



Scotchcast™ Reenterable Signal and Control Cable Splicing Kits 78-R Series

Data Sheet

Product Description

3M™ Scotchcast™ Reenterable Splicing Kits 78-R Series are a series of compound filled splices which utilize a modular system approach to joining signal and control cables. The modular concept permits subsequent reentry into the splice, with the mold body and hardware being reusable. The kits are designed for use on shielded or non-shielded constructions of plastic or rubber jacketed cables. Five kit sizes cover a range of cable diameters from 0.25 to 2.50 inches (6,3 – 63,5 mm), and will accommodate inline, wye, “X”, butt and dead-end splice configurations.

The 78-R Series Splice is comprised of a strong reusable transparent PVC splice body filled with a clear, reenterable, polybutadiene compound, 3M™ Scotchcast™ Reenterable Electrical Insulating Resin 2123. The splices provide for strain relief, shield jumpering, multiple cable entry and compound spacing. The kits are sized for, but do not include 3M™ Scotchcast™ Insulating Butt, Self-Stripping Tap or Pigtail, and Spring Twist-on Connectors. The completed splice is designed and tested for direct burial.

Kit Contents

Each kit contains sufficient quantities of the following materials to make one splice, excluding connectors.

- One two-part transparent mold body of tough PVC construction with tongue and groove seams and built-in spacer web.
- Two flexible end caps — each with double stepped cable entry ports to accommodate the many splicing configurations possible.
- Two snap-in caps (one with Kit 78–R1) to cap-off fill ports after compound pouring.
- Strain Bar(s) with insulator sleeve(s): one in Kits 78–R1 and 78–R2; two in Kits 78–R3, 78–R4 and 78–R5.
- Four 3M™ Shield Connectors 4460–S to provide shield continuity with Strain Bar(s) for shielded cables.
- Stainless steel hose clamps to secure splice body, end caps and strain bar(s).
- 3M™ Scotchcast™ Reenterable Electrical Insulating and Sealing Compound 2123 in convenient Unipak™ containers(s).
- One large funnel in kits 78-R2, 78–R3, 78–R4 and 78–R5.
- Scotch™ Electrical Tape 23 for sealing cables and entry ports.

One non-conductive abrasive cloth for cable preparation.
Comprehensive instructions showing proper installation and reentry techniques for shielded and non-shielded signal and control cables.

Splice Features

- Versatility is designed into each kit to allow a wide range of cable sizes.
- Each splice will accommodate shielded or non-shielded cable.
- Reenterability is clean and easy.
- Splice body and hardware are reusable.
- Modular concept provides for inline, wye, “X”, butt and dead-end splice configurations.
- Convenient kits simplify ordering and stocking.
- Tough PVC mold body with built-in spacer web automatically provides for cable centering and compound coverage.
- Compound has low viscosity and exotherm.
- No special tools required — normal hand tools only.

Applications

- For inline, wye, “X” or butt splicing of shielded or non-shielded cables.
- For dead-ending cable for future reentry and splicing.
- For reenterability for future access to tapping or other splice work.
- For use on cables with plastic or rubber insulated conductors.
- For use in direct burial applications.
- For use with indoor or underground systems:
 - manhole
 - handhole
 - junction boxes
 - vault
 - cable tray
 - duct
- For joining cable reel ends.
- For cable failures and dig ins
- For reentry test points.

