



The Picker PC792A is the Highest Reliability 40 Amp Mini ISO Automotive Relay on the Market

Automotive Relay History

The ISO pin location that is the industry standard was pioneered in the latter half of the 1970s by Bosch of Germany. It is widely accepted that the original Bosch design still is they way to properly make a dependable high power automotive relay. An important part of this design is a hinged movable armature held in place and opened with a coil spring for long mechanical life. The second major part of the design is the braided copper strap that carries the power from the frame to the contacts. Many relay manufacturers have dropped the strap in favor of flat beryllium copper springs that both carry the load and operate the relay. It's a cheaper way of making the relay.

Life Testing Backs Up Our Claim

Picker life tested the PC792A along with five other competitors in a simulation of a head light switch. The test used three of each relay. The load was two Sylvania H7 bulbs wired in parallel at 13.6VDC drawing 14.9 -15.3 Amps of total current with the current decreasing as the bulbs age. Each relays was cycled on for 1 second with a 17 second off time. As of November 2016 the cycle count is 1.5 million and still running.

Results

<u>Manufacturer</u>	<u>Part Number</u>	<u>Results</u>
Song Chuan	896-1CH-C1-12VDC	All 3 failed between 131,000 and 175,000 cycles
Panasonic	CB1-T-M-12V	All 3 failed between 162,000 and 190,000 cycles
Zettler	AZ973-1C-12DC2	No Failures, Test Still Running
TE	V23134-A1052-648	No Failures, Test Still Running
Omron	G8JN-1C7T-MF-DC12	No Failures, Test Still Running
Picker	PC792A-1C-C1-12C-N-X	No Failures, Test Still Running

The failure mode in all cases is sticking contacts.



The test station as seen from the back which includes the bulbs and PLC and from the front with the relays and counters.

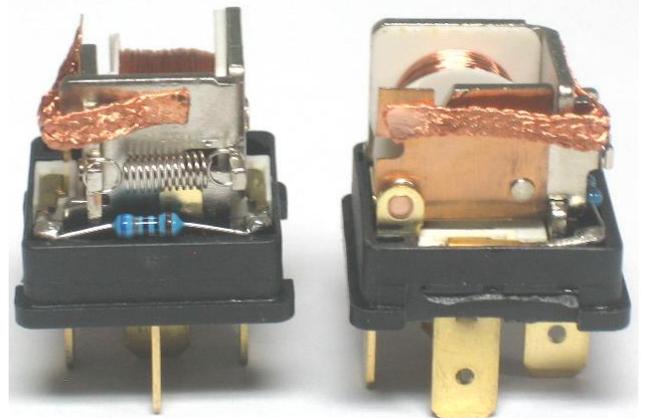




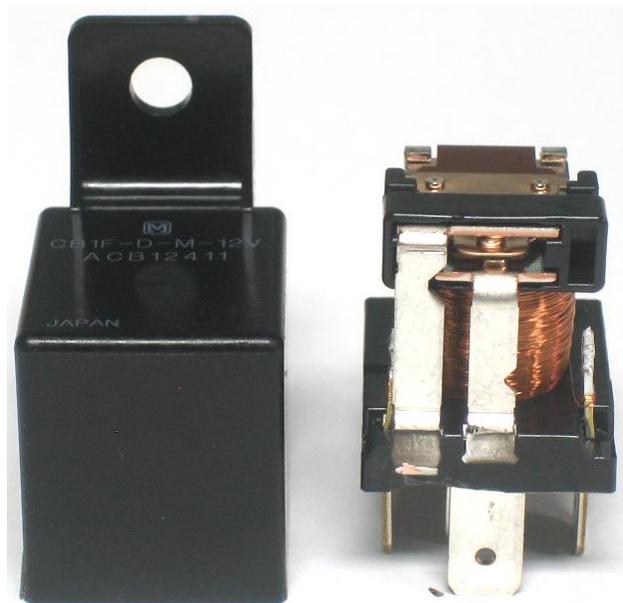
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Let's look at some photos

