

Ball Mill Grinder Project

-Sk Sartaz Ahmed

Mechanical Design & Materials

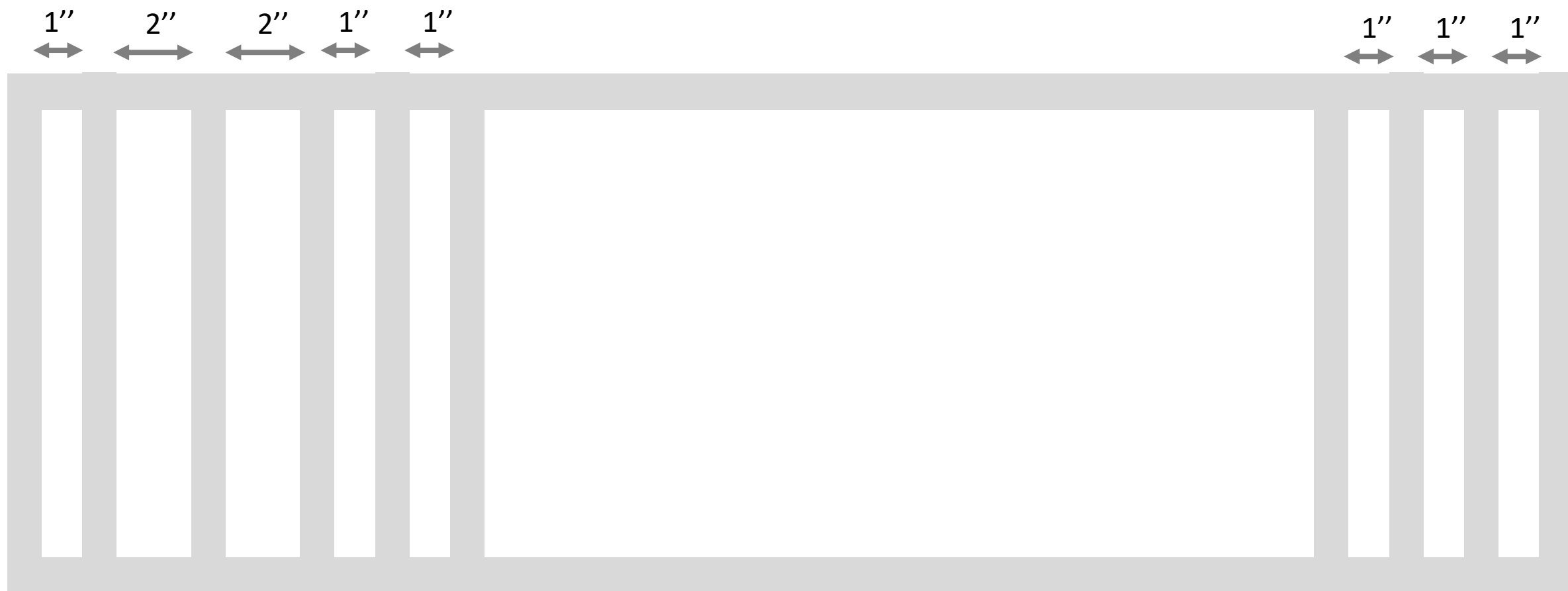
Material : Aluminum

1.3 inch

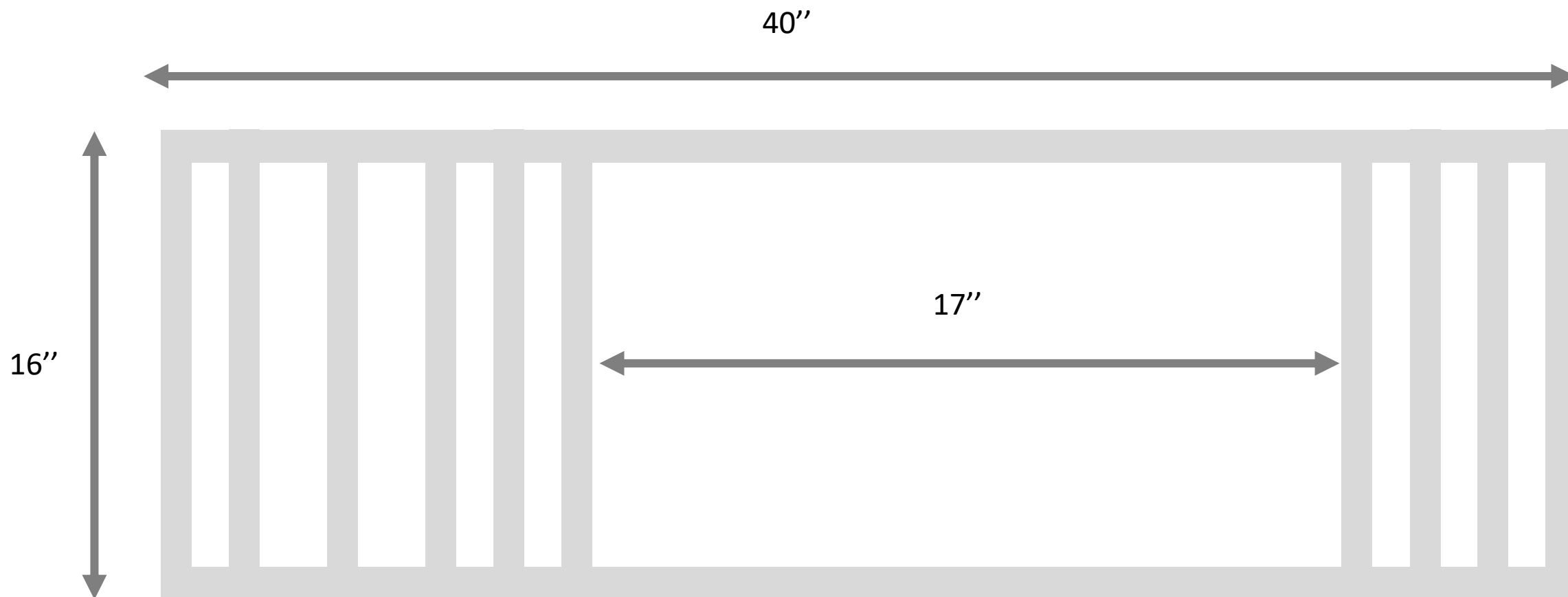


1.3 inch





