

Selection of Wrapping Bits and Sleeves

Application:

Wire diameter, Dimensions of Terminal, Grid System, Connection Style

Example:

Solid wire with conductor 0,25 mm (AWG 30) and insulation 0,55 mm diameter to be wrapped on a terminal a x b = 0,75 x 0,50 mm, terminal length 13,50 mm on a spacing of 2,54 mm - a MODIFIED connection is required.

Solution:

In the table „Technical Features of Wrapping Bits and Sleeves“ locate column (1): Conductor diameter, and column (2): connection style.

Example:

Conductor diameter 0,25 mm (AWG 30) and „MOD“.

Find:

„Terminal Diagonal from/to (column 3 in the chart on page XX). Using side „a“ = 0,75 mm and side „b“ = 0,50 mm calculate the theoretical diagonal = 0,90 mm. the actual diagonal is 0,90 - 0,04 = 0,86 mm (0.04 mm is the terminal corner radius allowance). For bit 507573 the terminal diagonal is from 0,84 to 0,92 mm.

Check maximum insulation diameter - column 4 - (applicable only to MODIFIED connections)

The insulation diameter is 0,55 mm. The bit 507573 can accept a maximum insulation diameter of 0,60 mm.

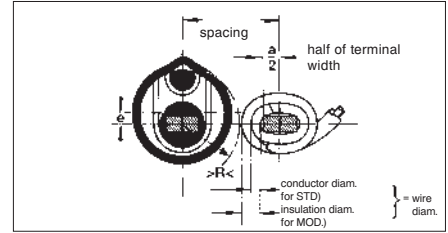
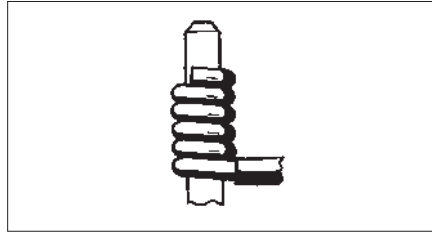
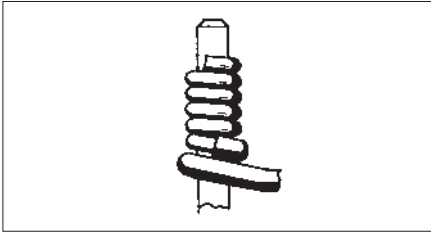
Clearance between sleeve and adjacent wrapped terminal use the formula: **Effective Radius + Wire diameter + $\frac{a}{2} \leq \text{Spacing}$.**

The bit 507573 with the sleeve 507100 has an effective radius of 1,55 mm. So: 1,55 + 0,55 + 0,375 < 2,54 mm.

Determine that the Strip Length (column 7) gives the required number of turns (column 8). This relationship depends on the wire diameter and the dimensions of the terminal.

In our example: strip length: 25 mm is correct.

- When using a terminal locator 14YN use the following sleeves:
517 101 instead of 507 100
517 168 instead of 502 129



MOD. = MODIFIED

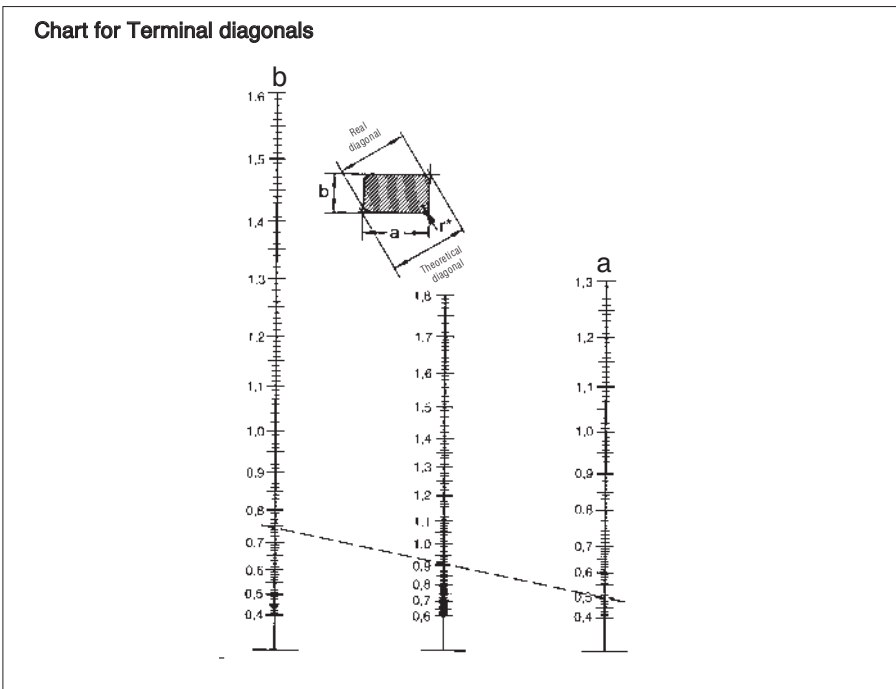
A connection is called MODIFIED when there is a turn of insulation at the base of the wrap. This turn of insulation will reinforce the connection against shocks and vibrations.

