RMA Drive Packaging Change and Carrier Attachment and Removal Instructions

New Policy for RMA Drive Replacements

In the past, when you received a replacement drive through the RMA (return material authorization) process, you always received a drive packaged in a carrier. The carrier mates a wide variety of drives to the slot form factor and drive locking mechanism of a particular drive enclosure.

DDN is changing the management of our RMA supply chain to improve efficiency and effectiveness. Therefore, in the future you will receive RMA replacement drives in one of four packages:

- **The drive with the proper carrier attached.** This is what happens today. In this case, simply install the drive.

- **The drive and the carrier in separate packages.** In this case, the carrier must be attached to the drive before installation.

- **The bare drive without the carrier.** In this case, the old carrier from an existing, failed drive needs to be removed from that drive and attached to the replacement drive before installation.

- **The drive with an incorrect carrier attached.** This might happen if this is the only way to get a replacement drive to you quickly. In this case, you will need to remove the incorrect carrier from the shipped drive, then treat the drive like it was received bare without a carrier.

The benefits of this new policy to customers are greater drive availability in the local parts depots and faster delivery of replacement drives.

Customers with onsite self-support contracts will be most affected by this change, since they will need to attach and remove the drive carriers themselves. However, for customers with support contracts that include onsite engineering services, the onsite engineer will perform this task. For all customers, newly purchased drives will continue to ship from the factory with the proper carrier attached.
This bulletin shows how to identify the carriers used with different enclosures, and provides instructions for attaching carriers to or removing them from a 3.5-inch SAS disk drive.

**Identifying Carriers for Different Enclosures**

Different drive carriers are used with different drive enclosures. If a replacement drive arrives with a carrier attached, you must first verify that the supplied carrier is the correct one to use with your enclosure before you install the drive. Compare your carrier with the photos below to make this determination.

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Carrier Attachment and Removal Instructions

Carrier attachment and removal procedures differ according to the type of carrier used in each drive enclosure. Click one of links below to jump directly to:

- SS6000 carrier instructions
- SS7000 carrier instructions
- SS8460 and SS8462 carrier instructions (both enclosures use the same carrier)

SS6000 Carrier Instructions

The instructions in this section apply to carriers used with the SS6000 disk enclosure only. They cover carrier removal from and attachment to 3.5-inch SAS hard disk drives. Do not attempt to use these instructions with 2.5-inch SAS drives, with SATA disk drives, or with solid-state drives.

**ALERT!** To protect sensitive components in the disk drive, use an anti-static work surface and wear an anti-static wrist bracelet to keep yourself electrically grounded while working.

Tools Required

- Adjustable torque screwdriver calibrated to 6 inch-pounds of torque, with #1 Philips bit
- Anti-static wrist bracelet, grounded

Component List

- Disk carrier assembly
- #6-32 panhead screws, quantity 4
Removing the SS6000 Carrier from a Drive

**Step 1.** Place the drive and carrier assembly on an anti-static work surface with the handle cover plate and circuit board side up and the connector facing you on the right.

**Step 2.** Remove the two panhead screws from one rail of the carrier.

**Step 3.** Rotate the drive and carrier as a unit 180 degrees on the work surface. Then remove the two panhead screws from the other rail of the carrier.

**Step 4.** Carefully lift the carrier up from the drive as shown. Retrieve all four screws. The carrier is then ready for reuse with a replacement drive.

**ALERT!** Do not allow any part of the carrier assembly to contact the circuit board or the flex cable.
Attaching the SS6000 Carrier to a Drive

**Step 1.** Place the bare disk drive on an anti-static work surface with the circuit board side up and the connector facing toward you on the right.

**Step 2.** Lower the carrier over the drive as shown, with the handle cover plate facing up and out on the side away from you. The open end of the carrier should be toward you and the end of the two rails should be approximately even with the end of the drive.

**ALERT!** Do not allow any part of the carrier assembly to contact the circuit board or the flex cable.

**Step 3.** Align the screw holes in the carrier with the screw holes in the drive. Then, using an torque screwdriver calibrated to 6 inch-pounds of torque, attach one rail of the carrier to the drive with two #6-32 panhead screws.
Step 4. Rotate the drive and carrier as a unit 180 degrees on the work surface. Then attach the other rail of the carrier to the drive with the remaining two #6-32 panhead screws.

Step 5. Verify that all four screws are attached, straight, and flush against the carrier rails. The drive is then ready to install in the SS6000 enclosure.

SS7000 Carrier Instructions

These instructions apply to carriers used with the SS7000 disk enclosure only. They cover carrier removal from and attachment to 3.5-inch SAS hard disk drives. Do not attempt to use these instructions with 2.5-inch SAS drives, with SATA disk drives, or with solid-state drives.

ALERT! To protect sensitive components in the disk drive, use an anti-static work surface and wear an anti-static wrist bracelet to keep yourself electrically grounded while working.

