

TECHNICAL REFERENCE · PRINT & KEEP

# 3/8 vs 1/2 Threaded Stem Casters: Which Is Stronger?

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**Quick answer.** A 1/2 inch-13 UNC threaded stem caster carries roughly 2 to 3 times the dynamic load of a 3/8 inch-16 UNC stem before fastener fatigue. Upsize to 1/2 inch for repeated dynamic loads above 250 lb per caster or static loads above 400 lb. For office chairs and light carts under 250 lb, 3/8 inch is correct and economical.

## Fast answer: which size do you need?

| Spec                               | 3/8"-16 UNC            | 1/2"-13 UNC            |
|------------------------------------|------------------------|------------------------|
| Outside diameter                   | 0.375"                 | 0.500"                 |
| Tensile stress area                | 0.0775 in <sup>2</sup> | 0.1419 in <sup>2</sup> |
| Typical caster capacity per wheel  | 75-250 lb              | 250-500 lb             |
| Main nut torque                    | 25-30 ft-lb            | 40-50 ft-lb            |
| Relative fatigue life at same load | 1.0x                   | 2.5-3.0x               |

## Load capacity side by side

| Wheel size | Material           | 3/8" stem rig | 1/2" stem rig |
|------------|--------------------|---------------|---------------|
| 3"         | Poly on poly       | 200 lb        | 300 lb        |
| 4"         | Poly on alu core   | 250 lb        | 400 lb        |
| 4"         | Nylon              | 300 lb        | 500 lb        |
| 5"         | Poly on steel core | ,             | 600 lb        |
| 5"         | Cast iron          | ,             | 800 lb        |



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