

# RENEWABLE ENERGY



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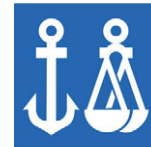


**ELPRESS**

# Certification and standards



**IEC - International Electrical Commission**  
- issues international standards which, although not always compulsory, do have strong influence and are used as a basis within the international terminal trade.



**DNV - Det Norske Veritas**  
Elpress KR/KS, KRF/KSF and KRT/KST terminals meet DNV's rules for classification of ships and Det Norske Veritas' Offshore Standards. The terminals are approved for installations on ships and mobile "offshore" units.

## Environment policy

Elpress products and services, are designed to minimise environmental impact, to protect limited resources and to take the life-cycle perspective into consideration in connection with:

- Product development.
- Manufacturing.
- Use and withdrawal of products.

Each and every Elpress employee shall prioritize the personal responsibility for safety, quality and the environment within his daily work routine. Information and education will constitute normal activity for increased awareness.

Our suppliers and commissioned partners are chosen and influenced in such a way that they can comply with and add value to our Policy.

Our customers are informed about our environmental dedication and our partners have all the necessary knowledge to assist and advise all parties of the distribution chain and safeguard the proper use, stocking and final disposal of our products.

We continuously evaluate the results of our Policy and openly distribute information on our work and impact on the environment.

Our environment work has resulted in Elpress being certified to ISO 14001 since 2004.

Our certificate, with number EMS 531083, is issued by the internationally recognized BSI, British Standards Institution, of England.

## Quality

For us, quality means trying all the time to be the best in the business. That's why we are constantly developing our products, methods and ourselves, since knowledge is perhaps the most important component for achieving the highest quality. Our work on quality has resulted in Elpress being certified to ISO 9001 since 1992.

Our certificate, with number FM20987, is issued by the internationally recognized BSI, British Standards Institution, of England.

## Verification of products

There are quite a lot of different test standards and approval routines that may be applied on cable connectors and terminations. Due to this and the variation in contents between standards from different countries one has to make a selection. Elpress had previously applied primarily Swedish, UK and German standards but lately IEC and EN Standards, where the latter rapidly will substitute the old national standards. In many cases, there are also UL, DNV-Det Norske Veritas or other approvals on our products.



KR/KS, KRF/KSF, KRFS, KRT/KST UL approved in accordance with file no. E205350. UL certified products are delivered with UL marking on the label including the UL file number and/or certification code for control by an UL inspector. The Certificate can be downloaded at UL Product IQ.

# Table of content

What's special with Renewable Energy applications? .....	2
Crimping with DUAL System .....	3
Cu-terminals.....	4
Al- and Al-/Cu-terminals.....	13
Aluminium terminals 16 - 1200 mm <sup>2</sup> .....	14
Aluminium through connectors with partition 16 - 1200 mm <sup>2</sup> .....	15
Through connectors with aluminium partitions with different areas 16 - 400 mm <sup>2</sup> .....	16
Aluminium through connectors with cable stop 300 - 400 mm <sup>2</sup> .....	17
Aluminium-copper terminals 16 - 1200 mm <sup>2</sup> .....	18
Aluminium-copper terminals 300 - 400 mm <sup>2</sup> .....	19
Aluminium-copper pin sockets 16 - 300 mm <sup>2</sup> .....	19
Through connectors of aluminium 16 - 95 mm <sup>2</sup> to solid copper 10 mm <sup>2</sup> .....	20
Through connectors of aluminium-copper 300 - 400 mm <sup>2</sup> .....	20
Aluminium-copper through connectors 16 - 400 mm <sup>2</sup> .....	21
Tools and accessories for crimping Al and Cu terminals.....	22
PVX1300/PVX1300DB.....	22
PVX1300C2/PVX1300C2DB.....	23
DV1300 and DV1300C2.....	24
Table stand for Cu- and Al-terminals and DV250.....	25
Accessories for crimping Cu flexible conductors with DUAL system.....	26
Accessories for crimping Cu conductors with 1300 and 250 system (DIN terminals).....	28
Accessories for crimping Al with DV1300 and PVX1300.....	29
Accessories for crimping Al with DV250.....	30
Storage boxes for Al and Cu accessories.....	31
Crimp station for industrial crimping of KRF/KSF.....	32
Crimp dies for CS2500.....	33
Analyzer - software for analysis of crimps & system calibration.....	34
Lightweight and versatile designed pumps based on customer needs.....	35
Other hydraulic pumps.....	39
Pre-insulated terminals.....	40
Hand Tools.....	41
Certified handtools for pre-insulated terminals.....	49
End terminals.....	50
Certified Miniforce handtools for end terminals.....	54
Battery-powered cable cutters.....	55
Earthing and braids.....	58
Cable clamps.....	60
Some important comments on contact crimping.....	63
Standards for contact crimping.....	64
Use and safety instructions.....	65
Bolt joints.....	67
Service and maintenance.....	68
Technical information.....	69
Development - technical services.....	70
General comments on the use of Elpress terminals for voltages of 12 kV and above.....	71

# What's special with Renewable Energy applications?

## Demanding applications

During several years Elpress has had contact with manufacturers of demanding applications like trains and windpower manufacturers, or with their sub-suppliers of cable assemblies. In these contacts it has been more and more apparent that there is quite a spectrum of different requirements that is regarded highly relevant to the use in these applications.

## Electrical properties

- First of all comes of course the requirements of electrical properties and mainly the current carrying capacity. These requirements must be seen in the light of high current peaks in lowest possible conductor areas and the requirements of flexible conductors.
- Wind applications may include tough corrosion resistance requirements.
- Vibrations as well as static loads may occur and be of the most different types. The connection must stand these loads.

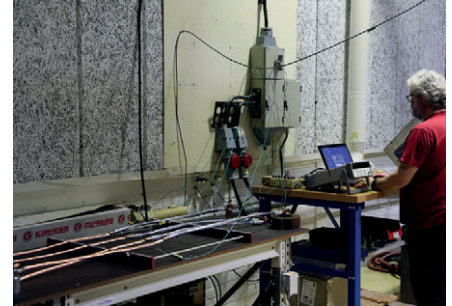
## Tests

Elpress has gone through which tests that may be used to verify that our terminals and connectors together with our crimp system meet the Vehicle application requirements. Together with customers the following test standards have been regarded relevant:

- Electrical properties - IEC 61238-1, Class A. This is a relatively new standard corresponding to or in many cases superceding most earlier European standards. Environmental requirements - DIN V 40 046, part 37. The chosen part of this German standard states a very tough test where hydrogen sulphide is used as the aggressive substance.
- Static loads normally form part of established electrical tests and this is the case also in the IEC-standard referred to above. The load limits are often rather low but in the Swedish standard SEN 245010 relatively high load limits are given and these are therefore used here.
- Vibration tests are hard to carry through in a representative manner. This is due to the very different load patterns that every build-in case may give. A european test for railway applications - EN 50155 - has been used in applicable parts.

## System technology

Crimping is a System Technology. This means that it is the combination of a chosen terminal or connector and a matching crimp tool, all determined by the specific conductor that will result in the desired connection properties.



Flexible and customized test setups.



# Crimping with DUAL System

## DUAL system

This system has been developed to meet the hard combine requirements from manufacturers with tough applications with the best result.

The DUAL technology combines the desired properties from an optimal hexagonal crimp with those of a limited indent crimp. This results in tight contact surfaces without damage to the conductor strands.



## The patented Elpress Dual system

We call this technology, which is patented, the Elpress DUAL System where the name points at split crimp sequence that starts with a hexagonal crimp and, without separation of the dies, is finished by an additional indent crimp.

## Tools for DUAL crimping

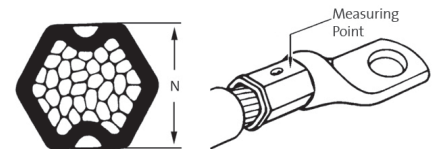
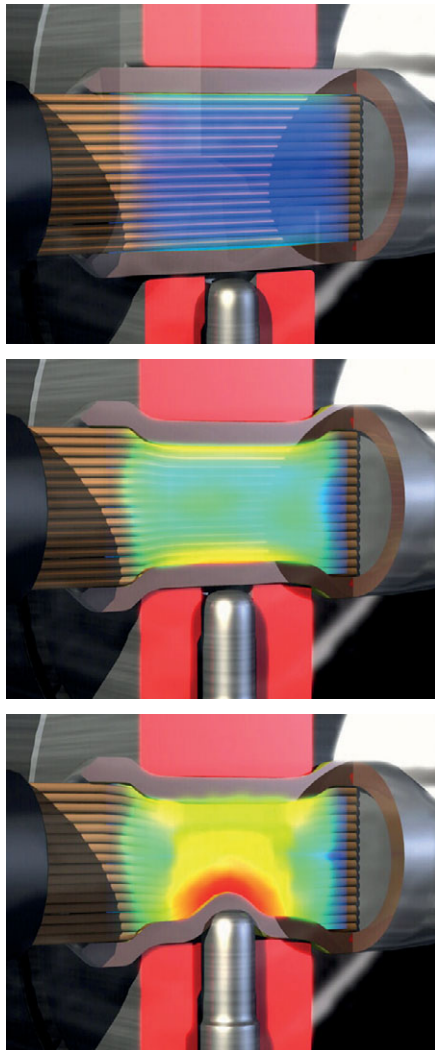
The DUAL crimp is performed by crimp tools PVX1300, PVX1300C2, crimp heads DV1300, DV1300C2 or DV250 using the crimp dies DBxx available from 10 to 400 mm<sup>2</sup>. The crimp heads are powered by the normal Elpress hydraulic pumps P4000 (foot pump), PS710 (mains and battery operated hydraulic pump) or P1000 (mains powered pump).

## Check measures

An effective way to check correct crimps during work is to perform measurements of achieved crimp heights, N-measures in the following table, regularly or as first and last piece inspection.

## N measures

Area mm <sup>2</sup>	Die (for DV1300 & PVX1300)	Die (for DV1300C2 & PVX1300C2)	Die (for DV250)	N-measure mm
10	13DB8	13DCB8		6,7
16	13DB9	13DCB9		7,5
25	13DB11	13DCB11		9,0
35	13DB13	13DCB13		10,6
50	13DB14,5	13DCB14,5		11,8
70	13DB17	13DCB17		13,6
95	13DB20	13DCB20		16,0
120	13DB22	13DCB22	DB2522	17,7
150	13DB25	13DCB25	DB2525	20,3
185	13DB27	13DCB27	DB2527	21,7
240	13DB30	13DCB30	DB2530	23,9
300	13DB32	13DCB32	DB2532	25,7
400			DB2538	30,5



Cross section of DUAL crimp



# Cu-terminals

## General information about Elpress Cu-terminals



### System Elpress

System Elpress consists of terminals and tools that are designed and tested together to give a certified crimping result. This ensures that users will feel confident when using our systems, and that a secure connection is achieved through the proper handling of our products. By using Elpress Cu-connection elements together with one of Elpress crimp systems one obtains a connection that has been tested according to the requirements of IEC 61238:1.



### Cu terminals

Elpress copper connectors are made of pure copper 99.95%. We manufacture tube terminals type KR/KRF/KRD/KRT and through connectors type KS/KSF/KSD/KST for stranded conductors (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228. Other products such as C-sleeves, primarily used for pre-splicing of Cu-lines, and many customised products specially designed for our customer needs.

#### KRF/KSF type

For flexible (class 5), very flexible (class 6) and stranded (class 2) Cu conductors, terminals of type KR/KRF and through connectors of type KS/KSF are used.

#### KRD/KRT and KSD/KST type

Terminals type KRD/KRT and through connectors type KSD/KST are normally used for stranded Cu conductors (class 2).

### Applications

Terminals of type KR/KRF/KRD/KRT are used mainly in termination to bus bars and apparatus of copper, while through connectors, of type KS/KSF/KSD/KST, are used mainly in the splicing of copper conductors in cable assemblies. They can also be used for straight splicing of earth conductors. With a branching sleeve, type C, one splices and branches earth conductors, lightning conductor installations and the like.



### UL-approved terminals

KR/KS, KRF/KSF, KRFS, KRT/KST UL approved in accordance with file no. E205350. UL certified products are delivered with UL marking on the label including the UL file number and/or certification code for control by an UL inspector. The certificate can be downloaded at UL Product IQ.

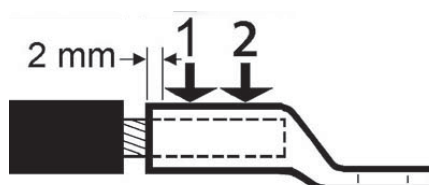


### DNV-approved terminals

Elpress KR/KS, KRF/KSF and KRT/KST terminals meet DNV's rules for classification of ships and Det Norske Veritas' Offshore Standards. The terminals are approved for installations on ships and mobile "offshore" units.

### Number of crimps

Normally one crimp is required up to and including 150 mm<sup>2</sup> and two or three crimps for larger areas. Note, however, that another number of crimps may be needed in some cases, see tables for tool dies. If possible, crimps should be placed next to each other with a couple of mm spacing between each one. Overlap is sometimes inevitable.



Crimp sequence for two crimps.

### Marking of Cu terminals

Elpress marking system for copper terminals shows logotype, cable area and type number for hexagonal die. This system allows checks that the correct tools have been used when contact crimping because the die number automatically becomes embossed during the contact crimping.



#### Marking tube terminals

25 (on neck)  
Type No. for hexagonal die (Elpress logo) 150 12 F (on the palm)  
150 = Cu conductor in mm<sup>2</sup>  
12 = Hole size  
F = KRF



#### Marking through connectors

Elpress Logo  
Type No. for hexagonal die 16 F (possible screened conductor area and earthing sign)  
16 = Cu conductor in mm<sup>2</sup>  
F = KSF



#### Marking C-sleeves (example C70-95)

Area marking (side 1)  
25-120 / 140-190  
min - max (mm<sup>2</sup> per conductor) / min - max (total mm<sup>2</sup> in the sleeve)  
Elpress logo, Die number (side 2)  
BCx, "x" corresponds to die number

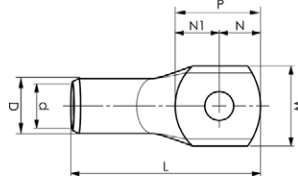
# KRF tube terminals 16 - 800 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn.
- Inspection hole
- For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228
- For class 5 and class 6 Cu conductors Elpress recommends the Dual system.
- UL approved (KRF16-500 mm<sup>2</sup>), DNV approved (16-400 mm<sup>2</sup>).



## Example of marking KRF: 17 (neck) Elpress logotype 70 10F (palm)

17 = Die No. 70 = mm<sup>2</sup> 10 = palm hole for M10 F = type KRF for class 2, 5 and 6 conductors.



mm <sup>2</sup> (Cu)	AWG Cu	Name	Screw	W mm	d	D	N	N1	P	L	t	s	Tool	Pcs/pack	Die
16	6	KRF16-6	M6	13	6	9	8	9	17	34	2,9	11	PVL350, V600, DV1300, DV250	100	9
16	6	KRF16-8	M8	13	6	9	8	9	17	34	2,9	11	PVL350, V600, DV1300, DV250	100	9
16	6	KRF16-10	M10	16	6	9	10	11	21	38	2,3	11	PVL350, V600, DV1300, DV250	100	9
16	6	KRF16-12	M12	22	6	9	12	13	25	47	1,6	11	PVL350, V600, DV1300, DV250	100	9
25	4	KRF25-6	M6	16	8	11	8	10	18	39	2,9	13	PVL350, V600, DV1300, DV250	100	11
25	4	KRF25-8	M8	16	8	11	8	10	18	39	2,9	13	PVL350, V600, DV1300, DV250	100	11
25	4	KRF25-10	M10	17	8	11	10	11	21	42	2,9	13	PVL350, V600, DV1300, DV250	100	11
25	4	KRF25-12	M12	22	8	11	12	13	25	47	2,1	13	PVL350, V600, DV1300, DV250	100	11
35	2	KRF35-6	M6	18	9	13	10	11	21	47	3,9	16	PVL350, V600, DV1300, DV250	100	13
35	2	KRF35-8	M8	18	9	13	10	11	21	47	3,9	16	PVL350, V600, DV1300, DV250	100	13
35	2	KRF35-10	M10	18	9	13	10	11	21	47	3,9	16	PVL350, V600, DV1300, DV250	100	13
35	2	KRF35-12	M12	22	9	13	12	14	26	52	3,2	16	PVL350, V600, DV1300, DV250	100	13
50	1/0	KRF50-6	M6	21	11	14,5	11	11	22	50	3,4	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRF50-8	M8	21	11	14,5	11	11	22	50	3,4	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRF50-10	M10	21	11	14,5	11	11	22	50	3,4	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRF50-12	M12	21	11	14,5	12	13	25	53	3,4	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRF50-16	M16	27	11	14,5	15	16	31	59	2,7	19	PVL350, V600, DV1300, DV250	100	14,5
70	2/0	KRF70-6	M6	25	13	17	11	11	22	55	3,9	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRF70-8	M8	25	13	17	11	11	22	55	3,9	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRF70-10	M10	25	13	17	11	11	22	55	3,9	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRF70-12	M12	25	13	17	12	13	25	58	3,9	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRF70-16	M16	28	13	17	15	16	31	64	3,5	22	PVL350, V600, DV1300, DV250	50	17
95	4/0	KRF95-8	M8	29	15	20	15	16	31	69	4,9	25	V600, DV1300, DV250	50	20
95	4/0	KRF95-10	M10	29	15	20	15	16	31	69	4,9	25	V600, DV1300, DV250	50	20
95	4/0	KRF95-12	M12	29	15	20	15	16	31	69	4,9	25	V600, DV1300, DV250	50	20
95	4/0	KRF95-16	M16	29	15	20	15	16	31	69	4,9	25	V600, DV1300, DV250	50	20
120	250	KRF120-10	M10	32	17	22	15	16	31	73	4,9	27	V600, DV1300, DV250	25	22
120	250	KRF120-12	M12	32	17	22	15	16	31	73	4,9	27	V600, DV1300, DV250	25	22
120	250	KRF120-16	M16	32	17	22	15	16	31	73	4,9	27	V600, DV1300, DV250	25	22
150	300	KRF150-10	M10	36	19	25	15	16	31	80	5,9	32	V600, DV1300, DV250	25	25
150	300	KRF150-12	M12	36	19	25	15	16	31	80	5,9	32	V600, DV1300, DV250	25	25
150	300	KRF150-16	M16	36	19	25	15	16	31	80	5,9	32	V600, DV1300, DV250	25	25
150	300	KRF150-20	M20	36	19	25	19	19	38	87	5,9	32	V600, DV1300, DV250	25	25
185	350	KRF185-10	M10	39	21	27	15	16	31	86	5,9	37	DV1300, DV250	20	27
185	350	KRF185-12	M12	39	21	27	15	16	31	86	5,9	37	DV1300, DV250	20	27
185	350	KRF185-16	M16	39	21	27	15	16	31	86	5,9	37	DV1300, DV250	20	27
185	350	KRF185-20	M20	39	21	27	19	19	38	93	5,9	37	DV1300, DV250	20	27
240	500	KRF240A-10	M10	42	22,5	30	19	20	39	96	6,4	37	DV1300, DV250	10	30
240	500	KRF240A-12	M12	42	22,5	30	19	20	39	96	6,4	37	DV1300, DV250	10	30
240	500	KRF240A-16	M16	42	22,5	30	19	20	39	96	6,4	37	DV1300, DV250	10	30
240	500	KRF240A-20	M20	42	22,5	30	19	20	39	96	6,4	37	DV1300, DV250	10	30
300	600	KRF300A-10	M10	46	24,5	32	15	19	34	93	6,8	40	DV1300, DV250	10	32
300	600	KRF300A-12	M12	46	24,5	32	15	19	34	93	6,8	40	DV1300, DV250	10	32
300	600	KRF300A-16	M16	46	24,5	32	20	20	40	99	6,8	40	DV1300, DV250	10	32
300	600	KRF300A-20	M20	46	24,5	32	23	25	48	107	6,8	40	DV1300, DV250	10	32
300	600	KRF300A-24	M24	46	24,5	32	23	25	48	110	6,8	40	DV1300, DV250	10	32
400	750	KRF400A-00		56	30	38			55	125	7,8	52	DV1300, DV250	10	38
400	750	KRF400A-12	M12	56	30	38	15	25	40	111	7,8	52	DV1300, DV250	10	38
400	750	KRF400A-16	M16	56	30	38	20	20	40	111	7,8	52	DV1300, DV250	10	38
400	750	KRF400A-20	M20	56	30	38	23	25	48	119	7,8	52	DV1300, DV250	10	38
400	750	KRF400A-24	M24	56	30	38	23	25	48	118	7,8	52	DV1300, DV250	10	38
500	1000	KRF500-00		61	33	42			70	160	8,8	70	DV250, V1470	5	42
500	1000	KRF500-12	M12	61	33	42	25	35	60	150	8,8	70	DV250, V1470	5	42
500	1000	KRF500-14	M14	61	33	42	25	35	60	150	8,8	70	DV250, V1470	5	42
500	1000	KRF500-16	M16	61	33	42	25	35	60	150	8,8	70	DV250, V1470	5	42
500	1000	KRF500-20	M20	61	33	42	25	35	60	150	8,8	70	DV250, V1470	5	42
500	1000	KRF500-24	M24	61	33	42	25	35	60	150	8,8	70	DV250, V1470	5	42
630	1250	KRF630-00		75	39	53			80	195	13,8	80	DV250, V1470	1	53
630	1250	KRF630-12	M12	75	39	53	35	45	80	195	14	80	DV250, V1470	1	53
630	1250	KRF630-16	M16	75	39	53	35	45	80	195	13,8	80	DV250, V1470	1	53
630	1250	KRF630-20	M20	75	39	53	35	45	80	195	13,8	80	DV250, V1470	1	53
630	1250	KRF630-24	M24	75	39	53	35	45	80	195	13,8	80	DV250, V1470	1	53
800	1575	KRF800-00		75	42,5	53			80	195	13,8	80	DV250, V1470	1	53
800	1575	KRF800-16	M16	75	42,5	53	35	45	80	195	13,8	80	DV250, V1470	1	53
800	1575	KRF800-24	M24	75	42,5	53	35	45	80	195	13,8	80	DV250, V1470	1	53

t = palm thickness, s = strip length

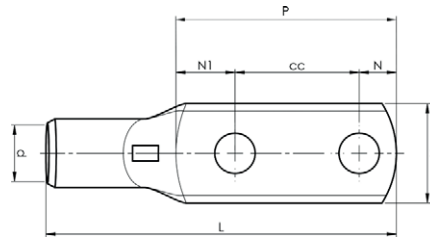
# KRF tube terminals with two holes 16 - 400 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn.
- Inspection hole
- For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228.
- For class 5 and class 6 Cu conductors Elpress recommends the Dual system.
- UL approved (16-400 mm<sup>2</sup>), DNV approved (see note).



## Example of marking KRF: 17 (neck) Elpress logotype 70 10F (palm)

17 = Die No. 70 = mm<sup>2</sup> 10 = palm hole for M10 F = type KRF for for class 2, 5 and 6 conductors.



mm <sup>2</sup> (Cu)	AWG Cu	Name	Screw	W mm	d	N	N1	P	cc	L	t	s	Tool	Pcs/ pack	Die	Note
16	6	KRF16-6X2-16	M6x2	13	6	6,5	8,5	31	16	50	2,8	11	PVL350, V600, DV1300, V250	100	9	
16	6	KRF16-10X2-40	M10x2	16	6	11	11	62	40	81	2,2	11	PVL350, V600, DV1300, V250	100	9	
16	6	KRF16-10X2-24-26	M10x2	16	6	11	19	55	25	75	2,2	11	PVL350, V600, DV1300, V250	100	9	
25	4	KRF25-6X2-16	M6x2	16	8	6,5	8,5	31	16	54	2,9	13	PVL350, V600, DV1300, V250	100	11	
25	4	KRF25-8X2-40	M8x2	16	8	9,5	10,5	60	40	81	2,8	13	PVL350, V600, DV1300, V250	100	11	
25	4	KRF25-10X2-40	M10x2	18	8	11	19	70	40	93	2,5	14	PVL350, V600, DV1300, V250	100	11	
25	4	KRF25-14X2-40	M14x2	22	8	15	17	72	40	94	1,8	13	DV1300, V250, V600, PVL350	100	11	
35	2	KRF35-10X2-24-26	M10x2	18	9	11	16	52	25	78	3,9	16	PVL350, V600, DV1300, DV250	100	13	
35	2	KRF35-10X2-40	M10x2	20	9	11	19	70	40	95	3,5	16	PVL350, V600, DV1300, DV250	100	13	
50	1/0	KRF50-10X2-24-26	M10x2	21	11	11	16	52	25	82	3,4	19	PVL350, V600, DV1300, DV250	100	14,5	
50	1/0	KRF50-10X2-40	M10x2	21	11	11	19	70	40	100	3,3	19	PVL350, V600, DV1300, DV250	100	14,5	
70	2/0	KRF70-10X2-24-26	M10x2	25	13	11	17	53	25	86	3,9	22	PVL350, V600, DV1300, DV250	50	17	
70	2/0	KRF70-12X2-40	M12x2	25	13	12	18	70	40	103	3,9	22	PVL350, V600, DV1300, DV250	25	17	DNV approved
95	4/0	KRF95-10X2-24-26	M10x2	29	15	11	19	55	25	93	4,9	25	V600, DV1300, DV250	25	20	
95	4/0	KRF95-12X2-40	M12x2	29	15	12	18	70	40	107	4,9	25	V600, DV1300, DV250	25	20	DNV approved
120	250	KRF120-10X2-24-26	M10x2	32	17	11	19	55	25	97	4,9	27	V600, DV1300, DV250	25	22	
120	250	KRF120-12X2-40	M12x2	32	17	12	19	71	40	113	4,9	27	V600, DV1300, DV250	25	22	DNV approved
150	300	KRF150-10X2-24-26	M10x2	36	19	11	19	55	25	104	5,9	32	V600, DV1300, DV250	25	25	
150	300	KRF150-12X2-40	M12x2	36	19	12	19	71	40	120	5,9	32	V600, DV1300, DV250	20	25	DNV approved
185	350	KRF185-10X2-24-26	M10x2	39	21	11	21	57	25	111	5,9	37	DV1300, DV250	20	27	
185	350	KRF185-12X2-40	M12x2	39	21	12	20	72	40	126	5,9	37	DV1300, DV250	20	27	DNV approved
240	500	KRF240A-10X2-24-26	M10x2	42	22,5	11	22	58	25	115	6,4	37	DV1300, DV250	10	30	
240	500	KRF240A-12X2-40	M12x2	42	22,5	12	21	73	40	130	6,4	37	DV1300, DV250	10	30	DNV approved
300	600	KRF300A-12X2-40	M12x2	46	24,5	12	22	74	40	133	6,8	40	DV1300, DV250	5	32	DNV approved
400	750	KRF400A-12X2-40	M12x2	56	30	12	23	75	40	145	7,8	52	DV1300, DV250	1	38	DNV approved

t = palm thickness, s = strip length



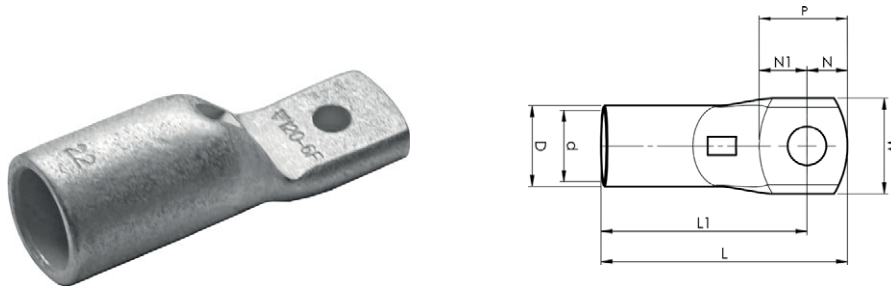
# KRFS tube terminals with narrow palm 50 - 400 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn.
- Inspection hole
- For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228.
- For class 5 and class 6 Cu conductors Elpress recommends the Dual system.
- Easy to install via cable gland, allows for pre-installation.
- The width of the palm is less than or as wide as the neck.
- UL-approved, DNV approved.



## Example of marking KRFS: 17 (neck) Elpress logotype 70 10F (palm)

17 = Die no. 70 = mm<sup>2</sup> 10 = palm hole for M10 F = type KRF for class 2, 5 and 6 conductors.



mm <sup>2</sup> (Cu)	AWG Cu	Name	Screw	W mm	d	D	N	N1	P	L	L1	t	s	Tool	Pcs/ pack	Die
50	1/0	KRFS50-6	M6	15	11	14,5	11	11,5	22,5	51	40	4	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRFS50-8	M8	16,5	11	14,5	11	11,5	22,5	51	40	3,8	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRFS50-10	M10	16,5	11	14,5	11	12,5	23,5	52	41	3,8	19	PVL350, V600, DV1300, DV250	100	14,5
70	2/0	KRFS70-6	M6	17	13	17	11	12,5	23,5	58	47	4,5	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRFS70-8	M8	17	13	17	11	12,5	23,5	58	47	4,5	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRFS70-10	M10	19	13	17	11	12,5	23,5	58	47	3,9	22	PVL350, V600, DV1300, DV250	50	17
95	4/0	KRFS95-6	M6	19	15	20	11	14	25	63	52	5,7	25	V600, DV1300, DV250	50	20
95	4/0	KRFS95-8	M8	19	15	20	11	14	25	63	52	5,7	25	V600, DV1300, DV250	50	20
95	4/0	KRFS95-10	M10	19	15	20	11	14	25	63	52	5,7	25	V600, DV1300, DV250	50	20
95	4/0	KRFS95-12	M12	20	15	20	12	15	27	64	52	5,4	25	V600, DV1300, DV250	50	20
120	250	KRFS120-6	M6	19	17	22	11	13,5	24,5	67	56	5,9	27	V600, DV1300, DV250	25	22
120	250	KRFS120-8	M8	19	17	22	11	13,5	24,5	67	56	5,9	27	V600, DV1300, DV250	25	22
120	250	KRFS120-10	M10	19	17	22	11	13,5	24,5	67	56	5,9	27	V600, DV1300, DV250	25	22
120	250	KRFS120-12	M12	22	17	22	12	15	27	70	58	5	27	V600, DV1300, DV250	25	22
150	300	KRFS150-6	M6	25	19	25	11	14	25	74	63	6,3	32	V600, DV1300, DV250	25	25
150	300	KRFS150-8	M8	25	19	25	11	14	25	74	63	6,3	32	V600, DV1300, DV250	25	25
150	300	KRFS150-10	M10	25	19	25	11	14	25	74	63	6,3	32	V600, DV1300, DV250	25	25
150	300	KRFS150-12	M12	25	19	25	12	15	27	76	64	6,3	32	V600, DV1300, DV250	25	25
185	350	KRFS185-10	M10	27	21	27	11	13	24	79	68	6,6	37	DV1300, DV250	20	27
185	350	KRFS185-12	M12	27	21	27	12	15	27	82	70	6,6	37	DV1300, DV250	20	27
240	500	KRFS240A-10	M10	29	22,5	29	15	19	34	91	76	7,7	37	DV1300, DV250	10	30
240	500	KRFS240A-12	M12	29	22,5	29	15	19	34	91	76	7,7	37	DV1300, DV250	10	30
240	500	KRFS240A-16	M16	29	22,5	29	20	19	39	96	76	7,7	37	DV1300, DV250	10	30
300	600	KRFS300A-10	M10	31	24,5	31,5	15	19	34	94	79	8,6	40	DV1300, DV250	10	32
300	600	KRFS300A-12	M12	31	24,5	31,5	15	19	34	94	79	8,6	40	DV1300, DV250	10	32
300	600	KRFS300A-16	M16	31	24,5	31,5	20	19	39	99	79	8,6	40	DV1300, DV250	10	32
400	800	KRFS400A-12	M12	38	30	38	15	24	39	114	99	8,8	52	DV1300, DV250	10	38
400	800	KRFS400A-16	M16	38	30	38	20	39	39	114	94	8,8	52	DV1300, DV250	10	38

t = palm thickness, s = strip length



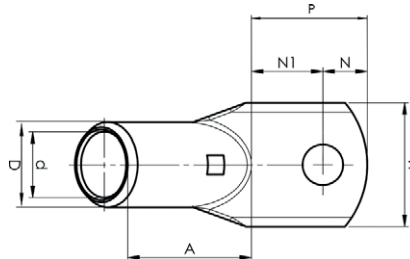
# KRF angled terminals 45° 10 - 150 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn.
- Inspection hole
- For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228.
- For class 5 and class 6 Cu conductors Elpress recommends the Dual system.
- UL approved (35-150 mm<sup>2</sup>). DNV approved (16-150 mm<sup>2</sup>).