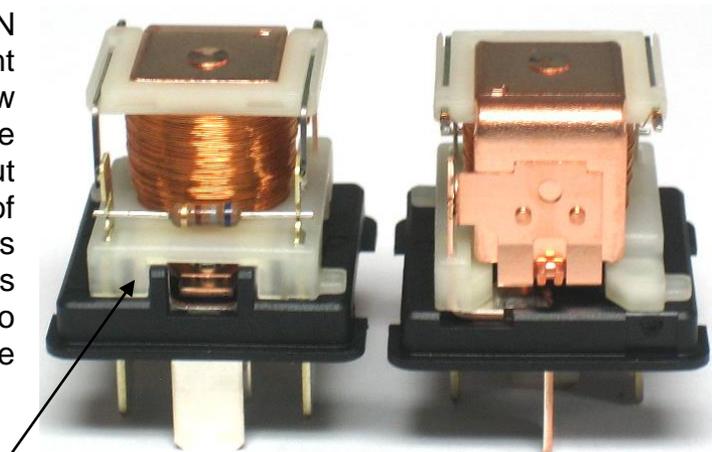
Shown at the right is the internal construction, of the accepted industry leader, Tyco's 40/30 amp ISO automotive relay. About 4 years ago Tyco purchased the Bosch relay line. The photo shows the coil spring and braided strap. This sample happened to have an internal resistor, which is clearly seen in the left view.



The next photo is of the Panasonic (Aromat) CB1, 40/30 automotive relay. No braided strap and no coil spring. The power is carried by a flat beryllium copper spring. Now we are talking about 40 amps and a relay that is often used around very hot gasoline and diesel motors. I have seen this style relay get so hot that these beryllium copper flat springs become annealed and the relay doesn't work anymore. To make things even worse, Aromat puts the contacts at the very top of the relay a very long way away from the relay socket. The power has to go all the way to the top of the relay and back down again making things even hotter.



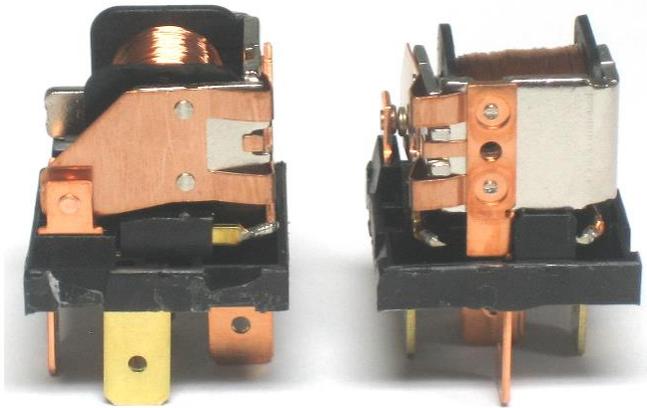
This next photo is of the Omron G8JN 40/30 automotive relay. The right hand view shows the two narrow beryllium copper springs that carry the entire power load. At least Omron put the relay contacts near the bottom of the relay. What is difficult to see is the narrow Strip of copper that goes from the normally open terminal up to the normally open contact. See the arrow.



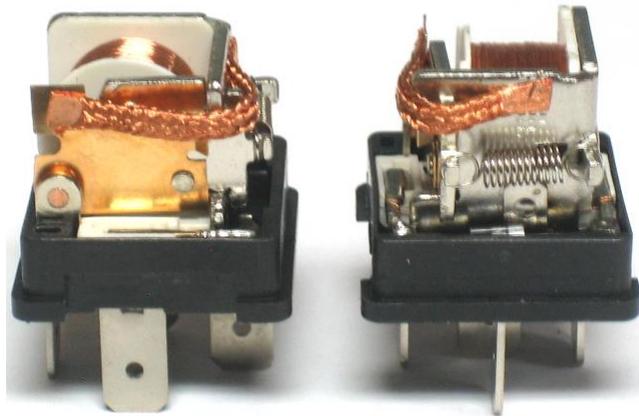


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The next is the Song Chuan 896H. They stayed close to the Bosch design of the frame and armature but did away with the coil spring and braided strap. Again the two narrow beryllium copper springs carry the load.



Finally here is our PC792A relay. Looks a little bit like the Tyco (Bosch) design, doesn't it? Below is the Tyco again for comparison. The only way to tell them apart, except for the resistor is that the Tyco terminals are unplated, while ours are nickel plated. We have sold over 4 million of these relays over the past few years and don't get any back.



As a side note, the Aromat and Omron terminals are plated. But if you look closely, you can see copper on the edges of their terminals. They plate the material in the flat, then punch out and form the terminals. We plate our terminals after they are formed.

