

HKR INC.

Installation & Handling Guide

Glass Fiber Reinforced Polymer (GFRP) Reinforcement Products

COMPANY INFORMATION

Company: HKR INC.

Industry: Composite Materials Manufacturing

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INTRODUCTION

This Installation & Handling Guide provides general recommendations for the transportation, storage, handling, cutting, placement, and installation of HKR INC. Glass Fiber Reinforced Polymer (GFRP) reinforcement products.

Proper handling and installation procedures help ensure product performance, reduce damage during construction, and support long-term structural durability.

This guide is intended for:

- Contractors
 - Construction supervisors
 - Site engineers
 - Installers
 - Fabricators
 - Procurement teams
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PRODUCT OVERVIEW

HKR GFRP reinforcement products are manufactured using continuous glass fibers embedded in a polymer resin matrix.

Compared to traditional steel reinforcement, GFRP products are:

- Corrosion resistant
- Lightweight
- Non-conductive
- Non-magnetic
- High strength

Because GFRP behaves differently from steel reinforcement, proper handling and installation procedures should be followed.

SAFETY PRECAUTIONS

Recommended PPE

Personnel should wear:

- Safety glasses
- Gloves
- Long sleeves
- Dust mask or respirator during cutting operations
- Safety footwear

General Safety

- Follow all site safety regulations
 - Use proper lifting procedures
 - Avoid dropping bundles or bars
 - Prevent impact damage during handling
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RECEIVING & INSPECTION

Upon delivery:

- Inspect bundles for shipping damage
- Verify bar sizes and quantities
- Confirm labels and identification markings
- Report visible damage before installation

Do not install visibly damaged products without engineering review.

STORAGE REQUIREMENTS

Storage Recommendations

- Store on flat, level supports
- Keep bundles elevated from standing water
- Protect from mud, debris, and excessive contamination
- Cover for long-term outdoor storage where practical
- Avoid prolonged UV exposure during extended storage periods

Stacking

- Stack uniformly
 - Avoid excessive unsupported spans
 - Prevent crushing loads on lower bundles
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HANDLING GUIDELINES

Lifting

Recommended lifting methods include:

- Nylon slings
- Fabric straps
- Forklifts with padded contact points

Avoid:

- Dragging bars across rough surfaces
- Chain contact directly on bars
- Excessive bending during handling
- Impact loading

Transportation

Secure bundles properly during transport to minimize movement and vibration.

CUTTING PROCEDURES

Recommended Tools

GFRP reinforcement may be cut using:

- Abrasive saws
- Diamond blade saws
- Carbide-tipped cutting tools

Cutting Safety

During cutting operations:

- Wear eye protection
 - Use dust collection where practical
 - Follow equipment safety instructions
 - Maintain clean work areas
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BENDING & FABRICATION

Field Bending

GFRP reinforcement should not be field bent unless specifically engineered and manufactured for bending applications.

Factory Fabrication

HKR INC. may provide:

- Stirrups
 - U-bars
 - Hooks
 - Custom bent reinforcement shapes
 - Project-specific fabrication packages
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INSTALLATION GUIDELINES

Placement

- Follow approved structural drawings
- Maintain specified spacing
- Maintain required concrete cover
- Use appropriate chairs and spacers
- Prevent excessive movement before concrete placement

Tying

Use compatible tie materials suitable for project requirements.

Concrete Placement

During concrete placement:

- Avoid excessive vibration contact with reinforcement
- Prevent displacement of reinforcement cages
- Monitor bar alignment and cover

SITE MODIFICATIONS

Any field modifications should be reviewed by the project engineer.

Avoid:

- Unauthorized drilling
- Excessive grinding
- Heat exposure
- Welding operations

GFRP reinforcement must never be welded.

ENVIRONMENTAL CONSIDERATIONS

GFRP reinforcement is especially suitable for:

- Marine environments
- Coastal infrastructure

- High humidity conditions
 - Industrial facilities
 - Wastewater exposure
 - Corrosion-prone structures
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QUALITY CONTROL CHECKLIST

Before Installation

- Verify sizes and quantities
- Inspect for damage
- Confirm layout drawings
- Verify supports and spacers

During Installation

- Maintain spacing
- Maintain cover
- Monitor alignment
- Prevent displacement

Before Concrete Placement

- Final inspection of reinforcement
 - Confirm tie security
 - Confirm cleanliness
 - Confirm dimensional compliance
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COMMON APPLICATIONS

HKR GFRP products are suitable for:

- Bridges
 - Highways
 - Seawalls
 - Drainage systems
 - Docks & jetties
 - Industrial slabs
 - Water treatment facilities
 - Oil & gas infrastructure
 - Coastal foundations
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LIMITATIONS

Project engineers should evaluate:

- Fire resistance requirements
 - Structural loading conditions
 - Serviceability criteria
 - Project-specific design requirements
 - Applicable codes and standards
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REFERENCE STANDARDS

- ASTM D7957
 - ASTM D7205
 - ACI 440.1R
 - CSA S806
 - Applicable local project specifications
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DISCLAIMER

This document provides general installation guidance only.

Final installation procedures and project requirements should be reviewed and approved by the project engineer and contractor.

HKR INC. assumes no responsibility for improper installation, unauthorized modifications, or non-compliance with applicable engineering standards.

CONTACT INFORMATION

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For technical support, handling recommendations, or project-specific assistance, contact HKR INC.

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