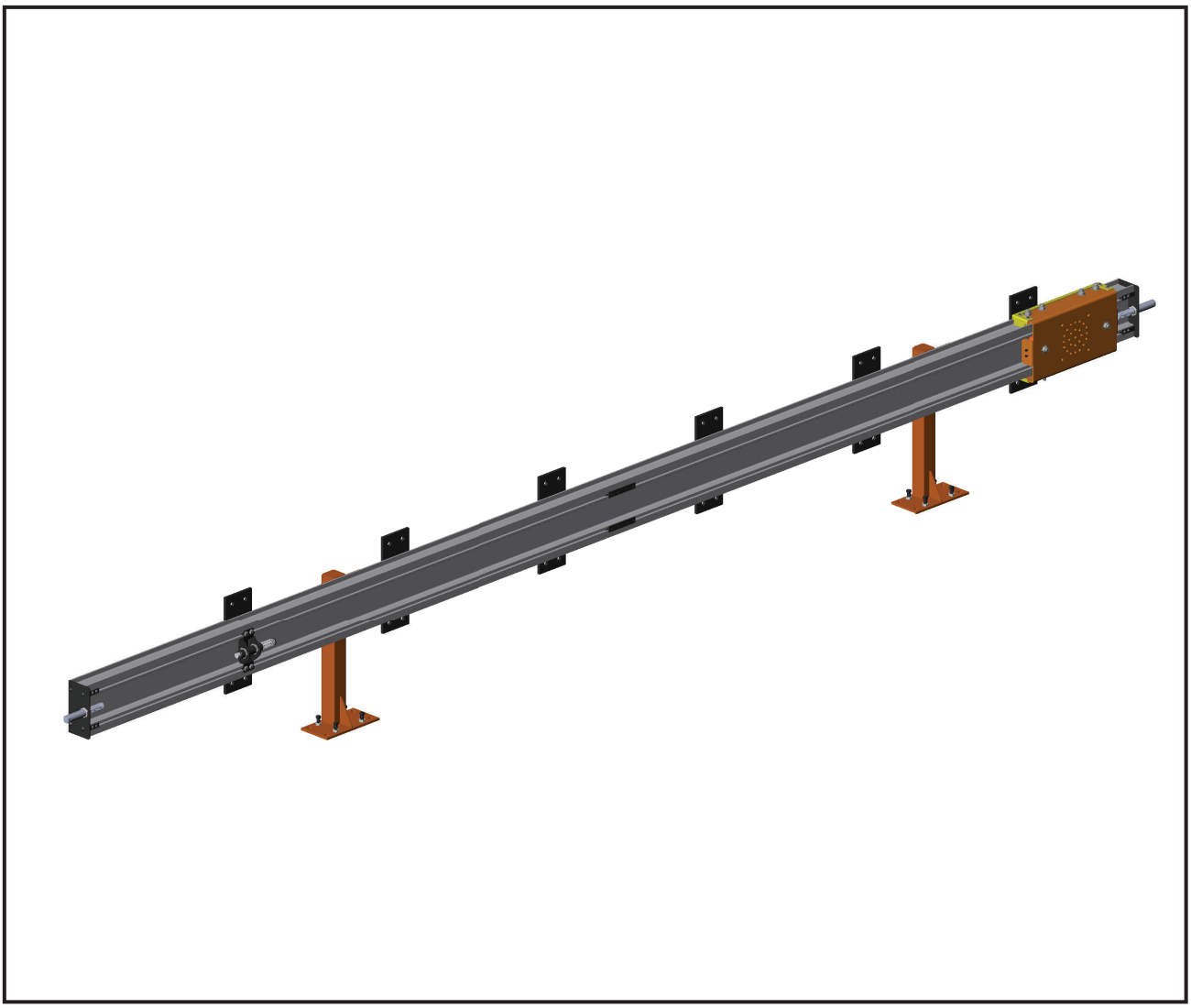
KNIGHT GLOBAL

Engineered Aluminum Linear Rail

Installation and Maintenance Manual



For: **LRD9500 Series Rail**

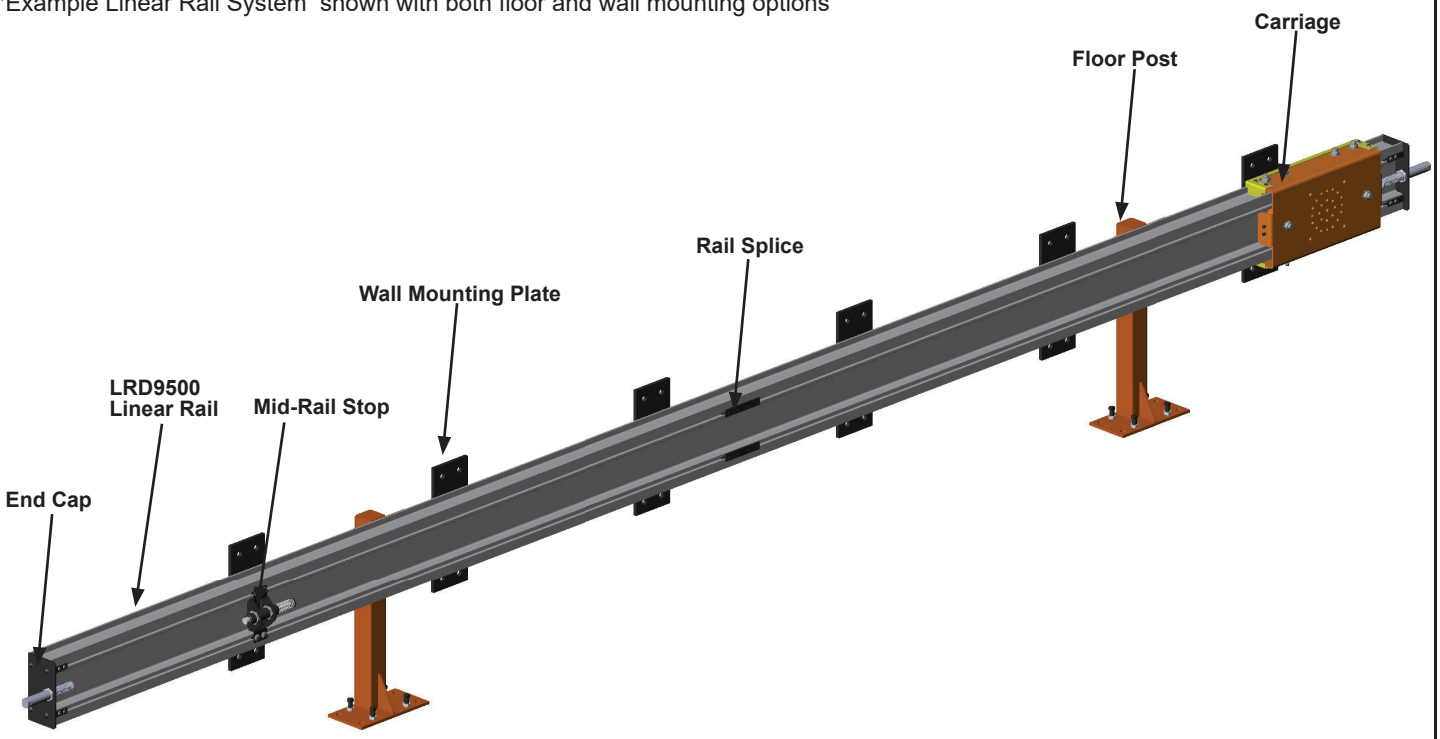
ORIGINAL INSTRUCTIONS

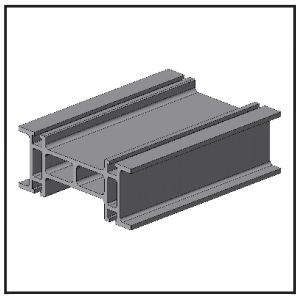
THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING, SAFETY, INSTALLATION, MAINTENANCE, AND OPERATION OF KNIGHT GLOBAL FLOOR MOUNTED STRUCTURE AND SHOULD BE AVAILABLE TO ALL PERSONNEL RESPONSIBLE FOR USING ENCLOSED TRACK RAIL SYSTEM.

