

HYDRAULIC LULA ELEVATOR 14220-1

PRODUCT – LULA (Limited Use / Limited Application) HYDRAULIC ELEVATORS – Holeless

Niagara Belco Hydraulic LULA Elevators come in different sizes and cab configurations in order to satisfy your every requirement.

A full range of Niagara Belco cab and standard entrances options are available on all Niagara Belco Hydraulic LULA Elevators.

INSTRUCTIONS FOR USE

These specifications include all information required for selecting the Niagara Belco Hydraulic LULA Elevator.

These specifications are to be used as follows:

- Where information must be provided, the text indicates [**Specify...**] or [**Include...**], bolded and bracketed.
- 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 (**Option**), bolded and in parentheses.
- Simply choose the appropriate item and delete the item that does not apply.

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SECTION 14220

1400.1 GENERAL

1.1 INSTRUCTIONS

This Contractor shall report in writing to the General Contractor and to the Consultant any defects of surfaces or work prepared by other trades, which affect the quality or dimensions of this Contractor's work. Commencement of this Contractor's work shall imply complete acceptance of all work by other trades.

1.2 QUALIFICATIONS

To establish a standard for tendering purposes, the Drawings and Specifications are based on Niagara Belco Ltd. LULA (Limited Use / Limited Application) Elevator(s) rated at 1000lb or 1400lb capacity.

Elevator to be Niagara Belco LULA Elevator or approved equal.

1.3 QUALITY ASSURANCE

Employ fully trained mechanics that are regularly employed in this field.

1.4 SHOP DRAWINGS

Submit five (5) copies of all shop drawings for the Architect to review.

Do not commence work until drawings have been approved and returned.

1.5 GUARANTEE

1. The Elevator Contractor shall guarantee the work and materials and will make good any defects, not due to ordinary wear and tear, or to improper use or care, which may develop within one year from the date of completion provided same has been properly used, oiled and cared for, and provided all payments due by the terms of this contract shall have been made in full when due.

2. Workmanship and any materials supplied and used in this work to be in strict accordance with this specification.

1.6 MEASUREMENTS

General Contractor to confirm all hoistway measurements as per Niagara Belco Elevator shop drawings.

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1.7 MAINTENANCE

A quality maintenance service consisting of regular examinations at least once a month, adjustments and lubrication of the elevator equipment shall be provided by the Elevator Contractor for a period of (Select one of the following) Three (3) Twelve (12) months after the elevator has been turned over for the owner's use and this service shall not be subcontracted. All work shall be performed by competent employees during regular working hours of regular working days and shall include emergency 24-hour call back service. This service shall 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 shall be provided. This service shall be supplied by the elevator contractor and shall not be subcontracted.

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

1. Hoistway, control room, control space and machine room (as required) and all applicable fire ratings in accordance with elevator, safety, electrical and building codes.
2. The hoistway must be plumb within 1" and not less than the dimensions shown on layout drawing. All ledges over 4" (100mm) to be beveled 75° to the horizontal (top and bottom).
3. Install concrete wall inserts as provided by elevator contractor.
4. Necessary removable barricades outside of hoistway and on roof (as required) according to local codes.
5. No conduit, wiring, or piping other than that pertaining to the elevator(s) is permitted in the hoistway, control room, control space, or machine room.
6. 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.
7. Entrance wall pocket at rear serving floor(s) as shown. Furring where required.
8. Finished front and rear walls to be erected in the rough openings after elevator entrance frames have been installed. Finish masonry and grout in saddles full

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length.

