

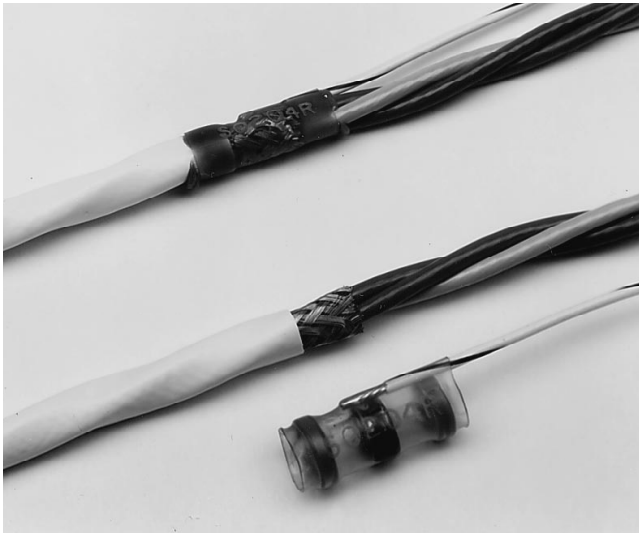
# Shield Termination

Solder Sleeve shield terminators

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

FAX ID	Description
5600	Data sheet
5000	Data sheet (CWT)

Before ordering check with factory for most current data.



## Applications

Used for shield-to-ground termination.

## Features/Benefits

- Transparent insulation sleeve provides encapsulation, inspectability, strain relief, and insulation.
- Prefluxed solder preform provides a controlled soldering process.
- One-piece design offers easy installation and lower installed cost.
- Optional preinstalled ground leads provide convenience and ease of installation.

Product Options (refer to Table E on page 9-38 for additional information)

Product series	System oper. temperature (max.)	Used on cables rated (min.)	Environmental protection	Solder alloy	Flux type	Insulation material	Part no. selection table
CWT	125°C	85°C	Splash resistant	Cd18	RA	Polyolefin	A
SO63*	150°C	125°C	Immersion resistant	Sn63	RMA	Kynar	B
M83519**	150°C	125°C	Immersion resistant	Sn63	RMA	Kynar	C
SO96***	200°C	150°C	Immersion resistant	Sn96	RA	Kynar	D

\*Meets performance requirements of MIL-S-83519 and NAS 1747, supplied with BiAlloy temperature indicator.

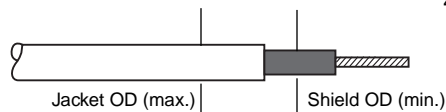
\*\*Qualified to MIL-S-83519, supplied with thermochromic temperature indicator.

\*\*\*Meets performance requirements of MIL-S-83519 and NAS 1747, supplied with thermochromic temperature indicator.

## Product Selection Process

1. Select product series from the Product Options table above.

2. Determine cable dimensions.



3. Optional: Select preinstalled wire lead type (see Table E on page 9-38 for type descriptions).

4. Select part number (use the selection table indicated for your product series in the Product Options table above).

5. Refer to Table F on page 9-40 for supersession and cross-reference information.

**Table A. CWT Series (125°C rated) (mm/in)**

The CWT series is suitable for applications using low-temperature wires (typically rated at 85°C to 125°C) with bare copper or tin plating.

Cable OD		Part number			
Jacket OD max.		Shield OD min.		No preinstalled lead	With preinstalled lead (22AWG/0.38 mm <sup>2</sup> green)
1.7	(.065)	0.9	(.035)	CWT-1	—
1.95	(.075)	1.15	(.045)	CWT-2	—
2.7	(.105)	1.8	(.070)	CWT-3	CWT-3-W1-22-5
4.5	(.180)	2.3	(.090)	CWT-5	CWT-5-W1-22-5
6.0	(.235)	3.3	(.130)	CWT-6	CWT-6-W1-22-5
7.0	(.275)	3.7	(.145)	CWT-7	CWT-7-W1-22-5
8.7	(.340)	4.2	(.165)	CWT-9	CWT-9-W1-22-5
10.7	(.420)	7.1	(.280)	CWT-11	CWT-11-W1-22-5
13.0	(.510)	8.9	(.350)	CWT-13	CWT-13-W1-22-5

\*See Table E on page 9-38 for lead description.

**Table B. SO63 Series (mm/in)**

The SO63 series is immersion resistant, features Raychem's unique BiAlloy temperature indication system (described at right), and meets the performance requirements of MIL-S-83519.

**BiAlloy Temperature Indication System.**  
This system greatly enhances the reliability and repeatability of SO63 series terminators while reducing installed cost. The heat-shrinkable thermoplastic sleeve contains a precisely engineered, fluxed solder band that is visible through the sleeve. The band provides exactly the amount of solder and flux required to terminate the ground lead

to the cable shield. Encircling the band is a small temperature indicator ring. This ring melts only when the surfaces to be joined have reached the correct soldering temperature, thus ensuring a properly soldered connection. Process control is built into each sleeve.

