

# Elpress System



## reliable results

Product brochure

## Elpress DUAL System

Reliable results

Elpress 2003





# What's special with Traction applications?

During several years Elpress has had contact with manufacturers of traction units, like trains, trams and such, 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 rolling stock.

- 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 currents and current peaks in lowest possible conductor areas and the requirements of flexible conductors.
- Traction 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.

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

- Electrical properties - **IEC61238-1, 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.



***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.***



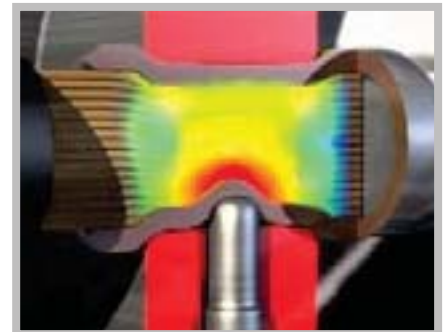
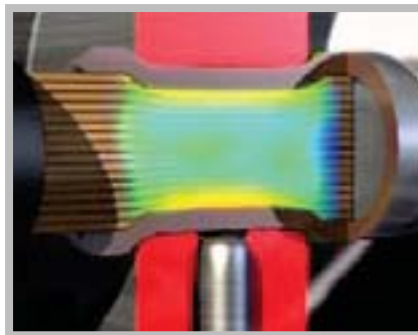
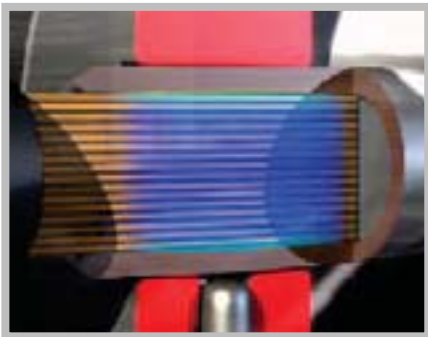


# Crimping with the DUAL System

This System has been developed to meet the hard combined 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.



We call this technology, for which patent is applied, 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.

The DUAL Crimp is performed by the crimp heads **DV1300** or **DV1300C** using the crimp dies DBxx available from 16 to 300 mm<sup>2</sup>. The crimp heads are powered by the normal Elpress hydraulic pumps **P4000** (foot pump) or **PS700** (mains and battery operated hydraulic pump).

The stationary crimp unit **CS200** is also available in a DUAL Crimp version designated **CSD200**.

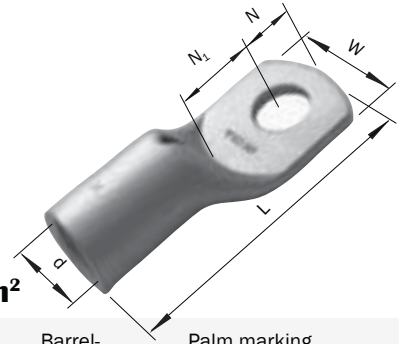
More information on the crimp tools is found on page 8.





Technical data, see also note:

- electrolytic copper
- tin plated
- cable inspection hole
- for flexible (and stranded) Cu-conductors



