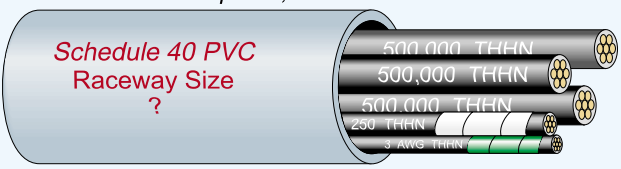


Determining Raceway Size
Chapter 9, Tables 4 and 5



Schedule 40 PVC Raceway Size ?

Determine the raceway size for these conductors.

Determine the area in square in. of the conductors, Chapter 9, Table 5.

1- 500 kcmil THHN	= 0.7073 in ² x 3 conductors	= 2.1219 in ²
1- 250 kcmil THHN	= 0.3970 in ² x 1 conductor	= 0.3970 in ²
1- 3 AWG THHN	= 0.0973 in ² x 1 conductor	= 0.0973 in ²
Total area of the conductors		= 2.6162 in ²

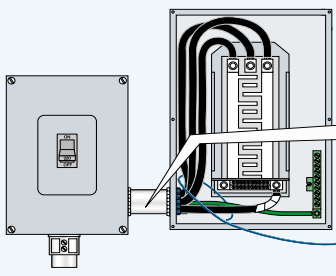
Chapter 9, Table 4, assume 40% fill (Chapter 9, Table 1).

3 in. raceway required at 2.907 square in.

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Figure 5-10
Determining Raceway Size

Conductor Fill Sizing a Nipple
Chapter 9
Tables 4 and 5



Rigid Metal Conduit Nipple Size?

3- 3/0 AWG THHN Feeders
1- 1 AWG THHN Neutral
1- 6 AWG THHN Ground

Determine the nipple size for these conductors.

Area in square inches of conductors, Chapter 9, Table 5:

1- 3/0 AWG THHN	= 0.2679 in ² x 3 conductors	= 0.8037 in ²
1- 1 AWG THHN	= 0.1562 in ² x 1 conductor	= 0.1562 in ²
1- 6 AWG THHN	= 0.0507 in ² x 1 conductor	= 0.0507 in ²
Total area of the conductors		= 1.0106 in ²

Chapter 9, Table 1, Note 4, nipple is 60% fill
Chapter 9, Table 4 RMC, 60% fill (last column):
Use a 1 1/2 in. nipple

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Figure 5-11
Conductor Fill – Sizing a Nipple

□ Raceway Size

A 400A feeder is installed in Schedule 40 rigid nonmetallic conduit. This raceway contains three 500 kcmil THHN conductors, one 250 kcmil THHN conductor and one 3 AWG THHN conductor. What size raceway is required for these conductors? Figure 5–10.

- (a) 2 in. (b) 2 1/2 in. (c) 3 in. (d) 3 1/2 in.
- Answer: (c) 3 in.

Step 1: Determine the cross-sectional area of the conductors, Table 5 of Chapter.

500 kcmil THHN	0.7073 sq in. × 3 wires	= 2.1219 sq in.
250 kcmil THHN	0.3970 sq in. × 1 wire	= 0.3970 sq in.
3 AWG THHN	0.0973 sq in. × 1 wire	= 0.0973 sq in.

Step 2: Total cross-sectional area of all conductors = 2.6162 sq in.

Step 3: Size the conduit at 40% fill [Chapter 9, Table 1] using Table 4.
3 in. Schedule 40 PVC has a cross-sectional area of 2.907 sq in. for conductors

□ Nipple Size

What size rigid metal nipple is required for three 3/0 AWG THHN conductors, one 1 AWG THHN conductor and one 6 AWG THHN conductor? Figure 5–11.

- (a) 1/2 in. (b) 1 in. (c) 1 1/2 in. (d) 2 in.
- Answer: (c) 1 1/2 in.

Step 1: Cross-sectional area of the conductors, Table 5 of Chapter 9.

3/0 AWG THHN	0.2679 sq in. × 3 wires	= 0.8037 sq in.
1 AWG THHN	0.1562 sq in. × 1 wire	= 0.1562 sq in.
6 AWG THHN	0.0507 sq in. × 1 wire	= 0.0507 sq in.

Step 2: Total cross-sectional area of the conductors = 1.0106 sq in..

Step 3: Size the conduit at 60% fill [Table 1, Note 4 of Chapter 9] using Table 4.

1 1/4 in. nipple	= 0.0916 sq in., too small
1 1/2 in. nipple	= 1.243 sq in., just right
2 in. nipple	= 2.045 sq in., too big