STD. = STANDARD

A connection is called STANDARD when there is no turn of insulation at the base of the wrap. The use of STANDARD connections makes the wrapping of thicker wires in a determined spacing possible (e.g. power supply lines).

Effective Radius (**R**) is the radius of the circle covered by the bit + sleeve combination when the tool rotates. As many bits have an excentric terminal hole axis, the (**R**) is not always half of the sleeve outside diameter.

$>R < + \text{Wire-Diam.} + \frac{a}{2} \leq \text{Spacing}$




AWG	Diameter mm	Cross-section mm ²
34	0.16	0.021
32	0.202	0.032
31	0.227	0.040
30	0.2555	0.050
29	0.286	0.064
28	0.321	0.080
27	0.361	0.102
26	0.405	0.128
25	0.455	0.163
24	0.511	0.205
23	0.573	0.259
22	0.644	0.325
21	0.723	0.412
20	0.813	0.519
19	0.912	0.652
18	1.024	0.826
17	1.151	1.039
16	1.290	1.309
15	1.450	1.652
14	1.628	2.084
13	1.829	2.627
12	2.053	3.308
11	2.304	4.168
10	2.588	5.262

1	2	3	4	5	6	7	8	Note				
Conductor Diameter	Wrap Type	Wrap Bit	Terminal diagonal from/to	Terminal hole diam. x terminal hole depth	max. insulation diam.ø	sleeve (stationary)	effective radius >R<	average strip-length Win	recommended number of turns			
mm (AWG)	MOD. STD.	p / n	mm	mm	p / n	mm	mm	for terminal mm				
0,25	(30)	MOD.	501 097	0,67 / 0,77	0,79x19	0,68	507 100*	1,67	23	8	0,5 x 0,5	
			507 063	0,78 / 0,87	0,9x19	0,60	507 100	1,55	25		0,6 x 0,6 / 0,635 x 0,635	
			990 734	0,78 / 0,87	0,9x28	0,60	507 100	1,55	25		0,6 x 0,6 / 0,635 x 0,635	
			507 573	0,84 / 0,92	0,94x19	0,60	507 100	1,55	25		0,6x0,6 / 0,635x0,635/0,5x0,75	
			519 936	0,79 / 0,95	0,99x19	0,70	507 100	1,72			0,6x0,6 and alloy wire	
			507 502	1,04 / 1,12	1,14x19	0,68	507 100	1,8	30		0,56x0,91 and regular copper wire	
			508 105	1,35 / 1,45	1,48x25	0,68	502 129	2,36	38		1,0x1,0 and alloy wire	
			501 381	1,52 / 1,62	1,65x25	0,68	512 056	2,72	43		1,14x1,14 and alloy wire	
			990 891	0,59 / 0,64	0,65x15	0,49	511 274	1,21	20		0,46 x 0,45	
			STD.	500 352	0,69 / 0,77	0,79x19	-	507 100	1,69	23	8	
500 353	0,81 / 0,89	0,91x19		-	507 100	1,55	25					
0,3	(28)	MOD.	509 278	0,78 / 0,87	0,91x19	0,76	507 100	1,7	23	7	0,6 x 0,6 / 0,635 x 0,635	
			501 389	0,84x0,92	0,99x19	0,91	502 129*	2,2	25			
		STD.	508 748	0,86 / 0,94	0,96x19	-	507 100	1,6	25	7		
			505 373	1,68 / 1,75	1,88x25	-	512 056	2,66	40			
0,4	(26)	MOD.	506 445	0,59 / 0,98	0,99x19	0,79	507 100	1,88	23	6	0,6x0,6 / 0,635x0,635	
			511 250	0,79 / 0,91	0,97x19	1,09	507 100	1,88	23		0,6x0,6 / 0,635x0,635 max. insulation diam.	
			509 405	0,87 / 1,28	1,3x25	0,86	502 129	2,18	25		0,56x0,91	
