



Product Information
02/2004

Flexible connectors • Solderless terminals • Contact systems

druseid

Elektrotechnik

Silicone insulated copper cables and high current connectors.
Highly flexible, free of halogen and flame retardant
incl. suitable cable lugs and crimping tools.



Single insulated silicone copper cables 1,8/3 kV

highly flexible, free of halogen and flame retardant



Highly flexible, heat resistant cables with stabilized insulation thickness and a good UV and ozone stability. Excellently suitable for high current connections inside switch gears, switch boards or other electro technical installations. Because the electro technical industry develop switch gears with great power but smaller and smaller dimensions, extremely flexible high current connectors are needed.

Our silicone insulated copper cables offer a excellent possibility for high current connections inside multifarious applications. The heat resistance combined with the great surface of the conductors caused by the small single wire-Ø of 0,07 or 0,10 mm enable a bigger current load compared with PVC or normal rubber insulated conductors. The stabilized insulation which is free of halogen, flame retardant and self-extinguishing offer also multifarious applications inside of the railway or military field. Additionally applications as earthing tapes, high current conducting wires or as flexible heat resistance cables for hand operated welding devices are imaginable too.

Insulation:

silicone rubber circa 60 shore A free of halogen acc. to VDE 0472 part 813 and 814 as well as IEC 754 parts of chlorine < 4 ppm

Operating temperature of the insulation:

continuously – 50° C up to + 180° C
shortly + 250° C up to + 300° C
(by touching with a soldering-iron)

Flame retardant:

hardly inflammable / self-extinguishing
acc. to DIN 50265-2-1 / 50265-2-2

Tensile strength:

before growing old 8,3 MPa

Breaking elasticity:

before growing old 300 %

Copper conductor:

bare round stranded copper cable,
highly flexible in special construction

Operating voltage:

4-6 mm² U₀/U 1,5/1,5 kV
10-150 mm² U₀/U 1,8/3 kV

Testing voltage:

10 kV

Dielectric strength:

20 kV/mm

Short circuit resistance:

SiR + 350° C acc. to VDE 0298 part 3 and 4

General attributes:

excellent electric arc- and tracking resistance
and a good UV and Ozone stability

Delivery:

of rolls or on spools / drums

	Part-No.	Technical Datas					current load in dependence of the conductor heat in ° C				
		cross-section mm ²	diameter and number of wires	dimensions mm		ca. thickness of the insulation	45°	80°	90°	100°	130°
1,5/1,5	15014	4,0	1036 x 0,07	4,8	1,1	30 A	50 A	55 A	60 A	70 A	
	15016	6,0	1568 x 0,07	5,6	1,1	40 A	65 A	70 A	78 A	90 A	
1,8/3 kV single insulated	15020	10,0	2562 x 0,07	8,5	2,0	50 A	90 A	98 A	107 A	120 A	
	15022	16,0	4116 x 0,07	10,0	2,0	70 A	125 A	132 A	143 A	160 A	
	15024	25,0	3234 x 0,10	12,0	2,3	95 A	160 A	176 A	187 A	215 A	
	15026	35,0	4508 x 0,10	13,8	2,5	115 A	200 A	218 A	230 A	260 A	
	15028	50,0	6468 x 0,10	15,5	2,5	145 A	245 A	276 A	287 A	325 A	
	15030	70,0	8967 x 0,10	16,0	2,5	175 A	305 A	347 A	352 A	400 A	
	15032	95,0	12201 x 0,10	20,0	2,5	215 A	370 A	416 A	425 A	485 A	
	15034	120,0	15435 x 0,10	21,5	2,5	245 A	425 A	488 A	495 A	560 A	
	15036	150,0	19404 x 0,10	23,5	2,5	285 A	490 A	566 A	575 A	640 A	

Remark: All information about current load are approximate values in consideration of the cables heat for single laying of air cooled cables and ambient temperature + 30° C. The values by a conductor heat of + 90° C are in accordance with VDE 0298 part 4 table 15.

By changing the ambient temperature or the kind of laying reducing factors are to be considered. Nature colour is standard but on request it is also possible to manufacture cables with colours like black, red, blue, yellow/green etc. or with reduced insulation thickness and

other operating voltages. Minimum quantity on request. The outside diameter of our highly flexible copper conductors are manufactured in coordination with cable lugs acc. to DIN 46234/DIN 46341 and druseidt tubular cable lugs for fine stranded cables.