9. 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 shall conform to the requirements of the certifying organization.
10. A hoist beam must be installed in the hoistway overhead as per Liftavator requirements for elevator construction and maintenance.
11. Adequate support for machine beams, buffers and hydraulics to be provided and designed for the reaction forces shown on layout.
12. Adequate support for guide rail fastening to be provided at pit and guide rail bracket locations, not spanning more than allowed by code (see layout). Rail force loads doubled for safety.
13. Permanent single phase, and permanent or temporary three-phase power must be available for elevator equipment installation. Temporary power must meet the specified power requirements.
14. Pit waterproofing, where required.
15. Elevator pit ladder(s) shall extend a minimum of 48" (1220mm) above the sill of the lowest access door, with centerline of rungs 4 ½" (115mm) from wall with 11 7/8" (300mm) vertically between rungs. Ladder location as shown. Ladder and attachments shall sustain a minimum load of 300 lbs (135kg).
16. Pit lighting level to be minimum 100lx. Pit to contain a 120VAC light fixture, switch and GFCI convenience outlet. Switch to be accessible from pit access. All conduit in hoistway to be EMT.
17. Machine room, control space, or control room to be located as shown on layout, a location adjacent to the hoistway being preferred.
18. Provide a self-closing, self-latching, fire rated machine room, control room or control space door, minimum 29 ½" (750mm) wide x 80" (2030mm) high. Minimum room or space height to be 84" (2134mm).
19. Temperature of machine room, control room, or control space to be thermostatically controlled and maintained between 10°C and 32°C. Maximum allowed humidity is 95%, non-condensing.
20. Elevator feeders, dedicated ground wire and lockable, fused disconnects wired to our controller.
21. Machine room, control room, or control space lighting level to be 200lx min. Must contain a 120VAC light fixture, switch and GFCI convenience outlet. Switch to be on the lock jamb side of door. All conduit to be EMT.

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22. Equipment placement subject to job conditions.
23. 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.
24. Machinery space in hoistway lighting level to be minimum 200lx. Space to contain a 120VAC light fixture, switch, and GFCI convenience outlet. Switch placed as shown on drawings.
25. General contractor to supply and co-ordinate with the elevator contractor for the installation of a means of two-way communication (telephone, intercom, etc.) With the car. Buildings with a rise of less than 59'-0" (18m) must have a connection between the car and a location staffed by authorized personnel. Buildings with a rise of 59'-0" (18m) or more must have a connection between the car and a location within the building that is accessible to emergency personnel.
26. Provide telephone connection except for the wire from the controller in the machine room, control room or control space to elevator.
27. For elevators with hall or car security features, general contractor to provide (1) "normally open" dry contact per secure hall or car call in the machine room rated for 120vac @ 1 amp.
28. Where an emergency or standby power system is provided to operate an elevator in the event of normal power supply failure, then two "normally open" dry contacts rated for 120VAC @ 1 amp are to be provided from the emergency power transfer switch and wired (by others) to the elevator controller. One contact (E-power) to close when emergency or standby power is in effect. Other contact (pending) to close ten seconds prior to E-power testing to allow elevator to stop at nearest landing.
29. Fire alarm initiating devices (smoke or heat detectors, not pull stations) located at each floor served by the elevator and in the associated elevator machine room, control space or control room to be wired to a building fire panel (by others). Building fire panel to have (3) "NORMALLY OPEN" dry contacts rated for 120vac @ 1 amp, wired from the building fire panel to the elevator controller(s) (by others). One contact for main lobby, one contact for other building floor levels, and one contact for machine room, control space or control room. Contact to close when alarm is initiated. Provide signals to the elevator controller as required by elevator supplier.
30. Finished flooring in elevator cab.
31. A cheque from the owner to cover the first year's licensing fee must be supplied at the time of inspection.
32. Contractor/Owner to complete the Pre-Inspection Checklist for this product type

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and return to installing contractor. The installing contractor will not be able to schedule an inspection until it has received this fully completed and signed checklist. The checklist can be provided by the installing contractor.

1.9 CODES

1. Installation, elevator, components, accessories and operation must comply with all governing Codes and By-Laws.
2. All welding of elevator components shall be done by a AWS / CWB certified company according to AWS / CSA Standards latest editions

1.10 PERMIT AND INSPECTIONS

The elevator contractor shall furnish all licenses and permits and shall arrange for and make all inspections and tests required thereby.