## Example of marking KRF: 17 (neck) Elpress logotype 70 10F (palm)

17 = Die No. 70 = mm<sup>2</sup> 10 = palm hole for M10 F = type KRF for class 2, 5 and 6 conductors.



mm <sup>2</sup> (Cu)	AWG Cu	Name	Screw	W mm	d	D	N	N1	P	A	t	s	Tool	Pcs/ pack	Die
10	8	KR10-6-45GR	M6	13	5	8	6,5	11,5	20,5	19	2,3	11	PVL350, V600, DV1300, DV250	100	8
10	8	KR10-8-45GR	M8	13,5	5	8	8,5	12	18	19	2,2	11	PVL350, V600, DV1300, DV250	100	8
16	6	KRF16-6-45GR	M6	13	6	9	6,5	11,5	18	23	2,9	12	PVL350, V600, DV1300, DV250	100	9
16	6	KRF16-8-45GR	M8	13	6	9	8,5	12	20,5	23	2,7	12	PVL350, V600, DV1300, DV250	100	9
16	6	KRF16-10-45GR	M10	16	6	9	11,5	13,5	25	23	2,3	12	PVL350, V600, DV1300, DV250	100	9
25	4	KRF25-6-45GR	M6	16	8	11	6,5	11,5	18	24	2,7	13	PVL350, V600, DV1300, DV250	100	11
25	4	KRF25-8-45GR	M8	16	8	11	8,5	12	20,5	24	2,7	13	PVL350, V600, DV1300, DV250	100	11
25	4	KRF25-10-45GR	M10	17	8	11	11,5	13,5	25	23	2,9	13	PVL350, V600, DV1300, DV250	100	11
35	2	KRF35-6-45GR	M6	18	9	13	6,5	11,5	16	30	3,9	16	PVL350, V600, DV1300, DV250	100	13
35	2	KRF35-8-45GR	M8	18	9	13	8,5	12	20,5	30	3,9	16	PVL350, V600, DV1300, DV250	100	13
35	2	KRF35-10-45GR	M10	18	9	13	11,5	13,5	25	30	3,9	16	PVL350, V600, DV1300, DV250	100	13
50	1/0	KRF50-8-45GR	M8	21	11	14,5	8,5	17,5	26	31	3,4	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRF50-10-45GR	M10	21	11	14,5	11,5	18,5	30	31	3,4	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRF50-12-45GR	M12	21	11	14,5	12,5	19,5	32	31	3,3	19	PVL350, V600, DV1300, DV250	100	14,5
70	2/0	KRF70-8-45GR	M8	24	13	17	8,5	17,5	26	35	3,9	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRF70-10-45GR	M10	24	13	17	11,5	18,5	30	35	3,9	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRF70-12-45GR	M12	24	13	17	12,5	19,5	32	35	3,9	22	PVL350, V600, DV1300, DV250	50	17
95	4/0	KRF95-10-45GR	M10	28	15	20	11,5	18,5	30	40	4,9	25	V600, DV1300, DV250	50	20
95	4/0	KRF95-12-45GR	M12	28	15	20	12,5	19,5	32	40	4,9	25	V600, DV1300, DV250	50	20
95	4/0	KRF95-16-45GR	M16	29	15	20	15,5	20,5	36	40	4,8	25	V600, DV1300, DV250	50	20
120	250	KRF120-10-45GR	M10	32	17	22	11,5	18,5	30	43	4,9	27	V600, DV1300, DV250	25	22
120	250	KRF120-12-45GR	M12	32	17	22	12,5	19,5	32	43	4,9	27	V600, DV1300, DV250	25	22
120	250	KRF120-16-45GR	M16	32	17	22	15,5	20,4	35,9	43	4,9	27	V600, DV1300, DV250	25	22
150	300	KRF150-10-45GR	M10	36	19	25	11,5	18,5	30	49	5,8	32	V600, DV1300, DV250	25	25
150	300	KRF150-12-45GR	M12	36	19	25	12,5	19,5	32	49	5,8	32	V600, DV1300, DV250	25	25
150	300	KRF150-16-45GR	M16	36	19	25	15,5	20,5	36	49	5,8	32	V600, DV1300, DV250	25	25

t = palm thickness, s = strip length

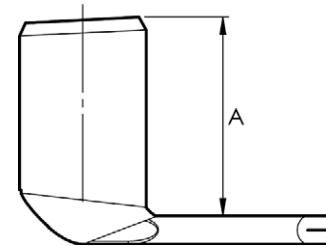
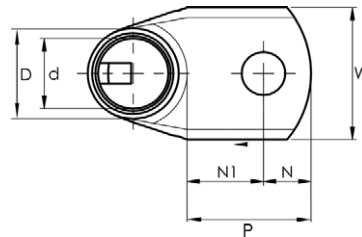
# KRF angled terminals 90° 10 - 185 mm²

- Material: Cu 99.95%, tin plated Cu/Sn.
- Inspection hole
- For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228.
- For class 5 and class 6 Cu conductors Elpress recommends the Dual system.
- UL approved (35-150 mm²). DNV approved (16-150 mm²).



## Example of marking KRF: 17 (neck) Elpress logotype 70 10F (palm)

17 = Die No. 70 = mm² 10 = palm hole for M10 F = type KRF for class 2, 5 and 6 conductors.



mm² (Cu)	AWG Cu	Name	Screw	W	d	D	N	N1	P	A	t	s	Tool	Pcs/ pack	Die
10	8	KR10-6-90GR	M6	13	5	8	6,5	11,5	18	15	2,3	11	PVL350, V600, DV1300, DV250	100	8
10	8	KR10-8-90GR	M8	13,5	5	8	8,5	12	20,5	15	2,2	11	PVL350, V600, DV1300, DV250	100	8
16	6	KRF16-6-90GR	M6	13	6	9	6,5	11,5	18	16,5	2,9	12	PVL350, V600, DV1300, DV250	100	9
16	6	KRF16-8-90GR	M8	13	6	9	8,5	12	20,5	16,5	2,7	12	PVL350, V600, DV1300, DV250	100	9
25	4	KRF25-6-90GR	M6	16	8	11	6,5	11,5	18	18,5	2,7	13	PVL350, V600, DV1300, DV250	100	11
25	4	KRF25-8-90GR	M8	16	8	11	8,5	12	20,5	18,5	2,7	13	PVL350, V600, DV1300, DV250	100	11
25	4	KRF25-10-90GR	M10	17	8	11	11,5	13,5	25	18,5	2,9	13	PVL350, V600, DV1300, DV250	100	11
35	2	KRF35-6-90GR	M6	18	9	13	6,5	11,5	18	22,5	3,9	16	PVL350, V600, DV1300, DV250	100	13
35	2	KRF35-8-90GR	M8	18	9	13	8,5	12	20,5	22,5	3,9	16	PVL350, V600, DV1300, DV250	100	13
35	2	KRF35-10-90GR	M10	18	9	13	11,5	13,5	25	22,5	3,9	16	PVL350, V600, DV1300, DV250	100	13
50	1/0	KRF50-8-90GR	M8	21	11	14,5	8,5	17,5	26	30,5	3,4	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRF50-10-90GR	M10	21	11	14,5	11,5	18,5	30	30,5	3,3	19	PVL350, V600, DV1300, DV250	100	14,5
50	1/0	KRF50-12-90GR	M12	21	11	14,5	12,5	19,5	32	30,5	3,3	19	PVL350, V600, DV1300, DV250	100	14,5
70	2/0	KRF70-8-90GR	M8	24	13	17	8,5	17,5	26	31,5	3,9	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRF70-10-90GR	M10	24	13	17	11,5	18,5	30	31,5	3,9	22	PVL350, V600, DV1300, DV250	50	17
70	2/0	KRF70-12-90GR	M12	24	13	17	12,5	19,5	32	31,5	3,9	22	PVL350, V600, DV1300, DV250	50	17
95	4/0	KRF95-10-90GR	M10	28	15	20	11,5	18,5	30	32,5	4,9	25	V600, DV1300, DV250	50	20
95	4/0	KRF95-12-90GR	M12	28	15	20	12,5	19,5	32	32,5	4,9	25	V600, DV1300, DV250	50	20
95	4/0	KRF95-16-90GR	M16	29	15	20	15,5	20,5	36	32,5	4,8	25	V600, DV1300, DV250	50	20
120	250	KRF120-8-90GR	M8	32	17	22	8,5	17,5	26	42	4,9	27	V600, DV1300, DV250	25	22
120	250	KRF120-8-90GR-SB	M8	32	17	22	8,5	17,5	26	34,5	4,9	27	V600, DV1300, DV250	25	22
120	250	KRF120-10-90GR	M10	32	17	22	11,5	18,5	30	42	4,9	27	V600, DV1300, DV250	25	22
120	250	KRF120-10-90GR-SB	M10	32	17	22	11,5	18,5	30	34,5	4,9	27	DV250	25	22
120	250	KRF120-12-90GR	M12	32	17	22	12,5	19,5	32	42	4,9	27	V600, DV1300, DV250	25	22
120	250	KRF120-12-90GR-SB	M12	32	17	22	12,5	19,5	32	34,5	4,9	27	DV250	25	22
120	250	KRF120-16-90GR	M16	32	17	22	15,5	20,5	36	42	4,9	27	V600, DV1300, DV250	25	22
120	250	KRF120-16-90GR-SB	M16	32	17	22	15,5	20,5	36	34,5	4,9	27	DV250	25	22
150	300	KRF150-10-90GR	M10	36	19	25	11,5	18,5	30	47	5,9	32	V600, DV1300, DV250	25	25
150	300	KRF150-10-90GR-SB	M10	36	19	25	11,5	18,5	30	37,5	5,9	32	DV250	25	25
150	300	KRF150-12-90GR	M12	36	19	25	12,5	19,5	32	47	5,9	32	V600, DV1300, DV250	25	25
150	300	KRF150-12-90GR-SB	M12	36	19	25	12,5	19,5	32	37,5	5,9	32	DV250	25	25
150	300	KRF150-16-90GR-LB	M16	36	19	25	15,5	20,5	36	47	5,9	32	V600, DV1300, DV250	25	25
150	300	KRF150-16-90GR-SB	M16	36	19	25	15,5	20,5	36	37,5	5,9	32	DV250	25	25
185	350	KRF185-10-90GR-SB	M10	39	21	27	11,5	18,5	30	42,5	5,9	37	V1300, V250	25	27
185	350	KRF185-12-90GR-SB	M12	39	21	27	12,5	19,5	32	42,5	5,9	37	V1300, V250	25	27
185	350	KRF185-16-90GR-SB	M16	39	21	27	15,5	20,5	36	42,5	5,9	37	V1300, V250	25	27

t = palm thickness, s = strip length, SB = short barrel

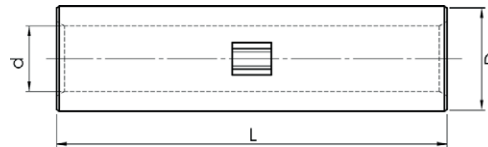
# KS/KSF through connectors 0.75 - 800 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn.
- Inspection hole and int. cable stop.
- For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228.
- For class 5 and class 6 Cu conductors Elpress recommends the Dual system.
- UL approved (1-500 mm<sup>2</sup>). DNV approved (16-400 mm<sup>2</sup>).



Examples of marking: 20 95F (Elpress logotype is included on the marking.)

20 = Die No. 95 = mm<sup>2</sup> F = type KSF for class 2, 5 and 6 conductors 111 = screen mm<sup>2</sup>



mm <sup>2</sup> (Cu)	AWG Cu	Name	Screen conductor	d mm	D	L	s	Tool	Pcs/ pack	Die
0,75	(22)-18	KS0,75		1,3	2,8	14	7	DKB0325, DKB0760	100	
1,5	(18)-16	KS1,5		1,8	3,3	14	7	DKB0325, DKB0760	100	
2,5	(16)-14	KS2,5		2,3	4,2	16	8	DKB0325, DKB0760	100	
4	12	KS4		3	5	19	9	GWB4099, ES2258	100	
6	10	KS6		4	6	19	9	GWB4099, ES2258	100	
10	8	KS10		5	8	30	15	GWB4099, ES2258, PVL350, V600, DV1300	100	8
16	6	KSF16	15	6	9	35	17	ES2258, PVL350, V600, DV1300	100	9
25	4	KSF25	21-29	8	11	35	17	ES2258, PVL350, V600, DV1300	100	11
35	2	KSF35	41	9	13	35	17	PVL350, V600, DV1300, DV250	100	13
50	1/0	KSF50	57	11	14,5	45	22	V600, DV1300, DV250	50	14,5
70	2/0	KSF70	72-88	13	17	45	22	V600, DV1300, DV250	50	17
95	4/0	KSF95	111	15	20	45	25	V600, DV1300, DV250	50	20
120	250	KSF120		17	22	55	27	V600, DV1300, DV250	50	22
150	300	KSF150		19	25	65	32	V600, DV1300, DV250	25	25
185	350	KSF185		21	27	70	35	DV1300, DV250	25	27
240	500	KSF240A		22,5	29	70	35	DV1300, DV250	25	30
300	600	KSF300A		24,5	31,5	75	37	DV1300, DV250	10	32
400	750	KSF400A		30	38	100	50	DV1300, DV250	10	38
500	1000	KSF500		33	42	135	68	DV250, V1470	5	42
630	1000	KSF630		39	53	175	88	DV250, V1470	3	53
800	1000	KSF800		42,5	53	175	88	DV250, V1470	2	53

s = strip length

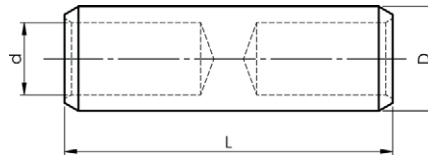
# KS/KSF through connectors with partition 10-500 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn.
- For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228.
- For class 5 and class 6 Cu conductors Elpress recommends the Dual system.
- With partition to prevent oil leakage.
- UL approved (1-500 mm<sup>2</sup>). DNV approved (16-400 mm<sup>2</sup>).



Examples of marking: 20 95F (Elpress logotype is included on the marking.)

20 = Die No. 95 = mm<sup>2</sup> F = type KSF for class 2, 5 and 6 conductors 111 = screen mm<sup>2</sup>



mm <sup>2</sup> (Cu)	AWG Cu	Name	Screen conductor	d mm	D	L	s	Tool	Pcs/ pack	Die
10	8	KS10M		5	8	36	18	ES2258, PVL350, V600, DV1300	100	8
16	6	KSF16M	15	6	9	37	18	ES2258, PVL350, V600, DV1300	100	9
25	4	KSF25M	21-29	8	11	38	18	ES2258, PVL350, V600, DV1300	100	11
35	2	KSF35M	41	9	13	41	19	PVL350, V600, DV1300, DV250	100	13
50	1/0	KSF50M	57	11	14,5	48	22	PVL350, V600, DV1300, DV250	50	14,5
70	2/0	KSF70M	72-88	13	17	49	22	PVL350, V600, DV1300, DV250	50	17
95	3/0	KSF95M	111	15	20	56	25	V600, DV1300, DV250	50	20
120	250	KSF120M		17	22	63	28	V600, DV1300, DV250	50	22
150	300	KSF150M		19	25	64	28	V600, DV1300, DV250	25	25
185	350	KSF185M		21	27	74	32	DV1300, DV250	25	27
240	500	KSF240AM		22,5	29	76	32	DV1300, DV250	1	30
300	600	KSF300AM		24,5	31,5	88	37	DV1300, DV250	1	32
400	750	KSF400AM		30	38	105	45	DV1300, DV250	1	38
500	1000	KSF500M		33	42	135	54	DV250, V1470	1	42

s = strip length

# DIN 46235 tube terminals 6 - 1000 mm<sup>2</sup>

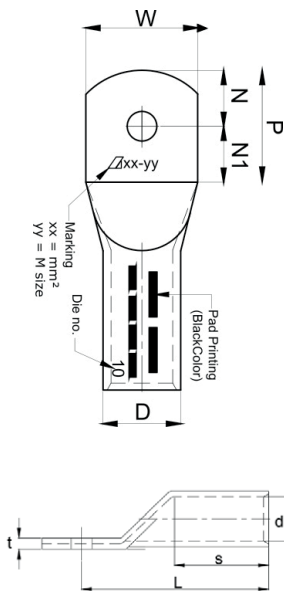
- Din tube terminals for Cu conductors.
- Material: Cu 99.95%, tin plated Cu/Sn.
- Dimensions according to DIN 46235, the number of crimps is indicated on the neck of the terminal.
- For crimping DIN 46235 terminals, use dies according to DIN 48083.



Example of plate marking: 95 10  
95 = mm<sup>2</sup> 10 = palm hole for M10



mm <sup>2</sup> (Cu)	AWG Cu	Name	Screw	W mm	d	D	N	N1	P	L	t	s	Tool	Pcs/ pack	Die
6	10	KRDIN6-5	M5	8,5	3,8	5,5	7,5	7,5	15	31,5	1,5	10	V600, V1300	100	5DIN
6	10	KRDIN6-6	M6	8,5	3,8	5,5	9	9,5	18,5	33	1,5	10	V600, V1300	100	5DIN
6	10	KRDIN6-8	M8	13	3,8	5,5	10	10	20	35	1	10	V600, V1300	100	5DIN
10	8	KRDIN10-5	M5	9	4,5	6	7,5	7,5	15	34,5	1,5	10	V600, V1300	100	6DIN
10	8	KRDIN10-6	M6	9	4,5	6	9	9,5	18,5	36	1,5	10	V600, V1300	100	6DIN
10	8	KRDIN10-8	M8	13	4,5	6	10	10	20	37	1	10	V600, V1300	100	6DIN
10	8	KRDIN10-10	M10	15	4,5	6	10	11,5	21,5	39	0,8	10	V600, V1300	100	6DIN
16	6	KRDIN16-6	M6	13	5,5	8,5	9	9,5	18,5	45	2,5	20	V600, V1300	100	8DIN
16	6	KRDIN16-8	M8	13	5,5	8,5	11,5	11,5	23	47,5	2,5	20	V600, V1300	100	8DIN
16	6	KRDIN16-10	M10	17	5,5	8,5	13,5	13,5	27	49,5	1,9	20	V600, V1300	100	8DIN
16	6	KRDIN16-12	M12	18	5,5	8,5	13,5	13,5	27	52	1,8	20	V600, V1300	100	8DIN
25	4	KRDIN25-6	M6	14	7	10	9	9,5	18,5	47	3	20	V600, V1300	100	10DIN
25	4	KRDIN25-8	M8	16	7	10	11,5	11,5	23	49,5	2,5	20	V600, V1300	100	10DIN
25	4	KRDIN25-10	M10	17	7	10	13,5	13,5	27	51,5	2,4	20	V600, V1300	100	10DIN
25	4	KRDIN25-12	M12	19	7	10	14,5	14,5	29	52,5	2,1	20	V600, V1300	100	10DIN
35	2	KRDIN35-6	M6	17	8,2	12,5	7,5	8	15,5	49,5	4,1	20	V600, V1300	100	12DIN
35	2	KRDIN35-8	M8	17	8,2	12,5	11,5	11,5	23	53,5	4,1	20	V600, V1300	50	12DIN
35	2	KRDIN35-10	M10	19	8,2	12,5	13,5	13,5	27	55,5	3,7	20	V600, V1300	50	12DIN
35	2	KRDIN35-12	M12	21	8,2	12,5	14,5	14,5	29	56,5	3,3	20	V600, V1300	50	12DIN
50	1/0	KRDIN50-6	M6	20	10	14,5	11,5	11,5	23	63,5	4,3	28	V600, V1300	50	14DIN
50	1/0	KRDIN50-8	M8	20	10	14,5	11,5	11,5	23	63,5	4,3	28	V600, V1300	50	14DIN
50	1/0	KRDIN50-10	M10	22	10	14,5	13,5	13,5	27	65,5	3,9	28	V600, V1300	50	14DIN
50	1/0	KRDIN50-12	M12	24	10	14,5	14,5	14,5	29	66,5	3,6	28	V600, V1300	50	14DIN
50	1/0	KRDIN50-16	M16	28	10	14,5	17,5	17,5	35	69,5	3,1	28	V600, V1300	50	14DIN
70	2/0	KRDIN70-6	M6	24	11,5	16,5	11,5	11,5	23	66,5	4,5	28	V600, V1300	25	16DIN
70	2/0	KRDIN70-8	M8	24	11,5	16,5	11,5	11,5	23	66,5	4,5	28	V600, V1300	25	16DIN
70	2/0	KRDIN70-10	M10	24	11,5	16,5	13,5	13,5	27	68,5	4,5	28	V600, V1300	25	16DIN
70	2/0	KRDIN70-12	M12	24	11,5	16,5	14,5	14,5	29	69,5	4,5	28	V600, V1300	25	16DIN
70	2/0	KRDIN70-16	M16	30	11,5	16,5	17,5	17,5	35	72,5	3,7	28	V600, V1300	25	16DIN
95	4/0	KRDIN95-8	M8	28	13,5	19	13,5	13,5	27	78,5	5	35	V600, V1300	25	18DIN
95	4/0	KRDIN95-10	M10	28	13,5	19	13,5	13,5	27	78,5	5	35	V600, V1300	25	18DIN
95	4/0	KRDIN95-12	M12	28	13,5	19	14,5	14,5	29	79,5	5	35	V600, V1300	25	18DIN
95	4/0	KRDIN95-16	M16	32	13,5	19	17,5	17,5	35	82,5	4,4	35	V600, V1300	25	18DIN
120	250	KRDIN120-10	M10	32	15,5	21	13,5	13,5	27	83,5	5	35	V600, V1300	20	20DIN
120	250	KRDIN120-12	M12	32	15,5	21	14,5	14,5	29	84,5	5	35	V600, V1300	20	20DIN
120	250	KRDIN120-16	M16	32	15,5	21	17,5	17,5	35	87,5	5	35	V600, V1300	20	20DIN
120	250	KRDIN120-20	M20	38	15,5	21	20,5	20,5	41	90,5	4,1	35	V600, V1300	20	20DIN
150	300	KRDIN150-10	M10	34	17	23,5	13,5	13,5	27	91,5	6	35	V600, V1300	20	22DIN
150	300	KRDIN150-12	M12	34	17	23,5	14,5	14,5	29	92,5	6	35	V600, V1300	20	22DIN
150	300	KRDIN150-16	M16	34	17	23,5	17,5	17,5	35	95,5	6	35	V600, V1300	20	22DIN
150	300	KRDIN150-20	M20	40	17	23,5	20,5	21,5	42	98,5	5,2	35	V600, V1300	20	22DIN
185	350	KRDIN185-10	M10	37	19	25,5	13,5	13,5	27	95,5	6	40	V1300, V250	10	25DIN
185	350	KRDIN185-12	M12	37	19	25,5	13,5	13,5	27	95,5	6	40	V1300, V250	10	25DIN
185	350	KRDIN185-16	M16	37	19	25,5	17,5	17,5	35	99,5	6	40	V1300, V250	10	25DIN
185	350	KRDIN185-20	M20	40	19	25,5	20,5	21,5	42	102,5	5,7	40	V1300, V250	10	25DIN
240	500	KRDIN240-10	M10	42	21,5	29	14,5	14,5	29	117,5	7,1	40	V1300, V250	10	28DIN
240	500	KRDIN240-12	M12	42	21,5	29	14,5	14,5	29	106,5	7,1	40	V1300, V250	10	28DIN
240	500	KRDIN240-16	M16	42	21,5	29	17,5	17,5	35	109,5	7,1	40	V1300, V250	10	28DIN
240	500	KRDIN240-20	M20	45	21,5	29	20,5	21,5	42	112,5	6,5	40	V1300, V250	10	28DIN
300	600	KRDIN300-12	M12	48	24,5	32	17,5	17,5	35	117,5	7	50	V1300, V250	5	32DIN
300	600	KRDIN300-16	M16	48	24,5	32	17,5	17,5	35	117,5	7	50	V1300, V250	5	32DIN
300	600	KRDIN300-20	M20	48	24,5	32	20,5	21,5	42	120,5	7	50	V1300, V250	5	32DIN
400	750	KRDIN400-12	M12	55	27,5	38,5	23,5	17,5	41	138,5	10,4	70	V1300, V250	5	38DIN
400	750	KRDIN400-16	M16	55	27,5	38,5	23,5	17,5	41	138,5	10,4	70	V1300, V250	5	38DIN
400	750	KRDIN400-20	M20	55	27,5	38,5	23,5	21,5	45	138,5	10,4	70	V1300, V250	5	38DIN
500	1000	KRDIN500-20	M20	60	31	42	23,5	21,5	45	148,5	10,5	70	V250	2	42DIN
625	1250	KRDIN625-20	M20	63	34,5	44	23,5	21,5	45	158,5	9,3	80	V250	2	44DIN
800	1600	KRDIN800-20	M20	75	40	52	23,5	21,5	45	188,5	11,6	100	V1470	1	52DIN
1000	2000	KRDIN1000-20	M20	85	44	58	23,5	21,5	45	188,5	13,2	100	V1470	1	58DIN





# Al- and Al-/Cu-terminals

## General information about Elpress Al- and Al-/Cu-terminals



### System Elpress

System Elpress consists of terminals and tools that are designed and tested together to give a certified crimping result. This ensures that users will feel confident when using our systems, and that a secure connection is achieved through the proper handling of our products.

### Al terminals

Elpress terminals for Al cable are made of solid and pure aluminium 99.7%. We manufacture Al terminals type AK and AS, but also customised terminals or terminals larger than 1200 mm<sup>2</sup>.



Terminal type AK is used with Al conductors for connection to busbars and apparatus sockets.



Through connectors type AS are used when splicing aluminium conductors.



Indent crimping of Elpress through connector using crimp head V250.

### AlCu terminals

Elpress bimetallic terminals (AlCu) are manufactured from solid material which is friction welded together, joining Aluminium with Copper. This is done when aluminium is rotated towards copper under pressure and it is the method that provides the best connection between Al and Cu.



Terminals of type AKK are used at the end of an Al conductor for connection to a Cu bus bar.



Through connectors of type AKS are used to connect Al conductors to Cu conductors.

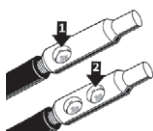


Pin sockets type AKP are manufactured for connection of Al conductors to apparatus intended for copper pin connections.

### Number of crimps

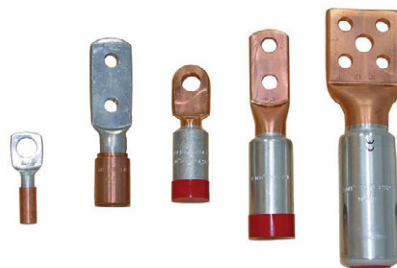
The Elpress system is suitable for both stranded conductors, acc. to IEC 60228 class 2, and solid conductors, acc. to IEC60228 class 1.

However, it should be noted that there is an area difference between stranded and solid Al conductors (see tables). When using sectoral Al-cable, a pre-rounding is normally required, which is done with a round crimping tool. When contact crimping Al terminals, two crimps should always be made. Note the crimp sequence.



### Customised products

Customised products are an important part of our work. Solving problems for the customer and at the same time manufacturing the products with profitability is a special challenge. This way, we also increase our knowledge of the customers' needs. The above terminals include different models of T-connectors where you can connect three conductors of the same size using only one terminal.



Upon request for variants in hole arrangement, the size of the connection flag and the like, we make variants of cable clips.

### Marking Al and AlCu terminals

Elpress system for marking Al and AlCu terminals states the conductor area (for small and solid conductors) and reference to rounded and contact crimp tools within the Elpress range. A tool reference for hexagonal crimping copper is given on the bimetallic through connectors.

#### TERMINALS:

##### Explanatory marking Al and AlCu terminals

Barrel marking i.e. ALU300-R21-P36 (Elpress logotype) T2

ALU300 = Al conductor in mm<sup>2</sup>

R21 = size no. for punch and matrix for pre-rounding

P36 = size no. for punch and matrix for crimping

Palm marking: (Elpress logo) 16 = Screw dimension

#### THROUGH CONNECTORS:

##### Explanatory marking Al and AlCu terminals

For example: Cu240 - 30 (Elpress logotype)

Cu240 = Cu conductor in mm<sup>2</sup>

30 = Size no. for hexagonal die

For example: ALU300-R21-P36 (Elpress logotype) T2

ALU300 = Al conductor in mm<sup>2</sup>

R21 = size no. for punch and matrix for pre-rounding

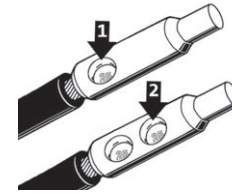
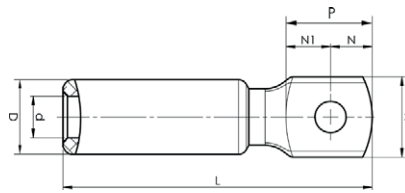
P36 = size no. for punch and matrix for crimping

### Clearance for holes in terminal palm

Screw size	Hole diameter (Ø mm)
M3	3,2
M4	4,3
M5	5,3
M6	6,4
M8	8,4
M10	10,5
M12	13
M16	17
M20	21
M24	26

# Aluminium terminals 16 - 1200 mm<sup>2</sup>

- Used for connecting solid (class 1) and stranded (class 2) Al conductors acc. IEC 60228 to Al busbar.
- Two indent crimps are needed - For crimp sequence, see image.