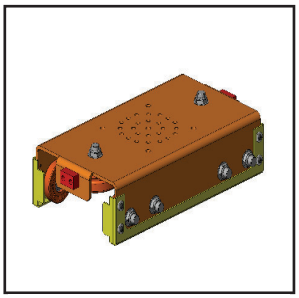
REV: LRD9500_20220524

INTRODUCTION

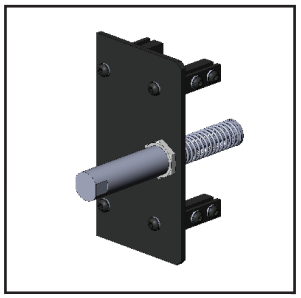
*Example Linear Rail System shown with both floor and wall mounting options

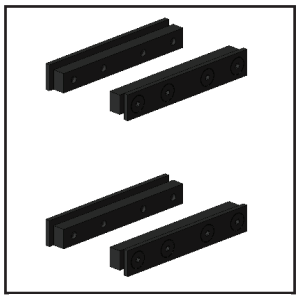


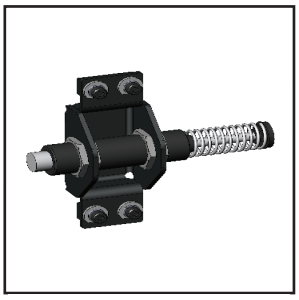

LRD9500 Engineered Rail

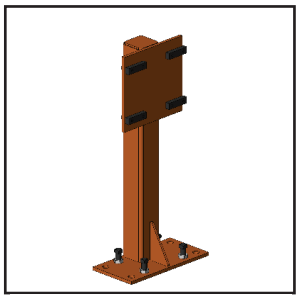

MRLA9501 Carriage

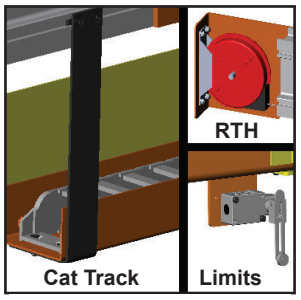

MRLA9502 Wall Mount Plate


MRLA9504 End Cap


MRLA9505 Splice Kit


MRLA9507 Mid Rail Stop


Floor Post (Custom)



Accessories (Not Shown)

Knight Global's LRD9500 Series Engineered Linear Rail is for floor mounted or wall mounted low friction horizontal movements. Capable of handling direct or offset loads. Linear rail is a lower maintenance alternative to hardened ground rail and bearing blocks. The LRD Series binding is significantly reduced due to its flexible tolerances.

GENERAL INSTALLATION

LRD9500 Series Rail Systems are typically custom systems that are designed and assembled at Knight Global. The following are general installation instructions of standard components for the LRD9500 rail. It is recommended to review all supplied installation and layout drawings prior to installation and to consult a Knight Global sales specialist when ordering a linear rail system.

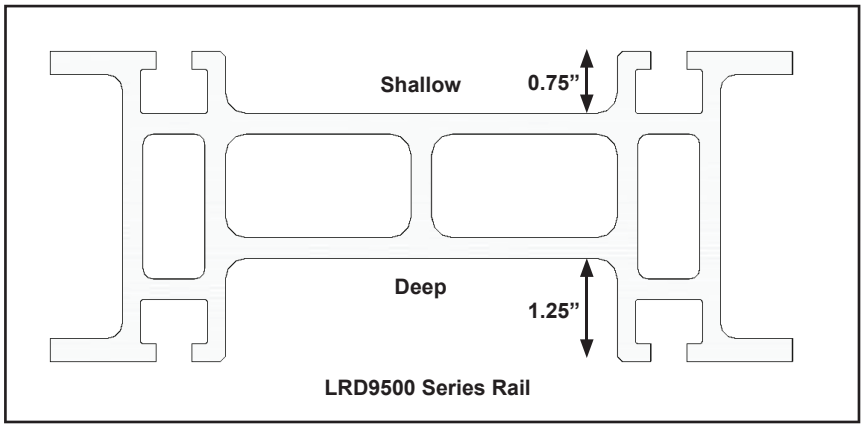


Figure 1

MLRA9502 Wall Mount Plate Installation

Step 1. Refer to installation drawings for placement of mounting plates and mark onto rail. Mounting plates should be installed on shallow side of the rail. See Figure 1.