1.11 KNOW SITE CONDITIONS

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

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1400.2 PRODUCTS

2.1 ELEVATOR

1. Roped Hydraulic
2. Rated Load: **1000lb (454kg) or 1400lb (635kg)**.
3. Rated Speed: 30fpm (0.15 m/s)
4. Car Inside Dimensions: **(Select One of the following)**
Style 1 42" x 48", 42" x 60", 48" x 54", 51" x 51"
Style 2 42" x 52", 42" x 60"
Style 3 or 4 42" x 60", 51" x 51"
Style 5 42" x 60", 51" x 51"
5. Hoistway Size: Refer to Architectural Drawings
Operation: Automatic
6. Car Controls Illuminated Type with faceplate in Stainless Steel #4 finish.
7. Hall Call Stations: Illuminated type with D.P.I.. Stainless steel #4 finish.
8. Hoistway Entrances Size: 36" (914mm) wide by 84" (2133mm) high
9. Hoistway Entrance Type: Two Speed Sliding (Left or Right)
10. Door Operations: Automatic door operator for hoistway and car
11. Travel: Refer to Architectural Drawings - Maximum 29'-0" (9 metres)
12. Stops: Refer to Architectural Drawings - Maximum 7 floors
13. Openings: Refer to Architectural Drawings
14. Power Supply: Select one (220-1-60 or 208/480-3-60, 30Amp)
15. Lighting Supply: 120 Volts, 60 Hertz., 15 Amp (separate circuit)
16. Elevator must comply with ASME A17.1 & CSA CAN CSA-B44, "Safety Code for Elevators", Section 5.2, (Latest Version Including Supplements) in force at the time of inspection.

2.2 CAR CAB SPECIFICATIONS

Shell Enclosure:

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1. Car Top 14ga. Steel
2. Shell Walls 1" x 1" x 1/8" HSS Tubing
3. Strike Column 16ga. Stainless Steel # 4
4. Fascia 16ga. Stainless Steel # 4, full width, straight type.

Architectural Features:

1. Side Walls: Plastic Laminate – Flush or optional raised panels
2. Front Return: Stainless Steel # 4 finish
3. Car Door: Primer Finish [Optional Selection - Stainless Steel # 4]
4. Base: Black enamel finish [Optional Selection - Stainless Steel # 4]
5. Reveals: Black enamel finish [Optional Selection - Stainless Steel # 4]
6. Floor: Shall be supplied and installed by flooring contractor.
7. Ceiling: White enamel steel ceiling [Optional Selection – Stainless Steel #4]
8. Hoistway Doors and Frames: 2 options; Prime Coat (standard). **[Optional: Stainless Steel #4 Finish]**. Specify finish applicable to each floor

Supplementary Features:

1. Lighting: Fluorescent Down lights
2. Car sill(s): Extruded Aluminium.
3. Clear Overall Height 84" min (2134mm clear inside)
4. Car Operating Panel: Panel arrangement to conform to latest version of ASME A17.1 / CSA B44 Appendix E
5. Handrail; ¼" (6mm) x 2 ½" (63mm) flat handrail Stainless Steel #4 finish Located on control wall (handrails on other non-entrance walls optional)
6. Pad Hooks (Optional)
7. Protective Cab Pads: **[Optional]**
8. Battery Emergency Power for lowering of elevator and door opening.

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9. Emergency Car Lighting: An emergency power unit employing a sealed rechargeable battery and totally static circuits shall be provided that shall illuminate the elevator car.
10. Emergency Communication: Hands-free automatic dialing telephone shall be furnished and installed as part of the car station. A separate phone line to the elevator controller shall be provided and located in the elevator machine room under another section of the specifications.
11. Labels: Entrances shall be manufactured in accordance with procedures established by Warnock Hershey or Under-Writers laboratories and shall be so labelled.
12. Sight Guards Sight guards shall be furnished on the leading edge of the doors to conceal the hoistway beyond the doors. Finish to match door panels.
13. Car Floor Indicator: One (1) digital dot matrix alphanumeric display to be installed in each car as part of the car station.
14. Car Arrival Chime
15. Braille plates on car station.
16. Certificate Frame
17. Car directional lantern: Located in the strike post of each car door.
18. Independent service operation.

2.3 ROPED HYDRAULIC SYSTEM

1. Safety: An instantaneous safety shall be provided which will be actuated by a friction governor or slack ropes. The instantaneous safety shall be automatic, and reset by running the car in the up direction.
2. Plunger and Cylinder: The cylinder shall be constructed of steel pipe of sufficient thickness and suitable for the operating pressure. The top of the cylinder shall be equipped with a cylinder head with a drip ring to collect any oil seepage as well as an internal guide ring and self-adjusting packing. The plunger shall be constructed of selected steel tubing or pipe of proper diameter machined true and smooth with a fine polished finish. The plunger shall be provided with a stop ring electrically welded to prevent the plunger from leaving the cylinder. The plunger and cylinder shall be installed plumb and shall operate freely with minimum friction.
3. Ropes: minimum (2) 3/8" (9.5mm) aircraft cable
4. Sheave Carriage: Sheave carriage to be guided along elevator rails. Sheave to be of

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metal construction and of diameter to suit wire ropes.

