Calculation Example 3

Using the standard method, determine the adequacy of the device box illustrated in Exhibit 314.3, in which two standard-sized 3 in. × 2 in. × 3½ in. device boxes are ganged to form a single box.

Solution

Table 314.16(A) shows that the minimum volume for a single box is 18 in.^{3} Thus, the total box volume for the ganged box is 36 in.^{3} The total box fill, based on Table 314.16(B)(1), is determined as given in Commentary Table 314.3. With only 26 in.^{3} of the 36 in.^{3} filled, the box is adequately sized.

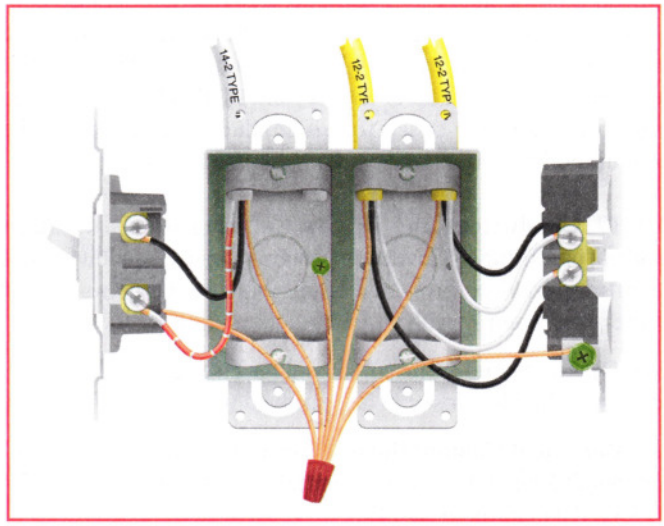

EXHIBIT 314.3 Two standard gangable device boxes containing conductors of different sizes.

COMMENTARY TABLE 314.3 Total Box Fill for Calculation Example 3

Items Contained Within Box	Volume Allowance	Unit Volume Based on Table 314.16(B)(1) (in.^{3})	Total Box Fill (in.^{3})
6 conductors	2 volume allowances for 14 AWG conductors	2.00	4.00
	4 volume allowances for 12 AWG conductors	2.25	9.00
2 clamps	1 volume allowance (based on 12 AWG conductors)	2.25	2.25
2 devices	2 volume allowances (based on 14 AWG conductors)	2.00	4.00
	2 volume allowances (based on 12 AWG conductors)	2.25	4.50
EGCs (up to four)	1 volume allowance (based on 12 AWG conductors)	2.25	2.25
Total			26.00

(C) Conduit Bodies.

(1) General. Conduit bodies enclosing 6 AWG conductors or smaller, other than short-radius conduit bodies as described in 314.16(C)(3), shall have a cross-sectional area not less than twice the cross-sectional area of the largest conduit or tubing to which they can be attached. The maximum number of conductors permitted shall be the maximum number permitted by Table 1 of Chapter 9 for the conduit or tubing to which it is attached.

(2) With Splices, Taps, or Devices. Only those conduit bodies that are durably and legibly marked by the manufacturer with their volume shall be permitted to contain splices, taps, or devices. The maximum number of conductors shall be calculated in accordance with 314.16(B). Conduit bodies shall be supported in a rigid and secure manner.

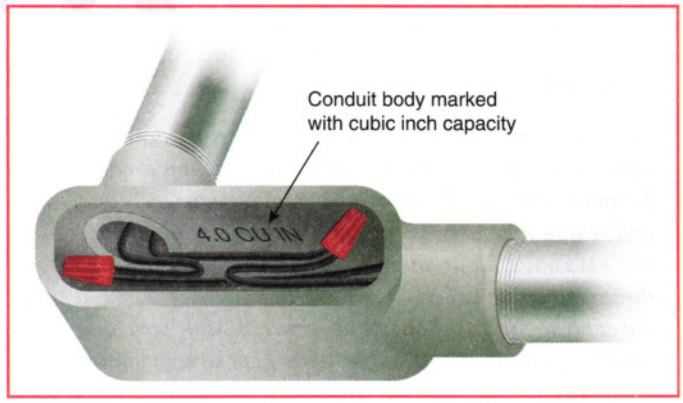

EXHIBIT 314.4 An example of permitted splices in a raceway-supported conduit body.

As illustrated in Exhibit 314.4, conduit bodies are required to have a cross-sectional area not less than twice that of the conduit to which they are attached and are not permitted to contain more conductors than the attached raceway. Conduit bodies must be rigidly supported.

See also

314.23 for support requirements