**Engine Room Foundation**

Centre Girder:

Depth of center girder:

h= 350+45 x l[[1]](#footnote-1)

l = unsupported span

l = B; in general

h = 350+45 x 11.42

= 864 mm

= 870 mm

The thickness of the center girder

tm =

=­

= 9.25

= 10 mm

The thickness of plate floors

tpf= tm -2

= 9.25-2

= 7.25 mm

= 8 mm

Double Bottom:

Plate floors:

Plate floors are to be fitted at every frame, floor thickness,

t = c

c =

= 1.005

t =1.005 x 7.574

= 7.61 mm

= 8 mm

Longitudinal Girders:

The thickness of the longitudinal girders above the inner bottom

t =

=

= 13.642mm

= 15mm

**Side Girders:**

According to Section D.4.2.1

t = 15mm

**Inner Bottom Plate:**

Thickness, t = +tk

Height of Double Bottom, hDB= .9 m

Design Pressure, P = 10(T-hDB)

= 10(4.4-.9)

= 35kN/m2

Inner Bottom Thickness, tk= 1.1x .6x mm

= 5.4 mm

= 6 mm

So, in machinery space[[2]](#footnote-5), t = 6+2 = 8 mm

Top Plate Dimension:

The cross-sectional area of the top plate

AT= [[3]](#footnote-6)

=

= 81.68 cm2

The thickness of the top plate is approximately to be equal to the diameter of the fitted-in bolts.[[4]](#footnote-7)

Therefore, thickness of the top plate = 32mm

Bolt Dia

Bolt Dia is taken to be= 32 mm[[5]](#footnote-8)

Distance between the bolts = 3 x d

= (3 x 32) mm

= 96 mm

Web Frame in Machinery Space:

As per instruction, web frame in machinery space is exactly the same as the main framing system.

The dimension of the web frame determined beforehand= T-180 x 25 x 5

**Summary**

|  |  |  |
| --- | --- | --- |
| Items | Dimension | Unit |
| Thickness of Floor Plate | 8 | mm |
| Center Girder Thickness | 10 | mm |
| Center Girder Height | 870 | mm |
| Thickness of Longitudinal Girder | 15 | mm |
| Top Plate Area | 81.68 | cm2 |
| Thickness of Center Girder | 10 | mm |
| Thickness of Side Girder | 15 | mm |
| Inner Bottom Plate | 8 | mm |
| Web Frame | T-180 x 25 x 5 | mm x mm x mm |
| Top Plate Thickness | 32 | mm |
| Bolt Diameter | 32 | mm |

1. DNV GL Rulebook 2013 Section (8-C.2.1) [↑](#footnote-ref-1)
2. **D.3.3 Inner bottom** [↑](#footnote-ref-5)
3. Section-8-D.4.2.3 [↑](#footnote-ref-6)
4. Section 8-**D.4.2.3** [↑](#footnote-ref-7)
5. https://mechanicalc.com/reference/fastener-size-tables [↑](#footnote-ref-8)