Top View

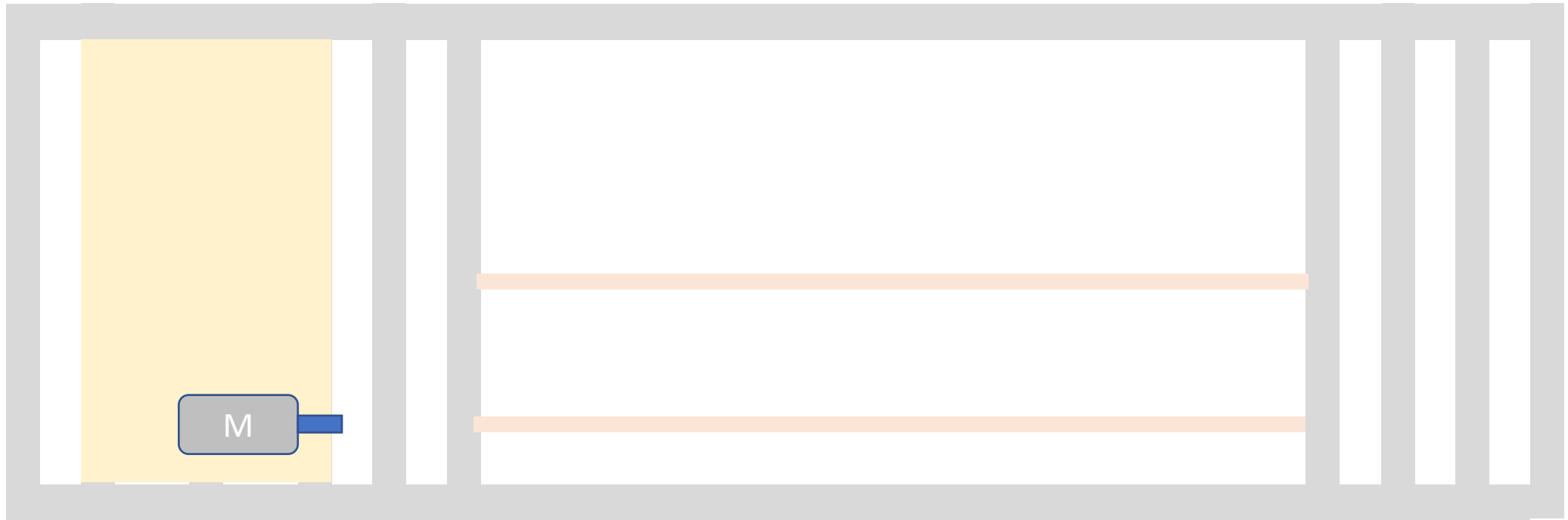




Material : Stainless Steel

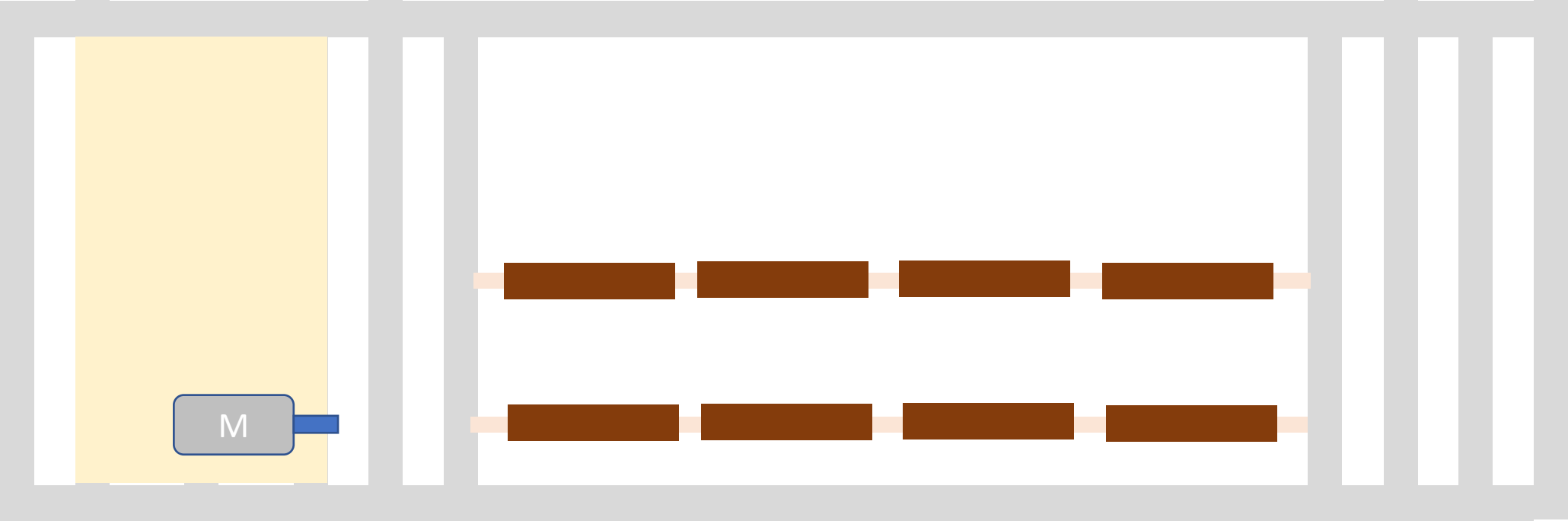


0.5"



Material : Foam





Material : Bearing steel (AISI 521000)