### Tube terminals 0,75 - 1000 mm<sup>2</sup>

Cat no	mm <sup>2</sup>	mm					kg/100	pcs/pack	Barrel-marking (ref die No)	Palm marking		Note
		W	d	N	N <sub>1</sub>	L					*	
KRF 16	-6	13,0	6,0	7,0	9,0	33	0,91	100	9	16	6F	
	-8	"	"	"	"	"	0,85	"	9	16	8F	
	-10	16,0	"	10,0	12,0	38	0,94	"	9	16	10F	
	-12	22	"	12,0	13,0	47	1,1	"	9	16	12F	
KRF 25	-6	16,0	8,0	7,0	10,0	37	1,4	100	11	25	6F	
	-8	"	"	8,0	"	38	1,3	"	11	25	8F	
	-10	17,0	"	10,0	12,0	42	1,4	"	11	25	10F	
	-12	22	"	12,0	13,0	47	1,6	"	11	25	12F	
KRF 35	-6	18,0	9,0	10,0	10,0	45	2,6	100	13	35	6F	
	-8	"	"	"	"	"	2,5	"	13	35	8F	
	-10	"	"	"	11,0	"	2,4	"	13	35	10F	
	-12	22	"	12,0	14,0	52	"	"	13	35	12F	
KRF 50	-6	21	11,0	11,0	12,0	50	2,9	100	14,5	50	6F	
	-8	"	"	"	"	"	2,8	"	14,5	50	8F	
	-10	"	"	"	"	"	2,7	"	14,5	50	10F	
	-12	"	"	12,0	14,0	53	"	"	14,5	50	12F	
	-16	27	"	15,0	17,0	59	2,9	"	14,5	50	16F	
KRF 70	-6	25	13,0	11,0	12,0	55	4,2	50	17	70	6F	
	-8	"	"	"	"	"	"	"	17	70	8F	
	-10	"	"	"	"	"	4,1	"	17	70	10F	
	-12	"	"	12,0	14,0	58	"	"	17	70	12F	
	-16	28	"	15,0	17,0	64	4,4	"	17	70	16F	
KRF 95	-8	29	15,0	15,0	17,0	69	7,9	50	20	95	8F	
	-10	"	"	"	"	"	7,7	"	20	95	10F	
	-12	"	"	"	"	"	7,5	"	20	95	12F	
	-16	"	"	"	"	"	7,1	"	20	95	16F	
KRF 120	-10	32	17,0	15,0	17,0	73	9,1	25	22	120	10F	1
	-12	"	"	"	"	"	9,0	"	22	120	12F	1
	-16	"	"	"	"	"	8,7	"	22	120	16F	1
KRF 150	-10	36	19,0	15,0	17,0	80	13	25	25	150	10F	1
	-12	"	"	"	"	"	"	"	25	150	12F	1
	-16	"	"	"	"	"	"	"	25	150	16F	1
	-20	"	"	19,0	20	87	"	"	25	150	20F	1
KRF 185	-10	39	21	15,0	17,0	86	16	20	27	185	10F	1
	-12	"	"	"	"	"	15	"	27	185	12F	1
	-16	"	"	"	"	"	"	"	27	185	16F	1
	-20	"	"	19,0	20	93	16	"	27	185	20F	1
KRF 240	-10	44	24	19,0	20	95	21	10	30	240	10F	1
	-12	"	"	"	"	"	20	"	30	240	12F	1
	-16	"	"	"	"	"	"	"	30	240	16F	1
	-20	"	"	"	"	"	19	"	30	240	20F	1
KRF 300	-10	48	26	22	31	115	27	10	32	300	10F	1
	-12	"	"	"	"	"	26	"	32	300	12F	1
	-16	"	"	"	"	"	"	"	32	300	16F	1
	-20	"	"	"	"	"	25	"	32	300	20F	1
	-24	"	"	"	"	"	"	"	32	300	24F	1

\*Epress logotype which is included in the marking.

Note:

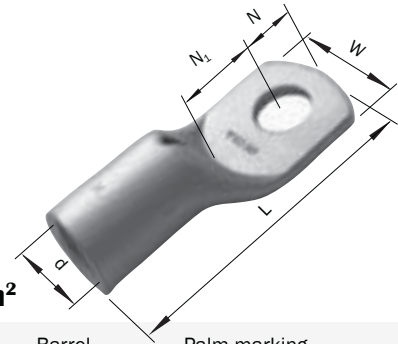
- 1 Two adjacent compressions are necessary on 120 mm<sup>2</sup> when using DUAL system





Technical data, see also note:

- electrolytic copper
- tin plated
- cable inspection hole
- for flexible (and stranded) Cu-conductors



### Tube terminals 0,75 - 1000 mm<sup>2</sup>

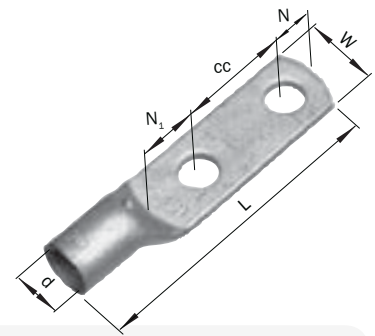
Cat No	mm <sup>2</sup>	mm	mm	mm	mm	mm	kg/100	pcs/pack	Barrel-marking (ref die No)	Palm marking *	Note
		W	d	N	N <sub>1</sub>	L					
KRF 400	-12	54	30	22	33	124	33	10	36	400 12F	
	-16	«	«	«	«	«	«	«	36	400 16F	
	-20	«	«	«	«	«	32	«	36	400 20F	
	-24	«	«	«	«	«	31	«	36	400 24F	
KRF 500	-00	61	33	70**	-	160	75	10	42	500 F	
	-16	«	«	25	35	150	70	«	42	500 16F	
	-20	«	«	«	«	«	«	«	42	500 20F	
	-24	«	«	«	«	«	«	«	42	500 24F	
KRF 630	-00	75	39	80**	-	195	160	10	53	630 F	
	-20	«	«	35	45	«	«	-	53	630 20F	
	-24	«	«	«	«	«	«	-	53	630 24F	
KRF 800	-00	75	42	80**	-	195	150	-	53	800 F	
	-24	«	«	35	45	«	«	-	53	800 24F	

**NOT a part of Elpress DUAL System.**

\*Elpress logotype which is included in the marking.  
\*\* Corresponds to the whole palm length.