Step 2. Ensure that M8x30mm bolts are loose holding the mounting plate and mounting blocks together so the assembly can slide easily into the mounting channels.

Step 3. Slide mounting plate assembly into mounting channels at one end of the rail. (Remove end cap if installed)

Step 4. Locate mounting plate assembly to mark made in Step 2.

Step 5. Tighten all bolts on mounting plate assembly.

Step 6. Repeat for each mounting plate.

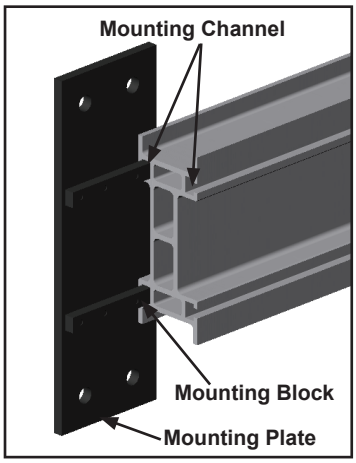


Figure 2

Floor Post Mounting Installation

Step 1. Refer to installation drawings for placement of post mounting plates and mark onto rail. Mounting plates should be installed on shallow side of the rail. See Figure 1. (Floor posts are custom for each application. The post shown is not a standard product of Knight Global.)

Step 2. Ensure that M8x30mm bolts are loose holding the mounting plate and mounting blocks together so the post assembly can slide easily into the mounting channels.

Step 3. Slide floor post mounting plate assembly into mounting channels at one end of the rail. (Remove end cap if installed)

Step 4. Locate floor post mounting plate assembly to mark made in Step 2.

Step 5. Tighten all bolts on floor post mounting plate assembly.

Step 6. Repeat for each floor post.

Step 7. Foundation requirements for anchoring the floor posts are based on data such as soil pressure, surrounding footings/pilings, etc. and should be determined by a local registered professional engineer.

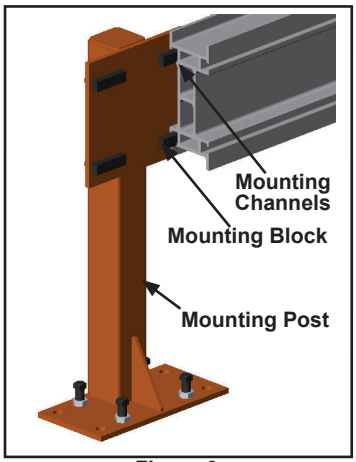


Figure 3

MRLA9504 End Cap Installation

Step 1. Ensure that (8) M8 x 35mm bolts and lock washers are loose holding the (4) mounting plates and (4) mounting blocks together so the assembly can slide easily into the mounting channels.

Step 2. Slide end cap assembly into mounting channels at the end of the rail. Ensure that the shock assembly is in the deep channel of the rail. See Figure 1.

Step 3. Align bolts on end cap mounting plates with pre-drilled holes on end of rail. If holes are not pre-drilled, drill (8) holes into mounting channel using a 5/16 drill bit (Do not cross drill). See Figure 6.

Step 4. Tighten all bolts and ensure bolts are engaged into rail. See Figure 5.

Step 5. Repeat for other end of the rail.

