File E13288
Project 4789573423

October 23, 1981

REPORT

on

Recognized Component – Wire Connector

Tyco Electronics Corp.

2901 Fulling Mill Rd

Middletown, PA, 17057 US

DESCRIPTION

PRODUCT COVERED:

USR, CNR - Component-Magnet Wire Connectors, Type, MAG-MATE™ Wire Interconnect System part numbers 62896-3, 63660-1, 63661-1, 63668-1,63668-2, 5-62420-1, 5-62888-1, 5-62935-1 and 5-63340-1.

USR, CNR - Component-Magnet Wire Connectors, Type, MAG-MATE™ Wire Interconnect System, Part number 1-928771-4, 2990000-2, 2990001-2.

USR, CNR – Component- Magnet Insulation Displacement Connectors, Type, MAG-MATE™, Part. No. 2825575-2.

USR, CNR - Component-Magnet Wire Connectors, Type, MAG-MATE™ Wire Interconnect System, Part numbers 63663-1, 63663-2, **63663-3**, **63145-2.**

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

Products designated USR have been investigated using US requirements as noted in the Test Record.

Products designated CNR have been investigated using CSA requirements as noted in the Test Record.

ENGINEERING CONSIDERATIONS:

These devices are wire connectors intended for factory assembly on copper or aluminium magnet wire without stripping the conductor insulation. They are suitable for use in equipment where the acceptability of the combination has been judged by UL LLC.

Conditions of Acceptability - In order to be judged acceptable as a component of electrical equipment, the following lists of conditions should be met.

1. The devices are for assembly of round magnet wire employing insulation as follows: enamelled, varnished or nylon wrap (Nomex).

2. These devices do not provide strain relief.

3. These devices are for assembly using this manufacturer's plastic cavity specifications, and hand tool or hand loaded semi-automatic bench machine. See Ill. 1 for installation instructions and tooling information.

4. These devices were tested in thermoplastic "test cavities" molded of Recognized Component plastic (QMFZ2), Valox 420 by General Electric Co. The acceptance of other plastic materials shall be judged in end-use applications.

5. Heating and Cycling Tests - The connectors were judged with respect to their ability to carry current based on their max wire sizes by subjecting them to Heating and Cycling Tests without vibration in 80°C ambient. Refer to the Test Records for temperature rises recorded. The acceptability of the temperature rises in the Heating and Cycling Tests including any higher temperature rise is to be judged with respect to the requirements of the equipment in which the magnet wire connectors are used.

6. Vibration - Connectors were not subjected to Vibration Tests. The possible effects to vibration shall be considered in the end product use.

7. Types intended for "Leaf" contacts are not provided with a detent. The Temperature Rise Test was conducted with a brass leaf, 0.025 in thick, 0.1 in wide inserted into the MAG-MATE and carrying current. The acceptability of other sizes of mating leaf and the need for a detent or other retaining means should be determined in the end product.

8. Intermixing of copper and aluminium magnet wires shall be limited to dry locations.

Rating - The copper and aluminium magnet wires are rated in accordance with the following tabulations. Refer to the illustrations for catalog numbers and associated wire sizes.

Standard MAG-MATE (.120 by .135 by .300 box)			Small box (.09 by .07 by .187) Mini-MAG-MATE	
Magnet Wire Size AWG	Current Rating (A) Copper	Aluminium	Magnet Wire Size-AWG Copper Only	Current Rating (A)
13	21	14.5		
14	18.5	12.75		
15	16	10.75		
16	14	9.05		
17	11.0	7.5	22	4.5
18	10.0	6.75	23	3.75
19	9.0	6.0	24	3.5
20	8.0	5.5	25	3.0
21	7.0	4.75	26	2.5
22	6.25	4.25	27	2.0
23	5.5	3.75	28	1.75
24	4.75	3.25	29	1.5
25	4.0	2.75	30	1.25
26	3.75	2.5	31	0.75
27	3.0	2.0	32	0.5
28	2.5	1.75	33	0.5
29	2.25	N/A	34	0.5
30	1.75	N/A	35	0.5
31	1.0	N/A	36	0.5
32	0.75	N/A	37	0.5
33	0.5	N/A	38	0.5

Cat. No. 2825575-2 is rated for 0.311-0.567mm^2 and (2) 0.311 - 0.50mm^2. Refer to Ill. 139 for details.

Cat. Nos. 2990000-2 and 2990001-2 are rated for (1-2) 0.70-1.05mm^2. Refer to Ill. 143 for details.

9. The Splice terminal Mag-Mate, part number 1742996-1 may terminates with the wire size range 19-17 AWG, Sol, Cu, magnet wire, and 18-16.5 AWG, Sol, Al, magnet wire. As for the construction detail, refer to ILL. 123.