Technical data, see also note:

- electrolytic copper
- tin plated
- cable inspection hole
- for flexible (and stranded) Cu-conductors



### Tube terminals with two hole 70 - 300 mm<sup>2</sup>

Cat No	mm <sup>2</sup>	mm	mm	mm	mm	mm	kg/100	pcs/pack	Barrel-marking (ref die No)	Palm marking *	Note
		cc	W	d	N	N <sub>1</sub>	L				
KRF 70-12x2-40		40	25	13,0	15,0	20	107	9,8	17	70 12F	
KRF 95-12x2-40		40	29	15,0	15,0	20	112	14	20	95 12F	
KRF 120-12x2-40		40	32	17,0	15,0	20	116	17	25	120 12F	1
KRF 150-12x2-40		40	36	19,0	15,0	20	123	26	10	150 12F	1
KRF 185-12x2-40		40	39	21	15,0	20	129	28	10	185 12F	1
KRF 240-12x2-40		40	44	24	15,0	20	131	37	10	240 12F	1
KRF 300-12x2-40		40	47	26	15,0	20	137	43	5	300 12F	1

\*Elpress logotype which is included in the marking.

Note:

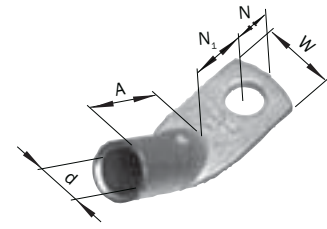
- 1 Two adjacent compressions are necessary on 120 mm<sup>2</sup> when using DUAL system





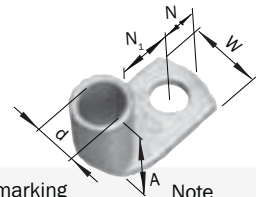
Technical data, see also note:

- electrolytic copper
- tin plated
- cable inspection hole
- for flexible (and stranded) Cu-conductors



### Tube terminals 45°, 10 - 120 mm<sup>2</sup>

Cat No	mm <sup>2</sup>	mm					pcs/ pack	Palm marking		Note
		W	d	N	N <sub>1</sub>	A		*	*	
KRF 16	-6-45GR	13,0	6,0	6,5	11,5	23	100	16-6F	9	
	-8-45GR	13,5	«	8,5	12,0	«	«	16-8F	9	
KRF 25	-6-45GR	17,0	8,0	6,5	11,5	24	100	25-6F	11	
	-8-45GR	«	«	8,5	12,0	«	«	25-8F	11	
	-10-45GR	«	«	11,5	13,5	«	«	25-10F	11	
KRF 35	-6-45GR	18,0	9,0	6,5	11,5	30	100	35-6F	13	
	-8-45GR	«	«	8,5	12,0	«	«	35-8F	13	
	-10-45GR	«	«	11,5	13,5	«	«	35-10F	13	
KRF 50	-8-45GR	21	11,0	8,5	17,5	31	100	50-8F	14,5	
	-10-45GR	«	«	11,5	18,5	«	«	50-10F	14,5	
	-12-45GR	«	«	12,5	19,5	«	«	50-12F	14,5	
KRF 70	-8-45GR	25	13,0	8,5	17,5	35	50	70-8F	17	
	-10-45GR	«	«	11,5	18,5	«	«	70-10F	17	
	-12-45GR	«	«	12,5	19,5	«	«	70-12F	17	
KRF 95	-10-45GR	29	15,0	11,5	18,5	40	50	95-10F	20	
	-12-45GR	«	«	12,5	19,5	«	«	95-12F	20	
	-16-45GR	«	«	15,5	20,5	«	«	95-16F	20	
KRF 120	-10-45GR	32	17,0	11,5	18,5	43	25	120-10F	22	1
	-12-45GR	«	«	12,5	19,5	«	«	120-12F	22	1
	-16-45GR	«	«	15,5	20,5	«	«	120-16F	22	1