Please notice our crimping instructions on pages 6-9 of these product information.

Double insulated copper cables 1,8/3 kV or 3,6/6 kV

highly flexible, free of halogen and flame retardant



Double insulated highly flexible silicone insulated cables for greater demands on mechanical and electrical stress. The silicone compound and the copper conductors are the same like our single insulated cables. So we are able to offer also double insulated cables with excellent technical characteristics in a extremely flexible design. The outside diameter of the stripped cables are manufactured in coordination with cable lugs acc. to DIN 46234/DIN 46341 and druseidt cable lugs for fine stranded cables. Please notice our crimping instructions on pages 6-9 of these product information. Nature colour is standard. Other colours and minimum quantities on request.

Insulation:

Silicone rubber circa 60 shore A free of halogen acc. to VDE 0472 part 813 and 814 as well as IEC 754 parts of chlorine < 4 ppm

Operating temperature of the insulation:

continuously – 50° up to 180° C
shortly + 250° C up to 300° C
(by touching with a soldering-iron)

Flame retardant:

hardly inflammable / self-extinguishing
acc. to DIN 50265-2-1 / 50265-2-2

Copper conductor:

bare round stranded copper cable, highly flexible in special construction

Operating voltage:

15170-15192 U₀/U 1,8/3 kV / 15138-15160 U₀/U 3,6/6 kV

Testing voltage:

10 kV

Dielectric strength:

20 kV/mm

Short circuit resistance:

SiR + 350° C acc. to VDE 0298 part 3 and 4



	Part-No.	Technical Datas				
		cross-section mm ²	current load	diameter and number of wires	dimensions mm ca. outside diameter	ca. thickness of the insulation
1,8/3 kV, double insulated	15170	2,5	41 A	651 x 0,07	6,2	1,1 + 1,0
	15172	4,0	55 A	1036 x 0,07	7,0	1,2 + 1,0
	15174	6,0	70 A	1568 x 0,07	8,1	1,2 + 1,2
	15176	10,0	98 A	2562 x 0,07	9,4	1,3 + 1,2
	15178	16,0	132 A	4116 x 0,07	10,7	1,3 + 1,2
	15180	25,0	176 A	3234 x 0,10	12,8	1,6 + 1,2
	15182	35,0	218 A	4508 x 0,10	14,7	1,6 + 1,5
	15184	50,0	276 A	6468 x 0,10	16,7	1,6 + 1,5
	15186	70,0	347 A	8967 x 0,10	19,3	1,6 + 1,8
	15188	95,0	416 A	12201 x 0,10	21,9	1,9 + 1,8
	15190	120,0	488 A	15435 x 0,10	24,4	2,0 + 2,1
15192	150,0	566 A	19404 x 0,10	26,6	2,1 + 2,1	
3,6/6 kV, double insulated	15138	2,5	43 A	651x 0,07	8,4	2,0 + 1,2
	15140	4,0	56 A	1036 x 0,07	9,0	2,0 + 1,2
	15142	6,0	71 A	1568 x 0,07	9,7	2,0 + 1,2
	15144	10,0	99 A	2562 x 0,07	11,2	2,2 + 1,2
	15146	16,0	133 A	4116 x 0,07	12,5	2,2 + 1,2
	15148	25,0	174 A	3234 x 0,10	15,2	2,5 + 1,5
	15150	35,0	215 A	4508 x 0,10	16,5	2,5 + 1,5
	15152	50,0	270 A	6468 x 0,10	19,1	2,5 + 1,8
	15154	70,0	338 A	8967 x 0,10	21,1	2,5 + 1,8
	15156	95,0	403 A	12201 x 0,10	24,3	2,8 + 2,1
	15158	120,0	473 A	15435 x 0,10	26,0	2,8 + 2,1
15160	150,0	546 A	19404 x 0,10	28,4	3,0 + 2,1	

Remark:

All information about current-load are approximate values acc. to VDE 0298 part 4 table 15 for single laying of air cooled cables by a ambient temperature + 30° C and allowed conductor heat of + 90° C.

By changing the ambient temperature or the kind of laying reducing factors are to be considered.