Number : 6201

Bore diameter : 0.5 inch



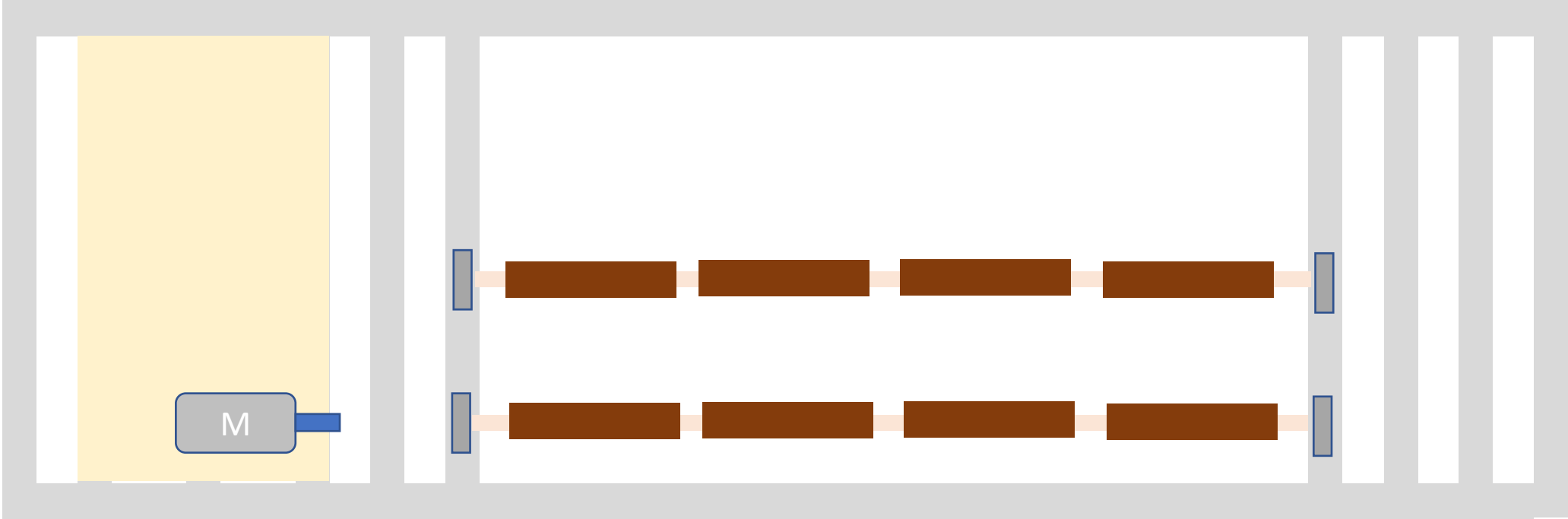
Material : Mild Steel

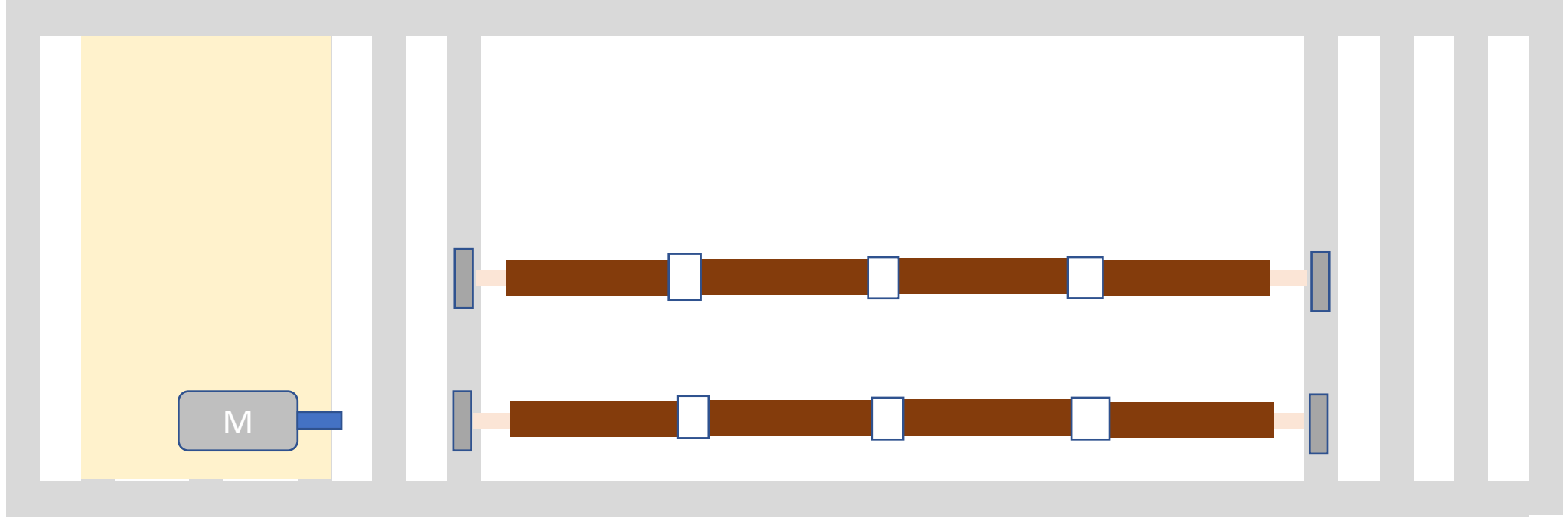


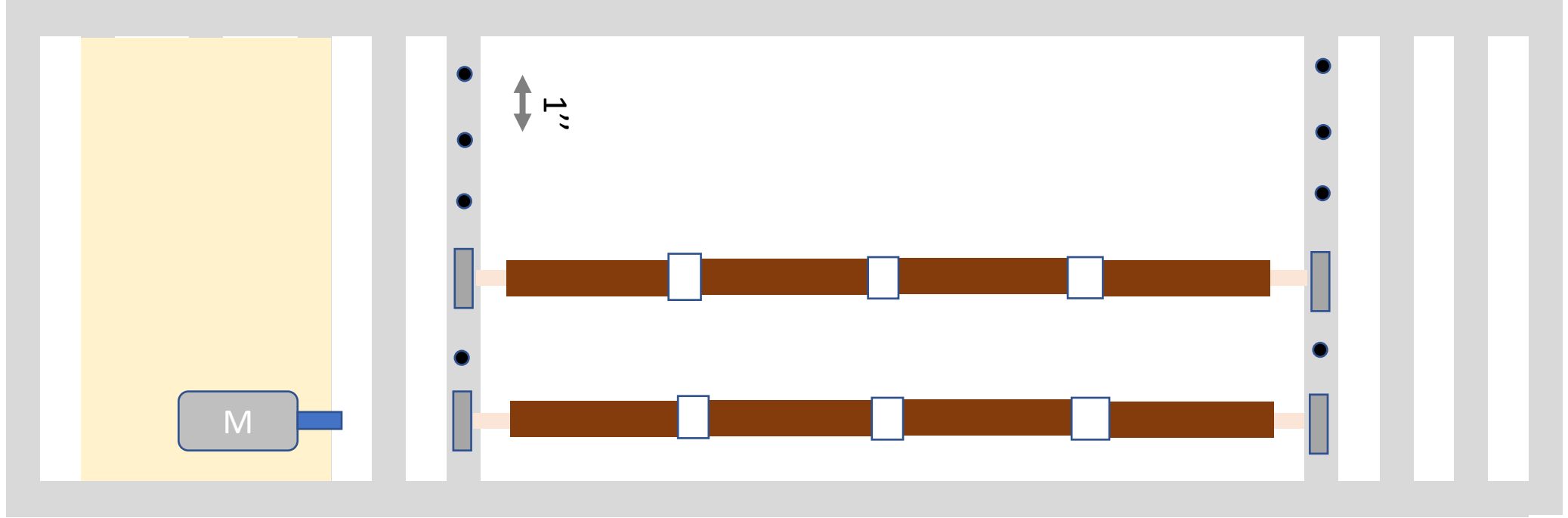
