

Wire-to-Wire Splicing

SolderGrip closed end connector splices

Fax-on-Demand: (800) 260-9099
(650) 361-6523

FAX ID	Description
5900	Data sheet

Before ordering check with factory for most current data.



Applications
Stub wire splices.

Features/Benefits

- Transparent Kynar insulation sleeve provides encapsulation, inspectability, strain relief, and insulation.
- Spiral copper coil grips and compresses the conductors for the optimum solder connection.
- Prefluxed solder preform provides a controlled soldering process.
- The SGRS series has an adhesive insert to provide immersion sealing performance.
- One-piece design makes installation easy.
- Splices accommodate a wide variety of conductor types, quantities, sizes, and plating types unmatched by any other termination technique.
- UL, CUL, and CEBEC recognized.



Product Options

Product series	Environmental protection
SGRP	Splashproof
SGRS	Sealed

Product Selection Process

1. From the Product Options table above, select the product series appropriate for your application.
2. Determine the wire combination (number of wires and size) of the wire bundle you wish to splice.
3. Use Table C (page 9-14) to select the correct connector for AWG wire combinations.* For mm² wire combinations use Table A to select a SolderGrip part number.
4. Verify that the wire bundle (with wire insulation) does not exceed the maximum diameter allowed for the connector you selected. Simply check the bundle's diameter against the maximum diameter that Table A (page 9-13) lists for that part.
5. Verify that the total amperage to be applied does not exceed the maximum amp rating for the part as specified in Table A.

Example: For connecting a bundle with one 12 AWG wire (1 #12) and two 14 AWG wires (+2 #14), you need an SGRP-4 connector. For sealed parts, select the SGRS series.

*If the wire combination is not listed in Table C, use the CMA (mm²) method of determining wire bundle size (see "CMA/mm² Calculation" on page 9-13). Using Table B (page 9-13), select the smallest size connector that will fit your total wire CMA (mm²) value.

Table A: Part Number Selection (mm/in)

SolderGrip part number		Max. bundle diameter [†]		Maximum amp rating	Wire range (min.–max.) CMA/mm ²	Typical length
Splashproof	Sealed	SGRP	SGRS			
SGRP-1	SGRS-1	4.0 (0.15)	3.3 (0.130)	17 A	1400–4800 (0.7–2.4)	38.0 (1 1/2)
SGRP-2	SGRS-2	6.0 (0.24)	4.5 (0.175)	28 A	4000–8000 (2.0–4.0)	38.0 (1 1/2)
SGRP-3	SGRS-3	8.5 (0.33)	7.0 (0.275)	56 A	7000–16,000 (3.5–8.0)	44.5 (1 3/4)
SGRP-4	SGRS-4	10.5 (0.41)	9.0 (0.350)	84 A	15,000–24,000 (7.5–12.0)	44.5 (1 3/4)

[†]Maximum bundle diameter is measured over wire insulation.

CMA/mm² Calculation

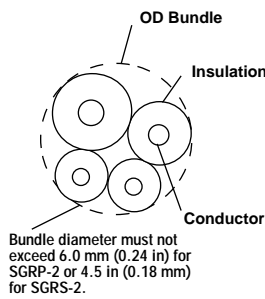
To calculate the total circular mil or mm² area of the wire bundle to be terminated, follow these steps:

1. Choose either CMA or mm² as your unit of measure for selection purposes and continue to use it for all your selection criteria. (Both measures provide the same results.)
2. In the workspace below, list the CMA or mm² for each conductor in the bundle. (Table B provides the CMA of typical conductors.)
3. Add together the values listed in the workspace below to obtain the total area.
4. Use Table A to select the smallest terminator that will fit the total CMA (mm²).