Highly flexible ready assembled copper connectors 50 - 300 mm²

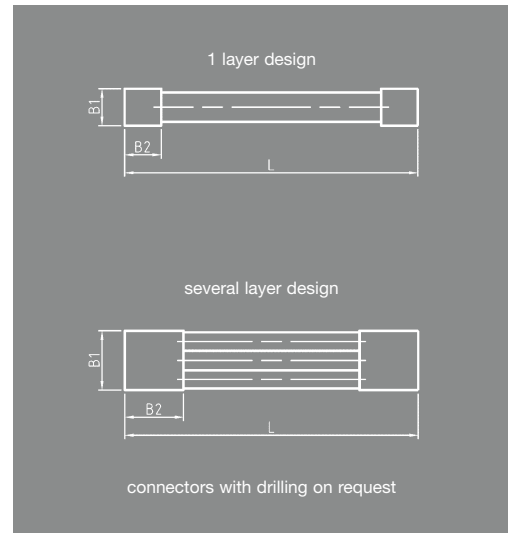
solderless pressed design, extremely movable



These extremely flexible connectors are manufactured by one or several single insulated silicone cables in extruded design acc. to the page 2 of these product information.

The contact areas are assembled with solderless pressed copper connectors. The connectors with their high flexibility are suitable for connections which have to do movements as well as to transfer high current by using components with smaller dimensions. So they are excellent suitable for connecting components inside switch gear or switch board applications.

The insulating material is free of halogen, flame retardent and has a continuously operating temperature up to + 180° C. The technical attributes of the material offer a wide field of applications mainly for installations into difficult equipment or small places.

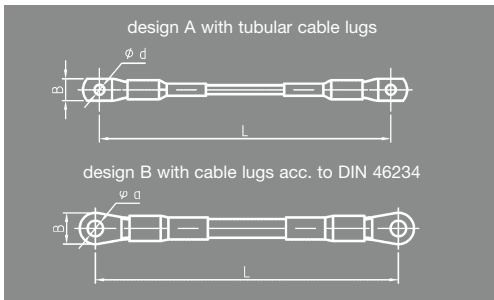


	Part-No.	Technical Datas					
		cross-section mm ²	current load	dimensions of the contact areas in mm			
				B1	B2	ca. S	L
1 layer design	14350	1 x 50	200 A	20	20	4,7	acc. to the customer's wishes
	14360	1 x 70	250 A	20	20	7,5	
	14370	1 x 95	300 A	25	25	6,7	
	14380	1 x 120	350 A	25	25	7,5	
	14390	1 x 150	400 A	30	30	7,7	
2 layer design	14430	2 x 25	250 A	25	25	4,5	
	14440	2 x 35	300 A	30	30	5,0	
	14450	2 x 50	350 A	30	30	6,0	
	14460	2 x 70	480 A	40	40	6,7	
	14470	2 x 95	560 A	40	40	8,5	
	14480	2 x 120	650 A	40	40	9,1	
	14490	2 x 150	750 A	40	40	11,8	
3 layer design	14530	3 x 25	375 A	40	40	4,4	
	14540	3 x 35	450 A	40	40	6,0	
	14550	3 x 50	525 A	50	50	5,8	
	14560	3 x 70	720 A	50	50	7,8	
4 layer d.	14630	4 x 25	500 A	40	40	7,0	
	14640	4 x 35	600 A	50	50	6,5	

Remark:

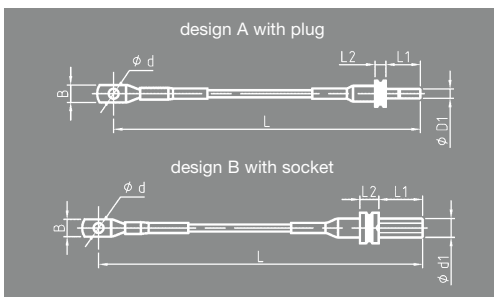
All information about current load are approximate values for single laying and ambient temperature +30° C in acc. with VDE 0298 part 4. In dependence of the allowed heat of the connectors it is likewise possible to work with higher current rates as recommend (in comparison to the tabular values acc. to page 2). If you need more information to planed applications don't hesitate to contact our company.

Flexible connectors with cable lugs or plugs and sockets 4-150 mm² respectively 10-120 mm²



Highly flexible connectors manufactured by single insulated extruded silicone cables acc. to page 2 of these product information. Design A with tubular cable lugs. Design B with cable lugs acc. to DIN 46234. The values about the current load are in accordance with VDE 0298 Part 4 table 15.