Material : Mild Steel

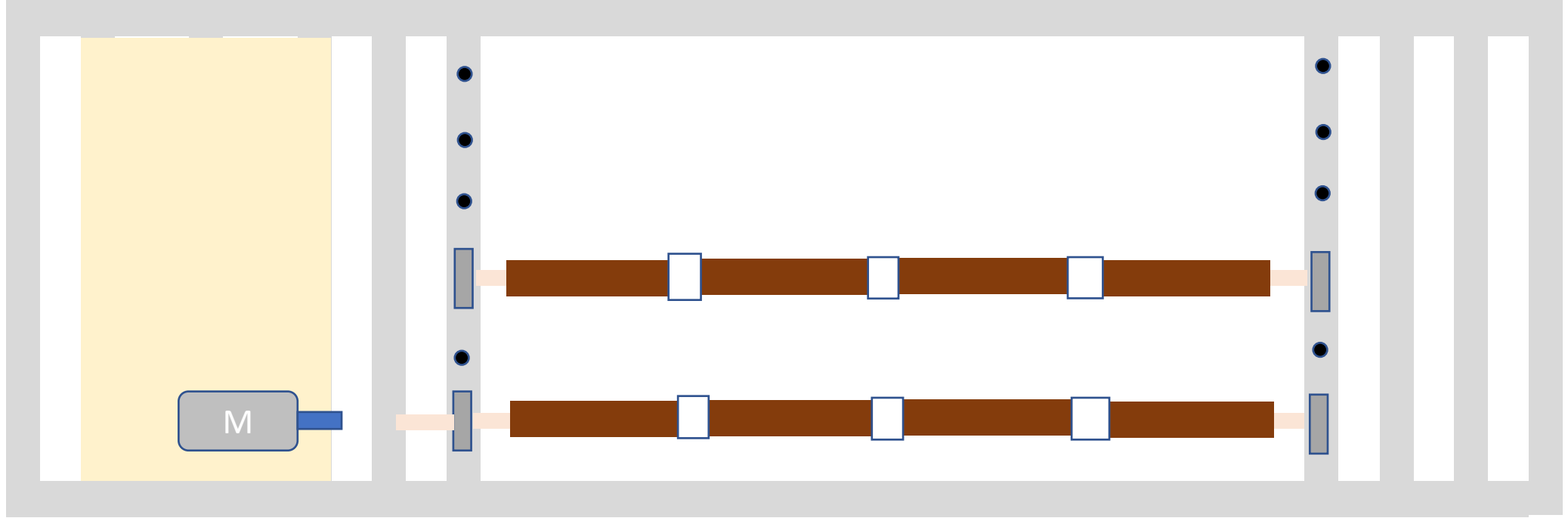
Size : 2 inch





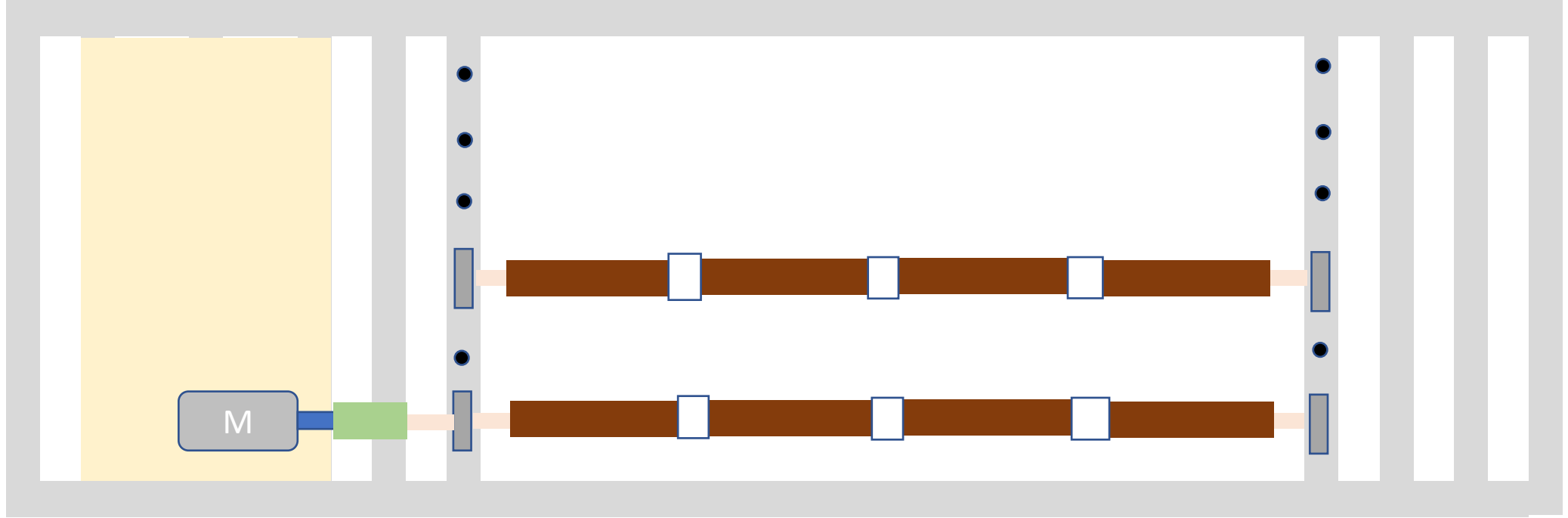


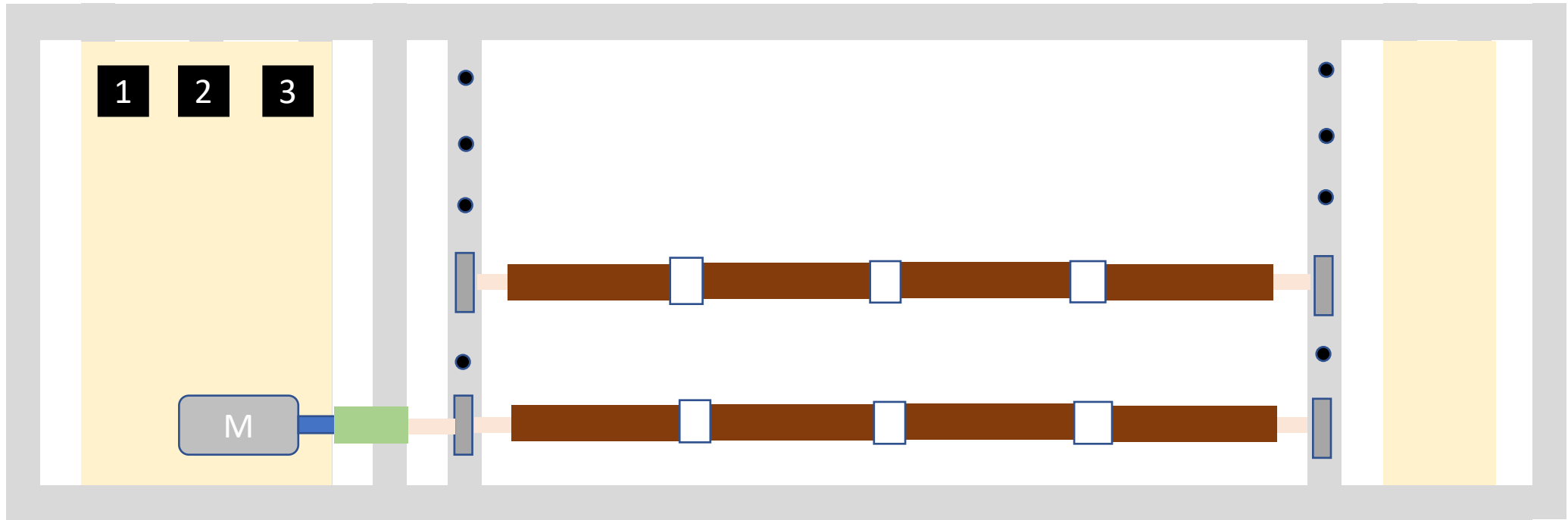


