

THE COMPLETE WIRE ROPE

INSPECTION GUIDE

A PRACTICAL VISUAL GUIDE TO SAFE INSPECTION, IDENTIFICATION, AND MAINTENANCE OF WIRE ROPE



SAFETY FIRST

Regular inspection helps prevent equipment failure, injury & downtime.



KNOW WHAT YOU'RE LOOKING AT

Understand wire rope construction, common damage, and rejection criteria.



INSPECT SYSTEMATICALLY

Use a consistent process to ensure nothing is missed.



ACT PROMPTLY

Remove from service if criteria are met. When in doubt, take it out.

UNDERSTAND YOUR WIRE ROPE

WIRE

Individual steel wires

STRAND

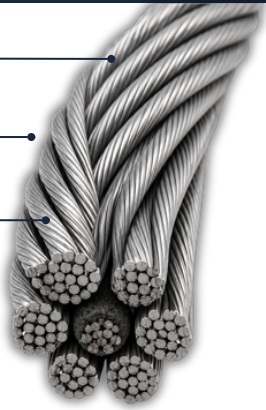
A group of wires laid helically

CORE

Supports the strands and provides structural stability

ROPE

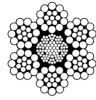
Strands laid around the core



TIP

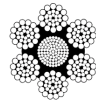
Identify the rope type, diameter, lay direction, construction, and grade before inspecting.

COMMON CONSTRUCTIONS



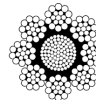
6x19 IWRC

General purpose. Good balance of flexibility and abrasion resistance.



6x36 IWRC

More flexible. Smoother surface. Good fatigue life.



8x19 IWRC

Rotation resistant. Higher breaking strength.



35x7 IWRC

Rotation resistant. Used in high-load applications.



IWRC = Independent Wire Rope Core

INSPECTION CHECKLIST

- Verify rope identification (type, size, construction, lay)
- Inspect entire length - don't just look at the working area
- Look for visible damage and unusual conditions
- Check for reduction in diameter
- Inspect end terminations and attachments
- Check for corrosion and lubrication condition
- Compare findings to rejection criteria
- Document inspection and take appropriate action

Follow manufacturer's recommendations and applicable standards (e.g ASME B30, ISO 4309)

COMMON WIRE ROPE DAMAGE



BROKEN WIRES

Most common form of damage. Check all strands.



WEAR/ABRASION

Loss of outer wires due to rubbing or abrasive contact.



CORROSION

Rust weakens wires and hides other damage.



KINKS

Permanent distortion that damages internal structure.



BIRDCAGING

Core breaks and strands splay out of position.



CRUSHING

Flattening or distortion of the rope structure.



HEAT DAMAGE

Discolouration, loss of lubrication, reduced strength.



CUTS/NICKS

severed wires from sharp edges or impact.



STRAND LOOSENING

Strands opening up due to fatigue or wear.



END CONNECTION DAMAGE

Broken wires or deformation at terminations.



ANY OF THESE CONDITIONS CAN LEAD TO PREMATURE FAILURE WHEN IN DOUBT, REMOVE IT FROM SERVICE

GOOD PRACTICES

1

Keep clean and properly lubricated.

2

Store properly to prevent corrosion and kinks.

3

Use properly sized sheaves and avoid shock loading.

INSPECT. RECORD. PROTECT.



Consistent inspections and proper care extend wire rope life and keep your people and operations safe.

NOTES