			517 104	1,22 / 1,42	1,5x25	1,04	512 056	2,54	31		1,0x1,0	
			511 439	1,22 / 1,42	1,5x2,5	1,04	502 129	2,41	31		1,0x1,0 and silver plated wire	
			502 118	1,35 / 1,76	1,78x25	1,04	512 056	2,82	35		1,0x1,0 / 0,91x1,22 / 0,8x1,4 /	
			506 781	1,6 / 1,86	1,88x25	1,04	512 056	2,84	38		0,8x1,6 / 1,14x1,14 / 0,8x1,6 / 1,14x1,14	
0,4	(26)	MOD.	519 070	1,37 / 1,88	1,91x28,7	1,17	18 840	2,97	38			
0,5	(24)	MOD.	519 070	1,37 / 1,88	1,91x28,7	1,17	188 40	2,97	38			
0,4	(26)	STD.	505 279	0,59 / 0,98	0,99x19	-	507 100	1,73	23	6		
			504 910	1,47 / 1,86	1,88x25	-	512 056	2,66	38			
0,5	(24)	MOD.	505 415	0,61 / 1,1	1,12x25	1,12	502 129	2,49	20	5	0,6x0,6 / 0,635x0,635 / 0,56x0,91	
			506 991	1,19 / 1,69	1,7x25	1,04	506 999	2,54	28		1,0x1,0 / 0,91x1,22 / 0,8x1,4 / 1,14x1,14	
			504 155	1,25 / 1,74	1,75x28	1,27	18 840	3,02	28		1,0x1,0 / 0,91x1,22 / 0,8x1,4 / 1,14x1,14	
			26 263	1,37 / 1,86	1,88x28	1,17	18 840	2,97	38		1,0x1,0 / 0,91x1,22 / 0,8x1,4 / 0,8x1,6 / 1,14x1,14	
0,5	(24)	STD.	502 134	0,61 / 1,1	1,12x25	-	502 129	2,12	20	5		
			512 058	1,38 / 1,88	1,89x25	-	512 056	2,65	30			
0,65	(22)	MOD.	504 939	1,25 / 1,86	1,88x25	1,32	18 840	3,35	28	4	1,0x1,0 / 0,91x1,22 / 0,8x1,4 / 0,8x1,6	
			STD.	505 413	1,25 / 1,86	1,88x25	-	18 840	3,0	28	4	
				18 632	1,55 / 2,17	2,18x25	-	18 840	3,16	30		
				18 635	2,49 / 3,11	3,12x25	-	18 640	3,6	36		
0,8	(20)	MOD.	26 495	1,07 / 1,86	1,88x25	1,5	26 245	3,81	28	4	1,0x1,0 / 0,91x1,22 / 0,8x1,4 / 0,8x1,6 / 1,14x1,14	
			STD.	507 356	1,07 / 1,86	1,88x25	-	18 840	3,06	28	4	
				18 633	1,5 / 2,3	2,31x25	-	26 245	3,74	32		
				18 637	2,31 / 3,11	3,12x25	-	18 640	3,81	36		
1,0	(18)	MOD.	504 908	1,55 / 1,86	1,88x25	1,78	18 640	3,83	30	4	1,14x1,14	
			STD.	504 222	1,55 / 1,86	1,88x25	-	26 245	3,81	30	4	
Strapping Bits and Sleeves												
0,25	(30)	STD.	501 866	0,81 / 0,89	0,99x19	-	517 228	2,04	-	7	0,6x0,6 / 0,635x0,635	
0,32	(28)	STD.	511 202	0,79 / 0,89	0,96x19	-	517 228	1,65	-	6	0,6x0,6 / 0,635x0,635	
0,4	(26)	STD.	509 207	0,58 / 0,97	0,99x19	-	517 228	1,85	-	6	0,5x0,5 / 0,6x0,6 / 0,635x0,635	
			501 332	1,47 / 1,87	1,88x25	-	517 230	2,65	-	6	1,0x1,0 / 0,91x1,22 / 0,8x1,4 / 0,8x1,6 / 1,14x1,14	
0,5	(24)	STD.	503 912	1,38 / 1,88	1,89x25	-	517 230	2,65	-	5	1,0x1,0 / 0,91x1,22 / 0,8x1,4 / 0,8x1,6 / 1,14x1,14	
0,5-0,65	(24-22)	STD.	509 242	1,37 / 1,87	1,88x25	-	517 231	2,87	-	4	1,0x1,0 / 0,91x1,22 / 0,8x1,4 / 0,8x1,6 / 1,14x1,14	
(0,65	(22)	STD.	501 550	1,25 / 1,87	1,88x25	-	517 231	3,05	-	4	1,0x1,0 / 0,91x1,22 / 0,8x1,4 / 0,8x1,6 / 1,14x1,14	