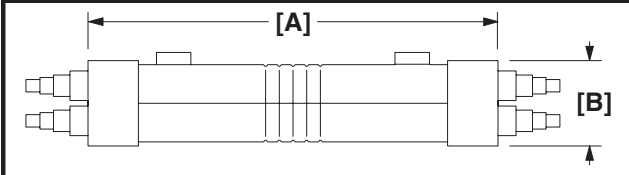
Kit Selection Table

3M™ Scotchlok Connectors								
Cable Diameter			Insulated Butt Connectors					
			18 – 22 AWG		14 – 16 AWG		10 – 12 AWG	
			MV18BC MN18BC		MV14BC MN14BC		MV10BC MN10BC	
Kit No.	Run	Tap	No. Cond.	No. Pairs	No. Cond.	No. Pairs	No. Cond.	No. Pairs
78-R1	0.25 – 1.00 (6,3 – 25,4 mm)	0.25 – 1.00 (6,3 – 25,4 mm)	40	20	26	13	16	8
78-R2	0.25 – 1.00 (6,3 – 25,4 mm)	0.25 – 1.00 (6,3 – 25,4 mm)	66	33	45	22	26	13
78-R3	0.50 – 1.50 (12,7 – 38,1 mm)	0.50 – 1.00 (12,7 – 25,4 mm)	160	80	110	55	70	35
78-R4	0.50 – 2.00 (12,7 – 50,8 mm)	0.50 – 1.75 (12,7 – 44,4 mm)	300	150	180	90	110	55
78-R5	1.00 – 2.50 (25,4 – 63,5 mm)	1.00 – 2.50 (25,4 – 63,5 mm)	550	275	320	160	200	100
Cable Diameter			Pigtail Connectors					
			12 – 18 AWG		10 – 14 AWG		16 – 22 AWG	
			“Y”		“R”		557	
Kit No.	Run	Tap	No. Cond.	No. Pairs	No. Cond.	No. Pairs	No. Cond.	No. Pairs
78-R1	0.25 – 1.00 (6,3 – 25,4 mm)	0.25 – 1.00 (6,3 – 25,4 mm)	8	4	5	2	15	7
78-R2	0.25 – 1.00 (6,3 – 25,4 mm)	0.25 – 1.00 (6,3 – 25,4 mm)	20	10	10	5	30	15
78-R3	0.50 – 1.50 (12,7 – 38,1 mm)	0.50 – 1.00 (12,7 – 25,4 mm)	50	25	28	14	80	40
78-R4	0.50 – 2.00 (12,7 – 50,8 mm)	0.50 – 1.75 (12,7 – 44,4 mm)	84	42	60	30	142	71
78-R5	1.00 – 2.50 (25,4 – 63,5 mm)	1.00 – 2.50 (25,4 – 63,5 mm)	174	87	120	60	260	130
Cable Diameter			IDC Connectors					
			16 – 22 AWG		14 – 18 AWG		10 – 12 AWG	
			558		560		562	
Kit No.	Run	Tap	No. Cond.	No. Pairs	No. Cond.	No. Pairs	No. Cond.	No. Pairs
78-R1	0.25 – 1.00 (6,3 – 25,4 mm)	0.25 – 1.00 (6,3 – 25,4 mm)	10	5	8	4	6	3
78-R2	0.25 – 1.00 (6,3 – 25,4 mm)	0.25 – 1.00 (6,3 – 25,4 mm)	20	10	16	8	12	6
78-R3	0.50 – 1.50 (12,7 – 38,1 mm)	0.50 – 1.00 (12,7 – 25,4 mm)	50	25	40	20	36	18
78-R4	0.50 – 2.00 (12,7 – 50,8 mm)	0.50 – 1.75 (12,7 – 44,4 mm)	100	50	80	40	68	34
78-R5	1.00 – 2.50 (25,4 – 63,5 mm)	1.00 – 2.50 (25,4 – 63,5 mm)	200	100	160	80	130	65

NOTE: Above figures based on IMSA Cable Specifications.

Table 1

Typical Dimensions



Kit Number	A Inches (mm)	B Inches (mm)
78-R1	12.50 (318 mm)	2.75 (70 mm)
78-R2	24.50 (622 mm)	2.75 (70 mm)
78-R3	24.50 (622 mm)	3.81 (97 mm)
78-R4	24.50 (622 mm)	4.81 (122 mm)
78-R5	26.50 (673 mm)	6.00 (152 mm)

Table 2

Physical and Electrical Properties

3M™ Scotchcast™ Reenterable Electrical Insulating Resin 2123 is used in the 3M™ Scotchcast™ Reenterable Signal and Control Cable Splicing Kits 78-R Series. Typical data has been provided for both resin and kits as follows:

Scotchcast 2123 Reenterable Resin Electrical Insulating and Sealing Compound

Physical Properties

Test Method	Typical Value*
Isocyanate Content	Not Isocyanate Based
Viscosity Mixed (25°C) (3M Test Method) Brookfield Viscometer	670 cps
Gel Time (min) Sunshine Gel Meter (100 g mass) 4°C (4°F) 24°C (75°F) 43°C (110°F)	105 min 62 min 34 min
Maximum Exotherm 180 g mass in Calorimeter 23°C (75°F) ambient	6°F Rise
Heat Aging (% Wt. loss 95°C (203°F) for 168 hrs)	2
Copper Corrosion West Elect. Spec. AT-8612 (MS 17000, Sec 1139)	None
Water Absorption (3M Test Method) (% Wt. Gain)	0.2
Fungus Resistance (ASTM 621)	"0" Growth

Electrical Properties

Test Method	Typical Value*
Dielectric Strength (ASTM D 149-64) (volts/mil) 125 mil thickness	> 240
Insulation Resistance (ohms) West Elect. Spec. (MS 17000, Sec 1182)	> 4 x 10 ¹⁵

78-R Series Splicing Kits Physical and Electrical Properties

Test Method	Typical Value*
Insulation Resistance @ 1000 V after 24 hr submersion UL 486 D, Sequence A	3.1 x 10 ¹⁵ ohms
Dielectric Withstand (1 min) @ 2200 V, after 24 hr submersion UL 486 D, Sequence A	Pass
Insulation Resistance @ 1000 V, after 72 hrs @ 90°C, flexing and twisting, 24 hr. submersion UL 486 D, Sequence A	1.68 x 10 ¹⁵ ohms
Dielectric Withstand (1 min) @ 2200 V, after 72 hrs @ 90°C, flexing and twisting, 24 hr. submersion UL 486 D, Sequence A	Pass
Insulation Resistance @ 1000 V, after 4 hrs @ -18°C, flexing and twisting, 24 hr submersion UL 486 D, Sequence A	3.5 x 10 ¹⁵ ohms
Insulation Resistance @ 1000 V, after 25 cycles heat and submersion UL 486 D, Sequence A	2.1 x 10 ¹⁰ ohms
Insulation Resistance @ 1000 V, after 50 cycles heat and submersion UL 486 D, Sequence A	2.0 x 10 ¹³ ohms
Dielectric Withstand (1 min) @ 2200 V, after 50 cycles heat and submersion UL 486 D, Sequence A	Pass
Leakage Current Test 600V, after 50 cycles heat and submersion UL486 D, Sequence A	0.10 mA
Impact Test after 2 hrs @ -10°C after 168 hrs @ 113°C UL 486 D, Sequence A	Pass Pass
Dielectric Withstand (1 min) @ 2200 V, after impact and 4 hr submersion @ 25°C UL 486 D, Sequence A	Pass

* These are typical values and should not be used for specification purposes.

Storage

The components within this kit are stable under normal storage conditions. Normal storage and stock rotation are recommended. The resin has a 2-year shelf life for best results.

Availability

3M™ Scotchcast™ Reenterable Signal and Control Cable Splicing Kits 78-R Series are available in five sizes for inline or tap splicing. They are packaged one kit per carton. Connectors are not included.

3M™ Scotchcast™ 7820 Spacer Web and 3M™ Scotchcast™ Reenterable Resin Electrical Insulating and Sealing Compound 2123 may be ordered separately for splice rework. Spacer Web 7820, 3" x 20' roll is packaged two rolls per box. Compound 2123 in the Unipak Container, is available in three sizes: Size C 12.3 oz. (350 g), Size D 21.2 oz. (600 g), and Size H 52.8 oz. (1500 g). Size C and D are packaged one container per carton, ten containers per case. All products are available from your local authorized 3M electrical distributor.

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Electrical Markets Division

6801 River Place Blvd.
Austin, TX 78726-9000
800-626-8381
Fax 800-828-9329
www.3M.com/electrical



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