Part-No.		Technical Datas					
Design A	Design B	cross-section mm ²	current load	dimensions mm			L
				d	B A Type	B B Type	
16110	16210	4,0	55 A	5,3	10,0	10,0	acc. to customer wishes
16115	16215	6,0	70 A	6,5	11,0	11,0	
16120	16220	10,0	98 A	6,5	11,0	11,0	
16125	16225	16,0	132 A	8,5	15,0	14,0	
16130	16230	25,0	176 A	8,5	16,0	16,0	
16135	16235	35,0	218 A	8,5	17,0	16,0	
16140	16240	50,0	276 A	10,5	22,0	18,0	
16145	16245	70,0	347 A	10,5	25,0	22,0	
16150	16250	95,0	416 A	13,0	29,0	24,0	
16155	16255	120,0	488 A	13,0	31,0	24,0	
16160	16260	150,0	566 A	13,0	35,0	30,0	



Highly flexible connectors with plugs and sockets manufactured by single insulated extruded silicone cables acc. to page 2 of these product information. Design A one side tubular cable lug and solderless pressed plug at the other side. Design B one side tubular cable lug and solderless pressed socket at the other side. Plugs and sockets with snap-in locking system. They lock automatically when connected. Plugs are inserted only so far that the ring-snaps-in. To release, lightly turn and push in plug, then pull out. We deliver highly flexible connectors in plug technique in various designs.

Part-No.		Technical Datas							
Design A	Design B	cross-section mm ²	current load	dimensions mm					
				d1	L	L1	L2	d	B
16320	16325	10,0	80 A	6,0	acc. to customer wishes	22,0	7,0	6,5	11,0
16330	16335	16,0	100 A	6,0		22,0	7,0	8,5	15,0
16340	16345	25,0	130 A	10,0		42,5	12,0	8,5	16,0
16350	16355	35,0	170 A	10,0		42,5	12,0	8,5	17,0
16360	16365	50,0	200 A	14,0		43,0	17,0	10,5	22,0
16370	16375	70,0	250 A	14,0		43,0	17,0	10,5	25,0
16380	16385	95,0	300 A	14,0		43,0	17,0	13,0	29,0
16390	16395	120,0	350 A	14,0		43,0	17,0	13,0	31,0



Cable lugs and crimping tools for working with silicone insulated druseidt-cables

Tubular cable lugs 10f-150f for fine stranded cables

Material: E-Copper-tube DIN 40500, surface tinned

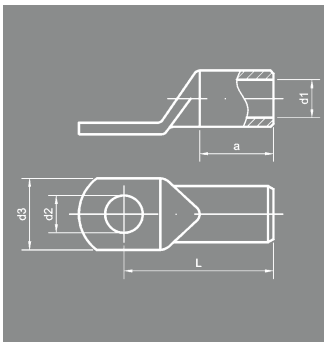


When working with our highly flexible silicone cables even under high current or voltage it is necessary to guarantee optimized electrical connections. So it is necessary to work only with suitable cable lugs and suitable crimping tools to guarantee a absolute save and correct crimping. To guarantee this facts we offer additionally to our cables suitable cable lugs as well as suitable crimping tools with special die sets acc. to the following tables and pages. Further tools and terminals (e. g. angle types 90°) are contained in our main catalogue "Solderless terminals and special tools for cutting, stripping and crimping". If you have interest to get our main catalogue or if you have further questions don't hesitate to contact our company.

For the crimping of our highly flexible silicone cable with our tubular cable lugs acc. to the following tables we recommend our special WM-crimping die sets acc. to the page 9 of this product information.

This special crimp design is a modified hexagonal crimping with a additionally indent crimp on both sides of the die. Compared with the real hexagonal crimping, which is normally used by working with conductors with stronger wire-Ø to DIN 48201 or similar, you get a stronger compression in the centre of our highly flexible cable and therefore optimized electrical connections.

So it is possible to guarantee save connections also when working with highly flexible cables with a single wire-Ø of 0,07/0,10 mm.