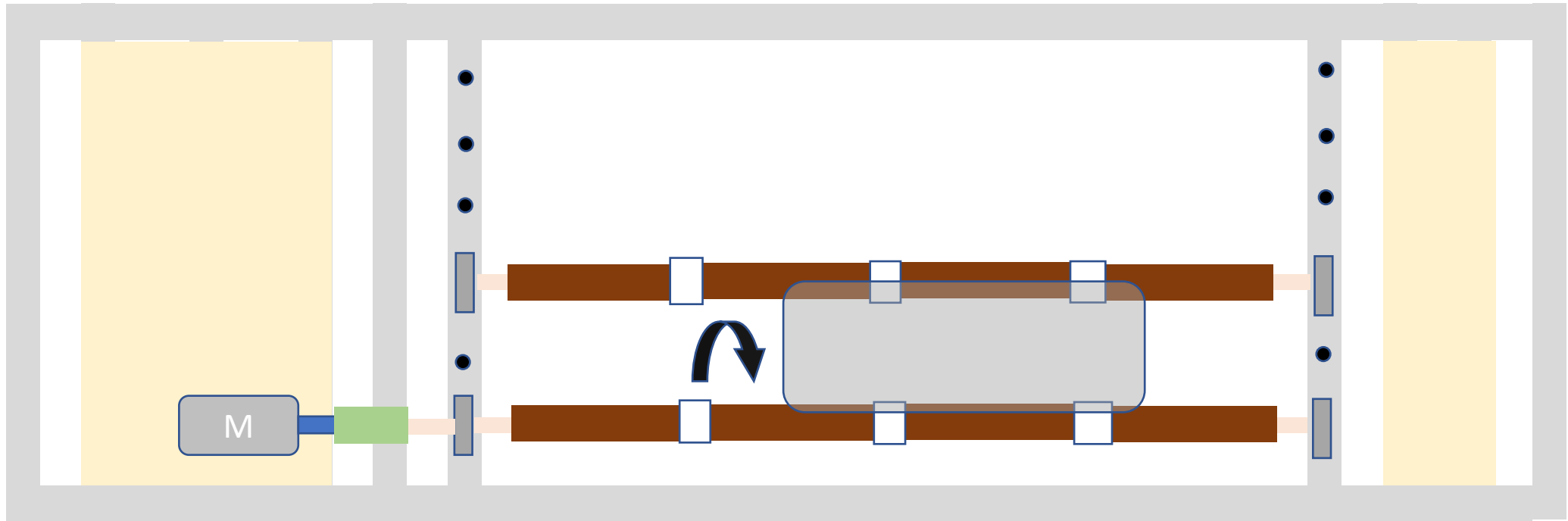


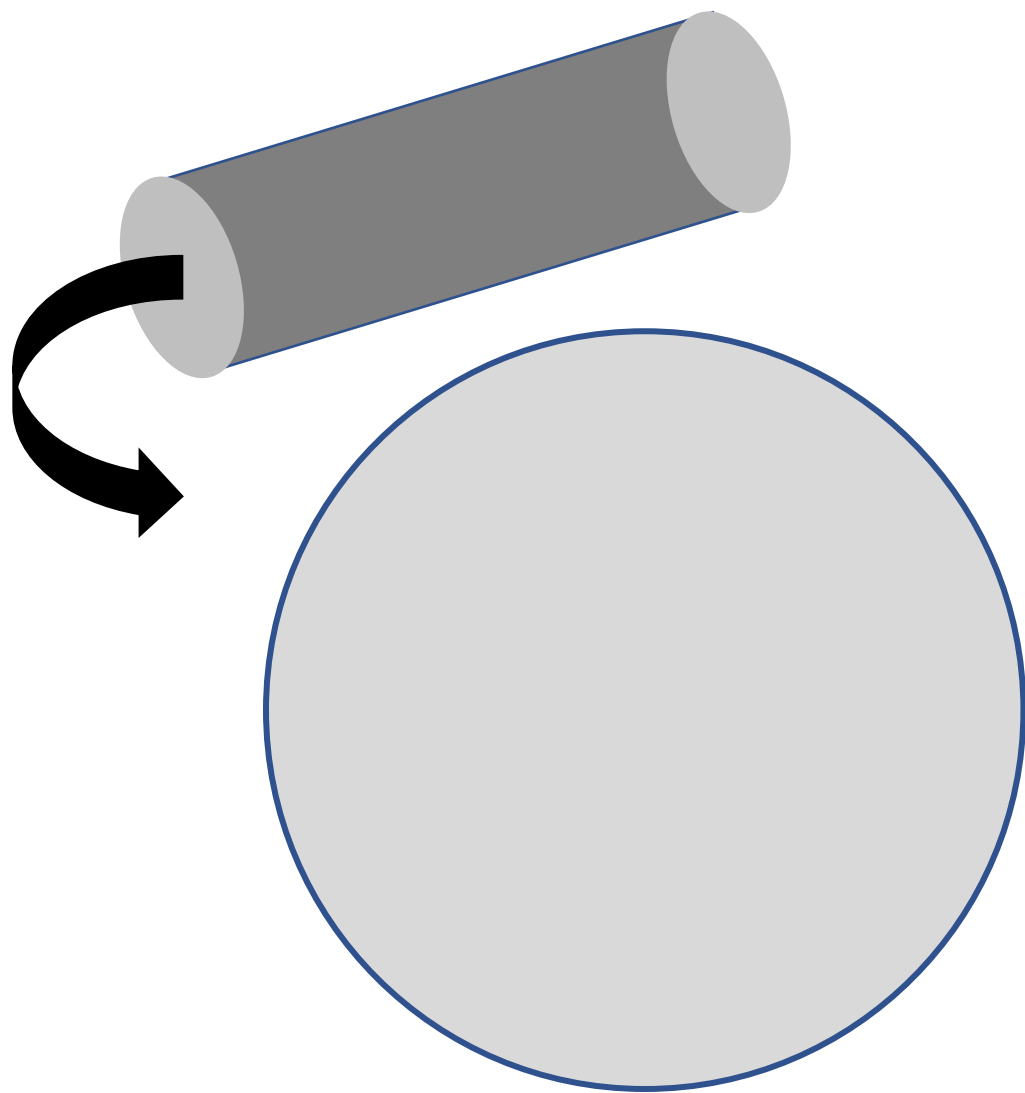
Material : Mild Steel

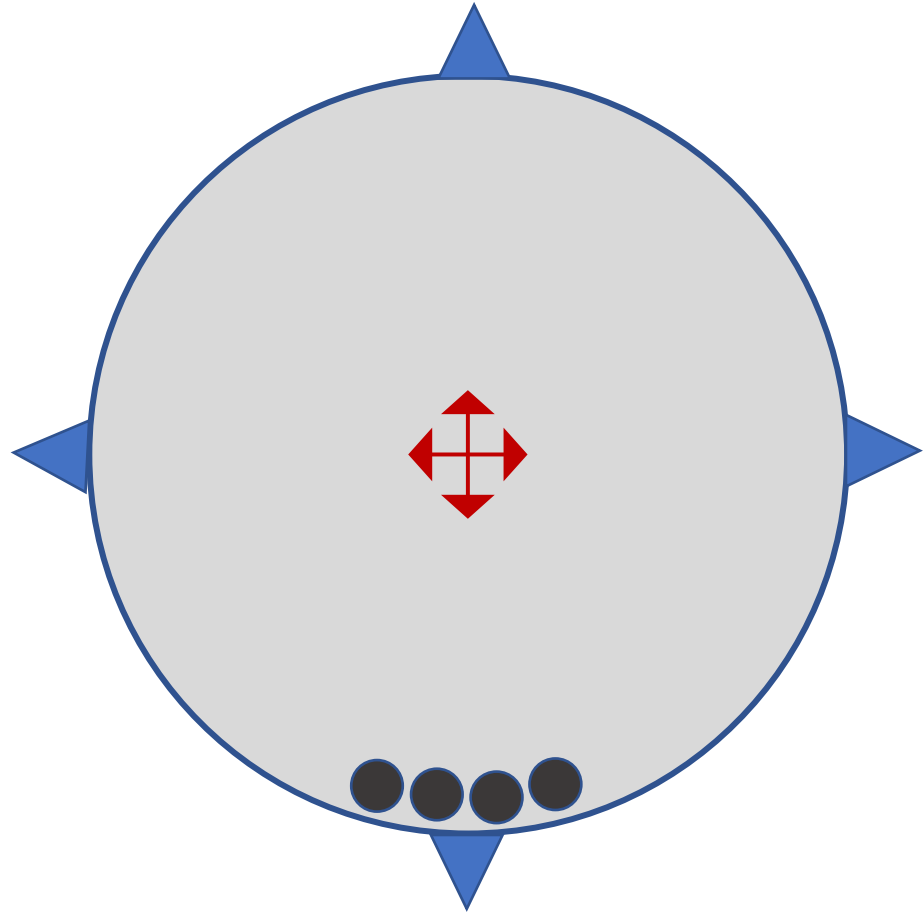