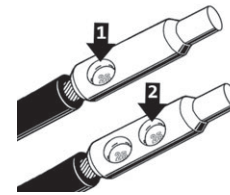
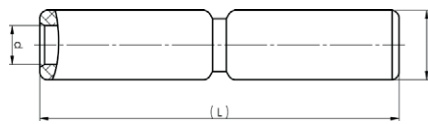
Crimp sequence

Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	AWG/MCM	AWG Al (Solid Al)	Name	Screw	W mm	d	D	N	N1	P	L	t	s	Tool	Pcs/pack
16	25	6	4	AK16-6	M6	16	5,9	13	8,5	9	17,5	61	5	29	V600, V1300, V250	48
16	25	6	4	AK16-8	M8	16	5,9	13	8,5	9	17,5	61	5	29	V600, V1300, V250	48
25	35	4	2	AK25-6	M6	16	6,8	13	8,5	9	17,5	61	5	29	V600, V1300, V250	48
25	35	4	2	AK25-8	M8	16	6,8	13	8,5	9	17,5	61	5	29	V600, V1300, V250	48
35	50	2	1/0	AK35-6	M6	22	8,5	20	11	14	25	85	7,5	45	V1300, V250	24
35	50	2	1/0	AK35-8	M8	22	8,5	20	11	14	25	85	7,5	45	V1300, V250	24
50	70	1/0	2/0	AK50-8	M8	22	9,6	20	11	14	25	85	7,5	45	V1300, V250	24
50	70	1/0	2/0	AK50-10	M10	22	9,6	20	11	14	25	85	7,5	45	V1300, V250	24
50	70	1/0	2/0	AK50-12	M12	27	9,6	20	14	15	29	90	6	45	V1300, V250	24
70	95	2/0	4/0	AK70-8	M8	22	11,3	20	11	14	25	85	7,5	45	V1300, V250	24
70	95	2/0	4/0	AK70-10	M10	22	11,3	20	11	14	25	85	7,5	45	V1300, V250	24
70	95	2/0	4/0	AK70-12	M12	27	11,3	20	14	15	29	90	6	45	V1300, V250	24
95	120	4/0	250	AK95-8	M8	27	12,5	25	14	15	29	104	10,5	60	V1300, V250	24
95	120	4/0	250	AK95-10	M10	27	12,5	25	14	15	29	104	10,5	60	V1300, V250	24
95	120	4/0	250	AK95-12	M12	27	12,5	25	14	15	29	104	10,5	60	V1300, V250	24
120	150	250	300	AK120-10	M10	27	14	25	14	15	29	104	10,5	60	V1300, V250	24
120	150	250	300	AK120-12	M12	27	14	25	14	15	29	104	10,5	60	V1300, V250	24
150	185	300	350	AK150-10	M10	27	15,8	25	14	15	29	104	10,5	60	V1300, V250	24
150	185	300	350	AK150-12	M12	27	15,8	25	14	15	29	104	10,5	60	V1300, V250	24
150	185	300	350	AK150-16	M16	35	15,8	25	21	23	44	119	8	60	V1300, V250	12
185	240	350	500	AK185-10	M10	35	17,6	32	16	18,5	34,5	113	13	61	V1300, V250	12
185	240	350	500	AK185-12	M12	35	17,6	32	16	18,5	34,5	113	13	61	V1300, V250	12
185	240	350	500	AK185-16	M16	35	17,6	32	16	18,5	34,5	113	13	61	V1300, V250	12
240		500		AK240-12	M12	35	19,8	32	16	18,5	34,5	113	13	61	V1300, V250	12
240		500		AK240-16	M16	35	19,8	32	16	18,5	34,5	113	13	61	V1300, V250	12
	300		600	AK300-12SOLID	M12	41	20	36	18	25	43	154	14	83	V250	6
	300		600	AK300-16SOLID	M16	41	20	36	18	25	43	154	14	83	V250	6
300		600		AK300-12	M12	41	22	36	18	25	43	154	14	83	V250	6
300		600		AK300-16	M16	41	22	36	18	25	43	154	14	83	V250	6
300		600		AK300-20	M20	41	22	36	20	23	43	154	15	83	V250	6
400		750		AK400-12	M12	41	25	40	18	25	43	155	15	83	V250	6
400		750		AK400-16	M16	41	25	40	18	25	43	155	15	83	V250	6
400		750		AK400-20	M20	41	25	40	20	23	43	155	15	83	V250	6
500		1000		AK500A-16	M16	55	28	52	26	29	55	225	20	110	V250	1
500		1000		AK500A-20	M20	55	28	52	26	29	55	225	20	110	V250	3
500		1000		AK500A-1		55	28	52			80	250	20	110	V250	3
500		1000		AK500A-2		70	28	52			80	250	16	110	V250	3
500		1000		AK500B-16	M16	44	28	44	22	22	44	174	16	83	V250	3
500		1000		AK500B-20	M20	44	28	44	22	22	44	174	16	83	V250	3
500		1000		AK500B-1		44	28	44			80	210	16	83	V250	3
500		1000		AK500B-2		70	28	44			80	210	16	83	V250	3
630		1250		AK630A-1		55	32	52			80	250	20	110	V250	3
630		1250		AK630A-2		70	32	52			80	250	16	110	V250	3
800		1600		AK800-1		60	36	60			80	267	20	129	V1470	1
800		1600		AK800-2		75	36	60			80	275	17	129	V1470	1
1000		2000		AK1000-1		60	40	60			80	267	20	129	V1470	1
1000		2000		AK1000-2		75	40	60			80	275	17	129	V1470	1
1200		2500		AK1200		75	44	70			80	291	17	142	V1470	1

t = palm thickness, s = strip length

# Aluminium through connectors with partition 16 - 1200 mm<sup>2</sup>

- Used for connecting solid (class 1) and stranded (class 2) Al conductors acc. IEC 60228 to Al busbar.
- Two indent crimps are needed - For crimp sequence, see image.
- Partition in the middle to prevent fluid flow.



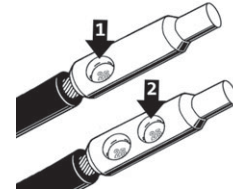
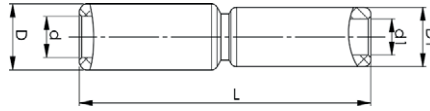
Crimp sequence

Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	AWG Al (Stranded Al)	AWG Al (Solid Al)	Name	d mm	D	L	s	Tool	Pcs/ pack
16-25		6-4		AS1625	6,2	11,5	35	18	V600	50
16	25	6	4	AS16	5,9	13	67	29	V600, V1300, V250	48
25	35	4	2	AS25	6,8	13	67	29	V600, V1300, V250	48
35	50	2	1/0	AS35	8,5	20	100	45	V1300, V250	24
50	70	1/0	2/0	AS50	9,6	20	100	42,5	V1300, V250	24
70	95	2/0	3/0	AS70	11,3	20	100	42,5	V1300, V250	24
95	120	3/0	250	AS95	12,5	25	130	57	V1300, V250	12
120	150	250	300	AS120	14	25	130	57	V1300, V250	12
150	185	300	350	AS150	15,8	25	130	58	V1300, V250	12
185	240	350	500	AS185	17,6	32	131	58	V1300, V250	9
240		500		AS240	19,8	32	131	58	V1300, V250	9
	300		600	AS300SOLID	20	36	177	83	V250	6
300		600		AS300	22	36	177	83	V250	3
400		750		AS400	25	40	179	83	V250	3
	400		750	AS400SOLID	23	40	179	83	V250	3
500		1000		AS500A	28	52	250	110	V250	3
500		1000		AS500B	28	44	184	83	V250	3
630		1250		AS630A-1	32	52	250	110	V250	1
630		1250		AS630A-2	34	52	250	110	V250	1
800		1600		AS800-1	36	60	288	129	V1470	1
1000		2000		AS1000-1	40	60	288	129	V1470	1
1200		2500		AS1200	44	70	320	142	V1470	1

For other combinations, please contact Elpress. s = strip length

# Through connectors with aluminium partitions with different areas 16 - 400 mm<sup>2</sup>

- Used for connecting solid (class 1) and stranded (class 2) Al conductors acc. IEC 60228 to Al busbar.
- Two indent crimps are needed - For crimp sequence, see image.
- With partition.



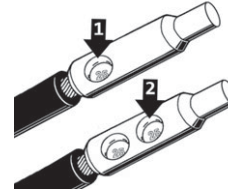
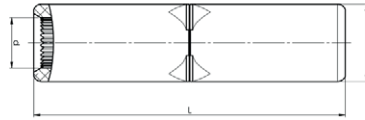
Crimp sequence

Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	AWG/ MCM	AWG Al (Solid Al)	Name	d mm	d1	D	D1	L	s	s1	Tool	Pcs/ pack
25-16	35-25	4-6	2-4	AS25-16	6,8	5,9	13	13	67	29	29	V1300, V250	48
35-25	50-35	2-4	1/0-4	AS35-25	8,5	6,8	20	13	85	45	29	V1300, V250	24
50-25	70-35	1/0-4	2/0-4	AS50-25	9,6	6,8	20	13	85	45	29	V1300, V250	24
50-35	70-50	1/0-2	2/0	AS50-35	9,6	8,5	20	20	100	45	45	V1300, V250	24
70-50	95-70	2/0-1/0	4/0-2/0	AS70-50	11,3	9,6	20	20	100	45	45	V1300, V250	24
95-25	120-35	4/0-4	2-250	AS95-25	12,5	6,8	25	13	101,1	60	29	V1300, V250	24
95-35	120-50	4/0-2	1/0-250	AS95-35	12,5	8,5	25	20	116	60	45	V1300, V250	24
95-50	120-70	3/0-1/0	250-2/0	AS95-50	12,5	9,6	25	20	116,1	60	45	V1300, V250	24
95-70	120-95	4/0-2/0	250-4/0	AS95-70	12,5	11,3	25	20	116,1	60	45	V1300, V250	24
120-95	150-120	250-4/0	300-250	AS120-95	14	12,5	25	25	130	60	60	V1300, V250	12
150-50	185-70	250-1/0	350-2/0	AS150-50	15,8	9,6	25	20	116,1	60	45	V1300, V250	12
150-70	185-95	300-2/0	350-3/0	AS150-70	15,8	11,3	25	20	116,1	60	45	V1300, V250	24
150-95	185-120	300-4/0	350-250	AS150-95	15,8	12,5	25	25	130	60	60	V1300, V250	12
150-120	185-150	300-250	350-300	AS150-120	15,8	14	25	25	130	60	60	V1300, V250	12
185-95	240-120	350-4/0	500-250	AS185-95	17,6	12,5	32	25	131,9	61	60	V1300, V250	12
185-150	240-185	350-300	500-350	AS185-150	17,6	15,8	32	25	131,9	61	60	V1300, V250	12
240-95	120	500-4/0	600-250	AS240-95	19,8	12,5	32	25	132	61	60	V1300, V250	12
240-120	150	500-250	300	AS240-120	19,8	14	32	25	132	61	60	V1300, V250	12
240-150	185	500-300	350	AS240-150	19,8	15,8	32	25	132	61	60	V1300, V250	12
240-185	240	500-350	500	AS240-185	19,8	17,6	32	32	131	61	61	V1300, V250	12
300-240		600-500		AS300-240	22	19,8	36	32	155,1	83	61	V250	6
400-300		750-600		AS400-300	25	22	40	36	179	83	83	V250	3

s, s1 = insulation stripping length

# Aluminium through connectors with cable stop 300 - 400 mm<sup>2</sup>

- Used for connecting stranded (class 2)  
Al conductors acc. IEC 60228 to Al busbar.
- Two indent crimps are needed - For crimp sequence, see image.



Crimp sequence

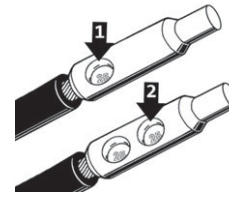
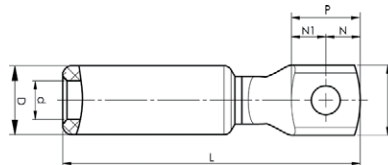
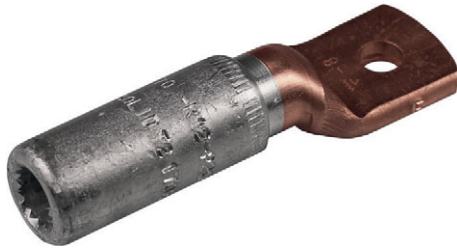
Stranded Al mm <sup>2</sup>	AWG/ MCM	Name	d mm	D	L	s	Tool	Pcs/pack
300	600	AS300B	22,5	37	150	65	V1300, V250	1
400	750	AS400B	25	37	150	64	V1300, V250	1

s = strip length



# Aluminium-copper terminals 16 - 1200 mm<sup>2</sup>

- Used for connection of Al conductors for apparatus outlets and busbars of Cu.
- Two crimps are needed - For crimp sequence, see image.



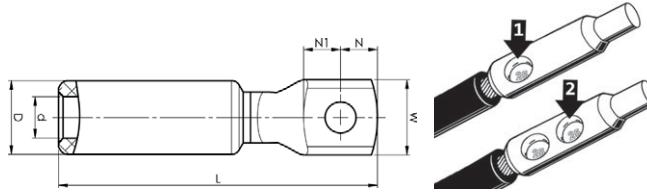
Crimp sequence

Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	AWG/ MCM	AWG Al (Solid Al)	Name	Screw	W mm	d	D	N	N1	P	L	t	s	Tool	Pcs/ pack
16	25 (16)	6	4	AKK16-8	M8	16	5,9	13	8,5	10	18,5	66	3	29	V600, V1300, V250	48
25	35	4	2	AKK25-8	M8	16	6,8	13	8,5	10	18,5	66	3	29	V600, V1300, V250	48
25	35	4	2	AKK25-12	M12	22	6,8	13	11,5	15,5	27	75	4	29	V600, V1300, V250	24
35	50	2	1/0	AKK35-8	M8	25	8,5	20	12,5	12,5	25	89	5,8	45	V1300, V250	24
35	50	2	1/0	AKK35-12	M12	25	8,5	20	12,5	12,5	25	89	5,8	45	V1300, V250	24
50	70	1/0	2/0	AKK50-8	M8	25	9,6	20	12,5	12,5	25	89	5,8	45	V1300, V250	24
50	70	1/0	2/0	AKK50-10	M10	25	9,6	20	12,5	12,5	25	89	5,8	45	V1300, V250	24
50	70	1/0	2/0	AKK50-12	M12	25	9,6	20	12,5	12,5	25	89	5,8	45	V1300, V250	24
70	95	2/0	4/0	AKK70-8	M8	25	11,3	20	12,5	12,5	25	89	5,8	45	V1300, V250	24
70	95	2/0	4/0	AKK70-10	M10	25	11,3	20	12,5	12,5	25	89	5,8	45	V1300, V250	24
70	95	2/0	4/0	AKK70-12	M12	25	11,3	20	12,5	12,5	25	89	5,8	45	V1300, V250	24
95	120	4/0	250	AKK95-8	M8	25,5	12,5	25	12,5	12,5	25	108	5,7	60	V1300, V250	12
95	120	4/0	250	AKK95-10	M10	25,5	12,5	25	12,5	12,5	25	108	5,7	60	V1300, V250	12
95	120	4/0	250	AKK95-12	M12	25,5	12,5	25	12,5	12,5	25	108	5,7	60	V1300, V250	12
95	120	4/0	250	AKK95-16	M16	30	12,5	25	15	15	30	115	6,5	60	V1300, V250	12
120	150	250	300	AKK120-10	M10	25,5	14	25	12,5	12,5	25	108	5,7	60	V1300, V250	12
120	150	250	300	AKK120-12	M12	25,5	14	25	12,5	12,5	25	108	5,7	60	V1300, V250	12
120	150	250	300	AKK120-16	M16	30	14	25	15	15	30	115	6,5	60	V1300, V250	12
150	185	300	350	AKK150-10	M10	25,5	15,8	25	12,5	12,5	25	108	5,7	60	V1300, V250	12
150	185	300	350	AKK150-12	M12	25,5	15,8	25	12,5	12,5	25	108	5,7	60	V1300, V250	12
150	185	300	350	AKK150-16	M16	30	15,8	25	15	15	30	115	6,5	60	V1300, V250	12
185	240	350	500	AKK185-10	M10	30	17,6	32	15	15	30	116	6,5	60	V1300, V250	12
185	240	350	500	AKK185-12	M12	30	17,6	32	15	15	30	116	6,5	60	V1300, V250	12
185	240	350	500	AKK185-16	M16	30	17,6	32	15	15	30	116	6,5	60	V1300, V250	12
240		500		AKK240-10	M10	30	19,8	32	15	15	30	116	6,5	61	V1300, V250	12
240		500		AKK240-12	M12	30	19,8	32	15	15	30	116	6,5	61	V1300, V250	12
240		500		AKK240-16	M16	30	19,8	32	15	15	30	116	6,5	61	V1300, V250	12
300		600		AKK300-12	M12	37	22	36	18,5	18,5	37	154	6,5	82	V250	6
300		600		AKK300-16	M16	37	22	36	18,5	18,5	37	154	6,5	82	V250	6
300		600		AKK300-20	M20	37	22	36	18,5	18,5	37	154	6,5	82	V250	6
	300		600	AKK300-12SOLID	M12	37	20	36	18,5	18,5	37	154	6,5	82	V250	6
	300		600	AKK300-16SOLID	M16	37	20	36	18,5	18,5	37	154	6,5	82	V250	6
	300		600	AKK300-20SOLID	M20	37	20	36	18,5	18,5	37	154	6,5	82	V250	6
400		750		AKK400-12	M12	37	25	40	18,5	18,5	37	155	6,5	83	V250	6
400		750		AKK400-16	M16	37	25	40	18,5	18,5	37	155	6,5	83	V250	6
400		750		AKK400-20	M20	37	25	40	18,5	18,5	37	155	6,5	83	V250	6
500		1000		AKK500A-16	M16	48	28	52	26	29	55	222	9,5	110	V250	3
500		1000		AKK500A-20	M20	48	28	52	26	29	55	222	9,5	110	V250	3
500		1000		AKK500A-1		48	28	52			70	237	9,5	110	V250	3
500		1000		AKK500A-2		70	28	52			70	240	12	110	V250	3
500		1000		AKK500B-16	M16	42	28	44	21	21	42	174	10	83	V250	3
500		1000		AKK500B-20	M20	42	28	44	21	21	42	174	10	83	V250	3
500		1000		AKK500B-1		42	28	44			70	202	10	83	V250	3
500		1000		AKK500B-2		70	28	44			70	211	12	83	V250	3
630		1250		AKK630A-1		48	32	52			70	237	9,5	110	V250	3
630		1250		AKK630A-2		70	32	52			70	240	12	110	V250	3
800		1600		AKK800-1		62	36	60			70	263	12	129	V1470	1
800		1600		AKK800-2		75	36	60			75	275	17	129	V1470	1
1000		2000		AKK1000-1		62	40	60			70	263	12	129	V1470	1
1000		2000		AKK1000-1-16	M16	62	40	60	30	40	70	263	12	129	V1470	1
1000		2000		AKK1000-2		75	40	60			75	275	17	129	V1470	1
1200		2500		AKK1200		75	44	70			75	310	17	142	V1470	1

s = strip length, t = palm thickness

## Aluminium-copper terminals 300 - 400 mm<sup>2</sup>

- Used for connection of Al conductors for apparatus outlets and busbars of Cu, etc.
- For stranded wire Al conductor.
- Two crimps are needed, see image.



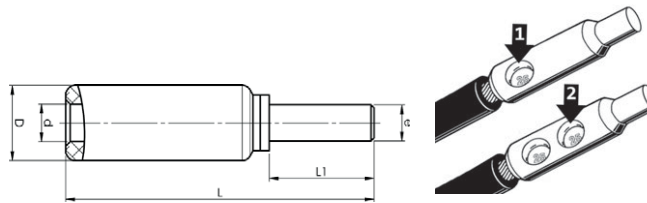
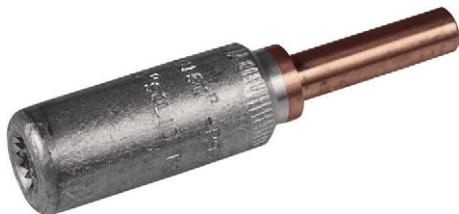
Crimp sequence

Stranded Al mm <sup>2</sup>	AWG/MCM	Name	Screw	W mm	d	D	N	N1	L	t	s	Tool	Pcs/pack
300	600	AKK300B-12	M12	37	22,3	37	18,5	18,5	139	6,7	68	V1300, V250	6
300	600	AKK300B-16	M16	37	22,3	37	18,5	18,5	139	6,7	68	V1300, V250	6
400	750	AKK400B-12	M12	37	25	37	18,5	18,5	139	6,7	68	V1300, V250	6
400	750	AKK400B-16	M16	37	25	37	18,5	18,5	139	6,7	68	V1300, V250	6

t = palm thickness, s = strip length

## Aluminium-copper pin sockets 16 - 300 mm<sup>2</sup>

- Used for connection of Al conductors to apparatus with copper connectors.
- Two crimps are needed - For crimp sequence, see image.



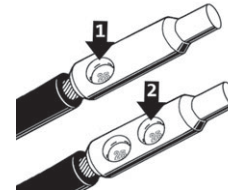
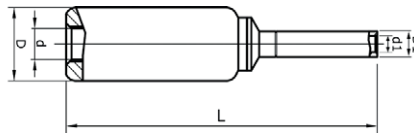
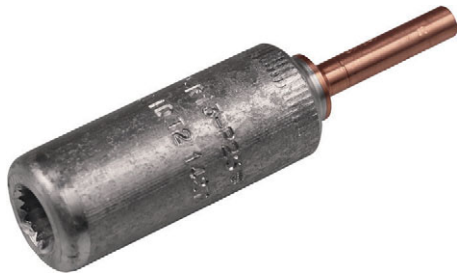
Crimp sequence

Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	AWG/MCM	AWG Al (Solid Al)	Name	d mm	D	e	L	L1	s	Tool	Pcs/pack
16	25 (16)	6	4	AKP16	5,9	13	6	56	25	29	V600, V1300, V250	48
25	35	4	2	AKP25	6,8	13	6	56	25	29	V600, V1300, V250	48
35	50	2	1/0	AKP35	8,5	20	9	78	25	45	V1300, V250	24
50	70	1/0	2/0	AKP50	9,6	20	9	88	35	45	V1300, V250	24
70	95	2/0	4/0	AKP70	11,3	20	9	88	35	45	V1300, V250	24
95	120	4/0	250	AKP95	12,5	25	12	103	35	60	V1300, V250	24
120	150	250	300	AKP120	14	25	12	108	40	60	V1300, V250	24
150	185	300	350	AKP150	15,8	25	12	108	40	60	V1300, V250	24
185	240	350	500	AKP185	17,6	32	14	113,5	45	61	V1300, V250	12
240		500		AKP240	19,8	32	14	113,5	45	61	V1300, V250	12
300		600		AKP300	22	36	16	142	50	83	V250	9

s = strip length

# Through connectors of aluminium 16 - 95 mm<sup>2</sup> to solid copper 10 mm<sup>2</sup>

- Used for connecting stranded Al conductors to solid Cu conductors 10 mm<sup>2</sup>/8 AWG (e.g. Excel, Excelett).
- Two crimps are needed for both Al (crimp sequence see image) and Cu.



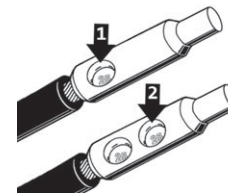
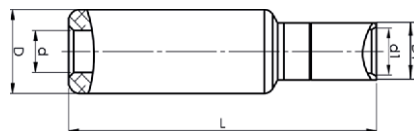
Crimp sequence

Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	mm <sup>2</sup>	AWG	AWG Al (Solid Al)	Name	d	d1	D	D1	L	s	s1	Tool	Pcs/pack
16	25	10	6	4	AKS16-10S	5,9	4,5	13	7	64,5	29	33	V600, V1300, V250	48
25	35	10	4	2	AKS25-10S	6,8	4,5	13	7	64,5	29	33	V600, V1300, V250	48
35	50	10	2	1/0	AKS35-10S	8,5	4,5	20	7	86	45	33	V1300, V250	48
50	70	10	1/0	2/0	AKS50-10S	9,6	4,5	20	7	86	45	33	V1300, V250	24
70	95	10	2/0	4/0	AKS70-10S	11,3	4,5	20	7	86	45	33	V1300, V250	24
95	120	10	4/0	250	AKS95-10S	12,5	4,5	25	7	101	60	33	V1300, V250	24

s = strip length (Al), s1 = strip length (Cu)

# Through connectors of aluminium-copper 300 - 400 mm<sup>2</sup>

- Used for connecting Al conductors and Cu conductors
- Stranded/solid Al conductors, stranded/flexible Cu conductors. For multi-stranded Cu conductors, contact crimping using the DUAL system is recommended.
- Two crimps are needed for Al (see image).
- When crimping the Al part, use matrix P2537M and punch P2537D, no matrix holder is needed.
- When crimping the Cu part, place the dies between the marking on the sleeve and the edge of the Cu part.



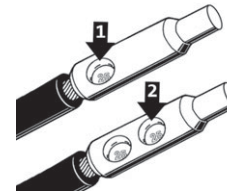
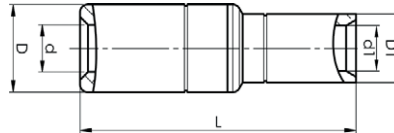
Crimp sequence

Stranded Al mm <sup>2</sup>	mm <sup>2</sup> (Cu)	AWG Al (Stranded)	AWG Cu	Name	d	d1	D	D1	L	s	s1	Tool	Pcs/pack
300	185	600	350	AKS300B-185	22,3	21	37	27	126,5	68	40	DV1300, DV250	6
300	240	600	500	AKS300B-240A	22,3	22,5	37	29	126,5	68	40	DV1300, DV250	6
400	240	750	500	AKS400B-240A	25	22,5	37	29	126,5	68	40	DV1300, DV250	6
400	300	750	600	AKS400B-300A	25	24,5	37	31,5	127	68	40	DV1300, DV250	6

If class 5 Cu conductors are used, use the corresponding DUAL tool for (D)V1300 or (D)V250., s = strip length (Al), s1 = strip length (Cu)

# Aluminium-copper through connectors 16 - 400 mm<sup>2</sup>

- Connector from Al conductor to Cu conductor.
- Stranded/solid Al conductors, stranded/multi-stranded Cu conductors.
- For multi-stranded Cu conductors, contact crimping using the DUAL system is recommended.
- Two crimps are required for Al (see image) normally one for Cu.
- When hexagonally crimping the Cu part, the dies are placed between the marking groove and the outer edge.



Crimp sequence

Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	Cu mm <sup>2</sup>	AWG/MCM	AWG (Solid Al)	AWG Cu (AlCu)	Name	d	d1	D	D1	L	s	s1	Tool	Pcs/pack
16-25		10-16	6-4		8-6	AKS1625-1016	6,2	6	8,3	7,5	36,5	19	17	V600	48
16	25 (16)	10	6	4	8	AKS16-10	5,9	5	13	8	45,5	29	14	V600, DV1300, DV250	48
25	35	10	4	2	8	AKS25-10	6,8	5	13	8	45,5	29	14	V600, DV1300, DV250	48
25	35	16	4	2	6	AKS25-16	6,8	6	13	9	45,5	29	15	V600, DV1300, DV250	48
35	50	10	2	1/0	8	AKS35-10	8,5	5	20	8	66	45	14	DV1300, DV250	24
35	50	16	2	1/0	6	AKS35-16	8,5	6	20	13	66	45	15	DV1300, DV250	24
35	50	25	2	1/0	4	AKS35-25	8,5	8	20	13	69	45	17	DV1300, DV250	24
50	70	10	1/0	2/0	8	AKS50-10	9,6	5	20	13	66	45	14	DV1300, DV250	24
50	70	16	1/0	2/0	6	AKS50-16	9,6	6	20	13	66	45	15	DV1300, DV250	24
50	70	25	1/0	2/0	4	AKS50-25	9,6	8	20	13	69	45	17	DV1300, DV250	24
50	70	35	1/0	2/0	2	AKS50-35	9,6	9	20	13	71	45	19	DV1300, DV250	24
50	70	50	1/0	2/0	1/0	AKS50-50	9,6	11	20	14,5	75,5	45	23	DV1300, DV250	24
70	95	35	2/0	4/0	2	AKS70-35	11,3	9	20	13	71	45	19	DV1300, DV250	24
70	95	50	2/0	4/0	1/0	AKS70-50	11,3	11	20	14,5	75,5	45	23	DV1300, DV250	24
70	95	70	2/0	4/0	2/0	AKS70-70	11,3	13	20	17	78	45	25	DV1300, DV250	24
95	120	10	4/0	250	8	AKS95-10	12,5	5	25	17	81	60	14	DV1300, DV250	24
95	120	16	4/0	250	6	AKS95-16	12,5	6	25	17	81	60	15	DV1300, DV250	24
95	120	25	4/0	250	4	AKS95-25	12,5	8	25	17	84	60	17	DV1300, DV250	24
95	120	35	4/0	250	2	AKS95-35	12,5	9	25	17	86	60	19	DV1300, DV250	24
95	120	50	4/0	250	1/0	AKS95-50	12,5	11	25	17	90,5	60	23	DV1300, DV250	24
95	120	70	4/0	250	2/0	AKS95-70	12,5	13	25	17	93	60	25	DV1300, DV250	24
95	120	95	4/0	250	4/0	AKS95-95	12,5	15	25	20	93,5	60	25	DV1300, DV250	24
120	150	50	250	300	1/0	AKS120-50	14	11	25	17	90,5	60	23	DV1300, DV250	24
120	150	70	250	300	2/0	AKS120-70	14	13	25	17	93	60	25	DV1300, DV250	24
120	150	95	250	300	4/0	AKS120-95	14	15	25	20	93,5	60	25	DV1300, DV250	24
120	150	120	250	300	250	AKS120-120	14	17	25	22	103,5	60	30	DV1300, DV250	24
150	185	25	300	350	4	AKS150-25	15,8	8	25	17	84	60	17	DV1300, DV250	24
150	185	35	300	350	2	AKS150-35	15,8	9	25	17	86	60	19	DV1300, DV250	24
150	185	50	300	350	1/0	AKS150-50	15,8	11	25	17	90,5	60	23	DV1300, DV250	24
150	185	70	300	350	2/0	AKS150-70	15,8	13	25	17	93	60	25	DV1300, DV250	24
150	185	95	300	350	4/0	AKS150-95	15,8	15	25	20	93,5	60	25	DV1300, DV250	24
150	185	120	300	350	250	AKS150-120	15,8	17	25	22	103,5	60	30	DV1300, DV250	24
150	185	150	300	350	300	AKS150-150	15,8	19	25	25	99	60	30	DV1300, DV250	24
185	240	70	350	500	2/0	AKS185-70	17,6	13	32	17	93,5	61	25	DV1300, DV250	12
185	240	95	350	500	4/0	AKS185-95	17,6	15	32	20	94	61	25	DV1300, DV250	12
185	240	120	350	500	250	AKS185-120	17,6	17	32	22	104	60	30	DV1300, DV250	12
185	240	150	350	500	300	AKS185-150	17,6	19	32	25	99,5	61	30	DV1300, DV250	12
185	240	185	350	500	350	AKS185-185	17,6	21	32	27	100	61	30	DV1300, DV250	12
240		35	500		2	AKS240-35	19,8	9	32	17	86,5	61	19	DV1300, DV250	12
240		50	500		1/0	AKS240-50	19,8	11	32	17	91	61	23	DV1300, DV250	12
240		70	500		2/0	AKS240-70	19,8	13	32	17	93,5	61	25	DV1300, DV250	12
240		95	500		4/0	AKS240-95	19,8	15	32	20	93,5	61	25	DV1300, DV250	12
240		120	500		250	AKS240-120	19,8	17	32	22	104	60	30	DV1300, DV250	12
240		150	500		300	AKS240-150	19,8	19	32	25	99,5	60	30	DV1300, DV250	12
240		185	500		350	AKS240-185	19,8	21	32	27	100	61	30	DV1300, DV250	12
240		240	500		500	AKS240-240A	19,8	22,5	32	29	100	61	30	DV1300, DV250	12
300		150	600		300	AKS300-150	22	19	36	25	122,5	83	30	DV250	9
300		185	600		350	AKS300-185	22	21	36	27	123	83	30	DV250	9
300		240	600		500	AKS300-240A	22	22,5	36	29	123,5	83	30	DV250	9
	300	300		600	600	AKS300SOLID-300	20	26	36	32	124	83	30	DV250	6
400		150	750		300	AKS400-150	25	19	40	25	124	83	30	DV250	6
400		185	750		350	AKS400-185	25	21	40	27	124	83	30	DV250	6
400		240	750		500	AKS400-240A	25	22,5	40	29	124	83	30	DV250	6
400		300	750		600	AKS400-300A	25	24,5	40	31,5	125	83	30	DV250	6

s = strip length (Al), s1 = strip length (Cu)



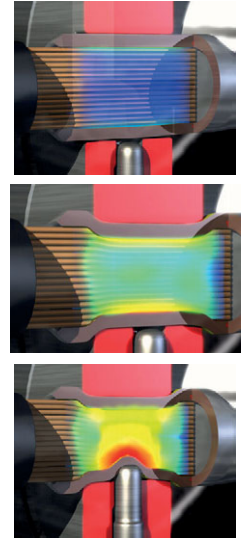
# Tools and accessories for crimping Al and Cu terminals

## DUAL SYSTEM for crimping flexible conductors in KRF/KSF terminals for demanding applications 10-400 mm<sup>2</sup>



### Properties:

- patented crimping for crimping stranded conductors (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228
- used with Elpress KRF/KSF terminals
- for extra harsh environments such as cars and trains, where the terminals in addition to electrical properties are also exposed to, for example, corrosion, mechanical durability and vibration
- meets IEC/EN 61238:1
- meets corrosion requirements according to DIN V 40 046-37
- meets the requirements for vibration according to EN 50 155
- meets the requirements of mechanical strength according to SEN 24 50 10



### Crimping sequence

Contact crimping takes place in a two-stage movement, first a hexagonal crimping that provides optimal symmetrical contact with the conductor, which means that no wires are broken or come apart in the edge facing the connector. This is followed by indent crimping, which provides up to 30% better electrical properties.