Suitable crimping tools are contained in this product information on pages 8 and 9

Part-No.		Technical Datas							
without inspection hole	with inspection hole	cross-section mm ²	drilling M	dimensions mm					weight kg/% pieces
				d1	d2	d3	L	a	
13650	13650/S	10f	5	5,0	5,3	12,0	23,0	12,0	7,00
13651	13651/S		6	6,4	12,0	25,0		7,60	
13652	13652/S		8	8,4	15,0	28,0		8,40	
13653	13653/S		10	10,5	18,0	31,0		9,40	
13654	13654/S		12	13,0	20,0	32,0		9,50	
10700	10700/S	16f	5	6,0	5,3	14,0	25,5	13,0	9,40
13655	13655/S		6	6,4	14,0	27,0		9,70	
13656	13656/S		8	8,4	15,0	29,5		11,30	
13657	13657/S		10	10,5	18,0	32,0		12,00	
13658	13658/S		12	13,0	20,0	33,0		11,90	
13659	13659/S	25f	6	7,7	6,4	16,0	32,0	16,0	15,10
13660	13660/S		8	8,4	16,0	34,0		15,30	
13661	13661/S		10	10,5	18,0	35,0		15,60	
13662	13662/S		12	13,0	20,0	36,0		16,50	
10702	10702/S	35f	6	9,2	6,4	18,0	36,0	18,0	20,70
13663	13663/S		8	8,4	18,0	36,0		19,40	
13664	13664/S		10	10,5	20,0	38,0		21,40	
13665	13665/S		12	13,0	23,0	40,0		22,20	
13666	13666/S		16	17,0	28,0	45,0		22,10	
10704	10704/S	50f	6	11,2	6,4	22,0	42,0	21,0	32,50
13667	13667/S		8	8,4	22,0	42,0		31,80	
13668	13668/S		10	10,5	22,0	43,0		33,10	
13669	13669/S		12	13,0	23,0	44,0		33,60	
13670	13670/S		16	17,0	28,0	48,5		35,70	
13671	13671/S	70f	8	13,5	8,4	25,0	46,0	23,0	48,50
13672	13672/S		10	10,5	25,0	47,0		50,00	
13673	13673/S		12	13,0	26,0	47,0		49,10	
13674	13674/S		16	17,0	28,0	50,0		51,50	
10706	10706/S		20	21,0	31,0	54,5		55,20	
10707	10707/S	95f	8	15,5	8,4	29,0	53,0	26,0	78,40
13675	13675/S		10	10,5	29,0	53,0		75,00	
13676	13676/S		12	13,0	29,0	52,5		74,00	
13677	13677/S		16	17,0	29,0	55,0		75,10	
13678	13678/S		20	21,0	35,0	60,0		76,10	
13679	13679/S	120f	10	16,8	10,5	31,0	56,5	29,0	83,50
13680	13680/S		12	13,0	31,0	56,0		81,30	
13681	13681/S		16	17,0	31,0	57,5		81,40	
13682	13682/S		20	21,0	35,0	63,0		84,00	
10708	10708/S	150f	10	19,0	10,5	35,0	59,0	30,0	104,00
13683	13683/S		12	13,0	35,0	58,5		107,00	
13684	13684/S		16	17,0	35,0	63,0		111,10	
13685	13685/S		20	21,0	35,0	66,0		119,60	

Cable lugs and crimping tools for working with druseidt silicone insulated cables

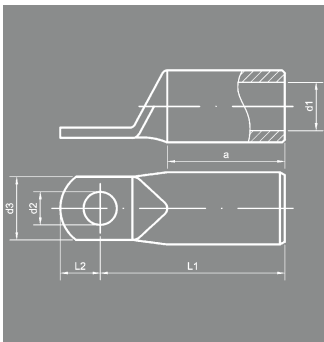
Tubular cable lugs 35f – 150f mm² **with smaller flange** for fine stranded cables
Material: E-Copper-tube DIN 40500, surface tinned



By working with our tubular cable lugs with smaller flange it is in combination with our silicone insulated cables possible to produce highly flexible and extremely movable electrical connections with smallest dimensions.

The electro technical industry develop switch gears or switch boards with smaller and smaller dimensions by the same or more power as the model before.

So our silicone insulated cables combined with tubular cable lugs with smaller flange offer a good solution for connecting electrical components inside difficult equipments or small places. Because the possible current load and the heat resistance of our silicone cables are higher (compared with normal PVC or normal rubber insulated cables), our products enable to transfer high current by using components with extremely small dimensions.



Suitable crimping tools are contained in this product information on pages 8 and 9.