CMA/mm² Example

22 AWG/.38 CMA 754	■
22 AWG/.38 CMA 754	■
18 AWG/.95 CMA 1900	■
16 AWG/1.21 CMA 2426	■

Total CMA = 5834
 Total mm² = 2.92
 Correct part number
 (based on CMA of 5834
 or mm² of 2.92): SGRP-2
 or SGRS-2



Wire number	CMA	mm ²	SolderGrip part number
1	_____	_____	
2	_____	_____	
3	_____	_____	
4	_____	_____	
5	_____	_____	
6	_____	_____	
7	_____	_____	
8	_____	_____	
9	_____	_____	
10	_____	_____	
Total	_____	_____	_____

Table B. CMA of Typical Copper Conductors

AWG	28	26	24	22	20	18	16	14	12	10	8
CMA	177	304	475	754	1216	1900	2426	3831	5874	9354	16983
mm ²	0.09	0.15	0.24	0.38	0.61	0.95	1.21	1.92	2.94	4.74	8.61

Table C. SolderGrip Wire Combinations

Wire combinations	Splashproof	Sealed	Wire combinations	Splashproof	Sealed	Wire combinations	Splashproof	Sealed
1 # 8 + 1 # 12	SGRP-4	SGRS-4	1 # 14 + 3 # 20	SGRP-2	SGRS-2	2 # 16 + 1 # 18 + 3 # 20	SGRP-3	SGRS-3
1 # 8 + 1 # 16	SGRP-4	SGRS-4	1 # 14 + 4 # 20	SGRP-3	SGRS-3	2 # 16 + 1 # 18 + 2 # 20	SGRP-3	SGRS-3
2 # 8 + 2 # 16	SGRP-4	SGRS-4	1 # 14 + 1 # 18	SGRP-2	SGRS-2	2 # 16 + 1 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 8 + 1 # 14	SGRP-4	SGRS-4	1 # 14 + 1 # 18 + 1 # 20	SGRP-2	SGRS-2	2 # 16 + 1 # 18	SGRP-2	SGRS-2
1 # 8 + 1 # 14 + 1 # 16	SGRP-4	SGRS-4	1 # 14 + 2 # 18	SGRP-2	SGRS-2	2 # 16 + 4 # 20	SGRP-3	SGRS-3
1 # 10 + 1 # 18	SGRP-3	SGRS-3	1 # 14 + 3 # 18	SGRP-3	SGRS-3	2 # 16 + 3 # 20	SGRP-3	SGRS-3
1 # 10 + 2 # 18	SGRP-3	SGRS-3	1 # 14 + 4 # 18	SGRP-3	SGRS-3	2 # 16 + 2 # 20	SGRP-2	SGRS-2
1 # 10 + 3 # 18	SGRP-3	SGRS-3	1 # 14 + 5 # 18	SGRP-3	SGRS-3	2 # 16 + 1 # 20	SGRP-2	SGRS-2
1 # 10 + 1 # 16	SGRP-3	SGRS-3	1 # 14 + 1 # 16	SGRP-2	SGRS-3	2 # 16	SGRP-2	SGRS-2
1 # 10 + 1 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 14 + 1 # 16 + 1 # 20	SGRP-2	SGRS-2	1 # 16 + 5 # 18	SGRP-3	SGRS-3
1 # 10 + 1 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 14 + 1 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 4 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 10 + 2 # 16	SGRP-3	SGRS-3	1 # 14 + 1 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 16 + 4 # 18	SGRP-3	SGRS-3
1 # 10 + 3 # 16	SGRP-4	SGRS-4	1 # 14 + 1 # 16 + 3 # 18	SGRP-3	SGRS-3	1 # 16 + 3 # 18 + 2 # 20	SGRP-3	SGRS-3
1 # 10 + 4 # 16	SGRP-4	SGRS-4	1 # 14 + 1 # 16 + 4 # 18	SGRP-3	SGRS-3	1 # 16 + 3 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 10 + 5 # 16	SGRP-4	SGRS-4	1 # 14 + 2 # 16	SGRP-3	SGRS-3	1 # 16 + 2 # 18 + 3 # 20	SGRP-3	SGRS-3
