

# Lifting Accessories Guide: Safety, Selection & Application

## 1. Why Lifting Accessories Matter

### Purpose:

Ensures safe connection between loads and cranes or hoists.

### Key Stat:

30% of lifting accidents are caused by accessory failure.

### Priorities:

- ✓ Safety
- ✓ Efficiency
- ✓ Regulatory Compliance

## 2. Core Safety Rules

- **PLAN:** Know the weight, shape, and path of the load.
- **TRAIN:** Only certified riggers should handle accessories.
- **INSPECT:** Always check gear before every lift.
- **DO NOT** exceed the **Working Load Limit (WLL)**.

## 3. Types of Lifting Accessories

### A. Shackles

- **Dee Shackles:** Great for straight-line lifts.
- **Bow Shackles:** Ideal for multi-leg slings.
- ✓ **Tip:** Always fully tighten pins — never mix or swap pins.

### B. Slings

- **Wire Rope Slings:** Durable against heat and abrasion.
- **Chain Slings:** Perfect for extreme heat (up to 400°C).
- **Synthetic Slings:** Lightweight — avoid contact with sharp edges.

### C. Below-the-Hook Devices

- **Spreader Bars:** Maintain safe sling angles.
- **Lifting Beams:** Best for unbalanced or wide loads.

## 4. Selecting the Right Accessory

Ask yourself:

### • Load Factors:

- How heavy is it?
- Is it fragile?
- Is it symmetrical?

### • Environment:

- Is there heat, sharp edges, moisture, or chemicals?

### • Sling Angle Formula:

Tension per leg = Total Load ÷ (No. of Legs × sinθ)

Example:

1,000kg at 45° = **1,410kg per leg**  
(Use multiplier 1.41x for 45°)

5. Inspection & Retirement Guidelines

Inspect for:

- Cracks, rust, wear, bent components, or missing ID tags.

Retire if:

- **Wire Rope:** 6+ broken wires in one lay.
- **Shackles:** Jaw opening increases by 10% or more.
- **Synthetic Slings:** Cut or frayed more than 5% of the width.

Storage Tips:

- ✔ Hang accessories in dry, shaded areas
- ✔ Keep away from chemicals and sunlight

6. Load Angle Multipliers



Angle	Multiplier
90°	1.0×
60°	1.15×
45°	1.41×
30°	2.0×
<30°	✗ Too Dangerous

7. Standards & Compliance

- **USA:** OSHA 1926.251 + ASME B30 series
- **Europe:** EN 13889 (Shackles), EN 1492 (Slings)

- ✔ Always check for **ASME** or **CE** certification on accessories.

## 8. Do's & Don'ts

 Do	 Don't
Use edge protection on sharp corners	Shock-load or jerk the load
Maintain sling angles above 45°	Use worn or damaged gear
Store accessories off the ground	Drag slings across surfaces

### Common Mistakes to Avoid:

- Ignoring sling angles
- Skipping inspections
- Using incompatible accessories together

## 9. Key Terms

- **WLL (Working Load Limit):** Max safe load. Never exceed.
- **MBS (Minimum Breaking Strength):** Usually 3–5× WLL.
- **Choke Hitch:** A sling wrapped through its eye, forming a choke hold.