Part-No.	Technical datas								
	cross-section mm ²	drilling M	dimensions mm						weight kg/‰ pieces
			d1	d2	d3	L1	L2	a	
10850	35f	6	9,2	6,4	15,0	33,5	7,5	18,0	27,0
10852	50f	6	11,2	6,4	15,0	38,5	7,5	21,0	26,9
10853		8		8,4	17,0	41,0	10,0		31,8
10854		10		10,5	19,0	43,0	12,0		33,1
10856	70f	6	13,5	6,4	17,0	44,0	7,5	23,0	42,2
10857		8		8,4	17,0	46,0	10,0		44,6
10858		10		10,5	19,0	48,0	12,0		46,2
10859		12		13,0	22,0	49,0	13,0		49,2
10861	95f	6	15,5	6,4	19,0	46,5	7,5	26,0	56,4
10862		8		8,4	19,0	48,5	10,0		61,6
10863		10		10,5	19,0	51,0	12,0		62,9
10864		12		13,0	22,0	53,0	13,0		65,0
10866	120f	6	16,8	6,4	19,0	49,0	7,5	29,0	66,0
10867		8		8,4	19,0	51,0	10,0		70,4
10868		10		10,5	19,0	53,0	12,0		75,7
10869		12		13,0	22,0	59,0	13,0		78,6
10871	150f	6	19,0	6,4	19,0	56,0	7,5	30,0	89,5
10872		8		8,4	19,0	58,0	10,0		96,4
10873		10		10,5	19,0	60,0	12,0		101,7
10874		12		13,0	22,0	59,5	13,0		103,1



When working with druseidt tubular cable lugs with smaller flange you get connections with very small dimensions.

The following examples show the difference between the design with smaller flange and the standard types.

cross-section/ drilling	flange d3 in mm tubular cable lugs	
	standard- design	with smaller flange
35 mm ² / M 6	18	15
70 mm ² / M10	25	19
95 mm ² / M10	29	19
120 mm ² / M12	31	22
150 mm ² / M12	35	22

Crimping tools with exchangeable die sets

for tubular druseidt cable lugs for fine stranded cables

Hydraulic operated crimping tools

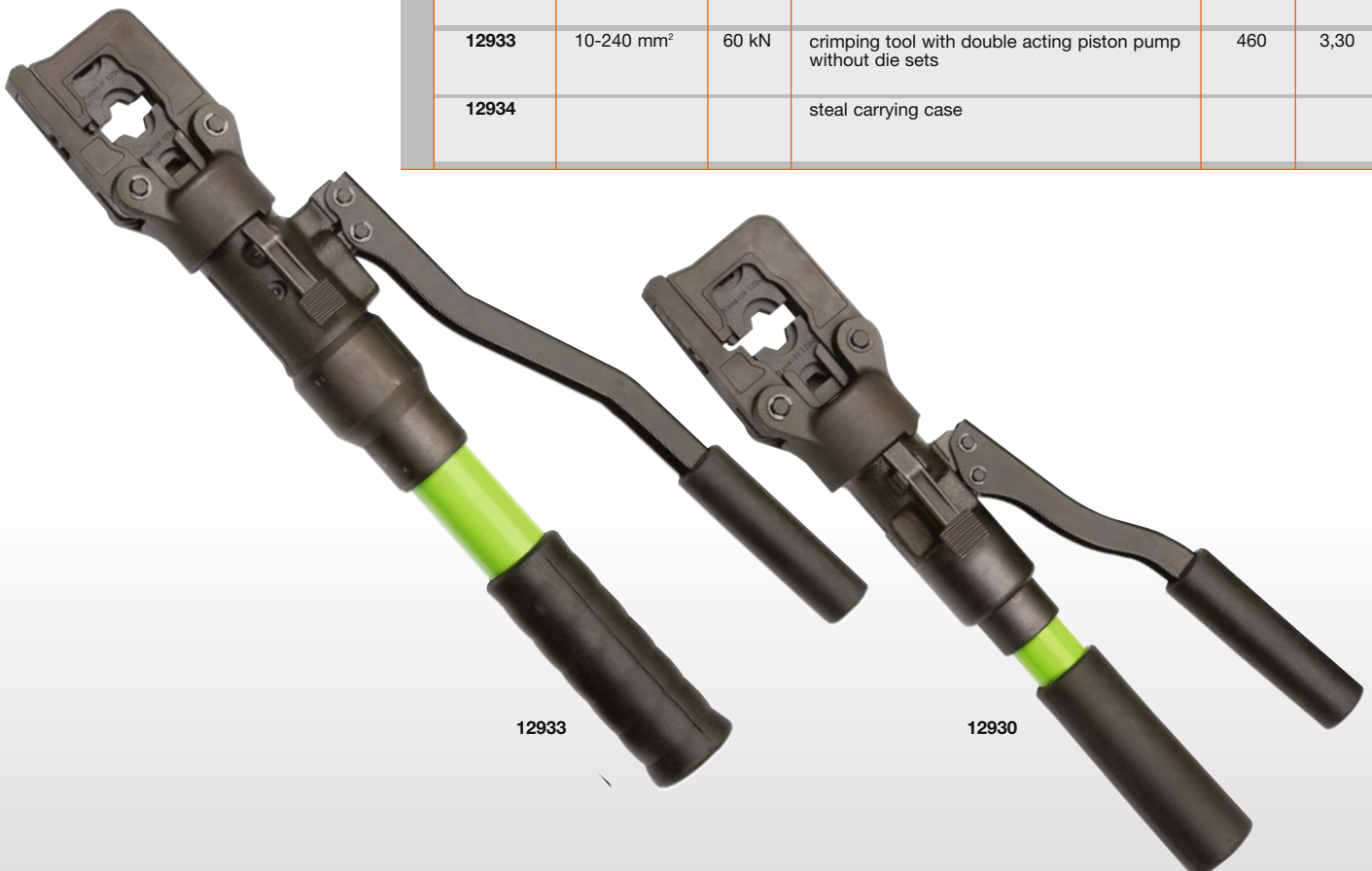
Small handy, hydraulic operated crimping tools with limit compression valve. Part-No. 12930 with single acting piston pump.