## PVX1300/PVX1300DB

Tested and certified battery-powered crimp gun for contact crimping Cu-terminals, type KR/KRT 10 mm<sup>2</sup>, KS/KST 10 mm<sup>2</sup>, KRF/KRD/KRT 16-400 mm<sup>2</sup>, KSF/KSD/KST 16-400 mm<sup>2</sup>, Al-terminals 16-400 mm<sup>2</sup> (-240 solid), DIN 46235 10-300 mm<sup>2</sup>, C sleeves up to 240 mm<sup>2</sup> total area (C95-120).



### Properties:

- ergonomic design ensures optimum balance in the user's hand
- crimp monitoring with warning light and signal when the correct pressure/full crimp is not achieved
- LED work lighting
- possibility of documentation of each crimp for unique service control
- crimp force 124 kN (13 tonnes)
- crimps/charging: 60-120 depending on size and temperature
- crimp time: 4-12s depending on size
- usage temperature -20°C to +40°C
- Li-Ion Makita, 5.0 Ah, 18V
- charger Li-Ion Makita, charging time 22 min 110-240VAC 50-60Hz
- DUAL: 10 - 300 mm<sup>2</sup>



### Crimp geometries



mm <sup>2</sup> (Cu)	mm <sup>2</sup> (Stranded Al)	mm <sup>2</sup> (Solid Al)	Name	Crimp geometries	Net weight (kg)	Length mm	Width	Height	Note
10-400	16-400	16-240	PVX1300	Punch, Dual, Hexagonal, Oval	6,7	412	319	75	Delivered in standard case
10-400	16-400	16-240	PVX1300DB	Punch, Dual, Hexagonal, Oval	7,3	412	319	75	Delivered with 2 batteries
10-400	16-400	16-240	PVX1300-ADV	Punch, Dual, Hexagonal, Oval	14,2	412	319	75	Delivered in CASE ADVANCED
10-400	16-400	16-240	PVX1300DB-ADV	Punch, Dual, Hexagonal, Oval	14,2	412	319	75	Delivered with 2 batteries and CASE ADV.
10-400	16-400	16-240	PVX1300-WOBC-ADV	Punch, Dual, Hexagonal, Oval	12,4	412	319	75	Delivered in CASE ADV. and without Battery/Charger
10-300	16-400	16-240	PVX1300-US	Punch, Dual, Hexagonal, Oval	6,7	412	319	75	Delivered with battery and US-charger
10-300	16-400	16-240	PVX1300DB-US	Punch, Dual, Hexagonal, Oval	7,3	412	319	75	Delivered with 2 batteries and US-charger
10-400	16-400	16-240	PVX1300-WOBC	Punch, Dual, Hexagonal, Oval	4,8	412	319	75	Delivered without Battery/Charger



# PVX1300C2/PVX1300C2DB

Tested and certified battery-powered crimp gun for crimping Cu-terminals, type Cu-terminals, type KR/KRT 10 mm<sup>2</sup>, KS/KST 10 mm<sup>2</sup>, KRF/KRD/KRT 16-400 mm<sup>2</sup>, KSF/KSD/KST 16-400 mm<sup>2</sup>, C-sleeves up to 240 mm<sup>2</sup> total area (C95-120).

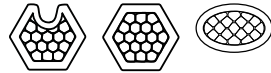


## Properties:

- ergonomic design ensures optimum balance in the user's hand
- crimp monitoring with warning light (LED) and signal when the correct pressure/ full crimp is not achieved
- LED work lighting
- possibility of documentation of each crimp for unique service control
- crimp force 124 kN (13 tonnes)
- usage temperature -20°C to +40°C
- Li-Ion Makita, 5.0 Ah, 18V
- charger Li-Ion Makita, charging time 22 min 110-240VAC 50-60Hz
- DUAL: 10 - 300 mm<sup>2</sup>



Crimp geometries



mm <sup>2</sup> (Cu)	Name	Crimp geometries	Net weight (kg)	Length mm	Width	Height	Note
10-400	PVX1300C2	Dual, Hexagonal, Oval	7,5	399	319	75	Delivered in standard case
10-400	PVX1300C2DB	Dual, Hexagonal, Oval	8,1	399	319	75	Delivered with 2 batteries
10-400	PVX1300C2-ADV	Dual, Hexagonal, Oval	15,1	399	319	75	Delivered in CASE ADVANCED
10-400	PVX1300C2DB-ADV	Dual, Hexagonal, Oval	15,1	399	319	75	2 batteries and CASE ADV.
10-400	PVX1300C2-US	Dual, Hexagonal, Oval	5,6	399	319	75	With US charger
10-400	PVX1300C2DB-US	Dual, Hexagonal, Oval	6,2	399	319	75	Delivered with 2 batteries and US-charger
10-400	PVX1300C2-WOBC	Dual, Hexagonal, Oval	5,6	399	319	75	without Battery/Charger



## DV1300

Tested and certified crimp head with patented DUAL technology for crimping Cu-terminals, type KR/KRF and KS/KSF 10-300 mm<sup>2</sup>. Used in combination with foot pump P4000 or the electrically powered pump PS710 (battery powered version of PS710E is also available).

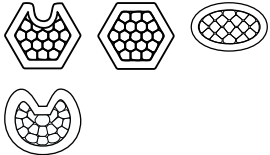


### Properties:

- crimp head with the patented DUAL technology that provides optimised hexagonal crimping + a certain amount of indent crimping in two integrated steps
- working pressure 63 MPa (630 bar)
- crimp force 130 kN
- no die holders are needed for DUAL dies
- other accessories (without DUAL function) for crimping both Cu and Al-terminals can be used
- DUAL: 10 - 300 mm<sup>2</sup>

mm <sup>2</sup> (Cu)	mm <sup>2</sup> (Stranded Al)	mm <sup>2</sup> (Solid Al)	Name	Crimp geometries	Net weight (kg)	Length mm	Width	Height
10-400	16-400	16-240	DV1300	Punch, Dual, Hexagonal, Oval	3,34	265	74	75

### Crimp geometries



## DV1300C2

Crimp head with patented DUAL technology for crimping Cu-terminals, type KR/KRF and KS/KSF 10-300 mm<sup>2</sup>. Used in combination with foot pump P4000 or the electrically powered pump PS710 (battery powered version of PS710E is also available).



### Properties:

- crimp head for the patented DUAL technology that provides optimised hexagonal crimping + a indent crimping in two integrated steps
- working pressure 63 MPa (630 bar)
- crimp force 130 kN
- no die holders are needed for DUAL dies
- other accessories (without DUAL function) for crimping Cu can be used
- DUAL: 10 - 300 mm<sup>2</sup>

mm <sup>2</sup> (Cu)	Name	Crimp geometries	Net weight (kg)	Length mm	Width	Height
10-400	DV1300C2	Dual, Hexagonal, Oval	4,9	297	140	75

### Crimp geometries





## DV250

Tested and certified crimp head with patented DUAL technology for crimping Cu-terminals, type KRF/KSF 120-400 mm<sup>2</sup>. Used in combination with foot pump P4000 or the electrically powered pump PS710 (battery powered version of PS710E is also available).

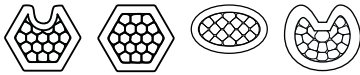


### Properties:

- crimp head with the patented DUAL technology that provides optimised hexagonal crimping + a certain amount of indent crimping in two integrated steps
- working pressure 63 MPa (630 bar)
- crimp force 250kN (25 tonnes)
- large crimp area
- no die holders are needed for DUAL dies
- Other accessories (without DUAL function) for crimping both Cu and Al-terminals can be used
- DUAL: 120 - 400 mm<sup>2</sup>

mm <sup>2</sup> (Cu)	mm <sup>2</sup> (Stranded Al)	mm <sup>2</sup> (Solid Al)	Name	Crimp geometries	Net weight (kg)	Length mm	Width	Height
10-800	16-630	16-300	DV250	Punch, Dual, Hexagonal, Oval	4,8	280	111	74

Crimp geometries



## Table stand for Cu- and Al-terminals



## TS1300, TS1300CU, TS1300AL

The TS1300 is a table stand that can be used with crimp heads DV1300C2 or V1300C2-AL.

The table stand is designed for operators with high frequency use of the C2 crimp head. With the table stand you get a stable, safe and easy use of the C2 crimp head.



mm <sup>2</sup>	Name	Crimp geometries	Net weight (kg)	Length mm	Width	Height
10-400	TS1300CU	Dual, Hexagonal, Oval	18,7	190	100	312
16-400	TS1300AL	Punch	20,9	190	100	330
10-400	TS1300		14,1	190	100	215

TS1300 with crimp head

# Accessories for crimping Cu flexible conductors with DUAL system DV1300, DV1300C2, PVX1300, PVX1300C2 and DV250

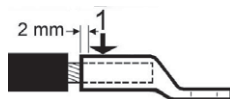
## Crimp dies for DV1300 och PVX1300

Supplied in pairs.

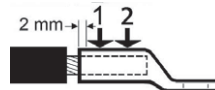
For Cu-terminals, type KR/KRF and KS/KSF. For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228. No die holders are needed.



Die pair 13DB20.



Crimp sequence for one crimp.



Crimp sequence for two crimps.

mm <sup>2</sup>	Name	Number of crimps	Net weight (kg)
10	13DB8	1	0,448
16	13DB9	1	0,447
25	13DB11	1	0,462
35	13DB13	1	0,477
50	13DB14,5	1	0,480
70	13DB17	1	0,486
95	13DB20	1	0,484
120	13DB22	2	0,441
150	13DB25	2	0,440
185	13DB27	2	0,443
240	13DB30	2	0,453
300	13DB32	2	0,428

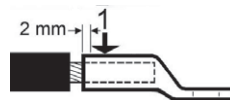
## Crimp dies for DV1300C2 and PVX1300C2

Supplied in pairs.

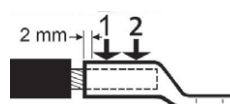
For Cu-terminals, type KR/KRF and KS/KSF. For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228. No die holders are needed.



Die pair 13DCB20.



Crimp sequence for one crimp.



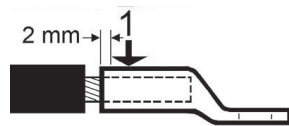
Crimp sequence for two crimps.

mm <sup>2</sup>	Name	Number of crimps	Net weight (kg)
10	13DCB8	1	0,456
16	13DCB9	1	0,440
25	13DCB11	1	0,465
35	13DCB13	1	0,486
50	13DCB14,5	1	0,497
70	13DCB17	1	0,503
95	13DCB20	1	0,507
120	13DCB22	2	0,450
150	13DCB25	2	0,498
185	13DCB27	2	0,514
240	13DCB30	2	0,534
300	13DCB32	2	0,490

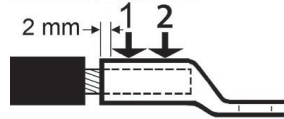
# Crimp dies for DV250

Supplied in pairs.

For Cu-terminals, type KR/KRF and KS/KSF. For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228. No die holders are needed.



Crimp sequence for one crimp.



Crimp sequence for two crimps.

mm <sup>2</sup>	Name	Number of crimps	Net weight (kg)
120	DB2522	1	1,060
150	DB2525	1	1,060
185	DB2527	1	1,060
240	DB2530	1	1,060
300	DB2532	1	1,060
400	DB2538	2	1,060



# Accessories for crimping Cu conductors with 1300 and 250 system (DIN terminals)

## Crimp dies for DIN 46235 with 1300 system

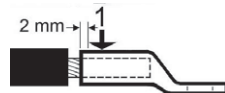
Supplied in pairs.

For Cu-terminals, hexagonal crimping together with Cu conductors according to VDE 0295.

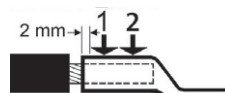
Unless otherwise stated, use inner die holder **V1316** and outer die holder **V1318**.



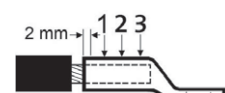
B-dies



Crimp sequence for one crimp.



Crimp sequence for two crimps.



Crimp sequence for three crimps.

mm <sup>2</sup> DIN	Name	Number of crimps	Net weight (kg)	Die holder required
10	B6DIN	1	0,099	Yes
16	B8DIN	1	0,085	Yes
25	B10DIN	1	0,105	Yes
35	B12DIN	1	0,114	Yes
50	B14DIN	1	0,120	Yes
70	B16DIN	1	0,108	Yes
95	B18DIN	1	0,126	Yes
120	B20DIN	1	0,122	Yes
150	B22DIN	1	0,147	Yes
185	13B25DIN	2	0,419	No
240	13B28DIN	2	0,431	No
300	13B32DIN	3	0,452	No

## Crimp dies for DIN 46235 with 250 system

Supplied in pairs.

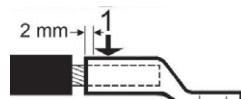
For Cu-terminals according to DIN46235, hexagonal crimping.

For conductors according to VDE 0295.

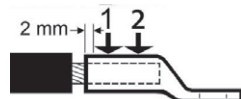
Use inner die holder **V2506** and outer die holder **V2508** for the V250 system.



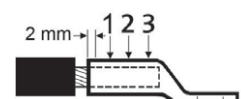
B-dies



Crimp sequence for one crimp.



Crimp sequence for two crimps.



Crimp sequence for three crimps.

mm <sup>2</sup> DIN	Name	Number of crimps	Net weight (kg)
10	B6DIN	1	0,099
16	B8DIN	1	0,085
25	B10DIN	1	0,105
35	B12DIN	1	0,114
50	B14DIN	1	0,120
70	B16DIN	1	0,108
95	B18DIN	1	0,126
120	B20DIN	1	0,122
150	B22DIN	1	0,147
185	B25DIN	2	0,136
240	B28DIN	2	0,108
300	B32DIN	3	0,079

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email: sales@etechcomponents.com

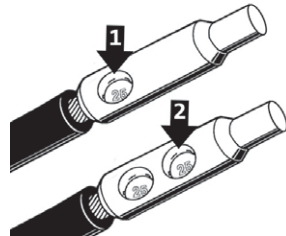
web: www.etechcomponents.com

# Accessories for crimping Al with DV1300 and PVX1300

## Punch and Matrix for indent crimping

For Al-terminals, indent crimping. For the indent crimping of Al-terminals, two crimps are always required.

For 16-150 (185 solid) mm<sup>2</sup> use matrix holder V1320.



Matrix holder V1320, matrix P13M, punch P13D.

Crimp sequence

Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	Matrix	Punch	Number of crimps	Matrix holder required	Punch holder required	Note
16-25	16-35	P13M	P13D	2	Yes	No	
35-70	50-95	P20M	P20D	2	Yes	No	
95-150	120-185	P25M	P25D	2	Yes	No	
185-240	240	13P32M	P32D	2	No	No	
300-400		13P37M	13P37D	2	No	No	

Matrix with safety line. For Al-terminals, type AKKxxxB/AKSxxxB and sleeves type ASxxxB.

## Punch and Matrix for pre-rounding

For Al conductors, pre-rounding.

Use matrix holder V1320.



Matrix holder V1320, matrix R6MR, punch 13R6DR.

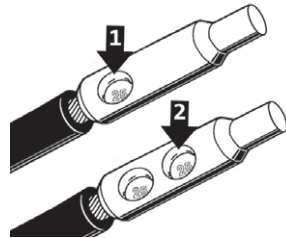
Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	Matrix	Punch	Number of crimps	Matrix holder required	Punch holder required
16	16 (+25)	R6MR	13R6DR	1	Yes	No
25	35	R7MR	13R7DR	1	Yes	No
35	50	R8MR	13R8DR	1	Yes	No
50	70	R9MR	13R9DR	1	Yes	No
70	95	R12MR	13R12DR	1	Yes	No
95	120	R13MR	13R13DR	1	Yes	No
120	150	R15MR	13R15DR	1	Yes	No
150	185	R16MR	13R16DR	1	Yes	No
185	240	13R18MR	13R18DR	1	Yes	No
240		13R20MR	13R20DR	1	Yes	No

# Accessories for crimping Al with DV250

## Punch and Matrix for indent crimping

For indent crimping of Al-terminals and connectors. Two crimps are always needed, see image.

For solid (Class 1) and solid (Class 2) Al-conductors according to IEC 60228. (no punch holder is needed)



Matrix holder V2521, matrix P13M, punch P13D.

Crimp sequence

Stranded Al mm <sup>2</sup>	Solid Al mm <sup>2</sup>	Matrix	Matrix holder	Punch	Number of crimps	Used for
16-25	16-35	P13M	V2521	P13D	2	
35-70	50-95	P20M	V2521	P20D	2	
95-150	120-185	P25M	V2521	P25D	2	
185-240	240	P32M	V2531	P32D	2	
300	300	P36M	V2531	P36-40-44D	2	
300-400		P2537M		P2537D	2	Terminals and through connectors of type AK/AS/AKK/AKS 300B-400B
400		P40M	V2531	P36-40-44D	2	
500		P44M	V2531	P36-40-44D	2	Terminals and through connectors of type AK/AS/AKK/AKS 500B
500-630		P2552M		P2552D	2	Terminals and through connectors type AK/AS/AKK/AKS 500A

## Punch and Matrix for pre-rounding

For Al conductors, pre-rounding. Use punch holder V2540



mm <sup>2</sup> (Cu)	Matrix	Punch	Number of crimps
185	25R21ML	25R21DL	1
240	25R24ML	25R24DL	1
300	25R26ML	25R26DL	1
400	25R30ML	25R30DL	1
500	25R33ML	25R33DL	1
630	25R39ML	25R39DL	1
	25R42ML	25R42DL	

# Storage boxes for Al and Cu accessories



## Storage box LV1300B

Storage box that holds the V1300 tool and accessories to crimp Elpress Cu-terminals.

### Properties:

- material plywood
- interior material polyethylene
- solid, moulded interior

Name	Net weight (kg)	Length mm	Width	Height
LV1300B	5,12	570	467	130



## Storage box L-Alu

Additional storage box for LV1300B and LV250, with space for accessories to crimp Elpress Al-terminals.

### Properties:

- material plywood
- interior material polyethylene
- solid, moulded interior

Name	Net weight (kg)	Length mm	Width	Height
L-ALU	5,17	570	467	130

# Crimp station for industrial crimping of KRF/KSF terminals 10 - 300 mm<sup>2</sup>



## CS2500

Elpress crimp station CS2500 offers efficient production with the greatest possible personal safety. Advanced, intelligent properties combined with simplicity make the product unique.



Crimp station CS2500.

### Properties:

- designed for continuous production of electric Cu-terminals, 10-300 mm<sup>2</sup>
- quick locking of the terminal using low force shortens the overall time for crimping
- automatic setting of crimp force up to 250 kN, provides optimal service life for tools and accessories
- only one crimp necessary throughout the work area
- integrated Elpress DUAL System
- hydraulic pump PS710D with control, monitoring and error reporting
- operated with a foot pedal
- CE approved, meets the requirements of the Safety of machinery directive
- software Analyzer for analysis and report printout of crimps
- 110-240VAC 50-60Hz

mm <sup>2</sup> (Cu)	Name	Net weight (kg)	Length mm	Width	Height
10-300	CS2500	59,5	200	350	340



Pump PS710D.



# Crimp dies for CS2500

Supplied in pairs.

For Cu-terminals, type KR/KRF and KS/KSF. For stranded (class 2), multi-stranded (class 5) and very flexible (class 6) Cu conductors according to IEC 60228, no die holders are required.



Die pair 13DCB20.

mm <sup>2</sup>	Name	Number of crimps	Net weight (kg)
10	13DCB8	1	0,456
16	13DCB9	1	0,440
25	13DCB11	1	0,465
35	13DCB13	1	0,486
50	13DCB14,5	1	0,497
70	13DCB17	1	0,503
95	13DCB20	1	0,507
120	20DCB22	1	0,599
150	20DCB25	1	0,599
185	20DCB27	1	0,591
240	20DCB30	1	0,587
300	20DCB32	1	0,564

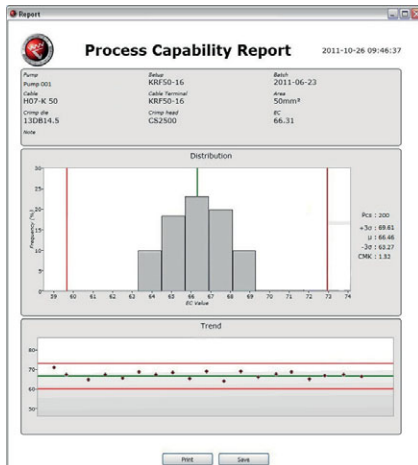
# Analyzer - software for analysis of crimps and system calibration



The Analyzer program is used to ensure quality crimps and save data to quality documents. By simple means, all crimps can be studied in a PC environment where they get their own ID number for full traceability. The unique SPC tool, Statistic Process Control, makes it possible to consider crimping as a measurable process. Analyzer is a statistical program for systematic studies of variations in the crimp process. Furthermore, you can export, import, print or save graphs, calibration data, batch reports etc.

## Properties:

- Elpress Analyzer improves overall quality
- helps the user
- provides a process improvement tool
- measures and shows all crimps
- supports preventive maintenance of equipment
- creates traceability and documentation
- makes communication easy
- increases user skills
- eliminates incorrect crimps
- comes with instructions for use



Analyzer, measures and analyses each individual crimp.

# Lightweight and versatile designed pumps based on customer needs



## PS710

The PS710 is an electrically driven pump for crimping with advanced control and monitoring of crimping progress. A flexible system for a wide range of applications with high performance and reliability for professional use. The pump is suitable for cabling manufacturers as well as for fitters working in the field. The PS710 can be used for all types of crimping or cutting. The PS710 has a power source for all types of crimping.

### Technical data:

- possibility to use different pressure ranges, 0 - 700 Bar
- can be used with a PC on a computer network with a printer, does not apply to the PS710R
- oil flow at 20 bar: 0.6 litre/min (PS710D 1.2 litre/min)
- oil volume: 1.0 litre
- oil type: HYDREX MV 22 or similar
- crimps/battery charge: 120 crimps with Cu 150 mm<sup>2</sup>
- ambient temperature: -22 to 55°C
- protection: IP54
- mains operation 85-276VAC 50-60Hz
- Li-ion battery 28,8V, 3,0 Ah
- meet CE requirements: Safety of machinery 2006/42/EC, Electromagnetic compatibility 2014/30/EU, Low Voltage Directive 2014/35/EU, ROHS 2014/35/EU, WEEE 2012/19/EU
- weight approx. 12,4 kg
- compact dimensions 370 x 170 x 280 mm

The pump consists of three basic versions, each with customisation options.



## PS710D

For cabling manufacturers. used with crimping station CS2500

### Properties:

- unique electronic control system together with special PC software
- analysis and process monitoring/control, SPC, for tracking each crimp
- LCD Display with keypad for full status information of pump to the fitter
- communication with PC in real time provides instant quality control
- integrated communication via CAN with Elpress CS2500
- high flow hydraulic pump for fastest possible crimping
- can be used with PC on a computer network with printer



Pump PS710D

Name	Net weight (kg)	Length mm	Width	Height
PS710D	12,4	370	170	280



# CE PS710E

For fitters working in the distribution network or industry.



Pump PS710E

### Properties:

- small and light weight, which makes the product easy to use in every situation
- maximum performance, can be used both with Li-ion battery 28.8 V or 220V mains power
- LCD Display with keypad for full status information of pump to the fitter
- able to store and document crimps in the control system
- PC communication via USB
- to be used with crimp heads and cable cutters
- Elpress ergonomic handle ERGOCOM, with wireless communication can be selected for
- charger 230 VAC 50 Hz, 10.8-28.8 V, charging time 65 min

Name	Net weight (kg)	Length mm	Width	Height
PS710E	12	370	170	280



# CE PS710E251 and PS710E501\*



### Contains:

- pump E-version
- cable
- hydraulic hose 2.4 m or 5.0 m with wireless communication ERGOCOM
- battery
- charger
- carrying strap
- 110-240VAC 50-60Hz

Name	Gross weight (kg)	Length mm	Width	Height	Note
PS710E251	24,5	370	170	280	PS710E pump with carrying strap. Ergocom hose 2.4 m and power cord EU, battery and charger
PS710E501	26,0	370	170	280	PS710E pump with carrying strap. Ergocom hose 5.0 m and power cord EU, battery and charger
PS710E501-US	26,0	370	170	280	PS710E pump with carrying strap. Ergo hose 5.0 m and power cord US, battery and charger
PS710E251-US	24,5	370	170	280	PS710E pump with carrying strap. Ergo hose 2.4 m and power cord US, battery and charger

ERGOCOM hoses are not available in US/North American market.



# CE PS710R

For users looking for a reliable standard product (without the need for documented traceability).



Pump PS710R

### Properties:

- pump control without electronic control system, relay controlled
- easily equipped without data communication
- without battery
- to be used with crimp heads and cable cutters
- Elpress ergonomic handle ERGO, with wired communication can be selected for
- 110-240VAC 50-60Hz

Name	Net weight (kg)	Length mm	Width	Height
PS710R	12	370	170	280



# CE PS710R250 and PS710R500

### Contains:

- pump R version
- cable
- hydraulic hose 2.4 or 5.0 m with wired communication ERGO
- carrying strap



Name	Gross weight (kg)	Length mm	Width	Height	Note
PS710R250	23,0	370	170	280	PS710R pump with carrying strap. Ergo hose 2.4 m and power cord EU
PS710R500	24,5	370	170	280	PS710R pump with carrying strap. Ergo hose 5.0 m and power cord EU
PS710R250-US	23,0	370	170	280	PS710R pump with carrying strap. Ergo hose 2.4 m and power cord US
PS710R500-US	24,5	370	170	280	PS710R pump with carrying strap. Ergo hose 5.0 m and power cord US



## Accessories for PS710x



Operating handle for operation of pump PS710. Ergonomically designed handle that reduces the load on the operator at the workstation. ERGOCOM is controlled via Bluetooth and ERGO is wired. Available in different designs depending on the length of the hydraulic hose.



Name	Pcs/ pack	Note
HYD.SLANG KPL. 2,4M ERG PS710E	1	Hydraulic hose (2.4 m) for PS710E, with ERGO handle
HYD.SLANG KPL. 5M ERGO PS710E	1	Hydraulic hose (5 m) for PS710E, with ERGO handle
HYD.SLANG KPL.2,4M ERGO PS710R	1	Hydraulic hose (2.4 m) for PS710R, with ERGO handle
HYD.SLANG KPL. 5M ERGO PS710R	1	Hydraulic hose (5 m) for PS710R, with ERGO handle
HYD.SLANG KPL. 2,4M ERGOCOM	1	Hydraulic hose (2.4 m) for PS710R, with ERGOCOM handle (bluetooth)
HYD.SLANG KPL. 5M ERGOCOM	1	Hydraulic hose (5 m) for PS710R, with ERGOCOM handle (bluetooth)
FCU-PS710R	1	Foot pedal for PS710R
FCU-PS710D&E	1	Foot pedal for PS710D and PS710E
BÄRREM PS710	1	Carrying strap for all PS710 versions

ERGOCOM hoses are not available in US/North American market

# Other hydraulic pumps

CE



## P1000

Secure, lean produced 2-step pump as an economical alternative for industrial use where simplicity and reliability is required.

