##### G-4400 MODEL

**FULL VISION ("Service station style”) GARAGE DOOR**

Door thickness 1 3/4" (45 mm)

GARAGA INC. SECTION: 08 36 13

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**OVERHEAD RETRACTABLE DOORS**

**WITH METAL SECTIONS ON HINGES**

**PART 1: OVERVIEW**

**1.1 RELATED WORK**

*The author shall give all the necessary references.*

**1.1.1** Electrical connections, water tightness of openings, and so on. Remember:all electrical connections and installations must be done by a qualified electrician as recommended by the manufacturer of the electric garage door operators. (Section 16, 150)

**1.1.2** Preparation of the opening of the garage door (Section 05 500 or 06 100).

**1.1.3** These construction specifications and shop drawings are applicable to **Garaga Inc.** products only.

**1.2 SHOP DRAWINGS**

**1.2.1** Submit the shop drawings as per the instructions outlined in Section 01 300.

**1.2.2** The shop drawings shall include all the following information: the type of materials, the type of opening mechanism, the required tolerances, the electrical connections, the structural fastenings executed by the general contractor, and the suitable matching with neighboring materials.

**1.3 MAINTENANCE RECORDS**

**1.3.1** Provide the necessary instructions to ensure proper operation and maintenance of all the hardware components for the doors as well as the electric garage door operators, and include these instructions with the manual on use and maintenance described in Section 01 300.

**1.4 QUALIFICATIONS**

**1.4.1** The manufacturer of the specified products must be a sectional garage door manufacturer with at least 5 years of experience.

**1.4.2** The installation must be executed by a company approved by the garage door manufacturer as an installer, using skilled installers experienced on this work.

**PART 2: GARAGE DOORS**

**2.1 CALCULATION CRITERIA**

**2.1.1** The doors and the hardware system must be designed to meet standard ANSI/DASMA 102 (American National Standard Specifications for Sectional Overhead-Type Doors; DASMA: Door & Access Systems Manufacturer Association).

*(Note: for doors wider than 18’ (5.5m), or high wind situations, consult our engineering department).*

**2.1.2** The doors, the tracks, and the springs shall be designed to withstand at least \_\_\_\_\_\_\_\_\_\_operation cycles per year and \_\_\_\_\_\_\_\_\_total cycles over their lifespan.

***Note:*** *the number of spring cycles can vary from 10,000 to 100,000 cycles. However, you must realize that you cannot get 100,000 cycles for every size of door. If you want the best operating system, with the highest cycles possible, please specify “springs shall be designed for the maximum operation cycles”.*

**2.2 MATERIALS**

**2.2.1** Tubular aluminum extrusions are 0.06” (1.6 mm) thick (*choose from*: Clear Anodized, pre-painted White or Black), are in accordance with ASTM B 209 and ASTM B 209M standards, model 6063 T5, and have an additional thickness of 1/8” (3.2 mm) where hinges are to be fastened.

***CHOOSE…***

**2.2.2a** Windows have clear, double thermo panes and a total thickness of 7/8" (22 mm). The 1/8" (3 mm) panes are sealed in aluminum extrusions using the Intercept™ system with a 5/8” (16 mm) air space. The windows are inserted in an expanded PVC frame and factory installed by the manufacturer.

 ***Note****:* *there is a vast choice of glass choices including sealed panes, clear or tinted, tempered, wired, etc. Contact our Technical department for other types of glass.*

**2.2.2b** Windows have triple-walled fluted polycarbonate (choose clear or bronze) and a total thickness of 5/8” (16 mm). The windows are inserted in an expanded PVC frame and factory installed by the manufacturer.

***CHOOSE…***

**2.2.3a** Bottom door section is made ofdouble aluminum sections made up of two 0.018” (0.48 mm) steel sheets or 0.02” (0.60 mm) aluminum sheets and a 3/4" (19 mm) sheet of plywood, in the manufacturer’s standard colors. The section is fixed to the aluminum extrusion assembly with rigid PVC moldings and brackets.

**2.2.3b** Bottom door section is a double-walled section in 26-gauge, G60 galvanized steel, Garaga model G-5000, polyurethane-injected with a total thickness of 1 3/4” (45 mm).

**2.3 DOORS**

**2.3.1** The garage doors shall be the model G-4400 as made by Garaga Inc. The sections are made up of anodized tubular extrusions fastened with self-tapping screws which have a stop notch. The extrusions shall have a minimum diameter of 6 ¼" (159 mm) at the perimeter of the door.

**2.3.2** The doors shall have the following sizes and features:

**LOCATION SIZES # OF SECTIONS # OF PANES**

**OF DOORS (W. by H.) WITH PANES PER SECTION**

\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.3.3** The top-to-bottom end of the aluminum extrusions shall be doubled at each end in order to obtain a minimum support of 6 ¼” (159 mm) at these places. Doors 14’ 0’’ (4.27 m) wide and over will have 1 ¾" (45 mm) horizontal reinforcements integrated into the aluminum extrusions.