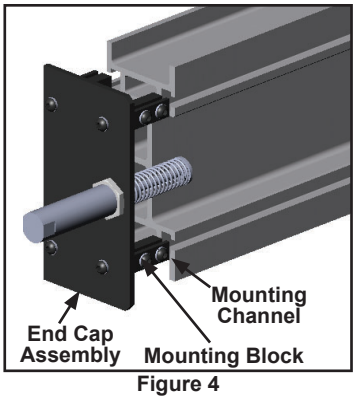


Figure 4

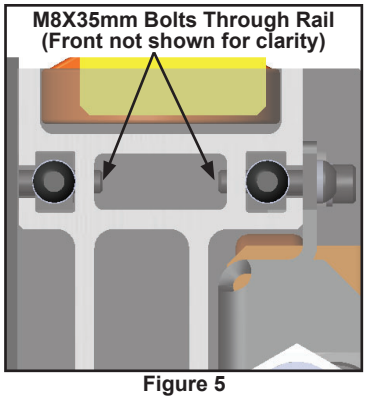


Figure 5

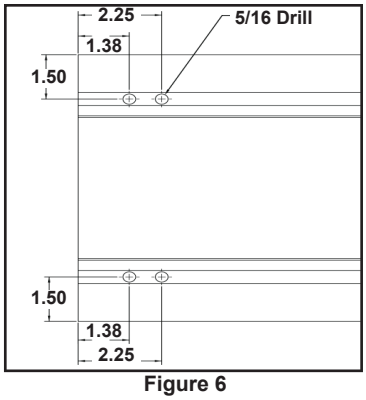


Figure 6

MRLA9501 Carriage Installation

Step 1. Determine which side of the rail the carriage will be installed on. Carriage should be installed on deeper side of the rail. See Figure 1.

Step 2. Align top, bottom, and middle carriage guide wheels into the top, middle, and bottom wheel channels at one end of the rail. (Remove end cap if installed)

Step 3. Slide carriage completely into rail. Replace end cap if installed.

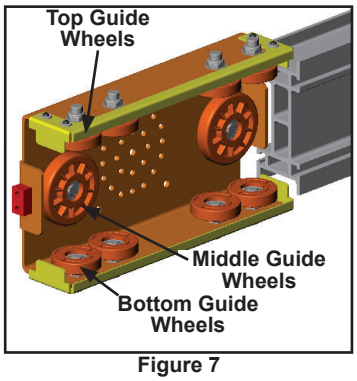


Figure 7

MRLA9505 Splice Installation

Step 1. Determine which end of the rail the splice kit will be installed on.

Step 2. Ensure that (16) M8x35mm bolts are loose holding the (4) splice mounting plates and (4) splice mounting blocks together so the assembly can slide easily into the mounting channels.

Step 3. Slide splice kit mounting plates and mounting blocks into the top and bottom mounting channels on each side of the rail.

Step 4. Align the rail to be spliced to the rail with the splice kit installed in the previous step.

Step 5. Slide splice kit mounting plates and mounting blocks until the splice kit is positioned equally on both sides of the rails.

Step 6. Tighten all bolts on splice kit assembly.

Step 7. Repeat for each splice required.

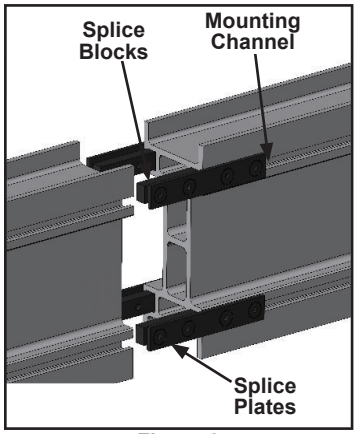


Figure 8

MRLA9507 Mid-Rail Stop Installation

Step 1. Determine which side of the rail the mid-rail stop will be installed on. Ensure that the shock assembly is in the deep channel of the rail. See Figure 1.

Step 2. Refer to installation drawings for placement of mid-rail stop and mark onto rail.

Step 3. Ensure that M8x25mm bolts are loose holding the mounting plate and mounting blocks together so the assembly can slide easily into the mounting channels.

Step 4. Slide mid-rail stop assembly into mounting channels at one end of the rail. (Remove end cap if installed)

Step 5. Locate mid-rail stop assembly to mark made in Step 2.

Step 6. Tighten all bolts on mid-rail assembly.

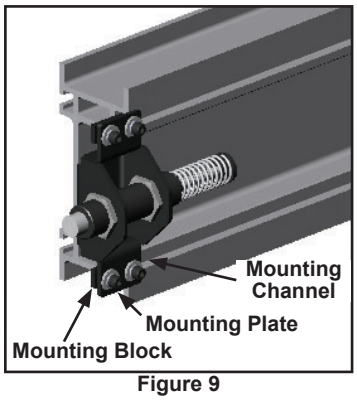


Figure 9

MAINTENANCE

Inspection Record Requirements

Duty Rating

Inspection frequency should be determined by a qualified person and is based upon duty service as defined below. Each rail system should be rated individually and inspections performed in accordance with rating. Inspections can be performed by qualified personnel.