10. All devices except for Cat. Nos. 1742940-1, 1742996-1, and 2825575-2 are constructed of base metal C260 (70% Cu, 29% Zn) or C274 (Zn C274 - 64% Cu, 35% Zn). Cat. Nos. 1742940-1 and 1742996-1 are constructed solely of C274 copper alloy base metal (62-64% Cu and balance is practically all zinc content) construction. Cat. No. 2825575-2 is made of C19010 CuNiSi copper alloy.

11. Cat. Nos. 1742940-1 and 62958-1 have an assigned supplemental rating of one or two No. 27-24AWG sol Al magnet wire. Pull to Displacement was only conducted on representative 62958-1. The min pull out force recorded was 5.64lb for two - No. 27 and 5.4lb for two No. 24 AWG sol Al magnet wire. The suitability of this wire range shall be an end-product consideration.

12. Cat. Nos. 2825382-1, 2825380-1 are intended to be used internal to an end-product where they will not be subject to any stress or force as these devices have not been subjected to the Pullout test. Pull to Displacement was only conducted on representative 2825382-1. The min pull out force recorded was 1.5 lb for 24 AWG solid Al magnet wire. As for the construction detail, refer to ILLs. 130, 131.

13. Cat. Nos. 2328510-1 is identical to that of Cat. No. 63273-1 with the exception that the quick connect tab has a hole in Cat. No. 2328510-1. See ILL. 132 for dimensional details.

14. Cat. No. 1742347-1 is identical to that of Cat. No. 62833-1 with the exception that Cat. No. 1742347-1 has three wire slots instead of one. See ILL. 133 for dimensional details.

15. The Splice terminal Mag-Mate, Cat. number 1217579-1 may terminates with the wire size range 13-14 AWG, Sol, Cu, magnet wire, and 12-13 AWG, Sol, Al, magnet wire. Cat. No. 1217579-1 is intended to be used internal to an end-product where they will not be subject to any stress or force as these devices have not been subjected to the Pullout test. Pull to Displacement was conducted. The min pull out force recorded was 36 lb for 14 AWG solid Cu magnet wire. The min pull force recorded was 46.5 lb when breaking 13 AWG solid Al magnet wire before pulling out the wire. As for the construction detail, refer to ILL. 134.

16. The Mag-Mate Leaf terminal, Cat. No. 1-928771-4 may terminate with the wire size range 17-19 AWG, Sol, Cu, magnet wire. Cat. No. 1-928771-4 is intended to be used internal to an end-product where they will not be subject to any stress or force as these devices have not been subjected to the Pullout test. Pull to Displacement test was conducted. The min pull force recorded was 34.5 lb when breaking 19 AWG solid Cu magnet wire before pulling out the wire. As for the construction detail, refer to ILL. 137.

17. Cat. No. 62896-3 is identical to Cat. No. 62896-1 with the exception of a different packaging option. **Cat. Nos. 5-62420-1, 5-62888-1, 5-62935-1 and 5-63340-1 are identical to models 62429-1, 62888-1, 62935-1 and 63340-1 respectively, except for different packaging. See ILLs. 139-142 for Cat. Nos. 5-62420-1, 5-62888-1, 5-62935-1 and 5-63340-1 respectively.**

*18. Cat No. 2825575-2 was subjected to the following tests with the interpolated test parameters, listed below. Heating tests were conducted with the indicated conductors installed into the insulation displacement connection and soldered directly onto the adjacent sample’s PCB pin. Testing was done at an elevated ambient of 80C. Suitability of these connections shall be determined in the end product.

Wire size, mm^2	Static Heating Current, A (per wire)	Current Cycling Current, A (per wire)	Pull force, lbs. (per wire)
0.567	12.8	18.1	14.1
Two - 0.50	25.4 (total) current)	33.3 (total) current)	12.6

19. Cat. No. 2990000-2 and 2990001-2 are identical except for the fast-on tap.

20. Cat. Nos. 63663-2, 63663-3 are identical to Cat. No. 63663-1(ILL. 91) with the exception of a different packaging option and varnish coating only for 63663-1. See Ill. 144 for construction details.

21. Cat. Nos. 63663-2, 63663-3 are intended to be used internal to an end-product where they will not be subject to any stress or force as these devices have not been subjected to the Pullout test. Pull to Displacement was only conducted on representative 63663-2. The min pull out force recorded was 4.8 lb for 19 AWG solid Al magnet wire and 3.1 lb for 21 AWG solid Al magnet wire. As for the construction detail, refer to ILL. 144.

22. Cat. No. 63145-2 is identical to Cat. No. 63145-1. The only difference is the a nickel plating under the tin. See ILL. 67A for dimensional details.