### Properties:

- hydraulic pressure: Working range 0-63 (70) MPa, adjustable
- hydraulic flow: Low pressure (up to 1.5 MPa) approx. 0.8 l/min, High pressure (more than 1,5 MPa) 0.2 l/min
- oil volume 2 l (usable 1,8 l)
- oil hydraulic oil ISOVG32
- mains connection 230 V AC 50/60 Hz
- allowable voltage fluctuation: Rated voltage  $\pm 5\%$
- electric motor 0.25 kW, Class E insulation, open type commutated motor 230 V, 50/60 Hz single-phase, Max. current: 2.8 A (5 min.)
- protection class IP20
- environment temperatures 0 - 40°C
- CE-approved: Machine safety 98/37/CE, LVD 73/23/EEC
- hydraulic hose 2.4 m, quick coupling, manoeuvre handle 12 V AC
- mains cord 1.5 m earth plug

Name	Net weight (kg)	Length mm	Width	Height
P1000	14	250	384	150



CE

## P4000



### Properties:

- unique version in high strength aluminium alloy
- ergonomic design
- smooth, anodised (electro-oxidised) surfaces – easy to keep clean
- highly efficient, two-stage pump system with fast feed
- single foot-operated pressure relief (tool return) after automatic stop when crimping is complete
- 2.2 m hose with quick coupling
- standard pressure setting 630 bar/63 MPa, (max. setting 700 bar)
- safety valve for return at all pressures
- smooth transport mode for the hose
- special output for pressure monitoring

Name	Net weight (kg)	Length mm	Width	Height
P4000	8,8	500	180	280

# Pre-insulated terminals

## Pre-insulated terminals - general info



### System Elpress






System Elpress consists of terminals and tools that are designed and tested together to give a certified crimping result. This ensures that users will feel confident when using our systems, and that a secure connection will be achieved through the proper handling of our products.

### Pre-insulated terminals

Elpress ring, fork and pin terminals are made of high-class copper 99.95%. The tab and bullet terminals are made of brass or tin-bronze. All terminals are then electrolytically tin-plated for maximum corrosion protection. The terminal's neck is brazed and annealed, which means it can be crimped in any direction. The metal in the receptacles' neck is double folded. This means that the finished terminal has excellent mechanical strength and low resistance.

### Insulation material

Elpress insulation sleeves are usually made from halogen-free polycarbonate, PC, which has excellent deformation properties. Furthermore, it maintains its vibration support up to high temperatures. Caution must be exercised in case of alkaline exposure. Some types of terminals have insulation of PA, nylon, which is also halogen-free, or PVC (not halogen free). The colour of the insulation sleeve indicates the cross-sectional area that the terminal is intended for:

	Bright yellow sleeve	0.1 - 0.5 mm <sup>2</sup>
	Green sleeve*	0.25 - 0.75 mm <sup>2</sup>
	Red sleeve	0.5 - 1.5 mm <sup>2</sup>
	Blue sleeve	1.5 - 2.5 mm <sup>2</sup>
	Yellow sleeve	4-6 mm <sup>2</sup>

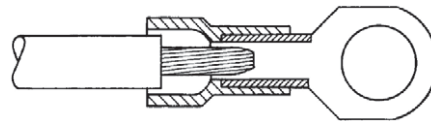
\* or transparent white

The table below shows properties for Elpress pre-insulated terminals insulation. Note the properties are general since the influences of environment, temperature, etc. can affect the terminals. Polycarbonate, PC, and polyamide, PA, are halogen-free, i.e. they do not contain any of the substances fluoride, chlorine, bromide or iodine.

Insulation material	Max. temperature	Halogen-free	Flammability class, UL94
PA (Polyamide)	105°	Yes	V0
PC (Polycarbonate)	115°	Yes	V2
PVC (Polyvinyl chloride)	60°	No, chlorine	V0

### Easy-entry

Elpress insulation sleeves are usually of the easy-entry type, which means it guides the conductor strands properly into the terminal neck. The risk of back-folded and stray strands, possibly resulting in flash-overs or reduced electrical properties, is therefore eliminated.



Easy-entry.

### Labelling of pre-insulated terminals

Elpress pre-insulated terminals are labelled with logo, cross sectional area and any applicable screw diameter to facilitate work and controllability. When contact crimping pre-insulated terminals, Elpress crimping dies/tools leave an imprint in the insulation sleeve so that all crimped terminals can be inspected retrospectively in accordance with the requirements of many standards.



Samples of Elpress crimped pre-insulated terminals.

### Designation example

Cat no. A1532R (E, FLS, G etc.)

A = pre-insulated  
 15 = cross sectional area (1.5 mm<sup>2</sup>)  
 32 = characteristic size (Hole 3.2 mm)  
 E = end connectors  
 FLS = receptacles, rolled type  
 FLSF = receptacles, fully insulated rolled type  
 FLSH = multiple tabs, rolled type (piggy back)  
 FLST = receptacles, rolled type, tin-bronze  
 G = fork terminals  
 GB = flanged fork terminals  
 H = tabs (male)  
 HA = bullets (male)  
 HO = sockets (female)  
 K = hook terminals  
 PSK = parallel connectors  
 R = ring terminals  
 SF = blade terminals  
 SFB = blade terminals, flanged  
 SFK = blade terminals, short pin  
 SFL = blade terminals, long pin  
 SFN = blade terminals, with tab  
 SR = pin terminals  
 SRK = pin terminals, short pin  
 SK = through connectors  
 SKW = through connectors with heat shrink insulation



Crimping of Elpress pre-insulated ring terminal with hand tool GSA0760.

# Hand tools

## Mechanical tools

In the development of a mechanical crimping tool at Elpress, we strive for the best quality and ergonomics in the actual tool, and the best characteristics in the crimped terminal. The tools have a built-in locking system (not the hobby tools) that ensures that the entire crimping process is completed - a prerequisite for professional and quality-assured work.



Elpress Mobile, professional tool with interchangeable dies for the installer or service technician.

## Miniforce-tools

With the unique Miniforce tools, a new level has been established regarding ergonomic adaptation to the user and low force requirements. This has resulted in a decrease in the grip forces by up to 45% and is the result of an advanced development process where minimisation of the risks of work-related injuries and the best ergonomics have been the deciding factors.



Miniforce type C has longer handles to facilitate two-handed operation, which is often a simple and natural way to reduce the loads. Electrical crimping tools and terminals together constitute a contact crimping system where crimping results are continuously checked against the requirements of established standards such as IEC 60352-2, SEN 245010, DIN 46429, IEC 61238-1 etc. Many of the manual tools have symmetrical crimp positions that make it possible to work from both sides - something that is important for left-handed users. The tools in the Miniforce, D and 50 series are made of very high-grade hardened steel with a black oxide finish and are laser marked.



## Certification of crimping tools

For quality assurance of our tools, we certify the manufacture of our crimping tools, both hand tools, type Gxx, i.e. Miniforce tools, and type Dxx.



## What do we certify?

Certification of the crimping tools means that each individual tool is documented at the final assembly and inspection stage with respect to:

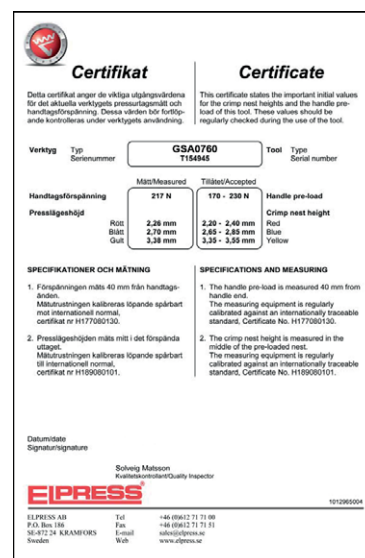
- **handle pre-load**, which is the force needed to ensure that the lock, which prevents a crimp from being interrupted, is not released too early.
- **crimp die nest heights**, i.e. the maximum height measurements which can be measured in each indentation with the dies pressed together.

## Why certification?

The certificate that accompanies the tool serves several functions:

- crimping tools are often directly introduced upon procurement in a quality management system. The tool's status at procurement shall of course be the first thing noted, to then be followed by regular checks where potential changes can be discovered and addressed.
- the certificate shows that each individual tool meets the requirements of the tool's basic specifications.
- the certificate states what the most important characteristics are that shall be followed up.

Elpress' service department offers the possibility of continued follow-up of the quality of the tools.



Certificate that accompanies the tool.

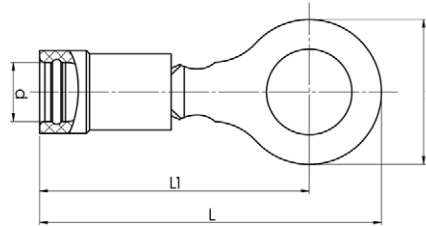


Elpress ergonomic Miniforce tool.



# Ring terminals 0.1 - 6 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn, brazed neck.
- PC insulation has easy-entry, PC and PA are halogen-free.



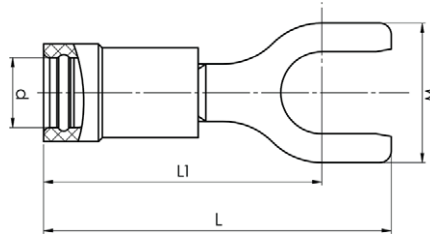
mm <sup>2</sup> (Cu)	AWG Cu	Name	Screw	W mm	d	L	L1	t	s	Tool	Insulation material	Easy Entry	Pcs/ pack
0,1-0,5	26-20	A0522R	M2,5	5,4	2	16	14	0,5	6	DSA0115	PA	No	100
0,1-0,5	26-20	A0532R	M3	5,4	2	16	14	0,5	6	DSA0115	PA	No	100
0,1-0,5	26-20	A0543R	M4	6,5	3	19	16	0,5	6	DSA0115	PA	Yes	100
0,1-0,5	26-20	A0553R	M5	8	2	19	16	0,5	6	DSA0115	PA	Yes	100
0,25-0,75	24-20	A0832R	M3	5,5	3,2	18	15	0,5	7	DSA0115	PC	Yes	100
0,25-0,75	24-20	A0837R	M3,5	6,2	3,2	21	17,5	0,5	7	DSA0115	PC	Yes	100
0,25-0,75	24-20	A0843R	M4	7,5	3,2	21	17,5	0,5	7	DSA0115	PC	Yes	100
0,25-0,75	24-20	A0853R	M5	9	3,2	22	17,5	0,5	7	DSA0115	PC	Yes	100
0,5-1,5	20-16	A1532R	M3	5,5	4	19	16	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1537R	M3,5	6	4	19	16	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1543R	M4	7	4	20,5	17	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1553R	M5	9	4	22,5	18	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1565R	M6	11	4	26,5	21	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1585R	M8	14	4	27,5	20	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1510R	M10	16,5	4	30,5	22	0,7	7	GSA0760	PC	Yes	100
1,5-2,5	15-14	A2532R	M3	5,5	4,5	19	16	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	15-14	A2537R	M3,5	6,2	4,5	19	16	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	15-14	A2543R	M4	7	4,5	21	17,5	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	15-14	A2553R	M5	9	4,5	23	18	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	15-14	A2565R	M6	11	4,5	26	20,5	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	15-14	A2585R	M8	14	4,5	28	21	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	15-14	A2510R	M10	16,5	4,5	30,5	22	0,75	8	GSA0760	PC	Yes	100
1,5-2,5	15-14	A2513R	M12	18	4,3	34	26	0,75	8	GSA0760	PA	Yes	100
4-6	12-10	A4643R	M4	7,8	6,4	24,5	20,5	1	9	GSA0760	PC	Yes	100
4-6	12-10	A4653R	M5	9	6,4	25	20,5	1	9	GSA0760	PC	Yes	100
4-6	12-10	A4665R	M6	11	6,4	28,5	23	1	9	GSA0760	PC	Yes	100
4-6	12-10	A4685R	M8	14	6,4	30,5	23,5	1	9	GSA0760	PC	Yes	100
4-6	12-10	A4610R	M10	17	6,4	34	25,5	1	9	GSA0760	PC	Yes	50
4-6	12-10	A4613R	M12	19,2	6,8	40	31	1	9	GSA0760	PC	Yes	50

t = palm thickness, s = strip length



## Fork terminals 0.1 - 6 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn, brazed neck.
- PC insulation has easy-entry, PC and PA are halogen-free.

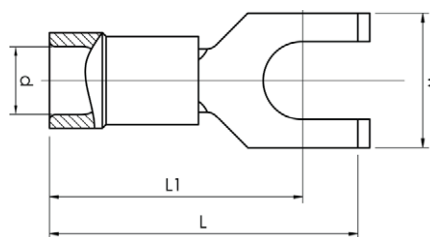


mm <sup>2</sup> (Cu)	AWG Cu	Name	Screw	W mm	d	L	L1	t	s	Tool	Insulation material	Easy Entry	Pcs/pack
0,1-0,5	26-20	A0532G	M3	5,5	3,2	18	15	0,5	6	DSA0115	PA	No	100
0,25-0,75	24-20	A0832G	M3	5,5	3,2	18	15	0,5	7	DSA0115	PC	Yes	100
0,25-0,75	24-20	A0837G	M3,5	6,2	3,2	21	17,5	0,5	7	DSA0115	PC	Yes	100
0,25-0,75	24-20	A0843G	M4	6,2	3,2	21	17,5	0,5	7	DSA0115	PC	Yes	100
0,5-1,5	20-16	A1532G	M3	5,5	4	19	16	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1537G	M3,5	6,2	4	21	17,5	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1537GS	M3,5	5,5	4	21,2	17	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1543G	M4	7	4	21	17,5	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1553G	M5	9	4	22,5	18	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1565G	M6	11	4	26,5	21	0,7	7	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2532G	M3	5,5	4,5	18	15	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2537G	M3,5	6,2	4,5	21	17,5	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2537GS	M3,5	5,5	4,5	21,2	17	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2543G	M4	7	4,5	21	17,5	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2553G	M5	9	4,5	23	18	0,8	8	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2565G	M6	11	4,5	25	19,5	0,8	8	GSA0760	PC	Yes	100
4-6	12-10	A4643G	M4	7,8	6,4	24	20	1	9	GSA0760	PC	Yes	100
4-6	12-10	A4653G	M5	9	6,4	25	20,5	1	9	GSA0760	PC	Yes	100
4-6	12-10	A4665G	M6	11	6,4	27	21,5	1	9	GSA0760	PC	Yes	100
4-6	12-10	A4685G	M8	14	6,4	30	23	1	9	GSA0760	PC	Yes	100
4-6	12-10	A4610G	M10	18	6,4	36	27,5	1	9	GSA0760	PA	Yes	100

t = palm thickness, s = strip length

## Flanged fork terminals 0.5 - 2.5 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn, brazed neck.
- PC insulation has easy-entry, PC is halogen free.

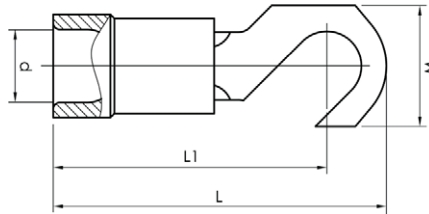


mm <sup>2</sup> (Cu)	AWG Cu	Name	Screw	W mm	d	L	L1	t	s	Tool	Insulation material	Easy Entry	Pcs/pack
0,5-1,5	20-16	A1537GB	M3,5	6,2	4	21	17,5	0,7	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1543GB	M4	6,2	4	21	17,5	0,7	7	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2543GB	M4	6,2	4,5	21	17,5	0,8	7	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2553GB	M5	9	4,5	22,5	17,5	0,8	7	GSA0760	PC	Yes	100

t = palm thickness, s = strip length

## Hook terminals 0.5 - 2.5 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn, brazed neck.
- PC insulation has easy-entry, PC is halogen free.

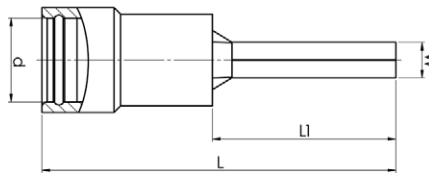


mm <sup>2</sup> (Cu)	AWG Cu	Name	Screw	W mm	d	L	L1	t	s	Tool	Insulation material	Easy Entry	Pcs/ pack
0,5-1,5	20-16	A1543K	M4	7	4	20,5	17	0,7	7	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2543K	M4	7,5	4,5	21	17	0,8	8	GSA0760	PC	Yes	100

t = palm thickness, s = strip length

## Pin terminals 0.1 - 6 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn, brazed neck.
- PC insulation has easy-entry, PC and PA are halogen-free.

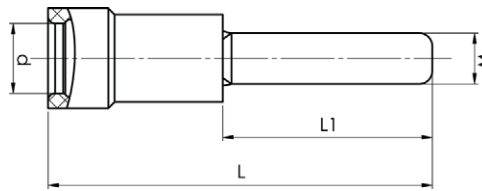


mm <sup>2</sup> (Cu)	AWG Cu	Name	W mm	d	L	L1	s	Tool	Insulation material	Easy Entry	Pcs/ pack
0,1-0,5	26-20	A0514SR	1,2	2,2	18	8	6	DSA0115	PA	No	100
0,25-0,75	24-20	A0819SR	1,8	3,2	22	12	7	DSA0115	PC	Yes	100
0,25-0,75	24-20	A0819SRK	1,8	3,2	18,5	8,5	7	DSA0115	PC	Yes	100
0,5-1,5	20-16	A1519SR	1,7	4	22	12	7	GSA0760	PC	Yes	100
0,5-1,5	20-16	A1519SRK	1,7	4	18,5	8,5	7	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2519SR	1,9	4,5	21,5	11,5	8	GSA0760	PC	Yes	100
1,5-2,5	16-14	A2519SRK	1,9	4,5	18,5	8,5	8	GSA0760	PC	Yes	100
4-6	12-10	A4630SR	2,7	6,4	27	14	9	GSA0760	PC	Yes	100

s = strip length

## Blade terminals 0.25 - 6 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn, brazed neck.
- PC insulation has easy-entry, PC is halogen free.

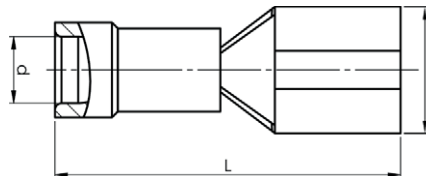


mm <sup>2</sup> (Cu)	AWG Cu	Name	W mm	d	L	L1	t	s	Insulation material	Easy Entry	Tab	Tool	Pcs/pack
0,25-0,75	24-20	A08255FK	2,5	3,2	20	10	0,5	7	PC	Yes	No	DSA0115	100
0,5-1,5	20-16	A1518SFL	2,3	4,0	27,2	18	0,8	7	PVC	Yes	No	GSA0760	100
0,5-1,5	20-16	A1529SF	2,9	4	22	12	0,7	7	PC	Yes	No	GSA0760	100
0,5-1,5	20-16	A1529SFN	2,9	4	22	12	0,7	7	PC	Yes	Yes	GSA0760	100
0,5-1,5	20-16	A1530SFB	3	4	25,8	16,8	0,8	7	PVC	Yes	No	GSA0760	100
1,5-2,5	16-14	A2524SFL	2,3	4,5	27,2	18	0,8	8	PVC	Yes	No	GSA0760	100
1,5-2,5	16-14	A2529SF	2,9	4,3	21,5	11,5	0,8	8	PC	Yes	No	GSA0760	100
1,5-2,5	16-14	A2529SFN	2,9	4,3	22	12	0,8	8	PC	Yes	Yes	GSA0760	100
1,5-2,5	16-14	A2530SFB	3	4,5	25,8	16,8	0,7	8	PVC	Yes	No	GSA0760	100
4-6	12-10	A4640SF	4	6,8	27,5	13,5	1	9	PVC	Yes	No	GSA0760	100
4-6	12-10	A4645SFB	4,6	6,8	30,3	16,8	1	9	PVC	No	No	GSA0760	100

t = palm thickness, s = strip length

## Receptacles rolled type 0.1 - 6 mm<sup>2</sup>

- Material: brass, tin plated Cu/Sn, brazed neck.
- PC and PA insulation have easy-entry, PC and PA are halogen-free.

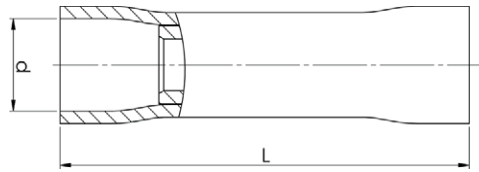


mm <sup>2</sup> (Cu)	AWG Cu	Name	W mm	d	L	s	For tab	Tool	Insulation material	Neck type	Easy Entry	Pcs/pack
0,1-0,5	26-20	A0503FLS5	3,7	2,2	16,4	7	2,8x0,5	DSA0115	PVC	Brazed	Yes	Brass, Cu/Sn
0,1-0,5	26-20	A0503FLS8	3,7	2,2	16,4	7	2,8x0,8	DSA0115	PVC	Brazed	Yes	Brass, Cu/Sn
0,5-1,5	20-16	A1503FLS5	3,2	4	18	7	2,8x0,5	GSA0760	PC	Brazed	Yes	Brass, Cu/Sn
0,5-1,5	20-16	A1503FLS8	3,2	4,0	18	7	2,8x0,8	GSA0760	PC	Brazed	Yes	Brass, Cu/Sn
0,5-1,5	20-16	A1505FLS5	5	3,2	19,5	7	4,8x0,5	GSA0760	PA	Brazed	Yes	Brass, Cu/Sn
0,5-1,5	20-16	A1505FLS8	5	3,2	19,5	7	4,8x0,8	GSA0760	PA	Brazed	Yes	Brass, Cu/Sn
0,5-1,5	20-16	A1507FLS	7,6	4	20,5	7	6,3x0,8	GSA0760	PC	Brazed	Yes	Brass, Cu/Sn
0,5-1,5	20-16	A1507FLST	7,6	4	20,5	7	6,3x0,8	GSA0760	PC	Brazed	Yes	Tin bronze (phosphor bronze), Cu/Sn
1,5-2,5	16-14	A2505FLS5	5,6	4,5	20	8	4,8x0,5	GSA0760	PA	Brazed	Yes	Brass, Cu/Sn
1,5-2,5	16-14	A2505FLS8	5	3,9	19,5	8	4,8x0,8	GSA0760	PA	Brazed	Yes	Brass, Cu/Sn
1,5-2,5	16-14	A2507FLS	7,6	4,5	20,5	8	6,3x0,8	GSA0760	PC	Brazed	Yes	Brass, Cu/Sn
1,5-2,5	16-14	A2507FLST	7,6	4,5	20,5	8	6,3x0,8	GSA0760	PC	Brazed	Yes	Tin bronze (phosphor bronze), Cu/Sn
4-6	12-10	A4607FLS	7,6	6,4	24	9	6,3x0,8	GSA0760	PC	Brazed	Yes	Brass, Cu/Sn
4-6	12-10	A4609FLS	10,9	6,6	30,1	9	9,5x1,2	GSA0760	PA	Reinforcement sleeve	Yes	Brass, Cu/Sn

s = strip length

## Through connectors 0.25 - 6 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn, contact sleeve of Cu pipe
- Halogen-free PC insulation without Easy-entry.

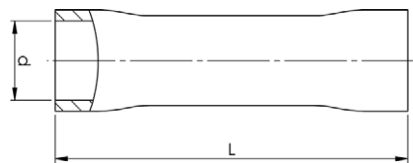


mm <sup>2</sup> (Cu)	AWG Cu	Name	d mm	L	s	Tool	Insulation material	Easy Entry	Pcs/ pack
0,25-0,75	24-20	A0824SK	2,9	24,5	7	DSA0115	PC	No	100
0,5-1,5	20-16	A1525SK	3,4	24	7	GSA0760	PC	No	100
1,5-2,5	16-14	A2527SK	4,3	26	8	GSA0760	PC	No	100
4-6	12-10	A4652SK	6,5	33	9	GSA0760	PC	No	50

s = strip length

## Through connectors with heat shrink insulation 0.5 - 6 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn, contact sleeve of Cu pipe.
- Insulation of halogen-free PA, hot melt adhesive inside the insulation.



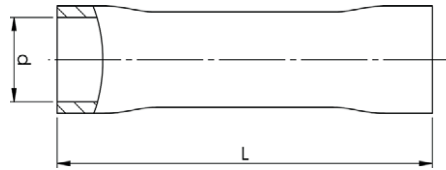
mm <sup>2</sup> (Cu)	AWG Cu	Name	d mm	L	s	Tool	Insulation material	Pcs/ pack
0,5-1,5	20-16	A1535SKW	3,7	31,5	8	GSW0560C	PA	25
1,5-2,5	16-14	A2535SKW	4,6	31,5	8	GSW0560C	PA	25
4-6	12-10	A4650SKW	6,5	37,5	9	GSW0560C	PA	25

s = strip length

After crimping and heating with a hot air gun, a water proof terminal, glued to the cable and the connector, is achieved.

# Parallel through connectors 0.5 - 6 mm<sup>2</sup>

- Material: Cu 99.95%, tin plated Cu/Sn, contact sleeve of Cu pipe.
- Insulation of halogen-free PA.



mm <sup>2</sup> (Cu)	AWG Cu	Name	d mm	L	s	Tool	Insulation material	Pcs/ pack
0,5-1,5	20-20	A1515PSK	3,2	17	7	GSA0760	PA	100
1,5-2,5	16-16	A2517PSK	4	17	8	GSA0760	PA	100
4-6	12-10	A4634PSK	5,6	21	9	GSA0760	PA	100

s = strip length

Type PSK must be crimped with GSA0760 (C) and with two crimps.



# Certified Miniforce handtools for pre-insulated terminals



## Properties:

- locking function which only releases once crimping is complete
- emergency release if the crimping process has to be interrupted
- symmetrical and clearly marked crimping positions
- adjustable for changes after long use
- tested with Elpress terminals
- unique mechanism that reduces maximum handle force from 450 N right down to 250 N (model C)
- ergonomic handle suitable for all users
- maximises the quality of work
- reduces the risk of occupational injuries
- light and versatile design without sacrificing on strength
- model C has extra long handles for the use of two hands
- withstands at least 80,000 crimps
- supplied with certificate for basic quality monitoring



## GSEA0340C



Tested and certified mechanical Miniforce hand tool for crimping pre-insulated terminals 0.5-2.5 mm<sup>2</sup> as well as pre-insulated and uninsulated end sleeves 0.25-4 mm<sup>2</sup>.

mm <sup>2</sup>	AWG	Name	Crimp geometries	Net weight (kg)	Length mm	Width
0,5-2,5 / 0,25-4	20-14 / 22-12	GSEA0340C	Oval, Trapezoid	0,613	256	80

Crimp geometries



## GSW0560C



Tested and certified mechanical Miniforce hand tool for crimping 0.5-6 mm<sup>2</sup> through connectors with heat shrink insulation of the SKW type.

mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
0,5-6	20-10	GSW0560C	Oval	0,612	256	80

Crimp geometry





# GSA0760 and GSA0760C

Tested and certified mechanical Miniforce manual tools for symmetrical crimping of pre-insulated terminals 0.5-6 mm<sup>2</sup>.

### Special properties:

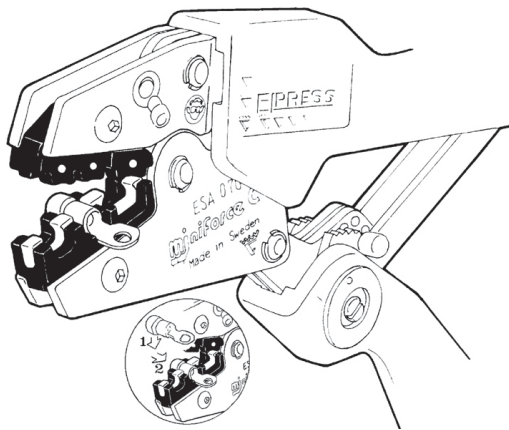
- locator that holds the terminal in the right position when crimping and facilitates work in, for example, tight spaces
- die nests are easily checked with die nest gauge, ESAQ0760



Crimp geometry



mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length	Width
0,5-6	20-10	GSA0760	Oval	0,548	203	76
0,5-6	20-10	GSA0760C	Oval	0,607	256	80



\*Follow procedures (1) and (2) when attaching the terminal in the locator on tool GSA0760(C).

# Certified handtools for pre-insulated terminals



## Properties:

- crimping positions are clearly marked
- adjustable for changes after long use
- tested with Elpress terminals
- locking function that ensures a complete crimp
- emergency release if the crimping process has to be interrupted
- unique design that makes the tools thin and versatile
- minimal muscle strength required for complete crimp
- suitable for both right and left-handed users
- withstands at least 50,000 crimps
- supplied with certificate for basic quality monitoring



## DSA0115



Tested and certified mechanical hand tool for symmetrical crimping of pre-insulated terminals 0.14-1.5 mm<sup>2</sup>.

## Special properties:

- easy to check red die nests easily with die nest gauge, ESAQ0760

Crimp geometry



mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
0,14-1,5	26-16	DSA0115	Oval	0,445	192	66



## DSA0725



Tested and certified mechanical hand tool for symmetrical crimping of pre-insulated terminals 0.5-2.5 mm<sup>2</sup>.

## Special properties:

- die nests are easily checked with die nest gauge, ESAQ0760

Crimp geometry



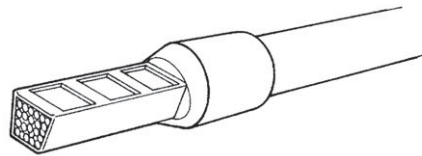
mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
0,5-2,5	20-14	DSA0725	Oval	0,449	192	66

# End terminals

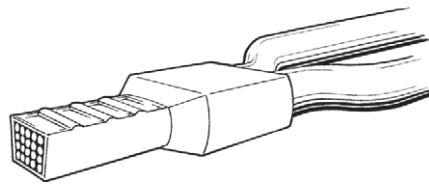
## End terminals - general info



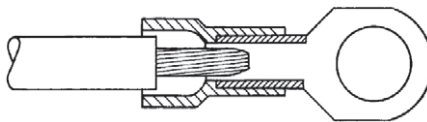
With Elpress end terminals you avoid splayed conductors and reduce the risk of cable breaks. Moreover, they create a lasting contact pressure and a large contact area.



Crimped End terminal.



Crimped TWIN end terminal.



Easy-entry.

### Designation example

Cat. no. A4-12ET

A = pre-insulated

B = uninsulated

4 = area (4 mm<sup>2</sup>)

12 = Length metal sleeve

ET = end terminal

ET2 = TWIN end terminal



### CSA certification

CSA, Canadian Standards Association, is a Canadian organisation that certifies products according to US standards. Elpress end sleeves of type A..ET / ETT / ETD, B. .. ET, A...ET2/ETT2/ETW2 is CSA certified according to US standard C22.2 No 158 and UL 1059 according to file No. 247206. End terminals of the type A..ET/B...ET/A...ET2 are intended for stranded Cu-conductors 26 AWG to 500 MCM, equivalent to the metric sizes 0.14 mm<sup>2</sup> to 240 mm<sup>2</sup>. To be used together with Elpress crimping tool.