Duty Service

Normal - Operation with uniform loads less than 65% of rated load for not more than 25% of time.

Heavy - Operation within rated load limit, which exceeds normal service.

Severe - Service that involves normal or heavy service with abnormal conditions.

Frequency of Documentation

Frequent Inspection (Non-Documented):

- Normal Service - quarterly
- Heavy Service – monthly.
- Severe Service - daily

"Rail Inspection Checklist"

"Rail Inspection Checklist" can be used as documentation sheet for new installations as well as to schedule routine maintenance. Use one sheet for each system inspected, additional forms can be copied from this booklet. Periodic maintenance should be performed every six months or more frequently depending on usage and environment. Inspect each system from "Item to be Checked" column. Fill in "Date Checked and "Checked by" columns to indicate that an inspection has been done and record any discrepancies that may appear. If any instructions or criteria are not clear, refer to applicable product page in this manual to help clarify.

Turn in a copy of completed checklist to supervisor for recording maintenance schedule and record keeping purposes.

Use one sheet for each system inspected, additional forms can be copied from this booklet. Periodic maintenance should be performed every six months or more frequently depending on usage and environment.

RAIL INSPECTION CHECKLIST								**DATE:**
Work Cell Identification/Location:								
Rail-Type/Size:	Aluminum							
What type of mounts?			How many mounts?					
What type of load?	Direct	Cantilevered	Notes:					
Application:								Cycle Time:

Item to be Checked	Date Checked	Checked by	Notes/Discrepancies/Comments
GENERAL			
Ensure all safety devices e.g., safety wire, safety cables, clips, pins, lock-nuts, etc. are properly installed.			
Visually check all fasteners for indications of over-torquing, especially on pivot points and any other points where movement is required.			
Where applicable, check floor post support base mounting bolts for presence and tightness.			
Carriage			
Rubber Bumper – Wear not to exceed .250 in (6.35 mm). Wheels-Inspect wheels, side rollers, axles, nut and hardware for security and damage, replace as needed.			`
Mounting Plates			
Visible distortion, cracks; ≥ .250 in (6.35 mm) increase in bolt hole diameter(s).			
Rail			
Gouges on running surface; twisting of more than ≥.125 in (3.175 mm) bend in excess of ≥.125 in (3.175 mm) in any span of any plane.			
Installation			
Straightness-Must be straight within ¼ in (6.4 mm) in any span length.			
Splice Gap-Must not exceed 1/16 in (1.6 mm) at load carrying flange.			
Runway Elevation-Should not vary ± ¼ in (6.4 mm) in any span length.			
Runway Parallelism-Must not exceed ± 3/16 in (4.8 mm).			

TROUBLESHOOTING

Rails Troubleshooting Chart

Refer to previous sections in this manual for specific installation instructions.

Problem	Cause	Solution
Load does not roll well along entire length of runway.	Splice sections	Ensure splices are installed per OEM instructions.
	Carriage	Ensure carriage rollers are in good condition and clean.
	Splice sections	Ensure splice sections are tight. Loosen over-tightened bolts if binding at end caps.
	Rails	Ensure rail is damage and debris free.
Load settles in center span of a rail and does not remain parked at intervals along rail.	Fixture Carriage	Ensure attached components such as coiled tubing, electrical cables, or hoses move freely.
	Rails	Ensure support spans are correct per system layout. Ensure that load does not exceed system rated capacity. (Refer to: http://www.knightglobal.com/rails for rated capacity charts.)
Carriage wheels continually wear out.	Carriage	Ensure carriage rolls smoothly throughout entire span of rail.
	Spliced Sections	Ensure splices are installed per OEM instructions.
	Rails	Ensure rail is damage free.
		Wipe rolling surfaces of rail with a clean dry rag.

Rail performance may be affected by various factors. If your rail system is not performing as well as expected, contact Knight Global at: 248-377-4950 or visit our website at www.knightglobal.com .

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