Fastener Types Manual

# Introduction to Fasteners

Fasteners are essential components used in various assemblies to hold parts together. Choosing the right fastener is crucial as it affects the strength, durability, and appearance of the final product. This manual introduces four common types of screws—Hex Head Screws, Socket Head Screws, Rounded Head Screws, and Flat Head Screws—and provides insights into their applications, materials, and standards.

# Hex Head Screws

Hex head screws are suitable for projects where strength and durability are crucial, such as heavy machinery or automotive applications. These screws often come in materials like stainless steel and alloy steel, which offer excellent corrosion resistance.

Standard Sizes for Hex Head Screws:

|  |  |  |  |
| --- | --- | --- | --- |
| Hex Head Size (mm) | Thread Pitch (mm) | Length (mm) | Tensile Strength (MPa) |
| M6 | 1.0 | 20-100 | 800-1000 |
| M8 | 1.25 | 25-120 | 800-1000 |
| M10 | 1.5 | 30-150 | 800-1000 |

# Socket Head Screws

Socket head screws are ideal for situations with limited space or where a clean, flush fit is needed. They are commonly used in precision equipment. Typical materials include stainless steel and black oxide coatings for added durability.

Standard Sizes for Socket Head Screws:

|  |  |  |  |
| --- | --- | --- | --- |
| Socket Size (mm) | Head Diameter (mm) | Head Height (mm) | Thread Length (mm) |
| M3 | 5.5 | 3.0 | 8-50 |
| M5 | 8.5 | 5.0 | 10-60 |
| M8 | 13.0 | 8.0 | 15-80 |

# Rounded Head Screws

Rounded head screws work best in decorative or low-profile designs, where appearance is important, such as furniture or consumer electronics. Materials often include brass or chrome-plated finishes for enhanced appearance.

Standard Sizes for Rounded Head Screws:

|  |  |  |  |
| --- | --- | --- | --- |
| Head Size (mm) | Thread Diameter (mm) | Head Height (mm) | Common Finishes |
| 4.0 | M2 | 1.6 | Brass, Chrome-plated |
| 6.0 | M4 | 2.5 | Zinc, Nickel-plated |
| 8.0 | M6 | 3.5 | Stainless Steel, Brass |

# Flat Head Screws

Flat head screws are recommended for situations where the screw must sit flush with the surface. These are perfect for countersunk applications, such as cabinetry or structural panels.

Standard Sizes for Flat Head Screws:

|  |  |  |  |
| --- | --- | --- | --- |
| Screw Diameter (mm) | Head Diameter (mm) | Countersink Angle | Length Range (mm) |
| M4 | 7.5 | 90° | 8-50 |
| M6 | 11.0 | 90° | 10-80 |
| M8 | 14.5 | 90° | 15-120 |

# Standards and Specifications

Fastener standards, such as those from ISO, ANSI, and DIN, ensure quality and compatibility across industries. These standards govern the dimensions, materials, and manufacturing processes to maintain high standards of quality and safety in fastener use.

Comparison of Standards for Different Screw Types:

|  |  |  |  |
| --- | --- | --- | --- |
| Screw Type | ISO Standard | ANSI Standard | DIN Standard |
| Hex Head Screws |  |  |  |
| Socket Head Screws |  |  |  |
| Flat Head Screws | ISO 10642 | ASME B18.3.6 | DIN 7991 |