### Tube terminals 90°, 10 - 120 mm<sup>2</sup>

Cat No	mm <sup>2</sup>	mm					pcs/ pack	Palm marking		Note
		W	d	N	N <sub>1</sub>	A		*	*	
KRF 16	-6-90GR	13,0	6,0	6,5	11,5	17	100	16-6F	9	
	-8-90GR	13,5	«	8,5	12,0	«	«	16-8F	9	
KRF 25	-6-90GR	17,0	8,0	6,5	11,5	18,5	100	25-6F	11	
	-8-90GR	«	«	8,5	12,0	«	«	25-8F	11	
	-10-90GR	«	«	11,5	13,5	«	«	25-10F	11	
KRF 35	-6-90GR	18,0	9,0	6,5	11,5	22,5	100	35-6F	13	
	-8-90GR	«	«	8,5	12,0	«	«	35-8F	13	
	-10-90GR	«	«	11,5	13,5	«	«	35-10F	13	
KRF 50	-8-90GR	21	11,0	8,5	17,5	30,5	100	50-8F	14,5	
	-10-90GR	«	«	11,5	18,5	«	«	50-10F	14,5	
	-12-90GR	«	«	12,5	19,5	«	«	50-12F	14,5	
KRF 70	-8-90GR	25	13,0	8,5	17,5	31,5	50	70-8F	17	
	-10-90GR	«	«	11,5	18,5	«	«	70-10F	17	
	-12-90GR	«	«	12,5	19,5	«	«	70-12F	17	
KRF 95	-10-90GR	29	15,0	11,5	18,5	32,5	50	95-10F	20	
	-12-90GR	«	«	12,5	19,5	«	«	95-12F	20	
	-16-90GR	«	«	15,5	20,5	«	«	95-16F	20	
KRF 120	-10-90GR	32	17,0	11,5	18,5	34,5	25	120-10F	22	1
	-12-90GR	«	«	12,5	19,5	«	«	120-12F	22	1
	-16-90GR	«	«	15,5	20,5	«	«	120-16F	22	1

\*Elpress logotype which is included in the marking.

Note:

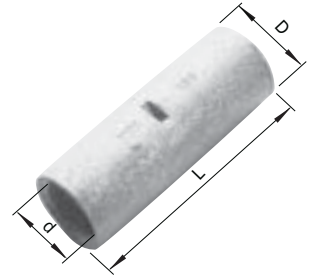
- 1 Two adjacent compressions are necessary on 120 mm<sup>2</sup> when using DUAL system





Technical data, see also note:

- electrolytic copper
- tin plated
- cable inspection hole and cable stop
- for flexible (and stranded)  
Cu-conductors

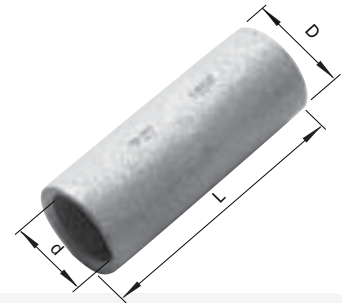


### Through connectors 0,75 - 800 mm<sup>2</sup>

	Cat No	mm <sup>2</sup>	mm			kg/	pcs/	Marking		Note
	mm <sup>2</sup>	Screen cross section	d	D	L	100	pack	*		
Flexible and stranded conductors	KSF 16	15	6,0	9,0	35	0,89	100	9	16F 15	⏚
	KSF 25	21-29	8,0	11,0	«	1,4	«	11	25F 21-29	⏚
	KSF 35	41	9,0	13,0	«	2,2	«	13	35F 41	⏚
	KSF 50	57	11,0	14,5	45	2,6	50	14,5	50F 57	⏚
	KSF 70	72-88	13,0	17,0	«	3,4	«	17	70F 72-88	⏚
	KSF 95	111	15,0	20	«	5,7	«	20	95F 111	⏚
	KSF 120		17,0	22	55	6,2	50	22	120F	1
	KSF 150		19,0	25	65	10	25	25	150F	1
	KSF 185		21	27	70	14	«	27	185F	1
	KSF 240		24	30	70	16	25	30	240F	1
Flexible	KSF 300		26	32	75	17	10	32	300F	1
	KSF 400		30	36	«	18	«	36	400F	
	KSF 500		33	42	135	65	5	42	500F	
	KSF 630		39	53	175	120	-	53	630F	
	KSF 800		42	«	«	156	-	53	800F	

**NOT a part of Elpress DUAL System.**

\*Elpress logotype which is included in the marking.