Part-No. 12933 with double acting piston pump for rapid motion of the die set. The collapsible 180° pivoting head of the tool enables a quick changing of the die sets. The handy design, the little weight and the construction of the crimping head offer also a working inside difficult equipment or small places.

You find the necessary crimping dies on the opposite page 9. The same dies can be used also in our battery operated tool part-no. 12750 acc. to page 9. Additionally to the described dies for tubular cable lugs for fine stranded cables we deliver for all the tools (12930/12933/12750) exchangeable die sets for all common cable lugs and connectors (DIN as well as handles-types).

The total crimping range of the tools part-no. 12930 and 12933 is 240 mm². Further dies and more description are contained in our main catalogue "Solderless terminals and special tools for cutting, stripping and crimping". If you have interest to get our main catalogue or if you have further questions don't hesitate to contact our company.

Part-No.	Technical Datas				
	cross-section range	crimping force	description	length mm	weight/ kg piece
12930	10-240 mm ²	60 kN	crimping tool with single acting piston pump without die sets	370	2,40
12931			steal carrying case		
12933	10-240 mm ²	60 kN	crimping tool with double acting piston pump without die sets	460	3,30
12934			steal carrying case		



Battery operated crimping and cutting tool

Battery operated crimping and cutting tool with extremely high compacting pressure (up to 100 kN). The collapsible, turnable head combined with the little weight (ca. 4 kg) enables also a working in small places. The high speed battery charger with a loading time of only ca. 15 minutes is standard and makes it possible to work continuously without break only with one additional spare battery. The stabilized exchangeable cutting head enables quick and easy cutting of copper- and aluminium cables up to an outer-Ø of 54 mm. So it is possible to cut cables with a cross-section range up to 4 x 150 mm² without any problem. Easy changing of the head by putting up on the battery operated tool.

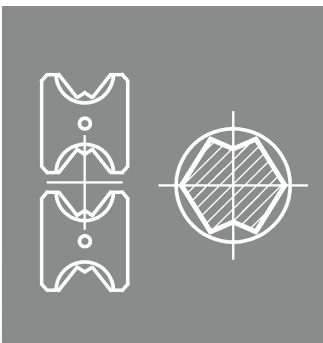
Additionally to the described WM-crimping dies for tubular cable lugs for fine stranded cables we deliver also for the battery operated tool Part-No. 12750 further exchangeable die sets for all common cable lugs and connectors (DIN as well as handles-types).