1 # 10 + 1 # 14	SGRP-3	SGRS-3	1 # 14 + 2 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 2 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 10 + 1 # 14 + 1 # 18	SGRP-3	SGRS-3	1 # 14 + 2 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 16 + 2 # 18	SGRP-2	SGRS-2
1 # 10 + 1 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 14 + 2 # 16 + 3 # 18	SGRP-3	SGRS-3	1 # 16 + 1 # 18 + 4 # 20	SGRP-3	SGRS-3
1 # 10 + 1 # 14 + 2 # 16	SGRP-3	SGRS-3	1 # 14 + 3 # 16	SGRP-3	SGRS-3	1 # 16 + 1 # 18 + 3 # 20	SGRP-2	SGRS-2
1 # 10 + 1 # 14 + 3 # 16	SGRP-4	SGRS-4	1 # 14 + 3 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 1 # 18 + 2 # 20	SGRP-2	SGRS-2
1 # 10 + 2 # 14	SGRP-4	SGRS-4	1 # 14 + 3 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 16 + 1 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 10 + 3 # 14	SGRP-4	SGRS-4	1 # 14 + 4 # 16	SGRP-3	SGRS-3	1 # 16 + 1 # 18	SGRP-1	SGRS-1
1 # 10 + 1 # 12	SGRP-3	SGRS-3	1 # 14 + 4 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 4 # 20	SGRP-2	SGRS-2
1 # 10 + 1 # 12 + 1 # 14	SGRP-4	SGRS-4	1 # 14 + 5 # 16	SGRP-3	SGRS-3	1 # 16 + 3 # 20	SGRP-2	SGRS-2
1 # 10 + 2 # 12	SGRP-4	SGRS-4	2 # 14	SGRP-2	SGRS-2	1 # 16 + 1 # 20 + 1 # 22	SGRP-1	SGRS-1
2 # 10	SGRP-4	SGRS-4	2 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 16 + 1 # 20	SGRP-1	SGRS-1
2 # 10 + 1 # 16	SGRP-4	SGRS-4	2 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 16 + 3 # 22	SGRP-1	SGRS-1
1 # 12 + 1 # 18	SGRP-2	SGRS-2	2 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 16 + 2 # 22	SGRP-1	SGRS-1
1 # 12 + 2 # 18	SGRP-3	SGRS-3	2 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 16 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 3 # 18	SGRP-3	SGRS-3	2 # 14 + 2 # 16	SGRP-3	SGRS-3	1 # 18 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 4 # 18	SGRP-3	SGRS-3	2 # 14 + 2 # 16	SGRP-3	SGRS-3	1 # 18 + 2 # 22	SGRP-1	SGRS-1
1 # 12 + 5 # 18	SGRP-3	SGRS-3	2 # 14 + 3 # 16	SGRP-3	SGRS-3	1 # 18 + 3 # 22	SGRP-1	SGRS-1
1 # 12 + 1 # 16	SGRP-3	SGRS-3	2 # 14 + 4 # 16	SGRP-4	SGRS-4	1 # 18 + 1 # 20	SGRP-1	SGRS-1
1 # 12 + 1 # 16 + 1 # 18	SGRP-3	SGRS-3	3 # 14	SGRP-3	SGRS-3	1 # 18 + 1 # 20 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 1 # 16 + 2 # 18	SGRP-3	SGRS-3	3 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 18 + 1 # 20 + 2 # 22	SGRP-1	SGRS-1
1 # 12 + 1 # 16 + 3 # 18	SGRP-3	SGRS-3	3 # 14 + 2 # 16	SGRP-4	SGRS-4	1 # 18 + 2 # 20	SGRP-1	SGRS-1