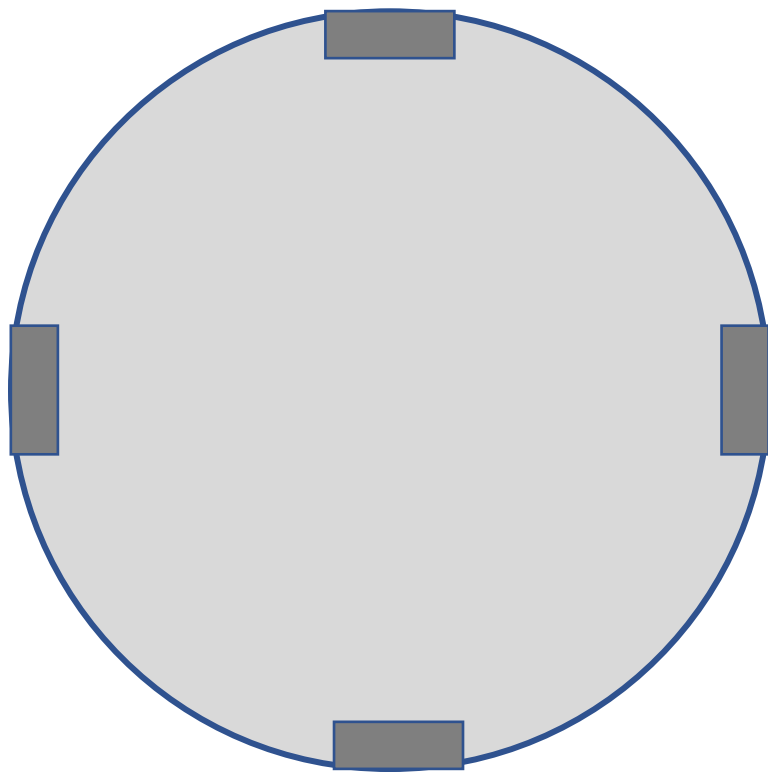


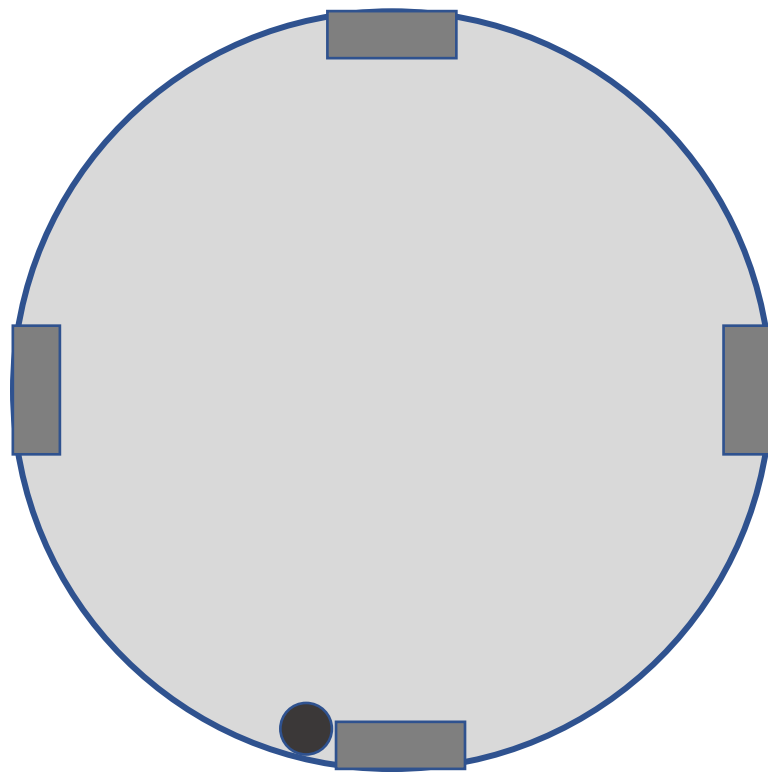












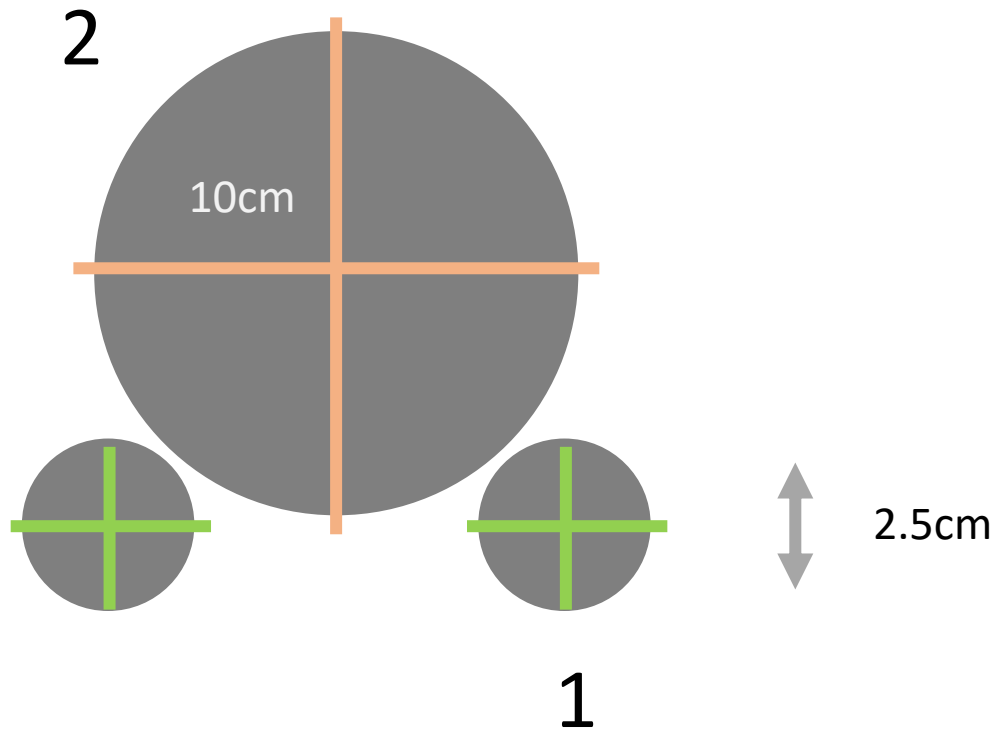
60 RPM 12 Volt DC High Torque Gear Motor

