

Sprinkler Assembly

This is a complex task requiring sophisticated manipulations.



Materials

- 24 shafts (A)
- 24 springs (B)
- 24 white rings (C)
- 24 filters (D)
- 24 small caps (E)
- 24 white washers (F)
- 24 large caps (G)
- 24 sprinkler casings (H)
- 1 screwdriver (not shown)
- 3 blue single-compartment bins
- 1 3-compartment bin
- 1 small single-compartment bin
- 2 red storage bins

Setup

Arrange the bins with the shafts, springs, rings, filters, and small caps on the table to the left. Arrange the springs in their bin so they are standing in rows and as untangled as possible. Place the bins with the white washers and the large caps in the center and the red storage bin with the sprinkler casings on the table to the right. Place the empty red storage bin on a chair to the right.

Procedure

- Take one shaft (A) and one white ring (C). Slip the white ring onto the shaft and let it slide down to the base.
- Take one filter (D) and insert it, narrow end first, into the top (threaded end) of the shaft.
- Take one spring (B) and slide it over the shaft. (If the springs are tangled, turn one spring while holding the others until it is released.)
- With one hand, slide the spring down past the top of the shaft and hold. The spring will be tense.
- With the other hand, take one white washer (F) and slide it over the top of shaft, with the top (patterned) side facing out. Hold down the washer and spring.
- Take one small cap (E) and screw it into the top of the shaft.
- Take one sprinkler casing (H) and hold it with the larger opening facing up.
- With the white washer facing up, drop the assembled shaft into the casing.
- Take one large cap (G) and screw it onto the top of the casing (snug but not too tight).
- Place the assembled sprinkler in the empty red storage bin.
- Repeat the previous steps for the remaining 23 units.

Norms:

Per unit – 30 seconds
Per task (24 units) – 12 minutes

Quality Criteria

All parts must be in the correct position and tight.



Assembled sprinkler unit

Variations

The spring adds to the difficulty of the task and may cause substantial variations in speed depending on how tangled they are in the parts bin. If this is a problem, arrange the springs ahead of time in the parts bin or on the table to minimize tangling. The task may also be done without the springs.

If the springs are not used, these norms apply:

Assembly Norms Without Springs

Per unit – 20 seconds

Per task (24 units) – 8 minutes

Disassembly Norms Without Springs

Per unit – 15 seconds

Per task (24 units) – 6 minutes

Sprinkler Disassembly

Setup

Arrange the materials and bins as in the assembly task.

Procedure

- Take one assembled sprinkler unit from the storage bin.
- Turn the large cap and remove it from the sprinkler. Place the large cap in the correct bin.
- Grasp the white washer and pull it to remove the shaft from the casing. (If necessary, use the screwdriver to pry the washer loose.)
- Place the casing in the red storage bin on the table.
- Pull back the white washer and hold.
- Turn the small cap to remove it from the casing. Place it in the correct bin.
- SLOWLY release the white washer and remove it from the spring. Place it in the correct bin.
- Remove the spring and place it in the correct bin.
- Tap the shaft to remove the filter. Place the filter in the correct bin.
- Slide off the white ring and place it in the correct bin.
- Place the shaft in the correct bin.
- Repeat the previous steps for the remaining units.

Norms:

Per unit – 25 seconds

Per task (24 units) – 10 minutes

Quality Criteria

All the parts must be disassembled and placed in the correct bins.