1 # 12 + 1 # 16 + 4 # 18	SGRP-4	SGRS-4	3 # 14 + 3 # 16	SGRP-4	SGRS-4	1 # 18 + 3 # 20	SGRP-2	SGRS-2
1 # 12 + 2 # 16	SGRP-3	SGRS-3	4 # 14	SGRP-3	SGRS-3	1 # 18 + 4 # 20	SGRP-2	SGRS-2
1 # 12 + 2 # 16 + 1 # 18	SGRP-3	SGRS-3	4 # 14 + 1 # 16	SGRP-4	SGRS-4	1 # 18 + 5 # 20	SGRP-2	SGRS-2
1 # 12 + 2 # 16 + 2 # 18	SGRP-3	SGRS-3	4 # 14 + 2 # 16	SGRP-4	SGRS-4	2 # 18	SGRP-1	SGRS-1
1 # 12 + 3 # 16	SGRP-3	SGRS-3	5 # 14	SGRP-4	SGRS-4	2 # 18 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 4 # 16	SGRP-3	SGRS-3	5 # 14 + 1 # 16	SGRP-4	SGRS-4	2 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 12 + 5 # 16	SGRP-4	SGRS-4	1 # 16 + 3 # 18	SGRP-3	SGRS-3	2 # 18 + 2 # 20	SGRP-2	SGRS-2
1 # 12 + 1 # 14 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 2 # 18 + 2 # 20	SGRP-3	SGRS-3	2 # 18 + 3 # 20	SGRP-2	SGRS-2
1 # 12 + 1 # 14 + 2 # 18	SGRP-3	SGRS-3	1 # 16 + 5 # 20	SGRP-3	SGRS-3	2 # 18 + 4 # 20	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 3 # 18	SGRP-3	SGRS-3	1 # 16 + 2 # 20	SGRP-2	SGRS-2	3 # 18	SGRP-2	SGRS-2
1 # 12 + 1 # 14 + 1 # 16	SGRP-3	SGRS-3	6 # 16	SGRP-3	SGRS-3	3 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 12 + 1 # 14 + 2 # 16	SGRP-3	SGRS-3	5 # 16 + 1 # 18	SGRP-3	SGRS-3	3 # 18 + 2 # 20	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 3 # 16	SGRP-4	SGRS-4	5 # 16 + 1 # 20	SGRP-3	SGRS-3	3 # 18 + 3 # 20	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 4 # 16	SGRP-4	SGRS-4	5 # 16	SGRP-3	SGRS-3	4 # 18	SGRP-2	SGRS-2
1 # 12 + 2 # 14	SGRP-3	SGRS-3	4 # 16 + 2 # 18	SGRP-3	SGRS-3	4 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 1 # 18	SGRP-3	SGRS-3	4 # 16 + 1 # 18 + 1 # 20	SGRP-3	SGRS-3	4 # 18 + 2 # 20	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 1 # 16	SGRP-4	SGRS-4	4 # 16 + 1 # 18	SGRP-3	SGRS-3	5 # 18	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 2 # 16	SGRP-4	SGRS-4	4 # 16 + 2 # 20	SGRP-3	SGRS-3	5 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 3 # 16	SGRP-4	SGRS-4	4 # 16 + 1 # 20	SGRP-3	SGRS-3	6 # 18	SGRP-3	SGRS-3
1 # 12 + 3 # 14	SGRP-4	SGRS-4	4 # 16	SGRP-3	SGRS-3	1 # 20 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 3 # 14 + 1 # 16	SGRP-4	SGRS-4	3 # 16 + 3 # 18	SGRP-3	SGRS-3	1 # 20 + 2 # 22	SGRP-1	SGRS-1
1 # 12 + 4 # 14	SGRP-4	SGRS-4	3 # 16 + 2 # 18 + 1 # 20	SGRP-3	SGRS-3	1 # 20 + 3 # 22	SGRP-1	SGRS-1
2 # 12	SGRP-4	SGRS-4	3 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 20 + 4 # 22	SGRP-1	SGRS-1