### System Elpress

System Elpress consists of terminals and tools that are adapted and tested together for best performance. This ensures that users will feel confident when using our systems, and that a secure terminal is achieved through the proper handling of our products. Using an Elpress crimping tool when crimping an Elpress end terminal means that a terminal is obtained according to DIN 57609.

### End sleeves

Elpress pre-insulated and uninsulated end terminals are made of 99.95% copper and are tin plated. The end terminals have dimensions according to DIN 46228 with a few exceptions (see note in tables). The insulation boot is made of PP (polypropylene) and has a shape comparable to easy-entry, see image. Elpress end terminals are used when you need a perfect connection for the cable end .

### Colour codes for pre-insulated end terminals and TWIN-end terminals

AWG	Area mm <sup>2</sup>	Standard colour W Elpress type ET	Colours acc. to DIN 46228 Elpress type ETD	Alternative colour T type ETT
26	0,14	grey	grey	brown
24	0,25	light blue	yellow	violet
22	0,34	turquoise	turquoise	pink
20	0,50	orange	white	white
18	0,75	white	grey	blue
17	1	yellow	red	red
15	1,5	red	black	black
13	2,5	blue	blue	grey
11	4	grey	grey	orange
9	6	black	yellow	green
7	10	ivory	red	brown
5	16	green	blue	white
3	25	brown	yellow	black
2	35	beige	red	red
1/0	50	olive-green	blue	blue
2/0	70	yellow	yellow	yellow
3/0	95	red	red	red
250	120	blue	blue	blue
300	150	yellow	yellow	yellow

# Pre-insulated end terminals 0.14 - 50 mm<sup>2</sup> ET standard colour



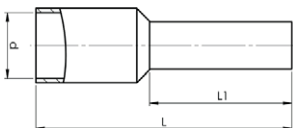
- Material: Cu 99.95%, tin plated Cu/Sn, CSA approved.
- Polypropylene insulation, colour code W.



mm <sup>2</sup> (Cu)	AWG Cu	Name	d mm	L	L1	s	Measures acc DIN46228	Tool	Pcs/pack
0,14	26	A0,14-6ET	1,9	10	6	8	Yes	PEB0110T	500
0,14	26	A0,14-8ET	1,9	12	8	10	No	PEB0110T	500
0,25	24	A0,25-6ET	1,9	10	6	8	No	PEB0110T	100
0,25	24	A0,25-8ET	1,9	12	8	10	No	PEB0110T	500
0,34	22	A0,34-6ET	1,9	10	6	8	No	PEB0110T	100
0,34	22	A0,34-8ET	1,9	12	8	10	No	PEB0110T	100
0,5	20	A0,5-6ET	2,4	12	6	8	Yes	PEB0110T	100
0,5	20	A0,5-8ET	2,4	14	8	10	Yes	PEB0110T	100
0,5	20	A0,5-10ET	2,4	156	10	12	Yes	PEB0110T	100
0,75	20	A0,75-6ET	2,8	12	6	8	Yes	PEB0110T	100
0,75	20	A0,75-8ET	2,8	14	8	10	Yes	PEB0110T	100
0,75	20	A0,75-10ET	2,8	16	10	12	Yes	PEB0110T	100
0,75	20	A0,75-12ET	2,8	18	12	14	Yes	PEB0110T	100
1	18	A1-6ET	3	12	6	8	Yes	PEB0110T	100
1	18	A1-8ET	3	14	8	10	Yes	PEB0110T	100
1	18	A1-10ET	3	16	10	12	Yes	PEB0110T	100
1	18	A1-12ET	3	18	12	14	Yes	PEB0110T	100
1,5	16	A1,5-6ET	3,3	12	6	8	No	PEB0110T	500
1,5	16	A1,5-8ET	3,3	14	8	10	Yes	PEB0110T	100
1,5	16	A1,5-10ET	3,3	16	10	12	Yes	PEB0110T	100
1,5	16	A1,5-12ET	3,3	18	12	14	Yes	PEB0110T	500
1,5	16	A1,5-18ET	3,3	24	18	20	Yes	PEB0110T18	100
2,08	14	A2,08-8ET	3,5	14	8	10	No	PEB0110T	500
2,5	14	A2,5-8ET	4,2	15	8	10	Yes	PEB0110T	100
2,5	14	A2,5-10ET	4,1	17	10	12	Yes	PEB0110T	500
2,5	14	A2,5-12ET	4,2	19	12	14	Yes	PEB0110T	100
2,5	14	A2,5-18ET	4,2	25	18	20	Yes	PEB0110T18	100
4	12	A4-10ET	4,8	17	10	12	Yes	PEB0110T	100
4	12	A4-12ET	4,8	20	12	14	Yes	PEB0110T	100
4	12	A4-18ET	4,8	26	18	20	Yes	PEB0110T18	100
6	10	A6-12ET	6,1	20	12	14	Yes	PEB0110T	100
6	10	A6-18ET	6,1	26	18	20	Yes	PEB0110T18	100
10	8	A10-12ET	7,4	21	12	14	Yes	GEB1025	100
10	8	A10-18ET	7,4	27	18	20	Yes	GEB1025	100
16	6	A16-12ET	8,8	23	12	14	Yes	GEB1025	100
16	6	A16-18ET	8,8	29	18	20	Yes	GEB1025	100
25	4	A25-16ET	10,9	29	16	18	Yes	GEB1025	50
25	4	A25-18ET	10,9	31	18	20	Yes	GEB1025	50
25	4	A25-22ET	10,9	35	22	24	Yes	GEB1025	50
35	2	A35-16ET	12,3	30	16	18	Yes	GEB3550	50
35	2	A35-18ET	12,3	32	18	20	Yes	GEB3550	50
35	2	A35-25ET	12,3	39	25	27	Yes	GEB3550	50
50	1/0	A50-20ET	15	36	20	22	Yes	GEB3550	50
50	1/0	A50-25ET	15	41	25	27	Yes	GEB3550	25

s = strip length

We can also offer end terminals with other colour codes and areas over 50 mm<sup>2</sup>.





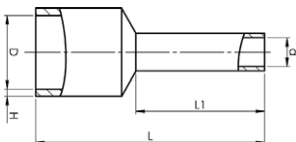
# Pre-insulated TWIN-end terminals 2 x 0.5 - 2 x 10 mm<sup>2</sup> ET2 standard colour code



- Material: Cu 99.95%, tin plated Cu/Sn. CSA approved.
- Polypropylene insulation, colour code according to DIN 46228.

mm <sup>2</sup> (Cu)	AWG Cu	Name	d mm	D	H	L	L1	s	Tool	Pcs/ pack
2 x 0,5	2x20	A0,5-6ET2	1,5	4,5	2,3	13	6	8	PEB0110T	100
2 x 0,5	2x20	A0,5-8ET2	1,5	4,5	2,3	15	8	10	PEB0110T	100
2 x 0,75	2x20	A0,75-8ET2	1,8	5,1	2,6	15	8	10	PEB0110T	100
2 x 0,75	2x20	A0,75-10ET2	1,8	5,1	2,6	17	10	12	PEB0110T	100
2 x 0,75	2x20	A0,75-12ET2	1,8	5,1	2,6	19	12	14	PEB0110T	100
2 x 1	2x18	A1-8ET2	2	5,1	3	15	8	10	PEB0110T	100
2 x 1	2x18	A1-10ET2	2	5,1	3	17	10	12	PEB0110T	100
2 x 1	2x18	A1-12ET2	2	5,1	3	19	12	14	PEB0110T	100
2 x 1,5	2x16	A1,5-8ET2	2,3	6,4	3,5	16	8	10	PEB0110T	100
2 x 1,5	2x16	A1,5-12ET2	2,3	6,4	3,5	20	12	14	PEB0110T	100
2 x 2,5	2x14	A2,5-10ET2	2,9	7,5	4	18,5	10	12	PEB0110T	100
2 x 2,5	2x14	A2,5-13ET2	2,9	7,5	4	21,5	13	15	PEB0110T18	100
2 x 4	2x12	A4-12ET2	3,8	8,6	4,9	23	12	14	GEB4010C-TWIN, PEB0110T	100
2 x 4	2x12	A4-18ET2	3,8	8,6	4,9	29	18	20	GEB4010C-TWIN, PEB0110T18	100
2 x 6	2x10	A6-14ET2	4,6	9,6	5,8	25	14	16	GEB4010C-TWIN, PEB0110T18	100
2 x 6	2x10	A6-18ET2	4,6	9,6	5,8	29	18	20	GEB4010C-TWIN, PEB0110T18	100
2 x 10	2x8	A10-14ET2	6,5	12,6	7	26	14	16	GEB4010C-TWIN	100

s = strip length  
Use the tool socket closest to the total area of the sleeve.



# Certified Miniforce handtools for end terminals



## Properties:

- locking function which only releases once crimping is complete
- emergency release if the crimping process has to be interrupted
- adjustable in case of changes due to long-term use
- tested with Elpress terminals
- ergonomic handle suitable for all users
- maximises the quality of work
- reduces the risk of occupational injuries
- light and versatile design without compromising durability
- model C has extra long handles for the use of two hands
- withstands at least 80,000 crimps
- supplied with certificate for basic quality monitoring



## GSEA0340C



Tested and certified mechanical Miniforce hand tool for crimping pre-insulated terminals 0.5-2.5 mm<sup>2</sup> as well as pre-insulated and uninsulated end sleeves 0.25-4 mm<sup>2</sup>.

mm <sup>2</sup>	AWG	Name	Crimp geometries	Net weight (kg)	Length mm	Width
0,5-2,5 / 0,25-4	20-14 / 22-12	GSEA0340C	Oval, Trapezoid	0,613	256	80

Crimp geometries



## GEB4010C-TWIN



Tested and certified mechanical Miniforce hand tool for crimping pre-insulated TWIN end terminals 2 x 4-2 x 10 mm<sup>2</sup>.

mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
4-10	12-8	GEB4010C-TWIN	Trapezoid	0,618	256	80

Crimp geometry



## PZD3



Tested and certified mechanical hand tool for crimping end terminals 0.5-6 mm<sup>2</sup> and insulated TWIN end terminals 2 x 0.5-2 x 4 mm<sup>2</sup>.

## Special properties:

- a crimp mode that automatically adjusts itself
- front-fed
- can handle crimp lengths up to 17 mm

Crimp geometry



mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
0,5-6	20-10	PZD3	Rectangle	0,472	192	66



## GEB4010C



Tested and certified mechanical Miniforce hand tool for crimping end terminals 4-10 mm<sup>2</sup>.

mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
4-10	12-8	GEB4010C	Trapezoid	0,615	256	80

Crimp geometry



## GEB1025 and GEB1025C



Tested and certified mechanical Miniforce hand tool for crimping end terminals 10-25 mm<sup>2</sup>.

mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
10-25	8-4	GEB1025	Trapezoid	0,558	203	76
10-25	8-4	GEB1025C	Trapezoid	0,62	256	80



Crimp geometry



## GEB3550 and GEB3550C



Tested and certified mechanical Miniforce hand tool for crimping end terminals 35-50 mm<sup>2</sup>.

mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
35-50	2	GEB3550	Trapezoid	0,558	203	76
35-50	2	GEB3550C	Trapezoid	0,614	256	80



Crimp geometry





## PEB0110T and PEB0110T18

Tested and certified mechanical Miniforce hand tool for crimping end terminals 0.14-10 mm<sup>2</sup>.

### Special properties:

- rotating die
- front and side feed



mm <sup>2</sup>	AWG/MCM (Cu)	Name	Crimp geometry	Net weight (kg)	Length mm	Width
0,14-10	26-8	PEB0110T	Trapezoid	0,385	180	65
0,14-10	26-8	PEB0110T18	Trapezoid	0,300	180	25

Crimp geometry



## PEB0116H

Tested and certified mechanical Miniforce hand tool for crimping end terminals 0.14-16 mm<sup>2</sup> with hexagonal crimping.



mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
0,14-16,0	26-6	PEB0116H	Hexagonal	0,379	176	62

Crimp geometry



## PEB0116S

Tested and certified mechanical Miniforce hand tool for crimping end terminals 0.14-16 mm<sup>2</sup> with square crimping.



mm <sup>2</sup>	AWG	Name	Crimp geometry	Net weight (kg)	Length mm	Width
0,14-16,0	26-6	PEB0116S	Square	0,371	176	62

Crimp geometry



# Battery-powered cable cutters



CE

## PKL54C

Electric cable cutter for cutting Cu and Al cable, max. cutting diameter 54 mm.

### Properties:

- not intended for cutting steel
- comes in a bag with Li-ion battery, 18 V, as well as charger
- tool performs a scissor motion when cutting that provides an optimal cut surface
- built-in fuse as a surge protector
- CE-marked



Battery powered cutting tool PKL54C.

Max $\phi$ conductor	Name	Net weight (kg)	Length mm	Width	Height	Note
54	PKL54C	3,6	338	220	120	Charger: 230VAC
54	PKL54C-US	3,6	338	22	12	Charger: 150VAC
54	PKL54C-WOBC 3,0		338	22	12	Without Battery/Charger



# Earthing and braids

## Flat, flexible braids

Earthing braids with flat, twined, highly flexible Cu-conductor, uncoated 0,09 - 400 mm<sup>2</sup>.



- Broad range of flexible and highly flexible flat earth braids.
- Customer unique solutions are available.
- Braids in other materials, such as stainless steel, aluminium or insulated connectors could also be provided.

Uncoated earthing braid: FJCU area (mm<sup>2</sup>) - length (mm) - Hole size

Example: FJCU50-100-8



## Flat, flexible braids (tin plated)

Earthing braids with flat, twined, highly flexible Cu-conductor, tin plated 0,09 - 400 mm<sup>2</sup>.



- Broad range of flexible and highly flexible flat earth braids.
- Customer unique solutions can be made.
- Braids in other material, such as stainless steel, aluminium or insulated connectors are also available.

Tin plated earthing braid: FJCUSN area (mm<sup>2</sup>) - length (mm) - Hole size

Example: FJCUSN50-100-8



## Round, flexible connections (un-insulated)

Un-insulated slacks with many possibilities to connect Elpress terminals.

Such as KSF/KRF Cu tube terminal range, AlCu bi-metallic range

AKK/AKS or Al range AK/AS.

Round, twined, highly flexible Cu-conductor, tin plated or uncoated, 0,06 - 600 mm<sup>2</sup>.



- Broad range of flexible and highly flexible flat earth braids.
- Customer unique solutions available.
- Braids in other materials, such as stainless steel, aluminium or insulated connectors are also available.

Uncoated earthing braid (round): FLCU area (mm<sup>2</sup>) - length (mm) - Hole size

Example: FLCU50-100-8



## Round, flexible connections (un-insulated, tin plated)

Un-insulated slacks with many possibilities to connect Elpress terminals. Such as KSF/KRF Cu tube terminal range, AlCu bi-metallic range AKK/AKS or Al range AK/AS.

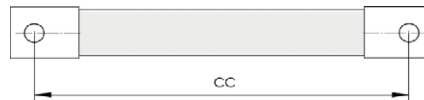
Round, twined, highly flexible Cu-conductor, tin plated or uncoated, 0,06 - 600 mm<sup>2</sup>.



- Broad range of flexible and highly flexible flat earth braids.
- Customer unique solutions could be made.
- Braids in other materials, such as stainless steel, aluminium or insulated connectors could also be provided.

Tin plated earthing braid (round): FLCUSN area (mm<sup>2</sup>) - length (mm) - Hole size

Example: FLCUSN50-100-8



## Round, flexible connections (insulated)

Insulated slacks with many possibilities to connect Elpress terminals. Such as KSF/KRF Cu tube terminal range, AlCu bi-metallic range AKK/AKS or Al range AK/AS.

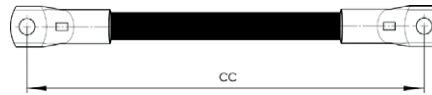
Round, twined, highly flexible Cu-conductor, tin plated or uncoated, 0,06 - 600 mm<sup>2</sup>.



- Customer unique slack, possible to make according to customer requirements.
- Insulated braids in other materials, such as stainless steel, aluminium or insulated connectors could also be provided.

Insulated, uncoated slacks: FKCU area (mm<sup>2</sup>) - length (mm) - Hole size

Example: FKCU50-100-8



### Slacks

Type	Conductor mm <sup>2</sup>	Hole	Description	Used with (combine terminals freely)
KRF	CU 16-800	M range	Terminal	CU conductors
KSF	CU 16-800		Connector	CU conductors
AKS	AL/CU 10-400/10-300	M range	Connector	CU and/or AL conductors
AKK	AL 16-1200		Terminal	AL conductors
AKP	AL 16-1200	M range	Pin terminal	AL conductors
KR	CU 0,75-10		Terminal	CU conductors
KS	CU 0,75-10		Connector	CU conductors

# Cable clamps

## Cable Clamps for 3-conductor, $\varnothing$ 27 - 69 mm

Cable Clamps for fastening a wide range of single and multi conductor low and high voltage cables in a triangular formation. The installation is designed to provide superior mechanical strength. The width of the clamping area provides a controlled pressure on the cable and avoids damage to the insulation.

- For fastening single and multi conductor, low and high voltage cables.
- Constructed for a mechanical strength up to 65500 Nm
- Temperature range -40 - +120°C (shortly +225°C)
- Material strength of more than 50 year
- UL tested
- Space saving
- For low and high voltage cables
- Halogeen free
- Easy to mount
- Stackable

To mount next clamp above the first, i.e. a mounting of 6 cables, you preferably use 1 pcs TRIPLE 27-38 KIT, 1 pcs TRIPLE 27-38 and 1 pcs fastening material M10x120.

Please contact Elpress for further information regarding the articles.

## Cable Clamps for 3-conductor, KIT



Cable clamp kit for 3-conductor  $\varnothing$  xx-yy mm.

The kit comes with installation material for 3-conductor cable clamp.

Mounting kit 1 pcs cable clamp, 2 pcs threaded rod, 4x nuts with washers, 2 connectors.

Example: TRIPLE51-69KIT, with size  $\varnothing$  51-69 mm

## Cable clamps for 3-conductor



Cable clamp for 3-conductor  $\varnothing$  xx-yy mm.

Example: TRIPLE51-69, with size  $\varnothing$  51-69 mm

## Cable Clamps for 3-conductor, Accessories



Mounting material, 2 threaded rods M10x120,

4 x M10 nuts and washers, 2 bushes

Galvanized steel

(Mounting material is included in the KIT, for i.e. mounting of 6 cables in two rows, add one mounting material M10x120)

## Cable Clamps for 1-conductor, $\varnothing$ 26 - 135 mm

Cable Clamps for fastening a wide range of single and multi conductor low and high voltage cables. The installation is designed to provide superior mechanical strength. The width of the clamping area provide superior mechanical strength. The width of the clamping area provides a controlled pressure on the cable and avoids damage to the insulation.

- For fastening single and multi conductor, low and high voltage cables.
- Constructed for a mechanical strength of up to 68 Nm
- Temperature range -40 - +120°C (shortly +225°C)
- Material strength of more than 50 year
- Tested by the Prof. Ir. Damstra Laboratory
- UL tested
- For low and high voltage cables
- Halogeen free

Please contact Epress for further information regarding the articles.

## Cable Clamps for 1-conductor, KIT



Cable clamp kit for 1-conductor  $\varnothing$  xx-yy mm.  
The kit comes with installation material for 1-conductor cable clamp.  
Mounting kit 1 pcs cable clamp, 2 pcs threaded rod, 4x nuts with washers, 2 connectors.

Example: SE26-38KIT, with size  $\varnothing$  26-38 mm

## Cable Clamps for 1-conductor, Cable clamp

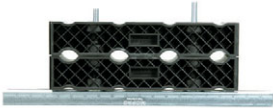


Cable clamp for 1-conductor  $\varnothing$  xx-yy mm.

Example: SE26-38, with size  $\varnothing$  26-38 mm

# Cable Blocks for 4-conductor, $\varnothing$ 12 - 32 mm and 32 - 48 mm

## Cable Blocks for 4-conductor, Cable clamps and mounting material



For fastening of 4 cables in a block along side each other.  
Cable Blocks are suitable for fastening cables with a diameter 12 mm (0.45 inch) up to 32 mm (1.26 inch) and a diameter of 32 mm up to 48 mm.  
By means of 2 block parts, 4 cables can be fastening along side each other.  
On the basis of the number of cables to be fastened, the number of block parts is decided. 2 block parts for 4 cables, 3 block parts for 8 cables and so on.  
The blocks can also be fastened along side each other by the clever dovetail connection.



Cable clamp kit for 4-conductor  $\varnothing$  xx-yy mm.  
The kit comes with installation material for 4-conductor cable clamp.  
Mounting kit 1 pcs cable clamp, 2 pcs threaded rod, 4x nuts with washers, 2 connectors.

### Properties:

- Constructed for a mechanical strength of 29500 Nm
- Temperature range -40 – + 120 C° (shortly +225 C°)
- Material strength of more than 50 year
- UL tested
- For low and high voltage cables
- Supplied in 2 blocks (for 4 cables)
- Halogen free
- Stackable (max 6 blocks)

### Example:

To mount 8 cables above each other you preferable use 1 pcs UNIFIX IM12-32, 1 pcs UNIFIX IM12-32 and 1 pcs mounting material M10x120.

## Cable Blocks for 4-conductor, Cable clamps



Cable clamp for 4-conductor  $\varnothing$  xx-yy mm. Only the cable clamp without accessories.

Example: UNIFIX IM 12-32, with size  $\varnothing$  12-32 mm

## Cable Blocks for 4-conductor, Accessories



Mounting material, 2 threaded rods M10x120,  
4 x M10 nuts and washers, 2 bushes  
Galvanized steel  
(Mounting material is included in the KIT, for i.e. mounting of 6 cables in two rows, add one mountig material M10x120)



# Some important comments on contact crimping



## About System Elpress

There is a wide range of electrical terminals today, and it can be difficult to know if you have chosen the right solution for your installation.

A first step is to ensure that a system is chosen, consisting of terminal, tools and a standard conductor.

In order for this combination of material to be classified as a system, there must be common test documentation, a type test according to a standard relevant to the material.

There may also be a need to identify the correct terminal depending on the cable class. Cables are divided into different classes depending on their structure.

With System Elpress you get a complete solution, KRF/KSF in combination with Dual can be combined with all Cu cable classes. Elpress systems for aluminium indented crimping are a robust solution that can be used with all types of Al cables.

Not choosing a system carries great risks. All terminals are designed with respect to a specific tool system. Small differences in dimensions of terminals and tools can lead to serious consequences, such as hot running or fire.

## Terminals

Elpress terminals have been developed over 60 years of continuous work to always meet the highest standards.

Our terminals are designed to be able to operate at a continuous temperature of 90°C and to always be able to carry the same load that the relevant cable area can handle.

This means, among other things, that tubes for our KRF/KSF are dimensioned to be adapted to the cable's conductivity. This type of terminal should be crimped with a hexagonal geometry that provides a symmetrical shape that distributes crimp force evenly and ensures that thin strands are not damaged shortening the lifetime of the connection.

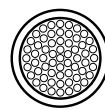
Our aluminium terminals are designed according to the same criteria and requirements as mentioned above, and should be crimped with a punch tool that ensures that the aluminium insulating oxide layer is broken and that good points of contact are created between conductors and terminal.

## Cables

Elpress terminal systems are designed to be used in conjunction with cables according to IEC 60228. This is an international standard used all over the world and describes the structure and conductivity of a cable ( $\Omega/\text{km}$ ) The norm divides cables into classes as shown below.



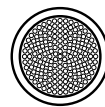
**Class 1**  
Solid conductor



**Class 5**  
Flexible conductor



**Class 2**  
Stranded conductor



**Class 6**  
High flexible conductor

Types of conductor

Cables in each class shall have mechanical and electrical properties that meet the requirements of the norm, which means that they can be used with System Elpress without special adaptation. In addition to the classification of conductors, the differences between cables are mainly in the design of the insulation.



Hexagonal crimping.



Indented crimping.

## Trained users

Another important aspect of a system is a knowledgeable and trained operator. Good and safe work requires knowledge of materials, regulations and the importance of using a system solution. We offer company-adapted training that includes both theoretical and practical parts.

# Standards for contact crimping



## Standards for electrical terminals

SEK Svensk Elstandard is appointed by the government to be responsible for all standardisation within the electrical area in Sweden.

The Standards are established mainly through international and European collaborations within the International Electrotechnical Commission (IEC) and CENELEC (Comite' Européen de Normalisation Electrotechnique). SEK represents and coordinates Swedish companies and authorities.

These standards are available on the SEK website. There are also manuals that show regulations and recommendations for different types of installations.

For type testing of electrical terminals, the current standard is IEC 61238-1-1, it supersedes all national standards.

It has been active since 1993 and was last updated in 2018 and is thus the standard that best meets the requirements that can be imposed on today's installations.

In addition to this, there are a large number of more industry-specific standards for railways or switchgear where, in addition to the requirements of IEC 61238-1-1, there may be a need for vibration and environmental testing.



SEK - Svensk elstandard, <https://elstandard.se/>



IEC, <https://www.iec.ch/>



CENELEC, <https://www.cenelec.eu/>

## Tests against standard

Many existing products for electrical terminals are older than IEC 61238-1-1, this does not mean that they have to be retested against the new standard to be acceptable, the standard they were tested against at launch applies. This is rarely a problem as they are likely to be used in installations of the same age. In newer installations with higher demands on current and temperature, it is important to choose materials tested according to current standards.

## Crimp results

For a good crimp result, you have to ensure clean conductor surfaces, without visible oxide layers.

A good cable stripper guarantees clean stripping without damage to individual strands, follow Elpress instructions for stripping lengths.

Crimping tools should be checked before starting work, to avoid the risk of injury and to ensure a good result.

The crimp dies are the key to a successful crimping process, whether they are hydraulically or manually operated.

It very important that all tool parts are kept dry and clean and that they are regularly checked for damage.

Damage and/or contamination of tool parts can lead to a deterioration in the end result and shortened tool life.



# Use and safety instructions

## Instructions and directions

Elpress hydraulic and mechanical tool systems are some of the safest on the market. Safety requires that instructions and directions are available and followed closely. Each Elpress tool is therefore accompanied by detailed instructions on how to use the tool. These instructions should be read carefully before use, in the best interests of the operator.

### Correct use of the tools:

- increases productivity
- increases tool life
- ensures the quality of work done
- minimises the risk of accidents

### Safety rules

Below are some simple and common rules that we at Elpress recommend all operators to follow:

- Before starting work with a crimp tool, a thorough visual inspection should be carried out. Pump, crimp head, forks, couplings, hoses and other accessories must be checked to ensure that they are faultless and clean. The correct placement of the inserts in the forks should also be checked before starting work.
- All operators must wear personal protective equipment such as A51 gloves, goggles and safety shoes.
- Hydraulic pressure must not be applied to a hose that is heavily bent or knotted. The hose is made for particularly high pressure and cannot be replaced by another type.
- Hydraulic tools must never be carried in the hose or coupling.
- Operate with caution, do not drop heavy objects on the hydraulic hose. This can damage the steel reinforcement and cause leakage. If leakage occurs, oil under high pressure may come into contact and penetrate the skin resulting in internal injury. If this happens, contact a doctor immediately.
- The tools must be serviced and calibrated at regular intervals.
- Make sure that the correct tool or tool insert has been selected for the terminal and conductor to be crimped.
- Check that the installation is unpowered before carrying out work. The tools are not designed for "Live working".
- Keep in mind that there is very high crimp pressure during work. Therefore, never stand in front of a tool in the direction of crimping force.
- Pay attention to the risk of crushing and cutting injuries during work. This applies to all types of crimping tools and cable cutters.
- If there is a suspicion of failure of a crimp system, always contact the Elpress Service Centre.

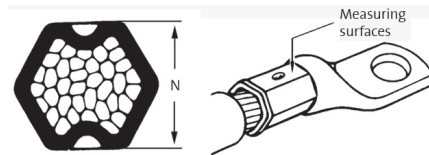
## Check of crimping results

In order to ensure that the tool has achieved the predetermined shape change for each cable terminal, the crimp result shall be measured. This shape change provides both mechanical strength and good electrical properties.

### Hexagonal crimping

For terminals and through connectors of copper the following applies:

- The "N" dimension is checked in the direction of the crimp.
- Measure with calipers and compare with the table's "N" dimensions.
- If the measurement result exceeds the "N" dimension (according to the table that follows) after correct contact crimping, contact the Elpress service centre.



### Crimp die table type KRF/KSF with Dual dies (N measurement)

Type KRF/KSF with DUAL dies

KRF/KSF	DB-die nr	max N mm
10	8	6,7
16	9	7,5
25	11	9,0
35	13	10,6
50	14,5	11,8
70	17	13,6
95	20	16,0
120	22	17,7
150	25	20,3
185	27	21,7
240	30	23,9
300	32	25,7
400	38	30,5

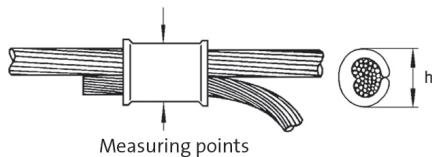
### Crimp die table type KRF/KSF (N-measurement)

Type KRF/KSF with B-dies

KRF/KSF	Die No.	max N mm
10	8	6,3
16	9	7,3
25	11	8,8
35	13	10,2
50	14,5	11,2
70	17	13,4
95	20	16,4
95	20	15,8 (TB die)
120	22	16,3
150	25	20,1
150	25	20,3 (CB and KB dies)
185	27	20,5
240	30	23,3
300	32	24,5
400	38	30,3
500	42	30,4
630	53	38,4
800	53	38,4

## Oval crimping

For Cu **branching sleeves**, the "h" dimension must be checked. This is done at the maximum height of the crimped oval, preferably with calipers. The measurements are compared to the table below. If the "h" measurement is exceeded, after a contact crimping, contact the nearest Elpress service centre. See measurement points on the image below.

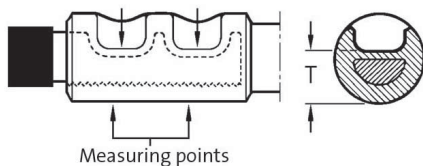


## Crimp die table type C sleeves (H-dimensions)

C-die No.	Sleeve	max h mm
5	C6-10	12.5
6	C16-25	15.5
8-9	C25-50	22.0
13	C50-70, C70-95	26.5
15	C95-120	30.8
18	C150-185	44.5
21	C240-300, C23	54.4

## Indent crimping

For Al terminals, the measurement "T" must be checked, which is measured at the bottom of the indent that the punch has achieved on the terminal. This is best done with special calipers, contact Elpress if necessary. Compare measured "T" measurement with table. If the "T" measurement is exceeded, after indented crimping, contact the nearest Elpress service centre. See measurement points on the image below.



