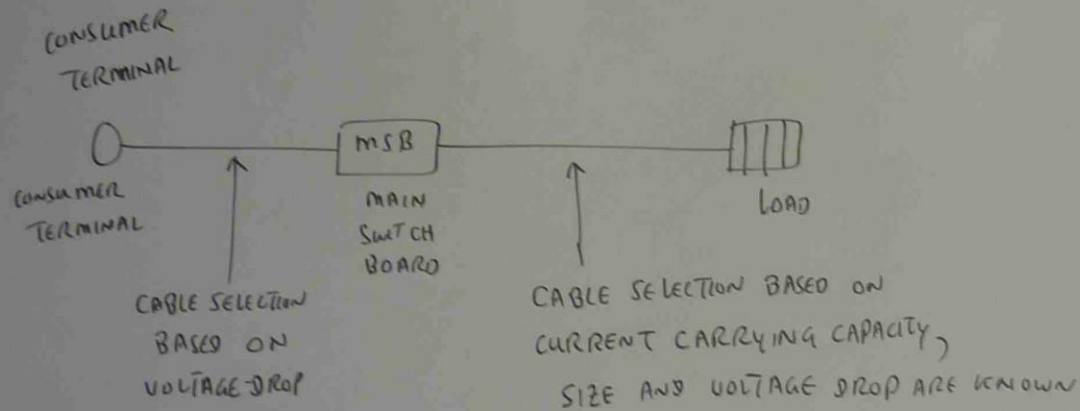


G007 CALCULATION

CABLE SELECTION BASED ON VOLTAGE DROP



AS 3008

TABLE 40 → 50

VOLTAGE DROP OF CABLE, CROSS SECTIONAL
AREA, TEMPERATURE

V_c 1X TABLE

$$V_d = \frac{L I V_c}{1000}$$

$V_d = 3\phi$ VOLTAGE DROP (V)

$L =$ LENGTH OF CIRCUIT (m)

$I =$ CURRENT

$V_c =$ UNIT VOLTAGE DROP mV/A-m
(3 ϕ)

$$\frac{1\phi V_d}{V_d} = \frac{3\phi V_d}{\sqrt{3}}$$

$$1\phi V_c = \frac{3\phi V_c}{0.866}$$

COPPER

SINGLE CORE | TREFOL → TABLE (40)
 (3) CONDUIT

SINGLE CORE | TOUCHING FLAT → TABLE (41)
 TRAY ENCLOSURE

MULTI CORE → TABLE (42)

| SIZE | V _L |
|------|----------------|
|------|----------------|

ALUMINIUM

SINGLE CORE (TREFOL) → TABLE 43

SINGLE CORE (FLAT | TOUCHING | TRAY) → TABLE 44

MULTI CORE → TABLE 45

FLEXIBLE

SINGLE CORE — TREFOL → TABLE 46
 CONDUIT

MULTI CORE → TABLE 47

MIMS

SINGLE CORE / MULTI CORE
TREFOL CONDUIT → TABLE 48

AERIAL

COPPER - INSULATED - TABLE 49

ALUMINIUM — TABLE 50

ph

DETERMINE THE VOLTAGE DROP FOR 3 SEPARATE FINAL SUBCIRCUIT
AND INDICATE IF EACH RESULT IS WITH IN S.A.A LIMITATION.
PERMISSIBLE VOLTAGE DROP IS 14.2 V. ASSUME ALL CABLES ARE
OPERATING AT THEIR NORMAL TEMPERATURE.

SEPARATE FINAL SUBCIRCUIT

① 25 mm² COPPER U75 TPI CABLE IN CONDUIT, 30m, 75 Amp

TABLE 40
 $V_c = 1.54$ $V_d = \frac{V_c L I}{1000} = \frac{1.54 \times 30 \times 75}{1000} = 3.49V$

PERMISSIBLE

② 2.5 mm² COPPER U75 SSI CABLE, UNENCLOSED & SPACED APART
40m, 27 A TABLE 41, 75°C

$V_c = 15.6$ $V_d = \frac{V_c L I}{1000} = \frac{15.6 \times 40 \times 27}{1000}$

= 16.85V NOT PERMISSIBLE

③ 10 mm^2 , copper, $X = 11 \text{ f}$ 110 MULTICORE CABLE
ON CABLE TRAY, 10 m , 80 Amp .

TABLE 42 110 f $V_c = 4.39$

$$V_d = \frac{V_c L I}{1000} = \frac{4.39 \times 10 \times 80}{1000} = 3.43 \text{ V} \quad \text{PERMISSIBLE}$$

④ 10 mm^2 copper MULTICORE, 48 MIMS CABLE, $\text{PF} = 1$, 25 m , 55 Amp

$$V_c = 3.92 \rightarrow V_d = \frac{3.92 \times 25 \times 55}{1000} = 5.39 \text{ V} \quad \text{PERMISSIBLE}$$

⑤ 150 mm^2 copper, SINGLE CORE, TABLE 48 MIMS CABLE, 3 m , 400 Amp .

$$V_c = 0.297 \quad V_d = \frac{0.297 \times 3 \times 400}{1000} = 0.35 \text{ V} \quad \text{PERMISSIBLE}$$

⑥ 70 mm^2 , ALUMINIUM, MULTICORE

X - 90 CABLE ON CABLE TRAY
(120mm, 180 AMP.

90C

TABLE 45

$$V_c = 0.993$$

$$V_d = \frac{V_c \cdot L \cdot I}{1000} = \frac{0.993 \times 120 \times 180}{1000}$$

$$= 21.45 \text{ V} \quad \#$$

NOT PERMISSIBLE