Reference RBD-0390

Features of 60 RPM High Torque 12 Volt DC Gear Motor:

- 60RPM 12V DC motors with Metal Gearbox and Metal Gears.
- 20000 RPM base motor.
- 6mm Dia shaft with M3 thread hole.
- Length 63 mm without shaft.
- Shaft length 30mm.
- 275gm weight.
- 20 kg cm torque.
- No-load current = 0.15 mA, Load current = upto 4 A(Max).

$$\omega = 1 \text{ rev s}^{-1}$$



$$V_1 = V_2$$

$$\omega_1 r_1 = \omega_2 r_2$$

$$\text{Or, } \omega_2 = (\omega_1 r_1) / r_2$$

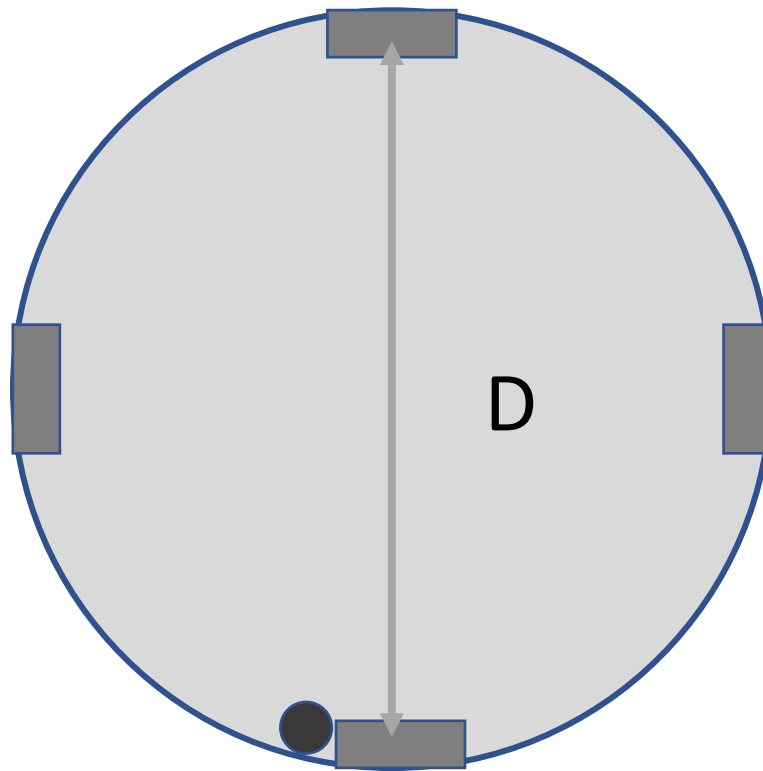
$$\text{Or, } \omega_2 = (\omega_1 r_1) / r_2$$

$$\text{Or, } \omega_2 = (1 \times 1.25) / 5$$

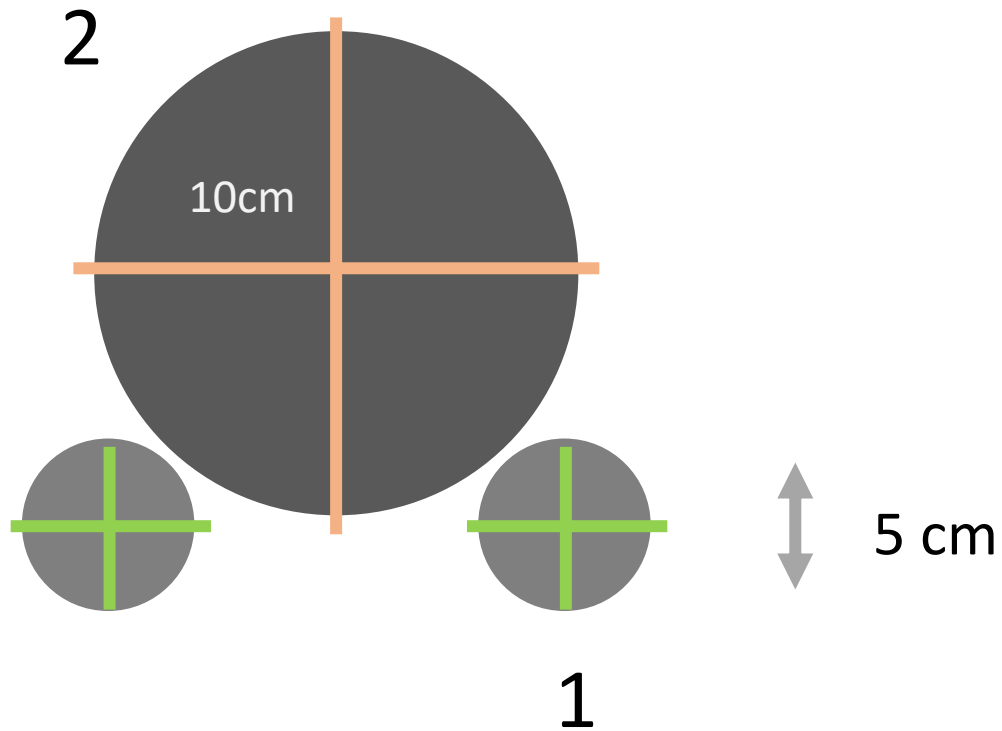
$$\text{Or, } \omega_2 = (1 \times 1.25) / 5$$

