GENERAL INFORMATION - BOXES

ADVANTAGES OF CAST ENCLOSURES: (1) Their one-piece construction during the casting process eliminates possible openings that can occur in the welded seams of fabricated (sheet metal) boxes; (2) Thicker walls provide greater mechanical strength and make the cast enclosure suitable for field drilling; (3) Metals used in the casting process are inherently more corrosion-resistant than the sheet steel used in most sheet metal enclosures.

CAST METALS USED: Engineers have generally recognized the superiority of cast iron for use in electrical systems where long life is required under corrosive conditions. Cast iron surfaces are protected by a natural oxide coating which prevents further oxidation and are additionally protected in SPRING CITY's products by a hot-dip galvanized finish, conforming to ASTM designations A123-84, A153-82 Class A, and to NEMA requirements for corrosion resistance. The galvanized finish is not only attractive but requires no periodic recoating. SPRING CITY's boxes are manufactured of gray iron castings which conform with the ASTM designation, A48-83, Class 25. The castings are close grain gray iron and are easily machinable, permitting hole cutting and sharp threading in shop and field. Cast aluminum boxes are used for their lighter weight, and their non-rusting, non-sparking and non-magnetic qualities. The aluminum is copper free (contains a maximum of .4 of 1% copper.) Unless suitably coated, the aluminum units are subject to corrosion under certain alkali conditions such as a flush installation in concrete. Ductile iron covers which conform to ASTM designation A536-84, Grade 65-45-12 are furnished for certain flush boxes to meet heavy vehicular load conditions.

TYPES OF ENCLOSURES

Dust-Tight- A suitable gasket will prevent the entry of any dust. All products listed herein are Dust-Tight.

Weatherproof- These enclosures are designed to provide proper protection against weather hazards during outdoor use under normal conditions. The tight gaskets will prevent the entry of dust, rain, snow and sleet under normal climatic conditions. For protection against the entry of water under severe weather conditions, Watertight or Raintight enclosures are recommended.

Raintight- Water will be excluded when subjected to a beating rain, in accordance with a UL-designed test.

Watertight- Water will be excluded when subjected to a stream of water from a hose with a one-inch nozzle delivering at least 65 gallons per minute from a distance of 10' to 12' for five minutes.

Submersible- Water will be excluded when enclosure is submerged under 6' for a period of 30 minutes. Conduit connections in these enclosures should be made with pipe-thread sealing compound, with the sealant made of material that will not interrupt the grounding continuity of the conduit run.

Dust Hazard- Type DH boxes are designed to meet the application requirements of the National Electric Code 500.5-05 of Class II, Group E, F and G Hazardous Locations and to conform with current UL requirements.

CONDUIT ENTRANCES

Slip Holes- These conduit clearance holes are drilled without any threads being provided. Locknuts and bushings are the usual means of fastening conduits in slip holes with lead washers used occasionally under the locknut to provide a weatherproof enclosure. Conduit locations must provide for standard locknut and bushing spaces.

Drilled and Tapped Holes- The number of threads depend on the wall thickness of the box which should be compared with the thread chart on page 16 to determine whether the required threads can be provided. For non-hazardous areas, UL requires 1/4" wall thickness at tapped conduit holes and not less than 3 threads. Type DH boxes require 3 1/2 full threads. If the thread chart indicates that the required number of threads cannot be provided in the box wall thickness, bosses (or pads) should be specified. These bosses, which are normally cast integral with the box, will be sufficiently thick to provide a minimum of five full threads. Threads are standard ASA B2.1 NPT (National Pipe Taper.) Tapped conduit entrances are required to maintain watertightness, raintightness or submersibility.

SPECIAL EQUIPMENT

Covers- Many special types are available, including plain or checkered steel, aluminum, brass and two piece covers. Special cast-on or engraved lettering can be added.

Gaskets- Some gasket materials specified are:
1. Neoprene - resistant to oils, acids, abrasion, aging and oxidation.
2. Neoprene and wire mesh combined - for EMI (Electro-Magnetic Interference) and RFI (radio Frequency Interference) shielding.
3. Vellumoid (trade name) - resistant to oils and fats.

Cover Screws- Stainless steel screws are standard, but brass, bronze, monel metal and tamperproof screws are available. Cover screw holes of the most popular boxes are machined with jigs; less popular sizes have covers and boxes that are match-machined.

Finish- Hot Dip Galvanizing of cast iron is standard. Paint, cold galvanizing and plastic coating are also available.

Mounting Lugs- Mounting lugs are standard on surface mounted boxes above 100 cubic inch. They are available on other boxes for an additional charge.

Interior mounting buttons- small round bosses which are cast integral with the inside back of a box. They contain drilled and tapped blind holes and provide an air space under electrical devices mounted on them. Mounting buttons for mounting equipment off the back of the box are usually 1/2" height by 1" diameter and blind tapped for 1/4" -20, other sizes available upon request. It is sometimes desired to locate the equipment on a mounting plate instead of directly on the mounting buttons. Mounting plates should be ordered based on the box size that they are mounted in. Pricing includes: mounting plate, mounting buttons and installation screws.

MINIMUM BOX SIZES

For complete wording of requirements for minimum sizes of junction and pull boxes, see National Electric Code paragraphs 370-18(a) and 370-51. For a 3/4" conduit size or larger containing No. 4 or larger conductors, in straight pulls the box length shall not be less than eight times the trade diameter of the largest conduit entrance. Where angle or U pulls are made, the distance between each conduit entrance inside the box and the opposite wall of the box shall not be less than 6 times the trade diameter of the largest conduit. This distance is increased for additional conduit entrances by the amount of the sum of the trade diameters of all other conduit entries on the same box wall. The distance between conduit entrances enclosing the same conductor shall not be less than 6 times the trade diameter of the larger conduit entrance. Exception: Where a conduit entrance is in the back of a box opposite to a cover and where the distance from that wall to the cover conforms with the column for one wire per terminal in Table 373-6(a) in the Code. Smaller size boxes are permitted where there is less than the maximum conduit fill of conductors permitted by Table 1, Chapter 9 provided the box is permanently marked with maximum number and size of conductors permitted.

PRICES, DIMENSIONS & CONDITIONS

Firm price quotations for extended time periods are available upon application and cover both standard and special enclosures. The dimensions of all enclosures listed herein are always nominal inside dimensions given in the order of length by width by depth (L x W x D.) The dimensions and weights may vary within normal foundry tolerances. Wall thicknesses of most boxes are measured 2" up from inside back of box. Depths may be decreased by up to 3/8" because of ribs cast on underside of some covers. Dimensions, weights and other data in this catalog are for general information only and are subjected to change without notice. All quotations and bids, and the acceptance of all contracts and orders, are subject to final approval at the home office of Spring City Electrical Mfg. Co, at Spring City, PA.