**2.4 WEATHER TIGHTNESS**

**2.4.1** Provide and install continuous weatherstripping at the bottom of the lower section. The weatherstripping shall be made of a semi-circular TPE (thermoplastic elastomeric) tubing.

 **2.4.2** Provide and install, on the exterior side of the door jambs and lintel, weatherstripping made up of an aluminum extrusion as well as a double-edged strip of arctic vinyl.

**2.5 OPTION (*to choose*)**

**2.5.1** Exhaust ports of 3” (76 mm) in diameter are factory installed on each door in order to place flexible hoses for venting exhaust gases.

**PART 3: HARDWARE WITH TORSION SPRINGS**

**3.1 PRODUCTS**

**3.1.1 Tracks**

The tracks are made of 12-gauge (0.1” (2.6 mm)) galvanized steel, 3” (76 mm). The horizontal track is reinforced with a steel angle of 50 x 50 mm (2” x 2”).

**3.1.2 Hardware**

The hinges are made of 13-gauge galvanized steel. Industrial rollers 3” (76 mm) in diameter with 10 ball bearings, are used.

**3.1.3 Struts for large doors (*if applicable*)**

Doors **12' 4" (3759 mm)** wideor wider will come with 22-gauge galvanized steel horizontal struts, and 13-gauge double hinges at each end.

**3.1.4 Type of movement**

The movement of the hardware will allow for the most space possible available underneath the door when it is in the open position.

 **LOCATION TYPE OF MOVEMENT AVAILABLE SPACE**

 **OF DOORS (FLOOR/CEILING)**

\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3.1.5 Torsion-type springs**

The torsion spring lifting system will consist of all the parts and accessories needed for its installation. All doors weighing more than 1000 lb. (454 kg), hardware parts included, must be approved by a professional in installation as to the choice of hardware (drums, galvanized cables, springs, anchor plate, 1" (25 mm) solid shaft).

**3.2 OPTIONS (*to choose from*)**

**3.2.1 3"-long (76 mm) rollers, NB SS (*for car or truck washes)***

Garage door rollers for 3” (76 mm) tracks will have UHMV head (nylon) on a stainless steel rod.

**3.2.2 3"-long (76 mm) precision rollers, machined steel (*for doors weighing over 770 lb./350 kg, or dusty locations*)**

Garage door rollers for 3" (76 mm) tracks will have a machined steel head. They also include a sealed 6203 precision ball bearing and are mounted on a steel rod.

**3.2.3 Track guards, L-shaped**

The vertical tracks are protected by non-galvanized, L-shaped track guards 5’ x 0.3” (1524 mm x 6.4 mm), in order to avoid accidental breaking. Track guards should be painted with a bright color after installation.

**3.2.4 Track guards, Z-shaped**

The vertical tracks are protected non-galvanized, Z-shaped track guards 5’ x 0.2” (1524 mm x 5.0 mm) in order to avoid accidental breaking. Track guards should be painted with a bright color after installation.

**3.2.5 Chain hoist**

Doors of over 10’ (3 m) high with manual operation will come equipped with a chain hoist mounted on the wall.

***Note:*** *If an electric door opener is included, this option is unnecessary. Consult specs in the next section.*

**3.2.6 Pull chain**

Manual operation doors less than 10’ (3 m) high will come with a pull chain to assist the lowering of the door.

 ***Note:*** *If an electric door opener is included, this option is unnecessary. Consult specs in the next section*

**3.2.7 Pusher springs *(to choose from)***

For doors exceeding 161 ft2 (15 m2), the standard movement hardware will come with pusher springs at the end of the horizontal tracks in order to prevent the cables from falling off the drums.

**3.2.8 "C" bumper springs *(to choose from)***

 For dock doors (ex: 8’ x (8’2438 mm x 2438 mm)), the vertical lift movement hardware will come with “C” bumper springs at the end of the horizontal tracks.

**3.2.7 Flanged bearing**

The end bearing plates will come equipped with flanged bearings for doors weighing more than **660 lb. (300 kg)**. Center plate (football bearings) will also be included with doors exceeding this weight.

**3.2.8 Tension bridge reinforcements**

Doors that are 18' 3" (5563 mm) wide and over will come equipped with tension bridge reinforcements. They will be mounted at each end of the top section and held in the center by a support whose height is adjusted according to the width of the door. These reinforcements must be installed according to Garaga’s exact specifications.

***Note:*** *all doors weighing more than* ***1000 lb.******(454 kg),*** *including hardware parts attached to the door, must be designed according to manufacturer’s specifications, in order to assure the proper choice of hardware Consult the Garaga technical service department.*

***CHOOSE FROM:*** *- Trolley-type operators for commercial use*

 *- Jackshaft-type operators*

**PART 4: TROLLEY-TYPE OPERATORS FOR COMMERCIAL USE**

**4.1 PRODUCTS**

**4.1.1** These are trolley-type electric operators that come equipped with a quick-release device which instantly disconnects the door from the operator to enable manual operation in the event of a power failure. The system consists of a carriage that slides between dual galvanized steel angle tracks.

