOTOR

- 3.6.1. The motor must be of the alternating current, polyphase squirrel cage induction type and must be of a design adapted to electro-hydraulic requirements.

3.7. HYDRAULIC CONTROL SYSTEM

- 3.7.1. The hydraulic control system must be of compact design suitable for operation under the required pressures. The control valve must be a manifold with up, down, and check valve sections. A control section including solenoid valves will direct the main valve and control up and down starting, transition from full speed to levelling speed, up and down stops, pressure relief and manual lowering. Down speed and up and down levelling will be controlled at the main valve sections. All of these functions must be fully adjustable for maximum smoothness and to meet contract conditions. All control systems must be pre-adjusted at the factory.
- 3.7.2. The manual lowering feature must permit lowering the elevating device at slow speed in the event of power failure or for adjusting purposes.

3.8. LEVELLING DEVICE

- 3.8.1. The elevating device must be provided with an automatic levelling device which brings the car to a stop within 6 mm (1/4") of the landing level regardless of load or direction of travel. Landing level will be maintained within the levelling zone irrespective of the hoistway doors being open or closed.

3.9. STORAGE TANK

- 3.9.1. The storage tank must be constructed of steel, and must be provided with a cover and a filter screen mounted over the suction inlet. Tank design must incorporate a reserve capacity. An initial supply of oil sufficient for proper operation must be provided.

3.10. PIPING

- 3.10.1. Pipe of adequate size and thickness must be installed between the pumping unit and the cylinder head. A shut off valve must be provided for maintenance and adjusting purposes.

3.11. CONTROLLER

- 3.11.1. A microprocessor controller must be provided, including necessary starting switches of adequate size together with all relays, switches and hardware required to accomplish the operation specified. Overload protection must be provided to protect the motor against overloading.

3.12. CAR STALL PROTECTIVE CIRCUIT

- 3.12.1. A protective circuit must be provided which will stop the motor and the pump and return the car to its lowest landing in the event the car does not reach its designed landing with a predetermined time interval. This circuit will permit a normal exit from the car but prevent further operation of the elevating device until the issue has been corrected.

3.13. WIRING

- 3.13.1. All wiring and electrical interconnections must comply with the governing Codes. Insulated wiring must have flame retardant and moisture proof outer covering, and must be run in conduit, tubing or electrical wire-ways. Travelling cables must be flexible and suitably suspended to relieve strain on individual conductors.

3.14. HOISTWAY OPERATING DEVICES

- 3.14.1. Normal terminal stopping devices must be provided.

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3.15. PIT SWITCH

3.15.1. An emergency stop switch must be located in the pit.

3.16. PIT MAINTENANCE STAND

3.16.1. Provide a non-removable means to mechanically hold the car above the pit floor to provide an area in the pit for maintenance and inspection as per requirements of the CSA B44 Elevator Code.

3.17. PLATFORM

3.17.1. The car platform must have a fabricated frame of formed and structural steel shapes, rigidly welded. The platform must be manufactured by a CWB certified shop.

3.18. CAR FRAME

3.18.1. A suitable car frame fabricated from formed or structural steel members must be provided with adequate bracing to support the platform and car enclosure. The crosshead must be of sufficient strength to lift the fully loaded car when slung from the lifting points on the crosshead.

3.19. GUIDES

3.19.1. Steel guide rails must be furnished to guide the car, erected plumb and securely fastened to the building structure.

3.19.2. Sliding Guides: Guides must be mounted on top and bottom of the car.

3.20. DOOR OPERATION

3.20.1. An approved positive interlock must be provided for each hoistway entrance which must prevent operation unless all doors are closed and must maintain the doors in their closed position while the elevating device is away from the landing. Provide emergency access to the hoistway as required by governing Codes.

3.20.2. The door locking mechanism (beak) must be of the 'hidden mounting' type, fastened to a reinforcement plate on interior of the leading edge of the swing door. It must be CSA approved. The hall station controls must consist of a mushroom head call button, key switch and stop button and there must be lift operating instructions at each entrance. The key must be removable only in the OFF position.

4. OPTIONAL FEATURES (DELETE ITEMS NOT REQUIRED)

4.1. OIL HEATER

4.2. OIL COOLER

4.3. TELEPHONE

4.3.1. An ADA-approved AUTODIAL telephone must be furnished and installed as part of the car station. A separate phone line to the elevating device controller must be provided and located in the machine room under another section of the specifications.

4.4. NON-PROPRIETARY CONTROLS

4.4.1. Elevating device control equipment must be non-proprietary. If a site specific service tool or on-board diagnostic tool is required to render the control equipment non-proprietary, it must be provided with the elevating device. The tool must allow full access to fault codes and maintenance related parameters and must allow complete and thorough maintenance service to be performed by

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any properly licensed and qualified Elevator Contractor. The tool must come with a user's manual that also defines and explains all error codes, including required fixes. The service tool must remain property of the building owner.

4.5. PROVISION FOR CAMERA IN CAR (CAMERA PROVIDED AND INSTALLED BY OTHERS)