2.1 PUMPING UNIT

The pumping unit shall be of integral design and shall include a submersible 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 shall be mounted on a rubber isolated inner base.

2.2 PUMP

The pump shall be a positive displacement screw type to give smooth operation and shall be especially designed and manufactured for elevator service.

2.3 MOTOR

The motor shall be of alternating current, submersible design for quiet operation.

2.4 CONTROL VALVE

1. The hydraulic control system shall be of compact design suitable for operation under the required pressures.
2. The manual lowering feature shall permit lowering the elevator at slow speed in the event of power failure.

2.5 STORAGE TANK

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

2.6 PIPING

Pipe and/or hose as permitted by code of adequate size and thickness shall be installed between the pumping unit and the cylinder head. A shut off valve shall be provided for maintenance and adjusting purposes.

2.7 CONTROLLER

A Programmable Logic controller (PLC) shall be provided. Include necessary starting switches of adequate size together with all relays, switches and hardware required to accomplish the operation specified.

2.8 CAR STALL PROTECTIVE CIRCUIT

A protective circuit shall 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 elevator until the trouble has been corrected.

2.9 WIRING

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All wiring and electrical interconnections shall comply with the governing codes.

2.10 LEVELLING DEVICE

The elevator shall be provided with an automatic levelling device, which will bring the car to a stop within 3/8" (9.5mm) 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.

2.11 HOISTWAY OPERATING DEVICES

All required Hoistway operating switches to be provided.

2.12 PIT SWITCH

An emergency stop switch shall be located in the pit.

2.13 PIT MAINTENANCE STAND

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 ASME A17.1 / CSA B44

2.14 PLATFORM

The car platform shall have a fabricated frame of formed or structural steel shapes. Sub-flooring shall be wood. The underside of the platform will be fireproofed with 1/8" steel plate. The platform shall be manufactured by a AWS / CWB certified shop and be equipped with an aluminum sill.

2.15 CAR FRAME

A suitable car frame fabricated from formed or structural steel members shall be provided with adequate bracing to support the platform and car enclosure. Guides to be mounted on top and bottom of the car frame to engage the guide rails.

2.16 RAILS

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

2.17 DOOR OPERATION

1. Doors on the car and at the hoistway entrances shall be power operated by means of an operator mounted on top of the car. The motor shall have positive control over the door movement for smooth operation.
2. The car door shall have an infra-red detector to cause the doors to re-open should an obstruction be detected during the closing cycle.
3. Door operation shall be automatic at each landing with door opening being initiated as the car arrives at the landing and closing taking place after expiration of a time interval. A car door electric contact shall prevent starting the elevator away from the landing unless the car door is in its closed position.

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4. An approved positive interlock shall be provided for each hoistway entrance, which shall prevent operation of the hydraulic unit unless all doors for that elevator are closed and shall maintain the doors in their closed position while the elevator is away from the landing. Provide emergency access to the hoistway as required by governing codes.

2.18 HOISTWAY DOORS

The elevator contractor shall install at each landing served, a hoistway entrance of the type and size as previously described. Each entrance shall consist of flush hollow metal doors with integral hanger assembly, frames assembled for one piece unit installation, extruded aluminum sill, fascia, toe guard, hanger cover, header, hanger track assembly, and formed structural strut supports.

The following are optional features: (Delete the items that are not required)

- 2.19 PROVISION FOR CARD READER IN CAR (CARD READER PROVIDED AND INSTALLED BY OTHERS).
- 2.20 AUTOMATIC STANDBY BUILDING EMERGENCY POWER OPERATION.
- 2.21 LOW OVERHEAD PACKAGE FOR EXISTING BUILDINGS ONLY 120" (3048MM) MINIMUM OVERHEAD FROM TOP FLOOR LANDING.