 *Note: 4” (100 mm) of free space is required between the highest point of the door and the ceiling.*

**4.1.2** The electric motors, control mechanisms, relays, and electrical devices of the operator shall be approved according to CSA and UL standards.

**4.1.3** The electrical power supply is of \_\_\_\_\_\_\_\_\_\_\_\_ volts, \_\_\_\_\_\_\_ phase(s) and 60 Hz. The model and horsepower of the door openers will be as follows:

 **LOCATION MODEL HORSEPOWER TYPE OF**

 **OF DOORS MOVEMENT**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_

 *\* Standard lift hardware only*

**4.1.4** The operators come equipped with a reversible motor, which has built-in thermal protection mechanism. The electrical control circuit shall be 24 volts.

**4.1.5** The door shall travel at approximately 7.9 to 11 in. /sec (200 to 280 mm/sec).

**4.1.6** The control panel for the door operator shall be the push-button type for Up/Stop/Down control and surface mounted on the inside wall.

**4.1.7** A safety mechanism with photocells shall be added to each operator in order to stop and reverse the movement of the door in the event an object cuts off the light beam.

**4.2 OPTIONS** **(*to choose from***)

**4.2.1** The door operators identified by the numbers \_\_\_\_\_ come with a remote control system.

**4.2.2** A control station with a key switch for Up/Stop/Down shall be surface mounted on the outside of the building.

 **4.2.3** All side latches will be equipped with an electrical interlock switch to prevent use of the electric operator when the door is locked.

 **4.2.4** An electro-pneumatic safety device with an instant reverse feature will be added to each operator. It consists of a rubber hose concealed within the weatherstripping located at the bottom of the door, combined with the electric switches. This device makes the door stop and go back up as soon as it comes into contact with an object.

 **4.2.5** The MyQ technology is available, to enable monitoring and control of the facility operators through a mobile app.

**PART 4: JACKSHAFT-TYPE OPERATORS**

**4.1 PRODUCTS**

**4.1.1** The electric operators shall be the Jackshaft type and shall come equipped with a built-in chain hoist assembly and with a quick release mechanism to allow for manual operation of the door in the event of a power failure.

**4.1.2** The electric motors, control mechanisms, relays, and electrical devices of the operator shall be approved according to CSA and UL standards.

**4.1.3** The electrical power supply is of \_\_\_\_\_\_\_\_\_\_\_\_ volts, \_\_\_\_\_\_\_ phase(s) and 60 Hz. The model and horsepower of the door openers will be as follows:

 **LOCATION MODEL HORSEPOWER TYPE OF**

 **OF DOORS MOVEMENT**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_

**4.1.4** The operators shall feature a positive lock mechanical brake, an instantly reversible motor, and a thermal protection device against power surges. The electric control circuit is of 24 volts.

**4.1.5** The door shall travel at a speed of 7.9 to 11 in./sec (200 to 280 mm/sec).

**4.1.6** The control panel for the door operator shall be the push-button type for Up/Stop/Down control and surface mounted on the inside wall.

**4.1.7** A safety mechanism with photocells shall be added to each operator in order to stop and reverse the movement of the door in the event an object cuts off the light beam.

**4.2 OPTIONS (*to choose from*)**

**4.2.1** The door operators identified by the numbers \_\_\_\_\_ come with a remote control system.

**4.2.2** A control station with a key switch for Up/Stop/Down shall be surface mounted on the outside of the building.

**4.2.3** All side latches will be equipped with an electrical interlock switch to prevent use of the electric operator when the door is locked.

 **4.2.4** An electro-pneumatic safety device with an instant reverse feature will be added to each operator. It consists of a rubber hose concealed within the weatherstripping located at the bottom of the door, combined with the electric switches. This device makes the door stop and go back up as soon as it comes into contact with an object.

 **4.2.5** The MyQ technology is available, to enable monitoring and control of the facility operators through a mobile app.

**PART 5: INSTALLATION**

**5.1** Before starting, make sure that the frames and the fixtures prepared by the general contractor are square.

**5.2** Install the doors and the related hardware.

**5.3** Apply some touch-up paint to areas where the finish might have been damaged during the mounting.

**5.4** Install the electric motors, control devices, push-button control stations, relays, and other electrical equipment needed for operating the door.

**5.5** All electrical connections must be done by a certified electrician.

**5.6** Adjust all movable parts and weatherstripping with the exterior jambs in order to get proper weather tightness under all conditions.

**5.7** Make sure all of the mechanisms that have been installed work properly.

 **5.8** Clean doors as recommended by the manufacturer, and get rid of all leftover materials and debris found near the openings and the hardware.