

This package of Kadee® products is designed to assist the beginning model railroader in learning the basic modeling skills of proper coupler mounting and use of the Kadee® Magne-Matic® coupler system.

Please read these instructions and the included information, "Coupler Primer", to familiarize yourself with the products and the terminology used in model railroading.

Unfortunately, many begin model railroading without knowing these important and simple basic rules and end up having a bad experience that turns them away from this great hobby.

There are all levels of skills and experience involved in model railroading and everyone started at the beginning. So do not get discouraged or overwhelmed and don't give up, just go slow and learn as you go. Your knowledge and skills will develop through experience so don't be afraid to just try. Many model railroaders also enjoy the learning process as well as the operational process. Always remember that this hobby is meant for your enjoyment and we'll do our best to help you.

The following items are a basic selection of assorted couplers and related products that should be enough for the beginner to acquire the knowledge needed for proper coupler selection and mounting.

Instructions and Helpful Hints

HO Coupler Conversion List and Coupler Primer

#5 2 Pair of Couplers, All Metal Medium Centerset

#42 2 Pair of Couplers, All Metal Medium Overset (lowers the coupler head)

#43 2 Pair of Couplers, All Metal Short Centerset

#46 2 Pair of Couplers, All Metal Long Centerset

#47 2 Pair of Couplers, All Metal Medium Underset (raises the coupler head)

#205 Multi Purpose HO Coupler Height Gauge

#208 .015" Thick Fiber Washer Shims (4 doz.)

#209 .010" Thick Fiber Washer Shims (4 doz.)

#211 Plastic .010" and .015" thick Shims (designed to fit common draft gear boxes) (20 ea.)

#231 Greas-em Dry Graphite Lubricant

#237 Trip Pin Pliers (for adjusting coupler trip pins)

#241 "Dual Tool" (Manual Uncoupling Tool with a Spring Pick Tip)

#256 Plastic 1/2" x 2-56 Screws (1 doz.)

#321 Permanent Magnet Uncouplers (1 pair)

#334 Gluing Jig (for proper placement of uncouplers)

Each of the above products have their own instructions that need to be reviewed. But the following brief descriptions will give you a basic idea of what each are used for and why they are needed.

HO Coupler Conversion List: A listing of our coupler recommendations for particular locomotives and rolling stock. This does not give information as to how the couplers might be attached or if there are any modifications involved. We do have drawings and instructions available, upon request, for most of the conversions that require more than a "drop in" or "screw on" operation. You also can find these on our web site at www.kadee.com under "Conversion Info". (<http://www.kadee.com/conv/ho.htm>)

Coupler Primer: This is an information sheet to help you understand our coupler system, general info about our couplers, and terminology we use in our information.

No. 5® Coupler: This is a medium length centerset all metal coupler. This is our most popular HO coupler and has been, more or less, the industry standard since 1959. This is the coupler all others are compared to and if you walk into most any hobby shop that carries HO trains you'll also find packages of the #5 couplers. In coupler conversions, if you do not have any other guidance as to what coupler to use then start with a #5 and proceed from there.

#42, #43, #46, and #47 Couplers: This is an assortment of couplers from our 40 series. Each of these is an example of the different shank lengths and "offsets" in each of our series of couplers. The short, medium, and long shanks are necessary to gain various spacing between models depending on radius of track and the coupler clearance. The "offset" couplers (overset, centerset, and underset) are designed to allow certain coupler height adjustments without modifying the model, however, each offset coupler is about .050" higher or lower than the next so choosing an offset coupler is based on this difference.

#205 Multi Purpose HO Coupler Height Gauge: This might be the most important tool you'll have while working on knuckle couplers. The coupler installed in the #205 is set to the NMRA Standards S-1 of $\frac{25}{64}$ ", which is measured from the "top" of the rail to the "center" of the coupler. Checking "all" of your couplers to this height assures you that they are set at the "correct" height for top performance. The #205 gauge also checks for the correct height of the between the rails uncouplers, the correct trip pin height, and is used for a track gauge.

#208 and #209 Fiber Washers: The #208 (.015") and #209 (.010") are thin fiber washers used in many applications. They are used to raise body mounted coupler heights by placing the appropriate number of them between the truck and underframe. They'll usually fit over the king pin or pivoting post that the truck sits on. Normally you would not need more than .040" in combined thickness. Any more and the car will "wobble" too much so just use the next offset coupler. So if a #5 centerset coupler is about .040" too low then you would use the #47 underset coupler to raise the coupler height.

#211 Plastic Shims: These are a set of .010" and .015" thick shims designed to fit under the common #5 style of draft gear box to lower the coupler height, thus the term "shimming down". These are also very versatile shims and can be easily trimmed to different shapes for a multitude of applications.