Tools Required

- #0 Philips screwdriver
- Torque screwdriver calibrated to 4 inch-pounds of torque, with a #1 Philips bit
- Anti-static wrist bracelet, grounded

Component List

- Pivot rail and handle assembly
- Release rail and light pipe assembly
- Spacer block
- #2 flathead screw, quantity 1
- #6-32 thinhead screws, quantity 4
Removing the SS7000 Carrier from a Drive

**Step 1.** Place the drive and carrier assembly on an anti-static work surface with the circuit board side up, the drive connector facing you on the right, and the carrier handle facing away from you.

**Step 2.** Remove both #6-32 thinhead screws from the pivot rail with a #1 Philips screwdriver. Remove the screw closest to you first, then the screw closest to the carrier handle.
Step 3. Pull the pivot rail and handle assembly to the right to disengage it from the spacer block tab and free it from the drive.

Step 4. Rotate the remaining drive, release rail, and spacer block assembly 180 degrees on the work surface so that the spacer block faces toward you and the drive connector faces away from you on the left.

Step 5. Remove the two #6-32 thinhead screws from the release rail and drive. Remove the screw farthest from you first, then remove the screw closest to the spacer block.
Step 6. Pull the spacer block and release rail assembly toward you to disengage it from the drive. It will come away as an L-shaped unit.

NOTE Do not disassemble the spacer block and release rail assembly if you plan to attach the carrier to a replacement drive. You can then attach this carrier to a new drive beginning at Step 3 of the attachment instructions below.

Attaching the SS7000 Carrier to a Drive

Step 1. Verify that the release rail includes a fiber optic light pipe, which should fit snugly in the channel prepared for it on the inside surface of the rail.

ALERT! If the light pipe is missing, do not proceed. Contact DDN Support.

Step 2. Next, attach the spacer block to the release rail using the #2 flathead screw as follows.

a. Begin by aligning the components on the work surface as shown.
b. The spacer block has two projecting round tabs that fit into matching cavities on the inside of the release rail (see below). Fit the spacer block tabs into the rail cavities.

c. Using the #2 flathead screw and a small Philips screwdriver, attach the release rail to the spacer block through the screw hole closest to the end of the rail. Tighten the screw until flush and seated, but no further.

**ALERT!** If you strip the threads, the spacer block must be replaced.
Step 3. Place the disk drive on a padded, anti-static work surface with the circuit board side up and the connector facing away from you on the left.

Step 4. Place the release rail and spacer block assembly alongside the drive with the spacer block toward you and the release rail flush against the right side of the drive. Then attach the spacer block end of the release rail to the drive through the screw hole closest to you, using one of the #6-32 thinhead screws and a torque screwdriver with a #1 Philips bit calibrated to 4 inch-pounds of torque. The top of the screw must fit entirely within the screw hole recess and must not project beyond the surface of the rail.

NOTE It will be necessary to lift the drive to align the drive’s mounting hole with the screw hole in the release rail.

Step 5. Attach the free end of the release rail to the drive using another #6-32 thinhead screw and a torque screwdriver with #1 Philips bit calibrated to 4 inch-pounds of torque. The
top of the screw must fit entirely within the screw hole recess and must not project beyond the surface of the rail.

Step 6. Rotate the drive, rail, and block assembly 180 degrees on the work surface so that the spacer block faces away from you and the drive connector is toward you on the right.

Step 7. Align the pivot rail and handle assembly for attachment to the drive as shown.
Step 8. The spacer block has a projecting square tab that fits into a matching slot in the pivot rail near the junction with the carrier handle (see below). Fit the spacer block tab into the rail slot on the inside of the pivot rail.

![Spacer block tab](image1)

![Pivot rail slot](image2)

![Tab in slot](image3)

Step 9. After the spacer block tab is fitted into the pivot rail slot, attach the pivot rail to the drive with two #6-32 thinhead screws, using a torque screwdriver calibrated to 4 inch-pounds of torque. The screw heads must fit completely within the recesses for the screw holes and must not project above the surface of the pivot rail.

![After attaching pivot rail](image4)

Step 10. Verify that all five screws are installed and no screwheads project above the surface of the rails. If all screwheads are flush or recessed, the carrier assembly is complete and the drive is ready to install in the enclosure.
**SS8460 and SS8462 Carrier Instructions**

These instructions apply to carriers used with the SS78460 and SS8462 disk enclosures only. They cover carrier removal from and attachment to 3.5-inch SAS hard disk drives. Do not attempt to use these instructions with 2.5-inch SAS drives, with SATA disk drives, or with solid-state drives.

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**ALERT!** To protect sensitive components in the disk drive, use an anti-static work surface and wear an anti-static wrist bracelet to keep yourself electrically grounded while working.

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**Tools Required**

- #1 Philips screwdriver
- Torque screwdriver calibrated to 4 inch-pounds of torque, with a #1 Philips bit
- Anti-static wrist bracelet, grounded

**Component List**

- Pivot rail and handle assembly
- Release rail with dual light pipes
- Spacer block
- #4 self-tapping screw, quantity 1
- #6-32 thinhead screws, quantity 4
Removing the SS8460/SS8462 Carrier from a Drive

Step 1. Place the drive and carrier assembly on a padded, anti-static work surface with the circuit board side up and the carrier handle facing you.