2 # 12 + 1 # 18	SGRP-3	SGRS-3	3 # 16 + 1 # 18 + 2 # 20	SGRP-3	SGRS-3	2 # 20	SGRP-1	SGRS-1
2 # 12 + 1 # 18	SGRP-3	SGRS-3	3 # 16 + 1 # 18 + 1 # 20	SGRP-3	SGRS-3	2 # 20 + 1 # 22	SGRP-1	SGRS-1
2 # 12 + 1 # 16	SGRP-3	SGRS-3	3 # 16 + 1 # 18	SGRP-3	SGRS-3	2 # 20 + 2 # 22	SGRP-1	SGRS-1
2 # 12 + 2 # 16 + 1 # 18	SGRP-4	SGRS-4	3 # 16 + 3 # 20	SGRP-3	SGRS-3	2 # 20 + 3 # 22	SGRP-1	SGRS-1
2 # 12 + 3 # 16	SGRP-4	SGRS-4	3 # 16 + 2 # 20	SGRP-3	SGRS-3	3 # 20	SGRP-1	SGRS-1
2 # 12 + 1 # 14 + 1 # 18	SGRP-4	SGRS-4	3 # 16 + 1 # 20	SGRP-3	SGRS-3	3 # 20 + 1 # 22	SGRP-1	SGRS-1
2 # 12 + 1 # 14 + 1 # 16	SGRP-4	SGRS-4	3 # 16	SGRP-2	SGRS-2	4 # 20	SGRP-2	SGRS-2
3 # 12 + 1 # 14	SGRP-4	SGRS-4	2 # 16 + 4 # 18	SGRP-3	SGRS-3	5 # 20	SGRP-2	SGRS-2
2 # 12 + 2 # 14	SGRP-4	SGRS-4	2 # 16 + 3 # 18 + 1 # 20	SGRP-3	SGRS-3	6 # 20	SGRP-2	SGRS-2
3 # 12 + 1 # 18	SGRP-4	SGRS-4	2 # 16 + 3 # 18	SGRP-3	SGRS-3	3 # 22	SGRP-1	SGRS-1
3 # 12 + 1 # 16	SGRP-4	SGRS-4	2 # 16 + 2 # 18 + 2 # 20	SGRP-3	SGRS-3	4 # 22	SGRP-1	SGRS-1
1 # 14 + 1 # 22	SGRP-1	SGRS-1	2 # 16 + 2 # 18 + 1 # 20	SGRP-3	SGRS-3	5 # 22	SGRP-1	SGRS-1
1 # 14 + 1 # 20	SGRP-2	SGRS-2	2 # 16 + 2 # 18	SGRP-3	SGRS-3	6 # 22	SGRP-1	SGRS-1
1 # 14 + 2 # 20	SGRP-2	SGRS-2						

Product Characteristics

Material

Insulation	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride (Kynar)
Solder and flux	Sn60 Pb40 with RA flux

Typical performance

Voltage drop	<2.0 mV
Tensile strength	Exceeds strength of individual conductors
Dielectric strength	2.0 kV
Temperature rating	-55°C to 125°C
Insulation resistance	100 megohms
Immersion performance (SGRS)	300 mbar (for specific combinations refer to RB-109)

Specifications/Approvals

Series	Agency	Raychem
SGRP	UL, CUL E87681, CEBEC	RB-109
SGRS	UL, CUL E87681, CEBEC	RB-109

Installation

The SolderGrip product is pushed onto the conductors with a twisting motion. With the product in place, installation can be completed with the proper selection and use of heating tools and reflectors.

Either of the following Raychem heating tools is recommended:

- HL1802E
- CV-1981

Refer to Raychem installation procedure RPIP 820-00 for detailed instructions and recommended reflector attachments.

You will find ordering information for these tools in the Application Equipment section of this catalog.

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Kynar is a trademark of Elf Atochem North America, Inc.