Bits and Sleeves

for modified connections (DIN EN 60 352-1)

	Mini			Midi			Maxi						
Conductor diam.Ø (mm) d' (AWG)	0,25 (30)	0,32 (28)	0,4 (26)	0,4 (26)	0,5 (24)	0,65 (22)	0,8 (20)	1,0 (18)					
Strip length (mm)													
d² insulation diam.-Ø (mm)	0,58	0,58	0,67	1,04	1,17	1,1	1,5	1,78					
spacing (mm)	2,54	2,54	2,54	5,08	5,08	5,08	7,62	7,62					
a x b = terminal 0,5 x 0,5	50 1097 50 7100 (517228)	23											
terminal 0,6 x 0,6 (0,635 x 0,635)	50 7063 50 7100 (517228)	25	50 9278 50 7100 (517228)	23	50 7063 50 7100 (517228)	23							
terminal 0,56 x 0,91	50 7502 50 7100 (517228)	30											
terminal 1,0 x 1,0				51 7104 51 2056 (517230)	31	50 4155 18 840 (517231)	28	25	25				
terminal 0,91 x 1,22					33		30	28	28				
terminal 0,8 x 1,4					35		30	28	28				
terminal 0,8 x 1,6					38		33	30	30				
terminal 1,14 x 1,14				50 2118 51 2056 (517230)	35	26 263 18 840 (517231)	30	50 4939 18 840 (517231)	28	26 495 26 245 (517232)	28	50 4908 18 640 (517231)	30
result	 8	7	6	6	5	4	4	4					

Explanation of the grey fields of the chart

 = Strip length mm

Part-Number:

Bit

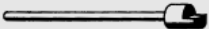
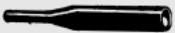
Stationary Sleeve

Simplified Sleeve - rotary -

for all „Wire-Wrap“ Tools (strapping tools excepted)

for all „Wire-Wrap“ Tools, excepted of:

for manual tools



Cut Strip Wrap Bits and Sleeves for MODIFIED connections

CSW (Cut – Strip – Wrap)

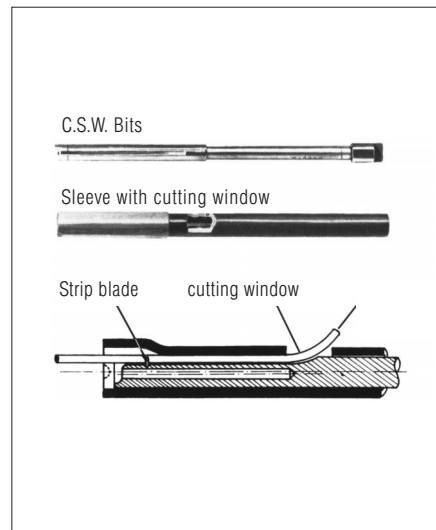
C.S.W. Bits and Sleeves can be used with following tools:

For C.S.W. Bits use tools with „A“ nose-piece only

The C.S.W. bits and sleeves cut the wire to the correct length, strip the insulation and wrap the correct number of turns in one operation.