#231 Greas-em: This is a tube of dry graphite lubricant that we recommend to be used in our couplers and other modeling applications to reduce friction. **NEVER** use oil or grease in couplers or in axle journals on trucks. It will attract dirt, dust, and grime of all sorts. Some will even soften plastics.

#237 Trip Pin Pliers: These are a specially designed pair of pliers made for adjusting the trip pin height on couplers from HO_{n3} up to O scales. All of our trip pins are factory set at the correct height, however, if the coupler is mounted correctly and the trip pin is too low or too high (check it with the #205 height gauge) it becomes necessary to adjust the pin. Be sure to carefully follow the instructions.

#241 Dual Tool: This is a "manual" uncoupling tool used if the modeler does not wish to use the magnetic uncoupling system. Many modelers wish to operate their layouts as prototypical as possible and they actually hand uncouple their trains just like the brakeman on a real railroad. After a bit of practice the tool is very easy to use (understanding how scale model couplers work will help a great deal). Also, as an extra feature the blade end of the tool has a little nub so this end can be used as a spring pick to install small coil springs, such as the knuckle springs on most couplers.

#256 Plastic 1/2" x 2-56 Screws: 2-56 screws are the most commonly used screws in HO model railroading. We recommend using screws to mount couplers where other methods are not provided. These screws can be used in threaded holes or with 2-56 hex nuts and being plastic can easily be trimmed to the appropriate length. 2-56 means that it is a #2 screw size with 56 threads per inch (a machine screw).

#321 Permanent Uncoupler: This is our most popular HO scale uncoupler. It is mounted between the rails and is designed to set on the ties of most code 100 track without modification. It is also used on code 83, 70, and smaller track. To mount the uncoupler at the correct height on code 83 or smaller track you'll need to trim the ties down or completely out then build back up to the correct height.

#334 Gluing Jig: This is a special "jig" used to make sure that the #321 or the #312 between the rails uncouplers are positioned correctly. This means correctly centered and at the right height. When the uncouplers' position is ready you would use the jig to place it onto the glue so it will be set properly while the glue sets up.

Important Helpful Hints:

- (1) Not all model manufacturers make their coupler mounting pockets and platforms the same and the coupler heights may vary from model to model. So do not assume that every model will use the same coupler or mounting method, treat each model individually concerning coupler mounting heights. You will find that certain models will need extensive modifications to attach knuckle couplers and others will not.
- (2) Make sure that "all" of your couplers are mounted at the "same height".
- (3) Always have the couplers mounted on the centerline of the model and mounted as level as possible avoiding any drooping or slanting of the coupler and draft gear box.
- (4) Couplers that do not match in height will slip up or down and uncouple at the most inopportune time. If the coupler is too low the trip pin will hang up on the trackage and if too high it will not properly function over the magnetic uncouplers. The inside of the knuckle is called the "pulling face" and when the two couplers are at a different height or angle the contact surface is reduced allowing more chances for an unwanted uncoupling.
- (5) "Couplers can not compensate for rough trackage". Even our #118 SF shelf coupler that keeps the couplers from slipping apart will only cause a derailment instead of an unwanted uncoupling on rough trackage. The limitations with the length of a model and the lack of the couplers' up and down flexibility means that you must take extra care when laying your track to make sure the joint connections are level and the transition into a grade is not too abrupt. The abrupt transition will cause the end of one car (model) to drop while the other cars end will stay level until the wheels reach the rise. This means, on an abrupt rise, the coupler on the lead car will, more or less, slip down and out of the other coupler.
- (6) It is recommended to mount couplers using screws or a method that you can access the coupler at anytime.
- (7) We do not recommend using glue to attach couplers. It should only be considered as the absolute "last" resort.
- (8) We recommend never to have a metal to metal coupler mounting. This helps avoid any chance of electrical shorting through the coupler. Although there are many locomotives that have insulated chassis this is still good practice and common sense. Always use a complete plastic draft gear box or a 20 or 30 series plastic shank coupler against any metal mounting surface on in a metal molded on coupler pocket.
- (9) Build a test track for coupler mounting and servicing. Use about 36" of spare straight track and mount a #321 uncoupler near the center. Mount some Kadee couplers on a couple of cars using the #205 coupler height gauge. Hand push the cars back and forth over the magnetic uncoupler, watch and learn what happens with the couplers. You'll start to see what happens and how they work, then you can apply what you learned to your layout operation.
- (10) Be sure to read the information carefully, each product has its' own set of instructions and much of the info will overlap and be interrelated.
- (11) Last but not least, don't be afraid to ask. If you have a coupler problem or question just ask us and we'll do our best to help.



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