### Through connectors with partition 10 - 400 mm<sup>2</sup>

	Cat No	mm <sup>2</sup>	mm			kg/	pcs/	Marking		Note**
	mm <sup>2</sup>	Screen cross section	d	D	L	100	pack	*		
	KSF 16M	15	6,0	9,0	37	1,3	100	9	16F 15	⏚
	KSF 25M	21-29	8,0	11,0	38	1,7	«	11	25F 21-29	⏚
	KSF 35M	41	9,0	13,0	41	2,8	«	13	35F 41	⏚
	KSF 50M	57	11,0	14,5	48	3,5	50	14,5	50F 57	⏚
	KSF 70M	72-88	13,0	17,0	49	4,9	«	17	70F 72-88	⏚
	KSF 95M	111	15,0	20	56	8,1	«	20	95F 111	⏚
	KSF 120M		17,0	22	63	10	50	22	120F	1
	KSF 150M		19,0	25	64	14	25	25	150F	1
	KSF 185M		21	27	74	18	«	27	185F	1
	KSF 240M		24	30	76	22	25	30	240F	1
	KSF 300M		26	32	88	28	10	32	300F	1
	KSF 400M		30	36	90	35	«	36	400F	

**NOT a part of Elpress DUAL System.**

\*Elpress logotype which is included in the marking.

Note:

- 1 Two adjacent compressions are necessary on 120 mm<sup>2</sup> when using DUAL system





# DUAL System Crimp Tools

## Crimp head DV1300

Crimp force 130 kN (13 ton).

Double sided fork to be used with integrated DUAL-dies (without die holders). The piston has the unique double-function for DUAL Crimping. Can be used with conventional dies as well.



## Crimp head DV1300C

Crimp force 130 kN (13 ton).

C-fork, open to one side, to be used with integrated DUAL-dies (without die holders).

The piston has the unique double-function for DUAL Crimping. Can be used with conventional dies as well.

## CSD200

*- a crimp unit exclusively designed for volume production*

**CSD200** has been developed to meet the requirements of effective industrial heavy cable assemblies. It is dimensioned for continuous work and high availability combined with low maintenance requirements.

**CSD200** meets established and high demands on operator safety and it has a very low noise level - almost not heard in normal work environments.



## Pumps

### PS700

**PS700** is a battery and mains powered pump for crimping with advanced control and supervision of the crimp procedure.

A flexible system for almost all crimp applications where high performance and reliability is required. The robust design in aluminium, combined with a high total efficiency, allows intensive use in most cases.



### P4000

**P4000** is the new light and low-force two-step footpump. Also here the full crimp cycle is warranted by a release valve opening only at full pressure. A unique ergonomic design in high strength aluminium.



TRACTION - 8







# Crimping quality

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## QA-System

Elpress tools and terminals/connectors are produced under a BSI-certified ISO 9001 QA-system. Elpress works in close connection together with the users regarding practical quality assurance e.g. through tool inspection routines and certification.

## Check measures

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

Area mm <sup>2</sup>	Die id. no.		N <sub>max</sub> -measure mm
	DV1300	DV1300C	
16	13DB9	13 DCB9	7,6
25	13DB11	13 DCB11	9,0
35	13DB13	13DCB13	10,8
50	13DB14,5	13DCB14,5	11,8
70	13DB17	13DCB17	13,6
95	13DB20	13DCB20	16,0
120	13DB22	13DCB22	17,6
150	13DB25	13DCB25	20,2
185	13DB27	13DCB27	21,6
240	13DB30	13DCB30	23,8
300	13DB32	13DCB32	25,6

## Service and maintenance

Undisturbed use of crimp tools and their pump units calls for regular maintenance and service. The documentation supplied with the tools contains simple instructions for current maintenance and care. For both preventive actions and repairs there are authorised service shops. Contact Elpress for closer details.





# The Elpress product range

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Since more than 40 years Elpress is the leading manufacturer and supplier of crimp systems on the Scandinavian market. Through our own sales companies in Denmark and Germany and through representatives we are close to most customers.



## The Elpress product range covers

- Pre-insulated and un-insulated terminals 0,25 – 6 mm<sup>2</sup>
- Copper terminals and connectors 0,75 – 1000 mm<sup>2</sup>
- Aluminium and bi-metal terminals and connectors 16 – 1200 mm<sup>2</sup>
- Manual, hydraulic and mains-/battery powered crimp tools
- Stripping and cutting tools
- Deep earthing material

Elpress stocks a wide range of standard items but we also work close to the end users to be able to supply special designs.

Please contact us or our representatives for details.

