CALCULATION OF DUNNAGE FOR STEEL COIL.

1) ALL DUNNAGE MUST BE OF GOOD QUALITY WOOD WITH NO CRACKS.
2) ALL DUNNAGE MUST BE AT LEAST 1500 MM -- 60 INCHES LONG BECAUSE IT MUST EXTEND ACROSS 2 FRAMES BELOW THE TANK TOP.

REQUIRED PIECES OF DUNNAGE IS CALCULATED AS FOLLOWS:

DUNNAGE FACE

B = WIDTH OF DUNNAGE **IN INCHES**

TO CALCULATE ALLOWABLE LOAD FOR 1 PIECE OF DUNNAGE IN METRIC TONS, CONVERT THICKNESS AND WIDTH OF DUNNAGE INTO INCHES.

THEN CALCULATE AS :

0.15 x B x W x W = ALLOWABLE LOAD IN METRIC TONS.

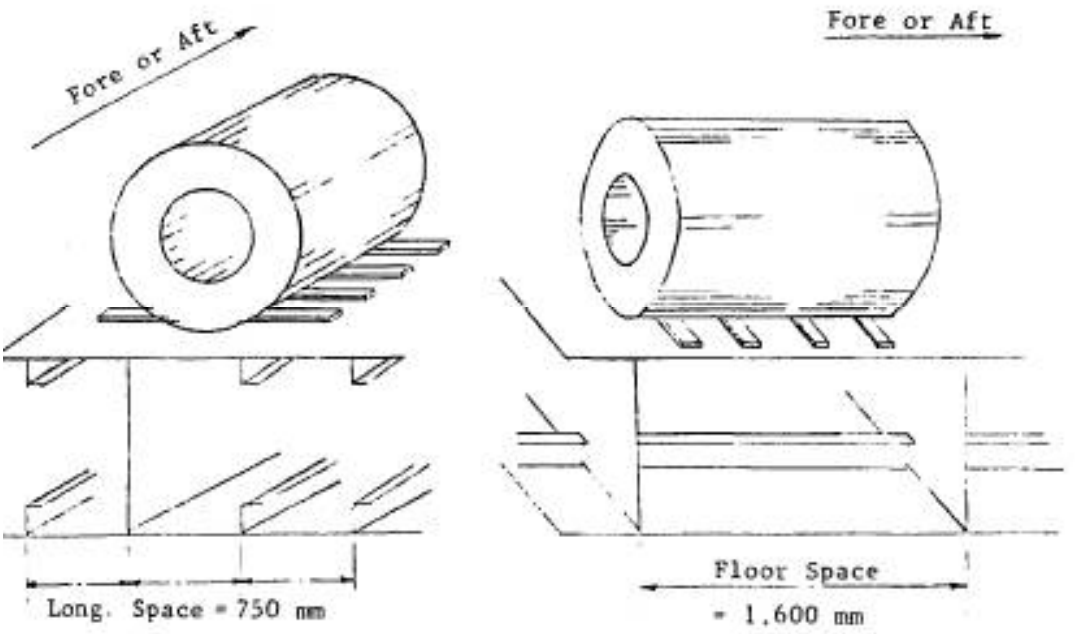
EXAMPLE 1: IF DUNNAGE IS 50 MM THICK (2 INCHES) X 200 MM WIDE (8 INCHES)

THEN 0.15 X 8 X 2 X 2 = 4.8 TONS ALLOWABLE LOAD.

20 TON COIL ? 4.8 MT/DUNNAGE PIECE = 4.16 . SO REQUIRED PIECES OF DUNNAGE ARE ABOUT 4 PIECES.

YOU NEED 4 PIECES OF DUNNAGE 50 MM X 200 MM X 1500 MM FOR THE STEEL COIL.

THE DUNNAGE MUST ALWAYS GO ATHWARTSHIPS (EGKARSIWS) FROM PORT TO STARBOARD.



EXAMPLE 2:

DUNNAGE SIZE: W = 75 MM AND B = 75 MM

THEN THIS IS 3 INCHES X 3 INCHES

0.15 X 3 X 3 X 3 = 4.05 TONS.

FOR 20 TON COIL YOU NEED 5 PIECES OF DUNNAGE WITH 75 MM X 75 MM X 1500 MM SIZE.

TABLE OF VARIOUS DUNNAGE SIZES AND ALLOWABLE LOAD PER PIECE OF DUNNAGE:

THICKNESS (W)	WIDTH (B)	LENGTH (L)	ALLOWED LOAD METRIC TONS PER PIECE
50 MM – 2 INCH	200 MM – 8 INCH	1500 MM – 60 IN.	4.8 MT
50 MM – 2 INCH	150 MM – 6 INCH	1500 MM – 60 IN.	3.6 MT
50 MM – 2 INCH	100 MM – 4 INCH	1500 MM – 60 IN.	2.4 MT
75 MM – 3 INCH	75 MM – 3 INCH	1500 MM – 60 IN.	4.05 MT
100 MM – 4 INCH	100 MM – 4 INCH	1500 MM – 60 IN,.	9.6 MT

FOR ANY OTHER SIZE OF DUNNAGE USE:

0.15 x B x W x W = ALLOWABLE WEIGHT PER PIECE OF DUNNAGE.

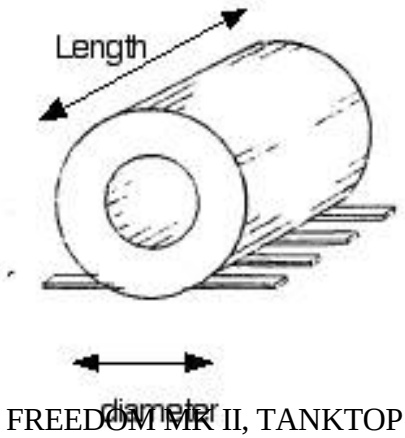
COIL WEIGHT ? ALLOWABLE WEIGHT PER DUNNAGE PIECE = REQUIRED NUMBER OF PIECES.

FOR AREA UNDER KEY COIL:

THIS COIL IS SUPPORTED BY 2 COILS IN FIRST TIER. THEREFORE ADD ½ OF KEY COIL WEIGHT TO FIRST TIER COIL. FOR EXAMPLE IF LOWER COILS ARE 20 TONS EACH, AND KEY COIL IS 20 TONS, THEN DUNNAGE MUST SUPPORT 30 TONS UNDER TWO LOWER COILS. REQUIRED DUNNAGE FOR AREA EACH LOWER COIL IS:

30 TONS ? ALLOWABLE WEIGHT PER DUNNAGE PIECE.

<u>TANKTOP STRENGTH</u>



MULTIPLY LENGTH X DIAMETER OF COIL. = AREA

DIVIDE WEIGHT BY AREA TO GET LOAD/M2. COMPARE TO ALLOWABLW.

EXAMPLE: 20 TON COIL.
D= 1.2 M L =1.7 M. AREA = 1.2 X 1.7
AREA = 2.04 M2.

20 TONS ? 2.04 M2 = 9.84 TONS/M2

ON FREEDOM MK II, TANKTOP STRENGTH = 12.3 T/M2. SO COIL IS OK.