The total crimping range of the tool is up to 300 mm². Further dies and more description are contained in our main catalogue "Solderless terminals and special tools for cutting, stripping and crimping".

If you have interest to get our main catalogue or if you have further questions don't hesitate to contact our company.

Part-No.	Technical Datas				
	cross-section range	crimping force	description	length mm	weight/kg piece
12750	10-300 mm ²	100 kN	Battery operated crimping tool with one 12 V battery and high speed battery charger, delivered in a high quality suitcase	330	4,00
12751	54 mm Ø		Exchangeable cutting head for copper and aluminium cables up to an outer-Ø of 54 mm	170	1,65
12754			Replacement high speed battery charger (loading time ca. 15 min.)		0,90
12756			spare battery 12 V		0,63

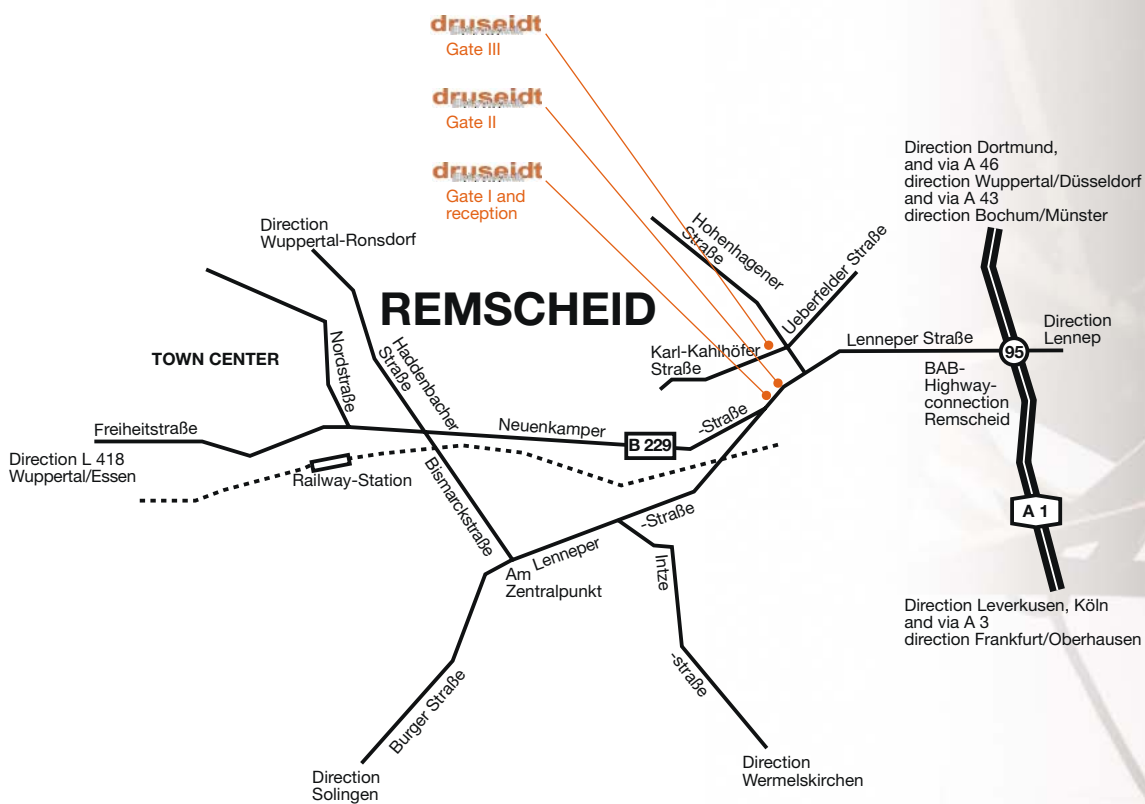
Exchangeable die sets for the tools Part-No. 12930/12933/12750



Part-No.	cross-section	crimping width mm
12492	10f + 25f	5,0
12493	16f + 35f	5,0
12494	50f	5,0
12495	70f	5,0
12496	95f	5,0
12497	120f	5,0
12498	150f	5,0



Exchangeable cutting head 12751



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Please order also our detailed catalogues to the following subjects:

- 1 Solderless terminals and special tools for cutting, stripping and crimping
- 2 Flexible air and water cooled connectors and cables for Hi-Tech-applications
- 3 Main catalogue for contact systems and accessories for electroplating and anodizing equipments