$$\text{Or, } \omega_2 = 1/4 \text{ rev s}^{-1}$$

h



$$E = mgh$$



$$V_1 = V_2$$

$$\omega_1 r_1 = \omega_2 r_2$$

$$\text{Or, } \omega_2 = (\omega_1 r_1) / r_2$$

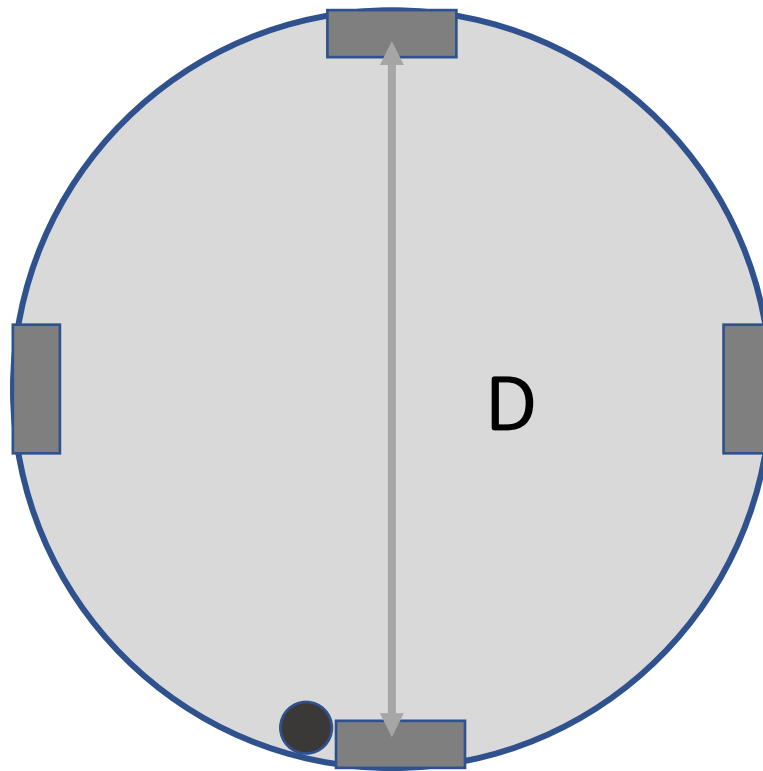
$$\text{Or, } \omega_2 = (\omega_1 r_1) / r_2$$

$$\text{Or, } \omega_2 = (1 \times 2.5) / 5$$

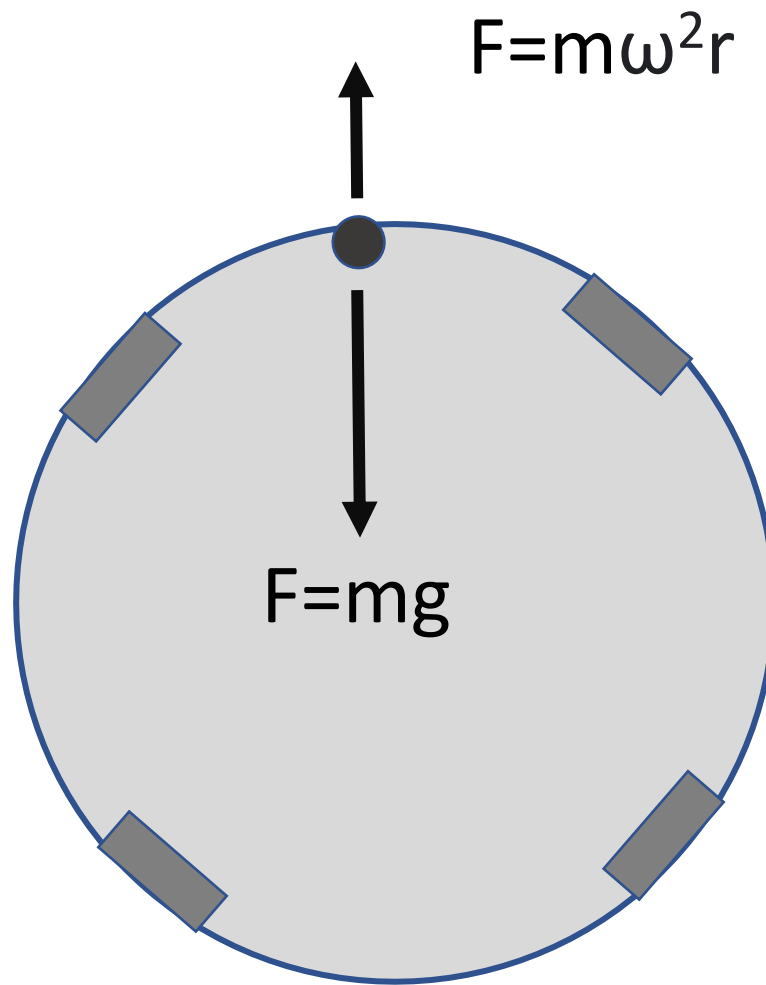
$$\text{Or, } \omega_2 = (1 \times 2.5) / 5$$

$$\text{Or, } \omega_2 = 1/2 \text{ rev s}^{-1}$$

h



$$E = mgh$$



$$m\omega^2 r = mg$$

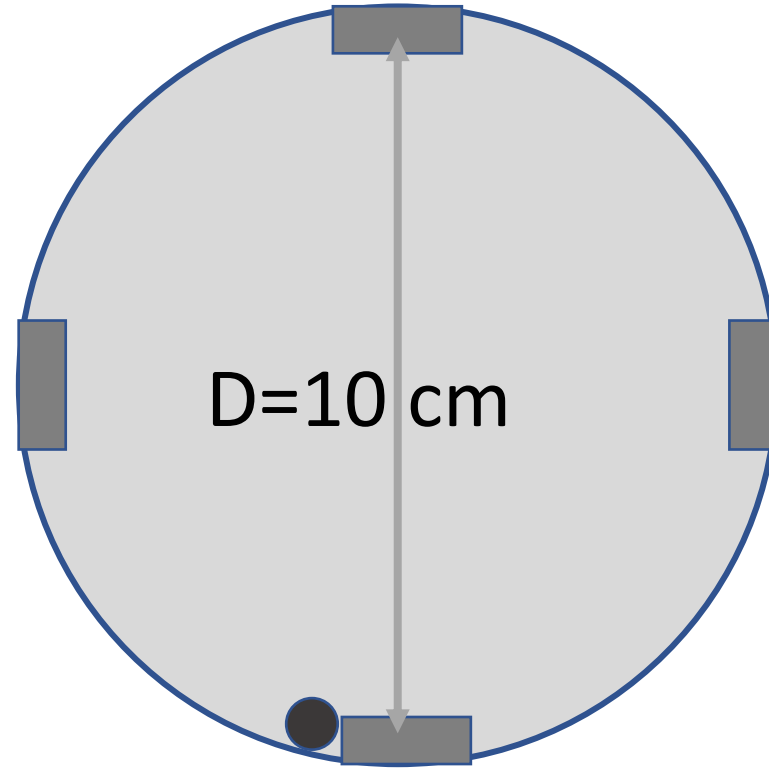
$$\text{Or, } \omega^2 r = g$$

$$\text{Or, } \omega = \sqrt{g/r}$$

Let's assume $r = 5\text{cm}$

$$\text{Or, } \omega = \sqrt{9.81/0.05}$$

$$\text{Or, } \omega = 14 \text{ rad s}^{-1}$$



$$\omega = 2.23 \text{ rev s}^{-1}$$





Building & Test Run