## Crimp die table type AK/AS (T-measurement)

Type AS/AK/AKK	Matrix	Punch	max T mm
AS/AK/AKK			
16	P13M/TP13M	P13D/TP13D	6.8
25	P13M	P13D	6.8
35	P20M	P20D	10.8
50	P20M	P20D	10.8
70	P20M	P20D	10.8
95	P25M	P25D	13.5
120	P25M	P25D	13.5
150	P25M	P25D	13.5
150SOLID	13P29M	13P29D	14.3
185	P32M	P32D	18.4
240	P32M	P32D	18.4
300	P36M	P36/40/44D	21.0
300B	13P37M/P2537M	13P37D/P2537D	22.5
400B	13P37M/P2537M	13P37D/P2537D	22.5
400	P40M	P36/40/44D	22.8
500B	P44M	P36/40/44D	24.5
500A	P2552M	P2552D	31.0
630A	P2552M	P2552D	31.0
630	W60M	W60D	36.0
800	W60M	W60D	36.0
1000	W60M	W60D	36.0
1200	W70M	W70D	41.0



# Bolt joints

## Bolt joints

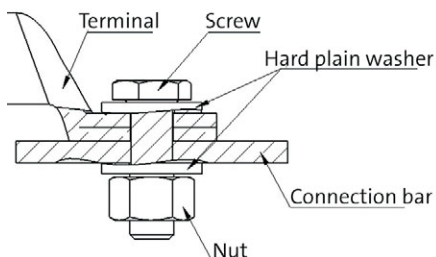
Users/installers of bolted connectors always have to adhere to, and follow electrical codes and norms in the local region where they are making such installations. The information below is general and hence, should never be seen as an installation instruction.

The installation of a terminal with bolt joint for electrical transmission requires special attention. It is important that this is done in

a correct manner, as important as the contact crimping at the other end of the terminal as described above. The joint must achieve a sufficiently high clamping force, distributed in a desirable manner and ensure the electrical properties over a very long time under high and varying loads of different characteristics. It is very important to follow the installation instructions.

These are based on theoretical calculations, verified tests and experience from field studies.

Tightening must be carried out in a controlled manner using torque tools, where the relevant screw is tensioned to the specified torque. The accuracy of the tool is of great importance. The clamping force of a properly tightened screw shall create a contact area large enough to ensure good conductivity, without the risk of overheating. In order for the clamping force to be distributed evenly and create a sufficiently large contact area, **hard flat washers must always be used**, type BRB HB200 SMS 70, under screw head and nut. See image below. This applies regardless of the hardness of the conductive materials (which are softer than HB200). Otherwise, there is risk of large deformation of the conducting material that reduces the tension, which can increase the risk of inadequate contact area and overheating.

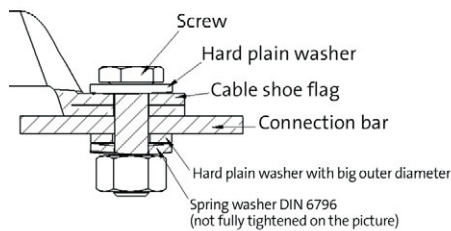


Bolt joints.

## Tension washers

The use of different types of locking elements or spring washers often increases the risk of settlement. If a spring washer of type DIN 6796, with a very high clamping force, is

positioned and secured between e.g. nut and the hard flat washer, it can provide an increased margin towards excessively high settlement. The diameter of the tension washer should be less than or equal to the flat washer's, even after tightening fully. Otherwise, the risk of settlement at the outer edge of the flat washer increases where the clamping forces are concentrated. **When using spring washers, 1 is sufficient and it is preferably placed on the opposite side of the terminal.**



Bolt joint with spring washer.

## Mounting the terminal against the connection rail

Max. 2 terminals of the same size on the same screw. Current load should be checked.

### Preparatory:

- Clean contact surfaces from dirt, oxide layers and grease using a steel brush and denatured alcohol. This is especially important for aluminium. Surfaces that are tinned, nickel-plated, silver plated must not be brushed.
- Petroleum jelly or contact grease reduces corrosion risk on cleaned surfaces

### Fastener selection:

- Screws and nuts of strength class 8.8.
- Greased galvanized screws provide the least dispersion of the pre-tension force.
- Choose stainless A4-80 in environments when there is a high risk of corrosion.

## Recommended tightening torque

Thread	Steel 8.8 *		Steel 8.8 *	Steel 10.9 *		Steel 10.9 *	Steel 10.9 *	Stainless *	Stainless *	Stainless *
	Mv	Ff	p	Mv	Ff	p				
-	Mv	Ff	p	Mv	Ff	p	Mv	Ff	P	
M5	5,5	6,6	118,0	8,0	9,2	164,0	5,5	6,2	111,0	
M6	9,5	9,2	114,0	13,0	13,0	160,0	9,5	8,6	107,0	
M8	23,0	17,0	116,0	32,0	24,0	164,0	22,0	16,0	109,0	
M10	45,0	27,0	92,0	64,0	38,0	129,0	45,0	25,5	88,0	
M12	78,0	40,0	125,0	110,0	56,0	175,0	76,0	37,0	116,0	
M16	200,0	75,0	156,0	280,0	110,0	229,0	185,0	69,0	144,0	

Mv = tightening torque (Nm)

Ff = pre-tensioning force (kN)

p = flat pressure (N/mm<sup>2</sup>)

FZB = electroplated + gloss chromed

FZY = electroplated + hard chromed

FZM = FZM= mechanically galvanized

\* (FZB, FZY, FZM)

A4/80

### Selection of washers:

- Always select hard flat washers of the BRB, HB200 type.
- The tension washer can normally be excluded. If a tension washer of type DIN 6796 is used, it must be placed between the screw head/nut and the flat washer. It must never be placed directly against an electrical contact surface without a flat washer in between. The flat washer must have an external diameter at least as large as the tension washer.
- 1 spring washer is sufficient and it should be placed on the rear of the busbar, between nut and hard flat washer, see diagram.

### Installation:

- The screws must be tightened with torque tools so that tightening is controlled.
- Torque wrenches must be calibrated regularly. Oil the screw when installing. Even if the torque is recorded correctly, the pre-tension force depends entirely on the friction.
- Tightening torque according to the table above. Accuracy better than ±5%.
- The terminal palm and busbar may be of different materials.

*Al/Al gives a weaker joint. It is important to clean and use contact grease. Tension washer + flat washer can reduce the risk of settlement.*

*Al/Cu gives a higher risk of corrosion and settlement, use contact grease.*

*Cu/Al provides low risk of galvanic corrosion when the rail is made of Al.*

*Cu/CU provides the best joint, good contact and small risk of settlement.*



# Service and maintenance

## Service and maintenance

Our service department maintains, repairs, checks, calibrates and certifies Elpress tools and power sources.

Following a review of the equipment by the service department, certificates are issued that verify the performance of the tools. To ensure that your crimped terminals maintain a high and even level of quality, regular checks shall be done of the crimping tools.

### We offer:

- Contract preventive maintenance, Elpress Basic and Elpress Advance
- Calibration of tools
- Repairs (servicing of tools)
- Rental of crimping equipment



KONTROLLBEVIS / INSPECTION CERTIFICATE				
Kontrollbevis / Inspection date	2013-03-08			
Kontroll / Inspection No.	93887			
Kund / Customer		Tel / Phone No.		
		Fax / Fax No.		
Kund ref / Customer ref.		Director / Director No.		
Objekt / Objekt	Serial / Serial No.	Antal / Quantity	Kundens ID-nummer / Customer ID-number	
Objekt / Objekt	Serial / Serial No.	Antal / Quantity	Kundens ID-nummer / Customer ID-number	
Metod / Inspection method				
Kontrollad med manometer med (Om / Inspected against Manometer with (Yes) /				
Anordning / Note				
Betyg / Graderad trycknivå och tillfälle				
Metod / Test result				
HYDRAULPUMPAR / HYDRAULIC PUMPS				
Max tryck vid kontroll / Max pressure during inspection				
Max tryck efter justering och kontroll /				
Max pressure after adjustment and inspection				
Och till / Inspection of				
<input type="checkbox"/> Yttre läckage / External leakage				
<input type="checkbox"/> Inre läckage / Internal leakage				
<input type="checkbox"/> Slanger och anslutningar / Hoses and connections				
<input type="checkbox"/> Elektriska kablar och anslutningar / Electrical cables and connections				
Betyg / Decision				
<input checked="" type="checkbox"/> GODKÄND / APPROVED				
<input type="checkbox"/> EJ GODKÄND / NOT APPROVED				
Märk- och kontrollavvikning är tillåtnad med internationella standarder.				
The registered and other measuring and reporting is according to internationally accepted standards.				
Kontroll utförd av / Inspected by				
Datum / Date				
Meddelat hos kund / Received by customer				
Signatur(er) /				
Datum / Date				
Adress / Address				
Elpress AB				
Elpress AB - Industrivägen 15 - P.O. Box 100 - SE-202 24 KIRUNA SWEDEN				
Tel +46 902 71 71 00 - Sveriges Öst - +46 902 71 71 00				
Fax +46 902 71 71 51 - Sveriges Öst - +46 902 71 71 45				
Påsk 10 050201 007 - www.elpress.se - e-mail: service@elpress.se				

## Preventive maintenance

Elpress service offers a flexible service solution for increased security with fast service and high availability. Our service agreements are available in 2 levels, Elpress Basic and Elpress Advance. To sign a service agreement with Elpress means the following:

- Planned and preventive maintenance ensures better performance for your equipment.
- Regular service intervals minimise the risk of unforeseen stoppages by indicating any safety or functional defects and recommending measures to avoid these problems
- Regular service intervals are normally implemented every 12 months for a fixed price
- The price is based on the service level and tool equipment.
- A certificate is issued after the equipment has complied with calibration requirements
- Calibration can also be done on-site at the customer

## Elpress Basic

This forms the basis of a service agreement and includes the following points:

- General inspection of the tool
- Safety aspects according to declaration of conformity (compliance with the Machinery Safety Directive, Low Voltage Directive, EMC Directive).
- Function test
- Checking of accessories, e.g. crimp dies etc.
- Issue of Certificate
- The inspection follows Elpress final inspection and acceptance inspection requirements.

## Elpress Advance

Elpress Advance includes:

- Elpress Basic + corrective maintenance
- Includes calibration with certification and consumables repairs at a fixed price.



## Calibration with certification of tool

Calibration follows the same points and requirements as Elpress Basic, but it is the customer's responsibility to submit the tool for calibration.

## Rental of contact crimping equipment

Sometimes the accumulation of work can be greater than can be expected, or individual projects may require more resources than usual and then it is possible to rent equipment at Elpress. When repairing equipment for a company, Elpress can rent tools to the company if required, until the original equipment is repaired and returned.

## Purchased a new product?

Send the Product registration form to Elpress and Elpress Basic is included for free the first year.



## Information

More information is available from the service department:  
<https://www.elpress.net/en/products/system-elpress/service/>

# Technical information

## Connecting materials

Elpress uses copper, brass and aluminium as terminal materials.

The copper and brass products are electrolytically tin plated for increased corrosion resistance. In a bimetal (copper aluminium) terminal, the copper part is untreated.

## Brass

Brass is mainly used for flat pin sleeves in areas up to 6 mm<sup>2</sup>, where good suspension properties are desired.

Brass is an alloy of about 70% copper and about 30% zinc and has very good cold form properties.

## Copper

The copper used by Elpress for terminals has a purity of at least 99.95 %. Its excellent properties for use in electrical terminals are among the following:

- high conductivity (only silver is better)
- high corrosion resistance
- good formability
- good sealability

In manufacturing the neck of the terminal element is soft soldered in order to obtain as good form properties and good enclosure around the conductor as possible during the contact crimping.

This then provides a terminal that exhibits low transitional resistance and good mechanical properties.

## Aluminium

The aluminium used for through connectors and cable terminals has a purity of at least 99.7 % and its excellent qualities are:

- low weight
- strong, in relation to its weight
- good electrical conductivity, approximately 60% of the conductivity of copper
- easy to work with

## Conductor design

Cable standard IEC 60228 provides:

Information about materials, construction and resistance values for both copper and aluminium conductors.

Class 1 solid conductor

Class 2 stranded conductor

Class 5 flexible conductor

Class 6 highly flexible conductor

## UL-approved terminals

KR/KS, KRF/KSF, KRFS, KRT/KST UL approved in accordance with file no. E205350. UL certified products are delivered with UL marking on the label including the UL file number and/or certification code for control by an UL inspector. The certificate can be downloaded at UL Product IQ.

## MCM and AWG cross-reference table to the corresponding area in mm<sup>2</sup>

MCM No.	Area mm <sup>2</sup>	AWG No.	Area mm <sup>2</sup>
250	127	36	0,013
300	152	34	0,020
350	177	32	0,032
400	203	30	0,051
450	228	28	0,080
500	253	26	0,13
550	279	24	0,20
600	304	22	0,33
650	329	20	0,56
700	355	19	0,65
750	380	18	0,82
800	405	17	1,04
850	431	16	1,31
900	456	15	1,65
1000	507	14	2,08
1100	557	13	2,62
1200	608	12	3,31
1300	659	11	4,17
1400	709	10	5,26
1500	760	9	6,63
1600	811	8	8,37
1700	861	7	10,6
1800	912	6	13,3
1900	963	5	16,8
2000	1013	4	21,2
		3	26,4
		2	33,6
		1	42,4
		1/0	53,5
		2/0	67,4
		3/0	85,5
		4/0	107

### Remarks:

1. The information in this table comes from catalogues published by respected cable providers and does not refer to official standards.
2. The types relating to AWG vary depending on the different design of the conductors, i.e. the number of strands.  
AWG > 20 refers to single strand conductors.  
AWG ≤ 20 refers to multi stranded conductors.  
Exact areas for specific number of strands can be found in cable provider catalogues.

# Development - technical services

## Development - technical services

Elpress is one of Europe's leading manufacturers of electrical crimping systems and has 60 years of experience in application solutions in everything from nuclear power plants to small electronic devices.

Products in electrical applications are subjected to both mechanical and thermal loads.

Elpress invests considerable resources to achieve success through continuous product development towards better value, quality and performance.

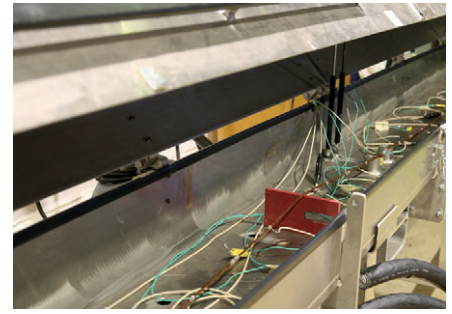
For this purpose there is modern laboratory equipment for, among other things:

- High current testing
- Mechanical tensile strength testing
- Cyclic current testing
- Vibration testing
- Corrosion testing
- Resistance determination

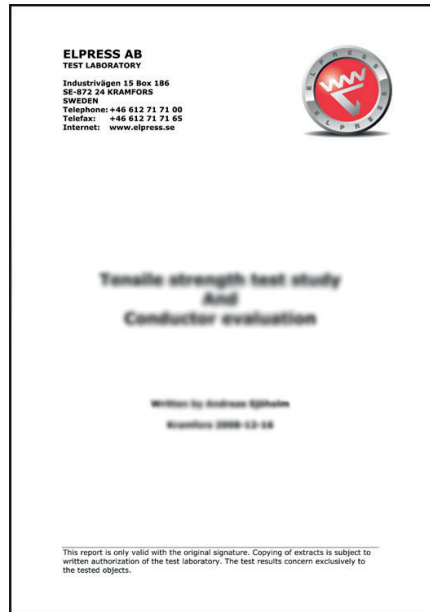
The activities also include theoretical studies, prototype development, technical documentation and advice etc. The competence of the staff together with good laboratory and calculation aids is a strong competitive tool both in terms of consultancy services and their own development projects.



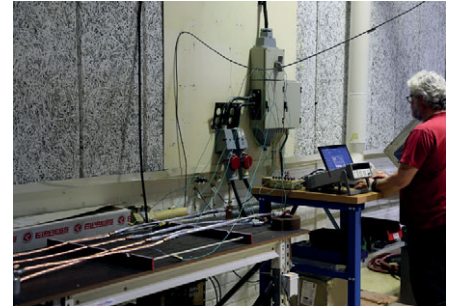
Test of terminals.



Tests according to IEC 61238-1-1 in own premises.



Laboratory report.



Flexible and customized test setups.

# General comments on the use of Elpress terminals for voltages of 12 kV and above

## Terminals

The modern and easy-to-use cable terminations for 12 to 36 kV PEX insulated cable consisting of prefabricated modules or even fully finished terminations, provide no or very little restriction in the use of terminals with type designations AK, AKK or KRF. This also includes the "top pins" with the type designation AKP.

One detail to take into account when using KRF terminals outdoors is that this terminal is equipped with an inspection hole that must be sealed. Your supplier of cable terminations can provide its specific solution.

Terminals type AK, AKK or "top pin" AKP can today be used on high voltage cable terminations where solutions are available up to 84 kV. In case of doubt, always consult with your cable termination supplier for specific solutions for different issues regarding technical details regarding the design.

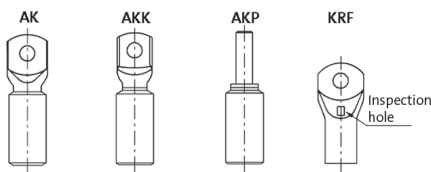
When installing cable terminations for oil impregnated paper cable where an oil reservoir is used, manufacturers usually have their own specially designed solutions for the conductor connections.

## Terminals type AK

Terminal type AK is used at termination of an Al conductor for connection to busbars and apparatus sockets

## Terminals type AKK

Terminals of type AKK are used at the end of an Al conductor for connection to a Cu bus bar.

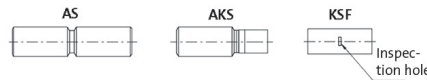


## Through connectors type AS

Through connectors type AS used when splicing aluminium-conductors.

## Through connectors type AKS

Through connectors of type AKS are used for jointing of Al conductors to Cu conductors.



## Joint sleeves PEX insulated cable against PEX insulated cable

In Sweden, four types of splice are currently used in the voltage range 12 to 36 kV. These are tape, heat shrink, cold shrink and push-on joints. All these joints are designed to accept AS, AKS and KSF through connectors. No connectors with conical ends are required today.

Different manufacturers have their own solutions that are designed to take care of, for example, the punch holes and the distance between the insulation edge and the through connector.

Always note the joint manufacturer's directions regarding maximum lengths and diameters of the connectors. If you are not sure, or if the installation instructions do not indicate what you are considering, consult your joint supplier. At higher voltages, e.g. 52 and 84 kV, other requirements are placed on the through connectors depending on the joint design and design. However, there are solutions where "normal" through connectors are used together with filler materials in the voltage range up to 145 kV.

## PEX insulated cable against oil impregnated cable

When installing a transition splice between cables with oil impregnated insulation and PEX insulation at voltages of 12 kV and above, connectors with partitions must be used, regardless of the splicing method and make. AKS, KSF-M and AS connectors always have partitions.

## Oil impregnated against oil-impregnated cable

When splicing two cables with this type of insulation, connectors of type AS, AKS, or KSF can be used, whether it is an oil tube connector or a "dry" heat shrink connector.





# SYSTEM ELPRESS



# SYSTEM ELPRESS

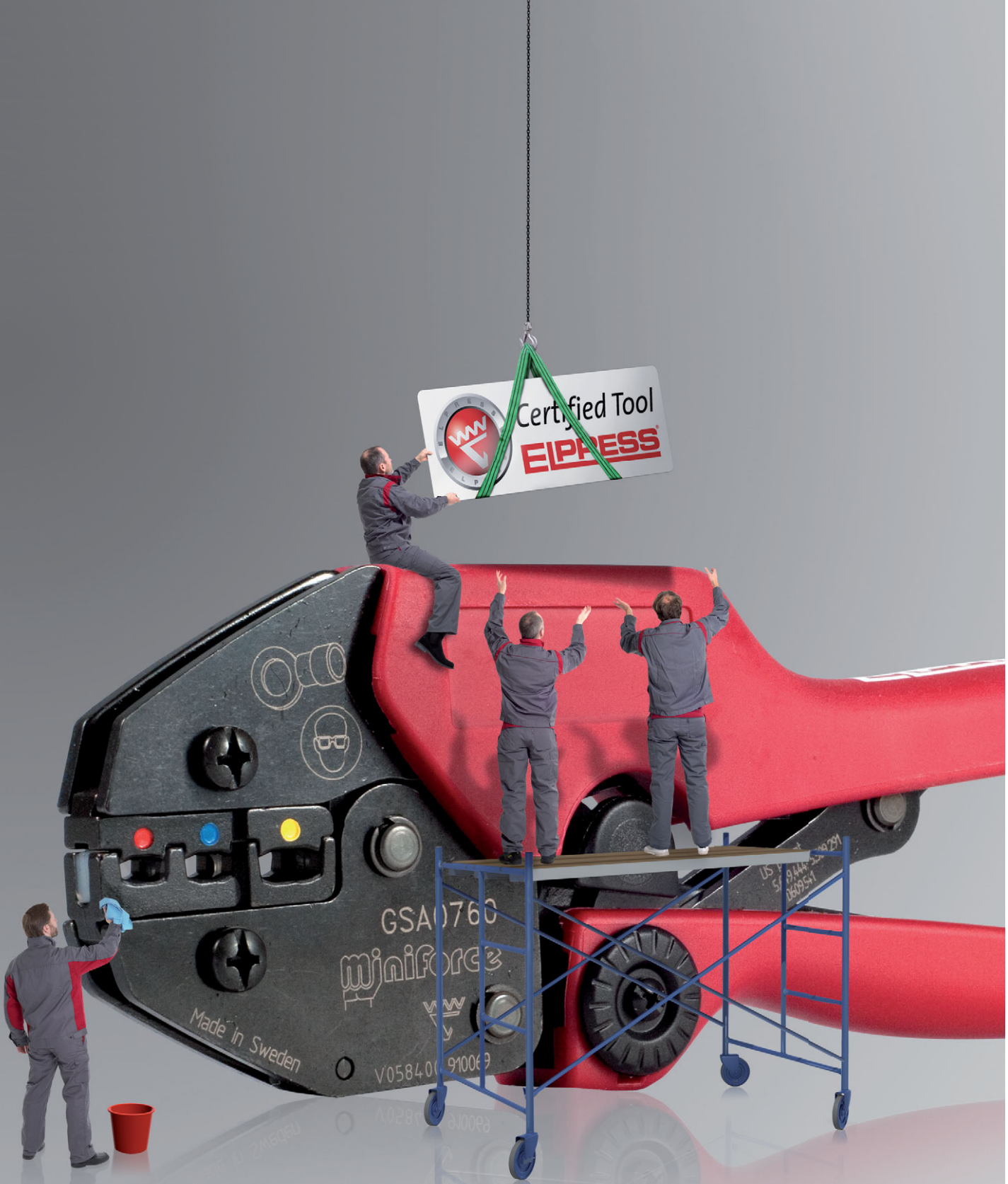
**System Elpress** symbolizes our **cornerstones** – safety and quality. In order to achieve a secure connection, we offer **certified solutions** of the combination cable, terminal and tool.

For perfect crimping connections, **Elpress Academy** offers Crimping Technology training and seminars.



For non-standard solutions you can **consult** us and let our own production and laboratory verify your solution. A preventive **service** maintenance of the tool is the base for the system to work.

**Certification, Academy, Consulting and Service is System Elpress – your secure connection!**



*We manufacture tested systems for electrical connectors  
and their tools. You get a secure connection.*

# SYSTEM ELPRESS CERTIFICATION



## **We offer:**

Tool delivered with a calibration certificate

Verified and tested combination of cable, terminal and tool

Certified solutions for customized product development

Product approval in accordance with IEC, UL, DNV and CSA

Third part quality and environment certification in accordance with ISO9001 and ISO14001





In order to achieve a secure connection we offer certified solutions of the combination cable, terminal and tool.

This is so that you as customer can feel secure when you use our system and be sure that a safe connection will be made when our products are used correctly.

## FOR YOUR SAFETY

### The System includes:

- Terminal, connector
- Crimping tool
- Correct cable
- Trained and skilled operator

The system is developed and tested in accordance with existing norms and standards, for example IEC.

### Product development

- Customized solutions
- Specialized segment solutions
- Leading technology in our industry
- Innovative products







**Quality & environment certified and approved according to**

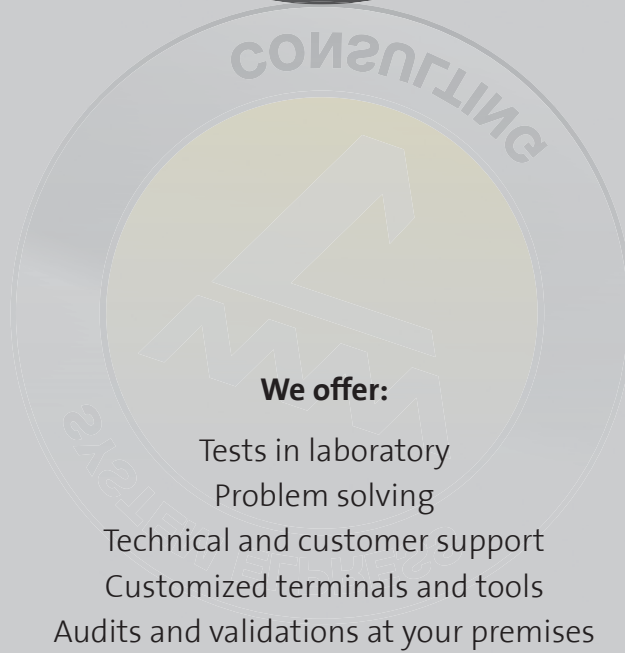
- ISO 14001
- ISO 9001
- DNV
- UL





*We have the necessary resources for you  
to maintain the highest quality*

# SYSTEM ELPRESS CONSULTING



**We offer:**

- Tests in laboratory
- Problem solving
- Technical and customer support
- Customized terminals and tools
- Audits and validations at your premises





## WHY CONSULT US?

We have been developing, manufacturing and marketing complete cable crimping systems for electrical connectors with more than 50 years of experience. We have therefore the best knowledge and equipment for your requirements and demands.

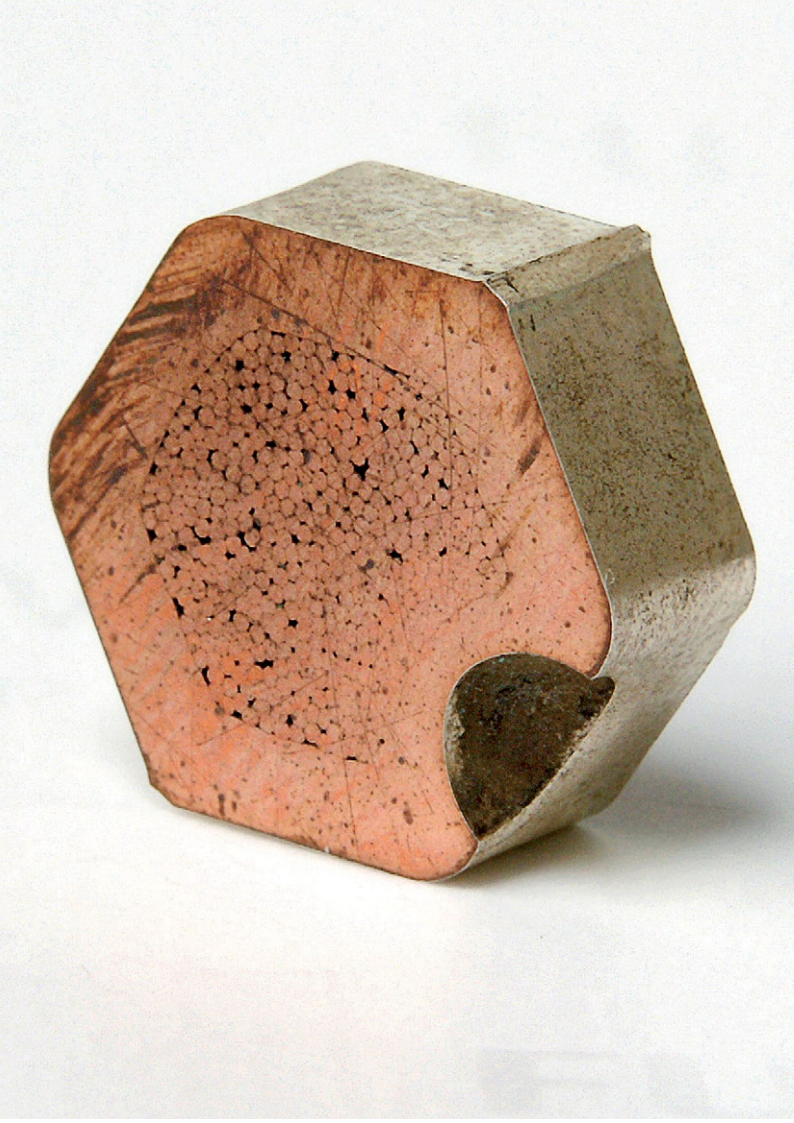
### **You will have access to:**

- Our Technical Departments that designs and develops customized products and solutions according to your requirements.
- Our Production Team who can manufacture unique solutions.
- Our laboratory who can supply for example
  - Electrical tests
  - Mechanical tests
  - Corrosion- and environmental tests

*Contact us and let us assist you.*











*A well educated personnel ensures the final quality of products and services.  
Our Academy certificate is a Quality Assurance Document between you and your customer.*

# SYSTEM ELPRESS ACADEMY



**We focus on the following four areas:**

- Utility sector and installers
- Transformer manufacturers
- Traction/Train manufacturers
- Wind Power manufacturers



# WHO AND HOW DO WE EDUCATE?

## Utility and installation personnel

General training for all staff. Provides a general knowledge of crimping in all areas;

- Terminals below 10 mm<sup>2</sup>
- Cu-connectors over 10 mm<sup>2</sup>
- Al-connectors from 16 mm<sup>2</sup>
- Cu-branching
- Bolt connections
- Deep earthing
- Standards and requirement
- Safety and maintenance
- Quality inspection

The program combines theory and practice and concludes with a written test. Course participants will receive certificate after the completion of their training.

Possibility to customize the training so the content fits the needs of the company.

## Transformer manufacturers

For operators who work daily in the production. The aim is to train personnel in the special conditions applying in the transformer manufacturing. The training focuses on areas like;

- Management of tools
- Calculations and preparation for crimping
- Work procedure
- Quality inspection
- Safety in use
- Preventive maintenance in daily production

The training consists of a theoretical and a practical part and ends with a written test. Course participants will receive certificate after the completion of their training.

We can provide education for all personnel such as operators, supervisors, designers and quality departments. The education includes a thorough knowledge of calculations, tool selection and management, problems and solutions and quality assessment.