Cable OD		Part number					
Jacket OD max.	Shield OD min.	No preinstalled lead	Preinstalled lead option*				
			20 AWG	22 AWG	24 AWG	26 AWG	Braid strap
1.95 (0.075)	0.9 (.035)	SO63-1-00	SO63-1-55-20-90	SO63-1-55-22-90	SO63-1-55-24-90	SO63-1-55-26-90	SO63-1-01
2.7 (0.105)	1.40 (.055)	SO63-2-00	SO63-2-55-20-90	SO63-2-55-22-90	SO63-2-55-24-90	SO63-2-55-26-90	SO63-2-01
4.3 (0.170)	2.15 (.085)	SO63-3-00	SO63-3-55-20-90	SO63-3-55-22-90	SO63-3-55-24-90	SO63-3-55-26-90	SO63-3-01
6.0 (0.235)	3.30 (.130)	SO63-4-00	SO63-4-55-20-90	SO63-4-55-22-90	SO63-4-55-24-90	SO63-4-55-26-90	SO63-4-01
7.0 (0.275)	4.30 (.170)	SO63-5-00	SO63-5-55-20-90	SO63-5-55-22-90	SO63-5-55-24-90	SO63-5-55-26-90	SO63-5-01

\*See Table E on page 9-38 for lead description. Color of wire lead is denoted by the last two digits of the part number as follows:  
 90 = White with a black stripe  
 9 = White  
 0 = Black  
 6 = Blue (24 AWG only)  
 5 = Green (20, 22, 24 AWG)

**Table C. M83519 Series (mm/in)**

M83519 is the qualified product listed in MIL-S-83519. The series features a thermochromic temperature indicator (described at right) to assist in termination and inspection. The Raychem part number is permanently marked on the sleeve.

**Thermochromic Temperature Indicator.**  
The M83519 (S01 and S02) series terminators contain a colored thermochromic temperature indicator that exhibits a distinct color change when surfaces have reached wetting temperature. This color change gives both manufacturing and Quality Control an aid in the inspection of the completed termination.

Cable OD		Part number (MIL part number and Raychem part number) by lead option					
Jacket OD max	Shield OD min	No preinstalled lead		Preinstalled lead option*			
				20 AWG		22 AWG	
		MIL	Raychem	MIL	Raychem	MIL	Raychem
1.95 (0.075)	0.9 (.035)	M83519/1-1	S01-01-R	M83519/2-1	S02-01-R	M83519/2-6	S02-06-R
2.7 (0.105)	1.40 (.055)	M83519/1-2	S01-02-R	M83519/2-2	S02-02-R	M83519/2-7	S02-07-R
4.3 (0.170)	2.15 (.085)	M83519/1-3	S01-03-R	M83519/2-3	S02-03-R	M83519/2-8	S02-08-R
6.0 (0.235)	3.30 (.130)	M83519/1-4	S01-04-R	M83519/2-4	S02-04-R	M83519/2-9	S02-09-R
7.0 (0.275)	4.30 (.170)	M83519/1-5	S01-05-R	M83519/2-5	S02-05-R	M83519/2-10	S02-10-R

Jacket OD max.	Shield OD min.	Preinstalled lead option*			
		24 AWG		26 AWG	
1.95 (0.075)	0.9 (.035)	M83519/2-11	S02-11-R	M83519/2-16	S02-16-R
2.7 (0.105)	1.40 (.055)	M83519/2-12	S02-12-R	M83519/2-17	S02-17-R
4.3 (0.170)	2.15 (.085)	M83519/2-13	S02-13-R	M83519/2-18	S02-18-R
6.0 (0.235)	3.30 (.130)	M83519/2-14	S02-14-R	M83519/2-19	S02-19-R
7.0 (0.275)	4.30 (.170)	M83519/2-15	S02-15-R	M83519/2-20	S02-20-R

\*See Table E for lead description.

**Table D. SO96 Series (200°C rated) (mm/in)**

The SO96 series is designed for high-temperature applications with operating temperature requirements up to 200°C. This series features a thermochromic temperature indicator (described at right) and meets performance requirements of MIL-S-83519. The solder is Sn96 with RA flux compatible with nickel-plated shields.

**Thermochromic Temperature Indicator.**  
The SO96 series terminators contain a colored thermochromic temperature indicator that exhibits a distinct color change when surfaces have reached wetting temperature. This color change gives both manufacturing and Quality Control an aid in the inspection of the completed termination.

Cable OD		Part number		
Jacket OD max.	Shield OD min.	Preinstalled lead option*		
		No preinstalled lead	22 AWG	Braid strap
1.95 (0.075)	0.9 (.035)	SO96-1-00	SO96-1-55-22-90	SO96-1-01
2.7 (0.105)	1.40 (.055)	SO96-2-00	SO96-2-55-22-90	SO96-2-01
4.3 (0.170)	2.15 (.085)	SO96-3-00	SO96-3-55-22-90	SO96-3-01
6.0 (0.235)	3.30 (.130)	SO96-4-00	SO96-4-55-22-90	SO96-4-01
7.0 (0.275)	4.30 (.170)	SO96-5-00	SO96-5-55-22-90	SO96-5-01

\*See Table E for lead description.