The purpose of the C.S.W. Bits and sleeves is not to replace conventional wrapping, but to widen the field of operation of the Wire-Wrap technique.

For good results its important to keep to the wire specifications



Conductor	Insulation	Terminal diagonal from/to	Effective radius >R<	Terminal hole depth	C.S.W. bit part no.	Sleeve with cutting part no.	Note	Result	
mm (AWG)	mm	mm	mm	mm	part no.	part no.		for terminal mm	
0,25 (30)	0,51–0,56	0,76–0,86	1,79	25,4	990 063	990 064	7	0,6x0,6	0,635x0,635
	0,48–0,55	0,76–0,86	1,65	25,4	990 764	990 765	7	0,6x0,6	0,635x0,635
	0,48–0,52	0,76–0,86	1,65	28,2	990 841	990 765	7	0,6x0,6	0,635x0,635
0,40 (26)	0,64–0,71	0,76–0,86	2,08	25,4	527 812	527 813	7	0,6x0,6	0,635x0,635
	0,70–0,79	0,76–0,86	2,08	25,4	990 995	527 813	7	0,6x0,6	0,635x0,635
	0,64–0,74	1,65–1,75	2,95	25,4	522 205	522 204	7	0,8x1,6	
	0,64–0,74	1,50–1,60	2,85	25,4	522 203	522 204	7	1,0x1,0	1,14x1,14
	0,79–0,89	1,50–1,83	3,25	25,4	522 202	522 201	7	0,8x1,6	
	0,86–0,99	1,37–1,47	3,25	25,4	521 105	521 116	6	1,0x1,0	
	0,97–1,03	1,37–1,47	3,25	25,4	521 105	990 435	6	1,0x1,0	
	0,66–0,74	1,37–1,47	2,82	25,4	519 926	519 927	6	1,0x1,0	
	0,97–1,05	1,37–1,47	3,35	25,4	990 681	990 435	6	1,0x1,0	
	0,64–0,71	0,76–0,86	2,08	28,2	990 842	527 813	7	0,6x0,6	0,635x0,635
	0,56–0,64	0,76–0,86	1,76	25,4	990 844	990 845	7	0,6x0,6	
	0,75–0,85	1,37–1,44	2,82	25,4	990 846	990 847	6	1,0x1,0	1,3x0,6
	0,40–0,50 (26/24)	0,76–0,91	1,37–1,47	2,78	25,4	990996	990997	7	0,6x1,3
0,50 (24)	0,74–0,85	1,37–1,47	3,25	25,4	990 753	519 929	6	1,0x1,0	
	0,86–0,99	1,50–1,83	3,38	25,4	519 066	522 201	6	1,0x1,0	0,8x1,6
	1,02–1,14	1,68–1,78	3,48	25,4	521 198	521 199	6	0,8x1,6	
	0,81–0,89	1,50–1,88	3,28	25,4	990 046	522 201	6	0,8x1,6	
	1,02–1,14	1,50–1,83	3,38	25,4	518 910	518 911	6	0,8x1,4	
	0,81–0,94	1,50–1,83	3,25	25,4	518 910	519 929	6	0,8x1,4	1,0x1,0
	1,02–1,09	1,37–1,47	3,35	25,4	990 561	990 562	5,5	1,0x1,0	0,91x1,22
	0,84–0,91	1,37–1,47	3,23	25,4	519 928	519 929	5,5	1,0x1,0	0,91x1,22
	1,02–1,14	1,50–1,83	3,38	25,4	519 066	519 067	6	1,0x1,0	0,80x1,60
	1,31–1,39	1,37–1,47	3,28	25,4	990 579	522 212	5	1,0x1,0	
0,50–0,60 (24/22)	1,14–1,27	1,75–1,83	3,38	25,4	518 931	518 932	6	0,8x1,6	
0,60 (22)	1,16–1,25	1,37–1,47	3,38	25,4	990 646	522 212	5	1,0x1,0	
	1,14–1,27	1,50–1,60	3,28	25,4	522 211	522 212	5	1,14x1,14	0,8x1,4
	0,94–1,02	1,37–1,47	3,48	25,4	990 563	990 562	5	1,0x1,0	
	1,04–1,12	1,37–1,47	3,38	25,4	990 779	990 780	5	1,0x1,0	