*A follow-up of the certificates is necessary*





*Each training has a level that suits everyone, such as operators, designers, supervisors and quality managers. In addition, there is the possibility to customize the training so that the content fits the needs of the company. You also decide whether the training should be company-based or held in Elpress's training facilities.*

## **Train and vehicle manufacturers**

Educate staff in the special demands and external conditions that apply in the manufacturing of rail traffic. The training concerns;

- Management of tools
- Work procedure
- Elpress Dual-technology
- Crimp technique
- Quality inspection
- Safety in use
- Preventive maintenance in daily production

The training consists of a theoretical and a practical part and ends with a written test. Course participants will receive certificate after the completion of their training.

Education for all personnel such as operators, supervisors, designers and quality departments. Provides a thorough knowledge of calculations, tool selection and management, problems and solutions and quality assessment. Completed training gives a certificate.

## **Wind Power manufacturers**

Educate staff in the special demands and external conditions that apply in the manufacture of wind turbines. The training concerns;

- Management of tools
- Work procedure
- Elpress Dual-technology
- Crimp technique
- Quality inspection
- Safety in use
- Preventive maintenance in daily production

The training consists of a theoretical and a practical part and ends with a written test. Course participants will receive certificate after the completion of their training.

Education for all personnel such as operators, supervisors, designers and quality departments. Provides a thorough knowledge of calculations, tool selection and management, problems and solutions and quality assessment. Completed training gives a certificate.

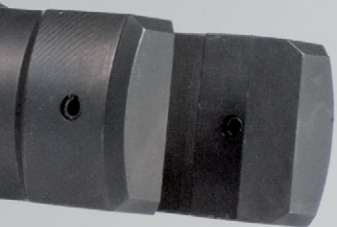
*A follow-up of the certificates is necessary*





*Preventive maintenance agreements  
secure the quality of your connection*

# SYSTEM ELPRESS SERVICE



**We offer:**

- Preventive maintenance agreements
- Calibration of certified tools
- Repairs/maintenance of tools
- Crimping systems for rent
- Sales of spare parts



# WHAT IS THE BEST SOLUTION FOR YOU?

## Preventive maintenance agreements

Our Service offers you a flexible solution for enhanced security, with rapid service and high availability:

- Planned and preventive maintenance guarantees high performance for your equipment.
- Regular service intervals minimize the risk of unforeseen stoppages by indicating any safety or functional defects and by recommending measures to avoid such problems.
- Regular service intervals are normally implemented every 12 months at a fixed price.
- The price is based on the service level solution and equipment.
- A certificate is issued after the equipment has complied with calibration requirements.  
The maintenance can be performed at your premises.

## Elpress Basic

Elpress Basic service agreement includes following points:

- General inspection of the tool
- Safety aspects in accordance with declaration of conformity
- Function test
- Checking of accessories, e.g. crimp dies etc.
- Issue of Certificate

The inspection follows Elpress final inspection and acceptance inspection requirements.

## Elpress Advance

Elpress Advance service agreement includes following points:

- Elpress Basic + corrective maintenance
- Includes the Calibration/certification and wear & tear repairs at a fixed price.

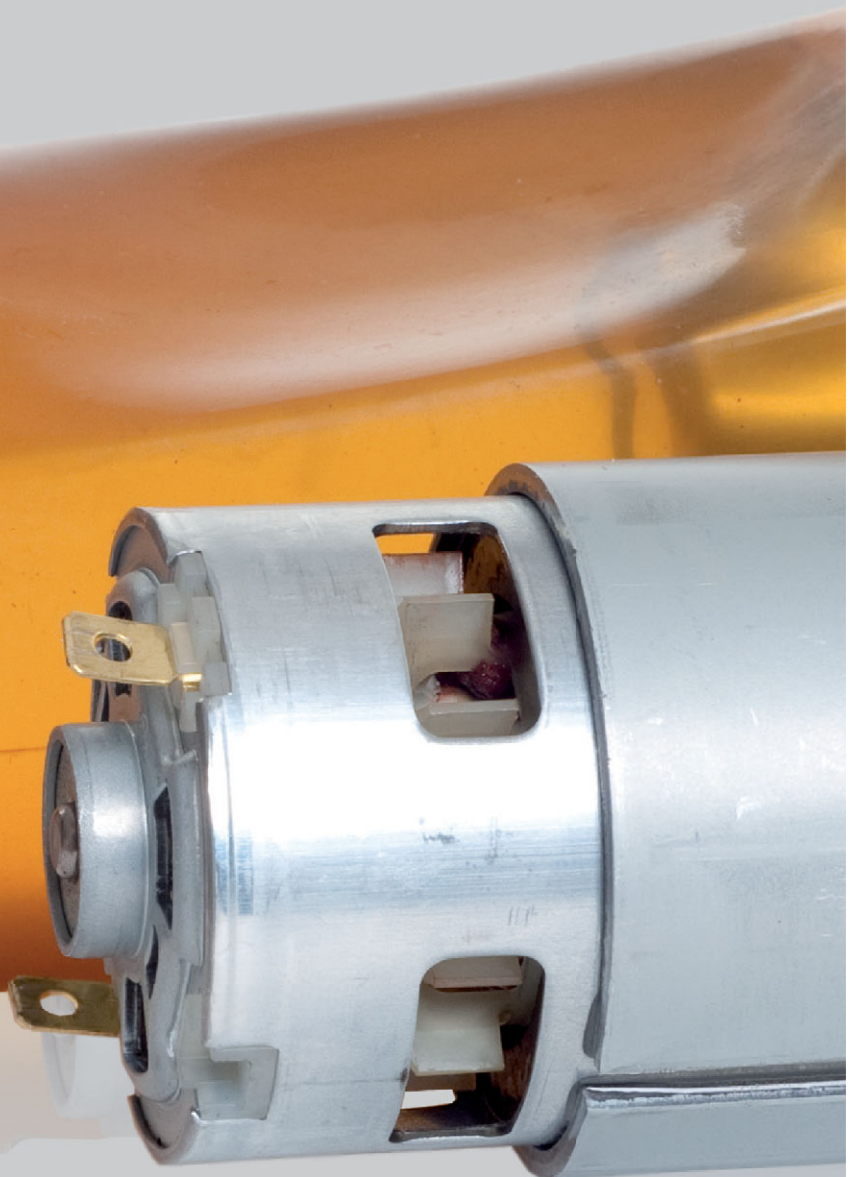
## Calibration of certified tools

The calibration follows the same inspection points and requirements as Elpress Basic, but it is the customer's responsibility to send the tool for calibration.

## Purchased a new product?

Send the Product registration form to Elpress and Elpress Basic is included for free the first year.







## Table of content

NAME	PAGE	NAME	PAGE	NAME	PAGE	NAME	PAGE
13B25DIN	28	A0,34-8ET	52	A1553R	42	A4665R	42
13B28DIN	28	A0,5-10ET	52	A1565G	43	A4685G	43
13B32DIN	28	A0,5-6ET	52	A1565R	42	A4685R	42
13DB11	26	A0,5-6ET2	53	A1585R	42	A50-20ET	52
13DB13	26	A0,5-8ET	52	A16-12ET	52	A50-25ET	52
13DB14,5	26	A0,5-8ET2	53	A16-18ET	52	A6-12ET	52
13DB17	26	A0,75-10ET	52	A1-6ET	52	A6-14ET2	53
13DB20	26	A0,75-10ET2	53	A1-8ET	52	A6-18ET	52
13DB22	26	A0,75-12ET	52	A1-8ET2	53	A6-18ET2	53
13DB25	26	A0,75-12ET2	53	A2,08-8ET	52	AK1000-1	14
13DB27	26	A0,75-6ET	52	A2,5-10ET	52	AK1000-2	14
13DB30	26	A0,75-8ET	52	A2,5-10ET2	53	AK1200	14
13DB32	26	A0,75-8ET2	53	A2,5-12ET	52	AK120-10	14
13DB8	26	A0503FLS5	45	A2,5-13ET2	53	AK120-12	14
13DB9	26	A0503FLS8	45	A2,5-18ET	52	AK150-10	14
13DCB11	26	A0514SR	44	A2,5-8ET	52	AK150-12	14
13DCB11	33	A0522R	42	A2505FLS5	45	AK150-16	14
13DCB13	26	A0532G	43	A2505FLS8	45	AK16-6	14
13DCB13	33	A0532R	42	A2507FLS	45	AK16-8	14
13DCB14,5	26	A0543R	42	A2507FLST	45	AK185-10	14
13DCB14,5	33	A0553R	42	A2510R	42	AK185-12	14
13DCB17	26	A0819SR	44	A2513R	42	AK185-16	14
13DCB17	33	A0819SRK	44	A25-16ET	52	AK240-12	14
13DCB20	26	A0824SK	46	A2517PSK	47	AK240-16	14
13DCB20	33	A0825SFK	45	A25-18ET	52	AK25-6	14
13DCB22	26	A0832G	43	A2519SR	44	AK25-8	14
13DCB25	26	A0832R	42	A2519SRK	44	AK300-12	14
13DCB27	26	A0837G	43	A25-22ET	52	AK300-12SOLID	14
13DCB30	26	A0837R	42	A2524SFL	45	AK300-16	14
13DCB32	26	A0843G	43	A2527SK	46	AK300-16SOLID	14
13DCB8	26	A0843R	42	A2529SF	45	AK300-20	14
13DCB8	33	A0853R	42	A2529SFN	45	AK35-6	14
13DCB9	26	A1,5-10ET	52	A2530SFB	45	AK35-8	14
13DCB9	33	A1,5-12ET	52	A2532G	43	AK400-12	14
13P32M	29	A1,5-12ET2	53	A2532R	42	AK400-16	14
13P37D	29	A1,5-18ET	52	A2535SKW	46	AK400-20	14
13P37M	29	A1,5-6ET	52	A2537G	43	AK500A-1	14
13R12DR	29	A1,5-8ET	52	A2537GS	43	AK500A-16	14
13R13DR	29	A1,5-8ET2	53	A2537R	42	AK500A-2	14
13R15DR	29	A10-12ET	52	A2543G	43	AK500A-20	14
13R16DR	29	A10-14ET2	53	A2543GB	43	AK500B-1	14
13R18DR	29	A10-18ET	52	A2543K	44	AK500B-16	14
13R18MR	29	A1-10ET	52	A2543R	42	AK500B-2	14
13R20DR	29	A1-10ET2	53	A2553G	43	AK500B-20	14
13R20MR	29	A1-12ET	52	A2553GB	43	AK50-10	14
13R6DR	29	A1-12ET2	53	A2553R	42	AK50-12	14
13R7DR	29	A1503FLS5	45	A2565G	43	AK50-8	14
13R8DR	29	A1503FLS8	45	A2565R	42	AK630A-1	14
13R9DR	29	A1505FLS5	45	A2585R	42	AK630A-2	14
20DCB22	33	A1505FLS8	45	A35-16ET	52	AK70-10	14
20DCB25	33	A1507FLS	45	A35-18ET	52	AK70-12	14
20DCB27	33	A1507FLST	45	A35-25ET	52	AK70-8	14
20DCB30	33	A1510R	42	A4-10ET	52	AK800-1	14
20DCB32	33	A1515PSK	47	A4-12ET	52	AK800-2	14
25R21DL	30	A1518SFL	45	A4-12ET2	53	AK95-10	14
25R21ML	30	A1519SR	44	A4-18ET	52	AK95-12	14
25R24DL	30	A1519SRK	44	A4-18ET2	53	AK95-8	14
25R24ML	30	A1525SK	46	A4607FLS	45	AKK1000-1	18
25R26DL	30	A1529SF	45	A4609FLS	45	AKK1000-1-16	18
25R26ML	30	A1529SFN	45	A4610G	43	AKK1000-2	18
25R30DL	30	A1530SFB	45	A4610R	42	AKK1200	18
25R30ML	30	A1532G	43	A4613R	42	AKK120-10	18
25R33DL	30	A1532R	42	A4630SR	44	AKK120-12	18
25R33ML	30	A1535SKW	46	A4634PSK	47	AKK120-16	18
25R39DL	30	A1537G	43	A4640SF	45	AKK150-10	18
25R39ML	30	A1537GB	43	A4643G	43	AKK150-12	18
25R42DL	30	A1537GS	43	A4643R	42	AKK150-16	18
25R42ML	30	A1537R	42	A4645SFB	45	AKK16-8	18
A0,14-6ET	52	A1543G	43	A4650SKW	46	AKK185-10	18
A0,14-8ET	52	A1543GB	43	A4652SK	46	AKK185-12	18
A0,25-6ET	52	A1543K	44	A4653G	43	AKK185-16	18
A0,25-8ET	52	A1543R	42	A4653R	42	AKK240-10	18
A0,34-6ET	52	A1553G	43	A4665G	43	AKK240-12	18



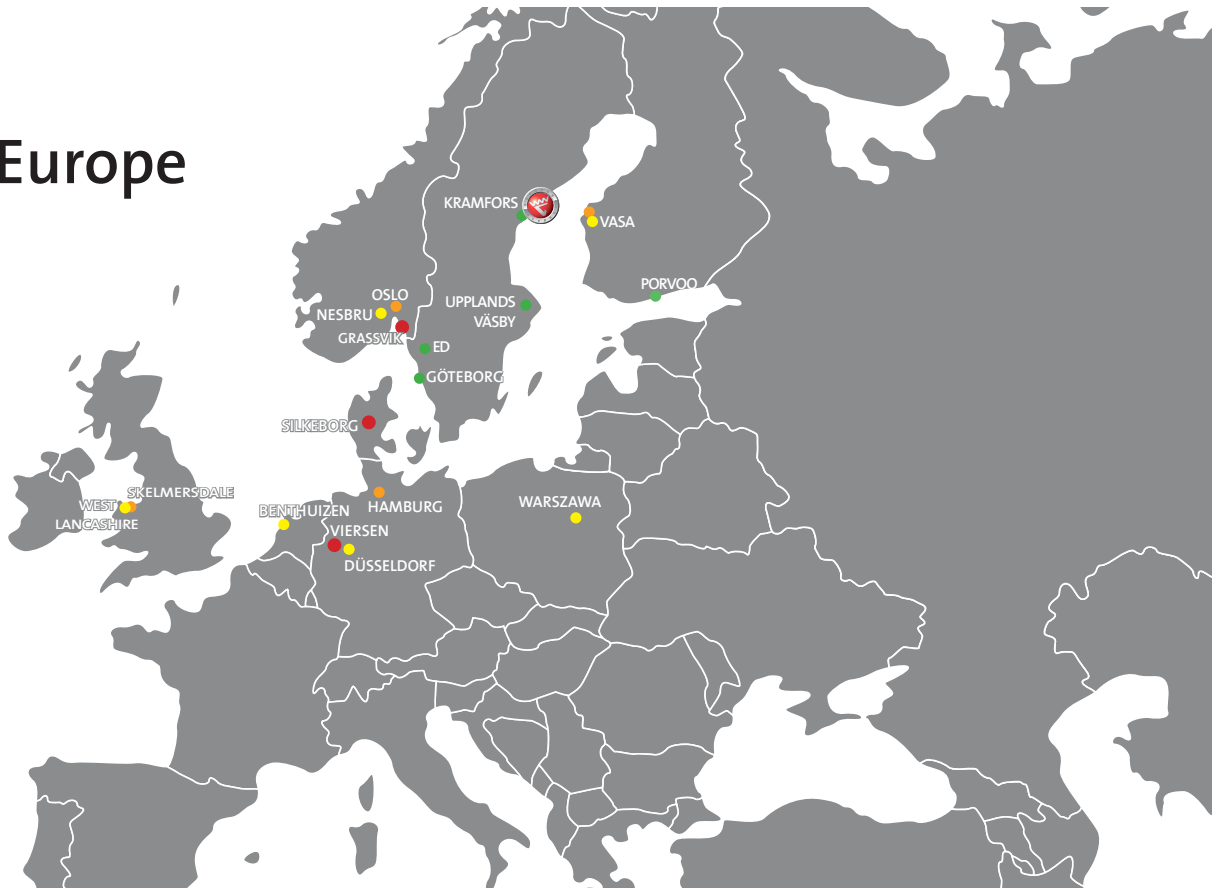
## Table of content

NAME	PAGE	NAME	PAGE	NAME	PAGE	NAME	PAGE
AKK240-16	18	AKS240-240A	21	AS50	15	KRDIN10-10	12
AKK25-12	18	AKS240-35	21	AS500A	15	KRDIN10-5	12
AKK25-8	18	AKS240-50	21	AS500B	15	KRDIN10-6	12
AKK300-12	18	AKS240-70	21	AS50-25	16	KRDIN10-8	12
AKK300-12SOLID	18	AKS240-95	21	AS50-35	16	KRDIN120-10	12
AKK300-16	18	AKS25-10	21	AS630A-1	15	KRDIN120-12	12
AKK300-16SOLID	18	AKS25-10S	20	AS630A-2	15	KRDIN120-16	12
AKK300-20	18	AKS25-16	21	AS70	15	KRDIN120-20	12
AKK300-20SOLID	18	AKS300-150	21	AS70-50	16	KRDIN150-10	12
AKK300B-12	19	AKS300-185	21	AS800-1	15	KRDIN150-12	12
AKK300B-16	19	AKS300-240A	21	AS95	15	KRDIN150-16	12
AKK35-12	18	AKS300B-185	20	AS95-25	16	KRDIN150-20	12
AKK35-8	18	AKS300B-240A	20	AS95-35	16	KRDIN16-10	12
AKK400-12	18	AKS300SOLID-300	21	AS95-50	16	KRDIN16-12	12
AKK400-16	18	AKS35-10	21	AS95-70	16	KRDIN16-6	12
AKK400-20	18	AKS35-10S	20	B10DIN	28	KRDIN16-8	12
AKK400B-12	19	AKS35-16	21	B10DIN	28	KRDIN185-10	12
AKK400B-16	19	AKS35-25	21	B12DIN	28	KRDIN185-12	12
AKK500A-1	18	AKS400-150	21	B12DIN	28	KRDIN185-16	12
AKK500A-16	18	AKS400-185	21	B14DIN	28	KRDIN185-20	12
AKK500A-2	18	AKS400-240A	21	B14DIN	28	KRDIN240-10	12
AKK500A-20	18	AKS400-300A	21	B16DIN	28	KRDIN240-12	12
AKK500B-1	18	AKS400B-240A	20	B16DIN	28	KRDIN240-16	12
AKK500B-16	18	AKS400B-300A	20	B18DIN	28	KRDIN240-20	12
AKK500B-2	18	AKS50-10	21	B18DIN	28	KRDIN25-10	12
AKK500B-20	18	AKS50-10S	20	B20DIN	28	KRDIN25-12	12
AKK50-10	18	AKS50-16	21	B20DIN	28	KRDIN25-6	12
AKK50-12	18	AKS50-25	21	B22DIN	28	KRDIN25-8	12
AKK50-8	18	AKS50-35	21	B22DIN	28	KRDIN300-12	12
AKK630A-1	18	AKS50-50	21	B25DIN	28	KRDIN300-16	12
AKK630A-2	18	AKS70-10S	20	B28DIN	28	KRDIN300-20	12
AKK70-10	18	AKS70-35	21	B32DIN	28	KRDIN35-10	12
AKK70-12	18	AKS70-50	21	B6DIN	28	KRDIN35-12	12
AKK70-8	18	AKS70-70	21	B6DIN	28	KRDIN35-6	12
AKK800-1	18	AKS95-10	21	B8DIN	28	KRDIN35-8	12
AKK800-2	18	AKS95-10S	20	B8DIN	28	KRDIN400-12	12
AKK95-10	18	AKS95-16	21	BÄRREM PS710	38	KRDIN400-16	12
AKK95-12	18	AKS95-25	21	CS2500	32	KRDIN400-20	12
AKK95-16	18	AKS95-35	21	DB2522	27	KRDIN500-20	12
AKK95-8	18	AKS95-50	21	DB2525	27	KRDIN50-10	12
AKP120	19	AKS95-70	21	DB2527	27	KRDIN50-12	12
AKP150	19	AKS95-95	21	DB2530	27	KRDIN50-16	12
AKP16	19	AS1000-1	15	DB2532	27	KRDIN50-6	12
AKP185	19	AS120	15	DB2538	27	KRDIN50-8	12
AKP240	19	AS1200	15	DSA0115	50	KRDIN625-20	12
AKP25	19	AS120-95	16	DSA0725	50	KRDIN6-5	12
AKP300	19	AS150	15	DV1300	24	KRDIN6-6	12
AKP35	19	AS150-120	16	DV1300C2	24	KRDIN6-8	12
AKP50	19	AS150-50	16	DV250	25	KRDIN70-10	12
AKP70	19	AS150-70	16	FCU-PS710D&E	38	KRDIN70-12	12
AKP95	19	AS150-95	16	FCU-PS710R	38	KRDIN70-16	12
AKS120-120	21	AS16	15	GEB1025	55	KRDIN70-6	12
AKS120-50	21	AS1625	15	GEB1025C	55	KRDIN70-8	12
AKS120-70	21	AS185	15	GEB3550	55	KRDIN800-20	12
AKS120-95	21	AS185-150	16	GEB3550C	55	KRDIN95-10	12
AKS150-120	21	AS185-95	16	GEB4010C	55	KRDIN95-12	12
AKS150-150	21	AS240	15	GEB4010C-TWIN	54	KRDIN95-16	12
AKS150-25	21	AS240-120	16	GSA0760	49	KRDIN95-8	12
AKS150-35	21	AS240-150	16	GSA0760C	49	KRF120-10	5
AKS150-50	21	AS240-185	16	GSEA0340C	48	KRF120-10-45GR	8
AKS150-70	21	AS240-95	16	GSEA0340C	54	KRF120-10-90GR	9
AKS150-95	21	AS25	15	GSW0560C	48	KRF120-10-90GR-SB	9
AKS16-10	21	AS25-16	16	HYD.SLANG KPL. 2,4M ERG PS710E	38	KRF120-10X2-24-26	6
AKS16-10S	20	AS300	15	HYD.SLANG KPL. 2,4M ERGOCOM	38	KRF120-12	5
AKS1625-1016	21	AS300-240	16	HYD.SLANG KPL. 5M ERGO PS710E	38	KRF120-12-45GR	8
AKS185-120	21	AS300B	17	HYD.SLANG KPL. 5M ERGO PS710R	38	KRF120-12-90GR	9
AKS185-150	21	AS300SOLID	15	HYD.SLANG KPL. 5M ERGOCOM	38	KRF120-12-90GR-SB	9
AKS185-185	21	AS35	15	HYD.SLANG KPL.2,4M ERGO PS710R	38	KRF120-12X2-40	6
AKS185-70	21	AS35-25	16	KR10-6-45GR	8	KRF120-16	5
AKS185-95	21	AS400	15	KR10-6-90GR	9	KRF120-16-45GR	8
AKS240-120	21	AS400-300	16	KR10-8-45GR	9	KRF120-16-90GR	9
AKS240-150	21	AS400B	17	KR10-8-90GR	9	KRF120-16-90GR-SB	9
AKS240-185	21	AS400SOLID	15	KRDIN1000-20	12	KRF120-8-90GR	9

## Table of content

NAME	PAGE	NAME	PAGE	NAME	PAGE	NAME	PAGE
KRF120-8-90GR-SB	9	KRF35-8-45GR	8	KRFS300A-10	7	P36M	30
KRF150-10	5	KRF35-8-90GR	9	KRFS300A-12	7	P4000	39
KRF150-10-45GR	8	KRF400A-00	5	KRFS300A-16	7	P40M	30
KRF150-10-90GR	9	KRF400A-12	5	KRFS400A-12	7	P44M	30
KRF150-10-90GR-SB	9	KRF400A-12X2-40	6	KRFS400A-16	7	PEB0110T	56
KRF150-10X2-24-26	6	KRF400A-16	5	KRFS50-10	7	PEB0110T18	56
KRF150-12	5	KRF400A-20	5	KRFS50-6	7	PEB0116H	56
KRF150-12-45GR	8	KRF400A-24	5	KRFS50-8	7	PEB0116S	56
KRF150-12-90GR	9	KRF500-00	5	KRFS70-10	7	PKL54C	57
KRF150-12-90GR-SB	9	KRF500-12	5	KRFS70-6	7	PKL54C-US	57
KRF150-12X2-40	6	KRF500-14	5	KRFS70-8	7	PKL54C-WOBC	57
KRF150-16	5	KRF500-16	5	KRFS95-10	7	PS710D	35
KRF150-16-45GR	8	KRF500-20	5	KRFS95-12	7	PS710E	36
KRF150-16-90GR-LB	9	KRF500-24	5	KRFS95-6	7	PS710E251	36
KRF150-16-90GR-SB	9	KRF50-10	5	KRFS95-8	7	PS710E251-US	36
KRF150-20	5	KRF50-10-45GR	8	KS0,75	10	PS710E501	36
KRF16-10	5	KRF50-10-90GR	9	KS1,5	10	PS710E501-US	36
KRF16-10-45GR	8	KRF50-10X2-24-26	6	KS10	10	PS710R	37
KRF16-10X2-24-26	6	KRF50-10X2-40	6	KS10M	11	PS710R250	37
KRF16-10X2-40	6	KRF50-12	5	KS2,5	10	PS710R250-US	37
KRF16-12	5	KRF50-12-45GR	8	KS4	10	PS710R500	37
KRF16-6	5	KRF50-12-90GR	9	KS6	10	PS710R500-US	37
KRF16-6-45GR	8	KRF50-16	5	KSF120	10	PVX1300	22
KRF16-6-90GR	9	KRF50-6	5	KSF120M	11	PVX1300-ADV	22
KRF16-6X2-16	6	KRF50-8	5	KSF150	10	PVX1300C2	23
KRF16-8	5	KRF50-8-45GR	8	KSF150M	11	PVX1300C2-ADV	23
KRF16-8-45GR	8	KRF50-8-90GR	9	KSF16	10	PVX1300C2DB	23
KRF16-8-90GR	9	KRF630-00	5	KSF16M	11	PVX1300C2DB-ADV	23
KRF185-10	5	KRF630-12	5	KSF185	10	PVX1300C2DB-US	23
KRF185-10-90GR-SB	9	KRF630-16	5	KSF185M	11	PVX1300C2-US	23
KRF185-10X2-24-26	6	KRF630-20	5	KSF240A	10	PVX1300C2-WOBC	23
KRF185-12	5	KRF630-24	5	KSF240AM	11	PVX1300DB	22
KRF185-12-90GR-SB	9	KRF70-10	5	KSF25	10	PVX1300DB-ADV	22
KRF185-12X2-40	6	KRF70-10-45GR	8	KSF25M	11	PVX1300DB-US	22
KRF185-16	5	KRF70-10-90GR	9	KSF300A	10	PVX1300-US	22
KRF185-16-90GR-SB	9	KRF70-10X2-24-26	6	KSF300AM	11	PVX1300-WOBC	22
KRF185-20	5	KRF70-12	5	KSF35	10	PVX1300-WOBC-ADV	22
KRF240A-10	5	KRF70-12-45GR	8	KSF35M	11	PZD3	54
KRF240A-10X2-24-26	6	KRF70-12-90GR	9	KSF400A	10	R12MR	29
KRF240A-12	5	KRF70-12X2-40	6	KSF400AM	11	R13MR	29
KRF240A-12X2-40	6	KRF70-16	5	KSF50	10	R15MR	29
KRF240A-16	5	KRF70-6	5	KSF500	10	R16MR	29
KRF240A-20	5	KRF70-8	5	KSF500M	11	R6MR	29
KRF25-10	5	KRF70-8-45GR	8	KSF50M	11	R7MR	29
KRF25-10-45GR	8	KRF70-8-90GR	9	KSF630	10	R8MR	29
KRF25-10-90GR	9	KRF800-00	5	KSF70	10	R9MR	29
KRF25-10X2-40	6	KRF800-16	5	KSF70M	11	TS1300	25
KRF25-12	5	KRF800-24	5	KSF800	10	TS1300AL	25
KRF25-14X2-40	6	KRF95-10	5	KSF95	10	TS1300CU	25
KRF25-6	5	KRF95-10-45GR	8	KSF95M	11	V2521	30
KRF25-6-45GR	8	KRF95-10-90GR	9	L-ALU	31	V2521	30
KRF25-6-90GR	9	KRF95-10X2-24-26	6	LV1300B	31	V2521	30
KRF25-6X2-16	6	KRF95-12	5	P1000	39	V2531	30
KRF25-8	5	KRF95-12-45GR	8	P13D	29	V2531	30
KRF25-8-45GR	8	KRF95-12-90GR	9	P13D	30	V2531	30
KRF25-8-90GR	9	KRF95-12X2-40	6	P13M	29	V2531	30
KRF25-8X2-40	6	KRF95-16	5	P13M	30		
KRF300A-10	5	KRF95-16-45GR	8	P20D	29		
KRF300A-12	5	KRF95-16-90GR	9	P20D	30		
KRF300A-12X2-40	6	KRF95-8	5	P20M	29		
KRF300A-16	5	KRFS120-10	7	P20M	30		
KRF300A-20	5	KRFS120-12	7	P2552D	30		
KRF300A-24	5	KRFS120-6	7	P2552M	30		
KRF35-10	5	KRFS120-8	7	P25D	29		
KRF35-10-45GR	8	KRFS150-10	7	P25D	30		
KRF35-10-90GR	9	KRFS150-12	7	P25M	29		
KRF35-10X2-24-26	6	KRFS150-6	7	P25M	30		
KRF35-10X2-40	6	KRFS150-8	7	P32D	29		
KRF35-12	5	KRFS185-10	7	P32D	30		
KRF35-6	5	KRFS185-12	7	P32M	30		
KRF35-6-45GR	8	KRFS240A-10	7	P36-40-44D	30		
KRF35-6-90GR	9	KRFS240A-12	7	P36-40-44D	30		
KRF35-8	5	KRFS240A-16	7	P36-40-44D	30		

# Europe



# USA



# Asia



## Head office and production

Elpress AB, Kramfors Sweden

## Subsidiaries

- Elpress AS, Gressvik Norway
- Elpress A/S, Silkeborg Denmark
- Elpress GmbH, Viersen Germany
- Elpress China, Beijing China
- Elpress Inc, Chicago USA

## Sales

- Region north Sweden, Kramfors
- Region middle Sweden, Upplands Väsby
- Region south Sweden, Gothenburg
- Sales office, Ed
- Suomi, Porvoo
- India, New Delhi



## Service partners

- Hydraulikkteknikk, Hagan (Oslo) Norway
- Enkom, Vasa Suomi
- Hamburger Hochdruck Hydraulik, Hamburg Germany
- E-Tech Components, Skelmersdale UK
- Precision Hydraulics, Portland USA



## Distributors och partners

- Unitronic GmbH, Düsseldorf Germany
- Enkom-Active Oy, Helsingby Soumi
- JF Knudtzen AS, Nesbru Norway
- Jobarco, Br Benthuizen Netherlands
- ACTE Sp. Z o.o., Warszawa Polen
- E-Tech Components, West Lancashire UK



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