**Table E. Preinstalled Lead Description**

Series	Lead type	Remarks	Plating	Stranding	Min. length (mm/in)
M83519, SO63	55A0111	MIL-W-22759/32	Tin	Stranded	150 (6)
SO96	55A0813	MIL-W-22759/41	Nickel	Stranded	150 (6)
SO63, SO96	Braid strap	Uninsulated	Nickel	40 x 38 AWG	150 (6)
CWT	XL polyethylene	UL Listed	Tin	Stranded (W1)	150 (6)

**Material**

Insulation	
SO, M83519	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride (Kynar)
CWT	Radiation-crosslinked, heat-shrinkable polyolefin
Solder and flux	
SO63, M83519	Sn63 Pb37, RMA flux
SO96 series	Sn96 Ag4, RA flux
CWT	Sn50 Pb32 Cd18, RA flux
Ground lead	
CWT series	XL polyethylene
SO, M83519	MIL-W-22759/32 or /41

**Typical performance**

Voltage drop	2.5 mV
Tensile strength	Exceeds strength of ground lead
Dielectric strength	1.0 kV immersed
Temperature rating	
CWT	-55°C to 125°C
SO63/M83519	-55°C to 150°C
SO96 series	-55°C to 200°C
Insulation resistance	1000 megohms

**Specifications/Approvals**

Series	Agency	Raychem
CWT	—	D-5023
SO63*	NAS 1747	RT-1404
M83519**	MIL-S-83519/1&2	RT-1404
SO96***	NAS 1747	RT-1404

\*Meets performance requirements of MIL-S-83519 and NAS 1747, supplied with BiAlloy temperature indicator.

\*\*Qualified to MIL-S-83519, supplied with thermochromic temperature indicator.

\*\*\*Meets performance requirements of MIL-S-83519 and NAS 1747, supplied with thermochromic temperature indicator.

**Installation**

For proper installation of these devices, the correct heating tool and reflector attachment must be used.

Any one of the following Raychem heating tools is recommended:

- HL1802E
- AA-400 Super Heater
- CV-1981
- MiniRay
- IR-1759

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

For detailed instructions and recommended reflector attachments, refer to the appropriate Raychem installation procedure:

Series	Procedure
CWT	RPIP 655-00-D
SO63	RCPS 100-70
M83519 (S01/S02)	RCPS 100-70
SO96	RCPS 100-70

Table F. Supersession and Cross-Reference

NAS part number	Military part number	Raychem S01/S02* series	Raychem SO63** series	Superseded D-1XX series
1745-1	M83519/1-1	S01-01-R	SO63-1-00	D-144-25
1745-2	M83519/1-2	S01-02-R	SO63-2-00	D-100-00
1745-3	M83519/1-3	S01-03-R	SO63-3-00	D-101-00
1745-17	M83519/1-4	S01-04-R	SO63-4-00	D-107-00
1745-4	M83519/1-5	S01-05-R	SO63-5-00	D-103-00
1745-13***				D-142-83***
1745-14***				D-142-50***
1745-15***				D-142-51***
1745-23***				D-142-56***
1745-16***				D-142-52***
1746-1	M83519/1-1	S01-01-R	SO63-1-00	D-144-25
1746-2	M83519/1-2	S01-02-R	SO63-2-00	D-144-00
1746-3	M83519/1-3	S01-03-R	SO63-3-00	D-144-01
1746-9	M83519/1-4	S01-04-R	SO63-4-00	D-144-46
1746-4	M83519/1-5	S01-05-R	SO63-5-00	D-144-02
	M83519/2-1	S02-01-R	SO63-1-55-20-90	
	M83519/2-2	S02-02-R	SO63-2-55-20-90	
	M83519/2-3	S02-03-R	SO63-3-55-20-90	
	M83519/2-4	S02-04-R	SO63-4-55-20-90	
	M83519/2-5	S02-05-R	SO63-5-55-20-90	
	M83519/2-6	S02-06-R	SO63-1-55-22-90	
	M83519/2-7	S02-07-R	SO63-2-55-22-90	
	M83519/2-8	S02-08-R	SO63-3-55-22-90	
	M83519/2-9	S02-09-R	SO63-4-55-22-90	
	M83519/2-10	S02-10-R	SO63-5-55-22-90	
	M83519/2-11	S02-11-R	SO63-1-55-24-90	
	M83519/2-12	S02-12-R	SO63-2-55-24-90	
	M83519/2-13	S02-13-R	SO63-3-55-24-90	
	M83519/2-14	S02-14-R	SO63-4-55-24-90	
	M83519/2-15	S02-15-R	SO63-5-55-24-90	
	M83519/2-16	S02-16-R	SO63-1-55-26-90	
	M83519/2-17	S02-17-R	SO63-2-55-26-90	
	M83519/2-18	S02-18-R	SO63-3-55-26-90	
	M83519/2-19	S02-19-R	SO63-4-55-26-90	
	M83519/2-20	S02-20-R	SO63-5-55-26-90	

\*QPL listed to MIL-S-83519.

\*\*Meets performance requirements of MIL-S-83519.

\*\*\*The CWT series is the recommended replacement.

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