Step 2. Using a #1 Philips screwdriver, remove the #4 self-tapping screw from the spacer block through the release rail on the right side of the drive, as shown below. (This first screw to be removed is the fifth and last screw attached during carrier assembly onto the drive.)
Step 3. Remove the two #6-32 thinhead screws from the release rail on the right side of the drive as follows.

a. With a Phillips screwdriver, remove the screw farthest from the carrier handle.

b. Remove the screw closest to the carrier handle last.
c. Set the release rail and its three screws aside.

Step 4. Rotate the disk drive and carrier handle assembly on the work surface so that the handle side is away from you and the connector on the drive is toward you on the right.

Step 5. With a Phillips screwdriver, remove the two #6-32 thinhead screws that attach the handle, pivot rail, and spacer block assembly to the drive, as follows.

a. Remove the screw farthest from the carrier handle first.
b. Remove the screw closest to the carrier handle last.

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**Step 6.** Pull the carrier handle, spacer block, and release rail assembly away from the drive. It will come away as an L-shaped unit.

**NOTE** Do not disassemble the spacer block and release rail assembly if you plan to attach the carrier to a replacement drive. You can then attach this carrier to a new drive beginning at **Step 3** of the attachment instructions below.

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**Attaching the SS8460/SS8462 Carrier to a Drive**

**Step 1.** Before assembly, verify that two fiber optic light pipes have already been snapped into the channels prepared for them in the release rail.

**ALERT!** If either light pipe is missing, do not proceed. Contact DDN Support.

**Step 2.** Attach the spacer block to the pivot rail and handle assembly as follows.
a. Snap the spacer block into the pivot rail and handle assembly in two motions, as shown.

The result should look like this:

b. Verify that the square tab on the exterior of the spacer block is visible in the receiving slot of the pivot rail.
**Step 3.** Place the bare disk drive on a padded, anti-static work surface with the circuit board side up and the connector toward you on the right.

**Step 4.** Position the L-shaped carrier handle, spacer block, and pivot rail assembly for attachment to the drive. Arrange the handle assembly on the work surface to the upper right of the drive, with the handle and spacer block above the drive on the side away from you, as shown below left. Then fit the handle assembly snug against the drive, as shown below right.
Step 5. With a torque screwdriver calibrated to 4 inch-pounds of torque, attach the pivot rail to the right side of the drive with two #6-32 thinhead screws as follows.

a. Attach the handle end of the pivot rail to the drive first.

b. Attach the free end of the pivot rail to the drive last.

Step 6. Rotate the drive and carrier handle assembly on the work surface so that the connector on the drive is facing away from you at the top left and the carrier handle is toward you.
Step 7. Line up the carrier release rail screw holes with the mounting holes on the right side of the drive. The wide end of the release rail should be toward you, with the L-bracket turned in toward the drive. The lip of the L-bracket should fit snugly on top of the spacer block.

![Image of drive with release rail and L-bracket]

Step 8. With a torque screwdriver calibrated to 4 inch-pounds of torque, attach the release rail to the right side of the drive with two #6-32 thinhead screws as follows.

a. Attach the end of the release rail nearest the carrier handle to the drive first.

![Image of drive with end of release rail attached]
b. Attach the narrow end of the release rail to the drive last.

Step 9. Fit the #4 self-tapping screw through the end-most screw hole in the release rail and screw it into the spacer block using a #1 Phillips screwdriver. Hold the spacer block in place while tightening the screw to prevent any twisting movement.

Step 10. Verify that all five screws are installed and no screwheads project above the surface of the rails. Rescrew as needed to make all screws flush or recessed.
**Step 11.** Check the latching action of the carrier handle to ensure it operates smoothly.

**Step 12.** Press the carrier handle down to the fully latched position. Inspect the closure of the latch against the lip of the release rail to ensure there are no gaps. *If no gaps appear*, carrier assembly is complete and the drive is ready to be installed in the enclosure.

![Diagram of carrier handle and release rail](image)

**ALERT!** If a gap appears when the carrier handle is in the fully latched position, the carrier cannot be used. Remove the release rail from the drive and repeat **Step 7** through **Step 12**.

If reassembly of the release rail does not eliminate the gap, a new carrier may be required. Contact DDN Support.

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**Contacting DDN Technical Support**

Please contact DDN Technical Support at any time if you have questions or require assistance. Support can be reached by phone, by email, or on the web as listed below.

**Web**
- **DDN Community Support Portal**
  - [https://community.ddn.com/login](https://community.ddn.com/login)
- **Portal Assistance**
  - webportal.support@ddn.com

**Telephone**
- **DDN Support Worldwide Directory**
  - [http://www.ddn.com/support/contact-support](http://www.ddn.com/support/contact-support)

**Email**
- **Support Email**
  - support@ddn.com

**Bulletins**
- **Support Bulletins**
  - [http://www.ddn.com/support/technical-support-bulletins](http://www.ddn.com/support/technical-support-bulletins)
- **End-of-Life Notices**
- **Bulletin Subscription Requests**
  - support-tsb@ddn.com