

** Evolution of the 2028-109 Armature **



The original 2028-109 with the 226E-55 commutator. Black fiber insulators at ends of laminations, and fiber thrust collar at base of laminations.

The second 2028-109, with the 226E-55 commutator, but with rolled thread shaft. Black fiber insulators at ends of laminations, and fiber thrust collar at base of laminations.



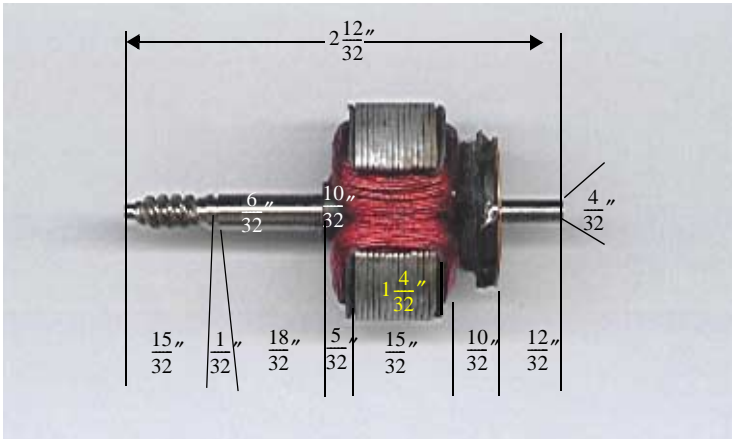
The third 2028-109 (ca. 1962), with the new 1055-130 commutator from 1962. Black fiber insulators at ends of laminations. Fiber thrust collar on shaft at base of armature windings stack retained.


The MPC 2028-109 with the white commutator. Black plastic insulators at ends of laminations. Natural Zytel thrust collar on shaft at base of armature windings.

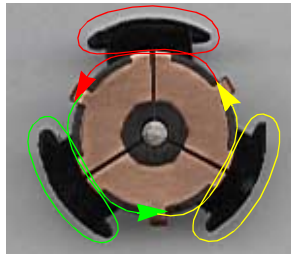


The LLC 2028-109 with the 6-00-8606-130 commutator. Insulating epoxy resin replaces fiber/plastic as lamination insulator. Nickel/steel clip replaces fiber/Zytel thrust collar at base of armature. Still available from Lionel in 1999.

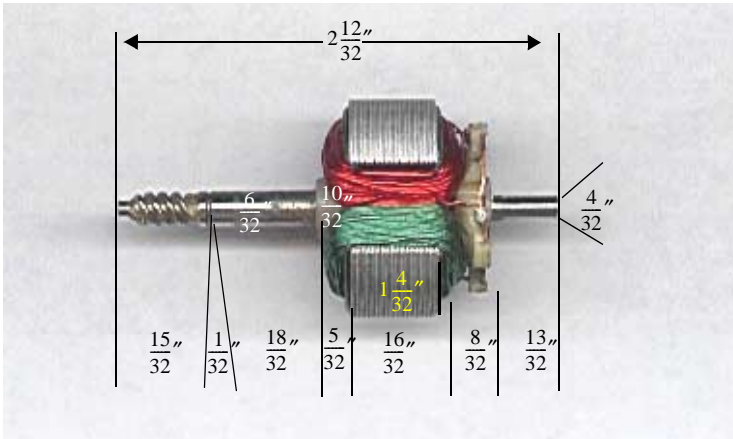
** The 2028-109 Armature (1962 & Later) **




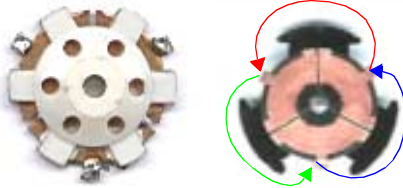
<i>Armature Detail</i>	<i>Specifications</i>	
	<i>Wire Size:</i>	28 (0.0116)
	<i># of Turns:</i>	129
	<i>Style:</i>	Layered ...
	<i># of Layers:</i>	10
	<i>Direction:</i>	Clockwise
	<i>Resistance:</i>	1.3 - 1.4 Ω
	<i>Laminations:</i>	13 Metal; 2 Fiber.
	<i>Wire Length:</i>	20'7"



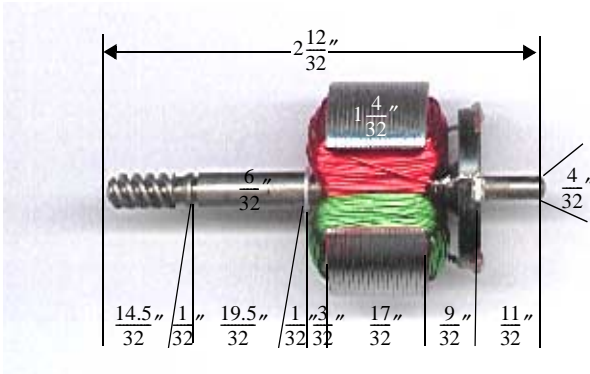
** The 2028-109 Armature (MPC) **




<i>Armature Detail</i>	<i>Specifications</i>	
	<i>Wire Size:</i>	28 (0.0115)
	<i># of Turns:</i>	133
	<i>Style:</i>	Layered ...
	<i># of Layers:</i>	10
	<i>Direction:</i>	Counter-Clockwise
	<i>Resistance:</i>	1.4 Ω
	<i>Laminations:</i>	18M 2F
	<i>Wire Length:</i>	21' 9"



** The 2028-109 Armature (thru 1999) **



<i>Armature Detail</i>	<i>Specifications</i>	
	<i>Wire Size:</i>	28 (0.0120)
	<i># of Turns:</i>	130
	<i>Style:</i>	Layered ...
	<i># of Layers:</i>	10
	<i>Direction:</i>	Counter-Clockwise
	<i>Resistance:</i>	1.3 Ω
	<i>Laminations:</i>	20M
	<i>Wire Length:</i>	21' 6"

